

A37BU

Operator: United Producing Company, Inc.
Farm: Yukon Pocahontas Coal Co., Et Al
Well No: 8 - 1673
Location: Buchanan County
16,400' South of 37° - 15'
6500' West of 81° - 55'
Elevation: 1648' - Derrick Floor
Total Depth: 4793'
Drilling Commenced: November 19, 1949
Well Completed: April 8, 1950
Result: Dry Hole

WELL LOG

DEPTH
(feet)

0 - 46 No samples.

46 - 50 Sandstone - very light gray (N 7.5) medium to fine-grained, subangular, clear quartz grains, moderately sorted; siliceous; local feldspar; micaceous; shale fragments.

50 - 55 As above; coarse grains, poor sorting; iron staining.

55 - 95 As 46 - 50; sparsely chloritic, illite up to 5% sparse. Coal at 80 - 85 and 90 - 95'.

95 - 99 Siltstone - medium dark gray (Ns) and sparse amount brownish-gray (5YR 4/1) hard, micaceous grading into a graywacke type sandstone-medium dark gray - as 46 - 50 but with abundant dark rock/mineral material.

99 - 115 As above.

115 - 147 As above.

147 - 158 Shale - 50% dark gray - firm, locally and sparsely micaceous; and 50% sandstone as 46 - 50; coal - high luster, conchoidal fractures, sulfur.

158 - 165 As above. The possibility exists that shale is confined to 147 - 158' and sandstone - to 158 - 165', and are now mixed from drilling.

165 - 175 Shale/Sandstone - as 158 - 165'.

175 - 211 Sandstone - very light gray (N7) medium to coarse grained, angular to sub-angular clear quartz grains; poorly sorted; siliceous; micaceous; up to 10% siltstone/shale fragments; sparse coal at 207 - 211'.

OWNER: United Producing Company, Inc.

VDMR Well # 8 - 1673

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- 211 - 246 Sandstone - light gray (N7) - fine to medium with some coarse grains, subangular and angular clear quartz grains moderate to poor sorting in graywacke fragments; siliceous; up to 10% rock fragments in light gray fragments - grading to "graywacke" type; micaceous; sparse siltstone fragments (not in sandstone) medium dark gray and siltstone - medium gray - quartzose and micaceous.
- 246 - 252 Siltstone/Sandstone - 60% - dark gray (NS) medium dark gray (N4) brownish gray (5 YR 4/1) - hard-quartzose; micaceous; local carbonaceous material; and 40% sandstone as 211 - 246'; moderately feldspathic.
- 252 - 264 As above.
- 264 - 270 Sandstone/Siltstone/Shale - 60% sandstone - as 211 - 246; micaceous and 40% siltstone.
- 270 - 300 Shale - medium dark gray (N4) - at top and bottom - some siltstone - medium gray to dark gray and sandstone fragments.
- 300 - 306 Shale/Sandstone/Shale - as above; sandstone - light gray (N7) - fine to medium grained, subangular, moderately sorted; siliceous; hard; chloritic; mica.
- 306 - 316 Siltstone/Sandstone - as above; siltstone - dark gray - micaceous.
- 316 - 336 Sandstone - medium gray - fine grained, subangular, moderately well sorted; siliceous, mica; local carbonaceous material and very fine chlorite at 328 - 336'; siltstone fragments.
- 336 - 350 Siltstone/Sandstone - sandstone - as 316 - 336'; much mica/carbonaceous material on bedding plants; moderate amounts of siltstone at 336 - 342'.
- 350 - 377 Siltstone - light dark gray - hard, quartzose, micaceous, locally carbonaceous; and at 358 - 370'; 35% [±] sandstone light gray - fine grained with abundant fine, dark rock fragments.
- 377 - 390 Shale - dark gray (N3) - massive, micaceous, local stringers of pyrite grains.
- 390 - 395 Shale/Sandstone - 50% shale as above 50% sandstone - medium gray - fine to medium grained, subangular, poorly sorted; siliceous; very micaceous, chloritic; finely pyritic; argillaceous and carbonaceous material.
- 395 - 401 As above; but containing abundant argillaceous and carbonaceous material.
- 401 - 402 Shale - medium gray (N5) - slightly silty, micaceous, fossils.
- 412 - 422 Shale/Sandstone - shale as above, sandstone - light gray - fine to medium grained, moderately sorted, subangular chert quartz grains; siliceous up to 10% fine dark rock fragments; micaceous; local carbon on bedding plane.

