



HYPACK® 2013: Changes since HYPACK® 2012A

WINDOWS 8 COMPATIBLE

All HYPACK® 2013 programs are compatible with Windows® 8.

SOUNDINGS

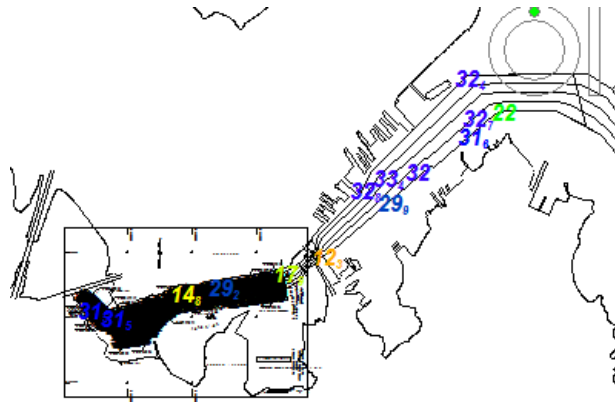
GOLDEN SOUNDINGS

Golden Soundings are soundings or a series of soundings whose positions are used to generate Point, Line or Area features that are designated as more important than other project data. They are stored as point, polyline or poly-polygon features in a project-specific Golden Soundings database and listed in the Project Files list. You can closely examine, modify and delete your golden sounding records in the GOLDEN SOUNDING EDITOR.

You can add golden soundings to the database from several HYPACK® modules:

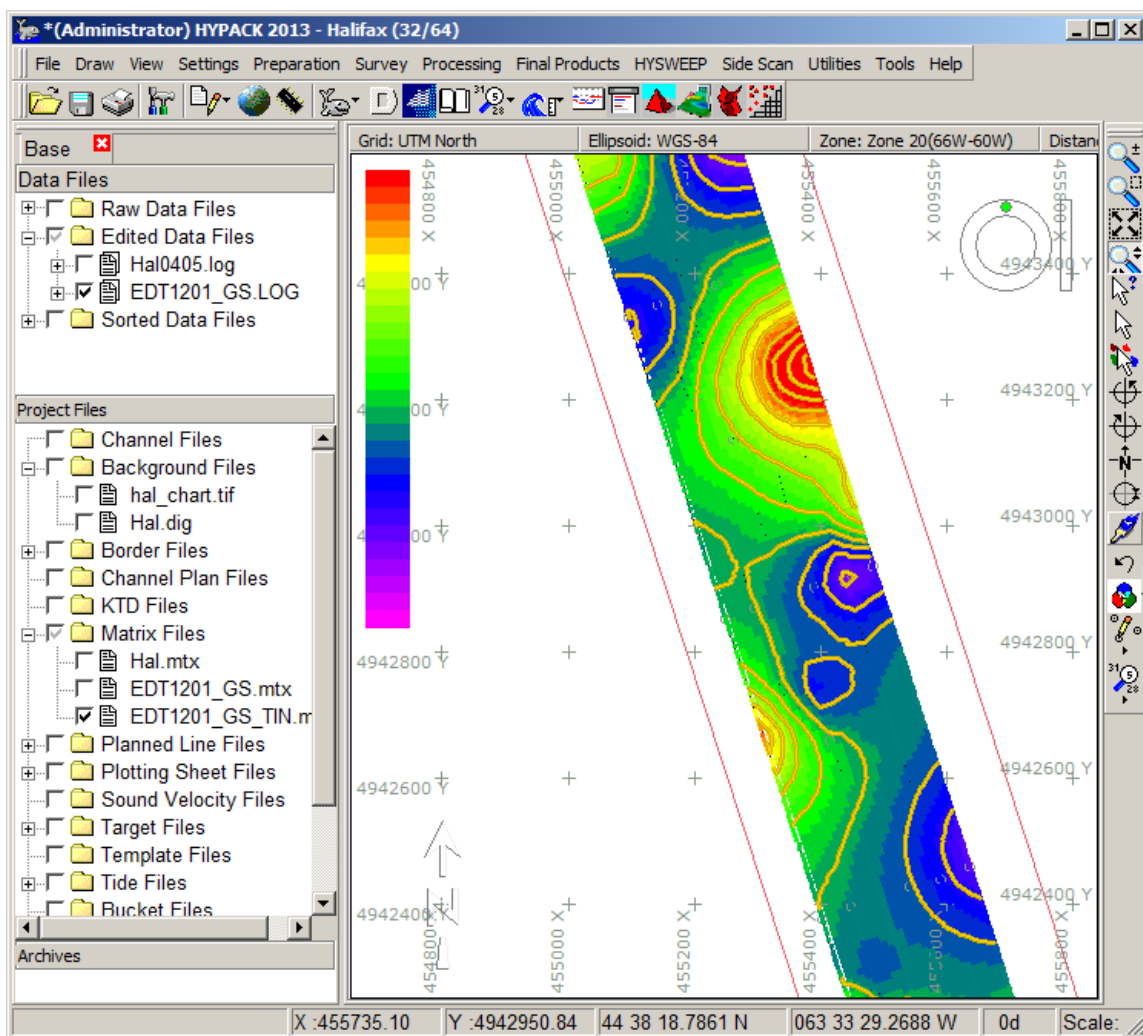
- **The SINGLE BEAM EDITOR:** Manually mark individual soundings, which are then colored gold.
- **The 64-bit HYSWEEP® EDITOR.** In this module, golden soundings are protected from filter operations and will not be deleted without your confirmation.
- **SB Selection:** Once you have made your selections, you can designate some of them as golden soundings. If you are in Depth Mode, you can mark all of the selected golden soundings that fall above a user-defined depth. In Elevation Mode, you can mark all selected soundings below the user-defined depth.
- **SORT:** Marks all soundings shoaler than the user-defined Z-level as golden soundings.
- **TIN MODEL:** User-defined contours can be exported as golden sounding line features.
- **CLOUD:** Use CLOUD tools to select soundings, individually or as a block, and mark them as golden soundings.
- **CHANNEL CONDITION REPORTER:** You can export controlling depths, channel shoals or both to golden soundings.

FIGURE 1. Controlling Depths as Golden Soundings in HYPACK®



- **HYPACK®** and **HYPLOT** overlay (gold-colored) golden soundings on all other chart features to display them with the prominence which they represent.

FIGURE 2. Golden Soundings from TIN MODEL Overlaid on a Filled Matrix in HYPACK®



- The **ENC EDITOR** imports golden sounding features so you can convert them to chart features in the S57 chart.
- **EXPORT:** Exports golden soundings to XYZ and CAD formats.

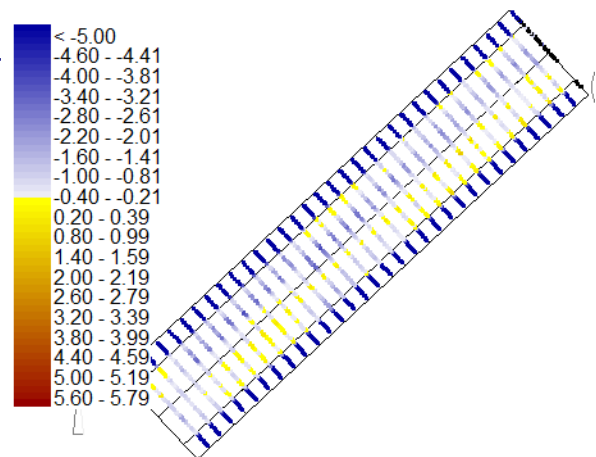
DISPLAYING THE CHN-DEPTH DIFFERENCE

HYPACK®, HYPLOT, HYPACK® SURVEY and DREDGEPACK® can now color-code soundings and matrix depths based on the difference between the depth of the channel and the sounding depth. Soundings that fall outside of the channel are black.

FIGURE 3. *Coloring Soundings by Their Difference from the CHN Surface*

To set this option, select Color by CHN Difference as the Color option in the Soundings tab of the Control Panel in HYPACK® and HYPLOT.

Tip: If your depths are both above and below your channel depth, set your project colors to show contrast between positive and negative differences.



SOUNDINGS/CELL

In SURVEY, you can choose to color-code the matrix cells by the number of soundings in each cell.

GEODESY

RTK OPTIONS

HYPACK® supports several RTK calculation methods. In the following table, find the area description that matches your project conditions then, in the GEODETIC PARAMETERS program, enter the information indicated in the remaining cells in the row.

TABLE 1. Configuring your Geodesy for RTK Tide Corrections

Area Description	RTK selection	Enter Geoid?	KTD File?	Enter Chart Datum ^a ?
US Coastal Waters	N from Geoid ^b , K from VDatum ^c	Yes	No	Chart Datum
Geoid Present Constant Separation of Geoid - Chart Datum	N from Geoid, K from user value	Yes	No	Height of Geoid above Chart Datum
Geoid Present Changing Separation of Geoid - Chart Datum	N from Geoid, K from KTD	Yes	Yes Geoid above Chart Datum values	No
No Geoid Present Constant Separation of Reference Ellipsoid-Chart Datum	(K-N) from user value	No	No	Height of Ellipsoid above Chart Datum
No Geoid Present Changing Separation of Reference Ellipsoid-Chart Datum	(K-N) from KTD	No	Yes Ellipsoid above Chart Datum values	No

a. These fields are enabled and disabled according to the RTK selection.

b. If you use the 2012 Geoid, you must also use the 2012 VDatum files. Otherwise, use the previous version of VDatum with Geoid 2009.

c. When using the VDatum database, you *must* use one of the pre-defined chart datums. If you enter a user-defined chart datum level, the VDatum database is ignored.

