



Jefferson and Franklin Counties, Illinois

Mining Method

- ### Source of Mine Outline

- ### Tipple, Shaft, Slope, Drift Locations

- ### Location



Company
Mine Name
ISGS Index No., Years of Operation

Please check the Coal Section at the Illinois State Geological Survey's web site at <http://www.isgs.illinois.edu> for the most up-to-date version of these products.

Note that each quadrangle scale mined-out area map requires the use of the associated text directory for full explanation of map features and mine attributes. Also note that some quadrangles have multiple seams of mining and therefore more than one map may be available for a particular quadrangle. Please take care to check for multiple maps, as extensive mining may exist in the other seams.

The maps and digital files for these studies were compiled from data obtained from a variety of public and private sources and have varying degrees of completeness and accuracy. This compilation map presents reasonable interpretation of the geology of the area and is based on available data. Locations of some feature measures may be offset by 500 feet or more due to errors in the original source maps, the compilation process, digitizing, or a combination of these factors. These data are not intended for use in site-specific screening or decision-making. Use of these documents does not eliminate the need for detailed studies to fully understand the geology of a specific site. The U.S. Geological Survey makes no warranty, expressed or implied, regarding the correctness of the interpretations presented in this data set and accept no liability for the consequences of decisions made by others on the basis of the information presented here.

These maps were designed for use at 1:24,000. Enlarging the map may reduce accuracy, as the original scale of the source maps used to compile the outlines shown varies from 1:400 to 1:150,000, and some mine locations are known only from text descriptions. See the accompanying mine directory for the original scale of the source map used for a specific mine to check accuracy of a given portion of the map. Areas with no mines shown may still be

The image of the U.S.G.S. topographic base map was projected from the original UTM to Lambert Conformal Conic.



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DIRECTORY OF COAL MINES IN ILLINOIS

7.5-MINUTE QUADRANGLE SERIES

WALTONVILLE QUADRANGLE

JEFFERSON & FRANKLIN COUNTIES

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2010

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Cover photo Track-mounted duckbill loading machine at a Peabody Coal Company mine, ca. 1915.

DISCLAIMER: The accuracy and completeness of mine maps and directories vary with the availability of reliable information. Maps and other information used to compile this mine map and directory were obtained from a variety of sources and the accuracy of some of the original information cannot be verified. Consequently, the Illinois State Geological Survey (ISGS) cannot guarantee the mine maps are free of errors and disclaims any responsibility for damages that may result from actions or decisions based on them.

The ISGS updates the maps and directories periodically, and welcomes any new information or corrections. Please contact the Coal Section of the ISGS at the address shown on the title page of this directory, or telephone (217) 244-4610.

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INTRODUCTION

Coal has been mined in 76 counties of Illinois. More than 7,400 coal mines have operated since commercial mining began in Illinois about 1810; fewer than 30 are currently active. To detail the extent and location of coal mining in Illinois, the Illinois State Geological Survey (ISGS) has compiled maps and directories of known coal mines. The ISGS offers maps at a scale of 1:100,000 and accompanying directories for each county in which coal mining is known to have occurred. Maps at a scale of 1:24,000 and accompanying directories, such as this, are available for selected quadrangles. Contact the ISGS for a list of these quadrangles.

These larger scale maps show the approximate positions of mines in relation to surface features such as roads and water bodies, and indicate the mining method used and the accuracy of the mine boundaries. The maps are useful for locating mine boundaries relative to specific properties and for assessing the potential for subsidence in an area. Mine boundaries compiled from final mine surveys are generally shown within 200 feet of their true position. As a result of poor cartographic quality and inaccuracies in the original mine surveys, boundaries of some older mines may be mislocated on the map by 500 feet or more. Original mine maps should be consulted in situations that require precise delineation of mine boundaries or internal workings of mined areas.

This directory serves as a key to the accompanying mine map and provides basic information on the coal mines in the quadrangle. The directory is composed of two parts. Part I explains the symbols and patterns used on the accompanying map and the summary data presented for each mine. Part II numerically lists the mines in the quadrangle and summarizes the geology and production history of each mine. Total production for the mine, not the portion in the quadrangle, is given.

