

Version 12 Imperial Tutorial



The Intelligent Geological Software Solution

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Introduction

Power*Log™(Petrographical Office Wellsite Evaluation and Reporting) is a chip and core logging management program that utilizes single-entry data capturing to produce geological striplogs. The geological data is entered into the system through the use of intuitive data entry forms to ensure standardization of data. This data is stored in an RDBMS(Relational Database Management System) to allow data manipulation using SQL access tools.

Power*Log[™] software consists of four (4) main parts:

- 1.) A log editor module that allows you to change the striplogs to suit your needs and preferences.
- 2.) A data transfer module.
- 3.) Report printing modules.
- 4.) An on-line help system that is designed to familiarize you with the commands and functions available in Power*Log[™] and lead you through many of the processes involved in creating welllogs.

A note about navigating through Power*Log[™] Reports:

When you are entering information into data forms, you may move between boxes/fields by **pressing** the **Tab keys** to go forward and **Shift +Tab keys** to move backwards. To exit forms that do not have an **Exit**, **OK**, or **Cancel** button, **press** the **Esc key** on the keyboard.

To access the On-line Help System in Power*Log™:

You can make use of the context sensitive help by **pressing** the **F1 key** when you are in a dialogue box. A pertinent help file will appear, opened to the topic relevant to the dialogue box you are in.

Below are some examples of common features within Power*Log™:

The Toolbar



Selection Bar Using the Ratio Style Selection for Screen Scale

The Status Bar...

For Help, press F1 paeology UPDATE KB: 567.6

The **Status Bar** displays system status messages and any error message (associated with a field entry), in the far left corner. The KB elevation is displayed in the lower right corner of the **Status Bar**.

The Import Toolbar

This toolbar is dock able and can be moved to different places on the screen.

The Power*Log / Core & Curve™ Import Toolbar...



The Export Toolbar

This toolbar is dock able and can be moved to different places on the screen.

The Power*Log / Core & Curve™ Export Toolbar...



Button, Check box and drop box types.

Radio Buttons	
Activated	O De-Activated
<u>Check Boxes</u>	Drop Box
✓ Activated □ De-Activated	Click Arrow ±
✓ Activated □ De-Activated	Click Arrow ±

The Four (4) Main On-line Help System Categories:

Commands - Descriptions of each menu command within Power*Log / Core & Curve™.

Toolbar - Shortcuts to common commands are explained.

Database Table Operations - Commands or functions related to the Database Table are described.

Quick Reference Guide - The portion of the On-line Help System that quickly refers you to some of the more commonly performed tasks

This tutorial will guide you through the process of creating and editing a new striplog (hereafter referred to simply as a log), with curves and interpreted lithology.

Connecting to the Database



1.) **Double click** on the **Power*Log** ^{PowerLog V12} **Icon**. Acknowledge the Security Information window by **clicking**

on the butte	n. This will initiate the program and activate	e a Connect Database window.
	Connect Database	
	Databases: PGEOLOGY V12 IMPERIAL (Microsoft Access Dr PGEOLOGY V12 METRIC (Microsoft Access Driver)	
	User ID: pgeology Connect Password: Cancel	

- 2.) Highlight the **PGEOLOGY V12 IMPERIAL (Microsoft Access Driver[*.mbd]))** database by **clicking** on it once.
- 3.) Move your mouse pointer to the User ID field and click. This will activate a flashing cursor in the User ID field. Type "pgeology" in the User ID field. Press the Tab key on the keyboard to move to the Password field.
- 4.) **Type "pgeology"** in the **Password** field and then **click** on the **Connect button**. The program will now load various dictionaries and then activate an **Open Log** window.

Creating a new Well / Log

The first step in creating a new log is to **click** on the **log New Log button** on the **Toolbar** or to **select New** under **File** on the **Selection Bar**. This will open the **New Log** window on the next page.

This more than likely will appear after connecting to the Database without you have to do the above procedure if this was the first time you have activated Power*Log.

New Log		×
UWI / API: Well List Well / Log Name:	35-139-23155 Tutorial Well	
Log Format	SYSTEM Geology Log	_
Log Type: Log Comments:	vert Geology & Total Gas / No Gas Track 8.5''	~
Log Start Depth:	6000 Storage Imperial Create Canc	

1.) The **Well/Log Name** field is where you enter the name of the well (no more than 50 characters long). **Type** "**Tutorial Well**" into the **Well / Log Name** field.

2.) Click on the UWI / API: button to activate the UWI Format window.

UWI / API Format
Use: API / I VWI / API: DLS (Dominion Land Survey System) Survey System Loc. Ex. LSD Sec. Township Range E/W Mer. 0/A Event Sequence 1 0 0 0 0 W V 0 0 0
NTS (National Topographic Series System) Survey System Loc. Ex. 1/4 Unit Block P. Quad L. Quad. Sixteenth Event Sequence
API Code / Name 35-139-23155
OK Cancel

- 4.) The default or flashing caret is in the API Code / Name field. **Type** in **"35-139-23155"**. The 23 is a State Code, the 139 is a County Code, the 20130 is the Unique Well ID.
- 5.) **Click** on the **DK button** when you have finished entering the **API Code**. You will notice that the API / UWI field will be filled in the New Log window.
- 6.) **Click** on the **Log Format... button** to activate the **Log Format List** window.

V SYSTEM Geology Log (SYSTEM (I))	Query
V SYSTEM [SYSTEM []]	- Select
V SYSTEM 2 Well Correlational (SYSTEM (I)) V SYSTEM 3 Well Correlational (SYSTEM (II))	Jelect
V SYSTEM Composite Geology Log [SYSTEM (I)]	Clear Field
V SYSTEM Core Carbonate Lithology Restricted Layers [SYSTEM [1]] V SYSTEM Core Carbonate LR Layers Depth Grid On [SYSTEM [1]]	Cancel
V SYSTEM Core Carbonate No Lith Restricted Layers [SYSTEM [I]]	-
V STSTEM Core Carbonate No LN Layers Depth Grid On (STSTEM (I)) V SYSTEM Core Composite Lithology Restricted Layers (SYSTEM (I))	
V SYSTEM Core Composite LR Layers Depth Grid On [SYSTEM []] V SYSTEM Core Composite No Lith Bestricted Layers [SYSTEM []]	
V SYSTEM Core Composite No LR Layers Depth Grid On [SYSTEM [I]]	
V SYSTEM Core Log Lithology Restricted Layers (SYSTEM (I)) V SYSTEM Core Log LR Layers Depth Grid On (SYSTEM (I))	
V SYSTEM Core Log No Lithology Restricted Layers [SYSTEM (II)]	
V SYSTEM Geo / Mudlog All Gas [SYSTEM [I]]	
V SYSTEM Geo / Mudlog Some Gases [SYSTEM [I]]	
V SYSTEM Horizontal Log PowerLog Vertical Format [SYSTEM (I)]	
H SYSTEM HURZ (SYSTEM (I)) H SYSTEM HORZ (Desc Track) (SYSTEM (I))	
H SYSTEM HORZ (Gas Track) (SYSTEM (I))	
TH SYSTEM HURZ 2 WELL CURR [SYSTEM [I]]	

6.) Click on "V SYSTEM Geology Log [SYSTEM (I)]" to highlight it and then click on the You may also double click on "V SYSTEM Geology Log [SYSTEM (I)]."

button.

- 7.) Once you have been returned to the **New Log** window, **double click** in the **Log Start Depth** field. This will highlight the zero (0) and activate a flashing cursor. **Type 6000** in the **Log Start Depth** field.
- 8.) Once the information is entered, **click** on the **Create button**.
- 9.) This will initiate a **New Log**. During this process, the curves associated with the selected log format will be added. **Drill Rate** will be the first Add curve window.

Add Curve	X
UWI / API: 35-139-23155	
Curve Heading	
Name: Drill Rate	Curve Units: min/ft 🛛 💌
Depth Units: 🥂 💌	Null Value: -1.00000
Curve Scale	
Use 0 to 0 for the whole interval: 0.00 to 0.00	og) (Left / Bottom) (Right / Top) Scale: 0.00000 to 15.00000
Backup Scale: straight shift 💌	Grid Type: Linear 💌
	OK Cancel

10.) Select min/2ft from the Curve Units drop down box. If done correctly it will look like Figure below.

Add Curve 🛛 🗙
UWI / API: 35-139-23155 Curve Heading
Name: Drill Rate Curve Units: min/2ft Depth Units: ft Null Value: -1.00000
Curve Scale (Use 0 to 0 for the whole log) (Left / Bottom) (Right / Top) Depth Interval: 0.00 to 0.00 Scale: 0.00000 to 15.00000
Backup Scale: Jeddig Kollik Grid Type: Jenedi

ΟK button in the Add Curve window for Drill Rate. This will activate the second Add 11.) Click on the Curve window for Total Gas shown below.

Add Curve	X
UWLZAPI: 35-139-23155	
Curve Heading	
Name: Total Gas	Curve Units: units 💌
Depth Units: 🥂 💌	Null Value: -1.00000
Curve Scale	
Use 0 to 0 for the whole Depth Interval: 0.00 to 0.00	log) (Left / Bottom) (Right / Top) Scale: 0.00000 to 1500.0000
Backup Scale: straight shift 💌	Grid Type: Linear 💌
	OK Cancel

- 12.) Click on the button in the Add Curve window for Total Gas. This will activate well and it's log layout
- You have just added two curves to the database that will be displayed as curve layers in the Drilling • Progress track on the new Tutorial log showing the Tutorial Wells information.

*	Power*Log 12 - [<l> Tutorial Well [35-139-23155]]</l>														
	File Edit View Reports Options Window Help										r ×				
	iii 🗅 🖻 🎒 🛍 🛄 🕍 🖳	тяях в				<u>a</u>	🛛 🖾	A ? N	° Ω ⊆	\geq	W		S 🕂 👫 🍜 🖀 🔳 🕼 🕢 🧏 🕷 🕂 👫 😽 🔂	SL	
] T	otal Gas 🔻 🕅	1	<mark>8</mark> 1	1 15	3	Ø	MD	▼ 1:240	-				▼ <u>▼</u> 1 ▼		
	Drilling Progress		Γ		Π	Т						Г	Lithology Description		^
			L					=	Gra			L			
			L		_	Po	P	terpi	in S		_	-	-π		
D.		De	₫	8	≞ S	rosit	prosi	eted	ze	Sort	ŝ	ame	a me		
ត		₿	8	<u>e</u>	NONS	УТУ	4	Lith		ing	ding	wort	work		
	Total Gas (units)					e	్	olog	< a c			Ê			
	D 750 1500 Drill Rate (min/ft)						8000	`				L			
\vdash	0 7.5 15	L			Ц		001001		HIGHA			⊢			
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When the log opens, it should resemble this log.

1.) You can now fill in your pertinent well information by selecting Well under Edit pull down menu on the Selection Bar to activate the Well window.

Vell							Đ
Save Und	New Del	First Prev ?	Next Last	Storage Unit	s: Imperial	💌 Original Un	its:
API	35-139-23155		Surf. Loc	ation: 35-139-2	3155		
Well Name	Tutorial Well		Btm. Loc	ation: 34-138-2	3155		
Operator:	ABC Oil & Gas		 Licer	nsee: ABC Oil 8	& Gas	Permit # 32	2423
Drilling Contractor:	Drill em Up		F	ool: Large		Field: Barne	tt
County:	Silverado		B	ig #: 27			
Province/State:	Texas		Eleva	ations	nd	- U.	
Country:	USA		Re	kp. 234		Ground / L	ollar: 218
Surface Coordinate	es			KD. Juon		Casing Fia	inge, jano
Latitude 30.161	2		N/S:	400 ft North of	the South bo	undary	
Longitude 97.443	3		E/W:	550 ft East of t	he West bour	ndary	
Intermediate Casin	a Point Coordinates						
Latitude 30.161	5		N/S	1345 ft North c	of the South b	oundaru	
Longitude 97.443	34		E/W:	520 ft East of t	he West bour	ndarv	
Bottom hole Loord	nates			OCOD & Marsh	- Ciller Counter L	2010/01/2010	
Latitude 30.163	7		E Aut	1027 B E pot o	(the) (est be	loundary	
LITM Surface Coor	/		L/ W.		i the west bu	undaly	
Nething: 334989	anates		Easting	621161			
Notiming. Joo looc			E downig.				
lole Direction: Ho	orizontal 💌	F Faulted	□ Dev	iated Hol	e ID: Ist of M	lany	
Depths					Date	Time	Work Schedule
Drillers T.D. Driller	rs T.D. Drillers T.D.	Drillers T.D. Loggers	T.D. Loggers 1	.D.	Soud: Aug	13, 2012 08:00	Curves
(Tally) MD (Tally) TVD (Strap) MD	(Strap) TVD MD	TVD		T D Con	12 2012 09:40	Mud Tupes
10500 7962.	11 10498	7962.1			T.D.: Joep	12,2012 00.40	Dia Come
KB to Ground Cul	Fill	Plugback	Sidetrack	_ Rig R	elease: Sep	17, 2012 08:00	Dir. Surveys
17 2		18027	8035	Well	Status: Pote	ential Oil Well – 🔺	Det. Lith.
	Beference:		th:			~	Abstract

2.) Fill in the information you feel is necessary (The well window shown above has been filled in to give you an

<u>S</u>ave idea of how to complete the fields) and then **click** on the button to save any changes you have made to the database.

