

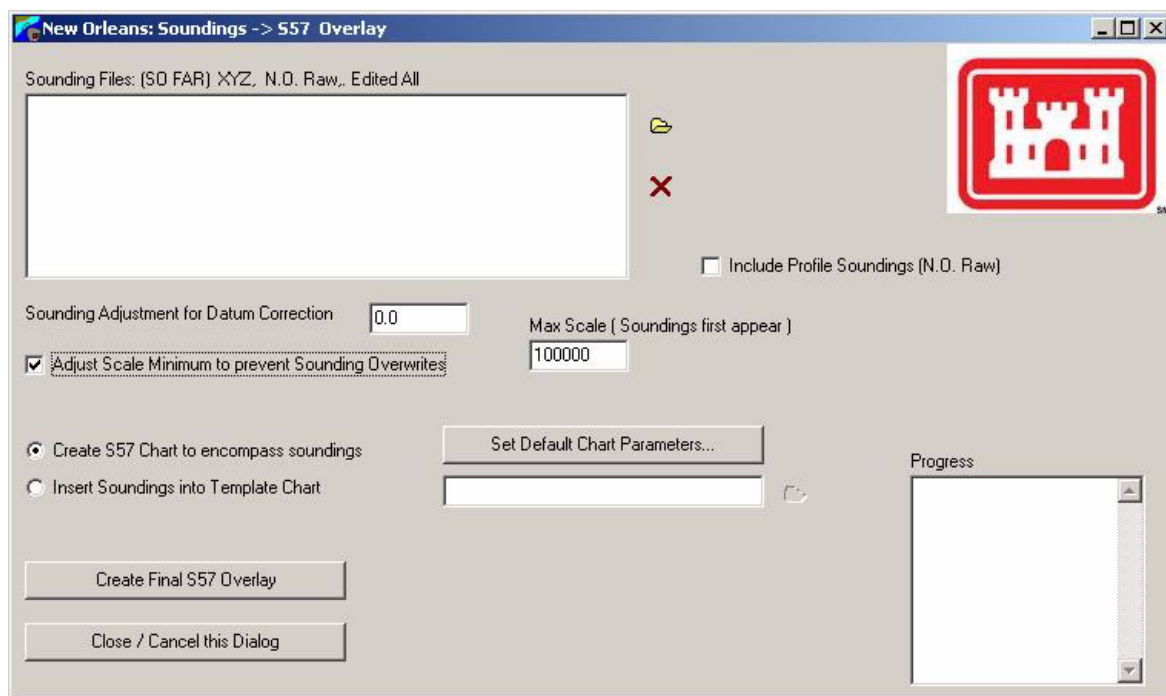


Sounding Overlays in ENC EDITOR

By Bill Berman

There is a new feature in the ENC EDITOR which allows for the rapid creation of a soundings only overlay chart. This option, found in the Processing menu, is called the New Orleans Overlay. The development was funded by the New Orleans Army Corps of Engineers as a means of distributing up-to-date survey information to mariners quickly and in a format their ECS or ECDIS systems can already handle. Selecting the menu item opens the dialog seen in Figure 1.

FIGURE 1. *New Orleans Overlay Dialog*



WHY SOUNDINGS ONLY?

The reasoning behind producing this type of end product is directed toward the final intent. That is, to distribute the most current sounding information to end users in the most efficient manner possible. Most Army Corps electronic charts, for various reasons, do not include soundings, but Mariners certainly can benefit from this information. Soundings also tend to be a continually changing entity in most navigable waterways, even more so than, for example, Buoys. An overlay chart then makes a lot of sense, as its purpose is to provide supplemental information to a chart display system. An Overlay file also tends to be quite small in relation to a base cell chart. A small footprint lends itself well to shore-to-ship transmission where smaller is definitely better. Such transmission could be an easy way to disseminate updates to passing vessels.

