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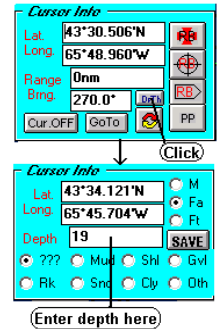
Using the Improved P-Sea BottomBuilder Option

Before you can build or rebuild the bottom you must have the data to do it with. With WindPlot, this is done two ways. The preferred method is by using the track files to store your data because it takes the least amount of effort to generate the data. The alternative is to use existing data like the spot sounding or fathom curves that are on the charts. This method is time consuming and takes a lot of effort to generate.

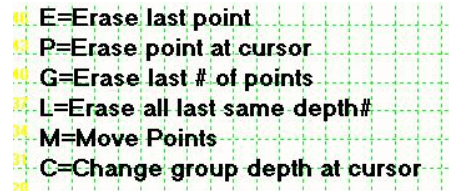
Creating "Cursor Depths"

Charts contain some depth information in the form of *Depth Contours* and individual soundings. You can create a *Cursor Depth* file that can be used by P-SeaBed Builder.

- 1) Turn on the cursor (press F2 on the keyboard) then place it over a fathom curve or spot sounding from a chart.
- 2) Click the **Dpth** button and the cursor box will change as show here on the right. A message box will appear asking if you are ready? You can click on "Yes" and it will use the current range but if you click on "No" it will redraw the screen at a 1 mile range WITH a grid. This point spacing grid guide that is the spacing needed for medium 3D depth points. However there are 6 more between the grid lines that are used for the high-resolution mode.
- 3) Enter in the value of the spot sounding or fathom curve in the **Depth** white text bos.
- 4) Set the depth unit (M=meter, Fa=Fathom and Ft=feet) by clicking on them in the Cursor Info box.
- 5) Then just click or drag the cursor by holding down the left mouse button and move the mouse along a fathom line. Keep sounding measurements fairly close together.



If you make a mistake either by putting the wrong value in for depth or just too many points down you have some editing options. When you are making "Cursor Depths" a edit guide will appear in the upper-left of the plotter screen as shown here on the right. These are keyboard short cuts for editing your Cursor Depths.



- Press E** If the last point you made was wrong then press **E** on the keyboard to erase it.
- Press P** To erase a point you made at the cursor, place the cursor (use the right mouse button to move it without making a point) on point you want to delete and click the left mouse button.
- Press G** To erase the last group of points you made. You will be prompted how many points to delete.
- Press L** To delete a number of points last made with the same depth.
- Press M** To move a point, press M and use the right mouse button to pan to the point to move. Then left-click on the point and move the cursor to the new location by clicking the right-mouse button and then left-click to set the point.
- Press C** To change a group of points with the same depth (as when you follow a depth line). Just right-click to place the cursor on the line then left-click to change them.

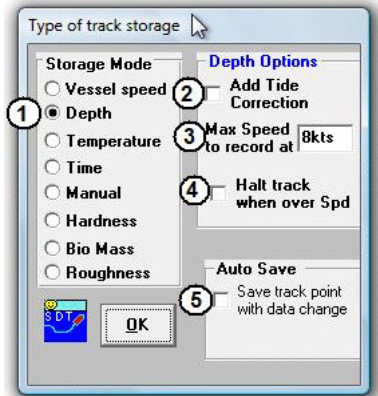
When finished, click the **Save** button. Use the left mouse button to pan to different areas. The files are saved in files 1x1 degree grids outlined in red/keep within these lines. To start another 1x1 degree area, save and restart with the cursor in that area. For example, take your current Latitude and add 1 degree (in the cursor info box) if you want to do the next section up or subtract 1 degree from the Longitude if you want to do a section that is East of your present position. You will see any previously made cursor data drawn red dots and depths printed.

