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The mechanism and the status of coal-seam gas

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Abstract: The development of oil and gas exploration and petroleum geology in the global transfer from the micro pore throat in oil and gas traps, continuous oil and gas gradually to the nano pore aggregation tendency. A large number of research literature, starting from the connotation of coal bed methane CBM, discussed the geological conditions for reservoir forming, as well as the influence of coal bed methane reservoir geological factors.

Key words: *Coal-seam gas; The accumulation mechanism; Influence pattern*

I. INTRODUCTION

With the development and utilization of natural oil-gas resources in the world , oil and gas resource structure has become increasingly evident, unconventional oil and gas resources exploration and utilization to the exploration and development of unconventional oil and gas is represent the general trend. Coal bed methane and shale gas are two important unconventional natural gas resources in business development has been in the world[1,2]. China's coal-bed methane industry has entered into commercial production stage.

In late twentieth Century, the exploration and development of Chinese government began to attach great importance to coal seam gas, in the inception of the company, former President Jiang Zemin is the inscription: to rely on scientific and technological progress, the development of CBM industry, for the benefit of the people. Former Premier Li Peng inscription: Breakthrough of coalbed methane, the development of new energy[3]. The Chinese government has promulgated a series of laws and regulations, exploration and development of coal bed methane are encouraged. The people's Republic of China Law of mineral resources and mineral resources of the people's Republic of China, rules for the implementation of the law of the people's Republic of China coal law, people's Republic of China foreign cooperative exploitation of continental petroleum resources regulations and other laws and regulations, have been clearly put forward to encourage the development of coal bed methane industry.

II. THE CONNOTATION AND CHARACTERISTICS OF COALBED GAS

Coal bed gas by adsorption phase occurred in coal seam, unconventional natural gas reservoir[4,5]. Changes in the underground temperature and pressure and hydrodynamic conditions, the adsorption of coal bed gas in parsing can be transformed into each other. The research shows that, the tectonic conditions, coal seam depth, temperature and pressure conditions, hydrodynamic conditions and coal seam thickness, buried depth on the enrichment of coal bed gas accumulation effect.

III. COAL BED METHANE RESERVOIR GEOLOGICAL CONDITIONS

Conventional oil and gas pool forming conditions are generation, reservoir, cap, transport, trap, storage, the hydrocarbon source rock, reservoir, the layer, migration, trap and preservation conditions of effective, more important is the source reservoir seal combination. The coal seam gas, reservoir geological conditions including gas generating conditions, reservoir conditions, storage conditions, because it is a form of self generation and self storage, not after the two large-scale migrations (see Table 1).

Table 1 Comparison of the characteristics of conventional oil and gas and coal bed gas

type	conventional oil and gas	Coal bed gas
Trap c	The conventional structural traps, stratigraphic traps, lithologic traps	No obvious trap boundaries
The distribution form	Single type, cluster	Continuous distribution
Flow form	Darcy's law	Does not meet the Darcy's law
Migration form	The two migration	One migration
Technology application	Conventional vertical well development	Large scale fracturing of horizontal wells

1 Generation of gas conditions

The formation of natural gas is abundant coal bed gas reservoir is the basic requirements of large-scale, hydrocarbon source rocks (coal measure source rocks) deposition thickness, wide range, good organic type, In general, type I kerogen and type II kerogen to oil, kerogen type is mainly gas, The maturity of organic matter is high, so as to provide sufficient natural gas. Shale America five shale basin thermal maturity distribution in the range of 0.4~2%, generate visible have natural gas in the whole process of hydrocarbon generation from organic matter.

2 Conditions of reservoir

Coal reservoir conditions, including characteristics analysis and adsorption properties of its pore permeability. Coal gas is mainly surface adsorption in the form of adsorption on coal, adsorption capacity; much depends on adsorption of coal bed methane from organic matter in coal matrix at the same time, the image stabilizing conditions of seam gas flow adsorption.

