

Fracture Modeling in Petrel

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Petrel 2007.1 and its new Fracture Modeling Module

A great deal of hydrocarbons is trapped in fractured reservoirs. Such reservoirs account for the bulk of the production in areas like the Middle East and Mexico. Fracture characterization is necessary to effectively tackle exploration and reservoir simulation in such areas (Ricoy and Cartwright, 2004; Mitra et al., 2004; Daniel et al., 1997)

During the last decade oil and gas producers have tried to minimize the risk of operating in fractured reservoirs by modeling Discrete Fracture Networks (DFN) aided by stress indicators and/or production data.

Petrel has robust workflows which proved to tie perfectly with fracture modeling. Two technologies used in such workflows are: AntTracking™, which detects fault patches often associated with fracture zones, and Neural Networks, which is able to create 3D properties based on well data or well+seismic data. Some other workflows are based on guiding fracture intensities as a continuum with the aid of the second derivative of a surface or by using another fracture dependant attribute.

Schlumberger has partnered with the FracMan® group to launch a fracture modeling module within Petrel. This new functionality enables reservoir modelers to create DFN'S from fracture intensities along the wellbore. Such "networks" are stochastic in nature, but can also be guided by seismic attributes. Fracture connectivity, transmissivity and permeability are computed and can be upscaled using Oda's method or Flow Based upscaling. In this new release of Petrel, users are able to model dual porosity / dual permeability systems which are ready for simulation within Petrel.

References

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