



**GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA**

Open File 3443

**CRETACEOUS AND TERTIARY STRATA OF THE NORTHERN INTERIOR PLAINS: SUBSURFACE
FORMATION TOPS AND CORE DESCRIPTIONS**

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FEBRUARY 1997

Although every effort has been made to ensure accuracy, this Open File Report has not been edited for conformity with Geological Survey of Canada standards.

LIST OF WELLS AND FORMATION TOPS (log depths)

Many wells have a variably thick cover of Quaternary sediments, however, they are only identified where there is a considerable thickness of unconsolidated sediments readily identifiable as Quaternary. There is an especially thick Quaternary cover in the Cameron Hills of the southernmost NWT. In some areas the differentiation between Quaternary and Tertiary strata (e.g., Summit Creek Formation) is difficult, this is especially common in the Tertiary Hills and Police Island areas of the Mackenzie Lowland. Some wells are not included because the shallowness of the Cretaceous-Tertiary strata and their lack of log and/or sample data precludes accurate assessment of the Cretaceous stratigraphy.

In many areas the Cretaceous succession contains radioactive shales (high gamma-ray readings on logs); where present the depth of the top of the radioactive interval is given.

Many of the formation tops published by the National Energy Board were originally chosen by G.K. Williams (Geological Survey of Canada, Calgary), however most the wells have been re-examined and, where necessary, the stratigraphy has been modified.

Antoine M-34			"Scatter" marker	336
Quaternary	3 ft	4.0 m	Radioactive shale	490
Fort St. John Gp	?500	?152.4	Basal silty zone	498
Radioactive shale	753	229.5	Paleozoic	501
?Chinkeh Fm	770	234.7		
Paleozoic	900	274.3		
Arctic Red C-60			Arrowhead D-60	
Arctic Red Fm	17 ft	5.2 m	Quaternary	4.9 m
Martin House Fm	275	83.8	Fort St. John Gp	?235
Paleozoic	530	161.5	Paleozoic	?565
Arctic Red F-47			Arrowhead G-69	
Trevor Fm	14 ft	4.3 m	Quaternary	4.9 m
Arctic Red Fm	1989	1576.1	Fort St. John Gp	30
Martin House Fm	6952	2119.0	"Scatter" marker	435
Paleozoic	7160	2182.4	Paleozoic	573
Arctic Red West G-55			Arrowhead I-46	
?Arctic Red/Martin House Fm	17 ft	5.2 m	Quaternary	15 ft
Paleozoic	300	91.4	Fort St. John Gp	?220
			Radioactive shale	?357
			"Scatter" marker	1210
			Radioactive shale	1590
			Basal silty zone	1620
			Paleozoic	1637
Arctic Red River O-27				
Arctic Red/Martin House Fm	16 ft	4.9 m		
Paleozoic	400	121.9		
Arrowhead B-41			Arrowhead L-49	
Quaternary		4.9 m	Quaternary	13 ft
Fort St. John Gp		68	Fort St John Gp	85
"Scatter" marker		453	?Fish Scales Bed	315
Radioactive shale		593	"Scatter" marker	1375
Chinkeh Fm		606	Radioactive shale	1805
Paleozoic		653	Chinkeh Fm	1832
			Paleozoic	1970
Arrowhead B-76			Arrowhead M-05	
Quaternary	16 ft	4.9 m	Quaternary	
Fort St. John Gp	170	51.8	Fort St. John Gp	18 ft
"Scatter" marker	1070	326.1	Radioactive shale	95
Radioactive shale	1576	480.4	Basal silty zone	1394
Paleozoic	1610	490.7	Paleozoic	1427
Arrowhead 2B-76				
Quaternary		4.9 m		
Fort St. John Gp		?52		

Arrowhead N-02		
Fort St. John Gp	?16 ft	?4.9 m
?Fish Scales Bed	?400	121.9
"Scatter" marker	1545	470.9
Radioactive shale	2020	615.7
Chinkeh Fm	2080	634
Paleozoic	2250	630.9

Arrowhead River #1 H-31		
Quaternary	13 ft	4 m
Fort St. John Gp	480	146.3
"Scatter" marker	1115	339.9
Radioactive shale	1490	454.2
Basal silty zone	1510	460.2
Paleozoic	1550	472.4

Aurora M-47		
Quaternary	14 ft	4.3 m
Fort St. John Gp	?490	?146.3
"Scatter" marker	?1493	?455.1
Radioactive shale	?1955	?595.9
Paleozoic	2006	611.4

Beaver River G-01		
Garbutt Fm	17 ft	5.2 m
Triassic	400	121.9

Beaver River I-27		
Quaternary	17 ft	5.2 m
Scatter Fm	?120	?36.6
Garbutt Fm	320	97.5
Triassic	1180	359.7
(there is a very thin sandstone at the base of the Garbutt)		

Blackwater E-11		
Quaternary	13 ft	4 m
Arctic Red Fm	130	39.6
?Martin House Fm	?1790	?545.6
(poorly developed)		
Paleozoic	2045	623.3

Blackwater Lake G-52		
Quaternary	14 ft	4.3 m
?Arctic Red Fm - logs begins at 330 ft and poor samples do not allow for an accurate estimate of the Albian top.		
?Martin House Fm	?400	?121.9
Paleozoic	?608	?185.3

Blackwater Lake I-54A		
Quaternary	12 ft	3.7 m
Arctic Red/Martin House Fm	?150	?45.7
Paleozoic	?715	?217.9
(Cretaceous behind casing)		

Blueberry Creek K-53		
Little Bear Fm		
Upper member		3.5 m
Lower member		228
Slater River/?Arctic Red undivided*		?433
?Martin House Fm		1144

Paleozoic ?1256
 (* the contact between shale of the Arctic Red and Slater River formations is not readily apparent from the lithological succession. There is only a minor velocity and density shift in the log responses at about 739 m which could represent the boundary).

Bluefish 1A A-37		
Quaternary	13 ft	4 m
Slater River Fm	360	109.7
Paleozoic	1618	493.2

Bluefish K-71		
Quaternary	12 ft	3.7 m
Slater River Fm	?530	?161.5
Radioactive shale	1190	362.7
Basal sandstone	1220	371.9
Arctic Red Fm	?1280	?390.1
Radioactive shale	1280	390.1
Martin House Fm	1662	506.6
Paleozoic	2020	615.7

Bovie M-05		
Quaternary	13 ft	4 m
Fort St. John Gp		
Sully Fm	40	12.2
?Fish Scales Bed	151	46
Lepine Fm	220	61
Scatter Fm	1090	332.2
Garbutt Fm	1300	396.2
Radioactive shale	1550	472.4
?Chinkeh Fm	1570	478.5
Paleozoic	1710	521.2

Brackett Lake C-21		
Slater River Fm	12 ft	3.7 m
Radioactive shale	844	257.3
Basal sandstone	?917	?279.5
Paleozoic	1114	339.5

Cameron N-24 (tentative stratigraphy)		
Quaternary	14 ft	4.3 m
?Fort St. John Gp	?500	?152.4
Radioactive shale	902	?274.9
Paleozoic	?945	?288

Cameron Hills A-05 (tentative stratigraphy)		
Quaternary	13 ft	4.0 m
Fort St. John Gp	650	198.1
Paleozoic	1820	554.7
(N.B. Logs begin at 828 ft; the section identified as Fort St. John Gp could be a Paleozoic shale succession)		

Carcajou D-05		
Arctic Red/Martin House Fm		4.0 m
Paleozoic		283

Carcajou J-27			Paleozoic	945	288
Arctic Red/Martin House Fm	15 ft	4.6 m	(Cretaceous mostly behind casing)		
Paleozoic	?769	?234.6			
Carcajou L-24			Cli Lake K-54		
Arctic Red Fm	13 ft	4.0 m	Quaternary	16 ft	4.9 m
Martin House Fm	690	210.3	Fort St. John Gp	?120	?36.6
Paleozoic	1005	306.3	Paleozoic	?590	?179.8
			(Cretaceous behind casing)		
Carcajou O-25 (very tentative stratigraphy)			Cli Lake M-05		
?Quaternary		7 m	Quaternary	15 ft	4.6 m
Arctic Red Fm		?150	Fort St. John Gp	?40	12.2
(no well defined basal sandstone)			Paleozoic	?810	?246.9
Paleozoic		320	(Cretaceous mostly behind casing. Paleozoic top may be at 780 ft)		
Cartridge F-72			Cloverleaf I-46		
Quaternary	10 ft	3.0 m	Little Bear Fm	15 ft	4.6 m
Arctic Red/Martin House Fm	?240	?73.2	Slater River Fm	1104	336.5
Paleozoic	?530	?161.5	Radioactive shale	1380	420.6
			Radioactive shale	2383	726.3
Celibeta B-25			Paleozoic	2475	754.4
Fort St John Gp		4.1 m	Cormack C-65A		
Radioactive shale (?Fish Scales Bed)		303	Quaternary	9 ft	2.7 m
"Scatter" marker		311	Fort St. John Gp	?450	?137.2
Radioactive shale		424	Fish Scales Bed	?500	?152.4
Chinkeh Fm		427	"Scatter" marker	1280	390.1
Paleozoic		435	Radioactive shale	1642	500.5
			Basal silty zone	1675	510.5
Celibeta D-31			Paleozoic	1712	521.8
Quaternary	14 ft	4.3 m	Cormack N-33		
Fort St. John Fm	20	6.1	Quaternary	18 ft	5.5 m
?Fish Scales Bed	60	33.5	Fort St. John Gp	650	198.1
"Scatter" marker	1212	369.4	"Scatter" marker	1235	376.4
Radioactive shale	1571	478.8	Radioactive shale	1600	487.7
Basal silty zone	1595	486.2	Basal silty zone	1662	506.6
Paleozoic	1600	487.7	Paleozoic	1670	509
Celibeta D-66			Cormack I-19		
Quaternary/Fort St. John Gp	15 ft	4.6 m	Fort St. John Gp		5 m
Radioactive shale	1225	373.4	Radioactive shale		313
Chinkeh Fm	1235	376.4	Basal silty zone		322
Paleozoic	1268	386.5	Paleozoic		334
(Cretaceous mostly behind casing)			(Cretaceous mostly behind casing)		
Celibeta K-01			Cranswick A-22		
Quaternary	16 ft	4.9 m	Quaternary	21 ft	6.4 m
Fort St. John Gp	560	170.7	Martin House Fm	225	68.6
Radioactive shale	1150	350.5	Paleozoic	455	138.7
Paleozoic	1180	359.7	Cranswick A-42		
Celibeta N-39			Arctic Red Fm	22 ft	6.7 m
Quaternary	8 ft	2.4 m	Martin House Fm	?3624	?1104.6
Fort St. John Gp	240	73.2	Paleozoic	3840	1170.4
Radioactive shale	770	234.7	Dahadinni D-65		
Basal silty zone	790	240.8	Little Bear Fm	14 ft	4.3 m
Paleozoic	802	244.4	Slater River Fm	500	152.4
			Radioactive shale	710	216.4
Celibeta #7 H-50					
Quaternary	14 ft	4.3 m			
Fort St. John Gp	130	39.6			
Radioactive shale	910	277.4			

