LATNAV NET USER MANUAL

For free demo, click the LatNavNet download link below and follow the LNN setup wizard. Please contact <u>sales@hsigeosciences.com</u> to setup a username and password.

LNN Download Link: https://www.hsigeosciences.com/downloads

www.hsigeosciences.com

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Introduction to LatNavNet Reports



TSP LOG

1: Wellbore Path Track

- 2: Offset (Black Line)
- 3: Gamma String (Blue Line, then each pass is colored individually)
- 4: Formation Tops
- 5: True Stratigraphic Position Scale
- 6: Measure Depth Scale on the Wellbore Path Track
- 7: Gamma Ray Scale
- 8: Report Header with Well Information

Introduction to LatNavNet Reports

Wellbore Plot: Measure Depth View



1: Measure Depth Scale for entire chart

- 2: Apparent formation Dip Scale and Profile
- 3: True Vertical Depth Scale for the Wellbore Cross Section
- 4: Gamma Ray Scale and Gamma Log
- 5: Current Wellbore Path in the Cross-Section Track (solid black line)
- 6: Formation Tops
- 7: Fault Cuts
- 8: Report Header with Well Information

Introduction to LatNavNet Reports





1: Vertical Section Scale for entire chart

- 2: Apparent formation Dip Scale and Profile
- 3: True Vertical Depth Scale for the Wellbore Cross Section
- 4: Gamma Ray Scale and Gamma Log
- 5: Current Wellbore Path in the Cross-Section Track (solid black line)
- 6: Formation Tops
- 7: Fault Cuts
- 8: Drilling Target Line @ 0' VS
- 9: Report Header with Well Information

Part One

Well Data Management System (WDMS)

With LatNavNet's cloud-based Well Data Management System (WDMS) the entire team is empowered to work together and literally be on the same page.

- QC and load data once for sharing across the entire operations team
- Pull and share data directly from the cloud for fast and easy data access
- Save and backup all data and interpretations in the cloud seamlessly
- Administer well assignments, and re-assignments, while managing individual and shared wells
- Assign and manage multiple interpretation versions across your team working from any location

Data managed through the cloud will free your team of restrictive bit-locks, dongles and thumb drives, providing access anywhere for greater mobility and less overhead.

LATNAV NET

For a free demo of LatNavNet please contact sales@hsigeosciences.com

www.hsigeosciences.com

We will now login into LatNavNet. Start by double clicking the LatNavNet icon on your desktop.

Assigned WDMS Licenses Options Ext	
Wells Licensing LatNav .Net	
Login User Name Pessword Help Cancel OK	
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Next we will Login with a User Name and Password. If you do not have a user name and password please contact <u>helpdesk@hsigeosciences.com</u>.

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An Assigned Wells window will pop up. CLICK OPEN WDMS. The program will open your internet browser to latnav.net (WDMS).

WDMS Functions and Well Workflow- Well Setup

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The Well Workflow assists you in creating a new well in a step by step process. Click My Workflows \rightarrow Well Workflow.

WDMS Functions and Well Workflow- Loading Well Information

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	setup well setup offsets Survey Template LAS Template Home Setup Well	~

If you have a LAS file for this well, you may access it here to capture well identification data. Browse for the appropriate file, select the file, click "Parse" to complete the automated data capture. Otherwise, fields can be entered manually. Once done click "Save" to move to the next step.

WDMS Functions and Well Workflow- Loading the Type Log (Offset)

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	8			
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Click "Browse" to locate your offset file and click "Load Offset" to continue.

WDMS Functions and Well Workflow- Loading the Type Log (Offset)

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	Ref. Code: X/Longitude:		
	Show Optional Information		
	Select Curves: Full-screen Snip		
	Curve Unit Description Import Primary Correlation Curve		
	DEPT F 1 O		
	GR GAPI 2 Offset Primary Correlation, original data ☑ ●		
	Save Offset		

Review the well data below and edit as needed. Fields designated with an asterisk are required. Fields not captured from the LAS file may be manually entered.

Choose the primary correlation curve (required) by selecting the radial button next to the curve. This curve will be the primary offset well curve used for correlation to the new lateral well log during interpretation. The square check box shows the curve(s) that are available for import. Check all that apply.

After choosing the primary correlation curve, click "Save Offset" to complete the upload.

The next step is to import the formation tops from Type Log.



