Using an External PDA with Condor
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This month I'll describe how to use an external PDA/PNA with Condor. Condor has the ability to output NMEA (GPS) data strings to a serial or USB port, just as if it was a GPS device in the Condor glider. NMEA data from Condor is functionally indistinguishable from real GPS data being fed from a real GPS device in your real airplane. Properly configured and connected, a typical PDA/PNA running most popular cross country navigation software won't know the difference between real life GPS input and Condor simulated GPS input. I will use a popular free soaring program called SoaringPilot for the demonstration because I happen to be familiar with the software and it is quite easy to connect to Condor via either a serial connection using the PDA cradle, or via Bluetooth.

Why use an external PDA with Condor

There are two or three very good reasons you might want to use an external PDA/PNA with Condor.

- Condor's internal PDA, while quite nice, doesn't support AAT/TAT task management at all. If an AAT/TAT task is being flown, Condor's internal PDA will autosequence to the next active waypoint as soon as the glider enters an assigned area, and the pilot is instantly credited with the mileage from the center of the last area (or from the start line) to the center of the just-entered area. Moreover, there is no support for the minimum time concept – you just have to guess or rely on Condor's internal clock.
- Most modern PDA/PNA-based cross country navigation programs are quite complex. It is very easy, and quite common, for the software to become more of a distraction than a help without a lot of practice. Going out on a cross country flight with a new PDA and software is a good way to get lost and/or land out. Many soaring software packages have a simulation mode of one sort or another, but the simulations are generally too cumbersome to be of much training use, and operations in simulation mode do not incorporate all the other IQ-reducing stresses that come up in a real flight. Somehow we all get a lot dumber when we strap on the glider and launch out on a cross country, and all those things that seemed simple in simulator mode magically become way too complex to handle 'on the fly'.

SoarPilot software for Palm PDA's

The SoarPilot software used for this demonstration is available for free download from http://www.soaringpilot.org.   It is natively compatible with Palm OS devices, but can be used on Windows OS devices via use of another free program called StyleTap. Even though SoarPilot is a free program, it is very well supported by the developer, Paul Gleeson. Some features of the SoarPilot program

- Very complete support for all task types, including assigned tasks, modified assigned tasks, and assigned area (turn area) tasks.
- Support for a very wide range of GPS devices. The SoarPilot program has been adopted widely by hang-glider and para-glider pilots and consequently supports a wide variety of self-contained Bluetooth GPS 'pucks'. It is this native Bluetooth support that makes my SoarPilot setup convenient for use as an external PDA in Condor. SoarPilot will also connect to all popular IGC recorders used in sailplanes via the normal serial connection.

