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New inflow performance relationship for solution- gas drive oil reservoirs

Mohamed Elyas

Weatherford International, Mina Abdallah, Kuwait

IPR describes the behavior of the well's flowing pressure and production rate, which is an important tool in understanding the reservoir/ well behavior and quantifying the production rate. IPR is often required for designing well completion, optimizing well production, nodal analysis calculations, and designing artificial lift. In this work, a new model to predict the IPR curve was developed, using a new correlation that accurately describes the behavior the oil mobility as a function of the average reservoir pressure. This new correlation was obtained using 47 actual field cases in addition to several simulated tests.

After the development of the new model, its validity was tested by comparing its accuracy with that of the most common IPR models such as Vogel, Fetkovich, Wiggins, and Sukarno models. Twelve field cases were used for this comparison. The results of this comparison showed that: the new developed model gave the best accuracy with an average absolute error of 6.6 %, while the other common models are ranked, according to their accuracy in the following order to be Fetkovich, Sukarno, Vogel, and Wiggins, with average absolute errors of 7 %, 12.1 %, 13.7 %, and 15.7 respectively. The new developed IPR model is simple in application, covers wide range of reservoir parameters, and requires only one test point. Therefore, it provides a considerable advantage compared to the multipoint test method of Fetkovich. Moreover, due to its accuracy and simplicity, the new IPR provides a considerable advantage compared to the widely used method of Vogel.

Biography

Mohamed Worked as a teaching assistant at Faculty of Engineering, Petroleum Department, Cairo University from Oct, 2003 till August, 2009. Currently, he is working as a Training Manager at Weatherford International and Lecturer at the Australian College of Kuwait "ACK" (School of Engineering, Petroleum Department).

mola_elyas@hotmail.com