

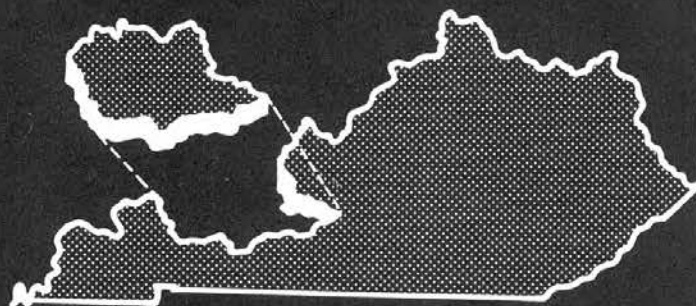
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**KENTUCKY GEOLOGICAL SURVEY**  
**UNIVERSITY OF KENTUCKY, LEXINGTON SERIES XI, 1982**  
**Donald C. Haney, Director and State Geologist**

**STRATIGRAPHIC FRAMEWORK OF  
COAL-BEARING ROCKS  
IN THE WESTERN KENTUCKY COAL FIELD**

**David A. Williams**  
**Allen D. Williamson**  
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# STRATIGRAPHIC FRAMEWORK OF COAL-BEARING ROCKS IN THE WESTERN KENTUCKY COAL FIELD

## ABSTRACT

The coal deposits of western Kentucky are an important energy resource to Kentucky and the Nation. The purpose of this paper is to present a stratigraphic framework, based on 32 core holes, to enhance the economic development of this region. West-east and north-south cross sections illustrate correlations of major stratigraphic units in the Western Kentucky Coal Field.

Stratigraphic determinations in the Pennsylvanian System of the Western Kentucky Coal Field are made difficult by the cyclic nature of the deposits. However, certain stratigraphic markers are found to be useful. The Springfield coal (W. Ky. No. 9) and Lead Creek Limestone were the principal stratigraphic markers used in this paper. Stratigraphic correlations above the Davis coal (W. Ky. No. 6) are considered reliable, but correlations below the Davis coal (W. Ky. No. 6) remain provisional. Lateral continuity of the coals in the Pennsylvanian strata decreases below the Davis coal (W. Ky. No. 6).

## ACKNOWLEDGMENTS

The authors are indebted to T. E. Kehn of the U. S. Geological Survey for sharing his knowledge of the Madisonville District; to Benjamin Gildersleeve also of the U. S. Geological Survey for advice and assistance in the Morgantown District; to Russel Peppers of the Illinois State Geological Survey for palynological determinations; and to many colleagues who offered helpful advice and criticisms.

The U. S. Geological Survey-Kentucky Geological Survey geologic quadrangle maps were also invaluable. Papers by Douglas (1979), Rice and others (1979), and Peppers and Popp (1979) relating paleontology and stratigraphy were valuable references for the authors in formulating a stratigraphic framework upon which correlations in this paper are based. Phillip DeHart, Gregory Upham, James C. Currens, and David Johnson contributed core descriptions during the drilling program. The authors, however, accept full responsibility for the stratigraphic correlations presented here.

The authors are indebted to Gilbert E. Smith of the University of Kentucky Institute for Mining and Minerals Research, for whom the stratigraphic test holes are subtitled the "Gil series."

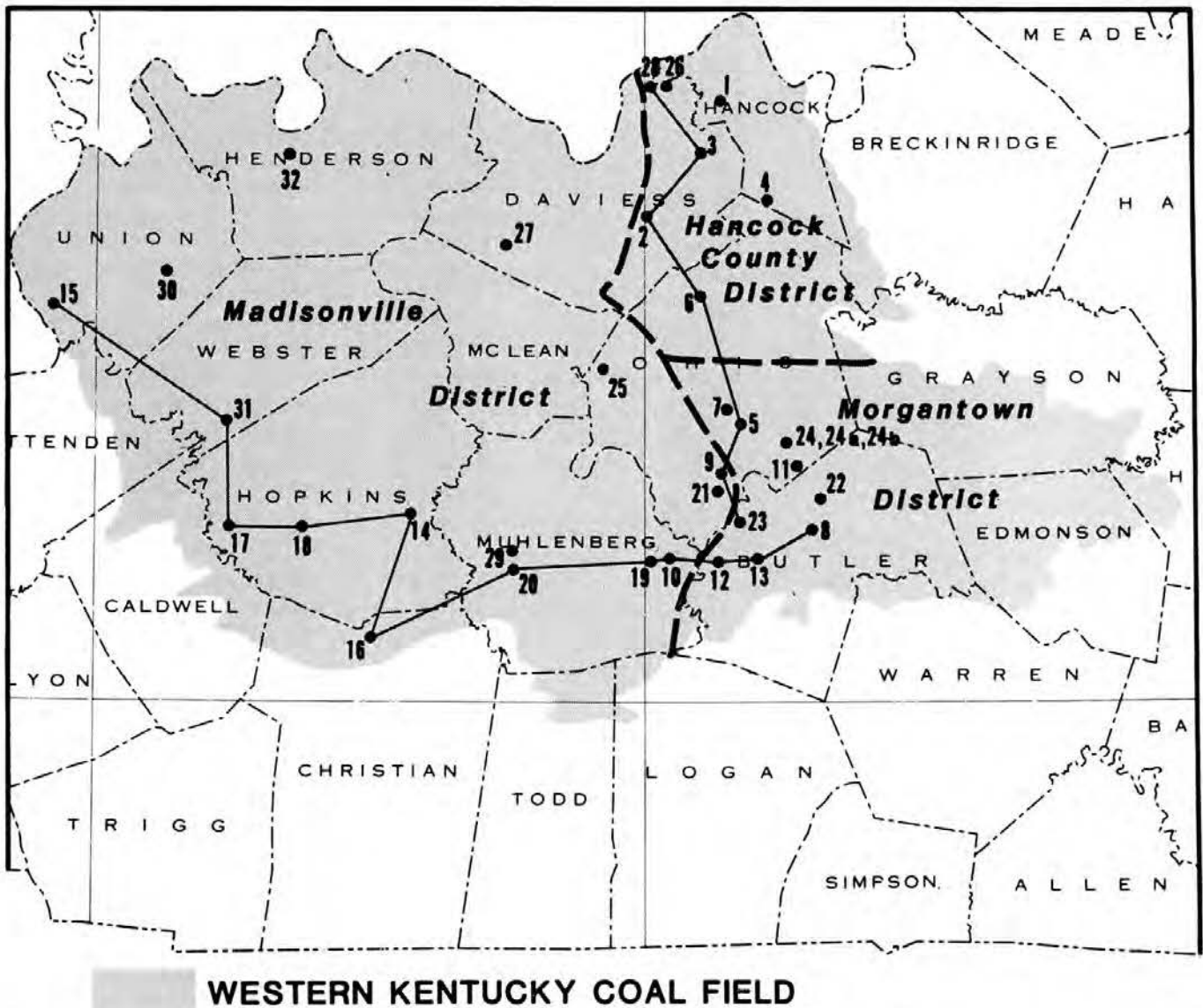
## INTRODUCTION

The coal resources of the Western Kentucky Coal Field constitute a vital part of the economy of Kentucky and the energy resources of the United States. The correlation of coal beds in the subsurface is a necessity for the accurate assessment of coal resources and coal mine planning. A stratigraphic framework for coal beds provides information about the lateral continuity of

coal beds from which coal thickness, quality, and mining aspects may be extrapolated and interpolated. The purpose of this report is to present a stratigraphic framework for the Western Kentucky Coal Field and its supporting core and geological data.

A total of 32 cores were drilled as stratigraphic tests in the Western Kentucky Coal Field. These cores were drilled as part of a Kentucky Geological Survey-University of Kentucky Institute for Mining and Minerals Research cooperative investigation of coal resources in western Kentucky. Results of the coal resource investigation are given in Smith and Brant (1980). The cores from the 32 stratigraphic test holes may be examined at the Kentucky Geological Survey Core Library. The geologists' core descriptions are given in Appendix A. Many interpretations of stratigraphic relationships in this paper are based on analyses of geophysical logs and other subsurface data, discussions with colleagues, and paleontological determinations from several sources. The University of Kentucky Institute for Mining and Minerals Research has performed chemical and petrographic analyses of coals from some of these cores.

Many of the drilling sites are near the eastern margin of the Western Kentucky Coal Field in the Illinois Basin (Eastern Interior Basin), where the middle and lower parts of Pennsylvanian strata lie at shallow depths and are accessible to current mining technology. Locations of the drilling sites are shown in Figure 1. Where conditions permitted, the drilling sites were located near an oil exploration hole which penetrated all Pennsylvanian strata and for which a geophysical log was available. The results of the stratigraphic test cores were compared with the geophysical logs of the nearby holes, providing a means for tracing persistent units



### WESTERN KENTUCKY COAL FIELD

Figure 1. Map showing districts of the Western Kentucky Coal Field, locations of stratigraphic test holes and cross sections in this report.

into the subsurface.

One hole, however, was located in a structural graben on the Borderly Quadrangle, Union County, Kentucky, where Permian strata outcrop at the surface (Douglas, 1979). The 3,200 feet of Pennsylvanian strata estimated to be present in this graben is probably the most complete section of Pennsylvanian rocks remaining in the Illinois Basin.

#### MINING DISTRICTS OF THE WESTERN KENTUCKY COAL FIELD

The Western Kentucky Coal Field can be divided into three coal districts, each with a distinct coal bed nomenclature (see Fig. 1). The Madisonville District con-

tains the largest coal resource and includes all of Union, Henderson, Webster, McLean, Hopkins, and Muhlenberg Counties; northern Crittenden, Caldwell, and Christian Counties; and the western part of Daviess and Ohio Counties. The eastern boundary roughly parallels the outcrop of the Springfield coal bed (Western Kentucky No. 9). This district contains the most complete section of Pennsylvanian strata in western Kentucky, ranging in age from Morrowan to Wolfcampian (Early Permian) (Douglas, 1979). A generalized stratigraphic section for the Madisonville District is shown in Figure 2. Geophysical logs of Stratigraphic Test Hole 31 are shown in Figure 3 in order to demonstrate the stratigraphic characteristics commonly recognizable on geophysical logs.

The Hancock County District, which includes most of

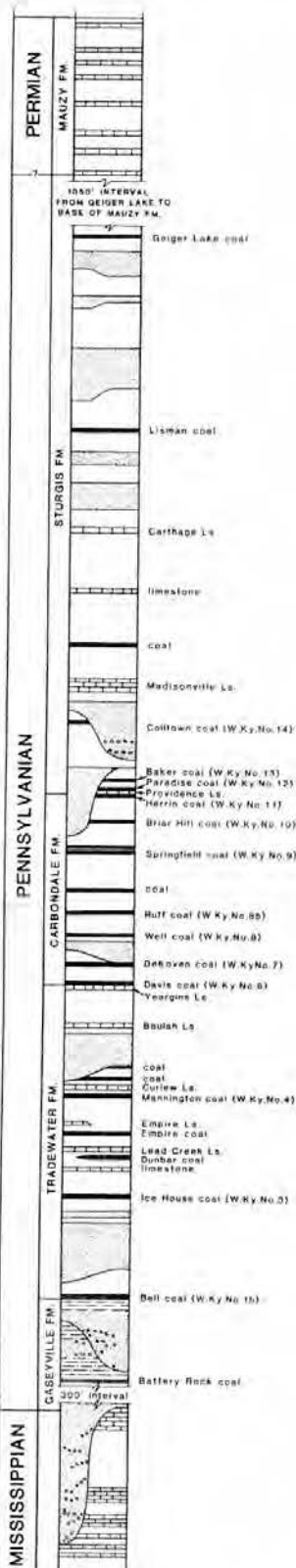


Figure 2. Generalized columnar section of Pennsylvanian units in the Madisonville District, showing lithologies important in stratigraphic correlation. Areas in the column where no lithology is indicated are mainly shale.

Hancock County, eastern Daviess County, and north-eastern Ohio County, is east of the outcrop of the Springfield coal (Western Kentucky No. 9). This district contains Pennsylvanian rocks of the Caseyville and Tradewater Formations. Figure 4 is a generalized stratigraphic column for the Hancock County District.

The Morgantown District includes southeastern Ohio County, most of Butler County, and parts of Edmonson, Grayson, and Hart Counties. Rocks of the Caseyville and Tradewater Formations occur at the surface except along the western margin of the district. A generalized stratigraphic section for the Morgantown District is shown in Figure 5.

### STRATIGRAPHY

The stratigraphic correlations between districts are based on physical and paleontological evidence, while the correlations within the districts are based solely on physical stratigraphy. Physical stratigraphic determinations within the Pennsylvanian strata of western Kentucky are made difficult by the repetitiveness of the lithologic types (because of cyclic deposition) and lack of bed continuity (because of lateral changes in environment of deposition). Few beds are identifiable throughout the coal field solely on a lithologic basis; consequently, some units are traced on the basis of their position in a lithologic sequence, and on the interval above or below a distinctive "marker bed." The Springfield coal (Western Kentucky No. 9), and the Lead Creek Limestone are important stratigraphic markers because of their lateral continuity. The Herrin coal (Western Kentucky No. 11) and the Providence, Curlew, Carthage, and Madisonville Limestones are also good stratigraphic markers. The physical stratigraphic relationships between rock units may be determined by using their stratigraphic relationship to these "marker beds," although local variations or unusually thick sections can prevent definitive conclusions.

The lateral continuity of Pennsylvanian strata decreases below the Davis coal (Western Kentucky No. 6), which occurs at the base of the Carbondale Formation. Correlations of Carbondale and Sturgis strata, in general, are considered reliable, although in the Madisonville District the persistence and correlation of the DeKoven (Western Kentucky No. 7) have been questioned. However, correlations within the Tradewater Formation are provisional. Because of a lack of paleontologic data and bed discontinuity, no correlations were made within the Caseyville Formation, which is herein defined as all Pennsylvanian strata beneath the Bell coal (Western Kentucky No. 1b).

Figures 6 and 7 are cross sections which illustrate west to east and north to south correlations. The datum for these cross sections is the Lead Creek Limestone. A

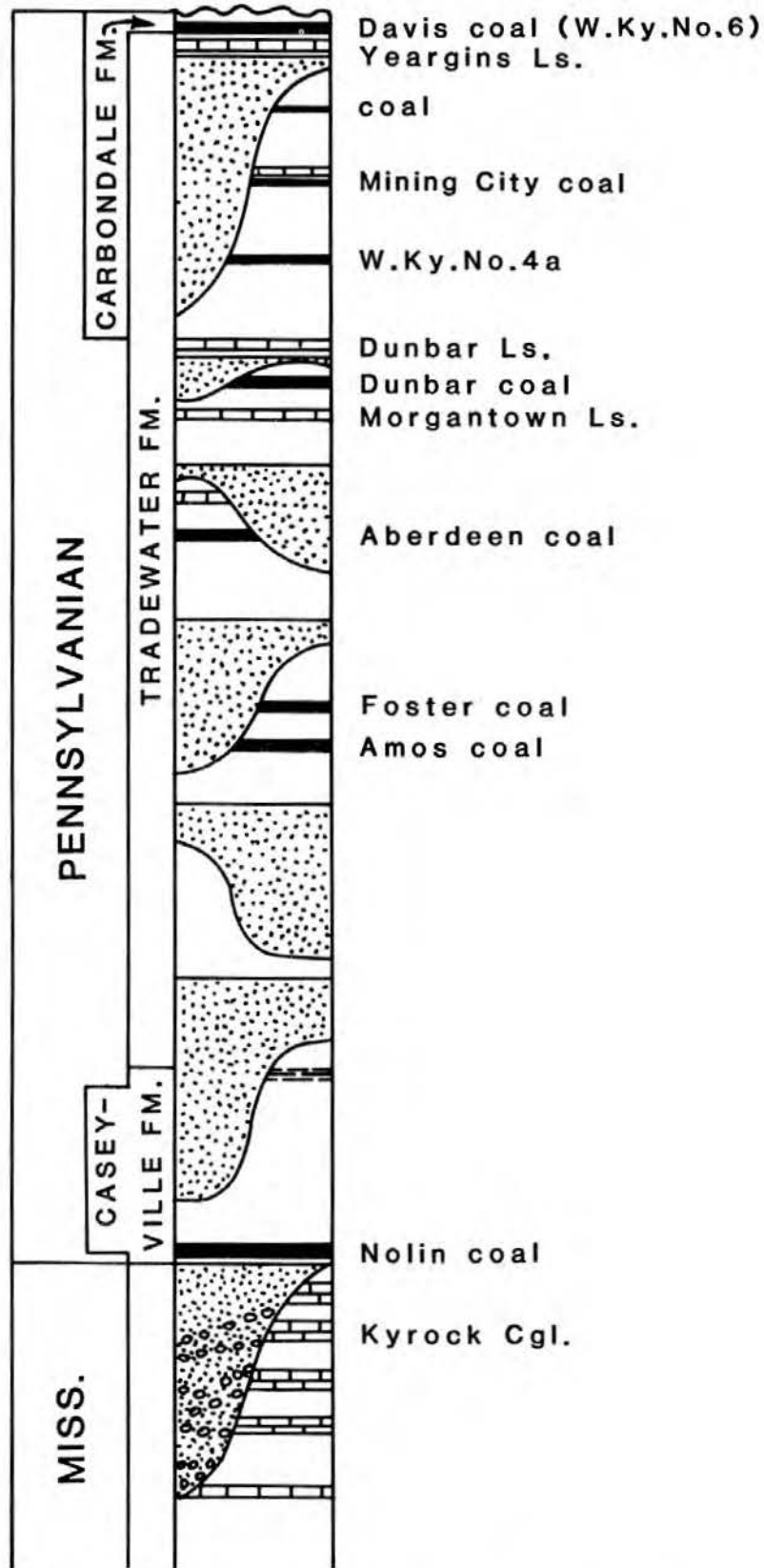


Figure 4. Generalized columnar section of Pennsylvanian units in the Morgantown District, showing lithologies important in stratigraphic correlation. Areas in the column where no lithology is indicated are mainly shale.

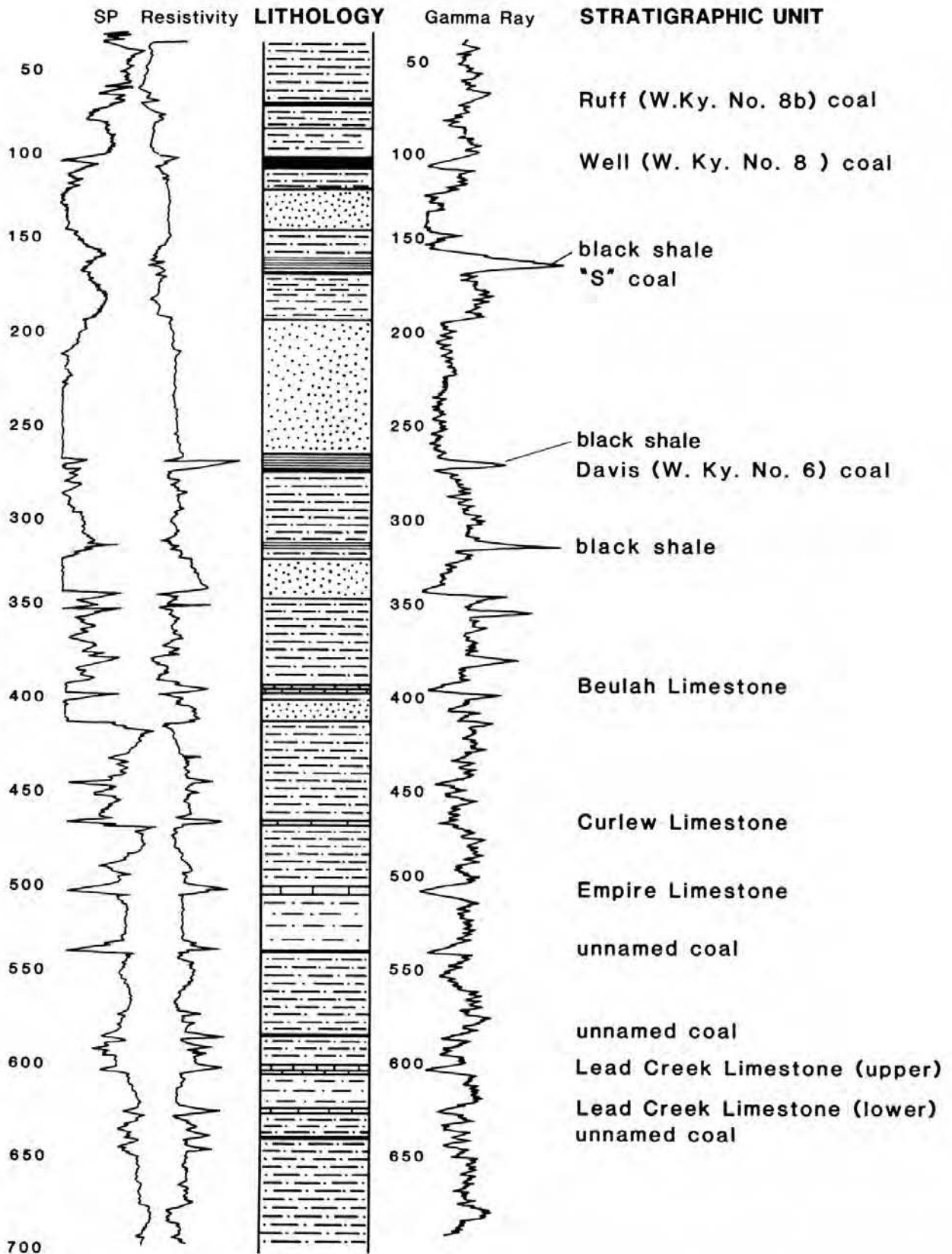


Figure 5. Geophysical logs for Stratigraphic Test Hole Gil 31, showing stratigraphic characteristics commonly recognizable on geophysical logs.

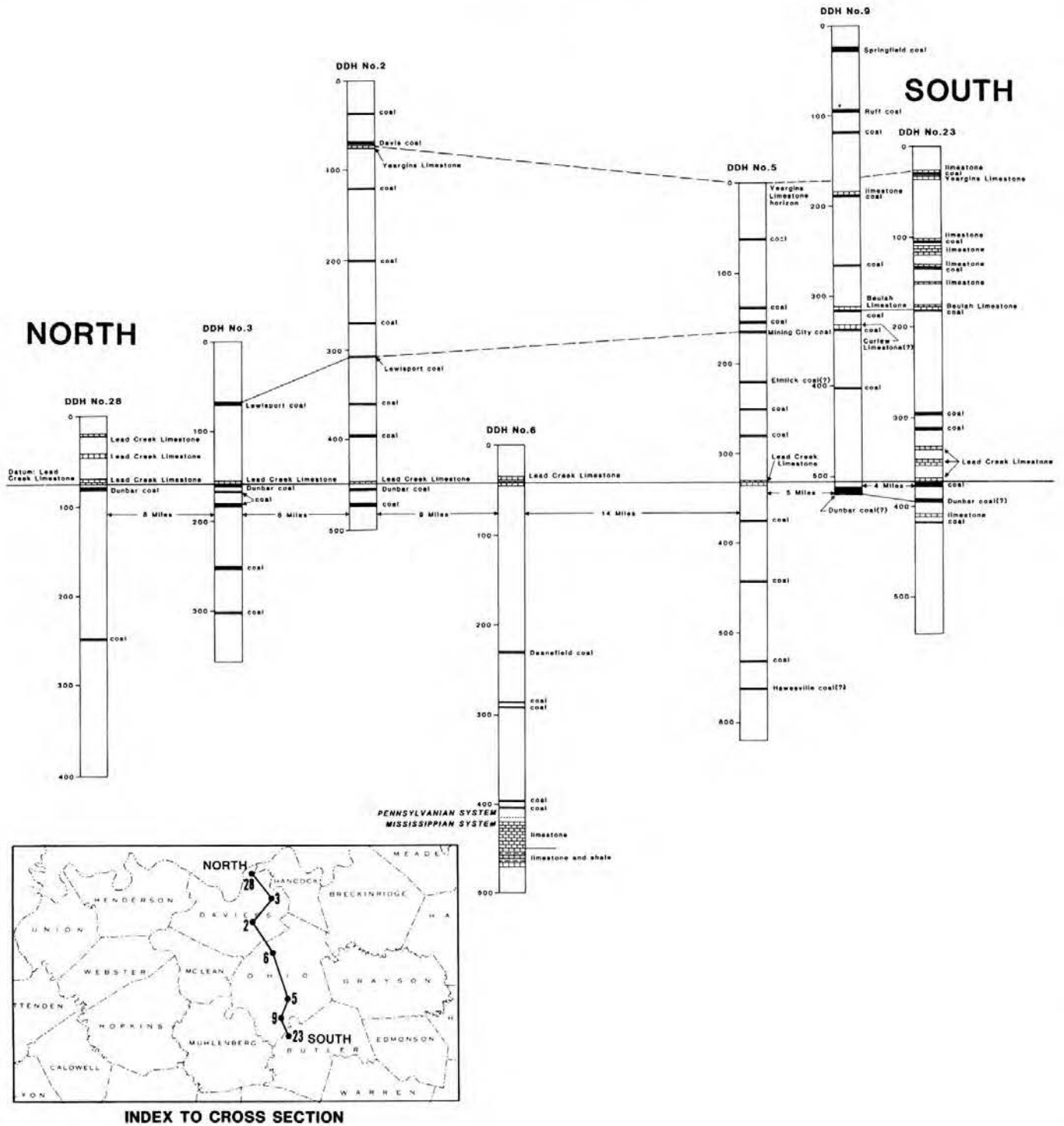


Figure 6. North-south cross section through the Western Kentucky Coal Field, showing key Pennsylvanian stratigraphic correlations.





limestone occurring in the Morgantown and Hancock County Districts.

The Yeargins Limestone (No. 6 limestone) is persistent in the eastern half of the Madisonville District and in the western part of the Hancock and Morgantown Districts (Douglas, 1979). The Yeargins defines the base of the Carbondale Formation in the Morgantown and Hancock County Districts, areas where the Davis coal is not persistent.

### **CORRELATIONS WITH ILLINOIS AND INDIANA**

Some of the coals and limestones of the Tradewater Formation in Kentucky can be correlated with the two other states that contain Pennsylvanian rocks in the Illinois Basin. The Bell coal (Western Kentucky 1b) is the equivalent of the St. Meinrad coal of Indiana and the Reynoldsburg Coal Member of Illinois. The Dunbar coal of Kentucky has been correlated with the Mariah Hill coal of Indiana (Peppers and Popp, 1979). The Lead Creek Limestone of Kentucky has been correlated with the Lead Creek Limestone of Indiana (Thompson and others, 1959). The Curlew Limestone of Kentucky is equivalent to the Perth Limestone of Indiana and the Seville Limestone of Illinois. The Curlew Limestone of Illinois is considered to be younger than the type Curlew Limestone of Kentucky (Douglas, 1979). The Davis coal (Western Kentucky No. 6) is correlated with the Davis Coal Member of Illinois (Peppers and Popp, 1979). The "4A" coal of Kentucky is correlated with the Lower Block coal of Indiana and the Tarter Coal Mem-

ber of Illinois (Peppers and Popp, 1979); however, the physical stratigraphy in the type area for the "4A" coal does not appear to support this correlation. The Mining City coal (Western Kentucky No. 4) is correlated with the Rock Island (No. 1) Coal Member of Illinois (Rice and others, 1979). The Yeargins Limestone of Kentucky has been correlated with the Creal Springs and Stonefort Limestones of Illinois (Douglas, 1979). Figure 8 summarizes the correlations discussed in this paper.

### **SUMMARY**

This paper presents correlations for key beds of the middle and lower parts of the Pennsylvanian strata of western Kentucky. The Lead Creek Limestone has been used as the datum on cross sections presented here because it is the most extensive bed occurring in this part of the geologic section. The correlations presented are based on stratigraphic sequence, intervals relative to the Lead Creek Limestone and to the Springfield coal (Western Kentucky no 9), and on paleontological and palynological evidence.

Future field work and paleontologic efforts will necessitate changes in these correlations and permit additional correlations for which data are currently unavailable. It is hoped that this publication will provide a basis for additional stratigraphic studies and a framework upon which economic studies can be based.

Geophysical logs of Western Kentucky Stratigraphic Test Hole Gil 31 (see Figure 3) are provided for comparison with the geologic section. The core descriptions of each core hole are provided in Appendix A. Appendix B is a list of the positions of key beds in each core hole.

SERIES	FORMATION	ILLINOIS	FORMATION	KENTUCKY	FORMATION	INDIANA		
Missourian	Mattoon	Shumway Ls. Mbr. Omega Ls. Mbr.	Sturgis	Geiger Lake coal Dixon Ss. Mbr.	Mattoon			
		Livingston Ls. Mbr. Shoal Creek Ls. Mbr.		Carthage Ls. Mbr.		Bond	Shoal Creek Ls. Mbr.	
Des Moinesian	Modesto	Chapel (No.8) Coal Mbr. West Franklin Ls. Mbr.		Madisonville Ls. Mbr.	Patoka			
		Carbondale		Providence Ls. Mbr.		Dugger	Providence Ls. Mbr. Herrin Coal Mbr.	
	Spoon	Brereton Ls. Mbr. Herrin (No.8) Coal Mbr. Springfield (No.5) Coal Mbr. Colchester (No.2) Coal Mbr.		Carbondale	Herrin (W.Ky.No.11) coal Briar Hill (W.Ky.No.10) coal Springfield (W.Ky.No.9) coal Ruff (W.Ky.No.8b) coal Well (W.Ky.No.8) coal	Dugger	Springfield Coal Mbr.	
		De Koven Coal Mbr. Davis Coal Mbr. Stonefort Ls. Mbr. *Curlew* Ls. Mbr. Seville Ls. Mbr. Rock Island (No.1) Coal Mbr.			De Koven (W.Ky.No.7) coal Davis (W.Ky.No.6) coal		Colchester Coal Mbr.	
	Atokan	Abbott			Tradewater	Linton Peteraburg	Staunton	Davis Coal Mbr. Perth Ls. Mbr.
				Willis Coal Mbr. Reynoldsburg Coal Mbr.				Curllew Ls. Mbr. Mannington (W.Ky.No.4) coal No. "4a" coal Lead Creek Ls. Mbr. Dunbar coal Ice House (W.Ky.No.3) coal Finnie Ss. Mbr. Bell (W.Ky.No.1b) coal
Morrowan	Caseyville	Pounds Ss. Mbr. Gentry Coal Mbr. Lusk Sh. Mbr.		Caseyville	Mansfield		Lead Creek Ls. Mbr. Mariah Hill Coal Mbr. St. Meinrad Coal Mbr.	
						Battery Rock coal		

Figure 8. Correlation chart showing stratigraphic nomenclature of the Eastern Interior Basin for Illinois, Kentucky, and Indiana. Modified from Rice and others (1979).

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**APPENDIX A: CORE DESCRIPTIONS  
FOR WESTERN KENTUCKY STRATIGRAPHIC TEST HOLES**

**Western Kentucky Stratigraphic Test Hole Gil 1, Hancock County, Pellville Quadrangle, Carter coordinate location 2-Q-32, 2375 FNL 1675 FWL, Elevation: 389.00, Total Depth: 377.00.**

Interval (Feet)	Description
<b>Cored: 30.00-33.00, Recovered: 3.00.</b>	
30.00-30.75 (0.75)	Clay shale, medium-gray, plastic.
30.75-33.00 2.25	Shale, dark-gray to black, carbonaceous.
<b>Cored: 33.00-43.00, Recovered: 10.00.</b>	
33.00-33.65 (0.65)	Clay shale, dark-gray to black, carbonaceous.
33.65-34.25 (0.60)	Clay shale, medium-gray, plastic.
34.25-35.75 (1.50)	As above.
35.75-43.00 (7.25)	Siltstone, sandstone, shale, gray to dark-gray; beds dipping 25°.
<b>Cored: 43.00-53.00, Recovered: 9.15.</b>	
43.00-48.25 (5.25)	Shale, dark-gray.
48.25-49.50 (1.25)	Shale, dark-gray, soft.
49.50-50.35 (0.85)	Last; washed out.
50.35-50.55 (0.20)	Clay shale, dark-gray, plastic.
50.55-53.00 (2.45)	Coal, sparse pyrite, some fusain partings.
<b>Cored: 53.00-63.00, Recovered: 8.25.</b>	
53.00-54.85 (1.85)	Coal, sparse pyrite.
54.85-54.90 (0.05)	Shale, black, carbonaceous.
54.90-55.67 (0.77)	Shale, medium-gray, plastic, silty toward base; probably lost some core.
55.67-61.25 (5.58)	Siltstone and shale, medium- to dark-gray, coarser toward base.
<b>Cored: 63.00-73.00, Recovered: 9.84.</b>	
63.00-67.00 (4.00)	Shale, dark-gray, silty toward base.
67.00-72.84 (5.84)	Siltstone and shale, gray to dark-gray, siderite nodule at 68.00.
<b>Cored: 73.00-83.00, Recovered: 9.75.</b>	
73.00-78.42 (5.42)	Shale, dark-gray, silty.
78.42-82.75 (4.33)	Sandstone and conglomeratic sandstone containing coal streaks, clay pebbles, and limestone pebbles, crossbedded, occasional siltstone laminations.
<b>Cored: 83.00-93.00, Recovered: 9.14.</b>	
83.00-88.68 (5.68)	Sandstone, as above, with lag conglomerate.
88.68-92.14 (3.46)	Shale, medium-gray.
<b>Cored: 93.00-103.00, Recovered: 9.60.</b>	
93.00-93.33 (0.33)	Shale, medium-gray.
93.33-101.60 (8.27)	Shale, dark-gray, siltstone laminations and siderite nodules.
101.60-102.33 (0.73)	Coal.
102.33-102.66 (0.33)	Shale, dark-gray; abundant plant impressions.
<b>Cored: 103.00-113.00, Recovered: 8.55.</b>	
103.00-103.60 (0.60)	Shale, medium-gray, with plant impressions.
103.60-107.33 (3.73)	Siltstone, light- to medium-green, grading into sandy shale.

107.33-110.73 (3.40)	Shale, black, siltstone beds, siderite bands.
110.73-111.55 (0.82)	Shale, medium-gray to light-green.
<b>*Cored: 113.00-122.00, Recovered: 10.75.</b>	
113.00-113.65 (0.65)	Clay shale, gray, siderite nodules, scattered plant impressions.
113.65-119.29 (5.64)	Shale, green, sparse siltstone beds, calcareous at base.
119.29-119.44 (0.15)	Shale, green, as above, fossiliferous and calcareous.
119.44-123.75 (4.31)	Limestone, buff to tan, finely crystalline.
<b>Cored: 122.00-133.00, Recovered: 10.74.</b>	
122.00-122.30 (0.30)	Limestone, buff to tan, finely crystalline, scattered carbonaceous laminations.
122.30-122.50 (0.20)	Shale, green, calcareous, fossiliferous.
122.50-122.80 (0.30)	Limestone, gray to tan, finely crystalline, sparse shale.
122.80-123.18 (0.38)	Limestone and shale, as above.
123.18-123.29 (0.11)	Dolomite, brown, with shale laminations.
123.29-123.51 (0.22)	Shale, black, with pyrite.
123.51-124.46 (0.95)	Shale, dark-gray, with carbonaceous laminations.
124.46-125.61 (1.15)	Clay shale, green, plastic, silty toward base.
125.61-126.00 (0.49)	Shale and siltstone, green to gray, interbedded.
126.00-132.74 (6.74)	Shale and siltstone, gray to dark-gray, interbedded.
<b>Cored: 133.00-143.00, Recovered: 9.90.</b>	
133.00-138.80 (5.80)	As above.
138.80-139.37 (0.57)	Shale, dark-gray.
139.37-142.90 (3.53)	Shale, dark-gray to black, calcareous, with many fossil fragments, siderite nodules at top.
<b>Cored: 143.00-153.00, Recovered: 10.00.</b>	
143.00-143.84 (0.84)	As above.
143.84-148.40 (4.56)	Limestone, gray to dark-gray; nodular matrix of argillaceous limestone, dark-gray, grades to shale below.
148.40-150.02 (1.60)	Shale, dark-gray, carbonaceous, calcareous, fossiliferous.
150.02-150.24 (0.22)	Shale, black, carbonaceous, coal laminations abundant toward base.
150.24-152.17 (1.93)	Coal.
152.17-152.51 (0.34)	Shale, dark-gray to black.
152.51-153.00 (0.49)	Clay shale, occasional carbonaceous laminations and plant impressions.
<b>Cored: 153.00-163.00, Recovered: 9.87.</b>	
153.00-155.32 (2.32)	Clay shale, medium-gray, nonbedded.
155.32-155.91 (0.59)	As above, poorly bedded.
155.91-158.10 (2.19)	Siltstone, gray, argillaceous, sparse shale laminations.
158.10-161.30 (3.20)	Siltstone and shale, dark-gray to gray, laminated, siderite nodule at base.
161.30-161.76 (0.46)	As above, with siltstone lenses.
161.76-162.87 (1.11)	Shale, black, sparse siltstone laminations.
<b>Cored: 163.00-173.00, Recovered: 9.98.</b>	
163.00-165.60 (2.60)	Shale and siltstone, black to gray, carbonaceous laminations and lenses of siltstone.

\*Depth is incorrect because of pick up from previous run.

165.60-166.20 (0.60)  
 166.20-167.46 (1.26)  
 167.46-170.76 (3.30)  
 170.76-172.98 (2.22)

**Cored: 173.00-183.00, Recovered: 9.45.**

173.00-174.18 (1.18)  
 174.18-178.91 (4.73)  
 178.91-179.08 (0.17)  
 179.08-182.55 (3.47)

**Cored: 183.00-193.00, Recovered: 9.70.**

183.00-192.70 (9.70)

**Cored: 193.00-203.00, Recovered: 8.30.**

193.00-194.50 (1.50)  
 194.50-194.87 (0.37)

194.87-200.04 (5.17)  
 200.04-201.30 (1.26)

**\*Cored: 203.00-211.00, Recovered: 10.45.**

203.00-205.65 (2.65)  
 205.65-205.80 (0.15)  
 205.80-209.78 (3.98)  
 209.78-210.08 (0.30)  
 210.08-213.45 (3.37)

**\*Cored: 211.00-223.00, Recovered: 12.10.**

211.00-213.22 (2.22)  
 213.22-213.42 (0.20)  
 213.42-214.32 (1.00)  
 214.32-215.35 (1.03)

215.35-217.10 (1.75)  
 217.10-221.10 (4.00)  
 221.10-223.10 (2.00)

**Cored: 223.00-233.00, Recovered: 9.94.**

223.00-229.30 (6.30)

229.30-232.94 (3.64)

**Cored: 233.00-243.00, Recovered: 9.80.**

233.00-236.68 (3.68)  
 236.68-237.56 (0.88)  
 237.56-242.80 (6.42)

**Cored: 243.00-253.00, Recovered: 9.95.**

242.80-243.19 (0.39)  
 243.19-252.95 (9.76)

Siltstone, black shale, and siderite, contorted.

As above.

Shale, black, with laminations and lenses of siltstone.

Shale, black, interbedded with siltstone.

As above.

Shale, black, carbonaceous, with occasional siltstone laminations.

Clay shale, dark-gray; some core lost.

Shale, black, with occasional siltstone lenses.

Shale, black to dark-gray, occasional laminations and lenses of siltstone, trace of siderite.

As above.

Sandstone, fine-grained, contorted, sideritic with occasional shale laminations.

Siltstone and dark-gray shale, interlaminated.

Shale, dark-gray to black, sparse siltstone laminations.

Shale, black to dark-gray, with sparse siltstone lenses.

Siderite, with calcite-filled syneresis fractures.

Shale, black to gray, sparse siltstone beds.

As above, with siderite nodules, grades to siltstone below.

Siltstone, gray, nonbedded, with sparse carbonaceous streaks; very dark-gray limestone nodules from 212.45-213.45.

Siltstone, as above.

Siltstone and shale, interbedded.

Siltstone and shale, gray to dark-gray, contorted, coal at base.

Siltstone, light-gray, nonbedded, sparse carbonaceous laminations.

Siltstone, gray, with shale laminations.

Siltstone, gray, with shale laminations.

Shale, dark-gray, sparse siderite layers.

Shale, dark-gray to black, with siltstone beds, sparse siderite laminations.

Shale, dark-gray to black, sparse siltstone beds.

Shale, as above, sparse siderite layers at base.

Shale and siltstone, gray to black, irregular beds, contorted.

Shale, black to dark-gray, very sparse siderite and siltstone beds.

As above.

Siltstone and shale; shale, dark-gray to black; siltstone, gray, contorted, with siderite nodules.

\*Picked up some of core lost from 193.00-203.00

<b>Cored: 253.00-263.00, Recovered: 10.10.</b> 253.00-263.10 (10.10)	Sandstone, light-gray, fine- to medium-grained, sparse carbonaceous shale laminations, sparse siderite nodules and layers.
<b>Cored: 263.00-273.00, Recovered: 9.93.</b> 263.00-272.93 (9.93)	As above.
<b>Cored: 273.00-283.00, Recovered: 10.08.</b> 273.00-283.08 (10.08)	As above.
<b>Cored: 283.00-293.00, Recovered: 10.00.</b> 283.00-293.00 (10.00)	As above.
<b>Cored: 293.00-303.00, Recovered: 10.07.</b> 293.00-303.00 (10.00)	As above, sandstone, fine- to medium-grained, crossbedded, porous; with gray shale laminations.
<b>Cored: 303.00-313.00, Recovered: 9.95.</b> 303.00-313.00 (10.00)	As above.
<b>Cored: 313.00-323.00, Recovered: 10.10.</b> 313.00-323.00 (10.00)	As above.
<b>Cored: 323.00-333.00, Recovered: 9.64.</b> 323.00-333.00 (10.00)	As above.
<b>Cored: 333.00-343.00, Recovered: 10.13.</b> 333.00-343.00 (10.00)	As above, 0.08'-thick coal laminae at base.
<b>Cored: 343.00-353.00, Recovered: 10.00.</b> 343.00-353.00 (10.00)	Sandstone, as above; shale beds up to 1.00" thick more abundant at top, calcareous layers, siderite nodules and layers, pebbles scattered throughout.
<b>Cored: 353.00-363.00, Recovered: 9.65.</b> 353.00-363.00 (10.00)	As above.
<b>Cored: 363.00-373.00, Recovered: 8.32.</b> 363.00-366.45 (3.45) 366.45-367.79 (1.34) 367.79-368.08 (0.79) 368.08-369.31 (1.23)  369.31-369.48 (0.17) 369.48-369.92 (0.44)  369.92-377.09 (7.17)	As above, with lag conglomerate at base. Siltstone and shale, medium-gray, interbedded. Shale, gray, interlaminated with greenish-gray shale. Sandstone, gray, fine- to medium-grained, with carbonaceous laminations. Coal. Sandstone, gray, fine- to medium-grained, with shale pebbles and siderite layers, lower contact sharp. Shale, dark-gray, with siderite layers.
<b>Total Depth: 377.09.</b>	

**Western Kentucky Stratigraphic Test Hole Gil 2, Daviess County, Philpot Quadrangle, Carter coordinate location 16-O-31, 275 FNL 1300 FWL, Elevation: 545.00, Total Depth: 501.10.**

Interval (Feet)	Description
<b>Cored: 16.00-26.00, Recovered: 9.99.</b> 16.00-18.82 (2.82) 18.82-26.00 (7.18)	Sandstone, medium-gray, micaceous, coal layers, iron stained. Shale, medium-gray
<b>Cored: 26.00-36.00, Recovered: 10.00.</b> 26.00-29.30 (3.30) 29.30-30.70 (1.40) 30.70-36.00 (5.30)	Shale, medium-gray, with siltstone band at 27.30. Shaly clay, dark-gray, plastic. Shale, black, platy.
<b>Cored: 36.00-43.00, Recovered: 7.00.</b> 36.00-36.83 (0.83) 36.83-37.93 (1.10) 37.93-43.00 (5.07)	Shale, black, fissile. Coal, bright, pyrite. Shale, medium-gray to light-gray, semiplastic (pulled out 3.00' short, picked up 3.00', 11-13-75, from 43.00-46.00).
<b>Cored: 43.00-46.30, Recovered 3.30.</b> 43.00-44.50 (1.50) 44.50-46.30 (1.80)	Shale, gray. Shale, gray, silty.
<b>Cored: 46.30-56.20, Recovered: 9.90.</b> 46.30-47.25 (0.95) 47.25-47.28 (0.03) 47.28-47.51 (0.23) 47.51-47.93 (0.42) 47.93-49.24 (1.31) 49.24-51.13 (1.89) 51.13-56.20 (5.07)	Shale, gray, silty, siderite nodules. Claystone, gray, shaly. Shale, gray, silty. Shale, medium-gray. Sandstone, medium-gray, micaceous. Shale, medium-gray, silty. Sandstone, medium-gray, medium-grained, carbonaceous layers, micaceous.
<b>Cored: 56.20-66.20, Recovered: 10.00.</b> 56.20-58.17 (1.97) 58.17-60.12 (1.95) 60.12-61.85 (1.73)  61.85-63.83 (1.98) 63.83-66.20 (2.37)	Siltstone with sandstone beds, green, micaceous. Siltstone, medium-gray, micaceous, carbonaceous. Siltstone, medium-gray, pyritic nodules, grades downward to medium-gray shale. Shale, dark-gray, siderite layer at 61.92. Shale, dark-gray, grades to medium-gray shale.
<b>Cored: 66.20-73.40, Recovered: 7.20.</b> 66.20-67.70 (1.50) 67.70-69.27 (1.57) 69.27-71.51 (2.24) 71.51-72.25 (0.74) 72.25-72.31 (0.06) 72.31-73.40 (1.09)	Shale, dark-gray. Shale, dark-gray, very fossiliferous, calcareous pyrite layers. Coal, bright, pyrite. Underclay, medium-gray, carbonaceous, semiplastic. Shale, gray. Limestone, nodular, becoming more massive at base, slightly fossiliferous.
<b>Cored: 73.40-83.00, Recovered 9.60.</b> 73.40-74.60 (1.20)	Limestone, medium-gray, nonfossiliferous, moderately crystalline, slightly nodular.

74.60-74.63 (0.03)	Limestone, medium-gray, moderately crystalline, crinoid stem.
74.63-77.11 (2.48)	Shale, medium-gray, silty, grades into siltstone, pyrite nodules.
77.11-78.91 (1.80)	Siltstone, light-green, carbonaceous debris, siderite lenses.
78.91-80.90 (1.99)	Siltstone, siderite lenses.
80.90-82.90 (2.00)	Siltstone, sideritic.
82.90-83.37 (0.47)	Siltstone, siderite.
<b>Cored: 83.40-93.30, Recovered: 9.90.</b>	
83.40-85.70 (2.30)	Shale, green, silty, micaceous, thinly laminated.
85.70-86.83 (1.13)	As above.
86.83-87.61 (0.78)	Siltstone, green, calcareous with limestone nodules.
87.61-89.53 (1.92)	As above.
89.53-91.46 (1.93)	As above.
91.46-93.32 (1.86)	Siltstone, green, micaceous.
<b>Cored: 93.30-103.00, Recovered: 9.70.</b>	
93.30-101.33 (8.03)	Siltstone, green with limestone and siderite nodules.
101.33-103.00 (1.67)	Shale, dark-gray.
<b>Cored: 103.00-111.00, Recovered: 8.00.</b>	
103.00-110.61 (7.61)	Shale, medium-gray, with siderite layers.
110.61-111.01 (0.40)	Siltstone, medium-gray to medium-green.
<b>Cored: 111.00- 116.30, Recovered: 5.30.</b>	
111.00-116.30 (5.30)	Siltstone, medium-gray, grades downward to silty shale with pyritic plant impressions.
<b>Cored: 116.30-126.20, Recovered: 9.90.</b>	
116.30-119.22 (2.92)	Shale, black.
119.22-120.29 (1.07)	Coal, bright, pyritic.
120.29-124.08 (3.79)	Claystone, medium-gray, carbonaceous.
124.08-125.98 (1.90)	Shale, silty, grading to siltstone, medium-gray, occasional siderite layers.
<b>Cored: 126.20-136.20, Recovered 10.00.</b>	
126.20-126.57 (0.37)	Siltstone.
126.57-136.20 (9.63)	Sandstone, medium-green, with siderite nodules, micaceous.
<b>Cored: 136.20-146.20, Recovered: 10.00.</b>	
136.20-146.20 (10.00)	Sandstone, medium-green, micaceous, contains sparse shale laminations.
<b>Cored: 146.20-156.20, Recovered: 10.00.</b>	
146.20-156.20 (10.00)	Sandstone, medium-gray, medium-grained, micaceous, sideritic, carbonaceous laminations, sparse shale laminations.
<b>Cored: 156.20-166.20, Recovered: 10.00.</b>	
156.20-162.23 (6.03)	Sandstone, medium-gray, sideritic, micaceous.
162.23-166.37 (4.14)	Siltstone, medium-gray, laminated, micaceous.
<b>Cored: 166.20-176.30, Recovered: 10.10.</b>	
166.20-176.30 (10.10)	Sandstone, light-gray, medium-grained, micaceous, contains sparse shale and carbonaceous laminations.
<b>Cored: 176.30-186.30, Recovered: 10.00.</b>	

176.30-177.60 (1.30)	Sandstone, light-gray, medium-grained, micaceous, with few carbonaceous laminations.
177.60-179.72 (2.12)	Sandstone, light-gray, medium-grained, micaceous, carbonaceous laminations.
179.72-179.92 (0.20)	Siltstone, green, micaceous, carbonaceous laminations.
179.92-180.49 (0.57)	Sandstone, medium-gray, micaceous, abundant carbonaceous laminations.
180.49-182.05 (1.56)	Siltstone, medium-gray, occasional carbonaceous laminations.
182.05-186.30 (4.25)	Sandstone, medium-gray, micaceous, medium-grained, carbonaceous laminations.
<b>Cored: 186.30-196.30, Recovered: 10.00.</b>	
186.30-196.30 (10.00)	Sandstone, medium-grained, medium-gray, friable, micaceous, siltstone laminations.
<b>Cored: 196.30-206.30, Recovered: 10.00.</b>	
196.30-201.67 (5.37)	Sandstone, medium-gray, medium-grained, micaceous, with sparse carbonaceous and shale laminations.
201.67-201.76 (0.09)	Coal, bright, hard.
201.76-206.30 (4.54)	Sandstone, medium-gray, medium-grained, micaceous, with carbonaceous laminations.
<b>Cored: 206.30-216.30, Recovered: 9.96.</b>	
206.30-212.50 (6.20)	Sandstone, medium-gray, sparse carbonaceous laminations, micaceous.
212.50-212.82 (0.32)	Shale, medium-gray, semiplastic.
212.82-214.04 (1.22)	Sandstone, with large shale pebbles and sideritic nodules.
214.04-215.35 (1.31)	Shale, green, plastic.
215.35-216.30 (0.95)	Sandstone, sideritic.
<b>Cored: 216.30-226.20, Recovered: 9.90.</b>	
216.30-226.20 (9.90)	Sandstone, medium-gray, medium-grained, micaceous, with sparse carbonaceous layers, more silt laminations toward the bottom.
<b>Cored: 226.20-236.20, Recovered: 10.00.</b>	
226.20-236.20 (10.00)	Sandstone, medium-gray, medium-grained, micaceous, with some carbonaceous laminations, grading into siltstone toward base.
<b>Cored: 236.20-245.80, Recovered 9.60.</b>	
236.20-243.55 (7.35)	Shale, silty, dark-gray, micaceous, contains thin layers of medium-grained, medium-gray sandstone with coal laminations from 7.32-7.35 and 7.35-7.80.
243.55-245.80 (2.25)	Shale, silty, medium-gray, micaceous, sandstone lenses with coal laminations.
<b>Cored: 245.80-255.90, Recovered: 10.10.</b>	
245.80-247.77 (1.97)	Siltstone, medium-gray, micaceous, interbedded with sandstone.
247.77-249.12 (1.35)	Sandstone, medium-gray, medium-grained, micaceous, with silt layers 0.35' from top.
249.12-255.90 (6.78)	Siltstone, medium-gray, micaceous interbedded with very thin beds of sandstone.

**Cored: 255.90-265.90, Recovered 10.00.**

255.90-259.50 (3.60)

259.50-265.90 (6.40)

Siltstone, medium-gray, micaceous, with small sandstone beds.  
Shale, silty, pyritic.**Cored: 265.90-269.60, Recovered: 3.72.**

265.90-269.62 (3.72)

Shale, dark-gray, pyritic, with siderite nodules.

**Cored: 269.60-276.30, Recovered: 6.70.**

269.60-270.68 (1.08)

270.68-272.29 (2.22)

272.29-272.47 (0.18)

272.47-276.30 (3.83)

Shale, dark-gray, sideritic.

Coal, bright, hard.

Shale, black.

Sandstone, medium-gray, medium-grained, micaceous, with some siderite.

**Cored: 276.30-286.30, Recovered 9.61.**

276.30-286.30 (10.00)

Sandstone, light-gray, fine-grained, crossbedded, siderite nodules, sparse shale laminations, micaceous.

**Cored: 286.30-293.80, Recovered: 7.50.**

286.30-288.91 (2.61)

288.91-289.58 (0.67)

289.58-293.67 (4.09)

Sandstone, medium-gray, fine-grained, micaceous, crossbedded, shale laminations, siderite nodules.

Sandstone, medium-gray, calcareous, fine-grained, interbedded with micaceous shale.

Shale, dark-gray, interbedded with medium-gray sandstone, siderite nodules.

**Cored: 293.80-302.80, Recovered: 2.77.**

293.67-294.67 (1.00)

294.67-295.73 (1.06)

295.73-296.56 (0.83)

Sandstone and shale interbedded; sandstone, fine-grained, medium-gray; shale, dark-gray.

Sandstone and shale interbedded; shale, dark-gray; sandstone, medium-gray, fine-grained, calcareous.

Shale, dark-gray, interbedded with medium-gray, fine-grained sandstone.

**Cored: 302.80-306.30, Recovered: 9.56.**

296.56-302.60 (6.04)

Shale, dark-gray.

**Cored: 306.30-316.10, Recovered: 9.80.**

306.30-307.50 (1.20)

307.50-309.50 (2.00)

309.50-316.24 (6.74)

Shale, dark-gray.

Coal, bright.

Shale, medium-gray, siderite nodules, carbonaceous material.

**Cored: 316.10-326.20, Recovered: 10.10.**

316.10-326.20 (10.10)

Siltstone, grades downward into dark-gray shale then back to siltstone; siltstone, sideritic and micaceous; shale, medium-gray and carbonaceous.

**Cored: 326.20-336.00, Recovered: 10.00.**

326.20-336.00 (9.80)

Sandstone, medium-gray, micaceous, finely bedded with siltstone.

**Cored: 336.00-346.20, Recovered: 10.20.**

336.00-337.15 (1.15)

337.15-337.37 (0.22)

Sandstone, medium-gray, micaceous, thinly bedded with shale.

Sandstone, light-gray, highly calcareous, thinly bedded with shale.

337.37-338.92 (1.55)	Sandstone, medium-gray, micaceous, thinly laminated with shale, some carbonaceous laminations.
338.92-339.40 (0.48)	Siltstone, medium-gray, slightly carbonaceous, micaceous, contains sandstone layers and clasts.
339.40-339.58 (0.18)	Sandstone, light-gray, micaceous, with shale laminations.
339.58-345.57 (5.99)	Siltstone, dark-gray, micaceous, with sandstone layers.
<b>Cored: 346.20-355.70, Recovered: 9.50.</b>	
346.20-355.70 (9.50)	Siltstone, dark-gray, micaceous, finely bedded with sandstone.
<b>Cored: 355.70-363.70, Recovered: 8.00.</b>	
355.70-359.83 (4.13)	Siltstone, medium-gray, micaceous, laminated with shale, siderite nodules.
359.83-360.93 (1.10)	Coal, hard, bright, pyritic.
360.93-361.88 (0.95)	Shale, slightly silty, green, carbonaceous, finely bedded with siltstone.
361.88-363.70 (1.82)	Shale, green, sandstone layers and clasts, sparse siderite bands, slightly micaceous.
<b>Cored: 363.70-370.73, Recovered: 7.03.</b>	
363.70-370.73 (7.03)	Shale, silty, dark-gray, sandstone layers, sideritic.
<b>Cored: 370.73-376.50, Recovered: 5.77.</b>	
370.73-376.50 (5.77)	Shale, dark-gray, silty, sideritic, sparse calcareous sandstone clasts.
<b>Cored: 376.50-382.80, Recovered: 6.30.</b>	
376.50-382.80 (6.30)	Shale, silty, dark-gray, sideritic, calcareous, sandstone layers.
<b>Cored: 382.80-392.80, Recovered: 10.00.</b>	
382.80-392.80 (10.00)	Shale, dark-gray, silty, sideritic with calcareous sandstone layers.
<b>Cored: 392.80-402.80, Recovered: 10.00.</b>	
392.80-393.60 (0.80)	Shale, dark-gray.
393.60-394.02 (0.42)	Shale, dark-gray, pyritic, sideritic.
394.02-395.73 (1.71)	Coal, pyritic, hard, bright.
395.73-402.80 (7.07)	Sandstone, medium-gray, medium-grained, micaceous.
<b>Cored: 402.80-412.80, Recovered: 10.00.</b>	
402.80-406.12 (3.32)	Sandstone, medium-gray, medium-grained, micaceous, friable.
406.12-412.80 (6.68)	Siltstone, medium-gray, sandstone layers and clasts.
<b>Cored: 412.80-420.90, Recovered: 8.10.</b>	
412.80-420.90 (8.10)	Siltstone, shale beds, medium-gray, sandstone clasts, and layers.
<b>Cored: 420.90-430.90, Recovered: 10.00.</b>	
420.90-430.90 (10.00)	Siltstone, dark-gray, micaceous, sandstone layers and clasts.
<b>Cored: 430.90-441.00, Recovered: 10.10.</b>	
430.90-441.00 (10.10)	Siltstone, dark-gray, sandstone clasts and layers, becoming more thinly bedded toward base.
<b>Cored: 441.00-450.90, Recovered: 10.19.</b>	
441.00-441.83 (0.83)	Shale, black.

441.83-445.63 (3.80)

Siltstone, dark-gray, grading to medium-gray, with occasional limestone layers, micaceous.

445.63-447.78 (2.15)

Siltstone, dark-gray, grading to medium-gray, calcareous, micaceous, grading into limestone.

447.78-449.98 (2.20)

Limestone, medium-gray, coarsely crystalline, highly fossiliferous.

449.98-450.33 (0.35)

Siltstone, medium-gray, calcareous, micaceous.

450.33-450.90 (0.57)

Siltstone, medium-gray, micaceous.

**Cored: 450.90-460.80, Recovered: 10.50.**

450.90-453.19 (2.29)

Siltstone, dark-gray, micaceous, slightly laminated.

453.19-454.85 (1.66)

Coal, pyritic, hard, bright.

454.85-456.58 (1.73)

Siltstone, medium-gray, carbonaceous, micaceous.

456.58-460.80 (4.22)

Sandstone, medium-gray, medium-grained, slightly carbonaceous and highly micaceous.

**Cored: 460.80-470.90, Recovered: 10.10.**

460.80-465.30 (4.50)

Siltstone, medium-gray, micaceous, slightly laminated.

465.30-470.90 (5.60)

Sandstone, medium-gray, medium-grained, micaceous, slightly laminated.

**Cored: 470.90-480.90, Recovered: 10.00.**

470.90-471.49 (0.59)

Sandstone, medium-gray, medium-grained, highly micaceous.

471.49-473.86 (2.37)

Coal, hard, bright, and pyritic.

473.86-474.52 (0.66)

Shale, dark-gray, siderite nodules.

474.52-480.90 (6.38)

Siltstone, medium-gray, micaceous, slightly carbonaceous with siderite nodules and shale laminations.

**Cored: 480.90-491.90, Recovered: 10.20.**

480.90-491.10 (10.20)

Shale, dark-gray, containing lenses of medium-gray, medium-grained, micaceous sandstone; more sandy toward the base.

**Cored: 491.10-501.10, Recovered: 10.00.**

491.10-492.00 (0.90)

Shale, sandy, micaceous.

492.00-501.10 (9.10)

Sandstone, medium-gray, medium-grained, micaceous, with shale laminations.

**Total Depth: 501.10.**

**Western Kentucky Stratigraphic Test Hole Gil 3, Daviess County, Maceo Quadrangle, Carter coordinate location 17-P-32, 1325 FSL 25 FEL, Elevation: 570.00, Total Depth: 356.00.**

Interval (Feet)	Description
<b>Cored: 36.00-46.00, Recovered: 10.00.</b>	
36.00-38.84 (2.84)	Shale, silty, medium-gray, micaceous, carbonaceous.
38.84-39.11 (0.27)	Sandstone, medium-gray, medium-grained, with angular clasts of micaceous sandstone.
39.11-41.50 (2.39)	Sandstone, green, medium-grained, micaceous, contains carbonaceous and shale layers.
41.50-46.00 (4.50)	Shale, medium-gray, very sandy, containing sandstone layers as thick as 3.00'.
<b>Cored: 46.00-56.60, Recovered: 10.60.</b>	
46.00-47.90 (1.90)	Shale, medium-gray, sandy, containing sandstone layers.
47.90-56.60 (8.70)	Siltstone, medium-gray, micaceous.
<b>Cored: 56.60-66.60, Recovered: 10.00.</b>	
56.60-58.43 (1.83)	Siltstone, medium-gray, micaceous.
58.43-66.60 (8.17)	Shale, medium-gray, slightly carbonaceous.
<b>Cored: 66.60-76.60, Recovered: 10.00.</b>	
66.60-67.16 (0.56)	Claystone, medium-gray.
67.16-70.83 (3.67)	Coal, pyritic, hard, bright.
70.83-71.33 (0.50)	Underclay, medium-gray, carbonaceous.
71.33-74.93 (3.60)	Shale, medium-gray and sandy.
74.93-76.60 (1.67)	Sandstone, medium- to fine-grained, micaceous, shaly.
<b>Cored: 76.60-86.60, Recovered: 10.00.</b>	
76.60-78.95 (2.35)	Sandstone, medium-gray, medium-grained, interbedded with green shale, sideritic.
78.95-81.25 (2.30)	Shale, green, sideritic.
81.25-86.60 (5.35)	Sandstone, medium-gray, medium-grained, micaceous, interbedded with black shale.
<b>Cored: 86.60-96.60, Recovered: 10.00.</b>	
86.60-96.60 (10.00)	Shale, dark-gray, with sandstone layers and clasts.
<b>Cored: 96.60-106.50, Recovered: 9.90.</b>	
96.60-106.50 (9.90)	Shale, dark-gray, grading to black shale, contains sandstone layers and clasts.
<b>Cored: 106.50-116.40, Recovered: 9.90.</b>	
106.50-116.40 (9.90)	Shale, black, sandstone layers, pyrite layers.
<b>Cored: 116.40-126.40, Recovered: 10.00.</b>	
116.40-124.89 (8.49)	Shale, black, sandstone layers, pyrite layers.
124.89-126.40 (1.51)	Shale, sandy, sideritic.
<b>Cored: 126.40-136.40, Recovered: 10.00.</b>	
126.40-133.53 (7.13)	Sandstone, medium- to fine-grained, medium-gray, micaceous, sideritic.
133.53-135.98 (2.45)	Sandstone, medium-gray, medium-grained, interbedded with shale.

135.98-136.40 (0.42)	Siltstone, dark-gray with sandstone layers.
<b>Cored: 136.40-146.40, Recovered: 10.00.</b> 136.40-146.40 (10.00)	Sandstone, medium-gray, medium-grained, micaceous, interbedded with dark-gray shale.
<b>Cored: 146.40-156.40, Recovered: 10.00.</b> 146.40-151.03 (4.63)	Sandstone, medium-gray, medium-grained, micaceous, interbedded with dark shale, becomes very shaly.
151.03-153.83 (2.80)	Sandstone, medium-gray, medium-grained, micaceous, with shale laminations.
153.83-154.27 (0.44)	Shale, green, contains siderite nodules.
154.27-155.83 (1.56)	Limestone, medium-gray, crystalline, highly fossiliferous.
155.83-156.03 (0.20)	Shale, green, calcareous.
156.03-156.40 (0.37)	Shale, green.
<b>Cored: 156.40-166.40, Recovered: 10.00.</b> 156.40-156.95 (0.55)	Shale, green, with limestone fragments.
156.95-157.95 (1.00)	Shale, dark-gray.
157.95-160.10 (2.15)	Coal, hard, bright, pyritic.
160.10-161.04 (0.94)	Claystone, medium-gray, carbonaceous, semiplastic.
161.04-163.98 (2.94)	Claystone, green, semiplastic.
163.98-164.31 (0.33)	Shale, medium-gray, plastic, carbonaceous.
164.31-164.51 (0.20)	Coal, bright, hard.
164.51-166.41 (1.90)	Claystone, carbonaceous, semiplastic.
<b>Cored: 166.40-176.40, Recovered: 10.00.</b> 166.40-171.96 (5.56)	Shale, medium-gray, sideritic, slightly silty.
171.96-176.40 (4.44)	Shale, dark-gray, silty at top, less silty toward base.
<b>Cored: 176.40-186.40, Recovered: 10.00.</b> 176.40-178.13 (1.73)	Shale, dark-gray.
178.13-178.25 (0.12)	Coal, banded, pyritic, hard.
178.25-180.75 (2.50)	Shale, dark-gray.
180.75-181.92 (1.17)	Shale, silty, medium-gray.
181.92-186.42 (4.50)	Sandstone, medium-gray, fine-grained, interbedded with shale, slightly sideritic, micaceous.
<b>Cored: 186.40-196.40, Recovered: 10.00.</b> 186.40-196.40 (10.00)	Sandstone, medium-gray, fine-grained, interbedded with shale, slightly micaceous and sideritic.
<b>Cored: 196.40-206.40, Recovered: 10.00.</b> 196.40-206.40 (10.00)	Sandstone, medium-gray, fine-grained, interbedded with shale, slightly micaceous and sideritic.
<b>Cored: 206.40-216.40, Recovered: 10.00.</b> 206.40-216.40 (10.00)	Sandstone, medium-gray, fine-grained, interbedded with dark-gray shale.
<b>Cored: 216.40-226.50, Recovered: 10.10.</b> 216.40-226.40 (10.00)	As above.
<b>Cored: 226.40-236.40, Recovered: 10.00.</b>	

226.40-236.40 (10.00)	Sandstone, medium-gray, fine-grained, interbedded with dark-gray shale, siderite nodules.
<b>Cored: 236.40-246.40, Recovered: 10.00.</b> 236.40-246.40 (10.00)	Shale, dark-gray, sandy.
<b>Cored: 246.40-256.40, Recovered: 10.00.</b> 246.40-255.04 (8.64) 255.04-256.40 (1.36)	Shale, dark-gray, sandy. Coal, bright, hard, siderite nodule, pyritic.
<b>Cored: 256.40-266.40, Recovered: 10.00.</b> 256.40-257.08 (0.68) 257.08-257.30 (0.22) 257.30-266.00 (8.70)	Coal, bright, hard, pyritic. Shale, black. Shale, dark-gray, sandy.
<b>Cored: 266.00-276.00, Recovered: 10.00.</b> 266.00-268.50 (2.50) 268.50-276.00 (7.50)	Shale, dark-gray, sandy, with siderite nodules. Sandstone, medium-gray, fine-grained, shaly, sideritic.
<b>Cored: 276.00-286.00, Recovered: 10.00.</b> 276.00-286.00 (10.00)	Shale, dark-gray, sandy.
<b>Cored: 286.00-296.00, Recovered: 10.00.</b> 286.00-296.00 (10.00)	Shale, dark-gray, sandy, sideritic.
<b>Cored: 296.00-306.00, Recovered: 10.00.</b> 296.00-302.82 (6.82) 302.82-302.85 (0.03) 302.85-303.94 (1.12) 303.94-306.00 (2.06)	Shale, dark-gray, sandy, sideritic. Coal, bright. Shale, dark-gray, sandy. Sandstone, medium-gray, fine-grained, shaly.
<b>Cored: 306.00-316.00, Recovered: 10.00.</b> 306.00-316.00 (10.00)	Sandstone, medium-gray, fine-grained, shaly.
<b>Cored: 316.00-326.00, Recovered: 10.00.</b> 316.00-326.00 (10.00)	Sandstone, medium-gray, medium- to coarse-grained, carbonaceous layers, micaceous.
<b>Cored: 326.00-336.00, Recovered: 10.00.</b> 326.00-336.00 (10.00)	Sandstone, medium-gray, medium- to coarse-grained, micaceous.
<b>Cored: 336.00-346.00, Recovered: 10.00.</b> 336.00-346.00 (10.00)	Sandstone, medium-gray, coarse-grained, micaceous, carbonaceous, siderite nodules.
<b>Cored: 346.00-356.00, Recovered: 10.00.</b> 346.00-356.00 (10.00)	Sandstone, medium-gray, coarse-grained, micaceous, siderite nodules.
<b>Total Depth: 356.00.</b>	

**Western Kentucky Stratigraphic Test Hole Gil 4, Ohio County, Whitesville Quadrangle, Carter coordinate location 9-O-33, 1500 FSL 400 FEL, Elevation: 640.00, Total Depth: 250.05.**

**Interval (Feet)**

**Cored: 9.40-18.20, Recovered: 7.35.**

9.40-10.81 (1.41)

10.81-10.94 (0.13)

10.94-14.54 (3.60)

14.54-16.75 (2.21)

**Description**

Sandstone, brown, micaceous, crossbedded, medium-grained.

Claystone, soft, brown, very plastic.

Shale, clayey, medium-gray, coal streaks, graded to dark-gray shale.

Shale, dark-gray, vitrain streaks, claystone layer at 15.77, sandstone layers, tan, medium-grained.

**Cored: 18.20-28.20, Recovered: 9.93.**

18.20-22.62 (4.42)

22.62-25.09 (2.47)

25.09-25.58 (0.49)

25.58-25.68 (0.10)

25.68-28.13 (2.45)

Shale, soft, clayey, medium-gray, interbedded with silty shale, tan, siderite nodules.

Sandstone, gray, yellow, tan, coarse-grained, friable, contacts sharp.

Shale, medium-gray, soft.

Sandstone, medium-gray, fine-grained, carbonaceous layers.

Sandstone, banded tan and gray, medium-grained, micaceous, well sorted.

**Cored: 28.20-38.20, Recovered: 10.00.**

28.20-38.20 (10.00)

Sandstone, banded tan and gray, micaceous, well sorted; some claystone clasts, siderite nodules.

**Cored: 38.20-48.20, Recovered: 10.00.**

38.20-38.94 (0.74)

38.94-41.17 (2.23)

41.17-42.01 (0.84)

42.01-42.81 (0.80)

42.81-48.29 (5.48)

Sandstone, clean, light-gray, medium-grained, micaceous, sharp contact.

Sandstone, tan, medium-grained, micaceous, sharp contact.

Sandstone, clean, light-gray, medium-grained, micaceous, sharp contact.

