

Operator: Clinchfield Coal Company  
 Farm: Virginia Coal and Iron Company  
 Well No.: 206  
 Location: Wise County  
           14,850' N. of 36° 55'  
           5600' W. of 82° 45'  
 Elevation: 2025.0'  
 Total Depth: 4028'  
 Drilling Commenced: September 9, 1951  
 Well Completed: May 23, 1958  
 Result: Gas Well

Geologic Log  
 Samples studied and  
 described by  
 K. Robinson  
 Virginia Division of  
 Mineral Resources  
 May 1962

## GEOLOGIC LOG

| <u>Depth (feet)</u>  | <u>Thickness (feet)</u> | <u>Lithology</u>  |
|--|-------------------------|---|
| Well starts in Pennsylvanian, Wise Formation sediments. No samples 0' - 774' |                         |   |
| <u>PENNSYLVANIAN SYSTEM</u>  |                         |   |
| <u>Wise Formation (0' - 784'?)</u>   |                         |   |
| 0' - 774'  | 774'                    | No sample   |
| 774' - 784'  | 10'                     | <u>Possible equivalent Dorchester Coal Horizon-</u><br>no coal present. Siltstone, micaceous, light to medium gray and light brown, moderately hard, locally very sandy, siliceous, with abundant mica and carbonaceous material. Interbedded sandstone, silty, white to light gray and brown, moderately hard, fine to very fine grained, well sorted and rounded, siliceous with abundant mica and carbonaceous material. No apparent porosity. |
| <u>Gladeville Sandstone (784'? - 838')</u>                                   |                         |   |
| 784' - 803'  | 19'                     | No sample.  |
| 803' - 817'  | 14'                     | Sandstone, white, moderately soft and friable, fine-grained, well sorted and rounded, interstitially very silty, siliceous with common to abundant mica, chlorite and carbonaceous material. No apparent porosity.  |
| 817' - 828'  | 11'                     | Interbedded siltstone, micaceous and sandstone, silty, as 774' - 784'.  |
| 828' - 838'  | 10'                     | Sandstone, white, moderately hard, fine to medium, commonly very fine-grained, moderately well sorted, subround to round, interstitially silty, siliceous with abundant mica, chlorite and carbonaceous material. Possible fair to poor porosity.   |

Norton Formation (838' - 1396'+)

|             |     |   |
|-------------|-----|---|
| 838' - 844' | 6'  | <u>Norton Coal Horizon</u> - interpreted thin coal seams with interbedded siltstone and sandstone as above.   |
| 844' - 854' | 10' | Siltstone, locally micaceous, light to medium gray, moderately hard and brittle, siliceous with abundant mica and very abundant finely divided carbonaceous material.   |
| 854' - 868' | 14' | Siltstone, argillaceous, medium gray, moderately hard, brittle, poorly fissile, siliceous with abundant finely divided carbonaceous material and mica, rare finely disseminated pyrite.   |
| 868' - 883' | 15' | No sample.  |
| 883' - 893' | 10' | Shale, coaly carbonaceous, dark gray and black. moderately hard and fissile with intercolated fine coal laminae.  |
| 893' - 904' | 11' | No sample   |
| 904' - 909' | 5'  | Siltstone, light to medium gray, hard, brittle, slightly fissile and argillaceous, siliceous with very abundant finely divided mica and carbonaceous material. Common fine coal laminae.  |
| 909' - 917' | 8'  | Sandstone, micaceous, white to light gray, moderately hard, very fine to fine grained, well sorted and rounded, interstitially extremely silty, siliceous and micaceous with abundant carbonaceous material and common chlorite, Interbedded siltstone, carbonaceous and micaceous, black with intercolated impure coal laminae and estimated very fine coal seams. No apparent porosity. |
| 917' - 935' | 18' | Sandstone, micaceous as above, commonly medium grained.   |
| 935' - 950' | 15' | Sandstone, micaceous as above, not as silty, very fine to medium grained, moderate sorting, subround to round. Possible fair to poor porosity.  |
| 950' - 960' | 10' | Sandstone, micaceous as above, fine to medium, rarely coarse grained. No apparent porosity. Interbedded carbonaceous siltstone and coal as 90' - 917'.  |
| 960' - 973' | 13' | Siltstone, micaceous, light to medium gray and gray-brown, hard, slightly fissile, siliceous with abundant finely divided mica and carbonaceous material.   |