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- 422 - 430 Sandstone - as above.
- 430 - 437 Shale - dark gray (N3) - partly very silty and micaceous; coal large fragments - dull luster and blocky features.
- 437 - 453 Sandstone - very light gray - (N8) fine to silt sized grains, sub-angular to subrounded, moderate sorting; siliceous; slightly micaceous, chloritic; some carbonaceous material on bedding planes.
- 453 - 487 Shale - dark gray 70% (N3) 20% medium dark gray (N4) and 10% brownish gray (5YR 4/1) silty, micaceous, some sandstone fragments - as 437 - 453.
- 487 - 521 Sandstone - medium gray to light gray (N5-6) fine to medium grained, subangular, moderate sorting; siliceous; micaceous; carbonaceous.
- 521 - 530 Shale - medium dark gray - (N4) - micaceous and silty.
- 530 - 537 Siltstone/Shale - as above; siltstone same color - silty to sandy and grading to sandstone; locally very micaceous.
- 537 - 542 Sandstone - as 487 - 521; 3% garnet (?) (reddish gemmy material/FE stains) in some fragments; highly variable in nature; coal; mica.
- 542 - 558 Sandstone - "white" - very light gray (N8) fine to medium grained, sub-angular, moderate sorting; siliceous, micaceous; coal.
- 558 - 575 Sandstone, silty - white (N9) - as above; crushed; sparse mica, becoming coarse grained at 565 - 575' with chloritic grains.
- 575 - 587 Sandstone - as above; fine to medium grained; some light gray fragments, some shale - dark gray - micaceous; coal.
- 587 - 630 Siltstone - medium dark gray (N4) - hard micaceous, chloritic; sandstone fragments at 600 - 630'.
- 630 - 699 Sandstone - light gray - fine to medium grained, subangular, moderate sorting; siliceous; micaceous; locally carbonaceous; siltstone - medium gray - hard, carbonaceous material on bedding surfaces; some siltstone dark gray - poorly silty.
- 649 - 684 Siltstone - as 630 - 649'.
- 684 - 712 Shale - dark gray (N3) - pyritic; micaceous; occasional floating grains of clear, fine to medium grained, subangular, quartz.
- 712 - 723 Sandstone - very light gray (N5) fine to medium grained, subangular, moderate sorting; siliceous; slightly micaceous; abundant reddish grains - garnet and 25% shale as above.
- 723 - 733 Siltstone - medium gray - hard, micaceous slightly chloritic; sparse shale, siderite nodules (?).
- 733 - 745 Shale - medium gray (N5) - silty, fissile, coal on bedding surfaces.

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- 745 - 756 Siltstone - as 723 - 733; red grains; chloritic abundantly micaceous; at 150 - 156' and a shale - medium gray - silty, very micaceous and some brownish gray.
- 756 - 762 Shale - medium dark gray (N4) and dark gray (N3) - partly carbonaceous; sandstone - fragments as 638 - 649.
- 762 - 805 Sandstone - very light gray (N8) - fine to medium grained, subangular moderately well sorted; siliceous; micaceous; chloritic; very fine rock fragments and reddish grains, at 783 - 794 - siltstone brownish gray (5YR 4/1) sandy, argillaceous, very micaceous, coal laminations; at 800 - 805 - 20% cannel coal.
- 805 - 824 As 756 - 762; some siltstone as 745 - 756.
- 824 - 870 As 762 - 805 at 860 - 870 light gray with coal laminations, clean otherwise.
- 870 - 884 Medium dark gray - massive with sandy, silty and carbonaceous laminations; sparse brownish gray fragments.
- 884 - 906 Shale - medium dark gray to dark gray - partly silty; micaceous; some shist as above. At 901 - 906, coal.
- 906 - 915 As above; 10% sandstone - light gray (N7) - fine to silty, subangular well sorted; siliceous; red grains; partly micaceous.
- 915 - 934 Shale - medium gray to light gray - micaceous, silty.
- 934 - 943 Sandstone - silty, medium gray (N5) - silty to very fine grained, subangular (?), well sorted, slightly (?) siliceous; silty red grains and shale - as 915 - 934.
- 943 - 951 Shale - as 915 - 934'.
- 951 - 961 Shale - as above; ^{siltstone} shist and sandstone fragments.
- 961 - 989 ^{siltstone} Shist - medium gray - (N5) - hard, micaceous, finely laminated - silt, and sandy layers of varying colors.
- 989 - 995 Medium to dark gray (N5-3) highly micaceous and silty.
- 995 - 1054 Sandstone - light brownish gray (5YR 6/1), fine to medium, subangular moderately well sorted, siliceous, micaceous; highly iron stained but probably from contamination throughout sample is coal in thin irregular laminations; some with plant fragments.
- 1054 - 1080 Shale - medium dark gray (N4) - silty, micaceous, at 1068 - 1074' siderite nodules; some interbedded shist - medium gray hard, coaly laminations; at 1060 - 1068' - coal - cannel.

