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Stephen F. Greb  
*University of Kentucky, greb@uky.edu*

David A. Williams  
*University of Kentucky*

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Stephen F. Greb and David A. Williams

Introduction

The Western Kentucky Coal Field, which is the largest coal-producing area in Kentucky, has a long history of coal mining. It is characterized by a complex geologic setting that includes a variety of coal seams, each with its own unique set of mining challenges. This introduction provides an overview of the geological features and mining obstacles encountered in the Western Kentucky Coal Field, focusing on the Springfield coal bed, which is the most important coal bed in the region.

Geology

The Western Kentucky Coal Field is situated in the Appalachian Mountains, extending from the Ohio River to the Tennessee border. It is a regional sedimentary basin that contains a series of coal beds deposited during the Pennsylvania and Westphalian periods of the Paleozoic era. The Springfield coal bed, which is composed of black shale and coal, is part of the Breathitt Group and is located in the upper Pennsylvanian age. It is flanked by the Rough Creek and Pennyrile Fault Zones, which represent major tectonic boundaries.

Mining Obstacles

1. Faults: The Rough Creek and Pennyrile Fault Zones, which are major structural features, can cause significant mining obstacles. These faults can be categorized into normal, reverse, and thrust faults, each with distinct characteristics and implications for mining operations.
2. Shear Fractures: Shear fractures, which are common in the area, can lead to floor heave, which can be remediated by using stratified coal or installing floor supports.
3. Slickensides: Slickensides are a result of tectonic activity and can cause floor heave. They are especially prevalent above the Springfield coal bed.
4. Coal Balls: Coal balls are result of in situ coalification and can cause mining problems, especially in the Springfield coal bed.
5. Carbonate Concretions: Carbonate concretions are common in the Springfield coal bed and can cause mining problems.}

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References


