

WELL HISTORY REPORT

SINCLAIR WOLVERINE CREEK D-61

Lat 65° 10' 14" North
Long 124° 12' 52" West

NORTHWEST TERRITORIES

CANADA

WELLSITE GEOLOGIST:

R. J. Kirkpatrick

REPORT SUBMITTED BY:

S. Paskevich
S. Paskevich

March 3 1969
Date

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SECTION ONE

WELL DATA SUMMARY

- a) WELL NAME: Sinclair Wolverine Creek D-61
- b) PERMITTEE: Sinclair Canada Oil Company
- c) OPERATOR: Sinclair Canada Oil Company
- d) LOCATION: D-61 Grid 65°20' N, 124° W
Latitude: 65°10'14" N
Longitude: 124°12'52" W
Universal Well Location Reference: Lat. 65.17056°N
Long. 124.21444°W
Unique Well Identifier - 300D616520124000
- e) CO-ORDINATES: Not applicable
- f) PERMIT NUMBER: 5003
- g) DRILLING CONTRACTOR: Nabors Drilling Ltd. Rig #8, Rotary
- h) DRILLING AUTHORITY: #329 Issued November 1, 1968
- i) WELL CLASSIFICATION: Wildcat
- j) ELEVATIONS: Ground - 1000' Used as depth datum
K.B. - 1017'
- k) SPUD DATE: December 1, 1968
- l) COMPLETED DRILLING: January 12, 1969, 4:15 P.M.
- m) TOTAL DEPTH: 6338'
- n) WELL STATUS: Dry and abandoned

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SECTION ONE

WELL DATA SUMMARY CONT'D

- o) DATE RIG RELEASE: January 20, 1969

- p) HOLE SIZES: 12-1/4" to 1039'
 8-3/4" to 6338

- q) CASING: 16" Sch. 80 42.05 $\frac{1}{2}$ " Ran 50', set at 34 w/65 + 10 Fondue
 9-5/8" J55 36 $\frac{1}{2}$ " Ran 1055.29 set at 1039 w/500 Fondue

SECTION
TWO

SINCLAIR WOLVERINE CREEK D-61

SECTION TWO

GEOLOGICAL SUMMARY

a) FORMATION TOPS:

	<u>Sample</u>	<u>E-Log</u>
Spud in ? Lower Cretaceous		
Bear Rock (Sil/Dev.)	2830	2828
Franklin Mtn. (Ord.)	4670	4720
Ordovician Clastics	5650	5637
Cambrian or Precambrian	5780	5778
Total Depth: 6338'		

b) CORED INTERVALS:

Core #1 (6199-6210)	Recovered 10.7 feet Cambrian or Precambrian
Core #2 (6230-6257)	Recovered 26 feet Cambrian or Precambrian
Core #3 (6257-6261.3)	Recovered 2 feet Cambrian or Precambrian

c) CORE DESCRIPTIONS:

Core #1 (6199-6210)

Siltstone, grey to grey-green, very thin to fairly massive beds, hard, with minor interbedded grey-green silty shale. Thin fracture zones filled with white dolomite. Dips vary from 40° near top (cross bedding?) to 8-10° near bottom. Some sediment slumping observed, producing an intraformational breccia.

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SECTION TWO CONT'D

GEOLOGICAL SUMMARY

Drilling rate Depth	Time	Jan. 8 1969 Min. per foot
6199	11:12	
6200	11:29	17
6201	11:49	20
6202	12:00	11
6203	12:11	11
6204	12:25	14
6205	12:42	17
6206	1:05	22
6207	1:27	22
6208	1:55	28
6209	2:38	43
6210	3:19	41

Core Jammed

Core #2 (6230-6257)

Grey-green siltstone with minor interbedded grey-green shale as in Core #1. The following bedding plane dips were measured.

6230 - 18°
 6232 - 21°
 6240 - 18°
 6244 - 15° to 18°
 6251.5 - 15° to 18°
 6254 - 28°

Some contorted beds show evidence of slumping.

Drilling Rate Depth	Time	Jan. 9 1969 Min. per foot
6230	10:41	
6231	11:17	36
6232	11:43	26
6233	12:10	28
6234	12:43	33
6235	1:20	37
6236	1:48	28
6237	2:20	32
6238	2:50	30

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SECTION TWO CONT'D

GEOLOGICAL SUMMARY

Drilling Rate Depth	Time	Jan. 9 1969 Min. per foot
6239	3:22	32
6240	3:54	32
6241	4:34	40
6242	5:10	36
6243	5:52	42
6244	6:40	48
6245	7:15	35
6246	7:55	40
6247	8:38	43
6248	9:20	42
6249	10:18	58
6250	10:44	26
6251	11:15	31
6252	11:50	35
6253	12:22	32
6254	12:53	31
6255	1:18	21
6256	1:47	29
6257	2:49	62

Core #3 (6257-6261.3)

Grey-green siltstone, hard, with interbedded minor silty shale as before. Upper part shows good bedding planes - dip 28°. Beds fractured, infilled with white dolomite.

Drilling Rate Jan 10 1969

No record kept of coring rate per foot.
Total time to cut this core: 2½ hours.

CORE #1

BORG-WARNER (CANADA) LIMITED

Engineer M. R. RAYLOR Date JUL 8, 1969
Drill Pipe 3 1/2 IF Collars OD 6 1/4 + 7 ID 2 7/8
Mud Weight 12.8 Viscosity 50 W.L. 21.4
Hole Size 8 3/4 CSG. _____
Other Tools _____ ID _____

[illegible]

BJ SERVICE DIVISION
BORG-WARNER (CANADA) LIMITED

Engineer M. S. R. J. J. J. Date Jan. 9, 1969
Drill Pipe 3 1/2 TF Collars OD 6 1/4" + 7" ID 2 7/8
Mud Weight 96 Viscosity 50 W.L. 18
Hole Size 2 3/4 CSG.
Other Tools _____ ID _____

[illegible]

SINCLAIR WOLVERINE CREEK D-61

a)

SAMPLE DESCRIPTION

0 - 10	Glacial Drift
10 - 30	Siltstone, dark grey.
30 - 100	No samples (i.e. no returns)
100 - 140	Sandstone, light grey, very fine grained, some siltstone, light to dark brown and dark grey, hard.
140 - 390	Siltstone, dark grey to black, some sandstone as above.
390 - 500	Siltstone, light brown, scattered sandstone, light grey, trace dark grey shale at 470', increasing to 30% at 490'.
500 - 620	Sandstone, light grey, fine to very fine grained, some dark brown hard siltstone at 520 - 560'; trace cryptocrystalline limestone, with scattered quartz grains at 620'.
620 - 740	Shale, dark grey. Scattered chips of limestone and siltstone at 650' and 670', some medium grey siltstone at 710'.
740 - 940	Shale, medium to dark grey, silty; some medium grey siltstone at 880'.
940 - 980	Siltstone, medium grey to slightly brown, some soft, some light grey, very fine grained sandstone at 980'.
980 - 1100	Sandstone, light to medium grey, grading to medium grey siltstone. Trace dark grey shale at 1100'.
1100 - 1130	Shale, dark grey, silty; some dark to medium grey siltstone, trace light grey, very fine grained sandstone at 1120'. Some tan to light brown and grey, cryptocrystalline to granular limestone at 1130'.

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SAMPLE DESCRIPTION CONT'D

- 1130 - 1170 Sandstone, light to medium grey, dirty, fine to very fine grained, with trace of medium grey siltstone. Scattered chips of limestone, tan to light brown, cryptocrystalline, and medium grey shale. Limestone 10% at 1170', trace pyrite.
- 1170 - 1180 Sandstone, 40%, light to medium grey, very fine to fine grained, dirty in part, interbedded with 50% medium to dark grey siltstone and 10% dark grey shale.
- 1180 - 1200 Siltstone, 60%, medium to dark grey, with 20% sandstone, light grey, very fine grained, and 20% dark grey shale.
- 1200 - 1240 Siltstone, 80%, medium brown, fairly soft, with 10% dark grey slightly silty shale and 10% light grey, very fine grained sandstone.
- 1240 - 1260 Sandstone, 90%, light grey, very fine grained, slightly glauconitic, with 10% medium brown siltstone and dark grey shale.
- 1260 - 1300 Siltstone, 70%, medium grey, with 20% light grey, very fine grained sandstone, and 10% dark brown, slightly glauconitic siltstone. 30% sandstone at 1280'.
- 1300 - 1340 Sandstone, 80%, light to medium grey, very fine grained, glauconitic, with 20% medium grey siltstone. At 1330' sandstone 70%, siltstone 30%. At 1340' sandstone 60%, siltstone 40%.
- 1340 - 1350 Siltstone, 60%, medium grey, glauconitic, interbedded with 40% medium grey, very fine grained sandstone, glauconitic.
- 1350 - 1420 Siltstone, 70%, medium to dark grey, glauconitic. Sandstone 30%, medium grey. Trace brown siltstone at 1410 and 1420.

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SAMPLE DESCRIPTION CONT'D

1420 - 1440	Siltstone, 95%, medium to dark grey, glauconitic, Sandstone, 5%, medium grey, very fine grained.
1440 - 1460	Shale, 80%, medium to dark grey, silty. Siltstone, 20%, medium to dark grey, glauconitic.
1460 - 1560	Shale, 95%, dark grey, clean, trace glauconite. Trace black shale at 1480'. Scattered chips of white, very fine grained, calcareous sandstone at 1510, 1520 and 1530-1550.
1560 - 1630	Shale, 90%, dark grey, slightly silty in parts, trace medium to dark grey siltstone at 1570, 20% at 1580', 30% at 1610' and 1620'.
1630 - 1710	Siltstone, 70%, dark grey. Sandstone 20%, light grey, very fine grained. Shale 10%, dark grey. At 1660' sandstone 30%, at 1680 sandstone 40%.
1710 - 1740	Siltstone, 70% medium to dark grey. Sandstone, 30%, medium grey, very fine grained, calcareous. At 1740 10% shale, medium grey.
1740 - 1760	Shale, 70% dark grey. Siltstone, 30%, dark grey.
1760 - 1850	Shale, 90%, dark grey, Siltstone, 10%, dark grey.
1850 - 2120	Shale, 95%, dark grey, silty in part. Siltstone, 5%, dark brown, hard. Trace dark brown, cryptocrystalline, hard limestone at 2030'.
2120 - 2280	Shale, medium to dark grey; trace dark brown, hard siltstone at 2150 and rare chip dark brown, hard, cryptocrystalline limestone at 2150-60. Scattered trace light - medium grey, very fine grained sandstone at 2250, 2260, and 2270.
2280 - 2390	Shale, medium to dark grey, slightly silty, with a trace of dark brown, hard, dolomitic siltstone grading to silty dolomite.
2390 - 2470	Siltstone, 80%, medium grey to brown. Shale, 20%, medium grey to brown. At 2430', shale 30%.

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SAMPLE DESCRIPTION CONT'D

2470 - 2480	Sandstone, 60%, medium grey, very fine grained, dirty, glauconitic. Siltstone, 30%, medium grey. Shale, 10%, medium grey.
2480 - 2490	Siltstone, 50%, medium to dark grey. Shale, 30%, dark grey to grey black. Sandstone, 20%, medium grey, very fine grained, dirty.
2490 - 2500	Sandstone, 50%, light to medium grey, very fine to fine grained, calcareous. Siltstone, 30%, dark grey. Shale, 20%, dark grey to grey black.
2500 - 2510	Sandstone, 75%, light grey, very fine to fine grained, salt and pepper in part, some light brown, calcareous. Siltstone, 5%, dark grey. Shale, 20%, dark grey to grey black.
2510 - 2530	Shale, 60%, dark grey, silty in part. Sandstone, 30%, light to medium grey, very fine grained, dirty. Siltstone, 10%, dark grey.
2530 - 2550	Shale, 80%, dark grey, slightly silty. Sandstone, 10%, medium grey, very fine grained. Siltstone, 10%, dark grey.
2550 - 2570	Sandstone, 60%, medium grey, very fine grained. Shale, 30%, dark grey. Siltstone, 10%, dark grey. At 2570', 10% sandstone, 30% shale.
2570 - 2590	Siltstone, 20%, light to medium grey, very fine grained. Shale, 20%, dark grey.
2590 - 2600	Siltstone, 60%, medium to dark grey. Sandstone, 30%, light-medium grey, very fine grained. Shale, 10%, dark grey.
2600 - 2630	Shale, 60%, dark grey. Sandstone, 30%, light to medium grey, very fine grained. Siltstone, 10%, grey. At 2620', sandstone 40%.
2630 - 2670	Shale, 90%, dark grey. Sandstone, 10%, light grey, very fine grained. Trace pyrite at 2670'.
2670 - 2680	Shale, 70%, dark grey, trace medium grey. Siltstone, 25%, burnt brown. Sandstone, 5%, medium grey, very fine grained.

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SAMPLE DESCRIPTION CONT'D

2680 - 2720	Shale, 90%, dark grey. Siltstone, 10%, dark grey. Trace light grey, fine grained sandstone at 2690' and 2720'.
2720 - 2730	Shale, 95%, dark grey to grey black. Siltstone, 5%, dark grey.
2730 - 2740	Sandstone, 30%, off white to tan, fine to medium grained, clear, sub-angular to sub-rounded quartz grains. Shale, 70% dark grey.
2740 - 2750	Sandstone, 40%, off white, fine to medium grained, trace coarse grained, clear quartz grains. Shale, 60%, dark grey.
2750 - 2800	Sandstone, 30-80%, light tan, fine to medium grained, trace coarse grained, grains sub-angular, not calcareous, some intergranular porosity. Shale, 10-20%, dark grey, amount decreasing with depth.
2800 - 2830	Sandstone, 100%, light tan, fine to coarse grained, poorly cemented, sub-angular, clear quartz grains, with intergranular porosity.
<u>Top Bear Rock Fm (Sil-Dev.) 2830'</u>	
2830 - 2850	Dolomite, light grey to tan, cryptocrystalline, with trace of pin point porosity, with trace sandstone as above.
2850 - 2870	Dolomite, tan to light brown, microcrystalline, slightly argillaceous, with poor pin point and micro-vugular porosity at 2870'.
2870 - 2880	Shale -trip, scattered chips sandstone and dolomite.
2880 - 2900	Dolomite, grey brown to medium brown, microcrystalline, slightly argillaceous, trace anhydritic dolomite at 2890-2900'. Anhydrite, up to 10%, white to tan, cryptocrystalline to sugary.
2900 - 2910	Anhydrite, 70%, white, sugary, to microcrystalline, some chalky and tan, cryptocrystalline. Shale, 25%, grey. Dolomite, 5%, grey to brown.

