Warrior Software Version 8.0 – Standard Cased Hole

# Warrior 8.0 Field Operations Manual

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Warrior software version 8.0 Standard cased hole

# **Field Operations Manual**

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#### Introduction

Warrior software Release 8.0 is a third-generation 64 / 32-bit Unicode program. The Warrior software is a mature logging environment that stresses ease of use, wide versatility, with a true multi-tasking environment. This software can also be used from a desktop to replay, recalculate and print logs from the raw data or imported data from other systems such as LAS or LIS data. The Warrior software runs on Windows Operating Systems (Currently Windows 7 32 bit or 64 bit or Windows 8 64 bit). Operators need to be familiar with Windows and logging.

The Warrior Tool Interface and Power Supply Panel is a new generation logging system. This system utilizes the USB Bus (Universal Serial Bus) along with DSP (Digital Signal Processor) technology providing the latest signal recovery technology available. This allows the PC to be upgraded independently as newer and faster PC's become available. Systems can be configured based on the services required at each site. The operator interface remains the same for each configuration, allowing the same look and feel for the operators.

The Warrior Well Logging System consists of a Tool Interface and Power Supply Panel, a computer, a printer and optional depth, line speed, line weight panel, and perforating power supply. The tool interface panel contains the necessary circuits to interface to most cased hole tools, both analog and digital. The depth encoder and line weight interfaces are built into the panel, as is the down hole tool power supply. All functions are digitally controlled from the software, with the power supply having a manual control mode. The panel incorporates data acquisition functions that interface to the host computer through the industry standard Universal Serial Bus (USB). A USB hub is also incorporated inside the panel allowing a single cable connection to the host computer. A second monitor may usually be attached to provide a Hoistman's or client's display. The system supports most thermal well log plotters and a selection of color printers.

An optional depth, line speed and line weight panel is available. This panel provides independent depth and tension measurements when powered from 12 VDC. It connects to the host computer through the USB and can be synchronized from the host depth or the host depth may be read from the depth panel.

The Probe Shooting Panel supplied by Scientific Data Systems can be set up with an option USBAUX board that allows computer control of the firing circuits so that firing is only allowed at a specified depth.

The Warrior logging system currently consists of the following components: Computer – Laptop/Desktop – with monitor, keyboard, and mouse Tool Interface and Power Supply (CP/PA/OP/SLAB) Plotter (for hard copies) Shooting Panel (optional) Depth, Line Speed and Line Tension Panel (optional) UPS (optional)

It is strongly suggested that the CPU and interface panel be run from an UPS with a capacity of approximately 1000 VA. Do not attempt to use an on-line type UPS with diesel generators unless the manufacturer specifically states that the product is suitable for this application. The switching type UPS seem to work well. Loss of data is guarded against by periodic update of the data base files, however, the use of a UPS allows the system to be shut down in an orderly manner and may also condition the line power to the system, thus eliminating problems due to a noisy power source.

This software uses the FreeImage open source image library. See <u>http://freeimage.sourceforge.net</u> for details.

FreeImage is used under the FreeImage Public License, version 1.0

# Section

## **1 Warrior Software Installation**

#### 1.1 Distribution Media

The Warrior Data Acquisition Software version 8.0 (XXXXXX) or latest is distributed on one DVD. A USB drive is installed in the panel that contains the distribution software and required licenses for Warrior 8.0 Software. The software is also downloadable in the form of a single executable file from the web site <a href="http://www.warriorsystem.com/">http://www.warriorsystem.com/</a> under **DOWNLOADS.** This file should be saved to a temporary directory and then run to expand the software into an installation folder. It also starts the installation process.

It is a fact of life that every computer system will, sooner or later; suffer a failure, such as a disk crash, where there is the potential for loss of programs and/or data. This will generally happen at the most inconvenient time. The importance of keeping current backups cannot be overemphasized. It is vital that the time be taken to keep current backups of all essential programs and data.

All Warrior systems from Scientific Data Systems are shipped with some type of mass storage device, (usually a DVD-R/W drive) which can be used for backing up programs and data. The procedure for using CD drives varies with the software supplied. Become familiar with the specific software by reading the manual or select 'Help' after starting the program. It may be useful to purchase an off the self-CD program to standardize all systems.



All files copied from a CD to a hard drive are often written as read only. Some files used by the Warrior software will not function properly as read only. To change the attribute, use Windows Explorer select the copied files, right click on the files and select properties, uncheck the 'Read Only' Attribute and click the apply button.

The warrior system is usually configured for the selection of services to be run by a given client. This information is primarily contained in three files, Warrior.ini, Services.ini, and Tools.ini. The Warrior Backup utility can do a configuration backup or restore. Most of the user editable files are included in a Configurations Backup. A configuration restore can then be done on the computer or a new computer with Warrior software installed. In addition, the three primary files are automatically backed up every time the Warrior system is used and can be restored from Warrior Backup. <u>See section 8</u> for a complete discussion of the Warrior Backup Utility.

#### 1.2 New Installation of Warrior Software.

Before the installation of the Warrior software we recommend updating the Windows operating system through the Internet connection.



Restart the computer and turn OFF the Interface Panel Power supply. Do NOT connect the Warrior Interface Panel to the computer via a USB cable before installing the Warrior 8.0 Software. This could cause problems in the later installation of hardware drivers.

The Warrior Data Acquisition Software DVDs are set up to be self-loading on most Windows Operating System computers. The Operating system must be any version of Windows 7 32-bit or 64 bit. After a fresh restart of the computer, open the CD tray, insert the Warrior Software DVD, and close the tray. The Windows Operating System will look for an autorun.inf file on the CD to start the loading procedure. The interactive menu shown in figure 1.2.2 should appear. Be sure that the CD player has stopped operating before assuming that the autorun file did not execute. There are several reasons that the autorun file may not execute. The two most like causes are the operating system may have autorun capability shut off or existing software on the computer may not allow software to run directly from the CD. Solutions for these problems will be discussed later.



FIG: 1.2.1 CD Start Detected

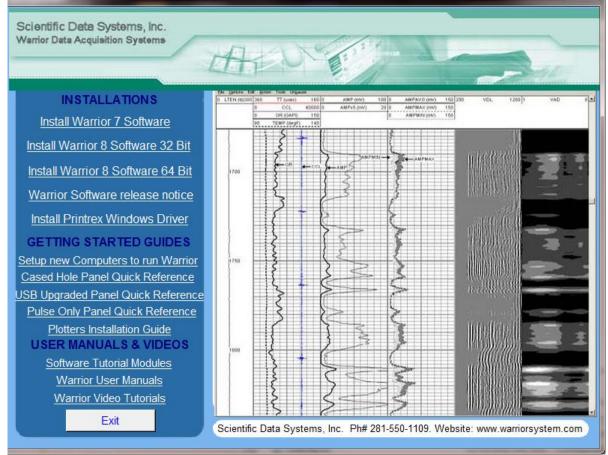


FIG: 1.2. 2 Interactive Menu

From the Interactive Menu, click on the Warrior 8 software installation that you wish to perform. The software will then do a preload to prepare for installation.



FIG: 1.2.3

The Install Shield Wizard will begin. Click on the [Next] button.

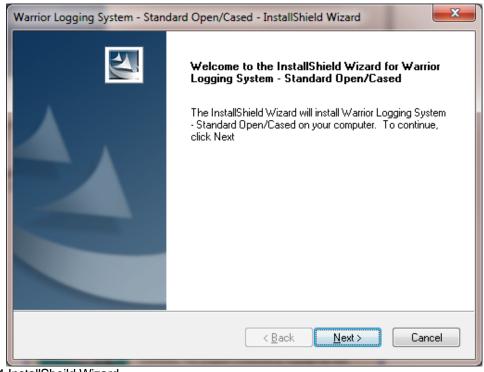


FIG: 1.2.4 InstallSheild Wizard

The folder for installing system files is then shown. The [Browse] button can be used to select an alternate folder in which to install the files. It is highly recommended that the default folder be used. Click the [Next>] button to continue.

Warrior Logging System - Standard Open/Cased - InstallShield Wizard
Choose Destination Location Select folder where setup will install files.
Setup will install Warrior Logging System - Standard Open/Cased in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\Program Files\Scientific Data Systems\Warrior\
InstallShield <u>Kancel</u> Cancel

FIG: 1.2. 5 Program file folder destination

A summary will be shown of the installation options. Click the [Next>] Button to Begin installation.

Warrior Logging System - Standard Open/Cased - InstallShield Wizard	×
Start Copying Files Review settings before copying files.	A CA
Install to C:\Program Files\Scientific Data Systems\Warrior\ Current Settings:	
Installing Warrior Logging System - Standard Open/Cased Install to C:\Program Files\Scientific Data Systems\Warrior\	*
InstallShield	
< <u>Back</u> <u>N</u> ext>	Cancel

FIG: 1.2. 6 Setup ready to install

The Install Shield wizard will now begin the process of installing the Warrior Software onto the computer.

Warrior Logging System - InstallShield Wizard	×
Setup Status	N-24
Warrior Logging System is configuring your new software installation.	
Copying files	
C:\\Backup\Config\2.28.2012.10.07.56\Sondex_STIPCH32USB.wcf	
InstallShield	Cancel

FIG: 1.2.7 Decompress and install the warrior files.

Allow the software to decompress, extract files, and create icons until it is finished.

Warrior Logging System - Insta	IIShield Wizard
	InstallShield Wizard Complete The InstallShield Wizard has successfully installed Warrior Logging System. Click Finish to exit the wizard.
	< <u>B</u> ack <b>Finish</b> Cancel



Click the [Finish] button.

Warrior Logging System - Insta	IIShield Wizard
	InstallShield Wizard Complete The InstallShield Wizard has successfully installed Warrior Logging System. Before you can use the program, you must restart your computer. Yes, I want to restart my computer now: No, I will restart my computer later. Remove any disks from their drives, and then click Finish to complete setup.
	< <u>B</u> ack <b>Finish</b> Cancel

FIG: 1.2.9 Restart Computer

Allow the computer to reboot and finish the installation procedure Remove any disk from their drives and click **[Finish]** to complete setup.

As the computer reboots, before windows starts, the final installation of the Warrior software will begin. There will be changes made to the configuration files that indicate what version of software has been installed. The Hardlock driver for the software key is installed. This may take some time, allow it to complete the Hardlock driver installation.



FIG: 1.2.10

As the SDS USB Devices Drivers are installed, you will be asked to accept the license agreement. Click **[Yes]** to continue.

S	cientific Data Systems Device Driver Installer 🛛 🔲 🗖		<
	Please read the following license agreement. Press the PAGE DOWN I to see the rest of the agreement.	key	
	SCIENTIFIC DATA SYSTEMS, INC	^	
	GENERAL TERMS AND CONDITIONS	٦	
	Effective October 1, 2007		
	The items to which these General Terms and Conditions refer are the items supplied or sold by Scientific Data Systems, Inc. (hereinafter referred to as "SDS") to the purchaser thereof (hereinafter referred to as "Buyer"). These items are sold only under the following General Terms and Conditions:		
	1. Price.	~	
	Do you accept all of the terms of the preceding License Agreement? If choose No, Install will close. To install you must accept this agreement		
	Yes <u>N</u> o		

FIG: 1.2.11

The interface panel must be turned off and disconnected from the computer before the device's drivers are installed. Click the [Next] button to continue.

Scientific Data Systems Device Driver Installer		
	Welcome to the Scientific Data Systems Device Driver Installer This wizard will install drivers for SDS USB devices. Make sure the devices are powered off before proceeding. After installation, power the devices back on to complete the process.	
	< Back Next > Cancel	

#### FIG: 1.2.12

You will get a window that shows that the devices drivers are installing. Wait for the device driver installation to be completed.

Scientific Data Systems Device Driver Installer	
Installing the drivers for Scientific Data Systems USB dev	rices
Please wait while the drivers install. This may take so	ome time to complete.
< <u>B</u> ack	Next > Cancel

#### FIG: 1.2.13

When the devices drivers have finished installing, you will be show the confirmation window. Click the **[Finish]** button to proceed. You may notice a black window momentarily flash on the screen as the Warrior Event Logger is installed and started.

Scientific Data Systems De	vice Driver Installer
	Finished installing the drivers for SDS USB devices
	The drivers were successfully installed on this computer.
	You can now connect your device to this computer. If your device came with instructions, please read them first.
	Driver Name Status
	Scientific Data Systems, Ready to use
	< Back Finish Cancel

FIG: 1.2.14

You should now attach the USB cable from the computer to the Interface Panel and then turn on the panel. The drivers for the devices should load into Windows and be ready to use in a few minutes.

### 1.3 Warrior Software Upgrade or Perform new versions.

Upgrades are released from time to time to distribute new or improved components of the software. Upgrades for Warrior Data Acquisition Software version 8.0 or latest is distributed on one DVD. Or the software is downloadable in the form of a single executable file from the web site <u>http://www.warriorsystem.com/</u> under **DOWNLOADS.** This file should be copied to a temporary directory and run to expand itself. To install the Warrior software run the SETUP.EXE.



Restart the computer and turn OFF the Interface Panel Power supply.

Do NOT connect the Warrior Interface Panel to the computer via a USB cable before installing the Warrior 8.0 Software. This could cause problems in the later installation of hardware drivers.

To install the update from DVD, Place the new version of Warrior into the CD Drive. It should auto run. If not run CD Start from the DVD. When upgrading from an existing installation, the current Warrior system program files and configuration files are saved to a backup directory. If problems occur with the new installation, the previous installation can be restored entirely. Select Upgrade from Version X.x to Version Y.y, the program files will be updated, and existing configuration files will be then retained.



FIG: 1.3.1 CD\_Start.exe found on DVD.

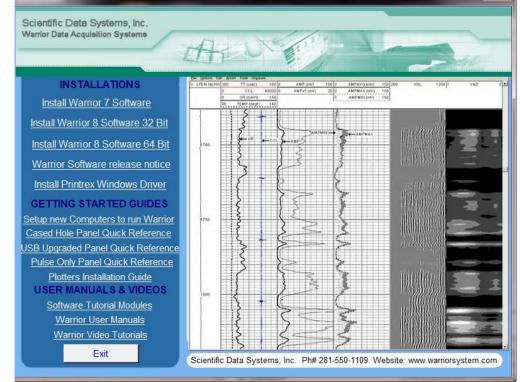


FIG: 1.3.2 Interactive Menu.

From the Interactive Menu, click on the Warrior 8 software installation that you wish to perform. The software will then do a preload to prepare for installation.

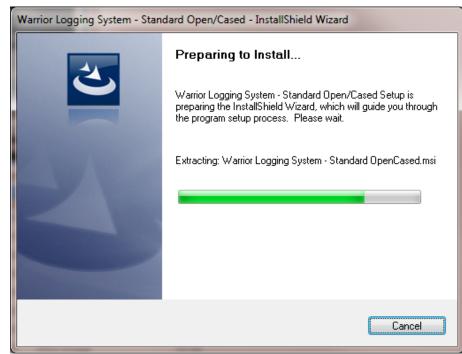


Fig. 1.3.3 Extracting preload files

You will be asked to do an upgrade or a completely new installation. Click the Upgrade button to retain current configuration setting and to upgrade program modules to new version. Click the Complete button to do a new installation, over writing any existing program configurations.

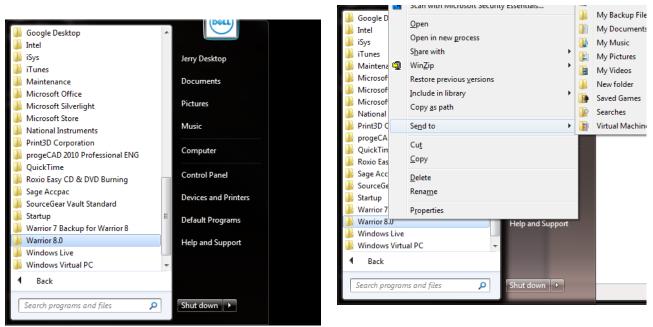
Fig. 1.3.4 Choose Upgrade to upgrade software and save current configuration settings.

Warrior Logging System - InstallShield Wizard	
Setup Status	
Warrior Logging System is configuring your new software installation.	
InstallShield	
	Cancel

Fig. 1.3.5 The rest of the installation process is the same as an initial installation.

#### 1.4 Warrior Shortcut Icon

Perhaps the easiest way to set up a short cut to a program group is using Windows Program Selection. Click on the Windows Start Button. Next, click on All Programs. Find the Warrior 8.0 program group and right click on that. Finally, select Send to -> Desktop (create shortcut)





It is recommended that the Warrior group programs be placed as a toolbar on the Windows toolbar. It is necessary to first have placed a shortcut to the Warrior program group on the desktop as done in the preceding paragraph. To add the Warrior toolbar, right click on a blank area of the Windows Toolbar. Select Toolbars >> then select New Toolbar...

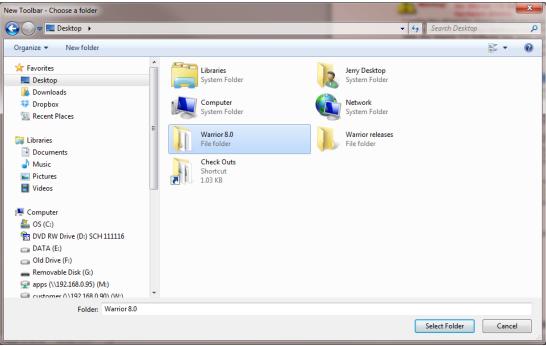


Fig. 1.4.2 Select Toolbar Folder

The window "New Toolbar – Chose a Folder" window will open. Click on Desktop to view the Desktop folders. Click on Warrior 8.0 folder then click the [Select Folder button]. You should now have a Warrior 8.0 toolbar for quick access to Warrior programs.

#### 1.5 Key Software Authorization Setup

A Warrior USB key must be attached to a USB port on the computer or be contained in the interface panel attached to a USB port on the computer for the software to operate (unless the demonstration release has been installed). In addition, the Warrior 8 key codes for the key being used must be entered the Warrior Control Panel for the key to be recognized.

From the Warrior group box, select Control Panel.





Warrior Control Panel	? ×
General Acquisition   Plot   Hot Keys/Shortcuts   Licenses   Depth.	/Tension
Show depth as Show data units as	
Feet     C Engli     Edit C Metri	
C Meters C User	defined
Use language	
English (United States)	-
└─ Warrior data directory	
C:\ProgramData\Warrior\Data\	Browse
Store realtime backups to	
F:\	Browse
C No realtime backups	
<ul> <li>Offer to make copy after each pass</li> </ul>	
O Automatically make copy after each pass	
-Version Warrior Logging System version 12.5.02001. Warrior Database API (F - 2012.5.2.1	10V0 unicode)
ОК	Cancel

FIG: 1.5.2 Warrior Control Panel

Click on the Licenses tab.

Warrior Control Panel		? ×
General Acquisition Other Ho	t Keys Licenses Depth/Tension	
Key Serial #:	U4026	
License for:	Warrior Desktop	
Code:	8881336A2BF18989 (P010V000	Save
	Import from File	
	ОК	Cancel

FIG: 1.5.3 Control Panel Licenses

Unlike the older Warrior software that required a single access code, Warrior 8.0 software requires multiple access codes for the different logging modules that get installed. Although the codes can be manually entered by typing the code for each individual license in the code box, the software can now import the codes by reading a text file and merging them into any existing codes. Click on the [Import from file] button to browse for the import file licenses.ini. With new systems, this file will be located on a USB drive installed in the Scientific Data Systems Interface panel.

🖉 🗢 👻 🗄 🕨 Computer 🔸 Removable				<b>▼ 4</b> 9 Se	arch Removable Di	
Organize 🔻 New folder						
🛠 Favorites	-	Name	Date modified	Туре	Size	
🥅 Desktop		鷆 ASPI Drivers For DAT Tapes	2/20/2012 3:57 PM	File folder		
🚺 Downloads		퉬 Brochure	2/20/2012 3:57 PM	File folder		
💝 Dropbox	-	DOC	2/20/2012 3:57 PM	File folder		
归 Recent Places	-	Modifications	2/20/2012 3:57 PM	File folder		
		퉬 PdfFiles	2/20/2012 3:58 PM	File folder		
词 Libraries		퉬 PROG	2/20/2012 3:58 PM	File folder		
Documents		RESOURCE	2/20/2012 3:58 PM	File folder		
👌 Music		🕌 ScanDisk	2/20/2012 4:11 PM	File folder		
E Pictures		🐌 Videos	2/20/2012 3:58 PM	File folder		
🚼 Videos		腸 Warrior 7 Software	2/20/2012 3:58 PM	File folder		
		腸 Warrior 8 Software 32 Bit	2/20/2012 4:01 PM	File folder		
🖳 Computer		腸 Warrior 8 Software 64 Bit	2/20/2012 4:02 PM	File folder		
🏝 OS (C:)		腸 Warrior Device Drivers	2/20/2012 3:58 PM	File folder		
髉 DVD RW Drive (D:) Warrior OH		腸 Warrior Engineering Bulletins	2/20/2012 3:58 PM	File folder		
Canal DATA (E:)		퉬 Warrior Manuals	2/20/2012 3:58 PM	File folder		
Old Drive (F:)		腸 Windows Printer Drivers	2/20/2012 3:58 PM	File folder		
👘 Removable Disk (G:)		Hot Hole 2-23-2012.conf.wbu	2/24/2012 12:13 AM	WBU File	8,970 KB	
🌗 ASPI Drivers For DAT Tapes		Licenses.ini	2/21/2012 9:43 AM	Configuration se	tt 1 KB	
Reachure	Ŧ					
File name: Licenses.ini	i				wse for Warrior bac	kup file (

Fig. 1.5.4 Browse for Licenses.ini (normally located on USB drive in interface panel)

The Control Panel will indicate whether the codes were properly imported by showing Import: OK. You can now look at each of the different License in the License for: dropdown list. The software will show the code for the license type shown.

arrior Control Panel		<b>3 ×</b>
General Acquisition Other	Hot Keys Licenses Depth/Tension	
Key Serial #:	U4026	
License for:	Warrior Desktop	
Code:	8881336A2BF18989 (P010V000	Save
	Import from File	

Fig. 1.5.5 Imported Licenses OK

#### 1.6 Warrior USB Drivers Setup

USB Warrior Drivers are now loaded upon the reboot of Windows after the Warrior Software has be installed or updated. This if why it is important not to have the Interface panel connected to the computer at that time.

After the computer has finished rebooting, connect the USB cable from the computer to the interface panel and then turn the Interface panel on. The drivers for the Warrior devices should now self-install through Windows. It is recommended to go to the Windows Device Manager and check to be sure that all devices have been properly installed.

#### 1.7 Device Manager

The device manager checks the connectivity between the Devices (Warrior Panel), USB Connection, and the computer. To get to the Windows Device Manager program in Windows 7, Click the Windows start / program button (icon) and then right click on the computer. From the list provided, select properties. You should be able to access the Device manager from this window.

Many Users place a shortcut to the Windows Device Manager on the computer desktop. To do this, first click on the Windows start / programs button, then click on Control Panel. In the upper right of the Control Panel Window, you can select to "view by:" category, large icons, or small icons. Select either the large icons or small icons. You should now be able to see the Device Manager Icon in the Window. Right click on the Device Manager Icon and select "Create Shortcut". This will put the Device Manager shortcut and icon on the computer desktop.



Fig. 1.7.1 Device Manager Shortcut and Icon

📇 Device Ma		×
File Action	n View Help	
(= =)   🖬		
⊿ 🚑 JerryD	esktop-PC	
⊳ d∎ Co		
b 👝 Dis	sk drives	
	splay adapters	
DV 🚑 DV	/D/CD-ROM drives	
> 🕼 Hu	uman Interface Devices	
👂 📺 IDI	E ATA/ATAPI controllers	
🏱 - 🚆 IEE	E 1394 Bus host controllers	
	laging devices	
⊳ 📖 Ke		
	ice and other pointing devices	
> 🧾 Me		
⊳ 💵 Me		
	etwork adapters	
Þ 🔲 Pro		
	und, video and game controllers	
	stem devices	
Un	eHome Infrared Receiver (USBCIR)	
	Generic USB Hub	
	Generic USB Hub	
· · · · ·	Generic USB Hub	
	Generic USB Hub	
i	Intel(R) ICH10 Family USB Enhanced Host Controller - 3A3A	
i		
i	Intel(R) ICH10 Family USB Universal Host Controller - 3A34	
i	-	
- ii	Intel(R) ICH10 Family USB Universal Host Controller - 3A36	
	Intel(R) ICH10 Family USB Universal Host Controller - 3A37	
	Intel(R) ICH10 Family USB Universal Host Controller - 3A38	
V	Intel(R) ICH10 Family USB Universal Host Controller - 3A39	
	Realtek USB 2.0 Card Reader	
<mark>9</mark>	SafeNet Inc. Hardlock Key	
	SafeNet Inc. USB Key	
	Scientific Data Systems CyStdFX1 Device	
····· 🖞	Scientific Data Systems LOGFX-DSP Device	
· · · · · · · · · · · · · · · · · ·	USB Composite Device	
	USB Composite Device	
	USB Printing Support	

FIG: 1.7.2 Device Manager Path

The normal devices that are connected when attached to a standard interface panel include, but are not limited to:

2 Generic USB Hubs which are the USB Hub in the Panel SafeNet Inc. Hardlock Key and SafeNet Inc. USB Key are the Warrior Software key Scientific Data Systems CyStdFX1 is the USB44 Board Scientific Data Systems LOGFX-DSP is the DSP Board

## 1.8 Creating Company Logo for Headings

For a logo to work correctly in the Warrior Standard headings, it should be twice as wide as it is high and be outlined with a heavy dark line. The actual dimensions used are not critical; it is the two to one relationship that is important so that the logo will appear in correct proportion when placed in the heading. If the logo is not outlined, it will cover the border area of the heading around the logo and make it look unusual.

Place a copy of your existing graphical image file that you wish to use as a logo into the Warrior\Config folder. The file can be a .BMP (bitmap image, .JPG (compressed picture file), .WMF (Window meta-file), .EMF (Enhanced meta-file), or .LGO (obsolete Warrior logo file). Open the Warrior Heading Editor program. Left click the mouse in the Logo area of the heading. You will get an Edit Logo window, as shown in figure 1.8.1. Click on [Change] to bring up the logo selection window, The Warrior\Config folder will be shown with all available logo selections. Select the logo that you wish to use and click on [Open]. This will be the logo that will be used in ALL files until it is changed again.

Edit Logo	100	×
Change	Remove	Cancel

FIG: 1.8.1 Edit Logo

The following is an example how to create a company logo for use on headings and log banners. If you do not have any existing graphical image for a logo, such as a JPG, TIF, or BMP, you can use most drawing program such as Windows Paint to create your LOGO image. Open the graphics program and set the size of the image to be twice as wide as it is high.

Resize		
By: 🔘	Percentage	Pixels
	Horizontal:	600
	Vertical:	300
🔽 Maintai	n aspect ratio	
Skew (Degr	ees)	
Ż	Horizontal:	0
<b>I</b>	Vertical:	0
	ок	Cancel

FIG: 1.8.2 Resize image in Windows paint

Once you have created your logo, save the file as a .JPG or .BMP to the Warrior\Config folder. You will then be able to change the logo in your heading as described above.

## Section

## 2 Windows Set Up

The Warrior Well Data Acquisition System runs in the Microsoft Windows operating system. This gives the user many powerful tools and facilities not previously available in an inexpensive logging system. One of the principle advantages is that the system is multitasking, meaning that several programs (or tasks) may be running on one computer at the same time. Within the Warrior system, for example, several different log plots may be displayed independently on the screen and other logs may be directed to plotters. Headings may be prepared, and final log presentations set up, all while continuing to acquire data.

Another advantage of the Windows environment is the graphical user interface, which presents the functions available in the system in an easy to understand manner (well, fairly easy). While the simple interface makes the Warrior easy and fast to operate, the full power of the system can only be realized when an understanding of Microsoft Windows itself has been acquired. It is therefore strongly recommended that, after some initial experimentation with the system, the Windows User Guide is studied, and the Windows Tutorials run. Courses are also available on videotape, and other media, from many sources.

#### 2.1 Windows Printer Setup

To be able to produce a hardcopy of your data from the Warrior software, a Windows printer must first be installed. The Warrior software includes the capability to print / plot to common plotters while logging but the software uses the Windows spooling to buffer the plotter output. Other plotters may be used to plot logs through Windows after data recording as stopped.

#### 2.1.1 Windows 7 Printer Installation

To facilitate this operation a USB Port has been assign on the Interface Panel (rear Plate) and marked "Plotter". It is recommended to use this USB port for your printer connection. With the printer turned off, plug in the USB cable or USB to Centronix Printer Adapter cable into the USB port. Make sure that the USB cable from the computer to the Interface Panel is properly connected. Turn the Printer On.

Windows will often install printer driver automatically. To see if Windows has installed the printer, click on the Windows start button and then click on the Device and Printers selection.



Fig. 2.1.1 Windows Start Button and Devices and Printers selection

Look in the Printers and Faxes section and see if the printer that you have connect has been automatically installed. If it hasn't been, then Windows drivers will have to be installed manually. At this point the manufacturer's drivers must be available. Drivers for black and white plotters normally supplied by Scientific Data Systems, such as Printrex and ISYS, are on the Warrior installation DVD.

									x
💽 🖉 🗟 🕨 Control Panel 🕨 Har	dware and Sound 🕨	Devices and Printers	•				<b>- 4</b> 9	Search Devices and	<b>P</b>
File Edit View Tools Help									
Add a device Add a printer								-	0
Devices (5)									-
Flash Diak Pinters and Faxes (10)	NEC LCD93VX	Sceptre X24WG	USB Receiver						ш
Brother MFC-FRADNUSB Printer	Fax	Kyocera CS-C3225 (KPDL)	Microsoft XPS Document Writer	NeuraLaserColor	Nitro PDF Creator	Printrex 843 Network	progeSOFT JPG Printer 2010	Send To OneNote 2010	
16 items									

Fig. 2.1.2 Click on Add a printer

Place the CD /DVD or other media containing the device drivers in the computer so that they are available when required during the printer installation. Click on Add a Printer in the Windows Devices and Printers window.

### Click on the Add a local printer selection

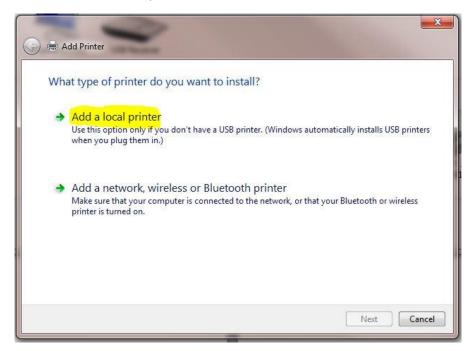


Fig. 2.1.3 Add a local printer

Click on the Use existing port selection, then drop down the scroll down printer port list to the right of the selection until you find USBxxx (Virtual printer port for USB). There may be several USB virtual printer ports, typically the highest numbered one is the last device that was plugged in to a USB Port. After selecting a USB port click the **[Next]** button.

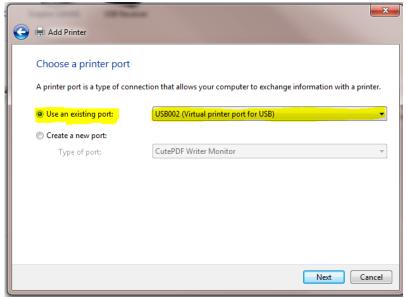


Fig. 2.1.4 Use Existing Port

The next step is to select the location of the printer driver to be installed.

🚱 🖶 Add Printer		3 Warrior Co
Install the printer driver Choose your printer from the To install the driver from an i		:k Windows Update to see more models. on CD, click Have Disk.
Manufacturer Brother Canon Epson Fuji Xerox	Brothe	s  ther DCP-116C ther DCP-117C ther DCP-128C ther DCP-129C ther DCP 130C Windows Update Have Disk
Tell me why driver signing is impo	<u>ortant</u>	Next Cancel

Fig. 2.1.5 Click [Have Disk]

The list on the left side of the window are printer manufacturers that Microsoft supports or that have previously been installed on the computer. Check the list to see if the manufacturer is in the list. If it is not in the list, click on [Have Disk ...].

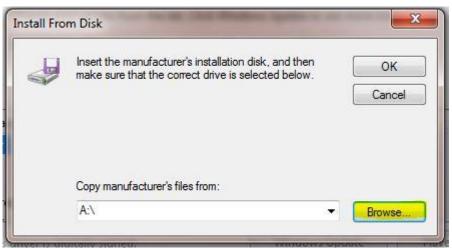


Fig. 2.1.6 Plotter Manufacturer Installation disk

Click on the [Browse ...] button to locate the drivers for the printer. The Warrior Installation CD contains drivers for the plotters that Scientific Data Systems has supplied.

Look <u>i</u> n: 🔋	win_2kxp 🔽	G 🤌 📂 🛄 🗸		
Name	Recent Items Desktop	Date modified	Туре	Si 4
🛯 📗 Chi_ 🎴	Network	12/17/2009 9:30 AM	File folder	
📗 Chi	Libraries	12/17/2009 9:30 AM	File folder	
📗 Dan	🥻 Jeny Desktop	12/17/2009 9:30 AM	File folder	
Dute	Computer	12/17/2009 9:30 AM	File folder	
Engl	CS (C:)	12/17/2009 9:30 AM	File folder	
Finn		12/17/2009 9:30 AM	File folder	
Fren	Old Drive (F:)	12/17/2009 9:30 AM	File folder	
Gerr	Removable Disk (G:)	12/17/2009 9:30 AM	File folder	-
i386	🕎 apps (\\sdsdc1) (M:)	12/17/2009 9:30 AM	File folder	
📗 Italia	customer (\\sdsdc) (W:)	12/17/2009 9:30 AM	File folder	
📗 Japa	TOMS FILES (\\Sdsdc\sds office\My Glients (\\SDSDC\Customer) (Y:)	12/17/2009 9:30 AM	File folder	
Kore	sds office (\\sdsdc) (Z:)	12/17/2009 9:30 AM	File folder	
Non	01 Neuralascr Color Printer Driver	12/17/2009 9:30 AM	File folder	
Polis	Printer	12/17/2009 9:30 AM	File folder	
Port	brivers	12/17/2009 9:30 AM	File folder	
📗 Rom	Neuralog_X64 Neuralog_X64	12/17/2009 9:30 AM	File folder	
Russ	print	12/17/2009 9:30 AM	File folder	
📗 Spar	win_2kxp	12/17/2009 9:30 AM	File folder	
1	Warrior 8.0			
	Warrior releases			
File <u>n</u> ame:	NGABR640.inf		•	<u>O</u> pen
Files of type:	Setup Information (*.inf)		-	Cancel

Fig. 2.1.7 Warrior CD

Click the Look in: drop down list in the Locate File window to find the Warrior Installation CD in the computer CD / DVD Drive and double click on it.

Look in: 🏫	DVD RW Drive (D:) SCH 111116	- 🧿 🤌 🖾 -		
Name	*	Date modified	Туре	Si
Files Curre	ntly on the Disc (16)			
📕 ASPI Dri	vers For DAT Tapes	11/16/2011 8:48 AM	File folder	
📕 Brochur	e	11/16/2011 8:48 AM	File folder	
📙 Cable to	Go USB to Serial Adapter Drivers	11/16/2011 8:48 AM	File folder	
📕 DOC		11/16/2011 8:48 AM	File folder	
📙 Modifica	ations	11/16/2011 8:48 AM	File folder	
PdfFiles		11/16/2011 8:48 AM	File folder	
📕 PROG		11/16/2011 8:48 AM	File folder	
RESOUR	CE	11/16/2011 8:49 AM	File folder	
]] Vendor I	Manuals	11/16/2011 8:49 AM	File folder	
📕 Videos		11/16/2011 8:49 AM	File folder	
退 Warrior	Device Drivers	11/16/2011 8:49 AM	File folder	
퉳 Warrior	Engineering Bulletins	11/16/2011 8:49 AM	File folder	
📕 Warrior	Manuals	11/16/2011 8:49 AM	File folder	
Warrior	Software v7.0	11/16/2011 8:49 AM	File folder	
Window	s Printer Drivers	11/16/2011 8:49 AM	File folder	Ļ
Autorun	Linf	10/10/2008 2:30 PM	Setup Information	
•	III			۲
File name:	Autorun.inf		- <u> </u>	pen
Files of type:	Setup Information (* inf)			ncel

Fig. 2.1.8 Windows Printer Drivers on Warrior DVD

Look in: 🔒	Windows Printer Drivers	- 🗿 🧊 🖽 -		
Name	*	Date modified	Туре	Size
Files Curre	ntly on the Disc (6)			
🕌 BELKIN	USB PRINTER CABLE	11/16/2011 8:49 AM	File folder	
📕 Gulton 2	275	11/16/2011 8:49 AM	File folder	
退 iTerraLit	e XP,2000 Ver1,0,0,3	11/16/2011 8:49 AM	File folder	
Printrex		11/16/2011 8:49 AM	File folder	
📕 Veritas		11/16/2011 8:49 AM	File folder	
Narrior	Tiff Driver	11/16/2011 8:49 AM	File folder	
۲ [		III		,
∢ File <u>n</u> ame:	Autorun inf		•	<u>O</u> pen

On the Warrior CD, locate the Windows Printer Drivers folder and double click on it.

Fig. 2.1.9 Printrex Drivers Folder

Locate File		-		x
Look in: 🌗	Printrex	- 🗿 🤌 📂 🎞 -		
Name	*	Date modified	Туре	Size
	tly on the Disc (3)			
amd64		11/16/2011 8:49 AM	File folder	
i386		11/16/2011 8:49 AM	File folder	
2 Proprint.i		9/2/2008 3:14 PM	Setup Information	
•	III			•
File <u>n</u> ame:	Autorun.inf		▼ Ope	n
Files of type:	Setup Information (*.inf)		Cane	cel

Select the plotter manufacturer and double click on that folder.

Fig 2.1.10 Windows Drivers information file

When the proper .inf, or setup information file has been located, click the file and then click on the [Open] Button.

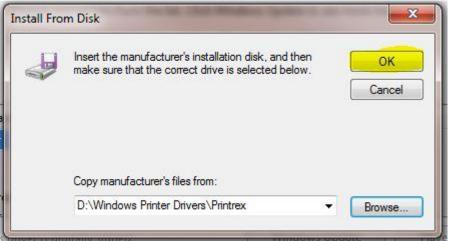


Fig 2.1.11 Opening Printrex Drivers

This should return you to the Install from Disk window with the folder with the manufacturers files selected. Click the [OK] button to continue.

Install the printer driver				
Choose your printer from the list	. Click Windov	vs Update to see more	models.	
To install the driver from an insta	allation CD, cli	:k Have Disk.		
Printers				
Printrex 840DL				
Printrex 840DL (201 Y DPI)				
Printrex 840DL/G				1
Printrex 842				
	. r			-
This driver has an Authenticode(tm) s	-	Windows Update	Have Dis	sk
Tell me why driver signing is importa				

Fig. 2.1.12 Selecting printer

You should now have a drop down list of the manufacturer's printers. Scroll down the list to find the model of the printer that in being installed and click [Next].

DDL/G driver.		
	Next	Cancel
	0DL/G driver.	

Fig. 2.1.13 Installing Printrex 840 DL/G Plotter

Either enter a new printer name or accept the printer name Windows has assigned by clicking the [Next] button.

.....

) 🖶 Add Printer			<b>1</b>
Printer Sharing			
	his printer, you must provi share name will be visible t		n use the suggested name or
Oo not share this provide the state of th	printer		
Share this printer s	that others on your netw	vork can find and use it	
Share name:			
Location:			
Comment			
			Next Cancel
			Curcer

Fig. 2.1.14

Warrior will not print through a shared printer (Warrior does print through network printers) so select the Do not share this printer option and then click [Next].

🕞 🖶 Add Printer		<b>x</b>
You've successfully added Printrex 8	340DL/G	
Set as the default printer		
To check if your printer is working properly, or test page. Print a test page	to see troubleshooting infor	mation for the printer, print a
		Finish Cancel

Fig. 2.1.15 Finish printer installation

If this is the only printer to be used on the computer, click the Set as the default printer check box.

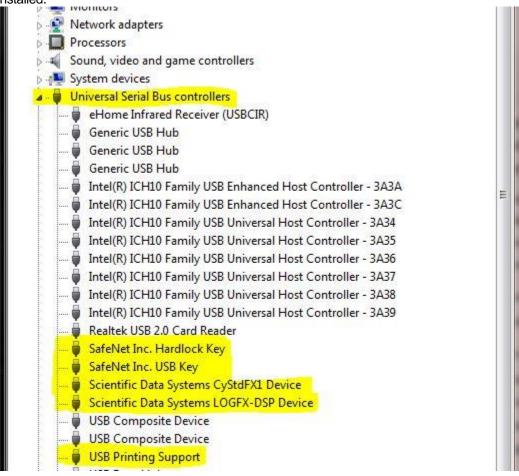
# 2.2 Create Shortcut to Device Manager on Desktop

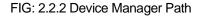
The Windows Device manager is a useful tool in determining device installation problems. It is suggested that a shortcut to the device manager be placed on the Windows desktop. To place the shortcut, click on the Windows Start button. Select All Programs. Select Accessories. Select and Open Windows Explorer. Navigate to C:\Windows\system32 and find devmgmt.msc. Right-click on the file, select Send to -> Desktop (create shortcut). Once the file is on the Windows Desktop, right click on the Icon and select Rename. Rename this shortcut to Device Manager.



FIG: 2.2.1 Device Manager Icon and renamed Icon

Double click on the Device Manager Icon to open the Device Manager. Scroll down the list to Universal Serial Bus Controllers and click the + sign beside it to expand and see what Universal Serial Bus Devices are installed.





Typical devices installed for Scientific Data Systems configurations include:

SafeNet Inc. Hardlock Key	
SafeNet Inc. USB Key	
Scientific Data Systems CyStdFX1	
Scientific Data Systems LOGFX-DSP	

Warrior software key Warrior software key USB44 Board DSP

Other Devices that also may be seen depending upon the system and peripherals:

Scientific Data Systems CYSTD	Upgrade Panel UPUSBDAC
Scientific Data Systems CYSIM	Simulator Box
Scientific Data Systems CyShPnIFX1	Shooting Panel USBAUX
Scientific Data Systems CyAuxFX1	USBAUX
Scientific Data Systems CyPipFX1	Pulse Interface Panel

# 2.3 Scientific Data Systems Device Management

The Warrior software installs the Icon Scientific Data Systems Devices in the Windows Control Panel. The control panel should be viewed as Large Icons or Small Icons to be able to see the Scientific Data Systems Device Manager. Scientific Data Systems devices can be removed and reinstalled from this program. The properties window shows all Scientific Data System devices and whether the computer has installed drivers and if the devices are currently connected.



FIG: 2.3.1 Scientific Data Systems Device in the Windows Control Panel

Scientific Data	Systems Devices	9 22	· ·	Q. 14	X
Device CYPIP CYUPIP CYPIPF1 CYUPIPF1 CYSTD CYUSTD CYUSTDF1 CYUSTDF1	Description Autoload USB Firmware Driver for CYUSB Autoload USB Firmware Driver for CYPIPF1 Autoload USB Firmware Driver for CYSTD Autoload USB Firmware Driver for CYSTDF1	Installed not installed INSTALLED INSTALLED INSTALLED INSTALLED INSTALLED INSTALLED	Connection No device connected No device connected		nnected Devices
Driver details	Select for driver	details	To reinstall driver: First power down device REINSTALL. Reboot ar device and follow instruc	nd then power up	Vista Clean Refresh
Driver verify OI	ĸ		v	ers. 2011.10.26.1	REINSTALL ALL REMOVE ALL Remove One Close

Fig. 2.3.2 Scientific Data Systems Devices

# Section

# **3 Warrior Control Panel**

The Control Panel sets certain global characteristics of the Warrior system. The Warrior Control Panel is started from its icon in the Warrior program group or via the Windows Program Menu. Warrior 8.0 now has several pages of information to set up system configurations. The pages of the Warrior Control Panel are General, Acquisition, Plot, Hot Keys, Licenses, and Depth/Tension.

## 3.1 Control Panel - General

The General page sets many of the typical settings from the Warrior 7.0 control panel.

Warrior System Control Panel ? 🛛 🗙
General       Acquisition       Plot       Hot Keys/Shortcuts       Licenses       Depth/Tension         Show depth as       Image: Show data units as         Image: Show depth data       Image: Show data units as       Image: Show data units as       Image: Show data units as         Image: Show data       Image: Show data units as       Image: Show data units as       Image: Show data units as         Image: Show data       Image: Show data units as       Image: Show data units as       Image: Show data units as         Image: Show data       Image: Show data units as       Image: Show data units as       Image: Show data units as         Image: Show data       Image: Show data units as       Image: Show data units as       Image: Show data units as         Image: Show data       Image: Show data units as       Image: Show data units as       Image: Show data units as         Image: Show data units data units as       Image: Show data units as       Image: Show data units as       Image: Show data units as         Image: Show data units data uni
Warrior data directory         C:\ProgramData\Warrior\Data\         Browse         Store realtime backups to         C:\ProgramData\Warrior\Backup Data\         Browse         O No realtime backups         O Offer to make copy after each pass         Image: Automatically make copy after each pass
Version Warrior Logging System version 14.05.23001 (64bit). Warrior Database API (P10V1 unicode) - 2014.5.23.1 OK

FIG: 3.0.1 Warrior Control Panel - General page

### 3.1.1 Show Depth as

The option buttons in the upper left set the default depth units for the system. The choices are Feet or Meters.

Show Depth as	
• Feet C Meters	

FIG: 3.1.1 Depth units

3.1.2 Show Data Units as

The "Show Data Units as" area allows the user to select one of three choices for the data units to be used. FIG: 3.1.2 Depth units

Show Data Units as			
JIIOW Data	Show Data Onits as		
English			
<u>E</u> dit	O Metric		
C User Defined			

By clicking on the [Edit] button, the user can select the actual units to be used for each of the 3 choices. Note that English units do not necessarily mean that they must be English units. This is merely a means to identify one of the three units' choices and to use those units as the defaults during program operation.

Selectable Unit Maps		-	-			×
Measurement Type	English		Metric		User Defin	ed
Depth	ft	•	m	-	ft	-
Calipers	in	•	mm	-	mm	•
Sonic Velocity	usec/ft	•	usec/m	-	usec/ft	-
Bulk Density	g/cc	•	kg/m3	-	kg/m3	•
Volume	ft3	•	m3	-	m3	•
Temperature	degF	•	degC	-	degC	•
Pressure	psi	-	kPa	-	psi	-
Speed	ft/min	•	m/min	-	m/min	•
Weight	lb	•	kg	-	lb	•
Flow Rate	b/d	•	b/d	-	b/d	•
Attenuation/Distance	db/ft	•	db/ft	-	db/ft	•
Weight/Distance	lb/ft	•	lb/ft	-	lb/ft	•
Perforation Shot Density	Shots/ft	•	Shots/ft	-	Shots/ft	-
Pressure Gradient	psi/ft	-	psi/ft	-	psi/ft	-
Weight/Volume	lb/gal	-	lb/gal	-	lb/gal	-
Porosity	pu	•	pu	-	pu	-
		0	к			

FIG: 3.1.3 Unit maps for the 3 data choices

### 3.1.3 Use Language

The drop down list allows the User to set the language of the user interface for the system. Several choices are expected to be available shortly.

Use Language	
English (United States)	-

### FIG: 3.1.4 Languages

### 3.1.4 Warrior data directory

This item indicates the current Windows directory for the default storage of Warrior database files. To change the folder, click on the [Browse] button and navigate to an existing folder or click on [Make New Folder] to create a new folder for data storage.



It is highly recommended to use the default directory of "C:\ProgramData\Warrior\Data".

Warrior data directory	
C:\ProgramData\Warrior\Data\	Browse

### FIG: 3.1.5 Default Warrior data storage folder

### 3.1.5 Setting up Real Time Backup

If something should happen to corrupt the original database through a faulty merge or recalculation, copies of the original passes would still be available. While in acquisition, recording data, at the end of a log pass, the data from that pass is copied into the backup database. The User is given three options. The first is to make no backups. The next option is to give the User a prompt asking if they want to make a copy of that pass. The final option will automatically make the backup without the prompt. The User also has the option of using the [Browse] button to select the folder to be used for storing backup databases.



It is highly recommended that real time backup files be created.

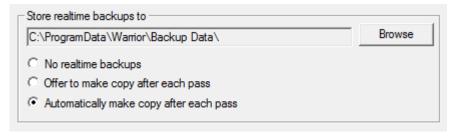


Fig. 3.1.6 Setting real time backup

Browse For Folder	
Browse for realtime backup directory	
▲ 🎍 Warrior 🔺	
De Backup	
📕 Backup Data	
Delta Config	
Critical Backup	
Data	
📔 Format	
📕 Halliburton 👻	
4	
Eolder: C:\ProgramData\Warrior\Backup Data	
Make New Folder OK Cancel	#

Fig. 3.1.7 Setting real time backup directory

3.1.6 Current Warrior Software Version

The currently installed Warrior Software version is shown on the bottom of the General page in the Warrior Control Panel.

Version		
Warrior Logging System version unicode) - 2014.5.23.1	14.05.23001 (64bit).	Warrior Database API (P10V1

Fig. 3.1.8 Current Warrior Software version

# 3.2 Control Panel - Acquisition

The acquistion page of the Warrior control Panel sets up many of the general settings that are used while acquiring data.

Warrior System Co	ontrol Panel ? ×	
General Acquisition Plot Hot Keys/Shortcu	ts   Licenses   Depth/Tension	
Panel type CPFE   External Power	Cable selection Dummy Cable Add Remove ine resistance 100.0 Ohm Set	
Refresh monitors every	Default font for gauges	
Waveforms         500         msec           Numerics         1000         msec	Arial	
Options         Iv       Load up tool string editor automatically at service load.         Iv       Wam about losing depth, if moving.         Font for Acquisition window.       It for the form the service loads.         Iv       If perforating service, pop up message with tool zero point when service loads.         Iv       Make Acquisition window always on top of other windows.         Iv       Update with max range of data at log stop.         Default log depth scale       10         Default log time rate       10		
	ОК	

Fig. 3.2.1 Warrior Control Panel - Acquistion page

### 3.2.1 Acquisition system settings

The Panel Type is read from the Warrior Software key that is stored in the panel and reflects the hardware that is currently installed in the panel. This should be grayed out so that the User cannot inadvertently change the panel type. If different revisions of boards are installed in the panel, contact Scientific Data Systems for directions on how to change the panel type to reflect the board changes.

Acq. system settings		
Panel type	CPFH	$\overline{\nabla}$

Fig. 3.2.2 Panel type setting

### 3.2.2 Refresh Monitor settings

The User has control over how often the Waveform windows and numeric windows such as monitoring outputs or sensors are refreshed. The default settings for refreshing windows is 1000 msec, or once per second. Be aware that while putting a lower value in for these settings will refresh the windows faster, that it will also put a lot of overhead computing power on the computer to do this and may slow down the response of the computer.

Refresh monitors every			
Waveforms	500	msec	
Numerics	1000	msec	

Fig. 3.2.3 Monitor Refresh settings.

### 3.2.3 Cable Selection Settings

The User can specify different cables to be used. This way each cable can have different settings for use as in a split drum unit or moving the computer among different units.

-Cable selection -	
Dummy Cable	•
Add	Remove
Line resistance	100.0 Ohm Set

Fig. 3.2.4 Cable Selection settings.

New cables can be added to the drop down list of cable selections by clicking the [Add] button. An "Add new Cable Type" window will come up. The User can then type in any description to identify the new cable type. When the [OK] button is clicked, the new description will be added to the cable selection drop down list.

Add new Cable Type	<b>x</b>
New Cable Type Description	
	OK Cancel
	]

Fig. 3.2.5 Entering new cable description.

Existing cables may be removed from the drop down list by first selecting the cable to be removed and then clicking the [Remove] button. A confirmation window will come up to confirm removal of the selected cable. Each cable in the drop down list can have its own line resistance setting. To assign a line resistance to a line, select the line, enter the line resistance in ohms, and then click the [Set] button to assign that resistance to the cable selected. Line resistance is a User defined value. Most services will have HVOLTA as an output. HVOLTA is computed by taking the TCURR output (tool current) and multiplying by the Line resistance value and then subtracting this value from the TVOLT output (tool voltage) to give an apparent head voltage. Note that HVOLTA will not be accurate unless the tool voltage and tool current are properly calibrated, and the line resistance is the correct value for the line being used.

It is a given fact the the phisical characteristics of a cable can effect the shape of signals on the cable. By adding the SignalType control keyword to a service, different cables can each have different line filter settings for that service. The User would be allowed to select a cable type that would then set cetain filter setting for specific signal types. This is discussed further in <u>Section 16</u>

### 3.2.3 Default Font for Gauges

The dropdown list allows the User to select the Windows font that he would like to use for gauges in Acquisition.

Default font for gauges -	
Arial	•
[Allal	•

Fig. 3.2.6 Setting Font for Gauges

### 3.2.4 Other Acquisition Options

There are several other options that may be set from the acquisition that would affect how the Warrior software would work.

The first option is to show the tool string editor automatically when a service is selected. The tools to be included in the tool string are shown when the service is loaded into the software in the tool editor window. The tools chosen will affect what outputs are available, what the sensor offsets for each output are, what filtering is used on the outputs, and what the calibrations are used for an output.



# It is highly recommended that this option be checked and the tool string editor used every time the service is started so that the User looks at the tools in the string.

If the "Warn about losing depth if moving" box is checked, the software will issue a warning if the depth is changing while a service would be loading. There is a short period of time while the software is loading that depth pulses to the panel would be missed. For the typical User in the field, this box should be checked.

The User may select the font that is used in the Acquisition window by clicking the [Edit font] button. This brings up a dialog window that allow the font, font style, and size to be selected. The selected font will then be used in the Acquisition window.

If a service has been made available for perforating in the Service Editor, then checking the "if perforating service . . " box will have the service pop up a message with the zero point of the tool string when the service loads.

By checking the next box, the Acquisition window will always be on top even if other windows are moved over it. If the Depth window is selected to always be on top also, then it could cover the acquisition window if the depth window is moved over the acquisition window.

The update with max range of data check box changes the start and stop depth of a log pass from the encoder depths when the pass was started and stopped to the maximum output depths at the start and at the end of a log pass.

The default log depth scale is the number of feet of well log per foot of paper. The standard in the US is 240 ft of log per foot of paper or 100 foot per 5 inches.

The default log time scale is the number of seconds of log per inch of paper. The default setting of 10 will give 10 seconds of log for 1 inch of paper or 120 seconds of log per fool of paper.

The log time rate is the default for the number of data sample to be recorded to the database per second. The default rate of 10 works well in most instances.

Options	
✓ Load up tool string editor automatically at service load.	
☐ Wam about losing depth, if moving.	
Font for Acquisition window. Might need smaller font size for all text to fit in Acquisition window.	Edit font
F If perforating service, pop up message with tool zero point when service,	vice loads.
Make Acquisition window always on top of other windows.	
Update with max range of data at log stop.	
Default log depth scale	240
Default log time scale	10
Default log time rate	10

Fig. 3.2.7 Other option settings for Acquistion

# 3.3 Control Panel – Plot

The plot page of the Warrior Control Panel is used to setup plotters and allow the User to set up many of the parameters and functions used by Warrior software in the plotting of logs.

3.3.1 Plotting – Gridline Setup

Plotting	
<u>G</u> ridline Setup	Printer Setup

### Fig. 3.3.1 Plotting Setup

The plotting of horizontal depth gridlines can be set up by adjusting the scale factors for the gridlines. If the vertical scale resolution on the plot is less than the maximum compression ratio, and the scale resolution is greater than the minimum compression ratio, than the gridline will be plotted. Separate gridline setups can be kept for English depth, Metric depth, and a time log.

In the setup shown in Fig. 3.3.2, the 50 foot depth line will be on the plot unless the scale is less than 12000 (.1"/100ft). The 10 foot depth line will plot when the scale is less than 2400 (.5"/100ft). The 2 foot depth line will only plot when the scale is less than 480 (2.5"/100ft). A 20 scale (60"/100ft ) will not have two foot depth lines since they have a minimum range of 25, but it will have 1 foot depth lines since the 20 scale is less than the 1.0 foot maximum of 25.

Hor	Horizontal Gridline Setup 🛛 ? 🛛 🗙		
English Depth Metric	Depth Time		
For each output frequency available, enter the highest compression ratio for which a gridline should be displayed.			
Frequency (foot)	Max. Comp. Ratio	Min. Comp. Ratio	
50.0	11999 2399	0	
2.0	479	25	
1.0	25 0	0	
0.5	0	0	
Set to Defaults	Ad	d Remove	
	ОК	Cancel <u>A</u> pply	

FIG: 3.3.2 Horizontal Gridline Setup

### 3.3.2 Plotting – Printer Setup

There are two different plotting modes that Warrior software can use to plot data. In the Direct Print mode, printer drivers contained in the Warrior Software allow real time printing while acquiring data and use only the Windows spooling function. In Windows mode, the Warrior software prints the data through the Windows installed printer drivers. <u>Windows mode should not be used for real time printing.</u>

For good quality color prints, or to print to a printer that is not in the list of supported Direct Print mode printers, select the option "Enable printing through Windows printer". If you have that option checked, then when you print from Warrior, you will see either (Direct) or (Windows) label for each printer in the list of printers to print to.

### Direct to Printer

Printers supported for Direct printing by Warrior, also have Windows drivers, so when a Direct Printer is installed; the Windows driver must be installed as well for printer spooling. When selecting a printer name, as would be done during a printer selection in Windows programs, Warrior can use the port properties you set up for that printer through the standard Windows printer setup, so the port name doesn't have to be specified in two different places. When a Windows name is specified, then the Port Name doesn't need to be changed in Warrior, as it will use the same port that is set up through your standard Windows printer setup. When using Direct printing, settings, such as media type, plot speed, etc., are all controlled by Warrior software directly, not by the Windows printer driver.

Printers supported by Warrior Software for monochrome printing Direct: Printrex 820 and 820 DL and the 840 DL/G or 843 DL/G and 920 (<u>www.printrex.com</u>) ISys V8.5 or V8.5e (<u>www.isys-group.com</u>)

Printers supported by Warrior Software for color printing Direct: Epson Stylus Color 900 Epson Stylus Color 1520 Epson Stylus Color 3000 Epson Stylus Color C60, C80, C82, C84 HP DesignJet 750C, 1050C HP LaserJet 5L

In addition, PDF and image (TIFF) file can also be made directly.

Installed Printers	
Direct to Printer	Windows Printing
Printer Names Warrior printer name	Enable printing through Windows printer
	<b></b>
Printrex843    Default	Windows printing options for above printer
Name of this printer as seen by Windows printing Required if not printing to file	Have printer do orientation
Printrex 843   Properties	Origin for printing
	Gap to start of print ( inches )
Since you have a Windows printer selected, change your printer port from	Windows page length is > 15
the Windows printer settings.	Length for headings, pictures, etc. ( inches )
Port	Force black grid lines
Name USB001Use with standard printer ports & SDS Burfet	Darkness for horizontal grid lines
Driver port Plotter Cards & USB parallel ports	Darkness for vertical grid lines
Gridlines	Left margin ( inches )
Darkness for horizontal grid lines	Right margin ( inches )
Darkness for vertical grid lines	Source resolution (smaller = faster print )
	Override printer bits/pixel setting
	Windows Config Find This Printer on USB Port
Install Remove Warrior Config	Show network printers in Windows printer list
Note: To print while logging you must print to one of the Direct printers	Color map Printing help Save Changes Close

Fig. 3.3.3 Warrior Control panel Printer Setup

### Printing through Windows Printing

While logging, it is possible to print to a Windows printer. However, printing hardcopy of your pass that you are currently logging is not possible do to Windows printing full pages at a time. SDS cannot guarantee that all printers will work properly for making prints from Warrior, therefore a list of tested printers that are able to make continuous prints, is available. The Windows printing options are settings that may change from one printer to the next. However, most of the settings are set by SDS, so they should not be changed. Some printers place a large gap at the start of a print, so a print gap is added during start of print, so the first fan fold can be skipped, and a distance can be added to get the <fold here> to come out in the right place. When using Windows printing, settings, such as media type, plot speed, etc., are all controlled by the Windows printer driver.

### 3.3.3 Plotting – Installing a Direct Warrior Printer

From the Warrior Control Panel, click the Plot tab. From the plot sheet, click on the [Printer Setup] button. From the Installed Printers window, select the [Install] button at the bottom of the page for a list of printers supported by Warrior for direct printing while logging.

Installed Printers	
Direct to Printers         Direct to Printer         Printer Names         Warrior printer name         Printrex843         Name of this printer as seen by Windows printing         Required if not printing to file         Printrex 843         Printrex 843         Printrex 843         Variation         Since you have a Windows printer selected, change your printer port from the Windows printer settings.         Port	Windows Printing         Image: Enable printing through Windows printer         Image: Windows printing options for above printer         Have printer do orientation         Origin for printing         Gap to start of print (inches )         Windows page length is > 15         Length for headings, pictures, etc. (inches )
Name USB001  Driver port Use with standard printer ports & SDS Buffered Plotter Cards & USB parallel Gridlines	Force black grid lines       1         Darkness for horizontal grid lines       1         Darkness for vertical grid lines       1         Left margin (inches)
Darkness for horizontal grid lines     2 ÷       Darkness for vertical grid lines     1 ÷	Right margin (inches )         Source resolution (smaller = faster print )         Override printer bits/pixel setting         Windows Config         Find This Printer on USB Port
Install         Remove         Warrior Config           Note: To print while logging you must print to one of the Direct printers	Image: Color map       Printing help       Save Changes       Close

Fig. 3.3.4 Warrior Installed Printers Setup

🙀 Install Printer	×
Printer	
	<b>7</b>
	K_
Install	Cancel

FIG: 3.3.5 Install Printer

Open the Drop- down list to view the list of printers. Note that there is a scroll bar to the side of the list to scroll up and down to view all the selectable printers.

💓 Install Printer	×
Printer	
	•
TIFF File	
Veritas	
VeritasE	
Printrex	▼

### FIG: 3.3.6 Install Printer

In this example we will select Printrex for the Printrex 840 DL/G.

🙀 Install Printer	×
Printer	
Printrex	•
I	
Install	Cancel

### FIG: 3.3.7 Install Printer

Click the [Install] button to select the printer shown for installation.

Printrex 820 Plotter	Configuration	×
Media	Paper	•
Paper speed	Full	•
Film speed	Half	•
Sensitivity	Low	•
Width	8.375	
Height	12.5	
	🔽 Top of Form	I
Top margin (inches)	0.1	
TOF marker offset (inc	hes) 0.625	
TOF marker thickness	(inches) 0.25	
Save	Close	

FIG: 3.3.8 Printrex 820/840 Plotter Configuration

The Plotter Configuration window for the plotter selected will now open. In this example, the Media can be paper or film. Depending upon the media selected, the plotter will run at either the paper speed or the film speed. The sensitivity setting controls the heat selection for the thermal paper or film that is installed. A low sensitivity will increase the heat setting. For fan fold printing, set the printer page height to twice the size of one fan fold page.

Some of the Windows printers may require a value to be entered for the "Gap to start of print". Having a nonzero value will cause the printer to advance the paper that distance, so the first fan fold page may be blank in order to position the print head to the proper place.

Select [Save] to save the plotter configuration.

One physical plotter in a system can be installed under different names and each installation can then have different configuration settings and/or printer calibrations. To install multiple configurations for the same physical plotter, start the installation by clicking the [Install] on the lower portion of the screen. Find and select the plotter in the drop- down list. If that plotter name already exists in the list of installed plotters, you will be given the option of entering a new name. Click the [Rename] button to continue to the configuration window for that plotter name.

Printer Printrex843 already installed		
Enter new name for printer		
Printrex Film		
Rename	Cancel	

Fig. 3.3.9 Entering Second plotter name for existing plotter

Once the plotter has been selected and installed, the plotter used for windows spooling needs to be selected. This plotter must already have been installed in windows as discussed in <u>section 2.1</u>.

installed Printers	<u>^</u>
Direct to Printer	Windows Printing
Printer Names	Enable printing through Windows printer
Warrior printer name	
Printrex 🔽 Default	
Name of this printer as each built (indeue printing	Windows printing options for above printer
Name of this printer as seen by Windows printing. Required if not printing to file.	Have printer do orientation
	Origin for printing
Printrex 840DL/G	Gap to start of print ( inches )
Port	Windows page length is > 15"
Name LPT1:	Length for headings, pictures, etc. ( inches )
Driver port32 Use with standard printer ports & SDS Buffered Plotter Cards & USB parallel ports	Darkness for horizontal grid lines
	Darkness for vertical grid lines
	Find This Printer on USB port
Install Remove Config	Show network printers in hardcopy Windows printer list
Note: To print while logging you must print to one of the Direct printers	Printing Help Save Changes Close

### FIG: 3.3.10 Installed Printers

Select the Drop-down list for the Name of this printer as seen by Windows printers and select the Windows installed printer. If no plotter is selected, you will get the plotter may be off-line error message when you try to print from Warrior.

Installed Printers	
Direct to Printer	Windows Printing
Printer Names Warrior printer name	Enable printing through Windows printer
Printrex  C Default Name of this printer as seen by Windows printing. Required if not printing to file.	Windows printing options for above printer Have printer do orientation
Printrex 840DL/G Properties	Gap to start of print (inches )
Port	Windows page length is > 15"
Name USB001	Length for headings, pictures, etc. ( inches )
Driver port32 Use with standard printer ports & SDS Buffered Plotter Cards & USB parallel ports	Darkness for horizontal grid lines     1       Darkness for vertical grid lines     1
	Find This Printer on USB port
Install Remove Config	Show network printers in hardcopy Windows printer list
lote: To print while logging you must print to one of the Direct printers	Printing Help Save Changes Close

### FIG: 3.3.11 Installed Printers

Select [Save Changes] to save the installed plotter and its configuration settings.

### 3.3.4 Printing to PDF

Warrior supports direct printing to PDF files through its own driver. Before creating a PDF output, determine what the customer intends to do with the file and configure the PDF configuration options accordingly. If it is intended only to view the PDF on the screen, then the driver should be set to Continuous Viewable Image and Color. If the customer intends to print the PDF, then it should be set to Continuous Printable Image and Color or Monochrome, depending on the printer being used. In addition, it may be important to set the page size to match the page size of the customer's printer; otherwise gaps between pages can appear. Furthermore, there is a tradeoff between file size and quality. The higher the dpi setting, the better the quality normally, but the file size is larger. Some experimentation may be required with the customer to produce optimal results. This is also true for the selected compression mode. For most situations, FLATE compression works well.

### 3.3.5 Printing to TIFF

Warrior also supports direct printing to TIFF files through its own driver. Again, determine what the file is intended for and configure the driver accordingly. Note that the driver supports TIFF single continuous pages of longer than 90 inches. However, many TIFF applications (including Warrior fax) do not support this, so before increasing the maximum page length make sure that the customer can read such files.

### 3.3.6 Windows Printing

Check "Enable printing through Windows printer." When this box is checked, either a (Direct) or (Windows) label for each available printer is shown when printing from Warrior.

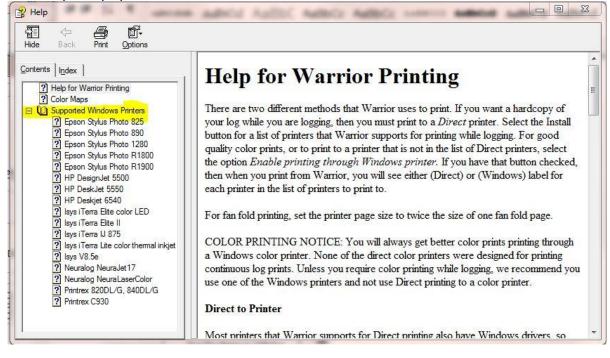
COLOR PRINTING NOTICE: You will always get better color prints printing through a Windows color printer. None of the direct color printers were designed for printing continuous log prints. Unless you require color printing while logging, we recommend you use one of the Windows printers and not use Direct printing to a color printer.

There are several settings that need to be set to achieve a quality print using Windows printers. By clicking on [Printing Help] you can read further about settings.

2211	Enable printing through Windows printer
- M	indows printing options for above printer
н	ave printer do orientation
0	igin for printing
G	ap to start of print (inches)
V	/indows page length is > 15
	Length for headings, pictures, etc. (inches)
F	prce black grid lines
D	arkness for horizontal grid lines
D	arkness for vertical grid lines
Le	ft margin (inches)
R	ght margin (inches)
Se	ource resolution (smaller = faster print )
0	verride printer bits/pixel setting
	Windows Config Find This Printer on USB Port
	Show network printers in Windows printer list

### Fig. 3.3.12 Printing Help

If you click on the Supported Windows Printers, a list of printers will drop down. If you click on one of the listed printers, settings for Windows printing from Warrior will be shown. In addition, suggested settings for the Windows printer properties will be listed.



### Fig. 3.3.13 Supported Windows Printers

Source Resolution: If it takes a long time to print to your Windows printer, try setting this to a lower value. The default is 1. A lower value may degrade the print quality, so test with your printer to find the optimal setting. You may be able to use a higher Windows printer resolution (600 or 720 dpi) and use a Source Resolution of 1/2 or 1/3 and still get a quality print.

### 3.3.7 Finding Printer

We recommend connect the Printer/Plotter in the same USB port but if you do not know which port to use, you can find the USB port where the printer is connected. This will work for printers that print only through Windows or for printers that use the Windows spooler for direct printing through Warrior.

Installed Printers	
Direct to Printer	Windows Printing
Printer Names Warrior printer name	Enable printing through Windows printer
Printrex  Violation Default Name of this printer as seen by Windows printing. Required if not printing to file.	Printrex 840DL/G windows printing options for above printer Have printer do orientation
Printrex 840DL/G Properties	Origin for printing Gap to start of print (inches )
Port Name USB001	Windows page length is > 15"       Length for headings, pictures, etc. ( inches )
Driver port32 Use with standard printer ports & SDS Buffered Plotter Cards & USB parallel ports	Darkness for horizontal grid lines 1
	Find This Printer on USB port
Install Remove Config	Show network printers in hardcopy Windows printer list
lote: To print while logging you must print to one of the Direct printers	Printing Help Save Changes Close

### FIG: 3.3.14 Installed Printers

Select on the Drop-down the Printer that you wish to find what USB port it is attached to. In this case Printrex 840DL/G.

Installed Printers	×
Direct to Printer	Windows Printing
Printer Names Warrior printer name Printrex V Default	Enable printing through Windows printer     Printrex 840DL/G     Windows printing options for above printer
Required if not printing to file.           Printrex 840DL/G   Properties	Have printer do orientation     Image: Comparison of the start of print (inches )       Origin for print (inches )     0.0
Port	Windows page length is > 15"
Driver port32 Use with standard printer ports & SDS Buffered Plotter Cards & USB parallel ports	Darkness for horizontal grid lines     1       Darkness for vertical grid lines     1
Install Remove Config	Find This Printer on USB port
Note: To print while logging you must print to one of the Direct printers	Printing Help Save Changes Close

### FIG: 3.3.15 Installed Printers

Click on the [Find this Printer on USB port] button. The find printer dialog box will come up. At time, it is important to disconnect any plotter that is not the plotter that you are trying to locate. A sample test page will be sent to the plotter and if the plotter is not the correct plotter being tested it may generate large amounts of wasted paper.

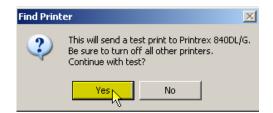


FIG: 3.3.16 Find Printer

Select [Yes] to start the test. Several USB ports may be tested before what the software thinks is the correct port is found.

Testing printer or	1 USB002	×	4
Did test	print come oul	.?	
Yes 📐	No	Cancel	

### FIG: 3.3.17 Testing Printer

If the test print comes out, select [Yes]. The software will automatically set the Windows printer to the shown port. The confirmation that the printer is connected to USB002 is then shown. Select [OK] to continue.

Printer found 🔀
Printrex 840DL/G has been set to USB002
<u> </u>

### FIG: 3.3.18 Printer Found

If you received the message shown in Fig. 3.3.7 and the test print did not come out and it did not come out after the rest of the USB ports have been tested, then it is possible that something may be wrong with that port. One common problem is that there may be prints in the print queue that are ahead of the test print. To check this, check the Windows Devices and Printers and check the status of the printer and make sure there is nothing pending.

Once the setup and configuration of the Windows printers has been completed, If Windows printers are not to be used, uncheck the Enable printing through Windows printer check box. On the left side, again select the Warrior printer name drop down list and select the default printer and the Window printer that it will use for Windows spooling. Check the Default check box to save it as the default printer when printing through Warrior.

Before leaving the Printer Setup, click the [Save Changes] button and then the [Close] button.

Direct to Printer		Windows Printing	
Printer Names Warrior printer name	🔽 Default	Enable printing through Windows printer     Printrex 840DL/G     Windows printing options for above printer-	•
Name of this printer as seen by Windows printing. Required if not printing to file.		Have printer do orientation	
Printrex 840DL/G	Properties	Origin for printing Gap to start of print (inches)	0.0
Port		Windows page length is > 15" Length for headings, pictures, etc. (inche	
Driver Use with standard printer ports & SE Plotter Cards & USB parallel ports	DS Buffered	Darkness for horizontal grid lines	1 🗄
		Darkness for vertical grid lines	1 📑
Install Remove	Config	Show network printers in hardcopy Wind	ows printer list

### FIG: 3.3.19 Installed Printers

Direct to Printer	Windows Printing
Warrior printer name	Enable printing through Windows printer      Printrex 840DL/G
Printrex	Windows printing options for above printer
Printrex 840DL/G  Properties Properties	Have printer do orientation         Image: Comparison of the printing           Origin for printing         1
	Gap to start of print (inches)
Port Name USB002	Windows page length is > 15"           Length for headings, pictures, etc. (inches)
Driver Use with standard printer ports & SDS Buffered Plotter Cards & USB parallel ports	Darkness for horizontal grid lines
	Darkness for vertical grid lines
	Find This Printer on USB po
Install Remove Config	Show network printers in hardcopy Windows printer list

FIG: 3.3.20 Installed Printers

irect to Printer	Windows Printing
Warrior printer name	Enable printing through Windows printer
Printrex 🔽 🔽 Default	Printrex 840DL/G
Name of this printer as seen by Windows printing. Required if not printing to file.	Windows printing options for above printer Have printer do orientation
Printrex 840DL/G    Properties	Origin for printing
	Gap to st of print (inches )
Port	Windows page length is > 15"
Name USB002	Length for headings, pictures, etc. ( inches )
Driver port32 Use with standard printer ports & SDS Buffered Plotter Cards & USB parallel ports	Darkness for horizontal grid lines
	Darkness for vertical grid lines
	Find This Printer on USB port
Install Remove Config	Show network printers in hardcopy Windows printer list

FIG: 3.3.21 Installed Printers

### 3.3.8 Plotting – Options

Options			
Monitor USB port while printing - if timeout then ask to try other ports.			
Wait this long on USB printing to see if print job 10 started ok (seconds).			
Cenpoll ONLY - Check printer status for paper, selected, or error. Uncheck this if you cannot print.			
Default heading			
stdopen.hdg	Browse		
Default banner			
title.wlb	Browse		
,			

FIG: 3.3.22 Other plotting options

If the Monitor USB port while printing is checked, then if the software does not receive a response from the plotter within the time that is specified, a prompt to try other USB ports will be shown. It is highly recommended that this box be checked.

Some plotters that are connected to the computer via parallel port may require that the status of the plotter not be checked. This is only for specific plotters such as an older Gulton that are connected to a parallel port and not a USB port.

The default heading that is used in the Heading Editor may be selected by click the [Browse] button. All the headings in the C:\ProgramData\Warrior\Format\ folder will be shown. The User can select any heading and install it as the default by clicking the [OK] button. Similarly, the default log banner may be selected by its [Browse] button.

3.3.9 Plotting – Service Company

The text that is entered in this field will appear in LAS files as the Service Company Name.

Service company -		

Fig. 3.3.23

## 3.4 Control Panel – Hot Keys / Shortcuts

This page allows the User to change the "Hot Keys" for certain Warrior functions such as using F9 to start an "Action – Record Up" from the Acquisition window. There is also an option to have the software create and place short cuts for the Warrior\Config\ folder and the current Warrior Data folder in the Favorites section of Windows Explorer.

General Acquisition Plot	Hot Keys/Shortcuts Licenses Depth/Tension
Hot keys	
Record Up	VK_F9 -
Record Down	VK_F10 -
Start Time Log	VK_F11 -
Start Tracer Ejection	<ctrl> + VK_F8</ctrl>
CCL Shift	VK_F8 -

FIG: 3.4. Hot Key setup

# 3.5 Control Panel - Licenses

The first functionality of this section of the Warrior Control Panel is to show the key number of the Warrior Software key that is attached to the computer, either directly or through the USB hub in the interface panel. This is shown in the Key serial #: window as #Uxxxx, where the xxxx is the key. If no key is currently seen by the software, you will see "NOKEY" in the window.

General Acquisition	Plot Hot Keys/Shortcuts Licenses Depth/Tension
Key serial #:	U4026
License for:	Warrior Desktop
Code:	8881336A2BF18989 (P010V000 Save
	Import from File

FIG: 3.5.1 Warrior Key License Codes

Unlike previous versions of Warrior Software that required a single license code, the Warrior 8 software has a different code for each of the software module types. In the "License for:" drop down list is the list of available Warrior Software licenses. When a license type has been selected, the "Code:" window will show the license code for the key serial # that is shown. If no license has been entered the code will be blank. The User has the option of hand entering the 16 digit hexadecimal code for a license and saving it, much like previous version of Warrior. Due to the number of codes that must be entered correctly for all the software permissions, the User can now import multiple codes for multiple software keys at the same time by clicking on the [Import from File] button and selecting the proper license file supplied by Scientific Data Systems.

# 3.6 Control Panel – Depth / Tension

Warrior System Control Panel		? ×	
General Acquisition Plot	Hot Keys/Shortcuts   Licenses	Depth/Tension	
Input			
Depth input from:	Warrior Panel	▼	
Line tension from:		<b>_</b>	
Depth			
Number of decimals for depth	display ( 1 or 2 only ).	1 🗄	
How often to refresh depth (r	nilliseconds ).	500	
Make depth window alwa	ys on top of other windows.		
Speed is positive when lo	Speed is positive when logging up		
		ОК	
	_		

FIG: 3.6.1 Warrior Control Panel - Depth / Tension

The input section of the Depth / Tension page of the Warrior Control panel allows the User to specify the signal input used for both Depth and Tension. At the present time, depth can come from the Interface panel encoder input or from the ASEP Smart Monitor. Tension can come from the interface tension input, line load module input (AUX1 BNC), or the ASEP Smart Monitor.

Input		
Depth input from:	Warrior Panel	•
Line tension from:	Load Cell	-

FIG: 3.6.2 Depth and Tension input selection

There are several other options for displaying the depth window. The depth may be displayed with 1 decimal point (0.0, normally used when depth is in feet), or with 2 decimal points (0.00, used when depth is in meters). The normal refresh rate of the depth window is 500 milliseconds. This can be changed by the User to be updated more or less often.

The "Make depth window always on top of other windows" check box will force the depth window to always be on top no matter what its position is.

The software normally shows speed as a negative value when logging up (depth decreasing). By checking the "Speed is positive when logging up" box, the value will be positive as depth decreases.

Number of decimals for depth display (1 or 2 only).	1 🚦
How often to refresh depth (milliseconds).	500
Make depth window always on top of other windows.	
Speed is positive when logging up	

FIG: 3.6.3 Depth display options

# Section

# **4 Acquisition**

Acquisition is the main logging or data acquisition subset of the Warrior system. It acquires data from the hardware I/O devices, stores the raw data in the Warrior database and provides all the normal well logging functionality. When necessary, it also automatically starts other Warrior programs to perform additional functions in an integrated manner. In the Warrior System group, choose the Acquisition icon. (Double-click the icon,). Note SDS sets up the software to display a Warrior System group on the desktop. However, the program group is also available via the Start button.

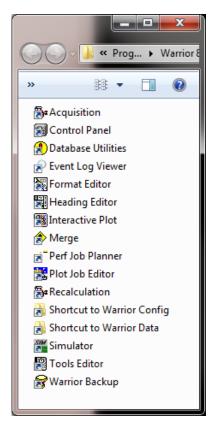


FIG: 4.1 Acquisition



Never switch off or disconnect a panel if Acquisition is running; always exit Acquisition first. Unpredictable results may occur if communication is lost with a panel during an Acquisition session.

Warrior is sensitive to USB devices being disconnected while it is running. USB devices can disconnect automatically when a computer goes into standby, so it is recommended that all standby/sleep/hibernate functions on the computer are disabled when using Warrior, not forgetting that closing the lid on laptop computers often puts them into standby as well.

# 4.1 Acquisition – Depth Control

When Acquisition is started, the Warrior Logging System Acquisition menu box will appear, along with the depth display. The Depth window displays the current depth and the line speed and has a **[Control]** button that causes the **Depth Control** window to be displayed.



FIG: 4.2 Depth Display

Click on the **[Control]** button of the **Depth** window or hit Enter when the Depth window is active. The **Depth Control** window appears as shown in Fig: 4.3. Enter the current depth in the **New Depth** field and click on **[Apply]** (or use the keyboard **Enter** key).

Depth Control	×
Depth New Depth 5000 © Feet C Meters	
Depth Panel None  Panel Type	Connect
🔽 Update to depth panel	Get
Differential 0.0	Mute
Hoist Config Apply	Close

FIG: 4.3 Apply to Set Depth

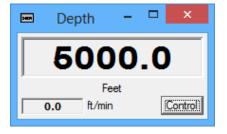


FIG: 4.4 Depth reset

The **Depth Panel** setting should normally be left at **None**; it is only used when there is a Scientific Data Systems stand-alone depth panel attached to the system. Refer to Depth Panel manual for settings. The Scientific Data Systems Depth, Tension, and Line Speed panel is connected via a **USB** port, select USB, if there is not panel available select **None** option.

	Depth Control		×
Depth New Depth Feet	C Meters		
Depth Pane	Panel Type	Conne	ct
None COM1 COM2 USB	o depth panel	Get Mute	
Hoist Config Apply Close			se

### FIG: 4.5 Depth Panel Type

To configure the Depth Control, click on the [Config] button to access the Parameters and Alarms menu.

Depth Control	×	
Depth New Depth 5000 Feet C Meters		
Depth Panel None 🖵 Panel Type	Connect	
✓ Update to depth panel Differential 0.0	Get Mute	
Hoist Config Apply Close		

FIG: 4.6 Depth Control Configurations.

The depth control box may be displayed at any time by clicking the Control button of the depth display; however, the New Depth, Correction, Encoder Resolution and the Wheel Size parameters may not be changed while logging.

The Depth Configuration window enables configuration of the depth from an encoder input. The depth simulator that was available in previous versions of Warrior is no longer implemented since this was basically the same as a time drive log.

The measuring wheel correction, the encoder characteristics, nominal wheel size (distance per encoder revolution), encoder direction, and speed direction are entered from this dialog box.

Parameters for the Scientific Data Systems Depth, Tension, and Line Speed panel (if it installed) may also be entered or read by clicking the **[Get]** button.

Depth Configuration	n X
Parameters	
Correction D	Ft/1000
Encoder Res. 120	Pulse/Rev
Wheel Size 1	Ft/Rev
Reverse	Apply
For up log, logging :	speed is positive
Depth Panel	
Depth Scale Factor	
Speed Scale Factor	
Divider (JP5 setting)	
🗖 Reverse	Get
Perf stop depth range Within +/- 0.3	ft
Close	Alarms

### FIG: 4.7 Depth Configuration window

If the system has a Scientific Data Systems USBAUX device attached to the shooting panel, the tolerance range for enabling of firing the panel may be adjusted in the **Perf stop depth range**.

The **[Alarms**] button brings up the Warrior Alarms edit window. This allows the User to set the values, and tolerance for differential alarms, and to active the alarm by checking the On/Off box for that alarm. When the alarm is activated, the computer will normally beep through the speaker. By clicking on the three dots browse button to the right of the **Sound file name** for each alarm the User can elect to play back a .WAV file for the alarm warning. Under the **Differential Alarms** section are two depth alarms that have editable name fields. These can be used for alarms such as Packer, Seating Nipple, etc.

			Ec	dit War	rior Alarn	ns	
Alams							
	Name	Value		Units	On/Off	Warning dialog	Sound file name
Surface Proximity		100		ft	<b>V</b>	V	
Line Overspeed		0		ft/min			
Line Tension		3000		Ь			
Differential Alarms							
Name		Value	Differential	Units	On/Off	Warning dialog	Sound file name
Total Depth		0	0	] ft			
Depth	Depth Warning	25	1	] ft			
Depth	Depth Warning	75	1	] ft			
Logging speed		40	5	ft/min			
Differential Weight		0	90000	в			
							Cancel Save

FIG: 4.8 Edit Warrior Alarms window

By clicking on the **[Hoist**] button in the **Depth Control** window, the Warrior System **Hoistman's Display** will come up. The Hoistman's Display contains depth and gauges for Depth, Line Tension, and Line Speed. The scales for each of the gauges may be individually scaled by right clicking on the gauge.

Depth Control	<u> </u>
Depth New Depth • Feet O Meters	
Depth Panel	Connect
Update to depth panel	Get
Differential 0.0	Mute
Hoist Config Apply	Close

FIG: 4.9 Click [Hoist] for Hoistman's Display

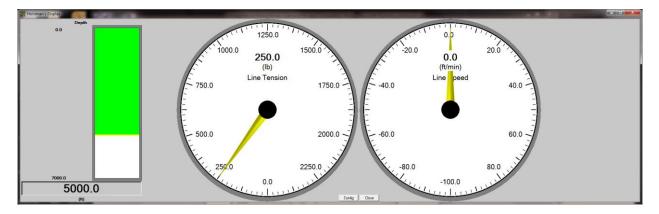


FIG: 4.10 Warrior System Hoistman's Display

# 4.2 Acquisition - File

The following options can be selected in File: Select Dataset, Load variables, About, Exit, Close All.

<u>3</u> - v	arrior Lo	ogging S	5 <b>ys</b> te	m	<u> </u>
Ne	Service		Edit	Monitor	
VSelect Dataset Load Variables					
About		Mo	de		
Exit Close All					

FIG: 4.11 Acquisition File Options.

### 4.2.1 Select Dataset

The Warrior well log database can (optionally) contain data from many wells, and within each well, data from many log passes. Each log pass is stored in a dataset. The dataset contains not only log data, but also other information about the logs, e.g. calibration and tool data.

Select Dataset Soad Variables
About
Exit Close All

FIG: 4.12 Select Dataset.

The system requires a Windows compliant file name to be defined for the database file within which the data is to be stored. The structure of the Warrior log database allows datasets to be defined by field, well, run and pass. The user may optionally choose to insert in the various fields of the **Select Dataset** window, abbreviations of the actual field and well names. The run number and pass may also be entered, or they may be used to identify some other features of the dataset.

As an example, when running production logging, multiple passes are normally made, and can be difficult to identify later, if the dataset definition is left with the default entries. Another approach is to use the run field to identify the tool being run, e.g. field/well/temperature/pass1. The pass number will automatically increment every time a log is started.

If desired, modify the remaining fields to reflect the actual well and log information. Click on OK or hit ENTER.

Select Dataset			×
Select Database	Well_3		ЛОК
Select Field Name	Good		Cancel
Select Well Name	OIL	-	
Select Run Name	Temp	_	Reopen existing database
Select Pass Name	pass1		
Recalc Output			

FIG: 4.13 Select Dataset

Enter a compliant file name in the Select Database field If desired, modify the remaining fields to reflect the actual well and log information. Click on **OK** or hit **ENTER**.

🕉 Warrior Logging System	- D ×
File Service Action Edit Monitor	
Service: None Database: c:\warrior\data\ <mark>well_3.dk</mark> Dataset: Good/OIL/Temp/pass1 Realtime Acquisition Mode	1

FIG: 4.14 Dataset Values

The file names may contain only the following characters:



Numbers (0,1-9) Letters (A-Z, a-z) Blank (Theoretically you can have spaces) ASCII characters greater than 127

The user may choose to store all data from a field in one file, or only the data from one log pass, or any intermediate level depending on the requirements. The usual procedure is to store all the data from one job in one file. In this way it is simple to back up the data to another directory before leaving the well site. Data may be merged into a single log file, or split into several files using the Merge program, to be described elsewhere.

#### 4.2.2 Load variables

This option allows you to load Zoned Variables from previous database passes. This is particularly useful when repeating runs but creating a new database. Load Variables from the other Dataset, enabling depth dependent parameters associated with the selected service to be zoned and values to be set.

Select Dataset
Load Variables
About
Exit
Close All

FIG: 4.15 Load Variables

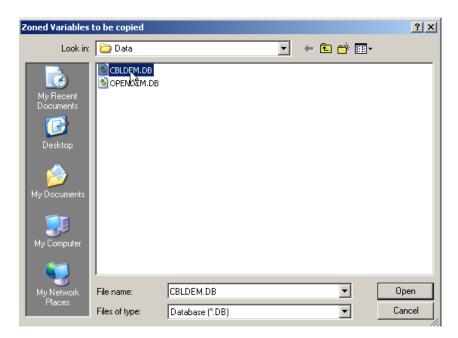


FIG: 4.16 Load Dataset Values

Zoned Variables to	pe copied	×
Current Database:	C:\Warrior\Data\CBLDEM.DB	
Current Dataset:	/field/well/run1/pass1	
/field/well/run1/pass	1 Database	]

FIG: 4.17 Dataset Values run1/pass1

4.2.3 About Shows the Software version installed in your computer



FIG: 4.18 Select About

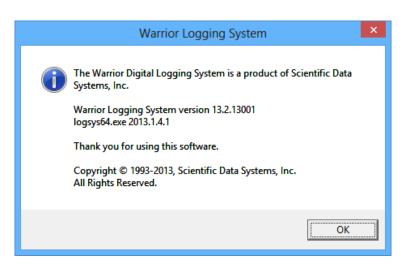


FIG: 4.19 Show the Version Warrior Software

### 4.2.4 Exit

Closes the program in the standard Windows manner. Exit the acquisition window.

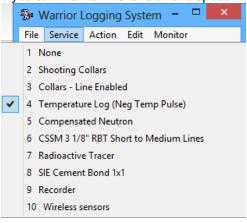
#### 4.2.5 Close All

Closes all windows that have been opened in a Warrior Acquisition session.

# 4.3 Acquisition - Service

In the Warrior acquisition window click on **Service** and select the desired service from the drop down box. The services can be customized using 'Edit Logging Service Details', in Warrior Utilities.

**None** is typically the service that is loaded by default when the Acquisition module starts. Usually the None Service contains no tools (except the tool STD that is a standard "tool" that should be included in every service). It will display depth, and you can monitor line tension and speed.





When any other service is selected by clicking on it, the tool string editor will appear. The importance of examining the tool string for the correct serial number and placement for each tool cannot be emphasized enough. Length, and sensor offsets will be calculated and calibrations for the selected tool serial numbers will be loaded. If the tool string is not correct than sensor offsets will not be correct. If the correct serial number is not selected, then the calibrations for the desired tool will not be used. The tool string editor will be discussed in further detail in the Acquisition -> Edit -> Tool String section

Tool String E	ditor						
Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)	E- D Tools
GR	3.88	Properties Remove Change		3.00	1.69	20.00	
CCL	2.38		CCL-SDSCCL (SDS) CCL For Testing	1.00	1.69	10.00	
TEMP FIG: 4.	0.58 3.2 Too		TEMP-1.375TEMP (0001) Temperature Tool	1.88	1.38	30.00	

After the service has been loaded, the selected service or service title will be listed on the service line in the acquisition window.

🖫 Warrior Logging System 📃 🗆 🗙				
File Service	Acting Edit Monitor			
Database: Dataset:	mma-Temp(Pos Grpul quisition Mode	se/Neg temp		

FIG: 4.3.2 Warrior Logging System

# 4.4 Acquisition - Action



FIG: 4.4.1 Acquisition – Action - Power Control

# 4.4.1 Power Control

Select Power Control from the **Action** menu. The Power Control window appears as shown below. Select the **Enable** box.

Note: Tool voltage and tool current must be calibrated.

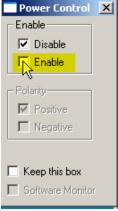


FIG: 4.4.2 Power Control

🔲 Outputs			;
Name	Source	Value	Units
LSPD	[STD]	0.0000	ft/min
LTEN	[STD]	1.9720	Ь
TCURR	[STD]	-0.0714	mA
TVOLT	[STD]	-0.0718	۷
ELTIM	[STD]	12.0800	sec
ADPTH	[STD]	4668.7251	ft
MINMK	[STD]	0.0000	
LTENRT	[STD]	1.9720	Ь
DLTENRT	[STD]	-0.0003	Ь
LSPDRT	[STD]	0.0000	ft/min
HVOLTA	[STD]	0.0000	۷

FIG: 4.4.3 TCURR Outputs

When the Tool Current (TCURR) is less of 10 mA for a Time period more than 10 seconds, the tool power supply relay is set to the power **disabled** position.

The Tool Current Open set point value (10mA) is set in wproperties.ini along with several other default values. These values can be controlled in each individual service by adding controls in the Service Editor.

Warrior L	ogging System
⚠	Warning: Open line suspected; less than 10 ma for too long Tool Power has been cut off automatically.
	ОК

FIG: 4.4.4 Open Line Warning

The Service Editor allows the User to adjust many of these power control values in each specific service. This is done by adding a Control through a Control Key Word and a value.

#### **NoMonitor**= True to completely disable power monitoring)

**External**= True will allow monitoring (if TVOLT and/or TCURR are measured), but only pop-up message; no cutoff

SoftPowerControl=No. If Yes, then the power control slider bars will be enabled in the service

#### Numeric entries:

**OverCurrent**= Maximum allowable TCURR milliamps, 0 = disable over current monitoring.

**OverVoltage**= Maximum allowable TVOLT volts, 0 = disable over voltage monitoring. **OverDissipation**= Maximum allowable TVOLT/TCURR watts, 0 = disable over dissipation monitoring. **ShortVoltage**= Minimum TVOLT volts that must be reached before the ShortCurrent value exceeds it set limit.

**ShortCurrent**= Maximum TCURR milliamps for short-circuit detection before ShortVoltage is reached. 0 = disable short monitoring

**OpenCurrent**= Minimum TCURR milliamps, 0=disable OpenCurrent monitoring. **OpenTime**= Maximum time interval for open-line detection, either 0 = disable OpenCurrent monitoring defaulted to 10 milliamp and 15 seconds.

#### Text entries:

ActionOnTrip= 'None' will cause the system to do nothing when a power "error" is detected. 'Cut off will cause the system to disable power with no message. 'Warn' will provide the User with a message that there has been a power "error. 'Cut off and warn' will disable tool power and provide the User with a message why the power was disabled.

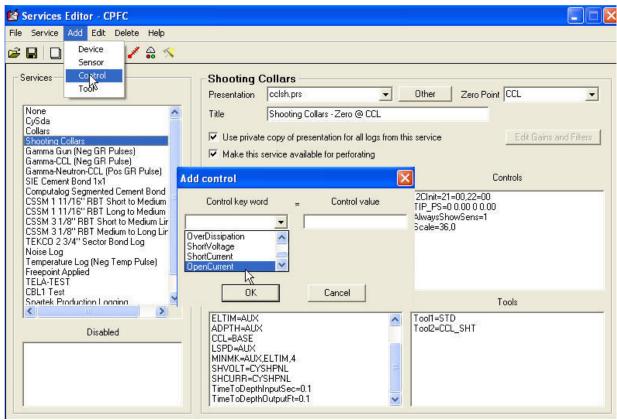


FIG: 4.4.5 Add Controls

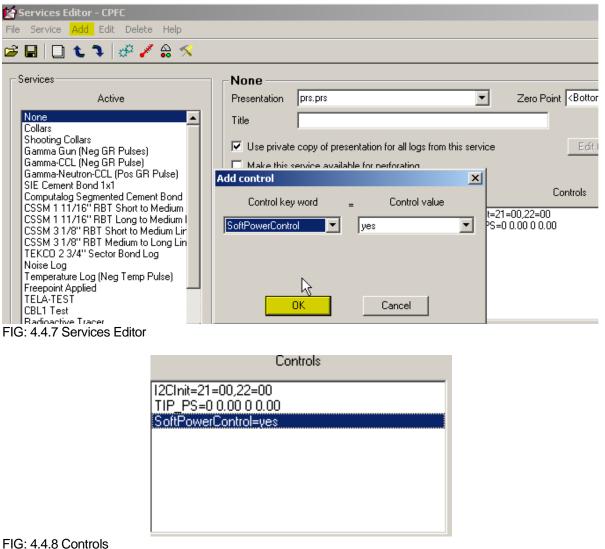


#### FIG: 4.4.6 Power Control

When the Warrior system is invoked or the service is changed, the tool power supply relay is set to the power **disabled** position. Clicking the **Enable** button sets the relay to the enabled position and allows tool power to be applied to the wireline. Clicking **Disable** disconnects the power supply from the line and connects the line input to chassis ground.

The user may choose to have the Power Control box remain open whenever an action is taken by selecting Keep this box. Otherwise the box will close when any action is taken.

In order to Enable the software Power Control, go to Services Editor, select the service, ADD control, select SoftPowerControl, and Save.



The Acquisition software module monitors the output current and voltage, and the power dissipation within the tool power supply. It checks for over voltage, over current, excessive power dissipation and short circuit conditions. If any fault condition is detected the power supply will be disconnected from the line and a warning message displayed.

Power Control	-	-		x
Enable	]		Max.	•
			**	
- Polarity	1			
Positive				
Negative		•		•
	NEG	0.00	POS	0.00
Software Monito			Apply	1
Ramp Rate V		100.00	Γ	100.00

FIG: 4.4.9 Line Enable

The **Polarity** section of the window controls the polarity of the line voltage with respect to ground. Clicking the appropriate button, causing the polarity relay to switch, may change the polarity. In order to switch the polarity of the power supply from the Power Control window the Interface Panel Polarity Switch must be in the **Auto** position.

The line power can also be controlled from Power Control window. Entering a percentage of the line power into the relevant textbox and clicking on the **Apply** button can adjust the level.

You can also use the scroll bars as an alternative.

For a few tools, the line power needs to be ramped up gradually before reaching its maximum. You can enter a **Ramp Rate** in Volts per second in the textbox provided to protect these tools. The ramp rate must be a non-zero value for the soft power controls to function.

#### 4.4.2 Caliper Control

This function is for Open Hole tools to Open and Close the Caliper.

# 4.4.3 Relay Control

The relay control is for opened Hole tools to switch the down tool from log mode to Calibration Mode or reference Mode.

#### 4.4.4 Calibrate

Invokes calibration procedures for tools in the service.

Note that in order to record a post survey calibration a log pass must be generated after performing the calibration. In order to include the post survey calibration in the Plot Job this log pass must be selected when selecting the post survey calibration.

#### 4.4.5 Verify

Invokes verification procedures for various tools in the service.

Note that in order to record post survey verification a log pass must be generated after performing the verification. In order to include the post survey verification in the Plot Job this log pass must be selected when selecting the post survey verification.

#### 4.4.6 Plot Cal Report

Allow you to print out all the calibrations information for all the tools in the current string. Print out the calibration report at the end of the Log.

# 4.4.7 Record Up

The plot may be paused by using the **Pause** button and terminated by reselecting **Unpause**. The plot may be paused at any time and the scroll bar, used to move back through the log to any zone of interest. When moving the scroll bar, the actual log depth, corresponding to the scroll bar position, is indicated in a box in the center of the log plot window. A popup window opens by right clicking on the plot, displaying all the curve's values (Log readings) at the mouse position.

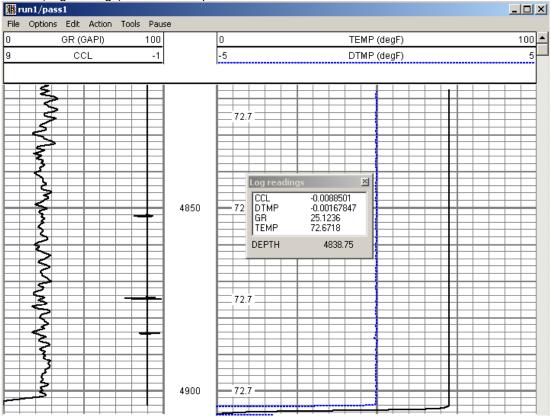
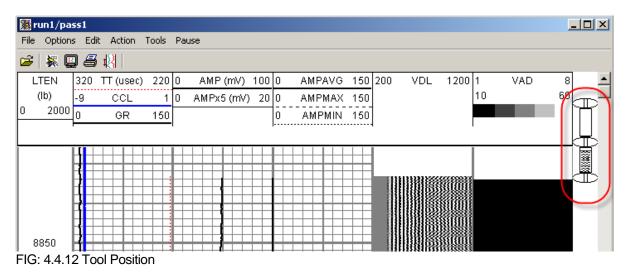


FIG: 4.4.10 Record Up GR/CCL/TEMP

<b>File</b>	n1/pass1 O <mark>rtions</mark> Edit Acti	on Tools Pause							_ 🗆 🗙
<b>2</b>	× 9 8 4								
1 - 1	EN 320 TT () Presentation Opt	iser) 22010 ions	AMP ()	איז 100 ח איז			VDL 1200	) 1 VAD 10	8 <b>▲</b> 60
0	Start At Stop At	8881.17		<< Maxi	mize	150			
8:	Presentation File Vertical Scale	scbl.PRS 240	•	<< Brov ( 5'' / 100' )	wse				
	English Depth     Metric Depth     Time     Other	Up     Down     Normal Speed     Fast Speed	O Me	glish Units tric Units er Defined					
		n curves on curves on screen on curves on screen	-	icopy					
	Show tool posite Use private co	tion py of presentation wi	th this lo	9	OK Cancel				

### FIG: 4.4.11 Options



# This option show the tool position



#### FIG: 4.4.13 Tool Position ON/OFF

4.4.8 Record Down Starts logging down.

#### 4.4.9 Record on Time

Sets record on time reference mode. You will be prompted for the sampling rate in samples per second for fast sampling; or seconds per sample for slow sampling.

4.4.10 Replay Replays data from current database.

4.4.11 Independent Replay

Replays data from any database.

#### 4.4.12 Depth Shift

Makes a linear shift to the depth reference on a data file.

This feature is intended to provide a rapid tie-in capability by applying a linear depth shift to a dataset. Once a section of log has been made and is displayed on the screen, select **Depth Shift** from the Action menu. The window shown in Fig:4.4.15 below appears. Or **Apply Linear Depth Shift** function is also available from the **Utilities** program in the Warrior shortcut folder.



FIG: 4.4.14 Depth Shift

Depth Shift Pa	355	×	Depth	
Database File:	c:\warrior\data\test.db		500	0.0
Pass:	/field/well/run1/pass1		000	0.0
Feet		NApply	Fee	et
C Meters			0.0 Spee	ed Control
Amount of shift:	100 ft (-= Uphole)	Select Data	8	
Shift current	Encoder Depth also	Cancel		

FIG: 4.4.15 Down Hole Depth Shift 100 ft.

The database and pass are defaulted to those of the last logged section. The **Feet** or **Meters** selection is defaulted to that set in the **Control Panel**.

Enter the required depth shift for the file and click **Apply**. Note that a positive number, entered here, **increases** the overall depth of the file. The screen plot of the file is now automatically redrawn, reflecting the applied depth shift

Depth Shift P	ass 🕂	×	🔤 Depth	-OX
Database File:	c:\warrior\data\test.db		510	0.0
Pass:	/field/well/run1/pass1		1 010	0.0
Feet     Meters     Amount of shift:    I		Apply	Fe	CALL INCOME.
		Select Data	J 0.0 Shee	
	t Encoder Depth also	Cancel		

# FIG: 4.4.16 Set Depth Shift 100 ft.

Add 100 Ft. Depth Shift P	ass 📝	×	Depth	-OX
Database File:	c:\warrior\data\test.db		510	0.0
Pass:	/field/well/run1/pass1		,	0.0
Feet		Apply	Fe	
C Meters			0.0 Spe	ed <u>Control</u>
Amount of shift:	-100 ft (- = Uphole)	Select Data		
🔽 Shift curren	t Encoder Depth also	Cancel		

FIG: 4.4.17 Up Hole Depth Shift -100 ft

Subtract 100 Ft.

Depth Shift P	ass	×	Depth	
Database File:	c:\warrior\data\test.db		500	0.00
Pass:	/field/well/run1/pass1		000	0.0
<ul> <li>Feet</li> <li>Meters</li> <li>Amount of shift:</li> </ul>	0 ft (-= Uphole)	Apply Select Data	<u> </u>	Feet
	t Encoder Depth also	Cancel		

# FIG: 4.4.18 Set Depth Shift -100 ft

The current encoder depth will be automatically updated when the **Shift current Encoder Depth also** box is selected. This is the default when the depth shift is run from Acquisition.

Note also that the shift may be made while logging; and that the encoder depth and log display will update accordingly. This facility may be used to apply a linear depth shift to log data, other than the current database. This can be achieved by using the **Select Data** button to bring up a file selection box. Ensure that the **Shift current Encoder Depth also** box is not selected, unless it is required to update the system depth.

#### 4.4.13 Preview Up

Allows viewing of the log on screen (Interactive Plot) or hardcopy without permanently recording data to disk.

#### 4.4.14 Preview Down

Allows viewing of the log on screen (Interactive Plot) or hardcopy without permanently recording data to disk.

#### 4.4.15 Preview on Time

Allows viewing of the log on screen (Interactive Plot) or hardcopy without permanently recording data to disk.



In Preview mode, data is being recorded in a special database called Preview. db. When the last program attached to Preview. dB is closed this database is automatically deleted.

There is no way to recover Preview. dB once it has deleted.

# 4.5 Acquisition - Edit

# 4.5.1 Edit - Tool String

The tool string editor will appear. The correct serial number and placement for each tool should be verified. Select save, depth offsets will be calculated and calibrations for the selected tool serial numbers will be loaded.

The Tool String Editor allows a tool string to be built from within the constraints of the selected service. Tools of the correct model may be selected by serial number and placed in the required physical position in the tool string. A tool string diagram is presented on the screen and may also be included in the hardcopy output by including in the plot job. Once the tool string has been assembled, the sensor offsets are automatically calculated using information stored in a tools database.

Note that a service will include one or more tools. The tools, which are included in a service, are defined in the services.ini file. Only those tools defined in the services.ini file may be entered the tool string with the tool String Editor.

ystem	_ [
Edit Monitor	
Tool String	
Wariables	
Heading	
Master Log Format	
Plot Job	
Sensors	
Calibrations	
Filters	
Tool Configuration	•
Device Configuration	•

### FIG: 4.5.1 Select Tool String

Select the required service and select **Tool String** from the **Edit** menu. The Tool String Editor will appear with the last saved tool string configuration.

# 4.5.1.1 Remove Tools in the string

To remove a tool from the string Mouse Right click on the tool section and select **Remove**.

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
CHD CENT	21.00 20.00		STNDRD Standard Cable Head	1.00	1.69	10.00
		Properties Remove Charge	RIGHT CLICK SDSCENT Centralizer for testing	3.00	3.25	20.00

#### FIG: 4.5.2 Remove Tool

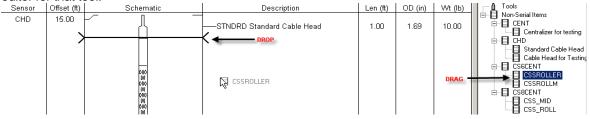
Other way is with Remove button and select the tool(s) to be removed using the >>> button(s) at the left of the tool string diagram. Note that, in the diagram below, the >>> buttons are now positioned at the center point of tools rather than at tool joints as in the above diagram.

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)	
Cł <b>&gt;&gt;&gt;</b>	19.37	~ д —	STNDRD Standard Cable Head	1.00	1.69	10.00	⊡ In Non-Serial Items □ In CENT
•	LEFT CLICK		- CSSROLLER -	2.20	1.69	4.41	Cable Head for Testing Cable Head for Testing Cable Head for Testing CSSROLLER CSSROLLM CSS_MID CSS_ROLL
wvr <del>332</del>	11.17 —		CBLSIE1X1-SIE (SDSDEMO) DEMO	10.00	1.69 L	25.00	
	6.17 -			1.00	1.69	10.00	
CS6CENT	5.17			2.17	1.69	4.41	
GR MMARK	1.00		GR-SDSGR (SDS) GR for Testing	3.00	1.69	20.00	Add Remove
SIE Cement Bon	d 1 x1: String Ler	ngth: 19.37 ft Weight: 73.82 lb Max O	D: 1.69 in			Help	Print Save Exit

FIG: 4.5.3 Remove Tool

#### 4.5.1.2 Add Tools in the string

To add tools to the string, click on the tool to be added and drag it into position in the tool string. A line on the drawing will indicate where the tool will be inserted. You can also click on any tool and drag to a new position in the string. To edit the properties of the tool, right click on the tool and select **Properties** to bring up the tool editor for that tool.



# FIG: 4.5.4 Add Tool

The second option is to double click a selected tool. This will add the tool to the top or bottom of the string depending up Tool String Editor options. Another option to Add is select the too with the mouse Left click, then Mouse Left Click Over **Add** Button. Once a tool has been selected the point at which it is to be inserted in the tool string is defined using the >>> buttons which appear to the left of the tool diagram.

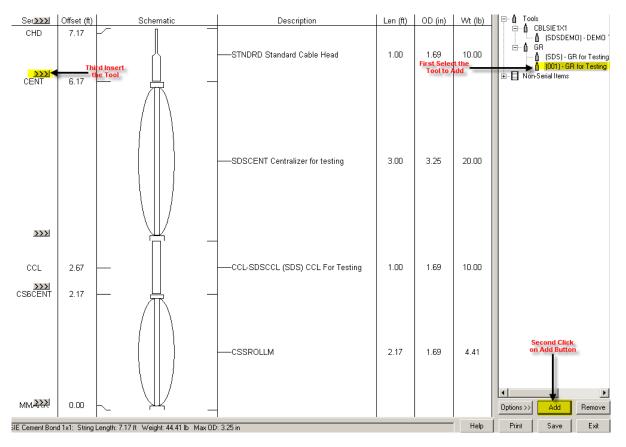


FIG: 4.5.5Add Tool

#### 4.5.1.3 Change Tool

To change to another tool of the same type, right click on the tool and select **Change** to see a list of the serial numbers of available tools that can replace the one in the string.

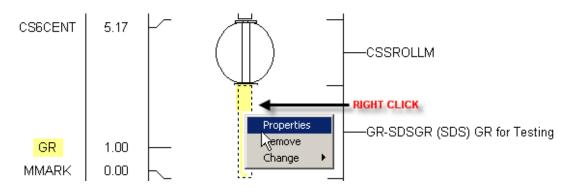


FIG: 4.5.6 Change Tool

#### 4.5.1.4 Tool Properties

Mouse Right Click over the tool and select Properties. This will bring up the Tools Editor. The Tools Editor is used to create tools and to modify the physical properties of the tools used by the Warrior Software. This includes length, diameter, software modules used for logging, sensor offset, default filters, and software specific settings. The Tools editor will be discussed in further detail in the Utilities – Edit Logging Tool Details section of this manual.

When editing has been completed, the tool string information is saved using the **Save** button. At this point, the service will be reloaded as the current status; and other parameters of the tool string may have changed.



#### FIG: 4.5.7 Tool Properties

<b>I Tools Editor</b> File Create Delete Copy Calibrations		<u> </u>
	Model     Software     Diagram       Model     SDSGR     Image: Comparison of the streng of the	

#### FIG: 4.5.8 Tool Model Properties

#### 4.5.1.7 Variable Length Items

To change the length of a variable length item, right click on the item and select Length from the pulldown menu.

#### 4.5.1.8 Options

When clicking on the Options button, a few options appear below the tool tree diagram. These include the sensor offsets, where to break diagrams of long tools and the scale factor of the diagrams.

For long tools, select the **Break item** option and then enter a break length. You may have to toggle the Break item checkbox to update to a new break length. This will draw any tool that is longer than the break length with a break in the middle so you can fit more objects in a smaller area.

Choose a different **Scale Factor** to display the diagram at a greater resolution. The **Show offsets** checkbox displays all the sensor names in the tool string and their offsets.

#### 4.5.1.9 Print

Any tool diagram will print to fit on one page. When another scale factor than <auto> is selected, two print choices are available. You can print to fit on one page, or you can print to scale. If you print to scale, the image may span multiple pages.

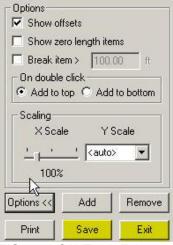


FIG: 4.5.9 SAVE and Exit

#### 4.5.2 Edit – Variables

The **Variables** Editor is invoked from the Acquisition **Edit** menu or from Warrior shortcut folder, double-click the **Utilities** icon. The Utilities menu box will appear, Click on the **Edit Variables in a Dataset** button. It is used to enter and edit zoned Parameters for use by the logging system. When first invoked it appears like the window shown below in Fig. 4.5.32. Displays the Variable (parameter) editor window, enabling depth dependent parameters associated with the selected service to be zoned and values to be set.

Tool String	
Variables	
reading	
Master Log Format	
Plot Job	
Sensors	
Calibrations	
Filters	
Tool Configuration	۲
Device Configuration	۲

# FIG: 4.5.10 Variables

A file selection dialog box appears. Select the required database, followed by the log pass (dataset). The Variable Editor is displayed with the variables that were active during the logging session. In this case the well is shown as one zone from top to bottom. To define a new zone, press the **Zones** Button and a window will appear as shown below.

Ċ		Variab	oles		×
Zones		Accept	<u>U</u> ndo	Close	
Top	BOTTEMP degF	TDEPTH ft	PERFS	CASEOD in	
Top Bottom	100	0	0	5.5	
	1				

# FIG: 4.5.11 Add Zones

C	Edit change point 🛛 🗕 🔍 🗙
Delete the change at Top	C Extending zone from Top down C Extending zone from Bottom up
Insert a new change	• at 1000 Feet
Move the change at Top	C to Feet
	OK Cancel

FIG: 4.5.12 Set a New Zone

Here boundaries may be inserted, and their positions changed, e.g. inserting a new change at 1000ft results in two zones, one from the top to 1000, and one from 1000 to the bottom. Note: if the variable editor is started from the acquisition module when logging, then by selecting the **Pick from Log** checkbox, the depth of zone changes can be selected by clicking on the appropriate depth on the interactive plot.

🗸 Variables					
Zones	: /	Accept	Undo		lose
Тор	BOTTEMP degF	TDEPTH ft	PERFS	CASEOD in	
1000.00	100	0	0	5.5	
Bottom	<mark>150</mark>	0	0	5.5	
Bottom	•				▼ ▶

FIG: 4.5.13 Edit values and accept

To change the value of the variable in a zone, TAB to or click on the variable and enter the New value. When all entries have been made **Accept** the changes and **Close** the editor.

🎸 Edit change point				
Delete the change at 1000.00		ending zone fr ending zone fr		
Insert a new change	💽 at	2000	Feet	
Move the change at 1000.00	C to		Feet	Pick from Log
		Cancel		

# FIG: 4.5.14 Insert New Zone

4	Accept	Undo		lose
BOTTEMP degF	TDEPTH ft	PERFS	CASEOD in	
100	0	0	5.5	
150	0	0	5.5	
200	0	0	5.5	-
	BOTTEMP degF 100 150	BOTTEMP TDEPTH degF ft 100 0 150 0	BOTTEMP TDEPTH PERFS degF ft 0 100 0 0 150 0 0	BOTTEMP degFTDEPTH ftPERFS PERFSCASEOD in100005.5150005.5

# FIG: 4.5.15 Undo Zone

🖉 Variables 📃 🗖						
: /	Accept	Undo				
BOTTEMP degF	TDEPTH ft	PERFS	CASEOD in			
100	0	0	5.5			
150	0	0	5.5	-		
	BOTTEMP degF 100	BOTTEMP TDEPTH degF ft 100 0	BOTTEMP TDEPTH PERFS degF ft 0	BOTTEMP TDEPTH PERFS CASEOD degF ft 0 5.5		

# FIG: 4.5.16 Accept and Close

# 4.5.3 Edit - Heading

Edit – Headings invokes the Warrior Heading Editor. This will be discussed in detail in the Heading Editor Section

4.5.4 Edit – Master Log Format

Edit – Master Log Format invokes the Warrior Format Editor. This will be discussed in detail in Format Editor Section

4.5.5 Edit – Plot Job

Edit – Plot Job invokes the Warrior Plot Job Editor. This will be discussed in detail in the Plot Job Editor Section.