On the Formation Tops page, the user is required to define the formation tops and target stratigraphic datum from the offset well(s).

Formation names and their corresponding measured depths may be manually entered, or loaded from an existing tab delimited text file where Column 1 = Formation Name, Column 2 = Measured Top Depth. To load formation data from a file, browse for the file then click "Load" to complete the upload.

To change a formation name or depth, click remove, then enter the correct name and depth in the text box, click "Add Formation" to complete the change.

Formation Tops can also be entered in manually by typing the formations names into the Formation Name column as well as the depths for each formation in the Top Depth column. Then click "Add Formation". The user can also select a formation by clicking on its location in the gamma display at the bottom of the page.

WDMS Functions and Well Workflow- Loading Formation Tops

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Fülscrein Srip	Chart Range: 300 - 6214 5 Refresh Chart	azi trit. Datum Rence

Once formation data is defined, select the radial button corresponding to the stratigraphic datum (this function is required) that will serve as the target formation and also define the zero TSP datum.

After all formations are added, select "Save and Done Loading Offsets" if you have completed all offset well entries, or select "Save and Load Another Offset" to return to the "Create Offsets" page to add another offset well to the project.

The following step describes how to load multiple offsets to your well.

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Existing project vertical offset wells (Existing Offsets) and/or previously interpreted lateral wells (Existing TSP logs) can be uploaded from the project database for correlation. New offset wells can also be imported as needed. Begin by importing any desired existing vertical offsets or existing TSP logs by selecting "Add Existing Offset" or "Add existing TSP Log," and selecting the chosen well(s) from the dropdown list. Click "Add" to begin the upload.

When you have added existing offset wells (if any), you can add a new offset well to the project. Select "Add New Offset" to continue to the next page of the workflow.

Once all offsets desired are loaded, determine which offset will be the Primary and select the radial button next to the appropriate offset and then click "Done"

This step shows you how to setup a Survey Template for importing directional survey data from the field.

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The Setup Survey Template page is required to create a data upload template to capture the directional survey data from the lateral well for geo-navigation. The template will be used to guide the upload of initial and incremental directional survey data. If incremental directional data is formatted differently than the initial template, a new template will need to be created, or the new input file modified to ensure an accurate upload.

Begin by browsing for the new lateral directional survey file, select the directional survey file and click "Begin Template Layout" to display the survey data and begin the template creation.

WDMS Functions and Well Workflow- Creating the Survey Template

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	Azimuth:	4093	32.70	301.30	3753.10	628.42	-1234.50						
	Not Set	4215	31.10	301.70	3856.67	662.10	-1331.72						
	TVD:	4282	31.40	301.50	3913.95	680.31	-1361.32						
	Not Set	4377	29.70	293.50	3995.80	702.64	-1404.03						
	North/South:	4472	26.40	292.60	4079.63	720.14	-1445.12	1					
	East/West:	4565	27.30	295.40	4162.60	737.24	-1483.48	1					
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		<										>	
	Preview												

Six variables must be selected to create the survey template. Click the column of the desired data for import in the order it appears on the left in "Red" (MD, INC, AZI. TVD, N/S, and E/W). The variables highlighted "Red" that say "Not Set" will change to "Green" and say "Set!" once selected. If you click on the wrong column for the appropriate variable you can start over by pressing "Reset" highlighted in blue.

NOTE

The Measure Depth value you choose will be the starting point of the interpretation.

WDMS Functions and Well Workflow- Creating the Survey Template



Preview the data below. Verify that 1) the highlighted columns match the required survey input fields (Measured Depth, Inclination, Azimuth, TVD, N/S and E/W). Also verify that the first row highlighted represents the chosen tie-in depth and the rows below the tie-in display the proper incremental survey points. If the template is mapped correctly, click "Approve" to complete the survey data upload.

LATNAV NET Welcome, Rob | Logout HOME MY PROJECTS MY WORKFLOWS EMPLATE FUNCTION MANAGE USER HELP LAS Template Home Setup LAS Template Project: Demo Well: HSI Demo EXAMPLE #02 Lateral: L1 ~ Upload File: Browse... No file selected. Select Curves for Import

The LAS Template page is required to create a data upload template to capture initial and incremental digital LAS curve data from the lateral well to support geo-navigation. Begin by browsing for the new lateral LAS file, select the file and click "Select Curves for Import" to display the parsed digital LAS curve data and begin the template creation.

