Study on the composition and inter-layer correlation of coalbed methane system of Xishanyao Formation under sedimentary control, Southern Junggar Basin, NW

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In order to investigate the controlling of the sedimentation environment evolution on the coalbed methane system in Xishanyao Formation on the southern margin of Junggar Basin using drilling wells, logging wells, outcrops and other data with the assistance of fine analysis methods such as scanning electron microscope and image granularity, the coalbed methane system was divided and its sedimentation evolution process was researched. The research results show that sand body of five types of sedimentation microfacies, whose water and air blocking capacity is sorted as “diversion channel < crevasse splay and beach dam < natural levee and shore < shallow lake”, can be identified in the research area and single-well vertical coalbed methane system was divided; during the SQ1—SQ2 period, the rise of lake level led to the expansion of the development area of lacustrine facies as well as the weakening of the coal accumulating process which was mainly concentrated in the TST and LST stages of SQ1 and the east—west characteristic difference regarding the coalbed development and gas content appeared and was in accordance with the plane distribution of sedimentary facies; during exploitation, the coalbed methane system should be defined according to the blocking capability of surrounding rock, appropriate exploitation methods should be selected according to the characteristics of each system and the avoidance of vertically joint—developing sandstone aquifer and combined layer series of development should be paid attention to.