

APR 2 1953



Mingo Land Company No. 1 GW(954) Well.

Stafford District, Mingo County, W. Va.  
 By Columbian Carbon Company, Charleston, W. Va.  
 Located - Turkey Creek. Lat. 29 mi S. of 37°35' Long. 4.6 mi W. of 81°50'  
 Gilbert Quadrangle, SC.  
 Elevation 1272'±.  
 Permit - Mingo 134

Drilling Commenced May 3, 1947; completed February 20, 1948.  
 Shot Dec. 10, 1947 at 3636' to 3671' SLM with #235 gelatin.

~~Gas Well~~; Dry hole.

Fresh water 29' hole full.

16" casing, 20' 6" pulled; 13" 3/8" 48#, 476' 9" pulled; 8-1/4" 24#, 2033' 1"; 7" 23#, 3176' 4" pulled; coal was encountered at 28' 1/4" and 1526' 1/2".  
 Samples based on samples from 0 to 5725'.  
 Examined by Russell R. Flowers.

*Remk*

Top Bottom Thickness

Pottsville Formation, 1645, plus, Feet

Top	Bottom	Thickness	Description
5	24	19	Sandstone, dark yellowish orange to moderate yellowish-brown, medium- to coarse-grained, some fine grains, sub-angular to subrounded, chloritic, micaceous; some of the grains are rock fragments; contains considerable weathered iron oxides and some argillaceous material
24	29	5	Coal, 40%; sandstone, grayish-yellow, fine- to medium-grained, contains mica, chlorite, iron oxide and rock fragments, 60% (coal 28'-29' from driller's log)
29	33	4	Sandstone, light-gray, medium- to very coarse grained, some fine grains, some granules, poorly sorted, glauconitic, contains chlorite and black (shaly, carbonaceous) material as matrix, subangular to subrounded; a large amount of dark to dusky yellowish brown, sideritic shale and siderite (probably from concretions)
33	49	16	Sandstone, light-gray, fine to very fine grained (with medium to very coarse grains and some granules at the bottom), very silty, contains much chlorite and siderite (with medium- to dark-gray, highly micaceous, carbonaceous, shaly streaks); a large amount of dark to dusky yellowish brown siderite at the bottom
49	62	13	Siltstone to shale, medium dark to dark gray (with brownish-black to black, carbonaceous streaks), highly micaceous, moderately sideritic
62	82	20	Shale, medium dark gray to grayish-black, silty in part
82	96	14	No samples
96	137	41	Shale, dark-gray to grayish-black; small amount of light- to medium-gray, fine to very fine sandstone at the bottom
137	151	14	Sandstone, light-gray at the top to brownish-gray (highly sideritic) at the bottom, very fine grained, some fine grains, contains chlorite, kaolinitic material, some mica, and a large amount of black, shaly, carbonaceous material, some black, carbonaceous shale at the bottom
151	156	5	Shale, black, carbonaceous 60%; trace of coal; shale olive-gray and brownish-gray to medium- and dark-gray, soft, 40%

156	161	5	Siltstone and some shale, medium- to dark-gray, olive-gray to olive- and brownish-black; some black, carbonaceous
160	194	3 $\frac{1}{2}$	Sandstone, light-gray (with some black, carbonaceous streaks), very fine to fine-grained; sideritic, contains mica, chlorite
194	214	20	Shale, medium dark to dark-gray, some olive-black to grayish-black; some dark to dusky yellowish brown siderite
214	225	11	Siltstone, medium to medium dark gray, some olive-gray; shale, medium dark gray to black (carbonaceous), sandy in part
225	235	10	Shale, medium dark to dark-gray, olive-gray to olive-black, silty in part
235	240	5	Siltstone (shaly), medium dark to dark-gray (with grayish-black to black, carbonaceous streaks) to sandstone (very fine), medium light to medium dark gray, olive-gray to brownish-gray
240	267	27	Sandstone, light-gray to light brownish-gray, very fine grained, fine to very coarse grained from 257 to 262', chloritic, micaceous, somewhat sideritic and kaolinitic; contains a moderate to small amount of dark-gray to black carbonaceous shale at the bottom, very silty, moderately sideritic, and a large amount of medium dark gray <del>and</del> to grayish-black shale
267	273	6	Sandstone (very fine) to siltstone, medium light to medium dark gray with dark-gray to black, shaly, carbonaceous streaks, kaolinitic, chloritic, micaceous; contains a small amount of siderite
273	291	18	Sandstone, white to light-gray, very fine to coarse-grained, poorly sorted, some chloritic and carbonaceous, shaly material, micaceous and sideritic in part
291	299	8	Sandstone (very fine) to siltstone, light- to medium-gray (with medium dark gray to grayish-black, micaceous, shaly streaks); depth corrected to 290 from 299
290	302	12	Sandstone, light-gray, fine to very fine grained, contains kaolinitic and carbonaceous material, chlorite, mica, and siderite; a large amount of siltstone to shale, medium dark gray to black, some olive-gray to olive black
302	358	56	Shale to siltstone, medium dark gray and olive-gray to grayish-black; small amount of dark to dusky yellowish brown (highly sideritic)
358	404	46	Sandstone, light-gray (with green, chloritic, brownish-black sideritic and dark-gray to black, shaly spots), fine grained, some medium grains, subangular to subrounded; contains some muscovite and a few black, carbonaceous streaks at the bottom
404	491	87	Sandstone, white to very light gray with some dark-gray to black, carbonaceous, shaly specks, very fine grained, contains some chlorite, a few brown (sideritic) spots; 465-469 and 471 to 476, some dusky yellowish brown siderite and some medium dark gray to grayish-black shale; the sandstone below 465' is very fine to fine-grained and a little lighter in color
491-496		5	Sandstone, light- to medium-gray with dark-gray (shaly) and brownish-gray (sideritic) with streaks of black, carbonaceous carbonaceous shale, contains dark, shaly material, siderite, somewhat pyritic

