Section 4

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.

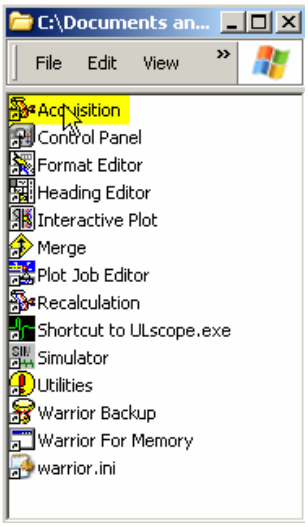


FIG: 4.1 Acquisition

Warning! 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 whilst 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 Depth Control

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

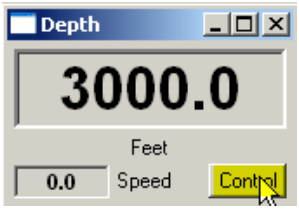


FIG: 4.2 Depth Display

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: 4.2. Enter the current depth in the **New Depth** field and click on **Apply** (or hit **Enter**). To configure the Depth Control, click on the **Config** button to access the Parameters and Alarms menu Fig: 4.5. The **Depth Panel** setting should normally be left at **None**; it is only used when there is a stand-alone depth system.

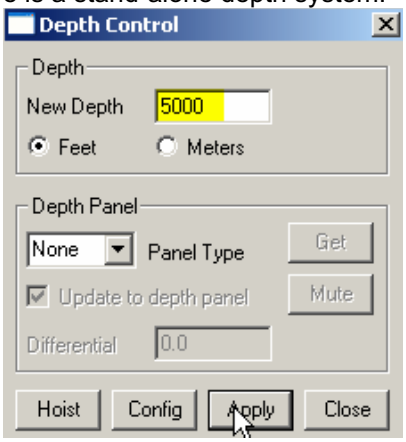


FIG: 4.3 Depth Control

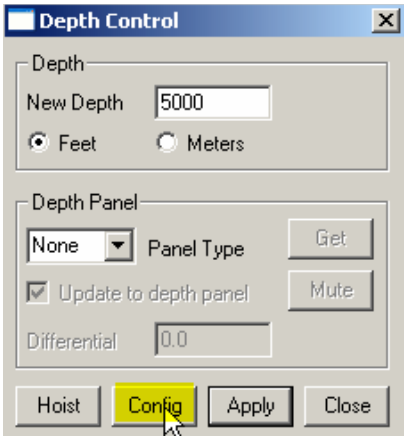


FIG: 4.4 Depth Control Configurations.

The Depth Configuration window enables selection of the depth source from an encoder input or a simulated depth input generated from within the software. The measuring wheel correction, the encoder characteristics, nominal wheel size, and encoder direction are entered from this dialog box. The simulated encoder speed and direction are adjusted using the slider bar and radio buttons.
Parameters in green Hi-Liter for the Scientific Data Systems Depth, Tension, and Line Speed panel (if it installed) may also be entered or read.
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 system maintains the encoder depth and the simulated depth separately, and keeps them updated. It is therefore possible to switch to simulated depth while the encoder is turning, perform some operation, and then return to the encoder depth, which will be updated and accurate. The Alarms set the values and tolerance to active the alarm, if the box is check. Reverse set the encoder direction (Up/Down) in the computer.

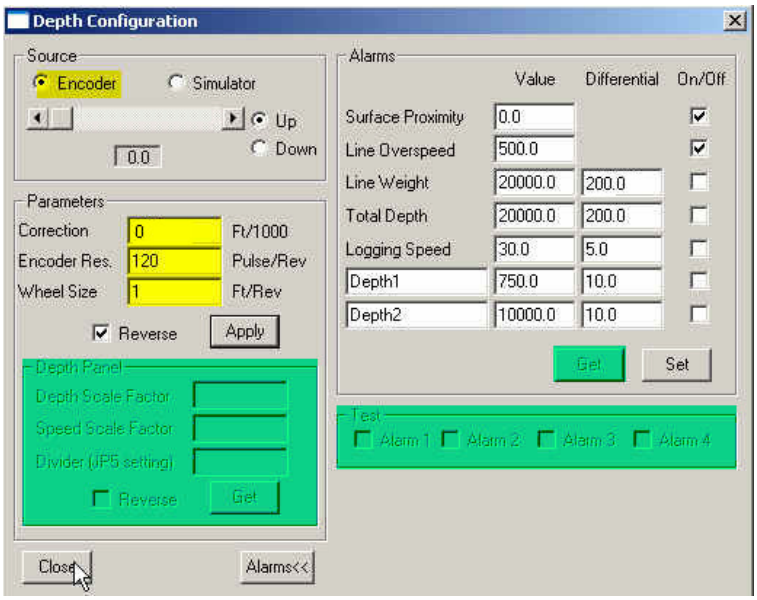


FIG: 4.5 Depth Configuration

Scientific Data Systems Depth, Tension, and Line Speed panel is connecting in the **USB** port select USB, if there is not panel available select **None** option.

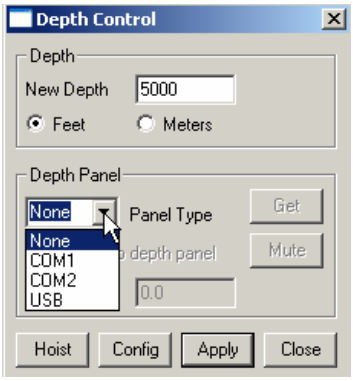


FIG: 4.6 Depth Panel Type

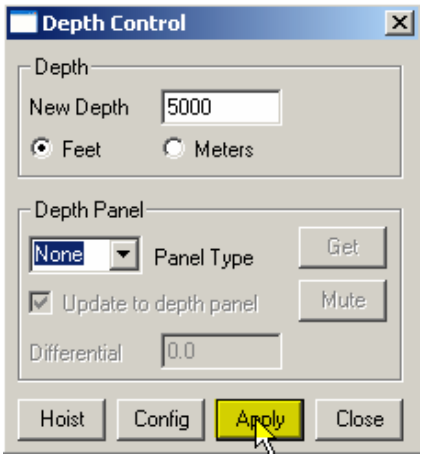


FIG: 4.7 Select Depth Panel.

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 below. Enter the current depth in the New Depth field, and clicks on **Apply** (or hit Enter).

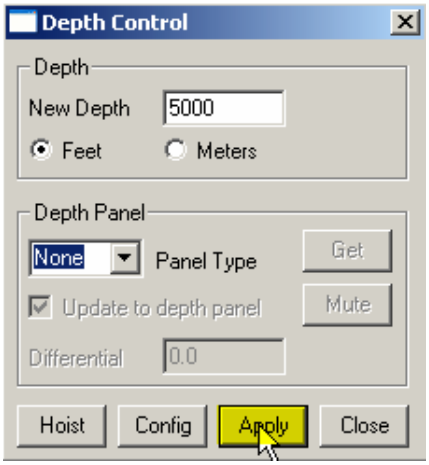


FIG: 4.8 Apply to Set Depth

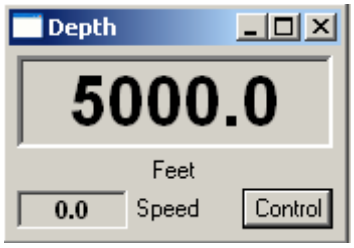


FIG: 4.9 Set Depth

4.2 File

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

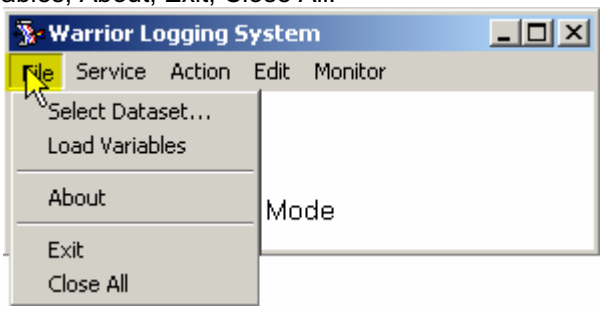


FIG: 4.10 File Options.

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.

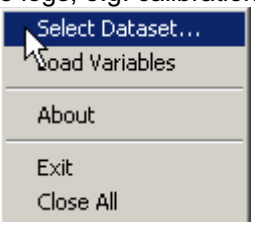


FIG: 4.11 Select Dataset.

The system requires a DOS filename 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.

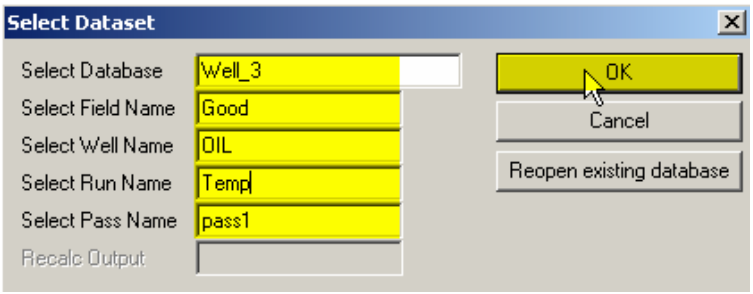


FIG: 4.12 Select Dataset

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**.

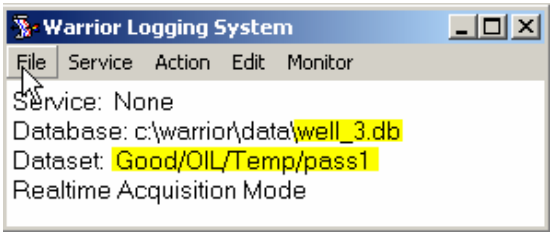


FIG: 4.13 Dataset Values

Warning!

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
Special characters: **$ % ' - _ @ ~ ` ! ( ) ^ # & + , ; = [ ]**
Lengths of the file names are limited to 255 characters (260 for full paths).

The user may choose to store all data from a particular 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 backup the data to tape before leaving the wellsite.
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 every time. Load Variables the other Dataset, enabling depth dependent parameters associated with the selected service to be zoned and values to be set.

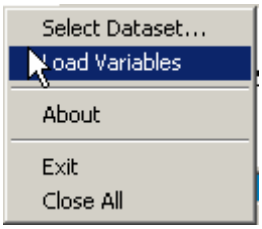


FIG: 4.14 Load Variables

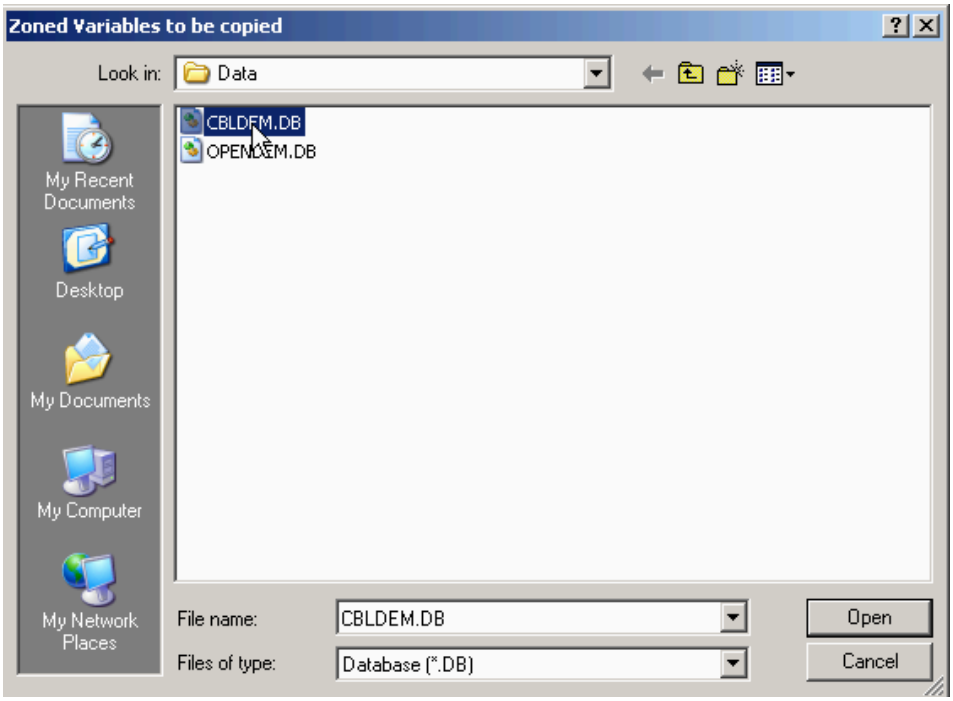


FIG: 4.15 Load Dataset Values

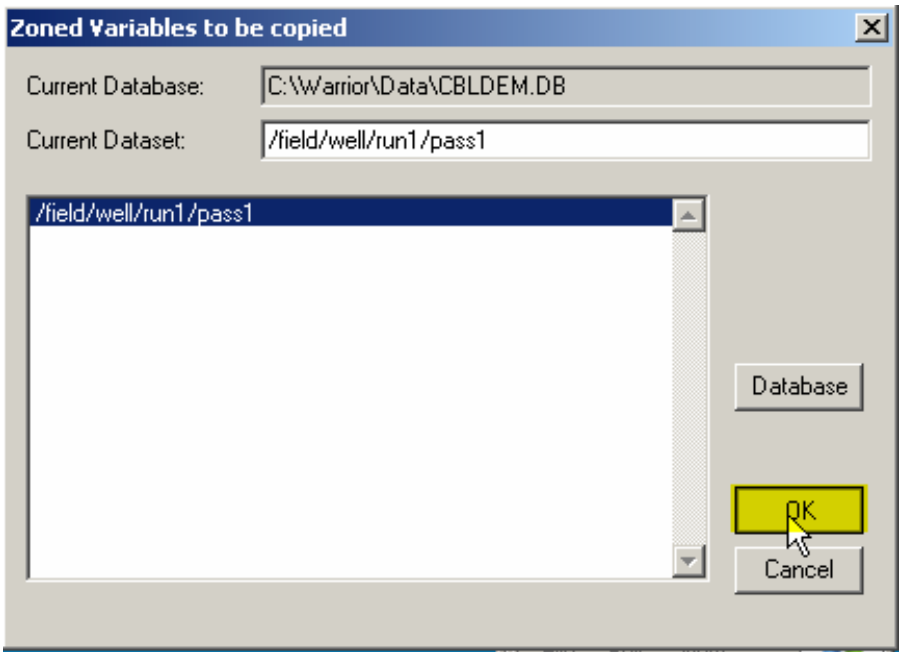


FIG: 4.16 Dataset Values run1/pass1

4.2.3 About

Shows the Software version installed in your computer

FIG: 4.17 Select About

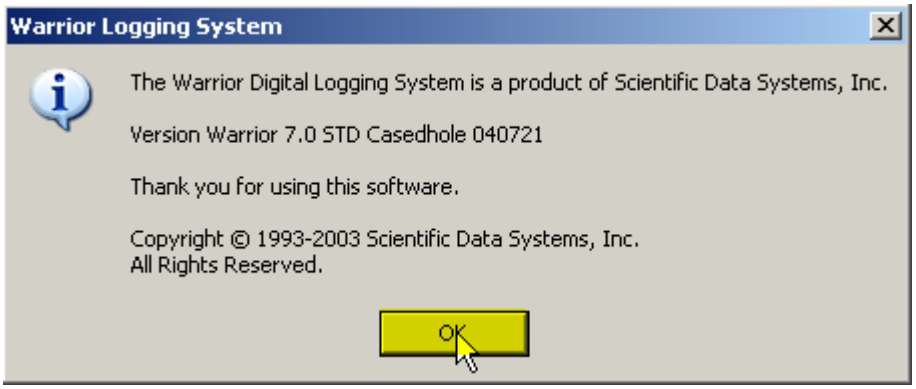


FIG: 4.13 Show the Version Warrior Software

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.

VIDEO: 4.1 File

4.3 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 the service that is loaded by default when the Acquisition module starts and must always be present. As delivered, it contains no tools (except the tool STD that is a dummy tool that must be included in every service). It will display depth, and you can monitor line tension and speed.

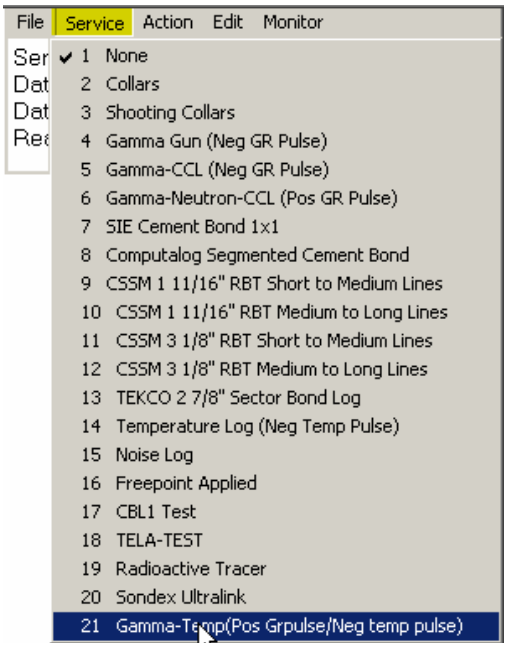


FIG: 4.14 Select Service

The tool string editor will appear. The correct serial number and placement for each tool should be verified. Length, offsets will be calculated and calibrations for the selected tool serial numbers will be loaded. Select **Properties** to go **Tools Editor.**

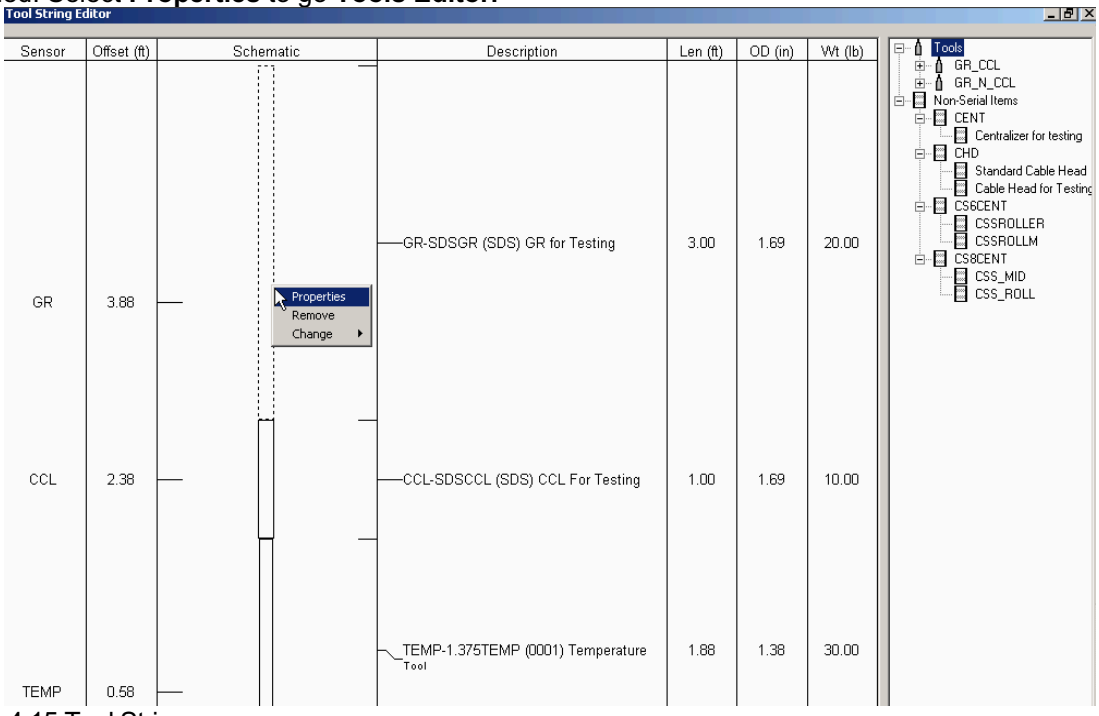


FIG: 4.15 Tool String

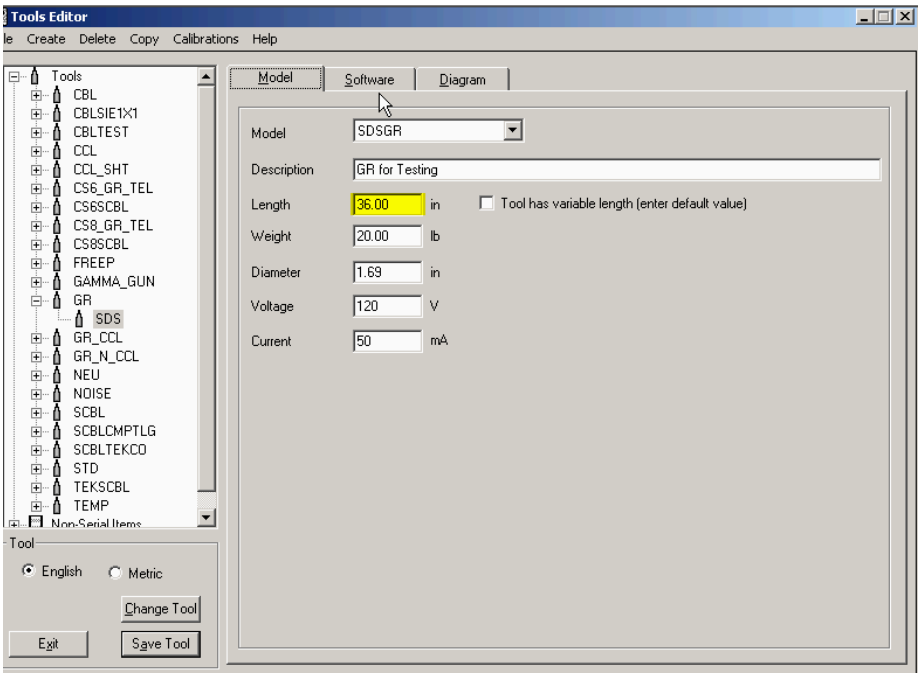


FIG: 4.16 Tools Editor

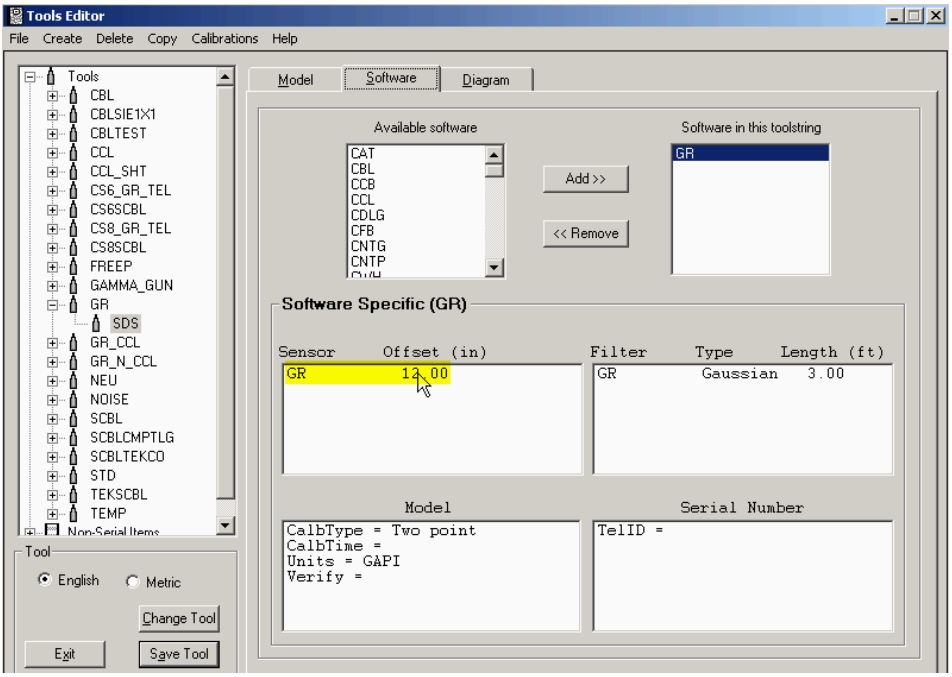
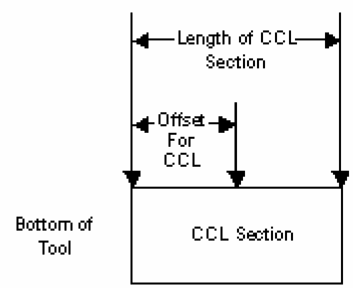