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	Upload File:	Browse HSI Demo Example _2_W_gamm	ma data.las		
Full-screen Snip		Select Curves for Import			
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		Curve Unit Description Imp	port Primary Correlation Curve		
		DEPTH FT Measured Depth	0		
	\Rightarrow	Preview Data for Import			

The LAS has been auto loaded from the well setup page. The gamma curve has been preselected to import and to be the primary correlation curve. Check mark any additional curves to import. Then click "Preview Data for Import".

WDMS Functions and Well Workflow- Creating the LAS Template

WDMS Functions and Well Workflow- Creating the LAS Template

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	Preview LAS Files MD Start: 4000, MD Stop: 12015	
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	4010 138.41 4011 144.35 4012 162.67 4018 185.33 4014 150.93 4016 139.56 4017 146.58	
	4018 147.84 4019 148.41 4021 149.7 4021 149.7	,

Preview the parsed digital LAS file data below. Verify that the data type matches the header for each column of data. If correct, click "Approve" to complete the template. If incorrect, click "Cancel" to repeat the LAS template creation process.

After the Survey and LAS Template have been created, you can now assign a user to the well.

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Select the well that needs to be assigned, Right Click and click on "Assign User". A list of available users will be presented in a pop up. Select the appropriate user and click "Save" and "Done". If the desired user does not appear in the drop down list please contact <u>helpdesk@hsigeosciences.com</u> to have them added to the project.

Return to the LatNavNet client to open the well (pg. 20).

WDMS Functions and Well Workflow- Loading Data

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To import new field data, click on File Manager \rightarrow Import Files

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\leftrightarrow > C \textcircled{a}	🛈 🔒 https://www.latnav.net/FileManager/FileViewer.aspx?vie	ew=upload 🗉 \cdots 🛡 ✿	≡
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	WELLS FILE MANAGER TEMPLATE FUNCTIONS	MANAGE USER HELP	
	Elle Viewer Elle Uploader Wei: ISI Demo EXAMPLE #02 Curve Data Select files Add files to the upload queue and click the start button. Filename Status Drag files here. Orag files here. Add Files Start Upload O% 0 kb	Survey Data Select files Add files to the upload queue and click the start button. Filename Status Size Drag files here. Drag files here.	
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Select the appropriate well. Drag and drop your files to the appropriate uploader or use the 'Add Files' button to upload your files.

WDMS Functions and Well Workflow- Cloning a Well

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		HSI Demo	WDFD	Delete Survey Data		L1	nidal.jabri@gm	CheckedOut					
		EAGLE FORD DEMO	EXAMPLE			L1	ssanborn@hori	CheckedOut					
		WOODFORD DEMO	EX	Create Sidetrack	D	L1	ddillaman@hor	CheckedOut					
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		EAGLE FORD DEMO	EX	Import Curve	рм	L1	Unassigned						
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		THREE FORKS DEMO	EX	View Details	р м	L1	Unassigned						
		THREE FORKS DEMO	EX	Delete Well	PL	L1	Unassigned						
		MARCELLUS DEMO	EX	Edit Well Description	PL	L1	ddillaman@hor	CheckedOut					
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	H			Edit Well Location	-		Page 1	of 1 (14 items)					
	Well De	etail:		Force Checkin			<u>View Detai</u>	s Upload File					

Select the well that needs to be cloned, Right Click and click on "Clone a Well". A list of available users will be presented in a pop up menu. Select the user that will be assigned to the clone and click "Save" and "Done". This feature allows multiple users to interpret and Geo-Navigate the well alongside the primary user of the well such as a senior interpreter.

NOTE

Cloned wells do not alter anything on the primary well. The cloned well will mimic the last saved point of a primary well (save to server feature). Adjusted gamma data may need to be re-adjusted if changes were made as well as displaying Centerline Plots or Planned data previously added. See Additional LatNavNet features for Centerline Plots and displaying Planned data (Page 48).

WDMS Functions and Well Workflow- Deleting Data

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		HSI EXAMPLE	Clone A Well	GAMMANJ		L1	nidal.jabri@gm	CheckedOut						
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		THREE FORKS DEMO	Delete Well	#1	COMPL	L1	Unassigned							
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To delete data right click on the well then click "Delete Survey Data"

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At the bottom of the page enter a depth to truncate the data. Click "Ok" then the range of data that will be deleted will be highlighted then click "Delete".

