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Experimental studies on constant mass expansion of gas reservoirs

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Abstract

This study presents a new empirical model to estimate dew point pressure for gas condensate reservoirs as a function of routinely measured gas analysis and reservoir conditions. The proposed model was developed based on field and laboratory PVT analysis data of 226 gas-condensate fluid samples representing different gas reservoirs and wide range of gas properties and reservoir temperatures. Statistical error analysis was used to determine the accuracy of the model. The evaluation shows that the correlation coefficient, an average relative error, and average absolute relative error are of 0.9881, -1.51% and 2.33 %, respectively. In addition, results of the proposed model were compared with those published in the literature and ensured its success for capturing the physical trend of gas-condensate systems, and consequently is considered as the most reliable one for petroleum industry. The accuracy of the model has been also compared to Soave Redlich Kwong equation of state (SRK-EOS) and Peng Robinson equation of state (PR-EOS). Gas condensate samples have been used to check the validity of the proposed model against EOS.

Biography

M. El Aily has completed his MSc at the age of 29 years from Ain Shams University, Cairo, Egypt and at the Egyptian Petroleum Research Institute, Cairo, Egypt. He is performing now doctoral studies also from Ain Shams University and at the Egyptian Petroleum Research Institute. He is an assistant researcher in PVT Lab and supervisor of PVT services center, Production department in Egyptian Petroleum Research Institute.