496	501	5	✓ Shale, black, highly carbonaceous, 60%; sandstone, light- to medium-gray with black (carbonaceous) spots and streaks, very fine grained, kaolinitic, some mica, 40%
501	550	49	Sandstone, light- to medium-gray with streaks of dark-gray, highly micaceous, silty shale and some black, carbonaceous shale, very fine grained, kaolinitic, contains some mica, chlorite and siderite
550	601	51	✓ Sandstone, light-gray, fine to very fine grained, some medium to coarse grains at 570 to 583, contains some chloritic and some shaly material (dark-gray to black) as grains and partings at the top; a large amount of interbedded, dark-gray to grayish-black, silty shale and a small amount of dusky yellowish brown siderite; at the bottom, some of the sandstone is brownish-gray to brownish-black, sideritic
601	627	26	Sandstone, very light to light-gray, fine- to medium-grained, fine-grained at the top, contains streaks and specks of chlorite and dark-gray to black micaceous, carbonaceous, shaly material; small amount of dusky-brown siderite
627	635	8	Sandstone, very light to medium-gray, very fine to fine-grained, some medium grains, chloritic, kaolinitic and micaceous, 60%; shale, medium dark to dark-gray (micaceous) and some grayish-black to black (carbonaceous), 40%
635	672	37	Sandstone, very light gray with green (chloritic) and dark-gray to black (carbonaceous) shaly spots in the upper part, and light-gray with green (chloritic), brown (sideritic) and dark-gray to black (carbonaceous) shaly spots; some dark-gray, micaceous, sideritic, and carbonaceous streaks
672	714	42	Shale, dark-gray to grayish-black; small amount of dark to dusky yellowish brown siderite
714	717	3	✓ Shale and siltstone, medium dark to dark-gray, highly micaceous; some grayish-black to black shale; some olive-gray to medium-gray, soft shale (sideritic in part)
717	730	13	✓ Sandstone, light-gray (with green, chloritic and dark-gray to black, carbonaceous, shaly spots), poorly sorted, very fine to medium-grained, sideritic in part
730	744	14	Shale, dark-gray to grayish-black, very silty to siltstone at the bottom; some dark to dusky yellowish brown siderite
744	755	11	Shale to siltstone, medium dark gray to olive- and grayish-black, sideritic in part
755	761	6	Shale, dark-gray to grayish-black, micaceous and carbonaceous, some black (highly carbonaceous)
761	767	6	Shale, brownish-black to black, highly carbonaceous; shale to siltstone, medium- to dark-gray, sideritic in part
767	773	6	Siltstone, medium-gray to olive-gray and medium dark gray with interbedded shale, dark-gray to grayish-black
773	787	14	✓ Shale, brownish-black to black, highly carbonaceous; shale, medium dark to dark-gray, very silty
787	798	11	Shale, brownish-black (sideritic) to grayish-black
798	805	7	Siltstone to sandstone (very fine), medium light to medium gray and olive-gray, sideritic in part; interbedded (very thin) shale, dark-gray to black

