

WELL HISTORY REPORT
SHELL PEBL R WT I-21

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SECTION I - SUMMARY OF WELL DATA

Well Name and Number

Shell Pool R YT I-21

Permitter

Shell Canada Limited

Name of Operator

Shell Canada Limited, P. O. Box 186, Edmonton, Alberta

Location

Unit I, Section 21, Grid: 66° 20' 134° 15'
Latitude: 66° 10' 36" .504N
Longitude: 134° 18' 52" .175W

Permit No.

#3498

Drilling Contractor

Regent Drilling Limited Rig No. 21 (Rotary)

Drilling Authority No.

No. 230 February 14, 1966

Classification

Wildcat

Elevation

G.L. : 1238'

K.B. : 1251'

Date Cased

2:30 p.m., February 20, 1966

Date Completed Drilling

March 28, 1966

Total Depth and Plugged Back Total Depth

T.D. : 6800' P.B.T.D. : Surface

Well Status

Dry and Abandoned

Rig Released

6:00 a.m. March 30, 1966

Hole Size

24" to 40'

13-1/4" to 660', 6-3/4" to 6800'

Casing

20" Conductor at 40' K.B. with
140 sacks Portland & 100# CaCl₂

9-5/8" J-55 #36 New Mannesman Casing at 659' K.B. with
500 sacks Portland Cement & 2% CaCl₂

SECTION II - GEOLOGICAL SUMMARY

A) Formation Tops

Spudded in Lower Mississippian	M-S-4
Top	M-S-3
Top	M-S-2
Top	M-S-1
Top	M-D-S-1
Top	Devonian
Top	Canol
Base	Canol
Top	Carbonate (Lower Devonian)
	550' KB
	1750' KB
	2400' KB
	2850' KB
	3200
	4620 KB
	4760 KB
	6702 KB

B) Cored Intervals

#1	5850-5885	Rec. 35' 2"
#2	6194-6224	Rec. 30'
#3	6470-6500	Rec. 30'
#4	6790-6800	Rec. 10'

Recovered 22 Sidewall Cores @ 670' - 4600'

C) Core Description

See insert

D) Sample Description

(C) CORE SUMMARY

CORE DESCRIPTIONS

Core #1; @ 5850' - 588⁵6'; with a recovery of 100%

The whole core consists of:

Shale, dark grey, trace to \pm 20% calcareous, with traces of white mica and carbonaceous, flaky matter on the bedding fissility, traces of pyrite.

This core contains locally traces of bioclastic material and fossils:

Pebble - Medium grainsize, straight cone, Nautiloid Shells; some tentaculities, anthropod shells and Medium-Fine grainsize bioclastic debris.

Core #2; @ 6194' - 6224'; with a recovery of 99%

6194'.0" - 6198'.6": Shale, dark grey, trace to \pm 20% calcareous, with traces of carbonaceous flaky matter and moderate amounts of white mica, locally streaks and papery lamina of Siltstone and silt grains;

Siltstone, @ top and bottom of interval a 3" respectively 6" thick bed, very argillaceous, trace to \pm 20% calcareous,

6198'.6" - 6222'.0": Shale, dark grey, traces to \pm 20% calcareous, with traces of white mica and carbonaceous flaky matter. This shale contains patches and streaks of Pebble to very fine grainsize bioclastic debris, and some fossils: crinoid ossicles, straight cone nautiloid shells, parts of brachiopods and rare bryozoans, corals, gastropods and arthropods.

Over the whole interval, rare to locally frequent papery lamina of calci-silt- and clastic-silt grains, and locally some pebble size Siltstone plates with a contorted internal lamination.

6222'.0" - 6223'.3": Shale, medium olive grey, with a homo-genous or papery laminated calci-silt to very fine calcisand content up to \pm 10%, traces of pyrite and white mica.

The contact between the dark grey and medium olive grey shales is partly contorted and partly faulted.

Core #3; @ 6470' - 6500'; with a recovery of 100%

The core consists of: 1/30% - 60% Lime carbonate, consisting of Lithographic to sub-Lithographic grainsize mud and sub-Lithographic to fine grained bioclastic debris Laminae.

2/70% to 40% Shale, either homogenously mixed with the Lime carbonate or functioning as a matrix for the bioclastic debris.

The rock as such should be called a Marlstone.

The bioclastic debris / Lime mud / Shale Lamination shows slumpfolds and syn-sedimentary faulting. And pyrite @ 6497 - 98 up to 90% of Bioclastic debris is present in clots and stringers, this debris consists of: one hole and two hole crinoid ossicles and some brachiopod debris.

The rock is bituminous and emits a fetid odour on fracturing.

Over the whole length of the core bedding-plane and \pm 60% dipping were observed these veins contain a filling of white calcite and black, very bituminous mud stone.

Core #4; 6790' - 6800'; with 95% recovery.

6790' - 6794'.6": A Lime-Carbonate Conglomerate & Breccia, consisting of 80% - 90% of components and 20% - 10% matrix. Components: Cobble to Fine Grainsizes subangular to rounded.

A) Limestone, medium brown to dark brown banded, Paecal-pellet Pack - to Grainstone, rock consists of very fine to extremely fine oval pellets and oolites, banding effect due to varying amounts of extremely fine crystalline sparry calcite cement.

Some argillaceous (20% - 30%), dark grey, slightly bituminous lamina are present.

B) Limestone, medium brown Lime-carbonate-mud with up to 10% extremely fine to medium grained bioclastic debris.

C) Limestone, medium brown to light brown, with 10% - 90% bioclastic debris mainly consisting of fine to coarse grained one hole and two hole crinoid ossibles. The rest of the rock consists of type B).

D) Individual grains of bioclastic debris of pebble to fine grainsize, consisting of

Coral debris

Brachiopod debris

One & Two hole Crinoid debris

Some Trilobite debris

Some Tentaculites debris

Matrix: dark grey, mainly very fine to sub-lithographic crystalline dolomite, with varying amounts of argillaceous-biluminous - and pyritic matter.

6794'6" - 6799'6" : Consists of Limestone as described under A) in the upper part of this core.

The lamina of this rock in the 94'6" - 99'6" interval dip 40% - 60% to the core axis.

It is quite possible that this part of the core is cut out of a boulder.

Traces to 10% of calcite veins are present in this interval.

(D) SAMPLE SUMMARY

SHELL, PAEL RIVER I-21

LATITUDE: 66° 10' 36.5" N.

T.D. 6800'

LONGITUDE: 134° 18' 52.2" W.

G.L. 1238'

0'-70'		No Samples.
70'-80'	Siltstone- Sandstone	Light grey, lithic, siltstone to pebble size sandstone, trace of argillaceous content, trace of ironstone.
80'-90'	Shale	Medium grey, trace of silty content.
90'-100'	Slate & Ironstone	Medium grey brown slate interbedded with ironstone, trace of silty content, pyritic.
100'-110'	Slate & Ironstone	Medium grey brown slate interbedded with ironstone, trace of silty content, pyritic.
110'-120'	Slate & Ironstone	Medium grey slate interbedded with ironstone, trace of silty content.
120'-130'	Slate & Ironstone	Medium grey slate interbedded with ironstone, trace of silty content.
130'-140'	Slate & Ironstone	Medium grey slate interbedded with ironstone, trace of silty content.
140'-150'	Slate & Ironstone	Medium grey slate interbedded with ironstone, trace of silty content.
150'-160'	Shale	Medium grey, trace of calcareous content.
160'-170'	Shale	Medium grey, trace of silty content and calcareous content, pyritic.

170'-180'	Shale	Medium grey, trace of calcareous content.
180'-190'	Shale	Medium grey, trace of silty and calcareous content, band of ironstone; pyritic.
190'-200'	Shale	Medium grey brown, trace of calcareous content, pyritic, band of ironstone.
200'-210'	Shale	Medium grey, trace of calcareous content, band of ironstone.
210'-220'	Shale	Medium grey, trace of calcareous content, band of ironstone.
220'-230'	Shale	Medium grey, trace of calcareous content, band of ironstone.
230'-240'	Shale	Medium grey, trace of calcareous content, band of ironstone; micaceous.
240'-250'	Shale	Medium grey, trace of calcareous content.
250'-260'	Shale	Medium grey, pyritic.
260'-270'	Shale	Medium grey, pyritic.
270'-280'	Shale	Medium grey.
280'-300'	Shale	Medium grey, trace of silty content, pyritic, band of ironstone.
300'-320'	Shale	Medium grey, slightly calcareous, pyritic.
320'-340'	Shale	Medium grey, trace of silty content.
340'-360'	Shale	Medium grey, trace of silty content.

360'-380'	Shale	Medium grey.
380'-400'	Shale	Medium grey, pyritic, band of ironstone.
400'-420'	Shale	Dark grey, pyritic.
420'-440'	Shale	Dark grey.
440'-460'	Shale	Dark grey.
460'-480'	Shale	Dark grey.
480'-500'	Shale	Dark grey, trace of silty content; band of siltstone to very fine grained sandstone.
500'-520'	Shale	Dark grey.
520'-540'	Shale	Dark grey, pyritic, streak of ironstone.
540'-560'	Shale	Dark grey, pyritic, streak of ironstone.
560'-580'	Shale	Dark grey, pyritic, trace of silty content and ironstone.
580'-760'		No Samples.
760'-780'	Shale	Dark grey.
780'-800'	Shale	Dark grey.
800'-820'	Shale	Dark grey.
820'-840'	Shale	Dark grey.
840'-860'	Shale	Dark grey.
860'-880'	Shale	Dark grey, trace of siltstone to very fine grained sandstone, trace of ironstone.
880'-900'	Shale	Dark grey, pyritic, trace of ironstone.
900'-920'	Shale	Dark grey, trace of ironstone.
920'-940'	Shale	Dark grey.

940'-960'	Shale	Dark grey.
960'-980'	Shale	Dark grey.
980'-1000'	Shale	Dark grey.
1000'-1020'	Shale	Dark grey.
1020'-1040'	Shale	Dark grey, trace of silty content, trace of ironstone.
1040'-1060'	Shale	Dark grey, trace of ironstone.
1060'-1080'	Shale	Dark grey, trace of ironstone.
1080'-1100'	Shale	Dark grey, trace of ironstone.
1100'-1120'	Shale	Dark grey, trace of ironstone.
1120'-1140'	Shale	Dark grey.
1140'-1160'	Shale	Dark grey, trace of calcite.
1160'-1180'	Shale	Dark grey.
1180'-1200'	Shale	Dark grey, trace of siltstone.
1200'-1220'	Shale	Dark grey, trace of ironstone.
1220'-1240'	Shale	Dark grey.
1240'-1260'	Shale	Dark grey, trace of calcite.
1260'-1280'	Shale	Dark grey.
1280'-1300'	Shale	Dark grey, trace of silty content, pyritic.
1300'-1320'	Shale	Dark grey, trace of silty content, trace of ironstone.
1320'-1340'	Shale	Dark grey. Band of light grey, extremely fine to coarse grained sandstone with 20% chert, subangular.

1340'-1360'	Shale	Dark grey, trace of silty content, pyritic.
1360'-1380'	Shale	Dark grey, trace of silty content, pyritic, band of ironstone.
1380'-1400'	Shale	Dark grey, pyritic, band of ironstone.
1400'-1420'	Shale	Dark grey, trace of silty content, pyritic. Band of siltstone to medium grained sandstone, quartzitic, sub-angular, lithic.
1420'-1440'	Shale	Dark grey, trace of silty content, pyritic. Band of siltstone to medium grained sandstone, quartzitic, sub-angular, lithic.
1440'-1460'	Shale	Dark grey, trace of silty content, pyritic. Band of siltstone to medium grained sandstone, quartzitic, sub-angular, lithic.
1460'-1480'	Shale	Dark grey, trace of silty content.
1480'-1500'	Shale	Dark grey.
1500'-1520'	Shale	Dark grey, pyritic.
1520'-1540'	Shale	Dark grey.
1540'-1560'	Shale	Dark grey, trace of silty content.
1560'-1580'	Shale	Dark grey, trace of silty content.
1580'-1600'	Shale	Dark grey, trace of silty content, pyritic.
1600'-1620'	Shale	Dark grey, trace of silty content. Thin band of very fine to fine grained sandstone.