Radioactive shale	1800	548.6	Fish Lake G-60		
Paleozoic	1890	576.1	Quaternary	12 ft	3.7 m
			Arctic Red/Martin House Fm	?485	?147.8
Dahadinni M-43A			Paleozoic	?710	?216.4
Quaternary/Cretaceous	9 ft	2.7 m	Fort Norman K-14		
Paleozoic	410	125.0	Little Bear Fm	13 ft	4 m
			Slater River Fm	900	274.3
Davidson Creek P-02			Basal sandstone	2217	675.7
Quaternary	0 ft	0 m	Paleozoic	?2254	?687.0
Arctic Red Fm	?370	112.8	Grandview L-26		
Radioactive shale	410	125.0	Arctic Red/Martin House Fm	13 ft	4.0 m
Radioactive shale	752	229.2	Paleozoic	40	12.2
Martin House Fm	800	243.8			
Paleozoic	?990	?301.8	Great Bear River N-30		
Dodo Canyon K-03			Quaternary	12 ft	3.7 m
Quaternary	17 ft	5.2 m	Mahony Lake Fm	?160	?48.8
Slater River Fm	?140	?42.7	Arctic Red Fm	916	279.2
Radioactive shale	450	137.2	Radioactive shale	1445	440.4
Basal sandstone	502	153.0	Martin House Fm	2012	613.3
Arctic Red Fm	530	161.5	Paleozoic	2254	687.0
Martin House Fm	2512	765.7	Grey Goose N-70		
Paleozoic	2978	907.7	Quaternary	12 ft	3.7 m
East Flett H-13			?Upper Cretaceous shale	?100	?31
Quaternary	12 ft	3.7 m	?Upper Cretaceous sandstone	240	73.2
Fort St. John	370	112.8	Mahony Lake Fm	390	118.9
"Scatter" marker	690	210.3	Arctic Red Fm	916	279.2
Radioactive shale	1124	342.6	Radioactive shale	1386	422.5
Chinkeh Fm	1182	360.3	Martin House Fm	1824	556.0
Paleozoic	1212	369.4	Basal sandstone	2095	638.6
East Mackay B-45			Paleozoic	2146	654.1
East Fork Fm	14 ft	4.3 m	(Poorly defined radioactive shale in Arctic Red Fm)		
Little Bear Fm			Hanna River J-05		
Upper member	2088	636.4	Arctic Red Fm	14 ft	4.3 m
Lower member	2580	786.4	Martin House Fm	620	189.0
Slater River Fm	3175	967.7	Paleozoic	815	248.4
Radioactive shale	3850	1173.5	Harris River F-71		
Basal sandstone	3880	1182.6	Quaternary	14 ft	4.3 m
Paleozoic	3987	1215.2	Arctic Red Fm	?728	?221.9
East Mackay I-55			Radioactive shale	1060	323.1
Summit Creek Fm or Quaternary		4.3 m	Martin House Fm	1095	336.6
East Fork Fm		90	Paleozoic	1320	402.3
Little Bear Fm			Highland Lake I-23		
Upper member		690	Quaternary	13 ft	4 m
Lower member		867	Arctic Red/Martin House Fm	30	9.1
Slater River Fm		1073	Paleozoic	830	253.0
Radioactive shale		1312	(Top of Martin House Fm could be at 710 ft)		
Paleozoic		1325	Highland Lake K-42		
Ebbutt J-05			Quaternary	13 ft	4 m
Quaternary	11 ft	3.4 m	Arctic Red Fm	80	24.4
Arctic Red Fm	50	15.2	Radioactive shale	?195	?59.4
Radioactive shale	695	211.8	?Martin House Fm	?228	?69.5
Radioactive shale	828	252.4	Paleozoic	450	137.2
Martin House Fm	880	268.2			
Paleozoic	1060	323.1			

Hoosier Ridge N-22			Martin House Fm	1330	405.4
Arctic Red Fm		5.8 m	Paleozoic	1504	458.4
Martin House Fm		284			
Paleozoic		345			
Hornell Lake F-17			Island River D-29		
Quaternary	11 ft	3.4 m	Quaternary	18 ft	5.5 m
Arctic Red/Martin House Fm	1120	341.1	?Dunvegan Fm	?180	54.9
(No logs through this interval)			Fort St. John Gp	280	85.3
Paleozoic	?1848	?563.3	Fish Scales Bed	970	295.7
			Radioactive shale	1765	538
			"Scatter" marker	1775	541
			Radioactive shale	2038	621.2
			Basal silty zone	2050	624.8
			Paleozoic	2075	632.5
Hornell Lake G-24			Island River E-56		
Quaternary	11 ft	3.4 m	Quaternary/Dunvegan Fm	14 ft	4.3 m
Arctic Red Fm	?700	?213.4	Fort St. John Gp	900	274.3
Radioactive shale	1045	318.5	Fish Scales Bed	960	292.6
Martin House Fm	1084	330.4	Radioactive shale	1755	534.9
Paleozoic	1270	387.1	"Scatter" marker	1775	541
			Radioactive shale	1949	594.1
			Basal silty zone	?2005	?611.1
			Paleozoic	2040	621.8
Horton River G-02			Island River G-38		
Quaternary	15 ft	4.6 m	Quaternary		
Horton River Fm	20	6.1	Dunvegan Fm		?110 m
Langton Bay Fm	770	234.7	Fort St. John Gp		166
Husky Fm	1520	463.3	Radioactive shale		542
Paleozoic	1816	553.5	Radioactive shale		612
			Basal silty zone		624
			Paleozoic		628
Hume River A-53 (tentative stratigraphy)			Island River G-42		
Arctic Red Fm	13 ft	4.0 m	Quaternary	12 ft	3.7 m
Martin House Fm	?570	?187.0	Fort St John Gp	700	213.4
Paleozoic	?760	?231.6	Fish Scales Bed	900	274.3
			Radioactive shale	1755	534.9
			"Scatter" marker	1775	541
			Radioactive shale	1965	598.9
			Basal silty zone	2020	615.7
			Paleozoic	2033	619.7
Hume River D-53			Island River J-44		
Arctic Red Fm	15 ft	4.6 m	Quaternary	14 ft	4.3 m
Martin House Fm	1295	394.7	Fort St. John Gp	290	88.4
Paleozoic	1473	449.0	Fish Scales Bed	690	210.3
			Radioactive shale	1370	417.6
			"Scatter" marker	1410	419.8
			Radioactive shale	1630	496.8
			Basal silty zone	1682	512.7
			Paleozoic	1718	523.6
Hume River I-20			Island River #1 G-50		
Quaternary		5.5 m	Dunvegan Fm	8 ft	2.4 m
Arctic Red Fm	?90	?30.5	Fort St. John Gp	70	21.3
Martin House Fm	255	?578.5	Fish Scales Bed	955	291.1
Paleozoic	323	?622.4	Radioactive shale	1840	560.8
			"Scatter" marker	1860	566.9
			Radioactive shale	2060	627.9
			Paleozoic	2110	643.1
Hume River I-66					
Arctic Red Fm		5.5 m			
Martin House Fm		418			
Paleozoic		495			
Hume River L-09 (tentative stratigraphy)					
Quaternary	17 ft	5.2 m			
Arctic Red Fm	?100	?30.5			
Martin House Fm	?1898	?578.5			
Paleozoic	?2042	?622.4			
Hume River N-10					
Quaternary		5.5 m			
Arctic Red Fm		?80			
Martin House Fm		248			
Paleozoic		315			
Hume River O-62					
Quaternary	13 ft	4.0 m			
Arctic Red Fm	65	19.8			

Judile #1 H-40 (tentative stratigraphy)		
Quaternary	10 ft	3 m
Arctic Red/Martin House Fm	60	18.3
Paleozoic	315	96.0

Judile O-17 (tentative stratigraphy)		
Arctic Red/Martin House Fm	0 ft	0 m
Paleozoic	?270	?82.3

Judile O-41 (tentative stratigraphy)		
Arctic Red/Martin House Fm	0 ft	0 m
Paleozoic	?238	?72.5

K'alo B-62		
Quaternary		4.3 m
Slater River Fm		50.0
Radioactive shale		325.0
Basal sandstone		345.0
Paleozoic		367.0

Kakisa River F-56 (tentative stratigraphy)		
Quaternary		4.9 m
?Fort St. John Gp		342.6
Paleozoic		385.5
(Only a neutron log is available above 1450 m; interval tentatively identified as Cretaceous could be a Paleozoic succession)		

Kakisa River #1 H-57 (tentative stratigraphy)		
Quaternary	24 ft	4.3 m
?Fort St. John Gp	?615	?187.5
Radioactive shale	948	289
Paleozoic	?1030	313.9
(Interval tentatively identified as Cretaceous could be Paleozoic)		

Keele River A-28		
Quaternary	14 ft	4.9 m
East Fork Fm	70	21.3
Little Bear Fm		
Upper member	1484	441.4
Lower member	1990	606.6
Slater River Fm	2590	789.4
Radioactive shale	3842	1171.0
Basal sandstone	poorly developed	
Paleozoic	?3872	?1180.2

Keele River I-01		
East Fork		
Sandstone member	17 ft	5.2 m
Shale member	?360	?109.7
Little Bear Fm		
Upper member	1962	598.0
Lower member	2366	721.2
Slater River Fm	2898	883.3
Radioactive shale	3534	1077.2
Basal sandstone	3608	1099.7
(poorly developed)		
Paleozoic	3670	1118.6

Keele River L-04		
Quaternary	14 ft	4.3 m
East Fork Fm	?130	?39.6
Little Bear Fm		
Upper member	668	203.6
Lower member	?918	?279.8
Slater River Fm	1590	484.6
Radioactive shale	2160	658.4
Basal sandstone	2220	676.7
(poorly developed)		
Paleozoic	?2290	?698.0

Keele River N-62		
East Fork Fm	11 ft	3.4 m
Little Bear Fm		
Upper member	1132	345.0
Lower member	1500	457.2
Slater River Fm	2129	648.9
Radioactive shale	2722	829.7
Basal sandstone	2782	848.0
(poorly developed)		
Paleozoic	2840	865.6

Keele South E-19		
Quaternary		5 m
East Fork Fm		55
Little Bear Fm		242
Slater River Fm		560
Paleozoic		945

