Buchanan County
Pipeline Construction and Drilling Co.
F. H. Curtis 1-B
VDMR W-4
Index No. 17
Elevation: 1209'
Remarks: Well location about 116' below Kennedy coal, about 59' above the Raven coal. Referred to: measured sections 238, 239, 250, 251, and 253; coal geology on Little Prater Creek; and core [illegible], 3 miles N., core' , 5 miles SE., and Va. Poca. Mine 5 miles E. Correlations by Marshall Miller, 1970-74, VDMR.

Formation	Top	Bottom	Thickness
Post Lee Formation	0	465	465'
		Kennedy coal at -116'	
		McClure Sand Interval -116 -0?	116'
		Aily Coal Horizon at 0	
		Raven Coal Horizon at 59'	
Lee Formation	465	1276	811'
		War Creek Coal Horizon at 880'	
Middle Member 465-604 (139')			
		quartzose sand 465-604?	139?
		conglomeratic 516-535	19'
		conglomeratic 582-586	4'
Lower Member 1090-1276 (186')			
		quartzose sand 1140-1276	136'
		conglomeratic 1186-1231	45'
		conglomeratic 1252-1276	24'
		total quartzose sand	275'
		total conglomerate	92'
Pocahontas Formation	1276	1504	228'
		coal at 1280-1281 No. 4	
		Pocahontas #3 coal 1309-1313	

Mississippian System

Bluestone Formation	1504	1934	430'
Pride Shale	1700	1934	234'
Princeton Sandstone	1934	2050	116'
Little Stone Gap Mem.	2050	2109	59'
Stony Gap Sandstone?	2360	2504	144'
Greenbrier Fm.	3060	3404	344'
Maccrady	3404		

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Geologic review and summary by Marshall S. Miller, August, 1970.

Well has been logged by Voitsberger and Bowen. Two quartzose sand bodies and possibly a third are present according to their descriptions. Bowen applies the term quartzose to practically all of the sandstone, but only when he describes them as being "clean" are they actually quartzose. No "Lee" quartzose sands can be identified until 465'

Bowen places the Lee/Norton contact at 196'. A very fine grained gray, silty sandstone, which is very micaceous, carbonaceous and dirty is present at 196'. Obviously the contact was determined by an approximation of footage and was not determined by any geological reason or change in lithology. Bowen was able to come up with a thickness of 1308' for the Lee Formation. Actually the Lee is only about half that thickness in this well.

465-604	139'	Sandstone, white, fine grained, quartzose (but occasionally pick up too many accessory minerals) well sorted, subangular, silica cemented, with scattered dark, and brown minerals and very rare muscovite, iron stains, fair porosity depending on degree of cementing, usually well cemented. Is too dirty to be a Lee quartzose sand (472-479) (497-506)
1144-1276	131'	A moderately quartzose or subquartzose sand is present at 1090' and gradually "cleans up" downward. At 1090', the sand is light gray to white, fine grained, moderately sorted, subangular, interstitially silty, with scattered muscovite, feldspar, coal and red, green, and brown minerals. About 85-90% quartz. Has gradually changed to a pure quartzose sand by 1144'. The sand is white, but with yellow iron stains, medium grained, but increasing in grain size downward, moderately well sorted, subangular to subround and fairly well cemented with silica. Fair porosity.

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Elevation: 1209'
Remarks: Location and elevation of well indicate well spudded about 116' below Kennedy Coal.
Geologic summary by Marshall S. Miller to name and identify coal beds and Lee quartzose sands. All other descriptions are referred to David Bowens geologic log or Voigtsberger's geologic log.

Depth	Thickness	Description
*465-486	21'	Sandstone, white, fine grained, appears quartzose, subround to subangular, well sorted, with rare muscovite, siderite, and coaly laminations; X-ray analysis indicated quartzose sand, with no feldspar, verified presence of muscovite, siderite and kaolinite. Interval considered a Lee quartzose sand which is beginning to loose its quartzose and coarse grained nature.
*486-516	30'	Sandstone, white, fine to medium grained, occasionally coarse grained, quartzose, subangular to subround, moderately sorted
*516-535	19'	Sandstone, white, quartzose, medium to coarse grained, and granule, conglomeratic, poorly sorted, subround to subangular
*535-540	5'	Sandstone, white, quartzose, fine grained, rounded to subangular, well sorted
*540-548	8'	Sandstone, white, quartzose, medium grained, subrounded, well sorted
548-576	28'	No samples; assumed to be quartzose sand
*576-582	6'	Sandstone, white, quartzose, medium to coarse grained, subround to subangular, moderately sorted

*582-586	4'	Sandstone, white, quartzose, conglomeratic with black carbonaceous shale with fossil rootlets
586-596	10'	No sample
*596-604	8'	Sandstone, white quartzose, medium to coarse grained, subround to subangular, moderately sorted
604-657	53'	No samples
1090-1144	54'	Sandstone, white to buff, appears to be quartzose, but is fine grained throughout, interstitially silty, subround, well sorted, with scattered muscovite, dark carbonaceous material and rare reddish iron minerals. X-ray analysis indicated a high quartz sand, no feldspar, and presence of muscovite, illite, and siderite. Is not a typical Lee quartzose, coarse grained sand; contains too much clay matrix material, is too fine grained and contains too much foreign material.
*1144-1153	9'	Sandstone, white, quartzose, fine to medium grained, subangular to subround, moderately sorted
*1153-1161	8'	Sandstone, white, quartzose, fine to coarse grained to granule, subangular, poorly sorted
*1161-1186	25'	No samples; assumed to be quartzose sand like that above
*1186-1231	45'	Sandstone, white, quartzose, like sand (1153-1161) but silty in interval 1186-1214, and conglomeratic throughout; appears to be 100% quartz
1231-1276	45'	Sandstone, white, quartzose, very fine to medium grained, occasionally coarse grained, subangular to subround, moderately sorted; conglomeratic (1252-1276)

1276-		The interval at 1276' represents an abrupt change; to a coaly interval with a gray, fine grained, micaceous, feldspathic sand.
1280-1281	1'	Coal, pure to impure, dull to vitreous luster, irregular fracture
1309-1313	4'	Coal, pure, good show, with good conchoidal fracture, high vitreous luster, possible the Pocahontas #3 coal

*No significant quartzose sands are present within the Pocahontas interval. One isolated sand interval (1420-1467) does appear quartzose, but is fine grained, and interstitially silty, and generally atypical of the Lee quartzose sands. X-ray of this interval verified a pure quartz sand; however is not massive or coarse grained, light greenish gray shale is present with red siderite nodules at 1504'; at 1511 the red calcareous shales are present.