805	812	7	✓ Shale, brownish-black to black; shale, medium dark gray to grayish-black, very silty
812	820	8	Siltstone to sandstone (very fine), olive-gray to medium gray with medium dark to dark-gray, very silty shale
820	855	35	✓ Shale, brownish-black to black, very highly carbonaceous, sideritic in part; trace of pyrite
855	880	25	Sandstone, very light to light-gray, fine-grained, contains some kaolinitic and some dark, shaly material and some chlorite and mica
880	945	65	Sandstone, white to very light gray, fine-grained with some medium grains, fine-grained with medium to coarse grains at the top and at 902 to 915', fine to very coarse grained at the bottom, quartzose, subangular to subrounded, most of the samples contain a few grains showing a secondary crystal facet
945	947	2	Shale, medium dark gray to brownish- (sideritic) and grayish-black, 50%; siltstone to sandstone (very fine), medium light gray to dark-gray (shaly)
947	962	15	Sandstone, white, fine- to medium-grained with some coarse grains, quartzose, subangular to subrounded, some of the grains have secondary crystal facets (in the bottom sample)
962	976	14	Sandstone, light-gray to greenish (chloritic) and brownish-gray (sideritic) with black, carbonaceous spots and streaks, some mica and kaolinitic material, very fine to medium-grained, some coarse grains
976	998	22	✓ Sandstone, light-gray, fine to very fine grained, kaolinitic, contains brown (sideritic) and black (carbonaceous) specks, some mica and chlorite; the sand is darker in color (with dark-gray to black, carbonaceous, shaly streaks) at the bottom
998	1019	21	✓ Sandstone (very fine to fine) to siltstone, light- to medium-gray with dark-gray to brownish-black (sideritic) and grayish-black (carbonaceous) shaly streaks containing much mica, kaolinitic
1019	1067	46	Sandstone, very light to light-gray, fine-grained, quartzose, subrounded to rounded, contains a few scattered spots and streaks of shaly, carbonaceous, somewhat sideritic material
1067	1073	6	Shale, medium dark to grayish-black, some dusky yellowish brown (highly sideritic)
1073	1090	17	Sandstone, light-gray with brownish-gray (sideritic) and greenish-gray to dark-gray spots, very fine to fine grained; contains large amounts of kaolinite, siderite, chlorite, mica, and carbonaceous specks
1090	1096	6	Shale, dark-gray to grayish-black, some light olive gray, 60%; sandstone, light-gray, fine-grained, 40%
1096	1101	5	Shale, dark-gray to grayish-black, some light olive-gray, 40%; sandstone, very light to light-gray with medium-gray, very silty and micaceous streaks
1101	1232	131	Sandstone, white to very light gray, fine-grained, fine- to medium-grained with brownish-gray to brownish-black (sideritic) and dark-gray to black (carbonaceous, shaly) spots and streaks from 1131 to 1147'; small amount of carbonaceous sideritic and chloritic material 1147 to 1174; fine- to medium-grained with some quartz grains 1174 to 1199; fine to very coarse 1214 to 1223; quartzose from 1174 to bottom; many of the quartz grains show secondary crystal facets

1232	1248	16	Sandstone, medium-gray to brownish-gray (sideritic) and dark-gray (with black carbonaceous streaks), very fine to medium-grained, very silty, very shaly, contains large amounts of carbonaceous and sideritic material
1248	1270	22 ✓	Shale, grayish-black to black, very highly carbonaceous
1270	1288	18	Shale, dark-gray to grayish-black, silty; some siltstone light- to medium-gray; small amount of dark yellowish brown, sideritic shale
1288	1301	13	Shale, dark-gray to grayish-black, some olive-gray (sideritic) to dusky yellowish brown (highly sideritic)
1301	1307	6	Shale, grayish-black to black, carbonaceous; some dark-gray shale
1307	1313	6	Sandstone (very fine) to siltstone, olive gray to brownish gray, highly argillaceous with some moderate yellowish brown, siderite spherulites; some shale, brownish-gray to dark-gray and grayish-black to black (highly carbonaceous)
1313	1318	5	Coal, slightly pyritic, 60%; sandstone (very fine) to siltstone, light olive gray to olive-gray, kaolinitic and argillaceous with some moderate yellowish brown, siderite spherulites
1318	1322	4	Coal and black, highly carbonaceous shale, 50%; sandstone, light olive gray, kaolinitic to an olive-gray argillaceous siltstone and olive-gray shale with sideritic spherulites
1322	1326	4	Sandstone, light olive gray to olive-gray, silty argillaceous, very fine grained; contains some moderate to dark yellowish brown siderite spherulites
1326	1433	107	Sandstone, white to very light gray, very fine to fine grained from 1326 to 1335, fine- to medium-grained with an occasional coarse grain from 1335 to 1347, medium-grained with coarse to very coarse grains from 1347 to 1366, fine- to medium-grained from 1366 to 1405, fine-grained with an occasional medium grain from 1405 to 1418, medium-grained with some fine and some coarse grains from 1418 to 1433, subangular to subrounded quartzose except at 1414 to 1418 and 1423 to 1433 (these intervals contain some brownish-black sideritic and dark-gray to black, carbonaceous shale grains)
1433	1435	2	Shale, grayish-black to black (carbonaceous) and some brownish-black (highly sideritic)
1435	1510	75	Sandstone; 1435 to 1447, light-gray, fine-grained, fine- to medium-grained at the top, subangular to subrounded, contains some carbonaceous, shaly material, slightly sideritic; 1447 to 1453, light-gray to brownish-gray, fine- to medium-grained, sideritic, silty toward the bottom, some dark gray to black shale in the lower part; 1453 to 1468, light-gray to light brownish gray with medium- to dark-gray silty and shaly streaks, contains carbonaceous and sideritic material, fine-grained with some medium grains and a few coarse grains at the bottom; 1468 to 1480, fine-grained, some medium to <del>xxxx</del> coarse grains in the upper part, contains some sideritic, carbonaceous, shaly streaks; 1480 to 1493, fine-grained with an occasional dark-gray to black, shaly streak; 1492 to 1510, white to x very light gray, medium to very coarse grained, pebbly at the bottom, quartzose
1510	1515	5	Shale, dark-gray to black (highly carbonaceous), silty and sandy in part; some dark greenish gray to medium-gray, soft shale with sideritic spherulites