Creating Depth Data using Track Files

The 3D depth data we need to rebuild the 3D bottom can come from an on-board depth sounder that has the following NMEA 0183 data sentences: **DBT** (Depth Below Transducer or **DBS** (Depth Below Surface). You connect the sounder via a separate serial COM port or a data combiner. When depth data is received by P-Sea WindPlot the depth will be displayed with (DS) printed next to it just under WindPlot's vessel speed and heading readout located in the upper-right corner of the plotter screen. **Please note that if you have the 3D screen open, the depth reading will also appear at this position but it will show (3D) instead of (DS) next to it. In this case this means that you do not have depth from the sounder and therefore it will not work for rebuilding the bottom.**

Once depth data is available to P-Sea WindPlot we need some method to store it. Since P-Sea WindPlot creates tracks pretty much automatically it can use them to do the work. But before doing so it will help to understand how tracks are made. Tracks normally are used to follow your path over again. They are created the path by storing the vessels position (in Latitude and Longitude) at pre-determined intervals (or duration). To then re-display the tracks, the computer just draws a line connecting the saved points (dots) together.

Besides saving Lat/Long position, tracks can also be used to store 3 other types of data at the same time. By default, vessel speed is the only data this is saved. You must tell P-Sea WindPlot that you want to save the depth data in with the track file. To do this, click on "Tracks" from the WindPlot's menu bar and select "Current" then select "Track Type". The "Type of track storage" window should appear as shown here on the right. Click on "Depth" to select it as the data you want to save. If it is greyed out and doesn't change then that means you do not have the correct depth data available. Recheck your serial port connections and look to see that either the "DBS" or "DBT" is flashing in the "Adjustments">"Chng.COM port/Time" window. You should also make sure that "Depth" is set as the "Main" track data file. To do this, click on "Tracks" in the menu bar then on "Current". Now select "Color". Click the "Multi-Color" button if you get the "Present Track Color" menu. Just make sure that the dot is in front of "Main" in the "Track Color Bar" window by clicking on it if it isn't selected. Click the "Mono" color button if you want your tracks to be a solid color and exit. Then make sure again that the track mode is depth after you close these windows.



Setting Track to Store Depth Data

Setting up tracks so that they save depth data is fairly simple. First click on P-Sea WindPlot's menu "Tracks and select "Current" then select "Track Type". The "Type of Track Storage will appear as shown to the right here.

Refer to the #() on the "Type of track storage" window shown here above.

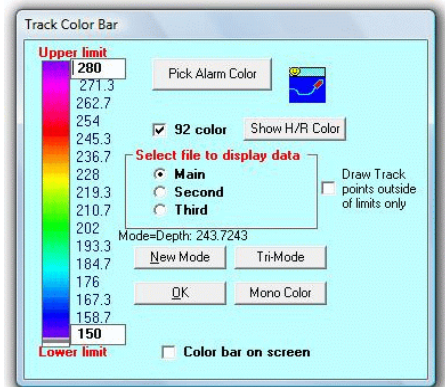
- #(1) Click this dot to select "Depth". If you can't select it then you do not have depth coming from your sounder to WindPlot.
- #(2) Click this box to have tide corrections added if there is a local tide station.
- #(3) If your depth sounder loses bottom at higher speeds then enter a value in this box. Enter a zero value to turn this feature off.
- #(4) Check this box to automatically stop tracking when vessel's speed over maximum.
- #(5) Check this to have data saved very time depth changes by a certain amount.

After you have the track storage set to store depth then you will need to create some tracks before you can rebuild the bottom . So go out to the grounds and circle or zig-zag over the area you want to see in 3D. Then you can build or rebuild the sea bottom.

Cleaning up Track files

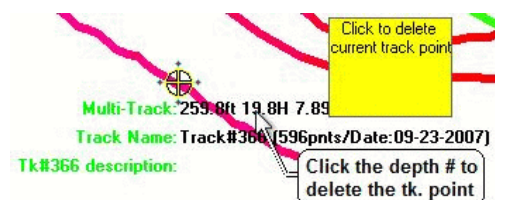
If you find that your depth sounder will loose the bottom occasionally from crossing over your wake or for what ever reason you will need to clean up the track files before you re-build the 3D bottom. Otherwise you will see holes or peaks on the 3D that are not really there. If you are not sure then go ahead and use the bottom builder to rebuild the sea bottom. It will then be obvious when you view the 3D where the errors are as you will see peaks or holes in the sea bottom. You can use the cursor to pan to these areas, set the present position (with GPS off) by clicking the "PP" button on the cursor info box.