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SAMPLE DESCRIPTION CONT'D

- 2910 - 2920 Anhydrite, 80%, tan, cryptocrystalline, some off white to tan, sugary to microcrystalline. Shale, 20%, grey.
- 2920 - 3040 Anhydrite, 90%, tan to light brown, cryptocrystalline, nearly opaque in part. Shale, 10%, grey. Trace brown, anhydritic, cryptocrystalline dolomite, up to 30% at 3040'.
- 3040 - 3060 Dolomite, 40%, light to medium brown, cryptocrystalline, slightly anhydritic. Anhydrite 40%, tan to light brown, trace white, sugary. Shale, 20%, cavings, grey.
- 3060 - 3090 Anhydrite, 80%, medium brown, cryptocrystalline, trace white, sugary, trace medium brown to grey-brown, cryptocrystalline dolomite at 3070'. Shale, 20%, cavings, grey.
- 3090 - 3110 Dolomite, 60%, tan to light brown, cryptocrystalline to microcrystalline, slightly argillaceous, with scattered pin point porosity and some micro-vugs. Anhydrite, 30%, tan to light brown, cryptocrystalline. Shale, 10%, cavings, grey.
- 3110 - 3130 Anhydrite, 50%, tan to light brown, cryptocrystalline. Dolomite, 30%, light to medium brown, microcrystalline. Shale, 20%. Anhydrite 70% at 3130'.
- 3130 - 3140 Anhydrite, 60%, as above. Shale, 40%, dark grey-brown.
- 3140 - 3160 Shale, 60%, dark grey, trace brown. Anhydrite 40%, tan to light brown.
- 3160 - 3210 Anhydrite, as above, to white, cryptocrystalline, to sugary, with trace medium brown, microcrystalline dolomite. Abundant shale cavings (70%).
- 3210 - 3220 Dolomite, 30%, medium to dark brown, cryptocrystalline, anhydritic. Anhydrite, 40%, tan to medium brown. Shale, 30% (cavings?)

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SAMPLE DESCRIPTION CONT'D

- 3220 - 3280 Anhydrite, 60%, tan to light brown. Dolomite, 10% as above. Shale, 30%, grey (cavings?). Trace white anhydrite at 3270'.
- 3280 - 3300 Anhydrite, 90%, tan to light brown, cryptocrystalline. Dolomite, 5%, medium brown, cryptocrystalline. Shale, 5% dark grey. Trace white anhydrite at 3300'.
- 3300 - 3400 Anhydrite, 100%, tan to light grey, cryptocrystalline, some medium grey. Trace medium brown, cryptocrystalline dolomite, trace white sugary anhydrite at 3350 and 3360. No sample for 3370' - trip made.
- 3400 - 3440 Anhydrite 85%, tan to light grey, cryptocrystalline, trace white, sugary anhydrite. Dolomite, 10%, light grey, anhydritic, at 3430'. Trace shale. At 3440' scattered pin point porosity in tan, very finely crystalline dolomite.
- 3440 - 3460 Dolomite, tan to light brown, microcrystalline to very finely crystalline, with scattered pin point porosity. Also medium grey to grey brown, cryptocrystalline, anhydritic dolomite. With interbedded anhydrite, tan to light brown, some white, sugary.
- 3460 - 3480 Anhydrite, 60% tan to light brown, cryptocrystalline. Dolomite, 30%, medium grey to grey brown, cryptocrystalline, anhydritic. Shale, 10%, dark grey.
- 3480 - 3500 Dolomite, 60%, light to medium brown, some medium grey, cryptocrystalline, anhydritic. Anhydrite, 40%, tan to light grey.
- 3500 - 3510 Anhydrite, 70%, tan to light brown. Dolomite, 20% light brown, cryptocrystalline. Shale, 10% dark grey.
- 3510 - 3540 Anhydrite, 80%, medium grey, some tan and white. Dolomite, 20%, tan to light brown, cryptocrystalline, anhydritic.
- 3540 - 3550 Dolomite, 40%, light brown, cryptocrystalline. Anhydrite 25% tan to light brown. Shale 40% dark grey (cavings?).

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SAMPLE DESCRIPTION CONT'D

- 3550 - 3590 Anhydrite 70%, light grey, cryptocrystalline. Dolomite 20%, tan, cryptocrystalline. Shale 10%, dark grey. At 3580 and 3590, dolomite increasing to 30%.
- 3590 - 3610 Dolomite, 60%, light to medium brown and grey, cryptocrystalline, anhydritic. Anhydrite 30%. Shale 10%, dark grey.
- 3610 - 3650 Anhydrite, 70%, tan to light brown, abundant white, sugary anhydrite. Dolomite, 20%, as above. Shale, 10%, grey, increasing to 30% at 3640' and 3650'.
- 3650 - 3680 Dolomite, 70%, light brown to medium grey, cryptocrystalline, anhydritic. Anhydrite, 30%, tan to light brown. Trace pin point porosity in dolomite at 3670' and 3680'.
- 3680 - 3740 Anhydrite, 50-60%, tan, to white, sugary. Dolomite, 40-50%, medium brown to grey brown, cryptocrystalline, anhydritic. Trace shale at 3710' and 3730' (cavings?).
- 3740 - 3800 Dolomite, 70% tan to light brown, microcrystalline to very finely crystalline, anhydritic. Anhydrite 30% tan, microcrystalline. Trace of pin point and micro-vugular porosity between 3770' and 3800'.
- 3800 - 3810 Anhydrite, 60%, tan to light brown and medium grey, cryptocrystalline, some white, sugary. Dolomite, 35%, light to medium brown, cryptocrystalline, anhydritic. Shale, 5%, dark grey.
- 3810 - 3840 Anhydrite, 70%, tan to light grey, microcrystalline, to sugary, white. Dolomite 30%, light to medium brown, trace of pin point porosity at 3840'.
- 3840 - 3860 Anhydrite, 70%, tan to light brown, microcrystalline, to sugary. Dolomite, 30% light to medium brown, cryptocrystalline. Trace dark grey shale.
- 3860 - 3890 Limestone, 60%, tan to buff, sugary. Anhydrite, 30% tan to medium grey, microcrystalline to sugary. Dolomite, 10%, medium brown, cryptocrystalline, anhydritic.

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SAMPLE DESCRIPTION CONT'D

- 3890 - 3910 Anhydrite, 50%, tan to light brown, micro-crystalline. Limestone, 30%, buff, sugary. Dolomite, 20%, tan to light brown, microcrystalline.
- 3910 - 3920 Anhydrite, 70%, tan to medium grey, crypto-crystalline, some tan, sugary. Dolomite, 30%, light brown, microcrystalline, anhydritic. One chert fragment, blue-grey, at 3920'.
- 3920 - 3940 Dolomite, 80%, tan to light brown, micro-crystalline to very finely crystalline, scattered poor intercrystalline porosity. Anhydrite, 20%, tan, microcrystalline.
- 3940 - 3950 Dolomite, 70%, light brown, microcrystalline, some medium grey, cryptocrystalline. Trace pin point porosity. Anhydrite, 30%, light to medium grey.
- 3950 - 3960 Dolomite, 90%, medium to dark grey, crypto-crystalline, anhydritic, with poor pin point porosity. Anhydrite, 10%, light brown, cryptocrystalline.
- 3960 - 3970 Dolomite, 80%, medium brown to grey-brown, microcrystalline, trace pin point porosity. Anhydrite, 20%, tan to light grey, cryptocrystalline.
- 3970 - 4030 Anhydrite, 80%, off white to tan, cryptocrystalline, some light to medium grey, medium brown. Shale, 10%, dark grey at 3980'. Dolomite, 10%, medium brown, cryptocrystalline.
- 4030 - 4060 Anhydrite, 80%, green-grey, cryptocrystalline, to off white and tan, sugary to microcrystalline. With quartz grains at 4040 and 4050'. Dolomite 20%, as above.
- 4060 - 4080 Anhydrite, 90%, off white to tan, some green-grey. Dolomite, 10%, medium brown.
- 4080 - 4140 Anhydrite, 80%, tan and off white. Shale 20% (cavings?). Abundant cavings at 4110, 4120 and 4130. Poor samples.

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SAMPLE DESCRIPTION CONT'D

- 4140 - 4170 Shale, 60%, dark grey to red. Anhydrite, 40%, light grey to tan and red-brown, also white. Trace dolomite, light-medium brown, microcrystalline.
- 4170 - 4210 Dolomite, 50%, tan to light brown, microcrystalline, anhydritic. Anhydrite, 30%, white to light grey. Shale, 20%, grey.
- 4210 - 4240 Anhydrite, 60%, light grey to tan, cryptocrystalline. Dolomite, 20%, as above. Shale, 20%, as above.
- 4240 - 4250 Dolomite, 60%, green-grey, cryptocrystalline, anhydritic, some tan to light grey. Anhydrite, 20%, white to light grey, dolomitic. Shale, 20%, dark grey.
- 4250 - 4270 Dolomite, 80%, off white to light buff, some light grey, microcrystalline. Anhydrite, 10%, white. Shale, 10%, dark grey.
- 4270 - 4340 Dolomite, 70%, tan to light grey, cryptocrystalline, some dark brown. Shale, 10%, dark grey. Anhydrite, 20%, white to light grey.
- 4340 - 4380 Dolomite, 80%, off white to tan, cryptocrystalline. Shale, 10%, dark grey. Anhydrite, 10%, white to tan, cryptocrystalline.
- 4380 - 4400 Anhydrite, 50%, light grey, dolomitic, cryptocrystalline to microcrystalline. Siltstone, 30%, light grey, dolomitic. Dolomite, 20%, light grey, cryptocrystalline, sandy. Trace of light grey, very fine grained, dolomitic sandstone at 4390'.
- 4400 - 4410 Anhydrite, 70%, grey to green-grey and pink, cryptocrystalline. Dolomite, 10%, light grey, cryptocrystalline. Siltstone, 20%, light grey, dolomitic.
- 4410 - 4430 Anhydrite, off white to light grey and green-grey, cryptocrystalline. Trace dolomite, light grey, and fine grained, light grey sandstone. 10% red to maroon siltstone, dolomitic, at 4430'.

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SAMPLE DESCRIPTION CONT'd

- 4430 - 4440 Siltstone, 70%, light grey to red brown, dolomitic. Anhydrite, 20%, white to light grey. Dolomite, 10%, light grey, crypto-crystalline, anhydritic.
- 4440 - 4500 Siltstone, 80%, grey, green-grey, red and red-brown, dolomitic. Anhydrite, 20%, light grey.
- 4500 - 4540 Siltstone, 90%, grey, green-grey, red and red-brown, Anhydrite, 10%, off white. Trace green-grey shale at 4530 and 4540.
- 4540 - 4570 Siltstone, rust to red-brown, red-grey and green-grey. Trace anhydrite and dolomite at 4550'. Rust and green mottled siltstone at 4570'.
- 4570 - 4600 Siltstone, 70%, rust and green mottled. Shale, 30%, light green. Trace white anhydrite.
- 4600 - 4640 Siltstone, grey to rust and green, mottled, dolomitic, hard. Trace of white and pink chert at 4620', 4630'.
- 4640 - 4660 Siltstone, light tan to light grey, dolomitic, hard.
- 4660 - 4670 Siltstone, light grey to rust and green mottled, dolomitic. Trace dolomite, off white to light grey, cryptocrystalline.

Top Franklin Mountain Formation 4670

- 4670 - 4680 Dolomite, light grey, cryptocrystalline, hard, slightly silty, with interbedded light grey to rust-brown dolomitic siltstone.
- 4680 - 4700 Shale, 90%, green to grey-green and mottled green and rusty. Dolomite, 10%, light grey, cryptocrystalline.
- 4700 - 4730 Dolomite, tan to light grey, cryptocrystalline, slightly silty, trace green shale and red-brown siltstone at 4710'.
- 4730 - 4740 Dolomite, 95%, off white to light grey, micro-crystalline to finely crystalline. Trace of shale and siltstone at 4730'.

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SAMPLE DESCRIPTION CONT'D

4740 - 4770	Dolomite, 90%, light grey, cryptocrystalline. Siltstone, 5% red brown. Shale, 5% dark grey.
4770 - 4780	Dolomite, light grey, cryptocrystalline to finely crystalline.
4780 - 4810	Dolomite, 100%, tan to light grey, cryptocrystalline to finely crystalline. Lost circulation at 4735'.
4810 - 4840	Dolomite, tan to medium brown, cryptocrystalline to microcrystalline, trace intercrystalline porosity. Poor samples, with shale cavings from 4810'.
4840 - 4850	Dolomite, tan to medium brown, cryptocrystalline to finely crystalline. Abundant cavings of shale and rust colored siltstone.
4850 - 4900	Dolomite, tan to brown and grey-brown, cryptocrystalline to finely crystalline, trace of intercrystalline porosity at 4860'. Abundant shale cavings.
4900 - 4940	Dolomite, tan to medium brown, cryptocrystalline to microcrystalline. Trace clean to white anhydrite. Some dark grey shale cavings.
4940 - 4950	Dolomite, tan to medium brown, as above.
4950 - 4970	Dolomite, tan to dark brown, cryptocrystalline, argillaceous. Trace medium grey chert. Abundant shale and anhydrite cavings.
4970 - 4980	Dolomite, tan to dark brown, cryptocrystalline to finely crystalline, argillaceous, with trace light grey to brown chert.
4980 - 5020	Dolomite, dark grey-brown, cryptocrystalline, slightly argillaceous, trace grey to brown chert fragments.
5020 - 5040	Dolomite, tan to brown and dark grey, cryptocrystalline, slightly argillaceous, trace chert fragments at 5030'.