1620'-1640'	Shale	Dark grey.
1640'-1660'	Shale	Dark grey.
1660'-1670'	Shale	Dark grey.
1670'-1680'	Shale	Dark grey.
1680'-1690'	Shale	Dark grey, pyritic. Band of siltstone to fine grained lithic sandstone.
1690'-1700'	Shale	Dark grey.
1700'-1710'	Shale	Dark grey, pyritic.
1710'-1720'	Shale	Dark grey, pyritic.
1720'-1730'	Shale	Dark grey, pyritic. Band of siltstone to very fine grained sandstone, lithic.
1730'-1740'	Shale	Dark grey.
1740'-1750'	Shale	Dark grey, trace of silty content.
1750'-1760'	Shale	Dark grey. Band of light grey siltstone to medium grained sandstone, lithic - 60% quartz, 40% chert, sub-angular.
1760'-1770'	Shale	Dark grey. Band of light grey siltstone to very fine grained sandstone, lithic. Argillaceous bands in sandstone. Chert: white, dark grey, grey.
1770'-1780'	Shale	Dark grey. Band of light grey, siltstone to very fine grained sandstone, lithic.
1780'-1790'	Shale	Dark grey, trace of silty content.
1790'-1800'	Shale	Dark grey, trace of silty content.

1800'-1810'	Shale	Dark grey, 20% siltstone to fine grained sandstone, slightly calcareous.
1810'-1820'	Shale	Dark grey, 20% silty content, pyritic. Band of light grey siltstone to medium grained sandstone, lithic, subrounded - quartz 80%, chert 20%. Chert: white, black, grey.
1820'-1830'	Shale	Dark grey, 20% silty content, slightly calcareous. Band of light grey, siltstone to medium grained sandstone, lithic.
1830'-1840'	Shale	Dark grey, 20% silty content, pyritic. Band of light grey siltstone to coarse grained sandstone, lithic. Stringers of sandstone in the shale.
1840'-1850'	Shale	Dark grey, 20% silty content, pyritic. Band of light grey siltstone to medium grained sandstone, lithic, slightly calcareous.
1850'-1860'	Shale	Grey black, 30% silty content, pyritic.
1860'-1870'	Shale	Grey black, trace of silty content.
1870'-1880'	Shale	Grey black, 10% silty content. Silty layers slightly calcareous.
1880'-1890'	Shale	Grey black, 30% silty content, floating chert grains.
1890'-1900'	Shale	Grey black, 30% silty content.
1900'-1910'	Shale	Grey black, 10% silty content.
1910'-1920'	Shale	Grey black, trace of silty content.

1920'-1930'	Shale	Grey black, trace of silty content.
1930'-1940'	Shale	Grey black, trace of silty content.
1940'-1950'	Shale	Grey black, trace of silty content.
1950'-1960'	Shale	Grey black, trace of silty content, pyritic.
1960'-1970'	Shale	Grey black, trace of silty content, pyritic, trace of ironstone.
1970'-1980'	Shale	Grey black, trace of silty content.
1980'-1990'	Shale	Grey black, 10% silty content, pyritic.
1990'-2000'	Shale	Grey black, 10% silty content.
2000'-2010'	Shale	Grey black, 30% silty content.
2010'-2020'	Shale	Grey black, 30% silty content. Band of siltstone to fine grained sandstone, lithic, trace of calcite.
2020'-2030'	Shale	Grey black, trace of silty content.
2030'-2040'	Shale	Grey black, trace of silty content.
2040'-2050'	Shale	Grey black, trace of silty content, pyritic.
2050'-2060'	Shale	Grey black, trace of silty content, pyritic.
2060'-2070'	Shale	Grey black, trace of silty content.
2070'-2080'	Shale	Grey black, trace of silty content.

2080'-2090'	Shale	Grey black, 10% silty content.
2090'-2100'	Shale	Grey black, 30% silty content, micaceous.
2100'-2110'	Shale	Grey black, 30% silty content.
2110'-2120'	Shale	Grey black, 30% silty content.
2120'-2130'	Shale	Grey black, 30% silty content.
2130'-2140'	Shale	Grey black, trace of silty content.
2140'-2150'	Shale	Grey black, trace of silty content, micaceous, white streaks.
2150'-2160'	Shale	Grey black, trace of silty content, white streaks.
2160'-2170'	Shale	Grey black, trace of silty content.
2170'-2180'	Shale	Grey black, trace of silty content.
2180'-2190'	Shale	Grey black, trace of silty content. Band of light grey siltstone to very coarse grained sandstone, lithic, trace of calcareous and dolomitic content, dark grey chert pebbles - quartz 60%, chert 40%, subangular to subrounded. Chert: white, grey and black.
2190'-2200'	Sandstone-Siltstone & Shale	Light grey siltstone to very coarse grained sandstone, lithic, trace of argillaceous content. Shale, light grey, trace of silty content.

2200'-2210'	Shale & Siltstone- Sandstone	Grey black shale with a trace of silty content. Light grey siltstone to very coarse grained sandstone, lithic, trace of argillaceous content.
2210'-2220'	Shale	Grey black, trace of silty content. Band of siltstone to very coarse grained sandstone, lithic, trace of argillaceous content.
2220'-2230'	Shale	Grey black, trace of silty content. Band of siltstone to very coarse grained sandstone, lithic, trace of argillaceous content.
2230'-2240'	Shale	Grey black, trace of silty content. Band of siltstone to medium grained sandstone, lithic, trace of argillaceous content.
2240'-2250'	Shale	Grey black with 30% silty content. Band of siltstone to very coarse grained sandstone, lithic, trace of argillaceous content.
2250'-2260'	Shale	Grey black with 30% silty content.
2260'-2270'	Shale	Grey black, trace of silty content, pyritic.
2270'-2280'	Shale	Grey black with 30% silty content.
2280'-2290'	Shale	Grey black with 30% silty content.
2290'-2300'	Shale	Grey black, trace of silty content.
2300'-2310'	Shale	Grey black, trace of silty content.
2310'-2320'	Shale	Grey black.

2320'-2330'	Shale	Grey black, trace of silty content. Band of siltstone to medium grained sandstone, lithic, trace of argillaceous content. Quartz - 80%, chert 20%, angular, carbonaceous partings.
2330'-2340'	Shale	Grey black, trace of silty content, carbonaceous partings.
2340'-2350'	Shale	Grey black, 10% silty content, carbonaceous partings.
2350'-2360'	Shale	Grey black, 20% silty content, carbonaceous partings.
2360'-2370'	Shale	Grey black, 20% silty content, pyritic; carbonaceous partings.
2370'-2380'	Shale	Grey black, 20% silty content, pyritic; carbonaceous partings.
2380'-2390'	Shale	Grey black, 20% silty content, pyritic; carbonaceous partings.
2390'-2400'	Shale	Grey black, 30% silty content, carbonaceous partings.
2400'-2410'	Shale	Grey black, 20% silty content.
2410'-2420'	Shale	Grey black, trace of silty content.
2420'-2430'	Shale	Grey black, trace of silty content.
2430'-2440'	Shale	Grey black, trace of silty content.
2440'-2450'	Shale	Grey black, 20% silty content.
2450'-2460'	Shale	Grey black, 20% silty content.
2460'-2470'	Shale	Grey black, 20% silty content.
2470'-2480'	Shale	Dark grey, trace of silty content. Band of light grey siltstone to very coarse sandstone, lithic. Quartz overgrowths, angular, Quartz 70%, chert 30% - 10% tripolitic chert. Chert: grey, black, white, less than 5% dolomitic sandstone.

2480'-2490'	Siltstone- Sandstone & Shale	Light grey, siltstone to coarse grained sandstone, lithic. Dark grey shale with a trace of silty content.
2490'-2500'	Shale	Dark grey, trace of silty content. Band of light grey siltstone to medium grained sandstone, lithic, less than 5% dolomitic content.
2500'-2510'	Shale	Dark grey, trace of silty content, band of ironstone.
2510'-2520'-	Shale & Siltstone- Sandstone	Dark grey shale with a trace of silty content. Yellow grey siltstone to pebble size sandstone, lithic, angular. Quartz 60%, chert 40%, less than 5% dolomitic content.
2520'-2530'	Sandstone- Siltstone	Yellow grey, siltstone to coarse grained sandstone, lithic, 10% dolomitic content.
2530'-2540'	Siltstone- Sandstone	Yellow grey siltstone to coarse grained sandstone, lithic, grey chert pebbles, 10% dolomitic content. Chert 20%, quartz 80%.
2540'-2550'	Siltstone- Sandstone	Yellow grey siltstone to coarse grained sandstone, lithic, 10% dolomitic content. Chert 20% Quartz 80%.
2550'-2560'	Siltstone- Sandstone & Shale	Yellow grey siltstone to medium grained sandstone, lithic. Dark grey shale with trace of silty content. Trace of dolomitic content. Quartz overgrowth.
2560'-2570'	Shale	Grey black, trace of silty content.
2570'-2580'	Shale	Grey black, trace of silty content.
2580'-2590'	Shale	Grey black, trace of silty content, pyritic; floating chert grains.

2590'-2600'	Shale	Grey black, 20% silty content.
2600'-2610'	Shale	Dark grey, 20% silty content.
2610'-2620'	Shale	Grey black, trace of silty content, pyritic.
2620'-2630'	Shale	Grey black, trace of silty content.
2630'-2640'	Shale	Grey black, 30% silty to very fine grained sandstone, pyritic, less than 5% calcareous content.
2640'-2650'	Shale	Grey black, trace silty content, pyritic.
2650'-2660'	Shale	Grey black, 30% silty content, 5% calcareous content.
2660'-2670'	Shale	Grey black, 30% silty content, pyritic. Band of siltstone to coarse grained sandstone, lithic, 5% calcareous content, trace of argillaceous content.
2670'-2680'	Shale	Grey black, 10% silty content. Band of siltstone to coarse grained sandstone, lithic, subangular, trace of argillaceous content.
2680'-2690'	Shale	Grey black, 30% silty content. Band of siltstone to coarse grained sandstone, lithic, trace of argillaceous content, calcareous in part.
2690'-2700'	Siltstone- Sandstone & Shale	Dark grey siltstone to medium grained sandstone, lithic, 40% argillaceous content, angular; white and grey chert. Grey black shale with 20% silty content. Pyritic.
2700'-2710'	Shale	Grey black, 30% silty content, siliceous, 5% calcareous content. Band of siltstone to very fine grained sandstone, lithic. Pyritic.

2710'-2720'	Shale- Siltstone	Grey black, 50% shale and 50% siltstone, pyritic, floating quartz grains, shale is siliceous. Band of ironstone.
2720'-2730'	Shale- Siltstone	Grey black, 50% shale and 50% siltstone; 5% calcareous content.
2730'-2740'	Shale	Grey black, 30% silty content, band of ironstone; sandstone stringers; pyritic.
2740'-2750'	Shale	Grey black, trace of silty content, pyritic.
2750'-2760'	Siltstone- Sandstone & Shale	Light grey siltstone and fine to very coarse grained sandstone, lithic, trace of argillaceous content; angular; glassy chert pebbles. Grey black shale with a trace of silty content.
2760'-2770'	Shale	Grey black, 30% silty content.
2770'-2780'	Shale	Grey black, siliceous, pyritic.
2780'-2790'	Shale	Grey black, trace of silty content, siliceous, pyritic.
2790'-2800'	Shale	Grey black.
2800'-2810'	Shale	Grey black, trace of silty content.
2810'-2820'	Shale	Grey black, trace of silty content, slightly calcareous, siliceous, pyritic.
2820'-2830'	Shale	Grey black, trace of silty content.
2830'-2840'	Shale	Grey black, trace of silty content.
2840'-2850'	Shale	Grey black, trace of silty content, pyritic, 5% calcareous content.

