

SAMPLE DESCRIPTIONS

Spud on January 29th, 2014 at 00:01hrs
Samples from 0 to 20m caught previously when conductor hole was drilled.

20-30 SHALE: light to medium grey, blocky, slightly micromicaceous, silty in part, grades to shaley Siltstone in part, soft to moderately firm, trace carbonaceous material with 20% interbedded SANDSTONE light grey, very fine grained, sub angular, well sorted, clay matrix, minor dark lithic grained, no visible porosity, no show. 20% cement in sample.

30-40 SHALE: light to medium grey, blocky, slightly micromicaceous, silty in part, grades to shaley Siltstone in part, soft to moderately firm, trace carbonaceous material with interbedded SANDSTONE light grey, very fine grained, sub angular, well sorted, clay matrix, minor dark lithic grained, no visible porosity, no show. 10% cement in sample.

Little Bear Formation 43.00mMD, (43.00mTVD, 246.35mSS.)

40-50 SANDSTONE: salt and pepper, upper fine grained, sub angular, moderate sorted, unconsolidated, quartz and chert, dark lithic grains, trace pyrite nodules, good intergranular porosity, no visible show

50-60m SANDSTONE: very light grey, very fine grained, sub angular, well sorted, quartz and light color chert, clay matrix, occasional white kaolinitic, soft, friable, trace disseminated pyrite, trace dark lithic grained, poor to fair intergranular porosity, no visible show.

60-70 SHALE: medium grey, blocky, soft to firm, silty, grades to silty shale in part, slightly micromicaceous, minor carbonaceous material, trace disseminated pyrite, trace minor SANDSTONE stringers as above.

70-80 SHALE: medium grey, blocky, soft to firm, silty, grades to silty shale in part, slightly micromicaceous, minor carbonaceous material, trace pyrite nodules, trace minor SANDSTONE stringers as above.

80-90 SHALE: medium grey, blocky, soft to firm, silty, grades to silty shale in part, slightly micromicaceous, minor carbonaceous material, very pyritic with minor SANDSTONE stringers, salt and pepper, fine grained, sub angular, moderate sorted, clay matrix, minor calcareous, tight to poor intergranular porosity, no visible show.

90-100 SANDSTONE: predominantly light grey, salt and pepper in part, lower fine grained, sub angular, well sorted, clay matrix, dark lithic grains, trace carbonaceous material, trace pyrite, poor trace glauconitic, friable in part, poor intergranular porosity, no show with 40% Shale as above.

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100-110 SANDSTONE: predominantly light grey, salt and pepper in part, very fine grained, sub angular, well sorted, clay matrix, dark lithic grains, trace carbonaceous material, trace pyrite, poor trace glauconitic, friable in part, tight to trace poor intergranular porosity, no show with minor Shale as above.

110-120 SANDSTONE: as above with increasing Shale as above with SHALE light brown, grey brown, blocky, sideritic, occasionally silty, trace sandy, trace brown siderite fragments.

120-130 SHALE: light to medium grey, blocky, silty, slightly micromicaceous, grades to siltstone in part, trace pyritic, trace pyrite nodules with 40% SANDSTONE, light grey, lower very fine grained, sub angular, well sorted, clay cement, silty, shaley, trace dark lithic grains, trace pyritic, predominantly tight, no show

130-140 SANDSTONE: medium grey, lower very fine grained, sub angular, well sorted, clay cement, silty, shaley, trace dark lithic grains, trace pyritic, predominantly tight, no show with 10% SHALE laminations as above.

140-150 SANDSTONE: light grey, upper very fine grained, sub angular, well sorted, clay cement, silty, shaley, trace dark lithic grains, trace pyritic, pyr filled worm burrows, predominantly tight, no show with 50% Shale as above.

150-160 SANDSTONE: light grey to salt and pepper, very fine grained, sub angular, well sorted, clay and calcareous cement, silty, shaley in part, trace dark lithic grains, trace glauconitic, trace pyritic, predominantly tight, no show with minor Shale as above.

160-170 SANDSTONE: light grey to salt and pepper, very fine grained, sub angular, well sorted, clay and trace calcareous cement, silty, shaley in part, trace dark lithic grains, trace glauconitic, pyritic, trace carbonaceous material, predominantly tight to poor intergranular porosity, no show with minor Shale as above.

170-180 SANDSTONE: as above, becoming increasing shaley, Shale increasing to 40%, medium grey, blocky, silty, sandy, trace carbonaceous specs.

180-190 SANDSTONE light grey to salt and pepper, upper very fine grained, sub angular, moderately well sorted, clay and trace calcareous cement, silty, shaley in part, trace dark lithic grains, trace glauconitic, pyritic, trace carbonaceous material, predominantly tight to poor intergranular porosity, no show with minor Shale as above.

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190-200 SANDSTONE: light grey to salt and pepper, lower fine grained, sub angular, well sorted, clay matrix and trace calcareous cement, silty in part, slightly shaley in part, trace dark lithic grains, trace glauconitic, trace pyritic, trace carbonaceous material, minor mica flakes, predominantly tight to poor intergranular porosity, no show with minor Shale as above.

Slater River Formation 207.00mMD, (207.00mTVD, 82.35mSS.)

200-210 SANDSTONE: as above with SHALE increasing slightly.

210-220 SHALE: medium grey, blocky, moderately firm, slightly micromicaceous, trace silty, poor trace carbonaceous material, trace silty with minor Sandstone stringers as above.

220-230 SHALE: medium grey, blocky, moderately firm, slightly micromicaceous, trace silty, poor trace carbonaceous material, trace silty with minor Sandstone stringers as above.

230-240 SHALE: medium grey, blocky, moderately firm, slightly micromicaceous, trace sandy, poor trace carbonaceous material, poor trace glauconitic, trace silty, trace micro fracture infilled with calcite.

240-250 SHALE: medium grey, blocky, moderately firm, slightly micromicaceous, trace sandy, poor trace carbonaceous material, poor trace glauconitic, trace silty.

250-260 SHALE: medium grey, blocky, moderately firm, slightly micromicaceous, trace silty, poor trace carbonaceous material, trace pyrite nodules with minor Siltstone stringers, light grey, clay cement, dark lithic grains, tight, no show

260-270 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace silty, poor trace carbonaceous material, trace pyritic with minor Siltstone stringers, light grey, clay cement, dark lithic grains, tight, no show.

270-280 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, sandy in part, poor trace carbonaceous material, trace pyrite nodules, occasional grey brown shale, sideritic with minor Sandstone stringers, medium grey, very fine grained, well sorted, sub angular, clay cement, dark lithic grains, tight, no show.

280-290 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, sandy in part, poor trace carbonaceous material, trace pyrite nodules, occasional grey brown shale, sideritic with minor Sandstone stringers, medium grey, very fine grained, well sorted, sub angular, clay cement, dark lithic grains, carbonaceous material, tight, no show.

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290-300 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, sandy in part, poor trace carbonaceous material, trace pyrite nodules, trace sideritic in part.

300-310 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace sandy in part, trace silty, poor trace carbonaceous material, trace pyrite with minor Sandstone stringers light grey, upper very fine grained, sub angular, well sorted, clay matrix, slightly calcareous, dark lithic grains, poor trace glauconite, no visible porosity, no show.

310-320 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace sandy in part, trace silty, poor trace carbonaceous material, trace pyrite with minor Sandstone stringers light grey, upper very fine grained, sub angular, well sorted, clay matrix, slightly calcareous, dark lithic grains, poor trace glauconite, no visible porosity, no show.

320-330 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace sandy in part, trace silty, poor trace carbonaceous material, trace pyrite with minor Sandstone stringers light grey, upper very fine grained, sub angular, well sorted, clay matrix, slightly calcareous, dark lithic grains, poor trace glauconite, no visible porosity, no show.

330-340 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace sandy in part, trace silty, poor trace carbonaceous material, trace pyrite with minor Sandstone stringers as above.

340-350 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace sandy in part, trace silty, poor trace carbonaceous material, trace pyrite with minor Sandstone stringers as above.

350-360 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace sandy in part, trace silty, poor trace carbonaceous material, trace pyrite with minor Sandstone stringers as above.

360-370 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace sandy in part, trace silty, poor trace carbonaceous material, trace pyrite with minor Sandstone stringers as above.

POOR SAMPLE QUALITY FROM 300 to 400 METERS
DUE TO MUD LOSSES AND ABUNDANT LCM IN MUD.

370-380 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace sandy in part, trace silty, poor trace carbonaceous material, trace sideritic in part with trace siderite fragments, trace pyrite with minor Sandstone stringers as above.

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380-390 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace sandy in part, trace silty, poor trace carbonaceous material, trace sideritic in part with trace siderite fragments, trace pyrite with minor Sandstone stringers as above.

390-400 SHALE: medium grey, blocky, soft to firm, slightly micromicaceous, trace pyritic, trace carbonaceous material, minor Sandstone stringers as above.

400-410 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace pyritic, trace carbonaceous material, trace silty with minor Sandstone stringers as above.

410-420 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace pyritic, trace carbonaceous material, trace silty with 10% Sandstone stringers, light to medium grey, very fine grained, sub angular, well sorted, clay matrix and calcareous cement in part, silty, grades to sandy siltstone in part, tight, no shows

420-430 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace pyritic, trace carbonaceous material, trace silty with 10% Sandstone stringers and laminations light to medium grey, very fine grained, sub angular, well sorted, clay matrix and calcareous cement in part, trace pyritic, silty, grades to sandy siltstone in part, tight, no shows

430-440 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace pyritic, trace carbonaceous material, trace silty.

440-450 SHALE: medium grey, blocky, soft to moderately firm, slightly micromicaceous, trace pyritic, trace carbonaceous material, trace silty.

