

Grace Land Company No. 1 (1031) Well

Richmond District, Raleigh County, W. Va

By Godfrey L. Cabot, Inc., Charleston, W. Va.

Located 2.42 mi. S. of 37° 45' and 1.78 mi. W. of 81° 00' -NE- Flattop
Quadrangle.

Elevation, 2927.44' L.

Permit Ral-16.

Drilling commenced April 27, 1942; completed, Sept. 5, 1942.

13 3/8" casing, 21'; 10 3/4", 600'; 8 5/8", 2930'.

Dry Hole.

Section based on samples from 390 to 5170' examined by J. H. C. Martens.

Identification of the Berea Sandstone is very doubtful, so that the
thicknesses for the Pocono Formation and Devonian Shales are uncertain.

Thick-
Top. Bottom. ness.

Pottsville Formation, 519+ feet

0	390	390	No sample
390	400	10	Shale and siltstone, gray
400	405	5	Siltstone, gray, sandy
405	440	35	Shale, gray, very silty; some siderite concretions
440	479	39	Siltstone, gray; very sandy toward bottom
479	486	7	Sandstone, light-gray, fine
486	505	19	Shale, very dark gray, silty
505	519	14	Siltstone, gray, sandy

Mauch Chunk Group, 2361 feet

519	536	17	Shale, brownish-gray, soft, with siderite spherulites
536	542	6	Shale, gray, calcareous
542	555	13	Shale, red and gray
555	560	5	Shale, gray with small red specks, soft
560	585	25	Shale, red and gray, calcareous
585	590	5	Shale, gray, silty
590	600	10	Siltstone, gray, sandy and shaly
600	609	9	Sandstone, white, coarse
609	614	5	Shale, red
614	637	23	Siltstone, gray to greenish, coarse

Top.	Bottom.	Thick- ness.	
637	665	28	Shale, red, partly calcareous
665	670	5	Sandstone, white with green specks, fine, calcareous
670	686	16	Shale, red
686	689	3	Sandstone, light-green, fine, calcareous
689	695	6	Shale, gray
695	717	22	Shale, red with some green; contains small limestone nodules
717	726	9	Siltstone, gray, coarse, calcareous
726	739	13	Shale, red and green, with limestone, nodules
739	750	11	Sandstone, light-gray, fine, calcareous
750	770	20	Shale, and siltstone, gray
770	780	10	Sandstone, light-gray, fine, calcareous
780	795	15	Shale, black
795	807	12	Siltstone, gray, sandy
807	815	8	Siltstone and silty shale, gray
815	863	48	Shale, dark-gray, distinctly laminated; contains a few fossil shells
863	876	13	Sandstone, gray; fine to very fine, 40 to 60%; nearly black silty shale, 60% to 40%
876	880	4	Shale, dark-gray
880	903	23	Sandstone, light-gray, fine, slightly calcareous
903	927	24	Siltstone, gray, shaly, slightly calcareous
927	937	10	Sandstone, light-gray, fine to very fine, calcareous
937	953	16	Shale and siltstone, gray
953	962	9	Siltstone, gray, 60%; fine to very fine, light-gray sandstone, 40%
962	968	6	Sandstone, white, fine, 60%; dark-gray shale, 40%
968	978	10	Sandstone, gray, very fine, 60%; darker gray shale and siltstone, 40%
978	1010	32	Shale, gray, silty
1010	1032	22	Shale, dark-gray, 60%; dark brownish gray impure limestone, 40%
1032	1047	15	Shale, very dark gray, distinctly laminated; contains fossil shells
1047	1053	6	Shale, dark-brownish gray, highly calcareous and fossiliferous

Top.	Bottom.	Thick- ness.	
1053	1080	27	Shale, dark-gray, interbedded with coarse siltstone
1080	1100	20	Siltstone, dark-gray, shaly
1100	1108	8	Shale, gray; calcareous
1108	1115	7	Shale, red and green
1115	1120	5	Siltstone and shale, gray
1120	1146	26	Sandstone, white, fine
1146	1150	4	Sandstone, light-grayish-green, fine
1150	1157	7	Siltstone, gray, sandy
1157	1160	3	Shale, gray, silty
1160	1170	10	Siltstone and shale, gray
1170	1185	15	Shale, gray and red; also some greenish siltstone
1185	1222	37	Shale, gray
1222	1227	5	Shale, red and green
1227	1240	13	Siltstone, gray and red, shaly
1240	1257	17	Shale, dark-gray, soft, dolomitic
1257	1287	30	Shale, dark brownish gray, partly dolomitic
1287	1318	31	Limestone, gray to light-brown, mostly very fine textured (Avis Limestone)
1318	1329	11	Limestone, gray, shaly, fossiliferous
1329	1368	39	Shale and siltstone, red, calcareous; many small nodules of gray to reddish limestone
1368	1388	20	Shale, red, calcareous
1388	1409	21	Siltstone, red, slightly calcareous
1409	1498	89	Shale, red; considerable fine red siltstone in some samples
1498	1510	12	Siltstone, light-red, calcareous; also some red and gray shale
1510	1562	52	Shale, red, mostly silty, calcareous
1562	1570	8	Shale, gray and red; also traces of coal and several pieces of pyrite
1570	1589	19	Shale, red, silty
1589	1592	3	Siltstone, light-red, sandy
1592	1600	8	Shale, red
1600	1607	7	Siltstone, grayish-red
1607	1665	58	Shale, red, with only a little calcareous material

