

New bit for Utilities Manual

Gate Generator

This application is designed to automatically create the Warrior gate settings for Sondex Radial Bond Tools (RBTs). It can also generate Warrior AGT files.

14 GATE GENERATOR

14.1 OVERVIEW

The Sondex Gate Generator is designed to automatically create the Warrior gate settings for Sondex Radial Bond Tools (RBTs). It can also generate Warrior AGT files. These files are used by Warrior Acquisition to automatically position the amplitude gates according to the current Casing OD and Casing Weight zoned variables.

Sondex Gate Generator

File Help

Tool and Pipe Information

Tool Model Type: 004

Model Description: Radial Bond Tool (UW 3 1/8)

Calculate Pipe ID:

Select Pipe OD: 5.500 inches

Select Pipe Weight: 13.000 lb/ft

Pipe ID: 5.044 inches

Calculate TT

E1 Transit Time 3ft: 247 us

E1 Transit Time 5ft: 361 us

WARNING: The E1 transit times calculated in this application are estimates and should not be regarded as absolute. They should be used as a guide and the gates positions may have to be corrected in Warrior.

Add to Gates.ini

Gate Title: RBT_SCBL-004 5.5 in

Add

Create AGT File

Minimum OD: inches

Maximum OD: inches

File Name:

Generate

3ft Waveform Display Options

Amplitude Gate: 232 to 262 us

Travel Time Gate: 218 to 418 us

Threshold: 100 mV

Time Axis: 100 to 1000 us

Amplitude Axis +/-: 2.50 V

5ft Waveform Display Options

Amplitude Gate: 346 to 376 us

Travel Time Gate: 332 to 632 us

Threshold: 100 mV

Time Axis: 200 to 1200 us

Amplitude Axis +/-: 2.50 V

Sector Waveform Display Options

Amplitude Gate: 232 to 262 us

Travel Time Gate: 218 to 318 us

Threshold: 100 mV

Time Axis: 170 to 370 us

Amplitude Axis +/-: 2.50 V

Sondex

Exit

21/10/2005

Figure 14.1 Sondex Gate Generator

The application estimates the E1 transit times (3ft and 5ft) for the RBTs over a wide range of selectable pipe ODs and weights. From these transit times the software generates default amplitude and travel time gates, and allows the user to fully configure the plotted scales and threshold values.

WARNING: The E1 transit times calculated in this application are estimates and should not be regarded as absolute. They should be used as a guide and the gates positions may have to be corrected in Warrior.

14.2 USING GATEGEN

14.2.1 Creating Gate Settings

- Select the model of RBT that will be used during the logging job. Once the model is selected the description of the tool is displayed beneath.

Tool and Pipe Information

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Figure 14.2 Tool and Pipe Information

- If the Pipe ID is **not** known select the **Calculate Pipe ID** check box. When selected the user can select the closest pipe OD and weight to match the pipe to be logged. When both are selected the software will automatically generate a pipe ID and estimate the E1 transit times.

If the Pipe ID is entered directly by the user then the **Calculate TT** (Calculate Transit Times) button must be clicked to generate the estimated E1 transit times.

- Once the E1 transit times have been estimated by the software the user has the option to customise the gate and plot settings. There are 3 separate plots to configure, the 3ft (Near), 5ft (Far), and the Sectors.

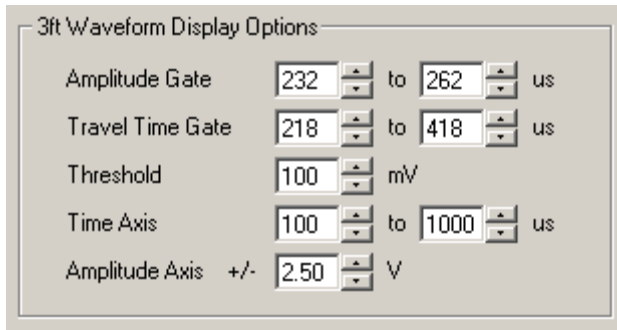


Figure 14.3 Waveform Display Options

For each plot the user can set the Amplitude gate, Travel Time gate, Threshold, Time axis range, and Amplitude axis range.

The amplitude gate by default is set to start $\frac{1}{4}$ of a wavelength before the E1 arrival time (approximately 14us), and stop $\frac{1}{4}$ of a wavelength afterwards. This can be altered by the user by increasing or decreasing the values in the text box. The user can either type in new values or use the up and down arrows next to the relevant text box.

The travel time gate by default is set to start $\frac{1}{2}$ a wavelength before the E1 arrival time and stop between 100 and 300us later, depending on the plot. Again these can be manually edited to suit the users' requirements.

Note that the time difference between the travel time gate start and stop times is saved to memory. When a new Pipe ID is entered, or calculated, the software automatically remembers the users preferred length of gate.