2850'-2860'	Shale	Grey black, trace of silty content, pyritic.
2860'-2870'	Shale	Grey black, trace of silty content.
2870'-2880'	Shale	Grey black, trace of silty content, pyritic, trace of calcareous content.
2880'-2890'	Shale	Grey black, trace of silty content, pyritic, trace of calcareous content.
2890'-2900'	Shale	Grey black, trace of silty content, pyritic, trace of calcareous content.
2900'-2910'	Shale	Grey black, trace of silty content, pyritic, trace of calcareous content.
2910'-2920'	Shale	Grey black, trace of silty content, pyritic, spotty calcareous content, floating quartz grains.
2920'-2930'	Shale	Grey black, trace of silty content, spotty calcareous content.
2930'-2940'	Shale	Dark grey, 30% silty content.
2940'-2950'	Shale	Dark grey.
2950'-2960'	Shale	Dark grey, 30% silty content, spotty calcareous content.
2960'-2970'	Shale	Dark grey, 30% silty content, spotty calcareous content, pyritic.
2970'-2980'	Shale	Dark grey, pyritic.
2980'-2990'	Shale	Dark grey, trace of silty content.
2990'-3000'	Shale	Dark grey, 30% silty content, spotty calcareous content.

3000'-3010'	Siltstone	Medium grey siltstone, 30% argillaceous content, 10% dolomitic content. Band of shale.
3010'-3020'	Shale	Dark grey, 30% silty content.
3020'-3030'	Shale	Dark grey, trace of silty content.
3030'-3040'	Shale	Dark grey, 30% silty content, pyritic; band of ironstone.
3040'-3050'	Shale	Dark grey, 30% silty content. Band of siltstone with a trace of argillaceous content and 10% dolomitic content.
3050'-3060'	Siltstone & Shale	Dark grey siltstone with 30% argillaceous content and 10% dolomitic content. Dark grey shale with 30% silty content.
3060'-3070'	Shale	Dark grey with a band of siltstone. Silt lenses and authigenic quartz.
3070'-3080'	Shale	Dark grey, pyritic.
3080'-3090'	Shale	Dark grey with a band of siltstone. Silt lenses and pyritic.
3090'-3100'	Shale	Dark grey with 30% silty content.
3100'-3110'	Shale	Dark grey with a trace of silty content.
3110'-3120'	Shale	Dark grey with 30% silty content.
3120'-3130'	Shale	Dark grey with a trace of silty content.
3130'-3140'	Shale	Dark grey with a trace of silty content.

3140'-3150'	Shale	Grey black, trace of silty content, 10% siliceous content, pyritic.
3150'-3160'	Shale	Grey black, 10% siliceous content, pyritic.
3160'-3170'	Shale	Grey black, 10% siliceous content.
3170'-3180'	Shale	Grey black, 10% siliceous content.
3180'-3190'	Shale	Grey black, 10% siliceous content, trace of ironstone, pyrite laminations.
3190'-3200'	Shale	Grey black, 10% siliceous content.
3200'-3210'	Shale	Grey black, 10% silty content, 10% siliceous content.
3210'-3220'	Shale	Dark grey.
3220'-3230'	Shale	Dark grey, 20% silty content.
3230'-3240'	Shale	Dark grey, 20% silty content.
3240'-3250'	Shale	Dark grey, 20% silty content.
3250'-3260'	Shale	Dark grey, trace of silty content.
3260'-3270'	Shale	Dark grey.
3270'-3280'	Shale	Dark grey.
3280'-3290'	Shale	Dark grey, trace of silty content, pyritic.
3290'-3300'	Shale	Dark grey, trace of siliceous content.
3300'-3310'	Shale	Dark grey, trace of siliceous content, pyritic.
3310'-3320'	Shale	Dark grey, trace of siliceous content.
3320'-3330'	Shale	Dark grey, trace of siliceous content, pyritic.

3330'-3340'	Shale	Dark grey, trace of silty content, pyritic.
3340'-3350'	Shale	Dark grey, 30% silty content, pyritic.
3350'-3360'	Siltstone-Sandstone & Shale	Medium to dark grey siltstone to fine grained sandstone, lithic, angular, trace of dolomite, 30% argillaceous content. Medium to dark grey shale with 30% silty content. Pyritic.
3360'-3370'	Siltstone-Sandstone & Shale	Medium to dark grey siltstone to very fine grained sandstone, lithic, 30% argillaceous content, 5% dolomitic content. Medium to dark grey shale with 30% silty content. Pyritic.
3370'-3380'	Siltstone-Sandstone & Shale	Medium to dark grey siltstone to very fine grained sandstone, lithic, trace of argillaceous content, 10% dolomitic content. Medium to dark grey shale with 30% silty content. Pyritic.
3380'-3390'	Siltstone-Sandstone & Shale	Medium to dark grey siltstone to very fine grained sandstone, lithic, trace of argillaceous content, 5% dolomitic content. Medium to dark grey shale with 30% silty content. Pyritic.
3390'-3400'	Shale	Grey black, 30% silty content, hackly appearance, trace of siliceous content.
3400'-3410'	Shale	Grey black, trace of siliceous content, pyritic.
3410'-3420'	Shale	Grey black, trace of siliceous content, pyritic.
3420'-3430'	Shale	Grey black.
3430'-3440'	Shale	Dark grey, trace of silty content. Band of siltstone to fine grained sandstone, lithic, 5% dolomitic content. Pyritic.

3440'-3450'	Shale	Grey black, trace of silty content, quartz veins.
3450'-3460'	Shale	Grey black, trace of silty content, pyritic, laminated.
3460'-3470'	Shale	Grey black, pyritic.
3470'-3480'	Shale	Grey black, trace of siliceous content, pyritic, laminated.
3480'-3490'	Shale	Grey black, trace of siliceous content, pyritic.
3490'-3500'	Shale	Grey black, trace of siliceous content, pyritic.
3500'-3510'	Shale	Grey black, trace of siliceous content.
3510'-3520'	Shale	Grey black, trace of siliceous content, pyritic.
3520'-3530'	Shale	Grey black, trace of siliceous content, pyritic.
3530'-3540'	Shale	Grey black, trace of siliceous content, pyritic.
3540'-3550'	Shale	Grey black, trace of siliceous content, pyritic.
3550'-3560'	Shale	Grey black, trace of siliceous content, pyritic.
3560'-3570'	Shale	Grey black, 5% siliceous content, finely disseminated pyrite, sometimes laminated locally up to 5% of rock.
3570'-3580'	Shale	Grey black, trace of silty content, 5% siliceous content, pyritic; floating chert grains.
3580'-3590'	Shale	Dark grey, pyritic.
3590'-3600'	Shale	Dark grey, trace of silty content, trace of calcareous content, 5% siliceous content, pyritic. Floating chert grains.

3600'-3610'	Shale	Grey black, trace of calcareous content, 5% siliceous content, laminated.
3610'-3620'	Shale	Grey black, 5% siliceous content, quartz veins, laminated.
3620'-3630'	Shale	Grey black, 5% siliceous content.
3630'-3640'	Shale	Grey black, trace of silty content, 5% siliceous content, floating chert grains, laminated, pyritic.
3640'-3650'	Shale	Grey black, trace of silty content, 5% siliceous content, pyritic.
3650'-3660'	Shale	Grey black, trace of silty content, 5% siliceous content, floating chert grains, pyritic.
3660'-3670'	Shale	Grey black, 5% siliceous content, pyritic.
3670'-3680'	Shale	Dark grey, trace of silty content, trace of calcareous and siliceous content, spherical pyrite.
3680'-3690'	Shale	Dark grey, trace of silty and siliceous content, 5% calcareous content, color lamination.
3690'-3700'	Shale	Dark grey, trace of siliceous content.
3700'-3710'	Shale	Dark grey, trace of siliceous content, pyrite laminations.
3710'-3720'	Shale	Dark grey, trace of silty content.
3720'-3730'	Shale	Dark grey, trace of silty content.
3730'-3740'	Shale	Dark grey, trace of silty content, finely disseminated pyrite.

3740'-3750'	Shale	Medium to dark grey, trace of silty content, band of ironstone, pyritic.
3750'-3760'	Shale	Medium to dark grey, trace of silty content, 1% pyrite blebs and ironstone.
3760'-3770'	Shale	Medium to dark grey, 20% silty content, pyritic; band of ironstone.
3770'-3780'	Shale	Medium to dark grey, trace of silty content, trace of ironstone laminations.
3780'-3790'	Shale	Medium to dark grey, trace of silty content.
3790'-3800'	Shale	Medium to dark grey, 20% silty content.
3800'-3810'	Shale	Medium to dark grey, trace of silty content.
3810'-3820'	Shale	Medium to dark grey, trace of silty content.
3820'-3830'	Shale	Medium to dark grey, 20% silty content, laminations of silt.
3830'-3840'	Shale	Dark grey, 20% silty content.
3840'-3850'	Shale	Dark grey, trace of silty content.
3850'-3860'	Shale	Dark grey, 20% silty content.
3860'-3870'	Shale	Medium to dark grey, 20% silty content, pyritic.
3870'-3880'		No Samples.
3880'-3890'	Siltstone-Shale	Medium grey. 50% shale and 50% siltstone.
3890'-3900'	Siltstone-Shale	Medium grey. 50% shale and 50% siltstone.
3900'-3910'	Siltstone-Shale	Medium grey. 50% shale and 50% siltstone.

3910'-3920'	Siltstone-Sandstone & Shale	Medium grey. 50% siltstone to very fine grained sandstone, lithic. 50% shale. Pyritic.
3920'-3930'	Siltstone-Sandstone	Medium grey siltstone to very fine grained sandstone, lithic, 20% argillaceous content, spherical pyrite.
3930'-3940'	Siltstone & Shale	Medium grey siltstone, sandy (very fine to fine grained,) lithic, trace of argillaceous content, sugary appearance. Medium grey shale, 20% silty content.
3940'-3950'	Siltstone & Shale	Medium grey siltstone, sandy (very fine to fine grained), lithic, trace of dolomite content. Shale, medium grey, 20% silty content.
3950'-3960'	Siltstone & Shale	Medium grey siltstone, sandy (very fine to fine grained), lithic, trace of argillaceous and dolomitic content. Medium grey shale, 20% silty content.
3960'-3970'	Siltstone	Medium grey, sandy (very fine to medium grained), lithic, trace of argillaceous and dolomitic content, pyritic.
3970'-3980'	Shale	Medium grey, 20% silty content. Band of siltstone to medium grained sandstone, lithic, trace of argillaceous content.
3980'-3990'	Sandstone	Medium grey, very fine to medium grained, silty, lithic, 20% argillaceous content, slightly dolomitic, angular. 30% white, grey and black chert.
3990'-4000'	Sandstone & Shale	Medium grey very fine to medium grained sandstone, lithic, silty, 20% argillaceous content. Medium grey shale, 20% silty content.