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- 1080 - 1118 Shale - dark gray - pyrite locally.
- 1118 - 1125 Shale/Sandstone - as above, some brownish gray; 20% sandstone - brownish gray (5YR 4/1) to dark gray (N3) - graywacke type - fine to coarse, angular and subangular, poorly sorted; siliceous; abundant dark material; mica and coal (10%) with pyritized plant fossils.
- 1125 - 1142 Sandstone/Shale - as above; coal still; sandstone grading to medium and light gray "cleaner" sandstone; carbonaceous material.
- 1137 - 1142 Siltstone - medium gray (N5) - quartzose, micaceous.
- 1142 - 1147 Medium to light gray - micaceous silty.
- 1147 - 1190 Sandstone - light gray to white - medium grained, some fine grained, subangular, moderately sorted; siliceous; micaceous, chloritic.
- 1190 - 1200 Siltstone/Sandstone - siltstone - medium dark gray (N4) - silty, slight micaceous-sandstone as above; siderite grains (?) grains of carbonaceous material.
- 1200 - 1217 Sandstone - as 1147 - 1190.
- 1217 - 1222 Sandstone/Shale - medium gray to light gray (N5-N7) - micaceous, silty coal on surfaces, siderite nodules; becoming quartzose at 1268 - 1277' with some shale.
- 1277 - 1290 Sandstone - light gray (N7) - fine grained subangular, moderately well sorted; siliceous; moderately micaceous, chloritic; carbonaceous locally.
- 1290 - 1305 Medium gray - quartzose, silty grading into shale - same color, micaceous, silty.
- 1305 - 1315 Shale/Coal, 50% shale - medium dark gray (N4) - grading into siltstone soft to massive; slightly micaceous (in part); coal - blocky and high luster, secondary calcareous material.
- 1315 - 1325 Shale - medium gray - partly micaceous.
- 1325 - 1340 Siltstone - medium gray - (N5) to light gray (N7) - with some brownish gray - quartzose, partly micaceous.
- 1340 - 1357 Shale/Siltstone color as above; micaceous coal - plant fossils and siltstone - as 1325 - 1340.
- 1357 - 1370 Shale/Siltstone - shale as above; grading locally to siltstone. Sandstone - very light gray (N8) - fine to medium grained, subangular and angular, moderate sorting; siliceous, micaceous - in varying amounts/fragments; chloritic; some color variation to light gray and greenish gray; coal with plant impressions.

