



Fracture Analysis in Tabnak Hydrocarbon Field of Iran by using Fractal Geometry and Multifractal Methods

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High gas production from the Dashtak formation of Tabnak hydrocarbon field in Fars province, Iran, indicates the presence of natural fractured reservoir whose production potential is dominated by the structural fracture. The connectivity of fractured media depends upon the power-law exponent and the fracture density. Fracture pattern traces obtained from the outcrops of producing formations of 6 different stations in Tabnak hydrocarbon field. 2D fracture network maps of Tabnak hydrocarbon field have been analyzed from their scaling properties. The fractal analysis of fracture intensity showed heterogeneous multifractal structure with characteristic generalized dimensions. Distribution of fracture lengths exhibits power-law behavior with specific exponent. Scaling laws serve to make extrapolations, and to study the fracture connectivity related to scale. Fracture distribution model and reservoir productivity can be estimated, which are of great interest in decision-making to optimize gas production.

Keyword: Fractals, Fracture network, Multifractals, Power-law exponent, Tabnak hydrocarbon field.