Using an External PDA with Condor
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Figure 1: Condor simulator and Naviter Oudie/See You Mobile (SYM)

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 the outside
world via a serial, USB or Bluetooth port. 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.

Why use an external PDA with Condor

There are two 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 auto-sequence 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 about a hundred times harder to handle 'on the fly'.

Example platform: Naviter Oudie/See You Mobile

When I was at the Llano, Texas (Region 10) regional contest earlier this year, I happened to meet up with my CCSC buddy Dave Coucke who had recently moved to Texas and was also flying in the contest. He had a brand-new Oudie/See You Mobile (SYM) setup and was still trying to learn how to use it. He had played with it a bit in simulator mode, but somehow that wasn't helping much as he tried to input a real TAT/AAT task and get information out of it. As I watched him struggle, I thought to myself – "Boy, I'll bet it would be a piece of cake to run the Oudie from Condor, and

that would make a great Condor Corner article". I had already planned to talk about external PDA/PNA in my November Condor Column, and in fact had already written most of it using the popular (and free) SoarPilot navigation program written by Paul Gleeson and Mark Hawkins (http://www.soaringpilot.org). However, I decided to see if I could do the same thing with an Oudie setup, and Paul Remde of Cumulus Soaring (http://www.cumulus-soaring.com) graciously loaned me his demo unit for the project. This would be a 'two-fer' for me, as not only would I get a column out of the deal, but I would also have the opportunity to evaluate the Oudie/SYM package for myself. Prior to writing this article I had never used an Oudie or SeeYou Mobile.

Oudie/Condor configuration

My setup for using Oudie/SYM with Condor is shown in Figure 2 below. Note that the cable connection is for DC power to the Oudie only – the GPS connection to my laptop and Condor was accomplished via Bluetooth.

Figure 2: Oudie and DC cable

To enable a Bluetooth connection, your PC or laptop's Bluetooth adapter must be configured to create a 'Bluetooth COM port service' (see Figure 3) and then Condor's external NMEA output must be enabled to use this port. On my laptop, the Bluetooth COM port service appears on COM 7 as shown in Figure 4 , so I configured Condor via its Setup/Options page to use COM 7 (Figure 5).
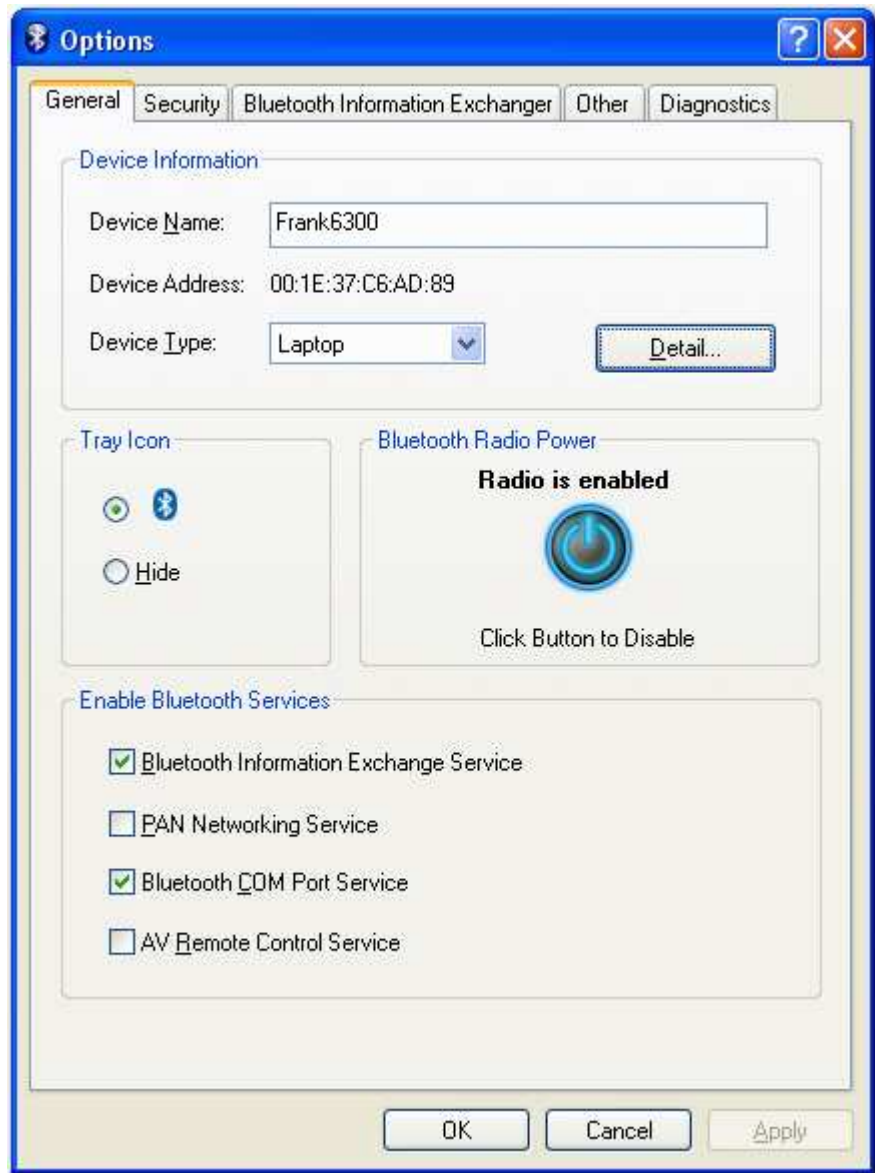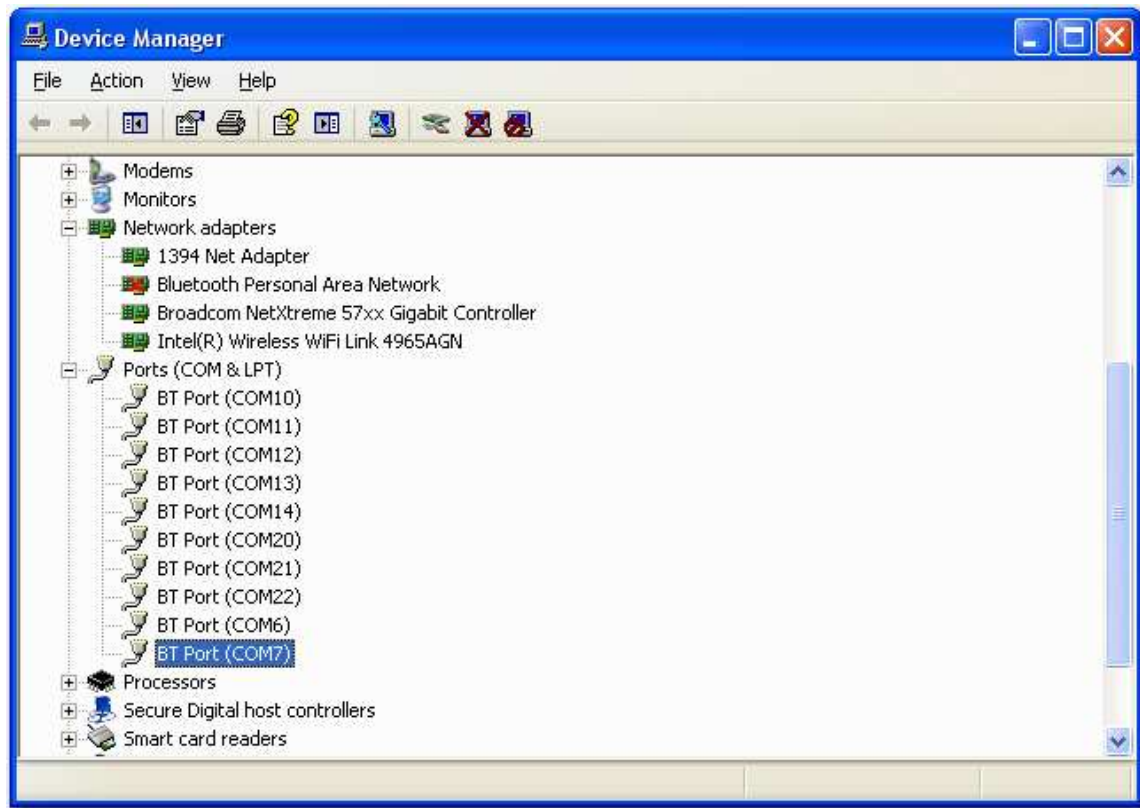
Figure 3: Enabling the Bluetooth COM port service

