

Prediction of the Deep Igneous Gas-Bearing Reservoir at Xingcheng Area Outside Daqing Oil Field, China

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Preliminary exploration shows there are huge gas reserves in the late Cretaceous igneous formation at Xingcheng area outside Daqing oil field, China, in which the major gas accumulation is located at the stratigraphic YC1 formation fractured. Complex lithology and abundant micro-fracture of the igneous formation made the logging features and readings radically unconformity, and detailed information about fracture productivity was difficult to obtain. As the results, the gas reservoirs were not completely distinguished with non-reservoirs or dense formations by using of the conventional methods. In order to provide the accurately gas reserve estimate in this area, the detailed gas (including CO₂ gas) prediction must be carried out based on the log, core (include RCA and SCAL), gas chromatograph, well testing and producing data. Through the studies some state-of-the-art methods were established to identify the gas-bearing reservoirs in this specific reservoirs.

This paper presents the case study on the prediction of the igneous gas-bearing reservoir fractured based on the data from 18 wells in which 6 wells were cored and 17 intervals in 11 wells were tested. The major contents are as follows, geological features of the igneous formation, definition and classification of the igneous formation, lithology identification of the igneous formation, compartmentalization and prediction of gas-bearing reservoirs.

The study and methodology presented in this paper had been recognized as a creditable to predict the igneous gas-bearing reservoir at the study area. The gas net pays predicted had been applied to estimate the gas reserve at this prospecting area.