

A1RU

Operator: Penn-Ohio Gas Co.

Farm: Clinchfield Coal Co.

Well No.: 1 (272)

Location: Russell County

10,600' N of 37°00'

6,000' E of 82°10'

Elevation: 2075'

Total Depth: 6160'

Remarks: Geologic log by Marshall S. Miller, samples borrowed from West Virginia Geological Survey. Cuttings are generally poor, consisting of 20 to 100 foot intervals. Well has been logged by J. H. C. Martens, and published in A. A. P. G. Bulletin, Vol. 27, No. 11, November, 1943. Part of the drillers log is published and interpreted by J. Martens and included below.

| <u>Depth</u> | <u>Thickness</u> | <u>Description</u>                     |
|--------------|------------------|--|
| 0- 26        | 26'              | Gravel                                 |
| 26- 36       | 10'              | Slate                                  |
| 36- 55       | 19'              | Lime, hard, sandy (probably siltstone) |
| 55- 60       | 5'               | Coal                                   |
| 60- 65       | 5'               | Shale, sandy                           |
| 65- 67       | 2'               | Coal                                   |
| 67- 74       | 7'               | Shale                                  |
| 74- 80       | 6'               | Coal and slate                         |
| 80- 85       | 5'               | Coal                                   |
| 85- 92       | 7'               | Slate                                  |
| 92-125       | 33'              | Sandstone, hard                        |
| 125-153      | 28'              | Sandstone                              |
| 153-156      | 3'               | Lime (probably siltstone)              |
| 156-190      | 34'              | Lime, sandy (probably siltstone)       |

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|---------|-----|--|
| 190-220 | 30' | Shale, sandy   |
| 220-222 | 2'  | Coal   |
| 222-278 | 56' | Sandstone  |
| 234-278 | 44' | Sandstone, white, medium grained, occasionally coarse grained, subangular, moderately sorted, with scattered loose argillaceous material, dark rock fragments, and carbonaceous material, possibly quartzose sand with contamination from above, but difficult to determine because of poor sample |
| 278-279 | 1'  | Coal, drillers log, Martens  |
| 279-324 | 45' | Sandstone, light gray, fine to medium grained, subround to subangular, poorly sorted, with considerable amount of dark, argillaceous material, muscovite, chlorite, siderite and traces of feldspar  |
| 324-406 | 82' | Shale, dark gray, silty, finely micaceous, with a fine grained, micaceous sand in upper 20'  |
| 406-452 | 46' | Sandstone, gray, fine grained, silty, micaceous, with abundant argillaceous material and dark rock fragments, minor stringers of shale and siltstone   |
| 452-454 | 2'  | Coal, drillers log, Martens  |
| 454-482 | 28' | Sandstone, as in 406-452   |
| 482-510 | 28' | Sandstone, white to light gray, fine grained to very fine grained, subangular, moderately sorted, with scattered muscovite, coaly material and dark rock fragments   |
| 510-557 | 47' | Shale, dark gray to gray, locally silty with minor amounts of white, coarse grained, subangular quartz sand  |
| 557-558 | 1'  | Coal, drillers log, Martens  |

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|---------|-----|--|
| 558-606 | 48' | Shale, as in 510-557, with continued presence of quartz sand   |
| 606-613 | 7'  | Shale, black, carbonaceous, silty  |
| 613-619 | 6'  | Coal, drillers log, Martens  |
| 619-625 | 6'  | Shale, gray, silty, finely micaceous with minor amount of light gray, fine grained, micaceous, sandstone   |
| 625-666 | 41' | Sandstone, light gray to gray, fine grained, silty, micaceous with minor amounts of gray, silty shale  |
| 666-668 | 2'  | Coal, drillers log, Martens  |
| 668-730 | 62' | Shale, dark gray, silty  |
| 730-751 | 21' | Sandstone, gray, fine to very fine grained, silty, micaceous, with abundant argillaceous material  |
| 751-753 | 2'  | Coal, hard, bony   |
| 753-770 | 17' | Siltstone, gray, locally shaly   |
| 770-780 | 10' | Sandstone, gray, very fine to fine grained, with minor amount of dark gray shale   |
| 780-782 | 2'  | Coal, drillers log, Martens  |
| 782-847 | 65' | Sandstone, according to Martens, gray, very fine grained, with minor amounts of shale and siltstone (A large sample interval with only a small amount of cuttings)   |
| 847-865 | 18' | Shale, dark gray   |
| 865-881 | 16' | Sandstone, gray to light gray, fine to very fine grained, subangular to subround, poorly sorted, interstitially silty, with considerable amount of argillaceous material, muscovite and traces of feldspar |
| 881-883 | 2'  | Coal <i>wh</i>   |