To clean up these errors, you must first set up the track display so that you can see them in the areas that you are rebuilding the bottom (if you have not already done so). First set up your track to display in multi-color mode (press F3) and set the color limits to match the maximum and minium depths of your tracks. Press F3 the and click the "Multi-Color Mode" button if on Mono Track Colors and you should get the window as shown here on the right. First, you should have the "Main" selected as the "Select file to display" . If the current track mode for the "Main" file isn't on "Depth" as indicated just above the "New Mode" button then click the "New Mode" button and set it to depth (The "Main" track is recommended to always be "Depth" for making 3D bottom but isn't necessary.) Check the "92 color" check box if it isn't already checked and Now enter the maximum depth in the white box at the top of the color bar. Any part of the track that has depth's outside of the limits you set will now show up in black.



Now that you have your track display properly setup, clear the plotter screen and then turn on the cursor. Pan around in the area of the depth file you want to generate. Areas of tracks will be black in color and may need to be deleted if they are suppose to be between the limits you set. The ones you want to delete are usually between good sections of the track. Deleting a point is permanent so BEFORE YOU DELETE ANY POINTS ALWAYS DO A BACKUP OF YOUR TRACKS. Check the "Draw Track Points outside the limits only" will only draw the portions of the tracks that have depths outside of the limits you set on the "Multi-Track Color" window . Use this to find bad track points in the middle of a large group of tracks.

To **delete a track point**, place your cursor over the black points and watch the readout that appears near the bottom of the plotter screen like the one shown here on the right. If the depth it is reporting is suspected as bad then delete the point by clicking on the readout. If you click the line below that that had the track name and date you can enter an upper and lower range of points to delete.

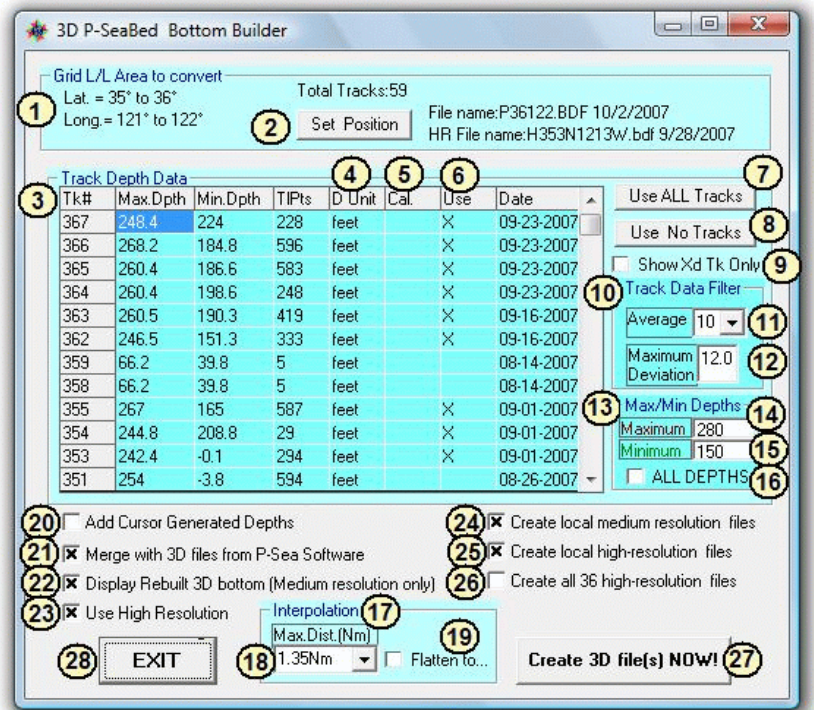


The P-Sea BottomBuilder Window

There has been a number of improvements in the BottomBuilder window that was designed to make the rebuilding of the 3D easier to understand. Starting with the layout is more straight forward with no hidden items as before, the tracks you choose to build and the rest of the settings are saved in separate files so that the next time you go to rebuild the bottom you do not have to re-select the tracks over again. New tracks are automatically added to the list to use, the file names are displayed now, you can set a maximum and minimum depths to use, the date of the track file has been added, you have the choice to display only the tracks that were "USED" to build the bottom displayed on the 3D window, the "Point Method" has been removed as it didn't produce a very good 3D bottom and now you should be able to rebuild the bottom while underway.

