1 Introduction

Unconventional oil and gas, a kind of resources of great exploration potential, has a wide application future. Tight oil, an important part of unconventional oil and gas, attracts much more attention. With the continuous improvement of technology exploration and the continuous exploitation of oil and gas, tight oil is widely concerned in recent years. In order to exploit tight oil effectively, many researchers using different materials and methods to discuss the formation mechanism and taxonomic character of tight oil. For the sake of clarify the development characteristics of tight oil reservoir and guide preliminary exploration work in China, the formation mechanism of tight oil is described on several aspects in this article, including reservoir type, porosity, diagenesis and hydrocarbon migration fashion.

2 Formation Mechanism and Characteristics

Diagenesis is one of the most important factors for the densification of sandstone. The effect of compaction: Compositional maturity, particle size and textural maturity are determined by the sedimentation type, which control capillary pressure. In general, the relative content of quartz, feldspar and cuttings affects the compaction effect of reservoir. The effect of cementation: Cementation can be divided into siliceous cementation, carbonate cementation and authigenic clay minerals cementation. They can all make the porosity decrease and promote the densification of the strata.

Another major factor is the abnormal high pressure. Under the differential pressure, tight oil is carried to the tight reservoir which is adjacent to the source rock. So it inevitably leads to abnormal pressure in reservoir. Because of this special way of migration, oil and gas can only be carried to the tight reservoir in a short distance. Just rely on the traditional power like buoyancy and hydrodynamic force, the differential pressure hardly overcome the capillary power. When the differential pressure is too small to break through the capillary power, the migration stops. There is no clear trap boundary. Urogenalogeny.

Caineng Zou etc. put forward ten evaluation standards about tight reservoir including porosity, permeability, pore matrix type, reservoir thickness, reservoir pressure and so on. Porosity and permeability are different with...
conventional reservoir. It is generally think of tight oil reservoir with low porosity(<10%) and permeability (<0.1 × 10⁻³ μm²) under the existing standards. Compared with conventional reservoir, tight oil reservoir usually distributes in sag or slope areas. And unconventional reservoir is wildly contact with the mature and high quality source rocks which consist mainly of kerogen of I and II with TOC > 1% and Ro > 0.6%. Its oil density is generally less than 0.8251 g/cm³, oil is lighter.

In conclusion, from poroperm characteristics, grading evaluation of tight oil reservoir with the lithological features, pressure characteristics and fractures of the reservoir.

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