

Clay-153

J. D. Duffield No. 1 (7687) Well

Otter District, Clay County, W. Va.

By Pittsburgh and West Virginia Gas Company, Pittsburgh, Pa.

Located 1.22 mi. W. of 80°55' and 1.03 mi. S. of 38°35' -SW- Cassaway Quadrangle; 1 mi.

E. of Duck.

Elevation, 981' L.

Permit, Clay-153

Drilling commenced May 25, 1939; completed, June 22, 1939.

Gas well; volume, 2,600,000 cu. ft.; rock pressure, 575 lbs. in 24 hrs.

Fresh water at 140, 249, and 272'.

Salt water at 1427 and 1506'.

13" wood conductor, 15'; 8 1/2" casing, 501'; 6-5/8", 1598'; 3" tubing, 1871'; all left in.

Anchor packer, 6-5/8 x 3, set at 1631'.

Perf. top 1845', perf. bottom 1871'.

Coal was encountered at 100-103, 249-251 and 435-437'.

Complete samples beginning at depth of 50 feet.

The boundary between the Pottsville and the Mauch Chunk in this well is not clearly indicated by any change in the nature of the material but it is regarded as probable that the distinct change in the texture of the sandstone at a depth of 1393 feet corresponds to this boundary. The gray and red shale at the top of the Mauch Chunk in the D. W. Sirk No. 4 well has apparently been eroded away and the coarse basal sandstone of the Pottsville deposited upon a sandstone in the Mauch Chunk.

Top Bottom Thickness

Allegheny Formation, 247+ feet

Top	Bottom	Thickness	
0	6	6	Clay, yellow, soft
6	30	24	Freesport Sand, gray hard
30	32	2	Slate, blue, soft
32	50	18	Sand white, hard
50	76	26	Siltstone, gray, shaly, micaceous
76	81	5	Shale, gray
81	86	5	Shale, light-gray, soft; small amount of coal and fragments of siderite concretions
86	95	9	Sandstone, gray, fine, micaceous
95	98	3	Coal (depth of this is 100-103' in driller's record; Upper Kittanning Coal)

Top	Bottom	Thickness	
98	149	51	Sandstone, white; very coarse and pebbly at bottom, becoming finer upward until it is medium-grained at top (water at 140', one bailer per hour)
149	159	10	Shale, light-gray, silty; contains many siderite spherulites
159	169	10	Shale, brownish-gray, soft, with siderite spherulites
169	225	56	Sandstone, nearly white, medium-grained; contains small amounts of mica, chlorite, kaolin, and siderite
225	245	20	Shale, gray, silty
245	247	2	Coal (Lower Kittanning coal; water, 2 bailers per hour; depth of coal in drillers' record, 249-251')
<u>Pottsville Formation, 1146 feet</u>			
247	272	25	Sandstone, white, medium-grained; contains small amounts of mica, chlorite, and kaolin
272	282	10	Siltstone, dark-gray, shaly, micaceous
282	293	11	Shale, dark-gray to black
293	308	15	Shale, dark-gray; with some lighter siltstone and fine sandstone
308	325	17	Siltstone, gray, shaly, micaceous
325	352	27	Sandstone, nearly white, medium-grained; contains muscovite, chlorite, siderite, and kaolin
352	358	6	Shale, black
358	363	5	Shale, dark-gray to black, 70%; soft brownish-gray shale, 20%; coal and siderite concretions, 10%
363	430	67	Sandstone, nearly white, medium-grained; contains small amounts of muscovite, chlorite, and kaolin
430	437	7	Shale, gray to black, with a little coal (drillers' record gives coal, 435-436')
437	495	58	Sandstone, nearly white, medium-grained; contains muscovite, biotite, chlorite, siderite and carbonaceous matter; calcareous from 470 to 480'
495	508	13	Shale, gray, silty micaceous
508	528	20	Sandstone, gray, fine to very fine, micaceous
528	535	7	Siltstone, gray, shaly, micaceous
535	544	9	Sandstone, light-gray, very fine, micaceous

