

SPORT

MAY 2012

Aerobatics

OFFICIAL MAGAZINE of the INTERNATIONAL AEROBATIC CLUB



2011
Hall of Fame
Inductee
Tony LeVier

HALL OF F



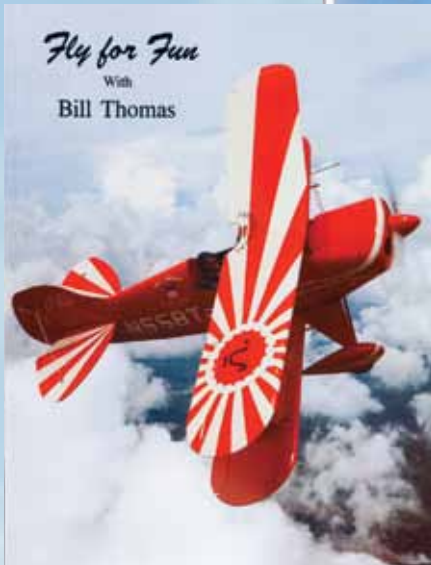
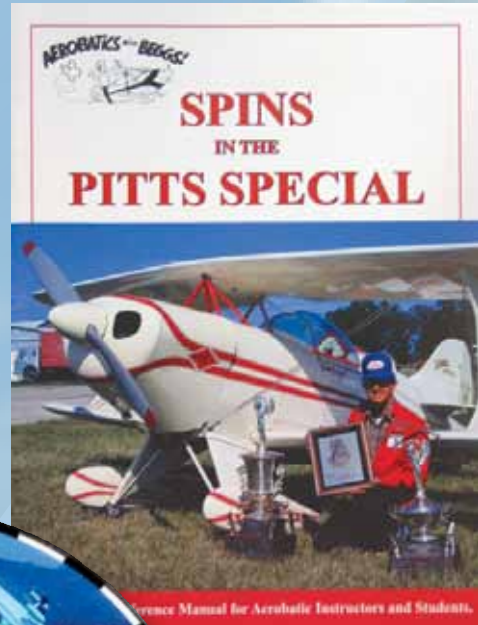
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Doing two curtsies, I brake to a stop, open my canopy, stand, and wave to the crowd.

—Tony LeVier

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THE COVER

Composite photo of Tony LeVier with the *Firecracker* racer, inset photo of Tony later in his career and the IAC Hall of Fame trophy.

PUBLISHER: Doug Bartlett

IAC MANAGER: Trish Deimer

EDITOR: Reggie Paulk

DIRECTOR OF PUBLICATIONS: J. Mac McClellan

SENIOR ART DIRECTOR: Olivia P. Trabbold

CONTRIBUTING AUTHORS:

Doug Bartlett

Gene Beggs

Reggie Paulk

Tony LeVier

IAC CORRESPONDENCE

International Aerobatic Club, P.O. Box 3086

Oshkosh, WI 54903-3086

Tel: 920.426.6574 • Fax: 920.426.6579

E-mail: reggie.paulk@gmail.com

ADVERTISING

Manager/Domestic: Sue Anderson

Tel: 920-426-6127 Fax: 920-426-4828

Partner Relationship Mgr: Heidi Hamm

Tel: 920-426-6565 E-mail: hhamm@eaa.org

Independent Business Relationship Representative:

Larry Phillip Tel: 920-410-2916 E-mail: lphillip@eaa.org

Business Relations and

Classified Advertising Coordinator: Trevor Janz

Tel: 920-426-6809 E-mail: classads@eaa.org

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Tel: 800.843.3612 Fax: 920.426.6761

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REGGIE PAULK
COMMENTARY / EDITOR'S LOG

Worth the Wait

WE USUALLY RUN THE IAC Hall of Fame inductee in the January issue of *Sport Aerobatics*, but this year we're running quite a bit later than that. Anthony "Tony" LeVier passed away in 1998, so it was necessary to contact his

ligence nearly 60 years after its first flight in 1955 with Tony at the controls.

Back in 1995, I had the good fortune to see Bob Hoover perform his famous routine at the controls of a Shrike Aero Commander twin-engine airplane. I sat stunned as I watched him shut off the engines, perform multiple aerobatic maneuvers, then roll to a stop right in front of the announcer's stand. Little did I know until just recently that someone had performed nearly that same routine, in a surplus P-38 no less, 49 years earlier! Tony's daughter was kind enough to send us a story he wrote about the experience, and we share it with you in this month's issue.

YouTube has a plethora of videos featuring Tony LeVier from a number of time frames. He even did a ce-real commercial after the war! In one of the more interesting videos, Tony takes you on a walk around of his beloved P-38 and shows nuances of the aircraft that could easily become lost to history if not for this record. At the tail section of the airplane, he points to a double row of rivets that hold the horizontal and twin vertical stabilizers on. He then goes on to describe how this area was later reinforced with a strap and extra rivets to prevent departure of the tail group during high-speed dives. He also describes how the angle of incidence of the tail was changed to compensate for changes during compressibility phases of flight. Compressibility isn't just for jets—LeVier demonstrated it with the P-38!

As a test pilot,
Tony was the first to
fly many airplanes
we consider to be
legendary today.

family in order to get details about his impressive and full life.

The more I learned about him, the more I came to realize that the IAC awards committee really found a gem with Mr. LeVier. Because he was born in 1913, he was perfectly positioned in history to take advantage of the explosion in aeronautical technology that would pervade the years from the Great War to World War II and beyond. Nearly everyone who participated in aviation before the advent of World War II had opportunities we can only dream of today.

As a test pilot, Tony was the first to fly many airplanes we consider to be legendary today. The U-2 continues to operate and provide valuable intel-

IAC



The Halo Effect

How to earn yours

HOW DO YOU WIN IN THE IAC? Well, let's look at it from the competitor's point of view. To win, one must get more points than any other pilot he is competing against in the various flights flown at a contest. You gain points by flying figures well, and you lose points through penalties such as zeros, low calls, interruptions, and flying out of the box. Most of this is very straightforward. Fly the figure perfectly and you get a 10. Fly the wrong figure and you get a zero. Fly outside of the box and wham, you lose points. But how about the subtleties? Why, with the exact same quality of figure flown, will some pilots get a 9.0 when others get an 8.5? One reason, the "halo effect!" The halo effect is alive and well in the IAC. Nobody can see the halo over that certain pilot's head, but everyone knows it is there, even the pilot who wears it. Everyone says it is unfair except for the pilots who earned it. Yes, I said earned it. When you fly a figure to the level of an 8.6, the judge has to give you a score of either 8.5 or a 9.0, in half-point increments. Most will get the 8.5, but the pilot with the halo may get a 9.0. How did he get the halo?

The halo started to develop because the pilot was a good stick. The gas through the engine was never wasted, and the pilot was always prepared for the practice flight. Fuel and time were seldom misused in repeating figures already mastered or endlessly re-flying a sequence over and over. But there is much more to the halo than that. The halo began to develop because the pilot never scared any of the judges. Always

in control of the aircraft, this pilot may get away with an extra 100 feet below the bottom of the box because he was never a "hot dog," had a history of safe flying practices, and flew by the rules.

There are several reasons the halo begins to appear, but none greater than being a nice guy!

There are several reasons the halo begins to appear, but none greater than being a nice guy! Some pilots endlessly complain about the quality of the judges, having to volunteer at a contest, or giving away knowledge to others that they worked so hard to learn themselves. The pilot with the halo will seldom, if ever, be in this group. The pilot with the halo effect can usually be found on the volunteer list any time he is not flying. During the pilot briefing he is the one with constructive suggestions, not complaints. At the end of the day this pilot is easy to find because he is with a group of younger pilots sharing his hard-earned skills and knowledge.

Most contests are won by less than one percentage point. Judges grade in increments of 5 percent. This makes the halo effect an awesome weapon for those pilots who have earned it. So a quick note to those of you who have it. Remember the halo rests over your head, not over your airplane. Ensure you have a distinctive entry into the box so everyone knows who you are!

One of the nice things about the halo effect is that it is available to all pilots. I truly believe what Kirby Chambliss told me early in my competition days, "Anyone can get good in this sport; it is just gas through the carburetor." So, how do you get a halo? Gas through the carburetor, fly safely, volunteer, and share your knowledge. That's all.

Many of us talk about the halo effect in regard to competition pilots, but few of us talk about the halos that float above many of our volunteers' heads. These people are really easy to recognize also. When something is going wrong, they are the individuals everyone else is looking to for answers. These people are the ones who get endless calls to volunteer for one event or another because they give of themselves with great energy and a smile.

So how do you win in the IAC? As a volunteer or a competitor, you earn a halo. With the halo you will find you receive way more than you give, making you a winner. My term as your IAC president will come to an end at AirVenture 2012, but before I depart, I want to tell you about some of our volunteers with the halo effect. Until next month, fly safely!

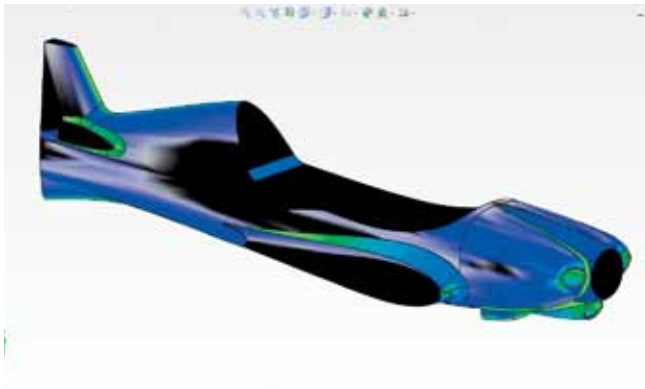
IAC



All New Aerobatic Plane Breaks Cover

by *Loop Magazine*, Available for free on the iPad

U.S. designer with new carbon-fibre Unlimited class challenger.



You wait decades for an all-new carbon-fibre Unlimited category aerobatic aircraft design to show up...and then two come along at once.

OK, the spectacular Raptor shown here isn't actually ready to buy yet, but it's in the pipeline—and looks to be another amazing addition to the most exciting class of aircraft there is. It will join the German Xtreme Sbach 300/342 as the only all-carbon aerobatics aircraft.

It's the brainchild of Florida designer Jeff Kerlo, and he wants to put America back on top in the world of aerobatics after Xtreme moved the goal posts with the Sbach, which was EASA certified in 2010.

Kerlo's Raptor design will be all-carbon, feature an injected Lycoming Thunderbolt engine with 350 hp or more, be rated to +/-13g, be suitable for touring when not being used for competition—and be convertible from single to dual seat with ease.

"The Raptor will provide unbelievably awesome performance," says Jeff. "It will obviously be for those who are not faint of heart and ready to push their and the aircraft's aerobatic limits. Equally appealing is that the Raptor will also provide a comfortable platform for owners to enjoy regular sport flying and cross-country excursions, all the while knowing you don't necessarily have to remain right side up."

Rivals from the likes of Xtreme, Extra, and MXS all make single- and dual-seat versions of their top aerobatic contenders, to allow training at the highest level with an instructor. But Jeff's Raptor will be unique in switching from one to two seats with ease.

"It will incorporate an interchangeable cockpit and canopy hatch," he continues, "which will let you simply and quickly

switch from single- to dual-seat operation. This capability allows one to enjoy aerobatics with a passenger for sport or instruction, but when required it can be configured for all-out competition in a matter of minutes."

Kerlo, who's known for his V-Raptor Orion canard kit plane, set out to create a new all-carbon composite after seeing how new materials like carbon fiber opened up spectacular levels of performance to designers.

He makes no bones about being inspired by the incredible Xtreme Sbach 300, the current newest Ultimate aerobatic aircraft design and 100 percent carbon-fiber construction.

"Unlike metal aircraft designed with a 1.25-times design safety margin," he says, "composite aircraft are generally designed to a two-times safety factor, giving an ultimate design failure load limit of 26g's in this case."

Like Xtreme's Philipp Steinbach, Jeff has a history of designing model aircraft before moving into full-sized machines. "The aircraft was designed to offer the extreme aerobatic capabilities currently enjoyed by its smaller brothers in the modeling world," he says. "Large control surfaces coupled with light weight and immense power should provide breathtaking 3-D style performance so popular with modelers and highly sought after by full-scale aerobatic performers and competitors."

Jeff is at the pattern-making stage in development and hopes to push forward to first flight within the year. He says the Thunderbolt will let him experiment with engine power options, expecting to fit one of around 400 hp into the prototype for a first flight later this year. But he also says it might be possible to make a radial-engine version using the Vedenyev nine-cylinder.

No word on price yet . . .

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IAC

IAC Aerobatic Waivers

BY STEVE JOHNSON
IAC SAFETY CHAIR

I normally write my safety articles about our personal safety with regard to flying and maintenance of our aircraft, but this article is more regulatory in nature and arises from a recent FAA letter of interpretation about altimeter settings. But, there is a YouTube video about a Thunderbirds pilot who set his altimeter wrong, missed his “top” gate, and got to land without his airplane (www.YouTube.com/watch?v=alo_XWCqNUQ). So this article, while more regulatory in nature, does relate back to our personal safety when flying.

When we want to hold an aerobatic contest, certain FAA regulations must be waived to allow the contest to be held. The FAA requires those pilots who will operate their aircraft under the waived regulations to read, understand, and comply with the waived regulations, hence our normal step of “signing the waiver” when we register at a contest. Please note, the regulations require *each pilot to read, understand, and comply with the regulations*. Our signing of the waiver is our acknowledgement of our understanding of the waived regulations. In an aerobatic contest or practice day, we pilots must still and always obey the FAA regulations, except those which have been waived, and typically the waived regulations have other, different rules we must obey.

The normally waived FAA regulation is CFR 91.303—aerobatic flight, which tells us where we may and may not fly aerobatic flight. This rule prohibits aerobatic flight over any congested area of a city, town, or settlement, over an open air assembly of persons, within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport, within 4 nautical miles of the center line of any federal airway, below an altitude of 1,500 feet above the surface, or when flight visibility is less than 3 statute miles. Thus, we typically want a waiver for this rule

so we can operate our contests over an airport without regard for the airspace, below 1,500 feet AGL, and within 4 nautical miles of an airway, if applicable. This waiver of the FAA regulation allows our aerobatic flight, but we also typically want other waivers as well.