450-460 SHALE: medium grey, blocky to sub blocky, micromicaceous, occasionally part carbs, silty in part, firm to part soft, trace pyritic, part finely laminated with SILTSTONE and occasional SANDSTONE; off white to light grey, salt and pepper, lower very fine to trace lower fine, lithic, trace glauconitic and carbonaceous grains, moderately to well consolidated, clay with trace calcareous cement, friable in part, very minor medium grey silty MDSTN preserved, no shows.

460-470 SHALE: medium grey, blocky to sub blocky, micromicaceous, occasionally part carbs, silty in part, firm to part soft, trace pyritic, part finely laminated with SILTSTONE and occasional SANDSTONE; off white to light grey, salt and pepper, lower very fine to trace lower fine, lithic, trace glauconitic and carbonaceous grains, moderately to well consolidated, clay with trace calcareous cement, no shows.

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470-480 SHALE: medium grey, trace darker grey, blocky to sub blocky, micromicaceous, locally part silty, firm to part soft, trace nodules pyrite, occasional very fine SILTSTONE laminations, trace MDSTN, rare siderite fragments, argillaceous sample wash, tight, no shows.

480-490 SHALE: medium grey, blocky to sub blocky, part platy, micromicaceous, trace part carbs, silty in part, firm to soft, trace very fine micro laminations of SILTSTONE, light to medium grey, slightly salt and pepper, argillaceous, trace sideritic, moderate to well indurated, grading to very fine Sandstone in part, no shows.

490-500 SHALE: medium grey, blocky to sub blocky, part platy, micromicaceous, trace part carbs, silty in part, firm to soft, trace very fine micro laminations of SILTSTONE.

500-510 SHALE: medium grey, blocky, minor platy in part, slightly micromicaceous, trace silty, slightly carbonaceous with minor carbonaceous material, unidentifiable fossil fragments (casts?) poor trace pyritic with minor Siltstone laminations as above, occasionally sandy, grades to very fine grained Sandstone in part.

510-520 SHALE: as above, increasing arenaceous with depth, trace sideritic with occasional brown siderite fragments (nodules?) 3% Sandstone stringers, medium grey, very fine grained, sub angular, well sorted, clay matrix, trace calcareous, dark lithic grains, pyritic with pyrite nodules, trace glauconitic, silty, shaley in part, no visible porosity, no shows.

520-530 SHALE: medium grey, blocky, trace platy, slightly micromicaceous, trace silty in part, trace sandy in part, trace carbonaceous specs, trace sideritic with brown siderite fragments (nodules + laminations?) trace pyritic with occasional Sandstone and Siltstone stringers as above.

530-540 SHALE: medium grey, blocky, trace platy, slightly micromicaceous, trace carbonaceous material, pyrite nodules, trace sideritic, trace sandy and silty in part with minor Sandstone stringers, medium grey, very fine grained, sub angular, well sorted, clay cement, slightly calcareous, trace glauconitic, dark lithic grains, no visible porosity or shows.

540-550 SHALE: medium grey, blocky, trace platy, slightly micromicaceous, trace carbonaceous material, pyrite nodules, trace sideritic, trace sandy and silty in part with minor Sandstone stringers, medium grey, very fine grained, sub angular, well sorted, clay cement, slightly calcareous, trace glauconitic, dark lithic grains, no visible porosity or shows.

SAMPLE DESCRIPTIONS

550-560 SHALE: medium grey, blocky, trace platy, slightly micromicaceous, trace carbonaceous material, pyrite nodules, trace sideritic, trace Inoceramus, slightly sandy and silty in part with 5% Sandstone stringers, medium grey, very fine grained, sub angular, well sorted, clay cement, slightly calcareous, trace glauconitic, dark lithic grains, no visible porosity or shows.

560-570 SHALE: medium grey, blocky, minor platy, slightly micromicaceous, trace carbonaceous material, trace Inoceramus, trace pyritic, trace sandy and silty in part with minor Sandstone stringers, medium grey, very fine grained, sub angular, well sorted, clay cement, slightly calcareous, trace glauconitic, dark lithic grains, no visible porosity or shows.

570-580 SHALE: medium grey, becoming slightly darker with depth, blocky, increasing platy, slightly micromicaceous, trace carbonaceous material, poor trace pyritic, trace silty in part.

580-590 SHALE: medium to slightly darker grey, blocky, platy in part, slightly micromicaceous, trace carbonaceous material, trace Inoceramus, trace pyrite nodules, trace sandy and silty in part with minor Sandstone stringers as above.

590-602 SHALE: medium to part darker grey, blocky, platy in part, slightly micromicaceous, trace carbonaceous material, trace Inoceramus, trace pyrite nodules, trace sandy and silty in part with occasional Sandstone stringers as above.

Surface Casing Final total depth @ 602.0m reached on February 2nd 2014 at 19:48hrs
Drilled out through surface casing @ 602m on February 7th at 06:50 hrs.

602-610 SHALE: medium to dark grey, blocky, platy in part, slightly micromicaceous, trace carbonaceous material, trace Inoceramus, trace pyrite nodules, trace sandy and silty in part with Sandstone stringers as above with abundant cement in sample

610-620 SHALE: medium to dark grey, blocky, platy in part, slightly micromicaceous, slightly carbonaceous, slightly silty, trace sandy in part to minor SANDSTONE stringers, light to medium grey, lower fine grained, sub angular, well sorted, clay matrix, trace calcareous cement, occasional dark lithic grains, poor trace glauconitic, no visible porosity or show.

620-630 SHALE: medium to dark grey, blocky, platy in part, slightly micromicaceous, slightly carbonaceous, slightly silty, trace sandy in part with minor SANDSTONE stringers, light to medium grey, lower fine grained, sub angular, well sorted, clay matrix, trace calcareous cement, occasional dark lithic grains, poor trace glauconitic, no visible porosity or show.

630-640 SHALE: medium to dark grey, blocky, platy in part, slightly micromicaceous, slightly carbonaceous, slightly silty, trace sandy in part with trace SANDSTONE stringers as above.

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640-650 SHALE: medium to dark grey, blocky, platy in part, micromicaceous, slightly carbonaceous, slightly silty, trace sandy in part.

650-660 SHALE: medium to dark grey, blocky, platy in part, micromicaceous, slightly carbonaceous, poor trace pyritic, slightly silty, trace sandy in part with minor Sandstone stringers, light to medium grey, very fine to fine grained as above.

660-670 SHALE: medium to dark grey, blocky, platy in part, micromicaceous, slightly carbonaceous, poor trace pyritic, slightly silty, trace sandy in part with minor Sandstone stringers, light to medium grey, very fine to fine grained as above.

670-680 SHALE: medium to dark grey, blocky, platy in part, micromicaceous, slightly carbonaceous, poor trace pyritic, slightly silty, trace sandy in part with minor Sandstone stringers, light to medium grey, very fine to fine grained as above.

680-690 SHALE: medium to dark grey, blocky, platy in part, micromicaceous, slightly carbonaceous, poor trace pyritic, slightly silty, trace sandy in part with minor Sandstone stringers, light to medium grey, very fine to fine grained as above.

690-700 SHALE: medium to dark grey, blocky, platy in part, micromicaceous, slightly carbonaceous, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part with minor Sandstone stringers as above.

700-710 SHALE: medium to dark grey, blocky and platy, micromicaceous, slightly carbonaceous, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part with minor Sandstone stringers, light to medium grey, lower fine grained, sub angular, well sorted, quartz and chert, clay matrix, slightly calcareous, trace siliceous, dark lithic grains, trace pyritic, shaley in part, no visible porosity or shows.

710-720 SHALE: medium to dark grey, blocky and platy, micromicaceous, slightly carbonaceous, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part with minor Sandstone stringers, light to medium grey, lower fine grained, sub angular, well sorted, quartz and chert, clay matrix, slightly calcareous, trace siliceous, dark lithic grains, trace pyritic, shaley in part, no visible porosity or shows.

720-730 SHALE: medium to dark grey, platy, blocky in part, micromicaceous, slightly carbonaceous, soft to firm, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part with trace Sandstone laminations as above.

730-740 SHALE: medium to dark grey, blocky and platy, slightly micromicaceous, slightly carbonaceous, soft to firm, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part, poor trace plant remains with trace Sandstone laminations as above.

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740-750 SHALE: medium to dark grey, blocky and platy, slightly micromicaceous, slightly carbonaceous, soft to firm, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part, with trace Sandstone laminations, light to medium grey, upper very fine grained, sub angular, well sorted, clay matrix, slightly calcareous, dark lithic grains, trace pyritic, trace glauconitic, shaley in part, tight, no shows.

750-760 SHALE: medium to dark grey, blocky and platy, slightly micromicaceous, slightly carbonaceous, soft to firm, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part, with trace Sandstone laminations, light to medium grey, upper very fine grained, sub angular, well sorted, clay matrix, slightly calcareous, dark lithic grains, trace pyritic, trace glauconitic, shaley in part, tight, no shows.

760-770 SHALE: medium to dark grey, blocky and platy, slightly micromicaceous, slightly carbonaceous, soft to firm, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part, with trace Sandstone laminations, medium grey, upper very fine grained, sub angular, well sorted, clay matrix, slightly calcareous, dark lithic grains, trace pyritic, trace glauconitic, shaley in part, tight, no shows.

770-780 SHALE: medium to dark grey, blocky and platy, slightly micromicaceous, slightly carbonaceous, soft to firm, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part, with trace Sandstone laminations, medium grey, lower very fine grained, sub angular, well sorted, clay matrix, slightly calcareous, dark lithic grains, trace pyritic, trace glauconitic, shaley in part, tight, no shows.

780-790 SHALE: medium to dark grey, blocky and platy, slightly micromicaceous, slightly carbonaceous, soft to moderately firm, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part, with minor Sandstone laminations, medium grey, lower very fine grained, sub angular, well sorted, clay matrix, slightly calcareous, dark lithic grains, trace pyritic, trace glauconitic, shaley in part, tight, no shows.

