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非常规天然气

页岩气赋存形式和初始原地气量（OGIP）预测技术

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摘要:

页岩气有利区或核心区评价的关键是确定页岩初始原地气量（OGIP)的空间分布，页岩气赋存形式介于致密砂岩气与煤层气之间,主要呈3种状态：孔隙中游离气、固体有机质吸附气、油和水中溶解气，温度和压力条件控制3种状态气体的量和相互转化。游离气量主控因素是页岩孔隙度和气体饱和度，吸附气量主控因素是有机质数量和有机质成熟度，溶解气量的主控因素是页岩中残留油的数量。提出了页岩气中游离气量、吸附气量和溶解气量的算法，并在油气系统模拟软件Trinity 3D中实现页岩气OGIP量空间分布计算，以Fort Worth盆地Barnett页岩为例展示了这一技术的实际应用。

关键词: 页岩气 初始原地气量(OGIP) 游离气 吸附气 溶解气 油气系统模拟

Occurrence of Shale Gas and Prediction of Original Gas In-place(OGIP)

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Abstract:

The key of assessment of shale gas is to evaluate the spatial distribution of original gas in\|place (OGIP) to delineate the core area. The occurrence of shale gas is interim between tight sandstone gas and coalbed gas. Shale gas is composed of free gas in pores,adsorbed gas in the solid organic matter,solution gas in the residual oil and water. Pressure-temperature conditions control the partitioning among three gases and reciprocal transformation. The key controlling free gas,adsorbed gas and solution gas are porosity of shale,amount and maturation of organic matter,amount of residual oil in shale,respectively. The algorithm of free gas,adsorbed gas and solution gas in shale has been designed to quantify the spatial distribution of original gas in-place (OGIP) in the Trinity 3D petroleum system modeling software. Case studies of Barnett shale in the Fort Worth basin are used to show the application of integrated organic maturation,adsorption and PVT simulation to predict the original gas in\|place(OGIP) of shale gas.

Keywords: Shale gas Original gas in-place(OGIP) Free gas Adsorbed gas Solution gas Petroleum system medeling.

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