SINCLAIR WOLVERINE CREEK D-61

SAMPLE DESCRIPTION CONT'D

5040 - 5110	Dolomite, tan to dark brown and grey-brown, cryptocrystalline to microcrystalline, slightly argillaceous, with light grey to white mottled chert fragments from 5060-5110'.
5110 - 5150	Dolomite, light brown to dark grey, microcrystalline to very finely crystalline, trace chert at 5140'. Some shale, dark grey, at 5120'.
5150 - 5160	Dolomite, tan to dark grey and grey-brown, cryptocrystalline to microcrystalline.
5160 - 5180	Dolomite, tan to dark brown, microcrystalline to very finely crystalline, trace off white to light grey chert fragments at 5160'.
5180 - 5190	Dolomite, medium brown to grey-brown, cryptocrystalline, slightly argillaceous; minor amount dark grey shale.
5190 - 5210	Shale, 60%, dark grey, silty. Dolomite, 40%, white to light brown, microcrystalline.
5210 - 5220	Dolomite, 80%, white to light brown, microcrystalline to very finely crystalline; Shale, 20%, dark grey.
5220 - 5230	Dolomite, 90%, white, microcrystalline to brown and grey-brown, cryptocrystalline, slightly argillaceous. Shale, 10%, dark grey.
5230 - 5240	Dolomite, 90%, white to medium brown, microcrystalline to very finely crystalline. Shale, 10%, dark grey.
5240 - 5260	Dolomite, tan to light grey and medium brown, cryptocrystalline; trace pyrite at 5250'. Abundant shale cavings at 5260'.
5260 - 5300	Dolomite, 90%, white, tan, and light grey, microcrystalline to very finely crystalline. Shale, 10%, dark grey. Trace rust to pink dolomitic siltstone at 5270', 5280', 5290', and 5300'.

SINCLAIR WOLVERINE CREEK D-61

SAMPLE DESCRIPTION CONT'd

5300 - 5320	Dolomite, 90%, white to tan and light grey, microcrystalline to very finely crystalline. Shale, 10%, dark grey to grey-black. Trace pink, dolomitic siltstone grading to silty dolomite.
5320 - 5350	Dolomite, 90%, pink, white, light grey and brown, cryptocrystalline to very finely crystalline. Shale, 10%, dark grey.
5350 - 5370	Dolomite, 90%, off white, pink, and medium brown, microcrystalline to very finely crystalline. Shale, 10%, dark grey.
5370 - 5410	Dolomite, 90%, off white, pink, to light grey and light brown, microcrystalline to finely crystalline. Shale, 10%, dark grey.
5410 - 5420	Dolomite as above. Trip made at 5418 - poor sample, consisting of 90% shale.
5420 - 5430	Dolomite, white, microcrystalline to finely crystalline, trace pink dolomite. This sample largely shale cavings.
5430 - 5460	Dolomite, off white to very light pink, microcrystalline to very finely crystalline; some dark grey pyritic shale at 5460'.
5460 - 5470	Dolomite, 90%, pink to tan and light brown, cryptocrystalline. Shale, 10%, dark grey, trace pyrite.
5470 - 5480	Dolomite, off white, light grey and grey-brown, microcrystalline to very finely crystalline. Trace shale at 5480'.
5480 - 5490	Dolomite, 90%, light to medium grey and brown, trace dark grey-brown, cryptocrystalline.
5490 - 5510	Dolomite, 90%, light grey to medium grey-brown, silty, cryptocrystalline. Shale, 10%, dark grey.
5510 - 5540	Dolomite, 90%, various shades of light to dark grey and brown, cryptocrystalline. Shale, 10%, dark grey.

SINCLAIR WOLVERINE CREEK D-61

SAMPLE DESCRIPTION CONT'D

5540 - 5570	Dolomite, 95%, light grey to medium grey-brown, clean, cryptocrystalline. Shale, 5%, dark grey.
5570 - 5580	Dolomite, off white to light grey, cryptocrystalline.
5580 - 5600	Dolomite, as above.
5600 - 5620	Dolomite, medium grey, trace light grey to tan, cryptocrystalline.
5620 - 5630	Poor sample. Largely dolomite and shale cavings.
5630 - 5640	Dolomite, medium grey to grey-brown, cryptocrystalline. Abundant dolomite and shale cavings. Poor sample.

Top Ordovician Clastic Zone 5640'

5640 - 5660	Dolomite, light to medium grey, cryptocrystalline, with interbedded pink to rust colored siltstone.
5670 - 5690	Siltstone, red and green, mottled. Trace dark grey shale, trace grey dolomite.
5690 - 5710	Siltstone, pink, red and green, dolomitic, interbedded with minor green shale and trace pink dolomite.
5710 - 5760	Shale, medium to dark grey, with interbedded grey dolomite, trace pink siltstone.
5760 - 5770	Dolomite, light to medium grey, cryptocrystalline with interbedded dark grey shale, trace pink and rust brown siltstone.
5770 - 5780	Siltstone, rust to red brown, with scattered sand grains, trace pin point porosity, interbedded with 30% dark grey shale and 20% light grey dolomite.

Top Cambrian or Precambrian 5780'

5780 - 5800	Siltstone, light to medium green, slightly metamorphosed? Trace dark grey shale, trace white, cryptocrystalline dolomite.
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SINCLAIR WOLVERINE CREEK D-61

SAMPLE DESCRIPTION CONT'D

- 5800 - 5820 Siltstone as above, trace white to tan cryptocrystalline dolomite.
- 5820 - 5870 Siltstone, light green grey to medium grey, largely recrystallized (metamorphosed?), with trace of dark grey shale and light grey dolomite.
- 5870 - 5880 Siltstone, light green-grey to medium grey, 85%, as above. Dolomite, 10%, off white to light grey, cryptocrystalline. Shale, 5%, grey.
- 5880 - 5900 Siltstone, grey to grey-green, as above, with interbedded dark grey shale, trace off white to pink dolomite.
- 5900 - 5970 Shale, 60%, dark grey to black. Dolomite, 40%, white to light pink, cryptocrystalline. Trace pyrite at 5970'. No sample at 5960'.
- 5970 - 5980 Siltstone, 60%, light green, hard, slightly dolomitic, as above. Shale, 40%, dark grey to grey-brown.
- 5980 - 5990 Shale, 80%, dark grey. Siltstone, 20%, very light green, hard.
- 5990 - 6010 Siltstone, 80%, very light green, hard, recrystallized. Shale, 20%, dark grey.
- 6010 - 6020 Shale, 60%, dark grey to grey-black. Siltstone, 30%, light green, hard, as above. Dolomite, 10%, light grey, cavings?
- 6020 - 6030 Siltstone, 80%, light green, hard, recrystallized, Shale, 20%, dark grey to grey black.
- 6030 - 6050 Siltstone, 80%, light green to light grey, as above. Shale, 20%, dark grey.
- 6050 - 6060 Shale, 60%, dark grey. Siltstone, 30%, light green, fairly hard. Dolomite, 10%, off white, cryptocrystalline, cavings?

SINCLAIR WOLVERINE CREEK D-61

SAMPLE DESCRIPTION CONT'D

6060 - 6130	Siltstone, 80-90%, green to rust brown, hard, recrystallized, trace clear quartz sand grains. Shale 10-20%, dark grey.
6130 - 6170	Siltstone, 90%, light green to grey, hard, as above. Shale, 10%, dark grey.
6170 - 6180	Shale, dark grey to brown grey, with interbedded light green to grey siltstone, trace dark brown dolomite.
6180 - 6190	Siltstone, 90%, light green to grey, as before. Shale, 10%, grey to grey black.
6190 - 6199	Siltstone, 90%, light green to light grey. Shale, 10%, dark grey to grey black.
6199 - 6210	Core #1 Recovered 10.7 feet. See Core description.
6210 - 6230	Siltstone, light green-grey to medium grey, with minor interbedded green to green-grey shale.
6230 - 6257	Core #2 Recovered 26 feet. See Core description.
6257 - 6261.3	Core #3 Recovered 2 feet. See Core description.
6261.3 - 6270	Siltstone, light green, quite hard, with minor interbedded light green, silty shale.
6270 - 6300	Siltstone, light green to medium grey, hard, as before.
6300 - 6338	Siltstone, light green, hard, as above.
6338	Total Depth.

SECTION
THREE

SINCLAIR WOLVERINE CREEK D-61

SECTION THREE

ENGINEERING SUMMARY

a) DRILL STEM TESTS:

D.S.T. #1 (2710-2868) Dec. 18, 1968
Preflow 4 minutes
ISI 30 mins., VO 60 mins., FSI 60 mins.
GIP, FAB decreasing to dead in 24 minutes.
Recovered 250' mud, 1840' slightly salty water.
9620 PPM, Temp. 78°.

ISI	1020 - 1020
IFP	610 - 1020
IHP	1320 - 1310

*Field readings
reported here*

D.S.T. #2 (3760-3940) Jan. 18, 1969
Preflow 7 minutes
ISI 60 mins., VO 30 mins., FSI 73 mins.
Weak initial puff - weak air blow throughout.
Recovered 270' drilling mud.

ISI	1586 - 1538
IFP	N11 - 684
IHP	1897 - 1897

b) CASING RECORD:

16" Sch. 80 42.05# Ran 50', set at 34 w/65 + 10 Fondue
9-5/8" J55 36# Ran 1055.29 set at 1039 w/500 Fondue

c) BIT RECORD:

See attached

d) MUD REPORT:

See attached



BIT RECORD

PAGE _____ OF _____

Province N.W.T.	Field WILDCAT	City Calgary	LSD	Section	Township W	Range	Operator Sidclair	Elev.	Mud Type
Location Wolverine Creek		Contractor NABORS DRILLING LTD		Rig No. 8	Rig Make & Type EMSCO GA 500		Tool Pusher FRANK KREMP		
Drill Collars 1. 7 7"	No.	O.D.	I.D.	Date Month/Day/Year	Time	Pump No. 1 N500	Type C-250	Special Additives	
2. 14 6 1/4"				Spudded 12 15 168	10:30 A.M./P.M.	Pump No. 2 OILWELL	Type 214-P		
Tool Joints - Make	Size	Type	O.D.	Under Surf. 12 15 168	8:00 A.M./P.M.	Approved			
1.				Under Inter. 1 1	A.M./P.M.	(Toolpush)			
2.				Completion 1 1	A.M./P.M.	Approved			
				Release 1 1	A.M./P.M.	(Fieldman)			
Lost Circulation Depths			Key Seat Depths		Other Remarks - Reaming, Re-Drilling, Etc.				

No.	Size	Make	Type	Jet Size	Serial	Depth	Feet	Hours	Accum. Hours	Dull Cond.			No. of DC	Wt. 1000 Lbs.	R.P.M.	Vert Dev	Pump Pres	No. 1		No. 2		Mud				Date		
										T	B	G						Spm	Liner	Spm	Liner	Wt	Vis	pH	WL			
1A	8 3/4	HW	OSC-3		98903	239	399	19 1/4	19 1/4	3	2	1	12															
2A	8 3/4	HW	OSC-3		98879	1136	577	19 1/4	38 1/2	3	2	1	12															
3A	12 1/4	REED	HALL MARKER		930R	925	925	21 1/2	60	4	4	1	18															
4A	12 1/4	REED	HALL MARKER		832R	1139	114	7	67	1	1	1	18															
5	8 3/4	HW	XLG	3/16	1967	2232	1056	30 1/2	97 1/2	3	4	1	18	35	110	1 1/4	1200	60	5 1/2				90	38				
6	8 3/4	HW	XLG	"	1572	2750	248	18 1/4	112 3/4	4	4	0	18	35	110	3/4	1400	60	5 1/2				89	38				
7	8 3/4	HW	WD7	3/16	1296	2750	REAM OUT OF GUAGE HOLE																					
8	8 3/4	HW	ROSSER	3/16	WC063	2578	98	6 3/4	122 1/2	2	1	1	18	35	PULLED TO END DST										41	*		
9	8 3/4	HW	"	"	"	3278	200	48	170 1/2	2	4	1	18	35	60	1 1/2	1200	60	5 1/2				89	38				
10	8 3/4	HW	ROSSER	3/16	3690	3532	254	48 1/2	219	4	2	1	21	40	60	1 1/4	1400	60	5 1/2				91	38	7	28		
11	8 3/4	HW	WD7	3/16	1296	4223	291	26 1/2	245 1/2	4	4	1	21	45	75	1 1/2	1400	60	5 1/2				91	38	7	28		
12	8 3/4	HW	ROSSER	3/16	3525	4747	224	49	294 1/2	4	2	1	21	40-45	50-60	1 1/2	1300	26	5 1/2				90	38				
13	8 3/4	HW	ROSSER	3/16	90648	5117	369	34 1/2	329	4	4	1	21	40-45	50-60	1 3/4	1100	60	5 1/2				96	40				
14	8 3/4	HW	ROSSER	3/16	89813	2190	73	12 1/4	341 1/2	1	1	1	21	45	50	1 1/2	1100	60	5 1/2				96	40		52		
15	8 3/4	HW	WD7	3/16	1287	5421	231	31	372 1/2	4	3	1	21	45	60	2	1000	60	5 1/2				98	37	8.0	32		
16	8 3/4	HW	ROSSER	3/16	98795	5717	286	37	408 1/2	3	4	1	21	45	60	1 1/2	1100	60	5 1/2				96	38	8.0	32		
17	8 3/4	HW	WD7	3/16	1290	5964	247	27 3/4	437	4	4	1	21	45	60	2 1/2	1100	60	5 1/2				97	38	8.0	28		
18	8 3/4	HW	ROSSER	3/16	98453	6147	183	27 1/4	464 1/2	2	4	1	21	45	60	2 3/4	1100	60	5 1/2				98	40	9.0	21		
19	8 3/4	HW	WD7	3/16	1294	6179	32	8	472 1/4	4	2	1	21	45	60	2 1/2	1100	60	5 1/2				95	45	9.0	22		
20	8 3/4	HW	ROSSER	3/16	84038	6189	20	4	476 1/4	1	1	1	21	45	60	PULLED TO CORE												

