

Geomechanical Solution for Natural Fractures Dynamics Prediction

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Abstract

The equivalent-continuum approach used in reservoirs geomechanics, considering the duality fractured-media deformation on pressure-flow. The research effort involves construction detailed of the natural fracture behavior during reservoir depletion. The model provides an insight into the key processes determining the closure of a fracture, and can act as a material input function for numerical models linking the effects of changes in the stress field, to the flow and transport parameters of a fractured system. The main novelty of this work is that the geomechanical solution can predict natural fractures dynamics. This approach rigorously captures the effect of fractured-media deformation on pressure-flow, and it is applied to naturally fractured reservoirs. Generally, fracture deformations produce an aperture change, which in turn influences reservoir flow and compaction behavior. Uncertainties associated with these predictions are considerably reduced by constraining and validating the mathematical model, using pressure data and geological model.

References

1. ZOBACK AND M. . Reservoirs Geomechanics. 2007.