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ABSTRACTS

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Abstract: The features of microscopic pore texture of the tight oil in Chang 7 Reservoir in Longdong Chenghao Area of Ordos Basin were systematically studied by using whole rock analysis, cast thin slice analysis, SEM, field emission SEM, mercury-injection and other correlation experiments. The tight reservoir in the study area has the feature of fine grain size, high content of interstitial material, and the illite was the main clay mineral. The pore texture of reservoir was complex. dissolution pore is the main pore type, and remaind intergranular pore was the next. The reservoir pores and throat radius were small with high tightness. The reservoir with different physical properties had similar pore radius, but it was much difference in throat radius. While the throat radius was one of the key factors for determining the permeability of reservoirs. The genetic analysis of microscopic reservoir structural difference shows that sedimentation and diagenesis are the main control factors affecting the pore textures, and sandy clastic flow sediments are the most favorable reservoir styles, the turbidite is the next.

Key words: microscopic pore texture; tight oil reservoir; Change 7 Reservoir; Longdong Chenghao Area; Ordos Basin

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Abstract: The Indus Basin was located in the northwest part of the India Plate, where was the conjunction of India, Afghanistan and Eurasian Plate. It was the foreland basin developed on the passive continental margin, the basin had the characteristics of special structural position and low level of exploration. In this study, the onshore part of the basin was divided into 12 secondary tectonic unites, and four evolution stages. By analyzing tectonic and sedimentary characteristics and petroleum geologic analysis, the study of typical gas reservoir dissection technique and hydrocarbon accumulation regulation indicated that the quality of the main marine source rock was better in the Lower Cretaceous of the basin with stable distribution, the main reservoir was sandstone of Lower Cretaceous and limestone of Eocene, the main traps were relevant to and the foreland basin. A hydrocarbon in the basin was mainly distributed in Eocene and Lower Cretaceous, and gases were mainly produced. It had the characteristics of "oil in the south and gas in the north and oil in the low and gas in the upper locations". Analysis shows that the oil and gas distribution in the basin is controlled by combination of the source rock distribution and thermal evolution characters, the distributive characteristics of favorable reservoir-caprock assemblage and the characteristics of favorable structural trap development and both of them are indirectly controlled by the palaeo-uplifts and slope of the palaeo-shelf. Therefore the

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Abstract: The volcanic reservoir was one of the important pay zones in Junggar Basin. The Xiazijie Oilfield in Junggar Basin was a typical volcanic oil and gas reservoir in the West China. Due to deeper burial and strong heterogeneity of reservoir, the reservoir distribution characteristics in the area were not clarified. In Xiazijie Oilfield, a fine description of 3D seismic data was carried out, the seismic attribute extraction and post-stack wave impedance inversion were used for reservoir prediction of $P_1f_3^2$ in the target zone. The result indicates that the thinner areas or pinchout in the east of Well Xia 3, Well Xia 1 and Well Xia 5 are favorable reservoirs, the wave impedance in $P_1f_3^2$ obtained from wave impedance inversion is enlarged gradually from the west to the east, the favorable reservoir is distributed in NW. It is thinned or pinched out in the east of Well Xia 3, it is consistence with that of attribute analysis. The distributive area of favorable reservoir in the $P_1f_3^2$ of the predicted area is 57.09km^2, the prediction rate of reservoir thickness is as high as 86%.

Key words: Jungar Basin; Xiazijie Oilfield; volcanic reservoir; seismic attribute; wave impedance inversion

Abstract: Aquifer was well developed in the western block of Sulige Gas Field. If the oversized production allocation was provided, water would rapidly be breaking through along the horizontal section, and earlier water out would be induced in the gas well, it would seriously influence the gas well production. The empirical method was often used for production allocation in the oilfields, the open flow capacity of 1/8～1/12 was used. Under the production principle, there existed problem of rapid pressure drop and early water breakthrough in the most of horizontal wells. In allusion to the problem, by optimizing the related reservoir equations, the critical production Q_c was established for controlling water invasion in the horizontal wells. Field experiments show that if critical rate Q_c is applied in production, water movement was stable, it would continuously provide pressure for the gas reservoir for slowing down the water invasion, reducing pressure drop, prolonging the interval of stable production and enhancing oil recovery. Study indicates that Q_c is a variable and exhibits a decline exponent of 0.5, so when use Q_c for production allocation, it is convenient to analyze and adjust allocation by creating the decline curve. Study also shows that allocation factor (Q_c / Q_{AOF}) and Q_{AOF} exhibit good power function relationship, so their correlation can also be used for production allocation for the horizontal wells lacking the production data.

Key words: Sulige Gas Field; horizontal well; production allocation; water invasion; critical production rate; half axis of oil drainage; production allocation factor

Abstract: Maling Oilfield belonged to an ultra-low permeability reservoir, the reservoir formation of mechanism was complex, the reservoir heterogeneity was strong, and it had the characteristics of difficult for effective reservoir prediction and evaluation. Due to poor physical condition, single well production was low, stable period was short, or even without stable production period and rapidly entering into the period of production decline, therefore, large areas of low yield were often caused in the development process. In this paper, the method of cluster analysis was applied to classify the

physical property of 45 wells in Well Z246 of Chang 8 Reservoir, the relevant parameters, such as porosity, permeability, clay content and flow zone index, etc were chosen as the basis of analysis. Three kinds of regions are identified, multiple linear functions are established by combining the single well production with the reservoir physical parameters (permeability, oil saturation and reservoir thickness) and reservoir reconstruction parameters (sand strength), then combined with the correlation of pressure balance and comprehensive decline rate, three kinds of initial production chart boards are established, it provides a positive guidance for the production prediction at initial stage of oilfield production.

Key words: cluster analysis; multi-variate linear function; initial productivity chart board; yield prediction

Abstract: In Huabei Oilfield, the development mode of toothbrush shape reservoirs was produced zone by zone. At present, the most of reservoirs were at high producing level with less residual oil for potential tapping, they were at the late stage of high water content. For further enhancing oil recovery in the reservoirs, by taking Checheng Oilfield for example and combined with reservoir engineering and numerical simulation, the regulation of water-out reservoirs and tapping the potential of remaining oil were studied. It is proposed that the method of lateral water injection is used for development and at the same time the methods of infilling well drilling at the higher position and separated production are used for effectively tapping the potential of remaining oil in inter-well, good effect is obtained in production, it provides a new way for the development of similar reservoirs at the late stage of high water content.

Key words: the stage of high water content; toothbrush shape reservoir; development mode; lateral change; potential tapping for matching the production

Abstract: Chang 7 Reservoir in Zhenyuan Oilfield was strictly controlled by underwater distributary channel sand which was extended to SW-NE direction, and the main components were gray green, gray black fine-grained lithic sandstones, lithic sandstone and lithic feldspar sandstone. Fillings were mainly composed of clay minerals, carbonate, silicates, and etc. Vertically the reservoir had the characteristics of plane distribution of strong heterogeneity and high starting pressure, soit had the condition for improving the single well production. Although combination of ceramsite and volume fracturing technology could simply improve the single well production in Chang 7 Reservoir at initial stage, it was seriously declined in the reservoir development, it could not hold long term stable production. The technology of horizontal well and volumetric fracturing is used, it improves the volume of reservoir reconstruction and conductivity of fractures. Good results are obtained in field testing. The technology is of great significance of enhancing single well production and improving effect of tight oil production.

Key words: Zhenyuan Oilfield; tight oil reservoir; reservoir characteristics; development technology

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