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- 1370 - 1377 Sandstone - as above.
- 1377 - 1410 As above; red grains and shale - lt. gray at 1390 - 1405'; siderite nodules.
- 1410 - 1417 Shale - medium gray with some brownish gray - silty; some sandstone as 1357 - 1370'.
- 1417 - 1422 Sandstone - dark gray (N3) - fine grained, subangular, grading into siltstone which is quartzose and micaceous.
- 1422 - 1432 Shale - as 1410 - 1417'.
- 1432 - 1472 Sandstone - very light gray (N8) - fine to medium grained with sparse coarse grains, subangular and some angular/subrounded; moderate sorting; siliceous; moderate chlorite and dark material; increasingly micaceous as increasing in depth; coal at 1465 0 1472' only.
- 1472 - 1477 Shale - brownish gray (5YR 4/1) to dark gray (N3) - carbonaceous, soft.
- 1477 - 1486 Sandstone - as 1432 - 1472; siderite nodules.
- 1486 - 1498 Shale - light gray (N9) - siderite nodules.
- 1498 - 1527 Sandstone - as 1432 - 1472; sparse coal.
- 1527 - 1534 Sandstone - medium light gray to light gray (Ng & N7) - as 1432 - 1472; numerous small red grains; sparse light gray siltstone with red grains also.
- 1534 - 1605 Sandstone - very light gray to light gray - as 1432 - 1472; at 1541 - 1550; 5% shale, sandy to brownish gray - graywacke type sandstone.
- 1605 - 1614 Shale - medium gray - (N5) - micaceous, floating quartz grains as in shale above; sandstone as above.
- 1614 - 1620 Shale/Sandstone - 50% each - shale as 1605 - 1614; sandstone as 1534-1605'; with some coarse grains; and 1% \pm grayish red shale.
- 1620 - 1631 Sandstone - 50% as 1432 - 1472'; 50% medium gray - "dirty" sandstone - same general description; varying from percentage of dark material to graywacke type - all grains dark.
- 1631 - 1646 Sandstone - "white to very light gray" - medium to coarse, subangular clear and milky quartz grains, moderately sorted; siliceous; clean.
- 1646 - 1660 Shale - medium gray (N5) "yellowish gray (5Y 7/2), grayish red (5R 4/2) and light greenish gray (5GY 8/1) - soft, varying - some silty to very finely sandy.

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- 1660 - 1670 Shale - grayish red (10R 4/2) and greenish gray (5GY 7/1) - silty at top of layer and finely micaceous toward bottom, some of both color, very finely sandy, moderately chloritic.
- 1670 - 1704 Shale - as above.
- 1704 - 1714 Siltstone - greenish gray - quartzose, micaceous, slightly calcareous,
- 1714 - 1747 Siltstone/Sandstone - as above; grading to very fine grained sandstone; at 1726 - 1731 interbedded with shale - medium gray.
- 1747 - 1765 Siltstone - light gray (N7) - quartzose, calcareous, coal laminations.
- 1765 - 1768 Sandstone - light gray (N7) - fine grained, angular and subangular clear quartz grains, moderately well sorted; siliceous; coal and argillaceous laminations; shale - 1% grayish red.
- 1768 - 1785 Sandstone/Shale - sandstone as above; shale - medium dark gray - sparsely micaceous; some sandstone grading into medium dark gray sandstone's shale increasing toward bottom.
- 1785 - 1803 Shale - dark gray (N3) - hard, silty on bottom of level.
- 1803 - 2096 See Bowens Log.
- 2096 - 2257 Sandstone - white (N9) medium, subangular and angular clear quartz grains, moderately well sorted; siliceous; clean; occasional shale fragments.
- 2257 - 2261 Limestone, argillaceous interbedded with siltstone, calcareous, medium to dark gray (N4-3) limestone. Description follows and siltstone - massive, calcareous.
- 2261 - 2312 Limestone, argillaceous - medium to medium dark gray - moderately hard, fossil fragments, increasing to bottom of level; no apparent bedding; micritic; silty, calcite and rare pelloidal (not colitic) fragments; at 2305 - 2312' - abundant Ostracods -; also Pelecypod, Grinoid, Brachiopod and Echinoderm spine fragments.
- 2312 - 2320 Shale/ Limestone, argillaceous - medium dark gray limestone - as above, shale - as 1783 - 1803.
- 2320 - 2324 Shale/Sandstone/Limestone - shale - as above, sandstone - as 2096 - 2050; red grains. Limestone varied grays, brownish gray, light brownish gray, calcite fragments; greenish gray shist fragments - highly chloritic; local carbonaceous fragments.
- 2324 - 2332 Siltstones - medium gray (N5), grayish red (10R 4/2) - both hard; gray is sparse to moderately calcareous; in some fragments differently colored having smaller fragments within, calcareousness is limited to the included fragments; grayish red is micaceous.
- 2332 - 2440 Siltstone - grayish red (10R 4/2) - massive soft.
- 2440 - 2460 Siltstone - medium gray (N5) - massive, siliceous, micaceous.

