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1851



NATIONAL ENERGY BOARD
ENGINEERING BRANCH

JAN 25 1999

GEOLOGICAL WELL REPORT

PREPARED FOR

CANADIAN FOREST OIL LTD.

CDN FOREST et al FLETT RAPIDS I - 61

Unit I, Section 61 GRID AREA: 60-50-123-15

DIRECTIONAL WELL

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9211-C131-1-1

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WELL DATA SUMMARY

OPERATOR: CANADIAN FOREST OIL LIMITED

WELL NAME: CANADIAN FOREST et al FLETT RAPIDS I-61

SURFACE LOCATION: Unit I, Section 61, Grid Area 60-50-123-15

SURFACE COORDINATES: N 60 degrees 40' 41"
W 123 degrees 26' 34"

FINAL COORDINATES: 264.1 metres North; 29.8 metres West
as calculated from surface location

FINAL LOCATION: Unit I, Section 61, Grid Area 60 - 50 - 123- 15

LICENCE No.: 9211-C131-1-1, WID 1851 A.F.E. No: A983002

ELEVATIONS: Ground: 254.0 metres K.B.: 262.5 metres

ZONES OF INTEREST: Primary: Middle Devonian - Arnica
Secondary: Mississippian
Upper Devonian

CONSULTING GEOLOGIST: M.Fox / B.Bellman

COMPANY GEOLOGIST: J. Taylor

DRILLING CONTRACTOR: Nabors Drilling Ltd. Rig No. 24E

SPUD DATE: November 13, 1998 at 12:15 hour

KICK OFF DEPTH: 1385.0 m K.B. / 1384.7 m T.V.D.

INITIAL AZIMUTH: 120.8 degrees

FINAL AZIMUTH: 48.0 degrees

MAXIMUM HOLE ANGLE: 21.4 degrees at 1722.8 m K.B.

DRILLING COMPLETED: January 8, 1999 at 11:50 hour

TOTAL DEPTH: 2660.0 m K.B. / 2622.2 m T.V.D.

TERMINATING FORMATION: Lower Devonian - Camsell (?)

WELL DATA SUMMARY

CONDUCTOR HOLE: Hole Size: 660 mm Casing Size: 508 mm
Weight and Type: 139.87 kg/m K-55 BT & C
Landing Depth: 150.8 metres

SURFACE HOLE: Hole Size: 445 mm Casing Size: 339.7 mm
Weight and Type: 101.2 kg/m, K-55 Buttress
Landing Depth: 569.6 metres

INTERMEDIATE HOLE: Hole Size: 311 mm Casing Size: 244.5 mm
Weight and Type: 64.73 g/m, L-80 Buttress
Landing Depth: 2067.7 metres

FINAL HOLE: Hole Size: 215.9 mm Casing Size: 177.8 mm
Weight and Type: 43.2 kg/m, L-80 Buttress
Landing Depth: Not available

MUD PARAMETERS:	Interval	Mud System
	0 m to 150 m	Gel Chemical
	150 m to 2073 m	K2SO4 Gel Polymer
	2073 m to 2660 m	Gel Polymer

WELL DATA SUMMARY

CORES: None

LOGGING PROGRAM:

Company: Computalog

District: Grande Prairie

Logging Engineer: J. Grubb

Date: December 22, 1998

Run No. 1:	Service	Interval	Time
	STI / SP / GR	569.8 m to 1663.0 m	5.00 hours
	BCS / GR / Cal	569.8 m to 1611.2 m	SPed / CNS /
	x-y cal	569.8 m to 1656.0 m	Hole Volume Log
		569.8 m to 1656.0 m	

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WELL DATA SUMMARY

LOGGING PROGRAM: **Company:** Computalog
 District: Edmonton
 Logging Engineer: C. Scutchings
 Date: January 02, 1999

Run No. 2:	Service	Interval	Time
	DLL / MSFL / SP	2066.7 m to 2394.0 m	6.00 hours
	Sped / CNS / X-Y	1550.0 m to 2386.2 m	4.50 hours
	BCS / GR / CAL	1550.0 m to 2371.9 m	
	EMI / GR	2066.7 m to 2394.0 m	5.00 hours
	Hole Volume Log	2066.7 m to 2394.0 m	

Comments: Run No. 2 - Logged BCS / GR - CNS run 500 m into intermediate casing over unlogged interval of Run No. 1.

LOGGING PROGRAM: **Company:** Schlumberger
 District: Grande Prairie
 Logging Engineer: T. Daniel / S. Kirstein
 Date: January 09, 1999

Run No. 3:	Service	Interval	Time
	DLL / SP / GR	2067.0 m to 2655.1 m	3.00 hours
	CNL / LDT / GR / EDAC	2067.0 m to 2648.3 m	DSI
	2067.0 m to 2652.0 m	NGT	2067.0 m to
	2640.0 m FMI / GR		2067.0 m to 2300.0 m
	6.00 hours		
	MDT	2090.1 m to 2565.8 m	4.00 hours

Comments: Bridged off at 2510 m on first attempt DLL/SP/GR/ and CNL/LDT/GR/EDAC combination tool. EDAC caliper arms and tool sleeve broken off and left in hole, clean out trip required. Line fault developed FMI/GR run approximately two thirds into hole, pulled tool to surface to check and correct. MDT ran pipe conveyed.

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GEOLOGICAL MARKERS

K.B. ELEVATION: 262.5 metres

FORMATIONS	PROGNOSIS SUBSEA (metres)	MEASURED LOG DEPTH (metres)	TRUE VERT. LOG DEPTH (metres)	TRUE VERT. SUBSEA (metres)
MISSISSIPPIAN				
Clausen	210	27.0	27.0	+235.5
Crinoid Bank	-368			
Yohin Ss	-400			
Banff	-450	428.0	428.0	-165.5)
Exshaw	-760	815.0	815.0	-552.5
DEVONIAN				
Clastic Wedge	-920	862.0	862.0	-599.5
Kotcho	-920	862.0	862.0	-599.5
Tetcho	-1337	1292.0	1292.0	-1029.5
Fort Simpson	-1788	1506.0	1505.0	-1242.5
Horn River	-1902	1936.0	1911.0	-1637.5
Intermediate Casing Depth	-1975	2066.7	2034.4	-1771.9
Nahanni	-1974	2069.5	2037.2	-1774.7
Nahanni Dol.		2208.6	2172.6	-1910.1
Headless	-2148	2239.0	2146.0	-1883.5
Landry Limestone		2290.7	2253.9	-1991.4
Arnica	-2182	2310.0	2273.1	-2010.6
Unconformity		2371.0	2333.0	-2070.5

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GEOLOGICAL MARKERS

K.B. ELEVATION: 262.5 metres

FORMATIONS	PROGNOSIS SUBSEA (metres)	MEASURED LOG DEPTH (metres)	TRUE VERT. LOG DEPTH (metres)	TRUE VERT. SUBSEA (metres)
Sombre	-2425	2449.0	2412.0	-2149.5
Camsell	-2460	2486.0	2448.8	-2186.3
Root River	-2560			
Thrust Fault	-2624			
Mount Kindle	-2690			
Little Doctor	-2860			
Franklin Mtn.	-2880			
Cambrian SS/SH	-2890			
Total Depth	-2940	2660.0	2622.2	-2359.7

** NOTE: Geological Markers Record represents Consultant Log Picks

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BIT RECORD

BIT No.	TYPE	MFG	SIZE (mm)	DEPTH OUT (metres)	METRES DRILLED	TOTAL HOURS
CONDUCTOR HOLE						
PILOT						
1A	MS13GJ	REED	445	150.8	150.8	33.50
REAM						
2A	S4	SEC	660	150.8	150.8	24.75
SURFACE HOLE						
1A	XG3	HC	445	440.0	289.2	61.25
RR1A	MS13GJ	REED	445	569.6	129.6	3.25
INTERMEDIATE HOLE						
1	F1	SMITH	311	892	300.0	56.25
2	C2	RBI	311	1385	493.0	89.00
3	C2	RBI	311	1418	33.0	10.50
3RR	C2	RBI	311	1573	155.0	48.50
4	ATM22G	HC	311	1872	299.0	85.75
5	EHP51H	REED	311	2073	201.0	67.50
3RR	C2	RBI	311	2073	REAM	
MAIN HOLE						
1B	HP11	REED	216	2083	10.0	2.50
2B	GS84F	SEC	216	2395	312.0	77.25
3B	F3P	SMITH	216	2571	176.0	57.75
4B	C45LRG	RBI	216	2660	89.0	29.75

