

Operator: Clinchfield Coal Company
 Farm: Virginia Iron, Coal & Coke Company
 Well No.: 207
 Location: Wise County
 9800' S. of 37° 00'
 4750' W. of 82° 25'
 Elevation: 2099.44'
 Total Depth: 6277'
 Drilling Commenced: October 12, 1957
 Well Completed: March 12, 1958
 Result: Gas well

Geologic log
 Samples studied by
 K. Robinson
 Virginia Division of
 Mineral Resources
 April 1962

GEOLOGIC LOG

Depth (Feet) Thickness

PENNSYLVANIAN SYSTEMNorton Formation (0' - 1047')

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| 0' - 53' | 53' | Shale, silty, medium gray, moderately hard and brittle, poorly fissile, siliceous and micaceous with carbonaceous inclusion. |
| 53' - 61' | 8' | Shale as 0' - 53', sandstone, argillaceous, medium gray, hard, fine to very fine-grained, moderate sorting and rounders, interstitially silty and argillaceous, poor porosity. Siltstone, argillaceous, medium gray, moderately hard, finely sandy and micaceous. |
| 61' - 69' | 8' | Shale, silty, micaceous as 53' - 61'. |
| 69' - 79' | 10' | Shale, silty, micaceous and coal (5'). |
| 79' - 99' | 20' | Sandstone, light gray, moderately hard, fine to very fine-grained, moderate sorting, interstitially silty and micaceous, poor porosity. |
| 99' - 109' | 10' | Siltstone, dark gray to black, carbonaceous, moderately hard, slight fissility, locally sandy. |

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| 109' - 146' | 47' | Shale, silty and micaceous, medium gray moderately hard and brittle, poorly fissile, siliceous with common mica and carbonaceous material. Coal fragments 116' - 125'. |
| 146' - 165' | 19' | Shale, silty and micaceous and above, fair fissility, no carbonaceous material. Interbedded fine stringers of siltstone and sandstone, silty, micaceous, at 152' - 160'. |
| 165' - 170' | 5' | No sample. |
| 170' - 193' | 23' | <u>Lower Banner Coal Horizon</u> - Sandstone, light gray, moderately hard to friable, very fine to fine-grained, locally silty, well sorted, subangular to subround interstitially silty, siliceous with abundant mica and chlorite. Poor to good porosity. Estimated 2' coal interval 170' - 179' and a 1' coal in the interval 188' - 193'. |
| 193' - 227' | 34' | Shale, medium to dark gray, hard, poorly fissile, finely silty, siliceous with abundant mica and carbonaceous material. Interbedded siltstone and sandstone, silty, argillaceous, very fine-grained, well sorted with abundant mica and carbonaceous material in the interval 207' - 227'. |
| 227' - 230' | 3' | Sandstone, white to light gray, moderately hard to friable, fine to silty-grained, moderate sorting, interstitially very silty, siliceous, slightly calcareous with abundant mica, chlorite and fine coal laminae. Good porosity, interbedded fine stringers of carbonaceous shale and siltstone. |
| 230' - 254' | 24' | Shale, silty, medium gray, hard, poorly fissile, siliceous and slightly calcareous with abundant mica and carbonaceous material. Interbedded siltstone, medium gray, argillaceous and finely sandy, and sandstone, medium gray, hard dense, fine-grained, well sorted, silty and argillaceous, with abundant mica, chlorite and carbonaceous material in the interval 230' - 235'. |
| 254' - 256' | 2' | No sample. |

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| 256' - 276' | 20' | Shale as 230' - 254', locally very sandy. Possible fragments of intraformational conglomerate? |
| 276' - 297' | 21' | Siltstone, medium to dark gray, moderately hard, poorly fissile, siliceous, locally finely sandy and argillaceous with abundant mica and coaly carbonaceous material. |
| 297' - 320' | 23' | Shale, silty with abundant mica and carbonaceous material as above. Interbedded stringers of siltstone and sandstone as before; in the interval 305' - 320'. |
| 320' - 323' | 3' | Sandstone, white to light gray, moderately hard to friable, fine to rarely medium-grained, well sorted, angular to subangular, interstitially silty, siliceous and slightly calcareous with common mica, chlorite and coaly carbonaceous material. Poor porosity. |
| 323' - 330' | 7' | No sample. |
| 330' - 350' | 20' | Sandstone as 320' - 323'. |
| 350' - 366' | 16' | <u>Equivalent Kennedy Coal Horizon</u> - No coal present. Siltstone, dark gray, moderately hard, brittle and fissile, very finely sandy and argillaceous, slightly calcareous, with abundant mica and carbonaceous material. |
| 366' - 412' | 46' | <u>McClure Sandstone</u> - Sandstone, white to light gray, moderately hard, fine to medium and coarse-grained, poorly sorted, subangular to subround, interstitially very silty, siliceous and slightly calcareous with abundant mica, chlorite, carbonaceous material and feldspar? No apparent porosity. Coal fragments 400' - 410'. |
| 412' - 444' | 32' | Siltstone, argillaceous, dark gray, hard, poorly fissile, siliceous with abundant mica and carbonaceous material. |
| 444' - 468' | 24' | Sandstone, as 366' - 412'. |