|               |     |   |
|---------------|-----|---|
| 973' - 986'   | 13' | No sample.  |
| 986' - 999'   | 13' | Sandstone, micaceous, light to medium gray and brownish gray, moderately hard, very fine to fine grained, well sorted, subround to round, interstitially very silty, siliceous and very slightly calcareous with abundant finely divided mica, carbonaceous material and common chlorite. |
| 999' - 1011'  | 12' | Siltstone as 960' - 973'  |
| 1011' - 1041' | 30' | Siltstone, light to medium gray and rarely gray-brown, hard, poor to no fissility, siliceous with abundant mica and carbonaceous material.  |
| 1041' - 1053' | 12' | No sample.  |
| 1053' - 1077' | 24' | Siltstone, as 1011' - 1041', locally finely sandy and very slightly calcareous.   |
| 1077' - 1105' | 28' | <u>Probable equivalent Upper Banner Coal Horizon</u> - Siltstone, light to dark gray and black, carbonaceous, rarely gray-brown, hard, siliceous, with very abundant coaly carbonaceous material and mica. Abundant intercolated laminae and fine stringers of coal.                      |
| 1105' - 1119' | 14' | Shale, silty, medium gray, hard, poorly fissile, siliceous with abundant very finely divided mica and carbonaceous material.  |
| 1119' - 1122' | 3'  | Siltstone, micaceous, light to medium gray, commonly gray-brown, hard, siliceous with finely divided mica and coaly carbonaceous material. Common impure coal laminae.  |
| 1122' - 1130' | 8'  | No sample.  |
| 1130' - 1132' | 2'  | Siltstone as 1090' - 1105' with estimated 1' coal, locally impure and argillaceous.   |
| 1132' - 1137' | 5'  | Sandstone, white to light gray-brown, moderately hard, fine to very fine grained, well sorted, subround to round, interstitially slightly silty, siliceous and slightly calcareous with carbonaceous material and mica. Probable fair to poor porosity.                                   |
| 1137' - 1145' | 8'  | Siltstone, micaceous, light to medium gray, moderately hard, locally finely sandy, siliceous with abundant finely divided mica and carbonaceous material. Common impure coal laminae.   |

|               |     |  |
|---------------|-----|--|
| 1145' - 1166' | 21' | Sandstone, white to light gray, moderately hard, fine to very fine grained, well sorted, round to subround, interstitially locally silty, siliceous with variable amounts of chlorite, mica and carbonaceous material. Possible fair to poor porosity. Interbedded minor siltstone, micaceous as 1137' - 1145'.  |
| 1166' - 1174' | 8'  | No sample.   |
| 1174' - 1193' | 19' | Sandstone, white, moderately hard, fine to medium grained, well sorted, subangular to round, interstitially very slightly silty, siliceous with rare chlorite and carbonaceous material. Possible fair porosity.   |
| 1193' - 1199' | 6'  | Sandstone as 1174' - 1193', very fine to medium grained, poorly sorted.  |
| 1199' - 1209' | 10' | <u>Lower Banner Coal Horizon</u> - Sandstone, white to light gray, moderately hard to friable, very fine to fine grained, well sorted, locally impure, silty, siliceous and argillaceous with abundant carbonaceous material, common chlorite and mica. No apparent porosity. Estimated 3' coal bed, locally impure, silty and argillaceous in the interval 1199' - 1209'. |
| 1209' - 1213' | 4'  | Sandstone as 1199' - 1209'.  |
| 1213' - 1217' | 4'  | Siltstone, light to medium gray, moderately hard, locally very finely sandy, siliceous with abundant finely divided mica and coaly carbonaceous material. Common impure coal laminae.  |
| 1217' - 1225' | 8'  | No sample.   |
| 1225' - 1238' | 13' | Siltstone as 1213' - 1217'.  |
| 1238' - 1256' | 18' | Sandstone, white, moderately hard, fine to medium grained, well sorted, subangular to round, interstitially slightly silty, siliceous with rare chlorite and carbonaceous material. Poor to no apparent porosity.  |
| 1256' - 1327' | 71' | No sample.   |
| 1327' - 1331' | 4'  | Sandstone, white, moderately hard to friable, fine to medium and coarse grained, poorly sorted, subangular to well rounded, interstitially slightly silty, siliceous with common chlorite and carbonaceous material. Possible fair to poor porosity.   |

