Geological and Geochemical Characteristic Analyses of Lower Cambrian Hetang Formation in Jiangshan-Tonglu Area

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Abstracts: The high degree of thermal evolution is the most important factor, which restricting the breakthrough of lower Paleozoic shale gas in the Yangtze region. The latest field survey found that there is a relatively low thermal evolution region in the Jiangshan-Tonglu area, the west of Zhejiang province. Centering on the low-thermal evolution area, this paper analyzes the geological characteristics and shale gas potential of the lower Cambrian Hetang Formation in Jiangshan-Tonglu area, based on the regional geological survey data in western Zhejiang province and the latest borehole data analysis results. The results show that: the study area is located in a good sedimentary facies belt (basin-shelf-restricted platform facies), with large sedimentary thickness (20 ~ 440 m), high abundance of organic matter (1.48%–23.52% / 5.86%). And the thermal evolution degree is relatively low (2.25%–3.73% / 3.12%), with high brittleness minerals content (51%–75% / 65.4%), moderate clay minerals content (8%–35% / 21.6%), well developed micro pores and micro fractures. So we think that the study area has a good source basis. And with "looking for thick" (looking for the thick shale deposited area with high organic abundance), "looking for low" (looking for relatively low value area with the high thermal evolution degree environment), “looking for stability” (looking for the more stable and deep buried area with strong tectonic background) for the principles, at the same time avoiding the igneous rock and hydrothermal activity relatively strong areas, we optimize the Changshan-Kaihua area is the most favorable area for shale gas exploration.

Key words: hetang formation, geological characteristics, geochemical characteristics, jiangshan-tonglu area

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