SUNCOR ENERGY INC.

GEOLOGICAL REPORT

NCOR NETLA K-77-60-50-122-3

Latitude 60°46'30.724"

Longitude 122°44'23.945"

CABRA CONSULTING

A Division of Cabra Enterprises Ltd.

CALGARY, ALBERTA

SUNCOR ENERGY INC.

GEOLOGICAL REPORT

SUNCOR NETLA K-77-60-50-122-30

Latitude 60°46'30.724"
Longitude 122°44'23.945"

Prepared by: Brian Hester P. Geol..

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Reported to: Ms. Lauren Pudsey

SUNCOR NETLA K-77-60-50-122-30

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SUNCOR NETLA K-77-60-50-122-30

WELL DATA SUMMARY

Company:	Suncor Energy Inc.
Well Name:	Suncor Netla K-77-60-50-122-30
Surface Location:	K-77-60-50-122-30
Surface Co-ordinates:	Latitude 60°46'30.724" Longitude 122°44'23.945"
Target Co-ordinates:	261.4 m North, 100.3 m West of well center.
Elevations:	***Ground:*** 618.4 meters (cut.5 m) ***Kelly Bushing:*** 625.2 meters ***K.B. to Ground:*** 6.8 meters
Unique Well I.D.:	300/K-77-60-50-122-30/00
Field:	Netla
Classification:	Exploration
Objectives:	***Primary*** – Slave Point (Gas)
Terminating Zone:	Fort Vermilion (Middle Devonian)
Security:	Tight
AFE Number:	A9811680K77
Licence Number:	NA
Spud Date:	0230 Hrs., February 7, 1999
Total Depth:	2118 meters @ 1700 Hrs, March 10, 1999
Sampled Interval:	***Suncor:*** 15 to 2118 meters (5 meter intervals) ***N.E.B.:*** 15 to 2118 meters (5 meter intervals)
Contractor:	Akita Rig No. 58 & Bonus Rig No. 235

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Drilling Supervision: Lee Brazel, Pat Miller, Godwin Valin, Mike Petroski

Geological Supervision: Brian Hester

Hole Size:
Surface: 311.0 mm
Intermediate: 222 mm
Main: 155.6 mm

Surface Casing:
Size: 244.5 mm
Type: 41 joints of 53.6 kg/m J-55, ST&C
Landed @ 535.5 meters
Cement: 35.0 tonnes RFC
Plug down @ 1832 Hrs February 10, 1999

Intermediate Casing:
Size: 177.8 mm
Type: 154 joints of 34.2 kg/m L-80
Landed @ 1989 meters
Cement with: 43 tonnes 1-1-2 + additives
Tail: 21 tonnes RFC + additives
Plug down @ 1200 Hrs., March 1, 1999
Cement Top @ 1800 meters

Mudlogging:
Datalog
Operated by Geologist.
Interval Logged: 20 to 2118 meters

Directional Services:
Anadrill
Directional Drillers: Maurice Nolan
MWD Operators: Several

Drill Stem Tests: None

Cores: None

Open Hole Logs: Schlumberger

Log	***Interval Logged***	***Scale***
Run 1		
AIT-BHC-CNL-LDT	1990 to 535.5 meters	1:240
DPS	535.5 to 0 meters	1:240
Run 2		
AIT-BHC-CNL-LDT	2118 to 1986.8 meters	1:240
MSCT	Various	
FMI	2118 to 1986.8 meters	1:240
VSP	2 vibration points	1:240

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Final Status:	Potential Slave Point Gas Well
Rig Release:	2400 Hrs, March 12, 1999
Final Costs:	$2,513,003
Comments:	This well was drilled by Akita to 990 meters and then drilled directionally to intermediate casing point at 1990 meters. The well was logged casing was run and the Akita rig was then moved off. A Bonus service rig was moved on to finish the well. After drilling to T.D. the Well was logged and a VSP was run. After this the well was turned over to production for completion.

