

Condor Cross-Country Training Program Redux

Frank Paynter

Last year about this time I wrote about the training syllabus I use for cross-country instruction using Condor. I have been providing training in Condor now for several years, so I thought a review of the syllabus and lessons learned might be worthwhile.

Background:

Cross-country soaring and cross-country racing is a very difficult skill to learn, and an even more difficult skill to teach in the real world. Very few clubs or commercial centers in the U.S. promote cross-country soaring in any organized way. Moreover, getting an interested student, an XC-qualified instructor, and XC weather together at the same place and time is very much a hit-or-miss situation. Although there have been some excellent XC camps in the last year or so, the training experience is of necessity limited by the time available, the soaring area, and the weather. Even when everything else cooperates to allow a soaring day, it is quite difficult to keep a XC training group together for any length of time – generally one or more pilot gets left behind and gets little or no benefit from the flight.

In contrast, cross-country training using Condor is much more straightforward and comprehensive than a program based at a real-world soaring site, as many of the limitations imposed by the site and its typical weather are eliminated. Any weather and any terrain can be accommodated, and both of these factors can be tailored to specific lesson objectives.

Takeoffs and landings aren't required, nor is there any need to return to the departure airport. The student, the instructor, and the desired soaring terrain can all be in different places, as they only come together in simulation space on the internet. The training can take place at night, in the winter.

XC Soaring Program

Last year I proposed an extensive training program comprising 15 lessons. However, my actual experience to date indicates that several of the lessons can be combined in one session, so a fairly comprehensive program can be accomplished in 3-5 three-hour sessions. The following is my updated syllabus.

Session 1 – Condor Introduction (2-3 hours):

Condor Familiarization (1 hour)

The instructor works with the student to ensure that the student's setup is current (up to date version/patch level), the appropriate sceneries are available, and the rest of the student's Condor environment is suitable.

Flatland Task (1-2 hours)

I normally start out in the flatlands in the northeast corner of the Slovenia scenery at Murska Sobota with a 50-75 mile triangle task. The Slovenia scenery is included with the initial Condor installation, so it's always available. This area is almost completely flat, with just a few low hills to make it visually interesting. The idea for this first task is to gently expose the student to XC flying, and to introduce Doug Jacob's '3/30/3/30' multitasking philosophy. The flight is planned for about 90 minutes, although I will suggest terminating a flight early if I see that the student is getting tired (flying in Condor can be just as tiring to a new student as flying in RL – I've even had a student rip their joystick off its plywood mount!). Later flights can be extended as necessary to accommodate greater skill levels. Note that in Condor-land, there is no need to return to the takeoff point, or even return to the ground – the flight can be terminated in mid-air just as easily as anywhere else. In my experience so far, 3 hours is about as much as a student can handle, with about half the time devoted to pre and post-flight briefing, and about half actually on task. Because the first 1- 1.5 hours of this session is devoted to basic Condor setup/familiarization, the task length has been reduced considerably.



Figure 1: Session 1 Flight Plan

Task debrief (15-30 minutes)

Another reason for making this first flight a short one is to allow time at the end for debrief and Q&A. This also gives me (and the student) a chance to assess whether or not the experience so far has been helpful and/or in line with their expectations, and worth the money they are forking out. So far at least, I have not had a single student tell me that it wasn't worth the money, and most are eager to move on to the next session.

Session 2 – Flatland+ Task (3 hours):

Task pre-brief (15-30 minutes)

This time is used to summarize the previous session and answer any questions and/or issues raised by the student. There may also be some lingering Condor setup issues from the first session, so this is a good place to handle them.