MINING IN THE WALTONVILLE QUADRANGLE

The Rend Lake Fault System impacted the mines in the Waltonville Quadrangle, with individual faults causing displacement up to 13 feet. In some areas, expansion was halted because of the faults and in other areas, the faults could be accommodated by altering the mine plan. The poor roof conditions were a more continuous problem. Thick Energy Shale required a great deal of support and often came down in spite of the additional support. The shale was composed of thin laminations interspersed with carbonaceous and sandy layers that did not adhere well to each other. Top coal was often left to support the roof. In some areas, a silty gray shale made the immediate roof, and this was even more difficult to support. Sometimes 2 feet of roof rock was taken down before roof bolts were installed. Rolls in the coal also contributed to roof difficulties. Some rolls were hundreds of feet long and tens of feet wide. The shale within the rolls did not adhere well to the layers above. Shear bodies were found in the Orient No. 6 Mine (mine index 885). The shear bodies probably formed as slumping features before the sediments solidified, and these occurred as lense-shaped masses. These shear bodies had low strength, and were particularly difficult to keep up. Roof falls of 30 feet above the coal were seen.

All of the mines that operated in the Waltonville Quadrangle worked for over 25 years. The coal was thick, as well as having a relatively low sulfur content (less than 2%).

PART I EXPLANATION OF MAP AND MINE SUMMARY SHEET

INTERPRETING THE MAP

The map accompanying this directory shows the location of coal mines known to be present in the quadrangle. The map, corresponding to a U.S. Geological Survey (USGS) 7.5-minute quadrangle, covers an area bounded by lines of latitude and longitude 7.5-minutes apart. In Illinois, a quadrangle is approximately 6.5 miles east to west and 8.5 miles north to south, an area of about 56 square miles. The USGS generally offers one map of mines per quadrangle. In some areas where extensive mining occurred in two or more overlapping seams, separate maps are compiled for mines in each seam to maintain readability of the map.

Mine Type and Mining Method

The mine type is indicated on the map by pattern color: green represents surface mines; red and yellow represent underground mines. The red patterns are used for areas of underground mining that are documented by a primary or secondary source map. A yellow pattern is used for cases where no map of the mine workings is available, but a general area of mining can be inferred from property maps or production figures. The patterns indicate the main mining methods used in underground mines. The methods are (1) room and pillar and (2) high extraction. The method used gives some indication of the amount and pattern of coal extraction within each mined area, and has some influence on the timing and type of subsidence that can occur over a mine.

The following discussion and illustrations of mining methods are based on Guither et al. (1984).

In room-and-pillar mines, coal is removed from haulage-ways (entries) and selected areas called rooms. Pillars of unmined coal are left between the rooms to support the roof. Depending on the size of rooms and pillars, the amount of coal removed from the production areas will range from 40% to 70%.

Room and Pillar - mining is divided into six categories:

- room-and-pillar basic (RPB, fig. 1A), an early method that did not follow a preset mining plan and therefore resulted in very irregular designs;
- modified room and pillar (MRP, fig. 1B);
- room-and-pillar panel (RPP, fig. 1C);
- blind room and pillar (BRP, fig. 1D);
- checkerboard room and pillar (CRP, fig. 1E);
- room and pillar (RP), a classification used when the specific type of room-and-pillar mining is unknown.

Blind and checkerboard are the most common types of room-and-pillar mining used in Illinois today. The knowledge of room-and-pillar mining methods gives a trained engineer information on the nature of subsidence that may occur. A more extensive discussion of subsidence can be found in Bauer et al. (1993).

High-extraction These mining methods are subdivided into high-extraction retreat (HER, Fig 1F) and longwall (LW, Fig 1G, 1H). In these methods, much of the coal is removed within well defined areas of the mine. Subsidence of the surface above these areas occurs within weeks. Once the subsidence activity ceases, the potential for further movement over these areas is low; however, subsidence may continue for several years after mining.

High-extraction retreat mining is a form of room-and-pillar mining that extracts most of the coal. Rooms and pillars are developed in the panels, and the pillars are then systematically removed (fig. 1F).

In early (pre-1960) longwall mines, mining advanced in multiple directions from a central shaft (fig. 1G). Large pillars of coal were left around the shaft, but all coal was removed beyond these pillars. Miners placed rock and wooden props and cribs in the mined-out areas to support the mine roof. The overlying rock gradually settled onto these supports, thus producing subsidence at the surface. In post-1959 longwall mines, room-and-pillar methods have been used to develop the main entries of the mine and panel areas. Modern longwall methods extract 100 percent of the coal in the panel areas (fig. 1H).