Keller Lake F-49 (Poorly defined stratigraphy)		
Quaternary	9 ft	2.7 m
Arctic Red Fm	?75	?22.9
Martin House Fm	180	54.9
Paleozoic	?475	?144.8

Keller Lake O-13		
Quaternary	9 ft	2.7 m
Arctic Red Fm	370	112.8
Radioactive shale	712	217.0
Martin House Fm	?895	?272.8
Paleozoic	?1146	?352.0

Keller Lake P-14 (tentative stratigraphy)		
Quaternary	9 ft	2.7 m
Arctic Red Fm	?768	?234.1
Martin House Fm	910	277.4
Paleozoic	1110	338.3

Kotaneelee B-38		
Fort St John Gp		
Garbutt Fm	25 ft	7.6 m
Triassic	1100	335.3

Lac Tache C-35		
Quaternary	0 ft	0 m
Arctic Red/Martin House Fm	?215	?65.5
Paleozoic	?340	?103.6

Little Bear I-70			?Upper Cretaceous shale	240	73.3
Quaternary	14 ft	4.3 m	?Upper Cretaceous sandstone	420	128
East Fork Fm	112	34.1	Mahony Lake Fm	460	228.6
Little Bear Fm	2766	843.1	Arctic Red Fm	1660	506
(Possible repeated section between 2766-3282 ft)			Martin House Fm	?2890	?880.9
Upper member	3282	1000.4	Basal sandstone	3058	932.1
Lower member	3705	1129.3	Paleozoic	3140	957.1
Slater River Fm	4400	1341.1			
Radioactive shale	5192	1582.5	Maida Creek F-57		
Basal sandstone	5310	1618.5	Arctic Red/Martin House Fm	13 ft	4 m
Paleozoic	5670	1728.2	Paleozoic	?570	173.8
			(Arctic Red is behind casing; difficult to determine depth of Martin House Fm)		
Little Growl N-11			Maida Creek O-65		
Quaternary	14 ft	4.3 m	Arctic Red Fm		7 m
Fort St. John Gp	30	9.1	Martin House Fm		252
? "Scatter" marker	870	265.2	Paleozoic		?295
Radioactive shale	1018	310.3			
Basal silty zone	1035	315.5	Manitou Lake L-61		
Paleozoic	1058	322.5	Arctic Red Fm	12 ft	3.7 m
			Martin House Fm	75	22.9
Loon Creek #1 A-52			Paleozoic	195	59.4
Arctic Red Fm	11 ft	3.4 m	Manuel Lake J-42		
Martin House Fm	170	51.8	Martin House Fm	16 ft	4.9 m
Paleozoic	585	178.3	Paleozoic	130	39.6
			Martin House L-50 (tentative stratigraphy)		
Loon Creek #2 G-78			Quaternary	14 ft	4.3 m
Martin House Fm	11 ft	3.4 m	Arctic Red Fm	?40	12.2
Paleozoic	150	45.7	Martin House Fm	?320	97.5
			Paleozoic	370	112.8
Losh Lake G-22			Mirror Lake O-33		
Quaternary	14 ft	4.3 m	Arctic Red Fm		0 m
Arctic Red Fm	?230	?70.1	Martin House Fm		322
Martin House Fm	825	251.5	Paleozoic		?364
Basal sandstone	1165	355.1	Morrow Creek J-71		
Paleozoic	1226	373.7	Arctic Red/Martin House Fm		6.2 m
			Paleozoic		628.0
Lost Hill Lake F-62			Mountain River A-23		
Quaternary	12 ft	3.7 m	Quaternary	17 ft	5.2 m
?Upper Cretaceous	?90	?27.4	Arctic Red Fm	80	24.4
Radioactive shale	322	98.1	Martin House Fm	1314	400.5
?Basal sandstone	592	180.4	Paleozoic	1449	441.7
?Mahony Lake Fm	?612	?186.5	Mountain River H-47		
Arctic Red Fm	670	204.2	Quaternary	13 ft	4 m
Martin House Fm	1356	413.3	Arctic Red/Martin House Fm	60	18.3
Basal sandstone	1670	509.0	Paleozoic	226	68.9
Paleozoic	1750	533.4	Muskeg River #1 I-24		
(Identification of Upper Cretaceous strata is based on the data of Yorath and Cook [1981] and Williams [1988]).			Quaternary	13 ft	4 m
			Fort St. John Gp	530	161.5
Mac #1 J-76			Fish Scales Bed	?618	188.4
Arctic Red Fm	12 ft	3.7 m	"Scatter" marker	1380	420.6
Martin House Fm	510	155.4	Radioactive shale	1732	527.9
Paleozoic	810	246.9	Basal silty zone	1775	541
Mac #2 P-05					
?Martin House Fm	12 ft	3.7 m			
Paleozoic	100	30.5			
Mahony Lake I-74					
Quaternary	18 ft	5.5 m			

Paleozoic	1785	544.1	Little Bear Fm	634
			(Probable repeated section between 634-769 m)	
Netla C-07			Upper member	769
Quaternary	14 ft	4.3 m	Lower member	891
Fort St. John Gp	110	33.5	Slater River Fm	1109
Fish Scales Bed	?700	?213.4	Radioactive shale	1345
"Scatter" marker	1620	493.8	Paleozoic	?1348
Radioactive shale	2010	612.6		
Basal silty zone	2020	615.7	North Ramparts A-59	
Paleozoic	2040	621.8	Quaternary	14 ft 4.3 m
			Arctic Red/Martin House Fm	245 74.7
Netla M-31			Paleozoic	4423 1348.1
Quaternary	13 ft	4 m	(Logs available only below 4995 ft: top of Martin House	
Fort St. John Gp	90	27.4	Fm possibly at 4370 ft)	
Paleozoic	410	125		
(Cretaceous behind casing)			Northwest C-1 C-25	
Nicholson G-56			Quaternary	0 ft 0 m
Quaternary	5 ft	1.5 m	Arctic Red/Martin House Fm	200 61.0
Mason River Fm	640	195.1	Paleozoic	720 219.5
Smoking Hills Fm	1317	401.4		
Horton River Fm	1480	451.1	Northwest C-2 C-25	
Langton Bay Fm	2236	681.5	Quaternary	0 ft 0 m
TD	2830	862.6	Arctic Red/Martin House Fm	60 18.3
			Paleozoic	680 207.3
Nicholson N-45			Ochre River I-15	
Quaternary	7 ft	2.1 m	Quaternary	14 ft 4.3 m
Mason River Fm	310	94.5	Arctic Red Fm	190 57.9
Smoking Hills Fm	1125	342.9	Radioactive shale	1178 359.1
Horton River Fm	1240	378.0	Martin House Fm	1370 417.6
Langton Bay Fm	2025	617.2	(poorly developed)	
TD	2833	863.5	Paleozoic	1540 469.4
North Beaver River I-27			Old Fort Point E-30	
Quaternary	17.1 ft	5.2 m	Summit Creek Fm and Quaternary	13 ft 4 m
Fort St. John Gp			Slater River Fm	?398 ?121.3
"Scatter" marker	120.1	36.6	Radioactive shale	578 176.2
Triassic	1180	359.7	Basal sandstone	624 190.2
			Paleozoic	910 277.4
North Cameron Hills M-05 (tentative stratigraphy)			Ontaratué H-34	
Quaternary	13 ft	4.0 m	Arctic Red Fm	15 ft 4.6 m
Fort St. John Gp	365	111.3	Martin House Fm	?830 ?253.0
Paleozoic	442	134.7	Paleozoic	852 259.7
			(Mesozoic behind casing)	
North Circle River #1 A-37			Ontaratué I-38	
Quaternary	8 ft	2.4 m	Arctic Red/Martin House Fm	19 ft 5.8 m
Arctic Red Fm	10	3.0	Paleozoic	?1060 ?323.1
Martin House Fm	120	36.6	(Mesozoic behind casing)	
Paleozoic	210	64.0		
North Island River O-12			Ontaratué K-04	
Quaternary	13 ft	4 m	Arctic Red Fm	15 ft 4.6 m
Fort St John Gp	310	94.5	Martin House Fm	?115 ?35.1
"Scatter" marker	1150	350.5	Paleozoic	?310 ?94.5
Radioactive shale	1410	429.8	(Mesozoic behind casing)	
Basal silty zone	1430	435.9	Oscar Creek H-77	
Paleozoic	1450	442	Arctic Red/Martin House Fm	12 ft 3.7 m
			Paleozoic	306 93.3
North Little Bear L-21				
Quaternary		0 m		
East Fork Fm		?50		

Peel F-37 (tentative stratigraphy)			East Fork Fm	7852	7259.7
Arctic Red Fm	19 ft	5.8 m	Little Bear Fm	2270	691.9
Martin House Fm	?200	?61.0	Slater River Fm	?2370	?722.4
Paleozoic	?480	?146.3	Radioactive shale	2965	903.7
			Basal sandstone	2970	905.3
Peel River B-06/B-06A			Paleozoic	3098	941.5
Arctic Red Fm	13 ft	4 m	Poplar River G-32		
Martin House Fm	835	254.5	Quaternary	13 ft	4.0 m
Paleozoic	1092	332.8	Fort St. John Gp	?420	?128
Peel River H-59			Paleozoic	620	189
Arctic Red Fm	13 ft	4 m	(Cretaceous behind casing)		
Martin House Fm	715	217.9	Raider Island #1 F-39		
Paleozoic	970	295.7	Arctic Red/Martin House Fm	50 ft	15.2 m
Peel River J-21			Paleozoic	395	120.4
Arctic Red Fm	13 ft	4 m	Ray #1 B-46		
Martin House Fm	830	253.0	Quaternary	10 ft	3 m
Paleozoic	1120	341.4	Arctic Red Fm	100	30.5
(top of Martin House Fm could be at 1081 ft)			Martin House Fm	1785	544.1
Peel River K-09			Paleozoic	1943	592.2
Arctic Red Fm	13 ft	4 m	Raven F-73		
Martin House Fm	2460	749.8	Quaternary	13 ft	4 m
Paleozoic	2765	842.8	Fort St. John Gp	280	85.3
Peel River K-76			Fish Scales Bed	750	228.6
Arctic Red Fm	13 ft	4 m	"Scatter" marker	1690	515.1
Martin House Fm	1190	362.7	Radioactive marker	2040	621.8
Paleozoic	1450	442.0	Paleozoic	2095	638.6
Peel River L-01			Redknife E-55 (tentative stratigraphy)		
Arctic Red Fm	13 ft	4 m	Quaternary	17 ft	5.2 m
Martin House Fm	2025	617.2	?Fort St. John Gp	200	61.0
Paleozoic	2300	701.0	Paleozoic	610	185.9
Peel River M-69 (tentative stratigraphy)			(No logs through Cretaceous interval; casing set at 658 ft)		
Quaternary			Redstone #1 J-42		
Arctic Red Fm	30 ft	9.1 m	Quaternary	10 ft	3 m
Martin House Fm	1500	457.2	Little Bear Fm	50	15.2
Paleozoic	1882	573.6	Slater River Fm	500	152.4
Petitot C-60			Paleozoic	1770	539.5
Quaternary	17 ft	5.2 m	Redstone P-78		
Fort St. John Gp	795	242.3	Quaternary	14 ft	4.3 m
Radioactive shale	1360	414.5	Little Bear Fm	30	9.1 m
"Scatter" marker	1370	417.6	Slater River Fm	520	158.5 m
Radioactive shale	1573	479.5	Paleozoic	1620	493.8 m
Basal silty zone	1580	481.6	Rond Lake #3 A-48		
Paleozoic	1602	488.3	Quaternary	6 ft	1.8 m
Pointed Mountain P-24			Martin House Fm	175	53.3
Quaternary	14 ft	4.3 m	Paleozoic	270	82.3
Fort St John Gp			Rond Lake #2 F-56		
Lepine Fm	120	36.6	Quaternary	9 ft	2.7 m
Scatter Fm	?250	?76.2	Martin House Fm	35	10.7
Garbutt Fm	?550	167.6	Paleozoic	100	30.5
Paleozoic	1395	425.2	Police Island L-66		
Police Island L-66			Summit Creek Fm and Quaternary	13 ft	4 m

