

Operator: Pipe Line Construction and Drilling Company

Farm: Florence H. Curtis

Well No.: 1-A

Location: Buchanan County

350' N. of 37°20') approximate
 9900' W. of 82°00'

Elevation: 1987.44' Ground

Total Depth: 3461'

Drilling Commenced: October 3, 1948

Well Completed: June 1, 1949

Result: Gas Well (Shut in)

Samples examined

by P. T. Stafford (351-2359')
 Eloise T. Jacobsen (2359-2886')
 Allen D. Williamson (2886-3461')
 U. S. Geological Survey,
 Lexington, Kentucky, 1949-1950

GEOLOGIC LOG

Depth Interval

Lithology

351-361	Sandstone, very light gray (N8), fine-grained to medium-grained, subangular to subrounded, poorly sorted, slightly porous, very silty, fairly micaceous, scattered black mineral and green mineral, 3/4 quartzose.
361-370	Sandstone, white (N9), fine-grained to medium-grained, with some coarse grains, subangular to subrounded, fairly well sorted, fairly porous, slightly silty, scattered black mineral and green mineral, 90% quartzose.
370-377	Sandstone, light gray (N7), very fine-grained to medium-grained, subangular to subrounded, very poorly sorted, very slightly porous, silty, calcareous, micaceous, abundant black mineral, few sideritic nodules, scattered green mineral, 3/4 quartzose.
377-388	Sandstone, very light gray (N8), very fine-grained to medium-grained, subangular, poorly sorted, slightly porous, very silty, scattered black mineral and green mineral, 3/4 quartzose.
388-400	Like 377-388, with some sideritic nodules; and a small amount of shale, brownish gray (5YR 4/1), sideritic.
400-417	Sandstone, light gray (N7), conglomeratic, fine-grained to coarse-grained, subangular to subrounded, poorly sorted, slightly porous, silty, micaceous, calcareous, abundant black mineral, small amount of green mineral, 90% quartzose.

- 417-422 Siltstone, medium dark gray (N4), sandy, micaceous, grades into shale, dark gray (N3), fissile, carbonaceous; also little white chert.
- 422-428 Like 417-422.
- 428-440 Siltstone, medium dark gray (N4), micaceous.
- 440-452 Sandstone, light gray (N7), very fine-grained, subangular, poorly sorted; very slightly porous, very silty, micaceous, 3/4 quartzose.
- 452-467 Sandstone, light gray (N7), very fine-grained to fine-grained, subangular, fairly well sorted, very slightly porous, slightly silty, calcareous, micaceous, scattered black mineral, 90% quartzose; and small amount of coal; and shale, dark gray (N3), carbonaceous.
- 467-475 Sandstone, very light gray (N8), very fine-grained to fine-grained, angular to subrounded, fairly well sorted, slightly porous, slightly silty, slightly calcareous, micaceous, sideritic, scattered black mineral, and green mineral, 90% quartzose.
- 475-482 Like 467-475.
- 482-489 Like 475-482.
- 489-494 Siltstone, medium gray (N5) to medium dark gray (N4), sandy to argillaceous, micaceous.
- 494-505 Siltstone, very light gray (N8), very sandy, calcareous, scattered mica, and black mineral.
- 505-512 Siltstone, medium dark gray (N4), sandy, micaceous.
- 512-520 Siltstone, medium dark gray (N4), sandy, micaceous.
- 520-539 Like 512-520.
- 539-547 Like 520-539.
- 547-552 Like 539-547.
- 552-558 Sandstone, medium gray (N5), very fine-grained, angular to subangular, very poorly sorted, very slightly porous, very silty, sideritic, 50% quartzose.
- 558-566 Siltstone, medium dark gray (N4), fairly micaceous, with few aggregates of pyrite crystals.
- 566-580 Like 558-566.

- 580-591 Siltstone, medium dark gray (N4), micaceous, calcareous.
- 591-600 Shale, dark gray (N3), carbonaceous, fissile; and brownish gray (5YR 4/1), sideritic.
- 600-606 No sample.
- 606-615 Sandstone, light gray (N7), very fine-grained to fine-grained, subangular to subrounded, poorly sorted, very slightly porous, silty, calcareous, scattered green mineral, 3/4 quartzose.
- 615-623 Shale, medium gray (N5), slightly micaceous, very slightly calcareous to calcareous, silty.
- 623-628 Shale, medium gray (N5), slightly micaceous, very slightly calcareous to calcareous, silty, 99%; sandstone, medium light gray (N7), very fine-grained, subangular to angular, calcareous, 1%; trace coal.
- 628-632 Shale, same as 615-623.
- 632-646 Shale " " .
- 646-654 Shale, as 615-623, 55%; sandstone, light gray (N7), very fine grained, subangular to angular, calcareous, slightly micaceous, shaly, some limonitic-stained, 44%; siltstone, light brownish-gray (5YR 6/1), 1%; trace coal.
- 654-662 Shale, medium gray (N5), slightly micaceous, very slightly calcareous, silty, 55%; sandstone, light gray (N7), very fine grained, subangular to angular, calcareous, slightly micaceous, shaly, 45%.
- 662-670 Shale, 80% and sandstone 20% as in above sample 654-662.
- 670-678 Shale, same as 654-662.
- 678-686 Shale, " " , very slightly calcareous to calcareous.
- 686-692 Shale, " " ; few pieces sandstone, light gray (N7), very fine-grained, subangular to angular, calcareous.
- 692-698 Shale, as in 654-662.
- 698-705 Shale, " " , very slightly calcareous.
- 705-713 Shale, " " .
- 713-718 Shale, " " .
- 718-725 Shale, " " .
- 725-731 Shale, " " .

- 731-734 Shale, medium gray (N5), very slightly calcareous to calcareous, silty, micaceous, 85 %; siltstone, light gray (N7), slightly calcareous, 15%, some slightly iron-stained.
- 734-740 Sandstone, very light gray (N8), fine to medium grained, sub-angular to sub-rounded, some apparently iron-stained, very slightly micaceous, 85%; shale, as in 654-662, 15%; trace coal and pyrite.
- 740-750 Sandstone, very light gray (N8) as 734-740 with some black and green minerals, 95%; shale, medium gray (N5) as in 654-662, 5%.
- 750-758 Sandstone 95%, and shale 5%, as in 654-662, 5%; Trace pyrite and coal.
- 758-764 Sandstone 97%, and shale 3%, " " "; no pyrite nor coal, trace shale, grayish red (10 R/4/2), finely micaceous.
- 764-767 Same as above sample 758-764.
- 767-774 " " " ; no grayish red shale.
- 774-782 " " " ; " , some of sandstone very slightly calcareous.
- 782-794 Same as above sample 774-782.
- 792-804 Shale, medium dark gray (N4), some very slightly calcareous, slightly micaceous, silty, 80%; sandstone, very light gray (N8), fine- to medium-grained, subangular to subrounded, very slightly micaceous, 20%.
- 804-812 Sandstone, light gray (N7), very fine-grained, sub-angular to angular, very slightly calcareous, slightly micaceous, some iron-stained, 85%; shale, medium gray (N5), very slightly calcareous, micaceous, silty, 15%.
- 812-818 Shale, medium gray (N5), very slightly calcareous and micaceous, silty, 95%; sandstone, light gray (N7), very fine grained, very slightly calcareous, micaceous, 5%.
- 818-825 Shale 95%, and sandstone 5% as in above sample 812-818.
- 825-830 Shale as in 812-818, 98%; limestone, light gray (N7), finely clastic, very slightly shaly, 2%.
- 830-840 Shale, varying from medium dark gray (N4) to brownish gray (5 YR 4/1), slightly micaceous, some very slightly calcareous.

