

## **An Analytical Method for Fracture Distribution and Water Production Regularity in a Buried-Hill Reservoir**

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### **ABSTRACT**

The fracture distribution in a buried-hill reservoir characterized by strong randomness and high degree of heterogeneity, resulted in complex water flooding regularity in the development of oil wells. There was no effective method to identify the distribution of underground reservoir fractures in the last few years. In order to solve the problem, the Bohai JZS buried-hill reservoir was taken as an example to analyze the features of water production in different oil wells by using abundant dynamic data, together with obtained water cut rising regularity, i.e. water produced in footstep style gradually from local fractures to all fractures. Based on the water production regularity in the buried-hill reservoir, a homogeneous pressure profile model was selected to predict the water production in fracture reservoir, and calculated inversely to the distribution of underground cracks by fitting the water production characteristics of actual oil wells. After that, the investigations arrived at a conclusion, considering the buried-hill reservoirs having strong anisotropy, with the characteristics of log-normal distribution of fractures. Research results showed that the log-normal distribution of fractures could be taken as a constraint in the geologic modeling of buried-hill fracture reservoirs and could be used to improve the accuracy of history matching the water cut in these reservoirs, providing valuable references for numerical simulation and high-efficiency development of similar fracture reservoirs.