



HYPACK® 2015 Release Notes: Changes Since HYPACK® 2014

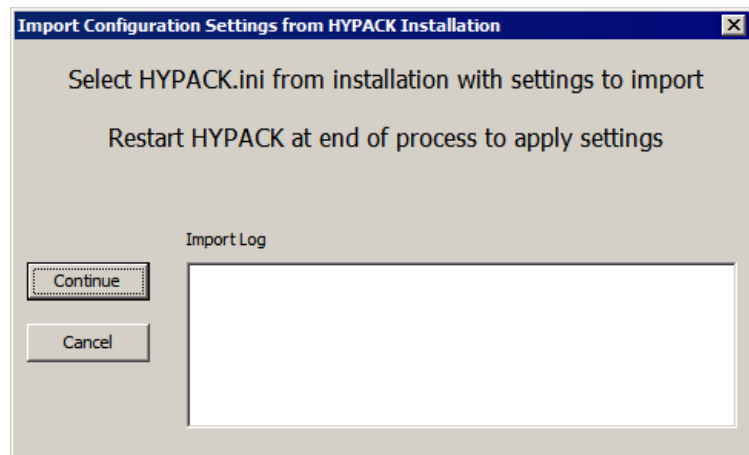
By Judy Bragg

HYPACK® SHELL

IMPORT GLOBAL SETTINGS

If you have already been working in a previous HYPACK® install, when you a new release version on your HYPACK® computer, it can be a time-consuming task to configure the interface like the previous version. To simplify your upgrade experience, a simple menu selection automates the process. In one short process, it copies the following to your new install:

- Web Map Server Configuration
- ARCS Permits and Licenses.
- S-63 Permits and Licenses
- HYPACK® Project Group Folders
- Items from the Tools menu in the HYPACK® Shell.
- Boat Shape files (*.SHP)
- 3D Shape files (*.3OD)
- HYPLOT Template Files (*.HYT)
- HYPLOT Title Blocks (*.HTB)
- TPU EDITOR Settings
- HYDRO DATABASES Location



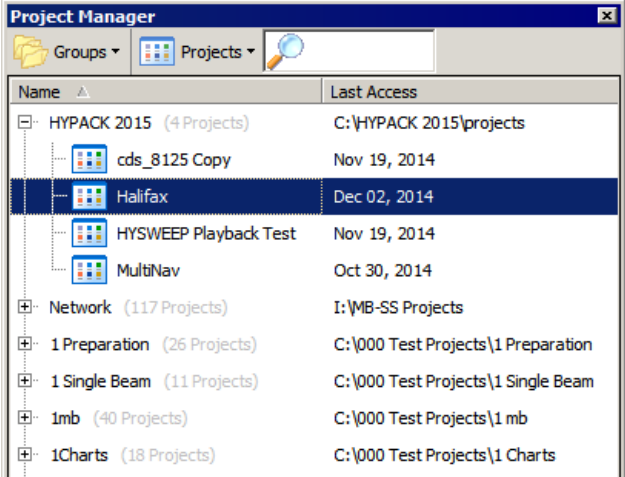
UNICODE COMPLIANT

- Language support is enhanced to allow complex character sets (Chinese, Japanese, Korean, Cyrillic) in Project Names and File Names.
- Nearly complete interface translation in Spanish and Russian.

PROJECT MANAGER

PROJECT GROUP CHANGES

- HYPACK 2015 and “Network” project groups are initially assigned to the \HYPACK 2015\Projects folder. You can assign them to alternate file locations.
- You cannot rename the “Network” project group.
- Other project groups can be renamed and assigned to different file locations. When you rename the project group, it is *for display purposes in HYPACK® only*. (It does not affect the folder name in Windows® Explorer.)

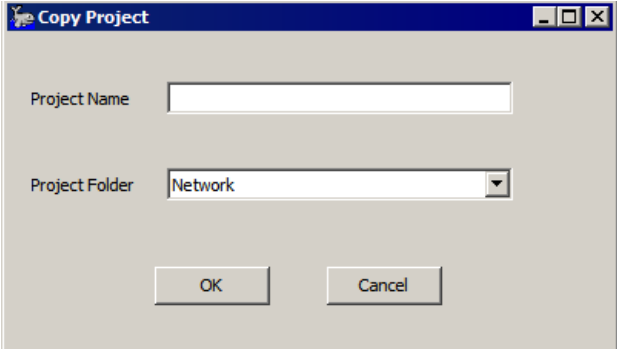


COPY AND TRANSFER FILES IMPROVED

A project **transfer** creates a duplicate copy of a project in another project group folder. The result is two identical, but *independently functioning* projects, with the same name but different locations. In HYPACK® 2015, you can choose to go to the transferred project group folder and rename the project at the new location.

When you **copy** a project, all files in the selected project folder, *except data and tide files*, are copied to the new project maintaining their enabled or disabled state.

In HYPACK® 2015, you can copy the project to a different project group folder location if you wish.



FIT PROJECT COLORS TO XYZ DATASET

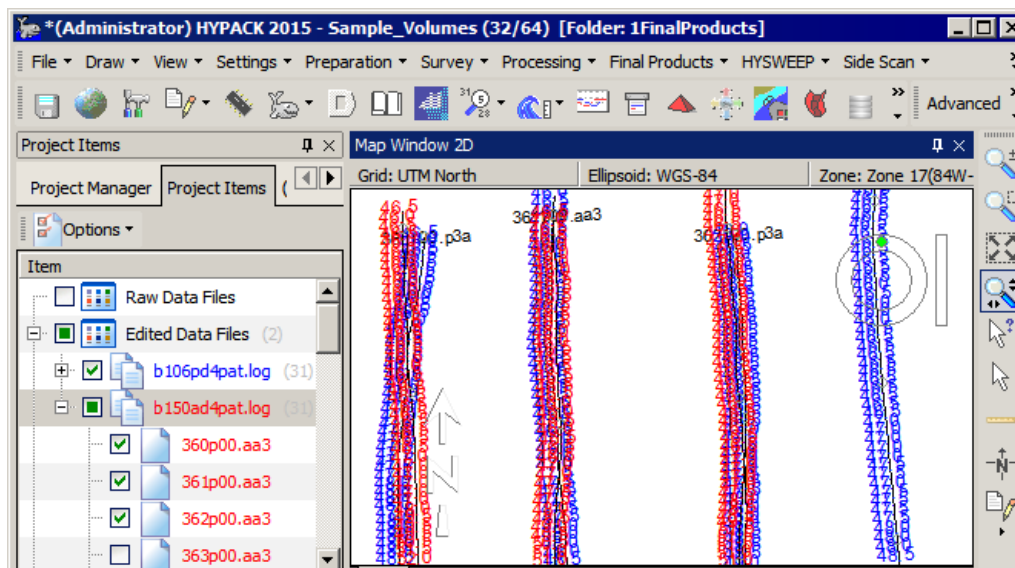
HYPACK® 2015 can read the range of Z-values in an XYZ file and automatically distribute the project colors evenly across the Z-range. Just right-click on the XYZ file in the Project Items list and select SET PALETTE RANGE FOR ASSOCIATED PALETTE.

PROJECT ITEMS LIST

- **New Folders:** Web maps and side scan images in a project can be numerous and making an excessively long and unwieldy list of Background charts. In HYPACK® 2015, Web maps and side scan images have their own folders in the Project Items list.
- **Color By File Color-codes Project Items:** When you color soundings by file, HYPACK® displays the soundings and each sounding LOG and file name in the Project Items list using their assigned colors.
- **HYPACK® 2015 does not allow you to load an individual file when it is a member of a project LOG file.**

To color-code individual files, remove the LOG file from the Project Items list and load the files individually. Then you can assign colors to the individual files.

FIGURE 1. Color-coding Soundings by File



WEB MAPS

The HYPACK® interface includes an easy, process that automatically downloads and displays the latest NOAA (National Oceanic and Atmospheric Administration) and ACOE (Army Corps of Engineers) charts in the area currently shown in the Map window. The Update ENC Catalogs button in the ENC Web Maps toolbar shows last download dates of each catalog.

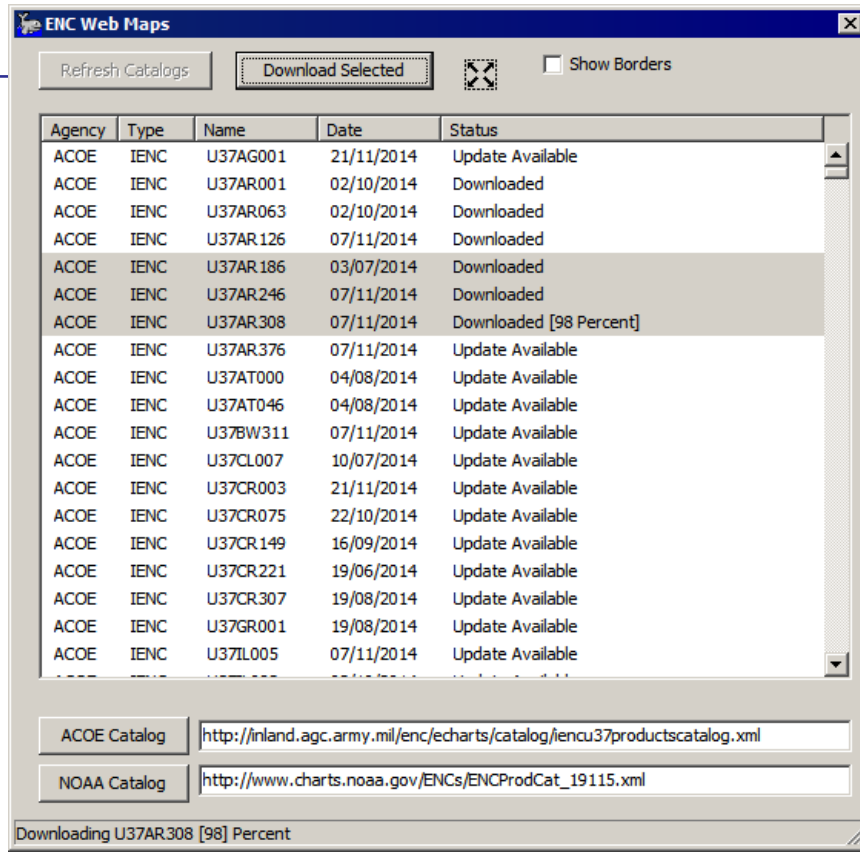
HYPACK® automatically converts the charts to project geodesy as you download them to your project.

NOAA and the Corps update their sites frequently so it's a good idea to confirm that you have the latest charts. The Web ENC dialog shows a complete list of charts in the catalogs with each chart name, originating agency, chart type, last modified date (dd/mm/yyyy) and the status relative to your project:

FIGURE 2. Web ENC Window

- **Downloaded:** You have the most recent version of this chart.
- **Update Available:** The most recent version of this chart has not been downloaded.

Select any charts you want to update and click [Download Selected]. HYPACK® downloads and installs the latest versions of the selected files and the status updates to “Downloaded”.

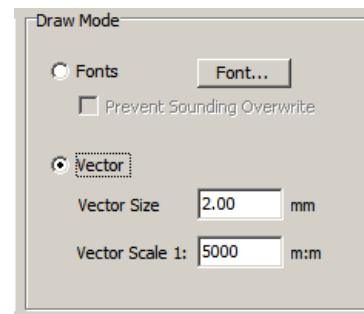


VECTORIZED SOUNDINGS

The size is tied to a particular scale in the Map window of HYPACK® and of HYPLOT.

For the HYPACK® Map window, set the scale and size in the Soundings tab of the HYPACK® Control Panel (right).

In HYPLOT, the plotting sheet determines the scale. Set the size in the Soundings Tab of the HYPLOT control panel (F9).



PREPARATION

HARDWARE

INCREASED NUMBER OF COM PORTS

Multibeam and Side Scan configurations are expanded to list up to COM50. Sometimes USB and Bluetooth devices add COM50 ports beyond the 16 supported in earlier versions of HYPACK®. This added support makes it a little easier than reassigning ports through the Windows® Device Manager.

NEW DEVICES

HYPACK® DRIVERS

- **SBG Ekinox** Series motion sensor
- **Bucket.dll**: New Capping driver that updates the matrix for capping. Enter flow rate (cubic yards/min) and the slope of the material. The driver shows the amount of material/min in each cell at this slope when you start logging.
- **Outland.dll**: Outland Video Display

HYSWEEP® DRIVERS

- **Blueview P900** forward scanning sonar
- **Tritech Gemini** forward scanning sonar
- **Simrad ME-70**: multibeam echo sounder supporting water column data collection.
- **Edgetech 6205**: Combined Bathymetry & Side Scan Sonar
- **Renishaw Dynascan** LIDAR
- **SyQwest B210** Sub-bottom (Subbot.dll)
- **Horizontal Seaspy Grad** (Magnet.dll)
- **Velodyne HDL-32-e** (LIDAR)

ADVANCED CHANNEL DESIGN

Import XML file to Nodes Tab: CAD programs commonly output the waypoint data in XML format. You can load this data (FILE-OPEN) to populate the Nodes tab.

NOTE: This feature was developed using a format common to multiple CAD programs. If this operation fails using your XML file, contact our Technical Support team to determine whether your output is compatible.

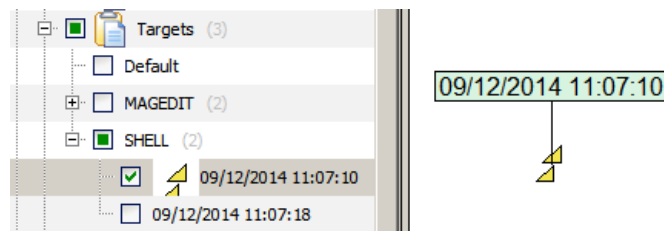
NEW TARGET ROUTINES

Target handling has undergone major revisions: In most cases, HYPACK® 2015 does not read or generate target files (*.TGT) as in earlier HYPACK® versions. Instead, each project maintains a database (targets.db) of *all* targets in the project in the project folder.

Targets still mark points of interest in your project area. To that end, each target must at least include a name and the XY position, but it can now also include a lot of other metadata according to the project and the technology used. For example, a side scan target may record the height, length, width, and a capture file of a submerged feature; in magnetometer data, the strength of the reading from peak to trough or duration; and in sub-bottom data, the depth of burial of the marked feature.

A **target group** is a list of individual targets which allows you to enable and disable all targets in the group in one operation (in much the same way catalogs facilitate data files).