790-800 SHALE: medium to dark grey, blocky and platy, slightly micromicaceous, slightly carbonaceous, soft to moderately firm, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part, with minor Sandstone stringers, medium grey, lower very fine grained, sub angular, well sorted, clay matrix, slightly calcareous, dark lithic grains, trace pyritic, trace glauconitic, occasionally silty, grades to sandy siltstone in part, shaley in part, tight, no shows.

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800-810 SHALE: medium to dark grey, blocky and platy, slightly micromicaceous, slightly carbonaceous, soft to moderately firm, poor trace pyritic with occasional pyrite nodules, slightly silty, trace sandy in part, with Sandstone laminations decreasing.

810-820 SHALE: medium to dark grey, blocky and platy, slightly micromicaceous, slightly carbonaceous, soft to moderately firm, poor trace pyritic with occasional pyrite nodules, slightly silty in part, trace Inoceramus.

820-830 SHALE: medium to dark grey, blocky and platy, slightly micromicaceous, slightly carbonaceous, soft to moderately firm, poor trace pyritic with occasional pyrite nodules, slightly silty in part with trace Siltstone stringers, medium grey, clay cement, slightly shaley, trace sandy, tight, no shows.

830-840 SHALE: medium to dark grey, blocky and platy, slightly micromicaceous, slightly carbonaceous, soft to moderately firm, trace pyrite nodules, trace micro fractures infilled with pyrite with trace Siltstone stringers as above.

840-850 SHALE: medium to part dark grey, blocky to platy and fissile in part, part moderately carbonaceous, micromicaceous in part, satiny texture in part, trace silty, firm, trace hard to part soft, trace calcareous partings, trace local calcite healing micro fractures, very minor Siltstone stringers, tight, no shows.

850-860 SHALE: medium to part dark grey, blocky to platy and fissile in part, part moderately carbonaceous, micromicaceous in part, satiny texture in part, trace silty, firm, trace hard to part soft, trace calcareous partings, silt increase in calcite healing micro fractures, very minor Siltstone stringers, tight, no shows.

860-870 SHALE: medium to part dark grey, blocky to platy and fissile in part, part moderately carbonaceous, micromicaceous in part, satiny waxy texture in part, trace silty, firm, trace hard to part soft, occasional calcite healing micro fractures, very minor Siltstone stringers, tight, no shows.

870-880 SHALE: medium to part dark grey, blocky to platy and fissile in part, part moderately carbonaceous, micromicaceous in part, satiny waxy texture in part, trace silty, firm, trace hard to part soft, trace acicular calcite, occasional calcite healing micro fractures, very minor Siltstone stringers, tight, no shows.

880-890 SHALE: medium to part dark grey, blocky to platy and fissile in part, part moderately carbonaceous, micromicaceous in part, satiny texture in part, firm, trace hard to part soft, trace acicular calcite, minor Claystone, increase to common calcite healing micro fractures.

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890-900 SHALE: medium to part dark grey, blocky to platy and fissile in part, part moderately carbonaceous, micromicaceous in part, satiny texture in part, firm, trace hard to part soft, trace acicular calcite, increase to common calcite healing micro fractures.

900-910 SHALE: medium to part dark grey, blocky to platy and fissile in part, part moderately carbonaceous, micromicaceous in part, satiny texture in part, firm, trace hard, soft in part, minor grading to silty, trace acicular calcite, minor Claystone, common micro fractures, trace Bentonite stringers.

910-920 SHALE: medium to part dark grey, blocky to platy and fissile in part, part moderately carbonaceous, micromicaceous in part, satiny texture in part, firm, trace hard to part soft, minor grading silty, minor Claystone, trace acicular calcite, very minor micro fractures, very rare Bentonite.

920-930 SHALE: medium to part dark grey, blocky to platy and fissile in part, part moderately carbonaceous, micromicaceous in part, satiny texture in part, firm, trace hard, soft in part, very rare micro fractures, minor Claystone, very rare Bentonite.

930-940 SHALE: medium to dark grey, blocky to sub fissile in part, part moderately carbonaceous, slightly silty, occasionally micromicaceous, occasional very fine calcite healed micro fractures, very rare pyritic, occasional dark brown mica flakes.

940-954 SHALE: medium to dark grey, blocky, sub fissile in part, part moderately carbonaceous, slightly silty, part micromicaceous, occasional micro fractures infilled with calcite with occasional Bentonite, trace brown mica flakes, tight, no shows

Arctic Red 954.00mMD, (953.89mTVD, -664.54mSS.)

954-960 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous with darker grey, part micromicaceous, occasional micro fractures infilled with calcite.

960-970 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous with darker grey, part micromicaceous, very rarely glaucic, trace calcareous partings, occasional micro fractures healed with calcite.

970-980 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous when darker grey, part micromicaceous, trace pyritic, trace siderite fragments, moderate micro fractures healed with calcite.

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980-990 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous when darker grey, local micro laminations visible, part micromicaceous, trace nodules pyrite, trace pyritic, very minor siderite fragments, minor micro fractures visible.

990-1000 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous when darker grey, part micromicaceous, trace nodules pyrite, trace pyritic, very minor siderite fragments, minor micro fractures visible.

1000-1010 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, micromicaceous in part, trace nodules pyrite, trace pyritic, very minor siderite fragments, trace micro fractures visible.

1010-1020 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, micromicaceous in part, trace nodules pyrite, trace pyritic, very minor siderite fragments, trace micro fractures visible.

1020-1030 SHALE: medium with dark grey, sub blocky, platy, part carbonaceous and fissile where darker grey, micromicaceous in part, trace nodules pyrite, trace pyritic.

1030-1040 SHALE: medium with dark grey, sub blocky, platy, part carbonaceous and fissile when darker grey, micromicaceous in part, trace nodules pyrite, trace pyritic.

1040-1050 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, firm to soft, micromicaceous in part, trace nodules pyrite, trace pyritic, very minor siderite fragments.

1050-1060 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, firm to soft, micromicaceous in part, trace nodules pyrite, very rarely pyritic.

1060-1070 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, firm to soft, micromicaceous in part, trace sideritic, trace nodules pyrite, very rarely pyritic, very minor dark brown siderite fragments.

1070-1080 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, firm to soft, micromicaceous in part, trace nodules pyrite, very rarely pyritic, very minor dark brown siderite fragments.

1080-1090 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, firm to soft, trace sideritic, micromicaceous in part, trace nodules pyrite, very rarely pyritic, very minor dark brown siderite fragments.

SAMPLE DESCRIPTIONS

1090-1100 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, firm to soft, micromicaceous in part, trace dark brown siderite fragments.

Martin House 1106.00mMD, (1105.82mTVD, -816.47mSS.)

1100-1110 SHALE: medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, firm to soft, trace sideritic, micromicaceous in part, trace dark brown siderite fragments.

1110-1120 SHALE; medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, silty in part, micromicaceous in part, trace to locally common glauconitic, trace dark brown siderite fragments; SANDSTONE off white to trace light grey, slightly salt and pepper in part, silt to very fine grained, sub angular, very well sorted, quartzose, slight to moderate with trace very calcareous with clay cement, locally part to very glauconitic, occasionally part shaley, no visible porosity.

1120-1130 SHALE; medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, silty in part, micromicaceous in part, trace to locally common glauconitic, trace dark brown siderite fragments; SANDSTONE off white to occasional grey grain, slightly salt and pepper in part, silt to very fine grained, sub angular, very well sorted, quartzose, slight with moderate and trace very calcareous with clay cement, occasional moderately glauconitic, occasionally partly shaley, no visible porosity

1130-1140 SANDSTONE: off white to occasional grey grain, slightly salt and pepper in part, silt to very fine grained, sub angular, very well sorted, quartzose, slight with moderate and trace very calcareous with clay cement, part glaucic, dense, tight, no visible porosity, SHALE; medium with dark grey, sub blocky, platy to fissile in part, part moderately carbonaceous, silty sandy in part, locally glauconitic, micromicaceous in part. no shows.

Imperial 1140.00mMD, (1139.81mTVD, -850.46mSS.)

1140-1150 SHALE: light to medium grey green, blocky and platy, slightly micromicaceous, slightly calcareous, trace pyritic, abundant Sandstone laminations as above.

1150-1160 SHALE: light to medium grey green, grey, blocky and platy, slightly micromicaceous, slightly calcareous, trace pyritic, abundant Sandstone laminations light grey, cream, quartz and light color chert, fine grained, sub angular, well sorted, calcareous, clay cement in part, glauconitic, sideritic in part, no visible porosity or show.

SAMPLE DESCRIPTIONS

1160-1170 SHALE: light to medium grey green, grey, blocky and platy, slightly micromicaceous, slightly calcareous, soft to moderately firm, trace pyritic, abundant Sandstone laminations light grey, cream, sparry yellow brown, quartz and light color chert, fine grained, sub angular, well sorted, calcareous, clay cement in part, glauconitic, sideritic in part, no visible porosity or show.

1170-1180 SHALE: light to medium grey green, grey, blocky and platy, slightly micromicaceous, slightly calcareous, soft to moderately firm, trace pyritic, abundant Sandstone laminations light grey, cream, sparry yellow brown, quartz and light color chert, very fine grained, sub angular, well sorted, calcareous, clay cement in part, glauconitic, sideritic in part, no visible porosity or show.

1180-1190 SHALE: medium grey, grey green in part, blocky and platy, slightly micromicaceous, slightly calcareous, soft to moderately firm, occasionally sandy, trace silty, trace pyritic, abundant Sandstone laminations light to medium grey, sparry yellow brown, quartz and light color chert, very fine grained, sub angular, well sorted, calcareous, clay cement in part, glauconitic, sideritic in part, no visible porosity or show.

