

Buchanan County
 United Fuel Gas Co.
 National Shawmut Bank of Boston
 Well No.: 8917
 Index No.: 45
 VDMR W-631

Elevation: 1513.46'

Remarks: Well located about 205' below Campbell Creek Coal and about 100' above the Eagle Coal. Referred to measured sections 850, 870, 872, 879. Coal geology on Elk Creek, Guess Creek and sections north of Guess Creek.

Correlations by: Marshall Miller, 1970-74, VDMR

<u>Formation</u>	<u>Top</u>	<u>Bottom</u>	<u>Thickness</u>
Pennsylvanian System			
Post Lee Formation	0	1100	1100'
		Campbell Creek Coal Horizon at -205'	
		Eagle Coal Horizon at 100'	
		Hagy Coal Horizon at 300'	
		Splash Dam Coal Horizon at 400'	
		Lower Banner Horizon at 500'	
		Kennedy Coal Horizon at 625'	
		McClure Sand Interval 615-778'	
Lee Formation	1100	1837	737'
Middle Member 1100-1395 (295')			
		quartzose sand 1100-1245	145'
		conglomerate 1100-1194	94'
		conglomerate 1213-1245	32'
		quartzose sand 1290-1310	20'
		quartzose sand 1342-1395	53'
		conglomerate 1369-1395	26'
		*War Creek Coal Horizon at 1400'	
		*Core 3 3 miles to SW	
Lower Member 1510-1837 (327')			
		quartzose sand 1510-1563	53'
		conglomerate 1534-1549	15'
		quartzose sand 1567-1713	146'
		conglomerate 1567-1575	8'
		conglomerate 1605-1713	108'
		quartzose sand 1718-1731	13'
		conglomerate 1718-1731	13'
		quartzose sand 1765-1837	72'
		conglomerate 1793-1823	30'
		total quartzose sand	502'
		total conglomerate	326'

Pocahontas Formation	1837	1866	29'
Mississippian System			
Bluestone Formation	1866	2184	318'
Pride Shale	2061	2184	123'
Princeton Sand	2184	2340	156'
Little Stone Gap	2340	2357	17'
Stony Gap Sand?	2487	2560	73'
Greenbrier Formation	2865	3295	430'
MacCrady	3295		

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Remarks: Well has been logged previously by John Wilson (VDMR) 1963. However, the Pennsylvanian section was reviewed and observed by Marshall S. Miller. The sands are described and summarized, and the quartzose sands identified. The gamma ray log was used extensively and samples corrected to the gamma-ray depth.

The Mississippian section was spot checked and the gamma-ray log was used to establish formational boundaries. Wherever Wilson's descriptions are sufficient, only the lithology is noted.

<u>Depth</u>	<u>Thickness</u>	<u>Description</u>
250-300	50'	Sandstone
300-417	117'	Siltstone, with some interbeds of sand. The sandstones present throughout the interval (250-417) are generally light gray, fine to medium grained, subangular, poorly sorted, silty, with abundant muscovite, biotite, chlorite, phlogopite, carbonaceous mineral, occasionally feldspathic
417-463	46'	Siltstone
463-530	67'	Sandstone
530-615	85'	Siltstone

No quartzose sands are present in the interval (417-615) and are as Wilson describes. The sand intervals below, which have quartzose sands in the same horizon in wells to the northwest are described below.