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
28 - 30	100	SHALE - light to medium grey, blocky, locally fissile, very calcareous to marlstone, micaceous, trace pyrite, trace shell fragment, scattered plant remains, well indurated.
30 - 35	100	SHALE - light to medium grey, blocky, locally fissile, very calcareous to marlstone, micaceous, trace pyrite, trace shell fragments, trace brown siltstone laminae, scattered sand grains, well indurated.
35 - 40	100	SHALE - medium to light grey, fissile, calcareous, marlstone stringers, micaceous, trace pyrite, trace shell fragment, well indurated.
40 - 50	100	SHALE - medium to light grey, fissile, calcareous, very fine grain crystalline calcite, light brown dolomitic laminae marlstone stringers, micaceous, trace pyrite, trace shell fragment, well indurated.
50 - 55	70	LIMESTONE - light to medium brown, mottled, wackestone, microcrystalline, fine to medium grain bioclasts, pellets, very argillaceous, possible Foraminifera fragments, common Spicula, trace Crinoid, trace silt, no visible voids.
	30	SHALE - medium to light grey, fissile, calcareous, very fine grain crystalline calcite, light brown dolomitic laminae, marlstone stringers, micaceous, trace pyrite, trace shell fragment, well indurated.
55 - 60	60	SHALE - medium to light grey, fissile, calcareous, very fine grain crystalline calcite, light brown dolomitic laminae, marlstone stringers, micaceous, trace pyrite, trace shell fragment, well indurated.
	30	LIMESTONE - light to medium brown, mottled, wackestone, microcrystalline, fine to medium grain bioclasts, pellets, very argillaceous, possible Foraminifera fragment, common Spicula, trace Crinoid, trace silt, no visible voids.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	10	SHALE - dark grey, fissile, non calcareous, trace to rare plant remains and pyrite grains, moderately indurated.
60 - 75	80/85	SHALE - dark grey, fissile, micromicaceous, non calcareous, trace plant remains, moderately indurated.
	10	SHALE - medium to light grey, fissile, calcareous, marlstone stringers, micaceous, trace pyrite, trace shell fragment, well indurated.
	5/10	LIMESTONE - light to medium brown, mottled, wackestone, microcrystalline, fine to medium grain bioclasts, pellets, very argillaceous, common Spicula, trace Crinoid, no visible voids.
75 - 80	90	SHALE - dark grey, fissile, micromicaceous, non calcareous, trace plant remains, moderately indurated.
	10	SHALE - medium to light grey, fissile, calcareous, marlstone stringers, micaceous, trace pyrite, trace shell fragment, well indurated.
80 - 85	50	SHALE - dark grey, fissile, micromicaceous, non calcareous, trace plant remains, moderately indurated.
	30	LIMESTONE - light to medium brown, mottled, packstone, microcrystalline, fine to medium grain bioclasts, rare coarse grain Crinoids, pellets, very argillaceous, rare medium and coarse grain size Crinoids, rare clay partings, trace Foraminifera fragment, trace Brachiopods, trace poor pinpoint porosity.
	20	SHALE - medium to light grey, fissile, calcareous, marlstone stringers, micaceous, trace pyrite, trace shell fragment, well indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
85 - 95	60	SHALE - medium to light grey, fissile, calcareous, marlstone stringers, micaceous, trace shell fragment, well indurated.
	20/25	LIMESTONE - predominantly as above, fine to very fine grain bioclastic.
	10/15	SHALE - dark grey, fissile, micromicaceous, non calcareous, trace plant remains, moderately indurated.
95 - 100	85	SHALE - medium to dark grey, blocky, calcareous in part, trace shell and fossil fragments, trace Brachiopods fragments, well indurated.
	15	LIMESTONE - as above, trace amounts Ostracod.
100 - 110	90	SHALE/MARLSTONE - medium to dark grey, blocky, calcareous in part, trace shell and fossil fragments, trace limestone stringers, trace Brachiopods fragments, well indurated.
	10	LIMESTONE - brown, wackestone, microcrystalline to very fine grain, trace medium to coarse grains, slightly trace Crinoids and Brachiopods, very argillaceous, no visible voids.
110 - 120	85	SHALE - dark grey, fissile to splintery, micromicaceous, non calcareous, rare pyrite granules, moderately to poor indurated.
	15	SHALE - medium to dark grey, blocky, calcareous in part, trace shell and fossil fragments, trace Brachiopods fragments, well indurated.
120 - 145	100	SHALE - predominantly non calcareous as above, trace silty dolomite laminae, occasional Crinoids and Brachiopod fragments.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
145 - 151	75/80	LIMESTONE - cream to light brown, packstone, medium to coarse grain crystalline, fine grain in part, Bioclastic, rare pellets and Spicula, rare Crinoids, common recrystallized clear spar, common argillaceous fragments, no visible voids.
	20/25	SHALE - dark grey, fissile, blocky in part, calcareous in part, predominantly as above.
151		<u>CONDUCTOR PIPE SET AT 150.6 metres K.B.</u>
151-155	90	SHALE - light to medium grey, blocky, locally fissile, micaceous, very calcareous to trace calcareous, common fossil fragment, trace pyrite, trace very fine arenaceous with silt, well indurated.
	10	LIMESTONE - white, brown to grey, wackestone, minor packstone, very fine grain crystalline to trace microcrystalline, fine grain bioclasts, common Spicula, trace medium grain Crinoids fragment, trace Brachiopods, pellets (?), grading very argillaceous, trace dolomite, occasional arenaceous, no visible voids.
155-160	65/70	LIMESTONE - white, brown to grey, wackestone, minor packstone, very fine grain crystalline to trace microcrystalline, fine grain bioclasts, common Spicula, trace medium grain Crinoids fragment, trace Brachiopods, pellets (?), grading very argillaceous, trace dolomite, occasional arenaceous, no visible voids.
	30/35	SHALE - light to medium grey, blocky, locally fissile, micaceous, very calcareous to trace calcareous, common fossil fragment, trace pyrite, trace very fine arenaceous with silt, well indurated.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
160-165	80/85	SHALE - light to medium grey, blocky, becoming fissile, common calcareous, well to moderately indurated.
	15/20	LIMESTONE - as above, very argillaceous.
165-170	90	SHALE - light to medium grey, dark grey, fissile, trace calcareous, trace fossil, moderately indurated.
	10	LIMESTONE - as above.
170-195	100	SHALE - medium to dark grey, fissile, common splintery, trace calcareous, trace silt, trace fossil, moderately indurated.
195-205	40	SHALE - medium to dark grey, blocky, calcareous in part, rare Crinoids and Ostracod, silty, trace very fine grain arenaceous, moderately to well indurated.
	30	LIMESTONE - grey, lithographic, argillaceous, common fossil fragment, locally frequent Ostracod and Brachiopods, Crinoids and Bryzoan, silty, trace dolomite.
	30	SHALE - medium to dark grey, fissile, common splintery, trace calcareous, trace silt, trace fossil fragments, moderately indurated.
205-225	85/90	SHALE - medium grey, blocky, calcareous in part, rare Crinoids and Ostracod, silty, trace very fine grain arenaceous, moderately to well indurated.
	10/15	LIMESTONE - grey, lithographic, argillaceous, common fossil fragment, rare Ostracod and Brachiopods, rare Crinoids, pellets?, silty.
225-230	90	SHALE - light to medium grey, blocky, calcareous in part, silty, trace dolomite, well indurated.
	10	LIMESTONE - grey, lithographic to very fine grain, argillaceous, common fossil fragment, silty, trace dolomite, no visible voids.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
230-240	80	SHALE - medium to dark grey, fissile, non calcareous, slightly trace siderite, moderately indurated.
	20	SHALE - medium to light grey, calcareous, silty in small part, common fossil fragments - Crinoid and Brachiopods, well indurated.
240-245	70	SHALE - medium to dark grey, fissile, splintery in small part, non calcareous, slightly trace siderite, moderately indurated.
	30	SHALE - medium to light grey, calcareous, trace dolomite, silty in small part, frequent fossil fragments - Crinoid and Brachiopods, well indurated.
245-255	80	SHALE - medium to dark grey, fissile, splintery in small part, non calcareous, slightly trace siderite, moderately indurated.
	20	SHALE - medium to light grey, calcareous, silty in small part, rare fossil fragments - crinoid and Brachiopods, trace dolomite, well indurated.
255-265	60	SHALE - medium to dark grey, fissile, splintery in small part, non calcareous, slightly trace siderite, moderately indurated.
	40	SHALE - medium to light grey, calcareous, rare silty, trace dolomite, trace fossil fragments - crinoid and Brachiopods, well indurated.
265-275	70	SHALE - medium to dark grey, fissile, splintery in small part, non calcareous, slightly trace siderite, moderately indurated.
	30	SHALE - medium to light grey, calcareous, rare silty, trace dolomite, trace fossil fragments - Crinoid and Brachiopods, well indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
275-295	100	SHALE - dark to very dark grey, fissile to platy, minor splintery, dolomite, trace calcareous, rare to locally common fossil fragments - Crinoids and Ostracod, moderately indurated.
295-305	100	SHALE - dark to very dark grey, black in part, fissile to platy, minor splintery, common calcareous, common micaceous, rare fossil fragments - Ostracod and Brachiopods and Crinoids, trace floating fine grain arenaceous, trace pyrite, moderately indurated.
305-310	100	SHALE - very dark grey to black, fissile and platy, trace calcareous, slightly dolomitic, trace fossil fragments, moderately indurated.
310-335	100	SHALE - medium and dark grey, blocky, very calcareous, argillaceous microcrystalline LIMESTONE laminae in part, trace dolomite, well indurated.
335-340	100	SHALE - dark and medium grey, platy to fissile, common calcareous, non calcareous in part, moderately well indurated.
340-360	100	SHALE - dark to very dark grey, platy, blocky in part, common to very calcareous, grading locally to marlstone, micaceous, moderately to well indurated.
360-375	100	SHALE - dark to medium grey, platy, blocky in part, common calcareous rare very fine to fine grain calcite, trace silty, moderately to well indurated.
375-380	90	SHALE - dark to medium grey, platy, blocky in part, locally very calcareous, trace shell fragment, moderately to well indurated.
	10	LIMESTONE - medium to dark grey, trace black, mudstone, lithographic to microcrystalline, very argillaceous, locally silty, trace Crinoids and shell fragments, no visible voids.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
380-390	50/60	SHALE - medium to dark grey, black in part, blocky, calcareous, trace very fine grain calcite recrystallized, well indurated.
	40/50	LIMESTONE - dark grey to black, medium grey in part, mudstone, lithographic to microcrystalline, very argillaceous, silty, trace Crinoids and shell fragments.
390-395	100	SHALE - very dark grey to black, platy to fissile, blocky in part, micromicaceous, very calcareous, well indurated.
395-405	100	SHALE - dark grey, black in part, platy and fissile, micromicaceous, common to non calcareous, trace brown silty laminae, trace pyrite, moderately well indurated.
405-425	100	SHALE - very dark grey to black, blocky, fissile in part, micromicaceous, slightly calcareous, trace brown SILTSTONE laminae, trace coarse grain pyrite granule and grains, well indurated.
425-435	70	SHALE - dark grey to black, fissile, splintery in part, micromicaceous, frequent calcareous, trace pyrite, trace silty, slightly dolomitic, well indurated.
	30	LIMESTONE - dark to medium grey, mudstone, lithographic to microcrystalline, very argillaceous, silty in small part.
435-445	80	SHALE - dark grey, blocky, micromicaceous, very calcareous, trace silty, slightly dolomitic, well indurated.
	20	LIMESTONE - medium to dark grey, mudstone, lithographic to microcrystalline, very argillaceous, slightly trace bioclastic, silty in small part.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
445-455	50	SHALE - medium grey to black grey, platy to blocky, micromicaceous, very calcareous, trace silty, well indurated.
	50	LIMESTONE - dark grey to black, mudstone, lithographic to microcrystalline, very argillaceous, trace silty, slightly trace bioclastic, no visible voids.
455-460	95	SHALE - medium grey to black, platy, micromicaceous, very calcareous, trace floating arenaceous, trace silty, well indurated.
	05	SANDSTONE - clear, yellow, orange, fine to coarse grain, trace pebble, angular and rounded, poor sorted, predominantly loose grains, trace calcite cement.
460-465	100	SHALE - medium grey to black, platy, micromicaceous, very calcareous, trace floating arenaceous, trace silty, trace loose sand grains, well indurated.
465-475	100	SHALE - medium grey, fissile to locally blocky, micromicaceous, moderately calcareous, trace dolomite, trace silty, trace Crinoids debris, well indurated.
475-490	100	SHALE - medium grey, fissile to platy, micromicaceous, moderately calcareous, trace dolomite, trace Crinoids debris, locally calcite laminae, moderately well indurated.
490-500	100	SHALE - medium grey, fissile to platy, micromicaceous, moderately calcareous, trace dolomite, trace pyrite granule, trace locally calcite laminae, moderately well indurated.
500-520	100	SHALE - medium to dark grey, fissile, trace blocky, moderately calcareous, rare dolomite, trace locally pyrite granule, trace calcite laminae, moderately indurated.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
520-535	100	SHALE - medium to dark grey, fissile to platy, micromicaceous, moderately calcareous, trace dolomite in part, slightly silty, moderately indurated.
535-545	100	SHALE - medium to dark grey, fissile, blocky in part, micromicaceous, moderately calcareous, trace dolomite in part, slightly trace drusy recrystallized calcite, slightly silty, moderately well indurated.
545-550	100	SHALE - medium to dark grey, blocky, fissile in part, micromicaceous, moderately calcareous, trace dolomite in part, silty, moderately well indurated.
550-555	100	SHALE - medium to dark grey, blocky, fissile in part, moderately calcareous, dolomite, silty, slightly trace disseminated pyrite, well indurated.
555-560	100	SHALE - medium to dark grey, blocky, fissile in part, moderately calcareous, dolomite in part, locally frequent silt, trace drusy calcite, trace disseminated pyrite, well indurated.
560-570	100	SHALE - medium to dark grey, blocky, splintery cavings, micromicaceous, weakly calcareous, trace dolomite in part, silty, trace drusy calcite, trace Crinoids and Brachiopods, slightly trace coarse grain to granule pyrite, well indurated.
570		<u>SURFACE CASING DEPTH</u>

