

February 2025 SOUNDING BETTER! NEWSLETTER

# HYPACK 2025 Release Notes

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The table of contents lists the programs and processes that have received new features, updates, and bug fixes in the HYPACK 2025 update, which encompasses updates from HYPACK 2024 Q1, Q2, and Q3. Click and jump to the sections for more information.

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# HYPACK SHELL

- Users can now add S-102 (\*.h5) charts as background files in a project.
  - > S-102 charts can be exported to XYZ and GeoTIFF files using the right click menu.
  - > The Info Query tool can be used on S-102 files.
  - > S-102 charts work similarly in HYPACK Survey and loads as background charts in the editors and MBMAX64.
- Users can now add custom labels to each band in a color table (\*.hcf file), and also choose to display those labels on a color bar in the HYPACK Shell.
  - > To add custom labels, open the Color Table Editor (HYPACK Shell -> Sounding Colors tab -> [Edit Color Table], right click on the desired color band and click Set Label. Type in the label name, then click [OK]. Once you are finished adding labels to all the color bands you need, click [Apply] and then [OK].
  - > **To display those custom labels**, back in the HYPACK Shell, right click on the color bar and click Show Label.

🏠 Co	lor Table Edito	r - *Default.hcf	×	滣 Color Table E	ditor - *Default.hcf ×		< 1.00 (Rock)
File	Style Bands	Help		File Style Ban	ids Help	er	
Color Z	ones		1	Color Zones			4.00. 0.00.(0
Color	Range	Add Single Band		Color Range	Label		1.00 - 2.99 (Sand)
	2.00	Set Bands	^	2.00	^		
	4.00	Edit Selected Bands		4.00			3.00 / 00 (Mud)
	6.00	Delete Selected Bands		6.00			5.00 - 4.33 (Midd)
	8.00	Smooth Selected Bands		8.00			
	10.00			10.00			5.00 - 6.99 (Stuff)
	12.00	Set Label		12.00			,
	14.00	Clear Label		14.00			
	18.00		·	18.00			7.00 - 8.99 (Other Stuff)
	20.00			20.00	Test Label		
	22.00			22.00			
	24.00			24.00			>= 9.00 (Um)
	26.00			26.00	Set Label		Show Text >
	28.00			28.00			Show Label
	30.00			30.00	Label		• Show Laber
	32.00			32.00	Test Label		Opaque
	34.00			36.00			Invert Display
	38.00			38.00	OK Cancel		Font
	50.00		¥	Adv-th Decide		-	Select Color Table
Adjust	Bands 0.1	+ -		Adjust Bands	0.1 + -		Edit Color Table
	ОК	Cancel Apply Undo	Redo	ОК	Cancel Apply Undo Redo		

• User-defined buttons or tools can now be added to custom toolbars. The Customize dialog used for toolbar customization now includes the User Tools Category, where any

user-defined buttons are listed and can be added to the toolbar. These user-defined buttons are used to launch external executable files.



To create a user-defined button or tool to launch an external program from HYPACK:

- 1. From the HYPACK Shell, click Tools -> Setup to open the Tool Options window.
- 2. In the Tool Options window, click [Add] to open the Tool Properties window.
- 3. In the Tool Properties window, fill out the program's name, select the executable file from your device, and enter any parameters that need to be passed to the executable on initialization. Click [OK] in Tool Properties, then [Close] in the Tool Options.

The new user-defined tool can be accessed from the Tools menu.

To add the user-defined button to a customized toolbar:

- 1. From the HYPACK Shell, right click on the top toolbar -> Customize to open the Customize window.
- 2. In the Commands tab, click User Tools under the Categories list on the left. All userdefined tools will be listed in the Commands list on the right.
- 3. Click the user-defined tool and drag and drop it in the custom toolbar of your choice. The user-defined tool name will appear in the custom toolbar.



 TIN files created in the TIN Model program can now be displayed in the main area map in the HYPACK Shell. They are accessed in the Project Items tab in the Project Files -> Background Files folder.

You can also change how the TIN model drawing style by right clicking on the file ->

Style, and clicking Points, Hollow, or Filled.

	1.000.00000			
	FlipSoundings.dxf			C: HYPAC
	FPWcontours.dxf			C:\HYPAC
- 🗆 🎑	junk.dxf	Remove File		C:\HYPAC
-0	MergeChnLnwCo	Delete File		C: HYPAC
-0 🗋	MTX.dgn	Archive		C:\HYPAC
-0 🗋	NoColors.dxf	0 : N : 1	-	C: HYPAC
	raster 150.pdf	Open in Notepad		C:\HYPAC
	SBMAX64_Edit.d:	Open in Explorer	-	C: HYPAC
	SBSelection_Cold	Zoom Extents		C: HYPAC
-0	SBSelection_Filet	Bring to Front		C:W PAC
- 🗆 🎑	SBSelection_Flip;	Style	Points	PAC
-0 🗋	SBSelection_Flip1		Hollow	PAC
	SBSelection_LOG	Set Color Table	✓ Filled	PAC
	SBSelection_NoC	Set Color lable	-	C:V PAC
🗆 🎑	SBSelection_Proj	Auto Scale Colors		C: HYPAC
	SBSelection_Step	Dirable		C: HYPAC
	SBSelection_Trac		-	C:\HYPAC
-0 🗋	SoundingsOnly.d	Chart Display Order		C: HYPAC
- 🗹 🊺	Test Tin File.tin	Export to Google Earth	-	C:\HYPAC
	Test Tin File2.tin	Modify Folder Font		C: HYPAC
	US4MS12M.000			C: HYPAC

The following images show examples of the display if Points (left), Hollow (center), or Filled (right) are selected.



• Removed the View Log Window menu item from the File menu in HYPACK Shell. This was an unmaintained window and did not show useful information to the user. The following images show the File menu before (left) and after (right) the removal the View Log Window option.



• In the Project Items list, the right-click menu options have been reorganized to group related items. Some items were also moved to the Options menu drop down to reduce the volume of options in right-click pop up menu.

The following images are examples of what the right-click menu looks like before (left) and after (right) the update.



• Added the options Export to XYZ and Export to MTX to the right-click menu for ESRI TIF files. Access the menu from Project Items list in the HYPACK Shell.



- If Export to XYZ is selected, the Save As window appears. Give the XYZ file a name and click [Save]. The file is saved to the Sort folder by default.
- > If Export to MTX is selected, the Save As window appears. Give the MTX file a name and click [Save]. The file is saved to the project folder by default.
- Added yards to the list of selectable units in the units drop down of the Measure Tool.

To use this new feature, in the HYPACK Shell, click the Measure tool on the right toolbar. The distance and azimuth toolbar appears at the bottom of the Map window. Click the units drop down and select yards.



• If your HYPACK license is deactivated or otherwise not detected, the "No License Found" popup now appears upon program startup. This update is intended to help users who regularly use their HYPACK® license on multiple devices.



• "No Project Loaded" is also displayed on the title bar of the HYPACK Shell after closing a project of if a project failed to load during startup. No Project Loaded is also displayed if HYPACK cannot find hypack.ini, or if the project location was changed.

🎦 HYPACI - No Project Loaded	
File - View - Settings - Preparation - Survey - P	rocessing *
🗏 🖬 🖆 📅 🧤 🖘 🍒 🗋 💷 📲	<sup>31</sup> /2: - 6
Project Items 푸 🗴	Map 0
Project Manager Project Items Sounding Colors	Grid: State
Options - Views -	Draw -
Item path	19850
Raw Data Files	
Edited Data Files	
Project Files (12)	
$\square$ $\square$ $\square$ $\square$ Golden Sounding (1)	
Archive	

• Clicking [Add ENC Charts] in the HYPACK Shell now launches a confirmation dialog that displays the number of charts to be downloaded.



Click [OK] to download all charts, or [Cancel] to prevent the operation. Previously, clicking on [Add ENC Charts] would immediately begin the download of all charts available in the area displayed in the map window, and if the view was zoomed out enough, it is possible to end up downloading hundreds of charts with no way to cancel the command. This update gives users the opportunity to prevent the automatic download of hundreds of charts that they might not need or want.

#### **PREPARATION**

# **BACKGROUND CHARTS**

#### **OPENSTREETMAPS**

• All projects now automatically contain a Dynamic OpenStreetMaps file within the Background Files folder. When checked, OpenStreetMaps is automatically displayed (sometimes with a slight delay) in the map view of the HYPACK Shell. Zooming in and out with the mouse scroll wheel or zoom functions in HYPACK Shell will pull in additional maps to display. This file is stored on your device at C:\HYPACK



2024\Projects\Project Name\Dynamic OpenStreetMaps.

In addition to the HYPACK Shell, OpenStreetMaps can be enabled and displayed within other HYPACK programs including HYPACK SURVEY, HYPLOT, and editors. The below examples show the OpenStreetMaps chart within MBMAX64 (top) and HYPLOT MAX

#### (bottom).



#### File Add Options View Help

#### - 0 ×

🗁 🝷 🗒 🕁 Clear	Isgs 🔊 🗠 😥 Map Area 🔹 Map Item 🝷 Plot Item 👻 🛛 1:1 🚋 📐 🔍 式 🖓 💭 🏷 🕂	
Items	Display Chart	ts (Map Area)
⊡ New Sheet	0pt	tions •
Hal.plt	Sele	ction Draw Order
Properties Name  Hal.plt [B Bord N Double Border Left   1.270 Widt  94.540 Heigr  56.540 (B Anch [skLeft,akTop] (B Anch [skLeft,akTop] (B Anch [skLeft,akTop] (B Anch [skLeft,akTop] (B Anch [skLeft,akTop] (B Lat)L Color C:HYPACK Store [Color T Line ( Line \ 0.50 Cent  455151.33 Cent  45515151.33 Cent  455151.33 Cent  455151.33	10 10 10 10 10 10 10 10 10 10	□ Raw (1)         ▲           □ Edt (2)         ▲           □ Sort (2)         □ Orannel (0)           □ Pranic OpenStreetMaps         □ Pranic OpenStreetMaps           □ Haldag (0)         □ Haldag (0)           □ Handra Line (0)         □ Haldag (0)           □ Mark (1)         □ Pranic OpenStreetMaps           □ Mark (1)         □ Pranic Unes (1)           □ Targets (2)         □ Targets (2)           □ Buddet (0)         □ Side Scan Images (0)           □ Side Scan Images (0)         ↓           □ Baconected.         ↓           □ Deconnected.         ↓           □ CHYPRACK StreetWMS Linesger/bit         ↓           □ backet (0)         ↓           □ Backet (0)         ↓           □ Side Scan Images (0)         ↓           □ Backet (
Froze False		dyn. 14.5300.5918.png 86 dyn. 14.5300.5918.png 76

• We've added the Explore OpenStreetMaps widget, which allows users to export part of the OpenStreetMaps as a \*.tif file for use as a background chart.



To use this new feature, from the HYPACK Shell click Widgets -> Explore OpenStreetMaps to open the Custom Map dialog.