GEOLOGICAL MARKERS

K.B. 1458.8 meters

	Prognosis		Samples			Logs		
Formation	**Depth (m)**	**Subsea (m)**	**MD (m)**	**TVD (m)**	**Subsea (m)**	**MD (m)**	**TVD (m)**	**Subsea (m)**
Upper Devonian								
Surface Casing	NP	NP	535.5	535.5	89.7	535.5	535.5	89.7
Exshaw	NP	NP	639.0	639.0	-13.8	638.0	638	-12.8
Kotcho Shale	665.2	-40.0	652.0	652.0	-26.8	652.3	652.3	-27.1
Kotcho Carbonate	713.9	-88.7	708.0	708.0	-82.8	710.9	710.9	-85.7
Tetcho Carbonate	988.3	-363.1	981.0	981.0	-355.8	989.6	989.6	-364.4
Trout River	1080.5	-455.3	1062.0	1062.0	-436.8	1078.7	1078.6	-453.4
Kakisa	1166.8	-541.6	1156.0	1155.6	-530.4	1156.7	1156.2	-531.0
Redknife	1185.8	-560.6	1176.0	1175.2	-550.0	1183.5	1182.5	-557.3
Jean Marie	1349.5	-724.3	1318.0	1305.8	-680.6	1317.0	1304.9	-679.7
Ft. Simpson	1432.4	-807.2	1433.0	1407.1	-781.9	1384.0	1363.6	-738.4
Middle Devonian								
Muskwa	NP	NP	1955.0	1895.7	-1270.5	1955.0	1895.7	-1270.5
Slave Point	1951.2	-1326.0	1983.0	1923.7	-1298.5	1982.0	1922.7	-1297.5
Intermediate Casing	NP	NP	1989.0	1929.7	-1304.5	1986.8	1927.5	-1302.3
Top Slave Pt. Reef	NP	NP	2015.0	1955.7	-1330.5	2013.4	1954.1	-1328.9
Top Porosity	NP	NP	2026.0	1966.7	-1341.5	2030.4	1971.1	-1345.9
Base Porosity	NP	NP	2046.0	1986.7	-1361.5	2043.8	1984.5	-1359.3
Ft. Vermillion	NP	NP	2111.0	2051.7	-1426.5	NP	NP	NP
Sulphur Point	2067.1	-1441.9	NP	NP	NP	NP	NP	NP
Total Depth	2107.1	-1481.9	2118.0	2058.7	-1433.5	2117.0	2057.7	-1432.5

DAILY PROGRESS SUMMARY

Days From Spud	Costs	Depth @ 2400 Hrs.	Progress (meters)	ROP	Formation	Operation	Operations Summary
0	$453,298	0	0	0	Surface	Rig to Spud	Move Rig. Rig up to Spud.
1	$634,616	237	237	14.8	Cretaceous	Drill	Rig up to spud. Spud well @ 0230 Hrs. Drill 311 mm hole & survey.
2	$684,671	401	164	12.4	Cretaceous	Drill	Drill ahead & survey to 315 m. Trip out to condition hole & change bits. Ream in and drill ahead & survey.
3	$712,594	540	139	9.0	Cretaceous	Trip	Drill ahead & survey to 540 m. Circulate and wiper trip. Survey. Circulate and trip out. Run in to survey.
4	$784,729	540	0	0.0	Cretaceous	Wait on cement	Trip in & directional survey. Trip out. Rig up & run & cement casing. Wait on cement & nipple down.
5	$820,945	540	0	0.0	Cretaceous	Nipple up	Nipple down diverter. Nipple up 346 mm BOPE's.
6	$865,824	544	4	5.3	Cretaceous	Leak off	Nipple up. Pressure test BOPE stack. Repair pumps. Pick up BHA. Run in & drill out @ 2130 Hrs. Under shoe @ 1100 Hrs. Drill 4 meters and perform leakoff.
7	$909,668	725	181	10.5	Kotcho	Drill	Pressure test. Drill ahead & survey.
8	$942,955	895	170	7.7	Kotcho	Drill	Drilll ahead & survey.
9	$992,506	1085	190	8.8	Trout River	Drill	Drill ahead & survey.