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
570 - 580	100	SHALE - medium to dark grey, fissile, micromicaceous, calcareous, slightly dolomitic, silty, trace fine to very fine grain arenaceous, moderately indurated.
580 - 590	100	SHALE - medium to black grey, fissile, blocky in part, micaceous, trace drusy calcite, trace calcite laminae, silty, moderately to locally well indurated.
590 - 595	100	SHALE - dark grey to black grey, fissile, blocky in part, micaceous, calcareous, trace dolomitic, silty, moderately to poorly indurated.
595 - 610	100	SHALE - dark grey, blocky, fissile in part, micaceous, moderately calcareous, trace silty, moderately to poorly indurated.
610 - 620	100	SHALE - dark grey, blocky, trace micaceous, moderately to slightly calcareous, trace dolomitic, trace silty, trace occasional pyrite, moderately to locally well indurated.
620 - 635	100	SHALE - dark grey, blocky, fissile in part, micaceous, slightly calcareous to dolomitic, rare silt, trace pyrite granule, moderately indurated.
635 - 645	100	SHALE - medium grey, light grey in part, blocky, micaceous, micromicaceous in part, moderately calcareous to dolomitic, trace calcite laminae, trace pyrite granules, silty, moderately to well indurated.
645 - 675	100	SHALE - medium to dark grey, blocky, micromicaceous, trace micaceous flakes, moderately calcareous to dolomitic, trace calcite laminae, silty, well indurated.
675 - 685	100	SHALE - medium to dark grey, blocky, micromicaceous, moderately calcareous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
685 - 695	100	SHALE - medium to dark grey, light grey in part, blocky, fissile in part, calcareous to locally very calcareous, local marlstone stringers, trace fossil fragments, trace Crinoid fragments, trace disseminated pyrite, moderately to well indurated.
695 - 700	100	SHALE - medium to dark grey, light grey in part, micromicaceous, blocky, fissile in part, calcareous to locally very calcareous, local fine grain crystalline lime stringers, trace disseminated pyrite, trace fossil fragments, well indurated.
700 - 715	95	SHALE - medium to dark grey, micromicaceous, blocky, trace fissile, calcareous to locally very calcareous, trace disseminated pyrite, trace imbedded fossil fragments, well indurated.
	05	LIMESTONE - buff, greyish brown, microcrystalline to very fine grain crystalline, mudstone, very argillaceous, trace bioclastic, no visible voids.
715 - 725	100	SHALE - medium to dark grey, blocky, fissile in small part, calcareous, trace dolomitic, locally grading to marlstone, trace pyrite, trace silty, moderately to well indurated.
725 - 735	100	SHALE - light to medium grey, blocky, calcareous, dolomitic in part, trace disseminated pyrite, silty, well indurated.
735 - 745	100	SHALE - light to medium grey, blocky, calcareous, dolomitic in part, trace disseminated pyrite, silty, well indurated.
745 - 765	100	SHALE - light grey, medium grey in part, blocky, trace fissile, slightly calcareous to dolomitic, trace silty, locally common pyrite granules, well indurated.
765 - 770	100	SHALE - light to medium grey, greyish black in part, blocky, fissile in part, micaceous, slightly calcareous, rare pyrite grains, moderately to locally poorly indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
770 - 775	95	SHALE - greyish black, brownish grey in part, blocky, fissile in part, frequently micaceous, slightly calcareous, common pyrite grains, slight trace angular black chert shards, slight hydrocarbon odor, trace dull orange fluorescence, no cut fluorescence.
	05	SILTSTONE - salt and pepper, blocky, quartzose, cherty in part, dolomite cement, hard.
775 - 780	100	SHALE - greyish black, brownish grey in part, blocky, fissile in part, frequently micaceous, slightly calcareous, common pyrite grains to granules, slight trace angular black chert, slight hydrocarbon odor, trace dull orange fluorescence, no cut fluorescence.
780 - 785	100	SHALE - greyish black, brownish grey, fissile, frequently micaceous, common pyrite grains, trace bentonitic, poor to moderately indurated, locally hard, slight hydrocarbon odor, slow streaming bright white cut fluorescence.
785 - 795	100	SHALE - blackish to brownish grey, predominantly fissile, blocky in part, frequently micaceous, common pyrite grains, trace bentonitic, moderately to well indurated, locally hard, slight hydrocarbon odor, slow even bright white cut fluorescence.
795 - 810	100	SHALE - very dark brown grey to black, fissile, medium soft to medium hard, sub bituminous, very fine disseminated pyrite, trace medium grey slightly calcareous laminae, rare pyrite crystals.
810 - 815	100	SHALE - very dark grey to brownish grey, fissile to subfissile, sub bituminous, trace medium brown grey soft calcareous streaks with trace pyrite vein.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
815 - 825	100	SHALE - very dark brown grey - black, subfissile - fissile, sub bituminous to bituminous, slightly earthy texture, trace light marlstone partings, rare pyrite vein, common very fine disseminated pyrite.
825 - 840	100	SHALE - very dark brown grey to black, sub bituminous, bituminous, slightly earthy texture, trace white calcareous spec in part, trace light grey color marlstone partings, rare to trace pyrite.
840 - 845	100	SHALE - black, bituminous, medium soft to medium hard, presence very fine disseminated pyrite, rare earthy brown marlstone partings.
845 - 855	80	SHALE - black, fissile, very bituminous, medium hard, trace clear white calcite veining, trace pyrite, rare white calcareous spec.
	20	CHERT - dark grey brown color, massive, very hard, slightly calcareous, trace white Spicules, no fluorescence, faint bloom yellowish cut fluorescence.
855 - 865	100	SHALE - dark grey, blocky, locally fractured, fine to coarse crystalline calcite throughout, trace pyrite, hard.
865 - 875	100	SHALE - dark grey - brown grey, subfissile to blocky, medium hard to hard, part slightly calcareous, trace white crystalline calcite crystals as above, trace dark chert shards, rare pyrite.
875 - 880	70	SHALE - as above.
	30	SILTSTONE - dark brownish grey, subangular, hard, very argillaceous, slightly calcareous, trace pyrite, tight.
880 - 890:	100	SHALE - very dark grey to brownish grey, subfissile to blocky, hard, siliceous, trace bituminous, very slightly calcareous, trace clear white calcite veining and drusy crystal, rare pyrite.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
890 - 905	100	SHALE - dark brownish grey, fissile to subfissile, medium hard, slightly calcareous, slightly silty, trace slightly bituminous, trace very fine disseminated pyrite crystal, trace medium brown colored laminae.
905 - 910	90	SHALE - dark to very dark brownish grey, fissile to subfissile, medium hard, slightly silty, very slightly calcareous, trace pyrite, trace medium brown grey marlstone partings.
	10	SILTSTONE - dark brown grey, very argillaceous, medium hard, slightly calcareous clay cement, trace pyrite, tight.
910 - 925	70	SHALE - medium light grey brown to brown grey color, subfissile, medium hard, silty to very silty, calcareous, trace micromicaceous, trace pyrite vein.
	30	SILTSTONE - medium light grey brown, argillaceous, trace arenaceous, calcareous cement, subrounded pyrite vein, tight.
925 - 950	90	SHALE - medium light grey brown to brown grey, subfissile, medium hard, slightly waxy lustre, slightly calcareous, dolomite, slightly silty to silty, occasional sand grains, trace micromicaceous, trace very fine pyrite crystal.
	10	SILTSTONE - medium light brown grey, very argillaceous.
950 - 955	100	SHALE - medium light grey brown, subfissile, medium hard, slightly waxy, slightly calcareous, slightly silty.
955 - 960	50	SHALE - as above.
	50	SILTSTONE - medium dark brown grey, medium hard to hard, calcareous cement, argillaceous, part bituminous argillaceous stain, micromicaceous, tight.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
960 - 970	70	SHALE - medium light grey brown, subfissile, medium hard, slightly calcareous with dolomite, some silty streaks, rare calcareous laminae, trace bituminous partings.
	30	SILTSTONE - as above, becoming medium to light brown grey, less argillaceous.
970 - 975	100	SHALE - black to very dark grey, fissile to subfissile, slightly bituminous, trace pyrite vein.
975 - 985	100	SHALE - medium light greenish brownish grey, fissile to subfissile, slightly waxy, medium hard to medium soft, slightly bituminous, slightly calcareous, trace micromicaceous, trace silty streaks, rare calcite veining.
985 - 995	100	SHALE - as above, becoming medium grey.
995 - 1000	80	SHALE - medium to medium dark greenish brownish grey, fissile, medium hard to medium soft, slightly waxy.
	20	SILTSTONE - cream to buff color, silica cement, calcareous cement.
1000 - 1010	100	SHALE - medium greenish brownish grey, fissile to subfissile, medium hard, slightly waxy, slightly calcareous, trace dark bituminous partings, rare calcite veining.
	trace	SILTSTONE - as above.
1010 - 1020	80	SHALE - medium to medium light greenish brown grey, fissile to subfissile, slightly waxy, rare calcite veining, silty varves, trace very dark grey brown bituminous laminae.
	20	SILTSTONE - medium to medium dark brown grey, silica, argillaceous, firm to medium hard, slightly bituminous to bituminous, calcareous, trace pyrite vein, tight, faint cut fluorescence.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1020 - 1025	80	SHALE - as above.
	20	LIMESTONE - buff, very fine crystalline, medium hard, dolomitic, slightly argillaceous, trace calcite veining, dense.
1025 - 1035	60	LIMESTONE - as above.
	40	SHALE - light grey brown, fissile, medium hard, calcareous, dolomite, trace peloids with Crinoid ghost structures.
1035 - 1045	90	SHALE - medium greenish brown grey, fissile to subfissile, medium hard, slightly waxy, calcareous, dolomite, trace calcite veining, rare pyrite crystal.
	10	SILTSTONE - light brown grey, silica, calcareous cement, medium hard, part argillaceous, tight.
1045 - 1055	100	SHALE - medium greenish brownish grey, fissile to subfissile, medium hard, calcareous to very calcareous, trace drusy crystalline calcite veining, rare bituminous stain, part silty, rare clear quartz prism, part grading siltstone.
1055 - 1065	100	SHALE - medium greenish brownish grey, fissile, medium hard, slightly waxy lustre, calcareous to slightly calcareous, part slightly silty, trace micromicaceous, trace white crystalline calcite veining.
1065 - 1080	100	SHALE - as above, fissile to subfissile and, part slightly blocky, medium dark brown color slightly silty streaks.
1080 - 1095	100	SHALE - medium to medium dark brown grey, fissile, medium hard, slightly calcareous, very slightly silty, trace clear white crystalline calcite veining material, rare bituminous partings, rare marlstone partings.
1095 - 1100	100	SHALE - medium dark brown grey, slightly waxy, slightly calcareous to calcareous, part very silty, rare pyrite crystal.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1100 - 1105	90	SHALE - as above.
	10	LIMESTONE - medium brown grey, microcrystalline, hard, very argillaceous, dolomitic, dense.
1105 - 1120	100	SHALE - medium dark to dark grey, subfissile, medium hard to hard, slightly silty, slightly calcareous to calcareous, trace silty varves, trace calcite veining, slight bituminous coating in part, trace fine pyrite blebs, presence soft medium brown waxy laminae.
1120 - 1125	90	SHALE - dark brown grey, subfissile, medium hard, slightly calcareous, trace euhedral calcite veining crystal, trace medium brown waxy streaks.
	10	SILTSTONE - medium brownish grey, very argillaceous, medium hard to firm, clay cement, very slightly calcareous, trace pyritic, tight, no visual shows.
1125 - 1135	100	SHALE - medium dark grey, subfissile, very slightly calcareous, presence medium brown color, soft waxy laminae.
1135 - 1145	100	SHALE - as above, very slightly bituminous, trace micaceous, trace slightly marlstone partings.
1145 - 1150	100	SHALE - as above, more subfissile to slightly blocky, slightly bituminous, slightly silty, trace siltstone laminae.
1150 - 1160	100	SHALE - dark grey, fissile, medium hard, slightly calcareous, part slightly silty, trace micromicaceous, uniform slightly bituminous stain, rare calcite veining, occasional soft waxy partings.
1160 - 1170	100	SHALE - as above, becoming slightly calcareous to calcareous, slightly silty, more frequent waxy partings.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1170 - 1190	90	SHALE - dark grey, fissile to subfissile, medium hard, slightly bituminous, part slightly silty, trace calcareous, trace waxy partings, rare calcite veining.
	10	SILTSTONE - medium to dark grey, medium hard, very argillaceous, calcareous cement, tight.
1190 - 1205	100	SHALE - dark grey, fissile to subfissile, medium hard, very slightly bituminous, slightly calcareous, trace micromicaceous, rare pyrite, some silty calcareous streaks, trace slickensides.
1205 - 1235	70	SHALE - dark grey, slightly silty to silty, slightly calcareous, trace micromicaceous.