615-666	51'	Sand interval at this depth is typical McClure sand; although relatively high in quartz percentage (65 to 75% quartz), the sand is light gray, fine to coarse grained, subangular, very poorly sorted, with abundant muscovite, biotite, chlorite, siderite, feldspar, dark rock fragments and carbonaceous material and interstitially silty. Also occasional silt stringers present.
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666-710	44'	Siltstone, gray to dark gray, locally shaly, separates the sand interval above from the sand below. Both sand intervals appear to grade laterally to quartzose sand intervals in wells to the west of this well.
710-778	68'	Sand, continues much like that sand above, gray, fine to coarse grained, subangular to subround, poorly sorted, silty, about 60 to 70% quartz
778-837	59'	Siltstone. Coal present around 820'
837-872	35'	Sandstone
872-885	13'	Shale, carbonaceous
885-928	43'	Sandstone
928-946	18'	Sandstone and siltstone
966-1020	54'	Sandstone
1020-1044	24'	Sandstone and siltstone
1044-1100	36'	Sandstone, gray, fine to coarse grained, to granule, locally conglomeratic, subround to subangular, poorly sorted, about 55% quartz, micaceous, feldspathic with abundant argillaceous and carbonaceous material. Increases in quartz percentage downward; has reached a quartzose nature by 1100' as indicated by gamma ray log.
*1100-1194	94'	Sandstone, white, quartzose, fine to coarse grained to granule, and conglomeratic, appears poorly sorted, subangular to subround, but 100% quartz, only occasional bluish gray chert is present with the quartz
*1194-1213	9'	Sandstone, white, quartzose, medium to coarse grained, and occasionally granule, but no longer conglomeratic, mostly sub-rounded, moderately sorted.
*1213-1245	32'	Sandstone, white, quartzose, fine to coarse grained to granule, conglomeratic, subangular to subround, poorly sorted. *Samples appear to be 5 to 10' deeper than gamma ray log.

1245-1265	20'	Shale, dark, carbonaceous. *Samples continue to be present 10' below gamma ray log depth. The depth of the samples are corrected to the gamma ray log.
1265-1290	25'	Sandstone, light gray, fine grained and silty, subangular, moderately sorted with abundant muscovite, biotite, carbonaceous material and dark rock fragments, some feldspar and reddish iron minerals; about 70% quartz
*1290-1310	20'	Sandstone, white, moderately quartzose to quartzose, fine to medium grained, subround to subangular, moderately sorted, with rare and scattered muscovite, carbonaceous material and dark rock fragments 90 to 95% quartz
1310-1342	32'	Siltstone, dark gray, locally shaly
*1342-1369	27'	Sandstone, white, quartzose, fine to medium grained, subrounded, moderately sorted, with rare muscovite and dark argillaceous material, locally interstitially silty, 90-95% quartz
*1369-1395	26'	Sandstone, white, quartzose, fine to granule, and conglomeratic, 95 to 100% quartz, subangular, poorly sorted
1395-1417	22'	Siltstone
1417-1456	39'	Sandstone
1456-1510	54'	Siltstone and sandstone, coal present at bottom of interval, vitreous luster, blocky fracture
*1510-1534	24'	Sandstone, white, quartzose, fine to medium grained, subround to subangular, moderately sorted, locally silty and iron stained, 95 to 100% quartz
*1534-1563	29'	Sandstone, white, quartzose, fine to coarse grained, almost 100% quartz, subround to subangular, poorly sorted, conglomeratic (1534-1549)
1563-1567	4'	Siltstone, brown, argillaceous

*1567-1575	8'	Sandstone, white, quartzose, medium grained and granule, and conglomeratic, poorly sorted, subangular
*1575-1605	30'	Sandstone, white, quartzose, medium grained, occasionally coarse grained, subround to subangular, moderately sorted, iron stained
*1605-1731	126'	Sandstone, white, quartzose, medium to coarse grained to granule and conglomeratic, grains up to 6 mm in diameter present in cuttings, subround to subangular, poorly sorted. A dark gray siltstone stringer present (1713-1718)
1731-1765	34'	Sandstone and siltstone; sand is light gray, white, to light brown, fine to very coarse grained, very poorly sorted, interstitially silty, with considerable amount of dark gray argillaceous material; siltstone is dark gray, locally carbonaceous
*1765-1837	72'	Sandstone, white, quartzose, fine to coarse grained, subround to subangular, poorly sorted, about 90% quartz, with continued presence of dark argillaceous material in upper 20', much of which is probably contamination; conglomeratic (1793-1823)
1837-1848	11'	Shale, black, carbonaceous, soft, flaky
1848-1866	18'	Siltstone, light tan to gray, siliceous with abundant muscovite, biotite and carbonaceous material, interbedded with a gray poorly sorted sand with red siderite? nodules
1866		Red and pastel green shales and siltstone with small rounded ironstone or siderite nodules