

The Putnam Company No. 1 (GW-441) Well

Washington District, Jackson County, W. Va.

By Columbian Carbon Company, Box 1240, Charleston, W. Va.

Located 0.85 mi. W. of 81°35' and 5.5 mi. S. of 38°40' -C- Kenna Quadrangle; on ridge between Sugar Creek and Middle Fork.

Elevation, 978.7' L. (derrick floor)

Permit, Jac-56.

Drilling commenced Oct. 1, 1939; completed, Jan. 27, 1940.

Volume, 2,987,000 cu. ft. per day.

Well was not shot.

Rock pressure, 1640 lbs. in 3 days.

14" casing, 26'; 10 $\frac{3}{4}$ "<sup>2</sup>, 895'11" (pulled); 8 5/8", 2161'10"; 7", 5216'9"; 2 3/8" tubing 5392'4".

Salt water at 1540-45', 1-9" bailer per hour.

Salt water at 1592-1630', hole full.

Samples examined from 1900 to 5372'.

Top	Bottom	Thickness	
<u>Greenbrier Limestone, 149 feet</u>			
1890	1900	10	Lime (from drillers' record)
1900	1953	53	Limestone, light-brown (mostly neutral-gray when dry)
1953	1995	42	Limestone, very light brown, sandy, oolitic; larger sand grains are rounded and frosted
1995	2003	8	Limestone, very light brown, oolitic; oolites are abundant and distinct
2003	2019	16	Limestone, very light brown to nearly white, somewhat dolomitic
2019	2039	20	Limestone, nearly white, sandy, dolomitic; from 2019 to 2027' sand is very fine and angular; from 2027 to 2039' some of the grains are larger and fairly well rounded
<u>Pocono Formation, 481 feet</u>			
2039	2062	23	Sandstone, nearly white, medium- to coarse-grained; samples are somewhat calcareous but perhaps most of carbonate material is from above
2062	2076	14	Sandstone, white, fine, slightly calcareous; grains are angular
2076	2092	16	Sandstone, light-brown, fine, calcareous; grains are angular
2092	2125	33	Shale, gray; also some siltstone and very fine sandstone
	2125		Depth corrected from 2125 to 2145' by SLM
2145	2232	87	Shale, gray, 50%; lighter gray siltstone and very fine sandstone, 50%

Top	Bottom	Thickness	
2232	2429	197	Shale, dark-gray; contains up to 20 or 30% of gray to greenish siltstone
2429	2465	36	Shale, gray, 80%; light-brown and gray siltstone, 20%
2465	2492	27	Shale, gray
2492	2513	21	Shale, black (Sunbury Shale)
2513	2520	7	Sandstone, light-gray, very fine with a few coarser grains; much pyrite in some fragments (Berea Sandstone; thickness from drillers' record; from samples it appears to be less than seven feet)
<u>Devonian Shales, 2641 feet</u>			
2520	2782	262	Shale, gray; interstratified with considerable amount of gray to grayish-green siltstone
2782	2929	147	Siltstone, gray, shaly, micaceous, partly calcareous; some darker gray shale throughout; not sharply separated from the interval below
2929	3243	314	Shale, gray, silty, micaceous; large amounts of gray to grayish-green siltstone throughout, and up to 50% in some samples
3243	3418	175	Shale, gray, silty, micaceous; not sharply separated from interval above but contains much less siltstone, although some is present throughout
3418	3702	284	Shale, gray; small amounts of dark-gray shale and light-gray siltstone throughout; there are a few scattered spores; also small spherical pyrite concretions in a few samples but they are so scarce that the exact depths at which they were seen probably have no significance
3702	3755	53	Shale, very dark gray, somewhat brownish; also some lighter gray shale and siltstone, perhaps cavings
3755	4000	245	Shale, gray; samples are mostly a mixture of various shades of gray with medium- to light-gray much in excess; about 30% of light-gray, micaceous, slightly calcareous siltstone near top of interval decreasing to perhaps 10% toward bottom
4000	4025	25	Shale, very dark-gray to black, 50%; medium-gray shale, 50%
4025	4087	62	Shale, medium-gray; also small amounts of siltstone and very dark shale; a little gray limestone, 4073 to 4087'
4087	4109	22	Shale, very dark gray to black, 60%; medium-gray shale 40%
4109	4151	42	Shale, medium-gray, with small amount very dark

Top	Bottom	Thickness	
4151	4268	117	Shale, very dark gray and dark brown to black; contains small black spores
4268	4783	515	Shale, gray; a little lighter and in part somewhat greenish below 4342'; some slightly calcareous
4783	4880	97	Shale, dark-gray; individual fragments vary from medium-gray to black, but average color is much darker than for interval above
4880	5051	171	Shale, dark-gray to black; contains some pyrite concretions
5051	5126	75	Shale, medium-to dark-gray; small proportion of greenish-gray shale
5126	5161	35	Shale, black
<u>Huntersville Chert, 120 feet</u>			
5161	5199	38	Limestone, brown, very cherty; thin streak of Motite-rich siltstone at or very close to the top (depth corrected from 5161 to 5161' by SLM)
5199	5252	53	Limestone, brown, very cherty; mostly contains small amounts of silt or very fine sand; small amount of dolomite throughout and a little glauconite in several samples
5252	5281	29	Limestone, brown, cherty, and silty; contains a little dolomite and glauconite; many fragments could be classed as siltstone or very fine sandstone rather than chert or limestone
<u>Oriskany Sandstone, 84 feet</u>			
5281	5287	6	Sandstone, nearly white, medium-grained, calcareous; some grains rounded and frosted (SLM at top)
5287	5317	20	Sandstone (no sample; gas pays: 5287-5297'; 5299-5306')
5317	5322 $\frac{1}{2}$	5	Sandstone, nearly white, fine noncalcareous
5322 $\frac{1}{2}$	5340	17 $\frac{1}{2}$	Sandstone, gray, fine to very fine, calcareous; mostly rather dark
5340	5343	3	Sandstone, light-gray, fine, calcareous
5343	5348	5	Sandstone, gray, very fine, highly calcareous (gas pay: 5344 $\frac{1}{2}$ -5347')
5348	5350	2	Sandstone, gray, fine, calcareous (gas pay: 5348-5350')
5350	5365	15	Sand, gray, fine, calcareous; becomes darker, finer and more calcareous toward bottom (gas pay 5357-5365 $\frac{1}{2}$ )
<u>Helderberg Limestone, 7+ feet</u>			
5365	5372	7	Limestone, gray, cherty, fossiliferous
	5372		Total depth