4000'-4010'	Sandstone & Shale	Medium grey, very fine to fine grained sandstone, lithic, silty, trace of argillaceous content. Medium grey shale, trace of silty content.
4010'-4020'	Siltstone & Shale	Medium grey siltstone, sandy (very fine grained), lithic, trace of argillaceous content. Medium grey shale, trace of silty content.
4020'-4030'	Shale	Medium grey, 20% silty content. Band of very fine to fine grained sandstone, silty, lithic, argillaceous.
4030'-4040'	Shale	Medium to dark grey, trace of silty content.
4040'-4050'	Shale	Medium to dark grey, 20% silty content.
4050'-4060'	Shale	Medium to dark grey, 20% silty content.
4060'-4070'	Shale	Medium to dark grey, 20% silty content.
4070'-4080'	Shale	Medium to dark grey, 20% silty content, band of ironstone.
4080'-4090'	Shale	Medium to dark grey, 20% silty content, band of ironstone.
4090'-4100'	Shale	Medium to dark grey, 20% silty content.
4100'-4110'	Shale	Medium to dark grey, 20% silty content. Band of siltstone to very fine grained sandstone, lithic.
4110'-4120'	Shale	Medium to dark grey, 20% silty content. Band of siltstone, sandy (very fine grained), lithic.

4120'-4130'	Sandstone & Shale	Medium to dark grey sandstone, very fine to fine grained, lithic, silty, trace of argillaceous content. Medium to dark grey shale, 20% silty content.
4130'-4140'	Shale & Siltstone-Sandstone	Dark grey shale and medium grey siltstone to very fine grained sandstone, lithic.
4140'-4150'	Shale	Dark grey, band of siltstone to very fine grained sandstone, lithic.
4150'-4160'	Shale	Dark grey, band of siltstone to very fine grained sandstone, lithic.
4160'-4170'	Shale	Dark grey.
4170'-4180'	Shale	Dark grey.
4180'-4190'	Shale & Siltstone-Sandstone	Dark grey shale and medium grey siltstone to very fine grained sandstone, lithic.
4190'-4200'	Shale & Siltstone-Sandstone	Dark grey shale and medium grey siltstone to very fine grained sandstone, lithic.
4200'-4210'	Shale	Dark grey.
4210'-4220'	Shale	Dark grey, band of siltstone to very fine grained sandstone, lithic.
4220'-4230'	Shale	Dark grey, band of siltstone to very fine grained sandstone, lithic.
4230'-4240'	Shale	Dark grey, band of siltstone to very fine grained sandstone, lithic.
4240'-4250'	Shale	Dark grey.
4250'-4260'	Shale	Dark grey.

4260'-4270'	Siltstone-Sandstone	Medium grey siltstone to very fine grained sandstone, lithic, trace of argillaceous content.
4270'-4280'	Shale	Dark grey, band of siltstone to very fine grained sandstone, lithic.
4280'-4290'	Shale	Dark grey.
4290'-4300'	Siltstone-Sandstone	Medium grey siltstone to very fine grained sandstone, lithic.
4300'-4310'	Shale	Dark grey.
4310'-4320'	Shale & Siltstone-Sandstone	Dark grey shale and medium grey siltstone to very fine grained sandstone, lithic, trace of argillaceous content.
4320'-4330'	Shale	Dark grey.
4330'-4340'	Shale	Dark grey.
4340'-4350'	Shale	Dark grey.
4350'-4360'	Siltstone	Medium to dark grey, trace of argillaceous content.
4360'-4370'	Shale & Siltstone-Sandstone	Dark grey shale and medium grey siltstone to very fine grained sandstone, trace of argillaceous content, lithic.
4370'-4380'	Shale	Dark grey.
4380'-4390'	Shale	Dark grey.
4390'-4400'	Shale-Siltstone	Dark grey. 50% shale and 50% siltstone, lithic.
4400'-4410'	Shale	Dark grey, band of siltstone to very fine grained sandstone, lithic.
4410'-4420'	Shale & Siltstone	Dark grey shale and dark grey siltstone with 10% argillaceous content.

4420'-4430'	Shale	Dark grey.
4430'-4440'	Shale & Siltstone	Dark grey shale and dark grey siltstone with a trace of argillaceous content, lithic.
4440'-4450'	Siltstone	Medium to dark grey siltstone with a trace of argillaceous content, lithic. Band of shale.
4450'-4460'	Siltstone- Sandstone & Shale	Medium grey siltstone to very fine grained sandstone, lithic. Dark grey shale.
4460'-4470'	Siltstone- Sandstone & Shale	Medium to dark grey siltstone to very fine grained sandstone, trace of argillaceous content, lithic. Dark grey shale.
4470'-4480'	Siltstone- Sandstone & Shale	Medium to dark grey siltstone to very fine grained sandstone, trace of argillaceous content, lithic. Dark grey shale.
4480'-4490'	Siltstone & Shale	Medium to dark grey siltstone, lithic, trace of argillaceous content. Dark grey shale.
4490'-4500'	Siltstone- Sandstone & Shale	Medium to dark grey siltstone to very fine grained sandstone, lithic, 10% argillaceous content. Dark grey shale.
4500'-4510'	Siltstone- Sandstone	Medium to dark grey siltstone to very fine grained sandstone, lithic, 10% argillaceous content, trace of calcareous content.
4510'-4520'	Shale & Siltstone- Sandstone	Medium to dark grey shale and medium to dark grey siltstone to very fine grained sandstone, lithic, 10% argillaceous content.
4520'-4530'	Siltstone- Sandstone & Shale	Medium to dark grey shale and siltstone to very fine grained sandstone, lithic.

4530'-4540'	Siltstone-Sandstone	Medium to dark grey siltstone to very fine grained sandstone, lithic. Band of shale.
4540'-4550'	Siltstone-Sandstone	Medium brown grey siltstone to very fine grained sandstone, lithic, trace of argillaceous content.
4550'-4560'	Siltstone-Sandstone	Medium brown grey siltstone to very fine grained sandstone, lithic, trace of argillaceous content.
4560'-4570'	Siltstone-Sandstone	Medium brown grey siltstone to very fine grained sandstone, lithic, trace of argillaceous and calcareous content.
4570'-4580'	Siltstone-Sandstone	Medium brown grey siltstone to very fine grained sandstone, lithic.
4580'-4590'	Siltstone-Sandstone & Shale	Medium to dark grey siltstone to very fine grained sandstone, lithic, 10% argillaceous content. Medium to dark grey shale.
4590'-4600'	Siltstone & Shale	Medium to dark grey siltstone with 10% argillaceous content, lithic. Medium to dark grey shale.
4600'-4610'	Siltstone	Medium to dark grey siltstone, lithic, 20% argillaceous content.
4610'-4620'	Siltstone	Medium to dark grey siltstone, lithic, 20% argillaceous content.
4620'-4630'	Shale	Black, very hard, slightly siliceous.
4630'-4640'	Siltstone	Medium to dark grey siltstone, lithic, 20% argillaceous content.
4640'-4650'	Shale	Black.

4650'-4660'	Siltstone	Medium to dark grey siltstone, lithic, 20% argillaceous content. Band of black shale.
4660'-4670'	Siltstone & Shale	Dark grey siltstone, lithic, 20% argillaceous content. Black shale.
4670'-4680'	Siltstone & Shale	Dark grey siltstone, lithic, 20% argillaceous content. Black shale.
4680'-4690'	Siltstone & Shale	Medium to dark grey siltstone, lithic, 20% argillaceous content. Black shale.
4690'-4700'	Shale	Black.
4700'-4710'	Shale	Black.
4710'-4720'	Shale	Black.
4720'-4730'	Shale	Black, traces of pyrite.
4730'-4740'	Shale	Medium to dark grey shale with a band of microcrystalline limestone.
4740'-4750'	Shale	Medium to dark grey shale with a band of light brown-grey microcrystalline limestone.
4750'-4760'	Limestone & Shale	Medium to dark grey shale and microcrystalline limestone.
4760'-4770'	Shale	Black.
4770'-4780'	Shale	Black.
4780'-4790'	Shale	Medium to dark grey. Band of microcrystalline limestone.
4790'-4800'	Shale	Black, pyritic.
4800'-4810'	Shale	Black, pyritic.
4810'-4820'	Shale	Dark grey shale with a band of microcrystalline limestone.

4820'-4830'	Shale & Limestone	Dark grey shale and light grey microcrystalline limestone.
4830'-4840'	Shale	Medium to dark grey, band of microcrystalline limestone.
4840'-4850'	Shale & Limestone	Medium to dark grey (slight brownish cast) shale and light brown, microcrystalline limestone.
4850'-4860'	Shale & Limestone	Medium to dark grey shale and light brown microcrystalline limestone.
4860'-4870'	Shale & Limestone	Medium to dark grey shale and light brown, microcrystalline limestone. Considerable black shale - caving?
4870'-4880'	Shale	Medium brown grey shale, 10% calcareous content.
4880'-4890'	Shale	Medium brown grey shale, 10% calcareous content.
4890'-4900'	Shale	Light brown shale with 10% calcareous content. Band of microcrystalline limestone with 30% argillaceous content.
4900'-4910'	Limestone & Shale	Light brown, microcrystalline limestone with 30% argillaceous content. Medium brown grey shale with 10% calcareous content.
4910'-4920'	Limestone	Light brown, microcrystalline limestone with 30% argillaceous content.
4920'-4930'	Limestone	Light to medium brown, microcrystalline limestone with 30% argillaceous content (very light brown).

4930'-4950'	Shale	Medium to dark grey shale with 0 to 10% calcareous content.
4950'-4970'	Shale	Medium to dark grey shale with 0 to 50% calcareous content.
4970'-5020'	Shale	Light to medium brown shale with 50% calcareous content decreasing to 15%.
5020'-5030'	Shale	Medium to dark grey shale with 15% calcareous content decreasing to 10%.
5030'-5038'	Shale	Medium to dark grey shale with 10% calcareous content.
5038'-5080'	Limestone	Light to medium brown limestone, microgranular, 40% argillaceous content.
5080'-5090'	Shale	Light to medium brown shale, 40% calcareous content.
5090'-5100'	Limestone	Light to medium brown limestone, microgranular, trace of fragments.
5100'-5110'	Shale	Light to medium brown shale, 40% calcareous content.
5110'-5118'	Limestone	Light to medium brown limestone, microgranular, 20% argillaceous content.
5118'-5130'	Shale	Light to medium brown shale, 40% calcareous content.
5130'-5140'	Limestone	Light to medium brown limestone, 20% argillaceous content.
5140'-5150'	Shale	Light to medium brown shale, calcareous content 40% decreasing to 35%.
5150'-5200'	Shale	Medium to dark grey shale, calcareous content 35% decreasing to nil.

5200'-5260'	Shale	Dark grey.
5260'-5270'	Shale	Dark grey.
5270'-5450'	Shale	Dark grey, minor calcareous content.
5450'-5510'	Shale	Dark grey, 5% calcareous content increasing to 40%.
5510'-5520'	Shale	Dark grey, 40% calcareous content decreasing to nil.
5520'-5590'	Shale	Dark grey, calcareous content increases from trace to 10%.
5590'-5615'	Shale	Dark grey, 10% calcareous content increasing to 30%.
5615'-5670'	Shale	Dark grey, 30% calcareous content decreasing to nil over interval.
5670'-5680'	Shale	Dark grey.
5680'-5760'	Shale	Dark grey, 10% calcareous content.
5760'-5800'	Shale	Dark grey, 10% calcareous content decreasing to nil.
5800'-5845'	Shale	Dark grey.
5845'-5918'	Shale	Dark grey, 20% calcareous content. 5850': micaceous and pyritic.
5918'-5960'	Shale	Dark grey.
5960'-5990'	Shale	Dark grey, 30% calcareous content.
5990'-6000'	Shale	Dark grey, 30% calcareous content decreasing to 10%.
6000'-6010'	Shale	Dark grey, 30% calcareous content.

