

Operator: Clinchfield Coal Company  
Farm: David Colley  
Well No.: 204  
Location: Dickenson County  
12,550' S. of 37°05'  
850' W. of 82°20'  
Elevation: 1888.4'  
Total Depth: 6666'  
Drilling Commenced:  
Well Completed:  
Result: Gas Well

VDMR Well No. 130  
Geologic Log  
Samples studied and  
described by:  
Clarke Jones  
Virginia Division of  
Mineral Resources  
January, 1963

### GEOLOGIC LOG

| <u>Depth</u> | <u>Interval</u> | <u>Description</u>  |
|--------------|-----------------|---|
| 0 - 5        | 5               | No sample   |
| 5 - 90       | 85              | Interbedded; Siltstone, light to medium gray with rare red, moderately hard, brittle, argillaceous, siliceous, with: abundant mica, with; Sandstone, white, light to medium gray, pink with rare tan, well cemented, fine-grained, well-sorted, subangular to subrounded, interstitially silty, siliceous cement, with: abundant mica, slightly porous. |
| 90- 101      | 11              | No sample   |
| 101 - 128    | 27              | Interbedded; Siltstone as in 5-90, with; Sandstone, white to medium gray with rare red, well cemented, fine-grained, well sorted, subangular to subrounded, interstitially silty, siliceous and calcareous cement, with: abundant chlorite and mica. Slightly porous.   |
| 128 - 139    | 11              | Interbedded; Siltstone as in 5-90, with; Sandstone, white to dark gray and pink, well cemented, fine-grained, well sorted, subangular to subrounded, interstitially silty, siliceous cement, with: abundant chlorite and mica, common carbonaceous material. Slightly porous.   |
| 134 - 159    | 25              | Siltstone, medium gray, hard, brittle, argillaceous and carbonaceous.   |

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| 159 - 171 | 12 | No sample   |
| 171 - 180 | 9  | Siltstone as in 134-150.  |
| 180 - 189 | 9  | Siltstone, medium gray with rare brown-red, hard, brittle, argillaceous and carbonaceous, with: rare pyrite.  |
| 189 - 240 | 51 | Siltstone, medium gray, hard, brittle, argillaceous and carbonaceous.   |
| 240 - 250 | 10 | Sandstone, light gray, well cemented, fine-grained, well sorted, subangular to sub-rounded, siliceous cement with: common coal, vitreous, blocky to conchoidal fracture, common muscovite, rare chlorite, and Siltstone stringers as in 189-240, Slightly porous. |
| 250 - 252 | 2  | Coal, in part silty and impure (interpreted depth and thickness).   |
| 252 - 269 | 17 | Sandstone with Siltstone stringers as in 240-250.   |
| 269 - 283 | 14 | No sample   |
| 283 - 303 | 20 | Sandstone, white, well cemented, fine-grained, well sorted, subangular to sub-rounded, siliceous cement, with: common muscovite, common chlorite, common pink stained quartz, and Siltstone stringers and coal as in 240-250 (contamination?). Slightly porous.   |
| 303 - 305 | 2  | No sample.  |
| 305 - 318 | 13 | Sandstone as in 283-303 with: minor amounts of siltstone and coal (contamination?).   |
| 318 - 332 | 14 | No sample   |
| 332 - 344 | 12 | Shale, dark gray, brown, moderately hard, brittle, argillaceous, with: abundant quartz and rare muscovite.  |
| 344 - 354 | 10 | No sample   |
| 354 - 365 | 11 | Sandstone as in 283-303 with: Siltstone, medium gray, rare brown, hard, brittle, argillaceous, siliceous, and carbonaceous and minor amount of shale as in 332-344. (contamination)   |

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| 365 - 389 | 24 | Sandstone, white, well cemented, fine-to medium-grained, subangular to subrounded, siliceous cement, with: common muscovite, common chlorite, minor amounts of shale, siltstone, and coal (contamination?). Slightly porous.  |
| 389 - 398 | 19 | No sample   |
| 398 - 408 | 10 | Sandstone, white, well cemented, fine-to medium-grained, subangular to subrounded, siliceous cement, with: abundant chlorite, abundant muscovite, rare vermiculite, and stringers of Siltstone, dark gray, moderately hard, brittle, argillaceous. Slightly porous.   |
| 408 - 425 | 17 | Sandstone, as in 398 - 401.   |
| 425 - 430 | 5  | Sandstone, white to light tan, well cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: abundant muscovite, abundant chlorite, common biotite. Slightly porous.  |
| 430 - 435 | 5  | No sample   |
| 435 - 450 | 15 | Sandstone, as in 425-430, with: stringers of Siltstone, dark gray, rare brown, moderately hard, brittle, argillaceous, with: common coal laminae and partings. Slightly porous.   |
| 450 - 503 | 53 | Shale, dark gray, dark brown, moderately hard, brittle, argillaceous.   |
| 503 - 511 | 8  | Coal, blocky to conchoidal, vitreous, with: minor Siltstone, dark gray-brown, moderately hard, brittle, argillaceous and carbonaceous.  |
| 511 - 527 | 16 | Interbedded; Sandstone white, light gray, well cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, slightly calcareous, with: common muscovite, common chlorite, common carbonaceous material. Slightly porous. Shale, dark gray, dark brown, moderately hard, brittle, argillaceous and carbonaceous. |
| 527 - 529 | 2  | No sample   |

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| 529 - 551 | 22 | Interbedded; Sandstone, as in 511-521. Shale, dark gray, dark brown, moderately hard, brittle, argillaceous and carbonaceous, with: coal laminae and coal partings.   |
| 551 - 567 | 16 | Sandstone, white, light gray, well cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: abundant iron oxide staining, abundant muscovite, abundant chlorite, and abundant coal streaks. Slightly porous.  |
| 567 - 600 | 33 | Shale, dark gray, red-brown, moderately hard, brittle, argillaceous and carbonaceous, with: stringers of Sandstone, white, well cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: common muscovite, common chlorite. Slightly porous.  |
| 600 - 610 | 10 | Interbedded; Sandstone, white, light gray, well cemented, fine-to very fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant chlorite, common muscovite, abundant biotite. Slightly porous. Siltstone, medium gray; moderately soft, brittle, argillaceous.                             |
| 610 - 641 | 31 | Sandstone, white, light gray, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant muscovite, abundant chlorite, common biotite, rare vermiculite. Slightly porous.   |
| 641 - 653 | 12 | Sandstone, white, medium gray, well cemented, very fine-to fine-grained, well sorted, subrounded to subangular, siliceous, cement, with: abundant muscovite, abundant chlorite, rare pyrite, and stringers of Siltstone, dark gray, brown, moderately hard, brittle, argillaceous, with: coal laminae. Slightly porous. |
| 653 - 658 | 5  | Siltstone, dark gray, moderately hard, brittle, argillaceous.   |
| 658 - 664 | 6  | Coal, blocky to conchoidal, vitreous, with: stringers of Sandstone and Siltstone as in 641-646. (Possible 4-5 feet coal bed in this interval).  |