The usual “other” waivers are the use of transponders, 91.215; aircraft speed, 91.117; minimum safe altitudes, 91.119; operating on or in the vicinity of an airport in Class E, D, C or B airspace, 91.127 to 91.131; and altimeter setting, 91.121 (we typically set our altimeters to zero at the contest airport). Each of our contest and practice day waivers must include each of these waivers, as needed, in our waiver documents or the regulations are not waived. The IAC also has some other “exemptions:” VFR fuel minimums, 91.151, and carrying the pilot operating handbook (POH), 91.9b. The IAC holds these exemptions through an FAA exemption letter, number 10159, and it applies only during the conduct of an officially sanctioned aerobatic contest and associated practice flights. Thus, at practice day weekends and normal waived aerobatic practice, we still must carry the POH and meet minimum VFR fuel requirements.

As stated in the beginning, all of this stems from a recent FAA letter of legal interpretation. A glider operator asked for a clarification of 14 CFR 91.121, Altimeter Settings, with regard to using the current barometric pressure setting, MSL, or an above ground level (AGL) setting for local glider operations. (Does this sound familiar?) The FAA legal response was, “The cruising altitude of an aircraft below 18,000 feet MSL shall be maintained by reference to an altimeter that is set to the current reported altimeter setting of a station located along the route of flight and within 100 nautical miles of the aircraft.” This interpretation means that without a specific waiver of 91.121, we must set our altimeters to the local

barometric pressure, MSL altitude, not zero as we typically do at a contest.

All of us, pilots and contest staff, must be sure we have asked for and received the correct waivers of the FARs for our contests and practice days. Contest directors, be sure the actual waiver documents cover all the waived regulations required for your contest, and pilots, be sure you read the waiver for each contest you attend. They are not all the same! Each contest director and staff works with its local flight standards district office (FSDO), and one FSDO may have differing requirements than another. Additionally, local and airport geographic situations may require different aspects for individual waivers. As a pilot, we are held responsible for flying legally, so be sure you know what is waived and what is not. If you are not sure, read the waiver, or maybe find out the hard way.

Fly safely, and legally!

IAC

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FAA Regulations

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=3efaad1b0a259d4e48f1150a34d1aa77e7rgn=div5&view=text&node=14:2.0.1.3.10&idno=14>

IAC Exemption

<http://members.iac.org/forms/Fuel%20Exemption%2010159.pdf>

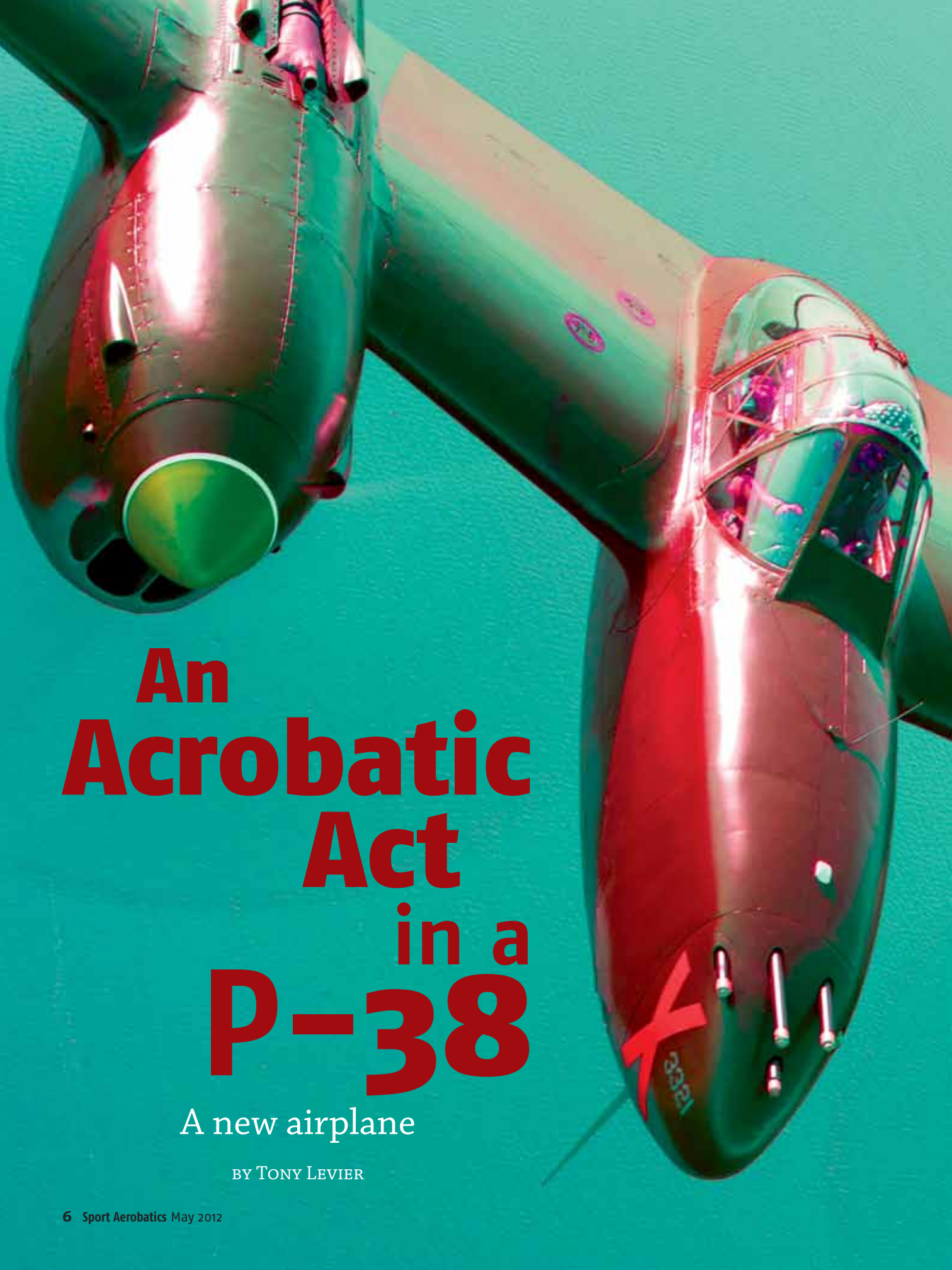
FAA Waiver Guidance 8900.1 CHG

85, Volume 3 *General Technical Administration, CHAPTER 5, Issue a Certificate of Waiver for an Aerobatic Practice Area or an Aerobatic Contest Box*

<http://fsims.faa.gov/PICDetail.aspx?docId=593271CA81FF3873862576C000571596>

YouTube F-16 Crash

http://www.youtube.com/watch?v=alo_XWCqNUQ



An Acrobatic Act in a P-38

A new airplane

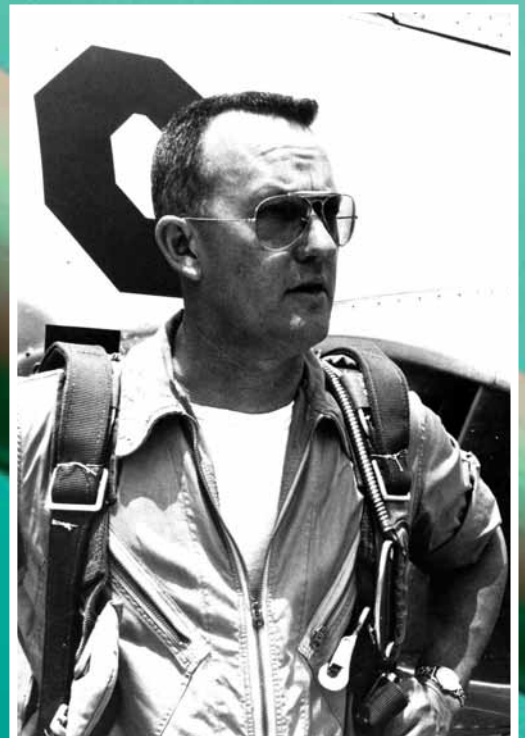
BY TONY LEVIER



I was flying above an overcast, circling Cleveland Municipal Air Terminal waiting for the control tower to give me word that I was on and could start my act when ready. It was the 1946 National Air Races, the first to be staged since before the war in 1939. Seven long years have come and gone. I was back at Cleveland with the most graceful and powerful fighter of World War II, the beautiful P-38 Lightning that I had purchased from the government last January 21. I had dreamed of owning a P-38 but never really thought it would come to pass.

I'll never forget the day I spent out at the air force base at Kingman, Arizona, searching for the one perfect P-38 out of a choice of more than 450 lined up row after row for acres and acres—never before, anywhere, had so many

airplanes been assembled together in one spot. Here at this one air base were stored 7,500 combat aircraft—some were battle weary, some practically brand new. My P-38 had but 15 hours and 25 minutes total flying time—all test and ferry hours since being at Burbank, then to Dallas, Texas, for modification, and finally back west to be stored in the great vast expanse of prairie country east of Kingman. When I came over the hill that Wednesday morning, through the mountain pass east of Kingman, I never dreamed of seeing such a sight. It might have well been a hundred years before, and instead of thousands of bright shiny airplanes, it could have been a herd of buffalo or wild horses—no, this was 1946, the war is over, and as usual the government is disposing of its enormous amount of assets. The aircraft at this base



are controlled by the War Assets Administration, and it is in charge of selling them.

I drive down Highway 66 along row upon row of warplanes—all makes and breeds, mile on end. I turn into the entrance to the base; there is very little formality with the war over. The guard has been relaxed, and I am admitted with little delay. Mr. Perry of the W.A.A. has expected me, called him Monday by telephone to get the particulars. He had a long list of P-38s with the lowest number of hours. But I could help myself to any airplane in the lot. For the next six hours I was like a kid in a toy store just before Christmas. Sammy Mason, an old friend of mine, had driven with me to help out and to drive my car home. We both went over each aircraft looking for certain telltale features that would indicate a good clean airplane. Finally after about four hours of this, we had the list paired down to about a dozen P-38s. Now, which one shall I pick? Why don't I just say 'that one' and get it over with? No! We came this far and spent half a day. I'll probably never have another chance like this to pick out a \$150,000 airplane for \$1,250.

I have worked out a plan of elimination; I'll follow that. I check off seven more from the list—four to go. Sammy is now just following me around, not saying anything. Guess he thinks I'm crazy. They all look alike. Why don't I just say eenie, meenie, miny, moe and get it over with—four, scratch two, two to go. The aircraft serial numbers are 44-53078 and 021. They are two rows apart; I walk back and forth for at least 30 minutes. I scrutinize every crook and cranny that is exposed; I don't miss a thing. Finally I say to Sammy, my choice is 078. Let's get back to the office and tell Mr. Perry so they can get it towed out to the flight line. About an hour later with my P-38 serviced, fuel tanks filled, a check flight for good measure, bill of sale in my pocket, I'm on my way home to Burbank the happiest person in the world, flying an airplane I have helped develop—to breathe and live—to do great things. Men have become heroes

flying P-38s—Maj. "Bong," McGuire and others. Bong was ace of aces flying P-38s; 40 victories to his credit. Here I am, flying my very own. I study the sound of the engines; they feel smooth with little more than a steady hum.

I decide to hedgehop awhile. I drop the nose—the speed picks up from 250 to 270-280-290-300-310. I'm about 400 feet from the ground. I ease back on the control wheel and retrim my elevators. Now I'm 100 feet, 50...25 feet above the desert floor. I adjust my throttles to give me maximum cruise power—the airspeed indicator steadies at about 315 mph. Now I must keep my eyes straight ahead—only a fleeting glance at my instruments. There's a small rise ahead—I pull back on the wheel. I skim the top of a knoll and ease down the other side. There's a large cactus ahead. I lift my right wing—it's effortless; like a dream. It's like driving down the highway in your car—the traffic is heavy and you say to yourself, oh if one could only pull back on the wheel and zoom up over the tops of all these other cars—higher and higher, above the telephone poles—you let yourself dream for awhile and you enjoy the fantastic flight of make believe. I'm not dreaming. I'm actually living the thrill of reality. I'm doing all the things I dreamed of when I was a young boy.

The mountain range ahead approaches. I increase my power and climb up the mountain without slackening the speed, over the top at 300—the mining town of Oatman, Arizona, lies ahead just over the top. Farther on, the Colorado River and then Needles, California. I tire of hedgehopping—requires too much attention to be fun for long. Over the Midwestern states and part of Texas, you can fly for hours without so much as a tree.

"Seven six four from Cleveland tower, over."

It's the control tower operator calling me. I answer back, and they tell me to be ready to start in 30 seconds. I acknowledge and start checking my position. I have been circling above the overcast using my radio range receiver to locate myself above the field.

The radio station is located just off the west side of the airport. My opening act is a compressibility dive, the first time in aviation history that it is to be demonstrated to the public. Today an overcast is hampering this part of the act, but I have it figured out and am working with the control tower. I intercept the west leg of the Cleveland radio range less than 15 seconds from hitting the code of silence. I've got to work fast—I cross the beam in a steep left bank and hold it—back to the beam. I turn hard right to the approximate bearing toward the station. God, I hope this works out! I've never tried this before. There are more than 100,000 people down there—thousands who are aviators—many of them critical. I must do my best. I fly into the cone of silence, and at the same time I roll over on my back and pull back on the control wheel.

