

Column: Condor Corner
Issue: December 2011
Title: Attaining / Regaining / Maintaining your Proficiency
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Introduction:

Back in April 2010, in the introductory Condor Corner article, I listed a number of possible educational applications for glider flight simulation. Primary flight instruction was (and still is) at the top of my list, but proficiency training is a close second.

Proficiency is defined as “the ability to do something well or to a required standard”.

Whether one is able to fly a glider “well” is rather subjective, so for an initial and more objective evaluation of your abilities, I suggest the following:

1. Look at the back of your pilot certificate under section XII Ratings.
Mine reads (among other things) “Commercial Pilot – Glider”.
2. Acquire a copy of the corresponding F.A.A. Practical Test Standard (PTS).
PTS documents are available for download, free of charge, from the F.A.A. website (<http://www.faa.gov/>).

Each PTS very clearly and completely specifies what we need to know, what we need to do, and how well we need to do it, to qualify for a specific certificate/rating.

3. After reading through the PTS, ask yourself this question:
“If I had to pass the practical test for a certificate/rating I currently hold, could I do it?”

If there is any doubt in your mind (and especially if there isn't), keep reading.

I respectfully submit that our responsibility to maintain the flight competency and knowledge standards, implied by our certificate/rating, did not end when we passed our practical test. I also submit that our initial glider training, and most of the flying we have done since, have left us woefully unprepared for events in which we all-too-often end up wrecking our equipment, causing property damage, killing or injuring ourselves and others, and generally contributing to the demise of our sport.

I, therefore, further submit it is in our own personal and collective best interest to regain, maintain, and in some cases, attain for the first time a broad, deep, and current level of flight proficiency. Broad in the sense we can competently fly within our entire flight envelope, especially at its edges, having mastered all the fundamentals of soaring flight; deep and current in that we have accumulated a large measure of widely varied and recent experience.

It would seem, however, based on our collective past behavior, that we glider pilots are loathe to use our precious flight time, nor spend our hard-earned cash towing to altitude, simply so we can maintain or improve upon our flight proficiency. So, is there any hope for us?

I believe there is, and here is my heart-felt recommendation:

Get into glider flight simulation and treat it like your life depends on it.



Practical Test Standard Requirement – Slip to a Landing

Use It or Lose It

Proficiency depends on a number of factors including how often we fly, what we experience while we're up there, the standards to which we hold ourselves, and the frequency with which we seek recurrent training.

Frequency of Flight

Many commercial operations and clubs only operate on weekends, limiting our opportunities to fly. In many parts of the country, the weather often conspires against us, resulting in weeks spent between flights. Our careers and family responsibilities compete for our available time. As we advance in our sport, we become much more selective about which days are worth the effort. Finally, for many of us, there is the dreaded off-season; as much as six months of nearly complete separation from the sport.

Flight simulation removes nearly all these limitations (actually all of them if you can get your boss and family hooked on Condor). Granted simulation is not real flight, but it is