- 840-850 Shale, same as above sample 830-840.
- 850-860 Shale, medium gray (N5), slightly micaceous, slightly silty.
- 860-866 Shale, " " " " " "
- 866-871 Shale, " " " " , some very slightly calcareous.
- 871-877 Shale, same as 866-871.
- 877-880 Shale, medium gray (N5), slightly micaceous, 60%; sandstone, light gray (N7), very fine- to fine-grained, subrounded to subangular, slightly micaceous, very slightly calcareous to calcareous, 40%.
- 880-884 Sandstone 70%, and shale 30%, as in above sample 877-880.
- 884-892 Sandstone, light gray (N7), very fine-to medium-grained, subrounded, very slightly micaceous, calcareous, 96%; shale, medium gray (N5), slightly micaceous, 4%.
- 892-900 Sample missing.
- 900-903 Shale, medium gray (N5); few pieces coal.
- 903-912 Shale, " " ; trace coal.
- 912-917 Shale, medium gray(N5), very slightly micaceous, some very slightly silty.
- 917-925 Shale, medium gray (N5), slightly micaceous, very slightly silty, 50%; sandstone, light gray (N7), very fine to fine grained, subrounded to subangular, very slightly micaceous, contains some black and green minerals, 45%; shale, pale yellowish brown (10 YR 6/2) to grayish orange (10 YR 7/4), silty, very slightly micaceous, 5%.
- 925-929 Shale 50%, and sandstone 40%, as in above sample 917-925; shale, yellowish-brown, 10%. (10 YR 6/2).
- 929-934 Shale 90%, and sandstone 10%, " " ; no shale, yellowish-brown.
- 934-944 Shale 70%, and sandstone 30%, " " ; no shale.
- 944-952 Sample missing.
- 952-960 Shale, medium gray (N5) and medium dark gray (N4), some slightly micaceous, some slightly silty.

- 960-965 Shale, medium dark gray (N4), very slightly micaceous, 90%; sandstone, light gray (N7), very fine- to fine-grained, subrounded, very slightly micaceous, very slightly calcareous, contains some black and green minerals, 10%.
- 965-970 Shale 90%, and sandstone 10%, as in above sample 960-965.
- 970-975 Shale 100%, no sandstone " " .
- 975-979 Shale " " " " " .
- 979-984 Shale " " " " " .
- 984-1000 Shale " " " " " .
- 1000-1010 Sample missing.
- 1010-1015 Sandstone, light gray (N7), very fine-grained to fine-grained, subrounded to subangular, 90%; shale, medium dark gray (N4), very slightly micaceous; trace coal.
- 1015-1017 Sandstone, 90%, and shale 10%, " " " . No coal.
- 1017-1022 Sandstone, 95%, and shale 5%, " " " . Company reports "show of oil". Much of sandstone appears dark brownish black and probably contains oil.
- 1022-1025 Sandstone, 97%, and shale 3%, " " " ; some of sandstone appears to contain oil as above sample 1017-1022.
- 1025-1035 Shale, medium dark gray (N4), micaceous, 92%; sandstone, light gray (N7), very fine- to fine-grained, subrounded to subangular, very slightly micaceous, 8%.
- 1034-1040 Shale, medium gray (N5), very silty, slightly micaceous, 75%; sandstone, very light gray (N8), subangular to angular, medium-grained, some black and green minerals, 10%; sandstone, light gray (N7), very fine-grained, subrounded to subangular, very slightly micaceous, 15%.
- 1040-1050 Sandstone, very light gray (N8), subangular to angular, fine- to medium-grained, some black and green minerals, 98%; sandstone, light gray (N7), very fine-grained, subrounded to subangular, very slightly micaceous, and shale, medium gray (N5), very silty, slightly micaceous, 2%.
- 1050-1054 Sandstone, very light gray (N8) as in above sample 1040-1050.

- 1054-1059 Sandstone, very light gray (N8) as in above sample 1040-1050.
- 1059-1064 Sandstone, as in 1050-1054, 50%; shale, medium gray (N5), silty, micaceous, 50%.
- 1064-1075 Sandstone, as in 1050-1054, 99%; shale, medium dark gray (N4), very slightly micaceous, 1%.
- 1075-1084 Sandstone, 99%, shale 1%, " " " .
- 1084-1090 Sandstone, 99%, shale 1%, " " " .
- 1090-1100 Sandstone 100%, .
- 1100-1108 Sample missing.
- 1108-1116 Sandstone as in 1050-1054.
- 1116-1122 Sandstone, " " , abundant black minerals, including biotite (?).
- 1122-1125 Sandstone, " " " " " " .
- 1125-1133 Sandstone, as in 1116-1122.
- 1133-1141 Sandstone, " " ; trace shale, medium dark gray (N4), very slightly micaceous.
- 1141-1145 Sandstone, as in 1116-1122, 20%; sandstone, medium gray (N4), fine- to medium-grained, subrounded to subangular, micaceous, 60%; shale, medium dark gray (N4), very slightly micaceous, slightly silty, 20%.
- 1145-1152 Shale, medium dark gray (N4), very silty, slightly micaceous, 95%; sandstone, medium gray (N5), fine to medium-grained, subrounded to subangular, micaceous, 5%.
- 1152-1157 Shale, as in above sample 1145-1152.
- 1157-1161 Shale, " " " " .
- 1161-1170 Shale, " " " " , some slightly silty to silty.
- 1170-1180 Shale, " " " " " " ; one piece shale, pale red brown (10 R 5/4), very finely silty.
- 1180-1185 Shale, as in 1145-1152.
- 1185-1192 Shale, " " , 60%; siltstone, medium light gray (N6), shaly, micaceous, 40%.

