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Features of Gravity anomalies in Qingdong Area and Their Petroleum Geologic Significance

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The Qingdong area, located in Bohai bay basin, was suspected good exploration prospects. In order to study tectonic features and find out favourable petroleum prospects in the area, the gravity data at a scale of 1:50,000 were interpreted. This paper, through data processing and synthetic interpretation of the high-precision gravity data in the area, discusses characteristics of the gravity field and their geological implications, determines the fault system, analyses features of the main strata, divides structure units and predicts favourable petroleum zones. The results show that the faults controlled the development of the Mesozoic and Cenozoic strata and distribution of local structures in this area. The study reveals that the Qingtuozi uplift and the Kendong uplift in the north were formed in Mesozoic, the basement of the Weibei uplift in the south is ancient metamorphic rock, and the Qingdong depression in the middle is the rift basin in Mesozoic and Cenozoic. There are a lot of subsidiary fractures and nose structures in the Kendong uplift and oil sources in surrounding depressions, such as the Fulin sub-depression, the Gunan depression, the Zhuangxi depression and the Qingdong depression, wherefore, the reservoirs formed easily and the Kendong uplift is the favorable place for prospecting. Thicker strata in Mesozoic and Cenozoic developed in the Dongying depression and the Qingdong depression, so there is abundant hydrocarbon in these two depressions, and then the Guangligang rise-in-sag and the Qingdong rise-in-sag developed in the center in these two depressions are also the favorable places for prospecting.

Key words: the Qingdong depression, gravity anomaly, integrated interpretation, petroleum geologic significance, rise-in-sag, structure unit

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