Sandstone, tan, micaceous, medium-grained.

Sandstone, tan, medium-grained, numerous siderite nodules that become less abundant, but larger at base.

**Cored: 48.20-58.20, Recovered: 9.96.**

48.29-48.39 (0.10)

48.39-49.37 (0.98)

49.37-57.33 (7.96)

57.33-58.25 (0.92)

Sandstone, clean, light-gray, medium-grained, micaceous.

Sandstone, light-gray, fine-grained, shale layers, siderite nodules at 49.17.

Sandstone, light-gray, fine-grained, numerous shale laminations and claystone clasts.

Sandstone, light-gray, fine-grained, with black shale interbeds.

**Cored: 58.20-68.20, Recovered: 9.98.**

58.25-59.38 (1.13)

59.38-60.19 (0.81)

60.19-60.95 (0.76)

60.95-61.44 (0.49)

61.44-61.57 (0.13)

61.57-61.95 (0.51)

61.95-62.71 (0.76)

62.71-63.61 (0.90)

Sandstone, light-gray, fine-grained, with shale interbeds and siderite nodules, micaceous.

Sandstone, medium-gray, fine-grained, clean, micaceous.

Sandstone, medium-gray, fine-grained, micaceous, coal layers.

Coal, banded, pyrite layers.

Sandstone, medium-gray, fine-grained, micaceous, coal layers.

Coal, pyrite layers, micaceous.

Sandstone, medium-gray, fine-grained with coal layers.

Coal, pyrite layers.

63.61-64.38 (0.77)	Sandstone, medium-gray, fine-grained, with coal layers, siderite nodules.
64.38-65.35 (0.97)	Sandstone, medium-gray, fine-grained, micaceous, thin shale interbeds.
65.35-68.23 (2.88)	Siltstone, medium-gray, with dark-gray shale laminations.
<b>Cored: 68.20-78.20, Recovered: 9.94.</b>	
68.23-77.86 (9.63)	Siltstone, medium-gray, with dark-gray shale laminations.
77.86-78.17 (0.31)	Shale, dark-gray, with siderite layers.
<b>Cored: 78.20-87.88, Recovered: 10.0.</b>	
78.20-87.88 (9.68)	Shale, dark-gray with siderite nodules.
<b>Cored: 87.88-97.88, Recovered: 10.00.</b>	
87.88-97.88 (10.00)	Shale, dark-gray, with siderite nodules, siltstone lenses, medium-gray.
<b>Cored: 97.88-107.60, Recovered: 9.39.</b>	
97.88-103.98 (6.10)	Shale, dark-gray.
103.98-107.27 (3.29)	Coal, banded, pyritic.
<b>Cored: 107.60-117.60, Recovered: 10.0.</b>	
107.27-117.60 (10.33)	Siltstone, medium-gray, rooted.
<b>Cored: 117.60-127.60, Recovered: 10.00.</b>	
117.60-119.67 (2.07)	Siltstone medium-gray, some carbonaceous material.
119.67-122.32 (2.65)	Sandstone, fine-grained, with some carbonaceous material toward base.
122.32-125.71 (3.39)	Sandstone, unsorted; claystone clasts, coal clasts, siderite nodules, crossbedded, slightly carbonaceous.
125.71-125.87 (0.16)	Claystone, dark-gray, plastic, becoming hard and silty toward base.
126.66-127.69 (1.03)	Siltstone, dark-gray, shaly, grades to dark-gray claystone at base.
<b>Cored: 127.69-137.70, Recovered: 10.05.</b>	
127.69-132.59 (4.90)	Shale, dark-gray, with some silty layers.
132.59-134.79 (2.20)	Siltstone, very shaly, dark, carbonaceous material.
134.79-137.74 (2.95)	Siltstone, medium-dark-gray, shale laminations.
<b>Cored: 137.70-147.70, Recovered: 9.96.</b>	
137.74-147.70 (9.96)	Siltstone, medium-gray, with some siderite nodules, shale laminations, and a little carbonaceous material.
<b>Cored: 147.70-157.60, Recovered: 9.81.</b>	
147.70-154.08 (6.38)	Siltstone, medium-gray, with siderite nodules, micaceous, shale laminations.
154.08-157.51 (3.43)	Shale, dark-gray, with 1/4" medium-gray siltstone laminations; some laminations truncated.
<b>Cored: 157.60-167.30, Recovered: 9.71.00.</b>	
157.60-163.71 (6.11)	Shale, dark-gray, laminated with medium-gray siltstone.
163.71-165.61 (1.90)	Shale, laminated, dark-gray, with medium-gray siltstone with many siderite nodules, extremely sideritic at base.
165.61-167.31 (1.70)	Shale, dark-gray, silty, with siderite nodules.
<b>Cored: 167.30-177.30, Recovered: 10.16.</b>	

167.31-176.50 (9.19)	Shale, black, silty, numerous siderite nodules, lenses of medium-gray siltstone.
176.50-177.47 (0.97)	Siltstone, medium-gray, interlaminated with dark-gray silty shale; siderite band throughout.
<b>Cored: 177.30-187.35, Recovered: 7.41.</b>	
177.47-180.60 (3.16)	Siltstone, laminated, with dark-gray shale and siderite layers.
180.60-184.88 (4.28)	Shale, dark-gray, silty, with siderite layers.
<b>Cored: 184.88-188.20, Recovered: 2.78.</b>	
184.88-187.66 (2.78)	Shale, dark-gray, silty with medium-gray siltstone.
<b>Cored: 188.20-198.20, Recovered: 10.00.</b>	
188.20-198.20 (10.00)	Shale, dark-gray, silty, large siderite nodule at 9.00; some medium-gray siltstone beds, few scattered siderite nodules.
<b>Cored: 198.20-208.20, Recovered: 10.05.</b>	
198.20-198.43 (0.23)	Shale, dark-gray, silty.
198.43-199.03 (0.60)	Siderite, nodules, large, with dark-gray shale and siltstone, some carbonaceous material.
199.03-199.43 (0.40)	Shale, dark-gray, with coal layers.
199.43-205.37 (5.94)	Siltstone, medium-gray, with some micaceous shale; more shaly toward base.
205.37-206.29 (0.92)	Siltstone, interlaminated with shale, shale laminations more dominant downward; siltstone, medium-gray, micaceous; shale, dark-gray.
206.29-208.25 (2.21)	Shale, dark-gray, with siltstone laminations.
<b>Cored: 208.20-218.20, Recovered: 10.02.</b>	
208.25-208.37 (0.12)	Shale, dark-gray, with siderite nodules.
208.37-212.12 (3.75)	Shale, hard, black, micaceous, upper contact distinct, lower contact sharp.
212.12-213.30 (1.18)	Sandstone, dark-gray, carbonaceous, fine-grained, with laminations of medium-gray siltstone, siderite nodules.
213.30-215.38 (2.08)	As above, slightly calcareous.
215.38-216.75 (1.37)	As above, medium-gray, fine-grained sandstone.
216.75-217.42 (0.67)	As above, slightly calcareous, siderite nodules more abundant, larger.
217.42-218.27 (0.85)	Sandstone, fine-grained, with numerous of siderite nodules.
<b>Cored: 218.20-228.20, Recovered: 9.81.</b>	
218.27-219.72 (1.45)	Sandstone, medium-gray, interbedded with dark-gray shale and siderite nodules.
219.72-227.63 (7.91)	Shale, dark-gray, sandy, with sparse siderite nodules, plant impressions.
227.63-228.08 (0.45)	Shale, dark-gray.
<b>Cored: 228.20-237.70, Recovered: 9.87.</b>	
228.08-230.22 (2.14)	Shale, dark-gray, with plant impressions and siderite nodules; coal streak at 229.50.
230.22-230.93 (0.71)	Coal, bright.
230.93-237.95 (7.02)	Sandstone, medium-gray, fine-grained, with plant fossils.
<b>Cored: 237.70-247.66, Recovered: 9.74.</b>	
237.95-244.25 (6.30)	Sandstone, medium- to light-gray, fine-grained, with plant fossils,

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244.25-247.69 (0.44)

burrows, some siderite at base and 1/4" coal streak at 243.80, bright, pyritic.

Shale, dark-gray, with light-gray, fine-grained sandstone.

**Cored: 247.66-250.05, Recovered: 2.26.**

247.69-249.95 (2.26)

Shale, dark-gray, with medium-gray, fine-grained sandstone.

**Total Depth: 250.05.**

**Western Kentucky Stratigraphic Test Hole Gil 5, Ohio County, Horton Quadrangle, Carter coordinate location 6-K-33, 2050 FSL 1035 FWL, Elevation: 413.00, Total Depth: 620.52.**

Interval (Feet)	Description
<b>Cored: 16.70-17.50, Recovered: 0.85.</b> 16.70-17.55 (0.85)	Sandstone, medium-gray, fine-grained.
<b>Cored: 17.50-27.50, Recovered: 9.97.</b> 17.50-27.47 (9.97)	Sandstone, medium-gray, fine-grained, micaceous, sideritic.
<b>Cored: 27.50-37.50, Recovered: 10.08.</b> 27.50-37.01 (9.51)	Sandstone, medium- to light-gray, fine-grained, low-angle cross-bedding.
37.01-37.07 (0.06)	Siltstone, dark-gray.
37.07-37.58 (0.51)	Sandstone, light-gray, medium-grained, micaceous, friable, siltstone layers.
<b>Cored: 37.50-47.50, Recovered: 9.99.</b> 37.58-38.12 (0.62)	Sandstone, light-gray, medium-grained, micaceous.
38.12-38.95 (0.83)	Sandstone, light-gray, fine-grained, laminated with dark-gray shale.
38.95-47.49 (8.54)	Sandstone, light-gray, medium-grained, micaceous, with dark-gray shale partings, each 0.20' thick.
<b>Cored: 47.50-57.50, Recovered: 10.02.</b> 47.50-57.52 (10.02)	Sandstone, medium- to dark-gray, medium-grained, crossbedded, micaceous, shale layers.
<b>Cored: 57.50-67.50, Recovered: 9.88.</b> 57.50-57.66 (0.16)	Sandstone, medium-gray, coarse-grained, micaceous, with claystone interbeds.
57.66-58.09 (0.43)	Shale, dark-gray, interbedded with sandstone, medium-gray, very fine-grained.
58.09-62.39 (4.30)	Sandstone, light-gray to light-green, medium-grained, micaceous, friable, with claystone clasts and siderite nodules.
62.39-63.14 (0.75)	Coal, bright, soft, pyritic.
63.14-63.51 (0.37)	Sandstone, coarse-grained, medium-gray, micaceous, and green claystone.
63.51-63.81 (0.30)	Conglomerate.
63.81-67.38 (3.57)	Sandstone, light-gray, fine-grained, micaceous, shale layers.
<b>Cored: 67.50-77.50, Recovered: 9.94.</b> 67.50-77.44 (9.94)	Sandstone, light-gray, fine-grained, micaceous, shale layers, carbonaceous material.
<b>Cored: 77.50-87.45, Recovered: 9.97.</b> 77.50-87.47 (9.97)	As above.
<b>Cored: 87.45-97.45, Recovered: 9.37.</b> 87.45-92.85 (5.40)	As above, becoming sideritic toward base.
92.85-94.20 (1.35)	Shale, medium-gray, silty.
94.20-96.82 (2.62)	Shale, dark-gray.

**Cored: 97.45-107.45, Recovered: 10.01.**

97.45-97.51 (0.06)  
97.51-107.46 (9.95)

Shale, dark-gray.  
Sandstone, medium-gray, medium-grained, micaceous, dark-gray shale layers.

**Cored: 107.45-117.43, Recovered: 9.88.**

107.45-117.3 (9.88)

As above.

**Cored: 117.43-127.77, Recovered: 10.04.**

117.43-127.47 (10.04)

As above.

**Cored: 127.77-137.78, Recovered: 10.07.**

127.77-137.84 (10.07)

As above, coal streaks.

**Cored: 137.63-147.60, Recovered: 8.62.**

137.63-137.94 (0.31)

Sandstone, medium-gray, medium-grained, porous, with coal streaks to 0.03'.

137.94-138.76 (0.82)

Coal, bright, banded, with thin fusain partings.

138.76-143.00 (4.24)

Clay shale, medium-gray, silty toward base.

143.00-146.25 (3.25)

Siltstone and shale interlaminated, medium-gray.

**Cored: 147.60-157.60, Recovered: 10.18.**

147.60-154.48 (6.88)

Siltstone and dark-gray shale interlaminated.

154.48-154.66 (0.18)

Sandstone, light-gray, fine-grained, with siderite nodules.

154.66-155.14 (0.48)

Siltstone and dark-gray shale, interlaminated.

155.14-156.25 (1.11)

Sandstone, light-gray, fine- to medium-grained, carbonaceous, on crossbed surfaces.

156.25-156.38 (0.13)

Coal, dull, with occasional vitrain bands, much fusain, pyritic.

156.38-157.29 (0.91)

Clay shale, nonbedded to poorly bedded at base, dark-gray, with many plant impressions at top.

157.29-157.78 (0.49)

Shale, dark-gray, with occasional silty layers.

**Cored: 157.60-167.60, Recovered: 10.11.**

157.60-165.33 (7.73)

Shale, dark-gray, silty layers, sparse siderite nodules.

165.33-166.53 (1.20)

Coal, bright to dull, with fusain partings and pyrite in nodules and on bedding.

166.53-166.68 (0.15)

Coal and black carbonaceous shale, interlaminated.

166.68-167.71 (0.03)

Clay shale, nonbedded, with plant impressions, slickensided.

**Cored: 167.60-177.60, Recovered: 10.07.**

167.60-169.68 (2.08)

Clay shale, as above, silty toward base, large sideritic shale nodule at base.

169.68-170.88 (1.20)

Siltstone, grades to silty shale, poorly bedded, grades to sandstone below.

170.88-171.76 (0.88)

Sandstone, medium-gray, poorly bedded, fine-grained, sideritic, grades down to siltstone below.

171.76-171.90 (0.14)

Siltstone, dark-gray, shaly, grades down to shale below.

171.90-174.54 (2.64)

Shale, dark-gray, carbonaceous toward base.

174.54-174.64 (0.10)

Shale, black, carbonaceous, slightly fissile.

174.64-174.69 (0.05)

Shale, black, highly carbonaceous, with coal streaks.

174.69-174.75 (0.06)

Shale, black, carbonaceous, gray, interlaminated.

174.75-177.67 (2.92)

Clay shale, medium-gray, carbonaceous, siderite nodules abundant near base.

**Cored: 177.60-187.60, Recovered: 10.38.**

177.60-183.96 (6.36)  
 183.96-185.10 (1.14)  
 185.10-186.18 (1.08)

186.18-186.35 (0.17)  
 186.34-186.68 (0.33)  
 186.68-187.40 (0.72)

187.40-187.98 (0.58)

Siltstone, medium-gray, interbedded with gray silty shale.

Shale, medium-gray, silty.

Sandstone, brown, very fine-grained, silty, highly sideritic matrix, hard.

Siltstone and silty shale, medium-gray.

Clay shale, medium-gray to green, abundant siltstone nodules.

Sandstone, light-gray, very fine-grained, silty, with claystone clasts.

Sandstone, as above.

**Cored: 187.60-197.60, Recovered: 10.28.**

187.60-189.04 (1.44)

189.04-189.24 (0.20)

189.24-189.70 (0.46)

189.70-190.70 (1.00)

190.70-190.73 (0.03)

190.73-190.79 (0.06)

190.79-190.85 (0.06)

190.85-190.93 (0.08)

190.93-190.96 (0.03)

190.96-191.10 (0.14)

191.10-191.14 (0.04)

191.14-191.35 (0.21)

191.35-191.62 (0.27)

191.62-191.88 (0.26)

191.88-192.75 (0.87)

192.75-193.35 (0.60)

193.35-194.20 (0.85)

194.20-195.78 (1.58)

195.78-196.67 (0.89)

196.67-197.88 (1.21)

Sandstone, as above, with light-gray claystone clasts.

Clay shale, light-greenish-gray, poorly bedded.

Shale, dark-gray.

Siltstone, light-gray interlaminated with dark-gray shale.

Shale, as above.

Siltstone, as above.

Shale, as above.

Siltstone, as above.

Shale, as above.

Siltstone, as above.

Shale, as above.

Siltstone, as above.

Siltstone and shale, as above, contorted bedding.

Siltstone, as above.

Shale and siltstone, as above, laminated to thinly bedded.

Siltstone, medium-gray, with shale laminations.

Siltstone and shale, laminated to thin-bedded.

Siltstone and shale, contorted laminations.

Siltstone, as above.

Siltstone, shaly, contorted.

**Cored: 197.60-207.47, Recovered: 10.05.**

197.60-198.20 (0.06)

198.20-199.45 (1.25)

199.45-200.67 (1.22)

200.67-204.04 (3.37)

204.04-207.65 (3.61)

As above.

Siltstone, light-gray, sparse gray shale laminations.

Shale, medium-gray, silty, contorted.

Shale and siltstone interlaminated.

Shale, dark-gray, with sparse silty laminations.

**Cored: 207.47-217.53, Recovered: 9.83.**

207.47-209.63 (2.16)

209.63-210.05 (0.42)

210.05-210.27 (0.22)

210.27-212.45 (2.18)

212.45-215.67 (3.22)

215.67-217.30 (1.63)

Shale, medium-gray to dark-gray at base, with sideritic shale lenses.

Shale, dark-gray and black carbonaceous, fissile, interlaminated (possible coal zone).

Shale, black, carbonaceous, interlaminated with shale, medium-gray, silty.

Shale, medium-gray, nonbedded, silty, with siderite nodules.

Shale, medium-dark-gray.

Shale, as above, with sparse siltstone laminations.

**Cored: 217.53-227.60, Recovered: 10.07.**

217.53-218.75 (1.22)

218.75-222.43 (3.68)

222.43-222.48 (0.05)

Shale, as above, darker and more carbonaceous toward base.

Shale, black, carbonaceous, fissile.

Shale, black, carbonaceous, with coal laminations.

222.48-222.53 (0.05)	Pyrite lens.
222.53-223.08 (0.55)	Coal, bright to dull, clean and hard.
223.08-224.60 (1.52)	Underclay, medium-gray, nonbedded, rooted at top, silty toward base.
224.60-227.60 (3.00)	Siltstone and shale, contorted laminations, sparse siderite nodules.
<b>Cored: 227.60-237.57, Recovered: 9.74.</b>	
229.60-236.24 (6.64)	Shale, medium-gray to medium-dark-gray, scattered carbonaceous laminations, and thin, even, silty laminations; grades to siltstone below.
236.24-236.61 (0.37)	Siltstone, grades to sandstone, gray, silty, with large claystone clasts (lag conglomerate).
236.61-237.34 (0.73)	Siltstone, medium-gray, very fine-grained, nonbedded, abundant plant impressions.
<b>Cored: 237.51-247.60, Recovered: 9.88.</b>	
237.51-238.16 (0.65)	As above, grades to siltstone below.
238.16-240.42 (2.26)	Siltstone, light-gray, wavy bedding, sparse shale laminations, base sharp.
240.42-243.33 (2.91)	Shale and siltstone, flaser bedding.
243.33-247.39 (4.06)	Shale, medium-dark-gray to dark-gray, fissile, with siderite lens.
<b>Cored: 247.60-257.60, Recovered: 10.02.</b>	
247.60-249.30 (1.70)	As above, grades to shale below.
249.30-250.60 (1.30)	Shale, black, carbonaceous, very fissile.
250.60-250.78 (0.18)	Shale, black, highly pyritic.
250.78-252.62 (1.84)	Coal, bright, banded.
252.62-253.08 (0.46)	Shale, black, carbonaceous, with numerous vitrain bands.
253.08-254.10 (1.02)	Siltstone, gray, nonbedded, rooted at top, grades to sandstone below.
254.10-257.62 (3.52)	Sandstone, medium-light-gray, fissile, silty, micaceous, abundant wavy shale laminations.
<b>Cored: 257.60-267.50, Recovered: 9.64.</b>	
257.60-260.38 (2.78)	As above, grades to siltstone, greenish-gray, contorted (soft sediment deformation), base sharp.
260.38-261.84 (1.46)	Shale, dark-gray, with wavy lamination of light-gray, calcareous sandstone; base gradational.
261.84-267.24 (5.40)	Shale, very dark-gray, fissile, carbonaceous; sparse siltstone laminations, with plant and animal fossils.
<b>Cored: 267.50-277.10, Recovered: 9.73.</b>	
267.50-277.23 (9.73)	As above.
<b>Cored: 277.10-286.90, Recovered: 10.86.</b>	
277.10-278.45 (1.35)	As above.
278.45-278.98 (0.53)	Coal, hard, bright.
278.98-279.00 (0.02)	Fusain and coal.
279.00-279.10 (0.10)	Shale, dark-gray, carbonaceous, siliceous, grades to underclay below.
279.10-280.13 (1.03)	Underclay, medium-gray.
280.13-283.01 (2.88)	Shale, medium-gray, poorly bedded, grades to shale below.
283.01-287.96 (4.95)	Shale, medium-dark-gray, fissile.

**Cored: 286.90-296.05, Recovered: 10.05.**

286.90-293.16 (6.26)

293.16-294.00 (0.84)

294.00-296.30 (2.30)

296.30-296.95 (0.65)

As above, becoming darker, and containing sparse siderite nodules toward base; grades to transition zone below.

Transition zone, black shale, with sandstone and siderite clasts; grades down to siltstone with disseminated carbonaceous material.

Siltstone, medium-gray, contorted bedding, base irregular.

Sandstone, medium-gray, silty, calcareous.

**Cored: 296.05-307.17, Recovered: 10.02.**

296.05-297.60 (1.55)

297.60-299.90 (2.30)

299.90-304.35 (4.45)

304.35-306.07 (1.72)

As above, grades to siltstone below.

Siltstone, light-gray, and shale, dark-gray flaser bedding; grades to shale below.

Shale, dark-gray, with siltstone laminations, as above, grades to shale below.

Shale, medium-gray, fissile.

**Cored: 307.17-316.73, Recovered: 9.60.**

307.17-316.77 (9.60)

Shale, dark-gray, fissile.

**Cored: 316.73-326.45, Recovered: 9.69.**

316.73-326.42 (9.69)

Shale, dark-gray, fissile, sparse silty lamination.

**Cored: 326.45-337.08, Recovered: 9.71.**

326.45-332.25 (5.80)

332.25-332.30 (0.05)

332.30-332.38 (0.08)

332.38-336.16 (3.78)

Shale, dark-gray, fissile.

Clay shale, dark-gray, plastic, nonbedded.

Limestone, gray to dark-gray, very argillaceous, with shale lamination.

Shale, dark-gray, fissile, sparse silty lamination.

**Cored: 337.08-347.60, Recovered: 9.25.**

337.08-346.33 (9.25)

Shale, dark-gray, fissile, with siderite nodules, silty toward base.

**Cored: 347.60-356.80, Recovered: 9.20.**

347.60-359.14 (9.20)

As above.

**Cored: 356.80-366.83, Recovered: 9.84.**

356.80-358.04 (1.24)

358.04-361.95 (3.91)

361.95-365.24 (3.29)

365.24-366.64 (1.40)

As above, grades to shale below.

Shale, dark-gray, silty, even bedding, grades to shale below.

Shale, medium-gray to medium-dark-gray, silty to fine-grained.

Siltstone, light-gray to green, wavy shale lamination.

**Cored: 366.83-376.88, Recovered: 10.01.**

366.83-376.84 (10.01)

Siltstone, gray, firm, even bedding; coarser and with wavy laminations toward base.

**Cored: 376.88-386.75, Recovered: 10.02.**

376.88-377.13 (0.25)

377.13-377.29 (0.16)

377.29-377.34 (0.05)

377.34-379.85 (2.51)

As above, base sharp and angular.

Shale, black, fissile, highly carbonaceous.

Bone coal, core broken.

Underclay, medium-dark-gray, nonbedded to poorly bedded; plant impressions, grades to shale below.

Shale, medium-dark-gray, firm, moderately fissile, base sharp.

Sandstone, fine, silty, medium-gray, with dark-gray siltstone

379.85-381.55 (1.70)

381.55-386.90 (5.35)

**Cored: 386.75-396.67, Recovered: 10.00.**

386.75-389.08 (2.28)

389.03-390.21 (1.18)

390.21-396.45 (6.24)

396.45-396.75 (0.30)

interbeds; abundant wavy carbonaceous lamination.

Siltstone, medium-gray, with thin beds of sandstone, as above; grades to siltstone and sandstone below.

Siltstone and sandstone, as above; abundant carbonaceous laminations, base sharp.

Sandstone, light-gray, medium-grained, clean, massive, some low-angle crossbedding, grades to sandstone below.

Sandstone, light-gray, fissile, with abundant wavy carbonaceous laminations.

**Cored: 396.67-406.88, Recovered: 9.79.**

396.67-406.46 (9.79)

As above, grading down to shale, medium-dark-gray, silty, with lamination of sandstone, as above.

**Cored: 406.88-416.58, Recovered: 10.01.**

406.88-407.57 (0.69)

407.57-416.89 (9.32)

Shale and silty sandstone, as above, base sharp.

Sandstone, light-gray, fine- to medium-grained, massive, disseminated carbonaceous material, clean.

**Cored: 416.58-426.58, Recovered: 9.95.**

416.58-418.88 (2.30)

418.88-419.56 (0.68)

419.56-421.65 (2.08)

421.64-426.53 (4.89)

As above, base sharp.

Sandstone, light-gray, very fine-grained, silty, abundant wavy laminations of black carbonaceous shale.

Sandstone, very fine-grained, silty, greenish-gray, wavy to contorted bedding, calcareous toward base.

Siltstone, light-gray, interlaminated with shale, dark-gray, wavy.

**Cored: 426.58-437.60, Recovered: 9.87.**

426.58-427.13 (0.54)

427.12-433.75 (6.63)

433.75-436.45 (2.70)

As above.

Sandstone, fine-grained, light-gray, with laminations of dark-gray shale, sparse siderite nodules.

Shale, dark-gray, with lamination of light-gray siltstone.

**\*Cored: 437.60-447.60, Recovered: 7.75.**

437.60-441.00 (3.40)

441.00-441.15 (0.15)

441.15-441.86 (0.71)

441.86-442.07 (0.21)

442.07-442.25 (0.18)

442.25-442.52 (0.27)

442.52-442.55 (0.03)

442.55-442.70 (0.15)

442.70-443.68 (0.98)

443.68-445.35 (1.67)

Siltstone and shale interlaminated, as above, highly contorted.

Clay shale, medium- to dark-gray, with coal fragments (looks out of place).

Siltstone, light-gray, with dark-gray shale laminations.

Shale, dark-gray to black, carbonaceous.

Coal and black carbonaceous shale, broken fragments.

Shale, dark-gray to black, silty.

Coal and black shale.

Shale, black, carbonaceous, with sparse vitrain bands.

Underclay, dark-gray, carbonaceous, nonbedded, plastic.

Shale, dark-gray, silty, nonbedded to poorly bedded at base, sparse siderite nodules.

**Cored: 447.60-457.52, Recovered: 9.85.**

447.60-454.95 (7.35)

Shale and siltstone, interlaminated, poorly bedded at top, more

\*Units in this interval were recored—some core lost.

- 454.95-457.45 (2.50)  
 silty toward base.  
 Sandstone, light-gray, fine-grained, dark-gray shale laminations.
- Cored: 457.52-467.53, Recovered: 10.06.**  
 457.52-467.58 (10.06)  
 Sandstone, fine-grained, light-gray, crossbedded, sparse dark-gray shale laminations.
- Cored: 467.53-477.53, Recovered: 10.14.**  
 467.53-472.05 (4.52)  
 Sandstone, as above, with shale laminations more abundant downward.  
 472.05-473.33 (1.28)  
 Sandstone and shale interlaminated, as above; shale is dark-gray to black.  
 473.33-473.83 (0.50)  
 Sandstone, as above.  
 473.83-473.99 (0.16)  
 Shale and sandstone, as above, laminated.  
 473.99-474.63 (0.64)  
 Sandstone, as above.  
 474.63-476.80 (2.17)  
 Sandstone and shale, laminated, as above.  
 476.80-477.67 (0.87)  
 Sandstone, as above, with dark-gray shale laminations.
- Cored: 477.53-487.53, Recovered: 10.07.**  
 477.53-478.40 (0.87)  
 Sandstone and shale, laminated, as above.  
 478.40-487.60 (9.20)  
 Sandstone, gray, fine- to very fine-grained, with dark-gray shale laminations.
- Cored: 487.53-497.53, Recovered: 10.00.**  
 487.53-497.53 (10.00)  
 Sandstone, as above.
- Cored: 497.53-507.53, Recovered: 10.20.**  
 497.53-505.54 (8.01)  
 Sandstone, interlaminated, and dark-gray shale.  
 505.54-507.47 (1.93)  
 Shale, dark-gray, with siltstone laminations.  
 507.47-507.73 (0.26)  
 Sandstone, as above, with dark-gray shale laminations.
- Cored: 507.53-517.53, Recovered: 9.95.**  
 507.53-517.48 (9.95)  
 Shale, dark-gray, with sparse siltstone lamination and pod.
- Cored: 517.53-527.53, Recovered: 10.00.**  
 517.53-527.53 (10.00)  
 As above.
- Cored: 527.53-537.53, Recovered: 9.82.**  
 527.53-532.43 (4.90)  
 As above, with siderite nodules from 530.75-530.85; becoming darker toward base.  
 532.43-532.78 (0.35)  
 Coal, clean, bright-banded, gypsum on cleat faces.  
 532.78-532.87 (0.09)  
 Shale, interlaminated, black, carbonaceous, with vitrain laminations.  
 532.87-533.35 (0.48)  
 Siltstone, dark-gray, nonbedded, bioturbated (seat rock).  
 533.35-537.35 (4.00)  
 Siltstone, medium-gray, firm, nonbedded at top, shaly and poorly bedded at base.
- Cored: 537.53-547.53, Recovered: 10.00.**  
 537.43-547.43 (10.00)  
 Shale, dark-gray, with occasional lenses and laminations of siltstone.
- Cored: 547.53-557.53, Recovered: 9.95.**  
 547.53-548.65 (1.12)  
 As above.  
 548.65-549.88 (1.23)  
 Siltstone and dark-gray shale, very contorted.  
 549.88-557.48 (7.60)  
 Shale, dark-gray, moderately fissile.

**Cored: 557.53-567.53, Recovered: 9.89.**

557.53-563.58 (6.05)  
 563.58-563.86 (0.28)  
 563.86-564.17 (0.31)  
 564.17-564.35 (0.18)  
 564.35-565.00 (0.65)  
 565.00-567.42 (2.42)

Shale, dark-gray, sparse siderite laminations.  
 Shale, black, highly carbonaceous.  
 Coal, bright-banded.  
 Shale (clay-shale), black, highly carbonaceous.  
 Shale, dark-gray, nonbedded, silty toward base.  
 Siltstone, shaly, poorly bedded.

**Cored: 567.53-577.53, Recovered: 10.02.**

567.53-577.55 (10.02)

Siltstone and shale mixture, poorly bedded at top, becoming more evenly bedded toward base.

**Cored: 577.53-587.53, Recovered: 10.10.**

577.53-587.63 (10.10)

Shale, gray, very silty.

**Cored: 587.53-597.53, Recovered: 10.10.**

587.53-597.63 (10.10)

As above, becoming bedded toward base.

**Cored: 597.53-607.53, Recovered: 10.02.**

597.53-599.56 (2.03)

599.56-603.95 (4.39)

603.95-605.18 (1.23)

605.18-605.50 (0.32)

605.50-607.55 (2.05)

Sandstone, light-gray, very fine-grained, with dark-gray shale laminations.  
 Sandstone, light-gray, fine-grained, abundant dark-gray shale laminations.  
 Shale and sandstone, laminated, as above.  
 Sandstone, as above.  
 Sandstone, siltstone, and shale interlaminated.

**Cored: 607.53-617.53, Recovered: 9.95.**

607.53-608.05 (0.52)

608.05-612.53 (4.48)

612.53-617.48 (4.95)

As above, contorted bedding.  
 Shale, silty, dark-gray.  
 Shale, black, carbonaceous, nonbedded, slickensided, sparse siderite nodules.

**Cored: 617.53-620.11, Recovered: 3.00.**

617.53-620.52 (2.99)

Shale, black as above.

**Total Depth: 620.20 by rod measurement.**

**Western Kentucky Stratigraphic Test Hole Gil 6, Ohio County, Pleasant Ridge Quadrangle, Carter coordinate location 24-N-32, 850 FNL 600 FEL, Elevation: 586.00, Total Depth: 501.67.**

Interval (Feet)	Description
<b>Cored: 30.00-40.00, Recovered: 9.30.</b> 30.00-40.00 (10.00)	Shale, dark-gray, laminated, with sandstone, light-gray, fine-grained; sandstone calcareous toward base.
<b>Cored: 40.00-50.00, Recovered: 10.00.</b> 40.00-43.71 (3.71)	Shale, dark-gray, interlaminated, with sandstone, light-gray, calcareous, fine-grained.
43.71-46.05 (2.34)	Limestone, light-gray, coarsely crystalline, fossiliferous.
46.05-46.59 (0.54)	Shale, dark-gray, interlaminated with sandstone, light-gray, fine-grained, calcareous, sharp contact.
46.59-47.22 (0.63)	Shale, dark-gray.
47.22-48.65 (1.43)	Shale, dark-gray, interlaminated with sandstone, medium-gray, fine-grained, micaceous, noncalcareous.
48.65-50.00 (1.35)	Sandstone, fine-grained, light-gray, with shale laminations.
<b>Cored: 50.00-60.00, Recovered: 9.84.</b> 50.00-58.11 (8.11)	Sandstone, fine-grained, light-gray, with shale laminations.
58.11-58.34 (0.23)	Clay, medium-gray, plastic.
58.34-59.57 (1.23)	Sandstone, light-gray, fine-grained, with shale laminations.
59.57-59.84 (0.27)	Sandstone, light-gray, medium-grained, with shale, dark-gray, claystone, medium-gray, plastic.
<b>Cored: 60.00-70.00, Recovered: 9.99.</b> 60.00-60.83 (0.83)	Sandstone, medium-brown, medium-grained, micaceous, plant fossils, interlaminated, with dark-gray shale, light-brown claystone clasts, some carbonaceous material.
60.83-61.74 (0.91)	Sandstone, medium-gray, with iron staining, medium-grained, micaceous.
61.74-62.50 (0.76)	Shale, dark-gray.
62.50-63.64 (1.14)	Sandstone, coarse-grained, tan, micaceous, claystone clasts, limonite nodules.
63.64-69.99 (6.35)	Sandstone, light-brown, medium-grained, micaceous, limonite replacement of claystone clasts.
<b>Cored: 70.00-80.00, Recovered: 9.91.</b> 70.00-79.91 (9.91)	Sandstone, tan to red, medium-grained, micaceous, limonite nodules.
<b>Cored: 80.00-90.00, Recovered: 9.93.</b> 80.00-89.93 (9.93)	Sandstone, tan to red, medium-grained, micaceous, with fewer limonite nodules.
<b>Cored: 90.00-100.00, Recovered: 10.00.</b> 90.00-100.00 (10.00)	Sandstone, light-gray to dark-brown, medium-grained, limonitic, claystone clasts.
100.99-102.66 (2.66)	Sandstone, light-gray to dark-brown, medium-grained, limonitic, claystone clasts.
<b>Cored: 100.00-110.00, Recovered: 9.86.</b> 100.99-102.66 (2.66)	Sandstone, tan, medium-grained, limonitic, micaceous, car-

102.66-106.01 (3.35)	bonaceous material.
106.01-107.62 (1.61)	Sandstone, tan to dark-brown, medium-grained, limonitic, micaceous, with dark-gray shale laminations.
107.62-109.86 (2.24)	Sandstone, light-gray, medium-grained, micaceous, with dark-gray shale laminations.
<b>Cored: 110.00-120.00, Recovered: 10.00.</b>	
110.00-120.00 (10.00)	Sandstone, light-gray, medium-grained, micaceous, with shale laminations, dark-gray, and light-gray claystone clasts.
<b>Cored: 120.00-130.00, Recovered: 9.96.</b>	
120.00-128.82 (8.82)	Sandstone, light-gray, medium-grained, micaceous, carbonaceous material, claystone clasts.
128.82-129.02 (0.20)	Clay, dark-gray, plastic.
129.02-129.96 (0.94)	Sandstone, light-gray, medium-grained, micaceous.
<b>Cored: 130.00-140.00, Recovered: 10.12.</b>	
130.00-133.39 (3.39)	Sandstone, light-gray, medium-grained, friable, micaceous, calcareous, siderite nodules, carbonaceous material.
133.39-135.74 (2.35)	Sandstone, light-gray, medium-grained, micaceous, interlaminated with dark-gray shale.
135.74-140.12 (4.38)	Sandstone, light-gray, medium-grained, micaceous, interlaminated with dark-gray shale.
<b>Cored: 140.00-150.00, Recovered: 10.08.</b>	
140.00-145.45 (5.45)	Sandstone, light-gray, medium-grained, micaceous, with dark-gray shale laminations.
145.45-150.08 (4.63)	Sandstone, light-gray, medium-grained, micaceous, with fewer shale laminations.
<b>Cored: 150.00-160.00, Recovered: 9.79.</b>	
150.00-151.50 (1.50)	Shale, dark-gray, with light-gray, fine-grained sandstone streaks.
151.50-155.53 (4.03)	Shale, dark-gray, with sandstone, light-gray, fine-grained, bioturbated.
155.53-159.79 (4.26)	Shale, dark-gray, silty.
<b>Cored: 160.00-170.00, Recovered: 10.10.</b>	
160.00-162.48 (2.48)	Shale, dark-gray, silty, siderite nodules.
162.48-162.58 (0.10)	Shale, dark-gray, coal streaks, pyrite.
162.58-164.52 (1.94)	Shale, medium-gray, slightly silty at top, becoming more silty at bottom.
164.52-170.10 (5.58)	Sandstone, light-gray, fine-grained, with shale laminations.
<b>Cored: 170.00-180.00, Recovered: 9.99.</b>	
170.00-171.01 (1.01)	Sandstone, light-gray, fine-grained, micaceous, carbonaceous material, calcareous.
171.01-172.39 (1.38)	Sandstone, light-gray, fine-grained, micaceous, carbonaceous material, noncalcareous.
172.39-179.99 (7.60)	Sandstone, light-gray, fine-grained, micaceous, carbonaceous material with green shale laminations.
<b>Cored: 180.00-190.00, Recovered: 9.95.</b>	
180.00-189.95 (9.95)	Sandstone, medium-gray, fine-grained, laminated, with dark-gray shale.

**Cored: 190.00-200.00, Recovered: 10.06.**

190.00-192.98 (2.98)

192.98-197.46 (4.48)

197.46-200.06 (2.60)

Sandstone, medium-gray, fine-grained, laminated, with dark-gray shale.

Clay shale, medium-gray, with black dolomitic nodules.

Sandstone, light-gray, fine-grained, laminated, with dark-gray shale.

**Cored: 200.00-210.00, Recovered: 10.00.**

200.00-206.97 (6.97)

206.97-210.00 (3.03)

Shale, dark-gray, sandy.

Shale, dark-gray, with light-gray sandstone, fine-grained, siderite nodules.

**Cored: 210.00-220.00, Recovered: 10.07.**

210.00-220.00 (10.00)

Shale, dark-gray, with light-gray sandstone, fine-grained.

**Cored: 220.00-230.00, Recovered: 9.47.**

220.00-228.14 (8.14)

228.14-228.18 (0.04)

228.18-228.41 (0.23)

228.41-229.47 (1.06)

Sandstone, light-gray, fine-grained, laminated with dark-gray shale.

Shale, silty, dark-gray, with carbonaceous material.

Coal, bony.

Shale, dark-gray, vitrain laminations.

**Cored: 230.00-240.00, Recovered: 9.95.**

230.00-231.04 (1.04)

231.04-232.27 (1.23)

232.27-239.95 (7.68)

Coal, bony.

Coal, bright-banded, pyritic.

Siltstone, light-gray, carbonaceous material.

**Cored: 240.00-250.00, Recovered: 10.10.**

240.00-245.99 (5.99)

245.99-249.05 (3.06)

249.05-250.10 (1.05)

Sandstone, bioturbated, medium-gray, fine-grained, carbonaceous material.

Shale, dark-gray.

Shale, dark-gray, sandy.

**Cored: 250.00-260.00, Recovered: 9.77.**

250.00-259.77 (9.77)

Shale, dark-gray, with siderite nodules.

**Cored: 260.00-270.00, Recovered: 9.94.**

260.00-260.07 (0.07)

260.07-269.94 (9.87)

Siderite layer.

Shale, dark-gray, with siderite nodules abundant toward base.

**Cored: 270.00-280.00, Recovered: 10.00.**

270.00-273.87 (3.87)

273.87-280.00 (6.13)

Shale, black, with clay and siderite nodules grading downward to a dark-gray shale, micaceous.

Shale, dark-gray, micaceous, grading into sandy shale at bottom.

**Cored: 280.00-290.00, Recovered: 10.02.**

280.00-286.30 (6.30)

286.30-287.15 (0.85)

287.15-290.02 (2.87)

Sandstone, medium-gray, fine-grained, micaceous, very shaly.

Coal, bright, hard, pyritic.

Shale, black, with vitrain bands, pyritic, some bone coal.

**Cored: 290.00-300.00, Recovered: 9.99.**

290.00-291.30 (1.30)

291.30-291.74 (0.44)

291.74-294.29 (2.55)

294.29-299.34 (5.05)

299.34-299.99 (0.65)

Coal, bright, hard, pyritic.

Shale, black, vitrain laminations.

Shale, medium-gray, with plant impressions, very sandy.

Sandstone, medium-gray, fine-grained, micaceous, shaly.

Shale, medium-gray, slightly sandy, micaceous.

**Cored: 300.00-310.00, Recovered: 10.05.**

300.00-310.05 (10.05)

Sandstone, medium-gray, fine- to medium-grained, micaceous, sideritic, carbonaceous.

**Cored: 310.00-320.00, Recovered: 9.94.**

310.00-311.23 (1.23)

Sandstone, medium-gray, fine-grained, micaceous, medium-gray shale laminae.

311.23-312.36 (1.13)

Sandstone, light-gray, medium-grained, laminated, with shale, coal streaks, sideritic.

312.36-314.81 (2.45)

Lag conglomerate, sideritic.

314.81-316.63 (1.82)

Shale, dark-gray.

316.63-319.94 (3.31)

Shale, black, with sandstone, light-gray, fine-grained, sideritic layers.

**Cored: 320.00-330.00, Recovered: 9.95.**

320.00-321.99 (1.99)

Shale, black, with light-gray, fine-grained sandstone laminations and siderite layers.

321.99-326.99 (5.00)

Sandstone, medium-gray, fine-grained, micaceous, with black shale laminations, sideritic.

326.99-329.95 (2.96)

Shale, black, slightly sideritic.

**Cored: 330.00-340.00, Recovered: 10.02.**

330.00-331.94 (1.94)

Shale, dark-gray, with claystone.

331.94-332.69 (0.75)

Shale, dark-gray, with medium-gray, fine-grained sandstone laminations.

332.69-332.85 (0.16)

Siderite nodule.

332.85-340.02 (7.17)

Shale, dark-gray, with medium-gray, fine-grained sandstone laminations.

**Cored: 340.00-350.00, Recovered: 10.04.**

340.00-350.06 (10.04)

Shale, dark-gray, with medium-gray, fine-grained sandstone laminations.

**Cored: 350.00-360.00, Recovered: 10.05.**

350.00-360.05 (10.05)

Shale, dark-gray, with medium-gray, fine-grained calcareous sandstone laminations.

**Cored: 360.00-370.00, Recovered: 10.05.**

360.00-370.05 (10.05)

Shale, dark-gray, with medium-gray, fine-grained calcareous sandstone laminations.

**Cored: 370.00-380.00, Recovered: 10.17.**

370.00-380.17 (10.17)

Shale, dark-gray, with medium-gray, fine-grained calcareous sandstone laminations, more sandy and more sideritic toward base.

**Cored: 380.00-390.00, Recovered: 10.14.**

380.00-380.36 (0.36)

Sandstone, shaly, dark-gray, fine-grained, highly sideritic.

380.36-383.06 (2.70)

Shale, green, with light-gray, fine-grained sandstone laminations.

383.06-390.14 (7.08)

Shale, dark-gray, medium-gray, fine-grained sandstone, slightly sideritic, laminations.

**Cored: 390.00-400.00, Recovered: 10.16.**

390.00-396.07 (6.07)

Shale, dark-gray; light-gray, fine-grained, slightly calcareous sandstone laminations.

396.07-396.74 (0.67)

Coal, hard, bright, pyritic.

396.74-397.90 (1.16)

Shale, dark-gray, plant impressions, sparse siderite nodules.

397.90-400.16 (2.26)

Sandstone, light-gray, fine-grained, slightly calcareous at top and very calcareous toward base; interlaminated with dark-gray shale.

**Cored: 400.00-410.00, Recovered: 9.30.**

400.00-400.97 (0.97)

Sandstone, light-gray, fine-grained, very calcareous, sparse carbonaceous streaks.

400.97-404.44 (3.47)

Shale, dark-gray, sandstone laminations, light-gray, fine-grained.

404.44-404.89 (0.45)

Shale, dark-gray, small bands of vitrain, plant impressions, some pyrite.

404.89-405.09 (0.20)

Coal, fusain, dull, pyritic.

405.09-406.57 (1.48)

Sandstone, fine-grained, dark- to medium-gray, very much carbonaceous material, micaceous, very shaly.

406.57-409.30 (2.73)

Shale, medium-gray, plant impressions.

**Cored: 410.00-420.00, Recovered: 10.00?**

410.00-413.12 (3.12)

Shale, medium-gray, bottom 0.10' of shale consists of fossils and is calcareous.

413.12-414.32 (1.20)

Shale, dark-gray, fossiliferous, calcareous.

414.32-417.85 (3.53)

Shale, dark-gray, noncalcareous.

417.85-419.25 (1.40)

Shale, dark-gray, fossiliferous.

419.25-420.54 (1.29)

Shale, dark-gray, highly fossiliferous.

**Cored: 420.00-430.00, Recovered: 9.67.**

420.00-420.41 (0.41)

Clay shale, very calcareous.

420.41-420.67 (0.26)

Clay shales, interlaminated with limestone, highly fossiliferous.

420.67-426.41 (9.00)

Limestone, light- to dark-gray, biosparite.

**Cored: 430.00-440.00, Recovered: 10.02.**

430.00-440.20 (10.02)

As above.

**Cored: 440.00-450.00, Recovered: 10.01.**

440.00-446.00 (6.00)

Limestone, biosparite, with green, calcareous shale laminations.

446.00-450.01 (4.01)

Shale, green, calcareous, fossiliferous.

**Cored: 450.00-460.00, Recovered: 10.12.**

450.00-451.82 (1.82)

Shale, dark-green, slightly calcareous, with lime nodules, medium-gray, very calcareous nodules.

451.82-453.35 (1.53)

Shale, dark-red, slightly calcareous.

453.35-454.18 (0.83)

Shale, dark-green, slightly fossiliferous.

454.18-454.31 (0.13)

Limestone, dark-gray, fossil hash.

454.31-456.16 (1.85)

Shale, dark-green, slightly calcareous.

456.16-460.12 (3.96)

Limestone, biosparite, medium-gray, large brachiopods, more shaly to base, shale, dark-green.

**Cored: 460.00-470.00, Recovered: 10.17.**

460.00-460.17 (0.17)

Shale, dark-gray, very calcareous.

460.17-461.02 (0.85)

Limestone, medium-gray, crystalline, very fossiliferous, with brachiopods, interlaminated with dark-gray shale.

461.02-462.91 (1.89)

Shale, dark-gray, containing layers of fossil hash.

462.91-464.57 (1.66)

Shale, dark-gray, sparsely fossiliferous.

464.57-464.97 (0.40)  
464.97-465.97 (1.00)

465.97-466.09 (0.12)  
466.09-467.08 (0.99)

467.08-468.15 (1.07)

468.15-468.93 (0.78)  
468.93-470.17 (1.24)

**Cored: 470.00-480.00, Recovered: 10.00.**  
470.00-472.02 (2.02)

**Cored: 472.02-483.86, Recovered: 11.84.**

472.02-474.12 (2.10)  
474.12-475.90 (1.78)  
475.90-477.20 (1.30)  
477.20-477.65 (0.45)  
477.65-479.90 (2.25)  
479.90-481.60 (1.70)  
481.60-482.04 (0.44)  
482.04-483.86 (1.82)

**Cored: 483.86-496.98, Recovered: 13.12.**  
483.86-488.55 (4.69)  
488.55-496.98 (8.43)

**Cored: 496.98-501.67, Recovered: 4.69.**  
496.98-498.17 (1.19)  
498.17-498.69 (0.52)  
498.69-501.67 (2.98)

**Total Depth: 501.67.**

Shale, medium-green.  
Limestone, medium-gray, medium-crystalline, with green shale laminations.  
Shale, medium-green.  
Limestone, medium-gray, medium-crystalline, with green shale laminations.  
Shale, medium-green, fossiliferous, calcareous, becoming more sandy toward base.  
Sandstone, green, fine-grained, shaly.  
Silty shale, medium-gray.

Shale and sandstone, interlaminated; sandstone, medium-gray, fine-grained; shale, medium-green.

Shale, dark-gray, silty, poorly bedded.  
Shale, dark-gray, fissile.  
Shale, dark-gray, silty, poorly bedded, grades to calcareous shale.  
As above, calcareous.  
Shale, medium-gray, contorted to indistinct bedding.  
Shale, dark-gray, with sparse siltstone laminae.  
Shale, dull-green, poorly bedded.  
Shale, dark-gray, poorly bedded, not silty.

Shale, dark-gray, poorly to moderately fissile.  
Shale, dark-gray, soft, poorly bedded.

Shale, dark-gray, moderately fissile.  
Dolomite, buff, finely crystalline.  
Shale, medium-gray, dolomitic.

**Western Kentucky Stratigraphic Test Hole Gil 7, Ohio County, Horton Quadrangle, Carter coordinate location 21-L-32, 2050 FNL 1675 FWL, Elevation: 436.00, Total Depth: 300.11.**

Interval (Feet)	Description
<b>Cored: 22.00-32.00, Recovered: 9.94.</b>	
22.00-29.48 (7.48)	Shale, highly weathered, gray to olive, semi-plastic, less weathered at base.
29.48-30.00 (0.52)	Shale, medium-gray, soft, base sharp and irregular.
30.00-30.72 (0.72)	Clay shale, brownish-gray, silty, siliceous, possibly sideritic, base gradational.
30.72-31.52 (0.80)	Siltstone, brownish-gray, calcareous, wavy bedding, bioturbated in part.
31.52-31.94 (0.42)	Shale, medium-gray, interlaminated with siltstone.
<b>Cored: 32.00-42.00, Recovered: 9.89.</b>	
32.00-34.36 (2.36)	Shale, greenish-gray, interlaminated with medium-light-gray siltstone, grades downward to shale below.
34.36-41.89 (7.53)	Shale, very dark-gray, interbedded with very fine-grained sandstone, light-gray, flaser bedding, bioturbated.
<b>Cored: 42.00-52.00, Recovered: 9.99.</b>	
42.00-45.79 (3.79)	As above.
45.79-49.20 (3.41)	Sandstone and shale, interbedded, as above (flaser bedding), carbonaceous, fissile; sandstone, light-gray, fine-grained, micaceous, with light-brown siderite nodules, coal laminations abundant, poorly sorted, base sharp.
49.20-51.99 (2.79)	Sandstone, light-gray, fine-grained, upper 3.00' with siderite nodules, scattered carbonaceous plant remains, micaceous, low-angle crossbedding.
<b>Cored: 52.00-62.00, Recovered: 10.17.</b>	
52.00-53.67 (1.67)	Sandstone as above, with more abundant carbonaceous laminations, sharp basal contact.
53.67-58.49 (4.82)	Sandstone, very fine-grained, light-gray, interlaminated with carbonaceous shale and siderite nodules and layers up to 0.50' thick, micaceous, crossbedded, sharp basal contact.
58.49-60.88 (2.39)	Sandstone, very fine, light as above; carbonaceous shale bands as much as 0.04' thick.
60.88-62.17 (1.29)	Sandstone, light-gray, interbedded with dark-gray carbonaceous shale as much as 0.05' thick; three thin beds of banded coal up to 1.00' thick; nodules and layers of siderite abundant, abundant disseminated carbonaceous material.
<b>Cored: 62.00-72.00, Recovered: 9.88.</b>	
62.00-62.25 (0.25)	Sandstone, as in interval 58.49-60.88, basal contact sharp.
62.25-62.97 (0.72)	Sandstone and lag conglomerate, coal clasts and laminations; claystone clasts, siderite layers and nodules, sandstone, micaceous, basal contact sharp.
62.97-71.88 (8.91)	Shale, medium-dark-gray, carbonaceous plant material on bedding planes.
<b>Cored: 72.00-81.90, Recovered: 9.58.</b>	
72.00-74.37 (2.37)	Shale, gray, noncalcareous.

74.37-76.27 (1.90)  
76.27-81.58 (5.31)

Coal, bright- to dull-banded.

Clay shale, dark-gray to light-gray, nonbedded to poorly bedded in lower part, silty toward base, top 1.70' contains Stigmarian rootlets noncalcareous.

**Cored: 81.90-92.00, Recovered: 9.74.**

81.90-91.64 (9.74)

Shale, medium-gray at top to medium-dark-gray, laminated to poorly bedded, silty and micaceous toward base.

**Cored: 92.00-102.00, Recovered: 10.13.**

92.00-93.50 (1.50)

93.50-94.84 (1.34)

Shale and siltstone, interbedded, poorly bedded.

Siltstone, medium-gray to light-gray, micaceous, poorly bedded, with abundant small siderite nodules, irregular, and wavy bedding.

94.84-95.17 (0.33)

Shale, medium-gray, poorly bedded, silty.

95.17-102.13 (6.96)

Sandstone, buff to light-gray, fine- to medium-grained, low-angle, crossbedded, 0.25"-thick clasts of green-gray shale in basal 0.50', sparse carbonaceous laminations.

**Cored: 102.00-112.00, Recovered: 9.39.**

102.00-104.17 (2.17)

Lag conglomerate light-gray to light-brown, claystone clasts, and rock fragments in sideritic clay matrix.

104.17-109.83 (5.65)

Sandstone, medium-gray, medium- to fine-grained, low-angle crossbedding, partly sideritic, grades down to clay shale below.

109.83-110.95 (1.12)

Clay shale, medium-gray.

110.95-111.12 (0.17)

Clay shale, medium-gray to dark-gray, with carbonaceous material on bedding planes.

111.12-111.39 (0.27)

Coal, bright-banded, hard.

**Cored: 112.00-121.90, Recovered: 9.63.**

112.00-114.92 (2.92)

Coal, as above, with 0.10'-thick clay parting at top.

114.92-121.63 (6.71)

Underclay, sandy, some carbonaceous material; grades from medium- to dark-gray near base.

**Cored: 121.90-131.60, Recovered: 9.03.**

121.90-122.17 (0.27)

Underclay, medium-gray.

122.17-125.97 (3.80)

Shale, medium-gray, silty, becoming more silty toward base.

125.97-127.80 (1.83)

Sandstone, medium-gray, fine-grained, micaceous.

127.80-130.93 (3.13)

Shale, medium-gray, silty, carbonaceous.

**Cored: 131.60-141.70, Recovered: 9.70.**

131.60-136.22 (4.62)

Shale, dark-gray, with sparse siltstone laminations.

136.22-136.62 (0.40)

Siderite band.

136.62-138.98 (2.36)

Shale, dark-gray, becoming very dark at base.

138.98-139.08 (0.10)

Shale, very dark-gray.

139.08-139.25 (0.17)

Coal, bright-banded, with pyrite nodules.

139.25-141.30 (2.05)

Clay shale, medium-gray, with carbonaceous laminations and impressions; nodular toward base; looks like limestone but noncalcareous.

**Cored: 141.70-151.70, Recovered: 10.00.**

141.70-142.69 (0.99)

Clay shale, as above.

142.69-143.15 (0.46)

As above, silty, with sideritic nodules.

143.15-146.34 (3.19)

Shale, dark-gray, silty at base, large sideritic nodules from 144.10-

146.34-151.70 (5.36)

**Cored: 151.70-161.70, Recovered: 9.90.**

151.70-153.45 (1.75)

153.45-156.60 (3.15)

156.60-156.90 (0.30)

156.90-157.14 (0.24)

157.14-158.43 (1.29)

158.43-160.00 (1.57)

160.00-161.60 (1.60)

**Cored: 161.70-171.70, Recovered: 9.48.**

161.70-161.75 (0.05)

161.75-167.50 (5.75)

167.50-171.18 (3.68)

**Cored: 171.70-181.70, Recovered: 9.38.**

171.70-181.08 (9.38)

**Cored: 181.70-191.70, Recovered: 9.80.**

181.70-186.08 (4.38)

186.08-190.38 (4.30)

190.38-191.50 (1.12)

**Cored: 191.70-203.70, Recovered: 11.05.**

191.70-195.08 (3.38)

195.08-195.78 (0.70)

195.78-196.37 (0.59)

196.37-196.42 (0.05)

196.42-199.50 (3.08)

199.50-202.75 (3.25)

**Cored: 203.70-215.00, Recovered: 11.82.**

203.70-207.12 (3.42)

207.12-209.60 (2.48)

209.60-215.52 (5.92)

**Cored: 215.00-225.00, Recovered: 10.10.**

215.00-217.64 (2.64)

217.64-221.20 (3.56)

221.20-225.10 (3.90)

**Cored: 225.00-235.00, Recovered: 10.10.**

225.00-235.10 (10.10)

**Cored: 235.00-245.00, Recovered: 15.04.**

144.30.

Shale, dark-gray, with siltstone laminations.

As above.

Shale, dark-gray to very dark-gray, with sparse silty lamination.

Shale, very dark-gray, silty, fossiliferous and calcareous.

Shale, very dark-gray, silty.

Siltstone, contorted, and dark-gray shale.

Siltstone and dark-gray shale, laminated.

Coal, bright-banded to dull, sparse pyrite nodules.

Coal, grades to black carbonaceous shale.

Clay shale, medium-gray, nonbedded, silty toward base, sparse carbonaceous laminations near top; dark limestone nodules scattered throughout.

Shale, dark-gray, occasional siltstone laminations.

Shale, gray to very dark-gray, with siltstone laminations and sparse siltstone lenses.

As above.

Shale, dark-gray to very dark-gray, very poorly bedded, slightly silty toward base.

Shale, very dark-gray, very finely silty.

Shale, dark-gray to very dark-gray.

Shale, dark-gray, slightly silty, siderite nodule at top.

Siltstone and dark-gray shale, laminated.

Coal, bright-banded to dull.

Clay shale, medium-gray, nonbedded, plant impressions near top and limestone nodules near base.

Shale, dark-gray, poorly bedded at top to well bedded at base.

Shale, gray.

Shale, dark-gray, with siderite nodules.

Shale, dark-gray.

Shale, dark-gray, becoming sideritic toward base.

Sandstone, with dark-gray siltstone lenses, bioturbated; sandstone, fine-grained, light-gray, micaceous, sideritic.

Shale, dark-gray, with fine-grained, light-gray sandstone interbeds.

Shale, dark-gray, with fine-grained, light-gray sandstone interbeds.

235.00-235.54 (0.54)	As above.
235.54-237.00 (1.46)	Shale, dark-gray, with fine-grained, light-gray sandstone laminations.
237.00-239.95 (2.95)	Sandstone, light-gray, interlaminated with dark-gray shale.
239.95-245.04 (5.09)	Shale, dark-gray, with dark-gray, fine-grained sandstone streaks.
<b>Cored: 245.00-255.00, Recovered: 9.95.</b>	
245.00-254.95 (9.95)	As above, becoming sideritic toward base.
<b>Cored: 255.00-265.00, Recovered: 10.00.</b>	
255.00-265.00 (10.00)	As above, slightly sideritic.
<b>Cored: 265.00-275.00, Recovered: 9.99.</b>	
265.00-269.77 (4.77)	As above, nonsideritic.
269.77-274.99 (5.22)	Sandstone, light-gray, fine-grained, bioturbated, calcareous; dark-gray shale laminations.
<b>Cored: 275.00-285.00, Recovered: 10.18.</b>	
275.00-275.60 (0.60)	As above.
275.60-283.57 (7.97)	Sandstone, very fine-grained, medium-gray sandstone, interlaminated with dark-gray shale.
283.57-284.38 (0.81)	Sandstone, medium-gray, very fine-grained, bioturbated; irregular beds of dark-gray shale.
284.38-285.18 (0.80)	Shale, dark-gray, silty.
<b>Cored: 285.00-295.00, Recovered: 9.93.</b>	
285.00-290.99 (5.99)	Shale, dark-gray, sideritic.
290.99-291.36 (0.37)	Coal, bright-banded, pyritic, hard.
291.36-294.38 (3.02)	Shale, dark-gray, sandy and sideritic at base.
294.38-294.93 (0.55)	Sandstone, green, fine-grained, shaly.
<b>Cored: 295.00-300.00, Recovered: 5.11.</b>	
295.00-300.11 (5.11)	Sandstone, green, fine-grained, shaly.
<b>Total Depth: 300.11.</b>	

**Western Kentucky Stratigraphic Test Hole Gil 8, Butler County, Morgantown Quadrangle, Carter coordinate location 2-I-34, 1650 FNL 2050 FEL, Elevation: 538.00, Total Depth: 341.57.**

Interval (Feet)	Description
<b>Cored: 15.00-26.50, Recovered: 5.17.</b>	
15.00-16.41 (1.41)	Shale, clayey, weathered.
16.14-17.44 (1.03)	Sandstone, dark-gray, weathered, reddish-brown, fine-grained, carbonaceous.
17.44-20.11 (2.67)	Limestone, medium-gray, highly fossiliferous; biosparite.
22.50-24.00 (1.50)	Cavity, 18.00' thick; remainder of core washed out.
<b>Cored: 26.50-33.50, Recovered: 4.20.</b>	
26.50-26.70 (0.20)	Limestone, medium-gray, weathered, silicified fossils, carbonaceous.
26.70-26.90 (0.20)	Coal, weathered, core broken.
26.90-28.05 (1.15)	Underclay, medium-gray, carbonaceous material, plastic.
28.05-30.15 (2.10)	Limestone, medium-gray to tan where weathered, biosparite, highly fossiliferous, fossils weathered, tan on surface, dolomitic(?), some calcite veining at base.
30.15-30.49 (0.34)	Clay, medium-gray, plastic.
30.49-30.63 (0.14)	Siltstone, medium-gray, slightly carbonaceous, micaceous.
<b>Cored: 33.50-33.50, Recovered: 9.15.</b>	
*33.50-43.50 (9.15)	Shale, clayey, with carbonaceous material, very silty, medium-gray; grades into sandstone, fine-grained, medium-gray at 42.00.
<b>Cored: 43.50-53.50, Recovered: ?</b>	
43.50-45.73 (2.23)	Sandstone, medium-gray, fine-grained, carbonaceous, micaceous, sideritic.
45.73-50.39 (4.66)	Sandstone, medium-gray, fine-grained, micaceous, with green shale laminations.
50.39-53.51 (3.12)	Sandstone, medium-gray, fine-grained, micaceous, with dark-gray shale lamination.
<b>Cored: 53.50-63.50, Recovered: 10.15.</b>	
53.50-63.50 (10.00)	Sandstone, light-green, medium- to coarse-grained, micaceous, dark-gray shale laminations.
<b>Cored: 63.50-73.50, Recovered: 10.00.</b>	
**63.50-73.50 (10.00)	Sandstone, light-green to medium-gray, medium- to coarse-grained with dark-gray shale laminations, more shaly at bottom of core.
<b>Cored: 73.50-83.50, Recovered: 10.14.</b>	
73.50-74.30 (0.80)	Sandstone, medium-gray, fine- to medium-grained, laminated, with dark-gray shale.
74.30-74.41 (0.11)	Sandstone, medium-gray, medium-grained, micaceous.
74.40-75.10 (0.70)	Shale, dark-gray, containing sandstone, laminations, medium-

\*Reset casing at 34.00.

\*\*This core was dropped out of core barrel; top 2.00' and bottom 1.00' are in order.

75.10-75.84 (0.74)	gray, fine- to medium-grained. Sandstone, medium-gray, medium-grained, micaceous, with dark-gray shale laminations.
75.84-76.18 (0.34)	Shale, dark-gray, with sandstone laminations, fine-grained, medium-gray.
76.18-77.73 (1.55)	Sandstone, medium-gray, medium-grained, micaceous, with carbonaceous streaks, and dark-gray shale lamination.
77.73-79.68 (1.95)	Shale, dark-gray, interbedded with medium-gray, fine-grained sandstone.
79.68-80.64 (0.96)	Sandstone, medium-gray, medium-grained, micaceous with carbonaceous laminations, dark-gray shale laminations and siderite nodules.
80.64-81.36 (0.72)	Claystone, dark-gray, carbonaceous and plastic.
81.36-81.66 (0.30)	Coal, bright, hard.
81.66-82.32 (0.66)	Sandstone, medium-gray, medium-grained, with dark-gray shale laminations and carbonaceous material.
82.32-83.47 (1.15)	Shale, dark-gray.
<b>Cored: 83.50-93.50, Recovered: 10.04.</b>	
83.50-87.57 (4.07)	Shale, medium-gray, with siderite nodules, pyrite nodules.
87.57-87.90 (0.33)	Claystone, light-gray, plastic.
87.90-88.57 (0.67)	Sandstone, medium-gray, fine-grained, with shale laminations.
88.57-88.80 (0.23)	Clay, brown, plastic.
88.80-92.57 (3.77)	Sandstone, red- to brown-banded, fine-grained, micaceous, friable.
<b>Cored: 93.50-103.50, Recovered: 10.02.</b>	
93.50-103.52 (10.02)	Sandstone, medium-brown, medium-grained, micaceous, friable.
<b>Cored: 103.50-113.52, Recovered: 10.02.</b>	
103.50-113.52 (10.02)	Sandstone, brown, medium-grained, micaceous, friable.
<b>Cored: 113.50-123.50, Recovered: 10.09.</b>	
113.50-115.25 (1.75)	Sandstone, brown, medium-grained, micaceous.
115.25-115.29 (0.04)	Clay, brown, plastic.
115.29-115.65 (0.36)	Shale, medium-gray.
115.65-116.50 (0.85)	Sandstone, dark-brown to medium-brown, medium- to coarse-grained, micaceous.
116.50-123.54 (7.04)	Sandstone, medium-gray, medium-grained, micaceous, iron stained, sideritic.
<b>Cored: 123.50-133.50, Recovered: 10.00.</b>	
123.50-133.50 (10.00)	Sandstone, medium-gray, medium-grained, micaceous, sideritic.
<b>Cored: 133.50-143.50, Recovered: ?</b>	
133.50-143.50 (10.00?)	Sandstone, medium-gray, medium- to coarse-grained, with thick siderite layers and nodules in upper 3.00' of core; friable.
<b>Cored: 143.50-153.50, Recovered: 9.58.</b>	
143.50-144.58 (1.08)	Sandstone, medium-gray, medium-grained, micaceous, carbonaceous streaks, siderite nodules.
144.58-144.65 (0.07)	Claystone, dark-gray, plastic.
144.65-148.81 (4.16)	Sandstone, medium-gray, medium-grained, micaceous, carbonaceous streaks.

148.81-149.29 (0.48)

149.29-153.04 (3.75)

Shale, sandy.

Clay shale, dark-gray, semiplastic.

**Cored: 153.50-163.50, Recovered: ?**

153.50-154.73 (1.23)

154.73-158.90 (4.17)

158.90-161.73 (2.83)

161.73-161.87 (0.14)

161.87-162.15 (0.28)

162.15-162.45 (0.30)

162.45-163.01 (0.56)

Shale, dark-gray, pyritic.

Coal, hard, bright, pyritic.

Shale, dark-gray, laminated with medium-gray shale, siderite.

Clay, medium-gray, very plastic.

Shale, dark-gray.

Clay, medium-gray, plastic.

Sandstone, medium-gray, medium-grained, micaceous.

**Cored: 163.50-173.50, Recovered: 10.14.**

163.50-173.64 (10.14)

Sandstone, medium-gray, medium-grained, micaceous, carbonaceous layers, sideritic.

**Cored: 173.50-183.00, Recovered: 9.97.**

173.50-179.55 (6.05)

Sandstone, medium-gray, medium- to coarse-grained, micaceous, carbonaceous layers, sideritic.

179.55-179.57 (0.02)

Coal, bright, hard.

179.57-180.12 (0.55)

Sandstone, medium-gray, coarse-grained, sideritic, micaceous, with carbonaceous streaks.

180.12-183.47 (3.35)

Shale, dark-gray, siderite layers, pyritic.

**Cored: 183.50-193.50, Recovered: 9.82.**

183.00-183.67 (0.67)

Shale, dark-gray, sideritic, pyritic.

183.67-185.04 (1.37)

Shale, dark-gray, calcareous.

185.04-189.48 (4.44)

Shale, dark-gray, siderite nodules, pyritic.

189.48-189.85 (0.37)

Coal, bright, hard.

189.85-192.49 (2.64)

Shale, sandy, dark-gray to light-green, pyritic, sideritic.

**Cored: 193.00-203.00, Recovered: 9.73.**

193.00-202.73 (9.73)

Shale, medium- to dark-gray, with thin sandstone interbeds.

**Cored: 203.00-213.00, Recovered: 9.96.**

203.00-210.63 (7.63)

Shale, dark-gray, with sandstone lamination.

**Cored: 213.00-216.00, Recovered: 3.02.**

213.00-215.43 (2.43)

Shale, dark-gray, with sandstone laminations, sparse siderite nodules.

215.43-215.59 (0.16)

Clay, medium-gray, plastic.

215.59-215.97 (0.38)

Shale, dark-gray, with sandstone laminations.

**Cored: 216.00-226.00, Recovered: 9.98.**

216.00-225.98 (9.98)

Shale, dark-gray, fine-grained sandstone laminations, siderite layers, slightly fossiliferous at base.

**Cored: 226.00-236.00, Recovered: 10.00.**

226.00-229.70 (3.70)

Sandstone, dark-gray, medium-grained, sideritic with light-gray sandstone clasts.

229.70-229.81 (0.11)

Coal, bright, hard, pyritic.

229.81-230.19 (1.38)

Sandstone, shaly, medium-green, medium-grained, with coal clasts.

230.19-231.01 (0.82)

Shale, medium-green, sideritic.