- 1192-1197 Shale, 50%, siltstone, 50%, siltstone, medium light gray (N6), shaly, micaceous, 40%.
- 1197-1200 Sample missing.
- 1200-1215 Sandstone, light gray (N7), very fine- to fine-grained, sub-angular to angular, slightly micaceous, many black and dark minerals, 70%; shale, medium dark gray (N4), slightly micaceous, 25%; shale, grayish orange (10YR 7/4) to light brown (5YR 6/4), very silty, very slightly micaceous, 5%; few pieces sandstone, light brown (5YR 6/4), very fine-grained, subrounded to sub-angular; few pieces, shale, grayish red (10R 4/2) to pale redish brown (10R 5/4), very silty.
- 1215-1221 Shale, medium dark gray (N4), slightly micaceous, very silty, 75%; sandstone, light gray (N7), very fine- to fine-grained, angular to subrounded, slightly micaceous, many black and dark minerals, 20%; shale, grayish orange (10YR 7/4) to light brown (5YR 6/4), very silty, slightly micaceous, 5%; few pieces shale, grayish red (10R 4/2), very silty; trace siltstone, very light gray (N8); few pieces sandstone, light brown (5YR 6/4), very fine-grained, subrounded to subangular.
- 1221-1228 Sample missing.
- 1228-1230 Shale, medium dark gray (N4), very micaceous, silty, 60%; sandstone, light gray (N7), very fine- to fine-grained, sub-rounded to angular, very slightly micaceous, some black and dark minerals, 40%.
- 1230-1242 Sandstone, 98%, shale 2%, as in above sample 1228-1230.
- 1242-1245 Sample missing.
- 1245-1250 Sandstone as in 1228-1230, fine to medium grained, 50%; shale, medium dark gray (N5), very micaceous, some silty, 40%; siltstone, medium gray (N5), slightly micaceous, many dark and black minerals, 10%.
- 1250-1255 Sandstone, 99%, shale 1%, " " "
- 1255-1260 Sandstone, 99%, shale 1%, " " "
- 1260-1268 " " " " "
- 1268-1274 " " " " "
- 1274-1280 " " " " "
- 1280-1285 " " " " "
- 1285-1290 Sandstone, 99%, " "; shale, as 1245-1250, and siltstone, gray (N7), with a few black and dark minerals, 1%.

- 1290-1293 Siltstone, as in above sample 1285-1290, 59%; sandstone, 40%, and shale, 1%, as in 1245-1250.
- 1293-1307 Siltstone, very light gray (N8), very few black minerals, 90%; siltstone, medium gray (N7), a few black minerals, 5%; shale, grayish red (10R 4/2), very silty, 3%; shale, medium dark gray (N5), slightly micaceous, some slightly silty, 2%.
- 1307-1309 Sample missing.
- 1309-1314 Sandstone, very light gray (N8), very fine grained, rounded to subrounded, some iron-stained apparently, 90%; siltstone, very light gray (N8), very few black minerals, 10%.
- 1314-1318 Sandstone, as in above sample 1309-1314, 99%; shale, medium dark gray (N5), slightly micaceous, some slightly silty, 1%.
- 1318-1326 Sandstone, 99%, shale 1%, " " .
- 1326-1331 Sandstone, very light gray (N8), very fine to fine-grained, rounded to subangular, silty, some black and green minerals, 96%; shale, medium dark gray (N5), slightly micaceous, some slightly silty, 2%; shale, grayish red (10 R 4/2), very silty, 2%.
- 1331-1336 Sandstone as above sample 1326-1331, 99%; shale, medium dark gray (N5) and grayish red as same sample, 1%.
- 1336-1341 Sandstone, 90%, shale, medium dark gray (N5), 2%, shale, grayish red (10 R 4/2) and light brown (5YR 6/4), 8% " " .
- 1341-1350 Same as above sample (percentages same).
- 1350-1360 Shale, medium dark gray (N4), silty, micaceous, 95%; sandstone, medium light gray (N6), very fine- to fine-grained, rounded to subrounded, silty, slightly micaceous, 5%.
- 1360-1362 Sample missing.
- 1362-1367 Same as sample 1350-1360, shale 100%.
- 1367-1372 " " , shale 90%, sandstone 10%.
- 1372-1375 " " , shale 60%, sandstone 40%.
- 1375-1379 Shale, as in 1350-1360, 25%; sandstone, light gray (N7), very fine-to fine-grained, rounded to subrounded, well sorted, silty, very slightly micaceous, 75%.
- 1372-1405 Sandstone, as in 1375-1379, 95%; shale, as in same sample, 5%.
- 1405-1414 Sandstone, " " " ; shale, " " .
- 1414-1418 Sandstone, " " " ; shale, " " .

- 1418-1422 Sandstone, light gray (N7), very fine to fine-grained, rounded to subangular, well sorted, silty, very slightly micaceous, few pieces magnetite; limonitic-stained, 75%; sandstone, light brownish gray (5YR 6/1), very fine- to fine-grained, rounded to subrounded, very slightly silty, very slightly micaceous, 15%; shale, medium dark gray (N4), some slightly silty, micaceous, 10%.
- 1422-1426 Sandstone, light gray (N7) as in above sample 1418-1422, 90%; sandstone, light brownish gray (5YR 6/1) as in same sample, 5%; shale, same sample, 5%.
- 1426-1433 Sandstone, light gray (N7) as in 1418-1422, 95%; shale, as in same sample, 5%; trace siltstone, white (N9), calcareous cement; and trace hematite (?).
- 1433-1439 Sandstone, very light gray (N8) as in 1418-1422, 90%; sandstone, light brownish gray (5YR 6/1), very fine-grained to fine-grained, rounded to subrounded, very slightly silty, very slightly micaceous, many black and few green minerals, 5%; shale, medium dark gray (N4), some slightly silty, micaceous, 5%.
- 1439-1448 Sandstone, very light gray (N8) as sample 1418-1422, 75%; sandstone, light brownish gray (5YR 6/1) as sample 1433-1439, 10%; shale, as 1433-1439, 13%; shale, brownish gray (5YR 4/1), silty, very hard, 2%.
- 1448-1452 Sandstone, light gray (N7), very fine to fine grained, rounded to subangular, well sorted, silty, very slightly micaceous, few black minerals, some slightly iron-stained, 50%; sandstone, medium light gray (N6), very fine to fine grained, rounded to subangular, well sorted, some slightly silty, many dark and black minerals, very slightly micaceous, 30%; shale, medium dark gray (N4), very micaceous, some very silty, 20%; shale, brownish gray (5YR 4/1), silty, very hard, few pieces.
- 1452-1459 Sandstone, white (N9), very fine- to fine-grained, subrounded to subangular, well sorted, very slightly micaceous, slightly iron-stained, some black minerals, 99%; shale, medium dark gray (N4), very micaceous, some silty, 1%.
- 1459-1465 Sandstone 99%, shale 1%, " " "
- 1465-1476 Siltstone, medium gray (N5), very micaceous, shaly, numerous black minerals, 95%; shale, as in 1452-1459 and sandstone as in same sample, 5%.

- 1476-1485 Sandstone, medium light gray (N6), very fine- to fine-grained, poorly sorted, silty, many dark and black minerals, 90%; siltstone, as in above sample 1465-1476, 5%; shale as in same sample, 5%; trace coal.
- 1485-1493 Sandstone, very light gray (N8), very fine- to fine-grained, some medium grained, subrounded to angular, many green (glauconite?), brown and dark minerals, 90%; siltstone, medium gray (N5), very micaceous, shaly, numerous black minerals, 5%; shale, medium dark gray (N4), very micaceous, 5%.
- 1493-1505 Sandstone 95%, shale 5%, " " " .
- 1505-1515 Shale 60%, siltstone 30%, sandstone, 10%; as in 1485-1493.
- 1515-1524 Siltstone 50%, shale 40%, sandstone 10%, " " .
- 1524-1535 Siltstone, medium gray (N5), micaceous, shaly, 60%; shale, medium dark gray (N4), slightly micaceous, silty, 40%.
- 1535-1546 Sandstone, light gray (N7), very fine-grained, subrounded to subangular, silty, slightly micaceous, some with numerous dark and black minerals, 50%; shale 45%, siltstone 5%, as in 1524-1535.
- 1546-1556 Sandstone, as in above sample 1535-1540, except very fine- to fine-grained, iron-stained and magnetite present; trace shale as in same sample.
- 1556-1564 Shale, medium gray (N5), slightly fissile, very, very slightly micaceous.
- 1564-1571 Shale, "
- 1571-1576 Shale, "
- 1576-1582 Shale, "
- 1582-1588 Shale, "
- 1588-1596 Shale, "
- 1596-1603 Shale, " ; trace coal.
- 1603-1608 Shale, 40%, " ; siltstone, medium gray (N5), some very micaceous, some shaly, some with many dark and black minerals to sandstone, light gray (N7), very fine- to fine-grained, poorly sorted, silty, very slightly micaceous, with many to few dark and black minerals, 60%; numerous pieces of coal.

