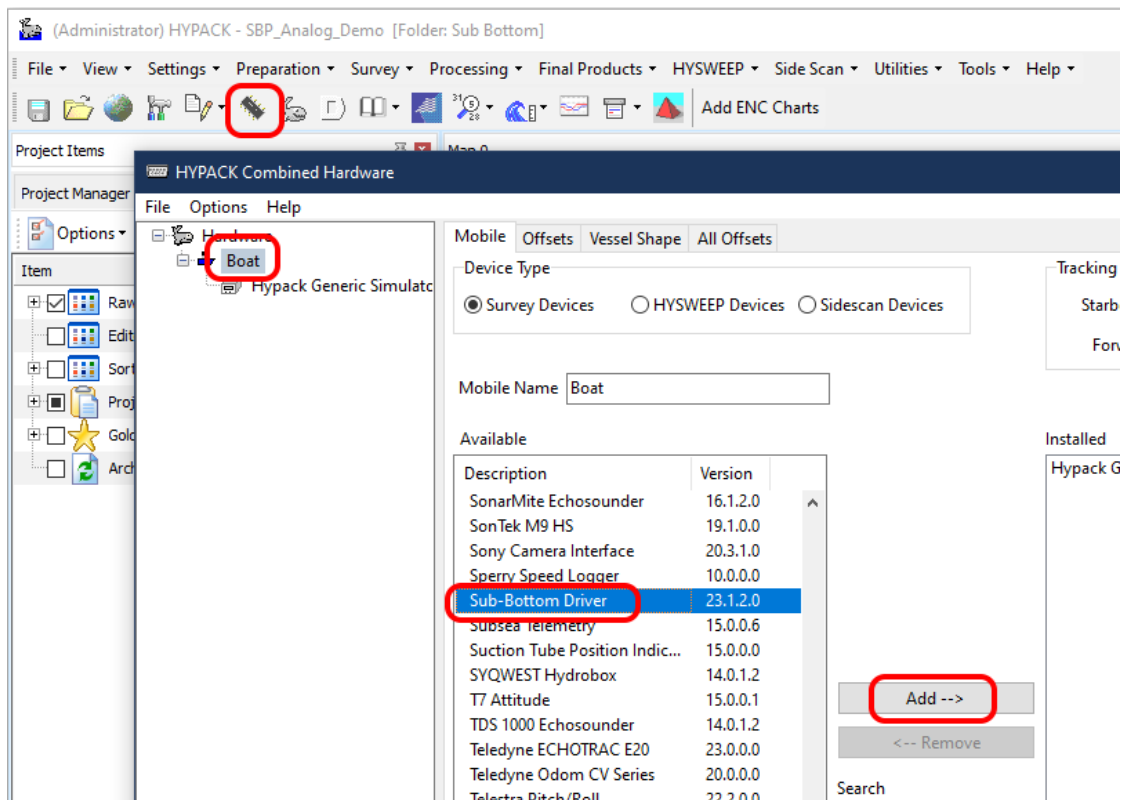




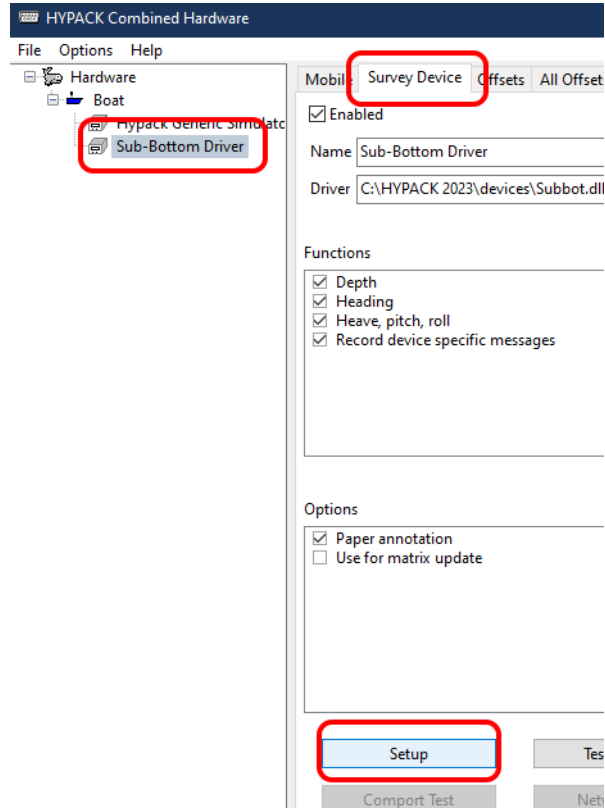
HYPACK Sub-Bottom Acquisition Walkthrough

By Daniel Tobin

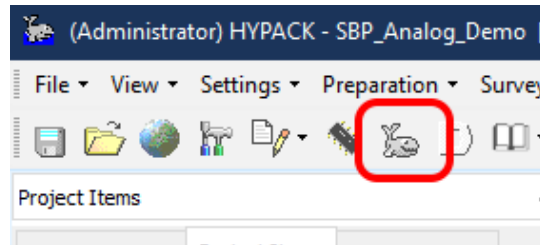
To run a sub-bottom survey, first you must configure your hardware. Start by selecting the Hardware program in HYPACK®, choose the vessel from the left, and add “Sub-Bottom Driver” to your Installed list.