HYPACK® automatically creates several default groups in the Project Items list named according to the



program in which the member targets were created. You can also create target groups to suit your needs. Targets can be members of more than one group.

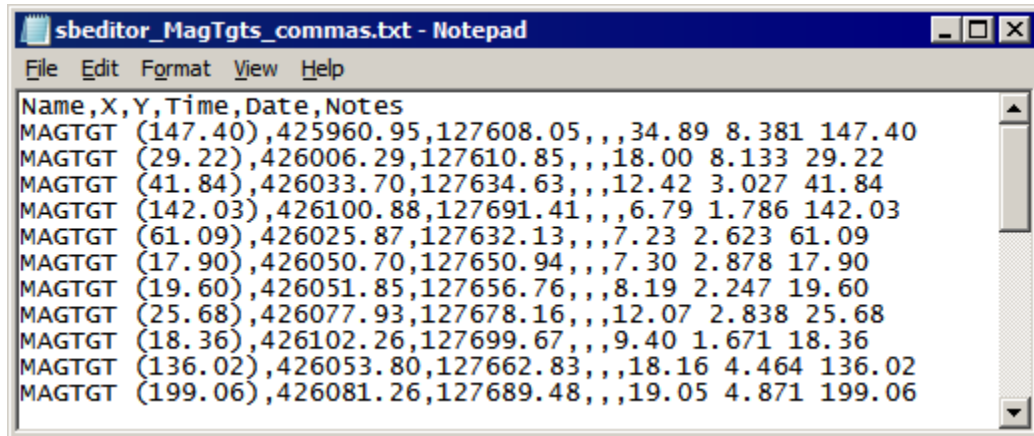
The target database: All HYPACK® programs—acquisition, processing, and final products—read and write target information to the target database. The database model currently supports many more target properties than the earlier target file format (*.TGT), and is expandable. Each program reads and writes only the properties they need.

HYPACK® 2015 can export to and import from the target file format (*.TGT) of earlier HYPACK® versions. This enables you to share basic target data with others who are working with earlier versions of HYPACK®.

NOTE: The extended target properties available in HYPACK® 2015 are not supported in the TGT file, so that data is not exported.

In addition, you can export the user-configured spreadsheet view to a text file which may then be imported to a text editor or spreadsheet program.

FIGURE 3. Sample Text Output

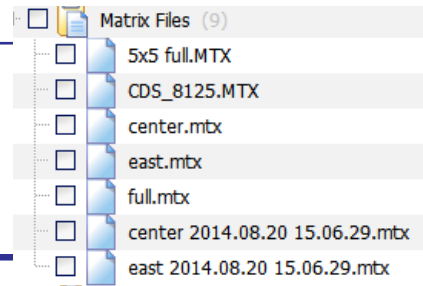


MANUAL MATRIX BACKUP

You can quickly and easily make a backup copy of your filled matrix file and include it in your Project Items list. HYPACK® automatically names the backup copy by appending the date and time to the original matrix file name: *FileName yyyy.mm.dd hh.mm.ss.mtx*.

FIGURE 4. Two Matrix Files Backed up at 3:06 on August 20, 2014

This enables you to maintain a series of backup matrix files over time. You can compare files to see changes from one time to another.



SURVEY

AUTO-MATRIX

For multibeam surveys only, Auto-matrix is a method by which matrix data is logged to a binary data file and stored in the project \Automtx folder. When you close the SURVEY program, HYPACK® generates matrix files according to user-defined options, and the right dimensions to fit your survey data. This eliminates the need to size one or more matrix files over your survey area in the MATRIX EDITOR.

AUTO-MATRIX DISPLAY OPTIONS

- **Choice of Display Value:** In HYPACK® SURVEY 2015, the Matrix Display drop-down in each HYPACK® SURVEY Map window enables you to choose the data to display: Minimum, Maximum or Average Depths, Standard Deviation or Sounding Count per Cell. That means you can display multiple Map windows, each with a different value!

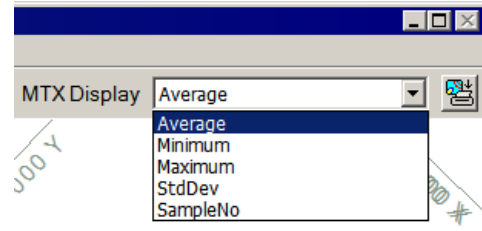
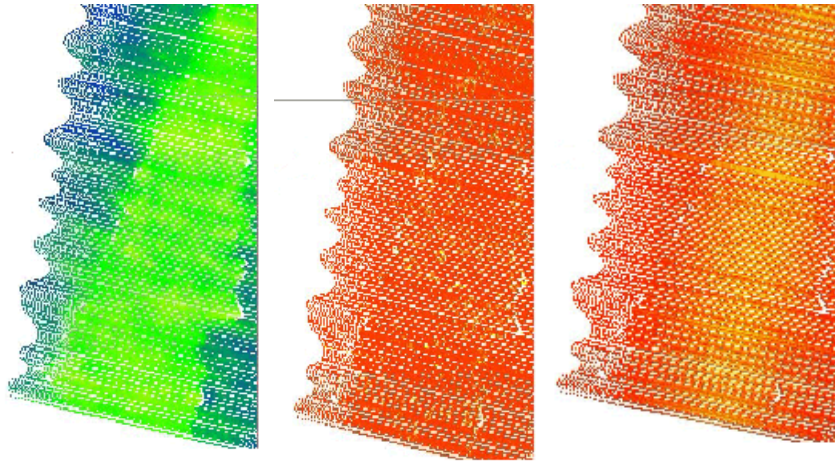


FIGURE 5. Minimum, Maximum or Average Depth—Average Depth (left), Standard Deviation (center), Sounding Count (right)



NOTE: It is important to remember, these are *display* options. *They do not affect the data logged.* (Those settings are in the Matrix Options dialog accessed from the SURVEY shell.)

- **Sun Illumination Options:** The Auto-Matrix display is always sun-illuminated with the same options that were previously available only for the user-defined matrix. Configure each Map window individually through the Matrix Appearance dialog.

NOTE: The options in this dialog change when you are using the Auto-Matrix feature vs a user-defined matrix.

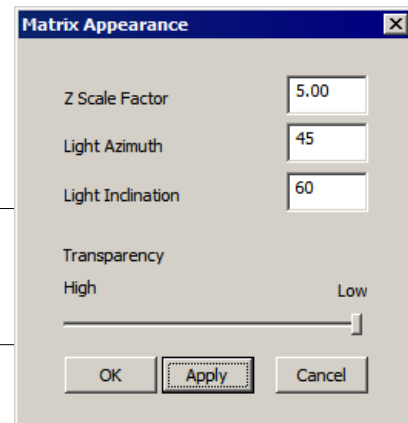
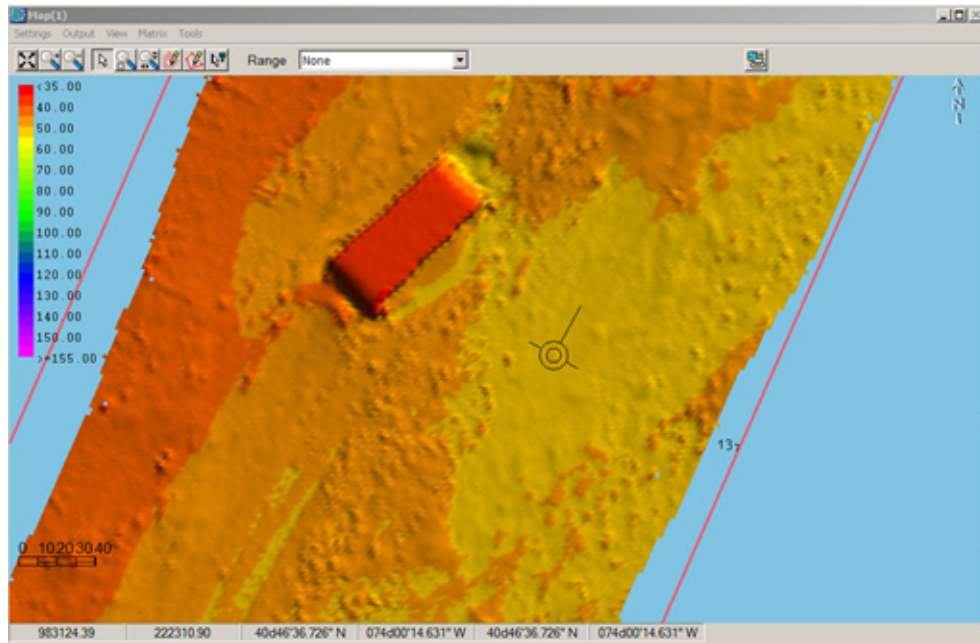


FIGURE 6.
Sample Sun Illuminated Matrix in HYPACK® SURVEY



AUTO-MATRIX LOGS MULTIPLE VALUES PER CELL

In the HYSWEEP Auto-Matrix area of the Matrix Options dialog, choose one or more values to be stored in the output HYPACK®-type matrix files. When you close HYPACK® SURVEY, *for each matrix block* the program generates a matrix file *for each selected value*. (For example: If you have 3 auto-matrix blocks, and you have selected Average and Standard Deviation Auto-matrix Record options, the program generates 6 MTX files—3 with average values and 3 with standard deviation.)

In addition, the matrix files with the same Record value type are grouped into a Matrix Catalog File (*.MLOG) to keep them organized and facilitate viewing in HYPACK® and HYPLOT.

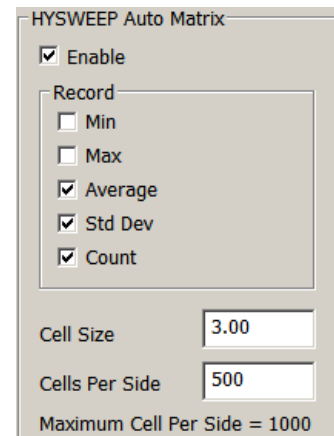
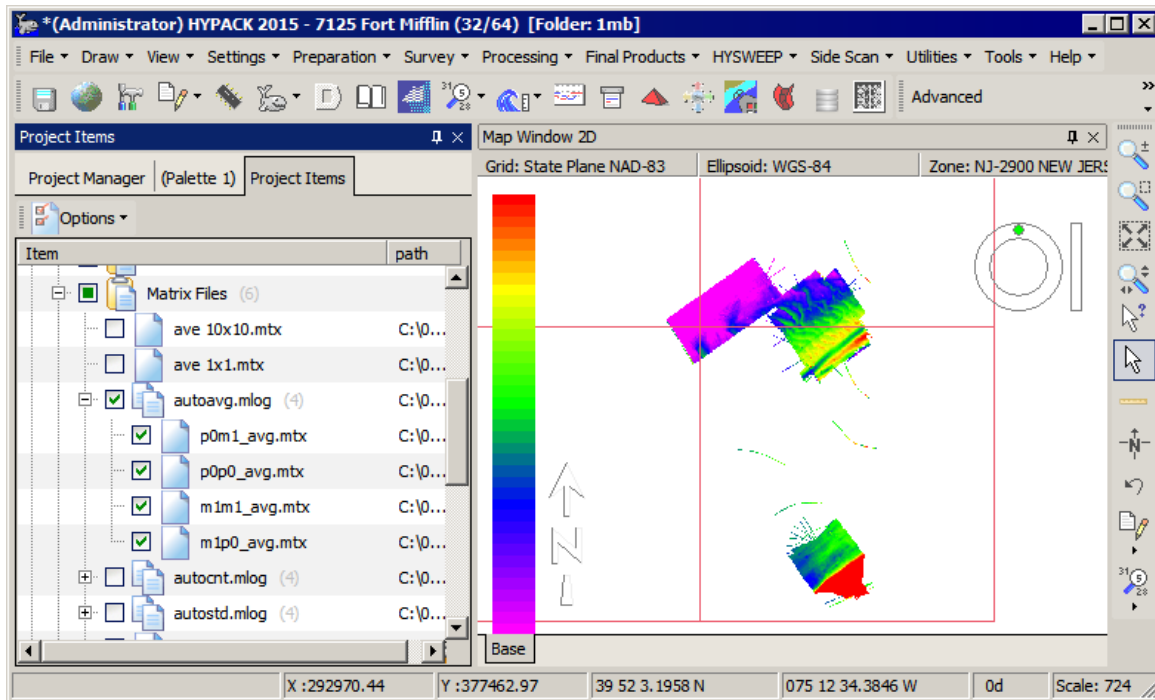


FIGURE 7. Matrix LOG in HYPACK®

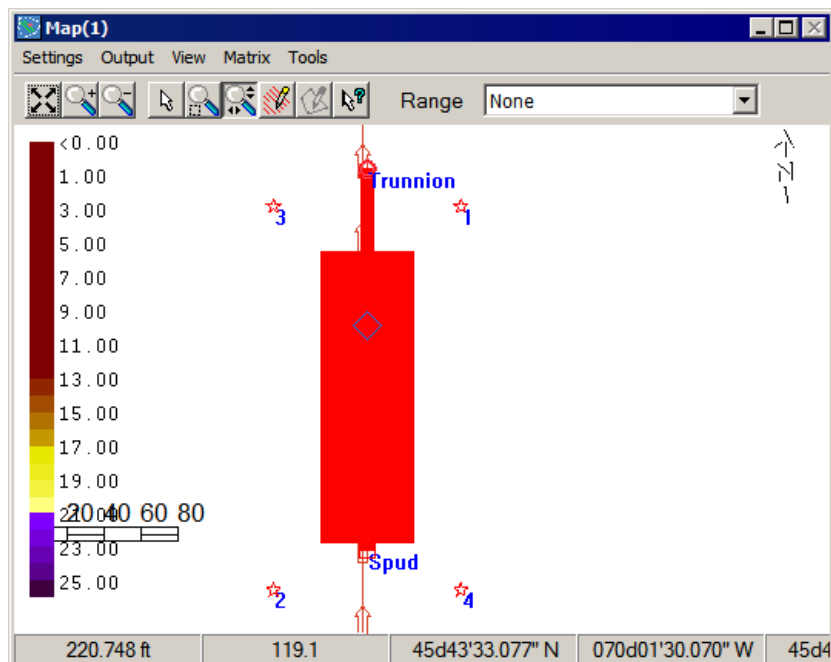


MULTIPLE TRACKING POINTS

The tracking point specified in HARDWARE is automatically the first tracking point location. In HYPACK® SURVEY, you can configure up to 15 additional tracking points and the display of any number of these 16 locations in SURVEY or DREDGEPAK®. For each location you choose to display, you also set the symbol, its size and whether it is labeled with its name.