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| 664 - 695 | 31 | Sandstone, light gray, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant coal streaks (contamination?); abundant muscovite, abundant chlorite, Slightly porous.  |
| 695 - 703 | 8  | Sandstone, light gray, well cemented, fine-to medium-grained, medium sorted, subrounded to subangular, siliceous cement, with: common coal partings, abundant chlorite, abundant muscovite. Slightly porous.  |
| 703 - 705 | 2  | No sample   |
| 705 - 712 | 7  | Sandstone, conglomeratic, light gray, well cemented, fine-to coarse-grained with abundant granules, poorly sorted, subrounded to subangular, siliceous cement, with: abundant chlorite, abundant carbonaceous material, common muscovite. Slightly porous.                      |
| 712 - 726 | 14 | Sandstone, light gray, moderately cemented, fine-to coarse-grained, medium sorted, subrounded to subangular, siliceous cement, with: abundant coal partings, abundant chlorite, abundant biotite and muscovite, common to abundant silty - micaceous partings. Slightly porous. |
| 726 - 754 | 28 | Siltstone, light to dark gray, light red-brown, moderately hard, brittle, siliceous, argillaceous, with: abundant muscovite.  |
| 754 - 800 | 46 | Interbedded; Siltstone, as in 726-733.<br>Sandstone, light gray, moderately cemented, fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous cement, with: common muscovite, common biotite, common chlorite. Slightly porous.                    |
| 800 - 812 | 12 | Siltstone, as in 754-777.   |
| 812 - 833 | 21 | Siltstone, dark gray, dark brown, moderately hard, brittle, siliceous, argillaceous.  |
| 833 - 848 | 15 | Sandstone, dark gray, well cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: common biotite, and stringers of Siltstone, as in 812-833.  |

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| 848 - 849 | 1  | No sample   |
| 849 - 860 | 11 | Interbedded; Sandstone, light to medium gray, well cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: common muscovite, common biotite. Slightly porous. Siltstone, dark gray, moderately hard, brittle, siliceous, argillaceous.                             |
| 860 - 884 | 24 | Sandstone, light gray, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant muscovite, abundant biotite, common chlorite, rare pyrite, and stringers of siltstone, dark gray, moderately hard, brittle, siliceous, argillaceous. Slightly porous. |
| 884 - 898 | 14 | Interbedded; Sandstone, light gray, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: common muscovite, common biotite, common chlorite. Slightly porous. Siltstone, dark gray, red brown, moderately hard, brittle, siliceous, argillaceous.           |
| 898 - 905 | 7  | Sandstone, as in 884-898, with stringers of Siltstone, as in 884-898.   |
| 905 - 930 | 25 | Siltstone, dark gray, dark brown, moderately hard, brittle, siliceous, argillaceous, carbonaceous.  |
| 930 - 949 | 19 | Siltstone, light to dark gray, moderately hard, brittle, siliceous, argillaceous, slightly micaceous.   |
| 949 - 959 | 10 | Siltstone, as in 905-930, with: minor amount of Sandstone, light to medium gray, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement. slightly porous.   |
| 959 - 965 | 6  | Interbedded; Siltstone, as in 930-949. Sandstone, light to medium gray, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: common chlorite, common biotite, and common muscovite. Slightly porous.   |

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| 965 - 980   | 15 | CK | Sandstone, white to colorless, well cemented, fine-grained, well sorted, subrounded to rounded, siliceous cement, with: common chlorite, common biotite, and abundant partings of Siltstone, as in 959-965. Slightly porous.   |
| 980 - 1007  | 27 | CK | Sandstone, white to colorless, poorly cemented, fine-to medium-grained, well sorted, subrounded to subangular, siliceous cement, with: common chlorite and abundant dark gray, silty, micaceous, carbonaceous. Slightly porous.  |
| 1007 - 1020 | 13 |    | No sample  |
| 1020 - 1033 | 13 | CK | Sandstone, conglomeratic, white, poorly cemented, fine-grained to granular, medium sorted, subangular to subrounded, siliceous cement, with: common chlorite and abundant silty, carbonaceous partings.  |
| 1033 - 1044 | 11 |    | Siltstone, dark gray, moderately hard, brittle, siliceous, argillaceous, with: stringers of Sandstone, conglomeratic, white, moderately cemented, fine-grained, to granular, medium sorted, subangular to subrounded, siliceous, slightly porous.  |
| 1044 - 1056 | 12 |    | Siltstone, dark gray, red-brown, moderately hard, brittle, siliceous, argillaceous, with: common muscovite and stringers of Sandstone, as in 1033-1044.  |
| 1056 - 1068 | 12 |    | Interbedded; Sandstone, light to medium gray, moderately cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant chlorite, common muscovite, common biotite. Slightly porous. Siltstone, dark gray, red-brown, moderately hard, brittle, siliceous, argillaceous, with: common coal partings, common muscovite, and abundant chlorite. |
| 1068 - 1088 | 20 |    | Sandstone, light to medium gray, moderately cemented, fine-grained, well sorted; subrounded to subangular, siliceous cement, with: abundant chlorite, abundant muscovite, and abundant dark gray, silty partings. Slightly porous.   |

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| 1088 - 1096 | 8  | Sandstone, conglomeratic, white to light gray, poorly cemented, fine-grained to granular, medium sorted, subangular to subrounded, siliceous cement, with: abundant carbonaceous material, abundant silty partings, abundant chlorite, abundant muscovite, and abundant biotite, Slightly porous.   |
| 1121 - 1127 | 6  | Sandstone, conglomeratic, white, poorly cemented, fine-grained to granular, medium sorted, subangular to subrounded, interstitially clayey, siliceous cement, with: abundant chlorite, abundant muscovite, and abundant carbonaceous material. Slightly porous.   |
| 1127 - 1139 | 12 | Sandstone, conglomeratic, well cemented, fine-grained to granular, medium sorted, subangular to subrounded, siliceous cement, with: abundant muscovite, common chlorite, abundant coal streaks, and abundant partings of Siltstone, dark gray, red brown, moderately hard, brittle, siliceous, argillaceous. Slightly porous.                               |
| 1139 - 1147 | 8  | Interbedded; Sandstone, light to medium gray, well cemented, fine-grained, well sorted, subrounded to rounded, siliceous cement, with: abundant biotite, common chlorite, abundant iron oxide staining, abundant carbonaceous material. Slightly porous. Siltstone, dark gray, moderately hard, brittle, siliceous, argillaceous, with: abundant muscovite. |
| 1147 - 1154 | 7  | Interbedded; Sandstone, light to medium gray, poorly cemented, fine-to medium-grained, well-sorted, subrounded to subangular, siliceous cement, with: common chlorite, Slightly porous. Siltstone, dark gray, dark brown, moderately hard, brittle, siliceous, argillaceous, carbonaceous.  |
| 1154 - 1167 | 13 | Interbedded; Sandstone, light to medium gray, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant biotite, and abundant chlorite. Slightly porous. Siltstone, dark gray to dark brown, moderately soft, brittle, siliceous, argillaceous.  |

