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时频电磁法含油气有利区预测在T盆地的应用

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Favorable oil and gas target prediction with time-frequency electromagnetic method in T Basin

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摘要

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摘要 储层含油层段与非含油层段的电阻率、极化率等电性差异一般较大, 时频电磁勘探通过大功率人工场源激发电磁场, 直接探测油气藏引起的电阻率和极化率异常, 达到检测和评价含油气有利目标的目的。通过在T盆地不同阶段不同油气目标的应用分析, 发现不同类型油气藏具有不同的极化异常特征。该技术在T盆地的有利目标预测结果已被多口井验证, 与实钻吻合率达68%以上。文中还总结了时频电磁勘探方法的适应性与局限性。

关键词: 时频电磁 极化率 时间常数 频率相关系数 油气预测

Abstract: The differences in resistivity and polarization between oil-bearing traps and non oil-bearing traps are very obvious. Using high-power artificial source to excite electromagnetic field, time-frequency electromagnetic(TFEM) detects the resistivity and polarization anomalies caused by reservoirs, and then detects and evaluates favorable hydrocarbon targets. Through applications on different stages of oil and gas exploration in T Basin, different types of reservoirs are found with different polarization anomaly characteristics. More than 68% of our prediction results by this approach in T Basin are proved as being consistent with latter drilling data. This article summarizes also the adaptability and limitation of TFEM.

Keywords: time-frequency electromagnetic(TFEM) polarization time constant frequency-dependant coefficient oil and gas prediction

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