عنوان مقاله:

Evaluation of Improved Heavy Oil Recovery by Polymer Flooding Using Two-Dimensional Simulations

محل انتشار:

دومین همایش ملی نفت و گاز ایران (سال: 1393)

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خلاصه مقاله:

Trapping and releasing of fluids from porous media have been the subject of an extensive research bythe petroleum production industry for many years. They are of greater interest today because of thecritical need to improve recovery efficiency from petroleum reservoirs. Although water and gas areinjected to recover more hydrocarbons, the injected fluids cannot recover them significantly. Themajority of the remaining oil is trapped by capillary forces and bypassed due to reservoirheterogeneities or unfavorable mobility of the injected fluids to displace reservoir oil. Therefore, asignificant fraction of the remnant oil is available as a target for Enhanced Oil Recovery (EOR)processes. Polymers have been traditionally used as a mobility control agent in water flooding toimprove sweep efficiency. It is well accepted that polymer flooding brings benefits such as later waterbreakthrough time, less water production and higher oil recovery at given water cut. The main factorsthat affect the forecasting of the performance of an isothermal EOR process are volumetric sweepefficiency, oil saturation at the start of a process, the final average oil saturation after the process andthe reservoir heterogeneity. The main objective of this study is history matching of the five-spot glassmicro-model results using the multi-component, multiphase and three-dimensional chemical floodsimulator. In this paper, the effect of polymer type, local heterogeneity, and initial water saturation areexamined using a series of numerical simulations. The agreement between simulation results andmeasured data are very good. Simulation results show that Hydrolized PolyAcrylaMide solution havea more predominant effect on the performance of polymer flood than xhantan, while increasing theinitial saturation decreases dramatically the performance of polymer flood.

کلمات کلیدی:

Polymer Flooding, Micro-models, Numerical Simulation, UTCHEM