Top	Bottom	Thickness	
544	561	17	Shale, gray, very silty, micaceous
561	570	9	Sandstone, light-gray, very fine, 60%; the rest gray siltstone and black shale, with a little coal
570	602	32	Siltstone, gray, shaly, micaceous; contains some streaks of very fine sandstone
602	670	68	Shale, dark-gray to black, mostly very silty
670	677	7	Siltstone, dark-gray, micaceous
677	690	13	Sandstone, gray, very fine
690	718	28	Siltstone, and shale, gray
718	726	8	Shale, gray and light-brown
726	750	24	Siltstone, dark-gray, shaly, contains siderite and carbonaceous matter
750	768	18	Sandstone, gray, very fine; also some dark-gray shale
768	807	39	Shale and siltstone, dark-gray to black
807	842	35	Shale, dark-gray to black
842	875	33	Siltstone, dark-gray, shaly, micaceous
875	907	32	Shale, dark-gray
907	914	7	Sandstone, light-gray, very fine, 60%; dark-gray shale, 40%
914	928	14	Shale, dark-gray, with lighter sandy streaks
928	985	57	Sandstone, nearly white, fine; contains siderite spherulites
985	1015	30	Sandstone, white, medium-grained
1015	1021	6	Shale, black
1021	1029	8	Siltstone, gray, with siderite spherulites
1029	1049	20	Shale and siltstone, dark-gray
1049	1058	9	Sandstone, nearly white, very fine, 60%; dark-gray shale, 40%
1058	1085	27	Shale and siltstone, gray
1085	1091	6	Siltstone, light-gray
1091	1099	8	Sandstone, white, very fine
1099	1140	41	Shale, dark-gray to black; with streaks of lighter gray siltstone and very fine sandstone
1140	1149	9	Siltstone, light-gray, 60%; nearly black shale, 40%
1149	1177	28	Shale and siltstone, dark-gray
1177	1187	10	Siltstone, gray, sandy
1187	1197	10	Shale, dark-gray, soft, with siderite concretions
1197	1204	7	Siltstone, gray, shaly, micaceous

Top	Bottom	Thickness	
1204	1233	29	Sandstone, white, with brown spots of siderite; medium-grained (show of gas and oil, 1228')
1233	1234	1	Shale, black, with a little coal
1234	1252	18	Shale, gray, soft, 50%; ^{mic} macaceous siltstone, 50%
1252	1273	21	Siltstone, gray, shaly, micaceous
1273	1306	33	Sandstone, light-gray, fine; contains much siderite at top (SLM, 1300' oil, 1274-1281'; water 1306', 20 bailers per hour)
1306	1393	87	Sandstone, nearly white, coarse to very coarse
<u>Mauch Chunk Group, 277 feet</u>			
1393	1476	83	Sandstone, white, medium-grained, nearly all quartz; crystal faces on many quartz grains, especially in lower part
1476	1481	5	Sandstone, white, coarse
1481	1518	37	Sandstone, white, medium-grained, nearly all quartz; crystal faces on many of quartz grains
1518	1536	18	Sandstone, light-gray, fine to very fine
1536	1542	6	Sandstone, white with some rust stain, fine
1542	1548	6	Limestone, brown and gray, 80%; soft gray shale, 40%
1548	1660	12	Shale, red, soft
1660	1678	18	Shale, green and gray, soft, distinctly laminated
1678	1615	37	Limestone, dark-brown with some white spots, fossiliferous
1615	1620	5	Shale, gray and green, soft, partly silty
1620	1626	6	Siltstone, gray; also some shale as above
1626	1631	5	Sandstone, gray, fine to very fine (apparently there is a gradual transition from the sandstone into the shale above)
1631	1670	39	Sandstone white, fine, hard; breaks mostly in small chips (SLM, 1639'; gas, 1635-1647', 40/10 merc. in 1")
<u>Greenbrier Limestone, 197 feet</u>			
1670	1679	9	Limestone, dark-brown, with some white spots
1679	1720	41	Limestone, light-brown (neutral-gray when dry)
1720	1733	13	Limestone, light-brown; contains a few oolites and a little sand; there are a few green, silty fragments containing pyrite cubes
1733	1781	48	Limestone, light-brown to nearly white, fine-textured
1781	1811	30	Limestone, light-brown, sandy, oolitic

Top	Bottom	Thickness	
1811	1831	20	Limestone, very light-brown or grayish-yellow, very fine textured
1831	1857	26	Limestone, very light brown, sandy, colitic
1857	1863	6	Limestone, light-brown, sandy; larger sand grains rounded and frosted (gas, 1860-1869', 35/10 merc. in 3")

Pocans Formation, 8+ feet

1863	1869	6	Shale, gray, soft; fragments disintegrate when placed in water
	1871		Total depth