Characters of reservoir and main control factors in upper second member of Shahejie formation (Es2) in Linnan sub-sag

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The Shuangfeng area is located in the Linnan Sub-sag, Huimin Depression, Bohai Bay Basin, China. This area contains four oil-bearing series: lower Es3, middle Es3, upper Es3 and Es2. However, the reservoirs in Es3 formation are low permeability, resulting high cost exploitation. Reservoirs in upper formation (Es2) become focused. Depending on the braided delta facies in Es2, the reservoirs can be divided into three types: Distributary channel reservoir, under water distributors channel reservoir and mouth bar reservoir. On the basis of core observing from 28 wells and 62 samples, a regional study, involving thin section, scanning electron microscopy and mercury injection method, has been undertaken. The thin section results indicate that the clastic rocks of distributary channel reservoir are mainly lithic arkose and lithic sandstone. The major lithology of underwater distributary channel reservoir and mouth bar reservoir are feldspathic litharenite sandstone. All of them have good sorting and middle texture maturity. The scanning electron microscopy result shows that there exist two types: macroporosity and microporosity. The mercury injection method figures up the physical property of the three reservoirs. The calculation of compacted rate shows that the three type reservoirs have the similar range. All the analysis show that: 1) the main principal controlling factors in reservoir are sedimentation, the diagenesis and lithology have less influence; 2) in Shuangfeng area the mouth bar reservoir has better physical property than the other two types. The results make the controlling factors of reservoirs clear and will help the oil and gas exploration in the region.

Biography

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