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应用实例

牛东区块石炭系卡拉岗组火山岩储层预测研究

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摘要 三塘湖盆地上石炭系卡拉岗组火山岩风化壳储层是吐哈油田近年来油气勘探的重要目标。根据该区钻测井资料揭示的火山岩风化壳剖面以及其岩石学特征、物性特点，选取该区块火山岩储层较为敏感的自然伽马曲线、声波曲线、深侧向电阻率曲线，构建具有声波量纲的拟声波曲线，采用基于模型道的地震波阻抗反演，从地质模型出发，应用模型优选迭代扰动算法通过空间地质建模、波阻抗反演、参数反演和平面综合分析研究，预测有效储层的分布。地震反演和储层预测的结果认为：牛东地区火成岩有效储层分辨率中等偏下，常规波阻抗体能分辨出大套的低阻抗体，而对较薄的有效储层分辨率很差；而储层特征自然伽马反演体分辨率比常规波阻抗体的分辨率高，与钻井储层对应关系较好，能较好分辨出安山岩、玄武岩储层。

关键词 火山岩储集层；波阻抗反演；石炭系；牛东地区；三塘湖盆地

Application of inversion technique in prediction of C 2k volcanic rocks in Niudong block

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Abstract Volcanic rock weathering crust reservoir of C 2k is an important goal of oil and gas exploration in Santanghu basin of Turpan Hami oilfield in recent years.According to the characters of volcanic rock weathering crust section and the characteristics of volcanic rock properties revealed from well information,we used natural gamma (GR)curve,acoustic curve (AC),and deep laterolog resistivity curve (RD)to build a pseudo acoustic wave curve.Based on seismic impedance inversion on model traces,we predicted the distribution of reservoir starting from a geological model using space geological modeling,wave impedance inversion,parameter inversion,and comprehensive study of the reservoir.It is concluded that the resolution of the volcanic reservoir is medium or lower.Though conventional wave impedance could reveal large low resistive bodies,it fails to reflect thin reservoirs.Targets of interest are more easily recognized and are in good agreement with well information on the wave impedance data inverted from GR curve.Andesite and basalt reservoirs are safely identified.

Key words volcanic rock reservoir;impedance inversion;carboniferous;Niudong block;Santanghu Basin
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