The Orthometric Height Correction is added to the geoid height value. It can be used to adjust HYPACK® calculations to exactly match your local tide gauge.

ADDED GRIDS/PROJECTIONS

- Added TaiwanTWD67 Grid.
- Added datum transformation parameters for Romania.

GML PRESENTATION EDITOR

GML (Geographic Markup Language) defines an XML grammar for the encoding of geographic information. The information that can be encoded includes, not only geographic objects and their geometries, but also more abstract notions like coverages and observations.

HYPACK® extracts Points, Lines and Polygons from almost any GML file, but it will not manipulate the data as a higher level feature (eg. a bridge, which could be tested for

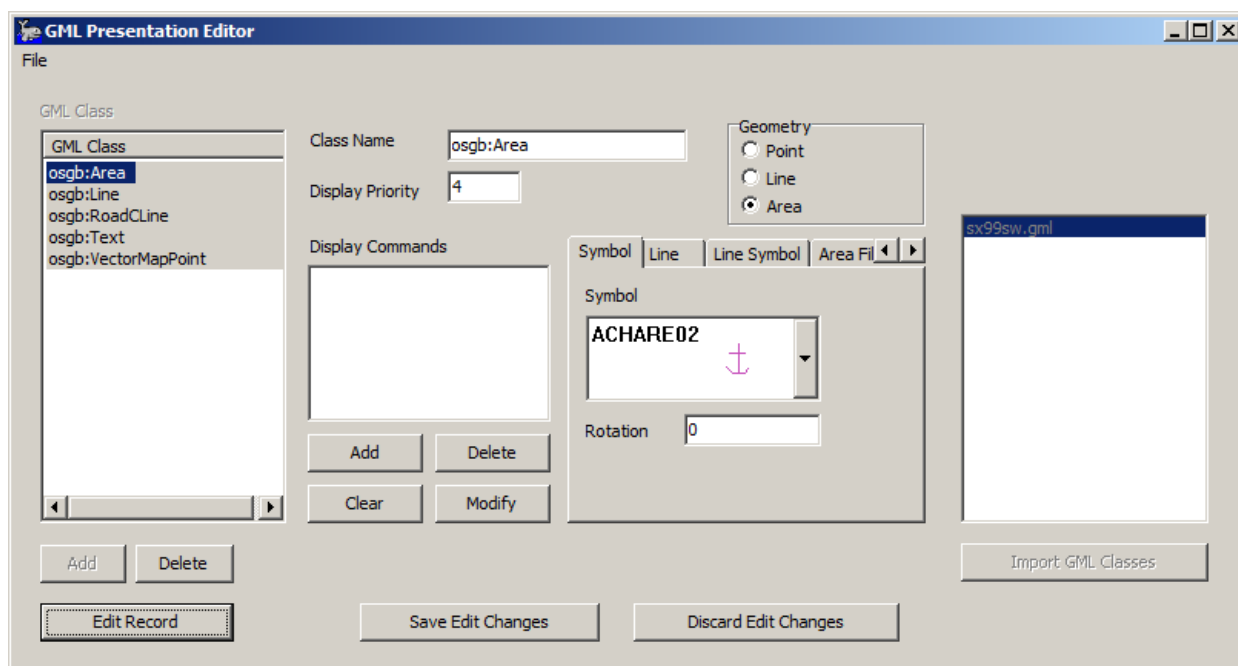
clearance or a rock, which should be detected and avoided). We can, however, tell you about the geometry is the class of an object.

In our software, we provide a means of symbolizing a GML file based on the class name of an object and its fundamental primitive type.

HYPACK® automatically projects GML data if the CRS/EPSG code within refers to WGS84. Otherwise, we treat the data without conversion. It is up to you to know your projects and data and set the appropriate geodesy settings.

In the GML Presentation Editor, you can import the GML classes from a GML chart then assign geometry and display attributes for the objects to be presented in HYPACK®.

FIGURE 4. GML PRESENTATION EDITOR



SINGLE BEAM EDITOR - IGRF FOR NORMALIZING MAGNETOMETER DATA

HYPACK® 2012, the SINGLE BEAM EDITOR provided tools with which to manually normalize magnetometer data and generate contours which clearly show monopolar and dipolar target areas. It required several steps to manipulate the data in such a way that SINGLE BEAM EDITOR could perform the normalization calculations. The results are good, but somewhat subjective as it also requires some human editing.

IGRF (International Geomagnetic Reference Field) is a mathematical model of the Earth's magnetic field created by the International Association of Geomagnetism and Aeronomy (IAGA). Given the time and position, the IGRF algorithm can calculate the expected gamma due to the Earth's main magnetic field. The IGRF method of normalization simplifies the

process and eliminates the subjectivity. (See [IGRF Magnetometer Corrections in the SINGLE BEAM EDITOR](#).)

64-BIT MULTIBEAM PROCESSING

NEW, 64-BIT EDITED MULTIBEAM FILE FORMAT—HS2X

HS2x are 64-bit HS2 files generated by the 64-bit HYSWEEP® EDITOR. They save the original data from all devices versus only from the selected ones as in the 32-bit files. HS2x files also include Total Vertical Uncertainty (TVU) and Total Horizontal Uncertainty (THU) data and support up to 10,000 beams/ping. All of this added data means the HS2x files are about three times larger than their HS2 counterparts, *however*, owing to the faster, 64-bit technology, they load *a lot* faster than HS2 files in spite of their larger file size.

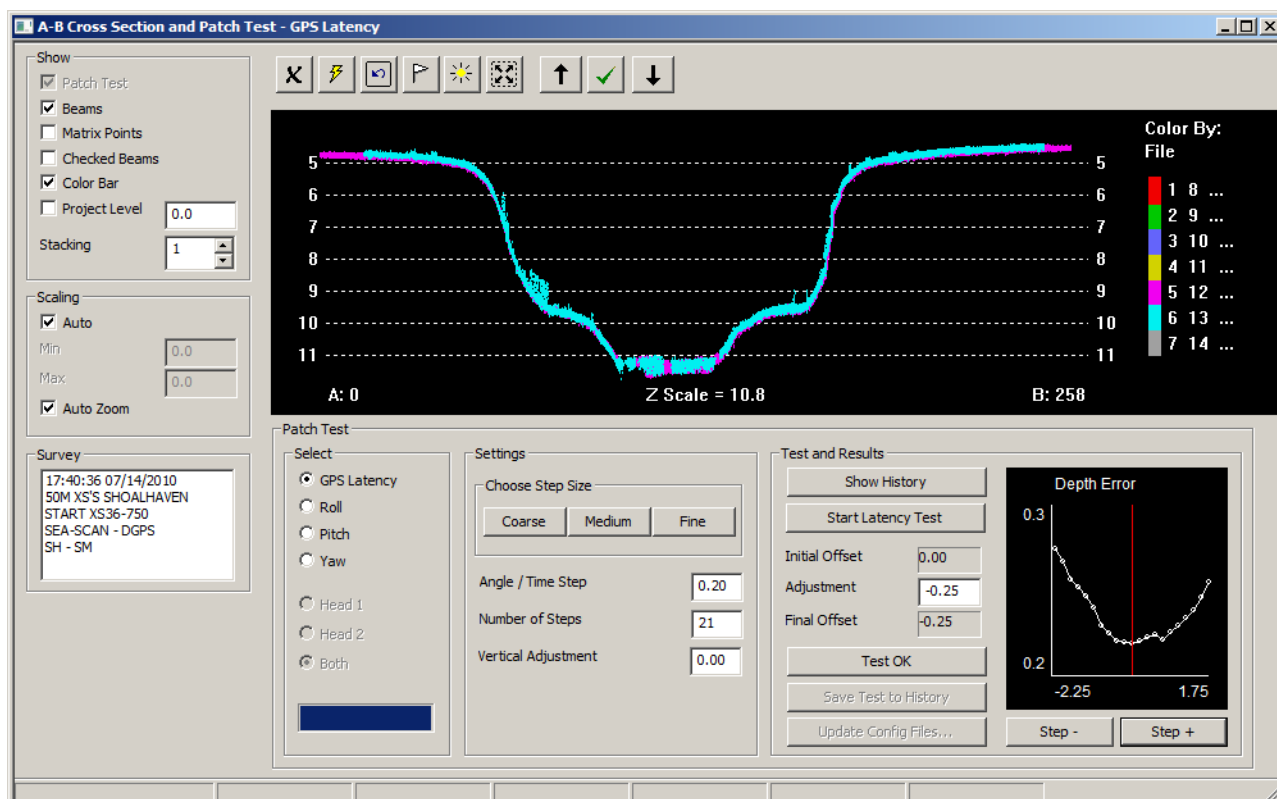
HS2x files are not yet generated in SIDE SCAN TARGETING AND MOSAICKING. We will add that capability when we convert it to 64-bit.

Important: Remember, you must have a 64-bit computer to take advantage of 64-bit software.

64-BIT PATCH TEST

The PATCH TEST interface shows the alignment of the data in your two overlapping data sets. The PATCH TEST tools are merged in a Profile editing window where you can do your stage 2 editing, removing any spikes that will negatively effect your patch test, then run the adjustment calculation routines.

FIGURE 5. PATCH TEST Interface



When the calculations are complete, the profiles are drawn using the offset adjustment value and a graph displays the difference between the cross sections (Y-axis) for each angle or time adjustment (X-axis). In the graph, you are looking for a distinct 'V'-shaped graph where the best offset adjustment value is at the apex of the 'V'.

