



Flowcharts Hands On: Single Beam Export to CAD

By Judy Bragg

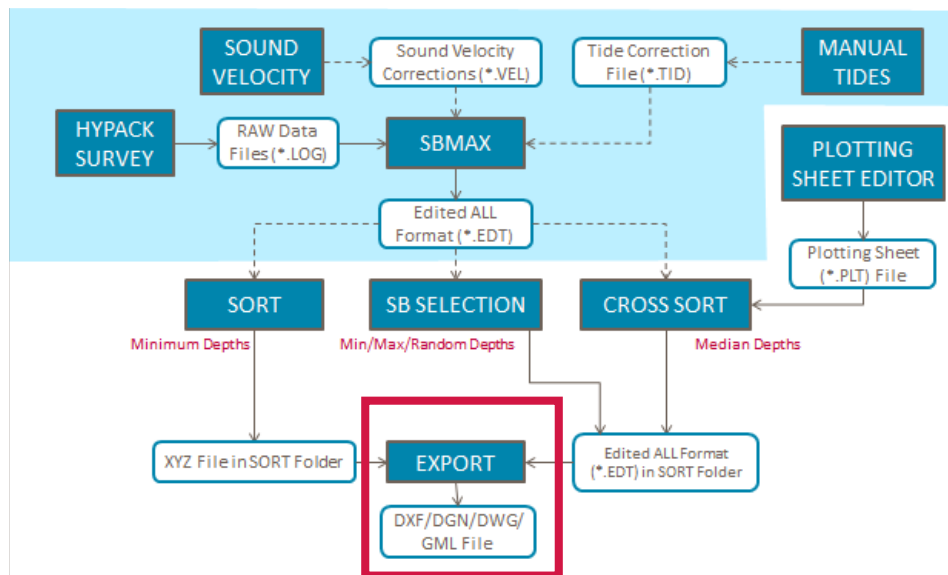
This article continues our series of *Flowcharts Hands On* articles based on the Flowcharts provided in the HYPACK® Help menu, and in the Appendix of the *HYPACK® User Manual*, and finishes the *Exporting Single Beam to CAD* flowchart.

In previous articles, we've looked at [preparing tide and sound velocity corrections files](#) that you can use to apply such corrections in the editing process, cleaning your single beam data in the [32-bit SINGLE BEAM EDITOR](#), and thinning your data with [sounding selection](#) programs. Now we're ready for Final Products. The flowchart we've been following so far in the Hands On series shows the work flow to transform your raw single beam soundings to a finished CAD format chart.

Hands On!

Use the [Single Beam Processing project](#) to experiment with generating CAD charts using the EXPORT program. Use the sorted soundings files to experiment with different sounding and track line options. Compare the results and note combinations that work best for your projects. Try merging different file types into one chart file. How can you use them in your work?

FIGURE 1. Sample Flowcharts



You can use the EXPORT program (FINAL PRODUCTS-EXPORT) to convert most HYPACK® files to DXF, DWG or DGN format, which can be very useful if you integrate HYPACK® data with work in CAD systems, or if you want to display them as chart data in HYPACK®.

Let's begin with converting only your soundings, then we can look at including additional files in your CAD output.

PROCEDURE

FIGURE 2. *The Main Window of the EXPORT Program*

1. **Select your Output file type** from the Output File Format drop-down menu. For this example, choose the we'll use the most common CAD format—DXF. All of the CAD formats require the same settings, but DGN version 7 output also requires Origin and Units information to position your chart.
2. **Click the File Open icon and name your output file.** The path will default to your project directory.
3. **Configure each soundings file you want to convert:**

- Enable it in the file tree.
- Right-click on it and select Export Tracklines, Export Soundings or both.

For CAD output, EXPORT supports both the HYPACK® All format and XYZ format files output by the single beam sounding selection programs. (It also supports HS2 and HS2X format generated by the 64-bit editors—both single beam and multibeam—and the sounding selection programs.)

4. **Click [Options]** (or F9) and **set your Input and Output Options.** The Input Filters tab holds the only Input options. The remaining tabs contain only output options.

