

## 四川盆地含钾地层的地球物理测井标志、判别模型与应用——以川中广安地区为例

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中文摘要:长期以来,钾盐层的测井识别都以放射性测井为主,辅佐以其他常规测井方法。在没有其他含钾矿物影响的情况下,运用效果良好。据地质资料显示,川中广安地区为一杂卤石沉积区,存在多个杂卤石层。除此之外,该地区亦存在泥岩、泥质云岩、菱镁矿泥岩及火山凝灰岩等含钾岩石,均具有较高放射性,给利用放射性测井划分杂卤石层带来了一定困难。针对多种含钾岩石在各测井曲线上的差异,本文提出了利用测井曲线综合分析法、测井曲线重叠法、交会图分析法及自然伽马能谱测井判别模型等识别杂卤石层,并对川中广安地区不同构造上的多口井进行了杂卤石层划分。对比录井资料,效果良好,验证了方法及模型的实用性。对杂卤石测井响应特征进行了统计,并对其分布层位、有效厚度进行了总结,探索了川中广安地区杂卤石分布情况,拓展了地球物理测井资料在钾盐勘探中的运用。

中文关键词:杂卤石 测井标志 判别模型 分布层位 有效厚度

## Geophysical Logging Criteria and Discriminant Model for the Potassium-rich Strata and Their Application to Sichuan Basin: A Case Study of Guang'an Area of Central Sichuan

**Abstract:** Usually, the logging recognition method for sylvite layer is mainly by means of radioactive logging whose working effect is good without the influence of other potassium minerals. According to the geological data, Guang'an area is defined as a polyhalite deposit zone, which has multiple potash layers comprising mainly polyhalite. In addition, there are some other potassium rocks in this area, such as mudstone, argillaceous dolomite, magnesite mudstone and volcanic tuff, which all have high-level radioactivity that causes difficulties in dividing the sylvite layer with radioactive logging. On the basis of the differences between various logging curves of potassium rocks, the authors identified the sylvite layer by such means as logging curve comprehensive analysis, logging curve overlapping, cross-plot analysis and NGS discriminant model and divided polyhalite layers of some wells in different structures of Guang'an area in central Sichuan. A comparison with logging data shows that these methods have good effects and are feasible. The authors made a statistic analysis of the logging response and summarized the distribution layers and the effective thickness of polyhalite, and the results obtained enable us to learn more about the distribution of polyhalite in Guang'an area and expand the use of geophysical logging data in potash exploration.


**keywords:** polyhalite logging mark discriminant model distribution layer effective thickness

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