



Tracking Surface Sound Velocity in HYSWEEP®

By Mike Kalmbach

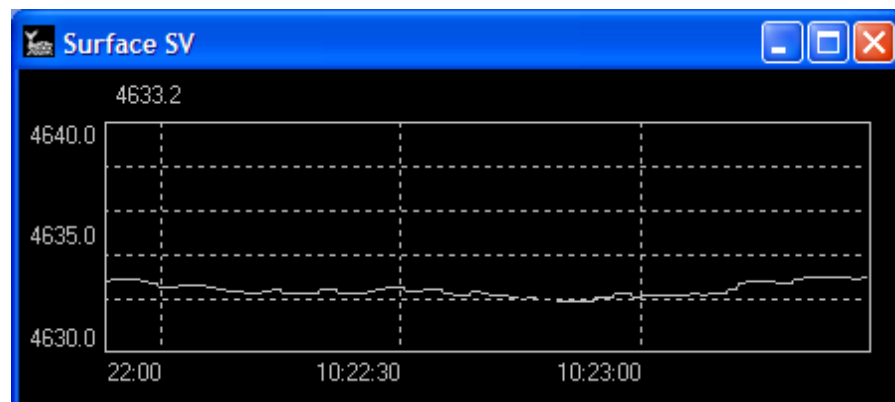
Knowing sound velocity at the multibeam head is important. *Really* important! If the measurement is wrong, beam angles are wrong and then of course, soundings are wrong. The guys who sold you the multibeam can tell you why. Probably with graphs and diagrams. (It's relatively complicated, and I don't have the right graphs and diagrams.)

Like all errors related to sound velocity, it's hard to fix this after the fact, particularly in shallow surveys. Water is dynamic, and if you don't have the right measurements at survey time, there are limits to what you can figure out afterward. So, a couple of software updates are here to help you with SV quality control. These are updates to HYPACK® 2010 and will soon be posted.

- **New feature: Real time graphing in HYSWEEP® SURVEY**

The Surface SV graph (below) tracks changes measured at the multibeam head over time. If you see jumps or spikes or numbers that just seem wrong, it's best to stop surveying and investigate. (Reminder: Hard to fix afterward!)

FIGURE 1. Real-time Surface Sound Velocity Graph



- **New feature: SV time history in MBMAX editing**

Figure 2 is the new SV profile window in MBMAX editing. It shows the time series of SV at the multibeam head (new) in addition to the profile (not new). With people chasing soundings to a tenth of a foot, the more information the better!

FIGURE 2. Sound Velocity Profile (left) and at the Sonar Head (right)



- **New feature: Save XY, SV**

In Figure 3, we take advantage of data already available in editing (X, Y and Surface SV) and save it to the familiar XYZ format, replacing Z with surface SV. Further processing in HYPACK® leads to the mapping shown below – color coded surface SV on the Delaware River.

FIGURE 3. Displaying Sound Velocity Data in the HYPACK® Map Window

