Soaring Safety Foundation

Increasing PTL success rates.
By Richard Carlson – SSF Chairman

This is the last in our Premature Termination of the Launch (PTL) series, looking at how to increase the number of successful abnormal occurrence practice events (i.e.; that dreaded x00 ft rope break).

In previous articles we pointed out how most rope break practice resulted in a successful return to the runway. In a few cases, an accident occurred instead, and alarmingly 40% of those practice or real emergency accidents resulted in fatalities. We also discussed the law of primacy and concluded that training should prepare our pilots to deal with real emergencies, not just routine practice events. However, better training that increases the number of successful practice events, thus reducing the failure rate, and will better prepare our pilots to deal with a real emergency.

Let's assume you took our advice and began this training in a simulator like Condor and first learned that returning to the runway, may not always be the best option, or even possible. You practiced launch failures from multiple altitudes and landed straight ahead on the runway or in a field off the end of the runway. Then you and your instructor continued with a series of expected and unexpected releases at intermediate altitudes (i.e. over 500 ft AGL) and learned to fly a partial pattern to a normal landing.

Now its time to work on that final step of how to handle that 300 ft AGL practice event. As we discussed before, a real emergency may lead to an off airport landing, but during these practice sessions your instructor will be using good Aeronautical Decision Making (ADM) skills to make a return more likely.

As before, once the glider is no longer being towed, the pilot immediately resets the pitch attitude to make sure the glider will continue to fly at or near today's per-determined approach speed. Once this pitch attitude has been achieved, take a breath (or as my instructor said 'wind your watch'). Now think about what your plan was at this point in the launch. Also note that your goal is to get the glider on a stabilized final as high as possible.

You already know the wind speed and direction and how that will effect the glider. The next thing is determining where the glider is in relation to the runway. Are you on the extended runway centerline, or did your towpilot allow the flight to drift downwind?

Using our friendly rate/radius of turn calculator we can see that after completing a 180^{O} turn at 55 Kts and 45^{O} of bank, the glider will be displaced 538 ft from its starting point. If your towpilot drifted this far downwind, then simply execute a turn into the wind and you can roll out on the extended centerline for your stable approach.

However, if your towpilot maintained the runway centerline you need to create this turning room yourself. Failure to do so, will result in your making a series of turns, with the final turn close to the ground (the traditional PT3 that is factor in this high fatality rate).

To create this turning room, first make a 45^{O} heading change to the downwind side of the runway. Just like your drifting towplane did, you want to make the final turn into the wind. After about 5 seconds, you can enter your 45^{O} angle of bank turn into the wind and after 225^{O} of turn you will roll out on the extended runway centerline. From there a normal landing can be performed. Figure 1 shows a horizontal and vertical ground track of a Condor 3 flight mapped onto Google Earth. Figure 2 shows

how it looks from the cockpit as you roll out on final (note the altimeter reading with the ground at 575 ft MSL).

Failure to create this turning room results in a traditional PT3 maneuver with the first turn into the wind requiring a 225^{O} heading change. This puts you an a 45^{O} flight path back to the runway centerline where a 45^{O} heading change in the opposite direction is required to line up with the runway. Figure 3 shows the vertical and horizontal ground track of a Condor 3 flight mapped onto Google Earth. Figure 4 shows what this looks like as you roll out on final (note the altimeter reading with the ground at 575 ft MSL).

Note that if you use this new PTL procedure you avoid that final turn being done at a dangerously low altitude where you are probably afraid to use a lot of bank. Less low altitude maneuvering and more time on final can significantly reduce the stress pilots feel when conducting this PTL maneuver.

Initial practice can be accomplished in your Condor simulator and then flown in your training glider at your club or school. With practice you can easily deal with slight variations in your position and adjust your ground track so you reliably roll out on the extended runway centerline.

Since this is a practice maneuver, there is no reason to begin at 200 ft AGL. You already have the skills to execute that off-airport landing if this were a real emergency. This practice should be started at a sufficiently high altitude (300 ft AGL) and at a distance from the runway where a return is reasonably certain.

We should also learn from other hazardous aviation training events that led to high fatalities. Such as engine failure practice in light twin airplanes. A multi-engine pilot is trained to deal with the failure of one engine during the take-off roll. If not handled correctly, a light twin has a tendency to roll towards the dead engine. Practicing this maneuver killed a lot of instructors and students making the practice much higher risk than an actual event. The fix was to stop practicing this close to the ground.

This recommended PTL, along with the higher altitude follows that guidance. We'll have better trained pilots and more successful PTL training if you do.