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Days From Spud	Costs	Depth @ 2400 Hrs.	Progress (meters)	ROP	Formation	Operation	Operations Summary
10	$1,050,432	1117	32	6.4	Trout River	Drill	Drill ahead to 1105 m. Circulate & trip out of hole. Pick up directional tools & bit #2. Run in & slip & cut. Finish in & drill ahead directionally.
11	$1,098,153	1252	135	6.7	Redknife	Drill	Drill ahead directionally
12	$1,145,210	1373	121	6.1	Jean Marie	Drill	Drill ahead directionally
13	$1,187,163	1484	111	5.4	Ft Simpson	Drill	Drill ahead directionally
14	$1,234,821	1577	93	4.8	Ft Simpson	Trip	Drill ahead & survey to 1577 m. Trip out of hole for bit #3.
15	$1,272,752	1630	53	4.9	Ft Simpson	Drill	Trip out for bit #3. Change out motor. Run in testing MWD on way in. Drill ahead directionally.
16	$1,331,258	1685	55	5.5	Ft Simpson	Drill	Drill ahead directionally to 1681 m. Trip for BHA. Set motor to 2.12`. Run in & drill ahead directionally.
17	$1,384,248	1782	97	5.0	Ft Simpson	Drill	Drill ahead directionally.
18	$1,440,733	1872	90	4.4	Ft. Simpson	Drill	Drill ahead directionally.
19	$1,594,786	1990	118	5.7	Slave Point	Circulate	Drill ahead directionally to 1990 m. Circulate sample.
20	$1,638,028	1990	0	0.0	Slave Point	Log	Circulate sample. Wiper trip to 990 m. Circulate & condition hole. Trip out to log. Lay down directional tools & rig up loggers.
21	$1,717,382	1990	0	0.0	Slave Point	Trip out sideways	Log well. Finish logging @ 0900 Hrs. Run in & condition hole for casing. Trip out sideways.

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Days From Spud	Costs	Depth @ 2400 Hrs.	Progress (meters)	ROP	Formation	Operation	Operations Summary
22	$1,745,533	1990	0	0.0	Slave Point	Run casing	Trip out sideways. Wait on power tong truck. Rig up tongs and run 177.8 mm casing.
23	$1,835,177	1990	0	0.0	Slave Point	Tear out	Circulate casing in to 1989 m. Circulate hole clean. Cement casing. (Unable to work same due to hole conditions.) Plug down 1200 Hrs. Nipple down and install well head. Rig released @ 2300 Hrs.
24	$1,861,420	1990	0	0.0	Slave Point	Move	Tear out rig. Rig released @ 0800 Hrs. Tear out and move rig.
25	$1,889,078	1990	0	0.0	Slave Point	Move	Tear down and move rig.
26	$1,941,084	1990	0	0.0	Slave Point	Rig in	Finish moving Akita #58 off location. Move on & spot service rig (Bonus #235). Rig in service rig.
27	$1,981,585	1990	0	0.0	Slave Point	Run in	Finish rigging up. Test accumulator.
28	$2,016,959	1990	0	0.0	Slave Point	Circulate	Make up BHA with mud motor & run in. Rig up power swivel & circulate in preparation to drill cement.
29	$2,185,085	2024	34	2.1	Slave Point	Drill ahead	Drill cement, plug & shoe. Drill to 1991.9 m. Under shoe @ 0230 Hrs. Circulate hole clean of cement. Displace to mud. Mix mud to replace displaced fluid. Drill ahead @ 1015 Hrs.
30	$2,219,098	2089	65	2.9	Slave Point	Drill ahead	Drill ahead. Repair rig. Drill ahead.

