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伊拉克艾哈代布油田白垩系生物铸模孔及体腔孔发育的灰岩储层特征及成因分析

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摘要:

伊拉克地区艾哈代布油田白垩系(含)生物灰岩的生物铸模孔和体腔孔普遍发育,是主要的储集空间。本文综合利用铸体薄片观察、物性实验数据和压汞曲线等资料对该类储层的特征和成因进行分析。生物铸模孔以绿藻铸模孔为主,常发育在生物碎屑滩和藻屑滩中;发育的体腔孔主要为底栖有孔虫和浮游有孔虫体腔孔,在滩间凹地及台坪中常见。研究区灰岩储层的平均孔隙度在20%~25%,为中高孔储层,渗透率与孔隙结构和孔隙组合类型密切相关。生物铸模孔和晶间微孔组合储层的孔隙结构相对较好,平均渗透率约在 $2 \times 10^{-3} \sim 10 \times 10^{-3} \mu\text{m}^2$ 之间,为中高孔-中低渗储层;体腔孔和晶间微孔组合储层的孔隙结构相对较差,平均渗透率小于 $2 \times 10^{-3} \mu\text{m}^2$,属于中高孔低渗储层。生物铸模孔及体腔孔灰岩储层的发育受控于沉积环境和同生期溶蚀作用。藻屑滩沉积在较局限的环境,因同生期的暴露溶蚀作用,发育铸模孔。滩间凹地、台坪等相对静水环境沉积物中有孔虫含量较高,原生的有孔虫体腔孔发育。由于这两类孔隙分布相对“孤立”,主要靠晶间隙连通,形成了储层的中高孔和低渗透的特征。

英文摘要:

The distribution of pore-type limestone reservoir controlled by sedimentation in China is mostly absent, result in d efficiency of understanding the origin of pores and the model of pore evolution of it. The pore-type limestone reservoir is widespread in Cretaceous stratum in Iraq. This study is based on the research of Cretaceous limestone reservoir in AHDEB oilfield in Iraq. The characteristics of four types of limestone were compared, including petrography, physical property and combination types of reservoir space. The porosity of grainstone, packstone and wackestone is similar, all most 20%, but the permeability of them decreased in turn. The relationship of permeability or pore structure and combination types of pores is close. The combination types of pores were divided to four types. The combination of big pores and big-middle pores in grainstone is best, with highest permeability, and combination of visceral foramen and intercrystalline solution pores in planktonic foraminifera wackestone is worst. The sedimentary facies can control the physical property of this reservoir, and the favorable reservoir distributed in shoals. The hydrodynamic condition and water salinity can control the type of grains, the type of shoals, and the distribution of planktonic foraminifera with high primary porosity. The influence of diagenesis on the reservoir physical property is positive, mainly transformed by dissolution and cementation in syngenetic period and supergene period. The expansion of dissolution occurred base on the primary rock structure. Through the study of the origin of pores, there are four models of pores evolution being established. This study revealed the origin of pores and models of pores evolution of pore-type limestone reservoir, and determined the distribution of reservoir controlled by microfacies, which can guide the exploration and development of pore-type limestone reservoir.

关键词: [生物铸模孔及体腔孔](#) [孔隙成因](#) [白垩系](#) [艾哈代布油田](#) [伊拉克中部](#)

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