SOURCE MAPS

Mine outlines depicted on the map are, whenever possible, based on maps made from original mine surveys. The process of compiling and digitizing the quadrangle map may produce errors of less than 200 feet in the location of mine boundaries. Larger errors of 500 feet or more are possible for mines that have incomplete or inaccurate source maps.

Because of the extreme complexity of some mine maps, detailed features of mined areas have been omitted. The digitized mine boundary includes the exterior boundary of all rooms or entries that were at least 80 feet wide or protruded 500 feet from the main mining area. Unmined areas between mines are shown if they are at least 80 feet wide; unmined blocks of coal within mines are shown if they are at least 400 feet on each side. Original source maps should be consulted when precise information on mine boundaries or interior features is needed.

The mine summary sheet lists the source maps used to determine each mine outline. The completeness of map sources is indicated on the map by a line symbol at the mine boundary. Source maps are organized in five categories.

Final mine map The mine outline was digitized from an original map made from mine surveys conducted within a few months after production ceased. The date of the map and the last reported production are listed on the summary sheet.

Not a final map The mine is currently active or the mine outline was made from a map based on mine surveys conducted more than a few months before production ceased. This implies the actual mined-out area is probably larger than the outline on the map. The mine summary sheet indicated the dates of source maps and the last reported production, as well as the approximate tonnage mined between these two dates (if the mine is abandoned). The summary sheet also lists the approximate acreage mined since the date of the map and, in some cases, indicates the area where additional mining may have taken place. This latter information is determined by locating on the map the active faces relative to probable boundaries of the mine property.

Undated map The source map was undated, so it may or may not be based on a final mine survey. When sufficient data are available, the probable acreage of the mined area is estimated from reported production, average seam thickness and a recovery rate comparable to other mines in the area. This information is listed in the summary sheet for the mine.

Incomplete map The source map did not show the entire mine. The summary sheet indicates the missing part of the mine map and the acreage of the unmapped area, which is estimated from the amount of coal known to have been produced from the mine.

Secondary source map The original mine map was not found so the outline shown was determined from secondary sources (e.g., outlines from small-scale regional maps published in other reports). The summary sheet describes the secondary sources.

POINTS AND LABELS

The locations of all known mine openings (shafts, slopes, and drifts) and surface mine tipples are plotted on the map. Tipples are areas where coal was cleaned, stockpiled, and loaded for shipping.

Only openings or tipples are plotted for mines without source maps. If the precise locations of these features are unknown, a special symbol is used to indicate the approximate location of the mine.

Each mine on the map is labeled with the names of the mine and operating company, ISGS mine index number, and years of operation (if known) if space permits. A seam designation is given on maps where more than one seam was mined. For a mine that operated under more than one name, only the most recent name is generally given. When a mine changed names or ownership shortly before closing, an earlier name is listed. All company and mine names are listed on the mine summary sheet in the directory, under the production history segment.



Figure 1 Mining methods: (A) room-and-pillar basic (RPB), (B) modified room and pillar (MRP), (C) room-and-pillar panel (RPP), (D) blind room and pillar (BRP).



Figure 1 (cont.) Mining methods: (E) checkerboard room and pillar (CRP), (F) high extraction retreat (HER), (G) early (pre-1960) longwall, (H) post-1959 longwall



Figure 2 Generalized stratigraphic section, showing approximate vertical relations of coals in Illinois.

INTERPRETING A MINE SUMMARY SHEET

The mine summary sheet is arranged numerically by mine index number. Index numbers are shown on the map and in the mine listing. The mine summary sheet provides the following information (if available).

Company and mine name The last company or owner of the mine is used, unless no production was recorded for the last owner. In that case, the penultimate owner is listed. Mines often have no specific name; in these cases, the company name is also used as the mine name.

Type *Underground* denotes a subsurface mine in which the coal was reached through a shaft, slope, or a drift entry. *Surface* denotes a surface, open pit or strip mine.

Total mined-out acreage shown The total acreage of the mined area mapped, including any acreage mined on adjacent quadrangles, is calculated from the digitized outline of the mine. The acreage of large barrier pillars depicted on the map is excluded from the mined-out acreage. Small pillars not digitized are included in the acreage calculation. If the mine outline is not based on a final mine map, the acreage is followed by an estimate of additional acres that may have been mined. The estimate is determined from reported mine production, approximate thickness of the coal, and recovery rates calculated from nearby mines that used similar mining methods.

