

Operator: Pipe Line Construction and Drilling Co.

Farm: A. L. Powers

Well No. 1

VDMR W-2

Index No. 20

Elevation: 1509.25'

Remarks: Well location and elevation with respect to coal seams cannot be determined accurately.

Geologic summary of Pennsylvanian section by Marshall S. Miller. All other descriptions are referred to the geologic log of Williamson and McFarlan, USGS.

<u>Depth</u>	<u>Thickness</u>	<u>Description</u>
40- 42	2'	Coal, noted by driller, no cuttings are available for interval; is probably the Kennedy Coal?
270-304	34'	Sandstone; white to light gray, moderately quartzose, fine to medium grained, sub-angular to subround, poorly sorted, with scattered and consistent muscovite, siderite, dark argillaceous and carbonaceous grains, a few chloritic grains, considerable amount of clay matrix material
486-491	5'	Coal, somewhat silty, dull and bony, but definitely a coal interval, also noted on drillers log. Depth and thickness taken from drillers log.
		*No significant quartzose sands are present in cuttings in upper 500' of well. The sand interval (270-304) described above is the only interval which approaches a quartzose nature.
502-625	123*	This horizon is quartzose in several wells to the northwest and represents the middle quartzose member of the Lee Formation. In the same horizon in wells to the east, this interval has completely lost the coarse grained, quartzose, nature of the Lee quartzose sand. This interval thus represents the most eastward phase of the near-shore sands of the middle quartzose member.

502-513	11'	Sandstone, light gray, very fine to fine grained, subangular to subround, moderately sorted, with abundant dark argillaceous material, scattered muscovite, and dark rock fragments
513-528	15'	Siltstone, dark gray to light gray, micaceous, locally carbonaceous and siliceous
528-548	20'	Sandstone, white, to light gray, mostly fine grained, but occasionally medium grained, subangular to rounded, poorly sorted, with scattered muscovite, biotite, chlorite, phlogopite, dark rock fragments, reddish hematite?, and traces of feldspar; 80 to 85% quartz
548-558	10'	Missing
558-562	4'	Sandstone, like that interval above, but slightly "cleaner"
*562-585	23'	Sandstone, white, fine to medium grained, appears quartzose, subrounded to subangular, poorly to moderately sorted, with scattered coarse grained muscovite, and rare dark rock fragments; 90 to 95% quartz, no clay or silt matrix
*585-598	13'	Sandstone, white, quartzose, medium to coarse grained to granule to conglomeratic, subround to subangular, poorly sorted, 95 to 100% quartz
598-625	27'	Sandstone, light gray, very fine to coarse grained, but generally fine grained, interstitially silty with abundant coal, muscovite, clay, silt, and dark argillaceous material. Coal occurs both loose and in laminations, accessory minerals continue to increase downward, and shale interbeds with sand 608-625.

625-1010	385'	No significant quartzose sands are present in this interval. The geologic log of U.S.G.S. provides description of the cuttings from this interval
1010-1100	90'	Missing samples, although interval has been described by U.S.G.S. Cannot definitely determine if sand is quartzose from their sample descriptions. Correlation of this interval with nearby wells indicates that this interval is not quartzose.
1100-1146	46'	Sandstone, light gray, fine to medium grained, poorly sorted, subangular, with abundant coal, muscovite, chlorite, red and dark minerals, and dark argillaceous material. Abundant coal laminations, clay, silt, and limonite stains; about 65% quartz but increases in quartz, stringers present, occasional shale percentage downward
*1146-1160	14'	Sandstone, white, quartzose, very fine to medium grained, subangular to subround, poorly sorted, with rare muscovite, 90-100% quartz
*1160-1208	48'	Sandstone, white, quartzose, coarse grained to granule, and conglomeratic, very poorly sorted, with quartz fragments up to 7 mm. Also considerable quartzite present.
*1208-1252	44'	Sandstone, white, quartzose, medium to coarse grained to granule, subround to subangular, poorly sorted, no visible matrix material, conglomeratic (1208-1216), (1245-1252)
*1252-1281	29'	Sandstone, white, quartzose, fine to coarse grained, with occasional granules and conglomeratic throughout, subangular to subround, poorly sorted
*1281-1300	19'	Sandstone, white, quartzose, very fine to medium grained, subround to subangular, moderately sorted