Select the map source (currently OpenStreetMaps is the only one available), enter the location using X/Y or Lat/Long coordinates, then click [Search Location]. You can zoom in and out using the mouse scroll wheel or the slider at the bottom of the window. Click [Export Map], then give your file a name. The file is saved in the project folder by default.



Back in the HYPACK Shell in the Project Items tab, click Options and select Rescan Folders. The new OpenStreetMaps chart should appear in Background Files, where you can enable to display in the map view.



#### **GEODETIC PARAMETERS**

• The Datum Shift File field in the Geodetic Parameters dialog has been changed to a dropdown list that contains only valid datum shift files (\*.lls and \*.gsb).

edefined EPSG		Projection	
ids	Ellipsoid Clarke-1866	Lambert Conforma	al Conical
tate Plane NAD-27	Semi-Major Axis 6378206.4		
ne	Flattening 294,9786982	Central Meridian	077 00 0 W
ID-1900 Maryland		Reference Latitude	37 50 0 N
		Scale Factor	1
S Survey Foot	Datum transformation parameters	North Parallel	39 27 0 N
	Delta X 0.000 Delta X 0.0000	South Parallel	38 18 0 N
pth Unit	Delta Y 0.000 Delta rY 0.0000	Ealse Easting	800000
	Delta Z 0.000 Delta rZ 0.00000		00000
Elevation Mode (Z-axis positive going up)	Delta Scale 0.00000	False Northing	0
	Datum shift file conus.lls	厂 Local Grid Adjus	stment Local Grid
RTK Tide Method	Geoid Mod conus.lls	Orthometric Heig	ht Correction
C Not using RTK tide	hawaii.lls prvi.lls	0.00	ftl
○ (K-N) from KTD file	stgeorge.lls strnc.lls		
C N from geoid model, K from KTD file	stpaul.lls		
	VDatum zone		
N from geoid model, K from VDatum			
N from geoid model, K from VDatum     N from geoid model K from user value			_

### **GEODETIC LIST CONVERSION**

- In the Geodetic List Conversion Program, three depth inversion options have been added to the Other drop down menu:
  - Invert and Meters to Feet Invert depths and convert units from meters to feet (ex: m to -ft).
  - Invert and Feet to Meters Invert depths and convert units from feet to meters (ex: ft to -m).
  - > Invert Depth Invert depths only (ex: d to -d).

To use these options, from the HYPACK Shell click Utilities -> Geodesy -> Geodetic List Conversion to open the Geodetic List Conversion dialog.

In the following example, Invert Feet to Meters is selected, and the depth value from the input file (50.40 ft) is inverted and converted to meters (-15.36 m) in the output file.

📲 Geodetic List Conversion – 🗆 🗙						
Project Group	Local		•	Project Group	Local	Ŧ
Input Project	Halifax		•	Output Project	Halifax	Ŧ
Input File Type	XYZ		•	Output File Type	WGS Lat, Long, Z	•
Input File Name	: 2024\Pr	ojects\Halifax\Sort\ha	l.xyz	Output File Name	ojects\Halifax\Sort\hal_LatLonZ.xyz	
				Degrees Format	ddd mm ss.ssss	•
Ellipsoid	WGS-84			Ellipsoid	WGS-84	
Projection	Transve	rse Mercator		Projection	Transverse Mercator	
Use Input Proje	ct as Outp	ut Project				
Decimal Precision for	or Lat\Long	6		Other	Invert and Feet to Meters	•
Decimal Precision fo	or Z\\Ellipso	oid 2		Degree Decoration	No Conversion on Depths Convert Metric Depths to Feet	
<ul> <li>✓ Easting (x)</li> <li>✓ Northing (Y)</li> <li>✓ Depth/Elevation</li> <li>☐ Ellipsoid Height</li> </ul>		Input: 454929.54 4 Output: 44 38 44.12	1943738.44 5 29884 -63 34	i0.40 6.082211 -15.36	Invert and Meters to Feet Invert and Feet to Meters Invert Depth	
Name Latitude Longitude Ignore						
						~
Add Ignore	Field	Tes	t Line	Run Exi	t Help	

### HARDWARE

#### SURVEY Device Driver Updates

 Gps.dll: Added the "Ignore ZDA Date" option in the Advanced device settings to overwrite the ZDA string date with the PC/computer date. This option was added to support end of life GPS units that are experiencing GPS week number rollover (WNRO) issues.

Please note that unless specifically instructed by the HYPACK Technical Support Team, leave this option unchecked.

To use this new feature:

- 1. From the HYPACK Shell, click Preparation -> Hardware Setup. The HYPACK Combined Hardware window appears.
- 2. Add the gps.dll driver, then double click on the GPS NMEA-0183 driver to open the Setup window.
- 3. In the Setup window, click [Advanced]. The Advanced options window appears.
- 4. Check Ignore ZDA Date, then click [OK].

Setup				×
Synchronization		Tide		
Use PPS box		Minimum Status for RTK T	ïde 📂	Fixed RTK
GPS Status Codes				Float RTK Differential
	Show alarm			Stand-Alone
Invalid 0				Any status
		Filter RTK tide		
Stand-Alone 1		True sussiant	Camalaa	
Differential 2	Advanced	Time constant	Samples ×	
Float RTK 5				
RTK 3	USE AT YOUR OWN RISK! Unless specifically instructed	d by HYPACK Technical Sup	port leave	Show alarm
Fixed RTK 4	these its	ems UNCHECKED!		
User Modified NMEA	Use MSL height only (NOT	RECOMMENDED)		).0 []
Show debug messa		ОК	Cancel	
Ignore Checksum		Used contracts		-
Use only for heading	g (OTFGYRO)	Position	Heading	Misc
Report antenna elev	vation as depth	GGA GGK	HDT	GSA
Use GPS time when	not synchronizing (special	GLL RMC	VTG	GST GST
configurations only	!!!)			GSV
Advanced		PTNL, GGK		PTNL, QA
			OK	Cancel

• POSMV.dll:

We've added the capability to use Group 1 codes back to the driver setup with the new frame data options. We recommend selecting Group 102, which logs multibeam frame data. Selecting Group 1 records vessel frame data, and we recommend using this

option only if Group 102 is unavailable.

Applanix POS M/V Setup	×
Use PPS signal for timing Use GSOF I Serial Port	Messages
Solution status	Solution status for RTK tides  - Narrow lane RTK - Wide lane RTK - Float RTK - Float RTK
<ul> <li>Get solution status from group 20</li> <li>Get solution status from group 10</li> </ul>	- DGPS - Always
Frame data O Record multibeam frame data (group 102) Record vessel frame data (group 1)	Show alarm when solution status is: - Wide lane RTK - Float RTK - DGPS - Stand Alone - Never
IMPORTANT: Please configure PosView Ethernet Rea 102. WARNING: Use Group 1 only if Gro	Itime to output groups 3, 7, 10, 20 and up 102 is unavailable OK Cancel

To select the Frame data source:

- 1. From the HYPACK Shell, click Preparation -> Hardware Setup to open the HYPACK Combined Hardware window.
- 2. Select posmv.dll from the Available drivers list, then click [Add -->].
- 3. Double click on the Applanix POS M/V driver from the Installed list. The Applanix POS M/ V Setup window appears.
- 4. Select your options. Under Frame data, choose between Group 102 and Group 1, then click [OK].
- Cutfill.dll: Added a drop-down box in the cutfill.dll Setup dialog to select the tide source, which users can designate either the global tide from HYPACK<sup>®</sup> SURVEY or a specific mobile as the tide source.



The mobiles listed under the Tide Source dropdown will depend on what is added in the HYPACK Combined Hardware. In this example, you can select from Dredge, Arm, and Spud, which correspond with the mobiles that are added in the following HYPACK

Combined Hardware image.

HYPACK Combined Hardware		-	×
File Options Help	System All Offsets		
<ul> <li>➡ Dredge</li> <li>➡ Cutter Dredge</li> <li>➡ GPS NMEA-0183</li> <li>➡ SGBrown Gyro</li> <li>➡ Arm</li> <li>➡ Cut Fill Monitor</li> <li>➡ Inclinometer</li> <li>➡ Tide Gauge Driver</li> <li>➡ Spud</li> <li>➡ Valeport Tide Gauge</li> </ul>	Synchronize Computer Clock       HYPACK Survey         Select Device to Synchronize Clock       Show XYZ Files         GPS NMEA-0183       Start Logging at Startup         Printer Connection		

Note that Tide Source interacts with the Individual Tide Per Mobile checkbox in the HYPACK Survey options in the System tab at the Hardware level. Individual Tide per Mobile enables you to use multiple tide devices - up to one for each mobile in your configuration. When this option is checked, any mobile without a tide device assigned to it will inherit the tide of the main vessel.

So, if Individual Tide Per Mobile is checked:

- > If Global is selected in Tide Source, the Cut Fill Monitor window will display the tide from the mobile on which the device is installed.
- > If a mobile is selected and it has a tide device, then the tide reading from that device will be used.

If Individual Tide Per Mobile is unchecked:

> If Global is selected, the Cut Fill Monitor window will display the global tide from Survey.

To use the Tide Source option:

- Add your mobile, give it a name in the Mobile Name field, and click File -> Save. This adds the name of the mobile to the Tide Source drop down in the CutFill driver Setup window.
- 2. Add the tide device(s) to each mobile that has one.
- 3. Add cutfill.dll to the appropriate mobile.
- 4. Double click on the Cut Fill Monitor driver to open the Setup dialog, then pick your Tide source and click [OK].
- Subbot.dll: Added support for the GeoAcoustics GeoPulse Compact sub-bottom sonar. To use this device in HYPACK, in the HYPACK Combined Hardware add subbot.dll (Sub-bottom Driver) to your vessel, then in the Setup window, select

GeoAcoustics GeoPulse from the Devices list as shown on the left. Then, go to the Survey Device tab, then configure the Connection Type as shown on the right.

HYPACK Combined Hardware			- 🗆 X						
File Options Help									
🖃 🦕 Hardware	Mobile Survey Device Offsets Vessel Shape All Off	ifsets							
🖻 📥 Boat	Device Type		Tracking Point						
Sub-Bottom Driver	Survey Devices O HYSWEEP Devices O Side S	Scan Devices	Starboard 0.00						
	Mobile Name Boat			Connection	1 Туре	Network			~
	Available		Installed						
	Description Version		HYPACK File Simulation	Network F	Paramet	ers			
	Sub-Bottom Driver 23.3.1.0	SUD-B	Sub-Bottom Driver	Protocol	TCP		Pala	Client	~
	Subsea Telemetry 15.0.0.6			11010101	ICF		KOIE	chene	-
	Satur			Host	10.0.0.	44			
	Setup			Port	25700				
	Choose a Device				55700				
	Apalog (NLLISB)								
	Edge Tech 3000 Series	Add>							
	rugio sz ok Analog	C Pamaua							
	LeoAcoustics GeoPulse	K Kemove							
	Knudsen Pinger & Chirp Older Benthos SBP systems	arch							
	su	ıb							
		Clear							
	AI	II Devices V							
	O DLL Name Description	Name	Sub-Bottom Driver						
	O Decimanic O Description	Driver	C:\HYPACK 2024\devices\Subbot.dll						
	Rescan Driver List								

For additional information, refer to <u>GeoAcoustics GeoPulse Compact Support Added to</u> <u>HYPACK by Daniel Tobin</u>.