The Adjustment value plus the Original Offset value equals the Final Offset value that you should then enter as your sounder offset in HYSWEEP® HARDWARE.

In the 64-bit HYSWEEP® EDITOR, you can still load, edit and patch test 2 files at a time as in the 32-bit PATCH TEST, but the 64-bit HYSWEEP® EDITOR also enables you to load *all* of your patch test lines at once and select the correct pair for each PATCH TEST in stage 1 editing. Any stage 2 editing can be done in the editor or in the PATCH TEST interface before you run the calibration test.

With a click of a button, you can directly update the offsets in your HYSWEEP® HARDWARE configuration and the Boat Configuration file based on your PATCH TEST results. These options eliminate the chance for typographical errors that may occur if you manually transfer the corrected offset values.

BOAT CONFIGURATION FILE

In the 64-bit HYSWEEP® EDITOR, if you save your device offsets to a boat configuration file when you load your data, you can update those offsets with your patch test results . When

you load subsequent data sets to the 64-bit HYSWEEP® EDITOR, you can quickly and easily load the correct offset values by loading the boat configuration file.

SIDE SCAN PROCESSING

SIDE SCAN DATA REFORMATTER

Previously, the SIDE SCAN DATA REFORMATTER was comprised of several files developed over time to process the various side scan input formats it supports. In HYPACK® 2013, all of the code is merged into one executable, and we've taken some time to review the interface and provide consistent terminology throughout.

SUPPORT FOR NEW DEVICES:

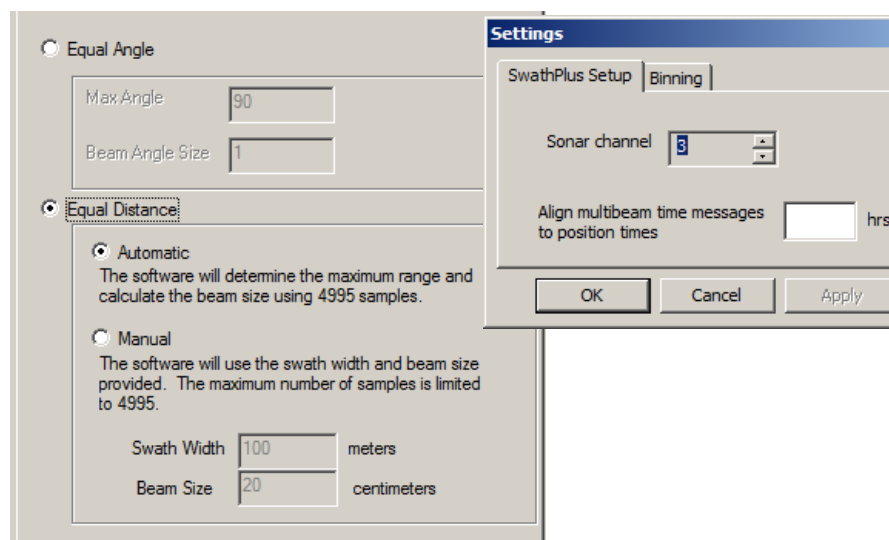
We convert the data from two additional devices to HYPACK® HSX format:

- **SeaSwath Plus SXI or SXP data:** (SXI data is logged when you choose the Record Raw Message option on the Connect Tab.)

Sonar Channel: The system has 1 channel to each side and 1 forward. Choose the forward channel. (The port and starboard channels are processed by the HYSWEEP® EDITOR.)

Align multibeam time messages to position times: Enter the time difference, in hours, between the time-stamps from the device and HYPACK® time (eg. +2, -3).

FIGURE 6. SwathPlus Setup



- **R2Sonic Raw data:** The SIDE SCAN DATA REFORMATTER merges the R2Sonic multibeam raw data with their heave, pitch and roll data and generates HYPACK® HSX files with RMB and HPR records.

EXTRACT SEGY SUB-BOTTOM DATA FROM JSF FILES

Select the **Store Sub-bottom to SEGY File** option to extract the sub-bottom data to a SEGY file which can then be processed in the HYPACK® SUB-BOTTOM PROCESSOR.

Important: If you intend to process your SEGY data in the HYPACK® SUB-BOTTOM PROCESSOR, choose the Little Endian option.

SDF LAYBACK OPTIONS

SDF Conversion options now include layback calculation options for towed side scan data. Check the **Apply Layback** option and one of the calculation methods provided.

- **Stored value** uses a layback value stored in the SDF file.
- **Cable out and fish depth** from data uses the cable out and fish depth values from the JSF file to calculate layback
- **Use Cable Out and Catenary Factor** uses the cable out from the SDF file and a user-defined catenary factor to calculate layback.
- **User Entered Value in Meters** tells the program to assume a fish on the water surface at a constant, user-defined distance.

SIDE SCAN TARGETING AND MOSAICKING

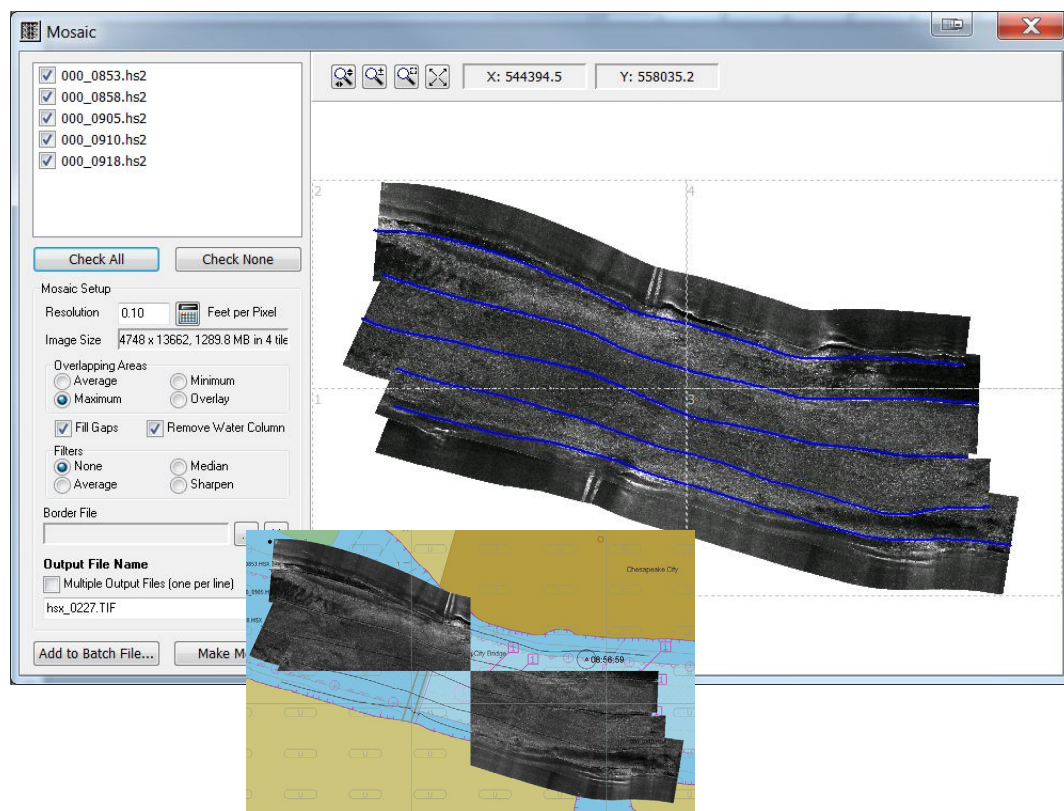
GEO-REFERENCE TIF 'TILES

The size of the data sets that some of our users wanted to mosaic has been, at times, extreme and there has been a limit to how much the program, the computer or both could handle. In 2013, the SIDE SCAN TARGETING AND MOSAICKING program TIF output has been revised.

When you choose to generate one output for all of the selected data files, the program automatically generates one or more "tiles" based on the size of your data set, the resolution and the resources available on your computer. Thus, if you want to output a TIF chart of a very large data set, the program may divide your data into smaller, square areas ("tiles") and generate one TIF per tile. You will display them together to show the full selection.

Note: Since the number of TIF tiles depends, in part, on the resources available on your computer at the time you generate the TIF output, the program may generate a different number of tiles at different times or on different computers.

FIGURE 7. *HYSCAN Generates a Series of Georeferenced TIF Charts to Display your Mosaic—HYSCAN Interface (top), Two TIF Tiles Overlaid on another Chart File in HYPACK® (bottom)*



ADJUSTING TARGET POSITIONS

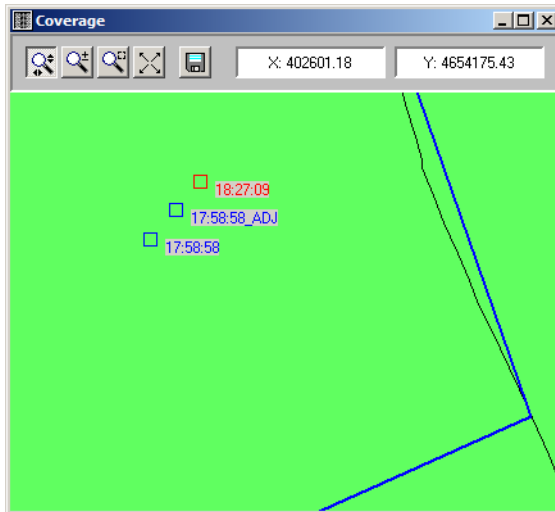
When you merge multiple scans to build your mosaic, you may see distinct bottom features positioned slightly differently between scans. These differences occur due to the number of variables involved in calculating the exact position of the towfish: cable out, catenary factor, whether the vessel towing the fish is going straight, and underwater currents to name a few.