Note: Some of the fields in the Edit Well window have character restrictions or mandatory requirements. Consequently, if any of these restrictions have been violated or if any requirements have not been met, the offending field will be highlighted. The nature of the problem will be displayed on the Status Bar (lower left corner of the screen), and you will be prompted with a system error message window.

Exit 3.) If the record has been successfully saved, click on the **button**, when prompted with the **Shortcut** Options system window.

Shortcut Options			
Record saved succe	ssfully. Choose one of the	e following sh	ortcuts.
Start New Record	Move to Next Record	Exit	Cancel

The System Options Window

To activate the System Options window click on System Options under the Options menu selection.

General Tab

System Options				
General Fonts Display Favorites				
General Fonts Display Favorites Home Directory: C:\PowerSuite_V12\ Version Date Format MMM DD, YYYY ▼ V1.9 ▼	Data Buffer Lookahead 500 ft	✓ Show All Wells at Startup		
			OK	Cancel

Home Directory - This is the directory on your hard drive where **Power*Log**, **Power*Core and Power*Curve** is being executed. The user will not see any symbols on their log or print out any of our reports it you have the wrong home directory.

Show All Wells at Startup This check box when is activated will populate the Open Log window with all the wells in the database. If it is unchecked it may help our corporate users and the time it take to retrieve thousands of wells from the database and to populate the Open Log window with that information. If this check box is deactivated and

you wish to see all your wells then simply **click** on the **Clear Query button** in the Open Log window to see all their wells if this option is deactivated.

Date Format	
MMM DD, YYYY	-
MM/DD/YYYY	
MM-DD-YYYY	
MMM DD, YYYY	
YYYY/MM/DD	
YYYYY-MM-DD	

Date Format - From this drop box, you can select the date format. This selection determines how every date in **Power*Log / Core & Curve** will be entered and displayed. If you import a log with different date formats, **Power*Log / Core & Curve** will change the dates to comply with the format you've chosen here. The user can change this at any time and all the Date formats will be changed in the database.

Version Compatibility - Enables the user to achieve compatibility for Annotations in the older Versions of Power*Suite (V1.81 and before) and the Annotations in the newer

Versions of Power*Suite (V1.9 and later).

Data Buffer Lookahead - The number placed in this field determines how far ahead and behind the current top depth will be stored in the computers buffer. The larger the look ahead number, the longer it takes for Power*Log / Core & Curve to refresh the screen when you exceed the look ahead value. However, until you meet or exceed the look ahead value, scrolling will be much faster, because the database is not yet being accessed.

Fonts Tab

This tab allows the user to set up most of the fonts used in Power*Log, Core and Curve. You can set it up to be used on the current log as well as using the fonts as your defaults when you are making new logs.

System Options					
General Fonts Display Fav	orites				
- Fonts					
Annotation Font		Track Header Font		Casing String Font	
AaBbCcDdEe	Set	AaBbCcDdEe	Set	AaBbCcDdEe	Set
Survey Font		Layer Header Font		Date Font	
AaBbCcDdEe	Set	AaBbCcDdEe	Set	AaBbCcDdEe	Set
Bit Record Font		Formation Top Font		Core Sample Code Font	
AaBbCcDdEe	Set	AaBbCcDdEe	Set	AaBbCcDdEe	Set
Generic Category Font		Offscale Font		Sidewall Core Font	
AaBbCcDdEe	Set	AaBbCcDdEe	Set	AaBbCcDdEe	Set
Depth Font		Core Box Font		MDT Font	
AaBbCcDdEe	Set	AaBbCcDdEe	Set	AaBbCcDdEe	Set
Depth Orientation: 💿 Vert	. O Horz	Show Depth Units:□	Set As Defa	ault Fonts: 🔽 Apply to C	urrent Log
				OK	Cancel

Annotation Font - Allows you to determine the default font style, type, color and size of your annotations on your log, Also this is the default when you use any of the Sample Description Transfer options.

Survey Font - Allows you to determine the font style, type, color and size of your survey data associated with the Survey Layer on your log.

Bit Record Font - Allows you to determine the font style, type, color and size of your bit record data associated with the Bit Record Layer on your log.

Generic Category Font - Allows you to determine the font style, type, color and size of your Long or Short Name display option in all the Generic Category Layers displayed on your log.

Depth Font - This allows you to determine the font style, type, color and size of the depth markers in the **Depth** track of the log.

Depth Orientation: C Vert. Horz - These radio buttons allows the user to change the orientation of the Depth Font on the Layer. Beware you may have to change the Track Width to accommodate the Font size and orientation. Refer to the Log Configuration Builder to do this.

Show Depth Units This check box **when activated will display the depth units with the depth on the Depth Layer.** ie. 1000 ft or 1000 m vs. 1000

Track Header Font - Allows you to determine the font style, type, color and size of your Track Headers on your log. All track headers use the same font across the entire log.

Layer Header Font - Allows you to determine the font style, type, color and size of your Layer Headers on your log. All Layer headers use the same font across the entire log.

Formation Tops Font - Allows you to determine the font style, type, color and size of your Formation Tops data associated with the Formation Tops Long and Expanded Layers on your log.

Offscale Font - Allows you to determine the font style, type, color and size of your curve values displayed when the curve pegs off scale.

Core Box Font - Allows you to determine the font style, type, color and size of your Core Box data entered in the Core Box layer.

Casing String Font - Allows you to determine the font style, type, color and size of your Casing string data displayed on the Casing String layer. This data is entered through the Casing String Report.

Date Font - Allows you to determine the font style, type, color and size of your Date data entered in the Date layer.

Core Sample Code Font - Allows you to determine the font style, type, color and size of your Core Plug data entered through the Core Plug Report. This font is displayed on the Core Sample Code layer.

Sidewall Core Font - Allows you to determine the font style, type, color and size of your Sidewall Run and Sample Number data entered through the Sidewall Core Report. This font is displayed on the Sidewall Core layer.

MDT Font - Allows you to determine the font style, type, color and size of your MDT Run and Test Number data entered through the MDT Report. This font is displayed on the MDT layer.

Set As Default Fonts This check box I when activated will make the font setting in this window your defaults for any new log created regardless on the Fonts stored in the template.

Display Tab

ystem Options
General Fonts Display Favorites
Symbology Frequency @ 5": 1 symbol every 2 rt Transparent Lithology Profile Use Global Symbols Use Ratio Scales Interbed Line Display Type Ture Backup Fill
Grain Size Scale, Wentworth Verbal Display: (mm) Display: Fill Pattern Soft Edges Pattern Color: Color:
Carbonate Textures Fill Pattern Pattern Color:
Interpreted Lithology Layer Show Accessories: Image: Contacts: Image: Contact:
OK Cancel

Arrowed Subintervals - This check box *k* when activated will indicate the top and bottom of your subintervals (portion of an interval) with an arrow rather than a set of symbols. An example is shown below.





Normal Subintervals

Arrowed Subintervals

Transparent - This check box \checkmark when activated, this function makes the background of the accessory symbols transparent, so that the bed in the background shows through. If deactivated, a white background surrounds the accessory symbols in order to separate them more from the beds.

Use Global Symbols – With the ability to edit existing metafiles the user may have imported a well that has used metafiles or symbols that have been modified to look differently than the one existing within your system symbols. If you wish to use your symbol set instead of the revised imported ones you can select this check box 🔽 to make that change.

Interbed Line Display Type - This check box 🔽 when activated will display the interbed data with a line display splitting the two lithology types or when unchecked will display the lithology in an interbed fashion as displayed below.



Curve Backup fill – This check box *I* when activated will show a sideways hatching fill pattern when a curve goes off scale or in the backup mode. If unchecked there will be no hatching pattern when the curve goes off scale.

Frequency @ 1:240 – This drop box determines how often symbols are drawn on a **Lithology Layer**, with the scale of 1:240. For example: 1 symbol every 1 meter at 1:240, 2 symbols every 1 meter at 1:120, 1 symbol every 2 meters at 1:480, and so on. These frequencies are only in effect if you utilize the entire interval in **Oil Shows**, **Rounding**, **Sorting**, **Framework**, or designated an interval in **Sedimentary Structures**, **Traces Fossils** and Rock Accessories.

Lithology Profile - This check box 🗹 when activated will fill in the Carbonate Texture and Grain Size layers with the interpretive lithology. It will draw the lithology to the maximum size filled in over the interval.

Note: The user may wish to turn off the track borders when this option is selected. You will see an example of this shown below.

Grain Size	csnd msnd fsnd vfsnd cslt	•••••••	
Interpreted Lithology			► * * * * * * * * * * * * * * * * * * *

Use Ratio Scales: This option allows the Imperial Users to utilize a ratio 1:200 or 1:500 rather than 2" or 5" which would be standard selections in the United States.



Grain Size Scale List box - You may choose between Wentworth, Canstrat or Amstrat scales, when using the Grain Size Builder. The Wentworth Grain size only allows full grain size while Canstrat / Amstrat allow half grain sizes when drafting in the Grain size and matrix layers.

Verbal Display: • This I radio button will display the Grain Size Track header with the equivalent verbal grain sizes such as such as C slt, VF snd, F snd, M snd, C snd etc.



(mm) Display: C This C radio button will display the **Grain Size Track header** with the equivalent numeric grain sizes (in mm) such as .0625, .125, .25, .5, 1, 2 etc. as shown above.

C Hard Edges This C radio button will display the grain size with strait edges and right angles between the grain sizes. The illustration below is shown with Lithology Profile activated.



Soft Edges This F radio button will display the grain size with curved edges and rounded angles between the grain sizes.

Grain Size Fill Pattern Upward hatch (left to right) at 45 degrees This drop box allows the user to select a hatching pattern when using the Grain Size Layer with the Lithology Profile not activate.

Grain Size Pattern Color: This color selector allows the user to pick the line color (foreground) when the fill pattern option is used. The background color is found in the Layer configuration for the Grain Size.





Grain Size No Pattern Hard edges

Grain Size Pattern Soft edges

Carbonate Texture Fill Pattern Upward hatch (left to right) at 45 degrees This drop box allows the user to select a hatching pattern when using the Carbonate Texture Layer with the Lithology Profile not activate.

Carbonate Texture Pattern Color: This color selector allows the user to pick the line color (foreground) when the fill pattern option is used. The background color is found in the Layer configuration for the Carbonate Texture Layer.

Carbonate Textures Hard Edges This Tradio button will display the grain size with strait edges and right angles between the Carbonate Textures. The illustration below is shown with Lithology Profile activated.

Carbonate Textures Soft Edges This radio button will display the grain size with curved edges and rounded angles between the Carbonate Textures.

Interpreted Lithology Layer - Show Bedding Contacts: V - When this check box V is activated the bedding contacts (lines) between the drawn lithology types in the Interpretive Lithology Layer will be shown.

Interpreted Lithology Layer Show Accessories: V When this check box V is activated it will turn on the accessories in the Interpretive Lithology Layer.

Monitor Height - This option allows you to scale your monitor for Power*Log / Core so you may correlate onscreen wells with hard copy logs that you may have. It is recommended that you take an opportunity to measure the <u>vertical</u> viewing area of your monitor in inches and then insert that value in the **Monitor Height** field. Be aware, however, that if you adjust the screen height knob on your monitor, this will affect the monitor height setting.

Monitor Width - This option allows you to scale your monitor for Power*Curve so you may correlate on-screen wells with hard copy logs that you may have. It is recommended that you take an opportunity to measure the <u>horizontal</u> viewing area of your monitor in inches and then insert that value in the **Monitor Width** field. Be aware, however, that if you adjust the screen width knob on your monitor, this will affect the monitor width setting.

