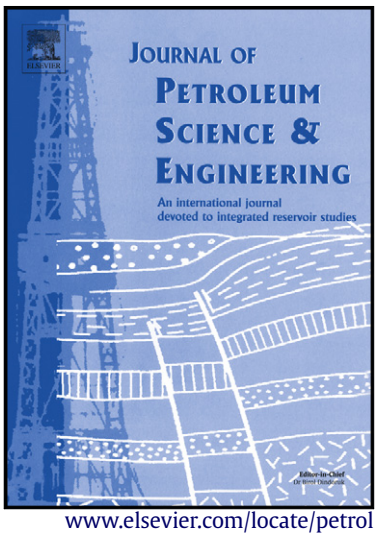

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Pressure buildup behavior of vertically fractured wells with stress-sensitive conductivity

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Abstract

This paper presents the results of a study on pressure buildup analysis of a vertically fractured well with the consideration of stress-sensitive permeability and hysteresis effect in fracture. A new function was established to better characterize the variation of fracture permeability on pore pressure, and a mathematical model was derived for the buildup test of fractured wells with stress-sensitive conductivity. Several simulation cases involve various conductive fractures were run to plot pressure buildup type curves under stress damage condition. The influence of stress effect on buildup behavior and the variation of the fracture conductivity are discussed extensively. Results of this investigation demonstrate that for stress-sensitive conductivity fractured wells, a straight line with slope value of 0.25 which defines the bilinear flow regime is still clearly observed on pressure buildup type curves after pressure drops. The stress sensitivity behavior of a producing fractured well could not be determined from a single buildup test. The effect of permeability hysteresis in the fracture has a negligible influence on the pressure buildup curves. From the test data

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