The reasonable location of high drainage roadway to control gas exceeding and spontaneous combustion in goaf

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Abstract： In order to study the problem of the layout of the high drainage roadway in the fully mechanized caving face of high gassy and easy spontaneous combustion seam to achieve the synergistic prevention of gas and coal spontaneous combustion， this paper will firstly use the physical similar simulation method to determine the distribution of overburden fracture, and the factors influencing the gas drainage effect and air leakage of coal mining face are obtained by analyzing the parameters of high drainage roadway. Based on the above influencing factors, the numerical simulation method is adopted to obtain the layout level of the high drainage roadway and the reasonable range of the suction negative pressure. Research indicates that the vertical horizon location of high drainage roadway and the negative suction pressure are the main controlling factors affecting the gas drainage effect and the spontaneous combustion of coal in the goaf. Under the action of suction negative pressure, the arrangement of the high drainage roadway at a lower position will cause a large number of fissure air leakage passages in the rock mass near the pumping section, resulting in the expansion of the oxidization and heat accumulation zone of the coal body in the goaf. The higher layer position can not solve the problem of gas accumulation in the upper corner. When the high drainage roadway is arranged at a cutting height of 2.8~3.2 times from the roof of the coal seam and 0.4~0.5 times the width of the crack belt of the return airway, the gas concentration of the upper corner together with the oxidization and heat accumulation zone of the coal body in the goaf can be controlled within the safe range, the safe and efficient recovery of the working face provides effective protection.

Key words: U+I-shape ventilation, high drainage roadway, coal spontaneous combustion, Synergistic prevention and control