These tracking points are useful for the following purposes:

- Set any of the 16 locations to use as the tracking point at any time during data collection.
- Averaging the position of any tracking point over a user-specified time.



- **Display Tracking Point to Target Statistics:** The new Target window shows information about the position of a selected target relative to a selected tracking point.

NOTE: You can only have *one active tracking point per mobile* at any one time. You must configure a separate mobile for each position you want to continuously monitor.

TRACKING POINTS WINDOW

The Tracking Points window has a tab for each mobile in your hardware configuration. It displays all of the tracking points with their positions relative to their mobile origin and in XYZ projection coordinates. It is also where you control which location is currently used by SURVEY or DREDGEPAK® as the tracking point, *potentially overriding the tracking point set in HARDWARE*.

FIGURE 8. Sample Tracking Points Window

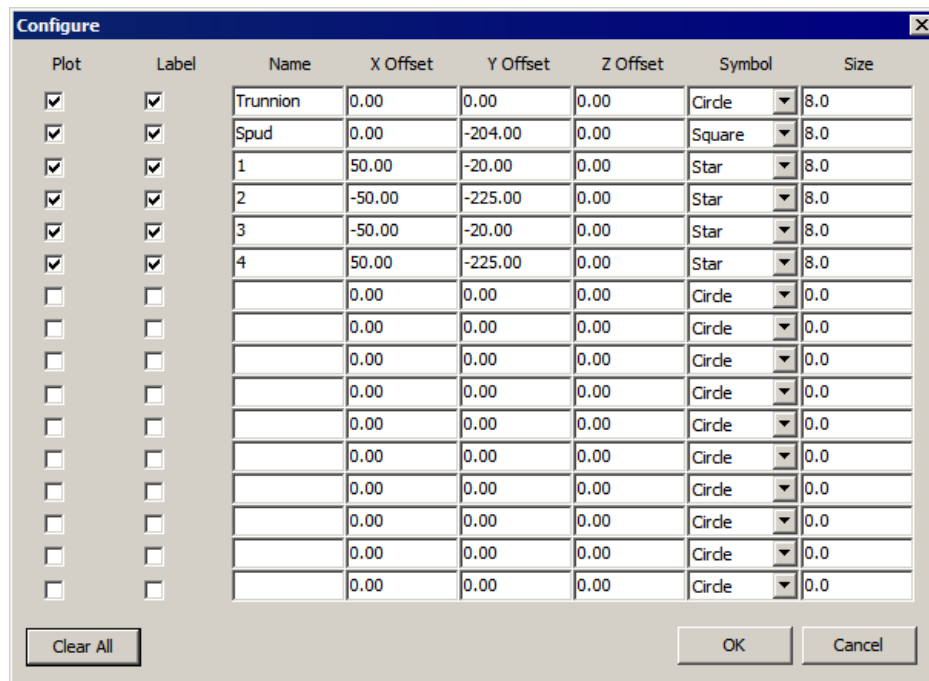
Main	Name	X Offset	Y Offset	Z Offset	X	Y	Z
<input checked="" type="checkbox"/>	Trunnion	0.00	0.00	0.00	1406110.00	1178163.89	-0.00
<input type="checkbox"/>	Spud	0.00	-204.00	0.00	1406110.00	1177959.89	-0.00
<input type="checkbox"/>	1	50.00	-20.00	0.00	1406160.00	1178143.89	-0.00
<input type="checkbox"/>	2	-50.00	-225.00	0.00	1406060.00	1177938.89	-0.00
<input type="checkbox"/>	3	-50.00	-20.00	0.00	1406060.00	1178143.89	-0.00
<input type="checkbox"/>	4	50.00	-225.00	0.00	1406160.00	1177938.89	-0.00

Buttons: Configure, Options, New Target Window, New Slope Window, Start Averaging

The tracking point specified in HARDWARE is automatically the first tracking point location. The name defaults to "Origin", but you can rename it.

Configure additional tracking points and their display options in the Tracking Point Configuration window.

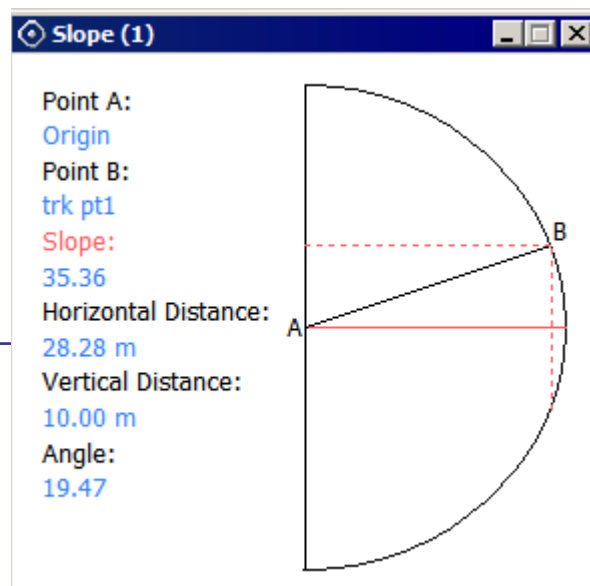
FIGURE 9. Tracking Point Configuration Window



TRACKING POINT-TO-TRACKING POINT INFORMATION

HYPACK® 2015 can display the slope, angle, and horizontal and vertical distances between any two tracking points by configuring a Tracking Point Slope window in SURVEY or DREDGEPACK®.

FIGURE 10. Sample Tracking Point Slope Window



TRACKING POINT- TO-TARGET INFORMATION

One application of tracking multiple points is in rig positioning. You can use the Barge device driver to display the target position of your rig and mark targets where your tracking points should be when the rig is correctly positioned. Using the same boat shape for your rig mobile, move your rig to directly overlay the displayed target position.

When there are targets, you can configure Target windows to display statistical data about the position of a selected tracking point relative to a selected target. Data options include the target and tracking point names, distance, bearing, the change in X and Y coordinates, and the difference in the target and tracking point depths.

IMPORTANT: The Data Display window displays the same statistics, *relative to the current tracking point only*. If you change the main tracking point in the Tracking Points window to see the statistics in the Data Display, it affects the recorded position and the position used for other SURVEY calculations.

The Target windows provide the same statistics *without affecting the recorded data*.

FIGURE 11. Sample Targets Window (left) and Sample Configuration Dialog (right)

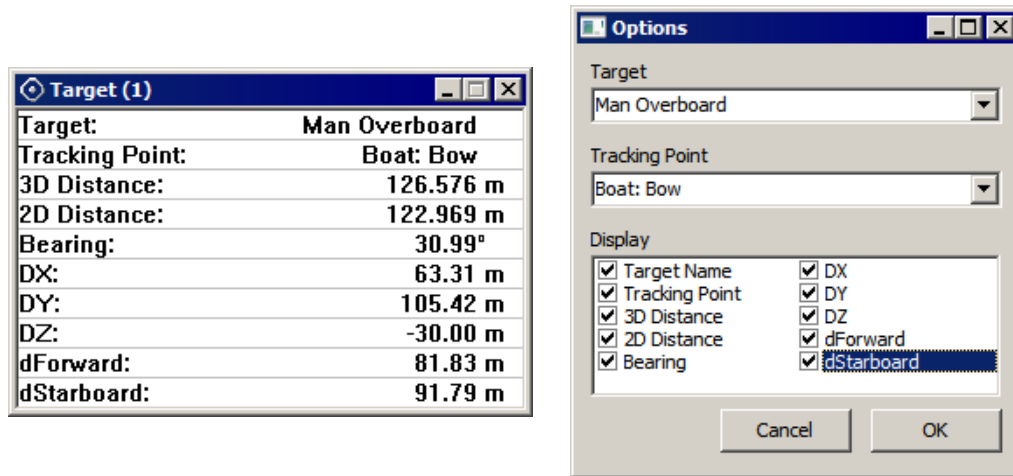
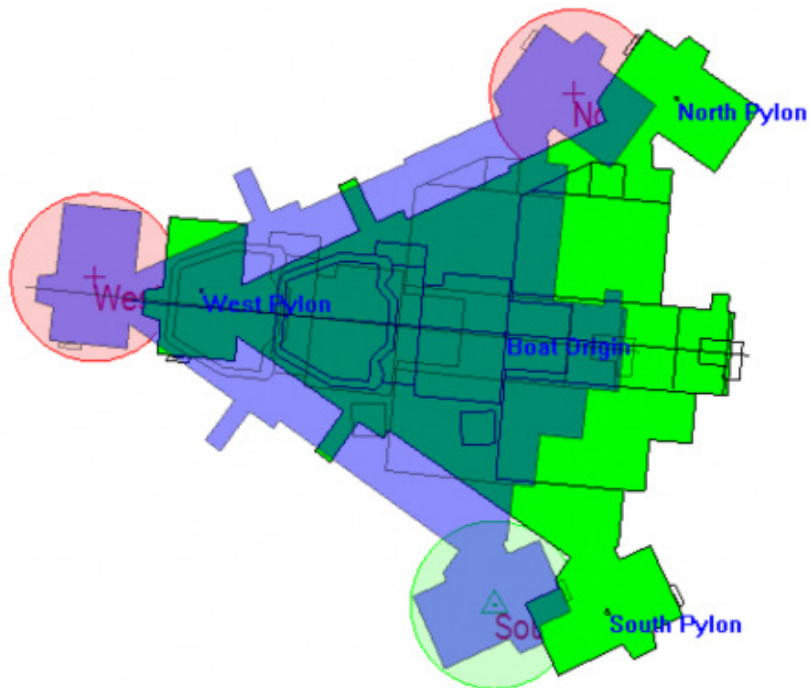


FIGURE 12. Real-time Rig Approaching its Final Destination.—Each pylon has a tracking point and a target at its final destination position.(Destination vessel image drawn by the barge.dll.)



AVERAGED POSITION REPORTS

SURVEY or DREDGEPACK® can generate a report of positioning statistics for each of your tracking points over a user-defined time period while logging. For each tracking point, the report shows its average X, Y and Z position and the standard deviation of each. It also includes the date and time span, and some GPS quality information.

If you select the Show Report on Averaging End option in the Options dialog, the report automatically appears. Otherwise, the program still generates the report and stores it in the project folder, but you have to manually open it.

FIGURE 13. *Sample Offsets Report*

Report Date:	11/15/2013						
Report Start Time:	12:20:34						
Report End Time:	12:21:06						
Units:	Feet						
	Min	Max					
HDOP:	1.00	1.10					
Num of Sats:	8	9					
GPS Mode:	2	2					
Offset	Name	Avg X	Avg Y	Avg Z	SD-X	SD-Y	SD-Z
1	Trunnion	1007035.54	777027.93	-12.00	0.00	0.00	0.07
2	1	1007027.54	777031.93	-12.00	4.08	9.66	0.07
3	2	1007043.54	777031.93	-12.00	9.80	3.73	0.07
4	3	1007027.54	777011.93	-12.00	19.32	8.16	0.07
5	4	1007043.54	777011.93	-12.00	7.45	19.60	0.07
6	Bucket	1007035.54	777039.93	-12.00	9.74	10.15	0.07

ANCHOR HANDLING

When you have created a boat shape file with anchors in the BOAT SHAPE EDITOR and loaded it in SURVEY or DREDGEPACK®, you can drop and raise its anchors in the map windows. Each vessel configured with anchors has an Anchor Manager, accessed through the Vessel Setup dialog, with the controls to move any anchor from the vessel to any location and raise it back to its original anchor attachment point. You can also set display properties for each anchor: name, color, marker position, radius and floats.

THE ANCHOR MANAGER

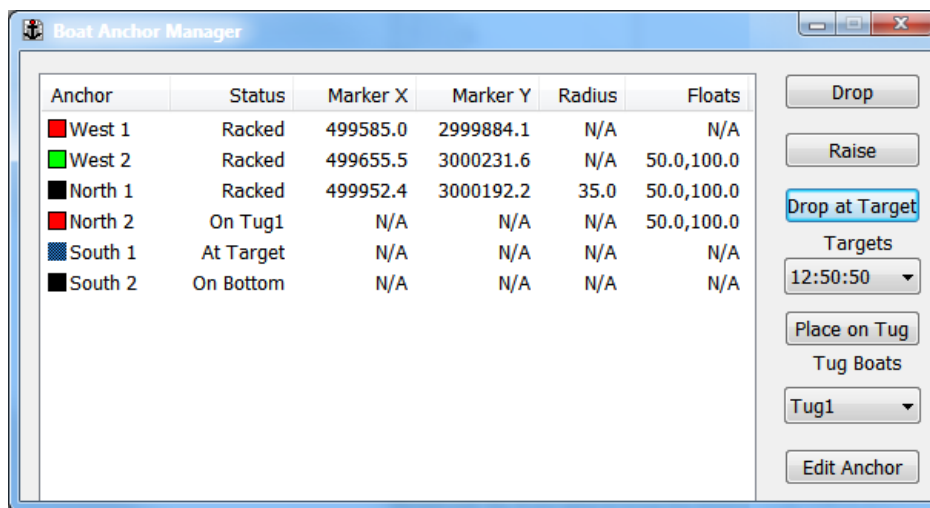
The Anchor Manager is designed to be used with remote viewing options (SURVEY VIEWER or Remote Access) to coordinate efforts of the barge master with the tugboat helmsman as they position the anchors for the barge.

With this method, the tugboats broadcast their positions over a wireless network to the barge using the GPStoNet utility. The barge runs SURVEY or DREDGEPACK® and all of the vessels appear in the area map. The helmsmen on the tugboats view the area map from the barge through SURVEY VIEWER or a Web browser while the barge master marks the required anchor positions in the area map and uses the controls in the Anchor Manager to control the anchor displays.

- **All vessels are on a wireless network.**

- **On the Barge:**
 - **One HYPACK® license for the barge master.** Neither the SURVEY VIEWER nor the WebIF display requires a license for the tug helmsman to view them.
 - **Barge boat shape file (*.SHP)** which includes named locations for each anchor point.
 - **Tugboat shapes are optional.**
 - **The hardware configuration** includes a mobile for each vessel position with the GPS driver assigned to them
 - **The barge computer runs SURVEY and broadcasts the SURVEY windows** via SURVEY VIEWER, or provides remote viewing in a Web browser. (See [“Remote Access Through a Web Browser”](#).)
- **On the tugs:**
 - **Broadcast position and heading to the network.** There are multiple ways to do this. The GPStoNET application is a stand-alone program that transmits the data from the GPS to the network. It is included in the \HYPACK 2015\Support folder. The GPS data stream is read over the Wi-Fi network by GPS.dll assigned to the tug mobile in the barge hardware configuration. The GPStoNET application does not require a HYPACK® dongle.
 - **If the tugs will be using SURVEY VIEWER, they must copy the program to their onboard computer.** Otherwise, they need only a web browser to use the Remote Access feature in SURVEY or DREDGEPACK®.
 - **If the tugs will be using the Remote Viewing option,** they must enter the Local IP Address, Port, User Name and Password provided by the barge master.

