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长岭气田营城组火山岩储层特征及分类评价

高兴军, 闫林辉, 田昌炳, 齐亚东 ▾

Characteristics and Classification Evaluation of Volcanic Rock Reservoir in Yingcheng Formation of Changling Gasfield

GAO Xing-jun , YAN Lin-hui , TIAN Chang-bing , QI Ya-dong ▾



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摘要/Abstract

摘要 :

为研究长岭断陷营城组火山岩不同类型储层发育特点, 指导气田开发, 在岩心观察、岩石薄片、铸体薄片以及压汞资料分析基础上, 结合岩性对火山岩储层的储集空间类型、孔隙结构、裂缝发育特征进行了研究。并以试气产能为基础, 综合应用FMI成像测井、核磁测井和常规测井解释成果, 建立了研究区的火山岩气藏储层分类评价标准。结果表明, 原地自碎角砾化熔岩的储集空间以砾内孔及其溶孔为主, 孔隙组合类型为裂缝—溶孔型, 以 I 类储层为主;发育气孔和溶孔的气孔流纹岩主要以 I 类、II类储层为主;而发育基质溶蚀孔、晶间微孔的少孔和致密流纹岩, 以及发育基质微孔、基质溶孔和粒内溶孔的晶屑熔结凝灰岩主要为 II类、III类储层。总体上, 3类储层有效厚度比例接近, 各占1/3左右, 但物性逐渐变差, 高导构造缝逐渐减少, 微裂缝相应增加, 裂缝宽度变小, 导致产能逐渐变差。

关键词:

长岭气田, 营城组, 火山岩, 储层特征, 储层评价, 储集空间类型, 孔隙结构, 裂缝

Abstract:

It develops acidic and intermediate-acid volcanic rock in Yingcheng Formation of Changling Gasfield of Jilin.Because of complex lithology,various types of reservoir pore space,deep burial depth and strong anisotropy,it's difficult to evaluate the characteristics of volcanic rock reservoir.In order to further study the reservoir development-controlling factors,find out the advantageous regions and provide some basis for producing well location optimizations and gas field development program design,the types of reservoir pore space,pore structure and characteristics of fracture development are analyzed in the basis of core,conventional and casting thin section,mercury injection curves data.Then the classification and evaluation criterion of volcanic rock reservoir is built with the productivity of gas test and interpretation results of FMI log data,nuclear magnetic logging and conventional logging.The results show that autochthonous autobreccia lava is the best reservoir that develops good physical property with more fracture-dissolved pores and high conductive cracks.Stomatal rhyolite mainly develops type I and type II reservoir.Less-pore and tight rhyolite grows matrix emposieu and intercrystal micropore.Crystal ignimbrite grows matrix micropore,matrix dissolved pore and intraparticle dissolved pore.They mainly develop type II and type III reservoirs and have more small width of microcrack.The ratio of effective thickness of three types is closed to each other.From the reservoir of type I to type III,physical property becomes worse and fracture width gets smaller,which result in the worse productivity.

Key words: Changling Gasfield, Yingcheng Formation, Volcanic rock, Reservoir characteristics, Reservoir evaluation, Types of reservoir pore space, Pore structure, Fracture

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地址：甘肃省兰州市天水中路8号 (730000)

电话：(0931)8277790 Email: geogas@lzb.ac.cn

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