

APPENDIX 1

SAMPLE DESCRIPTIONS

450' - 480' --- 100% SANDSTONE: clear to translucent, light to medium orange, light yellow, trace white, fine to predominantly medium, occasionally coarse, sub-angular predominantly sub-rounded, occasionally rounded, fair sorting, siliceous cement, moderately hard to hard.
POROSITY: fair.

SHOWS: Nil.

TR SILTSTONE:

REMARKS: Trace of siltstone cavings.

480' - 510' --- 100% SANDSTONE: clear to translucent, light to medium orange, light yellow, trace white, trace light pink, fine to predominantly medium, occasionally coarse, sub-angular to predominantly sub-rounded, occasionally rounded, siliceous cement, moderately hard to hard.

POROSITY: fair.

SHOWS: Nil.

TR SILTSTONE: grades from sandstone, light pink to green.

REMARK: SANDSTONE LESS COMPACTED.

510' - 540' --- 100% SANDSTONE: A/A

POROSITY: A/A

SHOWS: A/A.

TR SILTSTONE: A/A.

540' - 570' --- 100% SANDSTONE: predominantly clear, light orange, light yellow, predominantly fine, occasionally medium grained, predominantly sub-angular to rounded, siliceous cement, moderately hard to hard.

POROSITY: fair to good.

SHOWS: Nil.

TR SILTSTONE:

REMARKS: trace rock flour.

570' - 600' --- 100% SANDSTONE: clear, light to medium orange, light yellow, predominantly fine, occasionally medium grained, predominantly sub-rounded, trace rounded, siliceous cement, medium to hard.

POROSITY: fair to good.

SHOWS: Nil.

TR SILTSTONE:

REMARKS: trace rock flour.

600' - 640' --- 100% SANDSTONE: clear, light to medium grained, light yellow, light orange, brown, predominantly medium and occasionally fine, tight compacted cuttings, occasionally medium, sub-angular to sub-rounded, trace rounded, siliceous cement, medium to hard, grades to hard argillaceous matrix in parts, moderately well sorted.

POROSITY: fair to good.

SHOWS: Nil.

TR SILTSTONE:

640' - 670' --- 70% SANDSTONE: light to medium orange/brown, light brown, clear, light orange, predominantly fine to medium, sub-angular to sub-rounded, tightly compacted in part, siliceous cement, firm to hard, grades to hard argillaceous matrix in part. POROSITY: fair to good. SHOWS: Nil.

30% SILTSTONE: brick red to orange, sub-fissile to predominantly blocky, firm to medium hard, trace black (Mica).

670' - 700' --- 100% SANDSTONE: light orange/brown, light orange, light yellow, translucent, clear and white and pink, predominantly fine to medium, occasionally coarse grained, trace very fine grained, sub-angular to sub-rounded, coarse grains, rounded, poor to fair sorting, siliceous cement, firm to moderately hard. POROSITY: fair to good. SHOWS: Nil.

TR SILTSTONE: A/A.

700' - 730' --- 100% SANDSTONE: clear, light to medium orange, light yellow, predominantly hard, occasionally coarse grained, sub-rounded, occasionally rounded, well sorted, siliceous cement but poor compaction, firm to moderately hard. POROSITY: good. SHOWS: Nil.

730' - 760' --- 100% SANDSTONE: A/A, and trace rock flour.

760' - 790' --- 100% SANDSTONE: predominantly light orange, light yellow, occasionally clear, fine grained, occasionally medium and coarse, sub-angular, occasionally sub-rounded to rounded, fair sorting, siliceous cement, moderately hard to hard, grades to argillaceous in part. POROSITY: poor to fair. SHOWS: Nil. REMARKS: increase in rock flour.

790' - 820' --- 100% SANDSTONE: , predominantly light orange, light yellow, occasionally clear, medium grained, occasionally coarse grained, trace fine grained, sub-rounded to rounded, well sorted, siliceous cement, weak occasional quartz overgrowths. POROSITY: good. SHOWS: Nil. REMARKS: trace rock flour.

820' - 850' --- 100% SANDSTONE: 70% light red orange, 30% clear fine to medium grained, occasionally coarse grained, sub-angular, moderately sorted, siliceous cement, weak to moderate occasional quartz overgrowth.
POROSITY: fair to good.
REMARKS: trace rock flour.

850' - 870' --- 100% SANDSTONE: 60% light orange, 40% clear, medium grained, sub-angular to sub-rounded, moderate to well sorted, siliceous cement, weak trace quartz overgrowths.
POROSITY: fair to good.
REMARKS: trace rock flour.

870' - 900' --- 100% SANDSTONE: 60% light orange and light yellow, 40% clear, medium grained, rounded coarse grains, sub-angular, occasionally sub-rounded, well sorted, weakly compacted, siliceous cement, weak.
POROSITY: fair.
REMARKS: rock flour.

900' - 930' --- 100% SANDSTONE: 60% light orange, 40% clear, medium grained, trace coarse grained, sub-angular to sub-rounded, moderate sorting, weakly compacted siliceous cement, weak.
POROSITY: fair to good.
REMARKS: trace rock flour.

930' - 960' --- 100% SANDSTONE: 60% light yellow, 20% light orange, 20% clear, very fine to medium grained, trace coarse grained, sub-rounded to rounded, moderately sorted, siliceous cement, weakly compacted.
POROSITY: good.
REMARKS: trace rock flour.

960' - 990' --- 100% SANDSTONE: 80% light orange, 20% light yellow, trace clear, predominantly medium to fine grained, sub-rounded to rounded, moderately sorted, siliceous cement, weak to fair compaction.
POROSITY: fair to good.
REMARKS: 15% rock flour.

990' - 1020' --- 100% SANDSTONE: 50% light yellow, 40% trace orange, 10% clear, medium to coarse grained, occasionally fine, sub-rounded to rounded, (coarse grains rounded) occasionally sub-angular (fine grained sub-angular) fairly sorted, siliceous cement with occasional silty matrix around fine grained cuttings, fair compaction.
POROSITY: fair, (poor porosity in fine grained silty cuttings).
REMARKS: 15% rock flour.

1020' - 1050' --- 100% SANDSTONE: 60% light orange, 30% light yellow, 10% clear, predominantly fine, some medium and coarse grains, sub-rounded to rounded, occasionally sub-angular, poor to fairly sorted, siliceous cement, fair compaction.
POROSITY: fair to good.
REMARKS: 10% rock flour.

1050' - 1090' --- 100% SANDSTONE: predominantly light to medium orange, trace white, fine grained, occasionally very fine and medium, sub-angular to sub-rounded, well sorted, siliceous cement, friable to moderately hard, very fine grained with occasional silty matrix, white quartz occurs as discrete patches in surrounding coloured quartz.
POROSITY: poor to fair.
SHOWS: Nil.
REMARKS: trace black mineral lithics, trace rock flour.

1090' - 1120' --- 100% SANDSTONE: light to medium orange, trace to 10% pink, very fine to medium grained, predominantly fine, sub-angular to sub-rounded, well sorted, siliceous cement, friable to occasionally moderately hard, very fine grained and fine grained with occasional silty matrix, trace grades to argillaceous.
POROSITY: poor to fair.
REMARKS: trace black mineral lithics, trace rock flour.

1120' - 1150' --- 100% SANDSTONE: light to medium orange, light yellow and pink (A/A).

1150' - 1190' --- 100% SANDSTONE: light to medium orange, light yellow, clear, 35% pink, very fine to medium, sub-angular to sub-rounded (increasingly sub-rounded with size increase) poor to fairly sorted, siliceous cement, friable to firm.
POROSITY: fair.
REMARKS: trace rock flour.

1190' - 1220' --- 100% SANDSTONE: orange, orange/brown, pink and clear, very fine to medium, predominantly fine, sub-angular to sub-rounded, poor to fair sorting, siliceous cement, friable to firm, (trace very hard with very fine grained quartz in coarse sieve).
POROSITY: fair.
REMARKS: trace rock flour.

1220' - 1250' --- 100% SANDSTONE: red-orange to redish yellow, minor clear, very fine to medium grained, sub-angular to rounded, poorly sorted, siliceous cement, moderately hard.
POROSITY: fair.
SHOWS: Nil.

1250' - 1280' --- 100% SANDSTONE: 60% light orange, red/brown and yellow, 40% clear, very fine to medium, fine grained sub-angular, medium and occasionally coarse sub-rounded to rounded, very poor sorting, quartz, siliceous cement, ferruginous staining, moderately hard to hard.
POROSITY: fair.
SHOWS: Nil.
REMARKS: trace rock flour.

1280' - 1310' --- NO SAMPLE RECOVERED.

1310' - 1340' --- 100% SANDSTONE: 70% clear (glassy - frosted) 30% orange to red, fine to coarse grained, (predominantly fine) fine grained sub-angular to coarse grained rounded, poorly sorted, quartz, minor iron staining in silty matrix of orange to red cuttings, siliceous cement, moderately hard.
POROSITY: poor.
REMARKS: trace micromicaceous flecks.

1340' - 1370' --- 100% SANDSTONE: 80% clear (glassy - frosted) 20% orange red, fine to medium, occasionally coarse grained, (predominantly fine), fine grained sub-angular, medium to coarse grained rounded, poorly sorted, quartz, siliceous cement, moderately hard.
POROSITY: poor.

