

## **Genetic Mechanism of High Quality Sandstones Reservoirs in Permian of Koucun Buried Hill in Bohai Bay Basin, East China**

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Following a huge success in North America, hydrocarbon resources in Permian are now being actively explored worldwide. High quality sandstones reservoirs developed in Permian of Koucun buried hill in Bohai Bay Basin, after several periods of uplifting. For effective exploration from such a complex reservoir, the genetic mechanism must be thoroughly studied first.

The sandstone has been examined by a variety of methods, including core and thin section observation, CL, SEM, fluid inclusions and isotope testing, mercury penetration. Combined with the histories of burial evolution, organic matter thermal evolution and hydrocarbon charge, genetic mechanisms of the sandstones reservoirs in Permian of Koucun buried hill were investigated. The results show that the reservoir in Permian of Koucun buried hill is characterized by high compositional maturity and relatively high textural maturity, the porosity types is mainly secondary pores. The diagenetic sequence was compaction, early siderite cementation, early feldspar dissolution accompanied by bauxite and authigenic kaolinite precipitation, late feldspar dissolution accompanied by bauxite, quartz overgrowth and authigenic kaolinite precipitation, late carbonate cementation, under the control of tectonic movements. High quality sandstones reservoirs are controlled by multiple factors. Medium-coarse sandstone of high maturity make up the favorable material foundation of reservoirs, multi-stage dissolution is the key element to form reservoirs, and hydrocarbon charge effectively protected the secondary pores. During the period of exposure and corrosion, the meteoric freshwater intruded into the sandstones and flew downward and forward along the sandstones under the effect of gravity. The solutes derived from feldspar dissolution precipitated gradually as the water went on, which caused the differentiation of the reservoir physical property. As a result, the area of dissolution, transition and precipitation located from the top of buried hill to the wings successively.