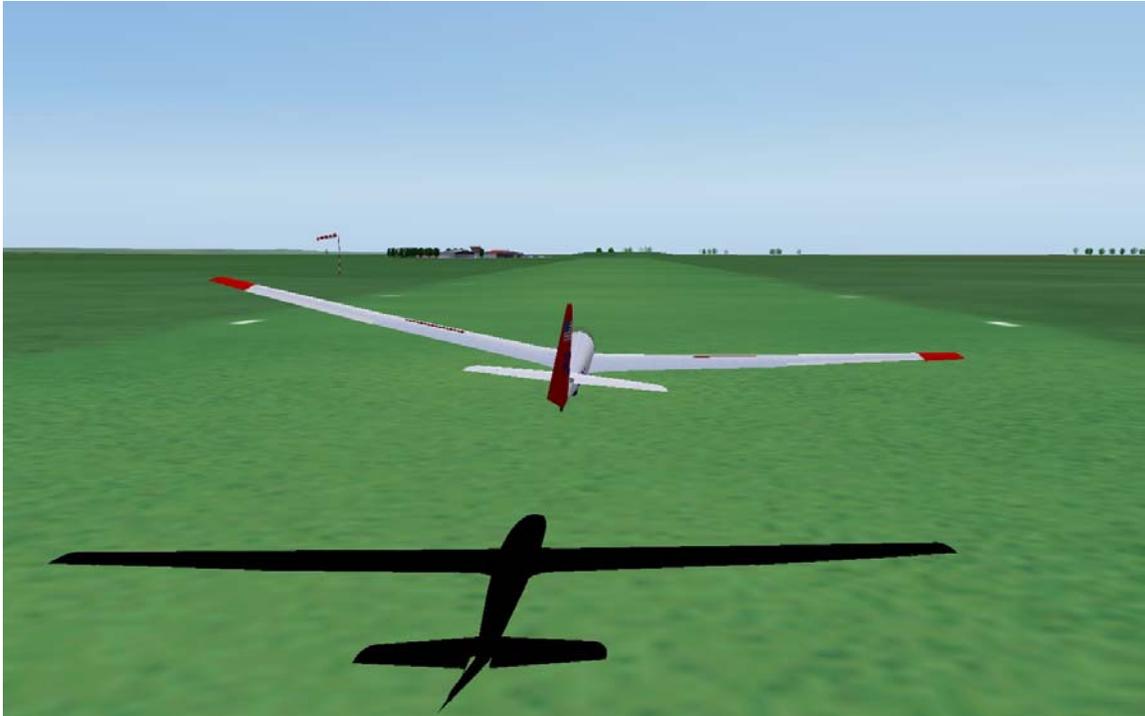
as good as, and in many respects better than, the real thing with respect to exercising our most important flight muscle; our brain. Keeping your “head in the game” is at least 80% of the flight proficiency battle. Student pilots can maintain their proficiency between actual flight lessons. Licensed pilots can stay sharp between real-life flights and flight simulation literally does away with the notion of an off-season.

Frank Paynter flies more real-life soaring competitions in a summer than Carter has liver pills. When the real-life competition season ends, Frank continues to compete weekly against a lot of very talented racing pilots from all over the world, and he does that all winter long. When the next real-life competition season begins, it’s like Frank never left the grid. He never loses his edge. If Condor had a Micro-Castle, I bet Frank would live in it. (You need to read Frank’s competition event blogs on SoaringCafe.com to appreciate the Micro-Castle reference.)

I fly Condor year-round, conducting simulation-based flight instruction in person or at a distance, exploring other aspects of the sport like cross-country flying, or just practicing my fundamentals. When the real-life glider season begins in Wisconsin, I fly my first flight of the year like my last flight was yesterday. I experience no loss of proficiency over the winter.

Because I’m instructing most of the time, I don’t fly my DG-303 very often in real life. When I do get to fly it, I don’t want to feel like a test pilot, so I use Condor to maintain my proficiency in a standard class glider. Condor’s ASW-28 is nearly identical to my DG in performance, configuration, and features. By flying the ’28 in simulation on a regular basis, I’m a lot more comfortable when I climb back into the DG.

In the real world, I have about 300 hours of glider flight time spread over about 575 flights. It took me 9 years to accumulate that amount of experience, and I am a flight instructor who flies frequently. In less than 3 years, I have accumulated more than 525 hours of simulated flight time spread over nearly 4700 flight experiences.



Back to Basics – Cross-wind Landing

What We Do While We Are Up There

When we do get to fly in the real world, we tend to fly a rather limited profile that maximizes our reasons for flying. For example, we soaring enthusiasts tend to wait for a nice day with light winds and lots of puffy clouds. With any kind of luck, we make only one takeoff that day (aerotows are not cheap you know). Our tow to altitude is routine and takes about 4-6 minutes. We spend the next few hours flying in and between good thermals at green-arc speeds. Our flights end with 1-2 minutes flying a routine traffic pattern to a single landing and roll out.

A time/experience analysis of this typical soaring flight might look something like this.

| Flight Phase | % Time/Experience |
|---------------------|--------------------------|
| Takeoff | 0.25 |
| Tow | 2.50 |
| Cruise / Climb | 95.00 |
| Traffic Pattern | 2.00 |
| Landing/Rollout | 0.25 |

Considering that proficiency is based on experience, it should come as no surprise that most glider accidents occur on takeoff and landing. Even glider pilots with hundreds of hours of flight time have very little experience taking off and landing.

