

Operator: Clinchfield Coal Corp.  
 Farm: Arch Rose  
 Well No.: 105  
 Location: Dickenson County  
           37°08' 50" N.  
           82°22' 27" W.  
 Elevation: 1431.3 Ground  
 Total Depth: 5364'  
               Samples to 4759'  
 Commenced: June 9, 1949  
 Completed: December 17, 1949  
 Result: Gas well

Geologic Log  
 Samples studied by James Wm.  
 Smith, Virginia Division of  
 Mineral Resources May, 1960

Note: Where porosity is not mentioned, the rock contains no visible porosity.  
 Where the cement is not mentioned in sandstone, the cement is believed  
 to be silica.

Pottsville group - Thickness 1660' - Depth Interval 40' - 1700'

Depth		
40' - 83'	43'	Siltstone, medium gray.
83' - 103'	20'	Sandstone, mottled light and dark gray, fine-grained.
103' - 138'	35'	As above, but medium-grained.
138' - 142'	4'	Sandstone, white, coarse-grained, medium sorted.
142' - 153'	11'	As above, but medium-grained.
153' - 165'	12'	Sandstone, mottled light and dark gray, fine-grained.
165' - 181'	16'	Sandstone, mottled white and dark gray, medium-grained.
181' - 217'	36'	As above, but poorly sorted.
217' - 230'	13'	Sandstone, light gray, fine-grained, micaceous.
230' - 232'	2'	Sandstone, medium gray, very fine grained, thin bed / of coal.
232' - 250'	18'	Siltstone, medium gray, micaceous.
250' - 262'	12'	Sandstone, medium gray, very fine-grained, tough, earthy.
262' - 270'	8'	Sandstone, mottled white and dark gray, medium-grained.
270' - 271'	1'	Coal, very thin bed.
271' - 286'	15'	Sandstone, white, medium to coarse-grained, medium sorted, subrounded.

286' - 298'	12'	Sandstone, medium gray, fine grained.
298' - 304'	6'	Sandstone, medium gray, speckled, medium grained, subrounded, few dark gray grains.
304' - 311'	7'	Siltstone, medium gray, trace of coal.
311' - 318'	7'	No samples.
318' - 343'	25'	Sandstone, white, coarse grained, vitreous, poorly sorted, silica cement, trace of light green mineral, few dark gray grains.
343' - 353'	10'	Sandstone, white, coarse grained, subangular, slightly porous, few dark gray grains.
353' - 384'	31'	Shale, medium gray.
384' - 391'	7'	Siltstone, medium gray.
391' - 394'	3'	No samples.
394' - 425'	31'	Siltstone, medium gray, micaceous.
425' - 430'	5'	Siltstone, medium gray, coarse grained, micaceous, few brownish red grains.
430' - 458'	28'	Sandstone, light gray, fine to medium grained, vitreous, poorly sorted, subangular micaceous, few dark gray grains, trace of coal.
458' - 476'	18'	Sandstone, light gray, speckled, medium grained.
476' - 495'	19'	Sandstone, white, speckled, very fine grained, vitreous, micaceous, poorly sorted.
495' - 505'	10'	Siltstone, medium gray, very fine grained.
505' - 550'	45'	Sandstone, light gray, speckled, very fine grained, poorly sorted, micaceous, few brownish red grains.
550' - 660'	60'	Siltstone, medium gray.
660' - 670'	10'	Shale, medium gray, micaceous.
670' - 680'	10'	Siltstone, medium gray.
680' - 718'	38'	Sandstone, white, speckled, medium grained, vitreous, medium sorted, angular.
718' - 735'	17'	Sandstone, white, speckled, medium grained, vitreous, poorly sorted, few dark gray grains.
735' - 750'	15'	Sandstone, very white, speckled, medium grained, vitreous, medium sorted, angular.

