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鄂尔多斯盆地高桥构造平缓地区奥陶系碳酸盐岩岩溶古地貌特征与储层分布

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摘要:

鄂尔多斯盆地高桥地区构造平缓,奥陶系顶部碳酸盐岩岩溶古地貌以岩溶潜台发育,而岩溶高地和岩溶斜坡发育局限为特征,岩溶斜坡区和岩溶潜台的东部沟槽区为储层发育区。本文综合利用大量岩心、薄片资料观察、物性实验数据和钻井、测井、地震等资料对高桥地区马家沟组顶的古岩溶识别标志进行了分析,恢复了岩溶古地貌,对岩溶古地貌类型(单元)进行了划分并分析其与储层的关系。高桥地区地层学标志,岩石学标志,矿物学标志,古岩溶发育的形迹说明奥陶系马家沟顶存在沉积间断、古岩溶作用已经是不容置疑的事实;按古风化壳出露层位,结合地震相追踪成果,落实沟槽分布,编制该区前石炭纪古地质图,运用古地质图法、印模法和残厚法恢复高桥岩溶古地貌,编制出岩溶古地貌图。根据岩溶古地貌,按岩溶单元划分为岩溶高地、岩溶斜坡和岩溶潜台三个二级地貌(类型)单元,岩溶高地可进一步分为岩溶台地、溶洼(洼地)2种三级微地貌类型。岩溶潜台进一步可划分为岩溶台地、溶洼、溶丘(残丘)、沟槽4种三级微地貌类型。高桥处于构造平缓地区,岩溶高地、岩溶斜坡区发育局限,大范围为岩溶潜台区且潜台区东侧沟槽(主沟槽、次沟槽)比较发育。岩溶高地整体储集性较东部岩溶斜坡区及岩溶潜台区差。岩溶斜坡区发育两套岩溶系统,储层条件相对较好,成藏要素配套较好,是下一步勘探开发的有利区域之一。岩溶潜台区总体岩溶作用减弱,储层发育程度变弱,东部沟槽区,因沟槽的存在,加强了垂向岩溶作用深度,间接增加侧向溶蚀作用,岩溶作用变好,储层发育程度增加,加上裂缝的影响,可以形成相对较好的储层。

英文摘要:

Gaoqiao area of Ordos Basin presents gentle structures. The top Ordovician karstified carbonate rocks are characterized by the development of buried platform and limited occurrence of karst highland and karst slope. Reservoirs are concentrated on the karst slope and in the eastern trench of the buried platform. In the thesis large number of data from core-section description and thin-section examination, physical property experimentation, well drilling and logging, and seismic exploration have been employed to identify and analyze the paleokarst at the top of Majiagou Formation, Gaoqiao area, to reconstruct the paleokarst landform. Types of the paleokarst landform were subdivided and their relationship to the reservoirs were analyzed. The existence of hiatus and karstification at the top of Majiagou Formation has been proved by the stratigraphic, petrologic, mineralogic markers and evidence of paleokarst. The trenches were delineated by the outcropped horizons of paleo-weathering crust and results of seismic researches. The paleo-karst geomorphological map was compiled on the basis of paleo-geological map, impressions and residual-thickness in the studied area. The paleo-karst can be subdivided into 3 second-order landform units: karst highland, karst slope and buried platform. The karst highland can be further divided into 2 third-order microtopography: karst platform and karst depression. The buried platform was categorized as 4 third-order microtopography: karst platform, karst depression, karst mound (residual mound) and trench. The studied area presents gentle structures. While the karst highland and karst slope are localized, a vast extent is occupied by the buried platform with its eastern side dominated by trenches. The reservoir quality of the karst highland might be better than that of the karst slope and buried platform at eastern part of the studied area. However, the karst slope could be favorable areas for further exploration and development because of its 2 sets of karst reservoirs, good reservoir quality and reservoir forming elements. The karstification of the buried platform is generally decreased, which induces a lower degree of reservoir development. In the eastern part of studied area trenches deepen the vertical karstification and intensify indirectly the lateral karstification, resulting in increased reservoir development. Added by the influences of fractures, relatively good reservoirs could occur in the eastern part of the studied area.

关键词: [岩溶古地貌](#) [岩石学标志](#) [岩溶潜台](#) [地貌单元](#) [鄂尔多斯盆地](#)

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