Top.	Bottom.	Thick- ness.	
1665	1672	7	Siltstone, light-red, calcareous
1672	1700	28	Shale, red, mostly silty, moderately calcareous
1700	1717	17	Siltstone, red
1717	1732	15	Shale, gray, calcareous and fossiliferous
1732	1748	16	Shale and siltstone, gray
1748	1756	8	Siltstone, gray and red, coarse
1756	1767	11	No sample
1767	1772	5	Shale, gray, silty
1772	1797	25	Shale, red, gray and green; some very fine textured dolomite near top of interval
1797	1818	21	Shale, red, silty
1818	1823	5	Siltstone, grayish-green
1823	1827	4	Shale, gray, silty
1827	1832	5	Sandstone, white, medium-grained, 50%; red shale, 50%
1832	1846	14	Shale, and siltstone, gray
1846	1854	8	Shale, red and gray
1854	1856	2	Siltstone, gray, sandy
1856	1896	40	Shale and siltstone, gray
1896	1915	19	Shale, brownish-gray, soft, dolomitic
1915	1921	6	Shale, red, silty, calcareous
1921	1931	10	Siltstone, red
1931	1960	29	Sandstone, red, very fine to medium-grained
1960	1979	19	Shale, red, calcareous
1979	1984	5	Shale, red and gray, 70%; gray dolomitic limestone, 30%
1984	1992	8	Shale, red, calcareous
1992	1998	6	Shale, red and gray, 80%; light-brown, very fine textured dolomite, 15%; white and reddish anhydrite, 5%
1998	2005	7	Shale, red
2005	2047	42	Shale, grayish red, silty
2047	2049	2	Siltstone, red
2049	2101	52	Shale, red, mostly non-calcareous; much of it is silty
2101	2110	9	Shale, gray and red, 80%; gray dolomite, 20%
2110	2126	16	Shale, red, silty
2126	2132	6	Shale, gray, soft

Top.	Bottom.	Thick- ness.	
2132	2140	8	Shale, gray, 75%; gray dolomite, 20%; white anhydrite, 5%
2140	2159	19	Shale, gray
2159	2167	8	Shale, red and gray, silty
2167	2171	4	Siltstone, gray
2171	2176	5	Shale, gray; small amount of black shale, coal and pyrite
2176	2184	8	Siltstone, gray, fine
2184	2194	10	Shale, dark-gray
2194	2214	20	Shale and siltstone, gray
2214	2230	16	Siltstone and shale, gray
2230	2232	2	Limestone, dark-gray
2232	2261	29	Shale, gray, silty, with small amount of gray limestone
2261	2272	11	Shale, red and gray
2272	2301	29	Shale, gray, with a few fossils; highly calcareous, 2286-2292'
2301	2315	14	Shale, gray, highly dolomitic
2315	2490	175	No samples
2490	2550	60	Shale, dark-gray, distinctly laminated, highly calcareous and fossiliferous
2550	2583	33	Shale, gray, silty; contains a few fossil shells
2583	2645	62	Shale, dark-gray, distinctly laminated, fossiliferous
2645	2667	22	Limestone, dark-gray with white spots; some dark-gray shale, probably cavings
2667	2689	22	Limestone and calcareous shale, dark-gray, fossiliferous
2689	2700	11	Shale and siltstone, dark-gray, calcareous, 80%; gray limestone, 20%
2700	2710	10	Shale, gray, somewhat calcareous
2710	2750	40	Limestone, dark-gray to brownish with some white spots, fossiliferous
2750	2789	39	Shale, dark-gray, highly fossiliferous and calcareous
2789	2850	61	Shale, dark-gray, distinctly laminated, calcareous; contains fewer fossils and breaks in larger pieces than the shale immediately above. (Top of Big Lime at 2815' in driller's record).

Top.	Bottom.	Thick- ness.	
2850	2859	9	Shale, very dark gray, 60%; gray to white, crystalline limestone, 40%
2859	2864	5	Limestone, light-gray to white, 70%; gray and grayish-green, shale, 30%
2864	2880	16	Shale, gray, silty, highly calcareous; also small amount of limestone