18
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NEW

LOCATION					CONTRACTOR					RIG No.		TOOL PUSHER					PAGE..... OF.....									
No.	Size	Make	Type	Jet Size	Serial	Depth Out	Feet	Hours	Accum. Hours	Dull Cond.			No. of DC	Wt. 1000 Lbs.	R.P.M.	Vert Dev	Pump Pres	No. 1		No. 2		Mud				Date
										T	B	G						Spm	Liner	Spm	Liner	Wt	Vis	pH	WL	
21	6 3/16	CHRIST	◇		71246	6210	11	4 1/2	480 3/4	Good		21	8-12	5-5												
22	8 3/4	HW	REGULAR	3/16	89813	6230	20	6	486 3/4	4 2 1	21	4-5	60	7	1100	60	2 1/2				9.8	48	9	2.2		
23	6 3/16	CHRIST	◇		71246	6257	27	17 1/4	504	Good		21	10-14	70		1100	40					9.7	49	8.5	21	
24	6 3/16	CHRIST	◇		71246	6261	4	4 3/4	505 3/4	Good		21	10-14	70		1100	40					9.7	50	8.5	21	
25	8 3/4	HW	REGULAR	3/16	84035	6338	77	18	526 3/4	2 3 1					PULL TO LOG											
T.D. 6338 RAIL ABANDONMENT PLUGS																										

ation SINCLAIR WOLVERINE CREEK

WELL MUD COST SUMMARY

Date Spudded 12/5/68

Date Released

Signatures—

Mud Engineer

Frank R. Kemp

Rig Supervisor

—Submit to Calgary Office Upon Completion

SINCLAIR WOLVERINE CREEK D-61

SECTION THREE CONT'D

ENGINEERING SUMMARY

e) WELL DEVIATION:

<u>Depth</u>	<u>Degrees</u>	<u>Depth</u>	<u>Degrees</u>
70	1	1856	1
105	3/4	2155	1 1/4
161	1	2232	1 1/4
228	1	2534	1 1/2
307	3/4	2779	3/4
428	1	2878	1 1/4
522	1	3378	1 1/2
618	1	3932	1 1/4
712	1.5	4748	3/4
776	2	5117	1-3/4
852	1.5	5190	1 1/2
884	1-3/4	5421	2
915	1-3/4	5717	1 1/2
946	1-3/4	5960	2 1/2
978	1 1/4	6147	5-3/4
1042	1 1/4	6179	5 1/2
1105	1 1/4	6230	7
1232	1 1/2	6338	7
1523	3/4		

f) ABANDONMENT PLUGS:

Plug #1 5735-5835 feet. Used 50 sacks cement.

Plug #2 4000-4500 feet. Used 215 sacks cement.
Felt at 3940', drilled cement to 3950'.

Plug #3 2780-2880 feet. Used 50 sacks cement
~~plus 2% calcium chloride.~~ Felt plug at
2764'.

Plug #4 990 - 1090 feet. Used 75 sacks cement
~~plus 2% calcium chloride.~~ Felt plug at
970'.

Ten sacks cement used at top of hole -
holding 2" pipe with identification plate.

SINCLAIR WOLVERINE CREEK D-61

SECTION THREE CONT'D

ENGINEERING SUMMARY

g) LOST CIRCULATION ZONES:

- (a) Lost circulation at 4790' (Franklin Mtn. fm.) Lost 256 bbls. mud. Mixed 8300 lbs. gel, 50 bags sawdust, 18 bags fiberseal, 100 lbs. caustic and recovered circulation after 5½ hours, although still losing 12 bbls. per hour for first 2 hours of drilling.

h) REPORT OF BLOWOUTS:

Nil

- (b) Dec. 6/68 at depth 428' (Cretaceous) reported mixing lost circulation material consisting of 4000 lbs. gel, 1 bag caustic, 25 sacks lost circulation material (sawdust).
- (c) Dec. 7/68 at depth 599' (Cretaceous) reported mixing lost circulation material consisting of 2400 lbs. gel, 15 sacks sawdust and 50 caustic.

SINCLAIR WOLVERINE CREEK D-61

SECTION FOUR

LOGS RUN:

<u>Type</u>	<u>Date</u>	<u>Interval</u>
Induction Electrolog	Jan. 12, 1969	1021-6336 ✓
BHC-Acoustilog-GR	Jan. 13, 1969	1021-6326
Minilog	Jan. 13, 1969	1021-6337
Densilog	Jan. 13, 1969	1021-6338
Rerun Gamma Ray	Jan. 14, 1969	1021-6326

The Gamma Ray was rerun because of the poor quality of the first one run, and which was not used.

Velocity Survey	Jan. 15, 16, 1969
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SINCLAIR WOLVERINE CREEK D-61

SECTION FIVE

ANALYSES

a) CORE ANALYSIS:

None

b) WATER ANALYSIS:

Chemical Analysis Report No. CBH-2-4035
D.S.T. #1. See attached.

c) GAS ANALYSIS:

None

d) OIL ANALYSIS:

None

CORE LABORATORIES – CANADA LTD.

PETROLEUM RESERVOIR ENGINEERING

WATER ANALYSIS



File CBH-2-4035 Page 1 of 1

Company Sinclair Canada Oil Company

Well Sinclair Wolverine D-61

K.B. _____ Grd. 1000'

Well	65	10° 14.00" N.L.
Location	124	12° 52.00" W.L.

Field Wolverine Creek Area Province N.W.T.

Formation _____ Interval 2710'-2868'

Sampled from DST #1 (Bottom of Tool)

by _____

Date sampled _____ Date analyzed Dec. 31/68 Analyst A.M.

Recovery

Mud type

Water cushion

Resistivity 0.318 Ohm-meters @ 72 °F

Total Solids:

Calculated 22,814 mg/liter

Specific gravity 1.0160 @ 60°F

By evaporation @ 110°C _____ mg/liter

H 7.40 H₂S Absent

By evaporation @ 180°C _____ mg/liter

Refractive Index 1.338 @ 72°F

At ignition _____ **mg/liter**

MILLIGRAMS PER LITER

Na + K	Ca	Mg	Fe	Ba	Br	I	Cl	HCO ₃	SO ₄	CO ₃	OH
6,962	992	324	Abs.	Abs.	-	-	10,428	181	3,927	-	-

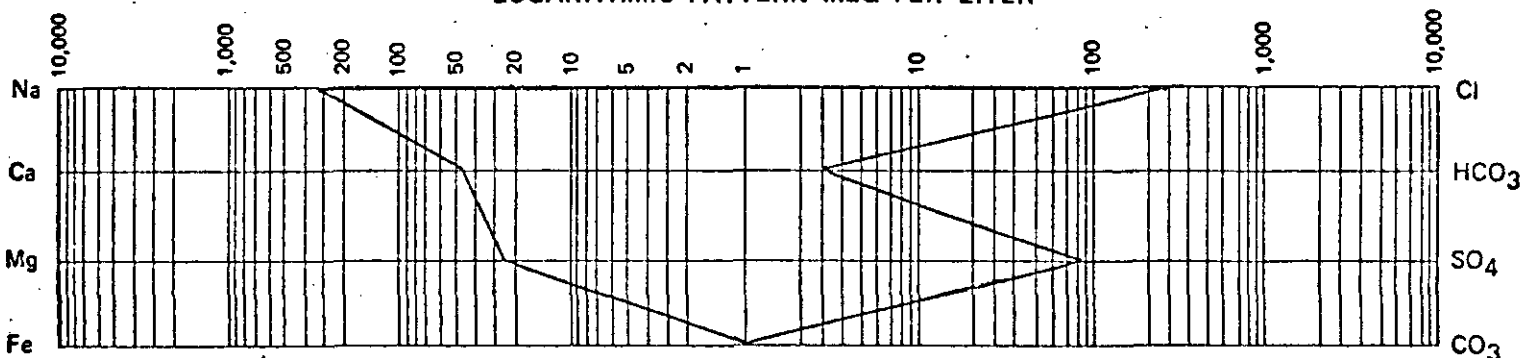
PER CENT CALCULATED SOLIDS

30.5	4.4	1.4	Abs.	Abs.	-	-	45.7	0.8	17.2	-	-
------	-----	-----	------	------	---	---	------	-----	------	---	---

MEQ PER LITER

302.7	49.5	26.6	Abs.	Abs.	-	-	294.1	3.0	81.7	-	-
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LOGARITHMIC PATTERN MEQ PER LITER



SINCLAIR WOLVERINE CREEK D-61

SECTION SIX

COMPLETION SUMMARY

a) TUBING RECORD:

Nil

b) PERFORATION RECORD:

Nil

c) CEMENTATION RECORD:

Abandonment Plugs

Plug #1	5735-5835 feet. Used 50 sacks cement.
Plug #2	4000-4500 feet. Used 215 sacks cement. Felt at 3940', drilled cement to 3950'.
Plug #3	2780-2880 feet. Used 50 sacks cement plus 2% calcium chloride. Felt plug at 2764'.
Plug #4	990 - 1090 feet. Used 75 sacks cement plus 2% calcium chloride. Felt plug at 970'.

Ten sacks cement used at top of hole -
holding 2" pipe with identification plate.

d) ACIDIZATION & FRACTURING RECORD:

Nil

e) BACK PRESSURE & PRODUCTION TESTS:

Nil

CHEMICAL ANALYSIS
FOR

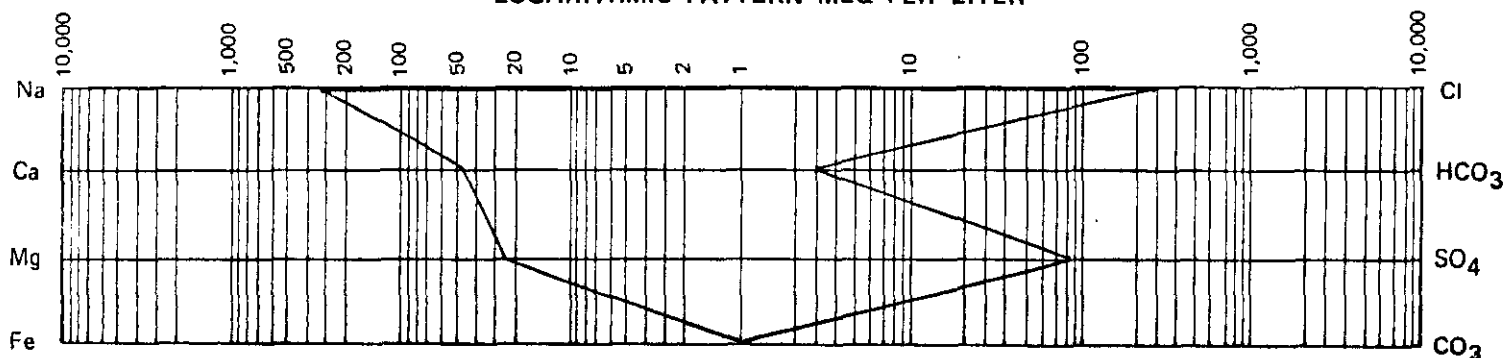
SINCLAIR CANADA OIL COMPANY

SINCLAIR WOLVERINE D-61
WOLVERINE CREEK AREA
NORTHWEST TERRITORIES

CORE LABORATORIES - Canada Ltd.

Petroleum Reservoir Engineering

CALGARY - EDMONTON - REGINA



Well Name SINCLAIR WOLVERINE CREEK		Test No 1
Well Number UNIT "D" SECTION 61		Zone Tested
Company Sinclair Canada Oil Co.		Interval 2710-2878
Comp. Rep B. KIRKPATRICK	Tester P. DAKUS	Date Dec. 18/68



BJ SERVICE DIVI
BORG-WARNER (CANADA)



DRILL-STEM TEST DATA

Well Name	SINCLAIR WOLVERINE CREEK	Test No.	1
Well Number	UNIT "D" SECTION 61	Zone Tested	
Company	Sinclair Canada Oil Co.	Interval	2710-2878
Comp Rep	B. KIRKPATRICK	Tester	P. DAKUS
		Date	Dec. 18/68

Type of Test Bottom Hole RFS Tool No. 53Preflow 3 mins. ISI 29 mins. Flow 60 mins. FSI 60 mins.

