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塔里木盆地哈拉哈塘地区碳酸盐岩油气地质特征与富集成藏研究

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摘要:

塔里木盆地塔北隆起哈拉哈塘地区奥陶系由于现今构造位置低,埋深在6500~8000m,长期以来一直将其作为塔北隆起的一个次级凹陷单元,并认为是一个海相油气的生烃凹陷,制约了哈拉哈塘的油气勘探。本文通过对哈拉哈塘构造解析和沉降演化过程恢复,发现哈拉哈塘地区是从石炭纪才开始转为负向构造单元,加里东-早海西期,它属于轮南大型古潜山的西斜坡部位;奥陶系鹰山组-一间房组碳酸盐岩经历了多期岩溶的叠加改造,风化岩溶缝洞体储层发育。通过最新钻井资料及油气地球化学分析数据,证实哈拉哈塘奥陶系沉积时期不是生烃凹陷,不发育烃源岩,哈拉哈塘及其以北地区的油气是来自南部满西地区的中、上奥陶统烃源岩。油气藏解剖表明,哈拉哈塘地区在晚海西期成藏;三叠系沉积前北部构造抬升,导致奥陶系油藏遭受局部破坏和降解。自三叠纪沉积以来,奥陶系油藏一直处于持续深埋过程,盖层不断加厚,油藏基本保持了晚海西期成藏时的形态,因此,哈拉哈塘地区是一个古老的油气系统。油气成藏条件分析表明,哈拉哈塘地区油气成藏条件优越,生储盖条件配置良好,奥陶系碳酸盐岩岩溶储层广泛分布,并处在油气向古隆起高部位运移的有利路径上,具有大面积、准层状富集油气的特征。

英文摘要:

Hanilcatam Ordovician reservoir in Tabei uplift of Tarim basin has long been considered as a secondary sag and hydrocarbon-generating sag of marine oil for its low tectonic location with the depth of 6500~8000m now, that constrained the petroleum exploration in this area. Through the structural interpretation and restoration of subsidence history, it was discovered that during Caledonian-Early Hercynian it was belonged to the slope of Lunan great buried hill, which became a subsiding structural unit since Carboniferous. Carbonates in the Yijianfang Formation and Yingshan Formation of Ordovician experienced multi-stage karstification and developed weathering karst cavern reservoirs. The newest drilling data and geochemical features indicated that it was not hydrocarbon-generating sag during the deposition of Ordovician, with no source rock developed. The hydrocarbon in the reservoirs of Hanilcatam and the north area derived from Middle-Upper Ordovician source rocks in South West Manjiaer sag. The analyzing of oil and gas reservoirs indicated that Hanilcatam pools accumulated at the stage of Late Hercynian; the north tectonic uplifts before the sedimentation of Triassic led to local damage and degradation of the hydrocarbon in Ordovician reservoir. Since the deposition of Triassic beds, Ordovician reservoirs experienced continuous deepening process, with cover continual thickening and preservation of reservoir configuration, Hanilcatam area was an old petroleum system therefore. The analysis of hydrocarbon accumulation condition showed that there have superior hydrocarbon accumulation condition and great geological configuration. Ordovician carbonate karst reservoir distributed widely, which located in the favorable migration path to the high paleo-uplift, with the characteristics of widely distributed and quasi-layered accumulation.

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