1515	1525	10	Shale, medium dark to dark-gray, some grayish-black to black, some dark yellowish brown (highly sideritic); some coal 1519 to 1525 (coal 1520 to 1526 from driller's log)
1525	1529	4	Siltstone, medium dark and dark-gray to sandstone, medium light to medium-gray, very fine grained; some shale, medium-gray to brownish-gray, grayish-black to black
1529	1540	11	No samples
1540	1547	7	Shale, dark greenish gray to brownish-gray, soft, some olive-gray with siderite spherulites, some dark-gray to black; some dark greenish gray siltstone and sandstone
1547	1556	9	Sandstone, light- to medium-gray with a large amount of brownish-gray to brownish-black spots and streaks (siderite); some dark greenish gray to dark-gray, shaly streaks
1556	1563	7	No sample
1563	1650	87	Sandstone, white to very light gray, fine-grained, mostly quartz, some grains of dark shale, light-gray to light brownish gray (sideritic) at the bottom
<u>Mauch Chunk Group, 999 Feet.</u>			
1650	1658	8	Siltstone, dark greenish gray to medium-gray; shale, olive-gray (sideritic), dark greenish gray to medium dark gray with sideritic spots and streaks
1658	1663	5	Siltstone, dark greenish gray to medium-gray (calcareous); clay-shale, olive-gray to medium-gray with moderate yellowish brown and some blackish-red streaks
1663	1670	7	Clay-shale, brownish-gray to grayish-brown and dusky-brown, some medium- to dark-gray (with moderate yellowish brown streaks), some dark greenish gray
1670	1673	3	Clay-shale, medium- to dark-gray with moderate yellowish brown streaks; also an occasional reddish-black streak; siltstone, dark greenish gray to medium dark gray
1673	1681	8	Clay-shale, mottled medium-gray and moderate yellowish brown, some grayish-brown to blackish-red; shale, dark greenish gray to medium dark gray, some grayish-black; trace of pyrite; small amount of pale-olive to light olive gray limestone
1681	1686	5	Shale, medium dark to dark-gray; some clay-shale, mottled medium-gray and moderate yellowish brown
1686	1693	7	Shale, medium dark to dark-gray, silty; some grayish-brown shale; some brownish-gray limestone; some coal
1693	1699	6	Shale, medium dark to dark-gray, some brownish-gray to grayish-brown; a large amount of clay-shale, mottled medium gray and moderate yellowish brown (some reddish-black streaks), some dark greenish gray
1699	1704	5	Sandstone (very fine) to siltstone, light to medium-gray, calcareous; shale, dark greenish gray to medium dark and dark-gray (with carbonaceous specks), some brownish-gray to dusky-brown; some clay-shale, mottled medium-gray and moderate yellowish brown
1704	1709	5	Shale, medium dark to dark-gray, some grayish-black; clay-shale, dark greenish gray (with dark-gray, calcareous spots and streaks); some medium- to dark-gray, calcareous, highly fossiliferous sandstone; some clay-shale, mottled medium-gray and moderate yellowish brown

1709	1713	4	Siltstone, olive-gray to medium dark-gray; clay-shale and shale, dark greenish gray to medium-gray (calcareous in part), some grayish-brown to dusky-brown; small amount of medium- to dark-gray, highly fossiliferous, calcareous sandstone
1713	1731	18	Siltstone and shale, dark greenish gray to medium- and dark-gray (calcareous in part), some grayish-brown to dusky-brown, some dark-gray to grayish-black
1731	1750	19	Clay-shale, grayish-brown to dusky-brown (calcareous in part), some moderate yellowish-brown; some shale, medium-gray to dark greenish gray, dark-gray to grayish-black
1750	1758	8	Clay, medium dark gray with some dark-gray calcareous and partly carbonaceous lumps; some shale, grayish-brown to very dusky red, some brownish-gray, some dark-gray to black
1758	1762	4	Clay-shale, grayish-brown to dusky-brown and very dusky red; some medium to medium dark gray and dark greenish gray shale, calcareous in part
1762	1772	10	Shale, dark greenish gray to medium dark gray, slightly dolomitic, a few fossil fragments, some grayish-brown to very dusky red and reddish-gray; small amount of olive-gray to grayish-olive limestone
1772	1784	12	Siltstone, medium to medium dark gray (with some dark-gray to grayish-black, micaceous streaks), kaolinitic, slightly dolomitic; some brownish-gray to grayish-brown shale (probably cavings)
1784	1800	16	Shale, black, highly carbonaceous; a large amount of medium- to dark-gray siltstone, small amount is sideritic
1800	1807	7	Siltstone, medium-gray to medium dark gray (shaly), somewhat calcareous, slightly sideritic
1807	1818	11	Shale, medium dark gray to grayish-black, some black (highly carbonaceous); trace of pyrite
1818	1824	6	Siltstone and some shale, medium dark to dark-gray, some grayish-black to black (carbonaceous to coal)
1824	1836	12	Shale, medium dark to dark-gray, some dark greenish gray to olive-black; some greenish-gray to medium-gray silty shale at the bottom, sideritic in part with a small amount of dark limestone
1836	1868	32	Sandstone, white, fine to very fine grained, quartzose, calcareous at the top; contains medium dark gray to dark greenish gray, soft shale in the middle part (partings or cavings?)
1868	1879	11	Shale, medium to dark-gray, some grayish-black to black (highly carbonaceous), pyritic in part
1879	1892	13	Siltstone, light- to medium-gray (with medium dark to dark gray, micaceous, shaly streaks); a moderate to large amount of medium dark gray to black (carbonaceous) shale, silty
1892	1909	17	Shale and some siltstone, medium dark to dark-gray, some brownish- and grayish-black to black; the colors are a little lighter toward the bottom
1909	1925	16	Shale, medium dark to dark-gray, some dark greenish gray, small amount of grayish-black to black, contains an abundance of siderite spherulites
1925	1937	12	Siltstone, medium to medium dark gray, somewhat sandy with interbedded, medium dark to dark-gray, silty shale