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| 1167 - 1175 | 8  | Siltstone, as in 1154-1161.  |
| 1175 - 1185 | 10 | No sample  |
| 1185 - 1193 | 8  | Sandstone, light gray, moderately cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant iron oxide stains, abundant chlorite, common muscovite, abundant dark gray, silty partings.  |
| 1193 - 1202 | 9  | Siltstone, dark gray, moderately hard, brittle, siliceous, argillaceous, with: stringers of Sandstone as in 1185-1193.   |
| 1202 - 1216 | 14 | Interbedded; Siltstone, dark gray, dark brown, moderately hard, brittle, siliceous, argillaceous, Sandstone, light gray, moderately cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant chlorite, common muscovite, common biotite. Slightly porous.   |
| 1216 - 1224 | 8  | No sample  |
| 1224 - 1226 | 2  | Interbedded; as in 1202 - 1216.  |
| 1226 - 1255 | 29 | Interbedded; Sandstone, light gray, poorly cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: abundant chlorite, abundant biotite, common iron oxide stains, common coal fragments. Slightly porous. Siltstone, dark gray, moderately hard, brittle, siliceous, argillaceous.  |
| 1255 - 1259 | 4  | No sample  |
| 1259 - 1299 | 40 | Siltstone, as in 1226-1255, with stringers of Sandstone, as in 1226-1255.  |
| 1299 - 1300 | 1  | Siltstone, medium to dark gray, red brown, moderately hard, brittle, siliceous, argillaceous, with: common carbonaceous partings and abundant stringers of Sandstone, light to medium gray, moderately cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: abundant chlorite, common biotite, abundant iron oxide stains. |

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| 1300 - 1316 | 16 | Siltstone, medium to dark gray, red brown, moderately hard, brittle, siliceous, argillaceous, with: common mica, abundant stringers of Sandstone, as in 1299-1300.  |
| 1316 - 1325 | 9  | Siltstone, medium to dark gray, red brown, moderately hard, brittle, siliceous, argillaceous, with: common coal fragments, common muscovite, stringers of Sandstone, light gray, well cemented, fine-grained, well sorted, subangular to subrounded, siliceous, cement, with: common muscovite, common chlorite, common biotite. Slightly porous.             |
| 1325 - 1331 | 6  | No sample   |
| 1331 - 1338 | 7  | Interbedded; Sandstone, tan, medium gray, moderately cemented, fine-grained, well sorted, subrounded to subangular, siliceous, cement, slightly calcareous, with: abundant chlorite, common muscovite, common biotite, common carbonaceous material. Slightly porous. Siltstone, dark gray, moderately hard, siliceous, argillaceous, with: common muscovite. |
| 1349 - 1364 | 15 | Siltstone, medium to dark gray, red, brown, moderately hard, brittle, siliceous, argillaceous with common muscovite, abundant coal fragments, abundant stringers of Sandstone as in 1331-1338.  |
| 1364 - 1366 | 2  | Coal, vitreous, conchoidal (interpreted depth and thickness)  |
| 1366 - 1380 | 14 | Sandstone, light to medium gray, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant chlorite, abundant biotite, abundant coal fragments, common muscovite, and stringers of Siltstone, as in 1349-1364. Slightly porous.  |
| 1380 - 1386 | 6  | Interbedded; Sandstone, light gray to tan, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with common chlorite and common biotite. Slightly porous. Siltstone, dark gray, red brown, moderately hard, brittle, siliceous, argillaceous, with: common coal partings.  |

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| 1386 - 1399 | 13 | Siltstone, dark gray, red brown, moderately hard, brittle, siliceous, argillaceous, with: stringers of Sandstone, as in 1380-1386.   |
| 1399 - 1404 | 5  | Siltstone, as in 1386-1393.  |
| 1404 - 1424 | 20 | Interbedded; Sandstone, tan, pink, medium gray, well cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, slightly calcareous, with: common muscovite, common chlorite, common iron staining, common biotite, Slightly porous. Siltstone, dark gray, red, dark brown, moderately hard, brittle, siliceous, argillaceous, with: common muscovite. |
| 1424 - 1436 | 12 | Sandstone, light to medium gray, tan, red brown, well cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: common muscovite, common biotite, and common silty partings. Slightly porous.   |
| 1436 - 1438 | 2  | Coal, blocky to conchoidal, "scoriaceous," vitreous.   |
| 1438 - 1454 | 16 | Sandstone, light to medium gray, well cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: common muscovite, common chlorite, and dark gray silty partings. Slightly porous.   |
| 1454 - 1485 | 31 | Sandstone, light to dark gray, poorly cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant muscovite, abundant biotite, abundant iron oxide staining, common coal fragments, abundant chlorite, and abundant dark gray carbonaceous, silty partings. Slightly porous.   |
| 1485 - 1495 | 10 | Sandstone, white to dark gray, poorly cemented, very fine-grained, well sorted, subangular to subrounded, siliceous cement, with: common muscovite, common biotite, abundant iron oxide staining, abundant dark gray, micaceous, silty partings. Slightly porous.  |

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| 1495 - 1506 | 11 | Sandstone, white to medium gray, moderately cemented, fine-to medium-grained, well sorted, subangular to subrounded, siliceous, cement, with: abundant chlorite, abundant biotite, common muscovite, abundant iron oxide staining, common dark gray, micaceous, silty partings.   |
| 1506 - 1515 | 9  | Interbedded; Sandstone, light to medium gray, well cemented, fine-to very coarse-grained, medium sorted, angular to well rounded, interstitially silty, siliceous cement, with: common red brown shale fragments, abundant muscovite, abundant biotite, common iron oxide staining. Common carbonaceous films, slightly porous. Shale, medium to dark gray, red brown, moderately soft, brittle, argillaceous, with: rare muscovite, rare coal fragments. |
| 1515 - 1523 | 8  | Interbedded; Sandstone, white to medium gray, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: common muscovite, common chlorite, common biotite. Slightly porous. Shale, dark gray, moderately hard, brittle, argillaceous, with: common dark gray, micaceous, silty partings, and common g coal fragments.  |
| 1523 - 1563 | 40 | Siltstone, light tan to dark gray, moderately hard, brittle, argillaceous.  |
| 1563 - 1572 | 9  | Siltstone, tan to dark gray, moderately hard, brittle, siliceous, with: common carbonaceous material, common muscovite, common iron oxide, staining, common biotite.  |
| 1572 - 1580 | 8  | Coal, blocky to conchoidal, vitreous.   |
| 1580 - 1590 | 10 | Siltstone, tan to dark gray, moderately hard, brittle, siliceous, with: common muscovite, common biotite, common iron oxide staining, abundant coal, as in 1572-1580. (contamination ?)   |
| 1590 - 1598 | 8  | Interbedded; Coal, as in 1572-1580. Siltstone, as in 1580-1590.   |