Note: You must restart Power*Log / Core & Curve for the Monitor Width / Height changes to take effect.

idewall Core

1, 1

 $\overset{1,2}{\triangleleft}$

Directional Survey display:	Azimuth 🗾 👻	T Id
	Azimuth	0
	Quadrant	

This drop box option will display your directional surveys on your log in either Quadrant format N 62 $^{\circ}$ W) or Azimuth format (AZ 298 $^{\circ}$)

Sidewall Core Run and Core No. This check box vehen activated will display the Sidewall Core Run & Core numbers above the core triangle indicator on the Sidewall Core layer.

Favorites Tab

This tab allows the user to define their System favorites for all the data categories that support these choices. This tab dialogue also allows the user to access the % Lithology Sort order for the % Lithology Track.

System Options			X
General Fonts Display	Favorites		
Rock Favorites	% Lithology Sort Order	Fractures Favorites	
Acc Favorites	Sedimentary Favorites	Trace Fossil Favorites	
Diagenesis Favorites	Generic Sym. Favorites		
			OK Cancel

Rock Favorites - The **Bock Favorites** button when activated allows the user to determine the number of the activation of the Rock Type Builder window in the Interpreted and Detailed Lithology tracks.

1.) Click on the Rock Favorites button in the System Options window.

- 2.) Click on the Clear All button in the Rock Type Favorites list window to prepare it for the selection of your Rock Favorites.
- 3.) Select the following Rock Types from the Rock Type Favorites list window:

Anhy (prim) [Anhydrite (primary)]
Sh m gy [Shale medium gray]
Ss [Sandstone]
Plus any other rock types you would use a lot.

4.) **Click** on the **DK button** to return to the **System Options** window.

Accessory Favorites - Allows the user to determine their favorite Accessories and then displays them in a pop-up menu generated by the activation of the Accessory Builder window in the Interpretive Lithology track.

- 1.) **Click** on the Acc Favorites **button** in the System Options window.
- 2.) Click on the **Clear All** button in the Accessory Favorites list window to prepare it for the selection of your Accessory Favorites.
- 3.) Select the following Accessories from the Thinbed, Components, and Cement headings in the Accessory Favorites list window:

	Thinbed cht dk pebbles [chert dark pebbles] sh gy stringers [shale gray stringers]
	Component aren [arenaceous] fld grs [feldspar grains]
	pyric [pyritic] sac [salt casts] slty [silty]
	Cement sils [siliceous] Plus other components that you would use a lot.
4.) Click on the	OK button to return to the System Options window.

The Log Configuration Builder window

- This is the heart of the Log/Track/Layer configurations and controls the way your well's information is displayed on the log.
- The well may have a lot of information stored in the database, but that information cannot be shown graphically on the log until the necessary layers are built to illustrate that information.
- 1. Click on Log Configuration Builder under the Options menu on the Selection Bar or click on the Log

Configuration Builder button on the Toolbar to activate window:

Log Configuration Builder		×
Available Logs		Active Log
Log SYSTEM 💌	Log Config.	Log: Tutorial Well
Tracks		 Tracks Track Config.
Ages Appotations	Add All >>>	Y 0.20 Date
Annotation Bedding Contacts	Show All	Y 2.25 Drilling Progress Y 0.30 Depth Y 0.20 Test
Bioturbation Bit Record Carbonate Texture	Hide All	Y 0.20 Core Y 0.15 Oil Show
Casing Core Core Box Data	Add >>>	Y 0.45 Porosity Type Y 0.45 Porosity Grade Y 0.80 Interpreted Lithology
Core Density Core Permeability	Delete	Y 0.45 Grain Size Y 0.20 Sorting Y 0.20 Rounding
	Show/Hide	Track Width: 0.20 Log Width: 8.00
	Move	C Layers Layer Config.
C Layers		Date (35-139-23155)
Ages		
	Exit	

Fundamentals of the Log Configuration Builder Window

The left side of the Log Configuration Builder window: Available Logs

The Available Logs section or <u>left</u> side of the Log Configuration Builder window allows you to take any track or layer from Available Logs and add it to the log you are currently creating/building. On the left side of the window, below the **Cracks radio button** is a list of the tracks available for adding to the Active Log.

The **Available Logs** section or left side of the window contains the track and layer configuration of the **SYSTEM** [SYSTEM] log, when the window first opens. You have the option of using any of the existing <u>Tracks</u> and their associated layers or any of the existing <u>Layers</u> that are associated with any of the system logs in the log database.

The user can **click** on the **Log...** SYSTEM **button** on the left side of the screen to activate a selection list of all log formats that are in your database. The list is comprised of two (2) names with the first name in the list being the system **Log Name** and the second name (in brackets), being the **UWI** of its primary well. **Double click** on the log format you wish to copy from.

Below the **Layers** radio button, on the left side of the window, is a list of the layers available in the track highlighted above. They will be added all at once, if you add their parent track. However, they can also be added on an individual basis, if you only want to add one(1) layer to an existing **Active Log** track.

The right side of the Log Configuration Builder window: Active Log

The Active Log section or the <u>right</u> side of the window displays the track and layer configuration of the <u>Active Log</u> (the log you are currently creating), in the main **Power*Log** window. The name of the log is viewed in the Log field. In this case, it will be "**Tutorial Well**." Below the **Tracks radio button** on the **right** side of the window, is a list of the tracks that are currently found within the **Active Log**. The track at the top of this list is drawn on the left side of the log, while the track on the bottom of the list is drawn on the far right of the log with all of the other tracks drawn

in between, respectively. Below the Clayers radio button on the right side of the window, is a list of the layers that are associated with the track highlighted above.

The middle of the Log Configuration Builder window: Selection Buttons

The **selection** buttons, found in the middle column of the window, are for adding layers or tracks from the **Available Logs** to the **Active Log**, activating/deactivating the **Active Log's** tracks, deleting active log tracks or layers, and moving tracks or layers within the **Active Log** itself. Step-by-step instructions for accomplishing these tasks are provided on the following pages.

Working with the Log Configuration Builder Window

Deleting the Date and the Framework tracks on the Tutorial Log...

1.) Highlight the Date track on the right side of the window by clicking on it.

been removed from the Tutorial Log.

2.)	Click on the	Delete	button. This action will p	rompt you with	n a system message, " Do you want to
	<i>delete the se</i> <u>removed</u> fron	e lected track i n the Tutorial L	n your log? " Click on the .og.	<u>Y</u> es	button. The Date track has now been
3.)	Highlight the	e Framework t	rack by clicking on it once.		
4.)	Click on the	Delete	button. This action will pr	rompt you with	n a system message, " Do you want to
	delete the se	elected track i	n vour log?" Click on the	<u>Y</u> es	button . The Framework track has now

Adding a Slide - Rotate Track to the Tutorial Log

- 1.) On the left side of the Log configuration window scroll down the list of tracks and **click** on the **Slide Rotate** track. The track will become highlighted and the **Tracks** radio button will become activated.
- 2.) On the right side of the Log configuration window **click** on the **Depth Track**. The track will become highlighted and the Tracks radio button will become activated.
- 3.) In the middle of the Log configuration window **click** on the Message asking the user " Do you really want to ADD the selected (track) from the available log to the active log?"
- 4.) **Click** on the **Yes button.** This will activate a Get Name window asking the user to name the track.
- 5.) The user may change the name or accept the Slide Rotate as a name by **clicking** on the **button** and the track will be added above the Depth Track or to the left on the vertical log.

Resizing a track...

- 1.) Scroll down the tracks list, on the **right** side of the **Log Configuration Builder** window and **click** on the **Lithology Description** track.
- 2.) **Double click** in the **Track Width** field and **Type** in the value of **2.5** Then, **press** the **Tab** key and the total width of the log itself will change to reflect the increase in the width of the **Lithology Description** track as well as the Log width field.

Note: For paper 8.5" wide, 8.00" is the widest that you want your log to be, especially if you are printing out the log in the **Portrait** paper orientation.

Moving the Oil Show track...

- 1.) Scroll down the tracks list, on the **right** side of the **Log Configuration Builder** window, and **click** on the **Oil Show** track to highlight it.
- 2.) Click on the <u>Move</u> button and it will change to <u>Move Start</u>." Then, click on the Lithology Description track. The Oil Show track will then be placed <u>above</u> the Lithology Description track (to the left of the Lithology Description track on the actual log).

Deleting the Gas Annotations layer from the Drilling Progress track...

- Scroll up through the tracks list, on the right side of the Log Configuration Builder window, and click on the Drilling Progress track to highlight it. Notice that the layers associated with this track are displayed below, in the Layers list box.
- 2.) Highlight the **Gas Annotations** layer, in the **Layers** list box, by clicking on it once. Notice that the **Layers** radio button is <u>automatically</u> activated by highlighting a given layer.

3.) Click on the button. This action will prompt you with a system message, "Do you want to

delete the selected layer in your log?" Click on the <u>Yes</u> button. The Bit Record layer has now been removed from the log

Turning off a track...

1.) Scroll down the tracks list, on the **right** side of the **Log Configuration Builder** window, and **click** on the **Test** track.

Show/Hide

- 2.) **Click** on the **button** to turn the **"Y**"(yes), to the left of the track name, to **"N**"(no), indicating that the track will <u>not</u> be shown on the log, until it is reactivated.
- 3.) Alternatively, you can simply **double click** on the **Test track** to turn the "**Y**"(yes) to "**N**"(no). The user will notice the log width has now decrease in size from 8" to 7.8" wide.

Resizing and Configuring the Drilling Progress Track

- 1.) Scroll up the tracks list, on the right side of the Log Configuration Builder window, and then highlight or **click** on the **Drilling Progress Track**.
- 2.) **Double click** in the **Track Width** field and **Type** in the value of **2.45**. Then, **press** the **Tab** key and the total width of the log itself will change to reflect the increase in the width of the **Drilling Progress Track** as well as increase the Log width field to 8".

Track Config.

3.) Then, **click** on the **button** (to the right of tracks), to activate the Track Configuration window. The changes in step four have already been done in this example.

Track Configuration			×
Save Undo New Del First Prev ? Nex	t Last		
Name: Drilling Progress	Sequence: 2	Width: 2.45	
Foreground Color: Backgrour	nd Color:	▼ Depth Offset:	
Current Layer Drill Rate	Remarks:		
			<u>×</u>
Heading: Drilling Rate	B	Borders	
Tutorial Well		✓ Left / Bottom ✓ Bight / Top	
35-139-231155	L	Finance Top Header Border	

- 4.) Currently, the name of the track is Drilling Progress. To change the track name, Type "Drilling Rate" in the Name field. Then, change the Heading name by typing "Drilling Rate" into the first Heading field. In the second heading field, Type in the well name "Tutorial Well." In the third heading field, Type in the location for the Tutorial Well, "35-139-23155." This would be beneficial if you were faxing or printing to Adobe the log only. It would identify to the client the location of the well data that is being transmitted.
- 5.) Click on the Save button to save your changes
- 6.) A system message will appear asking the User. "Record saved successfully. Do you wish to exit?" **Click** on the

button. This action will return you to the **Log Configuration Builder** window, where you will see the new name of your track displayed on the log you are creating. Later, when you exit from the **Log Configuration Builder** window, you will notice that the track headings have conformed to your changes.

7.) Press the Esc key on the keyboard or click on the Exit button to exit from the Log Configuration Builder window. You will be returned to the main log window, where you will see the changes you have made to the new log.

Importing ASCII File Data into the Drill Rate & Total Gas curve layers:

You will be able to do this import only if you have the LAS / ASCII Import Utility.

1.) Click on the File pull down menu, select Import / Export and then select ASCII Import from the pop out

menu. OR the user can **select** the Icon from the Import Tool Bar. This will activate an Open ASCII Data File window.

