



STEVE KROG
COMMENTARY / THE CLASSIC INSTRUCTOR

Training for the Unexpected

Think now, be ready later

BY STEVE KROG

EVERY FLIGHT IS AN adventure, be it a local 30-minute pleasure flight or a two-hour cross-country Sunday pancake outing. On exceedingly rare occasions the flight not only is adventurous but also tests one's skill, a skill to prevent considerable damage to either the aircraft or a person or persons. As pilots, do we spend enough time preparing and training for that rare occasion?

As one gets more comfortable and confident, trust in the airplane becomes such that never a thought to a problem occurs. But then, one beautiful summer day, the inevitable happens. The engine quits developing enough power to remain airborne. Panic and fear take over, leading to inaction and subsequently an off-field landing, or worse. Could this have been prevented? The engine issue, probably not. But the inaction leading to an incident, or worse, certainly could be.

When learning to fly, most of the training is focused on acquiring coordination skills to maneuver the aircraft efficiently and correctly. New pilots learn to safely get the aircraft off the ground, maintain a safe climb attitude, make turns, and then land without incident. Once they can do this efficiently and repetitively, along with a few other maneuvers, the first solo is the next step.

Prior to your first solo, though, did your instructor prepare you for handling a pattern emergency? You may have been exposed to a couple simulated emergencies, but from that point on, most likely little time or effort was spent practicing emergency situations.



Sadly, not enough time and training is devoted to practicing for emergency flight situations in today's flight training environment. Designated pilot examiners share this frustration with me when discussing flight training weaknesses they have experienced. This is apparent in all aspects of the traffic pattern as well.

There are three critical points in the traffic pattern. First is the takeoff from power application up to and including 500 feet of altitude. Second is when entering the traffic pattern. And, lastly, the descending turns from downwind to base and especially the turn from base to final. We're going to focus solely on the takeoff part of the traffic pattern in this article, just as my colleague Charlie Precourt has many times recently in his column, Flight Test.

I did a brief survey of a handful of pilots who fly old slow airplanes as well as complex aircraft. I asked each, "Do you look down the runway prior to takeoff and have a go/no-go point?" I also asked, "Do you have a plan should the engine quit at or below 500 feet AGL?"

The responses were interesting. When flying the old slow airplanes, pilots spent little or no time or effort anticipating a takeoff problem. If experiencing engine loss at 500 feet or less, all responded similarly: push the nose over at once and either land straight ahead or 45 degrees to the left or right. Don't even think about turning back.

When flying their complex airplanes, however, the pilots responded quite differently. Takeoff distances are calculated, go/no-go points are pre-determined, and they *always* land straight ahead or 45 degrees to the left or right should the engine quit. As one of the experienced pilots said about flying complex aircraft, "The pucker factor is always present from the time full power is applied until reaching 1,000 feet AGL."

These were all older, experienced pilots. Mind and muscle training had been instilled and retained throughout their flying careers. All of them fly at least two or three times per week, weather permitting.

But how would a less-experienced pleasure pilot react in these situations? It has been proven over and over that a pilot who has

If loss of power occurs after lifting off but below 500 feet AGL, never ever attempt to turn back. Land straight ahead or 45 degrees to the left or right of straight ahead, arriving at the point of touchdown at the slowest possible speed one can attain.

not had good emergency training, nor continued practicing for emergencies, will react quite differently from the experienced pilots. I've mentioned in earlier articles that when an emergency occurs in flight, it will take the average and unsuspecting pilot two to eight seconds to react. Only then do they remember to push the nose over for best glide. In just a few seconds, precious altitude and airspeed are lost, limiting options even further.

If muscle memory is not present, fear and inaction take over. The next action taken by the pilot will usually be an attempt to turn back to the airport, creating serious potential for a stall/spin. We all know the outcome of that situation, unfortunately.



STOL CH 750 Super Duty



Zenith CH 750 Cruiser



Zenith STOL CH 701



Zenith CH 650



Build It. Fly It! With Zenith Aircraft Company

Building your own Zenith kit airplane is easier, quicker and more affordable than ever!

Factory Workshops | Quick Build Kits | Easy to build. Fun to fly! www.zenithair.com



Number One
Light Sport Aircraft Brand



Zenith CH 250

Made and Supported
in the USA



Zenith Aircraft is the Number One Light Sport Aircraft brand in the U.S. based on actual FAA registration numbers Zenith Aircraft Company, 1881 Airport Rd., Mexico, Missouri 65265 573-581-9000

AEROLEDs™
PREMIER CHOICE FOR LED AVIATION LIGHTING

SUN FUN
AEROSPACE EXPO
APRIL 5-10 • 2022
KALAMAZOO, MI
VISIT US AT
BOOTH# D6/D7

**10% SHOW
DISCOUNT
COME SEE
WHAT'S NEW!**



208.850.3294 AeroLEDs.com MADE IN USA

EAA Webinars
What would you like to learn?

