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An Integrated Workflow for Modeling Methodology for Fractured Reservoir

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Abstract

In recent years for characterization of reservoir and their complex structure in a realistic ways a lot of data acquisition and efficient modeling tools have been emergence. For sustaining production from existing fields and increasing recovery factors will be critical due to early breakthroughs. To do this, it will be necessary to improve our understanding of fluid flow mechanisms and reservoir systems. A large proportion of the world's proven oil reserves have been found in reservoir rocks that are naturally fractured. Greater understanding of the fracture distribution and connectivity within basement reservoirs may prove to be the key tool for improved exploration and production management of this hidden resource. Commercial, naturally fractured basement oil deposits have been found largely by accident. However, with the advent of sophisticated instruments and integration of geological and geophysical techniques, the risk of drilling basement reservoirs was reduced considerably. Improvement in geological concepts, seismic survey designs, processing and interpretation, magnetic studies and integration of interpretations ensure minimum reservoir damage during drilling.

The main steps of integrated modeling methodology are (1) Geological analysis and modeling of multi-scale natural fracture network from seismic and well data (2) validation and calibration of these data from dynamic field information such as well data. (3) Innovative flow up scaling procedure applied to realistic model (4) the implementation of predictive and numerically-efficient algorithms

Beside this, one of the most important and emerging challenges of geoscientists and engineers is to improve reservoir description techniques. It is well recognized that improvements in reservoir description will reduce the amount of hydrocarbon left behind the pipe. Many reservoir description programs, though detailed, have not included descriptions of fractures.

This paper proposed the work flow by integrating geophysical, geological, drilling and production data to built a fracture model by using latest software FRACA FLOW Pro. This paper will provide meaningful information of fractures and faults for reservoir dynamic simulation process for optimizing field productivity and reserves.