Geophysical Research Abstracts
Vol. 12, EGU2010-6223-1, 2010
EGU General Assembly 2010

Sediment fill and hydrocarbon reservoir character of Xiagou Formation and their correlation with structural evolution of Lower Crataceous in Ying'er Sag, Jiuquan Basin, NW China

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Abstract: Because of the effect of extensional rift faulting in Early Crataceous and thrust nappe motion in Tertiary, the Jiuquan Basin experienced the evolutionary phases of fault basin and foreland basin, which presents the character of both extensional rift and compression convergence. Based on this structural setting, Ying'er Sag had been still in fault basin environment during the depositional stage of Xiagou Formation, and then it experienced a ephemeral strong longitudinal compressional movement, which made the Xiagou Formation strata fold modified. Afterwards, thrust nappe motion in Tertiary not only reformed the sediment of Xiagou Formation, but also made the hydrocarbon source rocks, which had reached critical mature stage in Early Crataceous but not generated oil largely, deeply buried in short time and come to oil forming fastigium. The lithosomic bodies, unconformity surfaces, and faults, which experienced depositional stage and later reform, provided migration pathway and favorable traps for hydrocarbon accumulation, which are favorable to form fault block hydrocarbon reservoir in fault structural belt, buried hill hydrocarbon reservoir in nappe uplift and fold bulge zone, structural lithologic hydrocarbon reservoir near faults, and lithologic hydrocarbon reservoir.

Key Words: Jiuquan BasinYing'er Sagstructural evolutionSediment fillhydrocarbon reservoir