Open ASCII [Data File	? 🛛
Look in: 🔀	SYSTEM	• 🔁 🖆 💷 •
MTDriver geological e Imperial Co Imperial Co Imperial Ho Imperial Ho	expansion dictionary.exp re Rate Curve.las re Tutorial gamma ray curve.las rizontal ASCII TG & ROP curve.txt rizontal Gamma Ray Curve.las	Imperial Horizontal Survey Po Imperial Vertical ASCIL TG & F Metric core picture 1.bmp Metric core picture 2.bmp Metric Core Rate Curve.las Metric Core Tutorial gamma ra
<		>
File name:	Imperial Vertical ASCII TG & ROP of	curve.txt Open
Files of type:	All Files (*.*)	Cancel

2.) Navigate to the C:\Powersuite_V12\system folder and select the Imperial Vertical ASCII TG & ROP

curve.txt file. Click on the be activated.	Den button. Once the file has been select	ted the Set delimiter window will
	Set Delimiter	
	C Comma C TAB 🕫 Space	
	Example 6000 <column-break>12<column-break>200</column-break></column-break>	

Finish

3.) This file is a Space delimited file and the default on this window is space delimited. You will see <column



			noose map File	Clear All	Save	марні
Data Column	Depth ID		Curve Layer	Curve ID	Mapped Data	Acti
🗹 🎇 Column 1	DEPTH		Drill Rate	Drill Rate	Column 2	APF
Column 2 🔀 Column 3			🎇 Total Gas	Total Gas	Column 3	APF
		Imp	ort			
			<			
	olumn: Column 1	•	🔽 Append Data To C	urve		
Choose Depth Ci						
Lnoose Depth C le Preview						
Lnoose Depth C le Preview EPT R0	P TG					
Lnoose Depth C le Preview EPT R0 000 1 002 1	P TG 2 200 3 210					
EPreview EPT R0 000 1 002 1 004 1 002 1	P TG 2 200 3 210 3 210 1 205					
EPT R0 000 1 002 1 004 1 006 1 008 1	P TG 2 200 3 210 3 210 3 210 1 205 2 230					
Choose Depth C le Preview EPT R0 000 1 002 1 004 1 006 1 006 1 006 1 006 1 006 1	P TG 2 200 3 210 3 210 1 205 2 230 2 230					
Choose Depth C le Preview EPT RO 000 1 002 1 004 1 006 1 006 1 008 1 010 1 010 1 010 1	P TG 2 200 3 210 3 210 1 205 2 230 2 230 4 210					2

- 4.) The default on the Depth column is Column 1 which is indicated by the purple X. In our case the depth is the first column so we do not have to change the depth column indicator.
- 5.) Click on the Column 2 on the left side and drag it to the Total Gas Curve layer on the right side of the window. You will see Column 2 in the mapped Data field and an APPEND in the action field.

- 6.) Click on the Column 3 on the left side and drag it to the Drill Rate Curve layer on the right side of the window. You will see Column 3 in the mapped Data field and an APPEND in the action field.
- 7.) **Click** on the **Button**. This will import the curve data and prompt you with a database message saying Imported successfully.



Changing Curve Scales

- 1.) Click anywhere in the Drilling progress track to make it active. It will have a green outline. Go to the layer selection list and select drill rate layer from the list to make it the active layer.
- 2.) Right click anywhere within the Drilling Rate track (Drill Rate Layer) to activate the pop-up menu.

Drill Rate	
Line Width	•
Line Pattern	×
Line Style	►
Line Color	►
Scale	
Import	×
Point Indicators	×
 Offscale Numerics 	
Edit Curve	
Open Curve Average Window	
Scale Change Line Color	
Scale Change Line Thickness	•
Scale Text Orientation	•
Edit Options	►
Add / Edit / Open Link Exit	

3.) Select Scale from the pop-up menu to activate the Curve Scale window for the Drill Rate curve. In this figure the user will notice the Scale has already been changed.

Curve Scale			
<u>Save</u> Undo <u>N</u> ew Del	First Prev	? Next Last	
from	to	Left / Bottom	Right / Top
Depth Interval	0	Scale: 0	30
Backup Scale: straight s	shift 💌		

4.) Notice that the default scale (when the curve was originally added to the log), was 0 to 15 min/m, as you would see in your window. To change the original scale from 0 – 15 min/2ft to 0 – 30 min/2ft, simply adjust the Right / Top Scale value to 30 by double clicking in the Right Scale field and typing in a value of 30.

<u>Note</u> : The backup scale (in this case straight shift), is there in case the curve values go off-scale (more than 30 min/2ft). A straight shift backup scale for an original scale of 0 to 30min/2ft would be 30 to 60 min/2ft for Left and Right Scale values, respectively.							
5.) Click on the Save button and select	Exit	from the ensuing Shortcut Options window.					

🚀 Power*Log 12 - [Tutorial Well]																					7	×
III File Edit View Reports Options Win	dow	Help	2																	-	5	×
) 🎏 🖬 🗅 😂 🎒 🔮 🛄 📖 🖳	ТТЭНОХ	Lange	•) 🎥 🛛	3 😪	A 9	N?	Ω	<u> </u>	W	I 🖸 💁 🧏 🖷 📲	B 🖩 🛛	: 🗇 【	8, 18	62	Lag e	6		9	SL	
- 81	1	8 9	171	[R]	1	MD	- 1	:200	•	59	990	• •	1 🔻									
Drilling Rate Tutorial Well 35-139-23155	Slide - Rotate	Depth	Core	Porosity Type	P orosity (%)	חונפו או פופע בומוסיס		Grain Size	Sorting	Rounding	Oil Shows	Lithology I	Descrip	tion				6	002			~
D Total Gas (units) 750 0 0 1500 0 0 1500 0 0 1500					N-1-1 00000	y y													000			
		6000 ft 6050 ft																				
For Help, press F1												pgeology	UPDATE	KB: 234								

******Your log should now look like the log shown below**

Adding Sample Descriptions

1.) Click on Sample Description, under Reports on the Power*Log[™] Selection Bar to open the Sample Description window.

Sample Description	
Save Undo New Del First Prev ? Next Last Auto Next Auto Inc Image: Ascending Interval Rock Type / Heading Image: Second Structure 10 6000 to 6029 Anhy Short Description Image: Compared Structure Image: Compared Structure Image: Compared Structure wh, lt gy, crpxl, com sacs, sft, dns, ns. Image: Compared Structure Image: Compared Structure Image: Compared Structure	Dictionary : 2 % To Long Desc
Long Description	To Short Desc
white, light gray, cryptocrystalline, common salt casts, soft, dense, no shows.	
Transfer Options Automatic Description transfer Transfer to Annotation Group: lithtext1	•
▼ Transfer Depth Range	Form

- 2.) Type 6000 into the Interval (From) field and then press the Tab key
- 3.) Type 6029 into the Interval (To) field and then press the Tab key
- 4.) Type Anhy into the Rock Type / Heading field and then press the Tab key 4 times to get to the short description field.

Note: The rock types have to be typed in correctly in the Short form field (according to our Geological Expansion Dictionary) in order for the Rock Type to be filled in when the Enter key is depressed.

5.) **Type** the following description into the **Short Description** field, exactly as it appears below:

wh, It gy, crpxl, com sacs, sft, dns, ns.

Note: The Short or Long Descriptions can be transferred to the Lithology Description layer and only the Long Description will be printed out in the Sample Description.

- 6.) Select the Automatic Transfer, Transfer Depth Range and Transfer Short Form check boxes (shown in the preceding sample description window.
- 7.) Click on the Save button and then select Start New Record

You will see your sample description on the log at 6000 ft with the options selected in step 6.

- Adding another Sample Description to the same interval...
- 1.) Type Sh into the Rock Type field, tab 4 times and Type the following description into the Short Description field:

It gy, wxy, bentic, occly slty, tr aren grs, sft, blky.

- 2.) Deselect Transfer Depth Range check box (¹¹).
- 3.) Click on the **Save** button and then select **Start New Record** from the ensuing **Shortcut Options** window. Your description will now be viewed at 6002 ft.

from the ensuing **Shortcut Options** window.

Not	<u>e</u> : If you ha	ave made any typing errors the user can click on the Cancel button , then you can make any
nec	essary corr	rections and then save the record once again to replace the old record with the new one.
•	Adding a	nother Sample Description to a new interval
1.)	Click on t to 6041.	he Auto Next button to advance the description interval from depth to 6029. Type in a new depth
2.)	Type Ss in Descriptio wh, h ptch	nto the Rock Type field, tab 4 times and then Type the following description into the Short on field: t gy, vf - f gred, w srt, sbang, qtz, tr wthrd fld grs, sils cmt, p intgran por (3-7%), sl tr brn o stng, dull yel flor, fr stmg mky yel cut flor.
3.)	Select Tra	ansfer Depth Range check box (🔽).
4.)	Click on t You will se	he <u>Save</u> button and then select <u>Start New Record</u> from the ensuing Shortcut Options window.
		Sample Description
		Save Undo New Del First Prev ? Next Last Dictionary
		Auto Next Auto Inc Ascending Interval Rock Type / Heading % Remaining: 100 % 6029.00 10 6029.00 to 6041 Ss % Short Description % Lithology: To Long Desc
		wh, it gy, vf - f gred, w srt, sbang, qtz, tr wthrd fid grs, sils cmt, p intgran por [3-7%], si tr ptch brn o stng, dull yel flor, fr stmg mky yel cut flor.
		Long Description
		white, light gray, very fine to fine grained, well sorted, subangular, quartz, trace weathered feldspar grains, siliceous cement, poor intergranular porosity (3-7%), slight trace patchy brown oil staining, dull yellow fluorescence, fair streaming milky yellow cut fluorescence.
		Transfer Options
		Transfer to Annotation Group: lithtext1
		Transfer Depth Range 🔲 Top Depth Only 🔲 Transfer % 🔽 Transfer Short Form

- Adding more Sample Descriptions to a new interval...
- 1.) Click on the Auto Next button to advance the description interval from depth to 6041. Type in a new depth to 6056.
- 2.) Type Ss into the Rock Type field, tab 4 times and then Type the following description into the Short Description field:

wh, It gy, vf - m gred, modly w srt, sbang, qtz, tr wthrd fld grs, tr dk cht pbls, sils cmt, fr intgran por (6-10%), q brn o stng, no cut flor.

3.) Deselect the Transfer Depth Range check box (

Click on the

4.)

Start New Record

button and then select from the ensuing Shortcut Options window. You will see your description at 6041 ft.

- Adding our Last Sample Descriptions utilizing the Auto Next button...
- Click on the Auto Next button to advance the description interval from depth to 6056. Type in a new 1.) depth to 6070
- Type Sh into the Rock Type field, tab 4 times and then Type the following description into the Short 2.) **Description** field:

m - dk gy, micmica, v carb, calcs, fis.

- Deselect the Transfer Short Form check box (3.)
- Click on the Save button and then select Exit from the ensuing Shortcut Options window. You 4.) will see your description at 6056 ft.

Printing out Sample Descriptions to Word. (Only if you have Word for Windows)

Connect		
Disconnect		
Access Registration		•
New	Ctrl+N	
Open	Ctrl+O	
Close		
Import / Export		•
ASCII Export		۲
Badkup		
Print Log	Ctrl+P	
Print Morning Report		
Print Well End Report		
Print Reports to Word®		
Print Setup		

No

- 1.) Click on the Print Reports to Word button on the Toolbar or select Print Reports to Word Selection, under the File menu, on the Selection Bar to activate the Power*Log Report: Well End Report window.
- 2.) The **Reporting Tool** print window will automatically default to the active Well/Log Name.: You will see Tutorial Well in the Choose a Well field If it is not the defaulted well then go to the Well list drop box and select it from the List.
- 3.) Highlight **Sample Desc** in the **Reports** field by clicking on it once.
- 4.) Leave the Depth Range field blank to print all the descriptions.
- 5.) Click on the Formation Tops in Desc. check box

Reporting Tool
Well End Benotic Marriag Research
weinend riepons Molning Repons
print status
Prepared For
Company:
Name:
Prepared By
Company: TriVision Geosysems Ltd.
Name: R.W. (Bob) Sephton P. Geol.
Choose a Well
Tutorial Well
Depth Range (leave blank for all)
Directional Survey Points
Deviation Survey Points Master Survey Points
Abandonment Plug
Work Schedule
Formation Tops.
Sample Desc.
Sidewall Core
Select All
Print to Word

Print to Word 7.) Click on the button in the Well End Report window to printout the Sample Descriptions. This will activate you word program and you will get the Sample descriptions and Formation tops that were input through the Reports window.

8.) When you are finished, press the Esc key on the keyboard to exit from the Well End Report window and to

activate the following system message, "Do you want to save the setup" Clicking on the button and the window selections you have just made will be remembered for the next time. Clicking on the

button will remember the default selections that were set for this window.

Printing out Sample Descriptions (If you do not have Word for Windows)

- 1.) Click on the Print Well End Report button on the Toolbar or select Print Well End Report, under File, on the Selection Bar to activate the Power*Log Report: Well End Report window.
- 2.) The Well End Report print window will automatically default to the active Well/Log Name and its associated API: you will see Tutorial Well (35-139-23155) in the Well List field and it should be highlighted. If it is not highlighted, move the mouse pointer to the Well List field and click on the desired Well / Log Name to highlight the Well you wish to print information from.
- 3.) Highlight Sample Descriptions in the Reports field by clicking on it once.
- 4.) Select Printer from the Output drop box field list.

Printer Setup...