• Aistide.dll: Driver now reads VDM and VDO messages.

#### • New Driver: Optimal Ranging Orion (Orion2.dll)

This driver is largely identical to the Orion.dll driver and was created for a specific use case that may not be relevant to all users. This driver uses the Orion ROV's position, depth, and heading to calculate the position and depth of burial of a target cable. The measured depth can then be corrected in SBMAX using altitude data from an altimeter. The following is a list of where the drivers differ:

- > The Orion2 driver additionally reports position, depth, and heading. This driver uses the USBL position and depth as a starting point, then uses the current offset from the device to obtain its position and depth. The heading can be configured to come from the Orion device itself or from the USBL.
- > To work properly, this driver requires an altimeter and must be on its own mobile with a gendevparse.dll driver reading heave from the altimeter. The Orion2 driver should be set relative to another ROV mobile which handles the position of the device itself.
- > The heave and depth data should be used in SBMAX to calculate the depth of burial of a target cable.

> The following setup parameters allow the data to be easily read by SBMAX:

ections	Offsets	Survey Info	Presort G	PS Pre-Filter	Advanced	
Devices						
Echosou	under			Navigatio	n	
Optima	Ranging	Orion	~	Optimal	Ranging Orion	$\sim$
Heading	1			Heave, P	itch, Roll	
Optima	Ranging	Orion	~	Altimeter	r	$\sim$
Tide						
None			~			
Other					Tida Valuas	
Other						
Snap	to Line		5	Invert	Tide Values	
	re Depth H re Planner	Line Informat	tion			
	re Echoara	am				

- DQM Mechanical Driver (DQM\_Mechanical.dll) The DQM Mechanical Driver has received a few updates:
  - > Added CD17 Système to the DQM\_Mechanical driver, which acts as a ModBus master to obtain crane slew, boom angle, and wire length from the sheave. Select this option if you have a ModBus-connected PLC crane. Note that the modbus.dll needs to be added to the HYPACK 2024 root directory to support the

		×
eral Settings Shapes CD17 Système		
system Type		
CD 17 Système		
Atlantic Crane System		
DPC/UA Crane System	The V offset is the vertical	
Cashman Crane System	distance from the drum to	
Marker Offshore System	The X effect is the besidential	
CD17 Système 🗸 🎚 🚱 HYPACK X	distance from the drum to the	
100 TON	boom pin.	
runnion to Drum Offset		
Offset 0.00	A CONTRACTOR OF	
Offset 0.00	Contraction of the second second	
	1 20 21 21 21	
Relative OInherited		
Absolute	Crane Depth Adjustment	
	Angle Adjustment	
Doom Angle 0.8 0.0 C - Tactol C - 1.0	60.00 0.00	
pent Reset Time (Seconds) 1 - Maximum Filtering 0.8 - Recommended	65.00 0.00	
5	70.00 0.00	
Boom Angle Offset 0.00	75.00 0.00	
New Advantage Manuface Time Denie		

To use this feature:

1) From the HYPACK Shell, click Preparation -> Hardware Setup to open the HYPACK Combined Hardware window.

2) Add the DQM Mechanical Driver, and double click it to open the Settings window.3) Under the System Type drop down menu, select CD17 Système. The CD17 Système tab appears.

4) Under the CD17 Système tab, fill out the IP address of the PLC crane, the ModBus port number, and the holding register offset.

Settings	_		$\times$
General Settings Shape	s CD17 Sys	tème	
PLC IP Address N Holding Register Offse	lodBus Port 502 t		
Test Connection			
	ОК	Cano	:el

The Design Profiles tab in the DQM Mechanical Driver device window now allows users to add up to 10 extra profile lines. To navigate to this tab, first add and set up DQM Mechanical.dll in HYPACK Combined Hardware. Run DREDGEPACK®, and the DQM Mechanical Driver device window appears, which will have the Design Profiles tab.

nabled	Туре	Offset	Width	Color	Style
2	Design 🗸	-1.50	2		Solid 🗸
<b>~</b>	Design 🗸	-3.00	1		Dash $\checkmark$
	Design 🗸	-4.50	1		Dot 🗸
	Design 🗸	-6.00	1		DashDot 🗸
<b>~</b>	Design 🗸	-7.50	1		DashDotDot 🗸
<b>~</b>	Survey 🗸	-1.50	2		Solid 🗸
<b>~</b>	Survey 🗸	-3.00	1		Dash 🗸
<b>~</b>	Survey 🗸	-4.50	1		Dot 🗸
<b>~</b>	Survey 🗸	-6.00	1		DashDot 🗸
~	Survey 🗸	-7.50	1		DashDotDot 🗸

- Enable the profile lines by checking each box that corresponds to the line you want to display.
- Under Type, select Design or Survey, which specifies the profile you want to replicate.
- Offset is the distance from the original profile.
- Customize the appearance each profile line with width (line weight in pixels), color of the profile line, and line style.

#### • MAVLink (mavlink.dll)

The MAVLink driver setup window has been completely reworked - The Upload Mission and Download Mission buttons have been replaced with a dropdown to select the manufacturer. The current manufacturer options are Generic and Seafloor USV.



This change was made because both Upload and Download Mission buttons are now redundant, as we upload the current Survey line file to the device when you click the [Start Mission] button in Survey. The Download Mission button could have some utility if you were trying to transfer Survey line plans using your vessel, but there are better ways to do that and limited use cases.

For more information about the MAVLink driver update, check out the article <u>MAVLINK</u> <u>Autopilot Updates by Daniel Tobin</u>, published October 2024. New Driver: MAVLink v2 (MAVLink v2.dll)
 This new driver was created to support v2 of the MAVLink interface. It uses mostly
 the same code as v1, but swaps out the v1 MAVLink API for v2.
 Note: We are currently keeping the previous v1 MAVLink driver.
 The MAVLink v2 setup window currently only supports the Spatialnetics Offboard
 Autopilot software.

MAVLink Setup		$\times$
Manufacturer	Spatialnetics	~
	OK	Cancel

To use:

Launch the Offboard Autopilot.exe. Add the MAVLink v2 driver to the HYPACK Combined Hardware. In the Offboard Autopilot settings, configure it to be a TCP connection, client address is 127.0.0.1, IP is 14550.

Launch HYPACK Survey. Offboard Autopilot should display "MAVLink Connected" at the bottom, indicating a successful connection.

#### • Trackpoint II ROV Acoustic System (trackp.dll)

In the Trackpoint Setup window, Target Number has been updated to Beacon ID to clarify that this value corresponds to the beacon number. Setup and behavior remain the same.



• EchoTrac E20.dll (Teledyne ECHOTRAC E20) Several updates were made to this driver:  Users can now choose what data to display on event marks from the EchoTrac E20 setup window in the Annotation Options section.

EchoTrac E20	$\times$
COM Port Passthrough The COM ports on the E20 can be played back over the network on these ports. Note: only COM messages that are recognized by the E20 software will pass through. C Enable COM 1 Passthrough UDP Port 6998 D Enable COM 2 Passthrough UDP Port 6997	
Annotation Options O None O Standard : Event Date Time LineName   DMG   XTE   DEP1   DEP2	
Special :	
Event           Line Name           DMG           XTE           DEP 1           DEP 2           Heave           Draft	<b>^</b>
Use device timetags	
OK Cancel	

To customize the event marks, from the HYPACK Shell open HYPACK Combined Hardware, add the ECHOTRAC E20.dll driver, and double click its name to open the EchoTrac E20 setup window. From the Annotation Options section, select None, Standard, or Special and check the data values you want to display.

Choose from the following data values when Special is selected: Event, Line Name, DMG, XTE, DEP 1, DEP 2, Heave, Draft, X, Y, LAT, LON.

- > Draft can now be added as an annotation value.
- The output now displays the values for Depth, Heave, and Draft to two decimal places.

#### • spectre.dll (Dynautics Spectre)

A few updates were made to the driver and the Dynautics Spectre runtime window in HYPACK SURVEY:

- Control now defaults to Dual mode upon startup so autopilot will always accept HYPACK commands from the beginning.
- > UDP connection setup was added.

> When a track is uploaded, Track mode is no longer automatically forced.

	Connecting			
end Commands				
Change Mode	Thrust	Heading		
Mode	^			
Heading				
Track				
Hover		×		
E Stee		0		
E-Stop	0			
rack		Control		
Upload Track		NMEA Dual RCW		
			^	

# HYSWEEP<sup>®</sup> Device Driver Updates

• Previously, HYPACK supported SEA Bathyswath and SEA SWATHplus. These devices have been consolidated into one, which is now named ITER Systems Bathyswath.

HYPACK Combined Hardware				- 🗆	$\times$
File Options Help					
🖃 🍰 Hardware	HYSWEEP Devices Offsets All Offsets				
<ul> <li>Boat</li> <li>Hypack Generic Simulatic</li> <li>HYSWEEP Survey</li> <li>K @ Kongsberg Simrac</li> <li>Simulation (Multibea</li> <li>Simulation (Playback)</li> <li>Simulation (Playback)</li> <li>Simulation (Sidescan)</li> <li>Resons to SONIC 2020</li> <li>Klein 3000</li> <li>Kongsberg Simrad Eh</li> <li>Reson Seabat 7101</li> <li>Reson Seabat 7101</li> <li>Fish</li> <li>Fish Pos</li> <li>Coverage</li> </ul>	HYSWEEP Devices Survey Devices  HYSWEEP Devices Manufacturer/Model Imagenex Dual Delta T Imagenex Sportscan Imagenex Vellowfin ITER Systems Bathyswath XBlue IMU (CP) XBlue IMU (UDP) JAE JM7531 Klein 3000 Klein 4900 Klein 4900 Klein 4900 Klein 44K-SVY Carofie Generaldentifiertine	Add> < Remove Search	HYSWEEP Survey  Include  Sidescan Devices on Towf eHydro Devices  Installed  Kongsberg Simrad EM Simulation (Playback) Simulation (Playback) Simulation (Playback) Simulation (Sidescan) R2Sonic Sonic 2020 EdgeTech 4205 System Klein 3000 Kongsberg Simrad EM Reson Seabat 7101 R2Sonic Dual Head 20	□ Installed on Towfish ish 12040 Dual ) m 12040 120	
	R2Sonic Sonic 2020	~	Name		

- The PingDSP driver format method in the Device Setup window now defaults to Binned instead of Raw. Here are the differences between the two formats:
  - > Raw Provides noisy data that is subsequently run through HYSWEEP interferometry filters and processing. Not recommended.

> Binned- Uses PingDSP binning methods to provide multibeam-style data that should need no additional processing by HYSWEEP. This update was made to help users collect data in a desirable format.

