



Getting More Out of Your S57 Chart

By Bill Bergmann

We recently sat down with Dr. Lee Alexander of the University of New Hampshire to review our current S57 production and display capabilities. Dr. Alexander is actively involved in a number of committees relating to electronic charting, so we were able to receive some insight into trends in this area. As a result of this meeting, we have added some functionality to the encEdit program which hopefully will make the S57 electronic chart a more useful product for emerging needs.

DYNAMIC CHARTING

You have collected your data, processed it and eventually placed it into an S57 Chart. What you have, besides a chart in a format digestible by diverse systems, is basically a snapshot of hydro-graphic data, that is the conditions of an area at some point in time. The acceptability of such a product, of course, is dependent on the propensity of the contained data to change. Land boundaries generally change very slowly over time, as do entities such as elevations and roadways. More dynamic is data related to ocean depth. Depending on the region represented, for instance the Mississippi delta in New Orleans, the survey data can be nearly obsolete in a few short weeks. The only course in such a case is to collect new data. The most efficient way of disseminating such updates, as mentioned in previous articles, is the production of lightweight S57 overlays containing naught but the soundings.

The most dynamic factor, for nearly all areas covered by electronic charts near shore, would be tidal influence. The sounding listed in your chart is always tied to some basis, e.g. mean low water, highest astronomical tide, etc. There are approximately 30 variations available in the S57 standard. Now for such tidal dynamic areas, a sounding at some location will vary to some extent, often dramatically, over a period of time. What the mariner needs to know is 'Is it safe for my ship to be in an area at a particular point in time?'. The encEditor, to aid this need, now allows the input of a tide component. When activated, depth areas, contours and spot soundings are displayed with tide factored in. The result is a truer representation of the conditions in and around the mariner's ship.

CONTOUR PLANNING

With the addition of dynamic charting, the door has been opened for the creation of a contour planning tool. In the dialog in Figure 1, there are options to set the low, safe and deep contours based on the draft of the vessel and a safety margin. The displayed chart updates just as if you had modified the low, safe and deep contours directly. The advantages to our approach is a temporary override of the default settings and a better description of how the contours relate to the boat. The tool also takes the vessel's height above the water line into account. The software can use this to search the chart for problematic areas, e.g. A bridge span without enough space for the vessel to pass safely beneath. All such detected problems are displayed in a report.

To run the check, simply click the VERCLR button. This is the 6 char code for the Vertical Clearance attribute of an object.

For both cases, that is ship draft and ship height, encEdit can be instructed to take tide into account or not. As it should be, you have total control.

FIGURE 1. *Contour Planning Tab in the S57 Display Options Dialog*

S57 Display Options

General Display | **Contour Planning**

Contour Planning Tool

Tide m (negative above gauge)

Keel Depth m

Safety Margin m

Ship Height m (above water line)

☐ Set Shallow Contour to Keel Depth and Safety Margin
Contour to Keel Depth plus Safety Margin

☒ Adjust Contours to Tide

	User Defined	Adjusted
Shallow Contour	0.0	-2.0
Safety Contour	2.0	0.0
Deep Contour	5.0	3.0

NEW VISUALIZATION

The IHO Standard known as S52 prescribes how an S57 chart should be presented. The colors chosen for representing depth areas were based in large part on making the electronic chart display look, on the whole, like a paper chart. For reasons lost on me, perhaps caprice on the part of the first cartographer and tradition ever since, the shallowest areas on a paper chart receive the darkest shade of blue, and successively deeper areas become fainter blue, heading toward white. As noted above, S52 carried this tradition to the screen. Besides being counter-intuitive (I did an informal survey of a number of people), Dr. Alexander had a number of solid reasons on why a better scheme might reverse this, such that darker means deeper. He also mentioned another Depth Scheme, based (it would seem) on of all things traffic lights. In this scheme, one ends up with three categories of Depth Areas. Unsafe - Red, Safe - Green, and Safe with Caution - Yellow. I was dubious at first, but after coding it and seeing the results, it is now my personal scheme of preference.

Another visual option, for the effect of 'less is more', is the removal from the display of superfluous contours. A contour attains this status if it is above the deep counter or below the shallow contour. It is real information but doesn't aid in the safe navigation of the vessel so much as take up screen real estate.

All new options are available in the Display Options dialog as seen in Figure 2. Included also in Figure 3 is a side-by-side of the new Depth schemes in action.

FIGURE 2. Expanded Display Options

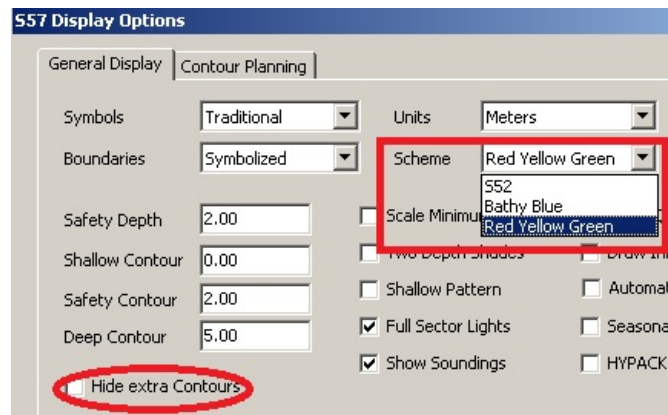


FIGURE 3. Depth Schemes: S52, Red Yellow Green, Bathy Blue