Specify Inside or Outside	Ins REC No. <u>2843</u> 6300 RANGE <u>12</u> HR. CLOCK	Outs REC No. <u>2660</u> 6400 RANGE <u>12</u> HR. CLOCK	REC. No. _____ RANGE _____ HR. CLOCK
DEPTH	<u>2693</u>	<u>2712</u>	
Initial Hydro Mud Press		<u>1344</u>	
Initial Shut-In Press		<u>1025</u>	
Initial Flow Press		<u>608</u>	
Final Flow Press		<u>1012</u>	
Final Shut-In Press		<u>1028</u>	
Final Hydro Mud Press		<u>1344</u>	

Mud Drop 6' Fluid Loss 13.2 Mud Weight 9.2
Viscosity 40 Temperature °F 78 Net Pay Tested Est 100'
Top Packer Depth 2709 Bottom Packer Depth 2710 Total Depth 2878
Drill Pipe Size 3 1/2" IF Wt. 13.3 Drill Collar I.D. 2 7/8" Ft. Run 252'
Surface Choke Size 1 1/8" Bottom Choke Size 1/2" Main Hole Size 8 3/4"
Anchor Size 4 3/4" OD Rot Hole Size _____ Feet of Rot Hole _____
Cushion Amount _____ Type _____ Rubber Size 7 1/2"

Fluid Recovery Total Feet 2050
Recovered 250 Feet of Drilling Mud
Recovered 1800 Feet of Mud cut salt water @ 9,260 PPM
Recovered _____ Feet of _____
Recovered _____ Feet of _____
Recovered _____ Feet of _____

Gas Recovery How Measured _____ Riser size: _____

_____ mins.	Temp. °F	Press Rdg. _____ psi	Orifice Size _____	= _____ MCF/Day
_____ mins.	Temp. °F	Press Rdg. _____ psi	Orifice Size _____	= _____ MCF/Day
_____ mins.	Temp. °F	Press Rdg. _____ psi	Orifice Size _____	= _____ MCF/Day
_____ mins.	Temp. °F	Press Rdg. _____ psi	Orifice Size _____	= _____ MCF/Day
_____ mins.	Temp. °F	Press Rdg. _____ psi	Orifice Size _____	= _____ MCF/Day
_____ mins.	Temp. °F	Press Rdg. _____ psi	Orifice Size _____	= _____ MCF/Day

Bleed Off Time for Drill Pipe _____

REMARKS Skin tool 25' to bottom. Pulled loose to pick up single Good air blow on preflow. Good air blow on tool opening, decreasing to weak air blow in 20 min. Dead in 24 min. Recorder # 2843 failed to record due to clock failure.



TESTING REPORT

45 LANDING SUB

45 CHAMBER

BLANK OFF OR P.O. SUB 1.00

CO SUB 1.00

SHUT IN TOOL 5.10

R.F.S. No. 53 3.30

R.F.S. No.

HYDRAULIC TOOL 7.10

JARS 5.10

RECORDER No. 2483 5.00 DEPTH 2693

RECORDER No. 1.70 DEPTH

SAFETY JOINT

BY PASS SUB

1. PACKER DEPTH 2704 PACKER 6.00

2. PACKER DEPTH 2710 PACKER 5.00 TOTAL TOOL ABOVE INTERVAL 40.30

ANCHOR—SPECIFY 1.00

BLANK OFF OR BY PASS SUB

RECORDER No. 2660 Outs. 5.00 DEPTH 2712

Perfs. 45.00

3. PACKER DEPTH PACKER TOTAL INTERVAL

4. PACKER DEPTH PACKER

ANCHOR—SPECIFY

Drill Collar 115.00

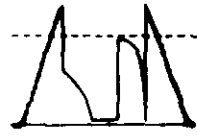
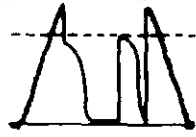
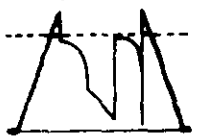
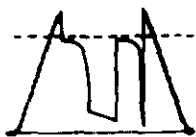
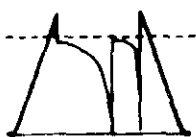
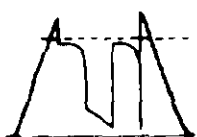
RECORDER No. DEPTH

BULLNOSE 2.50

TOTAL TAIL PIPE 168.50

TOTAL TEST TOOL 93.80

DST CHARTS FOR COMPARATIVE VISUAL ANALYSIS



B

HIGH PERMEABILITY
STRONG DAMAGE EFFECTHIGH PERMEABILITY
NO DAMAGE EFFECTMEDIUM PERMEABILITY
STRONG DAMAGE EFFECTMEDIUM PERMEABILITY
NO DAMAGE EFFECTLOW PERMEABILITY
STRONG DAMAGE EFFECTLOW PERMEABILITY
NO DAMAGE EFFECT



DST PRESSURE INCREMENTS

Recorder No

2660

Depth

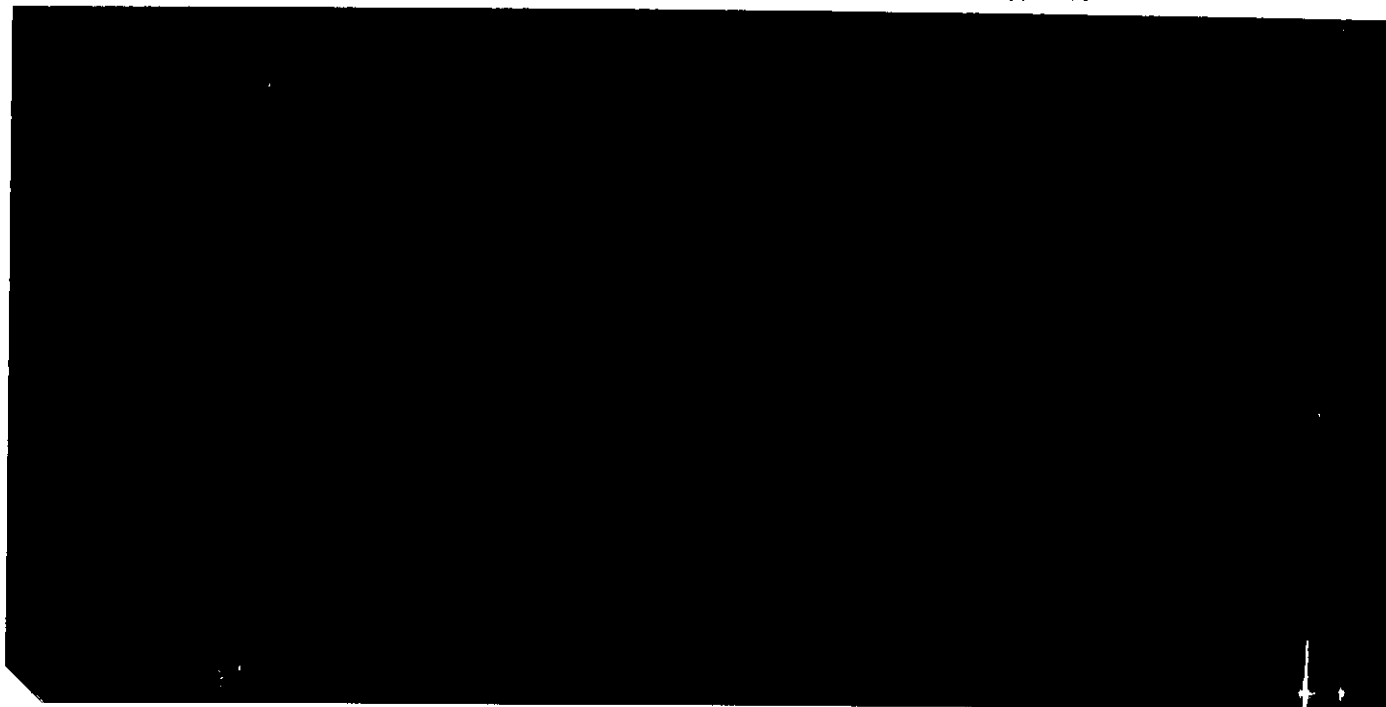
2712

Points	INITIAL CIP				FINAL CIP			
	Time Defl. "	T + θ	$\frac{T + \theta}{\theta}$	PSIG	Time Defl. "	T + θ	$\frac{T + \theta}{\theta}$	PSIG
1	0			523	0			1012
2	5			1012	5			1023
3	10			1020	10			1025
4	15			1022	15			1025
5	20			1023	20			1025
6	25			1025	25			1-25
7	29			1025	30			1026
8					35			1026
9					40			1026
10					45			1026
11					50			1028
12					55			1028
13					60			1028
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								

SINCLAIR WOLVERINE CREEK UNIT "D" SECTION 61

Ins. Rec. No. 2843

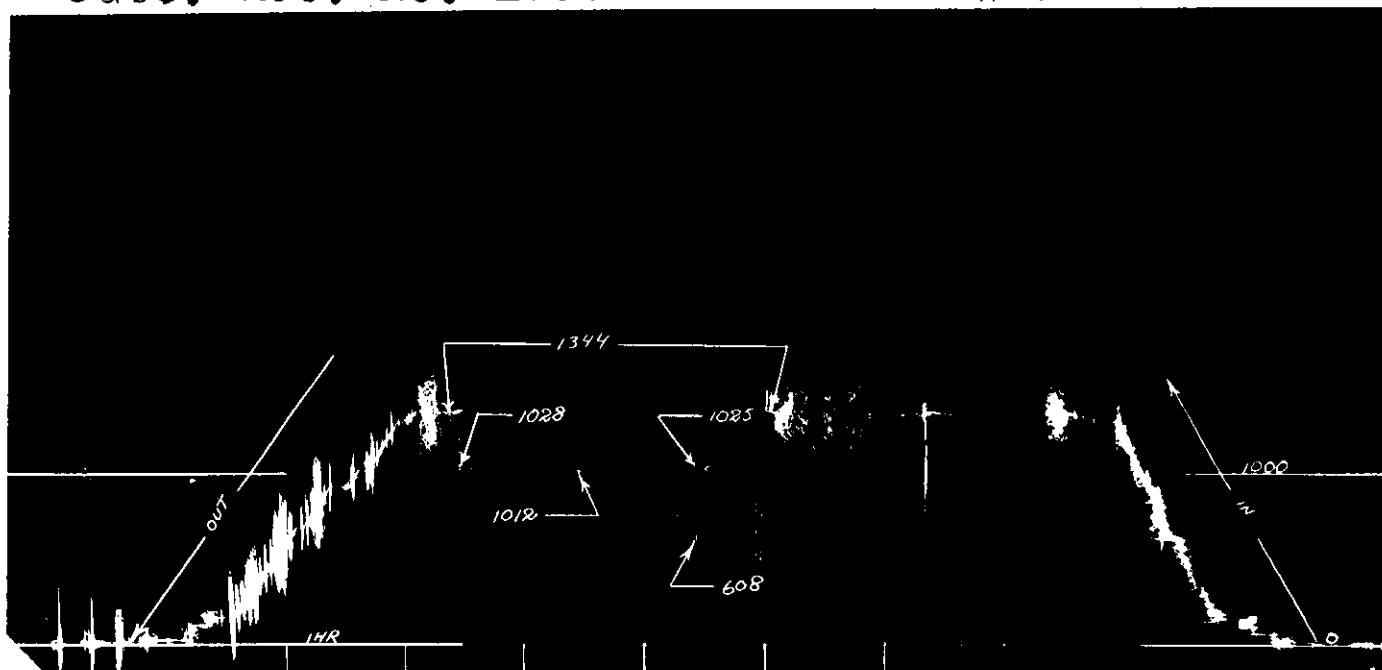
Test # 1



SINCLAIR WOLVERINE CREEK UNIT "D" SECTION 61

Outs. Rec. No. 2660

Test # 1



Well Name	Sinclair Wolverine Creek	Test No	2
Well Number	D-61	Zone Tested	
Company	Sinclair Canada Oil Co.	Interval	3760' - 3940'
Comp. Rep	H. Martinoff	Tester	D. Bilida
		Date	Jan. 18, 1969

BJ SERVICE DIV
BORG-WARNER (CANADA)

NER



DRILL-STEM TEST DATA

Well Name	Sinclair Wolverine Creek	Test No.	2
Well Number	D-61	Zone Tested	
Company	Sinclair Canada Oil Co.	Interval	3760' - 3940'
Comp. Rep	H. Martinoff	Tester	D. Bilida
		Date	Jan. 18, 1969

Type of Test Dual Bottom Hole RFS Tool No. 58Prewlow 0 mins ISI 60 mins Flow 30 mins FSI 73 mins

Specify Inside or Outside	ins	REC No.	outs	REC No.	
	6400	RANGE 12 HR CLOCK	6300	RANGE 24 HR CLOCK	RANGE HR CLOCK
DEPTH		3743		3781	
Initial Hydro Mud Press		1377		1897	
Initial Shut-In Press		1562		1586	
Initial Flow Press					
Final Flow Press		526		684	
Final Shut-In Press		1520		1538	
Final Hydro Mud Press		1877		1897	

Mud Drop 71 Fluid Loss 21 cc Mud Weight 9.8#
Viscosity 60 Temperature °F Net Pay Tested
Top Packer Depth 3754' Bottom Packer Depth 3760' Total Depth 3940'
Drill Pipe Size 3 1/2" Wt. 13.3 Drill Collar I.D. 2 1/4" Ft Run 300,00'
Surface Choke Size Closed Bottom Choke Size 1/2" Main Hole Size 8 3/4"
Anchor Size 4 3/4" Rat Hole Size Nil Feet of Rat Hole Nil
Cushion Amount Nil Type Nil Rubber Size 7 1/2"

Fluid Recovery Total Feet 270' High Viscosity Drilling Mud

Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Gas Recovery How Measured Riser size

mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day
mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day
mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day
mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day
mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day
mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day

Bleed Off Time for Drill Pipe

REMARKS

Few bubbles on preflow.
Fair blow on flow period, stopping in five minutes, start blowing again
for one minute, blowing and stopping again for next 1/2 hour. Quit blowing
for last 1/2 hour of flow period. Skidded packer for 10' on flow period



TESTING REPORT

45 LANDING SUB _____
45 CHAMBER _____
45 TOOL OR P.O. SUB _____
CO SUB _____ 1.00
SHUT IN TOOL _____ 5.20
R.F.S. No. # 58 _____ 3.00
R.F.S. No. _____
HYDRAULIC TOOL _____ 7.10
JARS _____ 6.10
RECORDER No. _____ DEPTH _____
RECORDER No. # 2843 Ins. _____ 5.00 DEPTH 3743
SAFETY JOINT _____ 1.70
BY PASS SUB _____

1. PACKER DEPTH 3754.00'

PACKER _____ 6.00

2. PACKER DEPTH 3760.00'

PACKER _____ 5.00 TOTAL TOOL ABOVE INTERVAL 40.10

ANCHOR—SPECIFY _____ 1.00
Perfs. 19.00BLANK OFF OR BY PASS SUB _____
RECORDER No. 2660 I Outs. _____ 1.00 DEPTH 3781

Perfs. 9.00

3. PACKER DEPTH _____

PACKER _____ TOTAL INTERVAL 180'

4. PACKER DEPTH _____

PACKER _____

ANCHOR—SPECIFY _____

Dr. Collars 147.00'

RECORDER No. _____ DEPTH _____

TOTAL DEPTH 3940.00

BULLNOSE 3.00

TOTAL TAIL PIPE _____

TOTAL TEST TOOL 220.10'

BEST CHARTS FOR COMPARATIVE VISUAL ANALYSIS



B

HIGH STR.