- 1608-1616 Sandstone, light gray (N7) to very light gray (N8), very fine - to fine-grained, poorly sorted, micaceous, some chlorite (?), green and black minerals, 99%; few pieces shale, pale brown (5YR 5/2), and grayish red (10 YR 5/2), some very finely silty, some slightly micaceous; few pieces shale as in 1603-1608.
- 1616-1624 Sandstone 95%; shale, medium gray (N5) 2%; shale, pale brown to (5 YR 5/2) to grayish red (10 YR 5/2), 3% " " "
- 1624-1630 Sandstone, 98%; shale, medium gray (N5), 2%, " " ; trace of shale, pale brown (5YR 5/2) as in same sample 1608-1616.
- 1630-1634 Sandstone 99%; shale, medium gray , 1%; " " "
- 1634-1641 Sandstone 99%; shale, " 1%; " " "
- 1641-1649 Sandstone, medium gray (N5) to very light gray (N8), very fine- to medium-grained, subrounded to angular, poorly sorted, some very micaceous, some silty, some with many dark and black minerals, 99%; shale, medium gray (N5), some silty, some micaceous, 1%; numerous pieces coal.
- 1649-1668 Sample missing.
- 1668-1671 Sandstone, light gray (N7), very fine- to medium-grained, subrounded to angular, slightly micaceous, silty; some with many dark and black minerals, iron-stained, 98%; shale, medium dark gray (N4), very micaceous, 2%.
- 1671-1676 Sample missing.
- 1676-1686 Sandstone; same as 1668-1671; sandstone, 99%, shale (cavings), 1%.
- 1686-1692 Sandstone, same as 1668-1671; sandstone, 99%, shale (cavings), 1%.
- 1692-1698 Sandstone, same as 1668-1671; sandstone, 100%.
- 1698-1702 Sandstone, same as 1668-1671, 40%; shale, medium dark gray (N4), very slightly micaceous, 55%; shale, medium dark gray (N4) to brownish gray (5YR 4/1), very hard, 5%.
- 1702-1709 Sandstone, same as 1668-1671, 95%; shale, same as 1668-1671, medium dark gray (N4), 5%.
- 1709-1716 Sandstone, same as 1668-1671; sandstone, 99%; shale (cavings ?), 1%.
- 1716-1725 Sandstone, same as 1668-1671; sandstone, 99%; shale (cavings ?), 1%.
- 1725-1730 Sandstone, light gray (N7), very fine- to medium-grained, subrounded to angular, silty, slightly micaceous, some with many black and green minerals, limonitic stained, 90%; shale, medium dark gray (N4), very slightly micaceous, 5%; shale, between medium dark gray (N4) and brownish gray (5YR 4/1), very hard, 5%.

- 1730-1736 Ditto; sandstone, 95%; shale, medium dark gray (N4), 5%.
- 1736-1740 Ditto; trace of coal.
- 1740-1747 Sample missing.
- 1747-1752 Shale, medium gray (N5), slightly micaceous, slightly silty to silty, 99%; sandstone as in 1725-1730 (1% cavings?); one piece quartz fragment.
- 1752-1758 Shale, medium gray (N5) and medium dark gray (N4), slightly micaceous, some slightly silty to silty, 60%; siltstone, light gray (N7) and medium light gray (N6), slightly shaly, some with many dark and black minerals, 40%; one piece quartz fragment; trace of coal.
- 1758-1769 Shale, medium dark gray (N4), slightly micaceous, slightly silty, 95%; siltstone as in 1752-1758, 5%.
- 1769-1775 Ditto; shale, 98%; siltstone, 2%.
- 1775-1783 Ditto; shale, 60%; siltstone, 40%; few pieces coal.
- 1784-1792 Siltstone, as in 1752-1758; abundant coal fragments; few pieces shale as in 1758-1769 (cavings?).
- 1792-1796 Sandstone, very light gray (N8), very fine-grained, round to subangular, fairly well sorted, slightly silty, 60%; siltstone as in 1752-1758, 20%; shale, medium dark gray (N4), slightly micaceous, slightly fissile, 20%; few pieces coal.
- 1796-1802 Ditto; sandstone, 80%; shale, 20%; abundant coal; few pieces pyritized shale (?).
- 1802-1810 Ditto; shale, 99%; sandstone, 1%; no coal or pyritized shale (?);
- 1810-1815 Shale as in 1792-1796, grading into siltstone, medium gray (N5), shaly, with many dark and black minerals.
- 1815-1820 Sandstone, very light gray (N8), fine-grained, subrounded to subangular, well sorted, stained limonitic, 75%; shale and siltstone as above, 25%.
- 1820-1826 Ditto.
- 1826-1830 Sandstone, very light gray (N8) to medium gray (N5), fine-grained to silty, some with many dark minerals, slightly micaceous, limonitic stained, 85%; shale, medium dark gray (N4), slightly micaceous, some slightly silty, 15%.

- 1830-1833 Shale, as above, very few pieces silty.
- 1833-1841 Ditto.
- 1841-1845 Siltstone, light gray (N7), some slightly shaly, some with many dark and black minerals, 95%; shale, as in 1826-1830, 5%.
- 1845-1852 Ditto; siltstone 95%; shale, 5%.
- 1852-1861 No sample.
- 1861-1868 Siltstone, medium dark gray (N4) to medium light gray (N6), many dark and black minerals, micaceous, some shaly grading into sandstone, light gray (N7), very fine-grained, poorly sorted, round to subangular, silty, slightly micaceous, few dark and black minerals and trace of white mineral (non-calcareous).
- 1868-1872 Sandstone as above, 40%; shale, dark gray (N3), micaceous, 60%.
- 1873-1874 Sandstone, light gray (N7), very fine-grained to fine-grained, round to subangular, very few dark and black minerals, limonitic stained, 95%; shale, dark gray (N3), micaceous, 5% (cavings?)
- 1874-1879 Sandstone, as above, 99%; shale, as above, 1% (cavings?); few pieces shale moderate brown (5YR 4/4), slightly micaceous.
- 1879-1884 Sandstone, as above, very fine-grained to medium-grained; few pieces shale (N3) as in 1872-1874 (cavings?); few pieces shale (5 YR 4/4) and hematite, trace of white mineral (Non-calcareous).
- 1884-1888 Sandstone, very light gray (N8), fine- to medium-grained, sub-rounded to angular, limonitic stained; trace of shale as in 1872-1874.
- 1888-1893 Sandstone, as above; trace shale as above; trace shale, grayish red (10 R 4/2), slightly micaceous.
- 1893-1900 Sandstone, as above; very fine- to medium-grained; trace of shale as above.
- 1900-1902 Ditto. No grayish red shale (10 R 4/2).
- 1902-1911 Ditto.
- 1911-1913 Ditto.
- 1913-1917 Ditto. Numerous pieces of shale, grayish red (5 R 4/2) and moderately yellowish brown (10 YR 5/4), very slightly and finely micaceous.