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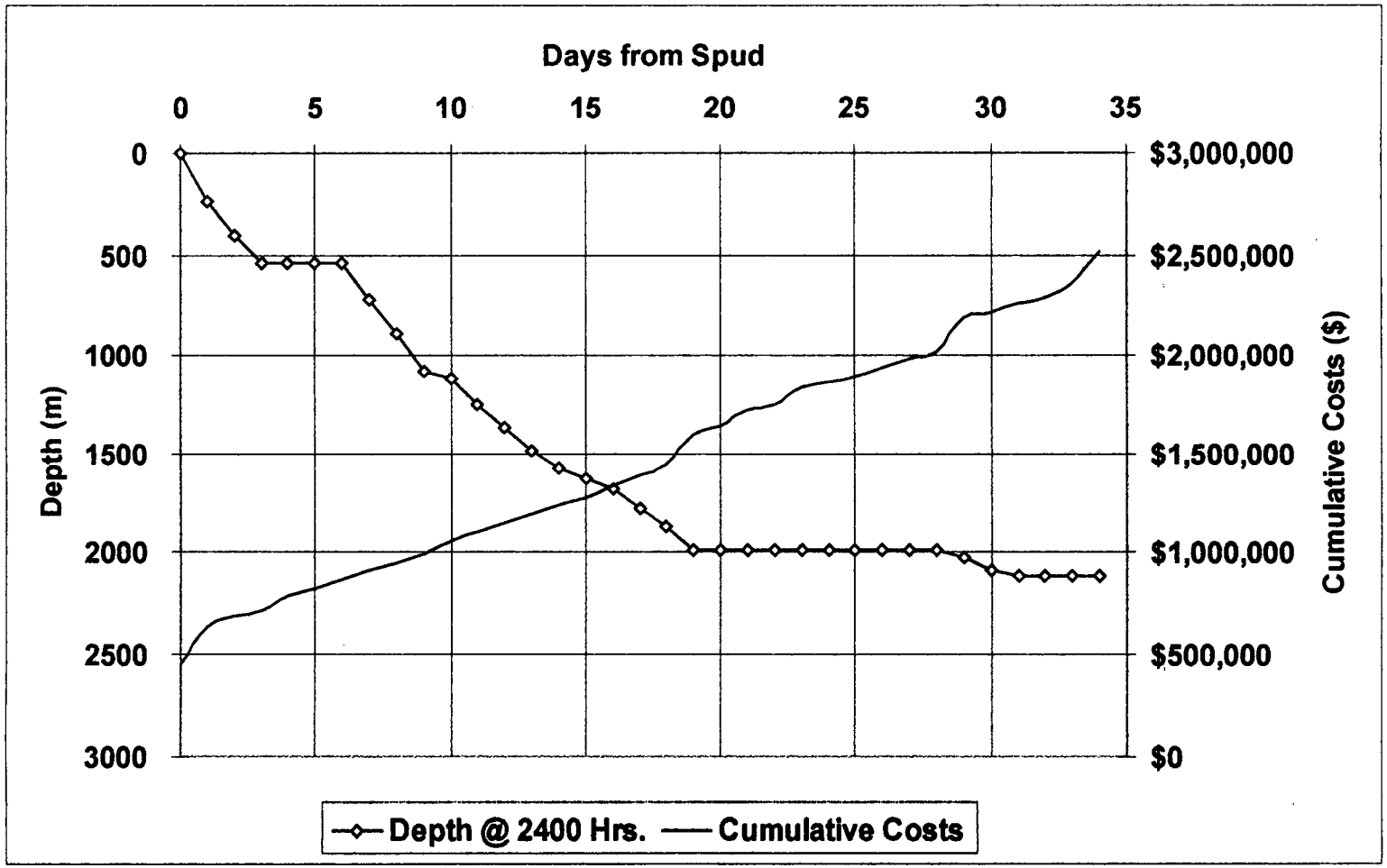
Days From Spud	Costs	Depth @ 2400 Hrs.	Progress (meters)	ROP	Formation	Operation	Operations Summary
31	$2,261,605	2118	29	1.7	Slave Point	Trip out	Drill ahead to 2118 m. ROP decrease to 1 m/hr. Call T.D. of 2118 m @ 1700 Hrs. Circulate. Lay down power swivel & trip out.
32	$2,291,620	2118	0	0.0	Slave Point	Core	Trip out & lay down drill collars. Rig to log. Run in @ 0530 with PE-HALS-LDT unable to get tools to function. Change out tools & run AITE-BHC-PE DENS-CNL-LDT-MEL & log well. Rig out & pick up MSCT tool. Cut & recover 22 cores.
33	$2,358,792	2118	0	0.0	Slave Point	Trip out	Finish MSCT & rig down. Wait on FMI. Rig up & log out with same. Make up casing scraper & run in. Scraper casing from 1930 to 1988 m. Displace cased hole to water. Trip out.
34	$2,513,003	2118	0	0.0	Slave Point	Rig release	Trip out with bit & casing scraper. Wait on VSP tools for 5 hours. Rig up for VSP. Spot vibro units and log VSP. Rig down loggers. Rig out open hole equipment. Release rig from drilling @ 0000 Hrs.