PERMEABILITY
DAMAGE EFFECTHIGH PERMEABILITY
NO DAMAGE EFFECTMEDIUM PERMEABILITY
STRONG DAMAGE EFFECTMEDIUM PERMEABILITY
NO DAMAGE EFFECTLOW PERMEABILITY
STRONG DAMAGE EFFECTLOW PERMEABILITY
NO DAMAGE EFFECT



DST PRESSURE INCREMENTS

Recorder No 2843

Depth 3743'

Points	INITIAL CIP				FINAL CIP			
	Time Defl. "	T + G	$\frac{T+G}{G}$	PSIG	Time Defl. "	T + G	$\frac{T+G}{G}$	PSIG
1					0			526
2					5			1396
3					10			1438
4					15			1463
5					20			1477
6					25			1484
7					30			1492
8					35			1497
9					40			1500
10					45			1505
11					50			1508
12					55			1511
13					60			1514
14					65			1517
15					70			1519
16					73			1520
17								
18								
19								
20								
21								
22								
23								
24								

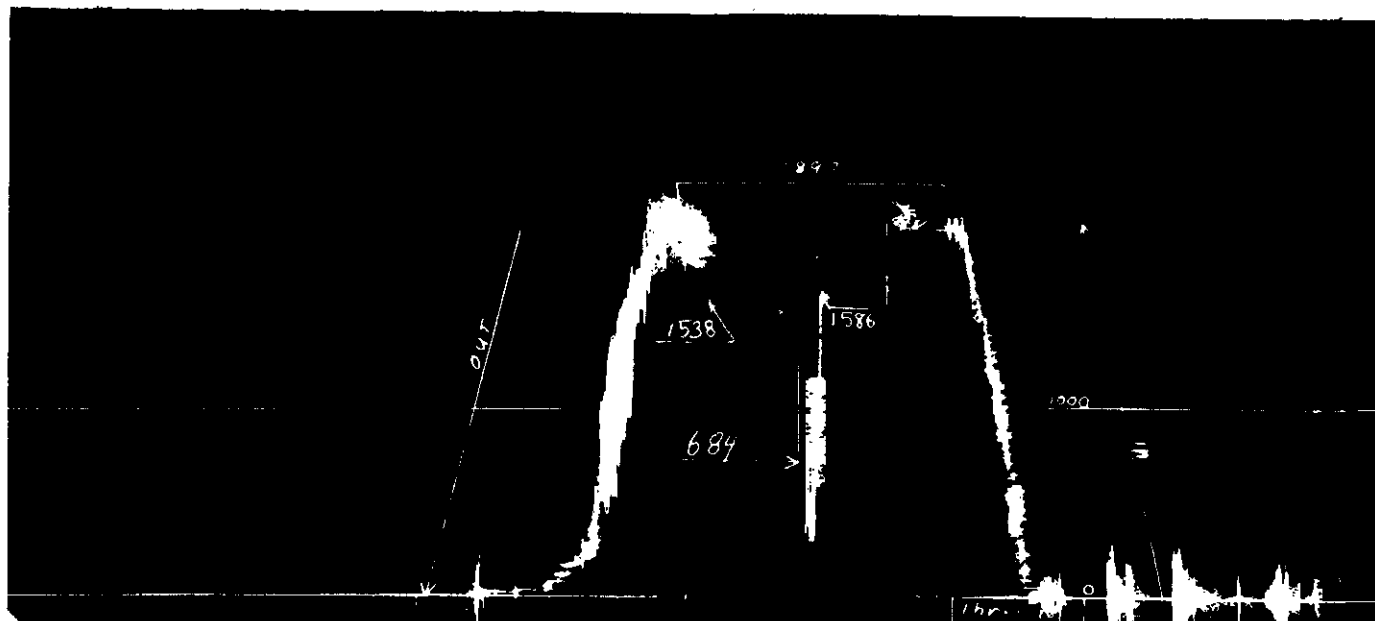
SINCLAIR WOLVERINE CREEK D-61

Inside Recorder # 2843 Test # 2



SINCLAIR WOLVERINE CREEK D-61

Outside Recorder # 2660 Test # 2



Well Name Sinclair Wolverine Creek		Test No 2
Well Number D-61		Zone Tested
Company Sinclair Canada Oil Co.		Interval 3760' - 3940'
Comp. Rep H. Martinoff	Tester D. Bilida	Date Jan. 18, 1969



BJ SERVICE DIVISION
BORG-WARNER (CANADA)



DRILL-STEM TEST DATA

Well Name	Sinclair Wolverine Creek	Test No.	2
Well Number	D-61	Zone Tested	
Company	Sinclair Canada Oil Co.	Interval	3760' - 3940'
Comp. Rep.	H. Martinoff	Tester	D. Bilida
		Date	Jan. 18, 1969

Type of Test Dual Bottom Hole RFS Tool No. 58Prewlow 5 mins ISI 60 mins Flow 30 mins FSI 73 mins

Specify Inside or Outside	ins	REC No.	outs	REC No.	
	6400	RANGE 12 HR CLOCK	6300	RANGE 24 HR CLOCK	RANGE HR CLOCK
DEPTH		3743		3781	
Initial Hydro Mud Press		1377		1897	
Initial Shut-In Press		1562		1586	
Initial Flow Press					
Final Flow Press		526		684	
Final Shut-In Press		1520		1538	
Final Hydro Mud Press		1877		1897	

Mud Drop 71 Fluid Loss 21 cc Mud Weight 9.8#
Viscosity 60 Temperature °F Net Pay Tested
Top Packer Depth 3754' Bottom Packer Depth 3760' Total Depth 3940'
Drill Pipe Size 3 1/2" Wt. 13.3 Drill Collar I.D. 2 1/4" Ft Run 300,00'
Surface Choke Size Closed Bottom Choke Size 1/2" Main Hole Size 8 3/4"
Anchor Size 4 3/4" Rat Hole Size Nil Feet of Rat Hole Nil
Cushion Amount Nil Type Nil Rubber Size 7 1/2"

Fluid Recovery Total Feet 270' High Viscosity Drilling Mud

Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Gas Recovery How Measured Riser size

mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day
mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day
mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day
mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day
mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day
mins	Temp. F	Press Rdg.	ps	Orifice Size	=	MCF Day

Bleed Off Time for Drill Pipe

REMARKS

Few bubbles on preflow.
Fair blow on flow period, stopping in five minutes, start blowing again
for one minute, blowing and stopping again for next 1/2 hour. Quit blowing
for last 1/2 hour of flow period. Skidded packer for 10' on flow period



TESTING REPORT

45 LANDING SUB _____
45 CHAMBER _____
45 TOOL OR P.O. SUB _____
CO SUB _____ 1.00
SHUT IN TOOL _____ 5.20
R.F.S. No. # 58 _____ 3.00
R.F.S. No. _____
HYDRAULIC TOOL _____ 7.10
JARS _____ 6.10
RECORDER No. _____ DEPTH _____
RECORDER No. # 2843 Ins. _____ 5.00 DEPTH 3743
SAFETY JOINT _____ 1.70
BY PASS SUB _____

1. PACKER DEPTH 3754.00'

PACKER _____ 6.00

2. PACKER DEPTH 3760.00'

PACKER _____ 5.00 TOTAL TOOL ABOVE INTERVAL 40.10

ANCHOR—SPECIFY _____ 1.00
Perfs. 19.00BLANK OFF OR BY PASS SUB _____
RECORDER No. 2660 I Outs. _____ 1.00 DEPTH 3781

Perfs. 9.00

3. PACKER DEPTH _____

PACKER _____ TOTAL INTERVAL 180'

4. PACKER DEPTH _____

PACKER _____

ANCHOR—SPECIFY _____

Dr. Collars 147.00'

RECORDER No. _____ DEPTH _____

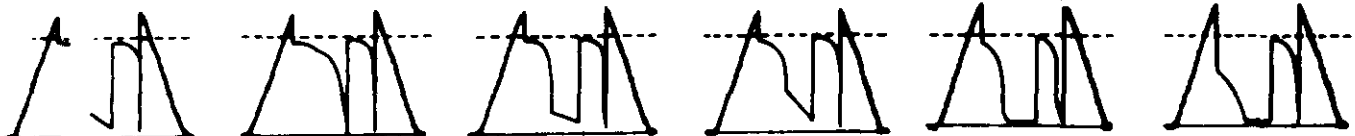
TOTAL DEPTH 3940.00

BULLNOSE 3.00

TOTAL TAIL PIPE _____

TOTAL TEST TOOL 220.10'

BET CHARTS FOR COMPARATIVE VISUAL ANALYSIS



B

HIC
STRPERMEABILITY
DAMAGE EFFECTHIGH PERMEABILITY
NO DAMAGE EFFECTMEDIUM PERMEABILITY
STRONG DAMAGE EFFECTMEDIUM PERMEABILITY
NO DAMAGE EFFECTLOW PERMEABILITY
STRONG DAMAGE EFFECTLOW PERMEABILITY
NO DAMAGE EFFECT



DST PRESSURE INCREMENTS

Recorder No 2843

Depth 3743'

Points	INITIAL CIP				FINAL CIP			
	Time Defl. "	T + G	$\frac{T+G}{G}$	PSIG	Time Defl. "	T + G	$\frac{T+G}{G}$	PSIG
1					0			526
2					5			1396
3					10			1438
4					15			1463
5					20			1477
6					25			1484
7					30			1492
8					35			1497
9					40			1500
10					45			1505
11					50			1508
12					55			1511
13					60			1514
14					65			1517
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16					73			1520
17								
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19								
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23								
24								

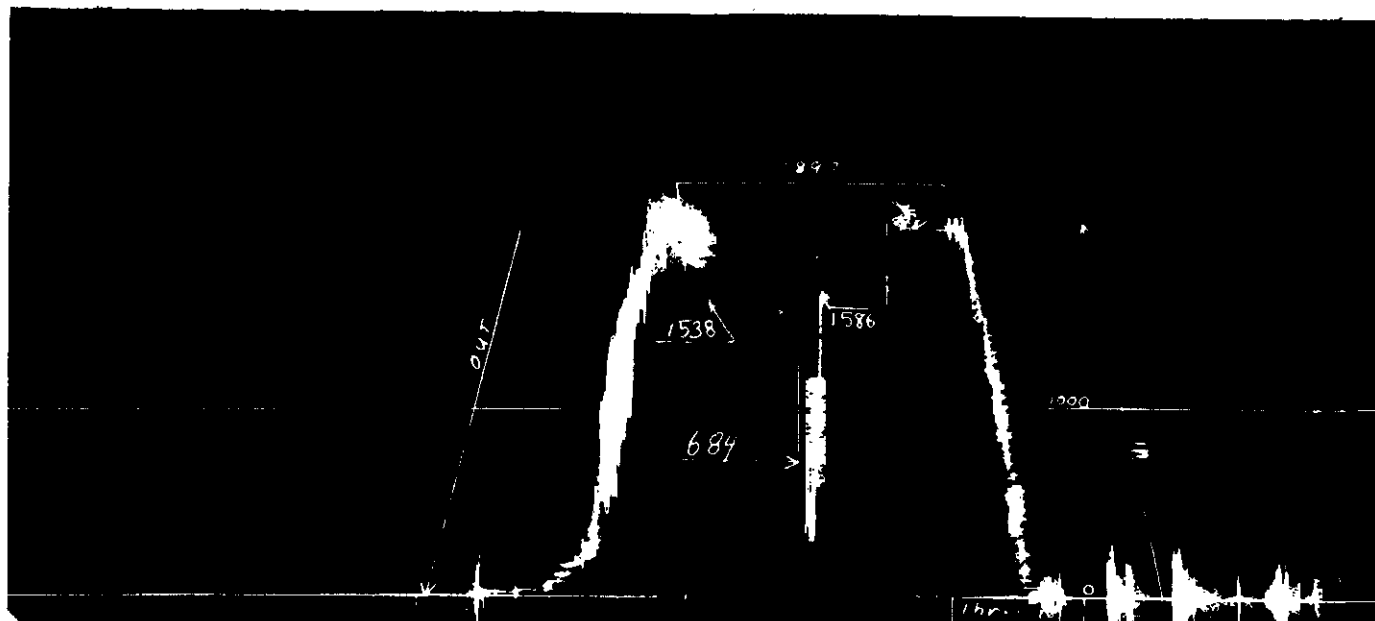
SINCLAIR WOLVERINE CREEK D-61

Inside Recorder # 2843 Test # 2



SINCLAIR WOLVERINE CREEK D-61

Outside Recorder # 2660 Test # 2



Report on nine subsurface samples from Wolverine Creek No. D61, Sinclair, Great Bear Lake Map-area, District of Mackenzie, collected and processed by Atlantic Richfield Canada Limited, (N.T.S. 96F).

The relevant parts of any manuscript prepared for publication that paraphrase or quote from this report should be referred to the Western Paleontology Section, Calgary, for possible revision.

NOTE: Identifications, paleoecology and provisional age assignments were made jointly by B. Johnson, Atlantic Richfield Canada Limited, and T.P. Chamney, Institute of Sedimentary and Petroleum Geology, Calgary. Drill cutting samples were used for the study.