SHAFT, SLOPE, DRIFT OR TIPPLE LOCATIONS

Shaft, slope, drift, or tippie locations Locations of all known former entry points to underground mines or the location of coal cleaning, tippie, and shipping equipment used by the mine's facility are listed. The location is described in terms of county, township and range (Twp-Rge), section, and location within the section by quarters. NE SW NW, for instance, would describe the location in the northeast quarter of the southwest quarter of the northwest quarter. When sections are irregular in size, the quarters remain the same size and are oriented (or "registered") from the southeast corner of the section. Approximate footage from the section lines (FEL = from east line, FNL = from north line, for example) is given when that information is known; this indicates a surveyed location and is not derived from maps. Entry points are also plotted on the map and coded for the type of entry or tippie. A mine opening may have had many purposes during the life of the mine. Old hoist shafts are often later used for air and escape shafts; this information is included in the directory when known. The tippie for underground mines was generally located near the main shaft or slope. At surface mines, coal was sometimes hauled to a central tippie several miles from the mine pit.

GEOLOGY

Seam(s) mined The name of the coal seam(s) mined is listed, if known. If multiple seams were mined, they are all listed, although the mined-out area for each seam may be shown on separate maps. Figure 2 shows the stratigraphic section of the coal-bearing interval in Illinois, and the vertical relations among the coals.

Depth The depth to the top of the seam in the vicinity of the shaft is listed, if known. The depth is determined from notes made by geologists who visited the mine during its operation or from drill hole data in ISGS files. Depth generally varies little over the extent of a mine; however, reported depths for an individual mine may vary. Depth for surface-mined coals varies, and is usually represented as a range.

Thickness The approximate thickness of the mined seam is shown, if known. Thickness also comes from notes of geologists who visited the mine during its operation or from borehole data in ISGS files. Minimum, maximum, and average thicknesses are given when this information is available.

Mining method The principal mining method used at the mine (figs. 1A-H) is listed. See the mining methods section at the beginning of this directory for a discussion of this parameter.

Geologic problems reported Any known geologic problems, such as faults, water seepage, floor heaving, and unstable roof, encountered in the mine are reported. This information is from notes made by ISGS geologists who visited the mine, or from reports by mine inspectors published by the Illinois Department of Mines and Minerals, or from the source map(s). Geologic problems are not reported for active mines.

PRODUCTION HISTORY

Production history Tons of coal produced from the mine by each mine owner are totaled. When the source map used for the mine outline is not a final mine map, the tonnage produced since the date of the map is identified. For mines that extend into adjacent quadrangles, the tonnage reported includes areas mined in adjacent quadrangles.

SOURCE OF DATA

Source map This section lists information about the map(s) used to compile the mine outline and the locations of tipples and mine openings. In some cases more than one source map was used. For example, a map drawn before the mine closed may provide better information on original areas of the mine than a later map. When more than one map was used, the bibliography section explains what information was taken from each source.

Date The date of the most recent mine survey listed on the source map is reported.

Original scale The original scale of the source map is listed. Many maps are photo-reductions and are no longer at their original scale. The original scale gives some indication of the level of detail of the mine outline and the accuracy of the mine boundary relative to surface features. Generally, the larger the scale, the greater the accuracy and detail of the mine map. Mine outlines taken from source maps at scales smaller than 1:24,000 may be highly generalized and may well be inaccurately located with respect to surface features.

Digitized scale The scale of the digitized map is reported. The scale may be different from that of the original source map. In many cases the digitized map was made from a photo-reduction of the original source map, or the source map was not in a condition suitable for digitizing and the mine boundaries were transferred to another base map.

Map type Source maps are classified into five categories to indicate the probable completeness of the map. See discussion of source maps in the previous section.

Annotated bibliography Sources that provide information about the mine are listed, with the data taken from each source. Some commonly used sources are described below. Full bibliographic references are given for all other sources. Unless otherwise noted, all sources are available for public inspection at the ISGS.

Coal Reports Published since 1881, these reports contain tabular data on mine ownership, production, employment, and accidents. Some volumes include short descriptions made by mine inspectors of physical features and conditions in selected mines.

Directory of Illinois Coal Mines This source is a compilation of basic data about Illinois coal mines, originally gathered by ISGS staff in the early 1950s. Sources used for this directory are undocumented, but they are primarily Illinois Department of Mines and Minerals annual reports, ISGS mine notes, and coal company officials.