6010'-6065'	Shale	Dark grey, 15% calcareous content.
6065'-6110'	Shale	Dark grey, 5% calcareous content.
6110'-6163'	Limestone & Shale	Light to medium brown grey. Limestone with 40% argillaceous content, cryptogranular to very fine grained alternating with shale, minor calcareous content.
6163'-6196'	Shale	Medium to dark grey, minor calcareous content, pyritic and micaceous at 6190'.
6196'-6200'	Siltstone	Medium to dark grey, minor calcareous content.
6200'-6235'	Shale	Medium to dark grey, 20% calcareous content, bioclastic debris and limestone fragments.
6235'-6248'	Shale	Medium to dark grey, 20% calcareous content decreasing to a trace.
6248'-6260'	Shale	Medium to dark grey, trace of calcareous content increasing to 20%.
6260'-6320'	Shale	Medium to dark grey, 20% calcareous content.
6320'-6330'	Shale	Medium to dark grey, 20% calcareous content decreasing to a trace.
6330'-6340'	Shale	Medium to dark grey, trace of calcareous content increasing to 20%.
6340'-6350'	Shale	Medium to dark grey, 20% calcareous content.
6350'-6375'	Shale	Medium to dark grey, 20% calcareous content.

6375'-6400'	Shale	Medium to dark grey, 20% calcareous content grading to argillaceous (up to 40%) limestone. Band of non-calcareous shale.
6400'-6410'	Limestone	Dark grey, cryptogranular, 40% argillaceous content. Band of non-calcareous shale.
6410'-6420'	Limestone & Shale	Dark brown grey. Argillaceous (40%) limestone, grading to calcareous (10%) shale which in turn grades back to argillaceous (40%) limestone.
6420'-6540'	Limestone	Dark brown grey, crypto to microgranular limestone, 40% argillaceous content. Bands of non-calcareous shale. 6493-6503': Limestone contains extremely fine to pebble sized bioclastic debris.
6540'-6545'	Shale	Dark brown grey, 30% calcareous content.
6545'-6550'	Shale	Dark brown grey.
6550'-6570'	Limestone	Dark brown grey, 20% argillaceous content, crypto to extremely fine granular. Pyritic at 6570'.
6570'-6575'	Shale	Dark brown grey.
6575'-6595'	Shale-Limestone	Dark brown grey, 50% shale and 50% limestone.
6595'-6600'	Shale	Dark brown grey.
6600'-6610'	Shale	Medium to dark grey, 40% calcareous content.
6610'-6635'	Shale	Medium to dark grey, 30% calcareous content.
6635'-6640'	Shale-Limestone	Medium to dark grey, 50% shale and 50% limestone.

6640'-6650'	Shale	Medium to dark grey, 30% calcareous content decreasing to nil.
6650'-6655'	Shale	Medium to dark grey.
6655'-6670'	Shale- Limestone	Medium to dark grey, 50% shale and 50% limestone.
6670'-6680'	Shale	Medium to dark grey, trace of calcareous content.
6680'-6700'	Limestone & Shale	Dark grey and medium brown grey. Limestone-shale interval alternating with calcareous (trace) shale. Limestone contains fine to medium fragments.
6110'-6700'		Shale-Limestone series are laminated to thin bedded with some slumped bedding. Bioclastic and limestone fragments are present, trace of siltstone.
6700'-6800'	Limestone	Conglomerate-Breccia, medium brown grey, trace of black. Composed of Limestone, crypto to microcrystalline with pellets and pyrite, argillaceous. Breccia fragments range in size from extremely fine to boulder. Matrix: dark grey-black, limestone, crypto to microcrystalline, argillaceous; dolomitic, extremely fine to very fine crystalline.

SHELL, PEEL RIVER I-21 (NO. 4)

66° 10' 36.5" N.
134° 18' 52.175" W.

Sidewall Core

670	Shale	Dark grey.
700	Shale	Dark grey.
1400	Shale	Dark grey, pyritic.
1500	Shale	Dark grey, pyritic.
1600	Shale	Dark grey, slightly silty.
1650	Shale	Dark grey.
1700	Shale	Dark grey, pyritic.
1750	Shale	Dark grey, slightly silty.
2200		Not Recovered.
2300	Shale	Grey-black, slightly silty.
2400	Shale	Grey-black, 30% lithic silt content.
2500	Shale	Dark grey, slightly silty.
2600	Shale	Grey-black, 20% lithic silt content.
2700	Shale	Grey-black, 30% lithic silt content.
2800	Shale	Grey-black, slightly silty.
2850	Shale	Grey-black, slightly silty, pyritic.
2900	Shale	Grey-black, slightly silty, pyritic.

Sidewall Core

3050	Shale	Dark grey, 30% lithic silt content, 10% dolomitic content.
3100	Shale	Dark grey, 30% lithic silt content.
3200	Shale	Grey-black, 10% siliceous content.
3300	Shale	Dark grey, slightly siliceous, pyritic.
3600		Not Recovered.
4000	Shale	Medium grey, 20% lithic silt content.
4600	Siltstone	Medium to dark grey, lithic, 20% argillaceous content.

SECTION III - ENGINEERING SUMMARY

A. DRILL STEM TESTS

	<u>Interval</u>	<u>T.O.</u>	<u>Recovery</u>	<u>IFP</u>	<u>FFP</u>	<u>ISIP/Time</u>	<u>FSIP/Time</u>
1.	2194-2331	60 min	30 ft of drilling mud	114	121	420/15 min	343/60 min
2.	2518- 2961 2916	60 min	1373 ft of fresh water	383	629	1072/15 min	1059/60 min
3.	4542-4878	60 min	20 ft of drilling mud	36	38	67/15 min	64/60 min 30

(1) IHMP 1085 FHMP 1085 (2) IHMP 1193 FHMP 1183 (3) IHMP 2183 FHMP 2183

B. CASING RECORD

20" conductor	94#	40' set @ 40' K.B. with 140 sacks of Portland cement + 100# CaCl ₂
9-5/8" J-55	36#	668' set @ 659' K.B. with 500 sacks of Portland cement + 2% CaCl ₂

C. BIT RECORD

<u>No.</u>	<u>Size</u>	<u>Type</u>	<u>Depth Out</u>	<u>Footage</u>	<u>Time (hours)</u>
1A	13-1/4"	S3	265	265	16
2A	13-1/4"	S3	598	333	16-3/4
3A	13-1/4"	S3	660	62	3-1/4
1	6-3/4"	OSC-3	1294	634	13-1/4
2	6-3/4"	OSC-3	1398	104	5-3/4
3	6-3/4"	M-4-N	1449	51	5
4	6-3/4"	H7U-J	1739	290	12
5	6-3/4"	H7U-J	1818	79	7
6	6-3/4"	H7U-J	1910	92	10-1/4
7	6-3/4"	H7U-G	2127	217	12-1/2
8	6-3/4"	H7U-J	2205	78	9
9	6-3/4"	H7U-J	2244	39	3-3/4
10	6-3/4"	H7U-J	2331	87	12-1/2
11	6-3/4"	H7U-J	2459	128	14
12	6-3/4"	H7U-J	2496	37	7
13	6-3/4"	H7U-J	2558	62	7-1/4
14	6-3/4"	H7U-J	2595	37	6-1/4
15	6-3/4"	H7U-J	2652	57	8-1/4
16	6-3/4"	H7U-J	2678	26	8-1/2
17	6-3/4"	RRG7X-J	3126	A48	34-3/4
18	6-3/4"	RRG7X-J	3410	284	26-1/4
19	6-3/4"	RRG7X-J	3762	352	36-1/2
RR17	6-3/4"	RG7X-J	3863	101	7-1/2
20	6-3/4"	H-8-J	4128	265	31-1/4
21	6-3/4"	H-7UJ	4356	228	14-1/2
22	6-3/4"	YHW2	4536	180	11-1/4
23	6-3/4"	M-4-N	4712	176	11-1/4
24	6-3/4"	M-4-N	4875	163	11-3/4
25	6-3/4"	M-4-L	5019	144	12-1/4
26	6-3/4"	M-4-N	5263	144	16-1/4
27	6-3/4"	M-4-N	5575	312	15-3/4
28	6-3/4"	M-4-N	5850	275	14-3/4
29	5"		5885	35	16-1/2

<u>No.</u>	<u>Size</u>	<u>Type</u>	<u>Depth. Out</u>	<u>Footage</u>	<u>Time (Hours)</u>
30	6-3/4"	M-4-L	6001	116	14-1/4
31	6-3/4"	M-4-N	6194	193	14-1/4
32	5"		6224	30	12-1/4
33	6-3/4"	M-4-N	6321	97	12-3/4
34	6-3/4"	M-4-N	6470	149	10-1/4
35	4-11/16"		6500	30	11-3/4
36	6-3/4"	M-4-N	6593	93	14-3/4
37	6-3/4"	M-4-L	6704	111	13-1/2
38	6-3/4"	M-4-N	6790	86	7-1/2
RR34	4-11/16"		6800	10	4-3/4

SECTION III Cont'd - ENGINEERING SUMMARY

D) Mud Report

<u>Type</u>	<u>Quantity</u>
Bicarb	100#
Gel	930 sacks
Caustic	4125#
Peltex	9150#
C.M.C.	100#
Quick Vis	2 Gals.

E Deviation Record

<u>Depth</u>	<u>Dev:</u>	<u>Depth</u>	<u>Dev.</u>
60'	1/4	2460'	2-1/2
120'	1/4	2650'	3
200'	3/4	2916'	5
230'	1	3100'	6
3300'	1/2	3160'	6-1/2
390'	1/2	3410'	6-1/2
480'	1-1/4	3550'	5-1/2
530'	1-3/4	3763'	5-3/4
560'	1-3/4	4127'	4-3/4
590'	1-7/8	4356'	4-1/2
660'	1-1/4	4536'	4-1/4
1250'	1-3/4	4878'	4-1/4
1450'	2-3/4	5263'	4-1/4
1739'	2	5575'	4
1770'	2	5850'	3-7/8
2100'	2-1/2	6321'	2-1/2
2250'	2-3/4	6700'	2

F Abandonment Plugs

1. 6650' - 6800' 50 sacks Portland disp. w/57 bbls. No feel
 2. 2150' - 2610' 200 sacks Portland + 2% CaCl2 disp. w/18 bbls. Felt 2075'
 3. 610' - 710' 50 sacks Portland + 2% CaCl2 Felt 595'
- Casing cut 3' below ground - 5 sacks in casing, weld on 1/2" name plate
5 sacks in Rathole. 5 sacks in Mouse Hole

G Lost Circulation Zones

None

H Blowouts

None

T.G. EASTLAND

testers Ltd.

R.R. No. 6 NORTH • EDMONTON, ALBERTA

TEST No. Three
 Date March 15, 1966
 Ticket No. 7420

SERVICE REPORT

Well Name: SHELL PEEL RIVER #4 Y.T.I.21

L.S.D.

Formation Tested: _____
 TYPE OF TEST: Standard Duals Straddle Casing
 From: 4542' To: 4878' Tail Pipe: 336'
 Main Hole Depth: 4878' Rat Hole Depth: _____
 Hole Size Tested: 6 3/4" Main Hole: _____ Rat Hole: _____
 Casing Depth: 659' Size: 9 5/8" Weight: _____
 Type of Drill Pipe: 3 1/2" I. F. Tubing: _____
 Type of Packer(s): 2 Conventional
 Size of Rubber Element(s): 6"

TEST RESULT DATA
 Started in Hole: 5:30 am Tool Opened: 8:45 am
 Initial Shut-in: 15 Min. Flow Period: 60 Min.
 Final Shut-in: 30 Min. Out of Hole: 11:15 am
 Choke Bottom: 1/2 Min. 2/4
 Choke Surface: _____
 Flow Rate _____ Mcf/day Flare Line Riser: _____
 Mcf/day measured by: _____

REMARKS: Opened on bleed off - good initial pull. Opened on 1/2" Port - wear air blow. Flow dead in 15 mins. Opened on 3/4" Port.