1190-1200 SHALE: medium grey, grey green in part, blocky and platy, slightly micromicaceous, slightly calcareous, soft to moderately firm, occasionally sandy, trace silty, trace pyritic, abundant Sandstone laminations medium grey, quartz and light color chert, very fine grained, sub angular, well sorted, calcareous, clay cement in part, glauconitic, trace sideritic in part, no visible porosity or show.

1200-1210 SHALE: medium grey, grey green in part, blocky and platy, slightly micromicaceous, slightly calcareous, soft to moderately firm, occasionally sandy, trace silty, trace pyritic, abundant Sandstone laminations medium grey, quartz and light color chert, very fine grained, sub angular, well sorted, calcareous, clay cement in part, glauconitic, trace sideritic in part, no visible porosity or show.

1210-1220 SHALE: medium grey, grey green in part, blocky and platy, slightly micromicaceous, slightly calcareous, soft to moderately firm, occasionally sandy, trace silty, trace pyritic, trace Pelecyopods with abundant Sandstone laminations, grey, brown in part, grey green, fine grained, sub angular, well sorted, clay and calcareous cement, trace pyritic, trace glauconitic, sideritic in part, Ostracods, Gastropod, shaley in part, tight, no shows.

SAMPLE DESCRIPTIONS

1220-1230 SHALE: medium grey, grey green in part, blocky and platy, slightly micromicaceous, slightly calcareous, soft to moderately firm, occasionally sandy, trace silty, trace pyritic, trace Pelecyopods with abundant Sandstone laminations, light to medium grey, fine grained, sub angular, well sorted, clay and calcareous cement, trace pyritic, trace glauconitic, sideritic in part, shaley in part, tight, no shows.

1230-1240 SHALE: medium grey, slightly darker in part, grey green in part, blocky and platy, slightly micromicaceous, slightly calcareous, soft to moderately firm, occasionally sandy, trace silty, trace pyritic, trace Pelecyopods with abundant Sandstone laminations as above.

1240-1250 SHALE: medium grey, slightly darker in part, grey green in part, blocky and platy, slightly micromicaceous, slightly calcareous, soft to moderately firm, occasionally sandy, trace silty, trace pyritic, with minor Sandstone laminations as above.

1250-1260 SHALE: medium grey, slightly darker in part, grey green in part, blocky and platy, slightly micromicaceous, slightly calcareous, soft to moderately firm, occasionally sandy, trace silty, trace pyritic, with minor Sandstone laminations as above

1260-1270 SHALE: medium grey, blocky and platy, micromicaceous, slightly calcareous, occasionally sandy with 10% SANDSTONE stringers, light to medium grey, lower fine grained, sub angular, well sorted, calcareous and clay cement, trace dark lithic grains, silty, shaley in part, tight, no shows.

1270-1280 SHALE: medium grey, blocky and platy, micromicaceous, slightly calcareous, occasionally sandy with 20% SANDSTONE stringers, light to medium grey, lower fine grained, sub angular, well sorted, calcareous and clay cement, trace dark lithic grains, silty, shaley in part, unidentifiable fossil debris, tight, no shows.

1280-1290 SHALE: medium grey, blocky and platy, micromicaceous, slightly calcareous, occasionally sandy with 15% SANDSTONE stringers, light to medium grey, lower fine grained, sub angular, well sorted, calcareous and clay cement, trace dark lithic grains, silty, shaley in part, unidentifiable fossil debris, tight, no shows.

1290-1300 SHALE: medium grey, blocky and platy, micromicaceous, slightly calcareous, occasionally sandy with 10% SANDSTONE stringers, light to medium grey, lower fine grained, sub angular, well sorted, calcareous and clay cement, trace dark lithic grains, silty, shaley in part, unidentifiable fossil debris, tight, no shows.

SAMPLE DESCRIPTIONS

1300-1310 SHALE: medium grey, blocky and platy, micromicaceous, slightly calcareous, occasionally sandy with 10% SANDSTONE stringers, light to medium grey, lower fine grained, sub angular, well sorted, calcareous and clay cement, trace dark lithic grains, silty, shaley in part, unidentifiable fossil debris, tight, no shows.

1310-1320 SHALE: medium grey, blocky and platy, micromicaceous, slightly calcareous, trace sandy and silty in part, with 10% SANDSTONE stringers, light to medium grey, lower fine grained, sub angular, well sorted, calcareous and clay cement, trace dark lithic grains, silty, shaley in part, tight, no shows.

1320-1330 SHALE: medium grey, blocky and platy, micromicaceous, slightly calcareous, trace sandy and silty in part, with 40% SANDSTONE stringers, light to medium grey, very fine to lower fine grained, sub angular, well sorted, calcareous and clay cement, trace dark lithic grains, slightly sideritic, trace glauconitic, silty, shaley in part, tight, no shows.

1330-1340 SHALE: medium grey, blocky and platy, micromicaceous, slightly calcareous, trace sandy and silty in part, with 30% SANDSTONE stringers, light to medium grey, very fine to lower fine grained, sub angular, well sorted, calcareous and clay cement, trace dark lithic grains, slightly sideritic, trace glauconitic, silty, shaley in part, tight, no shows.

1340-1350 SHALE: medium grey, blocky and platy, micromicaceous, slightly calcareous, trace sandy and silty in part, with 40% SANDSTONE stringers, light to medium grey, very fine to lower fine grained, sub angular, well sorted, calcareous and clay cement, trace dark lithic grains, slightly sideritic, trace glauconitic, silty, shaley in part, tight, no shows.

1350-1360 SHALE: light to medium grey, blocky and platy, micromicaceous, slightly calcareous, trace carbonaceous material, trace sandy and silty in part, grades to shaley siltstone in part, with 10% SANDSTONE stringers as above.

1360-1370 SHALE: light to medium grey, blocky and platy, micromicaceous, slightly calcareous, trace carbonaceous material, trace sandy and silty in part, grades to shaley siltstone in part, with 10% SANDSTONE stringers as above.

1370-1380 SHALE: light to medium grey, blocky and platy, micromicaceous, slightly calcareous, trace carbonaceous material, trace sandy and silty in part, grades to shaley siltstone in part, with 30% SANDSTONE stringers, light to medium grey, very fine grained, sub angular, well sorted, calcareous and clay cement, silty, shaley in part, grades to sandy siltstone in part, trace dark lithic grains, trace glauconitic, no visible porosity, no show.

SAMPLE DESCRIPTIONS

1380-1390 SHALE: light to medium grey, part darker grey, blocky to platy, trace fissile, part micromicaceous, trace carbonaceous material, firm brittle to part soft, inter bedded with SANDSTONE, off white to medium grey green, slightly salt and pepper, silty to very fine grained, predominantly sub angular, trace dark lithic grains, occasionally slight to moderately glauconitic, clay cement, slightly to moderately calcareous, dense, tight, part grading to SILTSTONE, no shows.

1390-1400 SHALE: light to medium grey, part darker grey, blocky to platy, trace fissile, part micromicaceous, firm brittle to part soft, inter bedded with SANDSTONE, off white to medium grey green, slightly salt and pepper, silty to very fine grained, predominantly sub angular, trace dark lithic grains, occasionally slight to moderately glauconitic, very rare ferruginous, clay cement, slightly to moderately calcareous, dense, tight, part grading to SILTSTONE, no shows.

1400-1410 SHALE: light to medium grey, part darker grey, trace grey green, blocky to platy, trace fissile, part micromicaceous, firm brittle to part soft, inter bedded with SANDSTONE, off white to medium grey green, slightly salt and pepper, silty to very fine grained, predominantly sub angular, trace dark lithic grains, trace carbonaceous material, occasionally slight to moderately glauconitic, clay cement, slightly to moderately calcareous, dense, tight, part grading to SILTSTONE, no shows.

1410-1420 SANDSTONE: off white to grey green, slightly salt and pepper, silty to very fine grained, sub angular, occasional dark lithic grains, occasionally slight to moderately glauconitic, clay cement, slightly to moderately calcareous, dense, tight, trace micro fractures, SHALE; light to medium grey, part darker grey, blocky to platy, trace fissile, part micromicaceous, part silty sandy, firm brittle to part soft.

1420-1430 SANDSTONE: off white to grey green, slightly salt and pepper, silty to very fine grained, sub angular, occasional dark lithic grains, part slight to moderately glauconitic, clay cement, slightly to moderately calcareous, trace very calcareous, tight, SHALE; light to medium grey, part darker grey, blocky to platy, trace fissile, part micromicaceous, trace carbonaceous flakes, part silty sandy, firm brittle to part soft.

1430-1440 SANDSTONE: off white to grey green, slightly salt and pepper, silty to very fine grained, sub angular, occasional dark lithic grains, occasionally slight to moderately glauconitic, clay cement, slightly to moderately calcareous, trace very calcareous, dense, tight, no shows,

1440-1450 SILTSTONE: light grey, slightly salt and pepper, quartzose, clay with slight to trace very calcareous cement, trace carbonaceous flakes, occasionally grading to very fine Sandstone, glauconitic in part, tight, no shows, interbedded with SHALE; light to medium grey, sub blocky to platy, trace fissile, part micromicaceous, minor carbonaceous flakes, more commonly silty sandy.

SAMPLE DESCRIPTIONS

1450-1460 SILTSTONE: off white to light grey, slightly salt and pepper, quartzose, clay with slight to trace very calcareous cement, common scattered carbonaceous flakes, occasionally grading to very fine Sandstone, glauconitic in part, tight, no shows, interbedded with SHALE; light to medium grey, sub blocky to platy, trace fissile, part micromicaceous, minor carbonaceous flakes, more commonly silty sandy.

1460-1470 SILTSTONE: off white to light grey, trace buff white, slightly salt and pepper, quartzose, clay with slight to trace very calcareous cement, moderate to trace very common carbonaceous material, occasionally grading to very fine Sandstone, glauconitic in part, tight, no shows, interbedded with SHALE; light to medium grey, sub blocky to platy, trace fissile, part silty sandy, part micromicaceous, minor carbonaceous flakes, satiny texture in part.

