

Condor XC Training Program Report

Frank Paynter and Jim Rise

I have been conducting cross-country training in Condor for the last three winters, but this year I decided to formalize the training into a complete training program, complete with an organized syllabus. The idea was to provide a graduated series of lessons suitable for a beginning cross-country student, starting with basic thermalling skills and ending up with advanced mountain flying techniques. This post is a report on how that training program worked, and describes the experiences of my first program graduate. The first part is a description of the flights and the student's performance from my point of view, and the second part is the student's take on the program.

Jim Rise is a 1,200 hour power pilot who has recently gotten into soaring, and bought a Lak-17a a couple of years ago. He has been trying to break into XC flying, but has been stymied by the problems of weather and towplane availability aligning with time away from work and family obligations - sound familiar? His 13 year-old son started soaring this past summer, but he did it the right way – he first mastered the basics in Condor, and then moved on to real life (RL). After three 20 minute dual flights, the instructor commented that he no longer had to touch the controls. After reading my Condor Corner article about my XC instructional program, and after seeing how well Condor training prepared his son, Jim decided my program might be worthwhile for him, too.

The program starts with a Condor configuration session, where I talk the student through setting up their Condor installation to synch it up as closely as possible with mine. This can involve everything from updating their Condor version to 1.1.5 to recommending joystick brands (I much prefer the Microsoft Sidewinder Force Feedback II), view control (mouse look) and other options. This usually takes an hour or so, and is often all that happens on the first session. In Jim's case, he had done much of this work already, and so we were also able to move on to the first flying session - Lesson 1 in Slovenia. Each session starts with 10-20 minutes of preflight discussion, then the flight lasts about two hours, leaving about 30 minutes at the end for post-flight debrief and anything else that comes up. In each preflight and debriefing period, I'm careful to ask if Jim is happy with the way things are going and/or would like to do something different the next time.

Lesson 1 is a short 90 mile triangle task in the far northeast section of the default Slovenia scenery, taking off from Murska Sobota. This area is completely flat, so we can concentrate on basic thermalling skills without having to worry about terrain issues. The weather is set for strong, wide thermals and a light wind from the north. Launch type is 'Airborne' to avoid any problem with aerotows (aerotows in Condor can be quite exciting due to the short tow rope), and all 'helper' options are enabled (smoke, external views, plane and height recovery, etc). I always fly with 'smoke' enabled on my glider to make me more visible to the student, and to make my thermal circles obvious. The 'height recovery' and 'plane recovery' options are enabled in case we collide (a distinct possibility in Condor due to the view restrictions inherent in simulations), or in case we get low and would like a 'do-over' (try that in real life!). I use the Schemp-Hirth Discus 2 glider for all lessons because the glareshield is deliberately shaped to provide a handy 45-degree bank reference. I have the student place the outside/upper

slanted portion of the glareshield parallel to the horizon (another reason to start with flat terrain), and the opposite upper corner on or slightly below the horizon and voila – a 45-degree bank at about 45 kt airspeed – perfect for thermalling!

Jim did fairly well on this first task; his thermalling technique was adequate, and he readily understood the concept of using the glareshield for bank angle control. During this first flight, I introduce the concept of always having a 'Plan B' (and a Plan C, D, and E) and Doug Jacob's '3/30/3/30' (3 sec/30 sec, 3 min/30 min) planning horizon philosophy. As usual for this first session, Jim was having a lot of trouble keeping all the balls (thermalling, following me, thinking about Plan A/B/C/D, 3/30/3/30) in the air, so I did most of the talking and planning. We were able to finish the 90 mile triangle in about 2 hours (for a total session of about 3 hours) and still had some time for questions at the end. As I do for all my students, I asked Jim if this is what he was after, and Jim seemed to think it was, and committed to continuing the program.



