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The Influential Factors and Charactristics of Triassic Yanchang Formation Reservior in the Zichang Delta, Ordos Basin, China

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Based on the theory of sedimentary petrology, mineral petrology, reservoir geology, well logging geology, exploitation geology and petroleum geology, and reservoir engineering, in combination with outcrop, core, thin section, scanning electron microscope, mercury intrusion and X-ray et al, this paper discussed the characteristics of the low penetrability reservoir of Chang 2 member and the ultra- low penetrability reservoir of Chang 6 member of the Zichang oilfield in the east of Shanbei slope.

Chang 2 and Chang 6 members of the interested Yanchang Formation are both structurally west dipping monoclines. The high structure relief amplitude, nosie background and small micro tectonics were developed in Chang 2 member, which controls the reservoirs types and residual oil distribution, and formed lithologic reservoir, lithologic-tectonic reservoir, and secondary diagenesis-lithologic reservoir, while lithologic reservoirs and secondary diagenesis-lithologic reservoir were developed in Chang 6 member.

Chang 2 belongs to the braided river facies and many sets of the superimposed and continuous lenticular sand bodies were developed, while Chang 6 the delta deposition, and sand bodies of distributary channels were strongly stacked with mudstones.

Chang 6 and Chang 2 member reservoir are composed mainly of fine-grained arkose, but there are more debris in Chang 6 than in Chang 2. Cement compositions are different, which calcites are the main component and chlorite takes the second place in Chang 2, while laumontite cement is the main component and chlorite takes the second place in Chang 6. The reservoir of the study area mainly developed dissolved pore, fresh water leaching the carbonate cements in Chang 2 member of which the content with pure sand body, super dissolved pore, while Chang 6 member organic acid in laumontite. The Chang 6 member is more heterogeneous than Chang 2 for different genesis of sand body. The influencing factors of heterogeneity include buried depth, diagenesis, sedimentary micro-facies, particle size, mineral composition and fracturing. Porosity and permeability of Chang 2 is higher than Chang 6. Chang 2 is low porosity-low permeability and low porosity-extra low permeability reservoir, and Chang 6 belongs low porosity-extra low permeability or extra low porosity-super low permeability.

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