Greenbrier Limestone, 570 feet

2880	2884	4	Limestone, dark brownish gray with white spots
2884	2937	53	Limestone, gray and white, crystalline, fossiliferous
2937	2945	8	Limestone, gray, silty, shaly and dolomitic
2945	2987	42	Limestone, light-gray, with some oolites
2987	3003	16	Limestone, dark brownish gray
3003	3058	55	Limestone, brown
3058	3086	28	Limestone, gray, shaly
3086	3096	10	Limestone, light-brown, oolitic
3096	3182	86	Limestone, brown to light-brown
3182	3205	23	Limestone, dark-brown
3205	3234	29	Limestone, light-brown
3234	3241	7	Limestone, red and light-brown
3241	3299	58	Limestone, light-brown
3299	3340	41	Limestone, brown
3340	3350	10	Limestone, light-brown
3350	3369	19	Limestone, light-brown to white
3369	3379	10	Limestone, brown and dark-brown
3379	3391	12	Limestone, brown, gray and white, somewhat dolomitic
3391	3402	11	Limestone, white, dolomitic; a little white and orange chert
3402	3410	8	Limestone, light-gray and light-brown, dolomitic, with a little chert
3410	3417	7	Limestone, light-gray, dolomitic
3417	3425	8	Dolomite, gray
3425	3430	5	Limestone, brown
3430	3435	5	No sample

Thick-
Top.Bottom. ness.

3435 3450 15 Limestone, gray, dolomitic, slightly sandy

Maccrady Formation, 44 feet

3450 3486 36 Shale, red, mostly silty, with a little anhydrite

3486 3494 8 Shale, gray to grayish-green with small amount of white
anhydrite, 70%; red shale, 30%

Pocono Formation, 38 feet

3494 3996 2 No sample

3496 3504 8 Sandstone, light-gray, very fine, with a few coarse grains,
70%; gray shale and siltstone, 30%; a little white
anhydrite, apparently occurring in veins

3504 3518 14 Shale and siltstone, gray; some of siltstone contains
anhydrite

3518 3536 18 Siltstone, gray, sandy; contains a little anhydrite which
has apparently not fallen in from the red shale above
since some is attached to the gray siltstone

3536 3546 10 Siltstone, gray, very sandy

3546 3656 10 Siltstone, gray, shaly

3556 3593 37 Siltstone, gray to dark-gray, shaly

3593 3610 17 Siltstone and silty shale, dark-gray

3610 3669 59 Siltstone, gray, coarse

3669 3675 6 Siltstone, red with some gray, coarse, dolomitic

3675 3690 15 siltstone, gray, coarse; some red siltstone at top

3690 3725 35 Siltstone, gray, with a little darker shale

3725 3730 5 Siltstone, gray; also a little brownish medium-grained
pyritic sandstone, a little dark-gray shale and a few
coarse quartz grains

3730 3751 21 Sandstone, gray and brown, mostly very fine, with a few
coarse quartz grains

3751 3759 8 Siltstone, gray, sandy

3759 3770 11 Sandstone, gray, very fine, 60%; black shale, 40%

3770 3780 10 Shale, black, silty

3780 3798 18 Sandstone, light-gray, very fine, 60 to 80%; darker gray
shale and siltstone, 40 to 20%

Thick-
Top. Bottom. ness.

3798	3830	32	Shale, very dark gray
3830	3840	10	Shale, very dark gray, 60%; lighter gray siltstone and very fine sandstone, 40%
3840	3850	10	Siltstone, gray to light-gray, mostly sandy, 60%; dark-gray silty shale, 40%
3850	3860	10	Shale, very dark-gray with a little lighter gray siltstone
3860	3878	18	Shale, very dark gray, 60%; gray to light-gray, fine to coarse sandstone with pyrite crystals, 40% (Berea?)

Devonian Shales, 1292? feet

3878	3910	32	Shale, very dark gray, small amount of fine gray to brownish sandstone, at least part of which occurs as thin streaks in the shale
3910	3946	36	Shale, dark-gray, 70%; fine gray sandstone with yellow and brown spots, 30%; the shale and sandstone are thinly interstratified
3946	3965	19	Shale and siltstone, gray, 60%; light-gray, fine to very fine sandstone, 40%
3965	3984	19	Siltstone, gray
3984	40 ⁵⁵ 60	7 ¹ 6	Shale, dark-gray, interstratified with large amount of lighter gray siltstone
4055	4098	43	Siltstone, gray, 80%; dark-gray, silty shale, 20%
4098	4106	8	Siltstone and silty shale, dark-gray
4106	4188	32	Shale, dark-gray
4138	4144	6	Shale, dark-gray, 60%; gray siltstone, with specks of yellowish-brown siderite, 40%
4144	4313	269	Shale and siltstone, gray
4313	4318	5	Sandstone, very light-brown, very fine
4318	4331	13	No sample
4331	4504	173	Shale and siltstone, gray; some samples contain some light-gray to brownish very fine sandstone
4504	4578	74	Shale, gray, with rather small amount of siltstone
4578	4616	38	Shale and siltstone, gray
4616	4646	30	Shale, dark-gray with rather small amount of siltstone
4646	4764	118	Shale, gray to dark-gray, silty

Top.	Bottom.	Thick- ness.	
4764	4870	106	Shale and siltstone, gray
4870	5052	182	Siltstone, gray to light-gray, 80%; darker gray shale, 20%
5052	5075	23	Shale and siltstone, gray
5075	5170	95	Siltstone, gray to light-gray, 70 to 80%; darker gray, mostly silty shale, 30 to 20%
5170			Total depth.