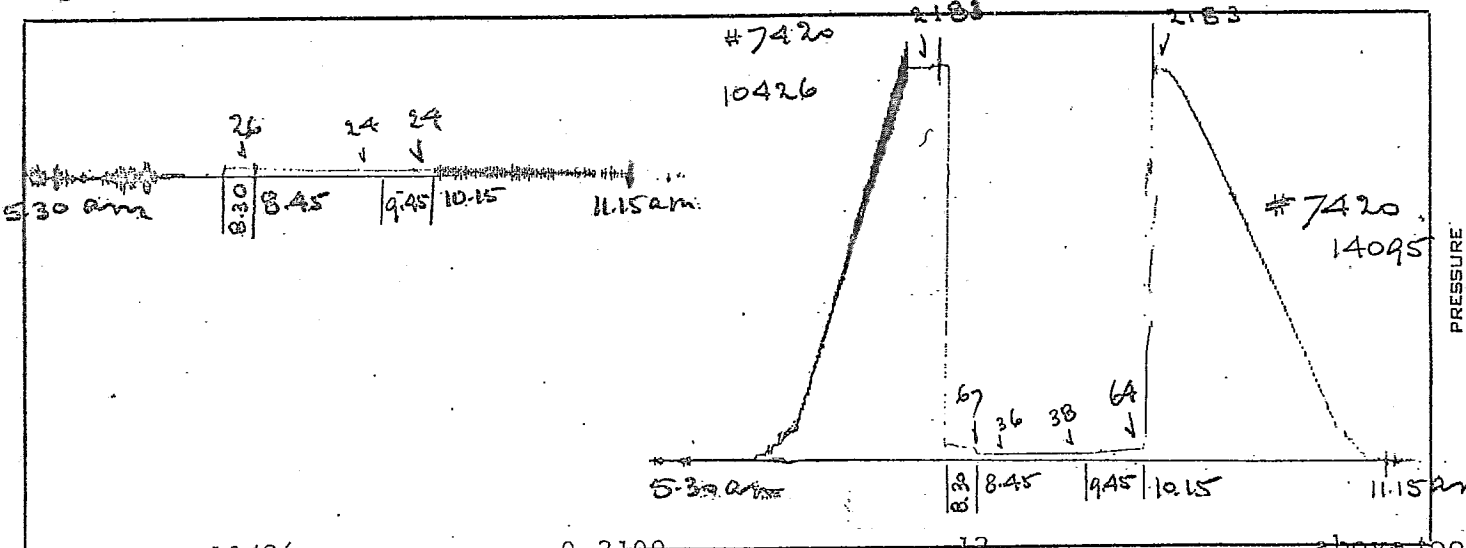
Fluid Cushion: _____ Max. Well Temp. 9 125 °F
 DRLG. FLUID: Viscosity: _____ Weight: _____ W.L. _____

FIELD (est.) CORRECTED
 2200 Initial Hydrostatic Pressure psig 2183
 96 Shut-In Press. #1 After 15 Min. psig 67
 32 Initial Flowing Pressure psig 36
 48 Max. Flowing Pressure psig 38
 70 Shut-In Press. #2 After 60 Min. psig 64
 20 drilling mud. (Ran 353)

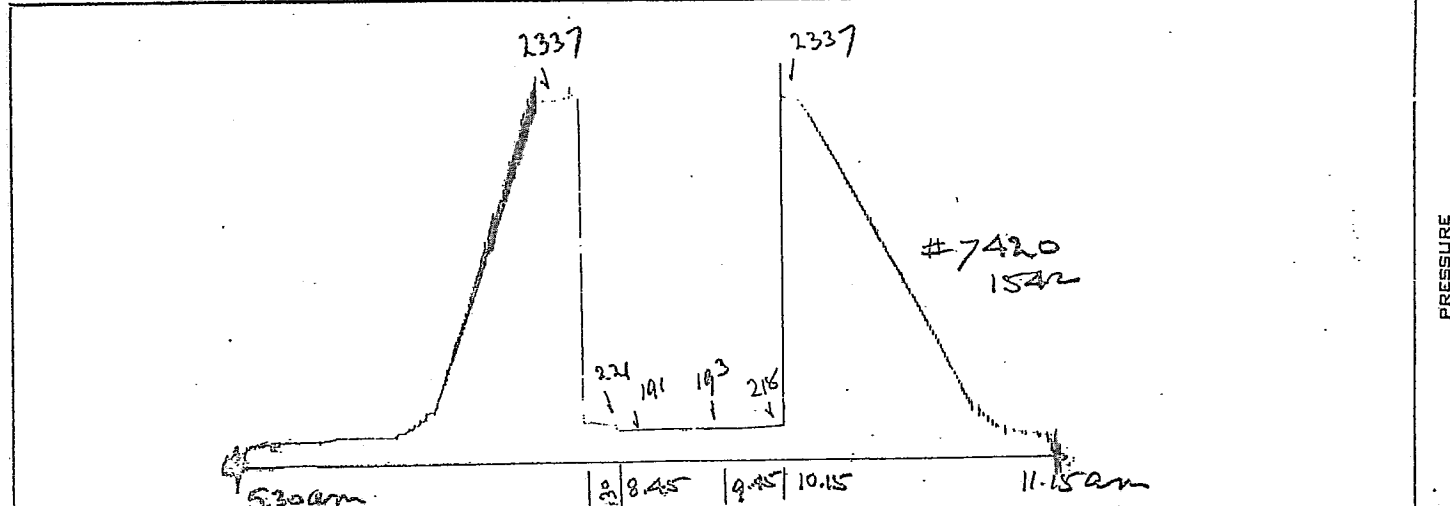
PRESENT DURING TEST

Your Representative: Lars Berggren
 Our Operator: Peter Sinkevich
 Toolpusher: R. Magnum
 Drlg. Contractor: Regent R17 #21

FLUID RECOVERY: drill collars above tool; 4 5/8" O.D.)



RECORDER No. 10426 ELEMENT RANGE: 0-2100 P.S.I. CLOCK SPEED: 12 HRS. RECORDER DEPTH: above too.
 RECORDER No. 14095 ELEMENT RANGE: 0-3000 P.S.I. CLOCK SPEED: 12 HRS. RECORDER DEPTH: 4542'
 RECORDER No. 1542 ELEMENT RANGE: 0-3500 P.S.I. CLOCK SPEED: 12 HRS. RECORDER DEPTH: 4877'



DRILL STEM TEST PRESSURE REPORT

WELL NAME SHELL PEEL RIVER #4 Y.T.I.21 LSD.
 INTERVAL 4542'-4878' K.B. FORMATION B.H. TEMP. °F 125
 GAUGE No. 14095 DEPTH OF ELEMENT 4542 K.B. CALIBRATION EQUATION P_c 1552.06 - 0.83

	Time	T mins	Pressure psig
Initial Hydrostatic	-----		2183
Initial Shut-in	8:30am	0	80
	8:33	3	91
	8:36	6	80
	8:39	9	74
	8:42	12	71
	8:45	15	67
Flowing Pressure	-----	F ₁	36
		F ₂	38
Final Shut-in	9:45am	0	38
	9:48	3	41
	9:51	6	44
	9:54	9	47
	9:57	12	50
	10:00	15	53
	10:03	18	55
	10:06	21	57
	10:09	24	60
10:12	27	62	
10:15	30	64	
Final Hydrostatic	-----		2183

T.G. EASTLAND testers Ltd.

R.R. No. 6 NORTH • EDMONTON, ALBERTA

TEST No. Two
 Date March 5, 1966
 Ticket No. 7419

SERVICE REPORT

Well Name: SHELL PEEL RIVER #4 V.T.I. #21 L.S.D.

Formation Tested:
 TYPE OF TEST: Standard Duals Straddle Casing
 From: 2516' To: 2916' Tail Pipe: 398'
 Main Hole Depth: 2916' Rat Hole Depth:
 Hole Size Tested: 6 $\frac{3}{4}$ " Main Hole Rat Hole
 Casing Depth: 659' Size: 9 $\frac{5}{8}$ " Weight:
 Type of Drill Pipe: 3 $\frac{1}{2}$ " I.F. Tubing:
 Type of Packer(s): 2 Conventional
 Size of Rubber Element(s): 6"

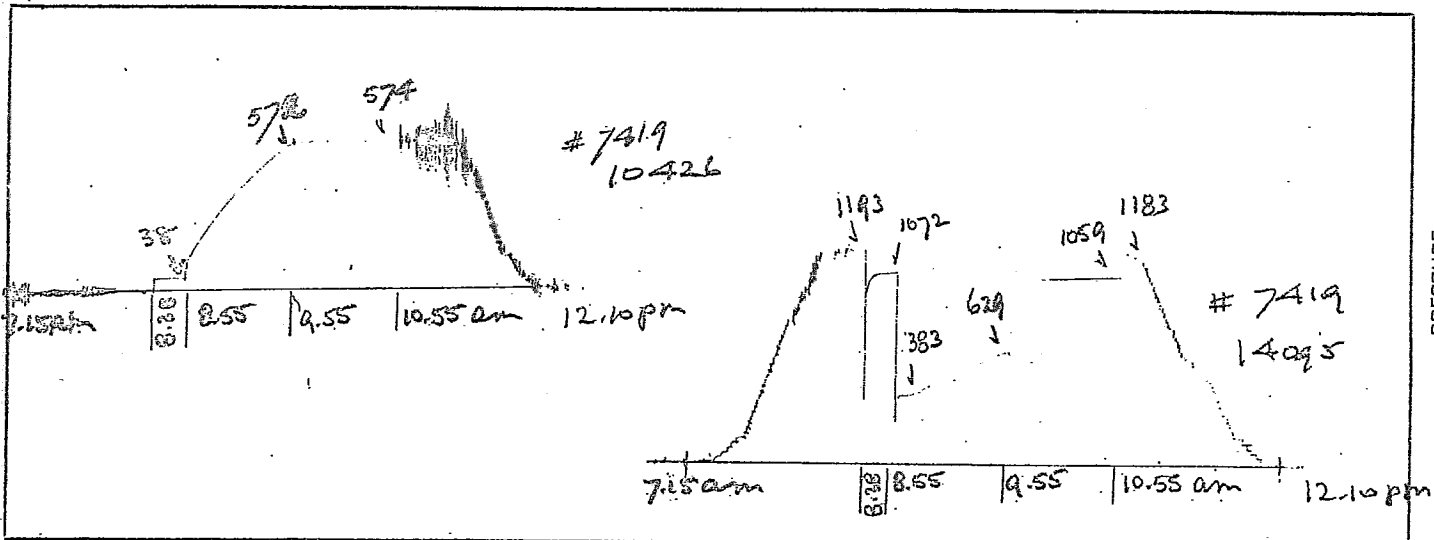
TEST RESULT DATA

Started in Hole: 7:15 am Tool Opened: 8:55 am
 Initial Shut-in: 15 Min. Flow Period: 60 Min.
 Final Shut-in: 60 Min. Out of Hole: 12:10
 Choke Bottom: $\frac{1}{2}$ "
 Choke Surface:
 Flow Rate Mcf/day Flare Line Riser:
 Mcf/day measured by:
 Fluid Cushion: Max. Well Temp: 98 °F
 DRLG. FLUID: Viscosity: 48 Weight: 8.8 W.L. 8.4
 FIELD (est.) CORRECTED
1152 Initial Hydrostatic Pressure psig 1193
1056 Shut-In Press. #1 After 15 Min. psig 11072
384 Initial Flowing Pressure psig 383
629 Max. Flowing Pressure psig 629
1056 Shut-In Press. #2 After 60 Min. psig 1059
 FLUID RECOVERY: 1373 Fresh water slightly
 gasified. (Ran 300' drill collars above
 tool, 4 5/8" O.D. 2 1/4" I.D.)