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| 468' - 504' | 36' | Siltstone, medium to dark gray, moderately hard and fissile, siliceous, slightly argillaceous with abundant mica and carbonaceous material. |
| 504' - 511' | 7' | Sandstone, silty-argillaceous, light gray, hard very fine to fine-grained, well sorted, interstitially very silty, siliceous with abundant mica, chlorite, carbonaceous material and brown quartz. No porosity. |
| 511' - 539' | 28' | Siltstone, as 468' - 504', locally finely sandy. |
| 539' - 549' | 10' | Interbedded siltstone and sandstone as above with an estimated 2' coal. |
| 549' - 587' | 38' | <u>Equivalent Raven Coal Horizon</u> - No coal present. Siltstone, medium dark gray, hard, poorly fissile, siliceous, slightly argillaceous, locally finely sandy with mica and carbonaceous material. |
| 587' - 592' | 5' | No sample. |
| 592' - 613' | 21' | Sandstone, white to light gray, moderately hard to friable, fine to medium-grained, rarely coarse, well sorted, subround, interstitially silty, siliceous with abundant mica, chlorite, carbonaceous material, feldspar and brown-black quartz. Common fine laminae of impure shaly coal and black siltstone to the interval 603' - 613'. |
| 613' - 619' | 6' | No sample. |
| 619' - 636' | 17' | Sandstone with abundant carbonaceous material as 592' - 613'. |
| 636' - 653' | 17' | Interbedded sandstone and siltstone as before. Estimated 1' impure coal in the interval 639' - 646'. |
| 653' - 671' | 18' | Siltstone, medium to dark gray, hard, poorly fissile, siliceous, argillaceous with abundant mica and fine laminae of coaly carbonaceous material. |
| 671' - 688' | 17' | Shale, medium to dark gray, moderately hard and brittle, fair fissility, locally silty, siliceous with abundant fine mica and carbonaceous material. Common white and brown chert fragments. |

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| 688' - 695' | 7' | No sample. |
| 695' - 701' | 6' | Shale as 671' - 688' grading to siltstone. |
| 701' - 741' | 40' | <u>Equivalent Jawbone Coal Horizon</u> - Siltstone, as 653' - 671'. Interbedded sandstone, very fine to fine-grained and coal laminae in the interval 709' - 715'. |
| 741' - 784' | 43' | Sandstone, white to light gray, moderately hard to friable, fine to medium-grained, rarely very coarse, well sorted, subangular to sub-round, interstitially silty, siliceous with abundant mica, chlorite, feldspar and carbonaceous material. Poor porosity. Coal fragments 741' - 750'. |
| 784' - 790' | 6' | No sample. |
| 790' - 816' | 26' | Sandstone as 741' - 784'. |
| 816' - 825' | 9' | Shale, medium to dark gray, moderately hard and fissile, locally silty, siliceous with abundant mica and carbonaceous material. |
| 825' - 830' | 5' | Siltstone, dark gray, moderately hard, argillaceous, locally finely sandy with mica and carbonaceous material. |
| 830' - 845' | 15' | Sandstone, white to light gray, hard to friable, fine to very fine-grained and silty, poorly sorting, siliceous, with abundant mica, chlorite and carbonaceous material. |
| 845' - 871' | 26' | Siltstone as 825' - 830' with coal fragments. |
| 871' - 876' | 5' | No sample. |
| 876' - 885' | 9' | Siltstone as 845' - 871'. |
| 885' - 890' | 5' | Sandstone as 830' - 845'. |
| 890' - 900' | 10' | No sample. |
| 900' - 938' | 38' | Sandstone, white to light gray, hard, medium-grained, well sorted, subround to round, interstitially silty, siliceous with common mica and chlorite. Fair porosity. |