Example SoarPilot/Condor configuration

My SoarPilot setup for use with Condor is a Palm Tungsten T mounted in its normal PDA cradle. The cradle isn't required for anything but external power – the connection to my laptop and Condor is accomplished via Bluetooth. To accomplish the connection, Condor's external NMEA output must be enabled via the 'Setup/Options' screen as shown in Figure 1 below. Note that I have the NMEA output set for Com7, but any unused comm port will do, but whatever port you set here must be configured as a 'BT' (Bluetooth) port on the PC's device manager page.
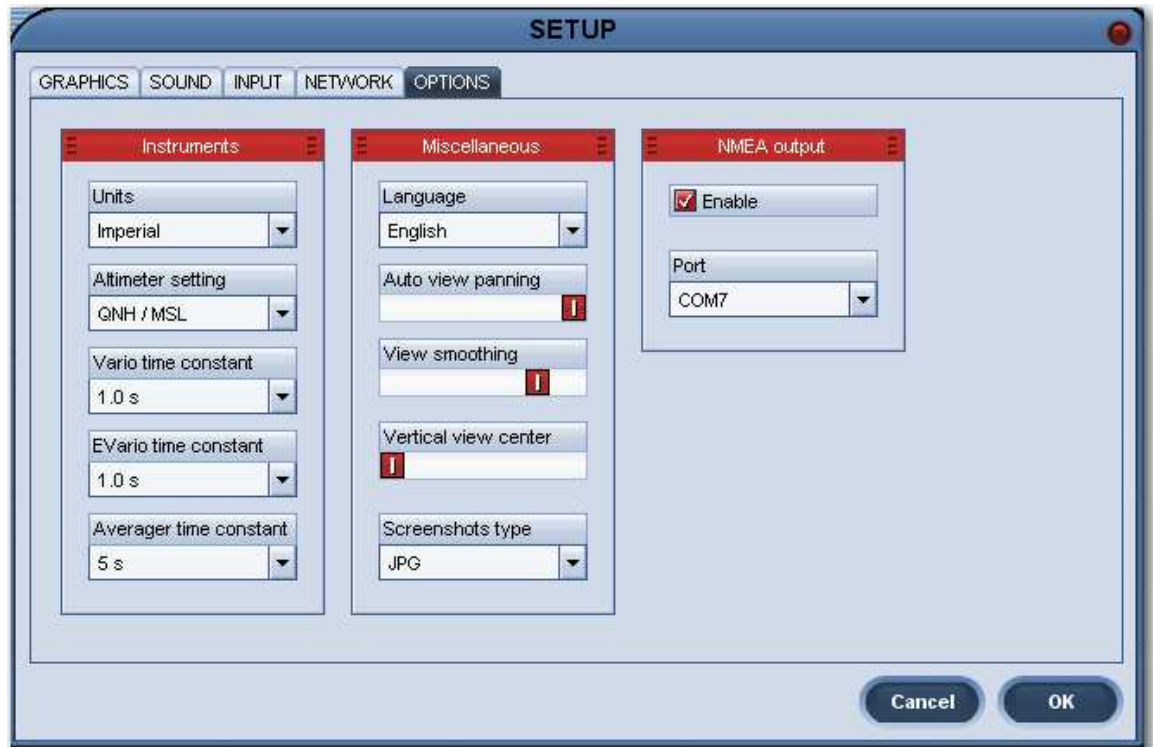
Figure 1: Condor Setup/Options page

After selecting a comm port for NMEA output, the next step is to configure the port as a Bluetooth port in the hardware device manager. Figure 2 below shows this for my Windows XP Pro setup – the configuration may be a bit different for Windows Vista or Window 7.
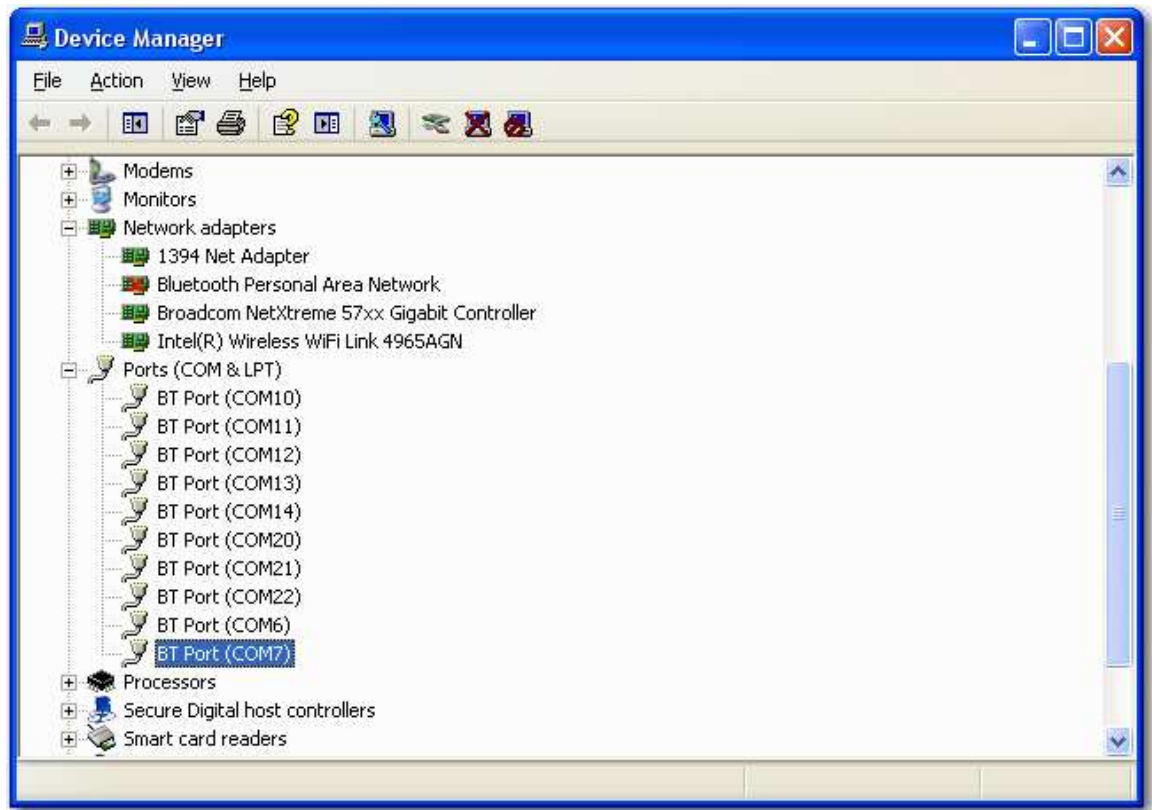
Figure 2: WinXP Pro Device Manager