Figure 1: Lesson 1 Flight Plan

We did two more flights in the Slovenia scenery; a 123 mile zig-zag task that started at Murksa Sobota as before, but ended at Novao Mesto, and another that ended at Lesce-Bled, as shown in the following figures. These two flights were intended to introduce terrain issues into the mix, complicating the

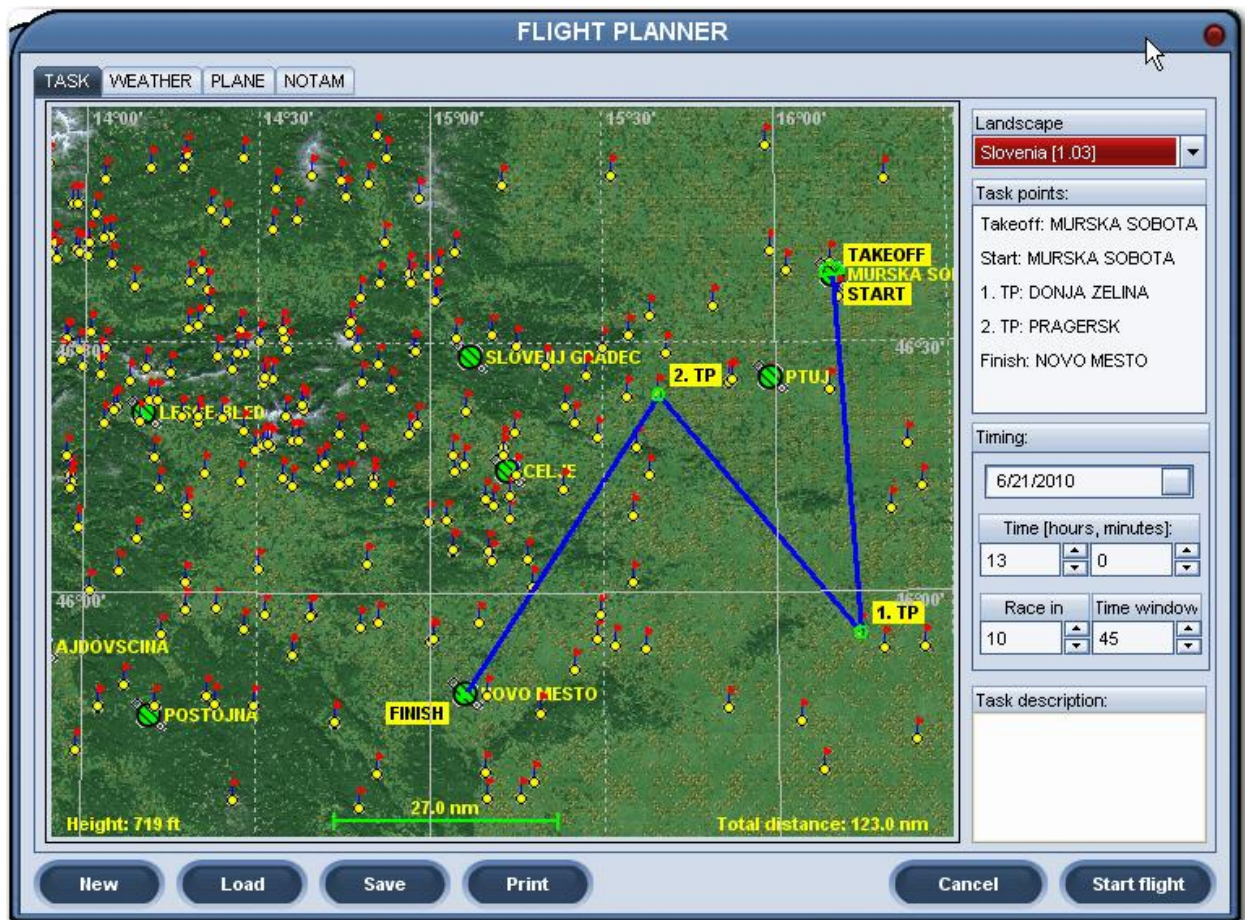


Figure 2: Lesson 2 Flight Plan

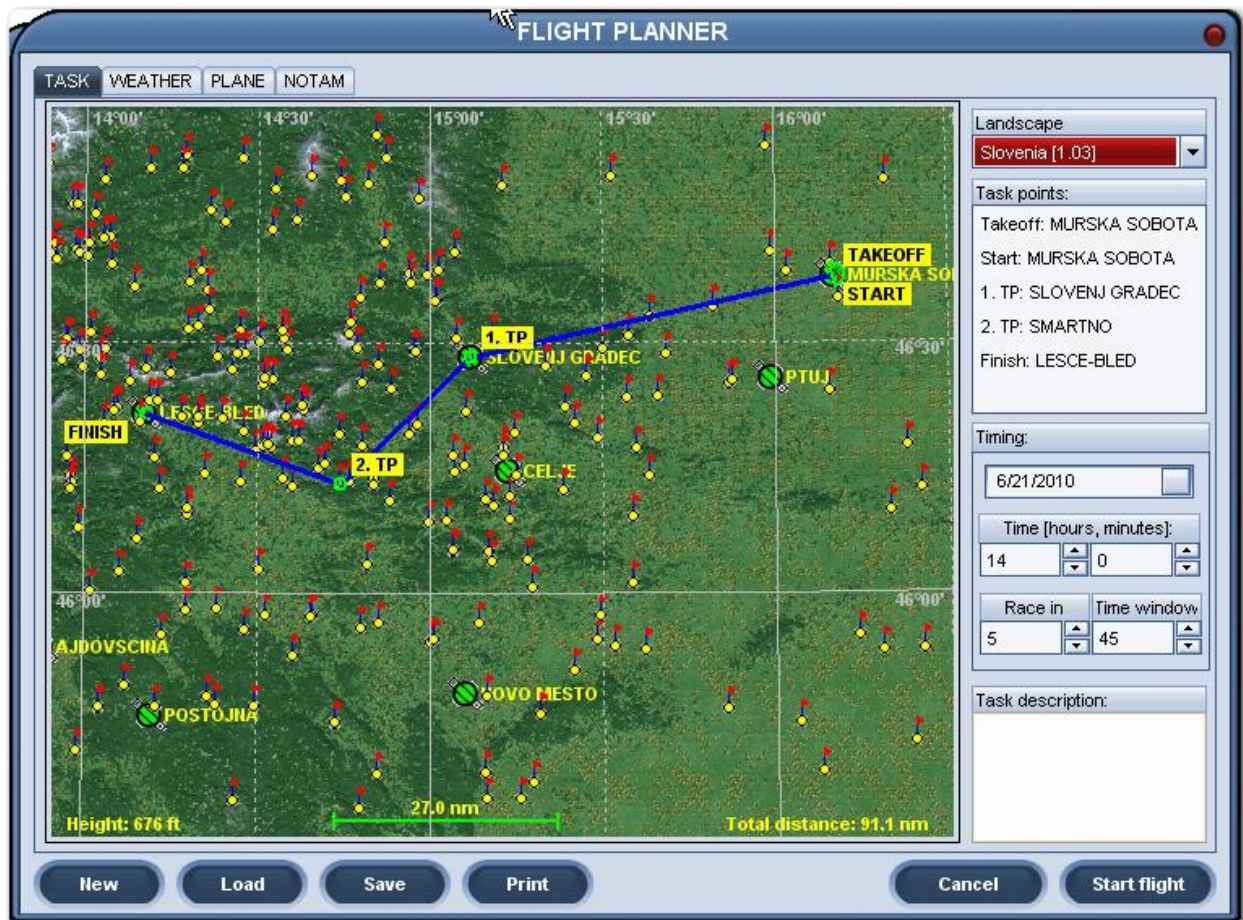


Figure 3: Lesson 3 Flight Plan

planning process. For these two tasks, I have Jim take over the lead at several points in the flight, and insist that he verbalize his thinking about plan A/B/C/D (Plan D typically being where he plans to land if plans A-C don't work) and to go through the 3/30/3/30 'mantra'. Predictably, the effort of formulating and verbalizing the plans and mantra causes Jim's thermalling to suffer significantly, but that too is part of the training – how to extend one's planning horizon beyond the nose of the glider while still maintaining in-the-instant thermalling performance. On the second flight, with weak weather dialed in and some significant terrain issues, we actually got down to landout altitude and had to use the 'Miracle' (Q) command to finish the task. The ability to take off at one airport and land at another, and to continue the flight after a 'landout' are only two of the many advantages of simulation over reality for training. This last flight also allowed an introduction to slope soaring, as the last 20 miles or so into Lesce-Bled are along a mountain range that provided some weak ridge lift.