- 1917-1919 Ditto; sandstone, white (N9).
- 1919-1923 Ditto; sandstone, very fine-grained to some coarse-grained.
- 1923-1926 Ditto; sample extremely limonitic stained; no grayish red (10R 4/2) shale.
- 1926-1930 Ditto; coarse grains increase in sandstone.
- 1930-1934 Ditto.
- 1934-1941 Ditto.
- 1941-1949 Ditto.
- 1949-1956 Ditto; grain size decreasing to very fine- to fine-grained, with few medium grains; very little limonitic staining; trace of shale as in above sample; few pieces of shale, near grayish orange (10 YR 7/4), finely micaceous, and grayish red (5 R 4/2).
- 1956-1961 Ditto.
- 1961-1975 Ditto.
- 1975-1981 Ditto; sandstone, fine- to coarse-grained.
- 1981-1984 Ditto.
- 1984-1994 Ditto.
- 1994-1999 Ditto; largely medium- to very coarse-grained; trace of hematite (?) and glauconite (?) in finer-grained sandstone.
- 1999-2000 Ditto.
- 2000-2010 Ditto; more pieces of shale, dark gray (N4), slightly micaceous-trace.
- 2010-2020 Ditto; very fine- to medium-grained; no shale.
- 2020-2030 Ditto.
- 2030-2036 Ditto; few coarse-grained pieces; shale, dark gray (N4), slightly micaceous-trace; shale, grayish red (5 R 4/2), numerous pieces.
- 2036-2039 Ditto; sandstone, 97%; shale, grayish red (5R 4/2) and light brown (5YR 6/4), 2%; trace of coal and shale, dark gray (N4).
- 2039-2043 Ditto; sandstone, 98%; shale, grayish red (5R 4/2), 2%.
- 2043-2048 Ditto; much limonitic stained.

- 2048-2052 Ditto; sandstone, 92%; shale, grayish red (5R 4/2) and light brown (5YR 6/4), 4%; shale, dark gray (N3), fissile, 4%.
- 2052-2055 Ditto; sandstone, very fine to fine-grained, few medium grains.
- 2055-2059 Ditto; sandstone, 99%; shale, grayish red (5R 4/2), 1%; no shale, dark gray (N3).
- 2059-2065 Ditto.
- 2065-2068 Ditto; very fine- to fine-grained only.
- 2068-2071 Ditto; sandstone, 100%; trace shale, grayish red (5R 4/2).
- 2071-2073 Ditto.
- 2073-2077 Ditto.
- 2077-2079 Sandstone, very light gray (N8) and white (N9), fine-to-medium-grained, some coarse-grained, subrounded to angular, trace white (Non-calcareous) and green minerals, 90%; shale, from grayish red (5R 4/2) to light brown (5 YR 6/4), 10%.
- 2079-2083 Ditto; sandstone, 98%; shale, as above, 2%; trace shale, dark gray (N3), fissile.
- 2083-2090 Shale, medium dark gray (N4), 90%; shale and sandstone as in above sample, 4%; abundant coal, 6%.
- 2090-2099 Shale, medium dark gray (N4), 50%; siltstone, medium gray (N5), shaly, slightly micaceous, 40%; coal, sandstone and shale, grayish red (5R 4/2), 10%; trace pyrite.
- 2099-2109 Siltstone, medium gray (N5) to light gray (N7), darker pieces shaly and slightly micaceous, 90%; shale, medium dark gray (N4), 10%.
- 2109-2116 Shale to siltstone, medium dark gray (N4), slightly fissile, micaceous.
- 2116-2127 Shale, dark gray (N3), slightly fissile, some silty, micaceous, 97%; siltstone, medium light gray (N6), as in 2099-2109; trace coal.
- 2127-2132 Shale, as above, 40%; siltstone, light gray (N7), slightly sandy, slightly micaceous, few dark and black minerals, 40%; coal, 20%; trace pyrite.
- 2132-2137 Coal, 90%; siltstone, as above, 5%; shale, as above, 5%.

- 2137-2142 Coal, 40%; sandstone, light gray (N7), very fine-grained, subangular to angular, silty, 30%; shale, dark gray (N3), fissile, 20%; shale, pale brown (5YR 5/2), grayish red (5R 4/2), and grayish orange (10 YR 7/4), several pieces.
- 2142-2146 Sandstone, light gray (N7), very fine-grained, angular, well sorted, few black minerals, silty, 40%; shale, dark gray (N3), fissile, 35%; shale, pale brown (5YR 5/2) and grayish red (5R 4/2), 2%; coal, 23%.
- 2146-2150 Coal, 95%; shale and sandstone, as above, 5%.
- 2150-2153 Sandstone, very light gray (N8), very fine- to fine-grained, angular, well sorted, much limonitic stained, 80%; shale, dark gray (N3), and medium dark gray (N4), 10%; coal, 10%; siltstone, medium light gray (N6), few pieces.
- 2153-2156 Ditto; sandstone, 90%; shale, 5%; coal and siltstone, 5%.
- 2156-2159 Sample missing.
- 2159-2161 Sandstone, as in 2150-2153, very limonitic stained, 95%; shale and siltstone, as in 2150-2153, 5%.
- 2161-2167 Ditto; sandstone, 95%; shale, 4%; also shale, grayish red (10R 4/2) and light brown (5YR 6/4), 1%.
- 2167-2171 Sandstone, white (N9), very fine- to fine-grained, angular, well sorted, few black minerals, heavy limonitic stained, 97%; shale, medium dark gray (N4), grayish red (10 R 4/2) and light brown (5YR 6/4), slightly micaceous; siltstone, as in 2150-2153, 3%.
- 2171-2173 Ditto; sandstone, 97%; shales and siltstone, 3%.
- 2173-2175 Ditto.
- 2175-2178 Ditto; sandstone, 80%; shale, medium dark gray (N4), trace shale, grayish red (10R 4/2), pale reddish brown (10R 5/4), pale brown (5YR 4/2), and light brown (5YR 6/4), 20%; trace pyrite.
- 2178-2185 Sandstone, as above, fine-to medium-grained, slightly limonitic stained, 95%; shales, as above, 5%.
- 2185-2188 Ditto; sandstone, 95%; shale, 5%.
- 2188-2190 Ditto.
- 2190-2195 Sample missing.
- 2195-2200 Same as 2188-2190.