ZigZag Flatland Task (1-2 hours)

The task for this session is usually a 90-mile zig-zag course, as shown in the following figure. This task was chosen to include some terrain features, both to make the task more interesting, and to introduce the student to the idea of incorporating terrain and obstacles into the planning process. Also, I have found that the idea of taking off from one airport and landing at another adds another element of the unknown, and (IMHO) helps the student break away from the ‘gotta get home’ mindset. I deliberately set the wind to be out of the north at about 5-7kt for this task, high enough so the student has to consider it on all three legs (downwind run on the first leg, quartering headwind on the second, and a tailwind final glide over obstacles on the third). The second leg has some mild high terrain that must be crossed, and the second turnpoint is a few miles north (upwind) of a fair-sized hill. As we go along the second leg, the student is encouraged to think about working the high ground as ‘Plan B’ or ‘Plan C’, where ‘Plan A’ is ‘stay high and go fast’.

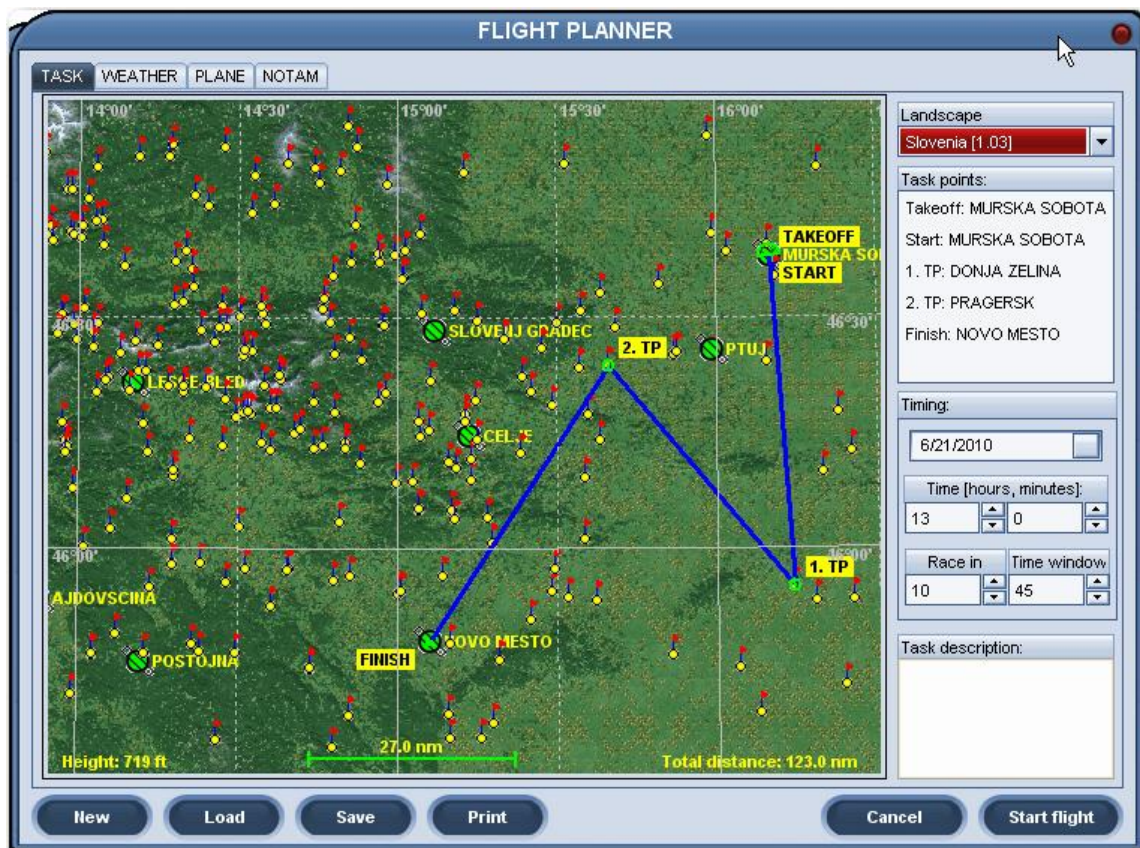


Figure 2: Session 2 Flight Plan

Task debrief (15-30 minutes)

Since this task is considerably longer and more difficult than the previous one, it is not at all unusual for the student to be quite tired at this point. However, it is still important to go over the salient points from the flight

Having a 'Plan B' (and C and D!) at all times

Understanding the interaction between the task line, the terrain, and the wind

Extending the planning horizon beyond the nose of the glider – the Doug Jacobs '3/30/3/30' mantra.