#### 4.5.6 Edit - Sensors

Brings up the Edit Sensor window. Once a service has been selected, the Edit Sensors window may be displayed and information concerning the individual sensors, associated with the service, may be edited. This information normally consists of the hardware source of the sensor (Device and Channel number), the depth offset of the sensor from tool zero reference, and the sampling rate.

The information contained in Edit Sensors is derived from the current service and current tool string information. For example, sensor depth offsets are derived from the selected tool string and the information is contained in the tools database. The default sample rates and device channel assignments are derived from the services.ini file.

The default device and channel settings, and the default sample rates are contained in the services.ini file. The default depth offsets are derived from tool information contained in the tools.ini file.

Although the information in Edit Sensors is normally derived automatically from the information contained within the system, it may sometimes be necessary to modify or review a setting.

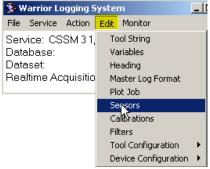


FIG: 4.5.17 Edit Sensors

Select **Sensors** from the **Edit** menu. The Edit Sensors window appears as shown below.

Edit Sensor	5			- 🗆 🗙
<u>E</u> dit <u>S</u> elect				
Name	Device	Chan	Offset	Samp Rate
TEL WVF3FT WVFCAL WVF5FT WVFS1 WVFS2 WVFS3 WVFS4 WVFS5 WVFS6 WVFS6 WVFS7 WVFS8 WVFS8 WVFS8	DSP DSP DSP DSP DSP DSP DSP DSP DSP DSP	27 2 5 3 19 23 20 24 21 25 22 22 26 1	2.71 2.71 2.71 2.71 2.71 2.71 2.71 2.71	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
LSPD	LOGSVC	3	<u> </u>	4
LTEN TCURR TVOLT ELTIM ADPTH MINMK TEMP CCL GR THV	BASE BASE LOGSVC LOGSVC LOGSVC DSP DSP DSP DSP	1 3 7 1 2 1 2 13 16 7 12	2.92 18.07 16.28 11.88	4 2 4 4 2 4 20 4 4 4
Edit Sensors			-2	<
Sensor TEMP Device DSP			-	
Channel 13 Rate 4	Samp	les/ft	ОК	
Offset 2.92	ft		Cance	el

#### FIG: 4.5.18 Edit

Highlight one or more sensors and select **Edit** or double-click on a sensor item. The Edit Sensors dialog box will be displayed for editing as shown in Fig: 4.5.39. The acquisition device may be selected with the **Device** box. There are several acquisition devices supported within the Warrior system. Do not change this entry unless you know what you are doing. The channel of the device, from which the sensor is to be read, is selected by editing the **Channel** box. Do not change this entry unless you know what you are doing.

The number of samples per foot to be recorded is entered in the **Rate** box. The maximum sample rate for a sensor is generally limited to the maximum rate set for the acquisition device acquiring the data. This maximum rate is set in the services.ini file.

The physical depth offset of the sensor from tool zero is entered in the **Offset** box. Note that the value to be entered in Offset is the physical depth offset, as the system automatically compensates for any lags introduced by filtering.



The change made in Edit Sensors will remain in effect until the service is reloaded; when the sensor parameters are returned to their default values. Sensors should not be edited during logging. Note that sensor cannot be edited while logging.

# 4.5.7 Edit - Calibrations

Warrior allows editing of sensor calibrations. The Warrior system supports many types of calibrated tool response. The calibration parameters may be derived from manual entries, or from calibration procedures, performed by the system itself. Some calibration parameters can be edited from Edit/ Calibrations.

🐉 Warrior Logging System			
File Service Action	Edit Monitor		
Service: CSSM 3 1, Database: Dataset: Realtime Acquisitio	Variables Heading		
	Sensors Calibrations Myters Tool Configuration Device Configuration	+	

# FIG: 4.5.19 Calibrations

Select **Calibrations** from the **Edit** menu and double-click on the sensor to be edited. Alternatively, click once and select and Edit/Edit Selections.

The tool type, serial number, calibration name and calibration type are displayed, but cannot be edited. The various calibration parameters can be edited and saved either permanently (with the **Perm** button) or temporarily (with the **Temp** button). See Fig: 4.5.20.



Warning!

Warrior stores calibrations internally in English units. When editing calibrations in this dialog, the reference values must always be entered in English units.

Changes made and saved temporarily stay in effect until the service is reloaded, so when the calibration parameters are returned to their normal permanent values. Note that calibrations can be changed while logging.

📑 Edit Cal	librations		_		Edit Calibrations	×
Edit Selec	_	<u> </u>			Tool Name CS8GF	Temp
Name	Type	Gain	Hi Read	Hi R	· · · · · ·	
AMP3FT	Lin2Pt	126.04100	0.57062		Tool Serial CSSM	Perm
WS_3FT	Lin2Pt	1.00000	0.00000			
AMPCAL	Lin2Pt	48.94840	1.46932		Cal Name GR	Cancel
WS_CAL AMP5FT	Lin2Pt Lin2Pt	1.00000 178.96100	$0.00000 \\ 0.40188$			
WS 5FT	Lin2Pt	1.00000	0.40100		Cal Type Lin2Pt	
AMPSUM	Lin2Pt	88,59000	0.81184			
WS SUM	Lin2Pt	1.00000	0.00000		Low Reading	Low Reference
AMPS1	Lin2Pt	135.47000	0.73817	1		0
WS S1	Lin2Pt	1.00000	0.00000			0
AMPS2	Lin2Pt	124.06100	0.80605	1		
WS_S2	Lin2Pt	1.00000	0.00000		High Reading	High Reference
AMPS3	Lin2Pt	93.83950	1.06565	1	1	1
WS_S3	Lin2Pt	1.00000	0.00000			•
AMPS4	Lin2Pt	93.42750	1.07035	1		
WS_S4 AMPS5	Lin2Pt Lin2Pt	1.00000 92.40630	0.00000 1.08218	1	Gain  1	
WS_S5	Lin2Pt	1.00000	0.00000	-	Offset 0	
AMPS6	Lin2Pt	106.94800	0.93503	1		
WS_S6	Lin2Pt	1.00000	0.00000	-		
AMPS7	Lin2Pt	131.58400	0.75997	1		
WS_S7	Lin2Pt	1.00000	0.00000			
AMPS8	Lin2Pt	131.80800	0.75868	1		
WS_S8	Lin2Pt	1.00000	0.00000			
LTEN	Lin2Pt	-2401.17000	-5.17643	100		
TCURR	Lin2Pt	1.00000	1.06520	1		
TVOLT TEMP	Lin2Pt Lin2Pt	1.00000 0.02000	1.05052 1.00000	1		
GR	Lin2Pt Lin2Pt	1.00000	1.00000			
CCL	Lin2Pt	1.00000	1.00000			
THV	Lin2Pt	1.00000	12107.70000	1		

FIG: 4.5.20 Edit Calibrations

4.5.8 Edit - Filters The **Filters** option displays filter settings and allows them to be edited. Four types of filter options are currently available in the Warrior system.

🖫 Warrior Logging S	ystem 📃
File Service Action	Edit Monitor
Service: CSSM 31, Database: Dataset: Realtime Acquisitio	Tool String Variables Heading Master Log Format Plot Job Sensors Calibrations
	Filters
	Tool 🖾 figuration 🔹 🕨
	🔹 Device Configuration 🔸

These are:

SQUARE is a simple average of the sensor value over the filter interval selected.

**GAUSSIAN** is a weighted average, where the weights, applied to each sample over the interval, take the form of a Gaussian distribution. The filter interval is in feet, when recording in depth, and in seconds, when recording in time.

**TRIANGLE** is another weighted average that accentuates peaks like the Gaussian filter. The Triangle filter is more extreme than the Gaussian.

**USER** is a user-defined filter but is currently not implemented.

Select **Filters** from the **Edit** menu and double-click (or single-click and Edit/Edit Selections) on the sensor, whose filter is to be edited.

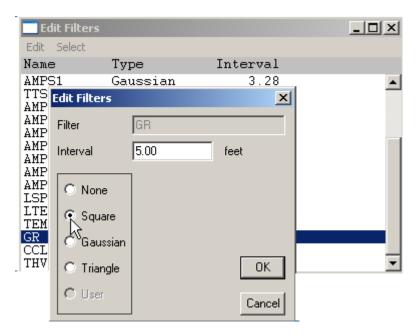
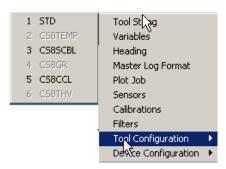


FIG: 4.5.22 Edit Filters

The tool type and current filter parameters are displayed for the sensor selected. Typing over the parameter, shown in the Interval box, may change the interval. The filter type can be changed by means of the radio buttons.

Note that changes, made here, stay in effect until the service is reloaded, so when the filter parameters are returned to their default values. Default filter settings are contained in the tools file as part of the tool model information. Filters cannot be edited while logging.

#### 4.5.9 Edit - Tool Configuration



#### FIG: 4.5.23 Tool Configuration

#### 4.5.9.1 STD Tool Configuration

The STD tool is normally in every service. The line resistance used to calculate HVOLTA (Head Voltage Apparent) can be edited from here.

STD Tool Configur	ation		
Line Resistance	35.00	OK	
		Cancel	
			-)

FIG: 4.5.24 Set Line Resistance

4.5.9.2 CCL Control The CCL software produces 2 outputs:

CCL Casing Collar Locator CCLRT Real Time Casing Collar Locator

The real time output bypasses the normal sampling queues so that changes can be seen immediately. The **CCL** software incorporates a facility to affect a shift of the CCL curve, as is sometimes required when running perforating services. The collar log may also be "filtered" in such a way as to remove noise from the baseline of the curve while still allowing collar signals above a certain threshold to be displayed.

When in Acquisition mode, and with a collar tool in the string, the **CCL Control** box may be displayed with **Edit/Tool Configuration/CCL**.

CCL Control				
Shift:				
<< Left	Right >>			
Step Size	0.1			
Current Total	-0.1			
Threshold:				
Enabled	Setup >>			
Clamp:				
Enabled	Setup >>			
Baseline Normal	ization:			
Enabled Setup >>				
Close				

FIG: 4.5.25 CCL Control

### Shift - CCL

Bring up the CCL Control box as described above.

Set the amount of shift required in the Step Size dialog. The value entered here should reflect the actual scale set for the log. For example, if the log is scaled at 1 volt per track and it is required to shift the curve 10 (small) divisions, enter a value of 0.1.

Clicking the Left or Right buttons produces the shift and the cumulative amount of shift applied appears in the Current Total box. Note that [<<Left] changes the CCL output by a negative value and [Right>>] changes the CCL by a positive value so that left and right only apply is the CCL plot is scaled with a negative value on the left and a positive value on the right.

Threshold - CCL

Invoke the CCL Control box and set the Threshold Enabled. Click on Setup and adjust the threshold settings as required.

The Positive and Negative Thresholds are set in the same units as the collar log output curve. Any collar curve signal smaller in amplitude than the threshold settings will be suppressed to a value of zero. Any signal greater than the threshold levels will be recorded as its true value.

	CCL Control
	Shift
	<< Left Right >>
	Step Size 0.1
	Current Total 0
	Threshold:
	Enabled Setup >>
	Clamp:
	Enabled Setup >>
	Baseline Normalization:
	Enabled Setup >>
	Close
С	L Thresholds
	Positive Threshold 01 Negative Threshold -0.1
	ОК

FIG: 4.5.26 CCL Thresholds

Clamp - CCL

The Positive and Negative Clamps cut the signal at the set point value. Any collar curve signal bigger in amplitude than the clamp settings will be set to clamp value.

	CCL Control				
	Shift:				
	<< Left	Right >>			
	Step Size	0.1			
	Current Total	0			
	Threshold:				
	Enabled	Setup >>			
	Clamp:				
	Enabled	Setup >>			
	Baseline Norma	lization:			
	Enabled	Setup >>			
	Clos	e			
сс	CCL Clamp Limits				
	Positive Clamp Negative Clamp	2 -2			
	0	ĸ			

FIG: 4.5.27 CCL Clamp Limits

**Baseline Normalization - CCL** 

Invoke the CCL Control box and set the Baseline Normalization Enabled. Click on Setup and adjust the cycle length (must be greater than 0) and the offset settings as required.

The system will attempt to correct a CCL baseline to a value of zero and then recheck it every cycle length.

	CCL Control	
	Shift:	1
	<< Left Right >>	
	Step Size 0.1	
	Current Total 0	
	Threshold:	
	Enabled Setup >>	
	Clamp:	
	Enabled Setup >>	
	Baseline Normalization:	
	Enabled Setup >>	
	Close	
CL B	aseline Zeroing Setup	
Cycle	e Length (sec):	
Curre	ent/Starting Offset: 0	
	ОК	

C

FIG: 4.5.28 CCL Baseline Zeroing Setup Select **Setup**, and type in Cycle Length 2 left in Zero **Current/Starting Offset**. Click over **OK** 

Check on the Enable box, and Click on Setup, you find the new value in Current/Starting Offset



FIG: 4.5.29 CCL Baseline Zeroing Setup

4.5.10 Edit - Device Configuration

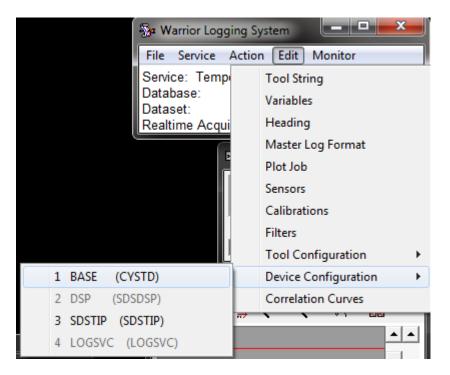


FIG: 4.5.30 Edit - Device Configuration

#### **Base Configuration**

Depending upon the panel type, the base device may be one of several different devices. The most common device is the CYSTD used in the standard interface panel. In most cases the card type will be read from the panel and need not be changed.

CYSTD Configura	tion	×
Card Type	USB44R6 💌	OK
This card drive Normally on unles	Cancel	

#### FIG: 4.5.31 CYSTD configuration

Varning! Do not change any settings here, unless you know what you are doing.

#### **DSP** Configuration

The current Scientific Data Systems Warrior Interface panel has no User controllable device settings.

SDSTIP and CBL1D Programmable Filters and Gain Controls

Most line signals, other than low frequency CCL signals, are filtered and amplified through the CBL1D board of the Scientific Data Systems, Inc. Tool Interface Panel. There is a single input to the CBL1D Board from the ANASW board, but it has three separate outputs, commonly referred to as Sync, Sonic, and AUX. Each

of these outputs has separate gain controls and programmable variable filter controls. Which sliders and filters are available are controlled by settings in the SDSTIP device in the service and saved in Services.ini? Each of the Sync, Sonic, and AUX output channels has a programmable attenuator that is controlled through the software by a slider bar in the panel controls. This is necessary to keep the signals from saturating during later stages of filtering and amplification. During normal operation, these are all that is necessary in a service to control the signal gains.

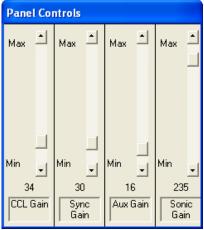


FIG: 4.5.32 Panel Controls

Each of the three channels also has a variable filter that can be set or adjusted. It is not normally necessary to adjust these filters once a service has initially been set up on a logging unit. Access for adjustment of these filters is obtained through the Acquisition Software by selecting Edit -> Device Configuration -> SDSTIP.

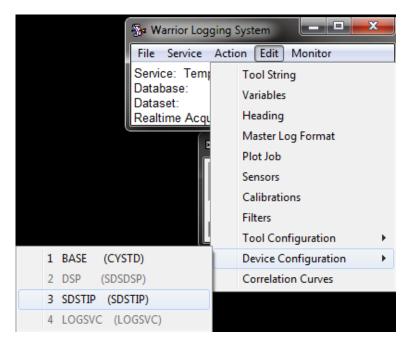


FIG: 4.5.33 Device Configuration

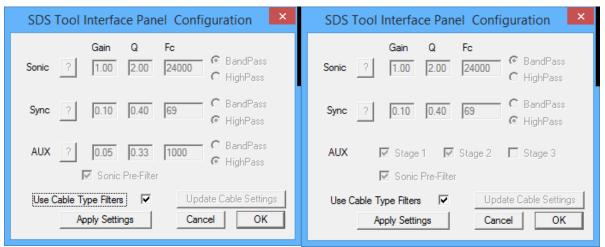


FIG: 4.5.34 SDSTIP for older CBL1D boards and for Revision 13 and newer

Each of the output channels has its own Gain, Q, Corner or Center Frequency, and whether it has a Band Pass or High Pass output. In addition to this, the Sonic channel has a pre-filter to keep the initial input attenuator from saturating. This pre-filter is turned off with a 0 value and is turned on with a value of 8. No other values will work. You will get no sonic signal with any value other than 0 or 8.

The Sonic and Aux channels will normally be set to filter a pulse signal, so they will usually have a High Pass filter with as low a corner frequency as possible. The gain for these channels should be set so that the slider bar gain control has a good setting for the service at near mid-range.

The Sonic channel will normally be looking at acoustic signals in the 20000 hertz range and should be selected as a Band Pass filter.

The Q of the filters is related to the how much frequency change is needed to attenuate the signal by 3DB. The larger the number, the less change from the Fc is needed to attenuate the signal.

The CBL1D Revision 13 and newer boards no longer have the programmable filter on the AUX channel. Instead, it has a set of 3 equalization filters in series. Any combination of the equalization's filters may be selected from none, to any one, to any combination of two, to all three filters.

The following Internet link gives simple explanations of filters and their characteristics. http://en.wikipedia.org/wiki/Electronic\_filter#Multipole\_types

The different hardware revisions of the CBL1D board require that the correct panel type be set in the Warrior

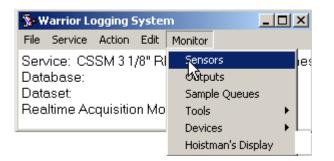
Warning! Control Panel for the CBL1D board to respond to slider bar and filter settings. Revisions R1 through R4 will normally have a panel type that ends with the letter a (CPFA). As of this date, Revisions R5 and higher will have panel types that end with a B, C, D or E

# (CPFB – CPFE).

If the service has a Signal type Control Keyword, the filter settings may change depending upon the Cable Selection in the Warrior control Panel. This is discussed in further detail <u>Section 16</u> – Cable Types and Filter Settings.

# 4.6 Acquisition - Monitor

Once a service has been selected, various data monitors are available to the operator as shown in Fig. 4.6.1 below.



## FIG: 4.6.1 Monitor Sensors

### 4.6.1 Monitor - Sensors

The sensors for the selected service are displayed along with the values of their current readings. The sensor monitor is used to monitor `raw' data. Select **Monitor Sensors** from the **Edit** menu. The Sensor Monitor will be displayed. The sensor monitor is updated at the refresh rate set in the Warrior Control Panel.

Sensors				- O X
Name	Source	Channel	Value	Units
LSPD	LOGSVC	3	0.0000	ft/min
LTEN	BASE	7	0.0000	V
TCURR	BASE	1	0.0000	V
TVOLT	BASE	2	0.0000	V
ELTIM	LOGSVC	2	20825.2755	sec
ADPTH	LOGSVC	1	0.0000	ft
MINMK	LOGSVC	2	20825.2755	sec
TEMP	DSP	13	0.0000	
CCL	DSP	16	0.0000	
GR	DSP	7	0.0000	
THV	DSP	12	0.0000	

FIG: 4.6.2 Sensors

# 4.6.2 Monitor - Outputs

The outputs for the selected service are displayed along with the value of their current readings in engineering units. Select **Monitor /Outputs** from the menu. The Outputs monitor is displayed as shown in Fig: 4.6.3. When in a logging mode, e.g. Record Up, the readings are updated at each depth sample. When not in logging mode, the outputs are updated at the frequency set in the Control Panel.

Outputs			- • • ×
Name	Source	Value	Units
AMP3FT	[CS8SCBL	0.0000	mV
TT3FT	[CS8SCBL	333.5000	usec
AMPCAL	[CS8SCBL	0.0000	mV
AMP5FT	[CS8SCBL	0.0000	mV
TT5FT	[CS8SCBL	511.0000	usec
AMPSUM	[CS8SCBL	0.0000	mV
AMPS1	[CS8SCBL	0.0000	
AMPS2	[CS8SCBL	0.0000	
AMPS3	[CS8SCBL	0.0000	
AMPS4	[CS8SCBL	0.0000	
AMPS5	[CS8SCBL	0.0000	
AMPS6	[CS8SCBL	0.0000	
AMPS7	[CS8SCBL	0.0000	
AMPS8	[CS8SCBL	0.0000	
AMPMIN	[CS8SCBL	0.0000	
AMPMAX	[CS8SCBL	0.0000	
AMPAVG	[CS8SCBL	0.0000	
ATT3	[CS8SCBL	-999.0000	db/ft
BONDIX	[CS8SCBL	75.8022	
LSPD	[STD]	0.0000	ft/min
LTEN	[STD]	0.0000	lb
TCURR	[STD]	-4.3954	mA
TVOLT	[STD]	-3.3472	V
ELTIM	[STD]	4990.9404	sec
ADPTH	[STD]	0.0000	ft
MINMK	[STD]	0.0000	
LTENRT	[STD]	0.0000	lb
DLTENRT	[STD]	0.0000	lb
LSPDRT	[STD]	0.0000	ft/min
TCURRRT	[STD]	0.0000	mA
TVOLTRT	[STD]	0.0000	V
HVOLTA	[STD]	0.0000	V
TEMP	[CS8SCBL	0.0000	degF
DTMP	[CS8SCBL	0.0000	degF
CCL	[CS8_GR	0.0000	
CCLRT	[CS8_GR	0.0000	
GR	[CS8_GR	0.0000	
THV	[CS8_GR	0.0000	v

FIG: 4.6.3 Outputs

#### Monitor - Outputs - Gauges

Another function of monitor output is the ability to add a meter to a service. With the Monitor – Output window open, right click on any output in the list. You will be given a choice of 4 types of gauges to use. They are Angular Gauge, Histogram Gauge, Bar Gauge, and Numeric Gauge. The gauge will remain on the windows desktop until closed. However, the next time the service is reloaded the gauge will return to the windows

desktop. To permanently remove gauge from the service, Monitor – Outputs again, right click on the gauge that you want to remove from the service and choose the Delete Gauge option.

		Outputs					X	10
	Name		Source		Value	Units		
	LTEN		[STD]		0.0000	lb		
		TCURR	[STD]		-4.3954	mA		- 1
-		TVOLT	[STD]		-3.3472	V		
	- J	ELTIM	[STD]		9178.7900	sec		-1
		ADPTH	[STD]		0.0000	ft		Ξ
		MINMK	[STD]		0.0000			
			ICTD1		0.0000	lb		
	Ang	ular Gauge			0.0000	lb		Ξ.
	Histo	ogram Gauge					•	
	Bar Gauge							
	Num	neric Gauge						
	Dele	te Gauge						

FIG: 4.6.4 Outputs – Adding / Deleting a gauge to a service.

The properties of the gauge can be modified by right clicking on the gauge.

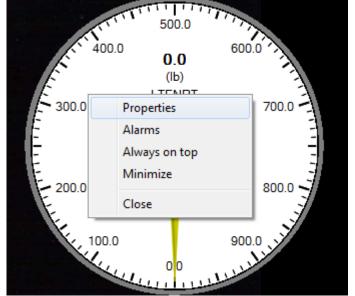


FIG: 4.6.5 Changing the properties of a gauge

Gauge Properties	
Settings         Presentation         ✓ Angular         Histogram         Numeric         Bar	Angular gauge properties Gauge type Output     Image: Colors       Background     Image: Colors       Needle     Image: Colors
Label LTENRT	Needle Warning I
Update frequency 1 🗧	
Font Microsoft Sans Serif	
Decimal places 1 ÷	Small Large
	Amplified gauge Only with full circle type gauge)
Chars 9 Number of characters to fit in display	Needle trace
History gauge properties     Bar gauge properties       Width     10       sec     Draw alarms to scale	Cancel Save

FIG: 4.6.6 Gauge properties

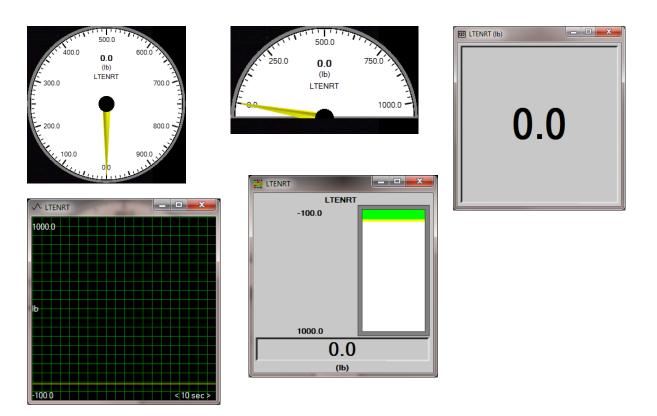


FIG: 4.6.7 Examples of various Gauge types available.

Monitor - Sample Queues

Monitors the status of the internal Warrior sample queues.

#### 4.6.3 Monitor – Tools

Some tools may have special monitor windows, such as bond tools. The window will be used to monitor and setup measurement parameters for those tools.

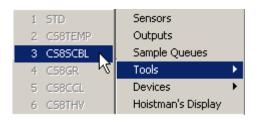


FIG: 4.6.8 Monitor Tools

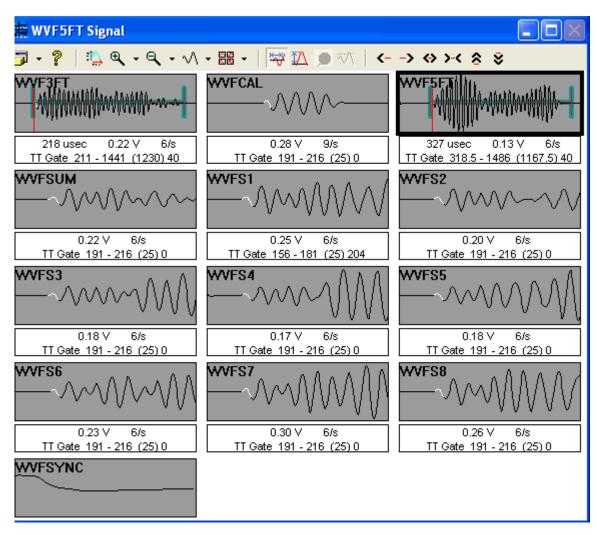


FIG: 4.6.9 Monitor CS8SCBL

#### 4.6.4 Monitor - Devices

Displays the raw data readings of the selected device, channels, irrespective of whether channels are being used for the current service.

Sa Warrior Logging System			
File Service Action Edit	Monitor		
Service: CSSM 3 1/8" RBT	Sensors		
Database: Dataset:	Outputs		
Realtime Acquisition Mode	Sample Queues		
	Tools	• • ]	
	Devices	+	1 BASE (CYSTD)
	Hoistman's Display		2 DSP (SDSDSP)
			3 SDSTIP (SDSTIP)
			4 LOGSVC (LOGSVC)

FIG: 4.6.10 Monitor Devices

### Monitor – Devices - Base

If the base device is the CYSTD, the 16 possible analog inputs and 4 counter channels will be shown. Note the several of the channels are named for their inputs.

Device: C	CYSTD		
Source	Name	Value	Units
BASE-1	TCURR	0.0000	V
BASE-2	TVOLT	0.0000	V
BASE-3	CCL	0.0000	V
BASE-4		0.0000	V
BASE-5		0.0000	V
BASE-6		0.0000	V
BASE-7	LTEN	0.0000	V
BASE-8		0.0000	V
BASE-9		0.0000	V
BASE-10		0.0000	V
BASE-11		0.0000	V
BASE-12		0.0000	V
BASE-13		0.0000	V
BASE-14		0.0000	V
BASE-15		0.0000	V
BASE-16		0.0000	V
BASE-17	CTR1	0.0000	cps
BASE-18	CTR2	0.0000	cps
BASE-19	CTR3	0.0000	cps
BASE-20	CTR4	0.0000	cps
BASE-21		0.0000	cps

FIG: 4.6.11 Base (CYSTD) Values

Monitor - Devices - DSP

Depending upon the DSP script used in the service, the DSP monitor may show a variety of different things

Device: S	DSDSP	
Source	Name	Value Units
DSP-6	TEL1	0.0000
DSP-7	TEL2	0.0000
DSP-8	TEL3	0.0000
DSP-9	TEL4	0.0000
DSP-10	TEL5	0.0000
DSP-11	TEL6	0.0000
DSP-12	TEL7	0.0000
DSP-13	TEL8	0.0000
DSP-14	TEL9	0.0000
DSP-15	TEL10	0.0000
DSP-16	CCL1	0.0000
DSP-17	ErrCnt	0.0000
DSP-18	ErrCode	0.0000

Device:	SDSDSP		
Source	Name	Value Units	
DSP-1	LgPos	0.0000 cps	
DSP-2	SmPos	0.0000 cps	
DSP-3	LgNeg	0.0000 cps	
DSP-4	SmNeg	0.0000 cps	

FIG: 4.6.12 Example DSP monitors.

Monitor – Devices – LOGSVC

The LOGSVC device is a software device used for processing depth and line speed.

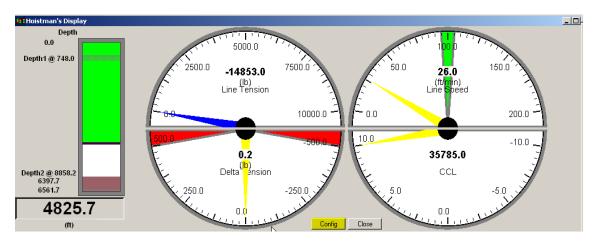
4.6.5 Monitor – Hoistman's Display

The Hoistman's display can be loaded by clicking on Monitor / Hostman's Display or the **Hoist** button in the **Depth Control** window. Activating the popup menu can configure the view and scales. Do this by right clicking on the display and selecting the required menu option. Sound alerts for various conditions can also be configured here if a suitable sound card and speaker are available.

Note that in multi-monitor systems, the Hoistman's display can be positioned on a second monitor close to the winchman.

💁 Warrior Logging Syste	m _ 🗆 🗙	I	
File Service Action Edit	Monitor		
Service: CSSM 31/8" R	Sensors	\$	
Database:	Outputs		
Dataset:	Sample Queues	L	
Realtime Acquisition Mo	Tools 🕨	L	
	Devices 🕨 🕨		
	Hoistman's Display		

### FIG: 4.6.13 Monitor Hoistman's Display





### Click Config.

Depth Configuration				×
Source © Encoder O Simulator	Alarms	Value	Differential	On/Off
	Surface Proximity	0.0		~
0.0 C Down	Line Overspeed	5000.0		▼
Parameters	Line Weight	20000.0	20000.0	▼
Correction 0 Ft/1000	Total Depth	5000	164.0	
Encoder Res. 120 Pulse/Rev	Logging Speed	100.0	5.0	
Wheel Size 1 Ft/Rev	Depth1	748.0	20.0	
Reverse Apply	Depth2	8858.2	10.1	
Depth Panel			Giet	Set
Speed Scale Factor		2 <b>F</b> A	larm 2 🗖 /	larm (
Divider (JP5 setting)				NGIIII 4
Reverse Get				
Close				

FIG: 4.6.15 Set up Depth Configuration

Right click over the gauge to select Gauge Properties

Gauge Properties	×
Settings       Auto rescale         Presentation       Scale         Image: Angular       Start         Image: Histogram       Stop         Bar       Stop         Label       Line Tension         Update frequency       Image: updates/second         Font       Arial         Warning       Image: Alarm on when value below         Image: Alarm on when value above       20000         Warning sound       Image: Im	Angular gauge properties         Gauge type         Image: Second image: Show amplified gauge         Image: Show amplified gauge         History gauge properties         Width         Image: Show amplified gauge
Clean Up	Cancel

FIG: 4.6.16 Set Gauge Properties

## Section

# **5 Heading Editor**

The Heading Editor allows the log heading information to be added to a blank heading of pre-existing format. There are several different versions of default headings that can be produced using Warrior. The Heading Editor may be started from several different locations including its icon in the Warrior program group, the Acquisition module under the Edit -> Heading, and Interactive Plot under Edit -> Log Heading.

Se Acquisition 👰 Control Panel Database Utilities Event Log Viewer 🐺 Format Editor Heading Editor 1 Interactive Plot Merge 📲 🌷 Perf Job Planner Plot Job Editor Se Recalculation Shortcut to Warrior Config Shortcut to Warrior Data Simulator Tools Editor 😹 Warrior Backup

FIG: 5.1 Heading Editor in Warrior Program Group

😼 Warrior Logging System					
File Service Action	Edit Monitor				
Service: None	Tool String				
Database: Dataset:	Variables				
Realtime Acquisition N	Heading				
	Master Log Format				
	Plot Job				
	Sensors				
	Calibrations				
	Filters				
	Tool Configuration				
	Device Configuration				
	Correlation Curves				

FIG: 5.2 Select Heading from Acquisition -> Edit

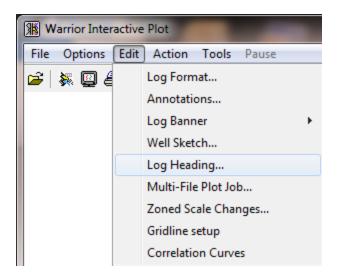


FIG: 5.3 Select Heading from Interactive Plot -> Edit

Headings are saved within and retrieved from Warrior databases. Headings generated during a logging operation, are normally saved in the same database as the log data for that job. When the Heading Editor is started, a blank heading appears. Headings can be filled out at any time during the job and saved. If the heading is only partially completed, it can be saved and reopened at later time and remaining information entered. It should then be saved again.

<u>F</u> ile F <u>o</u> nt	Editor					_
	Company					
È	Well					
Country	Field					
	County					
	State			Country		
				Country		
	Location:		API #			Other Service
		SEC TW	P	RGE		Elevation
	Permanent D	itum		Elevation		K.B.
Company Well Field County State	Log Measure	From				D.F.
Compar Well Field County State	Drilling Measu	red From				G.L.
Date						
Run Number Depth Driller						
Depth Logger						
Bottom Logged Inte	rval					
Fop Log Interval Open Hole Size						
Type Fluid					_	
Density / Viscosity						
Max. Recorded Ten Estimated Cement						
Fime Well Ready						
Fime Logger on Bo Equipment Numbe						
_quipment Number	ſ					
Recorded By						
Nitnessed By	rehole Record			Tubing R	lacord	
	Bit From	To	Size	Tubing R Weight	From	To
Bo						
Bo		-				
Bo						
Bc Run Number 6						
Bo Run Number E Casing Record	Size	W	gt/Ft	Тор		Bottom
Bc Run Number 6			gt/Ft	Top		Bottom
Bc Run Number 8 Casing Record Surface String		W	gVFt	Top		Bottom

FIG: 5.4 Blank Heading (STDCased) The default heading format is set from the Warrior Control panel – Plot page. In addition, the heading format may be changed for the current heading by clicking on File -> Select Format in the Heading Editor.

General Acquisition Plot Hot Keys/Shortcuts Licenses Depth/Tension	run/_plots_/_headings_/head
Gridine setup Printer setup	File Font
Options           Options           Image: The second	New
Wat this long on USB printing to see if print job 10 started ok (seconds ). — Cerpoll ONLY - Check printer status for paper, selected, or error. Uncheck	Open
Itis if you cannot print.  Default heading  Stdcased hidg  Browse	Save
Service company	Save As
Scientific Data Systems, Inc.	Select Format
	Print
	Watermark
OK	Exit

FIG: 5.5 Selecting heading format

From the Heading Editor **File** menu, either a new heading can be created, or a pre-existing heading may be selected for editing. In addition, the actual format of the header may be selected from the predefined formats in the system by using **Select Format...** Once a heading has been selected, fields may be chosen for editing by using the **TAB** key, or by pointing with the mouse to move around the heading. When a field has been selected, a dialog box appears, and the appropriate information may be entered.

Edit Heading Field		×
Log Title	^	OK Cancel
	Ŧ	
Warning This field accepts multiple lines. Pressing <enter> while the flashing cursor is in the text box will force a line-break.</enter>		

FIG: 5.6 Heading Data Field for the Log Title

Headings are saved within and retrieved from Warrior databases. Headings generated during a logging operation are normally saved alongside the log data for that job.

The description of the text to be typed in the field normally appears above the dialog entry, and the cursor is positioned for immediate text entry. When the text entry is complete, hit Enter to close the dialog window and move to the next field. Alternatively move to the OK button by using the TAB key or the mouse, and then hit Enter or click with the mouse. Then either hit the Enter key to open the next dialog window or click with the mouse to move to and open a new dialog window.

ſ	Edit Heading Field	×
	Run #1 Info: Date	ОК
	Aug. 20, 2012	Cancel

FIG: 5.7 Enter single line of information

Fields which have multiple lines are completed using a slightly different dialog box as shown in Fig. 5.8. Use the TAB key or the mouse to move to the text entry box and enter the required text. Pressing the Enter key while in the text field will add a new line of text.

ſ	Edit Heading Field	×
	Log Title	
	GAMMA RAY CCL LOG	Cancel
	Warning This field accepts multiple lines. Pressing <enter> while the flashing cursor is in the text box will force a line-break.</enter>	

FIG: 5.8 Multiple line Entry - Click in field to Type Log Name



Do not hit Enter within the text entry box unless you wish to move to a new line within the current field, as for example, if multiple lines of text were to be entered in the Comments field.

When the text is complete use the TAB or mouse to move to the OK button and exit the dialog box as normal.

The User can Save the heading by clicking File -> Save. It may be necessary to select a database file to save the heading into. If so, be sure to select the database where you will be recording log passes.

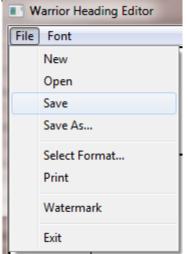


FIG: 5.9 Saving Heading

If no heading has been saved in the database, the software will use heading1 as the default heading name. Normally if you are only going to be plotting one log, the default need not be changed. The default name can be changed by backspacing out the "heading1" or highlighting the "heading1" and replacing it by typing.

Heading		x
Current Database	C:\ProgramData\Warrior\Data\8-21-2012.db	]
Current Dataset	/field/well/run/_plots_/_headings_/heading1	
	*	
		<u>D</u> atabase
	*	ОК
•	F	Cancel

FIG: 5.10 Saving Heading - heading1 as default name

Heading	×
Current Database	C:\ProgramData\Warrior\Data\Aug-21-2012.db
Current Dataset	/field/well/run/_plots_/_headings_/ <mark>heading1</mark>
	A

Heading	×
Current Database	C:\ProgramData\Warrior\Data\Aug-21-2012.db
Current Dataset	/field/well/run/_plots_/_headings_/Bond
	*

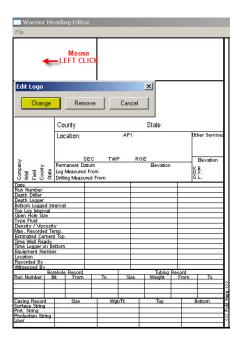
FIG: 5.11 Saving Heading – changing heading name

To save the modified heading under a different name use **Save As** from the **File** menu and enter a new name for the heading. The original heading will remain in the system under the original name. .11 Type the new Heading name File

### 5.1 Heading Logo

The logo accepts formats \* **.lgo**, **.\*.wmf**, **\*.emf**, **\*.bmp**, **\*.jpg**. The file must be in Warrior\Config. In a Warrior standard heading, it should have the ratio 1 high by 2 wide to keep the proportionality with respect the original one.

To change or remove the Logo, just Mouse Left click on Logo Box.



### FIG: 5.12 Edit Logo

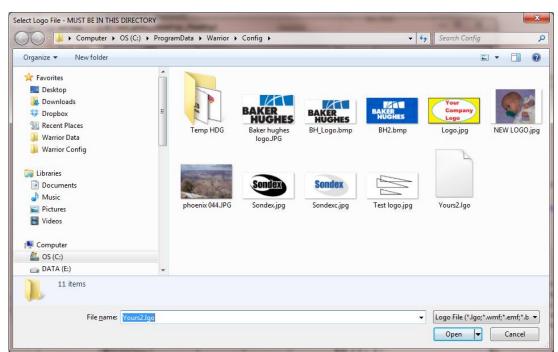


FIG: 5.13 Select the new Logo

### 5.2 Heading File Creation

Warrior creates headings by reading a text file that has a .hdg extension. The contents of these files can be viewed by using Windows Notepad. There are several different heading styles that are supplied with the

Warrior software (stdcased, stdopen, and greytest). The purpose of this document is to supply the information need for the user to write his own .hdg text files.

The first two lines of the file define the physical size of the heading in inches as plotted. The width of the heading is the length of the plot from the plotter. The height is the width of the heading, with 8.25 being the standard API log width.

Width 10 Height 8.25

\_\_\_\_\_

You must define panels to make the separate sections of the heading. Pictures, text, text edit fields, and panels may then be placed in the panels. Two pairs of x,y coordinates define the location of a panel as a percentage (0 to 100) of the current panel. The contents of the panel are enclosed in curly brackets. Panel x1, y1, x2, y2

Panel Contents

\_\_\_\_\_

The Border statement defines the thickness of the panel edge. The larger the integer N, the thicker the border will become.

Border N

The Font statement defines the font size of any text that is printed within a panel. The larger the integer N, the larger the font size.

Font N

Both the Font and the Border statement control the effects of the panel that they are in and all panels that are included in that panel, unless the included panel contains Font or Border statements, which are then used for that panel and any panels that it might include.

A picture may be placed within a panel. The location of the picture is defined by two sets of x and y coordinates as a percentage of the current panel. The name of the picture must be declared under the heading section of Warrior.ini.

Picture x1, y1, x2, y2 {NAME}

-----

Text may be placed within a panel. The location of the text is defined by two sets of x and y coordinates as a percentage of the current panel. Previous font statements determine the size of the text. The orientation of the text is determined by a four-letter code - OTHV. The O is the orientation of the text, the T is the type of text, the H is the horizontal centering, and the V is the vertical centering. Text strings that are larger than the area specified may have unpredictable results. They might be truncated or extend outside of the defined area. Multiple line text will automatically wrap at a word boundary if the text exceeds the area length.

O H - Horizontal Text

V - Vertical Text

T S - Single line of Text

M - Multiple line of text

H L - Left justify for horizontal text, Bottom justify for vertical text

C - Center Text horizontally

V T - Top justify for horizontal text, Left justify for vertical text

C – Center Text vertically

TextOTHV x1, y1, x2, y2 "TEXT"

An editable field may be placed within a panel. The location of the field is defined by two sets of x and y coordinates as a percentage of the current panel. Previous font statements determine the size of the text. The orientation of the text is determined by the same four-letter code - OTHV that is used with text. A hint name for the field is enclosed within curly brackets. A hint line is then added (normally at the end of the file) that will give a hint text to the user when he clicks on the field.

EditOTHV 0,0,100,100 {Hint Name} hint "Hint Text" {Hint Name}

\_\_\_\_\_

The following examples are the only commands that are in \*.HDG and \*.WLB files for headings and well log banners.

Width 10 Height 8.25 Panel x1, y1, x2, y2 {Panel Contents} Border N Font N FontfaceN "style" Picture x1, y1, x2, y2 {NAME} TextOTHV x1, y1, x2, y2 "TEXT" EditOTHV 0,0,100,100 {Hint Name} hint "Hint Text" {Hint Name} Comments

### 5.3 Headings LOG Banners File Creations

In addition to heading files (\*.HDG), well log banners (\*.WLB) use the same form of text file but when printed, the orientation is rotated 90 degrees. Thus, a heading has a height of 8.25 inches and a banner has a width of 8.25 inches.

Pipe Tally Tables (\*.WRF) also use a similar format with some variance. The mode of entering user information is quite different.

Comments may be placed anywhere in the file. Comments normally have // as the first two printable characters on a line.

### 5.4 Pipe Tally Tables

Pipe Tally Tables have a few additional commands and the mode that Edit text commands gets their data is different. The edit text fields are pre-defined rather than defined by the Hint Command and are filled from editing the heading information of the pipe tally table, editing the grading of the settings, and from processing the log. The predefined fields are as follows:

{CONAME} - Company Name from Edit - Heading Information {WELLNAME} - Well Name from Edit - Heading Information {FLDNAME} - Field Name from Edit - Heading Information {COUNTY} - County from Edit - Heading Information {STATE} - State from Edit - Heading Information {DATE} - Date from Edit - Heading Information {COMMENT} - Comments from Edit - Heading Information {COMMENT} - Comments from Edit - Heading Information {RANGE1} through {RANGE6} - Maximum of six grading ranges from editing Settings - Grading {SYMBOL1} through {SYMBOL6} - Maximum of six grading ranges from editing Settings - Grading {GRADECNT1} through {GRADECNT6} - Count of the number of joints of that grading acquired from Scan Minimum Wall Log {RWBC\_LVAL} - Bar Chart Left Value from RWBC\_LEFT of Warrior.ini {RWVC\_RVAL} - Bar Chart Right Value from RWBC\_RIGHT of Warrior.ini {RWUNIT} – Units of curve from Scan Minimum Wall Log

{NOX} – Number of Joint X from Scan Minimum Wall Log

{DEPX} – Top Depth of Joint X from Scan Minimum Wall Log

{LENX} – Length of Joint X from Scan Minimum Wall Log

{RWX} – Remaining Wall of Joint X from Scan Minimum Wall Log

{PLXX} – Percentage Loss of Joint X from Scan Minimum Wall Log

{PLF**X**} – Percentage Left of Joint X (100-PLX**X**)

{RWBCX} – Remaining Wall Bar Code of Joint X for Bar Charts

(GRX) – Grade Symbol of Joint X from Range and Symbols above and scan

There are three addition command that are used to create \*.WRF pipe tally tables.

They are as follows:

Recount N

This line must be in the first 512 characters of the WRF file (normally place just after the Width and Height commands). It is a count of the number of joints to be shown on each sheet as the file is printed.

barchart x1,y1,x2,y2 {RWCBZ} Charts bar code for Joint **Z** on RWBC\_left to RWBC\_right Scale

The Bar graphic default can be changed from by editing the Wproperties file. Open Wproperties with notepad and search for [Heading] if the line BarChartCode is not present add it an select a grayscale for the output.

[Heading] BarChartCode=

- 0 white
- 1 light gray
- 2 gray (default)
- 3 dark gray
- 4 black

editHSCCB 0,0,100,100 {GRZ}

Prints Grade symbol for Joint Z horizontal centered both vertically and horizontally on a colored background. The color of the background is defined in Warrior.ini [Heading] section.

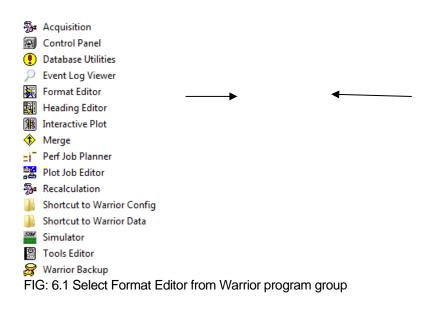
BkColorMap=grade1,{color1},grade2,{color2}, etc.

Where grade {x} is the symbol for a grade and color {x} is R, G, B set

### Section

# **6 Format Editor**

The Format Editor allows the creation and editing of the log presentation or format files. The output of the format editor are files of the type \*.prs which are subsequently used to control all aspects of plotting acquired data. The Format Editor may be started in three different ways: From its icon in the Warrior program group, from the **Edit** menu of the Acquisition or Recalculation modules, or from the **Action** menu of Interactive Plot. In addition, double-clicking in the scales area of the Interactive Plot window will also start the Format Editor. When started from the Warrior program group the Format Editor window will open with no presentation available for edit. Any presentation that is opened from there will be opened in Master Format mode so that any changes that are made will be permanent. If started from the Acquisition or Recalculation the Master copy of the presentation as declared in the current logging service will be opened. For Interactive Plot modules, the log format currently being used will be presented.



S Warrior Logging	System	×	
File Service Action Edit Monitor			
Service: CSSN Database: Dataset:	Tool String Variables		
Realtime Acqui	Heading		
	Master Log Format		
	Plot Job		
	Sensors		
	Calibrations		
	Filters		
	Tool Configuration	•	
💥 TEL Thresh	Device Configuration	•	
	Correlation Curves		

FIG: 6.2 Select Format Editor from the Acquisition window

When the Format Editor is opened from the Acquisition or Recalculation window, the format specified in the current service in the services.ini file is opened in the Master Format mode. Any changes that are made will be permanent to that Master Format. If a private copy of a presentation using that format has been saved to a database, no changes will be made to the private copy.

1 run1/pass3	l
File Options Edit Action Tools Unpause	🕱 run1/pass3
🔁 😹 🕎 着 🛛 Log Format	File_Options Edit Action Tools Unpause
9 Annotations	
0 Ga Log Banner	. <b>                                    </b>
Well Sketch	9 🔥 Collar Locator -1
Log Heading	0 Gamma Ray (GAPI) 200
Multi-File Plot Job	
Zoned Scale Changes	
Gridline setup	
Correlation Curves	

FIG: 6.3 Select Format Editor from the Interactive Plot window

The Format Editor can be opened from three different places in the Interactive Plot window. If you click Edit -> Log Format..., Click on the second icon on the Presentation Plot screen, or double click on the log scales, the Format Editor will open to the current presentation format.

When the Format Editor is invoked from Interactive Plot, changing the log format and saving it causes the active screen plots to be re-plotted with the new format. Note that many screen plots may be overlaid on each other at any one time. If a large number a plot are present, a noticeable delay will occur while all are replotted.

Before going any further we should discuss the difference between a Private Copy of a presentation and a Master Copy of a presentation. The Master Copy of a presentation is a file kept in the Warrior\Format folder. When a log pass is started from Acquistion, normally a copy of this file is placed into the Warrior database. This becomes the private copy that will be edited any time the format editor is opened from the interactive plot. Whether the private copy is used in a service or not is controlled by the service. In the Service Editor, there is a box "Use private copy of a presentation for all logs from this service".

private copy will be placed in the database. Otherwise, the will be no private copy and the master copy will be used at all times. It is recommended that the "Use private copy of presentation for all logs from this service" box be checked in all services.

┌ Service De	tails	
Presentation	Other	Zero point
Title		
🔽 Use private	copy of presentation for all logs from this service	Edit Gains and Filters
Make this se	ervice available for perforating	
	Devices	Controls

FIG: 6.4 Selecting Private copy of presentation in the Service Editor

When Format Editor is opened from the Warrior Program group, no presentation is shown. To edit a presentation, you must first select a presentation and open it. To do this, click on the [Open] button. Or build a presentation from the beginning, including the grid layout.

	E Lo	g Format	Editor				×
	<u>F</u> ile	<u>L</u> ayout	Object	<u>C</u> olor Maps	<u>O</u> ptions		
	<b>0</b>	pen	Add	Change	<u>R</u> emove	Save	Exit
I							
	F						

FIG: 6.5 Open Format

This will display a file selection window showing all the presentation files, currently available, within the system. The operator can select the presentation file to be edited. Note that all presentation files are to be found in the \warrior\format directory and have a prs extension.

) 🕗 🤄 🕨 🕨 Computer 🕨 OS (C:)	• Progra		romat		• <del>4</del> 9	Search Format	
Organize 🔻 New folder						** -	
🧮 Desktop	*	iprs	7inch.prs	858.prs	Cbl_sr.prs	CD3D40P6.prs	CD 📄
🗼 Downloads		OV.PRS	a 10Div.prs	858mit.prs	Cbl01.prs	CD3D40PLT.prs	CD
😻 Dropbox		2minmax5.prs	a 11.prs	@ 958.prs	cbl1test.prs	CD40ARM4.prs	CD
Recent Places		2minmax5p.prs	40ARMCAL4.prs	an8qual.prs	cbl02.prs	CD40ARM5.prs	cet.
퉬 1 Outlook file	=	2minmax6.prs	40ARMCAL5.prs	ancolsig.prs	cbldig.prs	CD40ARM6.prs	Cet
퉬 Warrior Data	=	2pmac40_5.prs	40ARMCAL6.prs	AP_ALL.prs	CBLdr_WS.prs	CD40ARMLT.prs	📄 cha
퉬 Warrior Config		3armCal.prs	40armLT.prs	ap_cclfl.prs	cblgc1.prs	CD60ARM7.prs	Chi
		3D40arm4.prs	40CAL5.prs	ap_cclpr.prs	CBLsr_WS.prs	CDCNSGR.PRS	📄 che
🛜 Libraries	3D40arm5.prs	55in17lb.prs	AP_CCLTE.prs	cbltst.prs	CDMM4PR.prs	📄 cj40	
Documents		3D40arm6.prs	60armkhm.prs	ap_grccl.prs	Cblx.prs	CDMM5PR.prs	📄 cj40
J Music		3D40armLT.prs	60armkhm2.prs	bh caliper.prs	Ccb01.prs	CDMM6PR.prs	Cole
E Pictures		3pmac40 5.prs	65in28lb.prs	CAT.PRS	Ccbx.prs	CDMM60AR.prs	CN
🔣 Videos		in15lb.prs	86in28lb.prs	CAT2.PRS	Ccl.prs	CDMM60ETT.prs	Cnt
		Sin15lbs.prs	240ARMCA.prs	cbg.prs	CCL_WS.prs	CDMMLT.prs	📄 cnt
💺 Computer		Sinch.prs	a 402ARMCA.prs	cbl_dr.prs	CD3D40P4.prs	CDNL.PRS	Col
🚢 OS (C:)		TIN23LB.prs	a 658.prs	cbl_drs.prs	CD3D40P5.prs	CDOVAL4PR.prs	Cold
👝 DATA (E:)		<	<u> </u>	<u> </u>			
	•						
371 items							
File <u>n</u> ame:					•	Presentation (*.prs)	

FIG: 6.6 Select Presentation Format to be Edited

From the Acquisition or Recalculation modules select Edit -> Master Log Format. The log format specified in the currently selected service will be presented. Note that when the master presentation is edited, if a private copy of the presentation has been created in the dataset, changes will not be made to the private copy.

💀 Warrior Logging System					
File Service Ad	tion Edit Monitor				
Service: None Database: Dataset: Realtime Acqui	Tool String Variables Heading				
	Master Log Format				
	Plot Job				
	Sensors				
	Calibrations				
	Filters				
	Tool Configuration				
	Device Configuration  Correlation Curves				

FIG: 6.7 Select Master Log Format

### 6.1 Editing a Log Format

The Format Editor provides the User a means to graphical display data. Any data or variables in a pass, either recorded or imported from external data, can be displayed using one of a few different layout presentations, or the User can create his own layouts. Fig. 6.8 below shows a sample presentation for a radial bond log.

c:\programdata\warr	ior\format\scbl.prs		X
<u>F</u> ile <u>L</u> ayout Object	<u>C</u> olor Maps <u>O</u> ptions		
Open <u>A</u> dd	Change <u>R</u> emove	<u>S</u> ave	E <u>x</u> it
0LTEN0 320 TT 220 0 -9 CCL 1 0 0 GR 150	AMP 100 0 AMPAVG150 20 AMPx5 20 0 AMPMAX150 0 AMPMIN150 AMPAVG AMPAVG	0 VDL 1200 0	VAD 8
DEPTH]			
7 8	9 10	11	(12)

FIG: 6.8 Example presentation

### 6.1.1 Editing a Data Item

To edit the plotting parameters of an existing curve, click on the curve shown and then click the [Change] button. Optionally, if you double click the curve it will also open the Define Data Item dialog window for curve editing.

Define Data Item						×
Data Source				Style		
DB Item	AMPM	IIN		red 💌	-	
	Quick Pick Lis	st Current	t pass		Thickness 1	
C Variable	Data	C List		Zonable Scales	C Solid	
- Position				🔲 Wrap	• Dot	
1 USLION		Left value	0	Logarithmic	O Dash	
Track #	10 +	Right value	150		O Dash Dot	
		right value	1.00	Scale Type	Label and Scales	<b>_</b>
- Presentation Type	e			Label - use carriage return		
Curve	0	Pattern Strip		for multiple lines	AMPMIN	
C Tabular	0	Graphic Strip				
C Variable Dens	sity 🤇	🗅 Image 3D				
C Signature	0	Potato Plot			1	
						ОК
						Cancel

Fig. 6.9 Define Data Item dialog window for curve editing.

The DB Item should be a valid Warrior Data Mnumonic or Warrior Variable but the software does not check to see if the entered DB Item is valid. If the DB Item does not exist in the current pass, the software sets up the DB Item named to be plotted but no curves or curve label are shown in the plot.

If the Format Editor is invoked from a Presentation Plot there will be a [Current Pass] button under the DB Item entry box. Clicking on the [Current Pass] button will show a list of all of the plottable items in the current pass. The [Quick Pick List] provides a list of commonly used DB items, but is by no means a complete list of possible DB items.

Current Pass List		×
From Log Pass: ADPTH AMP3FT AMP5FT AMPAVG AMPCAL AMPCAL AMPCAL AMPCATES AMPMIN AMP51 AMP51 AMP52 AMP53 AMP54 AMP55 AMP55 AMP56 AMP57 AMP58 AMP57 AMP58 AMP57 AMP58 AMPSUM ATT3 BONDIX CCL DTMP ELTIM	4 III >	OK Cancel

Fig. 6.10 Partial list of Data Items from a log pass

There are three basic types of DB items that can be plotted. The most common is a data item that is usally an output. Any of the log variables may be plotted as a variable. The list type would be an array of curves or the same type such as caliper arms or sector amplitudes.

Define Data Item						×	
Data Source — DB Item	Quick Pick List		pass	Style	Thickn	ess 1	
C Variable	🖲 Data	C List		Zonable Scales		C Dot	
Position				🗌 🗌 Wrap		🔿 Dash	
Track #		Left value Right value	0			C Dash I	Dot
Presentation Typ	be			What to show in scale —	🔽 Label	🔽 Units	Range
Curve	0	Pattern Strip					
C Tabular	0	Graphic Strip		Label - use carriage return for multiple lines			
C Variable Der	nsity C	) Image 3D					
C Signature	C	Potato Plot					
							OK Cancel

Fig. 6.11 DB Item Types

The curve may be put into any track that is defined in the current grid layout as shown at the bottom of the window. Note that the track numbers do not necessarily conform to any API standard. The track number can be changed by typing in the track# window or by using the scroll bar buttons next to the window. The presentation may use any of the predefined layouts or the User may edit or build his own layouts, as will be discussed later.

Position		Left value Right value	0	
Presentation Type				
[DEPTH]				
78	9	10	11	(12)

Fig. 6.12 Assigning curves to a track

The presentation type to be plotted will depend upon the data that has been selected. Most data and variables will be plotted using a curve or a Tabular list of the data. Waveform data will normally be presented using a Variable Density or Signature.

Pattern strips represent the values using a color pattern. Certain items such as Well Objects are plotted as a graphic strip. Caliper arrays can be plotted as a 3D image. Caliper cross sections and other items would be plotted as potato plots.

Curve	Pattern Strip
🖱 Tabular	C Graphic Strip
🖱 Variable Density	C Image 3D
Signature	C Potato Plot

Fig. 6.13 Presentation types

### 6.1.1.1 Plotting Data Item as a curve

When a data item or variable is plotted as a curve, there are several other options besides the track and the scale values. These options include the color of the line, the thickness, and the dash pattern.

The curve may also be plotted logarithmically between the scale values (Note that curves are plotted regardless of the grid layout that is in that track).

The Wrap option allows a curve to re-enter the track from the opposite side if it has exceeded the scale value. Zonable scales allows the user to set the scales to different values through different depth intervals on the log pass. The values and depths are entered through the "Edit -> Zoned Scale Changes ..." option in Interactive Plot.

	[	efine Data Item	X
Data Source — DB Item © Variable	Quick Pick List Current pass	Style	Thickness 2
Position		□ Wrap	C Dash
Track #	8     Left value     0       •     Right value     15		C Dash Dot
Presentation Ty	pe _	What to show in scale	I Label I Units I Range
Curve C Tabular C Variable Dei C Signature	C Pattern Strip C Graphic Strip Insity C Image 3D C Potato Plot	Label - use carriage return for multiple lines	GR
			OK Cancel

Fig. 6.14 Curve Style Options

### 6.1.1.2 Plotting Data Item as a Tabular Value

Scalar database items and variables may also be plotted as tabular data. The track is selected from the Grid Layout as before, but in this case the scales are not used. The color chosen will be the color that the tabular text is printed. The tabular data can be plotted in the left, middle, or right position of the selected track. The number of decimal places to be shown can be selected. If the data is plotted by interval, the interval between samples shown on the log can be selected. If the data is plotted by data, the delta change of the data can be selected, with the data being displayed whenever the amount of change has been reached. As with plotting a curve, the label may be changed from the Warrior mnemonic and whether the label and units are shown on the scale inserts can be selected. The Range, like the scales, is not used in this instance.

		Det	fine Data Iten	n				x
Data Source DB Item C Variable Position Track # Presentation Ty C Curve C Tabular C Variable De C Signature	npe CPa CGr nsity CIm	Current pass	Style black C Auto C Auto C .0 What to sh	C .00 C .000 C .000 C .0000 now in scale —	Tabu	C Middle Interval Jar by interval Jar by delta IIII Units GR	C Right I 50 ▲ ✓ Range	
							Cancel	

Fig. 6.15 Tabular Listing Style Options

6.1.1.3 Plotting Waveform Data Item as a Variable Density

Database items that are digitized waveforms can be plotted as either a Variable Density or as a Signature. The track is selected from the grid layout in the normal manner. The left and right scales are the sample times in microseconds. If scale values are selected that are out of the digitized range of the data item, then the maximum digitized value is used.

When waveforms are plotted as a variable density, normally the Percentage of the waveform windows maximum size is used. The Percentage of Black level and White Level set the levels to change to the last shades of the color map. As an example, if the color map had black, white, and three shades of gray between them, and the percentages were both set to 40%, then when the signal height gets greater than 40% or 1.0 volts positive the signal will be black, between 40% and 20% the first shade of gray, between 20% and -20% the second shade of gray, between -20% and -40% the third shade of gray, and at greater than -40%, or 1 volt negative signal, will be white. The percentages should be kept approximately equal if a small number of different shades are in the color map to keep the baseline in the middle shade. Note that by lowering the percentages, this in effect increases the contrast of the signal, making very small signals visible.

Constructed waveforms made from array of data, such as sector maps made from the individual sector amplitude data, may also be plotted as a variable density. In this case, if Specific Values is chosen, then the calibrated output value of the data is used to set the upper and lower limits. If we use limits of 10MV and 60MV and a map with black and white and three grays, then when a sector amplitude is less than 10MV, that section of the map will be black. When a sector amplitude is between 10 and 23.3, the first shade of gray will be shown. When a sector amplitude is between 23.3 and 36.6, the second shade of gray will be shown. When a sector amplitude is between 36.6 and 60, the third shade of gray will be shown. And when a sector amplitude is greater than 60MV, that section of the map will be white.

In addition to the options for labeling the scale insert as before, the User has the option to show the mapping in the insert or not.

		Defir	ne Data Item		×
Data Source DB Item C Variable Position Track # Presentation Tr C Curve C Tabular Variable De C Signature	C Patt C Gray	value 1200 tem Strip phic Strip ge 3D	Style Set Intensity by: Percentage* Specific Values Use % for sonic VDL, speci What to show in scale Label - use carriage return for multiple lines	VDL Black Level 40 % VDL White Level 40 % ific values for maps I Label I Units I Ra	▲ ▼ ■
			Color map Show color map in log in	sert	DK Incel

Fig. 6.16 Waveform Variable Density Style Options

### 6.1.1.4 Plotting Waveform Data Item as a Signature

Waveform data can also be plotted as a signature. The scales are the time in microseconds of the waveform capture as with a variable density and are limited by the actual time of the capture.

The User has the options of scaling the relative height of the waveform in the presentation and the interval of how often the curve is plotted. The interval is in the units of the log, feet or meters. The positive portion or the negative portion of the waveform can be selected for shading. The waveforms can also be presented using a logarithmic gain and / or with waveform maximum readings all normalized to the same value. The position of the waveform in the track can be shifted by entering a Vertical Skew value in the depth units.

	Defir	ne Data Item	×
Data Source	WVFSFT Quick Pick List Current pass	Style black  No Shade	Signature Height 0.5
C Variable	Data     Left value     200	C Shade Pos C Shade Neg	Signature Height 0.5
Track #	12 Right value 1200	What to show in scale	
Presentation Typ C Curve C Tabular C Variable Den	C Pattern Strip C Graphic Strip	Label - use carriage return for multiple lines	5' signature
<ul> <li>Variable Den</li> <li>Signature</li> </ul>	C Potato Plot	Ved Share	
		Vert. Skew	OK Cancel

Fig. 6.17 Waveform Signature Style Options

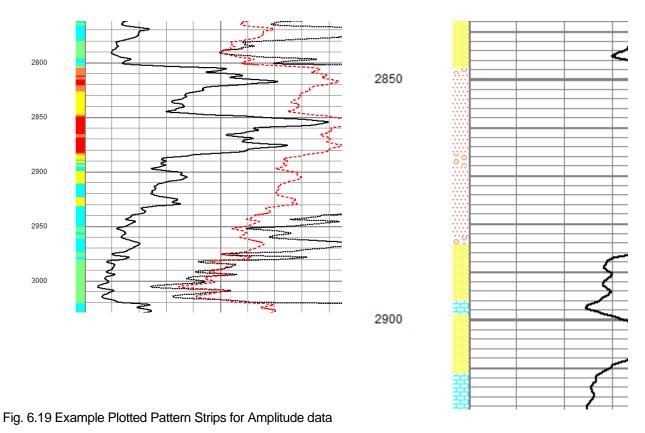
### 6.1.1.5 Plotting Data Item as a Pattern Strip

Data item may also be plotted as a pattern strip. Rather than plotting a curve, the data is shown as a band, or strip that changes shades or colors to indicate relative value across the whole width of the track that it is plotted in. The left and right values are the maximum extents of the color map used for shading. The last colors of the color map are used if the scale values are exceeded. An example of a bond amplitude curve used to indicate good bonding or poor bonding is shown in the figure below.

It is possible for the shading to be composed of one of the 25 different shading patterns that Warrior Software uses for the shading of logs. However, at the present time this requires hand editing of the color map in the Warrior.INI file. If this should be needed, contact Scientific Data Systems for further instructions.

	Defir	ne Data Item	X
Data Source — DB Item	AMP3FT Quick Pick List Current pass	- Style	
C Variable	Data		
Position Track #	7     Left value     0       V     Right value     72		
Presentation Ty	pe	What to show in scale	I Label I Units I Range
C Curve C Tabular C Variable De C Signature	C Pattern Strip C Graphic Strip nsity C Image 3D C Potato Plot	Label - use carriage retum for multiple lines	AMP3FT
		Color map	BondMap  OK Cancel

Fig. 6.18 Plotting Pattern Strip



### 6.1.1.6 Plotting a Graphic Strip

Graphic strips are used to plot well objects created by the Well Object Editor. These are normally created by using Edit -> Well Sketch. The allows the User to create a Well Sketch containing perforations, plug, packers,

tubing, etc. and placing them in any defined track in the grid layout. The DB Item selected to be plotted is WELLOBJ.

		Defi	ne Data Item			×
Data Source	ype C. Pa C.	Current pass value 0 t value 100 ttem Strip age 3D tato Plot	Style	I Label	Vinits wellobj	▼ Range
						OK Cancel

Fig. 6.20 Plotting a Graphic Strip

### 6.1.1.7 Plotting a Image 3D

A graphical 3-dimensional image can be plotted in the specified track. This is usually a representation of something like the casing taken from the readings of a multi-fingered caliper log. The software allows you to represent any array data as a 3D presentation, there is a Non-Caliper checkbox that should be checked if the array is not caliper data. The left and right scale values are not used in this instance, the scale values shown are taken from the image properties. Click on the [Image Properties] button to open the image properties dialog.

By clicking on the [Edit Variables] button, the Casing O.D. and Casing I.D. will be updated. These variables are what set the shown left and right scale values of the presentation.

		Defir	ne Data Item			×
Data Source — DB Item	IMGMAP Quick Pick List	Current pass	Style			
C Variable	Data					
Position	Left v	value 3.5		nage Properties	1	
Track #	2 Right	value 4.5		nage Propentes		
Presentation Ty	pe		What to show in scale —	✓ Label	🗌 Units 🔲 Ran	ge
Curve Tabular Variable Der Signature	⊂ Gra nsity <mark>⊙ Ima</mark>	ttern Strip aphic Strip age 3D tato Plot	Label - use carriage return for multiple lines		IMGMAP	
			Color map Show color map in log ins	BHImage	▼ OI Can	

Fig. 6.21 Plotting a 3D Image

What to plot	- How to plot
Non Caliper Mode	3D Plot range (height of diagram) 1.00 ft - 600000 sample
Curve setup Caliper Array High Caliper Of Caliper on high side) Other curves for 2D display Add Remove	Min, max reading O, 0 Save/print at this resolution O dpi 3D Perspective image Ves No Use colomap for 2D Simulate Outside Diameter (2D mode only)
	Simulate OD as Caliper + (Real OD - Real ID)
Drawing         Color         Size (in)         Opacity(%)           ✓ Calipers         2D color         100         100           ○ Casing I.D.         5.0120         50         50           ○ Casing O.D.         5.5000         50         50	Caliper start 0  Caliper stop 0  Color Maps
Minimal diameter         4.5240         50           Edit Variables         Edit Variables           Tool O.D.         0.00         100           ✓ Depth Axis         ✓	Caliper readings are radii Caliper numbered CCW Show 3D plot using deviation Hide 2D am labels
Background	Orawing reference     C asing ID OD     C BOREID +/- bounds
Plot resolution High Low 40 2D line width 0 ÷ Zoom 150 ÷ Rotate 0 ÷	More Options Set to Defaults Cancel OK

Fig. 6.22 Plotting a 3D Image - Image Properties

### 6.1.1.8 Plotting a Potato Plot

A potato plot is used to plot a graphical image such as a cross-section diagram from a multi-fingered caliper or a dip meter histogram. As with a 3-D image the image is placed in the appropriate track, but the scales have no relevance.

	Defi	ne Data Item		×
Data Source DB Item C Variable Position Track #	IMGMAP       Quick Pick List     Current pass       Image: Data     Image: Data       Image: Data     Image: Data	Style	Height 1 Interval 25	•
Presentation Ty C Curve C Tabular C Variable Der C Signature	C Pattern Strip C Graphic Strip	What to show in scale		nge )K ncel

Fig. 6.23 Plotting a Potato Plot

Cross Section Pre	esentation Options X
What to plot Curve setup Caliper Array High Caliper (Curve containing ID of caliper on high side) Other curves for 2D display Add Remove	How to plot         Plot range (height of diagram)         0.01       ft - 12 samples/ft         Undersample       sample(s)         Actual       0         Min, max caliper reading       0, 0         Save/print at this resolution       300       dpi         Perspective image       C       Yes       No
Color       Size (in)       Opacity(%)         ✓       Calipers       2D color       100         ✓       Casing 1.D.       4.0520       50         ✓       Casing 0.D.       4.5000       50         ✓       Depth Axis       3.13       100         ✓       Depth Axis       50       50         Background       50       50       50	Simulate Outside Diameter (2D mode only) Simulate OD as Caliper + (Real OD - Real ID) Caliper start Color Maps Color Maps Plot options V Caliper readings are radi Caliper numbered CCW Show 3D plot using deviation Hide 2D am labels
Text ■ Plot resolution High Low 200 2D line width 1 ÷ Zoom 140 ÷ Rotate 0 ÷	Drawing reference       © Casing ID OD       © BOREID +/- bounds         More Options       Set to Defaults       Cancel   OK

Fig. 6.24 Potato Plot Presentation options

#### 6.1.1.9 Plotting a List Item

By selecting the List data type, the user may plot a list of curve that are sequentially numbered and have the same prefix ( caliper arms – R0, R1, . . . and Sector Amplitudes – AMPS1, AMPS2, ... as examples) as a single presentation entry.

The track # needs to be a valid grid track as before. The scales values should be selected as if a single curve were to be plotted in the track.

	Defir	ne Data Item			×
Data Source Name	dius ⓒ List	Style			
Position Track # 4	Left value 1.9 Right value 2.25	Cur What to show in scale	rve List Properti	Es Dirits	T Range
		Label - use carriage retum for multiple lines		Radius	
					OK Cancel

Fig. 6.25 Plot a List of Curves

When you click on the [Curve List Properties] button the Curve List Editor dialog window will come up.

How to create curve list         Image: List of related names such as (CAL1,CAL2,CALn)         Enter curve name with wildcard.         For example, R0° will select R01-R40.         R* will select R01-R40         plus any other curve that starts with R.         RC0°         R39         R40         R8         Image: RC01         RC02         RC03         RC04
Cancel

Fig. 6.26 Plot a List of Curves Properties

By clicking on a curve name or mnuemonic, the list of related curve names will be shown with the \* appended as a wild card character(s). The style for thickness, dash pattern, color, and other selections are chosen as normal with the expection that the selected style (excect for color) applies to all of the curves. Every nth curve may be selected to have a different color other than the base color selected in the style.

The offset between each curve can be entered to separate the curves in the presentation. The offset has several effects. As an example, let us say that the original left and right scale values are 0.0 and 10.0, and we use and offset of 1.0. Each time an additional curve is picked up the presentation changes by the amount of the offset. When the first curve is added, the overall track scaling changes to 0.0 to 11.0, with the first curve plotted from 0.0 to 10.0, while the second curve is moved or by the the offset of 1.0 and then plotted from 1.0 to 10.0 making the total track width of 11. When the second curve is picked up, the effective grid scale changes to 0.0 to 12.0 to accomadate the additional 1.0 offset of that curve. This continues untill all of the curves that are chosen are picked up by the presentation. Although each curve is plotted to the left and right

scal values specified, the overall scales of the grid itself are the scale width plus the number of curves minus one times the curve offset.

### 6.2 Format Editor - Grid Layout

The grids or mattes that are used in the Warrior Software are extremely flexible. 20 different styles of tracks may be placed anywhere on the page. The layout is not a fixed width so that when the plot is printed it will fit on whatever width paper is used in the plotter from narrow 1 track plotters up to 17" or wider plotters. To choose a different layout, click on "Layout" and the available list of grid layouts will drop down. Click on any of the layouts available, and that layout will then be shown at the bottom of the Format Editor window. When the new layout is chosen, the track numbers as shown in the format editor may change significantly. This may cause many of the data items plotted as curves to lose their assigned tracks. It is a good idea to check at least one curve as this will show where all the curves would be plotted.

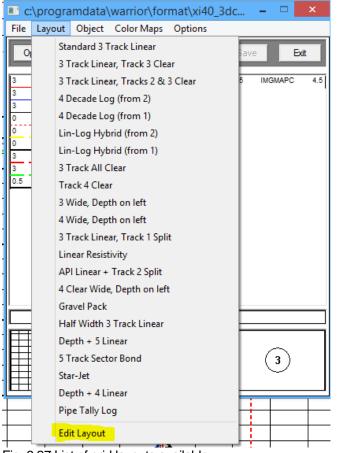


Fig. 6.27 List of grid layouts available

### 6.2.1 Format Editor - Grid Layout Editor

Even with the supplied list of grid layouts, it would be impossible to have a list long enough to accommodate all the possibilities of layouts the might be desired. To this end, the User can create and save his own grid layouts. At the bottom of the layouts list is the Edit Layout option. Click on Edit Layout to bring up the Layout Grid Editor.

There are two modes that the Layout Grid Editor can be entered. The first is a custom mode that allows the grid layout in the existing presentation to be edited. This mode is entered by as soon as the Format Editor is

opened clicking on "Layout -> Edit Layout". The second mode allows you to edit the Master Layouts list that shows all the available layouts. This allow the User to Rename layouts, delete layouts, change the order of the list by moving the layouts, and to copy an existing layout and giving the copy a name thereby creating a new layout.

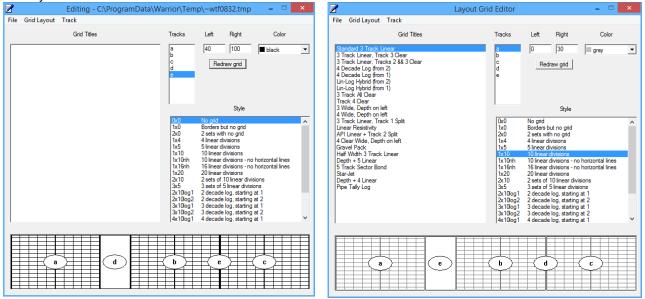


Fig. 6.28 Layout Grid Editor

### 6.2.1.1 Layout Grid Editor - Editing tracks

The width of the layout goes from 0 on the left to 100 on the right. When the log is plotted, the presentation will cover the width of the plotter regardless of the plotter width. Each track can be specified to be any width and be placed in any position on the page. When the track is highlighted in the Tracks column any of the existing grid styles may be applied to that track.

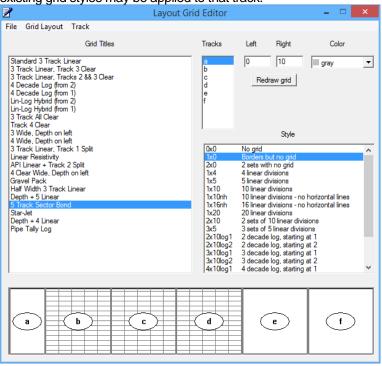


Fig. 6.29 Editing an existing layout

Tracks may be added or removed from the layout by clicking on Track -> Add ( or -> Delete). By clicking on the [Redraw grid] button, the grid track changes that have been made.

2	Layout Grid Editor		_ □	×
File Grid Layout Track				
Add Delete 3 Track Linear, Track 3 Clear 3 Track Linear, Tracks 2 && 3 Clear 4 Decade Log (from 2) 4 Decade Log (from 1) Fig. 6.30 Adding or Deleting Tracks	Tracks b c d e	Left Right 0 10 Redraw grid	Color gray	•

6.2.1.2 Layout Grid Editor - Editing List of Layouts

By	0	clicking	on	Grid	Layout,	the	User	can	edit	the	list	of	displaye	ed grid	layouts.
Ø	?						Layout	t Grid	Edito	r				_ 🗆	×
F	ile	Grid La	yout	Track											
			ename elete	e	itles				Tracks		Left	Ri	ght	Color	
	Sta 3 T		ору						a b		0	1	D	gray	•
	3 T 4 D		love		lear				c d		Re	draw <u>c</u>	grid		
		ecade Lo Log Hybr							e f						
		Log Hybr							ľ						
3 Track All Clear															
	Track 4 Clear 3 Wide, Depth on left							1				Style			
<b>T</b> : -				- Bat at	سيتما امترسه	-									

Fig. 6.31 Editing the list of grid layouts

By clicking on "Rename", the current name of the grid selected will be shown. By typing the new name of the grid in the box and selecting [OK] the grid will be renamed.

Rename Grid							
New grid title							
5 Track Sector Bond							
	Cancel	ОК					

Fig. 6.32 Renaming a grid layout

If "Delete" is selected, a verification window will open to confirm the deletion and to prevent accidental deletions. If [Yes] is clicked, the selected layout will be deleted from the list.



Fig 6.33 Deleting a Grid Layout

If "Copy" is selected, a window will open that the User can type a name for the new layout that will be generated when the existing layout selected is copied. This new layout will then appear at the end of the current list of layouts.

Copy grid from (Standard 3	Track Linear)
New grid title	
Cancel	ОК

Fig. 6.34 Enter new title for copy of existing layout

If "Move" is selected, the User will be allowed to move the selected layout to any position in the list of layouts. The "Move Grid Layout to" window will open. By selecting a position in the list, the currently selected layout will be moved to that position and all layouts from that position will be moved down.

Move grid layout to	
1=Standard 3 Track Linear 2=3 Track Linear, Track 3 Clear 3=3 Track Linear, Tracks 2 && 3 Clear 4=4 Decade Log (from 2)	^
5=4 Decade Log (rom 1) 6=Lin-Log Hybrid (from 2) 7=Lin-Log Hybrid (from 1) 8=3 Track All Clear 9=Track 4 Clear	~
Cancel OK	

Fig. 6.35 Moving a Layout in the list of Layouts

# 6.3 Format Editor - Object

By selecting "Object" from the Format Editor the User has several options. The first is "Add Data". This is the same as clicking the [Add] button and allows the User to add information to the presentation. If an item has been selected, the "Change Current Selection" and "Remove Current Selection" choices have the same effect as the [Change] and [Remove] buttons.

I	📧 1x:/field/well/run1/Main/_logform_/1 🗕 🗆 🔀							
	File Layout	Object	Color Maps Options					
I	Open		Add Data /e Exit					
I	2 Maximum Dian	Se Se	Select Data or Shading					
	2 Minimum Dian							
1	2 Average Diam	Ch	Change Current Selection					
	2 30% Wall Loss (	Re	Remove Current Selection					
	2 Tubing ID							
1	2 Tubing OD	) 3	3 FING06					

Fig. 6.36 Object Selection of Format Editor

The "Select Data or Shading" Selection allows the User to select any item that has been added to the presentation showing the DB Item type and the Warrior mnemonic. If it is shading, the left and right boundaries will be shown. Once selected the item may be changed or removed.

	Choose an item		×
Curve Tabular Curve Shade Shade Curve Curve Curve Tabular Tabular Curve Curve Curve Curve Curve Curve Curve Curve Curve Curve	Rxo\Rt RWA GR GR (200) to GR DPOR to CNPOR SP SWPOR RLL3F ABHV TBHV CNPOR TT4 TT3 TT2 TT1 GR ITT	~	OK Cancel
Curve Shade Curve Curve Shade Curve	DPOR MI to MN MI MN MCAL to BOREID BOREID	~	

Fig. 6.37 Selecting Data or Shading

#### 6.3.1 Format Editor - Object - Add Shading

Shading may be added to a Warrior Format presentation by selecting "Object -> Add Shading". The left and right boundaries may be any plotted curve or a constant value of a curve to set the position in the track where the curve is plotted.

S	hading ×					
Left Boundary	Right Boundary					
Curve Mnemonic GR	Curve Mnemonic GR 🗨					
C Follow Curve	Follow Curve					
Constant     10	C Constant 100					
<	>					
Selected: Diagonal 2						
Foreground: I black	🔲 See Through					
Label - use carriage return for multiple lines	(leave blank for no insert ) OK Cancel					

Fig. 6.38 Adding Shading

In the example shown in Fig. 6.38, the left boundary is set to a constant of 10 in the GR track, so if the GR scales were 0 to 100 then the shading would occur from 1 division in the GR track on the left to the GR curve on the right.



Be aware that it is the position of the curve in the track that is being shaded, not the value of the database item. The use of wrapped curves may cause unexpected results when shading. As an example, if you have a GR from 0 to 100 as a curve and you wish to shade from a GR constant value of 100 to the curve, you will get no shading

since the GR has to wrap to get to the greater than 100 value. To shade something like an off scale Gamma Ray, a second instance of the GR data item should be added (the user may want to use different lettering to identify the curve, such as Gr or gr) to the plot with the appropriate off scale left and right values with no wrap and then shade that curve from a constant that is the left boundary to the curve as the right boundary.

There are 25 different styles of shading that can be used. Note that there is a horizontal scroll bar to provide access to all the different patterns available. The color of the shading can be selected by clicking on the drop down list labeled as "Foreground:" If "See Through" is not checked, then the shading will cover all the presentation behind it. If "See Through" is checked, then grid lines and curves will show through behind the shading pattern. A label may be used to identify the shading in the format editor. Not that the label does not show on the plot itself unless it is selected in the Options, as discussed shortly.

# 6.4 Format Editor – Color Maps

Color maps are used to present variable density, 3D Images, and some pattern strips in Warrior. Each printing device and the screen can have its own presentation for a color map. If no presentation is available for the

device, the software interprets the screen presentation and uses it for the device. The User can create and/or edit his own color maps by clicking on "Color Maps -> Edit" from the Format Editor.

п с	\progra	mdata\	warrior\for	mat\xi40	_3dc		×
File	Layout	Object	Color Maps	Options			
Or	pen	Add	Edit	ove	Save	e Ex	it
1							
3	IDMXC	5 p	ss Secti <mark>3.5</mark>	IMGMAP	4.5 3.5	IMGMAPC	4.5
3 3	IDMXC IDMNC	5 p 5	ss Secti <mark>3.5</mark>	IMGMAP	4.5 3.5	IMGMAPC	4.5
3 3 3			ss Secti 3.5	IMGMAP	4.5 3.5	IMGMAPC	4.5
3 3 3 0	IDMNC	5	ss Secti <mark>3.5</mark>	IMGMAP	4.5 3.5	IMGMAPC	4.5

Fig. 6.39 Edit Color Maps

		ColorMap Editor Screen - Colors02	×
<ul> <li>□- Screen</li> <li>□- GrayScales</li> <li>□- Sectors</li> <li>□- Colors01</li> <li>□- Colors02</li> <li>□- Colors03</li> <li>□- CATVDL</li> <li>□- MITVDL</li> <li>□- MITREV</li> <li>□- BHImage</li> <li>□- PDF File</li> <li>□- Inage File</li> <li>□- Isys V8.5E (VeritasE)</li> <li>□- Printrex 843</li> <li>□- Printrex 920</li> <li>□- ISys V8.5 (Veritas)</li> <li>□- Printrex 840</li> </ul>	New Add Change Remove Reverse Blend count Save Save Close		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Fig. 6.40 Color Map Editor

#### 6.4.1 Format Editor – Color Maps – Creating and Editing

To create a new color map, first click on the device or screen that you want to create the color map for. Then click the [New] button to ensure a new map. Now click the [Add] button to bring up the Windows color palette. You can select any color and /or adjust the settings for the color. When you click [OK], that color will be added to your color map. You can continue adding colors, with each additional color placed to the right of the existing ones.

Col	or		×
Basic colors:		÷	
Custom colors:			
		Hue: 115 Sat: 166	Red: 149 Green: 236
Define Custom Colors >>	Color Solid	Lum: 181	Blue: 225
OK Cancel	A	dd to Custom (	Colors

Fig. 6.41 Windows color palette

At any time, on new or existing color maps, if you click on a color and click [Change], that color can be edited again to replace the existing color.

Similarly, by clicking on a color and clicking the [Remove] button, that color can be removed from the color map. Care should be taken when doing this as the [Remove] button will give the option to remove the color map if no color has been selected for removal.

The [Reverse] button allows the User to reverse the order of the colors shown in the color map.

The [Blend] button can function in two different ways. If the "count" box has a number in it, then clicking on [Blend] will cause that many new shades blended between the existing colors to be inserted between every pair of colors. If no count is in the box, the colors will be blended to a maximum of 256 different shades of colors.

Clicking the [Save] button will save any changes made to existing color maps (same as . The [Save As ...] button will allow the User to save the color map with a new name that will then appear in the colormaps list. [Close] will close the color map editor reminding the User of any unsaved changes.

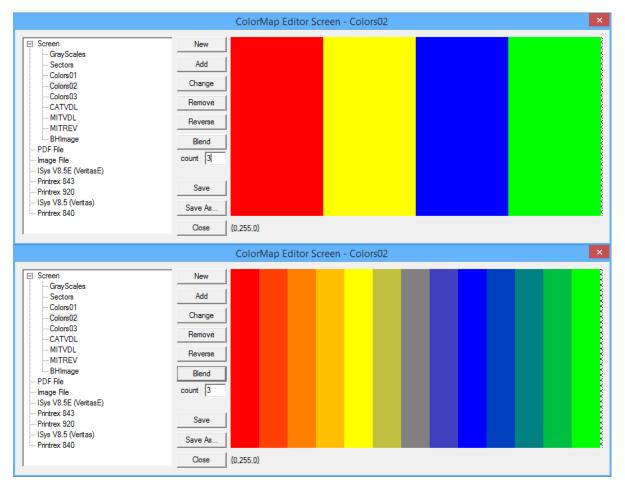


Fig. 6.42 Blending colors in color map

6.4.2 Restoring Color Maps from other systems

The Warrior 8 software now allow for the transferring of color maps between systems. On the system that has the color maps that you wish to use, go to Warrior Backup and do a backup to a file. Transfer the file to the system that you want to put the color maps on, and then run Warrior Backup on it.

-‰	Acquisition					
Q.	Control Panel					
	Database Utiliti	es				
2	Event Log View	/er				
8	Format Editor					
S.	Heading Editor					
315	Interactive Plot					
♦	Merge					
±i"	Perf Job Planne	er				
	Plot Job Editor					
-‰	Recalculation					
6	Release Notes					
5114	Simulator					
	Tools Editor					
8	Warrior Backup	)				
	Short Warrior					
	Shortcut to Wa	rrior Config				
8			Warrior Backup			×
<u></u>						
	<u>B</u> ackup		<u>R</u> estore	Restore Critical	Files	
	<u>B</u> ackup Options		<u>R</u> estore	R <u>e</u> store Critical	Files	, 1
		C:\ProgramData\W	<u>R</u> estore /arrior\Backup\warcfg14011'		Files	
	Options		/arrior\Backup\warcfg14011			
<b>,</b>	Options Back up to	C:\ProgramData\W Configuration Back	/arrior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to		/amior\Backup\warcfg14011	7.conf.wbu		
<b>,</b>	Options Back up to		/amior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to Comment		/amior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to Comment		/amior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to Comment		/amior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to Comment		/amior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to Comment		/amior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to Comment		/amior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to Comment		/amior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to Comment		/amior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to Comment		/amior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to Comment Advanced >>		/amior\Backup\warcfg14011	7.conf.wbu		
	Options Back up to Comment Advanced >>		/amior\Backup\warcfg14011	7.conf.wbu	Browse	

Fig. 6.43 Using Warrior Backup to backup files from a system

Go to the Restore page and use the [Browse] button to select the file. Click the [Advanced >>] button to see a list of the files in the backup file. Uncheck the uppermost check box to un-select all files in the backup. This prevents doing a complete restore from the first system. Click on the [+] beside configuration. Click on the [+]

beside Color Maps. You should now see the list of color maps from the first system. Check the box beside each color map that you wish to restore.

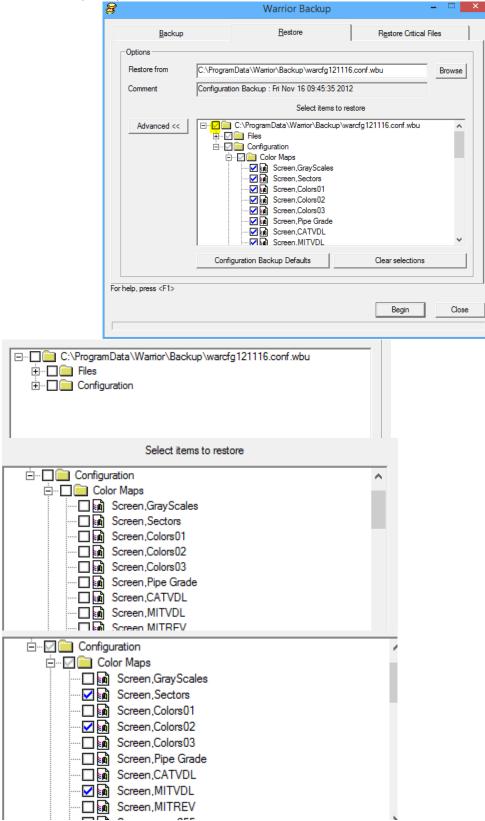


Fig. 6.44 Restoring Color Maps

# 6.5 Format Editor - Options

The options that are available in the Format Editor are to show a tool image on the side of the presentation during logging passes. To show the shading labels in interactive plot and on prints, like what is shown in the format editor. Bore Hole Image presentations can be attached to a presentation format so that when the presentation is called up the borehole image presentation also come up provided valid data values are available.

Options				
When logging, show tool position on Interactive Plot				
Show shading legend in log insert	ОК			
BHImage presentation xipe40.bhf	Cancel			

Fig. 6. 45 Format Editor Options

# Section

# **7 Interactive Plot**

Interactive plot is used for the viewing and optional plotting of acquired data either recorded as depth or time. Interactive plot is normally started from Acquisition by clicking on Action -> Record Up, or optionally Record Down or Record on Time. How the data is presented is initially controlled by the presentation that has been selected for each separate service. Note that even if interactive plot is closed that data continues to be acquired and recorded until the Action -> Stop command is invoked from acquisition.

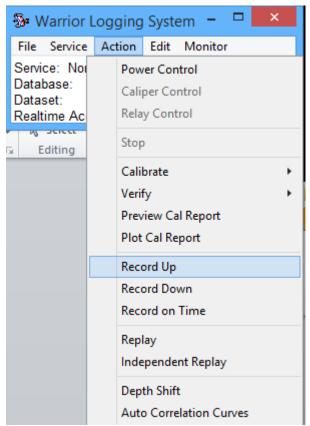


Fig. 7.1 Starting Interactive Plot from acquisition

Multiple instances of Interactive plot may be opened at the same time showing the same data with different presentations or with different passes of data even if they are not from the same database. To start an addition instance of Interactive plot from Acquisition, click on Action -> Replay or optionally Independent Replay. Replay will allow the user to view any previously recorded pass within the current database open in Acquisition, while Independent Replay allows the User to select a different database and open any pass within that database.

😼 Warrior Logging System 🗕 🗖 🗙						
File Service	Action Edit Monitor					
Service: Nor Database: Dataset: Realtime Ac	Power Control Caliper Control Relay Control					
Editing	Stop					
	Calibrate Verify Preview Cal Report Plot Cal Report					
	Record Up Record Down Record on Time					
	Replay Independent Replay					
	Depth Shift Auto Correlation Curves					

Fig. 7.2 Invoking additional instances of Interactive Plot from Acquisition.

Independent Replay functions the same as if Interactive Plot were started from the Warrior Software group.

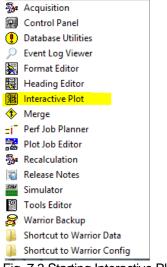


Fig. 7.3 Starting Interactive Plot from the Warrior Software group

# 7.1.1 Interactive Plot – File Selection – Select Dataset

If Interactive Plot is started from the Acquisition window the data will normally be immediately displayed on the screen. When Interactive Plot is started from the Warrior Software group no presentation is shown because the data to be displayed has not yet been selected. To select the data, click on File -> Select Dataset ... The User can then select a database file and then select a pass from that file. At that point, the data may still not be displayed on the screen.

<b>M</b>			Warrior Interactive Plot
File	Options Edit Action	Tools	Pause
	Select Dataset		
	Import ASCII Files Export to LAS Kill ALL Interactive Plots		
	Exit		

Fig. 7.4 Interactive Plot File Selection

To display the data, click on Action -> Screen Plot or click on the monitor icon (third from left).

38			Wa	rrior lı
File Options Edit	Action	Tools	Pause	
e   🕷 🧧 🖧 🖗		reen Plot		
	Pr	int		

Fig. 7.5 Displaying selected data

7.1.2 Interactive Plot – File Selection – ASCII Data

ASCII data files can be imported into a Warrior database by selecting the File -> Import ASCII Files ... selection. The existing database that has been selected can be written to an LAS file by selecting the File -> Export to LAS ... option.

Refer to the Database Utilities section 13.x.x

7.1.3 Interactive Plot – File Selection – Exit

The current active Interactive plot may be closed by click on File -> Exit. All Interactive plots that are open many be closed by click on File -> Kill ALL Interactive Plots.

## 7.2 Interactive Plot – Options

The Options selection of Interactive Plot allows the User to change the presentation of the current database pass selected. These options include the start and stop depths of the presentation regardless of the range of the acquired data. The format presentation file used to present curve data can be chosen. There is the option to add more than one presentation. If this is selected each presentation will appear as a tab in interactive plot. The vertical scale of a log pass can be set to certain standard values. The depth can be shown as either English Units of feet or Metric units of meters regardless of the units that depth was set at when the log was acquired. The data displayed can be shown as English units, Metric Units, or a mix of User defined Units regardless of the default unit selection shown in the Warrior Control panel for acquiring data. The scrolling

rate of the data can be selected so that if the plot screen is updated it will scroll quickly in the fast speed and more slowly in the normal speed.

If the check box – "Use private copy of presentation with this log" is checked than any changes made to the format presentation will only affect the passes in the current database that is being used. If the box is not checked, then any changes to the format presentation will be written to the presentation file that is saved in Warrior\Format folder and will be in effect when a new database is used.

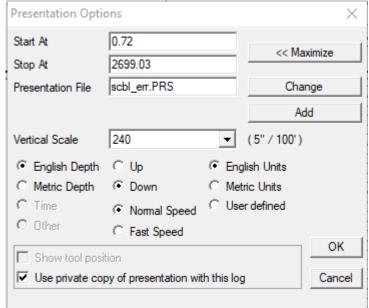


Fig. 7.6 Interactive Plot – Plot Options

### 7.3 Interactive Plot – Edit

Edit from Interactive Plot allows some addition features to be added to a log pass and invokes some programs that can be accessed elsewhere.

7.3.1 Interactive Plot – Edit – Log Format

The Log Format selection will open the Format Editor with the presentation for the current pass. If the pass is using a Private Copy of the presentation, it will be the private copy that is being edited. <u>See section 6</u> for more detail on the Format Editor.

t Action Tools Unpause
Log Format
Annotations
Log Banner 🔹 🕨
Well Sketch
Log Heading
Multi-File Plot Job
Zoned Scale Changes
Gridline setup
Correlation Curves

Fig. 7.7 Interactive Plot - Edit selections

#### 7.3.2 Interactive Plot – Edit – Annotations

The Warrior software allows the user to place annotations or text on the plot. By clicking on any of the text shown in the three windows, the text selected will be placed in the bottom text box. The User can also type any text that he wants into the text box.

When the text has been entered in the text box, click the first icon, that looks like an arrow with an ab (<ab).

	Anr	otate	е	×
File Action	La	yout		
🗘 🗖	÷		Û	
First Reading Last Reading Total Depth Tool Stuck Perforated Inte	rval			^
Fluid Level	D	000		~
ABHV BOREID CNPOR DEPTH	GI			MI MN RHOC RILD
<				>
3' Travel Time Bit Size CN Porosity Corr				^
Deep Induction Deep Resistivit		sistivity		~
✓ Erase Behind Text				
Fluid Level				
	D	one		

Fig. 7.8 Annotate Window

Now move the cursor across to the plot. You will see an arrow with abc. Position the tip of the arrow on the plot where you want the arrow of the annotation to be and then left click. If you right click, the direction of the arrow will rotate through left, up, right, down, and then two modes with no arrow. If the <ab icon in the Annotate window is active (shaded dark), every left mouse click will add another annotation to the plot. To change text, move to the annotate window, change text, move back to the plot, right click to set arrow direction and then left click to add the next annotation.

Once placed on the plot, annotations positions can be changed, or the annotation can be removed. In the annotate window, select the <ab icon so that it is not active (all icons have the same shading). Move the cursor back to the plot and click on the desired annotation. When selected it will show as black with white text (it may be necessary to pause the plot to be able to select the annotation). You can now right click to change arrow orientation and then left click to move it to a new position. To remove the annotation, check that the <ab icon is not active and then select the annotation. In the annotate window choose "Action -> Delete Selected Annotation (DEL)". Once selected, the annotation can also be removed by clicking on the Delete key on the keyboard.

There three groups of default annotations shown in the annotate window. The first group are text that appears in the annotate window no matter what is plotted. The second group is Warrior database mnemonics for all the Database items that are in the presentation. The third group contains "translations" for the mnemonics in the second window and all the labels that are used on the curves.

The list of curves in the first group can be edited and the translations can be changed. Click on "File -> Edit Default Annotation Text" to open the file Warrior\config\annotate.ini.

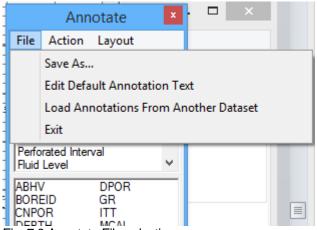


Fig. 7.9 Annotate File selection

The [Always] group must be a sequential number list that contains the text that the User wants. The order can be rearranged, and items added if the list remains sequentially numbered.

The [Translations] group allows for common labels to be shown for Warrior mnemonics used in the presentation. For example, if GR is in the current presentation, the translation "Gamma Ray" will show up in the third window of the annotate window.

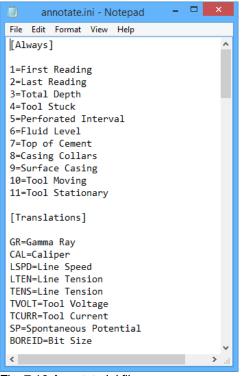


Fig. 7.10 Annotate.ini file

The second icon in the annotate window allows the user to place a graphical image onto the plot. The third icon is for vertical text but is currently not functional. The fourth icon will place a horizontal bar on the plot. The fifth icon has no function. The graphical image and the bar are placed and removed in the same manner as text.



Annotations are place at a depth and horizontal position on the plot. This mean that if the presentation is changed, the pass is depth shifted, scales changed, or anything

that would affect the position of the curve data, annotations are not moved and do not necessarily point to the curve that they originally pointed at.

#### 7.3.3 Interactive Plot – Edit – Log Banner

Log Banners are additions that can be attached to a log pass. The banners may be placed at the top and / or bottom of the log pass. Click in the area where the text will appear and type in the desired text. When finished, click on File -> Save and then File -> Exit.

(MR)		
File Options Ed	lit Action Tools Unpause	_
🖻 🐺 🖳 🖉	Log Format	
6	Annotations	16
0	Log Banner 🔹 🕨	Edit Top Banner
-150	Well Sketch	Remove Top Banner
TBHV	Log Heading	Edit Bottom Banner
	Multi-File Plot Job	Remove Bottom Banner
	Zoned Scale Changes	
	Gridline setup	
	Correlation Curves	

Fig. 7.11 Edit Log Banner

		run1/pass1/_banner_/1	- 🗆 ×
File	e Font		
	Edit Banner Field		
1	Log Pass Title	ок	
	J	Cancel	
	T Logo		

Fig. 7.12 Entering text in log banner

Log Banners are very similar to headings in that they are a text file with a .WLB extension that the User can easily edit. There are several variations that are supplied with the Warrior software. To select a different style, click on File -> Select Format. The Select Banner Format window will open shown the banners that are available in the Warrior\Format folder.

File	Font
	New
	Open
	Save
	Save As
	Select Format
	Print
	Watermark
	Exit

Fig. 7.13 Log Banner File Selections

Once the banner has been saved and the banner editor closed, the banner does not appear on the screen. However, when the log pass is printed through Interactive Plot or as part of a Plot Job, the banners will be included as part of that pass.

7.3.4 Interactive Plot – Edit – Well Sketch

The Well Object Editor allows the user to show certain well objects on the plot that would represent a well bore configuration. These objects include but are not limited to strings of casing and tubing, plugs, packers, and nipples. To be able to see the well objects once they have been configured, the presentation must contain WELLOBJ as a Graphic Strip.

Any track may be used, but the graphic strip will cover the width of the track regardless of the left and right values used.

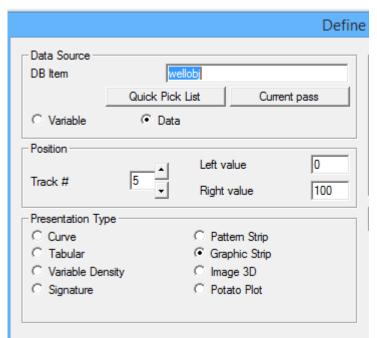


Fig. 7.14 WELLOBJ plotted as Graphic Strip

It is not necessary but if the wellbore gets complicated with multiple strings of casing, the first thing to do is to go to the Settings selection and set the "Width of Diagram" to the well bore size. This way all casing sizes can be entered as the dimensional values that they are. Measurement units for Depth and Object size can also be set from here.

	Well Object Editor - /fiel
File Object Toolbar <mark>Settings</mark> H	lelp
	1 ▷4 ▥ ⊠ 凵 <1 🛰 🗲 ┥ 🗖 🚄 🔔 . ◄ 🖛
Well Object	Depth Intervals (ft)
Casing	0.0 - 1840.0
S	ettings 🗕 🗆 🗙
Settings Depth Units English C Metric Object units English C Metric	Rows Per Object 2
	OK Defaults Cancel

Fig. 7.15 Well Object Editor Menu and Toolbar and Settings

The object that an icon represents can be identified by holding the mouse cursor on the icon. To demonstrate the well sketch, we will do an example. We will start by going to settings and setting the width of the diagram to 8.625 to represent a 8 5/8" well bore. Next, we will click on the Casing Icon.

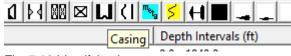


Fig. 7.16 Identifying Icons

The first string of Casing that we will put in will be 7" surface casing from surface down to 105 feet. Enter the depth interval from 0-105, and the width of object as 7 inches. Notice that the Horizontal positions are automatically adjusted to fit the diagram and casing size. Click [OK] to save that string of casing.

The next string will be 5  $\frac{1}{2}$ " casing from surface down to 1600 feet. On this string we are going to check "Yes" to the show bond. If the dataset being presented has bond curves, it will use the BONDIX to show shading as a representation of bonded pipe.

The last string of casing will be put in as a liner from 1550 -1850 and will be 4  $\frac{1}{2}$ ". We will also show bonding on this string.

Casing	x
Properties	_
Depth Intervals (tt) 0.0 - 105.0	
Annotations	-
└ Horizontal Position └ Casing shoe	
Left % 9.4 🕂 Right % 90.6 🕂 🗌 Show casing shoe	
, _ ,	
Size Width of Object 7.00 in Inflation Factor (%) 100 +	1
Width of Object 7.00 in Inflation Factor (%) 100	
Show Bond	
○ Yes ○ No Edit	
Show bonded above BONDIX of 0.80	
OK Defaults Cancel	1
	_
Casing	x
Properties	
Depth Intervals (ft) 0.0 - 1600.0	
Annotations	
Horizontal Position Casing shoe	
Left % 18.1 🕂 Right % 81.9 🕂 🗆 Show casing shoe	
Width of Object 5.50 in Inflation Factor (%) 100	
Show Bond	1
Show bonded above BONDIX of 0.80	
OK Defaults Cancel	
Casing	×
Properties	- 1
Depth Intervals (ft) 1575.0 - 1850.0	
Annotations	
Horizontal Position Casing shoe	1
Left % 23.9 🛟 Right % 76.1 🛨 🗌 Show casing shoe	
_ Size	
Width of Object 4.50 in Inflation Factor (%) 100	
Show Bond	1
Show bonded above BONDIX of 0.80	
OK Defaults Cancel	

Fig. 7.17 Entering casing depths for stings of casing

Now let's put a bridge plug and packer into our well. We want to put a plug at 1800'. We could type in 1800, but the problem with a single depth entry for plugs and packer is that it centers the image at the depth. So, if you want the top of the plug or packer to be at a depth, you need to put in a zone (usually 4' or 5' looks good even if the plug is not that long) in this case 1800-1805. At the same time, we will enter an annotation "Plug @ 1800'".

Bridge Plug
Properties Depth Intervals (ft) 1800.0 - 1805.0
Annotations Plug @ 1800
Horizontal Position     Color       Left %     23.9     ÷       Right %     76.1     ÷
Width of Object 4.50 in Inflation Factor (%) 100 -
Attach to <pre></pre>
OK Defaults Cancel
Packer
Properties       Properties       Depth Intervals (ft)       1550.0 - 1555.0       Annotations
Properties Depth Intervals (ft) 1550.0 - 1555.0
Properties Depth Intervals (ft) 1550.0 - 1555.0 Annotations Horizontal Position Color
Properties Depth Intervals (ft) 1550.0 - 1555.0 Annotations Horizontal Position Left % 18.1 ÷ Right % 81.9 ÷ Edit

Fig 7.18 Showing a plug in 4 ½" Casing at 1800' and packer in 5 ½" at 1550"

The next thing that we want is some tubing in our well from surface to 1620'. To make the picture look esthetically pleasing, the tubing should fit the hole in our packer. The hole in the packer is 1/3 the width of the packer. Since we set the packer in 5 ½ the tubing should be 1.84. If we are at it, let's put a seating nipple in the tubing at 1565"

Tubing	×
Properties Depth Intervals (ft) 0.0 - 1620.0	
Annotations Horizontal Position Left % 39.3 * Right % 60.7 * Show casing shoe Size Width of Object 1.84 in Inflation Factor (%) 100 *	
ColorEdit	
OK Defaults Cancel	
Nipple	×
Properties Depth Intervals (ft) Annotations	
Horizontal Position     Color       Left %     39.3     Image: Color       Edit     Edit	
Width of Object     1.50     in     Inflation Factor (%)     100     100       Attach to <none></none>	
OK Defaults Cancel	

Fig. 7.19 Tubing to fit 5 1/2" Packer and seating nipple at 1565'

The last thing that we want to do to our well sketch is to add some perforations. Zones are entered by top depth, a hyphen (or minus sign), and bottom depth. Multiple zones can be entered by separating each zone with a space or comma. Single shots can be entered by putting just the single depth. In the example below we have zones from 1630-1640, 1650-1655, and 1660-1667 with a single shot at 1683.

Use the left% and Right% to position the perforations. The default is 0 and 20. In this example, that puts the perforations into the area where the bond index is shaded and makes them difficult to see. Since the 4  $\frac{1}{2}$ " casing starts at 17.9%, I started the perforations at 18% and kept them 20% wide. This puts them inside the edge of the 4  $\frac{1}{2}$ " Casing.

Just as an example, I have also added some squeezed perforations, that use a slightly different image than normal perforations, from 1630-1680. I positioned these at -20% to 0% to show that well sketch images do not have to remain in the track that the WELLOBJ image is place. Any percentage can be used, but it is based on the track that the WELLOBJ image was placed in.

Perforations	×
Properties           Depth Intervals (ft)         1630.0 - 1640.0, 1650.0 - 1655.0, 1660.0 - 1667.0, 1683.0           Annotations         Image: Color interval in	
OK Defaults Canc	el
Perforations (squeezed)	×
Properties Depth Intervals (ft) 1630.0 - 1680.0 Annotations	×
Properties Depth Intervals (ft)	×

Fig. 7.20 Entering Perforations

Annotations that are adding from the well object will always be placed in the middle of the object. Should you want to move the annotation, you would need to "Edit -> Annotations" from Interactive Plot and then move them.

Well Sketches are kept by runs. So, every pass in a run of a dataset will have the same well sketch. If the User want to have different sketches, they must be entered in a pass on a different run number. (/field/well/run1/pass1 and /field/well/run1/pass2 would have the same well sketch while /field/well/run2/pass3 could have a different well sketch).

It is possible for the User to create their own well objects to be used in a well sketch, but it is outside of the scope of this document. If this need

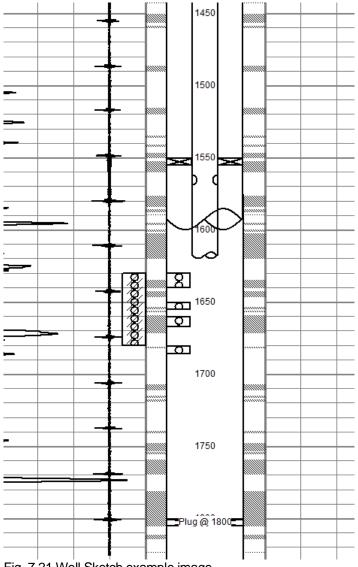


Fig. 7.21 Well Sketch example image

7.3.5 Interactive Plot – Edit – Log Heading

Clicking on "Edit -> Log Heading" from Interactive Plot invokes the Heading Editor. <u>See Section 5</u> for a discussion of the Heading editor.

7.3.6 Interactive Plot – Edit – Multi-File Plot Job

Clicking on "Edit -> Multi-File Plot Job" from Interactive Plot invokes the Plot Job Editor. <u>See Section 9</u> for a discussion of the Plot Job Editor.

7.3.7 Interactive Plot – Edit – Zoned Scale Changes

Zone scale changes allow the User to display curves with different scales in different parts of a pass and to shut the curve off if desired. If the current presentation does not have any curves that have been enabled for zone scale changes, a warning will come up to notify the User. If the [Yes] button is clicked, the Format Editor will open with the current presentation.

	Warrior Interactive Plot	×
8	The current log has no curves which are enabled for zoned scale changes. Would you like to run the Log Format Editor and enable some now?	
	Yes No	

Fig. 7.22 Zone Scale change invoked with no zoned scale curves

With the Format Editor open, click on the curve that you wish to have the zoned scale changes, then click [Change]. Check the box for Zonable Scales, then click [OK]. Save the presentation in the Format Editor and Exit.

c:\programdata\warrior\fo	rmat\gr-ccl.prs 🗕 🗆 🗙
File Layout Object Color Maps	Options
Open Add Change	<u>Remove</u> Save Exit
9 CCL -1 0 GR 150	
Defin	e Data Item 🛛 🗙
Data Source DB Item Quick Pick List Current pass C Variable Position Left value 0	Style
Track # 1 A Let Value 10 Track # 1 A Right value 150 Presentation Type	What to show in scale ✓ Label ▼ Units ▼ Range
Curve C Pattern Strip C Tabular C Graphic Strip C Variable Density C Image 3D C Signature C Potato Plot	Label - use cartage return for multiple lines
	OK Cancel

Fig. 7.23 Setting up Zoned Scale changes in Format Editor

Now when Edit -> Zoned Scale Changes is selected, the zoned scales window for the pass will come up with any zonable curves show. In this case GR and LTEN are shown, each with a left scale value and a right scale value. The only zone that is shown is from the top of the pass to the bottom of the pass. To create new zones, click on the [Zones] button. We are going to put in a zone change at 1750, type 1750 into the "Insert a new change " box and have that selected. For illustration purposes, we also want to put a zone change in at 1700.

C* Zoned Scale	es - /fie	eldpc/we	llfredfeasel	e – 🗆	×
Zones	Ac	cept	Undo	Close	
L	GR	R_GF	R L_LTEN	N R_LTEN	
Top Bottom	0	150	0	100	-
					-
•					•
Ć	E	dit chan	ge point	_ 🗆	×
Delete the change a	it Top		nding zone from nding zone from		
Insert a new change			1750 Fe		mla
Move the change at	Тор	$\mathbf{C}$ to	F	eet	
	(	ОК	Cancel		
C	Ec	dit chang	e point	_ □ >	۲.
Delete the change at	1750.00		ding zone from To ding zone from Bo		
Delete the change at Insert a new change	1750.00	C Exten		ottom up	
Insert a new change		⊂Extend ∙at [1	ding zone from Bo 1700 Fee	ttom up t Pick from	Log
_		C Exten	ding zone from Bo	ttom up t Pick from	Log
Insert a new change	1750.00	⊂Extend ∙at [1	ding zone from Bo 1700 Fee	ttom up t Pick from	Log
Insert a new change	1750.00	CExten i eat [ Cto [ K	ding zone from Bo 1700 Fee Fee Cancel	ttom up t Pick from	Log
Insert a new change Move the change at	1750.00	C Extension • at C to K dpc/wellf	ding zone from Bo 1700 Fee Fee Cancel	ttom up T Pick from	Log
Insert a new change Move the change at <b>Zoned Scales</b>	1750.00 O s - /fiel	C Extension • at C to K dpc/wellf	ding zone from Bo 1700 Fee Cancel fredfeasele	ttom up	Log
Insert a new change Move the change at Zones L Top	1750.00 0 s - /fiel Acce	C Extension • at C to K dpc/wellf pt	ding zone from Bo 1700 Fee Cancel fredfeasele Undo	t Pick from	Log
Insert a new change Move the change at Zones	1750.00 0 s - /fiel Acce _GR	C Extension at 1 C to [ K dpc/wellf apt R_GR	ding zone from Bo 1700 Fee Cancel fredfeasele Undo L_LTEN	Pick from	Log

Fig. 7.24 Zoneable Scales

Now we need to edit the scales in the different zones. From 1750 to bottom, we will leave them unchanged. From 1700 to 1750, we will make it 0 on the left and 100 on the right. From top to 1700, we will set both left and right values to 0 to turn off the curves. Once the scales have been edited, click the [Accept] button to complete the changes. Click [Close] to close the Zoned Scales window.

