عنوان مقاله:

Three-Phase Modeling of Dynamic Kill in Gas-Condensate Well Using Advection Upstream Splitting Method Hybrid Scheme

محل انتشار:

مجله علوم و فن آوری نفت, دوره 9, شماره 2 (سال: 1398)

تعداد صفحات اصل مقاله: 16

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خلاصه مقاله:

Understanding and modeling of three-phase transient flow in gas-condensate wells play a vital role in designing and optimizing dynamic kill procedure of each well that needs to capture the discontinuities in density, geometry, and velocity of phases but also the effect of temperature on such parameters. In this study, two-phase Advection-Upstream-Splitting-Method (AUSMV) hybrid scheme is extended to a three-phase model capable of modeling blowout and dynamic kill in gas-condensate-water wells. In order to better understand and model such a process, density and viscosity changes are calculated using the Peng-Robinson equation of state. Moreover, the resulted simulator enables us to study and model highly changing flow conditions during blowout and dynamic kill process applied to a well in a gas condensate reservoir. In addition, a sensitivity analysis has been conducted on the relief well kill rate, pump step down schedule, and well intersection depth. Moreover, the results reveal the impact and influence of each of these parameters on dynamic kill process. Finally, the model introduced here and the results of the sensitivity analysis using this transient three-phase model can be used to better design a control process for wells in gas condensate reservoirs.

کلمات کلیدی:

Three Phase Modeling, Dynamic Kill, Gas-Condensate Well, Advection Upstream Splitting Method, Hybrid Scheme