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A SIMULATION STUDY OF CO_2 FLOODING FOR *EOR* AND SEQUESTRATION IN BOTTOM WATER-DRIVEN RESERVOIR

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Abstract

CO_2 flooding has been recognized widely as one of the most effective enhanced oil recovery (EOR) technologies for reducing greenhouse emissions while increasing the ultimate recovery of oil reservoirs. Because of the wide variety of parameters that can influence, the outcome of CO_2 storage projects reservoir simulation has gained wide popularity. In this study, a fully compositional reservoir simulation model was used to simulate various operational conditions, reservoir properties and fluid composition, and their effects on the amount of CO_2 stored and oil recovered. The results can be used for selection of best reservoir candidates for carbon storage and optimization of operational parameters in CO_2-*EOR* and sequestration. The results show as injection pressure approaches oil minimum miscibility pressure, both CO_2 sequestered and oil recovery factor approaches to their maximum value. Also, injection of CO_2 in lower layers of reservoir (or in aquifer) delays breakthrough time and maximizes CO_2 solubility in water and storage capacity. Simulation results show as pore size distribution index decreases, both oil recovery factor and CO_2 storage capacity decreases. Early implementation of CO_2 flooding maximizes CO_2 sequestration and leads to lower recovery than CO_2 flooding of water flooded reservoir.

Key words: bottom water reservoir, CO_2 sequestration, enhanced oil recovery (EOR), simulation, storage

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