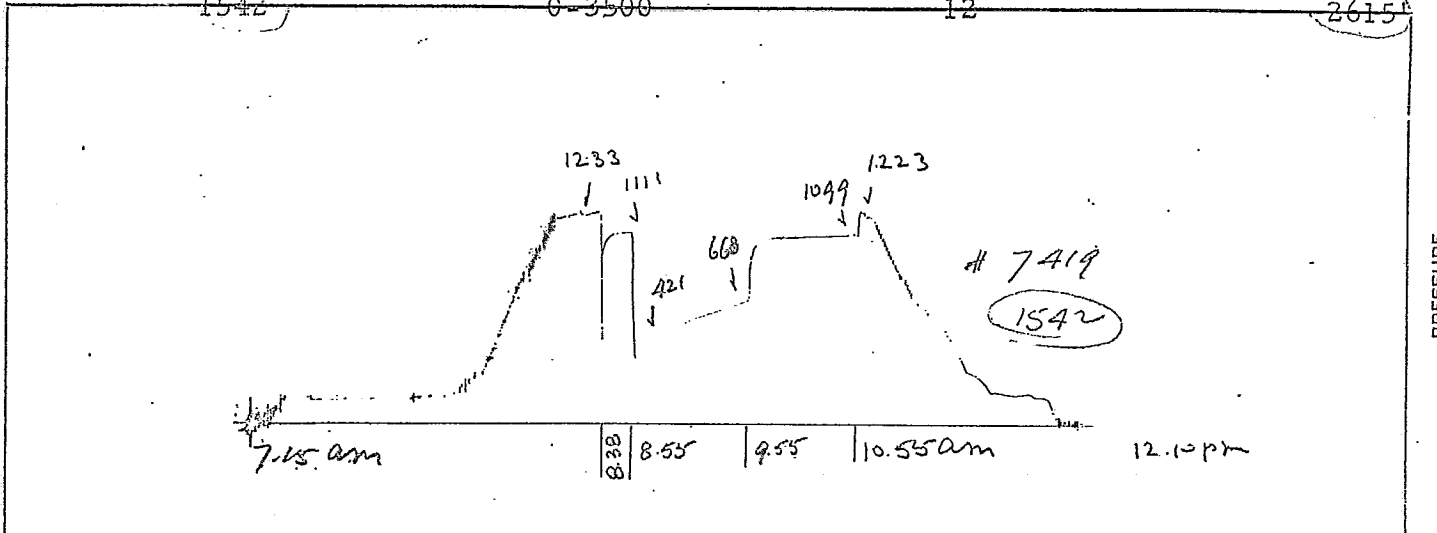
REMARKS: Opened on bleed-off - good initial puff. Opened on $\frac{1}{2}$ " choke - fair air blow, decreasing towards end of test. Comb above tool. Final Flow = 586.

PRESENT DURING TEST

Your Representative Lars T. Berggren
 Our Operator Peter Sinkovich
 Toolpusher A. Bacholek
 Drlg. Contractor Regent Rig #21



RECORDER No. 14095. ELEMENT RANGE: 0-3000 P.S.I. CLOCK SPEED: 12 HRS. RECORDER DEPTH: 252.5'



T.G. EASTLAND — testers Ltd.

R.R. No. 6, NORTH EDMONTON, ALBERTA

Two

TEST March 5, 1966

Date 7.1.9

Ticket No.

DRILL STEM TEST PRESSURE REPORT

WELL NAME SHELL PEEL RIVER #4 Y.T.I. -21
 INTERVAL 2518'-2516' K.B. FORMATION LSD.
 GAUGE No. 14095 DEPTH OF ELEMENT 2525' K.B. B.H. TEMP. °F 98
 CALIBRATION EQUATION Pc 1552.06 - 0.83

	Time	T mins	Pressure psig
Initial Hydrostatic			1193
Initial Shut-in	8:38am	0	361
	8:41	3	1006
	8:44	6	1061
	8:47	9	1067
	8:50	12	1070
	8:53	15	1072
	8:55	17	1072
Flowing Pressure		F ₁	383
		F ₂	629
Final Shut-in	9:55am	0	629
	9:58	3	955
	10:01	6	1005
	10:04	9	1024
	10:07	12	1031
	10:10	15	1037
	10:13	18	1042
	10:16	21	1045
	10:19	24	1048
	10:22	27	1050
	10:25	30	1051
	10:28	33	1053
	10:31	36	1053
	10:34	39	1055
	10:37	42	1055
	10:40	45	1056
	10:43	48	1056
	10:46	51	1058
	10:49	54	1058
	10:52	57	1059
	10:55	60	1059
Final Hydrostatic			1183

T.G. EASTLAND

Westers Ltd.

R.R. NO. 6 NORTH & EDMONTON, ALBERTA

TEST No. One
 Date March 1, 1966
 Ticket No. 7418

SERVICE REPORT

Well Name: SHELL PEEL RIVER #4 YT L.S.D. YT I-21

Formation Tested: _____

TEST RESULT DATA

TYPE OF TEST: Standard Duals Straddle Casing

Started in Hole: 6:30 am Tool Opened: 8:05 am

From: 2154'KB To: 2331'KB Tail Pipe: 137'

Initial Shut-in: 15 Min. Flow Period: 60 Min.

Main Hole Depth: 2331' Rat Hole Depth: _____

Final Shut-in: 60 Min. Out of Hole: 10:50 am

Hole Size Tested: 6.3/4" Main Hole _____ Rat Hole _____

Choke Bottom: 1/2"

Casing Depth: 659' Size: 9.5/8" Weight: _____

Choke Surface: _____

Type of Drill Pipe: 3 1/2" IF Tubing: _____

Flow Rate _____ Mcf/day Flare Line Riser: _____

Type of Packer(s): Conventional (2)

Mcf/day measured by: _____

Size of Rubber Element(s): 5.2"

Fluid Cushion: _____ Max. Well Temp: 90 °F

REMARKS: Open on initial bleed-off. Good

DRLG. FLUID: Viscosity: 46 Weight: 9.0 W.L. 8.6

initial puff. Open on 1/2" port. Weak air

FIELD (est.) CORRECTED

blow, decreasing throughout test. Flow on

1075 Initial Hydrostatic Pressure psig 1085

comb above tool 10 lbs.

444 Shut-In Press. #1 After 15 Min. psig 420

110 Initial Flowing Pressure psig 114

110 Max. Flowing Pressure psig 121

400 Shut-In Press. #2 After 60 Min. psig 343

FLUID RECOVERY: 30 ft drilling mud

(Ran 518 ft drill collars above tool, 4 5/8" OD, 2" ID)

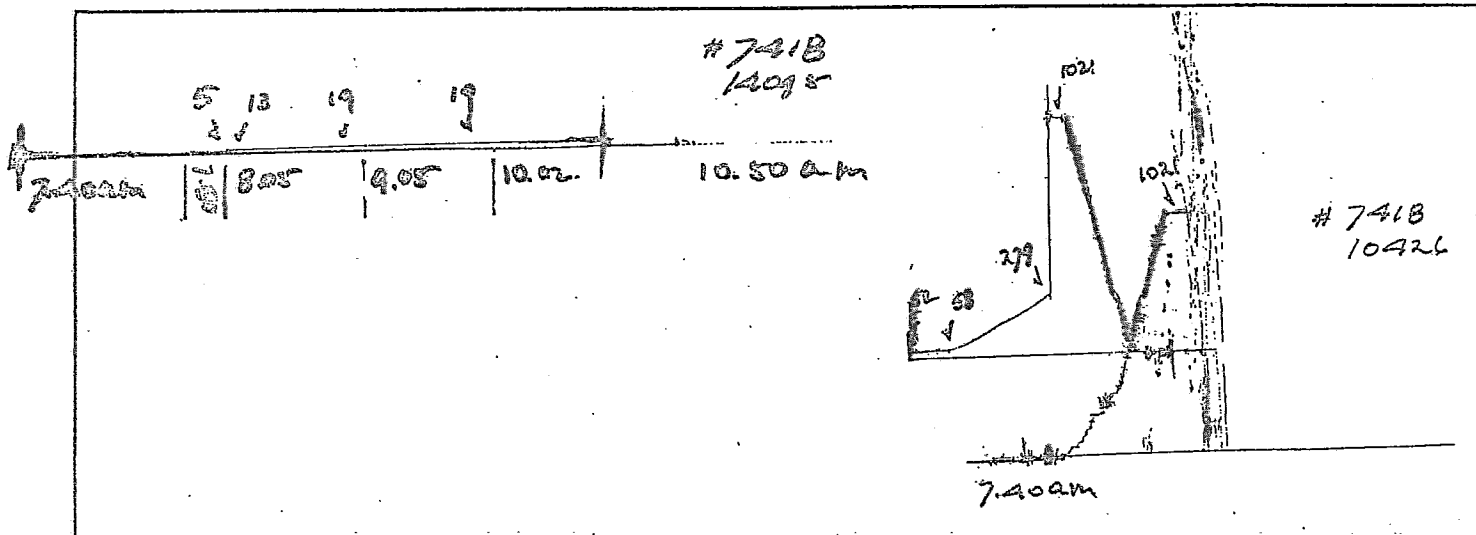
PRESENT DURING TEST

Your Representative L. Berggren

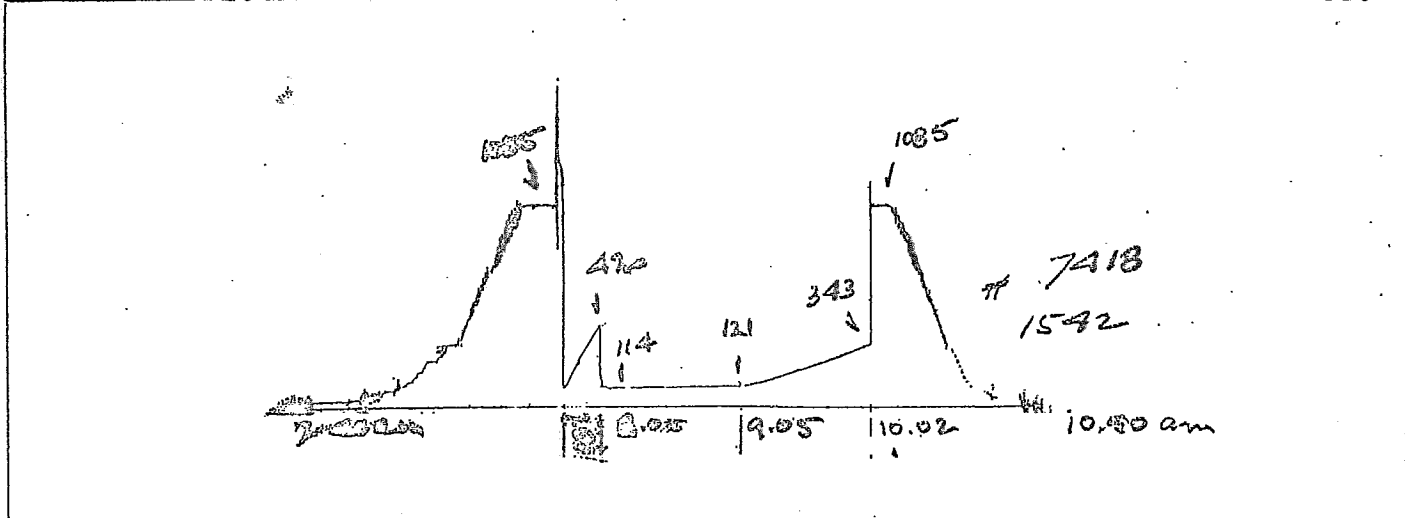
Our Operator P. Sinkevich

Toolpusher A. Pacholek

Drlg. Contractor Regent Rig #21



RECORDER No. 14095 ELEMENT RANGE: 0-3000 P.S.I. CLOCK SPEED: 12 HRS. RECORDER DEPTH: Above tool
 RECORDER No. 10426 ELEMENT RANGE: 0-2100 P.S.I. CLOCK SPEED: 12 HRS. RECORDER DEPTH: 2194'
1542 ELEMENT RANGE: 0-3500 P.S.I. CLOCK SPEED: 12 HRS. RECORDER DEPTH: 2330'