5.) Click on the **Printer Setup....** button, in the upper right corner of the Well End Report window, to activate the **Print Setup** window. Notice that the currently selected printer is listed beneath the **Default printer** radio button

(10.1), at the top left of the **Print Setup** window. Use the **Printer** section of the **Print Setup** window to specify the use of a printer other than the default printer.

<u>Note</u>: Power*Log[™] automatically defaults to a Paper Orientation of Portrait and a Paper Size of 8 5 x 11, as specified in the Orientation and Paper sections, respectively, of the Print Setup window. Please do NOT change these default settings.

- 6.) Make sure that the All check box (^{III}), in the Sample Description section at the lower right of the Well End Report window, is activated.
- 9.) Click on the **Print** button in the Well End Report window to printout the Sample Descriptions.
- 10.) When you are finished, **press** the **Esc** key on the keyboard to exit from the **Well End Report** window and to activate the following system message, "*Do you want to save the setup configuration?*" Click on the

button and all of the printer selection/settings information utilized in the Well End Report

window will be saved to the database for any future **Well End Report** print jobs. Clicking on the **button** will also return you to the main log window.

Drawing Interpreted Lithology

<u>Note</u>: To work on any layer in any track, simply **double click** on the track in which you wish to work to activate the "**builder**" window for that particular layer. Once the "**builder**" window for a given layer is active, you are then able to access the <u>pop-up</u> menu [**right click**] associated with that "**builder**" window and may proceed to enter any necessary intervals and graphical descriptions for the given layer.

• Drawing Rock Types...

Yes

1.) **Double click** anywhere within the **Interpreted Lithology** track to activate the **Rock Type Builder** window and the Toolbox with your Favorites Rock Type List.

Rock Type Builder			
Save Del	Rock Type	Interbeds	Accessory
6000.00 to 6029.00	Anhy prim [Anhydrite	(primary)]	-
🔽 Confirm Delete 💦 Sample Quality:	No Data Descri	ption:	•
Snap to Lithology Base Contact:			~
Edit Favorites Toolbox	Clea	ar Fields	Exit

2.) The user can move the Tool Box to a position where it is out of the way by clicking and dragging the Tool Box menu bar.

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<u>Note</u>: The graphical images utilized in the Tool Box window represent specific **Rock Types** selected by the user in the **System Options**, **Favorites Tab** window (See **System Options** earlier in this tutorial). The written descriptions of the **Rock Types** illustrated in the above diagram were included as a visual aid and do <u>not</u> normally accompany a pop-up menu.

- 3.) **Select** the **Rock Type** for **Anhydrite (primary)** from the Tool Box window and it will automatically be displayed in the **Rock Type** field within the **Rock Type Builder** window.
- 4.) Define the top interval by **clicking and holding** the **left** mouse button at **6000**' on the **Interpreted Lithology** track.
- 5.) Define the bottom interval by **dragging** the mouse pointer to **6029**' on the **Interpreted Lithology** track.
- 6.) **Release** the **mouse button** and the interval will be drawn accordingly.
- Drawing another Rock Type...
- 1.) Select the Rock Type for Sandstone from Tool Box window and it will automatically be displayed in the Rock Type field within the Rock Type Builder window.
- 2.) Define the top interval by **clicking and holding** the **left** mouse button at **6029**' on the **Interpreted Lithology** track.



4.) Release the mouse button and the interval will be drawn accordingly.

And another...

- 1.) Select the Rock Type for Shale (medium gray) from the Tool Box window and it will automatically be displayed in the Rock Type field within the Rock Type Builder window.
- 2.) Define the top interval by **clicking and holding** the **left mouse button** at **6058**' on the **Interpreted Lithology** track.
 - 6058'

000'

- 3.) Define the bottom interval by **dragging** the mouse pointer to **6070**' **6070**' on the **Interpreted Lithology** track.
- 4.) Release the mouse button and the interval will be drawn accordingly.

Note: You may wish to resize a particular bed or lithologic interval, but remember that beds cannot completely overlap one another. Also, keep in mind that only the top or the bottom of a particular bed can be resized at any one time. Accordingly, if you wish to resize both, you will have to do it twice.

• Resizing an interval...

N.B. If you have the Snap to Lithology checked and your mouse pointer accuracy is 1 you must uncheck the check box to resize the following bed or decrease the mouse pointer accuaracy.

- Press and hold the Ctrl key on the keyboard down, while hovering over the bed boundary between the Shale and Sandstone bedding contact at 6058 ft. You will view a mouse pointer turn into resize arrow and if the shale is viewed in the builder click and drag the left mouse button up two feet to 6056 ft on the Interpreted Lithology track.
- Release the mouse button at 6056 ft, followed by the release of the Ctrl key on the keyboard, and you will be prompted with the following system message, "Do you really want to resize the interval from 6058.00 – 6070.00 to 6056.00 - 6070.00?"

3.) Click on the <u>Yes</u> button.

4.) Press the Esc key on the keyboard to exit from the Rock Type Builder window and return to the log.



** Your log should now look like the log shown below.**

Editing Lithology Descriptions

In these examples we will start from the lower descriptions and work our way up the transferred descriptions. We will demonstrate to the user how to change the position, delete and modify transferred sample descriptions.

1.) Make the Lithology Description layer active (in the Layer Selection List field), by clicking once anywhere within the Lithology Description track to highlight the Lithology Description track in green.

Overview of RTF Font Toolbar buttons.



F At the flashing cursor or with some text highlighted this button will activate a Font Dialogue window to change Font Type, style, size etc.

B At the flashing cursor or with some text highlighted this button will activate a Bold Font style.

At the flashing cursor or with some text highlighted this button will activate an Italic Font style.

Let the flashing cursor or with some text highlighted this button will activate an Underline Font style.

At the flashing cursor or with some text highlighted this button will activate an Strikethrough Font style.

At the flashing cursor or with some text highlighted these buttons will orient the text line or paragraph left, centered or right within the box outline.

At the flashing cursor or with some text highlighted this button will place a bullet at the start of the text line or paragraph.

At the flashing cursor or with some text highlighted these buttons will indent or tab the text line or paragraph either left or right.

At the flashing cursor or with some text highlighted this button will activate a new Font color.

At the flashing cursor or with some text highlighted this button will activate a Font background color.

Overview of RTF Lines and Boxes Toolbar buttons.





EXAMPLE Left Right Centered Text boxes: With the text box or annotations outline activated these buttons will orient the text box left, centered or right within the track borders. The user can also click and drag on the box outline to any orientation on the track which will override these buttons.

	•	
All Scales	~	
1:5		
1:10		
1:15		
1:20		
1:48	_	
1:96		
1:120	_	
1:160	~	

Display scale drop box: This allows the user to change the display scale for each annotation to adapt to the printed or viewing scale of the log. The All Scales selection will display the annotation at all viewing and printing scales from 1:5 to 1:5000. If you select a different display scale then the annotation will be viewed at that viewing and printing scale and smaller. Anything larger than the display scale and the annotation will not be viewed or printed. This should alleviate the annotations overlapping each other when printed out on different scales. For example if the user were to choose 1:120 the annotation would show up on viewing / printing scales from 1:120 to 1:5 and not show up on scales from 1:121 to 1:5000.



Line Style Selector and Line Thickness drop boxes: These drop boxes allow the user to select a different line style for their drawn line as well as the line thickness for the line that is associated with each individual annotation. You can only have one line per annotation. The line can only be redrawn and not moved.

A This button will show / hide the text for a particular annotation. The text will not hide itself until the annotation is clicked outside of or deselected.

/	

This button will show / hide the line for a particular annotation.

This button will show / hide an outline around the annotation. The grey box you see around all annotations will not be printed. Only when this button is activated will the box be printed.

Will show / hide an arrow pointer at the end of a line draw.

Will show / hide an arrow pointer at the start of a line draw.

Will show / hide an tail at the end of a line draw.

Will show / hide an tail at the start of a line draw.

Moving a Lithology Description:

- 1.) Click anywhere within the Shale description that is viewed on your log at 6060 ft to activate the RTF Font and RTF Line and Boxes toolbars and highlight the text.
- 2.) Move the mouse pointer to the outline and you will see the pointer turn into a \bigoplus crosshair. Click and drag your mouse to move the description down 4 feet to 6064 ft.
- 3.) Click outside the annotation to save your annotations.

Editing Sample Descriptions

- 1.) Now we will edit the Shale description at 6001 ft. Click in the Sh description at 6001 ft. You will see the description outlined on the log.
- 2.) Move the mouse pointer to the outline and you will see the pointer turn into a \bigoplus crosshair. Click and drag your mouse to move the description down 11 feet to 6012 ft.
- 3.) Move your mouse pointer in the text field and click between the Sh and the (:) colon and Type in lam.
- 4.) Click outside the annotation to save your annotations.
- 5.) Move the other annotations so that fit on the layer without overlapping each other and then **Click outside the highlighted annotation** to save your changes. Follow the example below.

🖉 Power*Log 12 - [<i> Tutorial Well [35-139-23155]]</i>															
File Edit View Reports Options Window Help															
🍜 👬 🗅 🖻 🎒 🕲 🛄 💹 🖳	таках и	Į, į		🖬 🔛 🛛	3 😪 🔺 🤶	N? 🖆	2 9	21	W	🔽 🏪 🍇 📆 📆 📾 💷 🗔 🛃 🎙	š, 181	🗣 🍕 🖁	1	SL	
Lithology Description 💌 🕅	c 🗟	9 I	21	00	MD 🔻 1:	200 •	•	59	90	• • 1 •					
Drilling Rate Tutorial Well 35-139-23155	Slide - Rotate	Douth	Core	Porosity (%) Porosity Type	Interpreted Litholo	Grain Size	Sorting	Rounding	Oil Shows	Lithology Description					~
D Total Gas (units) D 750 1500 Drill Rate (min/ft)				8330	gy	<pre>>fsnd c snd c snd snd snd snd snd snd snd snd snd snd</pre>									
		6000 ft 6050 ft								6000 - 6029ft Anhy: wh, it gy, crpxi, com sacs, sft, dns, ns. Sh Lams: it gy, wwy, bentic, occly sity, tr aren grs, sft, biky. 6029 - 6041ft Ss: wh, it gy, vf - f gred, w srt, sbang, qtz, tr withrid fid grs, sils cmt, p intgran por (3-7%), si tr ptch brn o stng, dull yel flor, fr stmg mky yel cut flor. Ss: wh, it gy, vf - m gred, modly w srt, sbang, qtz, tr withrid fid grs, tr dk cht pbls, sils cmt, fr intgran por (6-10%), q brn o stng, no cut flor. Shale: medium to dark gray, micromicaceous, very carbonaceous, calcareous, fissile.					
r Help press F1 pgeology UPDATE KB: 234															

Your log should now look like the log below.

Drawing Porosity (%)

1.) Double click on the Porosity (%) track to activate the Porosity Builder window.

Porosity Build	er 🔀
Save Del Entire Interval: Sub-Interval:	Grade (%) 6029.00 to 6056.00 27 🗨 6
 Dbl Click Inter Snap To Soft Edges 	val
Pattern:	Pattern Color:
1	_

- 2.) Double Click the mouse pointer (with the Dbl Click Interval check box activated) between 6029' and 6056' @
 [6%] 6038' [6%] and the entire interval will be drawn accordingly in purple to represent an entire interval.
 6042' [8%]
- 3.) Click and drag the mouse pointer from 6042' [8%] to 6056' 6056' , release the mouse button, and the desired Porosity Grade will be drawn accordingly in green to represent a subinterval.

<u>Note</u>: The mouse pointer does NOT have to be dragged to the same percentage (%) point at the bottom of the interval, as you selected at the top of the interval: the mouse pointer needs <u>only</u> to be dragged to the desired depth.

• Deleting Porosity (%) Entire or Subinterval...

If you wish to delete a **Porosity (%)** subinterval or entire interval, while the **Porosity Builder** window is open, **right click** <u>within</u> the interval slated for deletion to activate a pop-up menu, and then left <u>or</u> **right click** on the appropriate selection.

Delete Sub	
Delete Entire	
Edit Options	۲
Exit	

Drawing Grain Size

1.) Double click on the Grain Size track between 6029 ft and 6056 ft to activate the Grain Size Builder window.

Grain Size Builder		
Save Del Size / Sequence:	Grain ▼	▼
Entire Interval: 6029.00 to 6056.00 Sub-Interval: Size / Sequence:	Grain	
Snap to closest lithology	-	to 💌
 ✓ Dbl Click Interval Entry ✓ Soft Edges 	scale: Wentworth	
		6029' [vf snd]

2.) Click and drag the mouse pointer from 6029' [vf snd] to 6056' [f snd] 6056' [f snd] on the Grain Size track.

