

N-S section

VDMR Well No. W-401

Buchanan County  
United Producing Company  
Clinchfield Coal Corp.  
Well No. 6-2940  
VDMR W-401  
Index No. 56  
Elevation: 2034.7'

Remarks: Well spudded in about 30' above the Kennedy coal. Referred to geology on Slate Creek particularly Mullins Branch area, Linn Camp core 3 miles south, Millhouse core 4 miles north. 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	1426	1426
		Kennedy coal 40-42	
		Jawbone coal 390-391	
		Tiller coal 420-421	
		Seaboard coal 834-835	
		War Creek coal horizon at 1120'	
Lee Formation	1426	1533	107'
		quartzose sand 1426-1500	74'
		conglomerate 1426-1434	8'
		conglomerate 1467-1476	9'
		quartzose sand 1516-1533	17'
		conglomerate 1516-1533	17'
		total quartzose sand	91'
		total conglomerate	34'
Pocahontas Formation	1533	1980	447'
		Pocahontas #5 coal 1534-1536	
		Pocahontas #4 coal 1602-1606	
		Pocahontas #3 coal 1677-1685	

Operator: United Producing Company  
 Farm: Clinchfield Coal Corporation et al  
 Well No.: 6-2940  
 Location: Buchanan County  
           7,050' S of 37°20'  
           13,000' W of 81°50'  
 Elevation: 2034.7' Ground  
 Total Depth: 4843'  
 Drilling Commenced: July 4, 1959  
 Well Completed: December 7, 1959  
 Result: Gas Well  
 Geologic log and summary by Marshall S. Miller

This well was logged quickly in February 1970, to determine the presence of a Lee Formation. Several intervals or samples were briefly looked at under the microscope. In some intervals only the lithology had been noted. In October 1970, the Pennsylvanian section of the well was logged completely.

0-267	267'	No samples.
267-307	40'	Sandstone, fine to medium grained, light gray, subround to subangular, medium to poorly sorted, abundant accessory minerals, muscovite, biotite, chlorite, hematite, phlogopite, and scattered coal fragments. Also coal "chunks" throughout interval, probably one or two coal seams present in interval, although none noted by driller.
307-391	84'	Shale, gray, fissile, finely micaceous, locally carbonaceous, locally silty. Coal noted by driller from (390-391) is shaly and impure
391-410	19'	Sandstone, gray, fine to medium grained, poorly sorted; very micaceous, feldspathic, with abundant coaly laminations, about 40-45% quartz at the most
410-420	10'	Sandstone, light gray, fine grained, moderate sorting, subangular to subround with consistent and scattered amount of muscovite, biotite, coaly material, and orange limonitic stains; about 70-75% quartz
420-421	1'	Coal, dull, silty, bony, impure.
421-437	16'	Shale, dark gray, black, locally carbonaceous, with lesser amounts of gray siltstone and red ironstone
437-446	9'	Sandstone, light gray to tan, fine to medium, moderate to poorly sorted, subangular, interstitially silty, with muscovite, biotite, coal, hematite, phlogopite, and limonite

446-454	8'	Shale and siltstone, with lesser amounts of gray, poorly sorted sandstone
454-463	9'	Sandstone, like previous sand interval from 437-446
463-500	37'	Siltstone, gray, locally shaly, but generally siliceous, lesser amounts of dark gray shale and reddish ironstone
500-508	8'	Sandstone and shale, interbedded, about 50% of each, sandstone is light gray, very fine grained, moderately sorted with muscovite, biotite and coal, interstitially silty
508-525	17'	Sandstone, light gray, fine to medium grained, poorly sorted, subangular, with scattered biotite, muscovite, chlorite, phlogopite, and dark brown minerals, 55-60% quartz, occasional feldspar can be recognized, percentage is difficult to estimate
525-537	12'	Missing
537-552	15'	Shale, gray, calcareous, fissile
552-582	30'	Missing
582-597	15'	Siltstone, gray, shaly, calcareous
597-666	69'	Sandstone, light gray, fine to very fine grained, moderate sorting, subangular to subround, with abundant muscovite, which is sometimes found in large clear flakes, biotite, chlorite, phlogopite and carbonaceous material, becomes medium grained and poorly sorted by 604', picks up considerable amount of dark argillaceous material by 620', becomes interbedded with a silty shale by 631' and continues interbedded to 641'. At 641, sand is light gray, remains poorly sorted, fine to medium grained, occasionally coarse grained, with continued abundance of accessory minerals, about 65-75% quartz.
666-732	66'	Shale, gray, dark gray, finely micaceous, locally carbonaceous, with occasional light gray siltstone stringers increasing downward, becomes interbedded with siltstone by 705' and sandstone by 723'