DRILL STEM TEST PRESSURE REPORT

WELL NAME SHELL PEEL RIVER #4 LSD. XT-1-21
 INTERVAL 2194-2331 KB FORMATION B.H. TEMP. °F 90
 GAUGE No. 1542 DEPTH OF ELEMENT 2330 KB CALIBRATION EQUATION Pc .1765, .94 + .12, .96

	Time	T mins.	Pressure psig
Initial Hydrostatic	-----		1085
Initial Shut-in	7:50 am	0	119
	7:53	3	186
	7:56	6	257
	7:59	9	318
	8:02	12	380
	8:05	15	420
Flowing Pressures	-----	F1	114
		F2	121
Final Shut-in	9:05 am	0	121
	9:08	3	130
	9:11	6	137
	9:14	9	144
	9:17	12	152
	9:20	15	165
	9:23	18	177
	9:26	21	190
	9:29	24	204
	9:32	27	218
	9:35	30	230
	9:38	33	243
	9:41	36	253
	9:44	39	264
	9:47	42	276
	9:50	45	288
	9:53	48	301
	9:56	51	315
	9:59	54	329
	10:02	57	343
Final Hydrostatic	-----		1085

SECTION IV - LOGS

Formation Density Log 661' - 6788')
Induction Electric Log 660' - 6788') March 26, 27, 28, 1966
Microlog Caliper 660' - 6788')
Borehole Compensated Sonic Log 660' - 6778')

Seismic Reference Survey 660' to 6750' March 27, 1966

SECTION V - ANALYSIS

A) Core Analysis

~~Attached~~ None

B) Water Analysis

Attached

C) Gas Analysis

None

D) Oil Analysis

None

SECTION VI - COMPLETION SUMMARY

A) Tubing Record

None

B) Perforation Record

None

C) Cementation

None

D) Acidization and Fracturing

None

E) Back Pressure and Production

None

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

WATER ANALYSIS

Lab No. E66-716-1

Received: April 4, 1966 Reported: April 21, 1966 Well: Location: Peel River Y.T. I-21 66° 10' 36" 5N, 134° 18' 52" 175W
 Operator: Shell Canada Limited Field or Area: Mississippi MSI
 Elev.: K.B. 1251' Grd. 1238' Zone/Formation: Sample Interval: 2518' - 2916'
 Method of Production: D.S.T. #2 Sampled from: Top Sampled by: Lars I. Berggren Date: March 3, 1966

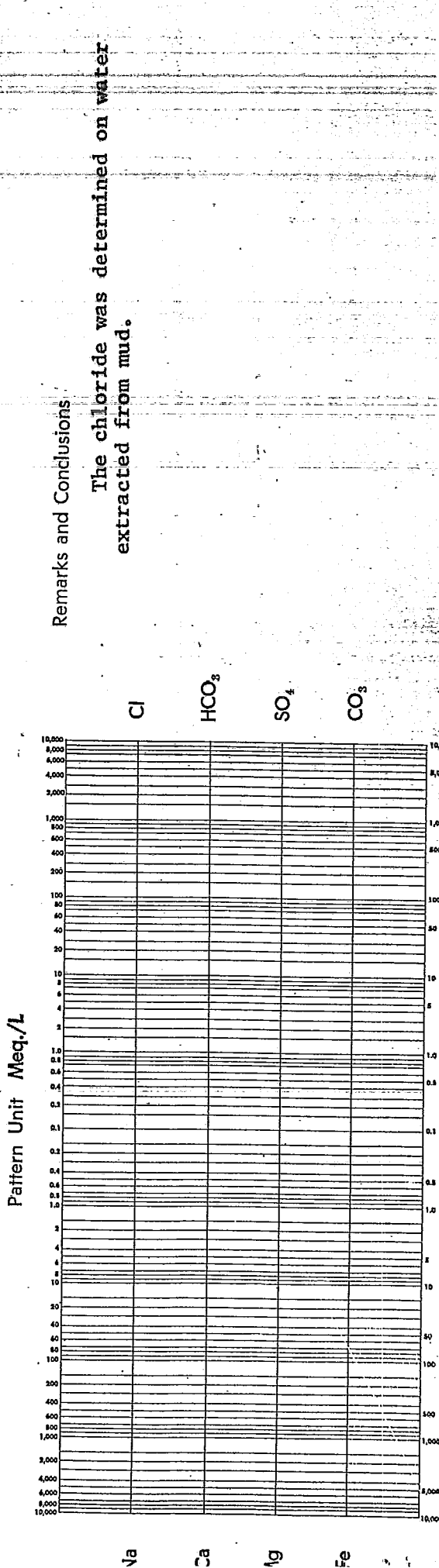
OTHER PERTINENT DATA Recovered 1373'. Sample number 2121.

Water

(Signed)

Mg./L		eq./L		%. %			
Na	K	Ca	Mg	SO ₄	Cl	CO ₃	HCO ₃
					154		

Total Solids Mg/L: By Evaporation Fe H₂S
 Calculated After Ignition Pattern Unit Meq./L
 Observed pH @60°F Specific Gravity
 Resistivity @25°C Refractive Index ohm meters @



Remarks and Conclusions

The chloride was determined on water extracted from mud.

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

WATER ANALYSIS

Lab No. E66-716-2

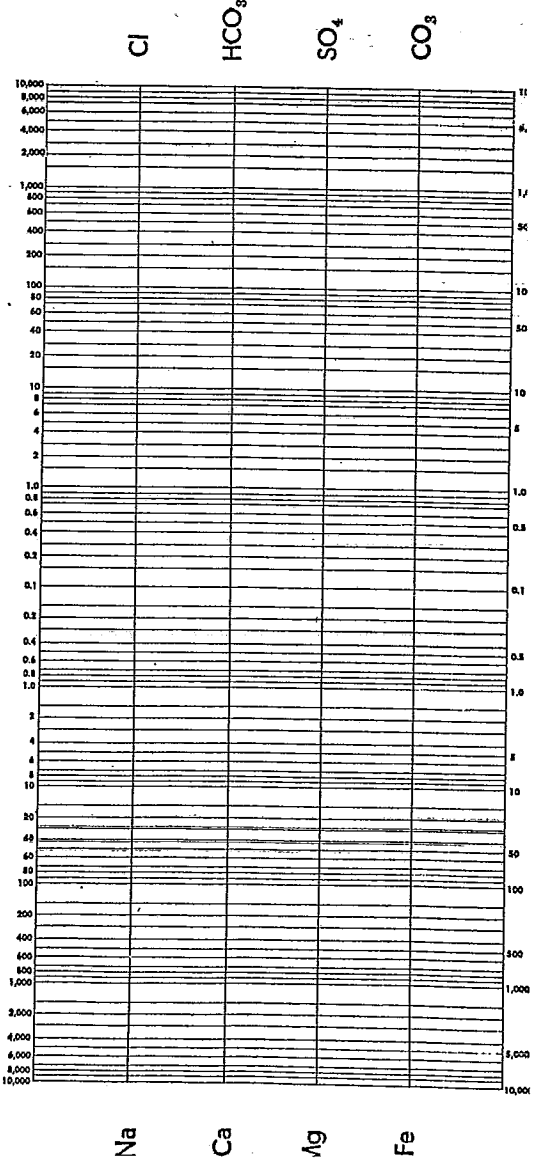
Received: April 4, 1966 Reported: April 21, 1966 Well: Location: Peel River Y.T. I-21 66° 10' 36" 5N, 134° 18' 52" 175W
 Operator: Shell Canada Limited Field or Area:
 Elev.: K.B. 1251' Grd. 1238' Zone/Formation: Mississippian MSI Sample Interval: 2518' - 2916'
 Method of Production: D.S.T. #2 Sampled from: Middle Sampled by: Lars I. Berggren Date: March 3, 1966
 OTHER PERTINENT DATA Recovered 1373'. Sample number 2122.

(Signed)

Mg./L		Na		K	Ca	Mg	SO ₄	Cl	CO ₃	HCO ₃
								380		
leq./L										
eq. %										

Total Solids Mg/L:	By Evaporation	Fe	Specific Gravity	Observed pH	@ 60°F	@ 25°C	Resistivity	ohm meters @	of
Calculated	After Ignition	H ₂ S	Refractive Index						of

Pattern Unit Meq./L



Remarks and Conclusions

The chloride was determined on water extracted from mud.

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

WATER ANALYSIS

Lab No. E66-716-3

Received: April 4, 1966 Reported: April 21, 1966 Well: Location: Peel River Y.T. I-21 66° 10' 36" 5N, 134° 18' 52" 175W

Operator: Shell Canada Limited Field or Area:

Elev.: K.B. 1251' Grd. 1238' Zone/Formation: Mississippian MSI

Method of Production: D.S.T. #2

Sampled from: Bottom

Sample Interval: 2518' - 2916'

Sampled by: Lars I. Berggren Date: March 3, 1966

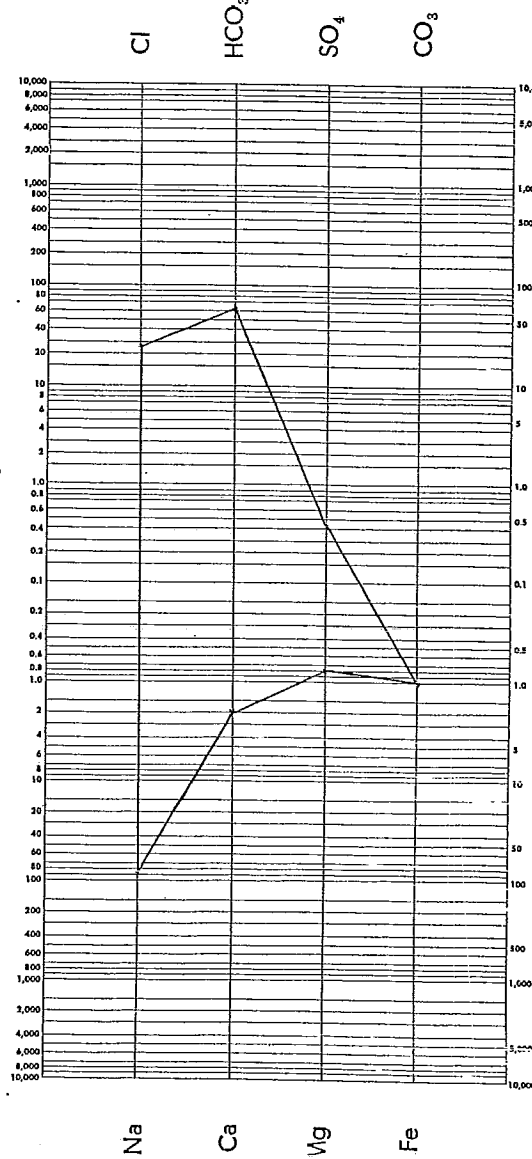
OTHER PERTINENT DATA Recovered 1373'. Sample number 2123.

(Signed)

	Na&K	Ca	Mg	SO ₄	Cl	CO ₃	HCO ₃
Mg./L		40	10	20	960		3,960
leq./L		2.00	0.82	0.42	27.07		64.94
eq. %	48.47	1.08	0.44	0.23	14.64		35.13

Total Solids Mg/L: By Evaporation 5,836 Fe Trace Specific Gravity 1.007 @60°F Observed pH 7.9 @ 73 °F
 Calculated 7,050 After Ignition 4,000 H₂S Nil Refractive Index 1.3375 @25°C Resistivity 1.44 ohm meters @ 68 °F

Pattern Unit Meq./L



Remarks and Conclusions

The sample appears to be filtrate water.