Rond Lake #5 B-57			Paleozoic	1470	448.1
Quaternary	8 ft	2.4 m			
Martin House Fm	80	24.4	South Island River M-41		
Paleozoic	156	47.5	Quaternary	14 ft	4.3 m
			Fort St. John Gp	520	158.5
Russell M-07			?Fish Scales Bed	860	262.1
Quaternary	14 ft	4.3 m	Radioactive shale	1735	528.8
?Upper Cretaceous	?150	?45.7	"Scatter" marker	1750	533.4
Mahony Lake Fm	?210	?64	Radioactive shale	1950	594.4
Arctic Red Fm	596	181.7	Basal silty zone	1960	597.4
Radioactive shale	930	283.5	Paleozoic	1998	609
Martin House Fm	1248	380.4			
Basal sandstone	1490	454.2	South Island River M-52		
Paleozoic	1612	491.3	Quaternary/Dunvegan Fm	13 ft	4.0 m
(Casing to 300 ft: tops within this interval are uncertain).			Fort St. John Gp	900	274.3
			Fish Scales Bed	?930	?283.5
			Radioactive shale	1818	554.1
			"Scatter" marker	1838	560.2
			Radioactive shale	2020	615.7
			Basal silty zone	2050	624.8
			Paleozoic	2100	640.1
Sainville River D-08					
Arctic Red Fm	16 ft	4.9 m	South Keele E-19		
Martin House Fm	1594	485.9	Quaternary		0 m
Paleozoic	?2070	?630.9	East Fork Fm		?55
			Little Bear Fm		
			Upper member		242
			Lower member		?360
			Slater River Fm		560
			Radioactive shale		926
			Basal sandstone		932
			Paleozoic		?945
Sainville River K-63			South Maida Creek G-56		
Arctic Red Fm	16 ft	4.9 m	Arctic Red Fm	19 ft	5.8 m
Martin House Fm	1050	320.0	Martin House Fm	?760	?231.6
Paleozoic	?1415	?431.3	Paleozoic	915	?278.9
Sans Sault #1 H-24			South Peel D-64		
Arctic Red Fm			Quaternary	16 ft	4.9 m
Sans Sault Mbr - top	0 ft	0 m	Arctic Red Fm	103	31.4
- base	790	240.8	Martin House Fm	?2542	?774.8
Martin House Fm	1118	340.8	(poorly defined)		
Paleozoic	1280	390.1	Paleozoic	?3158	?962.6
			St Charles Creek H-61		
Satah River G-72			Quaternary	12 ft	3.7 m
Quaternary	12 ft	3.7 m	?Mahony Lake Fm	?30	?9.1
Arctic Red/Martin House Fm	30	9.1	Arctic Red Fm	?290	?88.4
Paleozoic	551	167.9	Martin House Fm	1425	434.3
(Mesozoic behind casing)			Paleozoic	1655	504.1
Shoals C-31			Stewart B-30		
Very difficult to determine the stratigraphy. Its location on Yorath and Cook's (1981) geological map indicates it would have spudded in the Sans Sault Member, Arctic Red Formation. It is probable that the Cretaceous section is behind surface casing which ends at 315 ft (96 m).			Quaternary	14 ft	4.3 m
			Summit Creek Fm	?260	?79.2
			East Fork Fm		
			Sandstone member	?490	?149.4
			Shale member	1548	471.8
			Little Bear Fm		
			Upper member	3550	1082.0
			Lower member	3985	1214.6
Sibbeston Lake G-24					
Fort St. John Gp	13 ft	4.0 m			
Paleozoic	?270	?82.3			
(Cretaceous behind casing)					
Slater River A-37					
Slater River Fm	15 ft	4.6 m			
Paleozoic	540	164.6			
Smoking Hills A-23					
Quaternary	8 ft	2.4 m			
Horton River Fm	480	146.3			
Langton Bay Fm	1260	384.0			

Slater River Fm	4560	1389.9	Trainor H-28		
Radioactive shale	5290	1612.4	Quaternary	13 ft	4.0 m
Basal sandstone	5320	1621.5	Fort St. John Gp	?150	?45.7
Paleozoic	5451	1661.5	Fish Scales Bed	900	327.3
			Radioactive shale	1640	499.9
SW Airport Creek #1			"Scatter" marker	1660	506.0
Arctic Red/Martin House Fm	8 ft	2.4 m	Radioactive shale	1895	577.6
Paleozoic	265	80.8	Basal silty zone	1950	594.4
			Paleozoic	1975	602.0
Tate J-65			Trainor K-30		
Quaternary	21 ft	6.4 m	Quaternary/Dunvegan Fm	16 ft	4.9 m
Summit Creek Fm	?280	?85.3	Fort St. John Gp	890	271.3
East Fork Fm			?Fish Scales Bed	935	285.0
Sandstone member	?570	?173.8	Radioactive shale	1805	550.2
Shale member	1608	490.1	"Scatter" marker	1833	558.7
Little Bear Fm			Radioactive shale	2058	627.3
Upper member	3743	1140.9	Basal silty zone	2090	637.0
Lower member	4155	1266.4	Paleozoic	2127	648.3
Slater River Fm	4810	1466.1			
Radioactive shale	5525	1684.0	Trainor K-70		
Basal sandstone	5729	1746.2	Quaternary/Dunvegan Fm	17 ft	5.2 m
Paleozoic	5742	1750.2	Fort St. John Gp	600	182.9
			Fish Scales Bed	1100	335.3
Taylor Lake K-15			Radioactive shale	1700	518.2
Quaternary	13 ft	4 m	"Scatter" marker	1737	529.4
Arctic Red Fm	110	33.5	Radioactive shale	1930	588.3
Martin House Fm	2070	630.9	Basal silty zone	2035	620.3
Paleozoic	?2270	?691.9	Paleozoic	2054	626.1
Tetcho J-12			Trainor L-59		
Quaternary	15 ft	4.6 m	Quaternary	27 ft	8.2 m
Fort St. John Gp	500	152.4	Fort St. John Gp	500	152.4
Radioactive shale	828	252.4	?Fish Scales Bed	?600	?182.9
Basal silty zone	892	245.5	Radioactive shale	1150	350.5
Paleozoic	932	284.1	"Scatter" marker	1160	353.6
			Radioactive shale	1355	413.0
Tetcho Lake #1 L-26			Basal silty zone	1410	429.8
Quaternary	13 ft	4.0 m	Paleozoic	1456	443.8
Fort St. John Gp	?25	?7.6			
?Radioactive shale	770	234.7	Trainor O-72		
Radioactive shale	1115	339.9	Quaternary	12 ft	3.7 m
"Scatter" marker	1125	342.9	Fort St. John Gp	?50	?15.2
Radioactive shale	1356	413.3	Fish Scales Bed	810	246.9
Paleozoic	1415	431.3	Radioactive shale	1448	441.4
			"Scatter" marker	1490	454.2
Trail River H-37			Radioactive shale	1748	532.8
Arctic Red Fm	26 ft	7.9 m	Basal silty zone	1790	545.6
Martin House Fm	1860	566.9	Paleozoic	1825	556.3
Paleozoic	2165	658.4			
			Trainor Lake B-24 (tentative stratigraphy)		
Trainor E-35			Quaternary/Dunvegan Fm	19 ft	5.8 m
Quaternary	17 ft	5.2 m	?Fort St. John Gp	1150	350.5
Dunvegan Fm	370	112.8	Paleozoic	1300	396.2
Fort St. John Gp	?990	?301.8	(No logs/samples above 1270 ft - casing point)		
Fish Scales Bed	1070	326.1			
Radioactive shale	1820	554.7	Trainor Lake C-39		
"Scatter" marker	1860	566.9	Quaternary	16 ft	4.9 m
Radioactive shale	2090	637.0	Dunvegan Fm	120	36.6
Basal silty zone	2135	650.7	Fort St. John Gp	295	89.9
Paleozoic	2168	660.8	Fish Scales Bed	965	294.1

Radioactive shale	1560	475.5
"Scatter" marker	1570	478.5
Radioactive shale	1810	551.7
Basal silty zone	1855	565.4
Paleozoic	1876	571.8

Trainor Lake F-48

Quaternary	15 ft	4.6 m
Fort St. John Gp	?1090	?332.2
Radioactive shale	1575	480.1
Basal silty zone	1620	493.8
Paleozoic	1650	502.9

Trainor Lake G-07 (tentative stratigraphy)

Quaternary/Cretaceous	12 ft	3.7 m
Radioactive shale	695	211.8
"Scatter" marker	720	219.5
Radioactive shale	962	293.2
Basal silty zone	1010	307.8
Paleozoic	1040	317.0

Trainor Lake N-25

Quaternary		4.25 m
Fort St. John Gp		240
Radioactive shale		537
"Scatter" marker		550
Radioactive shale		615
Paleozoic		647

Trainor Lake P-55 (tentative stratigraphy)

Quaternary/Cretaceous	12 ft	3.7 m
Radioactive shale	920	280.4
"Scatter" marker	950	289.6
Radioactive shale	1220	371.9
Basal silty zone	1251	381.3
Paleozoic	1290	393.2

Trout Lake A-45

Quaternary	17 ft	5.2 m
Fort St. John Gp	?890	?271.3
Radioactive shale	1245	379.5
"Scatter" marker	1255	382.5
Radioactive shale	1465	446.5
Basal silty zone	1492	454.8
Paleozoic	1500	457.2