ENR Document 85/01, Guither, H. D., J. K. Hines, and R. A. Bauer, 1985 The Economic Effect of Underground Mining Upon Land Used for Illinois Agriculture: Illinois Department of Energy and Natural Resources Document 85/01, 185 p.

Microfilm map The U.S. Bureau of Mines maintains a microfilm archive of mine maps. A microfilm file for Illinois is available for public viewing at the ISGS.

Mine notes ISGS geologists have visited mines or contacted mine officials throughout the state since the early 1900s. Notes made during these visits range from brief descriptions of the mine location to long narratives (including sketches) of mining conditions and geology.

Federal Land Bank of St. Louis, Preliminary Reports on Subsidence Investigations Mining engineers working for the Federal Land Bank of St. Louis mapped areas of subsidence due to coal mining in the early 1930s. These reports often include county maps of mine properties with mined-out areas including shaft locations, as well as subsidence areas.

REFERENCES

Bauer, R. A., B. A. Trent, and P. B. Dumontelle, 1993, Mine Subsidence in Illinois: Facts for the Homeowner Considering Insurance, Illinois State Geological Survey, Environmental Geology Note 144, 16p.

Guither, H. D., J. K. Hines, and R. A. Bauer, 1985, The Economic Effects of Underground Mining Upon Land Used for Illinois Agriculture, Illinois Department of Energy and Natural Resources Document 85/01, 185p.

Krausse, H.-F., H. H. Damberger, W. J. Nelson, S. R. Hunt, C. T. Ledvina, C. G. Treworgy and W. A. White, 1979, Roof Strata of the Herrin (No. 6) Coal Member in Mines of Illinois: Their Geology and Stability, Summary Report, Illinois State Geological Survey, Illinois Mineral Note 72, 54p.

Nelson, W. J. and C. T. Ledvina, 1986, A Gravitational Slide in the Energy Shale Member Overlying the Herrin (No. 6) Coal Member in Southern Illinois, Illinois State Geological Survey, Reprint 1986B, 13p.

PART II DIRECTORY OF MINES IN THE WALTONVILLE QUADRANGLE

MINE SUMMARY SHEETS

A summary sheet on the geology and production history of each mine in the Waltonville Quadrangle is provided. These summary sheets are arranged numerically by mine index number. Consult Part I for a complete explanation of the data listed in the summary sheet.

Mine Index 447

Bell & Zoller Coal & Mining Company, Jefferson No. 20 Mine

Type: Underground Total mined-out acreage shown: 1,307

SHAFT, SLOPE, DRIFT or TIPPLE LOCATIONS

Type	County	Township-Range	Section	Quarters-Footage
Main shaft	Jefferson	4S 2E	15	NE NE SW
Air shaft	Jefferson	4S 2E	15	NW NE SW

GEOLOGY

Seam(s) Mined	Depth (ft)	Thickness (ft)			Mining Method
		Min	Max	Avg	
Herrin	720-740	6.0	9.0	7.0	RPP

Geologic Problems Reported: The roof was medium gray silty shale over 100 feet thick. Some rolls were noted. The source map showed very large pillars left in the area near the town of Nason. The coal contained charcoal bands up to 4 inches thick. The blue band was a maximum of 2 inches thick. Pyrite was prominent in fracture facings and was also present in lenses and balls.

PRODUCTION HISTORY

Company	Mine Name	Years	Production (tons)
Illinois Coal Corporation	Illinois Coal No. 10	1923-1938 *	693,363
Consolidated Coal Company	Consolidated No. 20	1938-1950	5,195,224
Bell & Zoller Coal & Mining Company	Jefferson No. 20	1951-1951	<u>244,904</u>
			6,133,491

* Idle 1928-1938

Last reported production: September 1951

SOURCES OF DATA

Source Map	Date	Original Scale	Digitized Scale	Map Type
Microfilm, document 352467	9-16-1951	1:2400	1:4303	Final

Annotated Bibliography (data source, brief description of information)

Coal Reports - Production, ownership, years of operation, depth, mining method.

Directory of Illinois Coal Mines (Jefferson County) - Mine names, mine index, ownership, years of operation.

Mine notes (Jefferson County) - Mine type, shaft location, seam, depth, thickness, geologic problems.

Microfilm map, document 352467, reel 03139, frames 151-154 - Shaft locations, mine outline, mining method, geologic problems.