1370' - 1400' --- 100% SANDSTONE: A/A.

1400' - 1430' --- 100% SANDSTONE: 90% clear (predominantly glassy occasionally frosted), 10% orange red, trace yellow staining, fine to medium grained, predominantly sub-angular to sub-rounded medium grains, fairly sorted, quartz, siliceous cement, friable to moderately hard.
POROSITY: poor to fair.
REMARK: ABUNDANT ROCK FLOUR

1430' - 1460' --- 100% SANDSTONE: A/A, with trace coarse rounded grains.

1460' - 1490' --- 100% SANDSTONE: A/A.

1490' - 1510' --- 100% SANDSTONE: A/A.

1510' - 1530' --- 100% SANDSTONE: A/A.

1530' - 1560' --- 100% SANDSTONE: 95% clear, 5% orange/red, predominantly fine grained, occasionally medium and coarse, fine grains sub-angular to sub-rounded, medium and coarse sub-rounded to rounded, moderately sorted, quartz, siliceous cement, moderately soft to moderately hard.
POROSITY: poor.

1560' - 1590' --- 100% SANDSTONE: 90% clear, (predominantly glassy occasionally frosted, occasionally with light yellow staining), 10% light orange to orange/red, predominantly fine to medium grained, trace coarse grained, sub-angular to sub-rounded, fairly sorted, quartz, siliceous cement, occasional silty matrix in orange red cuttings, grading to argillaceous, medium soft to moderately hard.
POROSITY: poor to fair.

TR SILTSTONE:

1590' - 1620' --- 30% SANDSTONE: clear to translucent, trace light yellow staining, trace light green, fine to medium, occasionally coarse, sub-angular to sub-rounded, poor sorting, quartz, siliceous cement, medium soft to firm.
POROSITY: fair.

70% SILTSTONE: medium to dark orange, orange green, occasionally light green, predominantly sub-fissile to blocky, friable to moderately hard, weakly dolomitic, light green occurs as discrete patches in orange brown cuttings, grades to very finely arenaceous in part.

1620' - 1650' --- 30% SANDSTONE: clear to translucent, occasional light orange and light yellow staining, trace mauve, trace light green, fine to medium, sub-angular to sub-rounded, fairly sorted, quartz, siliceous cement, medium soft to firm.
POROSITY: fair.

70% SILTSTONE: 30% light green, 30% green, brick red, red/orange, light orange green, sub-fissile to blocky, friable to moderately hard, weakly dolomitic, mauve and light brown cuttings occasionally very finely arenaceous, micromicaceous in part.
REMARKS: trace rock flour.

1650' - 1680' --- 80% SANDSTONE: 50% clear, 40% light to medium orange and mauve, orange green, fine to medium grained, occasionally very fine, sub-angular to sub-rounded, poor sorting, predominantly siliceous cement, trace white and light orange white calcareous matrix as cement, moderately soft to friable, micromicaceous, rock flour.
POROSITY: poor to fair.
20% SILTSTONE: A/A, grades to arenaceous in part.

1680' - 1710' --- 70% SANDSTONE: predominantly clear (glassy translucent and frosted) light orange, trace light green, trace light yellow staining, very light to light mauve, fine to medium, occasionally very fine and occasional coarse, sub-angular to sub-rounded (medium and coarse grains rounded) poorly sorted, predominantly siliceous cement, occasional trace calcareous matrix, occasional orange silt matrix, moderately soft to moderately hard, micromica and rock flour present.
POROSITY: poor to fair.
30% SILTSTONE: A/A, grades to arenaceous in part.

1710' - 1740' --- 60% SANDSTONE: clear to light brown and light orange, minor red brown and dirty off green, white, very fine to coarse grained, predominantly very fine and fine, sub-angular to sub-rounded, occasionally rounded, poor sorting, siliceous cement, trace calcareous cement, silty ferruginous cement in parts, moderately soft to moderately hard, rare micromica.
POROSITY: poor to fair
40% SILTSTONE: light red brown to brown, minor orange, trace light green, blocky, moderately well indurated.

1740' - 1770' --- 100% SANDSTONE: orange to brick red, trace white and brown, very fine to fine grained, angular to sub-angular, moderately well sorted, quartzose, ferruginous staining, friable, siliceous cement, trace calcareous cement.
POROSITY: fair.
SHOWS: Nil.
TR SILTSTONE: brown, blocky, well indurated, micromicaceous.
REMARKS: EST. TOP CARMICHAEL SANDSTONE @ 1735 FEET.

1770' - 1800' --- 100% SANDSTONE: orange to brick red, very fine to fine grained, angular to sub-angular, moderately well sorted, quartzose, ferruginous staining, 50% siliceous cement, 50% argillaceous cement, friable, micromicaceous in part, trace clear and green sandstone inclusions.
POROSITY: poor to fair.

TR SILTSTONE:
TR SHALE: pink brown, firm, well indurated, arenaceous.

1800' - 1830' --- 90% SANDSTONE: brick red, orange, minor off white to brown, very fine to fine grained, angular to sub-angular, moderately well sorted, quartzose, 80% silty ferruginous cement, friable to moderately hard, 5% rock flour, off white chips dolomitic.
POROSITY: poor.
SHOWS: Nil.

10% SILTSTONE: orange/brown, blocky to sub-fissile, arenaceous.

1830' - 1860' --- 90% SANDSTONE: A/A.
10% SILTSTONE: orange/brown, blocky to sub-fissile, occasional brown fissile chips, arenaceous.

1860' - 1890' --- 70% SANDSTONE: A/A.
30% SILTSTONE: A/A.

1890' - 1920' --- 60% SANDSTONE: orange, brick red to occasionally clear to off white, very fine to fine grained, sub-rounded to sub-angular, poorly to moderately sorted, predominantly siliceous cement, moderately hard, trace pyrite.
POROSITY: poor.

40% SILTSTONE: dark grey to grey green, occasionally green to red, hard to blocky, sub-fissile, trace pyrite, grading in part to very fine grained sandstone, weakly dolomitic.

1920' - 1950' --- 30% SANDSTONE: orange to brick red, occasionally clear, (glassy - translucent), occasionally orange brown, very fine to fine grained, sub-angular to sub-rounded, fair sorting, predominantly siliceous cement, trace calcareous cement in part, moderately hard, trace pyrite, occasional silty matrix.
POROSITY: poor.

70% SILTSTONE: predominantly dark brown, 30% grey green to light green, occasionally red brown, (occasionally grey green as discrete patch in dark brown) sub-fissile to blocky, friable to moderately hard, grades to very finely arenaceous in part, weakly dolomitic.

1950' - 1960' --- 10% SANDSTONE: A/A.
90% SILTSTONE: A/A.

1960' - 1970' --- TR SANDSTONE:
100% SILTSTONE: A/A, grey green predominantly as discrete patches in dark brown, trace micromica.

1970' - 1980' --- 10% SANDSTONE: clear to translucent, white to light grey, very fine to fine grained, sub-angular, fairly sorted, siliceous cement, moderately hard.
POROSITY: poor.
90% SILTSTONE: A/A.

1980' - 2010' --- 100% SILTSTONE: 70% medium to dark brown and orange brown, 30% light grey green and green, predominantly sub-fissile, occasionally blocky, friable to medium hard, (grey green occasionally as discrete patches in brown), dolomitic, micromicaceous in part.

2010' - 2040' --- 100% SILTSTONE: 60% orange, red/brown, medium to dark brown, 40% light grey, grey green, predominantly sub-fissile to blocky, friable to moderately hard, where brown is weakly dolomitic, grey green dolomite, micromicaceous in part.

2040' - 2070' --- 100% SILTSTONE: A/A, and occasionally fissile.
REMARK: CUTTINGS VERY COARSE

2070' - 2100' --- TR SANDSTONE:
100% SILTSTONE: A/A, and occasionally fissile.
REMARKS: trace white very fine grained sandstone (cavings?). Cuttings significantly finer.

2100' - 2130' --- 100% SILTSTONE: A/A, cuttings predominantly sub-fissile and fine.

2130' - 2160' --- 100% SILTSTONE: predominantly brown to red brown, 30% light grey green, green and grey (grey very dolomitic) predominantly sub-fissile, occasionally fissile, trace blocky, friable to moderately hard, brown weakly dolomitic, grey green dolomite, very finely arenaceous in part, micromicaceous in part.
TR DOLOMITE: light grey, occasionally light green grey, finely crystalline to microcrystalline, hard, calcareous in part.

2160' - 2190' --- 100% SILTSTONE: predominantly red brown to brown, light green and grey green, trace light grey sub-fissile to blocky, friable to moderately hard, brown weakly dolomitic, grey green dolomite, micromicaceous in part, cuttings significantly larger than above.

2190' - 2230' --- 100% SILTSTONE: light to medium grey and grey green
50%, light orange brown and brown 50%, A/A.

2230' - 2260' --- 100% SILTSTONE: light medium orange red, occasionally
grey, grey/green, soft to hard, blocky,
sub-fissile.

2260' - 2290' --- 100% SILTSTONE: red to light medium orange red,
occasionally grey green, sandy in part, trace
dolomite, firm to hard, sub-fissile, blocky,
trace micromica.

2290' - 2320' --- 100% SILTSTONE: medium brown, occasionally
orange/red, trace grey green, waxy texture, trace
dolomite, blocky, sub-fissile.