|           |     |   |
|-----------|-----|---|
| 883-885   | 2'  | Shale, dark gray to black   |
| 885-911   | 26' | No samples  |
| 911-916   | 5'  | Shale, black, carbonaceous, with plant fossil fragments   |
| 916-935   | 19' | Interbedded; sandstone and shale; sandstone, light gray, fine grained, silty; shale, dark gray  |
| 935-1026  | 91' | Sandstone, light gray, fine to medium grained, subangular, poorly sorted, with abundant muscovite, biotite, reddish iron-minerals, limonite stains and clay and silt matrix material. Coal 949-951 <i>WC</i>            |
| 1026-1070 | 44' | Siltstone, dark gray, locally shaly and carbonaceous  |
| 1070-1109 | 39' | Sandstone, light brown, medium grained, argillaceous, micaceous, silty with traces of feldspar, minor amount of gray siltstone  |
| 1109-1133 | 24' | Sandstone, light gray to white, moderately quartzose, fine to medium grained, subangular, poorly sorted, small amount of matrix material, scattered muscovite, iron minerals, and dark rock fragments, about 80% quartz |
| 1133-1135 | 2'  | Coal, drillers log, Martens.  |
| 1135-1172 | 37' | No samples  |
| 1172-1269 | 97' | Interbedded; shale and sandstone; shale, gray, dark gray, silty; sandstone, gray, fine grained, silty, argillaceous (only 1 sample)   |
| 1269-1280 | 11' | Shale, dark gray, silty   |
| 1280-1370 | 90' | Sandstone, white, quartzose, fine to medium grained, and locally conglomeratic, subangular to subround, poorly sorted, little or no matrix material, rare dark rock fragments   |
| 1370-1376 | 6'  | Sandstone, as in 1280-1370, but slightly silty and micaceous  |

*1700  
950  
850*

*2100  
1204  
358*

|           |     |   |
|-----------|-----|---|
| 1376-1407 | 31' | Sandstone, white, (but locally iron stained), quartzose, medium grained to granular, poorly sorted, little to no matrix material, rare dark rock fragments  |
| 1407-1411 | 4'  | Interbedded; shale and sandstone; shale, dark gray, finely micaceous; sandstone, light gray, with abundant clay and silt matrix material, micaceous, with abundant coaly material, dark rock fragments, and reddish iron minerals |
| 1411-1435 | 24' | Sandstone, light brown, fine to medium grained, subangular, poorly sorted, interstitially silty, micaceous, with abundant argillaceous material   |
| 1435-1440 | 5'  | Sandstone, white, quartzose, medium grained to granular, poorly sorted, no matrix material, rare dark rock fragments  |
| 1440-1460 | 20' | No samples  |
| 1460-1463 | 3'  | Sandstone, white, quartzose, fine grained, subrounded, well sorted  |
| 1463-1468 | 5'  | No samples  |
| 1468-1473 | 5'  | Shale, dark gray, silty   |
| 1473-1476 | 3'  | Shale, dark gray, silty with equal amounts of gray, coarse grained sand   |
| 1476-1478 | 2'  | Coal, silty with plant fossils  |
| 1478-1498 | 20' | Sandstone, light gray, medium to coarse grained, subangular, poorly sorted, with abundant muscovite, and dark, argillaceous material  |
| 1498-1530 | 32' | Shale, dark gray, silty, finely micaceous   |
| 1530-1564 | 34' | Sandstone, gray, very fine to fine grained, subangular, poorly sorted, micaceous, with abundant reddish iron minerals, dark rock fragments, traces of feldspar and clay and silt matrix material                                  |

