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### 岩石物理分析在叠前储层预测中的应用

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### Application of rock physics analysis in pre-stack seismic reservoir prediction

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摘要

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**摘要** 研究区位于苏里格气田的西北侧, 目的层盒8段储层为典型的低孔、低渗气藏, 物性变化大, 非均质性强, 纵波阻抗叠置, 基于叠后数据的储层预测方法多解性强。因此需通过地震岩石物理分析并结合叠前地震反演, 定性或半定量判断砂岩储层的含气性, 为气田的勘探与开发提供布井依据。基于此, 本文深入剖析岩石物理建模全过程, 在测井资料井、震一致性处理基础上, 通过标准井标定, 选用Xu-White模型并利用迭代方法优化关键参数, 准确地预测了横波速度并同时修正了密度曲线, 为叠前储层描述提供了可靠的基础资料。同时利用岩石物理分析形成的解释量板对叠前反演结果进行解释, 提高了气层的识别精度。

**关键词:** 岩石物理模拟 横波速度预测 岩石物理量板 叠前反演

**Abstract:** The project area is located in the north-west of the Sulige Gas Field. The He8 is a typical reservoir with low porosity, low permeability, high heterogeneity and P wave impedance superposition. So an accurate reservoir prediction cannot be done by methods on post-stack seismic data. Therefore a method for reservoir prediction on pre-stack seismic data is needed to predict gas reservoir with rock physics analysis and prestack seismic inversion, and to provide more information for future exploration. For this propose, this paper focuses on rock physics modeling, seismic processing with logging calibration, and iteration parameter optimization. Accurate S-wave velocity and density logs are calculated for reservoir characterization on prestack seismic data. Furthermore rock physics templates improve the accuracy of gas prediction on prestack seismic inversion.

**Keywords:** rock physics modeling S-wave velocity prediction rock physics template pre-stack seismic inversion

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