GEOLOGICAL CONTROL AND ITS MECHANISM OF MODERN TECTONIC STRESS FIELD TO PHYSICAL PROPERTIES OF COAL RESERVOIR IN MIDDLE-SOUTHERN QINSHUI BASIN, CHINA

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As for the main coal reservoir of the lower Permian Shanxi formation in the middle-southern Qinshui Basin, the permeability gradient of coal reservoir trends to increase in exponential function and the pressure gradient arise in logarithmic function with increasing the main stress difference σ_1-σ_3 of modern tectonic stress field, which is predominantly controlled by the correlation of the main stress direction to the preferentially developed direction of the natural fissures in coal reservoir. These two directions are parallel for the coal reservoir but nearly normal for the roof of coal seam. As for the result, the natural fissures in coal reservoir might be in a tensional statue whereas those in roof be in a compressive one. Larger the main stress difference, more remarkable the relative tensional or compressive effect. Based upon the regularity or controlled mechanism, it was predicted that the lower Permian main coal reservoir might occur in the Yangcheng, area between Lucheng and Qinyuan, area between Wuxiang and Zuoquan and northwestern Zuoquan of Qinshui Basin.