During the debrief on Lesson 3 (the last Slovenia flight), Jim mentioned that he would like to learn how to use the SeeYou flight analysis program to analyze flights on his own, so we agreed that the next session would be dedicated to SeeYou rather than Condor. For this session, I emailed him two representative IGC files from our CCSC regional contest last summer, one from the top of the

scoresheet, and one from lower down for comparison. We both loaded these files into SeeYou, and I talked Jim through the techniques I use (see my January 2011 Condor Corner article, available from the archive hosted by Cumulus Soaring at <http://www.cumulus-soaring.com/condor.htm> - scroll to the bottom) for objective flight analysis using SeeYou. I was quite happy to spend the time working with Jim on SeeYou analysis, because in my opinion, it is just as important to be able to objectively and accurately analyze one's own and other's flights as it is to be able to fly well. Flying well is of course necessary, but so is the ability to objectively measure progress (or the lack thereof).

The next two lessons were spent in the Mifflin scenery, and were focused on ridge/slope soaring techniques. The first lesson was a tour of the ridges, starting at Keystone Gliderport and ending at Mifflin. Starting at one airport and ending at another is almost never done (intentionally) in real life, but in Condor, there are no adverse consequences for this. So, by starting at KG and ending at Mifflin, I was able to give the student a nice tour of the most popular ridge routes, including the beautiful and exciting Raystown Dam route, using only downwind transitions. The student is introduced to the following important ridge flying concepts:

- Consciously maintaining the appropriate crab angle with respect to the ridgeline, and understanding the need to fight the unconscious tendency to remove it.
- Using airspeed as a 'Figure of Merit' for ridge lift, and setting a minimum airspeed to trigger abandoning the ridge for a safe landing area.
- The concept of immediately banking away from the ridge and applying forward stick pressure as an instinctive reaction to low or decreasing airspeed
- The need to plan ahead for transitions, especially upcoming gaps, and the concept of moving upwind at the start of a gap transition to achieve a better downwind angle to the other side of the gap.
- The idea of ALWAYS having a 'Plan B' queued up and ready to go if things don't work out as planned.

Jim did very well on this flight, with a couple of minor (and very instructive) exceptions. When we were approaching 'the Wall' from the south (see Karl Striedieck's wonderful treatise on ridge flying in the Mifflin area at <http://ridgesewing.com/mifflin/ridge.htm>), Jim made the downwind transition too early, which meant that we had to negotiate the high saddle where the downwind ridge meets the eastern extension of the Wall. Because we had just made the downwind transition, we were too low on the downwind ridge to safely make the saddle, so we retreated back down the ridge, gained some more altitude, and then made it safely on the second try. I thought this was a blessing in disguise, as it allowed me to directly demonstrate the correct technique for dealing with a difficult spot – run away and try again with more altitude! Later, after we had made the downwind transition from the north end of the Raystown Dam ridge to Jacks mountain and were on our way home to Mifflin, Jim crashed into the trees due to a momentary head-in-the-cockpit distraction. I thought this too was a good lesson, as it directly demonstrated the potential price of getting distracted from the primary mission when ridge flying, i.e. staying away from glider-grabbing trees! In Condor, the 'Miracle' (Q) key easily recovers the glider (not to mention the pilot) from the crash, and life is good. However, I'm here to tell you that a

crash in Condor (especially one in plain view of one's instructor), **does** leave an impression, and so I suspect Jim won't forget how quickly things can go to hell when ridge flying.