The next step in the process is to pair the external PDA to the PC using Bluetooth. SoarPilot makes this very convenient, as it incorporates the entire Bluetooth stack into the program. Just set the 'NMEA Input Type:' to 'BT' in SoarPilot's NMEA/Port Config setup screen as shown in Figure 3 below, and SoarPilot will automatically look for Bluetooth devices each time it is launched.
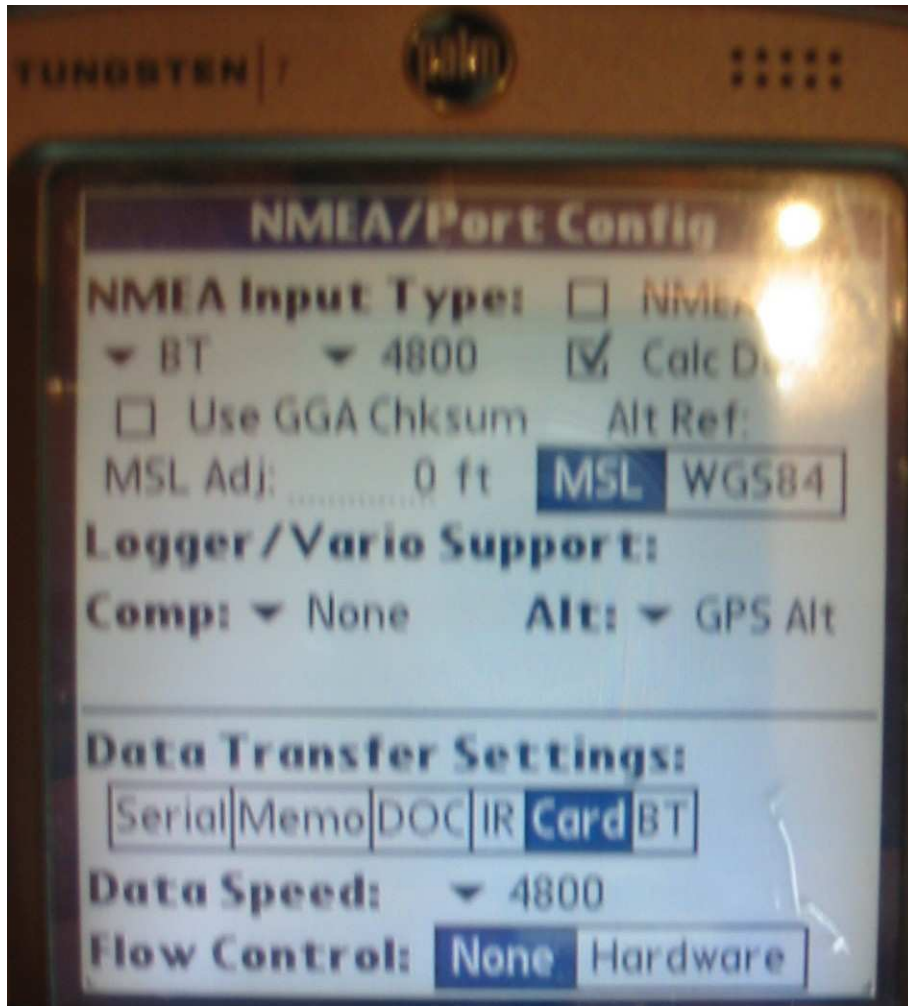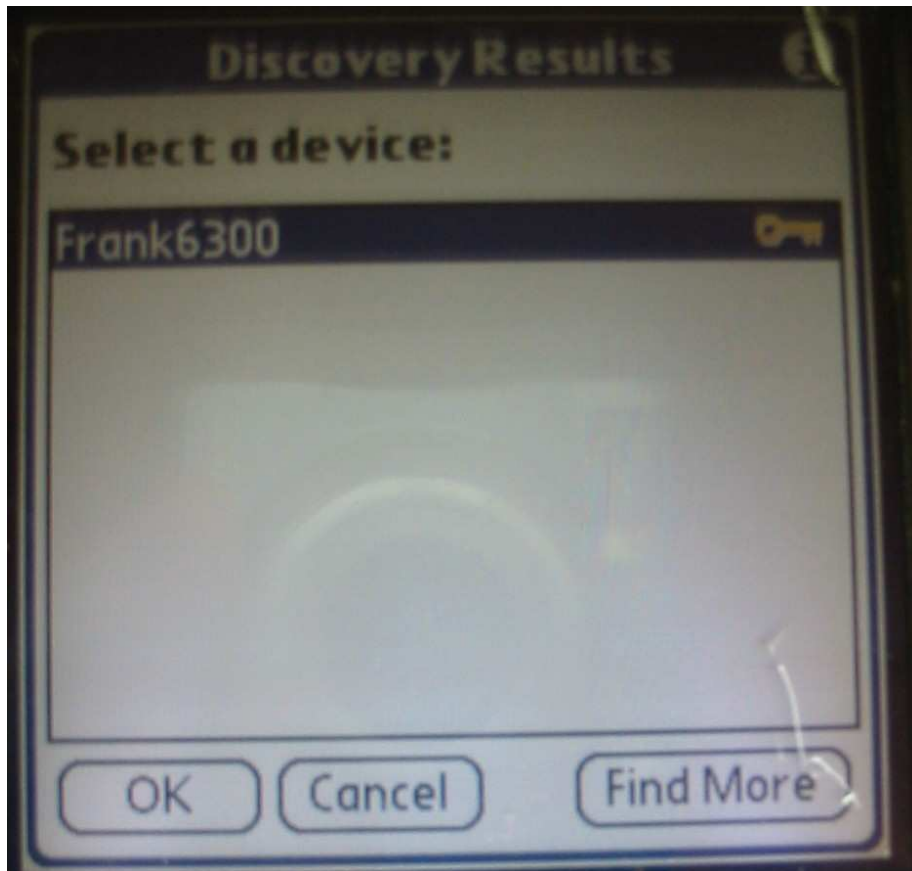
Figure 3: SoarPilot NMEA Input Config