1937	1949	12	Shale, dark-gray to grayish-black, very silty
1949	1960	11	Shale, medium dark to dark-gray, silty, small amount of grayish-black to black, small amount of dark yellowish brown siderite (concretions? and spherulites)
1960	1970	10	Sandstone, white to very light gray and light greenish gray, very fine grained, some medium-gray, silty and shaly streaks
1970	1980	10	Shale, medium dark to dark-gray, some of the shale contains an abundance of siderite spherulites; a little medium to medium dark gray siltstone
1980	2021	41	No samples
2021	2115	94	Sandstone, white to very light gray, fine-grained, medium to very coarse grained from 2092 to 2094, mostly medium-grained 2098 to 2115, mostly quartz, subangular to subrounded, contains some dark shale grains
2115	2121	6	Shale, medium dark to dark-gray; some medium-gray siltstone
2121	2143	22	Sandstone, light- to medium-gray, very fine to siltstone, medium dark gray to olive-gray, sandy to shale, medium dark to dark-gray, silty, the kaolinitic, micaceous (biotite), and chloritic; the sandstone is calcareous
2143	2147	4	Shale, grayish-brown to brownish-gray, a moderate amount of medium dark gray to grayish-black, some dark greenish gray and reddish-gray; small amount of olive-gray to pale-olive limestone
2147	2152	5	Sandstone, very light gray, fine-grained (with light greenish gray very fine to silty streaks); a large amount of medium dark gray, silty shale
2152	2159	7	Sandstone, very light to light-gray, very fine grained to siltstone, light greenish gray to greenish-gray, sandy; a large amount of medium- to dark-gray shale in the upper part
2159	2190	30	Siltstone, dark greenish gray (with some calcareous spots and streaks) to medium dark gray (shaly)
2190	2206	16	Sandstone, light-gray, very fine, calcareous to siltstone, dark greenish gray to shale, medium dark gray; a moderate to large amount of medium-gray to brownish-gray, very fine textured, calcareous dolomite
2206	2212	6	Siltstone and shale, dark greenish gray to medium dark and dark-gray; a moderate amount of shale, mottled grayish-red and medium-gray, medium dark to dark-gray; small amount of olive-gray dolomite
2212	2232	20	Shale, dark-gray, some dark greenish gray, a few calcareous streaks; some dolomite, brownish-black
2232	2245	13	Shale, medium dark gray (silty) to dark-gray; some brownish-black dolomite
2245	2387	142	Sandstone, white to very light gray, fine to very fine grained with the largest proportion being fine grains, quartzose, mostly clear and glassy (a small portion showing secondary crystal facets); contains large amounts of medium-gray to grayish-black shale at 2255 to 2259, 2268 to 2270, mostly shale from 2286 to 2295, a moderate amount of shale from 2298 to 2306, broken into individual grains except 2306 to 2338



