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The type, characteristic and effect of the overpressure fracture in shale of Eastern China

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Organic-rich shale is an important unconventional reservoir, with the characteristics of tight lithology, poor physical properties and strong plastic. It is easy to produce overpressure in the process of tectonism, diagenesis, hydrocarbon generation and expulsion. When fluid pressure exceeds the fracture limit of rock matrix, the special fracture- overpressure fracture forms. Taking the Paleogene organic-rich shale of Dongying Depression and Northern Jiangsu Basin of eastern china as examples, this paper mainly researches types, characteristics and the function on primary migration of the overpressure fracture.

The study shows that fluid overpressure fracture is very common in shale and three types of overpressure fracture are discussed. Early sluiced fractures have the typical characteristics of snaking morphology; A bedding-parallel fracture filled with bitumen is the trace of hydrocarbon generation and expulsion; And bedding-parallel calcite fibrous veins is also a product of fluid overpressure caused by hydrocarbon generation and mineralization. The overpressure fractures, cooperating with other fractures and pores, form interconnected organic network which is the most significant hydrocarbon migration pathway and reservoir space in shale reservoir. The fluid overpressure fracture is well developed in organic-rich shale and plays an important role in improving physical property of shale reservoir.

References:

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