Self-similar solution analysis of hydraulic fracture growth with bottom hole pressure restriction

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Nowadays hydraulic fracturing is an essential part of the development of low-permeability oil and gas fields. Moreover, the well productivity dynamics is radically depends on the effectiveness of fracturing treatment. One of the main hydraulic fracturing design problem is create a long fracture without crack height growth into the intervals saturated with non-target fluid (e.g. water). The obtaining self-similar solution to this problem in the framework of the Pserudo3D [1-3] model is considered in the presented study.

The presented crack propagation analysis shows that in the case of constant bottom hole pressure the automodel solution of one variable could be derived. A study on the dependence of the solution on pressure, time, hydraulic fluid properties and leak off is also conducted.

REFERENCES