2387	2413	26	Shale and siltstone, grayish-brown to dusky-brown, some medium dark to dark-gray, some brownish-gray to very dusky red; some olive-gray and brownish-gray to very dusky red dolomite
2413	2418	5	Dolomite, medium-gray to brownish-gray and brownish-black; shale and siltstone, dark greenish gray to medium dark and dark-gray, some brownish-gray to grayish-red
2418	2428	10	Shale, dark-gray to grayish-black, some greenish-gray to dark greenish gray
2428	2445	17	Siltstone, greenish-gray (calcareous) to dark greenish gray, some brownish-gray; shale, medium dark to dark-gray, some greenish-black
2445	2455	10	Limestone, brownish-black, shaly; a large amount of shale, medium dark gray to dark greenish gray
2455	2470	15	Siltstone, greenish-gray (calcareous) to dark greenish gray; shale, medium dark to dark-gray
2470	2480	10	Dolomite, light- to medium-gray, some brownish-gray; contains fossil fragments 60%; shale, medium dark to dark-gray, some dark greenish gray, 40%
2480	2499	19	Shale and siltstone, brownish-gray to dusky-brown, some grayish-brown to very dusky red; shale, medium dark to dark-gray, distinctly laminated
2499	2511	12	Limestone, light-gray to brownish-gray, contains oolites? and fossil fragments; a moderate amount of brownish-black, shaly dolomite to dolomitic shale; some medium- to dark-gray shale
2511	2523	12	Shale, brownish-black, highly dolomitic, calcareous
2523	2532	9	Shale, dark-gray to grayish-black with some highly carbonaceous, pyritic pieces
2532	2574	42	Sandstone (very fine) to siltstone, white to light-gray and greenish-gray, closely interbedded with shale, medium dark to dark-gray, the sandstone is somewhat calcareous
2574	2600	26	Shale, medium dark to dark-gray, soft, distinctly laminated
2600	2637	37	Limestone, brownish-black (with medium-gray, highly fossiliferous spots), very shaly; a large amount of medium dark to dark-gray distinctly laminated shale (cavings?)
2637	2640	3	Limestone, brownish-black with light-gray spots, a little lighter in color than the above limestone, shaly
2640	2649	9	Shale, dark greenish gray to medium dark gray, slightly calcareous to a highly calcareous shale (calcareous fossil fragments); this shale grades into an olive-gray limestone (shaly in part); highly oolitic and fossiliferous
<del>2649</del>			<u>Greenbrier Limestone, 405 Feet.</u>
2649	2659	10	Limestone, olive-gray to olive-black with light gray spots, highly oolitic in the upper part, fossiliferous
2659	2672	13	Limestone, brownish-black, shaly
2672	2695	23	Limestone, brownish-black (with light gray, highly fossiliferous spots); shaly to a medium dark gray, highly calcareous (fossil fragments) shale
2695	2710	15	Limestone, brownish-black (with light-gray, highly fossiliferous spots); shaly with some highly calcareous shale

2710	2720	10	Limestone, olive-gray to dark greenish gray (shaly) with light-gray spots, fossiliferous; contains some chert
2720	2725	5	No sample
2725	2777	52	Limestone, brownish-black (with light-gray to brownish-gray, fossiliferous spots), very shaly
2777	2795	19	Limestone, brownish-gray to olive-black, highly oolitic in part; shale, medium dark gray to dark-gray, calcareous to a highly fossiliferous, highly calcareous, dark greenish gray, sandy shale (part of which is shaly limestone)
2796	2804	8	Limestone, brownish-gray to medium-gray, oolitic in part
2804	2811	7	Limestone, brownish-gray to medium dark gray, some brownish-black, oolites with calcite matrix
2811	2820	9	Dolomite, olive-gray with light-gray spots, very fine textured, calcareous
2820	2826	6	Limestone, brownish-gray to olive-gray with light-gray spots, contains some fossil fragments, dolomitic in part
2826	2831	5	Limestone, brownish-gray and some brownish-black with light-gray spots, oolitic and fossiliferous; some dark greenish gray, shaly dolomite
2831	2839	8	Limestone, brownish-gray to brownish-black with light-gray spots, shaly
2839	2847	8	Limestone, brownish-gray (oolites) with white calcite matrix, shaly in part, 60%; shale, dark greenish gray to medium dark gray, very highly dolomitic, 40%
2847	2870	23	Limestone, brownish-black and some brownish-gray with light gray spots, very highly oolitic (oolites are tightly cemented), fossiliferous, very shaly, silty
2870	2917	47	Limestone, brownish-gray to olive-gray with light-gray spots, dolomitic to a calcareous dolomite, oolitic in part, very shaly in part
2917	2925	8	Limestone, light olive gray with brownish-gray spots, mostly oolites with calcite cement (broken into individual oolites), somewhat silty
2925	2931	6	Limestone, olive-gray to brownish-gray, somewhat dolomitic somewhat silty
2931	2942	11	Limestone, brownish-gray, somewhat shaly, silty, oolitic in part toward the bottom
2942	2948	6	Limestone, olive-gray (silty and shaly) to brownish-gray with light-gray spots, somewhat oolitic
2948	2954	6	Limestone, olive-gray to brownish-gray, some brownish-black, highly oolitic (some of the oolites are "broken free"), very silty, somewhat shaly
2954	2965	11	Limestone, brownish-gray to medium dark gray, very highly oolitic (tightly cemented for the most part), silty
2965	2975	10	Limestone, brownish-gray to medium dark gray and some brownish-black with some white to light-gray spots, silty
2975	2982	7	Dolomite, brownish-gray to olive- and brownish-black
2982	2995	13	Dolomite, brownish-gray to brownish-black (contains some carbonaceous material) with light-gray to light olive gray dolomitic limestone

2995	3001	6	Dolomite, light-gray to light olive gray, some brownish-gray to brownish-black, calcareous in part; a moderate amount of light-gray to brownish-gray, highly oolitic limestone (oolites are very tightly cemented)
3001	3013	12	Limestone, light- to medium-gray, very highly oolitic, contains some dark, shaly material in the matrix (oolites moderately well cemented, some "break free"), slightly dolomitic; some light olive gray to brownish-gray dolomite
3013	3021	8	Limestone, light to medium-gray and some brownish-gray, mostly oolites (tightly cemented), slightly dolomitic, silty
3021	3036	15	Limestone, olive-gray, dolomitic in part, small amount is highly oolitic (tightly cemented)
3036	3054	18	Limestone, (dolomitic) to a dolomite (calcareous), olive-gray and brownish-gray to olive- and brownish-black, silty; some dolomitic and calcareous, dusky-brown siltstone (probably included pebbles from the underlying MacCrady formation)