To determine the true position of the feature, as accurately as possible, the Target Viewer includes a Target Adjust routine which calculates the 'true' position, as accurately as possible based on the position of multiple targets using your choice of three methods, and generates a new target at that position.

- **Average:** Mathematically averages the coordinates of the checked targets.
 - **High Confidence** requires three or more targets. The position of the target that you are currently viewing (highlighted) is favored in the calculation. It gets 50% confidence while the remaining 50% is divided between the other checked targets.
 - **Known Point:** Moves all of the checked target positions to the position of the highlighted target.
1. **Load the side scan data into SIDE SCAN TARGETING AND MOSAICKING.**
 2. **In Scan View, mark the same, distinctive point in the feature on each scan.**
 3. **Select TOOLS-TARGET VIEWER.**
 4. **If you are using the High Confidence or Known Point method, highlight the favored target.**
 5. **Check the targets you want to include in the calculation.**

6. **Select ADJUST POSITIONS and your choice of methods.** The program generates a new target at the calculated position named with the time appended by '_ADJ'.

Three Targets—Two Outer Target Positions Averaged to the Center Adjusted Target Position



BEACH VOLUMES IN CROSS SECTIONS AND VOLUMES

In addition to the volumes calculated for the Minimum Design, Design and Maximum Design templates, the pre-dredge and post-dredge beach volumes calculations now also calculates the 'Minimum Required'—The sum of the Minimum Design volume and the volume in the design grade up to the Z Level Reference. In the following figure (predredge), the Minimum Required volume is represented by the green and aqua areas.

To calculate the Minimum Required volume, check 'Calc. Min. Required' and enter the Z Level Reference in the Volume tab of the Graph Options.

FIGURE 8. *Pre-dredge Beach Volumes*

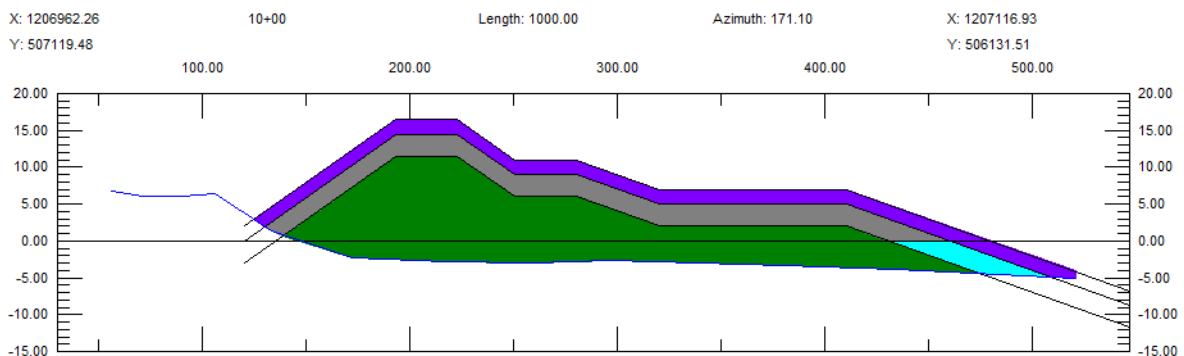
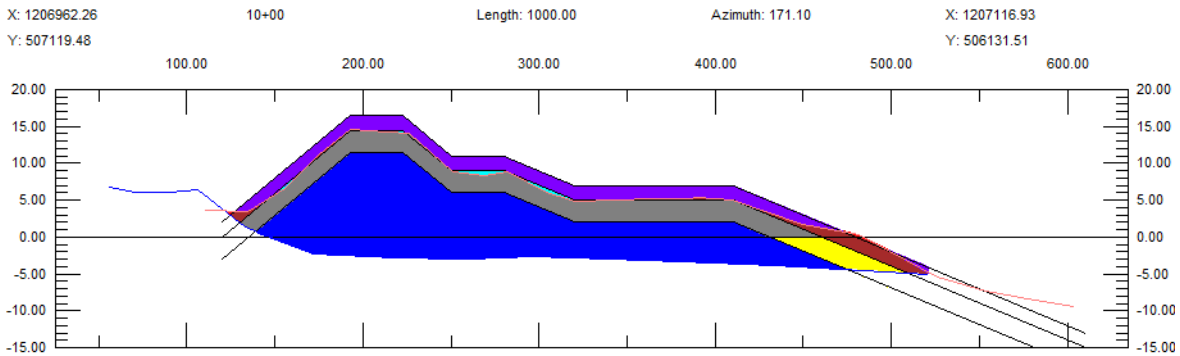


FIGURE 9. Post-dredge Beach Volumes



The **Volume Report** for the Beach methods provides a section for each of the following reports:

- Design Template
- Minimum Design Template
- Maximum Design Template
- Minimum Required: Minimum Design Template + Design Template below the Z-Level Reference
- Difference: Volume of material between the Minimum Design Template and the Design Template that lies above the Z-level defined in the Graph Options tab.

UTILITIES

3D TERRAIN VIEWER

CONFIGURING YOUR PROJECT LAYOUT

WIZARD FOR NEW PROJECTS

To quickly configure a new project, 3D TERRAIN VIEWER provides a wizard to guide you through loading the survey data for your model; adding channel, planned line and nature features; and arranging your windows and tool bars.

The wizard offers three layouts of Terrain windows and tool bars, and a few basic display options. However, it does not include all of the features supported by 3DTV. Typically you will use the wizard to get started, then manually modify your configuration as you prefer.

FIGURE 10. New Project Wizard—Terrain Settings (left), Layout (right)

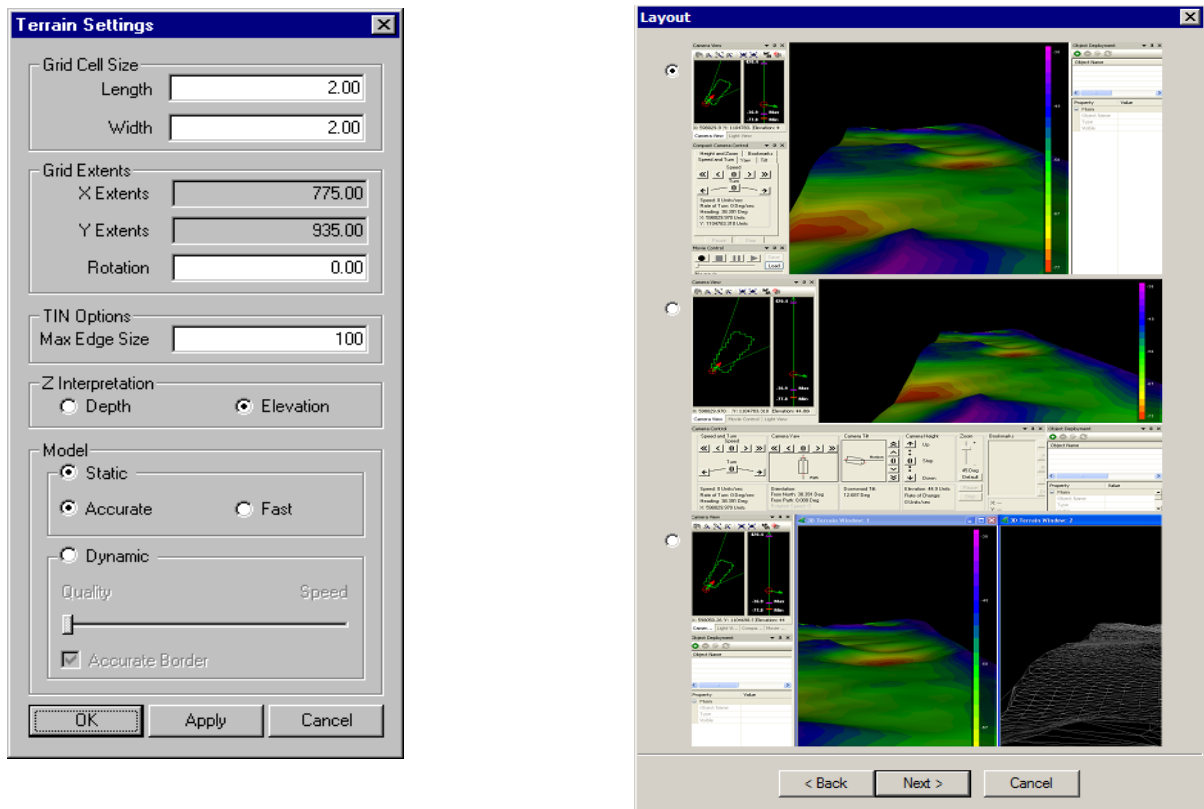
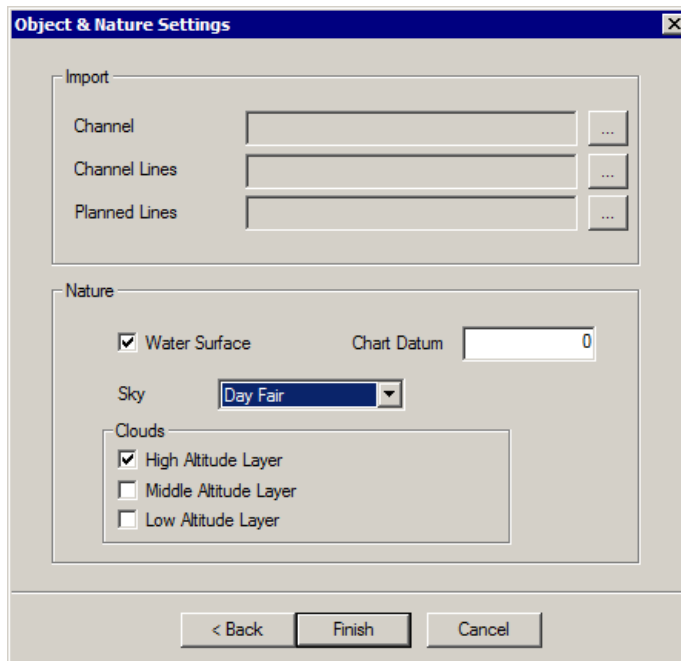


FIGURE 11. New Project Wizard—Nature Settings



UPDATING THE LAYOUT

The first time you open projects configured *before the 2013 release*, they will use a default 2013 layout supported by the new 3DTV software technology. You must reconfigure the layout of windows and tool bars in your project for your purposes and save the 2013 configuration.