|                              |       |   |
|------------------------------|-------|---|
| 1331' - 1340'                | 9'    | No sample.  |
| 1340' - 1350'                | 10'   | Sandstone as above, coarse to commonly fine and medium grained, rarely very coarse grained, generally well sorted.  |
| 1350' - 1357'                | 7'    | No sample.  |
| 1357' - 1362'                | 5'    | Siltstone, light to medium gray, moderately hard, locally very finely sandy, siliceous with abundant finely divided mica and coaly carbonaceous material. Common fragments of coal.   |
| 1362' - 1388'                | 26'   | No sample.  |
| 1388' - 1396'                | 8'    | Sandstone, white, friable, fine to medium and rarely coarse grained, well sorted, angular to round, interstitially silty siliceous. Poor to no apparent porosity.   |
| 1396' - 2402'                | 1006' | No sample.  |
| <u>Lee Formation</u> (? - ?) |       |   |
| 2402' - 2413'                | 11'   | Sandstone, white, very fine to fine, medium, coarse, very coarse and rarely granular grained, variable, graded, poor to moderate sorting, angular to round, interstitially silty, siliceous with rare chlorite and carbonaceous material. Possibly granular conglomerative? |
| 2413' - 2420'                | 7'    | No sample.  |
| 2420' - 2432'                | 12'   | Sandstone, conglomerative, white, very fine to granular and pebbly grained, poorly sorted, angular to round, very silty, siliceous with rare carbonaceous material. Possible fair to poor porosity.   |
| 2432' - 2452'                | 20'   | Sandstone, white, moderately hard to friable, fine to medium grained, well sorted, subangular to round, interstitially silty, siliceous with rare carbonaceous material. Possible fair porosity.  |
| 2452' - 2465'                | 13'   | Sandstone, as 2402' - 2413'. Common fragments of coal and interbedded carbonaceous siltstone.   |
| 2465' - 2467'                | 2'    | Coal and interbedded coaly carbonaceous siltstone.  |
| 2467' - 2478'                | 11'   | Sandstone as 2432' - 2452' with common fragments of coal and coaly carbonaceous siltstone.  |

|               |      |   |
|---------------|------|---|
| 2478' - 2507' | 29'  | No sample   |
| 2507' - 2531' | 24'  | Sandstone, white, very fine to very coarse and commonly granular grained, poorly sorted, angular to round, interstitially silty, siliceous. Possible fair to poor porosity. |
| 2531' - 2539' | 8'   | Sandstone, as above fine to rarely medium grained, well sorted, subangular to round.  |
| 2539' - 2551' | 12'  | No sample.  |
| 2551' - 2558' | 7'   | Sandstone, fine to medium grained, well sorted as 2531' - 2539'   |
| 2558' - 2571' | 13'  | No sample.  |
| 2571' - 2576' | 5'   | Sandstone, fine to medium grained, well sorted, subround to round as 2551' - 2558'.   |
| 2576' - 3092' | 516' | No sample.  |

Mississippian System

Pennington Group (? - 3387')

Bluestone Formation (? - ?)

Princeton Sandstone (? - ?)

Hinton Formation (? - 3387')

Avis Limestone Member (? - ?)

Middle Red Member (? - 3192')

|               |     |   |
|---------------|-----|---|
| 3092' - 3104' | 12' | Sandstone, white to light gray, very fine to medium, commonly coarse grained, moderate to poor sorting, subangular to round, silty, siliceous with common carbonaceous material and rare pyrite. Common fragments of interbedded siltstone, medium gray and red-brown, ferruginous, moderately hard, siliceous with abundant carbonaceous material and impure coal laminae. |
| 3104' - 3115' | 11' | Interbedded sandstone and siltstone as above with common finely disseminated pyrite.  |
| 3115' - 3123' | 8'  | Siltstone, variegated, light to medium gray, gray-green, buff, tan, brown and red-brown, ferruginous, mottled, hard and brittle, siliceous and calcareous with rare finely divided carbonaceous material.   |