Mine Index 690
Freeman United Coal Mining Company, Orient No. 3 Mine

Type: Underground Total mined-out acreage shown: 9,999

SHAFT, SLOPE, DRIFT or TIPPLE LOCATIONS

Type	County	Township-Range	Section	Quarters-Footage
Hoist slope (2)	Jefferson	4S 1E	12	NE NW SW
Man shaft	Jefferson	3S 1E	35	NE SE NW
Air shaft (upcast)	Jefferson	3S 1E	35	NE SE NW
Air shaft (downcast)	Jefferson	4S 1E	11	SW NW SE
Air shaft (upcast)	Jefferson	4S 1E	10	SE SE NW
Air / escape shaft	Jefferson	4S 1E	4	NW SE NE

GEOLOGY

Seam(s) Mined	Depth (ft)	Thickness (ft)			Mining Method
		Min	Max	Avg	
Herrin		4.5	14 *	6.9-7.0	CRP

* The coal was split in the western part of the mine. In this thickest area, the roof control was so difficult that the panels were shortened (not driven all the way south) to avoid entering the worst roof control area. The general maximum thickness was 9 ft.

Geologic Problems Reported: A fault was noted in the extreme northeastern part of the mine, most likely part of the Rend Lake Fault System. Faults were also present in other parts of the mine, as well as high-angle shear fractures with no displacement, associated with normal faults downthrown (sometimes more than 12 feet) to the east. The faulting halted eastward expansion, and Orient No. 6 Mine (mine index 885) mined westward until that mine encountered the fault problems (poor roof and coal offsets). Roof falls were caused by silty shale (the layers did not adhere well to each other), intersecting slips, thin coal rider seams, and fractures in the roof. The roof was generally an irregular thickness of Energy Shale. Rolls were noted occasionally. Top coal was left on the roof and floor. Pyrite and calcite were present on vertical joint facings.

PRODUCTION HISTORY

Company	Mine Name	Years	Production (tons)
Chicago, Wilmington & Franklin Coal Co.	Orient No. 3	1949-1955	5,126,881
Freeman Coal Mining Corporation	Orient No. 3	1955-1974	52,542,613
Freeman United Coal Mining Company	Orient No. 3	1975-1982	12,725,933
			<u>70,395,427</u>

Last reported production: December 1982

SOURCES OF DATA

Source Map	Date	Original Scale	Digitized Scale	Map Type
Company	1-1-1983	1:4800	1:4800	Final

Annotated Bibliography (data source, brief description of information)

Coal Reports - Production, ownership, years of operation.
 Directory of Illinois Coal Mines (Jefferson County) - Mine names, mine index, ownership, years of operation.
 Mine notes (Jefferson County) - Mine type, slope location, seam, thickness, mining method, geologic problems.
 Company map, Coal Section files, 6-425 - Slope & shaft locations, mine outline, mining method.

Mine Index 877
Consol Energy, Inc., Rend Lake Mine

Type: Underground Total mined-out acreage shown: 9,845

SHAFT, SLOPE, DRIFT or TIPPLE LOCATIONS

Type	County	Township-Range	Section	Quarters-Footage
Main production shaft	Jefferson	4S 2E	30	SE NE SW
Air, man & material shaft	Jefferson	4S 2E	30	NW SE SW

GEOLOGY

Seam(s) Mined	Depth (ft)	Thickness (ft)			Mining Method
		Min	Max	Avg	
Herrin	733			7.0-9.0	LW

Geologic Problems Reported: Faults were noted, with 3 to 13 feet displacement. The mine had a wet area that was delineated by the company by a "drip line" on their mine maps. Some saline water came from layers above the shale and dripped down the pillars into the mine. Another source of water was probably Rend Lake, as one of the test holes for the mine, drilled in 1918 and later submerged, penetrated one area noted for water problems. In other areas, water was said to seep up from the floor. The roof was a weak gray shale that came down readily, with a silty gray shale above that. Roof falls were more common near the top of seam undulations. A large roll was noted that crossed three entries. Sandstone-filled rolls were seen in this mine. One such roll cut out 5 feet of coal, and a different roll cut out 2 feet of coal and was 6 feet wide. However, most rolls were not persistent. The seam contained pyrite along cleat fillings and in en echelon fractures. Some pyrite occurred as thin laminations, with pyrite-filled "goat beards" above and below the laminations. (In this mine, "goat beards" was used for bundles of extension fractures.) When using the continuous mining machine, the company attempted to keep a 7-foot mining height, which sometimes involved leaving 1 foot of bottom coal and some top coal. The bottom coal was left because of the water, which would have turned the floor into mud and created a difficult surface for the machines. Some areas of the mine had split coal. The largest split was in the upper part of the seam, and was 0.1 to 0.4 feet thick.