2320' - 2350' --- 100% SILTSTONE: A/A.

2350' - 2380' --- 100% SILTSTONE: dark orange to brown, hard blocky,
occasionally grey/green, fissile to sub-fissile,
firm, trace pyrite, micromicaceous.

2380' - 2410' --- 100% SILTSTONE: 80% dark orange to brown, A/A, 20%
grey/green, firm to hard, sub-fissile, blocky to
elongated,

2410' - 2440' --- 100% SILTSTONE: A/A.

2440' - 2470' --- 100% SILTSTONE: orange to red to brown, occasionally
pyritic, generally blocky, firm to hard,
sub-fissile, micromicaceous, trace pyrite waxy
texture in part, trace dolomite.

2470' - 2500' --- 100% SILTSTONE: A/A.

2500' - 2530' --- 100% SILTSTONE: orange to red/brown, brown,
occasionally grey green, dolomite, sub-fissile to
fissile, micromicaceous, trace pyrite.

2530' - 2560' --- 100% SILTSTONE: red/brown to brown, occasionally
white, grey/green to green, dolomitic in part.

2560' - 2590' --- 100% SILTSTONE: brown to dark brown, sub-fissile to
fissile, blocky, firm to hard, trace micromica.

2590' - 2620' --- 100% SILTSTONE: A/A.

2620' - 2650' --- 100% SILTSTONE: A/A.

2650' - 2680' --- 100% SILTSTONE: dark brown to brown, occasionally grey/green, firm to hard, blocky, dolomite in part, micromicaceous.

2680' - 2710' --- 100% SILTSTONE: A/A.

2710' - 2740' --- 90% SILTSTONE: L. STOKES @ 2770 FEET
grey to grey green, occasionally red/brown 10%, sub-fissile, firm, blocky, well indurated, dolomite in part.
10% DOLOMITE: white to off white, buff, cryptocrystalline, silty.

2740' - 2770' --- 80% SILTSTONE: A/A.
20% DOLOMITE: A/A.

2770' - 2790' --- 30% SILTSTONE: grey/green, red brown, blocky to sub-fissile, well indurated, very finely arenaceous in part, dolomitic cement.
70% DOLOMITE: off white, grey green, very finely crystalline, blocky.

2790' - 2820' --- 20% SILTSTONE: A/A.
--- 80% DOLOMITE: A/A.

2820' - 2850' --- 60% SILTSTONE: green to grey/green, minor red brown, blocky, sub-fissile, well indurated, very finely arenaceous in part, dolomitic cement.
40% DOLOMITE: off white, light grey, grey/green, A/A.

2850' - 2880' --- 50% SILTSTONE: A/A.
50% DOLOMITE: A/A.

2880' - 2910' --- TR SANDSTONE: trace only, couple of medium round grains.
--- 50% SILTSTONE: A/A.
50% DOLOMITE: off white to grey/green, very finely crystalline, blocky.

2910' - 2920' --- TR SANDSTONE: A/A.
40% SILTSTONE: A/A.
60% DOLOMITE: A/A.

2920' - 2930' --- TR SANDSTONE: A/A.
30% SILTSTONE: A/A.
70% DOLOMITE: A/A.

2930' - 2940' --- TR SANDSTONE: trace translucent round coarse grains.
70% SILTSTONE: green and grey green, minor grey and and red brown, well indurated, blocky to sub-fissile, occasionally finely arenaceous, minor dolomitic cement.
30% DOLOMITE: off white to grey green, finely crystalline, blocky.

2940' - 2950' --- 80% SILTSTONE: A/A.
20% DOLOMITE: A/A.

2950' - 2960' --- 10% SANDSTONE: clear to white, medium grained, sub-angular to sub-rounded, moderately well sorted, quartzose.
POROSITY: poor.
70% SILTSTONE: 50% grey, 50% grey green, trace red brown, well indurated, blocky to sub-fissile, occasionally finely arenaceous, minor dolomitic cement.
20% DOLOMITE: white and off white and grey green, A/A.

2960' - 2970' --- TR SANDSTONE: trace only, medium quartz grains, sub-rounded.
60% SILTSTONE: A/A.
10% LIMESTONE: honey to buff, fine to medium crystalline, dolomitic.
30% DOLOMITE: off white and grey green, fine to medium crystalline, blocky.

2970' - 2980' --- 10% SANDSTONE: clear, very fine to fine grained, sub-angular to sub-rounded, fairly sorted, siliceous cement, trace dolomite, predominantly loose.
POROSITY: poor.
70% SILTSTONE: grey, very dark grey, occasionally green grey, occasionally light red brown, blocky, sub-fissile, occasionally arenaceous, minor trace dolomitic cement, very pyritic.
20% DOLOMITE: A/A, mottled appearance.

2980' - 2990' --- 30% SANDSTONE: A/A.
50% SILTSTONE: A/A.
20% DOLOMITE: A/A.

2990' - 3000' --- 30% SANDSTONE: A/A.
50% SILTSTONE: A/A.
20% DOLOMITE: A/A.

3000' - 3010' --- 10% SANDSTONE: A/A.
90% SILTSTONE: predominantly dark grey, occasionally medium to light grey, grey green, occasionally red/brown, sub-fissile to blocky, A/A.
DOLOMITE: A/A.

3010' - 3020' --- 10% SANDSTONE: very fine grained, clear A/A.
50% SILTSTONE: A/A, minor to common dolomite cement, trace pyrite.
10% LIMESTONE: white to trace honey brown, fine to medium crystalline, soft, dolomitic in part.
30% DOLOMITE: off white, grey green, fine to occasionally medium crystalline, blocky, mottled.

3020' - 3030' --- 70% SANDSTONE: clear, occasionally translucent, very fine grained, occasionally fine, sub-angular, well sorted, siliceous cement, trace dolomite.
POROSITY: poor.
20% SILTSTONE: 50% green grey, 50% red brown, trace grey.
10% DOLOMITE: off white to grey, finely crystalline, soft, blocky.

3030' - 3040' --- 70% SANDSTONE: A/A.
20% SILTSTONE: A/A.
10% DOLOMITE: A/A.

3040' - 3050' --- 80% SANDSTONE: clear, occasionally translucent, very fine to fine, sub-angular, occasionally sub-rounded, well sorted, poor siliceous cement, trace dolomite.
POROSITY: poor.
10% SILTSTONE: A/A.
10% DOLOMITE: A/A.

3050' - 3060' --- 80% SANDSTONE: clear to translucent, very fine to fine grained, sub-angular to sub-rounded, moderately well sorted, poor siliceous cement, soft.
POROSITY: poor.
SHOWS: Nil.
10% SILTSTONE: grey, some red, moderately fissile, moderately hard.
10% DOLOMITE: white to white grey, finely crystalline.

3060' - 3090' --- 70% SANDSTONE: A/A.
20% SILTSTONE: A/A.
10% DOLOMITE: A/A.

3090' - 3120' --- 60% SANDSTONE: clear to translucent, very fine to fine grained, sub-angular to sub-rounded, moderately well sorted, siliceous cement, hard.
POROSITY: poor.
SHOWS: Nil.
30% SILTSTONE: grey, red, moderately fissile, moderately hard.
10% DOLOMITE: A/A.

3120' - 3150' --- 20% SANDSTONE: clear, very fine to fine grained, sub-angular to sub-rounded, siliceous cement.
POROSITY: poor.
SHOWS: Nil.
80% SILTSTONE: dark grey, sub-fissile, micromicaeous in part, moderately hard.

3150' - 3180' --- 40% SANDSTONE: clear to translucent, very fine to fine grained, occasionally medium, angular to sub-angular, moderately well sorted, siliceous cement, moderately hard.
POROSITY: poor.
SHOWS: Nil.
60% SILTSTONE: dark grey to grey green, minor orange red, moderately hard.

3180' - 3210' --- 100% SILTSTONE: dark grey to greenish grey, soft to moderately hard.

3210' - 3240' --- 10% SANDSTONE: clear, very fine grained, sub-angular to sub-rounded, well sorted, siliceous cement, moderately hard.
90% SILTSTONE: dark grey to greenish grey, soft to moderately hard, trace pyrite, micromicaceous.

3240' - 3270' --- 50% SANDSTONE: clear, fine to very fine grained, sub-angular to sub-rounded, moderately well sorted, siliceous cement, moderately hard.
POROSITY: poor.
50% SILTSTONE: grey to dark grey, some greenish grey, firm to hard, blocky, sub-fissile, micaceous.

3270' - 3300' --- 20% SANDSTONE: clear, translucent, very fine to fine grained, sub-angular to sub-rounded, moderately sorted, siliceous cement, moderately hard.
POROSITY: poor.
80% SILTSTONE: grey to dark green grey, moderately hard, blocky, sub-fissile, micromicaceous.

3300' - 3330' --- 10% SANDSTONE: A/A.
90% SILTSTONE: A/A.

3330' - 3360' --- 50% SANDSTONE: clear to translucent, very fine to fine grained, angular to sub-rounded, moderately well sorted, siliceous cement, moderately hard to hard.
POROSITY: poor.
50% SILTSTONE: grey to dark greenish grey, blocky, sub-fissile, moderately hard, micromicaceous, occasionally pyritic.