<u>Stratigraphy & Footage</u>	<u>Locality, Microfossils & Age</u>	<u>GSC Loc. No.</u>
420 feet	Sinclair <u>Wolverine Creek</u> 65°10'14"N., 124°12'52"W. The sample contains simple and complex, agglutinated foraminifera, a (?) seed and a (?) radiolarian. The faunal list includes: <i>Reophax</i> aff. <i>troyeri</i> Tappan <i>Gaudryina nanushuckensis</i> Tappan <i>Ammobaculites fragmentarius</i> Cushman (?) <i>Trochammina</i> sp. <i>Trochamminoides</i> sp. (?) <i>Textularia</i> sp. Minerals: Pyrite and calcite debris. age: <i>Gaudryina nanushuckensis</i> is a Middle Albian form. environment: The complexity of the agglutinating foraminifera indicates this is a marine assemblage which may have had access to open marine conditions - (?) radiolarian.	C-12195
910 feet	Sinclair <u>Wolverine Creek</u> 65°10'14"N., 124°12'52"W. This sample contains an abundance of agglutinated foraminifera which includes the following forms: (?) <i>Spiroplectammina</i> sp. <i>Spiroplectammina</i> sp. <i>Reophax</i> aff. <i>minuta</i> Tappan (?) <i>Textularia</i> sp. <i>Ammobaculites fragmentarius</i> Cushman <i>Gaudryina nanushuckensis</i> Tappan (?) <i>Trochamminoides</i> sp. <i>Bathysiphon vitta</i> Nauss (?) <i>Trochammina</i> sp. <i>Reophax troyeri</i> Tappan	C-12196

Stratigraphy & Footage

Locality, Microfossils & Age

GSC Loc. No.

Saccammina sp.
Gaudryina sp. (stubby form)
Ammobaculites? sp.
Lagenammina? sp.
Trochammina aff. *umiatensis* Tappan
Trochammina aff. *ribstonensis* Wickenden
Verneuilinoides sp.
Haplophragmoides aff. *platus* Loeblich
Haplophragmoides aff. sp. 120 Chamney
(ex gr. *H. gigas minor* Nauss)
Haplophragmoides cf. sp. 122 Chamney
(ex gr. *H. multiplus* Stelck & Wall)
Haplophragmoides gigas minor Nauss.
Haplophragmoides aff. *sewellensis* Olsson
Haplophragmoides sp. 122 Chamney
Minerals: Pyrite.

age: *Gaudryina stotei*, *Gaudryina nanushuckensis*
and *Haplophragmoides gigas minor* are Middle
Albian forms - which probably fell down the drill
hole, this suggests there may be some Upper
Albian material which was not processed above
420 ft.

environment: The abundance and variety of the
fauna indicates this must have been a favorable
marine environment.

1520 feet

Sinclair Wolverine Creek
65°10'14"N., 124°12'52"W.

C-12197

This sample contains an abundance of agglutinated
foraminifera, a few calcareous foraminifera,
vertebrate fragments, pyritised-wood fragments,
burrows, faecal pellets and spherical (?) radiolaria
The faunal list includes the following forms:

Reophax aff. *minuta* Tappan
Lenticulina cf. *macrodisca* Reuss
(?) *Hippocrepina* sp.
Lagenammina sp.
Bathysiphon vitta Nauss
Trochammina sp.
Gaudryina sp.
Clavulina? sp.
Bathysiphon brosgiei Tappan
Reophax? n. sp. aff. *R. eckernex* Vieaux
Arenobulimina paynei Tappan
Lagenammina sp.
Lagenammina? n. sp.
Discorbis stictata Tappan
Haplophragmoides gigas minor Nauss
Haplophragmoides aff. sp. 107. Chamney
Haplophragmoides aff. *cucullatus* Gallitelli
Haplophragmoides cf. *globosa* Lozo
Haplophragmoides aff. *H. ex gr. linki* Nauss
Haplophragmoides ex gr. *gigas minor* Nauss
Haplophragmoides sp. 94 Chamney
Trochaminoides sp.

Stratigraphy & Footage

Locality, Microfossils & Age

GSC Loc. No.

Minerals: Pyrite

age: The combination of *Ammobaculites fragmentarius*, *Haplophragmoides gigas minor*, *Bathysiphon vitta* and *Ammodiscus mangusi* suggests that this sample is of Middle Albian Age.

environment: The abundance and the variety of fauna indicates a favourable marine environment and the presence of radiolaria and a pseudo-pelagic calcareous foraminifera suggests there must have been access to open marine conditions. The pyritised wood fragments suggests a land mass may have been close, which might suggest there was a large river bringing a good supply of nutrients into the sea, and thus the sea was capable of supporting such a rich faunal assemblage.

1810 feet

Sinclair Wolverine Creek
65°10'14"N., 124°12'52"W.

C-12198

This sample is rich in agglutinated foraminifera, which are somewhat smaller than those found in Sinclair Wolverine Lake - 1520 feet. There has also been a loss of most of the calcareous forms and the Radiolaria. Megaspores and wood fragments were also found in this sample.

The faunal list includes the following forms:

Reophax aff. *minuta* Tappan

Textularia topagorukensis Tappan

Spiroplectammina sp.

Bathysiphon brosgel Tappan

Ammodiscus aff. *rotalarius* Loeblich and Tappan

(?) *Lagena* sp.

Ammobaculites fragmentarius Cushman

Lagenammina sp.

Reophax cf. *troyeri* Tappan

(?) *Ammodiscus* sp.

Proteonina sp.

(?) *Trochammina* sp.

Trochamminoides sp.

Trochamminoides sp.

Trochammina sp.

Haplophragmoides aff. *barremicus* Myatliuk

Haplophragmoides ex gr. *gigas minor* Nauss

Haplophragmoides ex gr. *linki* Nauss

Haplophragmoides aff. *tryssa* Loeblich and Tappan

Haplophragmoides gigas minor Nauss

Haplophragmoides? n. sp.

Haplophragmoides aff. *cushmani* Loeblich and Tappan

Stratigraphy & Footage

Locality, Microfossils & Age

GSC Loc. No.

age: The combination of *Ammobaculites fragmentarius*, *Haplophragmoides gigas minor* and *Bathysiphon brosgiei* suggests this sample is of Middle Albian age.

environment: The variety and number of specimens indicates this is a marine sample, however there are fewer open marine indicators than in Sinclair Wolverine Creek - 1520 feet, and the fauna as a whole appears to be decreasing in size. There is a corresponding increase in the amount of wood material and megaspores, so it seems probably that this was a restricted marine, near shore sample.

2430 feet

Sinclair Wolverine Creek
65°10'14"N., 124°12'52"W.

C-12199

The sample contains agglutinated Foraminifera, pyritised faecal material, gastropod and wood fragments, and a single calcareous Foraminifera. The faunal list includes the following:

Gaudryina subcretacea Cushman
Ammodiscus aff. *mangusi* Tappan
(?) *Gaudryina* cf. *talleuri* Tappan
Bathysiphon aff. *borosgei* Tappan
Ammobaculites fragmentarius Cushman (stubby forms).
(?) *Glomospirella* aff. *gaultina* Berthelin
Reophax aff. *troyeri* Tappan
Gaudryina nanushuckensis Tappan
(?) *Hyperammina* sp.
Saëcammina lathrami Tappan
(?) *Trochammina* sp.
(?) *Glomospirella* sp.
Neobulimina subcretacea Cushman
Haplophragmoides gigas minor Nauss
Haplophragmoides? n.sp.
Haplophragmoides ex gr. *gigas minor* Nauss
Haplophragmoides coahuilaensis Conkin and Conkin
Haplophragmoides aff. *barremicus* Myatliuk

age: *Gaudryina subcretacea*, *Gaudryina nanushuckensis*, *Ammobaculites fragmentarius* (stubby forms) and *Haplophragmoides gigas minor* are all good indicators of the Middle Albian.

environment: The variety and abundance of Foraminifera indicates this deposit was formed under marine conditions, which was in close proximity to a land mass (wood fragments). The pyritisation of some Foraminifera may indicate high toxicity in the bottom waters.

<u>Stratigraphy & Footage</u>	<u>Locality, Microfossils & Age</u>	<u>GSC Loc. No.</u>
2620 feet	Sinclair Wolverine Creek 56°10'14"N., 124°12'52"W. This sample contains abundant agglutinated Foraminifera, wood fragments, megaspores, pyritised organic fragments and pyritised spheres siliceous spheres and a (?) radiolaria. <i>Ammobaculites</i> n. sp. <i>Ammobaculites fragmentarius</i> Cushman <i>Gaudryina</i> cf. <i>tailleuri</i> Tappan <i>Bathysiphon vitta</i> Nauss <i>Ammobaculites fragmentarius</i> Cushman (stubby form). <i>Lagenammia</i> sp. <i>Lagenammia</i> ? n. sp. (?) <i>Proteonina</i> sp. <i>Saccammia lathrami</i> Tappan (?) <i>Trochammia</i> sp. <i>Haplophragmoides</i> ex gr. <i>spissus</i> Stelck and Wall <i>Haplophragmoides</i> ex gr. <i>collyra</i> Nauss <i>Haplophragmoides</i> sp. 117 Chamney <i>Haplophragmoides</i> aff. <i>platus</i> Loeblich <i>Haplophragmoides</i> cf. <i>globosa</i> Lozo <i>Haplophragmoides</i> ex gr. <i>gigas minor</i> Nauss age: <i>Ammobaculites fragmentarius</i> (stubby form) <i>Gaudryina tailleuri</i> and <i>Bathysiphon vitta</i> are Middle/Upper Albian forms. As this sample occurs below a definite Middle Albian horizon it is probably Middle Albian also. environment: The rich, varied agglutinated foraminiferal assemblage is indicative of marine conditions, probably close to land mass which provided the microflora. The bottom waters may have been more restricted, resulting in the pyritisation of some organic material.	C-12200
2720 feet	Sinclair Wolverine Creek 65°10'14"N., 124°12'52"W. This sample contains agglutinated Foraminifera, radiolaria and pyritised worm burrows. The faunal list includes the following forms: <i>Dictyometra</i> sp. 9 Chamney <i>Ammobaculites fragmentarius</i> Cushman (stubby form) <i>Lagenammia</i> sp. <i>Gaudryina tailleuri</i> Tappan <i>Glomospirella</i> sp. <i>Ammodiscus mangusi</i> Tappan <i>Trochamminoides</i> ? n. sp. <i>Trochamminoides</i> sp. <i>Bathysiphon vitta</i> Nauss <i>Bathysiphon broegei</i> Tappan	C-12201

Stratigraphy & Footage

Locality, Microfossils & Age

GSC Loc. No.

Reophax cf. *troyeri* Tappan
 (?) *Trochammina* sp.
Neccammina ? n. sp.
Haplophragmoides aff. sp. 121 Chamney
Haplophragmoides gigas minor Nauss
Haplophragmoides aff. *eggeri* Cushman
Haplophragmoides aff. *formosum* Bolin
 age: This sample contains Lower to Middle
 Albian forms.

environment: The radiolarian *Dictyometra* sp. 9.
 has been discounted as contamination --
 as it is a Middle Albian form only. From
 the remainder of the biota it seems likely
 that this sample was formed during marine
 conditions.

2760 feet

Sinclair Wolverine Creek
 56°10'14"N., 124°12'52"W.

C-12202

This sample contains agglutinated Foraminifera,
 vertebrate fragments (? teeth), wood fragments
 and pyritised spheres, (?) radiolaria.
 The faunal list includes the following forms:
Bathysiphon brosgiei Tappan
Reophax sp.
Gaudryina sp. (stubby form)
 (?) *Glomospirella gaultina* Berthelin
Glomospirella ? n. sp.
Reophax cf. *troyei* Tappan
 (?) *Saccammina* sp.
Lagenammina sp.
Reophax cf. *minuta* Tappan
Gaudryina sp.
Ammobaculites fragmentarius Cushman (stubby form)
Gaudryina aff. *barrowensis* Tappan
Hypermmmina sp.
Haplophragmoides sp. 107. Chamney
Haplophragmoides sp. 117. Chamney
Haplophragmoides gigas minor Nauss
Haplophragmoides aff. *formosum* Bolin
Haplophragmoides ? n. sp. aff. *H.* sp. 125 Chamney
Haplophragmoides coahiulaensis Conkin and Conkin

age: *Haplophragmoides* sp. 117 is a Lower Albian
 form whilst *Haplophragmoides* sp. 107 is
 considered to range to the top of the
 Neocomian. It is possible that the specimen
 found in this sample is a later variety
 arising from the *H.* sp. 107 stock, or it
 could be an extension of the range *Haplo-*
phragmoides sp. 107.

environment: The rich varied agglutinated
 Foraminifera and the vertebrate fragments
 suggest this sample formed under marine
 conditions. The pyritised material and
 the fact that preservation is not as good

Stratigraphy & Footage

Locality, Microfossils & Age

GSC Loc. No.

as from previous levels suggests
there may have been adverse bottom
conditions.

2830 feet

Sinclair Wolverine Creek
56°10'14"N., 124°12'52"W.

C-12203

This sample contains pyritised wood fragments,
megaspores and a few agglutinated Foraminifera.
The faunal list includes the following forms:

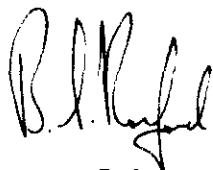
Haplophragmoides gigas minor Nauss

Haplophragmoides sp.

Minerals: Pyrite and glauconite

age: On lithological and geophysical data,
this level has been dated as Devonian.
However in the sample there is only a
Middle Albian form.

environment: The fauna and the presence of
wood fragments, megaspores and pyrite
suggests this sample probably formed
under brackish or very restricted
marine conditions close to a land mass.



Western Paleontology Section,
Institute of Sedimentary and Petroleum Geology,
Calgary, November 24, 1971.



T.P. Chamney.

Report on nine subsurface samples from Wolverine Creek No. D61, Sinclair, Great Bear Lake Map-area, District of Mackenzie, collected and processed by Atlantic Richfield Canada Limited, (N.T.S. 96F).

The relevant parts of any manuscript prepared for publication that paraphrase or quote from this report should be referred to the Western Paleontology Section, Calgary, for possible revision.

NOTE: Identifications, paleoecology and provisional age assignments were made jointly by B. Johnson, Atlantic Richfield Canada Limited, and T.P. Chamney, Institute of Sedimentary and Petroleum Geology, Calgary. Drill cutting samples were used for the study.