Merging Data

Another improvement is with the way the 3D data that is provided with the program is MERGED with the new track data. Before, both data's were combined and then the program filled in the gaps using interpolation. This method caused dimples and peaks were the two were combined. We found much better results if we rebuild the bottom using the settings you selected, then after that is interpolated then we add the 3D data that was provided by P-Sea Software and do the interpolation again.



P-Sea BottomBuilder Window Layout

- (1) This area of the window shows the files that can be generated according to the current Latitude and Longitude position which can be changed by using item (2).
- (2) Click to change to a different area.
- (3) Usable track file list. Only the tracks with depth data and set to show are listed.
- (4) Click here to change the depth file unit from feet, fathoms or meters. (Does not alter #'s)
- (5) Click here to add an offset to one of the track depth data files.
- (6) Click here to place or remove an "X" from the column. When X'ed, the track will be used to help rebuild the 3D data.
- (7) Click this button "Use ALL Tracks" to place an "X" in all tracks "Use" column.
- (8) Click this button "Use ALL Tracks" to remove all "X" in all tracks "Use" column.
- (9) Check this to limit the track 3D display to only those that have "X's" in the USE column.
- (10) Track data filter area has two types of filters; Click the drop down arrow at (11) to change the track point averaging. Adjust the amount of averaging so that the effect of the swell is reduced without losing any bottom resolution. You will need to experiment with this value, you will need more averaging at slower speeds and shorter track intervals., 10 is a good starting point. Item #(12) will reject any depths before and after a sudden change in depth. If you are not inclined to have sudden changes in depths then put a small number in item #(12). The number represents the number of feet or fathoms of change that can be allowed.
- (13) Maximum and Minimum allowable depths. If item #(16) is not checked, then all depths that are more than #(14) or less than #(15) will be rejected when creating 3D bottom. It is a real good idea to use this but be sure to enter the correct limits. Turn the 3D boundary lines (in the 3D Depth Files menu) ON and zoom out to 100 miles to get an idea of the depths you will be working with. Or zoom out to 12 miles if only working with the Hi-Resolution files.
- (17) Interpolation. A funny sounding word that basically means make up something and that is what it does in between the tracks. For example you make a 1 mile track loop. The program can look across the loop to the other side and see what the value of the depth is there. Then it fills in the missing data as it steps through all values between. So if one side is 100 ft and the other is 10 then a gradual slope is made from one side to the other. How far it will go look before it gives up is up to item #(18). However, the larger this number is the longer it will take to create the 3D bottom. Set this value to match the gap between track files. If you do not have any tracks that are close to each other then you can use item #(19) to create a side walk type of path. Usually you won't want to use this if you are merging your tracks with other data but it is nice for a long straight track run.
- (20) Creating Cursor depths was mentioned at the beginning of this section. If you have any cursor depths then you must check this to have them added to you 3D creation.
- (21) As mention many times, you can merge the P-Sea Software 3D data with your track or mark data when creating 3D bottom. Check this box to make the merge happen.
- (22) When this box is not checked, your BottomBuilder created 3D depths will not appear. Only the P-Sea Data files will appear.
- (23) Un-check this box if you only want to deal with medium resolution files.
- (24) & (25) selects high and or low resolution files should be created when checked. Usually you will want to do both.
- (26) There are a total of 36 high-resolution files per one medium resolution file. If (25) is checked and you check this then all 36 files will be created. This takes some time to do depending on the speed of the computer. Usually a good idea to do this at port.