FIGURE 14. Sample Anchor Manager



Use the controls in the Anchor Manager to update the anchor location in the maps based on your observations and communication with the crew on the tugboats. The Status column updates with the current placement of each anchor:

- **Racked:** At the anchor attachment point. If the vessel moves, the anchor position updates accordingly.

- **On VesselName:** At the vessel origin. If the tugboat moves, the anchor position updates accordingly.
- **On Bottom:** Directly below the current anchor position.
- **At Target:** Drops the anchor at the currently selected target location.

When you raise an anchor, it always returns to its attachment point on the vessel.

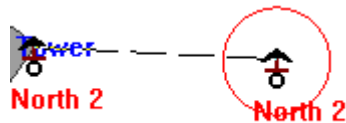
You can customize each anchor display individually by editing its view options.

ANCHOR DISPLAY PROPERTIES

You can customize each anchor display individually by editing its view options. To **open the Anchor Parameters dialog**, select an anchor in the Anchor Manager and click [Edit Anchor].

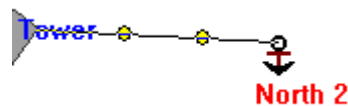
- **Radius** draws a circle of the defined size in survey units around the marker for that anchor. The radius shows only when the anchor is raised.

Anchor Marker with 35 foot Radius



- **Floats:** The distances of the floats from the anchor in a comma delimited list. The area map shows small circles at those distances measured from the anchor toward the anchor attachment point. The floats show only when the anchor is dropped.

Two Floats Between the Anchor and its Attachment Point



- **Marker X and Y** show the position of anchor markers the barge master can set where anchors should be placed. You can also set these coordinates using the cursor in the area map.
- **Color:** Select a color to color-code the anchor label and the anchor marker radius in the map window, as well as the data for that anchor in the Anchor Data Display.

BOAT ANCHOR DATA DISPLAY

Access the Anchor Data Display through the Vessels Setup Dialog. Select a vessel and click [Anchor Display]. The Anchor Data Display for the selected vessel appears. The title bar includes the vessel name in case you are working with anchors on more than one vessel. The data for each anchor is color-coded according to the color set in the anchor view options.

When an anchor is raised, the window displays its Distance To Mark and Bearing To Mark.

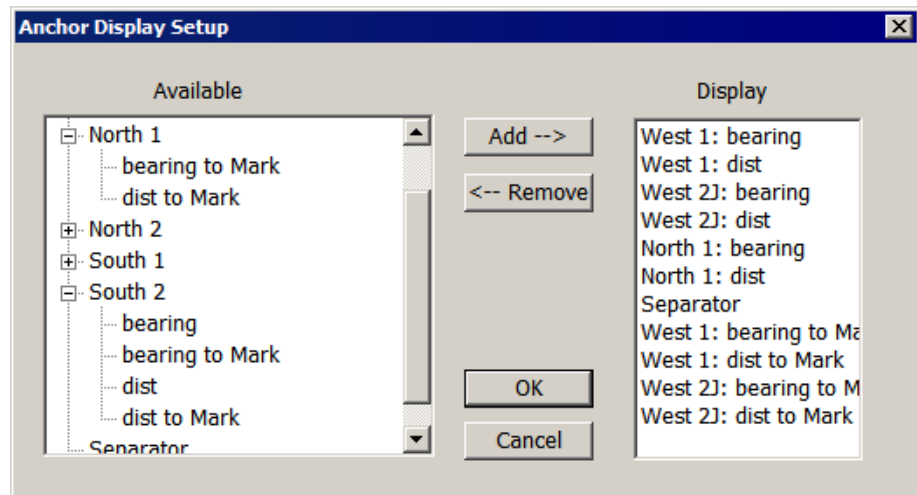
When the anchor is deployed, the window displays the Distance and Bearing values. In each case, the remaining values are displayed as not applicable (N/A).



Boat Anchor Display		
Font...	Configure...	Style
West 1: bearing		243.4
West 1: dist		231.32
West 2J: bearing		N/A
West 2J: dist		N/A
North 1: bearing		N/A
North 1: dist		N/A
West 1: bearing to Mark		N/A
West 1: dist to Mark		N/A
West 2J: bearing to Mark		298.4
West 2J: dist to Mark		341.35

Anchor Data Display

Configuration: You can select the items displayed and the order in which they are displayed using the Anchor Data Display Configuration dialog.



ANCHOR EVENT REPORTS

HYPACK® SURVEY records anchor activity in a daily Anchor Events Report. Each time you drop or raise an anchor at the anchor point, or on a target or anchor mark, the program appends a record to the report for the current day.

Anchor Events Reports are named "AnchorEvents_mm_dd_yyy.txt" and stored in your project folder.

FIGURE 15. Sample Anchor Events Report

```
05018DF8 09:43:28 500083.84 3000174.85 500083.84 3000174.85
05018DF8 09:43:31 500083.84 3000174.85
05018DF8 09:43:47 500083.84 3000174.85 499952.37 3000192.20
```

In this example, the anchor at 500083.84, 3000174.85 was dropped and raised at the anchor point position. It was then dropped at either an anchor mark or target at 499952.37, 3000192.20.

REMOTE ACCESS THROUGH A WEB BROWSER

invite anyone with Web access to view your Survey map from devices other than your Survey computer through a Web browser using the Remote Access option. Using this method, each viewer can have their own screen display with tools to zoom in/out independently of other displays and perform basic survey tasks on their computer, tablet or smart phone. All they need is an Internet connection.

NOTE: Remote Access is *not supported by Internet Explorer*.

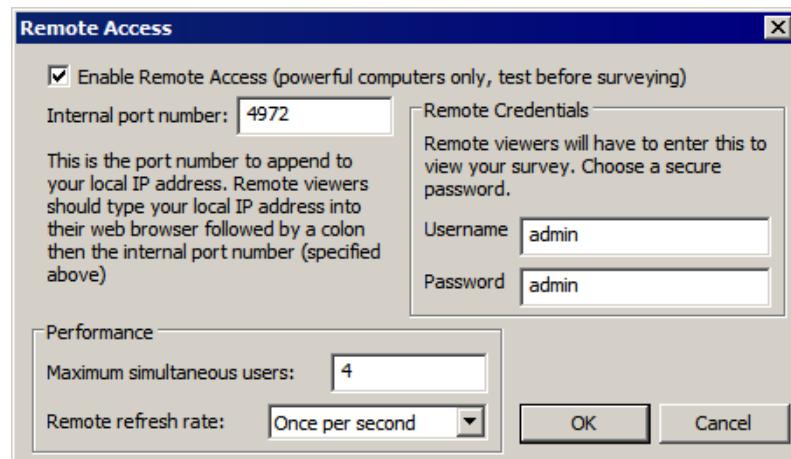
On the Survey Computer:

You must configure the survey computer for remote viewing and provide the IP Address and Port number with a User Name and Password to remote viewers. In addition, you can limit the number of viewers that can be connected at any one time, and the refresh rate for remote viewers.

To prevent further remote viewing, clear the check from the Enable Remote

Access option or change the User Name and Password.

Tip: If you have a low-end computer, reduce the number of simultaneous users and the refresh rate.



The screenshot shows a dialog box titled "Remote Access" with a close button (X) in the top right corner. The dialog is divided into several sections:

- Enable Remote Access:** A checked checkbox with the text "Enable Remote Access (powerful computers only, test before surveying)".
- Internal port number:** A text input field containing "4972". Below it is a descriptive text: "This is the port number to append to your local IP address. Remote viewers should type your local IP address into their web browser followed by a colon then the internal port number (specified above)".
- Remote Credentials:** A section with the text "Remote viewers will have to enter this to view your survey. Choose a secure password." It contains two text input fields: "Username" with "admin" and "Password" with "admin".
- Performance:** A section with two controls: "Maximum simultaneous users:" with a text input field containing "4", and "Remote refresh rate:" with a dropdown menu set to "Once per second".
- Buttons:** "OK" and "Cancel" buttons are located at the bottom right.

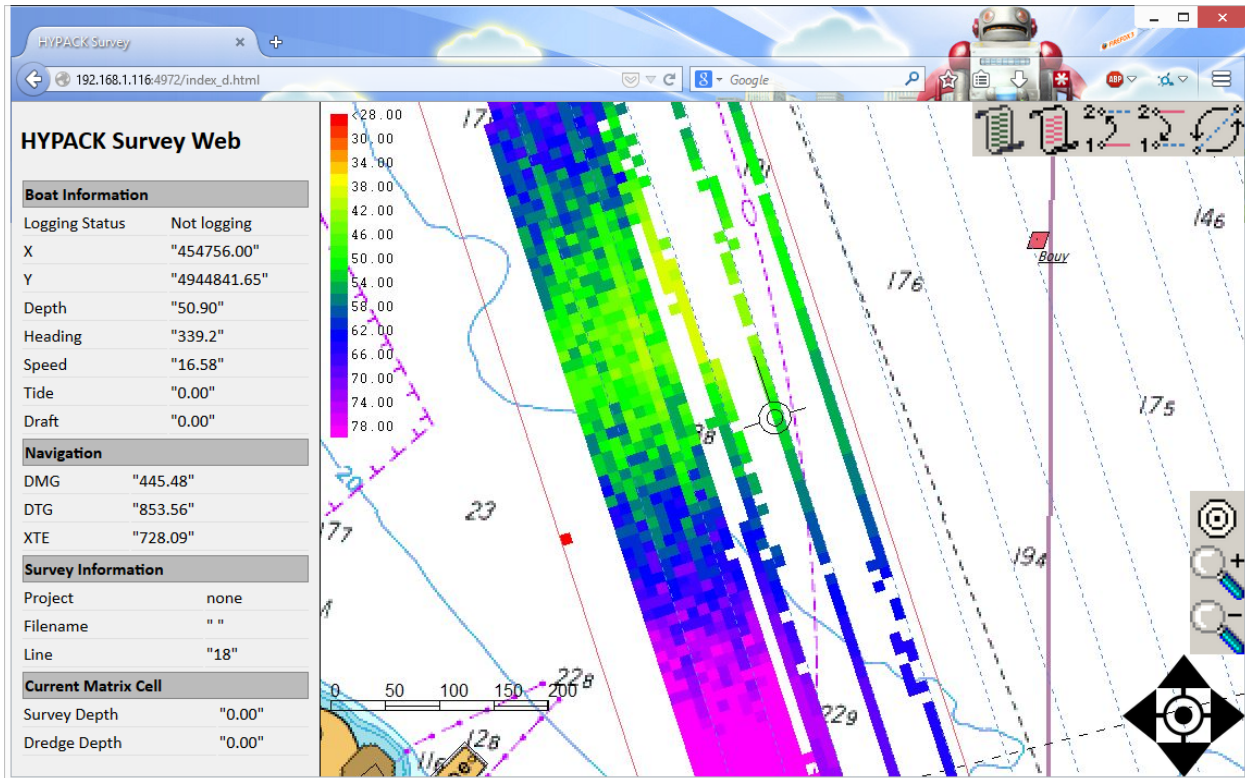
IMPORTANT: *Test these settings before beginning your survey* to ensure that remote viewers do not negatively affect the performance of the survey computer.

On the Remote Device: When a remote viewer enters your IP Address and Port in their Web Browser (*IP Address:Port*), an authentication dialog appears where they must enter your User Name and Password to gain access to your Survey display.

Each remote viewer can use the zoom and pan tools to customize their own display. The Remote Access view also enables the viewer to do any of the following:

- Customize the display with zoom and pan tools
- Start and stop logging
- Increment and decrement lines
- Swap line
- Toggle vessel tracking
- Mark targets. Targets marked through a Remote Access window are named *WEB Time* and stored in the Survey target group.

FIGURE 16. Remote Survey View



SHARED MEMORY OUTPUT

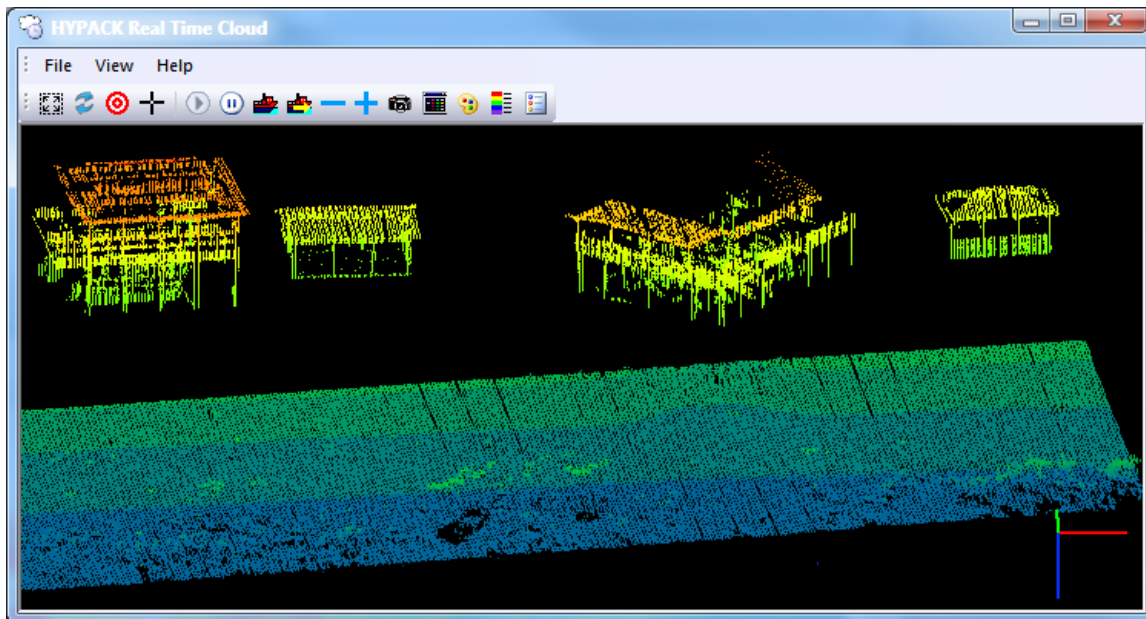
- New option to **automatically start 5 seconds after logging starts.**
- New option to **use decimal degrees for Lat/Lon output.**

HYSWEEP® SURVEY

REAL-TIME POINT CLOUD DISPLAY

The Real Time Cloud window merges topographic and hydrographic data in one window, including up to three million data points in a scrolling point cloud display. If you reach that limit, the window removes the earliest points as it draws new data. The Real Time Cloud window uses a separate core processor to maintain efficiency and accuracy of HYSWEEP® SURVEY.