WDMS Functions and Well Workflow- Adding Plan Data

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	Operator	Name	Number	Version Lateral	Assigned User	Status	
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	HSI EXAMPLE	WOLFCAMPANJ	GAMMANJ	Delete Survey Data	nidal.jabri@gm	CheckedOut	
	HSI Demo	WDFD	#2		nidal.jabri@gm	CheckedOut	
	EAGLE FORD DEMO	EXAMPLE	#1 TEST 1.4	Create Sidetrack	ssanborn@horiz	CheckedOut	
	WOODFORD DEMO	EX	#1	Relog Data	ddillaman@hori	CheckedOut	
.	EAGLE FORD	EXAMPLE DEMO	#1	Import Curve	ddillaman@hori	Assigned	
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To add a planned survey, select the well, right click then click "Planned Survey"

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Browse for the plan survey file, select the plan survey file and click "Begin Template Layout" to display the plan data and begin the template creation. Similar to survey template creation stated previously.

WDMS Functions and Well Workflow- Viewing Loaded Files and Reports

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		HSI EXAMPLE	WOLFCAMPANJ	GAMMANJ		L1	nidal.jabri@gm	CheckedOut			
		HSI Demo	WDFD	#2		L1	nidal.jabri@gm	CheckedOut			
		EAGLE FORD DEMO	EXAMPLE	#1 TEST 1.40		L1	ssanborn@horiz	CheckedOut			
		WOODFORD DEMO	EX	#1	DD	L1	ddillaman@hori	CheckedOut			
		EAGLE FORD	EXAMPLE DEMO	#1		L1	ddillaman@hori	Assigned			
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To view all uploaded data click on File Manager \rightarrow View Files

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All files imported into the well are listed in the database. There is also an option to download a particular file by right clicking on the appropriate file.

Part Two

LatNavNet (Client)

LNN's fast and easy, menu-driven workflows helps reduce your well set-up time and enhance interpretations. The graphical user interface gives you the ability to generate extremely accurate and concise interpretations for compiling informative, high-resolution reports to meet your asset team's requirements. Options include:

- **Proposed wellbore path** and **Target Line Projections** in graphical displays and reports
- **Percent in zone** can be calculated by selecting the start and end of formation intervals
- Ability to customize color shading of zones, formations and target areas on cross sections
- **Automatically generated reports** and easy-to-configure templates allow for complete customization
- The ability to **clone and share wells** allows for multiple interpreters and various working interpretation scenarios
- Standard reports feature both Vertical Section (VS) and Measured Depth (MD) cross-section views
- Reports include scaling and labeling options with multiple graphs throughout
- All reports include the wellbore's True Stratigraphic Position (TSP) relative to a reference target marker
- Reports also include apparent dip angles, fault identification, MD and TVD as the lateral is drilled
- Streamlined workflows for quick interpretations and fast results with minimal effort

LATNAV

For a free demo of LatNavNet please contact sales@hsigeosciences.com

www.hsigeosciences.com

LatNavNet - Opening a Well

After a well is created and assigned to a user in WDMS it will now be populated in the assigned wells status box.

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Once logged into LNN the "Assigned Wells Status Box" appears. Click "Open" beside the well. If the user is assigned to multiple wells there will be more than one well entry. To switch between wells, go back to "Assigned Well Status Box" and click "Open" on the appropriate well. If a newly created well is not listed in the Assigned Wells Status Box, then click "Refresh" to make the well appear.

After clicking "Open" on a well the LNN platform will begin retrieving the well data from WDMS and store it on the local client.

NOTE

Deleting a well here does not delete the well completely, but simply removes it from the local client. To delete a well entirely you must use the delete feature in WDMS.



The first chart to appear is the True Stratigraphic Position Chart (TSP). The chart is split into 2 tracks horizontally. The first track is the Wellbore Path Track located at the top of the page with TSP as the X-Scale and Measured Depth (MD) as the Y-Scale. The second track is the Gamma Track with TSP as the X-Scale and Gamma Ray as the Y-Scale. To the left of every chart is a chart header the will appear with the chart name, well, and drilling information (this can be toggled on/off under the display tab). To go to another chart and to bring up the "Select Chart Box", click the close button on the TSP Chart.