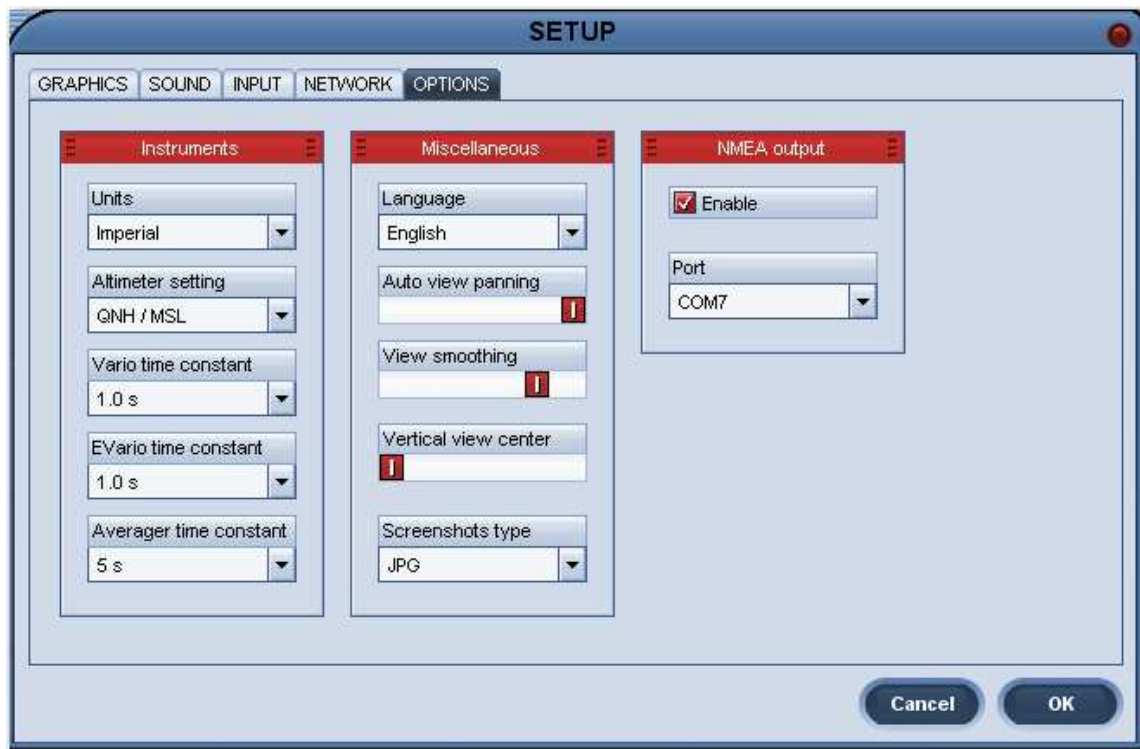**Figure 4: Windows XP Pro device manager**