FIGURE 17. Sample Real Time Cloud Window



- **Supports simultaneous laser and bathymetric data display.**
- **Manual display manipulation:** Rotate on all 3 axes around a user-defined center point, zoom in and out, freeze, clear current soundings, and follow the boat position.
- **Save a screen capture to a BMP image file.**

WATER COLUMN DATA

LOGGING WATER COLUMN DATA

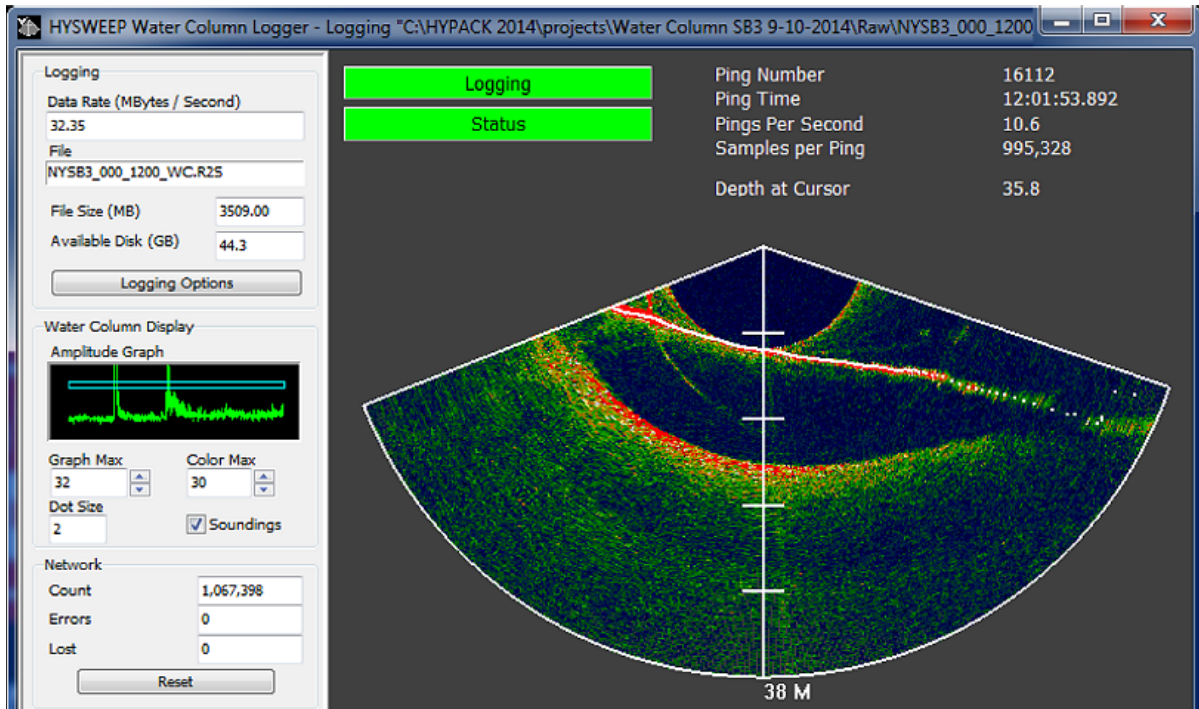
HYSWEEP® SURVEY can now log water column data from Reson 71xx and R2Sonic sounders. Water Column data files are very large (about 2Gb/minute) so, while constant logging is certainly an option, there are more practical options:

- **On Demand Logging:** Turn water column logging on and off in real time when you see something of interest. This requires someone to watch the display and control the water column logging throughout the survey.
- **Resurvey Select Areas:** Do a preliminary multibeam survey of your project area, then resurvey areas of interest, collecting water column data as well.

In either case, configure the Water Column Logger to retain the data long enough for you to start logging when you see something of interest and still capture the related data.

The Water Column Logger launches automatically in HYSWEEP® SURVEY when you have enabled water column logging in your hardware configuration.

FIGURE 18. Water Column Logger

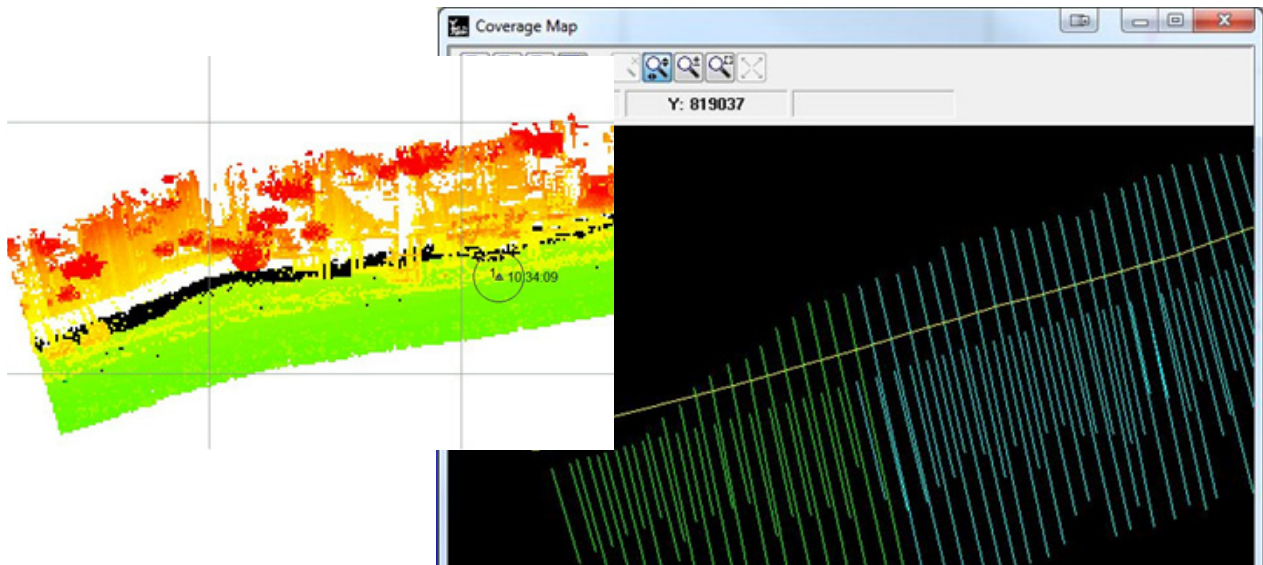


MULTIPLE MULTIBEAM AND LIDAR SYSTEMS

HYSWEEP SURVEY can now handle multiple combinations of multibeam and/or topographic LIDAR systems. The Survey and Coverage window s update with data from all devices.

- **Multiple Lasers**
- **Laser & Multibeam**

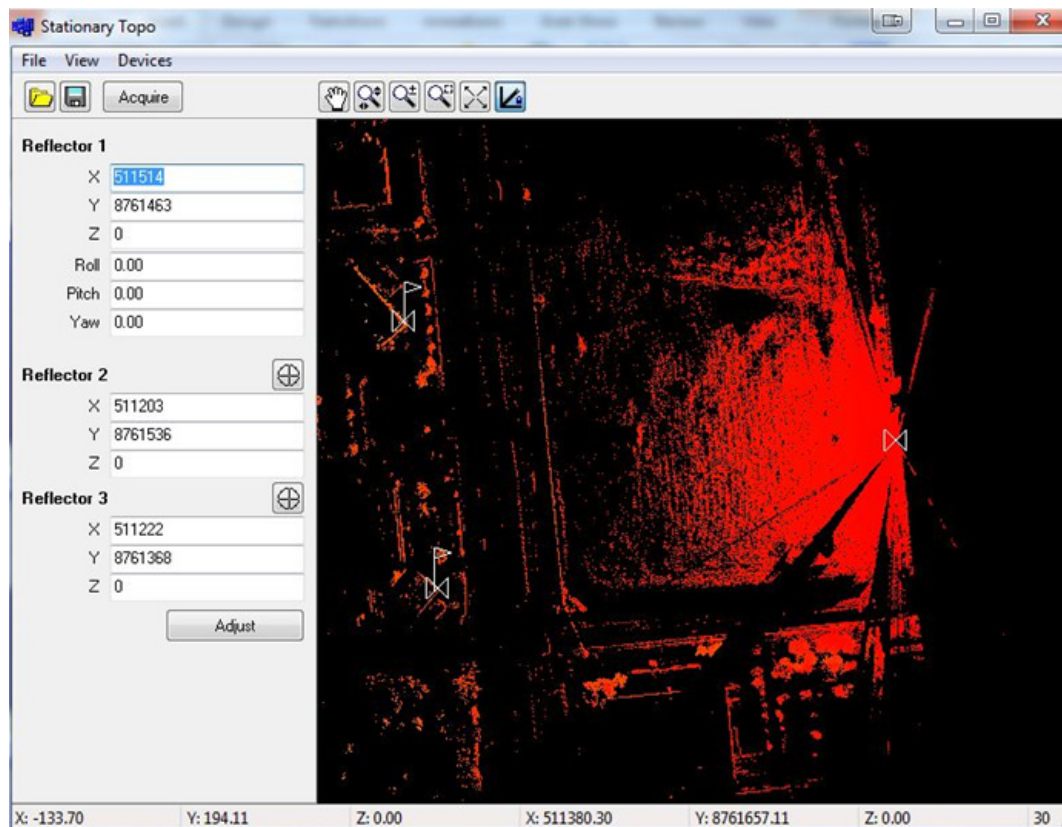
FIGURE 19. Windows show Data from Multiple Devices—Survey Window (left), Coverage Window (right)



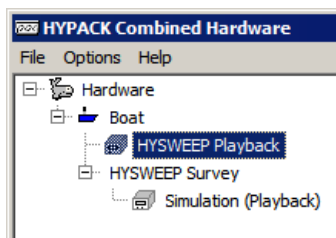
STATIONARY TOPOGRAPHIC LASERS

Acquires and processes 360° scans from a stationary tripod, then exports an XYZ data set. The program determines the calibration of the tripod mounting for the scan based on user-defined reflector points and their positions. It then adjusts the laser data to correct its positioning based on the calibration results. You can then save the adjusted data to an XYZ data file.

FIGURE 20. Sample Stationary Topo Display



HYSWEEP® PLAYBACK SIMULATION



A hardware configuration using the combination of the HYSWEEP® Playback driver in the HYPACK® Survey Devices tab and the Simulation (Playback) driver from the HYSWEEP® driver list enables you to replay HYSWEEP® raw files in HYPACK® SURVEY and HYSWEEP® SURVEY. All displays appear just as they did when the data was originally collected.

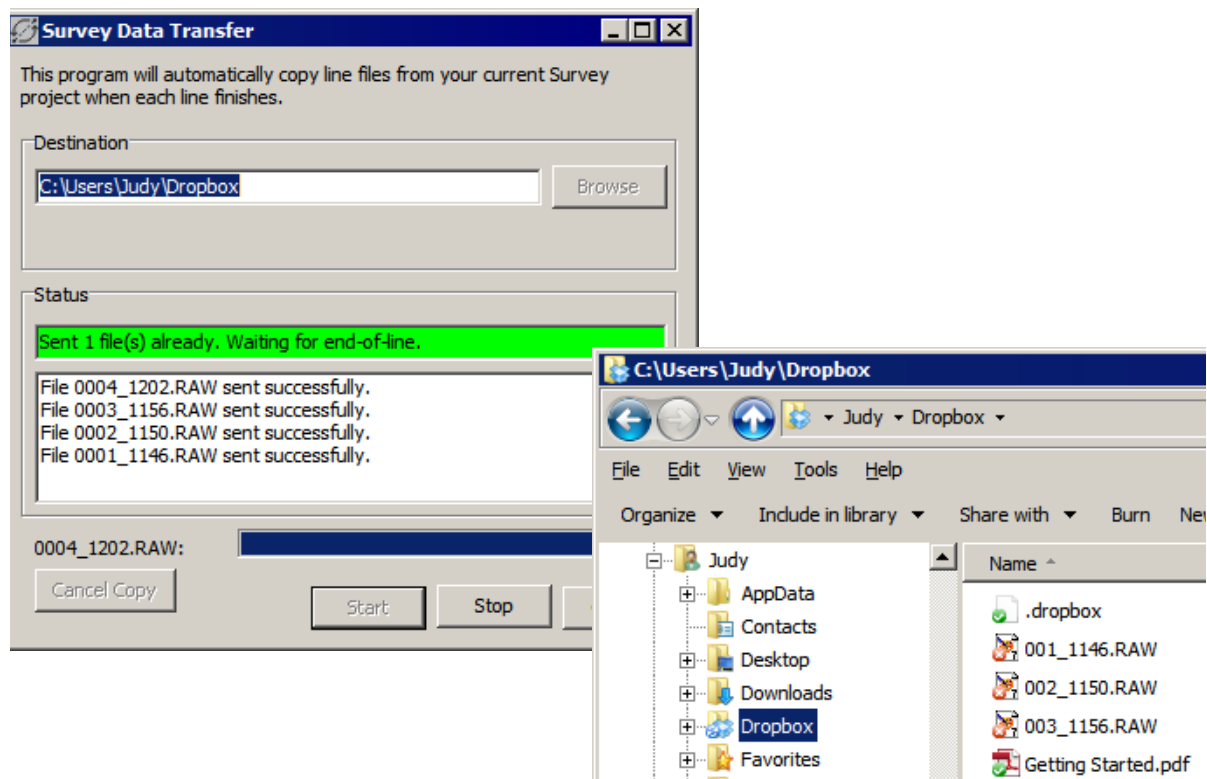
AUTOMATIC SURVEY DATA TRANSFER

Survey Data Transfer sends a copy of your data files via a LAN or an Internet connection. It is a separate program that you run simultaneously with HYPACK® SURVEY.

Each time you end logging, SURVEY tells SURVEY DATA TRANSFER that there's a file available. SURVEY DATA TRANSFER sends the data to the user-defined destination. In a very short time after the end of line, the data can be in post-processing elsewhere on the boat (via your LAN) or at the office on shore or half-way around the world.