<u>Note</u>: Measured Depths and Grain Sizes, like 6029' [vf snd], can be viewed within the mouse pointer display box, situated just to the right of the mouse pointer.

- 3.) Release the mouse button and the entire Grain Size interval will be drawn in purple to represent the entire interval accordingly.
- Drawing a Grain Size Sub-Interval...

Grain Size Builder			X
Save Del Size / Sequence: Entire Interval: 6029.00 to 6056.00 Sub-Interval: Size / Sequence: ✓ Snap to closest lithology	Grain vf snd [very fine sand] Grain vf snd [very fine sand]	f snd [fine sand] m snd [medium sand]	
 ✓ Dbl Click Interval Entry ✓ Soft Edges 	scale: Wentworth		
		6042' [vf snd]	

- 1.) Click and drag the mouse pointer from 6042' [vf snd] to 6056' [m snd] 6056' [m snd]
- 2.) Release the mouse button and the Grain Size Sub-Interval will be drawn accordingly.
- 3.) To exit from the Grain Size Builder window and return to the log, press the Esc key on the keyboard once.

Drawing Oil Shows

1.) Double click on the Oil Show track between to activate the Oil Show Builder window.

Oil Show Builder			
Save Del Entire Interval: 6029.00 to 6056.00	Stain	× •	Dead Stain

2.) Right click anywhere within the depth interval of 6029' to 6056' on the Oil Show layer to activate the pop-up menu.

Sub Interval Entire Interval - Alternate Delete Sub Delete Entire	•	♦ ● ® ® F O D	75-100% Oil Stained 50-75% Oil Stained 25-50% Oil Stained 0-25% Oil Stained Fluorescence. No visible oil staininç Questionable oil staining Dead oil staining
Edit Options	۲		
Exit			

Note: The symbols utilized in the pop-up menu, represent a specific percentage (%) or amount of oil staining, as illustrated in the above diagram.

6029

- 3.) Select 50-75% oil staining from the Sub Interval pop-up menu.
- 4.) Click and drag your mouse pointer from 6029' to 6041' and release the mouse button and this 12 ft sub-interval will be populated with the 50-75% oil staining symbol (.

Drawing Sorting

1.) Double click on the Sorting track between 6029' and 6056' to activate the Sorting Builder window.

Sorting Builder	
Save Del Entire Interval: 6029.00 to 6056.00 Sub-Interval:	•

2.) Right click anywhere within the 6029' and 6056' Sorting interval to activate the pop-up menu.



Note: Each of the abbreviations utilized in the pop-up menu represent a specific degree of Sorting.

- 3.) Select w for the Entire Interval from the pop-up menu and the entire bed will be populated with the "W" symbol.
- Drawing a Sorting sub-interval...
- 1.) Right click anywhere within the Sorting Track to activate the pop-up menu.
- 2.) Select modly w from the Sub Interval pop-out menu.
- 3.) Click and drag your mouse from 6041' to 6056' 6056' and one 15' sub-interval will be populated with the "mW" symbol.

Drawing Rounding

1.) Double click on the Rounding track between 6029' and 6056' to activate the Rounding Builder window.

Rounding Builder	\mathbf{X}
Save Del Entire Interval: 6029.00 to 6056.00 Sub-Interval:	

2.) Right click anywhere within the 6029' and 6056' Rounding interval to activate the pop-up menu



3.) Select sbang for the Entire Interval from the pop-up menu and the entire bed will be populated with the "a" symbol.

Drawing Porosity Type

1.) Double click on the Porosity Type Track to activate the Porosity Type Builder window

Porosity Type Builder			
Porosity Type:	intgran [intergranular]	<	

2.) **Right click** anywhere within the **Porosity Type** track activate the pop-up menu and then **select** types to activate the pop-out menu.



3.) Select x from the pop-up menu and click at 6029', 6035', 6041', 6047' and 6053' and "x's will appear at those depths.

Drawing Accessories

Using **the log on page 36** as a guideline, add some **Accessories** to the log at your discretion. Listed below are the steps for adding **Accessories**:

1.) Double click anywhere within the Interpreted Lithology track to activate the Rock Type Builder window.

Rock Type Builder						
Save Del		Rock Type			Interbeds	
Confirm Delete	Sample Quality:		•	No Data Descri	ption:	
I Snap to Lithology	Base Contact:					<u></u>
Edit Favorites Toolbo	ж			Clea	ar Fields	Exit

2.) Right click anywhere within the Interpreted Lithology track to activate the pop-up menu.

Rocks 🕨 🕨
Save
Delete
Acc Builder
Interbedding
Edit Options 🔸
Exit

3.) Select Acc Builder from the pop-up menu to activate the Rock Accessory Builder window or click on the Accessory button in the Rock Type builder.

Rock Access	ory Builder	×
		Rock Type
Thinbed:	😑 sh gy stringers [shale gray stringers]	•
Accessories:		•
Grains:		•
Fossils:		-
Textures:		•
Matrix:		•
Cement:		•
Contact:		•
	1	
Edit Favorites	Toolbox	Exit

4.) Now the user can move the Toolbox Favorite List by clicking and dragging the menu bar to a convenient location.

...Adding a Thinbed...

- 5.) Click on the symbol for Shale Gray Stringers from the Tool Box Favorites List and the Thinbed field in the Rock Accessory Builder window will be filled in with sh gy stringer [shale gray stringers].
- 6.) Click anywhere within existing Interpreted Lithology to insert the desired Accessories.

<u>Note</u>: To delete an Accessory symbol, activate the Rock Accessory Builder window, right click on the Accessory symbol you wish to delete, and then select Delete from the pop-up menu.

Adding another Thinbed...

- 1.) Click on the symbol for Chert Dark Pebbles from the Tool Box Favorites List and the Thinbed field in the Rock Accessory Builder window will be filled in with cht dk pebbles [chert dark pebbles].
- 2.) Click along the bottom of the Sandstone interval to insert the desired Accessory.

<u>Note</u>: When placing Accessories on the log, you may wish to increase the mouse accuracy from the default of 1 to 0.1. This selection box is located to the left of the LAS button on the Toolbar.

- Adding an Accessory...
- 1.) Click on the symbol for Salt Casts from the Tool Box Favorites List and the Component field in the Rock Accessory Builder window will be filled in with sac [salt casts].
- 2.) Click anywhere within the Anhy(prim) interval to insert the desired Accessory.

Adding another Accessory...

1.) Click on the symbol for Silty from the Tool Box Favorites List and the Component field in the Rock Accessory Builder window will be filled in with slty [silty].

- 2.) Click within the Anhy (prim) interval to insert the desired Accessory/Accessories.
- Add the following Accessory and Grain...

Arenaceous

Feldspar Grains

- Adding Cement...
- 1.) Click on the symbol for Siliceous from the Tool Box Favorites List and the Cement field in the Rock Accessory Builder window will be filled in with sils [siliceous].
- 2.) Click anywhere within the existing Interpreted Lithology intervals, that you wish to insert the desired Accessory/Accessories.
- 3.) **Press** the **Esc** key on the keyboard to exit from the **Rock Accessory Builder** window.



Your log should now look like the log below.

Adding a Cored Interval to the log

1.) Double click on the Core track to activate the Well Core report window.

Well Core	
Save Undo New Del First Prev ? Next Last	
Core # 1 Coring Date: Nov 12, 2001	Dre .
Interval Length Recovered Diar	neter Hole Size
6070 to 6106 36.00 32 4	7.875
Formations Cored: Fresca, Alberquerqui	
Coring Company: Freds Coring Ltd.	
Service Reps: Joe Abbott	
Bit Used	
Make Type Serial # Size	
BHI C201 CS234 7.875	[]
Remarks:	
Coring Times: 12, 14, 13, 10, 12, 14, 12, 11, 15, 8, 4, 5, 12, 16, 1 per 2 feet. Core jammed off after connection @ 6102 ft	3, 14, 56 min 🛛 🔼
The roughneok dropped Core Boy #2 on the way to the trailer. Pu	it the pieces
back together the best I could. Hopefully the core gamma will help back together into the correct alignment.) piece the core
	~
	Core Descriptions

- 2.) Type 1 into the Core # field. Tab key.
- 3.) **Type** today's date into the **Coring Date** field, using the **Date Format** (**MMM DD, YYYY**), selected in the **System Options** window at the beginning of this tutorial. **Tab key**.
- 4.) Type 6070 into the Interval (From) field, Press the Tab key, Type 6106 into the Interval (To) field, Press the Tab key and Type 32 into the Recovered field.
- 5.) The rest of the fields can be filled in. Only the yellow fields are mandatory. Remember to Tab between fields.
- 6.) **Click** on the **Save** button and select **Cancel** from the ensuing **Shortcut Options** window.



Adding Core Descriptions

1.) **Click** on the **Core Descriptions button**, in the Well Core window to activate the **Core Description** window.

Core Description	×
Save Undo New Del First Prev ? Next Last	Dictionary
Auto Next Ascending Interval Rock Type / Heading	
Short Description Sh It gy, occly mot dk gy, micmica, v carb, slty, plty & fis. Occ tr Sid nods & unident fos deb. Ss strgs pre top of zn, v thn <2 mm thk, s&p, vf gred, py srt, sbrdd, arg & tt / ns	To Long Desc
Long Description Shale with minor to abundant Sandstone stringers	To Short Desc
Shale light gray, occasionally mottled dark gray, micromicaceous, very carbonaceous, silty, platy & fissi Occasional trace Siderite nodules & unidentifiable fossil debris. Sandstone stringers predominant at the l very thin <2 millimeter thick, salt and pepper, very fine grained, poorly sorted, subrounded, argillaceous is no shows	e. top of zone, & tight with
Transfer Options	
Transfer to Annotation Group: lithtext1	•
Transfer Depth Range Top Depth Only Transfer Short	Form

- 2.) Type 6070 into the Interval (From) field, tab and Type 6085 into the Interval (To) field, tab and then Type Sh / mnr abnt Ss strgs into the Rock Type field. Tab to get to the short description field.
- 3.) Type the following Core Description into the Short Description field, exactly as is:

Sh It gy, occly mot dk gy, micmica, v carb, slty, plty & fis. Occ tr Sid nods & unident fos deb. Ss strgs pred @ the top of zn, v thn <2 mm thk, s&p, vf gred, py srt, sbrdd, arg & tt / ns.

<u>Note</u>: The Short or Long Descriptions can be added to the Lithology Description layer (in the Lithology Description track and only the Long Description will still be printed out in the Core Description Report in the Well End Report window.

- 4.) Select the Automatic Transfer, Transfer Depth Range and Transfer Short Form check boxes (), as shown in the preceding sample description window.
- 5.) Click on the **Save** button and then select **Start New Record** from the ensuing Shortcut Options window. This will activate a System Verification Window asking you if you want to change your screen scale to 10" so you can see your description. Otherwise, it will not be shown.

System	Verification 🛛 🕹
2	Transferring Core Descriptions. Do you wish to change screen scale to 10" so you can see the core descriptions?
	Yes No

6.) **Click** on the **button**. You will see your sample description on the log at 6070 ft with the options selected in step 4.

- Adding another Core Description to a new interval...
- 1.) Type 6090 into the Interval (To) field, tab and then Type Ss into the Rock Type field. Tab to get to the short description field.
- 2.) **Type** the following **Core Description** into the **Short Description** field, exactly as is:

s&p, m gred, w srt, sbrdd, qtz, cht, sils cmt, fr – g intgran por (16% - 18%), abnt brn o stng, bri yel flor, ex stmg yel cut flor.

3.) **Click** on the $\frac{Save}{Save}$ button and then select Start New Record

from the ensuing Shortcut Options window.

Note: If you made any typing errors, you can make any necessary corrections now and then Save the record once again to overwrite the old record. You must first delete the description from the Lithology Description Layer.

- Adding yet another Core Description to a new interval...
- Type 6096 into the Interval (To) field, tab and then Type Sh into the Rock Type field. Tab to get to the short 1.) description field.
- Type the following Core Description into the Short Description field, exactly as is: 2.)

It gy, occly mot dk gy, micmica, v carb, slty, plty & fis.

- Click on the Save button and then select Start New Record from the ensuing Shortcut Options 3.) window.
- Adding yet another Core Description to a new interval...
- Type 6102 into the Interval (To) field, tab and then Type Ss into the Rock Type field. Tab to get to the short 1.) description field.
- Type the following Core Description into the Short Description field, exactly as it appears below: 2.)

s&p, m - vc gred, m srt, sbrdd - rdd, qtz, cht, tr sils cmt, g - ex intgran por (20% - 24%), v fri, v abnt brn o stng, bri yel flor, ex stmg yel cut flor.