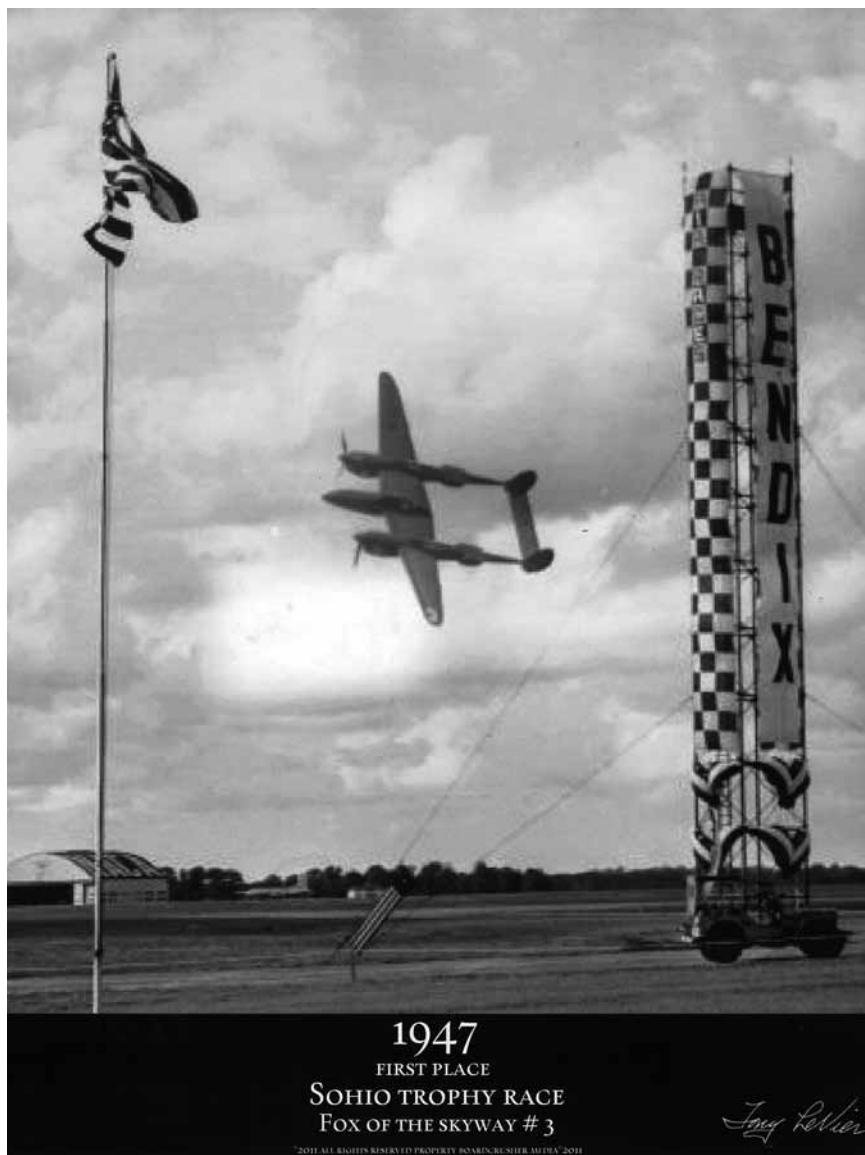
I call the tower, giving them my position, and on my way down put my props in full low pitch—which will wake the dead from the noise. One hundred thousand pairs of eyes look upward toward the west—I'm diving straight down—into the overcast at 11,000 feet. My speed is over 350 mph and going up fast. The altimeter is unwinding: 10,000...9,000...8,000. I break into the clear—lost momentarily—I spot the NACA hangars to my right. With both hands on the control wheel, I turn left and do a half aileron roll going straight down. There's the air race hangars and grandstand on my right as I stop my roll—couldn't have guessed better had there been no clouds. I ease back on the control wheel to start the recovery from my dive; my plane starts to buck and lurch; dive flaps out; this steadies the P-38, and the nose comes up slightly. I check my speed—450 indicated. Wow, no wonder it's bucking! I advertised a compressibility dive and that's what they're getting. Dive flaps in, the altimeter is spinning: 5,000...4,000...3,000...2,500. The airspeed is almost 500. I'm shooting for around 525 indicated at the bottom of my dive. I ease the throttles forward. The airspeed creeps up: 515...520 in-

icated. I'm almost leveled off. I had set my altitude the day before in a fast pass close to the ground and noted the error. I have set in the correction today—900 feet I forget the instruments. They have done their job—now it's up to me. Only my judgment alone can I depend on. My airplane and engines must function perfectly. No time to look around the cockpit. I pull in tight for my final pullout; the accelerometer reads 4...5...5-1/2...6g's.

My g suit has been partially inflated since the start of the recovery. Now it's swelled to the limit, the pressure making me strain my every muscle. It is partially painful but nice—no blackout—the blood's effort to rush from my head is impeded by the g suit's pressure against my lower extremities. It might not have been intended that man subject himself to so much torture, but we do it anyway

The purpose of this demonstration is to show the public what is expected of man and machine. I'm giving her hell today. Fifty feet and level. I continue to pull hard—the moist atmosphere releasing its moisture in the form of a cloud as the P-38 passes through the air. The entire plane is almost hidden from view—the tremendous and instantaneous reaction of the air flowing over the plane is like a violent storm before your very eyes.

The airspeed indicated almost reached 525—almost as fast as jets fly. My pullout is extremely abrupt and might be described by some as making a square corner. My engines are wide open, and I'm streaking upward—steeper and steeper—I look left to judge my angle of climb by the horizon. I'm vertical and my speed is over 400 mph. My climb indicator is against the peg. I'm climbing more than 35,000 feet per minute for a short distance—what a sensation and thrill as the ground drops away. The speed gradually slows down and the climax is over. I must ready myself for the next maneuver—no time to waste as I only have 20 minutes to display my routine. I ease the throttles back and start rolling the P-38 the last few thousand feet. Always try and keep doing something—never



anything twice the same. That's why the P-38 is so terrific.

I approach the clouds that I just came down through. I don't intend to go through them and stop my roll away from the spectators and pull back hard on the controls to effect a half-loop and head back down. My speed is very low, and the P-38 shakes and buffets from the stall. I lower the wing flaps and the nose comes around. I head almost straight down again and turn the control wheel all the way to the left. The plane starts to roll—slowly at first because my speed is low; now faster it rolls; three turns; four turns—I must be careful not to get too dizzy. It will happen.

My speed is back up to 350, and the throttle is still back. I roll to the right, all the way with the wheel. The

plane stops rolling and then reverses direction with a snap. The speed is just right for maximum rolling velocity. I'm dizzy, but rolling the opposite direction will steady my equilibrium. I stop my rolling lined up for my next pullout and maneuver. I cross in front of my spectators doing aileron rolls first left and then to the right—this uses up time and distance. Now I'm ready for the next. I pull back hard but smoothly. The nose comes up and over. I bend my head backwards to pick up the horizon and check for wind drift. Wind that's crossways to your flight path makes it extremely difficult to stay lined up and spoils the look of precision.

Now I'm headed down again as though I'm going to try to complete a simple loop the loop—closer and

closer to the ground. It even looks bad from where I'm sitting. I have been told this maneuver chills the person the first time they see it. I can believe it. It would scare me, too. I know that many people—especially the military pilots—begin to hold their breath. He'll never make it they say. But I've done this maneuver hundreds of times. I rely completely on the P-38 to react at the exact instant that I call upon her. She has never let me down. The only times I have had a scare or close call were my own fault. I'm not taking those chances today, just a repeat of what I've done many times. I have reached what appears to be a dangerously low altitude. I sense feelings of the people watching. Now I whip the wheel left; all the way. The plane almost snaps to an upright position, and I stop the roll. The wings roll slightly past level and then level like a soldier giving a snappy salute. My altitude is about 200 feet and descending. Now I ease back—just enough to skim the ground. This is easy if you have done it before; you get used to it over the years. It's a combination of depth perception, perspective, and closing rate all in one. I trained my students years before in the art of flying low; what to look for and how to avoid the hazards ever lurking close to the ground.

I clear the ground by perhaps 10 or 15 feet. I'm always higher than it looks from the cockpit—partly because of the refraction from the slanting windshield and partly from the blur of the ground being close. I ease back and repeat the maneuver to show the skeptics that I meant it the first time. This maneuver is called a Cuban-eight à la LeVier. I push the throttles wide open and zoom upward at a 45-degree climb and start rolling right, then left until I've reached enough altitude. I start another dive—this time I have my right engine stopped; the propeller feathered and standing still. I'm west of the field doing a wing-over to enter my dive. Back across the field, the airspeed is at 300—just right—I roll the plane inverted. I'm upside down looking up through my canopy at the ground. I glance to the left at



the spectators as I flash by. Hope they like my show—now a complete roll to the left—upside down again. Now one to the right. I cross the boundary of the airport and push forward and zoom up inverted to about a thousand feet and roll out. I feel good today—felt real fine when I awakened this morning. It was the third day of the National Air Races, and I had been putting my act on twice a day. The first day, people didn't believe it. The second day; yes, it was true. He really does do all those maneuvers. Then he shuts one engine off and does them over again. But brother that ain't nothing! Stick around for the last part. I had a friend tell me that Roscoe Turner, my longtime racing friend, had insisted on keeping a group from leaving early to go into town just to see my "grand finale."

I believe I enjoyed it as much as the people on the ground watching. I had lain awake nights planning how to do it successfully and safely. I had it worked out to perfection—that is—Levier style. I never considered myself a precision aerobatic pilot like Sammy Mason, Bevo Howard, Mike Murphy, Tex Rankin, and many others. But I had a style that everyone liked, mainly because you never knew just what came next.

Today my first act had been postponed because of a fuel leak. Glenn Fulkerson and my crew worked feverishly to make the necessary repairs. Ben Franklin, the general manager of the National Air Races, said I could do both acts all in one and that he

wouldn't penalize me for it.

With my engines at full power, I climbed up to 12,000 feet in a near 45-degree angle. For the grand finale, it was extremely important to have the exact position from the performing area in front of the spectators with about 12,000 feet to start from. I was about four miles east of the airport. I contacted the control tower to notify the announcing stand of my position as the overcast had broken up to some extent, and I had hopes of being able to dive through a hole in the clouds. I rolled left a little, now right—all lined up—two miles to go. I bring my engines back to idle, slowing the P-38 down to give me time to line things up. There's a hole in the overcast, and I can now see the grandstands and half of the airport. I have checked my cockpit and everything is in order; fuel okay with the fuel boost pumps off. I'm just about ready. I put both carburetor mixture controls in the off position, flip the feathering switches for both propellers, and turn on my electric hydraulic system. That is the secret to the grand finale. The propellers come to a stop, and there is earthly silence except for the faint howl of the wind across my cockpit canopy.

With the engines stopped, I place the mixture controls back to the auto-rich position and the feathering switches to normal. Now I place my manual propeller switches to



fixed position ready to unfeather the props if I need my engines for any reason. I haven't yet, but I must not take any chances. I wiggle my ailerons and check my special hydraulic system. It's okay and now I'm ready to go. One more check for position—just right—I roll upside down and pull back on the control wheel. The nose comes down through the horizon until I'm in a vertical dive. I flash through a wisp of cloud, and I'm in the clear. I roll the plane about until I'm facing the field. It seems as though I'm a little too close in. That's bad as it can ruin the whole act. Must be the wind effect and clouds. I roll the plane back again and pull out away from the airport. I do another half-roll, and now things look much better. This is going to be my best one. My altitude is 5,000 feet, and I start pulling out of my dive. Just enough to have a start—not too much or the act is spoiled. My speed is 400 mph. Just right, the best speed is around 450 to 475 mph. I'm headed for a spot that is three-fourths to one mile from the airport. Now I pull back—down lower and lower. Easy does it...want no more than 100 feet at the bottom of my pullout. Things are working out just right today

There's a rumor going around that LeVier must be nuts to think he can run the 300-mile Thompson Trophy race after the beating his plane has taken—some even say he should be stopped.

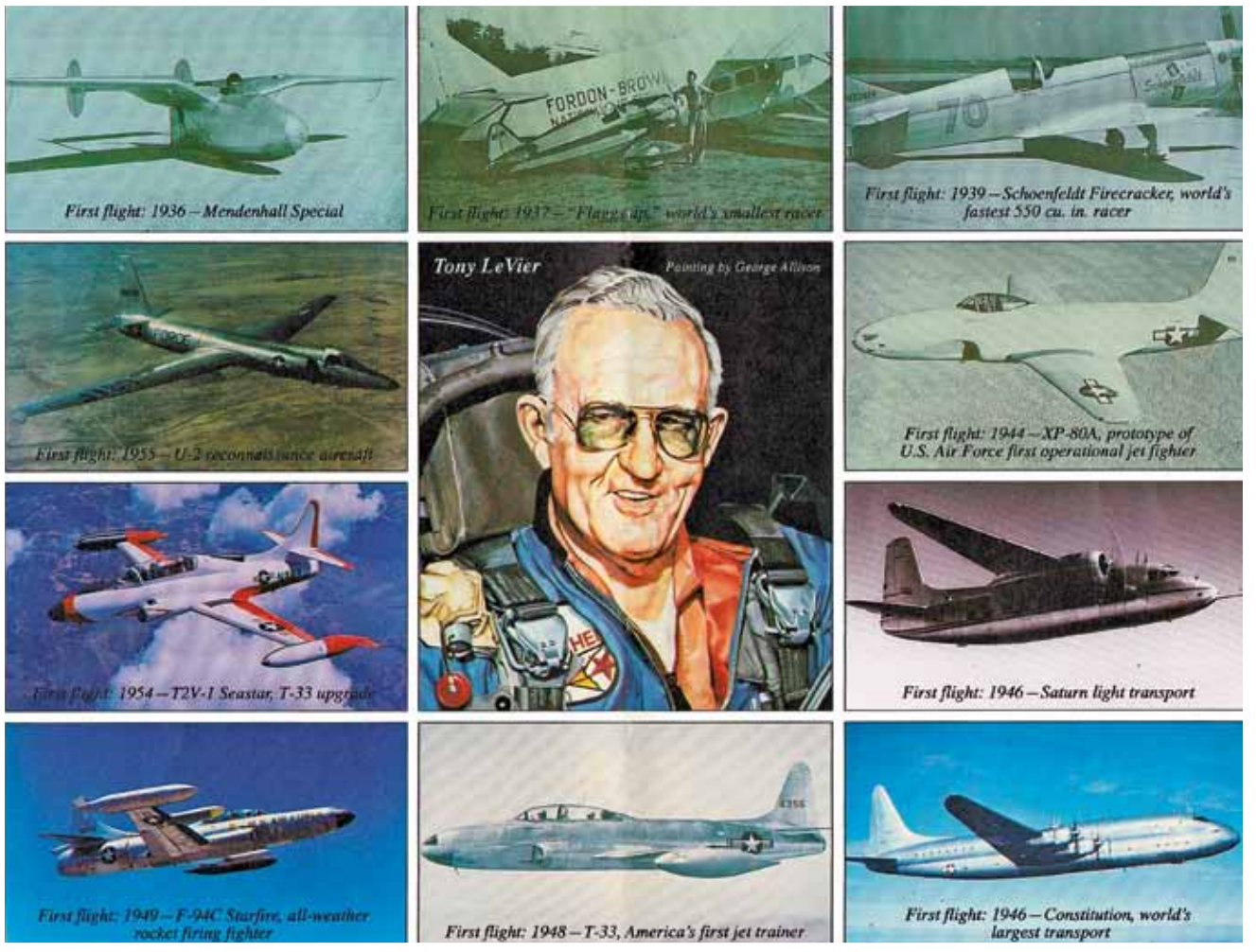
I'm down to 1,100 feet...800, 6, 5, 4, 3, 2, 1. I level off at tree height and pass over the old red brick school building east of the airport. Will use it as a landmark in tomorrow's race. I ease the nose up a little and roll the P-38 upside down as I push forward on the control wheel to keep from flying into the ground. It's unnatural to fly upside down, and if you do, your inverted senses will fool you. Pilots have flown into the ground because they failed to push forward hard enough on the controls. I cross the edge of the airport upside down and am just about ready for my grand finale. Now! I roll hard right and upside down again—now left—looking quickly to the right for a position check. I'm passing the end of the grandstands. I push forward and zoom up inverted. I roll right side up and pull back hard so I'm now vertical.