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| 938' - 973' | 35' | Interbedded siltstone and shale. |
| 973' - 997' | 24' | Siltstone, white to dark gray, moderately hard, slightly argillaceous, locally fine sandy with mica and carbonaceous material. |
| 997' - 1006' | 9' | Sandstone, white to light gray, hard, fine-grained, well sorted, silty, siliceous with mica and carbonaceous material. No porosity. |
| 1006' - 1037' | 31' | Shale, medium gray, hard, slightly fissile, siliceous, with common mica. |
| 1037' - 1047' | 10' | Siltstone, as 973' - 997'. |
| <u>Lee Formation</u> (1047' - 2279') | | |
| 1047' - 1055 | 8' | Sandstone, white, fine to medium-grained, well sorted, angular to subround, clean. Fair to poor porosity. Fragments of coal at 1047' - 1050'. |
| 1055' - 1061' | 6' | No sample. |
| 1061' - 1067' | 6' | Sandstone, white, fine to medium-grained, well sorted, angular to subround, interstitially slightly silty, siliceous with rare chlorite and some carbonaceous material. |
| 1067' - 1070' | 3' | No sample. |
| 1070' - 1120' | 50' | Sandstone as above. |
| 1120' - 1130' | 10' | No sample. |
| 1130' - 1143' | 13' | Sandstone as above. |
| 1143' - 1173' | 30' | Shale, silty, dark gray, hard, brittle, fissile with micaceous partings and finely disseminated pyrite. |
| 1173' - 1243' | 70' | Sandstone, white to light gray, moderately hard, very fine to medium grained, poorly sorted, interstitially very silty, siliceous with common mica, chlorite and carbonaceous material. No apparent porosity. Fragments of brown quartz?, with estimated thin coal at 1234'. |

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| 1234' - 1250' | 7' | Shale, medium to dark gray, hard, brittle, moderately fissile, finely silty, siliceous with mica and carbonaceous material. |
| 1250' - 1259' | 9' | Siltstone, medium to dark gray, hard, poorly fissile, siliceous with abundant coal carbonaceous material and mica. |
| 1259' - 1269' | 10' | Sandstone, light gray, hard, very fine to fine-grained, well sorted, interstitially very silty, siliceous with common mica and carbonaceous material. No apparent porosity. |
| 1269' - 1278' | 9' | No sample. |
| 1278' - 1289' | 11' | Sandstone, silty, micaceous as above. |
| 1289' - 1296' | 7' | No sample. |
| 1296' - 1301' | 5' | Siltstone, light gray, very hard, locally sandy with abundant mica and carbonaceous material. |
| 1301' - 1307' | 6' | No sample. |
| 1307' - 1356' | 49' | Siltstone as 1296' - 1301'. |
| 1356' - 1372' | 16' | Shale, medium gray, hard, poorly fissile, silty, siliceous with mica and carbonaceous material. |
| 1372' - 1410' | 38' | Sandstone, white to light gray, hard, fine to medium grained, poorly sorted, sub- to well-rounded, interstitially silty, siliceous, with abundant mica, chlorite and rare carbonaceous material. No apparent porosity. Impure coal streaks 1390' - 1400'. |
| 1410' - 1465' | 55' | Siltstone, medium to dark gray, moderately hard, locally sandy, siliceous with mica and coal fragments at 1410' - 1420'. |
| 1465' - 1490' | 25' | Sandstone, white to light gray, moderately hard, fine to very fine-grained, well sorted, interstitially silty, siliceous with common mica, chlorite, and impure coal fragments. No apparent porosity. |
| 1490' - 1531' | 41' | Siltstone as 1410' - 1465'. |

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| 1531' - 1563' | 32' | Interbedded siltstone and sandstone as above. Estimated thin coal in the interval 1553' - 1563'. |
| 1563' - 1575' | 12' | Sandstone as 1465' - 1490'. |
| 1575' - 1599' | 24' | Sandstone, silty, light gray, hard, very fine to silty grained, moderate sorting, siliceous with very abundant interbedded fine laminae of mica and coaly carbonaceous material, imparting fair fissility. Poor porosity. |
| 1599' - 1625' | 26' | Siltstone, light to medium gray, hard, finely sandy, siliceous, with mica and carbonaceous material. Common coal fragments at 1599' - 1610'. |
| 1625' - 1640' | 15' | Shale, medium gray, hard, fairly fissile, locally silty, siliceous. |
| 1640' - 1650' | 10' | Sandstone, light gray, hard, fine to medium-grained, moderate sorting, well rounded, interstitially very silty, siliceous with abundant mica, chlorite and carbonaceous material. Poor porosity. |
| 1650' - 1671' | 21' | Siltstone, medium to dark gray, hard, moderately fissile, siliceous with abundant coaly carbonaceous material. |
| 1671' - 1686' | 15' | Sandstone, white to light gray, very hard, very fine-grained, well sorted, interstitially silty, siliceous with rare mica and carbonaceous material. No porosity. |
| 1686' - 1696' | 10' | No sample. |
| 1696' - 1716' | 20' | Sandstone, fine to very fine-grained as 1671' - 1686'. |
| 1716' - 1785' | 69' | Shale, silty, medium to dark gray, moderately hard and fissile, siliceous with mica and coaly carbonaceous material. |
| 1785' - 1820' | 35' | Interbedded siltstone, sandy and sandstone as above, with abundant coal fragments. Fair to poor porosity. Estimated coal stringers throughout with a 3' coal in the interval 1811' - 1820'. |