FIG: 4.17 GR Sensor Offset

In the Fig: 4-18, 4-19,4-20, 4-21,and 4-22 show the way to take the tool measure for Length and Offsets

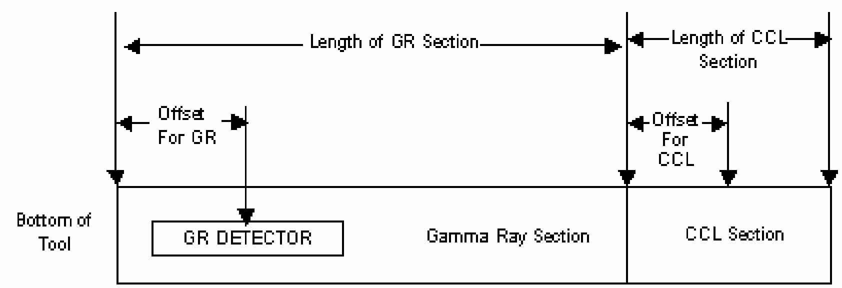
CCL Tools



Model					
Serial Number					
Diameter of Tool					
Length of CCL Section					
Offset For CCL					

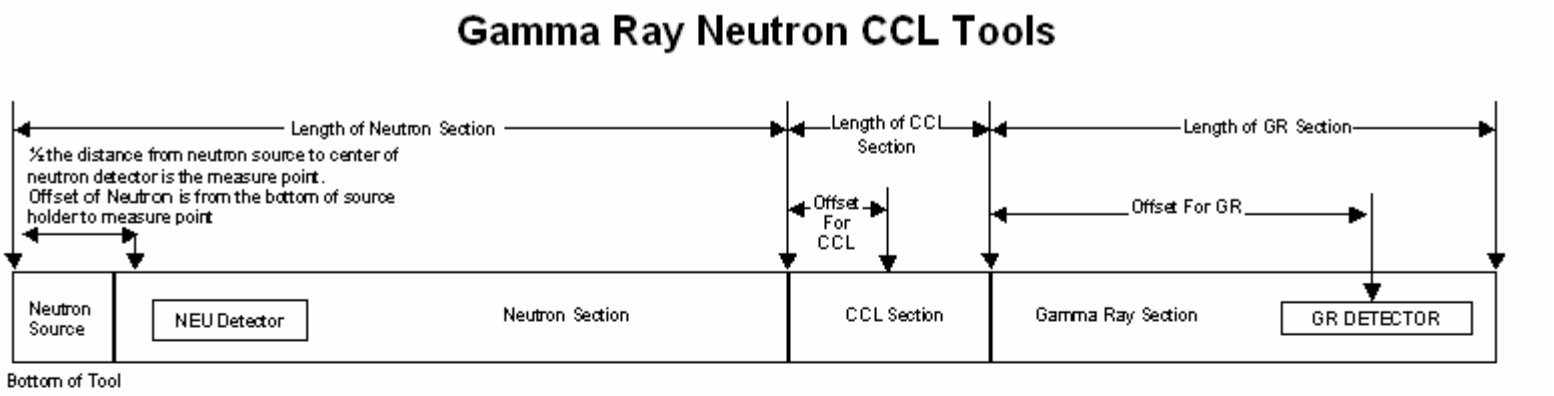
FIG: 4.18 CCL Tool Length and Offset

Gamma Ray CCL Tools



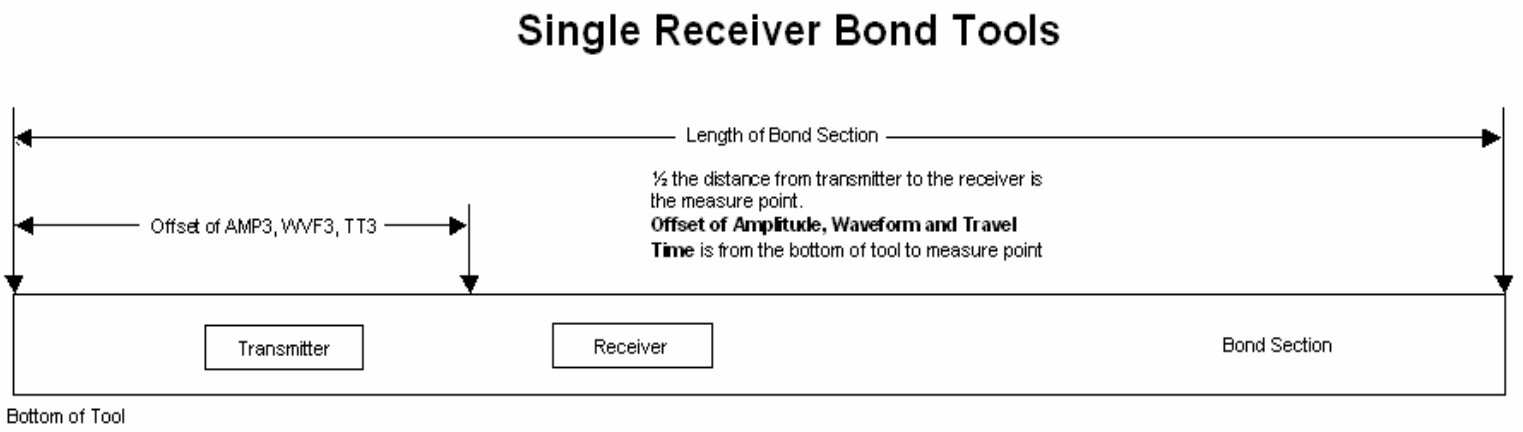
Model					
Serial Number					
Diameter of Tool					
Length of GR Section					
Offset For GR					
Length of CCL Section					
Offset For CCL					

FIG: 4.19 Gamma Ray /CCL Tool Length and Offset



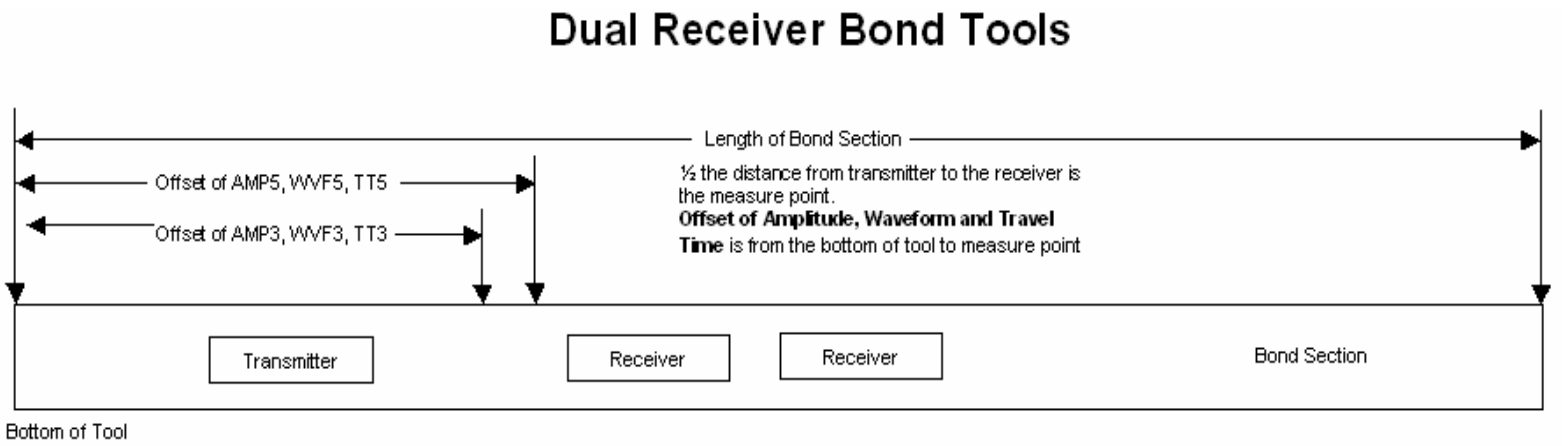
Model					
Serial Number					
Diameter of Tool					
Length of Neutron Section					
Offset For Neutron					
Length of CCL Section					
Offset For CCL					
Length of GR Section					
Offset For GR					

FIG: 4.20 Gamma Ray /Neutron/CCL Tool Length and Offset



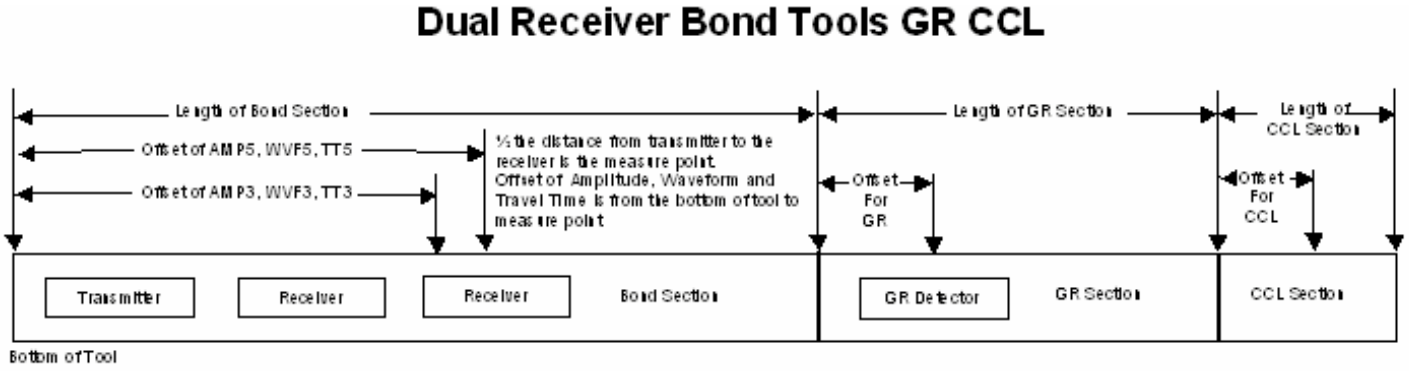
Model					
Serial Number					
Diameter of Tool					
Length of Bond Section					
Offset For AMP3, WVF3, TT3					

FIG: 4.21 Single Receiver Bond Tool Length and Offset



Model					
Serial Number					
Diameter of Tool					
Length of Bond Section					
Offset For AMP3, WVF3, TT3					
Offset For AMP5, WVF5, TT5					

FIG: 4.22 Dual Receiver Bond Tool Length and Offset



Model					
Serial Number					
Diameter of Tool					
Length of Bond Section					
Offset For AMP3, WVF3, TT3					
Offset For AMP5, WVF5, TT5					
Length of GR Section					
Offset For GR					
Length of CCL Section					
Offset For CCL					

FIG: 4.23 Dual Receiver Bond/Gamma Ray/CCL Tool Length and Offset

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

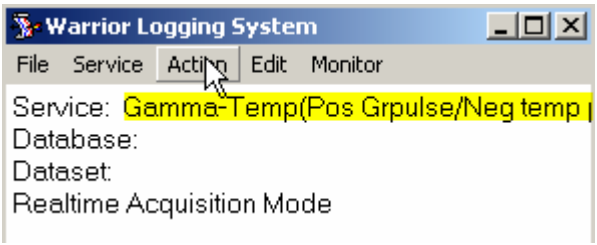


FIG: 4.24 Warrior Logging System

Set the service
Select **Action**

4.4 Action

FIG: 4.25 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 a current must be calibrated.

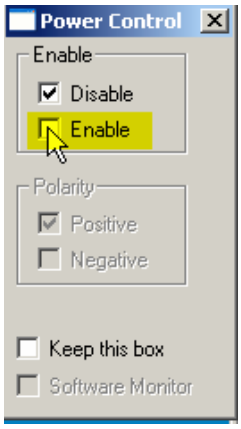
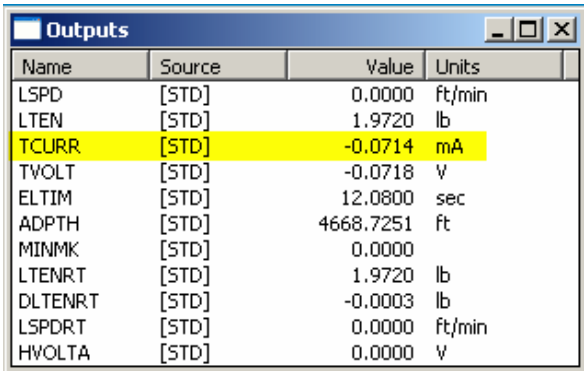


FIG: 4.26 Power Control



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

FIG: 4.27 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 point value (10mA) is set in warrior.ini

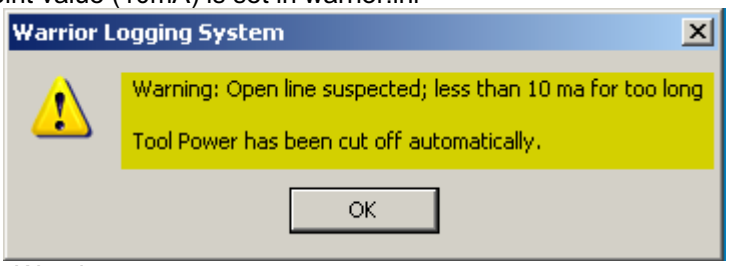


FIG: 4.28 Open Line Warning

Boolean switches (which can be entered as 'true', 'yes' or '1', or, 'false', 'no' or '0'):

NoMonitor= True to completely disable power monitoring)
External= rue will allow monitoring (if TVOLT and/or TCURR are measured), but only pop-up message; no cutoff

Numeric entries:

OverCurrent= Maximum allowable TCURR milliamps, 0 = disable current monitoring.
OverVoltage= Maximum allowable TVOLT volts, 0 = disable voltage monitoring.)
OverDissipation= Maximum allowable TVOLT/TCURR watts, 0 = disable dissipation monitoring.)
ShortVoltage= Minimum TVOLT volts AND

ShortCurrent= Maximum TCURR milliamps for short-circuit detection, either 0 = disable short monitoring)
OpenCurrent= Minimum TCURR milliamps AND
OpenTime= Maximum time interval for open-line detection, either 0 = disable open monitoring)
N.B if supply in NOT external, missing entries will be defaulted to 10 milliamp and/or 15 seconds.

Text entries:

ActionOnTrip= 'Cut' anywhere in the entry causes supply to be turned off, if possible; 'warn' anywhere will cause a message box to pop up.)

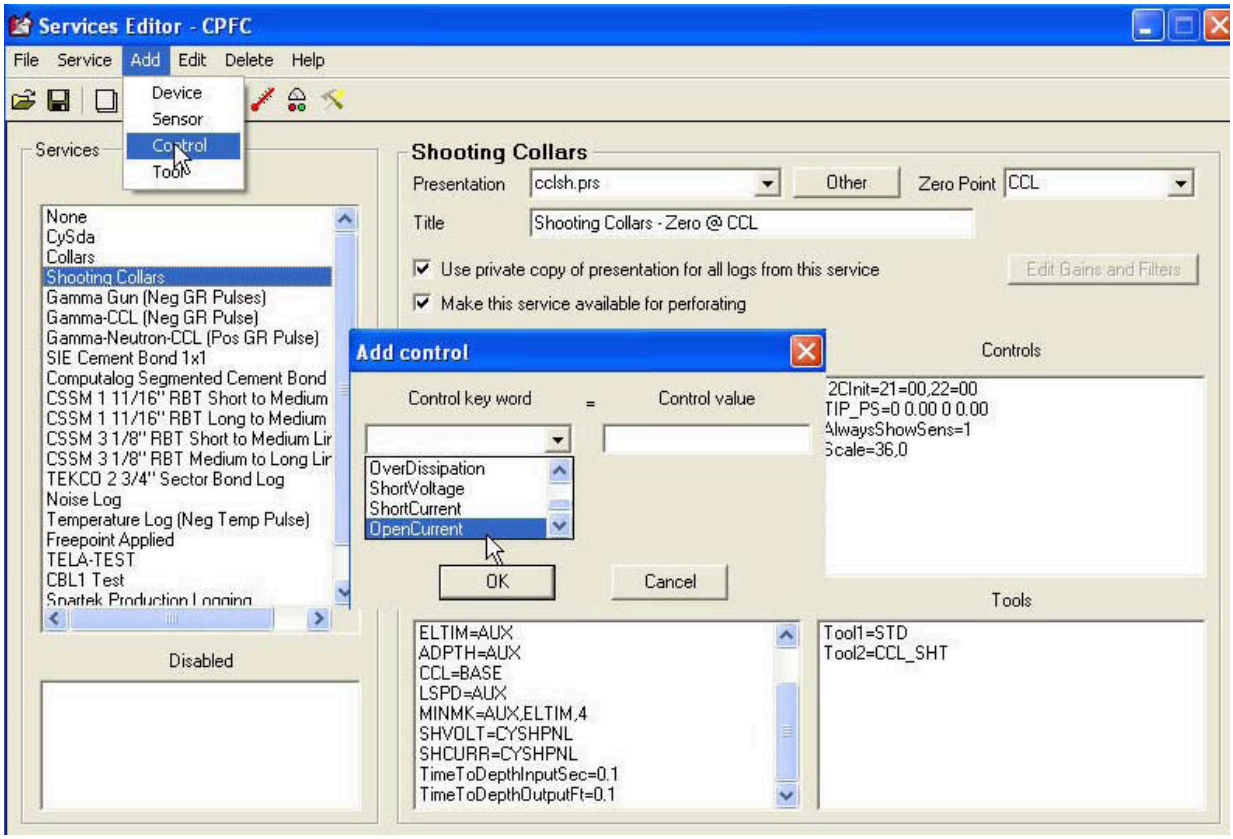


FIG: 4.29 Add Controls

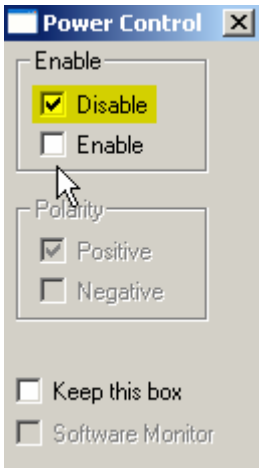


FIG: 4.30 Power Control

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 to ground.
The user may choose to have the Power Control box disappear whenever an action is taken by deselecting **Keep this box**. Otherwise the box will remain until closed by the user in the normal manner.
In order to Enable the software Power Control go to Services Editor, select the service, ADD control, select SoftPowerControl , and Save .

