Mining Geology of Coals in Western Kentucky

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Introduction

Each of the most heavily mined coal seams in the Western Kentucky Coal Field is underlain by a series of faults, and the frequent occurrence of small faults and fractures poses a significant hazard to mining operations. These faults and fractures may be associated with: (1) mining subsidence, (2) geologic stress, and (3) fractures related to regional tectonic stress. This review focuses on the mining geology of three western Kentucky coal beds, highlighted in the stratigraphic sections shown in Figure 1.

Additional mining disasters that can affect all coal beds and veins: (1) vein cutting, which is prevalent in eastern Kentucky; (2) dripping water; (3) rock bursts; and (4) fractures related to regional tectonic stress.

Folding

The term “fold” as used in this chapter refers to a vertical or horizontal displacement of rock units relative to the adjacent rock units. Folds may be classified into a variety of types, including flexures, undulations, and bends.

Folded structures are common in the Western Kentucky Coal Field, and are of three main types: (1) normal faults, (2) reverse faults, and (3) faults with a combination of normal and reverse movement. These faults are often associated with coal mining, and can pose significant hazards to miners.

Lateral-Stress Field

The lateral-stress field is the horizontal component of the total stress field, which is the sum of the vertical and horizontal stresses. The lateral-stress field is important in the study of coal mining because it is responsible for the deformation of coal and the occurrence of fractures.

In some cases, mines can ramp through a fault to the coal, which can lead to instability and falls. Therefore, it is important to understand the lateral-stress field in order to predict the occurrence of falls and other mining hazards.

References Cited


Baker, W. Ky. No. 13 Coal

Baker (W. Ky. No. 13) Coal

Herrin (W. Ky. No. 11) Coal

Springfield (W. Ky. No. 9) Coal

No scale intended

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