	30	SILTSTONE - medium to dark brownish grey, medium hard, very calcareous cement, argillaceous, micromicaceous, tight to trace porosity, no visual shows.
1235 - 1250	50	SHALE - dark to very dark grey, subfissile to fissile, medium hard, silty to very silty, trace bituminous, calcareous, micromicaceous.
	50	SILTSTONE - medium to dark grey to brownish grey, medium hard, calcareous cement, medium hard, very argillaceous, micromicaceous, slightly bituminous stained, tight.
1260 - 1265	100	SHALE - black to very dark brown grey, fissile, platy, medium hard, very bituminous, calcareous, silty laminae, trace pyrite.
1265 - 1270	80	SHALE - as above, becoming dark to very dark grey, fissile, slightly calcareous to calcareous, part silty, part bituminous.
	20	SILTSTONE - dark grey, very argillaceous, very calcareous, micromicaceous, tight.
1270 - 1275	90	SHALE - dark to very dark grey, slightly bituminous with bituminous partings, trace light colored slightly calcareous soft waxy partings.
	10	SILTSTONE - medium grey, very argillaceous, calcareous cement, micromicaceous, tight.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1275 - 1285	100	SHALE - black to very dark brownish grey, platy, bituminous, medium hard, slightly brittle, very slightly to slightly calcareous with calcareous streaks.
1285 - 1300	70	SHALE - dark grey to brownish grey, fissile to subfissile, slightly waxy lustre, calcareous, micromicaceous, trace bituminous partings, marlstone streaks, trace pyrite crystals and veining.
	30	SILTSTONE - medium dark brown grey, very argillaceous, calcareous, medium hard, trace pyrite crystal, tight.
1300 - 1305	50	SILTSTONE - medium dark brown grey, very argillaceous to argillaceous, calcareous, trace pyrite, trace micromicaceous, tight.
	40	SHALE - as above.
	10	LIMESTONE - buff to light grey brown, microcrystalline to very fine crystal, medium hard, argillaceous, trace very fine disseminated pyrite crystals, trace to poor intercrystalline porosity, no visual shows.
1305 - 1310	70	SHALE - medium grey to greenish grey color, subfissile, medium hard, part silty, slightly calcareous, trace micromicaceous.
	30	SILTSTONE - as above.
	trace	LIMESTONE - as above.
1310 - 1315	50	SHALE - dark grey to slightly greenish grey, subfissile to fissile, silty, slightly calcareous, trace micromicaceous.
	30	SILTSTONE - as above.
	20	LIMESTONE - cream to buff, microcrystalline to very fine crystalline, medium hard, slightly argillaceous to argillaceous, dense.
	trace	SANDSTONE - clear, vitreous, very fine grained, subangular, hard, silica cement, common black gilsonite (?), poor porosity, no visual shows.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1315 - 1325	70	SHALE - dark grey to slightly greenish grey, subfissile to fissile, medium hard, slightly calcareous, part silty, trace micromicaceous, trace pyrite, trace calcite veining.
	20	SILTSTONE - medium dark brown grey, very argillaceous, calcareous, micromicaceous, tight.
	10	LIMESTONE - cream to light grey brown, microcrystalline to very fine crystalline, medium hard, argillaceous, trace pyrite, dense.
1325 - 1340	80	SHALE - medium greenish grey color, fissile, medium hard, slightly waxy lustre, calcareous, rare bituminous partings, trace silty streaks.
	20	LIMESTONE - cream to buff, microcrystalline to very fine crystalline, slightly argillaceous, trace ghost peloids, dense.
1340 - 1350	40	SHALE - as above, part silty, trace pyrite crystal.
	40	SILTSTONE - medium greenish grey, very argillaceous, calcareous, medium hard to hard, slightly micromicaceous, tight.
	20	LIMESTONE - buff to light grey brown, microcrystalline very fine crystalline, medium hard, slightly argillaceous, trace pyritic, dense.
1350 - 1360	70	SHALE - medium to dark greenish grey, fissile to subfissile, calcareous, trace silty streaks.
	20	SILTSTONE - as above.
	10	LIMESTONE - as above.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1360 - 1365	40	SHALE - as above.
	30	SILTSTONE - as above.
	30	LIMESTONE - light brown grey, very fine crystalline, fine size peloids, medium hard to hard, slightly argillaceous, silty, part pyritic, dense.
1365 - 1375	50	SHALE - medium greenish grey color, fissile to slightly flaky, slightly waxy, medium hard, calcareous, trace calcite veining.
	30	SANDSTONE - light brown, quartzitic, very fine grained, subangular, moderate well sorted, slightly calcareous silica cement, medium hard to hard, very argillaceous, trace porosity to tight, no visual shows
	20	SILTSTONE - medium greenish grey, very argillaceous, slightly calcareous cement, very argillaceous, trace pyrite, tight.
1375 - 1385	20	SHALE - medium greenish grey, fissile, part silty, slightly calcareous, trace micromicaceous.
	30	SILTSTONE - medium light grey brown, argillaceous, arenaceous, slightly calcareous, tight.
	50	SANDSTONE - light grey brown, quartz with trace calcareous grained, very fine grained, subangular, well indurated, slightly calcareous silica cement, hard, trace argillaceous, silty, trace poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1385 - 1395	70	SHALE - medium to medium dark greenish grey, fissile, medium hard, slightly waxy, very slightly to slightly calcareous trace micromicaceous, rare pyrite, trace calcite veining.
	20	SILTSTONE - medium brownish grey, medium hard to hard, slightly calcareous, silica cement, tight.
	10	SANDSTONE - light brown, very fine grained, subangular with angular, moderate to well sorted, hard, slightly calcareous silica cement, very silty, micromicaceous, tight to trace poor porosity, no visual shows.
1395 - 1405	40	SHALE - as above.
	30	SILTSTONE - as above.
	30	SANDSTONE - light to medium greenish grey, quartzitic, very fine grained, hard, silica cement, silty, micromicaceous, tight to trace porosity.
1405 - 1415	40	SHALE - medium greenish grey, fissile, medium hard, slightly waxy, part silty, slightly micromicaceous, rare black bituminous partings.
	30	SILTSTONE - medium greenish grey, medium hard, very argillaceous, arenaceous, slightly calcareous, trace micromicaceous, tight.
	30	SANDSTONE - light greenish grey, quartzose, very fine grained, subangular to angular, well sorted, hard, silica cement, slightly calcareous, micromicaceous, trace pyritic, rare floating clear vitreous rounded medium grained, rare carbonaceous flakes, tight to trace poor porosity.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1415 - 1420	60	SHALE - medium to medium dark greenish grey, fissile, slightly waxy, slightly calcareous, part silty, slightly micromicaceous, rare pyrite, trace soft waxy streaks.
	20	SILTSTONE - as above.
	20	SANDSTONE - as above.
1420 - 1425	80	SHALE - as above.
	20	SILTSTONE - as above.
1425 - 1430	90	SHALE - as above, becoming silty.
	10	SILTSTONE - medium greenish grey, very argillaceous, arenaceous, tight.
1430 - 1435	70	SHALE - medium dark greenish grey to grey, fissile to subfissile, very slightly calcareous, silty to very silty, trace micromicaceous.
	20	SANDSTONE - light to medium light green yellowish green to grey, very fine grained, subangular with angular, well sorted, slightly calcareous silica cement, hard, very silty, trace argillaceous, tight.
	10	SILTSTONE - as above.
	trace	LIMESTONE - buff, microcrystalline, hard, silty, trace Crinoid ossicles, dense.
1435 - 1445	90	SHALE - medium dark greenish grey, fissile, medium hard, very slightly calcareous, trace silty streaks, slightly micromicaceous, trace loose medium grained clear quartz.
	10	SILTSTONE - as above.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1445 - 1455	50	SILTSTONE - medium greenish grey color, slightly calcareous, argillaceous, arenaceous, slightly micromicaceous, tight.
	30	SHALE - as above, becoming silty to very silty, part arenaceous.
	20	SANDSTONE - light greenish grey to grey, very fine grained, subangular with angular, well sorted, silica cement, slightly calcareous, very silty, micromicaceous, trace loose clear quartz, rare pyrite, rare bituminous fragment, tight to trace porosity.
1455 - 1465	70	SHALE - as above, part arenaceous, rare black bituminous partings.
	20	SILTSTONE - as above.
	10	SANDSTONE - as above.
1465 - 1475	40	SILTSTONE - medium greenish grey, slightly calcareous, arenaceous, micromicaceous, tight.
	30	SHALE - medium dark greenish grey, fissile to subfissile, part very silty, slightly calcareous, slightly bituminous.
	30	SANDSTONE - light grey to greenish grey. very fine grained, hard to medium hard, silica cement, slightly calcareous, silty, micromicaceous, tight.
1475 - 1485	40	SHALE - as above, trace slightly bituminous partings, trace pyrite blebs.
	40	SILTSTONE - medium grey, slightly calcareous, arenaceous, part slightly bituminous, tight.
	10	SANDSTONE - as above, trace loose medium size quartz floating.
	10	LIMESTONE - buff, microcrystalline, medium hard to slightly chalky texture, argillaceous, silty, trace pyrobitumen partings, dense.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1485 - 1490	60	SILTSTONE - medium to dark grey, medium hard, arenaceous, very calcareous cement, argillaceous, trace micromicaceous, trace pyritic, common bituminous stain with partings, tight.
	20	LIMESTONE - light brown, microcrystalline, hard, slightly argillaceous, silty, rare bituminous, dense, trace very fine pyrite crystals.
	10	SHALE - as above.
	10	SANDSTONE - as above, loose clear white medium size quartz floating.
1490 - 1495	50	LIMESTONE - light to medium grey brown, microcrystalline, hard, silty, argillaceous, trace very fine disseminated pyrite, trace bituminous flecks, trace peloids and indistinct fossil fragments, dense.
	30	SHALE - as above.
	20	SILTSTONE - as above, very calcareous, minor bituminous stain.
1495 - 1505	40	SILTSTONE - medium dark grey, calcareous, slight bituminous stain, micromicaceous, trace pyrite, tight.
	20	SHALE - as above.
	20	SANDSTONE - medium grey brown, very fine grained, very silty, calcareous, argillaceous, micromicaceous, trace bituminous stain, tight.
	20	LIMESTONE - as above.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1505 - 1515	40	SHALE - medium dark grey to slightly greenish grey, fissile to subfissile, medium hard, slightly bituminous, part very silty, presence very fine disseminated pyrite, trace calcareous streaks.
	30	SILTSTONE - as above.
	20	SANDSTONE - as above.
	10	LIMESTONE - as above.
1515 - 1525	80	SHALE - medium to medium dark grey to slightly greenish grey, slightly calcareous to calcareous trace very fine pyrite crystal, trace silty streaks.
	20	SILTSTONE - medium greenish grey, medium hard, calcareous, arenaceous, argillaceous, micromicaceous, slightly bituminous stain in part, tight.
	rare	LIMESTONE - cream, mudstone, medium hard, scattered medium size sand grains, dense.
1525 - 1535	100	SHALE - medium grey to greenish grey, fissile, medium hard, slightly waxy lustre, slightly calcareous, slightly micromicaceous, trace very fine pyrite crystals, calcareous streaks.
1535 - 1550	100	SHALE - medium dark grey to green grey, very slightly to slightly calcareous.
1550 - 1570	100	SHALE - medium dark grey to olive grey color, fissile, slightly waxy, medium hard, very slightly calcareous, slightly micromicaceous, rare pyrite, trace calcite veining, trace arenaceous and silty stringers.
1570 - 1580	90	SHALE - medium dark grey to olive grey, part silty, trace calcite veining, trace pyrite, rare dark color bituminous partings.
	10	SILTSTONE - medium grey, medium hard, calcareous clay cement, trace sand grains, slightly micromicaceous, rare pyrite, tight.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1580 - 1585	100	SHALE - medium to medium dark olive grey color, fissile, slightly waxy, medium hard, very slightly calcareous, slightly micromicaceous, rare to trace calcite veining, trace arenaceous and silty streaks.
1585 - 1595	100	SHALE - medium dark olive grey, fissile to subfissile, slightly soapy, very slightly calcareous, trace calcite veining.
1595 - 1605	100	SHALE - as above, trace calcite veining material, parted with silty and arenaceous streaks.
1605 - 1620	100	SHALE - medium dark olive grey, fissile to subfissile, medium hard, very slightly calcareous, slightly micromicaceous to micromicaceous, trace arenaceous and silty laminae, trace calcite veining, rare black bituminous partings.
1620 - 1630	100	SHALE - as above, some slightly dark with rare pyrobitumen fragments.
1630 - 1640	90	SHALE - medium dark to dark olive grey, trace very fine pyrite crystals.
	10	SANDSTONE - medium dark grey, very fine grained, subangular, moderate well sorted, slightly calcareous, hard, argillaceous, silty, slightly bituminous, tight.
1640 - 1650	100	SHALE - dark olive grey color, fissile to subfissile, presence to trace very fine pyrite crystals, occasional bituminous partings.
	trace	CHERT - buff color, massive, very hard, slightly calcareous, trace sponge spicules.
1650 - 1665	100	SHALE - dark olive grey, trace calcite veining, trace black brittle pyrobitumen fragments.
1665 - 1675	100	SHALE - dark olive grey, fissile, splintery, medium hard, very slightly calcareous, slightly micromicaceous, trace slightly bituminous partings.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1675 - 1685	100	SHALE - dark grey, fissile, non calcareous, slightly silty, rare clear colorless quartz shards, rare calcite veining, rare pyrite.