EAA offers a series of **FREE** live webinars moderated and presented by aviation experts on a variety of topics.

- > Accessible on both mobile and desktop
- > Often qualify for FAA Wings or AMT credit

April Webinar Schedule

Your Airplane's Report Card
April 6 | 7 p.m. CST

Gyrocopters of the EAA Collection, Part 2
April 12 | 7 p.m. CST

Getting the Most Out of Your EAA Membership
April 13 | 7 p.m. CST

Bad News Is Good News: Avoiding Most Accident Scenarios
April 27 | 7 p.m. CST

See the full schedule and register at [EAA.org/Webinars](https://www.eaa.org/Webinars)

EAA Webinars are supported by 

STEVE KROG

It is imperative that we all remember this rule: If loss of power occurs after lifting off but below 500 feet AGL, never ever attempt to turn back. Land straight ahead or 45 degrees to the left or right of straight ahead, arriving at the point of touchdown at the slowest possible speed one can attain.

At our flight school, I insist that emergency takeoff situations are practiced regularly with each student. Doing so can be done quite easily without jeopardizing safety. For example, pick a road for reference, and then climb and level off at 1,500 feet AGL above the road. Discuss and agree with the student that the simulated runway surface is this altitude. Now align the airplane over the road in a takeoff configuration and simulate a takeoff climb to 500 feet above the simulated ground level. Reduce the power to idle and count off eight seconds while holding the aircraft in the nose-high climb attitude. At this point, have the student attempt to make the turn back to the runway without descending more than 500 feet. It can't be done.

Even though the student may be aware of the exercise being practiced, most will still have difficulty reacting, especially responding correctly. After the count of eight seconds, they will barely relax the back-pressure. Then a turn to the left back toward the runway will be attempted. However, remember the airspeed was but 3-5 mph above a stall when the nose was lowered. Airspeed has increased, but only by about 5 mph at this instant; that's still well below a safe maneuvering speed.

The bank angle is ever increasing as the student begins looking at the runway and realizing it will take more than a 180-degree turn to realign with the runway. Hard left rudder is then usually applied creating a steep cross-controlled skidding-turn configuration at an airspeed that cannot sustain that angle of bank without stalling.

An astute student will begin recognizing the developing situation and relax the bank angle only to raise the nose without realizing doing so. Now a power-off stall situation is fast approaching. At this point I'll let the student continue but won't allow the stall to occur. Once realigned with the road, a look at the altimeter will tell us we would never have made it back as we broke through our 1,500-foot solid deck long before reaching the runway. This exercise makes quite an impression on the mind of a student.

Now we'll go back and try this exercise again with all parts in the setup remaining the same except for the eight-second count. This time initiate responses at the three-second count. The outcome is generally much better. Students are usually capable of making the simulated runway with a few feet to spare.

Once the student's confidence has been built by repeating this exercise several times throughout their early pattern training, move onto a tougher but equally important challenge. Select a simulated runway road that has a crosswind and try this exercise again. The student will be ready for the simulated emergency but will completely forget about the crosswind. If the wind is from the right and a descending

turn to the left is initiated, the aircraft will be pushed well away from the runway because of the tailwind in the turn. In this case, a turn into the wind would provide one with a little bit of a cushion and not carry the aircraft farther away from the runway.

I am not advocating for a return to the runway once reaching 500 feet AGL. Rather, I am trying to get students to not only train for an emergency, but also understand the performance of the aircraft being flown.

Before you try this exercise on your own in your trusty airplane, consider the make and model of your aircraft, and review the glide ratio performance chart. You may find, as many have, that your aircraft will never be able to make a safe return to the airport from 500 feet AGL, even if you reacted instantly. Repeat the exercise but give yourself a 1,000-foot margin in which to work. Airplanes with heavier wing loading than most training

I am not advocating for a return to the runway once reaching 500 feet AGL. Rather, I am trying to get students to not only train for an emergency, but also understand the performance of the aircraft being flown.

aircraft are especially vulnerable. Studies have been done repeatedly by experts proving that it is physically impossible to achieve a successful 180-degree return to the airport in some heavier and more complex airplanes.

The next time you go for a pleasure flight and want to face a new challenge, try performing the exercise detailed above and see how well you do. Then add it to your flight proficiency exercises, developing muscle memory for your safety. If pilots committed themselves to continuous learning and routine proficiency training through their entire flying career, imagine how much safer our pleasure flying skies would be.

Take the challenge and continue becoming a better pilot! *EAA*

Steve Krog, EAA 173799, has been flying for more than four decades and giving tailwheel instruction for nearly as long. In 2006 he launched Cub Air Flight, a flight training school using tailwheel aircraft for all primary training.

