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The Sedimentary Characteristics of Suning –Dawangzhuang Carbonate Bar in Ji Zhong Depression

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1 Introduction

A thin carbonate sediments is developed at Sha he jie group, in Su Ning—Da Wang Zhuang area of Ji Zhong depression. Based at core description, identification and analysis of foundation under the microscope, combined with logging, analysis, we have discussed the carbonate sedimentary characteristics and sedimentary model in Su Ning--Da Wang Zhuang area. Research shows that: the carbonate rock bar sedimentation in Shahejie formation of Paleogene at Suning Da Wang Zhuang area can be divided into huiyunping and yunhuiping, and dolomitic limestone and limy dolomite are the main rock type. Carbonate rocks development mainly affected by the relative lake level fluctuation, terrigenous supply level and paleogeomorphology in study area, and high-energy environment of high position mainly developed granular beach sedimentary environment, low energy development tidal flat deposition in the low position. In the foundation of analysis of sedimentary characteristics and control factors, we establish of carbonate beach bar sedimentation model, which provides a geological model for similar continental petroliferous basin in the prediction of carbonate reservoirs.

Carbonate bar was widely developed in the Bohai Bay Basin, mainly in the upper of the Paleogene Shahejie four, three sections and the lower of section one (Feng et al., 2009). In Jiyang Depression, Bohai Bay Basin, Predecessors did much deeply research on Huanghua Depression period of lacustrine carbonate rocks sand beach dam, but relatively few on Jizhong Depression carbonates, carbonates beach and bar distribution and depositional model studies lack, which restricts the exploration and development on carbonate bar. Combining

well logging and analysis data, Jizhong Depression Suning-Dawangzhuang area carbonate rocks at the beach sand dam were studied on the basis of a clear sedimentary characteristics and controlling factors of carbonate sedimentary rock beach dam mode, in order to provide guidance for the efficient exploration and development Jizhong Depression carbonate beach dam reservoir.

2 Distribution of Carbonate Rocks Bar

The block developed some thin oolitic limestone layers, mainly in the southwestern part of the block. The thickest remain concentrated in the Liu84, oolitic limestone is the main lithology, showing high energy environment. Compared with a wide range of large thickness, oolitic development basically have displayed over the block, but in the central block-southeastern of the block relatively developed the maximum thickness of oolitic. That rock in this area has become a major part of the carbonate bar. It shows a low-energy environment, indicating semi-deep lake depositional environment.

3 Carbonate Beach Bar and Development

There are not too much carbonate rock types in the study area, but they all have the characters of thin layer, small area and the lateral variation. The main factors affecting the carbonate rocks are changes in lake level, provenance, and micro topography. Relative lake level fluctuation is the most important factor in the control of carbonate rocks. During the deposition of S2, ramp generating overall uplift and erosion, a large area of the delta deposition zone developed, filling a lot of detritus in the lake basin then carbonate development was hindered. In The earlier period of sediment deposition of S1, Jizhong Depression occurred the largest lake transgression

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since the Paleogene (Ma et al., 2009), with stable tectonic activity in the study area, water continued to rise, shoreline retreated, and the slope was flooded lake, wave action increased. At this time warm and humid climate is conducive to growth and produce biological carbonates and preservation (Jiang et al., 2010), so these regions have large-scale carbonate sediments. Carbonate occurred environment requires not only the warm shallow water, no clastic sediments, but also a massive injection of water environment is required (Deng et al., 2008). Terrigenous supply has direct impact on the clear of lake water bodies during the deposition of sand. The main source of South of Lixian slope is the Anguo-Boye shrinking river, the north source Qingyuan- Goyang River is not developed, resulting in insufficient terrigenous supply. So the delta region is not developed, only developed debris scattered beach bar, with the formation conditions of carbonate rocks beach bar.

4 Conclusion

(1) Carbonates beach bar was developed in Suning-Dawangzhuang area of Ji Zhong depression, carbonate rock types including limestone, dolomite, dolomitic limestone, dolomite and dolomitic, which is the main area of limestone-based rock types.

(2) High-energy environment mainly developed carbonate rock particles to form a grain bank; low-energy environment of the lower portion mainly developed dolomite and dolomitic limestone.

(3) The development of the study area carbonates was controlled by many factors such as the lake level changing, provenance supply and micro-topography and other factors. A stable environment and clean shallow water conducive to the development of carbonate rocks, and control the distribution of microfacies.

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References

- Deng Hongwen, Ma Lixiang, Jiang Zhenglong, et al., 2008. Sand bank generation types and its controls on their distribution, the second member of Shahejie Formation, Lower Tertiary, Dawangbei, Chechen Depression. *Acta Sedimentologica Sinica*, 26(5): 715-724.
- Feng Xinglei, Ma Lixiang, Deng Hongwen, et al., 2009. Microfacies characters of sandy beach and bar in shallow water over-lake, with an example from the Dawangbei Sag. *Geological Science and Technology Information*, 28(1): 9-14.
- Jiang Xiufang, 2010. The distribution pattern and sedimentary mode of the carbonate rock in Sha4 member in Jiyang Depression. *Petroleum Geology and Recovery Efficiency*, 17 (6): 12-6.
- Ma Lixiang, Deng Hongwen, Lin Huixi, et al., 2009. Three kinds of spatiotemporal models of typical beach and bar sedimentary facies in Jiyang Depression. *Geological Science and Technology Information*, 28(2): 66-71.