Airspeed is 250—just right. I pull harder, straining my muscles to throw my head back. There's no g suit help on this one because the engines are dead and there's no air pressure. The nose comes through the horizon, and I reach down to the left side of my seat to place the landing gear lever in the down position. I hold the airplane inverted for a few moments and roll into an upright position. I'm back up to 3,000 feet and my gear is down, headed east. I pass over the red school building, break hard left, and put my wing flaps down. I call the tower out of habit and ask for landing instructions. They give me a clear go ahead. I must keep the right speed—about

120-130 for good control. I do a sideslip to the left and begin a turn. I'm about 180 degrees and headed away from the spectators. At six tons, the P-38's wing loading at this very moment is 40 pounds per square foot. That's not much for a fighter airplane, but plenty for maneuvering around inside of a field. I pass over the northeast corner of the airport and whip into a steep slipping turn to the left. Now I'm headed west, a bit high. I straighten out and head for a bridge over the Rocky River. I'm directly opposite the spectators and bank hard left and pull as tight as I dare. I check my speed—12. Now headed east, I start a slipping turn to the right. I cross the diagonal runway and continue slipping to the right, passing in front of the hangars.

I pass the United Airlines hangar, and everyone there is out in front. I can see every head is pointed my way—I get a big charge out of doing this—especially this part. It's so clean and quick that only two minutes ago, I was at 12,000 feet. I cross the large taxi ramp in front of the air terminal. Now I'm down to just a few feet, and the P-38 feels light as a Cub. I miss the drag of unfeathered propellers. Gotta fishtail. I rudder the nose left—now right—left again—right again. My speed is down to 80 mph, and I'm still in the air. God what an airplane! I do one more easy slip to the left, straighten out, and touch down at 75 miles per hour. I have already pumped my wheel brakes and they're ready. I press hard on the foot pedals—my speed drops off—I'm headed right for the grandstands, and now it's safe to turn. I press the left pedal and rudder at the same time and point the airplane directly at the announcer's stand. I straddle the white chalk line that is used as the start and finish line for the races. Easing up on the brakes, I coast down a slight grade onto the ramp. Doing two curtsies, I brake to a stop, open my canopy, stand, and wave to the crowd. They have been waving since I first noticed them on my final roll. I feel proud—proud of my beautiful red P-38!

IAC



The Tony LeVier Story

COURTESY OF AERO CLUB OF NEW ENGLAND

WHY DID TONY LEVIER GET INTO AVIATION? Tony says the person responsible was Charles A. Lindbergh (although Lindy probably was never aware of it). When the news of Lindbergh's solo flight across the Atlantic Ocean in 1927 was heard, an excited 14-year-old Tony LeVier announced to his mother, "I'm going to become an airplane pilot!"

And LeVier's mother, always encouraging her son

to reach as high as possible, replied, "That's wonderful, Tony, just remember to be a good one."

And Tony did just that: Became a good one. One of the best.

Somebody once tagged him as the Huck Finn of aviation. His own account of his boyhood days in Southern California has a Mark Twain flavor. Just as the Mississippi River beckoned to Huck Finn, the sky had





the same attraction for Tony LeVier. He had the same craving for flying in the 1920s that many river town boys had for steamboat piloting in the 1840s.

In 1927, Tony used \$5 he had accumulated from selling discarded old tires and other junk items for his first airplane ride. LeVier was forever hooked.

When he found a \$10 bill in the summer of 1928, LeVier headed toward the Eastside Airport in Whittier, a place he was long familiar with from the hours he had spent there hanging around planes and pilots, on beck and call to help work on the planes and engines.

LeVier took his first flying lesson aboard an Alexander Long-wing Eaglerock with a Curtiss OX-5 engine, on July 1, 1928. He was 15.

It took another year and a half for Tony to scrape up enough cash to complete his course of flying instruction. The aviation-enraptured teen-ager soloed on March 28, 1930, in a little Waco 10.

He went off to become a flight instructor, charter pilot, barnstormer, airline pilot, air racer and premier test pilot.

In 1940-1941, LeVier was chief research test pilot at General Motors under Charles F. (Boss) Kettering, creative head of GM's research laboratory division.

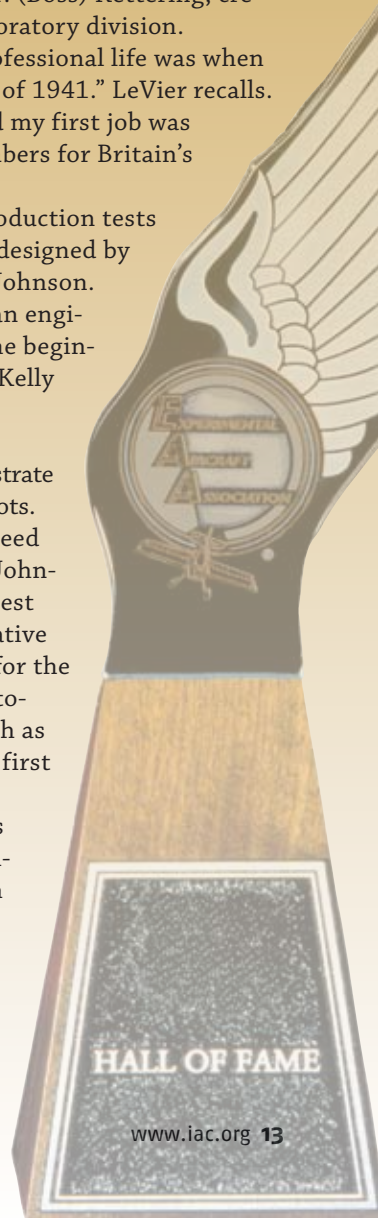
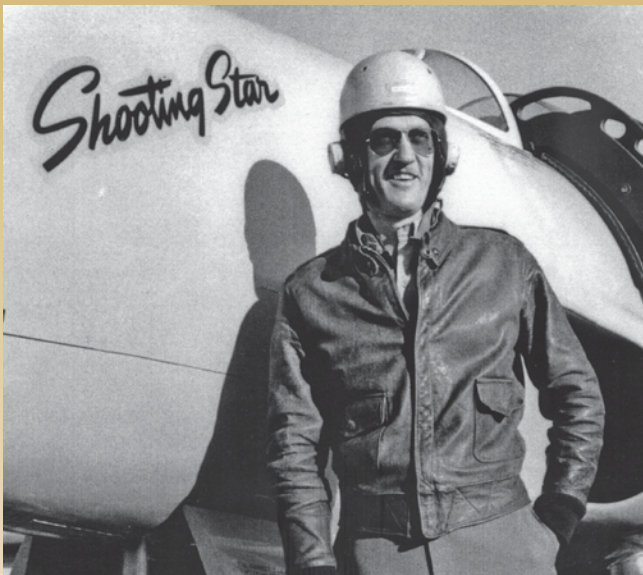
"The turning point of my professional life was when I joined Lockheed in the spring of 1941," LeVier recalls. "It was during World War II and my first job was ferrying Lockheed Hudson bombers for Britain's Royal Air Force to Canada."

In 1942, he started flying production tests on the P-38 Lightning fighter designed by Lockheed's Clarence L. (Kelly) Johnson. The same year, LeVier became an engineering test pilot. It signaled the beginning of a long association with Kelly Johnson and his aircraft.

During the war, LeVier toured fighter bases in Britain to demonstrate P-38 flying techniques for U.S. pilots.

With formation of the Lockheed Skunk Works in 1943 by Kelly Johnson, LeVier became one of the test pilots in this unique and innovative organization that won acclaim for the design and development of prototypes of advanced aircraft—such as the XP-80 that led to America's first operation jet fighter and the P-80/F-80 Shooting Star (it was the victor in the world's first all-jet air battle, during the Korean War in 1950).

LeVier piloted the XP-80A, nicknamed the Gray Ghost, on its first flight in June 1944. In March 1945, he had to bail out of the same aircraft over the





May 1963: 18 year-old Toniann LeVier with her 50 year-old father Anthony "Tony" LeVier. "We left the morning of the photo to fly the F-104 back to Andrews Air Force Base in Washington, D.C. as an exhibit for other countries to consider for their air forces," says Toniann. "We made promotional stops along the way in Albuquerque, N.M., Tinker Air Force Base in Oklahoma and Dayton, Ohio. Two days before, dad let me sit in the front cockpit and take the plane to Mach 2 over the Mojave Desert."

In the 1930s and into the 1940s (paralleling some of his Lockheed duties), he entered competitions. This table summarizes his air race experience.

DATE	EVENT	RESULTS
1932	Junior Pilot Air Meet	Second Place
1935	Arizona State Air Faire	First Place Pylon Race
1935	Ontario, CA Air Faire	First Place Pylon Race
1938	Pacific Intl., Air Race	Two Firsts and a Third Place
1938	Cleveland Air Race	Greve Trophy
1938	Thompson Trophy Race	Second Place
1939	Curtiss Cup, Miami	Second Place
1946	Thompson Trophy Race	Second Place (P-38)
1947	Thompson Trophy Race	First Place (P-38)
1947	Sohio Race	First Place (P-38)
1947	Goodyear Trophy Race	Fourth Place

LeVier's Lockheed test pilot duties after WWII. He was appointed Chief Engineering Test Pilot at Lockheed in 1945.

DATE	AIRCRAFT	ROLE
1946	Saturn	Pilot
1946	Constitution	Copilot
1946	P-80R	Pilot
1948	TF-80C Shooting Star	Pilot
1948-49	F-80, Neptune, Constellation, etc	Supervisor of Testing
1949	F-90	Pilot
1949	F-94C Prototype	Pilot
1950	F-94C Prototype	Pilot
1954	XF-104 Ground Test	Pilot
1954	XF-104 First Flight	Pilot
1955	U-2 Reconnaissance	Pilot

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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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Tony LeVier

The following is an incomplete list of the first flights of a new design that were piloted or copiloted by Tony LeVier during his career at Lockheed.

AIRCRAFT	DATE
XP-80A	January 8, 1944
Saturn	June 17, 1947
XR60-1 Constellation	November 9, 1946
XP-80R Racey	1946
T-33 Shooting Star	March 22, 1948
XF-90	June 3, 1949
F-94A Starfire	April 16, 1949
F-94C Starfire	January 19, 1950
XF-104 Starfighter	February 28, 1954
U-2	August 4, 1955

Mojave desert when the engine disintegrated. The desert landing was not an easy one. LeVier suffered two crushed vertebrae. After a stay in the hospital where orthopedic surgeons patched him up and put him in a steel brace for five months, LeVier returned to his job at the Skunk Works: flight testing aircraft. Waiting for him was a P-80. He took it up, wrung it out, and landed without incident.

In March 1948, LeVier flew the nation's first jet trainer for its maiden flight—a modified F-80 that became the U.S. Air Force T-33 and the Navy T-2V. In its time, the two place T-33 was the world's most widely used jet trainer.

LeVier went to make the first flights and develop such Skunk Works aircraft as the XF-90 (LeVier was at the controls when it became the first Lockheed aircraft to break the sound barrier, in 1950 during a 60-degree dive at 800 miles per hour), the F-94 Starfire, and the supersonic XF-104 (predecessor of the F-104 Starfighter speed and altitude record breaker).

He capped his engineering flight testing in mid-1955 with the first flight of the U-2 reconnaissance aircraft. The

long-winged plane “went up like a homesick angel” in August 1955, LeVier still remembers. The year 1955 marked his farewell to the U-2 flight test program when he was named Lockheed-California director of flying operations. He traded his cockpit seat for an executive's chair. He didn't fly the U-2 again until 1980 at Beale Air Force Base, Calif., on the 25th anniversary of the first flight.

Once before an audience of aviation people, LeVier noted: “I'm going to give you some embarrassing facts about one of the fliers among us tonight. This guy has been involved in 101 air accidents and incidents, eight crashes, 58 near crashes, five tailspins to ground level, 26 forced landings, five canopy losses, 20 pilot errors, one mid-air collision and nine near mid-air collisions.”

He paused and then continued with an impish grin. “The pilot's name,” he said, “is Tony LeVier.”

(Editor's Note: We'd like to thank the Aero Club of New England for allowing the use of their biography of Tony LeVier from their 1995 presentation of the Godfrey L. Cabot award to Mr. LeVier. He passed away on February 6th, 1998

IAC

Making Safe Preflight Decisions

Be open to saying 'no go'

REGGIE PAULK

ONE DAY, I WAS preflighting a twin-engine Beechcraft Duchess for a training flight at a well-known aviation university when I noticed something strange: a small hole in the left engine cowling. This hole wasn't supposed to be there, and I brought it to the attention of my instructor. I suggested we have a mechanic remove the cowl to see what might be wrong. In response, he said it wasn't significant, and we could write it up when we got back. His schedule for the day was tight, with many flights back-to-back, and he was in a terrible hurry due to my lengthy preflight.

