

Allen Hardman No. 2 (7846)

Sherman District, Calhoun County, W. Va.

By Hope Natural Gas Company, Clarksburg, W. Va.

Located 0.55 mi. W. of 81°05' and 3.2 mi. S. of 39°00' -NC- Arnoldsburg Quadrangle;

2 mi. N. of Grantsville.

Elevation, 1067' L.

Permit Cal-513.

Drilling commenced July 5, 1939; completed, August 7, 1939.

Gas well; volume, 785,000 cu. ft. per day; rock pressure, 690 lbs. in 24 hrs.

No fresh water recorded. Salt water at 1885 and 1960'.

No coal recorded by driller.

10" casing, 224'; 8 1/4", 1102'; 6-5/8", 2065'; 3" tubing, 2210'.

Drillers' record, 0 to 500'; record based on samples 500-2205'.

The well starts about 50 feet below the Washington Coal horizon.

Top	Bottom	Thickness	<u>Permian and Pennsylvanian, 1987+ feet</u>
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0	12	12	Surface
12	20	8	Sand
20	40	20	Slate
40	120	80	Sand
120	140	20	Slate
140	147	7	Red rock
147	165	18	Slate
165	182	17	Sand
182	198	16	Slate
198	220	22	Red rock
220	250	30	Lime
250	255	5	Slate
255	285	30	Lime
285	325	40	Red rock
325	350	25	Lime
350	365	15	Red rock
365	405	40	Slate
405	439	34	Gritty lime

Top	Bottom	Thickness	
439	445	6	Slate
445	467	22	Lime
467	485	18	Sand
485	500	15	Slate
500	520	20	Shale, gray to grayish-green, silty and micaceous
520	530	10	Sandstone, light-gray, medium-grained; contains muscovite, chlorite, pyrite and kaolin
530	540	10	Shale, gray, fine and soft, 50%; gray siltstone and silty shale, 50%
540	560	20	Clay, red and yellow, calcareous
560	565	5	Siltstone, green, micaceous, with abundant limestone nodules
565	592	27	Sandstone, light-gray and light-green, fine, micaceous, 60 to 80%; green micaceous siltstone, 40 to 20%; some siderite in both siltstone and sandstone
592	637	45	Sandstone, grayish-green, fine to very fine, micaceous and partly calcareous; samples also contain some clay and shale of various kinds, probably cavings
637	658	21	Sandstone, white with a few green specks, coarse
658	669	11	Shale, grayish-green, 70%; green siltstone, 30%
669	681	12	Clay, red and yellow, calcareous; contains small limestone nodules
681	688	7	Clay, red and yellow, calcareous, 60%; green siltstone and sandstone, 40%
688	715	27	Clay, red and yellow, soft, calcareous, 80%; green micaceous shale, 20%
715	735	20	Clay, red, soft, calcareous
735	745	10	Siltstone, green, micaceous; some red clay, probably cavings
745	774	29	Clay and soft shale, red, 70 to 90%; green siltstone, 30 to 10%
774	792	18	Clay, gray, soft; fragments fall to pieces when put in water
792	822	30	Shale and siltstone, gray to grayish-green
822	844	22	Coal and black shale, 30%; gray clay and soft shale, 70%; the three samples from this interval are all practically the same so it is impossible to get the true position and thickness of the coal

Top	Bottom	Thickness	
844	850	6	Sandstone, light-green, very fine; contains limestone nodules
850	855	5	Siltstone, gray, shaly, micaceous
855	875	20	Sandstone, light-green to nearly white, medium-grained
875	880	5	Limestone, grayish-green, very clayey; almost a calcareous shale
880	900	20	Clay, red, calcareous
900	935	35	Siltstone, green, micaceous
935	940	5	Clay, yellow, brown, and red; also a little brown limestone and green siltstone
940	946	6	Limestone, brown, 70%; green and red clay or soft shale, 30%
946	954	8	Shale, green, soft, 50%; the rest brown impure limestone and red and yellow clay
954	961	7	Clay, red and light-gray; some very soft and some harder; with conchoidal fracture
961	968	7	Siltstone, light grayish green, calcareous
968	985	17	Clay, red, gray, and yellow, soft; contains some limestone nodules
985	1000	15	Sandstone, light grayish green, fine, calcareous and micaceous; many siderite spherulite, 990-1000'
1000	1010	10	Shale, dark-gray, silty
1010	1025	15	Clay, light-gray, soft, with small siderite spherulites
1025	1030	5	Clay, red, gray, and yellow, soft; there are some fragments in which all three colors appear
1030	1059	29	Shale, green; interstratified with green micaceous siltstone containing siderite spherulites
1059	1068	9	Sandstone, light-green, very fine, micaceous; contains calcareous streaks or nodules
1068	1083	15	Shale and siltstone, grayish-green
1083	1096	13	Shale, dark-gray, silty
1096	1120	24	Sandstone, gray, fine; contains muscovite, biotite, chlorite,
1120	1156	36	Shale, gray, partly silty
1156	1170	14	Sandstone, light-green, fine, micaceous
1170	1218	48	Sandstone, white to light-gray, medium- to coarse-grained; contains small amounts of muscovite, biotite, chlorite, kaolin and siderite