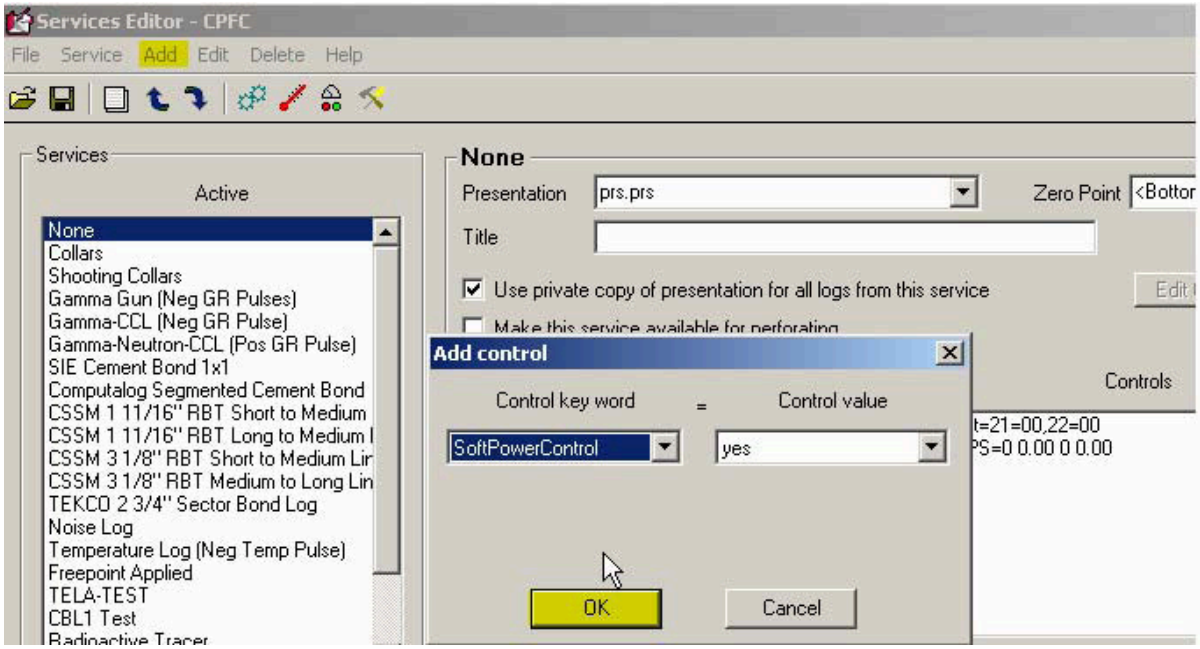


FIG: 4.31 Services Editor

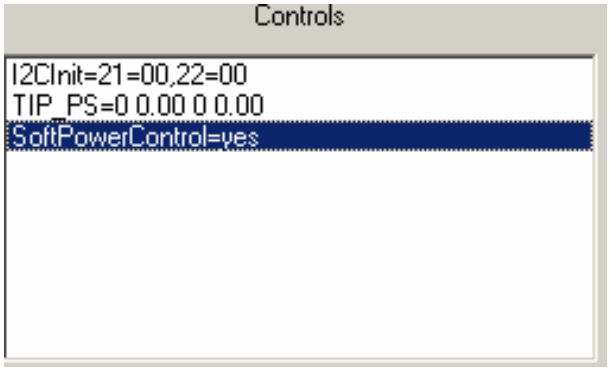


FIG: 4.32 Controls

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.

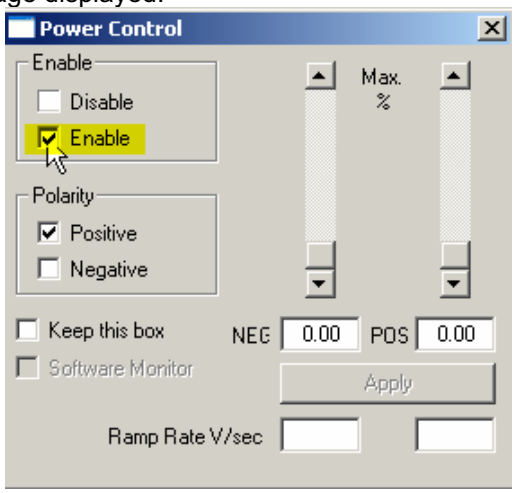


FIG: 4.33 Line Enable

The **Polarity** section of the window controls the polarity of the line voltage with respect to ground. The default is **Positive**. 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 number of 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.
Turn On the switch Tool Power and adjust the tool voltage according to the Tool specification.
If the base line is clean adjust the threshold at 50% of the signal.

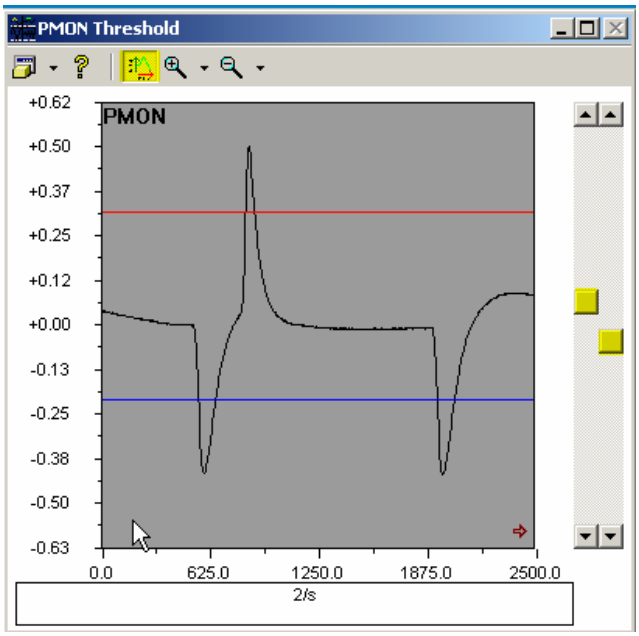


FIG: 4.34 PMON Threshold

Adjust the amplitude of the pulse signal with the Sync Gain Slide bar, and adjust the CCL signal with the CCL Gain Slide bar.

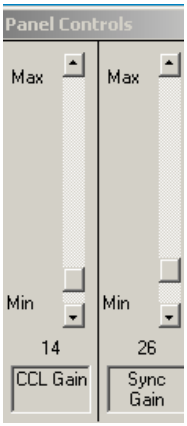


FIG: 4.35 Slide bars Control

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 de log mode to Calibration Mode or reference Mode.

4.4.4 Calibrate

Invokes calibration procedures for particular services.

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 services.
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 centre 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.

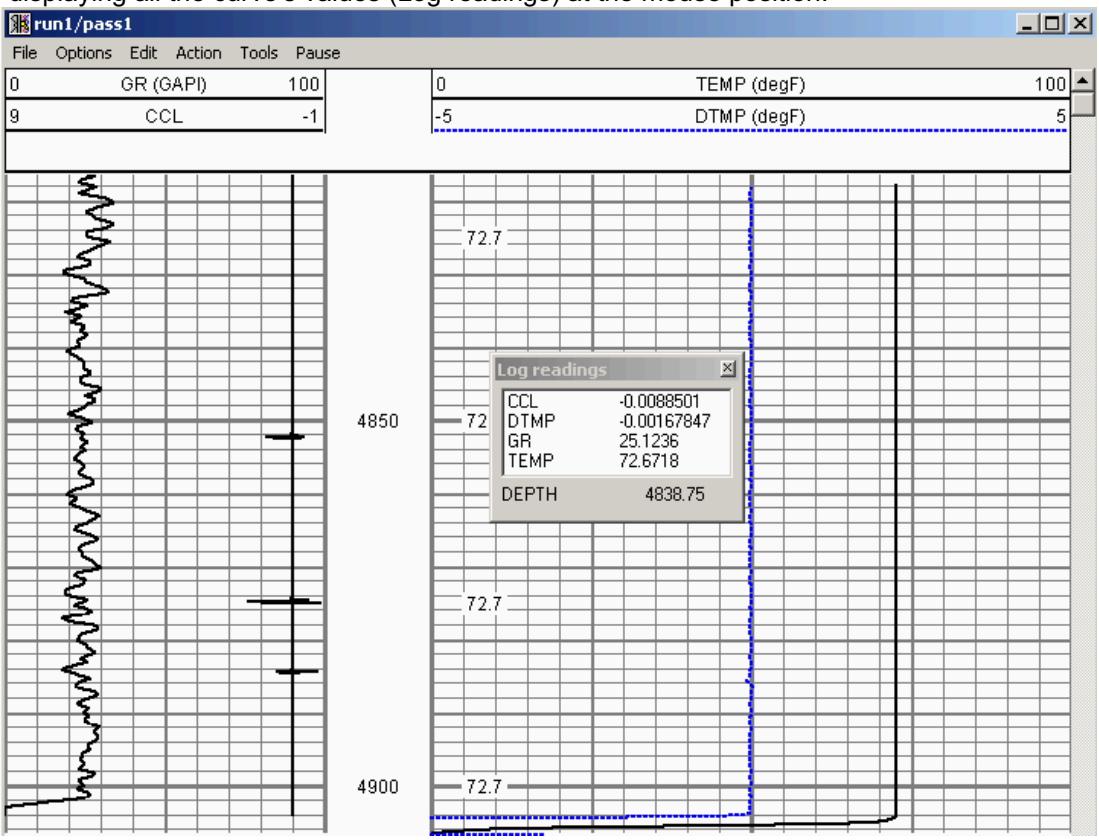


FIG: 4.36 Record Up GR/CCL/TEMP

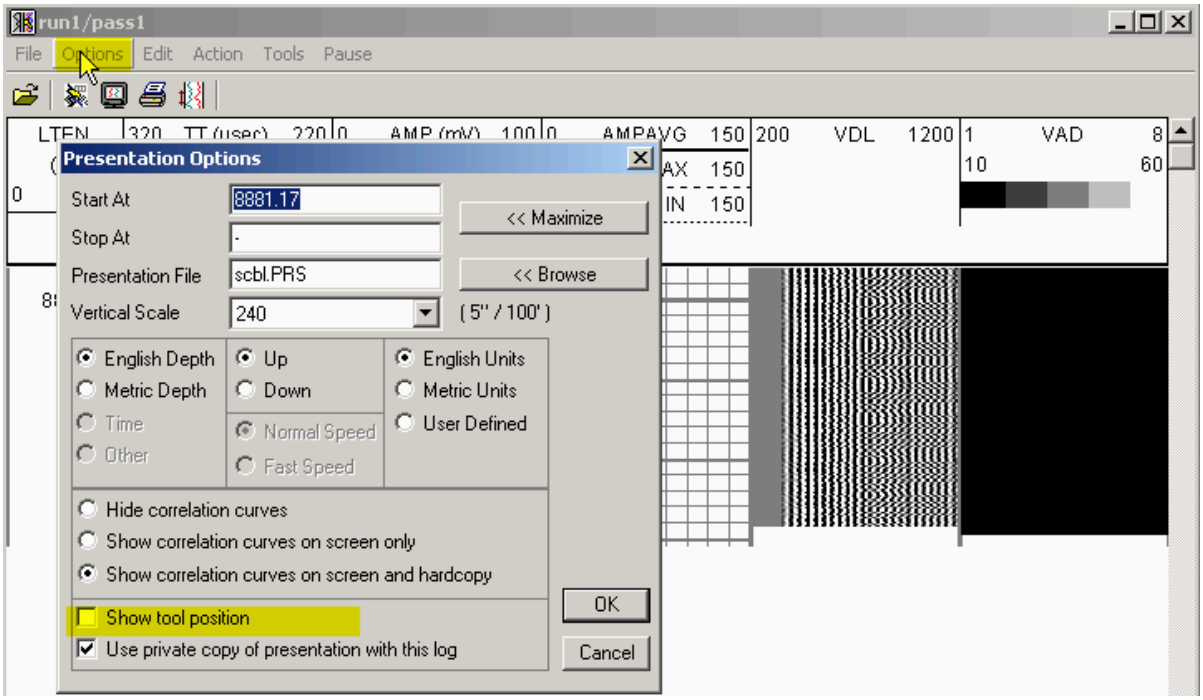


FIG: 4.37 Options

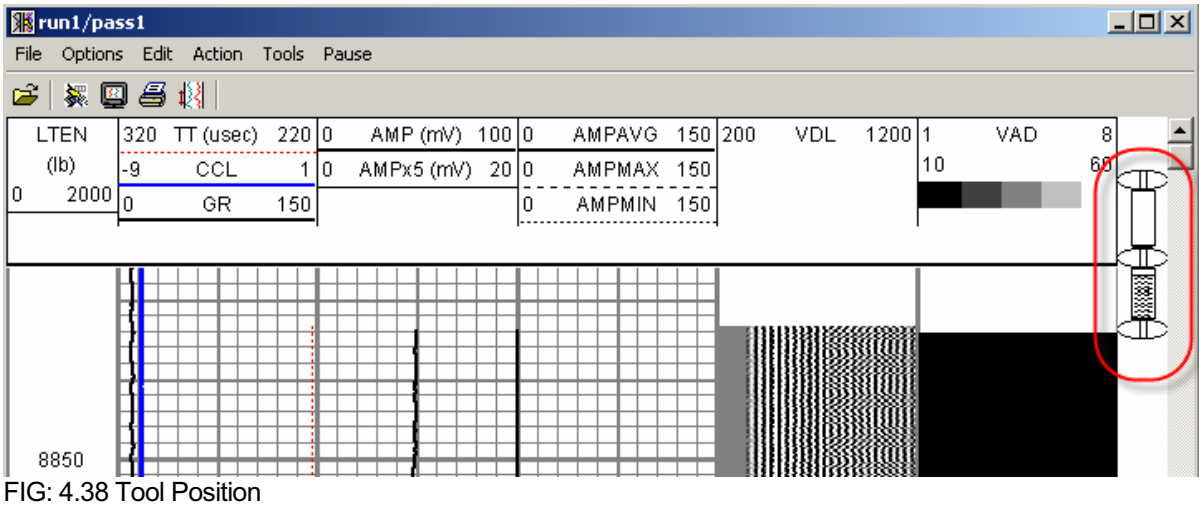


FIG: 4.38 Tool Position

This option show the tool position

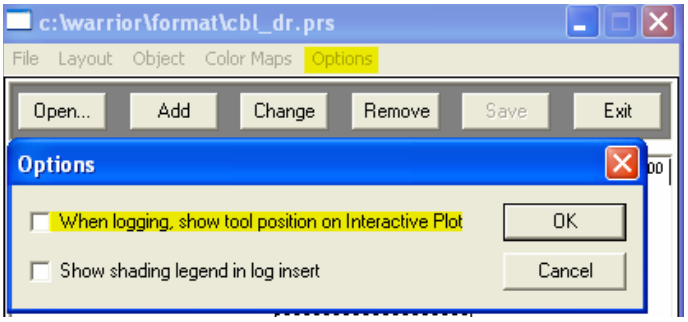


FIG: 4.39 Tool Position ON/OFF

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:4.30 below appears. Or **Apply Linear Depth Shift** function is also available from the **Utilities** program in the Warrior shortcut folder.

FIG: 4.40 Depth Shift

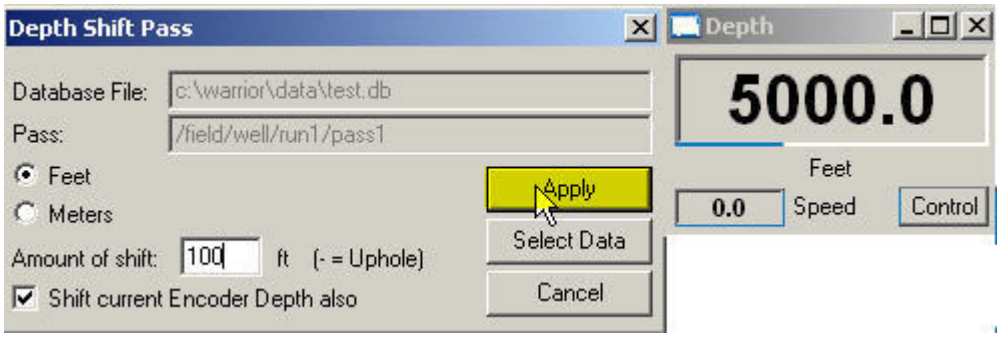


FIG: 4.41 Down Hole Depth Shift 100 ft.

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

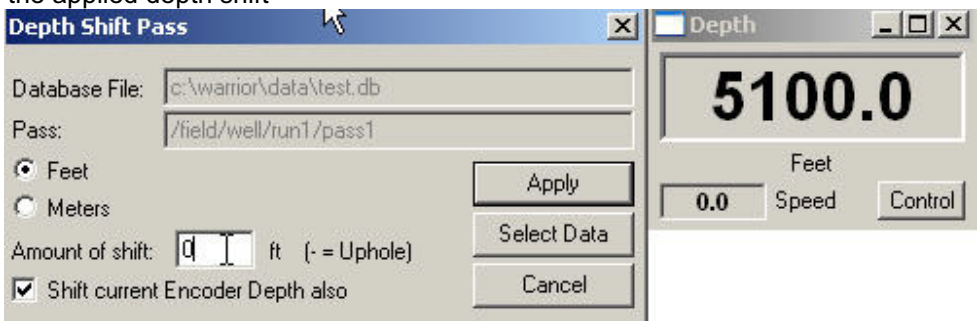


FIG: 4.42 Set Depth Shift 100 ft.

Add 100 Ft.

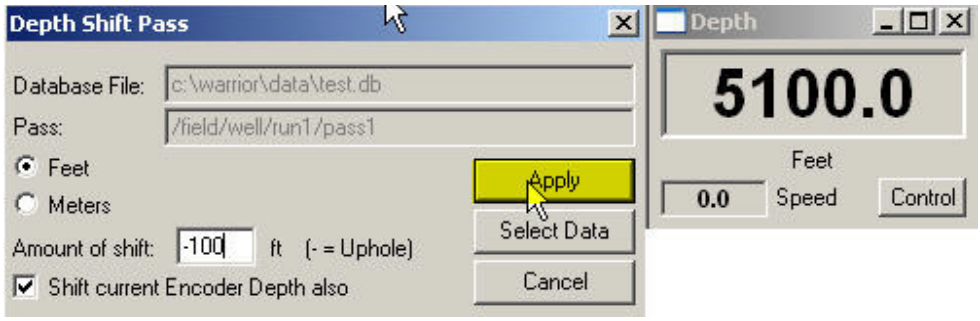


FIG: 4.43 Up Hole Depth Shift -100 ft

Subtract 100 Ft.

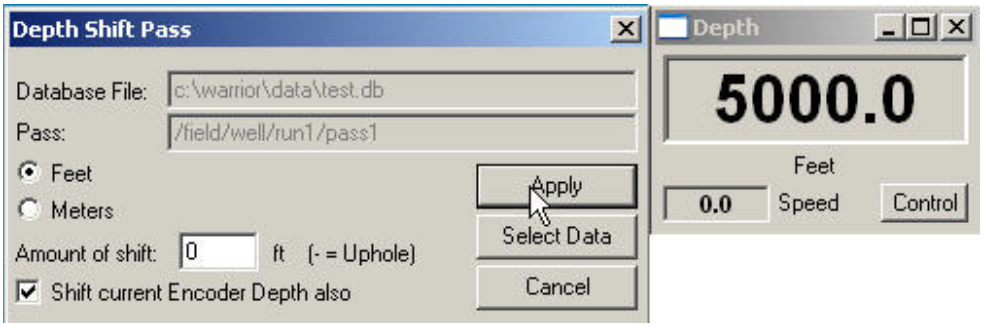


FIG: 4.44 Set Depth Shift -100 ft

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 whilst 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.

VIDEO: 4.2 Depth Shift

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 actually 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.

VIDEO: 4.3 Log Up GR/CCL/TEMP

4.5 Edit

4.5.1 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.

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 and 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 into the tool string with the tool String Editor.

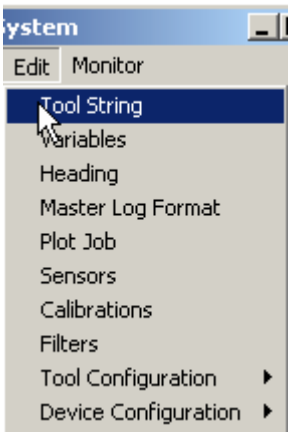


FIG: 4.45 Select Tool String

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**.

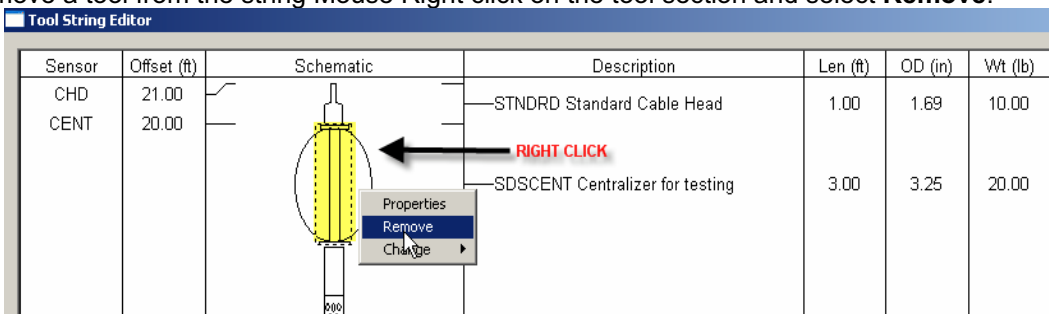


FIG: 4.46 Remove Tool

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.