1470-1480 SILTSTONE: off white to light grey, slightly salt and pepper, quartzose, clay with part calcareous cement, moderate to trace very common carbonaceous material, trace glauconitic, tight, interbedded with SHALE; light to medium grey, sub blocky to platy, trace fissile, satiny texture in part.

1480-1490 SILTSTONE: off white to light grey, slightly salt and pepper, quartzose, clay with trace local calcareous cement, moderate carbonaceous material, trace locally glauconitic, tight, trace grading to SANDSTONE; off white to light grey, slightly salt and pepper, very fine quartz grains, sub angular, clay trace calcareous cement, trace carbonaceous flakes, interbedded with SHALE; light to medium grey, sub blocky to platy, trace fissile, satiny texture in part.

1490-1500 SILTSTONE: off white to light grey, pale green grey, slightly salt and pepper, quartzose, clay with more common calcareous reaction, moderate carbonaceous material, part glauconitic, tight, grading to SANDSTONE; off white to light grey, pale green grey, trace buff white, slightly salt and pepper, lithic, very fine quartz grains, sub angular, clay with more common calcareous cement, minor SHALE, no shows.

1500-1510 SILTSTONE: off white to light grey, part pale green grey, slightly salt and pepper, quartzose, lithic, clay with slight with trace very calcareous reaction, moderate carbonaceous material, part moderately to trace very glauconitic, tight, grading in part to SANDSTONE; off white to light grey, pale green grey, trace buff white, slightly salt and pepper, lithic, silt to very fine quartz grains, sub angular, clay with increasing calcareous cement, sideritic, minor SHALE, no shows.

SAMPLE DESCRIPTIONS

1510-1520 SANDSTONE: off white to light grey, part pale green grey, trace buff white, slightly salt and pepper, lithic, silt to lower very fine quartz grains, sub angular, clay with slight and trace very calcareous cement, sideritic, argillaceous in part, minor carbonaceous flakes, glauconitic in part, firm to part hard, grading to SILTSTONE in part, minor silty SHALE.

1520-1530 SANDSTONE: off white to light grey, trace buff white, slightly salt and pepper, lithic, silt to lower very fine quartz grains, sub angular, clay with trace calcareous cement, sideritic, argillaceous in part, very fine carbonaceous material seen throughout, trace locally glauconitic, firm to part hard, grading in part to SILTSTONE, minor SHALE.

1530-1540 SANDSTONE: off white to light grey, slightly salt and pepper, lithic, silt to lower very fine quartz grains, sub angular, predominantly clay cement with very minor calcareous cement, argillaceous in part, very fine carbonaceous material, trace glauconitic, sideritic, firm to part hard, grading in part to SILTSTONE, minor SHALE stringers.

1540-1550 SANDSTONE: off white to light grey, slightly salt and pepper, lithic, silt to lower very fine quartz grains, sub angular, predominantly clay cement with very minor calcareous cement, argillaceous in part, sideritic, very fine carbonaceous material, trace glauconitic, firm to part hard, grading in part to SILTSTONE, minor SHALE stringers.

1550-1560 SANDSTONE: off white to light grey, slightly salt and pepper, lithic, silt to lower very fine quartz grains, sub angular, predominantly clay cement with occasional calcareous cement, argillaceous in part, sideritic, very fine carbonaceous material, trace glauconitic, firm to part hard, occasionally grading to SILTSTONE, minor SHALE stringers.

1560-1570 SILTSTONE: light to medium grey, clay cement, slightly calcareous in part, sandy and shaley in part, occasionally grades to silty very fine grained sandstone in part, occasional carbonaceous material, trace dark lithic grains, tight, no shows with minor Shale laminations, medium to dark grey, blocky and platy, slightly micromicaceous, silty in part, slightly carbonaceous.

1570-1580 SANDSTONE: cream to spotty tan, quartzose, upper very fine grained, sub angular, well sorted, calcareous, minor dark lithic grains, poor trace glauconitic, tight to poor intergranular porosity 2%, spotty tan dead oil stain, pale yellow dry fluorescence, pale yellow very slow streaming cut fluorescence, with Shale and Siltstone as above.

SAMPLE DESCRIPTIONS

1580-1590 SANDSTONE: as above with Siltstone as above with SHALE medium grey, blocky, platy in part, micro mica, occasionally silty, slightly carbonaceous.

1590-1600: SANDSTONE cream to spotty tan, quartzose, lower very fine grained, sub angular, well sorted, calcareous, minor dark lithic grains, trace glauconitic, no visible porosity, spotty tan dead oil stain, pale yellow dry fluorescence, pale yellow very slow streaming cut fluorescence, with interbed Shale and Siltstone as above.

1600-1610 SHALE: medium to slightly darker grey, blocky to sub platy, micromicaceous, occasionally silty, trace sideritic in part, minor carbonaceous specks, slightly sandy in part, with interbedded Siltstone and Sandstone as above.

1610-1620 SHALE: medium to slightly darker grey, blocky to sub platy, micromicaceous, occasionally silty, trace sideritic in part, minor carbonaceous specks, slightly sandy in part, with interbedded Siltstone light to medium grey, calcareous and clay cement, sandy, grades to very fine grained sandstone in part, slightly shaley, trace dark lithic grains, trace carbonaceous material, trace mica flakes, tight, no show with minor Sandstone as above.

1620-1630 SHALE: as above with Siltstone as above and occasional brown Siltstone, sideritic, slightly calcareous, sandy occasionally grades to very fine grained sandstone in part, occasionally shaley, tight, no show.

1630-1640 SHALE: medium grey, slightly darker grey in part, blocky, sub fissile in part, slightly micromicaceous, trace silty in part, trace pyrite nodules with interbedded Siltstone stringers as above.

1640-1650 SHALE: medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, trace silty in part, trace pyrite nodules with interbedded Siltstone stringers as above.

1650-1660 SHALE: medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, trace silty in part, trace minor carbonaceous material, trace minor siltstone stringers as above.

1660-1670 SHALE: medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, trace silty in part, trace minor carbonaceous material, trace minor Siltstone stringers, medium grey, slightly calcareous and clay cement, trace dark lithic grains, shaley, tight, no shows.

1670-1680 SHALE: predominantly medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, silty in part, trace minor carbonaceous material, trace minor Siltstone stringers as above.

SAMPLE DESCRIPTIONS

1680-1690 SHALE: predominantly medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, silty in part, trace minor carbonaceous material, trace minor Siltstone stringers as above.

1690-1700 SHALE: predominantly medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, silty in part, trace minor carbonaceous material, trace minor Siltstone stringers as above.

1700-1710 SHALE: predominantly medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, silty in part, trace minor carbonaceous material, trace minor Limestone stringers, cream to buff, mudstone to wackestone, trace unidentifiable fossil fragments (Gastropod) dense, no shows.

1710-1720 SHALE: predominantly medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, silty in part, trace minor carbonaceous material, trace minor Siltstone stringers as above.

1720-1730 SHALE: predominantly medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, silty in part, trace minor carbonaceous material.

1730-1740 SHALE: predominantly medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, silty in part, trace minor carbonaceous material.

1740-1750 SHALE: predominantly medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, trace silty in part, trace minor carbonaceous material.

1750-1760 SHALE: predominantly medium grey, slightly darker grey in part, platy and sub fissile, blocky in part, slightly micromicaceous, trace silty in part, trace minor carbonaceous material.

1760-1770 SHALE: predominantly medium grey, trace minor darker grey in part, platy and sub fissile, slightly micromicaceous, trace silty in part, trace minor carbonaceous material.

1770-1780 SHALE: predominantly medium grey, trace minor darker grey in part, platy and sub fissile, trace blocky, slightly micromicaceous, trace silty in part, trace minor carbonaceous material.

SAMPLE DESCRIPTIONS

1780-1790 SHALE: medium grey to part darker grey, sub fissile to fissile, part platy, trace sub blocky, part micromicaceous, argillaceous, satiny waxy appearance, trace scattered very fine carbonaceous material, trace locally silty, sparse pinpoint disseminated pyrite, soft to part firm, very rare grading silty, common well ground cuttings.

1790-1800 SHALE: medium grey to part darker grey, sub fissile to fissile, part platy, trace sub blocky, satiny waxy appearance, part micromicaceous, argillaceous, trace scattered very fine carbonaceous material, sparse pinpoint disseminated pyrite, trace locally silty, soft to part firm, very rare grading silty.

1800-1810 SHALE: medium grey to part darker grey, sub fissile to fissile, part platy, trace sub blocky, part micromicaceous, satiny waxy appearance, argillaceous, sparse pinpoint disseminated pyrite, trace scattered very fine carbonaceous material, trace locally silty, soft to part firm, common well ground cuttings.

1810-1820 SHALE: medium grey to part darker grey, sub fissile to fissile, part platy, trace sub blocky, part micromicaceous, argillaceous, satiny appearance, sparse pinpoint disseminated pyrite, decreased amount to very minor scattered very fine carbonaceous material, soft to part firm.

1820-1830 SHALE: medium grey to trace darker grey, sub fissile to fissile, part sub blocky to platy, part micromicaceous, satiny appearance, argillaceous, slightly carbonaceous in part, trace pinpoint disseminated pyrite, trace local carbonaceous material, soft to part firm, common well ground cuttings.

1830-1840 SHALE: medium grey to trace darker grey, sub fissile to fissile, part sub blocky to platy, part micromicaceous, argillaceous, slightly carbonaceous in part, trace pinpoint disseminated pyrite, very minor grading silty, soft to part firm, common well ground cuttings.