- 732-755 23' Shale, dark gray, carbonaceous, finely micaceous
- 755-796 41' Sandstone, light gray, gray, mostly fine grained, but poorly sorted, subangular with abundant muscovite, biotite, chlorite, feldspar, coaly material, and other dark minerals, possibly 60% quartz, but increases downward to 70-75% by 769', becomes fine to medium grained by 781'
- 796-835 39' Shale, dark gray, micaceous and siltstone, light gray, and brownish gray, siliceous. A coal is noted by driller (800-802) but none is present in sample. Generally about 80% of sample is shale. A dull, silty and bony coal is present at bottom of interval, possibly 1' coal (834-835)
- 835-849 14' Shale, siltstone, and sandstone: shale, dark gray, black, carbonaceous; siltstone, gray, shaly; sandstone, brown, feldspathic, silty
- 849-901 52' Sandstone, light gray, fine to medium grained, poorly sorted, subangular with scattered and consistent amount of muscovite, biotite, chlorite, feldspar, phlogopite, coaly material and other dark minerals, about 65% quartz
- 901-914 13' Shale and siltstone; shale, dark gray, finely micaceous; siltstone, light gray, siliceous
- 914-934 20' Sandstone, light gray, fine to medium grained, occasionally coarse grained, poorly sorted, subangular with abundant muscovite, biotite, some feldspar, coaly material, interstitially silty, 65% quartz, picks up considerable amount of dark argillaceous material (921-924')
- 934-957 23' Shale, dark gray, finely micaceous, carbonaceous, with some occasional reddish brown ironstone
- 957-1065 108' Sandstone, light gray, gray to white, fine to medium grained, poorly sorted, subangular with scattered biotite, muscovite, feldspar, phlogopite, dark argillaceous and coaly material, locally interstitially silty, 50-65% quartz, quartz percentage does increase downward, is 70 to 80% quartz by 1031', possibly 85% quartz by 1046'

1065-1073	8'	Shale, gray, finely micaceous
1073-1097	24'	Sandstone, light gray to white, fine to medium to occasionally coarse grained, subround to subangular, moderate to poorly sorted, with rare muscovite or biotite, but with considerable dark argillaceous and carbonaceous material, about 75-80% quartz. Shale interbeds in bottom 20'
1097-1245	148'	Sandstone, light gray, gray, fine to medium grained, occasionally coarse grained, poorly sorted, subangular, with abundant reworked carbonaceous material throughout, also abundant muscovite, biotite, chlorite, and other dark minerals, about 55-65% quartz, locally interstitially silty. Becomes medium to coarse grained, very poorly sorted sand (1189-1200), gradually increases in quartz percentage downward, about 75% quartz by 1212', is fine grained with occasional larger coarse grains by 1227'
1245-1266	21'	Sandstone, tan, light brown, light gray, mostly fine grained, moderate to poor sorting, micaceous with abundant coaly laminations and interbedded with thin carbonaceous shales, siltstones and coal. Sand is about 55% quartz.
1266-1291	25'	Sandstone, light gray, gray, fine to medium grained, poorly sorted, micaceous, feldspathic, with abundant coaly laminations and occasional shale partings
1291-1426	135'	Shale, gray to dark gray, locally silty, locally carbonaceous, finely micaceous, fair fissility, few stringers of fine grained "dirty" sandstone present
*1426-1434	8'	Sandstone, white, quartzose, mostly medium grained, but fine and coarse grains with scattered conglomerate quartz fragments up to 5 mm, subangular to subround, poorly sorted, a pure silica which appears to have the form of chert or chalcedony is present in minor amounts, might be a "opaline silica", no other matrix material is present