|               |     |   |
|---------------|-----|---|
| 3123' - 3128  | 5'  | Siltstone, light to medium gray, commonly greenish-gray, green and red-brown, siliceous and calcareous with abundant coaly carbonaceous material. Fragments of limestone, dolomite, white to light gray, hard, dense and microcrystalline.  |
| 3128' - 3135' | 7'  | Siltstone, variegated, as 3115' - 3123'.  |
| 3135' - 3161' | 26' | Siltstone, variegated, red-brown, ferruginous, greenish-gray, green and medium gray, mottled, hard and brittle, locally finely sandy, siliceous and calcareous, as above. Interbedded shale, variegated, red-brown, green and gray-green, hard, brittle, poorly fissile, silty, siliceous and calcareous. |
| 3161' - 3189' | 28' | No sample.  |
| 3189' - 3192' | 3'  | Siltstone, light to medium gray, hard, locally very finely sandy, siliceous with abundant finely divided coaly carbonaceous material and mica.  |

Stony Gap Sandstone Member (3192' - 3387')

|               |     |  |
|---------------|-----|--|
| 3192' - 3215' | 23' | Sandstone, white to light gray, moderately hard, very fine to fine grained, well sorted and rounded, interstitially silty, siliceous, very slightly calcareous with abundant finely divided carbonaceous material and carbonaceous laminae. Poor to no apparent porosity. Minor interbedded siltstone as 3189' - 3192' throughout. |
| 3215' - 3233' | 18' | No sample.   |
| 3233' - 3252' | 19' | Interbedded sandstone and siltstone as 3192' - 3215'.  |
| 3252' - 3270' | 18' | Sandstone, white, moderately hard, very fine to fine and medium-grained, graded, well sorted, subangular to round, interstitially silty, siliceous, very slightly calcareous with very rare carbonaceous material. Possible fair to poor porosity. Common fragments of interbedded siltstone as above and rare pyrite.             |
| 3270' - 3319' | 49' | Sandstone as 3252' - 3270', fine grained, commonly very fine and medium grained, well sorted, with rare pyrite and chlorite. Abundant fragments of siltstone, medium gray and red-brown, mottled as before, intercolated throughout the sandstone.   |

|                                     |     |   |
|-------------------------------------|-----|---|
| 3319' - 3334'                       | 15' | Siltstone, light to medium gray, moderately hard and brittle, locally very finely sandy, siliceous with abundant finely divided mica and carbonaceous material, common pyrite. Minor intercolated lenses of sandstone as above.                             |
| 3334' - 3340'                       | 6'  | No sample.  |
| 3340' - 3346'                       | 6'  | Sandstone with minor interbedded siltstone as 3252' - 3270'.  |
| 3346' - 3361'                       | 15' | No sample.  |
| 3361' - 3387'                       | 26' | Sandstone, as 3252' - 3270', fine to medium grained, well sorted with abundant fragments of variegated shale and siltstone throughout (contamination or interbedded?).  |
| Bluefield Formation (3387' - 3588') |     |   |
| 3387' - 3401'                       | 14' | Siltstone, light to medium gray, moderately hard and brittle, locally very finely sandy, siliceous with abundant finely divided mica and carbonaceous material. Common fragments of limestone, silty, dolomitic, light gray, hard and microcrystalline.     |
| 3401' - 3423'                       | 22' | Siltstone as above, commonly greenish-gray and red-brown, very slightly calcareous.   |
| 3423' - 3432'                       | 9'  | Interbedded siltstone as above and sandstone, white, moderately hard, very fine to fine grained, well sorted subround to round, interstitially silty, siliceous and very slightly calcareous with rare carbonaceous material. Poor to no apparent porosity. |
| 3432' - 3451'                       | 19' | No sample.  |
| 3451' - 3458'                       | 7'  | Siltstone with minor interbedded sandstone as 3423' - 3432'.  |
| 3458' - 3511'                       | 53' | No sample.  |
| 3511' - 3546'                       | 35' | Siltstone, argillaceous, light to medium gray, moderately hard, fairly fissile, locally finely sandy with intercolated sandstone stringers, siliceous with abundant finely divided mica and carbonaceous material.  |