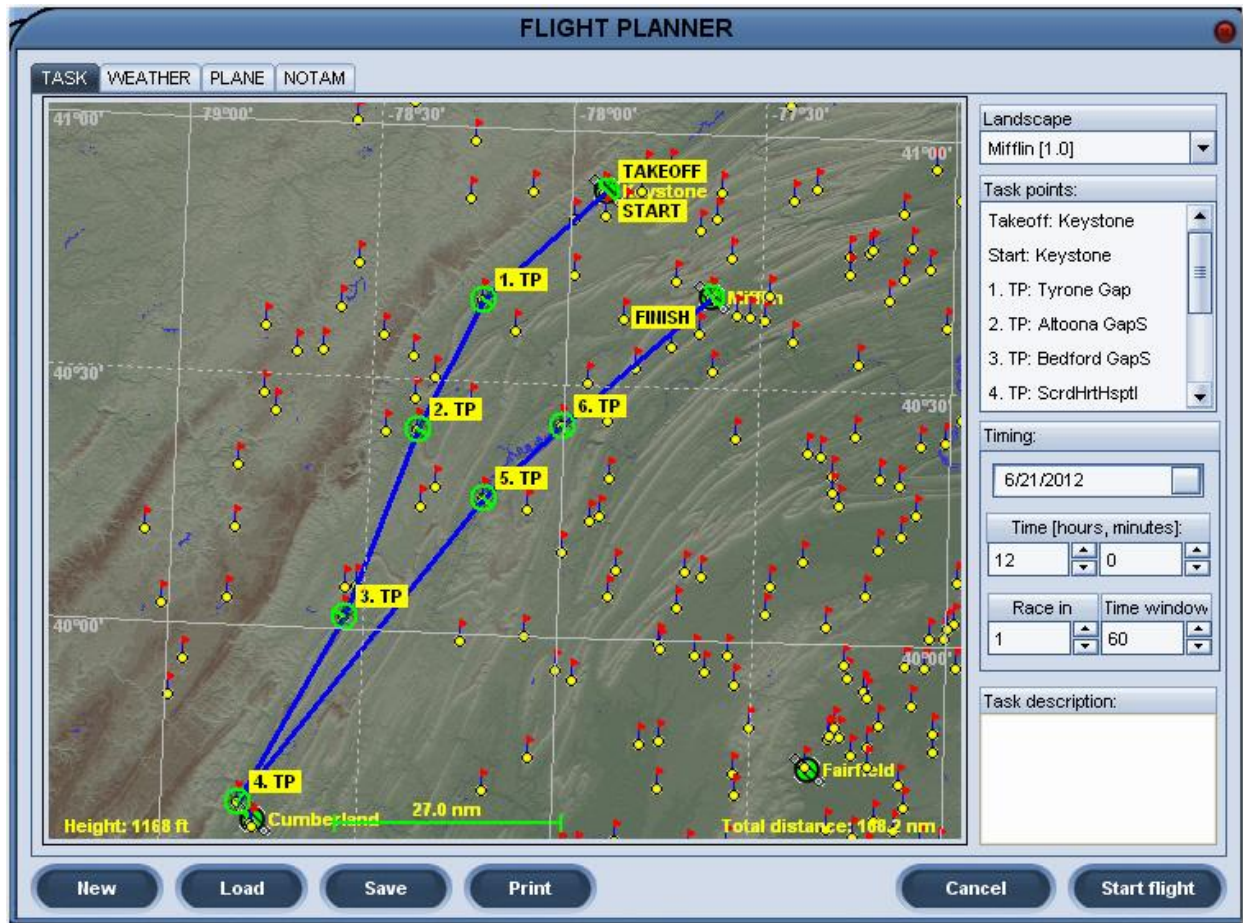


Figure 4: Lesson 4 Flight Plan

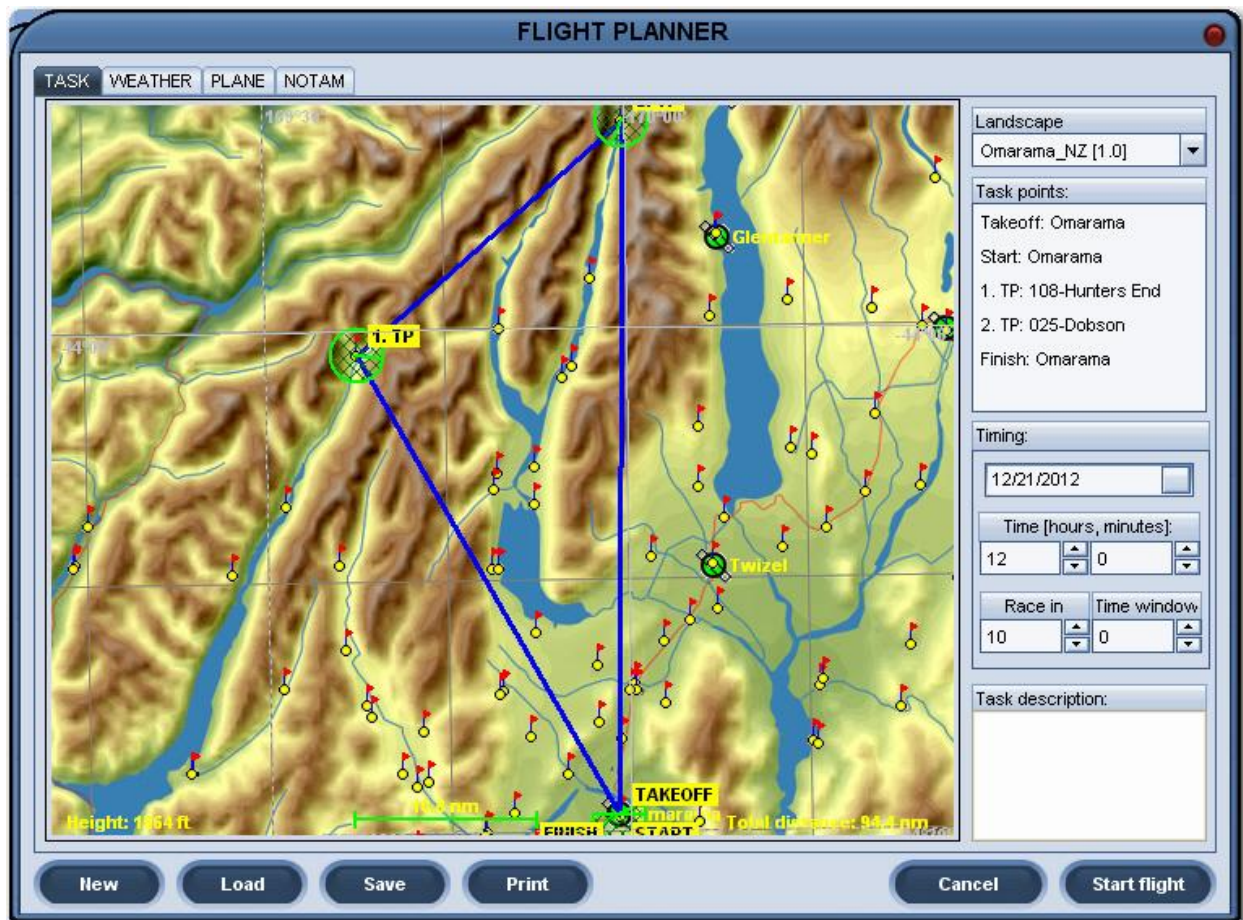
Our second and last flight in the Mifflin soaring area was dedicated to practicing upwind transitions. Upwind transitions on ridges or in the mountains are notoriously difficult, at least partly because it is so hard to tell whether or not the transition will succeed until it is almost too late to do anything about it. Experienced ridge-runners know that to evaluate progress during a transition by whether or not features beyond the target ridge are coming into view above the ridge, or disappearing behind it. However, this is not an easy concept to describe to someone who hasn't experienced the phenomena, so this is another area where Condor is very useful. During this lesson, we dropped downwind from Jacks Mountain to Shade Mountain, and then did an upwind transition back to Jacks. About 2/3 of the way across, Jim and I partially extended our spoilers so that Jim could see features beyond Jacks mountain start to disappear behind the ridge, indicating that we were not going to make the transition successfully. Then we 'failed' back to Shade Mountain, showing that it is almost always possible to

retreat back to the downwind ridge and try again. Then we did a successful transition with me in the lead, followed by another complete downwind-upwind transition cycle with Jim in the lead.