To transfer data over the Internet, both the survey computer and the receiving computer must have access to a Dropbox account. The file transfer occurs through the Dropbox folder.

FIGURE 21. Survey Data Transfer to Dropbox



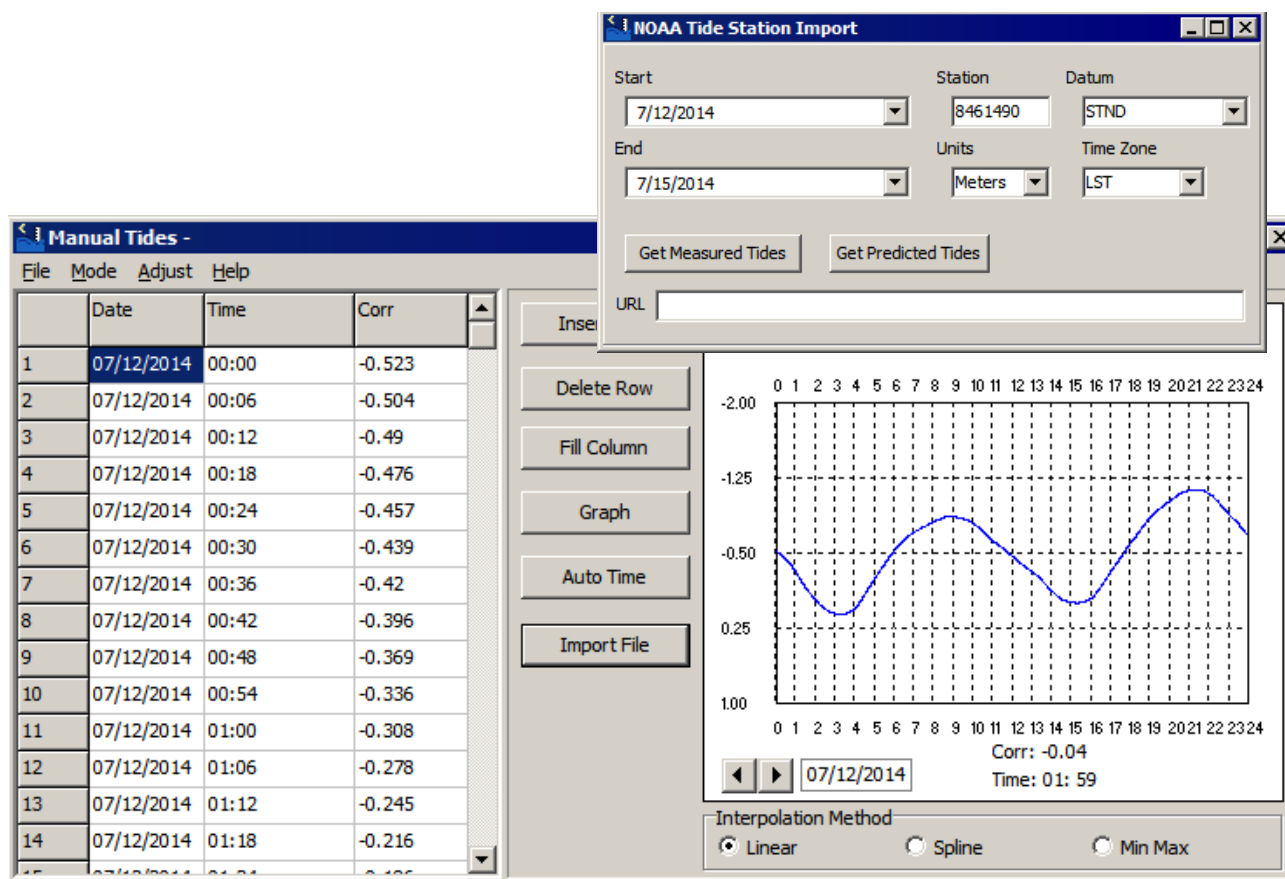
PROCESSING

MANUAL TIDES

New NOAA Tide Station Import routine downloads the tide data from the NOAA website directly into the MANUAL TIDES spreadsheet. Just enter the tide station ID number from the NOAA site, the dates for which you need the data, and other parameters as they apply to your project. With the click of a button, the program downloads either measured or predicted

tide data and populates the MANUAL TIDES spreadsheet with it. The graph updates accordingly.

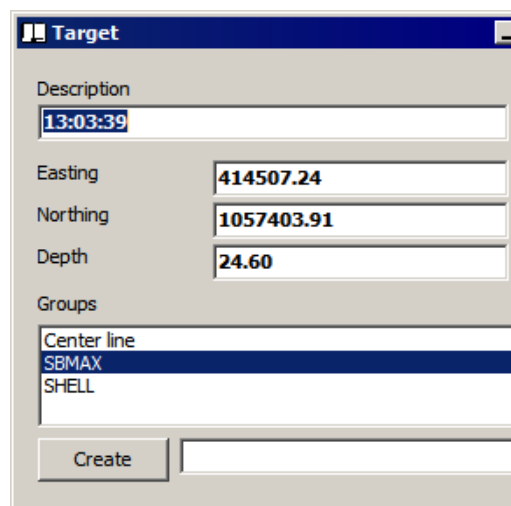
FIGURE 22. Importing NOAA Tide Data to MANUAL TIDES



SINGLE BEAM EDITOR

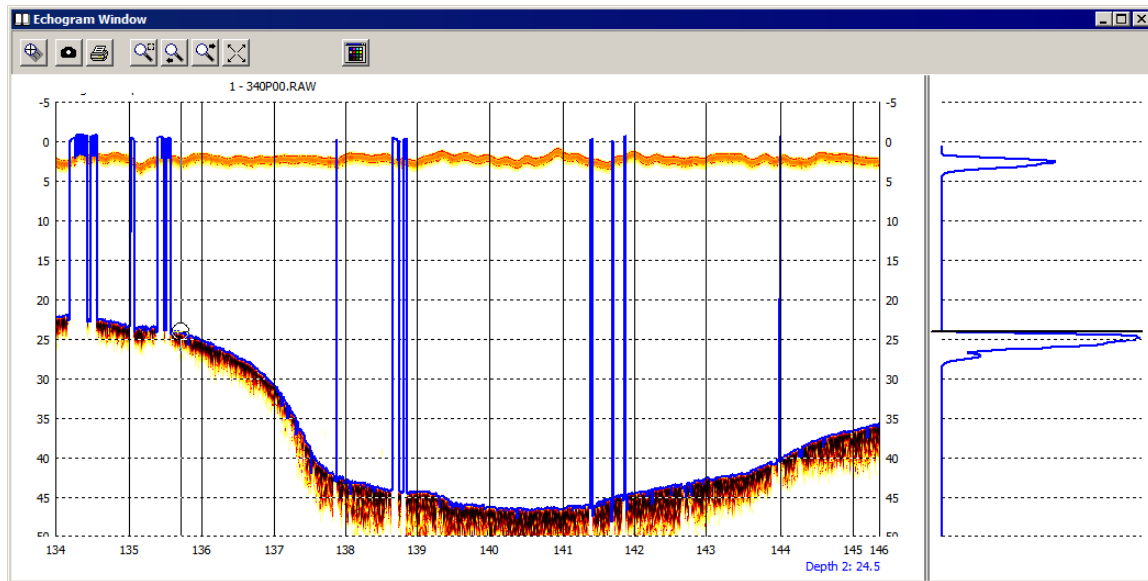
- **Target Support:** A Target dialog appears with the XYZ coordinates of your selected position and the default name (time) and target group (SBMAX). Edit your Target Name (Description), Position and Group information (Optional) and click [OK]. SINGLE BEAM EDITOR saves your target to your target group and displays it in the SINGLE BEAM EDITOR editing windows.

Tip: To quickly capture multiple targets, bypass the Target dialog: Select the Quick Targets option in the Other tab of the View Options dialog. Then, when you mark targets, The program automatically names them with the time-stamp from your data and saves them in the SBMAX target group.



- **New coloring scheme for the echogram** that more closely matches those commonly used in device firmware.

FIGURE 23. New Echogram Colors

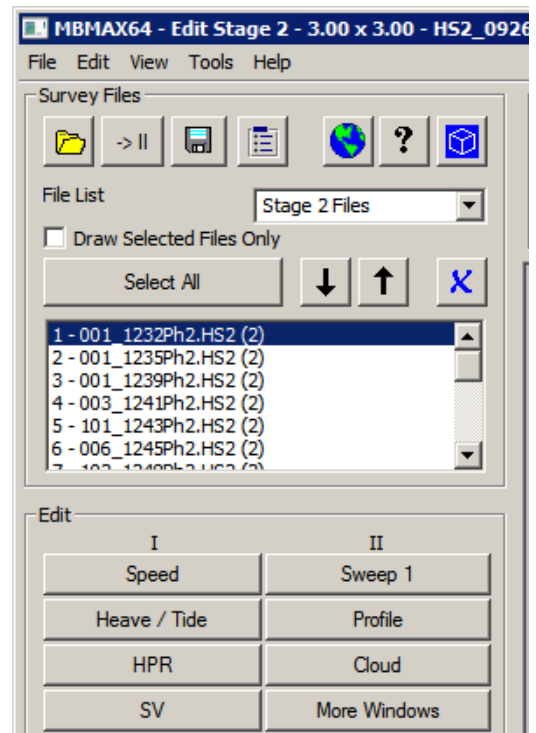


64-BIT HYSWEEP® EDITOR

- **Interface changes to support expanding number of window displays.** A “More Windows” button now provides a menu of the ever-expanding list of possible Stage 2 Editing Windows.
 - The **Water Column** window is new this year
 - A **Camera Log** window— designed for use with topographic laser surveys—is in development to show GoPro image files of the survey location.

PHASE 1

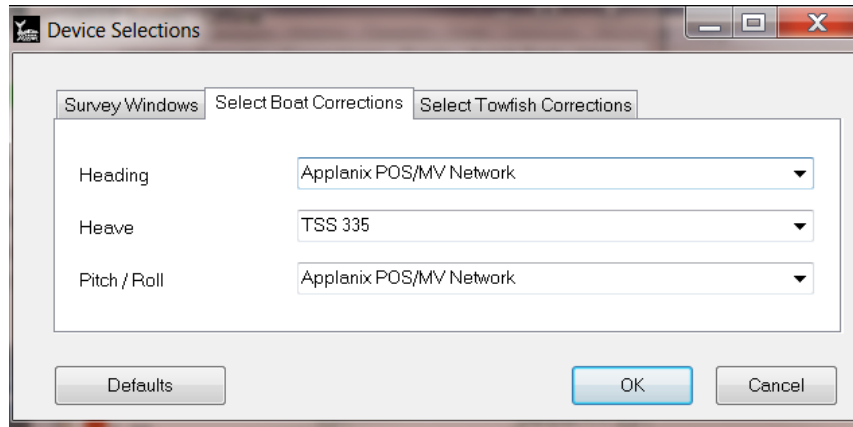
- **Improved Speed Editor.** Removing the effects of a position spike *and* return to good position is not a simple point edit in the Speed and Course Over Ground graphs as they would be in a position graph. MBMAX64 removes the spike *and the artifacts caused by the spike* to assure proper positioning in the results.
- **Shows GPS Mode** in the status bar of the Tide Editor.



- **New filter based on CUBE depth** in the Matrix tab of the Search and Filter dialog.
- **Allow split MRU data.** HYSWEEP® SURVEY and processing normally use MRU data (heave, pitch and roll) from a single device. Some systems provide pitch and roll but not heave, and vice versa.

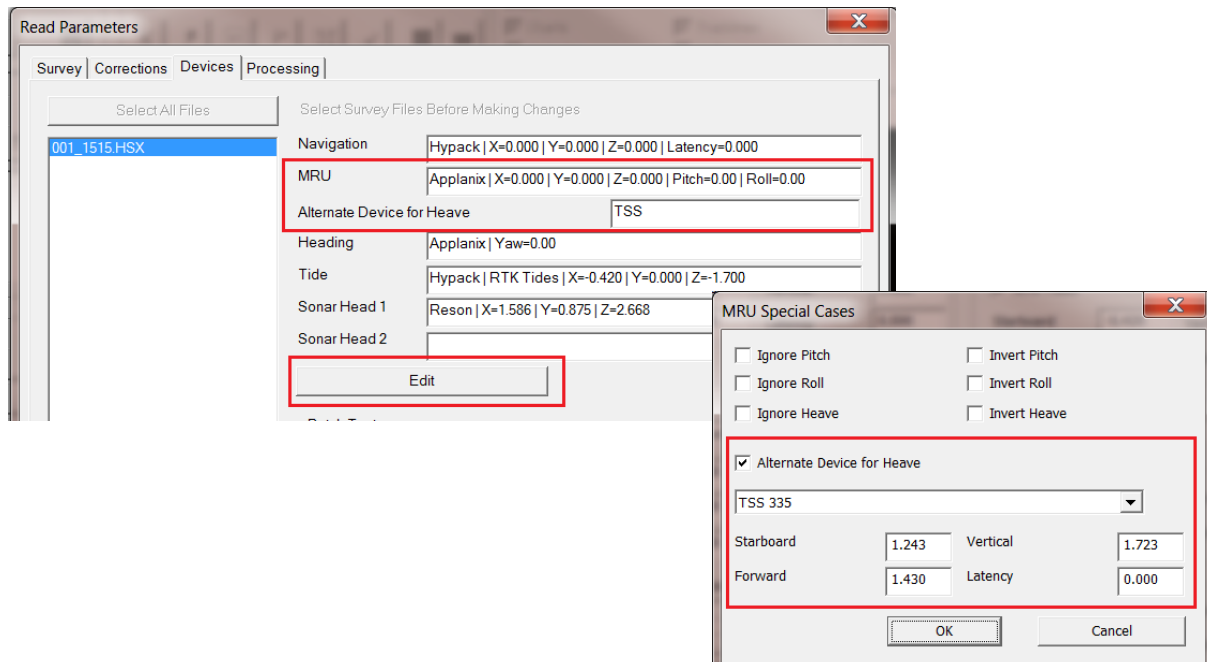
Heave may be split from pitch and roll in post processing as well. The most common example is POSpac post processing. POSpac creates a file that contains pitch and roll (with adjustments) but no heave.

- **For survey display**, select the correct device to apply the proper corrections. Use the HYSWEEP® View menu, Device Selections then Select Boat Configuration tab.