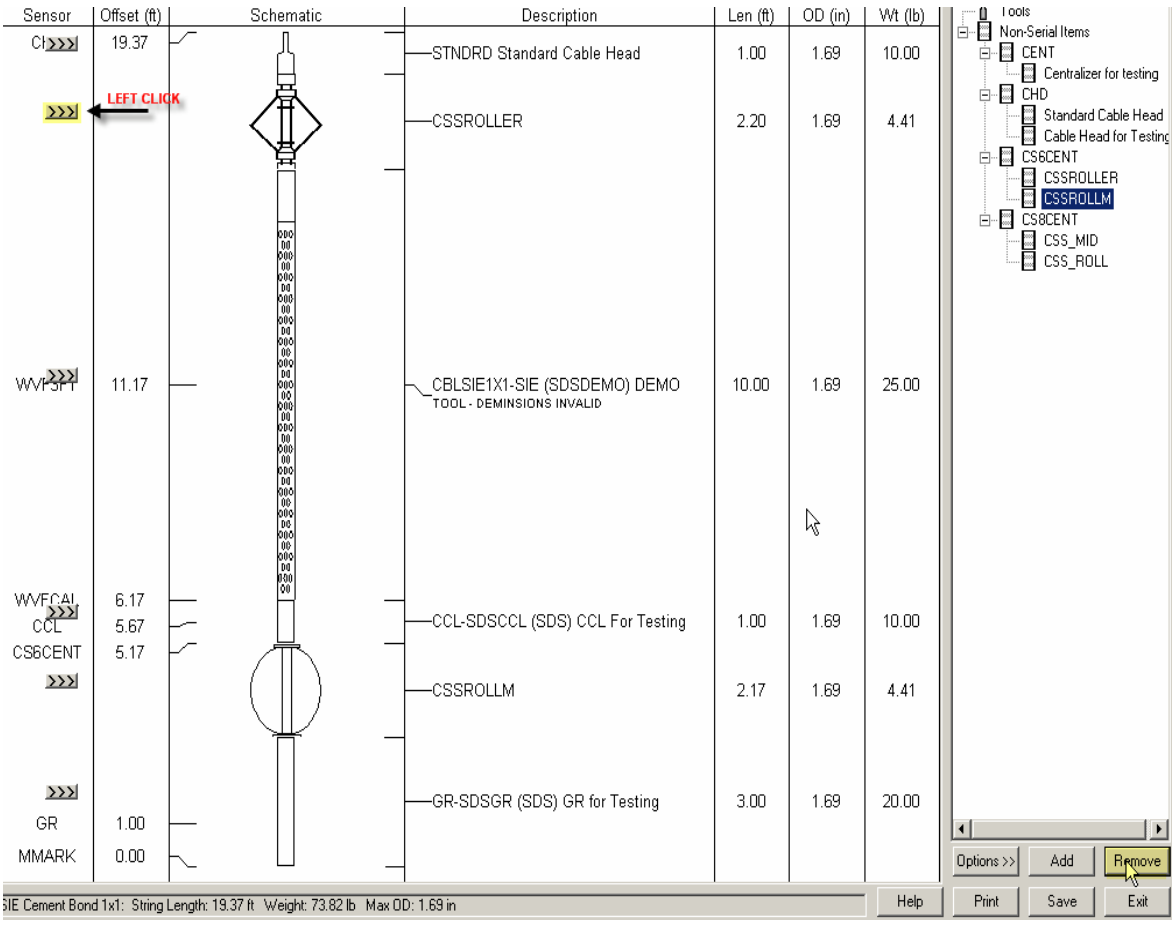


FIG: 4.47 Remove Tool

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.
Select the tool drag and drop in the tool string.

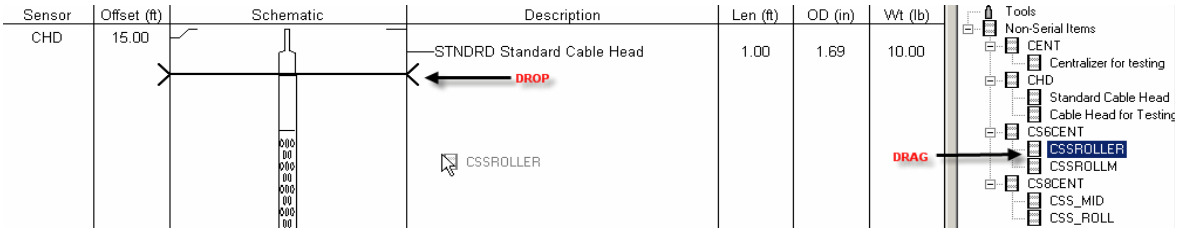


FIG: 4.48 Add Tool

Other 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.

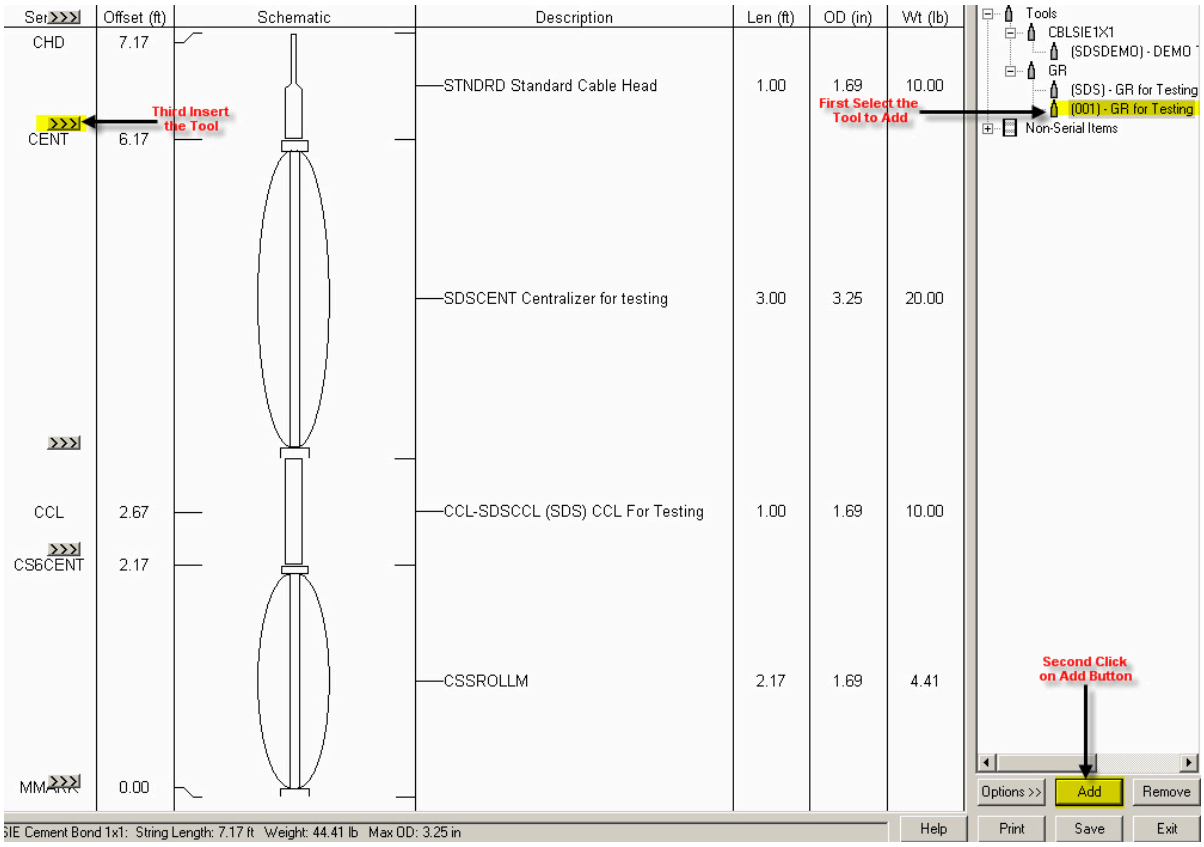


FIG: 4.49 Add Tool

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.

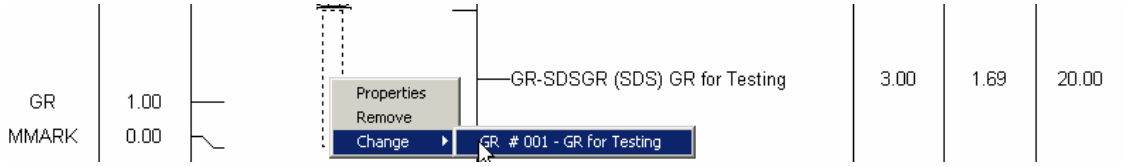


FIG: 4.50 Change Tool

4.5.1.4 Tool Properties

Mouse Right Click over the tool and select Properties

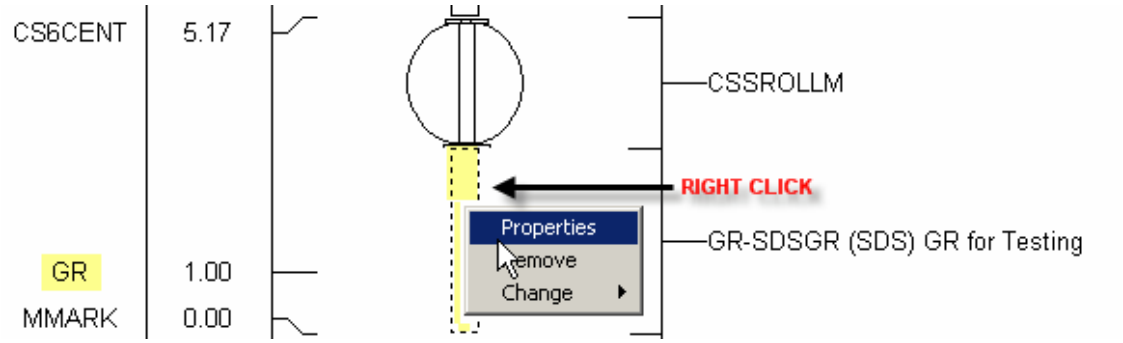


FIG: 4.51 Tool Properties

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.
Measure the tool from the Bottom to the Top and type the value

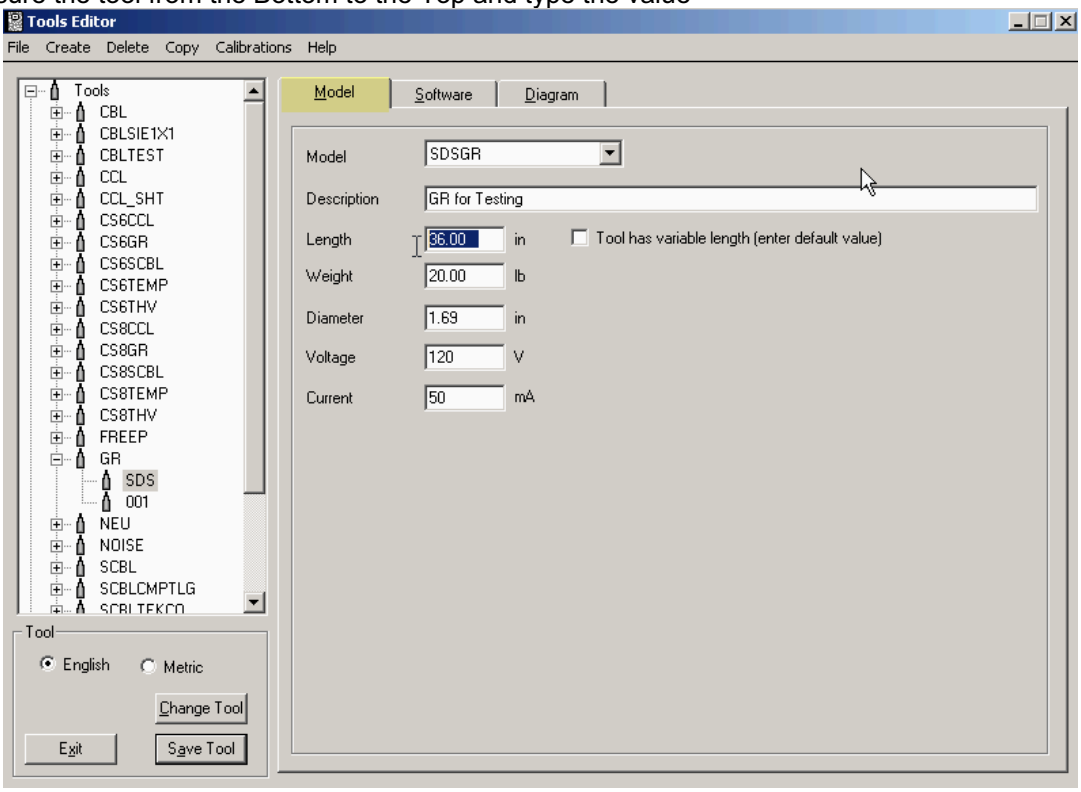


FIG: 4.52 Tool Model Properties

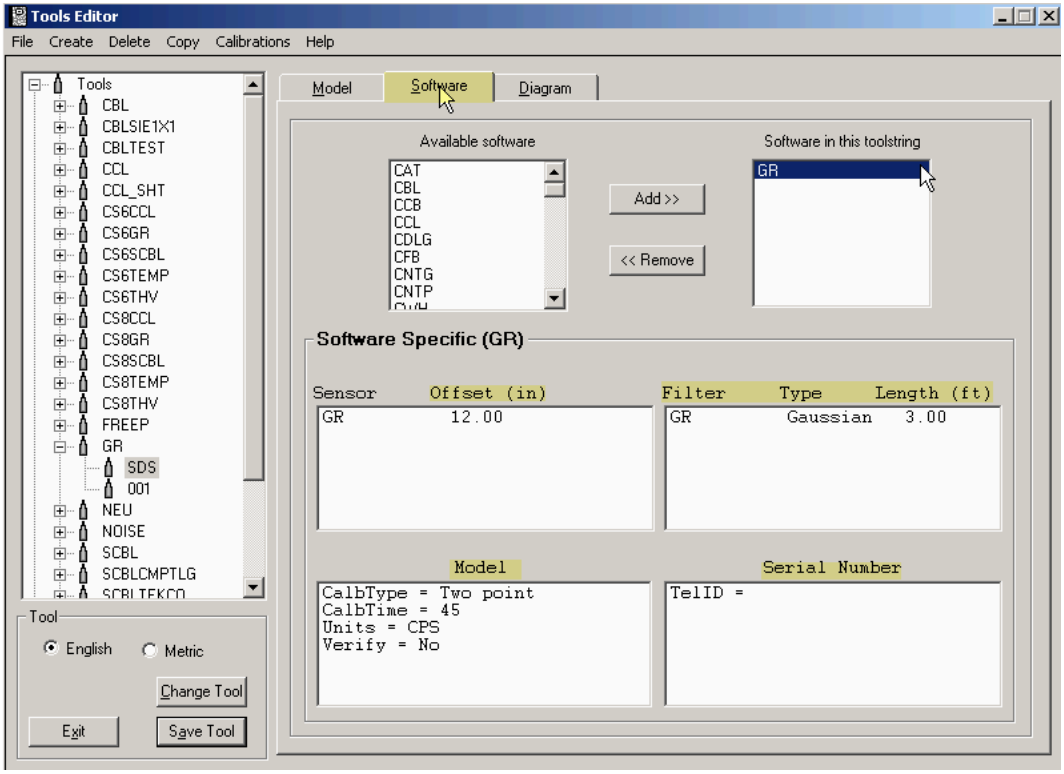


FIG: 4.53 Tool Software Properties

Measure the distance from the bottom of the Tool to the sensor and type the value in inches.

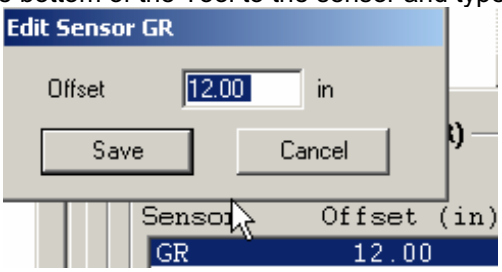


FIG: 4.54 Edit Offset Sensor.

Gaussian set as Gamma Ray default filter

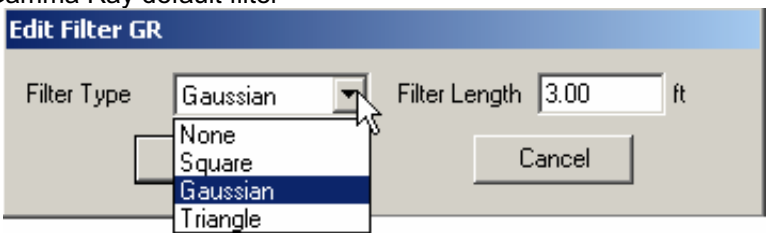


FIG: 4.55 Edit Sensor Filter.

Gamma Ray Calibration type set Two point as default

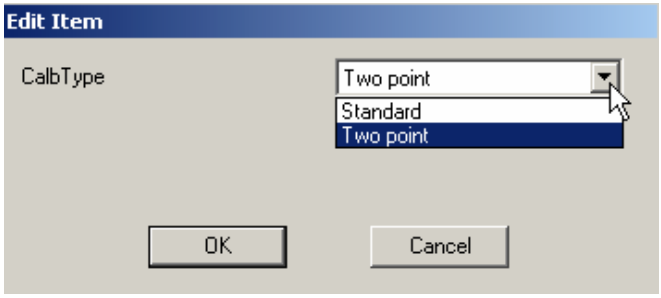


FIG: 4.56 Edit Calibration Type.

For statistical tools 45 second is a default value.

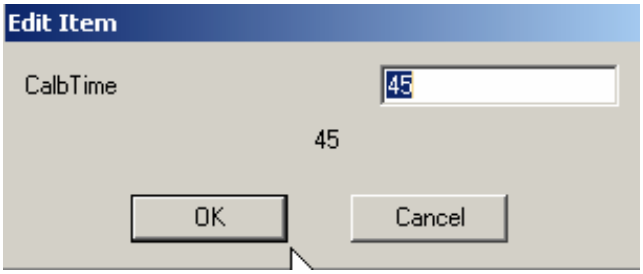


FIG: 4.57 Set Calibration Time

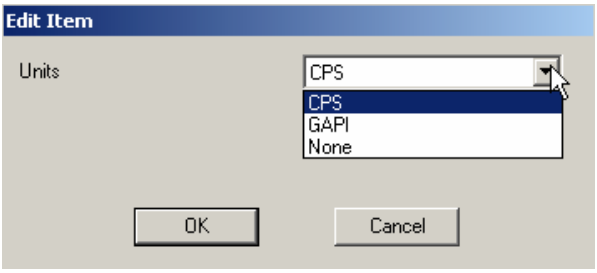


FIG: 4.58 Select Units

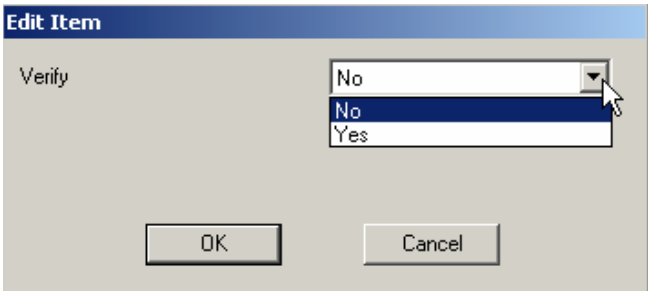


FIG: 4.59 Select Verify

4.5.1.5 Tool Diagram Properties

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.

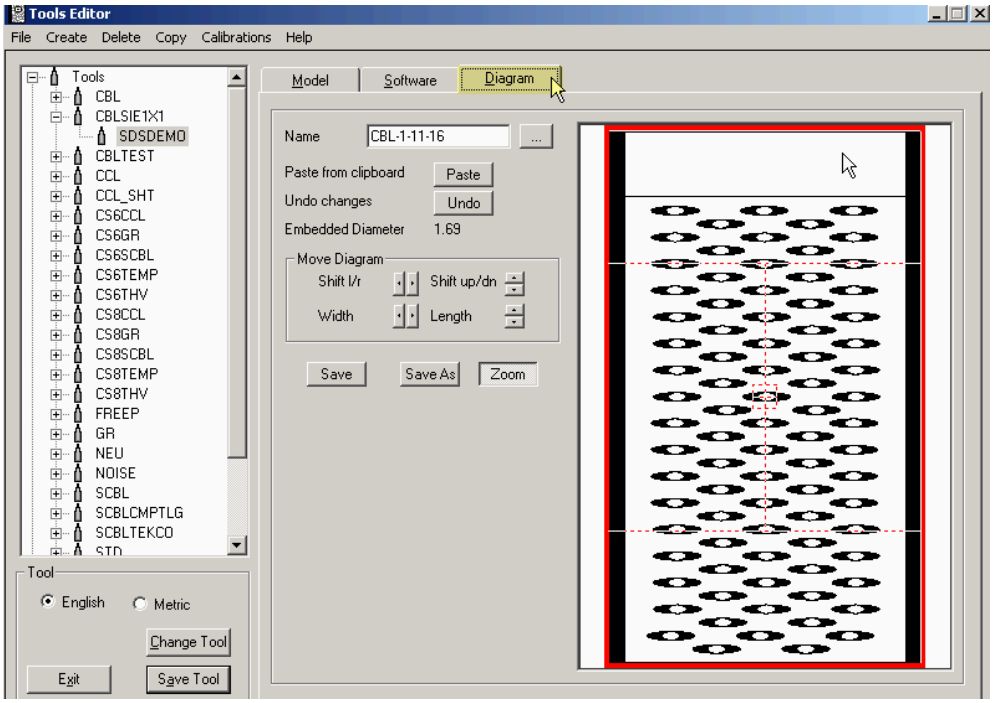


FIG: 4.60 Select Tool Diagram

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.

