Scholars Bulletin
(A Multidisciplinary Journal)
An Official Publication of "Scholars Middle East Publishers",
Dubai, United Arab Emirates
Website: http://scholarsbulletin.com/

ISSN 2412-9771 (Print)
ISSN 2412-897X (Online)

The accumulation patterns and main controlling factors of hydrocarbon in different types of tectonic units of Jizhong Basin

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Abstract: Going through depression tectonic units of different conditions of reservoir and cap, trap and conducting research, explore the different tectonic units of the difference of neogene hydrocarbon accumulation conditions, summarize its main controlling factors. Research shows that oil and gas in the study area are first along for vertical migration of oil source faults, sand body lateral migration along, but have certain differences in different tectonic unit. Uplift area big LiuQuan tectonic belt and chu tectonic belt is given priority to with vertical migration of oil source faults, vertical migration distance is longer, an slope zone of slope and He Xi Wu tectonic belt vertical migration distance is shorter, fracture of oil and gas mainly ACTS as vertical adjustment. Uplift area big Liu Quan tectonic belt and chu tectonic belt is given priority to with short distance lateral migration of sand body, an slope zone of slope and He Xi Wu tectonic belt is given priority to with sand body lateral migration, lateral migration distance is longer, strata for oil and gas enrichment is relatively single, oil and gas in zonal distribution.
Keywords: neogene, hydrocarbon accumulation, oil and gas.

INTRODUCTION

Langgu Hebei central oil-rich sag is refers to the hebei central depression of oil and gas resources, effective exploration and development, oil and gas resource potential is still large RaoYang sag, Ba County sag and gallery sag. Based on control fault depression lake basin tectonic evolution characteristics of sediment accumulation and hydrocarbon enrichment rule, going further to oil-rich sag are divided into the central uplift belt of oil and gas zones structural belt type slope belt and sub-sags belt [1-3]. Based on an slope belt and chu anticline belt, big LiuQuan an nose-like structure belt, slope and HeXiWu fault belt as an example, through analyzing the reservoiring geological elements, combined with physical simulation experiment, clarify different types of tectonic belt, the main controlling factors of hydrocarbon accumulation in the reveal of oil and gas enrichment regularity, establish hydrocarbon accumulation pattern, provide theoretical guidance for oil and gas exploration.

The Oil and gas distribution regularity of Uplift zone

Big Liu Quan tectonic belt and chu uplift zones within the structural belt are the source, mainly on vertical migration of oil and gas, sand body short distance lateral migration is complementary, gathered near the oil source fault trap, be late static fracture reservoir. Plane, oil and gas are mainly distributed in positive core fracture density of the main body, different types of faulted structure belt oil has a certain difference.

Big Liu Quan structural belt of oil and gas enrichment in fracture tectonic belt of the main body, depending on the type of fracture tectonic belt is divided into collapse anticline belt, back broken nose belt and faulted anticline. The company anticline faulted anticline belt; Old fracture for back tilt nose broken belt, west of state by the old state, fracture and a series of small reverse fault clamping, mainly by oil source faults of old fracture state oil supply, reverse formed small fault block reservoirs; Old state east of fracture collapse anticline belt, is by the old state of fault and amber camp fault, the king of the fault, the fork in the fault, Yang tax fault, Liu Quan fault oil source faults such as clamping, double source inside the oil supply and collapse anticline belt formed at a series of small fault reservoirs. The statistical results show that the collapse anticline belt in the highest degree in oil and gas enrichment.

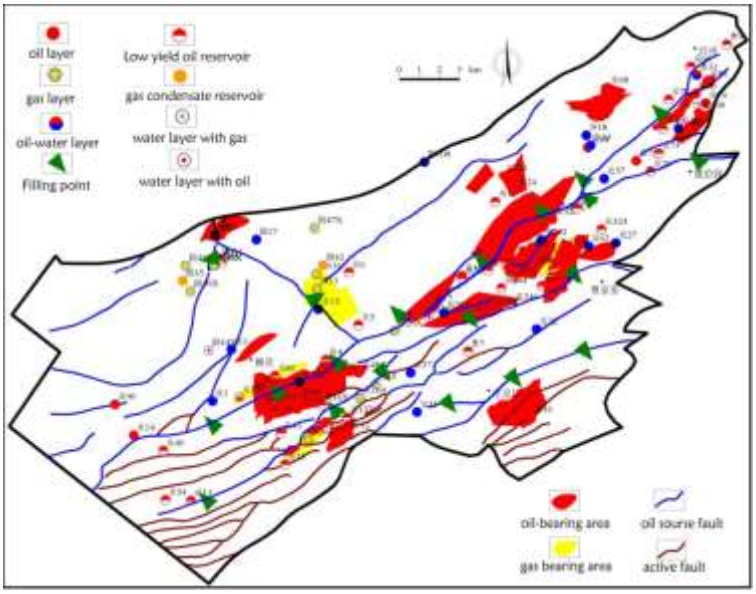

Fig-1: the traps, oil source faults, migration path and the hydrocarbon distribution of Daliuquan tectonic belt

For structural belt on the enrichment of oil and gas mainly chu chu anticlinal core subject, different tectonic units of oil content has a certain difference. Influenced by source rock, good prosperous, Yin village in the north of fault nose structure capability is much better than stay in the south of chu, leave ChuNa inclined structure; West wing of the anticline structure reverse faults development, form the effective lateral shade condition, development capability is much better than consequent fault of east wing . Vertical, the enrichment of oil and gas distribution is mainly under the regional cap rock, different tectonic units of enrichment layer have a certain difference [4]. Leave chu construction of major oil and gas enrichment in Ed2 - Ed3, from south to north, oil-bearing horizon gradually adjusted upward Big Liu Quan structure main distribution of oil and gas enrichment in Es3z, Es3x, oil and gas gradually adjusted upward from the south to the north.