Figure 5: Condor Setup/Options page

The next step in the process is to pair the Oudie to the PC using Bluetooth. See You Mobile (SYM) makes this very convenient, as it incorporates the entire Bluetooth stack into the program. The following figures show the setup sequence. At the Settings → Input dialog (Figure 6), click on 'Bluetooth…', which shows the warning dialog (Figure 7) – just click 'YES' here.
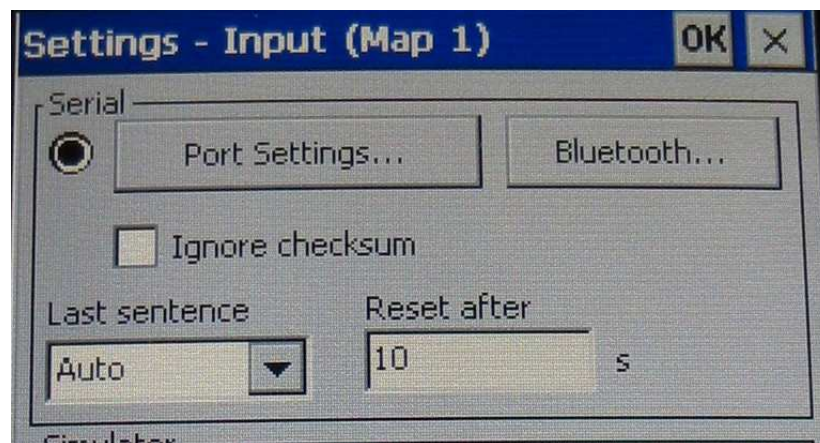

Figure 6: SeeYou Mobile NMEA Input Config

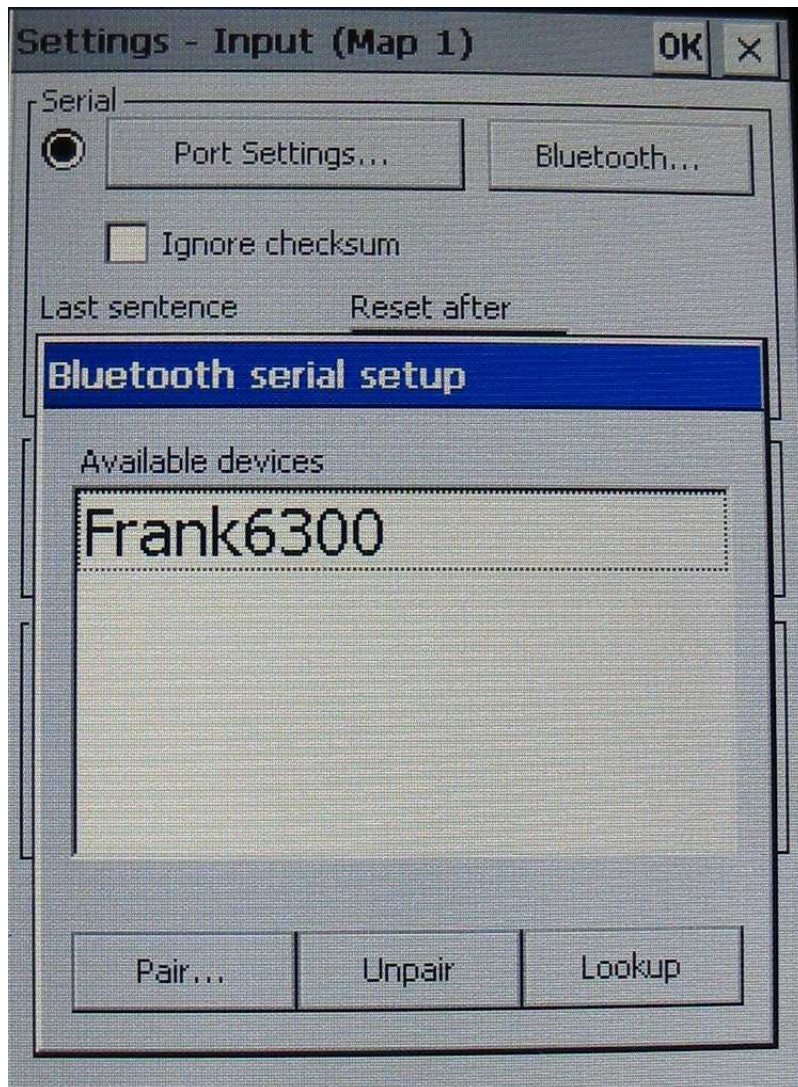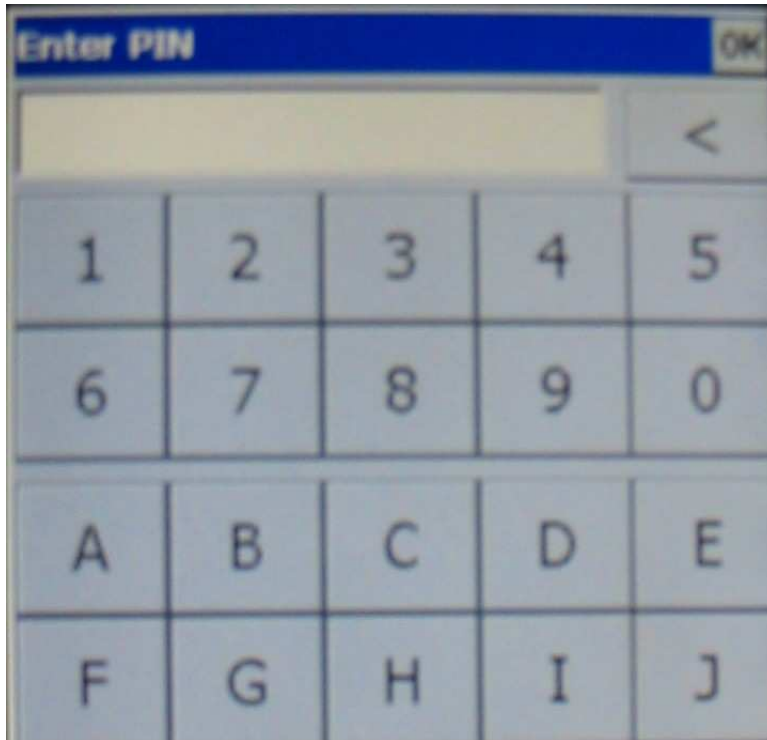Figure 7: Warning dialog – just click YES