1685 - 1710	100	SHALE - dark grey, fissile, non calcareous, slightly silty.
	rare	CHERT - dark brown, translucent, massive, very hard.
1710 - 1730	100	SHALE - dark grey, fissile, non calcareous, part silty.
	trace	SILTSTONE - medium dark brown grey, very argillaceous, very slightly calcareous, slightly micromicaceous, rare black bituminous part.
	rare	SANDSTONE - medium grey brown, quartzose, very fine grained, hard, silica cement, trace pyrite, trace micromicaceous, tight.
1730 - 1740	100	SHALE - as above, becoming slightly greenish grey tint in part.
1740 - 1755	100	SHALE - dark grey to slightly olive grey, fissile, medium hard, slightly silty, rare calcite veining, slightly micromicaceous, rare clay iron stain nodules, rare trace sand and silt stringers.
1755 - 1770	100	SHALE - dark grey, slightly splintery, non calcareous, rare to trace very fine disseminated pyrite, rare calcite veining, rare bituminous partings.
	trace	SANDSTONE - medium brown grey, very fine grained, subangular, calcareous silica cement, hard, very silty, tight.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1770 - 1780	90	SHALE - dark grey, fissile, slightly splintery, trace calcite veining, rare black bituminous partings, rare clear colorless quartz crystals.
	10	SILTSTONE - dark grey, medium hard, very argillaceous, arenaceous, slightly calcareous, trace pyrite, rare chert fragment, tight.
1780 - 1790	60	SHALE - as above.
	30	SANDSTONE - light to medium brown grey, very fine grained, subangular, moderate well sorted, silica cement, hard, very silty, argillaceous, trace pyritic, rare pyrobitumen fragment, trace bituminous stain, tight to trace porosity, no visual shows.
	10	SILTSTONE - as above.
1790 - 1800	70	SHALE - dark grey, fissile, part slightly silty to silty, trace very fine pyrite.
	20	SILTSTONE - dark to medium dark grey, medium hard to hard, silica cement, very argillaceous, part arenaceous, very slightly calcareous, trace very fine pyrite.
	10	SANDSTONE - as above, trace clear quartz fragments.
1800 - 1815	90	SHALE - dark grey to brownish grey, fissile, medium hard, non calcareous, slightly micromicaceous, trace thin arenaceous and silty laminae.
	10	SANDSTONE - light brown, very fine grained, hard to very hard, silica cement, silty, trace pyrite, tight.
1815 - 1820	85	SHALE - as above.
	10	SILTSTONE - dark to medium dark grey, very argillaceous, arenaceous, tight.
	05	SANDSTONE - as above.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1820 - 1825	80	SHALE - as above.
	20	SANDSTONE - medium grey, fine to coarse size varicolored clear and frost quartz with tripolitic chert, rounded, moderate sorted, medium hard, calcareous silica cement, very fine quartz matrix, trace pyrite in part, poor to fair intergranular porosity, no fluorescence, no cut fluorescence.
1825 - 1835	100	SHALE - dark brownish grey color, fissile, medium hard, slightly waxy, micromicaceous.
1835 - 1840	80	SHALE - as above, becoming silty.
	20	SILTSTONE - dark brownish grey, arenaceous, argillaceous, micromicaceous, very slightly calcareous, silica cement, tight.
1840 - 1850	85	SHALE - as above.
	10	SILTSTONE - as above.
	05	SANDSTONE - scattered loose fine to very coarse size subrounded light color clear and frost quartz and chert, trace calcareous, very fine grained quartz matrix material, part pyritic, poor porosity.
1850 - 1860	80	SHALE - dark grey to brownish grey, fissile, medium hard, part very slightly calcareous, trace silty to silty.
	10	SILTSTONE - dark to medium dark brown grey, medium hard, slightly calcareous, trace arenaceous, argillaceous, tight.
	10	SANDSTONE - medium brownish grey, very fine to fine grained with scattered medium grained, subangular with subrounded, moderate well sorted, medium hard, slightly calcareous silica cement, argillaceous, micromicaceous, tight to trace poor porosity.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1860 - 1865	80	SHALE - dark grey to slightly brownish grey, part silty, trace arenaceous with silty streaks.
	20	SILTSTONE - medium dark grey, medium hard to hard, part arenaceous, calcareous silica cement, tight.
1865 - 1870	30	SILTSTONE - as above, becoming dark with increasing bituminous stain.
	30	SANDSTONE - medium grey, very fine grained, subangular, moderate well sorted, hard, calcareous silica cement, very silty, trace micromicaceous, some dark color bituminous part, tight to trace porosity, no visual shows.
	20	SHALE - as above.
	20	LIMESTONE - light to medium grey brown, chalky micritic texture in part, microcrystalline, silty, slightly argillaceous, part pyritic, trace peloids, dense, no fluorescence, no cut fluorescence.
1870 - 1872	40	SHALE - as above, part black, subfissile to amorphous, medium soft, very bituminous, slightly calcareous, trace silty, trace very fine pyrite.
	20	SILTSTONE - as above.
	20	SANDSTONE - as above.
	20	LIMESTONE - as above.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1872 - 1875	50	SHALE - medium to dark grey to slightly brownish grey, fissile, medium hard, silty, trace very fine pyrite, presence black bituminous staining.
	30	SILTSTONE - medium brownish grey, calcareous clay cement, argillaceous, presence dark bituminous staining, tight.
	20	SANDSTONE - medium grey, very fine grained with loose fine to coarse subrounded quartz and chert, subangular, hard, slightly calcareous, silica cement, trace fine pyrite, bituminous staining, tight.
1875 - 1880	50	SILTSTONE - medium brownish grey, slightly calcareous to calcareous, very argillaceous, trace micromicaceous, black bituminous staining in part.
	30	SHALE - as above, trace very dark grey to black, very bituminous, trace pyritic.
	20	SANDSTONE - light grey brown, very fine grained, hard to very hard, very silty, tight.
1880 - 1885	40	SHALE - medium dark brownish grey, silty to very silty.
	40	SILTSTONE - as above.
	20	SANDSTONE - as above.
1885 - 1895	70	SILTSTONE - medium to very dark stain brownish grey, calcareous clay cement, bituminous, very argillaceous, rare to trace pyrite cubes.
	30	SHALE - as above, presence to common black bituminous staining.
	rare	CHERT - medium brown, translucent, very hard.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1895 - 1900	60	SHALE - medium brownish grey, fissile, slightly waxy, slightly calcareous, common black bituminous stain, trace very fine pyrite, trace black very bituminous partings.
	40	SILTSTONE - medium brownish grey, calcareous, very argillaceous, common to abundant very dark brownish grey bituminous stain.
1900 - 1905	80	SHALE - black to very dark brownish grey, fissile, medium soft to medium hard, very bituminous, silty to very silty, micromicaceous, trace fine pyrite crystals.
	20	SILTSTONE - dark grey to black, very argillaceous, bituminous.
1905 - 1910	90	SHALE - black to very dark brownish grey, very bituminous, silty, trace to rare pyrite, micromicaceous.
	10	SILTSTONE - as above.
1910 - 1920	100	SHALE - black, fissile, medium hard to medium soft, very bituminous, slightly silty to silty, slightly micromicaceous, rare pyrite, trace medium brown grey, waxy partings.
1920 - 1925	100	SHALE - black to very dark brownish grey, subfissile to slightly blocky, very bituminous, hard to medium hard, silty, trace calcite veining, rare to trace pyrite.
1925 - 1935	80	SHALE - as above.
	20	SILTSTONE - dark to very dark brown, hard, calcareous to very calcareous, argillaceous.
1935 - 1945	100	SHALE - black to very dark brownish grey, slightly satin sheen, hard, brittle, very bituminous, trace micromicaceous to micromicaceous, slightly silty, trace pyrite veining, trace microfracture with white quartz and calcareous infill, trace soft medium brown marlstone partings.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1945 - 1950	70	SHALE - as above.
	20	SILTSTONE - medium dark grey, salt and pepper, hard, very calcareous, argillaceous, micromicaceous, trace pyrite.
	10	SANDSTONE - medium grey, salt and pepper, quartzitic, hard, very calcareous, very silty, tight.
1950 - 1955	90	SHALE - black, subfissile to fissile, hard, brittle, very bituminous, micromicaceous, trace calcareous filled microfractures.
	10	SILTSTONE - as above.
1955 - 1960	100	SHALE - as above, microfractures present, trace very fine pyrite crystals, trace marlstone partings, rare siltstone laminae.
1960 - 1970	80	SHALE - black, subfissile, very bituminous, part silty, slightly calcareous, micromicaceous, trace pyrite veining and crystals, medium to light grey waxy claystone partings.
	20	SILTSTONE - black to very dark stain medium grey color, hard, calcareous cement, part arenaceous, argillaceous, micromicaceous, pyritic. tight.
1970 - 1985	100	SHALE - black to very dark brownish grey, subfissile to slightly blocky, bituminous, hard, slightly silty to silty, calcareous to slightly calcareous, trace pyrite veining, scattered fine pyrite crystals, trace siltstone and light colored marlstone laminae.
1985 - 1995	100	SHALE - becoming black to very dark brownish grey, subfissile, medium hard, part slightly earthy, bituminous, trace calcite veining.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1995 - 2005	100	SHALE - black to very dark brownish grey, slightly earthy, bituminous, micromicaceous, trace pyrite.
	trace	SILTSTONE - medium dark to very dark grey, medium hard to hard, very bituminous, micromicaceous, calcareous, argillaceous, micromicaceous, tight.
2005 - 2010	80	SHALE - black, subfissile to slightly blocky, bituminous, trace pyrite vein, trace calcite veining, presence medium to light grey claystone partings.
	10	SILTSTONE - as above.
	10	LIMESTONE - medium dark brown, microcrystalline to very fine crystalline, hard, extremely silty and argillaceous, part pyritic, dense.
2010 - 2020	60	SHALE - as above.
	30	SILTSTONE - medium grey, salt and pepper, hard, abundant calcareous cement, argillaceous, micromicaceous, trace pyritic, slight bituminous stain and partings, tight.
	10	LIMESTONE - medium grey slightly speckled, very fine crystalline, very silty, very argillaceous, hard, slight bitumen stain, dense.
2020 - 2030	50	SHALE - black to very dark grey, subfissile to slightly blocky, calcareous, silty, minor white crystal calcite veining.
	50	SILTSTONE - dark to very dark brownish grey, quartzitic, hard, very calcareous, very argillaceous, trace bituminous stain and partings, tight.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2030 - 2035	70	SHALE - black, very bituminous, slightly silty, slightly calcareous, minor medium grey claystone partings.
	25	SILTSTONE - as above.
	05	MARLSTONE - medium grey, micritic, chalky texture, very silty, slight bituminous staining, trace calcisphaera.
2035 - 2040	40	SHALE - very dark brownish grey, subfissile, medium hard to hard, bituminous, very calcareous, silty.
	30	SILTSTONE - dark grey to brownish grey, very calcareous, argillaceous, bituminous.
	30	MARLSTONE - medium grey to brownish grey, very calcareous, slightly chalky, very silty.
2040 - 2045	70	SHALE - black, subfissile to slightly blocky, hard to very hard, bituminous, calcareous, slightly silty, slightly micromicaceous, presence calcareous microfracture infill, trace pyrite.
	20	MARLSTONE - as above.
	10	SILTSTONE - as above.
2045 - 2050	40	SHALE - as above, numerous medium to light grey waxy claystone partings.
	35	SILTSTONE - dark to very dark grey, minor medium grey, medium hard to hard, argillaceous, very calcareous, micromicaceous, slight bituminous staining, tight.
	25	MARLSTONE - medium brownish grey, medium hard, calcareous, very silty, chalky texture, trace micromicaceous, slight medium brown to black bituminous stain, trace calcisphaera dense.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2050 - 2055	70	SHALE - very dark brownish grey to black, subfissile, medium hard, slightly earthy, very bituminous, calcareous, part silty, trace micromicaceous, trace medium to light grey claystone partings.
	20	SILTSTONE - dark to very dark grey, bituminous, very calcareous, very argillaceous.
	10	MARLSTONE - as above.
2055 - 2060	60	SHALE - as above.
	30	MARLSTONE - varigated light to very dark grey, medium hard, part chalky texture, very silty, trace calcisphaera, common black bituminous staining, dense.
	10	SILTSTONE - as above.
2060 - 2065	75	MARLSTONE - varigated light to very dark brownish grey color, medium hard, trace chalky, indistinct fossil fragment with calcisphaera, very calcareous, trace dead oil, and bituminous stain / partings.
	25	SHALE - very dark brownish grey to black, very bituminous, calcareous, presence shiny black brittle conchoidal fractured Gilsonite.
2065 - 2073	60	LIMESTONE - mottled, light to medium grey brown, very fine to fine crystalline, medium size peloids, hard, part slightly chalky, trace pyrite, trace calcite veining, indistinct fossil fragments - brachiopod, stromatoporoid, coral, dead oil with pyrobitumen stain, dense to trace intercrystalline and intrafossil porosity, no fluorescence or cut fluorescence.
	20	SHALE - as above.
	20	MARLSTONE - as above.