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| 1820' - 1850' | 30' | Siltstone, light to medium gray, very hard, fairly fissile, locally finely sandy, siliceous and slightly calcareous with finely divided mica. |
| 1850' - 1907' | 57' | Interbedded siltstone and sandstone, fine to very fine grained, as above. |
| 1907' - 1970' | 63' | Sandstone, white, moderately hard to friable, variable very fine to medium grained, rarely very coarse, well sorted, subangular to round. Interstitially siliceous, with rare mica, chlorite and carbonaceous material. Poor to possible fair porosity. |
| 1970' - 2006' | 36' | Siltstone, light to medium gray, hard, dense, locally finely sandy, siliceous with abundant finely divided mica and coaly carbonaceous material. |
| 2006' - 2100' | 94' | Sandstone, light gray, hard, very fine to medium grained, variable poor to well sorted, subround interstitially very silty, siliceous and very slightly calcareous with abundant mica, chlorite and coaly carbonaceous material. Poor to no apparent porosity. |
| 2100' - 2128' | 28' | Shale, medium gray, rarely brown, hard, poorly fissile, locally finely silty, siliceous with finely divided mica and carbonaceous material. |
| 2128' - 2146' | 18' | Siltstone, medium gray, hard, poorly fissile, locally finely sandy, siliceous and calcareous with abundant mica and coaly carbonaceous material. Estimated thin coal beds in the interval 2128' - 2138'. |
| 2146' - 2164' | 18' | Shale, silty, medium gray, hard, moderately fissile, siliceous with finely divided mica and coaly carbonaceous material. Fine laminae of coal impart fissility. Fragments of impure coal with visible plant impressions. |
| 2164' - 2218' | 54' | Siltstone, slightly calcareous as 2128' - 2146'. |
| 2218' - 2253' | 35' | Interbedded siltstone, white, shale and coal stringers. |

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| 2253' - 2279' | 26' | Sandstone, white, moderately hard, fine to very fine and silty grained, well sorted and rounded, siliceous with abundant coal carbonaceous material. Slight porosity. Estimated 2' coal 2257' - 2259'. |
| 2279' - 2294' | 15' | Siltstone as 2164' - 2218'. |
| 2294' - 2320' | 26' | Interbedded siltstone and sandstone as above. |

MISSISSIPPIAN SYSTEM

Pennington Group (2320' - 3604')

Bluestone Formation (2320' - 2762')

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| 2320' to 2350' | 130' | Interbedded variegated siltstone and shale. Siltstone, ferruginous, red-brown, red and white mottled, light gray-green, green and medium gray, hard, brittle, poorly fissile, locally finely sandy, siliceous and calcareous with common finely divided mica and carbonaceous material. Shale, ferruginous, red-brown, brown and gray, moderately hard and fissile, slightly calcareous. |
| 2450' - 2456' | 6' | Sandstone, light gray-green, moderately hard, fine to very fine-grained, well sorted, interstitially silty, siliceous and calcareous with chlorite, mica and black mineral? No porosity. |
| 2456' - 2482' | 26' | Interbedded variegated siltstone and shale as 2320' - 2450'. Plant impressions 2475' - 2482'. |
| 2482' - 2506' | 24' | Siltstone, light to dark gray and gray-green, moderately hard, brittle, poorly fissile, locally finely sandy, siliceous, slightly calcareous with common coaly carbonaceous material. |
| 2506' - 2533' | 27' | Interbedded siltstone as 2482' - 2506' and sandstone, white to light gray, hard, very fine to fine grained, well sorted and rounded, silty, siliceous and slightly calcareous with common chlorite and coal carbonaceous material. Poor porosity. |
| 2533' - 2554' | 21' | Sandstone as 2506' - 2533' with abundant intercolated impure silty coal laminae 2533' - 2540' and ferruginous siltstone 2540' - 2546'. |