Figure 8: Bluetooth discovery dialog

When 'Yes' is selected from the warning dialog, SYM brings up a Bluetooth discovery dialog (Figure 8 above) showing all available BT devices. In this case there is only my laptop, i.e. 'Frank6300'. Select this by tapping on it, and then click 'Pair…'. This brings up a dialog asking for a PIN number for pairing BT devices (Figure 9) – just click 'OK' here without entering a PIN number. Now the Oudie is paired with my laptop, and as soon as GPS data becomes available, it will be used by SYM just as if it were coming from a BT-enabled GPS device in your real-life glider. Figure 10 shows the SYM GPS status page, indicating that SYM is receiving a good GPS signal with 12 satellites visible. The coordinates in this case correspond to a position about 2000' directly above Mifflin County regional airport in Pennsylvania.

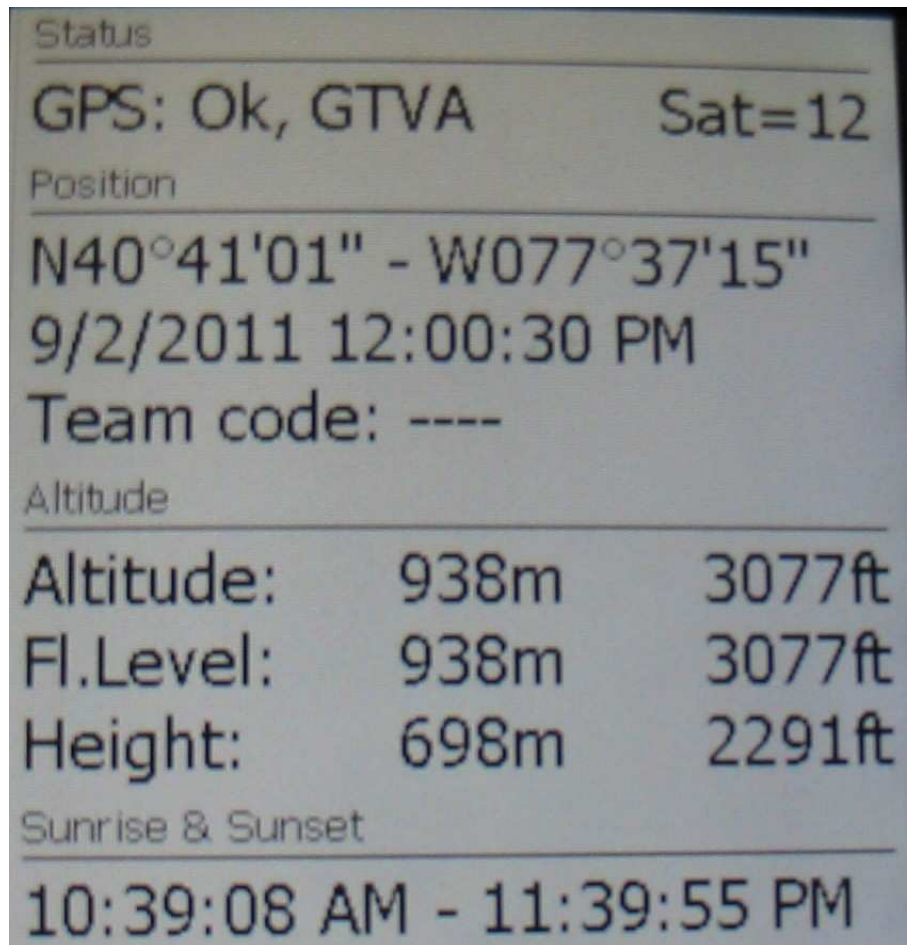**Figure 9: Bluetooth PIN entry dialog**

Figure 10: SeeYou Mobile GPS status page