750' - 768'	18'	Sandstone, medium gray, very fine grained, micaceous, few brownish red grains.
768' - 785'	23'	Siltstone, medium gray, micaceous.
785' - 794'	9'	Shale, medium gray.
794' - 821'	27'	Sandstone, white, speckled, medium grained, vitreous, poorly sorted.
821' - 835'	14'	As above, but micaceous.
835' - 867'	32'	Sandstone, white, medium grained, medium sorted, angular.
867' - 870'	3'	Sandstone, white, fine grained.
870' - 886'	16'	Siltstone, medium gray, micaceous.
886' - 905'	9'	As above, but contains a few brownish red grains.
905' - 939'	34'	Siltstone, medium gray, micaceous.
939' - 948'	9'	No samples.
948' - 965'	17'	Siltstone, medium gray, micaceous.
965' - 987'	22'	Sandstone, white, speckled, fine grained, medium sorted.
987' - 992'	5'	As above, but micaceous.
992' - 994'	2'	Sandstone, white, speckled, fine grained, medium sorted.
994' - 998'	4'	Sandstone, white, fine grained, medium sorted.
998' - 1002'	4'	Siltstone, medium gray, micaceous.
1002' - 1024'	22'	Sandstone, white, fine grained, medium sorted.
1024' - 1027'	3'	Siltstone, medium gray, micaceous.
1027' - 1037'	10'	Sandstone, white, speckled, medium grained, slightly porous.
1037' - 1050'	13'	Sandstone, white, fine grained, medium sorted, angular.
1050' - 1055'	5'	Sandstone, white, medium grained.
1055' - 1075'	20'	Siltstone, medium gray, micaceous.
1075' - 1082'	7'	Siltstone, mottled dark and light gray.
1082' - 1091'	9'	Sandstone, white, coarse grained, vitreous, poorly sorted, angular.
1091' - 1100'	9'	Siltstone, medium gray, micaceous.

1100' - 1108'	8'	Sandstone, white, speckled, medium grained, vitreous, medium sorted.
1108' - 1115'	7'	Siltstone, medium gray, micaceous, coal containing much pyrite.
1115' - 1137'	22'	Sandstone, white, medium-grained, vitreous, slightly micaceous, medium sorted.
1137' - 1146'	9'	Sandstone, light gray, speckled, medium grained, few brownish red grains, micaceous.
1146' - 1157'	11'	As above, but contains light green mineral.
1157' - 1173'		As above without the green mineral.
1173' - 1174'	1'	Thin coal bed.
1174' - 1188'	14'	Sandstone, white, speckled, fine grained, micaceous.
1188' - 1200'	12'	Shale, medium gray, micaceous, films of coal.
1200' - 1205'	5'	Siltstone, medium gray, micaceous.
1205' - 1271'	66'	Sandstone, light gray, very fine grained, few brownish red grains, micaceous.
1271' - 1280'	9'	Sandstone, white, fine grained, micaceous, few brownish red grains.
1280' - 1305'	25'	Siltstone, medium gray, micaceous.
1305' - 1317'	12'	Shale, medium gray.
1317' - 1327'	10'	Siltstone, medium gray, micaceous.
1327' - 1337'	10'	Sandstone, light gray to white, medium grained, green mineral, few brownish red grains.
1337' - 1350'	13'	Shale, medium gray, films of coal, plant fossils.
1350' - 1380'	30'	Sandstone, white, speckled, medium grained, poorly sorted, micaceous, few dark gray grains.
1380' - 1394'	14'	Sandstone, white, speckled, medium grained, medium sorted, few dark gray grains.
1394' - 1402'	8'	Sandstone, white, speckled, medium to coarse grained, poorly sorted, few dark gray grains.
1402' - 1429'	27'	Sandstone, white, fine to medium grained, well sorted, angular.
1429' - 1473'	44'	Sandstone, white, coarse to very coarse grained, medium sorted, angular.

1473'	- 1490'	17'	Sandstone, white, medium grained, medium sorted, angular. Trace of coal at 1480'.
1490'	- 1507'	17'	Sandstone, white, speckled, fine to medium grained, micaceous, poorly sorted. Trace of Shale and coal at 1495'.
1507'	- 1525'	18'	Sandstone, white, fine to medium grained, medium to well sorted.
1525'	- 1538'	13'	Sandstone, white, medium to very coarse grained, poorly sorted.
1538'	- 1562'	24'	Sandstone, white, medium to coarse grained, medium to well sorted.
1562'	- 1568'	6'	Sandstone, white, fine to medium grained, medium sorted.
1568'	- 1590'	22'	Sandstone, white, medium to coarse grained, medium sorted.
1590'	- 1596'	6'	As above, but coarse to very coarse grained.
1596'	- 1604'	8'	Conglomerate, white, vitreous, coarse sand to granule grained, poorly sorted, few dark gray grains.
1604'	- 1620'	16'	Sandstone, white, vitreous, medium to very coarse grained, poorly sorted, few dark gray grains. Trace of coal and shale at 1610'.
1620'	- 1625'	5'	Sandstone, light gray, speckled, fine grained, micaceous, few brownish red grains.
1625'	- 1630'	5'	Sandstone, white, medium grained.
1630'	- 1643'	13'	No samples.
1643'	- 1665'	22'	Sandstone, white, medium grained.
1665'	- 1670'	5'	Sandstone, white, medium to coarse grained, poorly sorted.
1670'	- 1681'	11'	Sandstone, white, medium grained, medium sorted.
1681'	- 1691'	10'	Sandstone, white, coarse to very coarse grained, poorly sorted.
1691'	- 1700'	9'	Conglomerate, white, coarse sand to granule grained, poorly sorted.