Figure 4: SoarPilot Bluetooth discovery

Of course, you will need to have the appropriate waypoint database loaded in your PDA/PNA, but this is easily accomplished. Each Condor scenery folder has a [scenery name].CUP file containing all the waypoints. For instance, the .CUP file for the Slovakia CE scenery used for this example is located at 'C:\Program Files\Condor\Landscapes\SlovakiaCE\SlovakiaCE.cup' on my PC. If your PDA/PNA can use a .CUP file directly, then simply copy it over and install it on your PDA/PNA in the same way you normally do for a waypoint file. If some other format (.DAT, .STX, etc) is required, then import the .CUP file into Naviter's SeeYou program and export it (File →Save As) in the desired format.

Example AAT/TAT task using external PDA

This example is based on a recent Kaeseman Championships task in the Slovakia CE6 scenery. The task layout is shown in Figure 5 through Figure 7 below. The flight plan (FPL), flight track (FTR) and IGC file for this example should be available on the Soaring

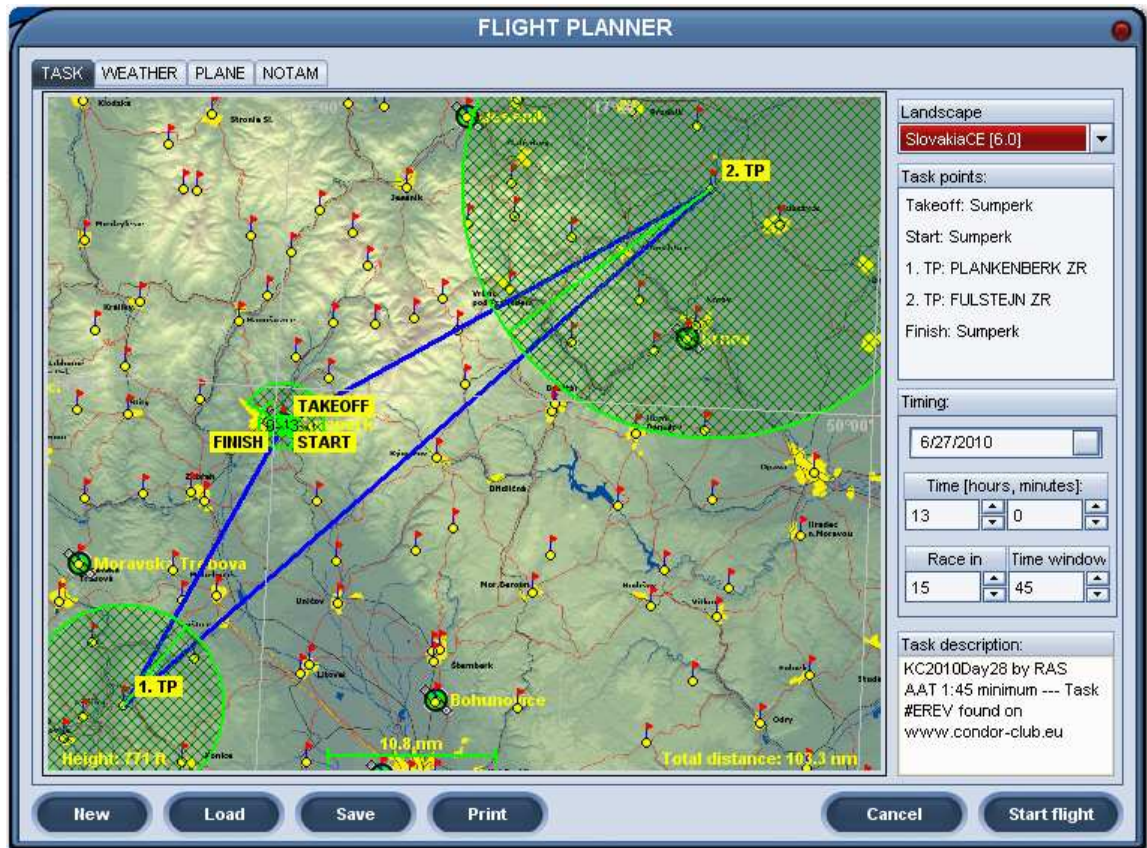Magazine web page (Soaring Magazine/Current Issue) by the time you read this.