DEFAULT CELL SIZE

When you configure a project manually with an XYZ data file, the Terrain Settings dialog includes the **[Default Cell Size]** button which calculates a grid cell size that balances performance and quality of the presentation in Static Fast mode. When you load a matrix file, the Grid Cell Size will match the matrix cell size.

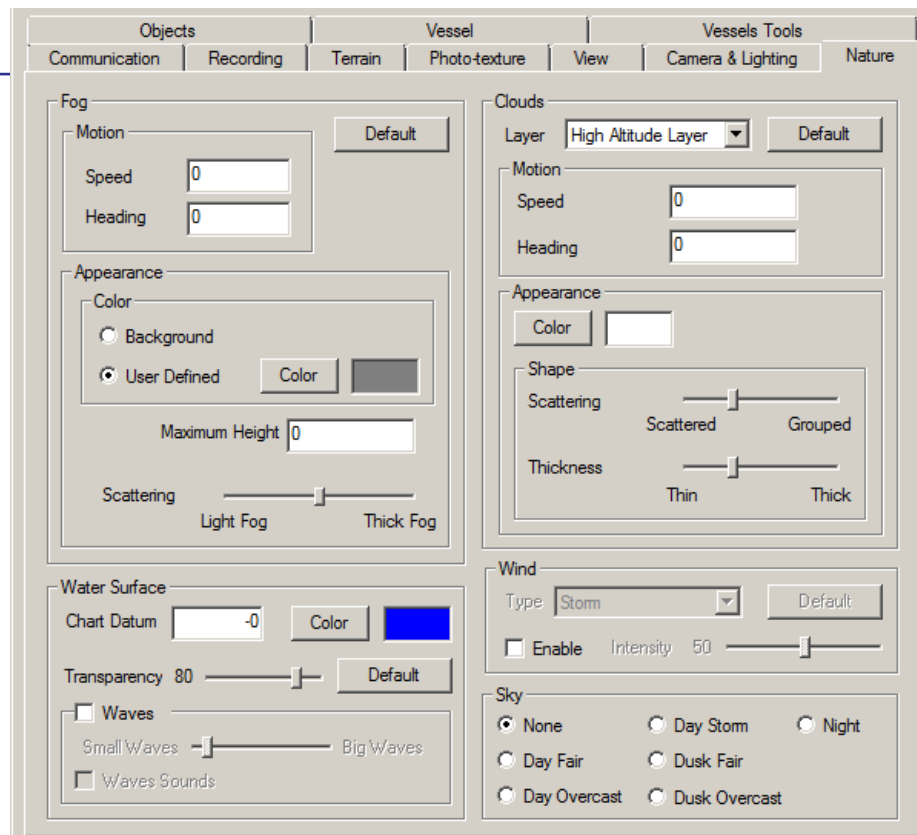
UNIFIED SETTINGS DIALOG

Many of the numerous settings dialogs have been consolidated into one multitabled Settings dialog. The new dialog can be accessed by clicking the Settings icon on the tool bar or by selecting FILE-SETTINGS. The menu selections that accessed the individual settings dialogs in previous versions of HYPACK® also open the new Settings dialog with the focus on the pertinent tab according to which menu selection you used.

FIGURE 12. *Unified Settings Dialog*

In the Settings dialog, there are two Apply functions with which you can preview the effects of your choices without closing the Settings dialog:

- **[Apply]** applies the settings of *only the currently visible tab*.
- **[Apply All]** applies *all settings in all tabs*.



ZOOM TO FOLLOW BOAT

Follow Camera synchronizes the light position with the camera position. Also, if the camera motion would take it out of view, the Camera View will now automatically zoom out to keep it visible.

FIGURE 13. Camera and Lighting Settings

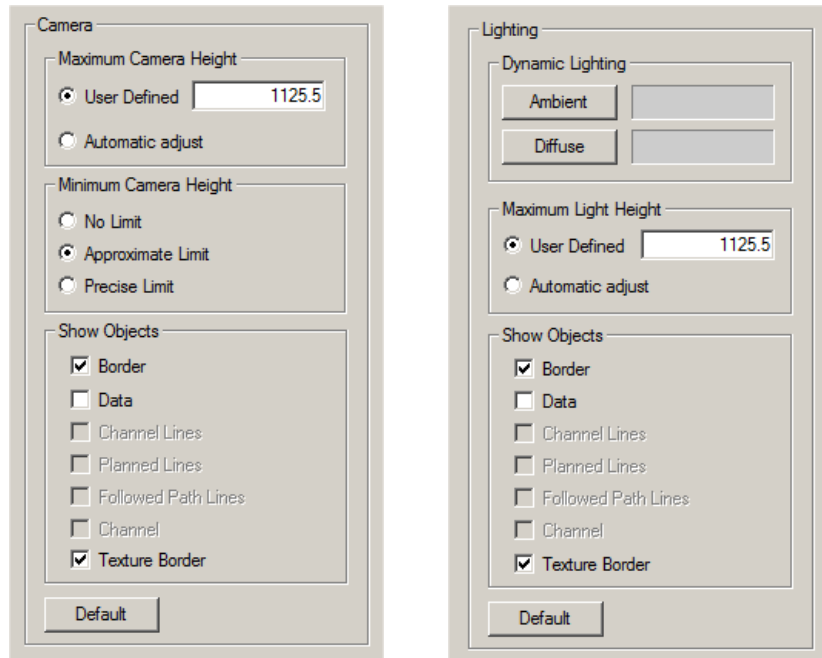


PHOTO-TEXTURES

ORDER

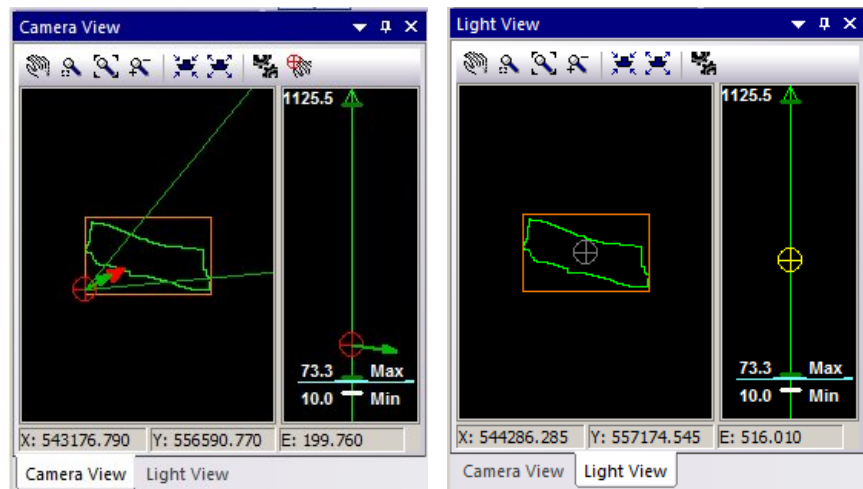
If you have more than one file loaded in the Photo-texture tab, one file may hide another in your display. To change the draw order, change the order in which they are listed in the Photo-texture tab.

1. **Select one of the TIF files** in the Photo-texture tab.
2. **Click [Up] or [Down]** to reposition it in the list.
3. **Click [Apply].**

BORDER IN CAMERA AND LIGHT VIEW

The Camera and Lighting settings each now include a Texture Border option which displays an orange polygon representing the border of the texture file in the Camera View and Light View.

FIGURE 14. Camera View and Light View with Photo-texture Border



SAVING PROGRESS BAR

Whenever you apply photo-texture settings, it may take significant time to do all of the calculations required to accurately display it on your model. A progress bar informs you that work is in process.

ANCHORS

You can track anchor positions for vessels in SURVEY or DREDGEPACK®. If the anchor ID, status (raised/dropped), and XY position at the drop location are passed through Shared Memory or via TCP/IP, 3DTV displays the anchor according to the settings in the Vessel Tools Tab of the Settings dialog.

When an anchor is displayed and you click in the 3D Terrain window, the anchor position is displayed in the status bar of the Terrain window.

