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应用实例

BP神经网络在致密砂岩储层测井识别中的应用

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摘要 川西须家河组地层岩性复杂，属于超致密低孔渗储层，所以储层识别是该地层天然气勘探中所面临的关键问题和难点之一。针对常规储层识别准确率不高的状况，提出利用BP神经网络进行储层含气含水或干层的识别。利用模糊聚类和产层测试结果标定建模样本，采取随机抽样形成建模集与测试集，建立BP神经网络模型对23口井的储层进行含气含水或干层预测，正确率达77.9%以上，明显地提高了该地区的测井解释精度，是一种准确率较高的储层预测方法。

关键词 致密砂岩；储层识别；神经网络；BP算法；测井解释

Application of BP neural network in the identification of tight sandstone reservoir on well logging data

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Abstract The strata of Xujiahe Formation in west of Sichuan Province are of complex lithology with super tight reservoirs of low permeability. Discrimination of reservoirs are vital to gas exploration in this Formation. Considering the low accuracy of conventional identification methods, this paper proposed to distinguish gas bearing layers from water bearing or dry layers by BP neural network. We used fuzzy clustering and test result to generate training samples, and adopted random sampling to divide the training samples into subsets of modeling building and verification. The resulting discriminating model was then used to classify the reservoir samples from 23 wells into gas bearing, water bearing, and dry. The success rate is more than 77.9%, which verifies the validity of the proposed method.

Key words tight sandstone; reservoir identification; neural network BP algorithm well logging interpretation

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