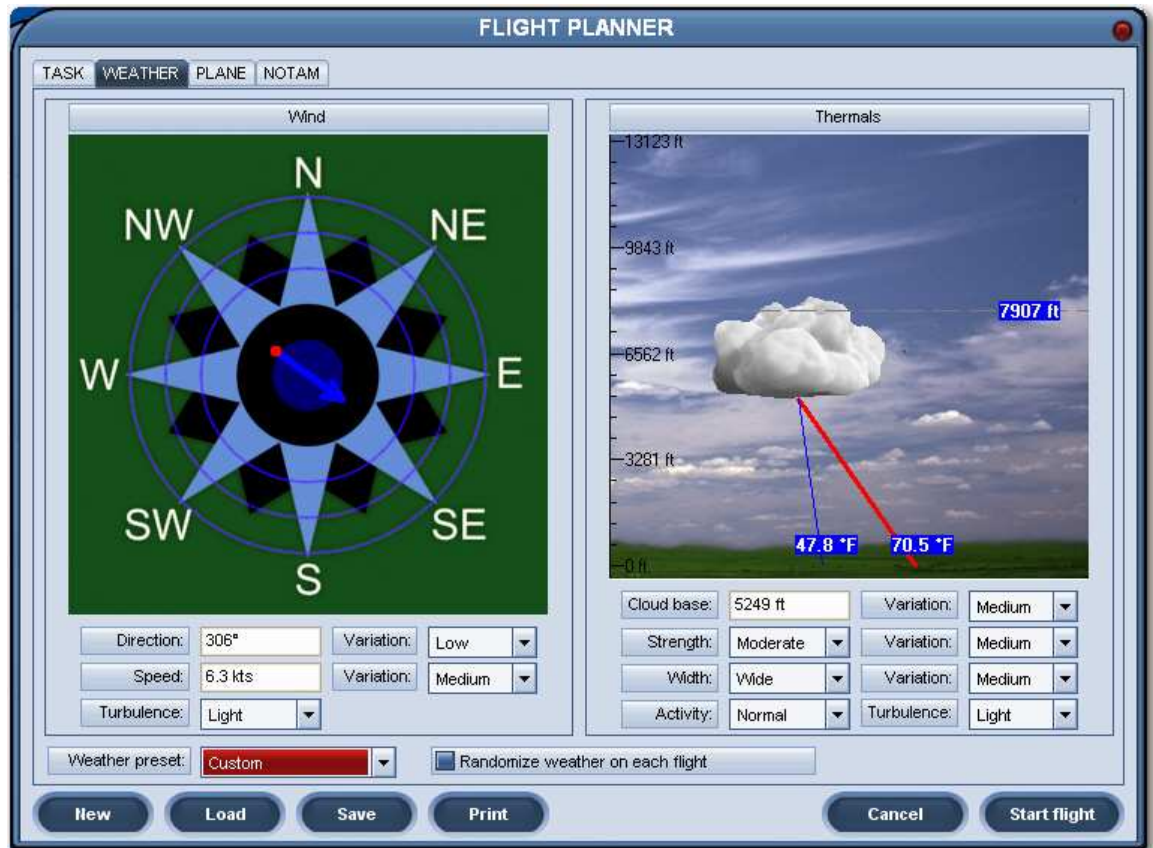Figure 5: Overall task layout
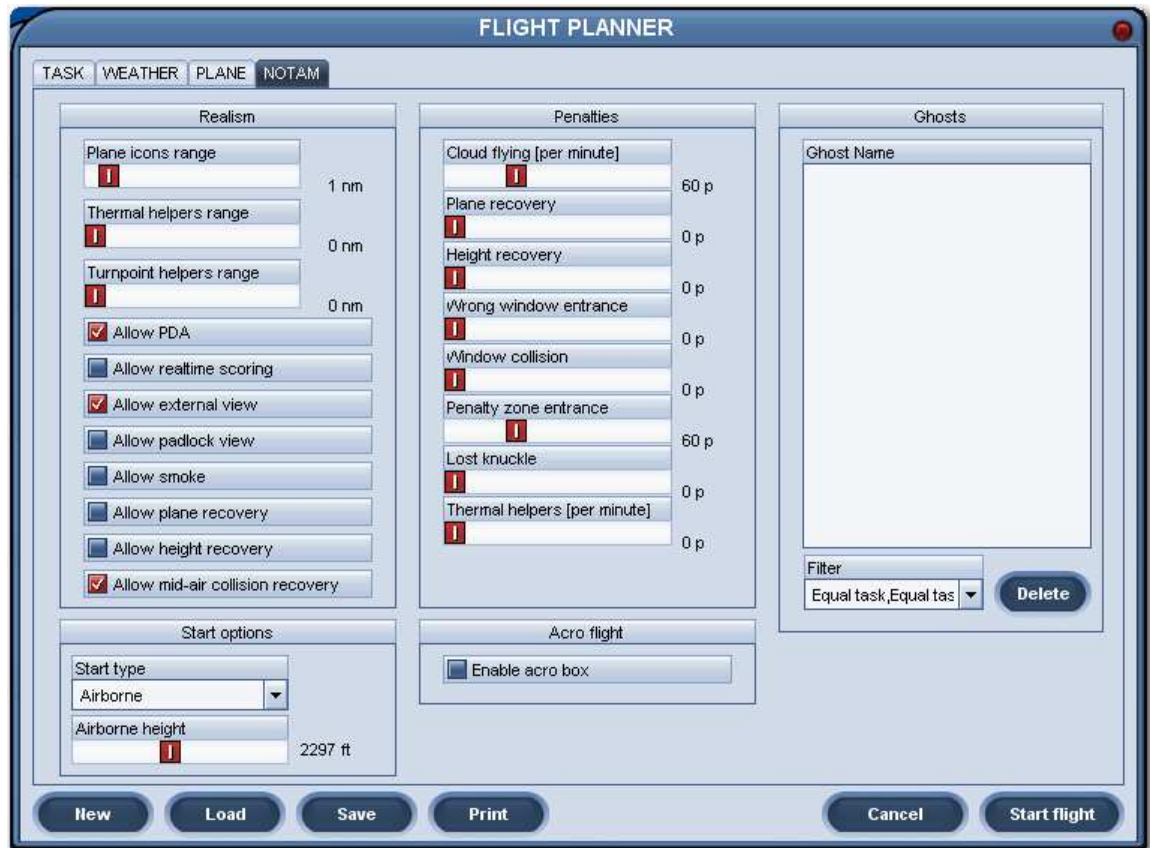
Figure 6: Task weather

