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Catalytic hydro cracking through hydro treating of atmospheric Kirkuk crude oil residue upgrading

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In this work, reduced crude residue derived from Kirkuk crude oil using a commercial nickel-molybdenum on alumina (Ni-Mo/γ-Al_2O_3) catalyst pre-sulfided at specified conditions in an experimental scale is considered. A series of experiments were carried out in a continuous flow trickle bed reactor by varying the reaction temperature from 380 to 420° C, the liquid hourly space velocity from 0.3 to 1.0 hr^{-1} and the hydrogen pressure from 60 to 100 bars at constant hydrogen to oil ratio of 1000 L/L. The hydrocracking products were distillated into the following fraction: naphtha (IBP-160° C), kerosene (160-225° C), light gas oil (225-345° C), heavy gas oil (345-540° C) and vacuum reside (+540° C).

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Compositional reservoir simulation evaluation of the gas miscible injection in tight formation

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The Bakken is a very tight formation with the oil contained mostly in siltstone and sandstone reservoirs with low porosity and permeability. There could be an estimated 25 to 100 billion barrels of Bakken oil in place. At present, the combination of horizontal well drilling and the new multi-stage fracturing and completion technologies has been the solution to economically produce from the Bakken formation. The primary recovery factor however remains rather low due to high capillary trapping. While water flooding could result in unfavorable infectivity issues, carbon dioxide (CO_2) or natural miscible flooding provides a promising option for increasing the recovery factor. Higher oil recovery factor can be achieved with gas injection through multi-contact miscibility that results in vanishing interfacial tension, viscosity reduction and oil swelling. The aim of this paper is to evaluate the performance of the miscible gas flooding using compositional reservoir simulation approach. Different strategies were tested to compare the effects on oil recovery of injection well pattern and heterogeneity. The simulation results show that gas flooding presents a technically promising method for recovering the vast Bakken oil.

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