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| 2554' - 2557' | 3' | No sample. |
| 2557' - 2603' | 46' | Sandstone, very fine to silty grained, as 2533' - 2554'. No apparent porosity. Abundant impure silty coal laminae 2557' - 2572'. |
| 2603' - 2734' | 131' | Siltstone, carbonaceous, medium gray to black, moderately hard, brittle and fissile, locally finely sandy, siliceous and very slightly calcareous with intercolated fine laminae of impure coal or carbonaceous material and stringers of fine grained sandstone 2603' - 2625'. |
| 2734' - 2762' | 28' | Siltstone, light to medium gray, moderately hard and fissile, locally finely sandy, siliceous and slightly calcareous with common mica and carbonaceous material. |

Princeton Sandstone (2762' - ?)

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| 2762' - 2773' | 11' | Sandstone, white to light gray, moderately hard to friable, fine-grained, well sorted, subangular to subround, interstitially silty, siliceous and calcareous with abundant carbonaceous material, rare chlorite and mica. No apparent porosity. |
| 2773' - 2813' | 40' | Sandstone as 2762' - 2773' with intercolated stringers of siltstone as 2603' - 2734'. |
| 2813' - 3313' | 500' | No samples. |

Hinton Formation (? - 3604')

Avis Limestone Member (? - ?)

Middle Red Member (? - 3342')

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| 3313' - 3315' | 2' | Sandstone, white, moderately hard to friable, very fine to fine grained, well sorted, subangular to subround, interstitially slightly silty, siliceous and calcareous with rare finely divided carbonaceous material. Slight porosity. |
| 3315' - 3317' | 2' | Siltstone, ferruginous, red-brown, moderately hard, locally finely sandy, siliceous. |

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| 3317' - 3342' | 25' | Siltstone, white to medium gray, hard, moderately fissile, siliceous, with abundant mica and coaly carbonaceous material. Intercolated laminae of very fine-grained sandstone and impure coal, 3317-3324'. |
| <u>Stony Gap Sandstone Member</u> (3342' - 3604', time-stratigraphic and lithologic) | | |
| 3342' - 3399' | 57' | Sandstone, with common mica, rare chlorite and carbonaceous material as 3313' - 3315' with estimated 1' - 3' interbedded layers of siltstone, ferruginous, red-brown as 3315' - 3317', siltstone, white to medium gray as 3317' - 3342' and shale, ferruginous, red-brown to gray, moderately hard and fissile, slightly calcareous. |
| 3399' - 3410' | 11' | Sandstone, as above, with interbedded siltstone, medium gray, coaly carbonaceous, micaceous with rare pyrite. |
| 3410' - 3443' | 32' | Sandstone, with interbedded siltstone, gray and coaly carbonaceous, siltstone, ferruginous, red-brown and shale, ferruginous, red-brown as 3342' - 3399'. Fragments of impure silty coal 3434' - 3438'. |
| 3442' - 3453' | 11' | Sandstone and interbedded siltstone, coaly carbonaceous as 3399' - 3410'. |
| 3453' - 3495' | 42' | Sandstone with interbedded siltstone, carbonaceous, siltstone, ferruginous and shale, ferruginous, red-brown as 3410' - 3442'. |
| 3495' - 3504' | 9' | Interbedded sandstone, white to light gray, hard, very fine to fine grained, well sorted and rounded, interstitially grained siliceous, very slightly calcareous with common to abundant coaly carbonaceous material and mica, and siltstone, white to medium gray, hard, poorly fissile, locally finely sandy, siliceous with abundant mica and coaly carbonaceous material. Fine laminae of coaly material impart fissility. |
| 3504' - 3552' | 48' | Sandstone with interbedded siltstone, carbonaceous, siltstone ferruginous and shale, ferruginous, red-brown, as 3453' - 3495'. |