I stood my ground and told him I was going to have the mechanic look at it. I was already a flight instructor, and it didn't intimidate me to stand up to him this way. He gruffly conceded, and we proceeded to have a mechanic remove the cowling. What he discovered made me shiver: the alternator-cooling fan had exploded, sending shrapnel through the cowling. Still not understanding the gravity of the situation, my instructor asked the mechanic if we could maintenance (defer) the alternator and have it remedied after our flight. To this the mechanic replied,



When you go flying, treat the entire time from the preflight inspection to the pre-takeoff checklist as a continuous operation where you are searching for anything that may interfere with the safe operation of your aircraft

“Sure, if you don't mind having an engine fire.” My instructor turned pale. We weren't going flying that day. Later, in his office, he confided in me that he didn't know what got into him. He was in such a hurry he was oblivious to the safety issues presenting themselves. He thanked me for making the mechanic take a look.

Preflight inspections are a routine for every pilot. They are done in many different fashions, with differing nuances for different aircraft types. But the goal of every preflight is the same: discover any anomalies that may jeopardize flight safety *before* leaving the ground. Had we had an in-flight fire, we would have been in real danger. We would have had to deal with not only a fire, but also other possibilities such as a single-engine landing or an explosion/wing separation. I hate to think of it.

The principle of preflighting aircraft is sound, but in practice many factors combine to sabotage the effort. I believe this is a subject whose time has come, because in the 14 years I have been flying, I have never met a pilot who has rejected a flight based on a preflight anomaly. In my experience,



So what do we do to ensure that preflight issues are discovered, researched, and resolved? It all comes down to discipline.

pilots find excuses to wait until the flight is over before bringing an item up as a maintenance issue. Besides the fact that this is usually illegal, it creates a dangerous mindset. If you are in the habit of taking off with a known problem, waiting to remedy it after you land, you may someday find yourself in a life-threatening situation of your own creation. How many fatal accidents result from a known preflight anomaly?

So what do we do to ensure that preflight issues are discovered, researched, and resolved? It all comes down to discipline. We have to approach the preflight as a ritual that has a purpose, and that purpose is to find a reason *not* to fly. At no time during our flying activities do we *have* to proceed, whether it is a pleasure flight or a scheduled airline flight. We, as pilots in command, have the authority to call it quits and live to fly another day.

The preflight is not just a task to be completed before you fly. It is a ritual that helps to ensure the safe outcome of your flying activities. As such, here are a few simple guidelines to absolutely follow to ensure a thorough preflight with no distractions:

- Always use a checklist. This helps to keep your place as you progress. Even though your aircraft may be simple, there are times when you won't remember that control lock you have in place due to the inevitable distraction.

- Never talk to someone while preflighting. (Other than to a student you may be teaching about the preflight.) If someone approaches you to talk while preflighting, place your finger on the last item you checked and politely tell him you will talk after you are finished. If you have passengers, let them know beforehand that you need to concentrate on this task.

- Always preflight the same way. This helps you notice when something is amiss. After seeing the ignition switches in the "Off" position every time, you will immediately notice they were left "On" when you start your inspection.

- After finishing your close inspection, always do a 360-degree walk around the aircraft from about 15 feet away. This helps you see the symmetry of the airplane and check for chocks left under the wheels, loose fuel caps, attached tow bars, tie-down chains dangling from a wing, etc. This walk-around should also be done—at mini-

mum—if you leave the aircraft after preflighting to call flight service or answer Mother Nature. You never know who may have bumped a fuel truck into the wing while you were away. (It *has* happened!)

But wait, you're not finished yet. Many pilots believe an aircraft that passes muster during a preflight inspection is airworthy, but that's just not true. Before engine start, there is no way to accurately check battery power, gyro erection, flight and engine instrumentation, alternator charge, vacuum suction, magneto operation, etc. The operation of these systems is vital to flight safety and must be brought into the realm of our preflight mentality. The before-takeoff checklist includes most of these items, but they seem to take on less importance when we are sitting at the run-up pad with expectant passengers, the excitement of flying, and so forth. This could lead to a fatal error in judgment.

One day, I was in the run-up area in a Cessna 172RG performing the before-takeoff checklist. Everything was progressing normally, and we were ready to go except for a control check. Having first learned to fly in gliders, I was accustomed to doing a full deflection check of the controls to check for range, freedom of movement, and proper deflection. On this particular day, I was turning the yoke fully to the right, and pushing it full forward. When I tried to center the controls, the yoke wouldn't budge. I pulled and turned harder...still no movement. My instructor grabbed the controls with me, and they still were jammed full forward and full right. We both looked at each other in horror, because had this happened in flight, our options would have been grim. We immediately taxied to the maintenance hangar, where a mechanic found a screwdriver that had wedged between the aileron cable and pulley inside the right wing. This airplane was fresh out of a 100-hour inspection, we were the first to fly it, and the screwdriver was in a location that made it impossible to find during a routine preflight inspection.

When you go flying, treat the entire



BONNIE KRATZ

craft is devoid of many of the pitfalls I have described throughout this article. The flight is already over, so there's no pressure on the pilot to proceed. There is no anticipation of the flight ahead clouding judgment. The weather and time constraints are no longer factors. Any problems discovered, whether major or minor, may be repaired without delaying the upcoming flight, and there will be fewer surprises for the pilot and passengers.

I could have avoided a lot of hassle and potential danger if the pilots who had flown the Duchess before my turn had performed a post-flight inspection and discovered the alternator problem for themselves. Their flight was over, and it would have been no hassle to report the problem to maintenance.

The most important thing we can do during our flying activities is to discover problems while still firmly planted on the ground. It takes only a little effort to add a lot of additional insurance to your flights, and those flying after you. You always have the option to call it quits and live to fly another day. **IAC**

time from the preflight inspection to the pre-takeoff checklist as a continuous operation where you are searching for anything that may interfere with the safe operation of your aircraft. Even if you find a problem that does not immediately jeopardize flight safety, getting into the habit of tak-

ing care of problems as they arise will make you and your passengers safer. To that end, a fellow EAAer suggested to me yet another layer of protection we can add to our flying routine, and that is the notion of a thorough post-flight inspection.

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Courses: Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Glider aerobatics. Teaching glider aerobatics for 40 yrs. Three time U.S. National Champion

APS Emergency Maneuver Training IWA - Mesa, AZ

Paul BJ Ransbury, Phone: 866-359-4273

Email: info@apstraining.com

Web: www.apstraining.com

Aircraft: 3 Extra 300Ls

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, , CFI Spin Endorsement. Instrument Recovery Training.

New Attitude Aerobatics KAVQ - Tucson, AZ

Brian Howard, Phone: 520-360-ROLL

Fax: 520-844-8132

Email: BK@NewAttAero.com

Aircraft: Extra 300L

Courses: Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics. Customized syllabus. Dual thru Advanced. Coaching/critique thru Unlimited.

Chandler Air Service, Inc. KCHD - Chandler, AZ

John Walker, Phone: 480-963-6420

Email: fly@aerobatics.com

Web: www.aerobatics.com

Aircraft: Great Lakes 2T-1A-2; Piper Super Cub; Pitts S2C

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout. FAA and Approved for Tailwheel and Acro, Cubs and Lakes can be rented to qualified pilots, may be combined with Flight reviews and other training.

Turf Soaring School P48 - Peoria, AZ

Roy M. Coulliette, Phone: 602-439-3921

Fax: 623-566-3161

Email: royc@turfsoaring.com

Web: www.turfsoaring.com

Aircraft: Grob 103A; ASK - 21

Courses: Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Glider aerobatics, 10 flight basic glider aerobatics. Custom designed training. Instructors rated , CFI-G. 47 years experience.

Budd Davisson's Plus 5/Sport AERO SDL - Phoenix, AZ

Budd Davisson, Phone: 602-971-3991

Fax: 602-971-3896

Email: buddairbum@cox.net

Web: www.airbum.com

Aircraft: Pitts S-2A

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Pitts checkout, High-end accommodations. Syllabus designed to customer's needs. Pitts & hi-perf taildragger checkouts for all aircraft types. Specialize in landing instruction (narrow/short runways), basic aerobatics. Low time pilots a speciality. Instructors: Budd Davisson, , CFI

Vertical Works SDL - Scottsdale, AZ

Ron Chadwick, Phone: 732.865.1610

Email: bubbaron43@gmail.com

Web: theverticalworks.com

Aircraft: Pitts S-2C

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout. Customer designed program, Primary thru Advanced, formation. Instructor is active Advanced competitor. Excellent year round weather.

CALIFORNIA

Bill Cornick Airshows CMA – Thousand Oaks, CA

Bill Cornick, Phone: 805-492-1066

Fax: 805-492-7366

Email: akropilot@billcornick.com

Web: www.billcornick.com

Aircraft: Pitts S-2C, Cessna 140, Customer owned aircraft

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, Primary thru Unlimited.

Sky Thrills! FUL – Fullerton, CA

Michael Blackstone, Phone: 714-402-4888

Email: skythrills@gmail.com

Web: www.skythrills.com

Aircraft: Pitts S-2C, Extra 300L, Marchetti SF-260, Waco YMF-5C

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Teaching aerobatics for 18 years.

Tutima Academy of Aviation Safety – Sean D. Tucker KIC – King City, CA

Chelsea Engberg, Phone: 657-888-4621

Email: info@tutimaacademy.com

Web: www.TutimaAcademy.com

Aircraft: Extra 300L, Pitts S-2C, Pitts S-2B

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, World class instruction staff/equipment. All instructors are SAC card holders / airshow pilots. Proven competition success. Formation and formation aerobatic training also available.

Attitude Aviation KLVK – Livermore, CA

Rich Perkins, Phone: 925-456-2276

Fax: 925-456-2201

Email: ATTAV@AOL.COM

Web: www.AttitudeAviation.com

Aircraft: Pitts S-2C, Great Lakes, Waco Classic, Marchetti SF260, North American T-6, L-39 Albatros (Jet) Citabria GCBC, Citabria 7ECA, Cessna 152A Aerobat, Cessna 172M, Cessna 172SP, Grumman AA-1B, Piper A3 Cub, Super Decathlon 8KCAB

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics, Primary thru Advanced aerobatics. High performance/complex. Air Combat. Formation.

West Valley Flying Club KPAO – Palo Alto, CA

Joshua Smith, Phone: 650-856-2030

Fax: 650-856-3078

Email: gm@wvfc.org

Web: www.wvfc.org

Aircraft: Super Decathlon, Citabria

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, RV aerobatics, Customer Designed. Rental available on all aircraft.

Powers Performance Aviation KSEE – San Diego, CA

Eamonn Powers, Phone: 619-318-8364

Email: info@flyppa.com

Web: www.flyppa.com

Aircraft: Aeronca Champ, Citabria 7KCAB, Super Decathlon 8KCAB

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics

San Diego Aerobatic KSEE – San Diego, CA

Eamonn Powers, Phone: 619-318-8364

Email: info@sdaerobatic.com

Web: www.sdaerobatic.com

Aircraft: 8KCAB Super Decathlon, Extra 300L

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, RV aerobatics

CP Aviation KSZP – Santa Paula, CA

Judy Phelps. Phone: 805-525-2138

Email: judy@cpaviation.com

Web: www.cpaviation.com

Aircraft: Pitts S2B, Decathlon, Super Decathlon, Citabria

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics 3 module EMT program. Customer designed programs.

Olmsted Aviation KSZP – Santa Paula, CA

Chris Olmsted, Phone: 831-334-7232

Email: chris@olmstedaviation.com

Web: olmstedaviation.com

Aircraft: Pitts S2-A

Courses: Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout. Fly the premier aerobatic aircraft in our wavered aerobatic box, just 3 miles from the historic Santa Paula Airport.

Aragon Aviation, Inc. KTCY – Berkeley, CA

Cecilia Aragon, Phone: 510-527-4466

Email: aragon@dcai.com

Web: www.dcai.com/flight

Aircraft: Citabria 7ECA, Citabria KCAB, Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics, 3 hr. Safety course. 10 hr. Aerobatic course. Primary thru Unlimited Competition. Customer designed. Former member of the US Unlimited team.

N51E Inc. MHV – Mojave, CA

Chuck Coleman, Phone: 310-877-0041

Email: chuck@ctcoleman.com

Web: www.ctcoleman.com

Aircraft: Extra 300L

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics Instructor has over 3,000 hrs in the Extra 300 series alone. IAC competitor, performed at hundreds of airshows, flown with thousands of others in the Extra 300 series. Based at the historic Mojave CA airport where acro can be performed over airport.

Adventure Wings Aviation MRY – Monterey, CA

Erik Fleming, Phone: 831-383-8620

Email: badassflyer@hotmail.com

Web: www.adventurewingsaviation.com

Aircraft: Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics

AeroDynamic Aviation RHV – San Jose, CA

Zdravko Podolski, Phone: 408-251-4939

Email: info@aerodynamicaviation.com

Web: www.aerodynamicaviation.com

Aircraft: Citabria 7KCAB, Super Decathlon, Customer's aircraft

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, RV aerobatics, Competition training – Primary, Sportman, Intermediate. Formation. Customer designed program. Solo rental of any aircraft after checkout.

Sunrise Aviation SNA – Santa Ana, CA

Michael Church, Phone: 800-717-4200

Email: mc@sunriseaviation.com

Web: www.sunriseaviation.com

Aircraft: Citabria, Decathlon, Pitts S-2B, Extra 300

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout. All aerobatic aircraft available for solo checkout and rental

Rich Stowell Consulting SZP – Santa Paula, CA

Rich Stowell, Phone: 805-218-0161

Email: rich@richstowell.com

Web: www.richstowell.com

Aircraft: Citabria, Decathlon, Pitts S-2B, Owner-supplied aircraft

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics. Winter location, generally October through May in California

Desert West Aviation UDD – Bermuda Dunes, CA

Parker Osborne, Phone: (760) 360-74001

Email: parker@desertwestaviation.com

Web: desertwestaviation.com

Aircraft: Cessna 152 Aerobat

Courses: Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics

Specialized Aviation WWI – Watsonville, CA

Mary Macdonald, Phone: 831-763-2244

Email: main@spheli.com

Web: spheli.com

Aircraft: Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics

COLORADO**New Attitude Aerobatics BJC – Denver, CO**

John Blum, Phone: 303-469-7746

Email: JohnnyBlum@aol.com

Web: www.flyaerobatics.com

Aircraft: Pitts S-2B, Citabria 7KCAB

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics

Primary – Intermediate. Customer designed course. Aircraft ferrying, fabric recover.

