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## The Carboniferous Structural Characteristics and Reservoir Analysis of the Sixth and Ninth Area, Karamay Oilfield, in Northwestern Margin of Junggar Basin

CUI Wenling<sup>1,\*</sup> and LI Zhongquan<sup>2</sup>

*1 College of Earth Sciences, Chengdu University of Technology, Chengdu, Sichuan, 610059, China*

*2 State Key Laboratory of Oil and Gas Reservoir Geology and Exploration, Chengdu University of Technology, Chengdu City, Sichuan, 610059, China*

The foreland thrust belt in northwestern margin of Junggar basin is a large-scale imbricated thrust system. It developed since Late Carboniferous – Triassic and was gradually buried and became the leading monoclinic which plunged to the basin in the Jurassic – Cretaceous. This system has been subdivided into three segments: Hong - Che fault zone, Ke - Bai fault zone and Wu-Xia fault zone, with distinctive structural style. The regional structure of Karamay Oilfield is located in Ke - Bai Overthrust Zone of northwestern margin of Junggar basin.

The sixth, ninth area, Karamay Oilfield is located in the topwall of Ke - Wu fault and the footwall of west Baibai fault, the middle of Ke - Bai fault zone which belongs to the uplift of the western part of the Junggar basin. It is also separated by Baijiantan fracture. As Carboniferous base rocks of this area's target layer, after a long-term weathering and denudation, Weathering crust developed, covered by Mesozoic sedimentary. Faults are well-developed in Carboniferous base rocks, the Formation dips are also steep.

Do in-depth studies of the structure in this area, find out the distribution law and distribution characteristics of the faults and traps, and explore master factors of hydrocarbon accumulation, conclusions are as follows. 1. The sixth, ninth area mainly developed pressure structural styles and twist structural style. Pressure structural styles have imbricate structure and up structures, which mainly distributed in the south of the area. Twist structural style include positive flower structures and similar flower structure which mainly distributed in the middle and north of the area. 2. According to the fine structure interpretation of the sixth and ninth area, clear the development characteristics and plane distribution characteristics of fracture and trap in the top surface and internal unconformity of the Carboniferous. It has lay a

solid foundation for hydrocarbon detection, crack detection and production deployment 3. The more development of nose structure, fracture and its associated fault block, broken nose, broken anticline in the north of the area, which not only provide a favorable environment for the oil and gas accumulation trap condition, but also the micro-fracture and cracks in more developed areas. Therefore, in the north sixth and ninth area, most of the top of the Carboniferous zones are in the oil and gas accumulation favorable structural positions. What's more, under the action of pressure torsional stress, layers develop the fracture and tension-shear joints, which form the situation of the overall oil and local enrichment at the top of the Carboniferous. 4. Carboniferous oil reservoir is mainly the fractured oil reservoir which controlled by faults, cracks and micro-cracks fractured, secondly the fracture -pore reservoir controlled by the antiquity erosion surface. Pore-based oil and gas reservoir is more develop within the scope of 100m below Ancient weathering crust in the north of the area. 5. In the north of the sixth, ninth area, the top surface and internal unconformity of the Carboniferous are good channel for oil and gas migration which control the distribution range of the areas in the longitudinal direction.

**Key words:** Junggar basin, Karamay Oilfield, Carboniferous, hydrocarbon accumulation

### References:

- Li xibin, A new exploration progress of fault zone in the Northwestern Margin of Junggar Basin [J], *Oil & Gas Geology*, 1990, (03).
- Fan Guanghua, Zhi jiasheng, The preliminary research on the stage oil source and migration in the Northwestern Margin of Junggar Basin [J]. *Xinjiang Petroleum Geology*, 1984, (02).
- Lanzhou Institute of Geology, Chinese Academy of Science, formation and evolution of the oil and gas formation in Junggar Basin [J]. *Advance in Earth Sciences*, 1986, (Z1).

\* Corresponding author. E-mail: cuiw1717@126.com

- Chen Liyu, The structural characteristics of each tectonic development stage in Karamay [J], Xinjiang Petroleum Geology, 1983, (01).
- You Yimei, The study of nappe structure in the northwestern margin of Junggar basin [J], Xinjiang Petroleum Geology, 1983, (01).
- Zhang Qinhua, Wei Zhouling, Sun Saohua, The forming age of bout fault zone in the west Junggar [J], Xinjiang Petroleum Geology, 1989, (01).
- Lan Tingji, The nappe and its evolution of west junggar [J]. Xinjiang Petroleum Geology 1986,(03).
- Huang Su, Wang Daojing, Tectonic characteristics and hydrocarbon formation in Northern Xinjiang [J]. Geotectonica et Metallogenia, 1984, (04).
- Song Yongdong, Dai Junsheng, Wu Kongyou, Structural characteristics and hydrocarbon accumulation mode of the Wuerhe-Xiazijie fault belt in the northwestern margin of Junggar basin [J], Journal of xi 'an petroleum university (natural science edition) , 2009, (03).
- Shao Yu, Wang Renfu, Zhang Yueqian, Wang Xin, etc, The strike-slip tectonics and oil and gas exploration in the northwestern margin of Junggar basin, Acta Petrolei Sinica , 2010,6-3.
- Du Shekuan, The study of the characteristics of the foreland thrust belt basin and oil-gas accumulation effect in the Northwestern Margin of junggar [D], Graduate University of Chinese Academy of Sciences (guangzhou institute of geochemistry). 2007.08.
- Xie Hong, Zhao Bai, Lin Longdong, etc, The oil bearing characteristics of overthrust fracture zones in the Northwestern Margin of Junggar Basin [J], Xinjiang Petroleum Geology, 1984,(03).