🗸 Zoned S	Scales - /fiel	dpc/wellfre	dfeasele		×
Zones	Acce	ept	Undo	Close	
	L_GR	R_GR	L_LTEN	R_LTEN	
Top 1700.00	0	0	0	100	-
1750.00	0	100	0	100	
Bottom	•	150	0	100	•

#### Fig. 7.25 Scales changed on zones

Zoned scale changes do not automatically refresh the Interactive Plot to show the changes. To refresh the screen the User could reselect the log pass but more common is to do "Action -> Screen Plot" twice or click the Screen Plot Icon twice. Fig. 7.27 show the same log pass before and after the scale changes that we have done in this example.

₩									
File	Options	Edit	Acti	on	Tools	U	npause	_	
<b>2</b>	🕷 🧧 🖉	3 #X			reen Plot				
9				Pri	int			-1	
				GF	२				
									1

Fig. 7.26 Refreshing the screen with Screen Plot

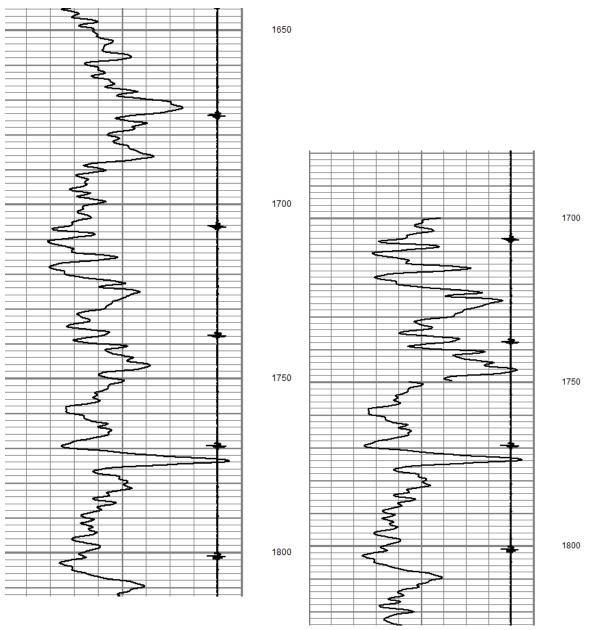


Fig. 7.27 Pass before and after zoned scale change  ${\pmb {\mathsf S}}$ 

#### 7.3.8 Interactive Plot – Edit – Gridline Setup

Edit -> Gridline Setup from Interactive Plot invokes the Gridline Setup editor to allow the User to control at what plot scaling the different horizontal (Depth / Time) grid lines appear. If the vertical scale resolution on the plot is less than the maximum compression ratio, and the scale resolution is greater than the minimum compression ratio, than the gridline will be plotted. Separate gridline setups can be kept for English depth, Metric depth, and a time log.

Hor	izontal Gridline	Setup ? ×				
English Depth Metric	Depth Time					
	For each output frequency available, enter the highest compression ratio for which a gridline should be displayed.					
Frequency (foot)	Max. Comp. Ratio	Min. Comp. Ratio				
50.0	11999 2399	0				
2.0	479	0				
1.0	21	0				
0.5	0	0				
Set to Defaults Add Remove						
	ок	Cancel Apply				
L						

Fig. 7.28 Gridline Setup

#### 7.3.8 Interactive Plot – Edit – Correlation Curves

Selecting correlation curves allows you to plot a curve(s) within a pass in a database into all other passes of the database. You will be given the option to select a curve or curves. Highlight the curve and select add. Once the curve has been added to the list of correlation curves, click on the selected Correlation curve. There are two radio buttons. The first one, "Always show in original track with original scales ", will place the curve in the same track as the pass it originated in, with the scales as shown above it. This is the standard correlation mode. The second radio button "Only show when another curve by the same name is plotted, show with the same name and scales as the named curve" will plot the selected curve only if it exists in the pass to be plotted, it will use the same scales and track as the current pass but will apply the color selected.

•	Select correlation	n curves ×
Select curves from this pass < all passes >	▼ Database	Correlation Curves
Choose to add as a correlation curve /field/well/run1/pass1/TCURR/1 /field/well/run1/pass1/RAWDSP1_4/1 /field/well/run1/pass1/RAWDSP1_3/1 /field/well/run1/pass1/RAWDSP1_3/1 /field/well/run1/pass1/RAWDSP1_2/1 /field/well/run1/pass1/RAWDSP1_1/1 /field/well/run1/pass1/RAWDSP1_1/1 /field/well/run1/pass1/RAWDSP1_1/1 /field/well/run1/pass1/LTEN/1 /field/well/run1/pass1/LTEN/1 /field/well/run1/pass1/LTEN/1 /field/well/run1/pass1/LTEN/1 /field/well/run1/pass1/LTEN/1 /field/well/run1/pass1/LTEN/1 /field/well/run1/pass1/LTEN/1 /field/well/run1/pass1/ADD1X/1 /field/well/run1/pass1/ATT3/1 /field/well/run1/pass1/AMPGATES/1 /field/well/run1/pass1/AMPGATES/1 /field/well/run1/pass1/AMP3FT/1 /field/well/run1/pass1/ADPTH/1	Add >> << Remove	Presentation         Left value       0       Right value       150       Vrap         Color <other>       Style       solid       Thickness       2       :         When to show       <other< td="">       Always show in original track with original scales (correlation mode).       Color show when another curve by same name is plotted. Show with same track and scales as named curve (repeat mode).         OK       Cancel</other<></other>

Fig. 7.29 Setup of correlation curves

If the displayed pas is depth shifted, the data in the pass will be shifted as usual but the correlation curve displayed will show the depth from its original pass and not be shifted.

There are now some additional options in Interactive plot. The default setting for correlation curves is to show the correlation curve, but do not plot the correlation curve in any hard copies (or PDF and TIFF). There are options to both display and print the correlation curves and to hide the correlation curves.

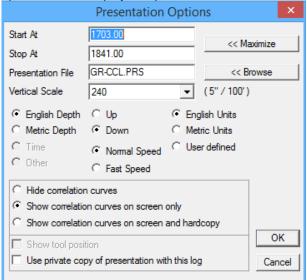


Fig. 7.30 New options for correlation curves

7.3.9 Interactive Plot – Action – Screen Plot

After a pass in a database has been selected, Action -> Screen Plot will display the pass on the screen. It may also be used to refresh the screen plot by selecting it twice. The first selection of Action -> Screen Plot will clear the

plot from the screen. The second selection will once again display the plot on the screen. Clicking on the Monitor Icon will have the same effect as Action -> Screen Plot.

₩							
File	Options	Edit	Acti	on	Tools	Unpause	_
<b>2</b>	🔉 📴 🖉	<b>3</b> 48		Sc	reen Plot	t	
9		C		Pri	nt		
0		R			200		

Fig. 7.31 Action -> Screen Plot and Screen Plot Icon

7.3.10 Interactive Plot – Action – Print

By clicking on the Plotter Icon or Selecting Action -> Print, the Start Plot Window will open. Printing may be started at any time, if it is direct printing (normal mode using Warrior Printer Drivers and not through Windows). Even though the screen may have acquired data for a considerable length of time, the plotter will start at the beginning of the plot and print the log until it has caught up. Any changes made to the presentation while plotting may have unexpected results on the hardcopy.

<b>₩</b>					
File	Options	Edit	Action	Tools Unpause	
<b>2</b>	🐺 🖳 🦀	<b>3</b> #21	Sc	reen Plot	
9		C	Pri	int	
		^	-		
				Start Plot	×
Print	er Prin	trex 84	0 on USB(	001	•
Сорі	es 1	<	< >>	Set as default printer Media	-
				🔲 Spool print job first	
	Setup	То	op of Form	n Advance Calibrate Cancel Print	

Fig. 7.32 Action-> Print and Print Icon

The User has the option of selecting which of the installed printers to send the hard copy to by clicking the dropdown installed printers list. There is a check box to set the currently selected printer as the default printer so that it will be shown when the Start Plot window is opened.

Start Plot	×
rintrex 840 on USB001	•
Sys V8.5 (Veritas) on USB001 rintrex 920 on USB002	
Bys V8.5E (VeritasE) on USB001 nage File on FILE:	
	Vrintrex 840 on USB001 Vrintrex 840 on USB001 Vrintrex 840 on USB001 Vrintrex 920 on USB002 Vrintrex 843 on USB002 Vrintrex 843 on USB002 Sys V8.5E (VeritasE) on USB001 Nage File on FILE: DF File on FILE:

#### Fig. 7.33 Installed printer list

The User has the option to print multiple copies of the current plot by increasing the copy count. Most printers have some selectable settings that can be configured through the Warrior Software by selecting the [Setup] button. Due to the variety of plotters and settings, we will not cover the possible settings at this time. The [Top of Form] and [Advance] buttons will perform those functions when clicked. The [Calibrate] button allows the user to adjust the vertical scaling of the plot, so the matte length meets required specifications (i.e. 5 inches of plot per 100 feet of well).

	Calibrate Printer		×
Printer	Printrex 840 on USB001		•
	☑ Default Printer	Undo Calibration	Make Test Print
Required Distance			Calibrate
Measured Distance			Cancel

#### Fig. 7.34 Calibration of printer

For the "Required Distance", enter the distance that you want between two points on the plot. For the "Measured Distance" enter the distance that is measured between those two points. The further apart that the two points are the more accurately (relatively) you will be able to measure the distance. As an example, if you want a plot that is 5"/100 ft., you might choose to measure 300 ft. which would make your required distance 15 inches. Then if you measure it and it is 14 and 15/16 of an inch, your measured distance would be 14.9375. When the values have been entered, click the [Calibrate] button. The new calibration will then be shown. This value should be somewhat close to 1.00. If it considerably different, it may be necessary to remove printer scaling calibrations and start over by making a new plot. To remove plotter calibrations, click the [Undo Calibration] button. This will set the plotter calibration back to 1.00.

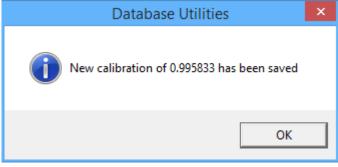


Fig. 7.35 New plotter calibration saved

#### 7.3.11 Interactive Plot – Tools – Depth Shift a Curve

The Warrior Software can depth shift a single curve in a dataset while keeping all the other curves at their current depths. It should be noted that while this feature does exist it should not be a general practice to need to do this. Tool offsets should be adjusted to ensure that curves are on depth. Depth Shifts to a data item or curve can be done in Interactive Plot or Database Utilities.

The first step is to select the data or curve to shift. Click the [Select Data] button to bring up a list of data items in the database. Be aware that all data in the database will be shown, not just the data from the current pass that is displayed if you are in Interactive plot. Find and select the curve and click [OK]. Now enter the amount of shift with negative amounts shifting up hole. If the "Shift current Encoder Depth also" is checked, the encoder depth will also be moved by that amount when the [Apply] button is clicked. If you are in Interactive Plot, the screen will be refreshed with the curve shifted.

No records are maintained of which curves have been shifted or by what amount. It is a good idea to make a backup of the database before doing depth shifts in case of operator mistakes.

	Depth Shift Item		х
Database File:	c:\programdata\warrior\data\xcorrl.db		
ltem:	/field/well/run1/pass2/*		
Feet			_
C Meters		Apply	
Amount of shift:	ft (-= Uphole)	Select Data	a
🔲 Shift current En	coder Depth also	Cancel	
	Linear Depth Shift	×	
Current Database	c:\programdata\warrior\data\xcorrl.db		
Current Dataset	/field/well/run1/pass1/GR/1		
	1		
	ass1/RAWDSP1_4/1 ass1/RAWDSP1_3/1		
/field/well/run1/pa	ass1/RAWDSP1_2/1		
	ass1/RAWDSP1_1/1 ass1/RAWCYSTD/1		
/field/well/run1/pa			
/field/well/run1/pa /field/well/run1/pa			
/field/well/run1/pa	ass1/HVOLTA/1		
/field/well/run1/pa			
/field/well/run1/pa /field/well/run1/pa			
/field/well/run1/pa			
/field/well/run1/pa	ass1/ATT3/1	Database	
	ass1/AMPGATES/1	Database	
/field/well/run1/pa /field/well/run1/pa			
/field/well/run1/pa			
	ass1/_vars_/TDEPTH	OK	
/field/well/run1/pa	ass1/_vars_/PPT		
<	>	Cancel	

Fig. 7.36 Depth Shift a Curve

#### 7.3.11 Interactive Plot - Tools - Depth Shift a Whole Pass

The Depth Shift Icon or Tools -> Depth Shift a Whole Pass can be used to depth shift a pass to put it on depth with other logs or passes. This can also be done from Database Utilities. If done from Interactive Plot, the current pass displayed will be selected as the pass to depth shift. If the check box "Shift current Encoder Depth also" is checked, the amount of shift will also be applied to the encoder. Enter the amount that you wish to shift the pass in feet or meters and click [Apply]. The Interactive plot will refresh the screen with the shifted pass and the encoder depth will be adjusted at that time.

<b>XK</b>			run1,		
File Options Edit Action	Tools	Unpause			
2 × 9 4	D	epth Shift a Curve			
9 CCL	D	epth Shift Whole Pass			
0 GR	R	un TVD/Merge Program			
0 GR-repeat	c	reate an Alias			
	R	un AutoMerge Utility			
	Depth	n Shift Pass	>		
Database File: c:\programda	ta\warrio	r\data\xcorrl.db			
Pass: /field/well/rur	n1/pass2	!			
• Feet					
C Meters Apply					
Amount of shift: ft (- = Uphole) Select Data					
Shift current Encoder Depth also					

Fig. 7.37 Depth Shift a Whole Pass

7.3.12 Interactive Plot – Tools – Run TVD/Merge Program

Clicking on Tool -> Run TVD/Merge Program from Interactive Plot will open the Warrior Merge Program. <u>See section 11</u> for information on the use of the Warrior Merge program. 7.3.13 Interactive Plot – Tools – Create an Alias

Creating an alias allows the User to display data in a presentation from a different pass in the same database. It does not create a copy of the original data but simply shows the data as being in the pass while it exists elsewhere.

Use the [<<Browse] button to select the pass that contains the original data. That data item will then be displayed in both the existing data item name and the New Name fields. The New Name field must now be edited to show the pass and curve name that you wish to present. This normally will consist of changing the pass number and often changing the curve mnemonic since two curves of the same name cannot exist in a given pass. Verification of the creation of the alias will be shown at the bottom of the window. Note that when the alias is created that it will need to be in the presentation to be displayed and if it is in the presentation the screen may need to be refreshed before it is displayed.

	Create Data Item Alias	×
Database Existing data item New Name Depth Offset	C:\ProgramData\Warrior\Data\xcorrl.db /field/well/run1/pass1/GR/1 /field/well/run1/pass1/GR/1 ft	<< Browse OK Close
	Create Data Item Alias	×
Database Existing data item New Name Depth Offset	C:\ProgramData\Wanior\Data\xcorfl.db /field/well/run1/pass1/GR/1 /field/well/run1/pass2/GR_1/1 ft	<< Browse OK Close
	Create Data Item Alias	×
Database Existing data item New Name Depth Offset <mark>Alias created : /field/</mark>	C:\ProgramData\Warrior\Data\xcorrl.db /field/well/run1/pass1/GR/1 /field/well/run1/pass2/GR_1/1 ft well/run1/pass2/GR_1/1	<< Browse OK Close

Fig. 7.38 Creating an Alias of GR from Pass1 as GR\_1 in pass2

7.3.14 Interactive Plot - Tools - Run AutoMerge Utility

The AutoMerge Utility allows the User to merge data items of the same name from multiple passes within a database into a new pass and automatically gives each of the data items a new name. This is very useful when several passes have been run over the same interval and you wish to see all the passes on one plot. The new output pass will automatically be named ./././merge1, but this may be edited. The User may use the [<<Browse] button to select a presentation to use on the pass that is created.

	Warrior Multiple Pa	ass Automerge 🛛 🗕	. □ ×
Database:	c:\programdata\warrior\dat	a\xconf.db	Merge
New Output Pass:	./././merge1		Cancel
Log Format:	0V.PRS	<< Browse	View
Subscript with:	Original pass name	•	
Select Passes:	toggle	Select Curves: t	oggle
Pass ////_correl_ /field/well/run1/pa		Curve TVOLT TT5FT TT3FT TCURR MINMK LTEN LSPD HVOLTA GR ELTIM CCL BONDIX ATT3	· · · · · · · · · · · · · · · · · · ·

Fig. 7.39 AutoMerge Utility

There are a variety of naming methods that may be used for the curve names. A list of some choices and the resulting name for a GR from pass2 are:

Original pass nameGRpass2Original pass numberGR2Run number and first pass letterGR2pRun number and pass numberGR1p2

Subscript with:	Original pass name 🔹	
	Current position in list Original pass name Original pass number	ves
Pass	Last pass letter and number Pass number and first pass letter No subscript Run number and pass number	

Fig. 7.40 Curve rename options in automerge utility

#### 7.3.14 Interactive Plot - Pause / Unpause

The Pause selection is used to keep the display from scrolling so that data may be examined, annotations added to the pass, etc. If the pass has been paused, the selection will change to Unpause and can be used to allow the display to once again scroll.

# Section

# **8 Warrior Backup**

Every computer system will, sooner or later, suffer a failure, like a disk crash, where potential loss of programs and/or data is possible. This will generally happen at the most inconvenient time. **The importance of keeping current backups cannot be overemphasized**. It is vital that current backups are kept of all essential programs and data.

The warrior system is usually configured for the selection of services to be run by a given client. This information is primarily contained in three files, namely wproperties.ini, services.ini, and tools.ini. A copy of all your customized files can be backed up to USB Memory/Hard disk by using " Configuration Backup/Restore" utility.

- Acquisition Control Panel Database Utilities Event Log Viewer 🐺 Format Editor Heading Editor Interactive Plot ∢ Merge 📲 🌷 Perf Job Planner 🐮 Plot Job Editor Se Recalculation Release Notes -Simulator 2 **Tools Editor** Warrior Backup Shortcut to Warrior Data
- FIG: 8.1 Select Configuration Backup/Restore.

Warrior Backup		
<u>B</u> ackup	Restore	Restore Critical Files
Options		
Back up to	C:\ProgramData\Warrior\Backup\warcfg1312	26.conf.wbu Browse
Comment	Configuration Backup	
	Comment will be displaye	ed when restoring
Advanced >>		
/uvailed //		
or help, press <f1></f1>		
		Begin Close

FIG: 8.2 Select Backup, Restore or Restore Critical Files

## 8.1 Backup

The first tab is used to Backup all you customized files including but not limited to Logo, Services, Depth offsets, calibrations, serial numbers and licenses. With the "wbu" file generated here you can recover all of these or take it on a USB drive to another computer and restore it to the same configuration as the current system. In the Backup to windows you can browse to where you want the backup stored. The comment line lets you add a comment to the file to more easily identify the purpose of the backup. The advanced option allows you select files to include or exclude from the backup, use this option with caution as selecting files other than the defaults may cause the backup file to either skip important files or over write critical software files. To begin the backup, you will need to click on the begin button. Once completed a "Backup completed" will be displayed as a status.

😹 Warrior Backup		
<u>B</u> ackup	Restore	Restore Critical Files
Options		
Restore from		Browse
Comment		
Advanced >>		
For help, press <f1></f1>		Begin Close
		Lose

#### FIG: 8.3 Restore

# 8.2 Restore

The restore tab can be used to restore a previously backed up system to its working state or copy relevant files to a new system. The restore from line lets you browse to the desired " wbu " file. Once selected the system will read through the file to ensure it is not damaged" this can take some time depending on the system ". Once it reads through the file you will need to click the begin button. Once completed a text dialog will show all the files restored.

2013.12.26.13.28.14.RestoreResults.txt - Notepad		22
File Edit Format View Help		
Restore Results		Â
*** SUCCESSFUL ITEMS ***		
Files:		
ScriptRenum.exe : OK		
3506.51m : OK		
Alpha Neutronics 3ft Sft CNT.sim : OK Alpha Neutronics CNT.sim : OK		
Alpha Neutronics Sector CNT.sim : OK		
CRG TELM. SIM : OK		
Computalog sector.GR Neutron.sim : OK		
Computalog sector.sim : OK		
Computalog-MTT-55.sim : OK		
Computalog-MTT-Air.sim : OK		
COPESS.SIM : OK CSS-1-11-16-SCBL.SIM : OK		
CSS-3-25-SCRL-25K-Line.sim : OK		
css1x2_3us.s1m : OK		
csstuckerfw.sim : OK		
CTEKSec.sim : OK		
CTEKSECAN2 26KHz Trim.sim : OK		
CTEKSECAN2_trimmed.sim : OK CTEKsecINTtempsync.sim : OK		
Delware 1x2.51m : 0K		
eli.sim : OK		
Ganna-Ray-Tenp-CCL.sin : OK		
Gamma-Ray-Temp.sim : OK		
Gearhart-CBL-64us.sim : OK		
GPT.sim : OK Greg Alpha CNT 13k 12kft.sim : OK		
Greg Alpha CNT 13k 30kf.sim : 0K		
GRSPAN19A, SIM : OK		
LEE-TEL-GR-CCL.sim : OK		
leehiresptgrccliframe.sim : OK		
leehiresptgrcclmultiframe.sim : OK		
muxbpl.sim : OK		
muxe.sim : OK muxe3u.sim : OK		
Noise-Tool-1Khz.sim : OK		
PMC Compensated CBL.sim : OK		
		Ŧ
4	)	

FIG: 8.4 Restore results

This tab has an advanced button as well, the same precautions should be observed, by selecting anything other than the defaults you may cause system instability.

# 8.3 Restore Critical Files

The third tab "Restore Critical Files " allows you to restore only the critical system configurations. These files are saved every time acquisition is started if there is a check mark in the " Do automatic critical backups " radio button. By clicking on any of the dated files under Critical backup dates the system will show which critical files were backed up.

<u>B</u> ackup	<u>R</u> estore	Restore Critical Files
Options for critical backups		
Do automatic critical backups		
Program to compare with		Browse
Back up critical files to	ogramData\Warrior\Backup\	Browse
Critical backups		
Critical backup dates	Files backed	up
Thu Dec: 19 1601124/20121           Thu Dec: 19 08:17:31 2013           Wed Dec: 18 11:44:59 2013           Tue Dec: 17 09:23:31 2013           Mon Dec: 16 16:43:15 2013           Thu Dec: 12 10:14:10 2013           Wed Dec: 11 15:32:27 2013           Wed Dec: 11 15:32:27 2013           Wed Dec: 11 15:32:27 2013           Wed Dec: 11 07:42:29 2013           Mon Dec: 02:75:55 2013           Tue Nov 26 08:21:17 2013           Fri Nov 22 07:50:30 2013           Wed Nov 10:21:41 2013           Tue Nov 21 0:21:41 2013	E Utraink.ini Utraink.ini Utraink.ini Utrave in wproperties	
items restored		
		Begin Clos

FIG: 8.5 Restore Critical Files

It is generally better to do a "Restore" than a "Restore Critical Files" critical files, Restore Critical Files is a more specific and advanced option.

# Section

# **9 Plot Job Editor**

The Plot Job Editor is a program module, which enables the operator to assemble the various components (heading, log sections, etc.) of a well log into its final presentation. The resultant plot job information is saved in a well log database, usually alongside the log data. The Presentation Plot program uses the plot job information to create the graphical output to a plotter or other graphics device (fax file, etc.).

The Plot Job Editor is started from its icon in the Warrior group, the Presentation Plot File menu, or the Acquisition module Edit menu.

Double click on the program group icon, the Acquisition Edit menu or the Presentation Plot File menu

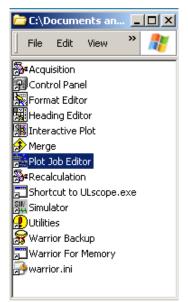


FIG: 9.1Select Plot Job Editor

🕉 Warrior Logging S		
File Service Action	Edit Monitor	
Service: None Database: c:\warric Dataset: field/well/i Realtime Acquisitio	Heading	
	Sensors Calibrations Filters Tool Configuration Device Configuratior	• 1 •

#### FIG: 9.2 Select Plot Job

## 9.1 Select File

法 Warrior Plot Job	o Editor				_ 🗆 ×
File					
Wew					
Open	nove	Add	Change	Save	Exit
Save					
Save As					
Screen Preview					
Hardcopy					
	-				)
Exit					
T					
Type:					
Database:					
Dataset:					
Format:					
Range:					
Scale:					

FIG: 9.3 File Menu

The menu functions are as follows:

#### 9.1.1 New

If a plot job is currently selected, <u>N</u>ew clears the editor for a new plot job.

#### 9.1.2 Open

Displays the file selection window to allow the operator to select the database file containing the plot job to be edited. Note that plot job information is stored in the Warrior database file at the run level.

#### 9.1.3 Save

After creating or editing the plot job it may be saved within a Warrior database file

#### 9.1.4 Save As

Allows a plot job to be edited and subsequently saved to new location with a different name.

#### 9.1.5 Screen Preview

Starts Screen Preview of the selected plot job, see section 6 in the manual on Presentation Plot.

#### 9.1.6 Hardcopy

Displays a list of the plotters supported on the logging system. Selection of one of the plotters causes the plot job to be output to the hardcopy device (plotter).

### 9.1.7 Exit

Closes the Plot Job Editor

## 9.2 Start the Plot Job Editor.

When the selection of the items is complete the plot job data is saved in the Warrior database. If the Plot Job editor is invoked from within the Acquisition module the database path and name are set to be those of the current database. If invoked from elsewhere the full path must be entered by the user. (LEAVE NO ASTERISKS / WILDCARDS) The blank plot job appears as shown above.

9.2.1 Change

Changes plot job to be edited.

#### 9.2.2 Remove

Removes the selected file from the plot job.

#### 9.2.3 Add

To create a new plot job, start with the <u>Add</u> button

e e	/run1/_plots_	/_jobs_/job1			
Open	Remove	Add	Change	Save	Exit
·					
Туре:					
Type: Database:					
Database:					
Database: Dataset:					

#### FIG: 9.4 Add File

Add Displays the selection box containing types of files, which may be included in the plot job.

Type of file to Add			
Heading	Noise Survey Table		
Calibration Report	Casing Joint Table		
Single Log Pass	Freepoint Survey Table		
Multiple Log Passes	External PRN File		
Tool String Diagram	Embedded ASCII File		
Log Variables	External Metafile		
Tracer Shot Table	XY Plot		
External ASCII File	TVD Plot		
CrossPlot	Tiff		
Bitmap	Job Plan Report		
JPEG	TCP Diagram		
Top of Form	Flow Report		
Ad-hoc Report			
Cancel			

#### FIG: 9.5 Select the File to add

Selecting a database file causes a list of plot jobs stored within the database to be displayed.

Plot Job				? ×
Look in:	🚞 Data	•	- 🗈 💣 🎟 -	
My Recent Documents Desktop My Documents	CBLDEM.DB GEOW.db geow_test.db new.db OPENDEMo.DB			
My Computer My Network Places	File name:   Files of type: Database (*.DB)			pen ancel

FIG: 9.6 Select Database

ise
el

FIG: 9.7 Select Plot Job

Type of file to Add	X				
Heading	Noise Survey Table				
Calibration Report	Casing Joint Table				
Single Log Pass	Freepoint Survey Table				
Multiple Log Passes	External PRN File				
Tool String Diagram	Embedded ASCII File				
Log Variables	External Metafile				
Tracer Shot Table	XY Plot				
External ASCII File	TVD Plot				
CrossPlot	Tiff				
Bitmap	Job Plan Report				
JPEG	TCP Diagram				
Top of Form	Flow Report				
Ad-hoc Report					
Cancel					

FIG: 9.8 Select Heading

Typically, a log heading would be the first file to appear in the plot job. Click on Heading and, because headings are stored in the log databases, the database selection window is displayed. Select the database where the required heading is stored. A list of the headings stored in that database is displayed

Plot Job Input					? X
Look in:	🗀 Data		•	+ 🗈 💣 🎟 -	
My Recent Documents Desktop My Documents My Computer	CBLDEM.DB GEOW.Sb geow_test.db new.db OPENDEMo.DB				
My Network Places	, File name:	CBLDEM.DB			Open
	Files of type:	Database (*.DB)		•	Cancel

#### FIG: 9.9 Select Database

Select the required heading by double clicking or highlighting and the OK button. The heading appears as an icon at the start of the plot job sequence, as shown below.

Current Database: C:\Warrior\Data\CBLDEM.DB
Current Dataset: //ield/well/run1/_plots_/_headings_/NEW_cbl
/field/well/run1/_plots_/_headings_/Cbl         /field/well/run1/_plots_/_headings_/Cbl         Database         OK         Cancel

FIG: 9.10 Select Plot Job Input

<b>ield/well</b> /	/run1/_plots_/_jobs_/job1	_ 🗆 X
Open	Remove Add Change Save	Exit
Type: Database:	Heading c:\warrior\data\cbldem.db	
Dataset: Format: Range: Scale:	field/well/run1/_plots_/_headings_/NEW_cbl	

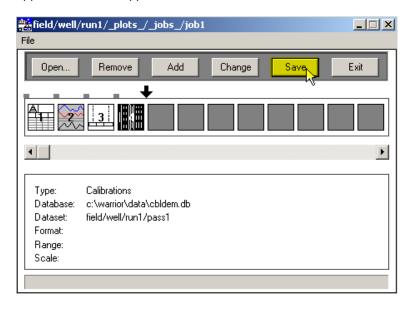
FIG: 9.11 Add Heading

<mark>≵field/well</mark> / File	/run1/_plots_/_jobs_/job1	<u> </u>
Open Heading Log Pas:	Remove Add Change Save	Exit
Type: Database: Dataset: Format: Range: Scale:	Calibrations c:\warrior\data\cbldem.db field/well/run1/pass1	

FIG: 9.12 Add Heading, Log Pass, Tool String, and Calibration Report

Other files may be added as required in the order they are to appear on the final log presentation. To add a log section, click on Single Log Pass and a list of the log passes in the currently selected database is displayed.

Selecting Multiple Log Passes allows the operator to select for inclusion the plot job several log passes at the same time. This is useful when there are many passes to be included, as with production logging. Other items from the type list may be added as required. Tool string diagrams and calibration reports are stored at the pass level, therefore when adding an item of these types, a list of the log passes is presented. In this way the items to be presented on log print are defined together with the order in which they are to appear. Each item appears as an icon as shown below.



#### FIG: 9.13 Save

Note that the plot job contains information concerning which files are to be plotted, in which order, and with what presentation. It does not contain the files themselves, therefore the files may be modified e.g. by adding annotations, without the need to recreate or modify the plot job itself.

Selecting External PRN file allows the inclusion within the plot job of plot or print output from any Windows application. It is necessary that the material to be added to the plot job have been previously printed to a PRN file from the application. See Windows Help - Print to a file for details on how to do this.

Upon completion of the plot job sequence the job may be plotted by choosing the Hardcopy option from the file menu. Alternatively, the Presentation Plot program may be started from the Warrior program group (particularly if a Screen Preview is required).

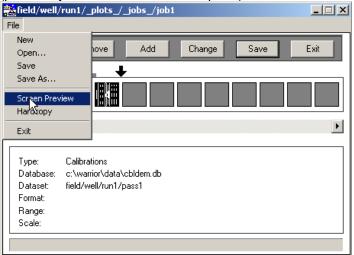


FIG: 9.14 Select Screen Preview

🍾 /field/	well/run1/_plots_/_jobs_/job1	
File Actio	n More <mark>Next</mark> Help	
Lour La	Cement Bond Gamma Ray CompanyBig Bucks Oil Co. Well Gusher #5	
O O O O O O O O O O O O O O	Frield     Worthy       County     Mer     State     Atlantis       Location:     API#:     Diversentee       228 Norh & 322 Easi     Nore       Sector 45     Township 2     Range 6E       Sector 45     Township 2     Range 6E       Sector 45     Township 2     Range 6E       Permaneni Dakm     Ground Level     Bevalon 1232 Fl       Masured From     R.K.B.     12' above P. 0.       October 22, 1993     State     D.F. 1238       October 22, 1993     State     State       V     Formation     K.B.       V     Na     State       State     State     State       State     State     State       V     Tom R.K.B.     12' above P. 0.       State     State     State       V     Na     State       State     State       State     State       V     Na       State     State       State     State	Hello

FIG: 9.15 Heading

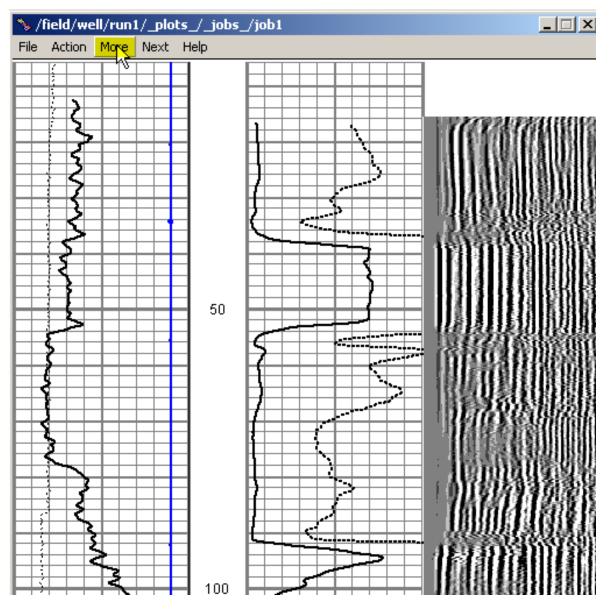


FIG: 9.16 Log Pass

<pre>% /field/well/run1/_plots_/_jobs_/job1</pre>							
File Act	ion Mor						
Sensor	Offset (	ft) 'Schematic		Description	Len (ft)	OD (in)	Wt (lb)
				HD-None (0)	2.00	3.00	20.00
CCL	0.00			CL-X (2345)	1.00	3.00	11.00
				ENT-X (1)	3.50	3.00	25.00
GR	-5.00 -	- 1		GR-X (12345)	2.00	3.00	20.00
TT3 WVF3	-9.50 - -9.50 -			CBL-X (3434)	6.00	3.00	127.00
				ENT-X (2)	3.50	3.00	25.00
		Dataset: Total Length: Total Weight: O.D.	/field/ 18.00 228.0 3.00	)0 lb	job1		

FIG: 9.17 Tool String Add

≫/field/well/run1/_plots_/_jobs	s_/job1		×
File Action More Next Help			1 1 1
Dataset: Total Length: Total Weight: O.D.	/field/well/r 18.00 ft 228.00 lb 3.00 in	run1/_plots_/_jobs_	_/job1
Cemen	t Bond Log Ca	alibration Report	
Serial Number: Tool Model: Performed:	3434 X Sun Aug 15	15:43:24 1993	
Depth: Casing Diameter:	0 5	ft in	
	3' Spacing	5' Spacing	
Signal Zero: Calibrated Amplitude: Reading at Signal Zero: Reading in Free Pipe:	0 62.1651 0.0460073 2.79531	0 62.1651 0.0460073 0.0463004	mv mv volts volts
Gain: Offset:	22.6112 -1.04028	212140 -9759.97	
Gam	ma Ray Calib	ration Report	
Serial Number: Tool Model: Performed:	12345 X Sun Jun 13	15:33:21 1993	
Calibrator Value:	100	GAPI	
Background Reading: Calibrator Reading:	0.625 3.75	cps cps	
Sensitivity:	1	GAPI/cps	

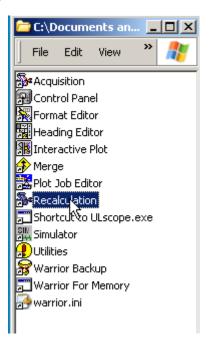
FIG: 9.18Calibration Report

# Section

# **10 Recalculation**

The recalculation mode allows log data to be recalculated or relogged from raw data. Calibrations and other acquisition parameters, such as filters and depth offsets, may be changed. The data monitors used during actual logging are available to the operator during recalculation.

Double-click the Recalculation icon in the Warrior group and a menu box like that of Acquisition will appear. In this case though, Service and Action are disabled (appear feint on the menu bar). The Edit and Monitor menus are identical to those of Acquisition.





# 10.1 File

The following option can be select in File: Select Dataset, About, Exit, Close All.

#### 10.1.1 Select Dataset

The Warrior well log database can (optionally) contain data from many wells, and within each well, data from many log passes. Each log pass is stored in a dataset. The dataset contains not only log data, but also other information about the logs, e.g. calibration and tool data

🕉 • W	🖫 Warrior Logging System					_ 🗆 🗙
File	Service	Action	Edit	Monitor		
- K	elect Datas					
4	ad Variabl	es				
A	bout		Mo	de		
-	kit Iose All		H			

FIG: 10.2 Select Dataset

Choose the Select Dataset option from the File menu. A dialog box will appear as shown below. The software includes a database named cbldem.db that may be used for the purpose of demonstrating the Recalculation mode. Select the dataset as shown below.

Recalculation						? X
Look in:	🗀 Data		•	+ 🗈 💣 🖩	<b>H</b> •	
My Recent Documents	CBLDEM.NB					
Desktop My Documents						
My Computer						
My Network	File name:	CBLDEM.DB		-	Op	en
Places	Files of type:	Database (*.DB)		•	Car	ncel

FIG: 10.3 Select Database

The Recalculation <u>O</u>utput is the destination pass (or dataset) of the recalculated data. It may be named anything you like. If this pass already exists in the database when Recalculation. Is invoked, the software will give an error message and a new Recalculation Output should be selected.

Allowing the system to give a default name to the recalculated output will cause it to be named x.1, where x is the name of the original pass. Repeated passes through Recalculation. Will cause an incrementing number to be attached to the Recalculation. Output. In this case pass1.2, pass1.3 etc.

When recalculating, for example, pass 1.1 to 1.2, upon selecting 1.1 as the base pass the system will still indicate 1.1 as the output pass. It will however create a new pass 1.2

Select Dataset		×
Select Database	c:\warrior\data\cbldem.db	юк
Select Field Name	field	Cancel
Select Well Name	well	
Select Run Name	run1	Reopen existing database
Select Pass Name	pass1	
Recalc Output	pass1.1	

FIG: 10.4 Select Pass Name and Set recalculated Output

When OK is selected the software reads information from the log database and displays the Recalculation Control dialog box, as shown below.

# 10.2 Recalculation Control

Recalculation Control						
Start At	307.25					
Go To	6.00					
Now At	307.25					
Step Size	3.00					
Next Pause	6.00					
<ul> <li>Single Step</li> <li>Variable Speed</li> <li>Maximum Speed</li> </ul>	Step d Quit					

FIG: 10.5 Recalculated Control

The Recalculation Control allows setting of Start, Stop and Pause depths. It also enables setting of the Step size. The Step size is the log interval that Recalculation attempts to recalculate during its share of the CPU time and functions effectively as a speed control. Recalculation may be run in three modes.

10.2.1 Run single step

Select a step size. This may be as small as a single sample. Click the Single Step radio button. The log plot will appear on the left of the screen. Successive clicks on the Step button will cause the pass to be recalculated step by step.

#### 10.2.2 Run variable speed

Select a step size.

Click the Variable Speed radio button. The log will appear on the left of the screen and will scroll at a rate that may be varied by the scroll bar in the Recalculation dialog box. Increasing the step size also increases the recalculation rate.

#### 10.2.3 Run maximum speed

Select a step size.

Click the Maximum Speed radio button. The log will appear on the left of the screen and scroll at its maximum rate. It is likely that the recalculation will complete quickly, but that the log on the screen will lag.

10.2.4 Pause Recalculation

Click once on the QUIT button causes the Recalculation to pause.

10.2.5 Quit Recalculation. Click twice on the QUIT button.

# 10.3 Load Variables

The Load Variable is invoked from the Recalculation File menu. It is used to Load variables from the database.

Load Variables the other Dataset, enabling depth dependent parameters associated with the selected service to be zoned and values to be set.

🐌 Warrior Logging S	ystem 📃 🗆 🗙
File Service Action	Edit Monitor
elect Dataset Load Variables	hd-Gamma-Collars data\cbldem.db
About	n1/pass1.1 Mode
Exit Close All	

FIG: 10.6 Load Variables

## 10.4 Monitor

The Monitor option in recalculation has the same properties that Monitor in acquisition. (See Section 4.6)

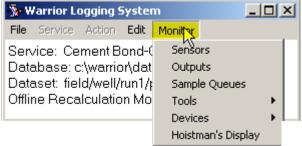


FIG: 10.7 Monitor Options

Recalculation Cor	ntrol	
Start At Go To Now At Step Size	307.25 6.00 226.25 3.00	•
Next Pause	10.00	
<ul> <li>Single Step</li> <li>Variable Speed</li> <li>Maximum Speed</li> </ul>	d Quit	-

FIG: 10.8 Step Control

## 10.5 Edit

The Edit option in recalculation has the same properties that Edit in acquisition. ( <u>See Section 4.5</u>). Change parameters as required. These may include:

Tool String, Variables, Heading, Master Log Format, Plot Job, Sensors, Tool Configuration, Device Configuration, depth offsets, input channels, curve filters, calibrations, sonic amplitude gate settings.

😼 Warrior Logging 9		
File Service Action	Fdit Monitor	
Service: Cement B Database: c:\warric Dataset: field/well/i Offline Recalculatio	Heading	• 1 •

FIG: 10.9 Edit Options

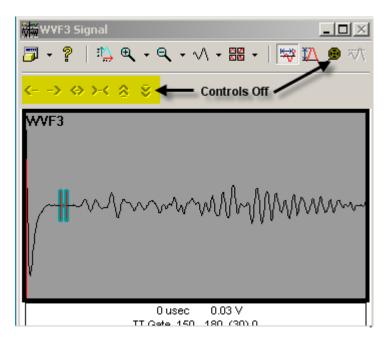


FIG: 10.10 Acoustic Signal Control Off

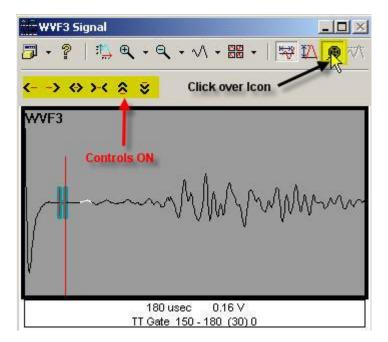


FIG: 10.11 Acoustic Signal Control set ON

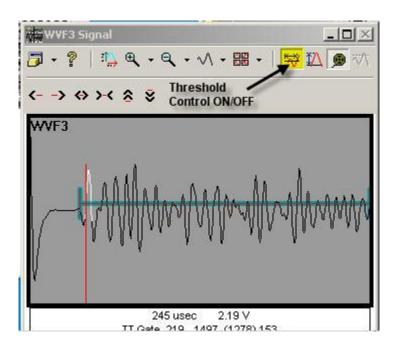


FIG: 10.12 Thresholds and Gate Control ON

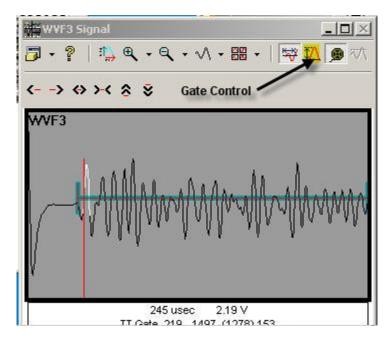


FIG: 10.13 Gate control Set ON

Edit Calibra	tions		
Tool Name	GR		Temp
Tool Serial	12345		Pelye
Cal Name	GR		Cancel
Cal Type	Lin1Pt		
Low Rea	ding	Low Re	ference
Low Rea		Low Re	
	5		)
0.625	j j j j ding	(	) ference

#### FIG: 10.14 Edit GR Calibrations

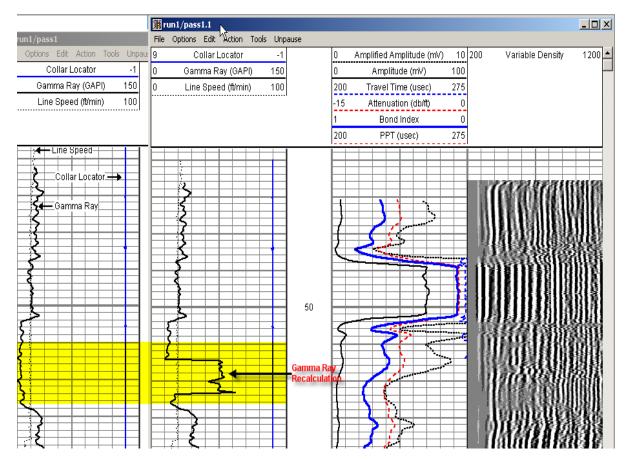


FIG: 10.15 GR Curve Before and After the Recalculation



# **11 Merge/Splice, TVD Merge/Splice**

The Wizard, Merge, Splice and TVD module allows data from one or more database files to be manipulated in the depth domain and output to one or more destination files. Data may be depth adjusted and correlated, curves from multiple runs spliced together, outputs renamed etc. The module also includes the capability to calculate True Vertical Depth (TVD) from directional survey data and generate log data referenced to TVD for subsequent plotting and other operations. Most of the Merge program operations may be accomplished with only one pass through the data.

Double-click the Merge icon in the Warrior group

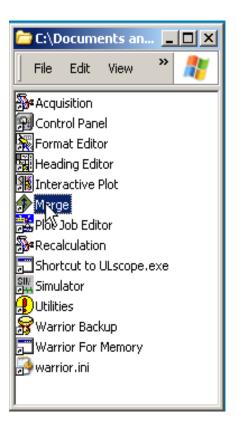


FIG: 11.1 Warrior Group

# 11.1 Wizard

The Wizard option is easy way to do Merge two Passes, Splice, Replace and Add curves 11.1.1 Merge two Passes Double-click the Merge two Passes option.

Warrior Merge-Splice     File Corrections Process					<u> </u>
Process Control	Merce two Passes Add/Replace a curve				
🔶 Directional S	Survey Stations				
🔷 Depth Co	orrection Tie Ins				×
🚯 Inpu	ıt Details			_	
	Log Data Inputs				
Dat	abase Dataset Path	Range	Corr?	Output As	
				9	
	<u>A</u> dd <u>Chan</u> g	je <u>R</u> em	ove	<u>C</u> lose	

FIG: 11.2 Wizard/Merge two passes option.

Set the Base Pass as Upper Pass or Lower Pass and select the Database

💠 Merge two Passes					
Upper Pass		Shallowest	Deepest	Base Pass*	
Lower Pass				0	^5
Merge Depth					
Output		0.0	0.0		
Presentation					
* Base Pass - use servi	ce, embedded, and presentation info from this pass.		Clear all Inputs	Pro	cess

FIG: 11.2 Merge two Passes set the Base Pass as Upper Pass

Select the Input pass to merge from the Database

Input pass for merge	<u>.</u>	X
Current Database:	C:\Warrior\Data\ <mark>CBLDEM.DB</mark>	
Current Dataset:	/field/well/run1/ <mark>pass1</mark>	
/field/well/run1/_plots /field/well/run1/pass1		Database OK Cancel

#### FIG: 11.3 Select Input pass for Merge

Select the Pass from the database to set as Lower Pass

💠 Merge two Passe	5				
		_	_	_	
		Shallowest	Deepest	Base Pass*	
Upper Pass	CBLDEM:/field/well/run1/pass1	6.0	318.3	۲	
Lower Pass				C	<u> </u>
Merge Depth					~~
Output	CBLDEM:/field/well/run1/merge1	6.0	0.0		
Presentation	CBL01.PRS				
* Base Pass - use serv	vice, embedded, and presentation info from this pass.		Clear all Inputs	Pro	cess

FIG: 11.4 Select Pass as Lower Pass

Select the Pass from another Database

Input pass for merge	•	X
Current Database:	C:\Warrior\Data\tek275n.db	
Current Dataset:	/field/well/run1/ <mark>pass5</mark>	
/field/well/run/_plots_ /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass1	.4	Database OK.
		Cancel

FIG: 11.5 Select pass from the Database

The software by default created a pass (Merge1). Set the depth to start the Merge1 (Splice the curves), Define the log interval and set the presentation.

🚯 Merge two Pa	sses				
		Shallowest	Deepest	Base Pass*	
Upper Pass	CBLDEM:/field/well/run1/pass1	6.0	318.3	۲	
Lower Pass	tek275n:/field/well/run1/pass5	172.8	747.5	0	
Merge Depth	Set the Depth to start the Merge	Define Log	g Interval		
Output	CBLDEM:/field/well/run1/merge1	6.0	747.5		
Presentation	CBL01.PRS				
* Base Pass - use	service, embedded, and presentation info from this pass.		Clear all Inputs	Pro	cess

#### FIG: 11.6 Merge two passes

Double-click the Process bar

💠 Merge two Pas	ses				<u>_                                    </u>
		Shallowest	Deepest	Base Pass*	
Upper Pass	CBLDEM:/field/well/run1/pass1	6.0	318.3	۲	
Lower Pass	tek275n:/field/well/run1/pass5	172.8	747.5	C	
Merge Depth	200				
Output	CBLDEM:/field/well/run1/merge1	6.0	747.5		
Presentation	CBL01.PRS				
* Base Pass - use s	ervice, embedded, and presentation info from this pass.	(	Clear all Inputs	Pro	cess

#### FIG: 11.7 Start the Process

Processing the Merge 1	
	×
Processing	
82%	
Cancel	

#### FIG: 11.8 Processing

Select Interactive Plot in the warrior group

Current Database:     C:\Warrior\Data\CBLDEM.DB       Current Dataset:     /field/well/run1/merge1	Interactive Plot			×
	Current Database:	C:\Warrior\Data\CBLDEM.DB		
	Current Dataset:	/field/well/run1/ <mark>merge1</mark>		
/field/well/run1/pass1 Database OK Cancel	/field/well/run1/merge /field/well/run1/pass1		ОК	

FIG: 11.9 Select Database from interactive plot

Screen plot the Merge1 check the Merge the curves (Splice) at 200 FT.

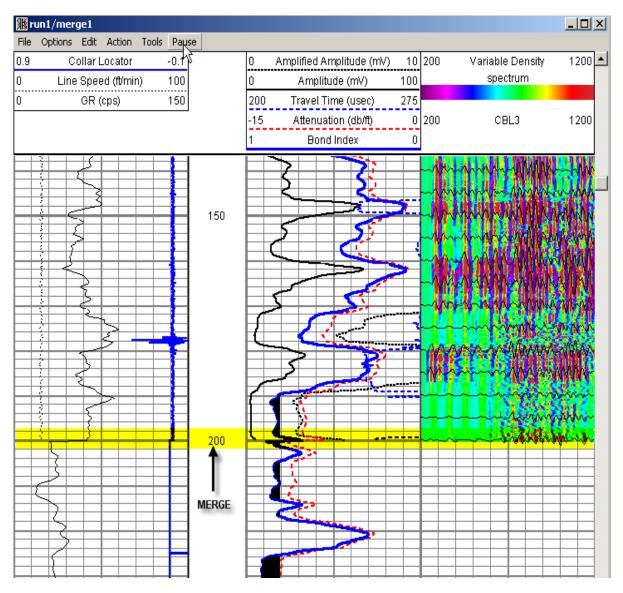
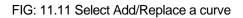


FIG: 11.10 Screen Plot Merge1

• Warrior Merge-Splice-TVD	,	
File Corrections Processing Window	Wizard	
🚯 Process Control	Merge two Passes	- <b>D</b> ×
🗘 Output Definition	Add/F place a curve	
Directional Survey Station	15	
🗘 Depth Correction Tie 1	ns	

11.2.2 Merge two Passes (Add Curves)



💠 Add / Replace a	Curve		- O ×
		Shallowest Deepest	
Pass			<u></u>
Select to add curve(s	)		- <u>1</u> 2
Output	cbldem:/field/well/run1/merge1		
Presentation			
		Pi	rocess

FIG: 11.12 Select the Base Pas	SS
--------------------------------	----

💠 Add / Replace a C	urve			
		Shallowest	Deepest	
Pass	CBLDEM:/field/well/run1/pass1	6.0	318.3	
Select to add curve(s)				
Output	CBLDEM:/field/well/run1/merge2	6.0	318.3	
Presentation	CBL01.PRS			
	R		F	Process

FIG: 11.13 Select to add curve

Select Data Items		×
Dataset Name:	warrior\data\tek275n.db	
/field/well/run1/p /field/well/run1/p /field/well/run1/p /field/well/run1/p	pass5/AMPS6/1 pass5/AMPS7/1 pass5/AMPS8/1	-
/field/well/run1/r /field/well/run1/r /field/well/run1/r /field/well/run1/r	pass5/BONDIX/1 pass5/CCL/1 pass5/ELTIM/1 pass5/GR/1	
/field/well/run1/r /field/well/run1/r /field/well/run1/r /field/well/run1/r /field/well/run1/r	pass5/LTEN/1 pass5/RAWAUX/1 pass5/RAWDAMU/1	
/field/well/run1/r /field/well/run1/r /field/well/run1/r /field/well/run1/r /field/well/run1/r	pass5/RAWDSP13/1 pass5/RAWDSP16/1 pass5/RAWDSP17/1	
/field/well/run1/p /field/well/run1/p /field/well/run1/p /field/well/run1/p	pass5/RAWDSP19/1 pass5/RAWDSP20/1 pass5/RAWDSP21/1 pass5/RAWDSP3/1	
/field/well/run1/r /field/well/run1/r /field/well/run1/r /field/well/run1/r /field/well/run1/r /field/well/run1/r	pass5/RAWDSP7/1 pass5/SECTORS/1 pass5/TCURR/1 pass5/TT3FT/1	
C Select all from one pass	33337 100117 1	
	allowest) epest)	 Cancel

FIG: 11.14 Select the curve

Database	Dataset Path	Range	Corr?	Output As	
CBLDEM	field/well/run1/pass1/CBL3/1	15.5-316.8		CBL3	
CBLDEM	field/well/run1/pass1/CCL/1	6.1-307.2		CCL	
CBLDEM	field/well/run1/pass1/GR/1	12.8-313.8		GR	
CBLDEM	field/well/run1/pass1/LSPD/1	6.3-307.3		LSPD	
CBLDEM	field/well/run1/pass1/LTEN/1	6.1-307.2		LTEN	
CBLDEM	field/well/run1/pass1/RAWADC/1	6.0-307.4		RAWADC	
CBLDEM	field/well/run1/pass1/RAWCTR/1	6.0-307.3		RAWCTR	
CBLDEM	field/well/run1/pass1/RAWWVF1/1	6.0-307.3		RAWW/F1	
CBLDEM	field/well/run1/pass1/TCURR/1	6.1-307.2		TCURR	
CBLDEM	field/well/run1/pass1/TT3/1	15.5-316.8		TT3	
CBLDEM	field/well/run1/pass1/TVOLT/1	6.1-307.2		TVOLT	
tek275n	field/well/run1/pass5/GR/1	×_×		GR	_
				12	

FIG: 11.15 Select the curve in log Data Inputs

Modify Input Item		×
Input Dataset	c:\warrior\data\tek275n.db /field/well/run1/pass5/GR/	ñ
Start From	× (Shallowest)	
Stop At	× (Deepest)	
Output As	GR1 - Set Curve Name OK	
Apply Depth Corr	ection Cancel	

FIG: 11.16 Modified input Curve

💠 Add / Replace a C	urve			
		Shallowest	Deepest	
Pass	CBLDEM:/field/well/run1/pass1	6.0	318.3	
Select to add curve(s)				
Output	CBLDEM:/field/well/run1/merge2	6.0	318.3	
Presentation	CBL01.PRS			
			F	

FIG: 11.17 Add Curve and Process

			×
Processing			
		_	
0	ancel		

FIG: 11.18 Processing

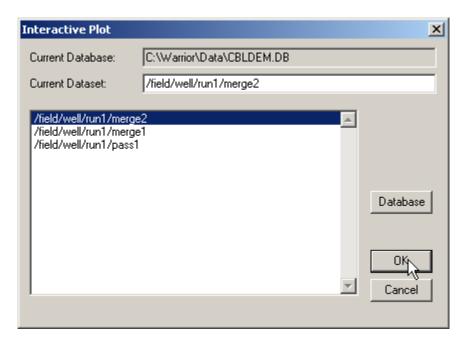


FIG: 11.19 Interactive Plot select pass

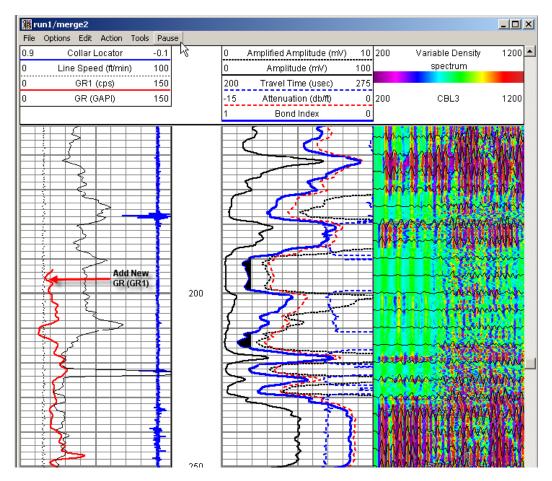


FIG: 11.20 Plot the Pass

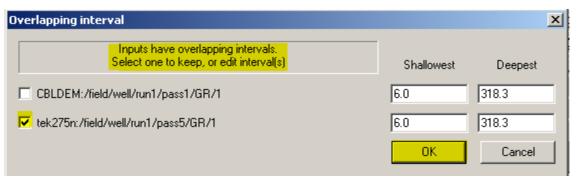
11.2.3 Merge two Passes		
Select Data Items		×
		_
Dataset Name: c:\warr	rior\data\tek275n.db	
		_
/field/well/run1/pas		
/field/well/run1/pas		
/field/well/run1/pas /field/well/run1/pas		
/field/well/run1/pas		
/field/well/run1/pas		
/field/well/run1/pas	ss5/CCL/1	
/field/well/run1/pas		
/field/well/run1/pas		
/field/well/run1/pas		
/field/well/run1/pas /field/well/run1/pas		
/field/well/run1/pas		
/field/well/run1/pas /field/well/run1/pas		
/field/well/run1/pas		
/field/well/run1/pas /field/well/run1/pas		
/field/well/run1/pas		
/field/well/run1/pas	ss5/TVOLT/1	•
Select all from one pass		
	•	
		_
Shallow (Shallow		
× (Danae)	Maximize Maximize	
(Deepes	st] Cance	
1		

11.2.3 Merge two Passes (Replace curve)

FIG: 11.21 Select Curve from the database

💠 Add / Repla	ice a Curve		
		Shallowest Deepest	
Pass	CBLDEM:/field/well/run1/pass1	6.0 318.3	
Select to add c	urve(s)		
Output	CBLDEM:/field/well/run1/merge5	6.0 318.3	
Presentation	CBL01.PRS		
			Process

### FIG: 11.22 Process





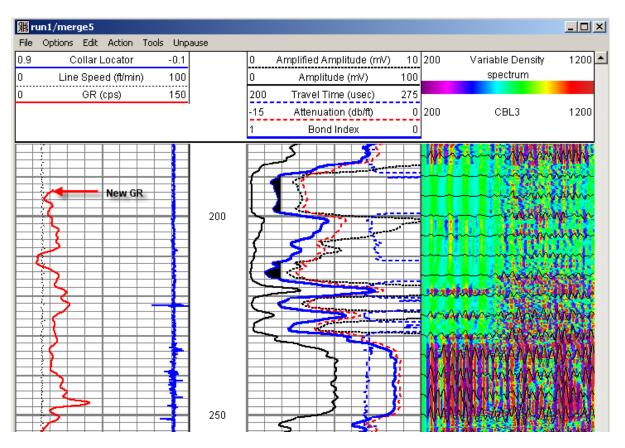


FIG: 11.24 Plot the pass with the new curve that replaced the old ones.

### 11.2 Merge

Double-click the Merge icon in the Warrior group. The Merge Splice TVD window will appear as shown below.

	essing <u>W</u> indow			_			
Process Control					_0	_	
🚯 Output Defini							
	al Survey Stations					-D×	-
	Correction Tie Ins						_
	put Details					_ [	
	Log Data Inputs	 			0.1.1.4		_ 🗆 🗡
	atabase Dataset Path		Range	Corr?	Output As		
							Ŧ
							F
<u> </u>	Add	Change	Rer	nove		<u>C</u> lose	
						_	

#### FIG: 11.25 Log data Inputs

The Merge module interface consists of six independent windows within the main Merge window. Any or all the windows may be displayed at the same time.

Note that if you lose a window by inadvertently or deliberately closing it, you can get them all back by clicking Window/Open All in the main menu bar.

The main Merge menu box contains several pull down menus and selection options, which control the operation and set up of the Merge sub-system. The pulls down menu functions are as follows:

### 11.2.1 File

#### 11.2.1.1 Select Input Log Data.

Selecting this option brings the **Log Data Input** window to the foreground. Data items e.g. curves, are selected from their source database(s) and dataset(s) and displayed as a scrolled list in the Log Data Input Window. Within the Log Data Input window several processing parameters are set.

#### 11.2.1.2 Detail Selected Inputs

Selecting this option brings the **Input Details** window to the foreground. This window displays detailed information concerning the data items selected for processing.

#### 11.2.1.3 Select Output Path/File

Selecting this option brings the **Output Definition** window to the foreground. This allows definition of the database and dataset to which the processed data is to be output. A default presentation, with start and stop depths, may be *associated* with the output database in this dialog also. Note that **Browse** buttons are available so that existing databases and presentation files may be easily selected.

### 11.2.2 Corrections

#### 11.2.2.1 Enter Depth Tie Ins

Selecting this option brings the **Depth Correction Tie Ins** window to the foreground. Processing parameters for data depth corrections are entered in this window.

#### 11.2.2.2 Enter Directional Data

Selecting this option brings the **Directional Survey Stations** window to the foreground. Entry of directional survey data for TVD calculations is made in this window.

### 11.2.3 Processing

#### 11.2.3.1 Process Commands.

Selecting this option brings the **Process Control** window to the foreground. Three selections may be made in this window. The type of processing to be performed, if the processing is to be done as a foreground or background task, and to the default depth units are to change.

### 11.2.3.2 Windows

Conventional Windows commands for manipulating windows on the screen

# 11.3 Merge data items (curves) from two (or more) log passes

If the Log Data Inputs window is not active, click on **Select Input Log Data .....** under the **File** menu. The Log Data Input window appears in the foreground. Clicking the **Add** button brings up a file selection box where an existing log database may be selected in the usual way.

Once a database is selected the contents in terms of runs, passes, curves etc. are displayed as a scrolled list, as shown below.

	Select Data Items		
Dataset Name:	c:\wtest\wellirt.db		
/field/well/run /field/well/run /field/well/run /field/well/run /field/well/run	/pass1/GR/1 /pass1/LSPD/1 /pass1/MIR/1	*	OK Cancel

FIG: 11.26 Select Curve from the database

Select the curves and other items, present in this list that you wish to merge. When all the required curves present in the current database have been selected click **OK** and the selected items are passed to the **Log Data Inputs** list as shown below.

Warrior Merge-Splice-TVD		
le <u>C</u> orrections <u>P</u> rocessing <u>W</u> indow		
		—
Log Data Inputs		<u> </u>
Database File Dataset Path c:\warrior\data\demo minerva/C-20/run1/pass2/ service /1	Range	Cor
c:\warrior\data\demo_minerva/C-20/run1/pass2/_service_/1 c:\warrior\data\demo_minerva/C-20/run1/pass2/AGT3/1	*-*	<u>1</u>
c:\warrior\data\demo minerva/C-20/run1/pass2/AGT5/1	*-*	
c:\warrior\data\demo minerva/C-20/run1/pass2/RAWADC/1 c:\warrior\data\demo minerva/C-20/run1/pass2/RAWCTR/1	** **	
c:\warrior\data\demo minerva/C=20/run1/pass2/RAWUF1/1	*-*	
		1
•		÷ É
Add Change Remove	Close	n
Add Change Remove	Close	JH

FIG: 11.27 Log Data Inputs

In the same way (Add etc.) curves and other data items may be selected from other databases until all the required curves are present in the Log Data Inputs window.

From within the Log Data Inputs window, details of the processing parameters for the individual data items are set. The processing parameters which may be adjusted are the depth range, the name of the output curve and the application (or otherwise) of depth corrections.

Select one or more curves from the input list by highlighting them in the normal way. Note that **Change** button is now activated.

Clicking the Change button brings up the Modify Input Item dialog as shown below.

	Modify Input Item	
<u>I</u> nput Dataset	(Multiple)	
Star <u>t</u> From		
Sto <u>p</u> At	x	
<u>O</u> utput As	(Multiple)	ОК
Apply Depth Co	prrection	Cancel

FIG: 11.28 Modify input item

If a group of curves was selected, the Input Dataset is shown as Multiple because several curves have been selected. If a single curve is selected the actual name of the curve us presented.

The depth range of the output curve(s) may be set as desired or left as the initial range. The name of the output curve may be changed only if a single curve was selected.

If depth corrections are to be applied the **Apply Depth Correction** box must be checked and depth correction tie-in points entered (see below).

Note that currently only one set of curves may be depth corrected per pass through the data. If you wish to correct more than one curve (or group of curves), where one curve (or group) has different depth corrections than the others, then tie-in points must be entered for the first group, the merge process run and then the second curve (or group) selected, the second group of tie-ins entered, and a second merge process run. Detailed information on all data items in the Log Data window is present in the Input Details window.

# 11.4 Access detailed information on data items

Select Detail Selected Inputs from the File menu. A new window is generated as shown below. A variety of information is shown about all the curves selected for processing. The horizontal and vertical scroll bars are used to access all the available information.

-						arrior Me	rge-Splice	:-TVD								•
<u>F</u> ile	<u>C</u> orrec	tions <u>P</u> r	ocessin	g <u>W</u> in	dow					_				_		_
Dat	Log Data Inputs atabase File Dataset Path Range Corr? Output As															
c:\	-	110		Dava	200 200		ut Details				nonge				- uopuo	
	Input	Output As	Storage	Туре	Units	Тор	Bottom	Rate	Blocks	Size	Points	From	Step			+
	TENS	TENS	Regular	Float		14728.00	15218.50	2	512/128	4	1					
C . 1	MIR	MIR	Regular	Float		14728.00	15218.50	2	512/128	4	1					
	LSPD	LSPD	Regular	Float		14728.00	15218.50	2	512/128	4	1					
	GR	GR	Regular	Float		14729.00	15219.00	2	512/128	4	1					
	DIR	DIR	Regular	Float		14728.00	15218.50	2	512/128	4	1					
*																
-																
L_																∣⊧
																+
	+															•

FIG: 11.29 Input Details

# 11.5 Enter depth tie in points

Select Enter Depth Tie Ins.... bringing up the Depth Correction Tie Ins dialog as shown below.

			Warrier Marra Caller TVD			_
	Course atting a	Densessien	Warrior Merge-Splice-TVD		▼ 4	•
<u>F</u> ile	<u>C</u> orrections	Processing	<u>W</u> indow			-
			Depth Correction Tie Ins	<b>▼</b> ▲		
			Measured Actual			
			1200.0 1205.0			
			1300.0 1310.0			
			<b>V</b>			
	Ad	d Ch	ange Bemove <u>G</u> et <u>P</u> ut <u>C</u> lose			
	/ V					
Out Defin	put Process ition Control		Log Data Input Details Inputs			
Denr	indon Control	Stations	прихо			

FIG: 11.30 Depth Correction Tie Ins

Depth tie in points may be entered from the keyboard by first clicking the **Add** button to obtain the window shown below

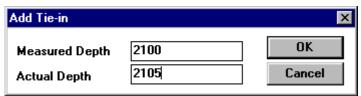


FIG: 11.31 Add Tie-in

Enter the current log depth in the Measured Depth box, and the depth to which you wish to move those log points in the Actual Depth box. Click OK and the points appear in the scrolled list. The Add Tie-in window continues for entry of the next tie-in point. When all tie-in points have been entered, click Cancel.

The log interval below the lowest tie-in point will be linearly shifted up or down, and by an amount corresponding to the lowest tie-in values.

The log interval above the highest tie-in point will be linearly shifted up or down, and by an amount corresponding to the highest tie-in values.

The log data between tie-in points will be linearly stretched or squeezed according to the tie-in values.

Note that if only one tie-in point is entered then all the log data will be linearly shifted up (or down) according to the tie-in values. The same result may be achieved much more quickly by using the Apply Linear Shift to a Dataset or Apply Linear Shift to a Data Item functions in the Utilities package.

Tie-in points mat be read from and written to a file using the Put and Get buttons. Points may be changed or removed using the corresponding buttons.

Once the changes have been made to the input data, it is necessary to indicate where the merged data is to be written.

### 11.6 Select the output path or file name.

Choose Select Output File/Path from the File menu. The dialog box shown below appears. The output database and dataset are typed in from the keyboard, or an existing database is selected using the Browse button.

Note that it is usually quicker to select an existing dataset with the Browse button and then modify its name and/or dataset path, than to type in all the fields from scratch.

A default presentation file may be attached to the output dataset with a depth range defined in this dialog. The Browse button may be used to select an existing presentation file from those in the system.

-		Warrior Merge-Splice-TVD	▼ ▲
Ei	le <u>C</u> orrections <u>P</u> rocessi	ing <u>W</u> indow	
	•	Output Definition	
	Select Database	Browse	
	Select <u>F</u> ield Name		
	Select <u>W</u> ell Name		
	Select <u>R</u> un Name		
	Select <u>P</u> ass Name		
	Default Presentation	Browse	
	Star <u>t</u> Depth	0.0	
	Sto <u>p</u> Depth	0.0	
	Free Space	115 MB	
	$\langle \mathbf{b} \rangle$		
	og Data Inputs		

FIG: 11.32 Output definitions

The final step in merging the data is to define the processing operation, the processing mode and the depth units (if other than default).

### 11.7 Select processing options and start processing

Select Process Commands bringing up the Process Control Window as shown below.

-			Warri	ior Merge-Splice-TVD		<b>-</b>
<u>F</u> ile	Correction	s <u>P</u> rocessing	<u>W</u> indow			
	[	-		Process Control		▼ ▲
		© Copy / Splic	e / Merge Log D	ata (with Optional Dept	Correction)	
		-	ata with <u>T</u> VD Cor		······································	
		○ Calculate TV	'D <u>R</u> eport			
		• Process in <u>E</u>	Background			
		O Process in <u>F</u>	oreground			
		Feet			Begin	
					Class	
		○ Meters			<u>C</u> lose	
	> <					-
Out Defin		Vell	Inputs	Correction Tie		
Dell		ions	mpoto	lns		

FIG: 11.33 Process Control

Select the Copy / Splice / Merge Log Data to process the data with optional depth corrections. Select Copy Log Data with TVD Correction to generate a new set of log data with depth referenced to TVD calculated from the directional survey data. Select Calculate TVD Report to generate an ASCII directional report. Process in Foreground causes the processing to take place in Windows foreground mode, whilst Process in Background allows processing to take place whilst other tasks, such as logging, are active.

# 11.8 Splice a curve

Select first input database as described above. Select the first section of input curve to be spliced from the Select Data Items window, then select the second and so on until all the original curves from which the spliced curve is to be assembled are present in the Log Data Inputs window. The original curves may originate from one or more databases.

Select the first curve and input depth range of this curve to be used in the spliced curve e.g. 1200, 1300. Select the second input curve and set its range e.g. 1300, 1400. Select the third input curve.

When all the sections have been defined go to Output Definition and define where the new curve is to be written, as described above. Process Control select the Copy / Merge...option and click Begin.

# 11.9 Enter Directional Survey Data

Select Enter Directional Data. bringing up the Directional Survey Stations window as shown below. The depth, borehole inclination, and azimuth are entered in a manner like the depth tie in data. The Add, Change, Remove, Get, Put and Close buttons are used in the same manner as previously described for Depth Correction.

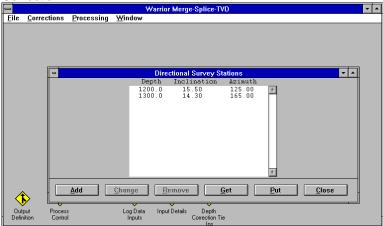


FIG: 11.34 Directional Survey Stations

Once the data items have been selected, the destination file chosen and the processing parameters defined, the Processing menu or Process Control window may be selected to initiate processing of the data as previously described.

The **Window** menu functions are identical to those found in any Windows application, allowing the individual windows e.g. Process Control, Log Data Inputs etc., to be tiled, cascaded, etc., as shown below.

-							Warrior Merg	e-Splice-TVD					r 🔺
Ē	le	<u>C</u> or	rec	tions	<u>Processing</u>	<u>W</u> indow							
						Log C	)ata Inputs			•			
Da C		Output Definition											
C:	s	c 🖻 Input Details 🔽 🔺											
C: C:		Ц	•				Depth Correc	tion Tie Ins			▼ ▲		
C:	٩	Ы		•			Directional	Survey Station	IS		•		_
	8	Н			•		P	rocess Control				▼ ▲	1
	8	Ľ			◉ <u>C</u> opy / Splic	:e / Merge L	_og Data (with	Optional Dept	Correction)				
	18	Н			O Copy Log D	ata with <u>T</u> V	D Correction						
*	D				O Calculate T	/D <u>R</u> eport							
	s				• Process in !	<u>B</u> ackground	i						
L	s				O Process in	Eoreground							
		•			Feet				Begin				
			-		○ Meters				<u>C</u> lose				
			l										
1													2

FIG: 11.35 Process Control

Note that the interface to the Merge program may be customized by the user in terms of window sizes and layout. The layout in existence at the time the program is closed will be brought back the next time the program is run.



# **12 Database Utilities**

The Utilities icon in the Warrior Program Group allows access to several programs, some with general, and some with more specific, applications.

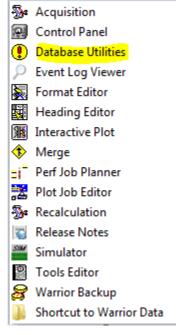


FIG: 12.0.1 Warrior Program Group

The warrior Utilities has six groups:

- 1) Data Export
   2) Interpretation Tools
   3) Setup Tools
   4) Depth Correction
- 5) Data Management
- 6) Data Import

Clicking on the icon Utilities gives a menu list as shown below.

Warrior Utilities								
Data Export	Depth Correction							
Export to LAS Format	Apply Linear Depth Shift to a Dataset							
Export to LIS Format	Apply Linear Depth Shift to a Data Item							
Export to ODBC Compatible Database	Data Management							
Extract Pass(es) to New Database	Create an Alias for a Data Item							
Export via Internet	Multiple Pass Automerge							
Interpretation Tools	Edit Variables in a Dataset							
Mathpack	Create Variables in a Dataset							
XY Plot	Create Waveform Gate Curves							
Tracer Interpretation	Create CCL Curve from Keyboard							
Create Differential Curve	Delete Data from a Database							
Create Total Dissolved Solids Curve	Undelete Data							
Calculate Borehole Volume from Caliper	Change a Name							
Calculate Rxo/Rt & Rwa	Edit a Log Curve							
Pipe Tally	Select Correlation Curves for Database							
Curve Normalization	Data Import							
Log Summary Generator	Read ASCII Data into Warrior							
Setup Tools	Read LIS Data into Warrior							
Calibrate Printer	Import ODBC Data into Warrior							
Configuration Backup/Restore	Create Log Format from Dataset							
Edit Logging Service Details	Import via Internet							
Edit Logging Tool Details	1							
	Exit							

FIG: 12.0.2 Warrior Utilities

# 12.1 Data Export

Unlike previous versions of Warrior, Warrior 8 now has a single program to export both LAS and LIS files, although the Warrior Utilities still shows them as being separate utilities. Depending upon which utility is selected, the export format for that type will be selected upon entering the export utility, although it can be changed within the utility.

### 12.1.1 LAS LIS Data Exporter

Warrior Utilities	×			
Data Export	Depth Correction			
Export to File	Apply Linear Depth Shift to a Dataset			
Extract Pass(es) to New Database	Apply Linear Depth Shift to a Data Item			
Export via Internet	Data Management			
Interpretation Tools	Create an Alias for a Data Item			
Mathpack	Multiple Pass Automerge			
XY Plot	Edit Variables in a Dataset			
Tracer Interpretation	Create Variables in a Dataset			
Create Differential Curve	Create Waveform Gate Curves			
Create Total Dissolved Solids Curve	Create CCL Curve from Keyboard			
Calculate Borehole Volume from Caliper	Delete Data from a Database			
Calculate Rxo/Rt & Rwa	Undelete Data			
Pipe Tally	Change a Name			
Curve Normalization	Edit a Log Curve			
Log Summary Generator	Select Correlation Curves for Database			
Setup Tools	Data Import			
Calibrate Printer	Read ASCII Data into Warrior			
Configuration Backup/Restore	Read LIS Data into Warrior			
Edit Logging Service Details	Import ODBC Data into Warrior			
Edit Logging Tool Details	Create Log Format from Dataset			
	Import via Internet			
	Exit			

FIG: 12.1.1 Export LAS Format

### 12.1.2 Warrior Data Exporter

This program will export to LIS, DLIS, LAS2, LAS3 and CSV for LIS the destination can be a file or a tape. The first step is to select the format output with the Format button.

<mark>d</mark> Warrior Data Expor	ter				$\times$
Setup Details LAS C	Options LAS3 Opti	ions CSV Options Li	IS Options		
Format					
		C CSV (Comm	a Separated V	alues)	
C LAS3	OLIS	C INSITE			
Data					
D <u>a</u> ta					-
Destination					
P	LIS File (export.dlis)	)			
					-
Data Destination	C:\ProgramData\	Warrior\Data\		<< Brows	e
File Base Name	export				
Options					
Automatic file na	ame [database_dat	aset ].ext			
Progress:					
1					_
		Begin	Close	н	elp

FIG: 12.1.2 Data Exporter

Clicking on the Format button to select the appropriate export option. Once you have chosen the format type, select the Data button

After Export to LAS2 Format has been selected, the following window will open with LAS selected as the export format. The next step is to click on the Data Button to select the data to export.

<mark>d</mark> Warrior Data Expo	orter			
Setup Details LAS	Options   LAS3 Options	CSV Options L	IS Options	
- Format				
	C LIS		na Separated Va	alues)
C LAS3	C DLIS	C INSITE		
Data Data				
				<u> </u>
Destination	.AS File (export.las)			
	LAS File (export.las)			
, Data Destination	C:\ProgramData\Warr	ior\Data\		<< Browse
File Base Name	export			
Options				
Automatic file r	name [database_dataset	J.ext		
Progress:				
		Begin	Close	Help

Fig. 12.1.3 Select Data to Export

A heading and log passes can be added from the Build Export File List window. Warrior 8 now uses an export template with the extention .AET to identify which curves are to be exported and sample rates for the export. The first time that you export a file, you may not have any templates. Just cancel that dialog window to set to default template and you can create and save a template later. Click the Done button after heading and all log passes have been selected.

	Build Export File List	×
Clear current export list	Hdg las export example:/field/well/run/_plots_/_headings Log las export example:/field/well/run1/pass1 using CNT-S	
Add a heading to export list		
Select Log Export Template (file defining how to arrange output))		
Add a single log pass to export list		
Add multiple log passes to export list		
Done		~

Fig. 12.1.4 Export File List

	De	fine Export File	×
Туре	Log data to LAS		
Database	c:\programdata\wa	mior\data\las export example.db	<< Browse
Dataset	/field/well/run1/pa	ss1	
Format	[DEFAULT]		<< Browse
Start At	12700.00	<< Maximize	OK
Stop At	12917.50		ОК
			Cancel

Fig. 12.1.5 Pass selected with no template selected

The default destination for the LAS file that is created is normally C:\ProgramData\Warrior\Data\ but the User may use the [<<Browse] button to select a different destination. Be sure to give a proper Windows file name for the output.

럼 Warrior Data Exporter		$\Leftrightarrow$		×
Setup Details LAS Options LAS3 Options	CSV Options LIS	Options		
	C CSV (Comma C INSITE	Separated Va	alues)	
Data Log 03282019:/field/we	II/run1/pass8 using [	DEFAULT]		•
Destination	_pass8.las)			
Data Destination C:\ProgramData\Warr			<< Brows	e
-Options				
Automatic file name [database_dataset	].ext			
Progress:				-
	Begin	Close	He	elp

Fig. 12.1.6 File Base Name

Once the Format and Data has been selected go to the Details Tab.

The Available list just shows whether that curve is on the current dataset. From this dialog, you can make your own template that will contain the curves that you want to export. For LAS you can rearrange the order of the curves to be exported in the order that they are listed. If you want GR to be exported first, then click on GR and drag to the top of the list.

etup Det	ails LAS Option	ns LAS3 Options CSV	Options LIS Options	
Available	Export	t Warrior Mnemo	nic Output Mnemo	nic AF 🗠
Yes	Yes	DEPT	DEPT	0 000
Yes	Yes	LSPD	LSPD	0
Yes	Yes	LTEN	LTEN	0
Yes	Yes	MINMK	MINMK	0
Yes	Yes	LOCTIM	LOCTIM	0
Yes	Yes	HVOLTA	HVOLTA	0
Yes	Yes	AMP3FT	AMP3FT	0
Yes	Yes	TT3FT	TT3FT	0
Yes	Yes	AMPCAL	AMPCAL	0
Yes	Yes	AMP5FT	AMP5FT	0
Yes	Yes	TT5FT	TT5FT	0
Yes	Yes	AMPSUM	AMPSUM	0
Yes	Yes	AMPS1	AMPS1	0
Yes	Yes	AMPS2	AMPS2	0
Yes	Yes	AMPS3	AMPS3	0
Yes	Yes	AMPS4	AMPS4	0
Yes	Yes	AMPS5	AMPS5	0
Yes	Yes	AMPS6	AMPS6	0
Yes	Yes	AMPS7	AMPS7	0 🗸
<				>
-Step Size		Templa	ite	
Step Size	(ft)	0.0500		
Sav	e sample rate as	default		Save
Cle	ar default sampl	e rate		Save As

Fig. 12.1.7 Details Tab

You can double click on a curve to change the output mnemonic, API Code, or the sample rate.

Edit Item	X
Export (if available)	
Warrior Mnemonic Output Mnemonic	GR GR
API Code	0
Sample/ft	20.00
	Cancel OK

Fig. 12.1.8 Edit Item Window

You can right click on a selection of curves to bring up a context menu – from there you can toggle the curve output on or off. Right click to bring up context menu.

📥 Warrio	or Data Exporter		_	
<u>S</u> etup D	etails LAS Optio	ons LAS3 Options C	SV Options LIS Options	
Availab	ole Expo	rt Warrior Mner	nonic Output Mnemo	onic AF 🔺
Yes	Yes	DEPT	DEPT	0 000
Yes	Yes	LSPD	LSPD	0
Yes	Yes	LTEN	LTEN	0
Yes	Yes	MINMK	MINMK	0
Yes	Yes	LOCTIM	LOCTIM	0
Yes	Yes	HVOLTA	HVOLTA	0
Yes	Yes	AMP3FT	AMP3FT	0
Yes	Yes	TT3FT	TT3FT	0
Yes	Yes	AMPCAL	AMPCAL	0
Yes	Yes	AMP5FT	AMP5FT	0
Yes	Yes	TT5FT	TT5FT	0
Yes	Yes	AMPSUM	AMPSUM	0
Yes	Yes	AMPS1	AMPS1	0
Yes	Yes	AMPS2	AMPS2	0
Yes	Yes	AMPS3	AMPS3	0
Yes	Yes	AMPS4	AMPS4	0
Yes	Yes	AMPS5	AMPS5	0
Yes	Yes	AMPS6	AMPS6	0
Yes	Yes	AMPS7	AMPS7	0 🗸
<				>
Step S	ize	Tem	plate	
Step Si	ze <del>(</del> ft)	0.0500		
Sa	ave sample rate a	s default		Save
(	Clear default samp	le rate		Save As
			Begin Close	Help

Fig. 12.1.9 Selecting Curves

Once you are satisfied, you can make your own template by selecting Save As...

Select Log Export Template	een Linchern L/	×
VorgramData > Warrior > Format	✓ 4y Search Format	٩
Organize 🔻 New folder	8== 👻	0
★ Favorites Name	Date modified Type	
🥽 Libraries	No items match your search.	
Documents		
Jusic		
E Pictures		
🤣 Homegroup		
👰 Computer		
🕌 Local Disk (C:) 👻 <	III	4
File name: [DEFAULT].aet		-
Save as type: Select Log Export Template (*.aet)		-
Hide Folders	Save	el

Fig. 12.1.10 Saving Template

LIS export templates have the extension 'iet', and LAS export templates have the extension 'aet'.

The next time you start an export, you can select the template you made.

### 12.1.3 LAS Options

🚔 Warrior Data Exporter 🛛 -	-		×
Setup Details LAS Options LAS3 Options CSV Options LIS Options	;]		
LAS Options			
C Smallest Size			
<u>Best Readability</u>			
Force Wrap Mode (80 col)			
Chevron Format			
Output all Parameters as Curves			
NO curve wrap, (NON STANDARD LAS)			
Multiple passes create multiple LAS files			
Well Info date options			
Original - ddd mmm dd hh-mm-ss yyyy (Tue Jan 15 08-22-04 20			
C yyyy mm dd (2019 01 15) C mm/dd/yyyy (01/15/ C Use date from heading if available	/2019	)	
Curve date/time format			
%d %b %Y %H:%M:%S         Test         15 Jan 2019 20:38:1	1		
LAS/CSV Mnemonics			
LAS/CSV Excludes			
Heading data to LAS			
Comment data to LAS (text > 255 characters )			
Change output units			
Begin Close		He	lp

Fig. 12.1.11 LAS Options

There are two radio buttons on the LAS options tab .

Smallest Size generates the most compact LAS compatible file, it is best suited for email.

<u>Best Readability</u> generates a LAS with a more intuitive header for opening in a text editor such as notepad. There are also five check boxes.

<u>Force Wrap Mode (80 col</u>) will generate a LAS that is wrapped at 80 colums, this makes it eiser to read in a text editor but may be less compatible with other integretation software.

Cheveron Format this will generate a LAS that follows the Chevron specific LAS format.

Output all Parameters as Curves this will treat all parameters from the pass as data and output it as LAS data

No Curve Wrap, (Non Standard LAS)

<u>Multiple Passes Create Multiple LAS Files</u> this will generate a separate LAS for each pass sellected if checked.

Use Data From heading if available the will use heading data in the LAS header if it is present in the selected data.

#### 12.1.4 LAS and LIS Mnemonics

The LAS Mnemonics will be the default mnemonics that are loaded without using a template. For example, if you have set up your mnemonic for LSPD to be SPED: The LIS Mnemonics will refer to the same list.

Name	Mnemonic	
LSPD	 SPED	

Fig. 12.1.12 LAS, LIS Mnemonics

Then when you select a pass to be exported, the default name for the output mnemonic will be SPED. That can be overwritten if you use a template file:

etup Dei	tails LAS Option:	s LIS Options		
Available	Export	Warrior Mnemonic	Output Mnemoni	ic AP
Yes	Yes	LSPD	SPED	0
Yes	Yes	LTEN	LTEN	0
Yes	Yes	MINMK	MINM	0
Yes	Yes	HVOLTA	HVOL	0
Yes	No	RAWCYPIP	RAWCYPIP	0
Yes	No	RAWAUX	RAWAUX	0
Yes	No	TCURR	TCURR	0
Yes	No	TVOLT	TVOLT	0
Yes	No	ELTIM	ELTIM	0
Yes	No	ADPTH	ADPTH	0
Yes	No	CASEOD	CASEOD	0
Yes	No	PERFS	PERFS	0
Yes	No	TDEPTH	TDEPTH	0
Yes	No	BOTTEMP	BOTTEMP	0
Yes	No	BOREID	BOREID	0
•		III		,
Frame rate	(Sample/ft)	4.00 Template		Save
				Save As

Fig. 12.1.13 LAS, LIS Mnemonics

### 12.1.5 LAS and LIS Excludes

LAS Excludes		-	-	-			×	
Name TVOLT TCURR CCURR TDEPTH PERFS ADPTH ELTIM TOD BOREID BOTTEMP SURFTEMP CASEOD								
	Edit		Add		Delete	ОК	Cancel	]

Any output listed in the excludes list will not show up to be exported.

Fig. 12.1.14 LAS, LIS Excludes

### 12.1.6 Heading data to LAS

Name	Mnemonic	Description
LOCSEC	SECT	SECTION
LOCTWP	TOWN	TOWNSHIP
LOCRGE	RANG	RANGE
APINUM	API	API#
OTHER	OS	OTHER SERVICES
PERMDAT	PDAT.FT	PERMANENT DATUM
ELEVATION	EEL.FT	ELEVATION
LOGFROM	LMF.FT	LOG MEASURED FROM
DRLFROM	DMF.FT	DRILLING MEASURED FR
KBELEV	EKB.FT	KB
DFELEV	EDF.FT	DF
GLELEV	EGL.FT	GL
DATE1	DATE1	DATE1
RUNNO1	RUN1	RUN NUMBER
DPDRL1	TDD 1.FT	DEPTH DRILLER
DDL CD 4	TN 4 FT	DEDTU LOCCED

Fig. 12.1.15 Heading to LAS

The first column is the name of the heading item as saved in Warrior. Those names are defined in your heading format file (\*.hdg). The Mnemonic is how that item will show up in the LAS file:

Mnemonic. Name from heading information: Description

The heading data to LIS will work in a similar manner.

### 12.1.7 Comment data to LAS

If your heading has some longer data you want to display in the LAS file, then add the name to this section. LAS specifications are limited to 255 characters per line. This allows multiple lines of data to be shown – each line < 255 characters. The result will end up in a LAS section labeled as  $\sim$ *Other Information.* 

### 12.1.8 Exporting to LAS3

Exporting to LAS3 is like LAS2 except that you have the option to export waveform data and raw data.

📥 Warrior I	Data Exporter			_		$\times$
Setup Det	ails LAS Optio	ons LAS3 Options	CSV Options	LIS Options		
Available	Expo	rt Warrior N	Inemonic	Output Mnemo	nic Af	~
Yes	Yes	RAWDSP1_	11 R	AWDSP1_11	0	
Yes	Yes	RAWDSP1_	12 R	AWDSP1_12	0	
Yes	Yes	RAWDSP1_	13 R	AWDSP1_13	0	
Yes	Yes	RAWDSP1_	14 R	AWDSP1_14	0	
Yes	Yes	RAWDSP1_	15 R	AWDSP1_15	0	
Yes	Yes	RAWDSP1_	16 R	AWDSP1_16	0	
Yes	Yes	RAWSYSAU	X R	AWSYSAUX	0	
Yes	Yes	LSPD	L	SPD	0	
Yes	Yes	LTEN	Ľ	ΓEN	0	
Yes	Yes	MINMK	м	INMK	0	
Yes	Yes	LOCTIM	LC	DCTIM	0	
Yes	Yes	HVOLTA	H	VOLTA	0	
Yes	Yes	WVF3FT	W	/VF3FT	0	
Yes	Yes	AMP3FT	A	MP3FT	0	
Yes	Yes	TT3FT	Т	T3FT	0	
Yes	Yes	WVFCAL	W	VFCAL	0	
Yes	Yes	AMPCAL	A	MPCAL	0	
Yes	Yes	WVF5FT	w	VF5FT	0	
Yes	Yes	AMP5FT	A	MP5FT	0	v
<					>	
- Step Size			Template			_
Step Size	(ft)	0.0500				
Save	e sample rate as	s default			Save	
Cle	ear default samp	le rate			Save As	
			Begin	Close	Hel	p

FIG: 12.1.16 LAS3 Details

LAS3 has its own options selection, that function similarly to LAS2.

ڟ Warrior Data Exporter		_		$\times$
Setup Details LAS Options	LAS3 Options CSV Options	LIS Options		
LAS Options				
	LAS/CSV Mnemonics			
	LAS/CSV Excludes			
	Heading data to LAS			
Comm	ent data to LAS (text > 255 cha	racters )		
	Change output units			
	Begin	Close	1 н	elp

FIG: 12.1.17 LAS3 Details

### 12.1.9 Exporting to LIS and DLIS

<mark> W</mark> arrior Data Expor	ter		[⇔]	$\Box$ $\times$
Setup Details LAS O	ptions LAS3 Option	ns CSV Options Li	IS Options	
Format				
C LAS2 C LAS3	C DLIS	C CSV (Comm	a Separated V	alues)
Data		10 INSTITE		
D <u>a</u> ta				•
Destination				
5	pe Image File (export	Limg)		
C tap				
Cinti				
Data Destination	C:\ProgramData\W	amor\Data\		<< Browse
File Base Name	export			
Options				
Automatic file na	me [database_datas	et].ext		
Progress:				
		Begin	Close	Help

FIG: 12.1.18 LIS Data Exporter

LIS has three destination formats, tap, nti, img and .dlis.

TAP is a tape compatible format.

NTI and IMG are image formats.

DLIS is a Digital LIS format.

There are three different tape image file types that can be selected by clicking on the [Destination] button when writing LIS files. .IMG files are raw image files. .NTI files are compressed disk image files. .TAP a tape images that were originally use for the Commodore 64 computer. In addition, if the computer you are using has a tape drive installed, it will be shown as a destination.

Consult with your client or computing center to select the most compatible format to their needs.

etup Details LAS	Options LAS3 Opti	ons CSV Options LIS Option	s
Format			
C LAS2 C LAS3		C CSV (Comma Separa C INSITE	ted Values)
	ULIS	() INSITE	
Data			
Data			<u> </u>
Destination			
🤨 img	Tape Image File (exp	ort.img)	
C tap	<u></u>		
C nti			
Data Destination	C:\ProgramData\	Warrior\Data\	<< Browse
File Base Name			
File Base Name	export		
Options			
Options	name [database_dat	aset ].ext	
Options	name [database_dat	aset ].ext	
Options	name [database_dat	aset ].ext	
Options	name [database_dat	aset ].ext	
Options	name [database_dat	aset ].ext	
Options	name [database_dat	aset ].ext	
Options	name [database_dat	aset ].ext	

FIG: 12.1.19 LIS Data Exporter

Selecting the LIS data to export is done in a similar manner to LAS data. The main difference is that the Template that is used is an .LET file rather than an .AET file.

	Build Export File List	
Clear current export list	Hdg las export example:/field/well/run/_plots_/_heading Log las export example:/field/well/run1/pass1 using [DE	
Add a heading to export list		
Select Log Export Template (file defining how to arrange output), now CNL.LET		
Add a single log pass to export list		
Add multiple log passes to export list		
Done		~

FIG: 12.1.20 Select DATA to Build the LIS File

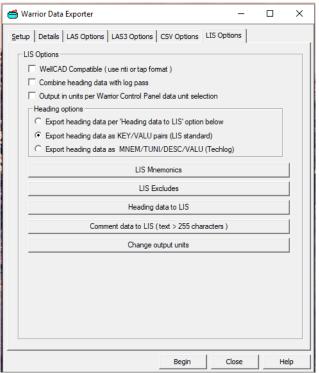


FIG: 12.1.21 LIS Options

The LIS Options has three check boxes.

WellCAD Compatible (use nti or tap format) This will generate a Well CAD software compatible LIS

Combine Heading data with log pass will generate a LIS with both Heading and log data.

<u>Heading data as KEY/VALU pairs (LIS standard</u>) unless otherwise instructed use this selection for LIS generation.

There are three heading options. The consult your customer for the appropriate standard.

The LIS Mnemonics, LIS Excludes, and Heading data to LIS are the same as they are for LAS.

The Comment data to LIS will take longer comments from your heading and export them to a comment section in the LIS file (LIS logical record type 232).

The Change Output Units allows you to select a specific Warrior unit and asign a text string to it. From the menu you can choose to add delete or edit your asignments. All the Warrior units will appear in a pull down menu ad your output unit will be a free for text.

In the example the pull down unit was degF and the text asigned was degC.

🖶 Warrior Data Exporter		
Change output units	of the second	23
Warrior Units	Unit text	
degF	degC	
Change output units		23
Warrior Units	degF	
Unit text		
Unit text	degC	
		OK Cancel
,		
Edit	Add Delete	OK Cancel
		Save
	Begin	Close Help

FIG: 12.1.22 LIS Change output units.

#### 12.1.10 Export to ODBC compatible Database

The Export ODBC Compatible Database and Import ODBC into Warrior use the same program and either menu option may be selected. The computer exporting or importing must have Microsoft Office installed in order to use this option.

This program will export data for Excel, Access and other ODBC compatible databases. The limit for exporting data is 255 data points per sample. A normal curve is one data point, but a waveform will be many more points for each sample. You will see a message in the progress window that the column count has exceeded if you exceed that amount. In order to export to an ODBC format, you must have Microsoft Office installed.

<mark>đ</mark> Warrior Data Expor	ter		⇔.		$\times$
Setup Details LAS C	ptions LAS3 Opt	ions CSV Options L	IS Options		
- Format					
C LAS2	C LIS	CSV (Comm	na Separated V	alues)	
C LAS3	C DLIS	○ INSITE			
Data					
D <u>a</u> ta					•
Destination					
	SV File (export.csv)				_
					-
Data Destination	C:\ProgramData	Warrior\Data\		<< Brows	e
File Base Name	export				
Options					
Automatic file na	ame [database_dat	taset ].ext			
Programa					
Progress:					
		Begin	Close	He	elp

FIG: 12.1.23 Export to CSV comma separated values

CSV export opens the same program as LIS and LAS exporter, ODBC export has be discontinued because the underlying software from Microsoft Office is discontinued. By exporting to CSV, you can easily manipulate your data in Excel.

There is an options tab specific to CSV.

🚔 Warrior Data Exporter —		$\times$
Setup Details LAS Options LAS3 Options CSV Options LIS Options		
CSV Options		_
C Smallest Size		
<ul> <li><u>B</u>est Readability</li> </ul>		
Output all Parameters as Curves		
Multiple passes create multiple CSV files		
Curve date/time format %d/%m/%Y %H:%M:%S         Test         15/01/2019 21:22:21		
LAS/CSV Mnemonics		
LAS/CSV Excludes		
Change output units		1
		-
Begin Close	He	lp

FIG: 12.1.24 CSV Options

12.1.11 Extract Pass(es) to New Database.

The Extract Pass(es) to a New Database Utility allow the User to selectively copy passes from an existing database to a new one.

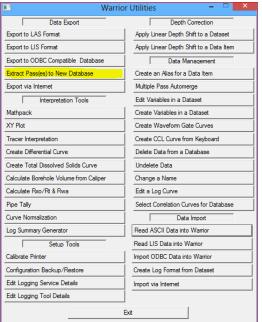


FIG: 12.1.25 Extract Pass(es) to New Database

🕘 🏵 🔻 ↑ 퉬 🕨 Computer 🤅	→ windows 8 (C:) → ProgramData → Warrior → Data →	∨ ¢ S	earch Data	م
Organize 🔻 New folder			8== •	· 🔟 🧕
🚺 Downloads	^ Name	Date modified	Туре	Size
💝 Dropbox	Caliper testing	6/6/2013 9:04 AM	File folder	
Recent places	Files	6/3/2013 10:13 AM	File folder	
퉬 1 Outlook file	1 0-24-2012.db	9/24/2012 10:36 AM	DB File	20
🅌 Bin	1-9-2013.db	4/10/2013 4:10 PM	DB File	1,49
Warrior Data	1-16-2013.db	3/22/2013 2:06 PM	DB File	
퉬 Warrior Config	<b>第</b> 1-29-2013.db	1/29/2013 10:54 AM	DB File	5,87
<b>-</b>	<b>3K</b> 1-31-2013.db	1/31/2013 5:05 PM	DB File	3,96
词 Libraries	<b>3H</b> 2-1-2013.db	4/23/2013 2:33 PM	DB File	1,02
Documents	<b>3H</b> 2-5-2013.db	2/6/2013 8:12 AM	DB File	134,792
J Music	<b>38</b> 2-13-2013.db	2/13/2013 11:45 AM	DB File	31,05
Pictures	3 2-15-2013.db	2/26/2013 11:01 AM	DB File	108,03
ቔ Videos	3-4-2013.db	3/4/2013 10:00 AM	DB File	61
	3-6-2013.db	3/6/2013 3:42 PM	DB File	2
🝓 Homegroup	3-7-2013.db	3/7/2013 1:30 PM	DB File	138,42
🖳 Computer	3-11-2013.db	3/12/2013 1:18 PM	DB File	174,90
windows 8 (C:)	3-13-2013.db	3/13/2013 11:07 AM	DB File	26,02
DATA (E:)	3-14-2013.db	3/14/2013 11:50 AM	DB File	224,68
DATA (E:)     New Volume (F:)	988 2.20.2013 AL	2/22/2012 2-25 DM	DR File	07
	2010			
File name: 3-4-	2013.db	¥ [	Database (*.DB)	Ý

FIG: 12.1.26 Select Database

Select passes to be exported	×
Current Database C:\ProgramData\Warrior\Data\3-4-2013.db	
2 of 3 selected	
/field/well/run1/pass1 /field/well/run1/pass2	
/field/well/run1/pass2 /field/well/run1/pass3	Toggle
	Database
~	ОК
< >	Cancel

FIG: 12.1.27 Select Pass(es)

You will be first asked to select the database and the pass / passes that you want extracted. Hold {CTRL} to select multiple passes. Then you will be asked for the copy target where the extracted passes will be sent.

	Copy Target		
🕞 🏵 👻 🕇 퉬 🕨 Compute	r ⊧ windows 8 (C:) ⊧ ProgramData ⊧ Warrior ⊧ Data ⊧	✓ C Search D	ata 🔎
Organize 👻 New folder			)= <b>-</b> 🔟 🧉
🗼 Downloads	^ Name	Date modified Type	Size
🗘 Dropbox	Caliper testing	6/6/2013 9:04 AM File f	older
🔛 Recent places	Files	6/3/2013 10:13 AM File f	older
퉬 1 Outlook file	3 0-24-2012.db	9/24/2012 10:36 AM DB Fi	ile 20
🎍 Bin	1-9-2013.db	4/10/2013 4:10 PM DB F	
퉬 Warrior Data	1-16-2013.db	3/22/2013 2:06 PM DB F	ile
🎉 Warrior Config	1-29-2013.db	1/29/2013 10:54 AM DB Fi	ile 5.87
Call Libraries	1-31-2013.db	1/31/2013 5:05 PM DB Fi	ile 3.96
	2-1-2013.db	4/23/2013 2:33 PM DB Fi	ile 1,02
	2-5-2013.db	2/6/2013 8:12 AM DB Fi	ile 134,79
👌 Music	2-13-2013.db	2/13/2013 11:45 AM DB Fi	ile 31,05
Pictures	2-15-2013.db	2/26/2013 11:01 AM DB Fi	ile 108,03
📑 Videos	3-4-2013.db	3/4/2013 10:00 AM DB Fi	ile 61
	3-6-2013.db	3/6/2013 3:42 PM DB Fi	ile 2
輚 Homegroup	3-7-2013.db	3/7/2013 1:30 PM DB Fi	ile 138,42
	3-11-2013.db	3/12/2013 1:18 PM DB Fi	ile 174,90
Computer	<b>3</b> -13-2013.db	3/13/2013 11:07 AM DB Fi	ile 26,02
windows 8 (C:)	3-14-2013.db	3/14/2013 11:50 AM DB Fi	ile 224,68
DATA (E:)	Stal 2.20.2012 Alt	3/22/2013 2-25 DM DR F	
New Volume (F:)	v «		>
File <u>n</u> ame: R	evised Database	✓ Databas	ie (*.DB) 🗸 🗸
		Op	en Cancel

FIG: 12.1.28 Copy Target

Database Pack (Not Responding)					
Copying data from C:\ProgramData\Warrior\Data\Caliper					
/field/well/run1/pass7/TTGATES/1					
Cancel					

FIG: 12.1.29 Packing

Depending upon the amount of data being copied, you will see a progress showing each item being copied into the new database.

### 12.1.12 Export via Internet

Before you can start sending data you must ensure that the sending computer's firewall has been properly configured.

Log into your local NETWORK ROUTER, and OPEN the defualt port 19500 and forward it to the specific Lan IP of the exporting computer.

Then start the server software on the sending computer. It is found under Database Utilities.

Warrior Utilities	× _			
Data Export	Depth Correction			
Export to File	Apply Linear Depth Shift to a Dataset			
Extract Pass(es) to New Database	Apply Linear Depth Shift to a Data Item			
Export via Internet	Data Management			
Interpretation Tools	Create an Alias for a Data Item			
Mathpack	Multiple Pass Automerge			
XY Plot	Edit Variables in a Dataset			
Tracer Interpretation	Create Variables in a Dataset			
Create Differential Curve	Create Waveform Gate Curves			
Create Total Dissolved Solids Curve	Create CCL Curve from Keyboard			
Calculate Borehole Volume from Caliper	Delete Data from a Database			
Calculate Rxo/Rt & Rwa	Undelete Data			
Pipe Tally	Change a Name			
Curve Normalization	Edit a Log Curve			
Log Summary Generator	Select Correlation Curves for Database			
Setup Tools	Data Import			
Calibrate Printer	Read ASCII Data into Warrior			
Configuration Backup/Restore	Read LIS/DLIS Data into Warrior			
Edit Logging Service Details	Import ODBC Data into Warrior			
Edit Logging Tool Details	Create Log Format from Dataset			
	Import via Internet			
E	Exit			

You should receive a Windows pop-up, from the Windows Firewall regarding Warrior's WDBaseTCPServer. Click on allow access.

	Windows Secur	rity Alert		×
	Window app	ws Defend	ler Firewall has blocked some features	of this
	Windows Defender I private networks.	Firewall has bi Name: Publisher:	ocked some features of WDBaseTCPServer on all public WOODDATCESONANT Scientific Data Systems, Inc.	and
Tue Jul 25 10:25:59 2023: Server listening on port 19500		Path:	C: program files poientific data systems warrior (bin wdbasetcpserver64.exe	
	Private networ Public networ because thes	orios, such as r ka, such as th e networks of	unicate on these networks: my home or work network ose in airports and coffee shops (not recommended ten have little or no security) aco through a frewall?	
			Allow access	Cancel

If you do not receive the pop-up, Windows Defender Firewall may have already blocked the WDBaseTCPServer. To check this open the Windows Defender Firewall by typing Windows Defender Firewall with Advance Security in the Windows Search box. Check to make sure that WDBaseTCPServer is allowed through the firewall.

Windows Defender Firewall with	Advanced Security								-	1	٥	Х
File Action View Help												
🗢 🏟 🙎 🖬 🔒 🛛 🖬												
🔐 Windows Defender Firewall with	Inbound Rules									Act	tions	
🗱 Inbound Rules 🔀 Outbound Rules	Name	Group	Profile	Enabled	Action	Override	Program	Local Address	Remote Address ^	Inb	oound R	
Connection Security Rules	CodeMeterFWExP22350UDP		All	Yes	Allow	No	C:\Program Files (x86)	Any	Any		New R.	
> 🛃 Monitoring	🔇 Firefox (C:\Program Files\Mozilla Fir	e e e e e e e e e e e e e e e e e e e	Private	Yes	Allow	No	C:\Program Files\Moz	Any	Any		Filter	1
	🔮 Firefox (C:\Program Files\Mozilla Fir	1	Private	Yes	Allow	No	C:\Program Files\Moz	Any	Any			
	🔮 nortonbrowser.exe		Public	Yes	Allow	No	C:\users\sdsdell inspi	Any	Any	Y	Filter	•
	🔮 nortonbrowser.exe		Public	Yes	Allow	No	C:\users\sdsdell inspi	Any	Any	7	Filter	•
	🔮 nortonbrowser.exe		Private	Yes	Allow	No	C:\users\sdsdell inspi	Any	Any		View	)
	🔮 nortonbrowser.exe		Private	Yes	Allow	No	C:\users\sdsdell inspi	Any	Any			
	🔮 Sentinel License Manager		Domai	Yes	Allow	No	C:\Program Files (x86)	Any	Any	Q	Refresh	í.
	WDBaseTCPServer		Private	Yes	Allow	No	C:\program files\scie	Any	Any		Export.	
	<b>WDBaseTCPServer</b>		Private	Yes	Allow	No	C:\program files\scie	Any	Any	?	Help	
	an mara ana		200			22	2	621.1	<i></i>			

Once the Server is open you will need to select the database you plan to use. To do this click on the Add Database to List button. You can send completed passes or passes in progress. Those choices are made on the receiving side.

(⇔_	$\times$

]			
Tue Mey 21 12:00:22 2010; Comme	listening on east 10E00		
Tue May 21 13:09:33 2019: Server	listening on port 19500		
Add database to list	Remove database from list		Close Server

Once you have selected a Database you will have the option to use a password, if you do not wish to use one just click on OK.

Warrior Remote Server 2015.4.30.1	
Set Password:	×
A secure secret password can prevent unauthorized access to database: C:\ProgramData\Warrior\Data\05102019.db	
OF	(

That is all that is required on the sending side.

On the receiving computer go to Database utilities and select Import Via Internet.

Warrior Utilities	× □
Data Export	Depth Correction
Export to File	Apply Linear Depth Shift to a Dataset
Extract Pass(es) to New Database	Apply Linear Depth Shift to a Data Item
Export via Internet	Data Management
Interpretation Tools	Create an Alias for a Data Item
Mathpack	Multiple Pass Automerge
XY Plot	Edit Variables in a Dataset
Tracer Interpretation	Create Variables in a Dataset
Create Differential Curve	Create Waveform Gate Curves
Create Total Dissolved Solids Curve	Create CCL Curve from Keyboard
Calculate Borehole Volume from Caliper	Delete Data from a Database
Calculate Rxo/Rt & Rwa	Undelete Data
Pipe Tally	Change a Name
Curve Normalization	Edit a Log Curve
Log Summary Generator	Select Correlation Curves for Database
Setup Tools	Data Import
Calibrate Printer	Read ASCII Data into Warrior
Configuration Backup/Restore	Read LIS/DLIS Data into Warrior
Edit Logging Service Details	Import ODBC Data into Warrior
Edit Logging Tool Details	Create Log Format from Dataset
	Import via Internet
E	ixit

The first thing you will need to enter is either an IP address or DNS name server. This is the most difficult part of the setup. You may need to contact someone from IT. To find this information. They may request the TCP port number located on the lower right of the screen.

Connect to remote Warrior server	×
Enter IP address or DNS name of a remo	ote Warrior server:
192.168.0.16	•
	ОК
TCP port 19500	Cancel

Once connected you will see a list of available Databases on the host computer. Select the desired Database by clicking on it. It will then be highlighted in blue.

Remote files on 192.168.0.6:	×
C:\ProgramData\Warrior\Data\05102019.db	
Cancel	ОК

Next thing you will be prompted for is the password entered earlier on the host computer.

Enter Password for Remote File:		×
Database: C:\ProgramData\Warrior\Data\05102019.db		
		_ 1
	OK	

At this point you can transfer a completed pass or if you select New you will receive any passes updated after you have made this choice. In this way you can receive a current pass as it is being acquired.

Warrior TCP Client 2016.11.10.1	×
warrior://192.168.0.6/C:\ProgramData\Warrior\Da	ata\05102019.db
<b>D</b>	
Browse remote database and import specific selections	Specific
Monitor remote database and import new activity	New
	Close

I have chosen specific for this example. Once selected I am prompted to select which pass or passes I wish to receive. Once again clicking on a choice will highlight it in blue. Once you are satisfied with your choice click OK.

Select log pass(es) to import		×
Current Database warrior://192.168.0.6/C:\ProgramData\V 0 of 3 selected	Varri	or\Data\05102(
/field/well/run1/_tracer_ /field/well/run1/pass1 /field/well/run1/pass2	^	Verbose
		Toggle
	~	ОК
		Cancel

After clicking OK the next window will display the transmission status. This window will close once completed, it will remain open until you click cancel if you have selected New as it waits for new data.

Capturing new data from warrior://192.168.0.6/C:\ProgramData\Warrior\Data\05102019.db		
	 	_
	Cano	cel

# 12.2 Interpretation Tools

12.2.1 Mathpack

See section 15

#### 12.2.2 XY Plot

A cross plot will consist of one or more curves. Each curve will be created by plotting database items against depth or time or from one database item against another database item.



FIG: 12.2.1 XY Plot

Select a database to work with.

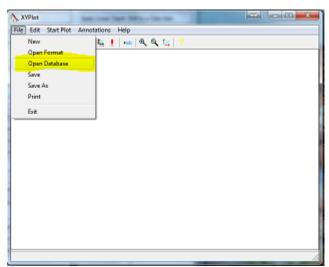


Fig: 12.2.2 Database selection

If you have an existing format file (.xpt) you can open it at this time.

urve1 💌	Add curve Delete Curve	
Curve1		
Plot on X-axis C DB Item	C Depth or time	
Specific curve	C Constant value	(leave blank for default curve label)
caliper demo:/field/well/run	1/pass15.1/BONDIX/1 X - Axi	
Plot on Y-axis		Style
C DB Item	<ul> <li>Depth or time</li> </ul>	C Dash Dot
C Specific curve	C Constant value	
	Y - Ax	Thickness 2 ÷
		Other    None

Fig:12.2.4 Curve Setup

Select New from the menu, if you have not loaded an existing (.xpt) file.

Select **Add Curve** to create each curve. Each curve name will increment by 1 as you add curves. Select **Delete Curve** to delete the selected curve from the plot.

To set up the cross plot you must first select what will be plotted on each axis. If depth or time is selected to plot on the x-axis, then no item will be selected to plot on the x-axis. Next select what database item(s) to plot by selecting the X - Axis or Y - Axis buttons. If you want to plot one database

item vs. another, the items do not have to come from the same pass, but they must both be recorded on depth or both be recorded on time. Also, the items must have an overlapping depth or time interval to plot from.

Once the plot setup is complete select the **OK** button, and the plot will start. The scaling will be done automatically. To change how the plot is scaled select **Edit/Scaling**.

The plot can be made real-time, and if the auto-scale option is used, the plot will resize automatically to fit all the data points as needed.