Aces Up Aviation FLY – Falcon/Colorado Springs, CO

Gary Frith, Phone: 719-337-6012

Email: AcesUpAviation@juno.com

Web: www.AcesUpAviation.com

Aircraft: Moravan Zlin 242L

Courses: Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics

Rocky Mountain Airsports LLC KFLY – Peyton, CO

Greg Baker, Phone: 804-815-4891

Email: fly@rockymountainairsports.com

Web: www.rockymountainairsports.com

Aircraft: Pitts S2C

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics

Air West Flight Center, Inc. KLMO – Longmont, CO

Larry Kuebrich/Lori Godfrey. Phone: 303-776-6266

Email: fbo@airwestflightcenter.com

Web: www.airwestflightcenter.com

Aircraft: Citabria (2), Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, RV aerobatics, Customer designed training. Primary thru Unlimited competition training.

Risher Aviation, Inc. KMTJ – Montrose, CO

Jim Risher, Phone: 970-274-3664

Email: pittstraining@gmail.com

Web: www.pittstraining.com

Aircraft: Pitts S-2B

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics, Pitts S-2B available for dual instruction. We also instruct in owner airplanes and offer ferry services for all types of aircraft.

FLORIDA**Sky Dynamics, Inc. – Ocala, FL**

Kevin Campbell, Phone: 469-766-2364

Email: MX2FLYR@comcast.net

Aircraft: MX2, S2B, RV 6,7,8

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics. We only train in YOUR aircraft.

Draggin Tail Flight Training 2FLO – Panama City, FL

Chris H Becker, Phone: 850-763-4645

Email: chrishbecker@hotmail.com

Aircraft: Aeronca 7AC

Courses: Tailwheel endorsement, Get your tailwheel checkout on a private grass airstrip. Training available at Crystal Village Airpark (2FLO), Panama City (KECP), and all over NW Florida.

SunQuest Aviation F45 – West Palm Beach, FL

Tamara Prinz, Phone: 561-627-0037

Email: fly@sunquestaviation.com

Web: www.sunquestaviation.com

Aircraft: Super Cub, Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout

Warbird Adventures, Inc. ISM – Kissimmee, FL

Susan DuVernois, Phone: 407-870-7366

Email: fly@warbirdadventures.com

Web: www.warbirdadventures.com

Aircraft: T-6 (3)

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, RV aerobatics. Five & 10 hour courses. Instruction by the hour. Formation flying. Aviation museum on field.

Eagle Sport Aviation Club KDED – DeLand, FL

Jose Rojas, Phone: 917-304-1534

Email: pitts@eaglesportaviation.org

Web: www.eaglesport.com

Aircraft: Pitts S-2B, J3 Cub, Schweizer 2-33, Schweizer 1-26, ASK 21

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Glider aerobatics. Primary thru Advanced Competition.

WingOver Aerobatics LLC KLEE – Leesburg, FL

Kathy Hirtz, Phone: 352-728-5667

Email: ithirtz@aol.com

Web: www.wingoveraerobatics.com

Aircraft: Pitts S2B, Zlin 242L

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics. We let you take off, land and fly the Pitts from the front or back seat. Pitts checkout complete w/multiple approach techniques.

Miami Fly, Inc. KTMB – Kendall Tamiami, FL

Eusebio Valdes, Phone: (305) 255-5519

Email: info@miamifly.com

Web: www.miamifly.com

Aircraft: Decathlon 8K-CAB

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics.

Southeast Aerosport, LLC LNA – Lantana, FL

Michael Terfehr, Phone: 954-358-9010

Email: southeastaerosport@gmail.com

Web: www.southeastaerosport.com

Aircraft: Extra 300

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics. Aerobatic Thrill Rides available. Rear seat dual available!

Air Orlando ORL – Orlando, FL

Bryan Iadaluca, Phone: 407-896-0721

Email: bryanl@flyairorlando.com

Web: www.flyairorlando.com

Aircraft: Super Decathlon 8KCAB

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics. Primary, Sportsman. CFI Spin endorsement. Customer designed program.

Greg Woods Aerobatics VNC – Venice, FL

Greg Woods, Phone: 941-587-2277

Email: bleauskie@yahoo.com

Aircraft: Extra 200

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics. Sharpen your flying skills and have fun doing it in the certified Extra 200. Offering basic-advanced instruction, aerobatic training is proven to produce safer and more proficient pilots. Ask the airlines and the military!

Dylan Aviation, Inc. X58 – Indiantown, FL

Jim Alsip, Phone: 772-485-6761

Email: jim@dylanaviation.com

Web: www.dylanaviation.com

Aircraft: Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout. Five star venue makes Dylan Aviation a best choice: Location – Country airport in S. Florida; Instruction from a Master, CFI-Aerobatic; Fly a Super Decathlon – a great training aircraft; Proven training syllabus; Overnight accommodations at County Inn.

GEORGIA

Silver Ace Aviation KFFC – Peachtree City, GA

Bill Mercure, Phone: 770-486-1893,

Cell phone: 404-372-2771

Email: silace@bellsouth.net

Web: www.silveraceaviation.com

Aircraft: Pitts S-2B

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout

American Air Flight Training, Inc. KPKD – Atlanta, GA

Steve Shaner, Phone: 770-455-4203

Email: aaftpdk@bellsouth.net

Web: www.fly-aaft.com

Aircraft: 1999 American Champion Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics. Custom basic aerobatics courses, Instructor over 33 years experience

Skybound Aviation PDK – Atlanta, GA

Evanthe Papastathis, Phone: 678-691-3283

Email: skybndco@skybnd.com

Web: www.skybnd.com

Aircraft: 1980 Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics. Custom designed. Basic aerobatics.

HAWAII

Kaimana Aviation HNL – Honolulu, HI

Hank Bruckner, Phone: 808-836-1031

Email: acrobat@pixi.com

Web: www.kaimanaaviation.com

Aircraft: CAP-10C

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, RV aerobatics. Become a better, safer, and more proficient pilot and fly the amazing CAP-10 in beautiful Hawaii. Expert, tailored instruction to meet your specific requirements. Current Low Altitude Waiver (SAC)

IDAHO

Rich Stowell Consulting U70 – Cascade, ID

Rich Stowell, Phone: 805-218-0161

Email: rich@richstowell.com

Web: www.richstowell.com

Aircraft: Super Decathlon, Owner-supplied aircraft

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics. Summer location, generally June through September in Idaho

ILLINOIS

Gauntlet Warbirds ARR – Sugar Grove, IL

Greg Morris, Phone: 312-339-6348

Email: greg@gauntletwarbirds.com

Web: www.GauntletWarbirds.com

Aircraft: T6, Super Decathlon, Decathlon, Extra 300,

L-39, Stearman, Yak-52, Customer owned aircraft
Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics. Competition Prep (Primary – Unlimited). Competition experience. Jet training. Instruction at customer's site available.

INDIANA

Brown Flying School 313 – Terre Haute, IN

Ryan Reeves, Phone: 812-466-2229

Email: janice.simon@brownflyingschool.com

Web: www.brownflyingschool.com

Aircraft: Cessna 152 Aerobat

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics. Basic Aerobatic course. Primary. Affiliated with Indiana State University.

Wild Aerobatics KOKK – Kokomo, IN

Mike Wild, Phone: 765-860-3231

Email: mike.wild@hotmail.com

Web: www.wildaerobatics.com

Aircraft: Super Decathlon, Pitts S2B, J-3 Cub

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout

Grayout Aerosports, LLC MQJ – Indianapolis, IN

Billy Werth, Phone: 317-379-2622

Email: billy@grayout.com

Web: www.grayout.com

Aircraft: 2001 Pitts S2C, C-140

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics. Military, competition, and airshow experience.

KANSAS

Welkin Aero, Inc. KMHK – Manhattan, KS

Brian Correll, Phone: 785-317-8120

Email: brian@welkinaero.com

Web: www.welkinaero.com

Aircraft: Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics

Knife Edge Aerobatics WLD – Winfield, KS

Tony Johnstone, Phone: 620-221-1381

Email: knifedgeakro@yahoo.com

Aircraft: AC Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, RV aerobatics. Available for dual instruction in customer-owned aircraft

KENTUCKY

Lynn Aviation DVK – Danville, KY

JW Lynn, Phone: 859-583-3361

Email: jwlynnnav@hotmail.com

Aircraft: C 150

Courses: Stall/spin recovery, CFI Spin Endorsement

LOUISIANA

Multi-Aero, Inc. Houma, LA

Darryl K. Christen, Phone: 985-851-1516

Email: darryl@dchristen.com

Aircraft: Giles 202

Courses: Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, RV aerobatics
Primary and Sportsman maneuvers. G-202 checkout. Customer designed training.

MASSACHUSETTS

Unusual Attitudes Aviation BAF – Westfield, MA

Bob Cipolli, Phone: 413-862-8049

Email: cipolli13@verizon.net

Aircraft: Decathlon. Owner-supplied aircraft including Decathlon, Pitts, Eagle, Extra, Yak, Staudacher

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout
Unlimited competitor. FAA Safety Counselor for Wings Seminars on Aerobatics.

Executive Flyers Aviation KBE – Bedford, MA

Marc Nathanson, Phone: 781-274-7227

Email: marc@executiveflyers.com

Web: www.executiveflyers.com

Aircraft: Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout
5 flight unusual attitude training. Primary thru Advanced training. Critiquing. Coaching. All instructors have competition experience. Checkouts in owner's aircraft.

Executive Flyers Aviation KLWM – Lawrence, MA

Marc Nathanson, Phone: 781-274-7477

Email: marc@executiveflyers.com

Web: www.executiveflyers.com

Aircraft: Extra 300L, Super Decathlon
Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout, RV aerobatics
5 flight unusual attitude training. Primary thru Advanced training. Critiquing. Coaching. All instructors have competition experience. Formation training program. Checkouts in owner's aircraft.

Flightlab PYM – Plymouth, MA

Bill Crawford, Phone: 617-680-8581

Email: crawford.we@gmail.com

Web: www.flightlab.net

Aircraft: Zlin 242, Airwolf M-26, Marchetti SF260

Courses: Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics
Full aerobatics. Complete aerodynamics ground school available including spin dynamics for instructors. Program helps pilots understand aircraft flying qualities, stability and control.

MARYLAND

Dent-Air, Ltd. ANP – Annapolis, MD

Bill Finagin, Phone: 410-353-2622

Email: wbfjinagin@cs.com

Aircraft: Pitts S-2C

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout

Kraemer Aviation Services KFDK – Germantown, MD

Harry Kraemer, Phone: 301-520-2109

Email: hkraemer@earthlink.net

Web: www.flymall.org

Aircraft: Customer owned aircraft

Courses: Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics. Beginning aerobatics. Confidence building program. Ground instruction.

Flying Lemur, Inc. VIX – Fort Washington, MD

Adam Cope, Phone: 703-623-9445

Email: N_A_spin@yahoo.com

Web: www.dcaerobatics.com

Aircraft: Super Decathlon

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, RV aerobatics, CFI Spin Endorsement

Aerosport Limited Woo – Bowie, MD

Joe Gauvreau, Phone: 301-346-8141

Email: jga1357@gmail.com

Web: www.aerosportlimited.com

Aircraft: 2004 American Champion GCBC
Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics

Trident Aircraft W29 – Stevensville, MD

Matt Bouchenot, Phone: 410-604-1333

Email: MattB@tridentaircraft.com

Web: www.tridentaircraft.com

Aircraft: Super Decathlon 8KCAB

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics

MINNESOTA

Sport Aerobatics KCFE – Buffalo, MN

Michael Wiskus, Phone: 612-812-3873

Email: akrosmith@aol.com

Web: www.westmetroaviation.com

Aircraft: Pitts S-2C, 152 Aerobat

Courses: Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Customer designed course & aircraft.

MISSOURI

Aerobatic Adventures 1HO – Creve Coeur, MO

John Housley, Phone: 314-518-8542

Email: johnhousley@aerobatic-adventures.com

Web: www.aerobatic-adventures.com

Aircraft: Pitts S-2B

Courses: Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics.

Bruce Ballew 1HO – St. Louis, MO

Bruce Ballew, Phone: 314-369-3723

Email: bruceballew@earthlink.net

Aircraft: Pitts S2B

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics.

Great Planes Aerobatics 3GV – Grain Valley, MO

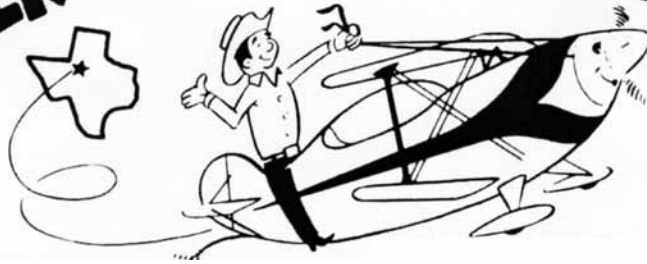
John Morrissey, Phone: 816-373-8675

Email: Greatplanes@comcast.net

Aircraft: Pitts S-2A

Courses: Tailwheel endorsement, Stall/spin recovery, Unusual attitude/upset training, Recreational aerobatics, Competition aerobatics, Pitts checkout. Aerobatic training camps. Hangar phone: 816-582-6753.

AEROBATICS WITH BEGGS!



OUT SPINNING WITH GENE BEGGS

THE END (Of confusion and mystery about spins!)

Editor's Note: This article appeared in the 1987 Technical Tips Manual III produced by the IAC. Gene Beggs was inducted into the IAC Hall of Fame in 2000.

What? That's no way to begin an article! Yes, I believe it is appropriate in this case, because if you don't read another word of this, I want you to read the most important part and memorize the following method of emergency spin recovery. It could save your life!

FOR EMERGENCY SPIN RECOVERY

1. Cut the throttle!
2. Take your hand off the stick!
3. Kick full opposite rudder until the spin stops!
4. Neutralize rudder and pull out of the dive!