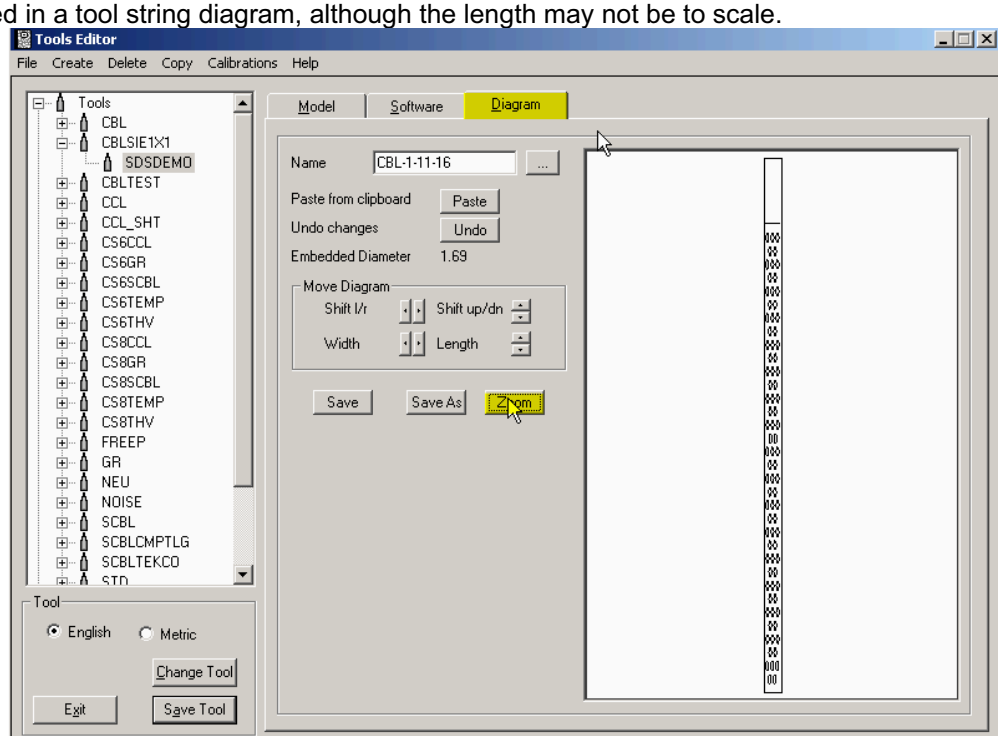


FIG: 4.61 Select Zoom Tool Diagram

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.

4.1.5.6 Customizing Tool Diagrams

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 warrior\format directory and rename it to (*.wtd) for Warrior Tool Diagram.
In order 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 in order 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.
Mouse click positions:

Left of center	- drag image left and right
Right of center	- drag image to change width
Top 1/4 of image	- drag image up and down
Bottom 1/4 of image	- drag image to change height

It may be easier to use the mouse for coarse adjustments and then use the buttons to make fine adjustments.
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.

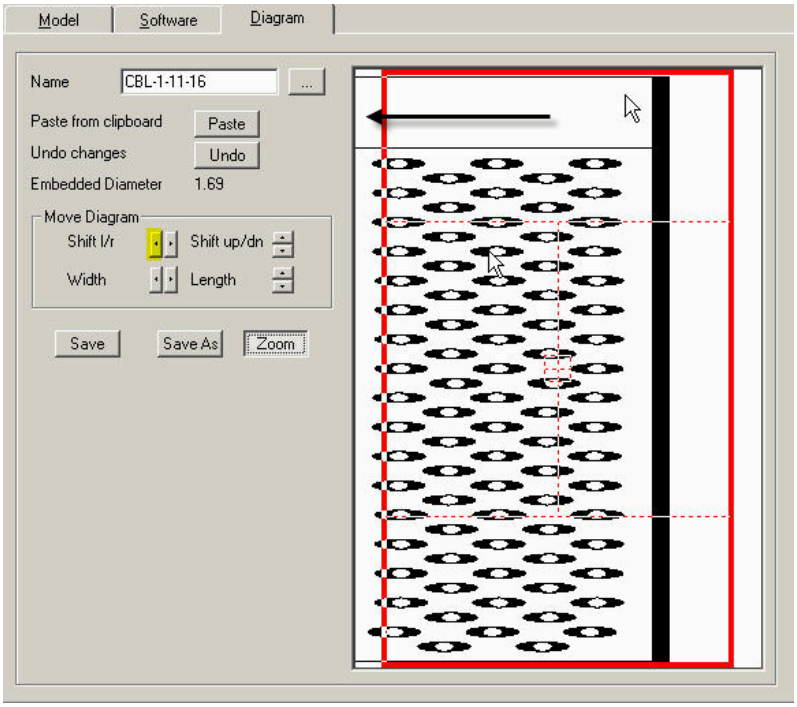


FIG: 4.62 Move Left the Tool

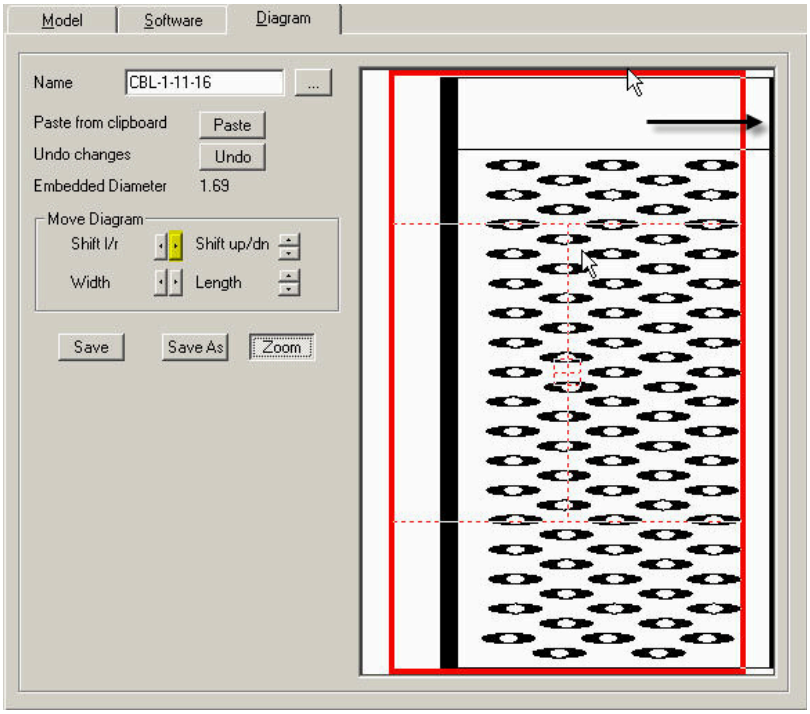


FIG: 4.63 Move Right the Tool

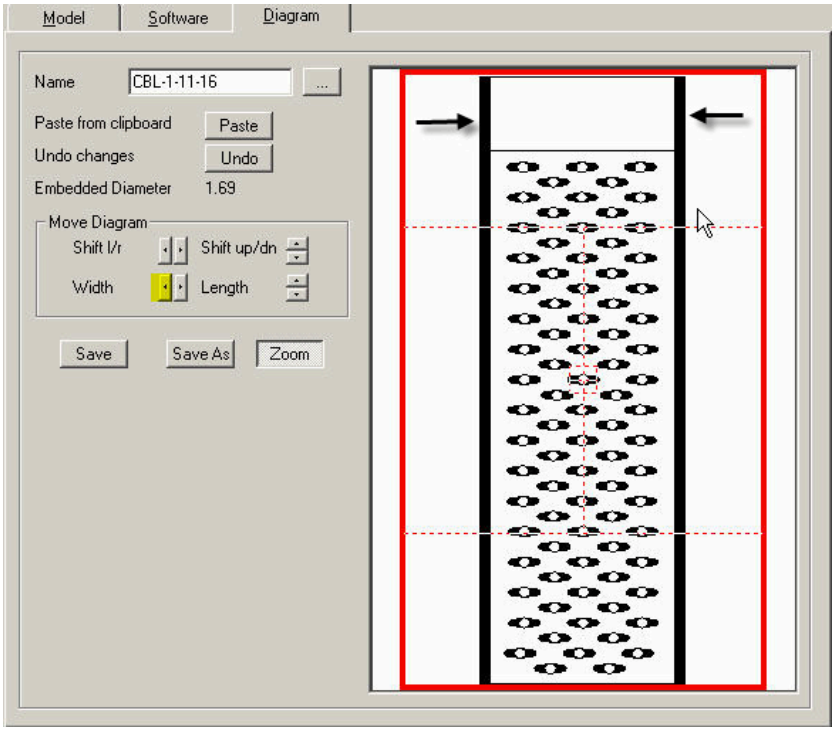


FIG: 4.64 Shrink the diameter of the Tool

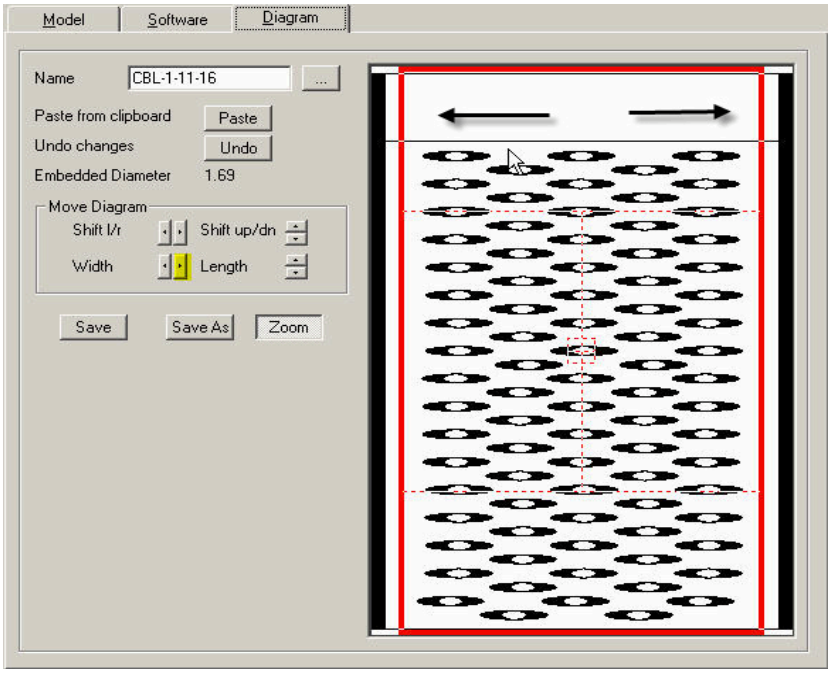


FIG: 4.65 Increase the diameter of the Tool

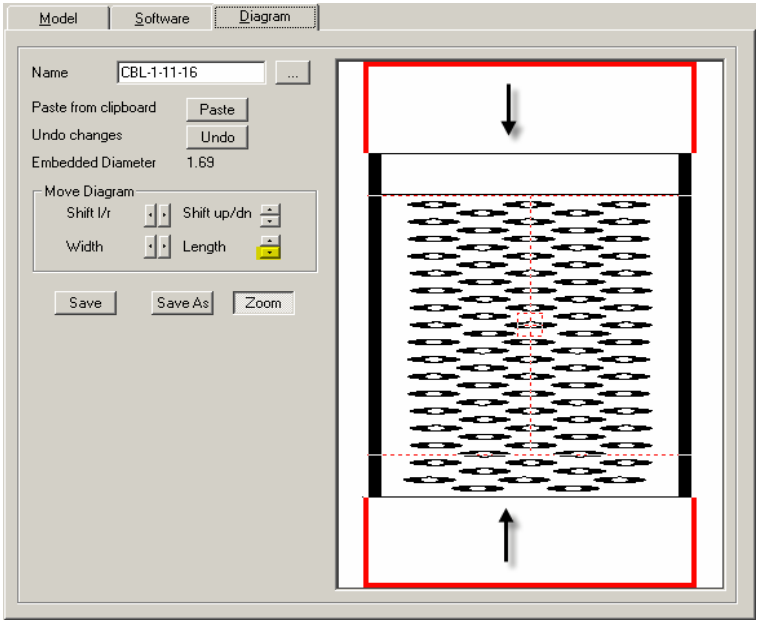


FIG: 4.66 Shrink the Length of the Tool

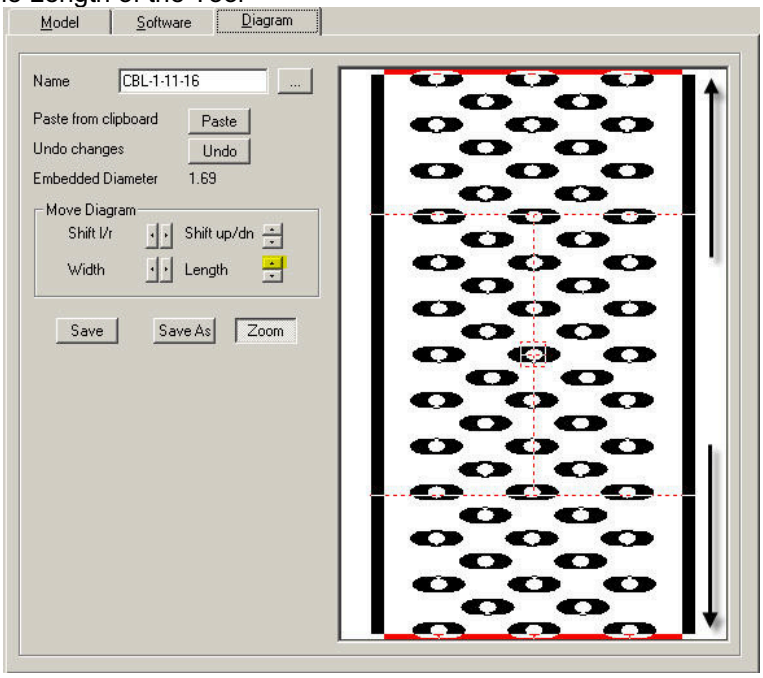


FIG: 4.67 Increase the Length of the Tool

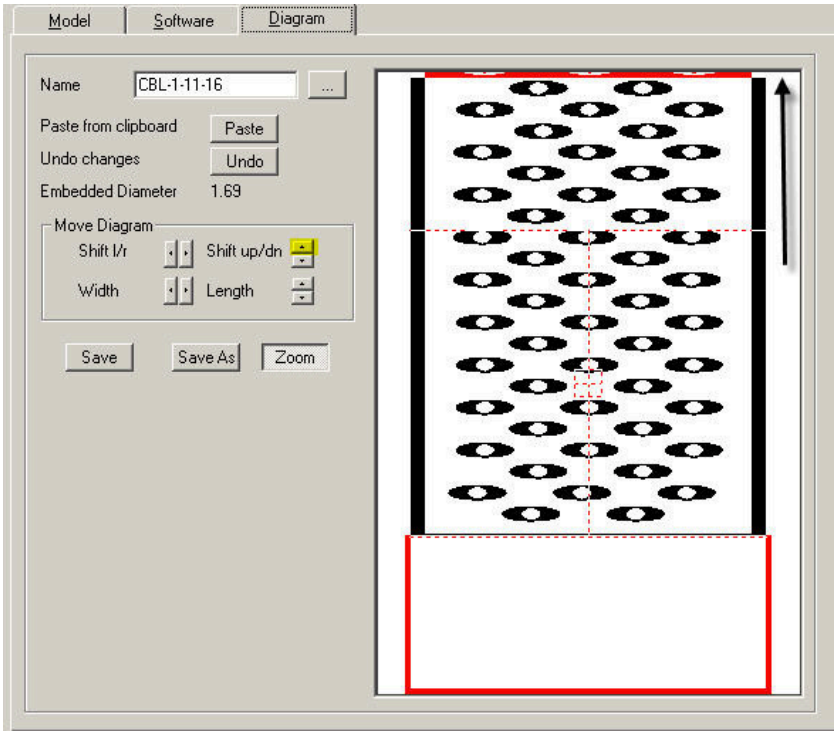


FIG: 4.68 Move up the Tool

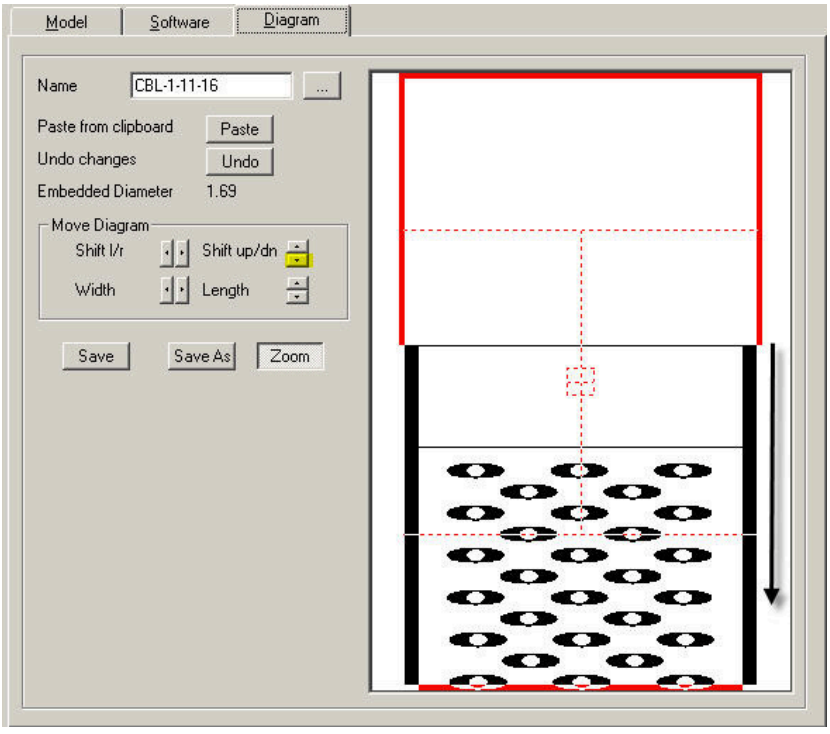


FIG: 4.69 Move Down the Tool.

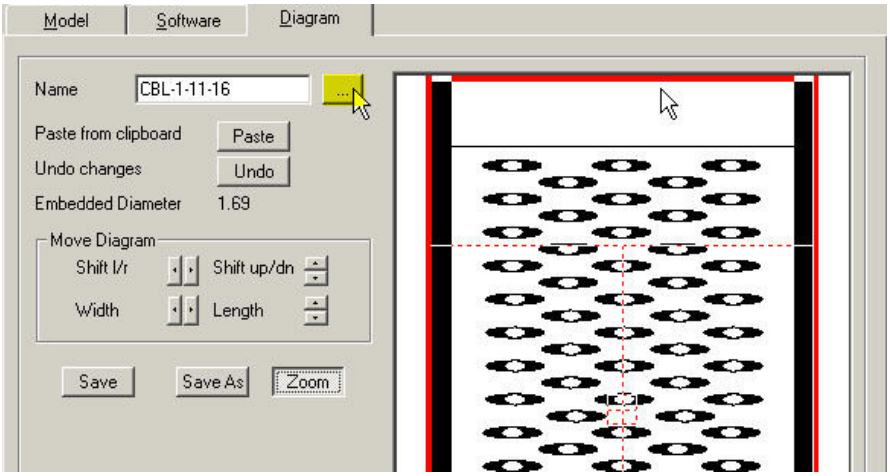


FIG: 4.70 Browse Tool Diagram

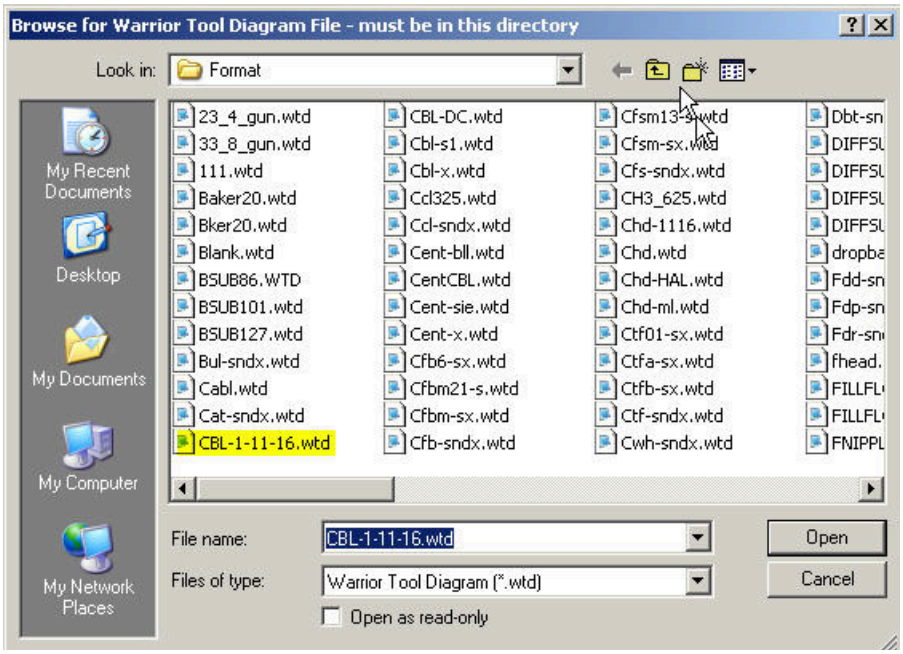


FIG: 4.71 Select Tool Diagram

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.**

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 number of 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.

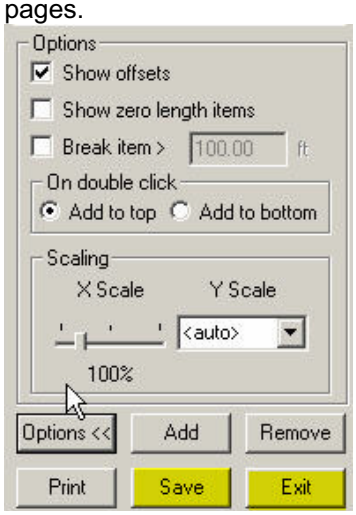


FIG: 4.72 SAVE and Exit

VIDEO: 4.4 Tool String

4.5.2 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 similar to the window shown Below. Displays the Variable (parameter) editor window, enabling depth dependent parameters associated with the selected service to be zoned and values to be set.

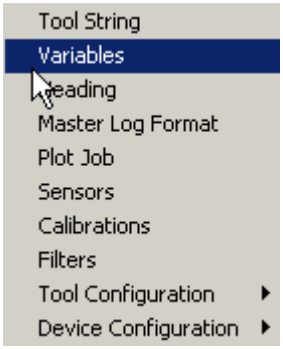


FIG: 4.73 Variables

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.