🔳 Devic	-		×
Format Raw Binned			
MRU <pre> <pre> <pre> <pre> <pre> </pre> </pre> </pre> </pre> MRU </pre> <pre> <pre> <pre> <pre> <pre> </pre> </pre> </pre> </pre> </pre> <pre> <pre> <pre> <pre> <pre> <pre> <pre> <pre> </pre> </pre> </pre> </pre> </pre> </pre> </pre> </pre> <pre> <pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>	_		
Heading <pre> <pre> <pre> <pre> </pre> </pre> <pre> <pre> </pre> </pre> <pre> <pre> <pre> </pre> </pre> </pre> <pre> <pre> <pre> </pre> </pre> </pre> <pre> <pre> <pre> <pre> <pre> </pre> </pre> </pre> </pre> </pre> <pre> <pre> <pre> <pre> <pre> <pre> <pre> <pre> <pre> </pre> </pre> </pre> </pre> </pre> </pre> </pre> </pre> </pre> <pre> <pr< td=""><td></td><td></td><td></td></pr<></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>			
		OK	

# DREDGEPACK<sup>®</sup>Device Driver Updates

• Mobileconnect.dll: The Mobile Connect window has been updated with color and transparency selections for the outline and fill of the mobile connect arm. Users can also specify the start and end width of the connection.

T HYPACK Mobile Connect-NUL:	- 🗆 ×
Outline Width 2 Pixels Color Black V	Fill Solid Fill Color White
Start Width	End Width
	✓ 2.0 ▲

The Mobile Connect driver was developed to connect the trunnion (origin point) on a dredge to the cutter head in the DREDGEPACK<sup>®</sup> map display to illustrate the physical connection and changing length of the ladder as it moves.

To use these new features:

- 1. In HYPACK Hardware, add the mobileconnect.dll to the dredge mobile.
- 2. In the HYPACK Shell, Open Survey -> DREDGEPACK. The HYPACK Mobile Connect window appears.
- 3. For the outline of the arm, you can adjust the width (0 to 10 pixels wide), color (custom or preset), and transparency.
- 4. Check the Solid Fill box to apply a fill to the inside of the arm. You can adjust the color (custom or preset) and transparency of the fill.

5. At the bottom of the window, adjust the width of the start (trunnion/origin point) and end (cutter head) of the mobile connect arm by typing in a number or using the up and down arrows.

The following image is an example that shows the settings in the Mobile Connect window and the corresponding dredge arm.



• Excavator.dll: Added the Smooth Channel Option, which when enabled calculates and draws straight line segments instead of a step-like line for the channel's slope. To use this new feature, in the HYPACK Hardware add excavator.dll. Open the device driver setup window, then click on the Profile/Shapes tab and check the Smooth Channel box.

eneral Settings	Bucket Geometry Profile / Shapes Quick Att	achment Optional Setting	38
Track Bucket		Colors	
Grid		Mark1	Dredge Above Channel
Minimal Depth	0.00 Profile Width 150.00	Mark2	Dredge in Overdepth
Maximal Depth	30.00 Boat Position 20.00	Pontoon	Dredge Below Ovd.
Control Lines		Channel	Survey
Horiz. Mark 1	0.00 Overdredge 0.00	Bucket	Excavator
Horiz. Mark 2	0.00 Pontoon Protection 0.00	Volume	Volume Alarm
✓ Smooth Char Select the Sha	nel Des for each element		
Body	C:\HYPACK 2024\Boat Shapes\Shapes for the	e ExcavatorSM Driver\boo	y.shp
Boom	C:\HYPACK 2024\Boat Shapes\Shapes for the	e ExcavatorSM Driver\boo	m.shp
	C:\HYPACK 2024\Boat Shapes\Shapes for the	e ExcavatorSM Driver\stic	k.shp
Stick		- EusensterCM DriverAhue	ket.shp
Stick Bucket	C:\HYPACK 2024\Boat Shapes\Shapes for the	e Excavators M Driver (Duc	+
Stick Bucket Stick2	C:\HYPACK 2024\Boat Shapes\Shapes for the C:\HYPACK 2024\Boat Shapes\Shapes for the	e ExcavatorSM Driver\stic	k.shp

The example below shows the Excavator interface with the Smooth Channel option unchecked (left) and checked (right).



#### • HopperDQMSender.dll:

Added the Pass-through Mode checkbox in the HopperDQMSender driver setup window. When this box is checked, this mode will look for data via serial or network, and if it receives something, will verify that the data is valid, add the Plant ID to the XML, and send the data via DQM Direct. The status and data tabs will not be visible on the runtime window. The user will only see the outgoing string, the time of the last message received, and the result of the DQM Direct send.

🔳 frmSetup				—		×	
Dredge Name	Test Dre	edge					
🗌 Invert Tide		Store Dump	Plots				
CSV Backup							
Store Backu	p File						
Local Time	Only						
Output Interval (s	;) 10	۲					
DQM Output							
Optional Iter	ns	🔽 Nivobob Le	evels				
Valve DQM It	tems	Center Arm	Items				
Export Positi	ons as X	(LL is the default	t)				
*Note: The items al	oove will r	anlu work if your pro	duction dr	iver sun	norts it		
DQM Direct		niy nonci you pro		1101 040			
C Enable DQM	Direct						
Plant ID 205	6						
Connection Stri	ing						
HostName=z0 devices.us;Dev 6urXpoFxZtbql	HostName=z007-mlz-dqm-iothub.azure- devices.us;DeviceId=Hypack_Test;SharedAccessKey=c0F1o25fv841Pli 6urXpoFxZtbqhPu92KOHNW7PbAYs=						
Pass-throug	h Mode						
		_	C	Ж	Can	icel	

• EntekTSHD.dll (Entek Hopper System)

> Added two settings to the Entek Hopper System Device Settings window: Fwd Draft Sensor To Mark, and Aft Draft Sensor To Mark. These settings are for entering the values of the distance from the bubblers to the aft and forward marks.

Device Settings	X
Settings	
Draft Sensors Fwd Draft Sensor To Mid 100.0	00 Aft Draft Sensor To Mid 100.00
Fwd Draft Sensor To Mark 20.00	0 Aft Draft Sensor To Mark 10.00
Inable	✓ Enable
Hopper Level (Ullage) Sensors	
Fwd Ullage Sensor To Keel 50.00	0 Aft Ullage Sensor To Keel 50.00
Fwd Ullage Sensor To Mid 140.0	00 Aft Ullage Sensor To Mid 140.00
✓ Enable	✓ Enable
Calibration	OK Cancel

- > Entek TSHD runtime window now shows the location of both of these marks as an 'X'.
- > The Aft Draft and Fwd Draft values in the runtime window correspond to the aft and forward marks.

The following image shows an example runtime window for the EntekTSHD driver. Notice that the Aft Draft value is 4.8, and the Fwd Draft value is 11.5, which correspond to the 'X' marks in the graph below.



#### INPUT ECHO

The Input Echo dialog has received multiple updates.

			_		×
Output 5 Outp	out 6	Outpu	t 7	Outpu	it 8
Input Output 1	Output	2 0	utput 3	Out	out 4
Connection Type	Serial Po	rt			$\sim$
Serial Parameters					
Port COM6	~ Spe	ed	460800	) ~	
Data Bits 8	<ul> <li>✓ Stop</li> </ul>	o Bits	1	×.	
Parity None	<ul> <li>✓ Flow</li> </ul>	v Contro	N N	one 🖂	1
Add Output		Remove	e Outpu	ut	
Add Output	100	Remov Size(ME	e Outpu	ut	
Add Output	100 art	Remove Size(ME Close	e Outpu ?)	ut	

- Users can now add and remove up to eight outputs using the newly added [Add Output] and [Remove Output] buttons.
  - > The supported output connection options are serial port, parallel port, and network port. Additionally, the output data can also be saved to file(s).
  - > If the wrong device is removed, click [Add Output] to add back the most recent deleted device.
- The supported input port types are serial port, parallel port, and network port.
- Parameters change depending on the input or output connection type selected.
- When File is selected as the output connection type, check the Split Files checkbox to split the data into multiple files based on size. This prevents giant files from being created. Additional files will be saved in the format {FileName}\_{number}.extension (Ex: test.tmp, test\_1.tmp, test\_2.tmp, etc.).
- Settings are saved when Input Echo is closed.

### TARGETS

#### TARGET EDITOR

• Klein Spectral Al targets can now be imported in the Target Editor.

To use this new function:

1. From the HYPACK Shell, click Preparation -> Editors -> Target Editor. The Target Editor window appears.

- 2. In the Target Editor window, click File -> Import -> Klein Spectral AI. The Import Target File window appears.
- Select one or multiple Klein Spectral AI target files and click [Open]. Only JSON files can be selected. The associated TIF file will also be imported as well.

Back in the Target Editor, the selected Klein Spectral AI targets will appear in the list of targets on the left. Name and metadata read from the JSON file of the associated target will be displayed on the right, as well as the TIF image.

## **SURVEY**

• Users can now convert \*.mxb to \*.mtx files directly in HYPACK<sup>®</sup> SURVEY and DREDGEPACK<sup>®</sup>. \*.mxb files are backup binary versions of the matrix files created at user-defined time intervals while surveying. These \*.mxb files can be used to restore your project \*.mtx file to the state it was at the time the file was generated, which ensures security against data loss.

To use this new feature, in HYPACK<sup>®</sup> SURVEY or DREDGEPACK<sup>®</sup>, click on the Matrix tab in the toolbar and click Convert .mxb -> .mtx, and the Open dialog appears.



In the Open dialog, click on the \*.mxb file and click [Open]. In the Save As window, give your \*.mtx file a name, then click [Save]. A new matrix file will be loaded and drawn on the map, and you can continue with your surveying.

For additional information, refer to <u>Converting MXB Files to MTX in DREDGEPACK<sup>®</sup> by</u> <u>Jocelyn Kane</u>.

• Fixed a bug where customized toolbar settings in the Survey window were not saved after closing Survey. Replaced both Toolbar menu options (Main Form and Map Windows) with the built-in toolbar customization window. Selecting these menu items will popup the customize dialog, where different sub-toolbars can be turned on and off.

**To customize and turn toolbars on and off in the main Survey window**, click Window -> Toolbox, and the Customize window opens. From the Toolbars tab, you can enable and disable toolbars, create new toolbars, rename and delete custom toolbars, and reset

the default toolbars. To add more features to a toolbar, navigate to the Commands tab, and click, drag, and drop each command icon at the desired location on the toolbar. To remove a tool from the toolbar, while the Customize window is open, click and drag the icon off the toolbar.

🖸 Customize	×	冗 Customize	X
Toolbars       Commands       Options         Toolbars:       ✓       Zoom         ✓       Zoom       ✓         ✓       Print       ✓         ✓       Mode       ✓         ✓       Range       ✓         ✓       Vessel Tracking       ✓         ✓       Multibeam Matrix       Topo Matrix         SB Matrix       ✓       TEST TOOLBAR 1	X New Rename Delete Reset	Customize	Commangs: Commangs: Arrow Create Border Zoom Window ↔ Pan Edit Line Cuery Map Object
		Description	
	Close		Close

**To enable and disable toolbars in the area map window**, right click on the grey toolbar and click on the name of the tools or toolbar you want to add or remove. To **customize toolbars in the area map window**, click Customize, and the same Customize window described previously appears.