After closing the charts window the Select chart box will always appear. Click on the appropriate chart to highlight it then click "OK" to open that chart. Or simply double click to open the desired chart.



There are additional chart options when you right click on a chart name.

After double clicking the Wellbore Plot: Vertical Section View the chart below will pop up.



The Vertical Section (VS) Chart is split into 3 tracks. All tracks are based on a Vertical Section scale (X - Scale). The first track is the Apparent Formation Dip profile which displays the dip applied to that interval by the user. The dip degree is the Y-Scale on the dip track. Track two is the Wellbore Formation Track which is the cross-sectional view of the wellbore and the formations. True Vertical Depth (TVD) is the Y – Scale. The wellbore is displayed in black and the formations are displayed in various colors selected by the user. Track three is the Gamma Track with the visual Gamma Log displayed and is based on a Gamma Ray API (Y – scale).



The Measured Depth (MD) Chart is split into 3 tracks. All tracks are based on a Measured Depth (X – Scale). The first track is the Apparent Formation Dip profile which displays the dip applied to that interval by the user. The dip degree is the Y-Scale on the dip track. Track two is the Wellbore Formation Track which is the cross-sectional view of the wellbore and the formations. True Vertical Depth (TVD) is the Y – scale. The wellbore is displayed in black and the formations are displayed in various colors selected by the user. Track three is the Gamma Track with the visual Gamma Log displayed and is based on a Gamma Ray API (Y – scale).

LatNavNet - Adjusting Scales (X - Scale)



Click Interpretation \rightarrow Change X – Scale



The Chart X –Scale setting box appears. At the top of the box choose which track the new setting should be applied to. This is where the user enters the new settings or selects a setting from the drop down list. Once the new settings have been entered click "Apply".



Click Interpretation \rightarrow Change Y – Scale



The Chart Y –Scale setting box appears. At the top of the box choose which track the new setting should be applied to. This is where the user enters the new settings or selects a value from the drop down list. Once the new settings have been entered click "Apply".

LatNavNet – Zoom In/Out



To extend the view larger click on the Display tab \rightarrow Adjust the Zoom in or out as desired to see the gamma data in better detail.



To reset the view to its original size, change the zoom percent to 100% in the drop down menu.

LatNavNet – Tying in the Type Log (Offset)



Click Tools \rightarrow Manipulate



The Manipulate Offset box will appear. At the top of the box choose which offset to adjust, if there are multiple offsets. To shift the offset, slide the scroll bar left or right. Once the offset has been adjusted to the appropriate location click "Apply".

LatNavNet – Adding Formation Labels



Click Labels \rightarrow Formations



When the Add Formations Label Box appears, choose a track from the drop down menu for the formation labels to be displayed. Enter a Y – scale value. Select a direction. Click "Apply" to preview to view label orientation, once confirmed click "OK". Otherwise click "Cancel" and assign a new Y – Scale value.

LatNavNet - Adding Labels



Click Labels \rightarrow Add to create a custom label.



The "Add Chart Label" box will pop up. Select which track you want the label to appear on. In the "Label Text" box type what you want displayed. The method drop down list gives the user different options to plot the new label on the chart. Select a method then click the desired area or fill in the X, Y value as needed. The user can also pick the border, offset, rotation and orientation and font of the custom label. Click "Preview" before clicking "Apply" to finalize you label.

LatNavNet - Delete Labels



Click Labels \rightarrow Delete to bring up the "Delete Label" box.

This box contains all labels currently being displayed. Click the label to be deleted and click "Delete".

LatNavNet - Changing Formation Colors



Click Charts \rightarrow Appearance. The Curve Appearance dialog box opens.



Once the Curve Appearance Box appears select the Track and then select a formation. Here the user has several Line options from Line Color, Line Type, and Line Weight. The user MUST click "Apply" after each color change before moving to the next formation. The changed formation colors will be reflected on ALL charts and tracks.

LatNavNet – Adjust Gamma Tool



Click Tools \rightarrow Adjust Gamma Data



The Adjust Gamma Data allows the user to change/manipulate the data in several different ways. Checkmark the box to adjust the entire gamma database or the user can select a depth range. Then select a function by clicking the radial button next to the function and then enter a value into the field and click "OK". New data added to the interpretation will include any changes the user makes in the Adjust Gamma Box.