2073

INTERMEDIATE CASING DEPTH

CASING STRING LANDED AT 2067.7 m K.B

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2073 - 2080	50	CEMENT
	40	SHALE - as above, cavings.
	10	LIMESTONE - medium to light greyish brown, very fine to fine crystalline, medium hard, Peloidal, slightly chalky texture, common bituminous stain, trace to poor porosity.
2080 - 2090	40	CEMENT
	30	SHALE - black, fissile, very bituminous, calcareous, cavings.
	30	LIMESTONE - medium grey brown color, very fine to fine crystalline, Peloidal, hard to medium hard, silty, common white calcareous fossil remains, slightly chalky texture in part, trace calcareous vein, common pyrobitumen staining and partings, trace to occasional poor porosity.
2090 - 2093	100	LIMESTONE - mottled light to medium grey brown color, part slightly pink tinge, biosparite, fine to medium crystal, medium hard to hard, slightly dolomitic, abundant clear milky white recrystallized fossil replacement, calcareous, trace medium brown Chert nodules, fair to good intercrystalline (some very fine crystalline sucrosic stringers) to organic porosity, no fluorescence, faint slow milky massive cut.
2093 - 2095	100	LIMESTONE - medium to dark grey brown, bioclastic, hard, slightly chalky, trace argillaceous, trace pyrobitumen stain, trace porosity.
2095 - 2100	100	LIMESTONE - dark greyish brown, cryptocrystalline to microcrystalline to very fine crystalline, biomicrite, blocky, hard, argillaceous, trace silty, slightly dolomitic, fossil fragment Crinoid, Peloids, Coral, some calcareous vein material, presence black bituminous staining, trace to poor intercrystalline to organic porosity, No visual shows.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2100 - 2105	100	LIMESTONE - dark to medium grey brown, microcrystalline to very fine crystalline, blocky, hard, trace argillaceous and silty, slightly chalky, rare pyrite, trace pyrobitumen stain and partings, trace calcareous vein, trace to some poor porosity.
	trace	LIMESTONE - light brown, very fine crystalline, sucrosic texture, medium hard, dolomitic, poor to rare fair intercrystalline porosity.
2105 - 2110	100	LIMESTONE - as above, becoming more bioclastic, pelloidal, trace to presence black dead oil stain.
2110 - 2115	100	LIMESTONE - mottled medium to dark grey brown color, biomicrite, microcrystalline to fine crystalline cement matrix with fine to very coarse size bioclastic inclusions, Peloids, Crinoids, Stromatoporoids, Coral, part slightly chalky, slightly dolomitic, slightly argillaceous, trace clear white euhedral calcite vein to replacement, presence dark pyrobitumen stain, trace intercrystalline to organic porosity.
2115 - 2125	100	LIMESTONE - mottled medium to dark greyish brown, fine to very coarse bioclastic with very fine to fine crystalline cement matrix, slightly chalky, trace argillaceous, trace euhedral calcite crystals, trace to presence dark pyrobitumen, trace to rare poor organic to intercrystalline porosity.
2125 - 2130	100	LIMESTONE - biomicrite, mottled medium to dark grey brown color, fine to very coarse size bioclastic with microcrystalline to very fine crystalline slightly chalky micritic matrix, trace argillaceous, slightly dolomitic, trace pyrobituminous staining, trace calcite veining, dense to trace porosity.
2130 - 2145	100	LIMESTONE - as above, slightly coarser very fine to fine grained matrix, trace pyrobitumen, trace intercrystalline and organic porosity.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2145 - 2155	100	LIMESTONE - mottled cream to dark grey brown, bioclastic, hard to medium hard, very fine crystalline, slightly chalky micrite, abundant fine to medium Peloids with fine to coarse size fossil fragment, trace euhedral calcite vein, rare pyrite crystal, trace black pyrobitumen, trace to rare poor intercrystalline to earthy to organic porosity.
2155 - 2160	100	LIMESTONE - mottled cream to light and medium grey brown color, biomicritic, fine to coarse fossil fragment with microcrystalline to very fine crystalline cement, medium hard, trace chert nodules, fossil assembly most Peloids with Crinoid to Stromatoporoids to Amphipora Coral to Brachiopod, trace to presence recrystallized calcite, rare dead oil stain, trace to occasional poor intercrystalline to organic porosity, no visual shows.
2160 - 2165	100	LIMESTONE - as above, more darker color microcrystalline very coarse size bioclastic, rare pyrite crystal.
2165 - 2170	100	LIMESTONE - mottled cream to light to medium to dark grey brown color, biomicrite to pelmicrite, very fine to fine crystalline cement matrix, fine to coarse size fossil fragment, trace clear white calcite, trace black dead oil stain and partings, trace to some poor intercrystalline to organic porosity.
2170 - 2175	100	LIMESTONE - as above, presence clear milky white recrystallized calcite.
2175 - 2185	80	LIMESTONE - as above.
	20	SHALE - medium greenish grey color, fissile, medium hard, slightly waxy, part black, fissile, very bituminous.
2185 - 2190	100	LIMESTONE - light to medium grey brown, very fine to fine crystalline with minor fossil fragment, medium hard, trace argillaceous, trace silty, trace pyrite, trace calcite vein, dark bituminous partings and stain, trace to occasional poor porosity.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2190 - 2195	100	LIMESTONE - cream to medium brown, microcrystalline to very fine crystalline, common fine to medium Peloids with Amphipora Coral, coarse fossil, trace calcite vein, trace dark bituminous material, trace to rare poor porosity.
2195 - 2200	100	LIMESTONE - light brown to tan, cryptocrystalline, blocky, hard, trace stylolite, dense.
2200 - 2205	100	LIMESTONE - medium to medium dark grey brown, microcrystalline to very fine crystalline, common fine to medium Peloids, Coral, trace silty, trace argillaceous to argillaceous, presence pyrobitumen staining, dense to trace intercrystalline porosity.
2205 - 2210	100	LIMESTONE - light brown to tan, cryptocrystalline, blocky, hard, trace argillaceous, trace to presence fossil fragment to bioclastic interbedded, dense to trace organic porosity.
2210 - 2212	100	LIMESTONE - medium dark brown, cryptocrystalline to microcrystalline, common Peloids to Amphipora, dense to trace poor intercrystalline to organic porosity.
2212 - 2215	70	DOLOMITE - milky white fine to medium size dolomite sucrosic rhomb mozaic, medium hard, slightly calcareous, trace black pyrobitumen, poor intercrystalline to possible fair drusy pinpoint porosity.
	30	LIMESTONE - as above.
2215 - 2218	100	DOLOMITE - milky white, fine to medium with occasional coarse size rhomb, rare clear vitreous quartz crystal, trace dog tooth spar, streaks poor to possibly fair intercrystalline to vuggy porosity.
2218 - 2220	100	DOLOMITE - white to light brown color, fine to medium sucrosic crystal, medium hard to hard, slightly calcareous, trace argillaceous in part, trace to poor intercrystalline porosity.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2220 - 2225	100	DOLOMITE - white to off white to cream color, fine to medium size euhedral dolomite rhomb, medium hard to hard, slightly calcareous, rare to trace black dead oil stain, poor intercrystalline to pinpoint porosity, no fluorescence, no cut.
2225 - 2230	100	DOLOMITE - white to light grey to light brown, medium to fine crystalline, rare fine pyrite crystal, some fine to very fine crystalline dark brown grey color argillaceous bituminous streaks, trace coarse size white dog tooth spar, trace to rare black pyrobitumen, poor to trace possibly to fair intercrystalline to pinpoint to vuggy porosity.
2230 - 2240	60	DOLOMITE - as above, milky white coarse euhedral crystal, presence to trace pyrobitumen coat and stain poor to occasionally fair pinpoint to vuggy porosity.
	40	DOLOMITE - medium grey brown color, argillaceous bituminous stain material, most fine crystalline to very fine crystalline, part calcareous, trace Pellet with Pellet ghost structure, streaky trace to poor intercrystalline porosity.
2240 - 2245	100	DOLOMITE - white to very light grey to buff color, with light to medium brown argillaceous bituminous stain streaks, predominantly medium size euhedral crystal, medium hard, slightly calcareous, rare clear color less quartz prism, streaky poor to trace intercrystalline to pinpoint porosity.
2245 - 2255	100	DOLOMITE - as above, less medium to coarse size euhedral type crystal, trace bituminous staining, poor to trace porosity.
2255 - 2265	100	DOLOMITE - white to light and trace medium to dark argillaceous bituminous stain streaks, medium to fine crystalline, trace coarse spar, rare to trace chalky white calcareous material, trace dark interstitial crystal dead oil stain, trace to some poor porosity.
	trace	SHALE - medium grey, subfissile, waxy.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2265 - 2275	60	LIMESTONE - medium brown to tan color, cryptocrystalline, blocky, hard, slightly dolomitic, slightly argillaceous, dense.
	40	DOLOMITE - light brown grey to white predominantly medium crystal, slightly sucrosic texture in part, rare to trace dead oil stain along crystal margins, trace to poor with possible fair intercrystalline to pinpoint to vuggy porosity.
	trace	SHALE - medium grey color, subfissile, medium, hard, slightly waxy.
2275 - 2280	50	DOLOMITE - white to light brown, fine to medium with some coarse crystal, slightly calcareous, trace to presence drusy crystal, trace bitumen along crystal margins, trace intercrystalline porosity.
	40	LIMESTONE - tan to light brown color, cryptocrystalline, blocky, hard, some chalky fossil streaks, dense.
	10	SHALE - light grey green color, subfissile, medium hard to medium soft, waxy lustre, pyritic.
2280 - 2285	60	LIMESTONE - cream to medium brown grey color, cryptocrystalline to microcrystalline with some chalky fossil streaks to interbedded, medium hard to hard, slightly argillaceous, slightly dolomitic, dense, trace microfractures.
	30	DOLOMITE - as above.
	10	SHALE - as above.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2285 - 2295	60	LIMESTONE - light to medium grey brown and grey, microcrystalline to cryptocrystalline, hard, part chalky, trace Peloids, trace argillaceous to argillaceous, trace pyrite crystal, slightly silty, dense.
	20	SHALE - light grey green to green grey, soft, waxy, numerous pyrite crystal.
	20	DOLOMITE - as above, white, fine to coarse sized crystals, trace to poor porosity.
2295 - 2300	50	LIMESTONE - as above, trace greenish Shale claystone.
	50	DOLOMITE - white to cream to buff, predominantly medium euhedral crystal, medium hard, slightly calcareous, trace to rare pyrobitumen, trace very fine to fine sucrosic argillaceous bituminous stain crystalline streaks, trace intercrystalline porosity to dense.
2300 - 2305	50	LIMESTONE - light brown to tan, cryptocrystalline, dolomitic, slightly argillaceous, pyritic, rare fossil fragment, dense.
	40	DOLOMITE - as above.
	10	SHALE - pale greenish grey color, soft waxy, pyritic.
2305 - 2310	70	LIMESTONE - as above, cream to buff to tan color.
	20	DOLOMITE - white to buff, fine to medium crystal, medium hard, part calcareous, trace intercrystalline porosity.
	10	SHALE - as above.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2310 - 2315	55	LIMESTONE - light to medium brown, cryptocrystalline, blocky, hard, trace Peloids, indistinct fossils, part chalky, argillaceous streaks, part pyritic, dense.
	45	DOLOMITE - white to light brown, fine to medium with some coarse euhedral crystal, medium hard, slightly calcareous, trace drusy calcite vuggy lining crystal, trace black pyrobitumen vein and crystal margin, dense, trace intercrystalline porosity, poor pinpoint to vuggy porosity.
2315 - 2320	70	DOLOMITE - white to light grey and brown, medium to coarse euhedral crystal, trace to presence dark grey to black color pyrobitumen with argillaceous along crystal margin and vein, rare clear quartz and recrystallized calcite, rare pyrite to sphalerite, trace to poor porosity, some green pyritic Shale clasts.
	30	LIMESTONE - as above.
2320 - 2330	80	DOLOMITE - white with dark grey to black vein, medium coarse crystal, slightly calcareous, dark colored argillaceous bituminous veins and partings.
	20	LIMESTONE - as above, light grey brown, cryptocrystalline.
2330 - 2340	70	DOLOMITE - as above, trace to presence argillaceous bituminous stain streaks, trace recrystallized calcareous, coarse dolomite rhomb, poor to trace porosity.
	30	LIMESTONE - light to medium grey brown color, cryptocrystalline with trace Peloids, hard, dolomitic, slightly argillaceous, dense.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2340 - 2350	90	DOLOMITE - white to some buff to light brownish grey color calcareous argillaceous streaks, medium to coarse crystal, hard, slightly calcareous, rare pyrite with sphalerite mineralization, trace dead oil stain and partings, trace calcite vein to quartz prism to dog tooth spar dolomite, trace to poor possibly fair intercrystalline to pinpoint to vuggy porosity.
	10	LIMESTONE as above.
2350 - 2355	100	DOLOMITE - white, fine to coarse crystalline, light to medium argillaceous bituminous stain vuggy crystal lining, trace quartz crystal, trace recrystallized calcite, poor intercrystalline to pinpoint to vuggy porosity, no visual shows.
2355 - 2360	90	DOLOMITE - as above.
	10	LIMESTONE - medium to dark brown, cryptocrystalline with fossil fragment to Peloids in part, hard, argillaceous, dolomitic, dense.
2360 - 2365	100	DOLOMITE - as above, part dark brown grey color, medium size crystal, hard, abundant argillaceous bituminous staining, trace drusy crystal, poor intercrystalline and pinpoint porosity.
2365 - 2370	100	DOLOMITE - buff color, fine grained, sucrosic texture, hard, calcareous, trace silty, trace silty, trace pinpoint to vuggy drusy crystal lining, rare bituminous stain, poor porosity.
2370 - 2375	90	DOLOMITE - as above, more coarse white drusy crystals, trace bituminous stain.
	05	SHALE - medium grey and black, part very bituminous.
	05	LIMESTONE - dark brown, microcrystalline, hard, argillaceous, dense.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2375 - 2380	100	DOLOMITE - light to medium grey and brown, predominantly fine grained, sucrosic texture, hard, calcareous, veins and partings with dead oil stain, trace white dolomite spar, rare quartz, rare pyrite, streaks poor intercrystalline porosity.
2380 - 2385	100	DOLOMITE - as above abundant milky white medium to coarse size dolomite spars, poor pinpoint to vuggy porosity.
2385 - 2390	100	DOLOMITE - light to medium grey and brown, fine to very fine grained, slightly sucrosic, hard, calcareous, common white medium to coarse crystalline dolomite spar, poor porosity.
2390 - 2395	100	DOLOMITE - as above, abundant medium size milky white dolomite crystals, trace clear quartz crystals and recrystallized calcite, chalky white calcareous streaks, rare pyrobitumen, poor to possibly fair vuggy and pinpoint porosity.
2395 - 2400	90	DOLOMITE - white to medium grey color argillaceous bituminous veining, fine to medium grained, medium hard, trace clear vitreous quartz crystal, trace recrystallized calcite, trace to poor porosity.
	10	LIMESTONE - dark brown, cryptocrystalline to micro-crystalline, blocky, hard, slightly argillaceous, dolomitic, dense.
2400 - 2405	75	DOLOMITE - white to light grey color, medium to coarse crystal, hard, slightly calcareous, presence medium to dark grey bituminous discolored drusy crystal, poor vuggy to pinpoint porosity.
	25	LIMESTONE - medium to dark brownish grey, microcrystalline, hard, slightly argillaceous to argillaceous, slightly dolomitic, rare pyrite, dense.
	trace	SHALE - medium greenish grey, subfissile, slightly waxy.

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CND FOREST et al FLETT RAPIDS I-61

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2405 - 2410	90	DOLOMITE - light to medium brownish grey color, fine grainstone, hard, slightly argillaceous, calcareous, trace fossil ghost and Peloids, minor medium to dark grey color argillaceous bituminous streaks, poor intercrystalline porosity.
	10	LIMESTONE - as above.
2410 - 2415	100	DOLOMITE - as above, common milky white medium to coarse size dolomite spar.
2415 - 2420	100	DOLOMITE - buff to medium light brownish grey color, predominantly fine grainstone, hard to medium hard, calcareous, very slightly argillaceous, common pyrobitumen staining and partings, rare pyrite, minor white dolomite spar, poor porosity.
2420 - 2425	100	DOLOMITE - buff to light brown grey, fine to very fine crystalline, hard, calcareous to very calcareous, presence pyrobitumen stain, trace coarse to medium size euhedral dolomite, poor porosity.
2425 - 2430	100	DOLOMITE - as above, part buff color, microcrystalline, hard to very hard, calcareous, dense, part dark grey, very fine crystalline, very calcareous streaks with common to abundant dead oil stain, trace clear quartz to calcareous crystal, trace to poor pinpoint porosity, part buff color, microcrystalline, hard to very hard, calcareous, dense.
2430 - 2445	100	DOLOMITE - buff to cream, fine crystalline, hard, calcareous, part slightly argillaceous, microcrystalline to very fine crystalline very calcareous interbedded, trace dark color bituminous stain, presence white drusy dolomite with clear quartz crystal, poor intercrystalline to pinpoint to vuggy porosity.
	rare	LIMESTONE - light grey, microcrystalline, blocky, hard to very hard, dolomitic, dense.

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CND FOREST et al FLETT RAPIDS I-61

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2445 - 2455	100	DOLOMITE - cream to buff to light grey, microcrystalline to very fine crystalline, blocky, hard to very hard, calcareous to very calcareous, trace to rare drusy crystal, trace pyrobitumen stain, dense to trace intercrystalline porosity.
2455 - 2460	100	DOLOMITE - cream to buff, microcrystalline, hard to very hard, blocky, calcareous, trace light brown cryptocrystalline pyritic laminae, dense to trace fracture porosity.
2460 - 2475	100	DOLOMITE - cream to buff to light grey, very fine crystalline with microcrystalline to cryptocrystalline to fine crystalline, blocky, hard, calcareous to very calcareous, trace drusy white medium to coarse crystal, trace to rare poor intercrystalline to pinpoint porosity.
2475 - 2480	90	DOLOMITE - as above, cream to buff very fine crystalline to microcrystalline, calcareous, some medium to coarse crystal vein with calcareous to quartz, trace to streaky poor porosity.
	10	LIMESTONE - medium brown, microcrystalline, hard to very hard, dolomitic, argillaceous, dense.
2480 - 2485	100	DOLOMITE - light grey brown, fine to very fine crystalline, sucrosic texture, presence dark dead oil stain and partings with pyrite crystal, streaks poor to fair intercrystalline to pinpoint porosity.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2485 - 2490	40	DOLOMITE - light grey to buff color, microcrystalline, blocky, hard, very calcareous, trace very fine disseminated pyrite, trace clear silt size angular quartz, dense.
	40	DOLOMITE - buff to cream color, very fine crystalline, slightly sucrosic, hard, calcareous, trace streaks fine to medium crystalline with trace bituminous stain and clear quartz veining, trace anhydrite, rare pyrite crystals and blebs, trace porosity.
	20	LIMESTONE - cream to pale grey color, cryptocrystalline to microcrystalline, hard, very dolomitic, slightly silty, dense.
2490 - 2495	50	DOLOMITE - cream to buff, microcrystalline, hard to very hard, calcareous to very calcareous, trace quartz vein, trace indistinct fossil, dense.
	30	DOLOMITE - cream to light to medium grey, very fine crystalline, medium hard, calcareous, trace silty, trace dolomite spar, presence argillaceous bituminous stain, trace intercrystalline to occasional poor porosity.
	10	LIMESTONE - light grey, cryptocrystalline, hard to very hard, blocky, trace anhydritic, very dolomitic, trace very fine disseminated pyrite, trace to presence clear vitreous silt size quartz, dense to trace fracture porosity.
	10	LIMESTONE - dark brown, cryptocrystalline, argillaceous, dense.

