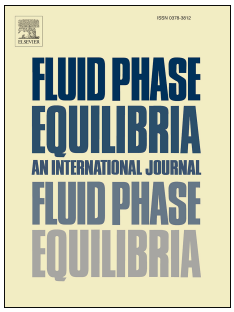

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Fluid behavior of gas condensate system with water vapor

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Abstract

For most gas condensate reservoirs, a high water cut and near-wellbore retrograde condensate pollution are the main problems encountered by engineers. Thus, a good understanding of the influence of water vapor and the complex phenomenon of a near wellbore region on the phase behavior of gas condensate is critical to forecast the performance of reservoir fluids and guide the exploitation of gas condensate reservoirs. In the present work, constant composition expansion (CCE) and constant volume depletion (CVD) measurements are performed to determine the phase behavior of gas condensate samples with and without water vapor. Our experimental results demonstrate that water vapor not only increases the dew point pressure, but it also influences other gas-related properties. Furthermore, several equations are applied to predict the solubilities and gas-related properties. As the predictions are compared to each other, it is obvious that the cubic-plus-association (CPA) equation of state (EOS) performs very well in all properties with a test fitting interaction parameter. A good agreement between the experimental data and predictions is observed.