3360' - 3390' --- 20% SANDSTONE: A/A.
80% SILTSTONE: A/A.

3390' - 3420' --- 70% SANDSTONE: A/A.
30% SILTSTONE: A/A.

3420' - 3450' 80% SANDSTONE: clear, grey, translucent, very fine to fine grained, sub-angular to sub-rounded, moderately well sorted, dolomitic cement, moderately hard.
POROSITY: poor.
20% SILTSTONE: grey to dark grey, blocky sub-fissile, moderately hard, micromicaceous, occasionally pyritic.

3450' - 3480' --- 70% SANDSTONE: clear, very fine to medium grained, sub-angular to rounded, fair sorting, siliceous cement, moderately hard.
POROSITY: poor to fair.
30% SILTSTONE: grey to dark grey, blocky, sub-fissile, moderately hard, micromicaceous.

3480' - 3510' --- 90% SANDSTONE: A/A.
10% SILTSTONE: A/A.

3510' - 3540' --- 100% SANDSTONE: clear, very fine grained, sub-angular to rounded, well sorted, siliceous cement, friable.
POROSITY: poor to fair.

3540' - 3550' --- 100% SANDSTONE: clear to light grey, occasionally white, very fine to occasionally fine grained, sub-angular to sub-rounded, moderately well sorted, moderately hard, occasionally friable.
POROSITY: poor.

3550' - 3560' --- 100% SANDSTONE: clear, very fine grained, occasionally medium grained, sub-angular to sub-rounded, poorly sorted, unconsolidated, moderately hard.
POROSITY: poor to fair.

3560' - 3570' --- 100% SANDSTONE: A/A.

3570' - 3600' --- 30% SANDSTONE: A/A, predominantly siliceous cement.
70% SILTSTONE: dark grey to grey green, red brown, orange, blocky, sub-fissile, trace pyrite, trace micromicaceous, trace dolomite.

3600' - 3630' --- 70% SANDSTONE: clear, light grey, occasionally white, very fine to occasionally fine grained, sub-angular to sub-rounded, moderate to well sorted, unconsolidated, moderately hard, occasionally friable.
POROSITY: poor.
30% SILTSTONE: dark grey to occasionally light grey, firm to hard, blocky to sub-fissile, micromicaceous.

3630' - 3660' --- 40% SANDSTONE: A/A.
60% SILTSTONE: A/A.

3660' - 3690' --- 20% SANDSTONE: clear to light grey, very fine to fine to occasionally medium grained, predominantly siliceous cement.
80% SILTSTONE: dark to light grey, grading in part to very fine grained sandstone, blocky, sub-fissile, brittle, micaceous in part, trace pyrite.

3690' - 3720' --- 30% SANDSTONE: clear to light grey, white, very fine to fine grained, occasionally medium grained, sub-angular to sub-rounded, quartzitic in part, predominantly siliceous cement, fair sorting, moderately hard.
70% SILTSTONE: dark to light grey to red/brown, green, firm to hard, sub-fissile, blocky, micromicaceous, trace pyrite in part.

3720' - 3750' --- 20% SANDSTONE: clear to dirty grey, dominantly fine grained to very fine grained, rare medium and coarse, sub-angular to sub-rounded, moderately sorted, siliceous/occasionally dolomitic cement, lithic in part, minor pyrite, interlaminated with siltstone, generally hard, occasionally friable.
POROSITY: poor.
SHOWS: Nil.
80% SILTSTONE: medium to dark grey, sub-blocky to fissile and splintery, firm and indurated to moderately soft and micaceous.

3750' - 3760' --- 20% SANDSTONE: clear to light grey, very fine to fine grained, trace medium grained, sub-angular to sub-rounded, moderate sorting, siliceous cement, some dolomitic cement, intermixed with siltstone, hard.
POROSITY: poor.
SHOWS: Nil.
80% SILTSTONE: light to dark grey, light greyish green, red brown, sub-blocky, fissile, soft to moderately hard, micromicaceous.

3760' - 3770' --- 20% SANDSTONE: A/A.
80% SILTSTONE: A/A.
TR DOLOMITE: off white, very finely crystalline, blocky.

3770' - 3780' --- 20% SANDSTONE: clear to light green, very fine to fine grained, trace medium grained, sub-angular to sub-rounded, moderate sorting, siliceous dolomitic cement, intermixed with siltstone, hard.
70% SILTSTONE: light to dark grey, light greyish green, red brown, sub-blocky, fissile, soft to moderately hard, micaceous.
10% DOLOMITE: off white, finely crystalline, blocky.

3780' - 3810' --- 70% SANDSTONE: clear to white, very fine to fine grained, occasionally medium grained, sub-angular to sub-rounded in part, moderately sorted, calcareous cement, hard to moderately hard, occasional dark argillaceous fragments, trace dark carbonaceous(?) fragments, trace argillaceous laminations.
20% SHALE: medium to dark grey, sub-fissile to fissile, moderately hard to friable in part, occasional calcareous laminations, occasionally arenaceous, micromicaceous, trace microspar to sparry dolomite, trace dark silty fragments, rare pyrite.
POROSITY: poor.
SHOWS: Nil.
10% LIMESTONE: off white to very pale tan, cryptocrystalline, trace sparry, soft, friable.
TR DOLOMITE: A/A, occasionally microsparry cryptocrystalline with shale, A/A.

3810' - 3820' --- 10% SANDSTONE: clear to off white and dirty grey, very fine grained, well sorted, calcareous cement, few lithics, interbedded and grades to sandstone in places, brittle to friable.
POROSITY: poor.
SHOWS: Nil.
80% SILTSTONE: medium grey, generally sub-fissile, grading arenaceous to argillaceous, occasionally finely pyritic and micaceous, non-calcareous, firm to brittle.
10% LIMESTONE: off white to dirty grey, variagated, sub-blocky, sandy in places, fossiliferous.

3820' - 3840' --- NO SAMPLE.

3840' - 3870' --- 10% SANDSTONE: A/A, trace clear, sub-rounded to rounded, medium grained, loose grains.
80% SILTSTONE: medium to dark grey, sub-fissile to fissile, moderately hard, brittle, arenaceous to argillaceous in part, occasionally calcareous where arenaceous, friable, calcareous, microlaminations, trace bedding.
10% LIMESTONE: A/A.

3870' - 3900' --- 10% SANDSTONE: clear to white, very fine, sub-rounded to rounded in part, well sorted, calcareous cement, hard to very hard, occasional dark silty fragments, occasional silt size grains, trace medium grains.
POROSITY: poor.
FLUORESCENCE: Nil.
70% SILTSTONE: medium to dark grey, sub-fissile to fissile, occasionally blocky, moderately hard, micromicaceous, calcareous, occasionally light grey and arenaceous.
10% SHALE: medium grey, soft, largely dissolved in mud (clayey).
10% LIMESTONE: off white to pale grey, cryptocrystalline, soft to moderately hard, friable, trace dark lithics.

3900' - 3930' --- 10% SANDSTONE: A/A.
POROSITY: poor.
60% SILTSTONE: A/A.
10% SHALE: A/A.
20% LIMESTONE: white to pale grey, occasionally pale brown, moderately hard to occasionally soft, cryptocrystalline to occasionally microspar, occasionally sparry, common dark argillaceous fragments.

3930' - 3960' --- 30% SANDSTONE: white to pale grey, very fine, angular, moderate to well sorted, moderately hard, calcareous cement, common dark grey fragments, trace glauconite.
POROSITY: poor.
SHOWS: trace pale yellow fluorescence, moderate white streaming cut.
50% SILTSTONE: medium to dark grey, sub-fissile, moderately hard, occasionally micromicaceous, calcareous, occasional sand size grains.
TR SHALE: A/A.
20% LIMESTONE: A/A.

3960' - 3990' --- 60% SANDSTONE: A/A, occasionally medium grey to dark brown, common dark green glauconite.
SHOWS: trace mineral fluorescence- no cut.
30% SILTSTONE: A/A.
TR SHALE: A/A, clayey.
10% LIMESTONE: A/A, trace fluorescence- no cut.

3990' - 4000' --- 80% SANDSTONE: clear to pale grey, medium brown, dark green, very fine, trace medium to coarse, moderate to well sorted, siliceous cement, hard to very hard, brittle, common dark lithics, trace pyrite.
 20% SILTSTONE: A/A.
 TR LIMESTONE: A/A.

4000' - 4010' --- 90% SANDSTONE: off white to pale grey, medium grey to dark brown, very fine to occasionally fine, sub-angular to sub-rounded, siliceous cement, hard to very hard, brittle, common dark argillaceous fragments, trace glauconite, trace calcareous, massive.
 POROSITY: poor to fair.
 SHOWS: Nil.
 10% SILTSTONE: medium grey to dark grey, sub-fissile, moderately hard to hard, splintery, trace arenaceous fragments.
 TR LIMESTONE: white to very pale grey, soft to occasionally moderately hard, cryptocrystalline, trace lithic fragments.

4010' - 4020' --- 90% SANDSTONE: pale grey to pale tan, occasionally dark brown, very fine to fine, occasionally medium grained, moderately sorted to well sorted, siliceous cement, moderately hard to hard, common silty fragments.
 POROSITY: poor.
 SHOWS: Nil.
 10% SILTSTONE: dark grey, sub-fissile, moderately hard, trace very fine sandstone.
 TR LIMESTONE: A/A.

