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支持向量机模型在火山岩储层预测中的应用——以徐家围子断陷徐东斜坡带为例

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Support vector machine in volcanic reservoir forecast: East slope in Xujiaweizi depression

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摘要 火山岩储层的发育程度是控制徐家围子断陷火山岩气藏的重要因素,但火山岩储层以岩性复杂、横向变化快、井间可对比性差为特点,火山岩储层的准确识别、厚度的精确描述是火山岩气藏勘探开发的难题.针对这一难题,作者提出在专家优化地震属性组合的基础上确定支持向量机模型,进而预测火山岩储层厚度.该技术在实际应用中取得了良好效果,预测的火山岩储层厚度符合研究区的地质规律,预测结果能够保持地震属性的横向分辨率和整体变化趋势,在井点处吻合程度较高,为火山岩储层预测提供了新的思路.

关键词: 徐家围子断陷 火山岩储层 地震属性组合 支持向量机

Abstract: In Xujiaweizi depression of northern Songliao Basin, the development of volcanic reservoir dominated largely gas accumulation. However, an accurate description for volcanic distribution is always difficult for geologists, because of its complex lithology, lateral heterogeneity and poor comparison between wells. With regard to this problem, we present the model of support vector machine as a solution. By the analyses of the combination of seismic attributes, this model can be used to indicate volcanic reservoir. The thickness of volcanic rocks and its distribution, which are predicted through using this method, can reflect its sedimentation model and maintain the lateral resolution of seismic as well as the overall trend. In addition, the thickness of volcanic rocks at drilled wells is highly consistent with those of well logs.

Keywords: Xujiaweizi depression   volcanic reservoir   the combination of seismic attributes   Support Vector Machine

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