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| 3552' - 3589' | 37' | Siltstone, medium gray, moderately hard and brittle, slightly fissile, siliceous with finely divided mica and carbonaceous material. Thin stringers of sandstone, white, very fine-grained 3552' - 3561'. |
| 3589' - 3604' | 15' | Sandstone, white, hard, very fine to medium grained, moderate sorting, angular to sub-angular, siliceous and calcareous with rare mica. Poor porosity. |
| <u>Bluefield Formation</u> (3604' - 4133') | | |
| 3604' - 3697' | 93' | Siltstone, light to medium gray, moderately hard and brittle, poorly fissile, locally finely sandy, siliceous, very slightly calcareous with common to abundant finely divided mica, carbonaceous material and pyrite. Grades to very argillaceous in the lower part of section. Possible bentonitic siltstone 3625' - 3635'. |
| 3697' - 3745' | 48' | Shale, silty, medium gray, hard, brittle, fairly fissile, very calcareous with very finely divided carbonaceous material and interbedded stringers of siltstone. |
| 3745' - 3771' | 26' | Limestone, argillaceous, light to medium gray, hard dense, moderately fissile with common fossil fragments and pyrite. Grades locally to a fossiliferous fragmental limestone with intercolated bands of calcareous shale. |
| 3771' - 3777' | 6' | Shale, calcareous as 3697' - 3745'. |
| 3777' - 3795' | 18' | Interbedded sandstone, white, hard, very fine to fine grained, well sorted, interstitially slightly silty, siliceous and very slightly calcareous with common carbonaceous material and siltstone, medium gray, hard, brittle, poorly fissile, locally finely sandy, siliceous with abundant laminae of coaly carbonaceous material and mica. |
| 3795' - 3908' | 114' | Siltstone, light to medium gray, hard, slightly fissile, locally finely sandy and argillaceous, siliceous and calcareous with abundant finely divided carbonaceous material and mica. Common fossil fragments 3890' - 3909'. |

Greenbrier Limestone (3909' - 4604')

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| 3909' - 3922' | 13' | Limestone, argillaceous and silty, light gray to brownish gray, very hard, dense, microcrystalline with common to abundant fossil fragments and pyrite. |
| 3922' - 3933' | 11' | Siltstone, calcareous as 3795' - 3909'. |
| 3933' - 3988' | 55' | Limestone, slightly argillaceous, gray brown to brown, hard, dense and microcrystalline, very fossiliferous and oolitic. Thin interbedded stringers of siltstone as above. |
| 3988' - 4078' | 90' | Siltstone, argillaceous, medium gray, hard, poorly fissile, siliceous and calcareous with abundant to common finely disseminated carbonaceous material and pyrite. Common fossil fragments and impressions. |
| 4078' - 4096' | 18' | Siltstone, variegated, argillaceous, light to medium gray, red-brown, brown, and greenish-gray, hard, poorly fissile, locally very finely sandy, siliceous and very calcareous with abundant finely divided pyrite and carbonaceous material. |
| 4096' - 4133' | 37' | Siltstone, argillaceous, light to medium and greenish gray, as 4078' - 4096'. |
| 4133' - 4149' | 16' | Limestone, argillaceous, light medium gray and gray-brown, very hard, microcrystalline with abundant fossil fragments and common finely divided carbonaceous material, pyrite and calcite. Locally fossiliferous fragmental and oolitic. |
| 4149' - 4243' | 94' | Limestone, light gray to tan, very hard and brittle, microcrystalline, locally silty, siliceous and argillaceous with common fossil fragments, pyrite and calcite. |
| 4243' - 4260' | 17' | No sample. |
| 4260' - 4282' | 22' | Limestone as 4149' - 4243'. |
| 4282' - 4295' | 13' | Sandstone, calcareous, light gray, very fine to fine grained, well sorted and rounded, interstitially very silty, siliceous. |

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| 4295' - 4339' | 44' | Limestone, white to light gray, gray-brown and tan, very hard, microcrystalline, locally silty and argillaceous with common fossil fragments and calcite. |
| 4339' - 4437' | 98' | Limestone, white to light gray and tan, very hard, microcrystalline, pure. |
| 4437' - 4455' | 18' | No sample. |
| 4455' - 4483' | 28' | Limestone, as 4339' - 4437'. |
| 4483' - 4496' | 13' | Siltstone, ferruginous, red-brown to green-gray, hard, siliceous. |
| 4496' - 4556' | 60' | Limestone, as 4455' - 4483'. |
| 4556' - 4577' | 21' | No sample. |
| 4577' - 4593' | 16' | Limestone as 4496' - 4556' with very abundant chert, milky white, tan and pink. |
| 4593' - 4604' | 11' | No sample. |
| <u>MacCraday Shale</u> (4604' - 4706') | | |
| 4604' - 4611' | 7' | Sandstone, light to medium gray, moderately hard fine to very fine-grained, well sorted, interstitially very silty, siliceous and calcareous with abundant coaly carbonaceous material. No porosity. Interbedded siltstone, medium gray, coaly carbonaceous to ferruginous, red-brown, moderately hard, locally finely sand sandy, siliceous, slightly calcareous with abundant finely divided mica and coal laminae in the gray siltstone. Common fragments of chert and limestone. |
| 4611' - 4614' | 3' | No sample. |
| 4614' - 4659' | 45' | Siltstone, light to medium gray, moderately hard, poorly fissile, locally sandy, siliceous, very slightly calcareous with abundant finely divided coaly coaly carbonaceous material and mica. |
| 4659' - 4667' | 8' | No sample. |

4667' - 4706' 39' Interbedded siltstone as above and sandstone, white to light gray and red-brown, hard, very fine-grained to silty, well sorted and rounded, locally ferruginous, siliceous and slightly calcareous with finely disseminated carbonaceous material. No porosity.