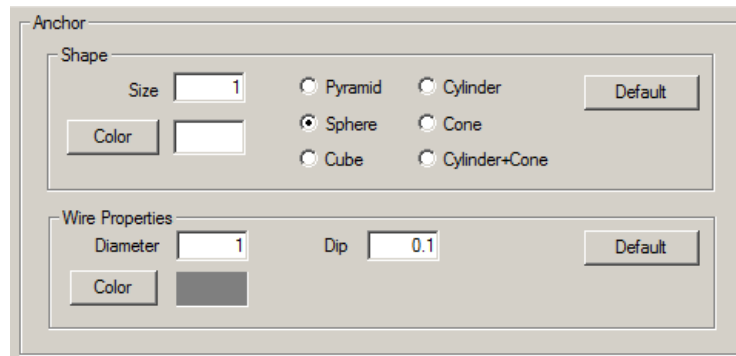
FIGURE 15. Displaying an Anchor in 3DTV



The VESSELS-ANCHOR menu options control whether the anchor is displayed in 3DTV.

- **NONE:** No anchor is displayed.
- **DEFAULT SHAPE** shows the shape selected in the Settings dialog.

FIGURE 16. Anchor Settings



- **IMPORTED SHAPE** shows the 3OD shape loaded by selecting VESSELS-ANCHOR-IMPORT SHAPE.

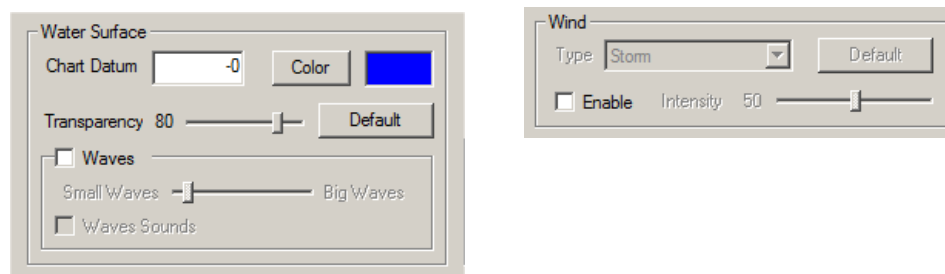
Note: The 3OD vessel shape must include the anchor position. A wire with the properties set in the Settings dialog links the anchor position on the vessel to the position of the dropped anchor defined in Shared Memory or TCP/IP.

NATURE SOUNDS

Wave Sounds: When the Waves option is selected, check this option to add water sound effects.

Wind settings in the Objects and Nature tab of the Settings dialog provide sound effects for a breezy or stormy day.

FIGURE 17. Water Settings (left), Wind Settings (right)



SNAPSHOTS AND MULTISHOTS

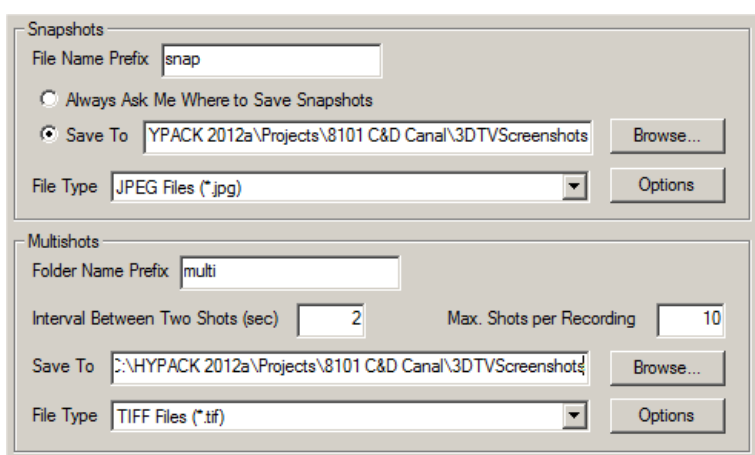
You can quickly and easily take screen captures of your 3D Terrain Window. With one click of an icon, 3DTV captures one image (snapshot), or several in series (multishot) and save them in your choice of JPG, BMP or TIF format.

You can also pre-set the save parameters so, when you click the icon, your images are automatically named and filed.

SCREEN CAPTURE SETTINGS

The Recording tab of the Settings dialog provides separate options for single snapshots and those taken in series (multishots).

FIGURE 18. Snapshot Settings in the Recording Tab of the Settings Dialog



When 3DTV automatically names images, it uses the following format: *PrefixDate_Time.Tag* to a user-defined location.

TABLE 2. Image File Naming Format

Prefix	User-defined in the Settings dialog.
Date	Current date in the YYYY-MM-DD format
Time	Snapshot time in the HH-MM-SS format.
Tag	Select JPG, BMP or TIF in the Settings dialog.

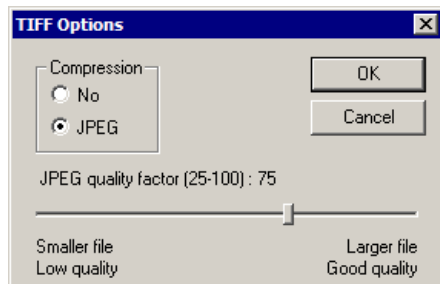
SNAPSHOT SETTINGS

- **File Name Prefix:** The prefix portion of the auto-named single snapshots.
- **Always Ask Me Where To Save Snapshots:** When you click the snapshot icon (F12), a File Save dialog appears so you can choose a new name and save location.
- **Save To:** Image automatically saves to the defined location.

To define the location, click [Browse] and go to the location to which you want to save the images, making a new folder if necessary. Click [OK].

- **File Type:** Select the file format to which you want to save your images. If you choose JPG or TIF format, click [Options] to set format-specific save options:

FIGURE 19. TIF and JPG Options Dialog



MULTISHOT OPTIONS

- **Folder Name Prefix:** This is the prefix for the image file names. A multishot series is stored in a sub-folder with the same name as the first shot in the series.
- **Interval Between Two Shots (sec):** Time between images in the multishot series.
- **Maximum Shots Per Recording:** Number of images in a multishot series. A second click of the multishot icon before this number of images is captured terminates the series.
- **Save To:** Image automatically saves to the defined location. A subfolder is created in this location for each multishot series and named to match the first image in the series.
- **File Type:** Select the file format to which you want to save your images. If you choose JPG or TIF format, click [Options] to set format-specific save options:

CAPTURING SINGLE SNAPSHOTS

To take a single snapshot:

1. **Set your save parameters** in the Recording tab of the Settings dialog.
2. **Click the snapshot icon** in the Accessories tool bar (F12) or select TOOLS-TAKE A SNAPSHOT.
 - **If you have selected the Always Ask Me Where To Save Snapshots option** in the Settings dialog, the Windows® File Save dialog will appear for you to name the file and set the save location. You can choose to save it as a JPG, BMP or TIF file.
 - **If you have selected the Save To option**, the image is automatically saved according to the snapshot options in the Recording tab of the Settings dialog.



Each snapshot is also saved to the clipboard in case you want to also paste it into a document or graphics program.

CAPTURING MULTISHOT SERIES

FIGURE 20. *Sample Multishot Series*

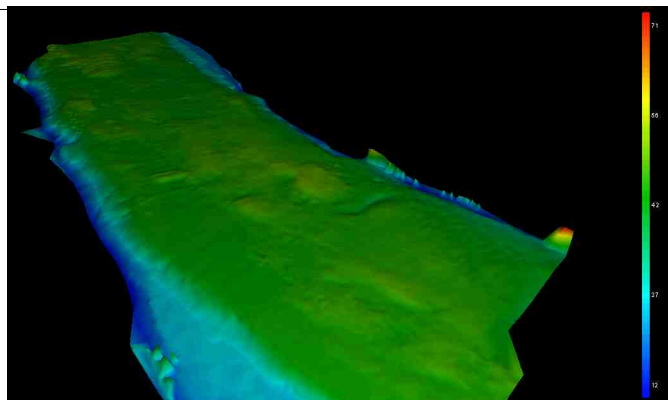
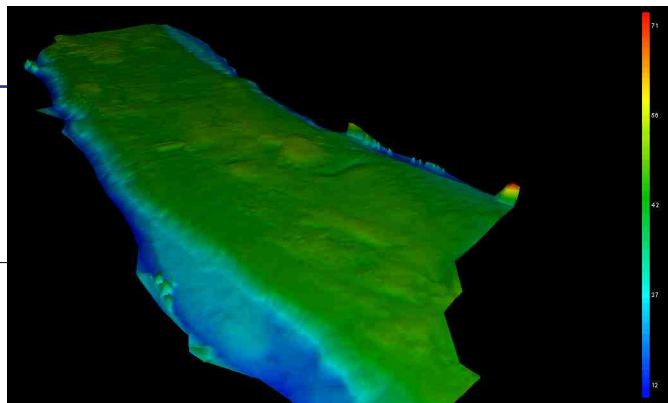
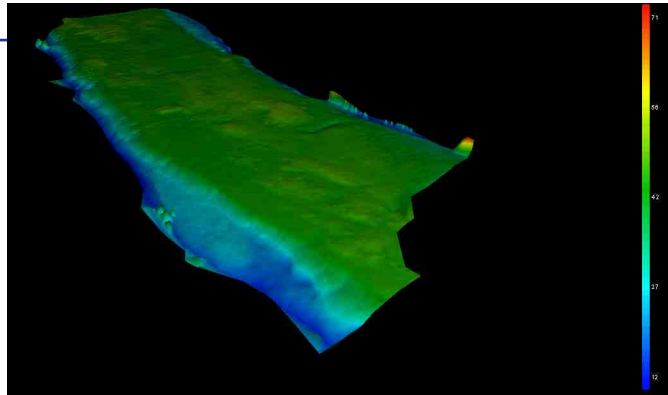
To capture a multishot series:

1. **Set your save parameters** in the Recording tab of the Settings dialog.
2. **Click the multishot icon** in the Accessories tool bar or select TOOLS-MULTISHOT. The program creates a subfolder at the Save To location and automatically saves a series of images according to the multishot options in the Recording tab of the Settings dialog.