DAYS FROM SPUD VS DEPTH & CUMULATIVE COSTS



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MUD RECORD

Date	Depth (m)	Density (kg/m3)	Viscosity (s/l)	pH	Water Loss.	Filter Cake (mm)	Yield Point
99/02/07	237	1040		11.1	11	1.0	26.0
99/02/08	401	1070		10.0	10.2	1.0	23.5
99/02/09	540	1125		10.1	11	1.0	27.0
99/02/10	540	1125		10.0	11.2	1.0	26.5
99/02/11	540	1095		8.5	11.5	1.0	23.5
99/02/12	544	1095		8.5	11.5	1.0	23.5
99/02/13	725	1140		10.5	8.5	1.0	32.5
99/02/14	895	1160		10.0	11.8	1.0	27.0
99/02/15	1085	1160		10.8	8.0	1.0	19.5
99/02/16	1117	1155		10.2	9.7	1.0	23.5
99/02/17	1252	1145		10.0	8.3	1.0	16.0
99/02/18	1373	1155		10.0	8.3	1.5	28.0
99/02/19	1484	1180		9.7	7.3	1.5	31.0
99/02/20	1577	1190		10.0	7.6	1.5	32.0
99/02/21	1630	1195		10.5	8.5	1.5	34.5
99/02/22	1685	1185		9.5	7.2	1.5	27.0
99/02/23	1782	1195		10.5	7.2	1.5	40.0
99/02/24	1872	1210		10.0	7	1.5	41.0
99/02/25	1990	1205		10.0	7.2	1.5	31.5
99/02/26	1990	1205		10.0	7.2	1.5	32.5
99/02/27	1990	1210		10.0	8	1.5	31
99/02/28	1990	1210		10.0	8	1.5	31
99/03/01	1990	1200		9.0	9	1.5	21.5
99/03/02	1990	Casing and rig on Service rig					
99/03/03	1990	Casing and rig on Service rig					
99/03/04	1990	Casing and rig on Service rig					
99/03/05	1990	Casing and rig on Service rig					
99/03/06	1990	Casing and rig on Service rig					
99/03/07	2024	1040	45	9.5	6.5	1	10
99/03/08	2089	1040	57	10.5	7.8	1	14
99/03/09	2118	1050	90	10.5	6.5	1	24.5
99/03/10	2118	1050	90	10.5	6.5	1	24.5
99/03/11	2118	1050	90	10.5	6.5	1	24.5
99/03/12	2118	1050	90	10.5	6.5	1	24.5

BIT RECORD

Bit No.	Type	Size (mm)	Depth Out(m)	Interval Cut(m)	Hrs	FOB (daN)	RPM	Cond'n T	Cond'n B	Cond'n G	ROP (m/hr)	Comments
1A	HP11	311	315	315	24.5	9000	160	5	3	I	12.9	ROP
2A	J1	311	540	225	21.5	12000	190	4	3	I	10.5	Casing
1	EHP43A	222	1105	565	63.5	18000	80	3	3	I	8.9	ROP
2	F10T	222	1577	472	82.5	22000	90	3	3	I	5.7	ROP
3	F10T	222	1990	413	81.5	30000	90	6	5	I	5.1	Casing
1B	EHP51H	156	2118	128	52.8	6000	120	4	3	I	2.4	T.D.