*1300-1360	60'	Sandstone, white, quartzose, medium to coarse grained to granule, and conglomeratic with pebble fragments up to 8 mm, subangular to subround, poorly sorted, infrequently masses of siliceous material which appear to have the form of chert or chalcedony, becomes very conglomeratic in basal 26' (1334-1360)
		-Unconformity-
1360-1375	15'	Gray, carbonaceous shale, and gray, fine grained, poorly sorted, low quartz sand. Represents an extreme and abrupt change from the massive sand interval above.
1375-1380	5'	Coal, good show, impure to pure, dull to high vitreous luster, locally silty, usually conchoidal fracture
1380-1396	16'	Sandstone, light gray, fine grained to very fine grained, subangular, poorly sorted, micaceous, feldspathic, with abundant green and brown rock fragments, interstitially silty, with abundant clay matrix
1396-1472	76'	Shale, gray, finely micaceous, locally silty
1472-1500	28'	Sandstone, light gray to light tan, fine to very fine grained, subround to subangular, moderately sorted, very silty, with fine muscovite, thin coaly laminations, and red and dark minerals. Interbeds with a gray silty shale.
1500-1540	40'	Sandstone, white, fine grained, subrounded, well sorted, appears quartzose, with clay, silica, and calcareous cement
1540-1590	50'	Sandstone, white, fine to medium grained, mostly fine grained, subround to subangular, moderately sorted, interstitially silty, with occasional or rare muscovite, hematite, and dark carbonaceous material, grades downward to a medium grained sand by 1567'
1590		Greenish gray shales with lesser amounts of reddish silty shale, locally calcareous

Buchanan County  
 Pipeline Construction and Drilling Co.  
 A. L. Powers #1  
 VDMR W-2  
 Index No. 20  
 Elevation: 1509.25'

Remarks: Elevation and location of well with reference to: measured section 396; coal geology on Slate Creek; core 192, 2 3/4 miles NW; core 193, 3 1/2 miles N; and 196, 3 1/2 miles W. and Va. Poca. Mine #1, 2 3/4 miles SE, indicate that the Kennedy coal is approximately 20' below well site, Aily coal 120', and Raven coal about 180'.  
 Correlations by Marshall Miller, 1970-74, VDMR.

<u>Formation</u>	<u>Top</u>	<u>Bottom</u>	<u>Thickness</u>
<b>Pennsylvanian System</b>			
Post Lee Formation "in at surface"		562	562'
		Kennedy coal 40-42	2'
		Aily coal horizon at 120'	
		Raven coal horizon at 180'	
		Upper Seaboard coal 486-491	5'
Lee Formation	562	1360	798'
		quartzose sand 562-598	36'
		conglomerate 585-598	13'
		quartzose sand 1146-1360	214'
		conglomerate 1160-1216	56'
		conglomerate 1245-1281	36'
		conglomerate 1300-1360	60'
		War Creek coal horizon at 960'	
		total quartzose sand	250'
		total conglomerate	165'
Pocahontas Formation	1360	1590	230'
		Pocahontas #3 coal 1375-1380	
<b>Mississippian System</b>			
Bluestone Formation	1590	2060	470'
Pride Shale	1770?	2060	290'
Princeton Sand	2060	2118	58'
Little Stone Gap	2118	2185	67'
Maxon Sands	2412	2463	51'
	2537	2621	84'
Greenbrier Fm.	3060	3510	450'
Maccrady Fm.	3516		