Session 3 – Ridge Soaring Introduction (3 hours):

Introduction

After the student masters basic thermalling/soaring skills and is comfortable with flatland tasks, then the next step would be to introduce slope soaring techniques. Contrary to RL, pilots can be exposed to potentially dangerous situations in a controlled way, and safe, effective techniques can be taught from the beginning, without worrying about oncoming traffic, wind angle, or weather conditions.

There are a number of nice ridge runs starting from Mifflin and/or Ridge Soaring. I'm partial to Mifflin as it gives better access to the southern ridges (Shade/Tuscarora), and coming home from the southeast requires a non-trivial upwind transition.

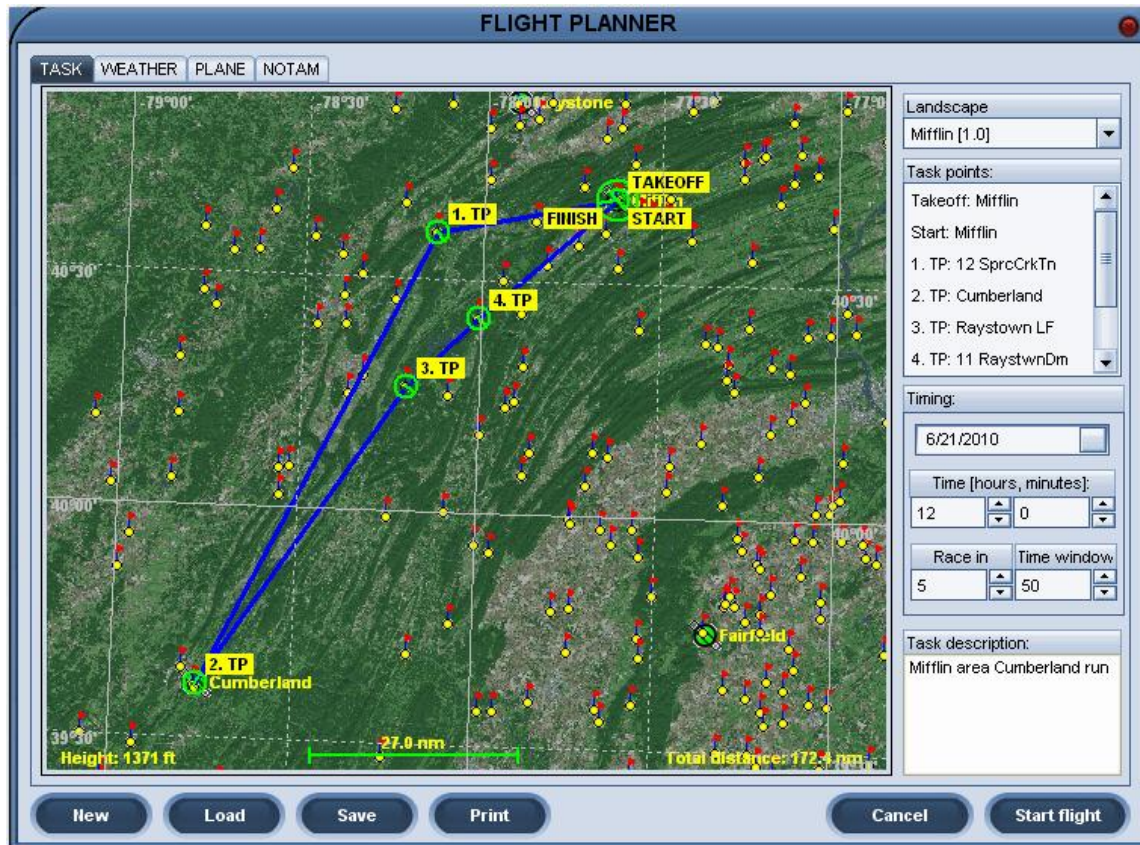


Figure 3: Mifflin Area Cumberland Run

Task pre-brief (15-30 minutes)