Figure 7: Task NOTAM page

With the wind out of the northwest at about 6t, it is clear from the map that it would be good to stay on the west side of the high ground going into the second (north) area, so I decided to move the target point in this area to the extreme northwest corner of the circle, just north of the Jesenic airport. At my anticipated ballasted speed of 65-70mph, this means that I need to penetrate all the way to the back of the first (south) circle. The next few screenshots show the pre-task mobile target point setup in SoarPilot. Different navigation programs will have different ways of doing this, but the concept will be the same.

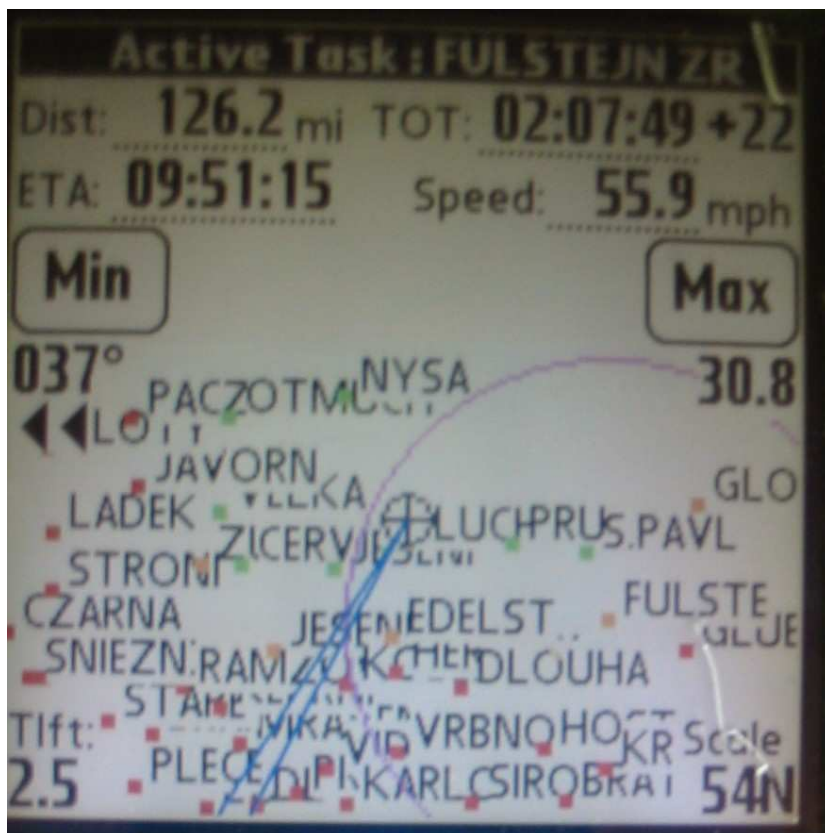**Figure 8: Area 1 initial target point**