<u>Stratigraphy & Footage</u>	<u>Locality, Microfossils & Age</u>	<u>GSC Loc. No.</u>
420 feet	Sinclair <u>Wolverine Creek</u> 65°10'14"N., 124°12'52"W. The sample contains simple and complex, agglutinated foraminifera, a (?) seed and a (?) radiolarian. The faunal list includes: <i>Reophax</i> aff. <i>troyeri</i> Tappan <i>Gaudryina nanushuckensis</i> Tappan <i>Ammobaculites fragmentarius</i> Cushman (?) <i>Trochammina</i> sp. <i>Trochamminoides</i> sp. (?) <i>Textularia</i> sp. Minerals: Pyrite and calcite debris. age: <i>Gaudryina nanushuckensis</i> is a Middle Albian form. environment: The complexity of the agglutinating foraminifera indicates this is a marine assemblage which may have had access to open marine conditions - (?) radiolarian.	C-12195
910 feet	Sinclair <u>Wolverine Creek</u> 65°10'14"N., 124°12'52"W. This sample contains an abundance of agglutinated foraminifera which includes the following forms: (?) <i>Spiroplectammina</i> sp. <i>Spiroplectammina</i> sp. <i>Reophax</i> aff. <i>minuta</i> Tappan (?) <i>Textularia</i> sp. <i>Ammobaculites fragmentarius</i> Cushman <i>Gaudryina nanushuckensis</i> Tappan (?) <i>Trochamminoides</i> sp. <i>Bathysiphon vitta</i> Nauss (?) <i>Trochammina</i> sp. <i>Reophax troyeri</i> Tappan	C-12196

Stratigraphy & Footage

Locality, Microfossils & Age

GSC Loc. No.

Saccammina sp.
Gaudryina sp. (stubby form)
Ammobaculites? sp.
Lagenammina? sp.
Trochammina aff. *umiatensis* Tappan
Trochammina aff. *ribstonensis* Wickenden
Verneuilinoides sp.
Haplophragmoides aff. *platus* Loeblich
Haplophragmoides aff. sp. 120 Chamney
(ex gr. *H. gigas minor* Nauss)
Haplophragmoides cf. sp. 122 Chamney
(ex gr. *H. multiplus* Stelck & Wall)
Haplophragmoides gigas minor Nauss.
Haplophragmoides aff. *sewellensis* Olsson
Haplophragmoides sp. 122 Chamney
Minerals: Pyrite.

age: *Gaudryina stotei*, *Gaudryina nanushuckensis*
and *Haplophragmoides gigas minor* are Middle
Albian forms - which probably fell down the drill
hole, this suggests there may be some Upper
Albian material which was not processed above
420 ft.

environment: The abundance and variety of the
fauna indicates this must have been a favorable
marine environment.

1520 feet

Sinclair Wolverine Creek
65°10'14"N., 124°12'52"W.

C-12197

This sample contains an abundance of agglutinated
foraminifera, a few calcareous foraminifera,
vertebrate fragments, pyritised-wood fragments,
burrows, faecal pellets and spherical (?) radiolaria
The faunal list includes the following forms:

Reophax aff. *minuta* Tappan
Lenticulina cf. *macrodisca* Reuss
(?) *Hippocrepina* sp.
Lagenammina sp.
Bathysiphon vitta Nauss
Trochammina sp.
Gaudryina sp.
Clavulina? sp.
Bathysiphon brosgiei Tappan
Reophax? n. sp. aff. *R. eckernex* Vieaux
Arenobulimira paynei Tappan
Lagenammina sp.
Lagenammina? n. sp.
Discorbis stictata Tappan
Haplophragmoides gigas minor Nauss
Haplophragmoides aff. sp. 107. Chamney
Haplophragmoides aff. *cucullatus* Gallitelli
Haplophragmoides cf. *globosa* Lozo
Haplophragmoides aff. *H. ex gr. linki* Nauss
Haplophragmoides ex gr. *gigas minor* Nauss
Haplophragmoides sp. 94 Chamney
Trochaminoides sp.

Stratigraphy & Footage

Locality, Microfossils & Age

GSC Loc. No.

Minerals: Pyrite

age: The combination of *Ammobaculites fragmentarius*, *Haplophragmoides gigas minor*, *Bathysiphon vitta* and *Ammodiscus mangusi* suggests that this sample is of Middle Albian Age.

environment: The abundance and the variety of fauna indicates a favourable marine environment and the presence of radiolaria and a pseudo-pelagic calcareous foraminifera suggests there must have been access to open marine conditions. The pyritised wood fragments suggests a land mass may have been close, which might suggest there was a large river bringing a good supply of nutrients into the sea, and thus the sea was capable of supporting such a rich faunal assemblage.

1810 feet

Sinclair Wolverine Creek
65°10'14"N., 124°12'52"W.

C-12198

This sample is rich in agglutinated foraminifera, which are somewhat smaller than those found in Sinclair Wolverine Lake - 1520 feet. There has also been a loss of most of the calcareous forms and the Radiolaria. Megaspores and wood fragments were also found in this sample.

The faunal list includes the following forms:

Reophax aff. *minuta* Tappan

Textularia topagorukensis Tappan

Spiroplectammina sp.

Bathysiphon brosgel Tappan

Ammodiscus aff. *rotalarius* Loeblich and Tappan

(?) *Lagena* sp.

Ammobaculites fragmentarius Cushman

Lagenammina sp.

Reophax cf. *troyeri* Tappan

(?) *Ammodiscus* sp.

Proteonina sp.

(?) *Trochammina* sp.

Trochamminoides sp.

Trochamminoides sp.

Trochammina sp.

Haplophragmoides aff. *barremicus* Myatliuk

Haplophragmoides ex gr. *gigas minor* Nauss

Haplophragmoides ex gr. *linki* Nauss

Haplophragmoides aff. *tryssa* Loeblich and Tappan

Haplophragmoides gigas minor Nauss

Haplophragmoides? n. sp.

Haplophragmoides aff. *cushmani* Loeblich and Tappan

Stratigraphy & Footage

Locality, Microfossils & Age

GSC Loc. No.

age: The combination of *Ammobaculites fragmentarius*, *Haplophragmoides gigas minor* and *Bathysiphon brosgiei* suggests this sample is of Middle Albian age.

environment: The variety and number of specimens indicates this is a marine sample, however there are fewer open marine indicators than in Sinclair Wolverine Creek - 1520 feet, and the fauna as a whole appears to be decreasing in size. There is a corresponding increase in the amount of wood material and megaspores, so it seems probably that this was a restricted marine, near shore sample.

2430 feet

Sinclair Wolverine Creek
65°10'14"N., 124°12'52"W.

C-12199

The sample contains agglutinated Foraminifera, pyritised faecal material, gastropod and wood fragments, and a single calcareous Foraminifera. The faunal list includes the following:

Gaudryina subcretacea Cushman
Ammodiscus aff. *mangusi* Tappan
(?) *Gaudryina* cf. *talleuri* Tappan
Bathysiphon aff. *borosgei* Tappan
Ammobaculites fragmentarius Cushman (stubby forms).
(?) *Glomospirella* aff. *gaultina* Berthelin
Reophax aff. *troyeri* Tappan
Gaudryina nanushuckensis Tappan
(?) *Hyperammina* sp.
Saëcammina lathrami Tappan
(?) *Trochammina* sp.
(?) *Glomospirella* sp.
Neobulimina subcretacea Cushman
Haplophragmoides gigas minor Nauss
Haplophragmoides? n.sp.
Haplophragmoides ex gr. *gigas minor* Nauss
Haplophragmoides coahuilaensis Conkin and Conkin
Haplophragmoides aff. *barremicus* Myatliuk

age: *Gaudryina subcretacea*, *Gaudryina nanushuckensis*, *Ammobaculites fragmentarius* (stubby forms) and *Haplophragmoides gigas minor* are all good indicators of the Middle Albian.

environment: The variety and abundance of Foraminifera indicates this deposit was formed under marine conditions, which was in close proximity to a land mass (wood fragments). The pyritisation of some Foraminifera may indicate high toxicity in the bottom waters.

<u>Stratigraphy & Footage</u>	<u>Locality, Microfossils & Age</u>	<u>GSC Loc. No.</u>
2620 feet	Sinclair Wolverine Creek 56°10'14"N., 124°12'52"W. This sample contains abundant agglutinated Foraminifera, wood fragments, megaspores, pyritised organic fragments and pyritised spheres siliceous spheres and a (?) radiolaria. <i>Ammobaculites</i> n. sp. <i>Ammobaculites fragmentarius</i> Cushman <i>Gaudryina</i> cf. <i>tailleuri</i> Tappan <i>Bathysiphon vitta</i> Nauss <i>Ammobaculites fragmentarius</i> Cushman (stubby form). <i>Lagenammia</i> sp. <i>Lagenammia</i> ? n. sp. (?) <i>Proteonina</i> sp. <i>Saccammia lathrami</i> Tappan (?) <i>Trochammia</i> sp. <i>Haplophragmoides</i> ex gr. <i>spissus</i> Stelck and Wall <i>Haplophragmoides</i> ex gr. <i>collyra</i> Nauss <i>Haplophragmoides</i> sp. 117 Chamney <i>Haplophragmoides</i> aff. <i>platus</i> Loeblich <i>Haplophragmoides</i> cf. <i>globosa</i> Lozo <i>Haplophragmoides</i> ex gr. <i>gigas minor</i> Nauss age: <i>Ammobaculites fragmentarius</i> (stubby form) <i>Gaudryina tailleuri</i> and <i>Bathysiphon vitta</i> are Middle/Upper Albian forms. As this sample occurs below a definite Middle Albian horizon it is probably Middle Albian also. environment: The rich, varied agglutinated foraminiferal assemblage is indicative of marine conditions, probably close to land mass which provided the microflora. The bottom waters may have been more restricted, resulting in the pyritisation of some organic material.	C-12200
2720 feet	Sinclair Wolverine Creek 65°10'14"N., 124°12'52"W. This sample contains agglutinated Foraminifera, radiolaria and pyritised worm burrows. The faunal list includes the following forms: <i>Dictyometra</i> sp. 9 Chamney <i>Ammobaculites fragmentarius</i> Cushman (stubby form) <i>Lagenammia</i> sp. <i>Gaudryina tailleuri</i> Tappan <i>Glomospirella</i> sp. <i>Ammodiscus mangusi</i> Tappan <i>Trochamminoides</i> ? n. sp. <i>Trochamminoides</i> sp. <i>Bathysiphon vitta</i> Nauss <i>Bathysiphon broegei</i> Tappan	C-12201

Stratigraphy & Footage

Locality, Microfossils & Age

GSC Loc. No.

Reophax cf. *troyeri* Tappan
 (?) *Trochammina* sp.
Neccammina ? n. sp.
Haplophragmoides aff. sp. 121 Chamney
Haplophragmoides gigas minor Nauss
Haplophragmoides aff. *eggeri* Cushman
Haplophragmoides aff. *formosum* Bolin
 age: This sample contains Lower to Middle
 Albian forms.

environment: The radiolarian *Dictyometra* sp. 9.
 has been discounted as contamination --
 as it is a Middle Albian form only. From
 the remainder of the biota it seems likely
 that this sample was formed during marine
 conditions.

2760 feet

Sinclair Wolverine Creek
 56°10'14"N., 124°12'52"W.

C-12202

This sample contains agglutinated Foraminifera,
 vertebrate fragments (? teeth), wood fragments
 and pyritised spheres, (?) radiolaria.
 The faunal list includes the following forms:
Bathysiphon brosgiei Tappan
Reophax sp.
Gaudryina sp. (stubby form)
 (?) *Glomospirella gaultina* Berthelin
Glomospirella ? n. sp.
Reophax cf. *troyei* Tappan
 (?) *Saccammina* sp.
Lagenammina sp.
Reophax cf. *minuta* Tappan
Gaudryina sp.
Ammobaculites fragmentarius Cushman (stubby form)
Gaudryina aff. *barrowensis* Tappan
Hypermmmina sp.
Haplophragmoides sp. 107. Chamney
Haplophragmoides sp. 117. Chamney
Haplophragmoides gigas minor Nauss
Haplophragmoides aff. *formosum* Bolin
Haplophragmoides ? n. sp. aff. *H.* sp. 125 Chamney
Haplophragmoides coahiulaensis Conkin and Conkin

age: *Haplophragmoides* sp. 117 is a Lower Albian
 form whilst *Haplophragmoides* sp. 107 is
 considered to range to the top of the
 Neocomian. It is possible that the specimen
 found in this sample is a later variety
 arising from the *H.* sp. 107 stock, or it
 could be an extension of the range *Haplo-*
phragmoides sp. 107.

environment: The rich varied agglutinated
 Foraminifera and the vertebrate fragments
 suggest this sample formed under marine
 conditions. The pyritised material and
 the fact that preservation is not as good

Stratigraphy & Footage

Locality, Microfossils & Age

GSC Loc. No.

as from previous levels suggests
there may have been adverse bottom
conditions.

2830 feet

Sinclair Wolverine Creek
56°10'14"N., 124°12'52"W.

C-12203

This sample contains pyritised wood fragments,
megaspores and a few agglutinated Foraminifera.
The faunal list includes the following forms:

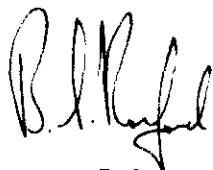
Haplophragmoides gigas minor Nauss

Haplophragmoides sp.

Minerals: Pyrite and glauconite

age: On lithological and geophysical data,
this level has been dated as Devonian.
However in the sample there is only a
Middle Albian form.

environment: The fauna and the presence of
wood fragments, megaspores and pyrite
suggests this sample probably formed
under brackish or very restricted
marine conditions close to a land mass.



Western Paleontology Section,
Institute of Sedimentary and Petroleum Geology,
Calgary, November 24, 1971.



T.P. Chamney.