- 2200-2202 Ditto.
- 2202-2206 Ditto.
- 2206-2211 Ditto; sandstone, 97%, few well rounded, coarse grains; shales, 3%.
- 2211-2216 Ditto.
- 2216-2222 Ditto; sandstone, 99%; shales, 1%.
- 2222-2227 Ditto; one well rounded quartz conglomeratic fragment.
- 2227-2229 Ditto; no conglomeratic fragment.
- 2229-2232 Sandstone, white (N9), fine- to medium-grained, angular, well sorted, some slightly limonitic stained, 99%; shale, medium dark gray (N4), finely micaceous; shale, grayish red (10 R 4/2), finely micaceous.
- 2232-2234 Ditto; sandstone, 99%; few pieces shale, medium light, light gray (N6) to light brownish gray (5YR 6/1).
- 2234-2240 Ditto; sandstone, 99%.
- 2240-2242 Ditto; sandstone, very slightly calcareous, very limonitic stained; 99%; few coarse angular quartz (conglomeratic ?) fragments.
- 2242-2244 Ditto; sandstone, slightly calcareous; no coarse quartz fragments.
- 2244-2249 Sandstone, white (N9), very fine- to fine-grained, few medium grains, fairly well sorted, subrounded to rounded, extremely calcareous, very limonitic stained, very few dark and green minerals.
- 2249-2255 Shale, medium gray (N5), silty, 95%; sandstone, as above 5%.
- 2255-2260 Sandstone, very fine-grained, silty, few dark minerals, slightly micaceous, 90%; shale, as above, 5%; sandstone, as in 2244-2249, 5%.
- 2260-2263 Sandstone, as above 75%; shale, as in 2249-2255, 25%.
- 2263-2268 Ditto; sandstone, 60%; shale, 40%.
- 2268-2271 Ditto; sandstone, very fine- to fine-grained, 85%; shale, 15%.
- 2271-2279 Shale, olive gray (5.3 Y 3/2), trace of finely micaceous material, 50%; shale, grayish red (5R 4/2), and blackish red (5R 2/2), trace of finely micaceous material, 50%.

- 2279-2284 Shale, olive gray (5Y 3/2), and dark greenish gray (5GY 4/1), trace of finely micaceous material, 40%; shale, grayish red (5R 4/2), and blackish red (5R 2/2), trace of finely micaceous material, 50%; siltstone, greenish gray (5GY 4/1), slightly to very calcareous, many greenish gray minerals, few red and black minerals, 10%.
- 2284-2289 Shale, olive and greenish gray, as above, 40%; shale, grayish red and blackish red, as above, 40%; shale, light brownish gray, very slightly micaceous, 15%; siltstone, as above, 5%.
- 2289-2300 Ditto; shale, olive and greenish gray, 30%; shale, grayish and blackish red, 60%; shale, brownish gray, 5%; siltstone, 5%.
- 2300-2305 Ditto.
- 2305-2310 Ditto; shale, olive and greenish gray, 20%; shale, grayish and blackish red, 20%; siltstone, 5%; shale, brownish gray, 5%; siltstone, greenish gray (5G 6/1), slightly micaceous, shaly, non-calcareous, many greenish gray minerals, 50%.
- 2310-2313 Ditto; shale, red, as above, 15%; shale, olive and greenish gray, slightly silty, becoming more micaceous, 15%; siltstone, non-calcareous, as above, 50%; sandstone, medium light gray (N6), very fine-grained, subrounded to subangular, poorly sorted, very calcareous, many green and black minerals, 20%.
- 2313-2319 Shale, red, as above, 55%; shale, greenish gray, very slightly calcareous, as above, 40%; sandstone and siltstone, as above, 5%.
- 2319-2324 Shale, red, as above, 50%; shale, medium gray (N5), slightly calcareous, 45%; sandstone and siltstone, 5%.
- 2324-2327 Sample missing.
- 2327-2333 Shale, medium gray (N5), slightly calcareous, 80%; shale, red, as above, 15%; sandstone and siltstone, as above, 5%.
- 2333-2339 Shale, medium dark gray (N4), slightly fissile, calcareous, 95%; shale, red, as above, 4%; sandstone and siltstone, as above, 1%.
- 2339-2344 Shale, medium dark gray (N4), slightly fissile, calcareous, 60%; shale, grayish brown (5YR 3/2), slightly calcareous, 40%; few pieces sandstone, as above.
- 2344-2349 Shale, medium dark gray, as above, 70%; shale, grayish brown, as above, 25%; limestone, medium gray (N5), finely clastic, highly fossiliferous (ostracods), very shaly, slightly silty, 5%.

- 2349-2353 Shale, medium gray (N5), calcareous to very calcareous, 60%; shale, grayish brown, as above, calcareous, 30%; limestone, as above, 10%.
- 2353-2359 Shale, grayish red (5R 4/2), 50%; shale, medium gray (N5), calcareous to very calcareous, 30%; shale, grayish brown (5Yr 3/2), 15%; limestone, as above, trace; siltstone, medium light gray (N6), well rounded, calcareous, 5%.
- 2359-2363 Shale, grayish red purple (5RP 4/2), very slightly calcareous, 40%; shale, medium light gray (N6), 30%; limestone, light brownish gray, (5YR 6/1), finely clastic, shaly, 20%.
- 2363-2368 Shale, greenish gray (5G6/1), silty, 60%; shale, medium gray (N5), slightly calcareous, 20%; shale, grayish red purple, as above, 20%. Trace brown shale.
- 2368-2377 Shale, medium light gray (N6.5), calcareous, 75%; siltstone, very light gray (N8), calcareous cement, coarse-grained, rather poorly sorted, shaly, 15%; shale, grayish red purple, as above, 10%.
- 2377-2384 Ditto.
- 2384-2388 Sandstone, very light gray (N8), very fine-grained, subrounded, moderately well sorted, shaly, 30%; shale, medium gray (N5), 20%; siltstone, as above 20%; shale, purple, as above, 20%; shale, medium light gray (N6), silty, fine micaceous, 10%.
- 2388-2392 Sandstone, as above, very calcareous cement, 50%; shale, medium gray, as above, 20%; siltstone, as above, 15%; shale, purple, as above, 15%. Trace brown shale.
- 2392-2399 Sandstone, as above, part with calcareous cement, slightly peppered with dark minerals, 70%; shale, purple, as above, 15%; shale, medium gray, as above, 15%.
- 2399-2405 Siltstone, light gray (N7), fine-grained, moderately well sorted, shaly, slightly peppered with dark minerals, 75%; shale, medium gray (N5), 15%; shale, purple, as above, 10%.
- 2405-2415 Siltstone, as above, coarse-grained, rather poorly sorted, shaly, slightly micaceous, with numerous yellowish gray (5Y8/1) angular chert fragments. Considerable iron staining.
- 2415-2422 Shale, medium gray (N5), part carbonaceous, part silty and part micaceous, 75%; siltstone, as above, 25%.
- 2422-2428 Shale, as above, non-carbonaceous, 50%; siltstone, as above, very coarse-grained (approaching very fine-grained sandstone), 50%.
- 2428-2438 Shale, as above, 70%; sandstone, very fine-grained, as siltstone above, 30%.
- 2438-2445 Shale, medium gray (N5), about 2/3 silty, slightly micaceous, 70%; sandstone, as above, slightly calcareous cement, 20%; siltstone, light gray (N7), calcareous cement, 5%.