4020' - 4030' --- 100% SANDSTONE: pale grey to medium brown, occasionally dark grey to dark brown, very fine to fine, trace medium grained, trace coarse grained, sub-angular to occasionally sub-rounded, moderate to well sorted, siliceous cement, hard to very hard, common dark argillaceous fragments, trace glauconite, trace calcareous.
 POROSITY: poor to fair.
 SHOWS: Nil.
 TR SILTSTONE: medium to dark grey, sub-fissile, moderately hard, trace very fine quartz, trace pyrite, trace calcareous.

4030' - 4040' --- 100% SANDSTONE: very pale grey to common dark grey brown, very fine to occasionally fine, trace medium to coarse grains, sub-angular to occasionally sub-rounded, moderately sorted, siliceous cement, hard to very hard, common dark lithic fragments, occasionally dark possible carbonaceous fragments and trace microlaminations, trace calcareous.
 POROSITY: poor to fair.
 SHOWS: Nil.

TR SILTSTONE: medium to dark grey, sub-fissile, moderately hard, trace arenaceous grains, trace calcareous.

4040' - 4050' --- 80% SANDSTONE: clear to very pale grey, occasionally medium grey to brown, fine to medium, occasionally very fine, trace coarse grains, sub-angular to sub-rounded, occasionally rounded, moderate to occasionally well sorted, calcareous cement in part, siliceous cement in part, hard to very hard, common dark lithics, occasional possible carbonaceous fragments, silty matrix.
 POROSITY: Fair.
 SHOWS: Nil.

10% SILTSTONE: A/A.

10% SHALE: moderate to dark grey, fissile, hard, trace dark microlaminations, trace quartz grains, trace calcareous.

4050' - 4060' --- 90% SANDSTONE: clear to very pale grey, fine to medium, occasionally very fine, sub-angular to sub-rounded, occasionally rounded, moderate to well sorted, siliceous cement, occasionally calcareous, hard to very hard, trace dark argillaceous fragments, trace glauconite, trace pyrite.
 POROSITY: poor to fair.
 SHOWS: Nil.

5% SILTSTONE: medium grey to dark grey, sub-fissile, moderately hard, trace calcareous laminations, common calcareous, occasionally arenaceous, occasionally very fine sand size grains.

5% SHALE: medium to dark grey, fissile, moderately hard to hard, trace light microlaminations, trace fine quartz grains, occasionally calcareous, rare pyrite.

4060' - 4070' --- 60% SANDSTONE: clear to very pale grey, medium to dark brown, fine grained, occasionally very fine, occasionally medium, sub-angular to sub-rounded, moderately well sorted, siliceous cement, occasionally calcareous, hard, common dark argillaceous grains, occasionally dark possible carbonaceous grains, trace glauconite.
 POROSITY: poor to fair.
 SHOWS: Nil.
 20% SILTSTONE: A/A.
 20% SHALE: medium grey to occasionally light grey, fissile, soft to moderately hard, trace light microlaminations, trace dark lithic microlaminations, trace arenaceous, trace quartz, trace clay dissolved in mud, trace pyrite.

4070' - 4080' --- 60% SANDSTONE: clear to very pale grey, fine to medium grained, occasionally very fine, trace coarse, sub-angular to sub-rounded, moderate sorting to occasionally well sorted, siliceous cement, moderately hard to hard, trace dark lithics.
 POROSITY: poor to fair.
 SHOWS: Nil.
 10% SILTSTONE: medium grey, crumbly, soft to moderately hard, common dark lithics, occasionally very arenaceous.
 30% SHALE: A/A.
 TR LIMESTONE: white to pale grey, occasional pale brown staining, soft cryptocrystalline, common dark carbonaceous inclusions occasionally as laminations.

4080' - 4090' --- 60% SANDSTONE: A/A.
 20% SILTSTONE: A/A.
 30% SHALE: medium to dark grey, sub-fissile to fissile, moderately hard to occasionally soft, trace light arenaceous laminations, trace dark lithics, microlaminations, occasionally very silty, occasional fine to very fine quartz, rare pyrite, no shows.
 TR LIMESTONE: A/A.

4090' - 4120' --- 60% SANDSTONE: clear to pale grey, fine to occasionally very fine, occasionally medium, trace coarse grains, sub-angular to sub-rounded, occasionally rounded, moderately sorted, siliceous cement, moderately hard to hard, trace dark argillaceous fragments, trace dark possible carbonaceous fragments.
 POROSITY: poor.
 SHOWS: Nil.

20% SILTSTONE: medium grey to dark grey, occasionally grey brown, sub-fissile, blocky, soft to moderately hard, very arenaceous, occasionally calcareous.

20% SHALE: medium to dark grey, sub-fissile to fissile, moderately hard, trace calcareous microlaminations, trace quartz grains, slightly calcareous, trace dark lithics.

4120' - 4130' --- 90% SANDSTONE: clear to white to very pale grey, fine to very fine, occasionally medium, trace coarse grains, sub-angular to sub-rounded, moderate to well sorted, siliceous cement, hard, trace dark lithics, trace possible carbonaceous fragments, trace pyrite aggregates.
 POROSITY: poor to fair.
 SHOWS: trace blue yellow fluorescence. No cut.

TR SILTSTONE: A/A.

10% SHALE: A/A.

4130' - 4140' --- 80% SANDSTONE: A/A.
 SHOWS: trace to rare pale yellow fluorescence. No cut.

10% SILTSTONE: medium to dark grey, sub-fissile, blocky, moderately hard to occasionally hard, rare dark microlaminations, occasionally very arenaceous, slightly calcareous.

10% SHALE: medium to dark grey, trace black, sub-fissile to fissile, moderately hard, trace dark microlaminations, trace quartz grains.

4140' - 4160' --- 60% SANDSTONE: clear to pale grey, occasionally pale brown, fine to medium, occasionally very fine, trace coarse, sub-angular to sub-rounded, moderately to occasionally well sorted, siliceous cement, hard to very hard, trace to common dark lithics, slightly calcareous, trace pyritic.
 POROSITY: poor to fair.
 SHOWS: trace pale weak fluorescence. No cut.

30% SILTSTONE: A/A.

10% SHALE: A/A.

REMARK: FROM 4160 FEET START SEEING HYDROCARBON STAINING THROUGHOUT SAMPLE.

4160' - 4170' --- 100% SANDSTONE: medium grey brown to dark grey, occasionally clear to very pale grey, fine grained, occasionally medium, occasionally very fine, sub-angular to sub-rounded, moderate to well sorted, siliceous cement, friable to hard, very argillaceous, common dark brown to black, hydrocarbon staining on grains, dark possible carbonaceous fragments also as rare microlaminations.

POROSITY: fair.

SHOWS: 30% dull yellow green fluorescence, faint slow yellow streaming cut.

TR SILTSTONE: medium to dark grey, blocky, moderately hard, very arenaceous, trace calcareous.

TR SHALE: medium to dark grey, occasionally black, sub-fissile to fissile, moderately hard, trace dark microlaminations, trace bedding, trace quartz grains, possibly carbonaceous.

4170' - 4180' --- 100% SANDSTONE: A/A.
SHOWS: 30% dull yellow fluorescence, no cut.

TR SILTSTONE: A/A.

TR SHALE: A/A.

4180' - 4190' --- 100% SANDSTONE: medium grey brown to dark grey, occasionally very pale grey to pale brown, fine to medium, occasionally very fine, trace coarse, sub-angular to sub-rounded, siliceous cement, hard, very argillaceous, common dark lithics, dark hydrocarbon staining, trace pyrite.
POROSITY: fair.

SHOWS: 10% blue yellow to dull yellow fluorescence, no crush cut, trace calcareous.

TR SILTSTONE: medium to dark grey, friable, moderately hard, trace calcareous.

TR SHALE: medium grey to dark grey, occasionally black, sub-fissile to fissile, moderately hard, trace dark microlaminations, possibly very carbonaceous, trace quartz grains, trace calcareous.

4190' - 4200' --- 90% SANDSTONE: medium grey brown to dark grey, occasionally very pale grey to pale brown, trace clear, dominantly fine, occasionally very fine and medium, trace coarse, trace very coarse grained, sub-angular to sub-rounded, occasionally rounded, moderate to well sorted, occasionally poorly sorted, siliceous cement, hard to very hard, very argillaceous, common dark lithics, trace dark possibly carbonaceous fragments, dark hydrocarbon staining.

POROSITY: fair.

SHOWS: trace bright pale yellow fluorescence, rapid streaming cut, milky white, 10% very dull yellow green fluorescence, no cut.

10% SILTSTONE: A/A.

TR SHALE: A/A.

4200' - 4210' --- 100% SANDSTONE: medium brown to dark brown, occasionally pale translucent brown, dominantly fine grained, sub-rounded, well sorted, siliceous cement, friable to hard, overall hydrocarbon staining, common dark argillaceous matrix and micaceous shale laminations.

POROSITY: poor.

SHOWS: trace dull green yellow and brighter blue yellow fluorescence. Blue yellow fluorescence from clean white sandstone, dull yellow from dirty sandstone. No crush cut.

TR SHALE: A/A.