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| 1598 - 1607 | 9  | Sandstone, light gray, well cemented, fine-to very fine-grained, well sorted, subangular to subrounded, siliceous cement, with: abundant chlorite, abundant biotite, abundant muscovite, abundant iron oxide staining, abundant coal fragments (contamination?). Slightly porous.  |
| 1607 - 1618 | 11 | Interbedded; Sandstone, as in 1598-1607. Siltstone, medium to dark gray, moderately hard, brittle, siliceous, argillaceous with: abundant coal fragments (contamination?) common muscovite.  |
| 1618 - 1633 | 15 | Siltstone, dark gray to dark red brown, moderately soft, brittle, siliceous, argillaceous, with: abundant muscovite, abundant coal fragments, blocky to conchoidal, vitreous.  |
| 1633 - 1636 | 3  | Coal, blocky to conchoidal, vitreous (interpreted depth and thickness).  |
| 1636 - 1645 | 9  | Siltstone, as in 1618-1633.  |
| 1645 - 1656 | 11 | Siltstone, dark gray, red brown, moderately hard, brittle, siliceous, argillaceous, with: abundant muscovite, common coal fragments, as in 1633-1636.  |
| 1656 - 1665 | 9  | Interbedded; Sandstone, light to medium gray, well cemented, fine-grained, well sorted, subangular to subrounded, siliceous, cement, with: abundant muscovite, common chlorite, abundant iron oxide stains, and common biotite. Slightly porous. Siltstone, medium to dark gray, moderately hard, brittle, siliceous, argillaceous, with: common muscovite, and common shaly partings. |
| 1665 - 1671 | 6  | Sandstone, white to tan, poorly cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant biotite, abundant muscovite, common chlorite, abundant iron oxide staining, abundant dark gray Siltstone partings, abundant silty coal fragments.  |
| 1671 - 1673 | 2  | Coal, blocky to conchoidal, silty (interpreted depth and thickness)  |

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| 1673 - 1691 | 18 | Sandstone, as in 1665-1671.   |
| 1691 - 1717 | 26 | Siltstone, medium to dark gray, red brown, moderately hard, brittle, siliceous, argillaceous, with: abundant fragments of Sandstone, as in 1665-1671.   |
| 1717 - 1726 | 9  | Interbedded; Sandstone, white, light to medium gray, fine-to-medium-grained, well sorted, subrounded to subangular, siliceous cement, slightly calcareous, with: common muscovite, common chlorite, common biotite, common carbonaceous material. Slightly porous. Siltstone, medium to dark gray, moderately hard, brittle, siliceous, argillaceous, with: common muscovite. |
| 1726 - 1735 | 9  | Sandstone, white, fine-to medium-grained, well sorted, subrounded to subangular, siliceous cement, slightly calcareous, with: abundant chlorite, abundant biotite, common muscovite, and dark gray silty partings. Slightly porous.   |
| 1735 - 1759 | 24 | Shale, dark gray, dark red, moderately hard, brittle, argillaceous, with: stringers of Sandstone, as in 1726-1735.  |
| 1759 - 1763 | 4  | Sandstone, white, moderately cemented, fine-to very coarse-grained, medium sorted, subrounded to subangular, interstitially clayey, siliceous cement, with: abundant chlorite, abundant biotite, abundant muscovite, abundant silty, and carbonaceous partings. Slightly silty.   |
| 1763 - 1797 | 34 | Sandstone, conglomeratic, white, poorly cemented, fine-grained to granular, poorly sorted, subrounded to subangular, interstitially clayey, siliceous cement, with: common chlorite, common muscovite, and common silty, carbonaceous partings. Slightly porous.  |

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| 1797 - 1802 | 5  |  | Sandstone, white, moderately well cemented, fine-to medium-grained, well sorted, subangular to subrounded, interstitially clayey, siliceous cement, with: common muscovite, common biotite, common chlorite, common silty, carbonaceous partings. Slightly porous. |
| 1802 - 1826 | 24 |  | Sandstone, conglomeratic, white, moderately cemented, fine-grained to granular, poorly sorted, subangular to subrounded, interstitially silty, siliceous cement, with: common chlorite, common biotite, common silty, carbonaceous fragments. Slightly porous.     |
| 1826 - 1836 | 10 |  | Sandstone, conglomeratic, white, poorly cemented, fine-grained to granular, poorly sorted, subangular to subrounded, interstitially clayey, siliceous cement, with: rare chlorite, abundant silty, carbonaceous material. Slightly porous.                         |
| 1836 - 1865 | 29 |  | Sandstone, conglomeratic, white, poorly cemented, fine-grained to granular, poorly sorted, subrounded to subangular, interstitially clayey, siliceous cement, with: rare chlorite, and common silty, carbonaceous fragments and films. Slightly porous.            |
| 1865 - 1871 | 6  |  | Sandstone, as in 1836-1865, with: abundant fragments of coal, conchoidal, vitreous. Slightly porous.   |
| 1871 - 1875 | 4  |  | Coal; conchoidal, vitreous, (interpreted depth and thickness).   |
| 1875 - 1886 | 11 |  | Sandstone, as in 1865-1871.  |
| 1886 - 1907 | 21 |  | Sandstone, light to medium gray, moderately cemented, very fine-to fine-grained, well sorted, subrounded to subangular, siliceous, cement, with: common chlorite, common muscovite, abundant biotite, abundant carbonaceous material. Slightly porous.             |

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| 1907 - 1926 | 19 | Sandstone, white to light gray, moderately cemented, fine-to medium-grained, well sorted, subrounded to subangular, interstitially clayey, siliceous cement, with: common chlorite, common biotite, common muscovite and common silty carbonaceous partings. Slightly porous.  |
| 1926 - 1951 | 25 | Sandstone, tan, light gray, moderately cemented, fine-to medium-grained, well sorted, subrounded to subangular, interstitially clayey, siliceous cement, slightly calcareous, with: abundant chlorite, abundant biotite, common muscovite, and abundant silty, carbonaceous fragments. Slightly porous.                                  |
| 1951 - 1959 | 8  | Interbedded; Sandstone, light to medium gray, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous, cement, with: common muscovite, abundant biotite, common chlorite, and abundant iron oxide staining. Slightly porous. Siltstone, dark gray to red brown, moderately soft, brittle, siliceous, argillaceous. |
| 1959 - 1965 | 6  | Sandstone, as in 1926-1946.  |
| 1965 - 1988 | 23 | Sandstone, white to light gray, moderately cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant chlorite, abundant biotite, common muscovite, and abundant silty, carbonaceous partings. Slightly porous.   |
| 1988 - 2008 | 20 | Sandstone, white to light gray, moderately cemented, fine-to medium-grained, well sorted, subangular to subrounded, interstitially clayey, siliceous cement, with: abundant chlorite, abundant biotite, common muscovite and common silty carbonaceous material. Slightly porous.  |
| 2008 - 2022 | 14 | Sandstone, white to medium gray, well cemented, fine-grained, well sorted, subangular to subrounded, interstitially clayey, siliceous cement, with: common chlorite, common biotite, common muscovite, and stringers of dark gray, Siltstone. Slightly porous.   |

