

Predicting a Log Race... *the Easy Way!*

By Tom Collins

I've been doing Cruiser Navigation predictions since the early '70's. Back then it involved laying out a chart on a large table with good lighting and a set of charting tools including straight edge, engineer's scale, protractor, magnifying glass, and dividers. It was important to wear long sleeves so that any moisture from your arms wouldn't transfer to the chart and cause it to swell thereby distorting the distances. Handheld calculators were not yet in common use so we had to do the math longhand!

Things are different now. I've been using Rose Point Navigation's **Coastal Explorer** to do my log race predictions for a number of years and doing so takes a lot less time and gives far better accuracy than was ever possible using the older methods. In fact, the total time from first opening the contest instructions to printing out the predicted times can be less than a half-hour for some of the simpler contests.

The other day a relatively new logger asked me about my procedures for doing predictions using Coastal Explorer (CE) and, as I've developed a routine over the years, I felt it might be worthwhile to share it with all of you. So here goes.

To begin with, bring CE up and running then using the *Main Menu* button (upper left), select the *Planning Mode* and set up your vessel's characteristics under *Configure Vessel and Electronics...* It's important to accurately enter your vessel's nominal speed as well as the port and starboard turning radius. For my boat, which is a twin screw running at 8 knots with a perfectly zeroed rudder angle indicator, I use 57 yards for both port and starboard turns. Single screw boats will either have different values or use different amounts of helm for each turn direction. Under *Options - Measurements (Main Menu)...* set up English measurements. Because our contest instructions typically specify degrees, minutes, and seconds for location of any virtual buoys, I select that option.

"Synchronize" CE by clicking the double arrows located in the upper right menu bar so that the latest program and charts, both raster and vector, are downloaded and installed. Let me interject here that although we are all familiar with the NOAA raster chart format, and it is the "format of choice" for contest instructions describing the route to be followed, the vector format offers some very important advantages to doing predicted logs. Vector charts have inherently more accuracy than rasters and can be zoomed for extremely accurate placement of course lines. If you aren't presently using vector charts, in addition to rasters, you should be.

Now it is time to actually lay a course down. Open a new clean chart from the *Main Menu* by clicking *New*. Then, while in raster format and zoomed out some, click *New Route* on the menu bar at the top of the chart (you might have to click anywhere on the chart to bring up the menu bar) and construct the approximate route by clicking close to

each waypoint called out in the contest instructions. At this point accuracy is not important. All we're trying to do is to quickly and coarsely lay out the route to see if the course waypoints have been correctly determined and note any special course deviation required. After clicking the last waypoint, hit the Esc key to terminate the route leg laying activity.

Then left click on one of the leg lines, and go to the route *Properties* menu on the right side of the screen. Give the route a name (typically the name and year of the contest), select *Predicted Log Race* under *Waypoint Style*, and check the three boxes: *Direction Arrows*, *Display Leg Range Bearing*, and *Display Leg Extensions*. Also compare the Total Length with the stated course distance in the contest instructions to verify they are close. If not, check to see if a waypoint was missed or some other mistake made. If you need to add a waypoint or delete one, place the cursor on the route line and right click the mouse. A pop-up list of options will appear.

A second iteration refines the route accuracy. Switch over to the vector chart display by selecting the tool icon (small wrench) in the lower left corner of the chart and under *Chart Types* select *Vector Charts*. Place the cursor over the first point on the route and double left click the mouse. This centers the chart on that point. Then zoom in using the mouse wheel (or if you don't have a wheel, repeatedly press the + (or -) key on your keyboard). While zooming in, the chart may have to be re-centered. By left clicking the beginning of the route line, the waypoint *Properties* box will be displayed on the right side of the screen. Enter the name of the waypoint (such as Buoy R4 Start) and choose *Circle* for the *Icon*. Then click the *Range* tab and set the *Display Count* to 1, and the *Radius* to the intended passage distance from the object, typically 15 yards (one boat length) for buoys - more for land objects, or whatever the contest instructions stipulate. Leave the *Line Thickness* set to 1 and click the *General* tab.

Now accurately position the route waypoint relative to the checkpoint on the chart. Position the cursor over the waypoint at the beginning of the course line and press and hold the left mouse button. An orthogonal dotted line will illuminate at right angles to the course. Position the point where this line intersects the range circle exactly over the buoy or other desired mark on the specified side by dragging it with the mouse. You have now positioned the starting waypoint of the route to the chosen side and distance off of the mark, and exactly abeam when on the course heading. If not already fully zoomed in, do so now and make any final precision adjustments. Now go over to the waypoint *Properties* on the right and click the *Lock Position* box. As this is the start point, also enter a starting time allowance by entering 6 seconds in the *Layover Time* field to account for the added time required to accelerate from a standing start.

Zoom back out and repeat the above procedure for the next mark, with the exception of *Layover Time*, which is left as zero. You'll notice that, as long as the vessel *Turn Radius* (Main Menu – Configure Vessel and Electronics – Performance Characteristics) is set to something other than zero, the actual track of the turn is plotted around the mark. CE computes the total leg distance including the distance covered by the turn, thereby accounting for turn time. No further allowance for turn time is needed.

Continue refining each mark until finished, accurately defining the passage of each mark.

Then place the cursor on a midpoint of any leg line and double left click the mouse. This will bring up a table that shows the Route Details for each waypoint. This table includes automatically computed leg distances, times, speeds, and headings. Click *Options* at the upper right of the table and click *Start at First Waypoint and Show ETA to the Second*. Then click *Set Speed of All Legs* and enter the baseline racing speed if different.

Click *Set Departure Time* at the top of the *Route Details* table and enter the *Planned Departure* date and the start time if specified; otherwise, enter an even starting time, say 0900. Return to the table and check the finish time and then adjust the starting time appropriately so that the specified common point time is correct.

If you want to include speed allowances for current on any leg, change the speed for that leg to reflect the boat speed adjusted for current by placing the cursor on that leg speed in the table, double clicking and entering a new value. Coastal Explorer current predictions can be displayed on the chart by right clicking on a clear area of the chart and then clicking *Tidal Current Prediction* in the pop-up box. I prefer to do this in vector mode because the chart is less cluttered. Set the time to the midpoint prediction for the leg in question. As speed changes are entered, it is important to adjust the starting time accordingly. I won't go into further detail on doing the current predictions here. That is fodder for another article.

Just about finished. Check everything over to be sure you haven't made any mistakes and then print out a copy of the charted course and the prediction table. With the *Route Details* table displayed, click *Options* on the upper right corner of the table and click *Print*. This brings up a preview of the chart with course and the prediction table. Click *Print* and a worksheet prints out ready to use for filling out the official Predicted Log entry form. CE doesn't print the first line with the starting mark info so write in the name, ETA (start time) and latitude/longitude on the printout.

Save your work by clicking *Main Menu - Save As* and naming the file accordingly. You can then come back to this file and easily make any subsequent adjustments desired.

What a joy this relatively simple procedure is. Compared to the effort involved in laying out the course using pencil and chart, with all the required measurements and calculations, this is almost child's-play! Plus, it's far more accurate. So enjoy – do your predictions in a fraction of the time and with utmost accuracy. Then your only remaining challenge will be in the execution. Good Luck on that!!!