



松辽盆地庆深气田营城组火山地层格架特征及储层地质意义

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Volcanostratigraphy framework characteristics and its reservoir significance in QS Gas field, Songliao Basin, NE China

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摘要

图/表

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摘要 以庆深气田密井网区营城组火山岩为例,开展火山地层精细地质—地球物理综合研究,分析火山地层界面和充填单元的特征.XS1-XS6井区火山地层界面系统由3个喷发间断不整合界面、数十个喷发不整合和少量喷发整合界面构成.在XS1-XS6井区识别出5个火山机构和13个冷却单元.总体上该区火山地层具有由南向北、由东向西再向东迁移的特征,早期形成了厚度大、范围小的锥状火山机构1和2,以熔岩型冷却单元充填为主;中后期形成厚度中等、分布面积大的席状—盾状火山、喷发中心不明显的火山机构3、4和5,以碎屑岩型冷却单元为主.界面、流动单元或堆积单元共同控制高孔隙带分布位置,流动单元和堆积单元还控制储层的类型和规模;总体上火山地层界面可为油气勘探提供重要线索.

关键词 : 松辽盆地, 营城组, 火山地层格架, 界面, 地层单元, 储层分布规律

Abstract : Based on short distance well pattern and high resolution 3D seismic data in QS Gas field, Songliao Basin, NE China, we carry out a research on volcano-stratigraphy framework of Yingcheng Formation. The volcano-formation boundary system is consisted by overlapping 3 key eruptive interval unconformity boundaries (EIUB), tens eruptive unconformity boundaries (EUB), a few eruptive conformity boundaries (ECB) and intrusive contact boundaries (ICB). 5 volcanic edifices constrained by the 3 EIUBs are identified as bottom and top boundaries of volcanic rocks of Yingcheng Formation. Furthermore, 13 cooling units constrained by the boundary system are also identified. The volcanostratigraphy shifts from southeast to northwest at first, and then shift to northeast. The volcanic edifices in the early stage are characterized by large thickness, small size and cone, such as the VE-1 and VE-2, which are mainly consisted of the lava flows. The volcanic edifices in middle-later stage are characterized by small thickness, large size, and sheet-shield without obvious eruptive center, such as VE-3, VE-4 and VE-5, which are mainly consisted of deposit units. The boundaries, lava flows and deposit units control the distribution of high porosity and permeability zone while the lava flows and deposit units control reservoir types and scales. The volcanostratigraphic boundary provides a very important mark for exploration.

Key words : Songliao Basin Yingcheng Formation volcanostratigraphic framework boundary stratigraphic unit reservoir distribution pattern

收稿日期: 2014-05-23

基金资助:

本项研究受国家“973”计划项目(2012CB822002,2009CB219303)和国家自然科学基金项目(41002038)联合资助。

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引用本文:

唐华风, 张元高, 刘仲兰, 丁日新, 徐岩, 高有峰. 松辽盆地庆深气田营城组火山地层格架特征及储层地质意义[J]. 石油地球物理勘探, 2015, 50(4): 730-741. Tang Huafeng, Zhang Yuangao, Liu Zhonglan, Ding Rixing, Xu Yan, Gao Youfeng. Volcanostratigraphy framework characteristics and its reservoir significance in QS Gas field, Songliao Basin, NE China. OGP, 2015, 50(4): 730-741.

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