

Wheeling Steel Corporation No. 102 Well

Cross Creek District, Brooke County, W. Va.

By Wheeling Steel Corporation, Wheeling, W. Va.

Located 0.52 mi. W. of 80°25' and 8.56 mi. S. of 40°25' -C- Steubenville
 Quadrangle, 2 mi. S. E. of Steubenville.

Elevation, 730' L.

Permit Bro-16

Completed Feb. 2, 1939.

Fresh water to 325 feet; salt water from 375 feet.

Small show of gas and oil in Berea; well plugged back to 1330 and will be used
 for pressure well.

Casing, 10", 42'; 8 1/2", 325'; 6-5/8", 705'; 5-5/16", 980'.

Coal was encountered at 242-247, 260-265, 305-310, and 370-375'.

According to the geologic map¹ this well starts 270 feet below the

¹
 R. C. Tucker; Map II of Ohio, Brooke and Hancock Counties, show general and
 economic geology; West Virginia Geological Survey; 1938.

Pittsburgh Coal horizon. This makes the total thickness of the Conemaugh
 Formation 455 feet. The interval from the Pittsburgh Coal to the Berea shown
 on the map would put the base of the Berea at a depth of 1355 feet, which checks
 very well with the actual depth of 1345 feet. ~~No definite boundary between
 the Allegheny and Pottsville Formations could be located.~~

Top Bottom Thickness

			<u>Recent Alluvium, 42 feet</u>
0	35	35	No samples; reported as sand and gravel
35	42	7	Sand, brown, coarse, gravelly (probably a river deposit)
			<u>Conemaugh Formation, ¹⁴³⁺ 200+ feet</u>
42	50	8	Clay, gray, with considerable amount of coarse sand and pebbles, probably from overlying river deposits; some fragments of pyrite and impure coal
50	60	10	Shale, light-green, very soft, with light-gray very fine textured limestone containing pyrite
60	65	5	Shale, red, soft
65	70	5	Shale, gray, soft, calcareous

Top	Bottom	Thickness	
70	75	5	No sample
75	95	20	Clay, gray, pyritic; with a little limestone and impure coal
95	105	10	Sandstone, gray, very fine; with much gray shale
105	140	35	Sandstone, very light-gray, medium-grained, rather soft; contains kaolin, mica and chlorite
140	150	10	Shale, dark-gray, with brown siderite or impure limestone containing pyrite; a little coal near bottom
150	160	10	Shale, gray, soft; with much fine textured gray limestone and a little coal; there is considerable pyrite, mostly in lumps broken free from the rock
160	165	5	Shale, gray and green; with some limestone
165	170	5	Limestone, gray, very fine textured, pyritic; with gray and green shale
170	175	5	Siltstone, green
175	185	10	Shale, grayish-green, silty, micaceous, containing many siderite spherulites
<u>Allegheny and Freeport Formations, 200 feet</u>			
185	195	10	Limestone, light-gray, very fine textured; with considerable gray and yellow clay or soft shale (Upper Freeport Limestone)
195	200	5	Sandstone, gray to slightly greenish, fine
200	205	5	Shale, gray and green, with some yellow and red, very soft and clay like; contains siderite spherulites and nodules and considerable pyrite
205	215	10	Shale, green, very silty, micaceous, containing much siderite in small nodules and spherulites
215	220	5	Siltstone, grayish-green, with siderite
220	242	22	Shale, gray, partly silty and partly fine and soft; contains siderite in spherulites and fragments of nodules or concretions
242	255	13	Shale, dark-gray to black, silty, pyritic; contains many fragmentary plant fossils (Upper Freeport Coal reported at 242 to 247; little coal shows in samples)