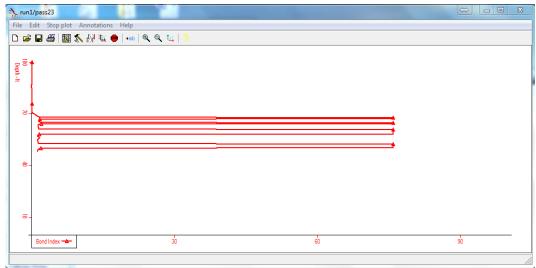


Fig:12.2.5 XY Plot Bond Index depth

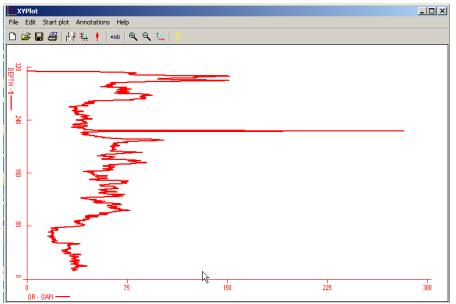


FIG: 12.2.6 XY PLOT Gamma ray Depth

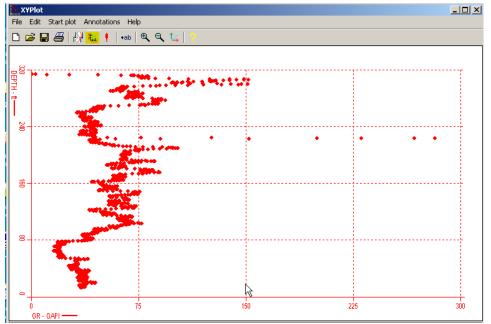
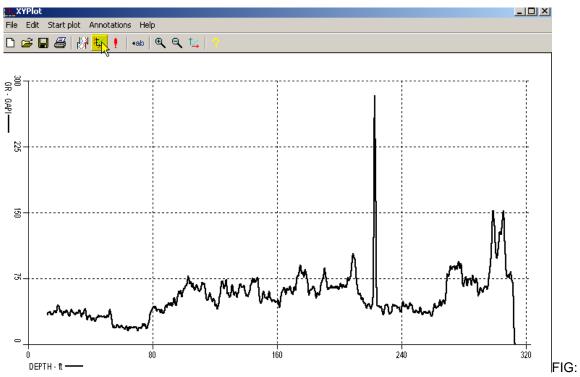


FIG: 12.2.7 XY Plot Selecting no lines between points



~ 1

# 12.2.8 XY Plot Depth Gamma ray

Curve1		
Plot on X-axis     DB Item     Specific curve	C Depth or time	Label
true simpson # 1-29 aug 5	2013:/field/well/run1/pass3.1/( X - Axis	(leave blank for default curve label)
Plot on Y-axis		Style Solid C Dot C Dash
<ul> <li>DB Item</li> <li>Specific curve</li> </ul>	C Depth or time C Constant value	C Dash Dot Color
true simpson # 1-29 aug 5	2013:/field/well/run1/pass3.1/( Y - Axis	Thickness 1
Override sample rate	Samp/ft	Other I None C Square

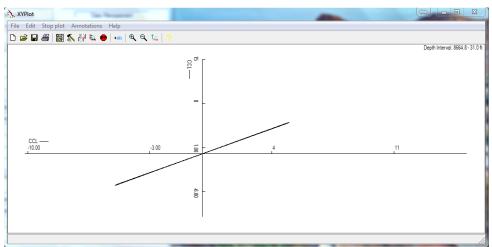


FIG: 12.2.9 Selecting CCL for X and Y Axis

A separate axis will be drawn for each curve unless the option **Overlap scales for each curve** is selected. If the auto-scale option is selected for the x or y axis, the left, right and/or top, bottom scales will automatically be calculated to fit all the data within the plot. If it is not selected, you can enter the scales yourself. If only one database item is selected to plot, then one of the axis will be depth or time.

When plotting two database items, there is a depth or time scaling option. It can be auto-scaled, or a range can be selected. The scales for the depth or time must be within the recorded range of the interval being plotted.

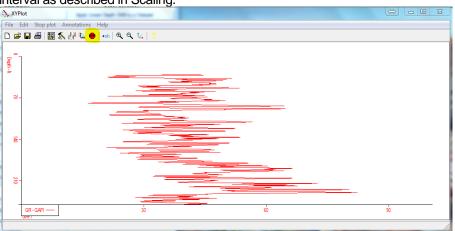
The x and y origin is defaulted to (0,0). If the origin is outside the range of data being plotted, then the origin will be moved to the bottom left corner of the plot.

The X and Y ticks give an approximate count to the number of gridlines that will be shown on that axis. The gridlines will attempt to be drawn at an integral distance apart, so the displayed ticks may not be the same as what are requested.

Sometimes it may not be appropriate to draw a line to connect each data point. To make a dot for each data point, deselect the option "Draw a line between plotted points".

#### 12.2.2.2 Plotting

If the plot is being created as the data is being collected, then the **Start Plot** button will change to **Stop Plot**. Press the **Stop Plot** button to halt the plotting. If the data collection continues, then press Start Plot to plot the entire collected interval again. Starting the plot in the middle of data collection will plot over the interval as described in Scaling.



# FIG: 12.2.10 Start Stop Plot Button

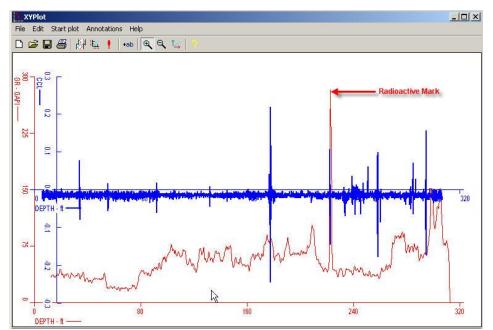


FIG: 12.2.11 XY Plot Two curves in the same chart

# 12.2.3 Scaling

The scaling menu allows you to manually or automatically scale both the x and y axis. It also has the options to set grid for both the x and y axis. There are four check boxes that select either displaying or not the grid lines, drawing lines between points and displaying scales.



FIG: 12.2.12 XY Plot Scaling

Curve 1 Edit Share axes with this curve	•	
Curve1 BONDIX Auto Scale BONDIX Cog scale X Left 0 Right 100	Depth Auto Scale Depth L Bottom 0 Top	.og scale Y 100
	X Ticks (approx.) 4 Y Ticks (a	0.000000 approx.) 4
	X Interval 0 Y Interval	0 lack for grid
<ul> <li>Draw a line between plotted points</li> <li>Hide scales</li> </ul>	Range of Data         52.50           3429.25	

Fig:12.2.13 Scaling Menu

# 12.2.4 Annotations

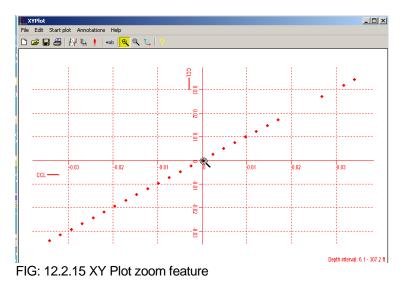
To create an annotation, select **Annotations/Create** or click on the "<-ab" annotation button in the toolbar. When the annotation button is depressed, an annotation can be added. When the cursor is moved in to the plot area, the cursor will change to indicate the type of annotation that will be added. Right click on the mouse to change the annotation type. Left click to place the annotation on the plot. Type in the text for the annotation while the annotation is highlighted. To move an annotation, click and hold the left mouse button and drag the annotation to the appropriate position. To delete an annotation, left click on the item to be removed. When it is highlighted, press the delete key. To edit an annotation, left click on the item and then type in the new text.



Fig:12.2.14 Anotations

12.2.5 Zoom

Select the Zoom in, zoom out buttons to change the cursor to a magnifying glass. Then select the area of the plot to magnify. To set the plot back to its default size, select the Auto scale button.



#### 12.2.6 Save and Restore

When saving the cross plot, two items can be saved. First the cross plot can be saved to a Warrior database to be plotted with pplot. Second, the plot setup can be saved and restored later with the cross plot program. Saving the setup does not save the plot itself - it only saves the curve(s) being plotted and the setup used to create the plot.

The plot heading is only seen when the plot is printed. It can accept multiple lines by hitting the enter key at the end of each line.

Plot Save plot to Warrio	or database
Orientation • Portrait	C Landscape
Resolution 300	) dpi
Setup	
Save curve setup	
Save	Cancel

12.2.3 Tracer Ir	nterpretation
------------------	---------------

Data Export	Depth Correction
Export to LAS Format	Apply Linear Depth Shift to a Dataset
Export to LIS Format	Apply Linear Depth Shift to a Data Item
Export to ODBC Compatible Database	Data Management
Extract Pass(es) to New Database	Create an Alias for a Data Item
Export via Internet	Multiple Pass Automerge
Interpretation Tools	Edit Variables in a Dataset
Mathpack	Create Variables in a Dataset
XY Plot	Create Waveform Gate Curves
Tracer Interpretation	Create CCL Curve from Keyboard
Create Differential Curve	Delete Data from a Database
Create Total Dissolved Solids Curve	Undelete Data
Calculate Borehole Volume from Caliper	Change a Name
Calculate Rxo/Rt & Rwa	Edit a Log Curve
Pipe Tally	Select Correlation Curves for Database
Curve Normalization	Data Import
Log Summary Generator	Read ASCII Data into Warrior
Setup Tools	Read LIS Data into Warrior
Calibrate Printer	Import ODBC Data into Warrior
Configuration Backup/Restore	Create Log Format from Dataset
Edit Logging Service Details	Import via Internet
Edit Logging Tool Details	1

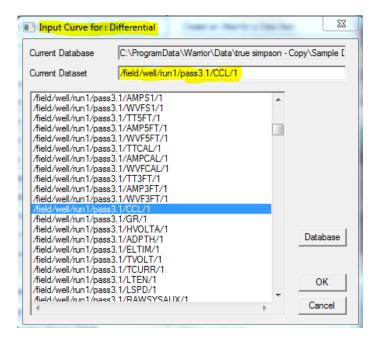
FIG: 12.2.17 Tracer Interpretation

See Section 27

12.2.7 Create Differential Curve

Warrior Utilities		
Data Export	Depth Correction	
Export to LAS Format	Apply Linear Depth Shift to a Dataset	
Export to LIS Format	Apply Linear Depth Shift to a Data Item	
Export to ODBC Compatible Database	Data Management	
Extract Pass(es) to New Database	Create an Alias for a Data Item	
Export via Internet	Multiple Pass Automerge	
Interpretation Tools	Edit Variables in a Dataset	
Mathpack	Create Variables in a Dataset	
XY Plot	Create Waveform Gate Curves	
Tracer Interpretation	Create CCL Curve from Keyboard	
Create Differential Curve	Delete Data from a Database	
Create Total Dissolved Solids Curve	Undelete Data	
Calculate Borehole Volume from Caliper	Change a Name	
Calculate Rxo/Rt & Rwa	Edit a Log Curve	
Pipe Tally	Select Correlation Curves for Database	
Curve Normalization	Data Import	
Log Summary Generator	Read ASCII Data into Warrior	
Setup Tools	Read LIS Data into Warrior	
Calibrate Printer	Import ODBC Data into Warrior	
Configuration Backup/Restore	Create Log Format from Dataset	
Edit Logging Service Details	Import via Internet	
Edit Logging Tool Details	]	
	Exit	

FIG: 12.2.18 Create Differential Curve



Create Differer	ntial Curve	23
Database	)ata\Warrior\Data\true simpson - Co	py\Sample Data.db
Input Curve	/field/well/run1/pass3.1/CCL/1	
Output Curve	DIFFCCL	ОК
Window Length	2.0 ft	Cancel

FIG: 12.2.19 Create Differential curves. (DIFFCCL)

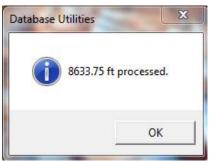


FIG: 12.2.20 Processing

12.2.8 Create Total Dissolved Solids Curve

Warrior Utilities		
Data Export	Depth Correction	
Export to LAS Format	Apply Linear Depth Shift to a Dataset	
Export to LIS Format	Apply Linear Depth Shift to a Data Item	
Export to ODBC Compatible Database	Data Management	
Extract Pass(es) to New Database	Create an Alias for a Data Item	
Export via Internet	Multiple Pass Automerge	
Interpretation Tools	Edit Variables in a Dataset	
Mathpack	Create Variables in a Dataset	
XY Plot	Create Waveform Gate Curves	
Tracer Interpretation	Create CCL Curve from Keyboard	
Create Differential Curve	Delete Data from a Database	
Create Total Dissolved Solids Curve	Undelete Data	
Calculate Borehole Volume from Caliper	Change a Name	
Calculate Rxo/Rt & Rwa	Edit a Log Curve	
Pipe Tally	Select Correlation Curves for Database	
Curve Normalization	Data Import	
Log Summary Generator	Read ASCII Data into Warrior	
Setup Tools	Read LIS Data into Warrior	
Calibrate Printer	Import ODBC Data into Warrior	
Configuration Backup/Restore Create Log Format from Dataset		
Edit Logging Service Details	Import via Internet	
Edit Logging Tool Details		
	- Exit	

FIG: 12.2.21 Create Total Dissolved Solids Curve

When you select the Create total Dissolved Solids Curve the system will prompt you to select either a calculation using resistivity and delta travel time or resistivity density porosity in either decimal or percentage.

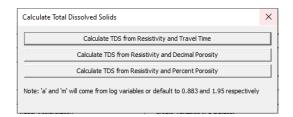


FIG: 12.2.22 Total Dissolved Solids Options

Current Database C:\ProgramData\Warrior\Data	\Open Hole\Open	HoleDemoV
Current Dataset /field/well/run1/pass1/RILD/		
/field/well/run1/pass1/_calrep_/1		
/field/well/run1/pass1/_service_/1		
/field/well/run1/pass1/_annot_/OPENHOLE		
/field/well/run1/pass1/_defaults_/1		
/field/well/run1/pass1/TBHV/1	=	
/field/well/run1/pass1/SSD/1		
/field/well/run1/pass1/SP/1		
/field/well/run1/pass1/RLL3/1		
/field/well/run1/pass1/RILM/1		
/field/well/run1/pass1/RILD/1		
/field/well/run1/pass1/RHOC/1		
/field/well/run1/pass1/RHOB/1		
/field/well/run1/pass1/RAWDSP9/1		
/field/well/run1/pass1/RAWDSP8/1		Database
/field/well/run1/pass1/RAWDSP7/1		Database
/field/well/run1/pass1/RAWDSP6/1		
/field/well/run1/pass1/RAWDSP5/1		
/field/well/run1/pass1/RAWDSP4/1		
/field/well/run1/pass1/RAWDSP3/1		OK
/field/well/run1/pass1/RAWDSP2/1 /field/well/run1/pass1/RAWCTR/1	- 1	

# FIG: 12.2.23 Deep Resistivity

Then it will request the Delta Travel Time curve or density porosity.

Input Curve for	Differential	. ,	×
Current Database	C:\ProgramData\Warrior\Da	ta\03222021.db	
Current Dataset	field/well/run1/pass1/DT/1	1	
/field/well/un1/pass /field/well/un1/pass /field/well/un1/pass /field/well/un1/pass /field/well/un1/pass /field/well/un1/pass /field/well/un1/pass /field/well/un1/pass /field/well/un1/pass /field/well/un1/pass /field/well/un1/pass	1/MEL20/1 1/MEL15/1 1/MEL15/1 1/WVF4/1 1/TTGATE4/1 1/WVF3/1 1/TTGATE2/1 1/TTGATE2/1 1/TTGATE2/1 1/TTGATE1/1 1/TTGATE1/1	^	☐ Verbose
/field/well/run1/pass /field/well/run1/pass /field/well/run1/pass /field/well/run1/pass	1/ITT/1 1/RHPOR/1 1/SPOR/1		Database
/field/well/run1/pass /field/well/run1/pass /field/well/run1/pass /field/well/nun1/pass	1/TT4/1 1/TT3/1	~	OK Cancel

# FIG: 12.2.24 Delta Travel Time

Current Database	C:\ProgramData\Warrior\	Data\geocam work	ting.db
Current Dataset	/field/well/run1/pass6/D	POR/1	
field/well/run1/pas field/well/run1/pas field/well/run1/pas field/well/run1/pas field/well/run1/pas field/well/run1/pas field/well/run1/pas field/well/run1/pas field/well/run1/pas field/well/run1/pas	56/CND/1 56/CND/1 56/CNL5/1 56/CNSS/1 56/CNRSC/1 56/CNSSC/1 56/CNL5C/1 56/CNL5C/1 56/CNL5C/1 56/CNL0C/1	^	Verbose
/field/well/run1/pas /field/well/run1/pas /field/well/run1/pas /field/well/run1/pas /field/well/run1/pas /field/well/run1/pas	s6/LSD/1 s6/SP/1 s6/RLL3/1 s6/RILM/1		Database
/field/well/run1/pas /field/well/run1/pas /field/well/run1/pas	s6/CLL3/1 s6/CILM/1	~	ОК

FIG: 12.2.25 Density Porosity

#### 12.2.9 Calculate Borehole Volume from Caliper

Warrior Utilities		
Data Export	Depth Correction	
Export to LAS Format	Apply Linear Depth Shift to a Dataset	
Export to LIS Format	Apply Linear Depth Shift to a Data Item	
Export to ODBC Compatible Database	Data Management	
Extract Pass(es) to New Database	Create an Alias for a Data Item	
Export via Internet	Multiple Pass Automerge	
Interpretation Tools	Edit Variables in a Dataset	
Mathpack	Create Variables in a Dataset	
XY Plot	Create Waveform Gate Curves	
Tracer Interpretation	Create CCL Curve from Keyboard	
Create Differential Curve	Delete Data from a Database	
Create Total Dissolved Solids Curve	Undelete Data	
Calculate Borehole Volume from Caliper	Change a Name	
Calculate Rxo/Rt & Rwa	Edit a Log Curve	
Pipe Tally	Select Correlation Curves for Database	
Curve Normalization	Data Import	
Log Summary Generator	Read ASCII Data into Warrior	
Setup Tools	Read LIS Data into Warrior	
Calibrate Printer	Import ODBC Data into Warrior	
Configuration Backup/Restore	Create Log Format from Dataset	
Edit Logging Service Details	Import via Internet	
Edit Logging Tool Details		
	Exit	

FIG: 12.2.26 Calculate Borehole Volume from Caliper

When selecting the "Create Borehole Volume from Caliper" the software will prompt you for Volume X Caliper Curve select your X Caliper and then OK.

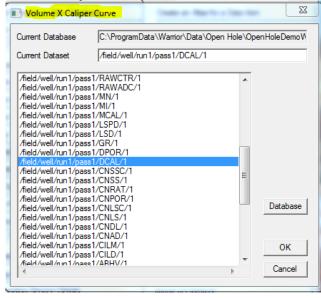


FIG: 12.2.27 Volume X Caliper Curve

Then you will be prompted for "Volume Y Caliper Curve" If you do not have one select the same curve as for the X Caliper.

Current Database C:\ProgramData\Warrior\I	Data \Open Hole \OpenHole	DemoV
Current Dataset /field/well/run1/pass1/DC	:AL/1	
/field/well/run1/pass1/RAWADC/1	*	
/field/well/run1/pass1/MN/1		
/field/well/run1/pass1/MI/1		
/field/well/run1/pass1/MCAL/1		
/field/well/run1/pass1/LSPD/1		
/field/well/run1/pass1/LSD/1		
/field/well/run1/pass1/GR/1		
/field/well/run1/pass1/DPOR/1		
/field/well/run1/pass1/DCAL/1		
/field/well/run1/pass1/CNSSC/1		
/field/well/run1/pass1/CNSS/1	=	
/field/well/run1/pass1/CNRAT/1	-	
/field/well/run1/pass1/CNPOR/1		
/field/well/run1/pass1/CNLSC/1		
/field/well/run1/pass1/CNLS/1		
/field/well/run1/pass1/CNDL/1		
/field/well/run1/pass1/CNAD/1		
/field/well/run1/pass1/CILM/1		
/field/well/run1/pass1/CILD/1	(	ЭК
/field/well/run1/pass1/ABHV/1 /field/well/run1/pass1/_vars_/CMNTEACT		
/nein/wei/nont/nassi/ Vars /LWINTEALT	. Ca	ncel

FIG: 12.2.28 Volume Y Caliper Curve

This will generate the Hole volumes. It ask if you want to calculate volumes to surface answer appropriately. It will then indicate the total footage processed.

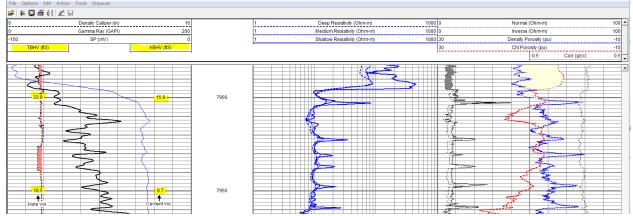


FIG: 12.2.29 Hole Volumes displayed As Tabular curves.

# 12.2.10 Calculate Rxo/Rt and Rwa Curves

Data Export	Depth Correction	
Export to LAS Format	Apply Linear Depth Shift to a Dataset	
Export to LIS Format	Apply Linear Depth Shift to a Data Item	
Export to ODBC Compatible Database	Data Management	
Extract Pass(es) to New Database	Create an Alias for a Data Item	
Export via Internet	Multiple Pass Automerge	
Interpretation Tools	Edit Variables in a Dataset	
Mathpack	Create Variables in a Dataset	
XY Plot	Create Waveform Gate Curves	
Tracer Interpretation	Create CCL Curve from Keyboard	
Create Differential Curve	Delete Data from a Database	
Create Total Dissolved Solids Curve	Undelete Data	
Calculate Borehole Volume from Caliper	Change a Name	
Calculate Rxo/Rt & Rwa	Edit a Log Curve	
Pipe Tally	Select Correlation Curves for Database	
Curve Normalization	Data Import	
Log Summary Generator	Read ASCII Data into Warrior	
Setup Tools	Read LIS Data into Warrior	
Calibrate Printer	Import ODBC Data into Warrior	
Configuration Backup/Restore Create Log Format from Dataset		
Edit Logging Service Details	Import via Internet	
Edit Logging Tool Details		
	Exit	

FIG: 12.2.30 Create Total Dissolved Solids Curve

Click on the Calculate Rxo / Rt button. This produces as file selection box, where the required database may be selected. Double click or Open the database file containing the input data for the calculation. The program presents a list of the log curves present in the database and requests selection of the Rt curve. Select the desired curve.

Deep Resistivity Control	urve		1	23
Current Database	C:\ProgramD	)ata\Warrior\Dat	ta\Open Hole\Op	penHoleDemoW
Current Dataset	/field/well/ru	n 1/pass 1/RILD	/1	
/field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1	/ defaults_/1 /TBHV/1 /SSD/1 /SP/1 /RLL3/1 /RILM/1 /RILD/1 /RHOC/1 /RHOB/1		E	
/field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1	/RAWDSP8/ /RAWDSP7/ /RAWDSP6/ /RAWDSP5/ /RAWDSP4/ /RAWDSP3/ /RAWDSP2/	1 1 1 1 1		Database
/field/well/run1/pass1 /field/well/run1/pass1 /field/well/nun1/pass1	/RAWADC/1		+	OK Cancel

FIG: 12.2.31 Select Dataset for Deep Resistivity Curve

The system then requests the selection of the shallow resistivity curve.

Shallow Resistivity	Curve (for Rxo/Rt)	-	23
Current Database Current Dataset	C:\ProgramData\Warrior\Data\Open H /field/well/run1/pass1/RLL3/1	Hole∖Op	enHoleDemoW
/field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1	/_service_/1 /_annot_/OPENHOLE /_defaults_/1 /TBHV/1 /SSD/1 /SP/1	- III	
/field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1	/RILM/1 /RILD/1 /RHOC/1 /RHOB/1 /RAWDSP9/1 /RAWDSP8/1 /RAWDSP8/1		Database
/field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1	/RAWDSP5/1 /RAWDSP4/1 /RAWDSP3/1 /RAWDSP2/1	•	OK Cancel

FIG: 12.2.32 Select Dataset shallow Resistivity Curve

The system then requests the porosity curve for the calculation of Rwa.

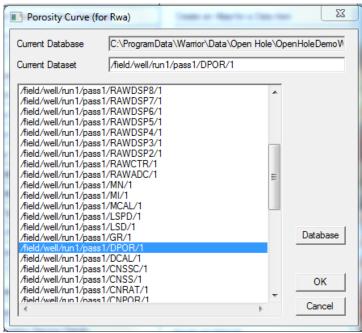


FIG: 12.2.33 Select Dataset for Porosity

Note that the "A" and 'M" variables must be present in the dataset for Rwa to be calculated. To set the values of "A" and "M" use Edit Variables in a Dataset. After selecting the porosity curve the system requests the name of the dataset for the output.

results output		Contract Reports		X
Current Database Current Dataset	C:\ProgramD  /field/well/ru	ata∖Warrior∖Data∖Ope n1/pass1	n Hole∖Ope	nHoleDemoW
/field/well/run1/pass1 /field/well/run1/_plots			*	
				Database
			*	OK Cancel

FIG: 12.2.34 Select Dataset Output

Select the required dataset and the system computes the Rxo / Rt and Rwa curves and displays a message indicating completion and log interval processed.

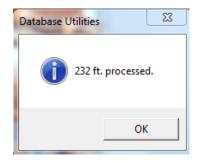


FIG: 12.2.35 Processing

Note that for the Rxo / Rt and Rwa curves to appear on the log, the respective curves must be added to the log format. The mnemonic for the Rxo / Rt and Rwa curves are RXORT and RWA respectively.

12.2.11 Pipe Tally

Warrior Utilities	
Data Export	Depth Correction
Export to LAS Format	Apply Linear Depth Shift to a Dataset
Export to LIS Format	Apply Linear Depth Shift to a Data Item
Export to ODBC Compatible Database	Data Management
Extract Pass(es) to New Database	Create an Alias for a Data Item
Export via Internet	Multiple Pass Automerge
Interpretation Tools	Edit Variables in a Dataset
Mathpack	Create Variables in a Dataset
XY Plot	Create Waveform Gate Curves
Tracer Interpretation	Create CCL Curve from Keyboard
Create Differential Curve	Delete Data from a Database
Create Total Dissolved Solids Curve	Undelete Data
Calculate Borehole Volume from Caliper	Change a Name
Calculate Rxo/Rt & Rwa	Edit a Log Curve
Pipe Tally	Select Correlation Curves for Database
Curve Normalization	Data Import
Log Summary Generator	Read ASCII Data into Warrior
Setup Tools	Read LIS Data into Warrior
Calibrate Printer	Import ODBC Data into Warrior
Configuration Backup/Restore	Create Log Format from Dataset
Edit Logging Service Details	Import via Internet
Edit Logging Tool Details	
	Exit

FIG: 12.2.36 Pipe Tally

📰 Warrior - Pipe Tally Utility 😂 🗖 🗉 🔀
File Edit Settings Help
Open Edit Process Save Exit
# Processes:
Get Joints from a Log Pass
Get Joints from Keyboard
Compute Remaining Wall, Losses and Grading
Put Grade Strip into a Log Pass
Put Annotations into a Log Pass
Put Annotations into a Text File
Done

FIG: 12.2.37 Get Joints from a Log Pass

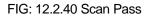
Scan Log for Collars				
Curve name CCL Max collar length 2.0 ft				
Use mouse and any Interactive Plot to outline one or more peaks of the named curve. Use 'Accept' to add results to Joint Table. Max Collar Length helps treat bursts as one collar.				
Start Plot Accept				
Reject	Done			

# FIG: 12.2.38 Scan log for Collars

Warrior Interactive	e Plot	
File Options Edit	Action Tools Pause	
6 🕷 🛛 🖧 👯	Screen Plot	
	Print	

FIG: 12.2.39 Screen Plot

Interactive Plot		23
Current Database Current Dataset	C:\ProgramData\Warrior\Data\SCBLDEM64 /field/well/run/pass11	- Copy.db
/field/well/run/pass1		
		Database
•	• F	OK Cancel



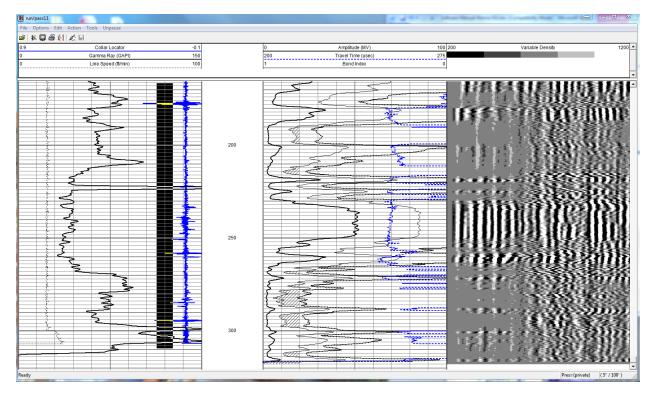


FIG: 12.2.41 Plot Pass and select area

Scan Log for Collars			
Curve name Curve name Max collar length 2.0 ft			
	5 collars, 4 178.1 ft to 7.5 ft 44.3 ft 26.7 ft		
Star	t Plot	Acce	ept
Reject		Don	e

# FIG: 12.2.42 Accept

Scan Log for Collars				
Curve name	CCL			
Max collar length	2.0 ft			
Start Plot	Accept			
Reject	Done			

# FIG: 12.2.43 Done

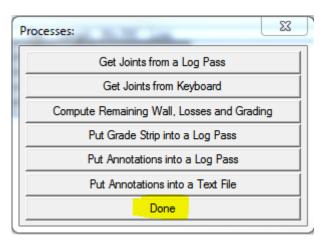


FIG: 12.2.44 Done

🔛 Warrior - Pipe Tally Utility 🦛	
File Edit Settings Help	
Open Edit Process S	Save Exit
4 Joints, 178.1 ft to 285.0 ft. Min: 7.5 ft Max: 4	4.3 ft Avg: 26.7 ft
# Top Length Min RW Loss	
4 178.1 44.3	
3 222.5 28.6	
2 251.0 7.5	
1 258.5 26.5	
0 285.0 0.0	
1	

#### FIG: 12.2.45 Results

For a more detailed look at Pipe Tally as it relates to multi armed caliper see section 18. <u>18.1 Caliper Presentation</u>

12.2.12 Curve Normalization

This program will cross plot two curves over a chosen interval. Then it calculates the gain and offset required to apply to the second curve (Curve to be normalized) to make it overlay the first (Reference curve). Select the reference curve, then the curve to be normalized. Interactive plot should start with the reference log pass. You should be able to plot the curve to be normalized on that same pass - look in the progress window to see the name (alias) that was created for the normalized curve. From interactive plot you can drag a rectangle over the interval to choose the depth range for normalization. Once that is done, and then selects MakeXY. If you are satisfied with the data points in the XY plot, then select Normalize. Interactive plot will start again, but this time with the pass from the normalized curve. If you look in the progress window, another curve will have been created in the Normalized pass. That curve will be what the curve looked like prior to the normalization. The name should be the same as the normalized curve except preceded by a '.', and the normalized curve will have the original name.

Warrior Utilities			
Data Export	Depth Correction		
Export to LAS Format	Apply Linear Depth Shift to a Dataset		
Export to LIS Format	Apply Linear Depth Shift to a Data Item		
Export to ODBC Compatible Database	Data Management		
Extract Pass(es) to New Database	Create an Alias for a Data Item		
Export via Internet	Multiple Pass Automerge		
Interpretation Tools	Edit Variables in a Dataset		
Mathpack	Create Variables in a Dataset		
XY Plot	Create Waveform Gate Curves		
Tracer Interpretation	Create CCL Curve from Keyboard		
Create Differential Curve	Delete Data from a Database		
Create Total Dissolved Solids Curve	Undelete Data		
Calculate Borehole Volume from Caliper	Change a Name		
Calculate Rxo/Rt & Rwa	Edit a Log Curve		
Pipe Tally	Select Correlation Curves for Database		
Curve Normalization	Data Import		
Log Summary Generator	Read ASCII Data into Warrior		
Setup Tools	Read LIS Data into Warrior		
Calibrate Printer	Import ODBC Data into Warrior		
Configuration Backup/Restore	Create Log Format from Dataset		
Edit Logging Service Details	Import via Internet		
Edit Logging Tool Details			
	Exit		

FIG: 12.2.46 Curve Normalization

12.2.13 Log Summary Generator

The log summary generator will produce a statistical analysis of tabular data in a database. There are radio buttons to select **Minimum**, **Maximum**, **Average** and **Standard Deviation**. The resultant table can is appended to the database and can be included in the plot job.

Log Summary Generator	X
Log interval to summarize: C:\ProgramData\Warrior\Data\Caliper Fil	es\56arm Cliper.db:/field/well/run/main_1
34.10 To 10632.79 ft	Browse
Log format to scan for tabular objects: msc40wft.prs	•
Summary types to be report:	Save report as:
Std. Deviation	Close Process

# FIG: 12.2.47 Log Summary Generator

🍾 /field/well/run/main	n_1/_report_/Summary	inge 11. Sporther	100 m	ALC: NO.		→ <b> ×</b>
File Action More	Next Previous Help					
			Warrior Report			
Database File	C:\ProgramData\Warrior\[		6arm Cliper.db			
Dataset Pathname	run/main_1/_report_/Sum					
Dataset Creation	Mon Sep 16 12:38:18 201	13				
			Log Summary 34.10 - 106	32.79 ft		
1		Minimum	Maximum	Average	Std. Deviation	
IDMN	in -2	.14748e+006	7.895	-383.751	28912.8	
IDMX	in	0	2.14748e+006	395.979	28912.6	

# 12.3 Data Import

# 12.3.1 Read ASCII Data into the Warrior (LAS)

In the Warrior System group, choose the database Utilities icon. The window shown below appears.

The ASCII Importer reads data from existing ASCII file(s) and writes the data to one or more Warrior well log database files.

Start the ASCII importer from the program group or Interactive Plot. The dialog and control box is presented as shown below.

Warrior Utilities			
Data Export	Depth Correction		
Export to LAS Format	Apply Linear Depth Shift to a Dataset		
Export to LIS Format	Apply Linear Depth Shift to a Data Item		
Export to ODBC Compatible Database	Data Management		
Extract Pass(es) to New Database	Create an Alias for a Data Item		
Export via Internet	Multiple Pass Automerge		
Interpretation Tools	Edit Variables in a Dataset		
Mathpack	Create Variables in a Dataset		
XY Plot	Create Waveform Gate Curves		
Tracer Interpretation	Create CCL Curve from Keyboard		
Create Differential Curve	Delete Data from a Database		
Create Total Dissolved Solids Curve	Undelete Data		
Calculate Borehole Volume from Caliper	Change a Name		
Calculate Rxo/Rt & Rwa	Edit a Log Curve		
Pipe Tally	Select Correlation Curves for Database		
Curve Normalization	Data Import		
Log Summary Generator	Read ASCII Data into Warrior		
Setup Tools	Read LIS Data into Warrior		
Calibrate Printer	Import ODBC Data into Warrior		
Configuration Backup/Restore	Create Log Format from Dataset		
Edit Logging Service Details	Import via Internet		
Edit Logging Tool Details			
	Exit		

FIG: 12.3.1 Read ASCII Data into Warrior

The input files are selected by clicking the Add Files button. This produces a file selection box as shown below.

🔳 Warr	rio <mark>r Data Importer 😂 🗌 🔿 🗌</mark>	<b>- -</b> X
Input	Files to read:	Clear List
		Add Files
Options		
		ate Heading 🔽
	Log Format: xi56_3d.prs	Select File
	Filter List: (optional)	Select File
	Options	
Output	Warrior database file name:	
		Select File
	Optional field, well and run names:	Select Path
Status		Select Path
	1	
Impo	ort Heading View Plot	Close

# FIG: 12.3.2 Input File to Read

Manuals       Name       Date       Type         Software       Caliper Files       6/6/2013 9:08 AM       File folder         Warrior Data       Open Hole       12/9/2013 2:28 PM       File folder         Scientific Data Systems       Software       6/6/2013 9:08 AM       File folder         Libraries       Copen Hole       12/9/2013 2:28 PM       File folder         Documents       Software       6/6/2013 9:08 AM       File folder         Music       Software       6/6/2013 9:08 AM       File folder         Pictures       Software       6/6/2013 9:08 AM       File folder         Wario       Software       6/6/2013 9:08 AM       File folder         Wusic       True simpson       8/6/2013 9:08 AM       File folder         Wideos       2F0T69 0322013 LAS.las       3/25/2013 11:40 AM       LAS File         S55.las       9/7/2013 4:17 PM       LAS File       PetCom (*.*)         PetCom (*.*)       Soft (*.4S)       Instal.ogger (*.*)       Opril (*.6AM)         Sw (*.1AS)       PetCom (*.*)       Dynalog (*.*)       Sondex Tet (*.1XT)         Chevron ASCII (*.ASC       Micro-Smart ASCII (*.ASC       Micro-Smart ASCII (*.ASC	folder folder folder	Туре					
Manuals       Name       Date       Type         Software       Caliper Files       6/6/2013 9:08 AM       File folder         Warrior Data       Files       6/25/2013 9:36 AM       File folder         Warrior Config       Scientific Data Systems       Files       6/2/2013 9:36 AM       File folder         Libraries       Open Hole       12/9/2013 2:28 PM       File folder         Documents       SCBL Files       6/6/2013 9:08 AM       File folder         Music       SCBL Files       6/6/2013 9:08 AM       File folder         Pictures       SCBL Files       6/6/2013 9:08 AM       File folder         Videos       20169 03232013 LAS.las       3/25/2013 1:40 AM       LAS File         S55.las       9/7/2013 4:17 PM       LAS File       9/9/2013 8:29 AM       LAS (*LAS)         PetCom (*.*)       State       Imstal ogger (*.*)       Optin (*.5)       Instal ogger (*.*)         Sondex Text (*.TKI)       Sondex Text (*.TKI)       Sondex Text (*.TKI)       Sondex Text (*.TKI)	folder folder folder		_			Organize 🔻 New folder	
Warrior Data       Caliper Files       6/6/2013 9:08 AM       File folder         Warrior Config       Files       6/25/2013 9:36 AM       File folder         Scientific Data Systems       Sample Tracer       11/27/2013 8:29 AM       File folder         Scientific Data Systems       SCBL Files       6/6/2013 9:08 AM       File folder         Scientific Data Systems       SCBL Files       6/6/2013 9:08 AM       File folder         Documents       SCBL Files       6/6/2013 9:08 AM       File folder         Wusic       SCBL Files       6/6/2013 9:22 AM       File folder         Videos       270169 03232013 LAS.las       3/25/2013 11:40 AM       LAS File         S55.las       9/7/2013 4:17 PM       LAS File       555.las         File name:       555.las       9/9/2013 8:29 AM       LAS (*LAS)         Instal ogger (*.*)       QDT (*.6AM)       SWS (*.*)       SWS (*.*)         Videos       Videos       Videos       Videos       Videos	folder	File folder	Date	Name	*	퉬 Manuals	
Warrior Data       Image: Files       6/25/2013 9:36 AM       File folder         Warrior Config       Scientific Data Systems       Image: Files       0pen Hole       12/9/2013 2:28 PM       File folder         Scientific Data Systems       Sample Tracer       11/27/2013 8:59 AM       File folder         Documents       SCBL Files       6/6/2013 9:38 AM       File folder         Music       20069 03232013 LAS.las       3/25/2013 1:40 AM       LAS File         Videos       555.las       9/7/2013 4:17 PM       LAS File         555.las       9/9/2013 8:29 AM       LAS File         555.las       9/9/2013 8:29 AM       LAS (*LAS)         Instal ogger (*.*) QDT (*.6AM)       QDT (*.6AM)       SWS (*.*) Sondex Text (*.TXI)         Opt (*.5) Chevron ASCII (*.AS)       Sondex Text (*.TXI)       Sondex Text (*.TXI)	folder		6/6/2013 9:08 AM	Caliper Files			
Scientific Data Systems       Image: Construction of the systems       12/9/2013 2:28 PM       File folder         Sample Tracer       11/27/2013 8:59 AM       File folder         Ibraries       SCBL Files       6/6/2013 9:08 AM       File folder         Documents       8/6/2013 9:22 AM       File folder         Music       2006 903232013 LAS.las       8/6/2013 9:38 AM       File folder         Videos       555.las       9/7/2013 4:17 PM       LAS File         State       555.las       9/9/2013 8:29 AM       LAS File         State       S55.las       9/9/2013 8:29 AM       LAS (*LAS)         Instal ogger (*.*)       QDT (*.6AM)       SVIS (*.*)       Notice         Svis (*.*)       Svis (*.*)       Svis (*.*)       Svis (*.*)         Music       State       *       *       *         File name:       State       9/9/2013 8:29 AM       LAS (*LAS)         Instal ogger (*.*)       QDT (*.6AM)       Svis (*.*)       Svis (*.*)         Videos       *       *       *       *         File name:       State       *       *       *         State       *       *       *       *         State       *       *       *<		File folder					
Scientific Data Systems       Image: Sample Tracer       11/27/2013 8:59 AM       File folder         Ibraries       SCBL Files       6/6/2013 9:08 AM       File folder         Documents       Image: Tracer       8/6/2013 9:22 AM       File folder         Music       Image: Tracer       8/6/2013 9:23 AM       File folder         Pictures       Image: Tracer       9/7/2013 1:40 AM       LAS File         Store       Image: Tracer       9/9/2013 8:29 AM       LAS File         Store       Image: Tracer       Image: Tracer       Image: Tracer         File name:       S55.las       9/9/2013 8:29 AM       LAS File         Image: Tracer       Image: Tracer       Image: Tracer       Image: Tracer         File name:       S55.las       9/9/2013 8:29 AM       LAS (*LAS)         Image: Tracer       Image: Tracer       Image: Tracer       Image: Tracer         Social Comment: Tracer       Star       9/9/2013 8:29 AM       LAS (*LAS)         Image: Tracer       Image: Tracer       Image: Tracer       Image: Tracer         Social Comment: Tracer       Star       9/9/2013 8:29 AM       LAS (*LAS)         Image: Tracer       Image: Tracer       Image: Tracer       Image: Tracer         Social Comment: Tracer	folder	File folder			=		
■ Libraries       ● SCBL Files       6/6/2013 9:08 AM       File folder         ● Documents       ● True simpson - Copy       8/6/2013 9:28 AM       File folder         ● Nusic       ● 2F0T69 03232013 LAS.las       3/25/2013 11:40 AM       LAS File         ● Videos       ● 555.las       9/9/2013 8:29 AM       LAS File         ● S55.las       9/9/2013 8:29 AM       LAS File         ● S55.las       9/9/2013 8:29 AM       LAS File         ● S55.las       9/9/2013 8:29 AM       LAS (*LAS)         Instal ogger (*.*)       OD (*.*)       LAS (*LAS)         Instal ogger (*.*)       OD (*.*)       Sondex Text (*.TXT)         Chevron ASCII (*.AS)       Microo-Smart ASCII (*.ASCII (*.Sci Drilling (*.DO))       Microo-Smart ASCII (*.ASCII (*.Sci Drilling (*.DO))		File folder	11/27/2013 8:59 AM			闄 Scientific Data Systems	
Image: State of the second	folder	File folder	6/6/2013 9:08 AM				
Music  Pictures Videos  Videos  File name: 555.las  File name: 555.las  Videos  File name: 555.las  File	folder	File folder	8/6/2013 9:22 AM	🚺 true simpson			
■ Pictures       ■ 2P0T69 03232013_LAS.las       3/25/2013 11:40 AM       LAS File         ■ Videos       9/7/2013 4:17 PM       LAS File         ■ 555_R.las       9/9/2013 8:29 AM       LAS File         ■ 555_R.las       9/9/2013 8:29 AM       LAS (*1.4S)         File name:       555.las       9/9/2013 8:29 AM       LAS (*1.4S)         PetCom (*.*)       LAS (*1.4S)       PetCom (*.*)       LAS (*1.4S)         Instal ogger (*.*)       QDT (*.6AM)       SVS (*.*)       ODT (*.6AM)         SVS (*.*)       Dynalog (*.*)       Sondex Text (*.TXT)       Chevron ASCII (*.ASCII (*	folder	File folder	8/6/2013 9:38 AM	\mu true simpson - Copy			
Videos 9/7/2013 4:17 PM LAS File 555.las 9/9/2013 8:29 AM LAS File 555.las 9/9/2013 8:29 AM LAS File File name: 555.las V LAS (*1.AS) PetCom (*.*) LAS (*1.AS) Instal ogger (*.*) QDT (*.6AM) SWS (*.*) Dynalog (*.*) Sonder Text (*.TXT) Chevron ASCII (*.ASC) Micro-Smat ASCII (*. Sci Drilling (*.1OG)	S File 1	LAS File	3/25/2013 11:40 AM	2F0T69 03232013_LAS.las		•	
File name: 555.las	5 File 36,3	LAS File	9/7/2013 4:17 PM	🧟 555.las			
File name: 555.las	S File 36,3	LAS File		355_R.las		Videos	
PetCom (*.*) LAS (*.LAS) Instalogger (*.*) QOT (*.6AM) SWS (*.*) Dynalog (*.*) Sondex Text (*.TXT) Chevron ASCII (*.ASC GRC LAS (*.LAS) Micro-Smart ASCII (*. Sci brilling (*.LOG)			m		<b>₩</b> 4		
LAS (*.LAS) Instalogger (*.*) QOT (*.6AM) SWS (*.*) Dynalog (*.*) Sondex Text (*.TXT) Chevron ASCII (*.ASC GRC LAS (*.LAS) Micro-Smart ASCII (*. Sci Drilling (*.LOG)	LAS)	LAS (*.LAS)	•	las	55.las	File name: 5	
Instalogger (*.*) QDT (*.5AM) SWS (*.*) Dynalog (*.*) Sondex Text (*.TXT) Chevron ASCII (*.ASC GRC LAS (*.LAS) Micro-Smart ASCII (*. Sci brilling (*.LOG)							
QDT (*.ŐAM) SWS (*.*) Dynalog (*.*) Sondex Text (*.TXT) Chevron ASCII (*.ASC GRC LAS (*.LAS) Micro-Smart ASCII (*. Sci Drilling (*.LOG)							
SWS (*.*) Dynalog (*.*) Sondex Text (*.TXT) Chevron ASCII (*.ASC GRC LAS (*.LAS) Micro-Smart ASCII (*. Sci Drilling (*.LOG)							
Sondex Text (*.TXT) Chevron ASCII (*.ASC GRC LAS (*.LAS) Micro-Smart ASCII (*. Sci Drilling (*.LOG)							
Chevron ASCII (*.ÁSC GRC LAS (*.LAS) Micro-Smart ASCII (*. Sci Drilling (*.LOG)							
GRC LAS (*.LAS) Micro-Smart ASCII (*. Sci Drilling (*.LOG)							
Micro-Smart ASCII (*. Sci Drilling (*.LOG)							
Sci Drilling (*.LOG)							
Indexless (*.*)		Indexless (*.*)					
	Penless Recorder (*.TXT)						
LineWise (*.TXT)							
Canada Tech (*.DEP) Kuster K10 (*.DEP)							

# FIG: 12.3.3 Select the ASCII File Type

The importer will automatically import several common ASCII file types. Clicking on the Files of type selection displays the various ASCII formats handled. Select the type to be imported. If the ASCII file format to be imported is not displayed here, contact SDS.

Select the required ASCII files in the normal way and click Open.

The selected files may be viewed by clicking the  $\Box$  button in the Files to read: field. The selected files may be cleared by clicking the <u>C</u>lear List button.

In Options Clicking the One log for each file radio button generates a warrior log pass for each ASCII file selected.

Clicking the Merge all files into one log button merges all the selected ASCII files into one log pass. If the ASCII files contain curves of the same name, the importer will automatically add a numerical subscript to the duplicate curves according to the order they appear in the Files to read: list.

The default presentation file for the new log pass is entered in the Log Format field by clicking the corresponding Select File button.

The filter list file has the default extension .wif. It may be selected by clicking the corresponding Select File button.

Checking the Create Heading selection causes the importer to create a log heading file based on any available information from the ASCII input file(s). If no information is available, it will create a blank heading in the new database.

Checking the Create Plot Job selection causes the importer to create a default plot job based on the log heading (if any) and the imported log passes.

🔳 Warr	io <mark>r Data Importer</mark>				
Input	Files to read:	Charalta			
	c:\programdata\warrior\data\555.las	Clear List			
Options	Tc. (programuata twantor tuata toos.ias	Add Files			
options	One log for each file	Create Heading 🔽			
	O Merge all files into one log	Create Plot Job 🔽			
	Log Format: xi56_3d.prs	Select File			
	Filter List: (optional)	Select File			
0.000	Options				
Output Warrior database file name:					
		Select File			
	Optional field, well and run names:				
Status		Select Path			
Judius					
		( )			
Impo	ort Heading View	Plot Close			

FIG: 12.3.4 Select File

🔳 Warr	ior Data Importer 😂 🗖 🗷 🗴
Input	Files to read: Clear List
Options	c:\programdata\warrior\data\555.las
	Image: Construction     Image: Construction     Image: Construction       Image: Construction     Image: Construction     Image: Construction
	Log Format: xi56_3d.prs Select File
	Filter List: Select File
Output	Options
	Warrior database file name: c:\programdata\warrior\data\newdatabase.db
	Optional field, well and run names: Select Path
Status	
Impo	ort Heading View Plot Close

# FIG: 12.3.5 Setup Warrior data Importer

If required, the curves may be filtered during the import process. An ASCII text file must be created in the \warrior\bin directory and consist of a list of filter definitions like those used in the tools.ini file to define default filters

ſ	Warr	io <mark>r D</mark> ata Importer	⇒ ∟	
	Input	Files to read: c:\programdata\warrior\data\555.las	•	Clear List Add Files
	options	<ul> <li>One log for each file</li> <li>Merge all files into one log</li> </ul>	Create H Create F	-
		Log Format: xi56_3d.prs		Select File
		Filter List:		Select File
	Output	Options		
	Output	Warrior database file name:		
		c:\programdata\warrior\data\newdatabas	e.db	Select File
	Chathara	Optional field, well and run names:		Select Path
	Status	UWI = n/a Found D01 in in Found D02 in in Found D03 in in Found D04 in in Found D05 in in		-
	Impo	ort Heading View	Plot	Close

FIG: 12.3.6 Start to select the curves

If a curve is found with units that warrior does not recognize you will be prompted to select the appropriate units along with a radio button to select weather the unit referenced should be save for future imports.

Identify Data Ur	nits		
The text "Deg_F" is declared as the unit of measure for the item named "WTEMP" but it is not recognized.			
Please select the most appropriate one from the list below:			
degF	#143, utDEC 🔻		
	Memorize this selection		
	ок		

FIG: 12.3.7 Identify Data Units

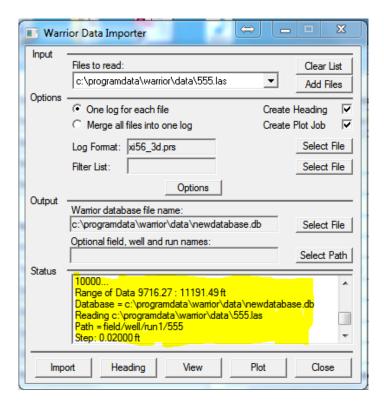


FIG: 12.3.8 Reading the ASCII and convert to DB

The status window displays a log of the importing operations.

Having made the various selections and chosen the required options the importer may be run by clicking the Import button. The importer will read the selected ASCII files and display the status.

Clicking the Heading button starts the Heading Editor program and displays the heading generated by the import process. If Create Heading was not selected a blank heading will be presented.

Clicking the View button starts the Interactive Plot program for screen display of the results of the import process.

Clicking the Plot button starts the Plot Job Editor program with the plot job generated during the import process (if any). If Create Plot Job was not checked a blank plot job is presented. The Close button closes the Importer program.

#### Warrior Utilities Data Export Depth Correction Apply Linear Depth Shift to a Dataset Export to LAS Format Export to LIS Format Apply Linear Depth Shift to a Data Item Export to ODBC Compatible Database Г Data Management Extract Pass(es) to New Database Create an Alias for a Data Item Export via Internet Multiple Pass Automerge Edit Variables in a Dataset Г Interpretation Tools Create Variables in a Dataset Mathpack XY Plot Create Waveform Gate Curves Tracer Interpretation Create CCL Curve from Keyboard Create Differential Curve Delete Data from a Database Create Total Dissolved Solids Curve Undelete Data Calculate Borehole Volume from Caliper Change a Name Calculate Rxo/Rt & Rwa Edit a Log Curve Pipe Tally Select Correlation Curves for Database Curve Normalization Г Data Import Read ASCII Data into Warrior Log Summary Generator Г Setup Tools Read LIS Data into Warrior Calibrate Printer Import ODBC Data into Warrior Configuration Backup/Restore Create Log Format from Dataset Edit Logging Service Details Import via Internet Edit Logging Tool Details Exit

12.3.2 Read LIS Data into the Warrior

FIG: 12.3.9 Select Read LIS Data into Warrior

If you are using a tape it must be copied to a disk file before it can be read in to a Warrior database. Select 'From Tape' and then select the tape drive and the output file name. Once that is completed, select OK to copy the data to a file. Once the data is read to a file, then a scan or conversion can be done.

🛃 LIS to Warrior	<u>×</u>
Files Scan Curves/Constants	
LIS Tape       Read LIS tape and make disk image   From Tape	
LIS File Disk Image File Name Select	
Scan summary	
Warrior Database Select	
Create Header C No  Yes Heading Format Stdopen.hdg	]
For help, press <f1> LIS to Warrior Stop Close</f1>	
Tape to File	
Read from tape	
Write to file Select	
OK Cancel	

FIG: 12.3.10 Tape to file conversion

LIS to Warrior - C:\ProgramData	\Warrior\Data\SCBLDemo.nti	
Files	Scan	Curves/Constants
LIS Tape		
Read LIS tape and make disk im	age	From Tape
LIS File		
Disk Image File Name C:\Pro	ogramData\Warrior\Data\SCBLDemo.	nti Select
Scan summary		
REEL HEADER ReelName: 01 Date: 13/12/1 DataOrigin: WARR ReelContNum REEL Comments:		A •
Warrior Database		
SCBLDemo:/field/well/run/pass	1	Select
Create Header		
C No 🍳 Yes He	ading Format SHTcased.hdg	
For help, press <f1> LIS to Warrior</f1>	Stop	Close

# FIG: 12.3.11 Select LIS file

When opening the LIS, the default extensions will be shown on the lower right hand side of the open file dialog.

		<b>▼</b> 49		_
Organize 🔻 New folder			== -	
🔆 Favorites	<ul> <li>Name</li> </ul>	Date	Туре	Size
🍌 Format	Dpen Hole	12/9/2013 2:28 PM	File folder	
	Bample Tracer	11/27/2013 8:59 AM	File folder	
<ul> <li>★ Favorites</li> <li>▲ Format</li> <li>▲ Bin</li> <li>▲ Manuals</li> <li>▲ Software</li> <li>▲ Warrior Data</li> <li>▲ Warrior Config</li> <li>♣ Scientific Data Systems</li> <li>■ Cournents</li> <li>▲ Music</li> <li>➡ Pictures</li> <li>➡ Videos</li> <li>➡ Homegroup</li> </ul>	📄 🖟 true simpson - Copy	8/6/2013 9:38 AM	File folder	
	🔰 true simpson	8/6/2013 9:22 AM	File folder	
	🗉 🌗 Files	6/25/2013 9:36 AM	File folder	
	SCBL Files	6/6/2013 9:08 AM	File folder	
Scientific Data Systems	Caliper Files	6/6/2013 9:08 AM	File folder	
See 1 thread on	SCBLDemo.nti	12/11/2013 2:25 PM	NTI File	1,2
	export.nti	12/2/2013 2:24 PM	NTI File	2
	export.tap	12/2/2013 2:21 PM	TAP File	3
E Pictures Videos Homegroup	👼 noise.img	10/30/2013 2:37 PM	Compressed File (I	
	👼 greg.img	10/30/2013 9:51 AM	Compressed File (I	
	test audio.tif	10/28/2013 8:47 AM	TIF File	7,4
	14 000355.tif	9/24/2013 12:05 PM	TIF File	3,8
	compressed 200dpi.tif	9/6/2013 9:34 AM	TIF File	4,9
	▼			
File name:	CBLDemo.nti	<b>•</b>	LIS File (*.lis;*.nti;*.img;*.t	ap;*.ti

FIG: 12.3.12 SCBLDemo.nti File

Once you have selected an input file and an output database you can scan the LIS file. The scan dialog has an optional radio button to save the scan as a text file.

US to W	arrior - (	C:\Progra	mData\	Warrior\Data\SCBLDe	mo.nti		23
	Files	3		Scan		Curves/Constants	
	Passes on LIS Tape						
Tape	File	Pass	Curv	Input Range	Min Smpl	Output Range	
0 0	0 1	0 0	0 9	6.10 - 318.10	0.250	6.10 - 318.10	
Select a	file to sh	ow curves	s and cor	nstants			
-Scan F	Results —						_
<mark>  </mark> Sa	ve result	s to text fil	e				
help, pre	ess <f1></f1>						
		LIS to	Warrior	Stop		Close	

#### FIG: 12.3.13 Scan

Once you scan your file then select Curves/Constants. Here you can change the LIS Mnemonic to a Warrior Mnemonic. This way you can use your standard presentations, if you make a change here it will be stored by the system so that the next file will have the edited mnemonics. Double clicking on any of the curves will bring up the mnemonics editor. At this point you can also select whether to output the curve to the database.

	Files	\$		Scan	C	urves/Const	tants
	Pass	LIS Name	LIS Units	Warrior Name	Warrior Units	Output	
Curves	1	DEPT BOND	FT	WDEPT BOND	ft	У	
		LSPD	FT/M	LSPD	ft/min	у У	
	1	LTEN	LB	LTEN	lb	ý	E
		CCL GR	GAPI	CCL GR	GAPI	У	
	li -	TT3F	USEC	TT3F	usec	y y	
	1	WVF3	V	WVF3	V	У	-
	Pass	LIS Name	Value		Warrior Name	Output	
Pass					<< Pre>relations of the second	ev	Next >>
Pass help, pre					<< Pro	ev	Next >>

FIG: 12.3.14 Curves/Constants

US to Wa		-	ata\Warrior\Da	ta\SCBLDemo.n	u c	⇔ ùrves/Co	
	Files			Scan		Curves/Constants	
-	Pass		LIS Units	Warrior Name	Warrior Units	Output	
Curves		DEPT BOND	FT	DEPTH BONDIX	ft	У	
	Li .	LSPD	FT/M	LSPD	ft/min	y y	
	li.	LTEN	LB	LTEN	lb	ý	E
	1	CCL		CCL		ý	-
	11		0.181			23	
	1	Edit Output			Ĺ		
	Pa	LIS Name	TT3F	Warrior Name	TT3FT	•	Ŧ
Constants	Π	LIS Units	USEC	Warrior Units	usec	-	
			🔽 Outpu	t to Warrior			
			ОК	Ca	incel		
Pass					<< Pr	ev	Next >>
or help, pres	s <f1:< td=""><td>&gt;</td><td></td><td></td><td></td><td></td><td></td></f1:<>	>					
		LIS to War	ior	Stop	Close		

FIG: 12.3.15 Mnemonics Change

Files	Scan		Curves/Constants			
LIS Tape						
Read LIS tape and make	disk image		From Tape			
LIS File						
Disk Image File Name	C:\ProgramData\Warrior\Data	SCBLDemo.nti	Select			
Scan summary						
	13/12/11 ServName:WARR ontNum:01 PrevReelName:	10	-			
ReelName: 01 Date: DataOrigin: WARR ReelC REEL Comments: Warrior Database	ontNum: 01 PrevReelName:	10				
ReelName: 01 Date: DataOrigin: WARR ReelC REEL Comments: Warrior Database SCBLDemo:/field/well/r	ontNum: 01 PrevReelName:	10	Select			
ReelName: 01 Date: DataOrigin: WARR ReelC REEL Comments: Warrior Database	ontNum: 01 PrevReelName: un/pass1	IO sedold.hdg				
ReelName: 01 Date: DataOrigin: WARR ReelC REEL Comments: Warrior Database SCBLDemo:/field/well/r Create Header	ontNum: 01 PrevReelName: un/pass1 Heading Format Stdca		Select			

FIG: 12.3.16 Convert List to Warrior

The destination database file name does not have to exist, but the specific run given for the destination cannot exist. For any LIS passes greater than the first pass, the LIS pass number will be appended to the output Warrior database pass name to create a unique Warrior name for each pass.

If a header is requested, then the heading information will be filled out based on the type of heading chosen. The heading that is chosen will affect the list of available heading names shown when editing constants from the Curves/Constants dialog. The heading that is created will go to /[field]/[well]/[run]/\_plots\_/\_headings\_/1. Only one heading is allowed per /[field]/[well]/[run]/. Therefore, if a database is created from a LIS file with multiple passes, only the heading information from the first pass will be used to create the heading

Output Destinatio	n	[X]
Current Database	C:\ProgramData\Warrior\Data\SCBLDemo.d	b
Current Dataset	/field/well/run/pass11	
/field/well/run/pass11 /field/well/run/_plots_		
		Database
	*	ОК
4	Þ	Cancel

FIG: 12.3.17 Output



FIG: 12.3.18 Header not Output Curves

Details for waveform output WVF3						
Pass: 1						
Start time for waveform recording in microseconds						
Waveform sample rate (microseconds/sample)						
Minimum recordable waveform value -2048						
Maximum recordable waveform value 2047						
OK Cancel						
For help press <f1></f1>						

FIG: 12.3.19 Setup Output Details

More Information Required for Waveform Data

The top line of the dialog contains the pass number and name from the LIS tape.

The start time for the waveform is the number of microseconds that elapsed prior to the beginning of recording the waveform.

The waveform sample rate is the total sample interval (in microseconds) divided by the total number of samples taken.

The minimum and maximum recordable waveform values are required for scaling the waveform plot properly. For example, a 13 bit-sampling device may have a range of values from –2048 to +2047.

### 12.3.3 Import ODBC Data into Warrior

This program will import data for Excel, Access, and other ODBC compatible databases. The limit for exporting data is 255 data points per sample. A normal curve is one data point, but a waveform will be many more points for each sample. You will see a message in the progress window that the column count has exceeded if you exceed that amount. The Import ODBC to warrior opens the same executable as the export to ODBC but in the Import tab.

Warrior Utilities				
Data Export	Depth Correction			
Export to LAS Format	Apply Linear Depth Shift to a Dataset			
Export to LIS Format	Apply Linear Depth Shift to a Data Item			
Export to ODBC Compatible Database	Data Management			
Extract Pass(es) to New Database	Create an Alias for a Data Item			
Export via Internet	Multiple Pass Automerge			
Interpretation Tools	Edit Variables in a Dataset			
Mathpack	Create Variables in a Dataset			
XY Plot	Create Waveform Gate Curves			
Tracer Interpretation	Create CCL Curve from Keyboard			
Create Differential Curve	Delete Data from a Database			
Create Total Dissolved Solids Curve	Undelete Data			
Calculate Borehole Volume from Caliper	Change a Name			
Calculate Rxo/Rt & Rwa	Edit a Log Curve			
Pipe Tally	Select Correlation Curves for Database			
Curve Normalization	Data Import			
Log Summary Generator	Read ASCII Data into Warrior			
Setup Tools	Read LIS Data into Warrior			
Calibrate Printer	Import ODBC Data into Warrior			
Configuration Backup/Restore	Create Log Format from Dataset			
Edit Logging Service Details	Import via Internet			
Edit Logging Tool Details				
	Exit			

FIG: 12.3.20 Import ODBC Data into Warrior

The Import ODBC to warrior opens the same executable as the export to ODBC but in the Import tab.

Warrior ODBC Import	t	100-0	- 140.10		
Import E	xport				
- Step (1)					
Data Source					Source
Warrior database					
Warrior dataset	, 				Destination
Log format	default.prs				Format
Step (2)	Joordan.pro				
Select worksheet					
Select one or more to import					
Step (3)					
Snapshot					
	Row to start data Column to start da	ita	1 ÷	Snapshot siz	e 10 🕂
	🔲 Irregular samp	les		View Inputs	Import
Progress					1
					<u>H</u> elp
					Close

From here you can select the source Destination and presentation.

When you select source the select data source window will open from here you can select either dBase, Excel or MS Access. There is a new button that can be used to import another ODBC Type, unless you need one that is not listed you should not need this option. There is also a tab for File Data Source, unless you are using a server to retrieve you file you should not need this option.

FIG: 12.3.21 Import ODBC Data Dialog

Select Data Source	23
Data Source       Machine Data Source         Data Source Name       Type       Description         dBASE Files       User         Excel Files       User         MS Access Database       User	
Nev	v
A Machine Data Source is specific to this machine, and cannot be shared. "User" data sources are specific to a user on this machine. "System" data sources can be used by all users on this machine, or by a system-wide service	e.
OK Cancel	Help

FIG: 12.3.22 Machine Data Source

Once you select Ok the Select Workbook or another dialog will appear. Select your file that you wish to import and click OK.

Database Name SCBLDemo xls 9260 xls dimasssb_W8 xls <u>SCBLDemo xls</u> u8055 xls u9482 xls	ProgramData	OK Cancel Help Read Only
List Files of Type: Excel Files (* xls*)	Drives:	Network

FIG: 12.3.23 Machine Data Source

Import E	xport						
Step (1)							
Data Source	C:\ProgramDat	C:\ProgramData\Warrior\Data\SCBLDemo.xls Source					
Warrior database	C:\ProgramDat	C:\ProgramData\Warrior\Data\SCBLExcell.db					
Warrior dataset	/field/well/run	1/pass1			Desund	LION	
Log format	default.prs				Form	at	
- Step (2)							
Select worksheet Select one or more to import	pass11 pass11\$						
Step (3)	,						
Snapshot	DEPTH#t 10.0 10.083 10.166 10.249 10.332 10.415 <	WDEPT -999.25 -999.25 -999.25 -999.25 -999.25 -999.25 -999.25	BOND -999.25 -999.25 -999.25 -999.25 -999.25 -999.25 -999.25	LSPD -999.25 -999.25 -999.25 -999.25 -999.25 -999.25 -999.25	LTEN -999.25 -999.25 -999.25 -999.25 -999.25 -999.25 -999.25		
	*** First row mu:	st contain colu	mn headings or i	import will not w	vork ***		
	Column to start	data	1 📫	Snapsho	ot size 10	*	
	🔲 Irregular sar	mples		View Inputs	Impo	rt	
ogress							
WVF3FT233: Column WVF3FT234: Column WVF3FT235: Column WVF3FT236: Column WVF3FT237: Column Message limit exceede	245 = SQL_DOU 246 = SQL_DOU 247 = SQL_DOU 248 = SQL_DOU ed	BLE, size 1 BLE, size 1 BLE, size 1			•	Hel	
						Clos	

FIG: 12.3.24 Importing File Data

## 12.3.4 Create Log format from Dataset

This utility will allow you to create a presentation file from a log pass.

Warrior Utilities			
Data Export	Depth Correction		
Export to LAS Format	Apply Linear Depth Shift to a Dataset		
Export to LIS Format	Apply Linear Depth Shift to a Data Item		
Export to ODBC Compatible Database	Data Management		
Extract Pass(es) to New Database	Create an Alias for a Data Item		
Export via Internet	Multiple Pass Automerge		
Interpretation Tools	Edit Variables in a Dataset		
Mathpack	Create Variables in a Dataset		
XY Plot	Create Waveform Gate Curves		
Tracer Interpretation	Create CCL Curve from Keyboard		
Create Differential Curve	Delete Data from a Database		
Create Total Dissolved Solids Curve	Undelete Data		
Calculate Borehole Volume from Caliper	Change a Name		
Calculate Rxo/Rt & Rwa	Edit a Log Curve		
Pipe Tally	Select Correlation Curves for Database		
Curve Normalization	Data Import		
Log Summary Generator	Read ASCII Data into Warrior		
Setup Tools	Read LIS Data into Warrior		
Calibrate Printer	Import ODBC Data into Warrior		
Configuration Backup/Restore	Create Log Format from Dataset		
Edit Logging Service Details	Import via Internet		
Edit Logging Tool Details			
	Exit		

FIG: 12.3.25 Create Format from Dataset

S	Select	the	pass	that	has	the	desired	embedded	format	you	wish	to	save.
	Format	Maker	-	-		-	23						
	Current Dat	abase	C:\Program[	)ata\Warrio	r\Data\SCB	LDemo.db							
	Current Dat	aset	/field/well/n	un/pass11									
	/field/well/ /field/well/	/run/pass11 /run/_plots_	-			•	Database OK Cancel						

FIG: 12.3.26 Create Format from Dataset

ganize 🔻 New folde	2r				
🖹 Documents 🔷 🔦	Name	Date modified	Туре	Size	
🎝 Music	鷆 Gregs	9/17/2013 8:25 AM	File folder		
Pictures	1in_comp.prs	2/25/2013 4:18 PM	PRS File	12 KB	
Videos	2.875MIT.PRS	5/31/2013 4:49 PM	PRS File	24 KB	
	2.prs	11/16/2012 11:31	PRS File	25 KB	
Homegroup	3armCal.prs	11/14/2011 4:00 PM	PRS File	4 KB	
E	4.5cbl.prs	7/29/2006 10:37 AM	PRS File	6 KB	
Computer	5_5cal.prs	2/26/1999 5:17 PM	PRS File	4 KB	
OS_Win_64 (C:)	5mtt.prs	2/19/1998 4:37 PM	PRS File	4 KB	
🕞 OS_Win7_32 (D:) 👻	7 60f .ors	6/14/2012 1:57 PM	PRS File	21 KB	
File name: NewP	resentation.prs				
Save as type: Preser	ntation Files(*.PRS) *.prs				

FIG: 12.3.27 Select new presentation name

Warrior Utilities					
Data Export	Depth Correction				
Export to LAS Format	Apply Linear Depth Shift to a Dataset				
Export to LIS Format	Apply Linear Depth Shift to a Data Item				
Export to ODBC Compatible Database	Data Management				
Extract Pass(es) to New Database	Create an Alias for a Data Item				
Export via Internet	Multiple Pass Automerge				
Interpretation Tools	Edit Variables in a Dataset				
Mathpack	Create Variables in a Dataset				
XY Plot	Create Waveform Gate Curves				
Tracer Interpretation	Create CCL Curve from Keyboard				
Create Differential Curve	Delete Data from a Database				
Create Total Dissolved Solids Curve	Undelete Data				
Calculate Borehole Volume from Caliper	Change a Name Edit a Log Curve				
Calculate Rxo/Rt & Rwa					
Pipe Tally	Select Correlation Curves for Database				
Curve Normalization	Data Import				
Log Summary Generator	Read ASCII Data into Warrior				
Setup Tools	Read LIS Data into Warrior				
Calibrate Printer	Import ODBC Data into Warrior				
Configuration Backup/Restore	Create Log Format from Dataset				
Edit Logging Service Details	Import via Internet				
Edit Logging Tool Details					
Exit					

## 12.3.5 Import VIA Internet

FIG: 12.3.28 Import via Internet

You can receive a saved data base or a real time database with the Import via Internet function. You will need the IP address of the sending computer and the port if different than the default the port number.

Connect to remote Warrior server	8						
Enter IP address or DNS name of a remote Warrior server:							
192.168.1.1							
	ок						
TCP port 19500	Cancel						

FIG: 12.3.29 IP address and Port setting.

# 12.4 Depth Correction

See Interactive Plot Section 7

# 12.5 Data Management

## 12.5.1 Create an Alias for a Data Item

Clicking on this button brings up a dialog box, which allows a data item, typically a curve from a log pass, to appear as though it were present in another (different) log pass. This allows curves and other data items to be effectively merged to other datasets, without using the Merge program or creating new merged log passes. Essentially a form of link is defined in the database(s) that allows application programs (such as Interactive Plot) to access data items from datasets other than the dataset currently selected. In the Warrior System group, choose the Utilities icon.

Warrior Utilities					
Data Export	Depth Correction				
Export to LAS Format	Apply Linear Depth Shift to a Dataset				
Export to LIS Format	Apply Linear Depth Shift to a Data Item				
Export to ODBC Compatible Database	Data Management				
Extract Pass(es) to New Database	Create an Alias for a Data Item				
Export via Internet	Multiple Pass Automerge				
Interpretation Tools	Edit Variables in a Dataset				
Mathpack	Create Variables in a Dataset				
XY Plot	Create Waveform Gate Curves				
Tracer Interpretation	Create CCL Curve from Keyboard				
Create Differential Curve	Delete Data from a Database				
Create Total Dissolved Solids Curve	Undelete Data				
Calculate Borehole Volume from Caliper	Change a Name				
Calculate Rxo/Rt & Rwa	Edit a Log Curve				
Pipe Tally	Select Correlation Curves for Database				
Curve Normalization	Data Import				
Log Summary Generator	Read ASCII Data into Warrior				
Setup Tools	Read LIS Data into Warrior				
Calibrate Printer	Import ODBC Data into Warrior				
Configuration Backup/Restore	Create Log Format from Dataset				
Edit Logging Service Details	Import via Internet				
Edit Logging Tool Details					
	Exit				

FIG: 12.5.1 Select Create an Alias for a Data Item

Click on the Create an Alias for a Data Item button. A dialog box will appear as shown below:

Create Data Iter	n Alias	 23
Database		
Existing data item		<< Browse
New Name		
Depth Offset	ft	ОК
		Close

FIG: 12.5.2 Browse DataBase

Click the Browse button and select the database file, then the dataset (log pass) and finally the data item to aliased. In the case shown below the curve GR has been selected from pass12 of the cbldemo.db database.

Create Data Iter	n Alias	23
Database	C:\ProgramData\Warrior\Data\SCBLDEM64 - Copy.db	
Existing data item	/field/well/run/pass11/CCL/1	<< Browse
New Name	/field/well/run/pass <mark>11</mark> /CCL/1	
Depth Offset	ft	ОК
		Close

FIG: 12.5.3 Create data Item Alias

This is the database item to be aliased to another pass.

In the New Name for item field replace any or the entire data item path. For example, if we want this CCL curve to appear in pass1, we type over pass11 with pass1, as shown below:

💽 Create Data Iter	n Alias	23
Database	C:\ProgramData\Warrior\Data\SCBLDEM64 - Copy.db	
Existing data item	/field/well/run/pass11/CCL/1	<< Browse
New Name	/field/well/run/pass <mark>1/CCL/</mark> 1	
Depth Offset	ft	ОК
		Close
	A COMPANY OF A CONTRACT OF A C	

FIG: 12.5.4 Create Pass1

The OK button is clicked and the CCL curve from pass11 will now appear in pass1. If a curve with the same name already exists in pass1 then the program will give a message indicating that this is the case and the alias will not be performed. The easiest thing to do in this case is to rename the CCL curve to something else (which does not already exist in that pass) e.g. CCL2.

Alias	
C:\ProgramData\Warrior\Data\SCBLDEM64 - Copy.db	
/field/well/run/pass11/CCL/1	<< Browse
/field/well/run/pass1/CCL2/1	
ft	ОК
	Close
	C:\ProgramData\Warrior\Data\SCBLDEM64 - Copy.db /field/well/run/pass11/CCL/1 /field/well/run/pass1/CCL2/1

FIG: 12.5.5 Create CCL2 Curve

Clicking the OK button will now alias the pass12 CCL curve to pass1 as CCL2. Note that if you now wish to plot this curve it will be necessary to include a curve called CCL2 in the presentation file with which the pass will be plotted.

Note that a linear depth offset may be applied to the data item as it aliased, so if the curve is not depth aligned with the other data in the destination path, it may be corrected at this point.

Note also that no new log passes are created in this process and the size of the database(s) remains the same. This is very important when wishing to present waveform data from several passes simultaneously, as large amounts of data would otherwise be created.

### 12.5.2 Multiple pass Auto merge

Warrior Utilities					
Data Export	Depth Correction				
Export to LAS Format	Apply Linear Depth Shift to a Dataset				
Export to LIS Format	Apply Linear Depth Shift to a Data Item				
Export to ODBC Compatible Database	Data Management				
Extract Pass(es) to New Database	Create an Alias for a Data Item				
Export via Internet	Multiple Pass Automerge				
Interpretation Tools	Edit Variables in a Dataset				
Mathpack	Create Variables in a Dataset				
XY Plot	Create Waveform Gate Curves				
Tracer Interpretation	Create CCL Curve from Keyboard				
Create Differential Curve	Delete Data from a Database				
Create Total Dissolved Solids Curve	Undelete Data				
Calculate Borehole Volume from Caliper	Change a Name				
Calculate Rxo/Rt & Rwa	Edit a Log Curve				
Pipe Tally	Select Correlation Curves for Database				
Curve Normalization	Data Import				
Log Summary Generator	Read ASCII Data into Warrior				
Setup Tools	Read LIS Data into Warrior				
Calibrate Printer	Import ODBC Data into Warrior				
Configuration Backup/Restore	Create Log Format from Dataset				
Edit Logging Service Details	Import via Internet				
Edit Logging Tool Details					
Exit					

FIG: 12.5.6 Multiple Pass AutoMerge

Warrior Multiple Pass Automerge							
Database: New Output Pass:	ldata\wamor\data\true simps field/well/run/merge1	on - copy	\sample data.db	Merge Cancel			
Log Format:	SCBL.PRS		<< Browse	View			
Subscript with:	Original pass name	-	[				
Select Passes:	Current position in list Original pass name Original pass number		ves: to	ggle			
Pass /field/well/run1/pa /field/well/run1/pa /field/well/run1/pa /field/well/run1/pa /field/well/run1/pa	Last pass letter and number Pass number and first pass le No subscript Run number and pass number ssz. 1 ssz. 1 ssz. 3 ssz. 1		3 G X				

FIG: 12.5.7 Multiple Pass Automerge

Warrior Multip	le Pass Automerge				
Database: Idata\wamor\data\true simpson - copy\sample data.db					
New Output Pass:	field/well/run/merge1		Cancel		
Log Format:	SCBL.PRS	<< Browse	View		
Subscript with:	Original pass name	•			
Select Passes:	toggle	Select Curves: to	ggle		
Pass /field/well/run1/p /field/well/run1/p /field/well/run1/p /field/well/run1/p /field/well/run1/p	ass2.2 ass2.1 <mark>ass3</mark> ass2	Curve TT5FT AMP5FT TTCAL AMPCAL TT3FT AMP3FT CCL GR HVOLTA ADPTH ELTIM TVOLT TCURR			

FIG: 12.5.8 Set Passes and Curves

Database Utilities		23
4 new alias(es) creat	ed, 0 failed.	
	OK	

FIG: 12.5.9 Four new aliases curves

New Output Pass:			Merge
new output russ. J	field/well/run/merge1		Cancel
Log Format:	SCBL.PRS	<< Browse	View
Subscript with:	Original pass name	•	
Select Passes:	toggle	Select Curves: to	oggle
Pass		Curve	
/field/well/run1/pas	ss3.1	TT5FT	
/field/well/run1/pas		AMP5FT TTCAL	
/field/well/run1/pas /field/well/run1/pas		AMPCAL	
/field/well/run1/pas		TT3FT	
/field/well/run1/pas	ss1	AMP3FT	
		CCL	
		HVOLTA	
		ADPTH	E
		ELTIM	

FIG: 12.5.10 View option

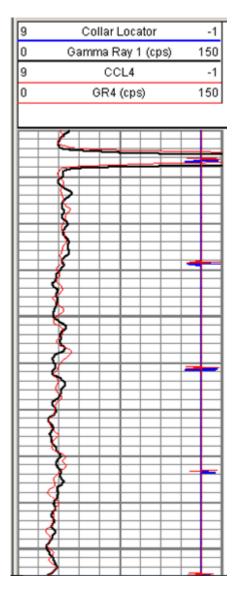


FIG: 12.5.11 Plot the new add curves

#### 12.5.3 Edit Variables in a Dataset

B Warrior Utilities		
Data Export	Depth Correction	
Export to LAS Format	Apply Linear Depth Shift to a Dataset	
Export to LIS Format	Apply Linear Depth Shift to a Data Item	
Export to ODBC Compatible Database	Data Management	
Extract Pass(es) to New Database	Create an Alias for a Data Item	
Export via Internet	Multiple Pass Automerge	
Interpretation Tools	Edit Variables in a Dataset	
Mathpack	Create Variables in a Dataset	
XY Plot	Create Waveform Gate Curves	
Tracer Interpretation	Create CCL Curve from Keyboard	
Create Differential Curve	Delete Data from a Database	
Create Total Dissolved Solids Curve	Undelete Data	
Calculate Borehole Volume from Caliper	Change a Name	
Calculate Rxo/Rt & Rwa	Edit a Log Curve	
Pipe Tally	Select Correlation Curves for Database	
Curve Normalization	Data Import	
Log Summary Generator	Read ASCII Data into Warrior	
Setup Tools	Read LIS Data into Warrior	
Calibrate Printer	Import ODBC Data into Warrior	
Configuration Backup/Restore	Create Log Format from Dataset	
Edit Logging Service Details	Import via Internet	

FIG: 12.5.12 Edit Variables in a Dataset

See Section 4.5.2

#### 12.5.4 Create Variables in a Dataset

In the Warrior shortcut folder, double-click the **Database Utilities** icon. The Warrior Utilities menu box will appear. Click on the **Create Variables in a Dataset** button.

Warrior Utilities		
Data Export	Depth Correction	
Export to LAS Format	Apply Linear Depth Shift to a Dataset	
Export to LIS Format	Apply Linear Depth Shift to a Data Item	
Export to ODBC Compatible Database	Data Management	
Extract Pass(es) to New Database	Create an Alias for a Data Item	
Export via Internet	Multiple Pass Automerge	
Interpretation Tools	Edit Variables in a Dataset	
Mathpack	Create Variables in a Dataset	
XY Plot	Create Waveform Gate Curves	
Tracer Interpretation	Create CCL Curve from Keyboard	
Create Differential Curve	Delete Data from a Database	
Create Total Dissolved Solids Curve	Undelete Data	
Calculate Borehole Volume from Caliper	Change a Name	
Calculate Rxo/Rt & Rwa	Edit a Log Curve	
Pipe Tally	Tally Select Correlation Curves for Database	
Curve Normalization	Data Import	
Log Summary Generator	Read ASCII Data into Warrior	
Setup Tools	Read LIS Data into Warrior	
Calibrate Printer	Import ODBC Data into Warrior	
Configuration Backup/Restore	Create Log Format from Dataset	
Edit Logging Service Details	Import via Internet	
Edit Logging Tool Details		
	Exit	

FIG: 12.5.13 Create Variables in a Data set.

A file selection dialog box appears. Select the required database, followed by the log pass (dataset). At this point a selection box is displayed allowing selection of the variable to be created in the log pass. Fig: Create Variables in a Dataset Double-click on the required variable name to create it in the pass variables.

New Variables	the State of State in the	-	23
Current Database	C:\ProgramData\Warrior\Data\true simp	pson - Copy\Sa	mple [
Current Dataset	/field/well/run1/pass1		
/field/well/run/merge1 /field/well/run1/pass3 /field/well/run1/pass2 /field/well/run1/pass2 /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass1 /field/well/run1/pass1	2 1	*	
		Data	abase
<u>ر</u>	Þ	-	DK ncel

FIG: 12.5.14 New Variables

vailable Variable Names:		Cancel	ОК
Warrior Mnemonic	Description		·
A	Cement Factor (a)		
AGR	AGR		E
AIR_HOLE?	Air Filled?		
ATMP	Atmospheric Pres.		
ATTNXOVR	Min Ampl for Attn calc.		
В	В		
BARITE	Barite		
BG	Gas Formation Volume factor		
BHCOR	Bore-Hole Correction		
BHFL_TYPE	BHFL_TYPE		
BHIDSRC	Source of Bore Hole ID		
BHTEMP_Src	BHTEMP Input Source Selector		
BOREID	Borehole I.D.		
BOTTEMP	Bottom Hole Temperature		
BSPH	Base Pres. High stage		
BSPL	Base Pres. Low stage		
BSTH	Base Temp. High stage		
BSTL	Base Temp. Low stage		
BSWH	Base Sediment and Water High stage		
BSWL	Base Sediment and Water Low stage		
CASCMN?	Casing Cemented?		
CASED?	Cased hole ?		
CASEID	Casing I.D.		
CASEID_Src CASEOD	CASEID Input Source Selector Casing O.D.		

FIG: 12.5.15 Choice the Variable

Once you have chosen a variable to add you should go back to edit variable in a dataset and enter the appropriate value.

## 12.5.5 Create Waveform Gate Curves

B Warrior Utilities			
Data Export	Depth Correction		
Export to LAS Format	Apply Linear Depth Shift to a Dataset		
Export to LIS Format	Apply Linear Depth Shift to a Data Item		
Export to ODBC Compatible Database	Data Management		
Extract Pass(es) to New Database	Create an Alias for a Data Item		
Export via Internet	Multiple Pass Automerge		
Interpretation Tools	Edit Variables in a Dataset		
Mathpack	Create Variables in a Dataset		
XY Plot	Create Waveform Gate Curves		
Tracer Interpretation	Create CCL Curve from Keyboard		
Create Differential Curve	Delete Data from a Database		
Create Total Dissolved Solids Curve	Undelete Data		
Calculate Borehole Volume from Caliper	Change a Name		
Calculate Rxo/Rt & Rwa	Edit a Log Curve		
Pipe Tally	Select Correlation Curves for Database		
Curve Normalization	Data Import		
Log Summary Generator	Read ASCII Data into Warrior		
Setup Tools	Read LIS Data into Warrior		
Calibrate Printer	Import ODBC Data into Warrior		
Configuration Backup/Restore	Create Log Format from Dataset		
Edit Logging Service Details	ing Service Details Import via Internet		
Edit Logging Tool Details			
	Exit		

FIG: 12.5.16 Create waveform Gate Curves

### Select the Database

Gate Curves	Course of Aller Street Street Street	23
-	amData\Warrior\Data\true simpson - Copy\Sa III/run1/pass1	imple [
/field/well/tun/merge1 /field/well/tun/pots_ /field/well/tun1/poss3.1 /field/well/tun1/poss2.2 /field/well/tun1/poss3 /field/well/tun1/poss3 /field/well/tun1/poss1 /field/well/tun1/poss1 /field/well/tun1/_plots_	<b>^</b>	
	Data	abase
		)K

FIG: 12.5.17 Gate Curves

This option is used to generate the high and low gate curves for sonic tools (e.g. CBL and RBT). You are prompted to select a database and pass containing a sonic tool with waveform data. The high and low gate curves are then automatically generated and added to the pass.

When a CBL tool is in the database Warrior looks for the WVF3FT and WVF5FT waveform curves in the pass and generates WVF3FTLG (3ft low gate) and WVF3FTHG (3ft high gate) if the WVF3FT curve is present, and the WVF5FTLG and WVF5FTHG if the WVF5FT curve is in the database.

These curves can be added to the Signature track as shown below in Fig:4.86, and the low and high gate curves should straddle the first peak in the waveform.

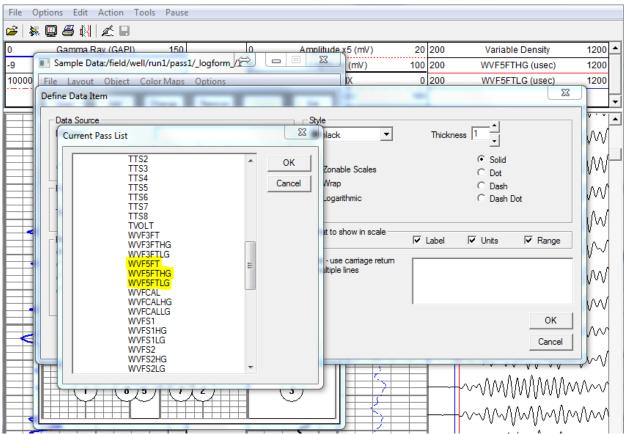


FIG: 12.5.18 Current pass List

≤ ऽृृ्ध ∠∎						
Gamma Ray (GAPI) 150		0	Amplitude x5 (mV)	20 200	Variable Density	1200
00 CCL 10 0000 Line Tension (Ib) 0		0	Amplitude (mV) BONDIX	100 200	WVF5FTHG (usec) WVF5FTLG (usec)	1200 1200
		280	TT (usec)		WVF5FTEG (usec)	1200
	200					

Warrior Utilities		
Data Export	Depth Correction	
Export to LAS Format	Apply Linear Depth Shift to a Dataset	
Export to LIS Format	Apply Linear Depth Shift to a Data Item	
Export to ODBC Compatible Database	Data Management	
Extract Pass(es) to New Database	Create an Alias for a Data Item	
Export via Internet	Multiple Pass Automerge	
Interpretation Tools	Edit Variables in a Dataset	
Mathpack	Create Variables in a Dataset	
XY Plot	Create Waveform Gate Curves	
Tracer Interpretation	Create CCL Curve from Keyboard	
Create Differential Curve	Delete Data from a Database	
Create Total Dissolved Solids Curve	Undelete Data	
Calculate Borehole Volume from Caliper	Change a Name	
Calculate Rxo/Rt & Rwa	Edit a Log Curve	
Pipe Tally	Select Correlation Curves for Database	
Curve Normalization	Data Import	
Log Summary Generator	Read ASCII Data into Warrior	
Setup Tools	Read LIS Data into Warrior	
Calibrate Printer	Import ODBC Data into Warrior	
Configuration Backup/Restore	Create Log Format from Dataset	
Edit Logging Service Details	Import via Internet	
Edit Logging Tool Details		
	Exit	

## 12.5.6 Create CCL Curve from Keyboard

## FIG: 12.5.20 Create CCL Curve from Keyboard

To add collars to a log select Create CCL Curve from Keyboard. This will open a dialog that will allow free form text box for the depth entries of the collars. Once entered and excepted a dialog will show the depth range of the collars to be created. You will then be prompted for a Database and pass to modify. A completion dialog will confirm the changes, the generated collars will be one division negative.

Generate CCL Curve	2			
Enter each collar depth into the edit field below. Separate with spaces, commas or the <enter> key.</enter>				
(The shallowest and deepest depths a they will not show as collars)	are the top and bottom of the curve			
50 80 110 130 160 190	*			
	~			
	OK Cancel			

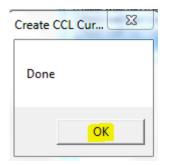
FIG: 12.5.21 Enter Depths of Desired CCL

Create CCL Curve	
Create 4 collar(s) between 50.0 a	nd 190.0?
Yes	No

## FIG: 12.5.22 Dialog of CCL to be created

New CCL Curve	Instead of the first law	23
Current Database C:\ProgramDatabase	ata\Warrior\Data\true simpsor	n - Copy\Sample [
Current Dataset /field/well/rur	n1/pass1	
/field/well/run/merge1 /field/well/run1/pass3.1 /field/well/run1/pass2.2 /field/well/run1/pass2.1 /field/well/run1/pass3 /field/well/run1/pass2 /field/well/run1/pass1 /field/well/run1/_palots_		
		Database
		OK
1.	4	

## FIG: 12.5.23 Select Database and Pass to add CCL



## FIG: 12.5.24 Ok Dialog

120	VDL	200	150		MPS1			0	100		' (mV)	AMP		0	200	T (usec)		300
			150	2	MPS2			0	20	')	5 (m\	MPx:	A	0	-1	CCL		9
			150	3	MPS3			0							150	R (GAPI)		)
			150	1	MPS4			0						•				
			150		MPS5			0										
								-										
			150		MPS6			0										
			150	7	MPS7			0										
8 <b>8</b> 8								8				:		H	+ +		1	+
1 I I														1			5	
							-	HR I			++			H-				+
111	11 100							1 E										
1 > 1	110040							HK I	$\vdash$		++	-	++				1	+
5. C 🕯	1. L.							111										
	1110					_				_		_					-	-
1111											++	-	-					-
10 I I I								111										
1.11								- 6						H-				_
168.	- 2998							121			++	-					Ż	+
1100	- 11111																	
2339						_		181		_	┢┿┥		1	<u>++-</u>			کر ا	+
334								- R				-	- /				え	+-
	P.3 P.1												1				5	
	See See						-	- 10-			+			-+				+-
	1100000000						-+-	문문			┢┼┼			⊢			$\sim$	+-
								112						H-			1	
12 2 2																	1	
111						_		- k		_	+		- /					-
							-	HĤ			┢┼┤		+ +	⊢	+		-	+-
144	IN STREET																_	1
2112	1100111																	1
1265	111111111							I R			+			4				$\rightarrow$
1111	12127973							HH			┢┼┼		++	H			┶┿═	<u>+</u> \$
1.19						-				-		-	$\pm$	H -			-	+
								T										

FIG: 12.5.25 Inserted CCL's

## 12.5.7 Delete Data from a Database

Warrior Utilities	
Data Export	Depth Correction
Export to LAS Format	Apply Linear Depth Shift to a Dataset
Export to LIS Format	Apply Linear Depth Shift to a Data Item
Export to ODBC Compatible Database	Data Management
Extract Pass(es) to New Database	Create an Alias for a Data Item
Export via Internet	Multiple Pass Automerge
Interpretation Tools	Edit Variables in a Dataset
Mathpack	Create Variables in a Dataset
XY Plot	Create Waveform Gate Curves
Tracer Interpretation	Create CCL Curve from Keyboard
Create Differential Curve	Delete Data from a Database
Create Total Dissolved Solids Curve	Undelete Data
Calculate Borehole Volume from Caliper	Change a Name
Calculate Rxo/Rt & Rwa	Edit a Log Curve
Pipe Tally	Select Correlation Curves for Database
Curve Normalization	Data Import
Log Summary Generator	Read ASCII Data into Warrior
Setup Tools	Read LIS Data into Warrior
Calibrate Printer	Import ODBC Data into Warrior
Configuration Backup/Restore	Create Log Format from Dataset
Edit Logging Service Details	Import via Internet
Edit Logging Tool Details	
E	Boit

FIG: 12.5.26 Select Delete data from a Database

Í	Warrior Data Deletio	on	23
		Delete Individual Item(s)	
		Delete Whole Pass(es)	
		Do Deferred Disk Space Recovery Now	
		Cancel	

FIG: 12.5.27 Delete Individual Item(s)

To delete a database item e.g. a curve, click on Delete Individual <u>I</u>tem(s). The standard database file selection dialog appears.

Select items to be deleted		C 140 540				X
◯◯ マ 🚺 « Data → true si	impson - (	Сору 🗸	49	Search true simpson	- Сору	Q
Organize 🔻 New folder				!≡ ▼		(?)
🐌 Warrior Config	*	Name		Date		Туре
🥽 Libraries		Sample Data.db		8/6/2013 9:38 AM		DB File
Documents						
J Music						
Pictures Videos						
👪 Videos	E					
🖳 Computer						
🏭 OS_Win_64 (C:)	-	•				+
File name:	Sample D	)ata.db	•	Database (*.DB)		•
				Open	Cance	<b>.</b>

FIG: 12.5.28 Select Database

After selecting the database, the dialog for selection of the data item appears. Select the data item(s) to be deleted. All or no items may be selected by using the Toggle button.

Select items to be deleted	23
Current Database C:\ProgramData\Warrior\Data\true simpson -	Copy\Sample [
2 of 524 selected	
/field/well/run1/pass1/AMPAVG/1 /field/well/run1/pass1/AMPCAL/1 /field/well/run1/pass1/AMPGATES/1 /field/well/run1/pass1/AMPMAX/1 /field/well/run1/pass1/AMPPS3/1	Toggle
/field/well/run1/pass1/AMPS1/1 /field/well/run1/pass1/AMPS2/1 /field/well/run1/pass1/AMPS3/1 /field/well/run1/pass1/AMPS5/1 /field/well/run1/pass1/AMPS5/1 /field/well/run1/pass1/AMPS7/1 /field/well/run1/pass1/AMPS8/1 /field/well/run1/pass1/AMPS8/1 /field/well/run1/pass1/ATT3/1	Database
/field/well/run1/pass1/BONDIX/1 /field/well/run1/pass1/CCL/1 /field/well/run1/pass1/ELTIM/1 /field/well/run1/pass1/HEADVOLT/1 /field/well/run1/pass1/HEADVOLT/1 /field/well/run1/pass1/LSPD/1 /field/well/run1/pass1/LSPD/1 /field/well/run1/pass1/LTEN/1 /field/well/run1/pass1/RAWCYSTD/1	
/field/well/run1/pass1/RAWDSP1_1/1 /field/well/run1/pass1/RAWDSP1_10/1 /field/well/run1/pass1/RAWDSP1_10/1	OK Cancel

## FIG: 12.5.29 Select Items

A warning message appears informing that permanent data deletion is about to take place.

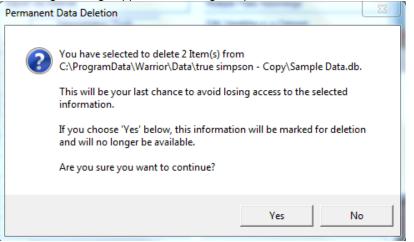


FIG: 12.5.30 Permanent Data Deletion



Clicking No in the above aborts the operation. Clicking Yes proceeds with the operation and allows the choice to repack the database file immediately or to defer the operation until later.

Permanent	Data Deletion					
?	Your selections have been marked for deletion. Select 'Yes' below if you wish to recover the disk space now.					
	This operation can take time, so you may wish to defer it until later.					
	Do you wish to pack the database now?					
	Yes No					

FIG: 12.5.31 Permanent Data Deletion and pack database

Deleatig a whole pass is the same procedure but will eliminate all traces in the sellected pass

Warrior Data Deletio	on	X
	Delete Individual Item(s)	1
	Delete Whole Pass(es)	
	Do Deferred Disk Space Recovery Now	
	Cancel	

FIG: 12.5.32 Delete Whole Pass(es)

Selecting "Do deferred Disk Space Recovery Now" will repack the database eliminating unused spaced freed up during the deletion.

Warrior Data Deleti	on	
	Delete Individual Item(s)	
	Delete Whole Pass(es)	
	Do Deferred Disk Space Recovery Now	
	Cancel	

FIG: 12.5.33 Disk Space Recovery

Clicking Yes causes the data item to be removed and the database repacked immediately and clicking No marks the data item for deletion, buts defers the packing of the data base.

## 12.5.8 Undelete Data

To undelete Data, select the "Undelete Data" tool from Data Management, select your database and you will be prompted with a list of deleted data that can be restored. You can only restore one item at a time. Highlight the data to restore and click on restore. If you are done after the restore click close or select the next data item to restore, continue until complete.

Warrior Utilities	
Data Export	Depth Correction
Export to LAS Format	Apply Linear Depth Shift to a Dataset
Export to LIS Format	Apply Linear Depth Shift to a Data Item
Export to ODBC Compatible Database	Data Management
Extract Pass(es) to New Database	Create an Alias for a Data Item
Export via Internet	Multiple Pass Automerge
Interpretation Tools	Edit Variables in a Dataset
Mathpack	Create Variables in a Dataset
XY Plot	Create Waveform Gate Curves
Tracer Interpretation	Create CCL Curve from Keyboard
Create Differential Curve	Delete Data from a Database
Create Total Dissolved Solids Curve	Undelete Data
Calculate Borehole Volume from Caliper	Change a Name
Calculate Rxo/Rt & Rwa	Edit a Log Curve
Pipe Tally	Select Correlation Curves for Database
Curve Normalization	Data Import
Log Summary Generator	Read ASCII Data into Warrior
Setup Tools	Read LIS Data into Warrior
Calibrate Printer	Import ODBC Data into Warrior
Configuration Backup/Restore	Create Log Format from Dataset
Edit Logging Service Details	Import via Internet
Edit Logging Tool Details	
	Ext

FIG: 12.5.34 Undelete Data

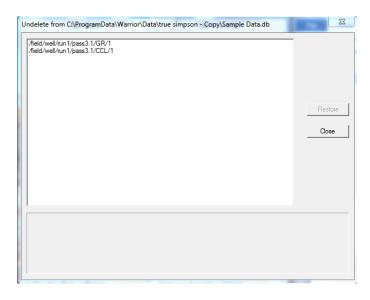


FIG: 12.5.35 Select Data to Undelete

## 12.5.9 Change a Name

The change a name utility allows you to change the database name of a field, Well, Run, Pass or Item. Select the appropriate radio button for to rename, then browse to the desired database and item. Once you have selected the item to edit you will be prompted for a new name and optional new description.

Warrior Utilities	
Data Export	Depth Correction
Export to LAS Format	Apply Linear Depth Shift to a Dataset
Export to LIS Format	Apply Linear Depth Shift to a Data Item
Export to ODBC Compatible Database	Data Management
Extract Pass(es) to New Database	Create an Alias for a Data Item
Export via Internet	Multiple Pass Automerge
Interpretation Tools	Edit Variables in a Dataset
Mathpack	Create Variables in a Dataset
XY Plot	Create Waveform Gate Curves
Tracer Interpretation	Create CCL Curve from Keyboard
Create Differential Curve	Delete Data from a Database
Create Total Dissolved Solids Curve	Undelete Data
Calculate Borehole Volume from Caliper	Change a Name
Calculate Rxo/Rt & Rwa	Edit a Log Curve
Pipe Tally	Select Correlation Curves for Database
Curve Normalization	Data Import
Log Summary Generator	Read ASCII Data into Warrior
Setup Tools	Read LIS Data into Warrior
Calibrate Printer	Import ODBC Data into Warrior
Configuration Backup/Restore	Create Log Format from Dataset
Edit Logging Service Details	Import via Internet
Edit Logging Tool Details	
	Exit

FIG: 12.5.36 Change a Name

Change a Name	🛛 🔳 Char	inge a Name	23
C Rield C Well C Run 🙆 Pa	ss Citem	t Database C:\ProgramData\Warrior\Data\true simpson - Copy\Sar t Dataset /field/well/run/_plots_	mple [
Database Data Warrion Data Virue simpson - Copy / Sam Existing data item New Name New Description Depth Offset tt	<         Trield //           / field //         //           //         //           //         //           //         //           //         //           //         //           //         //           //         //	wel/un/_plots         ^           wel/un I/pass3.1         ^           wel/un I/pass2.2         ^           wel/un I/pass3.3         ^           wel/un I/pass3.4         ^           wel/un I/pass3.4         ^           wel/un I/pass3.4         ^           wel/un I/pass3.4         ^           wel/un I/pass1.4         ^           wel/un I/pass1.4         ^	
	OK Close	Data	base
	4	× O	

FIG: 12.5.37 Change a Name Selection

C 💽	hange a Nam	e			_	X
	C Field	C Well	C Run	Pass	C Item	
	abase ting data item	C:\ProgramData /field/well/run1/		ue simpson - Cop	y\San << B	rowse
	v Name v Description	pass1				
Dep	th Offset		ft			
					0	ж
					Clo	ose

FIG: 12.5.38 Change a Name Selection

Change a Name	2			×
C Field	C Well	C Run	Pass	C Item
Database Existing data item	C:\ProgramData\ /field/well/run1/p		ue simpson - Cop	y\Sarr << Browse
New Name New Description	pass7 New Name			
Depth Offset		ft		
Sample Data renam field/well/run1/pas		d/well/run1/pas	s1' is now	OK Close

FIG: 12.5.39 Name change completed

12.5.10 Edit a Log Curve

To edit a log curve, select " Edit a Log Curve " and you will be prompted for a database and pass, select the appropriate pass.

Data Export	Depth Correction				
Export to LAS Format	Apply Linear Depth Shift to a Dataset				
Export to LIS Format	Apply Linear Depth Shift to a Data Item				
Export to ODBC Compatible Database	Data Management				
Extract Pass(es) to New Database	Create an Alias for a Data Item				
	Multiple Pass Automerge				
Interpretation Tools	Edit Variables in a Dataset				
Mathpack	Create Variables in a Dataset				
XY Plot	Create Waveform Gate Curves				
Tracer Interpretation	Create CCL Curve from Keyboard				
Create Differential Curve	Delete Data from a Database				
Create Total Dissolved Solids Curve	Undelete Data				
Calculate Borehole Volume from Caliper	Rename a Data Item				
Calculate Rxo/Rt & Rwa	Edit a Log Curve				
Pipe Tally	Select Correlation Curves for Database				
Curve Normalization	Data Import				
Setup Tools	Read ASCII Data into Warrior				
Calibrate Printer	Read LIS Data into Warrior				
Configuration Backup/Restore	Import ODBC Data into Warrior				
Edit Logging Service Details	Create Log Format from Dataset				
Edit Logging Tool Details					

## FIG: 12.5.40Edit a Log Curve

Select one or m	ore curves to edit
.CCL ADPTH AMP3FT	<u>^</u>
AMP5FT AMPAVG AMPCAL AMPMAX	E
AMPMIN AMPPS3 AMPS1 AMPS2	
AMPS2 AMPS3 AMPS4 AMPS5	1
AMPS6 AMPS7 AMPS8	OK     Cancel

FIG: 12.5.41 Select one or more curves to edit

You do not need to select a curve at this time in warrior 8 this has been replaced, click on OK to continue. This will bring up an interactive plot with an edit tool in the tool bar.

🕷 run1/pass3.1	-			100	10.1	1.000		Laffrage (	Second Sec.
File Options	Edit Acti	ion Tools Paus	e						
🖻 🕷 🗳 着	3 🕴   💋								
	270	TT (usec)	170 0	AMP (mV)	100 -:	2 AMPAVO	G 200 200	0 VDL	1200
	-9	CCL	1 0	AMPx5 (mV)	20 -:	2 AMPMAX	K 200		
	0	GR (GAPI)	120 1	Bond Index	0 -2	2 AMPMIN	I 200		

FIG: 12.5.42 Plot Curve

After clicking on the edit tool right click on the curve you wish to edit, make sure that it is not wrapped. After right clicking you will be prompted to left click and draw a rectangle around the area to be modified.

								_			
lit Acti	on Tools Paus	se	CCL			8	T	Editing C	CL		Σ
8							ſ			E dan d	_
070	TT (	470						Depth (ft)	Value	Edited	
270	TT (usec)	170 (			_			8544.58	0	No	
9	CCL	1		_				8544.63	0	No	
	0.0 (0.4.0)	400						8544.68	0	No	
)	GR (GAPI)	120						8544.73	0	No	
								8544.78	0	No	
<								8544.83	0	No	
┤╹┥								8544.88	0	No	
					_			8544.93	0	No	
	$\rightarrow$							8544.98	0	No	
+	5							8545.03	0	No	
	<				_			8545.08	0	No	
		<u>;==</u> ;						8545.13	0	No	
								8545.18	0	No	
<u>-</u>					_			8545.23	0	No	
2		imai						8545.28	0	No	
	2							8545.33	0	No	
+ +								8545.38	0	No	
								8545.43	0	No	
	<							8545.48	0	No	
		i <b>de la</b> i						8545.53	0	No	
+								8545.58	Ō	No	
		i <b>de</b> li						8545.63	3.67493	No	
+	<							8545.68	0	No	
+								8545.73	ŏ	No	

FIG: 12.5.43 Zoom Curve

At this point you can either hand draw the curve changes in the zoomed box or by double clicking on the text windows depth you can manually enter curve values.



FIG: 12.5.44 Draw Curve Free Hand and Manually.

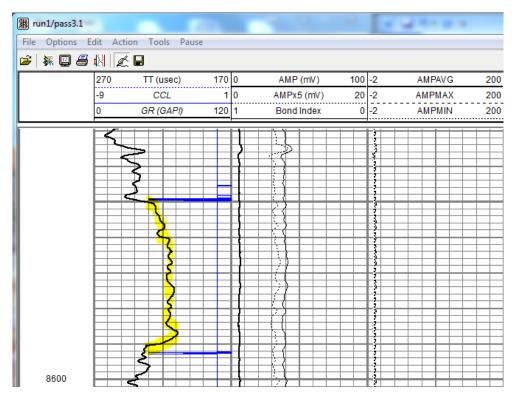


FIG: 12.5.45 Free Hand Gr

12.5.11 Select Correlations Curves from Data Base

Selecting correlation curves allows you to plot a curve (es) within a database along with any other pass. The first thing you will be prompted for is the database and then pass. Then you will be given the option to select a curve or curves. Highlight the curve and select add. On the right hand side of the window you can select scales color and wrap like the format editor. You also have two radio buttons the first one "Always show in original track with original scales " will place the curve in the same track with the same scales as the pass it originated in this will bypass the scales and tracks from above. This is the standard correlation mode. The second radio button "Only show when another curve by the same name is plotted, show with the same name and scales as the named curve" will plot the selected curve only if it exists in the pass to be plotted, it will use the same scales and track as the current pass.

Data Export	Depth Correction
Export to LAS Format	Apply Linear Depth Shift to a Dataset
Export to LIS Format	Apply Linear Depth Shift to a Data Item
Export to ODBC Compatible Database	Data Management
Extract Pass(es) to New Database	Create an Alias for a Data Item
Export via Internet	Multiple Pass Automerge
Interpretation Tools	Edit Variables in a Dataset
Mathpack	Create Variables in a Dataset
XY Plot	Create Waveform Gate Curves
Tracer Interpretation	Create CCL Curve from Keyboard
Create Differential Curve	Delete Data from a Database
Create Total Dissolved Solids Curve	Undelete Data
Calculate Borehole Volume from Caliper	Change a Name
Calculate Rxo/Rt & Rwa	Edit a Log Curve
Pipe Tally	Select Correlation Curves for Database
Curve Normalization	Data Import
Log Summary Generator	Read ASCII Data into Warrior
Setup Tools	Read LIS Data into Warrior
Calibrate Printer	Import ODBC Data into Warrior
Configuration Backup/Restore	Create Log Format from Dataset
Edit Logging Service Details	Import via Internet
Edit Logging Tool Details	
	Exit

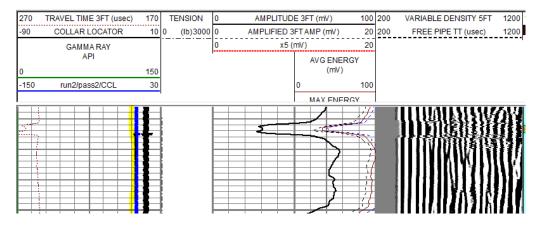
FIG: 12.5.46 Select Correlation Curves to for Database

Select correlation curves	
Select curves from this pass	Correlation Curves
< all passes >	Database
Choose to add as a correlation curve	
field/well/run1/pass1/TTS3/1 field/well/run1/pass1/WFS3/1 field/well/run1/pass1/WFS3/1 field/well/run1/pass1/TTS2/1 field/well/run1/pass1/TTS2/1 field/well/run1/pass1/TTS1/1 field/well/run1/pass1/TTS1/1 field/well/run1/pass1/TTS1/1 field/well/run1/pass1/TTS1/1 field/well/run1/pass1/TTSF1/1 field/well/run1/pass1/TTSF1/1 field/well/run1/pass1/TTSF1/1 field/well/run1/pass1/WFSF1/1 field/well/run1/pass1/WFSF1/1 field/well/run1/pass1/WFSF1/1 field/well/run1/pass1/WFSF1/1 field/well/run1/pass1/WFSF1/1 field/well/run1/pass1/WFSF1/1 field/well/run1/pass1/WFSF1/1 field/well/run1/pass1/WFSF1/1 field/well/run1/pass1/WFSF1/1 field/well/run1/pass1/KMP3F1/1 field/well/run1/pass1/KMP3F1/1 field/well/run1/pass1/KMP3F1/1 field/well/run1/pass1/KMP3F1/1 field/well/run1/pass1/KMP3F1/1 field/well/run1/pass1/KMP3F1/1 field/well/run1/pass1/KMP3F1/1 field/well/run1/pass1/KMP3F1/1 field/well/run1/pass1/KGE/1 field/well/run1/f	Add >>         <
/field/well/run1/pass1/HVOLTA/1 /field/well/run1/pass1/ADPTH/1	- OK Cano

FIG: 12.5.47 Select Curve(es) for Correlation

Select correlation curves	2
Select curves from this pass	Correlation Curves
<all passes=""></all>	Database     /field/well/run1/pass1/CCL/1
Choose to add as a correlation curve	
fileId/well/run1/pass1/WVFS2/1 /fileId/well/run1/pass1/ATFS1/1 /fileId/well/run1/pass1/ATFS1/1 /fileId/well/run1/pass1/ATFS1/1 /fileId/well/run1/pass1/ATFS1/1 /fileId/well/run1/pass1/TTSF1/1 /fileId/well/run1/pass1/WVFSFT/1 /fileId/well/run1/pass1/ATFCAL/1 /fileId/well/run1/pass1/ATFCAL/1 /fileId/well/run1/pass1/ATFCAL/1 /fileId/well/run1/pass1/ATFCAL/1 /fileId/well/run1/pass1/ATFST/1 /fileId/well/run1/pass1/ATFST/1 /fileId/well/run1/pass1/ATFST/1 /fileId/well/run1/pass1/ATFST/1 /fileId/well/run1/pass1/ATFST/1 /fileId/well/run1/pass1/ATFST/1 /fileId/well/run1/pass1/ATFST/1 /fileId/well/run1/pass1/ATFST/1 /fileId/well/run1/pass1/ATFST/1 /fileId/well/run1/pass1/TULTK1 /fileId/well/run1/pass1/TULTK1 /fileId/well/run1/pass1/TULTK1 /fileId/well/run1/pass1/LTELV1 /fileId/well/run1/pass1/LSEV1 /fileId/well/run1/pass1/LSEV1 /fileId/well/run1/pass1/LSEV1	Add >>  <

### FIG: 12.5.48 Plotting Options





# 12.6 Setup Tools

12.6.1 Calibrate Printer

In Database Utilities click on the Calibrate Printer button.

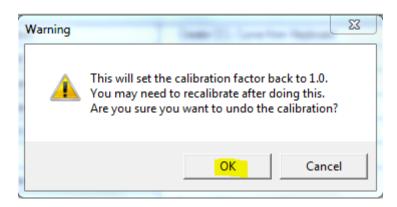
Warrior Utilities	
Data Export	Depth Correction
Export to LAS Format	Apply Linear Depth Shift to a Dataset
Export to LIS Format	Apply Linear Depth Shift to a Data Item
Export to ODBC Compatible Database	Data Management
Extract Pass(es) to New Database	Create an Alias for a Data Item
Export via Internet	Multiple Pass Automerge
Interpretation Tools	Edit Variables in a Dataset
Mathpack	Create Variables in a Dataset
XY Plot	Create Waveform Gate Curves
Tracer Interpretation	Create CCL Curve from Keyboard
Create Differential Curve	Delete Data from a Database
Create Total Dissolved Solids Curve	Undelete Data
Calculate Borehole Volume from Caliper	Change a Name
Calculate Rxo/Rt & Rwa	Edit a Log Curve
Pipe Tally	Select Correlation Curves for Database
Curve Normalization	Data Import
Log Summary Generator	Read ASCII Data into Warrior
Setup Tools	Read LIS Data into Warrior
Calibrate Printer Import ODBC Data into Warrior	
Configuration Backup/Restore	Create Log Format from Dataset
Edit Logging Service Details	Import via Internet
Edit Logging Tool Details	
	Exit

FIG: 12.6.1 Select Calibrate Printers

Calibrate Printer			23
Printer	Printrex 820DL/G-840DL/G on USB001		•
	Default Printer	Undo Calibration	Make Test Print
Required Distance			Calibrate
Measured Distance			Cancel

FIG: 12.6.2 Select from Hardcopy Calibrate

Printer box. It is recommended but not necessary Select the printer you want to calibrate. This printer may be made the Default Printer by checking the Default to undo calibration first, this will set the gain to 1.000000.



### FIG: 12.6.3 Undo Calibration

Select "Make Test Print" this will prompt you for a database to plot.

Calibrate Printer			23
Printer	Printrex 820DL/G-840DL/G on USB001		•
	Default Printer	Undo Calibration	Make Test Print
Required Distance			Calibrate
Measured Distance			Cancel

FIG: 12.6.4 Select Make Test Print

Log	1400. La 1980		23
🚱 🕞 🗢 📗 « ProgramData	► Warrior ► Data ► 🗸 😽	Search Data	Q
Organize 🔻 New folder		:= -	0
<ul> <li>Libraries</li> <li>Documents</li> <li>Music</li> <li>Pictures</li> <li>Videos</li> <li>Homegroup</li> <li>Computer</li> <li>OS_Win_64 (C:)</li> <li>OS_Win7_32 (D:)</li> </ul>	<ul> <li>Name</li> <li>SCBLDemo.db</li> <li>SCBLExcell.db</li> <li>Sectors.db</li> <li>slab.db</li> <li>slawsoncbl.db</li> <li>smoked panel.db</li> <li>software test.db</li> <li>spartek.db</li> <li>speed.db</li> <li>spinner.db</li> </ul>	*	•
File name:	SCBLDemo.db	Database (*.DB) Open 🛛 Canc	► el

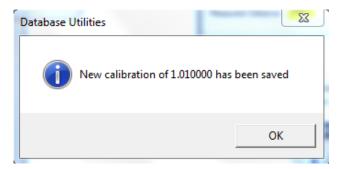
FIG: 12.6.5 Select Database to Plot

The calibration is based on two parameters entered by the user. Enter the required length of print output for any given log interval, e.g. 10 inches for 200 feet of log on a 5-inch scale (5 in = 100Ft). It means Scale 1: 240. Enter the actual length of plot currently output by the plotter for the same log interval. Press Calibrate.

Calibrate Printer			
Printer	Printrex 820DL/G-840DL/G on USB001		•
	Default Printer	Undo Calibration	Make Test Print
Required Distance	10		Calibrate
Measured Distance	10.1		Cancel

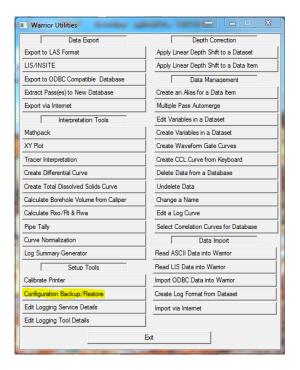
FIG: 12.6.6 Calibrate

Note that the required length can be any length, so that the current hardcopy may be forced to match any correlation log, even one with an incorrect hardcopy scale.