3 Storage conditions

The geological conditions of the coal bed gas storage in our country is complicated, tectonic movement is frequent and intense, the source of power of each period tectonic movement and the extrusion direction is different, after the formation of coal damage to different degrees of transformation, the current occurrence of coal bed methane is "the geological characteristics of three low and one high[6]. Low saturation, low permeability, low reservoir pressure and high degree of metamorphism.

IV. EFFECTS OF DIFFERENT GEOLOGICAL FACTORS OF COAL BED GAS

1 Effect of structure on coal seam gas

As early as in 1988, the British Davdir proposed the influence of geological structure on coal seam gas occurrence characteristics play a leading role[7], he proposed to strengthen the study on geological tectonic evolution and coal seam gas geological law. Australia's Jshhedr (1981)[8]in relation to the geological structure and coal seam gas also made extensive research. There is consensus that the occurrence of coal seam gas is coal

bearing strata in the experiences of previous tectonic evolution. Bi-bler C J (1998)[9] in the study of global methane emission phenomena, pointed out that the tectonic movement not only affects the coal bed gas generating conditions, but also affect the preservation conditions of cbm. The geological conditions of China's CBM hosting complex, frequent and strong tectonic movement, the power source of the tectonic movement and the extrusion direction is not same.

2 Effect of hydrodynamic characteristics on coal seam gas

Although the formation of steep, fracture is developing, but the Permo Carboniferous and Ordovician limestone aquifer of quaternary system, the hydraulic connection between the same horizon, coal measures aquifer close hydraulic connection between weak layer, save on gas, favorable. The hydro geological boundary condition is closed or semi closed, forming a relatively independent hydro geological unit, the hydraulic sealing, sealing conditions of coal bed gas well. Groundwater recharge from the North West Wing height, the outflow from the southeast wing of the lower, the North West Wing of coal bed gas migration with groundwater flow in the opposite direction, the groundwater hydrodynamic pressure hinders the coal bed gas under the action of static pressure bedding migration toarchive protection effect on gas, the syncline North West Wing coal seam gas Zhaoge zhuang Ida's relatively rich Set.

V. CONCLUSION

1 Understanding according to China's CBM exploration and development practice, the coal bed methane reservoir model is divided into self storage adsorption type, self storage free type and internal external storage type.

2 Tectonic evolution and its characteristics and hydrodynamic conditions are the main control factors of the occurrence of coal bed methane.

REFERENCE

[1] Meng Zhaoping, Tian Yongdong, Li Guofu. The theory and method of coal bed Science Press, 2010.

[2] Zou Caineng, Tao Shizhen, Hou Lianhua, et al. The unconventional oil and gasgeology [M]. Beijing: Geological Publishing House, 2011.

[3] Sun Maoyuan, Liu Yijun. New development of coalbed methane industry Chinese.Natural gas industry, 2008.3 (28): 4-9.

[4] Gayer R, Harris I.Coalbed methane and coal geology[M]. London: The Geological Society，1996:1－338.

[5] Malone P G, Lottman L K, Camp B S，et al．Aninvestigation of parameters affecting desorption rates of warrior basin coals[A]. Proceedings of International Coalbed Methane Symposium[C]. Tuscaloosa: University of Alabama, 1989: 35.

[6] Yu Yuanjiang, Yang Qi, Liu Dameng et al. J. geological science and technology information present situation and development trend of CBM reservoir layer China,2001 (1): 56 - 60.

[7] David P Creedy. Geological controls on the formation and distribution of gas in British coal measure strata[J]. International Journal of Coal Geology, 1988, 10(1):1－31.

[8] Shepherd J. Outbursts and geological structures in coal mines，Aus-tralia [J]. Int．J．Rock Mech．Min．Sci．, 1981, 18(4):267.

[9] Bibler C J，Marshall J S，Pilcher．Status of world wide coal mine methane emissions and use RC[J]. Int. J. Coal Geol. , 1998, 35:283－310.