- Click on the Save button and then select Start New Record from the ensuing Shortcut Options 3.) window.
- Adding the last Core Description to a new interval...
- Type 6106 into the Interval (To) field, tab and then Type No Recy into the Rock Type field. Click on the 1.) To Long Desc button. This will expand the abbreviated Rock type into the Long name Rock type field.
- Exit
- Click on the Save button and then select 2.) from the ensuing Shortcut Options window.

Editing Core Descriptions

Before we start editing the Core Descriptions on the Log we must first change our Screen scale from 10" to 25" so that all the descriptions will not be overlapping each other. This will make selecting them much easier.

1.) Click on Log Scales, under the View menu selection, to activate the pop out menu and then click on Imperial then click on the 25". This will refresh your log with the new Scale. Or Click in the Log Scales field drop box and select 25".



Moving and changing the Display Scale options



Changing the Display Scale options





- 1.) **Click** on the **6096-6102 ft Core Description**. This will activate the RFT Font and Lines and Boxes toolbars and show a highlight around the selected annotations borders.
- 2.) To change the Display Scale of the Core Description now highlighted, simply select All Scales from the display scale drop box to replace the 120 in the RFT Lines and Boxes Toolbar. (When this is done the core description will display at all log viewing and printing scales.)
- 3.) **Move your mouse pointer** onto the bordered area on the lithology description track and so that the mouse pointer turns into **track** and **click** and drag to move this description so that it can be read easily.
- 4.) **Click anywhere outside** the annotation to close down the RFT Builders.

Moving Core descriptions

- 1.) Click on the Core Description you wish to move.
- 2.) Move your mouse pointer onto the bordered area on the lithology description track and so that the mouse

pointer turns into \clubsuit cross hairs and **click** and drag to move this description so that it can be read easily. Release the mouse button, and the **Core Description** will be redrawn at its new location.

For a general guideline refer to the log example on page 45.

Deleting Core Descriptions

- 1.) Click on the Core Description you wish to delete to highlight it.
- 2.) Right Click anywhere inside the annotation to activate the pop up menu shown below.



3.) **Click** on the **Delete** selection.

5.) Click on the

the

4.) Click anywhere outside the annotation to close down the RFT Builders.

Adding a Core Rate curve layer to the log

- 1.) Under the **Options** menu, **click** on **Log Configuration Builder** or **click** on the Log Configuration Builder button on the **Toolbar** to activate the Log Configuration Builder window.
- 2.) On the left side scroll down in the tracks portion of the window until you can highlight the Curves Track by slicking on it.
- 3.) Click on the Core Rate layer in the layers portion of the window on the lower left side of the builder to highlight it. Also notice the Layers radio button on the left side gets activated.
- 4.) On the **right** side (**Active Log**) of the **Log Configuration Builder** window, **click** on the **Drilling Rate** track to highlight it. This is the track we want to add the Core Rate layer to.

Add >>>

button and you will be prompted with the following system message, "**Do you**

want to ADD the selected (layer) from the available log to the active log?" Click on the button.

6.) This will activate a **Get Name** window with "*Core Rate*" as the name in the **New Layer Name** field. **Click** on

button and the Core Rate layer will then be added to the Drilling Rate track.

<u>Note</u>: The **Core Rate** curve has not yet been associated with the **Core Rate** layer. This will be done when the **Add Curve** window has been correctly filled in.

Exit

7.) Click on the **button** to return to the log and the log will be initialized with the new layer, which in turn will generate an **Add Curve** window.

Yes.

ÖK

Add Curve	
UWI / API: 35-139-23155	
Curve Heading	
Name: Core Rate	Curve Units: min/ft 💽
Depth Units: 🥅 💌	Null Value: -1.00000
Curve Scale	
Use 0 to 0 for the whole it Interval: 0.00 to 0.00	bg) (Left / Bottom) (Right / Top) Scale: 0.00000 to 10.00000
Backup Scale: straight shift 💌	Grid Type: Linear 💌
	OK Cancel

7.) Click on

button to add the curve layer to the Drill Rate Track.

Importing an LAS Core Rate Curve data file

- 1.) **Click** on the Drilling Rate track to make it active. You will notice a green trace around the outside of the track if done correctly.
- 2.) Use the drop down arrow in the Layer Selection List field (located at the far left side of the Selection bar), to display a list of the layers in the Drilling Rate track.
- 3.) Select the Core Rate layer to make it the <u>active</u> layer and the Layer Selection List will close automatically after you have made your selection.
- 4.) Right click on the Core Rate layer to activate a popup menu shown below for the Core Rate Curve layer.



5.) Select Import from the pop-up menu to activate a pop out menu and select LAS. This will activate the LAS Import Window.

LAS Import		
Select LAS File LAS Information LAS Version: 2.0 WRAP: No. Data Start Depth: 6071.00000 Data Stop Depth: 6105.00000 Data Null Value: -1.000000 Curves: CORE RATE .MIN/FT :	Importing to curve: Total	Gas Import START 6071.000000 STOP 6106.00000 NULL -1.000000 VUse File Interval Select curve to import OORE Replace existing curve IMPORT
		Exit

Select LAS File

- button. This will activate the Open LAS File window and locate the "Imperial Click on the 6.) Core Rate Curve.las" in the Powersuite_V12 / System directory.
- After locating the Drive and Directory where the Imperial Core Rate Curve.las file is the user must select 7.)

ÖΚ the file by **double clicking on the file name** or clicking on it once and **clicking** on the button. This will bring the file header into the LAS Import window.

- Click on the Select Curve to Import drop box and select the Core curve. 8.)
- IMPORT button. The curve will import and the window will disappear leaving the core rate 9.) Click on the curve on the layer.

Adding Coring Times to the existing Drill Rate curve...

- 1.) Select the Drill Rate curve layer from the Layer Selection List field to make Drill Rate the active layer.
- 2.) Then, Double click on the Drilling Rate track to bring up the Curve Editor window for the Drill Rate curve layer.
- 3.) Change the Auto Depth Increment from one (1) to two (2) and then enter the following values into the Curve Editor window.

6072 6074 6076 6078 6080	13.0 11.5 13.2 13.2 14.0	6084 6086 6088 6090 6092	13.0 8.5 4.8 4.4	6096 6098 6100 6102 6104	10.0 6.0 5.0 4.0 12.0
6080	14.0	6090 6092	11.0	6102	4.0 12.0
6082	13.4	6094	12.5	6106	28.0

4.) **Click** on the **Save** button to save your Drill Rate (Core Rate in min/m).

Curve ID: Dr	ill Rate / NU	JLL: -1.0	0 🛛
Measured 6028.0000 6030.0000 6032.0000 6034.0000 6036.0000 6040.0000 6044.0000 6044.0000 6044.0000 6046.0000 6050.0000 6055.0000 6055.0000 6058.0000 6058.0000 6068.0000 6068.0000 6070.0000 6077.0000 6077.0000 6077.0000 6078.0000 6078.0000 6078.0000 6078.0000 6080.00000 6080.0000 6080.00000 6080.0000 6080.0000 6080.00	Value 13.00000 7.0000 5.50000 6.00000 7.00000 7.00000 7.50000 5.50000 5.50000 5.50000 5.00000 5.00000 5.00000 12.00000 12.00000 13.00000 13.00000 13.00000 13.00000 13.00000 13.00000 13.00000 13.2 13.2 13.2 13.2 14 13.4 13 8.5		Auto. Inc. 2 Ignore NULL Single Entry Depth Value 6086.0000 4.8 Enter Delete Range Entry From Depth To Depth New 'From' Depth New 'From' Depth Shift Data

• Changing Curve Scales in the Curve Editor window.

```
Curve Scales
```

1.) Click on the **Curve Scales** button in the Curve Editor window. This will activate a Curve Scale window. We will be changing scales in our case at 6066'

Curve Scale				×
Save Undo Ne	w Del	First Prev	? Next Last Left / Bottom	Right / Top
Depth Interval	0	6066	Scale: 0	30
Backup Scale:	straight sl	hift 👤		

- 2.) **Type** in a different from Depth Interval changing the 0 to **6066** and then **click** on the **Save Button.** This will activate a System message stating Record Saved Successfully.
- 3.) **Click** on the **Start New Record button**. This will clear the window.

Curve Scale				
Save Undo Ne	w Del	First Prev	? Next Last	
	from	to	Left / Bottom	Right / Top
Depth Interval	6066	10000	Scale: 0	60
Backup Scale:	straight sł	nift 💌		

- 4.) Type in 6066 in the from depth interval field, tab, Type 10000 in the to depth interval field, tab, Type in 0 in the left / bottom scale field, Type in 60 in the right / top scale field, select strait shift from the Backup Scale drop box.
- 5.) Click on the Save button and then select Exit from the ensuing Record Saved Successfully message box.
- 6.) **Press** the **Esc key** on the keyboard or **Click** on the **Exit button** in the Curve Editor window to exit from the **Curve Editor** window. This will return you to the main log and you will now be able to view your drill rate additions and the change of scale.



Your log should now look like the log below at 1:240 or 5" scale.

Your log should now look like the log below at 1:120 or 10" scale.



Adding a Formation Top

Save Undo New De Short Lo	H First Prev ? Ne	xt Last K.B.	Ground	Casing Fla
Group: S Formation ab	antoini Ibequerqui	Boundary T Fault T	ype: ype:	
Member:		Seq#: 5850.2	Long Name Display Dep	pth:
Era mesozoic Period	Series	Subsea: 5550.2	Tops MD Prognosis:	TVD 6080
Age: million y	ears MD: TVD:	▼ Calculate Thickness	Sample: 6085 Log: Display O Prog. © Smp	6084.2
Evaluation: The Albequerqui con The Sandstone is pro quartz, trace weathered patchy brown oil staining The lower Sandstone: is sorted, subangular, quai fair intergranular porosity	isists of Sandstone with m edominately white, light gr feldspar grains, siliceous g, dull yellow fluorescence predominately white, ligh rtz, trace weathered felds (6-10%), questionable br	Annot inor Shale beds. ay, very fine to fine cement, poor interg e, fair streaming milk, it gray, very fine to n par grains, trace dar own oil staining, no	ations Samples grained, well sorted, sub ranular porosity (3-7%), s y yellow cut fluorescenc nedium grained, moderat k chert pebbles, siliceou cut fluorescence.	To Long De angular, light trace e. lely well is cement,
Conclusion: The Sands exhibit go a zone of much econom	ood hydrocarbon shows a iic interest and should be	nd excellent reservo further evaluated or	pir deleopment. This zon n downhole wireline logs	To Long De

1.) Click on Formation, under Reports, to activate the Well Formation window.

- 2.) Type ab into the Formation Short name field, tab and Type Albequerqui into the Formation Long Name field, select Mesozoic from the Era Drop down box, select Lower from the Series Drop down box, select K [Cretaceous] from the Period Drop down box, and select Santonian from the Stage Drop down box.
- 3.) Move the mouse pointer to the Prognosis TVD field and click. This will activate a cursor and type in 6080 in the Prognosis TVD Top field and press the tab key

Exit

- 4.) Type 6085 in the Sample Top (MD) field and press the tab key
- 5.) Type 6084.2 in the Sample Top (TVD) field.
- 6.) Click on the $\frac{\text{Save}}{\text{button}}$ button and select

from the ensuing Shortcut Options window.

Draw the Interpreted Lithology (Please refer to the section on Drawing Interpreted Lithology earlier in this tutorial), for the Core Descriptions, that you have already created. Your Log should look fairly similar to the log illustrated below. To draw Lithology with more accuracy you may want to change the accuracy of your mouse pointer or the screen scale accuracy to from 1 foot (default) to a more detail mouse pointer. To do this click on View menu selection, select screen scale accuracy and select from the pop-out menu.



Adding Annotations

- 1.) Click on the Drilling Rate track to make it active (highlighted in green).
- 2.) Select Eng Mud Parameters, as your active layer, from the Layer Selection List field.
- 3.) Click and drag an area within the Drilling Rate track with the left mouse button depressed on the layer to define where the annotation will be viewed which will activate the RTF Toolbars.