4210' - 4220' --- 70% SANDSTONE: clear, translucent pale brown, milky, fine to coarse grained, dominantly medium to coarse, sub-angular to sub-rounded, poorly sorted, siliceous cement, medium and coarse as loose grains, quartzose.

POROSITY: poor.

SHOWS: trace dull green yellow fluorescence, no crush cut.

20% SILTSTONE: medium to brassy grey, sub-blocky to blocky, finely pyritic in parts, arenaceous, grades to sandstone in places, firm to hard.

10% SHALE: A/A, also finely micaceous in places.

4220' - 4230' --- 80% SANDSTONE: clear to white, common pale to medium grey brown, occasionally dark grey, fine to coarse, mainly medium to coarse, sub-angular to sub-rounded, occasionally angular, moderately to poorly sorted, dominantly loose, siliceous cement, friable to moderately hard, occasionally hard, common dark hydrocarbon staining, occasional argillaceous fragments, trace carbonaceous fragments, trace calcareous.
 POROSITY: poor.
 SHOWS: Nil.
 20% SILTSTONE: A/A, very arenaceous.
 TR SHALE: medium to dark grey, occasionally blocky, fissile, moderately hard, trace light microlaminations, trace calcareous, occasional dark carbonaceous fragments, trace quartz.

4230' - 4240' --- 70% SANDSTONE: clear to pale translucent grey brown, fine to medium, occasionally coarse, angular to sub-angular, trace sub-rounded to rounded, poorly sorted, common loose, siliceous cement, friable to moderately hard, common hydrocarbon staining, occasional carbonaceous fragments, occasionally very argillaceous, trace to rare pyrite.
 POROSITY: poor.
 SHOWS: Nil.
 30% SILTSTONE: medium to dark grey brown, firm to moderately hard, rare dark carbonaceous microlaminations, very arenaceous.

4240' - 4250' --- 100% SANDSTONE: clear to translucent pale brown, dark brown grey, fine to coarse grained, sub-angular to rounded, poorly sorted, quartzose, siliceous cement, moderately friable to hard, trace pyrite, common interstitial dead oil.
 POROSITY: poor.
 SHOWS: Nil.
 TR SILTSTONE: A/A, dolomitic in parts.

4250' - 4260' --- 100% SANDSTONE: clear to translucent pale brown, minor milky, fine to coarse grained, sub-angular to rounded, poorly sorted, quartzose, siliceous cement, moderately friable in places to hard.
 POROSITY: poor.
 SHOWS: trace pale blue yellow fluorescence, streaming white cut, dead oil.
 TR SILTSTONE: A/A.

4260' - 4270' --- 90% SANDSTONE: clear to off white, pale brown and brown grey, fine to coarse, becoming more fine, A/A, pyrite aggregates.
 POROSITY: poor.
 SHOWS: 5% very dull green yellow fluorescence, no cut.
 10% SILTSTONE: medium to dark and brassy grey, blocky to fissile, generally argillaceous, finely micaceous and pyritic in part, slightly dolomitic in places, firm.

4270' - 4280' --- 90% SANDSTONE: clear to pale brown and brown grey, fine to coarse grained, fine to medium predominant, rarely very coarse, sub-angular to rounded, poorly sorted, quartzose, siliceous cement, micaceous, argillaceous matrix in parts, generally friable, hydrocarbon stained, pyrite disseminations and aggregates in places.
 POROSITY: poor to fair.
 FLUORESCENCE: 5% dull green yellow fluorescence. No cut.
 TR SILTSTONE: medium to dark grey, blocky, arenaceous, grades to fine sandstone in part, pyritic.
 10% SHALE: medium to dark and brassy grey, sub-blocky to fissile, finely pyritic and micaceous in part, soft to moderately firm.

4280' - 4290' --- 100% SANDSTONE: clear to white to translucent, light to medium grey brown, occasionally dark grey brown, fine to coarse, mainly fine to medium, sub-angular to sub-rounded, poorly sorted, friable to moderately hard, occasionally hard, siliceous cement, very argillaceous, occasional dark oil stain and carbonaceous fragments, rare carbon microlaminations.
 POROSITY: poor.
 SHOWS: trace pale greenish fluorescence, no cut.
 TR SILTSTONE: medium grey brown to dark grey, firm, moderately hard.
 TR SHALE: medium to dark grey, friable to moderately hard, fissile, occasionally micromicaceous, trace dark microlaminations, trace quartz grains.

4290' - 4300' --- 100% SANDSTONE: A/A.
 TR SILTSTONE: A/A.
 TR SHALE: A/A.

4300' - 4310' --- 100% SANDSTONE: clear to pale grey, mainly pale translucent brown, occasionally medium and dark grey, fine to coarse, mainly fine to medium, sub-angular to sub-rounded, poorly to moderately sorted, siliceous cement, moderately hard to hard, common dark lithics, hydrocarbon staining, trace pyrite.
 POROSITY: poor.
 SHOWS: trace (3%) pale yellow green fluorescence. No cut.

TR SILTSTONE: medium grey to dark grey brown, moderately hard, blocky, very arenaceous.

TR SHALE: medium to dark grey, friable to moderately hard, fissile, occasionally micromicaceous, trace quartz.

4310' - 4320' --- 80% SANDSTONE: A/A.
 POROSITY: poor.
 SHOWS: trace pale yellow fluorescence, no cut.
 10% SILTSTONE: A/A.
 10% SHALE: A/A.

4320' - 4330' --- 80% SANDSTONE: white to pale translucent brown, occasionally clear, occasionally dark grey, fine to coarse, mainly fine to medium, occasional loose coarse grains, poor to moderately sorted, siliceous cement, trace calcareous, friable to moderately hard, trace dark lithics, occasional hydrocarbon staining, trace pyrite.
 POROSITY: poor.
 SHOWS: trace pale white fluorescence, no cut.
 10% SILTSTONE: A/A.
 10% SHALE: A/A.

4330' - 4340' --- 80% SANDSTONE: white to pale grey, occasionally pale grey brown, fine to medium, occasionally coarse, sub-angular to sub-rounded, moderately sorted, siliceous cement, occasional calcareous matrix, friable to moderately hard, common dark argillaceous fragments, common dark carbonaceous fragments, occasional hydrocarbon staining, trace to rare pyrite.
 POROSITY: poor to fair.
 SHOWS: trace pale white weak fluorescence with weak pale streaming crush cut.

TR SILTSTONE: medium to dark grey, firm, moderately hard, common dark lithics, very arenaceous.

20% SHALE: medium to dark grey, occasionally black and very carbonaceous, sub-fissile to fissile, friable, trace quartz lineations, trace dark carbonaceous microlaminations, trace calcareous microlaminations, trace micromica.

TR LIMESTONE: pale yellowish grey to pale greenish grey, pale tan, friable to moderately hard, cryptocrystalline, trace dark lithics, possibly fossiliferous.

4340' - 4350' --- 80% SANDSTONE: A/A.
 POROSITY: poor.
 SHOWS: trace very dull green yellow
 fluorescence. No cut. Oily appearance.
 TR SILTSTONE: A/A.
 20% SHALE: A/A.
 TR LIMESTONE: A/A.

4350' - 4360' --- 100% SANDSTONE: clear to white, occasionally pale to
 medium translucent brown, very fine to fine,
 occasionally medium to coarse, sub-angular to
 sub-rounded, moderately sorted, siliceous cement,
 friable to moderately hard, oily appearance,
 common interstitial dead oil, argillaceous in
 part, occasional dark carbonaceous fragments.
 POROSITY: poor to fair.
 SHOWS: trace very dull green yellow
 fluorescence, no cut, no crush cut.
 TR SILTSTONE: medium to dark grey, firm, moderately
 hard, common dark lithics, very arenaceous,
 pyritic.
 TR SHALE: medium to dark grey, friable, fissile,
 trace dark carbonaceous microlaminations, trace
 quartz grains.

4360' - 4370' --- 90% SANDSTONE: clear to white, occasionally pale
 grey brown, fine to coarse grained, occasionally
 very fine grained, sub-angular to sub-rounded,
 occasionally rounded, poorly sorted, occasionally
 well sorted, siliceous cement, friable to
 moderately hard, trace calcareous, trace
 argillaceous, common interstitial dead oil, trace
 pyrite, occasional dark carbonaceous fragments.
 POROSITY: poor.
 SHOWS: trace very weak fluorescence, no cut, no
 crush cut.
 TR SILTSTONE: A/A.
 10% SHALE: A/A.

4370' - 4380' --- 90% SANDSTONE: clear to very pale grey, fine to very coarse, sub-angular to sub-rounded, occasionally rounded to well rounded, poorly sorted to occasionally moderately sorted, siliceous cement, friable, moderately hard to occasionally hard, very argillaceous in part, common hydrocarbon staining and carbonaceous fragments, occasional authogenic quartz overgrowths, trace calcareous, trace pyrite.
 POROSITY: poor.
 SHOWS: trace pale yellow white fluorescence, trace very slow weak white cut.
 TR SILTSTONE: medium grey brown to dark grey, friable, blocky, soft very arenaceous, trace calcareous, trace dark carbonaceous fragments.
 10% SHALE: medium grey to dark grey, occasionally black, very carbonaceous, soft to moderately hard, sub-fissile to fissile, occasionally micromicaceous, trace quartz grains.

