



Relationship between deep structure and oil-gas in the eastern Tarim Basin

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The Tarim Basin is a large composite superimposed basin which developed in the Presinian continental basement. It is an important area for oil and gas replacement in China. In the eastern part of Tarim Basin, the exploration and research degree is very low and less system, especially in the study of tectonic evolution and physical property change. Basing on the study of geophysics, drilling and regional geological data in this area, analysis of comprehensive geophysical, geological and geophysical analysis comparison are launched by new methods and new technology of geophysical exploration. Fault, tectonic evolution and change of deep character in the eastern Tarim Basin are analyzed in system. Through in-depth study and understanding of the deep structure and physical changes of the eastern region, we obtain the fault characteristics in the study area and the deep structure and physical change maps to better guide the oil and gas exploration in this area.

The east area is located in the eastern Tarim Basin, west from the Garr Man depression, Well Kunan 1 - Well Gucheng 4 line to the East, north to Kuruketage uplift group near Qunke 1 wells, south to Cherchen fault zone, east to Lop Nor depression, an area of about $9 * 10^4$ square kilometres, Including the East of Garr Man sag, Yingjisu depression, Kongquehe slope, Tadong low uplift and the Lop Nor uplift, five two grade tectonic units. The east area of Tarim is belonging to Tarim plate. It changes with the evolution of the Tarim plate. The Tarim plate is closely related to the collision between the Yining - the Junggar plate, the Siberia plate and the southern Qiangtang - the central Kunlun plate. Therefore, it creates a complex tectonic pattern in the eastern Tarim basin.

Earth electromagnetic, gravity, deep seismic and other geophysical data are processed by a new generation of geophysical information theory and method, including multi-scale inversion of potential field inversion (Hou and Yang, 2011), 3D magnetotelluric data (Yang et al., 2012) and micro seismic wave field information recognition technology in the eastern Tarim Basin. Combining the information of the deep faults, tectonic evolution characteristics of the study area and the physical changes from geological data, we analyze the relationship between the change of the physical structure and the oil and gas, and predict the favorable oil and gas area and the exploration target area by information extraction, processing and interpretation analysis based on integrated geophysical technology.

References

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