- 2445-2470 Samples missing.
- 2470-2485 Shale, medium dark gray (N4), slightly fissile.
- 2485-2515 Ditto.
- 2515-2525 Sandstone, very light gray (N8), very fine-grained, subrounded, moderately well sorted, friable, 50%; shale, as above, 50%.
- 2525-2529 Ditto: few dark mineral grains in sandstone, 70%; shale, 30%.
- 2529-2534 Ditto: sandstone.
- 2534-2540 Ditto: sandstone, 85%; shale, dark gray (N3), 15%.
- 2540-2550 Sandstone, light gray (N7) with part medium gray (N5), very fine-grained, subrounded, poorly sorted, calcareous cement, better cemented, some dark mineral grains, slightly micaceous, 80%; shale, as above, 15%; shale, medium dark gray (N4), very micaceous, shows contact with sandstone, 5%.
- 2550-2555 Sandstone, as above, 90%; shale, dark gray, as above, 3%; shale, medium dark gray, as above, 7%.
- 2555-2560 Sample missing.
- 2560-2570 Shale, medium dark gray (N4), part very slightly silty, 90%; sandstone, light brownish gray (5YR 6/1), very fine-grained, subangular, rather poorly sorted, calcareous cement, 10%; trace sandstone, above.
- 2570-2585 Shale, dark gray (N3), most slightly carbonaceous, 95%; sandstone, white (N9), very fine-grained, subrounded to subangular, moderately poorly sorted, finely micaceous, 5%; trace coal.
- 2585-2600 Ditto.
- 2600-2610 Sandstone, very light gray (N8), as above, very slightly peppered with dark mineral, 85%; shale, medium dark gray (N4), slightly silty, slightly micaceous, 15%.
- 2610-2620 Sandstone, as above, better cemented, very slightly calcareous, 90%; shale, as above, 10%.
- 2620-2630 Sandstone, as above, stronger peppered with dark minerals, 80%; shale, as above, 20%.
- 2630-2642 Sandstone, very light gray (N8), friable, calcareous cement, 98%; shale, as above, 2%.
- 2642-2648 Sandstone, light gray (N7), very fine-grained, subrounded, moderately poorly sorted, peppered with dark mineral, silty, part calcareous cement, moderate cement, slightly micaceous.
- 2648-2655 Sandstone, as above, 90%; shale, medium gray (N5), micaceous, 10%.

- 2655-2665 Sandstone, as above, little with calcareous cement, friable, 95%; shale, as above, 5%.
- 2665-2675 Sandstone, as above, part medium gray (N5), 90%; shale, as above, and dark gray (N3), 10%; trace pyrite.
- 2675-2685 Sandstone, very light gray (N8.3), very fine-grained, subangular to subrounded, moderately poorly sorted, shaly, slightly calcareous cement, friable, 90%; shale, dark gray (N3), 10%.
- 2685-2695 Ditto.
- 2695-2705 Ditto, better cemented sandstone, 85%; shale, 15%.
- 2705-2715 Sandstone, very light gray (N8), fine-grained, subangular to subrounded, very poorly sorted (very fine-grained to medium-grained quartz fragments, some angular and broken, some rounded), 80%; shale, dark gray (N3), some very carbonaceous, with trace of coal, 20%; trace pyrite.
- 2715-2725 Ditto; with coarse-grained angular quartz fragments (conglomerate?).
- 2725-2735 Ditto; conglomeratic, considerable coarse-grained angular quartz fragments and shale nodules, 90%; shale, medium gray (N5), very finely micaceous, 10%; trace pyrite.
- 2735-2742 Ditto: fewer coarse-grained angular fragments, 95%; shale, as above, 5%.
- 2742-2750 Ditto: trace coarse-grained angular fragments, better sorting, 95%; shale, 5%.
- 2750-2755 Shale, medium dark gray (N4), 95%; pyrite, 2%; sandstone, as above, 3%.
- 2755-2760 Sandstone, white (N9), very fine-grained, subangular, very poorly sorted (silt size to fine-grained), friable, 95%; shale, 5%.
- 2760-2766 Sandstone, as above, conglomeratic (?), some coarse-grained angular smoky quartz fragments.
- 2766-2771 Sandstone, white (N9), very fine-grained, subangular to subrounded, well sorted, friable, 95%; shale, dark gray (N3), 5%.
- 2771-2781 Sandstone, white (N9); fine-grained, subangular, poorly sorted (few medium-grained fragments to very fine-grained), friable, 97%; shale, 3%.
- 2781-2791 Sandstone, white (N9), very fine-grained, subangular, poorly sorted (medium-grained to silt size), friable, 98%; shale, 2%.

- 2791-2800 Sandstone, greenish gray (5GY 6/1), very fine-grained, subrounded to subangular, moderately well sorted, about half to two-thirds quartzose, considerable green and some dark minerals, micaceous, few coarse-grained white quartz fragments, rather well cemented, trace calcareous cement, 85%; shale, medium dark gray (N4), 10%; shale, medium gray (N5), silty, 5%.
- 2800-2810 Sandstone, as above, 45%; shale, medium gray (N5), as above, finely micaceous, 35%; shale, medium dark gray (N4), as above, 20%.
- 2810-2820 Shale, medium gray to medium light gray (N5-6), part slightly silty to silty, 60%; sandstone, as above, slightly calcareous cement, friable, (no quartz fragments), 40%.
- 2820-2830 Sandstone, white (N9), fine-grained, subangular, very poorly sorted (very fine-grained to few medium-grained), part with calcareous cement, few dark mineral inclusions, friable, 70%; shale, medium dark gray (N3.5), 20%; shale, medium gray (N5), micaceous, 10%; considerable pyrite.
- 2830-2840 Sandstone, as above, 70%; sandstone, greenish gray (5GY 6/1), fine-grained, subangular, moderately poorly sorted, considerable green and few dark mineral inclusions, slightly micaceous, about 2/3 quartzose, 10%; shale, medium dark gray, as above, 20%.
- 2840-2850 Sandstone, white, as above, 70%; sandstone, greenish gray, as above, 5%; limestone, brownish gray to light brownish gray (5YR 4/1-6/1), fine to medium clastic, 15%; shale, as above, 10%.
- 2850-2855 Sandstone, white (N9), very fine-grained, subangular to some subrounded, moderately poorly sorted, silty, friable, 45%; shale, grayish red (10R 4/2), part very finely micaceous, 45%; limestone, as above, 5%; shale, as above, 5%.
- 2855-2860 Shale, grayish red, as above, calcareous, some silty, 85%; shale, medium dark gray to dark gray (4-3), 10%; sandstone, as above, 5%.
- 2860-2870 Shale, grayish red (10R 4/2), slightly calcareous.
- 2870-2875 Shale, medium gray (N5), very slightly calcareous, finely micaceous, 40%; shale, grayish red, as above, 20%; shale, pale red (5R 6/2), very finely micaceous, 20%; limestone, pale yellowish brown (10YR 6/2), very finely clastic, 20%.
- 2875-2880 Ditto.
- 2880-2886 Shale, grayish red (10R 4/2), calcareous, finely micaceous, 40%; shale, pale red (10R 6/2), silty, calcareous to slightly calcareous, 40%; shale, medium gray, as above, 10%; limestone, as above, 10%.
- 2886-2890 Siltstone, pale red (10R 6/2), sandy, slightly calcareous; and shale, dark gray (N3), fissile.
- 2890-2895 Like 2886-2890.