Top	Bottom	Thickness	
255	260	5	Coal and light-gray clay (Lower Freeport coal)
260	280	20	Siltstone, light-gray and green; with large amount of light-gray clay or soft shale and from 275 to 280' much brown ferruginous limestone; siderite, partly in spherulites, is present throughout
280	295	15	Shale, dark-gray, micaceous, pyritic; upper part is coarser and silty; contains siderite nodules
295	305	10	Shale, dark-gray to black, with lumps of pyrite and a little coal
305	310	5	Coal and light-brown, pyritic, very fine textured limestone (Middle Kittanning Coal)
310	325	10	Limestone, brown (gray when dry), very fine textured; contains a few small fossils
325	330	5	Siltstone, gray, with siderite
330	370	40	Shale, dark-gray; bottom 15 feet contains considerable silt and fine sand and some carbonaceous matter
370	375	5	Shale, black; and highly pyritic coal (5 feet of coal reported in driller's record)
375	385	10	Shale, gray
385	428	43	<u>Pottsville Formation, 307 feet</u> Sandstone, light-gray, poorly sorted; some grains very coarse; has kaolin in the cement and seems rather soft
428	450	22	Sandstone, light-gray, medium grained; contains mica, chlorite and kaolin and seems rather soft
450	480	30	Shale, dark-gray, very silty; contains siderite nodules, pyrite and carbonaceous matter
480	490	10	Siltstone, gray; individual fragments vary from shale to fine sandstone
490	510	20	Shale, light-gray, soft, with siderite spherulites
510	516	6	Shale, gray, brown, and green, mostly silty
516	525	9	Siltstone, gray to grayish-green, micaceous
525	566	41	Shale, dark-gray, mostly silty; some samples contain pieces of siderite nodules
566	595	29	Sandstone, light-gray, medium-grained, broken small
595	606	11	Siltstone, gray, shaly, carbonaceous

Top	Bottom	Thickness	
608	627	21	Sandstone, light-gray, coarse; contains little besides quartz
627	657	30	Shale, gray, very silty; with large amount of light-gray to white, fine sandstone; samples also contain much fine textured brown siderite, probably from nodules in the shale
657	692	35	Sandstone, gray, fine to very fine, shaly; all samples contain some silty shale or siltstone which is darker than most of the sandstone
<u>Greenbrier Limestone, 74 feet</u>			
692	700	8	Limestone, light-brown (mostly gray when dry), very fine textured
700	705	5	Limestone, light grayish brown, sandy; sand is not well sorted; larger grains are rounded and frosted
705	766	61	Sandstone, light-gray, calcareous, medium- to fine grained; all samples contain metallic iron and rust which tend to obscure the natural color; some oolites at least from 717 to 745' and possibly a few through a larger interval; larger quartz grains are rounded and frosted; from 750 to 766' there is considerable quartz as fine as silt, and a very little glauconite (Loyalhanna Limestone)
<u>Pocono Formation, ⁵⁷⁹ 601 feet</u>			
766	788	22	Sandstone, grayish-green ^{FINE} to very fine, micaceous; not calcareous except for contamination at top by material from above; broken mostly in small chips
788	792	4	Sandstone, white, fine; broken up into individual grains
792	805	13	Sandstone, light-gray, hard; broken mostly into small chips
805	844	39	Shale, dark-gray, mostly silty
844	901	67	Sandstone, light-gray to yellowish, medium- to fine-grained; many of the quartz grains have crystal faces due to secondary growth; small amounts of muscovite, biotite, chlorite and pyrite are unevenly distributed

Top	Bottom	Thickness	
901	965	64	Sandstone, light-gray to yellowish, fine; similar to last but mostly finer and contains a little more of minerals other than quartz
965	972	7	Siltstone, gray; with some gray shale
972	985	13	Sandstone, light-gray, very fine; sample much contaminated by rusty iron
985	1085	100	Shale, gray, silty, micaceous, interstratified with gray to greenish siltstone; some samples contain more siltstone than true shale
1085	1104	19	Siltstone, light-gray; contains small amounts of mica, chlorite and pyrite
1104	1274	170	Shale, gray, silty, micaceous, with streaks of lighter gray siltstone; except for a very few fragments both shale and siltstone are non-calcareous; some samples are more siltstone than shale
1274	1291	16	Siltstone, gray, shale; not sharply separated from the shale above
1291	1325	34	Shale, dark-gray, mostly fine but some silty and micaceous (Gambury or Orangeville Shale)
1325	1353	8	Sandstone, light-gray, fine; there is a concentration of pyrite at the contact with the overlying shale; samples stained yellow and brown by iron rust from drill steel; calcareous from 1331 to 1335 (Berea Sandstone; soft, with traces of gas and oil from 1327 to 1329)
1353	1345	18	Sandstone, light-gray, very fine, broken into chips up to about $\frac{1}{2}$ inch; contains a little mica, pyrite and specks of coaly material

Devonian or Mississippian Shales, 8+ feet

1345	1353	8	Shale, gray; with lighter gray, micaceous siltstone
	1353		Total depth