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- 2460 - 2469 As 2332 - 2440'.
- 2469 - 2472 "White" - (N-9) medium subangular clear quartz grains, moderately sorted; siliceous; clean; shale fragments with coal; and underclay fragments with coal.
- 2472 - 2514 ^{Siltstone} Shist/Sandstone - brownish gray (5YR 4/1) and grayish red (10R 4/2)-siltstones of varying shades and micaceous to non-micaceous; grading into sandstone - grayish red - fine to medium, subangular (?) clear, reddish and dark quartz grains; siliceous; micaceous to highly micaceous; biotite; chlorite; shale - dark gray - fragments.
- 2514 - 2534 ^{Siltstone} Shists - brownish grays, grayish red - as 2472 - 2514; becoming grayer toward bottom.
- 2534 - 2543 Light to medium gray (N7 and 5) quartzose, micaceous, sparse, fine black (coal?) particles in some fragments.
- 2543 - 2568 As 2469 - 2472'; fine to medium; finely micaceous; no coal.
- 2568 - 2640 Siltstone - medium dark gray (N4) - massive, silty, locally and finely micaceous.
- 2640 - 2645 Sandstone/Siltstone - sandstone as 2469 - 2472', siltstone as 2568 - 2640; sparse grayish red shale fragments.
- 2645 - 2677 As 2469 - 2472; clean, no micas or coal; iron staining.
- 2677 - 2692 ^{Siltstone} Shists - light gray, light olive gray (5Y 6/1) light brownish gray (5YR 6/1) massive, silty, grading to siltstone/sandstone locally.
- 2692 - 2700 Siltstone - medium dark gray (N4) - silty, micaceous; limestone fragments with fossil fragments within.
- 2700 - 2757 ^{Siltstone} Shist - as above; no limestone.
- 2757 - 2776 ^{Siltstone} Shist - grayish red and medium light gray - silty, soft.
- 2776 - 2786 ^{Siltstone} Shist - medium light gray (N6) - as above.
- 2786 - 2807 Siltstone - siltstone as above, siltstone, calcareous, medium dark gray.
- 2807 - 2890 ^{Siltstone} Shist - medium gray (N5) locally siliceous, silty, micaceous, some coal fragments; some sandstone fragments - graywacke type, silty.

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- 2890 - 2906 ^{Siltstone} Shist - dark gray - (N3) - silty, soft, carbonaceous in fine laminae.
- 2906 - 2917 Sandstone - as 2469 - 2472'.
- 2917 - 2931 ^{Siltstone} Shist - as 2890 - 2906'.
- 2931 - 2940 Sandstone - as 2469 - 2472'.
- 2966 - 2976 Sandstone/Siltstone - siltstone as 2890 - 2906 and sandstone as 2469 - 2472'; 50% each; sparse grayish red siltstone fragments, 1-3% greenish gray sandstone fragments - silty, locally and sparsely micaceous.
- 2976 - 3015 Sandstone - light gray (N7) - fine grained, subangular, well sorted, clear quartz grains; siliceous; clean; sparse siltstone fragments.
- 3015 - 3066 Siltstone - as 2890 - 2906'.
- 3066 - 3084 Shale - dark gray (N3) - silty, soft, locally carbonaceous.
- 3084 - 3105 Siltstone/Limestone, silty - medium gray (N5), light gray and light brownish gray (5YR 8/1) - siltstone (50% \pm) compact, hard, very sparse mica; limestone silty, varies in color micritic, sparsely micaceous; sandstone fragments at 3091 - 3105'.
- 3105 - 3112 Siltstone, calc./Sandstone - 80% siltstone - medium dark gray (N4) - as 3084 - 3105; calcareous; pyrite; sandstone as 2976 - 3015; limestone fragments.
- 3112 - 3126 Siltstone - medium to medium dark gray (N4-5) hard, slightly and finely micaceous.
- 3126 - 3138 Siltstone - as above; finely micaceous, 20% siltstone - as 2976 - 3015', pyrite.
- 3138 - 3147 ^{Siltstone} Shist/Sandstone - 10% shist - medium dark gray - quartzose, micaceous, grading into graywacke type sandstone (light gray) - and 30% sandstone - as 2976 - 3015; local grains pyrite.
- 3147 - 3168 "White" (N9) - fine grained, subangular, clear quartz grains; siliceous, hard; clean; and 10% shist from above.
- 3168 - 3175 ^{Shale} Siltstone/Shist - medium gray (N5) - silty, sparse fine mica; 5% sandstone - as above; pyrite.
- 3175 - 3223 Shale - medium dark gray (N4) - silty, sparsely micaceous.
- 3223 - 3230 Siltstone - medium dark gray (N4) occasional calcareous areas and fossil fragments, calcite in crack fillings; rare limestone, silty fragments.
- 3230 - 3263 Siltstone, calc./Limestone, silty - as above; increasing amounts of limestone; fossil fragments - coral?, Crinoid, Bryozoa, Brachiopods; pyrite granular masses.