- 2895-2900 Siltstone, pale reddish brown (10R 5/4), sandy, micaceous, non-calcareous.
- 2900-2905 Siltstone, pale reddish brown (10R 5/4) as 2895-2900, but calcareous.
- 2905-2915 Sandstone, greenish gray (5GY 6/1), very fine-grained, subangular, poorly sorted, very slightly porous, silty, calcareous, slightly micaceous, scattered black mineral, 3/4 quartzose.
- 2915-2925 Like 2905-2915.
- 2925-2930 Shale, medium dark gray (N4) to dark gray (N3), fissile.
- 2930-2935 Shale, like 2925-2930; and sandstone, like 2905-2915.
- 2935-2945 Like 2930-2935.
- 2945-2955 Shale, dark gray (N3), fissile.
- 2955-2960 Shale, medium dark gray (N4), fissile, micaceous.
- 2960-2965 Shale, medium dark gray (N4), to dark gray (N3), calcareous.
- 2965-2975 Siltstone, greenish gray (5GY 6/1), sandy, slightly calcareous.
- 2975-2980 Shale, medium dark gray (N4), fissile.
- 2980-2988 Siltstone, greenish gray (5GY 6/1), sandy, slightly calcareous.
- 2988-2995 Shale, medium dark gray (N4), with dark gray (N3), carbonaceous, nodular inclusions.
- 2995-3005 Sandstone, white (N9), very fine-grained, subangular to subrounded, fairly well sorted, slightly porous, slightly silty, slightly calcareous, 90% quartzose.
- 3005-3015 Like 2995-3005.
- 3015-3025 Shale, dark gray (N3), fissile.
- 3025-3029 Like 3015-3025.
- 3029-3033 Shale, medium dark gray (N4), silty to dark gray (N3), carbonaceous; with abundant coal.
- 3033-3036 Sandstone, white (N9), very fine-grained, angular to subangular, well sorted, slightly porous, 95% quartzose.
- 3036-3040 Like 3033-3036.
- 3040-3045 Sandstone, like 3036-3040; and shale, dark gray (N3), fissile.
- 3045-3049 Sandstone, like 3036-3040.
- 3049-3054 Shale, dark gray (N3), fissile.

- 3054-3061 Sandstone, very light gray (N8), very fine-grained to fine-grained, subangular, well sorted, porous, slightly calcareous, scattered black mineral, 90% quartzose.
- 3061-3070 Siltstone, grayish red (5R 4/2), locally calcareous; and siltstone, medium dark gray (N4), with greenish tint, argillaceous, slightly calcareous.
- 3070-3076 Shale, grayish red (10R 3/2), silty, calcareous; and shale, dark gray (N3), carbonaceous, lumpy.
- 3076-3084 Shale, grayish red, like 3070-3076.
- 3084-3094 Shale, medium dark gray (N4), very slightly calcareous.
- 3094-3100 Like 3084-3094.
- 3100-3110 Siltstone, medium gray (N5), calcareous.
- 3110-3116 Shale, medium dark gray (N4), silty, slightly calcareous; and shale, grayish red (5R 4/2), lumpy, slightly silty.
- 3116-3132 Shale, medium dark gray (N4), silty, calcareous; and siltstone, medium gray (N5), with greenish tint, sandy, calcareous; also little limestone, very light gray (N8), noncrystalline.
- 3132-3143 Siltstone, and shale, grayish red (5R 4/2), slightly calcareous; and shale, medium dark gray (N4), non-calcareous.
- 3143-3155 Like 3132-3143.
- 3155-3160 Like 3143-3155.
- 3160-3165 Like 3155-3160.
- 3165-3170 Siltstone, medium dark gray (N4) with greenish tint; shale, dark gray (N3), carbonaceous, fissile; and small amount of coal.
- 3170-3182 Shale, medium dark gray (N4), silty, micaceous to dark gray (N3), carbonaceous, abundant pyrite.
- 3182-3187 Siltstone, medium dark gray (N4), slightly sandy, micaceous, slightly calcareous.
- 3187-3196 Shale, grayish red (5R 4/3), moderately fissile; and siltstone, pale red (5R 5/2), micaceous.
- 3196-3204 Shale and siltstone, like 3187-3196; and limestone, light olive gray (5Y 6/1) to greenish gray (5GY 6/1), silty.
- 3204-3212 Like 3196-3204.
- 3212-3217 Shale, medium dark gray (N4) to dark gray (N3), fissile,
- 3217-3225 Sandstone, white (N9), very fine-grained, subangular, well sorted, slightly porous, slightly silty, slightly calcareous, 90% quartzose.

- 3225-3237 Shale, medium dark gray (N4), finely micaceous, to dark gray (N3), carbonaceous.
- 3237-3251 Like 3225-3237.
- 3251-3262 Like 3237-3251.
- 3262-3267 Sandstone, very light gray (N8) to medium dark gray (N6), very fine-grained to fine-grained, subangular, poorly sorted, very slightly porous, silty, calcareous, micaceous, 3/4 quartzose with partings of dark gray (N3) shale.
- 3267-3275 Like 3262-3267.
- 3275-3290 Shale, medium gray (N5), sandy, micaceous; shale, medium dark gray (N4), lumpy; and shale, dark gray (N3), fissile, calcareous.
- 3290-3301 Siltstone, light gray (N7), sandy, slightly calcareous.
- 3301-3312 Shale, medium dark gray (N4), fissile.
- 3312-3325 Like 3301-3312 with some shale, grayish red (5R 4/2), lumpy.
- 3325-3347 Limestone, medium gray (N5) to dark gray (N3), silty, dense.
- 3347-3358 No sample.
- 3358-3368 Shale, medium dark gray (N4), silty, slightly calcareous, fossiliferous (brachiopod fragments) with small amount of pyrite.
- 3368-3380 Like 3358-3368.
- 3380-3388 Sandstone, white (N9), fine-grained, subangular, well sorted, slightly porous, calcareous, 95% quartzose.
- 3388-3397 Shale, medium dark gray (N4), fissile, finely micaceous with scattered pyrite crystals.
- 3397-3404 Like 3388-3397.
- 3404-3415 No sample.
- 3415-3418 Like 3397-3404, with abundant pyrite crystals.
- 3418-3422 Sandstone, white (N9), fine-grained, subangular, subangular, well sorted, porous, 95% quartzose.
- 3422-3424 Like 3418-3422.
- 3424-3431 Like 3422-3424.
- 3431-3437 Shale, medium dark gray (N4), slightly silty.
- 3437-3443 Limestone, medium dark gray (N4), silty, finely crystalline to medium crystalline.

3443-3461 Like 3437-3443; and shale, dark gray (N3), calcareous.

Total Depth: 3461'