- \*1434-1439 5' Sandstone, white, quartzose, like that sand above, but with no conglomeratic fragments, and with scattered and minor amounts quartzite
- \*1439-1444 5' Sandstone, white, quartzose, coarse grained to granule, subround to subangular, no matrix material present, almost 100% quartz
- \*1444-1481 37' Sandstone, white, quartzose, medium to very coarse grained, subround to subangular, poorly sorted, with scattered quartzite which has a brownish iron-cement, sand is generally calcareous, becomes conglomeratic (1467-1476)
- 1481-1487 6' Missing
- \*1487-1491 4' Sandstone, white, quartzose, fine to medium grained, subrounded, moderately sorted, no matrix material or calcareous cement, approaches 100% quartz
- \*1491-1500 9' Sandstone, white, quartzose, medium to coarse grained, subangular to subround, poorly sorted with rare dark argillaceous grains and irregular fragments of quartzite
- 1500-1516 16' Shale, dark gray, carbonaceous and silty, finely micaceous
- \*1516-1533 17' Sandstone, white, quartzose, fine to granular grains with scattered conglomerate up to 5 mm, subround to subangular, poorly sorted, approaches 100% quartz, more conglomeratic downward
- 1533-1536 3' Shale and coal, represents an abrupt change and probably an unconformity. Estimated coal seam (1534-1536)

- 1536-1560 24' Sandstone, Pocahontas Age, fine grained, light gray, moderately sorted, subrounded, with coal fragments and muscovite the main accessory minerals, gives "speckled" appearance. Rare amounts of chlorite, biotite and hematite present. Occasionally stringers of shale with plant fragments visible
- 1560-1674 114' Shale, gray, fissile, locally silty, finely micaceous. \*Good coal interval in sample 1600-1611. Drillers log shows (1602-1606). A few interbeds of fine grained dirty sandstone in lower intervals
- 1674-1683 9' Coal, mostly, some fine grained, coal-speckled, feldspathic sandstone and dark carbonaceous shales. Possibly Pocahontas #3 coal. Driller noted coal 1677-1685
- 1683-1707 24' Sandstone, light gray, very fine grained, well rounded, moderately to poorly sorted, with abundance of accessory minerals, biotite, feldspar, muscovite, chlorite, and coal fragments. Interstitially silty
- 1707-1734 27' Shale, gray, hard, fissile, locally carbonaceous, locally silty
- 1734-1768 34' Sandstone, light gray, medium grained, moderately sorted; subrounded to subangular with abundant chlorite, muscovite, feldspar, hematite, biotite, rare coal fragments. Occasionally iron stained
- 1768-1778 10' Shale, dark gray, carbonaceous, probably a small coal seam present. Driller noted coal 1770-1776
- 1778-1798 20' Interbedded sequence; sandstone, shale and siltstone
- 1798-1828 30' Sandstone, white to light gray, fine grained, subrounded, to subangular, moderately sorted, with continued abundance of chlorite, biotite, hematite, and some coal fragments
- 1828-1856 28' Shale, dark gray, carbonaceous and coal. Essentially a black, highly organic shale interval

1856-1955 99' Sandstone, light gray, medium to fine grained, subrounded to subangular, moderately sorted, with abundant chlorite, biotite, and hematite. Very hematitic in upper interval. Locally silty throughout. Rare coal fragments, rare muscovite

Bluestone Formation

1955-1980 25' Missing

1980 Red, green and gray calcareous shales