Thermodynamic Modeling of Methane Injection in Gas-Condensate Reservoir Core: A Case Study

Authors : F. S. Alavi, D. Mowla, F. Esmaeilzadeh

Abstract : In this paper, the core of Sarkhoon Gas Condensate Reservoir located in the south of Iran was thermodynamically modeled in order to study the natural depletion process and methane injection phenomena for enhanced gas-condensate recovery using the Eclipse 300 compositional simulator. Modeling was performed for three different core lengths with different production and injection flow rates in both vertical and horizontal cases. According to the results, the final condensate in place value in the natural depletion process is approximately independent of the production rate for a given pressure drop. The final condensate in place value is lower in vertical cases compared to horizontal cases. An increase in the injection flow rate leads to a decrease in the percentage of gascondensate recovery. In cores of equal length, gas condensate recovery percent is higher in vertical cases in comparison to horizontal cases. For a constant injection rate, decreasing the core length leads to a decrease in gas condensate recovery.