### FIG: 12.6.7 Click on OK

### 12.6.2 Configuration Backup/Restore



See Chapter 9

### 12.6.3 Edit Logging Service Details

Warrior Utilities	
Data Export	Depth Correction
Export to LAS Format	Apply Linear Depth Shift to a Dataset
LIS/INSITE	Apply Linear Depth Shift to a Data Item
Export to ODBC Compatible Database	Data Management
Extract Pass(es) to New Database	Create an Alias for a Data Item
Export via Internet	Multiple Pass Automerge
Interpretation Tools	Edit Variables in a Dataset
Mathpack	Create Variables in a Dataset
XY Plot	Create Waveform Gate Curves
Tracer Interpretation	Create CCL Curve from Keyboard
Create Differential Curve	Delete Data from a Database
Create Total Dissolved Solids Curve	Undelete Data
Calculate Borehole Volume from Caliper	Change a Name
Calculate Rxo/Rt & Rwa	Edit a Log Curve
Pipe Tally	Select Correlation Curves for Database
Curve Normalization	Data Import
Log Summary Generator	Read ASCII Data into Warrior
Setup Tools	Read LIS Data into Warrior
Calibrate Printer	Import ODBC Data into Warrior
Configuration Backup/Restore	Create Log Format from Dataset
Edit Logging Service Details	Import via Internet
Edit Logging Tool Details	
	Exit

FIG: 12.6.8 Edit Logging Service Details

### See Chapter 13

12.6.4 Edit Logging Tool Details

Warrior Utilities	
Data Export	Depth Correction
Export to LAS Format	Apply Linear Depth Shift to a Dataset
LIS/INSITE	Apply Linear Depth Shift to a Data Item
Export to ODBC Compatible Database	Data Management
Extract Pass(es) to New Database	Create an Alias for a Data Item
Export via Internet	Multiple Pass Automerge
Interpretation Tools	Edit Variables in a Dataset
Mathpack	Create Variables in a Dataset
XY Plot	Create Waveform Gate Curves
Tracer Interpretation	Create CCL Curve from Keyboard
Create Differential Curve	Delete Data from a Database
Create Total Dissolved Solids Curve	Undelete Data
Calculate Borehole Volume from Caliper	Change a Name
Calculate Rxo/Rt & Rwa	Edit a Log Curve
Pipe Tally	Select Correlation Curves for Database
Curve Normalization	Data Import
Log Summary Generator	Read ASCII Data into Warrior
Setup Tools	Read LIS Data into Warrior
Calibrate Printer	Import ODBC Data into Warrior
Configuration Backup/Restore	Create Log Format from Dataset
Edit Logging Service Details	Import via Internet
Edit Logging Tool Details	
	Exit

FIG: 12.6.9 Edit Logging Tool Details

See Chapter 14

# Section

# **13 Service Editor**

The purpose of the Services Editor is to aid in modifying current services, creating new services, and importing and exporting services from similar types of Warrior systems. To start the Service Editor, go to Warrior Utilities and click on the Edit Logging Service Details.



We suggest that a backup of the Services.ini file be made before any service editing, so that existing service information may be recovered if mistakes are made while editing. Probably the easiest way to do this is to use the Warrior Backup utility and do a backup.

13.1 Edit logging services Details

Warrior Utilities		
Data Export	Depth Correction	
Export to LAS Format	Apply Linear Depth Shift to a Dataset	
LIS/INSITE	Apply Linear Depth Shift to a Data Item	
Export to ODBC Compatible Database	Data Management	
Extract Pass(es) to New Database	Create an Alias for a Data Item	
Export via Internet	Multiple Pass Automerge	
Interpretation Tools	Edit Variables in a Dataset	
Mathpack	Create Variables in a Dataset	
XY Plot	Create Waveform Gate Curves	
Tracer Interpretation	Create CCL Curve from Keyboard	
Create Differential Curve	Delete Data from a Database	
Create Total Dissolved Solids Curve	Undelete Data	
Calculate Borehole Volume from Caliper	Change a Name	
Calculate Rxo/Rt & Rwa	Edit a Log Curve	
Pipe Tally	Select Correlation Curves for Database	
Curve Normalization	Data Import	
Log Summary Generator	Read ASCII Data into Warrior	
Setup Tools	Read LIS Data into Warrior	
Calibrate Printer	Import ODBC Data into Warrior	
Configuration Backup/Restore	Create Log Format from Dataset	
Edit Logging Service Details	Import via Internet	
Edit Logging Tool Details		
	- Exit	

### FIG: 13.1 Edit Logging Services Details

When the Service Editor window comes up, on the left side of the window are two service lists, labeled Active and Disabled. The active list of services will be displayed when a service is selected from Warrior Acquisition. The disabled list of services are included in the service.ini file but are not displayed in the acquisition service list. Normally there will be no services in the disabled list.

When an active service is selected by clicking on it in the list, all the service details are displayed in the Service Details panel on the right side of the window. This information includes the default interactive plot for that service, the selected zero point (encoder depth reference for zero offset) for the service, a service title, if a title other than the service name is desired, and a choice whether the service should always use the master copy of the presentation or open the master and use it for editing as a private copy of the presentation in the database. There are also four lists that are labeled Devices, Controls, Sensors, and Tools. Each list contains specific details about the service.

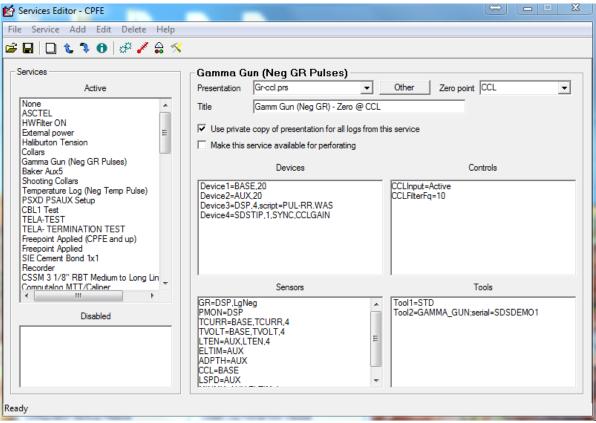


FIG: 13.2 Services Editor

The Tools list contains all the tool types that are available in the service. If a tool type is not listed in a service, then it is not possible to use that tool in that service. Tools may be listed but excluded. (Tools are normally excluded by removing them from the tool string using the tools string editor in Acquisition.) The STD tool type will normally be listed in every service since this includes sensors for depth, tension, line speed, tool voltage and current, etc.

The Devices list contains acquisition devices that the system uses to acquire information. Depending upon the panel type, it may include a BASE, AUX, DSP, SDSTIP, ASCTEL, and others. Each device is set with a default sample rate of the maximum number of samples per foot. Some of the devices also require additional information such as the DSP Script file, the type of ASCII telemetry, and what hardware gain controls that the service will provide.

The Controls list contains settings for hardware devices within the interface panel. This includes items such as filter settings for various signal paths, I2C Initialization codes for setting various initial relays states, and software controlled tool voltage setting for that service.

The Sensor list contains the sensors for the tool types that are available. Each sensor definition must have the device that it uses to acquire its information. The definition also should contain a device channel number or a device channel name. If the device channel name is the same as the sensor, then that name is not required. The definition could also have a sample rate. If the rate is less than the device default sample rate, then the sensor data will be saved at the slower rate. If the rate is greater than the device default rate, then the sensor data will be saved the default rate of the device. If omitted, the sample rate will be at the device default sample rate. The sample rate can only be used if the channel is listed. (Sensor=Device, channel, rate).

# 13.2 Editing an Existing Service

The Service Editor can be used to modify settings in an existing service. To view the settings for a service, click on the service in the Active service list. The right side of the window will display the service information and settings for that service.

The default presentation for a service can be selected from the Presentation drop down list. The list will include all PRS files that are in the "C:\ProgramData\Warrior\Format" folder. The interactive plot presentation will display outputs from the sensor information at that are included in the presentation. You can add more than one presentation, if added each presentation will be displayed as a tabbed output in interactive plot.

If the box labeled Use private copy of presentation for all logs from this service is checked, then when the first pass of the service is started in a database, the default presentation is copied into the database as a private presentation. If any changes are made to the log format presentation, then those changes are made in the private copy of the presentation in the database. The changes are not made to the original presentation that is in the "C:\ProgramData\Warrior\Format" folder.

If the box is not checked, then the presentation is not copied into the database. Any changes that are made to the presentation from interactive plot are made to the original presentation file. If later in time the file is viewed using interactive plot, then since the presentation is not part of the database, the current copy of the presentation (if it exists on the system) in the "C:\ProgramData\Warrior\Format" folder is used to display the presentation. If the presentation is not located in the Format folder, then no presentation will be displayed. Interactive Plot options would have to be used to select a presentation format for display.

The Zero Point drop down list has a list of sensors in the service. Any of the sensors or the bottom of the tool string may be selected as the zero point. The zero point of a tool string has zero offset to the encoder depth reading. Scientific Data recommends that the bottom of the tool string be used as the zero point in most logging services. In perforating services, the CCL is set as the encoder depth. In services that are normally run in a time drive mode at a set depth, such as a Noise Log or Freepoint Log, the sensor of interest should be set as the zero point to be able to position the sensor as desired.

In acquisition, when a service has been selected, that service name will normally be displayed. By typing in the Title field of the Service Editor, the service displayed may be different than the service name.

ſ	Narrior Logging System 🗁 💷 🔀
	File Service Action Edit Monitor
	Service: Gamm Gun (Neg GR) - Zero @ CCL Database:
	Dataset:
l	Realtime Acquisition Mode

FIG: 13.3 Service

😼 Warrior Logging Systen 🕀 🗖 🖾				
File Service Action Edit Monitor				
Service: Test Typed in Title Field Database: Dataset:				
Realtime Acquisition Mode				

FIG: 13.4 Service different Name

# 13.3 Adding and Removing Tool Types

Tool types can be added or deleted from a service. To delete a tool type from a service, click on the tool type in the Tools drop down list. Then either push the <Delete> key on the keyboard or on the Services Editor menu bar, click on Delete. A window will come up to confirm that you wish to delete the selected tool type.



Tool names, Model names, and Serial names can contain a maximum of 39 characters and cannot have any spaces.

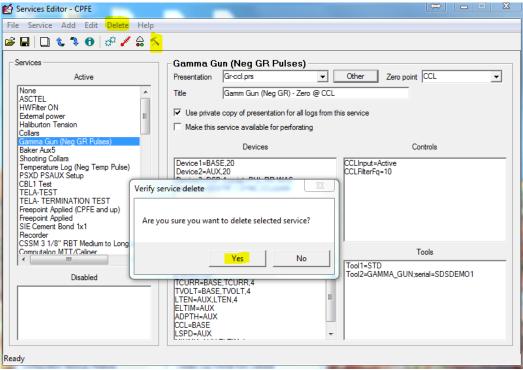


FIG: 13.5 Tool Delete

It is recommended that the sensors that the tool type produced be deleted in a similar manner at the same time, although if the sensors are left in, the service should still work.

To add a tool type to a service, on the Menu Bar click on  $\underline{A}dd \rightarrow \underline{T}ool$ . An Add tool dialog box will come up with the next available tool number. Enter the tool type in the dialog box. Only the tool type needs to be entered, a specific serial number for that tool type is not required at this time (i.e. Tool6=GR not Tool6=GR; Serial=1234). When the service is next used, it will call up the first available serial number of that tool type to exist in the tools.ini file. If the tool type does not exist, then when the service is called up from acquisition, you will get an error message and it will not work.

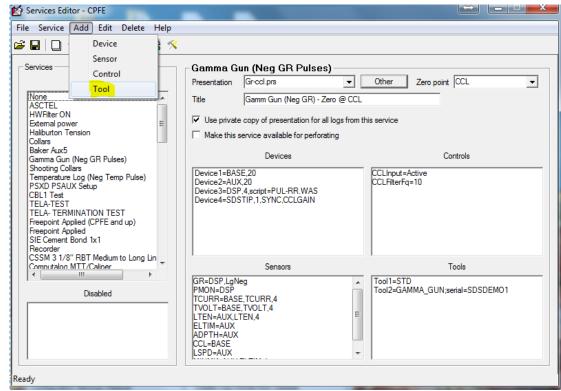


FIG: 13.6 Add Tool

Add tool Tool3=	nove or select tool below	×
Tool		✓ Edit Tool
Serial	GR GR_CCL GR2	Exclude
	GRADIO GRT INCL KUSTER_PL	

FIG: 13.7 Edit Tool

When a tool is added to a service, sensor(s) will normally have to be added also. The software modules that the tool type uses will have specific sensors, as shown in the Tool Editor. Each of these sensors will have to be added to the service or when the service is called up from acquisition you will get an error message and the service will not work.

To add a sensor to a service, click on <u>Add -> Sensor</u> on the Service Editor menu bar. The Add Sensor dialog window will come up. Enter the sensor mnemonic, followed by an equal's sign "=", then the Device that the sensor acquires data from, then the channel of that device, and the sample rate for storing the sensor data (Sensor=Device,Channel,Rate). The Device must be listed in the Devices drop down list. The device and channel that a sensor will use is hardware dependent, and in the case of the DSP also script dependent. It is beyond the scope of this document to explain further. For more help contact Scientific Data Systems, Inc.

Services Editor - CPFE					
File Service Add Edit Delete Help					
🗃 🔲 🕴 Device 🕴 🛠					
Services Control	na Gun (Neg GR Pulses)				
Tool Presen	ation Gr-ccl.prs	Other Zero point CCL 🗨			
ASCTEL Title	Gamm Gun (Neg GR) - Zero @ CCL				
HWFilter ON External power ≡ IV Use	private copy of presentation for all logs from this	s service			
Collars	e this service available for perforating				
Baker Aux5 Gamma Gun (Neg GR Pulses)	Devices	Controls			
PSXD PSAUX Setup Devic Devic Devic		CCLInput=Active CCLFilterFq=10			
Computation MTT/Caliper	Sensors	Tools			
Disabled GR=D PMON TCUR TVOL	=BASE,TCURR.4 =BASE,TVOLT.4 AUX_TEN.4 +AUX =AUX SE	Tool1=STD Tool2=GAMMA_GUN;serial=SDSDEMO1			
Ready					

FIG: 13.8 Add Sensor

Add sensor	in an	23
Sensor		
	OK Cancel	

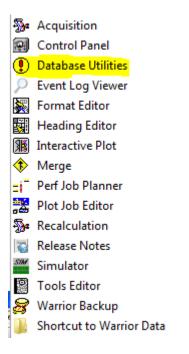
FIG: 13.9 Type New sensor

Devices and Controls may be added and removed in a similar manner. Again, they are hardware dependent and beyond the scope of this document. For more information contact Scientific Data Systems, Inc. Any line in the Devices, Controls, Sensors, and Tools list may be edited. To edit a line, click on the desired line, then on the menu bar click **<u>E</u>dit**. Double clicking on a line will also invoke the edit command.

# 13.4 Add Surface Sensors

ADD Wellhead Pressure Sensor on AUX4

Select Database Utilities



### FIG: 13.10 Database Utilities

### Select Edit Logging Tools Details

Warrior Utilities			
Data Export	Depth Correction		
Export to LAS Format	Apply Linear Depth Shift to a Dataset		
LIS/INSITE	Apply Linear Depth Shift to a Data Item		
Export to ODBC Compatible Database	Data Management		
Extract Pass(es) to New Database	Create an Alias for a Data Item		
Export via Internet	Multiple Pass Automerge		
Interpretation Tools	Edit Variables in a Dataset		
Mathpack	Create Variables in a Dataset		
XY Plot	Create Waveform Gate Curves		
Tracer Interpretation	Create CCL Curve from Keyboard		
Create Differential Curve	Delete Data from a Database		
Create Total Dissolved Solids Curve	Undelete Data		
Calculate Borehole Volume from Caliper	Change a Name		
Calculate Rxo/Rt & Rwa	Edit a Log Curve		
Pipe Tally	Select Correlation Curves for Database		
Curve Normalization	Data Import		
Log Summary Generator	Read ASCII Data into Warrior		
Setup Tools	Read LIS Data into Warrior		
Calibrate Printer	Import ODBC Data into Warrior		
Configuration Backup/Restore	Create Log Format from Dataset		
Edit Logging Service Details	Import via Internet		
Edit Logging Tool Details			
	Exit		

FIG: 13.11 EDIT Logging services Details

Select the service to add the new WHP sensor

Services Editor - CPFE						
File Service Add Edit Delete Help	File Service Add Edit Delete Help					
🖆 🖬   🗋 🕲 🦻 🕜 🦨 🛠 🕺						
Services  Services  Active  None ASCTEL HWRIter ON Extemal power Halburton Tension Collars Baker Aux5 Gamma Gun (Neg GR Pulses) Shooting Collars Temperature Log (Neg Temp Pulse) PSXD PSAUX Setup CBL1 Text TELA-TEST TELA-TERMINATION TEST Freepoint Applied SIE Cement Bond 1x1	None         Presentation       none prs         Title	Other     Zero point <bottom of="" string="">       his service       Controls       PowerMonitorDisabled=Yes       Line Termination=High       Soft PowerControl=Yes       CCL FilterGra10       SCCUrrentMax=450       PoscUrrentMax=450       PoscUrrentMax=450       PoscUrrentIm=400</bottom>				
Computation MTT/Caliner Computation MTT/Caliner TI Disabled Ready	Sensors LTEN=BASE.LTEN.4 ADPTH=AUX LSPD=AUX ELTIM=AUX MINMK=AUX.ELTIM.4 TVOLT=BASE TCURR=BASE	PosVoltaneMaved00 000000				
	1.000					

FIG: 13.12 Select the Service

😰 Services Editor - CPFE		
File Service Add Edit Delete Help		
🗃 🖬 🔲 🕴 Device 🕴 🚿		
Services Control Tool None ASCTEL HWFilter ON External power Haliburton Tension Collars Baker Aux5 Gamma Gun (Neg GR Pulses) Shooting Collars Temperature Log (Neg Temp Pulse) PSXO PSAUX Setup CBL1 Test TELA-TEST TELA-TERMINATION TEST TELA-TERMINATION TEST Freepoint Applied (CPFE and up) Freepoint Applied SIE Coment Bond 1x1 Recorder CSIM 31 1/8" RBT Medium to Long Lin Commitation MTT/Callier MINE Disabled	None         Presentation       none.prs         Title       Image: Construction of all logs from to the service available for perforating         Devices       Devices         Device2-SDSTIP.4.SPKRVOL       Device3=AUX.4         Sensors       LTEN-BASE.LTEN.4         ADPTH-AUX       LSPD-AUX         LITEN-BASE.LTEN.4       MINIMK-AUX.ELTIM.4         TVOLT-BASE       TCURR-BASE	Other       Zero point <bottom of="" string="">         his service         Controls         PowerMonitorDisabled=Yes         Line Termination=High          SoftPowerControl=Yes          CCLFIkerFq=10       E         V2Cint=21=00,22=00       PosCurrentMax=450         PosCurrentMax=450       PosCurrentMax=450         PosCurrentMax=450       PosCurrentIm=400         NegCurrentIm=400          NegCurrentIm=400          Tools       Tools</bottom>
Ready		

Add new Sensor

FIG: 13.13 Sensors

Type WHP1 = BASE, 11

Add sensor	inere a	23
Sensor	WHP1 = BASE, 11	
	OK Cancel	

FIG: 13.14 Add sensors

Select OK and Save the service

Services Editor - CPFE				
File Service Add Edit Delete Help				
🛎 🖬 🔲 🕲 🦻 🖉 🦨 🛠				
Services       None         Active       None         ASCTEL       Presentation         HWFilter ON       E         External power       Itle         Haliburton Tension       Collars         Baker Aux5       Make this service available for perforating         Collars       Devices         Collars       Devices         Collars       Device2=SDSTIP.4.SPKRVOL         Device2=SDSTIP.4.SPKRVOL       SoftPowerControl=Yes         CCLFilterTg=10       I2CIntt=21=00.22=00         Presentation MTT/Caliner       V         In Persona       Sensors         Tenevolution-Maplied       Sensors         Intel=BASE.ITEN.4       Tools         Intel=BASE.ITEN.4       Tools				
Ready				

FIG: 13.15 Set sensors

Open the service

Se Warrior Loggin	g System
File Service Ac	tion Edit Monitor
Service: None	Sensors
Database: Dataset:	Outputs
Realtime Acquisi	Sample Queues
	Tools •
	Devices +
	Hoistman's Display

### FIG: 13.16 Monitor sensors

### Select Monitor/Sensors

Sensors		¢	⇒∣∟□	×
Name	Source	Channel	Value	Units
LSPD	LOGSVC	3	-0.1000	ft/min
LTEN	BASE	7	1.0413	V
TCURR	BASE	1	0.0375	V
TVOLT	BASE	2	0.0381	V
ELTIM	LOGSVC	2	674723.6892	sec
ADPTH	LOGSVC	1	-3.3708	ft
MINMK	LOGSVC	2	67472 <u>3.6892</u>	sec
WHP1	BASE	11	0.0055	V
•				•

FIG: 13.17 Sensors Value

Sensor Value in Volts

Select Monitor/Outputs

🔳 Outp	uts	⇔	
Name	Source	Value	Units
LSPD	[STD]	-0.1000	ft/min
LTEN	[STD]	102.3865	lb
TCURR	[STD]	0.6286	mA
TVOLT	[STD]	0.6112	V
ELTIM	[STD]	181.5104	sec
ADPTH	[STD]	-3.4942	ft
MINMK	[STD]	0.0000	
LTENRT	[STD]	102.3865	lb
DLTENR	T [STD]	-0.7629	lb
WHP1	[STD]	0.0034	psi
LSPDRT	[STD]	-0.1000	ft/min
TCURRR	T [STD]	0.6286	mA
TVOLTR	T [STD]	0.6112	V
HVOLTA	A [STD]	0.5798	V
CTEMPF	RT [STD]	-999.2500	degF

FIG: 13.18 Output Value

### WHP1 (psi.)

Select Action/Calibration Wellhead Pressure 1

:	💱 Warrior Logging System			
	File Service		tion Edit	Monitor
	Service: Nor Database: Dataset: Realtime Ac		Power Co Caliper Co Relay Cor Stop	ontrol
Surface Line Tension			Calibrate	•
Tool Voltage and Cur	rent		Verify	•
Wellhead Pressure 1			Preview C Plot Cal R	Cal Report Report
			Record U Record D Record or	own
			Replay Independ	ent Replay
			Depth Shi Auto Cor	ift relation Curves
			Preview U Preview D Preview o	)own

FIG: 13.19 Action/Calibrate

Set the low and high value to calibrate the WHP1 Sensor.

STD Calibration - 0000		• 🗙
Low Reference Point	0 psi	Accept
High Reference Point	5000 psi	Cancel
Reading at Low Reference	V	<< Sample
Reading at High Reference	V	<< Sample

FIG: 13.20 Set Calibrations Points

On side DB25 Add 250 Ohms						
	AUX4 -			SOFTWARE		
	Auxiliary	DB25 Pin	USB44	CHANNEL		
	Inputs	OUT				
	4-20 mA	AUX4-2	CC13-2	BASE,15		
	4-20 mA	AUX4-3	CC13-3	BASE,14		
	4-20 mA	AUX4-4	CC13-4	BASE,13		
	4-20 mA	AUX4-5	CC13-5	BASE,12		
	4-20 mA	AUX4-6	CC13-6	BASE,11		
	Frequency	AUX4-9	CC13-34	CTR3		
	Frequency	AUX4-10	CC13-35	CTR2		
		AUX4-21	CC1-19	+5V		
		AUX4-22	CC1-20	GND		
		AUX4-23	CC1-21	-15V		
		AUX4-24	CC1-22	+15V		

Add Resistors (250 ohms) to convert the current loop 4-20mA to Voltage 1 -5 volts

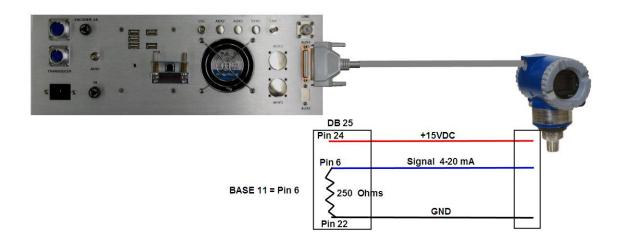


FIG: 13.21 AUX 4 Hardware Connections

WPH1 and WPH2 Connectors for ASW-Board version 11 or latest

CONNECTORS INPUTS	ANSW	SOFTWARE CHANNEL	SIGNALS
WHP1-A	CC7-11	BASE,9	-(4-20MA) Input Negative
WHP1-B	CC7-10		+(4-20MA) Input Positive
WHP1-C			
WHP1-D	CC7-8		WHP1 +15V Excitation
WHP1-E	CC7-20		Ground
WHP2-A	CC7-14	BASE,10	-(4-20MA) Input Negative
WHP2-B	CC7-13		+(4-20MA) Input Positive
WHP2-C			
WHP2-D	CC7-18		WHP2 +15V Excitation
WHP2-E	CC7-42		Ground

# 13.5 Realtime Calculator

### 13.5.1 Realtime Calculator

Real time calculations can be added to a service. From the Service menu drop down, select RTCalc. Or right click the service from the service in the tree view and select RTCalc from the context menu.

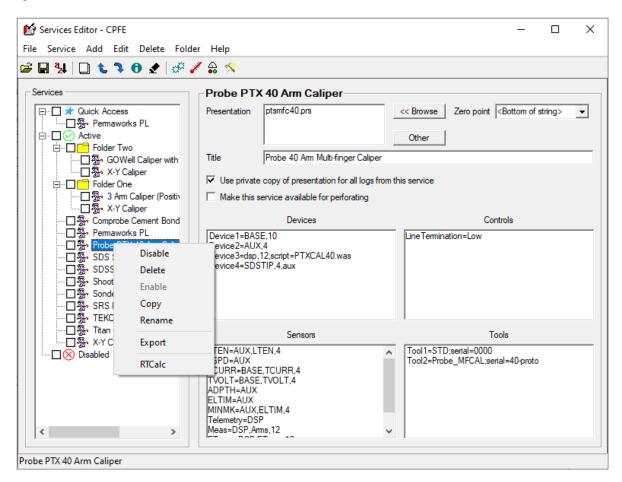


FIG: 13.22 Realtime Calculator Service Editor

Select RTCalc will bring up a formula editor.

[	RTCalc outputs for Probe PTX 40 Arm Caliper				
	Output Name	Formula			
	1		_		
		Add Delete Close			

FIG: 13.23 Realtime Calculator Output Window

Formula will require an output name and a formula to apply.

📧 Formula e	ditor		>
Output name			
Formula			
Hints	Command	Details	^
	SQRT	Returns a positive square root	
	SIN	Returns the sine of the input value (in the range -1 to 1)	
	COS	Returns the cosine of the input value (in the range -1 to 1)	
	TAN	Returns the tangent of x, sin(x)/cos(x)	
	POW	Power function, base to the exponent power	
	AVG	Output a curve that is the average of selected curves	
	MIN	Output a curve that is the minimum of selected curves	
	MAX	Output a curve that is the maximum of selected curves	
	LN	Returns the natural logorithm	¥
		ОК	Cancel

FIG: 13.24 Realtime Calculator Formula Editor

Type in a name for the output. Select a formula to apply from the list.

📧 Formula ed	ditor		×
Output name	GRSquared		
Formula	POW(Base, Exp	ponent)	
Hints	Command	Details	^
	SQRT	Returns a positive square root	_
	SIN	Returns the sine of the input value (in the range -1 to 1)	
	cos	Returns the cosine of the input value (in the range -1 to 1)	
	TAN	Returns the tangent of x, sin(x)/cos(x)	
	POW	Power function, base to the exponent power	
	AVG	Output a curve that is the average of selected curves	
	MIN	Output a curve that is the minimum of selected curves	
	MAX	Output a curve that is the maximum of selected curves	
	LN	Returns the natural logorithm	¥
		ОК	Cancel

FIG: 13.25 Realtime Calculator Formula Selection

Fill in the formula with output names and constant values - OK to save.

🔳 Formula ec	ditor			$\times$
Output name	GRSquared			
Formula	POW(GR,2)			
Hints	Command	Details	^	
	SQRT	Returns a positive square root		
	SIN	Returns the sine of the input value (in the range -1 to 1)		
	COS	Returns the cosine of the input value (in the range -1 to 1)		
	TAN	Returns the tangent of x, sin(x)/cos(x)		
	POW	Power function, base to the exponent power		
	AVG	Output a curve that is the average of selected curves		
	MIN	Output a curve that is the minimum of selected curves		
	MAX	Output a curve that is the maximum of selected curves		
	LN	Returns the natural logorithm	~	
	,	ОК	Cancel	

FIG: 13.26 Realtime Calculator Formula Editing

Add as many as you need to the formula list:

RTCalc outputs for Probe PTX 40 Arm Caliper				
	Formula			
POW(GR,2)				
		Delete	l dura l	
	Add	Delete	Close	
		POW(GR,2)	Formula POW(GR,2)	

📧 Formula ec	ditor		$\times$
Output name	Test2		
Formula	(GR * 2) + 5		
Hints	Command	Details	^
	SQRT	Returns a positive square root	
	SIN	Returns the sine of the input value (in the range -1 to 1)	
	cos	Returns the cosine of the input value (in the range -1 to 1)	
	TAN	Returns the tangent of x, sin(x)/cos(x)	
	POW	Power function, base to the exponent power	
	AVG	Output a curve that is the average of selected curves	
	MIN	Output a curve that is the minimum of selected curves	
	MAX	Output a curve that is the maximum of selected curves	
	L NI	Data and the set of the set they	v
		OK Cance	ł

FIG: 13.27 Realtime Calculator Multiple Entries

Errors will be indicated at the bottom of the dialog

🔳 Formula ec	ditor			×
Output name	Test3			
Formula	GR 3			
- official				
Hints	Command	Details	^	
	SQRT	Returns a positive square root		
	SIN	Returns the sine of the input value (in the range -1 to 1)		
	cos	Returns the cosine of the input value (in the range -1 to 1)		
	TAN	Returns the tangent of x, sin(x)/cos(x)		
	POW	Power function, base to the exponent power		
	AVG	Output a curve that is the average of selected curves		
	MIN	Output a curve that is the minimum of selected curves		
	MAX	Output a curve that is the maximum of selected curves		
	LN	Returns the natural logorithm	~	
Error in Formula 'GR 3'	a - invalid operation	ОК	Cancel	

FIG: 13.28 Realtime Calculator Error Indications

Formulas can have optional arguments. Insert in brackets:

AVG( CAL1, CAL2, [CAL3], [CAL4] )

\*\* AS ALWAYS, save and exit service editor before loading service to pick up formula changes.

# 13.6 Modifying the Service List

The Service Editor can be used to modify the appearance of the service list in a variety of ways. Services can be renamed, have where they appear in the list changed, be temporarily disabled so that they do not appear as a selection in **Acquisition**, or can be completely removed from the services.ini file.

To change the name of a Service in the active service list, click on the service. (Only services that are in the active service list can be renamed.) Then on the menu bar, click on **Service -> Rename**. A dialog box will come up with a place to type in the new name for the service. When the **OK** button is pressed, the service name will be changed.

😭 Serv	rices Editor - CPFE		
File S	Service Add Edit Delete Help		
File S Se Se A H E C B G	Add Edit Delete Help Disable Remove Enable Copy Move Rename Export Import	None Presentation none.prs Title Use private copy of presentation for all logs from th Make this service available for perforating Devices	Other Zero point <bottom of="" string=""></bottom>
S T CBL TEL Free SIE Rec	Verbose Import/Export KD PSAUX Setup 1 Test A-TEST A- TERMINATION TEST epoint Applied (CPFE and up) epoint Applied Cement Bond 1x1 corder	Device1=BASE.4 Device2=SDSTIP.4.SPKRVOL Device3=AUX.4	PowerMonitorDisabled=Yes Line Termination=High SoftPowerControl=Yes CCLFilterFq=10 = I2CInt=21=00,22=00 PosCurrentMax=450 NegCurrentIm=400 NegCurrentLim=400 NegCurrentLim=400 PosVoltaneMax=400 000000
	SM 3 1/8" RBT Medium to Long Lin nutraloo MTT/Caliner III IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Sensors LTEN=BASE,LTEN,4 ADPTH=AUX LSPD=AUX ELTIM=AUX MINMK=AUX,ELTIM,4 TVOLT=BASE TCURR=BASE WHP1=BASE, 11	Tools
Ready			

FIG: 13.29 Rename

Enter new service nar	ne		X
Type The New Name	ок	Cancel	1
	UK		

### FIG: 13.30 Enter new Service Name

Moving a service can change the order of the services in the active service list. To move a service, click on the service in the list. Then on the menu bar, click on **Service -> Move.** A dialog box will ask you to choose a location in the current list to move the service to. The service will then be moved to the selected location in the list with other services between the original location and the new location moving up or down in the list as needed.

🛃 Services Editor - CPFE		
File Service Add Edit Delete Help		
	None         Presentation         Title         Image: Use private copy of presentation for all logs from the market his service available for perforating         Devices         Device1=BASE.4         Device2=SDSTIP.4.SPKRVOL         Device3=AUX.4	Other Zero point <bottom of="" string=""></bottom>
Disabled	LTEN=BASE,LTEN,4 ADPTH=AUX LSPD=AUX ELTIM=AUX MINMK=AUX,ELTIM,4 TVOLT=BASE TCURR=BASE WHP1=BASE, 11	Tool1=STD

FIG: 13.31 Move Service

Nove service to	and the second second	23
1=None 2=ASCTEL 3=HWFilter ON 4=External power 5=Haliburton Tension		^ 
6=Collars 7=Baker Aux5 8=Gamma Gun (Neg GR Pulses)		-
ок	Cancel	

FIG: 13.32 Move service to

A service can be disabled so that it does not appear in the Acquisition service selection list. It will remain in the services.ini file so that it can be reactivated or enabled at some later date. To disable a service, click on the service in the Active list. Then on the menu bar, click on **Service -> Disable**. The service will immediately be moved to the disabled list. Any service that is in the Disabled list can be put back into the

Active list. Click on the service in the Disabled list. Then on the menu bar, click on <u>Service -> Enable</u>. The service will immediately be moved from the Disabled service list to the bottom of the Active service list. A service from either the Active service list or the Disabled service list may be removed. Once removed it will no longer be available. When the service has been selected and <u>Service -> Remove</u> clicked on from the menu bar, a confirmation window will come up. If you click <u>No</u>, the removal process will be terminated. If you click <u>Yes</u>, the service will be removed from the list.

Verify service de	lete	
Are you sure y	ou wan <mark>t</mark> to delete selec	ted service?
	Yes	No

FIG: 13.33 Service Delete

## 13.7 Adding Services

The two most common ways to add new services are to copy an existing service that you have or to import a service from an exported service list or a different services.ini file. Copying a service is normally used if you have an existing service that works, but you need an additional service that is very similar, such as having a Gamma Ray service that detects positive pulses and needing a Gamma Ray service that detects negative pulses. Importing a service is normally used to add a service that has tool types that the present service list does not support.

### 13.6.1 Copying a Service

To copy an existing service, click on the service that you wish to copy that is in the active service list. Then on the menu bar, click on **Service -> Copy.** A dialog box will come up requesting you to enter a name for the new service that you are about to create. The name cannot be the same as any name that currently appears in either the existing active or disabled service list. When you click on the **OK** button, the new service will be added to the bottom of the active service list. Be aware that the service information that is displayed on the right side of the Service Editor window is the information for the original service that was selected. If changes are to be made to the new service that was created, you must first click on that service in the active service list.

File     Service     Add     Edit     Delete     Help       Disable     Remove     Remove     Remove     Remove	
Remove	
Enable Presentation none.prs V Other Zero point <bottom of="" string=""></bottom>	-
Copy Tale	
A Move	
A     Move       H     Rename       H       H       H       H         Image: Comparison of the service of the servi	
C Export Make this service available for perforating	
C     Export       B     Import       Devices     Controls	
S Verbose Import/Export Device 1=BASE,4 PowerMonitorDisabled=Yes	<b>^</b>
PSXD PSAUX Setup CBL1 Test Device3=AUX,4 Line Termination=High SoftPowerControl=Yes	
TELA-TEST CCLHitertg=10	=
TELA- TERMINATION TEST I/2-init=21=00,22=00 Freepoint Applied (CPFE and up) PosCurrent Max=450 NecCurrent Max=450	
Preepoint Applied PosCurrentLim=400	
Recorder NegCurrentLim=400 CSSM 3 1/8" RBT Medium to Long Lin PosVoltaneMay=400 00000	-
Computation MTT/Caliner Sensors Tools	
LTEN=BASE_LTEN.4 Tool1=STD	_
LSPD=AUX	
ELTIM=AUX MINMK=AUX,ELTIM,4	
TVOLT=BASE TCURR=BASE	
WHP1=BASE, 11	
Ready	

FIG: 13.34 Copy service

Enter new service name			23
Type new Service name			
	ОК	Cancel	]

FIG: 13.35 Type new Service name

# 13.8 Importing Services

Services can be imported from a variety of sources. They can come from the Warrior cased hole (CH\_80.serv.wbu) service list or from services that have been exported from other warrior systems. With a little effort, they can be imported from service.ini files. Be aware that for an imported service to work, the tool types that the service calls out must exist in the tools.ini file. The Tool Editor can be used for restoring calibrations for tool types to the tools.ini file.

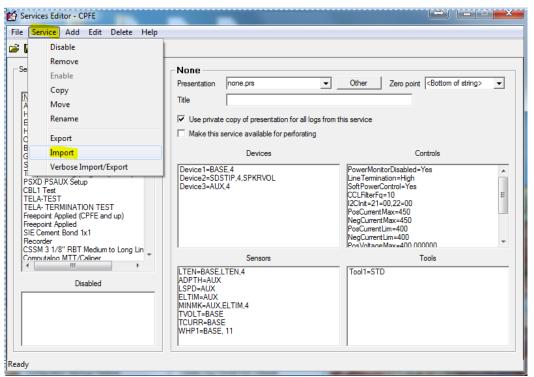


FIG: 13.36 Import service

🖄 Restore from	8.5			l	23
Computer + C	S_Win_64	(C:) ► ProgramData ► Warrior ► Config ►	✓ ✓ Search Con	fig	Q
Organize 🔻 New folder				= -	0
🔶 Favorites	*	Name	Date	Туре	-
🎍 Bin		퉬 tekco	10/10/2012 7:50 AM	File folder	=
Manuals		PROBE UniTool Warrior 8 Services.serv.wbu	12/12/2013 10:39 AM	WBU File	-
Software	=	ShootingColors.serv.wbu	11/21/2013 8:15 AM	WBU File	
Scientific Data Systems           Google Drive		Probe 60 Arm Caliper w-Thickness.serv.wbu	11/11/2013 2:50 PM	WBU File	
		Hotwell ODT.serv.wbu	10/21/2013 1:19 PM	WBU File	
Warrior Data		CH_80.serv.wbu	9/24/2013 3:53 PM	WBU File	
🍐 Warrior Config		sondex_80.serv.wbu	9/20/2013 3:06 PM	WBU File	
🕞 Libraries		RCBL_NextGen.serv.wbu	8/27/2013 2:16 PM	WBU File	
Documents		Quantum Temp Log and Noise.serv.wbu	8/14/2013 9:34 AM	WBU File	
Music		Quantum GRT noise.serv.wbu	8/14/2013 8:06 AM	WBU File	-
File name:	TH_80.ser	< m		Varrior backup file	
			Open	▼ Cancel	

### FIG: 13.37 Select warrior service file

To import a service, on the menu bar, click on **Service -> Import**. A browse window will come up looking for a WSV file in the Warrior\Config folder. If you select the **CH\_80.serv.wbu** file, it contains nearly 135 logging services that support most types of cased hole equipment. Click on one or more of the services that are listed. Each of the services chosen will be added to the bottom of the active service list.

Services that have been exported from the service editor are normally saved with the **WBU** extension but have been given a file name at the time they are exported. These files may be read in the same manner. You may have to use the look in drop down list to locate the correct drive (and folder) to read them.

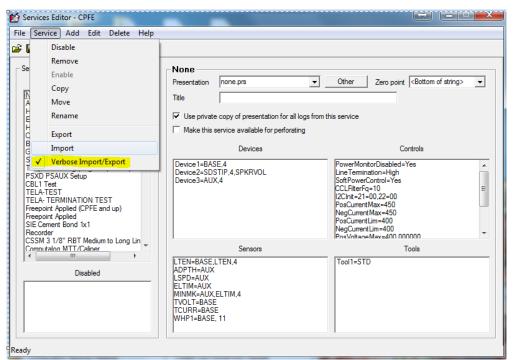


FIG: 13.38 Select Verbose Import/Export

### IF YOU ENABLE THIS CHECK BOX AT THE END OF EITHER AN IMPORT OR EXPORT A TEXT STATUS WINDOW WILL POP UP INDICATING WHAT WAS IMPORTED OR EXPORTED AND THE STATUS OF THE PROCEDURE.

# 13.9 Exporting Service

The purpose of exporting a service or multiple service is so that they can be imported and used on a similar system that uses the same type of devices. To export a service, on the menu bar, click on **Service -> Export**. A list of the existing active services is then brought up. Click on one or more services in the list and each will become highlighted. When the **OK** button is clicked, a **Browse** for Warrior Service File window will come up. Enter a file name in the file name box. When the **Save** button is clicked, the file will be saved in the folder indicated in the Save in: drop down list.

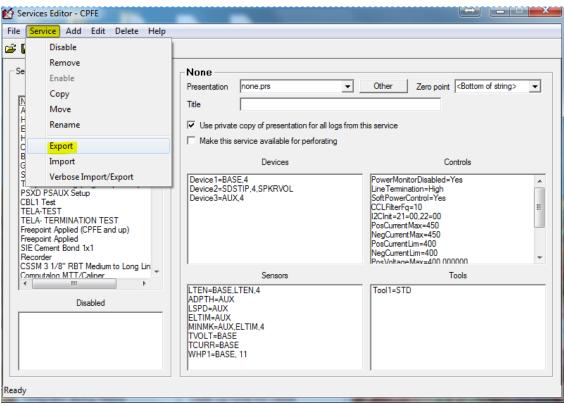


FIG: 13.39 Export

Export Service	23
Select service(s) to export	
1=None 2=ASCTEL 3=HWFilter ON 4=Extemal power 5=Haliburton Tension 6=Collars 7=Baker Aux5	
8=Gamma Gun (Neg GR Pulses) 9=Shooting Collars 10=Temperature Log (Neg Temp Pulse) 11=PSXD PSAUX Setup	Ŧ
OK Cancel	

FIG: 13.40 Export service

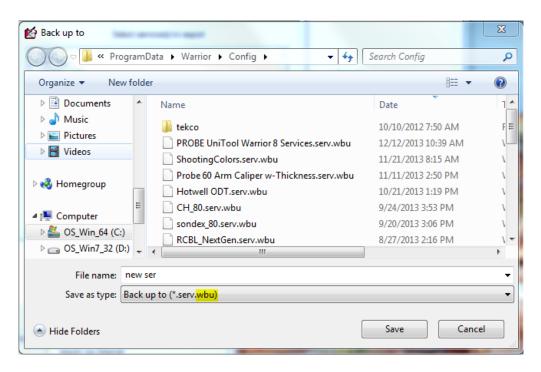


FIG: 13.41 Save new service

This will create a wbu file containing the service(s) and serial numbers of all the services and tools selected. This file can be brought over to any warrior 8 system and imported.

# Section

# **14 Tools Editor**

When tools are ran in a service (by editing the tool string for a service), they are chosen by type and serial number. Each serial number is assigned to a specific tool model. Each model of tool has the information that the Warrior System Software uses to process the data that it receives. This includes such general information as type of software, sensor offsets, sensor filtering, and tool length (which effects the offsets of other sensors in the tool string).

By using the tool editor, the pertinent information for each model can be easily changed, new serial numbers created, and new models created. The Tool Editor can be accessed from the Utilities Program in the Warrior Software Group Menu.



We suggest that a backup of the tools.ini file be made before any editing is done so that information may be recovered if mistakes are made.

Tool names, Model names, and Serial names can contain a maximum of 39 characters and cannot have any spaces.

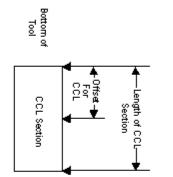
Warrior Utilities	
Data Export	Depth Correction
Export to LAS Format	Apply Linear Depth Shift to a Dataset
LIS/INSITE	Apply Linear Depth Shift to a Data Item
Export to ODBC Compatible Database	Data Management
Extract Pass(es) to New Database	Create an Alias for a Data Item
Export via Internet	Multiple Pass Automerge
Interpretation Tools	Edit Variables in a Dataset
Mathpack	Create Variables in a Dataset
XY Plot	Create Waveform Gate Curves
Tracer Interpretation	Create CCL Curve from Keyboard
Create Differential Curve	Delete Data from a Database
Create Total Dissolved Solids Curve	Undelete Data
Calculate Borehole Volume from Caliper	Change a Name
Calculate Rxo/Rt & Rwa	Edit a Log Curve
Pipe Tally	Select Correlation Curves for Database
Curve Normalization	Data Import
Log Summary Generator	Read ASCII Data into Warrior
Setup Tools	Read LIS Data into Warrior
Calibrate Printer	Import ODBC Data into Warrior
Configuration Backup/Restore	Create Log Format from Dataset
Edit Logging Service Details	Import via Internet
Edit Logging Tool Details	[]
	Bxit

FIG: 14.1 Select edit logging Tool Details

In the Fig: 14.2 through 14.7 show the way to take the tool measurements for Length and Offsets

Offset For CCL	Length of CCL Section	Diameter of Tool	Serial Number	Model





# CCL Tools

Offset For CCL	Length of CCL Section	Offset For GR	Length of GR Section	Diameter of Tool	Serial Number	Model

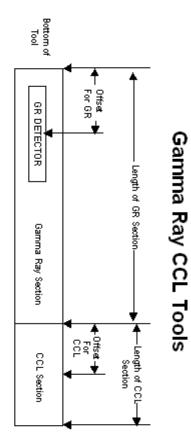
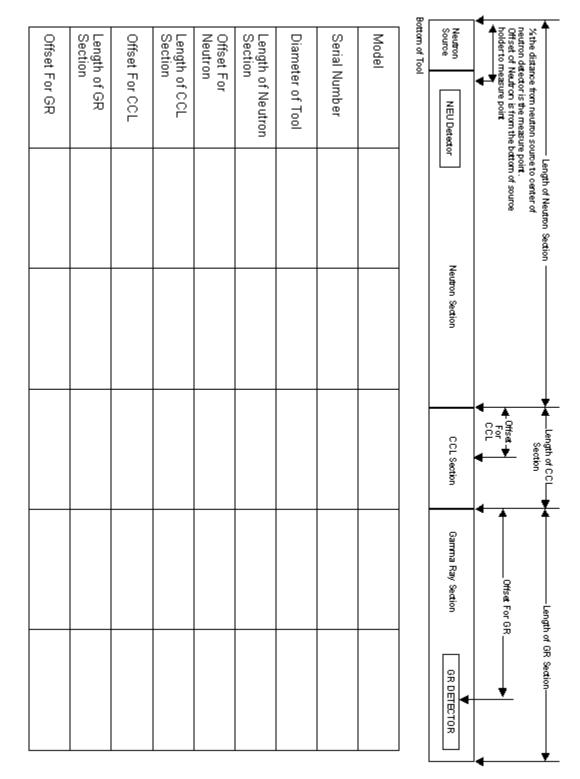


FIG: 14.3 Gamma Ray /CCL Tool Length and Offset



**Gamma Ray Neutron CCL Tools** 

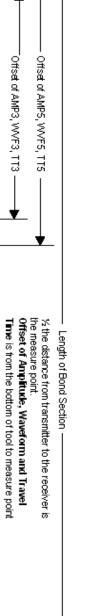
FIG: 14.4 Gamma Ray /Neutron/CCL Tool Length and Offset

		Single Recei	Single Receiver Bond Tools	ols	
Offset of AMP3, WVF3, TT3 -	₩F3, TT3	Length o % the distanc the measure Offset of An Time is from	Length of Bond Section	e <b>e</b> ver is point	
Transmitter	mitter	Receiver		Bon	Bond Section
Bottom of Tool					
Model					
Serial Number					
Diameter of Tool					
Length of Bond Section					
Offset For AMP3, WVF3, TT3					

FIG: 14.5 Single Receiver Bond Tool Length and Offset

		Offset For AMP5, WVF5, TT5
		Offset For AMP3, WVF3, TT3
		Length of Bond Section
		Diameter of Tool
		Serial Number
		Model

FIG: 14.6 Dual Receiver Bond Tool Length and Offset



Bottom of Tool

Transmitter

Receiver

Receiver

Bond Section

**Dual Receiver Bond Tools** 

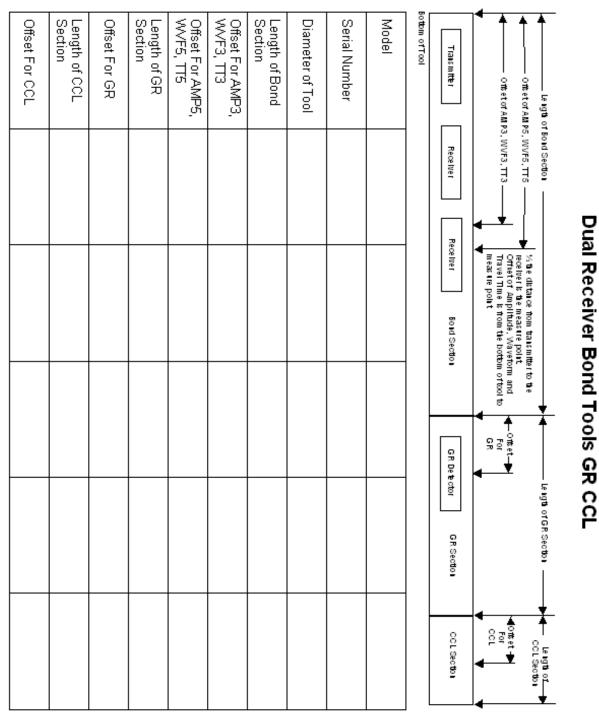


FIG: 14.7 Dual Receiver Bond/Gamma Ray/CCL Tool Length and Offset

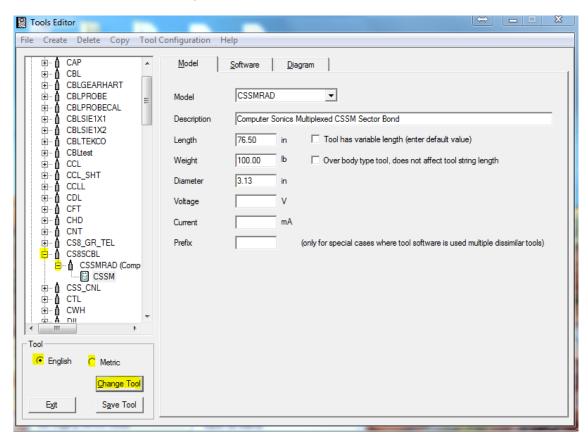
# 14.1 Editing an Existing Model or Serial Number

To edit the information for a tool, click the + beside the Tools icon. This will show all the different types of tools that are currently available. Click on the + beside the type of tool that you want to edit. This will show all the serial numbers that are available for that tool type. Next click either a Serial Number shown or click on the Model drop down list and choose a model type. Any information that is changed will be changed for all serial numbers that are of that model type.

The measuring Units used for all dimensions, sensor offsets, and filters can be selected to be entered as either English (In, Lbs.) or Metric (Cm, Kg).

The Change Tool button can be used to convert a tool to a non-serialized item such as a centralizer or weight bar. Extreme caution should be used with this button. This is to be used to convert files from older versions of Warrior, to Warrior version 8.0. If a tool is converted to a tool with no serial number, the software type and all sensor information is removed.

Tool information is entered by selecting the Model, Software, and Diagram tabs at the top of the window. Each tabbed sheet will contain specific information about the tool model.



#### FIG: 14.8 Tools Editor

Under Model Specific information, a brief description of the model can be given (This description will appear in the tool string diagram and in some calibration reports). The Length of the tool should be measured from tool joint to tool joint. This should be an accurate measurement in that it can affect sensor measurements for other tools in the string. The Diameter of the tool can affect services that do flowrate calculations. The combined string length, string weight, and maximum tool diameter will be presented on any tool string diagrams that are printed. Voltage and Current entries are not used by the Warrior software at this time but can be used as a reference for the user. A check box is supplied for tools that may have a variable length that can be set at run time such as guns or sinker bars.

The Software modules to be used for logging can also be selected. The selection of the software modules will determine what sensors and filtered outputs will be available for that model of tool. Other model specific parameters may be available depending on the software modules selected. The Warrior 8.0 Software now provides for selection of multiple software modules in the same tool model although the sensors for each module are configured separately.

Tools Editor		
File Create Delete Copy Tool Cor	figuration Help	
E CAP ▲ CBL	Model Software Diagram	]
B 1 CBLGEARHART B 1 CBLPROBE CBLPROBECAL B 1 CBLSROBECAL B 1 CBLSIE1X1 B 1 CBLSIE1X2 B 1 CBLSE1X2 B 1 CBLSE1 CBLSE1 B 1 CCLSHT B 1 CCLSHT B 1 CCLL CLL CLL CLL CLL CLL CLL CLL	Available software	Software in this toolstring           Add >>           Add >>
E û CDL E û CFT E û CFT E û CNT E û CS8_GR_TEL E û CS8SCBL E û CSSMRAD (Comp L 2 CSSM E û CSSM	Sensor Offset (in) WVF3FT 0.00 WVFGAL 0.00 WVFSTT 0.00 WVFSTM 0.00 WVFTIR1 0.00 WVFTIR1 0.00 WVFT1R2 0.00 WVFT1R2 0.00	Sub tool name CS8SCBL_SCBL Change Filter Type Length AMP3FT 0.00 AMP5AL 0.00 AMP5TT 0.00 AMP5TT 0.00 AMP5IM 0.00 AMP1R1 0.00 AMP1R1 0.00 AMP1R1 0.00 AMP1R1 0.00
CTL B-A CTL B-A CWH 	Model Invert = No spread = sonic_seq = CalReportFormat = BaselineZeroShift = SendTTsToSensors = NormalizeToCalPulse =	Serial Number

FIG: 14.9 Select Tool Model

Sensor Offsets should be measured from the lower makeup joint of the tool. Note that the sensor measurement for a source / detector or transmitter / receiver pair is half way between the two points. To change a sensor offset, double click on the sensor to bring up the edit box. Enter the appropriate measurements and click save.

Edit Sensor W	VF3FT	-	
Offset	46.20	in	
Save		Cancel	

FIG: 14.10 Set Offset

To change a filter setting, double click on the appropriate sensor. There is a drop down list for the different filter types. Square filtering should be used with sensors that would change slowly, such as Tool Voltage, while Gaussian filters should be used with statistical sensors, such as Gamma Ray. The longer the Filter Length, the more pronounced an effect the filtering would have.

dit Filter Al	MP3FT				
Filter Type	Gaussian	•	Filter Ler	ngth 3.28	ft
	Save			Cancel	

FIG: 14.11 Select the Filter Type and Filter Length

For some software modules, a specific Cal Report (Calibration Presentation) can be selected for the tool model.

The Model area contains information that is again determined by the software type. The Serial Number section is used for limited types of tools at this time.

# 14.2 Tool Diagrams

The diagram section of the tool editor allows the used to select or create tool diagrams for the tool model. If no Name is entered, the tool will be represented in tool string diagrams as a rectangle with the length and diameter given in the Model Specific area. The browse button next to the name box can be used to select an existing Warrior tool diagram. The selected tool diagram will now appear in the diagram window. The Zoom button can be toggled to change the display to see the complete width that will be displayed in a tool string diagram, although the length may not be to scale.

File Create Delete Copy Tool Configuration Help         Image: Coll Configuration Help         Image: Coll Coll Configuration Help         Image: Coll Coll Coll Configuration Help         Image: Coll Coll Coll Coll Coll Coll Coll Col	Tools Editor	
CBL       Bodd       Egende       Egende         CBL       CBLGEARHART       Fill       CBLGEARHART         CH       CBLSIEIX1       Pate from clipboard       Pase         CH       CBLSIEIX2       CH       Pate from clipboard       Pase         CH       CBLTEKCO       Embedded Diameter       3.13         Move Diagram       Shift Up / dn ±       Move Diagram         Save       Save       Save       Zoom         CH       CCL       Save       Save As       Zoom         CH       CSS (SRL       Save As       Zoom       Com         CH       CTL       Save As       Zoom       Com       Com         Col       CTL       Save As       Zoom       Com       Com         Col       CTL       CTL       Col       Col       Col       Col         Col       CTL       Col       Col       Col       Col	File Create Delete Copy Tool Configuration H	elp
	⊕ ↑     CAP     Model       ⊕ ↑     CBLEARHART     ■       ⊕ ↑     CBLPROBE     ■       ⊕ ↑     CBLSE1X1     Paste from clpb       ⊕ ↑     CBLSE1X2     Undo changes       ⊕ ↑     CBLSE1X2     Undo changes       ⊕ ↑     CBLSE1X2     Enbedded Dian       ⊕ ↑     CCL     Shift I/r       ⊕ ↑     CSSRARAD (Comp     Save       ⊕ ↑     CSSC     Save       ⊕ ↑     CSSC     Save       ⊕ ↑     CM     Save	Software Diagram

FIG: 14.12 Select Diagram

If you want to create your own tool diagrams using a third party graphics package, the only requirement is that the output file format be either Windows Metafile (\*.wmf) or Windows Enhanced Metafile (\*.emf). Once you have created the file, copy it to your C:\ProgramData\Warrior\Format directory and rename it to (\*.wtd) for Warrior Tool Diagram.

For any diagram to line up when it is placed in a tool string, it needs to be modified by using the Tools Editor. Select the diagram you want to edit from the Tools Editor and the image should appear on the right side of the window. A red box will appear also which indicates the location where the image should appear for it to line up with another image of the same diameter. It is important that the image be sized using the proper diameter. If you have two devices that you want to use the same image for, but they have different diameters, then you need to save two different tool diagrams, one for each diameter.

To size the image, use the buttons to change the width and height as well as shift the image up/down and left/right. You can also use the mouse to drag the image into position. The mouse moves the image by clicking and dragging from the appropriate portion of the screen.

Some tools, such as centralizers, may extend outside the red box.

When you click the save button, the image gets written to disk and then read back and redrawn to verify that the save was done properly.

P Tools Editor		
File Create Delete Copy Tool Cont	figuration Help	
	Model Software     Name [275CSS6CBL   Paste from clipboard   Paste   Undo changes   Undo   Enbedded Diameter   3.13   Move Diagram   Shift U/r   Shift up/dn   Save   Save   Save   Zoom	

#### FIG: 14.13 Select Zoom

In the zoom mode, the red rectangle reflects the appropriate length and diameter specified for the tool. The user can now use the controls in the Move Diagram box to resize and configure the drawing as needed to shift the drawing **left/right** or **up/down** or to **widen/narrow** or **lengthen/shorten** the drawing. Ideally, the body of the tool should fit the red rectangle, with external components (centralizer springs, etc.) allowed to extend outside of the red rectangle.

Within the red rectangle, there are four quadrants. The mouse can be used in each of these quadrants to configure the diagram in the same manner as the Move Diagram controls. By clicking the mouse in the top quadrant and dragging it up or down, the diagram will move up or down. Clicking and dragging up or down in the bottom quadrant will lengthen and shorten. Clicking and dragging to the left or right in the left quadrant will move the diagram left or right. The right quadrant will widen or narrow the diagram.

Once the diagram has be resized and configured as desired, the **Save** and **Save As** buttons can be used to save the diagram as a Warrior Tool Diagram. The Save button will replace the existing diagram that was

called up. Be aware that if any other model of tool uses this diagram, the drawing will be changed for that model also. The **Save As** button will prompt you for a new file name.

The Undo button, will undo any changes that have been made since the file was opened or since the last Save or Save As.

The user can create his own tool diagrams by pasting from the Windows Clipboard. Using a drawing application, you create the initial tool drawing. Then copy it onto the windows clipboard (**Edit – Copy**, right mouse click **–Copy**, etc.). When the paste button in the tool editor is clicked, you are first prompted to enter or select a file name for the drawing. When the file name is saved, whatever is on the Windows Clipboard is displayed in the diagram window. The drawing should then be reconfigured as described above to fit into the red rectangle. Finally, it should be saved again after the reconfiguration.

# 14.3 Creating a New Serial number for an existing tool model

If you have existing tools and wish to create a new serial number, find and select the serial number of an existing tool in the tool drop down list. Then on the menu bar, click **Create** - **Tool**. The New Tool dialog window will then come up and show the selected tool type, model type, the software module being used, and a list of existing serial numbers for that tool type. Enter a new serial number in the New Serial Number box and click **OK**. The new tool will use the same physical dimensions, sensor offsets, filters, and tool diagram as the model of the selected tool.

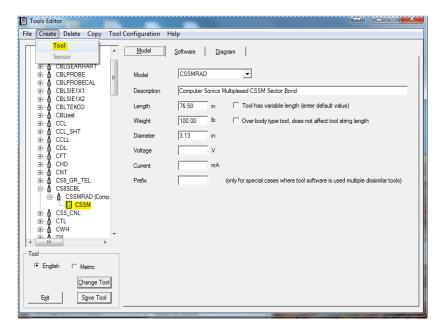


FIG: 14.14 Select Tool

Tool type		
Logging tool	O Tool accessory	
Properties		
Category (optional)		-
Tool	CS8SCBL	•
Model	CSSMRAD	•
🔲 Over body type ( does r	ot affect tool string length )	
Software		<b>6</b>
Available software		ftware in this toolstring
CCL A	Add >> SCI	
CNTP		
CPLNLL		
DETECT	<< Remove	
DILWAH DIPM		
Serial Numbers		
New Serial Numbers	Existin	g Serial Numbers
0001	CSSM	
	0000	

FIG: 14.15 Type the new serial

# 14.4 Creating a new tool type or a new model for existing tool

To create a new tool, click on the **<u>C</u>reate** selection in the Tools Editor menu bar. To create a new tool type, click the Tool drop down list and click on the first item in the list, <new tool type>.

You will then be prompted to enter a new tool type. - Be aware that any new tool that you have created can only be used if a Service in Services.INI lists that tool type as one of its available tools.

If you are creating a new tool type, the Create New Model Type box will appear. If you are going to create a new model for an existing tool type, once the tool type has been selected from the Tool drop down list, from the Model drop down list, select the first item in the list, <new model type>.

New Tool	-
Tool type	
Logging tool     C Tool accessory	/
Properties	
Category (optional)	<b>v</b>
Tool <new th="" tool="" type:<=""><th>&gt;</th></new>	>
Model	•
Over body type ( does not affect tool string	length )
Software Available software	Software in this toolstring
Create new tool type	<none></none>
New tool type	
OK Cancel	
- Serial Numbers	
New Serial Number	Existing Serial Numbers
ок	Cancel

FIG: 14.16 Select new tool type and create a new tool type

New Tool		
└_ Tool type		
Constant	C Tool accessory	
Properties		
Category (optional)		<b>T</b>
Tool	<new tool="" type=""></new>	•
Model	<new model="" type=""></new>	
🗖 Over body type ( doe	s not affect tool string len	gth )
Software Available software		Software in this toolstring
	·	<none></none>
Create new model type for		
New model type		
ОК	Cancel	
- Serial Numbers		
New Serial Num	ber	Existing Serial Numbers
	OK Ca	ancel

FIG: 14.17 Create new model type

New Tool	the second second
Tool type	
Construction Construction Construction	Tool accessory
Properties	
Category (optional)	<b></b>
Tool	GR
Model	GR_01
🗖 Over body type ( does not	affect tool string length )
Software Available software	Software in this toolstring
DIPM	GB
EJECT	Add >>
ELOG FDP	
FREEP	<< Remove
GPACK	
GRADIO	
17-36/MTT	1
- Serial Numbers	
New Serial Number	Existing Serial Numbers
	SDSDEMO
1	275
	275_Top GRBA2_7H
	GRTB 139
	GRS2_7G ▼
OF	Cancel

FIG: 14.18 Select GR software for GR tool.

You will then be prompted to enter a new model type. For any new model type, the software module(s) to be used must be selected from the software drop down list and then click the **ADD>>** button.



Tool names, Model names, and Serial names can contain a maximum of 39 characters and cannot have any spaces.

Continue selecting and adding software modules as need to include all the sensors in the tool. A list of sensors for the different software modules is included at the end of this section (Software Module Description).

The last step is to enter a New Serial Number. An Existing Serial Number drop down list is provided so that duplicate serial numbers are not entered.

Certain software modules will allow you to also create a new sensor. Note that all boxes of the Sensor Details section must have data entered for the created sensor to work properly. The Sensor is the name that you wish to have as an output; it cannot be a duplicate of any sensor that would be in the same string of tools. The Units can be chosen and printed on the log insert and calibration reports. The Description can be printed on calibration reports that include this sensor.

Once the basic sensor has be created and saved, reciprocal and/or differential outputs can also be created for the same sensor.

Create New Ser	nsor for none_USR
Sensor	
- Sensor Detail	
Offset	in Filter Type  Filter Length  ft  Calb Time sec Telemetry ID
Units	
Description	
Verifications - Master Verific	Number of Sample Points ation   Pre and Post Survey  AdHoc Survey  Show References
- Reciprocal O	utput
Enable	Name Units 🗸
Description	
Differential Ou	
Enable	Name Units 🗾
Description Interval	(interval in length (ft) or time (sec) )
Options	
Real Time Ou The service of	tput  an load even when the sensor is not configured
	Save

#### FIG: 14.19 Create a new Sensor

### 14.5 Creating a Tool

As an example, we will go through the steps necessary to create a new tool sting for a Gearhart COSMOS GR/N tool. One version of the Gearhart COSMOS Gr/N tool is a single tool that is approximately 7 <sup>1</sup>/<sub>4</sub> feet long and 1 11/16" in diameter, has a total weight of 25 pounds, and has three sensors, gamma ray, collar locator, and neutron. There are two different ways that we can create this tool. We can break it up into three separate tool types, with each type having its own software module. Or, we can make one tool type that has three software modules. We will do an example of each way.

ing tau	And an and a second		And Address of Concession, Name			
Serace Office (6)	Scherate	Description	Langet (R)	0.D.ave	Weght (R)	in Accase Tool
		Se costers chables Burne Costers for Name	2.28	148	10.08	
		CEL COMPS (MMMSD) Samer (SMMS) (SL NAM)	18	10	5.00	
		MELCOLARD EXXXXX	10	158	55.09	
						Courses of Aut

#### FIG: 14.20 Tool string editor

First, we will do the three separate tool types with each type having its own software module.

The first tool we will create is the neutron. Open the tool editor and click <u>Create</u> – <u>T</u>ool. Scroll down the Tool drop down list to NEU (if not in the list, click <New Tool Type> and enter NEU). Now enter a Model name by clicking on the model drop down list and clicking <New Model Type> and entering COSMOS (if not already in the list). Use the Software drop down list to pick NEU software, and it to. Enter a unique serial number (CMOS001) in the New Serial Number box. You should now have a tool created but with no information for it as shown.

New Tool	
Tool type           Cool type           Cool accessory	
Properties       Category (optional)       Tool       Model       COSMOS       Over body type ( does not affect tool string length )	
Software     Available software       Available software     Software in this toolstring       GRADIO     Add >>       ING     INCL       MAC     <       NEU     <       NEU        NSSPM     <       NEU        NEU        NOISE        NEU        Serial Numbers     Existing Serial Numbers       CMOS001     2755D NEU1_5V NEU2_7M SDSDEMO CMOS	Cost Catter     File Create Defet Copy Teol Configuration Help      File Create Defet Copy Teol Configuration Help      Bed FREEP     Bed Configuration Help      Bed Configuration      Bed Configura
OK Cancel	Qrange Tool

FIG: 14.21 Select Tools Editor

Tools Editor		
File Create Delete Copy Tool C	onfiguration Help	
GAMMA_GUN	Model Software Diagram	
B GUO B Gun B GOWellMAC B GOWellMAC	Model COSMOS   Description Gearhart COSMOS Neutron Section	
⊡ ∯ GR ⊞ ∯ GR_CCL	Length 48 in Tool has variable length (enter default value)	
⊞ ≜ GR2 ≡ ⊕ ∆ GRADIO ⊞ ∆ GRT	Weight 15 b Cver body type tool, does not affect tool string I	ength
⊡ ∰ INCL ⊞ ∯ KUSTER_PL	Diameter         1.69         in           Voltage         V	
⊞ Å MAC ⊞ Å ML ⊞ Å MTT	Current mA	
	Prefix (only for special cases where tool software is used mul	uple dissimilar tools)
Qhange Tool Egit Sgive Tool		

FIG: 14.22 Select Model

Now we will have to enter all the information for our COSMOS model of neutron tool. The length from the bottom of the source to the ccl joint is 48", the weight we will guess at 15 pounds, the diameter is 1 11/16" or 1.68".

The neutron detector is 14" from the bottom of the tool, but if we measure from halfway between the neutron source and the neutron detector to the bottom of the tool, we measure 8", so our NEU offset is 8". We will set the filter type to use a Gaussian 3 foot filter to start with.

Tools Editor File Create Delete Copy Tool Co	nfiguration Help	
$\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} $		
B→ A NEU2.7M (2 3/4" B→ A pt275 pt275 Tool C English C Metric Change Tool Egt Save Tool	Model CalbType = Two point CalbTime = 60 Units = NAPI Porceive No CalipCor =	Serial Number

FIG: 14.23 Set Sensor, Filter, and Model values

We will use a two-point calibration and use 60-second averaging for the calibration time. We will plot our output as Neutron API counts (NAPI), and not have a porosity curve. Our completed neutron tool should look as shown.

We will use the length and diameter rectangle for a tool diagram Therefore we will not have to do anything on the Diagram page.

We now need to create our next tool – the CCL. Click on <u>Create – Tool</u>. Chose CCL from the Tool list. Check the Model list for COSMOS. If COSMOS is not in the list, chose new model type and enter COSMOS. Software should be set to CCL and a New Serial Number will need to be entered (CMOS001).

Logging tool	C Tool accessory	
Properties		
Category (optional)		Ŧ
Tool	CCL	Ŧ
Model	COSMOS	Ŧ
🔲 O ver bodu tupe í do	es not affect tool string length )	
Software Available software	<b>6 b c c c c c c c c c c</b>	
	Software in this toolstr	ing
CCL		
	Add >> CCL	
CFB	Add >>	
CFB CNTP CPLNLL	Add >>	
CFB CNTP CPLNLL CWH	Add >> CCL << Remove	
CFB CNTP CPLNLL CWH DETECT	Add >>	
CFB CNTP CPLNLL CWH DETECT DILWAH DIPM	Add >>	
CFB CNTP CPLNLL CWH DETECT DILWAH	Add >>	
CFB CNTP CPLNLL CWH DETECT DILWAH DIPM	Add >>	
CFB CNTP CPLNLL CWH DETECT DILWAH DIPM EIECT	Add >>	
CFB CNTP CPLNLL CWH DETECT DILWAH DIPM E IECT Serial Numbers New Serial Num	Add>>	
CFB CNTP CPLNLL CWH DETECT DILWAH DIPM EIECT Serial Numbers	Add >> The second secon	•
CFB CNTP CPLNLL CWH DETECT DILWAH DIPM E IECT Serial Numbers New Serial Num	Add >>	
CFB CNTP CPLNLL CWH DETECT DILWAH DIPM E IECT Serial Numbers New Serial Num	Add >> The second secon	<ul> <li>III</li> </ul>

FIG: 14.24 Set New Tool

Tools Editor			
File Create Delete Copy Too	Configuration He	lp	
E- ANGRCNCCL	Model	Software Diagram	
tà⊢∆ CAL2 tà⊢∆ CAP ⋿ tà⊢∆ CBL	Model	COSMOS	
E CBLGEARHART	Description	Gearhart COSMOS CCL Section	
B-A CBLPROBE B-A CBLPROBECAL B-A CBLSIE1X1	Length	11 in Tool has variable length (enter default value	e)
E-A CBLSIE1X2	Weight	5 lb Over body type tool, does not affect tool str	ing length
	Diameter	1.69 in	
E- CCL	Voltage	v	
	Current	mA	
COSMOS	Prefix	(only for special cases where tool software is used	multiple dissimilar tools)
SDSCCL (CCL For     TIT169L (Titan Lo			
⊕- A CCL_SHT     ⊕- A CCLL			
Tool			
English C Metric			
Qhange Tool Egit Save Tool			

FIG: 14.25 Set Model values

The length from the lower case to the upper case is 11 inches, we will guess at a weight of 5 pounds, and the diameter is 1.68 inches. The center of the CCL coils is 5 1/2" from the bottom case. We do not want to use any filtering with a CCL, so we set the filter to NONE and the length to 0.00 Feet. We will not set any of the model specific parameters.

Tools Editor		
File Create Delete Copy Tool Cor	nfiguration Help	
E- A ANGRCNCCL	Model Software Diagram	1
B→ 0         CAL2           B→ 0         CAP           B→ 0         CBLGEARHART           B→ 0         CBLGENDECAL           B→ 0         CBLSETX1           B→ 0         CBLSETX2           B→ 0         CBLSETX2           B→ 0         CBLSETX2           B→ 0         CBLSETX2           B→ 0         CBLSETX2	CPLNLL CWH	Add >>
🗄 🖞 000 (Casing Collar	- Sultware Specific (CCE)	
	Sensor Offset (in)	Filter Type Length
⊡- 1 COSMOS - 10 CMOS001 ⊕- 1 PTS2MAG (Probe ⊕- 1 SDSCCL (CCL For ⊕- 1 TIT169L (Titan Lo		
	Model	Serial Number
C English C Metric	RTOutput = Threshold = Clamping = BaseLineZero = DigitalGain =	TelID =
Change Tool Exit Save Tool	1	1

FIG: 14.26 Set Sensor, Filter, and Model values

Finally, we need to create our Gamma Ray tool. Once again click on <u>Create</u> in the menu bar. Then choose <u>T</u>ool. Scroll down the **Tool** drop down list to **GR** (if not in the list, click on **<New Tool Type>**and enter GR). Now click on the **Model** drop down list and click on **<New Model Type>** and enter COSMOS. Click on the **Software** drop down list and choose GR software. Enter a serial number (CMOS001) in the **New Serial Number** box.

New Tool	the second second
Tool type	
Logging tool	C Tool accessory
Properties	
Category (optional)	<b>_</b>
Tool	GR
Model	COSMOS
🗖 Over body type ( does no	it affect tool string length )
Software Available software	Software in this toolstring
DIDM	GR
EJECT	Add >>
ELOG FDP	
FREEP	<< Remove
GPACK	< nellove
GR GRADIO _	
GWMTT	
Serial Numbers	
New Serial Number	Existing Serial Numbers
CMOS001	SDSDEMO 🔺
	275 275_Top
	GRBA2 7H
	GRTB 139 GRS2 7G T
	janoz_ra
0	K Cancel

FIG: 14.27 Set New Tool

Tools Editor		
File Create Delete Copy Tool C	onfiguration He	alp
GAMMA_GUN	Model	Software Diagram
⊕…∱ GGun ⊕…∱ GOWellMAC ⊕…∱ GOWellMTT	Model	COSMOS
GR GR	Description	Gearhart COSMOS Gamma Ray Section
	Length	27.375 in Tool has variable length (enter default value)
- COSMOS	Weight	10 lb Cver body type tool, does not affect tool string length
GR_01	Diameter	1.69 in
由- ☐ GRBA2.7H (2 3/4 由- ☐ GRS1.6V (1 11/1(	Voltage	v
	Current	mA
B- 0 Probe (Probe 2.75 B- 0 Probe (Probe 2.75 B- 0 SDSGR (GR for Ti B- 0 SDSGR (GR for Ti B- 0 T275GRLOG (2 3) B- 0 Tek-Co 2 3/4 HT B- 0 Tek-Co 2 3/4 HT B- 0 Tek-Co 2 3/4 HT B- 0 Tranzel (1 11/1€ C Tranzel (1 11/1€	Prefix	(only for special cases where tool software is used multiple dissimilar tools)
Tool		
English C Metric		
Change Tool		
Exit Save Tool		

FIG: 14.28 Set Model values

We now need to enter our model specific information. A tool description can be entered if desired. The length from where the upper case makes up to the top of the tool is 27 3/8". We will guess at a weight of 10 pounds. The diameter is 1 11/16".

The center of the gamma detector on this model is 16.68 inches up from the CCL. We want to use a Gaussian filter of 5-foot length, since this is a GM type detector. We will set this up with a two-point calibration with a

gain and offset and use 60-second averaging. The output will be plotted a Gamma Ray API counts (GAPI). We will not do field verification. Our completed Gamma tool should look as shown below.

E d GAMMA_GUN ▲	Model	Software	Diagram			
i⊞… Å GGun ⊞… Å GOWellMAC ⊞… Å GOWellMTT		Available soft CCL CFB	ware		Software in this to R	olstring
143PL (1 7/16" TI     275D_INC (2-3/4"     COSMOS     COSMOS      CMOS001		CNTP CPLNLL CWH DETECT DILWAH		Add >> << Remove		
GR_01	l.		<b>*</b>			
		Specific (G				
🖽 🖞 GR-Tek-Co (Tekc	Sensor	0113e 16.6	t (in)	Filter	Type	Length
		2010	5		Guappi	
TITANPL (1 11/16		Model	L	s	erial Num	ber
	CalbTi		point	TelID = C86 = C87 =		
English C Metric     Change Tool	Verify TelID Unfilt	-	_	C88 = C89 =		

FIG: 14.29 Set Sensor, Filter, and Model values .

This completes all three sections for the tool being set up as separate tool types. To use this tool in a service, the service must include each of the separate sections in the list of available tool types (GR, CCL, and NEU). When the service is selected from acquisition and the tool string editor comes up, the proper configuration must be set up (GR on top, CCL in the middle, and Neutron on bottom), and the serial number for each section should be selected.

Now we will go through the same process of creating the tool but will use a single tool type with all three software modules.

Click on <u>C</u>reate, then <u>T</u>ool. Click on the tool drop down list and choose new tool type. Enter GR\_N\_CCL for the tool type. For the new model type, enter COSMOS. Choose and add the GR, CCL, and NEU software modules. Enter CMOS001 for a serial number.

New Tool		
Tool type		
Constant Logging tool	C Tool accessory	
Properties		
Category (optional)		<b>_</b>
Tool	GR_CCL_NEU	•
Model	COSMOS	•
🗖 Over body type ( does	not affect tool string len	gth )
Software Available software		Software in this toolstring
CFB	Add >>	CCL GR
CNTP CPLNLL		NEU
CWH DETECT DII WAH	<< Remove	
DIPM	-	
Serial Numbers		
New Serial Numb	-	Existing Serial Numbers
CMOS001	CMOS	:001
	ок Са	ncel

FIG: 14.30 Set New Tool

Tools Editor		)
File Create Delete Copy Tool	onfiguration Help	
GAMMA_GUN ⊕ ↑ GDO ⊕ ↑ GDO ⊕ ↑ GGU ⊕ ↑ GGUN ⊕ ↑ GGWHMAC ⊕ ↑ GOWHMAC ⊕ ↑ GR ⊕ ↑ GR ⊕ ↑ GR_CCL ⊕ ↑ GR_CCL_NEU ⊕ ↑ GR_	Votage     v       Current     60     mA       Prefix     (only for special cases where tool software is used multiple dissimilar tools)	

FIG: 14.31 Set Model values

The overall tool length is 77 3/8", weighs 35 lbs., and is 1 11/16" OD. This information is entered the Model page. We measure the CCL from the bottom of the tool to the middle of the coils as 44.5 inches. The Gamma Ray detector is 66 5/8" from the bottom of the tool. And the Neutron measure point is 8 inches as in the previous example. For each software type, we will have to set up the appropriate sensors using these offsets. We will do the CCL module first. The offset is 44.5 inches. The rest is set the same as the previous example.

We do not want to use any filtering with a CCL, so we set the filter to NONE and the length to 0.00 Feet. We will not set any of the model specific parameters.

Tools Editor		
File Create Delete Copy Tool Co	nfiguration Help	
E CHD	Model Software Diagram	1
B A CS8_GR_TEL CS8SCBL B A CS8SCBL B A CSS_CNL	Available software	Software in this toolstring
- ∯ - ∱ CTL ⊕- ∱ CWH ≡ ⊕- ∱ DIL	CFB CNTP CPLNLL CWH	Add >> GR NEU
- ∯ - ∯ DTD ⊕- ∯ ETT ⊕- ∯ FBT	DETECT DILWAH DIPM E ECT	<< Remove
inia for inia for inia for inia freep	Software Specific (CCL)	Sub tool name GR CCL NEU CCL Change
GAMMA_GUN	Sensor Offset (in)	Filter Type Length
B ↓ GOO B ↓ GGun B ↓ GGwellMAC B ↓ GOWellMAC B ↓ GR CCL B ↓ GR CCL	CCL 44.50	CCL None 0.00
i⊟… in GR_CCL_NEU i⊞… in COSMOS (Gearha i⊞… in GR2	Model	Serial Number
Tool	RTOutput = Threshold = Clamping = BaseLineZero = DigitalGain =	TelID =
Change Tool Exit Save Tool	1	

FIG: 14.32 Set Sensor, Filter, and Model values

To edit the Gamma Ray sensor, click on the GR software in the list. The sensor offset is 66.68 inches. The rest of the information is the same as the previous example. Gaussian 5-foot filter, two point calibration, 60-second calibration averaging, output as Gamma Ray API counts (GAPI), and no field verification.

Tools Editor		
File Create Delete Copy Tool Co	nfiguration Help	
⊕-0 CHD     ⊕     0 CNT     ⊕-0 CS8_GR_TEL     ⊕-0 CS8_CRL     ⊕-0 CS8_CNL     ⊕-0 CS5_CNL     ⊕-0 CTL	Model Software Diagram Available software CCL CFB	Software in this toolstring CCL Add >>
B D CWH E B D DL B D DTD B D ETT B D FBT B D FBT B D FDT	CNTP CPUNLL CWH DETECT DIIWAH DIPM creations Control of the second secon	Ad>> NEU
	Soliware specific (GR)	Sub tool name GR_CCL_NEU_GR Change
GAMMA_GUN     GDO	Sensor Offset (in)	Filter Type Length
B-∄ GGun B-∄ GOWellMAC B-∄ GOWellMTT B-∄ GR B-∯ GR	GR 66.68	GR Gaussian 5.00
GR_CCL_NEU     GR_CCL_NEU     GR_CCSMOS (Gearha     GR2     GP2	Model	Serial Number
Tool  C English C Metric  Qhange Tool	CalbType = Two point CalbTime = 60 Units = GAPI Verify = No TelID = Unfiltered = GR Scaler Variable =	TelID = C86 = C87 = C88 = C89 =
Egit Save Tool		

FIG: 14.33 Set Sensor, Filter, and Model values

Tools Editor File Create Delete Copy Tool Co	nfiguration Help	
⊕-	Model Software Diagram Available software CFB CFB CNTP CVH DETECT DILWAH DIPM DIPM CH	Software in this toolstring CCL GR NEU << Remove
B û FDR B û FDT B û FREEP B û GAMMA_GUN B û GOO B û GGun B û GGun B û GGun B û GGun B û GGun B û GGun B û GGun	Software Specific (NEU) sensor Offset (in)	Sub tool name GR_CCL_NEU_NEU Change Filter Type Length MEU Gaussian 3.00
Col Col Col Col Col Col Col Col	Model CalbType = Two point CalbTime = 60 Units = NAPI Porosity = No CalipCor =	Serial Number

FIG: 14.34 Set Sensor, Filter, and Model values

Select NEU software to edit the neutron senor settings. Our NEU offset is 8", Gaussian 3 foot filter, two point calibration, 60-second averaging, and output as Neutron API counts (NAPI), and not have a porosity curve.

# 14.6 Deleting Tool Entries

Options are available under the **Delete** selection of the menu bar. Sensors, Serial Numbers, Models, or Tool types can be deleted. Be careful in deleting information. Read the whole confirmation box closely. You would not want to lose a whole tool type when you meant to delete only a serial number.

If a tool model has a user-defined sensor, click on the **Sensor** listed in the software specific area, and then clicking on **Delete** -> **Sensor** will remove that sensor from the tool model.

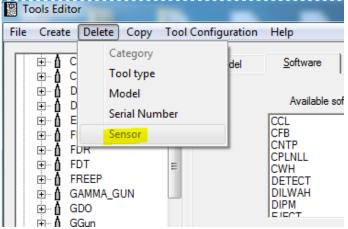


FIG: 14.35 Select sensor option to Delete

If a specific tool serial number has been selected from the tool list, then clicking on **Delete** -> **Serial Number** will remove that specific tool serial number from the tools.ini file.

If a tool type has been selected from the tool list, then clicking on **Delete** -> **Model** will provide a drop down list of models of that type of tool. Selecting a specific model and clicking **OK** will allow you to delete that model only if no serial numbers are currently set to that model type.

If a tool type has been selected from the tool list, then clicking on **Delete** -> **Tool Type** will delete all information for that type of tool. This includes all serial numbers and model information for any tools that are of that tool type.

_CCL_NEU
COSMOS 🗾
Cancel

FIG: 14.36 Delete model for GR

# 14.7 Saving Calibrations

Calibrations can be saved to disk or restored. This is meant to be an aid in the transfer of calibrations between different units or to transfer tool type and model information from one unit to another.

File	Create	e Delete	Сору	Tool (	Configuration	Help		
-	÷ A	SPTK-GRC	CL		Export			
		SPTK-ILS		I	mport			
	÷	SPTK-MAS	т		· /erbose import	(ask for seri	ial no. ever	rv time)
	±≬	SPTK-NFL	l	-	MODEL			,,
	<u></u> <u></u> <u></u>	SPTK-OP-T			Description	24 Arm	w/ 35inch	Centr.
	Ū	SPTK-QP SPTK-TEM			Length	111.00	) in	🔲 Tool has va
		SPTK-TPCI SPTK-WLD			Weight	28.00	lb	Over body t
		SPTK-XY STD			Diameter	1.68	in	
			Save	calibratio	ons to file	<u> </u>		
				ect Tool Select all >	TCT TELEM TEMP TMP-MA TRDET TREJCT WHU XIPEMAC			
			Seri	al Number	s 06001 06005 07018 09056 10112 12003			
				Backup m	odel only			
			☑	Save mod	el info also			
				S	ave Clos	e		

FIG: 14.37 Select Tool and serial number

On the menu bar click on **Tool Configuration**, then click **Export.** Only one tool type can be selected, but as many serial numbers as desired can be placed into the file. The model information for each selected serial number can also be included. The file is given a WBU extension but is a mini tools.ini file if the model information has been included. When the **Save** button is clicked, the save dialog box is brought up. The default is file name is the tool type and it is saved into the Warrior\Config directory. You can change the drive, folder, and name of the file.

Back up to			23
🔾 🖉 🖉 🖉 Warrior 🕨	Config > • • • Se	earch Config	م
Organize 🔻 New folde	r		?
🔒 Google Drive 🔺	Name	Date	^
Warrior Data	鷆 tekco	10/10/2012 7:50 AM	
뷀 Warrior Config	PROBE UniTool Warrior 8 Services.serv.wbu	12/12/2013 10:39 AM	
4 🔚 Libraries	ShootingColors.serv.wbu	11/21/2013 8:15 AM	E
Documents	Probe 60 Arm Caliper w-Thickness.serv.wbu	11/11/2013 2:50 PM	
Music	Hotwell ODT.serv.wbu	10/21/2013 1:19 PM	
Pictures	CH_80.serv.wbu	9/24/2013 3:53 PM	
Videos	sondex_80.serv.wbu	9/20/2013 3:06 PM	
E VIGEOS	RCBL_NextGen.serv.wbu	8/27/2013 2:16 PM	
🛛 🔣 Homegroup	Noise temp tool.tool.wbu	8/14/2013 9:37 AM	
inonic group	Quantum Temp Log and Noise.serv.wbu	8/14/2013 9:34 AM	
4 🖳 Computer	Quantum GRT noise.serv.wbu	8/14/2013 8:06 AM	
CS_Win_64 (C:)	Quantum Temp Log.serv.wbu	8/14/2013 8:06 AM	
OS_Win7_32 (D:)	SSB.serv.wbu	8/2/2013 3:57 PM	*
Ca + + - + + + + + + + + + + + + + + + +			•
File name: xipe			•
Save as type: Back u	p to (*.tool.wbu;* <mark>.serv.wbu)</mark>		-
Hide Folders		Save Cancel	

FIG: 14.38 Save Xipe calibration

If you select an existing WBU file, you will be given the option of appending to the file or overwriting the file.

Select Tool XIPEMAC			
Serial Numbers 10112			
Restore as this type of tool			
<ul> <li>Logging tool</li> <li>Tool accessory</li> </ul>			
Restore model only	Copying tool information		
Restore model info also	copying tool mormation		
Created Fri Dec 27 14:25:50 2013	Tool XIPEMAC-1	0112 exists already, overwrite?	
Restore Close	Overwrite All Yes	No	Don't Overwrite Any
	x		

FIG: 14.39 Save XIPE

To restore calibrations, click on **Tool Configuration** on the menu bar, then click **Import.** When the dialog box appears, select the saved file from the appropriate drive and directory. Then select as many serial numbers as desired to be restored.

5		DIPM				DETECT Tr	CWH C			CNTG 0	CFB C		<u>ссг</u>	CCB O		CBL C	Software D
Dual Lateral Log	Obsolete – USE DLLP	Dipmeter	Dual Induction Log - Hotwell	Dual Induction Log - Phoenix	Dual Induction Log - Gearhart	Tracer Detector	Capacitive Water Holdup		Comnensated Neutron Tool	Obsolete – USE CNTP	Caged Full Bore (Spinner Tool)	Compensated Density Log	Casing Collar Locator	Obsolete – USE SCBL	receivers	Cement Bond Log – 1 and 2	Description
VD, VS, ID, IS, DLLCAL		PAD1-PAD6, PADF, CAL1- CAL6, EA, EB, EC, EX, EY, EZ	ILD, ILM, LL8, SP	CILD, CILM, RLL3, SP	CILD, CILM, RLL3, SP, (CLL3)	DET	CWH		CNESC CNSSC (NCAL)		User Defined	LSD, SSD, DCAL, PER	CCL			3FT, 5FT	Sensors
VD, VS, ID, IS, RLLD, RLLS, CLLD, CLLS		PAD1-PAD6, PADF, CAL1-CAL6, INCL, RB, AZI, BDIR, GFLD, BFLD	CILD, CILM, CLL8, RILD, RILM,	CILD, CILM, CLL3, RILD, RILM,	CILD, CILM, CLL3, RILD, RILM,	(Outputs are derived from EJECT)	CWH	CNSS, CNDL, CNAD, CNPOR, CNSS, CNDL, CNAD, CNPOR, CNPORU, (NCAL)	CNI SC CNSSC CNRATICNI S		FRATE, FDIR	LSD, SSD, DCAL, PER, RHOB, RHOC	CCL			AMP3, AMP5, TT3, TT5	Outputs

Software Module Descriptions

FIG: 14.40 Software Module Descriptions

AP I
(2000Hz, 4000HZ, 6000Hz)
RANGE3, RANGE4, NOISE,
RANGE1, RANGE2
MN, MI, MCAL, MSFL
DCAL
5

FIG: 14.41 Software Module Descriptions

XYC	USR	TEMP	TCC	SWNP	STD	SLTN	SLT	SGR	SFT	SCBL
XYCaliper	USER DEFINED TOOL	Temperature	2	Sidewall Neutron	STANDARD – (Truck Settings)	Obsolete – USE SLT	Sonic Logging Tool	Spectral Gamma Ray	Sequential Formation Tester	Sector Cement Bond Log Compensated Cement Bond Log (BOND TOOLS WITH SEPARATE CAL SIGNAL WAVEFORM) CAL SIGNAL WAVEFORM)
XCAL, YCAL	USER DEFINED SENSORS	TEMP	2	SWN, SCAL	- none -		TT1, TT2, TT3, TT4, WVF1, WVF2, WVF3, WVF4	SGR	SPRES, HPRES, VTIX, SWPOS	WVECAL, WVE3ET, WVE5ET, WVET1R1, WVET1R2, WVET2R1, WVET2R2, WVET1R3, WVET2R3, WVES1, WVES2, WVES3, WVES4, WVES5, WVES6, WVES7, WVES8, WVESYNC, WVESUM
XCAL, YCAL	USER DEFINED	TEMP, DTMP					DT, AMP1, AMP2, AMP3, AMP4	K, U, T, GR, GRUF		AMPCAL, AMP3FT, AMP5FT, AMPT1R1, AMP71R2, AMP72R1, AMP72R2, AMP71R3, AMP72R3, AMPS1, AMPS2, AMPS3, AMPS4, AMPS5, AMPS6, AMPS7, AMPS8, AMPSM, TTCAL, TT3FT, TT5FT, TTT1R1, TTT1R2, TTT2R1, TTT2R2, TTT3R1, TTT3R2, TTS1, TTS2, TTS3, TTS3, TTS4, TTS5, TTS6, TTS7, TTS8, TTSUM

FIG: 14.42 Software Module Descriptions

#### 14.8 Accessory Tools

These tools such as centralizers, sinker bars knuckle joints etc., have no measurement. The only thing they affect in the tool string is the depth offsets of the other sensors and the tool diagram. If they are Over body tools, they will not affect depth offsets either. In the Tools Editor they are separate from the Logging tools.

Tools Editor			<u>×</u>
File Create Delete Copy Tool	Configuration Help		
⊕-↑         Logging Tools           ⊕-↑         Accessory Tools           ⊕-↑         Accessory Tools           ⊕-↑         Cablehead           ⊕-↑         CENT           ⊕-↑         CS8CENT           ⊕-↑         DCS8CENT           ⊕-↑         DCS8CENT	Model     Software     Diagram       Model     Image: Constraint of the solution of the solu	alue)	
⊕ ⊟ SST-CEN ⊕ ⊟ Tek ⊕ ⊟ Titan ⊕ ⊟ XoVER	Weight     0.00     Ib     □ Over body type tool, does not affect tool       Diameter     0.00     in       Voltage     □     V       Current     mA	string length	
	Prefix (only for special cases where tool software is us	ed multiple dissimilar tools)	
Tool			
English C Metric <u>Change Tool</u> Egt Save Tool			

FIG: 14.43 Accessory Tools

To create a new Accessory Tool is like creating a new logging tool, select create > Tool from the menu. This will bring up the New Tool window, in this case you will want to ensure that the "Tool accessory" radio button is selected. Notice that Category is now optional. You can now select an existing tool or a new tool type, if you select new tool type you will be prompted for a name, then a name for new model type. Once selected you can check the "Over body type" this is used for centralizers such as Gemcos and will not affect depth offsets. Now if you desire you can use a serial number, but it is not required.

w Tool	<ul> <li>Charled specific loss of them.</li> </ul>
Tool type     C Logging tool	Tool accessory
Properties	
Category (optional)	•
Tool	New
Model	Tool
Over body type (does not a	
- Software Available software	Software in this toolstring
CCL CFB CNTP	Add >>
CPLNLL CWH	<< Remove
DETECT DILWAH DIPM	
Serial Numbers	
New Serial Number	Existing Serial Numbers
ок	Cancel
UK OK	Cancer

FIG: 14.44 New Accessory Tools

You can now enter a description, tool length, Diameter and Weight. You have another opportunity to select Over body type. Here you will also notice a check box to select "Tool has Variable length" if you chose this option the length you enter here will be the default but when the service loads you will be prompted with the option to change the length.

Tools Editor	
File Create Delete Copy Tool	Configuration Help
Logging Tools     Accessory Tools	Model Software Diagram
	Model Tool 💌
GS8CENT	Description Tool for testing
ELE_SWIVEL	Length
Dverbody	Weight D Over body type tool, does not affect tool string length
i⊞ SST-CEN i Iek	Diameter 2.75 in
	Voltage V
	Current mA
	Prefix (only for special cases where tool software is used multiple dissimilar tools)
Tool	
English C Metric	
Change Tool	
Exit Save Tool	

FIG: 14.45 tool Information

If you click on the Software tab you will notice that it is grayed out and is not used for Accessory Tools. The next thing to change is the tool diagram it is modified in the same way as a Logging Tool.

Tools Editor	
File Create Delete Copy Too	Configuration Help
□         Logging Tools           □         □	Model     Software     Diagram       Name     2.75cent        Paste from clipboard     Paste        Undo changes     Undo       Embedded Diameter     2.75       Move Diagram     Shift up/dn $\div$ Width        Save     Save As       Zoom
English C Metric	
Change Tool	
Exit Save Tool	

#### FIG: 14.46 tool diagram

If you have selected a tool with a variable length when you load a service with your new tool you will be prompted with the following window.

Edit lengt	n of New	23
Length	0.25 ft	ок
Lengtri	10.23 IL	Cancel

FIG: 14.47 Edit length of New tool

If you had selected an over body, you would be able to potion it anywhere in the tool string without affecting the stack length.

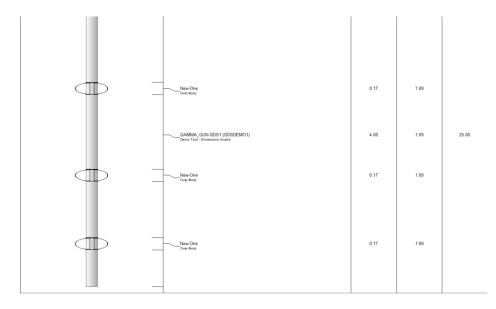


FIG: 14.48 Over Body

#### 14.8 Multiple Similar Instruments

In certain instances, it may be necessary to have several similar tools, such as multiple pressure tools in a production logging stack or gamma Ray detectors in an ejector service. The easiest way to accomplish tis is with the use of the Prefix function.

Tools Editor			
File Create Delete Cop	y Tool (	Configuration	Help
B A CBLtest B A CCL B A CCL_SHT B A CCL_SHT B A CCLL	•	<u>M</u> odel Model	Software Diagram
E A CDL E A CFT E A CFT E A CHD E A CNT	E	Description Length	Demo Tool - Dimensions Invalid           48.00         in         Tool has variable length (enter default value)
		Weight Diameter	25.00         Ib         □ Over body type tool, does not affect tool string length           1.69         in
i∰Λ CWH i∰Λ DIL i∰Λ DTD i∰Λ ETT		Voltage Current	V mA
B-∆ FBT B-∆ FDT B-∆ FDT B-∆ FDT B-∆ FREP B-∆ SDS1(Demo - SDSDEM - SDSDEM - SDSDEM		Prefix	(only for special cases where tool software is used multiple dissimilar tools)
Tool English C Metric <u>Change</u>	Tool		
Exit Save T	ool		

FIG: 14.49 Tool Prefix

In this example shown we will and a dual detector GR. The first step is to add a Prefix we used "Dual\_" to an existing GR instrument.

Tools Editor	
File Create Delete Copy Tool Co	onfiguration Help
GAMMA_GUN ▲ ⊕… Å GDO ⊕… Å GGun	Model <u>S</u> oftware <u>D</u> iagram
E GOUN E GOWellMAC E GOWellMTT	Model Tek-Co 2 3/4 HT
i i GR	Description Tekco 2 3/4" 500 Deg. F Logging Gamma Ray
	Length 51.13 in Tool has variable length (enter default value)
⊡ 🖞 COSMOS (Gearha <sup>⋿</sup> GR_01	Weight 53.00 lb 🗌 Over body type tool, does not affect tool string length
	Diameter 2.75 in
GRS1.6V (1 11/1€     GRS2.7G (2 3/4"	Voltage 120 V
GR-Tek-Co (Tekci 	Current 50 mA
⊡… A Probe 275dig (Prob ⊡… A SDSGR (GR for T	Prefix Dual_ (only for special cases where tool software is used multiple dissimilar tools)
🖻 – 🗴 Tek-Co 2 3/4 HT	
🔂 001 🔂 002	
<u> </u>	
Tool	
English C Metric	
<u>Q</u> hange Tool	
Exit Save Tool	

FIG: 14.50 Tool Prefix Example

Once that is done click on the software tab and add another "GR" from the available software, this will and a GR\$2 to the software in the tool string and rename the "GR" to "GR\$1"

lools Editor				
e Create Delete Copy Tool C	Configuration Help			
GAMMA_GUN	Model Software	Diagram		
B → Δ GDO B → Δ GGun B → Δ GOWeIIMAC B → Δ GOWeIIMAC B → Δ GOWeIIMAT B → Δ 143PL (1 7/16" TI B → Δ 143PL (1 7/16"	Available so DIPM EJECT ELCG FDP FREEP GPACK GRADIO GRADIO GRADIO GRADIO	Add	Software in GRS1 GIEV2 amove	this toolstring
⊕ ↑ GRBA2.7H (2 3/4'     ⊕ ↑ GRS1.6V (1 11/1(     ⊕ ↑ GRS2.7G (2 3/4'')	Software Specific (C			
		Sub tool i	,	Change
⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ⊕ ↓ Tek-Co 2 3/4 (Tek- ⊕ ↓ Tek- ↓ Tek-	Sensor Offs	et (in)	Filter Type	e Length ssian 2.00
A TITANPI /1 11/16	Mode	1	Serial	Number
	CalbType = CalbTime = Units = Verify =		TelID = C86 = C87 = C88 =	
English	TelID = Unfiltered = GR Scaler Varia	able =	C89 =	
Exit Save Tool				
-				

FIG: 14.51 Multiple similar sensors

Once you have your sensors added you must enter the appropriate depth offsets for the detectors, and if necessary, change your tool diagram. Once that is completed save the tool and open the "Edit Logging Service Details". Here you will need to edit the sensors so that they match your instrument.

Services Editor - CPFE					
File Service Add Edit Delete Help					
🖻 🖬 📋 🕲 🦻 🕜 🧭 🖊 🍰 🛠					
Services	Gamma Prefix				
Active Probe Digital GR-CCL-NEU	Presentation     Gr-ccl.prs     V     Other     Zero po       Title     Dual detector	int <bottom of="" string=""></bottom>			
Probe CBL       Advanced E-Line Freepoint         Advanced E-Line Freepoint       Image: Comparison of the private copy of presentation for all logs from this service         Spartek Production Logging       SLT-CAL-GR         Make this service available for perforating					
QPI - Radial Bond - SGR - QDEN - QN Temperature Log (Pos Temp Pulse) Noise Log TEKCO Sector Band (Canadian Stda)	Devices	Controls			
TEKCO Sector Bond (Canadian Style) TEKCO 2 3/4" RIB HT with I/E Temp ( Shooting Collars with Shooting Panel Shooting GR CCL with Shooting Panel Titan RCBL Next Gen GOWell Caliper with MTT ASCTEL Depth Hotwell MFC_ODT Probe Casing Thickness and MFC 60 Gamma Prefix	Device1=BASE,20 Device2=AUX,20 Device3=DSP,4,script=PUL-RR.WAS Device4=SDSTIP,1,SYNC,CCLGAIN				
	Sensors	Tools			
Disabled	TVOLT=BASE,TVOLT.4 LTEN=AUX,LTEN,4 ELTIM=AUX ADPTH=AUX CCL=BASE LSPD=AUX MINMK=AUX,ELTIM.4 GR\$1=DSP,LgNeg GR\$2=DSP,LgPos				
Ready					

#### FIG: 14.52 Service Editor for GR\$1 and GR\$2

Save your service and load acquisition to test your new service.

Sensor	Offset (ft)	Schematic
GR\$1	1.04	
GR\$2	0.00	

FIG: 14.53 Tool Diagram with GR\$1 and GR\$2

Sensors		-	4	
Name	Source	Channel	Value	Units
LSPD	LOGSVC	3	-0.1000	ft/min
LTEN	BASE	7	0.0000	V
TCURR	BASE	1	0.0000	V
TVOLT	BASE	2	0.0000	V
ELTIM	LOGSVC	2	925544.6314	sec
ADPTH	LOGSVC	1	-20.8167	ft
MINMK	LOGSVC	2	925544.6314	sec
GR\$1	DSP	3	0.0000	cps
GR\$2	DSP	1	0.0000	cps
_				

FIG: 14.54 Sensors GR\$1 and GR\$2

# Section

# **15 Math Pack**

A math pack output is created by a formula applied to one or more values from existing databases. A math pack job consists of one or more math pack outputs. Each math pack job is saved in a file with the extension ".wmp".

Warrior Utilities				
Data Export	Depth Correction			
Export to LAS Format	Apply Linear Depth Shift to a Dataset			
LIS/INSITE	Apply Linear Depth Shift to a Data Item			
Export to ODBC Compatible Database	Data Management			
Extract Pass(es) to New Database	Create an Alias for a Data Item			
Export via Internet	Multiple Pass Automerge			
Interpretation Tools	Edit Variables in a Dataset			
Mathpack	Create Variables in a Dataset			
XY Plot	Create Waveform Gate Curves			
Tracer Interpretation	Create CCL Curve from Keyboard			
Create Differential Curve	Delete Data from a Database			
Create Total Dissolved Solids Curve	Undelete Data			
Calculate Borehole Volume from Caliper	Change a Name			
Calculate Rxo/Rt & Rwa	Edit a Log Curve			
Pipe Tally	Select Correlation Curves for Database			
Curve Normalization	Data Import			
Log Summary Generator	Read ASCII Data into Warrior			
Setup Tools	Read LIS Data into Warrior			
Calibrate Printer	Import ODBC Data into Warrior			
Configuration Backup/Restore	Create Log Format from Dataset			
Edit Logging Service Details	Import via Internet			
Edit Logging Tool Details				
	Exit			

FIG: 15.1 Warrior Utilities-Math Pack

#### Math Pack user interface

The Math Pack job file contains:

A presentation file name and scale.

Each output name, output units, data id, sample rate, description, and the formula used to create the output. The units for each input variable.

Math Pack can be run from the command line - "Math Pack.exe [wmp file name]" to load a job file When the program loads. Note that the presentation file and scale will not be necessary if a Report is being generated.

### 15.1 File Menu

Math Pack		-		- C X
File Output Optic	ons Help			
New Open Save Save As Run	r\Config\DEMO np Formula			
Exit			< Browse S	cale
				<< Browse
Output Data Destinati	ion			
				<< Browse
From + f	t To 🕇	ft		
Progress:			Run	Exit

FIG: 15.2 Math Pack window.

Name	Date 5	Туре	Size Tags
鷆 tekco	10/10/2010 7 50 454		
	10/10/2012 7:50 AM	File folder	
MinRW.wmp	10/4/2013 10:57 AM	WMP File	1 KB
Min Max remainingwall.wmp	9/9/2013 8:32 AM	WMP File	1 KB
gpcc.wmp	8/30/2013 2:25 PM	WMP File	1 KB
minrwHotwel.wmp	8/9/2013 12:39 PM	WMP File	1 KB
XPORPAD.WMP	8/6/2013 10:00 AM	WMP File	1 KB
XPOR.wmp	8/1/2013 11:35 PM	WMP File	1 KB
≡ SW 0.05.wmp	4/25/2013 2:10 PM	WMP File	1 KB
SW 0.045.wmp	4/25/2013 12:52 PM	WMP File	1 KB
FCONA.WMP	12/5/2012 11:35 AM	WMP File	1 KB
TDS.WMP	12/5/2012 11:27 AM	WMP File	1 KB
TDSR.WMP	12/5/2012 11:24 AM	WMP File	1 KB
FLOW.WMP	8/7/2012 5:25 PM	WMP File	1 KB
.wmp	2/9/2007 12:38 PM	WMP File	1 KB
÷ <			
	gpcc.wmp minnwHotwel.wmp XPORPAD.WMP XPOR.wmp SW 0.05.wmp FCONA.WMP TDS.WMP TDS.WMP FLOW.WMP FLOW.WMPwmp	gpcc.wmp         8/30/2013 2:25 PM           minnwHotwel.wmp         8/9/2013 12:39 PM           XPORPAD.WMP         8/6/2013 10:00 AM           XPOR.wmp         8/1/2013 11:35 PM           SW 0.05.wmp         4/25/2013 2:10 PM           SW 0.045.wmp         4/25/2013 11:35 PM           FCONA.WMP         12/5/2012 11:25 PM           FCONA.WMP         12/5/2012 11:27 AM           TDS.WMP         12/5/2012 11:27 AM           FLOW.WMP         8/7/2012 5:25 PM           .wmp         2/9/2007 12:38 PM	gpccwmp         8/30/2013 2:25 PM         WMP File           minrwHotwel.wmp         8/9/2013 12:39 PM         WMP File           XPORPAD.WMP         8/6/2013 10:00 AM         WMP File           XPOR.wmp         8/1/2013 11:35 PM         WMP File           SW 0.05.wmp         4/25/2013 21:0 PM         WMP File           SW 0.05.wmp         4/25/2013 12:52 PM         WMP File           FCONA.WMP         12/5/2012 11:35 AM         WMP File           TDS.WMP         12/5/2012 11:27 AM         WMP File           TDSR.WMP         12/5/2012 11:27 AM         WMP File           FLOW.WMP         8/7/2012 5:25 PM         WMP File           .wmp         2/9/2007 12:38 PM         WMP File

FIG: 15.3 Save Math Pack Job

The file menu controls the Math Pack job files. The default directory for Math Pack jobs is "C:\ProgramData\Warrior\Config". The default extension is ".wmp".

# 15.2 Output

Each output requires a formula to create the output.

To create a formula, either select **Output/Add** from the main menu, or press the Insert key when inside the Output box in the Math Pack window.

To delete a formula, first highlight the formula to be deleted. Then either select **Output/Delete** from the main menu or press the **Delete** key.

To edit a formula, first highlight the formula to be edited. Then either select **Output/Edit** from the main menu or press the **Enter key**.

🔛 Ma	th Pack					(=  <b>□</b>   ×
File	Output	Options	Help			
C:\ Ou	Edi Ad		ıfig\DEMO Formula			
	De	lete				
	entation n Input Da	ata Source –			<< Browse	Scale <
Out	out Data (	Destination –				<< Browse
From	essing In	terval ft	To [*	ft		
Prog	ress:				Run	Exit

#### FIG: 15.4 Output options

Math Pack		-	Ð	(_   □   ×
File Output Options	Help			
C: Edit Ou Add Delete	rfig\DEMO Formula			
Presentation			<< Browse	Scale
Output Data Destination				<< Browse
Processing Interval From T ft	To  *	ft		
Progress:			Run	Exit

Formula Editor		Same Contage	to Constitution		
Output Name Description Formula		Units		Data ID Sample Rate f(x) Test	0 4 Compile
Variable	Data Source		Units	Data	abase
					Save
•				۱.	Cancel

#### FIG: 15.5 Output /Add

15.2.1 Output Units

If an input variable has units selected as "None", then the units for that variable will come from the database, otherwise the selected units will be used. If the units for the output or input are "None", then no unit conversion will be done. Otherwise, an attempt will be made to convert the value from the input units to the output units. An example may be:

CalAvg = (Cal1 + Cal2) / 2

CalAvg units may be inches, Cal1 units may be mm, Cal2 units may be cm.

Cal1 and Cal2 will be converted to inches before they are added together.

#### 15.2.2 Output Box

The output box shows the output name, output sample interval, and the formula used to create the output. If the output sample interval is 0, then it will be calculated when the Run button is selected. The calculated output interval will be the maximum of the intervals of the input curves. Any zoned variables will be sampled at a rate of 600.

#### 15.2.3 Presentation / Scale

The presentation file and scale to be used when creating a new pass. If the data is going to an existing pass, then the existing presentation and scale will be used.

#### 15.2.4 Main Input Data Source

Will overwrite any data sources that were selected for curves. Will default data source for each formula variable to: field/well/run/pass/[variable name]/\*

At runtime, if it cannot locate field/well/run/pass/[variable name]/\* then it will try to locate it as a zoned variable: field/well/run/pass/\_vars\_/[variable name]

If that cannot be located, then a warning message will appear "Unable to connect to input [variable name] in [database]:[pass]"

If the Output Data Destination is blank when this is selected, then a default new database name will be created. The new name will be: field/well/run/mpk\_[x] where x increments for each math pack run.

#### 15.2.5 Output Data Destination

This can be created automatically by selecting the Main Input Data Source first. This can be an existing database if the created curves do not exist already. If the created curves exist, then the following message will appear: "Unable to create output [database]:[pass]/[variable name]/1"

If you select Generate Report from the Options menu, then the destination will be the location of the embedded text report.

#### 15.2.6 Processing Interval

To process the entire input interval, leave FROM and TO values as "\*".

## 15.3 Formula Editor

#### 15.3.1 DataID

A value used for Warrior databases. Default is 0.

#### 15.3.2 Description

This will be written to the output database along with the output name.

#### 15.3.3 Formula

To see what functions are available, select the "f(x)" button. This will also show what parameters are needed for each function. There is a different set of formulas for the Report output and for the Curve output. The AVG curve formula will create a new curve which will be the average of one or more curves - i.e. AVG(GR1, GR2, GR3). The AVERAGE Report will create the average value of the curve(s) over the entire interval. The MIN, and MAX functions are like the AVG function, and the MINIMUM and MAXIMUM functions work like the AVERAGE function.

Formula Editor		Section Section	and the second second	-	$\Leftrightarrow$		x
Output Name Description Formula		Jnits			ata ID ample Rate Test	0 4 Compile	
Variable	Data Source		Units		Dat	abase	
						Save	
•					ŀ	Cancel	
Formula Builde Fomula Functions FILTSQUARE FILTGAUS SQRT SIN COS TAN							

FIG: 15.6 Formula Editor

15.3.4 Test

This will run sample values through the formula and show the result. It will automatically fill the variables with values starting with 1 and incrementing for each variable. You can also test the formula with other values by placing a number in the Data Source box next to the variable name.

15.3.5 Compile

This will determine if the created formula will be able to compute a value. The Formula Editor window will change after the compile to show the new variable list.

15.3.6 Data Source

Select the Curve button to select a curve from a dataset. Select the Var button to select a zoned variable from a dataset. This will be the source of the data for each variable. This will also be filled in if the Main Input Data Source from the Main Window is selected.

15.3.7 Variable Units

To override the units from the database, change this setting; otherwise leave it "None". Also see output units.

### 15.4 Options

The Math Pack program will generate two types of outputs - curves and reports. The curve output will create another log pass with the output curves generated by applying the formula at each data point. A report output will generate an embedded text report, which will contain the results of the formula(s) applied to all the data points over the entire interval. The output data destination will be the location of the embedded text file in the database.

🛗 Math Pack	-	-	-		$\ominus$		TEL X
File Output	Options H	elp					
C:\ProgramDa	✓ Generat	te Curve(s)	-				
Output		te Report					
I							
Presentation					<< Browse	Scale	
Main Innut Da	- C						
Main Input Da	ta source						<< Browse
1							CC DIOWSC
Cutput Data D	estination						
							<< Browse
December 14	1						
From •	ft	To +	ft				
Progress:					Run		Exit
r rogross.				_			

FIG: 15.7 Options

# 15.5 Demo example

Create a new Math Pack Job (demo), Add new output curve (GRADD), Select GR curve from DB CBLDEMO, ADD 200 API, and plot.

🔛 Select Math Pack Job			×
🖉 🖉 🖉 🖉 🖉 🖉	nData 🕨 Warrior 🕨 Config 🕨 🛛 👻 🍫	Search Config	٩
Organize 🔻 New fol	der	8== 👻	0
📙 Google Drive 🦨	Name	Date	-
Warrior Data	퉬 tekco	10/10/2012 7:50 AM	
🌡 Warrior Config	MinRW.wmp	10/4/2013 10:57 AM	
🕞 Libraries 📑 Documents	Min Max remainingwall.wmp	9/9/2013 8:32 AM	
	gpcc.wmp	8/30/2013 2:25 PM	
Music	innrwHotwel.wmp	8/9/2013 12:39 PM	-
Pictures	A XPORPAD.WMP	8/6/2013 10:00 AM	=
Videos	XPOR.wmp	8/1/2013 11:35 PM	
=	SW 0.05.wmp	4/25/2013 2:10 PM	
🝓 Homegroup	SW 0.045.wmp	4/25/2013 12:52 PM 12/5/2012 11:35 AM	
		12/5/2012 11:55 AM	
P Computer		12/5/2012 11:27 AM	
ڏ OS_Win_64 (C:)		8/7/2012 5:25 PM	-
👝 OS_Win7_32 (D:) 🚽	· · · · · · · · · · · · · · · · · · ·	STITLE STEPT IN	P.
File name: den	10		-
Save as type: Mat	n Pack Jobs		•
) Hide Folders		Save Cancel	L.