The threshold value is also saved in memory and will always return to the last saved value.

The time axis values can be edited by the user to any range between the maximum and minimum values. See the table below for maximum and minimum values allowed for each of the receivers:

	Minimum /us	Maximum /us
3ft	100	1000
5ft	200	1200
Sector	170	370

The amplitude axis is also fully configurable; the user can enter a value between 0.1V and 2.5V.

- To save the configured settings to Warrior (Gates.ini) the user must enter a title for the gate settings.

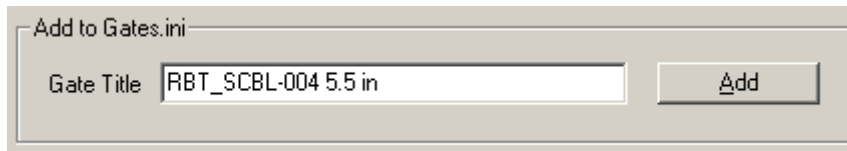


Figure 14.4 Enter Gate Title

The application automatically generates a title when the user selects the model of RBT and enters the pipe information. Two typical formats are shown below.

RBT-004 5.5 in RBT_SCBL-004 5.5 in

Key:
RBT/RBT_SCBL Tool Type
004 Model
5.5 CASEOD
in Units (inches, use mm for millimeters)

This format is recognised by Warrior, and when an RBT Warrior Service (i.e. Sondex Ultralink RBT 3 1/8") is selected in Warrior Acquisition, Warrior looks at the tool string and recognises when an RBT of model type 004 is in the string. If the CASEOD zoned variable matches the OD in the gate title then the Warrior Waveform Signal window is automatically loaded with the correct gate setting.

Note: When the user enters a Pipe ID manually the software can not automatically generate the correct gate title. The title is set to "RBT-MODEL X.X in", the user should edit the gate title by replacing "X.X" with the correct pipe OD (CASEOD).

To add the newly created gate settings to Warrior click on the **Add** button. A popup message will appear if the gate is successfully added to Gates.ini.

14.2.2 Creating AGT Files

Sondex Gate Generator has the option to create **AGT** files. These files are saved to the Warrior Config directory and contain default amplitude gate positions that are automatically loaded when specific Casing OD and Casing Weight zoned variables are set in Warrior.

Note: Warrior only uses the AGT files if they have been added to the tool information, see the Sondex Warrior manual (**MN_WARRIOR**) for a full description.

To generate an AGT file select the minimum and maximum Casing ODs.

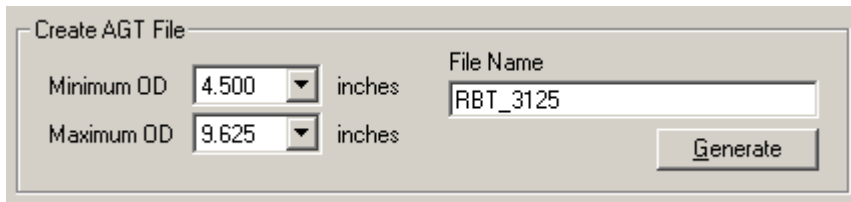


Figure 14.5 Create AGT File

Enter a suitable name for the AGT file and click on **Generate** to complete the process. The AGT file will be saved to the Warrior Config directory, and the user will be able to reference the file in the Warrior Tools Editor.

Note: The length of the amplitude gate is fixed to a default of 28us if the *Waveform Display Options* have not been edited by the user.

New bit for Warrior Manual

19.19.2.5 Automatic Gate Changing While Logging

It is now possible in Warrior V7.01 to automatically change the amplitude and transit time gates while logging using the zoned variables