The same is true for the even more rare aspects of glider flying. A towrope almost never breaks. We rarely takeoff or land in strong, gusting crosswinds. We usually have the landing pattern and runway to ourselves. We almost never need to fly an unusual landing

pattern. Many of us have never landed anywhere that required we clear life-threatening obstacles, accurately place the glider in a confined space, and bring it to a quick stop.

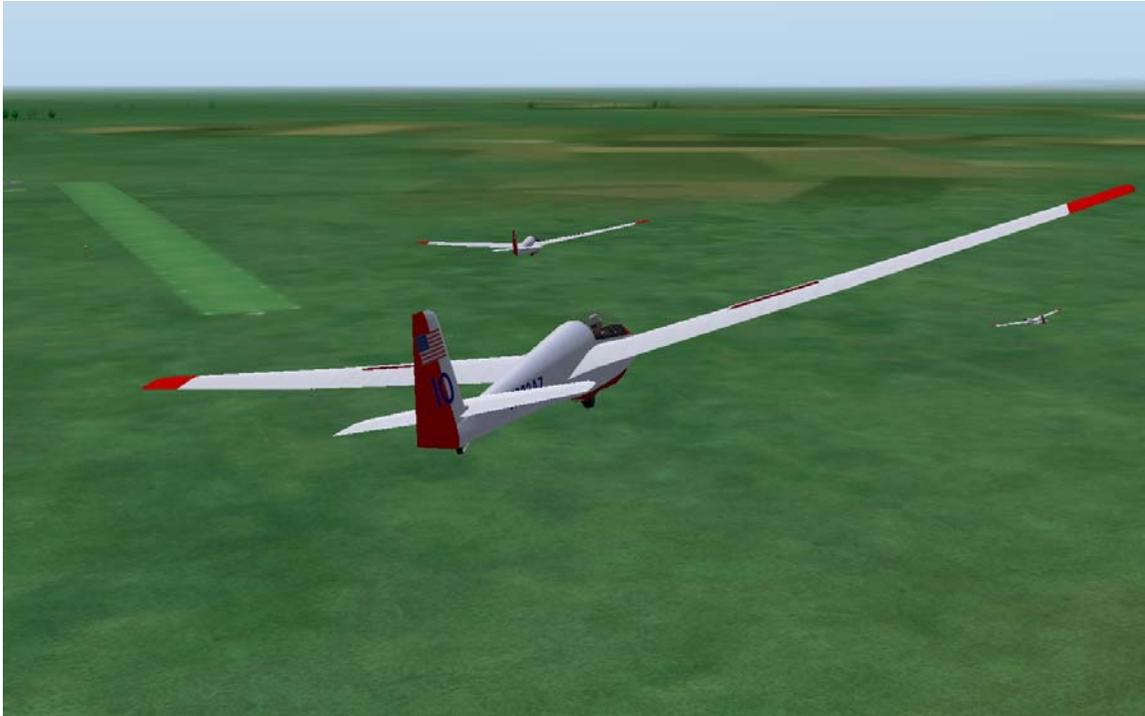
I could go on, but you get the idea. It is not the commonplace that does us in. It is our relative or nearly complete lack of meaningful experience in critical and unusual phases of flight.

Flight simulation enables you to develop and maintain a much higher level of proficiency in this regard than does your real life flying. Using flight simulation, you can perform dozens of takeoffs and landings in an hour. You can introduce increasingly more challenging crosswinds and fly takeoffs, traffic patterns, and landings in these conditions until it is second nature. You learn to recognize the performance limits of your aircraft and more importantly your own limitations. You can experience a wide variety of premature tow terminations and practice your recovery procedures until you can do them in your sleep. You can experience and learn to deal with situations rarely if ever experienced in real life, including low altitude rope breaks, spin recognition/recovery, crowded traffic patterns/landing areas, landing out (over obstacles and into tight spaces), landing uphill/downhill, landing downwind, flying unusual traffic patterns, recovering from unusual attitudes, and managing equipment malfunctions (e.g. spoilers jammed open/closed, landing gear failure, instrument failures).