4380' - 4390' --- 90% SANDSTONE: A/A, trace pale white fluorescence, no cut, no crush cut.
 TR SILTSTONE: A/A.
 10% SHALE: A/A.

4390' - 4400' --- 90% SANDSTONE: clear to pale grey, occasionally medium grey to brown, fine to coarse, trace very coarse, mainly medium to coarse, sub-angular to sub-rounded, occasionally rounded, moderate to poorly sorted, siliceous cement, friable to moderately hard, common carbonaceous fragments, occasional sand size shale fragments, occasional dead oil stain on grains.
 POROSITY: poor.
 SHOWS: rare pale yellow fluorescence with a very weak streaming crush cut.
 TR SILTSTONE: medium to dark grey brown, moderately hard, very arenaceous, common dark lithics, trace pyrite.
 10% SHALE: medium to dark grey, occasionally black, occasionally orange brown, fissile, soft to moderately hard, trace quartz grains.
 TR LIMESTONE: A/A.

4400' - 4410' --- 80% SANDSTONE: A/A.
 POROSITY: poor.
 SHOWS: rare pale yellow fluorescence, weak streaming cut, trace dull yellow fluorescence, no cut, no crush cut.
 TR SILTSTONE: A/A.
 20% SHALE: A/A, trace micromica.

4410' - 4420' --- 70% SANDSTONE: clear to pale grey, occasionally medium to dark grey brown, trace pale green, very fine to coarse, angular to rounded, mainly sub-angular to sub-rounded, poorly sorted, siliceous cement, occasionally dolomitic, friable, moderate to hard, occasionally hard, very argillaceous in part, occasional dark carbonaceous fragments, trace glauconite, trace pyrite, trace dead oil stain.
 POROSITY: poor.
 SHOWS: trace dull yellow orange fluorescence, no cut, no crush cut.

10% SILTSTONE: medium to dark grey brown, friable, moderately hard, common dark lithic, commonly very arenaceous, trace pyrite.

20% SHALE: medium to dark grey, occasionally orange brown, fissile to sub-fissile, moderately hard, trace micromica, trace quartz grains, trace chlorite.

4420' - 4430' NO SAMPLE 4420 TO 4430 FEET.

4430' - 4440' --- 60% SANDSTONE: clear to off white, common dirty grey brown, very fine to medium grained, rare coarse, moderate to poorly sorted, very argillaceous, siliceous/dolomitic cement, common dark green glauconite.
 POROSITY: poor.
 SHOWS: trace pale yellow fluorescence, no cut.

20% SILTSTONE: A/A.

20% SHALE: A/A.

4440' - 4450' --- 60% SANDSTONE: A/A.
 POROSITY: poor.
 SHOWS: trace very dull yellow fluorescence, no cut.

20% SILTSTONE: moderate to dark grey, brown, friable to moderately hard, common dark lithics, very arenaceous, calcareous in part.

20% SHALE: medium to dark grey, occasionally orange brown, fissile to sub-fissile, soft to moderately hard, trace quartz grains, calcareous in part.

4450' - 4460' --- 70% SANDSTONE: clear, medium to dark brown, dark grey, blackish, very fine to coarse, sub-angular to sub-rounded, moderate to poorly sorted, siliceous/dolomitic cement, occasionally friable, moderately hard to occasionally very hard, very common dark lithics, occasionally glauconitic, trace pyrite.
 POROSITY: poor.
 SHOWS: Nil.

TR SILTSTONE: A/A.

30% SHALE: A/A.

4460' - 4470' --- 80% SANDSTONE: clear, pale grey, medium to very dark grey, blackish, very fine to coarse, sub-angular to sub-rounded, moderate to poorly sorted, siliceous/dolomitic cement, friable, moderately hard, very silty in part, common carbonaceous fragments, glauconitic in part.
POROSITY: poor.
SHOWS: rare dull yellow fluorescence, no cut, dead oil stain.
TR SILTSTONE: medium to dark grey, fissile, moderately hard, trace light microlaminations, trace calcareous, trace micromica, trace quartz.
20% SHALE: medium to dark grey, fissile, moderately hard, very arenaceous, trace carbonaceous.

4470' - 4480' --- 80% SANDSTONE: A/A.
POROSITY: poor.
SHOWS: No fluorescence, no cut.
20% SHALE: A/A.

4480' - 4490' --- 80% SANDSTONE: clear, white, occasionally pale to dark silty grey, medium to coarse, occasionally fine grained, occasionally very coarse grained, sub-angular to sub-rounded, poor to moderately sorted, siliceous/dolomitic cement, moderate hard to hard, occasionally friable, very argillaceous in part, glauconitic in part, trace dead oil staining, trace carbonaceous fragments, trace quartz overgrowths.
POROSITY: poor.
SHOWS: trace to rare pale yellow fluorescence, no cut.
10% SILTSTONE: medium to dark brassy grey, blocky, occasionally sub-fissile, arenaceous, trace disseminated and aggregates pyrite, moderately soft to firm.
10% SHALE: medium grey, fissile to sub-fissile, finely micaceous and pyritic in parts.
REMARK: OIL BASED MUD CONTAMINATION. PALE BLUE FLUORESCENCE.

4490' - 4495' --- 80% SANDSTONE: clear to pale off grey, occasionally light brown to dark brown grey, fine to medium grained, trace coarse, dominantly sub-angular, occasionally sub-rounded, moderately to poorly sorted, siliceous/occasionally dolomitic cement, moderately hard, abundant glauconite, occasional silty lithics, trace interstitial dead oil.
 POROSITY: poor to fair.
 SHOWS: 5% blue white and dull golden yellow fluorescence, no cut.

10% SILTSTONE: medium to dark brown grey, generally blocky, occasionally sub-fissile, arenaceous, varies to very fine sandstone, trace pyrite, trace calcareous, firm.

10% SHALE: light to medium brassy grey, sub-fissile to fissile, finely pyritic and micaceous in part, occasionally strongly calcareous, firm to brittle.

4495' - 4500' --- 90% SANDSTONE: clear to very pale off grey, slight oil appearance, medium to coarse grained, occasionally fine, sub-angular to rounded, moderately poorly sorted, siliceous/occasionally dolomitic cement, hard to moderately friable, common glauconite, common light brassy grey silty lithic, trace pyrite.
 POROSITY: poor to fair.
 SHOWS: 10% dull golden yellow fluorescence, faint slow yellow streaming cut.

10% SHALE: light to medium and dark grey, sub-fissile to fissile, finely micaceous and pyritic in part, occasionally calcareous, moderately soft to firm.

4500' - 4505' --- 100% SANDSTONE: A/A.
 POROSITY: poor.
 SHOWS: tightly cemented, 10% dull golden yellow, fluorescence, very faint slow yellow streaming flood cut.

TR SHALE: A/A.

4505' - 4510' --- 100% SANDSTONE: clear to pale grey and brown grey, occasionally clear and white (P3-10 sandstone), fine to medium coarse grained, sub-angular to rounded, poorly sorted, siliceous/dolomitic, moderately hard to friable, abundant glauconite and light grey lithics, trace disseminated and aggregates of pyrite.
 POROSITY: poor to fair.
 SHOWS: 35% golden yellow and blue white fluorescence, faint yellow streaming and flood cut.

TR SHALE: light medium grey, sub-fissile, very pyritic, occasionally calcareous.
 REMARK: EST. TOP PACOOTTA P3 @ 4509 FEET.

4510' - 4520' --- 100% SANDSTONE: bimodal 70% P2 sandstone A/A, 30% P3 sandstone - clear, translucent, white, fine to coarse grained, sub-rounded to rounded, poorly sorted, siliceous, quartzose, no accessories, friable to hard.
POROSITY: poor to fair.
SHOWS: 30% dull green yellow fluorescence, occasional blue white and blue yellow fluorescence, yellow white flood crush cut, overall slightly oily appearance.
TR SHALE: A/A.
REMARK: TRIP TO RUN 8-3/8" CSG @ 4517 FEET AND NEW BIT NO. 12.
REMARK: CHANGE TO OIL BASED MUD.

4520' - 4530' --- 100% SANDSTONE: clear to very pale grey, fine to medium, occasionally coarse, trace very coarse, sub-angular to sub-rounded, moderate to occasionally poorly sorted, siliceous cement, trace siliceous matrix, friable to occasionally moderately hard, trace dead oil stain between grains, trace carbonaceous fragments, trace to rare ferruginous staining, generally clean sand.
POROSITY: poor to fair.
SHOWS: pale blue grey fluorescence, 50% rapid streaming cut of milky white to very pale yellow, leaving residue of same colour, dry sample (oil based mud contamination)
TR SILTSTONE: medium grey to dark grey, occasionally medium to dark brown, friable, soft to moderately hard, arenaceous in part.
TR SHALE: medium to dark grey, occasionally black, sub-fissile to fissile, moderately hard to hard, carbonaceous in part, micromicaceous in part, trace calcareous/dolomitic.

4530' - 4540' --- 100% SANDSTONE: clear to translucent, off white, trace fine grained medium brown, medium to coarse grained, occasionally very coarse, trace fine grained, sub-angular to sub-rounded, poor to moderate sorting, siliceous cement/matrix, occasionally friable to brittle, moderately hard, trace argillaceous, trace pyrite, trace spotty intergranular black dead oil staining.
POROSITY: poor to fair.
SHOWS: 90% grey to white fluorescence, rapid streaming cloudy milky white cut and residue, wet sample.
REMARK: trace to rare oil stained grains with no fluorescence but rapid cut.