The Oil and gas distribution regularity of slope zone

Wen 'an slope and HeXiWu tectonic belt are mainly sand body lateral migration of oil and gas, oil and gas enrichment in fracture density, be late static fracture reservoir. Plane, oil and gas show "block zoning" the characteristics of distribution, and controlled by the fault effect is obvious. Wen 'an slope enrichment of oil and gas mainly in four nose-like structure belt (figure 9), HeXiWu structural belt of oil and gas enrichment of oil and gas mainly in the broken base with nuclear department (figure 10)

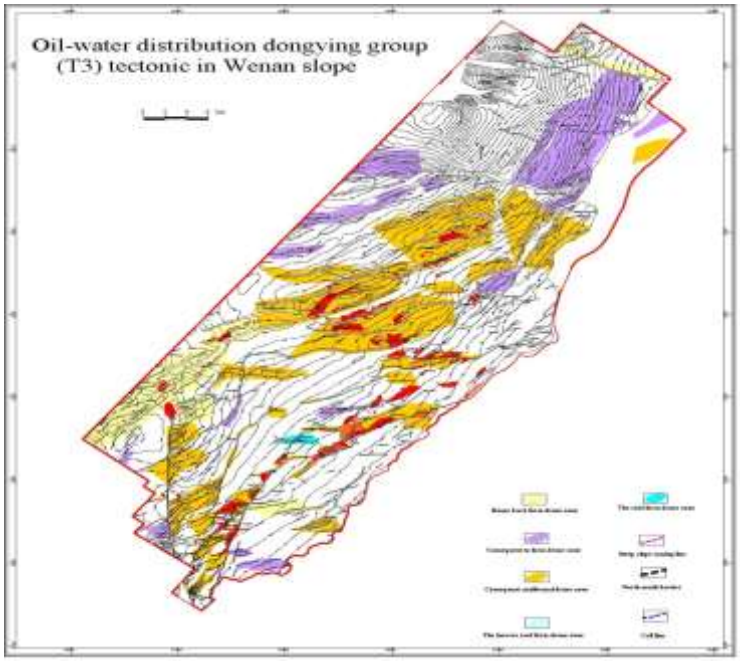

Fig-2: the traps, oil source faults, migration path and the hydrocarbon distribution of Wenan tectonic belt

HeXiWu tectonic belt slope area within the source, the part of oil and gas from the source reservoir fracture caused by docking, vertical migration of part comes from the source faults, the broken base with nuclear enrichment degree highest, ns zonal distribution. HeXiWu west base belt, a series of northwest Es3x source rocks and the consequent fault E4s reservoir, formation is broken - sand transportation systems [5], the broken base with core by reverse fault block reservoir. HeXiWu base belt and the eastern base belt, south west to the east big Meng Zhuang subsags and tung subsags Es3, Es4 source rocks under the hydrocarbon source rock, oil and gas along the vertical migration of oil source faults first, and then along the sand body [6-7], lateral migration in the broken base with nuclear department gathered accumulation. Vertical distribution of oil and gas enrichment in regional cap rock, different tectonic units of enrichment layer has a certain difference.

CONCLUSION

After reservoir fine dissecting found, oil and gas in the study area are all along for vertical migration of oil source faults, sand body lateral migration along, but have certain differences in different tectonic unit. Vertical migration channels: uplift area big LiuQuan tectonic belt and chu tectonic belt is given priority to with vertical migration of oil source faults, vertical migration distance is longer, split horizon is more, oil and gas from Ek, near the oil source faults, a toothbrush longitudinal vein, covered on the plane. An slope zone of slope and HeXiWu tectonic belt vertical migration distance is shorter, main vertical adjustment of the role of oil and gas lateral migration pathway uplift area big Liu Quan tectonic belt and chu tectonic belt is given priority to with short distance lateral migration of sand body, an slope zone of slope and HeXiWu tectonic belt is given priority to with sand body lateral migration, lateral migration distance is longer, the enrichment of oil and gas layer is relatively single, oil and gas in zonal distribution.

REFERENCES

1. Yielding, G. (2002). Shale gouge ratio—Calibration by geohistory. *Norwegian Petroleum Society Special Publications*, *11*, 1-15.
2. Bretan, P., Yielding, G., & Jones, H. (2003). Using calibrated shale gouge ratio to estimate hydrocarbon column heights. *AAPG bulletin*, *87*(3), 397-413.
3. Eichhubl, P., D'Onfro, P. S., Aydin, A., Waters, J., & McCarty, D. K. (2005). Structure, petrophysics, and diagenesis of shale entrained along a normal fault at Black Diamond Mines, California—Implications for fault seal. *AAPG bulletin*, *89*(9), 1113-1137.
4. Doughty, P. T. (2003). Clay smear seals and fault sealing potential of an exhumed growth fault, Rio Grande rift, New Mexico. *AAPG bulletin*, *87*(3), 427-444.
5. Færseth, R. B. (2006). Shale smear along large faults: continuity of smear and the fault seal capacity. *Journal of the Geological Society*, *163*(5), 741-751.
6. Kim, J. W., Berg, R. R., Watkins, J. S., & Tieh, T. T. (2003). Trapping capacity of faults in the Eocene Yegua Formation, east sour lake field, southeast Texas. *AAPG bulletin*, *87*(3), 415-425.
7. Yielding, G. (2002). Shale gouge ratio—Calibration by geohistory. *Norwegian Petroleum Society Special Publications*, *11*, 1-15.