FIG: 15.8 New Job Math Pack

Type new Math Pack job "demo'

Formula Editor	And and	Super-		
Output Name	GRADD	Units		✓ Data ID 0
Description				Sample Rate 4
Formula	GR+200			f(x) Test Compile
Variable	Data Source		Units	Database
GR				✓ Curve Var
	0.000000 = 201.000000			Curve Var     Save

FIG: 15.9 Formula Editor Setup

ADD or create a formula, either select **Output/Add** from the main menu, or press the Insert key Type on Name box "GRADD" Type on description box "Gamma Ray ADD " Type the formula GR+200 Type the formula and click on **Test** Click on **Save** 

Math Pack	1.0	-	_	$\Leftrightarrow$			X
File Output	Options He	lp					
C:\ProgramData	a\Warrior\Conf	ig\DEMO					
Output	Samp	Formula					
GRADD	4	GR+200					
Presentation	CbI01.prs			<< Browse	Scale	240	
Main Input Data	Source						
C:\ProgramData	a\Warrior\Data	\SCBLDemo.db	/field/well/run/	/pass11		<< Brov	vse
Output Data De	stination						
C:\ProgramData	a\Warrior\Data	\SCBLDemo.db	: /field/well/run/	/_mpk1_		<< Brov	vse
Processing Inter			_				
From  *	ft	To  *	ft				
Progress;				Run		Exit	

#### FIG: 15.10 Run Math Pack

Select Main input data source from the warrior Data Base (SCBLDEMO) The Output Data Destination can be created automatically by selecting the Main Input Data Source first. Click on Run

SCBLDemo:/fiel	d/well/run/_mpk1_/	_logform_/1	*	×			
	ject Color Maps						
efine Data Item			-	-			
Data Source DB Item	GRADD	Currer	t pass	Style	Thickness	1 •	
C Variable	<ul> <li>Data</li> </ul>	C List		Zonable Scales		Solid     Dot	
Position		t value	0			C Dash C Dash D	lot
Current Pass List	-		×	Vhat to show in scale —	✓ Label	✓ Units	Range
Other:	GRADD WELLOBJ		OK Cancel	bel - use carriage return • multiple lines		GRADD	
					,		OK Cance
					150		
		~					

FIG: 15.11 Select New Curve

Add a new curve GRADD

Data Source				Style		<b>.</b>	
DB Item	GRAD	D		red 🔻	Thickne		
	Quick Pick Lis	t Current	pass				
O Variable	• Data	C List		Zonable Scales		Solid	
						O Dot	
Position		Left value				C Dash C Dash [	
Track #	1	Right value	300	→ What to show in scale			
Presentation Type	)			1	Label	🔽 Units	🔽 Range
Curve		Pattern Strip		Label - use carriage return			
C Tabular	(	C Graphic Strip		for multiple lines		GRADD	
O Variable Densi	ity (	🖹 Image 3D					
C Signature	(	Potato Plot					

#### FIG: 15.12 Set Curve

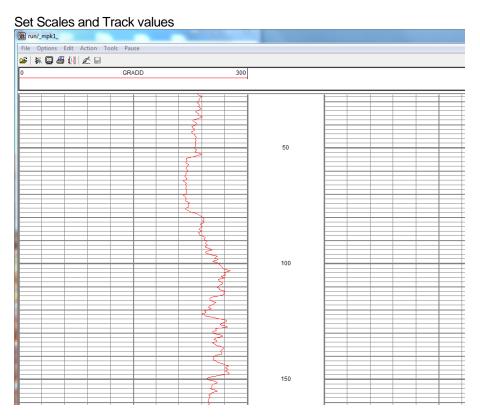


FIG: 15.13 Plot Curve

Plot the Curve GRADD

# Section

# **16 Cable Types and Filter Settings**

The Warrior 8.0 Software now includes provisions for setting certain parameters for user defined cables. These parameters include the line resistance for that line and filter settings for multiple user declared signal types.

The line resistance setting for a line will be used in computing the Head Voltage Apparent output in all services.

If a service has a signal type control in the service, then when that service is ran the Warrior Software will look for specific filter settings that have been saved for that signal type for the cable that is currently selected.

### 16.1 Defining Cable Types

The first step in setting up the process to use different cable selections is to define a new cable by name. The name can be any text string that the User wishes to identify that cable or type of cable. The name may be something as simple as "Truck 1234 - 5/16 Line". It may also be something more specific as "1K22PZ - 7/32 (12000 ft. to 18000 ft.)

To declare a new cable, go to the Control Panel in the Warrior Program group. At the top of the window, click on the Acquisition tab. The Cable type section is in the upper right hand corner of the Acquisition sheet.

Narrior System Control Panel	? <mark>×</mark>
General       Acquisition       Plot       Hot Keys/Shortcuts       Licenses         Acq. system settings       Cable selection       Cable selection       Click Add for         Panel type       CPFE       Click Add for       Add         Refresh monitors every       Maveforms       500       msec         Numerics       1000       msec       Line resistance	New Cable  Remove
Options Load up tool string editor automatically at service load. Warn about losing depth, if moving. Font for Acquisition window. Might need smaller font size for a to fit in Acquisition window. If perforating service, pop up message with tool zero point Make Acquisition window always on top of other windows	when service loads.
<ul> <li>Update with max range of data at log stop.</li> <li>Default log depth scale</li> <li>Default log time scale</li> <li>Default log time rate</li> </ul>	240 10 10
	ОК

Fig. 16.1 Acquisition Sheet of Warrior Control Panel

Cable selection				
Click Add for New Cable				
Add	Remove			
Line resistance	50.0 Ohm Set			

Fig. 16.2 Cable type section of the Acquisition sheet of Control panel.

To add a new line, click on the [Add] button to bring up the New Cable Type Description window.



Fig. 16.3 New Cable Type Description

Type in the new name or description that you wish to use to identify the cable then click [ OK ] to accept the name.

16.1.1 Setting Line Resistance

Each of the defined lines may have a line resistance setting. Enter the measured resistance of the line, then click the [Set] button to assign that resistance to the currently selected line. The line resistance is used to compute a head voltage apparent output HVOLTA. This is calculated by multiplying the line resistance by the Tool Current output to give a line voltage loss and then subtracting this from the Tool Voltage output. HVOLTA = TVOLT - (TCURR \* Line resistance).

Unless the line resistance is accurate and the tool voltage and current are properly calibrated then the head voltage will not be an accurate measurement.

#### 16.1.2 Defining Cable Signal Types

There are two different methods to set up signal types. The first are device signal types for certain proprietary devices. When the device is called out in a service, the software will look for a cable filter setting for the current cable.

The more common method comes from the SDSTIP device (Scientific Data Systems Tool Interface Panel). The cable signal types for the SDSTIP are User defined types of signals, usually telemetry signal from the tool that are filtered through the CBL1D board in the interface panel. If a signal type control has been added to a service, the software looks for saved filter settings for that type of signal in the settings of the cable that is currently selected in the Warrior Control Panel. If cable filter settings are found, it will use those settings, otherwise a notification that no settings were found will be displayed and it will use the service default settings. The first time a cable is used with a signal type control in a service the settings will not be found, and a warning message will be shown. To save the filter settings for the currently selected cable, from Warrior Logging System Acquisition window click on Edit -> Device Configuration -> SDSTIP. Click on the [Update Cable Settings] button to save the filter settings for the signal type to the cable selected. The next time the service is started, no error message is shown, and the service default filters are used. To use the cable signal type filters, you will need to edit the device configuration for the SDSTIP again and select to use the cable type filters. That setting will be saved so that from then on, the cable type filters will be used unless they are turned off in the SDSTIP settings.

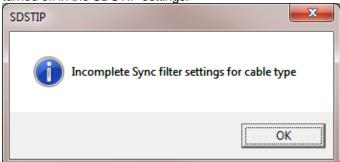


Fig. 16.4 Cable filter settings not found.

16.1.3 Example of Setting up Two Cables with different Filters for the same Service

I realize how convoluted all of this might seem to someone not familiar with the process. As an example, to show the procedure for getting a service to run different filter settings, I will give an example of a CSS (Computer Sonic Systems) tool that has previously required two different services to run on different length of lines.

16.1.4 Setting Two Example Cables

We will be making two lines. The first will be the short to medium line and the second will be the medium to long line. To set up cable types we will need to go to the Warrior Control Panel Acquisition page. In the Cable Selection area, click on the [Add] button to add a new cable.

Warrior System Control Panel	? X
General Acquisition Plot Hot Keys/Shortcuts Licenses Depth/T	ension
Acq. system settings Panel type OPAF  Cable selection Click Add for New Cable	-
Refresh monitors every Add Waveforms 500 msec	Remove
Numerics 1000 msec Line resistance 50.0	Ohm Set
Options	
Default log depth scale	240
Default log time scale Default log time rate	10
	ОК

Fig. 16.5 Click to Add a new Cable.

When the Add new Cable Type window comes up, type in the description for the new cable type. Click the [OK] button to accept the description.

Add new Cable Type	<b>X</b>
New Cable Type Description	
5 /16" - Short to Medium	
	OK Cancel

Fig. 16.6 Enter short to medium line description.

Click on the [Add] button again to add the second line. Type in the line description for the medium to long lines in the text window. Then click on the [OK] button to accept the description.

Add new Cable Type	
New Cable Type Description	
5/16" - Medium to Long	
	OK Cancel

Fig. 16.8 Enter medium to long line description.

Next, we need to set the line resistance for each line. From the control panel acquisition page cable selection area, click the drop down list of cable selections and pick the short to medium line

Cable selection				
Click Add for N	ble	<b></b>		
Add		Remo	ove	
Line resistance	50.	D Ohm	Set	

Fig. 16.9 Click Drop Down list to select cable.

For this example, we will set the line resistance to 35 Ohm. Enter 35 in line resistance and then click the [ Set ] button.

Cable selection -			
5 /16" - Short to	o Mediu	ım	-
Add		Remo	ve
Line resistance	35	Ohm	Set

Fig. 16.10 Set Line Resistance for short to medium line to 35 Ohm.

Next, click the cable selection drop down list and select the medium to long line. We will put in an example resistance or 70 ohms, and then we click the [Set] button to save that value.

Cable selection				
5/16" - Medium to Long				
Add	Remove			
Line resistance	70.0 Ohm Set			

Fig. 16.11 Set Line Resistance for medium to long line to 70 Ohm. Click the [ OK ] button at the bottom of the control panel Acquisition page to save changes.

## 16.2 Setting up Signal Types through the Service Editor

The next step is to add the Signal Type control to our services. From the Warrior Software program group, select Database Utilities. From the Database Utilities, click on Edit Logging Service Details to bring up the Service Editor.

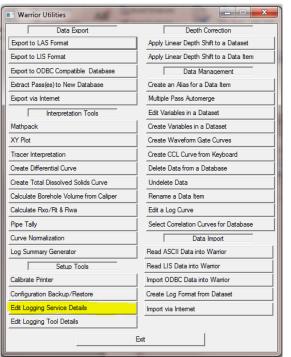


Fig. 16.12 Starting the Service Editor from Database Utilities.

In the Service Editor, click on one of our CSS services to edit it. We will start with the "CSSM 3 18" RBT Short to Medium Lines" service. Then click on Add -> Control.

😭 Services Editor - CPFE		
<u>File Service Add Edit D</u> elete <u>H</u> elp		
😂 🖬 📋 🕴 Device 👌 🔨		
Sensor	⊂ CSSM 3 1/8" RBT Short to Medium Lines	
Control	Presentation Scbl.prs   V Other Zero point <bottom< td=""><td>of string&gt;</td></bottom<>	of string>
None	Title	
Shooting Collars Collars		
SIE Cement Bond 1x1 Noise Log		ains and Filters
Gamma-CCL (Neg GR Pulse)	Make this service available for perforating	
Temperature Log (Neg Temp Pulse) Recorder	Devices Controls	
CSSM 3 1/8" RBT Short to Medium Lines) CSSM 3 1/8" RBT Medium to Long Lines	Device1=BASE,4 Device2=AUX,4 Device3=DSP;4,script=cssmSync.was Device4=SDSTIP,4,sync,sonic,aux	
	Sensors Tools	
Disabled           Disabled           PSXD PSAUX Setup           CBL1 Test           TELA-TERMINATION TEST           TELA-TEST           Gearhart Cement Bond           My Slab	TCURR=BASE,TCURR,2       Tool1=STD;serial=0000         TVOLT=BASE,TVOLT,2       Tool2=CS8CENT;serial=CSS_RO         LTEN=AUX,LTEN.4       Tool3=CS8CENT;serial=CSS_MI         CCL=DSP,CL1       Tool5=CS8_GR_TEL;serial=CSS_RO         TMV=DSP,TEL8       Tool6=CS8CENT;serial=CSS_RO         TMV=DSP,TEL7       Tool6=CS8_CENT;serial=CSS_RO         WVF2AT=DSP       Tool7=CSS_CNL;serial=0001;sexc	D M LL
Selected services have been imported		

Fig. 16.13 Select CSS Service and Add Control.

Scroll down the Control Keyword dropdown list to "Signal Type". For this example, we will enter "CSS\_TEL" as the Control value for the signal type. Note that any text string that the User chooses may be entered for a signal type. SClick [ OK ] to save the setting. Click on File -> Save to save the edited service.

Add control
Control key word _ Control value
SignalType  CSS_TEL
OK Cancel

Fig. 16.14 Set CSS Service signal type to CSS\_TEL

We now must add the same signal type control to the "CSSM 3 1/8" RBT Medium to Long Lines. Click on the service to edit it. Click on Add -> Control. Select the "Signal Type" Control keyword and enter CSS\_TEL for the control value. Click [ OK ] to save the control value and then click on File -> Save to save the edited service.

## 16.3 Setting Filter Settings for the Signal Types on each Line

Now we need to set the filter settings for the CSS\_TEL signal for each line that we will be using. Go to the Warrior Control panel Acquisition page, and in the Cable Selection area, click the dropdown list to select the 5/16" – Short to Medium cable that we have already declared. Click [ OK ] to save.

	hortcuts Licenses Depth/Tension
Acq. system settings	Cable selection
Panel type CPFE 💌	5 /16" - Short to Medium
- Refresh monitors every	Add Remove
Waveforms 500 msec	
Numerics 1000 msec	Line resistance 35.0 Ohm Set
Options	-
Load up tool string editor automatical	y at service load.
Warn about losing depth, if moving.	-
Font for Acquisition window. Might need to fit in Acquisition window.	smaller font size for all text Edit font
F perforating service, pop up message	e with tool zero point when service loads.
_	
Make Acquisition window always on t	op of other windows.
<ul> <li>Make Acquisition window always on t</li> <li>Update with max range of data at log</li> </ul>	
Update with max range of data at log	stop.
Update with max range of data at log Default log depth scale	stop.
Update with max range of data at log Default log depth scale Default log time scale	stop.
Update with max range of data at log Default log depth scale Default log time scale	stop.

Fig. 16.15 Select Short to Medium line for use.

Now start Acquisition and select the "CSSM 3 1/8" RBT Short to Medium line" service. You will get a message stating that you have incomplete filter setting for cable type. Click [OK] to cancel the message.

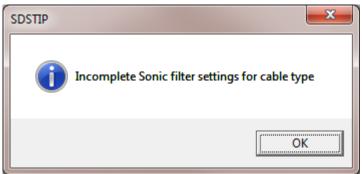


Fig. 16.16 Filter settings not yet saved for this cable and signal type message

Se Warrior Logging Syste	m	
<u>File</u> Service <u>A</u> ction	<u>E</u> dit <u>M</u> onitor	-
Service: CSSM 3 1/8" Database: Dataset: Realtime Acquisition N	Tool String Variables Heading Master Log Format Plot Job Sensors Calibrations Filters Tool Configuration	
	Device Configuration	1 BASE (CYSTD)
	Correlation Curves	2 DSP (SDSDSP)
		3 SDSTIP (SDSTIP)
		4 LOGSVC (LOGSVC)

To save the settings, Click on Edit -> Device Configuration -> SDSTIP.

Fig. 16.18 Edit SDSTIP to save filter settings

When the SDS Tool Interface Panel Configuration windows come up, click on the [ Save As Cable Settings ] to save the current values to the cable type. Then click [OK ] to close the window

Fig. 16.19 Saving the filter settings to 5/16" – Short to Medium line

SDS Tool Interface Panel Configuration	
Gain Q Fc Sonic ? 1.00 2.00 6000 O HighPass	
Sync ? 0.10 0.40 69 OBandPass OHighPass	
AUX Stage 1 Stage 2 Stage 3	Warrior System Control Panel
Sonic Pre-Filter Use Cable Type Filters Update Cable Settings	Save current settings to this Cable Type ? 5 /16" - Short to Medium
Apply Settings Cancel OK	Yes No

Now restart the "CSSM 3 1/8" RBT Short to Medium line" service and Edit -> Device Configuration -> SDSTIP again. This time the Use cable Type Filters check box has been enable. Click on this box to use the saved cable settings. This service now will use the saved cable filter settings every time until they are changed by editing the SDSTIP configuration settings and unchecking the Use Cable Type Filters box.

SDS Tool Interface Panel Configuration X				×		
Sonic	?	Gain 1.50	Q 1.00	Fc 6000	<ul> <li>BandPass</li> <li>HighPass</li> </ul>	
Sync	?	0.20	0.40	69	BandPass HighPass	
AUX		Stage		Stage 2	Stage 3	
Use Cable Type Filters Update Cable Settings Apply Settings Cancel OK						

Fig. 16.20 Selecting to use the saved Cable Filter settings.

Now that we have set up a CSSM service to use the short to medium line settings, we must set up the medium to long lines service. Go to the Warrior Control panel Acquisition page and select the 5/16" Medium to Long line. Then Click [OK] to close the control panel and save the selected cable.

Cable selection			
5/16" - Medium	to L	ong	•
Add		Remo	ove
Line resistance	70	.0 Ohm	Set

Fig. 16.21 Select the Medium to Long line to start savings CCS\_TEL settings

Now go to Acquisition and select the "CSSM 3 1/8" RBT Medium to Long line" service. You will once again get the warning message about incomplete filter settings for cable type.

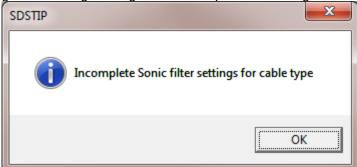


Fig. 16.22 Warning message for incomplete filter settings for cable type

From Acquisition, we need to once again Edit -> Device Configuration -> SDSTIP and Click the [ Save As Cable Settings ] Button. Click the [ YES ] button to save the settings. Then click [OK ] to close the SDS Tool Interface Panel Configuration Window.

Fig. 16.23 Saving CSS\_TEL filter settings for Medium to long line

SDS Tool Interface Panel Configuration		
Gain Q Fc Sonic ? 2.00 2.00 6000 OBandPass OBandPass		
Sync ? 0.20 0.40 69 OBandPass HighPass		
AUX 🗹 Stage 1 🗌 Stage 2 🔲 Stage 3	Warrior Sy	stem Control Panel
Sonic Pre-Filter	▲	Save current settings to this Cable Type ? 5/16" - Medium to Long
Use Cable Type Filters Save As Cable Setting Apply Settings Cancel OK		<u>Y</u> es <u>N</u> o

Now from Acquisition, restart the "CSSM 3 1/8" RBT Medium to Long line" service. When the service is loaded, we need to edit the SDSTIP configuration by clicking again Edit -> Device Configuration -> SDSTIP. Click the Use Cable Type Filters checkbox to bring in the saved cable settings. Then click [ OK ] to close the SDS Tool Interface Panel Configuration window.

SDS Tool Interface Panel Configuration X					
Sonic	Gain ? 2.00	Q 2.00	Fc 6000	BandPass HighPass	
Sync	? 0.20	0.40	69	BandPass HighPass	
AUX	Stage		Stage 2	Stage 3	
Use Cable Type Filters					
	Apply Settir	ngs	Ca	ncel OK	

Fig. 16.24 Using CSS\_TEL filter settings for Medium to long line

If you look at the filter settings that were saved in Fig 16.20 and Fig 16.24, they were:

	Gain	Sonic Fc	Sync Fc Aux Fc	
Short to Medium	1.50	1.00	6000 BP	
Medium to Long	2.00	2.00	6000 HP	

Now with Medium to Long lines selected in the Warrior Control panel, if you start Acquisition and select either the "CSSM 3 1/8" RBT Short to Medium line" service or the "CSSM 3 1/8" RBT Medium to Long line" service and then edit the SDSTIP configuration settings, you will find that both services are using the filter settings for the medium to long lines. Likewise, if you change the selected cable in the Warrior control panel too Short to Medium line, you will find that the short to medium filter settings are being used in both services.

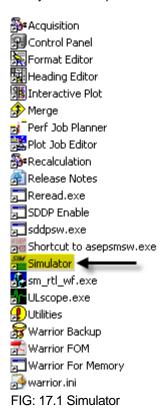
At this point, you could use the Service Editor to Remove one of these two services and then rename the remaining service to "CSSM 3 1/8" RBT".

If later, it is decided that you need to change the filter settings of the service for a cable, you would need to edit the SDSTIP Device Configuration and uncheck the Use Cable Type Filters check box. The software will revert the filter settings to what is saved in the service. Make any changes that you need and then [ Update Cable Settings ]. Restart the service and edit the SDSTIP device configuration to check the Use Cable Type Filters check box.



# **17 Simulator Box**

The USB Simulator connects to the USB port of the system pc and receives 5-volt power up to 500ma from it. Tool waveforms can be downloaded and then played back in analog form through the line or directly into the system. Outputs to test the Depth Encoder and Tension are also provided.



When the USB Simulator is powered up by plugging it into the USB port of a PC or the USB HUB of a Warrior Interface panel, it goes through a two-step enumeration according to the device code found on EPROM IC5. Double clicking the SIMULATOR icon in the Warrior panel will bring up the control window.

CYSim		_ 🗆 ×
Load TOOL S	ELECT	Close
Start Stop Speed Range High • Low Tension High • Low		LOG UP SIGNAL GAIN SPEED LOG DOWN Connect

FIG: 17.2 Simulator Controls

Select LOAD and choose the tool waveform from a list. These files are in the Warrior Bin directory.

Select a filename for the output reco	order file.	X
🔾 🗸 🖟 « Program Files	▶ Scientific Data Systems ▶ Warrior ▶ Sim	- 4 Search Sim
Organize 🔻 New folder		······································
<ul> <li>✓ □ Libraries</li> <li>▷ □ Documents</li> <li>▷ ♪ Music</li> <li>▷ □ Pictures</li> <li>▷ □ Videos</li> </ul>	<ul> <li>3506.sim</li> <li>Alpha Neutronics CNT.sim</li> <li>CBG TELM.sim</li> <li>Computalog sector.sim</li> <li>Computalog-MTT-Air.sim</li> <li>CSS-1-11-16-SCBL.sim</li> </ul>	Alpha Neutronics 3ft 5ft CNT.sim Alpha Neutronics Sector CNT.sim Computalog sector.GR Neutron.sim Computalog-MTT-55.sim copcss.sim css1x2_3us.sim
▷ 🌏 Homegroup ⊿ 🚛 Computer	CSS-3-25-SCBL-25K-Line.sim CTEKSec.sim CTEKSECAN2_trimmed.sim Delware 1x2.Sim	csstuckerfw.sim CTEKSECAN2 26KHz Trim.sim CTEKsecINTtempsync.sim eli.sim
▷ 🏭 OS_Win_64 (C:) ▷ 🧫 OS_Win7_32 (D:)	Gamma-Ray-Temp.sim	Gamma-Ray-Temp-CCL.sim GPT.sim ▼
File name:	CSS-3-25-SCBL-25K-Line.sim	<ul> <li>▼ .sim</li> <li>▼</li> <li>Open</li> <li>Cancel</li> </ul>

FIG: 17.3 Simulator tool files

Power Control	-			23
Enable Disable Enable	0.5 V	0.0	0.0 • 400	v v
Polarity Positive Negative				
Open Configu	iration	▼ NEG	➡ 0 POS	v

FIG: 17.4 Power Control

Outputs	-	$\leftrightarrow$		x
Name	Source	Value	Units	
AMPS6	[CS8SCBL	67.8039		
AMPS7	[CS8SCBL	74.3350		
AMPS8	[CS8SCBL	64.9096		
AMPMIN	[CS8SCBL	61.4217		
AMPMAX	[CS8SCBL	74.3350		
AMPAVG	[CS8SCBL	65.7221		
ATT3	[CS8SCBL	-1.9745	db/ft	
BONDIX	[CS8SCBL	0.1498		
LSPD	[STD]	-0.1000	ft/min	
LTEN	[STD]	103,1494	lb	
TCURR	[STD]	21.5104	mA	=
TVOLT	[STD]	21.1265	V	
ELTIM	[STD]	30.4197	sec	
ADPTH	[STD]	-0.0992	ft	
TOD	[STD]	33324.4180	sec	
MINMK	[STD]	0.0000		
LTENRT	[STD]	103.1494	lb	
DLTENRT	[STD]	0.0000	lb	
LSPDRT	[STD]	-0.1000		
TCURRRT	[STD]	21.5104	mA	
TVOLTRT	[STD]	21.1265	V	-

#### FIG: 17.5 Outputs

To playback the waveforms press the START button.

There are slides for Encoder Speed and Output Gain. The Encoder speed will depend on what number is input for pulses/foot. 120 should give a reasonable range. If less speed is needed change the number to 600 pulses per foot. There is a button for high and long range. Low range will provide speeds less than 100 feet per minute. There is a button for changing the direction, up/down.

The Depth Encoder power from the interface panel lights an LED or both if it is twelve volts.

# 17.1 Circuit Description

The simulator gets its intelligence from IC1 – a Cypress AN2131Q EZ-USB controller with 8k of internal ram. An external 128k x 8 static ram, IC2 - CY71019B – is used to store waveform data. IC5 - 24LC00P, EPROM is used to store the USB address code, so the device enumerates as a Simulator and not as something else. IC6 provides 3.3 volts for most of the logic from the USB 5 volt supply. A DC-DC Converter supplies +/- 12 volts from the 5 volts supplied by the USB port. An external 5-volt supply can be used if it is needed.

The encoder frequency is set by OUT0 from DAC, MAX519. The DAC output goes to a voltage divider to reduce the 0 to 5 volt swing to 0 to 1 volt for the V to F converter, IC10, AD654. Software controls the high and low range of the encoder speed. The output frequency goes to IC9B, buffer, and then is split and one side inverted. One side goes to IC12A, and the other to IC12B, SN74LS74, dual D flip flop. These are wired to give two wave trains 90 degrees apart. The A signal goes to Encoder Out A. The B side goes to IC9A where PA5 sets direction. When PA5 is changed the output of IC9A will be inverted. That is how UP/DOWN is controlled. The signal then goes to Encoder Out B. IC7 and IC8 test the ENCODER voltage, lighting one led if it is five volts, or both leds if it is twelve volts. The encoder pulses are derived from the supply voltage. A 5 volt supply produces 5 volt pulses and a 12 volt supply produces 12 volt pulses.

SDA and SCL from IC1 control the DAC. IC4 address lines: 01000000 address byte.

PA6 controls IC14, DG411, switch. It connects R32 for 20ma and disconnects it for 2ma. The 12 volts from the STIP is converted to a current by IC7, LM317 to furnish the output signal. The circuit will accept a 24 input also.

The data loaded into the ram, IC2, is sent to the DAC a byte at a time and reproduces whatever waveform has been recorded. The chip enable comes off A15 to allow memory paging. It is inverted. Write enable and out enable are active low. A15 is used because we are only interested in high addresses. A16 comes from PC1/TXDO. R36 was added to shift the DC offset of the DAC to zero. The signal is sent from the DAC to U2A, TL082P, op amp, and then to U3, AD633, and voltage multiplier, through a 1K resistor. The multiplier voltage is supplied by IC4, serial DAC, and OUT1, which set the output gain. The signal then goes to U2B and IC3, BUF634, op amps to the line out connector.

Cable to Encoder and Line Weight:

# 17.2 SIMULATOR Hookups

5 PIN MALE - Tension ------Interface Panel

A - TENSION SIGNAL GROUND REF	A
B - TENSION SIGNAL OUT	B
C – Tied to E	C
D - +12 VOLTS IN	-D
E – GROUND	E

7 PIN MALE - Depth Encoder

- A ENCODER-A
- B-ENCODER-B
- C N/C
- **D ENCODER POWER IN**
- E GROUND

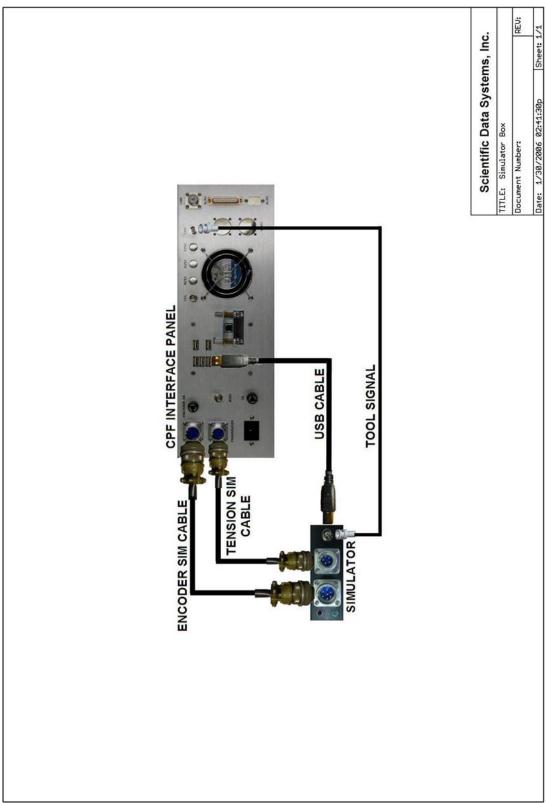


FIG: 17.6 Simulator Box Hookups

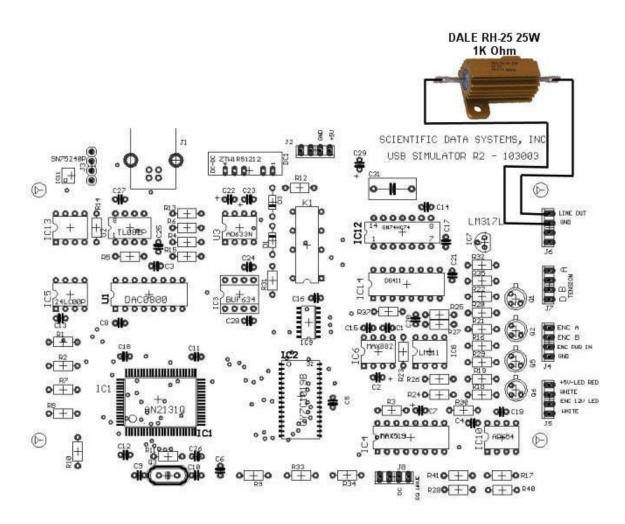


FIG: 17.7 USB SIM R2 board layouts

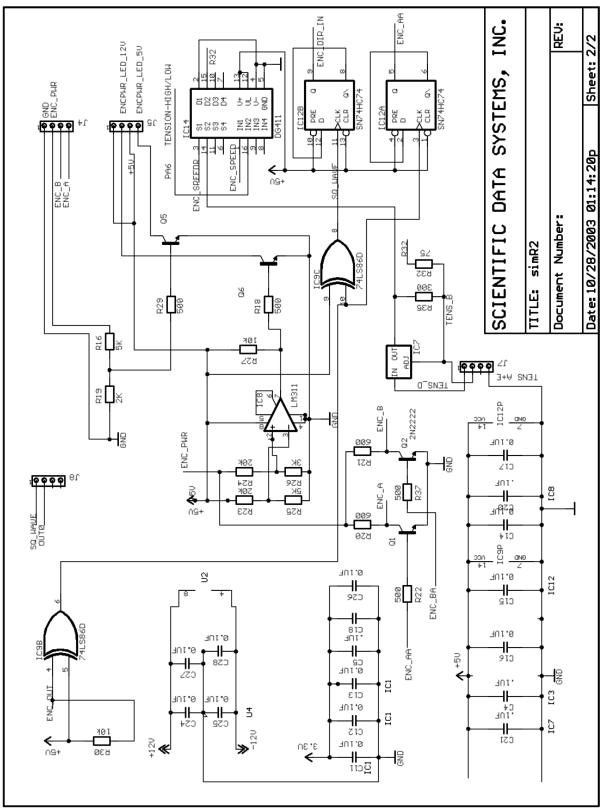


FIG: 17.8 USB SIM R2 Schematic

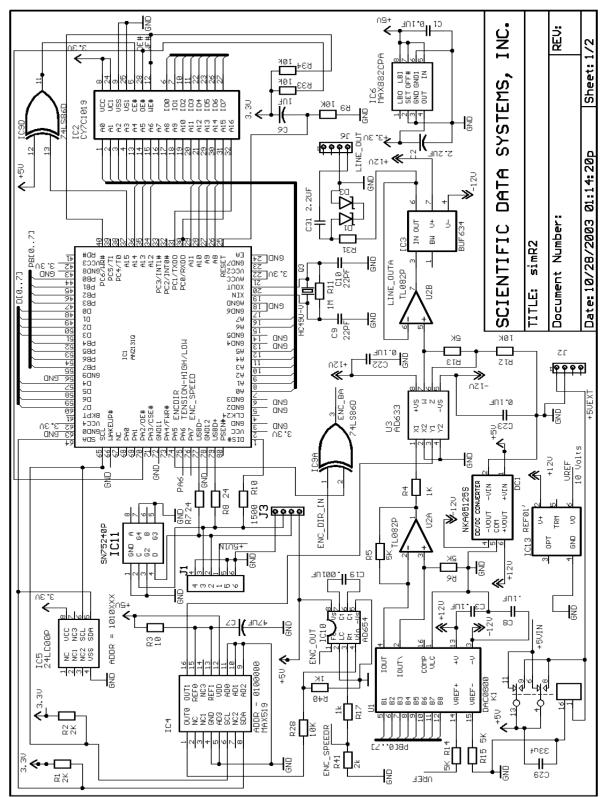


FIG: 17.9 USB SIM R2 Schematic

# Section

# **18 Recorder**

# 18.1 Warrior Line Signal Recorder Service

With the Recorder service, it is possible to make a recording of the line signal with minimal filtering. The recording can then be used to make a Simulator file to play back into the system through the Scientific Data Systems Simulator Box. Or the recorded file can be sent to Scientific Data Systems to check the tool telemetry or set up a new service for the tool telemetry. The recorder service is not normally installed as one of the default services. The service can be imported through the Service Editor.

Warrior Utilities	
Data Export	Depth Correction
Export to LAS Format	Apply Linear Depth Shift to a Dataset
LIS/INSITE	Apply Linear Depth Shift to a Data Item
Export to ODBC Compatible Database	Data Management
Extract Pass(es) to New Database	Create an Alias for a Data Item
Export via Internet	Multiple Pass Automerge
Interpretation Tools	Edit Variables in a Dataset
Mathpack	Create Variables in a Dataset
XY Plot	Create Waveform Gate Curves
Tracer Interpretation	Create CCL Curve from Keyboard
Create Differential Curve	Delete Data from a Database
Create Total Dissolved Solids Curve	Undelete Data
Calculate Borehole Volume from Caliper	Change a Name
Calculate Rxo/Rt & Rwa	Edit a Log Curve
Pipe Tally	Select Correlation Curves for Database
Curve Normalization	Data Import
Log Summary Generator	Read ASCII Data into Warrior
Setup Tools	Read LIS Data into Warrior
Calibrate Printer	Import ODBC Data into Warrior
Configuration Backup/Restore	Create Log Format from Dataset
Edit Logging Service Details	Import via Internet
Edit Logging Tool Details	
	Exit

#### FIG: 18.1 Select Edit logging Details

To install the Service Editor, go to Warrior Utilities and click on [Edit Logging Service Details]. To Import the Recorder Service, Click on Service ->Import. From the Warrior\Config folder, choose the SDS\_80.serv.wbu file and click the [ Open ] button. From the service import list, choose the Recorder service. It will then be added as the last service in your active service list. The Service Editor and Utilities can now be closed. If Acquisition is open, it will have to be closed and then reopened before the Recorder service will be available.

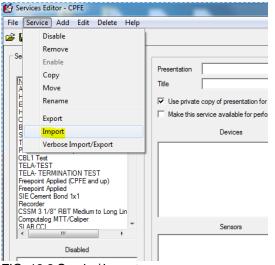


FIG: 18.2 Service\Import

Import Service			23
Select service(s) to import			
1=USBAUX Test 2=TELA-TEST 3=CBL1 Test 4=SLAB 80X TEST 5=ASES Perforating Se 6=Recorder 7=PSXD PSAUX Setu 8=TELA- TERMINATIO	D		
Mon Dec 05 14:46:33 Last Change Fri Mar 02			
	ок	Cancel	

FIG: 18.3 Import Recorder service

To make a line recording, start Acquisition and select Service -> Recorder. When the Tool String editor comes up, click [Save] or [Exit], there are no tools to select or edit. In the Acquisition window click on Action -> Power Control and enable the line in the normal manner. Adjust tool power for proper operating voltage and current for the tool that you are using. The Recorder Threshold window will show a sample of the signal that will be recorded. No adjustments are necessary in the Recorder Threshold window.

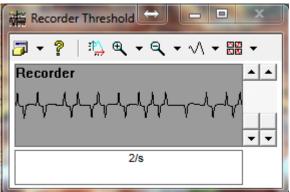


FIG: 18.4 Recorder

Signal Recorder	-	X
Input Channel	15	Apply Settings
Sample Rate (us)	5	Record
Attenuation (%)	75	Stop
Record Time (s)	10	Abort

FIG: 18.5 Set up Signal Recorder

There are two other windows that come up when the Recorder service is started. These are the Panel Controls window and the Signal Recorder Setup window. The Panels Controls are not normally used unless the default Input Channel is changed from 15 to a channel that corresponds to the Sync, Aux, or Sonic input channels. This will be discussed further later.

There are 4 settings in the Signal Recorder Setup window that can be adjusted. If any of these settings are changed, the [Apply Settings] button must be clicked before the recording is done, otherwise the original settings are used.

The Input Channel is the selected DSP input channel (0 to 15). These channels are hard wired within the Warrior Interface Panel. Channel 15 comes from the ANASW board. The signal has been capacitive decoupled from the line and ran through a buffer. It is as true a raw signal as the system can digitize.

The Sample Rate is how often the DSP will digitize the incoming signal. A 5us rate is appropriate for most recordings. It should not be set to lower than 3us.

Signals may be attenuated on the DSP before they are digitized. Before doing a recording, the Attenuation setting should be adjusted to maximize the signal in the Recorder Threshold Window. The signal should not go to the top or the bottom of the window. The smaller the Attenuation setting value, the larger the signal will be. An Attenuation of 100 will not show any signal and will not give a usable recording.

The record time is the number of seconds that the signal is recorded.

When settings have been adjusted as needed and the [Apply Settings] button has been set, the next step is to click the [Record] Button. You will need to select a file name to save the file. It is recommended that the file extension show the sample rate so that the file can be played back at the appropriate rate to give a valid recording such as 5us for a 5-microsecond sample rate. Once the [Save] button is clicked, the recording will start and continue for the number of seconds set in the Record Time setting. The Record Time will count down showing the number of seconds left to record until the recording is complete.

Organize 🔻 New	folde	r	8== •	0
🛃 Google Drive	*	Name	Date	
🎉 Warrior Data		4/19/2006 11:22 AM		
闄 Warrior Config		Greg Alpha CNT 13k 12kft.5us	11/2/2012 12:27 PM	
	-	Greg Alpha CNT 13k 30kft.5us	11/2/2012 12:19 PM	
<ul> <li>☐ Libraries</li> <li>☐ Documents</li> <li>☐ Music</li> <li>☐ Pictures</li> <li>☐ Videos</li> </ul>	E	probetelm.5us	5/10/2013 4:19 PM	
		RECORDERTEKCO.5us	12/4/2007 4:21 PM	
		short stack.5us	10/17/2013 10:16 AM	
		Tekco Sector Bond Tool.5us	11/27/2012 9:11 AM	
		😹 Warrior Programs	11/2/2012 10:27 AM	
	+	< [		۲
File name:	est R	ecording		_
Save as type: *				

FIG: 18.6 Save the Recorder signal

The following is a list of the Hard Wired DSP channels in the SDS Interface Panel.

Input Channel	Signal	Note
0	Sonic Amplitude	Configurable Filter
2	Audio X10	
3	Audio X1	
4	Sync / Pulse	Configurable Filter
5	Audio X.1	
6	Audio X.01	
8	AUX	Configurable Filter
15	ANASW Signal	Recorder Default

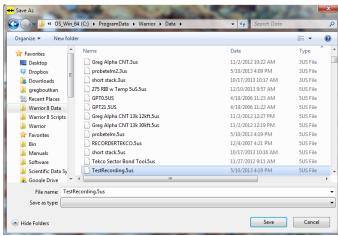
## 18.2 Converting Recordings to SDS Simulator Box Files

The recording must first be converted from a DSP recording to a WAV file and then the file must be edited to fit a format needed by the simulator box.

In "C:\Program Files\Scientific Data Systems\Bin" is SIMConver32.exe or SIMConver64.exe that will read in a recording and write a WAV file. Click on the [Load Oscope File] button to select the DSP recording. After loading the file and before writing the 8 Bit Wave file, be sure that the sample period matches the sample rate done during the recording. For simple recordings, the difference in the Start Sample and Stop Sample should be less than 128000, since this is the maximum number of samples the Simulator box can hold. Click the [Write 8 bit Wave] button to write the file. If this is a simple file, it can be saved with a .SIM extension and used directly by the Simulator Box.

→ SIMConvert	bit or 16 bit wave	Close
Load Oscope file 5 Sample Period uS (3 - 10 uS) 0 Start Sample 999446 Stop Sample	Write 8 bit Wave Make Time Log	<ol> <li>Select an 'Oscope' recording</li> <li>Correctly enter Sample Period</li> <li>Optionally change range to be converted (Start and Stop)</li> <li>For a simulator compatible 'wav' file select 'Write 8 bit Wave'</li> <li>Use a suitable 'wav' editor to make a final simulator file with a maximum of 128k samples.</li> </ol>

FIG: 18.7 SIM convert



#### FIG: 18.8 Open

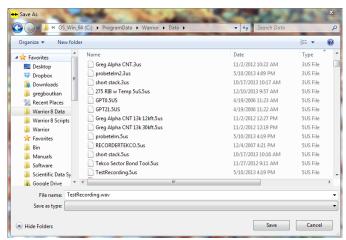


FIG: 18.9 Save As

With more complex recordings, it may be necessary to use a Wave Editor to view and modify the recording before converting it to a simulator file. The Warrior software does not include a waveform editor, but there are many free editors available through the Internet. The following Internet link is a down load for a very versatile editor - <a href="http://www.yamahasynth.com/download/twe.html">http://www.yamahasynth.com/download/twe.html</a>.

If the signal being recorded has a periodic rate, the waveform should be edited to start before a given point in the period of the signal and to end before the same point at several cycles later in time and keep below the 128,000-sample limit of the Simulator Box. The waveform editor could also be used to adjust the amplitude of the recording or insert or enhance features in the recording, such as gamma pulses in a bond tool recording.

# Section

# **19 Corrupted Database**

It is recommended to do a backup of the file before you begin this procedure. **Warning!** 

Run Windows Explorer.

Go to the C:\Program Files\Scientific Data Systems\Warrior\Bin.

Find a file called dbdump32.exe or dbdump64.exe

Double click on the program

This will open a window called Warrior Database Dumper.

In this window click on file and click on Dump Records.

Select corrupted database.

Click on file again and click on Scan Linkage.

Select corrupted database.

Click on file again and click on Scan Data Blocks.

Select corrupted database.

Close the Warrior DataBase Dumper Window.

There will be three new files in the C:\ProgramData\Warrior\Data.

They will have the same name as the corrupted database with the following extension: dsc, scn, and dmp.

Email these three files to sds.info@warriorsystem.com

The programmer will attempt to create a patch. The patch will be Emailed back to you and you will run dbdump32(64).exe again from the C:\Program Files\Scientific Data Systems\Warrior\Bin. From the Data Base Dumper Window click on file, then click on Patch. Select corrupt database and following instructions in Email.

An example of a patch is attached below.

Example of Patch for data base 14377.db.

A set of patch number will be supplied by Scientific Data Systems, Inc. Long word patch:

Hex offset Old Hex Value New Hex Value

000000D8	02149C8A	037FFD5A
00000378	02147B86	02112D6C

This is an example so do not use these numbers, the correct numbers will be supplied by Scientific Data Systems, Inc.

Open Dbdump.exe by double clicking on the file.

Database: DOS Size:	0 hvtes		
<b>Recorded Size</b>	:	0 bytes	
Deepest Ref:			
Examined:	0 bytes		

FIG: 19.1 Run Dbdump32(64).exe

Click on <u>File</u> and then click on <u>Patch</u>:

The Select Database for Manual Patch window will appear. Select the corrupted database and click on open.

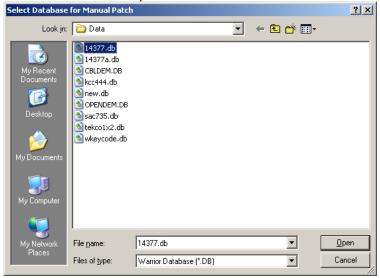


FIG: 19.2 Select Database

The Manual Patch window will appear:

Do not enter anything in the Password box.

Manual Patch		×
Password		<u>C</u> lose
Target File	c:\warrior\data\14377.db	
<u>H</u> ex Offset	<u>±+</u>	
<u>O</u> ld Hex Value	> <u>N</u> ew H	łex Value
● <u>B</u> yte ● <u>S</u>	hori C Long Apply	

FIG: 19.3 Manual Patch

Long word patch:

 Hex offset
 Old Hex Value
 New Hex Value

 000000D8
 02149C8A
 037FFD5A

 000000378
 02147B86
 02112D6C

Select the Long Button, enter the <u>Hex</u> Offset number, the <u>O</u>ld Hex Value will appear enter the <u>New Hex</u> Value, press apply.

If more than one patch set of numbers were supplied enter the next set and select apply.

Manual Patch			×
Password			<u>C</u> lose
Target File	c:\warrior\data\143	377.db	
<u>H</u> ex Offset	000000D8	<u>+</u> +	
<u>O</u> ld Hex Value	02149c8a >	037FFD5A	<u>N</u> ew Hex Value
C <u>B</u> yte C S	hori 🖲 Long	Apply	

FIG: 19.4 Set values

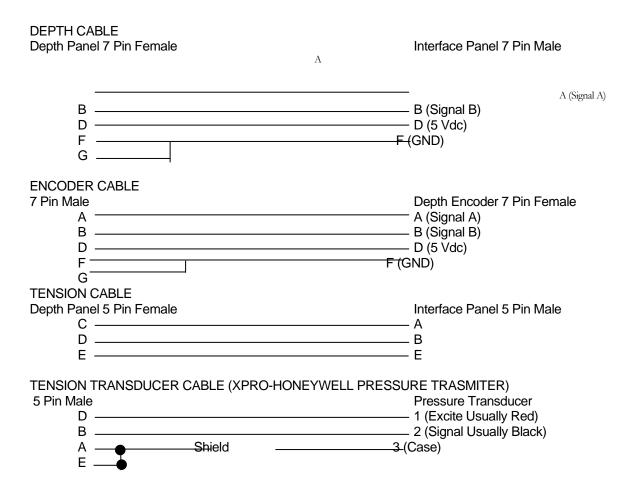
Manual Patch			×
Password			Close
Target File	c:\warrior\data	\14377.db	
<u>H</u> ex Offset	00000378	<u>±</u> +	
<u>O</u> ld Hex Value	02147b86	> 02112D6C	<u>N</u> ew Hex Value
○ <u>B</u> yte ○ <u>S</u>	hori 🖲 <u>L</u> ong	Apply	

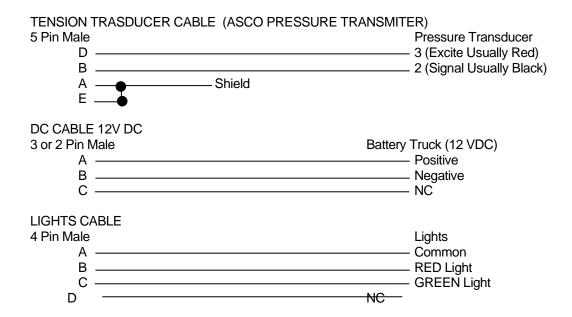
FIG: 19.5 Apply and Close

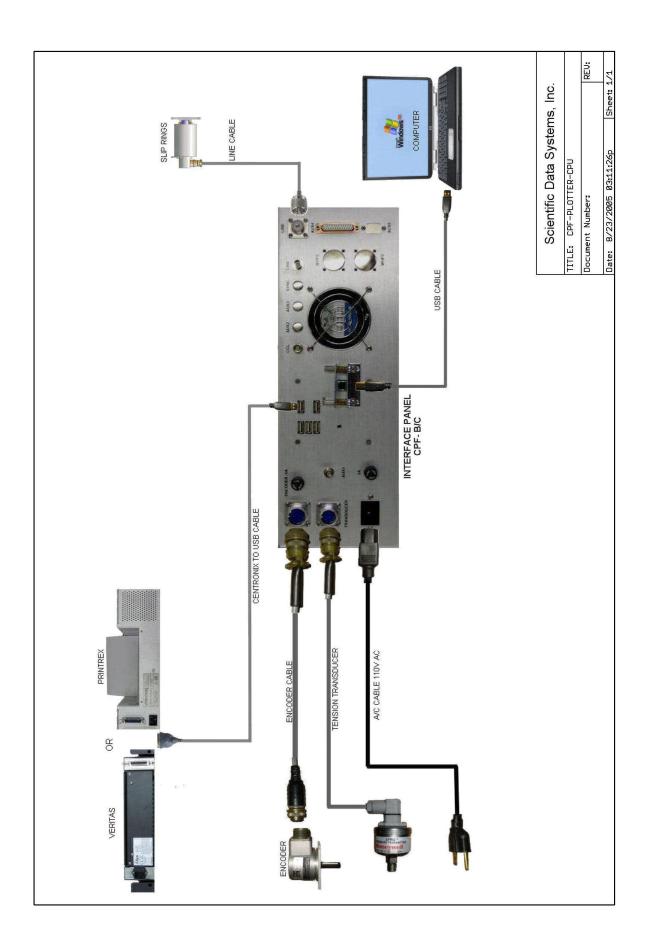
Close the Manual Patch window, and the Warrior Database Dumper window. The database should be accessible

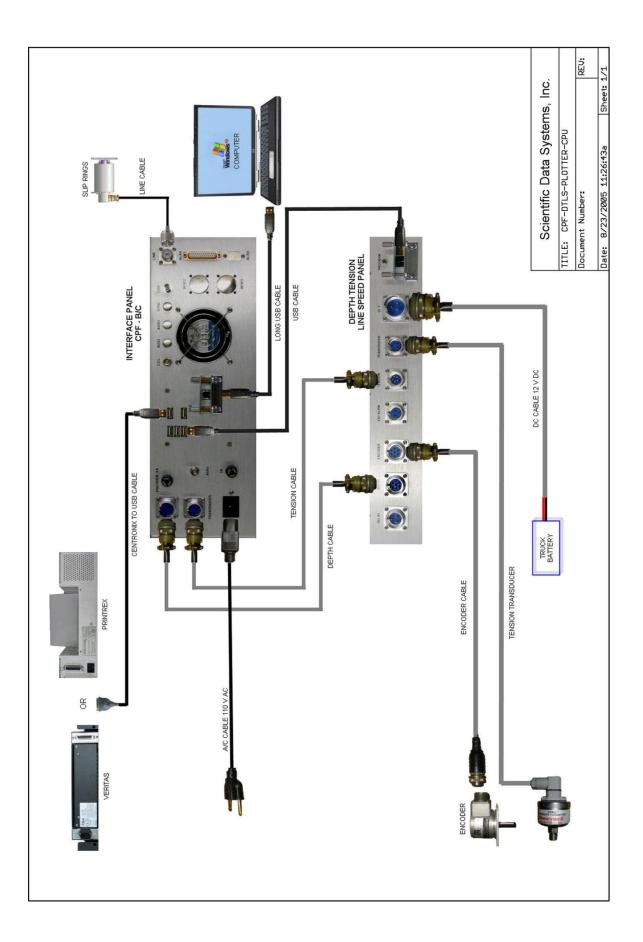


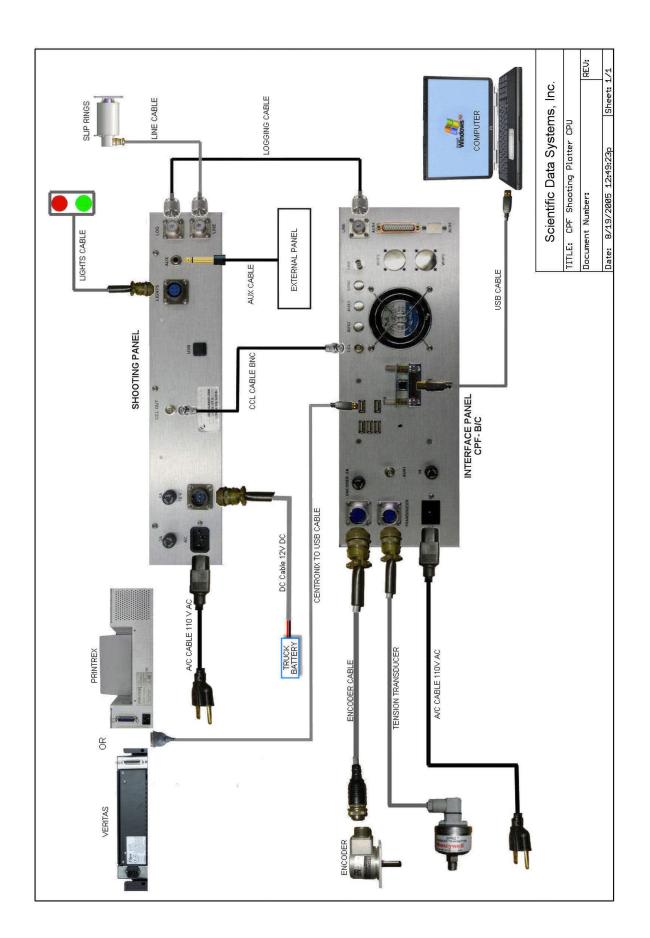
# **20 Panels Hookups**

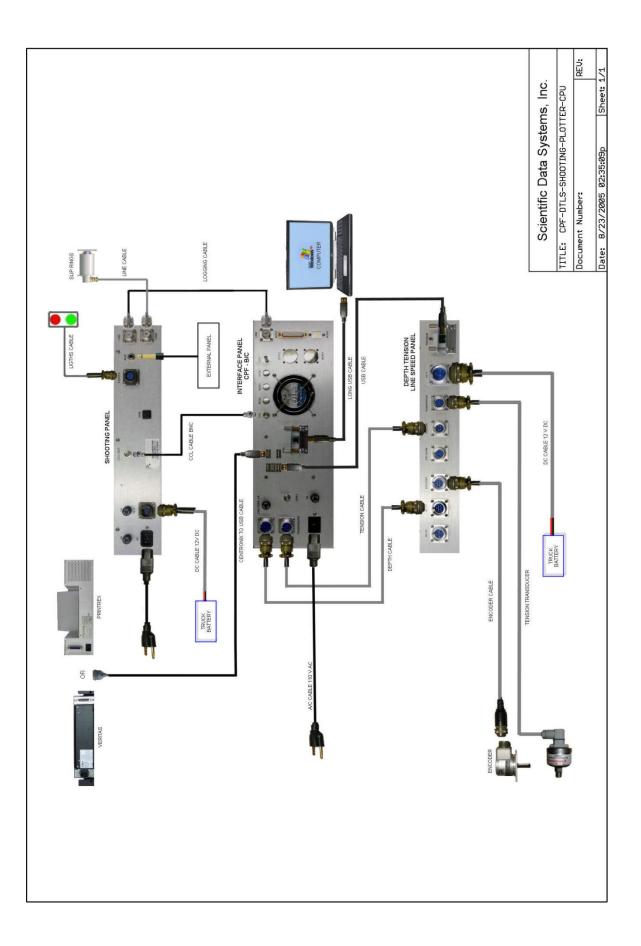














# **21 Perf Job Planner and UniFire**

# **21.1 Perf Job Planner**

The primary purpose is to assist in the design and assembly of perforating strings and help the user execute perforating and TCP jobs. For TCP jobs, the result will be an inventory of all the items required to complete your TCP string. For wireline jobs, you will have a list of all the runs you plan on making and the design of each tool string that goes in the hole. For either type of job, you build every gun to your specifications, and then add all the other components required to complete the tool string.

## 21.1.1 TCP Jobs

For TCP, the job table will be the inventory list of all the items that will go in the hole.

## 21.1.2 Wireline Jobs

= <mark>=</mark> Job Plan					
Job Edit Int	erval Print Utilities	Options Help			
New 🕨	Wireline 💦 🔤	I			
Open	TCP K		Description	Length (ft)	OD (in)
Wizard				200.900 (00)	00 (0)
Save					
Save As					
Exit					
<	1				>

FIG: 21.1 Job Plan

For Wireline jobs, the job table will be a list of all depth intervals that you will be dealing with during your job. One line in the job table will indicate either a depth to be perforated or a depth to set a plug or a depth to cut casing.

Each job consists of 1 or more Runs. Each Run contains 1 or more Intervals. Each run has a Base Service. The Base Service is what service will be run in the hole that will be attached to the gun, plug, whatever. Each interval consists of either a single depth or a single depth range (top depth - bottom depth). A run may contain more than 1 interval if the string contains a select fire assembly, or is a core gun, or is any other combination of devices that can be activated over more than one depth or depth range. The other possibility is that you may have more than one interval that will be part of one gun. If you must perforate from 5000-5002 and 5008-5010, then that may be achieved with 1 10' carrier but will still have to be entered as 2 intervals. The program will verify with the user if two intervals can be placed in the same carrier and that will be shown in the Job table by two intervals with the same serial number. Serial numbers of guns will be generated by the system and not editable by the user.

One interval takes up one line in the Job table. An interval consists of a single depth or a single depth range (top depth - bottom depth). An interval must be associated with a run name and a base service and must consist of some type of device.

here are two types of inventory you will need to do in order to take full advantage of the job plan module.

#### 21.1.2.1 Tools Inventory:

Since the purpose of this is to design perforating and TCP jobs, to start you need to make entries for all the equipment you will run in the hole using the Tools Editor. This includes gun subs, sinker bars, tandem subs, setting tools, firing heads, etc. Some items you may want to create as non-serial items so you can add as many to a tool string as you need. For this to properly calculate offsets and tool string lengths, all items that go in the hole that modify the length of the tool string need to be added to the tool string through the tool string editor. For example, if you choose a 10' carrier for a perforating job, that carrier will automatically be added to the bottom of the service you have chosen. But you will have to add the top and bottom gun subs to the tool string through the tool string editor.

#### 21.1.2.2 Perforating Inventory:

From the job plan module, you can create the gun types that you use. From job plan menu select Job->Wizard, and then go to the Build guns tab. From there you can create your gun types and charge types that you use. Right click on the Gun Type, and then select New Item or New Category. Each gun type can have 0 or more categories and each category can have 0 or more items associated with it. Categories are optional. For each item you create, you will see a picture on the right side. Just click on the item you want to edit. When you are done, select **Save** gun type. Now when you go to creating a perforating job, you will select from your inventory and the gun will automatically be filled in with the requested shot length. You will be warned if the requested shot length does not fit in the gun you selected.

## 21.1.3 Getting Started

There are two types of inventory you will need to do in order to take full advantage of the job plan module.

#### 21.1.3.1 Tools Inventory:

Since the purpose of this is to design perforating and TCP jobs, to start you need to make entries for all the equipment you will run in the hole using the Tools Editor. This includes gun subs, sinker bars, tandem subs, setting tools, firing heads, etc. Some items you may want to create as non-serial items so you can add as many to a tool string as you need. For this to properly calculate offsets and tool string lengths, all items that go in the hole that modify the length of the tool string need to be added to the tool string through the tool string editor. For example, if you choose a 10' carrier for a perforating job, that carrier will automatically be added to the bottom of the service you have chosen. But you will have to add the top and bottom gun subs to the tool string through the tool string editor.

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## 21.1.4 Job Wizard

Use the Job Wizard to complete the information for your job. You will have 4 pages (tabs) of information to fill out. The first 3 tabs will be the same whether you are doing a TCP job or a Wireline job.

z <mark>i</mark> " Wireline	e Job - field/well/ru	n1					×
Job Edit I	nterval Print Utilities	Options Help					
New Open	• 1   🔨 5- 5- E	9					
open	Description	Interval (ft)	Shots Per ft.	Stop Depth (ft)	Fire Polarity	Base Service	S
Wizard							
Save							
Save As							
Exit							
<							>

FIG: 21.2 Job Wizard

#### 21.1.4.1 Job information

You can enter the database name of the correlation log here. If you have a correlation log entered here, when you set your results, a well object will be added to this pass indicating the completion of that interval. All the other information is for reference use only.

🖥 Job Planner								×
Job Information	n	Sho	ot Depths		Build Guns	1	Complete Toolstrings	
Step 1 - Job inform	nation —							
Job name	field/wel	I/run1				Job date	2/ 2/2006	•
New Wireline job	Ne	w TCP job	Open existing jot	2	Correlation log	a\CBLDEM.D	)B	
Job type	🖲 Wirel	ine C	) TCP		/ /field/well/run1		Select	
Company name	GOOD				,			
Well name	OIL				Operator	NICE		
					Gun loader	SUPER		
Item	[ [	epth (ft)			Description		Length (ft)	OD (in)
<			IIII					>
For help press <f1></f1>			Print	:			Next>>	Close

## 21.1.5 Shot Depths

Enter your shot depth information here. Fill in the job table with shot depths or select an item from the list to edit. To enter a new interval, if the button says Update interval, press the Clear selection button. Then type in your new depths and select the Add interval button.

Job Planner						
Job Information		Shot Depths	Build Guns	Co	mplete Toolstrings	
Step 2 - Shot depth Top shot depth Bottom shot depth Shot length Shots per ft. Fire polarity	18 265.0 285.0 20.0 4.0 • Positive Jpdate interval	Depth options Enter shot depths Enter length and s Enter single depth Negative Clear selection	shot density only	Fill in list with depth from lis depth from lis and then hit t key.	en just enter the sho	;
Item	Depth (ft)		Description		Length (ft)	OD (in)
Cigan-1	265.0 - 285.0				0.0	0.00
For help press <f1></f1>		Print	<< Prev		Next>>	Close

FIG: 21.4 Job Planner

## 21.1.6 Build Guns

Now that you have intervals in your table, you need to assign a gun type to your depth interval. If you have no gun types in your list, then you must create new ones (see Gun types below). To assign a gun type, first select the interval from the list of intervals, and then choose the gun type from the list of gun types. If you want more than one interval to fit in one gun, then select more than one interval by using <ctrl> left click. If the intervals can fit in one gun, then a message will pop up reminding you that more than one interval has been assigned to a gun. Otherwise the same gun will be assigned to each of the selected intervals. You should see your gun in the picture on the right. The parameters that show up (length, top shot, etc.) are the ones that you assigned to that gun type. You can edit any of those parameters to change them for this gun by clicking on any of the values and typing in new values.

The gun will be loaded by default starting at the top of the gun. To change where the loaded interval starts, click in the loaded area of the gun (where the red dots are) and slide the loaded interval up or down. The distance to the top shot and bottom shot will change as you slide the loaded interval. The distance to the top

shot can be no less than the top loadable number and the distance to the bottom shot can be no more than the bottom loadable number.

When you are viewing the design of a gun with no interval assigned to it, the shots will be indicated in black. When you are viewing a gun that does have an interval assigned to it, the interval will be displayed in the upper left part of the diagram and the loaded interval will be indicated by red shots.

You can print a picture of the gun from here to give to the gun loader.

21.1.6.1 Gun types

Job Informati	on 📔	Sho	t Depths		Build Guns	Complete Toolstrin	gs
itep 3 - Build gu	os from shot	depths					
elect interval(s)		-					
Run	Descript		Interval (ft) 265.0 - 285.0				
<b>H</b>			200.0				
<				>			
iun Types							
Expend	able Ca			_			
No Carr	er N	lew Item					
Plug/Pa	icker N	lew Categor	У				
🚽 Casing I	Jutter	elete					
User De	fined						
Add, delete ch	arge types -	assign charg	ges in diagram —				
<new></new>			→ Delete		C	Courses   Delayers	
,					Save gun type	Save as Delete g	un (ype

#### FIG: 21.5 Gun Types

Enter new item name	X
HIGH	ОК

#### FIG: 21.6 New Item

There are several predefined gun types, or you can add your own gun type. Your own gun type will require a metafile picture to go with it. To add new items, right click on the Gun type and then select New Item, New Category, or Delete. For each type of gun, you can have 0 or more categories, and then for each category you can have 0 or more items. You can drag and drop items and categories within their gun type if you want to organize things differently. All the gun and charge type information goes in the file explobiles.ini so once you have all the standard gun information entered; you can pass out copies of this file.

Once you have a new gun showing in the window on the right, you can edit any of the parameters for the gun. All entries are edited by clicking on the value to be edited and then typing in a new value. The following entries are critical to having the gun diagrams and shot calculations come out properly. The Total length

value is the total length of the item without any gun subs. The Top shot value is the distance from the top of the gun body to the top shot. The Shot length is the maximum shot length that this type of gun can be loaded. All the parameters can be edited for a specific gun once you assign this gun to an interval in case you have a carrier that is slightly different from the generic gun type you created.

-i	Job Planne								×		
	Job Info	rmation	Sho	t Depths		Build Guns		Complete Toolstrings			
	_ Step 3 - Buil	d guns from she	ot depths								
	Select interv	/al(s), then sele	ct gun.			Edit Evnendeble	Corrior	HIGH			
	Run	Descrip	ption	Interval (ft)	)	Edit Expendable Carrier					
	1			265.0 - 285.0				↑     I <b>–</b>			
									-		
									-		
	<	III ]			>				-		
	Gun Types										
	Ext	pendable Carrie	r			Total length	10.0 ft <del></del>		-		
	I I No	Carrier				Top shot Shot length	0.5 ft.				
		g/Packer				Shot density	4.0 shot:	s/ft.	•		
		sing Cutter er Defined				Phasing	45				
		er Derined				Diameter Weight	4.50 in. 70.00 lb.		•		
						Charge type	XXX	¥ <u>9.5</u> ●			
		e charge types	- assign char	ges in diagram Delet	- 1			¥			
	×××				e	Save gun type	Sav	re as Delete gun	type		
F	or help press <	F1>		Prin	t	< <prev< td=""><td>,</td><td>Next&gt;&gt;</td><td>Close</td></prev<>	,	Next>>	Close		

FIG: 21.7 New Gun Type

## 21.1.7 Charge types

All the charges that you create in this list will show up in the list of charge types that you can choose from when you edit your gun parameters from your gun picture on the right.

🗂 Job Planner					×
Job Information	Shot Depths		Build Guns	Complete Toolstrings	
Step 3 - Build guns from sh	ot depths				
Select interval(s), then sele	ct gun.				
Run Description Inter		)			
L	265.0 - 285.0				
<		>			
Gun Types					
Expendable Carrie	ſ				
Plug/Packer					
Casing Cutter					
Add, delete charge types	- assign charges in diagram	e I			
n/a			Save gun type S	ave as Delete gun type	
<new></new>					
For help press <f1></f1>	Print		< <prev< td=""><td>Next&gt;&gt;</td><td>Close</td></prev<>	Next>>	Close

FIG: 21.8 Add New Charge

Enter new charge type	
	ОК
FIG: 21.9 New Charge	

## 21.1.8 Build TCP string

Selected TCP for the job type, then you will see this tab. The TCP job is centered around the gun shot depth, so as you add items to the string, their depth will be calculated based on the gun shot depth. To find items to add to the TCP string, select the Edit TCP string button. This will bring up the tool string editor and allow you to add and remove items from your TCP string. It is up to the user to add any gun subs to the carrier to make the diagram complete. If you have more than one gun in the TCP string, the depths will be referenced from the top gun. You will have to fill in items below the top gun to get the rest of the guns on depth or you will get a warning message. When you are completed with your TCP string, and then select the Finish button.

#### 21.1.8.1 Off Depth Warning:

If you have more than one gun in the TCP string, then you may get a warning message that displays how far off depth the gun is. The depth value is the amount of space you need to add above that gun to make it come out on depth. If it is negative, then you have too much space above the gun. From the Build TCP

String tab, you can modify that amount by changing the value TCP Depths must be within. The default is 0.25 ft.

## 21.1.9 Build Tool Strings

Selected Wireline for the job type, then you will see this tab. The first thing you must do is assign a service to one or more intervals. From the services editor, there is an option for every service – "**Make this service available for perforating**". Only the services that have this option checked will show up as services you can assign to a perforating interval.

Select one or more intervals from the list that will be run in the hole on one tool string. Say you have 10 intervals in the list. You may have two intervals that you will perforate with one run in the hole - either with select fire or because they both fit on one gun. Once you have those items selected, then choose a service from the list of services at the bottom of the screen and then select the Assign Service button. The tool string editor will start up with those selected guns in the tool string as well as the tools from the service you selected. It is up to you to add your gun subs and any other items to make this match what you are running in the hole. When completed, select the Finish button.

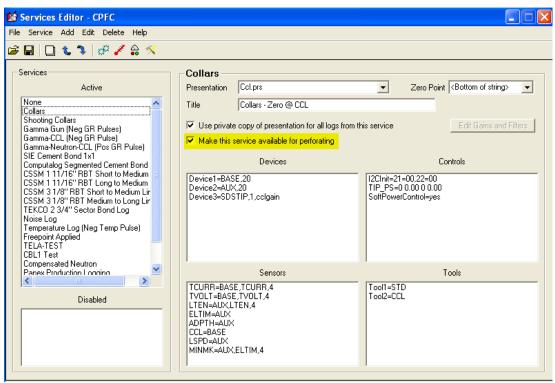


FIG: 21.10 Service editor

## 21.1.10 Main Window

21.9.1 Job menu Saving a Job: The following information will be saved with each job:

## 21.1.11 The job plan itself

- /f/w/r/\_jobplan\_/\_job\_/1

The results of the job

- /f/w/r/\_jobplan\_/\_report\_/1

Each tool diagram

- /f/w/r/\_jobplan\_/\_wtd\_/[name]

The TCP diagram ( for TCP jobs )

- /f/w/r/\_jobplan\_/\_tcp\_/1

## 21.1.12 Utilities

Insert a Well Object into a Log: Will create a well object in the run you have chosen. The tool diagrams will be saved in the database also, so you can recreate the picture.

#### 21.1.12.1 Import/Export

The loaded job can be exported to a floppy disk to be imported on another machine. The floppy will contain one file with the job information as well as tool diagram files for the guns. Note that every gun has a serial number assigned to it. When the job is imported to another machine, those gun serial numbers may already exist, so the imported serial numbers may be reassigned to prevent conflicts.

z <b>i</b> " Wir	🕯 Wireline Job - field/well/run1											
Job E	dit Interval Print	Utilities	Options H	elp								
	🖻 🖬 🛛 🗡	81	rt Job rt Job									
Run	Descript	ic			iots Per ft.	Stop Depth (ft)	Fire Polarity	Base Service	S			
1		Inser	t a well objec	t into a log		0.0	Pos	Shooting Collars	1			
2			245.0 - 250.	0 4.0		0.0	Neg		2			
<									>			

FIG: 21.11 Utilities Charge

#### 21.1.12.2 Changing order of runs

Let's say you have 2 different runs created. Then you decide you want to have run 5 be the first run. Click on run 2 and drag it up above run 1 and drop it. You will be asked "Move run 5 before run 1?". The run numbers will be rearranged; run 5 will be called run 1, run 1 will be called run 2, etc. The renumbering will always start at 1.

Job Plann	ег								×		
Job Info	rmation 9	Shot Depths	Build Guns		Corr	plete Toolstrings					
	Step 4 - Complete each tool string by assigning a service to selected interval(s) For each run in the hole, select one or more intervals, then pick a service from the list below.										
Run	Description	Interval (ft)	Shots Per ft.	1 1 1		Fire Polarity		Service	Serial		
1		265.0 - 285.0 245.0 - 250.0		0.0 0.0		Pos Neg	Shooting Col	lars	2		
					Reord	er runs	X				
<					Move run 1 after run 2?				>		
Pick a servi	ice for selected interval(s),	then click Assign servic	e Assign service	1				Edith	oolstring		
				]		Yes	No				
For help press <	F1>		F	rint	L	< <prev< td=""><td>Finisł</td><td>h</td><td>Close</td></prev<>	Finisł	h	Close		

#### FIG: 21.12 Reorder Runs

		hot Depths	Build Guns	COI	nplete Toolstrings	1	
	nplete each tool string by a n in the hole, select one or			e list below.			
Run	Description	Interval (ft)	Shots Per ft.	Stop Depth (ft)	Fire Polarity	Base Service	Serial
1 2		245.0 - 250.0 265.0 - 285.0			Neg Pos	Shooting Collars	2 1
<							>
<sup>p</sup> ick a servio	e for selected interval(s),	then click Assign service					
		•	Assign service			Edit	t toolstring

FIG: 21.13 Job Planer swap Runs

#### 21.1.12.3 Running a wireline job

Now that you have built a custom service for each run in the hole, you will control the service that is loaded from Job Plan. Right-click the run you are making from the list of runs and select Load Service. That will start Acquisition with the selected run. Make sure the tool diagram matches what is going in the hole, including gun subs. If this does not match exactly, then your Stop Depths will not be calculated correctly. When you close the tool diagram window, the Stop Depth will be updated, indicating the depth to stop the hoist to make the perforation. If you have made a previous run with this service, then Acquisition should load with the next free pass as the Dataset.

In the Depth Configuration screen, there is a "Stop Depth" setting that you can use to indicate when your logging depth is close enough to perforate.

#### 21.1.13 Active interval

You will also notice there is an Active Interval choice below Load Service. Since a single run in the hole can have more than one interval associated with it, you can choose the interval within the loaded service you want to be active. If you only have one interval within the run, then that interval will be active. The active interval will change the color of the depth to green when the hoist depth is at the active interval stop depth. Also, the active interval will have an icon next to the run indicating it is active.

#### 21.1.13.1 Results

Once you have completed one interval, right click on the interval and select Results. Your interval will show a different icon dependent upon what choice you make for your results. You can also add a text string to go with your results. You must at least choose one of the options (Successful, Unknown, Misfire) so you can keep track of the runs you have made already. If you choose Successful, then it will automatically add a perforating or plug well object to the log pass. If you have a correlation log entry in your Job Information screen, then the well object will be added to that log pass. Else the well object will be added to the current log pass.

eĵ‴ \	Wireline Job - field/well/run1     Image: Constraint of the second										
Job	Edit Interval	Print U	ilities Opl	tions Help							
Run 1	Job Info	Ð	» 🖱								
Run	Depths Guns	iption		Interval (ft)	Shots Per ft.	Stop Depth (ft)	Fire Polarity	Base Service	Serial	Charge Type	Results
1	Toolstrings		265	.0 - 285.0		0.0	Pos	Shooting Collars	1		
	Results										
<											
											1

#### FIG: 21.14 Results

Enter results for selected interval(s)									
🔿 Not Completed (	Successful	C Attempt	C Missfire						
Wellhead Pressure set	to 2500 psi		ОК	Cancel					

FIG: 21.15 Comments

z <mark>i</mark> Wireli	ne Job - field/well/ru	un1							
Job Edit	Interval Print Utilities	Options Help							
🚹 🔟 🖬	11 🖬 🚅 🔚 🛛 🥆 🖗 🕮								
Run	Description	Interval (ft)	Shots Per ft.	Stop Depth (ft)	Fire Polarity	Base Service	Serial	Charge Type	Results
OK1		265.0 - 285.0		0.0	Pos	Shooting Collars	1		Wellhead Pressure set to 2500
									1
<									>
FIG: 2	1.16 Job Statu	JS							

## 21.1.14 Print

zi <sup>#</sup> Wireline Job -	field/well/ru	in1					×
Job Edit Interval	Print Utilities	Options Help					
🛅 🛅 🚔 📙 🕴	Job Table Guns						
Run De		Interval (ft)	Shots Per ft.	Stop Depth (ft)	Fire Polarity	Base Service	S
1	rooisening	5.0 - 285.0 <b>د</b> _		0.0	Pos	Shooting Collars	1
2		245.0 - 250.0	4.0	0.0	Neg		2
5 - 16							
<							>
FIG: 21.17 Print	options						

Select the option to print.

# 21.2 UniFire

## 21.2.1 Introduction

Addressable switches provide the client with the ability to perforate zones in sequence and if necessary, out of sequence. This has become extremely popular with the advent of shale oil production and pump down perforating. Warrior supports addressable switches from various manufactures including but not limited to "GEO Dynamics, Guardian, Phoenix, Tru-Perf, Schlumberger, SRS and VeriFire. All the before mentioned switches operate with a Warrior STIP panel and a properly modified Probe shooting panel. The STIP panel must have a PSXD R7. It is recommended that you have a TELA HR5 "with appropriate panel wiring "and an ANASW R15 or R16 with U1 and U2 update to a surface mount OP Amp. All ANASW R20 have the correct op Amp. Most switches that are compatible with Warrior software and hardware operate from the new unified desktop. All screen shots will be made using the Phoenix addressable switches but will be similar for others. The UniFire software has been optimized for pump down perforating for optimal speed and ease of use.

#### 21.2.2 UniFire Menu Option

UniFire is a standalone application that loads the required software in a similar way that Warrior Acquisition does. Most addressable switches supported by Warrior are compatible with this front end. To load the front end simply click on the shortcut.

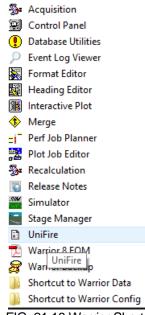


FIG: 21.18 Warrior Shortcuts

Once UNIFIRE is loaded you will be presented with a switch optimized front end.

a wanor Universal Perforating Interface	
<u>File Display Report Help</u>	
🗎 💎 🛅 🗟 🗞 🔻 🔹 🛣 🗠	7h
	<u> </u>
lauratary.	
Inventory	
Arm	
Fire	
Inc	
Countdown	XY
Cancel	
	Depth (ft)
Log Up	
rog oh	
Log Down	
Time Log	
Stop depth	
Stop Log Disable Stop Depth	
Drop Log	
Actual / Anticipated Switch position	Speed (ft/min)
Show Channels	0.0 Depth Control
	0.0
Ready	NUM

#### FIG: 21.19 UniFire Front End

If you have a like to add a corporate water mark to UniFire save a bitmap with the name MyWatermark.bmp to the Warrior config directory "C:\ProgramData\Warrior\Config ".

Warrior Universal Firing Interface		×
Ele Repely Beport Help		
Inventory		
Arm		
Fire XY		
Cancel		
Log Up		
Stop Log Depth Depth Stop Depth Stop Log Stop Article Stop Depth Stop Stop Stop Stop Stop Stop Stop Stop		
Show Channels 0.9 Depth Control		
Ready	NUM	

FIG: 21.20 Water Mark

## 21.2.3 Building a Stage

To build a stage you have a choice of using the icons or the more traditional File pull down menu. Either choice will give you the same results. To create a stage select the tool bar icon furthest to the left.

To Be Determined					⇔_	
Eile View Docking Help	_					
1	2 😼 🔬 👻	11452	7 23			
Inventory				XY		
Arm						
Fire						
Countdown						
Cancel						
Log Up						
Log Down						
Time Log						
Stop Log						
Show Channels	<		>			
Anticipated / Actual	Switch position			Depth (fr	2	
				10		
			-	_/\ \	<b>U</b>	
Stop depth				-49	· <b>J</b>	
	Disable Stop			Speed (ft/min)		
	Depth			-0.9	Depth Co	ontrol
Ready					P	NUM

FIG: 21.21 Build a Stage

This will bring up the Create Stages dialog. Enter the field, well, stage number and well color. The UniFire background will be colored in according with the color selected to ensure you are on the correct pad. At this point you can choose to reopen an existing database if you wish to continue a stage. Once you have competed the Create stage fields click OK.

Create stage(s)		×
Database	C:\ProgramData\Warrior\Data\LabWell_Yellow_191101_1331.db	ОК
Field	Lab	Cancel
Well	LabWell	Descent subtine database
First stage number	1	Reopen existing database
Well color	Yellow	

FIG: 21.22 Create Stage Dialog

This will open the next configuration window. In this window you will build your stage, selecting the service will automatically populate the UniFire front end with the appropriate buttons for the switch 's manufacture. It will also populate this window with the switch options available. Notice the yellow background this was updated from the stage color selected on the previous screen. All subsequent Stage #1 screens will be yellow. Once you have selected the correct service for your specific switches add the appropriate switch hardware for this stage. Below the Stage bottom depth there is a button that allows you to add optionally specific stop depths within the stage.

Creating Stage #1	×	Creating Stage #1	×
Stage #1	Service	Stage #1	Service Tru-Perf Addressables
Stage Top Bottom Details SD	IIUR80iOWNII       Number of guns       Stage information       Stage top depth       Stage botton depth       Enter Stop Depths       Save     Close	Stage Top Bottom Details SD	Tru-Perf <sup>TV</sup> Switches Release tool Safety switch Number of guns 4 Plug Stage information Stage information Stage top depth Stage bottom depth Stage bottom depth Save Close

Once you have saved the stage you can contiue to add stages by simply entering new dpths and clicking on save assuming the switch configuration remains the same.

Stop depths for stage 1: 5000 - 5500 (5 required)	$\times$
Enter each stop depth into the edit field below. Separate with spaces, commas or the ${<\!\!\!\!\!\!\! {\rm Enter\!>\!$	
5010, 5020, 5030, 5040,5050	
OK Can	cel

FIG: 21.23 Building a Stage Dialog

When completed save the stage. Check that the stage is displaying the correct depths. The details Colum in this case indicates a Release Tool, 4 Guns and a Plug. The Details column will show R4P as a representation of your stage. If all the details are correct select close.

Editing Stage	e #1				×
Stage #1				Service Tru-Perf Addressables	
Stage	Тор	Bottom	Details	SD	
1	5000.0	5500.0	R4P	Y	Tru-Perf ™ Switches         Release tool         Safety switch         0 ✓         Number of guns         4         Plug         Stage information         Stage top depth         Stage bottom depth         5500.0         Enter Stop Depths
					Save Close

FIG: 21.24 Populated Stage

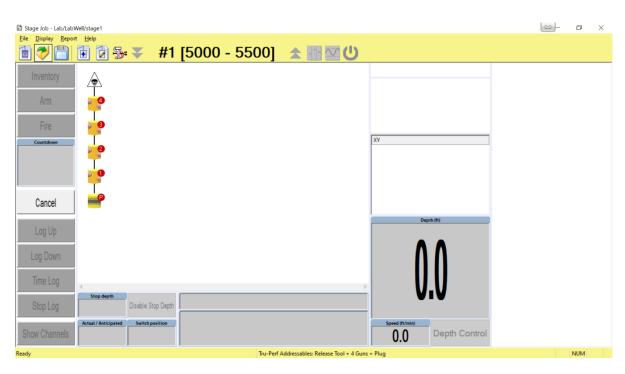


FIG: 21.25 UNIFIRE With Stage Loaded 1

#### 21.2.4 Using UniFire

Again notice the background color is yellow coresponding to the stage color. In the top banner the stage number and top and bottom depths are shown. There are also buttons to add a stage, edit a stage and an acquisition buton. Notice that a Release Tool, four guns and a Plug are shown graphically in the control panel. After the stage is loaded click on the Acquisition button. This will load Acquisition in the background, on the banner the panel control, PMon buttons are now enabled and Near the lower right hand corner the depth and line seed are also enabled. Selecting the Depth Control button will now let you adjust your depth. You may also notice that the status window and Line Tension windows have now become active.

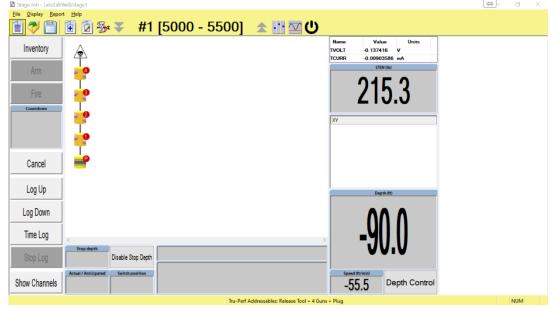


FIG: 21.26 UniFire With Aquisition Loaded

Sellecting the panel control icon next to the PMON and Power icons will allow you to adjust CCL gain, telemetry signal, downlink level and depending on the service Gamma Ray or telemetry signal.

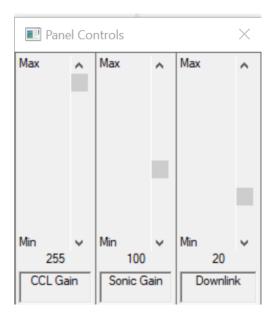


FIG: 21.27 Panel Controls 2

Clicking on the Pmon button displays the telemetry window and if included in the service the corelation window.



FIG: 21.28 PMon without Corelation 3

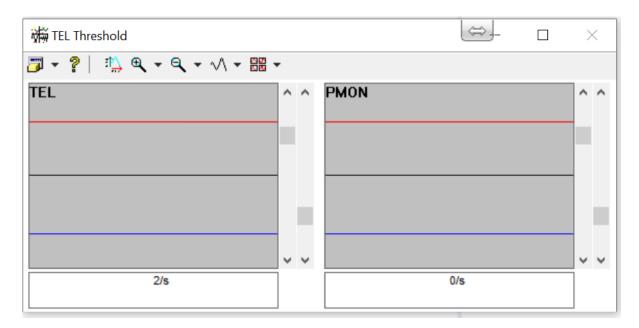


FIG: 21.29 PMon with Corelation

#### 21.2.5 Correlation Logging

When Acquisition was loaded the buttons on the left had side of the screen were activated, at this point you can log up , down or on time. You can also inventory your switches. You must be at a save depth 200 ft before you can power up you correlation tool or inventory your switches.

To run a coreclation down pass sellect correlate, make sure your power settings for your corelation tool are set correctly and your PMON thresholds and gains are corect.

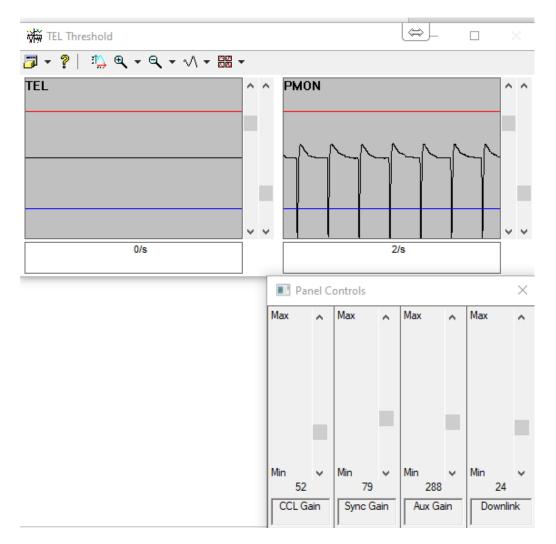


FIG: 21.30 Corelation Settings

To end the corelation log and proceed to firing the switches stop the log and click on the Perf Mode button.

📓 Stage Job - Lab/Lab	Well/stage1					l	⇔– a ×
File Display Report	rt Help	#1 [5000 - 5500]	🖈 🕛 🖂 🕛				
Inventory		_ <b>,</b>		Name Value TVOLT 0.331048 TCURR 0.352399	Units V mA		Cl_h         LAS
Fire				215	5.3		
Cancel				XY			
Log Up				Depth	***		
Log Down Time Log							
Stop Log	< Stop depth		>	90,	1.)		
Show Channels Perf Mode	Actual / Anticipated Switch posit	Switch to Correl	late Mode	Speed (ft/min) -5.1	Depth Control	Ready Pres=(priv	vate) (360° / hour) //
Logging down		Tru-Perf A	Addressables with Gamma: Release			Ready Pres=(priv	vate) (360" / hour ) //, NUM

FIG: 21.31 Logging Corelation Pass

As you log the shooting depths will be highlighted on the log transitioning from yellow to green as you enter your perforation zone.

🗃 🕷 🗳 🚑 👯 📴 🎫 돈	
CCL_TOOLPOS GR GR-N-CCL	
5 CCL -5	÷
	<b>^</b>
14950	
	-
15000	

FIG: 21.32 Highlighted logging zones

## 21.2.6 Inventorying Switches

To inventory click on the Inventory button, make sure your Sync Gain and Download Gain sliders are set correctly. You can monitor the uplink using the PMON window.

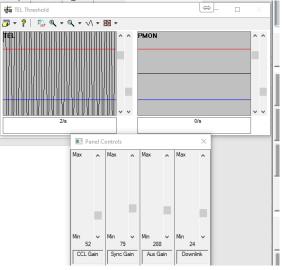


FIG: 21.33 Switch Telemetry

As the inventory is completed the individual switches will change color to green as they are found. There will be switch mismatch error if the switch count or type does not match the anticipated switches for the stage.

🖬 Stage Job - Lab/LabWell/stage1	
<u>File Display Report Help</u>	
🛅 🆈 📋 🗟 🗞 ∓ #1 [5000 - 5500] 🖈	·'' 🔽 🕛
Inventory	Name         Value         Units         Image: Constraint of the state
Arm p	
Fire Countour	215.3
Cancel	XV
Log Down	Depth (ft)
Time Log	0.05 5
Stop Log <	
Show Channels Disable Stop Depth	
Correlate 6/6 ARM	detected -5.1 Depth Control Ready Pres=(private) (360° / hour)
Tru-Perf Addressab	es with Gamma: Release Tool + 4 Guns + Plug NUM

FIG: 21.34 Switch Inventory

#### 21.2.7 Arming Switches

At this point if you are on depth you can begin to shoot your switches. Click on any switch and the Arm button will be activated, if you need to shoot out of sequence you be prompted to use the control key on your keyboard while clicking yes on the Warrning window.

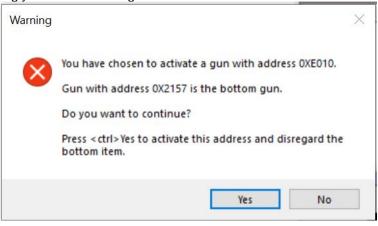


FIG: 21.35 Selecting out of Sequence Switch

Clicking Arm in sequence will highlight the selected switch and start the countdown timer, you will not be able to fire the switch unless you are at the correct depth. You have until the timer times out to position the gun and fire or you will need to reinventory and Arm. The depth shown will go from red to green when you are within the switches depth. There will be a message in the message box Arm Success when a switch is armed and ready to fire.



FIG: 21.36 Arming the switch

Stage Job - Lab/LabWell/stage1				⇒– o ×
File Display Report Help				
🛅 ờ 📋 🔁 🈼 🔻 🛛 #	*1 [5000 - 5500] 📑	<u>▲ · · · ☆ </u> · · · <u>·</u> · · · · · · · · · · · · · ·		
		Name TVOLT		Image: Second system         Image: S
Arm		TCURR	2 -9.01479 mA LTEN (Ib)	9 CCL -1 -200 LSP0 (filmin) 200 ▲     0 GR (GAP) 150 10 CCL -10     0 LTEN (lb)5000 ▼
			045 0	
Fire			215.3	
Countdown				
48 👎		XY		
· · · · · · · · · · · · · · · · · · ·				
Cancel				
Log Up				
			Depth (ft)	
Log Down				
Time Log				
Stop Log <				
Stop depth	ARM SUCCES	S	TIVIV	
Show Channels 5040.0 Disable Stop De			ipeed (ft/min)	
Correlate 6/6 ARM	ARMING Plug (xD		-5.3 Depth Control	
	Tru-Perf Addr	ressables with Gamma: Release Tool + 4 0		Ready Pres=(private) (360° / hour) // NUM

FIG: 21.37 Successfull Arming and on Depth

#### 21.2.8 Firing Switch

When you click on the Fire button you should see aFire comand Sucsess in the message box. You should now be able to fire the switch using the Shooting Panel. As you ramp the Variac the shooting voltage and current will be shown on the window below the line tension.

Stage Job - Lab/Lab/Veil/stage i					
Eile Display Report Help	#1 [5000 - 5500]	★ … ☑ ψ			
Inventory		Name TVOLT TCURR	-0.387264 V	ts 9 CCL -1 0 GR (GAP) 150 0 UTEN (Ib) 5000	
File Countdown		Plug.	215.3		
Cancel					
Log Down			Depth (ft)		
Time Log					
Stop Log <	0	>	4330.0		
Snow Channels	e Stop Depth	s	Speed (ft/min)		
Correlate 6/6	XYPlot Setup saved as Lab/LabWe	Il/stage1/Plug_shotlog/_xy_/1	-5.3 Depth C	ontrol Ready Pres	=(private) (360" / hour )
	Tru-Perf A	ddressables with Gamma: Release Tool + 4	Guns + Plug		NUM

FIG: 21.38 Successfull Switch Firing

If you right click on a switch that was fired you can display its shot profile. You can now continue to shoot the rest of the guns in sequence.

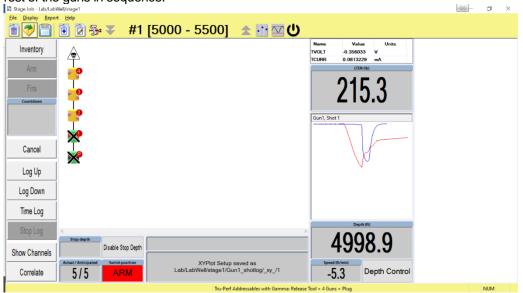


FIG: 21.39 Switch Firing inn Sequence



# **22 USB Shooting Panel**

The shooting panel has a new additional option Safety Software Key to run guns, if the panel has the USB port available (USB board inside), it should be connected to USBHUB back to the interface panel, add the DEVICE, SENSORS and Check the box to **Make this service available for perforating** must be include in the service

Setup in the software the new device, add the Device CYSHPNL, 4

## 22.1 Software set up

🕼 Services Editor - CPFC		
File Service Add Edit Delete Help		
Services None Collars Shooting Collars	Shooting Collars         Presentation       Ccl.prs         Title       Shooting Collars - Zero @ CCL         Image: Use private copy of presentation for all logs from	Zero Point CCL      this service
Gamma Gun (Neg GR Pulses) Gamma-CCL (Neg GR Pulse) Gamma-Neutron-CCL (Pos GR Pulse) SIE Cement Bond 1x1 Computalog Segmented Cement Bond CSSM 111/16" RBT Short to Medium CSSM 111/16" RBT Long to Medium	Make this service available for perforating Devices Device1=BASE,20	Controls
CSSM 31/8" RBT Short to Medium Lir CSSM 31/8" RBT Medium to Long Lir TEKCD 2 3/4" Sector Bond Log Noise Log Temperature Log (Neg Temp Pulse) Freepoint Applied TELA-TEST CBL1 Test Compensated Neutron	Device3=SDSTIP,1,cclgain	TIP_PS=0 0.00 0 0.00 AlwaysShowSens=1
Panex Production Logging	Sensors	Tools
Disabled	TCURR=BASE.TCURR,4 TVDLT=BASE.TVDLT,4 LTEN=AUX_LTEN,4 ELTIM=AUX ADPTH=AUX CCL=BASE LSPD=AUX MINMK=AUX,ELTIM,4	Tool1=STD Tool2=CCL_SHT

FIG: 22.1 Device

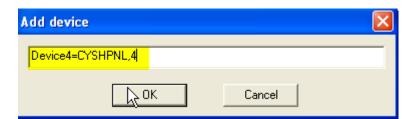


FIG: 22.2 Add Device

📓 Services Editor - CPFC		
File     Service     Add     Edit     Delete     Help       Image: Service     Image: Service     Image: Service     Image: Service     Image: Service		
Services Control Tool None Collars Gamma Gun (Neg GR Pulses) Gamma Gun (Neg GR Pulses) Gamma-Neutron-CCL (Pos GR Pulse) SIE Cemert Bond 1x1 Computalog Segmented Cement Bond CSSM 111/16' RBT Short to Medium CSSM 111/16' RBT Long to Medium CSSM 31/8'' RBT Short to Medium CSSM 31/8'' RBT Medium to Long Lir TEKCO 23/4'' Sector Bond Log Noise Log Temperature Log (Neg Temp Pulse) Freepoint Applied TELA-TEST CBL1 Test Compensated Neutron	Shooting Collars         Presentation       Ccl.prs         Title       Shooting Collars - Zero @ CCL         ✓       Use private copy of presentation for all logs from         ✓       Make this service available for perforating         Device1=BASE,20         Device2=AUX,20         Device3=SDSTIP,1,cclgain         Device4=CYSHPNL,4	Zero Point CCL  this service Edit Gains and Filters  Controls  I2CInit=21=00.22=00 TIP_PS=0.000 0.00 AlwaysShowSens=1
Panex Production Looning	Sensors TCURR=BASE_TCURR;4 TV0LT=BASE_TV0LT;4 LTEN=AUX_LTEN.4 ELTIM=AUX ADPTH=AUX CCL=BASE LSPD=AUX MINMK=AUX_ELTIM;4	Tools

FIG: 22.3 Sensor

Add the new two Sensors SHVOLT=CYSHPNL, and SHCURR=CYSHPNL

Add sensor	
SHVOLT=CYSHPNL	
ОК	Cancel

FIG: 22.4 Add Sensor

Shooting Voltage sensor

Add sensor	X
SHCURR=CYSHPNL	
ОК	Cancel

FIG: 22.5 Add second Sensor

#### Shooting Current sensor

Add sensor in order to acquire at the same time DEPTH and TIME versus Curves in the same Data Base. Double check the ADPTH = AUX is under sensor. Set the Data base for two outputs (Time and Depth) TimeToDepthInputSec = (seconds per time sample), e.g. 0.10

TimeToDepthOutputFt = (feet per depth sample),

time sample), e.g. 0.10 e.g. 0.25

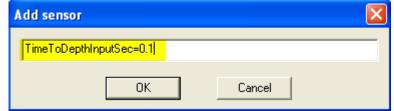


FIG: 22.6 Add Time to convert to Depth Input

Set the File Time with sample rate every 0.1 Sec, for high resolution for low resolution increase the sample rate Time.

Add sensor	
TimeToDepthOutputFt=0.1	
ОК	Cancel

FIG: 22.7 Add Time to convert to Depth Output

Set the Depth File with sample rate every 0.1 Ft. for high resolution, for low resolution increase the sample rate to 0.25 FT.

Check the option Make this service available for perforating

😭 Services Editor - CPFC		
File Service Add Edit Delete Help		
🖻 🖬 📋 🕲 🎙 🖉 🥖 🍰 🛠 👘		
Services  Collars  Collars  Gamma Gun (Neg GR Pulses)  Gamma-CL( (Neg GR Pulse)  Gamma-Neutron-CL (Pos GR Pulse)  SIE Cement Bond 1x1  Computalog Segmented Cement Bond  CSSM 11/1/16" RBT Short to Medium  CSSM 31/8" RBT Short to Medium Lir  CSSM 31/8" RBT Short to Long Lir  TEKCD 2 3/4" Sector Bond Log  Noise Log  Temperature Log (Neg Temp Pulse)  Freepoint Applied  TELA-TEST  CBL1 Test  Spartek Production Logging	Shooting Collars         Presentation       cclsh.prs         Title       Shooting Collars - Zero @ CCL         ✓       Use private copy of presentation for all logs from the service available for perforating         ✓       Make this service available for perforating         Device1=BASE_20       Device2=AUX_20         Device3=SDSTIP.1.cclgain       Device4=CYSHPNL.4	Other     Zero Point     CCL       his service     Edit Gains and Filters       Controls       I2CInit=21=00.22=00       TIP_FS=0.0.00 0.00       AlwaysShowSens=1       Scale=36,0
Sondex Ultralink	Sensors	Tools Tool1=STD Tool2=CCL_SHT

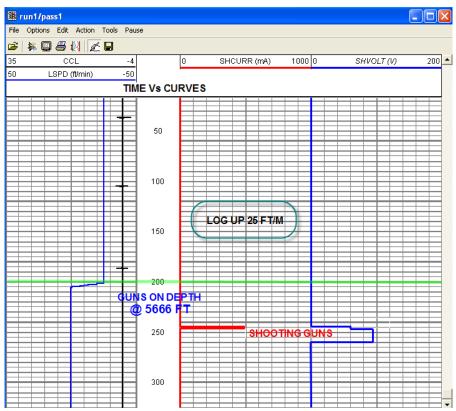
## FIG: 22.8 Set Service

Interactive Plot	
Current Database:	C:\Warrior\Data\shooting.db
Current Dataset:	/field/well/run1/pass1
/field/well/run1/depth /field/well/run1/pass1	1
	Database
	OK Cancel

FIG: 22.9 Interactive Time Plot

Select the File Pass1 to plot Time Vs Curves

# 22.2 Time Plot



## FIG: 22.10 Time Plot

The time plot is continues just depend of start acquisition (Record Up, Record Down, Record Time)

Interactive Plot		×
Current Database: Current Dataset:	C:\Warrior\Data\shooting.db /field/well/run1/depth1	Vs CURVES
/field/well/run1/depth /field/well/run1/pass	1 1	
		Database
		OK Cancel
1	×	

## FIG: 22.11 Depth Plot

The Depth is the standard plot Depth Vs curves if the you stop the tool the plot stop to acquire data.

# 22.3 Depth Plot

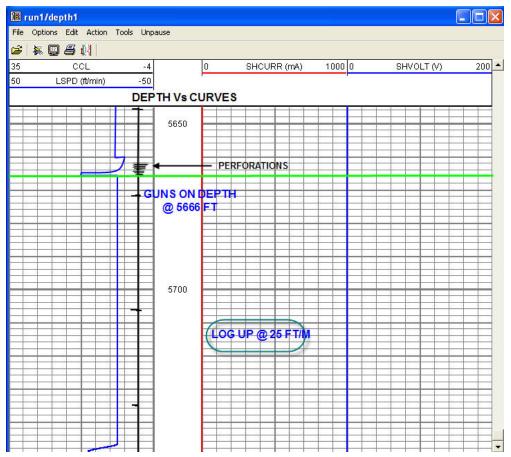


FIG: 22.12 Depth Plot

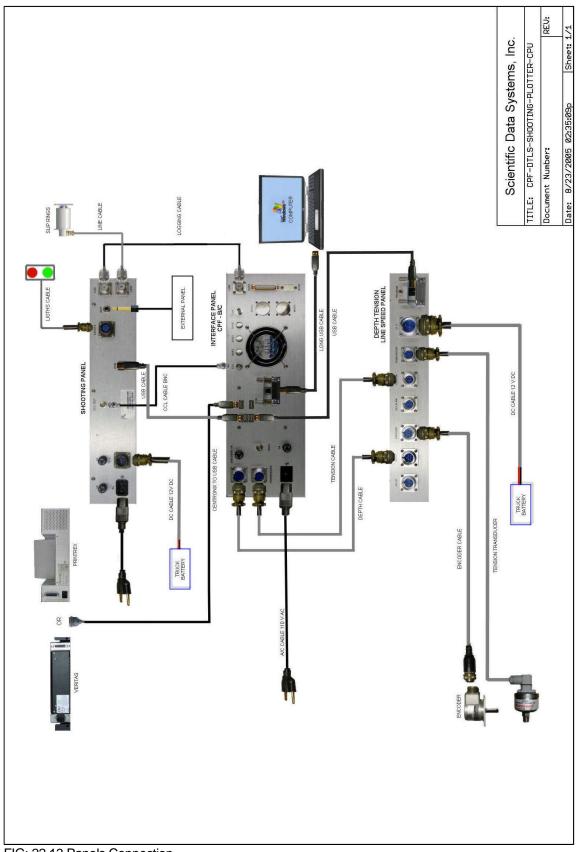


FIG: 22.13 Panels Connection

# 22.4 Shooting Panel Calibration

3	Warrior	Loggin	g Sys	tem 💽
Fi	e Service	Action	Edit	Monitor
D D	ervice: S atabase: ataset: ealtime A	Calip Rela	er Con Ier Cor y Cont	ntrol
Surface Line Tension		Calib	rate	۱.
Tool Voltage and Currer		Verif		•
Shooting Panel Voltage	and Cur	Plot	Cal Re	port
		Reco	ord Up	
		Reco	ord Do	wn
		Reco	ord on	Time
		Repl	ay	
				nt Replay
		Dept	:h Shifi	t
		Auto	) Corre	lation Curves
		Prev	iew Up	)
		Prev	iew Do	own
		Prev	iew or	Time

FIG: 221.14 Shooting Panel Calibration

🗖 Shooting Voltage and Current Calibration - 0000 👘 🔲 🖂				
Shooting Voltage Low Reference Shooting Voltage High Reference Shooting Current Low Reference Shooting Current High Reference	0 100 0 600	V V mA mA	Cancel	
Shooting Voltage Low Reference Reading Shooting Current Low Reference Reading Shooting Voltage High Reference Reading Shooting Current High Reference Reading	-0.0631201 -0.0407227 3.04538 1.73343	<pre> </pre> </td <td>&lt;&lt; Sample</td>	<< Sample	
TVOLT: Gain = 32.170 Offset = 2.03 TCURR: Gain = 338.190 Offset = 13.73				

FIG: 22.15 Voltage and Current Calibration

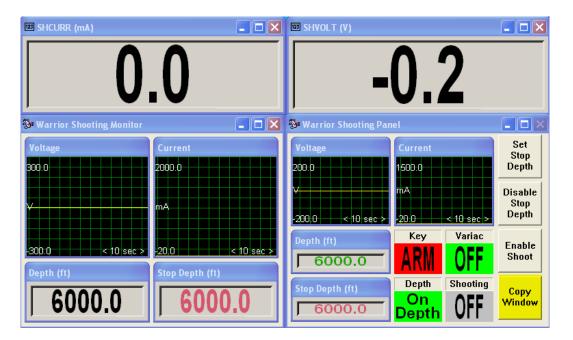


FIG: 22.16 Voltage and Current Values

# 22.5 Operation of the Shooting Panel

The speaker will emit a continuous WARNING tone while the **AC / DC** switch is in the AC position. The **'LOG'** and **'AUX'** positions on the **'MODE'** switch are active when the shooting panel is not powered. If the **'MODE'** switch is set to the **'LOG'** position, the **'LOG'** and **'LINE'** connectors on the rear of the panel are connected.

## 22.5.1 AUX Position

Place Switch in Aux Position

The 'AUX' key switch position simply connects the AUX connector to the line connector on the rear of the panel.

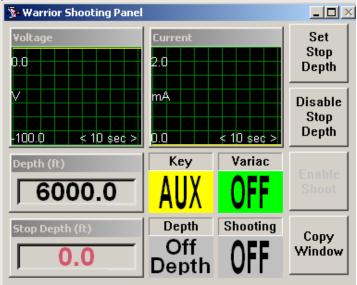


FIG: 22.17 Switch in AUX

## 22.5.2 LOG Position

Place Switch in LOG Position

To log, set the 'MODE' key switch to 'LOG'. The 'SAFE LIGHT' connector on the back of the panel will have pins A & C shorted for a UNSAFE 'red light' to be illuminated on the rear of the logging truck.

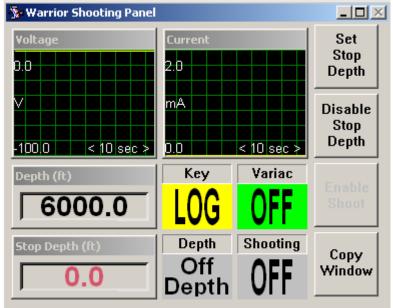


FIG: 22.18 Switch in LOG

## 22.5.3 SAFE Position

Place Switch in SAFE Position

The panel is in **'SAFE'** mode (line is shunted) any time the 'MODE' key switch is in the 'SAFE' position. The **'LIGHTS'** connector on the rear of the panel will have pins A & C shorted for a **SAFE** 'green light' to be illuminated on the rear of the logging truck. If the '**MODE'** switch is in any other position, pins A & B of the '**LIGHTS**' connector are shorted to indicate an unsafe **CONDITION**.

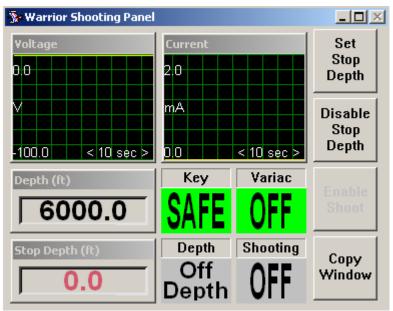


FIG: 22.19 Switch in SAFE

## 22.5.4 CCL Position

Place Switch in CCL Position

To log CCL, set the 'MODE' key switch to 'CCL'. The CCL amplifier is now connected to the line. The 'CCL GAIN' control adjusts the relative reading of the 'CCL' meter and the 'VOLUME' control adjusts the volume of a speaker inside the panel that emits a chirp when a collar is detected. The CCL amplifier will function when the power plant is shut off as long as the 'MAIN' switch is on.

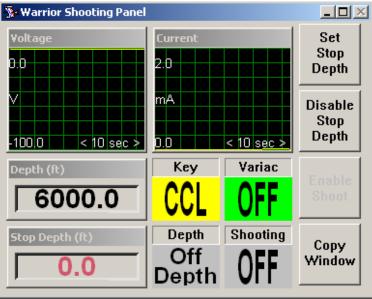


FIG: 22.20 Switch in CCL

## 22.5.5 ARM Position

Place Switch in CCL Position

To **arm** the panel, set the **'MODE'** key switch to **'ARM'**. The **'SAFE LIGHT'** connector on the back of the panel will have pins A & C shorted for a **UNSAFE** 'red light' to be illuminated on the rear of the logging truck.

🐌 Warrior Shooting Panel			
Voltage D.O	Current 2.0		Set Stop Depth
∨ -100.0 < 10 sec >	mA	< 10 sec >	Disable Stop Depth
Depth (ft)	Key ARM	Variac OFF	Enable Shoot
Stop Depth (ft)	Depth Off Depth	Shooting OFF	Copy Window

FIG: 22.21 Switch in ARM

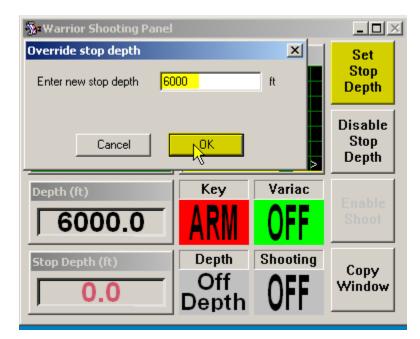


FIG: 22.22 Set Stop Depth



FIG: 22.23 Set Enable Shoot

Click over Enable Shoot

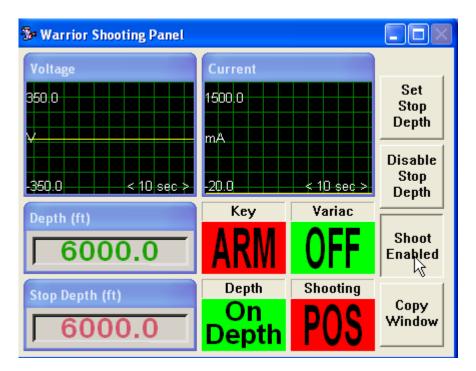


FIG: 22.24 Software Ready to Shoot

Ready to shoot

To **shoot**, verify that the **'MODE'** key switch is set to **'ARM'** and the **'ADJUST VOLTAGE'** control is rotated fully counter clock wise. Set the **'AC / DC'** switch the and the **'POS / NEG'** switch to the required settings (NOTE: the 'POS / NEG' switch has no effect when the 'AC / DC switch is in the AC position.) The panel is now ready to shoot. Lift and hold the **'SHOOT'** switch up and rotate the **'ADJUST VOLTAGE'** control clock wise while watching the **'VOLTAGE'** and **'CURRENT'** meters.

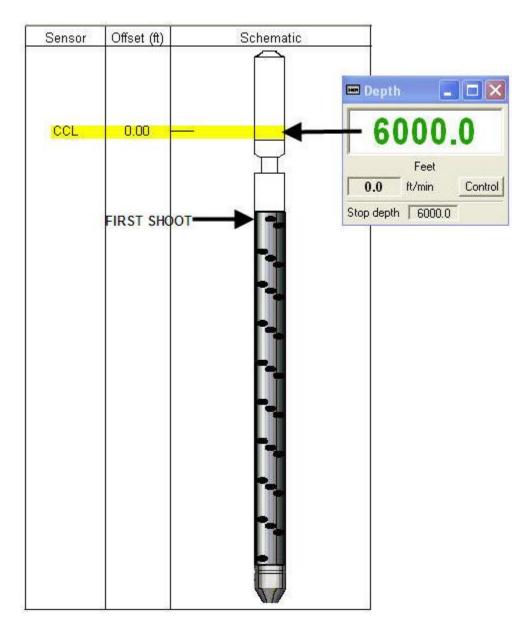


FIG: 22.25 CCL on Depth

Tool on Depth CCL Reference

Se Warrior Shooting Monitor		Se Warrior Shooting Panel		
Voltage	Current	Voltage	Current	
400.0	2000.0		1500.D	Set Stop Depth
		-350.0 < 10 sec >	20.0 /< 10 sec >	Disable Stop Depth
-400.0 < 10 sec >	-20.0 < 10 sec > Stop Depth (ft)	Depth (ft)	ARM ON	Shoot Enabled
6000.0	6000.0	Stop Depth (ft) 6000.0	Depth Shooting On Depth POS	Copy Window
🖾 SHCURR (mÅ)		123 SHVOLT (V)		
122	1.1	3	77.1	

FIG: 22.26 Positive Voltage and Current Shooting



## Set Switch in Positive position

FIG: 22.27 Negative Voltage and Current Shooting

Set Switch in Negative position



FIG: 22.28 Voltage and Current Shooting

Set Switch in AC position

# Section 223

# **23 Distributable Digital Media**

The Warrior software now includes the option of being able to generate a distributable digital media that would allow a User to supply their clients an interactive copy of log data to view without having to have Warrior software installed on their computer. Multiple files may be included for different log runs. It also includes the option to add a PDF file to the distributable files.

The media would allow the customer to view the log much as interactive plot is viewed by scrolling up and down the log. It does not provide capabilities to alter the log presentation such as changing scales or adding or removing curves. It does have the ability to change the vertical scaling. If the plot was created with a 3D presentation attached, as often happens in multi-finger caliper presentation, the 3D imaging will also be included in the distributed files.

Basic knowledge in the use of the Warrior Plot Job Editor is required in order to assemble a plot job from which the distributable media is created. Refer to the Warrior software manual for more information on the use of the Warrior Plot Job Editor.

## 23.1 Writing Distributable Digital Media

Once the option for distributable media has been invoked in the Warrior Software, the creating of the distributive digital media occurs through the Warrior Plot Job Editor much in the same manner as printing a log through a printer.

## 23.1.1 Use of Plot Job Editor to Create Files

After a plot job has been created in the normal manner and is ready to print and make copies, click on File - > Print, as if printing the plot job.

à	field	l/well/run/_plots_/_jobs_/job1 – 🗆	
File			
	New	Add Change Save Exit	
	Open		
	Save		
	Save As		
	Screen Preview		
	Print		
	Exit		
Database c:\programdata\warrior\data\mfcdemo2_w8.db			
Da	Dataset field/well/run/_plots_/_headings_/heading1		
Fo	Format		
	Range		
	ale		

Fig. 23.1 Preparing to print a plot job

The normal printing dialog window will come up. Click on the Printer drop down list to see all the available printers. "Distributable Digital" will have been added to your existing list of printers. Select the "Distributable Digital" printer and then click the [Print] button. The Distributable Digital dialog window will then open.

