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#br# 四川盆地元坝气田须家河组致密砂岩气地球化学特征及气源分析

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Geochemical Characters of the Tight Sandstone Gas from Xujiahe Formation in Yuanba Gas Field and Its Gas Source

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摘要/Abstract

摘要：

非常规油气藏是指在当前经济技术条件下不能用常规方法和技术手段进行勘探开发的非常规油气储集。四川盆地元坝地区须家河组气藏属于致密砂岩气藏类型。通过对元坝气田14口井须家河组20个气样主要组分、干燥系数等地球化学数据进行分析，元坝地区须家河组致密砂岩气以CH4为主，含量最高达98.39%，干燥系数基本上在0.97以上，为高热演化程度的干气。该区气样δ13C1值均小于-30‰，同时多数样品又具有正碳同位素系列特征，在有机成因基础之上须家河组致密砂岩气主要为自源型的煤成气和它源型的油型气组成，其中油型气受次生改造作用的影响比较大。该区气样R/Ra值一般介于0.01～0.02之间，为壳源型氦，表明该区致密砂岩气田主要分布在构造稳定区。元坝地区须家河组广泛发育暗色泥质岩类以及煤系地层，为煤成烷烃气的主要来源，并且须家河组致密砂岩气部分为油型烷烃气，由此推测其存在来自下伏地层上二叠统龙潭组气源的可能。

关键词: 气源, 油型气, 煤成气, 须家河组, 致密砂岩, 元坝气田

Abstract:

Unconventional oil and gas reservoirs are those that cannot use conventional methods and technical means for exploration and development under current economic and technological conditions.The gas reservoirs of Xujiahe Formation in Yuanba Gas Field belong to tight sandstone gas reservoirs.Geochemical data of 20 gas samples from 14 wells of Xujiahe Formation are analyzed for main gas component,gas dryness coefficient and so on in the Yuanba Gas Field.The tight sandstone gas of Xujiahe Formation in Yuanba Gas Field is dominated by methane with content up to 98.39%.The dryness coefficient is basically more than 0.97 for the dry gas with high thermal maturity.δ13C1 values of gas samples in the study area are lower than -30‰,while the majority of the samples is characterized by positive carbon isotope series.In addition to the biogenic origin,the Xujiahe tight sandstone gas mainly consists of self-sourced coal-derived gas and other-sourced oil-associated gas.Secondary alteration has greater influences on oil-associated gases.Gas samples in the study area normally have R/Ra values varying from 0.01 to 0.02.The crust origin helium indicates that tight sandstone gas reservoirs of the study area are mainly located in the tectonically stable area.The widely distributed coal series and dark muddy rocks in the Xujiahe Formation are the main source of coal-associated alkane gas.Part of the tight sandstone gas in the Xujiahe Formation is oil-derived alkane gas,therefore it infers that its existence may be from the underlying strata of the Upper Permian Longtan Formation.

Key words: Gas source, Oil-associated gas, Coal-derived gas, Xujiahe Formation, Tight sandstone, Yuanba Gas Field

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