

Operator: Clinchfield Coal Co.
 Farm: Virginia Coal and Iron Co.
 Well No.: 180
 Location: Wise County
 6000' N of 37°00'
 8400' E of 82°45'

Elevation: 2386.6'
 Total depth: 5596'

Remarks: Elevation and location of well site with reference to: geology along Rocky Fork Basin, and measured sections Nos. 209, 210, and 174, indicate that ^{well} located just above the Low Splint and well above Taggart coal seam. Correlations by Marshall Miller, 1970-74, VDMR.

<u>Formation</u>	<u>Top</u>	<u>Bottom</u>	<u>Thickness</u>
Pennsylvanian System			
Post Lee Formation "in at surface"		1702	1702'
		Kelly coal 566-568	
		Imboden coal 625-626	
		Gladeville sand interval 1104-1159	55'
		Kennedy coal 1685-1687	
Lee Formation	1702	3079	1377'
		quartzose sand 1702-1845	143'
		quartzose sand 1870-1938	68'
		quartzose sand 1958-1980	22'
		quartzose sand 2105-2195	90'
		quartzose sand 2420-2490	70'
		War Creek coal at 2700'	
		quartzose sand 2568-2631	63'
		quartzose sand 2793-2858	65'
		quartzose sand 2906-3079	173'
Pocahontas Formation	"absent"		
Mississippian System			
Pride Formation	3079	3361	282'
Princeton Interval	"absent"		
Little Stone Gap Mem.	3361	3381	20'
Stony Gap Sand	3624	3763	139'
Greenbrier Formation	3943	4460	517'
Maccrady	4460		

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Geologic log by Marshall S. Miller, 1970-71, well cuttings borrowed from
Clinchfield Coal Co.

<u>Depth</u>	<u>Thickness</u>	<u>Description</u>
0-125	125'	Sandstone, light gray to grayish brown, very fine to medium grained, subangular, poorly sorted, with abundant muscovite flakes, chlorite, reddish iron minerals (siderite), carbonaceous material, limonite stains and traces of feldspar, about 60% quartz, 5% feldspar, 20% matrix, 15% rock fragments and accessory minerals
125-160	35'	Siltstone, gray, micaceous, argillaceous
160-222	62'	Sandstone, light gray to white, medium to coarse grained, subangular, poorly sorted, with rare but large muscovite flakes, scattered chlorite, and greenish stained quartz, traces of feldspar, abundant carbonaceous material, and clay and silt matrix material, about 55% quartz
222-240	18'	No samples
240-250	10'	Sandstone, as in 160-222
250-288	38'	No samples
288-368	80'	Sandstone, white, moderately quartzose, fine to medium grained, subround to subangular, moderately sorted, with scattered chlorite and carbonaceous material, dark rock fragments, rare muscovite, and reddish brown iron minerals
368-422	54'	Siltstone, dark gray to gray, argillaceous, and more shaly
422-427	5'	No samples

427-481	54'	Shale, gray to brownish gray, finely micaceous, locally silty, with minor ironstone stringers
481-509	27'	Sandstone, white to light gray, fine to medium grained, subangular to subround, moderately sorted, with scattered carbonaceous material and dark rock fragments, abundant clay-silt matrix material, about 70% quartz
509-515	6'	Siltstone, brown, brownish gray, siliceous, locally carbonaceous
515-516	1'	Coal, dull, silty, and impure
516-525	9'	Siltstone, as in 509-515
525-566	41'	Shale, gray, brownish gray, and brownish red, finely micaceous, hard, brittle, with minor amounts of ironstone
566-568	2'	Coal, pure to impure, shaly in part
568-578	10'	Shale, as in 525-566
578-625	47'	Siltstone, gray to light tan, argillaceous or shaly, occasionally carbonaceous
625-626	1'	Coal
626-678	52'	Siltstone, as in 578-625
678-686	18'	No samples
686-705	19'	Limestone, dark gray, finely crystalline, and argillaceous, minor amounts of gray, calcareous shale
705-727	22'	No samples
727-747	20'	Limestone, as in 686-705
747-810	53'	Shale, gray, locally calcareous, with minor amounts of red ironstone
810-814	4'	Coal, good show, coal cuttings persist through 30-40' of cuttings; driller notes coal 810-814, good vitreous luster, blocky and conchoidal fracture

814-854	40'	Interbedded; siltstone, gray, argillaceous; and sandstone, gray, fine grained, silty, micaceous, abundant carbonaceous material persist throughout interval
854-912	58'	Shale, gray to dark gray, generally silty
912-951	39'	No samples
951-981	30'	Shale, gray, finely micaceous, with minor amounts of ironstone
981-1104	123'	Siltstone, gray, to light gray, brown and tan, generally argillaceous, but locally siliceous, with occasional carbonaceous material, finely micaceous, locally pyritic, minor stringers of grayish brown, fine grained, micaceous, silty sandstone
1104-1159	55'	Sandstone, light gray to gray, fine grained to medium grained, subangular, moderately sorted, micaceous, slightly feldspathic, with carbonaceous-silt partings, abundant clay and silt matrix material, 65% quartz
1159-1208	49'	Siltstone, gray, argillaceous
1208-1280	72'	No samples
1280-1326	46'	Sandstone, white to light gray, fine to medium grained, subangular, moderately sorted, micaceous, slightly feldspathic, with scattered carbonaceous material, 70 to 75% quartz
1326-1346	20'	Shale, dark gray to black, hard, brittle, silty
1346-1390	44'	No samples
1390-1446	56'	Sandstone, light gray, fine to coarse grained, subround to subangular, poorly sorted, abundant clay-silt matrix material, rare micas and carbonaceous material
1446-1518	72'	Shale, gray, silty

