

## USING COASTAL EXPLORER UNDERWAY ON A NAV RALLY

In the old days of Predicted Log Races only compass and tachometer were allowed. If you're still running those, then this article isn't for you. But if you're running the modern Cruiser Navigation Rallies and chart plotters are permitted, then I've got a few tips for enhancing its use.

These tips are specific to using the Coastal Explorer (CE) charting program while underway. Coastal Explorer is the preferred program for use by our cruiser-navigators because it features course plotting with a specified turn radius and includes the turn distance in the predicted distance, thereby simplifying the otherwise difficult task of including turn-time allowance in predictions. Coastal Explorer is available at special pricing to NACA members. See their ad on the rear cover of the Cruiser Log found on the News tab of NACA's [navrally.org](http://navrally.org) website.

We'll assume that you're already proficient in laying out a route and preparing the prediction using Coastal Explorer. If not, then you might want to review my article on 'Predicting a Log Race... *the Easy Way!*' on the NACA website on the Cruiser Navigation Education and Training tab [http://www.predictedlog.org/cruiser\\_navigation\\_education\\_and\\_training.aspx](http://www.predictedlog.org/cruiser_navigation_education_and_training.aspx). Also check out the CE educational videos at: [Rosepoint.com/support/coastal-explorer/videos.html](http://Rosepoint.com/support/coastal-explorer/videos.html).

Assuming you've done your predictions using CE, now it's time to run the course and see how well you can make good on those predictions. You could just transfer the course waypoints to any GPS based plotter and follow the route guidance information it provides. However, because of the Predicted Log plotting feature of CE where properly radiused turns are applied to the course, following the CE plot should give more accurate results; and that's the objective in Cruiser Nav Rallying. If you don't have a permanently installed computer and display for CE, then you can use a laptop with CE and GPS supplied from a USB GPS Receiver available for under \$15 (Amazon).

Set up the CE instrument panel with as a minimum the following: Active Waypoint Name (WP), Range to Waypoint (RNG), Bearing to Waypoint (BRG), Course Over Ground (COG), Cross Track Error (XTE), and Reset XTE. Display the contest route on the screen.

When ready to start position the boat at the charted Start waypoint and confirm that you are correctly positioned relative to any visual checkpoint. For a standing start we typically add a 5 or 6 second allowance in the predictions to account for time lost in accelerating from a stop<sup>1</sup>. With CE -3 this was simply inserted as a layover time on the Start waypoint properties. Unfortunately, CE-4 it does not apply any layover time entered for the first waypoint<sup>2</sup>. The workaround is to enter a 'Layover' waypoint a short distance from the start on the first leg and enter the layover time on its properties.

Underway adjust the heading so the COG is the same as the BRG and make minor adjustments to maintain the XTE at zero. While we're only addressing course following here, of course it is

also necessary to adjust the throttles to maintain the predicted speed accounting for any wind, current, or crab.

Approaching a checkpoint most rules require that a physical mark be called visually, regardless of its electronically indicated position. So minor corrections to the course may need to be made to satisfy that requirement. When a virtual (non-visual) waypoint is to be called a problem that will be noted in CE is that the distance to the waypoint will automatically switch from the active waypoint to the next waypoint 100 yards before mark is to be called. This can be disconcerting if the skipper was depending on calling mark when the RNG distance fell to zero because the distance to the next mark is now displayed. The switchover distance can be changed to zero by setting the Arrival Circle Radius to zero on the waypoint properties. The problem with that is that switchover won't occur unless the XTE is zero when the waypoint is passed - not likely. The best way to determine the time of mark on a virtual waypoint is by reference to the position of the boat symbol on the chart display. In order to enhance the precision, keep zooming in by pressing the plus button as you approach the waypoint and call mark when it is displayed exactly abeam.

If there is a substantial turn following the mark, then CE can be useful in executing the turn and evaluating quality of the maneuver. Be sure you have tracking turned on by right clicking on the boat and Enable Tracking. Because a boat can't accelerate instantly into a turn, experience has shown that rapidly moving the rudder to the desired turn angle two or three seconds before calling mark will help the boat to follow the curved course plot more accurately. Verifying the boat correctly follows the curve helps to verify the vessel's Turning Radius is correct in the CE Settings<sup>3</sup>.

Another problem is that even though the route properties have been set to Waypoint Style: Predicted Log Race, when the next waypoint is automatically activated upon reaching a waypoint, a new course is automatically plotted directly from the charted waypoint to the next<sup>2</sup>. The solution is to follow the curved course track to the new heading then reset the cross-track error to zero by either hitting "X" on the keyboard or the Reset XTE button on the instrument panel.

Enjoy Cruiser Nav Rallying!

<sup>1</sup>To determine the exact standing start time allowance for your vessel, simply run the measured mile from a standing start and note the time difference from a running mile.

<sup>2</sup>Coastal Explorer programmers have been alerted to this and may develop a fix.

<sup>3</sup>Using the CE track plot to determine the Turning Radius is simply a matter of making about three continuous turns at your predicted speed for a given rudder angle. Likely, rather than a circle, the resultant plot will be a spiral due to current. Measure the diameters of the circles perpendicular to the direction of the current using the Range/Bearing Line tool on CE. Average the diameters and divide by two to determine the radius.