30 FOB: 1.1.2 RPM: 50-70 SPM: 95 VOI 65 (TVD (SSL:	60 60 60 60 <th>Color ? Basic colors: Custom colors: Custom colors: Define Custom Colors >></th> <th>ift Sh: Sh It gy, occly mot dk gy, carb, sity, pity & fis. Occ tr Sid dent fos deb. Ss strgs pred @ h, v thn <2 mm thk, s&p, vf sbrdd, arg & tt / ns. ift Ss: s&p, m gred, w srt, cht, sils cmt, fr - g intgran por), abnt brn o stng, bri yel flor, cut flor. ift Sh: It gy, occly mot dk gy, carb, sity, pity & fis. ift Ss: s&p, m - vc gred, m srt, cht, sils cmt, fr - g intgran por), abnt brn o stng, bri yel flor, cut flor.</th>	Color ? Basic colors: Custom colors: Custom colors: Define Custom Colors >>	ift Sh: Sh It gy, occly mot dk gy, carb, sity, pity & fis. Occ tr Sid dent fos deb. Ss strgs pred @ h, v thn <2 mm thk, s&p, vf sbrdd, arg & tt / ns. ift Ss: s&p, m gred, w srt, cht, sils cmt, fr - g intgran por), abnt brn o stng, bri yel flor, cut flor. ift Sh: It gy, occly mot dk gy, carb, sity, pity & fis. ift Ss: s&p, m - vc gred, m srt, cht, sils cmt, fr - g intgran por), abnt brn o stng, bri yel flor, cut flor.
30	60 60 60 60	Define Custom Colors >> OK Cancel	Pft Ss: s&p, m - vc gred, m srt, qtz, cht, tr sils cmt, g - ex (20% - 24%), v fri, v abnt brn o flor, ex stmg yel cut flor.

- 4.) Type the following into the text field in the annotation layer:
 - FOB: 1-1.2 RPM: 50-70 SPM: 95 VOL: 65
- 5.) To change the Font Color **Highlight the Text you want to change by dragging the Mouse over the text** to highlight the letters.
- 6.) Click on the *button* in the RFT Font toolbar. This will activate the color palette.
- 7.) Click on the new color and then click on the **OK** button.
- 8.) Click anywhere outside the text box to save your annotation.

Adding a Curve Fill layer to an existing log

- 1.) Click on Log Configuration Builder, under Options, or use the Log Configuration Builder button on the Toolbar to activate the Log Configuration Builder window.
- 2.) On the left side of the window, click on the Curve fill track containing the Curve fill layer.
- 3.) Click on the Curve Fill Layer, that you wish to add to your log, within the Layers section on the left side of the Log Configuration Builder window. You should notice the Clayers radio button become activated
- 4.) On the right side of the window, **highlight** the **Drill Rate** track so that you add the selected Curve Fill layer to this track.



- 5.) Click on the **button** to add the selected layer to the track on your log and the following system message will be activated, "*Do you want to ADD the selected <LAYER> from the available log to the active log?*"
- 6.) **Click** on the <u>Yes</u> **button** to activate the **Get Name** window.
- 7.) You now have the option of either renaming the layer or simply leaving it with its original name. **Type** in **ROP/TG Curve Fill**.

Note: Two layers cannot share the same name. Accordingly, no layer will be added to your track if they share the same name as a layer that already exists on the active(your) track. ÖΚ button to add the layer to your log and place its name in the active Layers list on 8.) Click on the the right side of the Log Configuration Builder window. Exit. 9.) Click on the button to get out of the Log Configuration Builder Window. . This should activate the Curve fill option window. If so skip to step 3 in the setup directions. Setting up the (2) Two Curve Fill options Once the layer has been added to your log the user can now utilize the curve fill layer. 1.) To set the Curve Fill Options the user must first make the Curve Fill Layer active. To do so the user must Click on the Drill Rate Track containing the Curve Fill layer and then selecting the ROP/TG Curve Fill layer from the Layer Selection List field at the far left of the Selection Bar. 2.) Double click anywhere within the Curve Fill or layer to activate the Curve Fill Options window. An example is shown on the next page. Set Main Curve 3.) Click on the button. This will activate a list of curves associated with this well. Select 4.) Click on the Drill Rate and then click on the button or double click on the Drill Rate Curve. Set Main Curve button. You will now view the curve name below the Set SecondaryCurve 5.) Click on the button. This will activate a list of curves associated with this well. Select 6.) Click on the Total Gas Curve and then click on the button or double click on the Total Gas Set SecondaryCurve Curve. You will now view the curve name below the button. Curve Options Portion of the Window. This information is pertaining to the Main Curve and its Curve attributes. 7.) Click on the Pattern Type down arrow and select the correct curve pattern for the main curve. The Drill Rate Curve is defaulted to PtoP (Point to Point).

- 8.) Click on the Grid Type down arrow and select the correct curve grid type for the main curve. The Drill Rate Curve is defaulted to Linear.
- Fill Options Portion of the Window (2-Two Curves)
- 9.) Click on the Fill Modes 2 Curve down arrow and select the Fill Right of Main.
- 10.) Click on the Fill Patterns down arrow and select solid foreground.
- 11.) Click on the Foreground Color down arrow and select yellow.

Curve Fill Options	
Curve fills List ID: 1 New Curve fill	
Set Main Curve Set SecondaryCurve Drill Rate Total Gas	
Curve Options Pattern Type PtoP Log Cycles: 1 Grid Type Linear	Example Main Curve (units) Second Curve (units)
Fill Options Fill Modes - 2 Curves Fill Modes - 1 Curve Fill right of main Well Path Options Width: TVD SSL Value:	
Fill Patterns	$\int $
Foreground color Background color	2
Solid Rock Fill	Save Cancel
Well Path Scale	

12.) **Click on the Save button.** The Curve Fill Options window will close and the changes you have made will be shown on the layer.

You should now have a black hatching pattern with a white foreground and the Grid showing through as seen on the log on page 52.



*** Your Log should now look like the picture shown below***

How to Print the Log

1.) Under the File menu, click on Print Log or click on the Print 🙆 button on the Toolbar to activate the Print Log window.

Note: The Title bar and all depths associated with the Print Log window are defaulted to the Depth View that Power*Core are in at the time of the activation of the Print Log window.

Print [View Mode: MD]	
Printer: CutePDF Writer	
Title Page/Legend/Tops/Surveys Page Orientation: letter portrait Options Image: Core Log Title Page Core Log Title Page TRIVISON.BMP Dorient Core Log Title Page Azimuth View	Page Margin: 0.25 Page Overlap Print Methods C Default Meta File
Multi Views	Color Options
✓ Location MapU:\ProwerSuite_V12\Location maps\anywhere map_Page_1.	 Color
Title Page Remarks This log is printed at a Scale of 1:200	C Mono
Expanded Core log and Table of top on the tail of the striplog.	Interval per Page
☐ Legend	86.36
Scale: 200 V Header V Footer	Log Width: 8.00 ''
None User-defined Interval Today Section (0.00 to 0.00) Well Section (0.00 to 0.00) Lithologu Section (6000 00 to 6106 00) User-defined Interval: 5990 to 6112 Cores Scale: 96 V Header V Footer	Print
6070.00 - 6106.00 1 Dec 12, 2012	Help Exit
✓ Formation Tops Print Quality: 600	

2.) Select the letter portrait paper orientation from the Page Orientation drop box field and the Title Page, Legend, and Formation Tops will automatically conform to the selected orientation.

<u>Note</u>: The letter or legal landscape or portrait settings selected from within the **Print Log** window will <u>NOT</u> override the paper orientation settings selected in the printer's **Properties** window. Therefore, you must also modify the paper orientation settings in your printer's **Properties** window to letter or legal landscape.

3.) Activate the **use Dynamic Legend** check box (\checkmark), if you wish to have the legend reflect only the symbols printed on the log or core portions of the printed intervals defined in the log and core portions of the print log window.

In the Log portion of the Print Log window

- 5.) **Select 200** from the scale drop box for the log to be printed out at.
- 6.) Click to activate the Header and Footer check box (IV) to print the track headers on the log.
- 7.) **Click** on **Lithology Section** to highlight it in the printing options selection box.

<u>Note</u>: The log itself must be displayed in whatever depth view you wish to print before you activate the print log window. To change the log to the desired format refer to depth view under the view pull down menu.

Page Margin The page margin field is available, primarily, when you are printing to Adobe Acrobat writer. When a numerical value in inches is typed into this field it will initiate a top and left margin for the templates (Title Page, Legend and Formation Tops) as well as a left margin for the main log.

Page Overlap Activate the **Page Overlap** check $box(\checkmark)$ if you are printing on single sheets. This will force the printer to include an additional 1/4 inch of the log at the top and bottom of each page, so that you can cut-and-paste pages manually, if you so desire.

Print Methods...

Default Activating the **Default** radio button (^{••}) forces Power*Log / Curve / Core to use a **raster or bitmap graphic printing method**. This printing method is generally used with Laser printers but not exclusively so.

Meta File Activating the Meta File radio button (^(C)) forces Power*Log / Curve / Core to use the meta file technology printing method. This printing method was developed for the newer models of printers on the market today as well as using the Adobe Acrobat Distiller or pdf printing technology.

Color Options...

Auto Activating the Auto radio button () forces Power*Log / Curve / Core to use the settings from the printer driver to printout the log.

Color Activating the Color radio button (^C) forces Power*Log / Curve / Core to override the printer driver settings and consequently Power*Log / Curve / Core assumes that you are using a color printer.

Mono Activating the Mono radio button () forces Power*Log / Curve / Core to override the printer driver settings and consequently Power*Log / Curve / Core assumes that you are using a monochrome (black and white) printer.

Interval per page field indicates how many meters of log will fit on a page of selected paper size and orientation selected in the setup as well as what log scale you are printing at. This will help indicate to the user how many pages will be required by the print job.

- 8.) Click on the Core Section 6070-6106 to highlight it.
- 9.) Select the Core log scale of 1:48 and the Core Header check box (
- 10.) Click on the Printer Setup... button to activate the Print Setup window and confirm that the correct printer settings are in effect.

<u>Note</u>: If you are printing out logs in color, you must activate the **Diffusion** or **Error Diffusion** option normally found under **Graphics** in the **Properties** window for most printers.

Print

11.) When you are ready to print your log, **click** on the

button.

<u>Note</u>: If you do exit from the **Print Log** window, you will be asked if you wish to save the print settings. If you **click** on **Yes**, the program will remember every setting that you made to the **Print Log** window and then will default to those settings the next time you enter the **Print Log** window.

Adding a Link (Attachment) to your Log

1.) In our case Right Click on the Lithology Description layer to activate the pop out menu.

	Links	×
	Save Undo New Del First Prev ? Next Last Depth 6065.00	
Change Properties (Range) List Resize to Track	File Name:	
Edit Options		~
Add / Edit / Open Link Exit	Open File in Windows® Open Folde	۶

- 2.) Select Add / Edit / Open Link from the pop out menu. This will activate a blank Links window with the depth you right clicked at.
- 3.) Click on the **button** in the Links window and you can now pick any windows compatible file. In our case I am linking the printed well file from the next section of the tutorial printed to my backup folder and then

click on the but	utton. This will fill in in the details of the File	Name and location in this window.
------------------	---	-----------------------------------

Select File to Link to	? 🛛	Links
Look in: 🛅 My Documents 💽	⇔ 🗈 📸 -	Save Undo New Del First Prev ? Next Last
Name	Size Type 🔼	· 6065.00
Imperial Tutorial Well 35-139-23155.pdf	58 KB Adobe 4	
🗐 All_Docs-V12-AUG8-12.zip	13,070 KB WinZip F	File Name: Imperial Tutorial Well 35-139-23155.pdf
😰 Manual.chm	12,109 KB Compile	
🛃 drowssap.doc	32 KB Microsol	Path: C:\Documents and Settings\R.W. Sephton\My Documents
🔤 PBN ET AL HZ PEMBINA 12-20-49-12 HZ ne	266 KB EXP File	
R PBN FT AL HZ PEMBINA 12-20-49-12 HZ.exn	266 KB 🛛 FXP Eile 🞽	Remarks:
	>	
File name: Imperial Tutorial Well 35-139-23155.pdf	Open	
Files of type: All files (*.*)	Cancel	Open File in Windows® Open Folder

4.) Now the user can Type in some remarks to tell the viewer what the file is (if the user would like to identify the

	file) and then click on the	button . This will activate the Shortcut Options Window.	
		Shortcut Options	
		Record saved successfully. Choose one of the following shortcuts.	
		Start New Record Move to Next Record Exit Cancel	
5.)	Click on the Exit k link the file to the log.	button. This will insert the paperclip symbol $\widehat{\mathbb{Q}}$ where you originally right clicked an	۱d

This concludes the Power*Log Tutorial. If you need help with specific functions or operations, please use the Table of Contents in the Power*Suite User Manual to find the desired topic or use the Search function built into the On-line Help.