PRODUCTION HISTORY

Company	Mine Name	Years	Production (tons)
Inland Steel Coal Company	Inland	1967-1985	33,621,654
Consolidation Coal Company	Rend Lake	1986-1998	37,500,415
Consol Energy, Inc.	Rend Lake	1999-2002	<u>10,134,144</u> 81,256,213

Last reported production: 2002

SOURCES OF DATA

Source Map	Date	Original Scale	Digitized Scale	Map Type
Company, 6-355	1-1-2003	1:12000	1:12000	Final

Annotated Bibliography (data source, brief description of information)

Coal Reports - Production, ownership, years of operation, depth.
 Directory of Illinois Coal Mines (Jefferson County) - Mine names, mine index, ownership, years of operation.
 ENR Document 85/01 - Mining method.
 Mine notes (Jefferson County) - Mine type, shaft locations, seam, thickness, geologic problems.
 Company map, Coal Section files, 6-355 - Shaft locations, mine outline, mining method.

Mine Index 885
Freeman United Coal Mining Company, Orient No. 6 Mine

Type: Underground Total mined-out acreage shown: 6,806

SHAFT, SLOPE, DRIFT or TIPPLE LOCATIONS

Type	County	Township-Range	Section	Quarters-Footage
Hoist shaft	Jefferson	4S 2E	7	NE SE NE
Man & air shaft	Jefferson	4S 2E	7	SE SE NE
Man & material shaft	Jefferson	4S 2E	4	NE NE NE
Air shaft	Jefferson	4S 2E	4	NW NE NE

GEOLOGY

Seam(s) Mined	Depth (ft)	Thickness (ft)			Mining Method
		Min	Max	Avg	
Herrin	722-792	4.7		6.5	MRP & LW *

* The longwall portion began in 1989 and is in the eastern part of the mine.

Geologic Problems Reported: A fault was noted, with the downthrown side to the west. This fault was mined through in some areas, but when the same fault was found in the Orient No. 3 Mine (mine index 690), advancement was halted where the fault was encountered. The displacement was more than 7 feet. The roof near the shaft was a silty gray shale, very thinly laminated, with interlaminae of carbonaceous material. In other areas, a well-laminated dark gray shale made up the roof below the silty gray shale. The dark gray shale did not hold, and generally 2 feet of roof rock was taken down before bolting the roof. Roof falls of 5 to 25 feet were noted. Two shear bodies were found. One was discussed in IMN 72 and Reprint 1986B; see those documents for discussion of these features in more detail. Some large rolls were present in the coal, with coal riders above the main seam. In many areas of the mine, a 1- to 2-inch band of fusain at the top of the seam was present, as well as a ½ inch stringer that was 2 to 3 inches above the fusain. A soft gray shale was between the fusain and the stringer. Clay dikes and slips were also seen in the mine.

PRODUCTION HISTORY

Company	Mine Name	Years	Production (tons)
Freeman Coal Mining Corporation	Orient No. 6	1968-1974	10,050,086
Freeman United Coal Mining Company	Orient No. 6	1975-1997	<u>26,924,915</u> 36,975,001

Last reported production: 1997

SOURCES OF DATA

Source Map	Date	Original Scale	Digitized Scale	Map Type
Company	3-9-1997	1:12000	1:12000	Final

Annotated Bibliography (data source, brief description of information)

Coal Reports - Production, ownership, years of operation, depth, mining method.
 Directory of Illinois Coal Mines (Jefferson County) - Mine names, mine index, ownership, years of operation.
 Mine notes (Jefferson County) - Mine type, shaft location, seam, thickness, geologic problems.
 Nelson, W. J. & C. T. Ledvina, A Gravitational Slide in the Energy Shale Member Overlying the Herrin (No. 6) Coal Member in Southern Illinois, Illinois State Geological Survey Reprint 1986B - Geologic problems.
 Krause (H.-F.), H. H. Damberger et al., Roof Strata of the Herrin (No. 6) Coal Member in Mines of Illinois: Their Geology and Stability, Summary Report, Illinois State Geological Survey Illinois Mineral Note 72 - Geologic problems.
 Company map, Coal Section digital files - Shaft locations, mine outline, mining method.

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