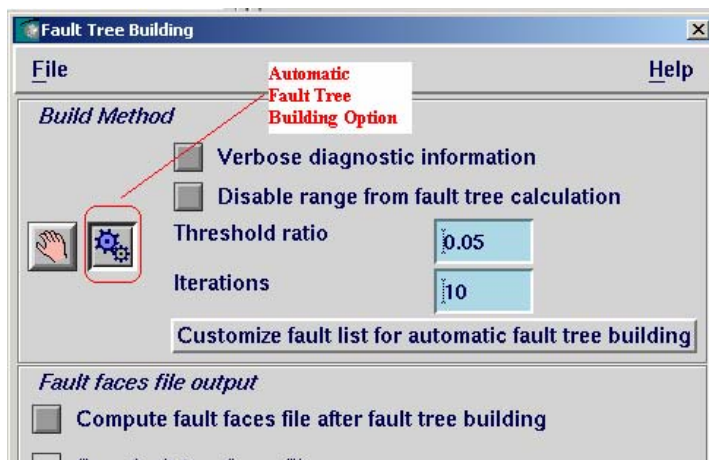




Automatic Fault Tree Building

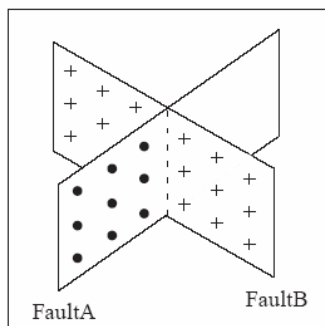
Horizon Gridding Project Paper II

Creating a fault tree is a critical part of building a 3D geologic model. A fault tree can be built manually but many users use the Automatic Fault Tree Building utility in the WorkFlow Manager, located on the **Fault Tree Building** menu:

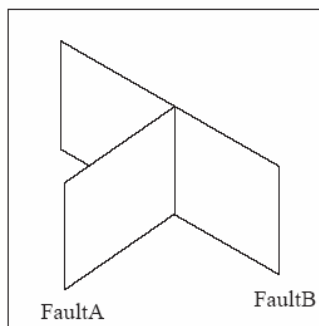


In the most simple terms, the automatic tree builder looks at the fault data and the fault grids for each fault. Where two faults intersect, it tries to determine which fault has "priority." It does this by determining the number of points for each fault that lie on either side of the fault intersection:

Input to Fault Tree Builder



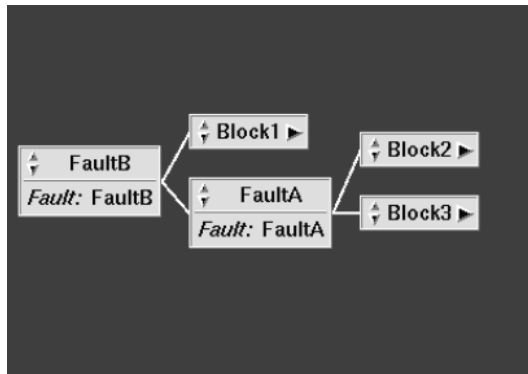
Resulting Fault Tree



- FaultA's Input Scattered Data Points
- + FaultB's Input Scattered Data Points

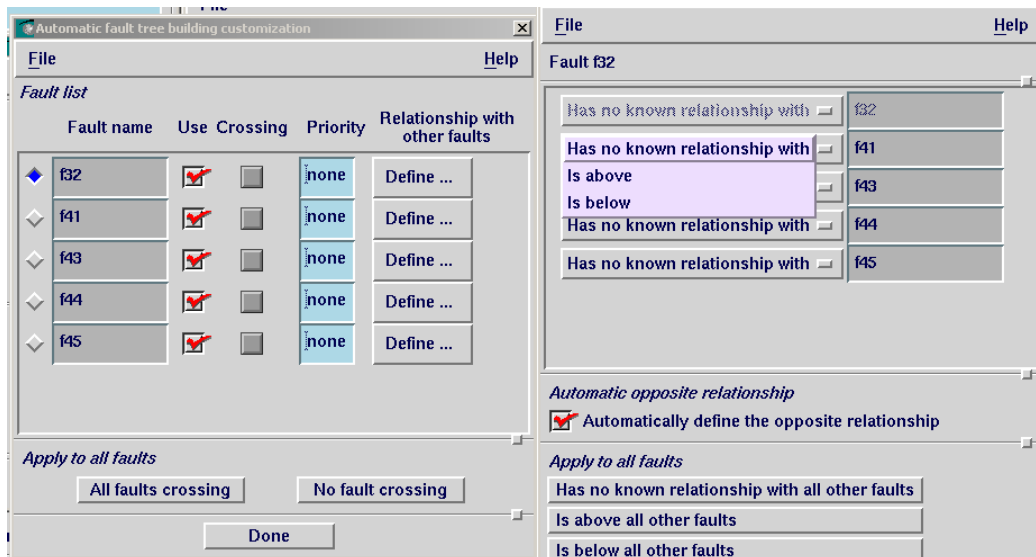
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This dataset would create the following fault tree hierarchy:



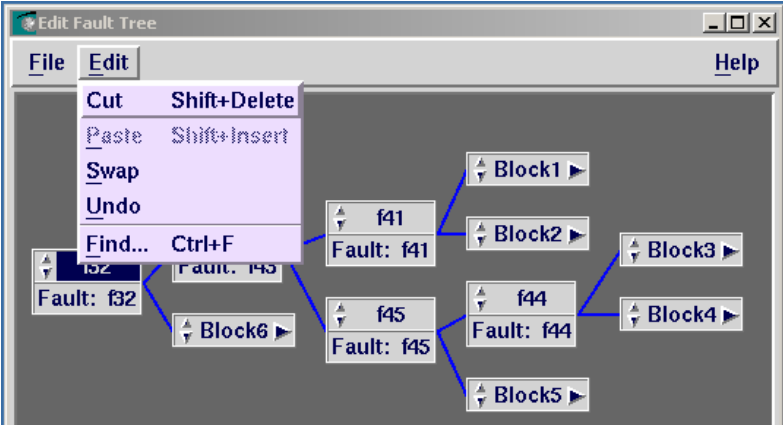
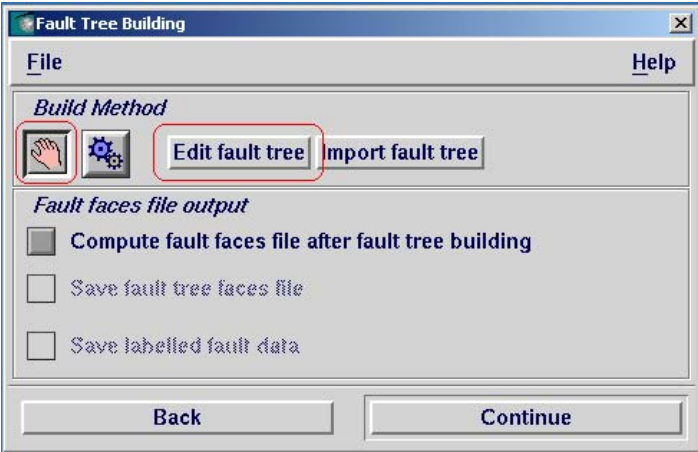
If more than 5% of the data for FaultA is on the other side of its intersection with FaultB, then the fault becomes *crossing* which means that FaultA is in the tree both above and below FaultB. The **Threshold Ratio** sets this 5% parameter and can be customized.

Many other parameters can be set in order to produce the best possible fault tree. By selecting the **Customize Fault List For Automatic Fault Tree Building** button, you have access to many of these parameters shown in the two windows below:



These parameters allow the user to force certain priorities among the faults when the fault tree is being created. The automatic fault tree builder will honor the priorities set here and automatically fill in the rest of the tree with other faults. The online help (*Help* → *On This Window*) has more information on each of these parameters.

Once the fault tree has been created automatically, it can be manually edited by selecting the hand icon on the Fault Tree Building menu and then selecting **Edit Fault Tree**. The Edit Fault Tree menu has Cut/Paste/Swap options that allow the user to customize the fault tree. When fault tree building is set to manual, the tree will not change the next time the model is built.



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