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- 3263 - 3286 Limestone, coarsely silty - medium dark gray (N4) complex sample of intergrading limestone, silty and siltstone, calcareous with local very fine sandstone in both types of samples; fossils - calcareous - as above; ^{white} secondary crystals in vein fillings.
- 3286 - 3390 Limestone - as 3263 - 3286; still very silty but finer silt.
- 3390 - 3414 ^{Siltstone} Siltstone, calc./Limestone, silty - medium light gray 70% \pm (N6) - hard, quartzose, calcareous in local areas interbedded with 30% limestone - some color, silty and fossiliferous.
- 3414 - 3445 Limestone, silty/^{Siltstone} Shist, calc. as above; 60% siltstone; 40% \pm Limestone.
- 3445 - 3460 Limestone - medium gray (N5) - micritic silty, highly fossiliferous and shales - dark gray to light gray (N3 - N7) - silty, sparsely micaceous.
- 3460 - 3480 Siltstone/Shale, calc. medium light gray hard, quartzose, calcareous, sparsely and very finely micaceous, local fossil fragments.
- 3480 - 3550 Limestone - medium gray (N5) - micritic, sparsely silty, moderately fossiliferous.
- 3550 - 3980 As above; light gray and white fragments, also; intraclasts in micritic base; becoming less fossiliferous and more silty toward base.
- 3980 - 4024 Limestone - dark gray and light gray (N3 - N7) - micritic, some siltiness in light gray, no fossils.
- 4024 - 4030 ^m Limestone/Shale - 50% each - limestone as above, shale - grayish red (5R 4/2); soft, silty; fossils in some frag 3% gray shale fragments; anhydrite fragments/grains.
- 4030 - 4046 Shale - grayish red (5R 4/2) - as above; anhydrite fragments - peach colored and gray shale toward bottom.
- 4046 - 4075 Siltstone - medium gray, some medium light gray (N5 - 6) silty, very sparsely micaceous.
- 4075 - 4235 Siltstone's - light, medium and dark gray - firm to locally shaley, some fragments sparsely and finely micaceous.
- 4235 - 4250 As above; medium gray - becoming finely sandy in local areas.
- 4250 - 4276 As medium gray - silty to sandy; fine Brachiopod fragments in limestone; coarse sized rounded, milky and clear quartz grains (?) at 4250 - 4261'; shale fragments at 4567 - 4576'.

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- 4276 - 4296 Siltstone - medium dark gray (N4) - hard, quartzose, finely micaceous locally; sparse fragments Siltstone, sandy to fine sandstone; grayish red shale fragments.
- 4296 - 4315 Siltstone/ siltstone, sandy - siltstone - medium dark gray - as above and siltstone, sandy - light gray - brittle, finely sandy; rare dark gray shale fragments.
- 4315 - 4375 Shale - medium dark gray (N4) firm, silty, sparsely finely micaceous.
- 4375 - 4641 As above; occasional angular clear fragments of quartz.
- 4641 - 4663 Grayish black (N2) - sort, carbonaceous?, at 4629 - 4663 - 30% medium dark gray (N4) - as 4315 - 4375; quartz fragments(contamination).
- 4664 - 4705 Siltstone - medium gray (N5) - hard, gritty, rare fine mica.
- 4705 - 4754 Siltstone - as above.
- 4754 - 4785 Siltstone - as above.

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