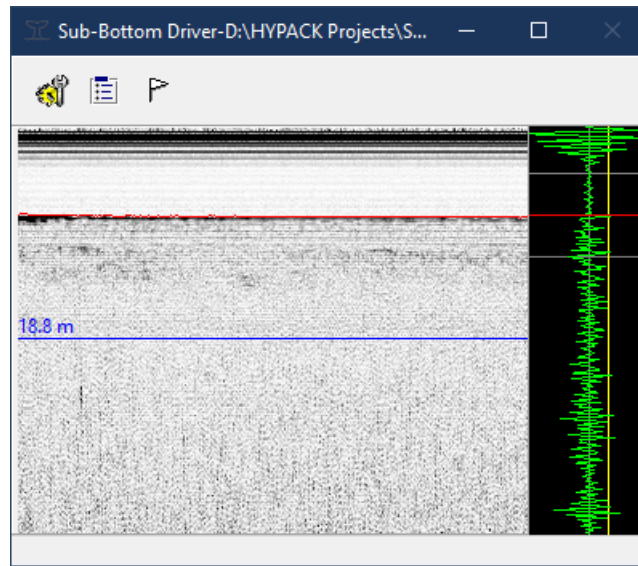
Once the sub-bottom driver is installed, double-click on it in the Installed list, or click [Setup] in the Survey Device tab while the driver is selected on the left.



From this menu, simply select the device you are using. Be sure to set up a position device and a towfish at this time too, if needed. When you are finished, save and close Hardware. Next, click the Survey icon from the HYPACK® Shell.

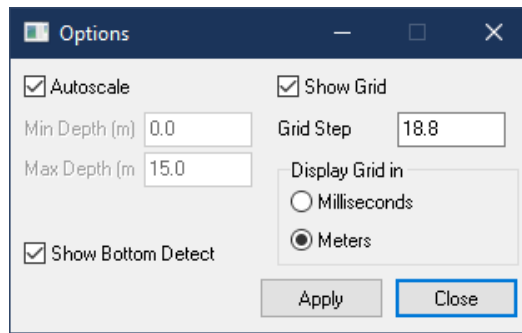


Find the Sub-Bottom Driver window. It will look like this:



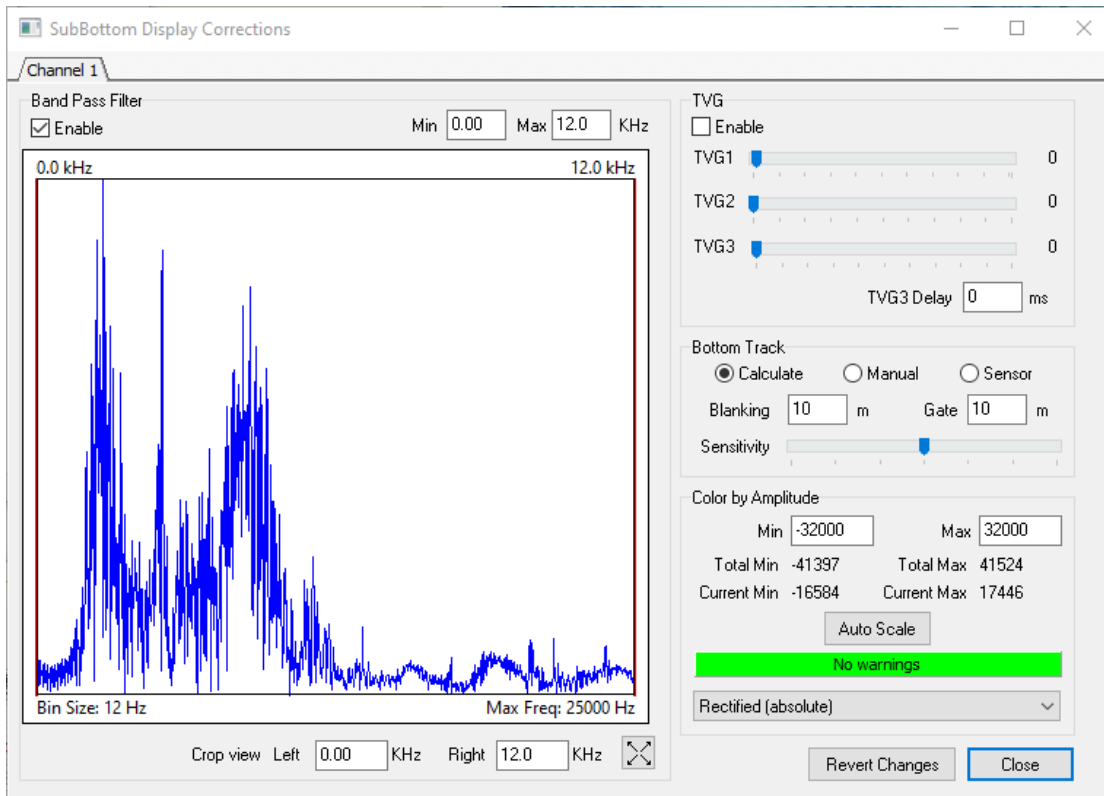
The three buttons in the top-left are your Device Control, View, and Display Corrections buttons. The Device Control window will be different based on which device you have selected. Notably, this is the only window where your settings will have an effect on the recorded data. All other windows only affect the display during acquisition, not the recorded data.

