付晓飞,王朋岩,申家年,付广,吕延防.简单斜坡油气富集规律——以松辽盆地西部斜坡北段为例[J].地质论评,2006,52(4):522-531

简单斜坡油气富集规律——以松辽盆地西部斜坡北段为例

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付晓飞 王朋岩 申家年 付广 吕延防

[1]大庆石油学院地球科学学院,黑龙江大庆 163318 [2]中国石油勘探开发研究院,北京 100083

基金项目：本文为国家“973”攻关项目“高效大气田形成机理及分布研究”（编号2001CB20914）资助成果.

DOI：

摘要：

斜坡是断陷和凹陷型盆地的重要构造单元，按其断裂发育程度和沉积厚度分为复杂斜坡和简单斜坡。松辽盆地西部斜坡为断裂不发育、平缓的简单斜坡，简单斜坡油气成藏有特殊性，表现在三个方面：一是简单斜坡的原油主要来自临近的凹陷，油气沿砂体以优势路径方式侧向运移，油气呈“线状”分布；二是简单斜坡大规模构造圈闭不发育，圈闭类型以地层、岩性和构造-岩性圈闭为主，其分布受构造带控制，超覆带发育岩性上倾尖灭圈闭，受规模较大的断层控制形成的鼻状构造带上发育断层遮挡和构造-岩性圈闭，不受断层控制的鼻状构造带主要发育构造-岩性圈闭。三是简单斜坡普遍受大气水的淋滤作用，由于游离氧的进入使原油遭受氧化降解作用而稠化，造成简单斜坡稠油分布普遍。这种成藏的特殊性决定了油气富集规律：只有位于油气运移路径上的圈闭才有成藏的可能。简单斜坡油气勘探方向是，在油气运移路径上寻找低幅度构造背景下的岩性油气藏（小规模）、规模较大断层附近寻找断层遮挡油气藏（中等规模）和地层超覆带上寻找岩性上倾尖灭油气藏（大规模）。

关键词：斜坡 油气分布 主控因素 富集规律

Migration and Accumulation of Oil and Gas in a Simple Slope Area: A Case Study on the Western Slope of the Northern Songliao Basin

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FU Xiaofei, WANG Pengyan, SHEN Jianian, LU Yanfang, FU Guang

1. Geoscience College, Daqing Petroleum Institute, Daqing, Heilongjiang, 163318;2. Petroleum Exploration and Development Science Research Institute of China National Petroleum Corporation ,Beijing , 100083

Fund Project:

Abstract:

A slope area is one of the important structural units in a rift-subsidence and sag basin. According to the fault property and depositional thickness, a slope is divided into two kinds: complex slope and simple slope. The western slope of the northern Songliao Basin is a simple slope that is characteristic of few faults and low dip. Through an analysis on the condition of migration and accumulation, we think that a simple slope has its special character. This special character is reflected in three aspects: the first is that crude oil in a simple slope is not original, and mainly come from near sag, oil and gas migrate laterally in the narrow path through sands in the main passage, and oil and gas distribute linearly. The second is that big structural traps are not many in a simple slope and mainly microstructures develop. Traps in a simple slope mainly contain Stratum traps and lithologic traps, and their distribution is controlled by structural belts. Traps in a overlap area are lithologic pinchout traps, and traps in a nose structure that is controlled by big faults mainly developed barrier faults traps and structural-lithologic traps. Traps in a nose structure that is not controlled by big faults mainly developed structural-lithologic traps. The third is that a simple slope is universally suffered by leaching of atmospheric rainfall. Because free oxygen with atmospheric rainfall percolates into reservoir, crude oil is transformed into heavy oil by oxidative degradation, and heavy oil is distributed universally. The special condition of migration and accumulation decide the accumulation of oil and gas. Oil and gas were accumulated in the traps in the migration pathway and in sandstone lens in the non-main passage by small faults. In a simple slope the exploration targets are the structural-lithologic reservoir(small scale) in the microstructures and fault reservoir(Middle scale)surrounding a large fault and lithologic pinchout oil reservoir in a stratigraphic overlap zone in the migration pathways on the basis of research on the stratigraphic sequence.

Keywords:slope zone distribution oil and gas mainly controlling factors migration and accumulation

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