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| 2022 - 2029 | 7  | Interbedded: Sandstone, as in 2008-2022. Siltstone, medium to dark gray, red brown, moderately hard, brittle, siliceous, argillaceous.  |
| 2029 - 2035 | 6  | Siltstone, medium to dark gray, red brown, moderately hard, brittle, siliceous, argillaceous, with: stringers of Sandstone, as in 2022-2029 (contamination?), partings of Shale, moderately soft, brittle, argillaceous.  |
| 2035 - 2042 | 7  | Siltstone, shaly, medium to dark gray, red brown, moderately soft, brittle, poorly fissile, argillaceous.   |
| 2042 - 2048 | 6  | Siltstone, light to dark gray, moderately hard, brittle, siliceous, argillaceous, with: common muscovite.   |
| 2048 - 2070 | 22 | Interbedded; Sandstone, light to medium gray, moderately cemented, fine-grained, well sorted, subangular to subrounded, interstitially clayey, siliceous cement; with: abundant biotite, common muscovite, abundant carbonaceous films and material. Slightly porous. Siltstone, as in 2042@2048.               |
| 2070 - 2085 | 15 | Siltstone, locally sandy, medium to dark gray, moderately hard, brittle, siliceous, argillaceous, with: common muscovite.   |
| 2085 - 2094 | 9  | Siltstone, locally sandy, dark gray to red brown, moderately hard, brittle, siliceous, argillaceous, with: common muscovite, abundant coal fragments.   |
| 2094 - 2098 | 4  | Coal, conchoidal, vitreous  |
| 2098 - 2115 | 17 | Coal, conchoidal, vitreous, with: stringers of Sandstone, white to light gray, moderately cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: common muscovite, abundant carbonaceous films, abundant iron oxide staining, common biotite, common chlorite. Slightly porous. |

- 2115 - 2123      8      Sandstone; white to light gray, moderately cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with common muscovite, abundant carbonaceous films, abundant iron oxide staining, common biotite, common chlorite, abundant coal fragments, as in 2094-2098. (contamination ?). Slightly porous.
- 2123 - 2132      9      No sample
- 2132 - 2156      24      Siltstone, locally sandy, light to dark gray, moderately hard, brittle, siliceous, argillaceous, with: common muscovite, common coal fragments. (contamination ?)
- 2156 - 2165      9      Interbedded; Sandstone, light to medium gray, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous, cement, with: abundant biotite, common muscovite, common biotite. Slightly porous. Siltstone, medium to dark gray, moderately hard, brittle, siliceous, argillaceous, with: common shaly partings, common carbonaceous material, common chert nodules.
- 2165 - 2179      14      Shale, variegated, silty, white, light gray, light to medium green, red, moderately hard, brittle, argillaceous, calcareous.
- 2179 - 2186      7      Shale, variegated, silty, locally sandy, light to medium gray, light to medium green, rare red, moderately soft, brittle, argillaceous, calcareous, with: common muscovite, abundant chlorite.
- 2186 - 2200      14      Interbedded; Sandstone, light gray-green, moderately cemented, fine-grained, well sorted, subrounded to subangular, siliceous, cement, with: common biotite, common chlorite, and common muscovite. Slightly porous. Shale, silty, medium to dark gray, moderately soft, brittle argillaceous.
- 2200 - 2219      19      Shale, silty, red-brown, moderately soft, brittle, siliceous, argillaceous, calcareous, with: common muscovite, abundant Siltstone and Sandstone fragments, as in 2186-2200. (contamination ?).

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| 2219 - 2231 | 12 | Interbedded; Shale, as in 2165-2171, and Shale as in 2200-2219.  |
| 2231 - 2235 | 4  | Shale, red-brown, moderately hard, brittle, argillaceous, calcareous, with: abundant sericite.   |
| 2235 - 2273 | 18 | Interbedded; Siltstone, light gray-green to medium gray, moderately hard, brittle, siliceous, argillaceous, with: abundant biotite, common chlorite. Shale, as in 2200-2219.   |
| 2273 - 2275 | 2  | No sample  |
| 2275 - 2278 | 3  | Interbedded; Siltstone and Shale, as in 2235-2273.   |
| 2278 - 2282 | 4  | Shale, silty, variegated, tan, white, light to medium gray, red brown, light to medium green, moderately hard, brittle, argillaceous, siliceous, calcareous.   |
| 2282 - 2285 | 3  | No sample  |
| 2285 - 2300 | 15 | Siltstone, gray-green, moderately hard, brittle, siliceous, calcareous, with: abundant muscovite and abundant chlorite.  |
| 2300 - 2313 | 13 | Interbedded; Siltstone, as in 2285 - 2300, Siltstone, dark gray, moderately soft, brittle, argillaceous.   |
| 2313 - 2325 | 12 | Shale, medium green, red-brown, moderately hard, brittle, poorly fissile, argillaceous.  |
| 2325 - 2335 | 10 | Interbedded; Sandstone, light gray green, poorly cemented, fine-grained, well sorted, subangular to subrounded, siliceous, with: abundant chlorite, abundant biotite, and common muscovite. Slightly porous. Shale, as in 2313-2325. |
| 2335 - 2351 | 16 | No sample  |
| 2351 - 2386 | 35 | Sandstone, light gray-green, poorly cemented, fine-grained, well sorted, subangular to subrounded, siliceous, with: common chlorite, and common biotite. Slightly porous.  |

