NHF11

Integrated Modelling of Faulted and Fractured Reservoirs

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SUMMARY

This work was elaborated at IFP Energies Nouvelles – Institut Français du Pétrole, in Rueil Malmaison, France, during one year. Since the early nineties, IFP has been developing an integrated methodology and softwares for modelling faulted and fractured reservoirs. The methodology includes static and dynamic modelling of fractured reservoirs and its calibration based on production data.

The description of the internal architecture of fractured reservoirs is much more difficult than that of the non-fractured ones. In fact, these reservoirs were originally continuous and, under the effect of tectonic stresses they have been fractured. The fractures themselves are frequently invaded by water and, as a consequence, calcite deposits may occur as well as the surrounding matrix dissolution causing the formation of vugs (diagenesis).

The fractured reservoir modelling process should always follow a multi-discipline integrated approach that includes geophysics, geology and reservoir engineering processes and data that are combined to identify the main types of fractures, to predict their occurrence in the reservoir (3D stochastic fracture model) and to determine the hydraulic properties (aperture, conductivity) of the different fracture sets.

In this field case interest challenges appeared along the process.

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