DEVIATION RECORD

Survey No.	Depth (meters)	Deviation (degrees)	Interval (meters)
1	30	0.250	30
2	59	0.500	29
3	89	0.750	30
4	115	0.750	26
5	155	0.750	40
6	182	0.500	27
7	209	1.000	27
8	256	0.250	47
9	286	0.750	30
10	315	0.000	29
11	333	0.750	18
12	362	0.250	29
13	391	0.750	29
14	418	1.000	27
15	477	0.750	59
16	505	0.000	28
	See Directional Record		

DIRECTIONAL RECORD

Vertical section @ 339°

Survey No.	Measured Depth (m)	Drift (degrees)	Direction (degrees)	True Vertical Depth (m)	Subsea (m)	Latitude +N/-S (m)	Departure +E/-W (m)	Vertical Section (m)	DLS (deg/30 m)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	37.75	0.70	52.00	37.75	587.45	0.14	0.18	0.07	0.56
3	150.67	0.70	77.00	150.66	474.54	0.72	1.40	0.17	0.08
4	263.34	0.50	107.00	263.32	361.88	0.73	2.54	-0.23	0.10
5	378.15	0.30	273.00	378.13	247.07	0.60	2.72	-0.41	0.21
6	503.00	0.50	82.00	502.98	122.22	0.70	2.93	-0.40	0.19
7	551.00	0.30	320.60	550.98	74.22	0.82	3.06	-0.33	0.44
8	591.00	0.70	307.00	590.97	34.23	1.05	2.80	-0.02	0.31
9	677.00	1.00	324.00	676.96	-51.76	1.97	1.94	1.15	0.14
10	777.00	0.80	317.20	776.95	-151.75	3.19	0.95	2.64	0.07
11	792.00	1.75	274.00	791.95	-166.75	3.28	0.65	2.83	2.58
12	878.00	1.25	322.00	877.92	-252.72	4.11	-1.24	4.29	0.45
13	991.00	1.50	322.00	990.89	-365.69	6.25	-2.91	6.88	0.07
14	1093.10	1.90	342.50	1092.94	-467.74	8.92	-4.24	9.85	0.21
15	1102.90	2.10	334.70	1102.73	-477.53	9.24	-4.37	10.19	1.03
16	1111.40	3.20	347.80	1111.22	-486.02	9.61	-4.48	10.58	4.41
17	1121.50	4.40	344.50	1121.30	-496.10	10.26	-4.65	11.24	3.62
18	1131.50	5.70	351.60	1131.26	-506.06	11.12	-4.82	12.11	4.32
19	1141.84	7.30	348.79	1141.53	-516.33	12.27	-5.02	13.26	4.73
20	1151.02	8.90	348.09	1150.62	-525.42	13.54	-5.28	14.53	5.24
21	1161.00	10.10	348.79	1160.46	-535.26	15.15	-5.61	16.16	3.62