FIGURE 21. *Multishot Icon*



Note: A second click of the multishot icon before the maximum number of images in a series is captured terminates the series.



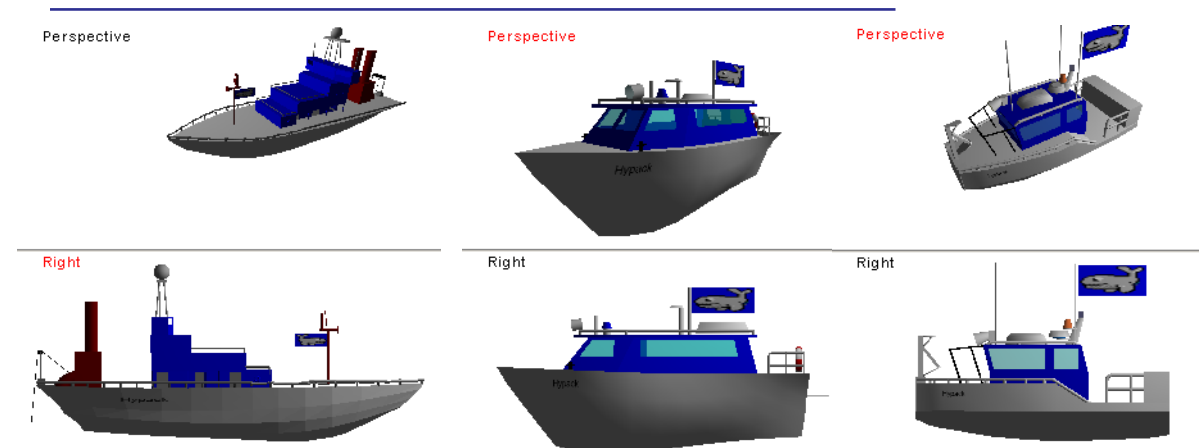
3D SHAPE EDITOR

MORE VESSEL TEMPLATES IN THE WIZARD

The wizard originated to provide a set of templates specialized for use in 3DTV. The dredge templates support moving parts, and both dredge and pole templates include points that connect by cable or extensible parts.

In HYPACK® 2013, the wizard has been expanded to include a choice of three vessel (boat) shapes as well as a hook type crane.

FIGURE 22. *Vessel Shapes*



In addition, the wizard also presents a properties dialog according to the template you have chosen. Most of the dredge options were available in 2012, though we have added the hook type crane and the motorized spud on the cutter suction dredge.

If you select one of the vessel templates, the vessel properties dialog enables you to set the scale of the model, as well as a few cosmetic options.

FIGURE 23. *Vessel Properties*

SETTING SHAPE DIMENSIONS

Whether you choose one of the template shapes or build your own, the overall size of the shape is important to achieve a realistic display in 3D TERRAIN VIEWER. When you select the root folder in the Object Browser window, the Object Properties includes the dimensions of the whole shape. If you change any of the three dimensions (length, width or height), the program adjusts the corresponding scale of the component objects to achieve the specified overall dimensions.

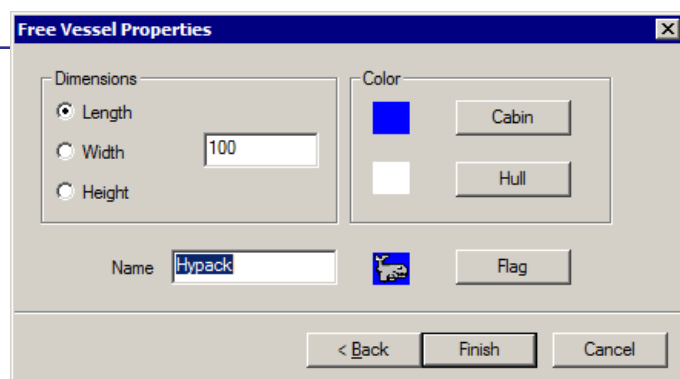
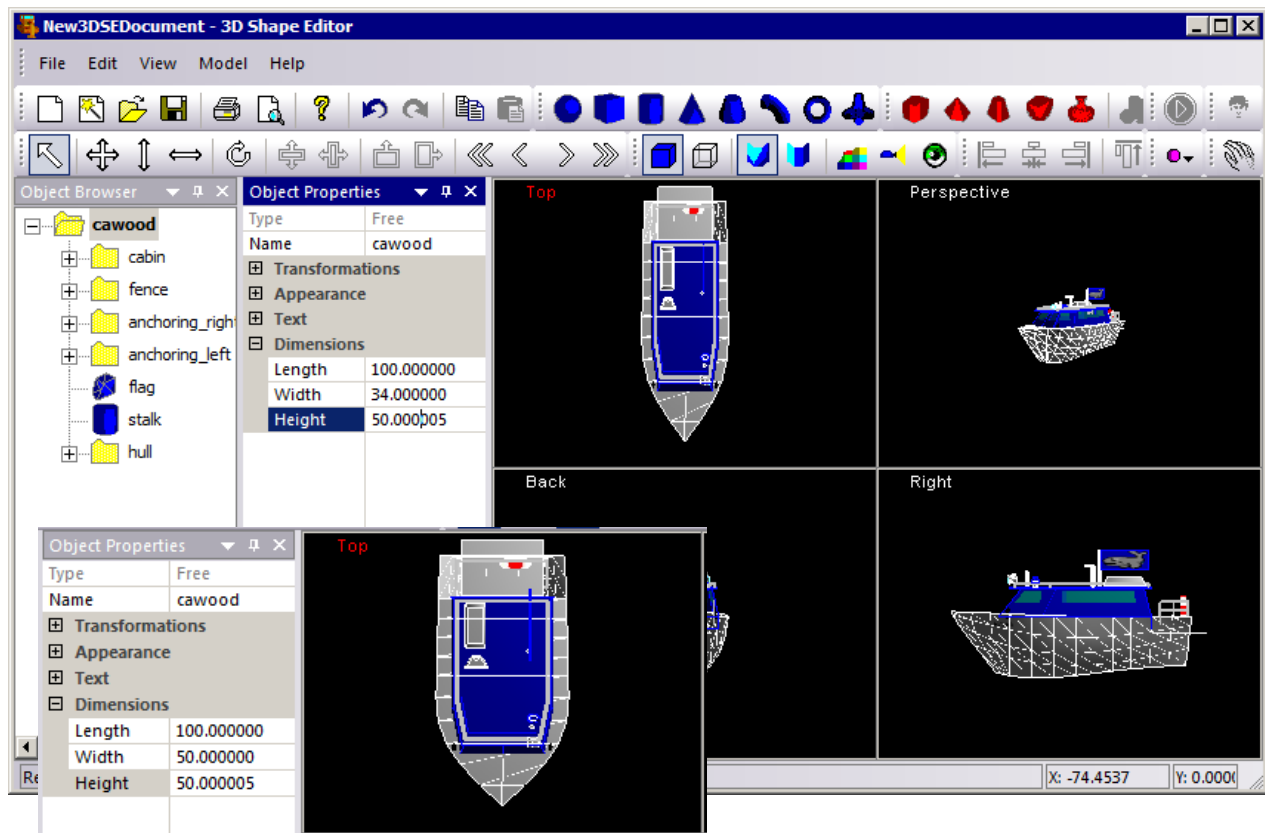


FIGURE 24. Changing the Width from 34 to 50



TEXT ON OBJECTS

You can now apply text to your 3D objects. There are two methods:

- The Object Properties include Text options where you enter the content and set the font.

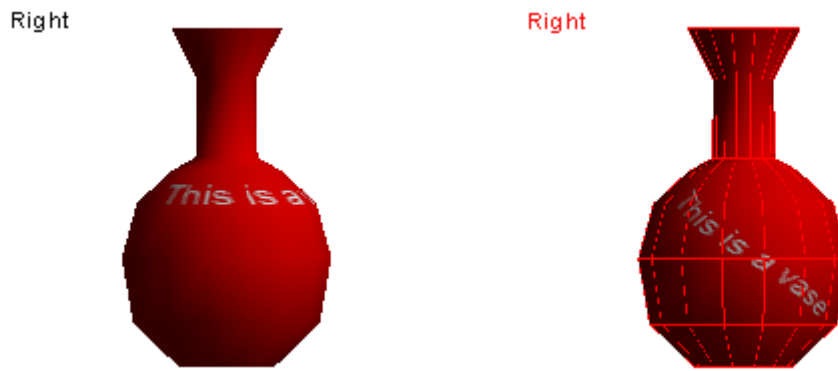
FIGURE 25. Text Options in the Object Properties

The text is initially applied on the side of the active object and wraps around to adjacent faces, if necessary. You can then use the tools on the Texture Transformation Bar to scale, shift and rotate the text in the design window.

