

Title:

Distribution Rules of Oil Shale of Cenozoic Fault Basins in Sequence Stratigraphic Framework in Eastern Northeast of China

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Cenozoic fault basins in China mainly distribute in eastern northeast area, by analyzing Cenozoic typical oil-bearing shale fault basins (Hudian, Fushun and Yilan) in above area. This paper revealed the distribution rules of oil shale in sequence stratigraphic framework. The paper adopted the concept of four-division scheme within a third order sequence, and established the sequence of stratigraphic framework in the target area based on the artificial outcrops and drillings, geochemistry, mineralogy and paleontology. Hudian basin is a brackish lake. During the period of transgressive systems tract (TST), salinity stratification of brackish basin make high single genera of productivity in upper level of lake preserve in lower level of lake. From the first lake flooding surface to the maximum lake flooding surface, along with the increase of water depth, the stability of salinity stratification increases and the oil yield and thickness of oil shale ever increase. But totally because the water depth is middle and the stratification is instable, oil shale has the features of thin thickness and high oil yield. During the period of highstand systems tract (HST), it is easy to form stable semi-lake environment. High productivity in surface level and anaerobic conditions caused by favorable density stratification form oil shale deposits with the features of middle thickness, stable distribution and high oil yield. In the late time of HST, oil yield and thickness of oil shale appear reductive gradually. Fushun and Yilan basin are freshwater lakes. During the period of TST, the degree of organic material concentration is relatively low, hasty tectonic subsidence makes Fushun Basin develop very thick and poor oil shale, but in Yilan Basin, because it is at the early stage of basin, it develops oil shale deposit interbed with coal. During the period of HST, it's easy to form stable lake environment. Oil shale has the features of middle oil yield and big thickness under the anaerobic conditions of stable stratification. Whereas, the reason of low oil yield in Yilan Basin is that the area frequently develops gravity current deposits, and the gravity current action can bring in a great deal of nutrients and decrease the anaerobic conditions of the lake, which is a disadvantage for the preservation of organic material. The studies indicates that oil shale in target area mainly develop in TST and HST.

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