|                      |                 |  |
|----------------------|-----------------|--|
| 3546' - 3555'        | 9'              | Siltstone, light to medium gray, moderately hard and brittle, locally finely sandy, siliceous and calcareous with abundant finely divided mica and carbonaceous material. Common occurrence of coral and fossil fragments with fragments of opaque calcite and impure silty limestone. |
| 3555' - 3588'        | 33'             | No sample.   |
| Greenbrier Limestone | (3588' - 4003') |  |
| 3588' - 3595'        | 7'              | Interbedded Siltstone, calcareous as 3546' - 3555' and Limestone, impure, silty, light to medium gray, white, tan-brown, and gray-brown, hard, brittle, microcrystalline, locally sandy, siliceous with common fossil fragments.   |
| 3595' - 3622'        | 27'             | No sample.   |
| 3622' - 3627'        | 5'              | Siltstone, calcareous, medium gray with coral and fossil fragments as 3546' - 3555'.   |
| 3627' - 3628'        | 1'              | Limestone, impure, silty and argillaceous as 3588' - 3595'   |
| 3628' - 3668'        | 40'             | No sample.   |
| 3668' - 3681'        | 13'             | Limestone, white, light to medium gray, tan, gray-brown and brown, hard, brittle, microcrystalline, locally silty, impure, with common fossil fragments and oolites.   |
| 3681' - 3696'        | 15'             | No sample.   |
| 3696' - 3707'        | 11'             | Limestone, fossiliferous fragmental and oolitic, white, light to medium gray, tan, gray-brown and brown, hard, brittle, microcrystalline, locally finely sandy and silty, siliceous, impure, with common calcite crystals.   |
| 3707' - 3757'        | 50'             | No sample.   |
| 3757' - 3764'        | 7'              | Limestone, white, tan, buff and light gray, hard, brittle and microcrystalline rarely fossiliferous fragmental and oolitic.  |
| 3764' - 3775'        | 11'             | No sample.   |
| 3775' - 3790'        | 15'             | Limestone, light to medium gray-brown and brown, very hard, brittle, locally finely sandy and silty, siliceous, slightly impure, with common to rare fragments of calcite and rare fossil fragments.   |

|                       |      |  |
|-----------------------|------|--|
| 3790' - 3805'         | 15'  | Limestone, fragmental, light to medium gray-brown and brown, very hard, brittle, microcrystalline, locally very sandy, siliceous with abundant oolites and fossil fragments. Common fragments of calcite.  |
| 3805' - 3855'         | 50'  | No sample.   |
| 3855' - 3878'         | 23'  | Limestone, white to tan and tan-gray, very hard, brittle, microcrystalline, rarely silty, siliceous, pure.   |
| 3878' - 4000'         | 122' | No sample.   |
| 4000' - 4003'         | 3'   | Limestone, oolitic, tan, very hard, microcrystalline.  |
| <u>MacCrady Shale</u> |      | (4003' - 4015'+)   |
| 4003' - 4015'         | 12'  | Siltstone, variegated, red-brown, ferruginous, light gray, greenish-gray and light brown, mottled, hard, brittle, rarely very finely sandy, siliceous, calcareous to slightly calcareous with very finely divided and very rare carbonaceous material. |
| 4015' - 4028'         | 13'  | No sample.   |
|                       |      | TOTAL DEPTH 4028'  |

SUMMARY

Pennsylvanian  
System  
(0' - ?)

Pottsville Group  
(0' - ?)

Wise Formation  
(0' - 784'?)

Gladeville Sandstone  
(784'?- 838')

Norton Formation  
(838' - 1396'+)

Lee Formation  
(? - ?)

Possible equivalent  
Dorchester Coal Horizon  
(774' - 784')

Norton Coal Horizon  
(838' - 844')

Probable equivalent  
Upper Banner Coal  
(1077' - 1105')

Lower Banner Coal Horizon  
(1199' - 1209')

Mississippian  
System  
(? - 4015'+)

Pennington Group  
(? - 3387')

Bluestone Formation  
(? - ?)

Princeton Sandstone  
(? - ?)

Hinton Formation  
(? - 3387')

Avis Limestone Member (?-?)  
Middle Red Member (?-3192')  
Stony Gap Sandstone  
Member (3192' -3387')

Bluefield Formation  
(3387' - 3588')

Greenbrier Limestone  
(3588' - 4003')

MacCrady Shale  
(4003' - 4015'+)