The View Options window looks like this:



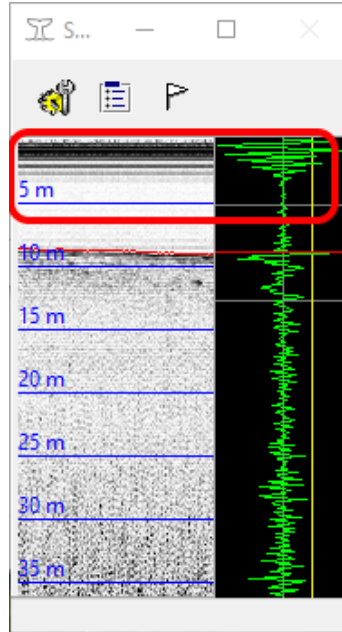
- Autoscale will display the entire depth of the data.
- If you uncheck Autoscale, the Min/Max Depth options are enabled. This lets you set a custom depth range.
- Show Bottom Detect will draw a red line in the data display marking the bottom detect, aka the fish altitude.
- Show Grid will draw blue lines with depth labels across the data display. You can customize the grid step and whether it displays in milliseconds or meters.

The Display Corrections window looks like this:



- Band Pass Filter Enable will turn on band pass filtering. You can then set the frequency range to filter to by either editing the Min/Max values in the text boxes, or by dragging the red sliders from the left and right on the frequency graph.
 - > A good rule of thumb to start with is to set the minimum to half of your sonar's frequency, and the maximum to double.
 - > Do not enable this for chirp systems, as those systems apply filtering at the source.
- The TVG box has three sliders.
 - > TVG1: This slider affects the entire depth, starting at the sonar. Slide it all the way to the right to turn on waterfall blanking. (Not recommended for shallow surveys, due to the risk of the sonar hitting the bottom.)
 - > TVG2: This gain is applied starting at the bottom detect. Good for most sub-bottom surveys, as the signal characteristics of the sonar change dramatically when in solid ground versus water.
 - > TVG3: This gain is applied at a user-specified offset from the bottom track, set with the TVG3 Delay setting. This is useful for deep penetration surveys, where you may want to apply a different gain curve deeper into the ground, as just using TVG2 could blow out detail at great depths.
- The Bottom Track box has three options.
 - > Calculate: This will look at your raw signal and try to find a bottom through signal analysis. You can tweak the formula used by adjusting these settings:

- Blanking: How much of the signal to ignore at the start. You should blank to at least past the transmission pulse, visible as a dark streak in your data at the top:



In this example image, a blanking of 5m would suffice.

- Gate: How far above and below the current bottom detect to look for the next bottom detect. Generally, you will not need to change this setting.
- Sensitivity: How eager the bottom track algorithm is to find a bottom. The higher this setting, the sooner it will lock on to the bottom. If you find your bottom detect is too high or too low, try adjusting this slider.
- > Manual: You can set a manual depth override.
- > Sensor: If you have a depth sensor on your sonar or your sonar provides bottom detection, you can select this to use its value.
- Color by Amplitude affects the data display's coloring
 - > Min/Max: Set the upper and lower limits for coloring by amplitude. Use the "Total/Current Min/Max" boxes to guide your setting, or click the "Auto Scale" button to have HYPACK® choose a range automatically.
 - > The warnings window will warn you if your amplitude ranges aren't set well.
 - > The signal type dropdown can be used to change the display between unipolar, bipolar, rectified, and red/blue colored. If you have a unipolar system, only use the unipolar option. All the other options only apply to bipolar systems. Adjust these to your preference.

Lastly, be sure to click "Start Logging" in HYPACK® Survey to record SEGY files. SEGY files will be saved to your project's RAW folder.