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Survey No.	Measured Depth (m)	Drift (degrees)	Direction (degrees)	True Vertical Depth (m)	Subsea (m)	Latitude +N/-S (m)	Departure +E/-W (m)	Vertical Section (m)	DLS (deg/30 m)
22	1170.75	11.20	348.09	1170.05	-544.85	16.92	-5.97	17.93	3.41
23	1180.60	12.00	349.49	1179.69	-554.49	18.86	-6.36	19.89	2.58
24	1189.28	13.60	348.09	1188.16	-562.96	20.74	-6.73	21.78	5.63
25	1199.24	15.80	348.09	1197.79	-572.59	23.22	-7.26	24.28	6.63
26	1208.92	17.50	347.38	1207.06	-581.86	25.93	-7.84	27.02	5.31
27	1218.46	19.30	345.98	1216.11	-590.91	28.86	-8.54	30.00	5.83
28	1228.22	21.10	343.87	1225.27	-600.07	32.11	-9.42	33.35	5.97
29	1237.62	22.70	343.87	1233.99	-608.79	35.48	-10.39	36.84	5.11
30	1246.75	23.90	344.57	1242.38	-617.18	38.95	-11.37	40.44	4.05
31	1256.52	25.00	345.98	1251.27	-626.07	42.86	-12.40	44.46	3.82
32	1266.27	26.20	347.40	1260.06	-634.86	46.96	-13.37	48.63	4.15
33	1276.27	27.10	347.79	1269.00	-643.80	51.34	-14.33	53.07	2.75
34	1285.74	27.90	348.09	1277.40	-652.20	55.62	-15.25	57.39	2.57
35	1295.49	28.50	346.68	1285.99	-660.79	60.11	-16.25	61.95	2.76
36	1305.15	28.70	344.57	1294.48	-669.28	64.59	-17.40	66.54	3.20
37	1314.72	28.90	341.05	1302.86	-677.66	69.00	-18.76	71.14	5.35
38	1324.31	29.20	338.24	1311.25	-686.05	73.36	-20.38	75.79	4.37
39	1334.00	29.60	336.84	1319.69	-694.49	77.76	-22.20	80.55	2.46
40	1343.38	29.80	337.54	1327.84	-702.64	82.04	-24.00	85.19	1.28
41	1353.04	29.80	340.35	1336.22	-711.02	86.52	-25.73	89.99	4.34
42	1362.59	28.70	337.54	1344.55	-719.35	90.87	-27.40	94.66	5.53
43	1371.99	27.20	338.24	1352.85	-727.65	94.95	-29.06	99.06	4.90
44	1381.70	26.50	334.00	1361.52	-736.32	98.96	-30.83	103.44	6.30
45	1391.10	26.40	333.30	1369.93	-744.73	102.71	-32.69	107.61	1.05
46	1400.75	26.90	332.60	1378.56	-753.36	106.57	-34.66	111.91	1.84

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Survey No.	Measured Depth (m)	Drift (degrees)	Direction (degrees)	True Vertical Depth (m)	Subsea (m)	Latitude +N/-S (m)	Departure +E/-W (m)	Vertical Section (m)	DLS (deg/30 m)
47	1410.30	27.30	334.70	1387.06	-761.86	110.47	-36.59	116.24	3.26
48	1420.00	28.00	334.70	1395.65	-770.45	114.54	-38.51	120.73	2.16
49	1429.60	28.80	334.90	1404.09	-778.89	118.67	-40.46	125.28	2.52
50	1439.20	28.20	335.40	1412.53	-787.33	122.82	-42.38	129.85	2.02
51	1448.90	27.60	334.70	1421.10	-795.90	126.94	-44.30	134.38	2.11
52	1458.60	28.00	334.00	1429.68	-804.48	131.02	-46.25	138.89	1.60
53	1467.90	28.90	335.40	1437.86	-812.66	135.02	-48.15	143.31	3.61
54	1477.30	29.80	336.10	1446.05	-820.85	139.22	-50.04	147.91	3.07
55	1486.94	30.40	337.75	1454.39	-829.19	143.67	-51.93	152.74	3.18
56	1496.20	29.70	336.80	1462.41	-837.21	147.95	-53.72	157.37	2.74
57	1505.80	28.50	337.30	1470.80	-845.60	152.25	-55.54	162.04	3.83
58	1515.40	27.80	335.40	1479.26	-854.06	156.39	-57.36	166.56	3.55
59	1525.00	28.10	334.70	1487.74	-862.54	160.47	-59.26	171.05	1.39
60	1534.41	29.30	334.73	1495.99	-870.79	164.56	-61.19	175.56	3.83
61	1543.97	29.70	336.50	1504.32	-879.12	168.85	-63.13	180.26	3.01
62	1553.50	29.20	336.84	1512.61	-887.41	173.15	-64.99	184.94	1.66
63	1563.01	28.89	337.59	1520.93	-895.73	177.41	-66.77	189.55	1.51
64	1572.60	28.50	338.30	1529.34	-904.14	181.67	-68.50	194.16	1.62
65	1582.20	28.20	338.90	1537.79	-912.59	185.92	-70.17	198.71	1.29
66	1591.80	28.30	339.70	1546.24	-921.04	190.17	-71.77	203.26	1.22
67	1601.40	28.00	340.40	1554.71	-929.51	194.43	-73.32	207.79	1.39
68	1610.60	27.20	340.40	1562.86	-937.66	198.44	-74.75	212.05	2.61
69	1619.90	26.20	341.80	1571.17	-945.97	202.39	-76.10	216.22	3.81
70	1629.60	25.60	341.80	1579.90	-954.70	206.42	-77.43	220.45	1.86
71	1639.20	25.50	341.10	1588.56	-963.36	210.34	-78.74	224.59	0.99