Tip: When you are dragging a tool from the Commands box to the toolbar, make sure the insert indicator appears - the tool you are dragging will be placed in that position.

Map 1	– 🗆 🗙	🗐 Data Display 1 🛛 —
Settings Output View Matrix Tools		Font Configure Style
💱 🕀 🗨   🕞   📐 💽 🕂 📝 🖉 🕼 🚱    Range None 🔹   🕐 Tracking: In Center 🛛 🚺 Matrix 🔹		Easting
	T Customize	×
<pre></pre>	Toolbars     Options       Categories:     Default       Matrix     Tools       Tracking     View	Commangs: Print Map Range New Item • New Button Select Target Close
7158.78 3425.59 29d28'26.328" N 091d54'11.862" W 29d28'26.328" N 091d54'11.86	62" W 7936.174 ft	

#### LEFT/RIGHT INDICATOR WINDOW

• Users can now change the style and weight of the indicator arrow in the Left/Right Indicator window. To do this, in the Left/Right Indicator window click Options -> Indicator, and select between Arrow or Bar, as well as the weight (Thin, Medium, Heavy).

+l + Left/Right Indicator 1								-		$\times$
Contract Ctrl+C Expand Ctrl+V	Opt	ions								
Dist to S/L: 2576.88 me to S/L:		Font			Offline	Depth: 48.70	Tide: 0.00	GPS N	1ode: -1	
	~	Floating Text Status Bar			350.8					
1000 100		Step Scale Linear Scale Logarithmic Scale		11				100	1	000
		Indicator	>	~	Arrow					
					Bar					
					Thin					
				~	Medium					
					Wide					

The following images show the Arrow (top) and Bar (bottom) styles, as well as the weight

(left to right is Thin, Medium, Heavy).



# **HYSWEEP SURVEY**

 Added an altitude window to HYSWEEP, similar to what is found in side scan survey, which takes the device reported altitude and displays this output in its own window. For additional information, refer to the article <u>Altitude Window for Side Scan</u> <u>Sonars in HYSWEEP® by Andrew Clos</u>.

<u>ا</u>	HYSW	/EEP Survey	- Offline				_		$\times$	Altitude Window
File	Viev	v Matrix	Targets	Corrections	Tools	Patch	h Test Help			
N		New Wind	low			>	Profile \	Vindow		📃 EdgeTech 4600/6205 System 🗸 🗸
Dept		Remove V	Vindow			>	3-D Sea	floor		
Tide	~	Profile Wi	ndow				Multibe	am Waterf	all	
Heav	~	Multibear	n Waterfa	II			Intensit	/ Waterfall		
Pitch	~	Side Scan	Waterfall				Topogra	phic Laser		<b>OU.</b> I
Easti	~	Altitude V	Vindow				Shore V	iew		••••
SV Fr		HYPACK F	Real Time	Cloud			Cide Ser	n Watorfal		
۲	~	Nadir Dep	th				Side Sca	in Signal		
E		Nadir Dep	th 2				Altitude	Window		

• Added the Dredge Mode option to the Matrix Options window in HYSWEEP Survey. Enable Dredge Mode if the vessel is stationary (dredge conditions). This fills the real time matrix with values that have applied offsets appropriate to a stationary dredge as opposed to a moving survey boat. Soundings are filtered via signal strength and collinearity to determine and select the highest quality soundings for use in the matrix.

With Dredge Mode enabled, roll, pitch, and non-averaged tide corrections are automatically applied to the matrix values, but not heave. While Dredge Mode is enabled,

the Draw Matrix in HYPACK Survey option is permanently enabled as well.

Matrix Options -			
🗹 Dredge Mode		🗌 Invert Dep	oths
🗹 Draw Matrix ir	n HYPACK Survey	No N	Matrix Loaded
Cells Length 5.00	Calcula	te	
Width 5.00	Number of Cell Approx, Memo	s ry (Mb)	0.0
Show Minimum So	oundings	() Maximum	Soundings
<ul> <li>Sounding Av</li> <li>Coverage</li> </ul>	/erage	Overlap (M	ax - Min)
Update Matrix	ng ( Always	0	Never
Apply		OK	Cancel

To use this new option:

In the HYSWEEP Survey window, click Options to open the Matrix Options window and check Dredge Mode. A couple of things will happen.

The title bar of "HYSWEEP Survey" will be replaced with "HYSWEEP Dredge Mode".

HYSWEEP	Dredge M	ode - Offli	ne		_		×
File View May	Matrix Ta	rgets Co MRU	rrections To Multibeam	ols Patch Tes	st Help	Devices	
Depth	34.	2	Time	(Event)	17:32:49	9 (O)	

The View Options window (HYSWEEP View -> Options -> Other tab) will also permanently enable the Apply Heave, Pitch, Roll Corrections and the Apply Tide Correction options while Dredge Mode is selected.

Ϋ́	View Op	otions			_		×
	Ranges	Multibeam Display	QC Tests	Coverage Map Other Laser Filters			
	Sound	ing Displays					
	✓ Apply Heave, Pitch, Roll Corrections ✓ Black Window Background			Generation Sidescan Display Has Hig	hest Priority	,	
	🗌 Adj	ust SV Profile Each Pir play Positions as Lat/L	ng Using S\ .on	/ at the Sonar Head			
	Nac	dir Depth Window Alw	vays On Top	2			

• Added the Invert Depths option to the Matrix Options menu, which inverts the depth values going into the matrix. This is for users who need an elevation matrix/ elevation mode.

latrix Options -	
🗹 Dredge Mode	Invert Depths
Draw Matrix in HYPACK Survey	No Matrix Loaded
Cells Length Calcu 5.00	late
Width Number of Ce 5.00 Approx. Mem	ells 1 nory (Mb) 0.0
Show Minimum Soundings	O Maximum Soundings
Sounding Average	🔿 Overlap (Max - Min)
Undate Matrix	
O While logging	vs O Never
Apply	OK Cancel

• In the View Options dialog, when Auto Scale Profile is checked, the minimum depth value (z-axis) is now automatically updated for the Sweep Profile and the Sounding Points options. Note that the minimum depth value remains locked at zero for the Beam Pattern and Wavefront options.

Ranges       Multibeam Display       QC Tests       Coverage Map       Other       Laser Filters         Profile       © Sweep Profile       © Beam Pattern       © Wavefront         © Sounding Points       □ Fix Vertical = Horizontal Scale       ○ Auto Scale Profile         3-D Seafloor       © Wiggle Display       © Wireframe Display       ● Solid TIN         © Color TIN       © Sounding Points       Point Size       2         Multibeam Waterfall       ● Color TIN       © Intensity         Nadir Depth       Font       Alarm Depth       70.0         Dual Head Calibration       □ Show Head 1 Only       □ Show Head 2 Only	View Op	tions					-		>
Profile Window	Ranges	Multibeam Display	QC Tests	Coverage Map	Other	Laser Filters			
<ul> <li>Sweep Profile</li> <li>Beam Pattern</li> <li>Wavefront</li> <li>Sounding Points</li> <li>Fix Vertical = Horizontal Scale</li> <li>Auto Scale Profile</li> </ul> <li>             3-D Seafloor         <ul> <li>Wiggle Display</li> <li>Wireframe Display</li> <li>Sounding Points</li> <li>Point Size</li> <li>Multibeam Waterfall</li> <li>Solid TIN</li> <li>Color TIN</li> <li>Color TIN</li> <li>Intensity</li> </ul> </li> <li>Nadir Depth         <ul> <li>Font</li> <li>Alarm Depth</li> <li>To.0</li> </ul> </li> <li>Dual Head Calibration         <ul> <li>Show Head 1 Only</li> <li>Show Head 2 Only</li> </ul> </li>	Profil	e Window							
○ Sounding Points       ☐ Fix Vertical = Horizontal Scale       ☐ Auto Scale Profile         3-D Seafloor       ○ Wiggle Display       ○ Wireframe Display       ⑧ Solid TIN         ○ Color TIN       ○ Sounding Points       Point Size       2         Multibeam Waterfall       ◎ Solid TIN       ○ Intensity         Nadir Depth       Font       Alarm Depth       70.0         Dual Head Calibration       □ Show Head 1 Only       □ Show Head 2 Only	<u>ی</u>	weep Profile	OBear	n Pattern		○ Wavefront			
3-D Seafloor       Wireframe Display       Solid TIN         Color TIN       Sounding Points       Point Size       2         Multibeam Waterfall       Solid TIN       Color TIN       Intensity         Nadir Depth       Font       Alarm Depth       70.0         Dual Head Calibration       Show Head 1 Only       Show Head 2 Only	⊖ s	ounding Points	Fix \	/ertical = Horizon	ital Scale	Auto Scale	Profile		
Wiggle Display       Wireframe Display       Image: Solid TIN         Color TIN       Sounding Points       Point Size       2         Multibeam Waterfall       Image: Solid TIN       Intensity       1mage: Solid TIN         Image: Solid TIN       Color TIN       Intensity       1mage: Solid TIN         Nadir Depth       Color TIN       Intensity       1mage: Solid Tin         Dual Head Calibration       Show Head 1 Only       Show Head 2 Only	3-D S	eafloor							
○ Color TIN       ○ Sounding Points       Point Size       2         Multibeam Waterfall       ●       Solid TIN       ○ Intensity         ● Solid TIN       ○ Color TIN       ○ Intensity         Nadir Depth       ●       ●         ● Font       Alarm Depth       70.0         Dual Head Calibration       □       Show Head 1 Only	OV	Viggle Display	⊖Wi	reframe Display	(	Solid TIN			
Multibeam Waterfall            Solid TIN          Nadir Depth         Font         Alarm Depth         Dual Head Calibration         Show Head 1 Only	00	Color TIN	⊖ So	unding Points	P	oint Size	2		
Solid TIN Color TIN Intensity     Nadir Depth     Font Alarm Depth     To.0  Dual Head Calibration     Show Head 1 Only Show Head 2 Only	Multi	beam Waterfall							
Nadir Depth     Font     Alarm Depth     70.0       Dual Head Calibration     Image: Comparison of the second sec	<u>ی</u> و	Solid TIN	⊖ <b>C</b> ₀	lor TIN	(	) Intensity			
Font     Alarm Depth     70.0       Dual Head Calibration	Nadir	Depth							
Dual Head Calibration Dual Head 1 Only Show Head 2 Only		Font	Alarn	n Depth	[	70.0			
Show Head 1 Only Show Head 2 Only	Dual I	Head Calibration							
	□ Sł	how Head 1 Only	Show Head 2 Only						
Defaults Apply OK Cancel	Def	faults			Apply	ОК		Cancel	

To use this feature:

- 1. In HYSWEEP Survey, click View -> Options. The View Options dialog appears.
- In the Multibeam Display tab, check Auto Scale Profile, select either Sweep Profile or Sounding Points, and click [Apply].

You will see that the minimum depth value automatically adjusts to a more suitable value in both the Ranges tab of the View Options dialog, as well as the Profile Window.