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| 2386 - 2395 | 9  | Sandstone, light gray-green, moderately cemented, fine-grained, well sorted, subrounded to subangular, siliceous, cement, with: abundant carbonaceous films, common chlorite and common biotite. Slightly porous.   |
| 2395 - 2400 | 5  | No sample   |
| 2400 - 2414 | 14 | Sandstone, as in 2386-2395.   |
| 2414 - 2430 | 16 | Sandstone, light gray-green, moderately cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant carbonaceous films and material. abundant muscovite, abundant biotite, common chlorite, and abundant fragments of Siltstone, dark gray, moderately soft, brittle, poorly fissile, siliceous, argillaceous, with: abundant muscovite and abundant carbonaceous material. |
| 2430 - 2442 | 12 | Siltstone, as in 2414 - 2430 with: abundant fragments of Sandstone, as in 2414-2430.  |
| 2442 - 2461 | 19 | Siltstone, light gray-green, to dark gray, hard, brittle, siliceous, argillaceous, with: abundant muscovite.  |
| 2461 - 2541 | 80 | Siltstone, medium to dark gray, moderately hard, brittle, siliceous, argillaceous, with: abundant muscovite, abundant fragments of Sandstone, light gray-green, moderately cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: common muscovite. Slightly porous.  |
| 2541 - 2601 | 60 | Siltstone, shaly, medium to dark gray, moderately hard, brittle, siliceous argillaceous, with: abundant muscovite.  |
| 2601 - 2655 | 54 | Interbedded; Sandstone, light gray-green, moderately cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: abundant chlorite, and abundant biotite. Slightly porous. Siltstone, shaly, medium to dark gray, moderately soft, brittle, siliceous, argillaceous, with: abundant muscovite, abundant carbonaceous material, and common chlorite.                                  |
| 2655 - 2678 | 23 | Shale, dark gray, moderately hard, brittle, poorly fissile, argillaceous, slightly calcareous.  |

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| 2678 - 2682 | 4  | Interbedded; Sandstone, conglomeratic, white to light gray, moderately cemented, fine-grained to granular, poorly sorted, subrounded to angular, siliceous cement, with: rare pyrite, abundant muscovite, and abundant biotite. Slightly porous. Siltstone, dark gray, moderately hard, brittle, siliceous, argillaceous. |
| 2682 - 2698 | 17 | No sample   |
| 2698 - 2720 | 22 | Sandstone, white to light gray, moderately cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: common chlorite, common muscovite, common biotite, and abundant silty fragments (contamination ?). Slightly porous.   |
| 2720 - 2733 | 13 | No sample   |
| 2733 - 2755 | 22 | Sandstone, as in 2698 - 2720  |
| 2755 - 2786 | 31 | Sandstone, conglomeratic, white to light gray, moderately cemented, fine-grained, to granular, poorly sorted, angular to subrounded, siliceous cement, with: common chlorite, common muscovite, common biotite, and abundant dark gray silty fragments (contamination ?) Slightly porous.                                 |
| 2786 - 2792 | 6  | No sample   |
| 2792 - 2804 | 12 | Sandstone, as in 2755 - 2786.   |
| 2804 - 2809 | 5  | No sample   |
| 2809 - 2863 | 54 | Siltstone, locally sandy, medium to dark gray, moderately hard, brittle, calcareous, argillaceous, with: rare pyrite, abundant calcite.   |
| 2863 - 2887 | 24 | No sample   |
| 2887 - 2899 | 12 | Interbedded; Siltstone, as in 2809-2863. Shale, red-brown, gray-green, moderately hard, brittle, argillaceous, slightly calcareous, brachiopod fragments, crinoid stems.  |

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| 2899 - 2905  | 6  | Siltstone, shaly, red-brown, moderately soft, brittle, argillaceous, with: abundant fragments of shale, as in 2887-2899, and common muscovite.  |
| 2905 - 2920  | 15 | Interbedded; Siltstone, as in 2899 - 2905. Sandstone, brown well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant gray-green silty partings, common chlorite, common muscovite, common biotite, Slightly porous. |
| 2920 - 2950  | 30 | Sandstone, gray-green, red-brown, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant muscovite., abundant biotite and common chlorite.  |
| 2950 - 2965  | 15 | Sandstone, white, well cemented, fine-grained, well sorted, subrounded to subangular, interstitially clayey, siliceous cement, slightly calcareous, with: common pyrite, common biotite, common chlorite. Slightly porous.                                      |
| 2965 - 2994q | 29 | Limestone, shaly, light to dark gray, moderately hard, cryptocrystalline, with: rare pyrite, abundant Sandstone fragments (contamination ?)   |
| 2994 - 3057  | 63 | Shale, variegated, red brown, gray-green, light to medium gray, moderately hard, brittle, argillaceous, siliceous, calcareous.  |
| 3057 - 3116  | 59 | Siltstone, light green medium gray, gray-brown, moderately soft, flaky, siliceous, argillaceous, with: common muscovite.  |
| 3116 - 3119  | 3  | No sample   |
| 3110 - 3135  | 16 | Siltstone, light to medium gray, light brown, red brown, moderately soft, brittle, siliceous, argillaceous with: rare pyrite.   |
| 3135 - 3140  | 5  | Siltstone, gray-green, light to medium gray, maroon, moderately soft, brittle, siliceous, argillaceous, with: common muscovite.   |

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| 3140 - 3162 | 22 | Shale, silty light to medium gray, moderately hard, brittle, siliceous, argillaceous, with: rare pyrite, and common muscovite.  |
| 3162 - 3168 | 6  | Interbedded; Sandstone, white, light brown, poorly cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, Slightly porous. Shale, as in 3140-3162.  |
| 3168 - 3184 | 16 | Interbedded; Sandstone, white, dark gray, tan, moderately cemented, fine-grained, well sorted, siliceous cement, with: abundant chlorite, abundant muscovite, common biotite, rare pyrite, and shaly partings. Slightly porous. Siltstone, light to dark gray, moderately hard, brittle, siliceous, argillaceous, with: abundant muscovite. |
| 3184 - 3186 | 2  | No sample   |
| 3186 - 3189 | 3  | Interbedded; Sandstone, as in 3168-3184, and Siltstone, as in 3168-3184.  |
| 3189 - 3225 | 36 | Sandstone, white, poorly cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: abundant fragments of Siltstone, medium to dark gray, maroon, (contaminations ?) and common muscovite. Slightly porous.   |
| 3225 - 3231 | 6  | Interbedded; Sandstone, white to light gray, well cemented, fine-grained, well sorted, subrounded to subangular, well siliceous, cement, with abundant muscovite, common biotite. Slightly porous. Siltstone, shaly dark gray, red-brown, moderately hard, brittle, siliceous, argillaceous with: abundant muscovite.                       |
| 3231 - 3241 | 10 | Sandstone, white, moderately cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: common muscovite, common chlorite, Slightly porous.   |
| 3241 - 3266 | 25 | Interbedded; Sandstone, as in 3231-3241, and Siltstone sandy, medium to dark gray, moderately hard, siliceous, argillaceous, with: abundant muscovite, rare pyrite.   |

