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川中西部侏罗系大安寨段天然气成因及其对油井产能的影响

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Natural Gas Origin and Influence on Oil Well Productivity in Jurassic Da'anzhai Formation, Western Part of Central Sichuan Basin

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摘要/Abstract

摘要 :

川中西部侏罗系大安寨段高气油比油井广泛分布, 大安寨段油井也主要分布在高气油比井较多的地区, 研究天然气成因对认识川中大安寨段油气富集规律具有重要的意义。通过川中西部侏罗系大安寨段天然气与其下伏上三叠统须家河组天然气组分和碳同位素对比分析, 并结合大安寨段凝析油轻烃特征研究表明: 川中西部大安寨段高气油比井的天然气呈现腐殖型或偏腐殖型天然气特征, 与下伏须家河组天然气特征相似, 认为川中西部大安寨段高气油比井形成原因是大安寨段烃源岩生成的腐泥型天然气与须家河组腐殖型天然气混合的结果。在存在断穿大安寨段地层的断裂区域内, 下伏须家河组天然气沿断裂侵入: 一方面溶解了大安寨段原始油藏中的轻组分, 并沿断裂运移到大安寨段以上地层散失; 另一方面引起脱沥青作用充填靠近断裂处的大安寨段储层孔隙及裂缝, 从而使得紧邻断裂处大安寨段储层勘探效果较差。

关键词: 川中西部, 大安寨段, 碳同位素, 天然气成因, 脱沥青作用, 勘探效果

Abstract:

Wells with high gas oil ratio of Jurassic Da'anzhai Formation are widely distributed in the western part of Central Sichuan Basin, where oil wells are also mainly distributed. Study on natural gas origin is helpful to understand the hydrocarbon enrichment regularity in Jurassic Da'anzhai Formation, central Sichuan Basin. Based on the comparison of natural gas compositions and carbon isotopes between Da'anzhai Formation and Upper Triassic Xujiahe Formation, combined with the characteristics of condensate light hydrocarbons of Da'anzhai Formation, it suggests that gas of high oil gas ratio wells is characterized by humic or near-humic origin which is similar to the gas from Xujiahe Formation. The mixture of sapropelic gas from Da'anzhai Formation with humic gas from Xujiahe Formation leads to high gas oil ratio wells in Da'anzhai Formation, western part of Central Sichuan Basin. On one hand, when the faults crossed the Da'anzhai Formation, light hydrocarbons in the primitive reservoir of Da'anzhai dissolved in the gas injection from underlying Xujiahe Formation and migrated to the upper formation. On the other hand the injected gas caused deasphalting to fill the reservoir's pores and fractures, which leads to poor exploration effects near faults.

Key words: Western part of Central Sichuan Basin, Da'anzhai Formation, Carbon isotopes, Natural gas origin, Deasphalting, Exploration effects

中图分类号:

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参考文献

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