A world-renowned expert was once asked for the one thing to which she would attribute most of her success. Her unequivocal answer was “Good judgment.” When asked how she acquired her superior judgment, her answer was equally certain: “Experience.” When asked how she had come by such valuable experience, her answer was “Bad judgment.”

In flight simulation world, you have the luxury of intentionally or otherwise making some very poor in-flight decisions, placing yourself in undesirable situations, electing to experience the consequences, but more importantly learning to recognize an impending disaster in time to avoid it. For example, you can experience the results of trying to stretch a glide, exceeding the aircraft’s design limits, getting low and slow the pattern, nearly missing or colliding with another aircraft, flying into a cloud, being pushed to the lee side of a ridge, etc. Having experienced these situations in simulation, you have a much better chance of recognizing them in real life, and either dealing with them or, better yet, avoiding them all together.

Whether you can deal properly with all these rare and potentially disastrous situations will, of course, depend on the mastery of your basic flying skills including controlling airspeed within tight tolerances, consistently executing highly coordinated turns, maintaining a controlled descent profile, and properly flying the aircraft throughout its entire performance envelope (e.g. slow-flight, slipping/crabbing flight, high-speed flight, flight at high load factors) in all possible configurations (gear, flaps, lift/drag devices). Flight simulation allows you to inexpensively and regularly polish your fundamental skills to a fine sheen, all from the comfort of your favorite chair.



Unusual Circumstance – Now What?

A Few Related Thoughts/Suggestions

Intensity

While flight simulation is not the “real” thing, Condor glider flight simulation is much closer to the real thing than anything else we have available. In fact, in some cases, it is a better proficiency training aid because it is “not” the real thing. In any case, the simulation experience can easily be “real” enough to leave you tired and sweating. That level of intensity helps ensure you learn and retain the things you practice.

Apply a Little Spit and Polish

While attaining, regaining, or maintaining your flight proficiency in Condor, use the opportunity to continually raise your performance standards. For example, don’t be satisfied with simply landing on the airport. Land directly on the runway centerline and stay there, rolling to a stop exactly where you planned. Don’t be satisfied with your performance on tow because the tug didn’t release you. Continually refine your ability to stay in position on tow. Fly precise headings. Don’t be satisfied with your level of turn coordination until you can convince your pilot friends that your yaw string is actually taped at both ends.

Simulate Real Life

Don’t do anything in simulation you wouldn’t do, or be willing to do, in your real life flying (except for your intentional bad judgment training as described above).

Don’t leave anything out of your simulations that is part of your real life flying. For example, perform a preflight inspection of your aircraft before your first simulated flight

of the day. Execute your pre-takeoff and pre-landing checklists on every flight. Make radio calls as you would in the real world. Scan for traffic. Clear your turns.

Whatever you do or don't do in simulation will transfer to your real life flying.

Get your Instructor into the Simulation Loop

Even if your favorite CFIG is not currently a fan of flight simulation, you can still involve him/her in a meaningful way in your simulation-based proficiency training. Using either live flight demonstrations or replay files, have your instructor review and critique your simulation-based flying skills. Have them suggest meaningful exercises and scenarios. The experience will be good for both of you and can be logged as ground instruction.

In Conclusion

The airlines, military, and specialty flight training companies (e.g. Flight Safety International) all use flight simulation for proficiency training. There are some very good reasons we in the glider community should be doing the same.

Next Time

I haven't yet decided what to cover next time, so until then, keep those cards and letters coming. smanley@wisc.edu

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Scott Manley owns, and occasionally actually flies, a DG-303. The back of his pilot's license reads: Commercial pilot: airplane single-engine land & sea; instrument airplane; glider. He lives in Madison, Wisconsin and flies as a commercial pilot, glider flight instructor, and tow pilot for Sylvania Soaring Adventures in Beloit, Wisconsin.

Instructions for the Editor / Mark up Staff
(not part of the article)

In addition to sending you the image files independently, I imbedded them in the document close to the text that refers to them to express my preferences for their placement.

I'm guessing you can strip these images out and replace them with their larger format counterparts. If not, I can send you another text document without the imbedded images.

Thanks, SRM