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 Mifflin scenery used for this example is located at 'C:\Program Files\Condor\Landscapes\Mifflin\Mifflin.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 small 90 sm TAT I constructed in the Mifflin soaring area. The task layout is shown below in Figure 11, along with a portion of the corresponding flight plan (.FPL) file viewed in an ascii editor;

Condor doesn't do TAT tasks natively, so the .FPL file must be manually edited to create turn areas larger than 5000 meters . To create the Mifflin task depicted here, I manually changed the highlighted values as shown. This is easy to do using any text editor such as NotePad or TextPad. Figure 12 shows the weather for the task, and Figure 13 shows the options selected on the NOTAM page. As I do for many of my training tasks, I set the 'Thermal Helpers' range to 5 miles so that students can avail themselves of this feature if necessary.
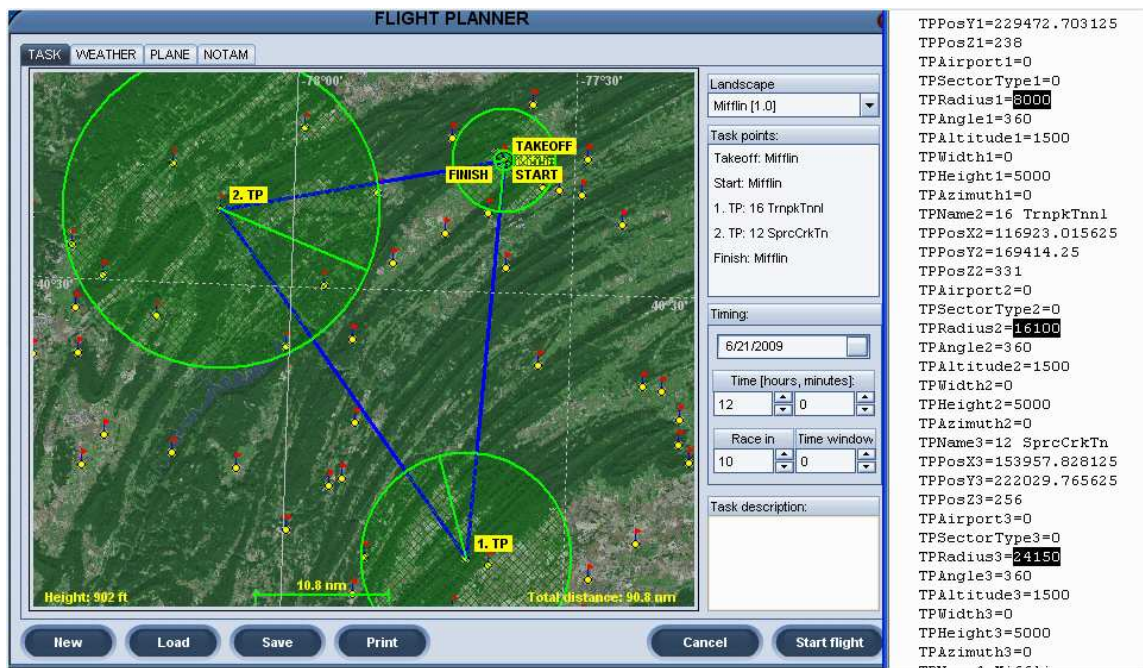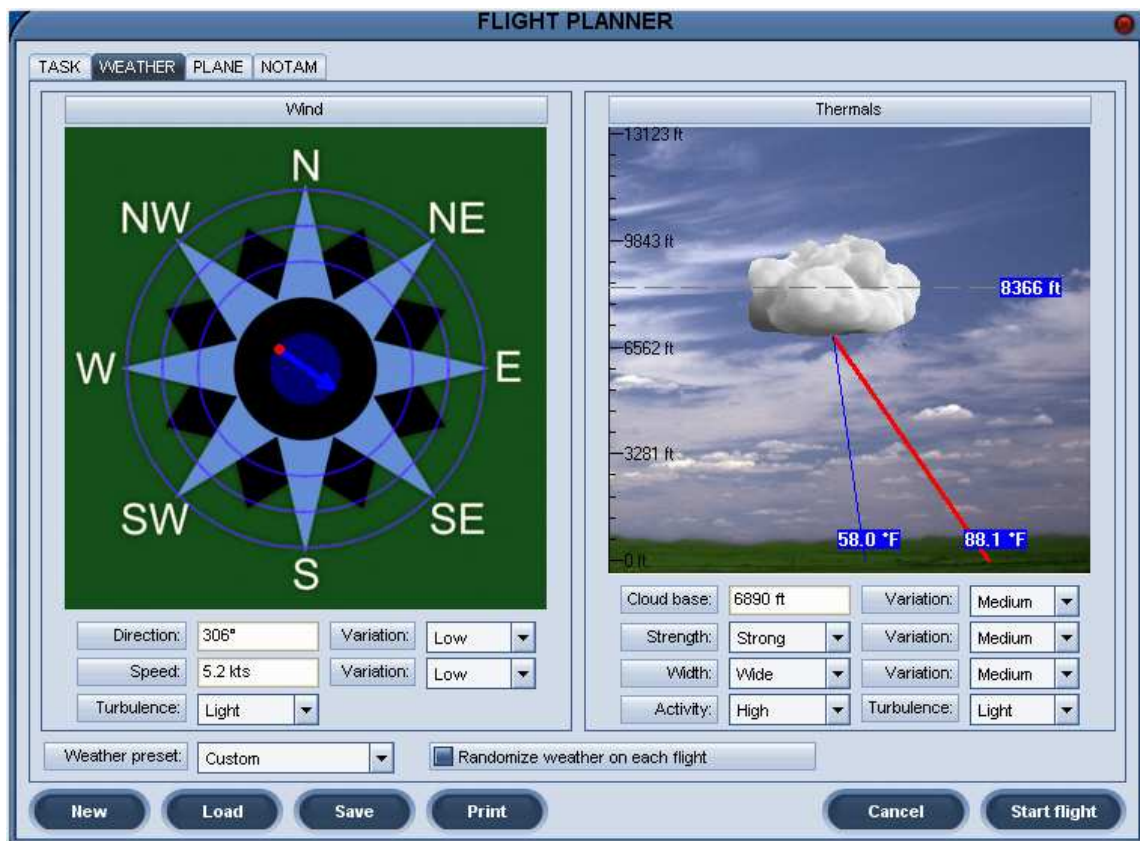