NOTE

The adjusted gamma data will need to be re-adjusted for a cloned well. See Part Three Additional Features for WDMS to understand more about cloning a well (Page 43).

LatNavNet - Adding New Gamma & Adjusting Dip

The following steps show how to begin interpreting the Gamma data for Geo-Navigation.



To add new gamma data and to begin adjusting the gamma string, right click anywhere on the gamma string or the wellbore path in track one (Blue line). This will bring up a drop down list of options.



Then the user will click adjust formation dip, then start depth for the Dip Rate box to appear.

LatNavNet – Adding New Gamma & Adjusting Dip



NOTE (Quick Keys)

Hold ctrl and click to bring this box up directly with the clicked value as your start depth.

Hold ctrl+shift and then click to bring up this box directly with the clicked value as your end depth.



The user can also click on Interpretation \rightarrow Dip Rate to have the Dip Rate Box appear as well.

LatNavNet – Adding New Gamma & Adjusting Dip



When the Dip Rate box appears the user can hand type a new depth into the END field and click "OK" to bring in data up to that entered new END depth. All new data will have the same dip that was applied to the last interpreted depth. To adjust the dip on the gamma string, select a depth range to adjust and use the slide bar to start making the dip adjustments. As dip is being adjusted the depth range on the gamma string will turn purple. The Dip field will change as the user slides the dip bar back and forth. To confirm changes made click "OK". To cancel any changes and revert back to the previous position click "Cancel".

**Tip #1: Hover the mouse over the word End to show the maximum depths that can be loaded (up to the maximum imported depth from WDMS). The header on the Dip Rate Box displays the last interpreted depth.

**Tip#2: Right Click on the slide bar to change the increment of dip. The increments range from .01 degrees to 2 degrees.

**Tip#3: Highlight the Start depth by double clicking the value. Then click at a desired location on the gamma string to insert that data point into the start depth on the dip rate box to begin the next segment of interpretation. The same can be done for the End depth as well.

LatNavNet – Adding, Editing, and Deleting Faults



Before adding a fault, the user must first recognize the start of the missing selection. Then right click where the fault has been recognized on the gamma string. Select "Add Fault" from the menu to bring up the "Add Fault" box.



A box will Pop up allowing the user to Name the Fault. Click Ok once the information has been inputted.

LatNavNet – Adding, Editing, and Deleting Faults



A box with an option to name the new fault will appear. Once the user selects a name and start depth, click "OK" and the Fault Edit Box appears. The upper scale bar adjusts the depth at which the fault occurs. The lower scale bar adjusts the fault throw. Slide bars left or right to make adjustments to the fault. Once the fault has been moved to the appropriate place click "OK"

LatNavNet – Adding, Editing, and Deleting Faults



The user can also click Interpretation \rightarrow Add Fault Cuts and the depth can be entered in manually and adjusted thereafter.

NOTE

To Edit an existing fault, click Interpretation \rightarrow Edit Fault Cuts. This will bring the Edit Fault Box up again.

To Delete a fault right click any depth in the Point Data Box and select Delete Fault and click OK.

LatNavNet - Adding a Drilling Target Line



Go to the Vertical Section Chart. Click on Tools \rightarrow Centerline Plot. Once the Centerline Plot Box appears type a value into the New TSP Target field and the Inclination desired and click "Plot". Use the up and down buttons on the left to adjust the New TSP Target and use the curved arrow buttons to adjust the inclination. As the user makes these adjustments the target line (dashed green line) will also adjust on the VS page.



Once the user has selected the appropriate position of the Drilling Target Line click "Save" and the drilling target line will turn into a black dashed line.

LatNavNet - Edit Charts Function (Displaying Plan Data)

On the Vertical Section Chart, click Charts \rightarrow Edit. The Edit Box will appear. On the left hand side, all of the charts will be listed and on the upper right hand side, all of the curves that are currently displayed on that chart. The lower right hand box lists all the available curves a user can add. The Plan will be listed in the Available Curves box, select it and click "Add" and then click "Apply". The plan will now populate in the upper right box (Current Selections).

NOTE

Current Selections can be deleted from this chart in the Edit Charts box as well. Select the item to be deleted in the upper right hand box under Current Selections and click "delete". This will remove it from the chart and the Current selections box. Available Curves can be added or deleted from any chart with this feature.