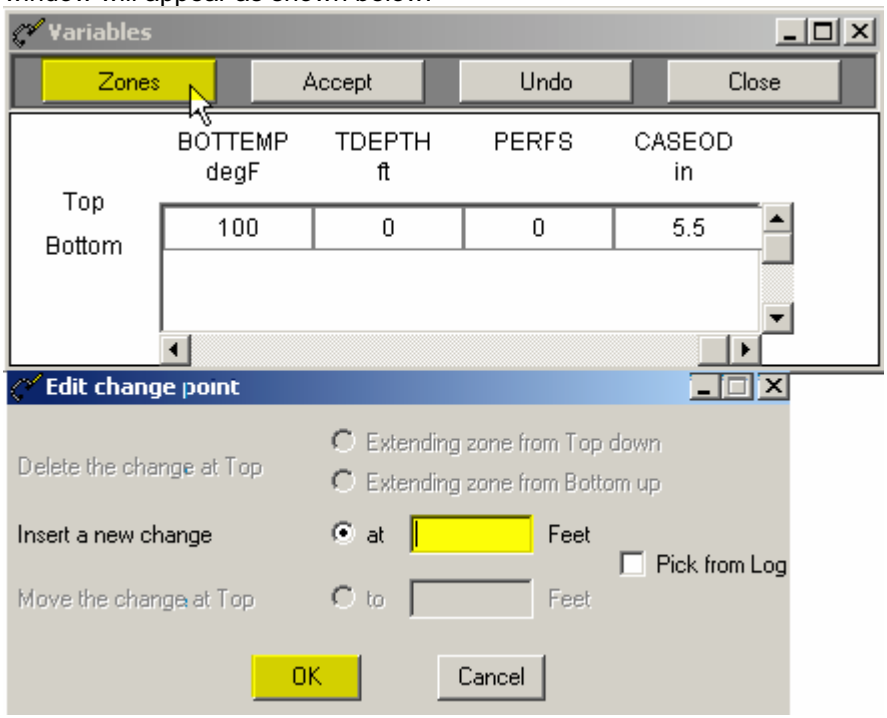


FIG: 4.74 Add Zones

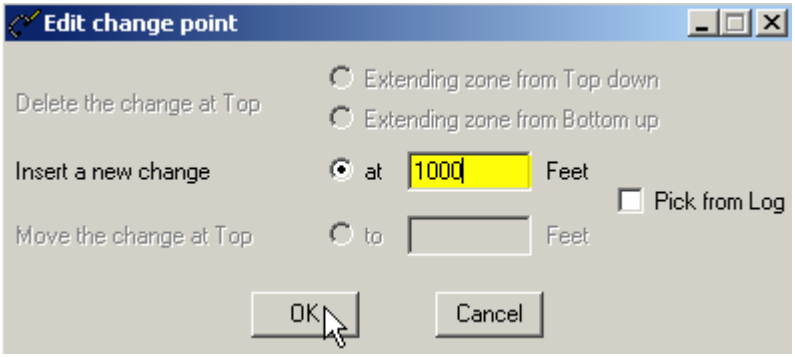


FIG: 4.75 Set a New Zone

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.
Here boundaries may be inserted and their positions changed, e.g. inserting a new change at 1000 ft Results in two zones, one from the top to 1000, and one from 1000 to the bottom.

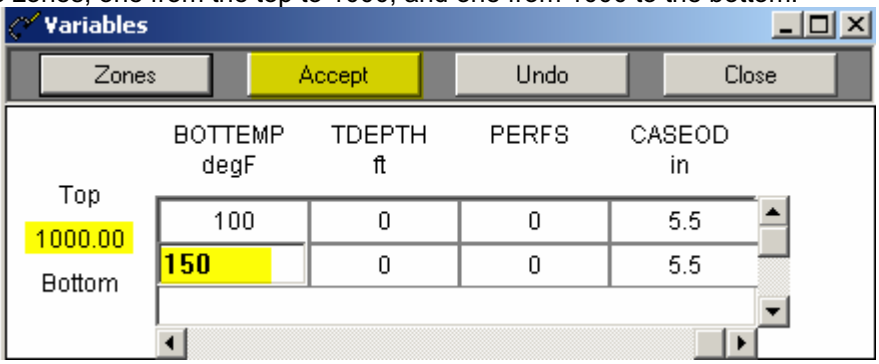


FIG: 4.76 Edit values and accept

To change the value of the variable in a particular 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.

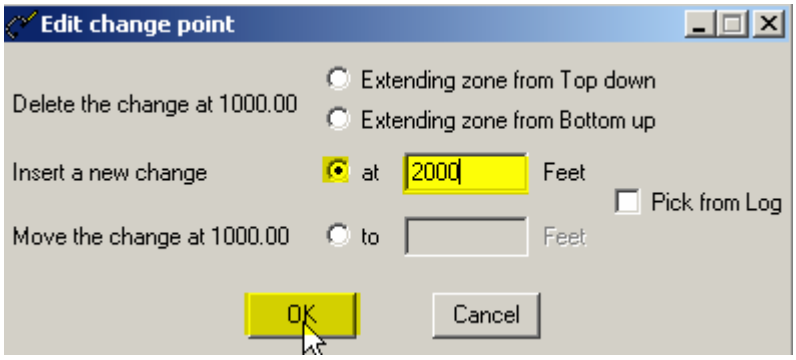


FIG: 4.77 Insert New Zone

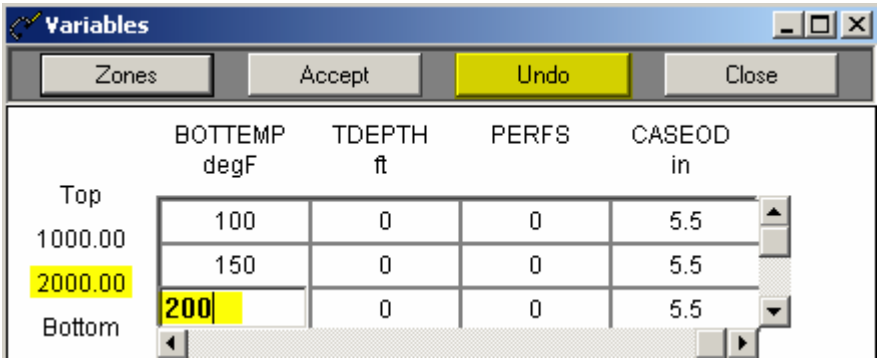


FIG: 4.78 Undo Zone

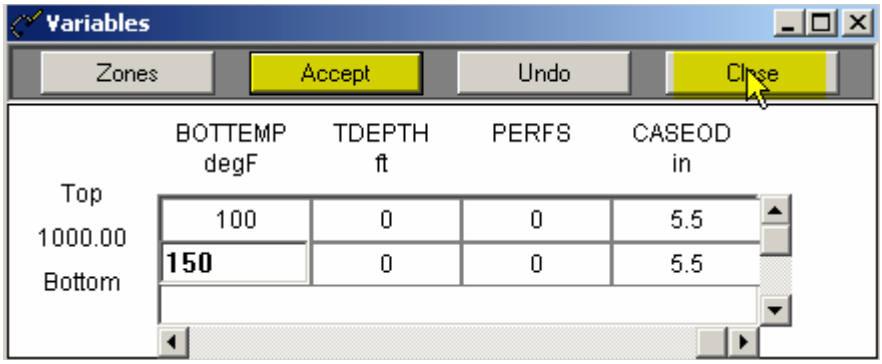


FIG: 4.79 Accept and Close

VIDEO: 4.5 Variables

4.5.3 Create a Variable in a Dataset

In the Warrior shortcut folder, double-click the **Utilities** icon. The Utilities menu box will appear. Click on the **Create Variables in a Dataset** button.

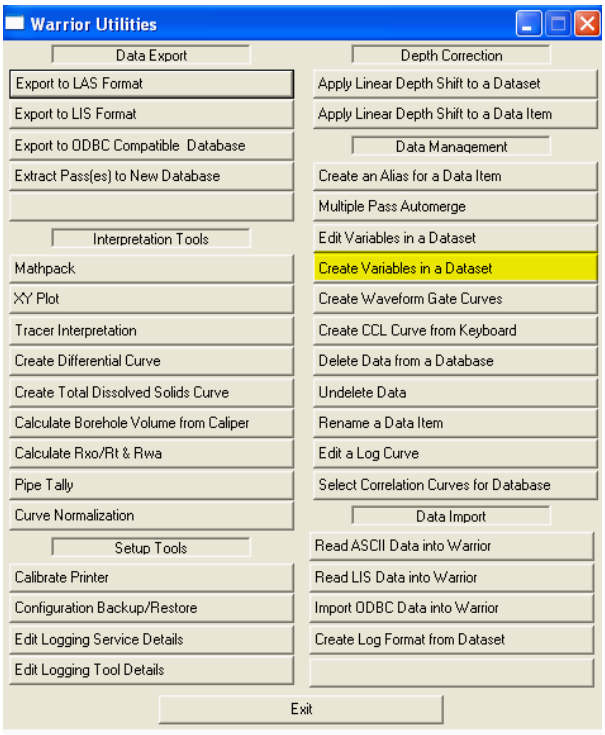


FIG: 4.80 Create Variables in a Dataset

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.

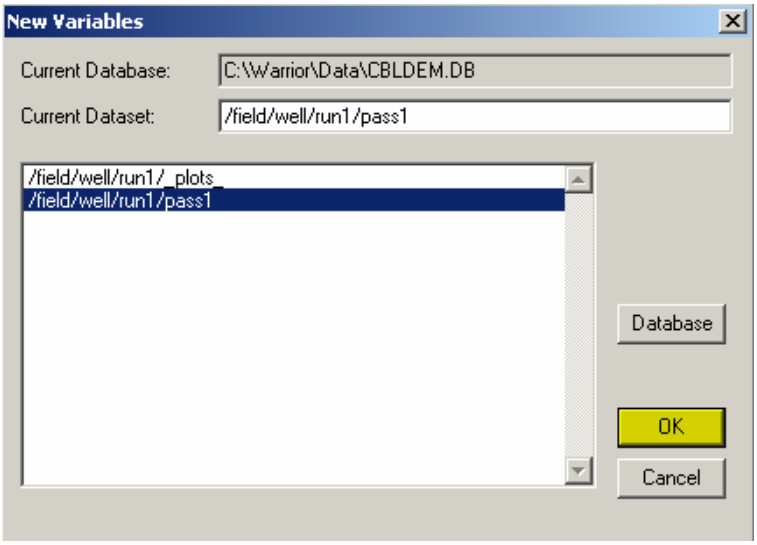


FIG: 4.81 New Variables

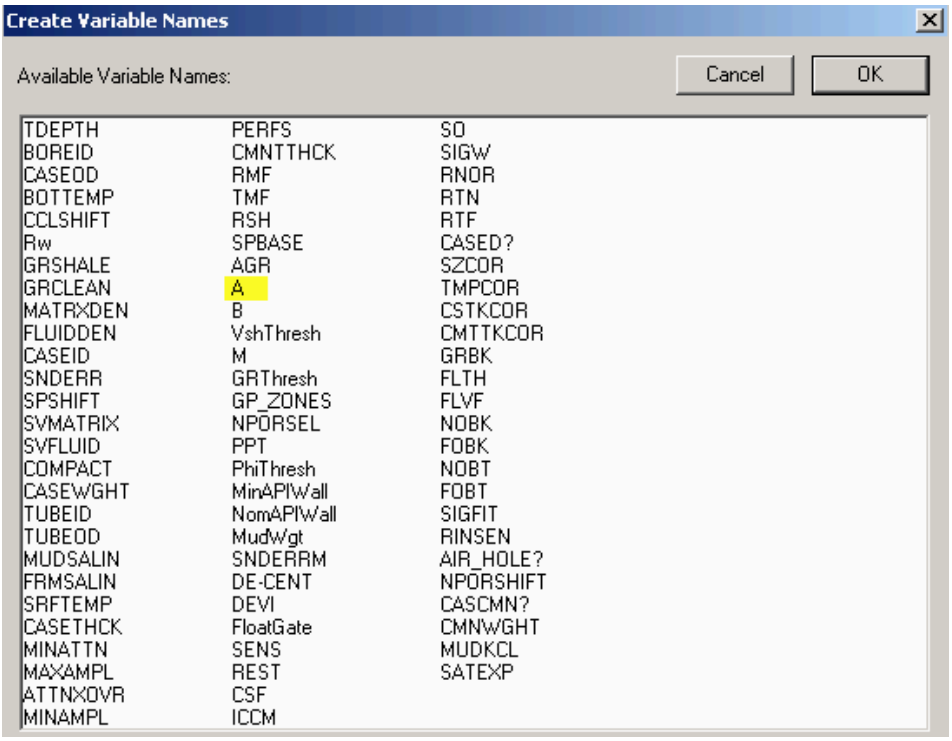


FIG: 4.82 Choice the Variable

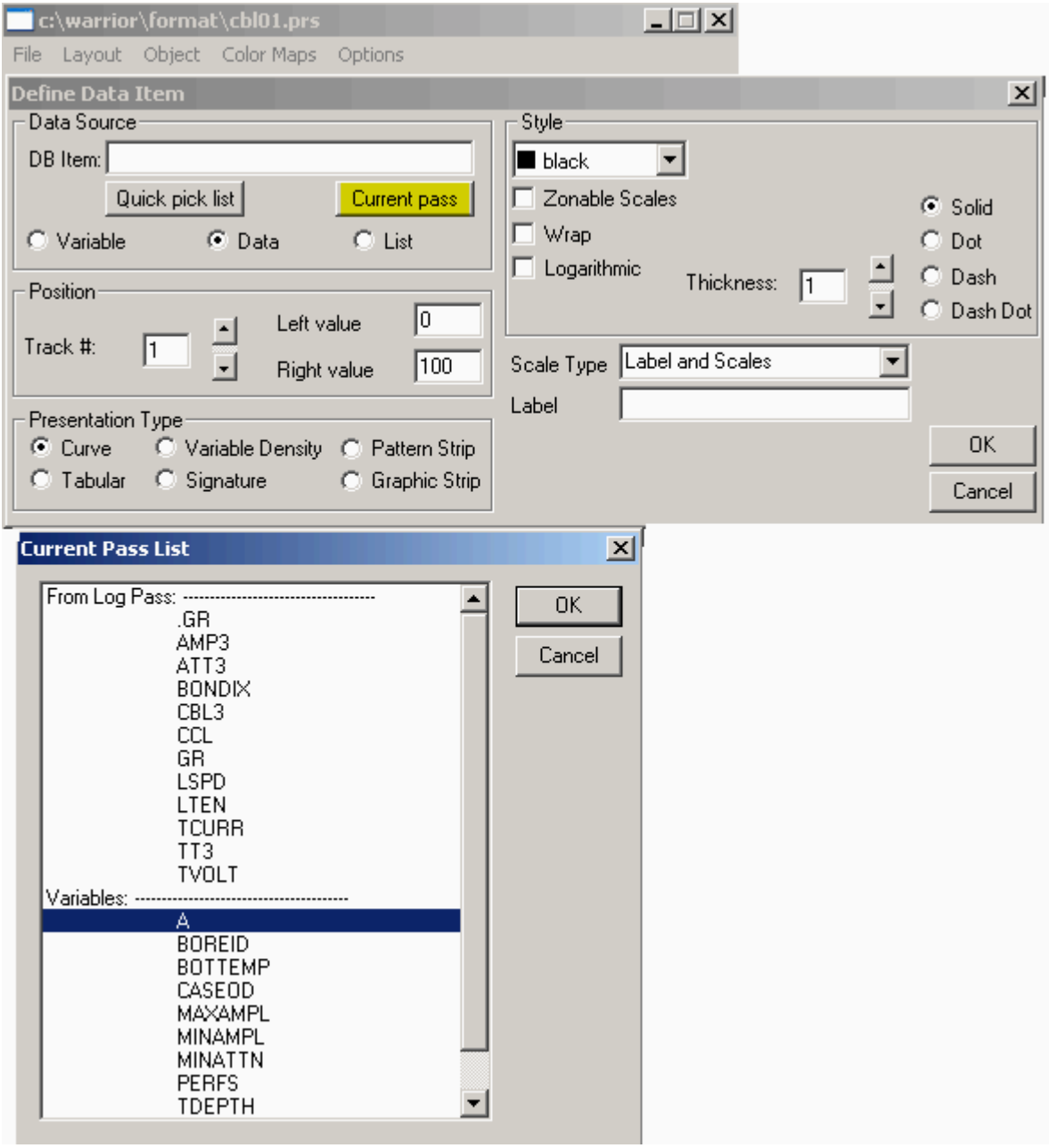


FIG: 4.83 Current Pass List

4.5.4 Create waveform gate curves

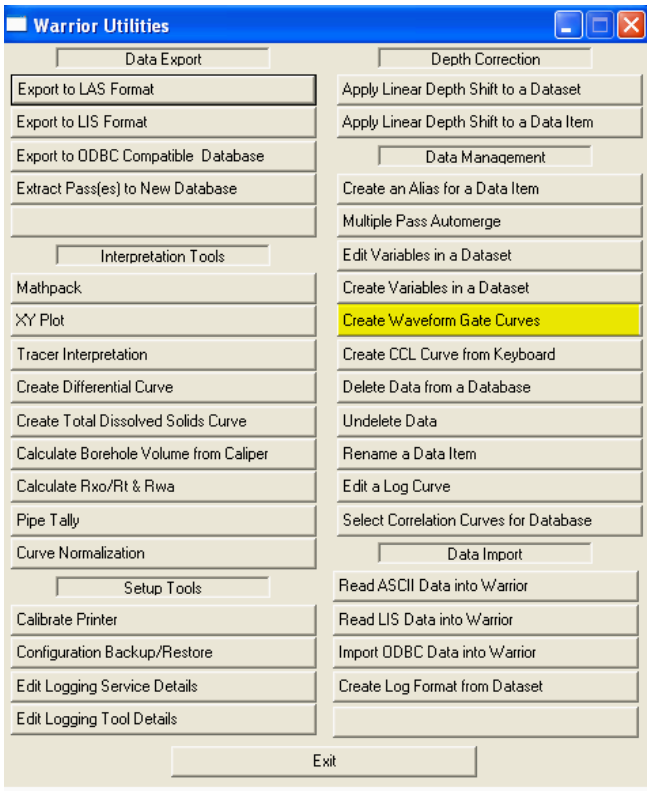


FIG: 4.84 Create waveform Gate Curves

Select the Database

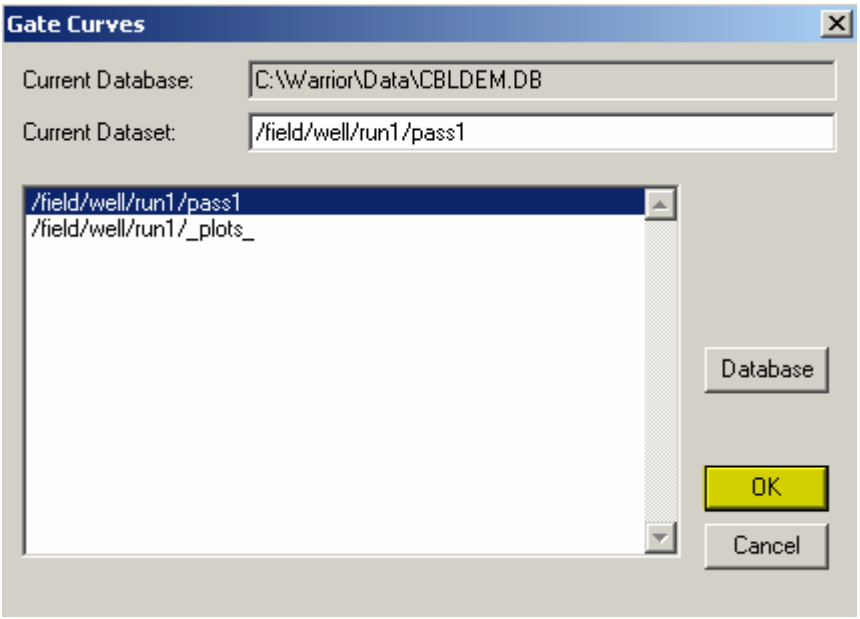


FIG: 4.85 Gate Curves

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 CBL3 and CBL5 waveform curves in the pass and generates CBL3LG (3ft low gate) and CBL3HG (3ft high gate) if the CBL3 curve is present, and the CBL5LG and CBL5HG if the CBL5 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.