Figure 11: Overall task layout
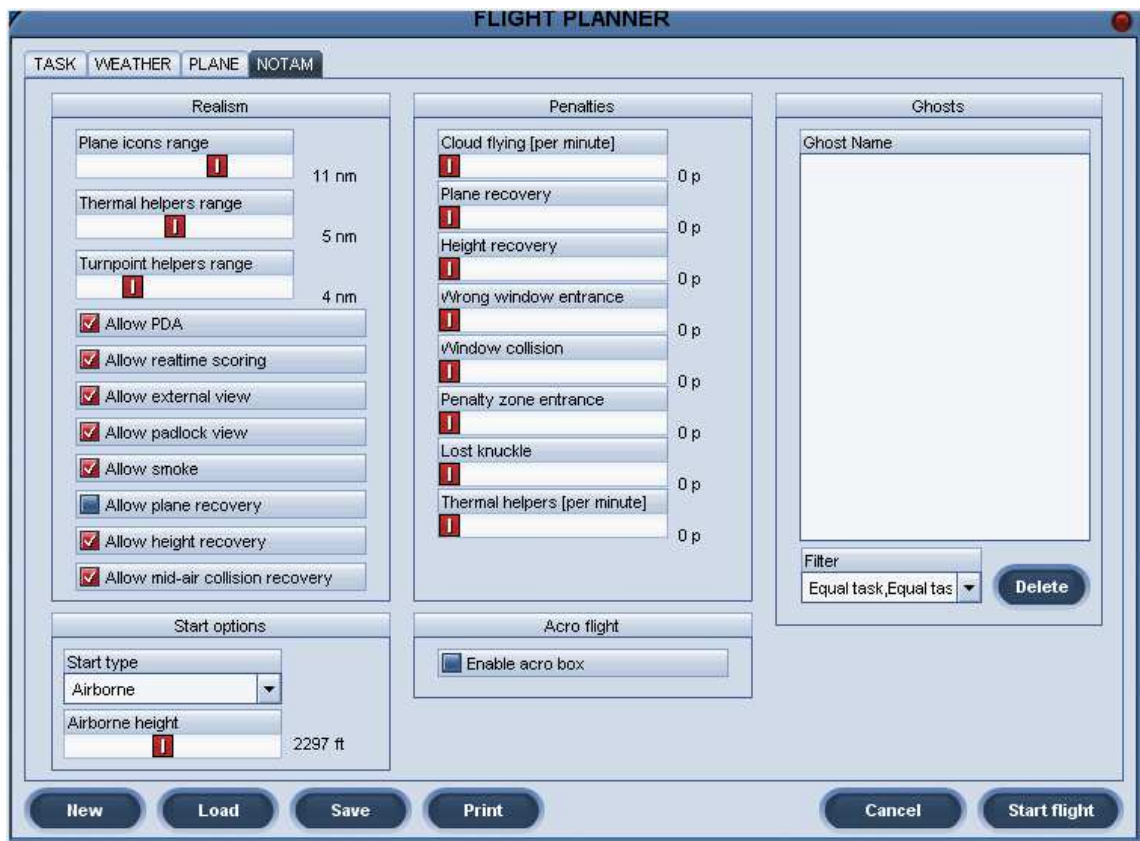
Figure 12: Task weather