231.01-231.16 (0.15)	Clay, medium-gray, plastic, carbonaceous material.
231.16-232.20 (1.04)	Shale, dark-green, sideritic.
232.20-232.28 (0.08)	Clay, medium-gray, plastic.
232.28-232.75 (0.47)	Shale, dark-green, sideritic.
232.75-232.82 (0.07)	Claystone, medium-gray, plastic.
232.82-234.25 (1.43)	Shale, dark-green, sideritic.
234.25-234.58 (0.23)	Claystone, medium-gray, plastic.
234.58-236.32 (0.74)	Shale, dark-green.
<b>Cored: 236.00-246.00, Recovered: 9.55.</b>	
236.00-242.52 (6.52)	Shale, dark-green.
242.52-242.58 (0.06)	Claystone, medium-gray, plastic.
242.58-244.91 (2.33)	Shale, dark-green, sandy toward base, sideritic.
244.91-245.14 (0.23)	Claystone, medium-gray, plastic.
245.14-245.35 (0.21)	Shale, dark-green, sideritic.
245.35-245.55 (0.20)	Claystone, medium-gray, plastic.
245.55-245.62 (0.07)	Shale, sandy, medium-gray, sideritic.
<b>Cored: 246.00-254.50, Recovered: 8.50.</b>	
246.00-254.50 (8.50)	Shale, medium-gray to dark-gray, with small clay laminations and siderite nodules and bands.
<b>Cored: 254.40-263.00, Recovered: 8.55.</b>	
254.50-263.05 (8.55)	Shale, dark-gray.
<b>Cored: 263.00-273.00, Recovered: 9.69.</b>	
263.00-268.60 (5.60)	Shale, dark-gray, sideritic, sparsely fossiliferous.
268.60-270.09 (1.49)	Coal, bright, hard, pyritic.
270.09-272.69 (2.60)	Sandstone, medium-gray, medium-grained, highly carbonaceous material sideritic.
<b>Cored: 273.00-279.97, Recovered: 6.97.</b>	
273.00-273.85 (0.85)	Sandstone, medium-gray, fine-grained, with light-gray sandstone clasts, thin layers of siderite.
273.85-274.36 (0.51)	Shale, medium-green, sideritic, sandy.
274.36-279.97 (5.61)	Shale, sandstone interlaminated; sandstone, light-gray, fine-grained.
<b>Cored: 279.97-285.60, Recovered: 6.00.</b>	
279.97-283.52 (3.55)	Shale, with medium-gray, sandstone laminations; sandstone, fine-grained, light-gray, siderite nodules.
283.52-285.97 (2.45)	Shale and sandstone, interlaminated; shale, medium-gray; sandstone, light-gray, fine-grained; numerous small burrows.
<b>Cored: 285.60-295.20, Recovered: 9.39.</b>	
285.67-289.66 (4.06)	Sandstone, light-gray, fine-grained, interlaminated with dark-gray shale, sideritic, carbonaceous material.
289.66-290.03 (0.37)	Coal, hard, bright, pyritic.
290.03-291.27 (1.24)	Sandstone, medium-gray, fine-grained, carbonaceous streaks, micaceous, shaly siderite nodules.
291.27-292.10 (0.83)	Shale, medium-green, sandy, sideritic.
292.10-293.40 (1.30)	Sandstone, medium-gray, fine-grained, micaceous, carbonaceous, sideritic.
293.40-294.43 (1.03)	Sandstone, dark-gray shale, and carbonaceous material, interlaminated sandstone, fine-grained, light-gray, micaceous.

294.43-294.50 (0.07)  
294.50-294.70 (0.20)

Claystone, medium-gray, carbonaceous material, plastic.  
Sandstone and dark-gray shale, interlaminated; sandstone, fine-grained, light-gray.

294.70-294.80 (0.10)  
294.80-294.99 (0.10)

Claystone, medium-gray, carbonaceous material, plastic.  
Sandstone and dark-gray shale, interlaminated; sandstone, fine-grained, light-gray.

**Cored: 295.20-305.20, Recovered: 9.05.**

295.20-295.70 (0.50)

Sandstone, medium-gray, fine-grained, interlaminated with dark-gray shale.

295.70-297.40 (1.70)

Sandstone, medium-gray, fine-grained, carbonaceous material.

297.40-298.23 (0.83)

Shale, dark-gray.

298.23-298.88 (0.65)

Shale, dark-gray, sandy, sideritic.

\*298.88-304.25 (5.37)

Sandstone, light-gray, fine-grained, interlaminated with dark-gray shale, slightly carbonaceous, with small burrows.

**Cored: 305.20-315.50, Recovered: 9.93.**

305.20-306.54 (1.34)

Sandstone and shale; sandstone, medium-gray, fine-grained, and interlaminated with dark-gray shale; bioturbated in part (worm burrows?).

306.54-308.83 (2.29)

Siltstone, very dark-gray at top, becoming medium- to dark-gray and sandy toward base.

308.83-315.13 (6.30)

Sandstone, siltstone, and shale, interlaminated; sandstone, fine-grained, medium-gray; siltstone and shale, dark-gray, bioturbated throughout, abundant worm burrows.

**Cored: 313.50-324.90, Recovered: 10.13.**

313.50-324.90

Shale, dark-gray, and siltstone.

**Cored: 324.90-334.90, Recovered: 9.70.**

324.69-332.20 (7.30)

Shale, dark-gray, sideritic.

332.20-332.30 (0.10)

Coal, hard, bright.

332.30-334.69 (2.39)

Sandstone, light-gray, fine-grained, sideritic with carbonaceous streaks.

**Cored: 339.90-341.00, Recovered: 6.67.**

334.90-338.74 (3.84)

Sandstone, medium-gray, fine-grained, with inclusions of carbonaceous material.

338.74-338.99 (0.25)

Shale, black.

338.99-341.57 (2.58)

Siltstone, shaly and sideritic, some carbonaceous material.

**Total Depth: 341.00.**

**Western Kentucky Stratigraphic Test Hole Gil 9, Ohio County, Cromwell Quadrangle, Carter coordinate location 2-J-32, 2600 FSL 2250 FWL, Elevation: 495.00, Total Depth: 519.84.**

Interval (Feet)	Description
<b>Cored: 22.00-30.00, Recovered: 7.50.</b>	
22.00-25.40 (3.40)	Shale, medium-gray.
25.40-26.70 (1.30)	Shale, dark-gray to black, very carbonaceous, pyritic.
26.70-27.80 (1.10)	Shale, black, very carbonaceous (bone coal?).
27.80-28.00 (0.20)	Coal, pyritic.
28.00-29.50 (1.50)	Coal, bright-banded.
<b>*Cored: 30.00-40.00, Recovered: 7.35.</b>	
30.00-32.60 (2.60)	Coal, dull, with bright bands, pyritic near base.
32.60-33.05 (0.45)	Claystone, light- to medium-gray, silty toward base.
33.05-36.13 (3.08)	Sandstone, medium-gray, fine-grained, crossbedded.
36.13-36.58 (0.45)	Siltstone, medium-gray, finely laminated.
36.58-37.23 (0.65)	Claystone, medium-gray, silty.
<b>Cored: 40.00-50.00, Recovered: 10.03.</b>	
40.00-40.22 (0.22)	Siltstone, medium-gray, laminated.
40.22-43.37 (3.15)	Sandstone, medium-gray, fine-grained, micaceous, crossbedded, bioturbated zone 0.50-1.00' below top.
43.37-44.02 (0.65)	Siltstone, medium-gray, laminated.
44.02-45.95 (1.93)	Sandstone, light-gray, fine-grained, crossbedded, silty on crossbeds.
45.95-48.13 (2.18)	Sandstone, light-gray, medium-grained, crossbedded.
48.13-50.03 (1.90)	Sandstone, light-gray, medium- to fine-grained, crossbedded.
<b>Cored: 50.00-60.00, Recovered: 10.03.</b>	
50.00-52.91 (2.91)	Sandstone, medium-gray, medium-grained, carbonaceous, micaceous, crossbedded, carbonaceous material on crossbed surfaces.
52.91-54.53 (1.62)	Sandstone, medium-gray, medium- to fine-grained, micaceous, increase in carbonaceous material.
54.53-56.95 (2.42)	Sandstone, medium-gray, fine-grained, micaceous, abundant carbonaceous partings, crossbedded.
56.95-57.97 (1.02)	As above, but with moderate carbonaceous laminations.
57.97-60.03 (2.06)	As above, but with abundant carbonaceous laminations.
<b>Cored: 60.00-70.00, Recovered: 10.02.</b>	
60.00-61.07 (1.07)	Sandstone, medium- to dark-gray, very carbonaceous, argillaceous, micaceous.
61.07-69.09 (8.02)	Shale, medium- to dark-gray, sparse lenses of very fine sandstone.
69.09-70.02 (0.93)	Shale, medium-gray, sparse, fine-grained, calcareous sand laminations.
<b>Cored: 70.00-80.00, Recovered: 9.80.</b>	
70.00-79.80 (9.80)	Shale, dark-gray to black, fine-grained, calcareous sand lenses in upper 1.00', siderite nodules scattered throughout.

\*All measurements are approximate due to breakage of core.

**Cored: 80.00-90.00, Recovered: 9.92.**

80.00-82.11 (2.11)

Shale, medium- to dark-gray, abundant siderite nodules, sparse fossils.

82.11-83.23 (1.12)

Shale, dark-gray, calcareous, fossil hash.

83.23-84.23 (1.00)

Shale, dark-gray.

84.23-89.80 (5.57)

Shale, dark-gray to black.

**Cored: 90.00-100.00, Recovered: 9.74.**

90.00-92.18 (2.18)

Shale, black, calcareous laminations.

92.18-93.56 (1.38)

Shale, black, carbonaceous (bone coal?).

93.56-94.14 (0.58)

Shale, dark-gray, pyritic, siderite nodules.

94.14-94.31 (0.17)

Coal, pyritic.

94.31-94.48 (0.17)

Shale, medium-gray.

94.48-95.81 (1.33)

Coal, dull, pyrite along bedding planes, calcareous on cleats.

95.81-96.73 (0.92)

Claystone, light-gray.

96.73-98.06 (1.33)

Shale, medium-gray.

98.06-99.74 (1.68)

Siltstone, light-gray, slightly calcareous.

**Cored: 100.00-110.00, Recovered: 9.38.**

100.00-102.06 (2.06)

Sandstone, light- to medium-gray, very fine-grained, micaceous, silty.

102.06-102.57 (0.51)

Siltstone, light- to medium-gray, micaceous.

102.57-103.17 (0.60)

Siltstone, medium-gray, abundant pyrite.

103.17-104.66 (1.49)

Shale, gray, pyritic.

104.66-105.77 (1.11)

Shale, dark-gray, siderite.

105.77-109.38 (3.61)

Shale, medium- to dark-gray.

**Cored: 110.00-120.00, Recovered: 9.84.**

110.00-115.11 (5.11)

Shale, medium- to dark-gray.

115.11-116.44 (1.33)

Shale, dark-gray to black, calcite laminations toward base.

116.44-117.21 (0.77)

Coal, black (bone coal?), pyritic.

117.21-117.49 (0.28)

Siltstone, dark-gray, abundant carbonaceous material.

117.49-119.84 (2.35)

Sandstone, light-gray, very fine-grained, poorly sorted, carbonaceous laminations toward top.

**Cored: 120.00-130.00, Recovered: 10.02.**

120.00-124.24 (4.24)

Sandstone, medium-gray, fine- to very fine-grained, with micaceous laminations, poorly sorted.

124.24-130.02 (5.78)

Sandstone, light- to medium-gray, fine-grained, micaceous laminations, poorly sorted.

**Cored: 130.00-140.00, Recovered: 9.96.**

130.00-130.05 (0.05)

As above.

130.05-130.54 (0.49)

Siltstone, light-gray, laminated.

130.54-133.57 (3.03)

Sandstone, light-gray, micaceous, fine- to very fine-grained, laminated.

133.57-136.01 (2.44)

Siltstone, light-gray, slightly micaceous.

136.01-139.96 (3.95)

Sandstone, light- to medium-gray, micaceous, fine- to very fine-grained, some crossbedding, poorly sorted.

**Cored: 140.00-150.00, Recovered: 10.07.**

140.00-150.07 (1.08)

Sandstone, medium-gray, very micaceous, fine-grained, cross-bedded and laminated.

**Cored: 150.00-160.00, Recovered: 9.97.**

150.00-151.73 (1.73)	Sandstone, medium-gray, very micaceous, fine-grained, ripple-bedded, moderately sorted.
151.73-153.63 (1.90)	Sandstone, light-gray, micaceous, fine-grained, crossbedded, moderate sorting.
153.63-156.97 (3.34)	Sandstone, medium-gray, very micaceous, fine-grained, laminated, rippled, poorly sorted.
156.97-158.42 (1.45)	Sandstone, medium-gray, very micaceous, fine- to very fine-grained, laminated, minor rippling.
158.42-159.97 (1.55)	Sandstone, medium-gray, micaceous, fine-grained, rippled.

**Cored: 160.00-170.00, Recovered: 10.00.**

160.00-162.19 (2.19)	Siltstone, medium-gray, slightly micaceous, siderite nodules, laminated.
162.19-163.17 (0.98)	Shale, medium-gray, fine sand partings along laminations.
163.17-164.15 (0.98)	Sandstone, medium-gray, micaceous, fine-grained, crossbedded, moderately sorted.
164.15-166.65 (2.50)	Siltstone, medium-gray, micaceous, sandstone, convolute bedding, siderite nodules.
166.65-167.07 (0.42)	Shale, medium-gray.
167.07-170.00 (2.93)	Shale, medium-gray, siderite nodules, sandstone and siltstone in convolute structures.

**Cored: 170.00-180.00, Recovered: 10.06.**

170.00-170.08 (0.08)	Shale, medium-gray.
170.08-172.81 (2.73)	Sandstone, medium-gray, micaceous, a few siderite nodules, fine-grained, crossbedded, poorly sorted.
172.81-174.37 (1.56)	Shale, medium-gray, carbonaceous plant fragments, laminated.
174.37-176.24 (1.87)	Sandstone, medium-gray, micaceous, carbonaceous plant fragments, very fine-grained, convolute beds and laminations, poorly sorted.
176.24-177.00 (0.76)	Shale, medium-gray, laminated.
177.00-178.28 (1.28)	Sandstone, medium-gray, micaceous, carbonaceous plant fragments, fine-grained, poorly sorted.
178.28-180.06 (1.78)	Shale, medium-gray, finely laminated.

**Cored: 180.00-190.00, Recovered: 9.61.**

180.00-182.67 (2.67)	Shale, medium-gray, siderite nodules, finely laminated.
182.67-184.71 (2.04)	Shale, dark-gray, siderite nodules.
184.71-186.13 (1.42)	Limestone, medium-gray, carbonaceous, fossiliferous.
186.13-187.19 (1.06)	Bone coal.
187.19-187.29 (0.10)	Shale, dark-gray (hard, possibly siliceous).
187.29-187.99 (0.70)	Bone coal, calcareous.
187.99-188.54 (0.55)	Claystone, light-gray (underclay), rooted.
*188.54-189.61 (1.07)	As above.

\*This thickness (1.07') was picked up after the upper part of the core was retrieved.

**Cored: 190.00-200.00, Recovered: 10.04.**

190.00-191.71 (1.71)	Claystone, light-gray (underclay), a few isolated limestone nodules, rooted.
191.71-192.12 (0.41)	Claystone (underclay), dark-gray to black, highly carbonaceous, rooted.
192.12-194.17 (2.05)	Claystone (underclay), medium- to light-gray, increasing silt downward, rooted.
194.17-195.48 (1.31)	Siltstone, light-gray, laminated and rippled, sandstone increasing downward, poorly sorted.
195.48-198.28 (2.80)	Sandstone, light-gray, micaceous, fine-grained, laminated, some ripples.
198.28-200.04 (1.76)	Sandstone, medium-gray, slightly micaceous, fine-grained, rippled.

**Cored: 200.00-210.00, Recovered: 9.70.**

200.00-204.96 (4.96)	Sandstone, medium-gray, micaceous, fine-grained, crossbedded, moderately sorted.
204.96-205.05 (0.09)	Siltstone, medium-gray, micaceous, laminated, sandy.
205.05-205.48 (0.43)	Sandstone, medium-gray, micaceous, fine-grained crossbedded, moderately sorted.
205.48-205.59 (0.11)	Sandstone, medium-gray, some mica, very fine-grained, rippled.
205.59-205.76 (0.17)	Siltstone, medium-gray, micaceous, rippled, sandy.
205.76-207.31 (1.55)	Sandstone, medium-gray, micaceous, fine-grained, rippled, moderately sorted, siltstone lenses.
207.31-207.69 (0.38)	Sandstone, medium-gray, very micaceous, fine-grained, crossbedded, moderately sorted, siltstone lenses.
207.69-209.70 (2.01)	Sandstone, medium-gray, micaceous, fine-grained, crossbedded, rippled, moderately sorted, siltstone lenses.

**Cored: 210.00-220.00, Recovered: 10.06.**

210.00-210.79 (0.79)	Sandstone, medium-gray, micaceous, fine-grained, rippled, moderately sorted, silt lenses, possibly glauconitic.
210.79-211.17 (0.38)	Sandstone, medium-gray, very micaceous, very fine-grained, laminated, moderately sorted, silt and clay laminations.
211.17-212.06 (0.89)	Sandstone, medium-gray, micaceous, fine-grained, alternate bands of laminae and crossbeds, moderately sorted, micaceous along bedding.
212.06-213.97 (1.91)	Sandstone, medium-gray, moderately micaceous, fine-grained, rippled, moderately well sorted.
213.97-215.17 (1.20)	Sandstone, medium-gray, moderately micaceous, fine-grained, laminated, moderately well sorted.
215.17-216.98 (1.81)	Sandstone, medium- to dark-gray, micaceous, fine-grained, laminated, moderately sorted, siltstone laminations.
216.98-217.29 (0.31)	Siltstone, medium-gray, slightly micaceous, laminated, sandy.
217.29-218.20 (0.91)	Sandstone, medium-gray, slightly micaceous, fine-grained, laminated, moderately sorted.
218.20-218.96 (0.76)	Sandstone, medium- to dark-gray, slightly micaceous, very fine-grained, laminated, moderately sorted.
218.96-219.72 (0.76)	Shale, medium- to dark-gray, micaceous, carbonized plant material.
219.72-220.06 (0.34)	Sandstone, medium- to dark-gray, micaceous, fine-grained, rippled, moderately sorted, abundant carbonaceous material.

**Cored: 220.00-230.00, Recovered: 9.57.**

220.00-221.75 (1.75)	Sandstone, medium- to dark-gray, moderately micaceous, abundant carbonaceous material, fine-grained, laminations and ripples, moderately sorted.
221.75-224.85 (3.10)	Sandstone, dark-gray, micaceous, carbonaceous material, medium-fine- to fine-grained, laminated and rippled, moderately sorted.
224.85-227.59 (2.74)	Sandstone, medium-gray, micaceous, abundant carbonaceous material, fine- to very fine-grained, very rippled, moderately sorted.
227.59-229.57 (1.98)	Shale, medium- to dark-gray, silty.
<b>Cored: 230.00-240.00, Recovered: 9.87.</b>	
230.00-232.90 (2.90)	Shale, medium- to dark-gray, increase in carbonaceous fragments downward, laminated, silty.
232.90-233.23 (0.33)	Siltstone, medium- to dark-gray, micaceous, carbonaceous fragments, laminated.
233.23-235.28 (2.05)	Shale, medium- to dark-gray, carbonaceous material, laminated, silty, silt stringers.
235.28-235.91 (0.63)	Siltstone, medium-gray, micaceous, some carbonaceous fragments.
235.91-238.19 (2.28)	Shale, medium-gray, micaceous, carbonaceous fragments.
238.19-238.71 (0.52)	Sandstone, medium- to dark-gray, micaceous, carbonaceous, fine- to very fine-grained, rippled.
238.71-239.55 (0.84)	Shale, medium-gray, micaceous, carbonaceous fragments.
239.55-239.87 (0.32)	Sandstone, medium- to dark-gray, carbonaceous fragments, very fine-grained, laminated, silty.
<b>Cored: 240.00-250.00, Recovered: 10.08.</b>	
240.00-241.30 (1.30)	Shale, dark-gray, carbonaceous fragments, small pyrite nodules.
241.30-241.77 (0.47)	Siltstone, dark-gray, micaceous, carbonaceous fragments, laminated, sandy.
241.77-241.99 (0.22)	Shale, dark-gray, carbonaceous fragments, small pyrite nodules.
241.99-242.59 (0.60)	Siltstone, dark-gray, micaceous, carbonaceous fragments, laminated, sandy.
242.59-250.08 (7.49)	Shale, dark-gray, carbonaceous fragments, small pyrite nodules.
<b>Cored: 250.00-260.00, Recovered: 9.94.</b>	
250.00-256.53 (6.53)	Shale, dark-gray, moderate amount of pyrite.
256.53-259.94 (3.41)	Shale, dark-gray, some pyrite, siderite nodules.
<b>Cored: 260.00-270.00, Recovered: 9.92.</b>	
260.00-262.61 (2.61)	Shale, dark-gray, moderate amount of pyrite, siderite nodules.
262.61-264.74 (2.13)	Shale, black, carbonaceous material along bedding.
264.74-264.76 (0.02)	Shale, dark-gray, highly pyritic and carbonaceous.
264.76-265.30 (0.54)	Coal, bright- and dull-banded.
265.30-265.48 (0.18)	Bone coal, abundant pyrite.
265.48-267.24 (1.76)	Underclay, light-gray, root structures, slickensides along breaks.
267.24-269.60 (2.36)	Siltstone, light-gray, carbonaceous material, flaser bedding, grain size decreases downward, claystone clasts.
269.60-269.92 (0.32)	Shale, light-gray.
<b>Cored: 270.00-280.00, Recovered: 10.00.</b>	
270.00-270.32 (0.32)	Shale, medium-gray.
270.32-270.97 (0.65)	Siltstone, light- to medium-gray, laminations and ripples.

270.97-271.10 (0.13)	Claystone (underclay), highly carbonaceous.
271.17-272.65 (1.55)	Underclay, light- to medium-gray, some root structures.
272.65-273.11 (0.46)	Siltstone, light-gray, hard.
273.11-274.26 (1.15)	Underclay, light- to medium-gray, slickensided, fresh-water limestone concretions.
274.26-279.26 (5.00)	Siltstone, light- to medium-gray, convolute bedding, fresh-water limestone concretions.
279.26-280.00 (0.74)	Shale, medium-gray.
<b>Cored: 280.00-290.00, Recovered: 9.89.</b>	
280.00-280.68 (0.68)	Shale, dark-gray, laminated.
280.68-281.74 (1.06)	Shale, dark-gray, slickensided, possible root structure.
281.74-283.64 (1.90)	Claystone, dark-gray, slickensided.
283.64-284.74 (1.10)	Claystone, dark-gray, with greenish tint, slickensided, irregular red claystone inclusions.
284.74-285.04 (0.30)	Claystone, green, slickensided, possible root structures.
285.04-285.38 (0.34)	Claystone, purple to green mottling, slickensided.
285.38-286.01 (0.63)	Claystone, green, small nodules of limestone, increasing in number downward, slickensided.
286.01-289.89 (3.88)	Sandstone, greenish-gray, calcite along fractures, scattered concentrations of pyrite, very fine-grained, massive bedding.
<b>Cored: 290.00-300.00, Recovered: 9.82.</b>	
290.00-290.41 (0.41)	Sandstone, greenish-gray, calcite along fractures, scattered concentrations of pyrite, very fine-grained, massive.
290.41-294.03 (3.62)	Shale (claystone), greenish-gray, yellowish-brown mottling, slickensided, sparse siliceous laminations.
294.03-294.38 (0.35)	As above, but brown with yellowish-brown and green mottling.
294.38-296.08 (1.70)	Claystone, greenish-gray, with inclusions of yellowish-brown mottling, weakly slickensided.
296.08-297.18 (1.10)	As above but without mottling and strongly slickensided, minor amounts of carbonaceous material.
297.18-299.82 (2.64)	Siltstone, greenish-gray, laminated.
<b>Cored: 300.00-310.00, Recovered: 9.94.</b>	
300.00-303.25 (3.25)	Shale, greenish-gray, finely laminated, siderite nodules.
303.25-304.61 (1.36)	Shale, dark-greenish-gray.
304.61-309.94 (5.33)	Shale, medium- to dark-gray, finely laminated.
<b>Cored: 310.00-320.00, Recovered: 9.88.</b>	
310.00-311.65 (1.65)	Shale, dark-gray to green, laminated.
311.65-313.23 (1.58)	Shale, dark-gray to green, laminated, slickensided.
313.23-313.51 (0.28)	Shale, dark-gray to green, limestone nodules more abundant downward.
313.51-314.57 (1.06)	Limestone, medium-brown, fossiliferous.
314.57-315.48 (0.91)	Limestone, dark-brown to black, sparse dolomite rhombs, fossiliferous, readily breaks along laminae.
315.48-316.05 (0.57)	Limestone, medium-brown to black, dolomitic, fossiliferous, carbonaceous material increases downward.
316.05-316.15 (0.10)	Limestone, dark-brown to black, abundant carbonaceous material, fossiliferous.
316.15-316.23 (0.08)	Shale, medium-gray, carbonaceous.
316.23-316.38 (0.15)	Bone coal.
316.38-316.68 (0.30)	Claystone, black, slickensided.

316.68-317.20 (0.52)

317.20-318.28 (1.08)

318.28-319.88 (1.60)

**Cored: 320.00-330.00, Recovered: 10.00.**

320.00-320.40 (0.40)

320.40-320.56 (0.16)

320.56-320.77 (0.21)

320.77-321.18 (0.41)

321.18-326.58 (5.40)

326.58-326.93 (0.35)

326.93-330.00 (3.07)

**Cored: 330.00-340.00, Recovered: 10.07.**

330.00-331.37 (1.37)

331.37-331.52 (0.15)

331.52-331.72 (0.20)

331.72-332.20 (0.48)

332.20-332.26 (0.06)

332.26-332.53 (0.27)

332.53-332.62 (0.09)

332.62-333.82 (1.20)

333.82-334.72 (0.92)

334.74-337.69 (2.95)

337.69-338.81 (1.12)

338.81-339.91 (1.10)

339.91-340.07 (0.16)

**Cored: 340.00-350.00, Recovered: 9.91.**

340.00-340.75 (0.75)

340.75-342.41 (1.66)

342.41-344.22 (1.81)

344.22-345.31 (1.09)

345.31-345.96 (0.65)

345.96-346.86 (0.90)

346.86-347.31 (0.45)

347.31-349.21 (1.90)

349.21-349.91 (0.70)

**Cored: 350.00-360.00, Recovered: 10.00.**

350.00-350.60 (0.60)

350.60-353.62 (3.02)

353.62-356.82 (3.20)

356.82-358.38 (1.56)

Underclay, dark-gray, rooted, silty.

Siltstone, medium-gray, slightly micaceous, slightly carbonaceous, very fine-grained, laminated and rippled, poorly sorted.

Sandstone, medium-gray, slightly micaceous, very fine-grained, laminated and rippled, poorly sorted.

Siltstone, dark-greenish-gray, slightly micaceous, laminated.

Siltstone, dark-greenish-gray, slightly micaceous, laminated, sandy.

Sandstone, medium-gray, micaceous, medium- to fine-grained.

Siltstone, dark-greenish-gray, slightly micaceous, laminated, sandy.

Siltstone, grayish-green, siderite nodules.

Shale, medium- to dark-gray, siderite nodules, silty.

Shale, light-purplish-gray, finely laminated, slickensided.

Shale, greenish-gray, finely laminated.

Shale, greenish-gray, finely laminated, fossiliferous.

Limestone, dark-brown, fossiliferous, sandy.

Limestone, medium-brown, fossiliferous, bioturbated.

Limestone, calcarenitic, fossiliferous.

Limestone, dark-brown, carbonaceous, fossiliferous

Bone coal.

Underclay, medium-gray, rooted, silty.

Shale, medium-gray, sandy.

Shale, medium-gray and dark-red mottled, silty, silt increases downward.

Shale, grayish-green and red, mottled, silty.

As above, but mottling is yellowish-brown.

Siltstone, grayish-green.

Siltstone, medium- to dark-gray, dark-brown to reddish-brown mottling.

Shale, grayish-green, root-like structures, silty.

Sandstone, green-gray to gray, very fine-grained, calcareous cement.

Siltstone, grayish-green, laminated.

Shale, greenish-gray.

Siltstone, greenish-gray, micaceous, laminated to rippled.

Sandstone, medium-gray, fine-grained.

Siltstone, greenish-gray, micaceous, laminated to rippled.

Shale, medium-green, carbonaceous plant fragments along bedding and root structures.

Shale, medium-green, carbonaceous plant fragments along bedding, root structures.

Shale, grayish-green, slightly micaceous, crossbedded, lenses of sandstone.

Sandstone, medium-gray, micaceous, fine- to medium-grained, crossbedded to massive, moderately sorted.

Sandstone, light- to medium-gray, very micaceous, fine-grained,

358.38-360.00 (1.62)	crossbedded, rippled, moderately sorted. Sandstone, medium-gray, micaceous, fine- to medium-grained, crossbedded, moderately sorted.
<b>Cored: 360.00-370.00, Recovered: 9.97.</b>	
360.00-361.50 (1.50)	Sandstone, medium-gray, micaceous, fine- to medium-grained, crossbedded, moderately sorted.
361.50-364.83 (3.33)	Sandstone, light-gray to grayish-green, slightly micaceous, very fine-grained, rippled, moderately sorted.
364.83-366.64 (1.81)	Sandstone, medium-gray, micaceous, fine-grained, rippled, moderately sorted.
366.64-369.97 (3.33)	Sandstone, medium-gray, slightly micaceous, medium-grained, crossbedded, moderately sorted.
<b>Cored: 370.00-380.00, Recovered: 10.03.</b>	
370.00-380.03 (10.03)	Sandstone, medium-gray, micaceous, medium-grained, crossbedded, moderately sorted.
<b>Cored: 380.00-390.00, Recovered: 9.97.</b>	
380.00-382.45 (2.45)	Sandstone, medium-gray, micaceous, medium-grained, crossbedded, moderately sorted.
382.45-384.26 (1.81)	Sandstone, medium-gray, micaceous, fine-grained, rippled, moderately well sorted, siderite nodules.
384.26-387.03 (2.77)	Sandstone, medium-gray, micaceous, fine- to medium-grained, crossbedded to massive, moderately sorted, siderite nodules.
387.03-387.23 (0.20)	Sandstone, medium- to dark-gray, micaceous, very fine-grained, crossbedded, poorly sorted.
387.23-387.75 (0.52)	Sandstone, medium-gray, micaceous, fine- to medium-grained, crossbedded to massive, moderately sorted, siderite nodules.
387.75-388.27 (0.52)	Sandstone, medium- to dark-gray, micaceous, very fine-grained, crossbedded, poorly sorted, siderite nodules.
388.27-389.97 (1.70)	Sandstone, medium-gray, micaceous, fine- to medium-grained, crossbedded to massive, moderately sorted, siderite nodules.
<b>Cored: 390.00-400.00, Recovered: 9.95.</b>	
390.00-391.48 (1.48)	Sandstone, medium-gray, micaceous, fine- to medium-grained, crossbedded, massive, moderately sorted, siderite nodules.
391.48-391.57 (0.09)	Sandstone, medium- to dark-gray, micaceous, very fine-grained, crossbedded, poorly sorted.
391.57-395.27 (3.70)	Sandstone, medium-gray, slightly micaceous, medium- to fine-grained, crossbedded to massive, moderately sorted.
395.27-399.95 (4.68)	Sandstone, medium-gray, micaceous, medium-grained, crossbedded to massive, moderately sorted.
<b>Cored: 400.00-410.00, Recovered: 9.99.</b>	
400.00-403.65 (3.65)	Sandstone, medium-gray, slightly micaceous, medium-grained, crossbedded to massive, siltstone lenses toward the base, moderately sorted.
403.65-403.74 (0.09)	Sandstone, dark-gray to black, micaceous, extremely carbonaceous, medium- to fine-grained, crossbedded, moderately sorted.
403.74-403.99 (0.25)	Sandstone, medium-gray, highly micaceous, medium- to fine-grained, crossbedded, moderately sorted.
403.99-404.03 (0.04)	Coal.
404.03-404.73 (0.70)	Sandstone, medium- to dark-gray, slightly micaceous, carbona-

404.73-404.83 (0.10)	aceous, medium-grained, crossbedded, moderately sorted, calcite cement.
404.83-405.38 (0.55)	Claystone (flint clay?), brown.
405.38-405.41 (0.03)	Claystone, dark-gray, finely laminated fissile.
405.41-405.57 (0.16)	Bone coal.
405.57-405.73 (0.16)	Claystone, dark-gray, fissile.
405.73-406.18 (0.45)	Bone coal.
406.18-407.46 (1.28)	Underclay, rooted.
407.46-408.69 (1.23)	Claystone, medium- to dark-gray, slickensided.
408.69-410.00 (1.30)	Siltstone, medium-gray, bioturbated.
	Shale, dark-gray to black.
<b>Cored: 410.00-420.00, Recovered: 10.01.</b>	
410.00-412.15 (2.15)	Shale, alternating beds of medium- and dark-gray, carbonaceous.
412.15-412.71 (0.56)	Siltstone, medium-gray, laminated.
412.71-415.94 (3.23)	Sandstone, medium-gray, slightly micaceous, fine- to very fine-grained, rippled and bioturbated.
415.94-420.01 (4.07)	Sandstone, medium- to dark-gray, slightly micaceous, fine-grained, rippled, moderately sorted.
<b>Cored: 420.00-430.00, Recovered: 9.93.</b>	
420.00-423.69 (3.69)	Sandstone, medium-gray, micaceous, carbonaceous laminations, fine-grained, moderately sorted, sparse claystone laminations.
423.69-429.93 (6.24)	Sandstone, medium-gray, slightly micaceous, carbonaceous laminations, medium-grained, moderately sorted, sparse claystone laminations.
<b>Cored: 430.00-440.00, Recovered: 10.02.</b>	
430.00-440.20 (10.02)	Sandstone, light- to medium-gray, micaceous, some carbonaceous laminations, medium-grained, slightly crossbedded, friable.
<b>Cored: 440.00-450.00, Recovered: 10.00.</b>	
440.00-450.00 (10.00)	Sandstone, light- to medium-gray, micaceous claystone laminations moderately abundant, medium-grained, crossbedded, friable, possible concentrations of heavy minerals.
<b>Cored: 450.00-460.00, Recovered: 10.04.</b>	
450.00-460.04 (10.04)	Sandstone, medium-gray, medium-grained, very porous, sparse, thin shaly laminations.
<b>Cored: 460.00-470.00, Recovered: 9.96.</b>	
460.00-464.98 (4.98)	As above.
464.98-465.53 (0.55)	As above, with coal laminations.
465.53-469.96 (4.43)	As above, but without coal, carbonaceous.
<b>Cored: 470.00-480.00, Recovered: 10.02.</b>	
470.00-480.02 (10.02)	Sandstone, medium-gray, medium-grained, very porous, sparse shale laminations, coal clasts.
<b>Cored: 480.00-490.00, Recovered: 9.95.</b>	
480.00-489.95 (9.95)	Sandstone, medium-gray, medium-grained, very porous, sparse, thin shaly laminations, coal laminations (0.03-0.05' thick).
<b>Cored: 490.00-500.00, Recovered: 10.00.</b>	
490.00-496.10 (6.10)	Sandstone, light- to medium-brown to brown, slightly micaceous,

496.10-500.00 (3.90)	medium-grained, carbonaceous laminations, crossbedded, claystone clasts. Sandstone, light- to medium-gray, very porous, slightly micaceous, medium-grained, massive, moderately sorted.
<b>Cored: 500.00-510.00, Recovered: 10.05.</b>	
500.00-502.19 (2.19)	As above.
502.19-503.76 (1.57)	As above, but with coal laminations.
503.76-510.05 (6.29)	Shale, light- to medium-gray, slightly micaceous, sandstone lenses up to 0.10' thick, convoluted in part.
<b>Cored: 510.00-520.00, Recovered: 9.84.</b>	
510.00-512.27 (2.27)	As above.
512.27-513.84 (1.57)	Sandstone, medium-gray, slightly micaceous, medium-grained, moderately well sorted, conglomerate lenses.
513.84-514.39 (0.55)	Shale, medium- to dark-brown, interlaminated.
514.39-514.98 (0.59)	Coal, with clay partings.
514.98-515.03 (0.05)	Bone coal.
515.03-518.94 (3.91)	Underclay, light-purplish-gray, rooted, silty downward.
518.94-519.84 (0.90)	Sandstone, grayish-green, slightly micaceous, laminated and rippled, silty.
<b>Total Depth: 520.00.</b>	

**Western Kentucky Stratigraphic Test Hole Gil 10, Muhlenburg County, Rochester Quadrangle, Carter coordinate location 13-I-31, 1640 FSL 3080 FWL, Elevation: 483.00, Total Depth: 326.76.**

Interval (Feet)	Description
<b>Cored: 18.09-26.96, Recovered: 8.02.</b>	
18.09-21.34 (3.25)	Siltstone, dark-gray, shaly, micaceous.
21.34-21.42 (0.08)	Siderite layers.
21.42-23.26 (1.84)	Siltstone, dark-gray, shaly, micaceous.
23.26-26.11 (2.85)	Shale, dark-gray, silty, micaceous.
<b>Cored: 26.96-36.96, Recovered: 10.05</b>	
26.96-37.01 (10.05)	Shale, dark-gray, slightly silty, fossil at 28.13; 0.50'-thick medium-gray clay zone at 32.96, with siderite nodule on top.
<b>Cored: 36.96-46.94, Recovered: 9.98.</b>	
36.96-41.46 (4.50)	Shale, dark-gray.
41.46-42.25 (0.79)	Shale, dark-gray, highly carbonaceous.
42.25-42.26 (0.01)	Shale, black.
42.26-42.67 (0.41)	Coal.
42.67-45.87 (3.20)	Underclay, medium-gray, slightly carbonaceous, silty, semiplastic, with very plastic light-gray zone at base, 0.10' thick.
45.87-46.94 (1.07)	Sandstone, medium-gray, very fine-grained, lightly micaceous, slightly carbonaceous, with clay galls at top, some siderite.
<b>Cored: 46.96-56.93, Recovered: 10.03.</b>	
46.96-49.95 (2.99)	Sandstone, medium-gray, fine-grained, slightly sideritic, carbonaceous, lower contact irregular and sharp.
49.95-56.99 (7.04)	Sandstone, light-gray, medium-grained, micaceous, carbonaceous, very sideritic at base; some green shale lenses.
<b>Cored: 56.93-66.80, Recovered: 9.98.</b>	
56.93-66.91 (9.98)	Sandstone, light-gray, medium-grained, micaceous, carbonaceous, highly sideritic at top.
<b>Cored: 66.80-76.86, Recovered: 10.01.</b>	
66.80-76.81 (10.01)	Sandstone, light-gray, medium-grained, micaceous, carbonaceous.
<b>Cored: 76.86-86.82, Recovered: 10.19.</b>	
76.86-85.22 (8.36)	As above.
85.22-85.30 (0.08)	Coal, much fusain.
85.30-87.05 (1.75)	Coal, pyritic.
<b>Cored: 86.82-96.86, Recovered: 9.50.</b>	
86.82-88.03 (1.21)	Coal, pyritic.
88.03-89.99 (1.96)	Underclay, medium-gray, carbonaceous, plastic.
89.99-90.68 (0.69)	Shale, black, carbonaceous, hard; sideritic nodules.
90.68-91.63 (0.95)	Shale, medium-gray, carbonaceous.
91.63-91.96 (0.33)	Shale, light-gray.
91.96-96.32 (4.36)	Clay shale, light-gray.
<b>Cored: 96.86-106.26, Recovered: 10.08.</b>	
96.86-97.15 (0.29)	Shale, light-gray, silty, carbonaceous.

97.15-97.47 (0.32)	Shale, dark-gray, silty, highly carbonaceous.
97.47-100.97 (3.50)	Shale, medium-gray, very silty, carbonaceous, siderite nodule, semiplastic.
100.97-101.32 (0.35)	Siderite layer.
101.32-101.79 (0.47)	Claystone, light-gray, plastic.
101.79-105.71 (3.92)	Shale, plastic, dark-gray, carbonaceous, slightly sideritic.
105.71-106.94 (1.23)	Clay shale, dark-gray, carbonaceous.
<b>Cored: 106.26-116.50, Recovered: 9.99.</b>	
106.26-106.98 (1.72)	Clay shale, medium-gray.
106.98-112.99 (6.01)	Sandstone, medium-gray, fine- to coarse-grained; contact between fine and coarse is irregular, sharp.
112.99-116.25 (3.26)	Siltstone, medium-gray.
<b>*Cored: 116.50-126.32, Recovered: 9.99.</b>	
116.50-117.18 (0.68)	Sandstone, medium-gray, very fine-grained, shaly, micaceous.
117.18-126.49 (9.31)	Sandstone, medium-gray, very fine-grained, shaly, sideritic, micaceous, some claystone beds.
<b>Cored: 126.32-136.31, Recovered: 9.96.</b>	
126.32-127.76 (1.44)	Sandstone, medium-gray, fine-grained, sideritic, micaceous.
127.76-133.32 (5.56)	Sandstone, medium-gray, fine-grained, sideritic, micaceous, shale laminations, carbonaceous.
133.32-136.28 (2.96)	Shale, dark-gray, silty.
<b>Cored: 136.31-146.33, Recovered: 10.10.</b>	
136.31-146.41 (10.10)	Shale, dark-gray, slightly silty, slightly sideritic, carbonaceous plant impressions.
<b>Cored: 146.33-156.43, Recovered: 10.10.</b>	
146.33-147.08 (0.75)	Shale, black, very carbonaceous, sideritic, contact sharp.
147.08-149.87 (2.79)	Shale, dark-gray, sideritic bands, contact sharp.
149.87-152.87 (3.00)	Limestone, dark-gray, highly fossiliferous at top, less fossiliferous toward base.
152.87-156.43 (3.56)	Shale, dark-gray, silty, fossiliferous, carbonaceous, micaceous, moderately fossiliferous at top to nonfossiliferous at bottom.
<b>Cored: 156.43-166.46, Recovered: 10.10.</b>	
156.43-162.22 (5.79)	Shale, dark-gray, sideritic, carbonaceous plant remains.
162.22-165.25 (3.03)	Coal, bright, hard, pyritic.
165.25-166.44 (1.19)	Sandstone, rooted, dark-gray, shaly, carbonaceous plant remains.
<b>Cored: 166.46-176.51, Recovered: 10.08.</b>	
166.46-167.72 (1.26)	Sandstone, rooted, dark-gray, fine-grained, black dolomite nodules(?), carbonized plant remains.
167.72-172.85 (5.13)	Sandstone, medium-gray, fine-grained, with medium-grained interbeds, carbonized plant remains, sideritic.
172.85-173.31 (0.46)	Sandstone, as above, high-angle crossbedding.
173.31-176.54 (3.23)	Sandstone, medium-gray, fine-grained, with dolomite nodules, argillaceous.

**Cored: 176.51-186.36, Recovered: 10.00.**

176.51-182.91 (6.40)

182.91-183.61 (0.70)

183.61-186.51 (3.08)

Shale, dark-gray, with light-gray sandstone interbeds, shale, very sandy, sideritic.

Coal, bright, badly broken.

Underclay, light-gray, very plastic, sandy at base, carbonaceous throughout.

**Cored: 186.36-196.41, Recovered: 10.02.**

186.36-196.43 (10.02)

Sandstone, medium-dark-gray, medium-grained, sideritic, carbonaceous, dark-gray shale laminations.

**Cored: 196.41-206.41, Recovered: 10.14.**

196.41-196.81 (0.40)

196.81-197.20 (0.39)

197.20-203.17 (5.93)

Sandstone, dark-gray, bioturbated, carbonaceous.

Siderite layer.

Sandstone, shaly, dark-gray, fine-grained, with dark-gray shale laminations, sideritic.

Claystone, sandy, medium-gray, sideritic, calcareous.

Shale, dark-gray, carbonaceous.

203.17-205.84 (2.67)

205.84-206.55 (0.71)

**Cored: 206.41-216.46, Recovered: 10.09.**

206.41-208.21 (1.80)

208.21-213.64 (5.43)

213.64-213.72 (0.08)

213.72-215.26 (1.54)

215.26-216.50 (1.25)

Sandstone, dark-gray, medium-grained, sideritic, shaly.

Shale, dark-gray, silty.

Coal, bright, hard.

Underclay, dark-gray, plastic, carbonaceous.

Shale, dark-gray, silty, carbonaceous.

**Cored: 216.46-226.46, Recovered: 9.98.**

216.46-224.61 (8.15)

224.61-225.20 (0.54)

225.20-226.44 (1.24)

Shale, dark-gray, silty, sideritic, carbonaceous.

Coal, bright.

Shale, medium-gray, hard, with carbonaceous plant remains.

**Cored: 226.46-236.36, Recovered: 10.00.**

226.46-228.98 (2.52)

228.98-235.46 (6.48)

235.46-236.46 (1.00)

Clay shale, medium-gray, carbonaceous, silty at base, sideritic.

Sandstone, dark-gray, fine-grained, shale laminations, dark-gray, sideritic.

Shale, dark-gray, with siltstone laminations.

**Cored: 236.36-246.37, Recovered: 10.00.**

236.36-241.62 (5.26)

241.62-244.01 (2.39)

244.01-246.34 (2.33)

Shale, dark-gray, interbedded with medium-gray, fine-grained micaceous sandstone.

Sandstone, medium-gray, medium-grained, with claystone clasts, shale laminations, dark-gray, siderite bands, carbonaceous, micaceous.

Shale, dark-gray, interbedded with medium-gray, fine-grained micaceous sandstone.

**Cored: 246.37-256.36, Recovered: 10.05.**

246.37-249.62 (3.25)

249.62-252.96 (3.34)

252.96-256.44 (3.48)

As above.

Sandstone and shale, bioturbated, sideritic shale, dark-gray; sandstone, medium-gray, fine-grained, carbonaceous, lower contact sharp and even.

Shale, dark-gray, carbonaceous plant impressions.

**Cored: 256.36-266.36, Recovered: 10.15.**

256.36-256.51 (0.15)  
 256.51-258.82 (2.31)  
 258.82-261.97 (3.15)  
 261.97-265.30 (3.33)  
 265.30-266.39 (1.09)

**Cored: 266.36-276.36, Recovered: 9.95.**

266.36-271.42 (5.06)

271.42-276.31 (4.84)

**Cored: 276.36-286.31, Recovered: 10.00.**

276.32-279.02 (2.70)

279.02-280.33 (1.31)

280.33-283.42 (3.09)

283.42-285.72 (2.30)

285.72-286.45 (0.73)

**Cored: 286.31-296.31, Recovered: 9.90.**

286.31-292.81 (6.50)

292.81-293.27 (0.46)

293.27-296.21 (2.94)

**Cored: 296.31-306.96, Recovered: 9.74.**

296.31-299.29 (2.98)

299.29-300.67 (1.38)

300.67-303.81 (3.14)

303.81-306.05 (2.24)

**Cored: 306.96-316.96, Recovered: 9.98.**

306.96-316.94 (9.98)

**Cored: 316.96-326.96, Recovered: 9.80.**

315.96-321.43 (4.47)

321.43-326.76 (5.33)

**Total Depth: 326.76.**

Shale, dark-gray, carbonaceous.

Coal, bright, hard, with gypsum, pyrite.

Shale, dark-gray, carbonaceous, sideritic.

Shale, dark-gray, with sideritic claystone.

Siltstone, dark-gray, micaceous.

Shale, dark-gray, interlaminated with sandstone, medium-gray, fine-grained; carbonaceous, sideritic nodules.

Shale, dark-gray, carbonaceous plant remains, siderite bands, micaceous.

As above.

Coal, dull, pyritic.

Shale, light-gray to green, slightly silty; siderite nodules.

Sandstone, light-gray, very fine-grained, interbedded with green shale.

Shale, dark-gray, upper contact sharp and even.

Sandstone, dark-gray, shaly, fine-grained, grades into medium-gray sandstone, becoming less shaly; lower contact sharp and even.

Shale, dark-green, hard, grades into limestone below.

Limestone, dark-gray, highly fossiliferous, biomicrite.

Limestone, dark-gray, highly fossiliferous, grades into dark-gray calcareous shale, with scattered pyritic, calcareous fossils.

Coal, bright-banded.

Shale, dark-gray, silty, with carbonaceous plant remains.

Siltstone, dark-gray, carbonaceous.

Shale, dark-gray, darker and highly carbonaceous at base.

Siltstone, dark-gray, sideritic.

Sandstone, medium- to dark-gray, bedded and bioturbated, sideritic with dark-gray shale laminations.

Western Kentucky Stratigraphic Test Hole Gil 11, Ohio County, Flener Quadrangle, Carter coordinate location 24-K-34, 1050 FSL 650 FEL, Elevation: 580.00, Total Depth: 350.60.

Interval (Feet)	Description
<b>Cored: 12.43-20.60, Recovered: 5.81.</b>	
12.43-14.79 (2.36)	Assumed washed out.
14.79-16.22 (1.43)	Limestone residuum, cherty, brown, fossiliferous (brachiopods).
16.22-18.37 (2.15)	Clay shale, medium-gray, limonitic.
18.37-20.60 (2.23)	Shale, dark-gray, some limonite streaks, thin sandstone beds.
<b>Cored: 20.60-30.60, Recovered: 9.84.</b>	
20.60-30.44 (9.84)	Shale, dark-gray, interbedded with medium-gray sandstone, pyritic and slightly sideritic, sparse carbonaceous streaks.
<b>Cored: 30.60-40.60, Recovered: 9.31.</b>	
30.60-33.61 (3.01)	Shale, dark-gray, sideritic, carbonaceous material.
33.61-33.70 (0.09)	Claystone, medium-gray, highly carbonaceous, plastic.
33.70-35.50 (1.80)	Coal, hard, bright, slightly pyritic.
35.50-36.04 (0.54)	Sandstone, carbonaceous, fine-grained.
36.04-36.16 (0.12)	Shale, black, and coal, interlaminated.
36.16-36.30 (0.14)	Shale, sandy, carbonaceous.
36.30-40.53 (4.23)	Sandstone, light-gray, medium-grained, micaceous, carbonaceous streaks.
<b>Cored: 40.60-50.60, Recovered: 9.66.</b>	
40.60-40.95 (0.35)	Sandstone, medium-grained, base sharp and angular.
40.95-44.60 (3.65)	Sandstone, medium-gray, very fine-grained, silty, wavy laminations of green siltstone, grades down to sandstone below.
44.60-46.66 (2.06)	Sandstone, light-gray, medium-grained, wavy laminations at top, base sharp and angular.
46.66-47.34 (0.68)	Sandstone, medium-gray, fine-grained, silty, base sharp.
47.34-49.90 (2.56)	Shale, dark-gray, carbonaceous, with many convolute siltstone laminations, very silty toward base.
49.90-50.26 (0.36)	Coal, bright-banded, probably underclay in bottom; core disordered.
<b>Cored: 50.60-60.60, Recovered: 10.00.</b>	
50.60-51.32 (0.12)	Siltstone, medium-gray and shale, dark-gray, interlaminated, wavy bedding.
51.32-52.18 (0.86)	Coal, bright, interbedded with siltstone, as above, convolute bedding.
52.18-52.70 (0.52)	Siltstone, medium-gray, carbonaceous material, base sharp and angular.
52.70-60.60 (7.90)	Clay shale, light- to medium-gray, plastic, poorly bedded.
<b>Cored: 60.60-70.60, Recovered: 9.85.</b>	
60.60-61.25 (0.65)	As above, grades to sandstone below.
61.25-67.88 (6.63)	Sandstone, medium-gray to tan, fine- to medium-grained, silty, sideritic, wavy shale laminations.
67.88-70.45 (2.57)	Transition zone, silty sand at top to dark-gray carbonaceous shale at base.
<b>Cored: 70.60-80.60, Recovered: 10.01.</b>	

70.60-72.78 (2.18)  
72.78-80.61 (7.83)

As above, grades to sandstone.

Sandstone, medium-light-gray to medium-gray, numerous bands of siderite and sideritic shale, carbonaceous laminations at top, fine-grained toward base.

**Cored: 80.60-90.60, Recovered: 9.95.**  
80.60-90.55 (9.95)

Sandstone, medium-gray, fine- to medium-grained, wavy, carbonaceous laminations up to 0.10' thick.

**Cored: 90.60-100.60, Recovered: 9.59.**  
90.60-97.00 (6.40)

Sandstone, medium-gray, fine- to medium-grained, dark-gray shale bands that thicken at top and bottom; interspersed siderite layers.

97.00-97.33 (0.33)  
97.33-99.52 (2.19)

Lag conglomerate.

Sandstone, medium-gray, fine- to medium-grained, dark shale laminations thicker at top, thin coal laminations, few siderite layers.

99.52-99.98 (0.46)

Sandstone, medium-gray, with coal clasts, claystone clasts, siderite nodules.

99.98-100.19 (0.21)

Sandstone and dark shale, interlaminated; sandstone, fine-grained.

**Cored: 100.16-110.13, Recovered: 8.53.**  
101.60-103.75 (2.15)

Sandstone, medium-gray, fine-grained, dark shale laminations, silty and sideritic toward base.

103.75-107.41 (3.66)

Sandstone, medium-gray, fine-grained, interbedded with dark-gray shale and gray siltstone.

107.41-110.13 (2.72)

Sandstone, medium- to coarse-grained, medium-gray, dark shale laminations, some carbonaceous material, scattered siderite nodules.

**Cored: 110.60-120.60, Recovered: 9.82.**  
110.13-110.82 (0.69)

Sandstone, as above, with siderite nodules, coal laminations, base sharp.

110.82-111.82 (1.00)

Shale, dark-gray, carbonaceous, sparse siltstone laminations.

111.82-118.25 (6.43)

Shale, medium-dark-gray, silty, grading to dark-gray shale.

118.25-119.95 (1.70)

Coal, bright-banded, hard.

**Cored: 120.60-130.60, Recovered: 9.96.**  
120.60-120.90 (0.30)

Coal, bright-banded, as above.

120.90-121.01 (0.11)

Coal, with carbonaceous shale laminations.

121.01-125.60 (4.59)

Shale, medium-gray to brownish, silty, rooted, dolomite and in lower half, grades to shale below.

125.60-130.56 (4.96)

Shale, medium-gray, moderately fissile.

**Cored: 130.60-140.60, Recovered: 9.93.**  
130.60-132.30 (1.70)

As above, grades to shale below.

132.30-134.40 (2.10)

Shale, medium-gray with dark-gray, interclasts, convolute bedding, base sharp and angular.

134.40-134.49 (0.09)

Coal, with shale, lenses (re-worked?).

134.49-138.00 (3.51)

Underclay, medium-gray, plastic, carbonaceous at top, grades to shale below.

138.00-140.53 (2.53)

Shale, green, with gray interlaminations.

**Cored: 140.60-150.60, Recovered: 9.82.**

140.60-143.01 (2.41)	Shale, grass-green, sideritic, with clay laminations.
143.01-143.52 (0.51)	Limestone, medium-gray, with green shale laminations.
143.52-144.42 (0.90)	Shale, green, laminated with siltstone, bedding wavy.
144.42-150.42 (6.00)	Shale, medium-gray to light-green, silty at top.
<b>Cored: 150.60-160.60, Recovered: 10.00.</b>	
150.60-152.73 (2.13)	Shale, medium-green to dark-green, sideritic.
152.73-153.55 (0.82)	Shale, dark-gray, with carbonaceous material.
153.55-155.43 (1.88)	Shale, medium-gray.
155.43-160.60 (5.17)	Shale, medium-green, sideritic.
<b>Cored: 160.60-170.60, Recovered: 10.01.</b>	
160.60-161.03 (0.47)	Shale, green, interlaminated with sandstone.
161.03-161.44 (0.41)	Sandstone, medium-gray, fine-grained, sideritic.
161.44-165.36 (3.92)	Sandstone and green and gray shale, interlaminated, sideritic, wavy and convolute bedding.
165.36-167.34 (1.98)	As above, without convolute bedding.
167.34-170.57 (3.23)	As above, shale, dark-gray.
<b>Cored: 170.60-180.60, Recovered: 10.00.</b>	
170.60-180.60 (10.00)	Sandstone, medium-gray, fine- to medium-grained, interlaminated with dark-gray shale.
<b>Cored: 180.60-190.60, Recovered: 10.00.</b>	
180.60-190.60 (10.00)	Sandstone, gray, medium- to fine-grained, interbedded with dark-gray shale, sideritic and carbonaceous.
<b>Cored: 190.60-200.60, Recovered: 10.07.</b>	
190.60-191.55 (0.95)	Sandstone, medium-gray, medium-grained, consisting of dark-gray shale bands, carbonaceous laminations and siltstone clasts.
191.55-194.96 (3.41)	Shale, dark-gray, interbedded with light-gray, medium-grained, calcareous sandstone; bedding, wavy and convolute.
194.96-197.11 (2.15)	Shale, dark-gray, with siderite bands, carbonaceous plant impressions, fossiliferous in bottom 0.05'.
197.11-198.81 (1.70)	Limestone, medium-gray, argillaceous at top, fossiliferous.
198.81-199.31 (0.50)	Shale, dark-gray, calcareous, fossiliferous.
199.31-199.73 (0.42)	Limestone, medium-gray, fossiliferous.
199.73-200.67 (0.94)	Shale, dark-gray, highly calcareous and fossiliferous.
<b>Cored: 200.60-210.60, Recovered: 10.00.</b>	
200.60-201.50 (0.90)	Shale, black, fossiliferous.
201.50-210.60 (9.10)	Shale, dark-gray, sideritic, carbonaceous plant impressions.
<b>Cored: 210.60-220.60, Recovered: 10.09.</b>	
210.60-217.12 (6.52)	Shale, black.
217.12-220.69 (3.57)	Sandstone, medium-gray, fine-grained, shaly and sideritic at bottom.
<b>Cored: 220.60-230.60, Recovered: 9.97.</b>	
220.60-224.58 (4.52)	Shale, medium-green.
224.58-230.03 (5.45)	Shale, dark-gray, sideritic.
<b>Cored: 230.60-240.60, Recovered: 10.03.</b>	
230.60-233.41 (2.81)	As above, slightly sideritic.
233.41-235.26 (1.85)	Sandstone, shaly, calcareous, fossiliferous at bottom.
235.26-236.46 (1.20)	Shale, dark-gray, fossiliferous, pyritic, sparse coal laminations.

236.46-238.01 (1.55)

238.01-240.63 (2.62)

**Cored: 240.60-250.60, Recovered: 10.05.**

240.60-245.51 (4.91)

245.51-250.66 (5.14)

**Cored: 250.60-260.60, Recovered: 10.00.**

250.60-260.60 (10.00)

**Cored: 260.60-270.60, Recovered: 10.00.**

260.60-270.60 (10.00)

**Cored: 270.60-280.60, Recovered: 10.00.**

270.60-280.60 (10.00)

**Cored: 280.60-290.60, Recovered: 10.00.**

280.60-286.31 (5.71)

286.31-287.71 (1.40)

287.71-287.86 (0.15)

287.86-288.59 (0.73)

288.59-288.69 (0.10)

288.69-288.80 (0.11)

288.80-290.62 (1.82)

**Cored: 290.60-300.60, Recovered: 10.00.**

290.60-300.60 (10.00)

**Cored: 300.60-310.60, Recovered: 10.07.**

300.60-306.26 (5.66)

306.26-310.67 (4.41)

**Cored: 310.60-320.00, Recovered: 10.60.**

310.60-320.60 (10.60)

**Cored: 320.60-330.60, Recovered: 9.95.**

320.60-328.10 (7.50)

328.10-330.55 (2.45)

**Cored: 330.60-340.60, Recovered: 10.00.**

330.60-340.60 (10.00)

**Cored: 340.60-350.60, Recovered: 10.00.**

340.60-342.97 (2.37)

342.97-345.39 (2.42)

345.39-349.18 (3.79)

349.18-350.60 (1.42)

**Total Depth: 350.60.**

Coal, hard, bright.

Clay shale, sparse siderite layers, slightly carbonaceous.

Siltstone, medium-gray, finely laminated, with dark-gray shale.

Sandstone, medium-gray, fine- to medium-grained, interbedded with dark-gray shale, highly micaceous, rippled.

Sandstone, medium-gray, medium-grained, micaceous, cross-bedded, porous.

As above.

As above, sideritic and numerous coal streaks.

As above, slightly sideritic.

Shale, dark-gray, sandstone, light-gray, convolute bedding.

Lag conglomerate.

Shale, medium-gray, sandy, with sandstone lenses.

Lag conglomerate.

Sandstone, medium-gray, medium-grained, carbonaceous laminations.

Shale, medium-gray, light-gray sandstone lenses, lower 0.25' black shale.

Shale, dark-gray, fine lenses of calcareous sandstone.

As above, thin layers of siderite, calcareous shale at bottom.

Shale, dark-gray.

Shale, dark-gray, siderite layers, slightly micaceous, pyritized plant material.

Shale, medium-gray, sideritic, sandy; black shale at bottom; carbonaceous laminations, pyritized plants.

Sandstone, medium-gray, medium-grained, micaceous.

Sandstone, medium-gray, medium-grained, micaceous.

Sandstone, medium-gray, medium-grained, coal laminations, siderite layers, dark-gray shale laminations, friable.

Shale, black, siderite layers and nodules at bottom.

Shale, greenish-gray, sideritic, silty.

Shale, dark-gray, sandstone lenses.

**Western Kentucky Stratigraphic Test Hole Gil 12, Butler County, Rochester Quadrangle, Carter coordinate location 13-I-32, 2280 FSL 1025 FWL, Elevation: 526.00, Total Depth: 375.15.**

Interval (Feet)	Description
<b>Cored: 7.79-17.40, Recovered: 9.82.</b>	
7.79-13.11 (5.32)	Sandstone, light-tan to dark-gray, weathered, fine-grained, with red ferric zones and white, very plastic clay layers.
13.11-14.10 (0.99)	Clay, dark-gray, very plastic.
14.10-14.28 (0.18)	Sandstone, weathered, reddish-brown, fine-grained.
14.28-16.95 (2.67)	Sandstone, medium-gray, bioturbated, very fine-grained, with dark-gray shale laminations, carbonaceous, weathered.
16.95-17.61 (0.66)	Sandstone, medium-gray to brownish-red, weathered, fine-grained, coal laminations.
<b>Cored: 17.40-27.45, Recovered: 10.05.</b>	
17.40-27.45 (10.05)	Sandstone, medium-gray, with coal laminations, fine-grained, micaceous, some medium-grained lenses, some dark-gray shale laminations, sideritic.
<b>Cored: 27.40-37.38, Recovered: 10.09.</b>	
27.40-28.73 (1.33)	As above.
28.73-37.49 (8.76)	Clay shale, dark-gray, micaceous, siderite layers.
<b>*Cored: 37.38-47.40, Recovered: 9.73.</b>	
37.38-40.59 (3.21)	Shale, dark-gray, siderite layers, carbonaceous, silty.
40.59-41.37 (0.78)	Coal, alternating bright and dull layers.
41.37-47.11 (5.74)	Underclay, light-gray, becomes silty toward bottom, carbonaceous toward bottom, more plastic at top.
<b>Cored: 47.40-57.40, Recovered: 10.02.</b>	
47.40-57.42 (10.02)	Clay shale, light-gray, silt laminations, carbonaceous plant remains, slightly micaceous.
<b>Cored: 57.40-67.34, Recovered: 10.00.</b>	
57.40-61.13 (3.73)	Sandstone and black shale, interbedded; sandstone, light-gray, medium- to fine-grained, micaceous; shale, silty, sideritic.
61.13-63.96 (2.83)	Sandstone, light-gray, medium-grained, micaceous, laminations of carbonaceous material, siderite nodules.
63.96-65.81 (1.85)	Coal, bright-banded, hard, blocky.
65.81-67.40 (1.59)	Underclay, light-gray, carbonaceous plant material, plastic.
<b>Cored: 67.34-77.40, Recovered: 10.04.</b>	
67.34-67.46 (0.12)	Clay, light-gray, plastic, carbonaceous.
67.46-77.38 (9.92)	Shale, dark-gray, with thin interbeds of light-gray, fine-grained, very sideritic sandstone; becomes clayey, less sandstone at base.
<b>Cored: 77.40-87.40, Recovered: 10.05.</b>	
77.40-87.45 (10.05)	Clay shale, medium-gray, silty; grades into sandstone, light-gray, very fine-grained, with dark-gray shale laminations and sideritic layers.

\*Core jammed in barrel.

**Cored: 87.40-97.35, Recovered: 10.04.**

87.40-89.27 (1.87)

89.27-97.33 (8.06)

97.33-97.44 (0.11)

Shale, dark-gray, and sandstone, light-gray, fine-grained, sideritic.

Sandstone, medium-gray, fine-grained, shaly, becomes more shaly toward base, sideritic.

Shale, dark-gray, slightly silty.

**Cored: 97.35-107.28, Recovered: 10.08.**

97.35-98.12 (0.77)

98.12-107.43 (9.31)

Shale, medium-gray, silty, sideritic.

Shale, dark-gray, with sandstone, light-gray, fine-grained, laminations, sideritic layers throughout.

**Cored: 107.28-117.36, Recovered: 10.06.**

107.28-117.34 (10.06)

Shale, dark-gray, with sandstone, medium-gray, fine-grained, sideritic.

**Cored: 117.36-127.40, Recovered: 9.96.**

117.36-119.95 (2.59)

119.95-124.15 (4.20)

124.15-127.32 (3.17)

As above.

Shale, green, sandy, convolute bedding.

Shale, light-gray to medium-brown, light-gray, sandy lenses toward base.

**Cored: 127.40-137.40, Recovered: 10.04.**

127.40-131.60 (4.20)

131.60-137.44 (5.84)

Sandstone, medium-gray, fine-grained, with dark-gray shale laminations.

Shale, dark-gray, silty laminations.

**Cored: 137.40-147.40, Recovered: 10.05.**

137.40-146.13 (8.73)

146.13-146.92 (0.79)

146.92-147.45 (0.53)

Shale, medium-gray, siderite layers.

Shale, medium-gray, siderite layers, fossiliferous.

Limestone (micrite), medium-gray, fossiliferous.

**Cored: 147.40-157.40, Recovered: 9.87.**

147.40-148.61 (1.21)

148.61-156.88 (8.27)

156.88-156.90 (0.02)

156.90-157.27 (0.37)

As above.

Shale, dark-gray, highly fossiliferous, less fossiliferous toward base; carbonaceous at base, with sparse fossils.

Coal, bright.

Shale, medium-gray, carbonaceous.

**Cored: 157.40-167.40, Recovered: 10.00.**

157.40-159.66 (2.26)

159.66-161.66 (2.00)

161.66-167.41 (5.75)

Shale, dark-gray, carbonaceous, with coal laminations.

Coal, bright-banded, pyritic.

Shale, medium-gray, carbonaceous at top.

**Cored: 167.40-177.37, Recovered: 10.01.**

167.40-171.36 (3.96)

171.36-175.02 (3.66)

175.02-176.07 (1.05)

176.07-177.41 (1.34)

Shale, medium-gray, sideritic, silty at base.

Sandstone, medium-gray, micaceous, fine-grained, sideritic, carbonaceous laminations.

Shale, dark-gray, silty.

Sandstone, light-gray, fine-grained, micaceous, carbonaceous.

**Cored: 177.37-187.35, Recovered: 10.02.**

177.37-179.48 (2.11)

Sandstone, light- to medium-gray, medium-grained, micaceous, some carbonaceous material, crossbedded, moderately well

179.48-181.15 (1.67)

181.15-187.39 (6.24)

**Cored: 187.35-197.35, Recovered: 10.00.**  
187.35-197.35 (10.00)

**Cored: 197.35-207.37, Recovered: 9.98.**  
197.35-206.66 (9.31)  
206.66-207.33 (0.67)

**Cored: 207.37-217.35, Recovered: 10.10.**  
207.37-210.32 (2.95)

210.32-214.92 (4.60)  
214.92-217.47 (2.55)

**Cored: 217.35-227.35, Recovered: 10.04.**  
217.35-227.39 (10.04)

**Cored: 227.35-237.33, Recovered: 10.09.**  
227.35-232.37 (5.02)  
232.37-237.44 (5.07)

**Cored: 237.33-247.37, Recovered: 10.05.**  
237.33-244.32 (6.99)  
244.32-247.38 (3.06)

**Cored: 247.37-257.32, Recovered: 9.97.**  
247.37-257.34 (9.97)

**Cored: 257.32-267.33, Recovered: 9.99.**  
257.32-264.04 (6.72)  
264.04-267.31 (3.27)

**Cored: 267.33-277.30, Recovered: 9.88.**  
267.33-268.43 (1.10)  
268.43-277.21 (8.78)

**Cored: 277.30-287.28, Recovered: 9.98.**  
277.30-287.28 (9.98)

sorted.

Sandstone, medium-gray, medium- to fine-grained, slightly micaceous, claystone laminations, dark-gray shale laminations.

Sandstone, light- to medium-gray, micaceous, some carbonaceous laminations, medium- to fine-grained, crossbedded, moderately well sorted.

Sandstone, medium-gray, some light-brown claystone clasts, some black, micaceous carbonaceous interbeds, medium- to fine-grained, crossbedded.

As above.

Sandstone, light-brown to medium-gray, micaceous, fine-grained, interlaminated with black, carbonaceous and light-brown claystone.

Sandstone, medium-gray, micaceous, fine-grained; carbonaceous laminations more numerous downward, one thin (0.10' thick) coal lamination.

Shale, dark-gray, with some siltstone laminations.

Sandstone, medium-gray, fine-grained, micaceous; interbedded with shale, dark-gray, convolute bedding.

Sandstone, light-gray, fine-grained, sideritic, carbonaceous; dark-gray shale laminations.

As above.

Shale and sandstone, interlaminated; shale, dark-gray; sandstone, light-gray, fine-grained; siderite nodules throughout.

As above.

Sandstone, light-gray, fine-grained, slightly micaceous, carbonaceous, with dark-gray shale laminations in upper section.

Sandstone, light-gray, medium-grained, slightly micaceous, siderite layers and nodules, carbonaceous laminations.

As above.

Sandstone and shale, interbedded, some bioturbated; shale, dark-gray; sandstone, light-gray, fine-grained, siderite nodules.

As above.

Shale, black, very calcareous, with siderite lenses, very carbonaceous.

Shale, dark-gray, siderite nodules, carbonaceous, silty.

**Cored: 287.28-297.26, Recovered: 9.98.**

287.28-297.26 (9.98)

As above, with pyritized plant remains.

**Cored: 297.26-307.20, Recovered: 9.98.**

297.26-307.24 (9.98)

As above.

**Cored: 307.20-317.20, Recovered: 9.98.**

307.20-317.18 (9.98)

As above, more carbonaceous.

**Cored: 317.20-327.20, Recovered: 10.02.**

317.20-322.12 (4.92)

322.12-327.22 (5.10)

Shale, as above, with calcareous layer at 318.45.

Shale, dark-gray, sideritic, silty.

**Cored: 327.20-337.20, Recovered: 10.08.**

327.20-337.28 (10.08)

Shale, dark-gray, siderite lenses and nodules, carbonized plant remains, slightly silty.