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CND FOREST et al FLETT RAPIDS I-61

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2495 - 2500	50	DOLOMITE - pale grey to buff, microcrystalline, hard to very hard, very calcareous, dense.
	40	DOLOMITE - buff to light brown, very fine to fine crystalline, hard, calcareous, trace medium to coarse size drusy crystal veining, rare pyrite, rare pyrobitumen, trace intercrystalline to pinpoint porosity.
	10	LIMESTONE - pale grey, cryptocrystalline, hard to very hard, very dolomitic, trace pyritic, trace clear quartz vein, dense.
2500 - 2510	40	DOLOMITE - cream to buff, microcrystalline to very fine crystalline, hard, calcareous to very calcareous, trace to rare pyrite vein and fine crystalline, presence bituminous stain, dense to trace intercrystalline porosity.
	30	LIMESTONE - pale grey to grey brown, cryptocrystalline, very hard, dolomitic, very fine pyrite crystal, trace calcareous to quartz vein, dense.
	20	DOLOMITE - buff to light grey brown, very fine crystalline, sucrosic texture, medium hard, calcareous, presence bituminous stain, poor to fair intercrystalline porosity, no visual shows.
	10	DOLOMITE - pale grey to buff, cryptocrystalline, blocky, hard to very hard, very calcareous, dense.
2510 - 2515	70	DOLOMITE - cream to buff to light grey, very fine crystalline, hard, calcareous, trace silty, presence drusy dolomite crystal vein to pinpoint, rare pyrite, trace poor porosity.
	30	DOLOMITE - light brown color, microcrystalline, blocky, hard to very hard, calcareous to very calcareous,, trace pyrite, dense, trace fracture porosity.

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CND FOREST et al FLETT RAPIDS I-61

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2515 - 2525	30	DOLOMITE - light brown grey, cryptocrystalline to microcrystalline, blocky, very hard, calcareous, trace pyrite, trace calcite to quartz filled fracture, dense.
	30	DOLOMITE - cream to light grey, very fine crystalline, hard, calcareous, trace pyrite, dense to trace porosity.
	30	DOLOMITE - buff, very fine to fine grained, sucrosic texture, medium hard, silty, calcareous, trace black dead oil stain, poor intercrystalline porosity.
	10	LIMESTONE - pale grey, cryptocrystalline, hard to very hard, very dolomitic, trace pyrite, dense to trace fracture porosity.
2525 - 2535	70	DOLOMITE - cream to light grey, very fine crystalline, hard, calcareous, slightly argillaceous, trace pyrite, rare pyrobitumen, trace coarse drusy crystal vein, trace porosity.
	30	DOLOMITE - buff to light grey, cryptocrystalline, blocky, very calcareous slightly silty, trace calcite to silica crystal, dense to trace fracture porosity.
2535 - 2540	40	DOLOMITE - cream to light brownish grey, very fine crystalline, medium hard, calcareous, trace silty, trace recrystallized calcite and silica crystals and white drusy dolomite, trace dead oil stain and partings, trace to poor intercrystalline and pinpoint porosity.
	30	DOLOMITE - buff to light grey, microcrystalline, blocky, hard, very calcareous, dense to trace pinpoint porosity.
	30	LIMESTONE - buff to light brownish grey, cryptocrystalline to microcrystalline, hard to very hard, very dolomitic, slightly silty, slightly argillaceous, trace calcite vein, dense.

DAX Consulting Ltd.
CND FOREST et al FLETT RAPIDS I-61

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2540 - 2545	50	DOLOMITE - buff, microcrystalline to cryptocrystalline, blocky, hard to very hard, calcareous, silty, dense.
	40	DOLOMITE - cream to buff to light brown grey, very fine crystalline, hard, very calcareous, trace pyrobitumen, trace pyrite crystal, rare coarse drusy dolomite, dense to trace porosity.
	10	LIMESTONE - as above.
2545 - 2550	70	DOLOMITE - buff, microcrystalline to cryptocrystalline, blocky, hard to very hard, calcareous, trace recrystallized calcite, trace chalky calcareous streaks, dense.
	30	DOLOMITE - cream to buff to light grey, very fine crystalline, trace bituminous staining, trace pyrite, trace porosity.
2550 - 2560	60	DOLOMITE - buff, microcrystalline to cryptocrystalline, hard to very hard, calcareous, dense.
	40	DOLOMITE - cream to light grey bituminous stain, very fine crystalline, hard, calcareous, trace milky white drusy Dolomite with recrystallized calcareous and quartz prism, trace to presence black dead oil stain, trace intercrystalline to pinpoint porosity.
2560 - 2570	40	DOLOMITE - buff, microcrystalline to cryptocrystalline, blocky, calcareous to very calcareous, very fine disseminated pyrite, trace calcareous vein, dense.
	30	DOLOMITE - cream to light brown grey, very fine crystalline, calcareous, rare to trace pyrobitumen stain, trace porosity.
	30	DOLOMITE - cream to buff, microcrystalline, hard, common fine to medium size indistinct Peloids to Amphipora, slightly chalky texture in part, very calcareous, dense.

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SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2570 - 2575	70	DOLOMITE - medium brownish grey to buff, cryptocrystalline to microcrystalline, blocky, hard to very hard, calcareous, slightly silty, trace calcareous vein, trace microfractures, dense.
	30	DOLOMITE - cream to buff, very fine crystalline, hard, calcareous, trace coarse crystal vein with pyrobitumen stain, trace porosity.
2575 - 2580	100	DOLOMITE - light brown to buff and cream, becoming microcrystalline to very fine crystalline, calcareous, slightly silty, very fine disseminated pyrite, trace coarse crystal vein, rare pyrobitumen, trace porosity, rare greenish grey argillaceous streaks.
2580 - 2585	50	DOLOMITE - as above.
	50	DOLOMITE - light to medium grey to brown grey, microcrystalline to cryptocrystalline, hard to very hard, calcareous to very calcareous, faint Pellet, trace very fine pyrite, trace calcareous filled microfractures.
2585 - 2595	70	DOLOMITE - medium light brown grey, cryptocrystalline to microcrystalline, calcareous, trace chalky calcareous streaks, dense.
	30	DOLOMITE - cream to buff, microcrystalline to very fine crystalline, calcareous, trace pyrobitumen stain, trace to poor intercrystalline porosity.
2595 - 2600	50	DOLOMITE - cryptocrystalline to microcrystalline, dense.
	50	DOLOMITE - cream to buff, microcrystalline to very fine crystalline, hard, calcareous, slightly silty, common indistinct fine size Peloids, trace fossil, trace very fine pyrite, rare white dolomite spar, trace intercrystalline porosity.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2600 - 2605	75	DOLOMITE - buff to light and medium brown grey, cryptocrystalline to microcrystalline, blocky, hard, calcareous, slightly silty, pyritic, dense to trace fracture porosity.
	25	DOLOMITE - cream to buff color, microcrystalline to very fine crystalline, trace porosity.
2605 - 2610	70	DOLOMITE - buff to cream, microcrystalline to very fine crystalline, common medium to fine size fossil fragment to Pellet, calcareous, slightly chalky in part, presence to common clear white recrystallized calcite to dolomite spar to quartz crystal, rare pyrobitumen, poor organic to pinpoint porosity.
	30	DOLOMITE - buff, microcrystalline to cryptocrystalline.
2610 - 2615	100	DOLOMITE - cream to buff to light brownish grey, fine to coarse size bioclasts, indistinct Peloids, microcrystalline matrix, slightly chalky, slightly silty, presence to common fine to medium size milky white dolomite with calcite crystal, trace argillite streaks, trace to poor organic and pinpoint porosity.
2615 - 2620	95	DOLOMITE - as above, medium to very fine size bioclasts, some very fine crystalline streaks, trace dolomite spar, recrystallized calcite, trace porosity.
	05	LIMESTONE - dark brown color, cryptocrystalline, hard, argillaceous, dense.
2620 - 2625	100	DOLOMITE - buff to light brown grey, microcrystalline to very fine crystalline, hard, calcareous, slightly silty, common indistinct fine to medium size Peloids, trace clear calcite crystal, dense to trace intercrystalline to pinpoint porosity.

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CND FOREST et al FLETT RAPIDS I-61

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
2625 - 2630	100	DOLOMITE - as above, part buff, cryptocrystalline to microcrystalline, blocky, hard, calcareous, dense.
2630 - 2640	100	DOLOMITE - cream to buff to light brown grey, microcrystalline to very fine crystalline, hard, calcareous, abundant indistinct Peloids and Amphipora, trace soft white chalky calcareous streaks, minor fine to medium white dolomite spar, recrystallized calcite and silica crystal, trace pinpoint porosity.
2640 - 2645	100	DOLOMITE - buff to medium light brown grey, cryptocrystalline to microcrystalline, blocky, hard to very hard, calcareous to very calcareous, slightly silty, common indistinct Peloids, trace fossil, rare to trace fine to medium crystal lined pinpoint to fracture, dense to trace fracture and pinpoint porosity.
2645 - 2650	100	DOLOMITE - as above, part more cryptocrystalline, presence to common fine to coarse size milky white dolomite spar, recrystallized calcite, trace clear quartz prism, trace to possibly streaks poor porosity.
2650 - 2660	100	DOLOMITE - buff to medium brownish grey color, microcrystalline to part cryptocrystalline, common very fine crystalline laminae to vein, hard, calcareous, slightly silty, indistinct Peloids and Amphipora, presence clear recrystallized calcite to milky dolomite to clear quartz, trace intercrystalline to pinpoint porosity.
2660		<u>TOTAL DEPTH / 2622.2 m T.V.D.</u>

DAX Consulting Ltd.
CDN FOREST et al FLETT RAPIDS I-61

REPORT DISTRIBUTION

The original and seven (7) copies of the Geological Report on CDN FOREST et al FLETT RAPIDS I-61-60-5-123-15 have now been completed. The original and six (6) copies have been forwarded to CANADIAN FOREST OIL LTD., and the remaining copy will be retained in DAX Consulting Ltd. files.

DAX Consulting Ltd.
CDN FOREST et al FLETT RAPIDS I-61

ADDENDUM A - DIRECTIONAL SURVEY RECORD

January 15,1999
09:23 PM

PathTracker 5.0.123
Survey Calculation Program

Page 1 of 3

Company: CANADIAN FOREST OIL LTD.
WellName: CDN FOREST et al FLETT RAPIDS I-61-60-50-123-15
Location: I-61-60-50-123-15

Surveyed by:
DAX Consulting Ltd.
4215 Dalhart Road N.W.
Calgary, Alberta
T3A 1B6
Phone: 403-288-9388

LATITUDE: NORTH 60.6781 degrees LONGITUDE: 123.4427 degrees
SURFACE UTM COORDINATES: NORTHING = 6726803.33 EASTING = 475809.73

Vertical Section calculated on an Azimuth of: 348.0000

Survey Calculation Method: Minimum Curvature

FileName: C:\Program Files\PathTracker50\FLETTSVY.sr5

#	Depth Meters	Inc Degrees	Azimuth Degrees	TVD Meters	SubSea Meters	North Meters	East Meters	Section Meters	Dogleg /30m	BldRate /30m	Trnrate /30m	Comment
0	0.00	0.00	0.00	0.00	262.49	0.00	0.00	0.00	0.00	0.00	0.00	
1	589.60	0.00	0.00	589.60	-307.11	0.00	0.00	0.00	0.00	0.00	0.00	
2	588.00	0.75	355.00	588.00	-325.51	0.12	-0.01	0.12	1.22	1.22	8.16	
3	599.00	0.50	7.00	599.00	-336.51	0.24	-0.01	0.24	0.77	0.68	32.73	
4	618.00	0.25	2.00	618.00	-355.51	0.36	0.00	0.35	0.40	0.39	7.89	
5	667.00	0.25	39.00	667.00	-404.51	0.55	0.07	0.53	0.10	0.00	22.65	
6	714.00	1.00	32.00	713.99	-451.50	0.98	0.35	0.89	0.48	0.48	4.47	
7	724.00	1.00	332.00	723.99	-481.50	1.13	0.36	1.03	3.00	0.00	180.00	
8	743.00	1.25	347.00	742.99	-480.50	1.48	0.23	1.40	0.61	0.39	23.68	
9	764.00	1.25	347.00	763.98	-501.49	1.93	0.13	1.86	0.00	0.00	0.00	
10	783.00	1.25	335.00	782.98	-520.49	2.32	0.00	2.27	0.41	0.00	18.95	
11	792.00	1.25	7.00	791.98	-529.49	2.50	-0.03	2.45	2.30	0.00	106.67	
12	802.00	1.25	352.00	801.98	-539.49	2.72	-0.03	2.67	0.98	0.00	45.00	
13	821.00	1.50	337.00	820.97	-558.48	3.15	-0.16	3.12	0.69	0.39	23.68	
14	839.00	1.50	7.00	838.96	-576.47	3.60	-0.22	3.57	1.29	0.00	50.00	
15	865.00	1.25	4.00	865.96	-603.47	4.25	-0.16	4.19	0.29	0.28	3.33	
16	893.00	1.00	0.00	892.95	-630.46	4.78	-0.14	4.70	0.29	0.28	4.44	
17	940.00	1.00	37.00	939.94	-677.46	5.52	0.11	5.37	0.41	0.00	23.62	
18	992.00	1.00	339.00	991.94	-729.45	6.30	0.22	6.12	0.66	0.00	33.46	
19	1049.00	3.00	17.00	1048.90	-786.41	8.19	0.48	7.91	1.21	1.05	20.00	
20	1067.00	3.25	15.00	1066.88	-804.39	9.14	0.75	8.78	0.45	0.42	3.33	
21	1087.00	3.13	21.00	1086.84	-824.35	10.19	1.09	9.74	0.53	0.19	9.00	
22	1102.00	3.25	29.00	1101.82	-839.33	10.95	1.44	10.41	0.92	0.25	16.00	
23	1126.00	3.00	37.00	1125.79	-863.30	12.04	2.15	11.33	0.63	0.31	10.00	
24	1146.00	2.75	39.00	1145.76	-883.27	12.83	2.76	11.98	0.40	0.38	3.00	
25	1175.00	2.10	35.00	1174.73	-912.24	13.81	3.51	12.78	0.69	0.67	4.14	
26	1211.00	1.60	49.00	1210.72	-948.23	14.68	4.27	13.47	0.58	0.42	11.67	
27	1233.00	1.50	59.00	1232.71	-970.22	15.03	4.74	13.71	0.39	0.14	13.84	
28	1281.00	1.50	132.00	1280.70	-1018.21	14.93	5.75	13.41	1.12	0.00	45.83	
29	1367.80	1.50	131.80	1367.47	-1104.98	13.41	7.44	11.57	0.00	0.00	0.07	
30	1380.90	1.30	122.60	1380.56	-1118.07	13.22	7.69	11.33	0.69	0.46	21.07	
31	1390.70	1.00	119.10	1390.36	-1127.87	13.12	7.86	11.20	0.94	0.92	10.71	
32	1400.30	0.90	120.50	1399.96	-1137.47	13.04	8.00	11.09	0.32	0.31	4.37	
33	1409.09	0.80	103.80	1408.75	-1146.26	12.99	8.12	11.02	0.91	0.34	57.00	
34	1419.70	1.20	48.20	1419.36	-1156.87	13.05	8.27	11.04	2.82	1.13	157.21	
35	1429.50	2.10	18.00	1429.15	-1166.66	13.29	8.41	11.25	3.74	2.76	92.45	
36	1439.10	3.50	3.90	1438.74	-1176.25	13.75	8.48	11.68	4.84	4.38	44.06	
37	1448.80	5.10	357.90	1448.41	-1185.92	14.47	8.48	12.39	5.13	4.95	18.56	
38	1458.40	6.60	355.30	1457.96	-1195.47	15.45	8.42	13.36	4.76	4.69	8.13	
39	1468.10	7.80	354.50	1467.59	-1205.10	16.66	8.31	14.67	3.72	3.71	2.47	
40	1477.90	8.70	354.30	1477.28	-1214.79	18.06	8.18	15.96	2.76	2.76	0.61	
41	1487.70	9.60	354.00	1486.96	-1224.47	19.61	8.02	17.51	2.76	2.76	0.92	