Figure 9: Area 2 initial target point

Flying the task itself is pretty straightforward. Condor's internal PDA is pretty much ignored, and the external PDA is used for all navigation functions, just as you would do in your real-life cockpit. The following two figures show the situation just before turning in area 1, and just as I approached the target point in area 2. Note in area 1, the PDA is predicting that I would finish the task 19 minutes over time (the TOT + 19 at the top center of the screen), so I had to make a minor adjustment to the target point in area 2 to make things work out. In area 2 just before the turn the PDA is predicting an on-time arrival with 40 miles to go. As it turned out, I actually arrived about 4 minutes over time – just about right.
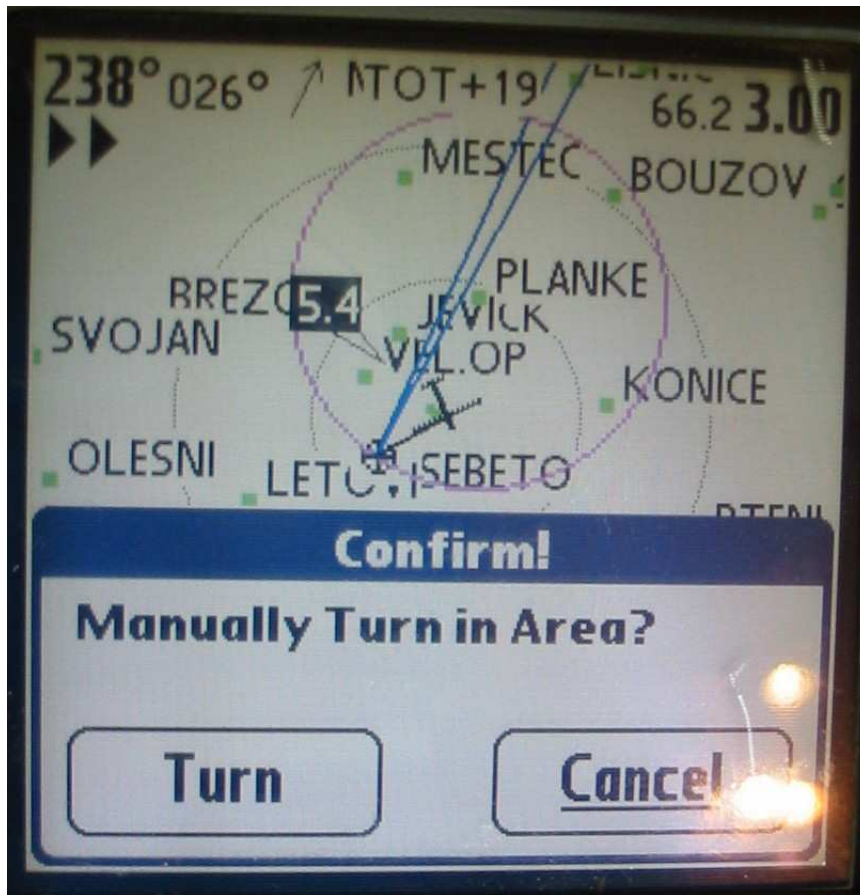

Figure 10: Just before turning in area 1

Figure 11: Just before turning in area 2

Although the SoarPilot/Tungsten T/Bluetooth arrangement I used for this example is particularly convenient and effective, any Nav program/PDA that will accept an external NMEA stream will work just as well. If your PDA supports Bluetooth but your nav program doesn't, you may still be able to use a Bluetooth connection if the PDA will internally route the Bluetooth so that it emulates the normal Comm1 serial port. Otherwise, you may have to figure out how to connect the Condor PC to the PDA via a serial connection. Many of these external PDA connection issues have already been solved by Condor pilots, so you might check the Condor hardware forum at http://www.condorsoaring.com. As an example, check out XXX YYY's recent post "xxxxxxx" at [put link to post here]

Having the ability to use an external PDA with Condor only adds to the already large number of reasons to consider using Condor for serious cross-country training. In the modern world of cross-country glider racing, it is not sufficient to be able to fly well; the types of tasks being flown in today's contests also mandate that the successful pilot be able to extract the most information and help from their

navigation instruments. With the proliferation of PDA and navigation software, combined with the sometimes very steep learning curve associated with many navigation programs, becoming proficient with the nav package 'on the fly' can be a very difficult task. If the task of learning how to operate the PDA and/or nav software can be done in the evenings or over the winter, then those precious real-life cross country opportunities can be better spent trying to go farther faster than by trying to figure out why that darned nav program refuses to cooperate at a critical juncture in the flight.