MacCrady Formation, 61 Feet

3054	3057	3	Siltstone to shale (silty), grayish-brown to dusky-brown; some greenish-gray siltstone
3057	3063	6	Siltstone, grayish-brown to dusky-brown, some very dusky red, some brownish-black; some dark-gray to grayish-black shale
3063	3081	18	Siltstone, grayish-brown to dusky-brown, reddish-black, some very dusky red to blackish-red; some dark-gray to grayish-black shale
3081	3097	16	Siltstone, dusky-brown to brownish-black; a large amount of dark-gray to grayish-black shale at the bottom
3097	3107	10	Siltstone, grayish-brown to dusky-brown, some very dusky red to reddish-black, some medium dark gray to dark greenish gray; a large amount of dark-gray to grayish-black shale
3107	3115	8	Siltstone, grayish-brown to brownish-gray, some very dusky red to reddish-black at the bottom; a large amount of dark-gray to grayish-black shale

Pocono Formation, 555 Feet.

3115	3127	12	Shale, dark-gray to grayish-black; some siltstone medium dark gray to olive-gray
3127	3148	21	Siltstone, medium dark gray to olive-gray and olive-black (somewhat shaly); a large amount of medium dark gray to grayish-black, distinctly laminated shale (cavings?)
3148	3158	10	Siltstone and shale (silty), medium dark to dark-gray, some grayish-black, 90%; sandstone, light-gray, very fine grained, 10%
3158	3199	41	Shale, medium dark to dark-gray
3199	3209	10	Shale, medium dark to dark-gray, 50%; sandstone, light-gray to light olive gray, very fine grained, 50%
3209	3219	10	Sandstone, (very fine) to siltstone, light-gray to medium-gray and greenish-gray; some medium dark gray shale
3219	3259	40	Siltstone, light to medium-gray and dark greenish gray; a moderate to large amount of medium dark to dark-gray shale

3259	3296	37	Shale, medium dark gray; small amount of dark yellowish brown, sideritic shale
3296	3355	59	Shale, medium dark gray, some dark-gray; small amount of sandstone, light-gray, fine to very fine to siltstone, medium-gray to dark greenish gray, pyritic; small amount of dark yellowish brown, sideritic shale
3355	3445	90	Shale, medium dark gray, some dark-gray, small amount of dark yellowish brown (sideritic); small amount of medium-gray to greenish-gray siltstone
3445	3484	39 ✓	Siltstone, medium light to medium dark gray to greenish-gray; shale, medium dark to dark-gray, small amount of dark yellowish brown (sideritic)
3484	3526	42	Shale, medium dark to dark-gray, some olive-black to grayish-black (silty); some medium to medium dark gray siltstone
3526	3558	32	Shale, medium dark gray, some dark-gray to olive-black, some dark yellowish brown (sideritic); some medium to medium dark gray siltstone
3558	3600	42	Shale, medium dark to dark-gray, olive-black to grayish-black; some medium light to medium dark gray siltstone; small amount of pyrite scattered throughout the interval
3600	3632	32	Shale, brownish-black to black, highly carbonaceous, some medium dark gray to brownish-gray; very small amount of pyrite (Sunbury Shale)
3632	3634	2	Sandstone, brownish-gray to brownish-black (silty) pyritic, some light to medium-gray, very fine grained, calcareous in part (3632 DLM 3638 SLM)
3634	3642	8	Sandstone, brownish-gray, very fine grained, slightly calcareous and dolomitic, highly kaolinitic
3642	3655	13	Sandstone, light- to medium-gray, very fine grained, kaolinitic, moderately calcareous and dolomitic from 3642 to _____ (Berea Sandstone (3632 to 3655))
3655	3670	15	No samples (From driller's log - Berea Grit 3638 SLM to 3670 SLM)
<u>Devonian Shales, 1923 Feet</u>			
3670	3671	1	No sample
3671	3692	21	Shale, medium dark gray to olive-gray and olive-black, some brownish- to grayish-black (small amount is dolomitic)
3692	3730	38	Shale, medium dark gray to olive-gray and olive-black (partly siltstone), brownish- and grayish-black to black (carbonaceous)
3730	3789	19	Shale, brownish- and grayish-black to black, some dark-gray to olive-black
3749	3782	33 ✓	Shale, brownish- and grayish-black, some dark-gray to olive-black; silty in part; some sandstone (very fine) to siltstone, medium light to medium dark gray
3782	3866	84	Shale, medium dark gray to olive-black, some olive-black to brownish-black; siltstone, medium light to medium dark gray to greenish-gray, some olive-gray
3866	4550	684	Siltstone, medium light gray to greenish-gray with medium dark gray to olive-black shaly streaks and layers; a small amount of brownish-black, shaly siltstone from 3988 to 4100' and a moderate amount from 4100' to 4144'; a large amount of shale from 4144 to 4244' and 4427 to 4550' (some olive-black to black shale)

