

**(T)** = This is the turnpoint button. In real life the competitors carry sealed cameras with which to photograph the turns, which are selected to be some well-known, easily-recognizable landmark. In the simulation, all you have to do is maneuver your sailplane to the correct location near the turn and press 'T'. If you are out of position, an error message will be flashed up. Correct locations for turning at each turn are as follows:

**Turn One:** You must be at a higher value for Y (than the turn) and within 2 units of the value for X.

**Turn Two:** You must be at a lower value for Y (than the turn) and within 2 units of the value for X. Example: If the first turn of the task is at X = 50 Y = 50 then to turn correctly you must be at Y = 50.1 (or higher) and X = 48 to X = 51.9. Also note that as soon as you get a 'good turn' message at turn one the program shifts all further analysis to refer to turn two.

**(F)** = This is the finish button. When you have completed the task, having rounded both turnpoints, you head for home and the finish line at coordinates X = 20 and Y = 20 (your original take-off point). When you cross the finish line - that is when both your X and Y coordinates are less than twenty - press 'F'. This will stop the timer and display your landed position back at the airfield.

**(R)** = This is your relaunch button. If, when you are initially launched, you cannot find a thermal to keep you airborne, the relaunch facility will place you back at the original launch position and height. This will then give you a second try at the task. Remember that you can only take 'one' relaunch and that this must be taken within the first hour of flight.

**(K)** = Stands for kill control input. If you press this control (you should hold it down for around 8 seconds), the control input routine, marked thus \*\*\*, ceases to run, ensuring a faster overall program execution. Of course, you would only use K if certain that control inputs would not be required for a while - to cancel, just hold down K again.

Unlike most so-called simulation programs available today "Sailplane Derby" is a fairly close model of actual cross-country gliding; (the author is an experienced glider pilot). Therefore, a certain level of skill is required for efficient operation of the program. It is suggested that the following training procedure is followed during the first few program runs.

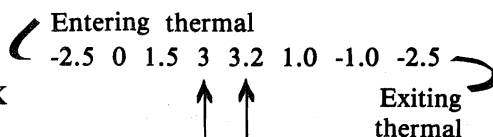
1. Run program.
2. Define weather with thermal strength set at 3 and wind strength set at 1.
3. Defer launch 2 hours.
4. Enter any valid turn-point coordinates (as you will not require turn-points for training).

You will now be launched into a favorable meteorological environment with strong thermals and little wind drift.

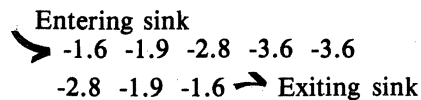
You should note that the program always initialises one strong thermal close to your launch position. Therefore, as soon as the cockpit display is printed, you should commence a gentle turn, say to the right, at a turn rate of around 25. Also, it is a good idea to slow down to 50 m.p.h. You will now see a panorama of the sky moving across your field of view. When you locate a nearby cloud, that is to say one that is both wide and high in your field of vision, straighten out the sailplane and fly in the direction of the cloud. Try to point your sailplane slightly to one side of this cloud, let us say to the left of the center.

It is essential to understand that when you approach the cloud it will disappear prior to your arrival at the location of the thermal. The disappearance is NOT an indication that you have reached the thermal: therefore, continue to glide in a straight line. **DO NOT TURN AT THIS TIME.**

If the cloud has a thermal under it (one in every five has sink!), you should notice first a rise in the sink rate and then your variometer should follow approximately the following progression. (The actual numbers will vary with the strength and height of the thermal).

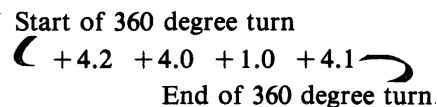


When the progression has reached almost the peak climb rate (between the two arrows) apply full right turn (90) and you should have your glider approximately central in the thermal. If you were unlucky enough to hit sink, the progression of variometer readings will be different, similar to those shown below.



The only thing to do here is to steer away and try another nearby cloud.

Looking on the bright side, let us assume that you are climbing in a thermal at the maximum turn rate of 90 which indicates a complete 360 degree turn in four program loops. It is possible in this situation that your climb rate may be varying (see example of variometer readings below).



This occurrence indicates that you are not correctly centered in the thermal. There are many techniques used for centering, the most common being the so-called 'worst heading' method. To use this technique wait until the least favorable indication of climb appears on the variometer, in our example +1.0, then wait one program loop until you get the next variometer reading which is +4.1. Quickly straighten out, and in the very next program loop, apply full turn in the same direction as previously. The effect of this procedure is to move the center of your circles into a position nearer the center of the thermal.

It is suggested that you fly the sailplane in various thermals, practicing centering the glider and training yourself in general flying skills prior to actually attempting to fly a set cross-country task. You should soon gain experience in the handling of the sailplane. This may take a little time but, once mastered, the program will provide interest which will not wane as do some of the more trivial simulations on the market.