Permeability prediction using a physical model based in Fractal Theory and a statistical one based in Fuzzy Logic

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We have used three different techniques for permeability prediction from porosity data in well PX12 at El Lago de Maracaibo. One of these techniques is statistical and is based in Fuzzy Logic. Another has been developed by H. Pape et al, based in Fractal Theory and the Kozeny-Carman equations and the other one is an empirical model obtained by Tixier. We have used 100% of the permeability-porosity data to obtain the predictor equations in each case. We have found better results with the statistical approach. The results obtained from the fractal model and the Tixier equations are similar in this case. We have also taken randomly 25% of the data to obtain the predictor equations. In this case the best results are those obtained with fractal theory. We have divided the permeability-porosity data by windows in order to determine the possibility of prediction using just part of the data. We have not improved the results obtained taking randomly 25% of the data.