



Lithology and Pore Structure of Basement Rock Reservoirs in Paleo Central Uplift Belt of Songliao Basin

ZENG Zhouqiang and SHAN Xuanlong*

Jilin University, Changchun, Jilin 130000

Citation: Zeng et al., 2019. Lithology and Pore Structure of Basement Rock Reservoirs in Paleo Central Uplift Belt of Songliao Basin. *Acta Geologica Sinica* (English Edition), 93(supp.2): 58.

Abstract: The Longtan1 well and Longtan2 well revealed metamorphic rock reservoirs, seeing a good natural gas display. Through comprehensive lithology identification, The lower part of the basement of LT1 is mica schist, the original rock is clastic rock; the middle part is granitic mylonite; the upper end is green schist whose original rock is andesite. The lower section of LT2 is a mylonitic granite. Using high pressure mercury and nitrogen adsorption, the average pore diameter of schist and mylonite is not much different, the schist throat is thinner and the sorting is poor; the mylonite throat is thicker and the sorting is better. The schist is a type II isotherm, and the B-type hysteresis loop reflects the pores as slit-like capillary pores; the mylonite is a type III isotherm, and the D-type hysteresis loop reflects that it is a pointed ridge with four sides open. Porosity. Compared with mylonite, schist has large adsorption capacity and large specific surface area. The average pore size is smaller than 100nm and larger than the pore volume. It reflects that it has more pores than schist and larger pore volume, but the pores are smaller and the pore structure is complex.

Key words: Songliao Basin, uplift belt, gas reservoir, lithology, pore structure

References

Ágnes Nagy, et al., 2013. Integrated core study of a fractured metamorphic HC-reservoir; Kiskunhalas-NE, Pannonian Basin.

Acta Geod Geophys. 48: 53–75.

Ane E. Lothe, et al., 2018. Porosity, permeability and compaction trends for Scandinavian regoliths. *Marine and Petroleum Geology*, 92: 319–331.

Du Tiantian, Shan Xuanlong, et al., 2017. Quantitative characteristics of nanoscale pores in gas-bearing volcanic rocks of the Yingcheng Formation in the Songnan Gas Field. *Energy Fuels*, 31(10): 10655–10664.

Gao Zhiye and Hu Qinhong, 2013. Estimating permeability using median pore-throat radius obtained from mercury intrusion porosimetry. *Journal of Geophysics and Engineering*.

Gareth, R.L., Chalmers, R., and Marc, B., 2015. Porosity and pore size distribution of deeply-buried fine-grained rocks: Influence of diagenetic and metamorphic processes on shale reservoir quality and exploration. *Journal of Unconventional Oil and Gas Resources*, 12: 134–142.

About the first author

Zeng Zhouqiang: male, born in 1995 in Hubei Province; Master student, graduated from Jilin University. He is now interested in unconventional petroleum geology.

About the Corresponding author

Shan Xuanlong, male, born in 1969 in Anhui Province; doctor, graduated from Changchun College of Geology. He is now interested in unconventional petroleum geology. Email: shanxl@jlu.edu.cn; phone: 13943133050

* Corresponding author. E-mail: shanxl@jlu.edu.cn