No matter who you are or what your level of experience is, please go back and read it again! If you fly aerobatics, or if you fly an airplane that is capable of spinning, you should know this life saving method of spin recovery. This method of recovery will enable you to quickly and easily recover from any spin that can be encountered in any of the airplanes that I have used in the spin tests conducted during the past two years. This method has many advantages over those shown in most aircraft flight manuals. It is as simple as one, two, three, and can be relied on in an emergency situation where a pilot may not be thinking clearly. It has the added advantage of it being unnecessary for the pilot to know what kind of spin he is in, the recovery procedures are the same whether the spin is upright or inverted, flat or normal, power on or off or otherwise.

Now that we have the most important part of this article behind us, you can stop right there if you wish, but I hope you will stay with me because I would like to tell

you in more detail of my experiences during the past two years of research and flight testing regarding spins and spin recoveries in aerobatic airplanes. I promise not to bore you with a long, technical article filled with formulas, graphs, and advanced aeronautical theories. I am certainly not an aeronautical engineer, but I am a pretty fair stick and rudder man and have been able to pick up a few bits and pieces of information worth passing along to others during my years of instructing and flying aerobatics.

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Now, if I have gotten your attention, or aroused your curiosity, or maybe even raised your ire a little bit, read on! At this point, you may be a little bit skeptical about the reliability of this method of spin recovery. It just sounds too simple and too good to be true doesn't it? But it is! Believe me, it is the answer to one of the greatest dangers in our sport, inad-

vertent spins! Spins that occur when falling out of a botched maneuver, a torque roll, lomcevack etc. These are the ones that get us into trouble, not the normal, competition type spin.

When the subject of spins and spin recovery comes, up you immediately begin to get all sorts of comments and opinions and theories regarding this or that and everyone begins to run off in his own direction and in many cases refuses to listen to anything else that is said that differs from his own opinions. This is so sad because many of these pilots are so misinformed by well intentioned but unknowledgeable friends and associates. Pilots tend to cling to their theories and opinions sometimes out of stubborn pride and refuse to admit to themselves or anyone else that they don't know everything there is to know about spins.

You may recall reading an article in the November 1981 issue of Sport Aerobatics by Eric Muller entitled, The Spin-Myth & Reality. In this article Eric explained this method of spin recovery which he had discovered. I must admit that when I first read the article, I too was very skeptical. I remember thinking to myself, "Hey, I don't think this man ever tried that in a Pitts!" "We better either prove that it will work, or get the word to him quick before he kills himself!" Then I read the article over and over again. Eric went on to say how he had conducted many hours of spin tests, taking in the widest variety of aircraft that came into the class of "conventional" design (i.e., excluding canards, T-tails, etc.). He also went on to say that he had studied ev-

ery existing text on the subject and had stopped the spin over 4000 times with this method. By this time I was thinking to myself, "Well, maybe there is something to this, after all, this man is a very experienced, world class aerobic pilot." "Maybe I better investigate this a little further." "I suppose that it is possible that even I, in all my wisdom, don't know it all!" (You see, you have to realize that most aerobatic pilots think like this. That is why most tend to skip over another boring article on spins because they think that they already know all there is to know on the subject.) For this reason, I hope everyone who flies aerobatics reads this one. There are a lot of pilots out there who need to know about this life saving method of spin recovery.

Since my earliest days of involvement in this sport, I was very much aware of the dangers of flat spins, inadvertent spins, etc. How many pilots do you know who have spun in accidentally during the past few years? Some of them were very experienced and competent pilots, some were new comers to the sport. What happened? Were they confused and disoriented, applying the wrong control inputs, trying desperately to recover from what they thought was an upright spin when in fact they were in an inverted spin, or were they simply not allowing enough time for recovery to take place. Maybe they were holding opposite aileron or forgot to pull the power, either of which will prevent recovery in many airplanes.

We have all heard tales of how an airplane just "Went into a flat spin" or "It just wouldn't come out no matter what I did!" We have also read articles where the pilot, after trying everything he knew to do to recover, finally decided to bail out and while trying to unfasten his seat belts or unlatch the canopy, the aircraft recovered on its own. Now what does this tell you? It tells me that the pilot was confused and applying the wrong control inputs simply holding the airplane in the spin! It also tells me that the pilot was not properly trained in spins and spin recovery procedures in that particular aircraft! I will readily admit that I at one time, was one of these pilots. We all know that a properly certificated aerobatic airplane loaded within the manufacturer's weight and

balance limitations, will recover from any spin if the pilot only knows the correct recovery procedures. Then why do pilots continue to get into trouble with spins? The lack of not being properly checked out are many, but the most common are:

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1. The lack of really qualified, knowledgeable and competent instructors.

2. The pilot's refusal to admit that he needs training. (Most experienced pilots tend to under-estimate these aircraft and tend to believe that they already know all that is necessary for them to know to fly these "little 'ol bitty airplanes!")

3. Economic reasons for which the pilot just does not want to spend the time and money to go where he can get good quality aerobatic training. He thinks he can just go out and learn it on his own. (The cost of a good check-out by a really qualified instructor is small when you compare this with the initial investment in a good aerobatic airplane and consider the risks involved in experimenting on your own.)

4. Fear! Many pilots are simply afraid of spins and are afraid that the instructor will take them up and "wring them out". (This simply will not happen if the instructor is truly a professional. His main concern will be that you receive the training you need to enable you to operate your airplane safely and to enjoy it fully without making you uncomfortable.)

Having been involved in the flight training business for several years, I have always been vitally concerned with flight safety. I have always been an advocate of spin training for all pilots, but it was after the loss of a very dear friend in the sum-

mer of 1981, that I became so terribly concerned about getting to the bottom of this spin thing once and for all. I began to search for the answers, and when I read Eric Mullers article in the November issue of Sport Aerobatics, I realized that if this would indeed work as he said it would, I had found the final piece of the puzzle and the answer to my prayers! Here was a simple and foolproof method that a pilot could use to recover from any spin he might find himself in without it even being necessary for him to know what type of spin he was in!

I was still a little skeptical at this point! It just sounded too simple and foolproof, nothing could be that easy, could it? (But it is!)

Before I continue, I would like to point out what my experience level was at the time I read Eric's article. I was an ATP rated pilot with single and multi engine ratings, a flight instructor and pilot examiner with over 12,000 hours, much of which had been spent in flight training on a daily basis in small airplanes. I was an experienced aerobatic competitor who had just completed his seventh year of IAC competition, of which two were in the unlimited category. I had over 500 hours in Citabrias and Decathlons and about 600 hours in the Pitts S-I-S. I thought I had a good understanding of aerobatics and pretty well knew it all about spins. (I didn't!) I point this out not to boast of my ratings or experience, but to try to convince you that no matter what our level of experience is, we still need to keep an open mind and realize that we all still have a lot to learn.

I realized that there were several occasions where my Pitts had surprised me and I just wasn't real sure what it had done or how I had got it out! I also realized that there had been many very experienced aerobatic pilots who had spun in under mysterious circumstances that defied explanation. I knew, whether I wanted to admit it or not, that there were still some things I did not understand about spins.

After deciding to investigate Eric's method further, I began by calling upon some of the most experienced and respected pilots in the sport and I asked them if they had any knowledge or expe-

rience with this method. Not one of them had even heard of it! Not one of them had even read the article! I don't mean to criticize or be disrespectful in any way to any of these fine gentlemen, as they are certainly among the best that's ever been. I simply want to point out how we tend to overlook things like this article by Eric Muller. Once in a while, a real "jewel" of an article or a priceless bit of information comes along and it goes by largely unnoticed and unappreciated for what it really is. This was the case with Eric Muller's article on spins.

After calling on the most experienced and respected pilots and instructors in the business and finding that none of them had done any experimenting with this method of spin recovery, I realized that if I was going to get anywhere with it I was going to have to do so on my own. I set out to flight test this method very carefully to see if it would work in every conceivable type of spin in the airplanes that were available to me. I began very cautiously and worked up to the more difficult situations very slowly. As I progressed I found that it did indeed work very well in every case. At this time, I was using my Pitts S-I-S, N16GB which is a stock airplane with no modifications. After taking delivery of my new Pitts S-I-T in October 1981, I continued with my spin tests in the "T" model. I went on to test the method in the Christen Eagle II, the Pitts S2A loaded in every possible way as long as it was within weight and balance limitations. I also tested the Cessna 150, Cessna 172, and the Beechcraft Skipper trainer in order to take in a wider variety of aircraft. I found that in every case, in every spin I could put these airplanes into including inverted and upright flat spins in the Pitts and Eagles, the aircraft always recovered promptly and smoothly by using the method of spin recovery that I outlined at the beginning of this article. I know of only one case where a pilot has reported that his aircraft would not recover from a spin using this method and that was an original, stock, DeHavilland Chipmunk with the small rudder and no spin strakes. I have conducted some spin tests in an original, stock, Chipmunk which had the spin strakes installed at the leading edges of the horizontal sta-

bilizers and the larger rudder, and this aircraft would always recover nicely from any spin I was able to put it into, using this method.

It just sounded too simple and foolproof, nothing could be that easy, could it?

While conducting the spin tests, I decided I would talk to as many pilots as possible while traveling around the country regarding their spin recovery techniques. I was absolutely amazed. I noticed that experienced pilots and neophytes alike tended to believe that they knew all that was necessary for them to know about spins. In some cases, the pilots were very indignant and seemed to be insulted that I had the nerve to even suggest that their aircraft could get into any spin that they couldn't get out of. I now believe that some pilots tend to cling to their theories and beliefs about spins and spin recoveries, which in many cases are entirely wrong and dangerous, out of stubborn pride, and as a matter of principle. No one likes to be told that he is wrong. After all he "read it in a book didn't he?"

Many of the pilots that I spoke with took me seriously and agreed that there was indeed a problem in this area. Many related their own experiences with spins that had gotten out of hand. The following are some comments from some of them that I think you will find interesting. Some are amusing, some are not so amusing.

How about this one? "It just went into a spin and wouldn't come out! I tried everything, full power, opposite rudder, opposite aileron, stick back, stick forward, nothing seemed to have any effect. I finally got it out but I don't know how!"

Or how about this one? "Son of a

#!!!! I tried everything! Why, you could put that stick anywhere you wanted to and nothing would happen, it kept right on spinning. Just when I thought I was going to get it out, it would start spinning again. I finally decided to bail out and cut the mags and while I was trying to unfasten my seat belts, the damn thing came out."

Or this! "Why, I must have reversed that spin five times. Just when I thought I was going to get it out, it would start spinning in the opposite direction. Just when I thought it was all over, she recovered when I turned the stick loose and started trying to unlatch the canopy to bail out."

I also heard this one: "I fell out of the torque roll at about 5000 feet. It started spinning and I did not recover and pull out till I was down to about 900 feet! I fought it all the way down trying everything I knew to do and somehow I got it out in time. It must have been out of rig or something.

I have also been told: "Yeah son, you need to slam that stick full forward and give her a burst of power. You need that power to make your elevator more effective."

Or this one: "We tried everything. Nothing worked. We finally turned the stick loose and started experimenting with the trim lever and she came out. The trim must have been out of adjustment or something."

These comments just show you how many pilots there are out there who do not know how to recover from an inadvertent spin, and bear in mind that these are just the ones who would talk about it and the ones that had lived to talk about it. It is interesting to note that in many cases the aircraft recovered on its own after the pilot cut the power and let go of the controls and turned his attention to trying to unfasten his seat belts or unlatch the canopy. This just proves that the pilot was simply holding the airplane in the spin with wrong control inputs trying in many cases, to recover from what they thought was an upright spin, when in fact they were in an inverted spin or vice versa.

After more than two years of flight testing and a lot of research, I bought a

new Pitts S2A and started my aerobatic training program in May of 1983. Since that time, I have taught the course to dozens and dozens of pilots from all over the country and as far away as Canada, and Austria. I have yet to have a student who could not recover quickly and easily from any spin I could put them in including inverted and upright flat spins using the method of spin recovery shown here. My students have included pilots with varying levels of experience from complete beginners to advanced aerobatic competitors. The following is an outline of the spin training program that I use in checking a pilot out in a Pitts type aircraft.

(I) Textbook Spins or Normal Spins. (Upright and inverted, left and right.) (Power off, ailerons neutral, stick full back or full forward.)

(II) Cross Controlled or Flat Spins. (Upright and inverted, left and right, power off, stick either full forward or full back, full opposite aileron.)

(III) Accelerated Spins. (Upright and inverted, left and right, power off.) (I'll go into more detail on this one later.)

(IV) Upright and Inverted Full Power Flat Spins.

The student will also be familiarized with the following:

1. Spin reversal by overcontrolling.
2. The effects of throttle, ailerons, elevator, rudder and elevator trim.
3. Visual cues relative to spin axis.
4. Psychological and physiological considerations.

In item (III) above, I am referring to the type of spin that develops when the pilot begins to move the stick slowly toward the neutral position from either the full back or full forward position after the spin has developed, or the type of spin that will result when the aircraft falls out of a maneuver and begins to spin with the stick not fully against the forward or back stop. I have never heard this type of spin mentioned in any aircraft flight manual and I use the term "Accelerated Spin" for want of something better to call them. The rate of rotation that can be developed in this type of spin can only be described as awesome! If it is encountered for the first time on your own, it can be very disorienting and frightening. I don't have the time or space here to go

into detail on each item listed in the outline above, but I would like to take a moment to explain a little bit further about these "accelerated" spins.

Please understand that this type of recovery procedure is used when you are not sure just what the airplane is doing. It is an emergency spin recovery procedure.