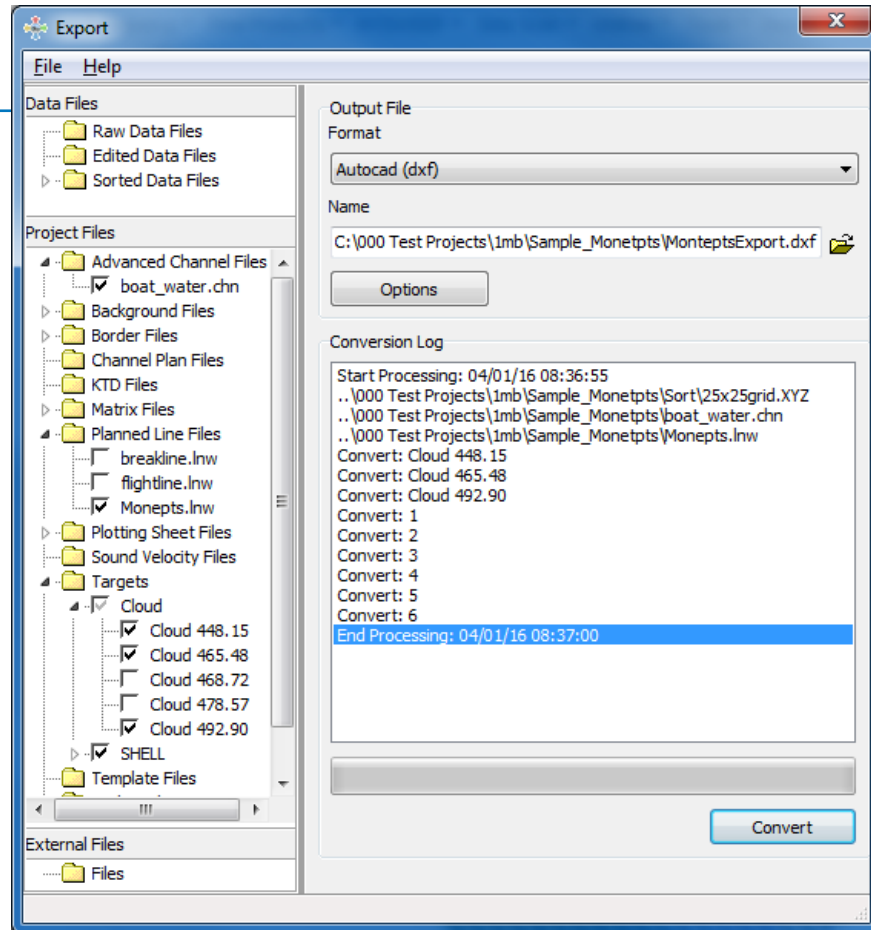


FIGURE 3. *Export Options Dialog*

- a. For dual frequency data, choose to convert either Depth 1 or Depth 2 in the Input Filters tab.
- b. **Choose the output file type on the left, configure the related options displayed on the right.** CAD output includes general CAD parameters as well as a tab for each HYPACK® file type you may want to convert.

To export our soundings to CAD, set options on two or three tabs, depending on your output format. The following sections

provide the highlights and a few examples. For detailed descriptions of each option, please read the HYPACK® User Manual or Help file (Final Products - Export-Export Options).

- [CAD Parameters](#)
- [CAD Parameters - Origin and Units](#) for DGN output.
- [CAD Parameters - Soundings](#)
- [CAD Parameters - Track Lines](#)

- c. **Click [OK].**
5. **Start the conversion.** Click [Convert] or select FILE-CONVERT. You can see the conversion progress in the conversion log.

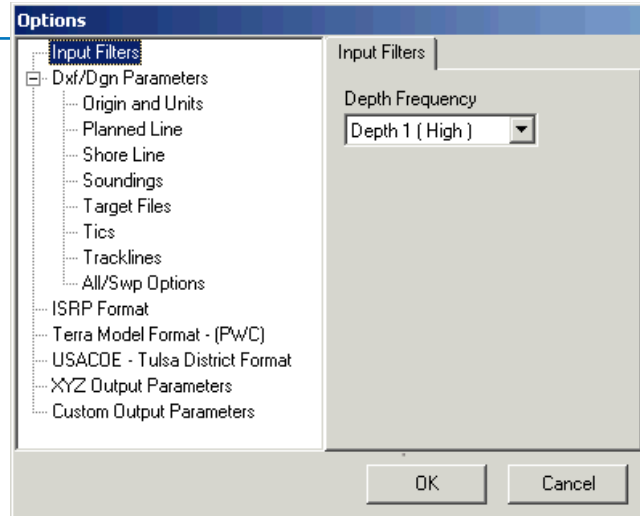
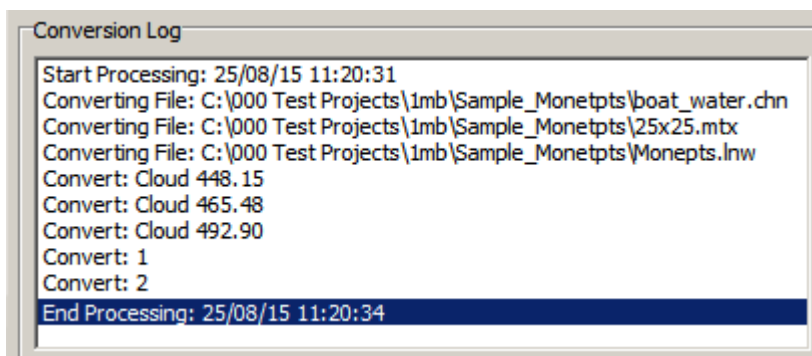


FIGURE 4. *Conversion Log*



NOTE: This shows which files have been successfully converted *and if any have not*.