On our last session together, Jim and I travelled to New Zealand, where we flew a relatively easy mountain flight out of Omarama. I much prefer New Zealand for mountain flying because it is not only drop-dead beautiful, but the ridge systems are very well organized and low enough to be relatively easy to negotiate. As usual, we pre-briefed about mountain flying concepts:

- Mountain flying is a 3-D challenge; not only do you have to figure out where to go, but what altitudes are required along the way to get over ridges, through saddles and/or mountain passes
- Many times the best thermals are very close to the rocks, so extreme care must be taken when climbing. If in doubt, use figure-8s to climb until it is clear that circling is possible.
- The flatland technique of placing one flat side and the opposite corner of the glareshield on the horizon for bank and pitch angle control doesn't work in the mountains, so constant attention to airspeed is required.
- When in any doubt about airspeed or pitch attitude, bank away from the mountain and push the nose down. Most mountain sides are very steep compared to the glider's glide angle so turning away provides almost instant clearance for regaining airspeed.
- Although there can be quite good lift on the windward side of a mountain ridge, there is almost always extreme sink on the lee side. Upwind transitions must be made with plenty of altitude in reserve, and even then it may be necessary to bail out and try again.

For this session, I emailed Jim the Flight Plan (FPL) file and then we went over the entire task together in some detail, discussing the altitudes required for each leg, and formulating alternate plans for accomplishing the task. After the pre-brief, and route planning, we were able to fly the entire task without a lot of drama, and Jim did very well. He was understandably more conservative and less willing to engage in 'rock polishing' than I was, which slowed him down some but will probably contribute to an enhanced life expectancy – a good trade IMHO.



At the conclusion of this flight, I told Jim that we had basically completed my original program syllabus, and unless he had some specific desire to continue on with additional flights, he was 'cleared for solo'. As I do with all my students, I encouraged Jim to jump into some of the many XC races available in Condor-land, including the beginner-friendly United States Nightly Soaring races held every night except Monday at 9pm EST, the long-running and quite popular Monday Night Soaring contests held every Monday evening at 7 and 10pm EST, and the multitude of other challenging XC tasks available on the Condor Servers list at <http://condorsoaring.com/serverlist.php>.

Comments by Jim:

I've been reading Condor corner for the past couple of years as I have tried to become a XC soaring pilot. Having followed simulator developments in general aviation over many years and having done some simulator training myself, I was already a believer in the benefits of simulators. I purchased Condor over a year ago with the intent of using it to improve my skills during the winter months, but had not done much with it. One issue was the learning curve on Condor itself. While I knew Condor could be a great tool, I did not find it intuitive to use, so I got frustrated not knowing how to simple things like set-up a task or use the PDA. I'm also a believer in structured training programs, so when I read Frank's article

looking for students to try out a defined XC syllabus, I thought I would give it a try. I'm glad I did because it turned out to be very worthwhile.

I felt that Frank and I communicated well from the start and working remotely was not a barrier to my learning. I found Frank to be organized, efficient, knowledgeable, and encouraging; all the things I look for in an instructor. The lessons Frank planned in Condor led to numerous in-depth discussions on a variety of topics. I've read my share of soaring books, but found it very useful to discuss and then immediately practice the practical application of the theories and techniques I've studied with and experienced contest pilot and exceptional instructor.

Frank has developed a structured syllabus, but was very flexible in adapting it to meet my experience and goals. I've been fortunate to have some wonderful mentors at Willamette Valley Soaring Club and I'd done some flat-land and mountain cross-country flights already, but I had virtually no experience ridge soaring, so we spent more time on that and only did one mountain flight together. We also spent one session entirely on how I can use See You more effectively to evaluate my performance.

Overall, this training program was a great experience for me:

- It was an efficient way to come up the learning curve on Condor so I can use it on my own to further develop skills and simply scratch my soaring itch in the off-season. Following Frank's recommendation, I'm now starting to join some of the many on-line Condor races, which are pretty fun.
- Frank makes every part of remote training easy from scheduling, to communications, to execution of the lessons, to payment. He is an expert on everything soaring and seems to love to teach others.
- In a couple of months of spending a weekend morning with Frank, I was able to fly more Condor XC than I was able to do in real life over the past two seasons. This part can't be overstated. A "Condor hour" is not equivalent to a "real life hour," but they are so much easier to get.

If you think about it, it is pretty remarkable what can be done remotely with a simple PC, a very inexpensive simulator, and an experienced instructor over the Internet. While there are certain limitations to Condor and remote training, it was clearly a tremendous value and a worthwhile investment of time. Given all the talk about how to grow our sport, I have to believe Condor should be playing a bigger role because it can make soaring instruction so much more accessible and affordable.