- **In the 64-bit HYSWEEP® EDITOR**, it's more complicated. You again make your device selections in the Read Parameters, but you must also access the MRU Special Cases dialog and configure the heave device and its offsets there.

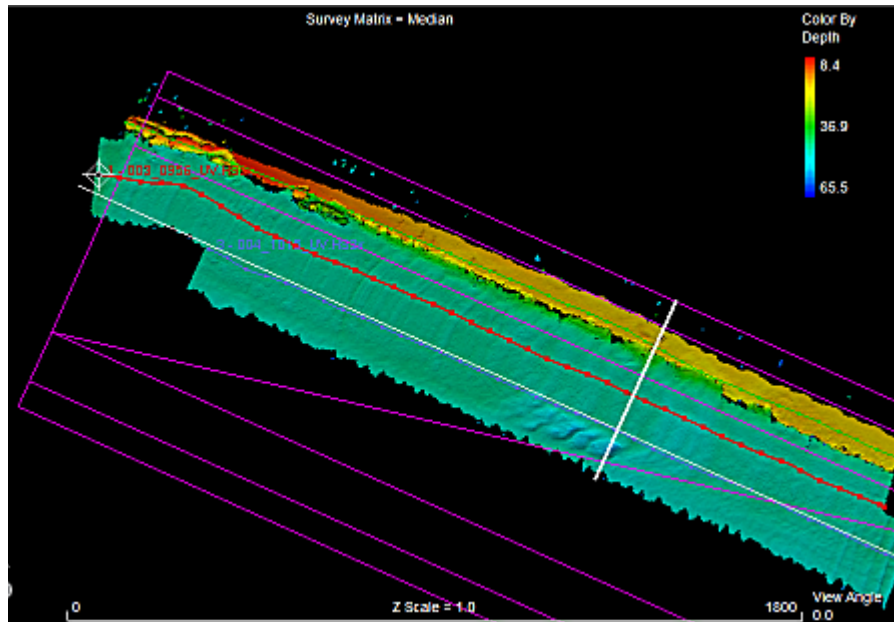
FIGURE 24. Splitting Heave from Pitch and Roll in the 64-bit HYSWEEP® EDITOR



PHASE 2

- **Supports overlay of CHN** (Channel Template File) in the Survey, Profile and A-B cross section windows. It can be helpful to use it as a guide in your editing process.

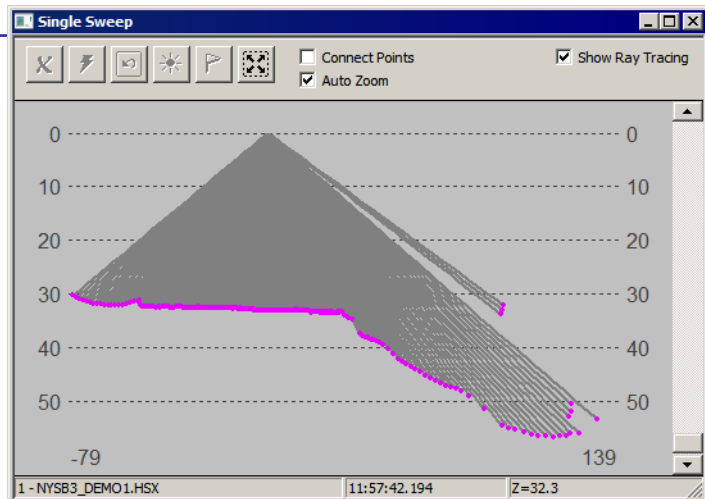
FIGURE 25. Channel File in the Survey Window



- **Single Sweep window can show ray tracing** which helps see effects of water column editing.

FIGURE 26. Single Sweep Ray Tracing

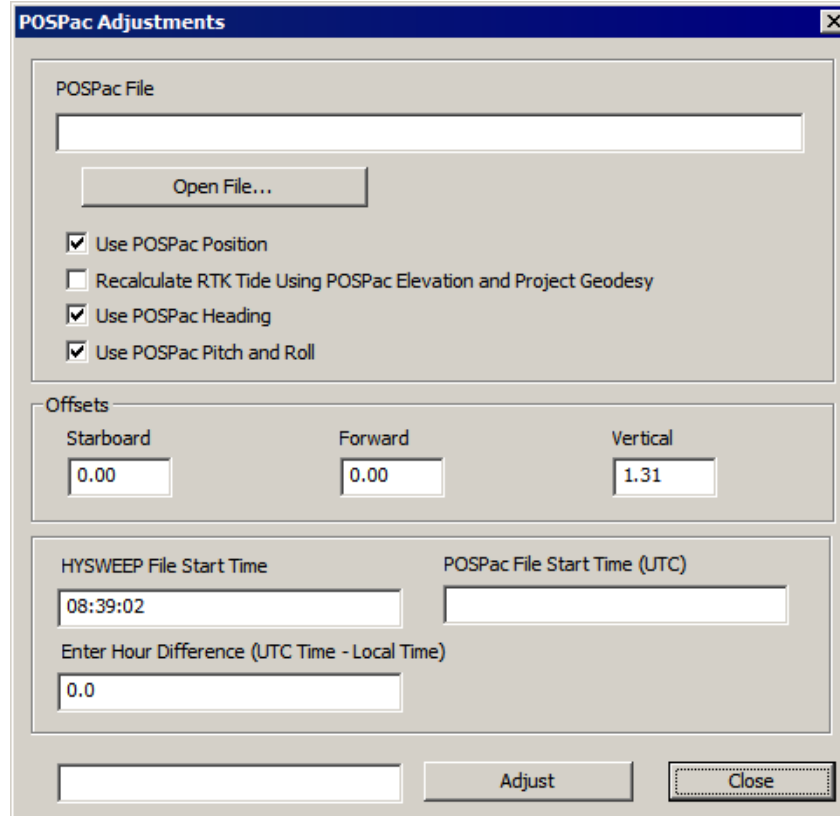
- **Support for time zones that are not full hour difference from UTC time.** Affects Heave adjustments, POSPac Adjustments and GPS Adjustments.
- **Delayed Heave Adjustments** supports Novatel SPAN files,
- **Single Beam Test renamed to Check Line Statistics.**
- **View Option to exclude TIF files in the background** so you can avoid viewing the matrix in two different ways.
- **Save Survey window display to a geo-referenced TIF.** Click the Save Tiff icon.
- **Digitizing Water Column Data** (See [“Editing Water Column Sounding Data in the 64-bit HYSWEEP® EDITOR”](#).)



- **PosPac Adjustments:**

- **Added option to check your device offsets.**
The POS MV Adjustments dialog shows offset from your Read Parameters, but this provides a second chance to correct them if you missed them.
- **Shows SBET start and end times**
- **A non-integer time differences between the HYSWEEP® and POSPac start times is supported.**

- **File Save Option to save median value to an XYZ file *only with minimum number of points in the cell.***



3D MOUSE INTEGRATION IN CLOUD AND THE 64-BIT HYSWEEP® EDITOR

If you're the ambidexterous sort, or you just like a bit of a challenge, in CLOUD and MBMAX-64 you can use the 3DConnexion mouse to rotate the model in the 3D display while deleting outliers with your regular mouse.



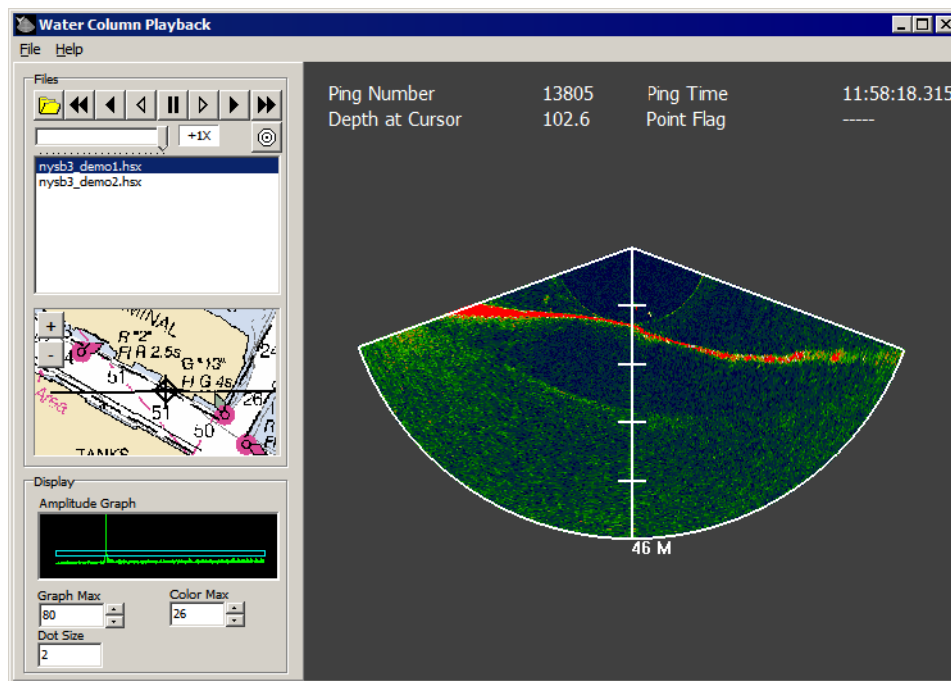
WATER COLUMN DATA

WATER COLUMN PLAYBACK

WATER COLUMN PLAYBACK enables you to review your water column data in a display similar to the Water Column Logger.

- **Use the controls to move forward or back through your data** and pause at places of interest.
- **Mark points of interest with flags or targets** so you can review the corresponding location in another program,
- **A small chart display geo-references the data.**
- **The interface displays the current ping number and time-tag, the depth at the current cursor position and the index of the most recent flagged point.**

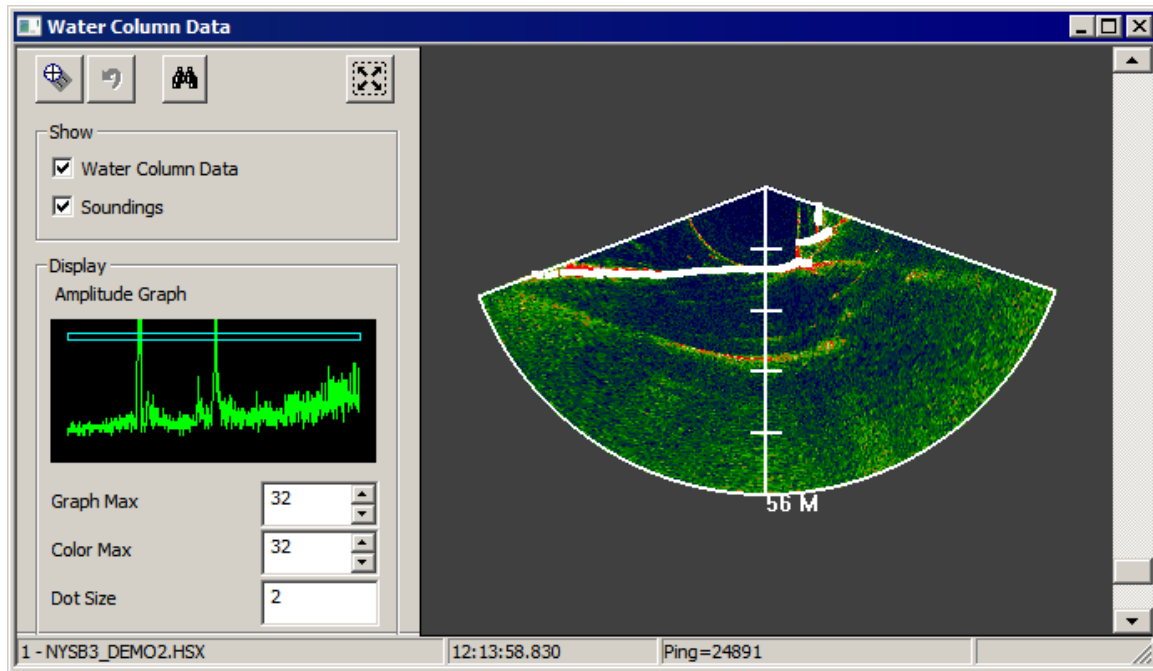
FIGURE 27. Water Column Playback



EDITING WATER COLUMN SOUNDING DATA IN THE 64-BIT HYSWEEP® EDITOR

When water column data is in the Raw folder, it automatically appears in the Water Column window. You can overlay your soundings then re-digitize them based on water column data to guarantee least depth in critical survey areas.

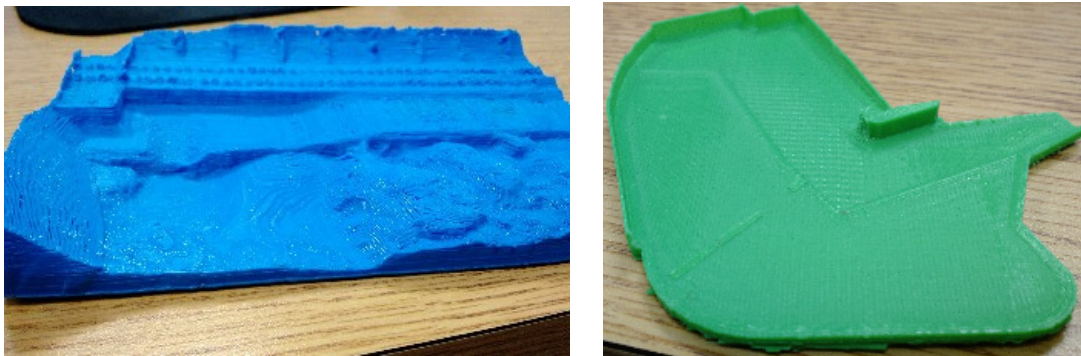
FIGURE 28. *Editing Water Column Data—Overlaid Soundings Appear in White*



3D PRINTING

Both TIN MODEL and ADVANCED CHANNEL DESIGN can output their 3D surfaces to STL format that is used in 3D printing applications. This allows you to produce 3D models of your survey area and channel designs.

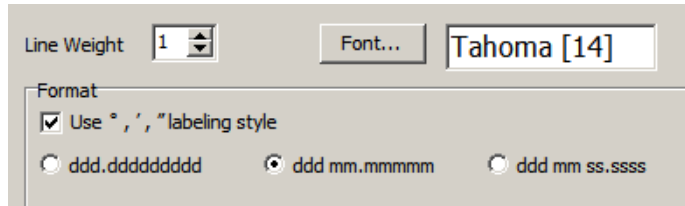
FIGURE 29. *Sample 3D Printed Models—TIN Model (left), Channel File (right)*



FINAL PRODUCTS

HYPLOT

- **Supports Vector Soundings.** (See [“Vectorized Soundings”](#).)
- **PDF Output offers a range of print resolutions: 72 - 600 DPI**
- **Option to write Latitude/ Longitude with degree symbols.**
If you choose not to use symbols, HYPLOT inserts an underscore to separate the values.