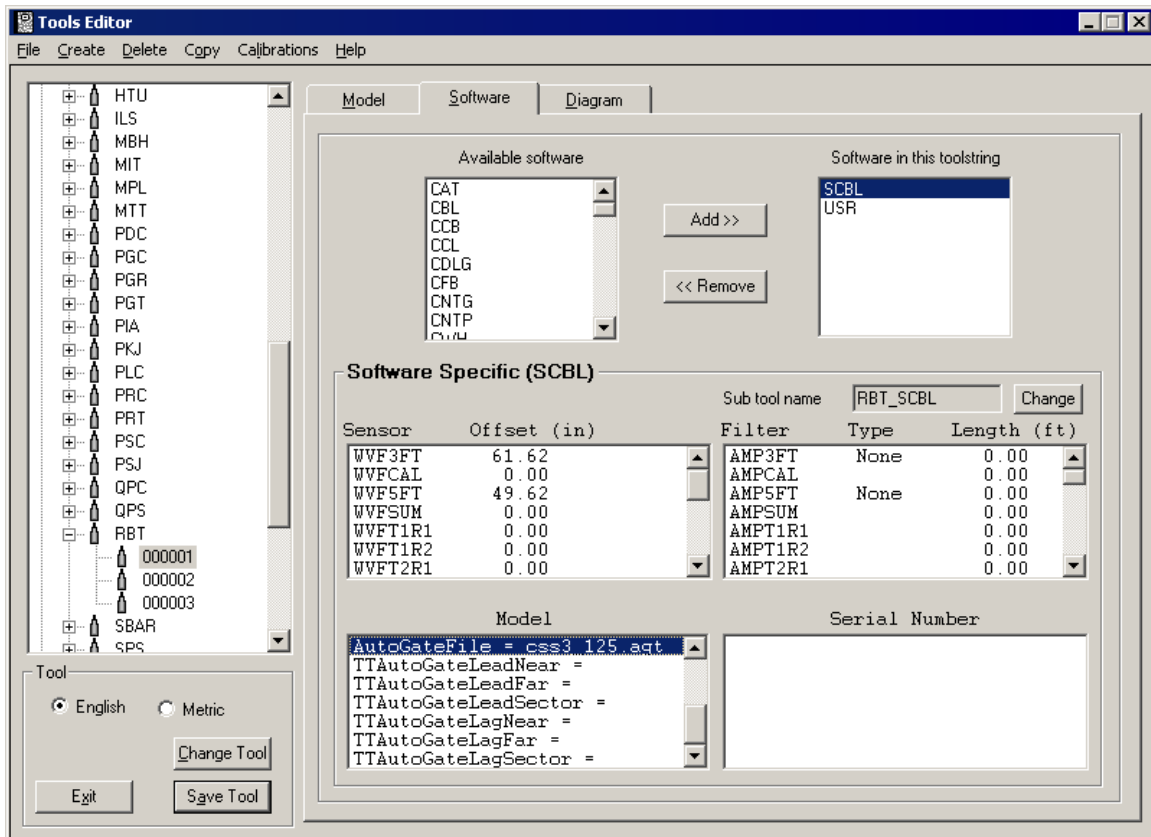
The first thing to do is make an AGT file, there are examples in the Warrior Config directory (Css1_6875.agt and Css3_125.agt). Note that the two example AGTs are designed for the old CSS RCBLs where the radials were 2ft from the transmitter rather than 3ft. To make this AGT file you'll need to know the transit times for all the casing ODs and weights, you can get a rough idea by using the new Sondex Utility - Gates Generator that calculates transit times and automatically creates gate settings in Gates.ini.

Below is a section from an example AGT file, the first column is the pipe ID, then the weight, the final three columns are amplitude gate settings for the radials, 3ft and 5ft.

Example: 40@141; this means the amplitude gate is 40us long starting 141us

```
;  
; This table specifies the automatic gate response for the CSS 3 1/8  
RCBL  
;  
; OD(inches) weight(lbs) width@start(radials) width@start(near)  
width@start(far)  
  
4.500    9.500    40@141    35@198    35@312  
"        10.500  40@140    35@197    35@311  
"        11.600  40@139    35@196    35@310  
"        13.500  40@138    35@195    35@309  
"        15.100  40@136    35@193    35@307  
5.000    11.500  40@150    35@207    35@321  
"        13.000  40@149    35@206    35@320  
"        15.000  40@147    35@204    35@318
```

Once the AGT file is created and saved to the Warrior Config directory the file needs to be linked to the tool. Locate the RBT in the Warrior Tools Editor (Warrior Utilities), and select the appropriate RBT serial number. In the Software tab (see Figure 19.X) you'll see in the Model information there's an option called AutoGateFile. Double click on the option and enter the name of your AGT file.



RBT.bmp

Figure 19.X Warrior Tools Editor (RBT)

The AGT file contains the amplitude gate settings, and by default Warrior makes the transit time gate values identical. Usually you want the transit time gate to start before the amplitude gate and catch the next couple of arrivals. Below the AutoGateFile setting are the transit time gate lead and lag settings, TTAutoGateLeadNear etc., a lead and lag should be entered for the Sectors (radials), Near (3ft) and Far (5ft) receivers. The lead is the number of microseconds the transit time gate should start before the amplitude gate start time, and the lag is added to the length of the amplitude gate.

Now when you enter Warrior Aquisition and select the RBT service the amplitude gate settings from the AGT file are automatically loaded, and the lead and lag applied to the transit time gates. It's probably worth setting up your zoned variables prior to selecting the service; remember to set both the Casing OD and Weight variables.

When you start to log Warrior will automatically check the zoned variables and alter the gate positions appropriately. It's worth noting that all manual changes while logging will now be overwritten immediately because Warrior checks the zoned variables at every depth change; except of course the transit time gate threshold (mV) which is independent of the AGT file.