SOUNDINGS OPTIONS

The fuel for the overlay chart are soundings. The module can currently accept sounding information from the ubiquitous XYZ format, the HYPACK® Edited All format, and the New Orleans's Raw file format. For the latter, a check box allows Profile soundings to be ingested. An adjustment to all soundings can be applied by entering a value in the area is provided. This value is simply added to each sounding before it ends up in the final chart.

You can control when soundings will be displayed in an ECS/ECDIS by placing a check in the '**Adjust Scale Minimum to prevent Sounding Overwrites**' box. This activates an algorithm which attempts to ensure soundings are always fully readable by preventing them from overwriting one another on the display. Zooming tighter causes displayed soundings to diverge on the screen and opposite zooming causes them to converge. Given that any two soundings don't have exactly the same position in the world, there will exist a scale where they can be displayed such that they won't overwrite. The trick then is to have as many soundings display as soon as possible while maintaining readability. The algorithm tests for scales within a defined range.

The **Maximum Scale** (read as Zoomed furthest out) box controls the maximum Scale Minimum, or SCAMIN, value, which in turn dictates when soundings are first allowed to show. The **Minimum Scale** is inherently the compilation scale of the chart.

There is an S57 rule that no SCAMIN attribute value can be less than the chart's compilation scale. This is an unfortunate rule, as any sounding which hasn't found a scale for clear writing by the time the minimum scale has been reached will just be inserted into the chart at the minimum scale. If you need to read this over a few times don't feel bad, its confusing.

As a final nod toward being conservative, the algorithm will attempt to insert depths from shallowest to deepest. This gives least depths priority and thus the first chance to be displayed at the highest minimum scale.

CHART OPTIONS

There are two options controlling the chart where the soundings will end up.

- **Allow the routine to create a new chart**, which will be just large enough to encompass all the soundings.

To configure the chart parameters, click the 'Set Default Chart Parameters...' button and make your selections in the dialog seen in Figure 2.

The settings are maintained specifically for this dialog in its own persistent section of the encEdit.ini file. This means, any settings adjusted here won't affect the default chart settings used in other parts of the editor. This also means that you needn't configure chart options each time you create an overlay - they will be maintained between editor sessions.

FIGURE 2. *Setting the Chart Parameters*

- Another way to go is to use an existing S57 Chart as a Template. Load the template chart into the editor and insert the soundings into it. Using this method, you could actually produce a final chart which contains more than just soundings. The template chart will not be changed. Only a copy of it will be modified and ultimately saved to a new file name.

FEET OR METERS (OR FATHOMS??) ?

Whichever method is used, the processing uses both the Chart parameter settings and the active Geodesy to determine how to modify the soundings.

- The **current Geodetic Settings** will control in which units the soundings are stored. Select ENVIRONMENT-GEODESY in the menu to quickly check the active settings.
- The **Depth Units on the Parameters page of the Chart settings dialog** controls the units into which the soundings should be converted for storage within the chart itself.
- The **Display Units option in the S57 Display options**, controls the units in which the soundings should be displayed, in the final presentation. All conversions are handled automatically in the software.

The screenshot shows the 'Set Chart Defaults' dialog box with the 'Parameter' tab selected. The settings are as follows:

Parameter	Value
Horizontal Datum	WGS 1984
Vertical Datum	Mean lower low water springs
Sounding Datum	Mean lower low water springs
Compilation Scale	1000
Depth Units	metres
Height Units	metres
Coordinate Units	feet
Positional Units	Metres
Coord Mult. Factor	1000000
Sound Mult. Factor	10
Comment	

Note: The software only handles Feet or Meters for Chart storage. We couldn't find any documentation for encoding the two fathoms options.

FINISHING UP

The final step is to click the 'Create Final S57 Overlay' button. The program will prompt you for the target file name. It will then process the soundings, inserting them into the final chart which is written to disk, then loaded into the Editor and activated. This is handy to get instant feedback on the final product. Processing is very quick on a reasonable number of soundings; typically a few seconds will produce the final product. Even a large number of soundings (I tested with a million and a half) only takes about half a minute. This speed lends itself to experimentation with different SCAMIN values, so you can get it just as you like.