OUTPUT OPTIONS

CAD PARAMETERS

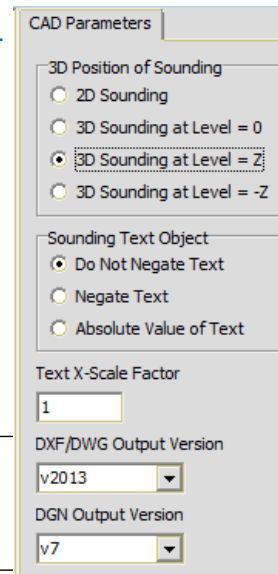
The CAD settings are for creating the chart regardless of which features are included. Use these options to configure the CAD version, and the text size of soundings and other labels.

FIGURE 5. CAD Parameters Tab

Additionally, there are two options that affect soundings.

- **3D Position of Sounding:** We recommend exporting soundings to a levels corresponding with the sounding value. Storing all soundings on the same level (0) or in a 2D file usually defeats the purpose of exporting soundings to a CAD format. The default is 3D Sounding at Level = Z.
- **Sounding Text Object** specifies how the text presents the soundings: as recorded (Do Not Negate Text—the default), the inverted value or the absolute value.

IMPORTANT! The **3D Position of Soundings** and **Sounding Text Object** act *separately*. Each applies the option selected to the *original* depth/elevation.



In other words, regardless of how the sounding is printed (as recorded, inverted or absolute value according to the Sounding Text Object option), it will be on the chart level *according to the as recorded Z value*.

For example, the HYPACK® convention is that positive Z values are *downward* from the hardware origin. If you or your customer want positive Z values *upward*, you would choose **3D Sounding at Level= - Z** to invert the vertical position of each sounding in the CAD levels, *and Negate Text* to invert the value of the sounding presented at each position.

CAD SOUNDING PARAMETERS

The Sounding Parameters tab defines how soundings will be output to the CAD file—the construction of the sounding object, and layer name.

NOTE: All sizes are expressed in survey units.

FIGURE 6. Sounding Parameters Tab

Layer Name/Level Number displays the default layer/level name of “Soundings”. Alternatively, you can name layers by the depth ranges they contain, the file name or catalog file name. Depth ranges can be customized with the Use Sounding to Layer Ranges, or you can use the depth ranges defined by the project colors (HYPACK Color File).

Tip: You may want different color ranges to guide the export than you have been using for display purposes. [Colors] enables you to modify the color ranges without leaving EXPORT.

The following table shows a few examples of what you can expect using the EDT0710_SBSelect.LOG in the Single Beam Processing project.

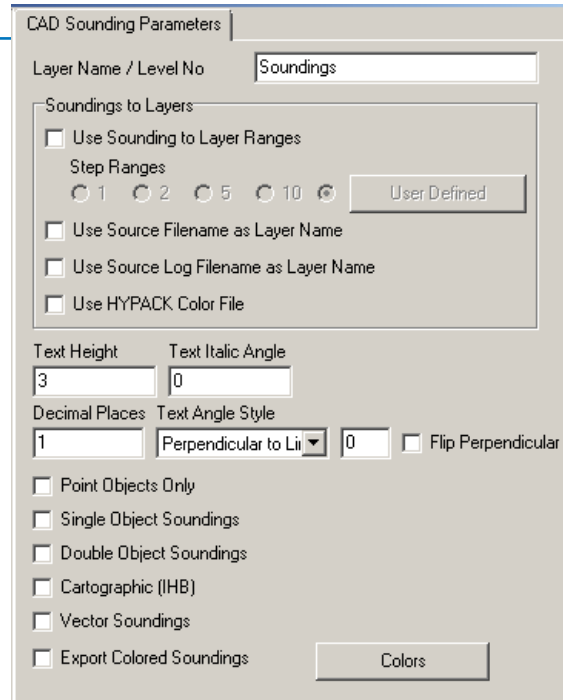


TABLE 1. Layer Naming Options

Option	Resultant Layer Name(s)
Use Sounding to Layer Ranges, Step Ranges = 5	20-25, 25-30, 30-35, 35-40, 40-45, 45-50, 50-55
Use Source File Name as Layer Name	302P38_sos, 305P00_sos, 310P00_sos...
Use Log File Name as Layer Name	EDT0710_SBSelect_Log
Use HYPACK Color File (Color band increment = 2)	_24_00, 24_00 - _25_99, 26_00- _27_99..., _52_00