## Bluestone formation - top 1700'

1700' - 1706'	6'	Sandstone, light gray, fine grained.
1706' - 1712'	6'	No samples.
1712' - 1723'	11'	Shale, dark gray.
1723' - 1736'	13'	Siltstone, light gray.
1736' - 1743'	7'	Sandstone, white, very fine grained.
1743' - 1751'	8'	No samples.
1751' - 1759'	8'	Calcareous siltstone, light gray, micaceous, contains green mineral.
1759' - 1760'	1'	Calcareous siltstone, grayish red.
1760' - 1770'	10'	Shale, medium gray.
1770' - 1778'	8'	Calcareous siltstone, light green.
1778' - 1793'	15'	Shale, grayish red.
1793' - 1805'	12'	Calcareous shale, grayish red.
1805' - 1810'	5'	Sandstone, white, fine grained, medium sorted.
1810' - 1812'	2'	No samples.
1812' - 1817'	5'	Sandstone, light gray, fine grained, micaceous.
1817' - 1823'	6'	No samples.
1823' - 1827'	4'	Sandstone, light gray, fine grained, micaceous.
1827' - 1834'	7'	No samples.
1834' - 1840'	6'	Sandstone, light gray, fine to medium grained, micaceous.
1840' - 1865'	25'	No samples.
1865' - 1870'	5'	Shale, dark gray.
1870' - 1879'	9'	No samples.
1879' - 1882'	3'	Shale, dark gray, micaceous.
1882' - 1884'	2'	No samples.
1884' - 1897'	13'	Sandstone, light gray, speckled, fine grained, black mineral, trace pyrite.
1897' - 1903'	6'	Siltstone, medium gray, micaceous.
1903' - 1925'	22'	No samples.

1925' - 1930'	5'	Siltstone, light gray.
1930' - 1940'	10'	Sandstone, mottled gray and white, fine grained.
1940' - 1957'	17'	Siltstone, medium gray.
1957' - 2045'	88'	No samples.
2045' - 2095'	50'	Shale, medium gray.
2095' - 2105'	10'	Calcareous shale, grayish tan.
2105' - 2112'	7'	No samples.
2112' - 2123'	11'	Sandstone, mottled light and medium gray, very fine grained, micaceous, trace of asphalt (probably contamination).
2123' - 2127'	4'	No samples.
2127' - 2136'	9'	Siltstone, medium gray.
2136' - 2149'	13'	Sandstone, mottled light and medium gray, very fine grained, micaceous.
2149' - 2169'	20'	Sandstone, light gray, speckled, very fine grained, angular.
Princeton sandstone - top ? 2169'		
2169' - 2188'	19'	Sandstone, white, fine grained, well sorted, angular.
2188' - 2191'	3'	No samples
2191' - 2201'		Sandstone, white, medium grained.
2201' - 2204'	3'	No samples.
2204' - 2221'	17'	Sandstone, white, fine grained, medium sorted.
2221' - 2229'	8'	Conglomerate, white, coarse sand to granule grained, poorly sorted.
2229' - 2285'	56'	Sandstone, white, fine to very coarse grained, poorly to medium sorted.
Avis, member ? of Hinton formation - top 2285'		
2285' - 2288'	3'	Sandstone, light green, very fine grained, micaceous, green mineral, calcareous cement.
2288' - 2310'	22'	Siltstone and shale, mottled or thinly bedded grayish red and medium gray, much calcareous cement.
2310' - 2318'	8'	Sandstone, light gray, speckled, micaceous, calcareous cement.
Hinton formation undivided - top 2318'		
2318' - 2322'	4'	Shale, medium gray.