1518-1576	58'	Sandstone, light gray to white, moderately quartzose, fine grained, subround to subangular, moderately well sorted, with finely dispersed carbonaceous material, dark rock fragments, trace of feldspar, and reddish iron minerals, about 80% quartz
1576-1617	41'	Sandstone, white, fine to medium grained, subround to subangular, moderately sorted, with small amounts of carbonaceous material, reddish iron minerals and chlorite, considerable clay-silt matrix material, 85% quartz
1617-1668	51'	Shale, dark gray, black, carbonaceous, finely micaceous
1668-1685	17'	Sandstone, white, fine to medium grained, subangular, moderately sorted, with scattered muscovite, biotite, chlorite, limonite and carbonaceous material, abundant clay-silt matrix material, 70 to 75% quartz
1685-1687	2'	Coal, silty, impure, with abundant plant fossils
1687-1702	15'	Siltstone, dark gray, black, carbonaceous
1702-1714	12'	Sandstone, white, quartzose, fine grained, subrounded, well sorted, small amount of clay-silt matrix, rare muscovite, and scattered dark rock fragments, 90% quartz, 5% matrix, 5% rock fragments, less than 1% accessory minerals
1714-1721	7'	No samples
1721-1750	29'	Sandstone, as in 1702-1714
1750-1845	95'	Sandstone, white, quartzose, medium to coarse grained, occasional granular grains, subround to subangular, no matrix material, cementing by secondary quartz overgrowths, rare dark rock fragments, 95 to 100% quartz
1845-1850	5'	No samples
1850-1861	11'	Shale, dark gray to black, silty and carbonaceous
1861-1870	9'	No samples

1870-1880	10'	Sandstone, white, quartzose, medium to granular grained, subround to subangular, poorly sorted, abundant secondary quartz overgrowths visible, rare dark rock fragments, little to no matrix material, 95% quartz
1880-1910	30'	Sandstone, as in 1870-1880,, and conglomeratič
1910-1920	10'	Sandstone as in 1870-1880
1920-1938	18'	Sandstone as in 1870-1880, and conglomeratic
1938-1956	18'	Sandstone, gray, very fine to fine grained, subangular, moderately to poorly sorted, with abundant clay and silt matrix material, muscovite, biotite, chlorite, reddish iron minerals, and yellow limonitic iron stains, considerable carbonaceous material, 65 to 70% quartz
1956-1958	2'	Coal, good show, very pure, good vitreous luster, good conchoidal fracture
1958-1980	22'	Sandstone, white, quartzose, medium grained, subround to subangular, medium grained to granular, little to no matrix material, with scattered conglomerate, 95% quartz
1980-1997	17'	Shale, gray, hard, brittle
1997-2058	61'	Sandstone, light gray to light tan, very fine to fine grained, subround, moderately sorted, micaceous, slightly feldspathic, abundant clay-silt matrix material and dark rock fragments, about 60% quartz
2058-2068	10'	Shale, gray, silty, finely micaceous
2068-2075	7'	No samples
2075-2105	30'	Shale, dark gray to black, carbonaceous, finely micaceous
2105-2146	41'	Sandstone, white, quartzose, medium grained, subround, moderately well sorted, with rare muscovite, dark rock fragments and small amount of clay matrix material, 90% quartz, 5% matrix, 5% dark rock fragments

2146-2195	49'	Sandstone, as in 2105-2146, finer grained, and with scattered carbonaceous material
2195-2235	40'	Siltstone, gray, argillaceous or shaly
2235-2239	4'	Coal, silty, impure, bony
2239-2248	9'	Sandstone, light gray, fine grained, interstitially silty, micaceous, slightly feldspathic, with finely dispersed carbonaceous material
2248-2250	2'	Coal
2250-2255	5'	Sandstone, as in 2239-2248
2255-2257	2'	Coal
2257-2268	11'	Sandstone as in 2239-2248, and shale, dark gray, carbonaceous
2268-2270	2'	Coal
2270-2279	9'	Shale, black, silty, carbonaceous
2279-2335	56'	Sandstone, white to light gray, fine to medium grained, subangular, poorly sorted, with scattered muscovite, reddish iron minerals, traces of feldspar, abundant clay-silt matrix material, dark rock fragments and carbonaceous material, about 65% quartz, 5% feldspar, 15% matrix, 15% rock and mineral fragments
2335-2339	4'	Coal, silty, impure
2339-2371	32'	Shale, gray, hard, fissile, carbonaceous
2371-2402	31'	Shale, as in 2339 2371, and sandstone, gray, fine grained, silty and micaceous
2402-2404	2'	Coal
2404-2420	16'	No samples