Let's take for example a normal upright spin to the right. Power off, and stick full back, ailerons neutral, and full right rudder. After the spin develops, we will begin to slowly go forward with the stick and as we do, you will notice a dramatic increase in the rate of rotation. We now let go completely of the stick, and you will notice that the stick stays in the aft position and the ailerons will lay slightly "in spin". The stick will not be full back, it will be about halfway between the true neutral position and the full aft position, but it will feel like it is in neutral to you. If you now take the stick & try to push it forward, you will find a lot of resistance and it will take an unbelievable amount of force to push that stick forward and you will also notice that the harder you push, the faster the airplane will spin and even with full forward stick, the airplane will not recover! If you let go of the stick at this time, you will notice that the elevator will snap right back into that same position mentioned above. After the airplane gets into this type of spin, pushing the stick forward increases the rate of rotation and pulling it back, slows the rate of rotation, in the case of an upright spin. Of course the same is true of an inverted spin except that pulling the stick back will increase the rate of rotation and pushing it full forward will slow it down. With this

type of spin, the pilot can become very confused and disoriented, not knowing whether the spin is inverted or upright, left or right. Combine this with a dangerously low altitude, and the panic that sets in when a pilot finds himself out of control, and you have a potential disaster in the making. Many pilots still believe that the elevator gets the airplane out of the spin, and when they have cycled the stick from full forward to full back and the spin rotation increases in one direction and slows in the other, this leads them to believe that the airplane will not recover. Let me emphasize at this point that the elevator does not get the airplane out of the spin! In most cases, if used by itself, it will only aggravate the spin. The rudder is the most effective control for spin recovery. If this all sounds complicated, confusing and frustrating, don't despair. It doesn't matter if you understand all the aerodynamics involved or not, the recovery from any spin is the same even if you don't even know what type of spin you are in. Simply, cut the power to idle, let go completely of the stick, look straight down the engine cowling so you won't become confused as to the direction of yaw, and push full opposite rudder. (The one that is hardest to push.) The airplane will recover! Please understand that this type of recovery procedure is used when you are not sure just what the airplane is doing. It is an emergency spin recovery procedure. We do not use this procedure for a precision, competition type spin where we want to recover precisely on a point. A precision type spin recovery is one in which we first apply full opposite rudder with the stick either full forward or full back depending on the type of spin and then apply nose down elevator at the point where we want the spin to stop, neutralize the rudders and then project a perfectly vertical down line.

The commonly accepted methods of spin recovery shown in most aircraft flight manuals are certainly correct and will work if used exactly as described. Also, the method of recovery from flat spins taught by many instructors will certainly work, however they are very complicated and time consuming and they also require that the pilot know exactly what type of spin he is in before he can

apply the proper control movements. This all just asks too much of the panic stricken pilot who finds himself in trouble at a dangerously low altitude. With the method of spin recovery that I teach in my aerobatic course, the pilot can quickly and easily recover, with a minimum loss of altitude, from any spin even if he is confused and doesn't know what type of spin it is.

While teaching basic aerobatics during the past few months, I have found that the following maneuvers are the ones most likely to result in an inadvertent spin during the student's first few attempts:

1. Hammerheads, 2. Immelmans,
3. Vertical rolls, 4. Vertical snaps.

In my own case, the maneuvers that got me in trouble before I thoroughly understood what was happening, were the torque rolls and lomcevak. Please treat these two with the greatest respect and don't practice them at low altitudes. I would also like to make one more suggestion to you regarding flying in airshows. Do not under any circumstances, do spins in airshows! They are just too unpredictable to be done safely at low altitudes. The altitude loss during recovery can be affected by too many variables such as, density altitude, miscalculating the number of turns, the hypnotic effect of multi-turn spins etc. Keep it flying. The average person at an airshow doesn't know the difference between a five turn inverted flat spin and a whifferdill anyway, and your friends that do would appreciate it if you wouldn't scare the hell out of them with a recovery in ground effect.

I certainly don't claim to know it all about spins, but I have learned a lot about the subject in the past few years and I am convinced that this method is the best, most reliable and easiest method of emergency spin recovery that has ever been devised. If widely known and accepted, it could save a lot of lives.

In conclusion, I would like to emphasize that I have not discovered or developed anything new on my own and I cannot take credit for developing the spin recovery technique that I teach. I have simply taken the best of what I have learned from others and from my own experiences and put it together to form a comprehensive and easy to un-

derstand spin training program that can be taught to any pilot in a relatively short period of time. I sincerely believe, that if I could give the average pilot thirty minutes of ground briefing, and thirty minutes of flight training, he would be able to recover from any spin that can be encountered in any of the airplanes I have tested so far. There is no need for any pilot to continue being afraid of flat spins, inverted spins etc. I am happy to provide training for individuals at my base in Midland, Texas and I would also be happy to provide training for instructors that are involved in aerobatic training for the benefit of the pilots in their area. They would then be able to go back to their home bases and teach this method to the pilots in that area.

When choosing an instructor, ask a lot of questions. Ask for the names and phone numbers of their last three students and call them and find out if they were happy with the training they received. Find out if the instructor has flown the model of aircraft that you will be using in your flying. If so, how many hours does he have in make and model. Many instructors will profess to be "aerobatic instructors" when in fact, they are no more than beginners themselves.

There can be no substitute for good dual instruction by a competent, professional instructor who has the patience and understanding to pass his knowledge and skills on to other pilots. Why stumble through it on your own, when with the proper training, you can remove all the mystery and fear from your mind about spins. Confidence in anything comes with knowledge and proficiency. This can come easily from the proper training.

I hope you all will overlook my shortcomings as a writer and realize that this is completely out of my element. At least my intentions were good. I hope I have chosen words that get the message across that I intended. If not, call me at my office at AC 915-563-1441 or home in the evenings at 915-367-0329 and I'll do my best to explain it or we will find someone who can! Please discuss this with your friends and fellow aerobatic types and if you have any comments or feedback, I'm always eager to hear about it. Let's all have the best and safest year ever in 1984!

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CONTEST CALENDAR

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

Los Angeles Gold Cup (Southwest)

Thursday, May 3 – Saturday, May 5, 2012
Practice/Registration: Thursday, May 3
Rain/Weather: Sunday, May 6
Power: Primary through Unlimited
Location: Apple Valley (APV): Apple Valley, CA
Region: Southwest
Contest Director: Casey Erickson
Contact Information: Primary Phone: 6194170839
Alternate Phone: 9093899020
E-Mail: Casey@allwaysair.com
Website: <http://www.allwaysair.com/AppleValley.html>

Sebring Aerobatic Championships (Southeast)

Thursday, May 3 – Saturday, May 5, 2012
Practice/Regist.: Saturday, April 28 – Wednesday, May 2
Glider Categories: Sportsman through Unlimited
Power: Primary through Unlimited
Location: Sebring regional airport (SEF): Sebring, FL
Region: Southeast
Contest Director: Mike Mays
Contact Information Primary Phone: 561-313-8503
Alternate Phone: 561-734-1955
E-Mail: Soaerobatics@aol.com
Website: IAC23.com

Armed Forces Memorial Aerobatic Competition (AFMAC) (Southeast)

Friday, May 18 – Saturday, May 19, 2012
Practice/Registration: Thursday, May 17
Rain/Weather: Sunday, May 20
Glider Categories: Sportsman through Unlimited
Power: Primary through Unlimited
Location: Grenada Municipal (GNF): Grenada, MS
Region: Southeast
Contest Director: Chris Rudd
Contact Information: Primary Phone: 850-766-3756
E-Mail: akrudd@aol.com
Website: www.iac27.org

Jersey Skyland Aerobatic Championship (Northeast)

Friday, May 18 – Sunday, May 20, 2012
Practice/Registration: Thursday, May 17 – Friday, May 18
Power: Primary through Unlimited
Location: Greenwood Lake (4N1)
West Milford, NJ
Region: Northeast
Website: <http://iac52.org/2012/jsac/index.html>

Carolina Boogie (Northeast)

Friday, May 18 – Saturday, May 19, 2012
Practice/Registration: Thursday, May 17 – Friday, May 18
Rain/Weather: Sunday, May 20
Power: Primary through Unlimited
Location: Wilson Industrial (W03) Wilson, NC
Region: Northeast Contest
Director: Eric Sandifer
Contact Information: Primary Phone: (919) 605-9585
Alternate Phone: (919) 605-9585
E-Mail: n10omp@yahoo.com
Website: <http://iac19.org>

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Ben Lowell Aerial Confrontation (South Central)

Saturday, May 26 – Sunday, May 27, 2012
Practice/Regist.: Thursday, May 24 – Friday, May 25
Power: Primary through Unlimited
Location: Sterling Municipal Airport (STK): Sterling, CO
Region: South Central
Contest Director: Michael Forney
Contact Information: Primary Phone: 303-514-1609
E-Mail: mlforney1@msn.com
Website: <http://www.iac12.org/>

Bear Creek Aerobatic Bash (Southeast)

Friday, June 1 – Saturday, June 2, 2012
Practice/Registration: Thursday, May 31
Glider Categories: Sportsman Intermediate
Power: Primary through Unlimited
Location: Henry County Airport (4A7): Atlanta, Georgia
Region: Southeast Contest
Director: Stan Moyer
Contact Information Primary Phone: 229-347-1616
Alternate Phone: 229-436-7791
E-Mail: moyestan@yahoo.com

Lone Star Aerobatic Contest (Southwest)

Friday, June 1 – Saturday, June 2, 2012
Practice/Regist.: Wednesday, May 30 – Thursday, May 31
Glider Categories: Sportsman through Unlimited
Power: Primary through Unlimited
Location: Grayson County (GYI): Sherman, TX
Region: Southwest
Contest Director: B J Boyle
Contact Information: Primary Phone: 214-697-5052
Alternate Phone: 972-306-5851
E-Mail: bj.boyle@att.net
Website: www.iac24.org

Southeastern Aerobatic Open (Southeast)

Friday, June 1 – Saturday, June 2, 2012
Practice/Registration: Thursday, May 31
Glider Categories: Sportsman Intermediate
Power: Primary through Unlimited
Location: Henry County Airport (4A7), Atlanta, GA
Region: Southeast
Contest Director: Stan Moyer
Contact Information: Primary Phone: 229-347-1616
Alternate Phone: 229-436-7791
E-Mail: moyestan@yahoo.com

Ohio Open (Mid-America)

Thursday, June 14 – Saturday, June 16, 2012
Practice/Registration: Thursday, June 14
Rain/Weather: Sunday, June 17
Power: Primary through Unlimited
Location: Union County airport (MRT): Marysville, OH
Region: Mid-America
Contest Director: Jeff Granger
Contact Information: Primary Phone: 574-721-4340
Alternate Phone: 614-505-6555
E-Mail: jgranger@columbus.rr.com
Website: www.iac34.com/

Midwest Aerobatic Championship (South Central)

Friday, June 22 – Sunday, June 24, 2012
Practice/Registration: Friday, June 22
Power: Primary through Unlimited
Location: Seward Municipal (SWT): Seward, NB
Region: South Central
Contest Director: David Moll
Contact Information: Primary Phone: 402-613-5422
E-Mail: davidmoll66@gmail.com

Apple Cup (Northwest)

Friday, June 22 – Saturday, June 23, 2012
Practice/Registration: Thursday, June 21
Rain/Weather: Sunday, June 24
Power: Primary through Unlimited
Location: Ephrata (EPH): Ephrata, WA
Region: Northwest
Contest Director: Rochelle Oslick and Jerry Riedinger
Contact Information: Primary Phone: 425-442-8280
E-Mail: volez@earthlink.net
Website: www.iac67.org

U.S./Canada Aerobatic Challenge (Northeast)

Saturday, June 23 – Sunday, June 24, 2012
Practice/Regist.: Thursday, June 21 – Friday, June 22
Power: Primary through Unlimited
Location: Olean Airport (KOLE): Olean, NY
Region: Northeast
Contest Director: Patrick Barrett
Contact Information: Primary Phone: 716-361-7888
E-Mail: cbpbmb@aol.com
Website: IAC126

Wildwoods AcroBlast (Northeast)

Thursday, June 28 – Sunday, July 1, 2012
Practice/Registration: Thursday, June 28 – Friday, June 29
Power: Primary through Unlimited
Location: Cape May County Airport (WWD): Lower Township, NJ
Region: Northeast
Contest Director: Craig B. Wisman
Contact Information Primary Phone: 717-877-8933
Alternate Phone: 717-566-5665
E-Mail: cwisman@comcast.net
Website: www.iac52.org, www.iac58.org

Salem Regional Aerobatic Contest (Mid-America)

Saturday, June 30 – Sunday, July 1, 2012
Practice/Registration: Friday, June 29
Power: Primary through Unlimited
Location: Salem – Leckrone Airport (SLO): Salem, IL
Region: Mid-America
Contest Director: Bruce Ballew
Contact Information: Primary Phone: 314-369-3723
E-Mail: bruceballew@earthlink.net

Beaver State Regional (Northwest)

Friday, August 24 – Saturday, August 25, 2012
Practice/Registration: Thursday, August 23
Rain/Weather: Sunday, August 26
Power: Primary through Unlimited
Location: Eastern Oregon Regional Airport (PDT): Pendleton, OR
Region: Northwest
Contest Director: John Smutny
Contact Information: Primary Phone: 2063997097
E-Mail: johnsmutny@gmail.com
Website: <http://iac77.eaachapter.org/>

Ace's High Aerobatic Contest (South Central)

Saturday, September 8 - Sunday, September 9, 2012
Practice/Registration: Friday, September 7
Power: Primary through Unlimited
Location: Newton City Airport (KEWK): Newton, KS
Region: South Central
Contest Director: AJ Hefel and Ross Schoneboom
Contact Information: Primary Phone: 316-648-5057
E-Mail: ahefel@cox.net schoneboomr@prodigy.net
Website: <http://www.iac119.webs.com/>

Michigan Aerobatic Open (Mid-America)

Saturday, July 7 - Sunday, July 8, 2012
Practice/Registration: Monday, July 2 - Friday, July 6
Power: Primary through Unlimited
Location: Reynolds Field (JXN): Jackson, MI
Region: Mid-America
Contest Director: Don Weaver
Contact Information: Primary Phone: 989-859-7237
Alternate Phone: 989-859-7237
E-Mail: donflies@chartermi.net
Website: <http://iac88.org/contest.html>

High Planes Hypoxia Fest (South Central)

Saturday, July 14 - Sunday, July 15, 2012
Practice/Registration: Friday, July 13
Power: Primary through Unlimited
Location: Sterling Municipal Airport (STK): Sterling, CO
Region: South Central
Contest Director: Dagmar Kress
Contact Information Primary Phone: 303-887-4473
E-Mail: dagmarkressbassett@mac.com
Website: www.iac12.org



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