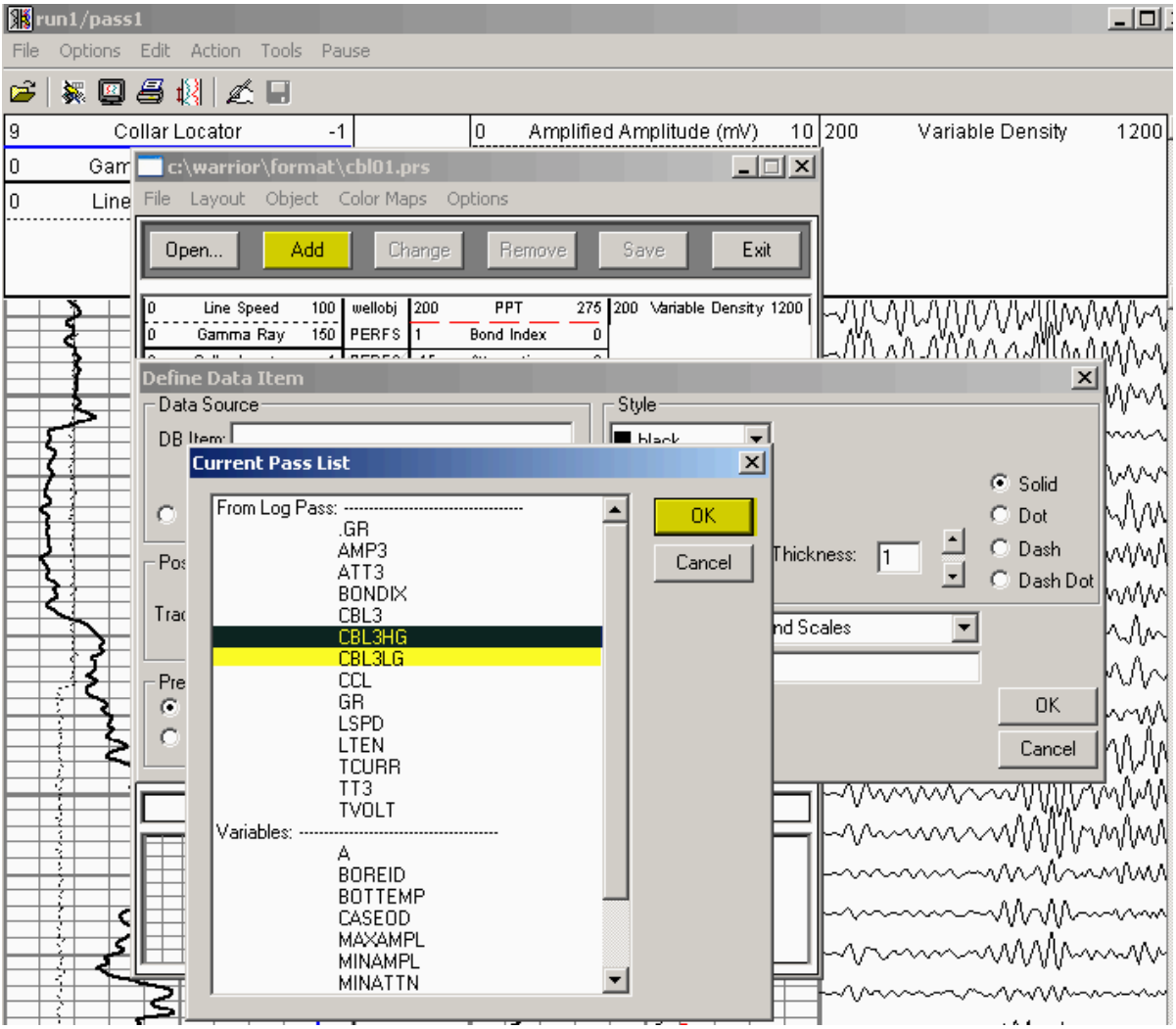


FIG: 4.86 Current pass List

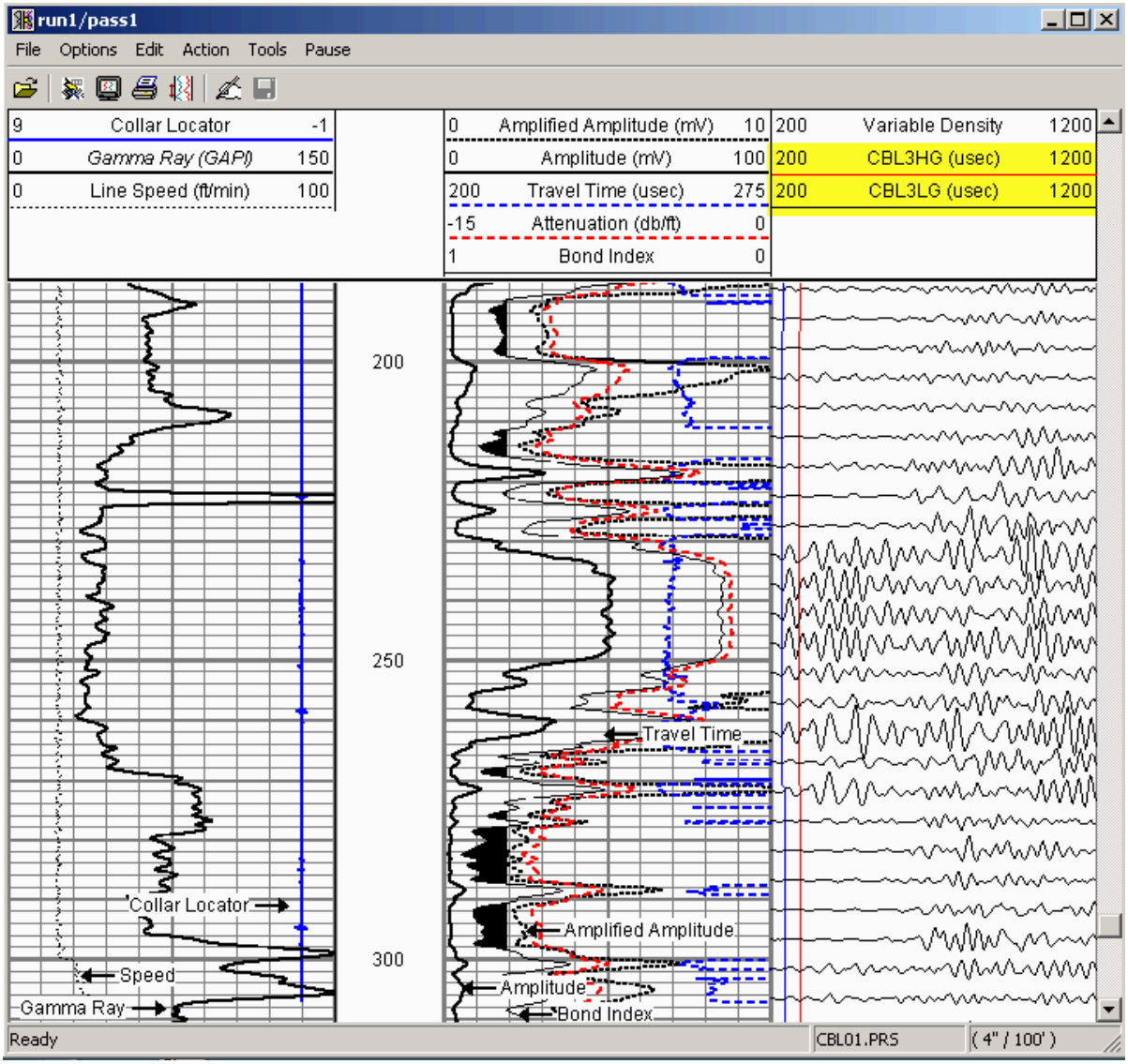


FIG: 4.87 Plot Curves

4.5.6 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 particular 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 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 is 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.

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

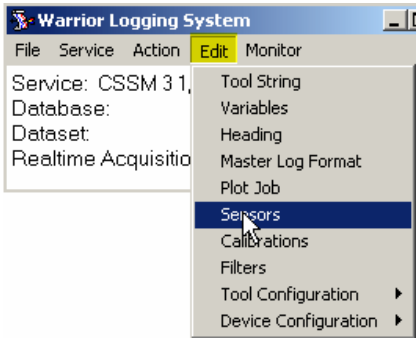


FIG: 4.88 Edit Sensors

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

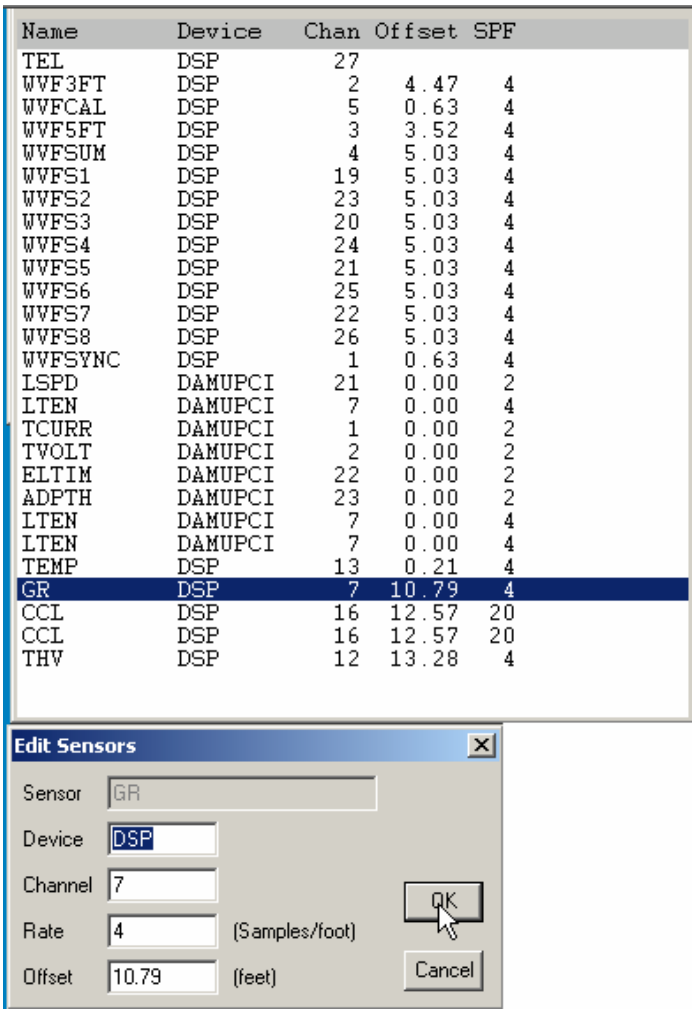


FIG: 4.89 Edit

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: 4.7.1. 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 particular 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.

Warning! 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.

4.5.7 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.

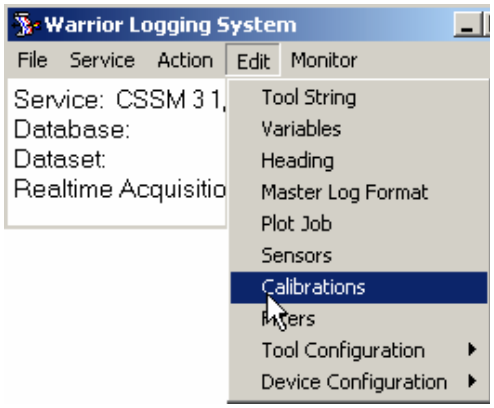


FIG: 4.90 Calibrations

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: 4.91.

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.

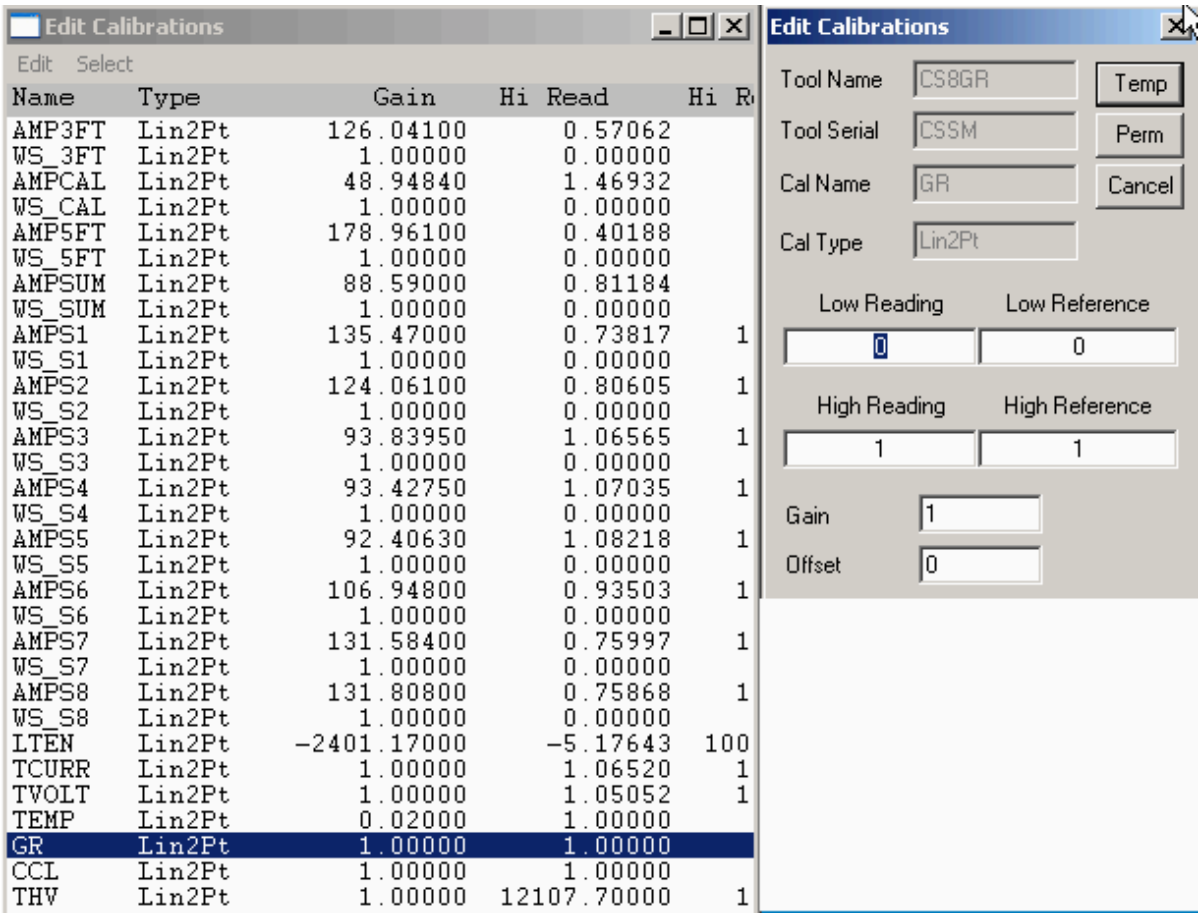


FIG: 4.91 Edit Calibrations

4.5.8 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.

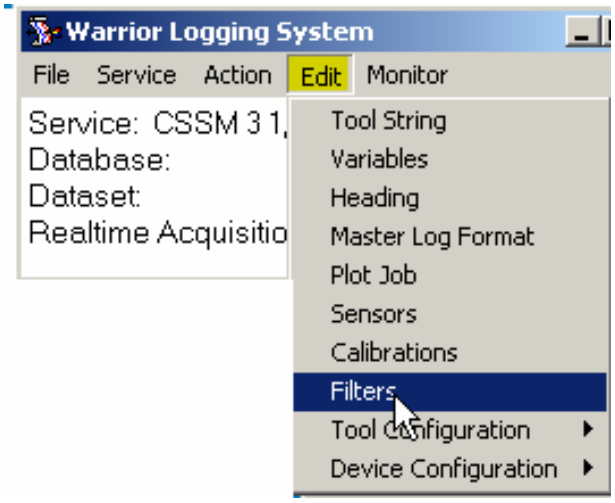


FIG: 4.92 Filters

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 similar to 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.

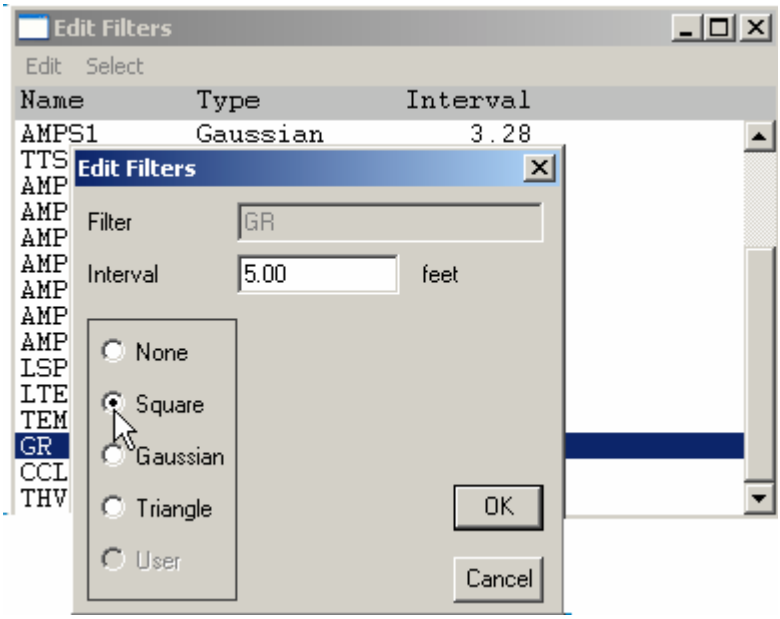


FIG: 4.93 Edit Filters

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 should not be edited whilst logging.

4.5.9 Tool Configuration

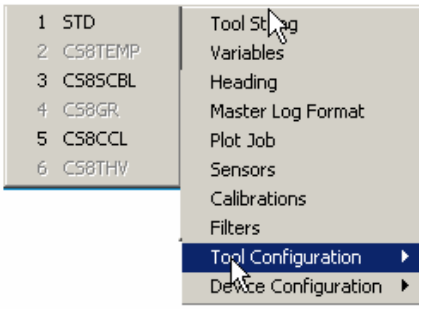


FIG: 4.94 Tool Configuration

4.5.9.1 STD Tool Configuration

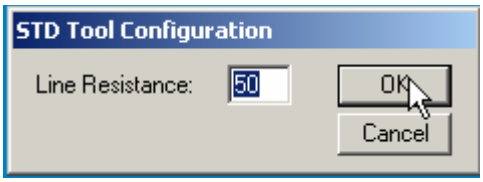


FIG: 4.95 Set Line Resistance

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 effect 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**.

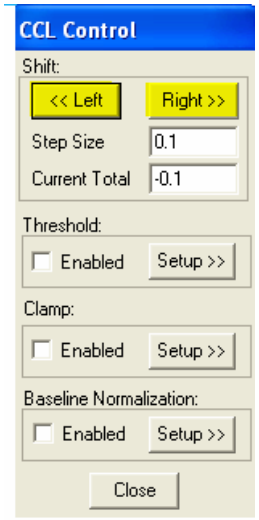


FIG: 4.96 CCL Control

4.5.9.3 Shift the 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.

4.5.9.4 Threshold (Filter the 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.

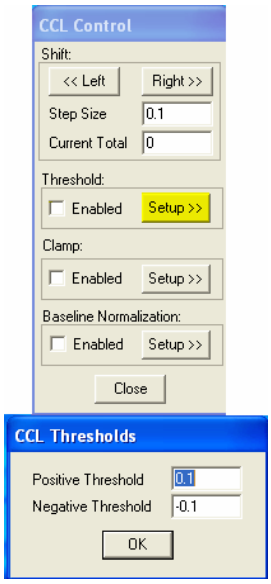


FIG: 4.97 CCL Thresholds

4.5.9.5 Clamp

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.

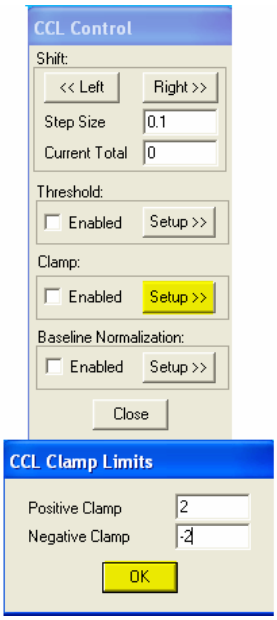


FIG: 4.98 CCL Clamp Limits

4.5.9.6 Normalize the CCL Baseline

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 baseline that is changing with time.

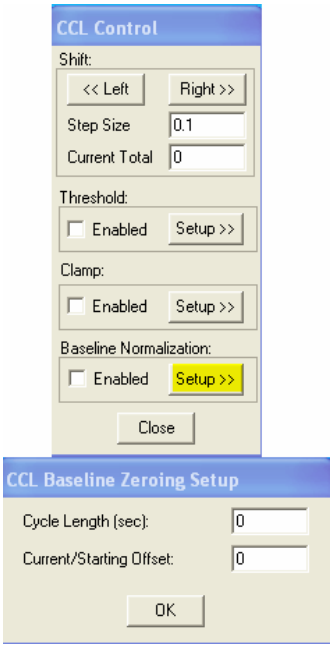


FIG: 4.99 CCL Baseline Zeroing Setup

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

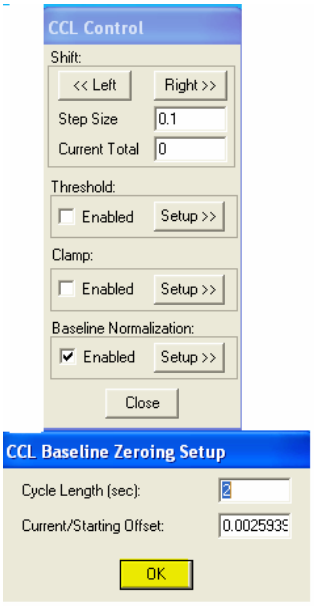


FIG: 4.100 CCL Baseline Zeroing Setup

4.5.10 Device Configuration

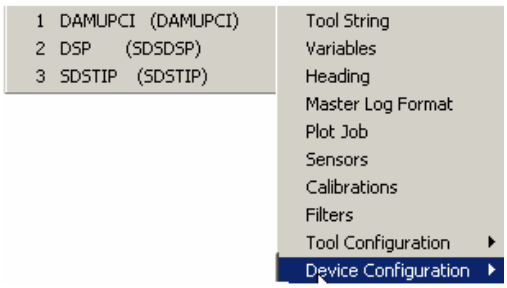


FIG: 4.101 Device Configuration

4.5.10.1 DAMUPCI Configuration

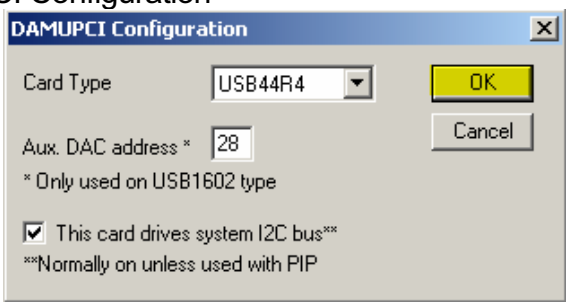


FIG: 4.84 DAMUPCI Setup

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

4.5.10.2 DSP Configuration

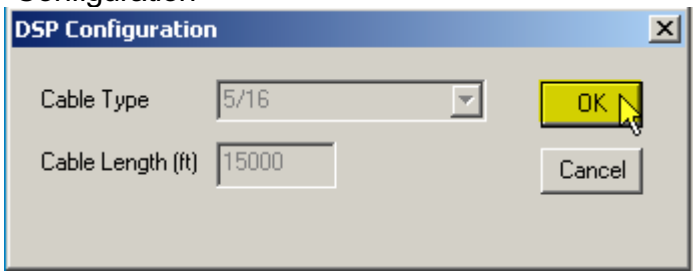


FIG: 4.102 DSP Configuration

4.5.10.3 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.