2420-2435	15'	Sandstone, white, quartzose, medium grained to granular, subround to subangular, poorly sorted, small amount of clay and silt matrix material, visible secondary quartz overgrowths, rare dark rock fragments, over 90% quartz, 5% matrix material
2435-2441	6'	Sandstone as in 2420-2435, and conglomeratic
2441-2449	8'	Sandstone as in 2420-2435
2449-2490	51'	Sandstone as in 2420-2435, and conglomeratic
2490-2500	10'	No samples
2500-2509	9'	Sandstone, light gray to yellow (due to iron staining) fine to coarse grained, subangular, poorly sorted, with abundant clay and silt matrix material, and considerable rock fragments and carbonaceous material, about 75% quartz, 15% matrix, 10% rock fragments
2509-2518	9'	No samples
2518-2526	8'	Sandstone, as in 2500-2509
2526-2532	6'	No samples
2532-2540	8'	Sandstone, as in 2500-2509
2540-2548	8'	No samples
2548-2554	6'	Sandstone, as in 2500-2509, fine grained
2554-2562	8'	No samples
2562-2565	3'	Shale, dark gray, carbonaceous
2565-2566	1'	Coal
2566-2568	2'	Shale, black, carbonaceous
2568-2615	47'	Sandstone, white, quartzose, fine grained to granular, subround to subangular, poorly sorted secondary quartz overgrowth visible, rare dark rock fragments, little to no matrix material, 90 to 95% quartz

2615-2623	8'	Sandstone, as in 2568-2615, and conglomeratic
2623-2631	8'	Sandstone, as in 2568-2615
2631-2726	95'	Shale, gray to dark gray, finely micaceous, locally silty, with occasional plant fossils
2726-2793	67'	Sandstone, white, fine to medium grained, subangular, poorly sorted, with considerable clay and silt matrix, scattered muscovite, biotite, dark rock fragments, and carbonaceous material, about 80% quartz
2793-2815	22'	Sandstone, white, quartzose, medium grained to granular, subangular to subround, poorly sorted, rare dark rock fragments, little to no matrix material, 90% quartz, 5% matrix, 5% rock fragments
2815-2858	43'	Sandstone, as in 2793-2815, and conglomeratic
2858-2906	48'	Sandstone, white, moderately quartzose, fine to medium grained, poorly sorted, with scattered muscovite, carbonaceous material, and dark rock fragments, small amount of clay and silt matrix material, 80 to 85% quartz
2906-3079	173'	Sandstone, white, quartzose, fine to coarse grained, subangular to subround, moderately to poorly sorted, little or no matrix material, other than secondary quartz overgrowths, rare dark rock fragments, 90 to 95% quartz
		- unconformity -
3079-3163	84'	Shale, gray, silty, carbonaceous, with minor amounts of siltstone, coarse-grained, siliceous and locally argillaceous
3163-3361	198'	Shale, gray, dark gray, and black, locally carbonaceous, locally silty

3361-3381	20'	Interbedded; shale and limestone; shale is green, calcareous; limestone is brownish gray, impure and argillaceous, with scattered crinoid stems and small fragments of pelecypods and cephalopods
3381-3406	25'	Shale, red calcareous
3406-3491	85'	Shale, red, green, calcareous, and brown, impure, limestone, with crinoid stems, minor amount of green, fine grained sandstone
3491-3502	11'	Sandstone, light greenish gray, fine grained, calcareous, with scattered carbonaceous material
3502-3545	43'	Shale, red, green and gray, locally calcareous
3545-3577	32'	Sandstone, white to light gray, fine grained, locally silty with small amount clay matrix, moderately quartzose
3577-3624	47'	Siltstone, light gray, siliceous, calcareous, with abundant calcareous clay matrix
3624-3763	139'	Sandstone, white, moderately quartzose and quartzose, fine grained, subrounded, well sorted, with calcareous clay matrix material, minor amounts of red and green calcareous shale
3763-3772	9'	Shale, dark gray, calcareous, with minor amounts of brown, argillaceous limestone
3772-3818	46'	Sandstone, as in 3624-3763, with minor amounts of gray, calcareous shale
3818-3847	29'	Limestone, gray, grayish brown, tan, argillaceous
3847-3855	7'	Sandstone, as in 3624-3763
3855-3936	81'	Limestone, dark gray, impure, argillaceous, with red shale; white, fine grained, sandstone; and gray, calcareous shale

3936-3943	7'	Sandstone, white, silty, calcareous
3943-4460	517'	Limestone, for the most part, gray to greenish gray, brown, black and white, locally silty (4018-4044) (4104-4145) and shaly (4230-4280) (4315-4350), dolomitic towards base 4380-4460, cherty (4380-4495), calcite and pyrite are common accessory minerals, fine to coarsely crystalline, often fossiliferous with fragments of brachiopods, crinoids, and other shell fragments (3990-4005), (4070-4090), (4160-4170), (4290-4300); often oolitic (3943-4000), (4070-4180), (4260-4270), (4320-4390)
4460		Siltstone, red, calcareous