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COMMENTARY / THE CLASSIC INSTRUCTOR

Short-Field Landings

Practice and proficiency

BY STEVE KROG

SOONER OR LATER, EVERY pilot is tempted to attend a fly-in event held at a short field. Or at least a landing strip much shorter than the one they've been accustomed to using. That should be no problem, right?

For that reason, one maneuver I have pilots demonstrate when conducting a flight review is the short-field obstacle takeoff and landing. They usually haven't done one in quite awhile. Much like stalls, pilots rarely practice short-field obstacle takeoffs and landings unless operating from such a field where they are required. As an instructor, I think it is important that a pilot practice these. It may save your life someday, or at least the life of your airplane.

At the airport I fly out of we have a 3,000-foot hard surface and a 2,000-foot turf runway. In the past few months I've observed at least three landing aircraft exit the end of the runway and roll out into hay fields beyond. The pilots all flew out of airports with 5,000 feet of runway or more and never really had to focus on landing shorter. None of the airplanes were damaged, but egos were badly bruised.



Left wing down and right rudder applied for the slip over the tree line.

Could these mishaps have been prevented? Most certainly.

TEACHING THE LANDING

When first teaching short-field obstacle landings (assume that the aircraft does not have flaps), I like to have a student climb to a safe altitude of approximately 1,500 feet AGL. Then align the aircraft with a road using it as a simulated runway. Reduce power to idle, establish recommended glide speed or approach to land speed, then note the amount of time and distance needed to descend 500 feet. Climb back to 1,500 feet AGL and repeat this exercise but use a moderate to aggressive forward slip to descend 500 feet, noting the time and distance required to do so. Both will be considerably less. I tell students not to look at the airspeed indicator (ASI) while performing a slip as the reading will be quite erratic. Rather, they should depend on establishing and maintaining the proper nose attitude for a power-off best glide speed. After repeating

this exercise a couple of times the student's comfort level is increased, and he or she is ready to try a short-field obstacle landing.

The biggest problem I've encountered when teaching the short-field obstacle landing is the inability to accurately judge altitude even though the student has previously made dozens of normal approaches and landings on the same runway. Usually on the first attempt at a short-field obstacle landing, the student will maintain an unusually high altitude on final approach. To overcome this, I will begin calling out the altitude above the obstacle starting at the midpoint of the base leg. "You're 200 feet above the obstacle, now 150 feet, now 100 feet, and so on until approaching the simulated obstacle. At this point, if any power is still being carried, power is reduced to idle and the airplane is put into a moderate to aggressive forward slip comfortably clearing the obstacle, then leveling off and landing.

Another big mistake I encounter is when the slip is established many students and

seasoned pilots will drop the nose. They've all heard wild hangar flying stories about slips leading to stall/spins and have an innate fear of doing so. Thus, they lower the nose, increasing airspeed by 10-15 mph in a matter of seconds. Now, another problem has been created – excess energy that must be dissipated before the aircraft will safely touch down, defeating the short-field landing and creating a *must* go around situation.

Usually, if slips are practiced early in flight training and outside the traffic pattern at a safe altitude, the stall/spin fear is eliminated. However, demonstrating a slip at 1,500 feet AGL and then at 100 feet AGL creates a different sight picture and can cause a certain level of apprehension. Like most other maneuvers, practice will eliminate the uneasy feeling.

There are two methods for flying the approach for an obstacle landing. The first is flying a normal traffic pattern but a higher, slightly steeper descent final leg, then using the slip for achieving a short-field landing.

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At the level-off point of the approach to land (approximately 10 feet), discontinue the slip moving the controls to neutral for correct longitudinal alignment for the landing.

This is the preferred approach when flying an aircraft with no flaps, and this is the approach the examiner wants to see on the checkride.

A second method is that of flying a lower, flatter final approach and then performing a slip as you approach and clear the obstacle. This approach works fine on a cool calm day, but if it is warm and there is any kind of wind, low-level turbulence can raise havoc when trying to maintain a steady approach. Thus, the FAA in all of its various flight-training-related publications highly recommends the former style approach rather than the latter.

Within 10 miles of the airport where I am based, there are several different private strips that I have access to for training purposes. The first that I use is a short north/south turf strip about 1,200 feet long. It is in the middle of a field, and the nearest obstruction, a line of trees that are about 30 feet tall, is about 200 yards from the runway end. This is usually the first short-field obstacle landing field that I introduce to students. It really proves what happens if the student comes in too high in an effort to clear the trees or if he or she drops the nose too much and builds up too much speed to get down and stopped.

Once the student has satisfactorily made several short-field landings and takeoffs from this strip we move on to the next, which is an east/west strip approximately 1,700 feet long. One end of the runway has 70-80 foot tall oak trees on one end, and the opposite end has

buildings and a power line. Approaching from either direction requires an aggressive slip, and the takeoff requires using a good short-field obstacle takeoff procedure. For safety, when departing in either direction, there are large gaps in the trees along either side of the runway, so we have an escape route if needed. Again, if the student can comfortably handle this runway, he or she has a true grasp of the short-field takeoff and landing procedures.

The final runway is a short 1,100-foot north/south strip. There is a 50-foot tall tree line on the north end with a gap cut through the trees. The runway tilts downhill for the first third and then uphill to the runway's end. The uphill angle is such that the runway end cannot be seen from the aircraft after leveling and establishing the flare to land. When approaching from either direction, speed control is critical, and when approaching from the north a slip is required as the aircraft passes through the gap in the tree line. Watching the treetops towering above the airplane on either side just beyond the wingtips can be a bit unnerving on the first two or three approaches.

There are several good rules of thumb to follow when you are going to land on a short strip, especially if it is one with which you are not familiar.

Make a low, slow pass next to the strip to check for any possible obstructions such as newly dug badger or fox holes. Look for the reflection of standing water in the turf. One mistake students make when performing

their first low pass is to align with the runway, preventing them from seeing anything on it.

Try to pick out some type of landmark that is located at the approximate halfway point of the runway. When landing, if you're not on the ground and slowing down at this point, go around. On takeoff, again, if not in the air, abort the takeoff.

If possible, lengthen the downwind leg of the pattern so that you have a bit more time to establish a stable approach. You will start from a slightly higher altitude than what you are accustomed to but stabilize your airspeed and rate of descent focusing on an aim point on the runway.

If flying an aircraft where the nose cowl and engine block your forward view on final approach, apply slight aileron and opposite rudder to establish a gentle slip. This will provide you with a clear line of sight at the runway without increasing your stabilized rate of descent.

Think ahead and be prepared to establish a slip to clear any obstruction. Break off the slip when you reach your normal level-off point approximately 10 feet above the runway and proceed with a normal short-field landing.

Short-field takeoffs and landings are fun, safe, and challenging, but do practice them from time to time to maintain proficiency and safe flying practices. *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.