1840-1850 SHALE: medium grey to trace darker grey, sub fissile to fissile, part sub blocky to platy, part micromicaceous, argillaceous, slightly carbonaceous in part, trace pinpoint disseminated pyrite, satiny appearance, very minor grading silty, soft to part firm, common well ground cuttings.

1850-1860 SHALE: medium grey to trace darker grey, sub fissile to fissile, part sub blocky to platy, part micromicaceous, argillaceous, slightly carbonaceous in part, locally common very fine LIMESTONE grains (very good calcareous reaction), trace pinpoint disseminated pyrite, satiny appearance, very minor grading silty, soft to part firm, common well ground cuttings.

1860-1867 SHALE: medium grey to trace darker grey, sub fissile to fissile, part sub blocky to platy, part micromicaceous, argillaceous, slightly carbonaceous in part, locally common very fine LIMESTONE grains (very good calcareous reaction), trace pinpoint disseminated pyrite, soft to part firm.

SAMPLE DESCRIPTIONS

1867-1880 SHALE: brown black to black, minor medium brown, rare medium grey, predominantly carbs, micromicaceous in part, blocky to sub blocky to fissile in part, soft to firm, trace locally calcitic, trace calcite filled micro fractures, trace pyritic, common disseminated pinpoint pyrite, silty texture in part, trace silty micro laminations, no fluorescence, very slow weak pale halo cut.

1880-1890 SHALE: brown black to black, minor medium brown, predominantly carbs, blocky to sub blocky to fissile in part, firm brittle to part soft, trace calcite filled micro fractures, trace pyritic, silty texture in part, no fluorescence, very slow weak pale halo cut.

1890-1900 SHALE: very dark grey, blocky, sub fissile, slightly micromicaceous, siliceous, hard, brittle in part, carbonaceous, silty texture, pyritic with pyrite nodules, good trace spicule, trace small fracture infilled with calcite, shale occasionally brown and bituminous and soft (Bit Damage?), very slow weak pale yellow cloudy cut.

Upper Canol 1902.70mMD, (1896.54mTVD, -1607.19mSS.)

1900-1910 SHALE: very dark grey, blocky, sub fissile, slightly micromicaceous, siliceous, hard, brittle in part, carbonaceous, silty texture, trace pyritic, trace spicule, shale occasionally brown and bituminous (Bit Damage?), show as above.

1910-1920 SHALE: very dark grey, trace black, blocky, sub fissile, slightly micromicaceous, siliceous, becoming calcareous in part, hard, brittle in part, carbonaceous, silty texture, trace pyritic with pyrite nodules, trace fossil casts(pellets?), with trace minor dark grey brown bituminous shale as above, with show as above.

1920-1930 SHALE: dark grey to black, blocky, sub fissile, slightly micromicaceous, siliceous, calcareous in part, hard, brittle in part, carbonaceous, silty texture, trace pyritic with pyrite nodules, with show as above.

**** Lower Canol 1935.80mMD, (1924.75mTVD, -1635.40mSS.)**

1930-1940 SHALE: dark grey, occasionally grades to black, blocky, sub fissile in part, siliceous, hard, occasionally brittle, trace pyritic with occasional pyrite nods, slightly calcareous in part, pale yellow cloudy fluorescence in solvent, trace minor Limestone stringers, mottled grey white, argillaceous, dense.

1940-1950 SHALE: dark grey, occasionally grades to black, blocky, sub fissile in part, siliceous, hard, occasionally brittle, trace pyritic with occasional pyrite nods, slightly calcareous in part, brown soft bituminous shale in part, pale yellow cloudy fluorescence in solvent, increasing hydrocarbon odor, trace Limestone laminations as above.

SAMPLE DESCRIPTIONS

1950-1960 SHALE: very dark grey, brown black to black, moderate to very carbonaceous in part, siliceous cement, blocky to sub blocky, trace fissile, firm to hard angular chips, rare calcareous partings, trace pyritic banding, trace pyritized, pinpoint disseminated pyrite common, no fluorescence, with occasional SHALE grey brown, blocky, soft, bituminous, weak slow pale cloudy yellow cut.

1960-1970 SHALE: very dark grey, black, brown black, carbonaceous to less carbonaceous where more siliceous, siliceous with trace local weak calcareous cement, blocky to sub blocky, trace locally fissile, firm to hard, local very fine pyritic banding, pinpoint disseminated pyrite common, trace muddy shaley LIMESTONE stringers, no fluorescence, very slow weak cloudy pale yellow halo cut.

1970-1980 SHALE: very dark grey, black, part brown black, carbonaceous to moderately carb, siliceous with trace local weak calcareous cement, blocky to sub blocky, shards in part, firm, very firm to hard, local very fine pyritic banding, pinpoint disseminated pyrite common, trace nodules pyrite, trace muddy shaley LIMESTONE stringers, no fluorescence, with occasional SHALE grey brown, blocky, soft, bituminous, weak slow pale cloudy yellow cut.

1980-1990 SHALE: very dark grey, black, part brown black, carbonaceous to moderately carb, siliceous with trace local weak calcareous cement, blocky to sub blocky, shards in part, rubbly appearance common, firm, very firm to hard, local very fine pyritic banding, pinpoint disseminated pyrite common, more common nodules pyrite, trace muddy shaley LIMESTONE stringers, common mud additive OPTISEAL III visible in samples, with occasional SHALE grey brown, blocky, soft, bituminous, weak slow pale cloudy yellow cut.

1990-2000 SHALE: very dark grey, black, part brown black, carbonaceous to moderately carb, siliceous with trace slight calcareous reaction, blocky to sub blocky, shards in part, rubbly appearance common, firm, very firm to hard, commonly brittle, pinpoint disseminated pyrite common, moderate nodules pyrite, no fluorescence, with occasional SHALE grey brown, blocky, soft, bituminous, weak slow pale cloudy yellow cut.

2000-2010 SHALE: dark grey to very dark grey, grades to black in part, blocky, sub fissile in part, carbonaceous, hard and siliceous, often brittle, increasing calcareous, pyritic, slightly micromicaceous, occasional grey brown Shale blocky soft, bituminous, pale yellow slow cloudy cut in part.

2010-2020 SHALE: dark grey to very dark grey, grades to black in part, blocky, sub fissile in part, hard, siliceous and calcareous, brittle in part, carbonaceous, pyritic, slightly micromicaceous, occasional grey brown Shale blocky soft, bituminous, pale yellow slow cloudy cut in part. Trace minor Limestone laminations medium to dark grey, mudstone, argillaceous, dense.

SAMPLE DESCRIPTIONS

2020-2030 SHALE: very dark grey, grades to black in part, blocky, slightly micromicaceous, carbonaceous, siliceous and calcareous, hard, brittle in part, trace pyritic, slightly silty texture, occasional grey brown bituminous shale, blocky, soft, slow pale yellow cloudy cut in solvent, weak hydrocarbon odor.

2030-2040 SHALE: very dark grey, grades to black in part, blocky, slightly micromicaceous, carbonaceous, siliceous and calcareous, hard, brittle in part, trace pyritic, slightly silty texture, occasional grey brown bituminous shale, blocky, soft, slow pale yellow cloudy cut in solvent, weak hydrocarbon odor.

2040-2050 SHALE: very dark grey, blocky, slightly micromicaceous, carbonaceous, siliceous and calcareous, hard, brittle in part, trace pyritic with trace pyrite nodules, silty texture in part, occasional grey brown bituminous shale, blocky, soft, slow pale yellow cloudy cut in solvent, weak hydrocarbon odor, trace micro fracture infilled with calcite.

2050-2060 SHALE: very dark grey, blocky, slightly micromicaceous, carbonaceous, siliceous and calcareous, hard, brittle in part, trace pyritic with increasing pyrite nodules, silty texture in part, occasional grey brown bituminous shale, blocky, soft, slow pale yellow cloudy cut in solvent, hydrocarbon odor.

2060-2070 SHALE: very dark grey, blocky, slightly micromicaceous, carbonaceous, siliceous and calcareous, hard, brittle in part, trace pyritic with pyrite nodules, silty texture in part, occasional grey brown bituminous shale, blocky, soft, slow pale yellow cloudy cut in solvent, hydrocarbon odor.

2070-2080 SHALE: very dark grey, black, part brown black, carbonaceous to moderately carb, siliceous with part very slightly calcareous to trace moderately calcareous, blocky, rubbly, trace shards, silty appearance in part, firm, very firm to hard, commonly brittle, pinpoint disseminated pyrite common, trace nodules pyrite, with occasional SHALE grey brown, blocky, soft, bituminous, weak slow pale cloudy yellow cut.

2080-2090 SHALE: very dark grey, black, part brown black, carbonaceous to moderately carb, siliceous with slightly to part moderately calcareous, blocky, rubbly, firm, very firm to hard, commonly brittle, pinpoint disseminated pyrite common, trace pyritic, minor SHALE grey brown, blocky, soft, bituminous, weak slow pale cloudy yellow cut.

2090-2100 SHALE: very dark grey, black, part brown black, carbonaceous to part moderately carbonaceous when more siliceous, with slightly to part moderately calcareous, blocky, rubbly, firm, very firm to hard, commonly brittle, pinpoint disseminated pyrite common, trace pyritic, very rare calcite healing micro fracture, minor SHALE grey brown, blocky, soft, bituminous, weak slow pale cloudy yellow cut.

SAMPLE DESCRIPTIONS

2100-2110 SHALE: very dark grey, black, part brown black, carbs, siliceous, locally slight to moderately calcareous, blocky, firm, very firm to hard, brittle, pinpoint disseminated pyrite common, trace pyritic, trace calcite healing micro fractures, minor SHALE grey brown, soft, bituminous, weak slow pale cloudy yellow cut.

2110-2120 SHALE: very dark grey, black, part brown black, carbs, siliceous, locally slight to moderately calcareous, blocky, firm, very firm to hard, brittle, pinpoint disseminated pyrite common, trace pyritic, very rare micro fractures, occasional SHALE grey brown, soft, bituminous, weak slow pale cloudy yellow cut.