		Start Plot	×	
Printer	(Direct) Printrex 843 on	USB003	<b>_</b> _	<u> </u>
Copies	1 << >>	Set as default printer Media	<b></b>	
		Spool print job first		
Setup	p Top of Form	Advance Calibrate	Cancel Print	

Fig.23.2 Click Drop Down List to view available printers

	Start Plot	×
Printer	Printrex 920 on USB002	•
Copies	ISys V8.5 (Veritas) on USB002 Printrex 920 on USB002 Printrex 843 on USB002 ISys V8.5E (VeritasE) on USB001	
Setup	Image File on FILE: PDF File on FILE: Distributable Digital	

Fig. 23.3 Select Distributable Digital

	Distributable Digital		×
Distributing run_jo	b1 from MFCDemo2_w8		
Output to Folder:	C:\ProgramData\Warrior\Data		Browse
Client Database	MFCDemo2_w8_run_job1		
Include Virtual Fanfold (PDF Image of the entire plot) OK Cancel			Cancel

Fig. 23.4 Distributable Digital Dialog window

The first time the software is used the default Output Folder will be the Warrior\Data folder. The [Browse] button can be used to select a different Output Folder. It is highly recommended that the Output Folder be a blank USB Drive, writeable CD, or empty folder. The output will contain multiple files that could be misplaced otherwise. Once selected, this can be made to be the default Output folder by click the box beneath the folder path.

Browse for Folder	×			
Browse to outpur folder:				
Windows	^			
Windows.old				
winzip				
DVD RW Drive (D:) Exmpl Distrib				
DATA (E:)				
New Volume (F:)				
> 👝 Removable Disk (G:)				
Apps (\\192.168.0.95) (M:)	_			
Lostomer (\\192.168.0.90) (W:)				
TOMS FILES (\\192.168.0.90\sds office\My	~			
< >>				
OK Cancel				

Fig. 23.5 Selecting Distributable Media Output folder

The Client Database name defaults to the Warrior Database name and plot job name. The User should change this so that it would be familiar to the Client and more descriptive of what the log is.

	Distributable Digital	×
Distributing run_j	ob1 from MFCDemo2_w8	
Output to Folder:	D:\ Make this the default	Browse
Client Database	Test Well MultiFinger Caliper	
	old (PDF Image of the entire plot)	OK Cancel
Fig. 23.6 Renaming Cl	ient Database	

A PDF file will be generated as part of the distributable media package if the "Include Virtual Fanfold (PDF Image of the entire plot)" is checked. When the [OK] button is clicked, you might temporarily get a window that shows the progress of generating the files. When all the files have been written, you will get a message window that will say that the file is ready.

Warrior Presentation Plot
Distribributable file D:\ is ready
ОК

Fig. 23.7 Files have be written to folder

If you check the folder, you should see the files shown below.

🌗 Files	6/4/2013 10:05 AM
autorun.inf	6/4/2013 10:05 AM
1 Menu.exe	5/12/2013 6:03 PM

Fig. 23.8 Files created in folder

🐐 bhimg32.exe	5/6/2013 2:17 PM
🚳 bhimglib32.dll	5/7/2013 4:43 PM
Display.lst	6/4/2013 10:04 AM
🚳 dscrt40.dll	12/6/2012 8:41 PM
🚳 filter32.dll	1/22/2013 1:07 PM
🕦 ilv.exe	5/11/2013 12:18 PM
🚳 ixclib40.dll	12/6/2012 8:42 PM
🚳 logsvc32.dll	5/7/2013 5:14 PM
🚳 mfc100u.dll	2/19/2011 10:03 PM
🚳 msvcp100.dll	2/19/2011 10:03 PM
🚳 msvcr100.dll	2/18/2011 11:40 PM
Test Well MultiFinger Caliper.wddb	6/4/2013 10:04 AM
🚳 tooldlg32.dll	5/7/2013 5:12 PM
🚳 wargaugedll32.dll	3/28/2013 10:34 AM
🚳 warutil32.dll	4/29/2013 11:28 AM
🚳 wdbase32.dll	5/14/2013 7:40 AM
🚳 wdbsys32.dll	5/14/2013 7:41 AM
🚳 wellobj32.dll	1/22/2013 1:09 PM
🚳 whplot32.dll	1/28/2013 5:08 PM
🚳 wlang32.dll	5/14/2013 8:22 AM
🚳 wlangenu32.dll	4/12/2013 6:09 PM
🚳 wlogplot32.dll	5/12/2013 5:58 PM
🚳 xccdx40.dll	12/6/2012 8:41 PM
Fig. 23.9. Example files in Files Folder	

Fig. 23.9 Example files in Files Folder

## **IMPORTANT NOTICE**

If you have written to a CD / DVD or USB Drive, make sure that you properly eject the drive to ensure that files are completely written. Failure to do so may result in the client receiving unreadable data.

# 23.2 Creating Multiple Files of Distribution

If the user wanted to add another Plot Job to the same distribution file, you would go about it in the same manner and write to the same output folder, but the Client Database name would need to be changed so that the original data is not overwritten

	Distributable Digital		×
Distributing run_jo	b1 from callon_schwartz W8		
Output to Folder:	D:\ Make this the default		Browse
Client Database	TEST WELL SCBL		
✓ Include Virtual Fanfold (PDF Image of the entire plot)		Cancel	

Fig. 23.10 Adding additional data to output folder

# 23.3 Viewing Distributable Digital Media

The Distributable Digital media has an Autorun.inf file included. If the Computer that is viewing the files is setup to use Autorun.inf files it will open the Menu viewing menu. The menu will include all log passes that were in the Plot Jobs that the media was created from. Any PDF files that were created of the plot job will also be shown as a Fanfold document.

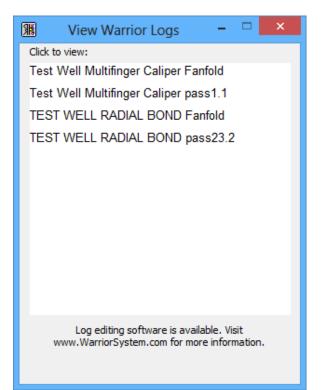


Fig. 23.11 Distributable Digital Viewing Menu

To view any of the log passes or PDF Fanfold files Simply click on the desire one. PDF Fanfold files will be opened in Adobe Acrobat for viewing and the Log passes will be opened with a simplified version of Warrior Interactive. Plot



# 24 Convert from 7.0 to 8.0 Warrior

The conversion from Warrior 7 to Warrior 8 is a straight forward process with one exception, if your warrior 7 services use CBL instruments. If you are unsure if you are using CBL or SCBL instruments <u>go to section</u> <u>24.4</u>.

## 24.1 Procedure

On the system with Warrior 7, Install Warrior 7 Backup for Warrior 8 "setup\_w7bk\_2013\_11\_19001.exe" you will find this on the CD provided with your system or it can be downloaded from the Scientific Data Systems web site

http://www.warriorsystem.com/private\_download/Beta/setup\_w7bk\_2013\_11\_19001.exe

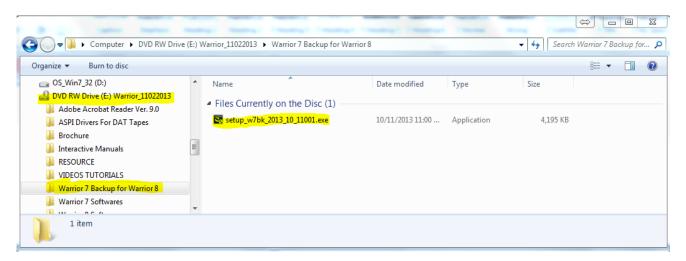


FIG: 24.1 Warrior 7 Backup for Warrior 8

Once installed execute the program. This will convert your Warrior 7 configuration into a warrior 8 compatible configuration. The first thing you may notice is that in warrior 7 configuration backups took the form of a zip file and warrior 8 backups use a wbu extension.

🔗 Warrior Backup from	n Version 7	
<u>B</u> ackup		
Options		
Back up to	C:\Warrior\Data\war7cfg140102.conf.wbu	Browse
Comment	Warrior 7 Backup	
Advanced >>		
For help, press <f1></f1>		
	Begin	Close

FIG: 24.2 Warrior 7 Backup for Warrior 8 Execution

Make a note of where the backup file will be saved so that you can browse to it later to install the generated backup or copy it to a USB drive to be installed on another computer.

The advanced button lets you modify which files to convert, this option is for the more experienced and is beyond the scope of this manual.

Once you click on begin the software will begin the backup process. You will receive a Backup completed status when finished.

🔗 Warrior Backup from	Version 7	
<u>B</u> ackup		
Options		
Back up to	C:\Warrior\Data\war7cfg140102.conf.wbu	Browse
Comment	Warrior 7 Backup	
Advanced >>		
Backup completed		
	Begin	Close

FIG: 24.3 Backup Completed

# 24.2 Importing WBU file

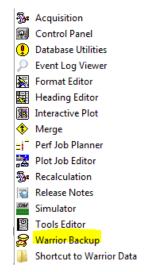


FIG: 24.4 Warrior Backup

Select Restore tab in Warrior Backup and the File created with the Warrior 7 Backup for Warrio8. Once selected "Examining" and a status bar will come up.

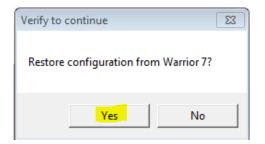
🔗 Warrior Backup				[	
<u>B</u> ackup		<u>R</u> estore		Restore Critical	Files
Options					
Restore from	C:\Warrio	r\Data\war7cfg140102.conf	wbu		Browse
Comment					
Advanced >>					
Examining					
				Begin	Close
					•••

FIG: 24.5 Opening Backup

😵 Warrior Backup				[	
<u>B</u> ackup		<u>R</u> estor	e	Restore Critical	Files
Options					
Restore from	C:\Warrior\	.Data\war7cfg14010	2.conf.wbu		Browse
Comment	Warrior 7 B	ackup : Thu Jan 02	10:49:41 2014		
Advanced >>		w ready to be restore		Begin button.	
	Or press Adv	vanced to see more (	details.		
or help, press <f1></f1>					
				Begin	Close

FIG: 24.6 Begin Restore

Once the Examining is complete click on the Begin button. This will cause a pop up asking you if you want to Restore configuration from Warrior 7, click on yes



#### FIG: 24.7 Confirmation Pop Up

This will begin the restoration process that will end with a text status window.

🧾 2014.01.02.13.02.13.Restor 🗖 🔲 🔀
File Edit Format View Help
Restore Results
*** SUCCESSFUL ITEMS ***
<pre>Files: ADMYR.LGO : OK Bwwc.lgo : OK GRAYJACK.LGO : OK Header6.lgo : OK Hp.lgo : OK LJ.LGO : OK LJ2.LGO : OK Sondex.lgo : OK Sondex.lgo : OK Trailer6.lgo : OK VICTORY.LGO : OK VICTORY1.LGO : OK VICTORY1.LGO : OK Iservices.ini : OK</pre>

## FIG: 24.8 Restore Results

This should complete your restoration; load acquisition and all your services and tools should be present.

# 24.3 Importing select Services from Warrior 7 Backup

You may wish to only import select services, this can be done from the same Warrior 7 backup for Warrior 8 "wbu" file. Go to Database Utilities and select " Edit Logging Service Details ".

Data Export	Depth Correction		
Export to LAS Format	Apply Linear Depth Shift to a Dataset		
Export to LIS Format	Apply Linear Depth Shift to a Data Item		
Export to ODBC Compatible Database	Data Management		
Extract Pass(es) to New Database	Create an Alias for a Data Item		
Export via Internet	Multiple Pass Automerge		
Interpretation Tools	Edit Variables in a Dataset		
Mathpack	Create Variables in a Dataset		
XY Plot	Create Waveform Gate Curves		
Tracer Interpretation	Create CCL Curve from Keyboard		
Create Differential Curve	Delete Data from a Database		
Create Total Dissolved Solids Curve	Undelete Data		
Calculate Borehole Volume from Caliper	Rename a Data Item		
Calculate Rxo/Rt & Rwa	Edit a Log Curve		
Pipe Tally	Select Correlation Curves for Database		
Curve Normalization	Data Import		
Log Pass Summary	Read ASCII Data into Warrior		
Setup Tools	Read LIS Data into Warrior		
Calibrate Printer	Import ODBC Data into Warrior		
Configuration Backup/Restore	Create Log Format from Dataset		
Edit Logging Service Details	Import via Internet		
Edit Logging Tool Details			

## FIG: 24.9 Edit Logging Service Details

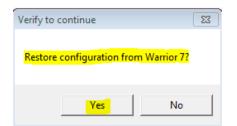
Rei	able				
-	move				
	able	Presentation	-	Other Zero point	
Co		Title			
Mo					
Rei	name	Use private copy of presentation for the second		service	
Exp	oort	Make this service available for per	forating		
	port	Devices		Co	introls
	rbose Import/Export			-	
epoint Ap LA-TEST LA TERN Cement SM 3 1/8					
mputalog KCO 2 3/ be CBL IOBE Cen	Segmented Cement Bond /4" Sector Bond Log ment Bond 2 3/4"				
mma-CCI	(Pos GR Pulse)	Sensors		T	ools
	Restore from				E
		rr > Main_Drive (C.) > Warrior > Data >	• 49	Search Data	
			▼ 4p	Search Data ∦☷ ▼	٩
	Compute Organize ▼ New fold Warrior Data		✓ 4y Date modified	8≡ ▼	٩
	Compute Organize ▼ New fold Warrior Data Warrior Config	er		ij≣ ▼ I Type	
	Comput Organize ▼ New fold Warrior Data Warrior Config Scientific Data Sy	er Name <mark>©] war?cfg140102.conf.wbu</mark> @] war?cfg131119.conf.wbu	Date modified	i Type PM WBU File	P Size
	Compute Organize ▼ New fold Warrior Data Warrior Config	er Name © wer7cfg140102.conf.wbu © wer7cfg131119.conf.wbu © Archer.conf.wbu	Date modified 1/2/2014 1:40 11/19/2013 8:2 11/18/2013 2:1	Type M WBU File TAM WBU File TAM WBU File WBU File	© Size 21,97 24,00 19,72
_	Comput Organize ▼ New fold Warrior Data Warrior Config Scientific Data Sy	r Name © war7cfg140102.conf.wbu © war7cfg13118.conf.wbu © war7cfg13118.conf.wbu	Date modified 1/2/2014 1:40 11/19/2013 8:2 11/18/2013 2:1 11/18/2013 12:	8≣ ▼ I Type PM WBU File 27 AM WBU File L7 PM WBU File ∺48 WBU File	21,97 24,00 19,75 23,88
_	Varrior Data Scientific Data Sy Warrior Parta Sy Warrior 8 Program	ar Name war7cfg140102.conf.wbu war7cfg131119.conf.wbu war7cfg131118.conf.wbu war7cfg131118.conf.wbu war7cfg131118.conf.wbu	Date modified 1/2/2014 1:40   11/19/2013 8:2 11/18/2013 2:1 11/18/2013 12: 11/6/2013 8:08	8≣ ▼ I Type PM WBU File 27 AM WBU File 17 PM WBU File ×48 WBU File 8 AM WBU File	21,97 24,00 19,75 23,86 13,14
	Organize Vew fold Warrior Data Warrior Config Scientific Data Sy Warrior 8 Prograt Distries Documents Music	r Name waricig18002.com/wbu waricig18109.com/wbu Waricig181104.com/wbu Waricig181104.com/wbu Waricig181104.com/wbu Waricig182104.com/wbu	Date modified 1/2/2014 1:40   11/19/2013 8:2 11/18/2013 12: 11/18/2013 12: 11/6/2013 8:08 10/22/2013 10:	I         Type           PM         WBU File           27 AM         WBU File           14         WBU File           15         MBU File           16         MBU File           17         MBU File           18         WBU File           18         WBU File           19         WBU File	₽ Size 21,95 24,00 19,75 23,86 13,14 14,04
	Varrior Data Warrior Data Warrior Config Scientific Data Sy Warrior 8 Program Ubraries Documents	ar Name war7cfg140102.conf.wbu war7cfg131119.conf.wbu war7cfg131118.conf.wbu war7cfg131118.conf.wbu war7cfg131118.conf.wbu	Date modified 1/2/2014 1:40   11/19/2013 8:2 11/18/2013 2:1 11/18/2013 12: 11/6/2013 8:08	Image:	21,97 24,00 19,75 23,86 13,14
-	Organize     New fold       Urganize     New fold       Warnior Data     Warnior Config       Warnior Rongar     Warnior Rongar       Warnior B Prograf     Ubraries       Documents     Nuicic       Pictures     Videos       Videos     Computer       Main, Drive (C)	er Name  warfcfg14002.cent.wbu warfcfg1180.cent.wbu warfcfg11818.cent.wbu warfcfg11818.cent.wbu warfcfg1118.cent.wbu warfcfg111022.cent.wbu warfcfg11022.cent.wbu warfcfg11022.cent.wbu Multi finger	Date modified 1/2/2014 1:40 11/19/2013 8:2 11/18/2013 2:1 11/6/2013 12: 11/6/2013 10: 10/22/2013 10: 10/17/2013 11:	Image:	₽ Size 21,95 24,00 19,75 23,86 13,14 14,04
-	Crganize Vew fold Organize Vew fold Warrior Data Warrior Config Scientific Data Sy Warrior 8 Prograf Ubsreise Documents Music Pictures Videos Computer	er Name  warfcfg14002.cent.wbu warfcfg1180.cent.wbu warfcfg11818.cent.wbu warfcfg11818.cent.wbu warfcfg1118.cent.wbu warfcfg111022.cent.wbu warfcfg11022.cent.wbu warfcfg11022.cent.wbu Multi finger	Date modified 1/2/2014 1:40 11/19/2013 8:2 11/18/2013 2:1 11/6/2013 12: 11/6/2013 10: 10/22/2013 10: 10/17/2013 11:	Image:	₽ Size 21,95 24,00 19,75 23,86 13,14 14,04

FIG: 24.10 Browse to WBU file

This will open a dialog that will allow you to select one or more services to import, by holding the control key and right clicking with your mouse.

Import Service	8
Select service(s) to import	
11=Freepoint Applied 12=TELA-TEST 13=TELA TERM TEST	^
14=SIE Cement Bond 1x1 15=CSSM 3 1/8" RBT Short to Medium Lines 16=Computalog Segmented Cement Bond	
17=TEKCO 2 3/4" Sector Bond Log 18=Probe CBL 19=PROBE Cement Bond 2 3/4" 20=Gamma-CCL (Pos GR Pulse) 21=Spinner Rowmeter	÷
Warrior 7 Backup Thu Jan 02 13:37:58 2014	
OK Cancel	

FIG: 24.11 Selecting services



## FIG: 24.12 Confirmation Dialog

You will then be prompted to select or de-select specific tool serial numbers.

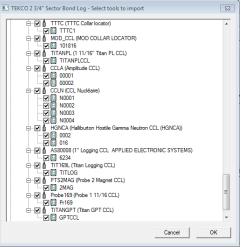


FIG: 24.13 Serial number Selection

At this point the service and selected serial numbers will be imported with a confirmation text window.

File Edit Format View Help Restore Results *** SUCCESSFUL ITEMS ***	•
*** SUCCESSFUL ITEMS ***	
*** SUCCESSFUL ITEMS ***	
Services:	
TEKCO 2 3/4" Sector Bond Log : Gamma-CCL (Pos GR Pulse) : OK	
Tools: SCBLTEKCO-SDSDEMO : OK SCBLTEKCO-TEKCO : OK GR-SDSG : OK GR-SDSGR : OK GR-SDSEMO : OK GR-POOL : OK GR-PIODE : OK GR-101 : OK GR-100 : OK GR-1.69TTGRN : OK GR-169TTGRN : OK	•
• III •	

FIG: 24.14 Status Text Box

If the service or any of the serial numbers already exist, you will be given a confirmation window to confirm overwriting the existing file.

24.4 Importing select Serial numbers from Warrior 7 Backup

You also have the option of importing specific tool serial; numbers from the Warrior 7 backup for Warrior 8 "wbu" file. Go to Database Utilities and sellect Edit Logging Tool Details.

Warrior Utilities				
Data Export	Depth Correction			
Export to LAS Format	Apply Linear Depth Shift to a Dataset			
Export to LIS Format	Apply Linear Depth Shift to a Data Item			
Export to ODBC Compatible Database	Data Management			
Extract Pass(es) to New Database	Create an Alias for a Data Item			
Export via Internet	Multiple Pass Automerge			
Interpretation Tools	Edit Variables in a Dataset			
Mathpack	Create Variables in a Dataset			
XY Plot	Create Waveform Gate Curves			
Tracer Interpretation	Create CCL Curve from Keyboard			
Create Differential Curve	Delete Data from a Database			
Create Total Dissolved Solids Curve	Undelete Data			
Calculate Borehole Volume from Caliper	Change a Name			
Calculate Rxo/Rt & Rwa	Edit a Log Curve			
Pipe Tally	Select Correlation Curves for Database			
Curve Normalization	Data Import			
Log Summary Generator	Read ASCII Data into Warrior			
Setup Tools	Read LIS Data into Warrior			
Calibrate Printer	Import ODBC Data into Warrior			
Configuration Backup/Restore	Create Log Format from Dataset			
Edit Logging Service Details	Import via Internet			
Edit Logging Tool Details				
	Exit			

FIG: 24.15 Edit Logging Tools Details

P Tools Editor		×
File Create Delete Copy	ool Configuration Help	
B→ Logging Tools B→ Accessory Tools TCP	Export Export Uverbose import (ask for serial no. every time) Description Length in Tool has variable length (enter default value) Weight ib Over body type tool, does not affect tool string length Diameter in Voltage V Current mA Prefix (only for special cases where tool software is used multiple dissimilar tools)	
C English ← Metric C English ← Metric Change Too Ext Save Tool		

## FIG: 24.16 Importing Tool

Select the "Tool Configuration" tab and from the pulldown select Import.

Browse to the Warrior 7 Backup for Warrior 8"wbu" file and select it. This will bring a a tool import window , here you can sellect a tool type and specific serial numbers.

Restore calibration	ons from file 🛛 🕅	
Select Tool	CS8_GR_TEL	
Select all >>	FREEP GAMMA_GUN GPT GR	
	GR_CCL T	
Serial Numbers	010 SDSDEMO1 SDSDEMO3	
_ Restore as this	type of tool	
Constant	tool	
C Tool acc	cessory	
C Tool for TCP		
Restore mode	el only	
Restore mode	el info also	
Created Thu Jan 02 13:37:58 2014		
Restor	e Close	

FIG: 24.17 Tool and Serial number selection

Once you have selected the desired Tool and serial numbers click on Restore. This will bring up a confirmation dialog click on OK. If the tool and serial numbers do not exist on the system you will be given a confirmation message in the status window.

Restore calibratio	ns from file	x				
Select Tool	CS8_GR_TEL CS8SCBL FREEP	*				
Select all >>	GAMMA_GUN GPT					
	GR GR_CCL	-				
Serial Numbers	010 SDSDEMO1 SDSDEMO3					
- Restore as this	type of tool					
Logging t						
C Tool acc	essory					
C Tool for T	СР					
Restore model	only					
Restore model	info also					
Created Thu Jan 02 13:37:58 2014						
Restore	Close					
Tool data has bee	n restored					

#### FIG: 24.18 Restore Confirmation

If either the tool or specific serial numbers were already present, you will be give an overwrite confirmation for each.

## 24.5 Identifying a CBL Service

Before using the Warrior 7 Backup for Warrior 8 you should confirm that your Bond services are configured to use SCBL as opposed to CBL instruments. Go to Database Utilities and select Edit Logging Tool Details.

Warrior Utilities					
Data Export	Depth Correction				
Export to LAS Format	Apply Linear Depth Shift to a Dataset				
Export to LIS Format	Apply Linear Depth Shift to a Data Item				
Export to ODBC Compatible Database	Data Management				
Extract Pass(es) to New Database	Create an Alias for a Data Item				
Export via Internet	Multiple Pass Automerge				
Interpretation Tools	Edit Variables in a Dataset				
Mathpack	Create Variables in a Dataset				
XY Plot	Create Waveform Gate Curves				
Tracer Interpretation	Create CCL Curve from Keyboard				
Create Differential Curve	Delete Data from a Database				
Create Total Dissolved Solids Curve	Undelete Data				
Calculate Borehole Volume from Caliper	Rename a Data Item				
Calculate Rxo/Rt & Rwa	Edit a Log Curve				
Pipe Tally	Select Correlation Curves for Database				
Curve Normalization	Data Import				
Log Pass Summary	Read ASCII Data into Warrior				
Setup Tools	Read LIS Data into Warrior				
Calibrate Printer	Import ODBC Data into Warrior				
Configuration Backup/Restore	Create Log Format from Dataset				
Edit Logging Service Details	Import via Internet				
Edit Logging Tool Details					
	Exit				

FIG: 24.19 Edit Logging Tool Details

Browse to your Bond tool Serial number, highlight it and click on the software tab. If under Software in this Tool string it has CBL contact Scientific Data System for instruction on the most effective way to convert you service prior to running Warrior 7 Backup for Warrior 8.

Tools	Model Softv	vare <u>D</u> iagram	1		
CBL     CBL     Crobe (Probe 2.75     CBL 002     C3 275     CBL 275     CBLCMPB     CBLCMPB     CBLPR0BE     CCL CBLST     CBLSETX1     CBLSETX1     CBLSET	Ava CAT CCB CCL CDLG CFB CNTG CNTF CWTH CWTH CWTH	ilable software	Add >> << Remove	Software in this toolstring	
	Sensor O	ffset (in) 50.25 38.25	Filter AMP3 AMP5 TT3 TT5	Type Length Gaussian 3.00 Gaussian 3.00 Gaussian 3.00 Gaussian 3.00	(ft)
Generation Content of	ttclamp3 = ttclamp5 = invert = No	Model		Serial Number	

FIG: 24.20 CBL Service



## **25 Spartek Tools**

### 25.1 Tool Editor Setup

In the Warrior Utilities, Edit Logging Tool Details check to see if the default (sample) Spartek logging tools are present. SPTK-BULLPLUG, SPTK-CCL, SPTK-CENT, SPTK-FULLBORE, SPTK-GRCCL, SPTK-MAST, SPTK-PTC, SPTK-SPIN, SPTK-TEMPPRES, SPTK-TPCD.

📓 T	ools Ec	litor					
Eile	Create	<u>D</u> elete	Сору	Calibrations	Help		
	÷ Å	RMTE RMTE_PS RSCT SCBL	5		<u>M</u> odel	Software Diagram	[
	±	SLAB Spacer SPFL SPIN			Description Length	in Tool has variable length (enter default value)	
		SPTK-BU SPTK-CC	L	ā	Weight	lb lb	
	Ū	SPTK-CEI SPTK-CFE SPTK-FU	В		Diameter	2.00 in	
	÷- ŏ	SPTK-GR SPTK-MA	CCL		Voltage Current	W mA	
	±	SPTK-PT SPTK-PT SPTK-TE SPTK-TP STD	CSPIN MPPRE	s	Gundin		
	±	TELEM TEMP TEMP_PF TempSub					
∐ ⊢To		тмпі		<b></b>			
	Engli	(	Metric Dhange				
	E <u>x</u> it		S <u>a</u> ve T	<u>ool</u>			

FIG: 25.1 Tools Editor

If these tools are not present use the Calibrations->Restore feature to either restore the sample tools from "CH USB 70.wcf" or "SpartekPL.wcf".

There are also some "external" calibration files needed to correctly configure some of the tools, these are the pressure and temperature quartzdine format .cff and .cft files. These will be provided by Spartek, but sample files are included in our release and in the file "**SpartekCals.zip**". These files need to be in the "**Warrior/Config**" directory.

Special care needs to be taken when creating a new Spartek tool in the Warrior system when basing it on an existing example tool. The Spartek tools communicate their types and serial numbers via telemetry to the system, and likewise the tools are set up in Warrior to convey their types and serial numbers to the telemetry handling device (the DSP inside the panel). Each tool will be examined in turn to demonstrate where the type and serial information is stored to be passed on to the telemetry

#### 25.1.1 SPTK-BULLPLUG

Well, the first one on the list is an exception to the rule, no ID or type; this tool can be copied again as necessary without any special steps.

#### 25.1.2 SPTK-CCL

In the example screenshot the field in the Software, Serial section termed "**TellD**" needs to be filled correctly, this tool, serial number **L00121**, has the **TellD** field set to "**ccl@121**", this is type@serial and the format follows through the tool family. Note that the "L00" has been stripped off, this is because the tools identify themselves in telemetry in the same manner, only the numerical part of the serial number is used. This field will need to check and filled when creating new tools.

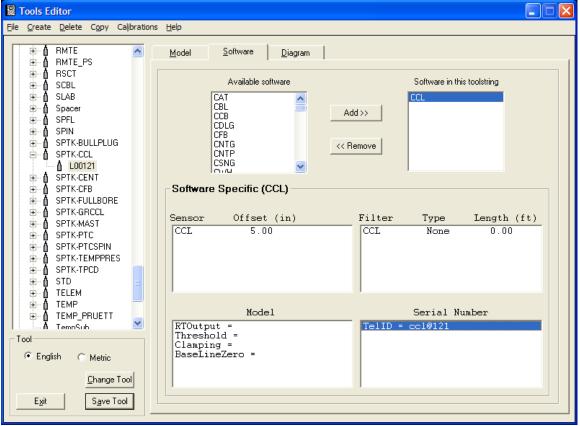


FIG: 25.2 CCL Tool

The centralizer does identify itself in the tool string so appropriately there is the need for it to have the correct TelID setup. In the first screen shot the software section of the tool serial L00318 is shown having a

#### 25.1.3 SPTK-CENT

Sensor called "IDOnly", double clicking on this brings up a second screen where the field "Telemetry ID" is filled in with "cent@318". This field will need to be checked and filled in correctly for new tools created in the system.

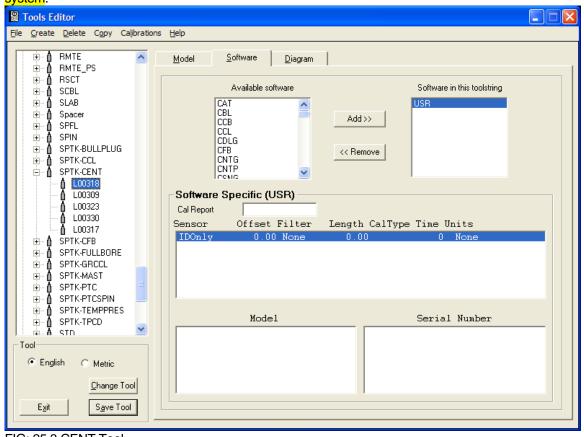


FIG: 25.3 CENT Tool

Edit Sensor								
Sensor	IDOnly		1					
🗆 Sensor Detai	ls							
Offset	0.00	in	Filter Type	None	-	Filter Length	0.00	ft
Calibration		-	CalbTime	0	sec	Telemetry ID	cent@318	
Units	None		-					
Description								
⊢ ⊢Reciprocal 0	utput							
🗖 Enable								
Units			~					
Description	<u></u>							
∟ ⊢Differential 0	utout							
	Name							
Units		,						
Description								
Interval		(interv	val in length or	time)				
		Sa	ve			Cancel		

FIG: 25.4 CENT Sensor

#### 25.1.4 SPTK-CFB

This tool type takes care of the 1-3/8" caged spinner tools. The example shown with tool serial "L00264" shows the TellD field in the Software screen, Serial Section, filled with "cfb@264" appropriately. This field will need to check and filled when creating new tools.

Tools Editor		
File Create Delete Copy Calibrations	: <u>H</u> elp	
	Model Software Diagram	
	Available software	move
B A SPTK-FULLBORE B A SPTK-GRCL B A SPTK-MAST B A SPTK-PTC B A SPTK-PTCSPIN B A SPTK-FTCSPIN B A SPTK-TPCD	Sensor         Offset (in)           FRATE         1.00           FDIR         1.00           FSENS3         0.00	Filter Type Length (ft) FRATE Square 1 00 FDIR 0.00
Column Constraints of the second	Model RateMnemonic = FRATE DirMnemonic = FDIR OutputMnemonic = FLOW Algorithm = Rate x Dir CWMnemonic = CCWMnemonic =	Serial Number TelID = cfb@264 Cl0Calb =

FIG: 25.5 CFB Tool

#### 25.1.5 SPTK-FULLBORE

This tool takes care of the 1-3/8 folding flow meter. It is setup in the same manner as the **SPTK-CFB** as seen in the following screenshot, the "**TellD**" uses the same "**type**" being "**cfb**" as before. This field will need to be checked and filled when creating new tools.

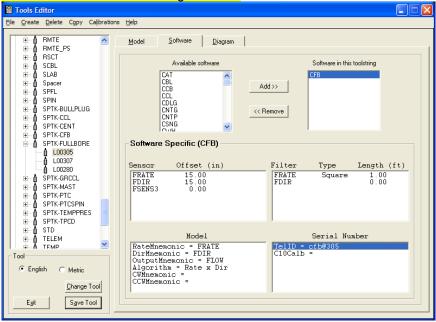


FIG: 25.6 CFB Tool

#### 25.1.6 SPTK-GRCCL

The setup for this tool is slightly different as for the spinner tools as the tool incorporates two software modules combined to represent the tool in its single housing, being the CCL and GR. The "**TellD**" information only must be present in one part of the tool information, we have chosen to use the CCL screen as this is the default when looking at the tool information and creating the new copies of the tool. In the screen shot below for example tool "**L00043**" the "**TellD**" is "grccl@43". This field will need to be checked and filled when creating new tools. If you click on the "**GR**" in the "**Software in this tool string**" box you will see the GR setup and note that intentionally the "**TellD**" field is left blank, this does not have to be filled in as the CCL software is communicating to the telemetry that the tool is present.

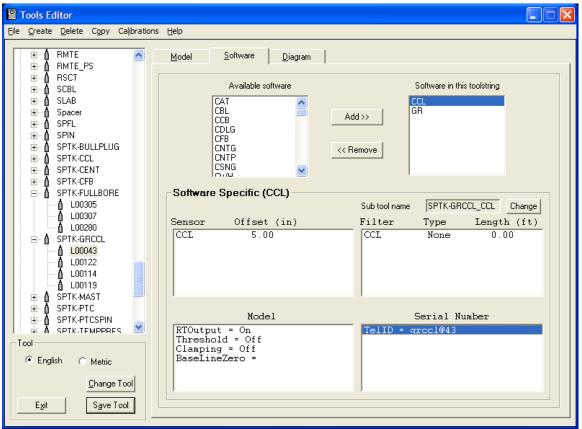


FIG: 25.7 GRCCL Tool

#### 25.1.7 SPTK-MAST

This takes care of both the 1" and 1-3/8" telemetry master tools. There is one example of the 1" tool, serial "L00020" and several examples of the 1-3/8" tools, such as "L00041". Care must be taken when copying one of these tools to create a new one in the system that the correct model type is selected, this is in the "Model" tab-screen of the tool in the Tools Editor. The SPTK-MAST tools have three sensors, double clicking on any sensor will bring up its set-up screen. As each sensor can have a "Telemetry ID" but we only need one to convey the tool type and identity to the telemetry we have chosen to set this up with the "CHV" sensor. Care must be taken to check and fill in this field when copying these tools.

Tools Editor		
File Create Delete Copy Calibrations	Help	
B A RMTE	Model Software Diagram	1
	Available software	Software in this toolstring USR
B→0       3FTK-ULBORE         - Δ       L00305         - Δ       L00307         - Δ       L00280         B→Δ       SFTK-GRCCL         B→Δ       SFTK-MAST         - Δ       L00373         - Δ       L00372         - Δ       L00372	Software Specific (USR)           Cal Report           Sensor         Offset Filter           CHV         25.00 None           INCL         2.00 Square           ZACC         2.00 None	Length CalType Time Units 0.00 lin2pt 0 V 4.00 multipt 0 * 0.00 lin2pt 0 gee
Col Col Col Col Col Col Col Change Tool	Model	Serial Number
Exit Save Tool		

FIG: 25.8 MAST Tool

In this example the "Telemetry ID" is "mast@41", the same type "mast" is used for both 1" and 1-3/8" tools.

Edit Sensor	
Sensor	CHV
🗆 Sensor Deta	ils
Offset	25.00 in Filter Type None 💌 Filter Length 0.00 ft
Calibration	lin2pt CalbTime 0 sec Telemetry ID mast@41
Units	V
Description	Cable Head Voltage
- Reciprocal C	Dutput
🗖 Enable	
Units	<b></b>
Description	
L Differential O	lutput
🔲 Enable	Name
Units	
Description	
Interval	(interval in length or time)
	Save

FIG: 25.9 Edit sensor

Calibration values for the INCL and ZACC must be provided by Spartek and are hand-entered in the software using Acquisition->Edit->Calibrations and selecting the appropriate output. For example, with the INCL (inclinometer):

Edit Calibrations						
Tool Name	SPTK-MA	ST	Iemp			
Tool Serial	L00041		Perm			
Cal Name	INCL		<u>C</u> ancel			
Cal Type	MultiPt					
Referer	nce Points	Rea	ading Values			
1:	90		22907.6			
2:	45		25002.7			
3:	0		26294.4			
4:						
5:						
6:						
7:						
8:						
9:						
10:						

FIG: 25.10 Edit Calibration

#### 25.1.8 SPTK-PTC

This tool is another composite of several tool software modules using **CWH** (Capacitance) and **PRESTEMP** (Pressure/temperature) software. The example tool "**L00026**" sets up the "**TellD**" in the **CWH** page as seen in the screen shot, "**ptc@26**". Care must be taken to check and fill in this field when copying these tools. The CWH calibration is hand entered similarly to the INCL mentioned above, via Acquisition->Edit->Calibrations and selecting the "**CWH**" from the list. Currently Warrior software is supporting this with 10 calibration multi-points (provided by Spartek), this may change in the future converting to a curve-fit type calibration that can handle more points. Clicking on the "**PRESTEMP**" line on the "**Software in tool string**" box will bring us to the pressure/temperature setup. There are three sensors here, **PTCP**, **PTCT** and **PTCTEMP**. All of them need correct configuration when setting up a new tool. Double clicking on a sensor will take you to the sensor setup screen and importantly the "**Gauge Serial No.**" of each sensor needs to be filled correctly. These fields relate directly to the external calibration files (provided by Spartek) for the tool. Each prestemp sensor has a calibration file. The file name is the composite of the serial number and the sensor channel, for example for tool "**L00026**" the pressure calibration name is "**L00026-01303**", software automatically assigns the file extension (**.cff** or **.cft**) by gauge type (pressure or temperature). These fields must be correctly configured for each sensor and each tool.

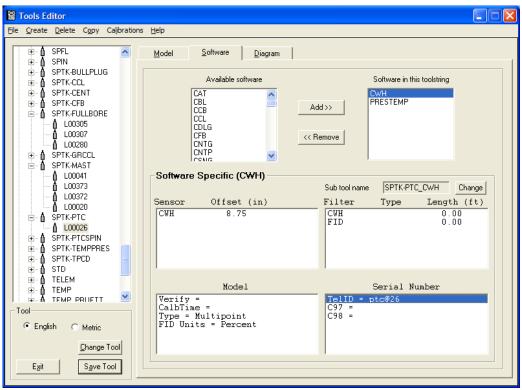


FIG: 25.11 Tools Editor

📱 Tools Editor							
File Create Delete Copy Calibrations	<u>H</u> elp						
Terna SPFL ▲	Model Software Diagram						
	Available software  CAT CBL CCB CCB CCCB CCL CCLG CCFB CNTG CNTG CNTG CNTF Cal Report Sensor Offset Filter PTCP 13.00 Square PTCT 13.00 Square	Software in this toolstring CWH FRESTEMP Sub tool name SPTK-PTC_PRESTE Change Length CalType Time Delta Temp 2.00 qd 0 0 2.00 PTCT 2.00 qd 0 0 0.00					
L00026     L00026     SPTK-PTCSPIN     SPTK-TEMPPRES     SPTK-TPCD     SPTK-TPCD     STD	PTCTEMP 2.00 Square	2.00 gd 0 2.00					
Tool Change Tool Exit Calculation Exit Calculation Exit Calculation Calcula	Model	Serial Number					

FIG: 25.12 Tools Editor

Edit Pressu	re Sensor					
Sensor Sensor Detail	PTCP s					
Offset	13.00	in F	ilter Type	Square	▼ Filter Length 2.	00 ft
Calibration		qd	•	CalbTime	0 sec	Edit Calb.
Gauge Serial	No.	L00026	6-01303	Telemetry ID		
Delta		2.00	ft	Temp	PTCT	
Description	Pressure					
		Save			Cancel	

FIG: 25.13 Edit Pressure sensor

Edit Tempe	rature Ser	isor					
Sensor Sensor Detail	PTCT						
Offset	13.00	in Filte	er Type	Square	➡ Filter Le	ength 2.00	ft
Calibration		qd	-	CalbTime	0 5	sec	Edit Calb.
Gauge Serial	No.	L00026-0	1302	Telemetry ID			
Delta		0.00	ft				
Description	СТМР						
		Save			Cancel		

FIG: 25.14 Edit Temperature sensor

Edit Tempe	rature Sen	sor				
Sensor Sensor Detail	PTCTEMP					
Offset	2.00	in	Filter Type	Square	➡ Filter Length	2.00 ft
Calibration		qd	-	CalbTime	0 sec	Edit Calb.
Gauge Serial	No.	L0002	26-01202	Telemetry ID		
Delta		2.00	ft			
Description	External Ten	nperatu	re			
		Sav	e		Cancel	

FIG: 25.15 Edit External Temperature Sensor

#### 25.1.9 SPTK-SPIN

This is for the 1" spinner that is optionally run on the **PTC**. Setup is very similar to the **SPTK-CFB** except that the "**TellD**" has a different identifier, for the example tool "**L00026**" the "**TellD**" is "**spin@26**".

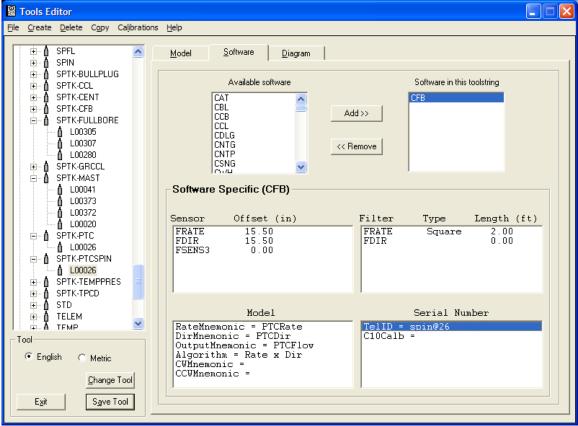


FIG: 25.16 Tools editor Spin

#### 25.1.10 SPTK-TEMPPRES

This tool is the combined 1-3/8" Temperature/Pressure. Setup is like the **PTC** Prestemp software section. Each sensor must have the correct "**Gauge Serial No.**" entry to identify the calibration file. The "**Telemetry ID**" is entered only in the "**TPP**" sensor setup as shown in the screen shots below. The example tool is serial "**L00022**" and the "**Telemetry ID**" is "**tp@22**". Each sensor must have the calibration file info entered as before in the **PTC** example and as demonstrated below. These fields must be correctly configured for each sensor and each tool. The external calibration files will be provided by Spartek and copied to the Warrior\Config directory as before.

Tools Editor		
File Create Delete Copy Calibrations	Help	
Den A SPFL ▲ Den A SPIN	Model Software Diagram	1
B ∆ SPTK-BULLPLUG B ∆ SPTK-CENT B ∆ SPTK-CENT B ∆ SPTK-CFB A SPTK-FULLBORE A L00307 A L00280 B ∆ SPTK-GRCCL A SPTK-GRCCL B ∆ SPTK-MAST	Available software	Software in this toolstring PRESTEMP Add >>
	Software Specific (PRESTEMF Cal Report         Sensor       Offset Filter         TPP       1.50 Square         TPTEMP       2.25 Square         TPT       1.50 Square	) Length CalType Time Delta Temp 2.00 gd 0 2.00 TFT 2.00 gd 0 2.00 2.00 gd 0 0.00
Tool C English C Metric Egit Save Tool	Model	Serial Number

FIG: 25.17 Tools editor PresTemp

Edit Pressu	re Sensor					
Sensor Sensor Detail	TPP s					
Offset	1.50	in Filte	er Type	Square	➡ Filter Length	2.00 ft
Calibration		qd	-	CalbTime	0 sec	Edit Calb.
Gauge Serial	No.	L00022-0	1303	Telemetry ID	tp@22	
Delta		2.00	ft	Temp	TPT	
Description	Pressure					
-		Save			Cancel	

FIG: 25.18 Edit Pressure sensor

Edit Temper	rature Sen	sor				
Sensor Sensor Detail	TPTEMP 8					
Offset	2.25	in Fil	ter Type	Square	Filter Lengt	n 2.00 ft
Calibration		qd	•	CalbTime	0 sec	Edit Calb.
Gauge Serial	No.	L00022-	01202	Telemetry ID		
Delta		2.00	ft			
Description	External Ter	mperature				
		Save			Cancel	

FIG: 25.19 Edit Temperature sensor

Edit Temperature Sen	sor
Sensor TPT Sensor Details	
Offset 1.50	in Filter Type Square 💌 Filter Length 2.00 ft
Calibration	qd    CalbTime 0 sec Edit Calb.
Gauge Serial No.	L00022-01302 Telemetry ID
Delta	0.00 ft
Description Compensation	on Temperature
	Save Cancel

FIG: 25.20 Edit Compensation Temperature sensor

#### 25.1.11 SPTK-TPCD

This is set up for the 1-3/8" TPCD tool with dual pressure, external temperature and capacitance. It comprises three software modules, CWH, PRESTEMP and GRADIO. GRADIO is purely a calculation module that uses pressure or delta pressure outputs together with the INCL output of the **SPTK-MAST** to calculate fluid density. Setup is the same as for the **SPTK-PTC** and this can be used as a reference with the exception shown in the "**TellD**" type being "**tpcd**", so for example tool "**L00051**" the "**TellD**" is set up as "**tpcd@51**" as seen in the CWH screen shot below. There are 5 Prestemp sensors to be configured correctly as seen in the example and this will need 5 corresponding external calibration files from Spartek copied to the \Warrior\Config directory. The sensors are **PRESU**, **PRESL**, **TEMP**, **TEMPU** and **TEMPL**.

Tools Editor		
<u>File Create Delete Copy Calibrations</u>	Help	
	Model Software Diagram	]
	Available software	Software in this toolstring          Add>>       CWH         Add>>       GRADIO         <<< Remove
Tool € English C Metric Egit Save Tool	Model Verify = CalbTime = Type = Multipoint FID Units = Percent	Serial Number TelID = tpcd@51 C97 = C98 =

FIG: 25.21 Tools Editor TPCD

Edit Pressu	re Sensor					
Sensor Sensor Detail	PRESU s					
Offset	28.19	in Filte	er Type	Square	▼ Filter Length 2.	00 ft
Calibration		qd	-	CalbTime	0 sec	Edit Calb.
Gauge Serial	No.	L00051-0	2603	Telemetry ID		
Delta		2.00	ft	Temp	TEMPU	
Description	Upper Press	ure				
Save Cancel						

FIG: 25.22 Edit Pressure sensor

Edit Pressur	e Sensor					
Sensor Sensor Details	PRESL					
Offset	1.50	in Filt	er Type	Square	Filter Length	2.00 ft
Calibration		qd	•	CalbTime	0 sec	Edit Calb.
Gauge Serial N	No.	L00051-0	02803	Telemetry ID		
Delta		2.00	ft	Temp	TEMPL	-
Description	Lower Press	ure				
		Save			Cancel	

FIG: 25.23 Edit Pressure sensor

Edit Temper	rature Sen	sor				
Sensor Sensor Detail	TEMP s					
Offset	2.30	in Filter	Туре	Square	Filter Length	2.00 ft
Calibration		qd	-	CalbTime	0 sec	Edit Calb.
Gauge Serial	No.	L00051-02	702	Telemetry ID		
Delta		0.00	ft			
Description	External Ter	mperature				
		Save	]		Cancel	

FIG: 25.248 Edit Temperature sensor

Edit Temper	rature Sen	sor						
Sensor Sensor Detail:	TEMPU s							
Offset	28.19	in Filter	Туре	Square	▼ F	ilter Length	2.00	ft
Calibration		qd	-	CalbTime	0	sec	Ed	it Calb.
Gauge Serial	No.	L00051-02	602	Telemetry ID				
Delta		0.00	ft					
Description	CPTU							
		Save	]		C	ancel		

FIG: 25.25 Edit Temperature sensor

Edit Temper	rature Sen	sor				
Sensor Sensor Detail:	TEMPL s					
Offset	1.50	in Filte	я Туре	Square	Filter Length	2.00 ft
Calibration		qd	-	CalbTime	0 sec	Edit Calb.
Gauge Serial	No.	L00051-0	2802	Telemetry ID		
Delta		0.00	ft			
Description	CPTL					
-		Save			Cancel	

FIG: 25.26 Edit Temperature sensor

## 25.2 Acquisition

When selecting the Spartek service you will first need to configure the Tool String in the Tool String Editor:

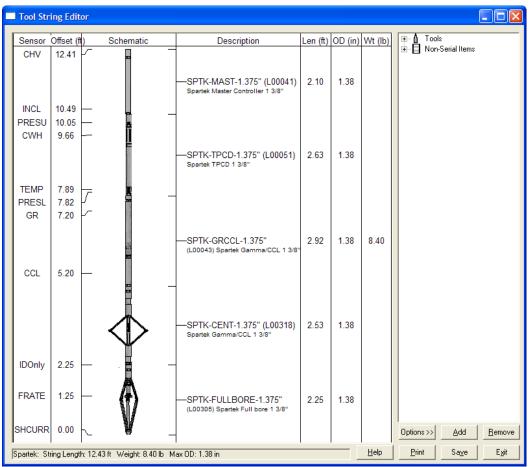


FIG: 25.27 Tool String

Once this is set up how you want to run the tools press Save.

The normal acquisition windows will now appear and will include the Spartek Telemetry monitor, and the TEL Threshold screen. This is how they will appear before tool power is applied:

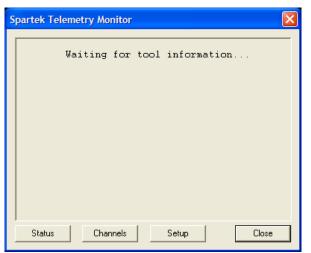


FIG: 25.28 Telemetry Monitor

🐜 TEL Threshold	
🗊 - १   🏥 🔍 - ९ -	
TEL	<b></b>
	• •
2/5	

FIG: 25.29 Telemetry

Currently the system is set up to work with manual thresholds, but possibly future automatic thresholds will be made available. Initial threshold settings (that can be saved so as not to set them every time the service is loaded) as above work fine.

Other settings that influence the telemetry detection are the line conditioning and gain settings. In Edit->Devices->SDSTIP the following general settings work well where only changes in the gain using the AUX slider will be needed to "sync" the tool.

SDS Tool	Inter	rface P	anel C	onfigurat	tion	X
Sonic	?	Gain	Q	Fc	C BandPass C HighPass	
Sync	?				C BandPass C HighPass	
Aux	?	0.03	0.40	4000	○ BandPass ⊙ HighPass	
Pre-Filte	r Settin	g	0		ingin doo	
	A	oply Setti	ngs	Can	cel OK	

FIG: 25.30 SDSTIP

On powering the tool, if an uplink is detected the system goes through a sequence of enquiring the tools themselves as to what type and serial numbers they are and configuring the telemetry to be setup in the specified configuration that the user selected.

Any differences between the user set up and the tool responses to the enquiries will be shown in the monitor. One other possibility is that the tools are unable to respond to the system downlink (on extremely long cables), in this case the system makes no attempt to downlink a new configuration and will simply try to acquire data from the tools in the manner they are sending it. Since these tools memorize their prior configuration it is possible to use the system to configure the tools while on surface using a dummy-load cable and then running them in the whole where they will work without being configured again on power-up.

The following screen shots indicate a normal start up and ones with non-matching user selection and actual tools and a shot of the TEL Threshold monitor:

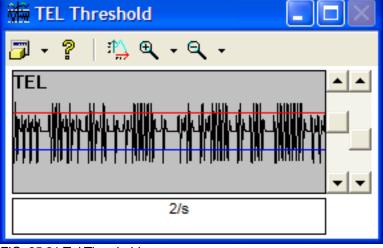


FIG: 25.31 Tel Threshold

s	partek Telemetry	Monitor			×
	MAST TPCD GAMMACCL CENT FLOW	43 318	Ac MAST TPCD GAMMACCL CENT FLOW	43 318	
	Status	Channels	Setup		Close

FIG: 25.32 Telemetry Monitor

Spartek Telemetry Mon	itor 🛛 🔀
User MAST 41 TPCD 51 GAMMACCL 114 CENT 318 FLOW 307	Actual MAST 41 TPCD 51 GAMMACCL 43 **** CENT 318
StatusChann	els Setup Close

FIG: 25.33 Telemetry Monitor

It is advisable that once the status screen has been updated with the tool information that the user switch to the Channels display. This will show the Frame Count and as importantly the Errors. Normal operation will show an update of 10 frames per second, some initial errors are normal while the configuration is taking place, but this should not update once the tools are running. The sensor channels are unprocessed raw counts.

ACC 22769.00 CHV 721.00 CFBRate 0.00 GR 46.00 CCL -1570.00 PRESU 8207966.00 CAP 102894.00 TEMPU 6779906.00 TEMP 5663639.00 PRESL 8218397.00 TEMPL 6781820.00 Frames 1705.00 Errors 61.20	s	partek Telen	netry Monitor		
Errors 61.20		CHV CFBRate GR CCL PRESU CAP TEMPU TEMPU PRESL TEMPL Frames	$\begin{array}{r} 721.00\\ 0.00\\ 46.00\\ -1570.00\\ 8207966.00\\ 102894.00\\ 6779906.00\\ 5663639.00\\ 8218397.00\\ 6781820.00\\ 1705.00\end{array}$		
Status Channels Setup Close				Setup	Close

FIG: 25.34 Telemetry Monitor

The final view option is Setup. This tells us exactly what the downhole EEPROM was programmed with to configure the master controller. Each press of Setup will take us on to a new setup screen.

# Section 226

# 26 MULTI-FINGER CALIPER AND PIPE Tally

The Warrior Logging Software supports imaging tools that include a wide range of multi-arm or multi-finger caliper tools supplied by different manufacturers such as Sondex , Hotwell, Probe, Katwell, GoWell, and Spartek Systems. The various caliper tools may have from 12 to 60 fingers. The Warrior software presents the readings from the fingers as radii or diameters. In addition, many presentations will also present a 3-dimensional image of the caliper log.

One of the problems with multi-finger caliper tools is when the tool is not centered in the wellbore, the readings of the diameters measured may not be correct. With the tool not centered, the diameters perpendicular to the high / low axis will read smaller than actual size, showing an eccentric pipe. Warrior Software has a Caliper Processing package available as a supplement to the Warrior 8 Software that corrects the eccentric caliper readings in real time. The Caliper Processing software would replace the third-party software that is normally used after the well is logged as post processing in the office or processing center. Sondex calipers cannot use the Warrior eccentricity correction.

The example shown in Fig. 26.1 shows a log pass with uncorrected caliper image on the left and a corrected caliper image on the right. Fig. 26.2 shows a cross-section image of the caliper readings. Fig. 26.3 shows a 3-dimensional image of the uncorrected and corrected caliper readings.

If you have Caliper processing software you will have an option in variables to select none, eccentricity correction or eccentricity correction and elliptical correction.

<ul> <li>Variables</li> </ul>													2
	Zones			Acce	ot		Und	0		Cl	ose		
Тор	BOREID in	BOTTEMP degF	CASEID in	CASEOD in	CASETHCK in	IMGCCLCTH	IMGRWCSRC	MinAPIWall in	PERFS	SRFTEMP degF	TDEPTH ft		_
Bottom	7.875	100	5.012	5.5	0	0.15	Ecc-Cor	0	No	0	0		
	•		_									•	

Fig. 26.1 Multi-finger Caliper Correction Selection

For more information about the Caliper Processing Software contact Scientific Data Systems.

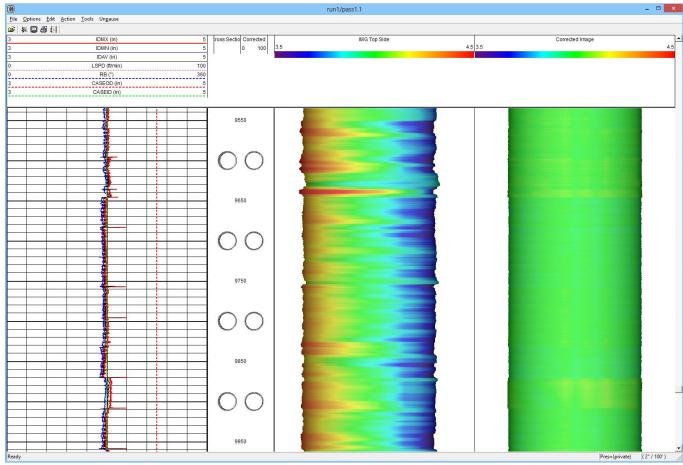


Fig. 26.2 Multi-finger Caliper Image Plot

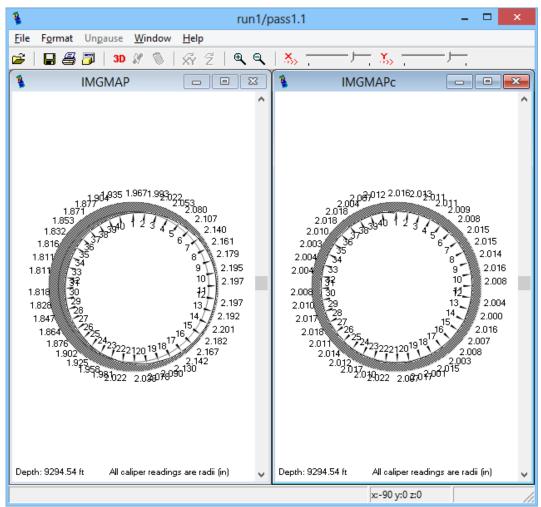


Fig. 26.3 Image map showing uncorrected and corrected caliper readings

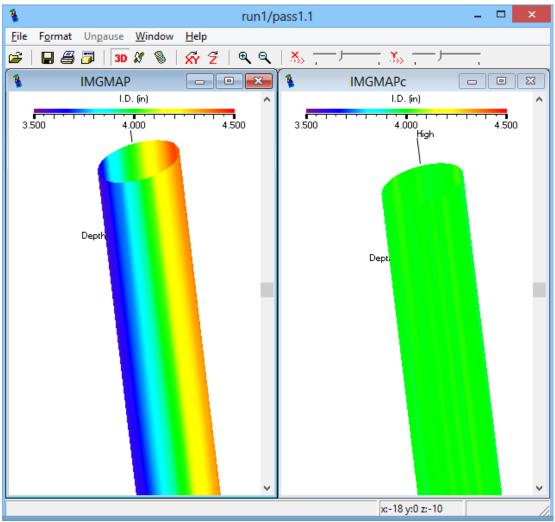


Fig. 26.4 3-D Image map showing uncorrected and corrected caliper readings

## 26.1 Pipe Tally Utility

The Warrior 8 software has an enhanced version of the Warrior Pipe Tally Utility. The utility provides a numerical table by joints of casing / tubing showing casing loss. In addition, it provides capabilities for enhancing the log presentations.

The Pipe Tally Utility is accessed through the Warrior Database Utilities by clicking on the Pipe Tally selection button.

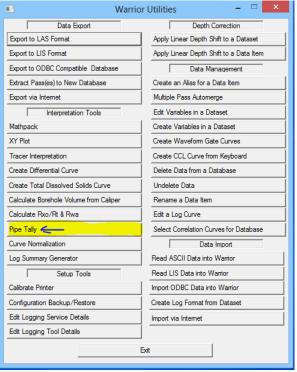


Fig. 26.5 Warrior Database Utilities - Pipe Tally

#### 26.1.1 Get Pipe Tally Data - Scan for Collars

When the Pipe Tally Utility is opened, there is no information present. The first step is to get the casing joints. If you click on the [Process] button, you will get the choice of getting the joints from a log pass or entering them from the keyboard. By clicking on [Get Joints from a Log Pass], multiple collars can be selected at one time with the mouse and the software will enter them into the table. If [Get Joints from Keyboard] is selected, the user must type in each collar position that he wants to use

Fig. 26.5 Pipe Tally Utility - Process

🗒 Warrior - Pipe Tally Utility 🗕 🗆 🗙
File Edit Settings Help
Open Edit Save Exit
# Top Length Min RW Loss
1

	Processes:	×
Get Jo	oints from a Log Pass	
Get J	loints from Keyboard	
Scan Log f	or Collars	Grading
Curve name Max collar length Use mouse and a to outline one or n named curve. Use results to Joint Ta Length helps treat collar	e 'Accept' to add ble. Max Collar	\$ 
Start Plot	Accept	
Reject	Done	

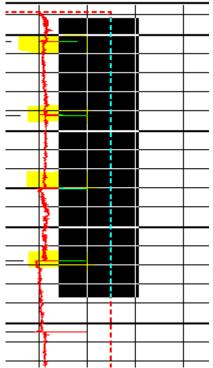
When getting joints from a log pass, any curve that indicates collars may be used, not just CCL. In the following example, since there is no CCL in the string, I will use the IDMXC curve. The maximum collar length would be set to the minimum length of a casing joint or longer than any hardware that might be in the well, normally 2 to 4 feet. When the [Start Plot] button is clicked, Interactive Plot will start. You will need to select the pass that you wish to process and to do a screen plot to see the pass. It is often advantageous to compress the scale of the plot to enable the user to select more collars at one time. To do this, click the Options choice from the Interactive Plot menu.

	Presentation C	Optic	ons	×
Start At	10110.00		<< Maximize	_
Stop At	8489.83		<< maximize	
Presentation File	xi40_3dCOR.prs		<< Browse	
Vertical Scale	240	•	( 5" / 100' )	
English Depth	2400 2000	^	glish Units	
O Metric Depth	1200		etric Units	
C Time	1000		er defined	
O Other	600 500			
Show tool posit	480 ion	~		
Use private cop	by of presentation with	this lo	g Can	cel

Fig. 26.6 Setting Vertical Scale to compress the viewed log pass

Click the Vertical Scale drop down and select a larger number to compress the scale. 600 or 1200 are good options. Using the mouse, draw a rectangle that catches the peaks of the curve that you are using as a CCL indicator.

Fig. 26.7 Capturing CCL indications in a log pass



Scan Log for	or Collars
Curve name	idmxc
Max collar length	2.0 ft
Cnt: 4 collars, 3 Rng: 8504.0 ft t Min: 37.8 ft Max: 38.3 ft Avg: 38.1 ft	3 joint(s) to 8618.2 ft
Start Plot	Accept
Reject	Done

The Scan Log for Collars window will show a summary of what you have just scanned. In this case, it shows 4 collars in the range of 8504.0 feet to 8618.2 feet and gives the minimum, maximum, and average lengths of the joints in that interval. If you click the [Reject] button, the summary is cleared, and you may reselect the collars from the log pass. If you click the [Accept] button, the collars that have been selected will be entered automatically into the pipe tally table. You should continue down the log pass, selecting collars until the whole pass has been collars picked. When you are finished, click the [Done] button to close the Scan Log for Collars window.

At this point, it is a good idea to take a close look at the Pipe Tally table and look for problems with the collars that have been selected. Things that should be looked for are extra-long and extra-short joints.

🔲 🛛 🖉 Warrior - Pipe Tally Utility 🚽 🗖 🗙
File Edit Settings Help
Open Edit Process Save Exit
18 Joints, 8504.0 ft to 9283.8 ft. Min: 0.1 ft Max: 76.8 ft Avg: 43.3 ft
# Top Length Min RW Loss
18 8504.0 38.3 1 9245.2 38.6
17 8542.3 38.0 0 9283.8 0.0
16 8580.3 37.8
15 8618.1 <u>36.9</u>
14 8655.0 76.8
13 8731.8 11.4
12 8743.2 39.4
11 8782.6 37.6
10 8820.2 38.1
9 8858.3 38.3
8 8896.5 37.3
7 8933.9 <mark>74.0</mark>
6 9007.8 49.9
5 9057.8 76.2
4 9134.0 0.1
3 9134.0 36.7
2 9170.7 74.5
, _

Fig. 26.8 Examine table for bad CCL selections

In the table shown in Fig. 2.5, there are long joints at joints 14, 7, and 2 and a .1-foot joint at joint 4. The long joints are probably caused by not having enough of an indication in the signal to pick the collar and the short joint is caused by selecting the same collar twice. The collars that have been selected twice can be eliminated by clicking on that collar in the table and then click on Edit -> Delete Selected Entries.

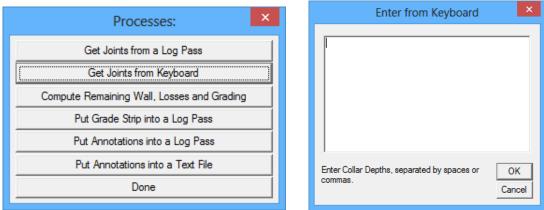
18       8504.0       38.3       1       9245.2       38.6         17       8542.3       38.0       0       9283.8       0.0         16       8580.3       37.8         15       8618.1       36.9         14       8655.0       76.8         13       8731.8       11.4         12       8743.2       39.4         11       8782.6       37.6         10       8820.2       38.1         9       8858.3       38.3         8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2		Warrior - Pipe Ta	ally Utility 🗕 🗖 🗙	
Image: Second	File Ed	it Settings Help		
18 Jd       Max: 76.8 ft       Avg: 43.3 ft         #       Top       Length       Min RW       Loss         18 8504.0       38.3       1       9245.2       38.6         17 8542.3       38.0       0       9283.8       0.0         16 8580.3       37.8       1       15       8618.1       36.9         14 8655.0       76.8       1       38731.8       11.4         12 8743.2       39.4       1       18782.6       37.6         10 8820.2       38.1       9       8858.3       38.3         8 8896.5       37.3       7       8933.9       74.0         6 9007.8       49.9       5       9057.8       76.2	<u>0</u>	Heading Information	<u>S</u> ave <u>Ex</u> it	
18       8504.0       38.3       1       9245.2       38.6         17       8542.3       38.0       0       9283.8       0.0         16       8580.3       37.8         15       8618.1       36.9         14       8655.0       76.8         13       8731.8       11.4         12       8743.2       39.4         11       8782.6       37.6         10       8820.2       38.1         9       8858.3       38.3         8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2	18 Jc	Delete Selected Entries	Max: 76.8 ft Avg: 43.3 ft	
17       8542.3       38.0       0       9283.8       0.0         16       8580.3       37.8         15       8618.1       36.9         14       8655.0       76.8         13       8731.8       11.4         12       8743.2       39.4         11       8782.6       37.6         10       8820.2       38.1         9       8858.3       38.3         8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2	# 1	op Length Min RW Loss		Warri
16       8580.3       37.8         15       8618.1       36.9         14       8655.0       76.8         13       8731.8       11.4         12       8743.2       39.4         11       8782.6       37.6         10       8820.2       38.1         9       8858.3       38.3         8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2			1 9245.2 38.6	
15       8618.1       36.9         14       8655.0       76.8         13       8731.8       11.4         12       8743.2       39.4         11       8782.6       37.6         10       8820.2       38.1         9       8858.3       38.3         8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2			0 9283.8 0.0	
14       8655.0       76.8         13       8731.8       11.4         12       8743.2       39.4         11       8782.6       37.6         10       8820.2       38.1         9       8858.3       38.3         8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2				
13       8731.8       11.4         12       8743.2       39.4         11       8782.6       37.6         10       8820.2       38.1         9       8858.3       38.3         8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2				
12       8743.2       39.4         11       8782.6       37.6         10       8820.2       38.1         9       8858.3       38.3         8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2	14 86	55.0 76.8		
11       8782.6       37.6         10       8820.2       38.1         9       8858.3       38.3         8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2	13 87	31.8 11.4		
10       8820.2       38.1         9       8858.3       38.3         8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2	12 87	43.2 39.4		
9       8858.3       38.3         8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2	11 87	82.6 37.6		
8       8896.5       37.3         7       8933.9       74.0         6       9007.8       49.9         5       9057.8       76.2	10 88	20.2 38.1		ſ
7 8933.9 74.0 6 9007.8 49.9 5 9057.8 76.2	9 88	58.3 38.3		L
6 9007.8 49.9 5 9057.8 76.2	8 88	96.5 37.3		
5 9057.8 76.2	7 89	33.9 74.0		
	6 90	07.8 49.9		
1 0124.0 0.1	5 90	57.8 76.2		
4 9134.0 0.1	4 91	34.0 0.1		
3 9134.0 36.7	3 91	34.0 36.7		
2 9170.7 74.5	2 91	70.7 74.5		

Warrior - Pipe Tally Utility	
1 selected. Delete?	
<u>Y</u> es <u>N</u> o	

Fig. 26.9 Deleting erroneous entries from table

To correct the long joints, you would need to Process and Get Joints from a Log Pass again or in this case I will Get Joints from Keyboard.

#### Fig. 26.10 Get Joints from Keyboard



After closely examining the log, I missed collars at 8695.3, 8966.1, and 9209.4. These depths will be entered the window separated by spaces or commas as shown in Fig. 2.8.

Enter from Keyboard	×
8695.3, 8966.1, 9209.4	
Enter Collar Depths, separated by spaces or commas.	OK Cancel

Fig. 26.11 Process – Get Joints from Keyboard

The corrected table is now shown in Fig. 26.12

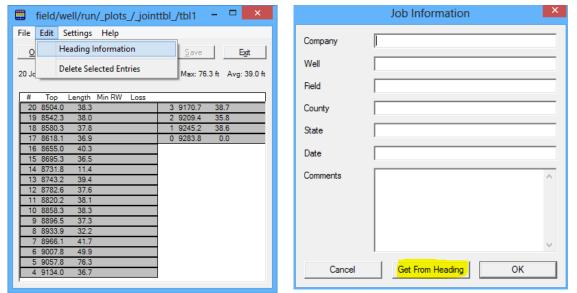
🗰 Warrior - Pipe Tally Utility 🗕 🗖 🗙				
<u>F</u> ile <u>E</u> dit <u>S</u> ettings <u>H</u> elp				
<u>O</u> pen <u>E</u> dit <u>P</u> rocess <u>S</u> ave <u>Ex</u> it				
20 Joints, 8504.0 ft to 9283.8 ft. Min: 11.4 ft Max: 76.3 ft Avg: 39.0 ft				
# Top Length Min RW Loss				
20 8504.0 38.3 3 9170.7 38.7				
19 8542.3 38.0 2 9209.4 35.8				
18 8580.3 37.8 1 9245.2 38.6				
17 8618.1 36.9 0 9283.8 0.0				
16 8655.0 40.3				
15 8695.3 36.5				
14 8731.8 11.4				
13 8743.2 39.4				
12 8782.6 37.6				
11 8820.2 38.1				
10 8858.3 38.3				
9 8896.5 37.3				
8 8933.9 32.2				
7 8966.1 41.7				
6 9007.8 49.9				
5 9057.8 76.3				
4 9134.0 36.7				

Fig 26.12 Corrected Pipe Tally Table

#### 26.1.2 Edit Pipe Tally Settings

There are several things that should be done before continuing. The first is editing the table header information.

Fig. 26.13 Edit Heading Information



If the Warrior Heading has already been completed and saved, that information can be brought into the Pipe Tally Header by clicking the [Get from Heading] button at the bottom of the Job Information window. If that heading information is not available, then the User should enter the data in the fields provided. The heading information is saved into the table by clicking the [OK] button.

	Job Information
Company	Big Bucks Oil Co.
Well	Gusher #5
Field	Worthy
County	Memaid
State	Atlantis
Date	Nov. 11, 2012
Comments	Example Table
	×
Cancel	Get From Heading

Fig. 26.14 Completed Job Heading Information

If grading to going to be applied to the log data, the grading options need to be set up before the casing thickness is scanned. Click on Settings -> Grading and options to bring up the options window. Fig. 26.15 Options and Grading

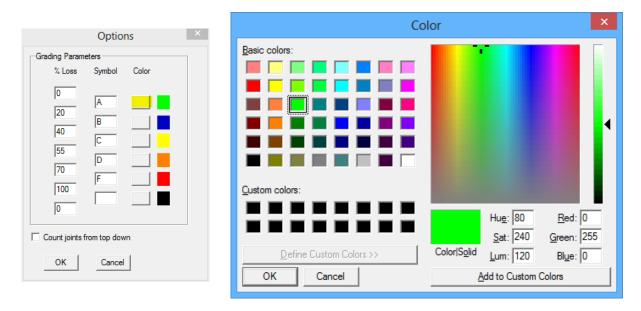
field/well/run/_plots_/_jointtbl_/tbl1 -	Options
File         Edit         Settings         Help           Open         Grading & options         ave         Egit           20 Joints, 8504.0 ft to 9283.8 ft.         Min: 11.4 ft         Max: 76.3 ft         Avg: 39.0 ft           #         Top         Length         Min RW         Loss         20         8504.0         38.3         3         9170.7         38.7           Options         ✓         ✓         6         0         0	Grading Parameters % Loss Symbol Color 0 0 Options
Grading Parameters         Color           % Loss         Symbol         Color           0         P         8           50         F         8           100         F         8           0         8         8           0         8         8           0         8         8           0         8         8           0         8         8           0         8         8           0         8         8           0         8         8           0         8         8	Grading Parameters           % Loss         Symbol         Color           0         A         B         B           20         B         B         B           40         C         B         B           55         D         B         B           70         F         B         B           100         F         B         B           0         B         B         B         B
Count joints from top down	Count joints from top down

The grading is based on a percentage of loss. The User would normally setup between 2 and 6 grade levels. This may be as simple as 0% - 50% Passing (Green) and 50% - 100% Failing (Red). It could be something more complex, such as a letter grading A=0% - 20% (Green), B=20% - 40% (Blue), C=40% - 55% (Yellow), D=55% - 70% (Orange), and F=70% - 100% (Red)

Fig. 26.16 Example Grading Scales

The colors assigned to the grading are used as a quick indication of the grading and can be shown both in some of the pipe tally tables and as a pattern strip in the log. The color for a given grade may be edited by clicking on the box located between the grade symbol and the grade color, defining the color and then clicking the [OK] button.

Fig. 26.16 Selecting Grading Colors



#### 26.1.3 Remaining Wall Loss and Grading

Now that grading options have been set up, the next step is to have the software scan the log, computing the wall loss percentage and grading the casing joints. Click on [Process] to open the Process window. Click on the [Compute Remaining Wall, Losses and Grading] option.

🗮 field/well/run/_plots_/_jointtbl_/tbl1 - 🗆 🗙				
File Edit Settings Help				
Open Edit Process	Save Exit			
20 Joints, 8504.0 ft to 9283.8 ft. Min: 11.4 ft Max: 76.3 ft Avg: 39.0 ft				
# Top Length Min RW Loss				
20 8504.0 38.3	3 9170.7 38.7			
19 8542.3 38.0	2 9209.4 35.8			
18 8580.3 37.8	1 9245.2 38.6			
17 8618.1 36.9	0 9283.8 0.0			
16 8655.0 40.3				
15 8695.3 36.5				
14 8731.8 11.4				
13 8743.2 39.4				
12 8782.6 37.6				
11 8820.2 38.1				
10 8858.3 38.3				
9 8896.5 37.3				
8 8933.9 32.2				
7 8966.1 41.7				
6 9007.8 49.9				
5 9057.8 76.3				
4 9134.0 36.7				
1				

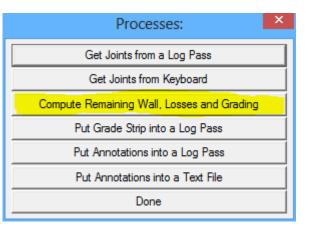


Fig. 26.17 Remaining Wall and Losses

There are two ways to process the remaining wall and losses. If the Warrior Caliper Processing software has been used, remaining wall has already been computed and that curve (MINRC – Minimum Remaining Corrected) can be used. The second method is to use the maximum diameter (which, depending upon the caliper eccentric could be appreciably off) and the casing OD and ID set up in Variables.

From the Compute Loss and Grading window, the User will first need to select which method that he wishes to use. And then, using the [<<Browse] button select the data item that he wished to use to process the log for losses.

Compute Loss and G	irading
Collar ignore window 0.1 ft (Above and below)	Setup Loss Grading
Determine Remaining Wall from:	Edit Zoned Variables
<ul> <li>Minimum Remaining Wall Log (e.g. MINRC curve)</li> <li>Compute from Maximum ID Log (e.g. IDMX curve)</li> </ul>	
Input Curve:	
/field/well/run1/pass1.1/MINRC/1	<< Browse
	Begin Cancel

Fig. 26.18 Compute loss and Grading

	Wall Thickness Scan		×
Current Database	C:\ProgramData\Warrior\Data\MFC2_W	8.db	
Current Dataset	/field/well/run1/pass1.1/MINRC/1		
/field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1 /field/well/run1/pass1	.1/ID10/1 .1/ID09/1 .1/ID08/1 .1/ID07/1 .1/ID06/1 .1/ID05/1 .1/ID04/1 .1/ID03/1 .1/ID02/1	^	
field/well/run1/pass1 field/well/run1/pass1 field/well/run1/pass1 field/well/run1/pass1 field/well/run1/pass1 field/well/run1/pass1 field/well/run1/pass1 field/well/run1/pass1 field/well/run1/pass1	.1/MINRC/1 .1/ELLIP/1 .1/RMXAC/1 .1/RMNAC/1 .1/IDAVC/1 .1/IDMXC/1 .1/IDMNC/1 .1/CTR_DIST/1 .1/CCLC/1	~	Database OK Cancel

Fig. 26.19 Selecting Data to Process for Losses

The Pipe Tally table will now be completed, showing the number of joints, the collar depth of each collar, the length of each joint, the minimum remaining wall in each joint, and the grade that has been given to each joint.

📕 fie	ld/well	/run/_	plots_/_	join	ttbl_/tb	011	-		×
<u>File E</u> dit <u>S</u>	ettings	<u>H</u> elp							
Open	<u>E</u> dit		Process		<u>S</u> ave		E <u>x</u> it		
20 Joints, 850	4.0 ft to 9	283.8.6	Min: 1	14 fr	Max: 76	3 ft 🗛	a: 39.0 f	f+	
20 000000, 0000	1.0 11 10 0.	200.0 11.			Max. Yo		g. 00.01		
# Top	Length	Min RW	Loss						
20 8504.0	38.3	0.221	11% A	3	9170.7	38.7	0.231	8% A	
19 8542.3	38.0	0.224	10% A	2	9209.4	35.8	0.136	46% C	
18 8580.3	37.8	0.220	12% A	1	9245.2	38.6	0.220	12% A	
17 8618.1	36.9	0.231	7% A	0	9283.8	0.0			
16 8655.0	40.3	0.218	13% A						
15 8695.3	36.5	0.222	11% A						
14 8731.8	11.4	0.121	51% C						
13 8743.2	39.4	0.222	11% A						
12 8782.6	37.6	0.221	12% A						
11 8820.2	38.1	0.223	11% A						
10 8858.3	38.3	0.226	10% A						
9 8896.5	37.3	0.132	47% C						
8 8933.9	32.2	0.244	2% A						
7 8966.1	41.7	0.227	9% A						
6 9007.8	49.9	0.215	14% A						
5 9057.8	76.3	0.221	12% A						
4 9134.0	36.7	0.222	11% A						
I									

Fig. 26.20 Completed Pipe Tally Table

# 26.2 Multi-Finger Caliper Presentations

If the Warrior Caliper Processing software is being used, there are several additional curves or outputs that are created in addition to the standard logging outputs. These include but are not restricted to IMGMAPC (corrected image map), IDMXC (corrected maximum diameter), IDMNC (corrected minimum diameter), IDAVC (corrected average diameter), MINRC (minimum remaining wall), and CTR\_DIST (distance from center of tool to center of hole). These outputs can be added to presentations in the normal manner.

#### 26.2.1 Pipe Tally Annotations and Grading

During the processing of the Pipe Tally table, there are two processes that will add data to the database. These are "Put Grade Strip into a Log Pass" and "Put Annotations into a Log Pass". While the information is added to the database, it is not plotted until it is added to a presentation format.

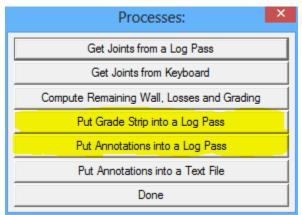


Fig. 26.21 Additional Pipe Tally Processes

From Interactive Plot, with a log pass pulled up, edit the log format. Click on the [Add] button to add a new database item to the presentation.

File	Layout	Object	t Color Ma	aps Options			
Op	pen	Add	Chang	e Remove	Save	Exit	
2 Ma	iximum Dian	neter 3	VELLOB. 1	Cali	per # 1	2.5	-
<u> </u>	inimum Diam		а		per # 2 NG03		

Fig. 26.22 Add a New Item to Presentation

To add the Pipe Tally Annotations to the presentation, the DB Item needs to be PTANN. This can be typed in or chosen from the [Current Pass] drop down list. The annotations can be placed in any track that is available, and the scales have no relevance in this case. The Presentation Type must be tabular, and the Style needs to be Tabular by delta.

	Defi	ne Data Item 🛛 🗙
Data Source DB Item	PTANN Quick Pick List Current pass	Style ■ black ▼ C Left C Middle C Right
C Variable	• Data	Detta 50
Position	Left value 0	Auto C .00     C Tabular by interval     C .0     C .00     C Tabular by deta
Presentation Ty		What to show in scale
Curve Tabular Variable De Signature	C Pattern Strip C Graphic Strip nsity C Image 3D C Potato Plot	Label - use carriage return for multiple lines
		OK Cancel

Fig. 26.23 Adding Pipe Tally Annotations

To add the grading strip, the DB item needs to be Grade. The presentation type needs to be a Pattern Strip. The color map needs to be Pipe Grade. This is a special color map that can only be edited from the pipe tally grading and options settings. It cannot be edited through the normal color map editing. The scales should be set from 1 to the number of grades that were set up in the Pipe Tally Options.

	Defi	ine Data Item		×
Data Source DB Item O Variable Position Track # Presentation Type O Curve O Tabular O Variable Dens	Grade Quick Pick List Current pass	Style Style What to show in scale Label - use carriage retum for multiple lines	IZ Label IZ Units IZ R Grade	X Range
C Signature	C Potato Plot	Color map	Pipe Grade	OK Cancel

Fig. 26.24 Adding Pipe Grade Strip

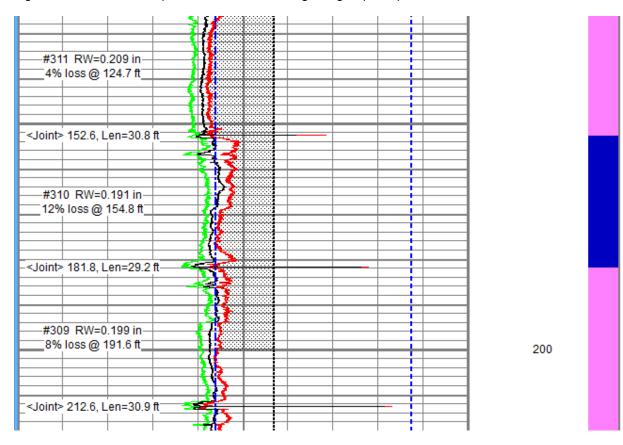


Fig. 26.25 shows an example with annotations and grading strip in a presentation.

26.2.2 Pipe Tally Tables in Plot Job

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• When adding a pipe tally table to a plot job, there are several formats that the table may be printed under. These are \*.WRF in the Warrior\Format folder. When adding the table to a Plot Job, the format that is to be used for printing the pipe tally table can be selected. Examples are shown below.

	Define Graphics File	×
Type Database Dataset Format	Joint Table <u>c:\programdata\wamior\data\mfc2_w8.db</u> field/well/run/_plots_/_jointtbl_/tbl1 inttbl01.wrf	<< Browse
		OK Cancel

Fig. 26.26 Selecting Pipe Tally Report format

No. Eile Action	More Next	Previous H	lein	/field/wel	/run/_plot	s_/_job	s_/tables				-	
Fue Broom				cks Oil Co. ⁺#5					Four		) He	re
	Joint		Rer	naining Wall			Join	t	Ren	naining	Wall	1
No.	Depth	Length	0.000	0.500 in		No.	Depth	Length	0.000	0.500	) in	1
20	8504.0	38.3		0.221								
19	8542.3	38.0		0.224								
18	8580.3	37.8		0.220								
17	8618.1	36.9		0.231								
16	8655.0	40.3		0.218								
15	8695.3	36.5		0.222								
14	8731.8	11.4		0.121								
13	8743.2	39.4		0.222								
12	8782.6	37.6		0.221								
11	8820.2	38.1		0.223								
10	8858.3	38.3		0.226								
9	8896.5	37.3		0.132								
8	8933.9	32.2		0.244								
7	8966.1	41.7		0.227								
6	9007.8	49.9		0.215								
5	9057.8	76.3		0.221								
4	9134.0	36.7		0.222								
3	9170.7	38.7		0.231								
2	9209.4	35.8		0.136								
1	9245.2	38.6		0.220								
0	9283.8	0.0		0.000								
	Log [	DateNo	ov. <b>1</b> 1	1, 2012					Shee	t: 1 o	f 1	
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JNTTBL01.wrf

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		TH			Com	pany		icks Oi	l Co.					
k.	N.	$\mathcal{I}$	-	.0	Well		Gushe							
. OG	ln r	$\nabla \mathcal{L}$	190,	•	Field		Worth							
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19	8542.3	38.0												
18	8580.3	37.8												
17	8618.1	36.9												
16	8655.0	40.3												
15	8695.3	36.5												_
14	8731.8	11.4												
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12	8782.6	37.6												
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9	8896.5	37.3												
8	8933.9	32.2												
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20	8504.0	38.3		89%					
19	8542.3	38.0		90%					
18	8580.3	37.8		88%					
1/	8618.1	36.9		93%					
16	8655.0	40.3		87%					
	8695.3	36.5		89%					
14	0742.0	39.4		49% 89%					
12	8782 6	37.6		88%					+
11	8820.2	38.1		89%					
10	8858.3	38.3		90%					+
9	8896.5	37.3		53%					+
8	8933.9	32.2		98%					<del> </del>
HŤ	8966.1	41.7		91%					-
6	9007.8	49.9		86%					
5	9057.8	76.3		88%					
Ă	9134.0	36.7		89%					
3	9170.7	38.7		92%					
2	9209.4	35.8		54%					
1	9245.2	38.6		88%					
0	9283.8	0.0							
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<u>File Action More Next Previous Help</u>									
Lour Logo Here	Company Well Field County	Big Bucks Oil C Gusher #5 Worthy Mermaid	LY SUMMARY :o. State	Atlantis					
		Comments							
Example Table									
Joint number, [	Depth, Length, Ma	ximum Penetration Pe	rcentage, and Symbol						
20 8504.0 38.3 11%									
19 8542.3 38.0 10%									
18 8580.3 37.8 12%									
17 8618.1 36.9 7%									
16 8655.0 40.3 13%									
15 8695.3 36.5 11%									
14 8731.8 11.4 51%									
13 8743.2 39.4 11%									
12 8782.6 37.6 12%									
11 8820.2 38.1 11%									
10 8858.3 38.3 10%									
9 8896.5 37.3 47%									
8 8933.9 32.2 2% 7 8966.1 41.7 9%									
5 9057.8 76.3 12% 4 9134.0 36.7 11%									
3 9170.7 38.7 8%									
2 9209.4 35.8 46%									
1 9245.2 38.6 12%									
(4) joint table	<b>I</b>								
(4) joint table									

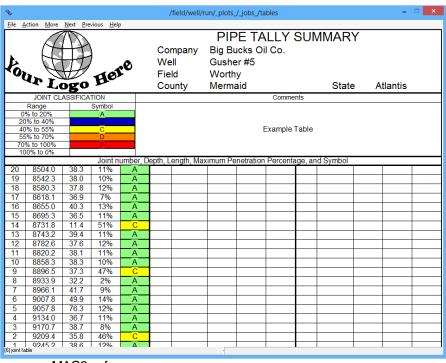
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ile Act	ion <u>M</u> ore	Next Previ	ious Help				~ -						
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MAC.wrf

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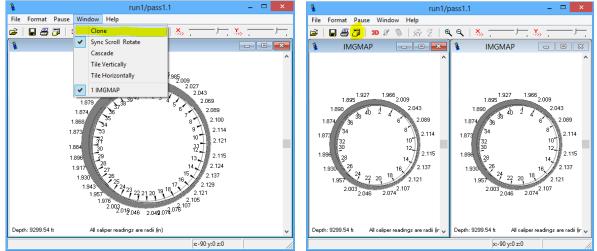


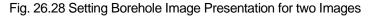
MAC2.wrf

Fig. 26.27 grading examples

26.2.3 Borehole Presentations

The Borehole Presentation Window, available in some presentations, has been enhanced with the ability to show two image map presentations. To show the second image map, click on the "Window" menu option and then select "Clone".

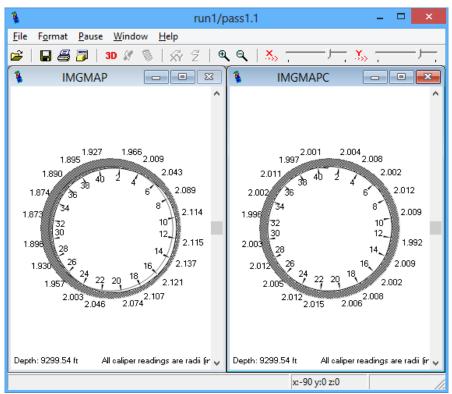




Once the two images are cloned, they will be the same image. By clicking one of the images and then clicking on the "Options" icon, as shown in fig. 3.1, the second image can be set to be a corrected caliper array image IMGMAPC. Either image can be set to either a 2-dimensional or 3-dimensional presentation.

Borehole Image Drawi	ng Presentation Options
What to plot         Curve setup         Caliper Array       IMGMAPC         High Caliper       MAP1         (Curve containing ID         of caliper on high side)         Other curves for 2D display         Add         Remove         Color         Size (n)       Opacity(%)         Image: Color       100         Calipers       2D color         Color       100         Casing I.D.       4.5000         Casing O.D.       4.5000         Edit Variables       50         Tool O.D.       3.13         Background       1         Text       Plot resolution         High       Low 200         2D line width       1	How to plot Plot range (height of diagram) 0.01 ft - 12 samples/ft Undersample 1
Zoom 140 🕂 Rotate 0 🛨	More Options Set to Defaults Cancel OK

Fig. 26.29 Setting Corrected Image for Second Borehole Presentation



clicking on the "Options" icon, as shown in fig. 3.1, the second image can be set to be a corrected caliper array image IMGMAPC. Either image can be set to either a 2-dimensional or 3-dimensional presentation.

Borehole Image Drawi	ng Presentation Options
What to plot         Caliper Aray       IMGMAPC         High Caliper       MAP1         (Curve containing ID of caliper on high side)         Other curves for 2D display         Add         Remove         Color         Size (in)         Opacity(%)         Calipers         2D color         Image: Color         Calipers         Color         Size (in)         Opacity(%)         Calipers         Color         Size (in)         Opacity(%)         Casing 1.D.         4.5000         50         Minimal diameter         3.5000         Edit Variables         Tool 0.D.         Size         Background         Text         Plot resolution         High       Low         2D line width	How to plot         Plot range (height of diagram)       0.01       ft - 12 samples/ft         Undersample       1       sample(s)       Actual       1         Min, max calper reading       1.86812, 2.13675       Save/pint at this resolution       300       dpi         Perspective image       C Yes       C No       Simulate Outside Diameter (2D mode only)       Simulate Outside Diameter (2D mode only)         Caliper start       1       Caliper stop       1       Color Maps         BHimage       ▼       Plot options       Caliper readings are radi       Caliper numbered CCW         Show 3D plot using deviation       ▼       Thide 2D arm labels       ▼         Drawing reference       C BOREID +/- bounds       Costing ID OD       C BOREID +/- bounds
Zoom 140 🔹 Rotate 0 📩	More Options Set to Defaults Cancel OK

Fig. 26.30 Setting Corrected Image for Second Borehole Presentation

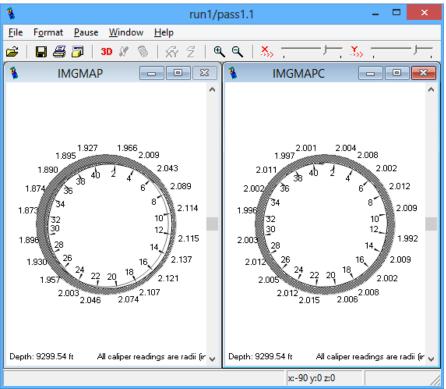


Fig. 26.31 Showing Caliper Array Image and Corrected Image

#### 26.2.4 Multi-Finger Presentations

In previous versions of Warrior software, an array of curves, such as arm radii, each had to be plotted individually. This meant that if a scale change was required each individual arm had to be rescaled. Warrior 8 allows the User to plot a list of curves as a single DB item. The presentation shown if fig.3.4.1 shows a 40-arm caliper presentation with arm R01 plotted from 2.4375 to 4.9375. Each additional arm is plotted with the scales set to .0625 less so that arm R40 is plotted from 0 to 2.5.

In this example, I will remove every caliper arm curve as shown in Fig. 3.4.2. Next, I will click the [ADD] button and select the List type of Data Source for the DB item. Click the [Curve List Properties] button to bring up the Curve List Editor Window as shown in Fig. 3.4.4.

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3 MIN ID	5	2.375	R02		4.875	
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Fig. 26.32 Typical 40 arm caliper presentation

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3 MAX ID 3 MIN ID 3 NOM CASE 0 MINR 1DMN	5 ID 5 0.5	SCCL 3			
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Fig. 26.33 Presentation with all caliper arm curves removed

			Defin	e Data Item			×
Data Source Name				Style			
C Variable	C Data						
Track #	1	Left value Right value	0		rve List Properti	es	
Presentation Type				What to show in scale	Label	✓ Units	Range
				Label - use carriage retum for multiple lines			
							OK Cancel

Fig. 26.34 Selected List type Data Source DB Item

Cur	ve List Editor	×
How to create curve list	For all curves       Thickness       I         black       Thickness       I         Zonable Scales       Solid         Wrap       Dot         Logarithmic       Dash         Offset       D         between each curve         Use this color for curve         OK	ancel

Fig. 26.35 Curve List Editor Window

On the left side of the Curve List Editor Window is a drop-down list of all the available outputs. Select the first curve in the list of curves that you would like to plot. There is a brief example that describes how to pick the curve shown in the "How to create curve list" box. When the curve is selected, the "list identifier" will be filled out. The "For all curves" box of the Curve List Editor Window is used the same as the style box of a normal curve.

Cui	ve List Editor	×
How to create curve list • List of related names such as (CAL1,CAL2,CALn) Enter curve name with wildcard. For example, R0* will select R01-R40. R* will select R01-R40 plus any other curve that starts with R. RC0*	For all curves     Thickness     Image: Construction of the second secon	
Name     A       ADPTH     AVRD       CCLC     CTR_DIST       DEVI     ECCE       ELLIP     V	For each curve Offset  Use this color for curve  OK  Ca	ncel

Fig. 26.36 Select List of Curves

The "For each curve" box provides some additional settings. When plotting multiple curves, it is normal to offset each curve by a small amount so that the curves are not stacked on top of each other and are distinguishable. Another method of distinguishing multiple curves is to make one of the curves a different color every so often. This box provides the User those capabilities with the multiple curve lists. When the settings have been selected, click [ OK ] to close the Curve List Editor window. Note that the scales for the first curve and every nth curve will automatically be shown.

The final settings for defining the list of curves are giving the list a name. This can be anything to identify the list, such as Calipers, R0 thru R40, or whatever the User decides is appropriate. The track and the scales also need to be set. The scales will be the scale for all the curves, but only the first curve and every nth curve will the scales be shown on the log insert. When complete, click [ OK ] to save the curve definition. Then click [ Save ] to save the edited plot.

Defin	e Data Item	×
Data Source Name Position Track # 4 Value 1.75 Presentation Type	Style         Curve List Properties         What to show in scale         Image: Curve List Properties         Label - use carriage return for multiple lines         Calipers	ge
	O	

Fig. 26.37 Setting Track and Scales and giving list of curves a name

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Fig. 26.38 Final presentation for a list of caliper curves

### 26.3 Multiarm64(32).exe

This program will read in LAS data from a Multi-Arm service and create a single pass in a Warrior database. This pass will not only contain the curves found in the LAS data, but will also create a 180-point VDL curve by interpolating between each of the Multi-Arm caliper readings. This program also contains a viewer that can display a 3-dimensional view of a section of the Multi-Arm data. The program is located at "C:\Program Files\Scientific Data Systems\Bin"

26.3.1 Importing Multi-Arm Data

The first step is to import the Multi-Arm data in to a Warrior database. Use the build button "Import from LAS" to select the LAS file to import.

🐐 Warrior for MultiArm Caliper	
LAS file name C:\ProgramData\Warrior\Data\555_R.las	Import from LAS
Presentation File PROBED60.prs	Edit Presentation
Borehole Image presentation file (required for 3D viewer) probed60.bhf	Create VDL
Output database:/field/well/run/pass	Start Plot
Output curves Base caliper name MULTIARM	Help
Offset between each caliper 5.0	
Caliper units in  VDL output name imagmap	
Input is radii, convert to diameters	
	Close

FIG:26.39 LAS Multiarm Caliper

26.3.2 Caliper Presentation

The presentation file will be embedded in the database as the presentation to be used when the data is plotted. This can be edited later.

Select the Las File

Select the Presentation file (Probed60.prs)

Select the output database Select an existing database or type in a new database name. Fill in the field/well/run portion of the dataset. The name of the pass will always be the same as the LAS file name. Set the offset between calipers to show all the calipers in one track

Type the "Base Caliper Name" (MULTIARM)

Type the VDL output name (imagmap)

If you just have LAS, then select import from LAS. If you have the database select create VDL

26.3.3 Output curves

The program will search through the Multi-Arm LAS data for caliper curves that start with this name – i.e. ARM1, ARM2, etc. It uses these names to create the 180-point interpolation for the 3-D view. The offset between each caliper is automatically applied to the presentation file to display the individual arm data. An offset of 0 would put all the arm curves on top of each other which may make it difficult to see responses of individual curves. The VDL output name is the name of the curve that will contain the interpolation of the caliper data. This curve will contain 180 data points for each depth sample.

🏂 Warrior for MultiArm Caliper		Select If you dont
LAS file name C:\Warrior\Data\Pass1.las	Import from LAS	have ready the database
Presentation file multiarm.prs	Edit Presentation	Select VDL if the database is ready
Output database:/field/well/run/pass NEWDATABASE:/field/well/run/Pass1	Create VDL	
Output curves Base caliper name AM	Start Plot	
Offset between each caliper 0.50 VDL output name INSIDE	Help	
Input is radii, convert to diameters		
	Close	

FIG: 26.40 Set up Multi-Arm Caliper

Start the process to convert the LAS to BD It takes long time for example to produce 1Gb .

Warr	ior Data Importer	
Input Options	Files to read: c:\programdata\warrior\data\555_r.las	Clear List Add Files
opiione		reate Heading 🔽 reate Plot Job
	Log Format: PROBED60.prs	Select File
	Filter List: (optional)	Select File
0.414	Options	
Output	Warrior database file name:	
	C:\ProgramData\Warrior\Data\555m.db	Select File
Status	Optional field, well and run names: /field/well/run1/pass1	Select Path
Jidius	Reading c:\programdata\warrior\data\555_r.las	*
	Path = field/well/run1/555_r Step: 0.02000 ft	
	Initializing 11000 10500	-
Imp	ort Heading View Plot	Close

FIG: 26.41 Warrior Data Import

Presentation for MultiArm calipers (M	IULTIARM curve lis	t)			Σ
Name	Plot	Offset	<b>_</b>	Presentation	
/field/well/run1/pass1/R01/1	Yes	0.0		Base caliper name	R
/field/well/run1/pass1/R02/1	Yes	5.0	=	base caliper name	lu lu
/field/well/run1/pass1/R03/1	Yes		-		
/field/well/run1/pass1/R04/1	Yes			Pick first ca	aliper name
/field/well/run1/pass1/R05/1	Yes				
/field/well/run1/pass1/R06/1	Yes			Offset	5.0
/field/well/run1/pass1/R07/1	Yes				1
/field/well/run1/pass1/R08/1	Yes				
/field/well/run1/pass1/R09/1	Yes			Re-cre	ate list
/field/well/run1/pass1/R10/1	Yes				
/field/well/run1/pass1/R11/1	Yes			VDL output name	imagmap
/field/well/run1/pass1/R12/1	Yes			VDL output hame	Imagnap
/field/well/run1/pass1/R13/1	Yes		-		
III				Cancel	OK
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MaxR	*				
MEAN					
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R02					
R03					
R04	*				
Cancel	OK				

FIG: 26.42 Selecting Caliper Name Once the system reads through the LAS file it will prompt you to select a caliper name, browse the list until you find the applicable mnemonic.

LAS file name	Import from LAS
C:\ProgramData\Warrior\Data\555_R.las	
Presentation File	Edit Presentation
PROBED60.prs	
Borehole Image presentation file (required for 3D v	viewer)
probed60.bhf	
Output database:/field/well/run/pass	Start Plot
555m:/field/well/run1/pass1	
Output curves	
Base caliper name R	Help
Offset between each caliper 5.0	
Caliper units in	•
VDL output name imagmap	
Input is radii, convert to diameters	
Creating VDL	

FIG 26.43 Creating VDL

Once it has completed the process the system will open the resulting file with interactive plot using the presentation selected earlier.

26.3.4 Edit Presentation

See section 6

# Calibration Reports for IMG tool software (multi-finger calipers)

#### Background

First a little background about Warrior calibration reports.

Calibration report formats are essentially templates that describe a mixture of hard coded text and place-holders for calibration "terms" that the logging system produces.

The formats have the extension "wcp" and are edited using a text editor.

Within the file there are three sections:

[columns], starting at 1, this is a list that lets us demark column positions for placement of text in the report (the report itself is described row based).

For example:

1=10

2=45

3=20

4=27

5=34

Etc.

[layout], also starting at 1 for row 1, typically uses column references, alignment characters and text or "terms" to place information on the report dynamically when being generated.

**@n** places whatever follows at column **n**, ~ implies centering, - as the first character of a line implies a thin dividing line, = as the first character of a line implies a thick dividing line, . as the first character of a line implies a blank line. Terms are bookended between % symbols.

For example:

1= ~ Multi Finger Caliper Tool Calibration Report

2=-

3=@1 Serial Number: @2 %serial%

4=@1 Tool Model: @2 %model%

5=@ 1 Performed: @2 %date%

6=.

[WarriorFileInfo] is the final section, this is used during restoring of configuration backups or tool calibration exports or service exports. When a restore is made on a new system from the exported file if the target computer already has a file with the same name this section is looked at and compared to

resolve the conflict, when the date of the new file being restored is newer than the current then the new file will write over the current. The only content of this section is a line like the example below representing August 3rd, 2017, version 1 of the day (001):

WarriorFileVersion=2017.08.03001

Some tool modules have hard coded calibration report format file names but, in many cases, there is an option to specify the name (or base name when multiple pages are required) in the Tool Editor. Terms are generally tool module specific but there are a few general "terms" that will appear such as tool name, mnemonic, date of the calibration, model and serial number. This document will focus mostly on the "terms" produced by the IMG tool module but first here is how the format files should be named,

#### IMG calibration format file naming

Because by nature we are interested in information not just about the tool itself but also the individual caliper arms the calibration report can easily span more than the typical one page of say a simple logging tool like a Gamma Ray. Also, the IMG module must cater with various dynamic options where the number of individual arms can vary from one tool to another, the number of calibration references can vary, calibration options can vary, the engineering units can vary as well as some proprietary or tool type terms may or may not be produced also.

In the initial stages of this tool module development we required two or three pages for the reports depending on the number of arms. Any tool up to and including 40 arms would have two pages, the first for "master" or "shop" ring calibration, the second for the verifications. These would be files "basename\_1.wcp" and "basename\_2.wcp". Tools with more than 40 arms would have three pages, "basename\_1.wcp" and "basename\_2.wcp" for the "master" calibration, splitting the report of the arms in to half on the first page, half on the second. Then "basename\_3.wcp" would be for the verifications.

The latest version of software has added two more pages, "basepage\_n+1.wcp" and "basepage\_n+2.wcp" for charts where "n" was the number of the page used for the verification report earlier. Page "n+1" has charts produced from the "master" calibration stage, "n+2" from the verification stages. So that these reports follow in a logical sequence, "master" tabular data followed by "master" charts and "verification" tabular data followed by "verification" charts, the actual "print" sequence is perhaps best shown in an example. The first column is for a 24-arm tool (would be like this for 36 and 40 arm tools), the second column for a 56-arm tool (would also be like this for a 60-arm tool). I am demonstrating this with a base cal report name of "BRANDX\_MFC" which is named in the tool configuration, the number of arms and page are added dynamically: BRANDX\_MFC24\_1.wcp (master cal) BRANDX\_MFC56\_1.wcp (master cal page 1) BRANDX\_MFC24\_2.wcp (verifications) BRANDX\_MFC56\_4.wcp (master cal page 2) BRANDX\_MFC24\_2.wcp (verifications) BRANDX\_MFC56\_4.wcp (master cal charts) BRANDX\_MFC56\_5.wcp (verifications) BRANDX\_MFC56\_3.wcp (verifications) BRANDX\_MFC56\_5.wcp (verificat

#### IMG calibration report "terms"

There is a handy power-user "trick" to see what terms are being produced for which calibration report. After making all the calibrations, master, verifications etc., record a short database pass. In the Bin folder where Warrior is installed there is a program called EFEditxx.exe (xx is 32 or 64 depending on the installation). If you launch this software you can select File->Open, choose your database then from the list of sections on display select the pass you just recorded /\_calrep\_/1, for example /field/well/run1/pass1/\_calrep\_1/1, this will now display information that is used to generate the calibration report. Sections start at [1] and increment. The information is term=val, for example:

mnem=MFC serial=12345 format=BRANDX\_MFC56\_1.wcp model=56 Arm date=Thu Aug 03 12:19:37 2017 Etc.

Below is a description of the latest terms, this may change in the future as the software is updated. utArmRaw – this will be blank or have the raw caliper units, for example "mV"

utAmCal - this will be the user selected caliper units, for example "mm" or "in"

Dia**N**Ref – for each master calibration ring reference (N) there will be a term for the size in the units used, for example:

Dia1Ref=4.00

Dia2Ref=5.00

RefNEccPct - for each master calibration ring reference there will be a term for the apparent eccentricity (%) ArmNOff – for each arm (N) this is the offset applied to the calibration (typically 0 but the user can edit) ArmNRdgY – for each arm (N) and each master calibration reference (Y) there will be a raw reading (some tools this has temperature correction applied and is in engineering units like "mm", others types may be telemetry values, for example:

Arm56Rdg1=1.98

Or

Arm56Rdg1=2311

Arm**ND**Rdg**Y** –as above but doubled, useful for tools with temperature correction applied before the master calibration to give a "diameter" comparison:

Arm56DRdg1=3.96

Arm**N**Raw**Y** – for each arm (N) and each master calibration reference (Y) when the tool has raw readings in caliper engineering units we also store and make available the telemetry readings

Arm**N**Corr**Y** – for each arm (N) and each master calibration reference (Y) if eccentralization calibration is being utilized this is the amount of correction needed

DRefTol - the reference tolerance used for diameter (double radii) comparison in the master calibration RefTol – as above but tolerance for radii comparison

Arm**N**RefTolBad**Y** - for each arm (N) and each master calibration reference (Y) this is the symbol ! when the reading is outside the reference tolerance specified

Arm**N**RefTolDDiff**Y** - for each arm (N) and each master calibration reference (Y) this is the difference of double radii to reference

Arm**N**RefTolDiff**Y** - for each arm (N) and each master calibration reference (Y) this is the difference of radii to half reference

Arm**N**Bad – for each arm (N) this is the symbol \* when an issue is found with the arm during calibration (for example all readings 0

Arm**N**CorCoef – for each arm (N) this is the homoscedastic (linearity) coefficient during the master calibration Arm**N**BFGain – for each arm (N) this is the best fit gain during the master calibration

ArmNBFOffset – for each arm (N) this is the best fit offset during the master calibration

LinTol – tolerance used to identify arms out of linear tolerance

ArmNLinTolBad – for each arm (N) this is the symbol ~ when an arm is out of linear tolerance

ManuSerial – when a manufacturer calibration file is used this is the serial number from the file (can differ from Warrior serial number)

ManuCalBy – when available this is the user described as performing the manufacturer calibration from the supplied file

ExtCalFileDate - when available this is the date from the manufacturer supplied calibration file

ResPlotD - this is the Residual Plot chart (when applicable) from the master calibration

NormFitPlot - this is the Normalized Plot chart from the master calibration

ECC - Either blank or "Eccent. Corr. On", this indicates if the master calibration used eccentricity correction

The following terms are from the Verifications, there are Pre, Post and Adhoc terms, below when describing a

term starting with the prefix "Pre" there will be similar terms with prefixes of "Post" and "Adhoc"

PreArmVerTime – time verification was performed

PreArmVerRef – diameter reference of verification

PreArmVerMin – minimum diameter observed during verification

PreArmVerMax – maximum diameter observed during verification

PreArmVerAvg – average diameter observed during verification

DVerTol – double radii verification tolerance (reading vs reference)

VerTol – as above but radii

PreArmVerDia**N** - for each opposing pair of arms (N) this is diameter read during verification Dia**N**TolBad - for each arm (N) this is the symbol \* when the above diameter is out of reference tolerance PreArmVerRad**N** - for each arm (N) this is the radii reading of the verification

 $\label{eq:preasa} PreArmVerDRad \textbf{N} \ \text{-} \ for \ each \ arm \ (N) \ this \ is \ the \ double \ radii \ reading \ of \ the \ verification$ 

PreRadNTolBad - for each arm (N) this is the symbol \* used when the radii is out of reference tolerance

PreArmEccPct – this is the term for the verification apparent eccentricity (%)

WearTol - Wear verification tolerance (pre radii vs post radii)

WearRad**N** - for each arm (N) this wear (pre verification – post verification)

WearRadNTolBad - for each arm (N) this is the symbol ! used when the wear observed is out of tolerance

WearPlot – this is the Wear chart (Pre vs Post) radii comparison

PrePlotD – this is the Pre Verification chart (vs Reference) double radii comparison

PostPlotD – this is the Post Verification chart (vs Reference) double radii comparison

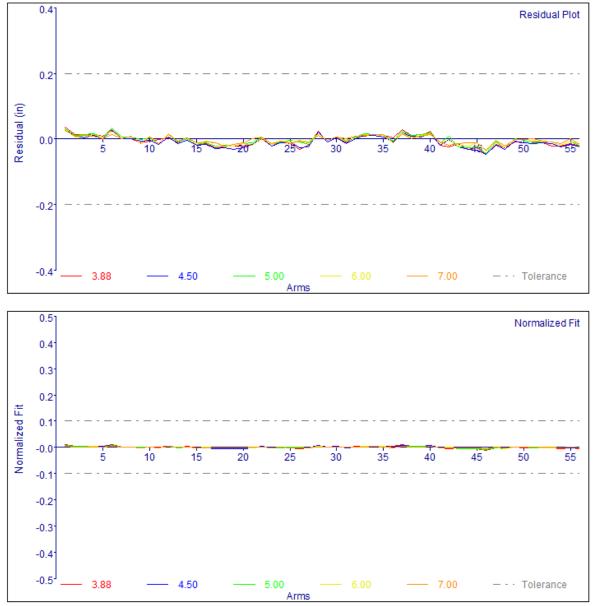
AdhocPlotD – this is the Casing Check Verification chart (vs Reference) double radii comparison

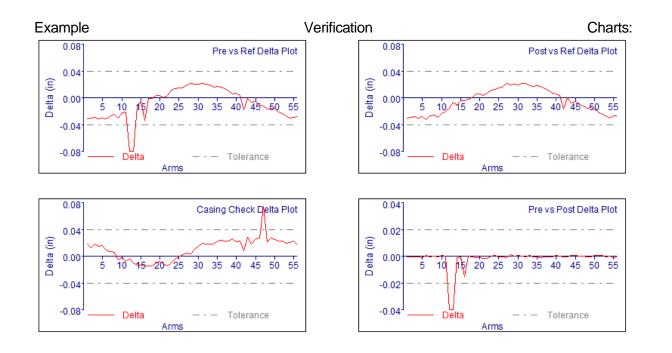
Please note that using EFEdit can potentially (if you change and save back anything) corrupt a

database, this is a power user tool and not recommended for general purpose use. Please contact

Scientific Data Systems if help is needed in generating calibration report formats.

References Example Master Calibration Charts (Residual and Normalized):







# **27 Radioactive Tracer Survey**

# 27.1 Setup Procedure

Bring up Radioactive Tracer service.

Click Acquisition Box - Edit - Tool String

Edit the tool string as necessary to reflect the tool string being run. This is important to insure proper offsets, filters, and tool diameters.

Click Acquisition Box - Edit - Variables

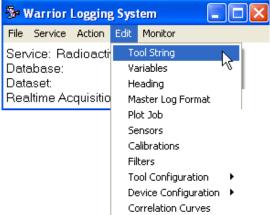


FIG: 27.1 Tool String

Edit the variables to reflect the correct casing ID and tubing ID sizes for proper flow rate calculation (Tubing OD is also important if running in annulus). Add multiple zones if needed. (Note: a size of 0 indicates no casing, tubing, etc.).

🎸 Variable	25									
	Zones	A	Accept		I	Jndo		C	llose	
Тор	BOTTEMP degF	TDEPTH ft	PERFS	СА	SEOD in	CASEID in	TUBE in		TUBEOD in	
Bottom	100	0	0		5.5	5.012	1.	7	2	-
FIG: 24.2 E	 dit Variables									

Click Acquisition Edit Tool Configuration TREJCT to bring up tracer configuration dialog box.

Se Warrior Logging	System	<
File Service Action	Edit Monitor	
Service: Radioacti Database: c:\warric Dataset: field/well/i Realtime Acquisitio	Heading	<
1 STD	Tool Configuration 🔹 🕨	
2 TRDET	Device Configuration 🔸	
3 TREJCT	Correlation Curves	1
4 TRS€T#2		
5 CCL		

FIG: 27.3 Tool Configuration

Tracer Configuration	
<ul> <li>Dual Detector Velocity</li> <li>Single Detector Velocity</li> </ul>	
C Drag Run	
C Drop Shot	Ejection Control
	Shot Table
🗐 In Annulus	Close
Log passes into Shot Table	
Use table # 1	
Threshold 0	
Base Curve	<< Browse

FIG: 27.4 Tracer Configuration

Pick the method of tracer log you wish to run Dual Detector, Single Detector, or Drop Run.

For Single Detector Velocity logs, the detection level can be determined from a base log pass if one has been run, (use browse to select it, it must be in your current database). Or enter a threshold value for the level of when a shot should be detected. More on this later.

If the log is being run in the annulus between the tubing and casing, check this box for proper flow rate determinations.

Other than base runs, make sure the Log Passes into Shot Table Box is checked.

While normally all shot passes are logged into a single table, more than one table can be used and would need to be selected.

#### 27.1.1 Tracer Ejection Control

Click **Ejection Control** box to set up ejector control. The ejection duration that you choose is dependent upon your tool type and strength of the tracer material being used. (This should be tested with water prior to the job to determine the approximate number of shots that will be available during the job.)