**Cored: 337.20-347.19, Recovered: 10.12.**

337.20-347.32 (10.12)

Shale, dark-gray, carbonaceous plant remains at top; grades downward into a lighter gray, silty shale; all sideritic.

**Cored: 347.10-357.40, Recovered: 10.04.**

347.10-352.49 (5.39)

352.49-357.14 (4.65)

Shale, dark-gray, sideritic, carbonaceous, silty.

Sandstone, medium-gray, medium-grained, massive.

**Cored: 357.40-367.20, Recovered: 10.02.**

357.40-364.31 (6.91)

364.31-367.42 (3.11)

Sandstone, medium-gray, medium-grained, sideritic, slightly micaceous, coal laminations at bottom.

Shale, dark-gray, silty, with light-gray siltstone laminations.

**Cored: 367.20-375.30, Recovered: 7.95.**

367.20-375.15 (7.95)

Shale, dark-gray, silty, carbonaceous, with light-gray sandstone lenses.

**Total Depth: 375.15.**

**Western Kentucky Stratigraphic Test Hole Gil 13, Butler County, South Hill Quadrangle, Carter coordinate location 8-I-33, 1520 FSL 1730 FEL, Elevation: 535.00, Total Depth: 236.00.**

Interval (Feet)	Description
<b>Cored: 14.00-26.00, Recovered: 7.93.</b> 14.00-26.00 (7.93)	Sandstone, medium-grained, tan to reddish-brown, highly weathered, iron-stained, slightly micaceous, crossbedded, carbonaceous.
<b>Cored: 26.00-36.00, Recovered: 7.82.</b> 26.00-31.00 (5.00) 31.00-33.78 (2.78)	As above. Shale, medium-gray, silty clay, medium-gray, plastic at contact between sandstone and shale, dark-gray shale laminations interspersed in unit.
<b>Cored: 36.00-45.94, Recovered: 9.94.</b> 36.00-45.94 (9.94)	Shale, medium-gray, silty, sparse carbonaceous plant remains, slight micaceous.
<b>Cored: 46.00-56.00, Recovered: 10.00.</b> 46.00-56.00 (10.00)	As above, with siderite bands.
<b>Cored: 56.00-66.00, Recovered: 10.00.</b> 56.00-56.23 (0.23) 56.23-58.06 (1.83)	As above. Limestone, biomicrite, dark-gray, very sideritic at top, slightly sideritic throughout, more argillaceous and less fossiliferous toward base.
58.06-65.96 (7.90)	Shale, dark-gray, fossiliferous, highly calcareous, limestone nodules, slightly sideritic, somewhat clayey.
<b>Cored: 66.00-76.00, Recovered: 9.67.</b> 66.00-66.60 (0.60) 66.60-70.00 (3.40) 70.00-75.66 (5.66)	As above, with coal laminations at base. Coal, bright-banded. Underclay, medium-gray, carbonaceous at top, plastic.
<b>Cored: 76.00-86.00, Recovered: 9.91.</b> 76.00-85.91 (9.91)	Shale, medium-gray, silty, sideritic, clayey.
<b>Cored: 86.00-96.00, Recovered: 10.00.</b> 86.00-89.56 (3.56) 89.56-96.00 (6.44)	As above. Sandstone, medium-gray, fine-grained, shaly, sideritic.
<b>Cored: 96.00-106.00, Recovered: 9.75.</b> 96.00-99.12 (3.13) 99.12-105.75 (6.63)	As above. Shale, dark-gray, silty.
<b>Cored: 106.00-116.00, Recovered: 9.88.</b> 106.00-115.88 (9.88)	Shale, dark-gray, with light-gray silt laminations.
<b>Cored: 116.00-125.00, Recovered: 9.91.</b> 116.00-123.48 (7.48) 123.48-125.90 (2.42)	As above with few siderite layers and claystone clasts at base. Coal, bright- and dull-banded.

**Cored: 125.00-135.00, Recovered: 9.80.**

125.00-125.01 (0.01)  
125.01-134.80 (9.79)

Shale, black.

Shale, light-gray, interspersed, with light-gray claystone clasts.

**Cored: 135.00-145.05, Recovered: 10.05.**

135.00-145.05 (10.05)

Shale, medium-gray, clayey, sideritic, carbonaceous.

**Cored: 145.00-155.00, Recovered: 10.10.**

145.00-155.10 (10.10)

Shale, green, sideritic, clayey, carbonaceous.

**Cored: 155.00-165.00, Recovered: 10.10.**

155.00-155.50 (0.50)

As above.

155.50-163.93 (8.43)

Shale, dark-gray, interbedded with sandstone, light-gray, fine-grained.

163.93-164.98 (1.05)

Limestone, biomicritic, dark-gray.

**Cored: 166.00-176.00, Recovered: 10.00.**

166.00-169.35 (3.35)

Limestone, medium-gray, fossiliferous, with sparse dark-gray shale laminations.

169.35-169.80 (0.45)

Shale, dark-gray, with sparse fossil fragments.

169.80-170.10 (0.30)

Sideritic shale, with sparse coal laminations and sparse siltstone clasts.

170.10-170.37 (0.27)

Coal, bright, with fusain partings.

170.37-170.41 (0.04)

Siderite layer.

170.41-170.55 (0.14)

Coal, bright.

170.55-171.02 (0.47)

Siltstone, shaly, dark-gray, carbonaceous at top.

171.02-172.80 (1.78)

Siltstone and dark-gray shale, interlaminated.

172.80-175.07 (2.27)

Shale, dark-gray to medium-gray, silty.

175.07-175.23 (0.16)

Coal, dull to bright.

175.23-176.00 (0.77)

Underclay, medium- to dark-gray, plastic, carbonaceous in part.

**Cored: 176.00-186.00, Recovered: 10.10.**

176.00-178.55 (2.55)

Clay shale, gray, green, and tan, nonbedded, plastic.

178.55-185.45 (6.90)

Shale, brown to gray, sideritic.

185.45-186.10 (0.65)

Shale, dark-gray.

**Cored: 186.00-196.00, Recovered: 9.93.**

186.00-195.93 (9.93)

Shale, dark-gray, with silty, sideritic laminations.

**Cored: 196.00-206.00, Recovered: 10.25.**

196.00-198.52 (2.52)

As above.

198.52-198.57 (0.05)

Shale, black, carbonaceous.

198.57-201.50 (2.93)

Coal, bright-layered.

201.50-203.60 (2.10)

Shale, dark-gray, very carbonaceous at top, poorly bedded.

203.60-206.25 (2.65)

Shale, medium-gray, with silty laminations.

**Cored: 206.00-216.00, Recovered: 10.10.**

206.00-214.08 (8.08)

Shale, dark-gray with silty laminations and sparse sideritic layers.

214.08-214.92 (0.84)

Shale, black, carbonaceous, with sparse vitrain laminations.

214.92-216.10 (1.18)

Shale, dark-gray, silty, carbonaceous.

**Cored: 216.00-226.00, Recovered: 9.92.**

216.00-218.10 (2.10)

Shale, medium- to dark-gray, silty, becoming more silty toward base.

218.10-219.90 (1.80)

Siltstone, sandstone, and shale, interlaminated.

219.90-225.92 (6.02)

Sandstone, light-gray, fine- to medium-grained, with scattered

shale laminations.

**Cored: 226.00-236.00, Recovered: 10.00.**  
226.00-236.00 (10.00)

Sandstone, light-gray, medium-grained, crossbedded, carbonaceous shale laminations.

**Total Depth: 236.00.**

**Western Kentucky Stratigraphic Test Hole Gil 14, Hopkins County, Madisonville East Quadrangle, Carter coordinate location 20-J-25, 150 FSL 800 FEL, Elevation: 452.00, Total Depth: 568.10.**

Interval (Feet)	Description
<b>Cored: 20.00-30.00, Recovered: 8.32.</b> 20.00-21.42 (1.42)	Sandstone, medium-gray to medium-brown, fine-grained, micaceous, crossbedded, iron-stained, and weathered.
21.42-23.22 (1.80)	Shale, rust-brown, weathered.
23.22-27.15 (3.93)	Sandstone, medium-gray, fine-grained, crossbedded, calcite veining, medium-brown streaks.
27.15-28.32 (1.17)	Shale, medium-gray, green tint, laminated.
<b>Cored: 30.00-40.00, Recovered: 9.80.</b> 30.00-30.44 (0.44) 30.44-39.80 (9.36)	As above. Sandstone, medium-gray, slightly micaceous, fine- to very fine-grained, slightly rippled to massive, well sorted.
<b>Cored: 40.00-50.00, Recovered: 10.10.</b> 40.00-50.10 (10.10)	As above, with shale laminations, siderite layers toward bottom.
<b>Cored: 50.00-60.00, Recovered: 10.80.</b> 50.00-60.08 (10.08)	As above, increasing silt downward.
<b>Cored: 60.00-70.00, Recovered: 9.90.</b> 60.00-64.64 (4.64) 64.64-69.90 (5.26)	Shale, medium- to dark-gray, silty, fossiliferous; siderite layers up to 0.20' thick. Shale, medium-gray, slightly silty, slightly fossiliferous, pyritic.
<b>Cored: 70.00-80.00, Recovered: 9.97.</b> 70.00-79.97 (9.97)	Shale, medium- to dark-gray, siderite lenses, pyritized fossils.
<b>Cored: 80.00-90.00, Recovered: 10.18.</b> 80.00-81.18 (1.18) 81.18-85.29 (4.11) 85.29-85.55 (0.26) 85.55-85.68 (0.13) 85.68-86.06 (0.38) 86.06- 88.59 (2.53) 88.59-90.18 (1.59)	As above. Shale, black, fossiliferous at top 1.30' (brachiopods?), pyritized, layers to 1.20' thick; coal laminations. Shale, black, highly carbonaceous, fine pyrite crystals disseminated throughout. Coal, bright-banded. Coal, pyrite lens at top, pyritic throughout. Underclay, medium-gray, greenish tinge, silt increases downward. Limestone, medium- to light-gray, sparitic to micritic, sandy downward.
<b>Cored: 90.00-100.00, Recovered: 10.01.</b> 90.00-95.92 (5.92) 95.92-98.27 (2.35) 98.27-100.01 (1.74)	Sandstone, grayish-green, micaceous; fine-grained, crossbedded, rippled siderite layers and nodules. Shale, gray, siderite lenses, siltstone and sandstone interbeds more abundant downward. Sandstone, gray; fine-grained, convolute siderite lenses and shale laminations.
<b>Cored: 100.00-110.00, Recovered: 9.94.</b>	

100.00-102.17 (2.17)  
 102.17-103.82 (1.65)  
 103.82-109.94 (6.12)

**Cored: 110.00-120.00, Recovered: 10.19.**

110.00-116.19 (6.19)  
 116.19-116.52 (0.33)  
 116.52-120.19 (3.67)

**Cored: 120.00-130.00, Recovered: 9.90.**

120.00-129.90 (9.90)

**Cored: 130.00-140.00, Recovered: 9.97.**

130.00-139.97 (9.97)

**Cored: 140.00-150.00, Recovered: 9.98.**

140.00-149.98 (9.98)

**Cored: 150.00-160.00, Recovered: 9.99.**

150.00-159.99 (9.99)

**Cored: 160.00-170.00, Recovered: 9.97.**

160.00-169.97 (9.97)

**Cored: 170.00-180.00, Recovered: 10.06.**

170.00-177.44 (7.44)

177.44-179.23 (1.79)

179.23-179.32 (0.09)

179.32-180.06 (0.74)

**Cored: 180.00-190.00, Recovered: 10.06.**

180.00-180.98 (0.98)

180.98-185.94 (4.96)

185.94-187.95 (2.01)

187.95-190.06 (2.11)

**Cored: 190.00-200.00, Recovered: 9.99.**

190.00-197.51 (7.51)

197.51-199.99 (2.48)

Sandstone, gray, siderite, shale stringers, fine-grained, rippled.  
 Shale, medium-gray, siderite nodules, interlaminated, sandstone.  
 Sandstone, gray, rippled, fine- to medium-fine-grained siderite  
 lenses, shale laminations.

As above, carbonaceous plant fragments.  
 Shale, dark-gray, fine-grained, pelletal siderite, carbonaceous  
 plant fragments, laminated.  
 Sandstone, gray to medium-gray, micaceous, medium-grained,  
 crossbedded, rippled, silty downward.

Sandstone, medium-gray, micaceous, trace pyrite, carbonaceous  
 fragments, fine- to very fine-grained, zone of shale laminations at  
 126.00.

Shale, medium-gray, sandstone interbeds in upper half, sand-  
 stone laminations in lower half, micaceous, carbonaceous plant  
 fragments, silty.

Shale, medium-gray, sandstone interbeds, micaceous, trace car-  
 bonaceous plant fragments.

Shale, medium-dark-gray, sandstone laminations, micaceous,  
 carbonaceous plant fragments.

Shale, medium-dark-gray, siderite layers, sand laminations, car-  
 bonized and pyritized plant fragments.

Shale, dark-gray, pyritized plant fragments, laminated, siderite  
 nodules.

Shale, black, highly carbonaceous, calcite along joints, slightly  
 pyritic.

Bone coal.

Coal, bright-banded, pyrite layer at top.

As above.

Underclay, medium- to dark-gray, brownish tinge, plant frag-  
 ments, silty downward.

Shale, medium-gray, silty, bioturbated.

Sandstone, medium-gray, with greenish tinge, fine- to very fine-  
 grained, interlaminated with siltstone.

Sandstone, medium-gray, with greenish tinge, fine- to medium-  
 fine-grained, laminated, grain size increases downward, siderite  
 nodules.

Shale, medium- to dark-gray, carbonaceous plant fragments, bio-  
 turbated.

**Cored: 200.00-210.00, Recovered: 9.77.**

200.00-206.01 (6.01)

206.01-209.02 (3.01)

209.02-209.77 (0.75)

Shale, dark-gray, carbonaceous material increases downward, siderite lenses, pyritized plant fragments.

Coal, bright- and dull-banded.

Shale, dark-gray, carbonaceous material.

**Cored: 210.00-220.00, Recovered: 10.02.**

210.00-213.58 (3.58)

213.58-215.46 (1.88)

215.46-215.66 (0.20)

215.66-215.72 (0.06)

215.72-220.02 (4.30)

Sandstone, medium-gray, carbonaceous plant fragments, shaly at top, pyrite (isolated).

Shale, medium-gray, carbonaceous, slickensided.

Bone coal.

Underclay, rooted.

Sandstone, light- to medium-gray, carbonaceous laminations, micaceous fine- to medium-grained.

**Cored: 220.00-230.00, Recovered: 9.92.**

220.00-229.92 (9.92)

Sandstone, light-gray, slightly micaceous, coal laminations, siderite nodules, medium-grained, crossbedded to massive, friable.

**Cored: 230.00-240.00, Recovered: 9.99.**

230.00-237.29 (7.29)

Sandstone, light-gray, micaceous along bedding, coal laminations, associated siderite nodules, fine- to medium-grained, crossbedded.

237.29-239.99 (2.70)

Shale, dark-gray, pyritized plant fragments, carbonaceous, siderite lenses.

**Cored: 240.00-250.00, Recovered: 10.14.**

240.00-241.88 (1.88)

Shale, dark-gray, pyritized plant fragments, carbonaceous downward.

241.88-244.10 (2.22)

Coal, bright- and dull-banded.

244.10-245.78 (1.68)

Underclay, medium-gray to medium-green, carbonaceous plant fragments.

245.78-250.14 (4.36)

Siltstone, medium-gray to brownish-green, bioturbated, carbonaceous.

**Cored: 250.00-260.00, Recovered: 9.99.**

250.00-251.31 (1.31)

Siltstone, medium-gray to brownish-green, slightly micaceous.

251.31-259.99 (8.68)

Sandstone, light- to medium-gray, greenish-gray in upper half, micaceous, fine- to medium-fine-grained, siderite layers, crossbedded.

**Cored: 260.00-270.00, Recovered: 9.98.**

260.00-269.98 (9.98)

Sandstone, medium-gray, siderite lenses, layers with calcareous matrix, micaceous, carbonaceous at base, fine- to very fine-grained, laminated.

**Cored: 270.00-280.00, Recovered: 10.12.**

270.00-280.12 (10.12)

Sandstone, medium- to dark-gray, carbonaceous plant fragments, scattered pyritized plant fragments, very fine-grained, slightly micaceous, laminated, convoluted near base.

**Cored: 280.00-290.00, Recovered: 9.93.**

280.00-299.93 (9.93)

Shale, dark-gray, carbonaceous, pyritized plant fragments, slightly micaceous, thinly laminated, silty at top.

**Cored: 290.00-300.00, Recovered: 10.06.**

290.00-300.06 (10.06)

Shale, medium-gray to dark-gray to black at bottom, siderite lenses carbonaceous and pyritized plant fragments.

**Cored: 300.00-310.00, Recovered: 10.00.**

300.00-300.96 (0.96)

Shale, black, carbonaceous plant fragments, pyritic, coal laminations.

300.96-301.16 (0.20)

Limestone, dark-gray, fossiliferous.

301.16-301.71 (0.55)

Coal, bright-banded.

301.71-303.40 (1.70)

Underclay, carbonaceous and pyritized plant fragments.

303.40-310.00 (6.60)

Shale, light- to medium-gray, carbonaceous plant fragments.

**Cored: 310.00-320.00, Recovered: 10.09.**

310.00-311.42 (1.42)

Shale, dark-gray, carbonaceous plant fragments, with a 0.13'-thick coal bed at base.

311.42-314.05 (2.63)

Sandstone, light-gray, with greenish tinge, slightly micaceous, siderite nodules, bioturbated, coal laminations, fine- to medium-grained.

314.05-320.09 (6.04)

Sandstone, light-gray, greenish tinge, siderite lenses, shale laminations, fine-grained.

**Cored: 320.00-330.00, Recovered: 9.92.**

320.00-329.92 (9.92)

Sandstone, light-gray, slightly micaceous, siderite lenses, shale laminations, fine-grained, crossbedded.

**Cored: 330.00-340.00, Recovered: 10.06.**

330.00-340.06 (10.06)

Sandstone, light-gray to gray, slightly micaceous, siderite lenses, fine- to medium-grained, crossbedded and rippled.

**Cored: 340.00-350.00, Recovered: 9.95.**

340.00-349.95 (9.95)

Sandstone, light- to medium-gray, micaceous, siderite lenses, fine- to medium-grained, crossbedded, 0.39'-thick carbonaceous layer at 345.29.

**Cored: 350.00-360.00, Recovered: 10.02.**

350.00-353.60 (3.60)

Sandstone, light- to medium-gray, micaceous, siderite lenses, medium-grained, crossbedded.

353.60-354.43 (0.83)

Coal, bright- and dull-banded, pyritic.

354.43-355.43 (1.00)

Underclay, medium- to dark-gray, carbonaceous.

355.43-356.25 (0.82)

Clay shale, medium-greenish-gray, carbonaceous plant fragments.

356.25-357.27 (1.02)

Coal, bright- and dull-banded, pyritic.

357.27-357.86 (0.59)

Underclay, dark-gray, carbonaceous.

357.86-360.02 (2.16)

Shale, medium- to dark-gray, siderite concretions, carbonaceous, silty downward.

**Cored: 360.00-370.00, Recovered: 9.94.**

360.00-362.23 (2.23)

As above.

362.23-366.85 (4.62)

Sandstone, medium-gray, slightly micaceous, fine-grained, shale laminations in upper half.

366.85-369.94 (3.09)

Shale, medium- to dark-gray, carbonaceous, silty toward bottom; coal laminations.

**Cored: 370.00-380.00, Recovered: 10.05.**

370.00-380.05 (10.05)

Sandstone, medium-gray, slightly micaceous, siderite nodules,

**Cored: 380.00-390.00, Recovered: 10.00.**

380.00-390.00 (10.00)

shale laminations, fine-grained, crossbedded, and rippled.

**Cored: 390.00-400.00, Recovered: 10.00.**

390.00-400.00 (10.00)

Sandstone, medium-gray, slightly micaceous, carbonaceous laminations, siderite lenses, shale laminations, fine-grained, friable, petroliferous(?) near base.

**Cored: 400.00-410.00, Recovered: 10.00.**

400.00-410.00 (10.00)

Sandstone, medium-gray, micaceous, carbonaceous laminations, siderite layers, shale laminations, fine-grained, friable, petroliferous(?), rippled.

**Cored: 410.00-420.00, Recovered: 10.00.**

400.00-410.00 (10.00)

As above, coal laminations.

**Cored: 420.00-430.00, Recovered: 10.00.**

420.00-430.00 (10.00)

Sandstone, gray, slightly micaceous, siderite nodules and lag conglomerate shale laminations, carbonaceous laminations, fine- to medium-grained, friable.

**Cored: 430.00-440.00, Recovered: 10.10.**

430.00-432.94 (2.94)

432.94-440.10 (7.16)

As above.

As above, 0.39'-thick lag conglomerate at base.

Siltstone, medium-gray, abundant shale laminations decreasing downward, laminated.

**Cored: 440.00-450.00, Recovered: 10.00.**

440.00-442.95 (2.95)

442.95-450.00 (7.05)

As above.

Shale, dark-gray, siderite nodules, slightly silty, laminated.

**Cored: 450.00-460.00, Recovered: 10.09.**

450.00-451.20 (1.20)

451.20-453.07 (1.87)

453.07-460.09 (7.02)

As above.

Coal, bright- and dull-banded, pyritic.

Shale, dark-gray, siderite nodules, carbonaceous plant fragments, silty.

**Cored: 460.00-470.00, Recovered: 10.00.**

460.00-470.00 (10.00)

Shale, dark-gray, siderite nodules.

**Cored: 470.00-480.00, Recovered: 10.06.**

470.00-474.26 (4.26)

474.26-475.43 (1.17)

475.43-480.06 (4.63)

As above.

Coal, dull and bright bands.

Shale, medium-gray to brown, carbonaceous plant fragments, siltstone laminations, more silty downward.

**Cored: 480.00-490.00, Recovered: 9.84.**

480.00-485.80 (5.80)

485.80-489.84 (4.04)

Shale, medium-gray, with greenish tinge, siderite nodules.

Shale, medium-gray, micaceous along bedding, siltstone laminations.

**Cored: 490.00-500.00 (10.03)**

490.00-500.03 (10.03)

Shale, dark-gray, siderite lenses, siltstone and sandstone interbeds, micaceous along bedding.

**Cored: 500.00-510.00, Recovered: 9.90.**

500.00-509.90 (9.90)

Shale, dark-gray, siltstone laminations, carbonaceous plant fragments.

**Cored: 510.00-520.00, Recovered: 10.05.**

510.00-511.85 (1.85)

511.85-516.71 (4.86)

As above.

Limestone, medium-gray, brown and yellow, siderite nodules and sand; brachiopods, corals, crinoids, shale laminations.

516.71-520.05 (3.34)

Shale, medium-gray, siltstone laminations.

**Cored: 520.00-530.00, Recovered: 10.02.**

520.00-530.02 (10.02)

Shale, medium- to dark-gray, siderite lenses, sparse pyritized crinoid stem, and plant fragments.

**Cored: 530.00-540.00, Recovered: 10.03.**

530.00-537.31 (7.31)

537.31-537.41 (0.10)

Shale, dark-gray, siderite layers, carbonaceous plant fragments.

Sandstone, light-gray, coal and shale laminations, medium-grained.

537.41-537.88 (0.47)

Coal, bright-banded, pyritized plant fragments.

537.88-540.03 (2.15)

Shale, dark-gray, very carbonaceous at top.

**Cored: 540.00-550.00, Recovered: 10.07.**

540.00-543.10 (3.10)

543.10-543.38 (0.28)

543.38-550.07 (6.69)

Shale, dark-gray, coal laminations, siderite layers.

Coal, bright-banded.

Shale, dark-gray, siltstone laminations, siderite nodules.

**Cored: 550.00-560.00 (Recovered: 10.00).**

550.00-560.00 (10.00)

As above.

**Cored: 560.00-570.00, Recovered: 8.10.**

560.00-566.75 (6.75)

Shale, medium- to dark-gray, very fine-grained sandstone laminations.

566.75-568.10 (1.45)

Sandstone, light-gray, slightly micaceous, fine- to very fine-grained, shale laminations, convolute bedding.

**Total Depth: 568.10.**

**Western Kentucky Stratigraphic Test Hole Gil 15, Union County, DeKoven Quadrangle, Carter coordinate location 5-M-18, 1950 FSL 2100 FWL, Elevation: 414.00, Total Depth: 777.41.**

Interval (Feet)	Description
<b>Cored: 28.35-37.82, Recovered: 9.47.</b> 28.35-37.82 (9.47)	Sandstone, medium-gray to buff-brown, medium-grained, micaceous, limonitic.
<b>Cored: 37.82-47.82, Recovered: 8.69.</b> 37.82-42.64 (4.82) 42.64-43.79 (1.15) 43.79-44.00 (0.21) 44.00-45.40 (1.40) 45.40-45.47 (0.07) 45.47-46.51 (1.04)	As above. Coal, bright, hard. Claystone, medium-gray, carbonaceous, semiplastic. Coal, bright-banded, slightly pyritic. Shale, black, fissile. Underclay, medium-gray, carbonaceous, semiplastic.
<b>Cored: 47.82-57.82, Recovered: 9.62.</b> 47.82-51.17 (3.35)  51.17-57.44 (6.27)	Sandstone, medium-gray, fine-grained, shaly and sideritic, slightly micaceous and carbonaceous. Shale, medium-gray, sideritic, carbonaceous.
<b>Cored: 57.82-67.81, Recovered: 10.05.</b> 57.81-67.86 (10.05)	Shale, medium-gray, silty, carbonaceous, micaceous, grading to black shale at bottom.
<b>Cored: 67.81-77.82, Recovered: 10.04.</b> 67.81-71.60 (3.79) 71.60-77.85 (6.25)	Shale, black, with sparse siderite lenses. Sandstone and shale, black interlaminated; sandstone, light-gray, fine-grained, calcareous, micaceous.
<b>Cored: 77.82-87.82, Recovered: 9.97.</b> 77.82-78.11 (0.29) 78.11-86.35 (8.24) 86.35-87.79 (1.44)	As above. Shale, medium-gray, sideritic lenses, carbonaceous material. Shale, black, pyritic.
<b>Cored: 87.82-97.82, Recovered: 9.32.</b> 87.82-88.52 (0.70) 88.52-88.85 (0.33) 88.85-97.77 (8.92)	As above, shale, black. Coal, hard, bright. Siltstone, light-gray, dolomitic nodules, slightly micaceous.
<b>Cored: 97.82-107.76, Recovered: 10.06.</b> 97.82-100.97 (3.15) 100.97-107.88 (6.91)	Siltstone, slightly micaceous. Sandstone, light-gray, fine-grained, micaceous, claystone 0.30' from bottom.
<b>Cored: 107.76-117.61, Recovered: 9.88.</b> 107.76-117.64 (9.88)	Sandstone, light-gray, fine-grained, micaceous, slightly sideritic, interlaminated with medium-gray shale.
<b>Cored: 117.61-127.61, Recovered: 10.08.</b> 117.61-127.59 (10.08)	As above, slightly carbonaceous.
<b>Cored: 127.61-137.61, Recovered: 10.13.</b>	

127.69-137.82 (10.13)	Shale, dark-gray, silty, micaceous, carbonaceous, thin sandstone laminations, fine-grained, medium- to light-gray.
<b>Cored: 137.61-147.71, Recovered: 10.09.</b>	
137.61-139.42 (1.81)	Shale, medium-gray, carbonaceous and pyritic at base.
139.42-142.57 (3.15)	Coal, hard, bright, pyritic.
142.57-147.70 (5.13)	Sandstone, light-gray, fine-grained, shaly, carbonaceous.
<b>Cored: 147.71-157.71, Recovered: 10.13.</b>	
147.71-150.14 (2.43)	As above.
150.14-157.84 (7.70)	Sandstone, medium-gray, fine-grained, with dark-gray shale, carbonaceous, micaceous.
<b>Cored: 157.71-167.71, Recovered: 10.04.</b>	
157.71-167.75 (10.04)	As above.
<b>Cored: 167.71-177.71, Recovered: 10.04.</b>	
167.71-174.66 (6.95)	Shale, dark-gray, silty, sideritic.
174.66-176.79 (2.13)	Shale, black.
176.79-177.75 (0.96)	Coal, bright-banded, pyritic, hard.
<b>Cored: 177.71-187.71, Recovered: 10.00.</b>	
177.71-181.46 (3.75)	Coal, as above.
181.46-184.43 (2.97)	Shale, medium-gray, silty, slightly carbonaceous.
184.43-187.71 (3.28)	Sandstone, light-gray, fine-grained, micaceous, slightly shaly.
<b>Cored: 187.71-197.71, Recovered: 10.00.</b>	
187.71-197.71 (10.00)	Sandstone, medium-gray, fine-grained, shaly, slightly sideritic, micaceous, carbonaceous.
<b>Cored: 197.71-207.71, Recovered: 9.95.</b>	
197.71-199.93 (2.22)	As above.
199.93-207.66 (7.73)	Shale, dark-gray, silty, carbonaceous.
<b>Cored: 207.71-217.68, Recovered: 10.09.</b>	
207.71-215.96 (8.25)	Shale, dark-gray, carbonaceous, slightly micaceous.
215.96-217.80 (1.84)	Shale, black, hard, pyritic.
<b>Cored: 217.68-227.68, Recovered: 10.13.</b>	
217.68-218.54 (0.85)	As above.
218.54-219.78 (1.24)	Coal, dull to moderately bright, hard, pyritic.
219.78-222.46 (2.68)	Siltstone, medium-gray, slightly carbonaceous.
222.46-223.85 (1.39)	Sandstone, very shaly, medium-gray, fine-grained with carbonaceous material, micaceous.
223.85-227.95 (4.10)	Shale, very silty, medium-gray, sideritic.
<b>Cored: 227.68-237.68, Recovered: 10.03.</b>	
227.68-231.72 (4.04)	Siltstone, medium-gray, carbonaceous laminations.
231.72-235.16 (3.44)	Sandstone, medium-gray, fine-grained, with coal clasts, sideritic.
235.16-235.54 (0.38)	Coal, banded, pyritic.
235.54-235.67 (0.13)	Shale, dark-gray, carbonaceous.
235.67-237.71 (2.04)	Shale, medium-gray, carbonaceous.
<b>Cored: 237.68-247.76, Recovered: 9.98.</b>	

237.76-246.41 (8.65)  
246.41-247.74 (1.33)

Shale, medium-gray, silty.  
Shale, dark-gray.

**Cored: 247.76-257.76, Recovered: 10.11.**

247.76-251.04 (3.28)  
251.04-254.16 (3.12)

Shale, dark-gray, silty.  
Sandstone, light-gray, fine-grained, with dark-gray shale laminations, slightly micaceous.  
Shale, dark-gray, carbonaceous, fissile.  
Shale, medium-gray, carbonaceous, slightly silty.

254.16-254.34 (0.18)  
254.34-257.87 (3.53)

**Cored: 257.76-267.76, Recovered: 10.26.**

257.76-258.54 (0.78)  
258.54-264.27 (5.73)

As above.  
Shale, green, moderately carbonaceous at top, slightly carbonaceous and sideritic at base, lower contact sharp.  
Limestone, dark-gray, slightly fossiliferous, green shale laminations.

264.27-268.02 (3.75)

**Cored: 267.76-277.76, Recovered: 9.92.**

267.76-267.97 (0.21)  
267.97-275.39 (7.42)  
275.39-276.50 (1.11)  
276.50-277.68 (1.18)

Shale, dark-gray, carbonaceous.  
Shale, medium-gray, carbonaceous at top, highly silty.  
Shale, medium-gray, carbonaceous.  
Shale, dark-gray, carbonaceous.

**Cored: 277.68-287.76, Recovered: 10.10.**

277.68-287.76 (10.00)

Shale, medium-gray, silty, micaceous, slightly carbonaceous, siderite lenses 0.71' and 4.81' from bottom.

**Cored: 287.76-297.76, Recovered: 10.00.**

287.76-292.09 (4.33)  
292.09-297.44 (5.35)

Sandstone, light-gray, fine-grained, dark-gray shale laminations.  
Shale, dark-gray, silty; sandstone laminations, light-gray, micaceous.  
Sandstone, light-gray, fine-grained, micaceous, shaly, slightly carbonaceous.

297.44-297.76 (0.32)

**Cored: 297.76-307.76, Recovered: 10.01.**

297.76-302.21 (4.45)  
302.21-302.88 (0.67)  
302.88-307.77 (4.89)

As above.  
Shale, dark-gray, sandstone laminations.  
Sandstone, light-gray, fine-grained, micaceous, argillaceous, carbonaceous, massive.

**Cored: 307.76-317.76, Recovered: 10.03.**

307.76-316.54 (8.78)  
316.54-317.79 (1.25)

As above, with coal laminations and clasts at 313.55 and 314.46, with coal laminations abundant toward bottom.  
Sandstone and shale, interlaminated; sandstone, light-gray, fine-grained, micaceous; shale, dark-gray, with some coal laminations.

**Cored: 317.76-327.76, Recovered: 10.10.**

317.76-318.66 (0.90)  
318.66-322.08 (3.42)

As above.  
Shale, alternating beds of medium- and dark-gray; dark-gray shale highly carbonaceous and slightly sideritic at base.  
Shale, black, and bone coal.  
Coal, banded, highly pyritic, contact sharp.  
Shale, medium-gray, silty, with siderite nodules, carbonaceous.

322.08-322.21 (0.13)  
322.21-323.15 (0.94)  
323.15-327.86 (4.71)

**Cored: 327.76-337.76, Recovered: 9.97.**

327.76-329.85 (2.09)  
 329.85-330.72 (0.87)  
 330.72-331.80 (1.08)  
 331.80-334.15 (2.35)  
 334.15-337.73 (3.58)

Shale, medium-gray.  
 Shale, dark-gray.  
 Shale, medium-gray.  
 Shale, green, sideritic, slightly calcareous at base.  
 Shale, green, limestone nodules.

**Cored: 337.76-347.76, Recovered: 10.16.**

337.76-338.97 (1.21)  
 338.97-341.81 (2.84)  
 341.81-342.31 (0.50)  
 342.31-343.85 (1.54)

Shale, green, carbonaceous.  
 Shale, black, sideritic.  
 Coal, pyritic, hard, dull.  
 Shale, dark-gray, carbonaceous.

343.85-347.92 (4.07)

Shale, medium-gray, slightly silty.

**Cored: 347.76-357.76, Recovered: 10.13.**

347.76-357.89 (10.13)

Siltstone, medium-gray, slightly carbonaceous.

**Cored: 357.76-367.76, Recovered: 9.94.**

357.76-361.38 (3.62)  
 361.38-362.60 (1.22)  
 362.60-363.92 (1.32)  
 363.92-364.03 (0.11)  
 364.03-365.80 (1.77)  
 365.80-367.70 (1.90)

Shale, medium-gray, silty, slightly sideritic.  
 Shale, dark-gray, slightly silty at top, sideritic.  
 Shale, black, siderite layers at top.  
 Coal, fusain, with vitrain laminations.  
 Claystone shale, carbonaceous at top, silty toward base.  
 Sandstone, dark-gray, shaly, micaceous.

**Cored: 367.76-377.76, Recovered: 9.98.**

367.76-370.06 (2.30)  
 370.06-373.39 (3.30)  
 373.39-375.82 (2.43)  
 375.82-377.77 (1.95)

Shale, medium-gray, silty.  
 Shale, dark-gray, silty, micaceous, calcareous at base.  
 Limestone, biosparite, medium-gray.  
 Shale, highly calcareous and fossiliferous, dark-gray.

**Cored: 377.76-387.76, Recovered: 10.21.**

377.76-381.17 (3.41)

Limestone, biosparite, with dark-gray fossiliferous shale laminations.

381.17-387.97 (6.80)

Shale and sandstone, dark-gray, bioturbated at top, with bedding more distinct toward bottom; sandstone, calcareous.

**Cored: 387.76-397.76, Recovered: 9.96.**

387.76-392.68 (4.92)

Sandstone and shale interlaminated; sandstone, dark-gray, fine-grained, micaceous; shale, dark-gray.

392.68-394.31 (1.63)

Coal, banded, pyritic.

394.31-397.72 (3.41)

Sandstone, dark-gray, carbonaceous at top, micaceous, shaly.

**Cored: 397.76-407.76, Recovered: 9.93.**

397.76-401.27 (3.51)

Sandstone, medium-gray, carbonaceous, shaly and sideritic at base.

401.27-407.69 (6.42)

Sandstone and shale, interlaminated; shale, dark-gray; sandstone, fine-grained, medium-gray, siderite layers at top.

**Cored: 407.76-417.76, Recovered: 10.11.**

407.76-409.18 (1.42)

Shale, dark-gray, silty, sideritic.

409.18-410.57 (1.39)

Shale and sandstone, interlaminated, dark-gray.

410.57-417.87 (7.30)

Shale, dark-gray, carbonaceous plant impressions, coal laminations.

**Cored: 417.76-427.76, Recovered: 10.00.**

417.76-427.14 (9.38)

427.14-427.76 (0.62)

As above.

Shale, dark-gray, sandy.

**Cored: 427.76-437.76, Recovered: 10.00.**

427.76-437.76 (10.00)

Sandstone, medium-gray, fine-grained, sideritic, carbonaceous plant impressions, slightly micaceous, shaly.

**Cored: 437.76-447.76, Recovered: 10.06.**

437.76-442.05 (4.29)

Sandstone, dark-gray, fine-grained, shale laminations, carbonaceous material, slightly sideritic.

442.05-447.82 (5.77)

Shale, dark-gray, with sandstone laminations, micaceous, carbonaceous siderite zone 0.72' from bottom.

**Cored: 447.76-457.76, Recovered: 9.99.**

447.76-453.45 (5.69)

453.45-454.00 (0.55)

454.00-457.75 (3.75)

Shale, dark-gray, silty, carbonaceous.

Coal zone, coal 0.02' thick, Stigmarian sand 0.52' thick.

Sandstone, dark-gray, fine-grained, carbonaceous, shaly, micaceous.

**Cored: 457.76-467.76, Recovered: 9.87.**

457.76-460.47 (2.71)

460.47-464.91 (4.40)

464.91-465.05 (0.14)

465.05-467.67 (2.62)

Sandstone, light-gray, fine-grained, sideritic, shaly, micaceous.

Shale, dark-gray, sandstone laminations, light-gray, fine-grained.

Claystone shale, fissile, carbonaceous.

Shale, dark-gray, sandstone laminations, light-gray, fine-grained.

**Cored: 467.76-477.76, Recovered: 10.15.**

467.76-470.59 (2.83)

470.59-471.68 (1.09)

471.68-471.88 (0.20)

471.88-474.18 (2.30)

474.18-476.82 (2.64)

476.82-477.91 (1.09)

Shale, dark-gray, silty, carbonaceous, sideritic.

Coal, bright, with fusain, slightly pyritic.

Shale, black, coal laminations.

Shale, dark-gray, carbonaceous, sideritic.

Claystone shale, dark-gray, carbonaceous, sideritic.

Shale, dark-gray, sideritic.

**Cored: 477.76-487.76, Recovered: 9.97.**

477.76-487.73 (9.97)

Shale, dark-gray, silty, sideritic, carbonaceous.

**Cored: 487.76-497.71, Recovered: 9.94.**

487.76-497.70 (9.94)

As above.

**Cored: 497.71-507.66, Recovered: 10.07.**

497.71-507.78 (10.07)

As above.

**Cored: 507.66-517.76, Recovered: 9.99.**

507.66-517.65 (9.99)

As above.

**Cored: 517.76-527.61, Recovered: 9.98.**

517.76-527.74 (9.98)

As above.

**Cored: 527.61-537.66, Recovered: 10.15.**

527.61-532.56 (4.95)

532.56-537.76 (5.20)

As above.

Sandstone interlaminated with shale, sideritic, with numerous coal laminations.

**Cored: 537.66-547.66, Recovered: 9.99.**

537.66-547.51 (9.85)

547.51-547.65 (0.14)

Sandstone and shale, interlaminated, micaceous.

Shale, dark-gray.

**Cored: 547.66-557.61, Recovered: 10.07.**

547.66-549.70 (2.04)

Sandstone, medium-gray, fine-grained, shaly, sideritic, crossbedded at bottom.

549.70-550.61 (0.91)

Shale, dark-gray, sandy.

550.61-551.73 (1.12)

Sand and shale, bioturbated.

551.73-557.73 (6.00)

Sandstone, light-gray, micaceous, with carbonaceous shale laminations, burrowed.

**Cored: 557.61-567.46, Recovered: 9.84.**

557.61-560.83 (3.22)

As above.

560.83-567.45 (6.62)

Shale, dark-gray, carbonaceous, silty.

**Cored: 567.46-577.51, Recovered: 10.14.**

567.46-577.60 (10.14)

Sandstone, light-gray, fine-grained, micaceous, with dark-gray shale laminations.

**Cored: 577.51-587.51, Recovered: 10.20.**

577.60-587.80 (10.20)

As above.

**Cored: 587.51-597.51, Recovered: 10.10.**

587.51-597.61 (10.10)

As above, with siderite nodules.

**Cored: 597.51-607.51, Recovered: 10.06.**

597.51-607.57 (10.06)

As above.

**Cored: 607.51-617.46, Recovered: 10.01.**

607.51-617.52 (10.01)

As above.

**Cored: 617.46-627.46, Recovered: 10.00.**

617.52-627.52 (10.00)

As above.

**Cored: 627.46-637.46, Recovered: 10.13.**

627.46-637.69 (10.13)

As above, with carbonaceous laminations.

**Cored: 637.46-647.46, Recovered: 9.99.**

637.46-643.63 (6.17)

As above, with thin coal bed.

643.63-644.76 (1.13)

Shale, with dark-gray, light-gray sandstone beds, beds dip at high angle.

644.76-645.23 (0.47)

Siderite layer.

645.23-647.45 (2.22)

Shale, dark-gray, carbonaceous, micaceous, with light-gray sandstone laminations, calcareous.

**Cored: 647.46-657.46, Recovered: 10.19.**

647.46-651.23 (3.77)

Shale, dark-gray, silty, carbonaceous, pyritic.

651.23-652.32 (1.09)

Coal, banded, pyritized plant remains.

652.32-657.65 (5.33)

Siltstone, slightly micaceous, dark-gray shale laminations at base, some coal laminations, slightly bioturbated.

**Cored: 657.46-667.51, Recovered: 10.10.**

657.46-667.56 (10.10)

Shale and sandstone, interlaminated, sideritic, micaceous, slightly bioturbated.

**Cored: 667.51-677.61, Recovered: 9.98.**

667.51-677.49 (9.98)

Shale, bioturbated, sandy, carbonaceous.

**Cored: 677.61-687.56, Recovered: 10.10.**

677.61-687.71 (10.10)

As above.

**Cored: 687.56-697.61, Recovered: 10.02.**

687.56-697.58 (10.02)

Sandstone and shale, interlaminated, sideritic.

**Cored: 697.61-707.71, Recovered: 10.26.**

697.61-703.04 (5.43)

703.04-705.08 (2.04)

705.08-707.87 (2.79)

Shale, silty, highly carbonaceous, slightly sideritic.

Coal, dull, with bright bands, pyrite lenses.

Shale, silty, dark-gray, dolomite and siderite nodules, carbonized plant remains.

**Cored: 707.71-717.76, Recovered: 10.00.**

707.71-715.33 (7.62)

715.33-717.71 (2.38)

Shale, medium-gray, silty, with carbonaceous laminations.

Shale, dark-gray, silty, carbonaceous, sideritic.

**Cored: 717.76-727.76, Recovered: 9.95.**

717.76-727.71 (9.95)

As above.

**Cored: 727.76-737.71, Recovered: 9.99.**

727.76-731.03 (3.27)

731.03-737.75 (6.72)

As above.

Sandstone and shale, interlaminated, sideritic.

**Cored: 737.71-747.66, Recovered: 9.69.**

737.71-746.36 (8.65)

746.36-747.40 (1.04)

As above.

Shale, dark-gray, carbonaceous.

**Cored: 747.66-757.46, Recovered: 9.98.**

747.66-757.64 (9.98)

As above, with siderite layers.

**Cored: 757.46-767.45, Recovered: 10.01.**

757.46-758.74 (1.28)

758.74-759.13 (0.39)

759.13-760.31 (1.18)

760.31-764.21 (3.90)

764.21-767.47 (3.26)

As above.

Sandstone, bioturbated, pyritic.

Coal, bright-banded, pyritic.

Sandstone, rooted, slightly calcareous.

Sandstone, medium-gray, shaly, micaceous, medium-grained.

**Cored: 767.45-777.36, Recovered: 9.96.**

767.45-777.41 (9.96)

As above, sandstone.

**\*Total Depth: 777.36.**

**Western Kentucky Stratigraphic Test Hole Gil 16, Christian County, Dawson Springs Southeast Quadrangle, Carter coordinate location 21-H-24, 2500 FNL 150 FEL, Elevation: 554.00, Total Depth: 300.00.**

Interval (Feet)	Description
<b>Cored: 4.00-10.00, Recovered: 5.73.</b> 4.00-4.30 (0.30) 4.30-9.73 (5.43)	Limestone, medium-brown, fine-grained, weathered, hard. Clay shale, highly weathered, light-brown to greenish-gray, and dark-gray toward base, slightly silty toward base, carbonaceous plant debris, iron-stained.
<b>Cored: 10.00-20.00, Recovered: 9.29.</b> 10.00-15.87 (5.87)	Sandstone, medium-brown to dark-gray, weathered, fine-grained, abundant micaceous carbonaceous laminations, rippled to crossbedded.
15.87-19.37 (3.50)	Shale, dark-gray, micaceous along bedding, rippled to crossbedded, with calcareous siltstone laminations, light-gray.
<b>Cored: 20.00-30.00, Recovered: 9.76.</b> 20.00-29.76 (9.76)	As above.
<b>Cored: 30.00-40.00, Recovered: 10.09.</b> 30.00-32.78 (2.78) 32.78-35.79 (3.01)	As above. Shale, very dark-gray, carbonaceous, very fossiliferous (brachiopods).
35.79-37.92 (2.13)	Limestone, medium-gray, fine-grained, argillaceous, carbonaceous laminations, fossiliferous.
37.92-38.32 (0.40)	Shale, dark-gray, fossiliferous, carbonaceous laminations.
38.32-40.09 (1.76)	Shale, dark-gray, interlaminated with medium-gray siltstone.
<b>Cored: 40.00-50.00, Recovered: 9.98.</b> 40.00-49.98 (9.98)	Shale, dark-gray, scattered silty lenses, less silty toward base, moderately fissile.
<b>Cored: 50.00-60.00, Recovered: 10.10.</b> 50.00-60.10 (10.10)	Shale, dark-gray, moderately fissile.
<b>Cored: 60.00-70.00, Recovered: 9.89.</b> 60.00-69.89 (9.89)	Shale, dark-gray, carbonaceous, slightly micaceous along bedding, a few siderite layers.
<b>Cored: 70.00-80.00, Recovered: 10.18.</b> 70.00-70.35 (0.35) 70.35-70.45 (0.10)	As above.
70.45-72.63 (2.18)	Clay shale, plastic to brittle.
72.63-75.03 (2.40)	Coal, bright-banded, fusain partings.
75.03-76.04 (1.01)	Sandstone, light- to dark-gray, conglomeratic with cobbles up to 2 1/2" in diameter, calcareous.
76.04-80.18 (4.14)	Clay shale, light-gray to greenish-gray, plastic, with siderite nodules.
<b>Cored: 80.00-90.00, Recovered: 10.23.</b> 80.00-83.95 (3.95)	Shale, dark-gray, poorly bedded at the base, grading upward to nonbedded claystone.
<b>Cored: 80.00-90.00, Recovered: 10.23.</b> 80.00-83.95 (3.95)	Shale, dark-gray, moderately fissile.

83.95-84.91 (0.96)	Shale, dark-gray, moderately fissile, with dark-gray plastic clay-shale laminations.
84.91-85.18 (0.27)	Shale, silty, with 1"-diameter siderite nodule.
85.18-90.23 (5.05)	Shale, dark-gray to very dark-gray, moderately fissile, plastic, clay-shale bed from 88.00-88.50.
<b>Cored: 90.00-100.00, Recovered: 9.85.</b>	
90.00-97.70 (7.70)	Shale, very dark-gray to black, carbonaceous.
97.70-99.85 (2.15)	Shale, dark-gray, and siltstone, dark-gray to greenish-gray, interlaminated, pyrite nodule at top, scattered siderite layers.
<b>Cored: 100.00-110.00, Recovered: 10.06.</b>	
100.00-110.06 (10.06)	Shale, gray to greenish-gray, silty to very silty, nodules and clasts of limestone, brown to tan, very fine-grained, scattered fossils.
<b>Cored: 110.00-120.00, Recovered: 10.00.</b>	
110.00-111.40 (1.40)	As above.
111.40-113.13 (1.73)	Shale, dark-gray, silty.
113.13-120.00 (6.87)	Shale, dark-gray, with medium-gray siltstone laminations.
<b>Cored: 120.00-130.00, Recovered: 10.00.</b>	
120.00-130.00 (10.00)	Shale, dark-gray, with siltstone laminations, contorted at 125.10-125.60, siderite nodules and layers from 128.30-128.50.
<b>Cored: 130.00-140.00, Recovered: 9.97.</b>	
130.00-131.30 (1.30)	As above.
131.30-132.10 (0.80)	Sandstone, medium-gray, argillaceous, contorted bedding, some siderite.
132.10-132.95 (0.85)	Shale, dark-gray to black, carbonaceous, moderately fissile with, some claystone laminations.
132.95-133.25 (0.30)	Coal, bright to dull, bony, pyritic.
133.25-133.70 (0.45)	Clay shale, dark-gray, carbonaceous, with plant impressions.
133.70-137.25 (3.55)	Underclay, gray to greenish-gray, nonbedded to poorly bedded, with siderite nodules.
137.25-137.67 (0.42)	Sandstone, light-gray, fine-grained, with gray shale laminations.
137.67-139.97 (2.30)	Shale, dark-gray, sparse siltstone laminations.
<b>Cored: 140.00-150.00, Recovered: 10.15.</b>	
140.00-143.80 (3.80)	Shale, light-gray, sparse sandstone laminations toward base, siderite nodules at top.
143.80-150.15 (6.35)	Shale, dark-gray, interlaminated with sandstone, medium-gray, fine-grained.
<b>Cored: 150.00-160.00, Recovered: 10.10.</b>	
150.00-158.70 (8.70)	As above.
158.70-160.10 (1.40)	Clay shale, greenish-gray to gray, poorly bedded, slightly sideritic.
<b>Cored: 160.00-170.00, Recovered: 10.04.</b>	
160.00-168.70 (8.70)	Shale, medium-gray, with greenish tinge, slightly silty, sparse thin beds of clay shale.
168.70-170.04 (1.34)	Shale, medium-gray, siderite, flaser bedding, silt laminations, convolute bedding.
<b>Cored: 170.00-180.00, Recovered: 10.01.</b>	

170.00-171.39 (1.39)	As above.
171.39-177.73 (6.34)	Shale, medium- to dark-gray, carbonaceous content increasing downward, carbonized plant fragments at base, finely laminated.
177.73-178.19 (0.46)	Coal, bright-banded, lenses of pyrite, fusain along bedding planes.
178.19-180.01 (1.82)	Siltstone, medium-gray, many carbonized root impressions, convolute bedding, siderite nodules.
<b>Cored: 180.00-190.00, Recovered: 9.89.</b>	
180.00-180.58 (0.58)	Siltstone, medium-gray, carbonized plant fragments, coal laminations, convolute bedding, siderite nodules.
180.58-181.31 (0.73)	Shale, grayish-green, carbonized plant fragments, silty.
181.31-184.23 (2.92)	Limestone, medium-gray to medium-brown, crystalline, fossiliferous.
184.23-189.89 (5.66)	Sandstone, light- to medium-gray, micaceous, siderite layers and nodules, shale laminations, medium- to fine-grained, crossbedded, carbonaceous at base.
<b>Cored: 190.00-200.00, Recovered: 10.00.</b>	
190.00-193.00 (3.00)	Sandstone, light- to medium-gray, slightly micaceous, carbonaceous, medium- to fine-grained, siderite layers, laminations of pyrite, claystone, shale and coal.
193.00-195.05 (2.05)	Shale, medium- to dark-gray, carbonized plant fragments, some finely disseminated pyrite, thin sandstone beds; sandstone, medium-gray, fine- to very fine-grained, convolute bedding.
195.05-196.70 (1.65)	Coal, bright-banded, pyrite nodules, calcite along cleats and bedding.
196.70-197.35 (0.65)	Underclay, medium- to dark-gray, rooted, carbonaceous, plastic at top.
197.35-199.25 (1.91)	Sandstone, medium-gray, slightly micaceous, siderite nodules, carbonaceous, fine- to very fine-grained, convolute bedding with fine shale laminations.
199.25-200.00 (0.74)	Sandstone, medium-gray, slightly micaceous, medium-grained.
<b>Cored: 200.00-210.00, Recovered: 9.92.</b>	
200.00-207.06 (7.06)	Sandstone, light- to medium-gray, carbonized plant fragments, siderite layers, shale laminations, medium- to fine-grained, crossbedded.
207.06-209.92 (2.86)	Shale, medium-gray, carbonized plant fragments, siderite layers, siltstone laminations.
<b>Cored: 210.00-220.00, Recovered: 10.02.</b>	
210.00-210.90 (0.90)	As above.
210.90-216.36 (5.46)	Sandstone, medium-gray, slightly micaceous, pyritized, carbonized plant fragments, fine-grained, shale laminations, crossbedded, with some convolute bedding.
216.36-218.75 (2.39)	Shale, medium- to dark-gray, carbonized plant fragments, sand laminations.
218.75-220.02 (1.27)	Shale, dark-gray, 0.15'-thick, siderite layer at top, silty, carbonized and pyritized plant fragments.
<b>Cored: 220.00-230.00, Recovered: 10.07.</b>	
220.00-222.89 (2.89)	Shale, dark-gray, pyrite nodules, carbonized and pyritized plant

222.89-223.10 (0.21)  
223.10-230.07 (6.97)

fragments, "sandstone clasts" at base.  
Siderite band, with carbonaceous laminations.  
Shale, medium-gray, slightly micaceous, carbonized plant fragments, with sandstone laminations flaser bedding; sandstone, light-gray, fine- to very fine-grained.

**Cored: 230.00-240.00, Recovered: 9.90.**  
230.00-238.18 (8.18)

Shale, medium- to dark-gray, carbonized plant fragments, sandstone laminations.

238.18-239.90 (1.72)

Sandstone, medium-gray, slightly micaceous, carbonized plant fragments, carbonaceous laminations, fine-grained, bioturbated at top, shale laminations.

**Cored: 240.00-250.00, Recovered: 9.99.**  
240.00-246.30 (6.30)

Sandstone, medium-gray, slightly micaceous, siderite nodules and layers, fine-grained, carbonaceous, shale laminations; shale, medium-gray.

246.30-249.99 (3.69)

Sandstone, medium-gray, slightly micaceous, sparse shale laminations, calcareous-carbonaceous matrix, fine-grained.

**Cored: 250.00-260.00, Recovered: 10.05.**  
250.00-260.05 (10.05)

As above.

**Cored: 260.00-270.00, Recovered: 9.94.**  
260.00-269.94 (9.94)

As above, noncalcareous.

**Cored: 270.00-280.00, Recovered: 10.00.**  
270.00-270.51 (0.51)  
270.51-277.06 (6.55)

As above.

Siltstone, medium-gray, slightly micaceous, carbonaceous shale laminations, thin sandstone beds and siderite layers.

277.06-280.00 (2.94)

Sandstone, medium-gray, slightly micaceous, siltstone laminations, shale laminations, siderite nodules, medium- to fine-grained, siltier at base.

**Cored: 280.00-290.00, Recovered: 10.00.**  
280.00-290.00 (10.00)

Sandstone, medium-gray, micaceous, siderite layers, carbonaceous shale laminations, medium-grained, friable, porous, crossbedded.

**Cored: 290.00-300.00, Recovered: 10.00.**  
290.00-300.00 (10.00)

As above.

**Total Depth: 300.00.**

**Western Kentucky Stratigraphic Test Hole Gil 17, Hopkins County, Dalton Quadrangle, Carter coordinate location 22-J-21, 50 FNL 2100 FWL, Elevation: 420.00, Total Depth: 399.82.**

Interval (Feet)	Description
<b>Cored: 26.00-30.00, Recovered: 3.28.</b> 26.00-29.28 (3.28)	Shale, medium-gray, grading to dark-gray, with sparse siderite layers; contains some carbonaceous plant impression.
<b>Cored: 30.00-40.00, Recovered: 9.82.</b> 30.00-39.82 (9.82)	Shale, dark-gray to medium-gray, with abundant siderite layers; some carbonized plant fragments.
<b>Cored: 40.00-52.00, Recovered: 12.13.</b> 40.00-45.02 (5.02) 45.02-48.91 (3.89) 48.91-49.00 (0.09) 49.00-49.16 (0.16) 49.16-50.13 (0.97) 50.13-52.04 (1.91) 52.04-52.13 (0.09)	Shale, medium-gray, with sparse sideritic layers. Shale, black, highly pyritic, very fissile. Coal, bright, hard, blocky. Pyrite. Coal, bright, pyritic. Coal, as above. Underclay, plastic, light-gray, silty.
<b>Cored: 52.00-60.00, Recovered: 7.00.</b> 52.00-59.00 (7.00)  59.00-60.00 (1.00)	Shale, silty, medium-gray, with dolomite nodules at top, sparse siderite layers at bottom. Lost; probably underclay (washed out).
<b>Cored: 60.00-70.00, Recovered: 9.82.</b> 60.00-62.67 (2.67) 62.67-69.82 (7.15)	Shale, medium-green, with siderite layers. Shale, dark-gray, sideritic, with some pyrite.
<b>Cored: 70.00-80.00, Recovered: 9.98.</b> 70.00-79.98 (9.98)	Shale, dark-gray, pyritic, with siderite layers as much as 0.15' thick.
<b>Cored: 80.00-90.00, Recovered: 9.60.</b> 80.00-85.21 (5.21) 85.21-85.31 (0.10) 85.31-85.40 (0.09) 85.40-89.57 (4.17)	Shale, dark-gray, slightly sideritic. Siderite layers. Shale, dark-gray, slightly sideritic. Shale, medium-green, with many siderite nodules.
<b>Cored: 90.00-100.00, Recovered: 9.96.</b> 90.00-93.55 (3.55)  93.55-99.95 (6.40)	Shale, medium-green to dark-gray, interlaminated with fine- to medium-grained sandstone; sandstone, micaceous; shale contains sideritic nodules. Sandstone, medium-gray, fine- to medium-grained, micaceous, some dark-gray shale laminations.
<b>Cored: 100.00-110.00, Recovered: 9.96.</b> 100.00-109.60 (9.60)	Sandstone, medium-gray, medium-grained, with black shale laminations, micaceous.
<b>Cored: 110.00-120.00, Recovered: 9.95.</b> 110.00-119.95 (9.95)	Sandstone, as above.

**Cored: 120.00-130.00, Recovered: 9.98.**

120.00-123.70 (3.70)

123.70-130.03 (6.33)

Sandstone, as above.

Sandstone, medium-gray, coarse-grained, dark-gray to medium-green shale laminations, abundant carbonaceous material, sideritic, and micaceous.

**Cored: 130.00-140.00, Recovered: 10.09.**

130.00-140.09 (10.09)

Sandstone, as above, with less carbonaceous material.

**Cored: 140.00-150.00, Recovered: 10.00.**

140.00-150.00 (10.00)

Sandstone, as above.

**Cored: 150.00-160.00, Recovered: 10.00.**

150.00-160.00 (10.00)

As above, sparse shale laminations less common.

**Cored: 160.00-170.00, Recovered: 10.00.**

160.00-170.00 (10.00)

As above, carbonaceous material toward bottom, pyritized plant fossils, friable.

**Cored: 170.00-180.00, Recovered: 9.81.**

170.00-173.05 (3.05)

173.05-173.19 (0.14)

173.19-178.07 (4.86)

178.07-179.81 (1.74)

As above.

Shale, green, slightly carbonaceous.

Limestone, medium-gray to light-brown, slightly fossiliferous, finely crystalline, slightly crossbedded, sparse shale laminations.

Shale, medium-green to gray, abundant carbonaceous material, semiplastic.

**Cored: 180.00-190.00, Recovered: 9.93.**

180.00-183.78 (3.78)

183.78-185.14 (1.36)

185.14-189.93 (4.79)

Shale, medium-gray, silty, carbonaceous, sideritic, bioturbated.

Siltstone, medium-gray, sideritic, interlaminated with shale toward bottom.

Sandstone, medium-gray, medium-grained, interlaminated with green shale, micaceous, shale less abundant toward bottom.

**Cored: 190.00-200.00, Recovered: 9.86.**

190.00-199.86 (9.86)

As above, more shaly and micaceous; grades down to shale, dark-gray.

**Cored: 200.00-210.00, Recovered: 9.77.**

200.00-209.77 (9.77)

As above, numerous carbonaceous plant impressions, more silty toward bottom, slightly pyritic.

**Cored: 210.00-220.00, Recovered: 10.14.**

210.00-220.14 (10.14)

Shale, dark-gray, silty, sandstone laminations, carbonaceous plant impressions, pyritic, slightly burrowed.

**Cored: 220.00-230.00, Recovered: 10.04.**

220.00-229.26 (9.26)

229.26-230.04 (0.78)

Shale, dark-gray, silty, more shaly toward bottom; bottom, pyritic, sideritic; bottom 0.14' is calcite.

Limestone, medium-gray, highly fossiliferous, calcarenite.

**Cored: 230.00-240.00, Recovered: 9.79.**

230.00-231.42 (1.42)

231.42-232.08 (0.66)

232.08-239.76 (7.68)

As above.

Shale, dark-gray, fossiliferous, slightly calcareous, silty.

Sandstone, medium-gray, medium-grained, interlaminated with

	dark-gray shale; highly bioturbated, pyritized plant remains, micaceous, more shaly toward bottom.
<b>Cored: 240.00-250.00, Recovered: 9.56.</b>	
240.00-246.88 (6.88)	Shale, dark-gray, sandstone, and siltstone, interlaminated, pyritic, pyrite plant impressions, carbonized plant remains.
246.88-247.56 (0.68)	Sandstone, medium-gray, sparse vitrain layers, worm burrows, pyritic, micaceous, carbonaceous.
247.56-248.72 (1.16)	Coal, dull to bright near base, pyritic.
248.72-249.50 (0.78)	Shale, medium-gray, silty, coal laminations, carbonized plant remains.
<b>Cored: 250.00-260.00, Recovered: 9.72.</b>	
250.00-259.72 (9.72)	Siltstone, medium-gray, sideritic, numerous carbonaceous plant remains.
<b>Cored: 260.00-270.00, Recovered: 9.30.</b>	
260.00-269.30 (9.30)	As above.
<b>Cored: 270.00-280.00, Recovered: 10.60.</b>	
270.00-276.90 (6.90)	As above.
276.90-280.38 (3.48)	As above, medium-gray.
280.38-280.70 (0.32)	Coal, dull.
<b>Cored: 280.00-290.00, Recovered: 10.00.</b>	
280.00-281.50 (1.50)	Coal, dull to bright, pyritic.
281.50-281.70 (0.20)	Shale, black.
281.70-287.82 (6.12)	Siltstone, medium-gray, interlaminated with coarse-grained(?) sandstone, sideritic, glauconitic, carbonized plant impressions.
287.82-290.02 (2.20)	Shale, medium-gray, grading to clay shale toward bottom.
<b>Cored: 290.00-300.00, Recovered: 10.29.</b>	
290.00-290.20 (0.20)	Coal, dull.
290.20-291.45 (1.25)	Shale, medium-gray, carbonaceous, silty toward bottom.
291.45-293.99 (2.54)	Siltstone, medium-gray.
293.99-297.29 (3.30)	Sandstone, medium-gray, medium-grained, interlaminated with medium-gray shale.
297.29-300.39 (3.00)	Siltstone, medium-gray.
<b>Cored: 300.00-310.00, Recovered: 9.85.</b>	
300.00-300.55 (0.55)	As above.
300.55-309.85 (9.30)	Sandstone, medium-gray, interlaminated with medium-green shale, burrowed, convolute bedding, some carbonaceous plant material.
<b>Cored: 310.00-320.00, Recovered: 10.00.</b>	
310.00-320.00 (10.00)	As above, sideritic toward bottom.
<b>Cored: 320.00-330.00, Recovered: 10.05.</b>	
320.00-321.05 (1.05)	Shale, dark-gray, sand-filled burrows, fine laminations of sandstone, sideritic, pyritized and carbonaceous plant impressions.
321.05-326.89 (5.84)	Siltstone, medium-gray to light-green, siderite nodules, slightly carbonaceous, possible bioturbation and/or soft-sediment deformation.

326.89-330.05 (3.16)

Shale, medium-gray, highly carbonaceous, becoming highly silty at bottom.

**Cored: 330.00-340.00, Recovered: 9.34.**

330.00-339.34 (9.34)

Siltstone, medium-green to medium-gray, dark-gray shale laminations at top, medium-gray sandstone laminations and lenses toward bottom, carbonaceous plant impressions, sideritic at top.

**Cored: 340.00-350.00, Recovered: 10.00.**

340.00-346.65 (6.65)

Siltstone, dark-gray, sandstone laminations, carbonaceous plant impressions.

346.65-346.72 (0.07)

Sandstone, medium-gray, medium-grained, calcareous.

346.72-350.00 (3.28)

Shale, medium-gray, sideritic, becoming highly silty toward bottom.

**Cored: 350.00-360.00, Recovered: 9.84.**

350.00-356.42 (6.42)

Siltstone, medium-gray, burrowed, sandstone laminations and lenses, sideritic.

356.42-356.80 (0.38)

Sandstone, medium-gray, medium-grained, highly carbonaceous, sideritic.

356.80-357.33 (0.53)

Coal, bright-layered, pyritic (reworked?).

357.33-359.86 (2.53)

Sandstone, medium-gray, fine-grained, carbonized root systems.

**Cored: 360.00-370.00, Recovered: 10.01.**

360.00-361.90 (1.90)

Sandstone, rooted, sideritic.

361.90-370.01 (8.11)

Sandstone, medium-gray, fine- to medium-grained, medium-gray shale, laminations, siderite layers, friable.

**Cored: 370.00-380.00, Recovered: 9.59.**

370.00-376.08 (6.08)

As above, slightly sideritic.

376.08-377.70 (1.62)

Sandstone, medium-gray, fine- to medium-grained, interlaminated with dark-gray shale, carbonaceous, sideritic, shale laminations abundant toward base.

377.70-377.95 (0.25)

Lag conglomerate.

377.95-379.56 (1.61)

Sandstone and dark-gray shale, interlaminated, micaceous.

**Cored: 380.00-390.00, Recovered: 10.05.**

380.00-390.05 (10.05)

As above, convolute bedding.

**Cored: 390.00-400.00, Recovered: 9.82.**

390.00-392.10 (2.10)

Shale, dark-gray, sandstone laminations, convolute bedding.

392.10-397.12 (5.07)

Sandstone, medium-gray, medium-grained, sparse dark-gray shale laminations, carbonaceous, sideritic, slightly pyritic.

397.12-399.82 (2.70)

Shale, dark-gray, and sandstone, interlaminated.