Recommended PTL with 300 ft AGL Rope Break

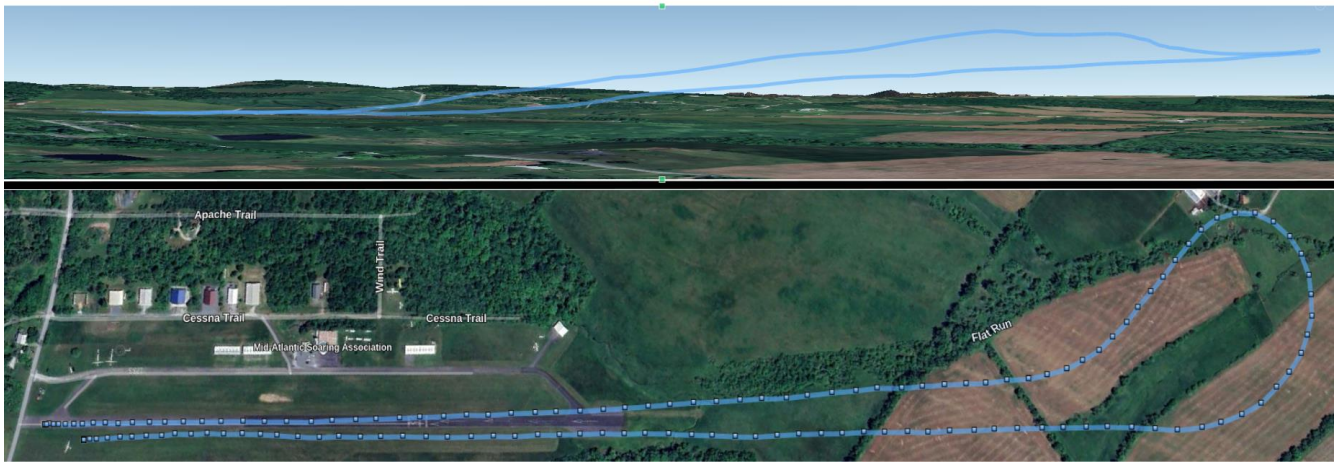

Figure 1: Overhead and side view of Recommended 300 ft PTL rope break, start with a left turn downwind followed by a right turn to arrive on final.

Figure 2: View of Glider turning final using PTL method – note Altimeter, ground 575.

Traditional PT3 with 200 ft AGL Rope Break

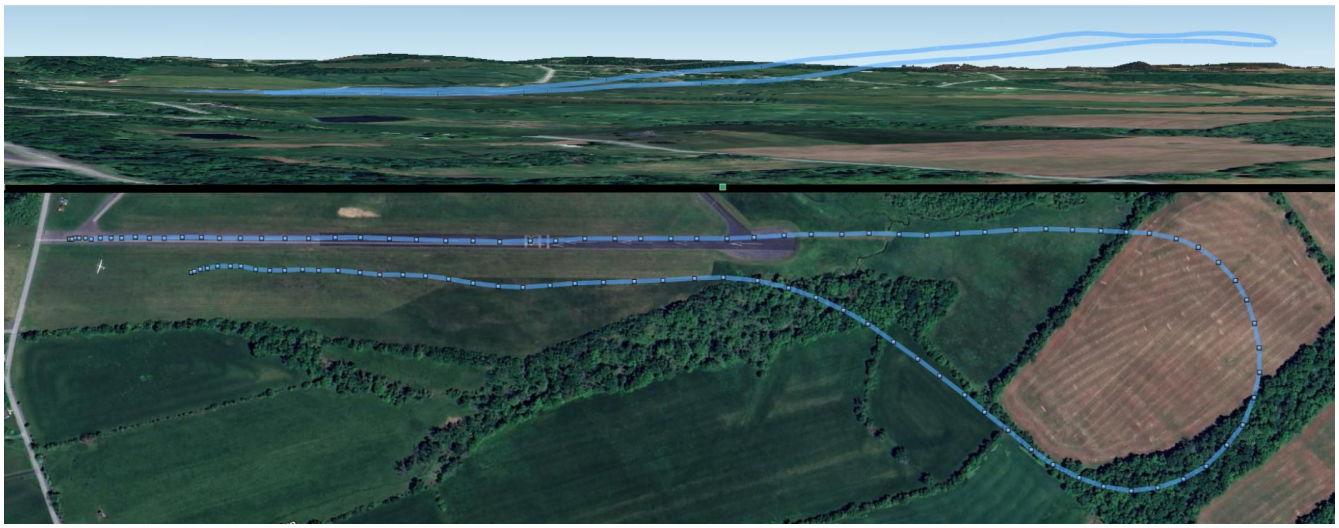

Figure 3: Overhead and Side view of Traditional 200 ft Rope Break, Start with a right turn followed by a left turn close to the ground.

Figure 4: View of Glider turning final using traditional method - note Altimeter, ground 575.