

Evaluating the effects of Gas Injection on Enhanced Gas-Condensate Recovery and Reservoir Pressure Maintenance

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Abstract : In this paper, the Eclipse 300 simulator was used to perform compositional modeling of gas injection process for enhanced condensate recovery of a real gas condensate well in south of Iran here referred to as SA4. Some experimental data were used to tune the Peng-Robinson equation of state for this case. Different scenarios of gas injection at current reservoir pressure and at abandonment reservoir pressure had been considered with different gas compositions. Methane, carbon dioxide, nitrogen and two other gases with specified compositions were considered as potential gases for injection. According to the obtained results, nitrogen leads to highest pressure maintenance in the reservoir but methane results in highest condensate recovery among the selected injection gases. At low injection rates, condensate recovery percent is strongly affected by gas injection rate but this dependency shifts to zero at high injection rates. Condensate recovery is higher in all cases of injection at current reservoir pressure than injection at abandonment pressure. Using a constant injection rate, increasing the production well bottom hole pressure results in increasing the condensate recovery percent and time of gas breakthrough.

Keywords : gas-condensate reservoir, case-study, compositional modelling, enhanced condensate recovery, gas injection

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