### **REAL TIME CLOUD**

- Added option to display the water column data in Real Time Cloud. To enable check the option on the Settings dialog. To set coloring change the color table used for the intensity colors (cloudInt.hcf by default).
- Users can now modify target size and style in the Real Time Cloud program.
   To use this new feature, first launch HYPACK<sup>®</sup> SURVEY, then click Options -> Shared Memory -> HYPACK Real Time Cloud. In the Real Time Cloud window, click View -> Settings to open the Settings dialog. In the Targets drop down menu, select from the following options: None, Point, Circle, Cylinder, MBMAX64, and Flag. You can also adjust the size of the targets from the Size field.

Settings	× Settings	$\times$
General Boats	General Boats	
Display     Badground Charts       Capture Multibeam Points     Max Points to Display       Capture Topo Points     300000       Capture Matrix     Badground Color       Hidle New Points     Badground Color       Show Legend     Configure Charts	Display     Background Charts       Capture Multibeam Points     Max Points to Display       Capture Topo Points     3000000       Capture Matrix     Background Color       Hide Near Points     Background Color       Show Legend     Configure Charts	
Channel File Color Color	Channel File  Enable Color	
Clip Points Below Clip Points Above Transparent Solid	Clip Points Below C Ip Points Above Transparent Solid	
Water Level     Targets       Cable     Winder       Transporent     Solid       S57 Code     Winder       None     Point       S57 Code     Winder       None     Point       S57 Code     Winder	Water Level       Enable     Targets       Transparent     Solid       Size     2.50       Size     2.50   Buckets None	ľ
OK Cancel Apply	OK Cancel Apply	

As a reminder, here are how the target styles appear. From left to right, top to bottom, the target styles used are Point, Flag, Circle, Cylinder, and MBMAX64.



## **POST-PROCESSING**

# 64-BIT SINGLE BEAM EDITOR (SBMAX64)

• We made a number of updates and bugfixes to the Offline Statistics window:

> Added the Depth 1 and Depth 2 check boxes to choose either or both depths.

5	O All Lines		Depth 2	Save Screen to RTF
	Average	Minimum	Maximum	Standard Deviation
Offline	0.56	-13.36	11.01	6.72
DBL Values	467.81	0.68	940.36	270.30
(Values	1083516.95	1083153.95	1083872.85	205.49
Y Values	254799.61	254497.01	255102.29	175.73
Z Values	40.24	35.00	49.10	6.98
99 -20: 20 -15: 15 -10: <b>–</b>				
99         -20:           20         -15:           15         -10:           10         -5:           -5         0:           0         5:           5         10:           10         15:           10         15:				

- > The number of points sometimes wrote on top of "Number of Points", this has been fixed.
- > Fix wrong line in graph being used to determine where to print max points.
- > Updated start line to use in calculations every time data changes, so switching between Current Line and All Lines now updates correctly.
- > Catch when line is changed in editor file list and update calculations.
- Added the Hide Deleted checkbox to the Spreadsheet window, which hides deleted soundings when checked. The first image below shows deleted soundings in the Spreadsheet window while Hide Deleted is unchecked, and the following image shows

#### the spreadsheet with deleted soundings removed after Hide Deleted is checked.

#### Spreadsheet - Depth

Hide Panel	Fill Column		Fill Selection	Swap Depth 1	1,2 Exp	ort		Hide D	eleted
Display Options			Time	X	Y	Corr. Depth 1	Raw Depth 1	Corr. Depth 2	Raw Depth 2
DBL		1	09:22:16.033	****	****	****	****	****	****
Dop Draft Corr		2	09:22:16.228	1078959.00	248825.42	40.70	41.50	40.60	41.40
Epoch		3	09:22:16.489	****	****	****	****	40.54	41.30
GPS Elevation		4	09:22:16.620	1078955.20	248828.90	40.64	41.40	40.64	41.40
GPS Latitude GPS Longitude		5	09:22:16.684	****	****	****	****	****	****
GPS Mode GPS Time	~	6	09:22:16.750	1078953.97	248830.05	40.64	41.40	40.54	41.30
	<b>↑</b>	7	09:22:16.944	1078952.13	248831.81	40.77	41.50	40.67	41.40
•		8	09:22:17.010	1078951.51	248832.40	40.77	41.50	40.67	41.40
Time		9	09:22:17.074	1078950.90	248832.98	40.77	41.50	40.67	41.40
Ŷ		10	09:22:17.139	1078950.30	248833.56	40.74	41.50	40.74	41.50
Corr. Depth 1 Raw Depth 1		11	09:22:17.205	1078949.70	248834.14	40.84	41.60	40.94	41.70
Corr. Depth 2 Raw Depth 2		12	09:22:17.269	1078949.11	248834.71	40.84	41.60	40.74	41.50
DOL		13	09:22:17.334	1078948.52	248835.29	40.84	41.60	40.74	41.50
Tide Corr Date		14	09:22:17.400	1078947.93	248835.87	40.84	41.60	40.74	41.50
Heave Corr		15	09:22:17.464	****	****	****	****	****	****
		16	09:22:17.529	1078946.77	248837.04	40.80	41.60	40.80	41.60
		17	09:22:17.595	1078946.19	248837.62	40.70	41.50	40.70	41.50
		18	09:22:17.660	1078945.62	248838.20	40.80	41.60	40.70	41.50
		19	09:22:17.724	1078945.05	248838.78	40.90	41.70	40.70	41.50
		20	09:22:17.790	1078944.47	248839.37	40.90	41.70	40.70	41.50
		21	09:22:17.855	1078943.91	248839.95	40.80	41.60	40.80	41.60
		<							

#### Spreadsheet - Depth

Hide Panel	Fill Column		Fill Selection	Swap Depth 1,2	Exp	ort		🗹 Hide 🛙	eleted
Display Options			Time	x	v	Corr Depth 1	Raw Depth 1	Corr Depth 2	Raw Depth 2
COG DBL	^	1	09-22-16 228	1078959.00	248825.42	40.70	41.50	40.60	41.40
Dop		2	00.22.16.620	1078955.00	2/10/2014	40.64	41.40	40.64	41.40
Epoch		2	00.22.16.750	1070052.07	240020.50	40.64	41.40	40.04	41.40
Event CPS Elevation		-	09:22:10.730	1070953.97	240030.03	40.04	41.40	40.34	41.50
GPS Latitude		4	09:22:10.944	1078952.13	248831.81	40.77	41.50	40.07	41.40
GPS Longitude		5	09:22:17.010	1078951.51	248832.40	40.77	41.50	40.67	41.40
GPS Mode GPS Time	~	6	09:22:17.074	1078950.90	248832.98	40.77	41.50	40.67	41.40
L	<b>†</b>	7	09:22:17.139	1078950.30	248833.56	40.74	41.50	40.74	41.50
	•	8	09:22:17.205	1078949.70	248834.14	40.84	41.60	40.94	41.70
Time		9	09:22:17.269	1078949.11	248834.71	40.84	41.60	40.74	41.50
Ŷ		10	09:22:17.334	1078948.52	248835.29	40.84	41.60	40.74	41.50
Corr. Depth 1 Raw Depth 1		11	09:22:17.400	1078947.93	248835.87	40.84	41.60	40.74	41.50
Corr. Depth 2		12	09:22:17.529	1078946.77	248837.04	40.80	41.60	40.80	41.60
DOL		13	09:22:17.595	1078946.19	248837.62	40.70	41.50	40.70	41.50
Tide Corr Date		14	09:22:17.660	1078945.62	248838.20	40.80	41.60	40.70	41.50
Heave Corr		15	09:22:17.724	1078945.05	248838.78	40.90	41.70	40.70	41.50
		16	09:22:17.790	1078944.47	248839.37	40.90	41.70	40.70	41.50
		17	09:22:17.855	1078943.91	248839.95	40.80	41.60	40.80	41.60
		18	09:22:17.921	1078943.35	248840.53	40.84	41.60	41.04	41.80
		19	09:22:17.985	1078942.78	248841.11	40.84	41.60	40.94	41.70
		20	09:22:18.050	1078942.24	248841.69	40.74	41.50	40.74	41.50
		21	09:22:18.114	1078941.68	248842.28	40.77	41.50	40.77	41.50

• The tide displayed in Tide Analyzer now matches with the Tide shown in the Heave/ Tide/Draft Editor window in SBMAX64. Previously, the tide display was inverted. • Added the field Z-Multiplier for XYZ to the Save Survey window. Users can now enter a positive or negative value, which will be used as a multiplier with the Z value. For instance, enter -1.0 to invert the Z. The default value is 1.0.

Save	Survey
0410	Janey

Save Survey			~
File Format	XYZ     All Separate	O Export Options	
One File Per Survey Line Append to File Names	sbmax64	Z-Multiplier for XYZ: -2.0	
Save Reminder / Auto Save HS2x	Save All Files	Save Selected Files	Close

To use this function:

- 1. In SBMAX64, click File -> Save Survey. The Save Survey window appears.
- 2. Type the multiplier value in the Z-Multiplier for XYZ field.
- 3. Select one of the save options, and the Save As window appears. Keep in mind the XYZ files are saved in the project's Sort folder by default.
- 4. Give the XYZ file a name and click [Save].
- 5. Open the XYZ file and verify that the Z multiplier has been applied.
  - The following example images below show the XYZ values without (left) and with (right) the multiplier of -2.0 applied.

Multiplier_1_De	epth1.xyz - No	otepad		Multiplier_N	2_Depth1.xyz	z - Notepad	_		$\times$
File Edit Format	View Help			File Edit Form	at View He	lp			
Multiplier_1_De File Edit Format 1078959.00 24 1078956.47 24 1078955.20 24 1078955.20 24 1078953.97 24 1078952.13 24 1078950.30 24 1078950.30 24 1078949.70 24 1078949.70 24 1078949.71 24 1078947.35 24 1078947.35 24 1078946.77 24 1078946.72 24 1078945.62 24 1078945.62 24	Pipth1.xyz - No           View         Help           18825.42         1           18827.72         1           18827.72         1           18827.72         1           18827.72         1           18827.72         1           18827.72         1           18829.46         1           18830.05         1           18831.81         1           18832.40         1           18832.40         1           18833.56         1           18833.56         1           18834.71         1           18835.29         1           18835.29         1           18835.20         1           18835.20         1           18837.62         1           18838.20         1           18838.20         1           18838.20         1           18838.20         1           18838.20         1           18838.20         2	40.70 40.64 40.64 40.64 40.64 40.64 40.77 40.77 40.77 40.77 40.74 40.84 40.84 40.84 40.84 40.80 40.80 40.70 40.80 40.90		Multiplier_N File Edit Form 1078959.00 1078956.47 1078955.20 1078954.60 1078952.13 1078950.30 1078950.30 1078949.70 1078949.70 1078949.11 1078948.52 1078947.35 1078946.77 1078946.77 1078946.29 1078945.62	2_Depth1.xyz at View He 248825.4 248827.7 248828.9 248829.4 248830.0 248831.8 248832.9 248832.9 248834.1 248834.1 248834.1 248835.2 248835.8 248835.8 248835.8 248837.0 248837.6 248838.2 248838.2	z - Notepad lp 2 -81.41 2 -81.27 6 -81.27 6 -81.27 5 -81.27 1 -81.54 0 -81.54 8 -81.54 6 -81.67 1 -81.67 9 -81.67 7 -81.67 6 -81.61 4 -81.61 2 -81.41 0 -81.61 8 -81.81 7 -81.81	_		×
1078944.47 24	18839.37	40.90		1078944.47	248839.3	7 -81.81			
1078943.91 24 1078943.35 24 1078942.78 24 1078942.24 24 1078941.68 24	18840.53 18841.11 18841.69 18842.28	40.80 40.84 40.84 40.74 40.77		1078943.91 1078943.35 1078942.78 1078942.24 1078941.68	248839.9 248840.5 248841.1 248841.6 248842.2	3 -81.61 3 -81.67 1 -81.67 9 -81.47 8 -81.54			~
			Ln 2(	Ln 26, Col 28	100%	Windows (CRLF)	UTF-	8	

• The "All" depth option is selected by default in the Contours window of SBMAX64 when the SonTek M9 is configured. This update was made since the SonTek M9 is a multi-transducer system which collects depth data from dual 4-beam transducers and one vertical beam echosounder. Before the update, depth options included Depth 1, Depth 2,

 $\sim$ 

and Both, however the issue is that depths 1 and 2 may not be populated with data. Beams 1-4 are set to one frequency, and beams 6-9 are set to the other frequency and swap depending on the depth. Only beam 5 from the vertical beam echosounder always has data. Because of this setup, the "Both" depth option was changed to "All" depths, and data from all nine beams are used for sorting and contouring.