Trout Lake H-45

Quaternary	14 ft	4.3 m
Fort St. John Gp	?470	?143.3
Paleozoic	920	280.4

(Most of Cretaceous is behind casing)

Trout Lake H-57

Quaternary	18 ft	5.5 m
Fort St. John Gp	1000	304.8
Radioactive shale	1448	441.4
"Scatter" marker	1460	445.0
Radioactive shale	1690	515.1
Basal silty zone	1720	524.3
Paleozoic	1741	530.7

Trout Lake M-73

Quaternary	13 ft	4.0 m
Fort St. John Gp	?130	?39.6
Radioactive shale	1012	308.5
"Scatter" marker	1021	311.2
Radioactive shale	1234	376.1
Paleozoic	1298	395.6

Trout Lake M-51

Quaternary	15 ft	4.6 m
Fort St. John Gp	330	100.6
Fish Scales Bed	?660	?201.2
Radioactive shale	1382	421.2
"Scatter" marker	1388	423.1
Radioactive shale	1640	499.9
Basal silty zone	1675	510.5
Paleozoic	1685	513.6

Trout Lake P-34

Quaternary		5.5 m
Fort St. John Gp		?155
Paleozoic		425

(Cretaceous behind casing)

Trout Lake O-41

Quaternary	16 ft	4.9 m
Fort St. John Gp	?870	?265.2
Radioactive shale	1060	323.1
"Scatter" marker	1070	326.1
Radioactive shale	1200	365.8
Paleozoic	1254	382.2

Trout River #2 D-18

Quaternary	12 ft	3.7 m
Fort St. John Gp	90	27.4
Radioactive shale	136	41.5
Paleozoic	160	48.8

(Cretaceous behind casing)

Trout River #6 K-18

Quaternary	13 ft	4.0 m
Fort St. John Gp	?100	?30.5
Paleozoic	?200	?61.0

(Cretaceous behind casing)

Weldon Creek O-65

Arctic Red Fm	13 ft	4 m
Martin House Fm	1725	525.8
Paleozoic	1920	585.2

West Whitefish River H-34

Quaternary	17.5 ft	5.3 m
Mahony Lake Fm	72	21.9
Arctic Red Fm	1155	352.0
Martin House Fm	2222	677.3
Basal sandstone	2430	740.7
Paleozoic	?2560	?762.0

White M-04

Quaternary	14 ft	4.3 m
Mahony Lake Fm	?280	?85.3
Arctic Red Fm	?690	?210.3
Radioactive shale	?700	?213.4
(poorly developed)		
Martin House Fm	1088	331.6
Basal sandstone	1375	419.1
Paleozoic	1469	447.8

Whitefish River K-76

Quaternary	17 ft	5.2 m
Upper Cretaceous shale	?60	?18.3
Mahony Lake Fm	?330	?100.6
Arctic Red	1200	365.8
Martin House Fm	?2310	?704.1
(poorly defined top)		
Basal sandstone	2418	737.0
Paleozoic	?2664	?812.0

Willow Lake G-32

Quaternary	13 ft	4 m
Arctic Red/Martin House Fm	?160	?48.8
Paleozoic	?360	?109.7

Willow Lake O-27A

Quaternary/Cretaceous	0 ft	0 m
Paleozoic	370	112.8

Windy Island A-53

Summit Creek Fm		4 m
East Fork Fm		172
Little Bear Fm		?598
Slater River Fm		?545
Radioactive shale		928
Basal shale-siltstone		950
(no well developed basal sandstone)		
Paleozoic		981

Wolverine Creek D-61

Quaternary	17 ft	5.2 m
Mahony Lake Fm	?22	?6.7
Arctic Red Fm	1405	428.2
Radioactive shale	1915	583.7
Martin House	2487	758.0
Basal sandstone	2730	832.1
Paleozoic	2828	862.0

DESCRIPTION OF CORES FROM CRETACEOUS STRATA IN THE
NORTHERN INTERIOR PLAINS AND PEEL PLATEAU

ARROWHEAD B-41

Core 1 597-615 m

Recovered 18 m. 16 boxes. Well preserved

Core 2 615-633 m

Recovered 18 m. 16 boxes. Well preserved

Cores 1 and 2 in the Chinkeh Formation of the Fort St. John Group.

- 597-609.9 m Shale: black; fissile; ?organic-rich. Scattered interbeds of white, light grey to yellowish grey, bentonite - few mm to 12 cm thick. This interval corresponds to a highly radioactive shale on the gamma-ray log. The shale intervals that are more fissile tend to correspond to the higher gamma-ray readings.
- 609.9-610.06 m Conglomerate: rounded chert pebbles in a matrix of clay to granules. Varies from clast to matrix supported. Clasts range from granule size to 2 cm; spherical shapes most common. Largest clasts and clast-supported conglomerate are present more towards the base of the unit. Greenish colour to matrix. Abrupt, erosional base; upper contact poorly preserved but appears to be rapidly transitional into shale. No obvious internal sedimentary structures.
- 610.06-612 m Sandstone: very fine grained; silty to argillaceous; tendency to become more argillaceous down-section. Contains interlaminae and thin interbeds of mudstone. Mostly burrow mottled; some load deformed beds. Uppermost 7-10 cm contains vertical to subvertical burrows filled with same material as the matrix of the overlying conglomerate (possibly comparable to a firm-ground).
- 612-613.4 m Mudstone: contains thin lenses and streaks of siltstone to very fine grained sandstone and some volcanic ash (light grey colour). Organic (plant) debris is common on bedding planes.
- 613.4-614.6 m Sandstone: very fine grained; argillaceous; silty. Rich in coaly detritus and contains one 3 cm thick coal seam at 614.13 m (could be a compressed log rather than a coal seam). Mottled texture. Irregular to anastomosing laminae of clay and coaly debris. Gradational base; abrupt upper contact.
- 614.6-616.3 m Mudstone: contains some bentonitic and sandstone interbeds. Dark grey to black. Coaly debris is very common. Very silty in places. Contains at least one bentonitic shale at 615.16-615.34 m. Rapidly gradational base. Sandy beds appear to be load deformed; are very argillaceous to silty; very fine grained; no preserved internal sedimentary structures - beds appear to be thoroughly disrupted.
- 616.3-618.5 m Sandstone: very fine to fine grained; light yellowish grey; lacks internal sedimentary structures. Mottled fabric - blebs of light grey, fine grained sand within the predominantly very fine grained sandstone. Upper 15 cm is very argillaceous due to transitional nature with overlying interval. Gradational downward change into underlying unit.
- 618.5-621.25 m Sandstone: light grey; very fine to fine grained. Load deformed sandstone beds separated by thin beds of sandy mudstone to muddy sandstone. Intensity of deformation declines down-section.
- 621.25-628.3 m Sandstone: fine grained throughout most of interval except the basal 35-40 cm which contains medium to coarse grained sandstone. Mostly lacking in sedimentary structures except in basal part where crossbeds are preserved and in the uppermost part where there are very low angle, fine laminae. Throughout interval there are discontinuous, irregular laminae of carbonaceous debris, and in parts of the core these laminae seem to suggest the presence of cross-laminae. Between 621.6-625.7 m the sandstone is oil stained and has a strong petroliferous odour - this interval corresponds to the gas-bearing, porous interval seen on logs and which tested gas. Basal 35-40 cm: medium to coarse grained with abundant lenses and layers of coaly debris. Crossbedded. Gradational into overlying sandstone. Basal contact is abrupt and erosional.
- 628.3-628.94 m Interbedded sandstone-mudstone. Thin beds of very fine grained sandstone separated by silty to sandy mudstone. Minor load deformation of sandy beds. Lenticular to continuous beds of sandstone. Abrupt basal contact,
- 628.94-630.4 m Shale: fissile; dark grey to black. Highly carbonaceous.
- 630.4-631 m Interbedded/interlaminated sandstone-siltstone-mudstone: Beds up to 5 cm thick. Carbonaceous mudstone and sandstone beds. Fine subhorizontal laminae in some sandstone beds. Rapidly gradational into overlying interval. Abrupt basal change.

631-631.6 m Sandstone: yellowish grey. Possibly oil stained. Petroliferous odour. Very fine to fine grained. Mottled appearance. Argillaceous. Abrupt upper and basal contacts.

631.6-631.97 m Interbedded mudstone-sandstone-siltstone: thin, 5-8 mm beds. No visible sedimentary structures. Carbonaceous.

631.97-633 m Sandstone: medium to coarse grained with a conglomeratic interval between 632.35-632.75 m. Also contains abundant coal fragments. Pebbles: mostly rounded grey chert; up to 5 cm in diameter; subspherical to elongate shapes; poorly sorted; ranges from clast to matrix supported.

Also contains load deformed interbeds of very fine to fine grained sandstone (or are they large clasts of sandstone?). Abrupt upper contact.

Comment: The cored interval is part of an overall transgressive interval overlying a major unconformity and appears to be part of an estuarine fill. The lower beds are interpreted to be channel-fill and lagoonal and/or low-energy estuarine facies abruptly overlain by marine shale. The conglomerate between the marine shale and the more sandy facies is interpreted to be a lag deposit on a surface of transgression.

ARROWHEAD I-46

Core 1 1276-1306 ft

Recovered 19 ft. 4 wooden boxes.

Fort St. John Group (?Scatter Formation)

Thinly interbedded mudstone and very fine grained sandstone. Burrow mottled throughout. Some of the thicker sandstone beds contain fine, subhorizontal laminae. A few sand-filled vertical burrows are preserved in some of the thicker sandstone beds.

1281-1284 ft is muddier than enclosing intervals.

Comment: a low energy, marine depositional environment.

ARROWHEAD L-49

Core 1 1865-1875 ft.

Recovered 9 ft. 3 boxes.

Core 2 1875-1892 ft

Recovered 18 ft. 5 boxes.

Well preserved cores.

Fort. St. John Group (Chinkeh Formation)

Interlaminated to thinly interbedded very fine grained sandstone and mudstone in a generally coarsening-upward succession.

Thicker sandstone beds occur in the upper 4 ft of core, gradually declining in thickness down-section. In the lower 6 ft sandstone occur as laminae or 2-3 cm thick beds interbedded with mudstone. Load deformed sandstone beds are ubiquitous. Coaly lenses/layers are present in the upper 4 ft of the core. Sandstone beds lack internal stratification. There are a few circular sand-filled features that could be burrows or small sand balls.

Comment: moderate energy depositional realm. Presumed to be marine, based on regional geology. Lack of bioturbation indicates an environment with constant input of sediment and/or of sufficient high-energy to prevent establishment of an infauna.