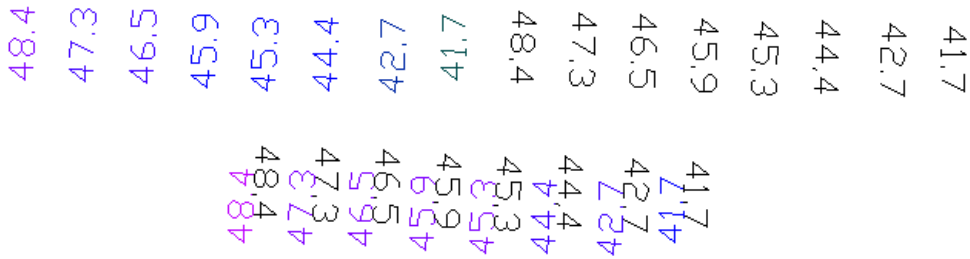
Text Height. The width is scaled according to this measurement and the Text X-Scale Factor in the CAD Parameters tab.

Text Angle Style: Sounding text can either be written perpendicular to the line, or at a user-defined, fixed angle.

NOTE: These two options are the same for Track Line text, as well as labels of other chart items. The angle style applies only where the text is written relative to the line.

Flip Perpendicular: Available only for All or HS2X format files when the Text Angle Style is perpendicular to line, this option rotates the text of all soundings 180 degrees. Alternatively, leave this option unselected, and select the **Select Files for Perpendicular Flipping** in the Edit Folder Options tab. With this option, when you click [Convert], the program displays a dialog where you can choose the files on which the soundings are flipped.

FIGURE 7. Vector Soundings—HYPACK Colors (top left), Flipped and Black (top right), Both Files Together (decimal in same position)



Sounding Styles:

- **All styles except Cartographic place the decimal point (or pixel for the Single Object option) at the sounding location.** Cartographic Soundings centers the integer portion of the sounding at the sounding location and then writes a smaller, lower fraction. If the sounding is a negative value, the integer is underlined.
- **Vector Soundings** are polyline objects, which can better adjust for fonts and export styles, thus improving accuracy. The additional **Store Soundings in Blocks** option further improves the accuracy of positioning vector soundings and can decrease the file size for charts with a lot of soundings.

NOTE: Vector soundings are recommended especially with Cartographic Soundings for most accurate positioning.

- **Export Colored Soundings** colors the soundings according to your project colors; otherwise they're black.
- **The Single and Double Object Sounding** options are unavailable for DGN v7 output.

CAD TRACK LINE PARAMETERS

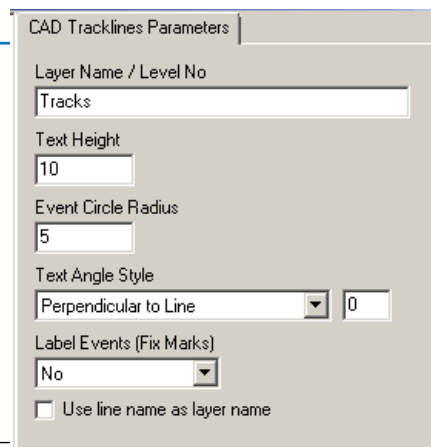
The Track Line Parameters sets labeling information for the event marks on the tracklines.

FIGURE 8. Track Line Parameters Window

Select to label Events by selecting either **Events** (Event Number) or **Time** in the Label Events field.

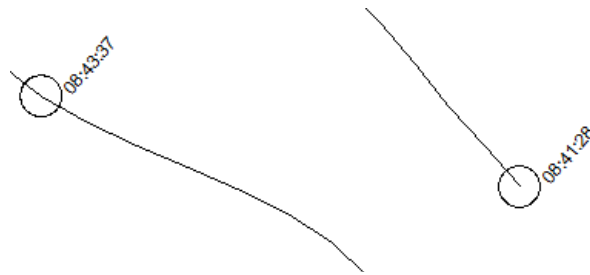
A **Circle Radius** greater than 0 draws a circle at that distance around each event.

Use Line Name as Layer Name exports the track line for each survey line to a separate DXF layer and names the layers according to the survey line name. If this is not selected, all track lines will be stored on 1 layer named Tracks.



NOTE: This option is unavailable for DGN v7 output.

FIGURE 9. Track Lines —Events Marked with 10-foot Circles and Event Time



MERGING SOUNDINGS WITH OTHER PROJECT FILES

I'm sure you've noticed by now that EXPORT can include several file types in the output charts. The process is still the same: enable the files in the file tree, then configure the applicable options and click [Convert]! Figure 11 shows Soundings merged with a Channel File (CHN), Planned Line File (LNW) all in a single DXF.

FIGURE 10. Channel File, Line File, and Soundings Merged in a Single DXF