NOTE: The selected font must support degree symbols, otherwise HYPLOT prints rectangles.

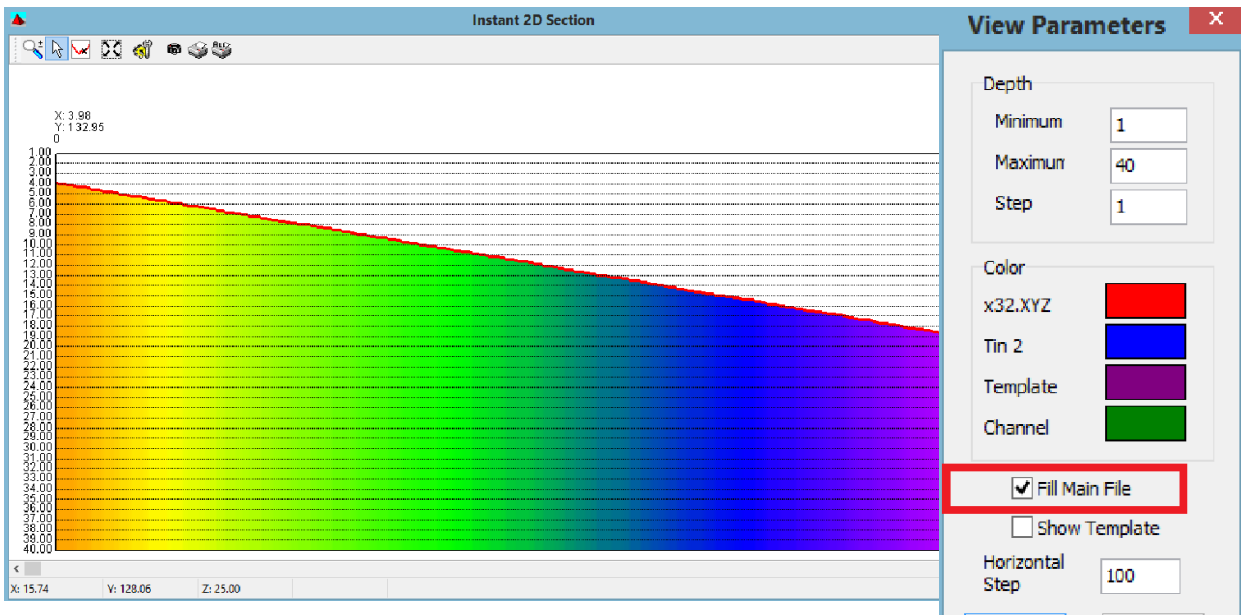
- **Sounding Settings are saved to the PLT.ini.**
- **Modifications to SHOM title block.**

TIN MODEL

COLOR-FILLED 2D SECTIONS

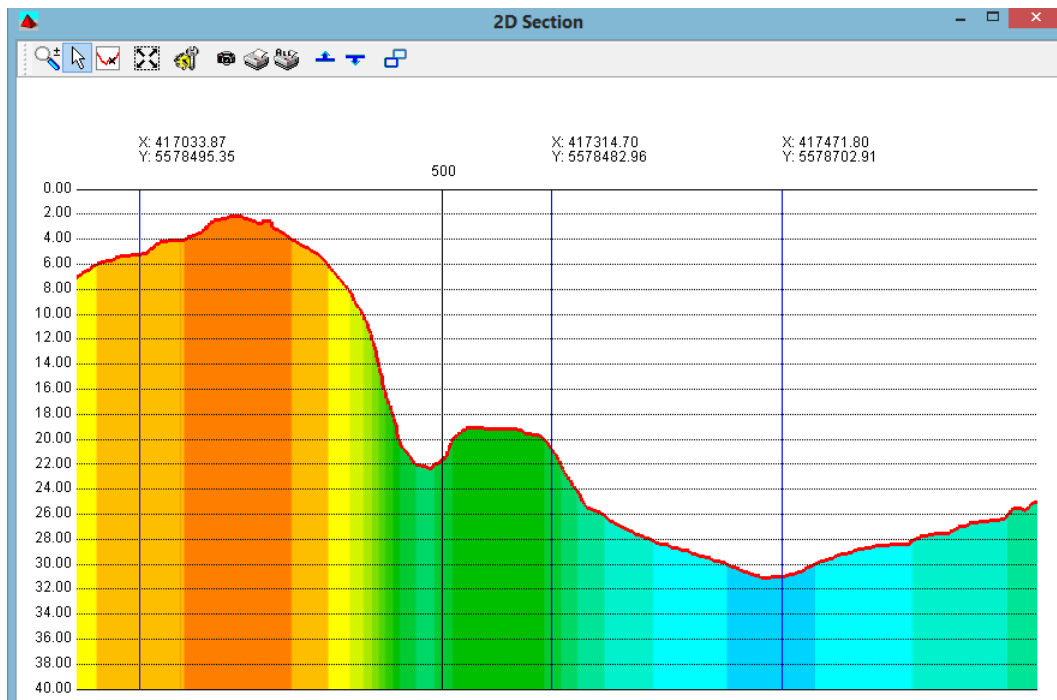
- **Create a blended color-fill based on the depths underneath the profile line.**

FIGURE 30. Color Fills in the Section Window



- **The Show Template option** in the View Parameters enables you to visualize the points of your section (.LNW) file.

FIGURE 31. Section File Visualization.

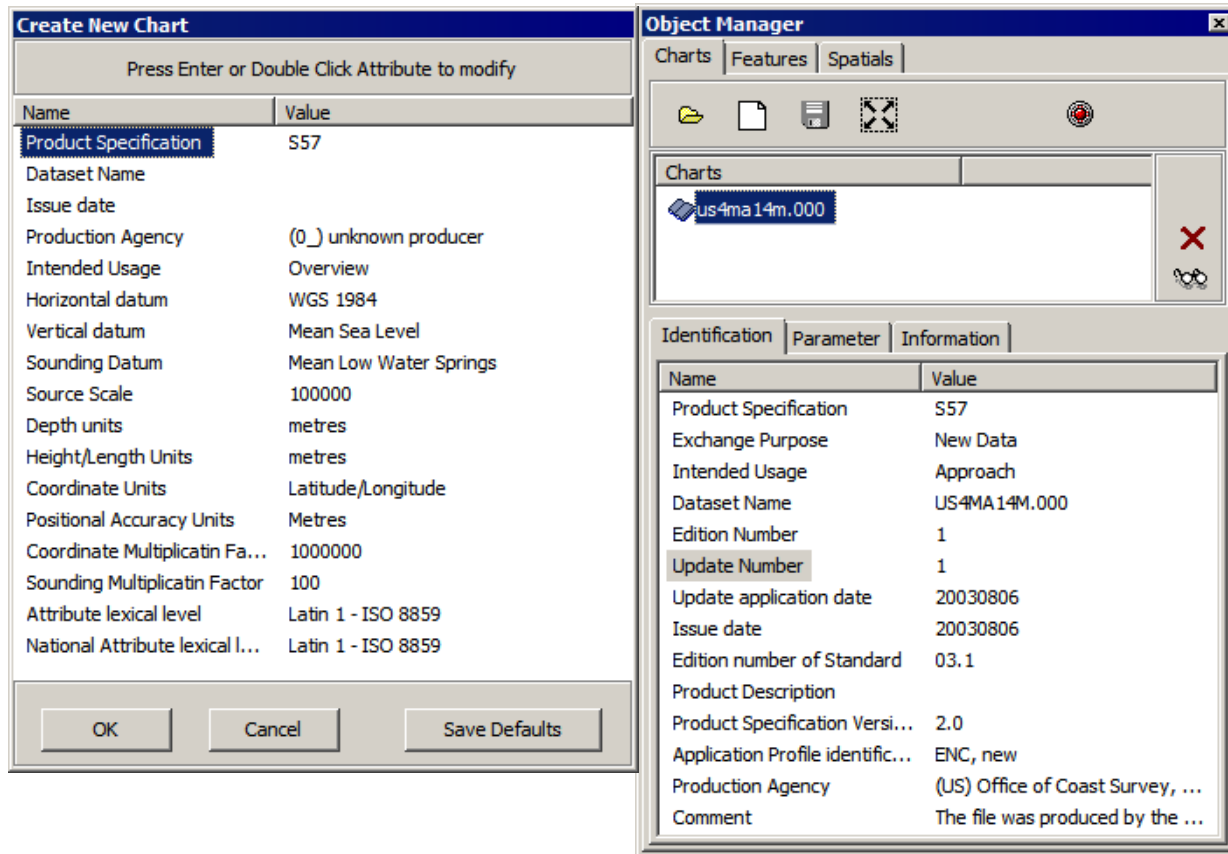


- **Capture your graph in bitmap images (*.BMP)** of varying resolutions using the camera icon on the toolbar at the top of the 2D Section window. You can load the image into HYPLOT, either as a graphical item or in a title block.

ENC EDITOR

- **IENC Product Specification 2.3 Compliant.**
- **Initially applies default values for chart metadata fields from the schema** in the New Chart Information dialog and in the ID tab of Chart Browser)

New Chart Information Dialog (left) Identification Tab of the Chart Browser (right)



SIDE SCAN

SIDE SCAN REFORMATTER

CONVERSION TO HSX

IMAGENEX 83P

- **Intensity stored in RMB record** and can be mosaicked in Geocoder.
- **Adds a GYR record computing heading by Course Over Ground (COG).** We've had a few cases where folks use this system without a decent gyro, and the COG will do. (It's not perfect, but it gives close to the real value.) In MBMAX64 (the 64-bit HYSWEEP® EDITOR), there is no selection for COG gyro, but the Converter creates a device that can be selected in processing.

XTF

- **Support for dual-head multibeam from Qinsy XTF**
-

KLEIN SDF

- **Heading Filter Strength:** Designed for towed sensors or sensors on autonomous underwater vehicles (AUVs), this option provides an alternate heading record (GYR) based on course made good. This is particularly helpful in processing multibeam data in the 64-bit HYSWEEP® EDITOR. Enter a number of positions on which the heading will be calculated. “Off” disables this feature.
 - **Merges output to a single HSX file.** The sonar output provided SDF files at one minute increments, creating a large number of files to be mosaicked. In the converter, a single check box combines all the files in the converter session to a single HSX file.
-

KONGSBERG ALL

- **Kongsberg ALL files output corresponding RAW with HSX.** The **Output RAW File** option generates a HYPACK® RAW file that corresponds to the HSX file in the same folder as the original ALL file. This provides the GPS parameters required by the 64-bit HYSWEEP® EDITOR to recompute RTK tides.
 - **Output Ellipsoid Height as Tide** option tells the program to extract the ellipsoid height or elevation from the selected GPS data in the ALL files and store them as tide correction (TID) records in the HSX output files.
 - The **Output Sensor Depth** option *for AUV operations only* outputs the sensor depth as draft. Thus, when added to the sonar depth, we get the total Z value.
-

SEA SWATHPLUS SXI

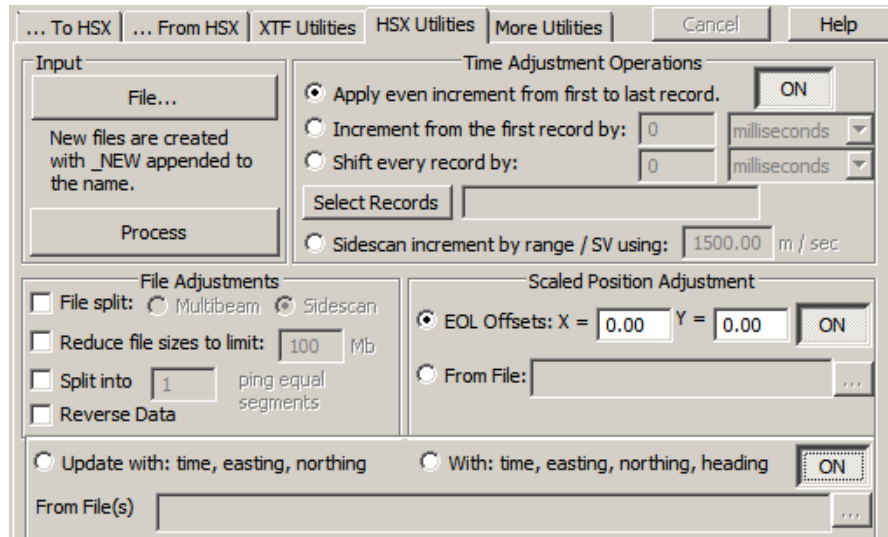
- **The Converter merges the multibeam (RMB) records (including tide) with the SEA SWATHPlus data and generates a new HSX file.** The output files are named with the original root name appended with “_forward” (eg. 000_0707.HSX becomes 000_0707_forward.HSX).

FROM HSX

- **Now generates GSF files from HS2+81xx.**

HSX UTILITES

- **Update with time, easting, northing or with time, easting, northing, heading:** This option enables you to provide position and heading for an AUV (autonomous underwater vehicle). It removes all position and heading records from the input file and replaces them with data from your configuration file.



The configuration file must be a comma delimited text file with each line formatted as Time (in seconds past midnight), X, Y or Time, X, Y, Heading (in degrees).

BEWARE! Do not use this feature if your HSX includes records from multiple mobiles. The routine removes all of the position and heading records for all of your mobiles.

- **HSX Scaled Position Adjustments** correct the position drift of AUVs based on periodic GPS positions acquired when the vehicle surfaces. The program applies the offset as a percentage of the total error over the distance traveled, applying the same vector to the entire line.
- **Split Into option divides the HSX file into a user-defined number of segments each with an equal number of pings.** This option may be used together with the File Split option. This is an alternative to the Reduce File Sizes to Limit option in which you specify the maximum output file size.

MORE UTILITES

- **Converts HS2 or HS2X format multibeam data to XYZ or XYZ, Time, Date format** where the time and date is read from the TND record in the corresponding HSX file. If the HSX file is absent, the program uses the current time and date.

SIDE SCAN TARGETING AND MOSAICKING

With the new multi-threading. You can begin editing the raw parameters as soon as the first file is loaded. The remaining files are loading in the background.