**Total Depth: 399.82.**

**Western Kentucky Stratigraphic Test Hole Gil 18, Hopkins County, Coiltown Quadrangle, Carter coordinate location 23-J-23, 2025 FSL 2300 FWL, Elevation: 545.00, Total Depth: 456.63.**

Interval (Feet)	Description
<p><b>Cored: 44.40-46.73, Recovered: 1.05.</b> 44.40-44.75 (0.35) 44.75-45.45 (0.70)</p>	<p>Shale, black. Coal, bright pyrite on cleats.</p>
<p><b>Cored: 46.73-56.73, Recovered: 10.10.</b> 47.73-53.83 (7.10) 53.83-56.83 (3.00)</p>	<p>Clay shale, medium-gray, lighter toward base. Clay, medium-gray to green, slightly calcareous, siderite nodules.</p>
<p><b>Cored: 56.73-66.73, Recovered: 10.07.</b> 56.73-61.98 (5.25) 61.98-66.80 (4.82)</p>	<p>Clay, interlaminated with sandstone, light-gray. Sandstone, medium-gray, claystone laminations, light-gray, micaceous, sandstone lenses abundant toward base.</p>
<p><b>Cored: 66.73-76.73, Recovered: 9.95.</b> 66.73-76.68 (9.95)</p>	<p>Sandstone, medium-gray, tan to medium-brown, medium-grained; micaceous, moderately to slightly carbonaceous throughout; 0.85'-thick dark-gray claystone, 1.55'-thick iron-stained zone.</p>
<p><b>Cored: 76.73-86.73, Recovered: 10.00.</b> 76.73-86.73 (10.00)</p>	<p>Sandstone, light-gray, shale laminations, medium-grained, siderite layers.</p>
<p><b>Cored: 86.73-96.73, Recovered: 9.95.</b> 86.73-96.68 (9.95)</p>	<p>Sandstone, light-gray, medium-grained, porous, carbonaceous laminations, coal laminations.</p>
<p><b>Cored: 96.73-106.73, Recovered: 10.00.</b> 97.73-106.73 (10.00)</p>	<p>As above.</p>
<p><b>Cored: 106.73-116.78, Recovered: 9.95.</b> 106.73-116.78 (9.95)</p>	<p>As above, with 0.15'-thick shale, dark-gray, silty from 112.73-112.88.</p>
<p><b>Cored: 116.78-126.78, Recovered: 10.12.</b> 116.78-117.55 (0.77) 117.55-118.10 (0.55) 118.10-119.70 (1.60) 119.70-121.36 (1.66) 121.36-124.82 (3.46) 124.82-126.90 (2.08)</p>	<p>Sandstone, dark-gray, fine- to medium-grained, porous, with carbonaceous laminations. Clay shale, black, carbonaceous, nonbedded. Coal, dull, occasional bright laminations, abundant fusain. Underclay, medium-gray, nonbedded, plant impressions. Siltstone, medium-gray, nonbedded at top, flaser-bedded at base. Shale, medium-gray, silty to very silty toward base.</p>
<p><b>Cored: 126.78-136.78, Recovered: 9.91.</b> 126.78-128.28 (1.50) 128.28-136.69 (8.41)</p>	<p>Clay shale, gray to green, nonbedded, slightly silty at top. Siltstone, medium-gray, interlaminated with shale, light-gray, scattered siderite layers, micaceous, less silty toward base.</p>
<p><b>Cored: 136.78-146.78, Recovered: 10.12.</b> 136.78-143.90 (7.02)</p>	<p>Shale, medium-gray, sparse silty laminations, micaceous, sparse siderite layers.</p>

143.90-146.90 (3.00)	Shale, dark-gray, sparse silty laminations, siderite layers, darker toward base.
<b>Cored: 146.78-156.78, Recovered: 10.00.</b> 146.78-156.78 (10.00)	Shale, dark-gray, micaceous throughout, color uniform throughout.
<b>Cored: 156.78-166.86, Recovered: 10.08.</b> 156.78-166.86 (10.08)	Shale, dark-gray, micaceous, plant impressions.
<b>Cored: 166.78-176.81, Recovered: 9.95.</b> 166.78-176.73 (9.95)	Shale, dark-gray, slightly micaceous, siderite layers toward base.
<b>Cored: 176.78-186.78, Recovered: 10.02.</b> 176.78-180.61 (3.83) 180.61-182.50 (1.89) 182.50-182.92 (0.42) 182.92-186.80 (3.88)	Shale, dark-gray. Shale, black, carbonaceous, moderately fissile. Coal, dull to bright, fusain partings, pyritic. Shale, dark-gray, abundant plant impressions.
<b>Cored: 186.78-196.78, Recovered: 9.91.</b> 186.28-188.81 (2.03) 188.81-189.00 (0.19) 189.00-189.05 (0.05) 189.05-190.00 (0.95) 190.00-193.95 (3.95) 193.95-195.08 (1.13)  195.08-196.71 (1.83)	Shale, dark-gray, calcareous, darker at base. Coal, bright to dull, fusain parting, bony at base. Shale, black, contorted, plant impressions. Shale, dark-gray, plant impressions. Shale, dark-gray, slightly silty at top. Shale, dark-gray, and sandstone, gray to brown, fine-grained, calcareous. Shale, dark-gray, with siderite laminations.
<b>Cored: 196.78-206.78, Recovered: 9.97.</b> 196.78-200.39 (3.61)  200.39-200.41 (0.02) 200.41-204.30 (3.89) 204.30-206.75 (2.45)	Shale, dark-gray, darker at base, sparse coal laminations toward base. Coal, bright to dull, shaly. Shale, dark-gray, as above, sandy at base. Sandstone, medium-gray, fine-grained, argillaceous.
<b>Cored: 206.78-216.78, Recovered: 10.02.</b> 206.78-206.88 (0.10) 206.88-212.80 (5.92) 212.80-213.84 (1.04) 213.84-216.80 (2.96)	As above. Shale, dark-gray, sandy at top, grading to non-sandy at base. Sandstone and shale, laminated. Sandstone, light-gray, medium- to coarse-grained, very porous, friable.
<b>Cored: 216.78-226.78, Recovered: 10.05.</b> 216.78-226.83 (10.05)	Sandstone, medium-grained, highly porous, micaceous, crossbedded, with carbonaceous shale laminations.
<b>Cored: 226.78-236.78, Recovered: 10.00.</b> 226.78-236.78 (10.00)	As above, but coarser grained, with scattered siderite nodules, lenses of lag conglomerate at 228.00.
<b>Cored: 236.78-246.78, Recovered: 9.90.</b> 236.78-246.68 (9.90)	As above, with coal laminations, lag conglomerate.
<b>Cored: 246.78-256.63, Recovered: 10.00.</b>	

246.78-253.50 (6.72)	As above.
253.50-254.65 (0.15)	Siderite band.
253.65-255.05 (1.40)	As above.
255.05-255.92 (0.87)	Sandstone and gray shale.
255.92-256.63 (0.71)	As above.
<b>Cored: 256.63-266.63, Recovered: 10.00.</b>	
256.63-260.75 (4.12)	Sandstone, with coal clasts, pyrite nodules, siderite nodules, lag conglomerate, highly micaceous.
260.75-266.63 (5.88)	Shale, gray, sandy at top, less sandy at base.
<b>Cored: 266.63-276.63, Recovered: 10.10.</b>	
266.63-276.73 (10.10)	Shale, light- to medium-gray, calcareous, micaceous toward base, carbonaceous, carbonaceous laminations increase in number toward base.
<b>Cored: 276.63-286.63, Recovered: 10.02.</b>	
276.63-281.08 (4.48)	As above.
281.08-282.48 (1.40)	Limestone, medium- to dark-gray, shaly, very fossiliferous (crinoids, brachiopods).
282.48-285.88 (3.40)	Limestone, medium-gray, shaly, fossiliferous.
285.88-286.65 (0.77)	Shale, medium- to dark-gray, fossiliferous at top.
<b>Cored: 286.63-296.63, Recovered: 10.02.</b>	
286.63-296.65 (10.02)	Shale, medium- to dark-gray, carbonaceous laminations, light-gray, silty laminations increase in abundance downward.
<b>Cored: 296.63-306.63, Recovered: 10.10.</b>	
296.63-297.93 (1.30)	As above.
297.93-298.07 (0.14)	Shale, dark-gray to black, clayey.
298.07-299.85 (1.78)	Coal, bright-banded, calcite along cleats.
299.85-306.73 (6.88)	Shale, light- to medium-gray, becomes lighter toward base, more silt toward base, carbonaceous fragments.
<b>Cored: 306.63-316.63, Recovered: 9.90.</b>	
306.63-307.53 (0.90)	As above.
307.53-316.53 (9.00)	Shale, medium-gray, clayey, with uneven layers of sandy shale, more sandy toward base, scattered calcareous zones.
<b>Cored: 316.63-326.63, Recovered: 10.10.</b>	
316.63-326.73 (10.10)	Shale, medium- to dark-gray, carbonaceous, with interlaminated light-gray siltstone toward base.
<b>Cored: 326.63-336.63, Recovered: 9.99.</b>	
326.63-336.62 (9.99)	As above, but with fewer laminations of silt.
<b>Cored: 336.63-346.63, Recovered: 10.00.</b>	
336.63-340.00 (3.37)	As above.
340.00-342.30 (2.30)	Coal, bright-banded, calcite along cleats.
342.30-346.63 (4.33)	Shale, light- to medium-gray, clayey, lighter toward base.
<b>Cored: 346.63-356.63, Recovered: 10.00.</b>	
346.63-348.98 (2.35)	Shale, medium-gray to medium-green, slightly silty.
348.98-349.48 (0.50)	Clay, medium-gray to medium-brown, shaly.

349.48-356.63 (7.15)

Shale, medium-gray, carbonaceous laminations, silty, slightly micaceous, convolute bedding.

**Cored: 356.63-366.63, Recovered: 9.98.**

356.63-366.61 (9.98)

As above, with several siderite laminations (< 0.15' thick) in bottom two-thirds; micaceous throughout.

**Cored: 366.63-376.63, Recovered: 10.00.**

366.63-371.93 (5.30)

371.93-373.01 (1.09)

373.02-376.63 (3.61)

As above.

Coal, bright-banded, fusain along bedding.

Shale, light-gray to light-green, clayey, slightly silty, black shale lenses, plastic, carbonaceous fragments.

**Cored: 376.63-386.63, Recovered: 10.05.**

376.63-386.68 (10.05)

Shale, light- to medium-gray, silty, a few small siderite nodules, interlaminated with light-gray siltstone.

**Cored: 386.63-396.63, Recovered: 10.02.**

386.63-396.65 (10.02)

As above, but with a few siderite layers up to 0.10' thick.

**Cored: 396.63-406.63, Recovered: 9.93.**

396.63-406.56 (9.93)

As above, slightly calcareous.

**Cored: 406.63-416.63, Recovered: 9.89.**

406.63-416.52 (9.89)

As above.

**Cored: 416.63-426.63, Recovered: 9.98.**

416.63-426.61 (9.98)

As above.

**Cored: 426.63-436.63, Recovered: 9.97.**

426.63-436.60 (9.97)

Shale, medium- to dark-gray, carbonaceous, light-gray, silty lenses, calcareous, plant fragments.

**Cored: 436.63-446.63, Recovered: 10.10.**

436.63-446.73 (10.10)

As above.

**Cored: 446.63-456.63, Recovered: 10.00.**

446.63-456.63 (10.00)

As above.

**Total Depth: 456.00.**

#### TWIN HOLE

**Moved 10.00' west and recored.**

**\*Cored: 0.00-12.88, Recovered: 7.30.**

0.00-7.30 (7.30)

Sandstone, gray to brown, fine- to medium-grained, crossbedded, micaceous, badly weathered, porous, poorly cemented.

\*Looks like full recovery, so plus or minus 5.00' is soil.

**\*Cored: 12.88-17.17, Recovered: 2.75.**

12.88-15.63 (2.75)

Shale, gray, iron-stained sandstone lenses, weathered.

**Cored: 17.14-27.14, Recovered: 7.87.**

17.14-25.01 (7.87)

Shale, dark-brown to black, dark-reddish-brown iron staining through light-red to brown iron-stained laminations scattered throughout, fractured.

**Cored: 36.53-46.53, Recovered: 10.04.**

36.53-43.00 (6.47)

Shale, as above, fossiliferous, abundant plant impressions and small brachiopods.

43.00-45.17 (2.17)

Shale, black, carbonaceous, fissile, one vertical fracture.

45.17-46.57 (1.40)

Coal, brown, weathered, banded.

**Cored: 46.53-52.88, Recovered: 5.41.**

46.53-46.80 (0.27)

Coal, as above.

46.80-50.85 (4.05)

Underclay, medium-gray, plastic with clast of medium-gray shale and some pyrite nodules.

50.85-51.94 (1.09)

Clay shale, with abundant carbonaceous root impressions.

**Total Depth: 52.00.**

**Western Kentucky Stratigraphic Test Hole Gil 19, Muhlenberg County, Rochester Quadrangle, Carter coordinate location 15-I-31, 1650 FNL 2400 FEL, Elevation: 520.00, Total Depth: 650.55.**

Interval (Feet)	Description
<b>Cored: 5.30-7.78, Recovered: 0.40.</b> 5.30-7.78 (2.48)	Shale, black, fissile, very carbonaceous.
<b>Cored: 7.78-17.78, Recovered: 9.84.</b> 7.78-11.93 (4.15) 11.93-14.73 (2.80) 14.73-17.62 (2.89)	Coal, bright-banded, pyrite along bedding. Underclay, light-gray, silty. Siltstone, light- to medium-gray, carbonaceous laminations, calcite along joints.
<b>Cored: 17.78-27.78, Recovered: 9.90.</b> 17.78-19.58 (1.80) 19.58-23.18 (3.60) 23.18-25.58 (2.40)  25.58-27.68 (2.10)	As above, with plant fragments. Clay, medium-gray, interbedded with clay shale, black. Siltstone, light- to medium-gray, calcite on bedding planes, calcareous throughout. Shale, dark-gray, slickensided, slightly calcareous.
<b>Cored: 27.78-37.78, Recovered: 9.97.</b> 27.78-32.96 (5.18)  32.96-37.75 (4.79)	Shale, dark-gray, very clayey, siderite nodule, pyritized, brachiopods, slickensided. Shale, black, slickensided, carbonaceous, fissile, slightly calcareous.
<b>Cored: 37.78-47.78, Recovered: 10.03.</b> 37.78-47.78 (10.03)	As above.
<b>Cored: 47.78-57.78, Recovered: 10.06.</b> 47.78-50.76 (2.98) 50.76-52.04 (1.28)  52.04-57.84 (5.80)	As above. Shale, dark-gray, moderately calcareous, pyritic, clayey, calcite on bedding planes at base. Shale, light-gray, plant fragments, silty and micaceous toward base.
<b>Cored: 57.78-67.78, Recovered: 10.08.</b> 57.78-60.93 (3.15) 60.93-67.86 (6.93)	Siltstone, light-gray, thin claystone beds, convoluted. Sandstone, medium-gray, silty, convoluted, bioturbated toward bottom, coal laminations abundant toward base.
<b>Cored: 67.78-77.78, Recovered: 9.99.</b> 67.78-70.17 (2.39) 70.17-77.77 (7.60)	As above. Shale, medium- to dark-gray, pyrite disseminated throughout, siderite layer (<0.15' thick) at top, bioturbated at top, fissile.
<b>Cored: 77.78-87.78, Recovered: 10.00.</b> 77.78-87.78 (10.00)	Shale, medium- to dark-gray, pyritic throughout, siderite layer throughout (<0.10' thick), fissile.
<b>Cored: 87.78-97.88, Recovered: 10.10.</b> 87.78-92.13 (4.35) 92.13-94.11 (1.98)	As above. Shale, black, fissile, some thin claystone beds, some thin calcite

94.11-95.71 (1.60)	laminations.
95.71-97.88 (2.17)	Coal, bright-banded, pyrite laminations, thick (approximately 0.20') calcite layer (not parallel to bedding). Underclay, light-gray, slickensided, plastic, some plant fragments.
<b>Cored: 97.78-107.78, Recovered: 9.97.</b>	
97.78-104.21 (6.43)	As above.
104.21-107.75 (3.54)	Shale, black, thin, light-gray siderite layers toward base, pyritized plant fragments.
<b>Cored: 107.78-117.53, Recovered: 9.50.</b>	
107.78-109.18 (1.40)	As above.
109.18-109.40 (0.22)	Shale, dark-brown, claystone conglomerate.
109.40-109.64 (0.24)	Shale, black, pyrite lenses.
109.64-110.62 (0.98)	Coal, bright-banded, pyrite lenses, calcite along cleats.
110.62-111.84 (1.22)	Underclay, medium-gray, plastic.
111.84-112.25 (0.41)	Coal, bright-banded, pyrite lenses, calcite along cleats.
112.25-117.28 (5.03)	Underclay, medium-gray to green, plant fragments, carbonaceous laminations at top.
<b>Cored: 117.53-126.98, Recovered: 10.00.</b>	
117.53-120.38 (2.85)	Underclay, light- to medium-gray, carbonaceous material, siderite layers.
120.38-122.33 (1.95)	Shale, medium-gray, carbonaceous material, siderite layers (<0.12' thick).
122.33-125.08 (2.75)	Shale, dark-gray, pyritized plant fragments.
125.08-126.98 (1.90)	Coal, bright-banded, pyritic, calcite along cleats.
126.98-127.53 (0.55)	Underclay, light-gray, plant fragments, plastic.
<b>Cored: 126.98-137.08, Recovered: 10.10.</b>	
126.98-128.76 (1.78)	Limestone, medium-gray to brown, crinoidal, clayey at top.
128.76-134.31 (5.55)	Shale, green-gray to red-gray, clayey, silty layers; light-brown, limestone lenses (<0.10' thick).
134.31-134.41 (0.10)	Coal, bright-banded.
134.41-137.08 (2.67)	Shale, medium-gray, clayey, plastic, silty toward base.
<b>Cored: 137.08-147.08, Recovered: 10.08.</b>	
137.08-139.60 (2.52)	Shale, medium-gray to brown, clayey, with siltstone laminations, plastic.
139.60-144.77 (5.17)	Siltstone, light- to medium-gray, and thin sandstone interbeds, light-gray, slightly calcareous.
144.77-147.16 (2.39)	Sandstone, light- to medium-gray, with silty laminations, crossbedded, fine-grained.
<b>Cored: 147.08-157.08, Recovered: 9.95.</b>	
147.08-154.90 (7.82)	As above, with siderite nodules and layers.
154.90-157.03 (2.13)	Siltstone, medium-gray, sandstone layers, thin, light-gray, fine-grained, micaceous, carbonaceous, friable.
<b>Cored: 157.08-167.08, Recovered: 9.96.</b>	
157.08-167.04 (9.96)	Shale, with micaceous plant fragments less abundant downward, some pyritized.
<b>Cored: 167.08-177.08, Recovered: 9.97.</b>	
167.08-177.05 (9.97)	As above, with slightly micaceous, carbonaceous laminations, siltstone laminations.

**Cored: 177.08-187.03, Recovered: 10.04.**

177.08-187.12 (10.04)

As above.

**Cored: 187.03-196.98, Recovered: 9.98.**

187.03-197.01 (9.98)

As above.

**Cored: 196.98-206.98, Recovered: 10.10.**

196.98-207.08 (10.10)

Shale, medium-gray, carbonaceous, siderite laminations.

**Cored: 206.98-217.03, Recovered: 10.01.**

206.98-209.22 (2.24)

Shale, black, fissile, 2.00'-thick band of light-gray, fossiliferous limestone at base (crinoids).

209.22-209.87 (0.65)

Coal, bright-banded.

209.87-216.99 (7.12)

Clay shale, medium-gray, grades into a silty, light-gray, micaceous, fine-grained sandstone, with siderite nodules.

**Cored: 217.03-227.03, Recovered: 9.87.**

217.03-226.90 (9.87)

Sandstone, light- to medium-gray, fine-grained, siderite nodules and layers, crossbedded, interlaminated with medium-grained sand, light-gray.

**Cored: 227.03-236.98, Recovered: 9.95.**

227.03-229.38 (2.35)

Siltstone, light-gray, becomes argillaceous at base.

229.38-231.23 (1.85)

Claystone, medium-gray to brown, plastic, carbonaceous plant debris.

231.23-235.08 (3.85)

Coal, bright-banded, pyrite lenses, calcite along cleats.

235.08-236.98 (1.90)

Underclay, medium-gray to green, rooted, plastic.

**Cored: 236.98-246.93, Recovered: 9.86.**

236.98-246.84 (9.86)

Clay shale, light-brown at top becoming light-gray toward base, plastic.

**Cored: 246.93-257.67, Recovered: 10.74.**

246.93-250.45 (3.52)

Siltstone, medium-gray, argillaceous, carbonaceous plant debris, plastic, more silty toward base.

250.45-254.26 (3.81)

Sandstone, light-gray, fine-grained, rippled siderite layers, slightly micaceous.

254.26-257.67 (3.41)

Siltstone, medium-gray, argillaceous, plastic, carbonaceous fragments.

**Cored: 257.67-267.78, Recovered: 10.00.**

257.67-262.03 (4.36)

Shale, medium-gray to gray, fissile, interbedded with siltstone (0.10-0.20' thick), light-brown.

262.03-264.25 (2.22)

Sandstone, medium-gray, fine-grained, sparse siltstone laminations.

264.25-264.74 (0.49)

Shale, medium-gray to green, fissile, carbonaceous plant impressions.

264.74-267.67 (2.93)

Sandstone, light-gray, fine-grained, siltstone laminations.

**Cored: 267.78-277.78, Recovered: 10.04.**

267.78-268.68 (0.90)

Sandstone, light-gray to green, fine-grained, rippled, argillaceous throughout.

268.68-270.65 (1.97)

Sandstone, light-gray, fine-grained, rippled, white siltstone laminations.

270.65-271.85 (1.20)  
 271.85-272.65 (0.80)  
 272.65-274.11 (1.46)  
 274.11-277.82 (3.71)

Siltstone, light- to medium-gray, argillaceous, siderite layers.  
 Sandstone, light- to medium-gray, fine-grained.  
 Siltstone, light- to medium-gray, claystone laminations.  
 Shale, dark-gray, fissile, pyritized plant fragments, siderite layers (<0.20' thick).

**Cored: 277.78-287.78, Recovered: 10.03.**

277.78-282.80 (5.02)  
 282.80-285.80 (3.00)

As above.  
 Limestone, light- to medium-gray, fossiliferous, dense (crinoids, articulated brachiopods), bioturbated.  
 Sandstone, light- to medium-gray, micaceous, fine-grained, slightly pyritic, rippled, black, carbonaceous shale laminations.

285.80-287.81 (2.01)

**Cored: 287.78-297.78, Recovered: 10.07.**

287.78-297.85 (10.07)

As above.

**Cored: 297.78-307.78, Recovered: 9.99.**

297.78-307.77 (9.99)

As above, with more abundant black shale laminations.

**Cored: 307.78-317.78, Recovered: 9.97.**

307.78-317.75 (9.97)

Shale, medium-gray, silty, interlaminated siltstone, light-gray.

**Cored: 317.78-327.78, Recovered: 10.03.**

317.78-327.81 (10.03)

As above, with lag conglomerate near base.

**Cored: 327.78-337.78, Recovered: 10.00.**

327.78-329.55 (1.77)  
 329.55-330.23 (0.68)  
 330.23-332.23 (2.00)  
 332.23-337.78 (5.55)

Coal, bright-banded, clay partings near base.  
 Shale, dark-gray, black carbonaceous laminations.  
 Coal, bright-banded, some claystone laminations.  
 Sandstone, light-gray, fine-grained, carbonaceous laminations at top, micaceous.

**Cored: 337.78-347.78, Recovered: 9.97.**

337.78-340.47 (2.69)  
 340.47-342.60 (2.13)  
 342.60-347.75 (5.15)

Shale, light- to medium-gray, silty, carbonaceous.  
 Clay, light-brown, slickensided, plastic.  
 Shale, light-gray, silty.

**Cored: 347.78-357.78, Recovered: 10.09.**

347.78-357.87 (10.09)

Shale, light-gray, silty and sideritic, more silty toward base, thin carbonaceous layers.

**Cored: 357.78-367.78, Recovered: 10.10.**

357.78-367.88 (10.10)

Shale, light-gray to green, siltstone laminations and siderite layers scattered throughout.

**Cored: 367.78-377.78, Recovered: 9.98.**

367.78-371.81 (4.03)  
 371.81-371.85 (0.04)  
 371.85-375.75 (3.90)

As above.  
 Shale, black, carbonaceous, and bony coal.  
 Shale, dark-gray to black, carbonaceous, nonbedded to poorly bedded.  
 Shale, dark-gray, silty, more silty at top, plant fragments.

375.75-377.76 (2.01)

**Cored: 377.78-387.78, Recovered: 10.04.**

377.78-379.55 (1.77)  
 379.55-379.65 (0.10)

Shale, medium-gray, argillaceous, carbonaceous.  
 Coal, bony.

379.65-381.85 (2.20)	Shale, light-gray, silty, plant fragments.
381.85-387.82 (5.97)	Shale, light-gray, silty, grades to fine-grained, micaceous micaceous, silty shale, rippled toward base.
<b>Cored: 387.78-397.78, Recovered: 10.02.</b>	
387.78-396.95 (9.17)	Sandstone, light-gray to light-brown, fine-grained, interlaminated with shale, dark-gray, carbonaceous; rippled and crossbedded, micaceous.
396.95-397.80 (0.85)	Shale, dark-gray, silty.
<b>Cored: 397.78-407.78, Recovered: 9.97.</b>	
397.78-406.44 (8.66)	Shale, light- to dark-gray, interlaminated with sandstone, light-gray, fine-grained, micaceous (6.08' from top is a zone of coal laminae <1.00 mm thick).
406.44-407.04 (0.60)	Coal, bony.
407.04-407.75 (0.71)	Shale, dark-gray, carbonaceous, plant fragments.
<b>Cored: 407.78-417.78, Recovered: 10.00.</b>	
407.78-409.82 (2.04)	Shale, medium- to dark-gray, some siltstone laminations.
409.82-414.98 (5.16)	Siltstone, dark-brown to medium-gray, sandy.
414.98-417.78 (2.80)	Shale, light-gray, silty interlaminations, rippled.
<b>Cored: 417.78-427.78, Recovered: 10.07.</b>	
417.78-427.85 (10.07)	As above.
<b>Cored: 427.78-437.78, Recovered: 9.93.</b>	
427.78-437.71 (9.93)	Shale, medium- to dark-gray, carbonaceous, interlaminated with sandstone, light-gray, fine-grained.
<b>Cored: 437.73-447.78, Recovered: 9.87.</b>	
437.78-441.26 (3.48)	As above.
441.26-442.24 (0.98)	Shale, dark-gray, silty, fissile.
442.24-444.57 (2.33)	Shale, medium- to dark-gray, carbonaceous, interlaminated with sandstone, light-gray, fine-grained.
444.57-446.43 (1.86)	Coal, bright-banded, some pyrite.
446.43-447.65 (1.22)	Underclay, light- to medium-gray, hard, rooted, slickensided.
<b>Cored: 447.78-457.63, Recovered: 10.00.</b>	
447.78-449.13 (1.35)	As above.
449.13-455.28 (6.15)	Sandstone, light- to medium-gray, fine-grained, laminated, some crossbedding.
455.28-456.28 (1.00)	Shale, dark-gray, silty, carbonaceous.
456.28-457.78 (1.50)	Shale, light-gray, silty, thinly laminated.
<b>Cored: 457.63-467.63, Recovered: 10.02.</b>	
457.63-467.65 (10.02)	Sandstone, light- to medium-gray, siderite layers, claystone clasts, siltstone laminations throughout.
<b>Cored: 467.63-477.63, Recovered: 10.00.</b>	
467.63-471.60 (3.97)	As above.
471.60-474.60 (3.00)	Coal, bright-banded, calcite along cleats.
474.60-477.63 (3.03)	Sandstone, light-gray, silty, siderite nodules, fine-grained, claystone clasts.
<b>Cored: 477.63-487.63, Recovered: 10.00.</b>	

477.63-487.63 (10.00)

As above, with siltstone interbeds.

**Cored: 487.63-497.68, Recovered: 10.02.**

487.63-492.66 (5.03)

Sandstone, light-gray, some siltstone, slightly micaceous and pyritic, crossbedded and laminated, calcareous toward base.

492.66-497.65 (4.99)

Shale, medium-gray to green, becoming darker toward base, carbonaceous, fissile, siderite nodules, some pyritic plant fragments.

**Cored: 497.68-507.68, Recovered: 9.89.**

497.68-500.84 (3.16)

Shale, dark-gray, very thin-bedded, pyritized plant fragments.

500.84-506.67 (5.83)

Shale, medium- to dark-gray, interlaminated with sandstone, siderite layer.

506.67-507.57 (0.90)

Sandstone, light-gray, light-green, fine-grained, claystone clasts, carbonaceous fragments.

**Cored: 507.68-517.68, Recovered: 10.07.**

507.68-517.75 (10.07)

Sandstone, light-gray, fine-grained, siderite nodules at top, very porous, slightly micaceous.

**Cored: 517.68-527.68, Recovered: 9.99.**

517.68-527.67 (9.99)

Sandstone, light-gray, fine- to medium-grained, 0.59'-thick lag conglomerate, siderite nodules, carbonaceous laminations.

**Cored: 527.68-537.68, Recovered: 9.96.**

527.68-537.64 (9.96)

Sandstone, light-gray, fine-grained, light- to medium-gray-green, claystone clasts, black, carbonaceous shale laminations.

**Cored: 537.68-547.68, Recovered: 10.03.**

537.68-547.71 (10.03)

As above, but with light-gray to gray shale and claystone in lower 0.50'.

**Cored: 547.68-557.63, Recovered: 10.02.**

547.68-557.70 (10.02)

Sandstone, light-gray, medium-grained, slightly micaceous, carbonaceous laminations, crossbedded, light-gray green shale clast at top.

**Cored: 557.63-567.63, Recovered: 9.95.**

557.63-565.95 (8.32)

As above, with sharp basal contact.

565.95-567.58 (1.63)

Shale, dark-gray, fissile, siltstone laminations near top, pyritic plant fragments.

**Cored: 567.63-577.63, Recovered: 9.95.**

567.63-577.58 (9.95)

As above, with siderite layers, calcareous zone (<0.38' thick).

**Cored: 577.63-587.63, Recovered: 10.10.**

577.63-580.89 (3.26)

Shale, dark-gray, fissile, a few thin siltstone laminations, pyritic plant fragments, siderite nodules near base.

580.89-584.60 (3.71)

Sandstone, light-gray, fine-grained, rippled, interlaminated with black, carbonaceous shale.

584.60-587.73 (3.13)

Shale, light-gray, silty, a few calcareous zones, white siltstone laminations.

**Cored: 587.63-597.68, Recovered: 10.09.**

587.63-597.72 (10.09)

Shale, dark-gray to black, thin, calcareous, sideritic layers 0.25' thick at 596.72.

**Cored: 597.68-607.68, Recovered: 10.03.**

597.68-607.71 (10.03)

Shale, dark-gray, thin siderite layers, calcite laminations.

**Cored: 607.68-617.68, Recovered: 9.95.**

607.68-610.64 (2.96)

610.64-617.63 (6.99)

As above.

Shale, light- to medium-gray, with white siltstone bed, carbonaceous toward bottom.

**Cored: 617.68-627.68, Recovered: 10.00.**

617.68-620.52 (2.84)

Shale, medium-gray, silty, with lenses and laminations of fine-grained sandstone.

620.52-622.80 (2.28)

Siltstone, medium-gray, with laminations of light-gray, fine-grained sandstone.

622.80-625.32 (2.52)

Sandstone, medium-grained, sideritic, lag conglomerate.

625.32-627.68 (2.36)

Shale, dark-gray, laminations of gray to green shale, fine-grained sandstone laminations.

**Cored: 627.68-637.68, Recovered: 9.89.**

627.68-630.16 (2.48)

630.16-630.68 (0.52)

630.68-637.57 (6.89)

As above.

Coal, bright-banded, abundant pyrite.

Sandstone, light- to medium-gray, fine- to medium-grained, micaceous, sideritic, carbonaceous, rooted at top, rippled at base.

**Cored: 637.68-647.68, Recovered: 10.07.**

637.68-642.57 (4.89)

Sandstone, light-gray to greenish-gray, fine-grained, micaceous, carbonaceous plant fragments, dark-gray shale laminations, sideritic at base.

642.57-644.87 (2.30)

Shale, dark-gray, carbonaceous plant fragments, disseminated pyrite, sideritic, fine-grained sand laminations.

644.87-645.25 (0.38)

Lag conglomerate, sideritic.

645.25-647.75 (2.50)

Shale, dark, interlaminated with light-gray, fine-grained, micaceous sandstone, convolute bedding.

**Cored: 647.68-650.18, Recovered: 2.87.**

647.68-648.28 (0.60)

648.28-650.55 (2.27)

As above.

Shale, dark-gray, silty, carbonaceous and pyritized plant debris, sideritic.

**Total Depth: 650.55.**

**Western Kentucky Stratigraphic Test Hole Gil 20, Muhlenberg County, Greenville Quadrangle, Carter coordinate location 16-I-28, 875 FSL 1750 FEL, Elevation: 497.00, Total Depth: 730.02.**

Interval (Feet)	Description
<b>Cored: 18.00-30.00, Recovered: 11.15.</b> 18.00-19.45 (1.45)	Sandstone, buff, fine grained, weathered, friable, micaceous, low-angle crossbedding, iron-oxide stain.
19.45-19.94 (0.49)	Shale, dark-green, clayey, nonbedded.
19.94-24.45 (4.51)	Sandstone, as above, shaly, calcareous.
24.45-29.15 (4.70)	Shale, as above, with sandstone clast.
<b>Cored: 30.00-40.00, Recovered: 9.22.</b> 30.00-31.47 (1.47)	Shale, dark-gray, slightly silty, becoming more silty at base, sideritic.
31.47-39.92 (8.45)	Sandstone, medium-gray, fine-grained, interlaminated with dark-gray shale at base, micaceous, sideritic.
<b>Cored: 40.00-50.00, Recovered: 10.01.</b> 40.00-50.01 (10.01)	Sandstone, medium-gray, fine-grained, sideritic, micaceous, dark-gray shale laminations with interbeds of white calcareous sandstone.
<b>Cored: 50.00-60.00, Recovered: 10.11.</b> 50.00-60.11 (10.11)	As above, noncalcareous.
<b>Cored: 60.00-70.00, Recovered: 10.05.</b> 60.00-60.93 (0.93) 60.93-70.05 (9.12)	As above. Shale, dark-gray, sandy, carbonaceous plant fragments; sandstone laminations, light-gray, fine-grained.
<b>Cored: 70.00-80.00, Recovered: 9.98.</b> 70.00-75.68 (5.68)	Shale, dark-gray, slightly calcareous, plant fragments, carbonaceous.
75.68-77.31 (1.63)	Sandstone, fine-grained, highly calcareous, argillaceous; grades to limestone, dark-gray, finely crystalline, highly fossiliferous.
77.31-77.71 (0.40)	Coal, bright, some fusain, contact sharp.
77.71-79.98 (2.27)	Sandstone, dark-gray, fine-grained, plant fragments, bioturbated.
<b>Cored: 80.00-90.00, Recovered: 9.90.</b> 80.00-89.90 (9.90)	Sandstone, interlaminated with shale, highly sideritic, calcareous, micaceous.
<b>Cored: 90.00-100.00, Recovered: 10.09.</b> 90.00-100.09 (10.09)	As above.
<b>Cored: 100.00-110.00, Recovered: 10.13.</b> 100.00-110.13 (10.13)	As above, high-angle crossbedding toward base.
<b>Cored: 110.00-120.00, Recovered: 9.95.</b> 110.00-110.61 (0.61) 110.61-113.48 (2.87) 113.48-115.74 (2.26) 115.74-116.67 (0.93)	As above. Coal, bright to dull, pyritic, gypsum on cleat faces. Underclay, medium-gray, carbonaceous, calcareous, silty. Limestone, fossiliferous, medium-gray.

116.67-118.50 (1.83)	Shale, dark-gray, clayey, calcareous, fissile.
118.50-118.72 (0.22)	Limestone, as unit at 115.74.
118.72-119.00 (0.28)	Shale, dark-gray, pyritic.
119.00-119.95 (0.95)	Sandstone, dark-gray to medium-gray, fine-grained, carbonaceous, with pyritized plant fragments, shaly.
<b>Cored: 120.00-130.00, Recovered: 10.06.</b>	
120.00-122.06 (2.06)	As above.
122.06-126.09 (4.03)	Siltstone, medium-gray, shaly, dolomitic at top.
126.09-130.06 (3.97)	Shale, silty, sideritic, medium-gray.
<b>Cored: 130.00-140.00, Recovered: 9.55.</b>	
130.00-135.04 (5.04)	Shale, olive-green, silty, highly sideritic.
135.04-135.94 (0.90)	Siderite.
135.94-136.50 (0.56)	Shale, black, sideritic.
136.50-139.55 (3.05)	Sandstone, medium-gray, fine-grained, highly sideritic.
<b>Cored: 140.00-150.00, Recovered: 10.19.</b>	
140.00-142.25 (2.25)	As above, but no siderite.
142.25-143.91 (1.66)	Coal, bright-banded, pyritic, sideritic, gypsum along cleats.
143.91-148.55 (4.64)	Underclay, medium-gray, plastic at top, plant fragments, dolomitic.
148.55-150.00 (1.45)	Shale, black, pyritic, coal laminations.
150.00-150.19 (0.19)	Sandstone, dark-gray, fine-grained, siderite nodules, calcareous.
<b>Cored: 150.00-160.00, Recovered: 9.81.</b>	
150.00-151.03 (1.03)	Shale, sideritic.
151.03-152.21 (1.18)	Coal, bright-banded, pyritic.
152.21-156.45 (4.24)	Sandstone, medium-gray, silty, sideritic.
156.45-159.81 (3.36)	Shale, light-gray, silty, sideritic.
<b>Cored: 160.00-170.00, Recovered: 9.88.</b>	
160.00-164.88 (4.88)	Shale, medium-gray, sideritic.
164.88-169.88 (5.00)	Shale, dark-gray, sideritic, calcareous, fossil fragments.
<b>Cored: 170.00-180.00, Recovered: 10.01.</b>	
170.00-171.60 (1.60)	As above.
171.60-180.01 (8.41)	Shale, dark-gray, calcareous, pyritized plant debris.
<b>Cored: 180.00-190.00, Recovered: 9.97.</b>	
180.00-189.97 (9.97)	As above.
189.97-190.00 (0.03)	Sideritic.
<b>Cored: 190.00-200.00, Recovered: 10.08.</b>	
190.00-191.05 (1.05)	Shale, dark-gray, sideritic.
191.05-194.67 (3.62)	Limestone, medium-gray, medium-crystalline fossiliferous.
194.67-196.97 (2.30)	Shale, medium-gray, fossiliferous, calcareous.
196.97-200.08 (3.11)	Shale, medium-gray.
<b>Cored: 200.00-210.00, Recovered: 10.28.</b>	
200.00-201.42 (1.42)	Shale, medium-gray, sideritic.
201.42-205.47 (4.05)	Coal, bright, slightly pyritic.
205.47-210.28 (4.81)	Siltstone, medium-gray, dolomitic, sideritic, more sandy toward base.

**Cored: 210.00-220.00, Recovered: 10.07.**

210.00-220.07 (10.07)

Siltstone, medium-gray to light-green, interlaminated with light-gray sandstone.

**Cored: 220.00-230.00, Recovered: 10.05.**

220.00-230.05 (10.05)

Siltstone, dark-gray; and light-gray sandstone, interlaminated with sparse coal laminations.

**Cored: 230.00-240.00, Recovered: 10.07.**

230.00-240.07 (10.07)

As above, with sandstone, slightly calcareous.

**Cored: 240.00-250.00, Recovered: 9.99.**

240.00-249.99 (9.99)

Siltstone, medium- to dark-gray, sparse sandstone laminations.

**Cored: 250.00-260.00, Recovered: 10.06.**

250.00-254.29 (4.29)

254.29-254.64 (0.35)

254.64-255.24 (0.60)

255.24-258.87 (3.63)

258.87-258.97 (0.10)

258.97-260.06 (1.09)

Siltstone, medium- to dark-gray, carbonized plant fragments.

Coal, bright, slightly pyritic.

Shale, medium-gray, coal laminations.

Shale, medium-gray, grading to siltstone, sideritic.

Claystone, medium-gray, plastic.

Siltstone, medium-gray.

**Cored: 260.00-270.00, Recovered: 9.99.**

260.00-269.99 (9.99)

Siltstone, medium-gray, sideritic, containing sandstone lenses and laminations toward bottom of core.

**Cored: 270.00-280.00, Recovered: 9.90.**

270.00-289.90 (9.90)

As above.

**Cored: 280.00-290.00, Recovered: 10.00.**

280.00-289.29 (9.29)

Shale, dark-gray, sideritic, carbonized and pyritized plant fragments.

Shale, medium-green, siderite nodules.

289.29-290.00 (0.71)

**Cored: 290.00-300.00, Recovered: 10.02.**

290.00-295.88 (5.88)

295.88-298.56 (2.68)

298.56-299.62 (1.06)

299.62-299.96 (0.34)

299.96-300.02 (0.06)

Shale, medium-green, with carbonaceous plant debris.

Limestone, buff, fossiliferous at top.

Limestone, medium-green, sandy, fossiliferous.

Sandstone, medium-green, fine-grained, noncalcareous.

Coal, dull.

**Cored: 300.00-310.00, Recovered: 10.18.**

300.00-300.08 (0.08)

300.08-300.23 (0.15)

300.23-300.40 (0.17)

300.40-302.01 (1.61)

Shale, black, carbonaceous.

Coal, dull with bright bands, fusain along bedding planes.

Siltstone, dark-gray, carbonaceous.

Sandstone, medium- to light-gray, carbonaceous pyritized plant fragments, micaceous.

302.01-305.10 (3.09)

Sandstone, medium-gray, fine-grained, carbonaceous, shaly; shale, green, micaceous.

305.10-308.61 (3.51)

Shale, green, becomes silty at base.

308.61-310.18 (1.57)

Sandstone, medium-gray, fine-grained, shaly; calcareous fragments (probably fossils).

**Cored: 310.00-320.00, Recovered: 10.35.**

310.00-312.73 (2.73)	Siltstone, medium-gray, shaly.
312.73-314.16 (1.43)	Transition zone; shale and siltstone, siltstone as above; shale, dark-green, sideritic.
314.16-317.37 (3.21)	Shale, dark-green, grades to dark-gray shale.
317.37-320.35 (2.98)	Shale, dark-gray to black, sideritic, highly carbonaceous, pyritized plant fragments, coal laminations.
<b>Cored: 320.00-330.00, Recovered: 10.48.</b>	
320.00-321.65 (1.65)	Coal, bright, pyritic.
321.65-321.74 (0.09)	Shale, black.
321.74-323.44 (1.70)	Shale, dark-gray, clayey, carbonaceous, silty at base.
323.44-330.48 (7.04)	Siltstone, medium-gray, carbonaceous, dark-gray shale, laminations, plant fragments, bioturbated.
<b>Cored: 330.00-340.00, Recovered: 9.97.</b>	
330.00-339.97 (9.97)	Shale, dark-gray, with light-gray siltstone laminations at top with abundant siderite layers.
<b>Cored: 340.00-350.00, Recovered: 10.09.</b>	
340.00-343.60 (3.60)	Shale, dark-gray, slightly pyritic.
343.60-343.80 (0.20)	Clay, dark-gray, plastic.
343.80-344.47 (0.67)	Sandstone, calcareous, interlaminated with dark-gray shale.
344.47-344.82 (0.35)	Shale, dark-gray, sideritic.
344.82-344.90 (0.08)	Clay, dark-gray, plastic.
344.90-349.11 (4.21)	Shale, dark-gray with sparse siderite layers.
349.11-350.09 (0.98)	Shale, medium-green, slightly carbonaceous, sideritic.
<b>Cored: 350.00-360.00, Recovered: 9.94.</b>	
350.00-359.94 (9.94)	Shale, light-gray, silty, grading to dark-gray, silty shale, sideritic.
<b>Cored: 360.00-370.00, Recovered: 10.00.</b>	
360.00-370.00 (10.00)	As above, burrowed, bioturbated, slightly calcareous.
<b>Cored: 370.00-380.00, Recovered: 10.08.</b>	
370.00-377.24 (7.24)	Shale, dark-gray, silt laminations, carbonaceous, sideritic layers.
377.24-377.89 (0.65)	Coal, bony, with bright bands.
377.89-379.15 (1.26)	Shale, dark-gray, highly carbonaceous, silty at base.
379.15-380.08 (0.93)	Siltstone, gray, carbonaceous, shaly, coal laminations.
<b>Cored: 380.00-390.00, Recovered: 10.00.</b>	
380.00-390.00 (10.00)	Sandstone, medium-gray, fine-grained, flaser bedding bioturbated at top, carbonaceous laminations, plant fragments.
<b>Cored: 390.00-400.00, Recovered: 9.95.</b>	
390.00-399.95 (9.95)	As above, sideritic.
<b>Cored: 400-410, Recovered: 10.02.</b>	
400.00-410.02 (10.02)	Sandstone, medium-gray, fine- to medium-grained, carbonaceous, micaceous, friable, dark-gray shale laminations.
<b>Cored: 410.00-420.00, Recovered: 10.00.</b>	
410.00-420.00 (10.00)	As above, sideritic.
<b>Cored: 420.00-430.00, Recovered: 10.00.</b>	

420.00-430.00 (10.00)	As above, silty toward base.
<b>Cored: 430.00-440.00, Recovered: 10.17.</b>	
430.00-433.80 (3.80)	Siltstone, dark-gray, interlaminated with medium-gray sandstone, carbonaceous plant fragments.
433.80-437.72 (3.92)	Sandstone, medium-gray, medium-grained, coal laminations, micaceous.
437.72-440.17 (2.45)	Siltstone, dark-gray, interlaminated with sandstone, dark-gray, fine-grained, carbonaceous, micaceous.
<b>Cored: 440.00-450.00, Recovered: 10.00.</b>	
440.00-447.63 (7.63)	As above.
447.63-448.07 (0.44)	Sandstone, medium-gray, medium-grained, carbonaceous, convolute bedding, micaceous.
448.07-449.08 (1.01)	Siltstone, dark-gray, interlaminated with medium-gray sandstone, coal laminations toward bottom.
449.08-449.18 (0.10)	Lag gravel.
449.18-450.00 (0.82)	Sandstone, medium-gray, medium-grained, numerous coal laminations, carbonaceous plant fragments.
<b>Cored: 450.00-459.64, Recovered: 9.64.</b>	
450.00-459.29 (9.29)	As above, sparse lenses of lag conglomerate, coal clasts, 1.4'-thick lag conglomerate at base.
459.29-459.64 (0.35)	Shale, black.
<b>Cored: 460.00-470.00, Recovered: 9.64.</b>	
460.00-461.49 (1.49)	Shale, black, fissile.
461.49-464.49 (3.00)	Siltstone, medium-gray, black shale laminations at top, slightly sideritic at base.
464.49-465.66 (1.17)	Sandstone, highly calcareous, silty.
465.66-466.91 (1.25)	Siltstone, medium-green, calcareous, micaceous.
466.91-467.81 (0.90)	Sandstone, light-green, highly calcareous, silty.
467.81-470.27 (2.46)	Sandstone, medium- to fine-grained, micaceous green shale laminations.
<b>Cored: 470.00-480.00, Recovered: 10.21.</b>	
470.00-472.30 (2.30)	As above, sideritic.
472.30-480.21 (7.91)	Sandstone, light-gray, interlaminated with medium-gray shale.
<b>Cored: 480.00-490.00, Recovered: 10.03.</b>	
480.00-482.46 (2.46)	As above.
482.46-485.06 (2.60)	Shale, dark-gray, sandstone laminations and lenses, burrowed, sideritic.
485.06-485.46 (0.40)	Shale, black, coal laminations, pyritic.
485.46-486.14 (0.68)	Bone coal, some bright layers, pyritic.
486.14-486.85 (0.71)	Siltstone, medium-gray, carbonaceous.
486.85-499.23 (3.18)	Sandstone, medium-gray, fine-grained, bioturbated at top, slightly carbonaceous, sideritic.
<b>Cored: 490.00-500.00, Recovered: 10.12.</b>	
490.00-495.81 (5.81)	As above, not sideritic.
495.81-500.12 (4.31)	Sandstone, medium-gray, micaceous, convolute bedding, argillaceous.

<b>Cored: 500.00-510.00, Recovered: 10.00.</b> 500.00-510.00 (10.00)	As above.
<b>Cored: 510.00-520.00, Recovered: 10.07.</b> 510.00-520.07 (10.07)	As above, but more silty.
<b>Cored: 520.00-530.00, Recovered: 10.18.</b> 520.00-530.18 (10.18)	Siltstone, medium-gray, sideritic.
<b>Cored: 530.00-540.00, Recovered: 10.06.</b> 530.00-537.00 (7.00)  537.00-539.16 (2.16) 539.16-540.06 (0.90)	Siltstone, dark-gray, carbonaceous debris, siderite nodules; sandstone, dark-gray, fine-grained, carbonaceous debris at base. Shale, dark-gray, coal laminations, plant remains. Siltstone, dark-gray, carbonaceous, sideritic, grades to sandstone, light-gray, fine-grained, micaceous, sideritic.
<b>Cored: 540.00-550.00, Recovered: 10.07.</b> 540.00-544.20 (4.20)  544.20-545.90 (1.70) 545.90-550.07 (4.17)	Sandstone, light-gray, fine-grained, carbonaceous, micaceous, sideritic; shale laminations, dark-gray. Shale, dark-gray, carbonaceous, silty. Sandstone, as above, at 540.00-544.40.
<b>Cored: 550.00-560.00, Recovered: 9.55.</b> 550.00-555.10 (5.10)  555.10-559.55 (4.45)	Sandstone, light-gray, fine-grained, micaceous, sideritic with shale laminations, dark-gray. Sandstone, light-gray, fine-grained, sideritic, coal laminations, claystone lenses; shale laminations, dark gray, sandstone, micaceous, with plant fragments.
<b>Cored: 560.00-570.00, Recovered: 10.03.</b> 560.00-560.60 (0.60) 560.60-564.42 (3.82)  564.42-570.03 (5.61)	As above. Sandstone, light-gray, fine-grained, micaceous, carbonaceous debris, sideritic. Sandstone, as above, interlaminated with shale, dark-gray, carbonaceous, micaceous.
<b>Cored: 570.00-580.00, Recovered: 10.03.</b> 570.00-580.00 (10.03)	As above.
<b>Cored: 580.00-590.00, Recovered: 9.99.</b> 580.00-589.99 (9.99)	Shale, dark-gray, carbonaceous, slightly micaceous, abundant light-gray sandstone beds and laminations.
<b>Cored: 590.00-600.00, Recovered: 9.92.</b> 590.00-599.92 (9.92)	As above, with sideritic layers at 595.10.
<b>Cored: 600.00-610.00, Recovered: 10.06.</b> 600.00-610.06 (10.06)	Shale, medium- to dark-gray, white siltstone laminations throughout, flaser-bedded, clayey toward base.
<b>Cored: 610.00-620.00, Recovered: 10.12.</b> 610.00-620.12 (10.12)	Shale, medium- to dark-gray, thin-bedded, siderite layers, carbonaceous and silty laminations throughout, calcareous layers in upper half, plant fragments and pyrite near top.

**Cored: 620.00-630.00, Recovered: 9.88.**

620.00-629.88 (9.88)

Shale, dark-gray, carbonaceous, siderite nodules.

**Cored: 630.00-640.00, Recovered: 10.07.**

630.00-640.07 (10.07)

As above.

**Cored: 640.00-650.00, Recovered: 10.04.**

640.00-650.04 (10.04)

As above, with siderite layers more numerous.

**Cored: 650.00-660.00, Recovered: 9.98.**

650.00-654.03 (4.03)

As above.

654.03-655.46 (1.43)

Coal, bright, some pyrite, a few siderite layers at base.

655.46-656.46 (1.00)

Shale, light-gray, more silty toward base.

656.46-658.64 (2.18)

Sandstone, light-gray, fine-grained, grades to siltstone at base.

658.64-659.62 (0.98)

Shale, light-gray, silty.

659.62-659.98 (0.36)

Shale, light-gray, silty at top.

**Cored: 660.00-670.00, Recovered: 10.05.**

660.00-670.05 (10.05)

As above, with a thick (0.19') siderite layer 5.82' from top, and a siltstone bed, light-gray, 0.50' below siderite band.

**Cored: 670.00-680.00, Recovered: 10.05.**

670.00-680.05 (10.05)

Shale, dark-gray, some calcite, siderite.

**Cored: 680.00-690.00, Recovered: 9.92.**

680.00-689.92 (9.92)

As above, from top 3.90' siderite band (0.60' thick), very thin layers and lenses of siderite.

**Cored: 690.00-700.00, Recovered: 9.96.**

690.00-699.96 (9.96)

As above, and gray shale, laminated.

**Cored: 700.00-710.00, Recovered: 9.90.**

700.00-704.06 (4.06)

As above.

704.06-704.42 (0.36)

Coal, medium-bright, some fusain with calcite and pyrite at top.

704.42-705.42 (1.00)

Shale, gray.

705.42-709.90 (4.48)

Interlaminated gray shale, siltstone and siderite.

**Cored: 710.00-720.00, Recovered: 10.02.**

710.00-717.70 (7.70)

As above.

717.70-720.02 (2.32)

Shale, gray, carbonaceous laminations, siltstone laminations, two lenses of thin coal at 718.70.

**Cored: 720.00-730.02, Recovered: 10.02.**

720.00-727.16 (7.16)

Shale, dark-gray to black, sparse siderite layers; thin coal laminations.

727.16-727.48 (0.32)

Coal, bright-banded, much fusain, calcite along cleats.

727.48-730.02 (2.54)

Underclay, light-gray, noncalcareous, some rooted.

**Total Depth: 730.02.**

**Western Kentucky Stratigraphic Test Hole Gil 21, Ohio County, Cromwell Quadrangle, Carter coordinate location 9-J-32, 650 FSL 2150 FEL, Elevation: 586.00, Total Depth: 299.98.**

Interval (Feet)	Description
<b>Cored: 2.50-8.05, Recovered: 5.53.</b>	
0.00-1.02 (1.02)	Shale, dark-gray to black, clayey, fissile, weathered.
1.02-3.10 (2.08)	Coal, bright, calcite and pyrite along cleats and bedding.
3.10-4.35 (1.25)	Underclay, light-gray, coal laminations, carbonaceous.
4.35-5.53 (1.18)	Underclay, light-gray, carbonaceous.
<b>Cored: 8.05-17.23, Recovered: 8.01.</b>	
8.05-12.25 (4.20)	Shale, light-gray, clayey at top, silty toward base.
12.25-13.63 (1.38)	Shale, light-gray to green, very calcareous, flaser bedding, crinoid stems(?).
13.63-16.06 (2.43)	Limestone, light-gray at top to light-gray-pink at base, argillaceous at top, crinoids at top, crystalline toward base, calcite filled cavities toward base (weathered).
<b>Cored: 17.23-27.73, Recovered: 8.82.</b>	
17.23-18.58 (1.35)	As above.
18.58-22.88 (4.30)	Shale, medium-gray to green to light-gray toward base, carbonaceous, calcareous in upper half, scattered siltstone laminations, plastic.
22.88-23.91 (1.03)	Shale, light-gray, silty, claystone laminations, medium-gray to blue plastic.
<b>Cored: 27.23-37.23, Recovered: 10.00.</b>	
27.23-27.80 (9.57)	Shale, light-gray to green, interlaminated with calcareous siltstone.
27.80-29.26 (1.46)	Limestone, light-gray to brown, flaser bedded, calcareous detritus, argillaceous at base.
29.26-30.28 (1.02)	Coal, bright, pyrite along bedding.
30.28-32.98 (2.70)	Shale, medium-gray with greenish tinge, a few siltstone lamination, plastic.
32.98-37.23 (1.25)	Sandstone, light- to medium-gray, clayey at top, fine-grained, calcareous matrix.
<b>Cored: 37.23-47.23, Recovered: 9.91.</b>	
37.23-47.14 (9.91)	Sandstone at top grading to a siltstone downward; sandstone, light-gray to brown, fine-grained, some carbonaceous bands, calcareous at top; and siltstone, light-gray, noncalcareous to slightly calcareous.
<b>Cored: 47.23-57.23, Recovered: 10.03.</b>	
47.23-49.04 (1.81)	Siltstone, light- to medium-gray, carbonaceous laminations.
49.04-57.26 (5.19)	Shale, medium- to dark-gray, fissile, carbonaceous, siderite layers (<0.45'), a few siltstone laminations.
<b>Cored: 57.23-67.28, Recovered: 10.00.</b>	
57.23-67.23 (10.00)	As above, without siderite layers.
<b>Cored: 67.28-77.28, Recovered: 9.37.</b>	
67.28-76.65 (9.37)	Shale, medium- to dark-gray, fissile, light-gray, laminations of

**Cored: 77.28-87.28, Recovered: 10.01.**  
77.28-87.29 (10.01)

siltstone, and siderite layers toward base.

**Cored: 86.88-96.88, Recovered: 10.10.**  
86.88-92.38 (5.50)

Clay shale, slightly calcareous at top; top 1.50' clay shale, carbonaceous; remainder is light-gray; siderite nodules throughout.

92.38-96.98 (4.60)

Clay shale, light-gray at top to darker gray at bottom, siderite nodules; pyrite zone 4.40' from top (about 0.70" thick).  
Coal, bright-banded, pyrite in cleats.

**Cored: 96.98-106.88, Recovered: 9.80.**  
96.98-97.28 (0.30)  
97.28-98.83 (1.55)  
98.83-100.03 (1.20)  
100.03-106.88 (6.85)

Coal, bright, pyrite on cleats.  
Underclay, light-gray, plastic.  
Shale, silty, light-gray, slightly calcareous.  
Sandstone, light-gray, micaceous, slightly calcareous.

**Cored: 106.88-116.88, Recovered: 10.04.**  
106.88-116.92 (10.04)

Clay shale, with interlaminated calcareous sandstone, more silty and micaceous toward base, siderite nodules at top.

**Cored: 116.88-126.88, Recovered: 10.06.**  
116.88-126.94 (7.06)

As above.

**Cored: 126.93-136.93, Recovered: 9.97.**  
126.93-134.76 (7.53)

Sandstone, silty at top, carbonaceous laminations, slightly calcareous.  
Shale, silty, light-gray, micaceous.

134.76-136.98 (2.22)

**Cored: 136.98-146.98, Recovered: 9.79.**  
136.98-143.73 (6.75)

Clay shale, light-gray, some scattered siderite layers, darker downward.  
Clay shale, dark-gray to black, fossiliferous.  
Clay shale, black, slightly fossiliferous (brachiopods).

143.73-144.55 (0.82)

144.55-146.77 (2.22)

**Cored: 146.93-156.93, Recovered: 10.10.**  
146.93-156.16 (9.23)

Shale, black, slightly calcareous at base, siltstone laminations, pyrite lens 6.00' from top, 0.65' thick.  
Shale, fossiliferous, fragmented brachiopods, very calcareous.  
Coal, dull, pyritic.

156.16-156.29 (0.13)

156.29-157.03 (0.74)

**Cored: 157.03-167.03, Recovered: 10.10.**  
157.03-157.23 (0.20)  
157.23-167.03 (9.80)

As above.  
Clay shale, light- to medium-gray, silty layers throughout, light-gray.

**Cored: 167.03-177.03, Recovered: 10.10.**  
167.03-167.75 (0.72)  
167.75-172.55 (4.80)  
172.55-177.13 (4.58)

Clay shale, light-gray, plastic.  
Clay shale, medium-gray, some siltstone.  
Sandstone, light-gray, silty at top, some coarse-grained sandstone laminations.

**Cored: 177.03-186.73, Recovered: 9.98.**  
177.03-178.99 (1.96)  
178.99-187.01 (8.02)

Sandstone, light-gray, silty.  
Clay shale, slightly silty, siderite nodules, slightly more silty

**Cored: 186.73-196.63, Recovered: 9.99.**  
186.73-196.72 (9.99)

toward base.

Clay shale, medium- to dark-gray, calcareous layers 0.90' above base.

**Cored: 196.72-206.78, Recovered: 10.10.**  
196.72-199.93 (3.21)  
199.93-201.35 (1.42)  
201.35-206.82 (5.47)

Clay shale, dark-gray to black, pyritic laminations.

Coal, bright-banded, slightly pyritic.

Sandstone, silty, more silty at top, light- to medium-gray, some pyrite at top.

**Cored: 206.78-216.88, Recovered: 10.06.**  
206.78-208.78 (2.00)  
208.78-210.43 (1.65)  
210.43-216.84 (6.41)

Sandstone, as above.

Siltstone, light-gray.

Sandstone, light-gray, silty at top, scattered shale laminations.

**Cored: 216.88-226.88, Recovered: 9.93.**  
216.88-217.53 (0.65)  
217.53-218.66 (1.13)  
218.66-219.48 (0.82)  
219.48-219.78 (0.30)

Sandstone, medium-gray, argillaceous.

Sandstone, light- to medium-gray, fine-grained, micaceous.

Shale, medium-gray, clayey.

Sandstone, medium-gray, medium- to fine-grained, calcareous, micaceous.

Sandstone, medium-gray, fine-grained, micaceous.

Shale, medium-gray, clayey, darker toward base.

Coal, bony.

Sandstone, light-gray, fine-grained, silty at top, siderite layers in lower 1.00'.

219.78-221.33 (1.55)

221.33-222.21 (0.88)

222.21-222.31 (0.10)

222.31-226.81 (4.50)

**Cored: 226.88-236.88, Recovered: 9.94.**  
226.88-236.82 (9.94)

Sandstone, light- to medium-gray, fine-grained, silty, micaceous, siderite layers throughout.

**Cored: 236.88-246.88, Recovered: 10.00.**  
236.88-246.88 (10.00)

Sandstone, medium-gray, fine-grained, siderite layers.

**Cored: 246.88-256.88, Recovered: 10.05.**  
246.88-256.93 (10.05)

Siltstone, light-gray, darker toward base, argillaceous toward base, siderite nodules throughout.

**Cored: 256.88-261.18, Recovered: 10.16.**  
256.88-257.21 (0.33)

Shale, dark-gray, laminated, slightly fossiliferous (pecten), pyrite nodules.

257.21-258.18 (0.97)

258.18-260.07 (1.89)

260.07-264.17 (4.10)

264.17-264.54 (0.37)

264.54-264.61 (0.07)

264.61-267.04 (2.43)

Shale, very dark-gray, calcareous, fossiliferous (brachiopods).

Coal, bright-banded, calcite on cleats.

Underclay, light-gray to green, silty, scattered siderite nodules.

Shale, dark-gray to black, carbonaceous, sharp basal contact.

Coal, base sharp and slightly irregular.

Underclay, light- to medium-gray, silty.

**Cored: 267.18-277.18, Recovered: 10.10.**  
267.18-268.83 (1.65)  
268.83-277.13 (8.30)  
277.13-277.28 (0.15)

Clay shale, light-gray, some sandstone laminations.

Sandstone, light-gray, siderite nodules, micaceous.

Siltstone, medium-gray, micaceous.

**Cored: 277.18-287.18, Recovered: 9.90.**

277.18-279.14 (1.96)

279.14-287.08 (7.94)

Clay shale, medium-gray, with siderite layers.

Shale, silty, medium-gray, micaceous, interlaminated with sandstone, siderite nodules, darker toward base.

**Cored: 287.18-297.18, Recovered: 10.07.**

287.18-297.25 (10.07)

Siltstone, light- to medium-gray, micaceous; with sandstone interbeds.

**Cored: 297.18-300.18, Recovered: 2.80.**

297.18-299.98 (2.80)

As above.

**Total Depth: 300.00.**

**Western Kentucky Stratigraphic Test Hole Gil 22, Butler County, Flener Quadrangle, Carter coordinate location 11-J-34, 2600 FNL 2200 FWL, Elevation: 440.00, Total Depth: 590.02.**

Interval (Feet)	Description
<b>Cored: 9.00-20.00, Recovered: 10.14.</b>	
9.00-10.07 (1.07)	Sandstone, buff-brown, medium-grained, micaceous.
10.07-10.16 (0.09)	Clay, medium-gray, plastic, limonitic.
10.16-10.19 (0.03)	Shale, black, fissile.
10.19-19.14 (9.05)	Shale, medium-gray, siderite nodules, limonitic at top.
<b>Cored: 20.00-30.00, Recovered: 9.55.</b>	
20.00-22.88 (2.88)	Clay shale, medium-gray, sideritic.
22.88-25.14 (2.26)	Siltstone, medium-gray, carbonaceous, sideritic.
25.14-26.24 (1.10)	Clay shale, medium-gray, carbonaceous, sideritic.
26.24-29.53 (3.29)	Siltstone, medium-gray, with light-gray sandstone laminations.
<b>Cored: 30.00-40.00, Recovered: 9.97.</b>	
30.00-30.70 (0.70)	Siltstone, medium-gray, carbonaceous, micaceous.
30.70-31.02 (0.32)	Shale, sandy, medium-gray.
31.02-39.97 (8.95)	Sandstone, medium-gray, fine- to medium-grained, with shale laminations, sideritic, micaceous.
<b>Cored: 40.00-50.00, Recovered: 10.17.</b>	
40.00-50.17 (10.17)	Sandstone, as above.
<b>Cored: 50.00-60.00, Recovered: 10.03.</b>	
50.00-58.42 (8.42)	Sandstone, as above, coarse-grained, with lag conglomerate at bottom.
58.42-60.03 (1.61)	Shale, medium-gray.
<b>Cored: 60.00-70.00, Recovered: 9.91.</b>	
60.00-69.91 (9.91)	Shale, medium- to dark-gray.
<b>Cored: 70.00-80.00, Recovered: 10.02.</b>	
70.00-80.02 (10.02)	Shale, dark-gray to medium-green, medium-gray, sideritic.
<b>Cored: 80.00-90.00, Recovered: 9.96.</b>	
80.00-89.96 (9.96)	Shale, medium- to dark-gray, sideritic, slightly silty.
<b>Cored: 90.00-100.00, Recovered: 9.99.</b>	
90.00-99.99 (9.99)	Shale, medium- to dark-gray, silty, with sparse siderite layers.
<b>Cored: 100.00-110.00, Recovered: 9.91.</b>	
100.00-109.91 (9.91)	As above.
<b>Cored: 110.00-120.00, Recovered: 9.95.</b>	
110.00-119.95 (9.95)	As above, with lag conglomerate 4.50' from top of core.
<b>Cored: 120.00-130.00, Recovered: 9.96.</b>	
120.00-129.96 (9.96)	As above.
<b>Cored: 130.00-140.00, Recovered: 9.96.</b>	
130.00-131.19 (1.19)	As above.
131.19-131.23 (0.04)	Claystone, medium-gray, plastic.

131.23-133.67 (2.44)  
133.67-139.97 (6.30)

Sandstone, medium-gray, medium-grained, bioturbated.  
Siltstone, medium-gray, slightly sideritic, with sparse burrows.

**Cored: 140.00-150.00, Recovered: 9.95.**  
140.00-149.93 (9.93)

Siltstone, dark-gray, with sparse siderite layers.

**Cored: 150.00-160.00, Recovered: 10.05.**  
150.00-158.45 (8.45)  
158.45-158.70 (0.25)  
158.70-160.05 (1.35)

Siltstone, dark-gray, sideritic, slightly pyritic.  
Coal, bright-banded, fusain.  
Shale, black, grading to medium-gray, with carbonized plant impressions.

**Cored: 160.00-170.00, Recovered: 9.92.**  
160.00-160.92 (0.92)  
160.92-169.92 (9.00)

Shale, medium-gray.  
Siltstone, medium-gray, carbonaceous plant impressions, sandy toward bottom.

**Cored: 170.00-180.00, Recovered: 10.00.**  
170.00-176.81 (6.81)  
176.81-179.62 (2.81)  
179.62-180.02 (0.40)

Siltstone and bioturbated sandstone, with coal laminations.  
Siltstone, dark- to medium-gray, with carbonaceous material.  
Shale, dark-gray.

**Cored: 180.00-190.00, Recovered: 10.00.**  
180.00-181.56 (1.56)  
  
181.56-182.31 (0.75)  
182.31-190.00 (7.69)

Sandstone, interlaminated with black, carbonaceous shale; sandstone, micaceous, with siderite nodules.  
Shale, black, slightly plastic.  
Shale and sandstone, interlaminated, siderite layers.

**Cored: 190.00-200.00, Recovered: 9.88.**  
190.00-191.35 (1.35)  
191.35-198.31 (6.96)  
  
198.31-199.88 (1.57)

Siltstone, carbonaceous, medium- to dark-gray.  
Clay shale, grading to fine-grained sandstone with small pellets of siderite.  
Siltstone, black- to dark-gray, carbonaceous.

**Cored: 200.00-210.00, Recovered: 9.85.**  
200.00-209.85 (9.85)

Sandstone and shale, interlaminated, light-gray; in bottom 5.00', sandstone, fine- to medium-grained, slightly calcareous; and shale, dark-gray, rippled, carbonaceous; siderite layers.

**Cored: 210.00-220.00, Recovered: 9.81.**  
210.00-217.91 (7.91)  
  
217.91-218.02 (0.11)  
218.02-218.21 (0.19)  
218.21-219.81 (1.60)

Shale, dark-gray, carbonaceous, interbedded with sandstone, fine-grained, light-gray, grades to shale at base.  
Coal, bright-banded.  
Shale, medium-gray, carbonaceous.  
Siltstone, light-gray, rooted.

**Cored: 220.00-230.00, Recovered: 10.08.**  
220.00-221.15 (1.15)  
221.15-223.98 (2.83)  
  
223.98-230.08 (6.10)

As above, with siderite nodules at base.  
Sandstone, light-gray, fine-grained, claystone laminations, rippled and crossbedded.  
Sandstone, interlaminated with shale; sandstone, light-gray, fine-grained, crossbedded; shale, black, carbonaceous, thin siderite layers.

**Cored: 230.00-240.00, Recovered: 9.92.**

230.00-239.92 (9.92)	Sandstone and shale, interlaminated; sandstone, light-gray, fine-grained, crossbedded; shale, dark-gray, carbonaceous, plant fragments, siderite nodules, some contorted shale beds, more shale toward base.
<b>Cored: 240.00-250.00, Recovered: 10.06.</b> 240.00-250.06 (10.06)	Shale, interlaminated with sandstone; shale, black, carbonaceous, thin-bedded; sandstone, light-gray, fine-grained, rippled, a few thin siderite layers.
<b>Cored: 250.00-260.00, Recovered: 9.84.</b> 250.00-259.84 (9.84)	As above, with calcareous sandstone in lower 5.00'.
<b>Cored: 260.00-270.00, Recovered: 9.90.</b> 260.00-269.90 (9.90)	As above, but with very little sandstone in lower 5.00'.
<b>Cored: 270.00-280.00, Recovered: 10.08.</b> 270.00-276.22 (6.22) 276.22-277.44 (1.22)	As above. Lag conglomerate, siderite nodules and shale laminations, medium-brown, light-gray. Shale, dark-gray, with light-gray, siltstone laminations.
277.44-280.00 (2.56)	
<b>Cored: 280.00-290.00, Recovered: 9.92.</b> 280.00-281.19 (1.19) 281.19-285.30 (4.11)	As above. Sandstone, medium-gray, slightly micaceous, very carbonaceous, some shale laminations, convolute bedding, siderite nodules, siltstone laminations, light-gray at base.
285.30-286.50 (1.20)	Shale, dark-gray, some siltstone laminations, light-gray.
286.50-289.92 (3.42)	Limestone, light- to medium-gray, crystalline, carbonaceous, convolute bedding.
<b>Cored: 290.00- 300.00, Recovered: 9.99.</b> 290.00-297.00 (7.00) 297.00-299.99 (2.99)	Sandstone, light-gray, some shale laminations, silty downward. Shale, silty, dark-gray to black.
<b>Cored: 300.00-310.00, Recovered: 9.99.</b> 300.00-303.91 (3.91) 303.91-309.99 (6.08)	Shale, silty, medium- to dark-gray, slightly sideritic, micaceous. Sandstone, light-gray, fine-grained, slightly micaceous, some thin carbonaceous sandstone interbeds.
<b>Cored: 310.00-320.00, Recovered: 9.90.</b> 310.00-313.66 (3.66) 313.66-319.90 (6.24)	As above. Shale, silty, carbonaceous laminations, micaceous.
<b>Cored: 320.00-330, Recovered: 9.99.</b> 320.00-329.99 (9.99)	Shale, with sandstone and siltstone laminations, medium- to dark-gray; shale, carbonaceous, thinly bedded.
<b>Cored: 330.00-340.00, Recovered: 9.94.</b> 330.00-339.94 (9.94)	As above, less sandstone.
<b>Cored: 340-350.00, Recovered: 10.09.</b> 340.00-349.00 (10.00)	As above.
<b>Cored: 350.00-360.00, Recovered: 9.95.</b> 350.00-359.95 (9.95)	As above.

**Cored: 360.00-370.00, Recovered: 10.09.**  
360.00-370.09 (10.09)

As above, with a 0.84'-thick zone of shale containing siderite nodules 2.49' from top; lower 6.00' has more sandstone laminations, light-gray, fine-grained.

**Cored: 370.00-380.00, Recovered: 10.04.**  
370.00-380.04 (10.04)

Shale, dark-gray to black, carbonaceous, interlaminated with sandstone, light-gray, fine-grained, a few thin siderite layers.

**Cored: 380.00-390.00, Recovered: 9.95.**  
380.00-389.95 (9.95)

As above.

**Cored: 390.00-400.00, Recovered: 10.06.**  
390.00-395.25 (5.25)  
395.25-400.06 (4.81)

As above.  
Shale, dark-gray to black, siderite nodules, interbedded with sandstone, medium-gray calcareous.

**Cored: 400.00-410.00, Recovered: 9.85.**  
400.00-409.85 (9.85)

Shale, dark-gray, with medium-gray sandstone laminations; sandstone, fine-grained, some small siderite nodules.

**Cored: 410.00-420.00, Recovered: 9.85.**  
410.00-419.85 (9.85)

As above.

**Cored: 420.00-430.00, Recovered: 10.06.**  
420.00-424.68 (4.68)  
424.68-430.06 (5.38)

Shale, black, more silty and sideritic at base.  
Sandstone, light-gray, fine-grained, shale laminations, micaceous and carbonaceous, sideritic at top.