AURORA M-47

Core 1 1605-1649 ft

Recovered 44 ft. 10 boxes. Full diameter core.

Fort St. John Group (?Scatter Formation)

1605-1640 ft: Interbedded sandstone-mudstone: thin to thick beds of very fine to fine grained sandstone separated by thin beds of sandy mudstone to muddy sandstone. Burrow mottled with some discrete burrows. Load deformed sandstone beds in mudstone units.

1640-1649 ft: Irregular interbeds of sandstone-mudstone: Thoroughly burrow mottled. Gradual downward decline in amount of sandstone. Poorly defined bedding. Beds generally <5 cm thick. Sandstone beds commonly load deformed.

Core 2 1650-1700 ft

Recovered 50 ft. 11 boxes. Full diameter core.
Fort St John Group (Scatter or Garbutt Fm).

Similar to lower part of Core 1.

Comment: the two cores are part of a marine coarsening-upward cycle.

BLUEFISH 1A A-37

Core 1 840-845 ft

Recovered 3 ft. 1 box.
Slater River Fm

Almost completely disaggregated into small, platy or irregular fragments of light grey shale.

GSC Paleontological Report 5-DJM-1988: dinoflagellates recovered from this core which have a Turonian to Santonian age range.

Core 2 1087-1100 ft

Recovered 10 ft. 2 boxes.
Slater River Fm

Completely disaggregated into small, paper-thin fragments of light grey shale.

GSC Paleontological Report 5-DJM-1988: Turonian dinoflagellates recovered from this core.

Core 3 1228-1245 ft

Recovered 13 ft. 3 boxes. Full diameter core.
Slater River Fm.

A cohesive core (unlike cores 1 and 2), although tends to split readily along horizontal parting/bedding planes. There are a few intervals of "rubbly" to "lumpy" looking, non-fissile shale that weather with white flecks on the surface (these are probably bentonitic). At least one interval where the shale is darker and may be more organic-rich than enclosing shale.

GSC Paleontological Report 5-DJM-1988: Turonian dinoflagellates recovered from this core.

BOVIE M-05

Core 1 1580-1635 ft

Recovered 34 ft. 9 boxes. Well preserved.

Core and log depths appear to be mismatched. Core depths are 5-6 ft deeper than corresponding log response. Fort St. John Group (?Chinkeh Formation).

Core depths:

1580-1596.5 ft: Sandstone: brownish light grey; fine grained. Lacks internal sedimentary structures - some scattered carbonaceous streaks/laminae. Basal contact in badly broken core.

1596.5-1597 ft: Sandstone: thin beds of fine grained sandstone separated by mm-thick, irregular and uneven laminae and thin beds of mudstone.

1597-1601.5 ft: Interbedded sandstone-mudstone: thin beds of irregularly bedded to lenticular sandstone interbedded with laminae and very thin beds of mudstone (about 60% sandstone). Load deformed sandstone beds. A few possible sand-filled burrows.

1601.5-1635 ft: Interbedded-interlaminated mudstone-sandstone: About 60-70% mudstone. Sandstone: laminae and very thin beds; load deformed beds; very fine grained. Possibility of presence of some horizontal, sand-filled burrows - but it is possible these represent small sand balls. Mudstone is highly carbonaceous.

Comments: part of a coarsening-upward succession; probably marine.

AQUITAINE BRACKETT LAKE C-21

Core 1 1090-1100 ft

Recovered 4 ft. 1 box. Full diameter core.

Basal sandstone of the Slater River Fm.

Sandstone: Weakly cemented, friable, fine grained. The top 8-10 ins (20-25 cm) consists of a white, fine grained bentonitic sandstone or tuff that rests abruptly on a fine grained, brownish grey, quartz arenite. No visible sedimentary structures in either rock type. Brownish coloration in the sandstone could be due to oil staining.

SOBC CS GREAT BEAR RIVER N-30

Core 1 2200-2252 ft

Recovered 52 ft. 12 boxes. Full diameter core. Well preserved.

Martin House Formation

2200-2204 ft: Thinly interbedded sandstone and shale. Sandstone content about 15-20%. This interval contains more numerous sand-filled burrows than any of the underlying units. Sandy beds and laminae are thoroughly contorted.

2204-2209 ft: Interbedded sandstone-shale. Sandstone content 50-60%. Sandstone beds usually >1 cm thick and are more numerous than in underlying intervals. Ripple laminae are very common in the sandstone beds.

Short vertical burrows, about 0.7 cm long, are present at about 2208.5 ft. Other parts of interval generally devoid of burrows.

At 2206.4 ft there is a 2-6 cm thick bed of fine to medium grained sandstone within the generally very fine grained succession. There are a few other scattered occurrences of medium sand, usually as distorted, enfolded lenses within the mudstone or other deformed sandstone beds.

There is an ironstone band at 2204.4 to 2204.6 ft: it is brown coloured and has abrupt contacts.

A gradational change from underlying interval. Upper contact is a rapid transition into a shalier succession.

2209-2219.5 ft: Thinly interbedded sandstone and shale. Sandstone content about 30-35%. Some zones of closely spaced sandstone beds. Shell debris noted at about 2213.7 ft.

2219.5-2224.5 ft: Shale/mudstone with scattered, highly deformed, interbeds of very fine grained sandstone. Well developed ripple laminae in some of the thicker (1-3 cm) sandstone beds. Sandstone content about 20%.

2224.5-2227 ft: Thinly interbedded sandstone-shale. Beds are a few mm to 6 cm thick. Sandstone beds are load deformed to contorted. Sandstone content about 60-70%.

Gradational lithological change at top/base. Thickest sandstone bed is in middle of interval and it is undeformed, and contains ripple laminae.

2227-2247 ft: Predominantly shale/mudstone with scattered interbeds of highly deformed, laminated, very fine grained sandstone. Approximately 20-25% sandstone. All sandstone beds are deformed - many are highly contorted. The thicker sandstone beds (2-5 cm) contain well developed laminae, some of which define current ripples. The basal 2-2.5 ft contains very little sand, usually only as single laminae. However, there is a general upward increase in sandstone content.

2247-2252 ft: Highly deformed (soft sediment deformation) thin beds (up to 5 cm thick) of laminated, very fine grained sandstone interbedded with sandy mudstone. Approximately 1:1 sandstone/shale ratio. There are a few zones with identifiable oblique to subhorizontal, sand-filled burrows, 2-4 mm in diameter.

Uppermost 1-15 cm contains shell debris (bivalve): half shells, convex-up; largest shell is 2 cm from anterior to posterior and is relatively thick-walled for its size.

Soft sediment deformation is mostly due to loading of sand beds into mud.

Abrupt upper contact.

Comment: interval 2204-2227 ft represents an overall coarsening-upward unit that is also reflected in the gamma-ray log response. The basal shale rests abruptly on an underlying sandy interval and is relatively devoid of sand. In general, sandstone content increases up-section, culminating in the sandstone-rich interval between 2204-2209 ft. However, there are a few zones below the capping sandstone where sandstone beds are concentrated, but not as prominent as the uppermost sandstone interval.

These beds are probably marine in origin (burrows and shell debris) and represent sandstone deposition during periodic, moderately high-energy events in an environment normally subject to lower energy deposition (e.g., storm events). The Martin House Formation in the Great Bear River N-30 well is muddy in comparison to some nearby wells.

HUME RIVER I-66

Cores 1 to 3 456-497.6 m

24 boxes. Well preserved.

#1 456-483 m; #2 483-486.2 m; #3 486.2-497.6 m

Martin House Formation unconformably overlying the Devonian Imperial Formation.

MARTIN HOUSE FM

456-467 m Shale: dark grey to black; predominantly fissile with scattered thin intervals of more massive appearing, silty, thoroughly bioturbated shale. Bioturbated intervals contain thin lenses and blebs of coarse silt to very fine sand. There are a few small, vertical burrows.

467-474 m Burrow mottled sandy mudstone to argillaceous sandstone. Scattered thin beds (1-20 cm thick) of very fine grained, laminated sandstone. Upward-fining trend to less sand content. Sand-filled burrows and sandy lenses in a background of silty to sandy, thoroughly bioturbated, mudstone. Burrows are predominantly subhorizontal with a few vertical burrows; the latter tend to be more common in basal part of interval.

474-475.2 m Sandstone: very fine grained; light grey. Very faintly laminated in upper 10 cm and within basal 30 cm; remainder appears massive. Upper contact is transitional, marked by a 2 cm interval of interlaminated sandstone and carbonaceous shale, abruptly overlain by burrow-mottled sandstone. Lower contact is abrupt and erosional and is immediately overlain by a 3 cm thick interval of mudstone-clast-bearing, medium grained sandstone. Clasts are up to 1.5 cm in diameter, discoid in shape. A few mm-sized mudstone granules are present about 9 cm above base.

475.2-477.32 Sandstone: burrow mottled; argillaceous; very fine grained. Contains some small vertical burrows and calcite-lined horizontal burrows, 2-4 mm in diameter. Basal 20 cm contains discrete, anastomosing, irregular laminae of carbonaceous shale enclosing large ellipsoidal lenses of sandstone. Small vertical burrows (<3 mm in diameter) present in some of the sandstone lenses.

- 477.32-477.4 Conglomerate: mostly white or grey chert pebbles up to 2 cm in long diameter, with some sandstone and mudstone pebbles. Clast supported in a matrix of medium to coarse sand. Elongate clasts tend to be inclined. Fining-upward trend in clast size. Erosional base, abrupt top.
- 477.4-485 m Sandstone: light grey.
 477.4-480: Fine to medium grained, quartz arenite. Good porosity. A few scattered clay seams.
 480-485: Predominantly medium to coarse grained with lenses and layers of very coarse sand and granules. Grain size variations suggests presence of low-angle crossbeds. In the basal 2 cm there are irregular laminae, seams, and stylolite-like features of carbonaceous shale/coaly material. Basal contact is abrupt and erosional.
- 485-485.6 Mudstone: silty and carbonaceous, with mm-thick lenses of coal. Silt/very fine sand in irregular layers, lenses and laminae. General fining-upward trend. Top of interval consists of 5 cm of highly carbonaceous mudstone interlayered with mm-thick coal seams.
- 485.6-486.45 m Very finely inter laminated siltstone, very fine grained sandstone, and mudstone. Undulatory to crinkly laminae disrupted by short, vertical, root casts. Fining-upward trend. Upper contact is transitional; lower contact abrupt.
- 486.45-486.55 m Shale: dark grey to brownish black; carbonaceous; mm-thick coal seams (especially common near base)
- 486.55-487.4 m Sandstone: fine to medium grained, highly carbonaceous. Irregular laminae and seams of clay and coaly material. Mottled fabric (possibly due to development of intense root penetration). Transitional upper contact; disrupted lower contact.
- 487.4-495 m Very finely inter laminated siltstone, very fine grained sandstone, and mudstone. Between 491.5-492 m some of the sandstone beds contain current-ripple laminae. Basal 5 cm consists of conglomerate: clasts of chert, shale, and sandstone in a coarsely crystalline calcite cement and a remnant matrix of coarse sand. Clasts are poorly sorted and up to 5 cm in diameter. Erosional base. Between 2 and 30 cm above base there some scattered pebbles in thin beds of medium to coarse grained sandstone. Coal and carbonaceous material is less common in lower 2-3 m.