Contours		—		×
Export	2D Contour		~	
Contour para	ameters			
Filtering				
Minimun	n Leg		0	
Minimun	n Area		0	
Enable S	moothing		$\checkmark$	
Export				
Cont	ours	Solid /	Area	
Step	1.0		$\sim$	]
		antaux Atl	huile ute e	
	C	onlour Ali	Indutes	
-Use as Z Value				-
Use as Z Value				_
Use as Z Value			~	
Use as Z Value			~	
Use as Z Value	Sort Spa	cing: 10	~	
Use as Z Value	Sort Spa	cing: 10	~	
Use as Z Value	Sort Spa um Side	cing: 10	~ 	
Use as Z Value	Sort Spa um Side V Label All	cing: 10	· · · · ·	,
Use as Z Value	Sort Spa um Side ☑ Label All e Colors	cing: 10 Contours	<ul> <li></li> <li>100</li> <li>t Colors</li> </ul>	]
Use as Z Value All Maximu Autoscale	Sort Spa um Side ☑ Label All e Colors	cing: 10 Contours Edi	100 t Colors	
Use as Z Value All Maximu Autoscak	Sort Spa um Side ✓ Label All e Colors Sau	cing: 10 Contours	V 100 t Colors Save As	5
Use as Z Value	Sort Spa um Side ✓ Label All e Colors Sav	cing: 10 Contours Edi /e	100 t Colors Save As	ð

#### ECHOGRAM WINDOW

The [Export] button in the Echogram window now opens the Export dialog, which
has additional functionalities.

When users export signal intensity data as ASCII \*.txt files, they have the option to choose which depth data to export, as well as whether they want to export data from the currently displayed line or all lines. Users can now also export screenshots

of the echogram as \*.jpg files through the SBMAX64 echogram window.

Export	×
File Type	
Samples (.TXT)	◯ Image (.JPG)
Options	
🔽 Depth 1	O Current Line
Depth 2	O All Lines
	OK Cancel

To us these new functions, you will need to first load at least one \*.raw file and open the data in the echogram.

From the HYPACK Shell click Processing -> Single Beam Editor (64 bit), and the SBMAX64 window opens. Click Load Survey, and in the Raw folder select the LOG file and click [Open]. Click any of the \*.raw files in the Catalog window, then click [Select] or [Select All]. In the Read Parameters window, click [OK]. Back in the SBMAX64 window, click [Echogram] to open the echogram window(s).

Once in the Echogram window, click [Export]. The new Export window allows users to select the File Types (\*.txt or \*.jpg) they want to generate. If Samples (.TXT) is selected, users can further choose if they want to export data for Depth 1, Depth 2, or both, as well as whether they want to export data for the current line or all lines. Click [OK], and the Select Folder dialog appears. Choose the desired folder to save the exported files, then click [Select Folder]. Within each \*.txt file, the program exports each sample as a number, and data is grouped into rows by ping.

In the following example, both depths are selected and the output files each contain intensity data from a single depth channel. File names are in the format of RawFileName.RAW\_Channel#.txt.

B SBMAX64 - RAW0710	0.LOG - Depth	1	<b> </b> =	Raw				
File Edit View Tools H	lelp	File	Home	Share View				
Survey Files	2 ly	Pin to Quic access	k Copy	Paste Copy path Paste Paste shortcut	Move Copy to * to *	Delete Rename	New folder New	Properties •
1 - 302P38.RAW*		$\leftarrow \rightarrow$	· ↑	📜 « HYPACK 2023 » F	Projects > Single	e Beam Mobile 🔉	Raw	~
		•	Name	2	-	Date modi	fied	Туре
			3	02P38.RAW_Channel2.txt		7/31/2023	2:45 PM	Text D
Dor	ne	e	3	02P38.RAW_Channel1.txt		7/31/2023	2:45 PM	Text D
			<b>a</b> 3	02P38_0001.RAW		5/23/2023	3:05 PM	RAW F
Speed	Profile	日日	3	02P38.RAW		2/3/2023 3	3:08 PM	RAW F
Heave / Tide	Spreadsheet		3	02P38.BIN		8/30/2012	1:59 PM	BIN Fil
LIDD	Echogram	· ·	3	10P00.BIN		8/30/2012	1:58 PM	BIN Fil
	Lonogram		3	05P00.BIN		8/30/2012	1:58 PM	BIN Fil
SV			🖹 3	05P00.RAW		8/30/2012	1:57 PM	RAW F
Sort	Contour		3	12P96.BIN		8/30/2012	1:57 PM	BIN Fil
			2			9/20/2012	1.57 DM	

If you choose Image (.JPG), a different Save dialog will appear. Choose the desired location to save the exported image, then click [Save]. The output will be an image capture of the graph from the echogram window.



#### **SB** SELECTION

- The Sounding Selection program has new sounding selection options: Start Gate, End Gate, Include First Point, and Include Last Point.
  - Start Gate Set the starting distance along the line where soundings will start being selected. For example, if you do not need the first bit of data because it is too far from your trackline, you could set the Start Gate value to 200 m. If left blank, no start gate will be used.
  - > End Gate Set the distance beyond which no more soundings are selected. If left blank, soundings will be selected through the end of the line.

Previously, when selecting by Distance, the Sounding Selection program did not take into account the first and last points of the data file. We've added these as options:

- > **Include First Point** Enable to keep the original starting point of the line.
- > Include Last Point Enable to keep the last very point of the line.



To use these new options:

- 1. From the HYPACK Shell, click Processing -> Sounding Selection -> SB Selection. The Sounding Selection window opens.
- 2. On the left toolbar, make sure the Distance checkbox is checked. You can type in values for Start Gate and/or End Gate, and check or uncheck the Include First Point and Include Last Point boxes.
- 3. Click [Apply Settings] to apply these settings to your sounding selection.

The following example shows how these new sounding selection options are applied. Include First and Include Last Points are enabled, and so both points are selected (contrast this with the previous image where these options are not checked). Start Gate and End Gate are set to 200 and 850, respectively, and soundings from in between these two distances are selected.



#### REAL-TIME MOSAIC FOR SIDE SCAN DATA

• The Real-Time Side Scan Mosaic Settings dialog has received a slight UI update.

Real-Time Side Scan Mosaic Settings	×
Cell Size 0.10 meters per cell	
Blend Percentage Transparent	Opaque
ок	Cancel

Users will also receive a warning and are sent back to the Real-Time Side Scan Mosaic Settings dialog if the resolution is too low.

• **Bugfix:** Previously, changing resolution and clicking "No" when it asks to delete old mosaics causes old mosaics to be drawn offset. GeoTIF files are now created at the right location.

# SIDE SCAN PROCESSING

#### TARGETING AND MOSAICKING BETA

- The Side Scan Targeting and Mosaicking Beta (SSTM) now supports loading backscatter exports from MBMAX64 in the HS2x format. We've also added a new gain option that works great with backscatter (Angle Varied Gain, across all lines). Refer to our article Backscatter Update for Side Scan Targeting and Mosaicking by Daniel Tobin for more information.
- The Optimal Resolution Calculator has been greatly simplified to display only two fields, Range and Horizontal Aperture in degrees, since these are the only values used to calculate the suggested resolution.

To use the new Optimal Resolution Calculator:

- 1. From the HYPACK Shell, click Side Scan -> Targeting and Mosaicking (Beta). The Side Scan Targeting and Mosaicking Beta window appears.
- 2. Load some data, then click Tools -> Resolution Calculator. The Optimal Resolution Calculator window opens.

Optimal	Resolution C	alc	ulator	$\times$
Load Sonar	Save Sonar	De	elete Sonar	
JSF Fish				
	Ran	ge	213	ft
Horizonta	al Aperture (de	g)	0.50	
Sugg	ested Resoluti	on	0.62	
	ОК		Cancel	

Note you can also open the calculator by selecting the Mosaic tab, then clicking on the calculator icon under the Lines list.

🗱 Side Scan Targeting and Mosaicking	Beta - 24.2.3.0			- 🗆 ×
File View Tools Help				
	Scanview Altitude Spreadsheet Mosaic Pitch	n/Roll		
Stages	Lines	양 약 약 ☆ X: 29342951.7	Y: 53977171.7	Cancel
1 2 3 S+A	20130207200103.jsf			
	Check All Check None			
Load Time: 0.6s	Resolution			
Cancel	0.62 Feet Per Pixel			
Cancer	Dimensions: 2794 x 1264 pixels			
$\leftarrow \rightarrow \mathbf{X}$	Memory Usage: 13.5 MB Number of Tiles: 1 tiles			
20130207200105.jst	Overlapping Areas			
	O Average O Minimum			
	Maximum     Overlay			
	Filters			
	None     Median			
	O Average O Sharpen			
	Border File			
	X			
	Frequency			
	Output File Name			
	Multiple Files (one per line)			
	tile.tif			
	Add to Batch File Make Mosaic			
	Heading		Survey Window	
	20:01:02.755 7.5		Positions Imagery View R Q Q Q X	
	+90 -			
	284			
	-90 20:01:00	20:02:42		1
	Smoothed 0x		Smoothed 0x	

3. The current dataset's range should be listed. If the dataset's sonar has an entry in our database, the Horizontal Aperture field should be accurately filled. Otherwise, it uses the default of 0.5.