**Cored: 430.00-440.00, Recovered: 0.00.**

**Recorded: 430.00-440.50, Recovered: 9.87.**  
430.00-436.53 (6.53)  
436.53-439.87 (3.34)

As above, sideritic.  
Shale, black, sideritic; sandstone laminations, light-gray, fine-grained.

**Cored: 440.50-450.00, Recovered: 9.43.**  
440.00-449.43 (9.43)

Shale, black, highly carbonaceous, siltstone laminations, light-gray, pyrite lenses.

**Cored: 450.00-460.00, Recovered: 10.66.**  
450.00-453.64 (3.64)  
453.64-460.66 (7.02)

As above.  
Sandstone, light-gray, fine-grained, and shale, black, carbonaceous, micaceous, slightly sideritic, interbedded.

**Cored: 460.00-470.00, Recovered: 9.35.**  
460.00-463.90 (3.90)

Sandstone, light-gray, fine-grained, with dark-gray, carbonaceous shale laminations, micaceous, sideritic.

463.90-469.35 (5.45)

As above, with shale laminations more abundant downward.

**Cored: 470.00-480.00, Recovered: 9.99.**  
470.00-479.99 (9.99)

As above with black shale interbeds.

**Cored: 480.00-490.00, Recovered: 10.06.**  
480.00-482.36 (2.36)

Shale, as above, interbedded with calcareous sandstone.

482.36-490.06 (7.70)

Shale, black, highly carbonaceous, (burrowed?).

**Cored: 490.00-500.00, Recovered: 10.02.**

490.00-496.33 (6.33)

As above, sandy at top, carbonaceous.

496.33-497.18 (0.85)

Sandstone, dark-gray, fine-grained, argillaceous, sideritic.

497.18-500.02 (2.84)

Shale, black, fissile, highly carbonaceous, sandy at top.

**Cored: 500.00-510.00, Recovered: 9.95.**

500.00-500.92 (0.92)

Coal.

500.92-507.56 (6.64)

Clay shale and siltstone, interbedded.

507.56-509.95 (2.39)

Shale, carbonaceous, silty, medium- to dark-gray.

**Cored: 510.00-520.00, Recovered: 10.07.**

510.00-520.07 (10.07)

Clay shale, medium-gray to dark-gray, siderite nodules, light-gray claystone laminations.

**Cored: 520.00-530.00, Recovered: 9.85.**

520.00-529.85 (9.85)

As above.

**Cored: 530.00-540.00, Recovered: 10.06.**

530.00-540.06 (10.06)

Shale, black, sideritic, carbonaceous, with thin sandstone beds, light-gray, fine-grained.

**Cored: 540.00-550.00, Recovered: 9.95.**

540.00-549.95 (9.95)

As above, burrowed.

**Cored: 550.00-560.00, Recovered: 10.07.**

550.00-559.01 (9.01)

As above, with irregular pyritic sandstone clasts.

559.01-560.07 (1.06)

Sandstone, brown, fine-grained, calcareous, argillaceous, sideritic; contact with shale above abrupt; grades downward to bioturbated sandstone, light-gray, fine-grained, with black shale laminations.

**Cored: 560.00-570.00, Recovered: 10.07.**

560.00-563.74 (3.74)

Shale, black, interlaminated with sandstone, light-gray pyrite nodules.

563.74-564.05 (0.31)

Conglomerate(?).

564.05-569.88 (5.83)

Sandstone, light-gray, fine-grained, interbedded with black shale.

569.88-570.07 (0.19)

Sandstone, medium-gray, fine-grained, sideritic, shale clasts.

**Cored: 570.00-580.00, Recovered: 10.00.**

570.00-570.41 (0.41)

Sandstone, olive-green, fine-grained, very argillaceous, micaceous, lower contact sharp, angular.

570.41-580.00 (9.59)

Sandstone, light-gray, medium-grained, clean, micaceous, abundant tiny nodules of a black mineral (phosphatic?), some carbonaceous laminations.

**Cored: 580.00-590.00, Recovered: 10.02.**

580.00-590.02 (10.02)

Sandstone, light-gray, medium-grained at top, coarse-grained downward; some well rounded quartz pebbles, white and pink, 1.5 X 0.6 to 0.03 X 0.03 inches; abundant black mineral, as above; clean quartz pebbles, well rounded, semi-spherical; some thin glauconite and carbonaceous laminations (Caseyville?).

**Total Depth: 590.02.**

**Western Kentucky Stratigraphic Test Hole Gil 23, Butler County, Cromwell Quadrangle, Carter coordinate location 25-J-33, 1700 FNL 1050 FWL, Elevation: 442.00, Total Depth: 540.21.**

Interval (Feet)	Description
<b>Cored: 3.80-7.53, Recovered: 3.47.</b> 3.80-5.84 (2.04)	Sandstone, buff to brown, medium-grained, containing clay laminations with silty fill, highly micaceous, highly weathered.
5.84-7.27 (1.43)	Clay shale, sandstone laminations, limonitic, plastic, some carbonaceous material.
<b>Cored: 7.53-17.53, Recovered: 9.50.</b> 7.53-17.03 (9.50)	As above.
<b>Cored: 17.53-27.53, Recovered: 10.23.</b> 17.53-26.72 (9.19)	Clay shale, medium-gray to dark-gray, top is limonitic, plastic, siltstone laminations.
26.72-27.23 (0.51)	Limestone, medium-gray, argillaceous, fossiliferous.
27.23-27.86 (0.63)	Coal, dull to bright, slightly pyritic.
<b>Cored: 27.53-37.53, Recovered: 8.82.</b> 27.53-29.52 (1.99)	Coal, as above.
*29.52-29.76 (1.40)	Underclay, dark-gray to medium-gray, plastic, carbonaceous material.
29.76-35.01 (5.25)	Limestone, medium-gray, fine- to moderately crystalline, gnarly, fossiliferous.
35.01-35.06 (0.05)	Clay shale, medium-gray, plastic.
35.06-35.21 (0.15)	Bone coal, fine coal laminations.
35.21-35.28 (0.07)	Clay shale, medium-gray, carbonaceous material, plastic.
<b>Cored: 37.52-47.53, Recovered: 10.34.</b> 37.53-42.33 (4.80)	As above, grading to dark-gray clay-shale, plastic.
42.33-47.87 (5.54)	Sandstone, medium-gray, fine-grained, micaceous.
<b>Cored: 47.53-57.53, Recovered: 9.48.</b> 47.53-55.78 (8.25)	Shale, medium-gray, grading to medium-gray siltstone, with medium- to light-gray sandstone lenses.
55.78-55.91 (0.13)	Bone coal, vitrain and fusain layers.
55.91-56.35 (0.44)	Siltstone, medium-gray, sparse coal laminations, carbonaceous.
56.35-56.81 (0.46)	Sandstone, medium-gray, medium-grained, carbonaceous laminations, micaceous.
56.81-57.01 (0.20)	Bone coal, with sandstone laminations and pyrite nodules.
<b>Cored: 57.53-67.04, Recovered: 10.12.</b> 57.53-58.73 (1.20)	As above.
58.73-59.50 (0.77)	Siltstone, interlaminated with bone coal.
59.50-67.65 (8.15)	Siltstone, medium-gray, light-gray sandstone lenses.
<b>Cored: 67.04-77.04, Recovered: 10.10.</b> 67.04-77.14 (10.10)	As above.

\*Driller reported loss of some of this core.

**Cored: 77.04-87.04, Recovered: 10.13.**

77.04-87.17 (10.13)

As above.

**Cored: 87.03-96.97, Recovered: 10.09.**

87.03-88.96 (1.93)

88.96-97.12 (8.16)

Shale, medium-gray, silty.

Shale, medium-gray.

**Cored: 96.97-107.93, Recovered: 10.21.**

96.97-97.87 (0.90)

97.87-102.14 (4.27)

102.14-103.26 (1.12)

103.26-104.51 (1.25)

104.51-104.62 (0.11)

104.62-105.21 (0.59)

105.21-107.08 (1.87)

As above, siderite layers.

Shale, black, calcareous layers.

Shale, black, calcareous, fossiliferous; interlaminated, light-gray, calcareous sandstone toward bottom.

Coal, dull to bright, pyritic, numerous black shale laminations.

Shale, black.

Underclay, medium-gray, plastic.

Clay shale, medium-gray.

**Cored: 107.03-117.20, Recovered: 10.31.**

107.03-116.40 (9.37)

116.40-117.34 (0.94)

As above, grading downward to medium-gray siltstone, with fresh-water limestone nodules.

Limestone, sandy, light-gray, medium-grained, micaceous.

**Cored: 117.20-127.24, Recovered: 10.42.**

117.20-118.07 (0.87)

118.07-119.62 (1.55)

119.62-125.45 (5.83)

125.45-127.62 (2.17)

As above.

Siltstone, medium-gray, crossbedded.

Shale, medium-gray, grading to clay shale.

Shale, medium-gray, silty.

**Cored: 127.24-137.21, Recovered: 9.78.**

127.24-128.27 (1.03)

128.27-128.60 (0.33)

128.60-129.55 (0.95)

129.55-130.09 (0.54)

130.09-131.85 (1.76)

131.85-132.17 (0.32)

132.17-132.64 (0.47)

132.64-137.02 (4.38)

Siltstone, medium-gray, calcareous.

Shale, medium-gray, calcareous.

Limestone, coarsely crystalline, fossiliferous.

Shale, silty, medium-gray, calcareous.

Shale, black.

Shale, calcareous, fossiliferous.

Bone coal.

Underclay.

**Cored: 137.21-146.73, Recovered: 10.05.**

137.21-145.52 (8.31)

145.52-147.78 (2.26)

Clay shale, medium-gray.

Siltstone, sandy.

**Cored: 146.73-156.55, Recovered: 10.22.**

146.73-149.42 (2.59)

149.42-149.83 (0.41)

149.83-157.05 (7.22)

As above.

Limestone, slightly fossiliferous.

Siltstone, sandy, medium-gray.

**Cored: 156.55-167.45, Recovered: 11.13.**

156.55-167.68 (11.13)

As above.

**Cored: 167.45-177.45, Recovered: 10.03.**

167.45-175.89 (8.44)

175.89-177.48 (1.59)

Siltstone, medium-gray.

Limestone, moderately crystalline, fossiliferous.

**Cored: 177.45-187.45, Recovered: 10.31.**

177.45-179.75 ( 2.30)  
 179.75-180.17 (0.42)  
 180.17-181.02 (0.85)  
 181.02-181.37 (0.35)  
 181.37-187.76 (6.39)

**Cored: 187.45-197.45, Recovered: 10.15.**

187.45-192.64 (5.90)  
 192.64-196.89 (4.25)

**Cored: 197.45-207.45, Recovered: 10.20.**

197.45-202.26 (4.81)  
 202.26-207.65 (5.39)

**Cored: 207.45-217.45, Recovered: 10.28.**

207.45-211.17 (3.72)  
 211.17-217.73 (6.56)

**Cored: 217.45-227.45, Recovered: 10.06.**

217.45-222.00 (4.55)  
 222.00-225.58 (3.58)  
 225.58-225.88 (0.30)  
 225.88-226.02 (0.14)  
 226.02-227.51 (1.49)

**Cored: 227.45-237.45, Recovered: 10.18.**

227.45-231.55 (4.10)  
 231.55-237.22 (5.67)

237.22-237.63 (0.41)

**Cored: 237.45-247.45, Recovered: 10.11.**

237.45-237.97 (0.52)  
 237.97-246.77 (8.70)  
 246.77-247.27 (0.50)  
 247.27-247.66 (0.39)

**Cored: 247.45-257.45, Recovered: 10.00.**

247.45-257.45 (10.00)

**Cored: 257.45-267.45, Recovered: 10.20.**

257.45-267.65 (10.20)

**Cored: 267.45-277.45, Recovered: 10.18.**

267.45-274.43 (6.98)

274.43-275.45 (1.02)

275.45-277.63 (2.18)

**Cored: 277.45-287.38, Recovered: 10.08.**

277.45-278.04 (0.59)

278.04-287.53 (9.49)

As above.

Shale, calcareous, dark-gray, fossiliferous.

Coal, dull and bright, slightly pyritic.

Clay shale, medium-gray, carbonaceous plant impressions.

Siltstone, medium-gray to green, micaceous.

As above, more sandy toward base.

Siltstone, light-gray, fine- to medium-grained, with shale laminations.

As above.

Siltstone, medium-gray, micaceous.

As above.

Sandstone, medium-gray, fine- to medium-grained, abundant medium-gray claystone laminations.

As above, fewer claystone laminations.

Siltstone, medium-gray.

Siltstone, dark-gray.

Bone coal.

Siltstone, medium-gray.

As above.

Siltstone, interlaminated with light-gray sandstone, sandstone units less abundant toward bottom.

Siltstone, medium-gray.

Shale, silty, dark-gray, plant impression.

Shale, silty, medium-gray.

Coal, bright-banded, pyritic.

Siltstone, medium-gray.

Siltstone, medium-gray, carbonaceous plant impressions, interlaminated with sandstone.

As above.

Siltstone, dark-gray, interlaminated with light-gray sandstone, argillaceous toward base.

Lag conglomerate, calcareous at top.

Sandstone, medium-gray, fine-grained, sideritic, micaceous.

As above.

Siltstone, medium-gray, interlaminated with light-gray sandstone.

**Cored: 287.38-297.25, Recovered: 10.42.**

287.38-292.97 (5.59)  
 292.97-294.41 (1.44)  
 294.41-295.81 (1.40)  
 295.81-297.80 (1.99)

As above, more argillaceous toward base.  
 Coal, bright-banded, fusain.  
 Underclay, medium-gray, plastic, carbonaceous material.  
 Clay shale, medium-gray to light-green.

**Cored: 297.25-307.05, Recovered: 10.37.**

297.25-297.47 (0.22)  
 297.47-303.09 (5.62)  
 303.09-307.62 (4.53)

As above.  
 Shale and light-gray sandstone, interlaminated (flaser bedding), slightly sideritic.  
 Siltstone, dark-gray, and light-gray sandstone, interlaminated.

**Cored: 307.05-317.05, Recovered: 10.13.**

307.05-308.89 (1.84)  
 308.89-310.68 (1.79)  
 310.68-311.25 (0.57)  
 311.25-317.18 (5.93)

As above.  
 Shale, medium-gray to dark-gray, plant impressions.  
 Coal, dull to bright, pyritic, gypsum on cleat face.  
 Siltstone, argillaceous, medium-gray, carbonaceous material.

**Cored: 317.05-327.03, Recovered: 10.20.**

317.05-327.25 (10.20)

As above.

**Cored: 327.03-337.03, Recovered: 10.07.**

327.03-332.93 (5.90)  
 332.93-335.22 (2.29)  
 335.22-337.10 (1.88)

Shale, dark-gray, interlaminated with light-gray sandstone; sparse siderite layers, bioturbated at base.  
 Limestone, dark-gray, moderately crystalline, fossiliferous.  
 Shale, silty, dark-gray.

**Cored: 337.03-347.45, Recovered: 9.94.**

337.03-337.99 (0.96)  
 337.99-342.70 (4.71)  
 342.70-346.97 (4.27)

Shale, silty, dark-gray.  
 Clay shale, medium-green, with sparse carbonaceous laminations.  
 Shale, silty, medium-green, slightly sideritic.

**Cored: 347.45-357.45, Recovered: 10.49.**

347.45-348.15 (0.70)  
 348.15-351.27 (3.12)  
 351.27-353.22 (1.95)  
 353.22-354.09 (0.87)  
 354.09-357.99 (3.90)

Clay, medium-gray, plastic.  
 Shale, medium-green, with limestone nodules.  
 Limestone, medium-gray, moderately crystalline, fossiliferous.  
 Shale, silty, calcareous, medium-gray and fossiliferous at top.  
 Siltstone, medium-gray, argillaceous.

**Cored: 357.45-367.45, Recovered: 10.08.**

357.45-358.03 (0.58)  
 358.03-367.83 (9.50)

Siltstone, medium-gray, argillaceous.  
 Shale, medium-green to dark-gray.

**Cored: 367.45-377.45, Recovered: 10.24.**

367.45-369.55 (2.10)  
 369.55-371.99 (2.44)  
 371.99-373.50 (1.51)  
 373.50-375.11 (1.61)  
 375.11-377.69 (2.58)

Shale, dark-gray, calcareous and fossiliferous at bottom, siderite layer.  
 Limestone, medium-gray, moderately crystalline, fossiliferous toward base.  
 Shale, dark-gray, calcareous, fossiliferous.  
 Coal, dull to bright, slightly pyritic.  
 Shale, medium-gray, grading downward to medium-gray siltstone.

**Cored: 377.45-387.38, Recovered: 8.83.**

377.45-385.65 (8.20)	Siltstone, medium-gray, with sandy layers; basal 0.47' argillaceous.
385.65-386.52 (0.87)	Shale, black, fissile (varved appearance).
<b>Cored: 387.38-397.38, Recovered: 10.09.</b>	
387.38-389.35 (1.97)	Shale, black, as above.
389.35-390.11 (0.76)	Shale, black, very fissile.
390.11-392.37 (2.26)	Coal, dull to bright, pyritic, with gypsum on cleat faces.
392.37-397.47 (5.10)	Siltstone, medium-gray to dark-gray, sideritic.
<b>Cored: 397.38-407.38, Recovered: 10.35.</b>	
397.38-407.73 (10.35)	Siltstone, sandy in middle, then grading downward to fissile black shale in bottom 3.16' of core.
<b>Cored: 407.38-417.38, Recovered: 10.11.</b>	
407.38-408.07 (0.69)	Shale, black, fissile, calcareous at bottom.
408.07-409.84 (1.77)	Shale, black, calcareous, fossiliferous.
409.84-415.56 (5.72)	Siltstone, medium-gray.
415.56-416.06 (0.50)	Coal, dull to bright, with fusain partings, pyritic.
416.06-417.49 (1.43)	Siltstone, medium-gray, with carbonaceous material.
<b>Cored: 417.38-427.45, Recovered: 10.00.</b>	
417.38-427.38 (10.00)	Shale, medium-gray, silty, sideritic at base.
<b>Cored: 427.45-437.38, Recovered: 9.97.</b>	
427.45-431.45 (6.00)	Siltstone, light-gray, and shale, medium-gray, interlaminated
431.45-437.35 (5.90)	Shale, dark-gray, with laminations of light-gray siltstone.
<b>Cored: 457.38-467.38, Recovered: 10.02.</b>	
457.38-458.15 (0.77)	Sandstone, fine- to very fine-grained, light-gray to white, with sideritic and argillaceous laminations.
458.15-460.35 (2.20)	Shale, dark-gray and sandstone, as above, bedding contorted.
460.35-467.40 (7.05)	Sandstone, as above.
<b>Cored: 467.38-477.28, Recovered: 9.92.</b>	
467.38-470.63 (3.25)	As above.
470.63-473.55 (2.92)	Shale, dark-gray, with sandstone laminations; some contorted bedding.
473.55-477.30 (3.75)	Sandstone, as above.
<b>Cored: 477.38-487.38, Recovered: 10.00.</b>	
477.38-487.38 (10.00)	Sandstone, light-gray, fine- to medium-grained, porous, with sparse shale and coal laminations.
<b>Cored: 487.38-497.13, Recovered: 9.97.</b>	
487.38-490.63 (3.25)	Sandstone, as above.
490.63-497.35 (6.72)	Shale, dark-gray, sparse silty laminations.
<b>Cored: 497.13-507.13, Recovered: 9.87.</b>	
497.13-507.00 (9.87)	Shale, dark-gray, fissile.
<b>Cored: 507.13-517.08, Recovered: 9.80.</b>	
507.13-516.93 (9.80)	As above, dark-gray to very dark-gray.

**Cored: 517.08-527.18, Recovered: 9.90.**

517.08-527.08 (10.00)

As above.

**Cored: 527.18-537.23, Recovered: 9.90.**

527.18-527.85 (0.67)

527.85-528.15 (0.30)

Shale, dark-gray to black, fissile.

Shale, dark-gray and siltstone, medium-gray, siderite nodules, contorted bedding.

528.15-533.05 (4.90)

Shale, dark-gray to black, with sparse siderite layers and nodules.

533.05-534.50 (0.45)

Siltstone, medium-gray, and dark-gray shale, contorted bedding.

534.50-537.08 (2.58)

Shale, as above, with sparse silty laminations.

**Cored: 537.23-540.25, Recovered: 2.98.**

537.23-540.21 (2.98)

As above.

**Total Depth: 540.00.**

**Western Kentucky Stratigraphic Test Hole Gil 24, Ohio County, Horton Quadrangle, Carter coordinate location 10-K-33, 1400 FSL 1650 FWL, Elevation: 570.00, Total Depth: 68.16.**

Interval (Feet)	Description
<b>Cored: 9.00-10.00, Recovered: 0.73.</b> 9.00-9.73 (0.73)	Sandstone, light- to medium-brown, fine-grained, weathered.
<b>Cored: 10.00-20.00, Recovered: 9.74.</b> 10.00-19.74 (9.74)	As above, with some thin clay beds.
<b>Cored: 20.00-30.00, Recovered: 9.66.</b> 20.00-25.05 (5.05) 25.05-27.49 (2.44)  27.49-29.66 (2.17)	As above, with sharp basal contact. Shale, light- to medium-gray, abundant carbonaceous fragments, some silt laminations, sharp basal contact. Sandstone, orange to medium-brown, medium-grained, micaceous, crossbedded.
<b>Cored: 30.00-40.00, Recovered: 9.11.</b> 30.00-39.11 (9.11)	Sandstone, light-tan to medium-reddish-brown, medium-grained, micaceous, porous, crossbedded.
<b>Cored: 40.00-50.00, Recovered: 9.53.</b> 40.00-47.33 (7.33) 47.33-49.53 (2.20)	As above, with dipping beds, gradational base. Shale, medium-gray, tan, silty lenses throughout (<0.00-30.00' thick).
<b>Cored: 50.00-60.00, Recovered: 9.81.</b> 50.00-54.64 (4.64) 54.64-59.81 (5.17)	As above, becoming more silty toward base. Sandstone, light-gray, tan, medium-brown, fine-grained, rippled, a few shale clasts near top.
<b>Cored: 60.00-70.00, Recovered: 8.16.</b> 60.00-60.88 (0.88) 60.88-68.16 (7.28)	Limestone, tan to light-gray, fossiliferous. Sandstone, light-gray and medium-dark-brown, fine- to medium-grained, micaceous, iron-stained.
*70.00-	

**Total Depth: 68.16.**

**Western Kentucky Stratigraphic Test Hole Gil 24a, Ohio County, Horton Quadrangle, Carter coordinate location 10-K-33, 1600 FSL 1450 FWL, Elevation: 537.00, Total Depth: 607.77.**

Interval (Feet)	Description
<b>Cored: 19.00-20.00, Recovered: 1.10.</b> 19.00-20.10 (1.10)	Sandstone, light-brown to dark-gray, medium-grained, slightly micaceous, very porous, iron-stained.
<b>Cored: 20.00-30.00, Recovered: 4.52.</b> 20.00-22.66 (2.66) 22.66-22.94 (0.28)	As above. Limestone, yellow to tan, medium-gray, very fossiliferous (brachiopods).
22.94-24.52 (1.58)	Sandstone, light-gray, fine-grained, interlaminated with shale, dark-gray, flaser-bedded, dark-gray, carbonaceous sandstone at top 0.23' thick; sharp contact at top.
24.52-30.00 (5.48)	No recovery—lost water circulation at 25.00; skid rig.
<b>Cored: 30.00-40.00, Recovered: 7.70.</b> 30.00-32.88 (2.88) 32.88-37.30 (4.42)	As above. Sandstone, light-gray with zones of iron-stained sandstone (staining has vertical boundaries), fine- to medium-grained, carbonaceous laminations, sharp contact at base.
37.30-37.70 (0.40)	Shale, dark-gray, carbonaceous, clayey at top; set more casing to 39.00.
<b>Cored: 40.00-50.00, Recovered: 8.45.</b> 40.00-45.63 (5.63) 45.63-47.05 (1.42) 47.05-47.20 (0.15) 47.20-48.45 (1.25)	Shale, light- to medium-gray, carbonaceous plant fragments. Coal, bright-banded. Limestone, light-gray, fossiliferous. Underclay, light-gray.
<b>Cored: 50.00-60.00, Recovered: 9.72.</b> 50.00-60.00 (9.72)	Claystone, light-gray, some thin laminations of carbonaceous material, sparse calcareous nodules.
<b>Cored: 60.00-70.00, Recovered: 9.80.</b> 60.00-60.43 (0.43) 60.43-60.73 (0.30) 60.73-61.03 (0.30) 61.03-62.33 (1.30) 62.33-65.48 (3.15) 65.48-65.81 (0.33) 65.81-69.80 (3.99)	As above. Coal, bony, much fusain, some pyrite. Claystone, medium-gray, silty. Claystone, light-gray, gradational at base. Claystone, light-gray, silty. Claystone, dark-gray, carbonaceous laminations. Claystone, dark-gray, silty, interlaminated with siltstone, light-gray toward base.
<b>Cored: 70.00-80.00, Recovered: 9.99.</b> 70.00-74.71 (4.71)	Shale, dark-gray, carbonaceous, with siltstone laminations throughout.
74.71-79.23 (4.52)	Shale, dark-gray, carbonaceous, interlaminated with siltstone, light-gray, rippled and thin, light-brown siderite layers.
79.23-79.99 (0.76)	Shale, dark-gray, carbonaceous, with thin siltstone laminations near top.

**Cored: 80.00-90.00, Recovered: 9.99.**

80.00-80.29 (0.29)  
 80.29-82.09 (1.80)  
 82.09-89.99 (7.90)

As above.  
 Coal, bright-banded.  
 Claystone, light-gray, silty, siderite nodules.

**Cored: 90.00-100.00, Recovered: 10.00.**

90.00-91.71 (1.71)  
 91.71-100.00 (8.29)

Claystone, light-gray to green, carbonaceous lenses.  
 Shale, dark-gray, carbonaceous, siderite laminations.

**Cored: 100.00-110.00, Recovered: 10.13.**

100.00-105.23 (5.23)  
 105.23-110.13 (4.90)

Shale, dark-gray, carbonaceous, siderite layers.  
 Sandstone, light-gray, medium- to coarse-grained, slightly calcareous, with black carbonaceous shale laminations.

**Cored: 110.00-120.00, Recovered: 10.00.**

110.00-120.00 (10.00)

As above, with lag conglomerate; carbonaceous shale laminations more abundant toward base, rippled.

**Cored: 120.00-130.00, Recovered: 10.00.**

120.00-124.08 (4.08)  
 124.08-125.49 (1.41)  
 125.49-130.00 (4.51)

As above.  
 Coal, bright, a few pyrite laminations on cleats.  
 Siltstone, light- to medium-green, interlaminated with medium-gray shale, wavy bedding, calcareous near top, slightly micaceous, calcareous clasts.

**Cored: 130.00-140.00, Recovered: 9.96.**

130.00-130.89 (0.89)  
 130.89-131.76 (0.87)  
 131.76-132.01 (0.25)  
 132.01-135.26 (3.25)  
 135.26-137.54 (2.28)

Clay shale, medium-gray, more silty at top, siderite nodules.  
 Coal and clay shale, interlaminated.  
 Underclay, dark-gray, carbonaceous.  
 Clay shale, light-gray to brown, carbonaceous laminations.  
 Clay shale, interlaminated with coarse-grained sandstone, some carbonaceous material, siderite layers, sandstone laminations less abundant downward.  
 Clay shale, as above.

137.54-139.96 (2.42)

**Cored: 140.00-150.00, Recovered: 10.00.**

140.00-141.82 (1.82)  
 141.82-143.17 (1.35)  
 143.17-150.00 (6.83)

Siltstone, light- to medium-gray, becoming more sandy toward base, carbonaceous, bioturbated.  
 Coal, bright, with some pyrite and calcite along bedding.  
 Underclay, light-gray to green, calcareous from 147.95 to base, calcareous nodules and siderite layers.

**Cored: 150.00-160.00, Recovered: 10.00.**

150.00-151.61 (1.61)  
 151.61-153.14 (1.53)  
 153.14-160.00 (6.86)

Siltstone, medium-gray to green; 1.53' calcareous, lag conglomerate at top.  
 Coal, bright and dull, bony toward base.  
 Clay shale, dark-gray, silty, siltstone laminations abundant toward base, siderite and pyrite nodules.

**Cored: 160.00-170.00, Recovered: 9.82.**

160.00-160.75 (0.75)  
 160.75-160.92 (0.17)  
 160.92-162.72 (1.80)

Clay shale, silty, light-gray, some carbonaceous laminations, slightly calcareous.  
 Clay shale, carbonaceous, dark-gray to black.  
 Clay shale, light- to medium-gray.

162.72-165.03 (2.31)	Clay shale, fossiliferous, calcareous, light-gray to medium-gray.
165.03-166.13 (1.10)	Clay shale, no fossils, slightly calcareous toward base, medium-gray.
166.13-167.55 (1.42)	Clay shale, medium- to dark-gray, carbonaceous toward base, some coal laminations.
167.55-167.95 (0.40)	Bone coal.
167.95-169.75 (1.80)	Clay shale, dark at top, light- to medium-gray at base, some carbonaceous laminations, small siderite nodules at base.
<b>Cored: 170.00-180.00, Recovered: 9.97.</b>	
170.00-179.97 (9.97)	Siltstone, micaceous, light-gray, darker gray at base, small pellets of siderite throughout.
<b>Cored: 180.00-190.00, Recovered: 9.99.</b>	
180.00-184.07 (4.07)	Siltstone, micaceous, light- to medium-gray, carbonaceous laminations.
184.07-184.12 (0.05)	Coal, interlaminated with pyrite, calcareous.
184.12-189.99 (5.87)	Siltstone, micaceous, light- to medium-gray, with carbonaceous laminations, some laminations of siderite.
<b>Cored: 190.00-200.00, Recovered: 9.92.</b>	
190.00-193.85 (3.85)	Siltstone, light- to medium-gray, some carbonaceous plant fragments.
193.85-195.77 (1.92)	Sandstone, micaceous, light-gray, small siderite nodules concentrated at top and bottom.
195.77-197.77 (2.00)	Siltstone, light- to medium-gray.
197.77-197.78 (0.01)	Coal, bright, calcareous and pyritic.
197.78-199.92 (2.14)	Siltstone, light- to medium-gray, carbonaceous.
<b>Cored: 200.00-210.00, Recovered: 9.96.</b>	
200.00-209.96 (9.96)	As above, but, some siderite layers.
<b>Cored: 210.00-220.00, Recovered: 9.85.</b>	
210.00-219.85 (9.85)	Siltstone, light- to medium-gray, interlaminated with sandstone, light-gray, micaceous, slightly calcareous, some carbonaceous laminations.
<b>Cored: 220.00-230.00, Recovered: 9.90.</b>	
220.00-229.57 (9.57)	As above.
229.57-229.90 (0.33)	Clay shale, light- to dark-gray, plastic.
<b>Cored: 230.00-240.00, Recovered: 9.84.</b>	
230.00-230.10 (0.10)	As above.
230.10-239.84 (9.74)	Shale, black, abundant sandstone laminations.
<b>Cored: 240.00-250.00, Recovered: 10.02.</b>	
240.00-250.02 (10.02)	As above, with a 0.60'-thick sandstone lens at 2.80' above base.
<b>Cored: 250.00-260.00, Recovered: 9.94.</b>	
250.00-256.81 (6.81)	Shale, dark-gray, carbonaceous, with siderite layers less than 0.15' thick.
256.81-259.94 (3.13)	Clay shale, light- to medium-gray, carbonaceous laminations near top.
<b>Cored: 260.00-270.00, Recovered: 9.96.</b>	

260.00-266.00 (6.00)	Siltstone, light-gray to green, sideritic near top, transitional lower boundary.
266.00-269.96 (3.96)	Shale, dark-gray, carbonaceous siderite layers (<0.10'-thick), pyritic.
<b>Cored: 270.00-280.00, Recovered: 10.00.</b>	
270.00-273.05 (3.05)	Shale, dark-gray, carbonaceous, thin siderite layers, 0.01'-thick coal laminations near base, sharp basal contact.
273.05-273.80 (0.75)	Coal, bright-banded, calcite along cleats.
273.80-280.00 (6.20)	Siltstone, light-gray to green, clayey, siderite nodules abundant.
<b>Cored: 280.00-290.00, Recovered: 10.10.</b>	
280.00-290.10 (10.10)	Shale, light- to medium-gray, becoming darker toward base, carbonaceous, thin silty lenses throughout, siderite throughout.
<b>Cored: 290.00-300.00, Recovered: 9.95.</b>	
290.00-299.95 (9.95)	Shale, dark-gray, carbonaceous, some silt laminations, siderite layers (<0.10' thick).
<b>Cored: 300.00-310.00, Recovered: 9.98.</b>	
300.00-308.06 (8.06)	As above, slightly calcareous.
308.06-309.98 (1.92)	Sandstone, light-gray to green, very fine-grained, claystone laminations, crossbedded.
<b>Cored: 310.00-320.00, Recovered: 9.91.</b>	
310.00-313.28 (3.28)	As above.
313.28-319.91 (6.63)	Shale, black, with siderite layers.
<b>Cored: 320.00-330.00, Recovered: 9.94.</b>	
320.00-322.20 (3.20)	As above.
322.20-329.94 (7.74)	Sandstone, light-gray, fine-grained, slightly carbonaceous and calcareous at top.
<b>Cored: 330.00-340.00, Recovered: 9.98.</b>	
330.00-339.28 (9.28)	Siltstone, light-gray to dark-gray, some siderite layers, more carbonaceous at base.
339.28-339.98 (0.70)	Siltstone, light- to medium-gray, micaceous.
<b>Cored: 340.00-350.00, Recovered: 10.02.</b>	
340.00-344.00 (4.00)	As above, with siderite layers toward base.
344.00-344.31 (0.31)	Siltstone, medium- to dark-gray, micaceous, calcareous, pyritic.
344.31-344.51 (0.20)	Coal, fusain and durain, pyritic.
344.51-345.04 (0.53)	Claystone, medium-gray, silty, rooted.
345.04-350.02 (4.98)	As above, with siderite pellets scattered throughout, coal lamination (0.01' thick) at 444.99.
<b>Cored: 350.00-360.00, Recovered: 9.94.</b>	
350.00-353.02 (3.02)	As above, middle is more carbonaceous.
353.02-359.94 (6.92)	Sandstone, light-gray, fine-grained, interbedded with shale, dark-gray, siderite layers (<0.20' thick), convolute bedding.
<b>Cored: 360.00-370.00, Recovered: 9.98.</b>	
360.00-363.35 (3.35)	As above.
363.35-369.98 (6.63)	Shale, dark-gray, thin-bedded, interlaminated with sandstone, light-gray, fine-grained, micaceous.

**Cored: 370.00-380.00, Recovered: 10.02.**

370.00-371.26 (1.26)

371.26-379.34 (8.08)

379.34-380.02 (0.68)

As above.

Siltstone, light- to medium-gray, sandstone laminations, siderite layers toward top.

Sideritic shale.

**Cored: 380.00-390.00, Recovered: 10.07.**

380.00-381.75 (1.75)

381.75-385.37 (3.62)

385.37-385.95 (0.58)

385.95-388.35 (2.40)

388.35-388.92 (0.57)

388.92-390.09 (1.15)

As above.

Siltstone, dark-gray, carbonaceous, micaceous.

Coal, bright-banded, pyritic.

Sandstone, light-gray, very fine-grained; upper 0.15' is carbonaceous.

Clay shale, medium-gray, light-green laminations.

Clay shale, medium- to dark-gray, carbonaceous, with sandstone laminations, light-gray, very fine-grained.

**Cored: 390.00-400.00, Recovered: 10.04.**

390.00-393.10 (3.10)

393.10-396.21 (3.11)

396.21-400.04 (3.83)

As above.

Siltstone, dark-gray, carbonaceous, interlaminated with sandstone, light-gray, fine-grained, siderite layers.

Sandstone, light-gray, fine- to medium-grained, calcareous in upper 1.00', interlaminated with shale, dark-gray, carbonaceous, convolute bedding.

**Cored: 400.00-410.00, Recovered: 10.00.**

410.00-420.00 (10.00)

As above, with siderite layers, sparse calcareous bands.

**Cored: 410.00-420.00, Recovered: 10.00.**

410.00-420.00 (10.00)

As above.

**Cored: 420.00-430.00, Recovered: 10.02.**

420.00-424.85 (4.85)

424.85-427.46 (2.61)

427.46-427.62 (0.16)

427.62-427.77 (0.15)

427.77-428.00 (0.23)

428.00-428.12 (0.12)

428.12-430.02 (1.90)

As above.

Siltstone, light-gray, disseminated siderite ooids.

Clay shale, medium- to dark-gray, carbonaceous.

Coal, durain, pyritic.

Clay shale, medium-gray, carbonaceous.

Coal, bright- and dull-banded, pyritic.

Claystone, dark-gray, silty toward base.

**Cored: 430.00-440.00, Recovered: 9.97.**

430.00-431.05 (1.05)

431.05-439.97 (8.92)

As above, some plant impressions, more silty.

Sandstone, light-gray, fine-grained, carbonaceous laminations.

**Cored: 440.00-450.00, Recovered: 10.08.**

440.00-442.58 (2.58)

442.58-443.24 (0.66)

443.24-443.44 (0.20)

443.44-446.04 (2.60)

446.04-450.08 (4.04)

As above, more carbonaceous at base.

Coal, bright-banded, fusain laminations, pyritic.

Siltstone, carbonaceous.

Clay shale, light-gray, calcareous.

Sandstone, light-gray, fine-grained, micaceous.

**Cored: 450.00-460.00, Recovered: 10.14.**

450.00-453.87 (3.87)

453.87-460.14 (6.27)

As above.

Sandstone, with carbonaceous laminations, few siderite layers, sparse vitrain laminations.

<b>Cored: 460.00-470.00, Recovered: 10.10.</b> 460.00-471.10 (10.10)	As above.
<b>Cored: 470.00-480.00, Recovered: 9.86.</b> 470.00-477.93 (7.93) 477.93-479.86 (1.93)	Sandstone, light-gray, fine-grained, slightly calcareous; calcareous lag conglomerate and coal laminations at base. Siltstone, abundant carbonaceous shale, sandstone, and coal laminations.
<b>Cored: 480.00-490.00, Recovered: 10.03.</b> 480.00-490.03 (10.03)	As above.
<b>Cored: 490.00-500.00, Recovered: 9.95.</b> 490.00-499.95 (9.95)	As above.
<b>Cored: 500.00-510.00, Recovered: 9.98.</b> 500.00-509.98 (9.98)	As above.
<b>Cored: 510.00-520.00, Recovered: 10.00.</b> 510.00-512.84 (2.84) 512.84-515.42 (2.58) 515.42-520.00 (4.58)	Sandstone, light- to medium-gray, fine-grained, micaceous, bioturbated. As above, with calcareous and sideritic layers. Sandstone, medium- to dark-gray, very fine-grained, micaceous; interlaminated with shale, dark-gray, carbonaceous, bioturbated.
<b>Cored: 520.00-530.00, Recovered: 9.94.</b> 520.00-522.59 (2.59) 522.59-529.94 (7.35)	As above. Shale, dark-gray, sideritic laminations, sparse siltstone laminations.
<b>Cored: 530.00-540.00, Recovered: 9.99.</b> 530.00-533.75 (3.75) 533.75-536.25 (2.50) 536.50-539.99 (3.74)	As above. Coal, bony, shaly at base. Siltstone, light-gray, micaceous, carbonaceous toward top.
<b>Cored: 540.00-550.00, Recovered: 9.98.</b> 540.00-549.98 (9.98)	Siltstone, sandy, light-gray, micaceous, siderite layers.
<b>Cored: 550.00-560.00, Recovered: 9.95.</b> 550.00-559.95 (9.95)	Siltstone, medium-gray, micaceous.
<b>Cored: 560.00-570.00, Recovered: 9.95.</b> 560.00-569.95 (9.95)	As above.
<b>Cored: 570.00-580.00, Recovered: 10.10.</b> 570.00-571.00 (1.00) 571.00-572.15 (1.15) 572.15-580.10 (7.95)	As above, slightly calcareous. Siltstone, light- to medium-gray, with siderite layers. Siltstone, light- to medium-grained, contains siderite layers and bioturbated sandstone laminations; sandstone, light-gray, fine-grained, slightly calcareous, micaceous, some plant impressions.
<b>Cored: 580.00-590.00, Recovered: 10.00.</b> 580.00-587.90 (7.90) 587.90-590.00 (2.10)	As above. Siltstone, micaceous, light- to medium-gray, some plant impressions.

## STRATIGRAPHIC FRAMEWORK OF WESTERN KENTUCKY

**Cored: 590.00-600.00, Recovered: 10.00.**

590.00-594.60 (4.60)

Siltstone, with sandstone inclusions; siltstone, medium-gray, carbonaceous, in part calcareous.

594.60-600.00 (5.40)

Sandstone, light-gray, micaceous, carbonaceous.

**Cored: 600.00-610.00, Recovered: 7.77.**

600.00-603.93 (3.93)

As above, but with calcareous oil-stained laminations from 601.43 to base.

603.93-606.47 (2.54)

Clay shale, dark-gray, silty toward base, calcareous claystone clasts at base.

606.47-606.54 (0.07)

Coal (0.70' thick), bone coal and fusain.

606.54-607.77 (1.23)

Siltstone, light- to medium-gray, micaceous, some plant impressions.

**Total Depth: 607.77.**

**Western Kentucky Stratigraphic Test Hole Gil 24b, Ohio County, Horton Quadrangle, Carter coordinate location  
10-K-33, 1600 FSL 1450 FWL, Elevation: 537.00, Total Depth: 27.94.**

<b>Interval (Feet)</b>	<b>Description</b>
<b>Cored: 10.00-20.00, Recovered: 5.05.</b>	
10.00-13.40 (3.40)	Clay, light-gray, very plastic at top, becomes denser and darker gray at base.
13.40-14.34 (0.94)	Shale, medium-brown, very dense, iron-stained.
14.34-15.05 (0.71)	Limestone, light- to medium-gray, calcareous, fossiliferous.
<b>Cored: 20.00-30.00, Recovered: 7.94.</b>	
20.00-26.94 (6.94)	As above.
26.94-27.94 (1.00)	Sandstone, light- to medium-gray, carbonaceous laminations, micaceous.
<b>Total Depth: 27.94.</b>	

**Western Kentucky Stratigraphic Test Hole Gil 25, Ohio County, Equality Quadrangle, Carter coordinate location 6-L-30, 3500 FNL 1900 FWL, Elevation: 385.00, Total Depth: 500.12.**

Interval (Feet)	Description
<b>Cored: 62.90-67.09, Recovered: 4.19.</b> 62.90-67.09 (4.19)	Shale, dark-green, silty, micaceous.
<b>Cored: 67.00-77.00, Recovered: 9.93.</b> 67.00-76.93 (9.93)	As above, grades to siltstone, siderite nodules at 69.00.
<b>Cored: 77.00-87.00, Recovered: 10.00.</b> 77.00-87.00 (10.00)	As above, more sideritic; grades at 83.00 to black, carbonaceous siltstone, with fine-grained, medium-gray, sandstone laminations.
<b>Cored: 87.00-97.00, Recovered: 9.79.</b> 87.00-96.79 (9.79)	Shale, black- to dark-gray, sandy, sideritic, sandstone laminations near top.
<b>Cored: 97.00-107.00, Recovered: 10.25.</b> 97.00-99.85 (2.85) 99.85-102.55 (2.70) 102.55-104.20 (1.65)  104.20-107.25 (3.05)	Shale, dark-gray to black, carbonaceous, fissile. Coal, bright, fusain laminations. Underclay, medium-gray, plastic, nonbedded, abundant plant impressions. Limestone, light-gray, finely crystalline, nodular, fossiliferous, shale laminations.
<b>Cored: 107.00-117.00, Recovered: 9.90.</b> 107.00-108.10 (1.10) 108.10-112.89 (4.79)  112.89-114.08 (1.19)  114.08-116.90 (2.82)	As above. Clay shale, medium-gray, plastic, massive, slightly calcareous, silty toward base. Sandstone, very fine-grained, light-gray, nonbedded at top to bedded at base. Sandstone, medium-gray, fine-grained, argillaceous laminations, coarser toward base.
<b>Cored: 117.13-127.13, Recovered: 10.28.</b> 117.13-127.41 (10.28)	As above, with siderite.
<b>Cored: 127.13-137.13, Recovered: 10.12.</b> 127.13-137.25 (10.12)	Sandstone, gray, fine-grained, porous, less siderite and fewer argillaceous laminations.
<b>Cored: 137.13-147.13, Recovered: 10.00.</b> 137.13-147.13 (10.00)	As above, sparse shale laminations.
<b>Cored: 147.13-157.13, Recovered: 10.00.</b> 147.13-157.13 (10.00)	As above, with coal laminations, micaceous, and porous.
<b>Cored: 157.13-167.13, Recovered: 9.96.</b> 157.13-167.09 (9.96)	Sandstone, as above, with dark-gray shale interbeds (0.41' thick) at 161.99.

**Cored: 167.13-177.13, Recovered: 9.95.**

167.13-168.93 (1.80)

168.93-177.08 (8.15)

Sandstone, as above.

Shale, dark-gray to black, with siderite layers and nodules.

**Cored: 177.13-187.15, Recovered: 10.00.**

177.13-183.15 (6.02)

183.15-186.15 (3.00)

186.15-187.13 (0.98)

Shale, dark-gray, with sideritic layers, darker toward base.

Shale, black, carbonaceous, fissile.

Coal, bright-banded, fusain laminations, gypsum on cleat faces.

**Cored: 187.13-197.13, Recovered: 9.87.**

187.13-187.64 (0.51)

187.64-187.73 (0.09)

187.73-187.92 (0.19)

187.92-188.20 (0.28)

188.20-195.70 (7.50)

Coal, as above.

Pyrite and coal.

Coal, as above.

Shale, black, and bone coal.

Clay shale, medium-gray, nonbedded at top to poorly bedded at base; plant impressions at top.

Clay shale, dark-gray, plastic.

195.70-195.83 (0.13)

195.83-197.00 (1.17)

Coal, bright-banded to dull-, with fusain laminations, much nodular and laminated pyrite.

**Cored: 197.13-207.13, Recovered: 9.37.**

197.13-197.34 (0.21)

197.34-197.45 (0.11)

197.45-199.30 (1.85)

199.30-200.30 (1.00)

200.30-206.50 (6.20)

Coal, as above.

Coal and dark-gray clay shale.

Underclay, dark-gray, plastic, plant impressions.

Limestone, nodular, underclay.

Clay shale, dark-gray, plastic.

**Cored: 207.13-216.58, Recovered: 10.07.**

207.13-211.73 (4.60)

211.73-216.35 (4.62)

216.35-217.20 (0.85)

Clay shale, as above, grades to sandstone below.

Sandstone, fine-grained, contorted to crossbedded, with lag conglomerate at base, calcareous.

Shale, dark-gray, sideritic.

**Cored: 216.98-227.13, Recovered: 9.94.**

216.98-220.92 (3.94)

220.92-226.92 (6.00)

Shale, dark-gray, slightly sideritic.

Shale, dark-gray, sparse silty laminations.

**Cored: 227.13-237.13, Recovered: 9.95.**

227.13-232.43 (5.30)

232.43-233.55 (1.12)

233.55-233.65 (0.10)

233.65-235.00 (1.35)

235.00-237.08 (2.08)

Shale, dark-gray.

Limestone, dark-gray, argillaceous, fine-grained, very fossiliferous.

Shale, black, carbonaceous, with vitrain laminations.

Shale, medium-gray, nonbedded.

Clay shale, gray, red, pink, plastic, nonbedded.

**Cored: 237.13-247.13, Recovered: 9.87.**

237.13-242.05 (4.92)

242.05-245.50 (3.45)

245.50-246.35 (0.85)

246.35-247.00 (0.65)

Clay shale, gray, green, red, mottled as above, greenish toward base, grades to shale below.

Shale, medium-gray, silty toward base.

Siltstone, medium-gray, grading to fine-grained sandstone at base, low-angle crossbedding.

Shale, medium-gray, silty, moderately fissile.

**Cored: 247.13-257.13, Recovered: 9.71.**

- 247.13-256.84 (9.71) Shale, gray to greenish-gray, red, ochre-yellow, mottled, poorly bedded, grading to medium-dark-gray, clay shale at base (not calcareous).
- Cored: 257.13-267.13, Recovered: 9.87.**
- 257.13-257.48 (0.35) As above.
- 257.48-260.40 (2.92) Clay shale, medium-dark-gray to brick red and ochre-yellow, grades to clay shale below.
- 260.40-261.45 (1.05) Clay shale, medium-gray, poorly bedded, base sharp and angular.
- 261.45-265.10 (3.65) Siltstone, medium-gray, and sandstone, light-gray, fine-grained, grades to shale below.
- 265.10-267.00 (1.90) Shale, dark-gray, siltstone, yellow and light-gray, siltstone interlaminated, flaser bedding.
- Cored: 267.13-277.13, Recovered: 9.37.**
- 267.13-271.90 (4.77) As above, grades to shale below.
- 271.90-274.30 (2.40) Shale, medium-dark-gray, plant impressions abundant toward base.
- 274.30-274.50 (0.20) Clay shale, very dark-gray, plastic, with thin coal laminations.
- 274.50-275.20 (0.70) Coal, bright-banded, pyritic, much fusain, several thin shale laminations.
- 275.20-276.50 (1.30) Underclay, medium-dark-gray, rooted, nonbedded to poorly bedded, scattered dolomite nodules.
- Cored: 277.13-287.13, Recovered: 9.95.**
- 277.13-287.08 (9.95) As above, grading to shale, fissile, dark-gray, carbonaceous, with siderite layers.
- Cored: 287.13-297.13, Recovered: 10.10.**
- 287.13-287.23 (0.10) Coal, bony.
- 287.23-294.59 (7.36) Shale, medium-gray, carbonaceous, siderite layers, clayey towards base.
- 294.59-294.91 (0.32) Claystone, medium-gray, carbonaceous, coal laminations near base.
- 294.91-296.28 (1.37) Coal, bright-banded, pyrite along bedding, calcite along cleats.
- 296.28-297.23 (0.95) Underclay, medium-gray, carbonaceous, rooted.
- Cored: 297.13-307.13, Recovered: 10.02.**
- 297.13-297.40 (0.27) Coal, bright-banded, calcite along cleats.
- 297.40-306.61 (9.21) Shale, medium-gray, clayey toward top, light-gray siltstone laminations.
- 306.61-307.15 (0.54) Coal, bright-banded, pyrite along bedding planes.
- Cored: 307.13-317.13, Recovered: 9.92.**
- 307.13-307.45 (0.32) As above.
- 307.45-317.05 (9.60) Shale, medium-gray, clayey near top; interlaminated with light-gray siltstone; siltstone lens (0.32' thick) 2.29' from base.
- Cored: 317.13-327.13, Recovered: 10.14.**
- 317.13-327.27 (10.14) Shale, medium-gray to dark-gray, interbedded with siltstone, light-gray, calcareous.
- Cored: 327.13-337.13, Recovered: 9.97.**

- 327.13-337.10 (9.97) As above, siltstone laminations are thinner and fewer.
- Cored: 337.13-347.13, Recovered: 10.01.**  
 337.13-339.65 (2.52) As above, with a siderite band (0.20' thick) at 338.82.  
 339.65-346.21 (6.56) Sandstone, light-gray, fine-grained; a few scattered, thin claystone, siderite, and black shale beds.  
 346.21-347.14 (0.93) Shale, black, carbonaceous, with one siderite nodule.
- Cored: 347.13-357.13, Recovered: 10.12.**  
 347.13-349.25 (2.14) Claystone, light-gray, rooted, silty toward base.  
 349.25-351.12 (1.85) Shale, medium-gray, thin-bedded, interbedded with siltstone, light-gray, with claystone lenses.  
 351.12-354.35 (3.25) Sandstone, light-gray, very fine-grained, micaceous, sparse light-gray claystone laminations (0.03' thick), siderite layers, and a few dark-gray shale laminations.  
 354.35-355.01 (0.64) Sandstone, light-gray, fine-grained, calcareous, micaceous.  
 355.01-355.47 (0.46) Sandstone, light-gray, fine-grained, noncalcareous, micaceous.  
 355.47-357.25 (1.78) Sandstone, light-gray, fine-grained, micaceous, interbedded with shale, dark-gray, thinly bedded, rippled to crossbedded.
- Cored: 357.13-369.15, Recovered: 10.20.**  
 357.13-367.33 (10.20) Sandstone, light-gray, fine-grained, slightly calcareous, interbedded with shale, dark-gray, thin-bedded; bedding thicker and more predominant toward base; siderite laminations scattered throughout, crossbedded.
- Cored: 367.13-377.13, Recovered: 9.96.**  
 367.13-373.97 (6.84) As above, with a siderite layer (0.30' thick) at 372.54; convolute bedding.  
 373.97-375.05 (1.08) Shale, dark-gray; interbedded with siltstone, light-gray.  
 375.05-376.44 (1.39) Coal, bright-banded, calcite along cleats, pyrite along bedding.  
 376.44-377.09 (0.65) Underclay, light- to medium-gray, root fragments.
- Cored: 377.13-387.13, Recovered: 9.94.**  
 377.13-381.13 (4.00) As above, gradational basal contact.  
 381.13-387.07 (5.94) Shale, medium- to dark-gray, interbedded with siltstone, light-gray; more silty toward base.
- Cored: 387.13-397.13, Recovered: 10.06.**  
 387.13-397.19 (10.06) Shale, medium- to dark-gray, siltstone laminations scattered throughout; siltstone, light-gray, micaceous, carbonaceous.
- Cored: 397.13-407.13, Recovered: 10.11.**  
 397.13-397.68 (0.55) As above.  
 397.68-400.03 (2.35) Coal, bright-banded, hard, calcite on cleat surfaces, pyritic.  
 400.03-407.24 (7.21) Shale, dark-gray, clayey, plant impressions, siderite nodules.
- Cored: 407.13-417.13, Recovered: 9.90.**  
 407.13-417.03 (9.90) Shale, medium-gray, slightly silty, sideritic, carbonaceous at top.
- Cored: 417.13-427.13, Recovered: 10.11.**  
 417.13-418.80 (1.67) Siltstone, with shale laminations, dark-gray, carbonaceous.  
 418.80-427.24 (8.44) Sandstone and shale, interbedded, light-gray, fine-grained.
- Cored: 427.13-437.13, Recovered: 10.00.**

427.13-429.82 (2.69)	As above, sandstone dominant, some medium-gray claystone laminations.
429.82-437.13 (7.31)	Sandstone, light-gray, fine-grained at top, medium- to coarse-grained at base; siderite nodules and few lenses of dark-gray, carbonaceous, micaceous shale; bottom 2.00' of core broken.
<b>Cored: 437.13-447.13, Recovered: 10.03.</b> 437.13-447.16 (10.03)	Sandstone, as above, with vitrain laminations; micaceous, carbonaceous, and sideritic at 442.63.
<b>Cored: 447.13-457.13, Recovered: 10.09.</b> 447.13-457.22 (10.09)	As above, medium- to coarse-grained, siderite layers, numerous carbonaceous, micaceous laminations, as above.
<b>Cored: 457.13-467.13, Recovered: 10.05.</b> 457.13-467.18 (10.05)	As above.
<b>Cored: 467.13-477.13, Recovered: 10.00.</b> 467.13-477.13 (10.00)	As above.
<b>Cored: 477.13-489.13, Recovered: 10.03.</b> 477.13-482.98 (5.85) 482.98-484.01 (1.03) 484.01-487.16 (3.15)	As above. Shale, dark-gray, silty, interbedded with sandstone, light-gray, fine-grained. Sandstone, light-gray, fine- to medium-grained; siderite layers and dark-gray, carbonaceous shale laminations, micaceous.
<b>Cored: 487.13-497.13, Recovered: 10.00.</b> 487.13-497.13 (10.00)	As above, but cleaner and very porous toward base.
<b>Cored: 497.13-500.12, Recovered: 2.99.</b> 497.13-500.12 (2.99)	Sandstone, light-gray, medium-grained, a few carbonaceous laminations, a few siderite nodules (<0.12' thick), micaceous, dark minerals, porous.
<b>Total Depth: 500.12.</b>	

Western Kentucky Stratigraphic Test Hole Gil 26, Daviess County, Lewisport Quadrangle, Carter coordinate location 8-Q-31, 2200 FNL 700 FWL, Elevation: 572.00, Total Depth: 171.40.

Interval (Feet)	Description
<b>Cored: 22.20-27.38, Recovered: 5.79.</b> 22.20-27.99 (5.79)	Sandstone, light-brown, weathered, medium-grained, micaceous, dark mineral beds, iron staining throughout.
<b>Cored: 27.38-37.38, Recovered: 6.37.</b> 27.38-33.75 (6.37)	As above, with a claystone bed, tan, 0.65'-thick, at 30.13.
<b>Cored: 37.38-47.38, Recovered: 10.05.</b> 37.38-41.51 (4.13) 41.51-43.11 (1.60) 43.11-47.43 (4.32)	As above, with a few thin claystone beds scattered throughout. Sandstone, light-gray, fine-grained, micaceous, carbonaceous laminations throughout. Sandstone, light- to medium-brown, fine- to medium-grained, micaceous, dipping beds.
<b>Cored: 47.38-57.38, Recovered: 10.00.</b> 47.38-57.38 (10.00)	As above.
<b>Cored: 57.38-67.38, Recovered: 9.17.</b> 57.38-66.55 (9.17)	Sandstone, light-brown to light-gray, medium-grained, micaceous, dark minerals throughout.
<b>Cored: 67.38-77.38, Recovered: 7.78.</b> 67.38-75.16 (7.78)	As above.
<b>Cored: 77.38-87.38, Recovered: 10.00.</b> 77.38-87.38 (10.00)	As above, but with light-gray color.
<b>Cored: 87.38-97.33, Recovered: 9.95.</b> 87.38-97.33 (9.95)	As above.
<b>Cored: 97.38-107.38, Recovered: 9.72.</b> 97.38-107.10 (9.72)	As above.
<b>Cored: 107.38-117.38, Recovered: 10.00.</b> 107.38-117.38 (10.00)	As above, but light-gray in upper 3.35'.
<b>Cored: 117.38-127.38, Recovered: 9.95.</b> 117.38-119.78 (2.40) 119.78-122.78 (3.00)	Sandstone, light-brown, fine- to medium-grained. Sandstone, light-gray, fine- to medium-grained, carbonaceous laminations.
122.78-123.58 (0.80)	Siderite nodules in claystone matrix.
123.58-124.88 (1.30)	Sandstone, light-gray, fine- to medium-grained; shale, dark-gray, carbonaceous.
124.88-125.08 (0.20)	Siderite.
125.08-125.51 (0.43)	Sandstone, light-gray, fine-grained; shale, dark-gray, siderite nodules.
125.51-126.91 (1.40)	Sandstone, light-gray, fine-grained, with carbonaceous laminations.
126.91-127.33 (0.42)	Sandstone, light-gray, fine-grained; claystone, 0.04' thick at base.

**Cored: 127.38-137.38, Recovered: 9.75.**

127.38-137.13 (9.75)

Sandstone, light-gray, fine-grained, calcareous, interlaminated with shale; dark-gray carbonaceous shale more abundant toward base.

**Cored: 137.38-147.38, Recovered: 10.61.**

137.38-138.64 (1.26)

138.64-139.64 (1.00)

139.64-144.18 (4.54)

144.18-147.99 (3.81)

Siltstone, medium-gray, siderite nodules throughout.  
Coal, bright-banded, pyrite along beds, some calcite along cleats.  
Shale, medium-gray, silty, carbonaceous fragments throughout.  
Shale, medium-gray, becoming darker toward base, carbonaceous laminations throughout.

**Cored: 147.38-157.38, Recovered: 9.52.**

147.38-156.90 (9.52)

As above.

**Cored: 157.38-167.63, Recovered: 9.75.**

157.38-161.18 (3.80)

161.18-162.81 (1.63)

162.81-167.13 (4.32)

As above.  
Coal, bright- and dull-banded, pyrite along cleats and bedding.  
Shale, dark-gray, becoming light-gray at base, carbonaceous, claystone.

**Cored: 167.63-171.40, Recovered: 3.77.**

167.63-171.40 (3.77)

Siltstone, laminated, and medium-gray shale; many carbonaceous laminations.

**Total Depth: 171.40.**

**Western Kentucky Stratigraphic Test Hole Gil 27, Daviess County, Curdsville Quadrangle, Carter coordinate location 1-N-27, 1400 FNL 550 FEL, Elevation: 432.00, Total Depth: 841.76.**

Interval (Feet)	Description
<b>Cored: 24.00-30.00, Recovered: 6.00.</b> 24.00-30.00 (6.00)	Clay, light- to medium-gray to light- to medium-brown, very plastic, iron-stained.
<b>Cored: 30.00-40.00, Recovered: 9.65.</b> 30.00-31.85 (1.85) 31.85-39.65 (7.80)	As above. Sandstone, medium-gray, fine-grained, sideritic, micaceous, claystone laminations, crossbedded, some bioturbation.
<b>Cored: 40.00-50.00, Recovered: 10.04.</b> 40.00-45.04 (5.04)  45.04-46.09 (1.05)  46.09-46.18 (0.09) 46.18-50.12 (3.94)	Sandstone, medium-gray, highly sideritic, crossbedded, fine-grained, micaceous. Sandstone and shale, interlaminated; sandstone, as above; shale, medium-gray, clayey. Siderite band. Shale, medium-gray, sandy, pyritic, micaceous; light-gray, sandstone laminations; core broken, darker gray toward base; carbonaceous flecks.
<b>Cored: 50.00-60.00, Recovered: 10.00.</b> 50.00-60.00 (10.00)	As above, core broken, less sandy.
<b>Cored: 60.00-70.00, Recovered: 10.19.</b> 60.00-70.19 (10.19)	Shale, as above, non-sandy, core not broken.
<b>Cored: 70.00-80.00, Recovered: 9.90.</b> 70.00-79.90 (9.90)	As above, clay shale, with carbonaceous laminations.
<b>Cored: 80.00-90.00, Recovered: 9.98.</b> 80.00-89.98 (9.98)	As above.
<b>Cored: 90.00-100.00, Recovered: 9.97.</b> 90.00-99.97 (9.97)	Clay shale, dark-gray, one brachiopod(?) shell.
<b>Cored: 100.00-109.00, Recovered: 9.38.</b> 100.00-103.19 (3.19) 103.19-104.44 (1.25) 104.44-108.57 (4.13) 108.57-109.31 (0.74) 109.31-109.38 (0.07)	As above, with numerous siderite layers. Limestone, dark-gray, fossiliferous, highly shaly. Shale, black, highly carbonaceous, pyritic, becoming sideritic. Coal, bony, pyritic at top, hard, bright at base, calcite on cleats. Clay shale, plastic, medium-gray, carbonaceous.
<b>Cored: 110.00-120.00, Recovered: 10.01.</b> 110.00-112.70 (2.70) 112.70-120.01 (7.31)	Clay shale, medium- to dark-gray, plastic. Clay shale, silty, light-gray, with siderite layers, micaceous.
<b>Cored: 120.00-130.00, Recovered: 9.97.</b> 120.00-129.97 (9.97)	Clay shale, medium-gray, micaceous, dense, siderite nodules at top, slightly silty.

**Cored: 130.00-140.00, Recovered: 10.00.**

130.00-140.00 (10.00)

Shale, dark-gray, with light-gray, silty laminations, siderite nodules, irregularly shaped calcareous, pyritic concentrations, slightly micaceous.

**Cored: 140.00-150.00, Recovered: 10.07.**

140.00-144.67 (4.67)

Shale, dark-gray, with clay, light-gray; sideritic, pyritized plant remains, carbonaceous.

144.67-147.43 (2.76)

Shale, black, pyritic, highly carbonaceous.

147.43-148.58 (1.15)

Coal, bright, calcite along cleats, pyritic, some fusain.

148.58-150.07 (1.46)

Sandstone, dark-gray, highly bioturbated, highly sideritic, shaly, carbonaceous, fine-grained, micaceous, calcareous at base.

**Cored: 150.00-160.00, Recovered: 10.06.**

150.00-151.28 (1.28)

As above.

151.28-156.66 (5.38)

Sandstone and shale, interlaminated; sandstone, as above; shale, dark-gray, carbonaceous, less carbonaceous toward base, sideritic.

156.66-160.06 (3.40)

Clay shale, dark-gray, carbonized plant remains.

**Cored: 160.00-170.00, Recovered: 10.11.**

170.00-173.10 (3.10)

Shale, dark-gray, with siderite layers, black toward base, highly carbonaceous, plant fragments.

173.10-174.08 (0.98)

Sandstone, medium-gray, fine-grained, micaceous, convolute carbonaceous laminations.

174.08-176.85 (2.77)

Sandstone and shale, interbedded, sideritic; sandstone, light-gray, fine-grained; shale, dark-gray, carbonaceous.

176.85-177.43 (0.58)

Sandstone, medium-gray, fine-grained, carbonaceous, micaceous, fossiliferous (snail).

177.43-180.11 (2.68)

Siltstone, dark-gray, with light-gray sandstone laminations, bioturbated at base.

**Cored: 180.00-190.00, Recovered: 9.99.**

180.00-180.73 (0.73)

Sandstone, medium-gray, fine-grained, bioturbated at base, carbonaceous plant debris, micaceous.

180.73-189.98 (9.25)

Siltstone, dark-gray, with light-gray sandstone laminations, micaceous, carbonaceous.

**Cored: 190.00-200.00, Recovered: 10.01.**

190.00-192.22 (2.22)

Siltstone, dark-gray, carbonaceous sandstone laminations, siderite nodules, carbonaceous plant fragments.

192.22-199.37 (7.15)

Sandstone, medium-gray, calcareous, fine-grained, micaceous, with carbonaceous shale laminations.

199.37-200.01 (0.64)

Siltstone, dark-gray, micaceous, carbonaceous.

**Cored: 200.00-210.00, Recovered: 9.21.**

200.00-201.62 (1.62)

Siltstone, dark-gray, micaceous, with siderite layers, light-gray claystone laminations.

201.62-201.77 (0.15)

Shale, black, highly carbonaceous.

201.77-202.70 (0.93)

Clay shale, dark-gray, carbonaceous, sideritic.

202.70-203.59 (0.89)

Shale, black to dark-gray, carbonaceous, fossiliferous.

203.59-209.21 (5.62)

Shale, black, highly carbonaceous, some coal laminations.

**Cored: 210.00-220.00, Recovered: 10.00.**

210.00-210.83 (0.83)

As above.

210.83-212.07 (1.24)

Coal, bright-banded, calcite and pyrite in cleats.

212.07-212.37 (0.30)  
212.37-220.00 (7.63)

Coal, bony, interlaminated with clay shale.  
Clay shale, light-gray, plastic at top, becoming more silty at base.

**Cored: 220.00-230.00, Recovered: 9.94.**

220.00-225.71 (5.71)

Shale, silty, contains calcareous, medium-gray sandstone laminations, siderite layers at top.

225.71-229.98 (4.27)

Shale, silty, carbonaceous in middle; 2.00'-thick siderite layer near base.

**Cored: 230.00-240.00, Recovered: 9.95.**

230.00-239.95 (9.95)

Shale, silty, medium-gray, micaceous, siderite layers throughout; carbonaceous at base.

**Cored: 240.00-250.00, Recovered: 10.31.**

240.00-241.50 (1.50)

As above, except for claystone bed 0.09' thick at 239.75.

241.50-243.55 (2.05)

Coal, bright-banded, calcite and pyrite in cleats.

243.55-244.70 (1.15)

Clay shale (underclay?), medium-gray, carbonaceous, partly silty, slightly calcareous in spots.

244.70-247.76 (3.06)

Limestone, light-gray, some vugs with calcite crystals, fossiliferous (brachiopods?).

247.76-250.31 (2.55)

Clay shale, silty, light-gray, more micaceous and sandy toward base.

**Cored: 250.00-260.00, Recovered: 10.03.**

250.00-260.00 (10.03)

Sandstone, light-gray, fine-grained, micaceous, with layers of light-green glauconitic claystone; thin siderite layer at bottom.

**Cored: 260.00-270.00, Recovered: 10.04.**

260.00-270.00 (10.00)

As above, but less glauconitic.

**Cored: 270.00-280.00, Recovered: 9.94.**

270.00-280.00 (10.00)

As above, increasingly silty toward base.

**Cored: 280.00-290.00, Recovered: 10.01.**

280.00-290.00 (10.00)

As above, but micaceous.

**Cored: 290.00-300.00, Recovered: 9.79.**

290.00-295.45 (5.45)

Siltstone, light-gray, micaceous, with disseminated pyrite.

295.45-298.38 (2.93)

Siltstone, more shaly than above, medium- to dark-gray, carbonaceous with siderite layers and nodules, grading to light-gray toward base.

298.38-299.79 (1.41)

Siltstone, light-gray, contains calcareous sandstone laminations at top, less sandy and more silty at base.

**Cored: 300.00-310.00, Recovered: 9.97.**

300.00-306.48 (6.48)

As above, pyrite band at 0.14' from top.

306.48-308.85 (2.37)

Siltstone, plant fragments, dark-gray, siderite layers, carbonaceous.

308.85-310.00 (1.15)

Shale, silty, dark-gray to black, highly carbonaceous, some pyritic plant impressions.

**Cored: 310.00-320.00, Recovered: 10.00.**

310.00-311.65 (1.65)

Clay shale, medium-gray, silty toward base, plant impressions.

311.65-312.95 (1.30)

Shale, dark-gray, calcareous, fossiliferous (calcareous and pyritic).