Top	Bottom	Thickness	
1218	1225	7	Shale and siltstone, brownish-gray; small amount of coal at about 1225'
1225	1235	10	Sandstone, nearly white, medium-grained
1235	1239	4	Shale and siltstone, gray
1239	1250	11	No sample
1250	1262	12	Shale and siltstone, gray
1262	1298	36	Sandstone, nearly white, medium- to coarse-grained
1298	1302	4	Shale, dark-gray, with traces of coal
1302	1316	14	Sandstone, white, coarse
1316	1325	9	Shale, dark-gray, silty
1325	1358	33	Sandstone, nearly white, medium-grained; contains a little mica, chlorite, and siderite
1358	1367	9	Clay, nearly white, soft
1367	1405	38	Clay, nearly white, 50%; brownish-gray shale, 30%; gray siltstone, 20%
1405	1408	3	Sandstone, light-gray, very fine; also a little gray shale and impure coal
1408	1440	32	Sandstone, nearly white, medium-grained; contains a little mica, chlorite and kaolin
1440	1512	72	Shale, dark-gray to black, mostly silty; contains siderite concretions
1512	1525	13	Sandstone, nearly white, medium-grained
1525	1535	10	Shale, black
1535	1545	10	Siltstone, light-gray, with many siderite spherulites
1545	1550	5	Sandstone, light-gray, fine; contains siderite spherulites
1550	1604	54	Siltstone, gray, shaly, micaceous
1604	1642	38	Shale and siltstone, dark-gray, micaceous
1642	1695	53	Sandstone, light-gray, fine; contains streaks of mica and carbonaceous material; some dark shale and siltstone, 1642-1669'
1695	1717	22	Sandstone, nearly white, medium-grained
1717	1730	13	Shale, black, 60%; white medium-grained sandstone, 40%; also a little coal

Top	Bottom	Thickness	
1730	1745	15	Shale, dark-gray, silty, 70%; light brownish gray shale and siltstone, 30%
1745	1760	15	Sandstone, gray, very fine
1760	1782	22	Sandstone, nearly white, medium-grained
1782	1786	4	Sandstone, light-brown, very fine
1786	1830	44	Siltstone and shale, gray
1830	1854	24	Sandstone, nearly white, coarse
1854	1860	6	Shale and clay, gray, soft
1860	1880	20	Sandstone, nearly white, medium-grained; somewhat calcareous 1860-1870'
1880	1900	20	Sandstone, white, coarse, nearly all quartz; crystal faces on many grains (water, 1885')
1900	1930	30	Siltstone and shale, gray
1930	1945	15	Sandstone, white, fine, nearly all quartz
1945	1987	42	Sandstone, white with some rust stain, medium-grained; below 1954' it is mostly broken up into individual grains (water, 1960')
<u>Mauch Chunk Group, 57 feet</u>			
1987	1989	2	Shale, gray, soft
1989	2006	17	Limestone, dark-brown ("Little Lime")
2006	2008	2	Shale, gray, soft
2008	2044	36	Sandstone, white with some rust stain, fine; mostly broken up into individual grains
<u>Greenbrier Limestone, 159 feet</u>			
2044	2116	72	Limestone, light-brown
2116	2126	10	Limestone, very light brown, sandy and oolitic
2126	2154	28	Sandstone, very light-brown (gray when dry), fine, highly calcareous; contains abundant oolites and could just as well be called limestone as sandstone; many of grains are rounded and frosted
2154	2160	6	Sandstone, very light-brown, fine, highly calcareous
2160	2179	19	Limestone, nearly white, sandy, colomitic; contains some indistinct oolites (gas, 2170-2172-2179-2188-2192')

Top Bottom Thickness

2179 2203 24 Dolomite, nearly white, sandy; contains a large proportion
of rounded and frosted quartz grains

Pocono Formation, 7+ feet

2203 2205 2 Shale, gray

2210 Total depth