Coal Resources of the Springfield Coal Bed in Western Kentucky

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Introduction

Historically, the Springfield (Western Kentucky) No. 1 coal has been the leading source of production in the Western Kentucky Coal Field. The Springfield coal is known for its lateral continuity in terms of both thickness and coal quality. It is estimated to have the largest original and remaining resource in the Western Kentucky Coal Field (Smith and others, 1992).

Map Compilation

The contour map of the Springfield coal bed was designed from 12,000 north Muir completion points that were digitized from the Kentucky Geological Survey digital data set. Data for coal thickness interpolation (fig. 1) were compiled from the coal bed-side database at the Kentucky Geological Survey. Some of the boreholes were drilled during KGS projects, but most data were submitted by KGS by coal companies and state government agencies. The data were converted to the datum, and contour units were established for the 1927 North American datum. The map in figure 1 was transformed from the data for digital manipulation. An inverse-distance weighted algorithm was used to produce the interpolated continuous thickness map from the point data. More contours were manually generalized from 12,000 north maps compiled by the Kentucky Department of Mines and Minerals; these 1:60,000 (1 inch = 60 feet) maps were digitized. This existing map was considered accurate to 1/2 of 1 inch (fig. 1). The same data were used for these maps on six of the Kentucky Department of Mines and Minerals, which are documented to be accurate for some coal fields before 1981. Many early mine maps were not mapped, so the original maps have been lost.

Coal Thickness and Mining

According to Western Kentucky records, the Springfield coal is greater than 15 inches thick (fig. 1). Most of the production from the coal bed has been in a northwest-southeast direction, or what is referred to today as the sunburst channel. The sunburst channel of the Springfield coal has been documented in western Kentucky, although some splitting may occur in the vicinity of stream channels.

The Springfield coal bed has been mined since at least 1820, and it is still the source of the majority of coal production from the Western Kentucky Coal Field. Early maize was near the surface, and, in the 1800s, the mine shafts were named after the surface mine. In the 1900s, the mine shafts were named after the location of the mine shafts.

Coal Resources

Coal resources at the Springfield coal bed in western Kentucky (table 1) were calculated using geological and geophysical data. The Springfield coal bed is divided into four sections, each with a different coal thickness. The first section is the most continuous, and the second section is the least continuous. The third section is the most continuous, and the fourth section is the least continuous. The third section is the most continuous, and the fourth section is the least continuous. The third section is the most continuous, and the fourth section is the least continuous. The third section is the most continuous, and the fourth section is the least continuous.

Coal Resources

Table 1. Resource estimates for the Springfield coal bed in western Kentucky (in millions of tons). The estimated resources are shown in the table below. The estimated resources are shown in the table below.

<table>
<thead>
<tr>
<th>Section</th>
<th>Original Resources</th>
<th>Lost in Mining</th>
<th>Underground</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
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<td>254</td>
<td>254</td>
<td>254</td>
</tr>
<tr>
<td>No. 2</td>
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<tr>
<td>No. 3</td>
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<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>No. 4</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 1: Resource estimates for the Springfield coal bed in western Kentucky (in millions of tons). Results are not used for national resources because of independent mining.

Acknowledgments

Several colleagues have given significant assistance, without which this project would not have been possible. Erin Tipton completed much of the survey and map for the United States Geological Survey, as well as the original Springfield coal bed resource estimate. Many thanks go to these friends for their help. This work was funded by the Coal Sustainability and National Coal Assessment Program of the U.S. Geological Survey.

References Cited


Figure 1. Total coal thickness of the Springfield coal in western Kentucky.

Figure 2. Locations of borehole data used in the analysis of the Springfield coal.

Figure 3. Mined-out areas of the Springfield coal in western Kentucky.

Figure 4. Remaining resource of the Springfield coal in western Kentucky.