LatNavNet – Edit Charts Function (Displaying Plan Data)

The plan data is now displayed in Tan. The current wellbore is displayed as a solid black line.

LatNavNet - Adding Series Data

Series Data can be any data that is in VS/MD & TVD (X,Y). This would included proposed formation tops, completions data, frac stages, etc. To load Series Data go to Tools \rightarrow Series Data.

The series data box will appear. Choose your file, which should be in excel format and click Parse.

LatNavNet - Adding Series Data

Next Name the data, determine the X axis (MD or VS) and designate which column it is in. Highlight all the data that will be uploaded using the cursor and click Add.

To display series data on a chart go to Charts \rightarrow Edit. On the left-hand side use the Chart/Track Tree to determine where the data is going to appear. On the right side choose the series data in the box on the bottom and add it to list of curves in the top box and click Ok.

LatNavNet - Adding Waypoints

To add directional waypoint go to Labels \rightarrow Waypoints.

The waypoints box will appear. Choose the report where you want the waypoints to appear. Next choose the track and click choose to select the excel file that includes the waypoint data (MD/VS, TVD, Waypoint).

LatNavNet – Adding Waypoints

Name the waypoints and highlight all the columns using the cursor. Click OK and then close. Then go to Charts \rightarrow Appearance to color the waypoints and to connect the waypoints if desired.

To create a new chart/report (in this example we will create a one-page report) click Charts \rightarrow New.

The create report window will appear. Name your report. Make your Horizontal and Vertical Track selections. Determine the with of the horizontal tracks (how much of the page do you want the horizontal tracks to take up?). Click Next.

In the next window select the Horizontal tracks you want appear on the report. Also put them in the order you want them to appear on the page. Click Next.

Select your vertical track. Click Next.

Name the Track. Determine the track proportion. Select track curves. Click Next

Name the Track. Determine the track proportion. Select track curves. Click Next

Name the Track. Determine the track proportion. Select track curves. Click Next

	LatNavNET - WOODFORD DEMO EX #1 DD - L1	- a ×
File View Tools Interpretation Charts	Heip	
Create Report		
Track Name: Gamma Bay		
New O Track Proportion: 100		
Select curves/graphs for Gamma Track.		
E Gamma		
GR GR GASP	Select Chart True Stratigraphic Position Log Vertical TSP WebsoreFind: You / Proposed Formation Tops & WayPoint WebsoreFind: Versured Depth Verw WebsoreFind: Versured Section Verw WebsoreFind: Versured Section Verw	
	Cancel Back Next	
	New OK Cancel	
		HSI
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Name the Track. Determine the track proportion. Select Vertical track curves. Click Next

Determine if all the chart/report information is correct and click Create.

The new chart will look similar to this. You may need to adjust scales (see adjusting scales section) and colors (see charts edit section).

LatNavNet - Saving and Archiving the Well

Click File \rightarrow Save. Saving to server keeps the interpretation on the Users client but saves the latest information to the server.

LatNavNet - Saving and Archiving the Well

Click File \rightarrow Archive. Archiving to server saves the interpretation but also removes the interpretation from that user's client (check-in). This allows other users to assign the well to themselves (check-out).

LatNavNet - Creating a Report and Percent in Zone

To create a report, click Tools \rightarrow Create PDF. The Create Report PDF Box will appear. The user has a few options to select prior to making the report. The user can select which available chart to include or exclude. A secondary TSP Chart can be created allowing the user to add a zoomed in or out view of the chart. Shading underneath the tops on the cross sectional view can be checked as well as a reverse orientation of the cross sectional view. The rotate TSP in PDF chart displays the TSP chart vertically in the resulting report. Once the options have been selected, click "OK" to bring up the Report Text Preview Box.

LatNavNet - Creating a Report and Percent in Zone

The most recent report text is generated (Blue arrow section). The report text can be edited manually in this window. The user can also calculate Percent in Zone from this window. Start by selecting the starting formation to calculate the percent of footage spent in that zone and every zone below it or specify the zone based on a start and end measured depth. Once it is correct click "OK". The report PDF will be generated and saved in Documents/LatNavNet Reports.

LATNAV

For free demo, click the LatNavNet download link below and follow the LNN setup wizard. Please contact <u>sales@hsigeosciences.com</u> to setup a username and password.

LNN Download Link: https://www.hsigeosciences.com/downloads

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