2322' - 2350'	28'	Shale, mottled grayish red and medium gray.
2350' - 2360'	10'	Siltstone, grayish red, micaceous, slightly calcareous.
2360' - 2379'	19'	Shale, medium gray.
2379' - 2382'	3'	No samples.
2382' - 2400'	18'	Sandstone, light gray, very fine grained, micaceous, green mineral.
2400' - 2406'	6'	Siltstone, light gray, micaceous, slightly calcareous.
2406' - 2420'	14'	Sandstone, light gray, very fine grained, micaceous, lower 5' is slightly calcareous.
2420' - 2428'	8'	No samples.
2428' - 2435'	7'	Sandstone, white, fine grained, micaceous, slightly calcareous.
2435' - 2457'	22'	Siltstone, medium gray, micaceous.
2457' - 2484'	27'	Siltstone and sandstone mottled or thin bedded, medium gray and white, very fine grained sandstone and coarse grained siltstone, micaceous.
2484' - 2495'	11'	Sandstone, white, fine grained.
2495' - 2523'	28'	Shale, mottled medium gray and grayish red, slightly calcareous at 2505'.
2523' - 2560'	37'	Siltstone, medium gray, micaceous.
2560' - 2576'	16'	Shale, medium gray, trace of sulphur, hydrated sulphate and iron sulphide.
2576' - 2583'	7'	Calcareous shale, greenish gray.
2583' - 2595'	12'	Calcareous shale, medium gray.
2595' - 2605'	10'	Shale, medium gray.
Stony Gap member of Hinton formation - top 2605'		
2605' - 2630'	25'	No samples
2630' - 2640'	10'	Sandstone, light gray, very fine grained, micaceous.
2640' - 2645'	5'	No samples.
2645' - 2653'	8'	Sandstone, mottled light and medium gray, very fine grained.
2653' - 2667'	14'	Siltstone medium gray, pyrite, trace of shaley coal.
2667' - 2685'	18'	Shale, black, carbonaceous.

2685' - 2700'	15'	Sandstone, medium gray, very fine grained, micaceous.
2700' - 2719'	19'	Sandstone, mottled gray and white, very fine grained, micaceous.
2719' - 2728'	9'	No samples.
Bluefield formation - top 2728'		
2728' - 2744'	16'	Siltstone, medium gray.
2744' - 2765'	21'	No samples.
2765' - 2770'	5'	Shale, medium gray.
2770' - 2773'	3'	Sandstone, white, medium grained.
2773' - 2783'	10'	Shale, black, carbonaceous, plant fossils.
2783' - 2787'	4'	Sandstone, white, medium grained, well sorted.
2787' - 2800'	13'	Calcareous siltstone, dark gray.
2800' - 2825'	25'	Shale, medium gray.
2825' - 2838'	13'	Siltstone, grayish red.
2838' - 2857'	19'	Calcareous shale, medium gray.
2857' - 2885'	28'	Siltstone, medium gray, with thin beds of calcareous sandstone, white, very fine-grained.
2885' - 2895'	10'	Calcareous sandstone, white, very fine grained, with thin beds of shale, medium gray.
2895' - 2915'	20'	Siltstone, medium gray.
2915' - 2941'	26'	Shale, medium gray.
2941' - 2982'	41'	Calcareous, shale, medium gray.
2982' - 2989'	7'	Shale, medium gray, trace of coal.
2989' - 2994'	5'	No samples.
2994' - 3010'	16'	Calcareous shale, medium gray.
3010' - 3023'	13'	Very calcareous shale, medium gray.
3023' - 3030'	7'	Clayey limestone, medium gray
3030' - 3031'	1'	Calcareous siltstone, white, few very coarse sand grains.
3031' - 3039'	8'	Limestone, medium gray, trace of coal.
3039' - 3044'	5'	Very calcareous shale, medium gray.