Figure 13: Task NOTAM page

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. By the time I had gotten started and was just entering the first turn circle (See Figure 14 below) I had already figured out a lot about how to operate the Oudie and SYM. For instance, it was apparent that I was going to come home way under time with the default mid-circle turn points, so I had to figure out how to move the turn points around in SYM (not obvious, but not too hard either). This is a bit easier to do in Condor than in real life (at least in 'Free Flight' mode) because you can hit the 'P' (Pause) key and stop the simulation and the GPS NMEA stream. The Oudie/SYM gets all its timing information from the GPS NMEA stream, so it pauses too – neat! Anyway, I was able to figure this out fairly quickly, and moved the turn point in both areas to their respective maximums. One thing I wasn't able to figure out until after the flight was over was why the 'Tsk. Sp' NavBlock (3rd from top on the right side) showed '---' throughout the flight. This is the sort of thing

that would just drive me nuts on a real flight with points on the line, but here it was just a minor annoyance (turns out this data block doesn't display anything until after the flight is complete, and ***then*** it displays the task speed – go figure). Figure 14 also shows the 'GoTo Next' on-screen button that appears when the glider first enters an area. Figure 15 shows the situation after turning for home in area 2. Unfortunately, even after having maxed out both turn areas, I am doomed to come home about 9 minutes early (top datablock on the right hand side) – bad call by the CD! ;-). Also, as noted above, the 'Tsk. Spd' data block is still blank. Figure 16 shows the situation just after finishing the task. Now both the 'tDelta' and 'tDist' blocks are blank (that's a bit annoying – I would have liked to know the finish over/under time), but now the 'Tsk. Sp' data block is active and showing the average task speed.
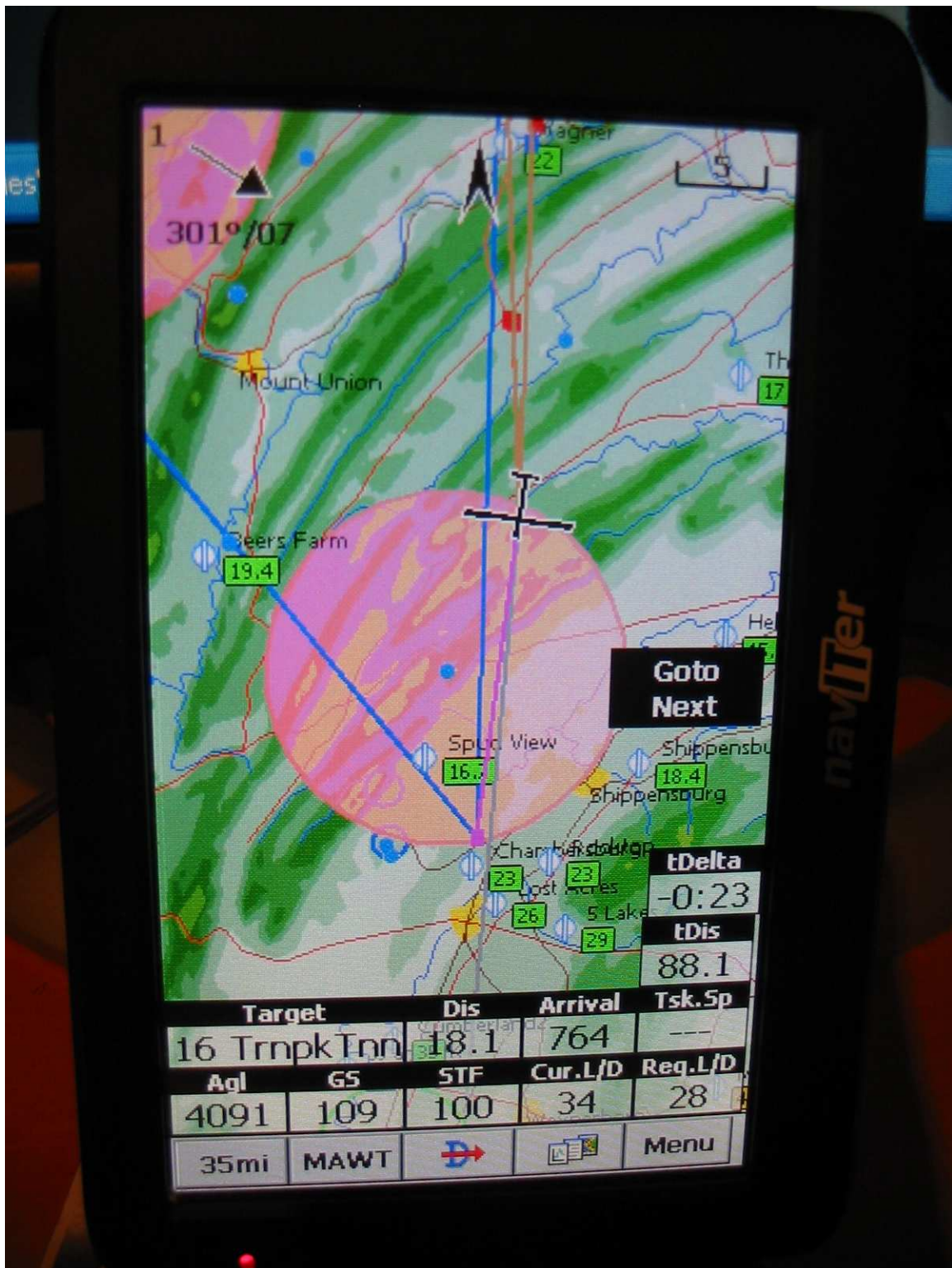
Figure 14: Just after entering the first turn area