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| 3266 - 3279 | 13 | Sandstone, white, moderately cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: common muscovite, common biotite, rare pyrite, and abundant dark gray, silty, shaly, partings. Slightly porous.   |
| 3279 - 3296 | 17 | Sandstone, white, poorly to moderately cemented, fine-grained, well sorted, subangular to rounded, siliceous cement, with: abundant dark gray to maroon silty to shaly partings, rare pyrite, and common carbonaceous material. Slightly porous.  |
| 3296 - 3312 | 16 | Sandstone, white to light gray, moderately cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: rare pyrite, abundant muscovite, abundant dark gray to maroon silty partings and common carbonaceous material. Slightly porous.   |
| 3312 - 3352 | 40 | Sandstone, white to light gray, moderately cemented, fine-grained, well sorted, subangular to subrounded, siliceous cement, with: abundant dark gray to maroon silty partings, and common muscovite.  |
| 3352 - 3359 | 7  | Interbedded, Sandstone, as in 3312 - 3352, and Siltstone, dark gray, moderately hard, brittle, siliceous, argillaceous, with: common muscovite.   |
| 3359 - 3367 | 8  | Siltstone, medium to dark gray, moderately hard, brittle, siliceous, argillaceous, with: rare pyrite, and common muscovite.   |
| 3367 - 3377 | 10 | No sample   |
| 3377 - 3379 | 2  | Siltstone, as in 3359-3367.   |
| 3379 - 3432 | 53 | Interbedded; Sandstone, white to light gray, moderately cemented, fine-grained, well sorted, subangular to rounded, siliceous, cement, with: common muscovite, common biotite, and common chlorite. Slightly porous. Siltstone, medium to dark gray, maroon, moderately hard, brittle, siliceous, argillaceous, with: common muscovite. |

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| 3432 - 3440 | 8  | Shale, medium to dark gray, rare brown, white, moderately hard, brittle, siliceous, argillaceous, with: abundant Sandstone, fragments, as in 3379-3432.(contamination ?)  |
| 3440 - 3450 | 10 | No sample   |
| 3450 - 3456 | 6  | Shale, as in 3432 - 3440.   |
| 3456 - 3471 | 15 | Shale, medium to dark gray, gray-green, white, rare brown, moderately hard, brittle, siliceous, argillaceous, with: rare brown, moderately, hard, brittle, siliceous, argillaceous, with: rare pyrite, abundant Sandstone fragments, as in 3379-3432. (contamination ?) |
| 3471 - 3481 | 10 | Interbedded; Sandstone, white, light gray, tan to brown, well cemented, fine-grained, well sorted, subangular to rounded, siliceous, cement, with: common chlorite. Slightly porous. Shale, as in 3456-3471.  |
| 3481 - 3493 | 12 | Interbedded; Sandstone, white, light gray, well cemented, fine-grained, well sorted, subrounded to subangular, siliceous cement, with: common pyrite, and common carbonaceous films. Slightly porous. Shale, as in 3456-3471.   |
| 3493 - 3514 | 21 | Interbedded; Sandstone, white, well cemented, fine-grained, well sorted, subrounded to rounded, siliceous cement, with: rare pyrite, Slightly porous. Shale, light to dark gray, red brown, moderately soft, brittle, siliceous, argillaceous, carbonaceous.            |
| 3514 - 3536 | 22 | Shale, light to dark gray, rare red-brown, moderately hard, brittle, argillaceous, calcareous, carbonaceous, with: rare pyrite, and common quartz.  |
| 3536 - 3572 | 36 | Interbedded; Shale, medium gray, moderately hard, brittle, argillaceous. Siltstone, gray-green, moderately hard, brittle, siliceous, with: rare pyrite.   |
| 3572 - 3581 | 9  | Shale, as in 3514 - 3536.   |
| 3581 - 3602 | 21 | Limestone, shaly, dark gray, moderately hard, cryptocrystalline, with rare pyrite.  |

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| 3602 - 3620 | 18 | Interbedded; Sandstone, white to light gray, moderately cemented, very fine-grained, well sorted, subrounded to rounded, calcareous cement, with: abundant carbonaceous material. Slightly porous. Limestone, as in 3581-3602.  |
| 3620 - 3650 | 30 | Siltstone, shaly, dark gray, moderately hard, brittle, argillaceous, with: rare pyrite.   |
| 3650 - 3687 | 37 | Shale, silty, medium to dark gray, moderately hard, brittle, poorly fissile, siliceous, argillaceous, calcareous, with: abundant fragments of Sandstone, tan, poorly cemented, very fine-to fine-grained, well sorted, subangular to rounded, siliceous, with: common biotite, and abundant iron oxide staining. Slightly porous. |
| 3687 - 3772 | 85 | Shale, dark gray, moderately hard, brittle, argillaceous, calcareous, with: rare pyrite, common Sandstone fragments, white, tan, moderately cemented, fine-to medium grained, well sorted, subangular to subrounded, siliceous cement, Slightly porous. Rare crinoid stems.   |
| 3772 - 3782 | 10 | No sample   |
| 3782 - 3790 | 8  | Limestone, light to medium gray, moderately hard, cryptocrystalline.  |
| 3790 - 3795 | 5  | Limestone, light to medium gray, white, moderately hard, cryptocrystalline, with: rare pyrite, and abundant calcite.  |
| 3795 - 3802 | 7  | No sample.  |
| 3802 - 3828 | 26 | Dolomite, limy, medium gray, white, moderately hard, cryptocrystalline, with: rare pyrite, and abundant calcite.  |
| 3828 - 3837 | 8  | Limestone, light to dark gray, moderately hard, cryptocrystalline to coarsely-crystalline, with: rare pyrite, abundant calcite, common silty partings, and rare fossil fragments.   |

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| 3837 - 3877 | 40 | Limestone, light to medium gray, moderately hard, cryptocrystalline to coarsely-crystalline, with: rare pyrite, abundant calcite, common silty partings, and rare fossil fragments. |
| 3877 - 3945 | 68 | Limestone, silty to shaly, light to dark gray, moderately hard, cryptocrystalline, with: rare pyrite, rare fossil fragments, and abundant calcite.                                  |
| 3945 - 4015 | 70 | Limestone, light to medium gray, rare dark gray, moderately hard, rarely oolitic, cryptocrystalline to finely-crystalline, with: abundant calcite, rare crinoid stems.              |
| 4015 - 5025 | 10 | Limestone, silty, light to dark gray, moderately soft, cryptocrystalline; with: abundant calcite, rare pyrite.  |
| 4025 - 4100 | 75 | Limestone, silty, light to dark gray, moderately hard, cryptocrystalline, with: abundant calcite and rare crinoid stems.  |
| 4100 - 4156 | 56 | Limestone, light to medium gray, white, moderately hard, cryptocrystalline, with: abundant calcite, rare pyrite.  |
| 4156 - 4201 | 45 | Limestone, silty, light to medium gray, white, moderately hard, cryptocrystalline, with: abundant calcite.  |
| 4201 - 4255 | 54 | Limestone, light to medium gray, white, hard, cryptocrystalline, with: abundant calcite.  |
| 4255 - 4274 | 19 | No sample   |
| 4274 - 4321 | 47 | Limestone, light gray, white, hard, cryptocrystalline, with: abundant calcite, and abundant dark gray, red-brown silty partings.  |
| 4321 - 4345 | 25 | Limestone, as in 4201-4255.   |
| 4345 - 4356 | 11 | Limestone, light to dark gray, moderately hard, cryptocrystalline, with: abundant calcite and abundant dark gray silty partings.  |
| 4356 - 4360 | 4  | Siltstone, light gray to red-brown, moderately hard, brittle, siliceous, with: abundant glauconite.   |