3044' - 3126'	82'	Calcareous shale, medium gray, crinoid stems between 3055' - 3080', chert between 3075' - 3080' and 3090' - 3095'; thin bed of calcareous siltstone, white with few very coarse sand grains between 3080' - 3085'; trace of coal at 3117'.
3126' - 3172'	46'	Very calcareous shale, medium gray, chert at 3132' and 3145'.
Greenbriar member of the Bluefield formation - top 3172'		
3172' - 3175'	3'	Clayey limestone, medium gray.
3175' - 3180'	5'	Very calcareous shale, greenish gray, trace of pyrite at 3175'.
3180' - 3190'	10'	Very calcareous shale, medium gray.
3190' - 3200'	10'	Clayey limestone, medium gray, very dense and very fine grained.
3200' - 3306'	106'	Limestone, medium gray, slightly clayey between 3253' - 3266' and clayey between 3300' - 3306'.
3306' - 3317'	11'	Calcareous shale, medium gray.
3317' - 3330'	13'	Limestone, medium gray.
3330' - 3356'	26'	Clayey limestone, medium gray.
3356' - 3363'	7'	Very calcareous shale, medium gray.
3363' - 3369'	6'	Clayey limestone, medium gray.
3369' - 3386'	17'	Limestone, medium gray.
3386' - 3391'	5'	Clayey limestone, medium gray.
3391' - 3400'	9'	No samples.
3400' - 3414'	14'	Very calcareous shale, light gray.
3414' - 3440'	26'	Clayey limestone, light gray, thin bed of medium gray shale 3435'.
3440' - 3510'	70'	Limestone; light gray from 3440' - 3462'; medium gray from 3462' - 3510'; very finely crystalline between 3465' - 3475' and 3487' - 3510'; Oolitic and crinoid stems 3475' - 3480'; Doubly terminated, euhedral, fine quartz crystals at 3475'.
3510' - 3524'	14'	Clayey limestone, medium gray, very finely crystalline.
3524' - 3527'	3'	Very calcareous shale, medium gray, very finely crystalline, trace of green mineral.
3527' - 3536'	9'	Limestone, medium gray.
3536' - 3540'	4'	Calcareous shale, medium gray.

3540' - 3547'	7'	Clayey limestone, medium gray.
Maccrady formation - top 3547'		
3547' - 3635'	88'	Siltstone, light to medium reddish brown and thin beds of medium gray. lower half is micaceous, slightly calcareous at top 6' and lower 5'.
Price formation (?) - top 3635'		
3635' - 3760'	125'	Siltstone, medium gray, except reddish brown between 3667' - 3670', micaceous between 3635' - 3670'.
Devonian - top 3760'		
3760' - 3850'	90'	Shale, medium gray.
3850' - 3865'	15'	Siltstone, medium gray.
3865' - 3893'	28'	Shale, medium gray, pyrite at 3880'.
3893' - 3906'	13'	Siltstone, upper 3' reddish brown, remainder is medium gray.
3906' - 4016'	110'	Shale, medium gray, trace of coal at 3990'.
4016' - 4020'	4'	Siltstone, reddish brown.
4020' - 4120'	100'	Shale, medium gray.
4120' - 4130'	10'	Siltstone, light gray.
4130' - 4134'	4'	No samples.
4134' - 4137'	3'	Shale, medium gray.
4137' - 4160'	23'	Sandstone, some white at top, remainder is light gray, very fine grained. Trace of coal at top.
4160' - 4170'	10'	Siltstone, light gray, very coarse grained.
4170' - 4183'	13'	Sandstone, light gray, very fine grained.
4183' - 4197'	14'	Siltstone, light gray, very coarse grained.
4197' - 4237'	40'	Siltstone, medium gray, pyrite near 4237'
4237' - 4278'	41'	Siltstone, dark gray, slightly calcareous between 4245' - 4250'.
4278' - 4298'	20'	Shale, light gray.
4298' - 4334'	36'	Siltstone, light gray, very fine grained, lower 7' is slightly calcareous.
4334' - 4366'	32'	Shale, light gray.
4366' - 4375'	9'	Siltstone, light gray, micaceous.

4375' - 4500'	125'	Shale, medium gray.
4500' - 4509'	9'	Siltstone, medium gray, very fine grained.
4509' - 4521'	12'	Shale, medium gray.
4521' - 4577'	56'	Siltstone, medium gray, very fine-grained, lower half of interval is micaceous.
4577' - 4641'	64'	Shale, medium gray.
4641' - 4650'	9'	Siltstone, medium gray, very fine-grained, micaceous.
4650' - 4759'	109'	Shale, medium gray.
Total Depth: 5364'		

Summary

Pottsville group	in bottom	40' 1700'
Bluestone formation	top bottom ?	1700' 2169'
Princeton sandstone	top ? bottom	2169' 2285'
Hinton formation		
Avis member	top bottom	2285' 2318'
Hinton formation undivided	top bottom ?	2318' 2605'
Stony Gap member	top ? bottom	2605' 2728'
Bluefield formation	top bottom	2728' 3172'
Greenbrier limestone	top bottom	3172' 3547'
Maccrady shale	top bottom	3547' 3635'
Price formation (?)	top bottom	3635' 3760'
Devonian	top sampled depth	3760' 4759'
	Total Depth	5364'