FIGURE 26. Texture Transformation Bar

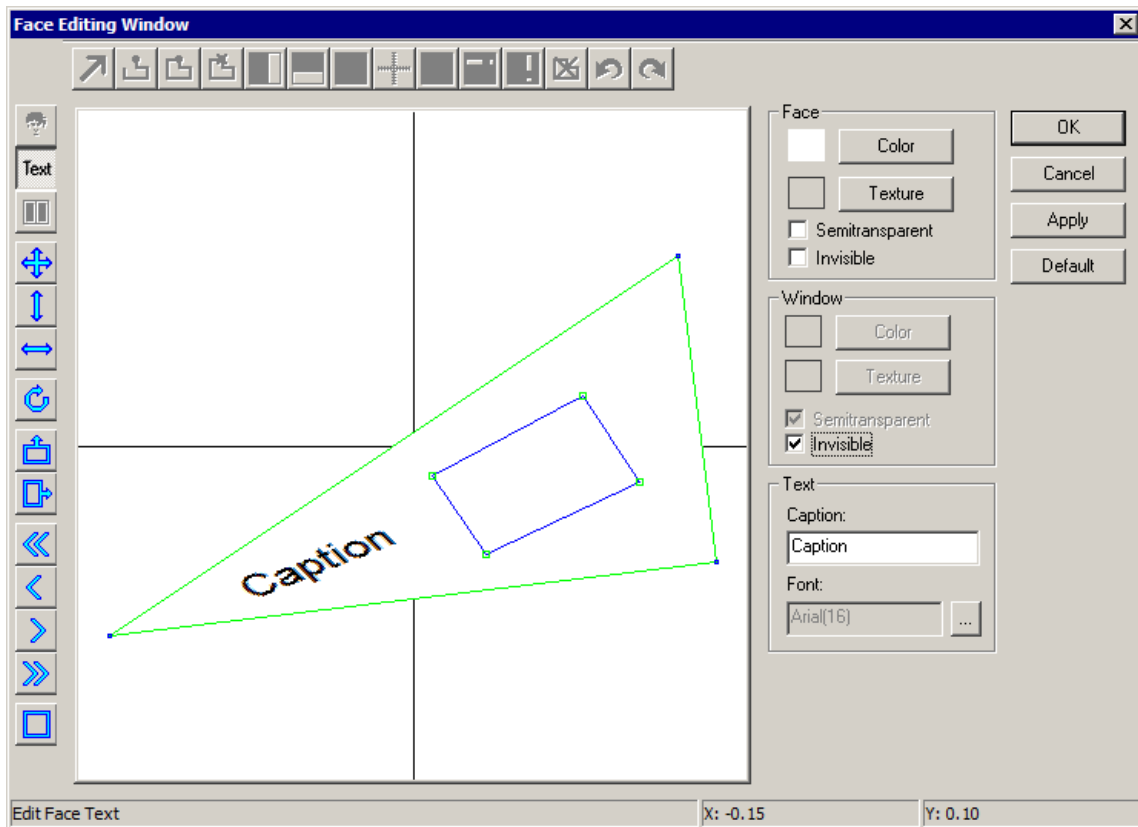


FIGURE 27. Text On a 3D Object—Default Position (left) and Rotated (right)



- The Face Edit window also includes Caption and Font options, and tools to scale, shift and rotate text and textures on the selected face.

FIGURE 28. Face Edit Window

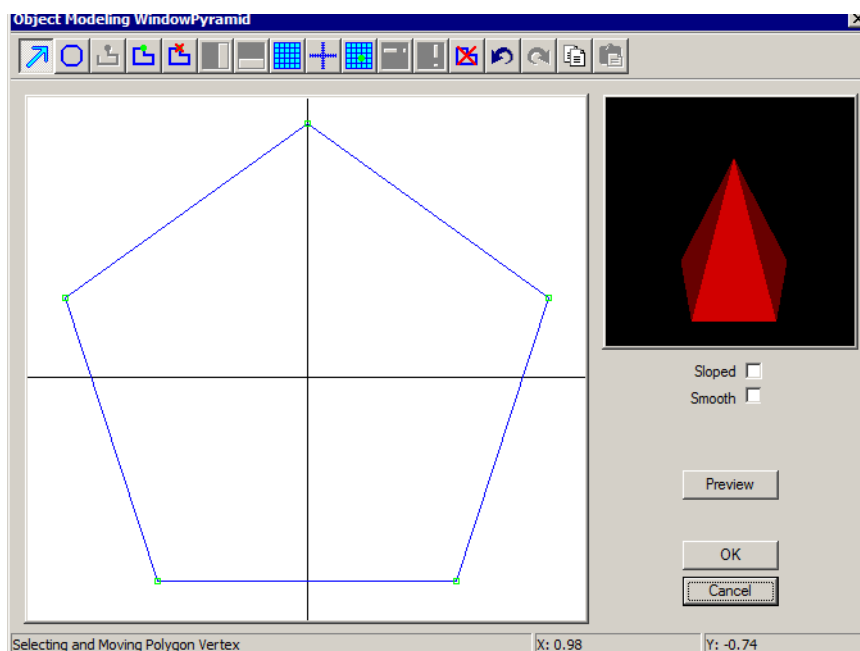


WIDE DIALOGS

Did you notice the more horizontal orientation of the Face Editing window in Figure 27? The Wide Dialogs option in the View menu presents the Face Editing and Object Modeling windows with the options on the right of the drawing board so the dialog fits on screens with

vertical resolution of less than 768 lines, eliminating the need for a scroll bar. Much more user-friendly for those of you with smaller screens!

FIGURE 29. *Wide Object Modeling Window*



ADVANCED CHANNEL DESIGN

REMOVING REDUNDANT NODES

As you build and modify your channel, you may find yourself with multiple nodes that define the same XYZ position, though they have different names. This condition can be problematic in certain operations such as merging faces. The following process cleans your redundant nodes to correct this problem.

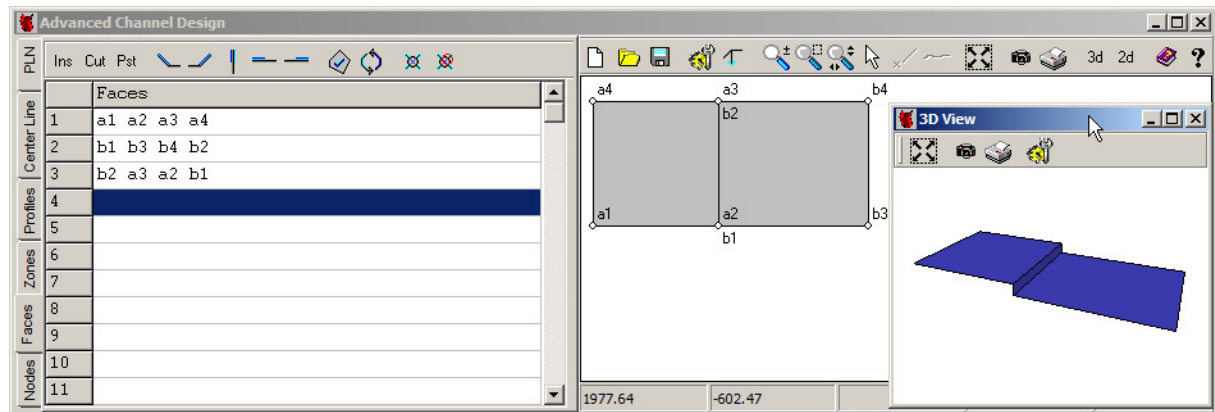
1. **Remove redundant names in the face descriptions** by clicking the Remove Duplicate Points icon. The program searches your channel file for redundant points (for example A and B) then searches the face descriptions and replaces all references to 'B' with 'A'. *It does not remove the now unused node B from your file.*
2. **Remove the unused nodes.** Click the Remove Unused Nodes icon to delete nodes that do not appear in the Faces tab.



EXPORTING ZONE BORDERS WHERE THERE ARE VERTICAL WALLS IN ONE ZONE

If you have a vertical wall in your channel, you can not select it to assign it to a zone.

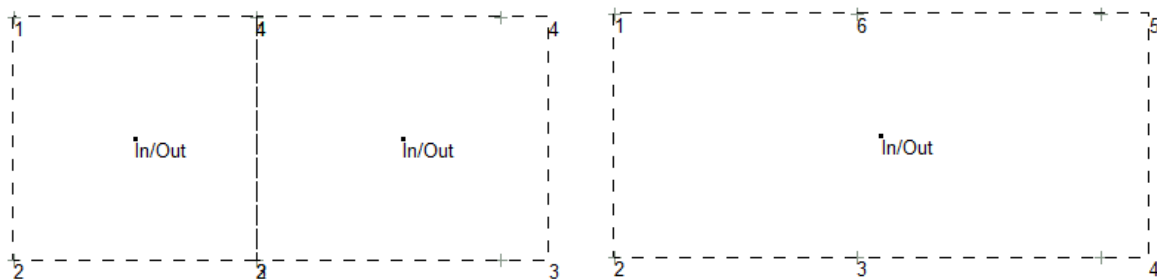
Channel Faces Joined by a Vertical Wall



If the faces adjacent to the wall are in the same zone, you have two choices:

- **[Save BRD]** creates separate borders for each level naming the borders *ZoneName.BRD* and *ZoneName1.BRD*.
- **[Save BRD-Flat]** ignores the changing Z-level (at the wall) and creates one border around the full horizontal area naming the border *ZoneName.BRD*.

Border File Results—[Save BRD] (left) and [Save BRD-flat] (right)



NEW SUB-BOTTOM PROCESSING PROGRAM

The SUB-BOTTOM PROCESSOR has been completely rewritten. The process is essentially the same, but the program is more user-friendly.

It displays SEGY sub-bottom data and provides tools with which you mark targets, and digitize your layers. The SUB-BOTTOM PROCESSOR converts the digitized points to the HYPACK® All format and XYZ formats. Display the sounding data with the targets in the HYPACK® screen or load the All format data to CROSS SECTIONS AND VOLUMES where you can overlay the layers in profile view and export them to a plotter.

FIGURE 30. SUB-BOTTOM PROCESSOR