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| 4360 - 4371 | 11  | Siltstone, as in 4352 - 4360, with: abundant glauconite, abundant muscovite, and abundant fragments of Limestone, as in 4352-4360.   |
| 4371 - 4414 | 43  | Siltstone, light to dark gray, moderately hard, brittle, siliceous, with: abundant muscovite, and rare pyrite.   |
| 4414 - 4548 | 134 | No sample  |
| 4548 - 4600 | 52  | Siltstone, as in 4371-4414.  |
| 4600 - 4689 | 89  | Siltstone, shaly, light to dark gray, moderately hard, siliceous, carbonaceous, with: common muscovite, and rare pyrite.   |
| 4689 - 4722 | 33  | Siltstone, shaly, light to dark gray, moderately soft, brittle, siliceous, argillaceous, with: rare pyrite.  |
| 4723 - 4804 | 81  | Shale, silty, medium gray, moderately hard, brittle, argillaceous, with: rare pyrite, and common Siltstone partings.   |
| 4804 - 4811 | 7   | Shale, silty, medium to dark gray, rare maroon, moderately soft, brittle, argillaceous, siliceous, with: rare pyrite, and common fragments of Sandstone, light gray to tan, fine-to medium-grained, well sorted, subangular to subrounded. |
| 4811 - 4851 | 40  | Shale, silty, medium to dark gray, brown, moderately soft, brittle, poorly fissile, siliceous, argillaceous, with: rare pyrite, and common muscovite.  |
| 4851 - 4857 | 6   | No sample  |
| 4857 - 5010 | 153 | Shale, as in 4811-4851.  |
| 5010 - 5017 | 7   | Shale, silty, medium to dark gray, moderately soft, brittle, poorly fissile, siliceous, argillaceous, with: rare pyrite, abundant Siltstone fragments, light to medium gray, moderately soft, brittle, siliceous.                          |
| 5017 - 5069 | 52  | Interbedded; Shale, as in 5010-5017, and Siltstone, as in 5010-5017.   |

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| 5069 - 5088 | 19  | Siltstone, medium gray, moderately hard, brittle, siliceous, with: abundant fragments of Shale, as in 5010-5017.                             |
| 5088 - 5119 | 31  | Siltstone, light to medium gray, moderately hard, brittle, siliceous, argillaceous, with: common muscovite.                                  |
| 5119 - 5224 | 105 | Siltstone, shaly, light to dark gray, moderately soft, brittle, siliceous, argillaceous.   |
| 5224 - 5742 | 518 | Shale, silty, light to dark gray, hard, brittle, poorly fissile, siliceous, argillaceous, with: rare pyrite.                                 |
| 5742 - 5750 | 8   | Shale, silty, medium to dark gray, rare brown, moderately hard, brittle, siliceous, argillaceous, with: rare chert nodules, rare pyrite.     |
| 5750 - 5810 | 60  | Shale, as in 5224-5742.  |
| 5810 - 5896 | 86  | Siltstone, shaly, light gray, dark gray, moderately soft, brittle, poorly fissile, siliceous, argillaceous, with: rare pyrite.               |
| 5896 - 5909 | 13  | No sample  |
| 5909 - 5972 | 63  | Siltstone, as in 5810-5896.  |
| 5972 - 5983 | 11  | No sample  |
| 5983 - 6016 | 33  | Siltstone, as in 5810-5896.  |
| 6016 - 6028 | 12  | No sample  |
| 6028 - 6134 | 106 | Siltstone, as in 5810-5896.  |
| 6134 - 6143 | 9   | Siltstone, white, light to dark gray, moderately soft, brittle, poorly fissile, siliceous, argillaceous, with: rare pyrite.                  |
| 6143 - 6155 | 12  | Siltstone, white, brown, light to dark gray, moderately soft, brittle, siliceous, argillaceous, with: rare pyrite.                           |
| 6155 - 6162 | 7   | Siltstone, light to dark gray, moderately hard, brittle, poorly fissile, siliceous, argillaceous, with: rare pyrite, and rare quartz grains. |

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| 6162 - 6247 | 85 | Siltstone, shaly, light to dark gray, moderately hard, brittle, siliceous, argillaceous, with: rare pyrite.   |
| 6247 - 6248 | 1  | Coal, black, vitreous, conchoidal, with: abundant calcite.  |
| 6248 - 6268 | 20 | Siltstone, as in 6162-6247.   |
| 6268 - 6290 | 22 | Shale, silty, light to dark gray, moderately soft, brittle, poorly fissile, siliceous, argillaceous, carbonaceous, with: abundant calcite, and rare pyrite. |
| 6290 - 6314 | 24 | Shale, medium to dark gray, moderately soft, brittle, poorly fissile, siliceous, carbonaceous, with: common pyrite, and common calcite.                     |
| 6314 - ?    |    | Shale, dark gray, moderately soft, brittle, argillaceous, carbonaceous, with: rare pyrite, and abundant fibrous calcite.                                    |
| ? - 6666    |    | Siltstone, shaly, medium to dark gray, moderately soft, brittle, argillaceous, siliceous.   |
| T. D. 6666' |    |   |

## GEOLOGIC SUMMARY

## Pennsylvanian System

|                  |               |             |
|------------------|---------------|-------------|
| Norton Formation | in<br>bottom  | 5<br>965    |
| Lee Formation    | top<br>bottom | 965<br>2165 |

## Mississippian System

|                           |               |               |
|---------------------------|---------------|---------------|
| Bluestone Formation       | top<br>bottom | 2165<br>2678  |
| Princeton Sandstone       | top<br>bottom | 2678<br>2807± |
| Hinton Formation          | top<br>bottom | 2807±<br>3432 |
| Stony Gap Sandstone       | top<br>bottom | 3162<br>3432  |
| Bluefield Formation       | top<br>bottom | 3432<br>3777  |
| Greenbrier Limestone      | top<br>bottom | 3777<br>4356  |
| Maccrady-Price Formations | top<br>bottom | 4356<br>4723  |

## Mississippian-Devonian Systems

|                     |               |              |
|---------------------|---------------|--------------|
| Big Stone Gap Shale | top<br>bottom | 4723<br>5069 |
|---------------------|---------------|--------------|

## Devonian - Pre-Devonian Systems

|                                   |                 |       |
|-----------------------------------|-----------------|-------|
| Devonian - Pre-Devonian undivided | top             | 5069  |
|                                   | (deepest sample | 6666) |

Correlations by: J. M. Wilson and R. C. Milici

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