|           |      |   |
|-----------|------|---|
| 1564-1565 | 1'   | Coal, drillers log, Martens   |
| 1565-1593 | 28'  | Sandstone, light gray, fine grained, sub-round, moderately sorted, micaceous, and silty with abundant iron minerals and dark rock fragments   |
| 1593-1597 | 4'   | Sandstone, light gray to white, fine grained with large muscovite flakes, iron minerals and dark rock fragments   |
| 1597-1704 | 107' | Sandstone, white, moderately quartzose, medium grained to conglomeratic, sub-angular, poorly sorted, with scattered muscovite, chlorite, and dark rock fragments, clay matrix, and about 80% quartz   |
| 1704-1718 | 14'  | Shale, dark gray, silty   |
| 1718-1743 | 25'  | Sandstone, light gray, fine grained, subangular to subround, moderately sorted, interstitially silty with abundant clay and silt matrix material, and dark rock fragments   |
| 1743-1785 | 42'  | Shale, dark gray, silty   |
| 1785-1788 | 3'   | Coal, pure, good conchoidal fracture, driller notes coal 1785-1788 P24  |
| 1788-1800 | 12'  | Shale, black, carbonaceous  |
| 1800-1804 | 4'   | Coal, pure, high luster, also noted by driller P3   |
| 1804-1820 | 16'  | Shale, black, carbonaceous  |
| 1820-1834 | 14'  | Shale, dark gray, finely micaceous  |
| 1834-1864 | 30'  | Interbedded; sandstone and shale; sandstone, light gray, fine to medium grained, subround to subangular, moderately sorted, with scattered coal fragments, dark rock fragments, muscovite, traces of feldspar, abundant clay matrix material; shale, dark gray, silty |

1804  
950  
254

|           |      |  |
|-----------|------|--|
| 1864-1965 | 101' | Sandstone, light gray to white, fine to coarse grained, subangular, poorly sorted, with calcareous clay matrix material, scattered muscovite, coaly material and dark rock fragments |
| 1965      |      | Red and green calcareous shales  |

LOG NO. P-1631  
**GEOLOGICAL SAMPLE LOG CO.**  
**250 Mt. Lebanon Blvd.**  
**Pittsburgh 34, PA.**

COMPANY PENN OHIO GAS 272  
 NO. 1 CLINCHFIELD COAL (TRUMAN)  
 LOC 4 mi N Cleveland  
 3 mi NE Clinchfield Junction

COUNTY Russell STATE Va.  
 ELEVATION COMM 6/22/32 COMPL 3/7/33  
 KB IP D & A

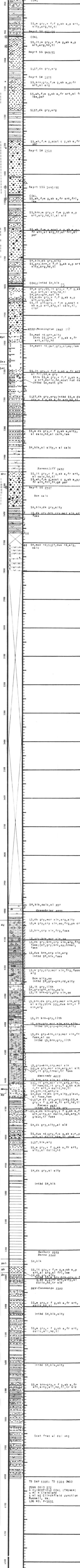
DF 2075'  
 TOTAL DEPTH 6160'  
 PROD. FM.  
 PROD. INT.  
 SAMPLE QUALITY Fair/good

REMARKS: LITHOLOG NOT ADJ. TO EL. PL  
 Cable tool

DEVONIAN CONEWANGO

CASING RECORD  
 15' 26' 9' 2168' 5x  
 12' 163' 5x  
 10' 143.5' 5x  
 Mar 69

SMP starts @ 222' in PENN-Pottsville



TD SMP 6006; TD 6160 OWDD  
 PENN OHIO GAS 272  
 1 CLINCHFIELD COAL (TRUMAN)  
 4 mi N Cleveland  
 3 mi NE Clinchfield Junction  
 Russell, Va.  
 LOG NO. P-1631