- 4540' - 4550' --- 100% SANDSTONE: clear to translucent, off white, fine to medium to coarse, sub-angular to sub-rounded, moderate sorting, siliceous cement/matrix, friable to moderately hard, trace argillaceous fragments, trace dark carbonaceous flecks, trace hydrocarbon (oil/dead oil) staining on grains and rare intergranular, rare calcareous, rare pyrite. POROSITY: poor, mainly coarse size fraction. SHOWS: 90% white to grey fluorescence, rapid streaming cloudy milky white cut and residue wet sample.
- 4550' - 4560' --- 100% SANDSTONE: A/A. POROSITY: poor, mainly coarse size fraction. SHOWS: 90% bright white to grey fluorescence, rapid milky bloom, then continuous streaming white cut, wet sample, milky white residue.
- 4560' - 4570' --- 100% SANDSTONE: clear to translucent, off white, fine to coarse grained, sub-angular to sub-rounded, poor to moderately sorted, siliceous cement/matrix, brittle, hard to very hard, trace carbonaceous fragments, trace dead oil both intergranular and as green coatings. POROSITY: poor, mainly medium to coarse grains. SHOWS: 80% bright white fluorescence, instant cut then continuous streaming cloudy white residue, wet sample.
- 4570' - 4580' --- 100% SANDSTONE: clear to translucent off white, fine to coarse, sub-angular to sub-rounded, moderately sorted, occasionally well sorted, siliceous cement/matrix, friable to occasionally brittle, moderately hard to hard, trace dark carbonaceous fragments, trace dead oil staining on grains. POROSITY: poor, medium to coarse grains, fine grained tight. SHOWS: 80% bright white to grey fluorescence, instant milky white cut, white residue, wet sample.
- 4580' - 4590' --- 100% SANDSTONE: A/A, decreasing coarse grains. POROSITY: poor, medium to coarse grained, fine grained appear tight, hard. SHOWS: 80% bright white to grey fluorescence, instant milky white cut, white residue, wet sample.

- 4590' - 4600' --- 100% SANDSTONE: clear to translucent, off white, fine to occasionally coarse, poor to moderately sorted, siliceous cement/matrix, moderately hard to hard, occasionally brittle, trace dark possible carbonaceous flecks, trace dead oil staining as coatings on grains and intergranular, trace pyrite aggregates.
POROSITY: poor, mainly medium to coarse grained aggregates.
SHOW: 80% bright white to grey fluorescence, instant cloudy white cut then continuous streaming, wet sample.
- 4600' - 4605' --- 100% SANDSTONE: A/A.
POROSITY: poor, mainly medium to coarse grained size.
SHOWS: 60% bright white to grey in part fluorescence, instant weak milky white cut, rapid streaming cut, very pale yellow white residue, wet sample.
- 4605' - 4610' --- 100% SANDSTONE: clear to very pale grey, trace medium grey, fine to occasionally coarse, trace very coarse, sub-angular to sub-rounded, trace rounded, moderately sorted to trace well sorted, siliceous cement/matrix, hard to very hard, brittle, trace dark argillaceous fragments, trace possible dark carbonaceous fragments, trace dead oil staining, trace to rare pyrite.
POROSITY: poor, mainly medium to coarse grained.
SHOWS: 80% bright white to grey fluorescence, very weak instant milky white cut, moderate white streaming cut, pale grey, white residue, wet sample.
- 4610' - 4615' --- 100% SANDSTONE: clear to very pale grey, fine to medium grained, trace coarse, sub-angular to sub-rounded, moderately to poorly sorted, siliceous cement/matrix, moderately hard to hard, brittle, trace dark argillaceous flecks, trace dark carbonaceous fragments, rare pyrite, trace ferruginous staining.
POROSITY: poor, evident in coarse grains.
SHOWS: 90% bright white fluorescence, also appears pale grey in translucent grains, instant milky white cut, moderately white thin streaming cut, pale white residue.

- 4615' - 4620' --- 100% SANDSTONE: A/A, trace pale red iron stained aggregates, fine to medium grained, trace iron staining as green coatings, trace to rare calcareous.
POROSITY: visually poor.
SHOWS: 80% bright white to medium grey, instant cut milky white, rapid continuous streaming cut white, milky white residue.
- 4620' - 4625' --- 100% SANDSTONE: off white, translucent to pale tan, common pale yellow tan to medium brown, trace reddish brown, fine to medium grained, sub-angular to occasionally angular, siliceous cement/matrix, moderately hard to hard, commonly brittle, trace dark argillaceous fragments, trace to rare carbonaceous fragments, occasionally authogenic quartz overgrowths.
POROSITY: poor, occasionally apparent in medium size grains.
SHOWS: pale grey to white fluorescence, instant cut milky white, moderately slow streaming cut, 100% fluorescence.
- 4625' - 4630' --- 100% SANDSTONE: A/A.
POROSITY: poor.
SHOWS: 100% A/A.
- 4630' - 4640' --- 100% SANDSTONE: clear to very pale to medium brown, fine to medium grained, sub-angular to sub-rounded, moderately sorted, poorly sorted in part, siliceous matrix cement, hard to very hard, trace carbonaceous flecks.
POROSITY: poor visual, trace iron staining.
SHOWS: white to pale grey fluorescence, instant cloudy white cut, streaming cut 100%, wet sample.
- 4640' - 4650' --- 100% SANDSTONE: clear white to very pale greyish yellow, fine to coarse, trace pale orange, trace very coarse grained, sub-rounded to trace rounded, occasionally rounded, moderate to poorly sorted, hard to very hard, brittle, trace dark argillaceous and carbonaceous fragments, trace iron staining, trace to rare calcareous.
POROSITY: poor.
SHOWS: 100% white and pale grey fluorescence, instant cloudy, off white cut, rapid continuous white streaming cut, milky residue, wet sample.

4650' - 4660' --- 100% SANDSTONE: off white to pale yellow grey, occasionally clear, fine to coarse, trace to rare pale orange to pale red, sub-angular to sub-rounded, trace rounded, trace very coarse, moderately sorted, poorly sorted in part, siliceous cement/matrix, hard to very hard, trace dark carbonaceous flecks and argillaceous fragments, trace ferruginous staining, rare pyrite, rare pale green staining on quartz aggregates possibly indicating live oil.
POROSITY: poor to fair.
SHOWS: 100% white to pale grey, instant milky cut, rapid streaming, white residue, wet sample.
REMARK: DST NO. 2 4605 TO 4660 FT. RECOVERED 1325 BLS/DAY. 775 M CU FT/D. GOR 584 CU FT/BL.

4660' - 4670' --- 100% SANDSTONE: clear, off white, translucent, fine to coarse grained, sub-angular to sub-rounded, moderately sorted to poorly sorted in part, siliceous cement, quartzose, friable, trace carbonaceous flecks, interstitial dead oil.
POROSITY: poor.
SHOWS: 100% white to pale grey, instant milky cut, probably due to oil mud contamination.

4670' - 4680' --- 100% SANDSTONE: A/A.
POROSITY: poor.
SHOWS: A/A.
TR SILTSTONE: dark grey, blocky, moderately hard, shaley, arenaceous.

4680' - 4690' --- 100% SANDSTONE: clear, white, pale green, fine to coarse grained, sub-angular to sub-rounded, moderately poorly sorted in part, siliceous cement, quartzose, friable to moderately hard, interstitial dead oil.
POROSITY: poor.
SHOWS: 100% white to pale grey, instant milky cut, probably due to oil mud contamination.

4690' - 4700' --- 100% SANDSTONE: clear, white, fine to medium grained, coarse in part, sub-angular to rounded, moderately sorted, siliceous cement, quartzose, friable to moderately hard, minor interstitial dead oil.
POROSITY: poor to fair.
SHOWS: white to pale grey, instant milky cut, probably due to oil mud contamination.

4700' - 4710' --- 80% SANDSTONE: clear, white, very fine to medium grained, sub-angular to sub-rounded, moderate sorting, siliceous cement, quartzose, friable to moderately hard, trace interstitial dead oil.
POROSITY: poor.
SHOWS: A/A.

20% SILTSTONE: grey, blocky, soft to moderately hard.

4710' - 4720' -- 100% SANDSTONE: clear, white, translucent, fine to medium grained, occasionally coarse grained, sub-angular to sub-rounded, moderately sorted, siliceous cement, quartzose, friable, interstitial dead oil.
POROSITY: poor.
SHOWS: white to pale grey, instant milky cut and residue, probably due to oil mud contamination.

4720' - 4725' --- 100% SANDSTONE: clear, white, translucent, fine to coarse grained, predominantly medium and coarse, sub-angular to rounded, moderate to well sorted, siliceous cement, quartzose, friable, trace interstitial dead oil.
POROSITY: poor.
SHOWS: A/A.

4725' - 4735' --- 100% SANDSTONE: clear, translucent, pale yellow, fine to medium grained, sub-angular to sub-rounded, moderately sorted, siliceous cement, quartzose, friable, interstitial dead oil.
POROSITY: poor.
SHOWS: white to pale grey, instant milky cut and residue, probably due to oil mud contamination.

REMARK: TD AT 2.45PM 24/7/85