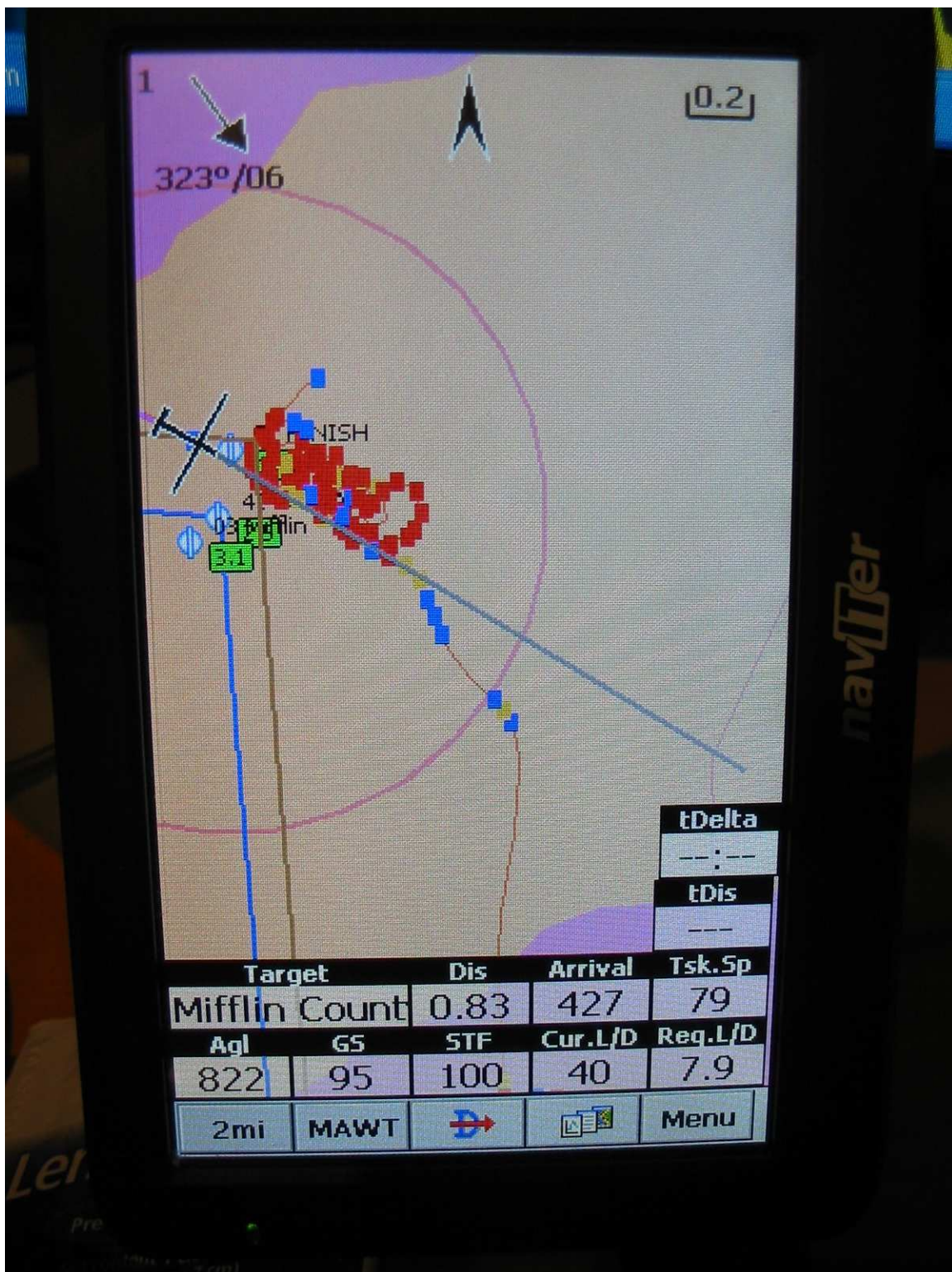**Figure 15: Just after turning in area 2**

Figure 16: Just after finish

Although the Oudie/SYM/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 Fons de Leeuw's recent post "Extremely cheap Condor > PNA (LK8000) adapter hack" (http://forum.condorsoaring.com/viewtopic.php?f=15&t=12704) and "Condor and PNA – How to connect? Via USB?" (http://forum.condorsoaring.com/viewtopic.php?f=15&t=12619)

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 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 these programs, becoming proficient with the nav package 'on the fly' can be a very difficult task. If 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" instead of trying to figure out why that darned nav program refuses to cooperate at a critical juncture in the flight.

Note: The flight plan (.FPL), flight track (.FTR) and IGC files for this article are available on the SSA Soaring Magazine's 'Current Issue' page at the SSA website. In addition, I have also included the version of this article that features the free SoarPilot program on a Palm Tungsten 'T'.