4550	4673	123	Siltstone and shale, light olive gray to olive-gray, medium-gray to olive-black, some grayish-black
4673	4694	21	Siltstone, brownish-gray to brownish-black, some light olive gray to olive-gray; a moderate amount of shale, medium dark gray to olive-black, some grayish-black to black
4694	4732	38	Siltstone to silty shale, brownish-black to black, some brownish-gray, somewhat dolomitic in part; some siltstone and shale, olive-gray to medium dark gray and olive-black; small amount of white, vein dolomite
4732	4807	75	Siltstone, light olive gray to olive-gray; shale, medium dark gray to olive-black, some grayish-black to black
4807	4848	41	Siltstone, olive-gray to brownish-gray and brownish-black; shale, medium dark gray to olive-black, grayish-black to black
4848	4894	46	Siltstone and shale, olive-gray to medium dark gray and olive-black
4894	4954	60	Siltstone, light olive gray to olive-gray; shale, medium dark gray to olive-black, grayish-black to black (carbonaceous); more shale than siltstone in the lower part
4954	4976	22	Shale and siltstone, olive-gray to brownish-gray to olive-black; shale, grayish black to black; trace of pyrite
4976	5057	81	Shale, brownish-black to black, highly carbonaceous, some olive-gray to brownish-gray and olive-black
5057	5145	88	Siltstone and shale, olive-gray to brownish-gray and olive- to brownish-black; a large amount of interbedded brownish- and grayish-black to black, highly carbonaceous shale
5145	5207	62	Siltstone and shale, medium to medium dark gray, olive-gray to dark greenish gray, some olive-black, some grayish-black to black
5207	5228	21	Siltstone and shale, olive-gray, some brownish- and greenish-gray, some medium-gray at the bottom; a large amount of grayish black to black, carbonaceous shale
5228	5430	202	Siltstone and shale, medium to medium dark gray and dark greenish gray, a moderate to large amount of dark-gray to olive-black
5430	5478	48	Shale and siltstone, olive-gray to olive- and brownish-black, some grayish-black to black
5478	5535	57	Shale, olive- and grayish-black to black (carbonaceous); some white, vein calcite
5535	5593	58	Shale, black, some brownish- and grayish-black, highly carbonaceous; pyritic at the bottom; a small amount of pyrite throughout the interval (5593 DLM = 5598 SLM)
3303			Huntersville Chert, <sup>35</sup> <del>127</del> Feet., and <del>Helderberg Formation</del>
5598	5604	6	Limestone, brownish-black to black with light-gray to brownish-gray spots, very cherty with a large shale content
5604	5621	17	Limestone, brownish-black to grayish-black with light-gray to brownish-gray spots, very shaly, cherty
5621	5625	4	Limestone, light- to medium-gray with dark-gray to grayish-black shaly streaks; contains a large number of fine to very coarse (rounded) sand grains, slightly pyritic

5625	5633	8	Limestone, light- to medium-gray (with brownish-to grayish-black, shaly streaks); very sandy (fine- to medium-grained, rounded), cherty
5633	5643	10	Chert (calcareous) to limestone (cherty), medium-gray (with light-gray spots and dark-gray, shaly streaks), shaly and silty
5643	5650	7	Chert (calcareous) to a limestone (silty), medium- to dark-gray with grayish-black, shaly streaks
5650	5654	4	Sandstone, medium-gray (with dark-gray, shaly streaks), very fine, silty, highly calcareous to a calcareous chert
5654	5668	14	Siltstone and shale (highly calcareous) to limestone (very silty and shaly), mottled light- to medium-gray and dark-gray to grayish-black, very cherty; moderately glauconitic
5668	5672	4	Sandstone (very fine, silty) calcareous to a limestone (sandy and silty), light- to medium-gray with white spots, cherty, slightly shaly, highly glauconitic
5672	5682	10	Limestone (sandy and silty) brownish-gray to sandstone (very fine, silty, highly calcareous), light- to medium-gray with dark-gray to grayish-black shaly streaks, some fossil fragments
5682	5685	3	Sandstone, light- to medium-gray, very fine grained, silty, very cherty, highly calcareous, glauconitic, somewhat shaly
5685	5707	22	Limestone, medium- to dark-gray (shaly) with light-gray (cherty) spots, very silty; a large amount of dark-gray to grayish-black shale; contains a little pyrite
5907	5712	5	<p style="text-align: center;"><i>HELDERBERG FORM, 79 FEET</i></p> <p><i>Shale, brn blk to gy blk, h. calc. pyr. silty, somewhat cherty</i></p> <p style="text-align: center;"><i>HELDERBERG FORM, 13 FEET</i></p>
5707	5715	8	
5712	5715	3	
5715	5725	10	Limestone, brownish-gray to dusky yellowish brown with white to light-gray spots, dolomitic, 60%; shale, brownish-black to grayish-black, highly calcareous, pyritic, silty, somewhat cherty, 60%

*brownish-black to grayish-black, highly calcareous, pyritic, silty, somewhat cherty*

5598	5650
1272	1272
<hr/>	
4326	4378