Tracer Ejection Control	L 🗙					
Dual Detector Velocity Mode						
Ejection Duration	sec					
Additional Squelch 0	sec					
Start Ejection Reve	rse					

FIG: 27.5 Tracer Ejection Control

The Additional Squelch time is set to allow settling of the gamma detectors after the ejection to avoid noise being detected on the log.

### 27.2 Logging Procedures

The depths where a tool is positioned in the well can be critical to the final log interpretation. Normally the Warrior system uses the bottom of the tool string as its zero point; this may put the detectors several feet above the depth shown. (It is possible to change the zero point to a sensor if desired.)

If drag runs or velocity shots with a single detector are going to be done, it is recommended that a base run be logged first to record a background gamma. Use this to determine the threshold detection level or as a base curve that the threshold level is added to before detection occurs. Be aware detection occurs when the detector value crosses this threshold or base curve value plus threshold level, statistical deviations may cause premature detection. (Pick a high threshold level high enough to not cause premature detection.)

#### 27.2.1 Velocity Shots

Position the tool in the well at the depth that you wish to make a shot. Shot passes are Recorded on Time. The true depth of the encoder is used as the shot depth. When starting a log pass. Allow enough time for the detectors to obtain a "background reading". Then click the **Start Ejection** control. Continue recording until the detectors have drop back to the previous background reading. Stop the log pass. Log as many passes in this manner as desired.

The Shot Table will now reflect the information just recorded. If a single detector method was used, the times and the flow rates will be complete. If a dual detector method was used the pass will have to be correlated to calculate the proper time, and thus the flow rates, as described below.

#### 27.2.2 Drag Runs

Normal procedure is to eject a tracer slug, then to drop down and Record Up until the slug passes, then stop the pass. Then drop back down and start another pass. Each pass is recorded as a separate entry into the shot table.

The normal calculations integrate the area between the detection level and the curve, so it is important to record the complete passing of the tracer material.



FIG: 27.6 Generate

field/well/drag2/_t	racer_/_shottabl	_/1			
File Options					
Open Caliper	Edit Correl	ate Generate	Save	Exit	
Reference Flow Rate: 0	b/d	🔽 Auto Calc			
Exclude: 0/4 Valid:	4/4			<< View >>	
Type Depth		eighting dTime	dDistance	Integration P	
+ 1 DR 9543.50		1		2131.45	
+ 2 DR 9578.10	30	1		1905.78	
+ 3 DR 9615.59		1		2699.93	
+ 4 DR 9637.30	30	1		2445.12	
	Generate:		3		
Velocity Shots from Drag Runs					
Merged Drag Run Profile					
	Merged Co				
	Cla	ise			

FIG: 27.7 Generate Drag Run Profile

By clicking on the Generate button of the Shot table, all drag runs with a plus sign will automatically be merged into a single presentation. Selected annotations can be added for each pass. By using auto merge, curves from other passes, such as collars, temperature, or gamma, can automatically be added to the presentation. By clicking on Velocity Shots from Drag Runs, records in the shot table will be generated with distances between runs. To get the times, each record will then have to be correlated.

27.2.3	Shot Table Editing, Correlation, and Flow Rate Log Generation
--------	---

🚟 field/well/Ve	lstb/_tracer	_/_shottabl_/	1		_ 🗆 ×
Eile					
Open	<u>E</u> dit (	<u>G</u> orrelate	enerate	Save	E <u>x</u> it
Referenc	e Flow Rate	945.269	] b/d	🗹 Auto Ca	alc
Exclude: 0/28	Valid: 26	/28		<	( <u>V</u> iew >>
Туре	Depth	Flow	%Flow	Delta	%Delta
?28 SDV	6509.91				
?27 SDV	6509.92				
+26 SDV	6550.57	135.97	14.38%		
+25 SDV	6570.73	118.01	12.48%	17.96	1.90
+24 SDV	6582.17	115.82	12.25%	2.18	0.23
+23 SDV	6590.73	152.54	16.14%	-36.72	-3.88
+22 SDV	6598.24	125.09	13.23%	27.45	2.90
+21 SDV	6601.57	135.97	14.38%	-10.88	-1.15
+20 SDV	6610.51	125.09	13.23%	10.88	1.15
+19 SDV	6620.51	138.99	14.70%	-13.90	-1.47
+18 SDV	6630.58	90.64	9.59%	48.34	5.11
+17 SDV	6640.37	122.64	12.97%	-31.99	-3.38
+16 SDV	6650.65	106.01	11.21%	16.63	1.76
+15 SDV	6660.69	127.64	13.50%	-21.63	-2.29
+14 SDV	6670.48	113.72	12.03%	13.93	1.47
+13 SDV	6680.73	97.73	10.34%	15.99	1.69 -

FIG: 27.8 Table flow rate

<mark>i fiel</mark> File	d/well/	TRACER3/_trace	er_/_shottab	ol_/1		_ 🗆 ×
_	ben	<u>E</u> dit <u>C</u> or	relate <u>G</u> e	enerate	<u>S</u> ave	E <u>x</u> it
	Refere	ence Flow Rate: [	2900	b/d	🗆 Auto Ca	alc
Exclu	ude: 5/2	23 Valid: 18/18	1		<-	< <u>V</u> iew >>
	Туре	Depth	Flow	%Flow	Delta	%Delta
- 5	DR	178956.90				
- 8	DR	-178956.90				
+ 1	DR	6301.58	2899.99	100.00%		
+ 2	DR	6556.35	2900.00	100.00%	-0.01	-0.00
+ 3	DR	6604.02	1622.94	55.96%	1277.06	44.04
+ 4	DR	6667.03	1531.29	52.80%	91.65	3.16
+ 6	DR	6706.54	1288.52	44.43%	242.77	8.37
+ 7	DR	6745.79	1145.87	39.51%	142.65	4.92
+ 9	DR	6792.80	938.66	32.37%	207.21	7.15
+10	DR	6821.02	350.81	12.10%	587.85	20.27
+11	DR	6840.77	307.54	10.60%	43.27	1.49
+12	DR	6874.27	51.14	1.76%	256.40	8.84
- 13	DR	6921.03				
- 14	DR	6966.26				
- 15	DRV	6301.58 - 6556.35				
+16	DRV	6556.35 - 6604.02	2811.81	96.96%		•

FIG: 27.9 Table Flow rate

Access to the shot table can be obtained through the Acquisition box and <u>E</u>diting <u>T</u>ool Configuration and choosing TREJCT and then clicking the Shot Table Button. It can also be accessed from the Utilities menu through the Tracer Interpretation selection.

The Shot Table shows the information taken each time a log pass was started. The first column contains a +, -, or ?. A + indicates a valid calculation. A – indicates that the record has been excluded from calculations. A ? indicates that correlation has not been done to determine time. The second column indicates the type of record. DR is drag run. DRV is velocity determined from drag runs. SDV is single detector velocity. DDV is dual detector velocity.

Other columns indicate depth of pass, flow rate, percentage of flow rate, change of flow rate, percent change of flow rate. By clicking on the view button, casing and tool dimensions can be viewed. Also available are detection times, integration, and dataset information.

Certain information for a given record can be edited by selecting the record and clicking the edit button or by double clicking on a record. Casing and tool dimensions can be changed. Weighting other than 1.0, adjusts the calculated output. An unsatisfactory station can be removed from the flow rate calculations by removing the check mark beside **Include in calcs.** A record marked as reference will be maximum or 100% flow rate.

🔲 field/well/drag2/_tracer_/_shottabl_/1
File Options
Open         Caliper         Edit         Correlate         Generate         Save         Exit
Reference Flow Rate: 0 b/d 🔽 Auto Calc
Exclude: 0/4 Valid: 4/4 <pre></pre>
Type Depth Threshold Weighting dTime dDistance Integration F
+ 1 DR 9543.50 30 1 2131.45
+ 2 DR 9578.10 30 1 1905.78
+ 3 DR 9615.59 30 1 2699.93
+ 4 DR 9637.30 30 1 2445.12
Options 🔀
Default weighting factor
└ Velocity calculations
C Show velocity calculation at center of interval
Show velocity calculation at end of interval Cancel
3

FIG: 27.10 Options

		/_tracer_/_sl	hottabl_/1			
File O	ptions					
Оре	n Caliper	Edit	Correlate	Generate	Save	Exit
Refere	ence Flow Rate:	0 b/	′d 🔽 A	uto Calc		
Exclud	de: 0/4 Va	alid: 4/4				<< View >>
· · ·	Type Dep	oth Thres	hold Weightin	ig dTime	dDistance I	ntegration P
+ 1	DR 9543	3.50 30	0 1			2131.45
+ 2	DR 9578					1905.78
+ 3	DR 9615					2699.93
+ 4	DR 9637	7.30 30	0 1			2445.12
	Edit Shot					
	Charless Trees	Due	. D	-	ОК	
	Station Type		) Run	_		
	Shot #	1, show	wn as 1		Cancel	
	Comment					
	Depth	9543	3.50	ft		
	Casing ID	9.82585	in (us	e caliper from	n log pass)	
	Tubing ID	1.7	in	-	de in reports	
	Tubing OD	2	in		de in calcs	
	Tool O.D.	1.375	in		as reference	
			In		n Annulus	
	Weighting	1		1 1001		
	Integration	2131.45				
	Spacing	0	ft			
				Correlate		
	Time		sec -		1	
	Plot Offset	0				
	Input Pass	field/wel	l/drag2/pass1/	DET1		
Input Pass		· · · · · · · · · · · · · · · · · · ·	field/well/drag2/pass1/DET1 /field/well/run1/pass1/DET1/1			
	Base Pass	/rieid/we	sil/run1/pass1/			

FIG: 27.11 edit shot

If a Dual Detector method or velocity shots from drag runs was used, the data recorded will have to be correlated before times will be computed. Shots that have not been computed will be tagged with a question mark (?). Click on a shot pass to select it, then click on correlate to open the correlation process box.

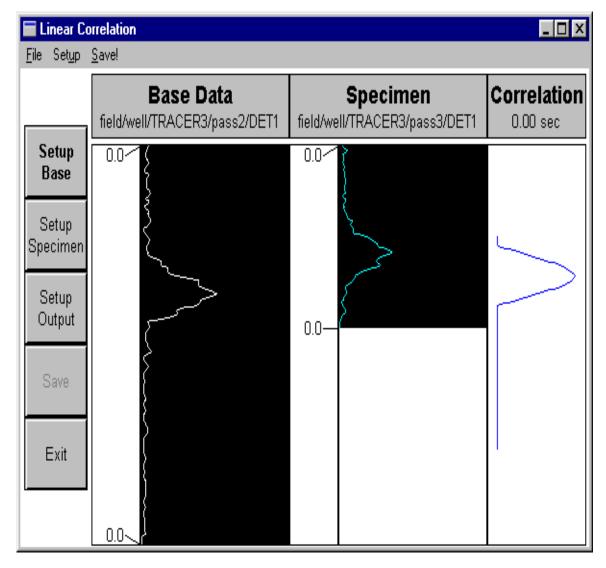


FIG: 27.12 Liner Correlation

Normally the selected base curve, specimen curve, and output curve will be setup. There are options to select different curves to be used if desired. On the base data, click and drag on the portion of the data that you think is valid, if the whole pass looks good, this step may be skipped. On the specimen data, click and drag on the portion of the data that is valid. The length of this data MUST be less than the length of the base data.

It is important that the whole response to the shot be selected since the calculations are done on the area under the curve and not on a given level.

Click Begin to compute the time. Click Save to retain the present calculations. Click Exit to return to the Shot table.

When all stations have been edited as desired, click on **Generate**. Choose Merged Composite File. Curves from a collar locator pass, a gamma ray pass, etc. may be added to the final presentation if desired. Finally, when OK is clicked the flow rate presentation will be plotted out.

# 27.3 Service Specific - Tracer Survey

The Tracer service incorporates several special features that may require further explanation. The Warrior software attempts to calculate results from each pass of data as it is recorded or immediately afterwards.

#### 27.3.1 Dual Detector Velocity

In **Dual Detector Velocity** mode, the time displacement between the two curves is determined by a correlation technique. Any part or all the data may be used to match the curves together. It is essential that complete event of the slug passing the detectors be recorded for this technique to be effective.

#### 27.3.2 Single Detector Velocity

In Single Detector Velocity mode, the time from the ejector shot to a threshold crossing by the GR (or detector) curve is measured. If two detectors are in the tool string, the time measurement is made from the ejector shot to the first GR curve to cross the threshold.

#### 27.3.3 Tracer

In **Tracer** the area between the designated GR (or detector) curve and either a baseline GR or a fixed level, is the primary measurement.

The results and other information are placed in a **Shot Table**. The contents of the shot table are used as a basis for the calculation of total and differential flow rates for display in tabular or log format.

When a Tracer survey is selected, Edit/Tool Configuration/Tracer brings up the Tracer Configuration window as shown below.

Tracer Configuration	
Oual Detector Velocity	
C Single Detector Velocity	
C Drag Run	
C Drop Shot	Ejection Control
	Shot Table
🔲 In Annulus	Close
🔽 Log passes into Shot Table	
Use table # 1	
Threshold 0	
Base Curve	<< Browse

FIG: 27.13 Tracer Configuration

The user defines the type of survey to be run from a choice of Single or Dual Detector Velocity, or Tracer (Drop Run). This selection defines the type of on-line calculation that the software will attempt. If the survey is being run in the annulus the **In Annulus** box should be selected on order that the correct calculations be made.

If it is required that the passes be inserted into the current shot table, the **Log passes into Shot Table** should be selected. This would be the normal case to record the results and is the default.

More than one Shot Table may be defined for each survey.

#### 27.3.4 Drag Run

Drag Run option is selected the user is asked to define which detector is to be used.

Tracer Configuration	
C Dual Detector Velocity C Single Detector Velocity	
<ul> <li>Drag Run</li> <li>Drop Shot</li> </ul>	
C Use DET1	Ejection Control
Use DET2	Shot Table
🔲 In Annulus	Close
🔽 Log passes into Shot Table	
Use table # 1	
Threshold 0	
Base Curve	<< Browse

#### FIG: 27.14 Tracer Configuration

When two detectors are in the tool string and single detector velocity is selected the system will make calculations based on the first curve to cross the threshold.

When making calculations from the tracer passes (i.e. the area under the DET curve) it is necessary to define either a fixed threshold value or a baseline DET pass. The area under the DET curve and above the Threshold or

Base Curve is used to calculate the percentage of the original radioactive material passing the detector and the flow profile.

This information is defined in the **Threshold** or **Base Curve** fields.

To display the current Shot Table and/or Tracer Ejection Control window click on the appropriate button.

🗖 Tracer Ejection Control 🛛 🔀			
2	sec		
2	sec		
Reve	erse		
	2 2		

FIG: 27.15 Tracer Ejection Control

When running the service with the SDS interface panel the operator has the option to control the run time of the ejector motor from the Tracer Ejection Control window.

The length of time for each motor run is entered in the **Duration** dialog box. Clicking on the **Start Ejection** button changes the polarity of the line power for the time set in the Duration box.

#### 27.3.5 Additional Squelch

The **Additional Squelch** field allows the user to set an additional dead time period in the DET curves after the ejector motor has run in order to avoid line noise appearing on the log. The time needed depends on various factors and is best set by trial and error.

The Tracer tool software module generates a curve called **EJECT** which shifts one unit to the right for the period of the ejection, thus indicating the occurrence and duration of the ejector motor run.

The survey is currently run by logging with the internal encoder simulator, however the actual depth is recorded as a curve named **ADEPTH**. This curve may be presented on the log in curve or tabular form, in order to indicate movement of the tool during the survey.

The elapsed time from the start of the survey is available via a curve named **ELTIM**.



# **28 Freepoint Service**



The warrior panel supports motorized and non-motorized free point tools depending on a combination of panel type and installed boards. Before importing a free point, service check the panel type in the warrior control panel.

Warrior System Control Panel	? X	
General Acquisition   Plot   Hot Keys/Shortcuts   Licenses   Dep	pth/Tension	1
Acq. system settings     CPFE     Cable selection       Panel type     CPFE     Add       External Power     Add     Line resistance       External Power     Default font for gauge	Remove	
Waveforms         500         msec           Numerics         1000         msec		Import Service 23
Options Load up tool string editor automatically at service load. Wam about losing depth, if moving. Font for Acquisition window. Might need smaller font size for all text to fit in Acquisition window. If perforating service, pop up message with tool zero point when Make Acquisition window always on top of other windows. Update with max range of data at log stop. Default log depth scale Default log time scale Default log time rate	Lucion	Select service(s) to import 84=Probe Compensate Neutron STX Telemetry 85=Probe Digital CNL 86=Compensated Neutron SIE(Pos) 87=Compensated Neutron SIE(Pos) 87=Compensated Neutron SIE(Neg) 88=HOTWELL PNN-C 89=Noise Log 90=Comprobe Continuous Noise Log 90=Comprobe Continuous Noise Log 91=Freepoint Applied 92=Freepoint Applied 92=Freepoint Applied 93=Freepoint Applied 94=Freepoint Applied 94=Freepoint Applied 95=Freepoint Applied 94=Freepoint Applied 95=Freepoint 9
	ОК	OK Cancel

FIG:28.1 Free point Service must match Panel Type

# 28.1 FREEPOINT Service CPFE and newer panels.

The current warrior system uses a combination of TELA board and the DSP for the free point service. Currently there is a 500ma limit for setting the tool, if your free point tool requires more current to set it, you will require an external panel. Supported tools include Applied Electronics Bowspring and Magnetic tools and Homco tools. Other models of Freepoint tools could also be setup in the Warrior system if the frequency of the transponder is known.

When the Freepoint service is first started, the window show below will appear. This is the Freepoint service control panel. It shows a graphical representation of the Freepoint output and a text output. It has selection buttons that allow one to select whether the next station is to be run is to be torque or stretch. There are three large buttons that control the Freepoint tool setup, starting and stopping time log passes, and station manager access.

#### 28.1.1 FREEPOINT CONTROL PANEL

■ Freepoint 😂	
Setup	100 %
Start Log	75 %
Run Station Manager	50 %
0%	25 %
raw: 0.000	0%

FIG: 28.2 Freepoint Control panel

28.1.2 FREEPOINT TOOL SETUP

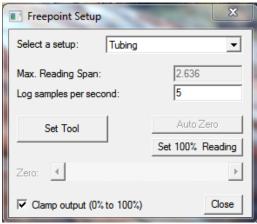


FIG: 28.3 Freepoint Setup

When the **Setup** button on the Freepoint control panel is pressed, the window shown below will appear. This is the Freepoint setup control panel. Up to five different setups may be saved. Which setup is used may be selected by clicking on the dropdown box and choosing from Heavy Drill Pipe, Drill Pipe, Large Casing, Small

Casing, or Tubing? Any changes made to the log sample rate or reading for 100% movement will be saved to the setup that has been selected.

A normal sample rate for the log should be set to 5 to 10 samples per second.

The 100% movement box is used to control the sensitivity of the response like the gain knob on an analog panel. Note that the lower the number the more sensitive the response will become. This does not have to be a whole number and may contain a decimal point (2.75 would be valid).

The Set Tool button engages power supply in the interface panel and temporarily applies a DC voltage to the line to set the Freepoint tool. Note that the tool power switch on the interface panel must be on and the 'Neg, Auto, Pos' switch must be in Auto position.

The Zero slide bar is used to set the zero position of the output before the log pass is started and torque or stretch is applied to the casing.

There is an optional check box to clamp the Freepoint output to 0% to 100% so that it does not go off the page on the log.

### 28.1.3 Running the Service

Once the Freepoint service has been selected and the tool lowered into the well to a depth where the casing is known to be free, the tool should be set, and the output zeroed. Stretch or torque should be put on the casing and the 100% movement number adjusted to get near a 100% output reading.

This should be repeated until you are satisfied that the equipment is responding correctly in free pipe. Once satisfied, the 100% Movement number should not be changed while recording stations.

You are now ready to record the first station. Click the Start Log button on the Freepoint Control panel. The system will start recording on time. Have the rig apply torque or stretch and the output will be recorded. When you have seen the tool response, click the Stop Log button to stop the pass. The minimum and maximum Freepoint readings will be entered the Station Manager table at the encoder depth (note that since the encoder depth is used. You can only simulate a log by using the encoder and resetting the depth before each pass).

Drop down the well to the depth that you wish to make the next pass and repeat the process. Make as many passes as desired to determine the Freepoint location in the well. Each pass will have the maximum output entered the station manager table.

The depths at which you run the stations do not have to be in descending order. You would normally start at the top of the well and start doing stations going down. Once stuck pipe is found, you can come back up to a depth between there and your last free pipe station to refine the stuck depth. Whatever order the stations are run, they will be entered the Station Manager table in descending order.

28.1.4 Station Manager

🖯 fie	ld/well/r	un1/_nois	se_/_surv	tabl_/1						$\Leftrightarrow$		• S	×
File													
Op	ben	Edit	G	enerate	Sav	e	Sound	F	FT	Exit			
#	Depth	200hz	600hz	1000hz	2000hz	4000hz	6000hz	Sound		Date			
+ 32	70.41	13.70	10.63	9.88	9.29	7.60	5.99	10 s	Thu Aug	08 17:38:03	2013		*
+31	70.51	14.38	10.94	10.94	9.51	7.78	5.91	10 s	Thu Aug	08 17:37:07	2013		
+ 30	70.60	13.74	11.07	10.36	9.00	7.90	6.24	10 s	Thu Aug	08 17:36:14	2013		
+ 29	70.70	13.96	10.42	10.06	9.20	7.82	6.15	10 s	Thu Aug	08 17:35:08	2013		
+28	70.80	13.91	10.94	10.34	9.35	7.49	6.09	10 s	Thu Aug	08 17:34:18	2013		
+27	70.91	14.17	10.49	10.19	9.36	7.74	6.37	10 s	Thu Aug	08 17:33:26	2013		=
+26	71.01	14.19	10.85	10.59	9.72	7.54	6.12	10 s	Thu Aug	08 17:32:10	2013		
+ 25	71.11	14.27	10.83	10.74	9.42	8.24	5.98	10 s	Thu Aug	08 17:31:12	2013		
+24	71.21	14.21	10.46	10.31	9.33	7.96	6.39	10 s		08 17:29:47			
+23	71.31	14.74	10.55	10.00	9.14	7.82	6.14	10 s	Thu Aug	08 17:28:29	2013		
+ 22	71.40	14.14	10.78	10.08	9.25	7.54	6.07	10 s	Thu Aug	08 17:26:21	2013		
+21	71.51	13.66	10.33	9.99	9.17	7.49	6.33	10 s	Thu Aug	08 17:25:08	2013		
+ 20	71.60	14.06	10.84	10.58	9.74	7.59	6.24	10 s	Thu Aug	08 17:23:53	2013		
+ 19	71.70	13.28	10.80	10.57	9.44	7.83	6.19	10 s	Thu Aug	08 17:22:22	2013		
+ 18	71.81	13.92	10.50	10.27	9.45	7.92	6.32	10 s		08 17:21:20			
+ 17	71.90	14.31	10.91	10.50	9.61	7.70	6.02	10 s	Thu Aug	08 17:20:23	2013		
+ 16	71.90	13.79	11.13	10.90	9.91	7.94	6.52	10 s	Thu Aug	08 17:19:45	2013		
+ 15	72.00	15.04	10.84	10.47	9.74	7.44	6.11	10 s	Thu Aug	08 17:18:08	2013		
+ 14	72.10	13.69	10.91	10.11	9.36	7.57	5.99	10 s	Thu Aug	08 17:17:14	2013		Ŧ

FIG: 28.4 Freepoint Table

As each station is run, the minimum and maximum values are placed into the station manager table. Notice that the stations can be done in any order but are placed into the table in descending order.

Once a station has been entered the table. It can be viewed and edited. Any field except the station # can be edited. This can be useful to make your final presentation more acceptable. There is a check box to disable the station so that it will not be included in the final log presentation if the tool slipped or something else occurred to make the station invalid.

When all the stations have been edited as desired, the final log presentation can be made by clicking the **Generate** button, and then click the **Depth Log** button.

Generate:		x
	Depth Log	
	Close	

FIG: 28.5 Generate

Generate Dept	h Log:		×						
Destination —		1							
Database	C:\ProgramData\Warrior\Data\Noise For Larry Warric								
Dataset	Dataset field/well/run1/_dlog8_								
Format	NOISE								
Auto Merge	Add Remove		ок						
			Cancel						

FIG: 28.6 Generate Depth

There is a check box for Logarithmic Interpolation that will produce a slight smoothing effect to the output curves. Additional curves from the same database, such as a CCL or gamma ray, can be auto merged into the output. When the **OK** button is clicked, the interactive plot will be presented on a  $\frac{1}{2}$ "/100' scale. Using the Plot Job Editor, a presentation can now be made for the customer. This will normally include a heading, the Freepoint survey table, the generated depth log. The individual station passes could also be included and a tool string diagram if desired.

# 28.2 FREEPOINT With CPFD and older panels.

The main difference between the CPFD and CPFE panels with regards to the free point service is the CPFD has an auxiliary transformer and a Freepoint board. The auxiliary transformer can supply up to 1000ma to set the tool. The operation is the same except that the tool power supply does not need to be turned on to set the tool since the auxiliary transformer produced the set current and is enabled by a software controlled relay.

Warrior System Control Panel	2
General Acquisition Plot Hot Keys/Shortcuts Licenses Depth/Tension	
Une resistance         50.0         Ohm           Refresh monitors every         Default fort for gauges           Waveforms         500         msec           Numerics         1000         msec	Import Service 23 Select service(s) to import
Options  Load up tool string editor automatically at service load.  Wan about losing depth, if moving.  Fort for Acquisition window. Might need smaller font size for all text to fit in Acquisition window.  If if perforating service, pop up message with tool zero point when service load	90=Comprobe Continuous Noise Log
Make Acquisition window always on top of other windows.     Update with max range of data at log stop.     Default log depth scale     Default log time scale     10     Default log time are     10	92-Freepoint Applied (CPFE and up - 60 Hz)         93-Freepoint Applied (CPFE and up - 360 Hz)           94-Freepoint - SIE         95-Freepoint - SIE           95-Freepoint - SIE         95-Freepoint - SIE
	OK Cancel

### FIG:28.7 Free point Service must match Panel Type

### 28.2.1 Running the Service

The logging operation of the service is the same as earlier Freepoint services. See section  $\frac{28.1.3}{2}$ 

# 28.3 Freepoint Service Homco-GO

The Warrior system supports Freepoint tools that require minimum DC voltage for motorized deployment. This includes Applied Electronics Bowspring and Magnetic tools, and Homco tools. Other models of Freepoint tools could also be setup in the Warrior system if the frequency of the transponder is known.

### 28.3.1 FREEPOINT CONTROL PANEL

📑 Freepoint 🛛 😂	 x
Setup	100 %
Start Log	75 %
Run Station Manager	50 %
0%	25 %
raw: 0.000 cps	0 %

FIG: 28.8 Freepoint Control panel

The Freepoint control panel appears the same as the control panel used for other free point tools. The difference is when you select the setup button you have an added slider for the 100% reading. 28.3.2 FREEPOINT TOOL SETUP

Freepoint Setu	p	X
Select a setup:	Heavy Drill P	ipe 💌
Log samples per se	cond:	10
Zero:		► Set
100%: <		► Set
	at raw rdng of 42 6 at raw rdng of 4	
Clamp output (0	0% to 100%)	Close

FIG: 28.9 Freepoint Setup

When the **Setup** button on the Freepoint control panel is pressed, the window shown below will appear. This is the Freepoint setup control panel. Up to six different setups may be saved. Which setup is used may be selected by clicking on the dropdown box and choosing from Heavy Drill Pipe, Drill Pipe, Large Casing, Small Casing, collars, and Tubing? Any changes made to the log sample rate or reading for 100% movement will be saved to the setup that has been selected.

A normal sample rate for the log should be set to 5 to 10 samples per second.

The Zero slider bar is used to set the frequency for when no torque or stretch is applied. The 100% slider bar is used to set the frequency for the maximum Torque or Stretch to be used.

There is an optional check box to clamp the Freepoint output to 0% to 100% so that it does not go off the page on the log.

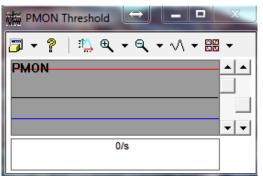


FIG: 28.10 Freepoint PMON Threshold

Remember that the signals in the PMON (pulse monitor) window need to be discriminated properly, like a gamma/ neutron service.

28.3.4 Running the Service

The logging operation of the service is the same as earlier Freepoint services. See section  $\frac{28.1.3}{2}$ 

# Section 29

# **29 Bond Index and Borehole Volume**

# 29.1 BL Attenuation and Bond Index arithmetic

Bond index is the ratio of measured attenuation to maximum attenuation.

# 29.2 Calculation parameters

29.2.1 fMxAmp

Maximum expected amplitude; should be the same as the free pipe Reference value used in calibration. Obtained from zoned variable MAXAMPL. If the zero is entered, then a value is calculated from the casing O.D.

# 29.2.2 fMnAmp

Minimum expected amplitude; should be the same as the zero signal used in calibration except for one caveat: Zero is not a valid value, even though it is commonly used for calibration. Suggest using a value of one millivolt for both. Obtained from zoned variable MINAMPL.

# 29.2.3 fMnAtt:

Minimum attenuation. Attenuation value expected to be measured in free pipe. Obtained from zoned variable MINATTN. SPE papers suggest a value of 0.8 as an overall average for common casing sizes and weights.

29.2.4 fLogValue: Calibrated log amplitude. (each sample). Transmitter/receiver spacing is assumed to be 3 feet.

# 29.3 Outputs:

29.3.1 fAtt:Calculated output attenuation.29.3.2 fBI:Calculated output Bond Index.

29.4 Processing for each log sample: (math protection not shown)

 $\begin{array}{l} \label{eq:fRatio} \textit{ffRatio} = \textit{fLogValue} / \textit{fMxAmp};\\ \textit{fAtt} = 20.0 / 3.0 * \textit{log(fRatio)} - \textit{fMnAtt};\\ \textit{fRatio} = \textit{fMnAmp} / \textit{fMxAmp};\\ \textit{fBI} = \textit{fAtt} / (20.0 / 3.0 * \textit{log(fRatio)} - \textit{fMnAtt}); \end{array}$ 

# 29.5 BOREHOLE VOLUME

Tool. From the Serial Number drop From Warrior Utilities select 'Edit Logging Tool Details'. From the Edit Tool drop down box select 'STD' down box select the serial number of the STD tool.

Tools Editor							_ 🗆 🤉
le <u>C</u> reate <u>D</u> elete	C <u>a</u> librations	<u>H</u> elp					
dit Tool STD	•					English	C Metric
Serial Number ⊢Model Specific	0000	•	Model	None 💌	Software	STD	-
Description					Cal Report	t	
Length	0.00	] in	Weight	0.00 ІЬ	Diameter	0.00	in
Voltage		] <b>v</b>	Current	mA	Diagram		
Software Spec	ific Offset (	in)		Filter	Туре	Length (f	t)
	Mode	-			Serial N	umber	
NoCaliperA Calipers = YCalipers VolumeTick MarkWindow	XCAL,YCA = :s = No	Yes Al, XYC	AL, DCAL, (				

FIG: 29.1 Tools editor

Double click on the 'Calipers=' line. Enter a list of any output names, from all your different services that should be used as main ('X') caliper inputs into the borehole volume calculation. Separate multiple names by commas

Edit Item		×
Calipers	CAL,XCAL,XYCAL,DC	AL
	ОК	Cancel

### FIG: 29.2 Edit item

Repeat for the YCalipers line. Y calipers measure perpendicularly to X calipers and allow a better calculation with an elliptical hole.

Edit Item		×
YCalipers	YCAL,MCAL	
	OK	Cancel
	OK	Cancel

FIG: 29.3 Edit Y Caliper

If any service has more than one X or more than one Y caliper, then those readings will be averaged unless the NoCaliperAverage flag is set to Yes.

Double click on the 'Volume Ticks =' Line.

Select 'YES' if you want volume ticks displayed instead of a tabular output.

Each small tick equals 10 cubic feet or 1 cubic meter. Each large tick equals 10 small ticks.

Select 'NO' if you want a tabular output for volume.

You can get either ticks or tabular volume, not both.

Edit Item	2
VolumeTicks	No
OK	Cancel

FIG: 29.4 Edit Volume Ticks

From Acquisition 'Edit Variables' the 'BOREID' size and 'CASEOD' size must be entered correctly for a valid calculation of borehole volume.

A total borehole volume curve 'TBHV' must be added to the Log format as follows:

×
Style
C Left 💿 Middle C Right
© Auto 0.00
CNone C.000 Interval: 10
0.0 0.0000
Scale Type Label and Scales
Label TBHV OK
Cancel

FIG: 29.5 Define Data Item

An annular bore hole volume curve 'ABHV' needs to be added to the log format as follows:

Define Data Item				×
Data Source		Style		
DB Item: ABHV	<< Browse	C Left	Middle	C Right
C Variable	🖲 Data 🛛 🔿 List			
Position Track #: 3	▲ Left value 0 ▼ Right value 0		Interval: 10	×
Presentation Type		Scale Type Label an	d Scales	·
	riable Density C Pattern Strip gnature C Graphic Strip	Label ABHV		OK Cancel

FIG: 29.6 Set Scales Data Item

# Section

# **30 CSS Radial Bond Services**

Computer Sonics produces two types of radial bond tool. One (the earlier model, though still produced) is known as the sequential tool. This tool has four modes of operation:

3 ft.- 5 ft. mode for generating the conventional dual spaced CBL radial mode for generating the eight-receiver radial bond log (RBL)

calibration mode for generating the internal calibration signal open hole mode

The tool is switched from mode to mode and to acquire data for a complete log two passes must be made over the log interval, one in CBL mode and one in RBL.

The later tool model generates all the required signals simultaneously and is known as the multiplexed tool. Both tools transmit nuclear, collar, and temperature log data in a digital form interleaved with analog sonic data. The telemetry scheme employed is not the same for the two tools, however in both cases it is detected and decoded in the Warrior system by DSP software through selection of the appropriate script command.

The sequential tool transmits acoustic signals on the wireline at their natural frequency (approximately 20 - 25 kHz). The multiplexed tool divides the downhole frequency by a factor of four before transmission to the surface, therefore the frequency of the tool signals on the line is approximately 6 kHz. Special provision must be made for this feature in the logging system in the form of a special filter / amplifier card that can be switched to accommodate conventional as well the CSS multiplexed tool.

In both tools CSS has provided an internal calibration signal which can be used for a well site calibration which does not rely on finding (assuming) free pipe in the well. For both tools the philosophy is the same, namely the tool is calibrated in a known environment (zero signal and a calibration pipe) and the internal calibrate signal evaluated. The calibrations for all the receivers and the value of the internal calibration signal are recorded by tool serial number. This procedure is termed the shop or master calibration. At the well site the receiver zero signals and internal calibration signal are re-evaluated, and corrections made to reproduce the readings obtained during the shop calibration. In this way any changes in signal amplitudes due to electronic drift, differences in wireline and other factors may be minimized.

The 3 ft receiver signal curve is calibrated to industry standard values. The sector signals are normalized to a given log amplitude during the shop calibration for calibration pipe diameter. When logging casing of other diameters the sector amplitudes are adjusted to produce the same log deflection and cement map appearance.

# 30.1 SDSTIP

The gains and filters for the CSS tools should be setup as follows:

From Acquisition Window Select 'Edit/Device Configuration/SDSTIP'

For the CSSM 1 11/16" tool, with Short to medium lines the following values should be entered in the SDSTIP Panel.

Panel Controls	SDS Tool Interface Panel Configuration
Max 🔺 Max 🔺	Gain Q Fc Sonic ? 2.00 24000 C HighPass
	Sync ? 0.50 0.33 69 C BandPass HighPass
Min T Min T	AUX ? 0.10 0.33 1000 C BandPass F HighPass
53 70 55 Sync Aux Gain Sonic Gain Gain	Apply Settings Cancel OK
Ga Sonic ? 0. Sync ? 0. AUX \[ S	Panel Configuration ×   ain Q   Fc BandPass   .50 1.00   6000 HighPass     .20 0.40   69 BandPass   Image 1 Stage 2   Stage 1 Stage 2   Stage 3 Sonic Pre-Filter
Apply	Settings Cancel OK

FIG: 30.1SDS Tool Interface Panel Configurations 1 11/16 Short to Medium Lines

The Gains set the maximum gain for the Panel Control Slider bars and should be set to give a usable range for the slider bars depending on line length and tool signal.

The Sonic line is for the Sonic signal.

The Sync line is for the Sync signal.

The Aux line is for the Telemetry signal.

The FC is the frequency of the signal being detected. The Q is the sharpness of the filter, the higher the Q the sharper the cutoff frequency. Band Pass or High Pass is the type filter used. Newer panels have enhanced telemetry filtering of the AUX channel that allow up to 8 filter options checkboxes selectable.

The FC for the Sonic Line should be set for the frequency of the sonic receiver crystals, with a Band Pass Filter.

The FC for the Sync Line usually works best with a low Q and Low FC, with a High Pass Filter.

The FC for the Aux Line has been tested for short to medium lines and medium to long lines and should be entered as shown.

For the CSSM 1 11/16" tool, with medium to long lines the following values should be entered in the SDSTIP Panel.

SDS Tool Interface Panel Configuration	SDS Tool Interface Panel Configuration X
Gain Q Fc Sonic ? 2.00 2.00 24000 G BandPass G HighPass	Gain Q Fc Sonic ? 0.50 1.00 6000 OBandPass OBandPass
Sync ? 0.50 0.33 69 C BandPass • HighPass	Sync ? 0.20 0.40 69 OBandPass HighPass
AUX ? 0.10 0.33 1000 <sup>C</sup> BandPass	AUX ☑ Stage 1
Apply Settings Cancel OK	Apply Settings Cancel OK

FIG: 30.2 SDS Tool Interface Panel Configurations 1 11/16 Medium to Long Lines

For the CSSM 3 1/8" tool, with short to medium lines the following values should be entered in the SDSTIP Panel.

SDS Tool Interface Panel Configuration	SDS Tool Interface Panel Configuration X
Gain Q Fc Sonic ? 1.00 2.00 6000 C HighPass	Gain Q Fc Sonic ? 0.50 1.00 6000 ○ BandPass ● HighPass
Sync ? 0.10 0.40 69 C BandPass G HighPass	Sync ? 0.20 0.40 69 ○ BandPass ● HighPass
AUX ? 0.05 0.33 1000 C BandPass G HighPass	AUX Stage 1 Stage 2 Stage 3
Apply Settings Cancel OK	Apply Settings Cancel OK

FIG: 30.3 SDS Tool Interface Panel Configurations 3 1/8 Short to Medium Lines

For the CSSM 3 1/8" tool, with medium to long lines the following values should be entered in the SDSTIP Panel.

SDS Tool Interface Panel Configuration	SDS Tool Interface Panel Configuration X
Gain Q Fc Sonic ? 1.00 2.00 6000 C HighPass	Gain Q Fc Sonic ? 0.50 1.00 6000 OBandPass OBandPass
Sync ? 0.10 0.40 69 C BandPass HighPass	Sync ? 0.20 0.40 69 OBandPass OBandPass HighPass
AUX ? 0.05 0.80 10000 C BandPass F iSonic Pre-Filter	AUX
Apply Settings Cancel OK	Apply Settings Cancel OK

FIG: 30.4 SDS Tool Interface Panel Configurations 3 1/8 Medium to Long Lines

These values are not set and stone and may have to be tweaked for individual situations.

# 30.2 Acquisition

After starting Acquisition, the first step when running a Bond Tool of any type on Warrior will be to set the proper casing size. This will ensure that the gates will default to the correct saved settings.

# 30.2.1 Edit

Click on the Edit menu box of the Warrior Logging System menu box and scroll down to and select Variables.

### 30.2.2 Variables

Displays the Variable (parameter) editor window, enabling depth dependent parameters associated with the selected service to be zoned and values to be set.

<b>Variable</b>	ones	Accep		Undo	_		
2	ones	Ассер		Undu		CIUSE	
Тор	BOTTEMP degF	TDEPTH ft	PERFS	CASEOD in	MINATTN db/ft	MINAMPL mV	
Bottom	100	0	0	5.5	0.8	1	•
	•						

FIG: 30.5 SDS Variables

Check the proper Casing OD under CASEOD. If you are outputting a Bond Index curve, enter the Minimum and Maximum Amplitudes. Enter any other variables that may be required. Then push the Accept button. The Minimum and Maximum Amplitude values are used for calculating the Bond Index Curve. Of these



values the MINAMPL will have the greatest impact upon the calculations. The proper values are listed in Appendix A. Also, the MINATTN value is typical for most standard casings.

# 30.2.3 Edit Logging Services Details

From the Warrior Logging System menu box, click on Services and select the proper service for the tool type. Tools have different telemetry schemes and the services must be set up to match the telemetry.

### 30.2.4 Edit logging Tools details

When the Service is selected the Edit Tool string Window will come up automatically. Or, select Edit and Tool String, to display the following window:

	1							
Sensor	Offset (ft)	-	Schematic	Description	Len (ft)	OD (in)	Wt (lb)	
S8CENT	21.48			CSS_ROLL	2.71	3.00	33.00	
CCL	18.07	-						
GR	16.28			CS8_GR_TEL-CSSMRAD (CSSM) Demo Tool - Dimensions invalid	6.90	3.13	31.00	
THV	11.88				2.79	3.00	36.00	
				CS8SCEL-CSSMRAD (CSSM) Computer Sonics Multiplexed CSSM Sector Bond	6.38	3.13	100.00	
TEMP S8CENT	2.92 2.71	7		CSS_ROLL	2.71	3.00	33.00	Options >> Add Rem

FIG: 30.6 Tool string

From this window it is possible to change the tool being run, the order of the tools in the string, and add or delete centralizers, weight bars, knuckle joints or other tool string components. It is from the information set in this window that the calibrations, default offsets and filters settings for the log to be run are derived.

# 30.2.5 Tool String

Depth offsets that were derived from the Edit - Tool String step may be viewed by choosing Edit - Sensors, to display the following window:

🔲 Edit Senso	ors				
Edit Select					
Name	Device	Chan	Offset	SPF	
TEL	DSP	27			
WVF3FT	DSP	27 2 5 3 4	2.71	4	
WVFCAL	DSP	5	2.71	4	
WVF5FT	DSP	3	2.71 2.71	4	
WVFSUM	DSP	4	2.71	4	
WVFS1	DSP	19 23	2.71 2.71	4 4	
WVFS2 WVFS3	DSP DSP	23 20	2.71		
WVFS4	DSP	24	2.71	4	
WVFS5	DSP	21	2.71	4 4 4	
WVFS6	DSP	25	2.71		
WVFS7	DSP	22	2.71	4 4 4	
WVFS8	DSP	26	2.71	4	
WVFSYNC	DSP	1	2.71	4	
LSPD	BASE	21		4	
LTEN	BASE	7		4	
TCURR	BASE	7 1 2 22		2	
TVOLT	BASE	2		2	
ELTIM ADPTH	BASE BASE	22		4 4 2 2 4 4 2	
MINMK	BASE	23		2	
TEMP	DSP	13	2.92	4	
CCL	DSP	16	18.07	20	
GR	DSP	- 7	16.28	4	
THV	DSP	12	11.88	$\overline{4}$	

FIG: 30.7 Edit Sensors

These offsets may be edited from this window, by double clicking on a sensor. The information in this window normally consists of the hardware source of the sensor (Device and Channel number), the depth offset of the sensor from tool zero reference, and the sampling rate.

The information contained in Edit Sensors is defaulted to the current service and current tool string information. For example, sensor depth offsets are derived from the selected tool string and the information contained in the tools database. The default sample rates and device channel assignments are derived from the services file. The default device and channel settings, and the default sample rates are contained in the services.ini file. The default depth offsets are derived from tool information contained in the tools.ini file. Sensors cannot be modified while in a record mode.



It is important to know that no permanent changes are saved from this window. If you change anything in the Edit Tool String window and save them, any changes under Edit Sensors will be deleted when the service is closed. If you must edit offsets in the Edit Sensor window the Tool.ini file should be modified.

### 30.2.6 Power Up

Power up the tool string. (Nominally 125V at the STIP)

Adjusting the sync. Start by turning the Panel Control 'Sync' slider bar all the way down. Monitor the Waveform Window and slowly raise the Slider Bar. In the Waveform Window you will see the 0/s changes to typically 3/s or 4/s on the 1 11/16" tool and 7/s or 8/s for the 3 1/8" tool. At this point the waveforms are synced. The PMON Window is used to adjust the telemetry thresholds. (This window will be hidden behind the Waveform window and must be brought to the front.) On the PMON Window the left arrow adjusts the positive threshold and the right arrow the negative threshold.

Adjusting CSS Telemetry sync. While looking at the PMON window, adjust the positive (+) and negative (-) thresholds to about 50%. Adjust the Panel Control 'AUX' Slider to adjust the height of the digital signal, until the pulses are just below saturation

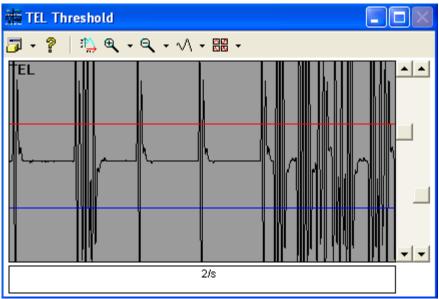


FIG: 30.8 Tel threshold



The PMON discriminator values will be what is saved in the 'Source/Save Setup' for this service. *Options - View Axis Scaling* may be used to more accurately set these values. This window is digital. The screen will not update until waveform sync is established. Select *Source/Save Setup* to retain these values for your next log.

30.2.7 Telemetry

Verifying Telemetry Data: From Warrior Acquisition Window -Select Monitor/ Devices/ DSP:



FIG: 30.9 Devices

Values for CSSM 3 1/8" Radial Bond Tool

🗖 Device: (	YSTD		
Source	Name	Value	Units
BASE-1	TCURR	0.0656	٧
BASE-2	TVOLT	0.0095	۷
BASE-3	CCL	-0.0034	۷
BASE-4		9.9997	۷
BASE-5		0.1865	۷
BASE-6		-0.0327	۷
BASE-7	LTEN	1.0306	۷
BASE-8		0.0052	۷
BASE-9		-0.0095	۷
BASE-10		-0.0095	۷
BASE-11		-0.0397	۷
BASE-12		-0.0336	۷
BASE-13		-0.0354	۷
BASE-14		-0.0330	۷
BASE-15		-0.0333	۷
BASE-16		-0.0079	۷
BASE-17	CTR1	0.0000	cps
BASE-18	CTR2	0.0000	cps
BASE-19	CTR3	0.0000	cps
BASE-20	CTR4	0.0000	cps
BASE-21	LSPD	-20.6300	ft/min
BASE-22	ELTIM	523,2700	sec
BASE-23	ADPTH	9776.6000	ft

FIG: 30.10 Devices List

The above values are very close to what the tool normally reads. Monitor TEL5-CCL, TEL7-Cable head voltage and TEL8-Temperature for stable readings. If necessary, adjust the positive threshold in the PMON window up or down to stabilize the readings.

### 30.2.8 Monitoring Outputs.

From Warrior Acquisition Window select Monitor /Outputs. An Outputs window will appear that allows you to monitor signals such as CCL, GR, and other sensors.

Outputs			
Name	Source	Value	Units
AMP3FT	[CS8SCBL	19.8975	m٧
TT3FT	[CS8SCBL	218.9651	usec
AMPCAL	[CS8SCBL	0.2441	m٧
AMP5FT	[CS8SCBL	0.0586	m٧
TT5FT	[CS8SCBL	327.5909	usec
AMPSUM	[CS8SCBL	0.1807	mΥ
AMPS1	[CS8SCBL	0.2902	
AMPS2	[CS8SCBL	0.2308	
AMPS3	[CS8SCBL	0.2189	
AMPS4	[CS8SCBL	0.2037	
AMPS5	[CS8SCBL	0.2240	
AMPS6	[CS8SCBL	0.2733	
AMPS7	[CS8SCBL	0.3530	
AMPS8	[CS8SCBL	0.3072	
AMPMIN	[CS8SCBL	0.2037	
AMPMAX	[CS8SCBL	0.3530	
AMPAVG	[CS8SCBL	0.2627	
ATT3	[CS8SCBL	-4.5204	db/ft
BONDIX	[CS8SCBL	0.3430	
LSPD	[STD]	-20.6300	ft/min
LTEN	[STD]	1.0306	lb
TCURR	[STD]	0.0644	mA
TVOLT	[STD]	0.0089	٧
ELTIM	[STD]	455.8200	sec
ADPTH	[STD]	9782.0498	ft
MINMK	[STD]	0.0000	
LTENRT	[STD]	1.0306	lb
DLTENRT	[STD]	0.0009	lb
LSPDRT	[STD]	-20.6300	ft/min
HVOLTA	[STD]	0.0056	٧
TEMP	[CS8SCBL	2020.0000	degF
DTMP	[CS8SCBL	0.0000	degF
CCL	[CS8_GR	7739.0000	
CCLRT	[CS8_GR	7739.0000	
GR	[CS8_GR	14.0000	
THV	[CS8_GR	12018.0000	٧

FIG: 30.11 Outputs List

Continue to Shop Calibration Section.

# 30.3 Shop / Tank Calibration:

Make up the tool with the centralizers and slide it into the tank. The tool should show signals on all the signals in the Waveform Window.

Bring the Waveform Window to the front. The gates appear on the waveforms as a white line on the section of the waveform where they are set.

The gates can be changed on this window by clicking on the waveform that needs to be adjusted (note the dark border around the selected waveform) and then using the buttons in the top right corner of the Waveform Window. To move the gate right or left on the x-axis use the buttons labeled  $\leq<$  to move it to the left or the button labeled  $\geq$  to move the gate to the right. The width of the gate can be increased by selecting the < = > button and decreased by using the >  $_{-} <$  button.

**Note:** It is recommended that you keep all of your gate widths the same. Approximatly 30 micro-seconds works well with most tool types.

Also, specific waveforms can be viewed by selecting Options – Enable, and selecting the waveforms that you want displayed. Reducing the number of waveforms gives you a screen that is easier to work with. Remember to click on the waveform before adjusting the gates.

Before gating on the first arrival use the ('BHC/CBL' pot on the panel for CBL01-09 sytems) (Panel Control 'Sonic' Slider Bar on CBLDR systems) to increase/decrease the signal. Make sure that none of the signals are saturated. (If you are going to be running logs in casing that is smaller than your calibration tank, be aware that the signals will be larger in smaller casings and decrease your signal to accomodate this.) **Note:** The signal height on the screen is not valid if you are in threshold mode.

After all of the gates are set select *Source – Save As*. Give this setup a name, such as 'CSSM 1 11/16' Cal Tank Amplitudes.' If there is a problem later the setting can be restored by selecting Source – Load and selecting that setup name.

**Note:** The same can be done for settings on the PMON Window.



AT THIS POINT YOU SHOULD HAVE YOUR GATE (WHITE LINE) ON ALL THE FIRST <u>POSITVE</u> ARRIVALS OF ALL THE SIGNALS BEING DISPLAYED. (The CAL pulse first arrival should be positive. If the first arrival is not positive, the polarity can be changed through Warrior/Utilities/Edit Logging Tool Details.)

On the Waveform Window, select Source – Threshold Mode and use the UP/DOWN Arrows (Only on the 3 ft and 5 ft display). To move the red threshold line to a suitable position where the threshold cuts the first arrival. Make sure it is far enough to avoid baseline noise (This may be above or below the baseline). Threshold Mode is only used to set the travel time thresholds.

On the Waveform Window, select Source – Normal Mode.

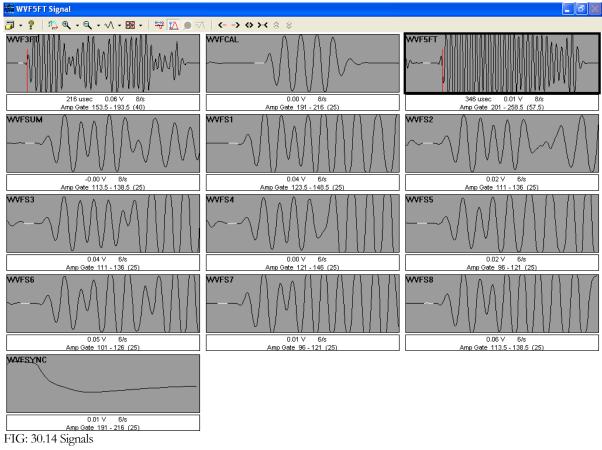
On the Acquisition Window select Action – Calibrate – Shop / Free Pipe Zero Cal. A window will appear to sample the base line noise.

	😼 Warrior	Logging System	
	File Service	Action Edit Monitor	_
	Service: CS Database: c Dataset: fiel Realtime Ac	Caliper Control Relay Control	.ong Line:
SCBL Pipe Signal Calibr	ation	Calibrate	
SCBL Pipe Zero Calibrat SCBL Air Zero Calibratio	SCBL Pipe Zero Calibration		•
SCBL Wellsite Internal Surface Line Tension Tool Voltage and Curre Temperature		Record Up Record Down Record on Time	
Gamma Ray CS8_GR_TEL_USR sn CSSM_sensor		Replay Independent Replay	
		Depth Shift Auto Correlation Curves	
		Preview Up Preview Down Preview on Time	
C. 20.12 Calibrata			

FIG: 30.12 Calibrate

SCBL Zero Baseline Calibrat	ion - CSSM	
Target Baseline Amplitude	0 mV	Accept
		Cancel
Reading of 3FT Baseline	V	
Reading of CAL Baseline	V	
Reading of 5FT Baseline	V	
Reading of SUM Baseline	V	
Reading of S1 Baseline	V	
Reading of S2 Baseline	V	<< Sample
Reading of S3 Baseline	V	
Reading of S4 Baseline	V	
Reading of S5 Baseline	V	
Reading of S6 Baseline	V	
Reading of S7 Baseline	V	
Reading of S8 Baseline	V	
1		

FIG: 30.13 Zero Baseline Calibration



Make sure the gates for all signals are on the flat part of baseline before the first arrival. These values will be updated when doing the well site air zero cal.

Click on the <<sample button. The Sample & Average Sensor(s) box will appear. Click on the begin button. When the sample is complete, monitor the values they should be very close to zero. If they are click the <u>A</u>ccept button. If the values are not close to zero, click the Reject button and correct the problem.

🔲 Sample &	Average Sens	or(s)	
Sensor	Instantaneous	Average	Units
WVF3FT WVFCAL WVF5FT WVFSUM WVFS1 WVFS1 WVFS2 WVFS3 WVFS4 WVFS5 WVFS6 WVFS6 WVFS7 WVFS8	0.0439 0.0537 0.0122 0.0391 0.0452 0.0366 0.0342 0.0317 0.0354 0.0439 0.0439 0.0574 0.0574	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
Period: 0.1 sec	Total: 10 sec		Begin Cancel

FIG: 30.15 Sensors signals

🔲 Sample	t Average Sens	or(s)			
SCBL Zero Baseline Calibration Reading of 3FT Baseline Reading of CAL Baseline Reading of SFT Baseline Reading of STIM Province					
Sensor	Instantaneous	Average	Units		
WVF3FT WVFCAL WVF5FT WVFSUM WVFS1 WVFS2 WVFS3 WVFS4 WVFS5 WVFS6 WVFS6 WVFS8	0.0427 0.0537 0.0134 0.0403 0.0452 0.0366 0.0342 0.0317 0.0354 0.0439 0.0574 0.0488	0.0433 0.0526 0.0283 0.0403 0.0459 0.0345 0.0340 0.0326 0.0358 0.0358 0.0435 0.0568 0.0496			
100% Comple	te		Accept Reject		

FIG: 30.16 Sensors Value signals

The SCBL Zero Baseline Calibration box will appear check that the values are all close to zero and click <u>A</u>ccept.

SCBL Zero Baseline Calibration	- CSSM		
Target Baseline Amplitude	0	mV	Accept
			Cancel
Reading of 3FT Baseline	0.0433105	V	
Reading of CAL Baseline	0.0526489	V	
Reading of 5FT Baseline	0.0283081	V	
Reading of SUM Baseline	0.0402588	V	
Reading of S1 Baseline	0.0458618	V	
Reading of S2 Baseline	0.0375	V	<< Sample
Reading of S3 Baseline	0.0339966	V	
Reading of S4 Baseline	0.0326294	V	
Reading of S5 Baseline	0.0357544	V	
Reading of S6 Baseline	0.0435181	V	
Reading of S7 Baseline	0.0568237	V	
Reading of S8 Baseline	0.0495728	V	
			1
1			

FIG: 30.17 Zero Base line

On the Acquisition Window select Action – Calibrate – Shop/Free Pipe Reference. The SCBL E1 Amplitude Calibration window will appear to sample the first arrival pipe amplitude. The Free Pipe Millivolt of the casing you are sampling is in the cells at the top of the window. The Sector E1 amplitude is normally set to 100 or made to match the 3ft E1 amplitude.

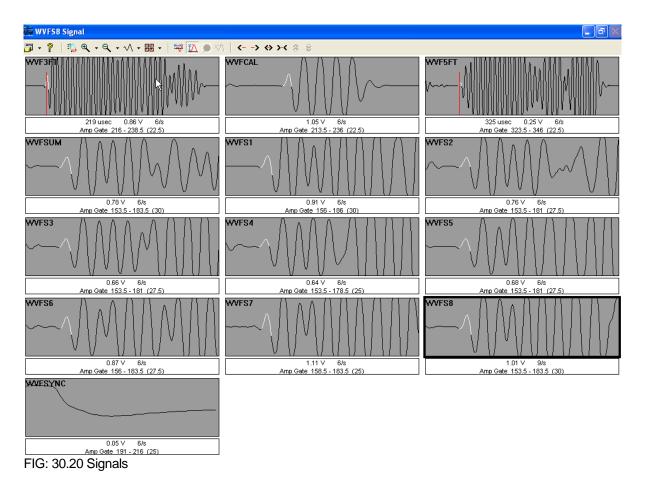
**Note:** If the value is not there or not correct check to see if the Casing OD and Maximum Amplitude were input in the Variables Window.

	<u>ه</u> و ا	Narrior	Logging	g Sys	tem		
	File	Service	Action	Edit	Monitor		
	Dati Dati	vice: CS abase: c aset: fiel altime Ac	Calip Rela	er Con Ier Cor y Cont	ntrol		.ong Line:
SCBL Pipe Signal Calibr SCBL Pipe Zero Calibrati SCBL Air Zero Calibrati	tion	ĥ	Calib Verif Plot		port	•	1
SCBL Wellsite Internal Surface Line Tension Tool Voltage and Curre Temperature	Cal		Reco	ord Up ord Dov ord Dov	wn		Control
Gamma Ray CS8_GR_TEL_USR sn (	ISSM s	ensor	Repl Inde	-	nt Replay		
				h Shift Corre	: Iation Curves		
			Prev	iew Up iew Do iew on	INN		

# FIG: 30.18 Pipe signal Calibration

Target Pipe E1 Amplitude       Imv       Accept         Target Sector E1 Amplitude       100       Cancel         Reading of 3FT E1 Signal       V       Reading of CAL E1 Signal       V         Reading of 5FT E1 Signal       V       Reading of SFT E1 Signal       V         Reading of SFT E1 Signal       V       Reading of SFT E1 Signal       V         Reading of SI E1 Signal       V       Reading of S1 E1 Signal       V         Reading of S2 E1 Signal       V       K       Sample         Reading of S3 E1 Signal       V       K       Sample         Reading of S5 E1 Signal       V       K       Sample         Reading of S5 E1 Signal       V       K       Sample         Reading of S7 E1 Signal       V       V       Reading of S8 E1 Signal       V         Reading of S8 E1 Signal       V       V       Reading of S8 E1 Signal       V	SCBL E1 Amplitude Calibration	- CSSM		_ 🗆 🔀
Reading of 3FT E1 Signal       V         Reading of CAL E1 Signal       V         Reading of 5FT E1 Signal       V         Reading of SUM E1 Signal       V         Reading of S1 E1 Signal       V         Reading of S2 E1 Signal       V         Reading of S3 E1 Signal       V         Reading of S4 E1 Signal       V         Reading of S5 E1 Signal       V         Reading of S5 E1 Signal       V         Reading of S5 E1 Signal       V         Reading of S7 E1 Signal       V         Reading of S7 E1 Signal       V         Reading of S7 E1 Signal       V	Target Pipe E1 Amplitude	71.921	mV	Accept
Reading of CAL E1 Signal       V         Reading of 5FT E1 Signal       V         Reading of SUM E1 Signal       V         Reading of S1 E1 Signal       V         Reading of S2 E1 Signal       V         Reading of S3 E1 Signal       V         Reading of S4 E1 Signal       V         Reading of S5 E1 Signal       V         Reading of S5 E1 Signal       V         Reading of S7 E1 Signal       V	Target Sector E1 Amplitude	100		Cancel
	Reading of 3FT E1 Signal Reading of CAL E1 Signal Reading of 5FT E1 Signal Reading of SUM E1 Signal Reading of S1 E1 Signal Reading of S2 E1 Signal Reading of S3 E1 Signal Reading of S4 E1 Signal Reading of S5 E1 Signal Reading of S6 E1 Signal Reading of S7 E1 Signal		V V V V V V V V V V V	

FIG: 30.19 Amplitude Calibration



Make sure the gates for all signals are on the positive part of the first arrival. Click on the <<sample button. The Sample & Average Sensor(s) box will appear.

SCBL E1 Amplitude Calibration         Reading of 3FT E1 Signal         Reading of 5FT E1 Signal         Beaching of 5FT E1 Signal         Beaching of SUM E1 Signal         Sensor       Instantaneous         WVF3FT       0.2209       0.2238         WVFCAL       0.2759       0.2725	×
WVF3FT 0.2209 0.2238 V	
WVF5FT         0.1270         0.1473         V           WVFSUM         0.2136         0.2089         V           WVFS1         0.2368         0.2393         V           WVFS2         0.1892         0.1377         V           WVFS3         0.1746         0.1749         V           WVFS4         0.1648         0.1687         V           WVFS5         0.1831         0.1838         V           WVFS6         0.2234         0.2253         V           WVFS7         0.2930         0.2952         V           WVFS8         0.2515         0.2571         V	
100% Complete	_

FIG: 30.21 Sample Signals

Select <<Sample. After the sampling has finished select Accept. The calibration gains and offsets for each waveform are displayed. The offsets on all waveforms should be near zero. The gains should range from 20 to150. Select OK.

SCBL Am	plitude	Cal Results	X
	Gain	Offset	
CAL 5FT 5UM 52 53 54 55 56 57	159.6165 159.1298 151.9288 126.6758 95.6708	-0.2318 5-2.9993 -0.9105 1-3.6135 7-4.8346 5-2.2193 80.5128 8-2.1866 8-4.7473 -3.6320	
58	107.8008 Ok		

FIG: 30.22 Amplitude Calibration Results

The SCBL E1 Amplitude Calibration window will appear with the raw voltage readings displayed. Select <u>Accept</u>.

SCBL E1 Amplitude Calibratio	n - CSSM		
Target Pipe E1 Amplitude	71.921	mV	Accept
Target Sector E1 Amplitude	100		Cancel
	0.820544		
Reading of 3FT E1 Signal		V	
Reading of CAL E1 Signal	0.99563	۷	
Reading of 5FT E1 Signal	0.547949	V	
Reading of SUM E1 Signal	0.767517	V	
Reading of S1 E1 Signal	0.896423	٧	
Reading of S2 E1 Signal	0.728455	٧	<< Sample
Reading of S3 E1 Signal	0.640405	٧	
Reading of S4 E1 Signal	0.625195	٧	
Reading of S5 E1 Signal	0.672595	٧	
Reading of S6 E1 Signal	0.826892	٧	
Reading of S7 E1 Signal	1.08322	٧	
Reading of S8 E1 Signal	0.952368	٧	
]			

FIG: 30.23 E1 Amplitude Calibration

Note: If you need to make more than one calibration for each tool you must enter a different Serial Number.



Do not do a downhole cal with the same Serial Number because if you accept the cal and it is no good you will have over written the good shop cal, which can be utilized, if there is no Free Pipe found in the well.

**Note:** To create In the Warrior Screen select Utilities – Edit Logging Tool details then click Edit Tool. A list will come up, select SCBL and enter the "alias" Serial Number which you will use to do other cals on the same tool without over writing the original. Then Click Create – Tool. Enter a new serial number.

# 30.4 Wellsite Calibration Procedures:

The GR can be calibrated like any other GR tool. Select Action – Calibrate – Gamma Ray. Follow the onscreen menu.

### 30.4.1 SCBL Air Zero Cal.

SCBL Air Zero Cal: The following step is performed with the tool hanging in the air. On the Acquisition Window select Action/ Calibrate/SCBL Well Site Air Zero Cal. The SCBL Air Zero Cal window will appear.



FIG: 30.24 Air Zero calibration

SCBL Wellsite Zero Cal - CSSM		
		Accept Cancel
Zero Reading of WVF3FT E1	V	
Zero Reading of WVF5FT E1	٧	
Zero Reading of WVFSUM E1	٧	
Zero Reading of WVFS1 E1	٧	
Zero Reading of WVFS2 E1	٧	
Zero Reading of WVFS3 E1	٧	<< Sample
Zero Reading of WVFS4 E1	٧	
Zero Reading of WVFS5 E1	٧	
Zero Reading of WVFS6 E1	٧	
Zero Reading of WVFS7 E1	٧	
Zero Reading of WVFS8 E1	٧	
]		

FIG: 30.25 Air Zero calibration

Ensure the gates are set in the proper position for the size pipe to be logged select <<Sample. The Sample & Average Sensor(s) box will appear. Select Begin.

a Average Serisor(s) box will appear. Select begin.					
	Sample & /	verage Sens	or(s)		
		SCBL Wellsi Zero Reading o Zero Reading of Zero Reading of Zero Reading of	FWVF3FT E1 FWVF5FT E1 WVFSUM E1		
	Sensor	Instantaneous	Average	Units	
	WVF3FT WVF5FT WVFSUM WVFS1 WVFS2 WVFS3 WVFS4 WVFS5 WVFS5 WVFS6 WVFS7 WVFS8	0.0305 0.0281 0.0293 0.0330 0.0269 0.0244 0.0232 0.0256 0.0317 0.0427 0.0366	0.0313 0.0205 0.0293 0.0337 0.0272 0.0246 0.0237 0.0260 0.0317 0.0414 0.0361	>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	
	100% Complete			Accept Reject	

FIG: 30.26 Air Zero Values

All the values should be close to zero, and are used to establish the offset to be applied to the primary gain and offset established in the Shop Calibration. Select <u>Accept</u>. Select <u>Accept</u> in the SCBL Air Zero Cal Window.

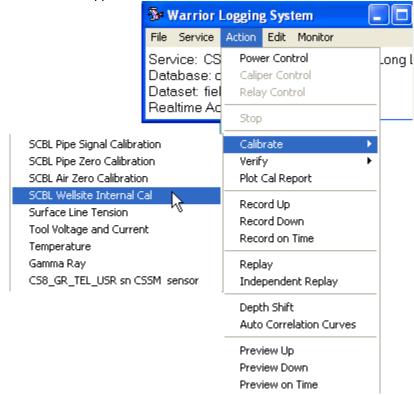
SCBL Wellsite Zero Cal - CSSN	l .	
		Accept Cancel
	0.0312622 V	
Zero Reading of WVF3FT E1		
Zero Reading of WVF5FT E1	0.0205444 V	
Zero Reading of WVFSUM E1	0.0293335 V	
Zero Reading of WVFS1 E1	0.0336548 V	
Zero Reading of WVFS2 E1	0.0271606 V	
Zero Reading of WVFS3 E1	0.0246338 V	<< Sample
Zero Reading of WVFS4 E1	0.0236572 V	
Zero Reading of WVFS5 E1	0.0259521 V	
Zero Reading of WVFS6 E1	0.0316528 V	
Zero Reading of WVFS7 E1	0.041394 V	
Zero Reading of WVFS8 E1	0.0361084 V	
,		

FIG: 30.27 Air Zero reading

30.4.2 SCBL Wellsite Internal Ref Cal

SCBL Wellsite Internal Ref Cal: The following step should be performed down hole. The CAL pulse is recalibrated to compensate for line resistance and temperature. The new values are used to normalize all waveform amplitude values back to the shop calibration.

On the Acquisition Window select Action/ Calibrate/ Well Site Internal Ref Cal. The SCBL Internal Reference Cal window will appear



# FIG: 30.28 Wellsite Internal Calibration

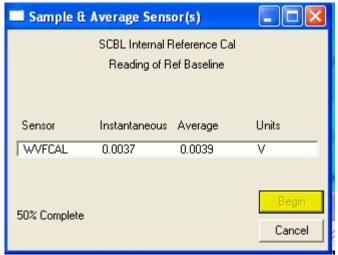


FIG: 30.29 Internal Reference Calibration

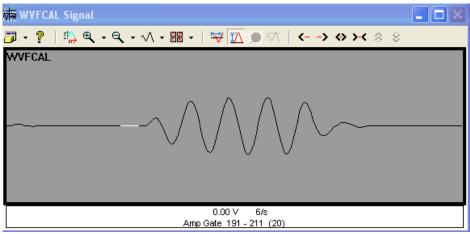
🗖 Se	CBL Internal Re	eference Cal	- CSSM		
Refer	ence Pulse Zero		0.0031982	4 V	Accept
Refer	ence Pulse Maximu	IUU	0.99563	V	Cancel
Readi	ing of Ref Baseline		0.0183716	- v	<< Sample
	ing of Ref Maximum			V	<< Sample
	🔲 Sample & /	Average Sens	or(s)		3
		SCBL Internal F	Reference Cal		1
		Reading of Re	ef Maximum		
	Sensor	Instantaneous	Average	Units	
	WVFCAL	0.9778	0.9861	V	
	Innone	0.0110	0.0001	•	
				R e ein	1
	90% Complete			Begin	4
				Cancel	

FIG: 30.30 Zero Reference

SCBL Internal Reference Cal - C			
Reference Pulse Zero Reference Pulse Maximum	0.00319824	V V	Accer
Reading of Ref Baseline Reading of Ref Maximum	0.0183716	V V	<< Sample << Sample
Correction Gain = 1.0255 Correction Offset = -0.0156			

FIG: 30.31 Gain and Offset

Move the gate in the WVFCAL Signal window to the flat part of the baseline in front of the first positive arrival. Select <<Sample on the Reading of Ref Baseline. The Sample & Average Sensor(s) window will appear.





🔲 Sample & /	Average Sens	or(s)	
	SCBL Internal Reference Cal Reading of Ref Baseline		
Sensor	Instantaneous	Average	Units
WVFCAL	0.0159	0.0046	V
70% Complete			Begin Cancel

FIG: 30.33 Calibration value

Select Begin the values should be very close to zero. Select Accept.

Move the gate in the WVFCAL Signal window to gate the first positive arrival. Select <<Sample on the Reading of Ref Maximum. The Sample & Average Sensor(s) window will appear.

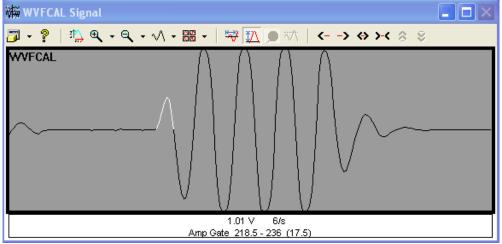


FIG: 30.34 Signal Reference Maximum value

🔲 Sample & /	Average Sens	or(s)	
	SCBL Internal F Reading of Ro		
Sensor	Instantaneous	Average	Units
WVFCAL	1.0217	1.0030	V
40% Complete			Begin Cancel

FIG: 30.35 Reference Maximum value

Select <<Begin on the Sample & Average Sensor(s). Select Accept. A gain and offset value will be shown in the SCBL Internal Reference Cal window. The gain should be very close to 1.0 and the offset value will be very close to 0. If they are not, redo your calibrations to ensure that the correct voltage is set for the WVFCAL and the gate was set in the proper position for each reading. Select Accept in the SCBL internal Reference Cal window.

SCBL Internal Reference Cal - C	SSM		
Reference Pulse Zero	0.00319824	٧	Accept
Reference Pulse Maximum	0.99563	V	Cancel
Reading of Ref Baseline	0.0183716	V	<< Sample
Reading of Ref Maximum	0.986133	V	<< Sample
Correction Gain = 1.0255 Correction Offset = -0.0156			

FIG: 30.36 Reference Maximum value

Go in the hole monitoring the various waveforms as shown below. Ensure that the gates are over the first positive signal and that the relative positions of the gates are correct. The gate for the 5ft receiver should be approximately 114 microseconds later in time than the 3ft. The various sector gates should be approximately 57 microseconds earlier in time than the 3ft (for a 2 foot sector spacing).

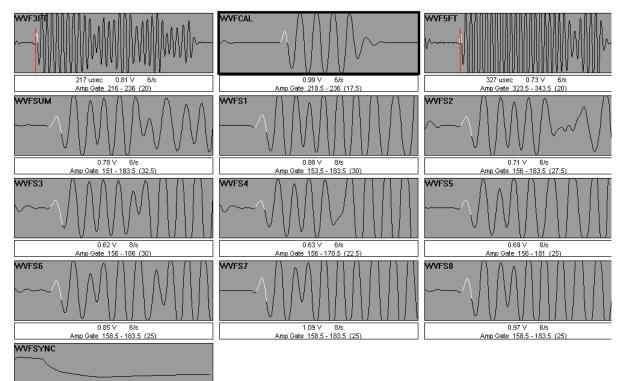


FIG: 30.37 Signals

All waveforms may be shown by selecting Options - Enable from the waveform window. After the gates are adjusted, open the Monitor -Outputs Window and monitor the various outputs. All the sector gates can be adjusted simultaneously if they are tethered. To tether the sectors, click on a sector window and then click on the tethering button.

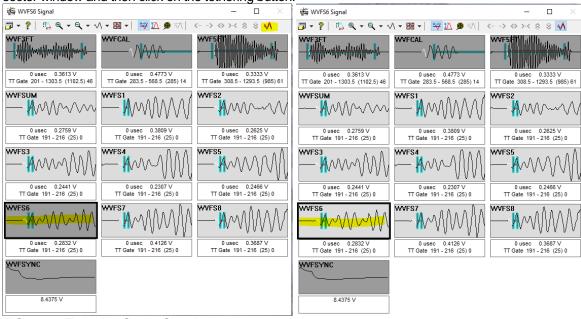


FIG: 30.38 Tethering Sector Signals

Cutputs			
-	-		
Name	Source	Value	Units
AMP3FT	[CS8SCBL	19.8975	m٧
TT3FT	[CS8SCBL	218.9651	usec
AMPCAL	[CS8SCBL	0.2441	mV
AMP5FT	[CS8SCBL	0.0586	mV
TTSFT	[CS8SCBL	327,5909	usec
AMPSUM	[CS8SCBL	0.1807	mV
AMPS1	[CS8SCBL	0.2902	
AMPS2	[CS8SCBL	0.2308	
AMPS3	[CS8SCBL	0.2189	
AMPS4	[CS8SCBL	0.2037	
AMPS5	[CS8SCBL	0.2240	
AMPS6	[CS8SCBL	0.2733	
AMPS7	[CS8SCBL	0.3530	
AMPS8	CS8SCBL	0.3072	
AMPMIN	[CS8SCBL	0.2037	
AMPMAX	CS8SCBL	0.3530	
AMPAVG	[CS8SCBL	0.2627	
ATT3	[CS8SCBL	-4.5204	db/ft
BONDIX	[CS8SCBL	0.3430	
LSPD	[STD]	-20.6300	ft/min
LTEN	[STD]	1.0306	Ь
TCURR	[STD]	0.0644	mA
TVOLT	[STD]	0.0089	V
ELTIM	[STD]	455.8200	sec
ADPTH	[STD]	9782.0498	ft
MINMK	[STD]	0.0000	
LTENRT	[STD]	1.0306	Ь
DLTENRT	[STD]	0.0009	lb Altri
LSPDRT	[STD]	-20.6300	ft/min
HVOLTA	[STD]	0.0056	V.
TEMP	[CS8SCBL	2020.0000	degF
DTMP	[CS8SCBL	0.0000	degF
CCL	[CS8_GR	7739.0000	
CCLRT	[CS8_GR	7739.0000	
GR	[CS8_GR	14.0000	
THV	[CS8_GR	12018.0000	۷

FIG: 30.39 Outputs

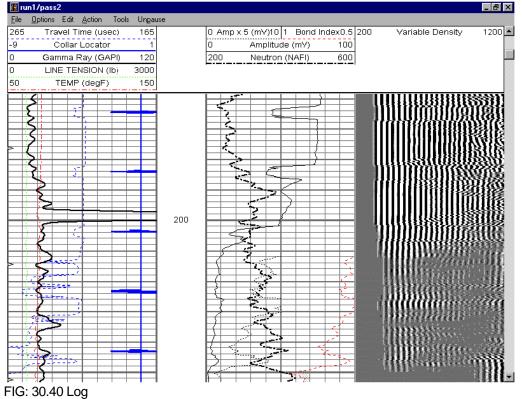
The maximum of the 3ft and sector outputs should be approximately those shown in appendix I for a given size casing. The minimum values in bonded casing should also match the indicated values. Sector values will tend to be slightly above indicated values in bonded pipe.

# 30.4.3 Setting Travel Time:

While monitoring the 3ft Waveform, choose Source - Threshold Setup Mode. Using the right hand scroll bar to set the Threshold Setting. The Travel Time should read within 10 microseconds of the value listed in Appendix I. This threshold should be kept as close to the baseline as possible without the threshold picking up baseline noise and triggering early.

# 30.5 Running the Log:

1 11/16" CSSM Radial Bond Tool			
CCL Calibrations –	Gain = 0.1	Offset = -12.8	
Temp Calibrations -		Offset = 32	
3 1/8" CSSM Radial Bond Tool			
CCL Calibrations –	Gain = 0.0005	Offset = -3.7	
Temp Calibrations -	Gain =0.02	Offset = 0	
An example Radial Bond presentation is shown below.			



The additional Radial Bond presentation is shown below. This presentation shows the eight sector readings and the waveforms of each as a signature presentation.

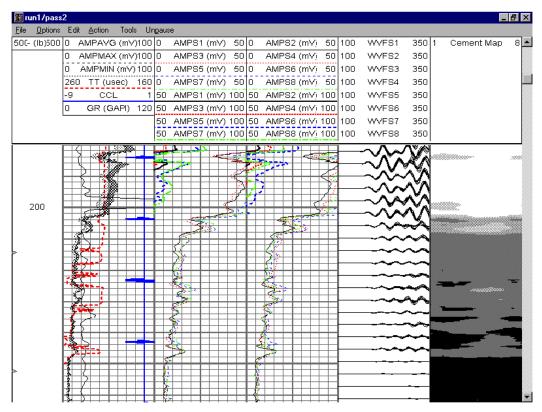


FIG: 30.41 Log Additional Radial Bond Presentation with Cement Map

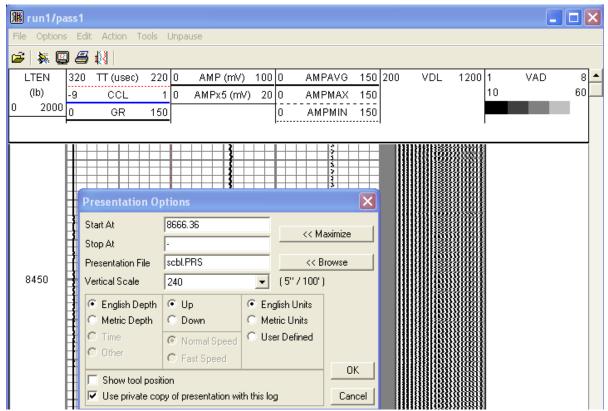


FIG: 30.42 Presentation Options

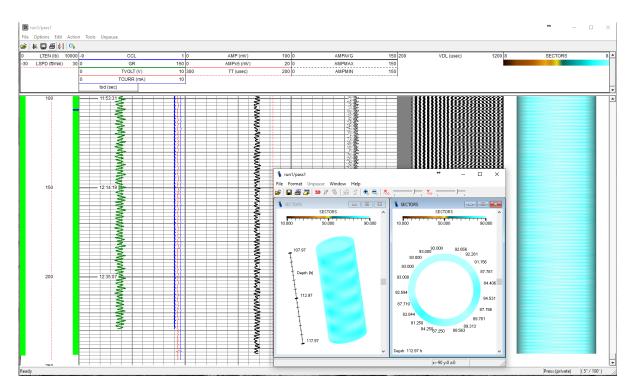


FIG: 30.43 Bond Log with 3D presentation and BH Image

The Presentation may be changed by clicking on *Options* in the Interactive Plot Window. This brings up the window shown below. Either browse to select the presentation required or edit the presentation name to the desired presentation.

Under Plot Job Editor, calling up Single Log pass will bring up a similar window. Editing the Format field will allow you to show the same pass, using different presentations.

Note: This same window allows you to show the same pass with different logging scales.

**Note:** Annotations must be made from the Interactive Replay Window for each presentation, as the annotations will not be transferred from one presentation to another.

Presentati	×		
Туре	Log		
Database	c:\warrior\data\der	nocss.db	C & Brauna I
Dataset	field/well/run1/pas	s1	<< Browse
Format	scbl.PRS		<< Browse
Start At	8666.36	Constanting 1	
Stop At	-178957	<< Maximize	
Y Scale	240		<u> </u>
Plot at I	nalf width		Cancel

FIG: 30.44 Presentation Options Type

# APPENDIX A Pipe Weight and Id

PIPE			1 11/16" RCBS			3 1/8" RCE	BL	
OD	WEIGHT	ID	RADIAL	3 FT	5 FT	RADIAL	3 FT	5 FT
2.875	6.500	2.441	128	204	318			
	7.900	2.323	126	202	316			
	8.700	2.259	125	201	315			
	9.500	2.195	123	199	313			
	10.700	2.091	121	197	311			
	11.000	2.065	121	197	311			
3.500	9.300	2.992	139	215	329			
	10.300	2.922	138	214	328			
	12.800	2.764	135	211	325			
	12.950	2.750	134	210	324			
	15.800	2.548	130	206	320			
	16.700	2.480	129	205	319			
4.000	11.850	3.476	149	225	339			
	14.000	3.340	146	222	336			
4.500	9.500	4.090	161	237	351	151	208	322
	10.500	4.052	160	236	350	150	207	321
	11.600	4.000	159	235	349	149	206	320
	13.500	3.920	157	233	347	148	205	319
	15.100	3.826	155	231	345	146	203	317
5.000	11.500	4.560	170	246	360	160	217	331
	13.000	4.494	169	245	359	159	216	330
	15.000	4.408	167	243	357	157	214	328
	18.000	4.276	164	240	354	155	212	326
	20.300	4.184	162	238	352	153	210	324
	23.200	4.044	160	236	350	150	207	321
	24.200	4.000	159	235	349	149	206	320
5.500	13.000	5.044	179	255	369	170	227	341
	14.000	5.012	179	255	369	169	226	340
	15.500	4.950	177	253	367	168	225	339
	17.000	4.892	176	252	366	167	224	338

		/						
6.000	15.000	5.524	189	265	379	179	236	350
	18.000	5.424 78 <sub>5 252</sub> 174	187	263 250 - 1	377 364	177 165 <sub>176</sub>	234 222	348 336-
	20.000 4.7	5.35Z	185	<sup>250</sup> 261	<sup>364</sup> 375	400	222 233 220	3367 334
	23.000 4.6	5.240	183	<sup>248</sup> 259	<sup>362</sup> 373	400	<sup>220</sup> 231	<sup>334</sup> 331
	26.000 26.000 4.5		181	239 246 <sub>57</sub>	360 <sub>371</sub>	172	217 229	3313 343
6.625	17.000	6.135	201	277	391	191	248	362
	20.000	6.047	199	275	389	190	247	361
	24.000	5.921	197	273	387	187	244	358
	28.000	5.791	194	270	384	185	242	356
	32.000	5.675	192	268	382	182	239	353
7.000	17.000	6.538	209	285	399	199	256	370
	20.000	6.456	207	283	397	198	255	369
	23.000	6.366	205	281	395	196	253	367
	26.000	6.276	203	279	393	194	251	365
	29.000	6.184	202	278	392	192	249	363
	32.000	6.094	200	276	390	190	247	361
	35.000	6.004	198	274	388	189	246	360
	38.000	5.920	196	272	386	187	244	358
7.625	20.000	7.125				211	268	382
	24.000	7.025				209	266	380
	26.400	6.969				208	265	379
	29.700	6.875				206	263	377
	33.700	6.765				204	261	375
	39.000	6.625				201	258	372
	45.300	6.435				197	254	368
8.625	24.000	8.097				230	287	401
	28.000	8.017				228	285	399
	32.000	7.921				226	283	397
	36.000	7.825				224	281	395
	40.000	7.725				222	279	393
	44.000	7.625				220	277	391
	49.000	7.511				218	275	389
9.625	29.300	9.063				249	306	420
	32.300	9.001				247	304	418
	36.000	8.921				246	303	417
	40.000	8.835				244	301	415
	43.500	8.755				243	300	414
	47.000	8.681				241	298	412
	53.500	8.535				238	295	409
	58.400	8.435				236	293	407
	61.100	8.375				235	292	406
	71.800	8.125				230	287	401

## **APPENDIX B-Sector Map**

### 30.6 Map

#### 30.6.1 Introduction

The heart of the Radial Bond Tool is the segmented crystal found below the transmitter. This crystal is cylindrical in shape. It is divided into 6 or 8 segments, each of which covers a section of the well bore.

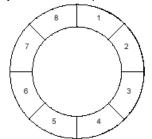


FIG: 30.39 Sector Map

#### 30.6.2 The Calibration Procedure

When the Radial Bond Tool is calibrated, the sonde section is rigidly centralized in a 5-1/2" calibration chamber and the chamber is pressured up to 500 lbs. of water pressure. The tool is powered up and the calibration signal is set to a reference voltage, using pots within the electronics section of the tool. Gates are then set over E1 of the 3ft, 5ft, and each of the segmented crystals. Each of these signals is then set to 1 Volt, again using pots within the electronics section.

Using the SCBL Shop/Free Pipe Calibration routine, the tool is then calibrated so that each of the signals reads 100 millivolts within the test chamber. Then, the test chamber is depressurized, and the tool is rotated 180 degrees. The test chamber is again pressurized, and the calibrations are checked again to assure that the tool was properly centralized during the calibration procedure.

**NOTE:** While it is true that the expected amplitude reading for the 3ft receiver in 5-1/2" casing is 72 millivolts, that is the expected reading with pressurized water on the backside of the casing. The presence of air on the backside allows the test chamber to vibrate more freely than 5-1/2" casing. The expected readings of the 3ft in various sizes of pipe, are based upon a tool calibrated to 100 millivolts in a 5-1/2" test chamber with air on the backside.

Edit Ca	librations							×
<u>E</u> dit <u>S</u> elec	st							
Name	Type	Gain	Hi Read	Hi Ref	Lo Read	Lo Ref	Offset	
AMP3FT	Lin2Pt	97.649	1.009	100.000	-0.015	0.000	3.004	
WS_3FT	Lin2Pt	1.008	0.000	0.000	0.005	0.000	-0.021	
AMPCAL	Lin2Pt	66.102	1.503	100.000	-0.009	0.000	0.625	
WS_CAL	Lin2Pt	1.008	1.493	1.503	-0.008	-0.009	-0.001	
AMP5FT	Lin2Pt	98.521	1.000	100.000	-0.015	0.000	1.491	
WS_5FT	Lin2Pt	1.008	0.000	0.000	-0.006	0.000	-0.009	
AMPSUM	Lin2Pt	99.273	0.993	100.000	-0.014	0.000	1.403	
WS_SUM	Lin2Pt	1.008	0.000	0.000	-0.008	0.000	-0.006	
AMPS1	Lin2Pt	97.452	1.011	100.000	-0.015	0.000	1.482	
WS_S1	Lin2Pt	1.008	0.000	0.000	-0.008	0.000	-0.007	
AMPS2	Lin2Pt	98.770	0.997	100.000	-0.015	0.000	1.505	
WS_S2	Lin2Pt	1.008	0.000	0.000	-0.006	0.000	-0.009	
AMPS3	Lin2Pt	98.485	1.002	100.000	-0.014	0.000	1.366	
WS_S3	Lin2Pt	1.008	0.000	0.000	-0.008	0.000	-0.006	
AMPS4	Lin2Pt	97.953	1.008	100.000	-0.013	0.000	1.296	
WS_S4	Lin2Pt	1.008	0.000	0.000	-0.007	0.000	-0.006	
AMPS5	Lin2Pt	97.091	1.016	100.000	-0.014	0.000	1.337	
WS_S5	Lin2Pt	1.008	0.000	0.000	-0.003	0.000	-0.011	
AMPS6	Lin2Pt	98.266	1.004	$100.000 \\ 0.000$	-0.014	0.000	1.346	
WS_S6 AMPS7	Lin2Pt Lin2Pt	1.008 99.237	0.000 0.994	100.000	-0.008 -0.013	0.000 0.000	-0.006 1.325	
WS_S7	Lin2Pt Lin2Pt	1.008	0.994	0.000	-0.013	0.000	-0.006	
AMPS8	Lin2Pt Lin2Pt	99.230	0.000	100.000	-0.008	0.000	1.308	
WS S8	Lin2Pt	1.008	0.000	0.000	-0.013	0.000	-0.006	<b>_</b>

30.6.3 The Radial Readings	30.6.3	The	Radial	Readings
----------------------------	--------	-----	--------	----------

#### FIG: 30.43 Radial Readings

With the Shop Calibration recorded in the Tools.ini file, all that is left for the Engineer to do at the well site, is to perform the SCBL Wellsite Internal Reference Cal and the SCBL Air Zero Cal. These calibrations generate a secondary Gain and Offset that are applied to readings from the SCBL outputs before they are plotted and recorded. These secondary calibrations are identified by WS\_ and are listed directly under the curve to which they are applied.

When the SCBL Internal Reference Calibration is performed, the High and Lo Read of the AMPCAL from the Shop Calibration are used as the Hi and Lo Ref for the WS\_CAL and the Calibration Signal is calibrated back to the readings taken during the Shop Calibration. The Gain derived from this calibration is then applied to ALL the Bond curves. This calibration adjusts the Warrior Logging System for differences in line length and variations in CBL/BHC Signal gains.

When the SCBL Air Zero Cal is performed, the gates of all the bond signals are set to their approximate values for the casing size anticipated by choosing the appropriate Setup (under *Load Setup*), while to tool is in air. This calibration generates the secondary calibration offset, which is applied to each of the Bond curves individually.

When using Shop Calibrations for logging, both calibrations must be done before going in the hole. If, for some reason a Wellsite Calibration is performed, there is no need to perform these two additional calibrations. Wellsite calibrations are not recommended except under unusual situations.

#### 30.6.4 The Cement Map

The Cement Map is a graphical representation of the response of the sector measurements. The shading of the cement map is purely representative of the recorded amplitude readings from the various sectors. Look back to the representation of the segmented crystal shown at the beginning of this bulletin, and visualize the sectors laid out horizontally.

1 Cement Map 8

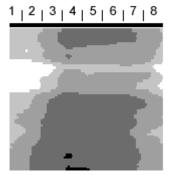


FIG: 30.44 Cement Map

Each of the individual sectors is represented by a section of the cement map, as shown below. The shade applied to each section of the map is a function of the amplitude of that sector as recorded.

The Warrior Logging System uses an algorithm to determine the shading associated with the amplitude recorded, based on several factors. These factors include:

The number of grayscales and the density of the grayscales in the Cement Map, as applied in the screen and printer setup within the Warrior.ini file.

The Filter level associated with each of the Sector Curves.

The amplitude reading of adjacent sectors.

The High Reference recorded in the Shop Calibration associated with each Sector Curve.

The Black and White values set in the presentation file.

Define Data Item	x
Data Source	Style
DB Item: SECTORS << Browse	
🗘 Variable 💿 Data 🛛 🖓 List	C Percentage*
Position	© Specific Values
Track #: 12 A Left value 0 Track #: 8	VDL White Level: 60
Presentation Type	Use % for sonic VDL, specific values for maps
	Scale Type Label and Scales
C Curve © Variable Density C Pattern Strip	Label VAD OK
C Tabular C Signature C Graphic Strip	Color Map Sectors

#### FIG: 30.45 Sectors

The only factor under control of the engineer is the Black and White values within the presentation file. The purpose of the Cement Map is to graphically illustrate small channels that may pose a problem. With that end in mind, the following is the proscribed setup for the Cement Map.

With the Black and White Levels set as above, the grays scales of the Cement Map will change as follows: 1. Amplitudes less than 10mv Black

- 2. Amplitudes greater than 10.0mv and less than 26.7mv Dark Gray
- 3. Amplitudes greater than 26.7mv and less than 43.3mv
- 4. Amplitudes greater than 43.3mv and less than 60.0mv

Light Gray

Medium Gray

5. Amplitudes greater than 60.0mv

White

If different gray scales are needed for an application, contact Technical Support.

#### 30.6.5 Logging Conditions

The Cement Map is a visual representation of the cement conditions behind the pipe. The Sector Crystal is not free to rotate within the tool, and the cement and casing are not free to rotate. However, the tool itself is free to rotate with the well, and it is expected that it will. For this reason, apparent "channels" may rotate within the cement map while running repeats, and that the Cement Map may not repeat exactly.

The Cement Map also becomes an important aid to quickly identify problems in tool setup or logging procedures.

# Section

# **31 Ultrawire Memlog Chart**

# 31.1 Updating Warrior V7.00

Run the self-extracting Warrior Updates executable.

Add the following entry to Warrior.ini (found in the Warrior Config directory or use the shortcut in Sondex Utilities).

In the Device Alias section add UWD=UWMEMORY

[Device Alias]

UWD=UWMEMORY

Next import the new UW memory tools using the Warrior tool editor (found in Utilities).

In the Calibration select Restore and select MBH025.wcf, UMT003.wcf, MITUW.wcf, PRC034.wcf, PRC057.wcf in turn. This imports the Memory Battery Holder, Ultrawire memory tool, Ultrawire MIT and 2 new centralizers.

Now add the new Ultrawire memory services. In the Service Editor (Utilities) import UMT Services.wsv which contains all 4 memory services.

## 31.2 Update MCU driver

Uninstall the current MCU device driver (using the Device Manager) and reinstall the latest MCU driver (SXMCULDR.SYS). The version required is V1,0,0,6 or greater.

## 31.3 Update UMT firmware

Open Ultrawire Memlog, select the Diagnostic menu and click on Upload new firmware. Select the latest firmware file (XXXX.bin) and if the UMT is connected to the MCU the new firmware is uploaded.

## 31.4 Using Ultrawire Memlog

Setting up the Service (tool string).

All service information is set up in Warrior. In Warrior Acquisition select the required Memory Service (i.e. Ultrawire Memory MIT). Make up the tool string, and at this point it is possible to perform all the calibrations using an XTU.

Next, if required set up the zoned variables in Warrior.

Once the service information is complete then UW Memlog can be used.



LEAVE WARRIOR RUNNING, DO NOT CLOSE UNTIL YOU HAVE FINISHED USING UW MEMLOG!

#### 31.4.1 Open UW Memlog

The first thing that must be done is to set up the DPT Settings. In the Edit menu select Edit DPT Settings, the options in this window must match those on the DTR or UW Memlog will not output the correct depth units! Create a new project (File menu, or toolbar), the user is then prompted to create the project files. Only do this if the service has been completely set up in Warrior.

UW Memlog takes all the service information from Warrior (tool string, telemetry information etc.) and creates the Project.ini and the Service.ini in the project directory. It also copies any calibration files in Warrior to the Project directory. They are not used by UW Memlog but are a useful archive.

Next import the zoned variables from Warrior. In the UW Memlog File menu select Create Variables database. This takes the zoned variable information and places it in the Project directory (vars.db).

#### 31.4.2 Create the Profile

The profile editor is slightly modified from the previous version of Memlog. It is now possible to sample any tool, at any rate (within reason). For each profile line a tool can be sampled at a different rate.

The first difference is that a start time for the profile line is NOT entered; this has been changed to the length of the profile in seconds.

The second major change is the profile type. There are 4 options, LOG, OPEN, CLOSE and SLEEP.

LOG is the default and will record all the tools at the selected sample rates.

OPEN and CLOSE can only be used on tools with motorized arms. (i.e. MIT). It is recommended that each OPEN and CLOSE profile be 3 minutes in length to allow the tool to fully open and close.

Note when an OPEN or CLOSE profile type is selected the tool to be opened\closed must also be selected in the rate window. The drop down list will now contain OPEN or CLOSE rather than sample rates.

NOTE: Only one tool can be opened or closed in a single profile!

NOTE: During an open or close no other tools can be sampled.

I recommend that a LOG profile precedes each open or close profile type.

The amount of memory being used can be seen at the bottom of the window. Make sure this does NOT exceed your memory limit.

If an MIT is in the service, there will be two memory usage values. Click on the Details... button and select the MIT compression rate to view the true memory used. Save the profile.

#### 31.4.3 Programming the tool

Assemble the tool string and attach to the MCU etc.

If an MIT is in the tool string, then before programming the tool, the COMPRESSION MODE must be set. Enter Command mode in UW Memlog (toolbar option), once the Command window is loaded, using Warrior select the MIT Tool Configuration window and select the Sample Options button.

The following options should selected and sent to the MIT.

Compression Mode = Absolute (12 bit), although this is a user choice.

Sample Type= On Demand

Sample Rate = 20 or 50 ms (again a user choice).

Send the command to the MIT, if the command is sent successfully the Command window will increment the command and response counters.

NOTE: If testing in the shop it might be worth changing the Memory size to 2MB prior to programming the tool (Edit menu). This will save time but REMEMBER TO CORRECT IT BEFORE GOING ON A JOB.

Program the tool using the toolbar option.

Monitoring the tool, or run the job

To monitor the tool, select the Monitor toolbar option (Warrior MUST be open with the correct service). The Monitor window outputs the MCU voltage, but the tool readings are sent directly to Warrior and can be view in Warrior in the View Outputs window.

As UW Memlog is transmitting the data directly to Warrior, the calibrations can be performed if required. Use the standard Warrior calibration routines.

Remember if you perform a new calibration it is recommended that you recreate the UW Memlog project files.

#### 31.4.4 Download the tool

Download the tool using the toolbar option. It is recommended that all the errors are viewed, and the user look at the UWstats text file. It will report any errors on each of the UW addresses and is a useful diagnostic tool.

31.4.5 Visual Merge the depth and tool data

Note: I have not gone into the DTR download and setup as this is identical to the old Memlog.

Visual Merge is also pretty much the same as the previous version, although UW Memlog only uses raw memory data, so the plotted data is all raw values.

The depth and tool data should be tied-in as usual and all passes picked and saved to file.

#### 31.4.6 Output passes

UW Memlog now only outputs directly to Warrior. Select the passes to output to Warrior and select the options for time based outputs (i.e. fast or slow sampling).

Output the passes, you are prompted for a Warrior database name. Make sure you do not attempt to over write a previously created database. You can append to an existing database, but the pass names must be different.

31.4.7 Recalculating the raw UW Memlog data and creating the curves

UW Memlog outputs a raw data dump into the Warrior database. To extract the curves and apply the calibrations Warrior Recalculation must be used.

Open Warrior Recalculation and select the database you have just output from UW Memlog. Enter a name for the recalculated pass and select OK.

At this point, if an MIT or CAT is in the tool string the user is prompted to use either current or embedded calibration files. I recommend using the current files (taken from the Warrior database).

Next it is possible to configure the tools, i.e. for the MIT the user can select whether to centralize or temperature-compensate the data. The zoned variables can also be altered at this point.

Now select the maximum speed option and the calibrated curve data is plotted and is ready to use.

It is possible to recalculate the raw data as often as necessary should any changes need to be made.

31.4.8 Extras

There is a Calibration Pass option in UW Memlog; this can be found on the tool bar. This looks like the Visual Merge window and you select a calibration pass in the same way you would pick a log pass. Once a calibration pass is selected it can be sent to Warrior using the option in the File menu.

If calibration data has been recorded to memory this is the way to pass it to Warrior.

When the data is being passed to Warrior a cursor scrolls across the screen to show which data is being sent. In the Warrior Output Monitors the user can view the data, and the calibrations can be performed in the standard way.

Remember after performing calibrations it is recommended the service information in the UW Memlog project be updated.



# 32 Noise Log

### 32.1 Services - Noise Survey

The signals from the noise tool are conditioned by filters and amplifiers on the ANASW board and routed to the AUDIO board. The AUDIO board produces 4 separate signals that are then sent to the DSPAUX and DSP for digitizing. The signal is amplified by the 4 stages of the Audio board so that each output is gained up by a factor of ten from the previous stage. The Warrior software examines the 4 signals and chooses the signal that is not saturated and with enough signal strength to analyze. This signal is digitally filtered in the computer and divided into the conventional frequency components. The frequency spectrum and raw and filtered signals may be monitored on the computer screen. Several samples may be averaged to produce a station reading for a given depth. The averaged frequency spectrum may be monitored on the computer screen.

Start the service from Services in the normal manner and power the downhole tool. A raw data monitor window is presented which has four signal displays corresponding to the conventional four peak to peak voltage ranges.

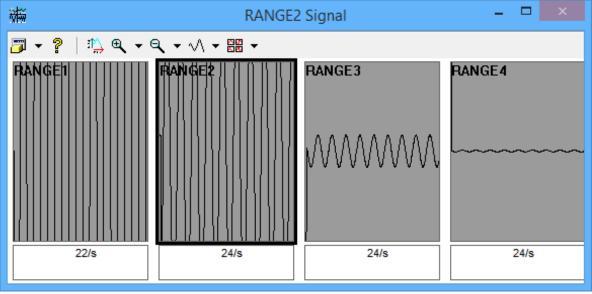


FIG: 32.1 Range Signals

The usual range of options associated with waveform monitors is available for this display. During operation the system automatically selects the most appropriate range for data collection.

The system also displays a window displaying the processed waveforms and frequency spectra. The survey is also controlled from this window. The settings that are used for sampling stations are controlled by clicking the [Settings] button. There is also a "Record Soundfile" checkbox that when checked will make a WAV recording after the data has been sampled.

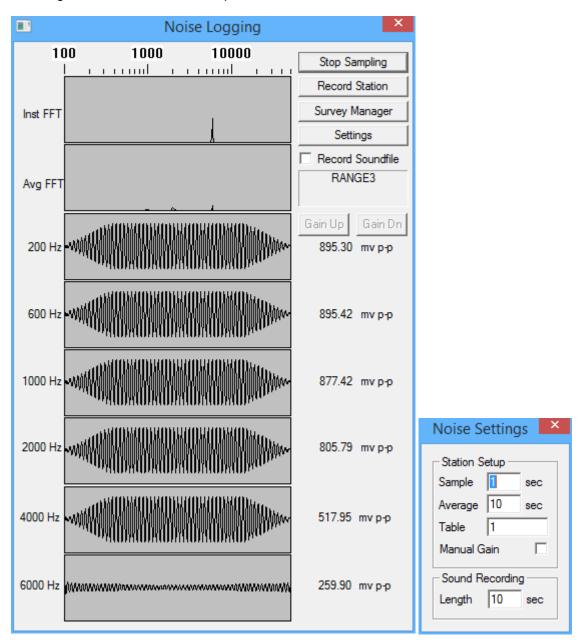


FIG: 32.2 Noise Logging Control

## 32.2 To run the survey

Click on the [Start Sampling] button and signals should appear in the various windows. To record a station, click on the [Record Station] button. With the parameters shown the system will take ten one second samples, average the results and record them as a depth station in a survey table.

To view the survey table, click on the [Survey Manager] button. As each depth station is recorded the results are entered the survey table as shown.

÷8	field/well/run1/_	noise_/_survtabl_/1	😂 – 🗆 🗙
File			
Open Edit	Generate Save	Sound FFT	Exit
# Depth 200hz	600hz 1000hz 2000hz 4000	hz 6000hz Sound	Date
+ 6 4000.00 4937.44	4937.24 4937.76 4938.32 4938.		n 23 11:48:14 2015
+ 5 5000.00 4217.45	4218.42 4217.62 4217.91 4217.		n 23 11:47:12 2015
+ 4 5000.00 2681.44	2680.15 2680.35 2680.65 2680.		n 23 11:46:41 2015
+ 3 6000.00 1508.81 + 2 7000.00 517.28	1509.25 1509.56 1509.42 1510. 517.61 517.59 517.58 517.8		n 23 11:46:04 2015 n 23 11:44:57 2015
+ 1 8000.00 1377.39	1377.37 1377.34 1376.56 1376.		n 23 11:44:57 2015 n 23 11:44:10 2015

FIG: 32.3 Survey Manager

After all stations have been recorded the survey may be output as log curves and/or tabular results. If there are stations which need to be excluded from the results this may be achieved by selecting the station in the survey table (by clicking anywhere in its line) and then clicking the Disabled box as shown below.

	Edit Noise Survey S	tation	×
Station Type Station #	Noise Survey 4, is shown as 3	-	OK Cancel
Comment Depth I Disabled	5000.00	ft	
200 hz 600 hz 1000 hz 2000 hz 4000 hz 6000 hz	2681.44         mV           2680.15         mV           2680.35         mV           2680.65         mV           2680.18         mV		

FIG: 32.4 Edit Survey Station

	Generate Depth Log:	×
Destination — Database Dataset Format	c:\programdata\warrior\data\jan23 2015.db field/well/run1/_dlog1_ NOISE	
Auto Merge	Add Remove	OK Cancel

Clicking on the Generate button and Depth Log displays the window shown below.

#### FIG: 32.5 Depth Log Format

The cryptic Dataset entry simply indicates what the resulting merged and interpolated log will be called. If a logarithmic display of the data is required, then the Logarithmic Interpolation box must be checked. In this case the log presentation used must specify a logarithmic grid and a logarithmic curve.

Note that other curves e.g. CCL, may be easily merged with the noise curves using the Auto Merge feature. Clicking the Add button displays a list of the other curves present in the current database. At present it is not possible to merge curves from other databases by this method. Aliasing may be used to achieve this if required.

	Auto Merge		x
Current Database Current Dataset	c:\programdata\warrior\data\jan23 2015.db /field/well/run1/pass3/_calrep_		-
field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3	/_logform_ /_defaults_ /_vars_	☐ Verbose	
/field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3	_vars		
/field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3 /field/well/run1/pass3	/_vars /_service /_dosfile/ /CCL		
/field/well/run 1/pass3 /field/well/run 1/pass3 /field/well/run 1/pass3 /field/well/run 1/pass3 /field/well/run 1/pass3 /field/well/nun 1/pass3	/TEMP /HVOLTA /MINMK /ADPTH /FI TIM	OK	]
] <	>	Cancer	

FIG: 32.6 Select Data set Auto merge

	Generate Depth Log:		X
Destination –	c:\programdata\warrior\data\jan23 2015.db		
Dataset			
Format			
	: interpolation un1/pass3/CCL un1/pass3/TEMP Add Remove	Oł	

Fig. 32.7 Curves added to Depth pass to be generated

Double click on the curve(s) to be merged with the noise data. To generate the merged presentation, click on the **OK** button and the merged log will be displayed on the screen. With long log intervals this may take several seconds.

Note that a merged presentation may be generated at any time in order to monitor the progress of the survey, e.g. after each depth station if required.

For final presentation a tabular output of the survey table may be added to log grid presentation when assembling the final plot using the Plot Job Editor.

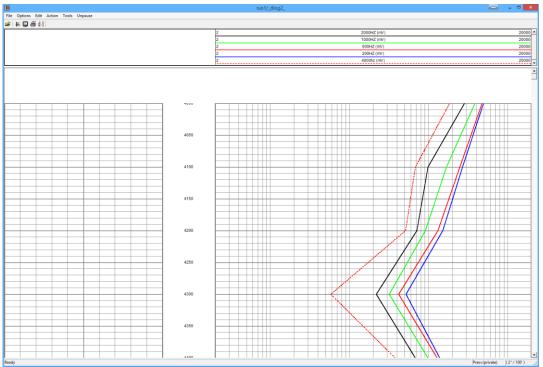


Fig. 32.8 Example Noise Log output

# Section 33

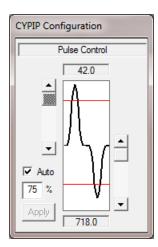
# **33 Pulse Interface Panel**

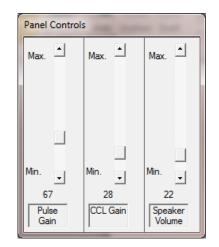
#### **Pulse Interface Panel**

(PIP System) Operating Procedures

The Pulse Interface panel has much of the same functionality of a standard panel but is limited to being able to process one positive pulse, one negative pulse, and an analog CCL. While the standard interface panel has a digital signal processor capable of digitizing and displaying line signals for visually adjusting pulse discriminators, the PIP does not have these capabilities.

The Pulse Interface Panel has peak detection circuitry. What is shown in the CYPIP Configuration Pulse Control window is a representation of the positive and negative peaks that are being detected, not the actual pulses. The Pulse Gain in the Panel Controls window should be adjusted so that the peaks of the pulses are in the window, but large enough to allow easy discrimination. The peak detection circuitry has a very long time constant. Thus, when adjusting the panel controls Pulse Gain to set the pulse height in the "pulse" window, allow enough time for the detected pulse peaks to respond. Fig 33.1 Panel Controls





Discrimination of pulse is accomplished through hardware comparators and counters. Since the peak signal levels have been detected by the hardware, the software can set the discrimination levels for the pulses to be a percentage of the peak level. This is accomplished by checking the "Auto" box in the Pulse Control window and setting the percentage in the "%" box.

The alternative method of setting the discriminator levels is by manual control. If the "Auto" box is not checked, then the slider bars to each side of the "pulse" window control the discrimination levels that are sent to the comparators.

Another difference in the Pulse Interface Panel and a standard panel is the way that periodic pulses are handled. Periodic pulses are pulse that have essentially the same time between pulses though the time between pulses may vary. If only pulses are counted there is always a variance of  $\pm$  1 count per second. These are tools such as temperatures and calipers.

In the standard panel with the appropriate DSP script, essentially the time between pulses is measured. This time is then converted to counts per second with fractional accuracy. The pulse interface panel has phase locked loop voltage controled oscillator circuits to multiple the number of counts by a scalar set in the hardware and confirmed in the software. After the pulses are counted, the software divides the scalar back out to give fractional counts per second to increase accuracy.

To implement whether the raw counts or the counts from the PLL are used, the services.ini file needs to be modified through the Service Editor. Go to the Service Editor and click on the service that will have periodic pulses. In the Devices section, after the Base device, you can add either multiply+, multiply-, or both as shown below to choose which pulse or pulses you wish to process as a periodic measurement. DO NOT use this method with random or non-periodic pulses as this will cause drastically incorrects counts for that sensor.

😰 Services Editor - PPAB						
<u>File Service Add Edit Delete H</u> elp						
🗃 🖬   🗋 🕲 🦻 🚯 🧭 🖌 🔒 🛠 🗌						
Services         Active         None         Shooting Collars         Gamma-Collars (GR Positive)         Gamma-Neutron-Collars (GR Positive)         Multiam Caliper (MIN Positive)         X-Y Caliper (XCAL Positive)         Temperature Log (Neg Temp Pulses)         Radioactive Tracer (DET Positive)         PIP - X-Y Caliper	PIP - X-Y Caliper         Presentation       Xyc.prs         Title         Image: State of the service available for perforating         Devices         Device1=BASE.20,multiply+,multiply-         Device2=AUX,20					
Disabled		Tools bl1=STD bl2=XYC;serial=SDSDEMO				
Selected services have been imported						

Fig 33.2 Service Editor for Periodic Pulse

# **34 SERMON and ASCTEL**

The Warrior software can send any data output through a COM Port as serial ASCII data so that the information that can then be made available to external computers or displays by use of the SERMON device module. ASCII data may also be imported through the ASCTEL device module to use as any sensor data input.

## 34.1 Sermon Device

To export serial data through Sermon, in the Database Utilities, click on [Edit Logging Service Details] to bring up the Service Editor. The current software supports two Sermon outputs, Sermon and Sermon2. In any service that the User desires, a new device can be added.

The example shown in Fig. 34.1 shows a typical Sermon device setup. Note that the 10 that would usually be the maximum rate of the device, is only a place holder. The output rate is set up in the Device configuration.



Fig 34.1 Sermon Device outputting Depth, Tool Voltage, and Elapsed Time

Often when the service with the Sermon outputs is first loaded, an error message will appear that indicates that Sermon failed to open a COM port. The COM port first must be configured by clicking on Edit -> Device Configuration -> Sermon from the Acquisition window. There are drop down lists to choose from the available Com Ports that the software has found on the computer and to select the transmission baud rate. There are several different types of serial outputs that can be chosen with standard being the most commonly used. Normally the continuous box is checked to have data continuously sent out. The rate is determined by the Repeat setting with 100 being 10 times per second and 10000 being once every 10 seconds.

	Sermon Configuration
SerMon	Comm Port COM5
Sermon failed to open port COM4	Type Standard  Continuous TX Continuous IV
ОК	Repeat (mS) 10 (100 - 10000 mS)

Fig 34.2 Sermon port failed to initialize and Sermon COM port settings.

# 34.2 ASCTEL Device

The ASCTEL device allows the User to bring in serial ASCII data and assign it as a sensor data source. Up to 10 sensors may be brought in through the ASCTEL device. The current software supports two ASTEL inputs, ASCTEL and ASCTEL2. The ASCTEL device has several additional parameters in the declaration. The third parameter in the declaration is the format of the data coming from the COM port (ifs is shown in fig. 43.3). The fourth parameter allows the User to specify the number of data inputs received by the ASCTEL device (shown as "n=8" for 8 inputs). You can send receive depth via ASCTEL by adding depth to the command line.

Edit device			$\times$
Device3=ASCTEL,1	0,ifs,DEPTH=1,n=	:8	
	ОК	Cancel	

Fig. 34.3 ASCTEL entered as a device in the Service Editor

Like Sermon, the ASCTEL device can be configured by entering the service and Edit -> Device Configuration -> ASCTEL. The User can select from a dropdown list of available import types, select the COM Port, and a timeout period

Warrior ASCII Device Interface		Device	: ASCTEL 🗕 🗖 🗙
Type     IFS     OK       Comm Port     COM5     ✓       Timeout (mS)     1500	Source ASCTEL-1 ASCTEL-2 ASCTEL-3 ASCTEL-4 ASCTEL-5 ASCTEL-6 ASCTEL-7 ASCTEL-7 ASCTEL-8 ASCTEL-9 ASCTEL-10	Name IFS1 IFS2 IFS3 IFS4 IFS5 IFS6 IFS7 IFS8 IFS9 IFS10	Value         Units           0.0000         0.0000           0.0000         0.0000           0.0000         0.0000           0.0000         0.0000           0.0000         0.0000           0.0000         0.0000           0.0000         0.0000           0.0000         0.0000           0.0000         0.0000

Fig. 34.4 ASCTEL COM Port settings and Monitor -> Device -> ASCTEL

Any tool sensor may now use the ASCTEL inputs as sensor data. The sensor references the device and the device channel in the normal manner. The sensor must be a valid sensor from a tool in the tool string to be available.

	Edit sensor	×
Sensor	WHP1=ASCTEL 1	
	OK Cancel	

Fig. 34.5 WHP1 sensor from ASCTEL Device channel 1

For CPFF panels there are two 9 pin RS232 ports on the rear plate and two RS485 ports " both of these are on the same 9 pin connector. The ports appear as:

WWSA_STIP_A	
WWSA_STIP_B	
WWSA_STIP_C	
WWSA_STIP_D	

Bottom RS232 1st RS485 pins 1&2 Top RS232 2<sup>nd</sup> RS485 pins 6&7

# Appendix

Appendix 1 Requirements for Addressable Switches

Required wiring for TELA HR5

CC1-11 to CC14-35

If wire present from CC13-36 to CC14-35 it may be removed.

CC1-16 to CC6-16

CC1-17 to CC6-17

Recommended ANASW R15 or R16 Mod



Apendix 1.0.1 ANASW R15 or R16

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