The pre-brief here is intended to introduce the basics of slope (ridge) soaring, including

Optimum position on the ridge

How to thermal on ridge

Upwind transitions

What not to do!

Mifflin Cumberland Run

The Cumberland run out of Mifflin is a classic ridge soaring task with all the cool food groups – an easy initial upwind transition from the start circle, several gaps to shoot, an interesting transition off the ridges to Cumberland and back to the Bald Eagle Ridge, then yank & bank downwind transitions to Blair County airport, then the beautiful Raystown Dam ridge one-way run, followed by an easy run up Jacks (or Stone) Mountain back to Mifflin.

This run is excellent for instruction because it is long and varied enough to keep the student's attention without being pathologically demanding. However, at 172 nm, it is almost twice as long as the previous session, so it is difficult to fit it (and a pre-brief /debrief) all in a 3-hour session. On more than one occasion, it has turned out to be just too long for the student, and we have agreed to terminate it early.

Task debrief (15-30 minutes)

This is intended to tie the just-experienced flight back to the basics, and answer any questions/issues raised by the student. Since this is often the student's first experience with ridge soaring, there are usually many questions.

Session 4 – Mountain Flying Introduction (3 hours):

Introduction

At this point in the curriculum, I generally ask the student if they would like an introduction to mountain flying, and I almost always get an enthusiastic 'Yes!' As any experienced mountain soaring pilot can tell you, serious alpine flying is a LOT different than typical ridge soaring.

- *Alpine flying requires much more '3-D' awareness. Not only do you have to know where you are on the map, but also where you are vertically with respect to future transitions.*
- *It is much more difficult, and much more important, to keep safe landing areas in range at all times. A safe landing area might be 20 or 30 miles away, down a valley and around a corner, and completely out of sight.*
- *Crossing mountain ranges is *different*. Even downwind mountain transitions can be difficult, and of course there is the ever-present possibility of getting lost, as visibility can be very restricted and many valleys look very similar.*
- *The need to recognize and respond appropriately to the 'I'm descending' optical illusion commonly triggered when flying toward rising terrain.*

When teaching mountain flying, I like to start out in New Zealand. NZ is a pretty benign mountain soaring site, with lots of flat areas suitable for landouts (and you don't have to worry about a retrieve in Condor!). Other possibilities are Provence, which offers a wide variety of intermediate and advanced terrain, and the Logan Utah scenery. For U.S. pilots, flying in the Logan scenery can be much more than an academic exercise, as they may actually fly there in competition.

Task pre-brief (15-30 minutes)

The pre-brief here is intended to introduce the basics of mountain flying, including

The need for a thorough understanding of the task, including the altitudes required for each upwind, downwind, or saddle transition

The most efficient/fastest altitude band

Upwind transitions, saddle transitions

What not to do!

Omarama Easy Mountain Task

The task shown below is one I like to use for the mountain flying introduction. Although it looks rather intimidating (and is, if you don't understand mountain flying techniques), it's actually rather easy. It features an apparently difficult upwind transition on Leg 1, two different saddle transitions on Leg 2, and a high-speed romp on Leg 3.