January 15,1999
09:23 PM

PathTracker 5.0.123
Survey Calculation Program

Page 2 of 3

Company: CANADIAN FOREST OIL LTD.
WellName: CDN FOREST et al FLETT RAPIDS I-61-60-50-123-15
Location: I-61-60-50-123-15

Surveyed by:
DAX Consulting Ltd.
4215 Dalhart Road N.W.
Calgary, Alberta
T3A 1B6
Phone: 403-288-9388

LATITUDE: NORTH 60.6781 degrees LONGITUDE: 123.4427 degrees
SURFACE UTM COORDINATES: NORTHING = 6726803.33 EASTING = 475809.73

Vertical Section calculated on an Azimuth of: 348.0000

Survey Calculation Method: Minimum Curvature

FileName: C:\Program Files\PathTracker50\FLETTSVY.sr5

#	Depth Meters	Inc Degrees	Azimuth Degrees	TVD Meters	SubSea Meters	North Meters	East Meters	Section Meters	Dogleg /30m	BldRate /30m	TmrRate /30m	Comment
42	1497.40	10.40	353.10	1496.51	-1234.02	21.28	7.83	19.19	2.52	2.47	2.78	
43	1507.00	11.30	351.00	1505.94	-1243.45	23.07	7.58	20.99	3.07	2.81	6.66	
44	1516.80	12.00	350.80	1515.54	-1253.08	25.03	7.26	22.97	2.15	2.14	0.61	
45	1526.60	12.50	350.50	1525.12	-1262.63	27.08	6.93	25.05	1.54	1.53	0.92	
46	1536.20	13.10	350.80	1534.48	-1271.99	29.18	6.58	27.17	1.89	1.88	0.94	
47	1546.00	13.40	351.20	1544.02	-1281.53	31.39	6.23	29.41	0.96	0.92	1.22	
48	1555.60	14.20	350.30	1553.34	-1290.85	33.65	5.86	31.70	2.59	2.60	2.81	
49	1565.40	15.30	349.70	1565.72	-1303.23	36.86	5.29	34.96	2.80	2.58	1.41	
50	1575.20	16.20	349.30	1575.15	-1312.66	39.48	4.81	37.82	2.78	2.76	1.22	
51	1587.90	17.00	349.20	1584.44	-1321.95	42.20	4.29	40.39	2.48	2.47	0.31	
52	1597.50	17.60	349.60	1593.81	-1331.12	45.01	3.77	43.24	1.91	1.88	1.25	
53	1607.20	18.10	348.70	1602.84	-1340.35	47.93	3.21	46.21	1.77	1.55	2.78	
54	1616.80	18.50	348.90	1612.05	-1349.56	50.91	2.62	49.26	1.25	1.24	0.62	
55	1626.60	19.00	348.50	1621.24	-1358.75	53.97	2.01	52.38	1.60	1.55	1.24	
56	1636.40	19.50	348.70	1630.49	-1368.00	57.14	1.37	55.61	1.54	1.53	0.61	
57	1646.00	20.00	349.10	1639.53	-1377.04	60.32	0.74	58.85	1.62	1.56	1.25	
58	1655.60	20.60	349.30	1648.53	-1386.04	63.59	0.12	62.18	1.89	1.88	0.62	
59	1665.20	21.20	349.40	1657.50	-1395.01	66.96	-0.51	65.60	1.88	1.88	0.31	
60	1674.80	21.20	350.30	1666.45	-1403.96	70.38	-1.13	69.07	1.02	0.00	2.81	
61	1684.50	21.10	350.30	1675.49	-1413.00	73.83	-1.72	72.67	0.31	0.31	0.00	
62	1694.20	21.00	350.40	1684.55	-1422.06	77.26	-2.30	76.05	0.33	0.31	0.31	
63	1703.80	21.10	349.80	1693.51	-1431.02	80.66	-2.89	79.50	0.74	0.31	1.88	
64	1713.00	21.30	349.10	1702.08	-1439.59	83.93	-3.50	82.82	1.05	0.65	2.28	
65	1722.80	21.40	348.70	1711.21	-1448.72	87.43	-4.19	86.39	0.54	0.31	1.22	
66	1732.50	21.30	348.90	1720.25	-1457.76	90.89	-4.88	89.92	0.38	0.31	0.62	
67	1751.90	21.10	348.10	1738.33	-1475.84	97.77	-5.27	96.94	0.54	0.31	1.24	
68	1761.60	21.00	347.70	1747.39	-1484.90	101.18	-7.00	100.42	0.54	0.31	1.24	
69	1771.30	20.90	348.10	1756.44	-1493.95	104.57	-7.73	103.89	0.54	0.31	1.24	
70	1780.90	20.70	348.60	1765.42	-1502.93	107.91	-8.42	107.30	0.77	0.62	1.25	
71	1790.60	20.50	348.20	1774.50	-1512.01	111.25	-9.11	110.71	0.70	0.62	0.93	
72	1800.10	20.40	347.80	1783.40	-1520.91	114.49	-9.80	114.03	0.54	0.32	1.26	
73	1809.90	20.20	347.20	1792.59	-1530.10	117.81	-10.54	117.43	0.88	0.61	1.84	
74	1819.60	20.30	347.40	1801.69	-1539.20	121.09	-11.28	120.79	0.38	0.31	0.62	
75	1829.30	20.20	346.90	1810.79	-1548.30	124.36	-12.02	124.14	0.62	0.31	1.55	
76	1839.00	20.00	346.90	1819.90	-1557.41	127.61	-12.78	127.48	0.62	0.62	0.00	
77	1848.70	19.90	348.00	1829.02	-1566.53	130.84	-13.50	130.79	1.20	0.31	3.40	
78	1858.30	20.20	348.00	1838.04	-1575.55	134.06	-14.18	134.08	0.94	0.94	0.00	
79	1868.30	20.40	348.70	1847.42	-1584.93	137.46	-14.88	137.55	0.94	0.60	2.10	
80	1877.30	20.10	348.90	1856.86	-1593.37	140.51	-15.49	140.66	1.03	1.00	0.67	
81	1887.10	20.00	347.70	1865.07	-1602.58	143.80	-16.17	144.02	1.30	0.31	3.67	
82	1896.60	20.00	345.50	1873.99	-1611.50	146.96	-16.92	147.27	2.38	0.00	6.95	
83	1906.30	19.80	344.50	1883.11	-1620.62	150.16	-17.78	150.57	1.22	0.62	3.09	

January 15, 1999
09:23 PM

PathTracker 5.0.123
Survey Calculation Program

Page 3 of 3

Company: CANADIAN FOREST OIL LTD.
WellName: CDN FOREST et al FLETT RAPIDS I-61-60-50-123-15
Location: I-61-60-50-123-15
LATITUDE: NORTH 60.6781 degrees LONGITUDE: 123.4427 degrees
SURFACE UTM COORDINATES: NORTHING = 6726803.33 EASTING = 475809.73
Vertical Section calculated on an Azimuth of: 348.0000
Survey Calculation Method: Minimum Curvature
FileName: C:\Program Files\PathTracker50\FLETTSVY.sr5

Surveyed by:
DAX Consulting Ltd.
4215 Dalhart Road N.W.
Calgary, Alberta
T3A 1B6
Phone: 403-288-9388

#	Depth Meters	Inc Degrees	Azimuth Degrees	TVD Meters	SubSea Meters	North Meters	East Meters	Section Meters	Dogleg /30m	BldRate /30m	TmrRate /30m	Comment
84	1916.00	19.80	343.60	1892.24	-1629.76	163.31	-18.68	163.84	0.94	0.00	2.78	
85	1925.70	19.80	342.80	1901.37	-1638.88	166.46	-19.63	167.12	0.84	0.00	2.47	
86	1945.20	19.80	342.50	1919.71	-1657.22	162.76	-21.60	163.69	0.16	0.00	0.46	
87	1964.80	19.90	342.50	1928.74	-1666.26	166.87	-22.58	166.94	0.31	0.31	0.00	
88	1974.30	19.90	340.90	1947.08	-1684.59	172.17	-24.66	173.54	0.84	0.00	2.46	
89	1983.90	19.90	340.60	1956.11	-1693.62	176.26	-25.74	176.78	0.32	0.00	0.94	
90	1993.70	19.60	341.20	1965.33	-1702.84	178.38	-26.82	180.06	1.11	0.82	1.84	
91	2003.60	19.30	341.20	1974.67	-1712.08	181.47	-27.87	183.30	0.92	0.92	0.00	
92	2013.20	19.30	341.20	1983.72	-1721.23	184.61	-28.91	186.49	0.00	0.00	0.00	
93	2022.90	18.90	341.10	1992.89	-1730.40	187.61	-29.93	189.64	1.24	1.24	0.31	
94	2034.60	18.60	341.40	2003.88	-1741.39	191.03	-31.13	193.33	1.06	1.03	0.78	
95	2042.20	18.30	341.20	2011.18	-1748.69	193.34	-31.91	195.75	0.82	0.78	0.78	
96	2051.30	18.10	341.10	2019.83	-1767.34	196.03	-32.83	198.67	0.67	0.66	0.33	
97	2066.60	18.00	341.90	2023.92	-1761.43	197.29	-33.25	199.89	1.86	0.70	5.58	
98	2080.00	16.60	343.00	2047.22	-1784.73	204.19	-35.43	207.09	1.99	1.84	1.36	
99	2091.00	16.60	343.00	2057.79	-1796.30	207.09	-36.32	210.11	2.73	2.73	0.00	
100	2130.00	13.10	347.00	2096.58	-1833.09	216.38	-38.84	219.72	2.00	1.85	3.08	
101	2160.00	12.00	349.00	2124.87	-1862.38	222.76	-40.20	226.24	1.18	1.10	2.00	
102	2207.00	9.75	353.00	2171.02	-1908.63	231.60	-41.62	236.09	1.51	1.44	2.56	
103	2248.00	7.88	357.00	2209.66	-1947.07	237.45	-42.16	241.02	1.52	1.44	3.08	
104	2284.00	6.75	359.00	2247.26	-1984.76	242.28	-42.33	245.79	0.91	0.89	1.58	
105	2320.00	6.26	6.00	2283.06	-2020.66	246.03	-42.20	249.43	1.39	1.26	5.83	
106	2359.00	6.26	20.00	2321.89	-2059.40	249.48	-41.40	252.84	0.98	0.00	10.77	
107	2399.00	6.00	41.00	2361.73	-2099.24	252.62	-39.63	256.24	1.41	0.19	15.76	
108	2436.00	4.60	40.00	2398.60	-2136.11	254.86	-37.64	257.11	0.41	0.41	0.81	
109	2476.00	4.00	40.00	2437.60	-2176.01	257.06	-35.78	258.88	0.38	0.38	0.00	
110	2513.00	4.00	40.00	2476.41	-2212.92	259.09	-34.08	260.52	0.00	0.00	0.00	
111	2522.00	3.60	47.00	2484.39	-2221.90	259.62	-33.68	260.85	2.26	1.67	23.33	
112	2561.00	2.75	46.00	2523.33	-2260.84	260.98	-32.13	261.96	0.68	0.68	0.77	
113	2600.00	2.75	28.00	2562.28	-2299.79	262.46	-31.02	263.17	0.66	0.00	13.85	
114	2648.00	1.60	44.00	2610.26	-2347.76	263.93	-30.04	264.41	0.86	0.78	10.00	
Ext	2660.00	1.19	48.00	2622.26	-2359.76	264.12	-29.84	264.66	0.82	0.78	10.00	

Closure is 265.8040 meters on an Azimuth of 353.6639

DAX Consulting Ltd.
CDN FOREST et al FLETT RAPIDS I-61

ADDENDUM B - GEOLOGICAL STRIP LOG