-----UNCONFORMITY-----

IMPERIAL FM

495-497 m Shale: medium grey; very fissile; some mm-thick silt laminae

Comment:

456-477.4 m Marine, fine grained clastics. Flooding surface at about 467 m.

----- Transgressive surface----

477.4-485 m Channel sandstone. No diagnostic features to indicate if marine or nonmarine.

----- Erosional surface -----

485-495 m Nonmarine floodplain or lagoonal beds. However, no marine indicators, therefore more likely to be floodplain.

----- Unconformity -----

495-497 m Marine shale of Imperial Fm

HUME RIVER N-10

Core 1 308-335 m

Recovered 22.35 m. 20 boxes. Well preserved.

Martin House Formation unconformably overlying the Devonian Imperial Formation.

Core depths are about 1 m deeper than the log depths. Depths used are core depths.

MARTIN HOUSE FM

308-308.45 m Sandstone: medium grey; very fine to coarse grained. Crudely defined, irregular laminae and very thin beds of fine, medium and coarse sand. Dispersed organic debris is common. Carbonaceous and argillaceous. Gradational lower contact.

308.45-309.1 m Sandstone: light grey to white; medium to coarse grained. Abundant irregular, undulose to anastomosing laminae and very thin beds of coaly shale and argillaceous coal. Spacing of coaly laminae is irregular, from <1 cm up to 5 cm. No internal sedimentary structures in sandstone beds. Basal contact appears to be abrupt.

309.1-310.7 m Sandstone: Similar to unit between 308-308.45 m. Coaly debris/seams more common in lower 50 cm. Abrupt basal contact.

310.7-312.4 m Coal: black; brittle. Some clay laminae. Basal 14 cm contains large sand balls (disrupted fabric). Rapidly transitional basal contact.

312.4-312.6 m Highly carbonaceous shale to argillaceous coal: Faintly and crudely laminated. Rapidly transitional basal and upper contacts.

312.6-314.7 m Sandstone: medium grey; very fine to fine grained; argillaceous. Abundant organic detritus. Massive to crudely bedded. Bedding more apparent in lower part of interval. Gradational into underlying beds.

314.7-317 m Sandstone: interbedded medium and coarse grained sandstone with thin seams and laminae of coal and coaly shale throughout interval. Bedding is crudely defined and irregular with some indications of minor soft sediment deformation. Scattered throughout, but especially common in the basal 1 m, are clasts of shale, coal, sandstone, and chert. Clasts are up to 6 cm in diameter, but most are <1 cm, and are subrounded to rounded. Abrupt, erosional basal contact.

-----UNCONFORMITY-----

IMPERIAL FM

317-335 m Shale: medium grey, fissile; laminae of silt and very fine sand.

Comment: The cored part of the Martin House Fm is a nonmarine succession. Log response in N-10 is almost identical to that in the nearby Hume River I-20 well. Although there are differences between the N-10 and I-66 wells the overall vertical succession is comparable.

Interval 310.7-317 is an overall fining-upward succession capped by a coal.

ISLAND RIVER #1 G-50

Core 1 1993-2013 ft

4 boxes.

Fort St. John Group

Shale: grey; fissile. Core is totally broken up into small platy fragments due to fissility of shale.

IMPERIAL LOON CREEK #1 A-52

Core 1 386-391 ft

Recovered 7 ft. 2 boxes. Full diameter core.

Martin House Formation

Very thin to thick beds of very fine to fine grained sandstone interbedded with silty shale.

Sandstone beds: 0.5 cm, up to possibly 60 cm thick (uppermost sandstone bed is the thickest in the core). Top of core marked by a maroon coloured, 6 cm thick, iron-stained zone. The uppermost 3 cm of this zone is ironstone, the lower 3 cm is iron-stained sandstone. All other sandstone units have a greenish grey colour - probably due to presence of glauconite or clay minerals. Beds have abrupt bases and abrupt or rapidly transitional tops. Most sandstone beds are finely cross laminated (very low-angle cross laminae) and some beds contain thin (few centimetres thick) burrowed layers. Carbonaceous debris is common on bedding planes.

Shale: generally in beds <1 cm thick. Sand laminae and sand-filled burrows are very common. A few shale beds have a maroon colour but most are medium grey.

Core 2 481-491 ft

Recovered 6 ft. 2 boxes. Full diameter core.

Martin House Formation

Similar to core 1 but the beds are thinner and there are more 0.5-1 cm thick interbeds of sandy shale, especially in the top 2 ft of core. Beds tend to become thicker down-section and sandstone is more prevalent.

Sandstones are finely laminated with a few burrowed zones.

There is a 3-4 cm thick sideritized sandstone about mid-way through cored interval and a 0.4 cm thick sideritized sandstone in the top few inches of the core.

Core 3 515-533 ft

Recovered 14 ft. 3 boxes. Full diameter core.

Martin House Formation

Similar to cores 1 and 2. In general, bed thickness and frequency of shale interbeds increases down-section. Finely laminated, very fine grained sandstone with a few burrowed (horizontal) horizons.

Comment: strata in cores 1-3 appear to be marine in origin, a mix of low and medium/high energy deposits. The deposits are probably inner shelf sediments, with the sandstone beds deposited during storms.

BP ET AL LOSH LAKE G-22

Core 1 1193-1231 ft

Recovered 29 ft (basal 9 ft lost). 6 boxes. Well preserved core.

Martin House Formation

1193-1198 ft Sandstone: light grey; very fine to fine grained. Thin, dispersed clay flasers. Mostly massive to mottled in appearance. At least one horizon with discrete horizontal burrows.

1198-1202 ft Thinly interbedded sandstone-shale: Gradual upward increase in sandstone content and bed thickness. Thicker sandstone beds are thoroughly bioturbated and some beds have soft sediment deformation structures. In the basal 2 ft the sandstone beds tend to be <0.5 cm thick and commonly occur as lenses within shale.

1202-1206 ft Sandstone: Abrupt upper contact marked by a layer of sandy to pebbly mudstone resting abruptly on a bioturbated, light grey, sandstone. The sandstone contains abundant wisps and very thin flasers of clay. Occurrence of clay laminae increases downward and contact into underlying interval is gradational.

1206-1213 ft Burrow mottled mudstone and sandstone: Generally a complete mixing of the clay and sand. A few discrete, thin (1-2 cm) sandstone beds. In the basal 2 ft there are scattered occurrences of coarse sand and very small pebbles within the very argillaceous sandstone/sandy mudstone. The greatest concentration of these coarser grains is in the lowest 2-3 ins. Base of interval is an abrupt contact.

1213-1222 ft Sandstone: medium to coarse grained with pebbly and granule-rich zones. Light grey to brownish grey. Some crude bedding defined by grain size variations. However, mostly massive in appearance. Pebbles mostly white and grey chert.

1222-1231 ft Lost core.

Comment: Character of the facies indicates a marine origin (bioturbation) in an environment that varied between moderately high- and high-energy to low-energy. At least two small-scale coarsening-upward cycles, 1193-1202 ft and 1202-1213 ft, are present.

NORTH CIRCLE RIVER #1 A-37

Cores 1-10 117-183 ft

2.5 inch diameter core. Full diameter core in wooden boxes. Poorly preserved.

Martin House Formation

117-152 ft Sandstone: fine to medium grained. Difficult to see internal structures, although there are a few bioturbated intervals - these tend to be argillaceous. At 129/130 ft there is a thin (2" thick) pebble zone. Tends to become less argillaceous and non-bioturbated below 132 ft. Ubiquitous dirty brown colour probably due to oil staining.

152-183 ft Shale: medium to dark grey, fissile. There is a lot of drilling mud caked on to the rim of the core.

Comment: the few bioturbated horizons suggest that the cored interval is marine in origin.

OLD FORT POINT E-30

Core 1 835-848 ft.

Recovered 7 ft. 2 boxes. Well preserved.

Basal sandstone of the Slater River Fm.

a) Top 2.5 ft consists of fine to medium grained sandstone with a few thin interbeds that contain clay laminae (0.4 to 6 cm thick intervals). Sandstones are light grey and without visible sedimentary structures.

b) Uppermost sandstone rests abruptly on 1.5 ft of granulestone. Abrupt, erosional base to granulestone unit. Crudely defined horizontal bedding - seen where sandy layers are present. Well rounded, moderately sorted granules.

c) Basal 3 ft consists of light grey, fine grained sandstone. Faint cross laminae. Sand grains are mostly quartz with some white and dark grey chert. Some scattered medium grains of black and white chert.

RAVEN F-73

Core 1 1733-183 ft

Recovered 50 ft. 11 wooden boxes. Full diameter core.

Fort St John Group (?Scatter Fm)

1733-1748 ft Sandstone: very fine grained; very finely laminated (very low- angle cross laminae). 10-28 ins thick beds of sandstone separated by thin to thick units of mudstone that contain thin beds of burrowed, ripple laminated sandstone. Contacts between mudstone-sandstone beds generally abrupt. Laminae in sandstone beds are rich in clay and/or organic detritus. Some sandstone beds lack laminae. Some sand-filled burrows in mudstone beds.

1748-1783 ft Mudstone-sandstone: predominantly mudstone with lenses, blebs and very thin beds of very fine grained, commonly ripple laminated sandstone. Extensively burrow to burrow mottled. General downward decrease in sandstone content and decline in preservation of laminae in sandstone beds. There are some intervals of predominantly bioturbated muddy sandstone. A few vertical burrows are preserved.

Comment: part of a marine coarsening-upward succession from thoroughly bioturbated mudstone into bioturbated sandy mudstone, grading into bioturbated muddy sandstone and capped by interbedded cross laminated sandstone and mudstone.

IMPERIAL REDSTONE #1 J-42

Core 1 1657-1676 ft

Recovered 17 ft. 4 boxes. Full diameter core.

Slater River Fm.

Appears to consist of predominantly silty-sandy, medium grey mudstone/shale interlaminated with siltstone to very fine grained sandstone (difficult to see details on the outer surface of core). Sand/silt laminae or lenses are mm-thick and are abundant. Some scattered short, vertical burrows. Carbonaceous debris on bedding planes.