The 'trick' to this task is a thorough preflight map review, with emphasis on crossing altitudes, for every part of the flight. Each possible route must be examined in detail, with an eye toward determining 'go/no-go' criteria for each transition, and what 'plan B' will be if problems are encountered. In RL, this would also include the locations of landing areas and the routes to them. For instance, the upwind transition on Leg 1 looks daunting, until the map review reveals that there is a relatively low saddle right where the task line crosses that ridge, and it is possible to get high enough on the next ridge downwind to cruise right through that saddle. After TP1, the challenge is to stay high enough on the mountain to jump over the top downwind at TP2. After TP2, it's just a high-speed romp to the south end of the range, where the biggest problem is staying below redline.

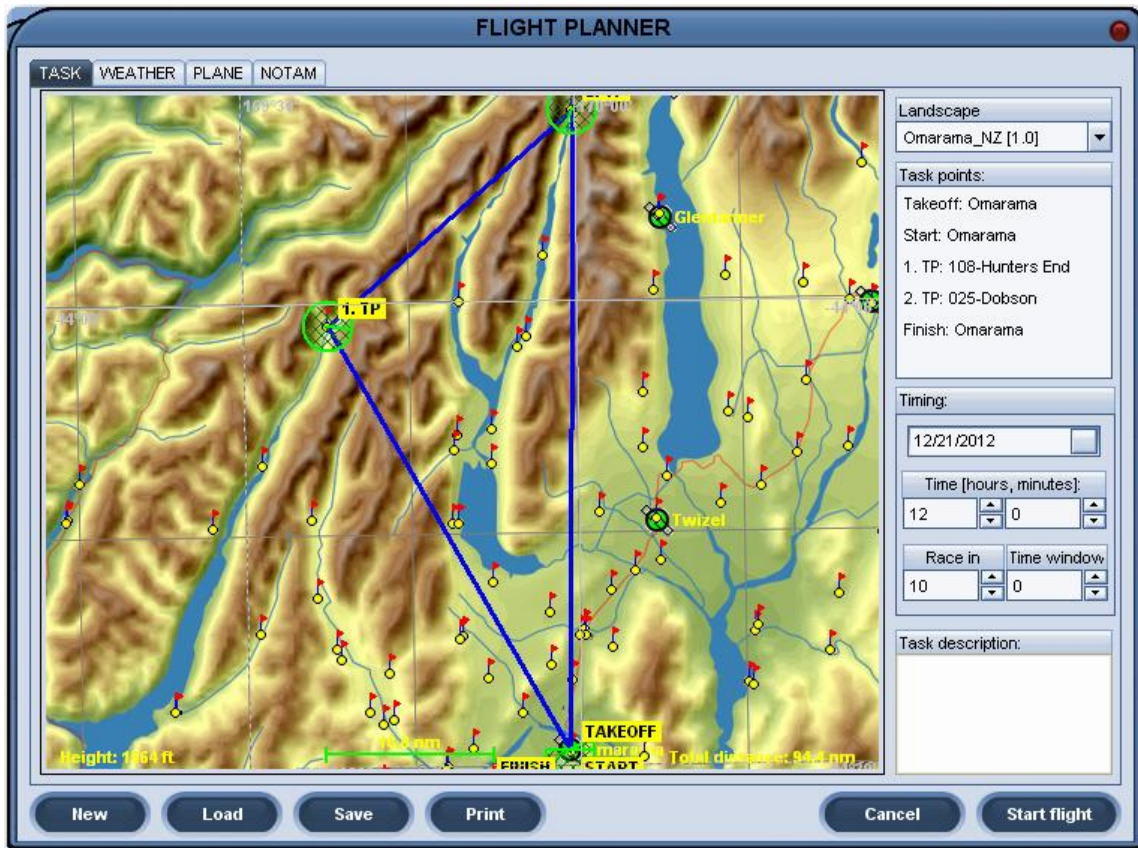


Figure 4: Omarama NZ Easy Mountain Task

I will be providing on-line Condor training again this winter. If you are interested in learning more about XC soaring and racing, and are willing to commit the time and money, please contact me at 'paynterf@gmail.com', or sign up for a Condor training session at <http://condorxc.calendarspots.com>.