2120-2130 SHALE: very dark grey, blocky, carbonaceous, siliceous and calcareous, hard, common brittle, sub fissile in part, slightly micromicaceous, trace pyritic, occasional Shale brown, bituminous, soft. Pale yellow slow cloudy cut in solvent, weak hydrocarbon odor, with trace minor Limestone laminations, mottled medium grey cream, mudstone, argillaceous, dense.

2130-2140 SHALE: very dark grey, blocky, carbonaceous, siliceous, calcareous decreasing, hard, common brittle, sub fissile in part, slightly micromicaceous, trace pyritic, occasional Shale brown, bituminous, soft. Pale yellow slow cloudy cut in solvent, hydrocarbon odor.

2140-2152 SHALE: very dark grey, blocky, carbonaceous, siliceous and calcareous, hard, common brittle, sub fissile in part, slightly micromicaceous, trace pyritic, occasional Shale brown, bituminous, soft. Pale yellow slow cloudy cut in solvent, weak hydrocarbon odor, with trace minor Limestone laminations, mottled medium grey cream, mudstone, argillaceous, dense.

ICP reached on February 13th, 2014. 09:05hrs.

Ext to: 2152.00mMD, (2013.99mTVD, -1724.64mSS, 240.52m VS)
64.61m North 231.69m West of Well Center

Grid N/E Y/X: N 7210084.220m, E 604172.260m
Lat with Long: N 65° 0' 0.7, W 126° 47' 26.41

SAMPLE DESCRIPTIONS

Drilled out through Intermediate casing on February 16th, 2014 at 11:05hrs

2152-2170 SHALE: very dark grey, grades to black in part, blocky, carbonaceous, siliceous and calcareous, moderately firm to occasionally hard, minor brittle, sub fissile in part, slightly micromicaceous, trace pyritic, occasional Shale brown, blocky, bituminous, soft. Pale yellow slow cloudy cut in solvent, weak hydrocarbon odor.

2170-2190 SHALE: very dark grey, grades to black in part, blocky, carbonaceous, siliceous and slightly decreasing calcareous, moderately firm to occasionally hard, occasionally brittle, sub fissile in part, slightly micromicaceous, trace pyritic, occasional Shale brown, blocky, bituminous, soft. Pale yellow slow cloudy cut in solvent, weak hydrocarbon odor.

2190-2210 SHALE: very dark grey, grades to black in part, blocky, carbonaceous, siliceous and slightly calcareous, moderately firm to occasionally hard, occasionally brittle, sub fissile in part, trace micromicaceous, pyritic with occasional pyrite nodules, with occasional Shale brown, blocky, bituminous, soft. Pale yellow slow cloudy cut in solvent.

2210-2230 SHALE: very dark grey to black, blocky, occasionally part sub fissile, part rubbly, carbonaceous, soft to moderately firm to occasionally hard, occasionally siliceous with part slightly calcareous, micromicaceous in part, trace disseminated pinpoint pyrite, trace nodular pyrite, very minor local very very fine pyritic laminations, occasional brown black SHALE, blocky, bituminous, soft; very weak slow pale cloudy yellow cut.

2230-2250 SHALE: very dark grey to black, blocky, occasionally part sub fissile, part rubbly, carbonaceous, soft to moderately firm to occasionally hard, occasionally siliceous with part slightly calcareous, micromicaceous in part, trace disseminated pinpoint pyrite, trace nodular pyrite, very minor local very very fine pyritic laminations, occasional brown black SHALE, blocky, bituminous, soft; very weak slow pale cloudy yellow cut.

2250-2060 SHALE: very dark grey to black, blocky, occasionally part sub fissile, carbonaceous, soft to moderately firm to occasionally hard, occasionally siliceous with trace part calcareous, micromicaceous in part, trace disseminated pinpoint pyrite, trace nodular pyrite, occasional brown black SHALE, blocky, bituminous, soft; very weak slow pale cloudy yellow cut.

SAMPLE DESCRIPTIONS

2260-2080 SHALE: very dark grey to black, blocky, trace part sub fissile to fissile, part rubbly, carbonaceous, soft to firm to occasionally hard, slight increase in occurring siliceous with more commonly slightly to moderately calcareous, micromicaceous in part, trace disseminated pinpoint pyrite, occasional nodular pyrite, trace very very fine pyritic laminations, occasional brown black SHALE, blocky, bituminous, soft; common Bit generated texture, very weak slow pale cloudy yellow cut.

2080-2300 SHALE: very dark grey to black, blocky, trace part sub fissile to fissile, part rubbly, carbonaceous, soft to firm to occasionally hard, slight increase in occurring siliceous with more commonly slightly to moderately calcareous, micromicaceous in part, trace disseminated pinpoint pyrite, occasional nodular pyrite, trace very very fine pyritic laminations, occasional brown black SHALE, blocky, bituminous, soft; common Bit generated texture, very weak slow pale cloudy yellow cut.

2300-2320 SHALE: very dark grey to black, blocky, trace part sub fissile to fissile, part rubbly, carbonaceous, soft to firm to occasionally hard, moderately siliceous with slight to part moderately calcareous, micromicaceous in part, trace disseminated pinpoint pyrite, occasional nodular pyrite, with occasional brown black SHALE, blocky, bituminous, soft to slightly firm; common BGT, very weak slow pale cloudy yellow cut.

2320-2340 SHALE: very dark grey to black, blocky, trace part sub fissile to fissile, part rubbly, carbonaceous, soft to firm to occasionally hard, moderately siliceous with moderately to part slightly calcareous, micromicaceous in part, occasional nodular pyrite, with occasional brown black SHALE, blocky, bituminous, soft; moderately common BGT, very weak slow pale cloudy yellow cut.

2340-2360 SHALE: very dark grey to black, blocky, trace shards, part rubbly, carbonaceous, firm to occasionally hard, part soft, part moderately siliceous with slight to moderately calcareous, micromicaceous in part, trace nodular pyrite, with occasional brown black SHALE, blocky, bituminous, soft to slightly firm; very weak slow pale cloudy yellow cut.

2360-2380 SHALE: very dark grey to black, blocky, part rubbly, carbonaceous, firm to occasionally hard, part soft, brittle in part, part trace to moderately siliceous with slight to part moderately calcareous, micromicaceous in part, trace pyritic laminations, minor nodular pyrite, trace pyritic fragments, pinpoint disseminated pyrite common, with occasional brown black SHALE, blocky, bituminous, soft to slightly firm; very weak slow pale cloudy yellow cut.

SAMPLE DESCRIPTIONS

2380-2400 SHALE: very dark grey to black, blocky, part rubbly, carbonaceous, firm to occasionally hard, part soft, brittle in part, part trace to moderately siliceous with slight to part moderately calcareous, micromicaceous in part, trace pyritized, occasional nodular pyrite, trace pyritic fragments, pinpoint disseminated pyrite common, with occasional brown black SHALE, blocky, bituminous, soft to slightly firm; very weak slow pale cloudy yellow cut.

2400-2420 SHALE: very dark grey to black, blocky, part rubbly, carbonaceous, soft to firm to occasionally hard, part trace to moderately siliceous with slight to trace very calcareous, micromicaceous in part, occasional LIMESTONE stringers, off white, part cream, wackestone, muddy, silty, shaley, part pyritic, with occasional brown black SHALE, blocky, bituminous, soft to slightly firm; common Bit generated texture, very weak slow pale cloudy yellow cut.

2420-2430 SHALE: very dark grey to black, blocky, part rubbly, carbonaceous, soft to firm to occasionally hard, part trace to moderately siliceous with slight to trace very calcareous, micromicaceous in part, occasional LIMESTONE stringers, off white, part cream, wackestone, silty, muddy, shaley, part pyritic, with occasional brown black SHALE, blocky, bituminous, soft to slightly firm; common Bit generated texture, very weak slow pale cloudy yellow cut.

2430-2450 SHALE: very dark grey to black, blocky, part rubbly, carbonaceous, soft to firm to occasionally hard, part trace to moderately siliceous with slight to trace very calcareous, micromicaceous in part, slightly pyritic, show as above. LIMESTONE stringers as above, but decreasing.

2450-2470 SHALE: very dark grey, grades to black, blocky, sub fissile, carbonaceous, common brittle, firm, siliceous, slightly calcareous, trace pyritic, slightly micromicaceous, trace pyrite laminations, pale yellow slow cloudy cut with minor LIMESTONE laminations, mottled grey cream, mudstone to wackestone, argillaceous, grades to marlstone in part, trace pyritic, no visible porosity.

2470-2490 SHALE: very dark grey, grades to black, blocky, sub fissile, carbonaceous, common brittle, firm, siliceous, slightly calcareous, trace pyritic with trace pyrite nodules, slightly micromicaceous, trace pyrite laminations, pale yellow slow cloudy cut with minor LIMESTONE laminations as before.

2490-2510 SHALE: very dark grey, grades to black, blocky, sub fissile, carbonaceous, common brittle, firm to hard, siliceous, calcareous cement decreasing, trace pyritic with trace pyrite nodules, slightly micromicaceous, pale yellow slow cloudy cut. No visible limestone laminations.

SAMPLE DESCRIPTIONS

2510-2530 SHALE: very dark grey, grades to black, blocky, sub fissile, carbonaceous, common brittle, firm to hard, siliceous, slightly calcareous, trace pyritic with trace pyrite nodules, slightly micromicaceous, pale yellow slow cloudy cut. No visible limestone laminations.

2530-2550 SHALE: very dark grey, grades to black, blocky, sub fissile, carbonaceous, common brittle, firm to hard, siliceous, very slightly calcareous, trace pyritic with trace pyrite nodules, slightly micromicaceous, pale yellow slow cloudy cut.