ROND LAKE #2 F-56

Core 1 73-83 ft

1 wooden box. 1.75 inch diameter core. Very poorly preserved.

Martin House Formation

Sandstone: occupies the top 1-1.5 ft of core. Mostly fine grained; contains abundant organic detritus. Oil stained. Sedimentary structures not readily visible.

Mudstone: occupies bulk of cored interval. Light, yellowish grey colour; silty to sandy and contains abundant carbonized woody detritus. In the sandy zones there is some oil staining.

ROND LAKE #5 B-57

Cores 1-4 120-125, 132-137, 141-156 ft

Very poorly preserved 1.75 inch diameter core. Probably <10% of core is preserved in fragments.

Martin House Formation

Light, yellowish grey mudstone-shale.

Comment: data from cores is insufficient to determine categorically the depositional environment. Rond Lake locality sits between the outcrops of the non-marine Langton Bay Formation along Horton River and the marine Martin House Fm under Peel Plateau. The abundance of wood detritus in F-56 could indicate proximity to the non-marine realm, but not necessarily deposited in a non-marine environment.

SAINVILLE RIVER D-08

Core 1 1835-1893 ft (possible log depth equivalent = 1831.75-1989.25 ft)

Recovered 58 ft. 13 boxes.

Well preserved core.

Martin House Formation (possibly resting on Imperial Fm: operator chose the equivalent of core depth 1885.25 ft - log depth 1882 ft - as the contact between Cretaceous and Devonian beds. This depth corresponds to a significant change in the character of the shale within the cored interval. Samples were collected for paleontological examination).

Core and log depths do not correspond: a prominent lithology change at core depth 1885.25 ft corresponds to a log character change at 1882 ft. All depths in the following description are core depths.

1835-1836.5 ft Bioturbated very fine grained sandstone: very argillaceous. Mostly burrow mottled with a few sand-filled vertical burrows preserved. Abrupt basal contact marked by a mm-thick layer of clay. Some preserved zones of non-mottled, but burrowed sandstone.

1836.5-1837.1 ft Conglomerate: matrix to clast supported. Rounded clasts of sandstone, chert, and shale in a very fine to coarse sand matrix. Many clasts are elongate and some are imbricated - there are no other visible sedimentary structures. Basal contact assumed to be abrupt (core apparently has split along contact).

1837.1-1852.1 ft Sandstone to sandy mudstone: Burrow mottled/thoroughly bioturbated, argillaceous, very fine grained sandstone to very sandy mudstone. General tendency to be sandier in upper 4-5 ft. A few discrete, very thin, remnant sandstone beds preserved between 1850-1851 ft. Burrows appear to be mostly subhorizontal to horizontal (where identifiable) with a few very long vertical burrows preserved in the top 1 ft.

1852.1-1854 ft Shale: Very fissile - due to presence of non-burrowed beds and very thin (mm-thick) laminae of coarse silt/very fine sand (this interval probably corresponds to a zone of high gamma-ray and low density readings on logs).

1854-1855.25 ft Mudstone: Burrow mottled/thoroughly bioturbated, very sandy to silty. Less fissile than overlying and underlying intervals.

1855.25-1865 ft Shale: Very fissile and finely laminated shale interspersed with less fissile laminated shale. Most fissile interval is between 1855.25-1861 ft. Laminae of silt to very fine sand. A few burrowed horizons are present, but are not very common.

1865-1878 ft Mudstone: Burrow mottled/thoroughly bioturbated sandy mudstone. There are several zones where discrete, very thin (mm) beds of burrowed sandstone are preserved. Mostly subhorizontal to horizontal burrows with a few vertical burrows present between 1870-1870.5 ft.

1878-1880 ft Sandstone: Thoroughly bioturbated, very fine grained. Light grey colour. No preserved primary structures. Argillaceous. Mostly subhorizontal to horizontal burrows. Basal contact is abrupt and loaded into mudstone.

1880-1881.9 ft Mudstone: Burrow mottled sandy mudstone with some preserved laminae and very thin beds of very fine sand-coarse silt. Some vertical burrows in top 0.5 ft. Gradationally overlies sandstone.

1881.9-1884 ft. Sandstone: very fine to fine grained. Burrow mottled/thoroughly bioturbated. Argillaceous in top 4-6". Some large granules to very small pebbles present at 1883.8 ft. Wisps and discontinuous, irregular clay laminae are present throughout. Abrupt basal contact.

1884-1885.25 ft Sandstone: About 10" of fine to medium grained sandstone grading upwards into 4-5" of conglomerate. Abrupt base and top. Sandstone is tightly cemented by silica and contains no visible sedimentary structures. Conglomerate is matrix supported and contains rounded, subspherical to elongated clasts of sandstone and chert. Elongated clasts tend to align parallel to bedding, with a few inclined clasts. Clasts range in size from large granules to small pebbles (2 cm).

1885.25-1893 ft Shale: Dark grey, finely laminated, non-bioturbated, fissile shale (contrasts sharply with shale/mudstone in overlying beds). Uppermost 4" is rust-coloured and appears to be due to presence of siderite. Scattered, very thin (<1 mm) laminae of silt/very fine sand.

Comment: the ubiquitous bioturbation in the 1835-1885.25 ft interval indicates a generally low-energy, marine depositional environment, which is consistent with the regional setting.

ST CHARLES CREEK H-61

Core 1 1373-1430 ft

Recovered 57 ft. 12 boxes. Full diameter core.

Arctic Red Formation

Shale: dark grey to black. At 1379-1380 ft there is a zone of light grey carbonate replacing the shale. The replaced area consists of massive carbonate interspersed with areas of anastomosing calcite and shale.

Core 2 1430-1442 ft

Recovered 12 ft. 3 boxes. Full diameter core.

Arctic Red Formation

Shale: similar to core 1. Between 1437.5 and 1440 ft the shale has a brown tint (perhaps more organic rich?).

GSC Paleontological Report 3-DHM-1994: Early Albian foraminifers were recovered from these cores. The lower core supposedly should intersect the Arctic Red-Martin House contact (based on log character change at the presumed contact). However, other than a colour change, there is no noticeable lithological change at the supposed contact in the cored interval. Either the sonic log response is reacting to some other factor or the contact should be lower, perhaps at 1445 ft.

BP ET AL WHITE M-04

Core 1 1445-1500 ft

Recovered 55 ft. 13 boxes. Well preserved.

Martin House Formation unconformably overlying the Devonian Arnica Formation.

Arnica Fm 1500-1469 ft

Light grey, totally brecciated, very finely crystalline dolostone.

Martin House Formation 1469-1445 ft

Martin House-Arnica contact is abrupt and erosional. Overlain by about 1 cm of pebbly, medium grained sandstone (small pebbles of white and light grey chert). In turn overlain by 4-5 cm of medium grained sandstone, which is followed by a 4-5 cm thick layer of pebbly sandstone. Above the latter pebbly beds the succession consists of alternating beds and layers of medium and coarse grained sandstone. Much of the sandstone is cross bedded (character of crossbeds suggests planar cross bedding) with some intervals that have no visible sedimentary structures. There are multiple crossbed sets. Some carbonaceous laminae.

Good porosity.

Comment: the Martin House Formation was deposited by fairly high energy, unidirectional currents.

ARCO WEST WHITEFISH H-34

Core 1 2278-2312 ft

Recovered 25 ft.(uncertain which part of core is missing). 7 boxes.

Martin House Formation

Form top to bottom the core consists of:

- a) Top 7-8 ft. Lenses of burrowed to thoroughly bioturbated siltstone to very fine grained sandstone within burrow mottled mudstone. Sandstone lenses and burrow-fills comprise about 30-40% of lithology. Gradual downward decline in sandstone content.
- b) 8-9 ft of dark grey to black shale/mudstone with scattered lenses and laminae of silt.
- c) 7-8 ft of strata similar to unit a. Grades down into shalier strata with fewer lenses of sandstone. Slight brownish tinge in lower 2 ft - could be due to oil staining.

Comment: Two rather crude coarsening upward intervals. Extensive bioturbation indicates a marine origin.

Core 2 2471-2531 ft

Recovered 60 ft. 16 boxes.

Martin House Formation resting unconformably on carbonates of the Devonian Landry Formation.

Description is from the Landry up into the Albian.

LANDRY FM

Light grey, finely laminated, fractured limestone.

MARTIN HOUSE FM

Rests abruptly on limestone at 2498 ft. Basal 1 ft consists of black shale with laminae and thin beds (mm-thick) of sandstone. Abruptly overlain by sandstone.

Overlying sandstone is medium grained, light grey with mud clasts in basal few centimetres.

Units above the basal sandstone consist of a series of fining-upward depositional units of variable thickness - consisting of a lower sandstone interval overlain by a thin interval of interbedded and interlaminated shale and sandstone. The lowermost depositional unit is the thickest - about 5.5 ft; the others are 1-2 ft thick. Sandstone is the dominant lithology in each unit. Many of the units contain thin mud clasts in the basal few inches of the sandstones. Sandstone intervals may contain no visible sedimentary structures, some low-angle cross laminae (as in the lower 2 units), or ripple drift laminae (as seen in the upper units). The mudstone intervals generally are laminated and many contain soft sediment deformation structures. Most of the sandstones above the basal bed are very fine to fine grained.

Contacts between units are rarely preserved but the abruptness of lithology changes would indicate abrupt contacts.

Comment: the depositional units were deposited in waning-flow conditions, possibly by storms or tidal currents.

SINCLAIR WHITEFISH RIVER K-76

Core 1 2549-2565 ft

Recovered 11.5 ft. 2 boxes. Full diameter core.

Martin House Formation

Top 1.25 ft: sandstone - fine grained quartz arenite; no visible sedimentary structures. Abrupt lithological change to underlying shale suggests abrupt contact (not preserved) - log character also suggestive of abrupt contact.

Next 4 ft: shale - medium grey, blocky to fissile. Fissility due to presence of closely spaced silt/sand laminae.

Bottom 6.25 ft: carbonaceous shale/very argillaceous coal. Black, shiny; irregular parting. Variable coal content throughout interval.

Log character and the lithological succession indicates that the top sandstone in the core is the basal part of a thick sandstone interval resting abruptly on shale. The shale-coal interval is the uppermost part of a fining-upward unit, beginning with a sandstone grading up into coal and then shale. The latter is typical of a channel-fill, in this case it could be either non-marine or marginal marine (i.e., lagoonal).

REFERENCES

Yorath, C.J. and Cook, D.G.

1981: Cretaceous and Tertiary stratigraphy and paleogeography, Northern Interior Plains, District of Mackenzie. Geological Survey of Canada, Memoir 398, 76p.

Williams, G.K.

1988: Tectonic evolution of the Fort Norman area, Mackenzie Corridor, N.W.T. Geological Survey of Canada, Open File 2045.