**NOTE:** Only the 64-bit version is included. There is no support for the 32-bit version due its lower memory limits.

#### SEGMENTATION AND CONTOURING

New in HYPACK<sup>®</sup> 2025 is segmentation and contouring in Side Scan Targeting and Mosaicking (SSTM). This includes the following features:

- Create binned XYZ files of your data.
  - > An XYZ file is created at a configurable grid size (say, a 10-foot grid). This is the "bin" size.
  - In each bin (e.g. each 10x10 foot area) of your mosaic, the X and Y coordinates and average signal intensity are written to the XYZ file (the signal intensity is written instead of depth).
- Create a DXF segment files using your XYZ files.
  - > Our TIN engine is leveraged for this.
  - > Given an XYZ file, adjacent bins with similar intensities are grouped into "segments".
- Interpret DXFs and label segments.
  - > The range of intensities a given segment covers is configurable.
  - > Once you've created a segment, you can label and color that segment.

For a full breakdown of the Segmentation and Contouring in HYPACK<sup>®</sup> 2025, refer to the article <u>Segmentation in Side Scan Targeting and Mosaicking by Daniel Tobin</u>.

# 64-віт HYSWEEP<sup>®</sup> EDITOR (MBMAX64)

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- KMALL and ALL files now calculate RTK tides when loaded into MBMAX64 if an RTK method is selected in the RTK Tide Method section of the Geodetic Parameters dialog in the HYPACK Shell. If "Not Using RTK Tide" is selected, no ellipsoidally-referenced tides are calculated.
- The [Update Filter Preview] button in the Search and Filter Options window has been changed to [Update] to avoid confusion about filters. Since filters are always precalculated regardless whether the filter preview (marked with yellow X's) is enabled or not, these options are applied to the filters. To view this change, in MBMAX64 click Edit -> Search and Filter Options, and view the different tabs. The MBMAX64 interface also uses "Filters" for the status labels instead of "Filter Preview".

Actions Basic GPS Sweep Matrix Search Only		
Filter	Toolbox	
Image: Selected Files         Reset All		
Count	Fast Delete	
	Inside     Outside	la la State de Carlos
Search	Above Below	
All Files All Selected Files And Next All Back	Large Dots Wide Lines	
Found	Filter Preview Show Deleted	
Coad Filters Save Filters	Image: Second system     Image: Second system     Filters       Floating Toolbar     Image: Second system     Image: Second system	
→ Exclude Checked Beams from Filter and Search	Filters 98%	
Search / Filter Inside Only	Old labels said "Filter Preview"	<
O Search / Filter Outside Only		X=361010.63 Y=4770288.80
Update		

• When a project is created using HYPACK's Create New Project option, the Apply Grid Convergence checkbox in Sonar Processing dialog now defaults to checked. Previous default was unchecked.

When a project is created using HYPACK's Copy Existing option, the Apply Grid

Search and Filter Options

Convergence checkbox will be checked or unchecked depending on the copy's source project, which is how this option has worked.

Sonar Processing				×
Sonar ID				
Reson Seabat T5	D-P			$\sim$
Adjust SVP Eve	ery Ping			
Apply Grid Con	vergence			
Ray Tracing				
Line Method	I O Arc M	ethod	O Auto Select	
Presort				
Off	0 50%	0 75%	90%	
D	efault Values		ОК	Cancel

• The Save Survey window now detects and warns users if the selected data cannot be saved using the XYZ Selection / Save one Point per Cell options. When an invalid Save One Point per Cell situation is detected, the following warning appears.

Save Survey			×	MBMAX64	×
File Format HS2x - HYSWEEP Edit 64 Bit MTX - HYSWEEP Matrix LAS Append to File Names	HS2 - HYSWEEP Edit 32 Bit Export BAG - Bathymetric Attributed Grid SORT	● XYZ ○ GSF Save Reminder / Auto Save HS2x		Cannot save the selected data as one poi	int per cell
XYZ Options         Save All Points <ul> <li>Save One Point per Cell</li> <li>eHydro Naming</li> <li>_A Suffix</li> <li>_FULL Suffix</li> </ul>	Use Actual XY (Where Possible)     Use Cell Center XY	Save Zoom Area Only One File Per Survey Line Use Project Rounding Rules Append Golden Soundings			ОК
MTX Selection Median Minimum # Points for Median 1 Default Values	XYZ Selection XYZ, Intensity Soft Ke Level 0.0 Save All Files	Export Selection Water Column Data Z Multiplier 1.000 Save Selected Files Clo	se		

# **ADCP PROFILE**

• The Save to XYZ option has been added to the ADCP Profile program. Users can now directly output XYZ bathymetry data from All format files, ADCP files (\*.ADP, \*.000), and SonTek files (\*.YDFF, \*.RIV, and \*.RIVR).

To us this new feature:

- 1. From the HYPACK Shell click Utilities -> ADCP -> ADCP Profile.
- 2. Load your data files by clicking File -> Open.
- 3. In the ADCP Profile window, click File -> Save to XYZ. The Select Folder for Export window appears.

4. Click on the folder name where you want to save files to, then click [Select Folder].

All XYZ files are now saved to the selected folder.

## **PROCESSING OTHER DATA TYPES**

### **MAGNETOMETER EDITOR**

 Added the Fast Delete and Delete Interpolates checkboxes to Magnetometer Editor window.



- Fast Delete When this option is checked, data selected with the Lasso Select, Block Select or Line Select tools is automatically deleted according to your Inside/Outside and Above/Below selections.
- > Delete Interpolates When you delete a position or value, it will delete the selection items and replace them with an interpolated value based on the items before and after the selection.
- The following keyboard shortcuts are now available to use in the Magnetometer Editor:
  - > Arrow keys: Advance data cursor.
  - > A: Delete Above, B: Delete Below, I: Delete Inside, O: Delete Outside
  - M: Measure Tool, L: Line Select, S: Lasso Select, T: Block Select, D: Fast Delete On/ Off.

### **DATA CONVERTER**

Updated the settings dialog in the HSX Converters program for Reson S7K files to include an option for No Downsampling of the data when using HYSCAN Beta.



### FINAL PRODUCTS

# **HYPLOT MAX**

• Users can now zoom to where individual project files appear on the map area. If a project file in the Charts (Map Area) section on the right is enabled and highlighted in blue, right click on it and select the Zoom Extents option.



- > Any enabled item may be right clicked to reveal the option, but the item highlighted in blue will be focused.
- > This action may only be performed on individual items, not on categories or groups of multiple items. For groups of items, use the Zoom Extents button on the top bar.

## TIN MODEL

• Added the Single Beam Depths option to the Initial Data window. This option only displays for files with single beam data. When loading edited log or HS2x files, you can

choose to load Depth 1, Depth 2, or All Depths.

Initial Data		×
Main Input File	C:\HYPACK 2024\Projects\Single Beam Mobile	Edit\302P38.HS2x;302P38_EL
Additional File		X
Channel File		X
Planned Lines		X
TIN Max Side 20.0 Align TIN with L Remove Narrov	Mode Depth ~ NW (Single Beam Data) v Triangles at Boundary	Single Beam Depths       Depth 1       Depth 1       Depth 2       All Depths
		OK Cancel

To select the Single Beam Depths you want to use when building your TIN model:

- 1. From the HYPACK Shell, click Final Products -> TIN Model. The TIN window opens.
- 2. In the TIN window, click File -> New. The Initial Data window appears.
- 3. Click [Main Input File] and select your single beam edited log (\*.EDT) or HS2x files. The Single Beam Depths option is available if you selected single beam data.
- 4. In the remaining fields, enter any additional files needed for your output goal.
- 5. Select Depth 1, Depth 2, or All Depths from the dropdown, then click [OK] to generate the TIN model.

# **ENC EDITOR**

• Removed the Geodesy option from the Environment drop down menu since this executable is no longer linked in the ENC Editor. Instead, set the geodesy from the HYPACK Shell by clicking Preparation -> Geodetic Parameters.

Previous (left) and current (right) versions of the Environment drop down menu



# UTILITIES

## **NEW TOOL: ABSOLUTE OCEAN INTEGRATOR**

HYPACK now offers integration with Terradepth's Absolute Ocean (AO) platform, which is a cloud-native platform that allows users to manage, visualize, and

**collaborate on ocean data.** Now, cloud processing is enabled through the AO partnership with HYPACK software.

For full information on this integration, refer to the article <u>Absolute Ocean Integration with</u> <u>HYPACK® by Jocelyn Kane</u>, published October 2024. A case study, workflow Q&A, and workflow brochure on the integration of HYPACK® and Absolute Ocean will also be released this month.

Here is a quick overview:

• To use the new Absolute Ocean integration, open HYPACK®, and from the HYPACK Shell, click Utilities -> File Work -> Absolute Ocean Integrator. The Absolute Ocean Integrator dialog opens.

HYPACK Project Sample_HYSWEEP_Survey    Jog.log    OUD Project Notes.txt   JDTV_Project.hcf  ADCP.hcf	~	Upload >> << Download	AO Project	~
idis.sqlite     ana_Tides.ini     Archive     autoscan     backup     backup     bascus     bisso.Inw     bisso.mtx		<< Allow Overwrites << Synchronize >> Auto Synch		
cloud.ini	~	Refresh		
Username Password			Login Login on Startup	
Retrieving HYPACK files Complete				^

- The tool displays the HYPACK project folder and file structure on the left, and the right side displays the currently selected AO project and all files within it.
- Within the file structures, each row will have a checkbox to select or deselect the item.
- Click [Upload] to upload all selected HYPACK project files to the selected AO project.
- Click [Download] to download all AO project files to the selected HYPACK project.
- Click [Synchronize] to search for differences in files. Where there is a difference, the newer file will be uploaded or downloaded.
- Check the Auto Synch checkbox to continuously search for new files in your HYPACK project that do not exist on the AO server and upload them, and search for new files on the AO server that do not exist in the HYPACK project and download them.
- Log in to your AO account from the bottom. Check the Login on Startup checkbox to save your login credentials, to automatically log into your AO account when you open the Absolute Ocean Integrator.

# DATA CONVERTER

• Added the On Towfish checkbox to the ...To HSX tab in the HYPACK HSXConverter window. While checked, any HSX files generated from JSF files will have draft values, which are read in MBMAX64 when the converted HSX file is opened.

To use this new feature:

- 1. From the HYPACK Shell, click Utilities -> File Work -> Data Converter. The HYPACK HSXConverter window appears.
- 2. Navigate to the ... To HSX tab and click [Setup]. The Settings window appears.
- 3. In the Settings window for the Edgetech JSF Setup, check the On Towfish checkbox to enable the pressure or depth values parsed from the JSF to serve as the draft values that are read from the HSX file in MBMAX64.

Settings		×
Edgetech JSF Setup Binning		
Edgetech JSF Setup Binning  Layback Options  Apply Layback Use Stored Value Use Cable Out and Fish D Use Cable Out and Caten User Entered Value in Met Heading Filter Strength (use calculation for layback use or Navigation Processing Raw NAV Interpolate NAV Navigation Source NAV from Datagrams NAV from NMEA	epth ary Factor 0.810 ers 0.000 d for CMG 3 ~ Data Scaling	Dual Frequency © Combine in one file Separate to two files Bathymetry Store Bathymetry (RMB Subbottom Subbottom Subbottom Subbottom Store Subbottom Segy File Endian O Little © Big On Towfish Downsampling method
		OK Cancel