2550-2570 SHALE: very dark grey, grades to black, blocky, sub fissile, carbonaceous, common brittle, firm to hard, siliceous, very slightly calcareous, trace pyritic with trace pyrite nodules, trace pyrite laminations, slightly micromicaceous, pale yellow slow cloudy cut.

2570-2590 SHALE: very dark grey, grades to black, blocky, sub fissile, carbonaceous, common brittle, firm to hard, siliceous, very slightly calcareous, trace pyritic with trace pyrite nodules, trace pyrite laminations, slightly micromicaceous, pale yellow slow cloudy cut. Poor trace LIMESTONE laminations as before.

2590-2610 SHALE: very dark grey, grades to black, blocky, sub fissile, carbonaceous, common brittle, firm to hard, siliceous, very slightly calcareous, trace pyritic with trace pyrite nodules, trace pyrite laminations, slightly micromicaceous, pale yellow slow cloudy cut.

2610-2630 SHALE: very dark grey to black, blocky, sub fissile, carbonaceous, common brittle, firm to hard, siliceous, very slightly calcareous, trace pyritic with trace pyrite nodules, slightly micromicaceous, pale yellow slow cloudy cut. Trace minor brown siderite laminations and sideritic Claystone laminations.

2630-2650 SHALE: very dark grey to black, blocky, sub fissile, carbonaceous, common brittle, firm to hard, siliceous, slightly calcareous, pyritic with trace pyrite nodules, slightly micromicaceous, pale yellow slow cloudy cut. Trace minor brown siderite laminations and sideritic Claystone laminations.

2650-2660 SHALE: very dark grey to black, blocky, sub fissile, carbonaceous, brittle, firm to hard, siliceous, very slightly calcareous, trace pyritic with trace pyrite nodules, slightly micromicaceous, pale yellow slow cloudy cut.

2660-2680 SHALE: very dark grey to black, blocky, part rubbly, trace shards, carbonaceous, firm to occasionally hard, brittle, siliceous with slightly calcareous in part, micromicaceous in part, trace calcite healed micro fracture, moderate Bit generated texture, very weak slow pale yellow cut.

SAMPLE DESCRIPTIONS

2680-2700 SHALE: very dark grey to black, blocky, part rubbly, trace shards, carbonaceous, brittle, firm to occasionally hard, siliceous with slightly calcareous in part, micromicaceous in part, pinpoint disseminated pyrite common, trace locally pyritic, minor nodular pyrite, moderate Bit generated texture, very weak slow pale cloudy yellow cut.

2700-2720 SHALE: very dark grey to black, blocky, part rubbly, trace shards, carbonaceous, commonly brittle, firm to occasionally hard, siliceous with slightly calcareous in part, micromicaceous in part, pinpoint disseminated pyrite common, trace locally pyritic, minor nodular pyrite, very rare calcite healed fracture, moderate Bit generated texture, very weak slow pale cloudy yellow cut.

2720-2740 SHALE: very dark grey to black, blocky, part rubbly, trace shards, carbonaceous, commonly brittle, firm to occasionally hard, siliceous with slightly calcareous in part, micromicaceous in part, trace locally pyritic, very rare calcite healed fracture, very weak slow pale cloudy yellow cut.

2740-2760 SHALE: very dark grey to black, blocky, part rubbly, trace shards, carbonaceous, commonly brittle, firm to occasionally hard, siliceous with slightly calcareous in part, micromicaceous in part, more common nodular pyrite, trace locally pyritic, very weak slow pale cloudy yellow cut.

2760-2780 SHALE: very dark grey to black, blocky, part rubbly, trace shards, carbonaceous, commonly brittle, firm to occasionally hard, siliceous with slightly calcareous in part, micromicaceous in part, minor nodular pyrite, trace locally pyritic, trace pyritic very fine laminations, very weak slow pale cloudy yellow cut.

2780-2800 SHALE: very dark grey to black, blocky, carbonaceous, brittle, firm to occasionally hard, siliceous with slightly calcareous in part, micromicaceous in part, pinpoint disseminated pyrite, occasional nodular pyrite, trace locally pyritic, very weak slow pale cloudy yellow cut.

2800-2820 SHALE: very dark grey to black, blocky, sub blocky, trace shards, carbonaceous, brittle, firm to occasionally hard, siliceous with locally trace calcareous in part, micromicaceous in part, pinpoint disseminated pyrite, occasional nodular pyrite, trace pyritic, very weak slow pale cloudy yellow cut.

2820-2840 SHALE: very dark grey to black, blocky, sub blocky, trace shards, carbonaceous, brittle, firm to occasionally hard, siliceous with locally trace calcareous in part, micromicaceous in part, pinpoint disseminated pyrite, occasional nodular pyrite, trace pyritic, very weak slow pale cloudy yellow cut.

SAMPLE DESCRIPTIONS

2840-2860 SHALE: very dark grey to black, blocky, sub blocky, carbonaceous, brittle, firm to occasionally hard, trace moderately firm, siliceous with more commonly slightly calcareous, micromicaceous in part, pinpoint disseminated pyrite, very rare nodular pyrite, very weak slow pale cloudy yellow cut.

2860-2880 SHALE: very dark grey to black, blocky, sub blocky, trace shards, carbonaceous, brittle, firm to occasionally hard, trace moderately firm, siliceous with more commonly slightly calcareous, micromicaceous in part, pinpoint disseminated pyrite, very rare nodular pyrite, no visible fractures or pyritic laminations, very weak slow pale cloudy yellow cut.

2880-2900 SHALE: very dark grey to black, blocky, sub blocky, carbonaceous, brittle, firm to part hard, trace moderately firm, siliceous with more commonly slightly calcareous, micromicaceous in part, pinpoint disseminated pyrite, very rare nodular pyrite, no visible fractures or pyritic micro laminations, very weak slow pale cloudy yellow cut.

2900-2920 SHALE: very dark grey to black, blocky, occasional shards, carbonaceous, brittle, firm to part hard, trace moderately firm, siliceous with slightly calcareous, micromicaceous in part, pinpoint disseminated pyrite, trace nodular pyrite, trace locally pyritic, very weak slow pale cloudy yellow cut.

2920-2940 SHALE: very dark grey to black, blocky, carbonaceous, common brittle, firm to hard, siliceous, increasing calcareous, slightly micromicaceous, trace disseminated pyrite, trace nodular pyrite, very weak slow pale cloudy yellow cut. Trace Limestone stringers, grey white, mudstone, argillaceous, dense.

2940-2960 SHALE: very dark grey to black, blocky, carbonaceous, common brittle, firm to hard, siliceous and calcareous, slightly micromicaceous, trace disseminated pyrite, trace nodular pyrite, very weak slow pale cloudy yellow cut.

2960-2980 SHALE: very dark grey to black, blocky, carbonaceous, common brittle in part, firm to hard, siliceous and calcareous, slightly micromicaceous, trace disseminated pyrite, trace nodular pyrite, very weak slow pale cloudy yellow cut.

2980-3000 SHALE: very dark grey to black, blocky, carbonaceous, brittle, firm to hard, siliceous and slightly calcareous, slightly micromicaceous, pyritic, increasing nodular pyrite, very weak slow pale cloudy yellow cut.

3000-3020 SHALE: very dark grey to black, blocky, carbonaceous, common brittle, firm to hard, siliceous and slightly calcareous, slightly micromicaceous, pyritic with occasional nodular pyrite, very weak slow pale cloudy yellow cut.

SAMPLE DESCRIPTIONS

3020-3040 SHALE: very dark grey to black, blocky, carbonaceous, common brittle, firm to hard, siliceous and slightly calcareous, slightly micromicaceous, pyritic with occasional nodular pyrite, very weak slow pale cloudy yellow cut.

3040-3060 SHALE: very dark grey to black, blocky, carbonaceous, common brittle, firm to hard, siliceous and slightly calcareous, slightly micromicaceous, pyritic with occasional nodular pyrite, very weak slow pale cloudy yellow cut.

3060-3080 SHALE: very dark grey to black, blocky, carbonaceous, common brittle, firm to hard, siliceous and slightly calcareous, slightly micromicaceous, pyritic with occasional nodular pyrite, very weak slow pale cloudy yellow cut.

3080-3100 SHALE: very dark grey to black, blocky, carbonaceous, common brittle, firm to hard, siliceous and slightly calcareous, slightly micromicaceous, pyritic with occasional nodular pyrite, very weak slow pale cloudy yellow cut.

3100-3120 SHALE: very dark grey to black, blocky, carbonaceous, common brittle, firm to hard, siliceous, very slightly calcareous, slightly micromicaceous, trace pyritic with occasional nodular pyrite, very weak slow pale cloudy yellow cut.

3120-3130 SHALE: very dark grey to black, blocky, carbonaceous, common brittle, firm to hard, siliceous, very slightly calcareous, slightly micromicaceous, trace pyritic with occasional nodular pyrite, very weak slow pale cloudy yellow cut.

3130-3152 SHALE: very dark grey to black, blocky, carbonaceous, common brittle, firm to hard, siliceous, very slightly calcareous, slightly micromicaceous, trace pyritic with occasional nodular pyrite, very weak slow pale cloudy yellow cut.

Driller's TD on February 19th, 2014 at 23:12hrs

Extrapolated to:

3152 mMD (2025.00mTVD, to 1735.65mSS, 1239.53mVS)
314.62m North 1198.96m West of Well Center

Lat with Long: N 65° 0' 8.13", W 126° 48' 40.23"
Grid N/E Y/X: N 7210300.15 m, E 603197.09 m

1000.00 meters have been drilled from the Heel at 2152.00m MD to FTD at 3152.00m MD

Spud on January 29th, 2014 at 00:01 hrs

Surface casing Drillout at 602m on February 7th at 06:50 hrs

Intermediate casing Drillout at 2152m on Feb 16, 2014 at 11:05 hrs