Price Formation (4706' - 4897')

4706' - 4752' 46' Siltstone as 4614' - 4659' with pyrite.

4752' - 4775' 23' Interbedded siltstone and sandstone as 4667' - 4706'.

4775' - 4881' 106' Siltstone, argillaceous, light to medium gray, moderately hard and fissile, locally sandy, siliceous, slightly calcareous with carbonaceous material, mica, and some pyrite.

4881' - 4897' 16' No sample.

DEVONIAN-MISSISSIPPIAN SYSTEMS

Big Stone Gap Shale (4897' - 5151')

4897' - 4968' 71' Shale, silty, medium gray, moderately hard, brittle and fissile, locally very finely sandy, slightly calcareous with abundant carbonaceous material and rare pyrite fragments.

4968' - 4990' 22' No sample.

4990' - 5067' 77' Shale as 4897' - 4968'.

5067' - 5082' 15' No sample.

5082' - 5151' 69' Shale, silty, medium to dark gray, moderately hard, brittle and fissile, slightly calcareous with abundant coaly carbonaceous material.

DEVONIAN SYSTEM

Devonian Shales, Siltstones and Sandstones (5151' - 6274')

5151' - 5160' 9' Siltstone, light to medium gray, very hard, locally very finely sandy, siliceous with finely divided pyrite, carbonaceous material and mica.

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| 5160' - 5170' | 10' | Sandstone, white to light gray, hard, very fine-grained, well sorted, subangular to subround, interstitially slightly silty, siliceous with common pyrite and finely divided carbonaceous material. No apparent porosity. Interbedded siltstone, coaly carbonaceous, gray to black, hard, siliceous grading to impure, silty coal. |
| 5170' - 5179' | 9' | No sample. |
| 5179' - 5201' | 22' | Interbedded sandstone and siltstone, carbonaceous, as 5160' - 5170'. |
| 5201' - 5241' | 40' | Sandstone as 5160' - 5170'. |
| 5241' - 5258' | 17' | Siltstone, light to medium gray, very hard, brittle, locally very finely sandy, siliceous, very slightly calcareous with abundant finely divided coaly carbonaceous material. |
| 5258' - 5266' | 8' | Sandstone, light gray to gray-brown, moderately hard, very fine to silty grained, well sorted, interstitially siliceous, very slightly calcareous with rare pyrite, carbonaceous material and coarse quartz grains. |
| 5266' - 5307' | 41' | Siltstone, dark gray to black, hard, poor fissility, locally finely sandy, siliceous with abundant finely disseminated pyrite, coaly carbonaceous material and common mica. |
| 5307' - 5322' | 15' | No sample. |
| 5322' - 5386' | 64' | Siltstone, light to medium gray, hard, moderately fissile, siliceous, very slightly calcareous with common finely disseminated pyrite and mica, rare carbonaceous material. |
| 5386' - 5400' | 14' | No sample. |
| 5400' - 5471' | 71' | Siltstone, medium to dark gray as 5322' - 5386' with common fine laminae of coaly carbonaceous material. |
| 5471' - 5479' | 8' | No sample. |