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.

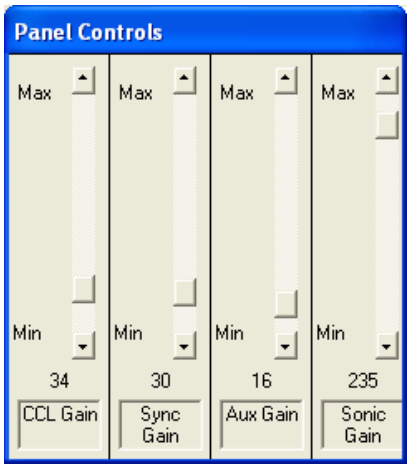


FIG: 4.103 Panel Controls

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.

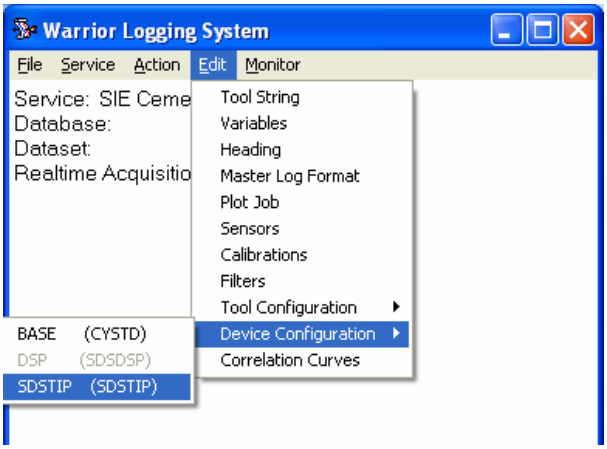


FIG: 4.104 Device Configuration

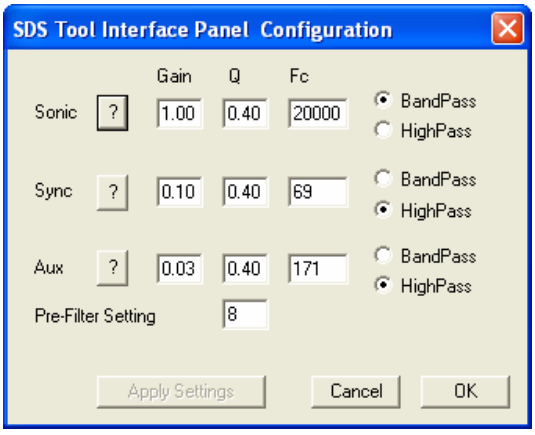


FIG: 4.105 SDSTIP

Each of the output channels has it's 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 normally turned on with a value of 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 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 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 or C (CPFB – CPFC).

VIDEO: 4.6 Edit

4.6 Monitor

Once a service has been selected, various data monitors are available to the operator as shown Below.

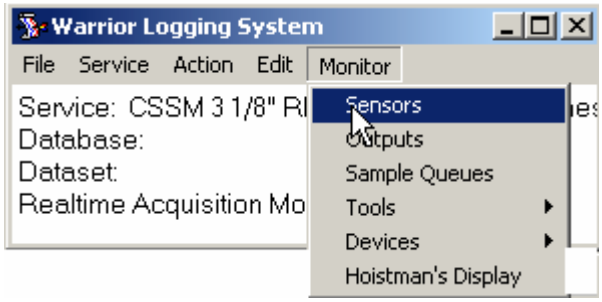


FIG: 4.106 Monitor Sensors

4.6.1 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 Control module.

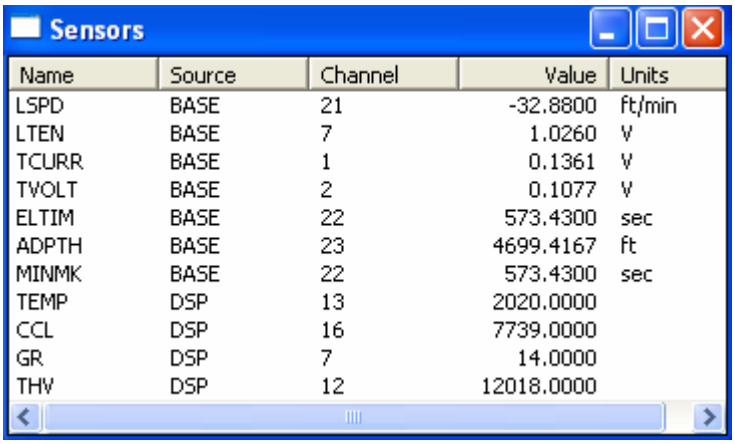


FIG: 4.107 Sensors

4.6.2 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: 4.108. 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 module.

Sampler Queues

Monitors the status of the internal Warrior sampler queues.

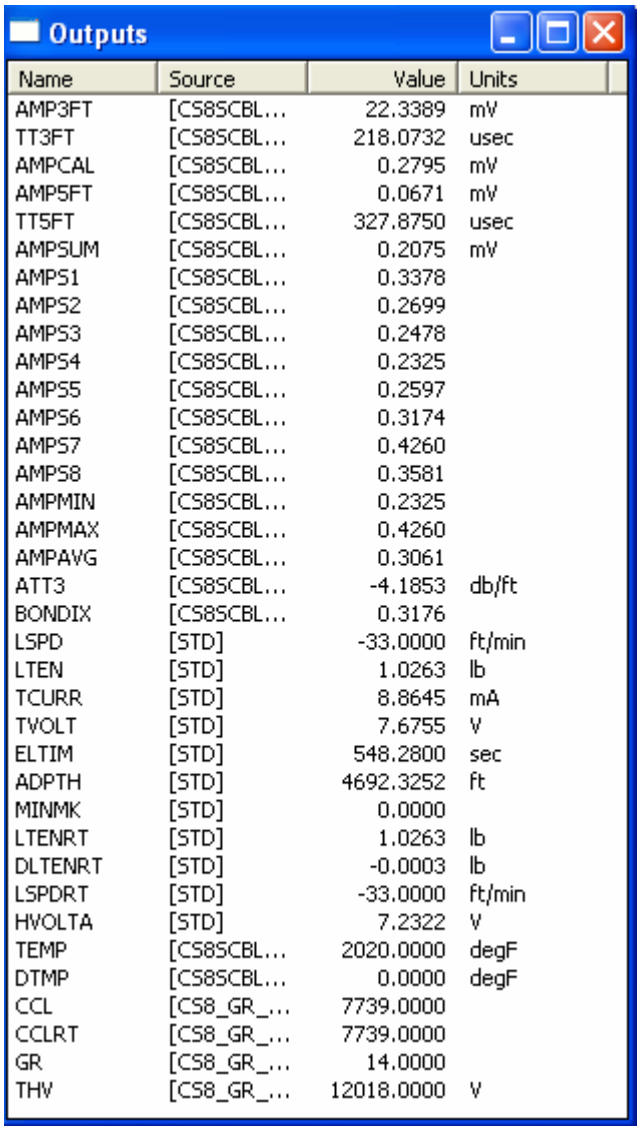


FIG: 4.108 Outputs

4.6.3 Tools

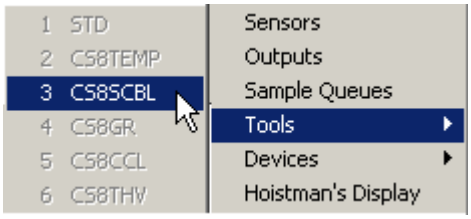


FIG: 4.109 Monitor Tools

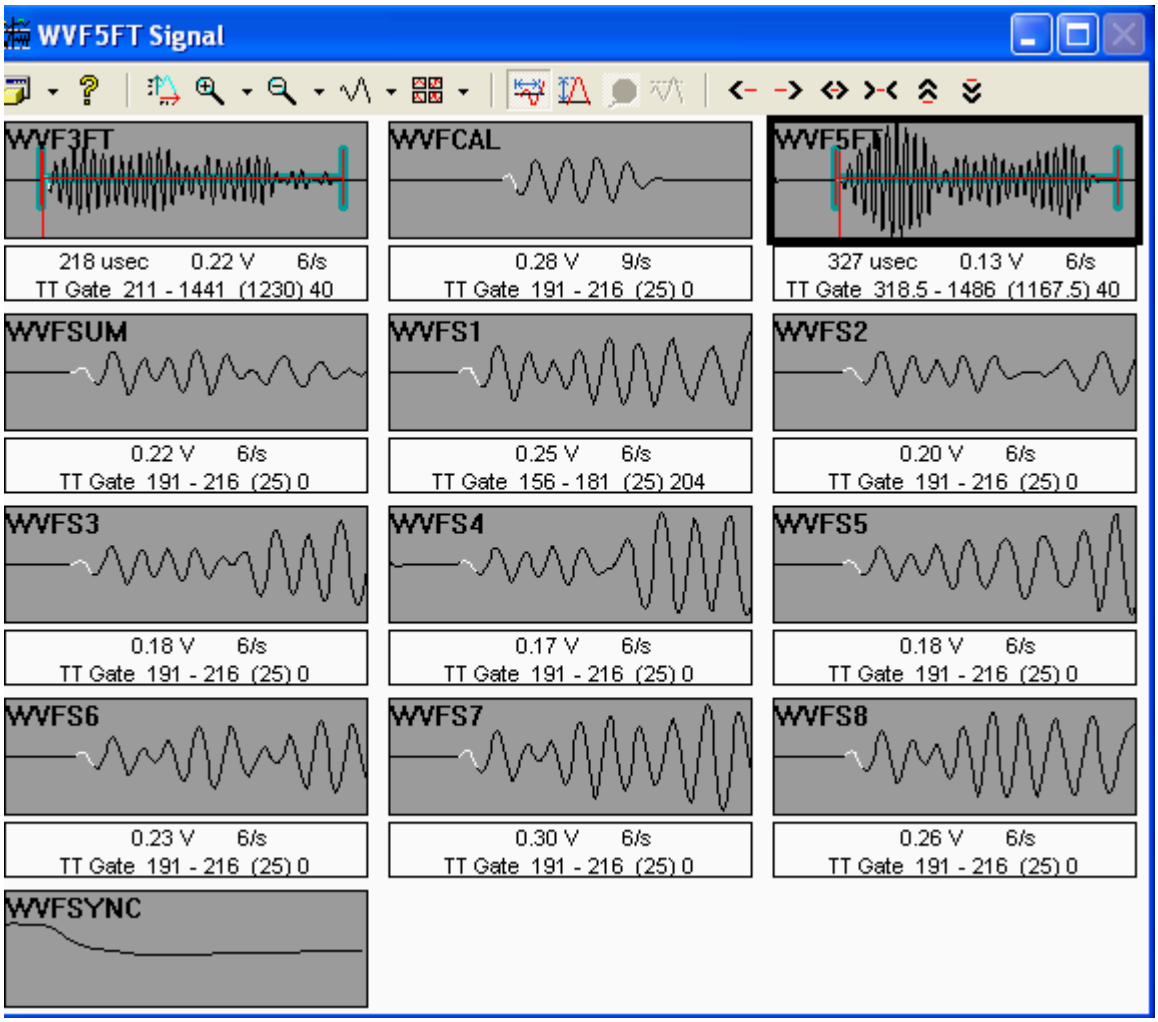


FIG: 4.110 Monitor CS8SCBL

4.6.4 Devices

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

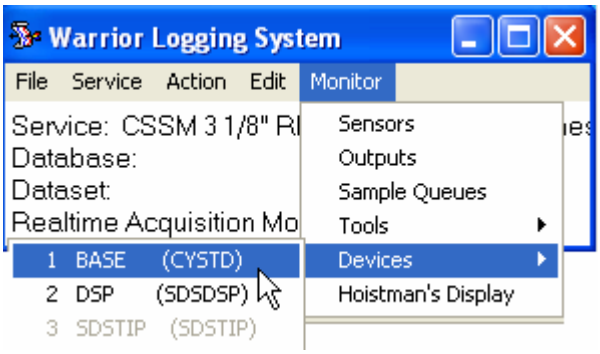
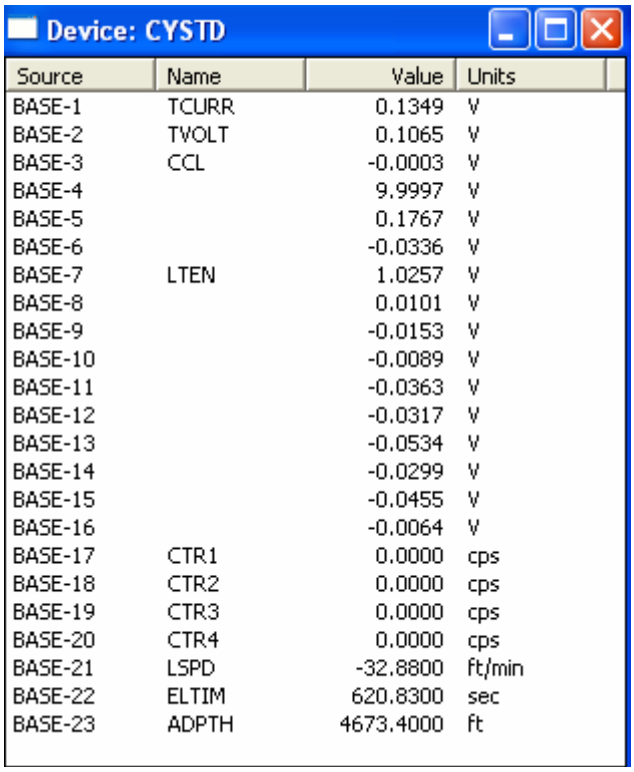


FIG: 4.111 Monitor Devices

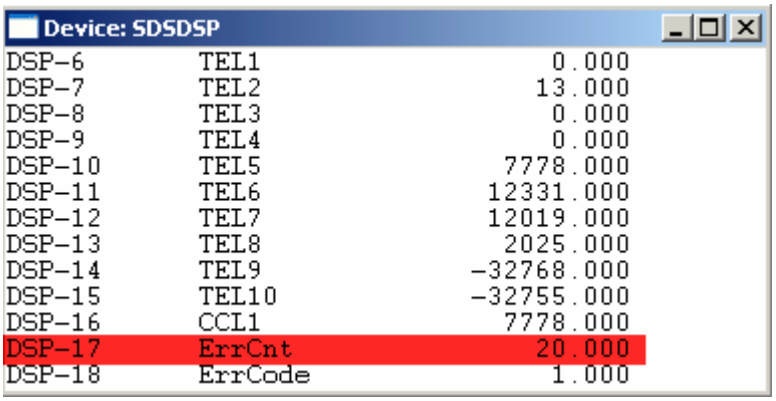
4.4.1 CYSTD



Source	Name	Value	Units
BASE-1	TCURR	0.1349	V
BASE-2	TVOLT	0.1065	V
BASE-3	CCL	-0.0003	V
BASE-4		9.9997	V
BASE-5		0.1767	V
BASE-6		-0.0336	V
BASE-7	LTEN	1.0257	V
BASE-8		0.0101	V
BASE-9		-0.0153	V
BASE-10		-0.0089	V
BASE-11		-0.0363	V
BASE-12		-0.0317	V
BASE-13		-0.0534	V
BASE-14		-0.0299	V
BASE-15		-0.0455	V
BASE-16		-0.0064	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	LSPD	-32.8800	ft/min
BASE-22	ELTIM	620.8300	sec
BASE-23	ADPTH	4673.4000	ft

FIG: 4.112 CYSTD Values

4.6.5.1 DSP Monitor



DSP-6	TEL1	0.000
DSP-7	TEL2	13.000
DSP-8	TEL3	0.000
DSP-9	TEL4	0.000
DSP-10	TEL5	7778.000
DSP-11	TEL6	12331.000
DSP-12	TEL7	12019.000
DSP-13	TEL8	2025.000
DSP-14	TEL9	-32768.000
DSP-15	TEL10	-32755.000
DSP-16	CCL1	7778.000
DSP-17	ErrCnt	20.000
DSP-18	ErrCode	1.000

FIG: 4.113 SDSDSP

The ErrCnt should have a constant value or Zero to get a good sync.

4.6.6 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.

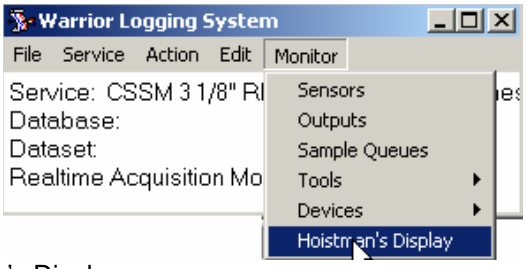


FIG: 4.114 Monitor Hoistman's Display

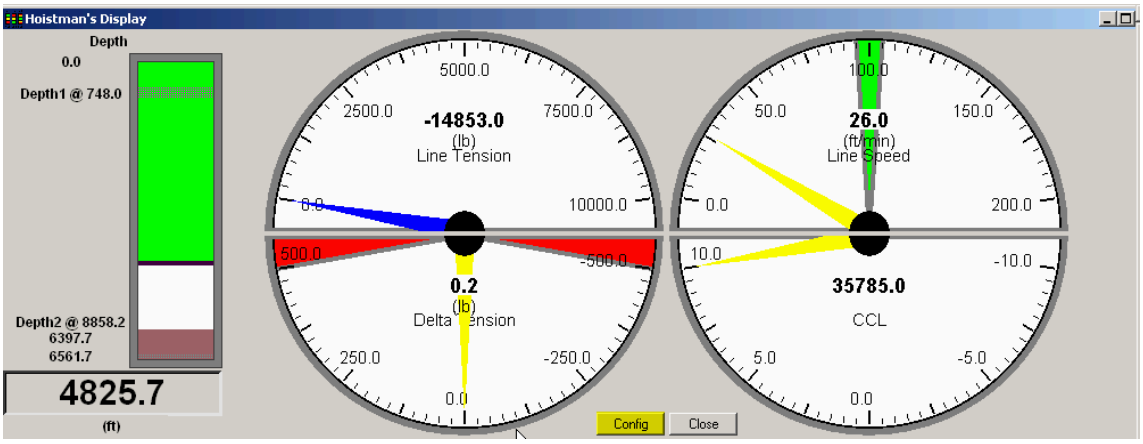


FIG: 4.115 Hoistman's Display

Click **Config**.

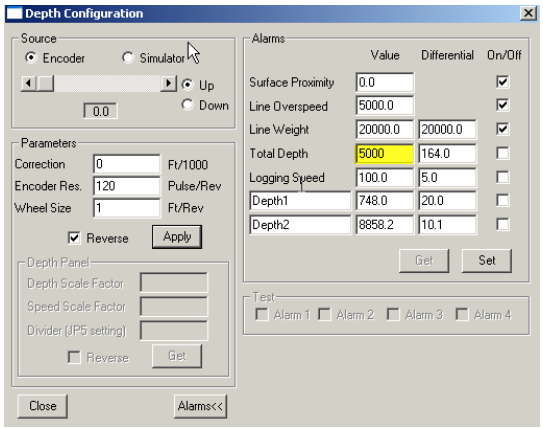


FIG: 4.116 Set up Depth Configuration

Right click over the gauge to select Gauge Properties

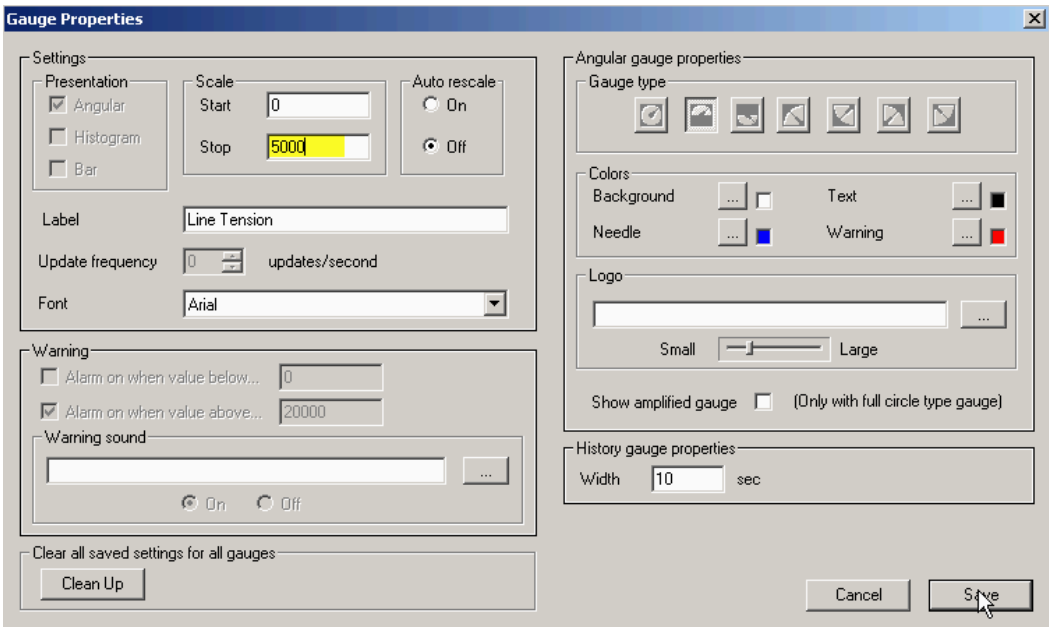


FIG: 4.117 Set Gauge Properties

VIDEO: 4.7 Monitor