312.95-314.03 (1.08)

Coal, bright-banded, pyrite and calcite in cleats, 0.50'-thick,

- 314.03-319.13 (5.10)  
319.13-320.05 (0.92)
- Cored: 320.00-330.00, Recovered: 9.89.**  
320.00-329.89 (9.89)
- Cored: 330.00-340.00, Recovered: 10.02.**  
330.00-339.17 (9.17)  
339.17-340.02 (0.85)
- Cored: 340.00-350.00, Recovered: 8.93.**  
340.00-340.85 (0.85)  
340.85-341.47 (0.62)  
341.47-341.75 (0.28)  
341.75-342.58 (0.83)  
342.58-346.98 (4.40)  
346.98-348.93 (1.95)
- Cored: 350.00-360.00, Recovered: 9.70.**  
350.00-353.50 (3.50)  
353.50-359.70 (6.20)
- Cored: 360.00-370.00, Recovered: 9.98.**  
360.00-364.15 (4.15)  
364.15-369.98 (5.83)
- Cored: 370.00-380.00, Recovered: 9.97.**  
370.00-379.97 (9.97)
- Cored: 380.00-390.00, Recovered: 10.00.**  
380.00-390.00 (10.00)
- Cored: 390.00-400.00, Recovered: 10.00.**  
390.00-400.00 (10.00)
- Cored: 400.00-410.00, Recovered: 10.09.**  
400.00-405.30 (5.30)  
405.30-405.37 (0.07)  
405.37-410.09 (4.72)
- Cored: 410.00-420.00, Recovered: 10.00.**  
410.00-417.38 (7.38)
- dense pyrite band at base.  
Shale, silty, grades into siltstone, dark-gray at top, lighter toward bottom.  
Sandstone, slightly calcareous, sideritic, green tinge (glaucopititic), micaceous.
- Sandstone, light-gray, micaceous, medium-green at top, greenish-tinged layers, some sideritic grains and layers, grades to siltstone below.
- Siltstone, medium-gray, micaceous, more carbonaceous toward base, siderite layers at base.  
Limestone, medium-gray, dense, fossil fragments.
- As above, mostly brachiopods, medium-gray, carbonaceous, with wavy laminations of carbonaceous material.  
Shale, dark-gray, highly carbonaceous, calcareous, pyritic.  
Limestone, as above, less carbonaceous material.  
Coal, dull, calcareous, pyritic, some plant impressions.  
Siltstone, shaly, light-gray, Stigmarian.  
Sandstone, fine-grained, silty at top; sandstone coarser toward base, many small siderite nodules, glauconitic, micaceous, low-angle crossbedding, light-gray to greenish.
- As above, more sideritic, more glauconitic.  
Siltstone, light-green, sideritic, with calcareous sandstone parting at 358.17, fine-grained, light-gray, sideritic.
- Siltstone, gray, micaceous, siderite grains.  
Sandstone, medium-grained, light-gray, friable, highly porous.
- As above, with siderite grains and laminations of muscovite.
- As above.
- As above.
- As above.  
Siltstone, carbonaceous.  
Siltstone, light-gray, micaceous, plant fragments.
- Siltstone, grading to fine-grained sandstone toward base, contains carbonaceous laminations and beds more abundant toward base; medium-gray, micaceous, 23.00"-thick sandstone bed near middle of unit.

417.38-420.00 (2.62)	Sandstone, medium-gray, medium-grained, micaceous, carbonaceous laminations, porous, friable.
<b>Cored: 420.00-430.00, Recovered: 9.94.</b>	
420.00-426.20 (6.20)	As above, slightly calcareous at base.
426.20-429.94 (3.74)	Siltstone, medium-gray, finer grained toward base.
<b>Cored: 430.00-440.00, Recovered: 9.98.</b>	
430.00-431.44 (1.44)	As above, with siderite; carbonaceous black shale at base.
431.44-436.43 (4.99)	Clay shale, olive, carbonaceous laminations and siderite layers toward base.
436.43-439.98 (3.55)	Shale, dark-green, interbedded with fine-grained sandstone; sideritic toward base.
<b>Cored: 440.00-450.00, Recovered: 10.01.</b>	
440.00-446.88 (6.88)	As above, blue-green.
446.88-450.01 (3.13)	Limestone, light-gray, dense, highly fossiliferous.
<b>Cored: 450.00-460.00, Recovered: 10.05.</b>	
450.00-450.62 (0.62)	As above.
450.62-454.45 (3.83)	Shale, silty, medium-gray, sparse sandstone laminations, some small crystals of pyrite toward base.
454.45-460.05 (5.60)	Siltstone, some claystone, medium- to dark-gray, sandstone laminations, micaceous, small scattered crystals of pyrite at top.
<b>Cored: 460.00-470.00, Recovered: 10.10.</b>	
460.00-466.07 (6.07)	As above, sideritic nodules at base.
466.07-466.62 (0.55)	Coal, bright-banded, much fusain, pyrite and calcite in cleats.
466.62-467.16 (0.54)	Shale, medium- to dark-gray, some carbonaceous laminations.
467.16-470.11 (2.95)	Siltstone, light- to medium-gray, grades down to silty sandstone at base, some bioturbated sandstone and carbonaceous laminations.
<b>Cored: 470.00-480.00, Recovered: 9.99.</b>	
470.00-479.99 (9.99)	Shale, dark-gray, highly carbonaceous, micaceous, sideritic, plant impressions, interbedded with sandstone, light-gray, fine-grained, bioturbated layers.
<b>Cored: 480.00-490.00, Recovered: 9.98.</b>	
480.00-480.59 (0.59)	As above, with pyritic plant impressions.
480.59-480.72 (0.13)	Coal, pyritic.
480.72-481.00 (0.28)	Clay shale, medium-gray, with trace of siltstone.
481.00-482.39 (1.39)	Siltstone, with claystone, medium- to dark-gray.
482.39-483.73 (1.34)	Claystone, with some siltstone, medium-gray, carbonaceous, plant impressions, trace siderite at base.
483.73-489.95 (6.22)	Siltstone, with some claystone, medium-gray, and sandstone, light-gray, fine-grained, slightly calcareous laminations.
<b>Cored: 490.00-500.00, Recovered: 10.01.</b>	
490.00-500.01 (10.01)	As above, noncalcareous.
<b>Cored: 500.00-510.00, Recovered: 9.09.</b>	
500.00-502.18 (2.18)	As above, more carbonaceous, more shaly, some coal laminations.
502.18-504.21 (2.03)	Coal, mostly dull, much fusain, some bright, some bone coal, pyrite in cleats.

504.21-510.11 (5.90)	Sandstone, with carbonaceous laminations, light- to medium-gray; top contains siderite nodules, small pellets of siderite scattered throughout; carbonaceous laminations, finer grained and more micaceous, downward; shale laminations, convolute bedding.
<b>Cored: 510.00-520.00, Recovered: 10.10.</b>	
510.00-512.28 (2.28)	As above.
512.28-516.23 (3.95)	Siltstone, light, carbonaceous, with thin sandstone beds, thicker at base; beds at top are maximum of 0.40' thick; carbonaceous material medium- to dark-gray.
516.23-519.49 (3.26)	Siltstone, medium- to dark-gray; top 0.83' is sandstone, coarse-grained, sideritic; siltstone slightly carbonaceous, micaceous.
519.49-519.62 (0.13)	Coal, dull; 0.10"-thick band of pyrite at top in calcareous matrix; coal, calcareous in cleats.
519.62-520.03 (0.41)	Siltstone, medium-gray, highly carbonaceous at top, plant impressions throughout unit, clayey.
<b>Cored: 520.00-530.00, Recovered: 10.10.</b>	
520.00-521.55 (1.55)	Clay shale, silty, medium-gray, few fine-grained siderite layers.
521.55-528.50 (6.95)	Sandstone, silty, light-gray, siderite nodules; fine-grained sandstone at base; silty, with carbonaceous laminations at base.
528.50-530.10 (1.60)	Siltstone, dark-gray, carbonaceous, micaceous.
<b>Cored: 530.00-540.00, Recovered: 10.00.</b>	
530.00-530.05 (0.05)	As above.
530.05-530.08 (0.03)	Bone coal, some siltstone laminations.
530.08-532.07 (1.99)	Coal and siltstone; coal, bony, with bright bands; siltstone, more abundant at base.
532.07-539.75 (7.68)	Clay shale, silty at base, light- to medium-gray, with sparse coal laminations, some plant impressions in shale and siltstone.
<b>Cored: 540.00-550.00, Recovered: 9.95.</b>	
540.00-549.95 (9.95)	Siltstone, light- to medium-gray, micaceous, plant impressions, convolute bedding in middle of unit.
<b>Cored: 550.00-560.00, Recovered: 10.10.</b>	
550.00-558.02 (8.02)	As above, except even bedding.
558.02-559.87 (1.85)	Coal, bright-banded, with fusain, calcite in cleats.
559.87-560.13 (0.26)	Siltstone, dark-gray, sparse plant impressions
<b>*Cored: 560.00-571.76, Recovered: 11.76.</b>	
560.00-569.66 (9.66)	Siltstone, medium-gray, micaceous, coarser grained(?) siderite layers and nodules, more silty at base.
569.66-571.59 (1.93)	Siltstone, medium-gray, micaceous, sideritic, calcareous throughout.
<b>Cored: 571.76-581.76, Recovered: 10.10.</b>	
571.76-574.41 (2.65)	Siltstone, some ooids of siderite, greenish tint (glaucanitic), trace claystone.
574.41-581.86 (7.45)	Clay shale and siltstone, light- to medium-gray, slightly

\*Increased length of core run is due to rod change; new rods were longer than old ones; therefore, resetting was misinterpreted.

**Cored: 581.76-591.76, Recovered: 9.88.**

581.76-586.24 (4.48)

586.24-591.65 (5.41)

micaceous, and siderite layers at base; 1.20' of clay shale at top grades into siltstone.

Claystone, medium- to dark-gray, trace siltstone, more silty toward base, few sandstone laminations.

Siltstone, with sandstone laminations, convolute sandstone bedding; more silty at base, micaceous.

**Cored: 591.76-601.76, Recovered: 10.00.**

591.76-597.57 (5.81)

597.57-599.45 (1.88)

599.45-601.78 (2.33)

Shale, dark-gray, with sparse silty laminations.

Shale, dark-gray, fissile.

Shale and siltstone interlaminated, dark-gray; contorted in part.

**Cored: 601.76-611.76, Recovered: 10.00.**

601.76-609.44 (7.68)

609.44-611.92 (2.48)

Shale, dark-gray, fissile, with sparse siderite nodules and layers toward base.

Siltstone with dark-gray shale laminations; contorted at top.

**Cored: 611.76-621.76, Recovered: 10.01.**

611.76-621.76 (10.01)

Shale, dark-gray, and siltstone, light-gray, interlaminated with siderite nodules at base, dark-gray shale at base.

**Cored: 621.76-631.76, Recovered: 10.00.**

621.76-631.76 (10.00)

Shale, dark-gray, with sparse siltstone laminations.

**Cored: 631.76-641.76, Recovered: 9.65.**

631.76-640.36 (8.60)

640.36-641.41 (1.05)

As above.

Sandstone, fine-grained, light-gray to brown, sideritic.

**Cored: 641.76-651.76, Recovered: 10.00.**

641.76-644.79 (3.03)

644.79-645.96 (1.17)

645.96-646.17 (0.21)

646.17-646.29 (0.12)

646.29-648.02 (1.73)

648.02-651.50 (3.48)

651.50-651.85 (0.35)

Sandstone, light-gray, fine-grained, with abundant shale laminations.

Shale, dark-gray, with siltstone laminations.

Siderite and dark-gray shale.

Coal, bright-banded to dull-, fusain abundant, bony at top.

Clay shale, dark-gray, nonbedded, with plant impression, silty toward base.

Sandstone, siltstone, and shale, interlaminated, contorted at top.

Sandstone, light-gray, fine-grained.

**Cored: 651.76-661.76, Recovered: 10.02.**

651.76-661.76 (10.00)

Sandstone, as above, sparse shale laminations.

**Cored: 661.76-671.76, Recovered: 10.15.**

661.76-671.76 (10.00)

Sandstone, as above, and shale, interlaminated.

**Cored: 671.76-681.76, Recovered: 10.07.**

671.76-681.76 (10.00)

As above, grades to shale below.

**Cored: 681.76-691.76, Recovered: 10.00.**

681.76-683.90 (2.14)

683.90-684.43 (0.53)

Shale, dark- and light-gray sandstone, interlaminated, bioturbated.

Coal, bright-banded, some fusain partings, pyritic.

684.43-688.80 (4.37)

Sandstone, light-gray, fine-grained, dark-gray shale laminations, burrowed at top, grades to sandstone below.

688.80-691.83 (3.03)

Sandstone, as above, and dark-gray shale, interlaminated.

**Cored: 691.76-701.76, Recovered: 9.99.**

691.76-696.15 (4.39)

As above, contact sharp.

696.15-697.40 (1.25)

Shale, dark-gray, fissile.

697.40-699.15 (1.75)

Siltstone, medium-gray, argillaceous, contorted.

699.15-701.75 (2.60)

Sandstone, fine-grained, light-gray, numerous wavy shale laminations, grades to shale and sandstone below.

**Cored: 701.76-711.76, Recovered: 9.98.**

701.76-711.76 (9.98)

Shale and sandstone, as above, interlaminated, flaser bedding, grades to shale below.

**Cored: 711.76-721.76, Recovered: 10.00.**

711.76-714.45 (2.69)

Shale, medium-gray, and siltstone, medium-light-gray, interlaminated, base sharp.

714.45-714.94 (0.49)

Sandstone, light-gray, fine-grained, numerous gray shale laminations.

714.94-721.33 (6.39)

Sandstone, light-gray, fine-grained, slightly porous, scattered shale laminations and siderite nodules, base sharp.

721.33-721.70 (0.37)

Shale, dark-gray, fissile.

**Cored: 721.76-731.76, Recovered: 10.00.**

721.76-726.38 (4.62)

Shale, dark-gray, fissile, carbonaceous, base sharp.

726.38-726.48 (0.10)

Coal, bright-banded, fusain partings, pyrite on cleat faces.

726.48-727.78 (1.30)

Shale, dark-gray, poorly bedded, vitrain laminations at top.

727.78-729.58 (1.80)

Clay shale, silty, siderite nodule at top, scattered irregular calcareous zones, grades to siltstone below.

729.58-731.85 (2.27)

Siltstone, medium-gray, sparse argillaceous and sideritic layers, contorted bedding, grades to sandstone below.

**Cored: 731.76-741.76, Recovered: 10.00.**

731.76-733.70 (1.94)

Sandstone, light-gray, fine-grained, numerous shale laminations, crossbedded.

733.70-738.15 (4.45)

Shale and fine-grained sandstone, interlaminated.

738.15-741.60 (3.45)

Shale, dark-gray, fissile, micaceous.

**Cored: 741.76-751.76, Recovered: 10.00.**

741.76-742.15 (0.39)

Shale, dark-gray to black, carbonaceous, sparse coal laminations.

742.15-742.36 (0.21)

Bone coal and carbonaceous black shale.

742.36-742.75 (0.39)

Coal, dull, sparse, bright band.

742.75-743.60 (0.85)

Siltstone, medium-gray, highly contorted, abundant carbonaceous plant impressions.

743.60-748.15 (4.55)

Siltstone, medium-gray, argillaceous, contorted, burrowed(?).

748.15-751.93 (3.78)

Sandstone, medium-gray, fine-grained, scattered shale laminations, siderite pellets at top.

**Cored: 751.76-761.76, Recovered: 10.15.**

751.76-761.76 (10.00)

Sandstone, light-gray, fine- to medium-grained, clean, porous (orthoquartzite), sparse, wavy, shale laminations.

**Cored: 761.76-771.76, Recovered: 10.05.**

761.76-771.76 (10.00)	Sandstone, as above, grading to sandstone, interlaminated with dark-gray shale (flaser bedding).
<b>Cored: 771.76-781.76, Recovered: 10.05.</b> 771.76-781.76 (10.00)	As above, grading down to shale, dark-gray, with sandstone laminations.
<b>Cored: 781.76-791.76, Recovered: 10.00.</b> 781.76-785.32 (3.56) 785.32-791.65 (6.33)	As above, base sharp. Shale, dark-gray, micaceous, fissile, slightly silty.
<b>Cored: 791.76-801.76, Recovered: 9.95.</b> 791.76-801.76 (10.00)	Shale, dark-gray.
<b>Cored: 801.76-811.76, Recovered: 9.96.</b> 801.76-811.76 (10.00)	Shale, dark-gray to black, fissile, grades down to siltstone, dark-gray, argillaceous, burrowed.
<b>Cored: 811.76-821.76, Recovered: 9.93.</b> 811.76-821.76 (10.00)	Shale, dark-gray, silty, with laminations of black carbonaceous shale.
<b>Cored: 821.76-831.76, Recovered: 10.15.</b> 821.76-831.76 (10.00)	Shale, dark-gray to black, carbonaceous, fissile.
<b>Cored: 831.76-841.76, Recovered: 9.85.</b> 831.76-832.43 (0.67) 832.43-832.47 (0.04) 832.47-833.95 (1.48)	Shale, as above. Shale, black, with numerous pyrite laminations, base sharp. Coal, dull to bright, much fusain, scattered pyrite nodules, gypsum on cleats. Pyrite band.
833.95-834.14 (0.19) 834.14-836.34 (2.20)	Coal, dull, some vitrain and fusain bands, numerous white calcite-filled fractures.
836.34-836.78 (0.44)	Shale, black, carbonaceous, scattered pyrite and vitrain laminations.
836.78-839.22 (2.44)	Clay shale, dark-gray, abundant carbonaceous plant impressions, poorly bedded, silty toward base.
839.22-841.30 (2.08)	Shale, dark-gray, and siltstone, medium-gray, interlaminated.
<b>Total Depth: 841.76.</b>	

**Western Kentucky Stratigraphic Test Hole Gil 28, Daviess County, Lewisport Quadrangle, Carter coordinate location 7-Q-31, 1250 FNL 1225 FEL, Elevation: 400.00, Total Depth: 400.28.**

Interval (Feet)	Description
<b>Cored: 11.00-17.38, Recovered: 3.19.</b>	
11.00-12.38 (1.38)	Clay, reddish-gray, weathered.
12.38-14.19 (1.81)	Sandstone, red to brown, soft, fractured, weathered.
<b>Cored: 17.38-27.38, Recovered: 1.47.</b>	
17.38-18.60 (1.22)	Clay and sandstone, weathered.
18.60-18.85 (0.25)	Limestone, green to brown, finely to moderately crystalline, fossiliferous.
<b>Cored: 27.38-37.28, Recovered: 9.27.</b>	
27.38-35.87 (8.49)	Clay shale, dark-gray to black, carbonaceous, with coal laminations.
35.87-36.65 (0.78)	Clay shale, medium- to light-gray.
<b>Cored: 37.28-47.28, Recovered: 8.52.</b>	
37.28-37.31 (0.03)	Coal, bright to bony.
37.31-43.23 (5.92)	Clay shale, medium-gray, nonbedded.
43.23-45.80 (2.57)	Limestone, light-gray, fine-grained, fossiliferous, few wavy argillaceous laminations.
45.80-46.05 (0.25)	Clay shale bed, medium-gray.
46.05-47.08 (1.03)	Limestone, as above; nodular at top, more argillaceous toward base.
47.08-47.48 (0.40)	Shale, gray, slightly silty, with carbonaceous laminations.
<b>Cored: 47.28-57.28, Recovered: 10.20.</b>	
47.28-57.48 (10.20)	Shale, gray, poorly bedded at top to moderately fissile toward base.
<b>Cored: 57.28-67.28, Recovered: 9.57.</b>	
57.28-58.05 (0.77)	Shale, as above.
58.05-66.85 (8.80)	Shale, dark-gray, with light-gray siltstone laminations.
<b>Cored: 67.28-76.88, Recovered: 10.00.</b>	
67.28-67.52 (0.24)	As above.
67.52-68.47 (0.95)	Shale, dark-gray.
68.47-70.40 (1.93)	Shale, black, carbonaceous, abundant fossils.
70.40-76.66 (6.26)	Limestone, gray to dark-gray, fine-grained, very argillaceous and fossiliferous, grades to shale below.
76.66-77.28 (0.62)	Shale, black, carbonaceous, fossiliferous.
<b>Cored: 76.88-86.88, Recovered: 10.37.</b>	
76.88-77.08 (0.20)	As above.
77.08-78.58 (1.50)	Shale, dark-gray to black, poorly bedded.
78.58-79.02 (0.44)	Shale, black, carbonaceous, fossiliferous.
79.02-79.14 (0.12)	Coal, bony.
79.14-81.00 (1.86)	Coal, bright-banded, with fusain partings and some pyrite; grades to clay shale below.
81.00-84.10 (3.10)	Clay shale, medium-gray, very silty, with plant impressions, grades to sandstone below.

84.10-87.25 (3.15)	Sandstone, gray, fine-grained, with carbonaceous laminations.
<b>Cored: 86.88-96.88, Recovered: 10.37.</b>	
86.88-95.50 (8.62)	Sandstone, as above, laminated with dark-gray shale.
95.50-97.25 (1.75)	Sandstone, fine-grained, gray, with carbonaceous and coal laminations.
<b>Cored: 96.88-106.88, Recovered: 10.10.</b>	
96.88-106.98 (10.10)	Sandstone, fine-grained, gray, with carbonaceous laminations and dark-gray shale laminations.
<b>Cored: 106.88-116.88, Recovered: 10.08.</b>	
106.88-116.96 (10.08)	As above.
<b>Cored: 116.88-126.88, Recovered: 10.00.</b>	
116.88-126.88 (10.00)	Shale, dark-gray, and medium-gray siltstone laminations.
<b>Cored: 126.88-136.90, Recovered: 10.02.</b>	
126.88-136.90 (10.02)	As above.
<b>Cored: 136.88-146.88, Recovered: 10.04.</b>	
136.88-146.92 (10.04)	As above.
<b>Cored: 146.88-156.88, Recovered: 10.05.</b>	
146.88-150.13 (3.25)	Sandstone and shale, laminated, as above.
150.13-154.96 (4.83)	Shale, dark-gray, with sparse siltstone laminations.
154.96-156.93 (1.97)	Shale, dark-gray, and sandstone, light-gray, very fine, interlaminated.
<b>Cored: 156.88-166.88, Recovered: 9.82.</b>	
156.88-165.25 (8.37)	Shale, as above, sandstone, as above, and siltstone, medium-gray.
165.25-166.70 (1.45)	Sandstone, light-gray, very fine- to fine-grained.
<b>Cored: 166.88-176.88, Recovered: 10.04.</b>	
166.88-168.09 (1.21)	Sandstone, as above, fine- to medium-grained, with lag conglomerate.
168.09-175.15 (7.06)	Sandstone, fine- to medium-grained, medium-gray, sparse claystone clasts.
175.15-176.92 (1.77)	Siltstone, medium-gray, and dark-gray shale, contorted, with lag conglomerate.
<b>Cored: 176.88-186.88, Recovered: 10.12.</b>	
176.88-182.24 (5.36)	Sandstone, medium-gray to brownish-gray, fine- to medium-grained, with scattered lag conglomerate.
182.24-187.00 (4.76)	Sandstone, light-gray, fine-grained, and dark-gray shale, interlaminated.
<b>Cored: 186.88-197.38, Recovered: 9.82.</b>	
186.88-193.61 (6.73)	As above, grading to dark-gray shale, with sparse sandstone laminations, grades to shale below.
193.61-197.70 (4.09)	Shale, black, carbonaceous, fissile.
<b>Cored: 197.38-207.38, Recovered: 10.32.</b>	

197.38-197.86 (0.48)	As above, grading to sandstone, light-gray, fine-grained, bedding contorted.
197.86-207.70 (9.84)	Sandstone, light-gray, fine-grained, with argillaceous lamination, light-gray.
<b>Cored: 207.38-217.38, Recovered: 10.17.</b>	
207.38-209.10 (1.72)	As above, grades to shale below.
209.10-213.97 (4.87)	Shale, dark-gray, with siltstone and sandstone laminations; light-gray, very fine-grained sandstone laminations, more numerous toward base.
213.97-214.21 (0.24)	Coal, bright and dull, with fusain.
214.21-214.42 (0.21)	Siltstone, medium-gray, carbonaceous; seat rock(?).
214.42-214.44 (0.02)	Coal lamination.
214.44-215.14 (0.70)	Siltstone, medium-gray, carbonaceous, nonbedded; possible seat rock.
215.14-215.68 (0.54)	Siltstone, as above, with clasts of sandstone, light-gray, very fine-grained.
215.68-217.55 (1.87)	Sandstone, light-gray, fine-grained, with medium-gray, argillaceous laminations.
<b>Cored: 217.38-227.38, Recovered: 9.92.</b>	
217.38-223.93 (6.55)	As above.
223.93-227.30 (3.37)	Sandstone, as above, and dark-gray shale, contorted in part.
<b>Cored: 227.38-237.38, Recovered: 9.98.</b>	
227.38-237.36 (9.98)	Shale, dark-gray, with laminations and lenses of siltstone, and light-gray, very fine-grained sandstone, contorted in part.
<b>Cored: 237.38-247.38, Recovered: 9.87.</b>	
237.38-245.04 (7.66)	As above, grading to dark-gray, sandy shale.
245.04-247.25 (2.21)	Shale, dark-gray, contorted, silty.
<b>Cored: 247.38-257.38, Recovered: 10.00.</b>	
247.38-248.20 (0.82)	Coal, bright and dull, with fusain.
248.20-249.15 (0.95)	Shale, medium-gray, poorly bedded, carbonaceous at top.
249.15-251.40 (2.25)	Shale, dark-gray, interlaminated with siltstone, light-gray.
251.40-257.38 (5.98)	Sandstone, light-gray, fine-grained, with varying amounts of dark-gray shale.
<b>Cored: 257.38-267.38, Recovered: 10.12.</b>	
257.38-257.65 (0.27)	As above.
257.65-262.20 (4.55)	Shale, dark-gray, interlaminated with sandstone, as above.
262.20-267.50 (5.30)	Shale, dark-gray, sparse silty lamination.
<b>Cored: 267.38-277.38, Recovered: 9.95.</b>	
267.38-277.38 (10.00)	As above.
<b>Cored: 277.38-287.38, Recovered: 9.94.</b>	
277.38-287.32 (9.94)	As above, very silty toward base.
<b>Cored: 287.38-297.38, Recovered: 10.00.</b>	
287.38-297.18 (9.80)	Shale, medium-gray, very silty, carbonaceous in part.
297.18-297.38 (0.20)	As above, very carbonaceous, with fusain partings.
<b>Cored: 297.38-307.38, Recovered: 10.07.</b>	

297.38-298.77 (1.39)	Shale, medium-gray, sandy, carbonaceous.
298.77-300.45 (1.68)	As above, with much lag conglomerate, calcareous.
300.45-307.35 (6.90)	Shale, dark-gray, with sparse silty laminations.
<b>Cored: 307.38-317.38, Recovered: 9.70.</b>	
307.38-317.13 (9.75)	Shale, dark-gray, with sparse silty laminations.
<b>Cored: 317.38-327.38, Recovered: 9.82.</b>	
317.38-327.20 (9.82)	As above.
<b>Cored: 327.38-337.38, Recovered: 9.92.</b>	
327.38-327.90 (0.52)	As above, silty, poorly bedded.
327.90-328.15 (0.25)	Shale, dark-gray, slickensided.
328.15-332.53 (4.38)	Shale, black, carbonaceous, fissile, with siltstone laminations, light-gray siderite layer at base.
332.53-337.32 (4.79)	Shale, medium-gray, with light-gray siltstone, and sandstone, light-gray, very fine-grained, laminations and beds.
<b>Cored: 337.38-347.38, Recovered: 10.05.</b>	
337.38-347.43 (10.05)	Shale, dark-gray, interlaminated and interbedded with sandstone, light-gray, very fine-grained.
<b>Cored: 347.38-357.38, Recovered: 10.24.</b>	
347.38-351.35 (3.97)	As above, less sandstone toward base, siderite nodules at base.
351.35-354.05 (2.70)	Shale, dark-gray, few silty lamination, darker toward base, grades to shale below.
354.05-357.62 (3.57)	Shale, black, carbonaceous, fissile, sparse dark-gray clay-shale beds.
<b>Cored: 357.38-367.38, Recovered: 9.92.</b>	
357.38-364.20 (6.82)	As above.
364.20-367.30 (3.10)	Clay shale, medium-gray, nonbedded, plastic in part, silty and calcareous at top, dark-gray at base.
<b>Cored: 367.38-377.38, Recovered: 9.92.</b>	
367.38-368.87 (1.49)	Shale, dark-gray to black, with abundant carbonaceous laminations and plant impressions, some coal laminations, lower boundary gradational.
368.87-377.30 (8.43)	Siltstone, light-gray sandstone, light-gray, very fine-grained, and shale, medium- to light-gray, interlaminated.
<b>Cored: 377.38-387.38, Recovered: 10.00.</b>	
377.38-387.38 (10.00)	Shale, dark-gray, silty, interlaminated and interbedded with sandstone, light-gray, very fine-grained.
<b>Cored: 387.38-397.38, Recovered: 10.05.</b>	
387.38-397.42 (10.04)	As above.
<b>Cored: 397.38-400.00, Recovered: 2.90.</b>	
397.38-400.28 (2.90)	As above.
<b>Total Depth: 400.28.</b>	

**Western Kentucky Stratigraphic Test Hole Gil 29, Muhlenberg County, Greenville Quadrangle, Carter coordinate location 6-I-28, 3050 FNL 100 FEL, Elevation: 566.00, Total Depth: 300.00.**

Interval (Feet)	Description
<b>Cored: 4.20-7.43, No Recovery.</b> 4.20-7.43 (3.23)	Coal (W. Ky. No. 9), weathered; cored too soon.
<b>Cored: 7.43-17.43, Recovered: 7.72.</b> 7.43-7.80 (0.37) 7.80-15.15 (7.35)	Coal, bright to dull, with fusain partings, weathered. Clay shale, light- to medium-gray, nonbedded, plastic at top.
<b>Cored: 17.43-27.43, Recovered: 10.35.</b> 17.43-27.43 (10.00)	Clay shale, gray, nonbedded to poorly bedded at base, plastic in part.
<b>Cored: 27.43-37.43, Recovered: 9.97.</b> 27.43-30.45 (3.02) 30.45-36.73 (6.28) 36.73-37.40 (0.67)	As above. Sandstone, fine- to very fine-grained, medium-gray, argillaceous. Shale, dark-gray, moderately fissile.
<b>Cored: 37.43-47.43, Recovered: 9.85.</b> 37.43-47.43 (10.00)	Shale, as above.
<b>Cored: 47.43-57.43, Recovered: 9.80.</b> 47.43-57.43 (10.00)	Shale, as above, sparse silty and sideritic layers and nodules.
<b>Cored: 57.43-67.43, Recovered: 9.80.</b> 57.43-67.43 (10.00)	Shale, as above.
<b>Cored: 67.43-77.43, Recovered: 10.01.</b> 67.43-77.43 (10.00)	As above.
<b>Cored: 77.43-87.43, Recovered: 10.05.</b> 77.43-87.43 (10.00)	Shale, dark-gray, fissile, sparse sideritic layers.
<b>Cored: 87.43-97.43, Recovered: 9.82.</b> 87.43-95.80 (8.37) 95.80-97.25 (1.45)	As above, darker toward base, grades to shale below. Shale, black, carbonaceous, with scattered fossils.
<b>Cored: 97.43-107.43, Recovered: 10.02.</b> 97.43-105.40 (7.97)  105.40-106.30 (0.90) 106.30-106.59 (0.29) 106.59-107.45 (0.86)	Shale, black, carbonaceous, hard but poorly bedded, sparse coal laminations, fractured. Clay shale, gray to black, poorly bedded. Coal and black shale interlaminated. Coal, bright- to dull-layered, with fusain partings and much pyrite.
<b>Cored: 107.43-117.43, Recovered: 9.95.</b> 107.43-107.67 (0.24) 107.67-112.65 (4.98)  112.65-117.37 (4.72)	Coal, as above. Clay shale, gray to medium-gray, nonbedded to poorly bedded, contains carbonaceous material and plant impressions. Shale, dark-gray, fissile, silty toward base.
<b>Cored: 117.43-127.43, Recovered: 10.15.</b> 117.43-127.43 (10.00)	Shale, gray to dark-gray, silty and sandy, flaser-bedded, with coal laminations toward base.

**Cored: 127.43-137.43, Recovered: 10.02.**

127.43-133.56 (6.13)

133.56-137.45 (3.89)

Shale, as above, with coal laminations and siderite nodules.

Shale, dark-gray, fissile.

**Cored: 137.43-147.43, Recovered: 9.60.**

137.43-147.43 (10.00)

Shale, dark-gray, sparse sideritic layers.

**Cored: 147.43-157.43, Recovered: 10.12.**

147.43-150.90 (3.47)

150.90-152.37 (1.47)

152.37-153.83 (1.46)

153.83-156.55 (2.72)

Shale, dark-gray to black, carbonaceous.

Shale, black, carbonaceous.

Coal, dull, sparse bright layers.

Clay shale, gray to medium-gray, nonbedded, plastic in part, carbonaceous at top.

**Cored: 157.43-167.43, Recovered: 10.22.**

157.43-158.47 (1.04)

158.47-160.00 (1.53)

160.00-160.65 (0.65)

160.65-163.72 (3.07)

163.72-163.85 (0.13)

163.85-167.65 (3.80)

As above.

Sandstone, medium-gray, fine-grained, argillaceous.

Shale, gray, silty, contorted.

Siltstone and shale, interlaminated.

Shale, black, carbonaceous.

Shale, dark-gray, darker toward base.

**Cored: 167.43-177.43, Recovered: 9.77.**

167.43-167.68 (0.25)

167.68-168.65 (0.97)

168.65-169.75 (1.10)

169.75-171.18 (0.90)

171.18-172.08 (2.37)

172.08-174.45 (1.82)

174.45-176.27 (0.93)

176.27-177.20 (2.37)

Shale, black to brown, sideritic and silty.

Clay shale, black, carbonaceous, plastic.

Coal, bright- to dull-layered, with fusain partings.

Shale, black, carbonaceous, poorly bedded, fusain partings at top.

Sandstone, light-gray, and shale, dark-gray, laminations and pods.

Sandstone, medium-gray, fine-grained, with dark-gray shale laminations.

Shale, dark-gray, with sideritic laminations.

Clay shale, medium-gray, nonbedded to poorly bedded.

**Cored: 177.43-187.43, Recovered: 10.17.**

177.43-181.70 (4.27)

181.70-183.07 (1.37)

183.07-184.00 (0.93)

184.00-185.75 (1.75)

185.75-186.15 (0.40)

186.15-187.60 (1.45)

As above.

Shale, dark-gray to black, carbonaceous, with siltstone laminations.

Coal, bright- to dull-banded, fusain partings.

Shale, black, carbonaceous, bone coal, and coal, interlaminated.

Shale, brown to black, sideritic, with plant impressions.

Clay shale, dark-gray to black, some plastic, bedded toward base.

**Cored: 187.43-197.43, Recovered: 10.00.**

187.43-197.43 (10.00)

Shale, dark-gray, poorly bedded, silty toward base.

**Cored: 197.43-207.43, Recovered: 10.19.**

197.43-201.63 (4.20)

201.63-207.62 (5.99)

Sandstone, light-gray, fine-grained, and shale, dark-gray, interlaminated.

Sandstone, light-gray, fine-grained, sparse dark-gray shale laminations, oil-stained.

**Cored: 207.43-217.43, Recovered: 10.05.**

207.43-209.62 (2.17)

Sandstone and shale, dark-gray, interlaminated.

209.62-210.85 (1.23)	Sandstone, light-gray, fine-grained, with dark-gray shale laminations.
210.85-212.72 (1.87)	Sandstone and shale, as above, interlaminated.
212.72-213.58 (0.86)	Sandstone, as above.
213.58-214.63 (1.05)	Sandstone and shale, as above.
214.63-217.43 (2.80)	Sandstone, as above.
<b>Cored: 217.43-227.43, Recovered: 9.82.</b>	
217.43-218.86 (4.43)	Sandstone, light-gray, fine-grained, calcareous, several large siderite layers and scattered shale clasts.
218.86-224.45 (5.59)	Shale, dark-gray, and siltstone, light-gray, interlaminated.
224.45-227.25 (2.80)	Shale, dark-gray, with scattered siltstone laminations.
<b>Cored: 227.43-237.43, Recovered: 9.90.</b>	
227.43-237.43 (10.00)	Shale, dark-gray, silty.
<b>Cored: 237.43-247.33, Recovered: 9.68.</b>	
237.43-247.33 (9.90)	Shale, as above.
<b>Cored: 247.33-256.98, Recovered: 9.98.</b>	
247.33-256.98 (9.65)	As above.
<b>Cored: 256.98-267.08, Recovered: 10.30.</b>	
256.98-267.08 (10.10)	Shale, dark-gray, fissile, micaceous, sparse siltstone laminations.
<b>Cored: 267.08-277.18, Recovered: 10.16.</b>	
267.08-271.32 (4.24)	Shale, dark-gray, scattered siltstone laminations.
271.32-271.77 (0.45)	Shale, black, carbonaceous, fissile, fossiliferous.
271.77-271.80 (0.03)	Shale, black, very calcareous and fossiliferous.
271.80-271.88 (0.08)	Shale, black, carbonaceous, bone coal and pyrite.
271.88-272.25 (0.37)	Coal, bright-banded, gypsum on cleat.
272.25-275.52 (3.27)	Underclay, medium-gray, nonbedded, silty toward base.
275.52-277.25 (1.73)	Siltstone, light-gray, and shale, medium-gray, interlaminated.
<b>Cored: 277.18-287.18, Recovered: 10.08.</b>	
277.18-287.18 (10.00)	Siltstone and shale, as above.
<b>Cored: 287.18-297.18, Recovered: 10.25.</b>	
287.18-297.18 (10.00)	Sandstone, light-gray, fine-grained, silty, and shale, interlaminated.
<b>Cored: 297.18-300.00, Recovered: 2.80.</b>	
297.18-300.00 (2.82)	Shale, dark-gray.
<b>Total Depth: 300.00.</b>	

**Western Kentucky Stratigraphic Test Hole Gil 30, Union County, Borderly Quadrangle, Carter coordinate location 13-N-20, 300 FSL 1700 FEL, Elevation: 455.00, Total Depth: 1841.05.**

Interval (Feet)	Description
<b>Cored: 19.00-30.00, Recovered: 11.05.</b>	
19.00-24.28 (5.28)	Shale, medium-gray to greenish-gray, micaceous, firm, slightly silty, small, brown weathered inclusions, base sharp; apparent dip 20°.
24.28-30.05 (5.77)	Shale, as above, unweathered, silty laminations, less silty toward base; dip 10°.
<b>Cored: 30.00-40.00, Recovered: 9.93.</b>	
30.00-30.70 (0.70)	Shale, as above, with siltstone laminations.
30.70-34.76 (4.06)	Sandstone, laminated, medium-gray, fine-grained, micaceous, and shale, dark-gray.
34.76-39.93 (5.17)	Sandstone, medium-gray, fine-grained, micaceous, with dark-gray shale laminations, dip as above.
<b>Cored: 40.00-50.00, Recovered: 9.75.</b>	
40.00-40.93 (0.93)	Sandstone and shale, as above, contorted.
40.93-41.20 (0.27)	Sandstone, as above, with shale laminations.
41.20-41.72 (0.52)	Sandstone and shale, interlaminated.
41.72-44.06 (2.34)	Sandstone, medium-gray, fine-grained, very micaceous, with dark-gray discontinuous shale laminations, contorted(?).
44.06-47.11 (3.05)	Sandstone and shale, as above, interlaminated with contorted, thick to thin shale lenses.
47.11-49.75 (2.64)	Sandstone, medium-gray, fine-grained, micaceous, with paper-thin laminations of dark-gray shale.
<b>Cored: 50.00-60.00, Recovered: 9.45.</b>	
50.00-56.12 (6.12)	Sandstone, as above, thick shale laminations and pebbles at base, base sharp.
56.12-57.93 (1.81)	Shale, gray to dark-gray, calcareous.
57.93-59.45 (1.52)	Limestone, gray to buff, finely crystalline to dense, slightly argillaceous, some fragmental; calcite-filled fractures 25° off vertical.
<b>Cored: 60.00-70.00, Recovered: 10.25.</b>	
60.00-61.95 (1.95)	Limestone, as above, vertical fractures.
61.95-63.35 (1.40)	Limestone, as above, more argillaceous, nodular.
63.35-63.82 (0.47)	Shale, medium-gray, calcareous.
63.82-64.80 (0.98)	Limestone, as above, grades to shale below.
64.80-69.75 (4.95)	Shale, medium-gray, calcareous, sparse clay-shale laminations, fractured.
69.75-70.25 (0.50)	Shale, green to greenish-gray, plastic at top.
<b>Cored: 70.00-80.00, Recovered: 10.00.</b>	
70.00-70.58 (0.58)	Limestone and shale, bedding contorted and dip.
70.58-74.10 (3.52)	Clay shale, medium-gray, calcareous, toward base.
74.10-76.75 (2.65)	Limestone, buff to gray, finely crystalline to dense, slightly argillaceous with claystone pellets and clasts, more argillaceous toward base, grades to clay shale below.
76.75-78.90 (2.15)	Clay shale, medium-gray, calcareous, contact sharp.
78.90-80.00 (1.10)	Limestone, as above, with filled fractures.

**Cored: 80.00-90.00, Recovered: 9.95.**

80.00-81.60 (1.60)  
 81.60-81.85 (0.25)  
 81.85-82.75 (0.90)  
 82.75-83.50 (0.75)  
 83.50-88.70 (5.20)

88.70-89.00 (0.30)  
 89.00-89.95 (0.95)

Limestone, light-gray to tan, dense, slightly argillaceous in part.  
 Shale, green to gray, plastic.  
 Limestone, as above.  
 Shale, as above.  
 Limestone, as above, argillaceous layers, grades to limestone and shale below.  
 Limestone and shale, as above.  
 Shale, dark-gray, calcareous, with limestone clasts.

**Cored: 90.00-100.00, Recovered: 9.85.**

90.00-97.90 (7.90)

97.90-99.85 (1.95)

Limestone, light-gray to tan to buff, dense, fragmental and pelletal in part, partly shaly.  
 Shale, dark-gray, calcareous, with limestone fragments and pellets.

**Cored: 100.00-110.00, Recovered: 9.90.**

100.00-109.90 (9.90)

Limestone, as above.

**Cored: 110.00-120.00, Recovered: 9.90.**

110.00-119.90 (9.90)

Shale, calcareous, limestone fragments and nodules, gray to greenish-gray.

**Cored: 120.00-130.00, Recovered: 7.15.**

120.00-120.85 (0.85)  
 120.85-122.25 (1.40)  
 122.25-126.15 (3.90)  
 126.15-127.15 (1.00)

Shale, as above, grades to limestone below.  
 Limestone, as above, grades to shale below.  
 Shale, gray, calcareous, grades to limestone below.  
 Limestone, light-buff, very fine-grained.

**Cored: 130.00-140.00, Recovered: 9.90.**

130.00-139.90 (9.90)

Limestone, light-gray to buff, dense, with fragments and pellets, partly shaly, and with thin beds of dark-gray shale.

**Cored: 140.00-150.00, Recovered: 10.28.**

140.00-150.28 (10.28)

As above, with irregular inclusions of grayish-green shale.

**Cored: 150.00-160.00, Recovered: 10.08.**

150.00-152.85 (2.85)  
 152.85-157.26 (4.41)

157.26-160.08 (2.82)

Limestone, as above.  
 Clay shale, green to gray, nonbedded at top to poorly bedded at base, some silty limey sections toward base.  
 Shale, medium-gray, fissile, silty, micaceous.

**Cored: 160.00-170.00, Recovered: 10.40.**

160.00-167.90 (7.90)

167.90-170.40 (2.50)

Shale, dark-gray, silty, with sparse laminations of very fine-grained, calcareous sandstone.  
 Shale, dark-gray.

**Cored: 170.00-180.00, Recovered: 10.00.**

170.00-180.00 (0.98)

Shale, dark-gray, siltstone laminations.

**Cored: 180.00-190.00, Recovered: 10.00.**

180.00-190.00 (6.51)

As above.

**Cored: 190.00-200.00, Recovered: 10.04.**

190.00-193.95 (3.95)

Shale, dark-gray, fissile.

193.95-195.82 (1.87)	Shale, calcareous, and limestone, light- to medium-gray, argillaceous, very fossiliferous.
195.82-200.04 (4.22)	Shale, dark-gray, fissile, micaceous.
<b>Cored: 200.00-210.00, Recovered: 9.99.</b>	
200.00-202.50 (2.50)	Shale, dark-gray, with sparse siltstone laminations; grades to sandstone below.
202.50-203.48 (0.98)	Sandstone, light-gray, very fine-grained, calcareous, with claystone and shale laminations.
203.48-209.99 (6.51)	Shale, dark-gray, with sparse siltstone laminations.
<b>Cored: 210.00-220.00, Recovered: 9.92.</b>	
210.00-213.96 (3.96)	As above.
213.96-216.50 (2.54)	Clay shale, very dark-gray, grades to limestone below.
216.50-219.92 (3.42)	Limestone, light-gray to tan, dense, fragmental and pelletal, green to gray, shaly in part.
<b>Cored: 220.00-230.00, Recovered: 10.10.</b>	
220.00-230.10 (10.10)	Limestone, as above, fragmental, with calcareous shale clasts.
<b>Cored: 230.00-240.00, Recovered: 10.05.</b>	
230.00-231.60 (1.60)	Limestone, tan to buff, dense to fine-grained, fractured, nodular.
231.60-236.12 (4.52)	Limestone, as above, and shale, greenish-gray to gray.
236.12-237.65 (1.53)	Limestone, as above.
237.65-240.05 (2.40)	Limestone and shale, as above.
<b>Cored: 240.00-250.00, Recovered: 9.95.</b>	
240.00-240.95 (0.95)	Limestone, as above, with bright-green shale inclusions.
240.95-241.55 (2.52)	Clay shale, gray to greenish-gray, nonbedded.
241.55-244.07 (0.93)	Shale, green to gray, poorly bedded.
244.07-245.00 (0.03)	Shale, as above, more gray than green.
245.00-245.03 (0.03)	Claystone bed, brown, plastic.
245.03-245.05 (0.02)	Shale, black, carbonaceous.
245.05-249.95 (4.90)	Shale, gray to greenish-gray, sparse nodules of limestone.
<b>Cored: 250.00-260.00, Recovered: 9.99.</b>	
250.00-252.00 (2.00)	As above.
252.00-259.99 (7.99)	Shale, dark-gray, with sparse silty lamination.
<b>Cored: 260.00-270.00, Recovered: 9.95.</b>	
260.00-269.95 (9.95)	Shale, dark-gray and light-gray siltstone laminations.
<b>Cored: 270.00-280.00, Recovered: 10.11.</b>	
270.00-272.70 (2.70)	As above.
272.70-275.00 (2.30)	Shale, dark-gray and brown, nodules of argillaceous limestone and siderite.
275.00-280.11 (5.11)	Shale, dark-gray, sparse silty laminations.
<b>Cored: 280.00-290.00, Recovered: 9.95.</b>	
280.00-289.95 (9.95)	Shale, dark-gray, with sparse silty laminations.
<b>Cored: 290.00-300.00, Recovered: 9.98.</b>	
290.00-299.98 (9.98)	As above.
<b>Cored: 300.00-310.00, Recovered: 10.03.</b>	
300.00-310.03 (10.03)	As above, with fewer siltstone laminations.

**Cored: 310.00-320.00, Recovered: 10.10.**

310.00-320.10 (10.10)

Shale, dark-gray, fissile, with sparse sideritic layers.

**Cored: 320.00-330.00, Recovered: 10.01.**

320.00-323.13 (3.13)

Shale, as above, fossiliferous (one brachiopod on bedding plane).

323.13-323.85 (0.72)

Shale, black, carbonaceous, fossiliferous.

323.85-324.00 (0.15)

Bone coal.

324.00-325.05 (1.05)

Clay shale, dark-gray to green, calcareous.

325.05-326.85 (1.80)

Limestone, brown to tan, dense to finely crystalline.

326.85-327.18 (0.36)

Shale, dark-gray.

327.18-329.12 (1.94)

Limestone, as above, argillaceous toward base.

329.12-330.01 (0.89)

Shale, dark-gray, with dolomite(?) band near top.

**Cored: 330.00-340.00, Recovered: 10.10.**

330.00-338.20 (8.20)

Limestone, light-gray to tan to brown, dense, clean to argillaceous, some birdseye-type markings.

338.20-339.55 (1.35)

Shale, dark-gray, calcareous.

339.55-340.00 (0.45)

Limestone, as above.

340.00-340.10 (0.10)

Shale, green and gray, slightly calcareous.

**Cored: 340.00-350.00, Recovered: 10.00.**

340.00-342.05 (2.05)

Clay shale, calcareous, nonbedded, green and gray, with some brown to red, mottling.

342.05-345.92 (3.87)

Shale, dark-gray, silty.

345.92-350.00 (4.08)

Sandstone, medium-gray, very fine-grained, argillaceous.

**Cored: 350.00-360.00, Recovered: 10.04.**

350.00-352.45 (2.45)

Sandstone, as above.

352.45-355.80 (3.35)

Shale, dark-gray, silty.

355.80-360.04 (4.24)

Shale, dark-gray.

**Cored: 360.00-370.00, Recovered: 10.08.**

360.00-370.08 (10.08)

Shale, very dark-gray, dolomite beds and nodules in bottom half, few fossil fragments at base.

**Cored: 370.00-380.00, Recovered: 9.93.**

370.00-379.93 (9.93)

Shale, very dark-gray to black, carbonaceous with beds and nodules of dolomite, as above, fossils scattered throughout.

**Cored: 380.00-390.00, Recovered: 10.00.**

380.00-390.00 (10.00)

As above.

**Cored: 390.00-400.00, Recovered: 10.30.**

390.00-390.55 (0.55)

As above.

390.55-390.61 (0.06)

Coal and black shale, pyrite and calcite on cleats.

390.61-392.35 (1.74)

Coal, bright-banded, with fusain partings.

392.35-393.32 (0.97)

Clay shale, medium-gray, nonbedded.

393.32-393.42 (0.10)

Shale, black, and bone coal.

393.42-400.30 (6.88)

Coal, as above, one pyrite band at 394.15-394.26.

**Cored: 400.00-410.00, Recovered: 9.75.**

400.00-403.90 (3.90)

Coal, dull to bright, with fusain partings.

403.90-404.33 (0.43)

Shale, black, carbonaceous, and bone coal, lamination of calcite.

404.33-409.75 (5.42)

Clay shale, medium-gray, nonbedded, calcareous plant impressions at top, sparse fractures at 45°.

**Cored: 410.00-420.00, Recovered: 10.15.**

410.00-418.85 (8.85)

418.85-420.15 (1.30)

Clay shale, as above, with limestone nodules toward base.  
Limestone, tan, dense, and clay shale, medium-gray.

**Cored: 420.00-430.00, Recovered: 10.10.**

420.00-420.70 (0.70)

420.70-430.10 (9.40)

Clay shale, medium-gray, and limestone, tan, dense.  
Shale, medium-gray, with sparse silty laminations, nodules, and clasts of limestone, tan, dense; more silty toward base.

**Cored: 430.00-440.00, Recovered: 10.05.**

430.00-440.05 (10.05)

Shale, dark-gray, with laminations of light-gray siltstone; sandstone, light-gray, fine-grained.

**Cored: 440.00-450.00, Recovered: 9.90.**

440.00-443.35 (3.35)

443.35-445.45 (2.10)

445.45-449.90 (4.45)

Sandstone, medium- to light-gray, fine-grained, with shale laminations.

Shale, medium- to greenish-gray, fissile.

Shale, black, carbonaceous, fissile, with pyritic nodules and laminations.

**Cored: 450.00-460.00, Recovered: 10.10.**

450.00-450.80 (0.80)

450.80-450.91 (0.11)

450.91-452.87 (1.96)

452.87-453.57 (0.50)

453.57-455.02 (1.45)

455.02-455.17 (0.15)

455.17-455.80 (0.63)

455.80-460.10 (4.30)

Shale, black, carbonaceous, with calcite veinlets.

Shale, black, coal, and bone coal.

Coal, dull to bright, with much fusain, sparse pyritic layers and pyrite on cleat.

Coal, black shale, pyritic.

Coal, as above.

Clay-shale, medium- to dark-gray.

Coal, as above, bony at base.

Clay shale, medium-gray, nonbedded, calcareous, with large white limestone nodules in lower part.

**Cored: 460.00-470.00, Recovered: 10.10.**

460.00-470.10 (10.10)

Clay shale, medium-gray, calcareous, with sparse white to light-gray limestone nodules; 45° fractures filled with calcite.

**Cored: 470.00-480.00, Recovered: 10.05.**

470.00-470.45 (0.45)

470.45-476.05 (5.60)

476.05-480.05 (4.00)

As above.

Limestone, light-gray to gray, dense to fine-grained, argillaceous layers near base.

Shale, medium-gray, with sparse silty laminations and nodules of limestone, as above.

**Cored: 480.00-490.00, Recovered: 10.02.**

480.00-488.27 (8.27)

488.27-490.02 (1.75)

Shale, medium-gray, darker toward base, with sparse silty and calcareous and nodules.

Shale, black, carbonaceous, with sparse pyrite nodules.

**Cored: 490.00-500.00, Recovered: 9.95.**

490.00-491.09 (1.09)

491.09-491.78 (0.69)

491.78-499.95 (8.17)

As above.

Shale, dark-gray, and light-gray sandstone laminations.

Sandstone, gray, finely to moderately porous, carbonaceous and argillaceous laminations.

**Cored: 500.00-510.00, Recovered: 9.97.**

500.00-506.50 (6.50)	As above, more argillaceous toward base.
506.50-509.97 (3.47)	Shale, dark-gray, sparse silty laminations.
<b>Cored: 510.00-520.00, Recovered: 10.08.</b>	
510.00-515.07 (5.07)	Shale, dark-gray, as above, darker toward base, grades to shale below.
515.07-517.07 (2.00)	Shale, black, carbonaceous, moderately fissile.
517.07-517.15 (0.08)	Limestone, brown, argillaceous, pelletal in part.
517.15-517.23 (0.08)	Shale, black, carbonaceous.
517.23-517.43 (0.20)	Limestone, as above.
517.43-518.35 (0.92)	Shale, black, as above, calcareous toward base, grades to limestone below.
518.35-519.47 (1.12)	Limestone, brown to gray, argillaceous, dense to finely crystalline, nodular at top.
519.47-519.80 (0.33)	Shale, black, carbonaceous, moderately fissile.
519.80-520.08 (0.28)	Limestone, gray, very argillaceous.
<b>Cored: 520.00-530.00, Recovered: 9.92.</b>	
520.00-520.18 (0.18)	Shale, dark-gray, and brown limestone, pelletal; transition zone.
520.18-522.81 (2.63)	Limestone, light-brown, argillaceous and pelletal at top, grades to shale below.
522.81-529.92 (7.11)	Shale, dark-gray, calcareous, sparse dendritic pattern of brown, dense limestone.
<b>Cored: 530.00-540.00, Recovered: 10.00.</b>	
530.00-536.68 (6.68)	Shale, dark-gray, sparse siltstone laminations.
536.68-538.86 (2.18)	Shale, dark-gray to very dark-gray at base.
538.86-538.89 (0.03)	Shale, black, carbonaceous, and bony coal.
538.89-540.00 (1.11)	Coal, bright-banded, abundant fusain, partings crushed, slickensided.
<b>Cored: 540.00-550.00, Recovered: 9.92.</b>	
540.00-540.56 (0.56)	Coal, moderately dull, some bright layers, grades to shale below.
540.56-540.61 (0.05)	Shale, black and very carbonaceous, grades to clay shale below.
540.61-547.83 (7.22)	Clay shale, dark-gray, nonbedded at top to poorly bedded at base, calcareous, pelletal, fractured, and slickensided.
547.83-549.92 (2.09)	Shale, dark- to medium-gray, interlaminated.
<b>Cored: 550.00-560.00, Recovered: 9.95.</b>	
550.00-550.50 (0.50)	As above.
550.50-551.15 (0.65)	Sandstone, medium-gray, fine-grained, calcareous, interlaminated with shale, medium-gray, calcareous.
551.15-554.85 (3.70)	Shale, medium-gray to dark-gray, with sparse siltstone laminations.
554.85-555.57 (0.72)	Sandstone, light-gray, fine-grained, very calcareous, sparse argillaceous laminations.
555.57-558.10 (2.53)	Shale, medium-gray to dark-gray at base.
558.10-559.95 (1.85)	Shale, dark-gray, with irregular nodules of brown, sideritic shale.
<b>Cored: 560.00-570.00, Recovered: 10.00.</b>	
560.00-570.00 (10.00)	Shale, dark-gray, with sparse siderite nodules, containing septarian fractures.
<b>Cored: 570.00-580.00, Recovered: 9.70.</b>	

570.00-575.05 (5.05)	Shale, as above; black, with vitrain laminations toward base.
575.05-576.35 (1.30)	Coal, bony, impure, grades to clay shale below.
576.35-577.90 (1.55)	Clay shale, dark-gray, calcareous.
577.90-579.70 (1.80)	Shale, dark-gray, poorly bedded, calcareous.
<b>Cored: 580.00-590.00, Recovered: 9.85.</b>	
580.00-589.85 (9.85)	Shale, dark-gray, with sparse siltstone laminations.
<b>Cored: 590.00-600.00, Recovered: 10.00.</b>	
590.00-600.00 (10.00)	Shale, dark-gray, heavily fractured.
<b>*Cored: 600.00-610.00, Recovered: 9.65.</b>	
600.00-604.80 (4.80)	Shale, as above.
*604.80-605.05 (0.25)	Shale, dark-gray to black, with vitrain layers.
*605.05-609.65 (4.60)	Shale, dark-gray, fissile.
<b>Cored: 610.00-620.00, Recovered: 10.00.</b>	
610.00-612.78 (2.78)	Shale, dark-gray to black at base.
612.78-613.03 (0.25)	Coal, bony.
613.03-620.00 (6.97)	Shale, medium- to dark-gray, moderately fissile.
<b>Cored: 620.00-630.00, Recovered: 9.81.</b>	
620.00-626.85 (6.85)	Shale, dark-gray, interlaminated with sparse irregular lenses of calcareous brown shale and light-gray, fine-grained, calcareous sandstone.
626.85-627.40 (0.55)	Limestone, brown, fine-grained, argillaceous, with lamination of dark-gray shale.
627.40-629.81 (2.41)	Shale, dark-gray, calcareous.
<b>Cored: 630.00-640.00, Recovered: 10.00.</b>	
630.00-633.20 (3.20)	Shale, dark-gray, calcareous, grades to limestone below.
633.20-635.11 (1.91)	Limestone, medium-gray, argillaceous, pelletal in part.
635.11-638.70 (3.59)	Shale, dark-gray, sandy, calcareous.
638.70-639.85 (1.15)	Shale, medium-gray, and sandstone, light-gray, fine-grained, calcareous, interlaminated.
639.85-640.00 (0.15)	Sandstone, light-gray, fine-grained, clean.
<b>Cored: 640.00-650.00, Recovered: 9.97.</b>	
640.00-643.35 (3.35)	Sandstone, as above, with sparse shale laminations, sharp base.
643.35-649.97 (6.62)	Shale, dark-gray, calcareous lenses scattered throughout.
<b>Cored: 650.00-660.00, Recovered: 10.00.</b>	
650.00-660.00 (10.00)	Shale, dark-gray, sparse calcareous siltstone laminations.
<b>Cored: 660.00-670.00, Recovered: 9.93.</b>	
660.00-669.93 (9.93)	Shale, dark-gray.
<b>Cored: 670.00-680.00, Recovered: 10.00.</b>	
670.00-675.82 (5.82)	Shale, as above, grading down to dark-gray shale.
675.82-679.15 (3.33)	Limestone, brown, very argillaceous, pelletal, contorted bedding.
679.15-680.00 (0.85)	Shale, dark-gray to greenish-gray, calcareous, with black shale pellets.

\*Core fractured and slickensided.

**Cored: 680.00-690.00, Recovered: 9.90.**

680.00-689.90 (9.90)

Shale, dark-gray, with calcareous layers.

**Cored: 690.00-700.00, Recovered: 9.90.**

690.00-695.18 (5.18)

695.18-700.00 (4.82)

As above, grading down to dark-gray siltstone.

Sandstone, light-gray, fine-grained, calcareous, with dark-gray shale laminations.

**Cored: 700.00-710.00, Recovered: 9.97.**

700.00-704.85 (4.85)

704.85-709.97 (5.12)

As above, grades to shale below.

Shale, dark-gray, sparse siltstone laminations.

**Cored: 710.00-720.00, Recovered: 9.98.**

710.00-719.98 (9.98)

Shale, medium-dark-gray, slightly silty.

**Cored: 720.00-730.00, Recovered: 9.93.**

720.00-729.93 (9.93)

Shale, as above.

**Cored: 730.00-740.00, Recovered: 10.05.**

730.00-740.05 (10.05)

As above.

**Cored: 740.00-750.00, Recovered: 9.77.**

740.00-748.85 (8.85)

748.85-749.24 (0.39)

749.24-749.53 (0.29)

749.53-749.77 (0.21)

Shale, as above, grading down to black shale.

Shale, black, carbonaceous, fissile, with horizontal calcite-filled laminations.

Coal, argillaceous and pyritic.

Underclay, medium-gray to dark-gray, carbonaceous.

**Cored: 750.00-760.00, Recovered: 10.08.**

750.00-751.55 (1.55)

751.55-760.08 (8.53)

Clay shale, as above, greenish-gray downward.

Shale, greenish-gray to medium-gray, sparse siltstone laminations.

**Cored: 760.00-770.00, Recovered: 9.98.**

760.00-769.98 (9.98)

Shale, dark-gray, sparse siltstone laminations.

**Cored: 770.00-780.00, Recovered: 10.05.**

770.00-776.34 (6.34)

776.34-780.05 (3.71)

As above, more silty toward base.

Sandstone, medium- to light-gray, fine-grained, sparse shale laminations.

**Cored: 780.00-790.00, Recovered: 10.15.**

780.00-790.15 (10.15)

Sandstone, as above, cleaner toward base.

**Cored: 790.00-800.00, Recovered: 9.90.**

790.00-799.90 (9.90)

As above.

**Cored: 800.00-810.00, Recovered: 10.00.**

800.00-810.00 (10.00)

Sandstone, as above, with concentrations of siderite nodules and coal laminations.

**Cored: 810.00-820.00, Recovered: 9.82.**

810.00-817.80 (7.80)

Sandstone, as above, with numerous shale laminations and coal laminations, calcareous towards base, basal contact sharp.

817.80-817.86 (0.06)	Shale, brown to gray, sideritic.
817.86-818.34 (0.48)	Coal, dull.
818.34-819.00 (0.66)	Shale, black, carbonaceous.
819.00-819.82 (0.48)	Shale, dark-gray, fissile.
<b>Cored: 820.00-830.00, Recovered: 10.02.</b>	
820.00-826.07 (6.07)	Shale, medium-dark-gray, calcareous, scattered limestone pellets, grades to siltstone.
826.07-830.02 (3.95)	Siltstone, medium-gray, with abundant irregular lenses of calcareous siltstone; burrowed.
<b>Cored: 830.00-840.00, Recovered: 10.16.</b>	
830.00-833.40 (3.40)	As above, bioturbated.
833.40-840.16 (6.76)	Sandstone, medium-gray, fine-grained, festooned.
<b>Cored: 840.00-850.00, Recovered: 9.95.</b>	
840.00-849.95 (9.95)	As above.
<b>Cored: 850.00-860.00, Recovered: 9.84.</b>	
850.00-858.31 (8.31)	As above, calcareous toward base.
858.31-858.47 (0.16)	Shale, black, very carbonaceous.
858.47-859.84 (1.37)	Coal, banded, abundant, fusain laminations and pyrite lenses; core crushed.
<b>Cored: 860.00-870.00, Recovered: 9.92.</b>	
860.00-861.98 (1.98)	Coal, as above.
861.98-862.10 (0.12)	Clay shale, black, very carbonaceous, with numerous vitrain laminations.
862.10-864.00 (1.90)	Underclay, medium-dark-gray, poorly bedded, grades to siltstone and shale below.
864.00-869.92 (5.92)	Siltstone, medium-gray, argillaceous, interbedded with shale, brownish-gray.
<b>Cored: 870.00-880.00, Recovered: 9.88.</b>	
870.00-879.88 (9.88)	Shale, dark-gray, moderately fissile, sparse calcareous zones.
<b>Cored: 880.00-890.00, Recovered: 10.25.</b>	
880.00-880.95 (0.95)	As above.
880.95-882.65 (1.70)	Shale, dark-gray, and interlaminated sandstone, medium-gray, fine-grained, noncalcareous, bioturbated.
882.65-889.30 (6.65)	Sandstone, medium-gray, fine-grained, burrowed toward base.
889.30-890.25 (0.95)	Sandstone and shale, as above.
<b>Cored: 890.00-900.00, Recovered: 10.06.</b>	
890.00-900.06 (10.06)	Sandstone, medium-gray, fine-grained, noncalcareous, dark-gray shale interbeds, burrowed, contorted bedding.
<b>Cored: 900.00-910.00, Recovered: 10.13.</b>	
900.00-910.13 (10.13)	As above.
<b>Cored: 910.00-920.00, Recovered: 9.90.</b>	
910.00-919.90 (9.90)	As above, partly argillaceous, coal laminations.
<b>Cored: 920.00-930.00, Recovered: 10.12.</b>	

920.00-930.12 (10.12)	As above.
<b>Cored: 930.00-940.00, Recovered: 9.70.</b>	
930.00-931.70 (1.70)	Sandstone, as above, grades to shale below.
931.70-933.30 (1.60)	Shale, dark-gray, sparse siltstone laminations at top, contorted, calcareous, fossiliferous, burrowed, basal contact sharp at a 45° angle.
933.30-935.40 (2.10)	Shale, dark-gray, moderately fissile, grades to shale below.
935.40-938.60 (3.20)	Shale, dark-gray, scattered fossils, grades to marine zone below.
938.60-939.05 (0.45)	As above, fossiliferous; marine zone.
939.05-939.70 (0.10)	Shale, dark-gray.
<b>Cored: 940.00-950.00, Recovered: 10.10.</b>	
940.00-950.10 (10.10)	Shale, medium- to dark-gray, moderately fissile, calcareous.
<b>Cored: 950.00-960.00, Recovered: 10.40(?).</b>	
950.00-960.40 (10.40)	As above, fractured, difficult to measure.
<b>Cored: 960.00-970.00, Recovered: 10.07.</b>	
960.00-961.25 (1.25)	As above, silty toward base.
961.25-970.07 (8.82)	Shale, dark-gray, and light-gray sandstone, very fine-grained, calcareous, laminated.
<b>Cored: 970.00-980.00, Recovered: 10.03.</b>	
970.00-980.03 (10.03)	Shale, dark-gray, fissile, sparse siltstone laminations, light-gray, calcareous.
<b>Cored: 980.00-990.00, Recovered: 9.80.</b>	
980.00-989.80 (9.80)	As above, with traces of siltstone laminations.
<b>Cored: 990.00-1000.00, Recovered: 9.85.</b>	
990.00-999.85 (9.85)	Shale, dark-gray, fissile.
<b>Cored: 1000.00-1010.00, Recovered: 10.00.</b>	
1000.00-1005.20 (5.20)	Shale, as above, darker toward base.
1005.20-1006.11 (0.91)	Shale, black, carbonaceous, calcareous, fossiliferous.
1006.11-1007.51 (1.40)	Shale, black, carbonaceous (marine zone).
1007.51-1008.00 (0.49)	As above (marine zone).
1008.00-1008.30 (0.30)	Shale, black, carbonaceous, and coal, bright to bony with much fusain.
1008.30-1009.44 (1.14)	Shale, dark-gray, fissile, with plant fragments, pyritized wood fragments, rooted zone.
1009.44-1010.00 (0.56)	Shale, dark-gray, abundant siltstone laminations, somewhat contorted.
<b>Cored: 1010.00-1020.00, Recovered: 10.05.</b>	
1010.00-1011.80 (1.80)	As above.
1011.80-1016.85 (5.05)	Sandstone, very fine-grained, medium-gray, argillaceous.
1016.85-1019.00 (2.15)	Sandstone and shale lamination, dark-gray to black.
1019.00-1019.65 (0.65)	Shale, dark-gray, moderately fissile.
1019.65-1020.05 (0.40)	Sandstone and shale, as above.
<b>Cored: 1020.00-1030.00, Recovered: 10.20.</b>	
1020.00-1030.20 (10.20)	Shale, dark-gray, and sandstone, gray, very fine-grained, argillaceous, laminated.

**Cored: 1030.00-1040.00, Recovered: 10.15.**

1030.00-1031.50 (1.50)

1031.50-1040.15 (8.65)

As above.

Shale, dark-gray, fissile, with sparse silty laminations; top 0.30' shows much fractured, claystone filled.

**Cored: 1040.00-1050.00, Recovered: 9.75.**

1040.00-1049.75 (9.75)

Shale, dark-gray, fissile, sparse silty laminations.

**Cored: 1050.00-1060.00, Recovered: 9.95.**

1050.00-1059.95 (9.95)

Shale, dark-gray, fissile.

**Cored: 1060.00-1070.00, Recovered: 10.00.**

1060.00-1066.97 (6.97)

1066.97-1070.00 (3.03)

As above, darker toward base, sparse brown siderite layers.

Shale, dark-gray to black, carbonaceous, sparse siderite, fractured, difficult to measure.

**Cored: 1070.00-1080.00, Recovered: 10.11.**

1070.00-1070.35 (0.35)

1070.35-1070.39 (0.04)

1070.39-1070.80 (0.41)

1070.80-1072.55 (1.75)

1072.55-1073.23 (0.68)

1073.23-1076.15 (2.60)

1076.15-1080.11 (3.96)

Shale, black, carbonaceous, with wavy, calcareous laminations (marine zone?).

Coal and bone coal.

Shale, black to dark-gray, carbonaceous, slickensided, sparse coal laminations, sharp base and at a 45° angle.

Shale, dark-gray, silty.

Limestone, brown, dense to finely crystalline, pelletal to nodular, argillaceous.

Shale, dark-gray to gray, calcareous, pelletal, fossiliferous(?).

Shale, dark- to medium-gray, and very fine-grained, calcareous sandstone interlaminated.

**Cored: 1080.00-1090.00, Recovered: 10.10.**

1080.00-1083.12 (3.12)

1083.12-1090.10 (6.98)

As above.

Shale, dark-gray, sparse silty laminations.

**Cored: 1090.00-1100.00, Recovered: 9.80.**

1090.00-1094.58 (4.58)

1094.58-1094.62 (0.04)

1094.62-1094.70 (0.08)

1094.70-1094.80 (0.10)

1094.80-1095.46 (0.66)

1095.46-1097.65 (2.19)

1097.65-1099.80 (2.15)

As above.

Shale, black, carbonaceous, with coal laminations.

Bone coal.

Shale, black, carbonaceous, and coal, rashy.

Coal, bright to dull, with much fusain, sparse calcite veins, no visible pyrite.

Shale, dark-gray, moderately fissile, plant impressions at top.

Shale, dark-gray, sparse silty laminations.

**Cored: 1100.00-1110.00, Recovered: 10.10.**

1100.00-1101.47 (1.47)

1101.47-1101.67 (0.20)

1101.67-1101.91 (0.24)

1101.91-1110.10 (8.19)

As above, darker at base.

Shale, black, and black, carbonaceous clay shale.

Shale, black, and bony coal, with calcareous veinlets.

Shale, dark-gray, moderately fissile.

**Cored: 1110.00-1120.00, Recovered: 10.10.**

1110.00-1120.10 (10.10)

Shale, dark-gray, fissile.

**Cored: 1120.00-1130.00, Recovered: 10.10.**

1120.00-1126.25 (6.25)

1126.25-1130.10 (3.85)

Shale, as above, sparse silty laminations.

Sandstone, very fine-grained, argillaceous, with dark-gray shale laminations.

**Cored: 1130.00-1140.00, Recovered: 10.05.**

1130.00-1136.20 (6.20)

1136.20-1140.05 (3.85)

Sandstone, as above.