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| 5479' - 5618' | 139 | Siltstone, light to medium gray, hard, poorly fissile, locally very finely sandy and slightly argillaceous, siliceous and very slightly calcareous with common finely disseminated pyrite, mica and carbonaceous material. |
| 5618' - 5782' | 164' | Siltstone, argillaceous, light to medium gray and gray-brown, hard, slightly fissile, locally very finely sandy, siliceous, slightly calcareous with rare to common pyrite, mica and carbonaceous material. |
| 5782' - 5787' | 5' | No sample. |
| 5787' - 5822' | 35' | Siltstone as 5618' - 5782'. |
| 5822' - 5830' | 8' | Shale, carbonaceous, black, hard, brittle, fairly fissile, finely silty, siliceous and slightly calcareous with common finely disseminated pyrite and abundant coaly carbonaceous material. |
| 5830' - 5838' | 8' | No sample. |
| 5838' - 5896' | 58' | Shale, carbonaceous as 5822' - 5830'. |
| 5896' - 5969' | 73' | Shale, silty, medium to dark gray, hard, moderately fissile, finely silty, siliceous, slightly calcareous with abundant pyrite and carbonaceous material. |
| 5969' - 6012' | 43' | Siltstone, light to medium dark gray, very hard, poorly fissile, slightly argillaceous, siliceous, slightly calcareous with abundant pyrite and carbonaceous material. Common fine laminae of coaly carbonaceous material and nodular pyrite. |
| 6012' - 6048' | 36' | Siltstone, carbonaceous, black, hard, brittle, poorly fissile, siliceous, slightly argillaceous and calcareous with abundant pyrite and coaly carbonaceous material. |
| 6048' - 6207' | 159' | Siltstone, argillaceous, light to medium gray, moderately hard, poorly fissile, siliceous with common pyrite and finely divided carbonaceous material. |

6207' - 6274' 67' Shale, carbonaceous, black, moderately hard and fissile, locally finely silty, siliceous and slightly calcareous, with abundant coaly carbonaceous material, finely disseminated pyrite and mica. Common fine laminae of coaly-carbonaceous material and rare fragments of white calcite.

"Helderberg Limestone" (6274' - 6277'+)

6274' - 6277' 3' Limestone, white to light gray, tan and brown, hard, microcrystalline, argillaceous in part, with common fossil fragments and pyrite. Fair porosity. Abundant flood of chert, white, blue and tan-brown.

6277' - 6288' 10' No sample.

Total Depth 6288'

Operator: Clinchfield Coal Company
 Farm: Virginia Iron, Coal & Coke Company
 Well No: 207
 Location: Wise County
 9800' S of 37° 00'
 4750' W of 82° 25'
 Elevation: 2099.44'
 Total Depth: 6277'
 Drilling Commenced: October 12, 1957
 Well Completed: March 12, 1958
 Result: Gas Well
 Coal: 74'-76', 607'-608', 1553'-1554', 1737'-1739'
 Water: 40'
 Gas Show: 5165'-5170', 5193'-5210', 6214'

Geologic log
 Samples studied by
 K. Robinson
 Virginia Division of
 Mineral Resources
 April, 1962

Pennsylvanian System (0' - 2279')
 Pottsville Group (0' - 2279')
 Norton formation (0' - 1047')
 Lower Banner Coal horizon (170')
 Kennedy Coal horizon (350')
 Raven Coal horizon (549')
 Jawbone Coal horizon (701')
 Lee formation (1047' - 2279')
 Mississippian System (2279' - 5151')
 Pennington Group (2279' - 3604')
 Bluestone formation (2279' - 2762')
 Princeton sandstone (2762' - ?)
 Hinton formation (? - 3604')
 Avis Limestone member (? - ?)
 Middle Red member (? - 3342')
 Stony Gap Sandstone member (3342' - 3604')

Bluefield formation (3604' - 4133')
 Greenbrier limestone (4133' - 4604')
 Maccrady formation (4604' - 4897')
 Price formation (4706' - 4897')
 Big Stone Gap shale (4897' - 5151')

Devonian System (5151' - T. D.)
 Devonian shales and siltstones

GEOLOGIC SUMMARY

Pennsylvanian System

| | | |
|------------------|---------------|-----------------|
| Norton Formation | in bottom | surface 1047 |
| Lee Formation | top bottom | 1047 2320 |

Mississippian System

| | | |
|---------------------------|---------------|--|
| Bluestone Formation | top bottom | 2320 2762 |
| Princeton Sandstone | top bottom | 2762 (?) |
| Hinton Formation | top bottom | (?) (?) |
| Stony Gap Sandstone | top bottom | 3342 3604 |
| Bluefield Formation | top bottom | 3604 3909 |
| Greenbrier Limestone | top bottom | 3909 4604 ₊ |
| Maccrady-Price Formations | top bottom | 4604 ₊ 4889 ₊ |

Mississippian-Devonian Systems

| | | |
|---------------------|---------------|--|
| Big Stone Gap Shale | top bottom | 4889 ₊ 5151 ₋ |
|---------------------|---------------|--|

Devonian - Pre-Devonian Systems

| | | |
|-----------------------------------|-----|------------------------------|
| Devonian - Pre-Devonian undivided | top | 5151 (sampled depth 6288) |
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Correlations by: Keith Robinson

September 1963