Sandstone, fine-grained, crossbedded, porous; shale laminations.

**Cored: 1140.00-1150.00, Recovered: 10.00.**

1140.00-1150.00 (10.00)

As above.

**Cored: 1150.00-1160.00, Recovered: 9.90.**

1150.00-1159.90 (9.90)

Sandstone, as above, with dark-gray shale laminations toward base.

**Cored: 1160.00-1170.00, Recovered: 9.97.**

1160.00-1169.97 (9.97)

As above.

**Cored: 1170.00-1180.00, Recovered: 10.20.**

1170.00-1170.35 (0.35)

1170.35-1170.74 (0.39)

1170.74-1172.32 (1.58)

1172.32-1174.02 (1.70)

1174.02-1178.70 (4.68)

1178.70-1180.20 (1.50)

Sandstone, as above.

Shale, dark-gray.

Sandstone, medium- to light-gray, fine-grained, porous.

Shale, dark-gray, fractured.

Sandstone, as above, base sharp.

Shale, dark-gray.

**Cored: 1180.00-1190.00, Recovered: 9.90.**

1180.00-1180.60 (0.60)

1180.60-1182.07 (1.47)

1182.07-1189.90 (7.83)

Shale, as above.

Sandstone and shale, as above, contorted and crossbedded.

Shale, dark-gray, with sparse siltstone laminations.

**Cored: 1190.00-1200.00, Recovered: 10.10.**

1190.00-1190.80 (0.80)

1190.80-1194.37 (3.57)

1194.37-1195.00 (0.63)

1195.00-1197.95 (2.95)

1197.95-1200.10 (2.15)

As above, darker toward base, with pods of siltstone at base.

Shale, black, carbonaceous, fractured.

Limestone, medium-gray, fine-grained, argillaceous, and black carbonaceous shale, contorted.

Shale, black to dark-gray, calcareous.

Shale, dark-gray, fissile to poorly bedded, fractured and slickensided.

**Cored: 1200.00-1211.00, Recovered: 9.75.**

1200.00-1203.70 (3.70)

1203.70-1210.75 (7.05)

Shale, as above.

Shale, dark-gray, sparse siltstone and silty laminations.

**Cored: 1211.00-1221.00, Recovered: 10.00.**

1211.00-1221.00 (10.00)

Shale, dark-gray, with sparse siltstone laminations.

**Cored: 1221.00-1231.00, Recovered: 9.65.**

1221.00-1222.90 (1.90)

1222.90-1227.70 (4.80)

1227.70-1227.75 (0.05)

1227.75-1227.85 (0.10)

1227.85-1227.89 (0.04)

1227.89-1228.60 (0.71)

1228.60-1230.65 (2.05)

As above.

Shale, dark-gray to black, with siderite layers and nodules.

Shale, black, carbonaceous, with coal laminations and white limestone clasts, fossiliferous(?).

Coal, dull to bright, with fusain partings.

Pyrite band.

Coal, bright to dull, with fusain partings.

Shale, dark-gray, poorly bedded to nonbedded, plant impressions at top.

**Cored: 1231.00-1241.00, Recovered: 10.75.**

1231.00-1239.70 (8.70)	Clay shale, medium-gray, nonbedded to poorly bedded.
1239.70-1241.75 (2.05)	Shale, medium-gray, fissile to poorly bedded, sideritic.
<b>Cored: 1241.00-1251.00, Recovered: 9.75.</b>	
1241.00-1243.35 (2.35)	As above, grades to shale below.
1243.35-1248.80 (5.45)	Shale, medium- to dark-gray, with laminations of soft clay shale, grades to shale below.
1248.80-1250.35 (1.55)	Shale, dark-gray, with siltstone laminations, light-gray.
1250.35-1250.75 (0.40)	Sandstone, medium-gray, fine- to medium-grained, porous.
<b>Cored: 1251.00-1261.00, Recovered: 10.80.</b>	
1251.00-1259.00 (8.00)	Sandstone, as above, interlaminated with shale, dark-gray to black.
1259.00-1261.80 (2.80)	Shale, medium-gray, silty, hard and firm.
<b>Cored: 1261.00-1270.50, Recovered: 9.40.</b>	
1261.00-1279.40 (9.40)	Shale, dark-gray, with sparse silty laminations.
<b>Cored: 1270.50-1280.50, Recovered: 10.25.</b>	
1270.50-1273.90 (3.40)	Shale, dark-gray to black, with siderite layers, darker toward base.
1273.90-1274.14 (0.24)	Shale, black, carbonaceous, fossiliferous, grades to limestone below.
1274.14-1275.95 (1.81)	Limestone, medium- to light-gray, argillaceous and very fossiliferous.
1275.95-1276.10 (0.15)	Shale, black, fossiliferous, clay shale at base.
1276.10-1277.13 (1.03)	Coal, bright to dull, with fusain partings.
1277.13-1277.85 (0.72)	Shale, dark to black, poorly bedded, carbonaceous.
1277.85-1280.75 (2.90)	Shale, laminated, dark-gray, and sandstone, light-gray, very fine-grained.
<b>Cored: 1281.00-1291.00, Recovered: 9.90.</b>	
1281.00-1286.20 (5.20)	As above.
1286.20-1290.90 (4.70)	Shale, dark-gray, with sparse siltstone laminations.
<b>Cored: 1291.00-1301.00, Recovered: 10.00.</b>	
1291.00-1301.00 (10.00)	As above.
<b>Cored: 1301.00-1311.00, Recovered: 10.00.</b>	
1301.00-1307.00 (6.00)	As above.
1307.00-1311.00 (4.00)	Clay shale, dark-gray, fractured, poorly bedded.
<b>Cored: 1311.00-1321.00, Recovered: 9.80.</b>	
1311.00-1314.38 (3.38)	As above, limestone nodules at base.
1314.38-1318.85 (4.47)	Shale, dark-gray, with sparse siltstone laminations.
1318.85-1320.80 (1.95)	Sandstone, very fine-grained, medium-gray.
<b>Cored: 1321.00-1331.00, Recovered: 10.10.</b>	
1321.00-1328.00 (7.00)	As above, with sparse dark-gray shale laminations.
1328.00-1331.10 (3.10)	Shale, dark-gray, hard, firm, sparse siltstone laminations.
<b>Cored: 1331.00-1341.00, Recovered: 9.90.</b>	
1331.00-1340.90 (9.90)	As above, less silty and darker toward base.
<b>Cored: 1341.00-1351.00, Recovered: 10.00.</b>	
1341.00-1342.05 (1.05)	Shale, dark-gray to black, carbonaceous.

1342.05-1342.55 (0.50)	Shale, black, carbonaceous, fossiliferous, calcareous (marine zone).
1342.55-1345.22 (2.67)	Shale, black, carbonaceous, fissile, with sparse clay shale layers.
1346.22-1346.60 (0.38)	Coal, dull, bony.
1346.60-1349.90 (3.30)	Shale, dark-gray, with siltstone laminations.
1349.90-1351.00 (1.10)	Shale, dark-gray, and siltstone, light-gray, very fine-grained, laminated.
<b>Cored: 1351.00-1361.00, Recovered: 9.90.</b>	
1351.00-1353.10 (2.10)	As above.
1353.10-1360.40 (7.30)	Shale, dark-gray.
1360.40-1360.90 (0.50)	Clay shale, black, carbonaceous.
<b>Cored: 1361.00-1371.00, Recovered: 9.20.</b>	
1361.00-1361.82 (0.82)	Coal, bright to dull, with much fusain.
1361.82-1362.32 (0.50)	Clay shale, black to dark-gray, plant impressions, coal laminations.
1362.32-1365.50 (3.18)	Clay shale, dark-gray, nonbedded to poorly bedded.
1365.50-1370.20 (4.70)	Shale, dark-gray, with lens of limestone, light-gray, dense.
<b>Cored: 1371.00-1381.00, Recovered: 9.61.</b>	
1371.00-1374.62 (3.62)	As above.
1374.62-1380.61 (5.99)	Shale, dark-gray, silty.
<b>Cored: 1381.00-1391.00, Recovered: 10.00.</b>	
1381.00-1381.15 (0.15)	As above.
1381.15-1383.20 (2.05)	Shale, black, carbonaceous, bone coal, and coal, bright to dull, much fusain, interlaminated.
1383.20-1383.39 (0.19)	Shale, black, carbonaceous.
1383.39-1391.00 (7.61)	Shale, dark-gray, sparse silty and sandstone laminations, light-gray, very fine-grained.
<b>Cored: 1391.00-1401.00, Recovered: 10.30.</b>	
1391.00-1399.30 (8.30)	Shale, dark-gray, with abundant sandstone laminations, light- to medium-gray, fine-grained, more sandy toward base.
1399.30-1401.30 (2.00)	Sandstone, as above, with dark-gray shale laminations.
<b>Cored: 1401.00-1411.00, Recovered: 9.95.</b>	
1401.00-1410.95 (9.95)	Sandstone, as above, with thick black shale laminations toward base.
<b>Cored: 1411.00-1421.00, Recovered: 10.15.</b>	
1411.00-1413.95 (2.95)	Sandstone, as above.
1413.95-1418.25 (4.30)	Shale, dark-gray, with laminations and clast of sandstone.
1418.25-1421.15 (2.90)	Sandstone, medium-gray, fine-grained, with abundant shale and coal laminations.
<b>Cored: 1421.00-1431.00, Recovered: 9.50.</b>	
1421.00-1428.90 (7.90)	Sandstone, as above, very shaly at top.
1428.90-1430.50 (1.60)	Shale, dark-gray.
<b>Cored: 1431.00-1440.50, Recovered: 10.05.</b>	
1431.00-1440.50 (9.50)	As above.
<b>Cored: 1440.50-1451.00, Recovered: 9.92.</b>	

1440.50-1444.02 (3.52)	As above.
1444.02-1445.99 (1.97)	Shale, dark-gray to black, with clay shale laminations.
1445.99-1450.92 (4.93)	Shale, black, carbonaceous, with fossiliferous layers (marine zone).
<b>Cored: 1451.00-1461.00, Recovered: 9.93.</b>	
1451.00-1451.55 (0.55)	As above, contact sharp and at 45° angle.
1451.55-1451.85 (0.30)	Limestone, medium- to brownish-gray, argillaceous, fine-grained, fossiliferous, base contact at 25° (marine zone).
1451.85-1452.02 (0.17)	Shale, black, carbonaceous, and bony coal.
1452.02-1454.08 (2.06)	Shale, dark-gray, moderately fissile, no dip.
1454.08-1454.47 (0.39)	Sandstone, light-gray, fine-grained, calcareous.
1454.47-1460.93 (6.46)	Shale, dark-gray, fissile, sparse siltstone laminations.
<b>Cored: 1461.00-1471.00, Recovered: 10.10.</b>	
1461.00-1462.48 (1.48)	As above.
1462.48-1465.20 (2.72)	Shale, dark-gray, and siltstone, light-gray to brown, fine-grained, laminated.
1465.20-1471.10 (5.90)	Shale, dark-gray, with sparse siltstone laminations.
<b>Cored: 1471.00-1481.00, Recovered: 9.80.</b>	
1471.00-1476.86 (5.86)	Shale, as above.
1476.86-1480.80 (3.94)	Shale, dark-gray to black, carbonaceous.
<b>Cored: 1481.00-1491.00, Recovered: 8.20.</b>	
1481.00-1487.25 (6.25)	Shale, black to dark-gray to brown, sideritic.
1487.25-1487.33 (0.08)	Shale, black, and coal.
1487.33-1487.70 (0.37)	Coal, bright to dull, with fusain partings.
1487.70-1487.84 (0.14)	Shale, black, carbonaceous.
1487.84-1488.18 (0.34)	Coal, as above.
1488.18-1489.20 (1.02)	Clay shale, black, carbonaceous, fractured and slickensided; probably lost core here.
<b>Cored: 1491.00-1501.00, Recovered: 9.85.</b>	
1491.00-1499.04 (8.04)	As above, grading to shale, dark-gray, with nodules and lacework(?) of brown limestone and siderite.
1499.04-1499.38 (0.34)	Shale, black, carbonaceous.
1499.38-1499.75 (0.37)	Coal, bright to dull, bony at base.
1499.75-1499.85 (0.10)	Clay shale, nonbedded at top to poorly bedded at base.
<b>Cored: 1501.00-1511.00, Recovered: 9.70.</b>	
1501.00-1510.70 (9.70)	Shale, medium-gray to greenish-gray, with lacework(?) and nodules, limestone, finely crystalline, light-gray to gray to brown.
<b>Cored: 1511.00-1521.00, Recovered: 9.70.</b>	
1511.00-1512.40 (1.40)	As above.
1512.41-1518.25 (5.84)	Shale, dark-gray, with siltstone laminations.
1518.25-1520.70 (2.45)	Sandstone, medium-gray, fine-grained, with sparse argillaceous laminations.
<b>Cored: 1521.00-1531.00, Recovered: 10.10.</b>	
1521.00-1531.10 (10.10)	As above, shaly at base.
<b>Cored: 1531.00-1541.00, Recovered: 10.10.</b>	
1531.00-1541.10 (10.10)	Sandstone, as above, with shale laminations and siderite

	laminations.
<b>Cored: 1541.00-1551.00, Recovered: 10.41.</b> 1541.00-1550.75 (9.75)	Sandstone, medium-gray, fine-grained, porous to tight, clean interlaminations of dark-gray shale.
1550.75-1551.41 (0.66)	Shale, medium- to dark-gray, silty.
<b>Cored: 1551.00-1561.00, Recovered: 10.05.</b> 1551.00-1551.60 (0.60)	As above.
1551.60-1561.05 (9.45)	Shale, dark-gray, and sandstone, light-gray, fine-grained, interlaminated.
<b>Cored: 1561.00-1571.00, Recovered: 10.20.</b> 1561.00-1571.20 (10.20)	As above.
<b>Cored: 1571.00-1581.00, Recovered: 10.13.</b> 1571.00-1581.13 (10.13)	As above.
<b>Cored: 1581.00-1591.00, Recovered: 10.02.</b> 1581.00-1591.02 (10.02)	Sandstone, light-gray to brown, fine-grained, clean to argillaceous, with many laminations of medium-gray shale.
<b>Cored: 1591.00-1601.00, Recovered: 9.95.</b> 1591.00-1592.85 (1.85)	As above, grades to shale below.
1592.85-1600.95 (8.10)	Shale, dark-gray, with sparse siltstone laminations.
<b>Cored: 1601.00-1611.00, Recovered: 8.02.</b> 1601.00-1602.15 (1.15)	As above.
1602.15-1605.20 (3.05)	Sandstone, medium-gray, fine-grained, contorted bedding, with shale and carbonaceous laminations, grades to sandstone below.
1605.20-1608.00 (2.80)	Sandstone, as above.
1608.00-1609.92 (1.92)	Shale, dark-gray, with sparse siltstone laminations.
<b>Cored: 1611.00-1621.00, Recovered: 10.10.</b> 1611.00-1621.10 (10.10)	As above.
<b>Cored: 1621.00-1631.00, Recovered: 9.90.</b> 1621.00-1621.82 (0.82)	As above.
1621.82-1626.68 (4.86)	Sandstone, medium-gray, fine-grained, slightly argillaceous, sideritic layers and nodules at top, shaly at base.
1626.68-1630.90 (4.22)	Shale, dark-gray, fissile.
<b>Cored: 1631.00-1641.00, Recovered: 9.90.</b> 1631.00-1636.75 (5.75)	Shale, dark-gray, sparse siltstone laminations.
1636.75-1640.90 (4.15)	Shale, dark-gray, fissile.
<b>Cored: 1641.00-1651.00, Recovered: 10.08.</b> 1641.00-1651.08 (10.08)	Shale, as above, sparse siltstone laminations.
<b>Cored: 1651.00-1661.00, Recovered: 10.20.</b> 1651.00-1661.20 (10.20)	As above.
<b>Cored: 1661.00-1671.00, Recovered: 9.90.</b> 1661.00-1670.90 (9.90)	Shale, dark-gray.

<b>Cored: 1671.00-1681.00, Recovered: 9.93.</b> 1671.00-1680.93 (9.93)	As above.
<b>Cored: 1681.00-1691.00, Recovered: 10.25.</b> 1681.00-1691.25 (10.25)	As above, sparse siltstone laminations.
<b>Cored: 1691.00-1701.00, Recovered: 9.90.</b> 1691.00-1700.90 (9.90)	Shale, dark-gray, with sparse siltstone laminations.
<b>Cored: 1701.00-1711.00, Recovered: 10.05.</b> 1701.00-1711.05 (10.05)	As above.
<b>Cored: 1711.00-1721.00, Recovered: 10.08.</b> 1711.00-1721.08 (10.08)	As above.
<b>Cored: 1721.00-1731.00, Recovered: 9.60.</b> 1721.00-1730.60 (9.60)	As above, darker and non-silty toward base.
<b>Cored: 1731.00-1741.00, Recovered: 10.30.</b> 1731.00-1732.53 (1.53) 1732.53-1741.30 (8.77)	As above. Shale, black, carbonaceous, fissile, fossiliferous at top (marine zone).
<b>Cored: 1741.00-1751.00, Recovered: 10.00.</b> 1741.00-1743.77 (2.77) 1743.77-1744.42 (0.65) 1744.42-1744.55 (0.13) 1744.55-1744.82 (0.27) 1744.82-1751.00 (6.18)	As above, fossiliferous at base. Coal, bright to dull, with fusain. As above, bony. Clay shale, black, carbonaceous. Clay shale, dark-gray, nonbedded at top to poorly bedded toward base.
<b>Cored: 1751.00-1761.00, Recovered: 10.00.</b> 1751.00-1752.65 (1.65) 1752.65-1753.70 (1.05) 1753.70-1757.85 (4.15)  1757.85-1761.00 (3.15)	As above, grading to shale, dark-gray, silty. Shale, dark-gray, silty and sandy. Sandstone, light- to medium-gray, fine-grained, with many laminations and beds of dark-gray shale. Shale, dark-gray, with siltstone laminations.
<b>Cored: 1761.00-1771.00, Recovered: 9.98.</b> 1761.00-1770.98 (9.98)	Shale, dark-gray, and medium-gray siltstone mixture.
<b>Cored: 1771.00-1781.00, Recovered: 9.90.</b> 1771.00-1780.90 (9.90)	As above.
<b>Cored: 1781.00-1791.00, Recovered: 10.05.</b> 1781.00-1791.05 (10.05)	As above.
<b>Cored: 1791.00-1801.00, Recovered: 10.00.</b> 1791.00-1795.05 (4.05) 1795.05-1801.00 (5.95)	As above, grades to shale below. Shale, dark-gray, sparse siltstone laminations.
<b>Cored: 1801.00-1811.00, Recovered: 9.98.</b> 1801.00-1807.10 (6.10) 1807.10-1810.98 (3.88)	As above. Shale, dark-gray, with laminations of siltstone, medium-gray,

noncalcareous.

**Cored: 1811.00-1821.00, Recovered: 10.05.**

1811.00-1821.05 (10.05)

Shale, dark-gray, with sparse paper-thin laminations of siltstone, as above.

**Cored: 1821.00-1831.00, Recovered: 9.55.**

1821.00-1823.74 (2.74)

As above, but base is darker, with coal laminations, calcareous at base.

1823.74-1823.97 (0.23)

Coal, dull and bony.

1823.97-1824.90 (0.93)

Shale, medium-gray, with abundant plant impressions.

1824.90-1829.40 (4.50)

Clay shale, medium-gray, nonbedded at top to poorly bedded at base, calcareous, silty toward base.

1829.40-1830.55 (1.15)

Shale, dark-gray, silty at top.

**Cored: 1831.00-1841.00, Recovered: 9.85.**

1831.00-1831.50 (0.50)

As above.

1831.50-1836.15 (4.65)

Shale, dark-gray, interbedded with clay shale, dark-gray, poorly bedded.

1836.15-1838.80 (2.65)

Shale, dark-gray, silty.

1838.80-1840.85 (2.05)

Shale, dark-gray.

**Cored: 1841.00-1851.00, Recovered: 10.05.**

1841.00-1851.05 (10.05)

Shale, dark-gray, sparse siltstone laminations.

**Total Depth: 1841.05.**

**Western Kentucky Stratigraphic Test Hole Gil 31, Webster County, Providence Quadrangle, Carter coordinate location 3-K-21, 2400 FSL 550 FEL, Elevation: 453.00, Total Depth: 699.93.**

Interval (Feet)	Description
<b>Cored: 28.90-36.88, Recovered: 6.63.</b> 28.90-35.53 (6.63)	Shale, weathered, tan to brown at top, grading to medium-gray shale at base, moderately iron-stained.
<b>Cored: 36.88-46.88, Recovered: 9.70.</b> 36.88-46.88 (9.70)	Shale, medium-gray, fissile.
<b>Cored: 46.88-56.88, Recovered: 9.83.</b> 46.88-56.71 (9.83)	As above.
<b>Cored: 56.88-66.88, Recovered: 9.82.</b> 56.88-66.70 (9.82)	As above, somewhat darker.
<b>Cored: 66.88-76.88, Recovered: 9.77.</b> 66.88-68.20 (1.32) 68.20-68.50 (0.30) 68.50-73.01 (4.51) 73.01-73.80 (0.79) 73.80-76.65 (2.85)	As above, grades to shale below. Shale, black, carbonaceous, calcareous, fossiliferous. Shale, black, carbonaceous, fissile. Coal, bright to dull, with fusain partings. Clay shale, medium-gray, plastic, poorly bedded, plant impressions.
<b>Cored: 76.88-86.88, Recovered: 9.90.</b> 76.88-79.30 (2.42) 79.30-80.50 (1.20) 80.50-86.78 (6.28)	As above, silty, grades to siltstone below. Siltstone, light-gray, argillaceous, grades to sandstone below. Sandstone, light-gray, very fine-grained, noncalcareous, many medium-gray, argillaceous laminations.
<b>Cored: 86.88-96.88, Recovered: 9.97.</b> 86.88-90.95 (4.07) 90.95-96.85 (5.90)	Shale, dark-gray with sparse siltstone and silty laminations. Sandstone, light-gray, very fine-grained, interlaminated and interbedded with medium-gray shale.
<b>Cored: 96.88-106.88, Recovered: 10.02.</b> 96.88-101.20 (4.32) 101.20-105.55 (4.35) 105.55-106.90 (1.35)	Shale, dark-gray, with sparse siderite layers. Shale, black, carbonaceous, fissile, pyritic. Coal, bright to dull, with fusain partings and pyrite on cleat.
<b>Cored: 106.88-116.88, Recovered: 10.17.</b> 106.88-109.20 (2.32) 109.20-110.00 (0.80)  110.00-113.65 (3.65) 113.65-117.05 (3.40)	Coal, as above. Clay shale, medium-gray to gray, poorly bedded, very carbonaceous, with many plant remains. Shale, dark-gray, fissile, silty toward base. Shale, laminated, medium-gray, and light-gray siltstone.
<b>Cored: 116.88-126.88, Recovered: 9.92.</b> 116.88-117.45 (0.57) 117.45-119.62 (2.17) 119.62-121.96 (2.34) 121.96-126.80 (4.84)	As above. Sandstone, light-gray, very fine-grained, noncalcareous, tight. Shale, laminated, dark-gray, and sandstone, as above. Sandstone, medium-gray, fine-grained, with argillaceous

**Cored: 126.88-136.88, Recovered: 10.20.**  
126.88-137.08 (10.20)

lamination.

Sandstone, as above, sparse shale laminations.

**Cored: 136.88-146.88, Recovered: 9.92.**  
136.88-145.30 (8.42)  
145.30-146.80 (1.50)

As above, iron stained, porous.

Sandstone, as above, occurring as lenses in contorted, dark-gray shale.

**Cored: 146.88-156.88, Recovered: 9.87.**  
146.88-146.96 (0.08)  
146.96-154.12 (7.16)  
  
154.12-156.75 (2.63)

As above.

Sandstone, light-gray, fine-grained, with sparse argillaceous and shale laminations.

Shale, dark-gray, fissile.

**Cored: 156.88-166.88, Recovered: 9.72.**  
156.88-160.55 (3.67)  
160.55-161.95 (1.40)  
161.95-162.53 (0.58)  
162.53-165.75 (3.22)  
165.75-166.60 (0.85)

As above, darker toward base, grades to shale below.

Shale, black, carbonaceous, fissile.

Coal, dull to bright, with fusain partings.

Clay shale, medium-gray, poorly bedded, plant impressions.

Siltstone, poorly bedded, with medium-gray shale laminations.

**Cored: 166.88-176.88, Recovered: 9.89.**  
166.88-169.78 (2.90)  
169.78-170.76 (0.98)  
170.76-176.77 (6.01)

Shale, dark-gray, silty.

Siltstone, dark-gray.

Shale, dark-gray, silty.

**Cored: 176.88' - 186.88' Recovered: 10.00.**  
176.88-186.88 (10.00)

Shale, dark-gray, silty.

**Cored: 186.88-198.88, Recovered: 9.94.**  
186.88-192.42 (5.54)  
192.42-196.82 (4.40)

As above.

Sandstone, light-gray, fine-grained, sparse medium-gray shale laminations at top.

**Cored: 196.88-206.88, Recovered: 9.98.**  
196.88-206.86 (9.98)

Sandstone, light-gray, fine-grained, with shale laminations.

**Cored: 206.88-216.88, Recovered: 10.00.**  
206.88-216.88 (10.00)

Sandstone, light-gray, fine-grained, porous, noncalcareous.

**Cored: 216.88-226.88, Recovered: 9.93.**  
216.88-226.81 (9.93)

As above.

**Cored: 226.88-236.88, Recovered: 10.05.**  
226.88-236.93 (10.05)

As above.

**Cored: 236.88-246.88, Recovered: 9.90.**  
236.88-246.78 (9.90)

As above.

**Cored: 246.88-256.88, Recovered: 9.95.**  
246.88-256.83 (9.95)

As above, with few shale beds.

**Cored: 256.88-266.88, Recovered: 10.03.**

256.88-266.91 (10.03)

As above, more shale beds.

**Cored: 266.88-276.88, Recovered: 10.18.**

266.88-271.37 (4.49)

271.37-273.24 (1.87)

273.24-275.99 (2.75)

275.99-277.06 (1.07)

As above.

Shale, black, carbonaceous, fissile.

Coal, bright and dull, with fusain partings, calcite on cleat, sparse pyrite on cleat and in laminations.

Clay shale, medium-gray, firm, silty, plant impressions, vitrain lamination near top.

**Cored: 276.88-286.88, Recovered: 9.96.**

276.88-277.80 (0.92)

277.80-286.84 (9.04)

As above.

Shale, silty, or siltstone, shaly, light- to medium-gray.

**Cored: 286.88-296.88, Recovered: 9.95.**

286.88-296.83 (9.95)

As above.

**Cored: 296.88-306.88, Recovered: 9.92.**

296.88-300.80 (3.92)

300.80-306.80 (6.00)

As above, grades to shale below.

Shale, dark-gray, fissile.

**Cored: 306.88-316.88, Recovered: 9.86.**

306.88-315.05 (8.17)

315.05-316.74 (1.69)

As above, darker toward base.

Shale, black, carbonaceous, fissile.

**Cored: 316.88-326.88, Recovered: 9.90.**

316.88-317.31 (0.43)

317.31-317.60 (0.29)

317.60-317.65 (0.05)

317.65-320.25 (2.60)

320.25-325.05 (4.80)

325.05-326.78 (1.73)

As above.

Coal, bright to dull, with fusain partings.

Clay shale, black, carbonaceous, with medium-gray lenses.

Clay shale, medium-gray, nonbedded to poorly bedded, silty at top to very silty toward base.

Shale, medium-gray, with siltstone and sandstone laminations, light-gray, very fine-grained; sandstone more abundant toward base.

Sandstone, light-gray, very fine-grained, with shale laminations.

**Cored: 326.88-336.88, Recovered: 10.00.**

326.88-336.88 (10.00)

As above, fine-grained toward base.

**Cored: 336.88-346.88, Recovered: 10.22.**

336.88-343.55 (6.67)

343.55-347.10 (3.55)

As above, fine- to medium-grained, porous toward base.

Clay shale, medium- to dark-gray, carbonaceous in upper part, poorly bedded; basal 0.40' is silty.

**Cored: 346.88-356.88, Recovered: 9.75.**

346.88-347.08 (0.20)

347.08-350.47 (3.39)

350.47-350.56 (0.09)

350.56-350.80 (0.24)

350.80-352.10 (1.30)

352.10-352.32 (0.22)

As above.

Shale, medium-gray, silty.

Shale, greenish-gray, soft, plastic, poorly bedded.

Limestone, nodular, light-gray, finely crystalline, fossiliferous(?); medium-gray shale.

Limestone, tan to brown, finely crystalline, some fossils, slightly argillaceous.

Shale, medium-gray, with limestone nodules, as above;

352.32-356.63 (4.31)

fossiliferous.

Shale, dark- to medium-gray at top, grading to clay shale, medium-gray, at base, carbonaceous at top; clay shale has carbonaceous mottling.

**Cored: 356.88-366.86, Recovered: 9.87.**

356.88-360.25 (3.37)

360.25-366.75 (6.50)

Clay shale, as above, sparse, silty; base sharp and irregular.

Shale, medium-gray, fissile, silty toward base.

**Cored: 366.88-376.88, Recovered: 9.90.**

366.88-376.78 (9.90)

Shale, medium- to dark-gray, fissile, sparse silty laminations.

**Cored: 376.88-386.88, Recovered: 10.12.**

376.88-377.44 (0.56)

377.44-378.35 (0.91)

378.35-379.07 (0.72)

379.07-385.50 (6.43)

As above, grades to shale below.

Shale, black, carbonaceous, fissile.

Coal, dull to bright, much fusain, bony and pyritic.

Clay shale, medium-gray to brownish-gray, nonbedded, carbonaceous at top, silty toward base.

Shale, medium-gray, sparse silty laminations.

385.50-387.00 (1.50)

**Cored: 386.88-396.88, Recovered: 9.82.**

386.88-391.90 (5.02)

391.90-394.95 (3.05)

As above.

Limestone, nodular, light- to medium-gray, finely crystalline, and shale, medium-gray.

Limestone, light-gray to medium-gray to tan, crystalline to dense, nodular in part, fossiliferous.

394.95-396.70 (1.75)

**Cored: 396.88-406.88, Recovered: 9.97.**

396.88-399.10 (2.22)

399.10-399.45 (0.35)

Limestone, but massive, shaly at base.

Clay shale, medium- to dark-gray, calcareous at top, carbonaceous throughout.

Shale, medium-gray, silty toward base.

Shale, medium-gray, and sandstone, light-gray, very fine-grained, noncalcareous.

Sandstone, light-gray, very fine-grained, with argillaceous and medium-gray shale laminations.

399.45-401.60 (2.15)

401.60-402.40 (0.80)

402.40-406.85 (4.45)

**Cored: 406.88-416.88, Recovered: 9.92.**

406.88-414.84 (7.96)

414.84-416.80 (1.96)

As above.

Shale, dark-gray, fissile, with siderite layers.

**Cored: 416.88-426.88, Recovered: 9.92.**

416.88-417.90 (1.02)

417.90-426.80 (8.90)

Shale, dark-gray to black, carbonaceous, sparse vitrain laminations.

Shale, medium-gray, fissile.

**Cored: 426.88-436.88, Recovered: 10.10.**

426.88-436.98 (10.10)

Shale, as above, silty toward base.

**Cored: 436.88-446.88, Recovered: 10.15.**

436.88-447.03 (10.15)

Shale, medium-gray, with laminations and beds of siltstone, light-gray.

**Cored: 446.88-456.88, Recovered: 9.75.**

446.88-456.63 (9.75)

Shale, medium-gray, mixed with siltstone, light-gray, and sand-

**Cored: 456.88-466.88, Recovered: 10.05.**  
456.88-466.93 (10.05)

stone, light-gray, fine-grained.

Shale, medium- to dark-gray and siltstone, light- to medium-gray, some soft-sediment deformation.

**Cored: 466.88-476.88, Recovered: 10.07.**  
466.88-468.25 (1.37)  
468.25-468.50 (0.25)  
468.50-471.80 (3.30)

As above.

Shale, dark-gray, fossiliferous, grades to marine zone below.

Limestone, medium- to light-gray, finely crystalline, and shale, dark-gray to black, very fossiliferous, black shale at base (marine zone).

471.80-471.87 (0.07)  
471.87-472.08 (0.21)  
472.08-476.35 (4.27)  
476.35-476.95 (0.60)

Shale, black and bony coal.

Coal, dull to bright, with fusain partings.

Clay shale, medium-gray, poorly bedded, carbonaceous nodules.

Shale, medium- to dark-gray.

**Cored: 476.88-486.88, Recovered: 9.90.**  
476.88-486.78 (9.90)

Shale, dark-gray, fissile.

**Cored: 486.88-496.88, Recovered: 9.97.**  
486.88-493.65 (6.77)  
493.65-496.85 (3.20)

As above.

Shale, dark-gray, with light-gray siltstone laminations.

**Cored: 496.88-506.88, Recovered: 10.05.**  
496.88-503.75 (6.87)  
503.75-504.85 (1.10)  
504.85-506.93 (2.08)

As above.

Shale, dark-gray, and limestone, light-gray to gray, finely crystalline, highly fossiliferous.

Limestone, medium- to light-gray, finely crystalline, very fossiliferous, with shale laminations.

**Cored: 506.88-516.88, Recovered: 9.77.**  
506.88-508.96 (2.08)  
508.96-511.50 (2.54)  
511.50-516.65 (5.15)

As above, more argillaceous.

Shale, dark-gray to black, highly fossiliferous at top.

Shale, dark-gray, fissile.

**Cored: 516.88-526.88, Recovered: 10.00.**  
516.88-526.88 (10.00)

Shale, dark-gray, fissile, with sparse fine-grained, siltstone laminations.

**Cored: 526.88-536.88, Recovered: 9.89.**  
526.88-536.30 (9.42)  
536.30-536.77 (0.47)

As above.

Shale, dark-gray, interlaminated with sandstone, light-gray, fine-grained, tight, noncalcareous.

**Cored: 536.88-546.88, Recovered: 9.52.**  
536.88-540.20 (3.32)  
540.20-541.22 (1.02)  
541.22-541.60 (0.38)  
541.60-546.40 (4.80)

As above, probably cut some of coal out.

Coal, bright and dull, with a little fusain, clean.

Shale, black, carbonaceous, bone coal, with vitrain layers, base irregular.

Clay shale, medium-gray, carbonaceous at top, poorly bedded and silty toward base.

**Cored: 546.88-556.88, Recovered: 9.82.**

546.88-547.75 (0.87)

547.75-556.70 (8.95)

Clay shale, silty, as above.

Shale, medium-gray, interlaminated with siltstone, medium- to light-gray, and sandstone, light-gray, fine-grained, contorted in part.

**Cored: 556.88-566.88, Recovered: 10.10.**

556.88-566.88 (10.00)

As above.

**Cored: 566.88-576.88, Recovered: 9.95.**

566.88-567.20 (0.32)

567.20-573.67 (6.47)

573.67-573.85 (0.18)

As above, grades to shale below.

Shale, dark-gray, fissile, with siderite layers.

Sandstone band, medium-gray, fine-grained, with brown siderite layers and shale laminations.

573.85-575.20 (1.35)

Shale, dark-gray, with sparse silty laminations.

575.20-576.07 (0.87)

Shale, dark-gray, sandstone, medium-gray, fine-grained, and siderite, brown.

576.07-576.83 (0.76)

Shale, dark-gray, sparse silty lamination.

**Cored: 576.88-586.88, Recovered: 9.85.**

576.88-586.73 (9.85)

Shale, dark-gray, with light-gray siltstone lamination.

**Cored: 586.88-596.88, Recovered: 10.02.**

586.88-587.12 (0.24)

587.12-588.30 (1.18)

588.30-592.25 (3.95)

As above.

Coal, bright and dull, with fusain parting, bony at base.

Clay shale, gray to brownish-gray, carbonaceous, very carbonaceous at top, silty toward base.

592.25-596.90 (4.65)

Sandstone, light-gray, fine-grained, with medium-gray shale laminations.

**Cored: 596.88-606.88, Recovered: 10.02.**

596.88-597.85 (0.97)

597.85-604.75 (6.90)

604.75-606.90 (2.15)

As above.

Sandstone, and shale, interlaminated, as above.

Limestone, nodular, medium-gray to brownish-gray, finely crystalline, slightly fossiliferous, with irregular shale laminations.

**Cored: 606.88-616.88, Recovered: 9.92.**

606.88-607.10 (0.22)

607.10-609.03 (1.93)

609.03-611.30 (2.27)

611.30-616.80 (5.50)

As above.

Shale, dark-gray, and siltstone, light-gray, interlaminated.

Shale, dark-gray, with light-gray siltstone laminations.

Shale, dark-gray, fissile.

**Cored: 616.88-626.88, Recovered: 9.85.**

616.88-626.73 (9.85)

As above.

**Cored: 626.88-636.88, Recovered: 9.77.**

626.88-627.63 (0.75)

627.63-630.08 (2.45)

Shale, dark-gray to black, carbonaceous.

Limestone, light-gray to dark-gray, finely crystalline, argillaceous, highly fossiliferous, grades to fossiliferous black shale at base.

630.08-630.12 (0.04)

Coal, bright and dull.

630.12-630.15 (0.03)

Shale, black, carbonaceous, grades to clay shale below.

630.15-634.62 (4.47)

Clay shale, brown to dark-gray, nonbedded to poorly bedded, carbonaceous throughout.

634.62-636.65 (2.03)

Shale, dark-gray, grading to sandstone, light-gray, fine-grained, with shale laminations at base.

**Cored: 636.88-646.88, Recovered: 9.77.**

636.88-639.73 (2.85)

639.73-643.43 (3.70)

643.43-643.75 (0.32)

643.75-644.33 (0.58)

644.33-646.51 (2.18)

646.51-646.65 (0.14)

Sandstone, light-gray, fine-grained, with medium-gray shale laminations.

Shale, medium-gray, and light-gray siltstone.

Shale, black, carbonaceous, with thick coal laminations.

Coal, dull to bright, with fusain partings, some pyrite.

Shale, dark-gray, poorly bedded at top, carbonaceous.

Shale, medium-gray, and light-gray siltstone, interlaminated.

**Cored: 646.88-656.88, Recovered: 10.05.**

646.88-656.93 (10.05)

Shale, dark-gray, interlaminated and interbedded with light-gray siltstone.

**Cored: 656.88-666.88, Recovered: 9.90.**

656.88-666.78 (9.90)

Shale, dark-gray, with abundant laminations of light-gray siltstone.

**Cored: 666.88-676.88, Recovered: 9.93.**

666.88-676.81 (9.93)

As above.

**Cored: 676.88-686.88, Recovered: 10.07.**

676.88-680.80 (3.92)

680.80-686.95 (6.15)

As above, sideritic toward base.

Shale, dark-gray, with sparse siderite layers and nodules.

**Cored: 686.88-696.88, Recovered: 10.00.**

686.88-696.88 (10.00)

Shale, dark- to dark-gray, fissile.

**Cored: 696.88-699.93, Recovered: 3.05.**

696.88-699.93 (3.05)

As above.

**Total Depth: 700.00.**

**Western Kentucky Stratigraphic Test Hole Gil 32, Henderson County, Wilson Quadrangle, Carter coordinate location 15-P-23, 825' FNL 25' FEL, Elevation: 405.00, Total Depth: 885.10.**

Interval (Feet)	Description
<b>Cored: 42.30-55.40, Recovered: 9.65.</b> 42.30-49.25 (6.95)	Sandstone, medium-gray, medium- to coarse-grained, porous, argillaceous.
49.25-51.95 (2.70)	Shale, dark-gray, siderite nodules.
<b>Cored: 55.40-65.10, Recovered: 6.80.</b> 55.40-61.00 (5.60) 61.00-62.00 (1.00) 62.00-62.20 (0.20)	As above, washed out. Coal, bright- to dull-banded, with fusain partings. Clay shale, medium-gray with plant impressions.
<b>*Cored: 65.10-75.00, Recovered: 9.70.</b> 65.10-72.20 (7.10)	Clay shale, medium-gray, nonbedded to poorly bedded with limestone nodules.
72.20-74.80 (2.60)	Shale, medium-gray, silty.
<b>Cored: 75.00-85.30, Recovered: 9.75.</b> 75.00-84.75 (9.75)	Shale, dark-gray, silty.
<b>Cored: 85.30-95.00, Recovered: 10.00.</b> 85.30-95.00 (9.70)	As above.
<b>Cored: 95.00-105.00, Recovered: 9.91.</b> 95.00-99.10 (4.10) 99.10-100.35 (1.25) 100.35-100.45 (0.35) 100.45-104.91 (4.46)	As above. Clay shale, medium-gray, soft, nonbedded to poorly bedded. Coal and shale, black, carbonaceous. Coal, bright- and dull-banded, with sparse fusain partings, sparse pyrite laminations, calcite on cleat faces.
<b>Cored: 105.00-114.95, Recovered: 9.70.</b>	Coal, as above. Coal and black shale. Coal, as above. Clay shale, medium-gray, plastic. Coal, as above. Clay shale, as above. Coal, as above. Clay shale parting. Coal, as above. Clay shale, medium-gray, plastic, nonbedded at top, poorly bedded at base, becoming firm and silty at base.
105.00-106.70 (1.70)	Coal, as above.
106.70-106.75 (0.05)	Coal and black shale.
106.75-107.13 (0.38)	Coal, as above.
107.13-107.16 (0.03)	Clay shale, medium-gray, plastic.
107.16-107.30 (0.14)	Coal, as above.
107.30-107.35 (0.05)	Clay shale, as above.
107.35-108.00 (0.65)	Coal, as above.
108.00-108.10 (0.10)	Clay shale parting.
108.10-110.10 (2.00)	Coal, as above.
110.10-114.70 (4.60)	Clay shale, medium-gray, plastic, nonbedded at top, poorly bedded at base, becoming firm and silty at base.
<b>Cored: 114.95-125.00, Recovered: 10.10.</b>	Shale, dark-gray.
114.95-125.05 (10.10)	Shale, dark-gray.
<b>Cored: 125.00-135.00, Recovered: 10.00.</b>	Shale, dark-gray, with laminations and lenses of siltstone, light-gray.
125.00-135.00 (10.00)	Shale, dark-gray, with laminations and lenses of siltstone, light-gray.

\*Reamed and reset casing at 66.00.

<b>Cored: 135.00-145.00, Recovered: 9.95.</b> 135.00-144.95 (9.95)	Shale, dark-gray, with sparse siltstone laminations.
<b>Cored: 145.00-155.00, Recovered: 10.00.</b> 145.00-155.00 (10.00)	As above.
<b>Cored: 155.00-165.00, Recovered: 10.15.</b> 155.00-159.45 (4.45) 159.45-165.15 (5.70)	As above. Sandstone, medium-gray, fine- to medium-grained, porous.
<b>Cored: 165.00-175.00, Recovered: 10.12.</b> 165.00-175.12 (10.12)	Sandstone, as above, with carbonaceous and argillaceous laminations.
<b>Cored: 175.00-185.00, Recovered: 10.10.</b> 175.00-185.10 (10.10)	As above.
<b>Cored: 185.00-195.00, Recovered: 10.10.</b> 185.00-195.10 (10.10)	As above, some scattered coal clasts.
<b>Cored: 195.00-205.00, Recovered: 9.00.</b> 195.00-204.00 (9.00)	As above, some allocthonous coal; core lost is very soft sandstone and coal.
<b>Cored: 205.00-215.00, Recovered: 10.00.</b> 205.00-205.17 (0.17) 205.17-215.00 (9.83)	Sandstone and lag conglomerate. Shale, dark-gray, with sparse siderite bands.
<b>Cored: 215.00-225.00, Recovered: 9.80.</b> 215.00-224.80 (9.80)	Shale, dark-gray, as above.
<b>Cored: 225.00-235.00, Recovered: 9.95.</b> 225.00-226.20 (1.20) 226.20-226.29 (0.09) 226.29-226.42 (0.13) 226.42-226.56 (0.14) 226.56-228.96 (2.40) 228.96-229.17 (0.21) 229.17-229.36 (0.19)  229.36-230.00 (0.64) 230.00-233.80 (3.80) 233.80-234.95 (1.15)	Shale, as above. Dolomite, sideritic, brown, argillaceous, finely crystalline. Shale, as above. Limestone, sideritic, brown, argillaceous, finely crystalline. Shale, as above, darker toward base. Shale, black, carbonaceous. Limestone, medium- to dark-gray, fine-grained, argillaceous, pyritic. Shale, black, carbonaceous. Coal, bright to dull, with fusain partings; very little pyrite. Clay shale, medium-gray, nonbedded, plant impressions, calcareous.
<b>Cored: 235.00-245.00, Recovered: 10.05.</b> 235.00-238.00 (3.00) 238.00-240.13 (2.13)  240.13-242.17 (2.04) 242.17-243.13 (0.96) 243.13-245.05 (1.92)	As above, more calcareous toward base. Limestone, medium-gray, dense to fine-grained, nodular and argillaceous at top. Shale, dark-gray, silty. Limestone, medium-gray, dense to finely crystalline, as above. Shale, dark-gray, silty.
<b>Cored: 245.00-255.00, Recovered: 9.96.</b>	

245.00-254.96 (9.96)	Shale, dark-gray, silty.
<b>Cored: 255.00-265.00, Recovered: 10.10.</b> 255.00-265.10 (10.10)	As above
<b>Cored: 265.00-275.00, Recovered: 9.90.</b> 265.00-274.90 (9.90)	Shale, dark-gray, moderately fissile, micaceous.
<b>Cored: 275.00-285.00, Recovered: 10.10.</b> 275.00-285.10 (10.10)	As above.
<b>Cored: 285.00-295.00, Recovered: 9.95.</b> 285.00-294.95 (9.95)	As above.
<b>Cored: 295.00-305.00, Recovered: 9.98.</b> 295.00-304.98 (9.98)	As above.
<b>Cored: 305.00-315.00, Recovered: 10.05.</b> 305.00-315.05 (10.05)	As above, more fissile and darker.
<b>Cored: 315.00-325.00, Recovered: 10.00.</b> 315.00-325.00 (10.00)	As above, dark- to very dark-gray.
<b>Cored: 325.00-335.00, Recovered: 9.90.</b> 325.00-328.00 (3.00) 328.00-332.48 (4.48) 332.48-332.50 (0.02) 332.50-332.56 (0.06) 332.56-333.36 (0.80) 333.36-333.39 (0.03) 333.39-334.21 (0.82) 334.21-334.90 (0.69)	As above, dark-gray to black. Shale, black, carbonaceous, with sparse white calcite veins. Coal. Coal and pyrite. Coal, bright to dull, with fusain partings, calcite on cleat faces. Pyrite band. Coal, as above. Clay shale, medium-gray, nonbedded, carbonaceous, plant impressions.
<b>Cored: 335.00-345.00, Recovered: 10.05.</b> 335.00-340.35 (5.35) 340.35-345.05 (4.70)	Clay shale, as above, silty toward base. Shale, laminated, medium- to dark-gray, and siltstone, light-gray.
<b>Cored: 345.00-355.00, Recovered: 10.00.</b> 345.00-346.77 (1.77) 346.77-355.00 (8.23)	As above, with large tan, dense limestone nodules at base. Shale, dark-gray, with sparse siltstone laminations.
<b>Cored: 355.00-365.00, Recovered: 10.01.</b> 355.00-365.01 (10.01)	Shale, dark-gray, moderately fissile.
<b>Cored: 365.00-375.00, Recovered: 9.95.</b> 365.00-374.95 (9.95)	As above.
<b>Cored: 375.00-385.00, Recovered: 9.92.</b> 375.00-381.04 (6.04) 381.04-381.70 (0.66) 381.70-383.95 (2.25) 383.95-384.92 (0.97)	Shale, dark-gray, fissile, with siderite nodules. Coal, bright to dull, sparse fusain partings; doesn't look very good. Clay shale, medium-gray, nonbedded, plant impressions at top, silty toward base. Shale, laminated, dark-gray, and siltstone, medium-gray.

**Cored: 385.00-395.00, Recovered: 9.95.**

385.00-389.10 (4.10)  
 389.10-394.21 (5.11)  
 394.21-394.56 (0.35)  
 394.56-394.95 (0.39)

As above.  
 Shale, dark-gray, with sparse siltstone laminations.  
 Coal, bright to dull, with much fusain.  
 Clay shale, medium- to dark-gray, nonbedded, plastic.

**Cored: 395.00-405.00, Recovered: 10.15.**

395.00-395.75 (0.75)  
 395.75-397.30 (1.55)  
 397.30-397.85 (0.55)  
 397.85-397.95 (0.10)  
 397.95-398.60 (0.65)  
 398.60-399.58 (0.98)

As above.  
 Shale, dark-gray.  
 Shale, black, carbonaceous, bone coal, and coal.  
 Clay shale, medium- to dark-gray, plastic.  
 Clay shale, medium- to dark-gray, poorly bedded.  
 Shale, dark-gray, with siltstone, sandstone laminations, laminations more abundant toward base.  
 Sandstone, medium-gray, fine-grained, sparse shale laminations.

399.58-405.15 (5.57)

**Cored: 405.00-415.00, Recovered: 10.00.**

405.00-415.00 (10.00)

As above.

**Cored: 415.00-425.00, Recovered: 9.90.**

415.00-415.95 (0.95)  
 415.95-421.95 (6.00)  
 421.95-424.30 (2.35)  
 424.30-424.90 (0.60)

As above.  
 Shale, dark-gray, trace siltstone.  
 Shale, dark-gray, silty.  
 Shale, dark-gray, moderately fissile.

**Cored: 425.00-435.00, Recovered: 9.97.**

425.00-434.97 (9.97)

Shale, dark-gray, fissile, sparse sideritic layers.

**Cored: 435.00-445.00, Recovered: 10.20.**

435.00-445.20 (10.20)

As above.

**Cored: 445.00-455.00, Recovered: 9.70.**

445.00-449.55 (4.55)  
 449.55-452.31 (2.76)  
 452.31-452.96 (0.65)  
 452.96-454.10 (1.14)  
 454.10-454.70 (0.60)

As above, darker toward base.  
 Shale, black, carbonaceous.  
 As above, fossiliferous.  
 Coal, bright, some fusain partings.  
 Clay shale, dark-gray, carbonaceous at top, poorly bedded.

**Cored: 455.00-465.00, Recovered: 10.30.**

455.00-456.75 (1.75)  
 456.75-462.72 (5.97)  
 462.72-465.30 (2.58)

As above.  
 Shale, medium-gray, silty, grades to shale below.  
 Shale, medium-gray, sandy.

**Cored: 465.00-475.00, Recovered: 10.05.**

465.00-471.87 (6.87)  
 471.87-475.05 (3.18)

As above.  
 Sandstone, medium-gray, fine-grained, argillaceous, coal laminations.

**Cored: 475.00-485.00, Recovered: 10.00.**

475.00-485.00 (10.00)

As above, with sparse thick shale laminations.

**Cored: 485.00-495.00, Recovered: 9.95.**

485.00-494.95 (9.95)

As above, more argillaceous, more shale laminations.

**Cored: 495.00-505.00, Recovered: 10.00.**

495.00-497.65 (2.65)

497.65-505.00 (7.35)

Shale, dark-gray, silty.

Shale, dark-gray.

**Cored: 505.00-515.00, Recovered: 10.15.**

505.00-515.15 (10.15)

As above.

**Cored: 515.00-525.00, Recovered: 9.90.**

515.00-522.66 (7.66)

522.66-522.75 (0.09)

522.75-524.90 (2.15)

As above, darker at base.

Siderite layers.

Shale, black, carbonaceous, fissile.

**Cored: 525.00-535.00, Recovered: 10.00.**

525.00-525.70 (0.70)

525.70-525.72 (0.02)

525.72-530.01 (4.29)

530.01-530.10 (0.09)

530.10-530.30 (0.20)

530.30-530.55 (0.25)

530.55-534.30 (3.75)

534.30-535.00 (0.70)

As above.

Pyrite layers.

Coal, bright to dull, with fusain partings and pyrite laminations, calcite-filled fractures.

Pyrite layers or nodule.

Coal, as above.

Coal, black shale, and bone coal.

Clay shale, dark- to medium-gray, poorly bedded to nonbedded, plant impressions in upper part.

Shale, black, carbonaceous, with calcite vein at top.

**Cored: 535.00-545.00, Recovered: 10.00.**

535.00-535.32 (0.32)

535.32-535.40 (0.08)

535.40-535.81 (0.41)

535.81-536.01 (0.20)

536.01-536.80 (0.79)

536.80-539.54 (2.74)

539.54-545.00 (5.46)

As above.

Coal and black shale.

Coal, bright to dull, with fusain partings.

Shale, black, carbonaceous.

Coal, as above.

Clay shale, medium-gray, poorly bedded, carbonaceous at top.

Shale, medium- to dark-gray, fissile.

**Cored: 545.00-555.00, Recovered: 9.88.**

545.00-553.90 (8.90)

553.90-554.88 (0.98)

Shale, as above, dark- to very dark-gray, calcareous at base.

Shale, black, carbonaceous.

**Cored: 555.00-565.00, Recovered: 9.90.**

555.00-556.70 (1.70)

556.70-556.97 (0.27)

556.97-557.22 (0.25)

557.22-564.90 (7.68)

As above.

Limestone, medium-gray, finely crystalline, argillaceous.

Shale, black, carbonaceous, contact sharp.

Shale, dark-gray, fissile.

**Cored: 565.00-572.00, Recovered: 7.00.**

565.00-567.90 (2.90)

567.90-568.97 (1.07)

568.97-569.20 (0.23)

569.20-569.30 (0.10)

569.30-569.48 (0.18)

569.48-569.55 (0.07)

569.55-569.67 (0.12)

569.67-570.00 (0.33)

As above.

Shale, black, carbonaceous, grades to limestone below.

Limestone, medium-gray, finely crystalline, argillaceous, grades to shale below.

Shale, black, as above, sharp.

Limestone, as above, base sharp.

Shale, black, grades to limestone below.

Limestone, as above, very fossiliferous, grades to clay shale below.

Clay shale, black, very carbonaceous.

570.00-572.00 (2.00)	Clay shale, medium-gray, nonbedded, slickensided.
<b>Cored: 572.00-576.00, Recovered: 4.10.</b> 572.00-576.10 (4.10)	Shale, medium-gray, fissile.
<b>Cored: 576.00-586.00, Recovered: 9.50.</b> 576.00-585.50 (9.50)	Shale, as above, grading to shale, dark- to very dark-gray, with siderite nodules and layers.
<b>Cored: 586.00-596.00, Recovered: 10.15.</b> 586.00-587.20 (1.20) 587.20-587.87 (0.67)	As above, grades to limestone below. Limestone, medium-gray, finely crystalline, argillaceous and fossiliferous.
587.87-592.10 (4.23)	Shale, black, carbonaceous, fissile.
592.10-592.25 (0.15)	As above, calcareous, carbonaceous, fossiliferous.
592.25-594.34 (2.09)	Coal, bright and dull, with fusain partings.
594.34-595.35 (1.01)	Clay shale, very dark-gray to black, carbonaceous.
595.35-596.15 (0.80)	Shale, dark-gray to black, carbonaceous.
<b>Cored: 596.00-606.00, Recovered: 9.90.</b> 596.00-596.95 (0.95) 596.95-604.35 (7.40)	As above, with coal laminations, grades to shale below. Shale, medium- to dark-gray, moderately fissile; top is poorly bedded, slickensided, plant impression.
604.35-605.80 (1.45)	Shale, dark-gray, silty.
<b>Cored: 606.00-616.00, Recovered: 10.10.</b> 606.00-610.10 (4.10) 610.10-613.15 (3.05)	As above, silty to very silty. Sandstone, medium-gray, fine-grained, with dark-gray shale lamination.
613.15-616.10 (2.95)	Sandstone, fine- to medium-grained, porous.
<b>Cored: 616.00-626.00, Recovered: 10.00.</b> 616.00-626.00 (10.00)	As above, clean.
<b>Cored: 626.00-636.00, Recovered: 10.10.</b> 626.00-636.00 (10.00)	As above.
<b>Cored: 636.00-646.00, Recovered: 10.05.</b> 636.00-646.00 (10.00)	As above.
<b>Cored: 646.00-656.00, Recovered: 9.95.</b> 646.00-652.75 (6.75) 652.75-655.95 (3.20)	As above. Shale, dark-gray, fissile.
<b>Cored: 656.00-666.00, Recovered: 9.95.</b> 656.00-665.95 (9.95)	As above.
<b>Cored: 666.00-676.00, Recovered: 10.03.</b> 666.00-676.03 (10.03)	As above.
<b>Cored: 676.00-686.00, Recovered: 10.15.</b> 676.00-678.18 (2.18) 678.18-678.20 (0.02) 678.20-679.28 (1.08)	As above. Bone coal. Coal, bright to dull, with fusain partings.

679.28-681.40 (2.12)	Clay shale, medium-gray, silty, hard; black shale lenses, plant impressions at top.
681.40-683.45 (2.05)	Shale, dark-gray, fissile.
683.45-686.15 (2.70)	Clay shale, medium-gray, poorly bedded to nonbedded, plastic in part.
<b>Cored: 686.00-696.00, Recovered: 9.95.</b>	
686.00-686.16 (0.16)	Limestone, brown, finely crystalline, argillaceous and fossiliferous, with small amount of gray clay shale on top.
686.16-690.25 (4.09)	Limestone, light-gray, finely crystalline, irregular shale laminations, sparsely fossiliferous.
690.25-690.63 (0.38)	Limestone, brown to light-gray, finely crystalline, slightly argillaceous, fossiliferous.
690.63-695.95 (5.32)	Shale, dark-gray, very dark-gray at base, with plant impressions.
<b>Cored: 696.00-706.00, Recovered: 9.92.</b>	
696.00-696.25 (0.25)	Shale, as above, plant impressions.
696.25-696.30 (0.05)	Bone coal and black carbonaceous shale.
696.30-698.33 (2.03)	Coal, dull, some bright, much fusain, pyritic.
698.33-705.70 (7.37)	Clay shale, carbonaceous at top, medium-gray, grading to shale at base, grades to limestone.
705.70-705.92 (0.22)	Limestone, light-brown to gray, finely crystalline, fossiliferous, slightly argillaceous.
<b>Cored: 706.00-716.00, Recovered: 10.30.</b>	
706.00-706.67 (0.67)	Limestone, as above, fossiliferous, grades to shale below.
706.67-707.20 (0.53)	Shale, black, carbonaceous, fossiliferous, grades to limestone.
707.20-710.90 (3.70)	Limestone, brown to gray, finely crystalline, argillaceous and fossiliferous, grades to shale below.
710.90-711.45 (0.55)	Shale, black, as above, grades to limestone below.
711.45-714.23 (2.78)	Limestone, as above, grades to shale below.
714.23-714.50 (0.27)	Shale, black, as above, grades to shale below.
714.50-716.30 (1.80)	Shale, dark-gray to black, fissile.
<b>Cored: 716.00-726.00, Recovered: 9.70.</b>	
716.00-725.70 (9.70)	As above.
<b>Cored: 726.00-736.00, Recovered: 9.70.</b>	
726.00-732.30 (6.30)	As above.
732.30-734.92 (2.62)	Coal, bright to dull, with fusain partings, rasy at top.
734.92-735.70 (0.78)	Shale, dark-gray, with plant impressions, coaly and carbonaceous at top.
<b>Cored: 736.00-746.00, Recovered: 10.04.</b>	
736.00-744.20 (8.20)	Shale, dark-gray, fissile.
744.20-745.50 (1.30)	Sandstone, brown, fine-grained, argillaceous.
745.50-746.04 (0.54)	Sandstone, light-gray, fine-grained.
<b>Cored: 746.00-756.00, Recovered: 10.10.</b>	
746.00-754.40 (8.40)	Sandstone, as above, with shale laminations.
754.40-756.10 (1.70)	Shale, dark-gray, with siltstone lamination, light-gray.
<b>Cored: 756.00-766.00, Recovered: 10.00.</b>	
756.00-766.00 (10.00)	As above.

**Cored: 766.00-776.00, Recovered: 10.00.**

766.00-767.04 (1.04)  
 767.04-768.05 (1.01)  
 768.05-774.18 (6.13)

774.18-775.10 (0.92)  
 775.10-775.98 (0.88)

As above.

Coal, bright and dull, with fusain partings, pyrite on cleat faces.  
 Shale, medium-gray, with siltstone and light-gray sandstone laminations.

Coal, dull to bright, with fusain partings.

Clay shale, medium-gray, nonbedded at top to poorly bedded at base, dark and very carbonaceous at top, plant impressions throughout.

**Cored: 776.00-786.00, Recovered: 10.05.**

776.00-786.05 (10.05)

Shale, dark-gray, with siltstone laminations, medium-gray, and sandstone laminations, medium-gray, fine-grained.

**Cored: 786.00-796.00, Recovered: 10.20.**

786.00-790.03 (4.03)  
 790.03-795.50 (5.47)  
 795.50-795.61 (0.11)  
 795.61-796.20 (0.59)

As above.

Sandstone, medium-gray, fine-grained, porous.

Shale, dark-gray.

Sandstone, as above.

**Cored: 796.00-806.00, Recovered: 9.90.**

796.00-804.82 (8.82)  
 804.82-805.73 (0.91)  
 805.73-805.90 (0.17)

As above, with dark-gray shale lamination.

Shale, dark-gray, and sandstone, as above, interlaminated.

Sandstone, as above.

**Cored: 806.00-816.00, Recovered: 9.83.**

806.00-807.13 (1.13)

807.13-807.25 (0.12)  
 807.25-808.14 (0.89)  
 808.14-812.56 (4.42)

812.56-813.26 (0.70)  
 813.26-815.83 (2.57)

Shale, as above, interlaminated with sandstone, as above, with coal laminations, contorted.

Lag conglomerate.

Limestone, calcareous, medium-gray, fine-grained.

Shale, dark-gray, with sparse layers of siltstone and sandstone, as above.

Coal, dull, some bright, with fusain partings, calcite veins at base.

Clay shale, very dark-gray, poorly bedded, carbonaceous, slickensided, with plant impression at top.

**Cored: 816.00-825.00, Recovered: 7.75.**

816.00-819.15 (3.15)

819.15-823.75 (4.60)

As above, grades to clay shale below, as above, medium-gray, grades to shale below.

Shale, medium- to dark-gray, somewhat fissile.

**Cored: 825.00-835.00, Recovered: 9.75.**

825.00-834.75 (9.75)

Shale, dark-gray, fissile.

**Cored: 835.00-845.00, Recovered: 10.07.**

835.00-844.22 (9.22)  
 844.22-845.07 (0.85)

As above, even darker toward base.

Coal, dull and bright, with much fusain, pyrite on cleat.

**Cored: 845.00-855.00, Recovered: 10.05.**

845.00-845.25 (0.25)  
 845.25-847.70 (2.45)

847.70-855.05 (7.35)

Coal, as above.

Clay shale, medium- to dark-gray, poorly bedded, with plant impression.

Shale, dark-gray, fissile, sparse siltstone laminations.

**Cored: 855.00-865.00, Recovered: 9.80.**

855.00-864.80 (9.80)

Shale, dark-gray, with sparse siltstone laminations.

**Cored: 865.00-875.00, Recovered: 9.75.**

865.00-874.75 (9.75)

As above.

**Cored: 875.00-885.00, Recovered: 10.10.**

875.00-885.10 (10.10)

As above.

**Total Depth: 885.10.**

**APPENDIX B: INDEX TO COALS AND LIMESTONES  
FOR WESTERN KENTUCKY STRATIGRAPHIC TEST HOLES**

	<b>Depth to Base (Feet)</b>		<b>Depth to Base (Feet)</b>
<b>Test Hole Gil 1</b>		Beulah Ls.?	313
Lewisport Ls.	50	Curllew Ls.?	331
Lead Creek Ls.	119	Dunbar coal?	514
Lead Creek Ls.	143		
Dunbar coal	150		
<b>Test Hole Gil 2</b>		<b>Test Hole Gil 10</b>	
Colchester coal?	36	Davis (W. Ky. No. 6) coal	+ 10*
Davis (W. Ky. No. 6) coal	69	Curllew Ls.?	149
Yeargins Ls.	72	Mining City coal?	162
Lewisport coal	307	Lead Creek Ls.	293
Lead Creek Ls.	447		
Dunbar coal	453	<b>Test Hole Gil 11</b>	
<b>Test Hole Gil 3</b>		Flint Springs Chert	0*
Lewisport coal	66	Mining City coal	118
Lead Creek Ls.	155	Lead Creek Ls.?	197
Dunbar coal	157	Dunbar coal?	236
<b>Test Hole Gil 4</b>		<b>Test Hole Gil 12</b>	
Deanefield coal	104	Curllew Ls.	+ 10*
<b>Test Hole Gil 5</b>		Mining City coal	40
Yeargins Ls.	0*	"No. 4a" coal	64
Mining City coal	165	Lead Creek Ls.	147
Elm Lick coal?	222	Dunbar coal	159
Lead Creek Ls.	332	<b>Test Hole Gil 13</b>	
Hawesville coal?	563	Curllew Ls.	56
<b>Test Hole Gil 6</b>		Mining City coal	66
Lead Creek Ls.	43	"No. 4a" coal	123
Deanefield coal	228	Lead Creek Ls.	166
Base Pennsylvanian	410	"Cates" coal	170
<b>Test Hole Gil 7</b>		Dunbar coal	198
Fusulina Chert Ls.	+ 10*	<b>Test Hole Gil 14</b>	
Elm Lick coal	110	Springfield (W. Ky. No. 9) coal	0*
<b>Test Hole Gil 8</b>		Ruff (W. Ky. No. 8b) coal	85
Lead Creek Ls.	17	"S" coal?	179
Aberdeen coal	154	Dekoven (W. Ky. No. 7) coal?	206
Deanefield coal?	268	Davis (W. Ky. No. 6) coal?	242
<b>Test Hole Gil 9</b>		Beulah Ls.	300
Springfield (W. Ky. No. 9) coal	28	Lead Creek Ls.	512
Ruff (W. Ky. No. 8b) coal	94	<b>Test Hole Gil 15</b>	
Schultztown coal	116	Well (W. Ky. No. 8) coal	41
		"S" coal	88
		Dekoven (W. Ky. No. 7) coal	140
		Davis (W. Ky. No. 6) coal	176
		Beulah Ls.	264
		Curllew Ls.	375

\*Base of unit exposed in nearby outcrop.

\*Base of unit exposed in nearby outcrop.

	Depth to Base (Feet)		Depth to Base (Feet)
Mannington (W. Ky. No. 4) coal	397	<b>Test Hole Gil 22</b>	
Bell (W. Ky. No. 1b) coal	759	Foster coal	215
<b>Test Hole Gil 16</b>		<b>Test Hole Gil 23</b>	
Beulah Ls.	4	Yeargins Ls.	29
Curlew Ls.	36	Beulah Ls.	175
Mannington (W. Ky. No. 4) coal	70	U. Lead Creek Ls.	333
Empire coal	133	M. Lead Creek Ls.	351
Lead Creek Ls.	181	L. Lead Creek Ls.	369
Dunbar coal	195	Dunbar coal?	390
<b>Test Hole Gil 17</b>		<b>Test Hole Gil 24</b>	
Davis (W. Ky. No. 6) coal	48	Curlew Ls.	22
Beulah Ls.	173	Mining City coal?	80
Curlew Ls.	229	Dunbar coal?	141
Mannington (W. Ky. No. 4) coal	249	Bell (W. Ky. No. 1b) coal?	533
Empire coal	280	<b>Test Hole Gil 25</b>	
Dunbar coal?	356	Davis (W. Ky. No. 6) coal	100
<b>Test Hole Gil 18</b>		Yeargins Ls.	104
Davis (W. Ky. No. 6) coal	44	Beulah Ls.	232
Curlew Ls.	281	<b>Test Hole Gil 26</b>	
Mannington (W. Ky. No. 4) coal	296	Lewisport coal	161
Dunbar coal	340	<b>Test Hole Gil 27</b>	
<b>Test Hole Gil 19</b>		Springfield (W. Ky. No. 9) coal	20
Springfield (W. Ky. No. 9) coal	7	Ruff (W. Ky. No. 8b) coal	108
Ruff (W. Ky. No. 8b) coal	94	Well (W. Ky. No. 8) coal	147
Well (W. Ky. No. 8) coal	127	"S" coal	210
Davis (W. Ky. No. 6) coal	231	Davis (W. Ky. No. 6) coal	241
Beulah Ls.?	282	Yeargins Ls.	244
<b>Test Hole Gil 20</b>		Beulah Ls.?	344
Davis (W. Ky. No. 6) coal	0*	Lead Creek Ls.?	446
Bancroft coal	110	Bell (W. Ky. No. 1b) coal?	832
Curlew Ls.	191	<b>Test Hole Gil 28</b>	
Mannington (W. Ky. No. 4) coal	201	U. Lead Creek Ls.	18
Empire coal?	254	M. Lead Creek Ls.	43
Lead Creek Ls.	295	L. Lead Creek Ls.	70
Dunbar coal	321	Dunbar coal	79
Bell (W. Ky. No. 1b) coal?	654	<b>Test Hole Gil 29</b>	
<b>Test Hole Gil 21</b>		Springfield (W. Ky. No. 9) coal	5
Baker (W. Ky. No. 13) coal	1	Ruff (W. Ky. No. 8b) coal	106
Bankston Fork Ls.	13	Well (W. Ky. No. 8) coal	152
Providence Ls.	27	"S" coal?	183
Herrin (W. Ky. No. 11) coal	29	Davis (W. Ky. No. 6) coal	272
Springfield (W. Ky. No. 9) coal	92		
Schultztown coal	156		
Davis (W. Ky. No. 6) coal	256		

\*Base of unit exposed in nearby outcrop.

\*Base of unit exposed in nearby outcrop.

	<b>Depth to Base (Feet)</b>		<b>Depth to Base (Feet)</b>
<b>Test Hole Gil 30</b>		Lead Creek Ls.?	604
Mauzy Fm.	389	Lead Creek Ls.?	627
Sturgis Fm.	389		
Geiger Lake coal?	1276	<b>Test Hole Gil 32</b>	
Projected depth to base of Sturgis Fm.	2275	Wheatcroft (W. Ky. No. 13a) coal	61
		Baker (W. Ky. No. 13) coal	100
<b>Test Hole Gil 31</b>		Springfield (W. Ky. No. 9) coal	230
Springfield (W. Ky. No. 9) coal	10	Buff (W. Ky. No. 8b) coal	332
Ruff (W. Ky. No. 8b) coal	73	Well (W. Ky. No. 8) coal	381
Well (W. Ky. No. 8) coal	105	"S" coal	452
"S" coal	162	Davis (W. Ky. No. 6) coal	525
Davis (W. Ky. No. 6) coal	273	Curlew Ls.?	686
Beulah Ls.	391	Mannington (W. Ky. No. 4) coal?	696
Curlew Ls.	468	Empire Ls.?	705
Empire Ls.?	504	Empire coal?	732