SUNCOR NETLA K-77-60-50-122-30

Survey No.	Measured Depth (m)	Drift (degrees)	Direction (degrees)	True Vertical Depth (m)	Subsea (m)	Latitude +N/-S (m)	Departure +E/-W (m)	Vertical Section (m)	DLS (deg/30 m)
72	1648.60	25.00	341.80	1597.06	-971.86	214.14	-80.02	228.60	1.86
73	1658.30	24.30	343.20	1605.87	-980.67	218.00	-81.24	232.64	2.82
74	1668.00	23.90	346.70	1614.73	-989.53	221.83	-82.26	236.57	4.59
75	1677.70	23.70	350.20	1623.60	-998.40	225.66	-83.05	240.43	4.41
76	1687.30	22.60	350.90	1632.43	-1007.23	229.38	-83.67	244.13	3.54
77	1696.90	20.30	351.60	1641.36	-1016.16	232.85	-84.20	247.56	7.23
78	1706.70	18.90	348.80	1650.60	-1025.40	236.09	-84.76	250.78	5.16
79	1716.20	18.80	345.70	1659.59	-1034.39	239.08	-85.44	253.82	3.18
80	1725.70	18.50	344.60	1668.59	-1043.39	242.02	-86.22	256.84	1.46
81	1735.30	16.90	346.70	1677.73	-1052.53	244.84	-86.94	259.74	5.38
82	1744.90	15.20	344.60	1686.96	-1061.76	247.42	-87.60	262.37	5.61
83	1754.40	12.80	346.70	1696.17	-1070.97	249.64	-88.17	264.66	7.75
84	1764.10	10.20	344.60	1705.68	-1080.48	251.51	-88.64	266.58	8.14
85	1773.60	8.60	338.30	1715.05	-1089.85	252.98	-89.13	268.12	6.00
86	1783.20	8.30	336.80	1724.54	-1099.34	254.29	-89.67	269.53	1.16
87	1792.80	8.40	336.10	1734.04	-1108.84	255.57	-90.23	270.93	0.45
88	1802.30	8.40	336.80	1743.44	-1118.24	256.84	-90.78	272.31	0.32
89	1811.80	7.90	337.40	1752.84	-1127.64	258.08	-91.30	273.66	1.60
90	1821.40	7.20	336.10	1762.36	-1137.16	259.24	-91.80	274.92	2.25
91	1831.00	6.50	337.50	1771.89	-1146.69	260.29	-92.25	276.06	2.25
92	1840.60	6.10	341.80	1781.43	-1156.23	261.28	-92.62	277.12	1.93
93	1850.10	5.80	343.20	1790.88	-1165.68	262.22	-92.92	278.10	1.05
94	1859.70	4.90	345.30	1800.44	-1175.24	263.08	-93.16	278.99	2.88
95	1869.30	3.70	341.10	1810.01	-1184.81	263.77	-93.37	279.71	3.87
96	1878.70	2.90	348.80	1819.40	-1194.20	264.29	-93.51	280.24	2.91

SUNCOR NETLA K-77-60-50-122-30

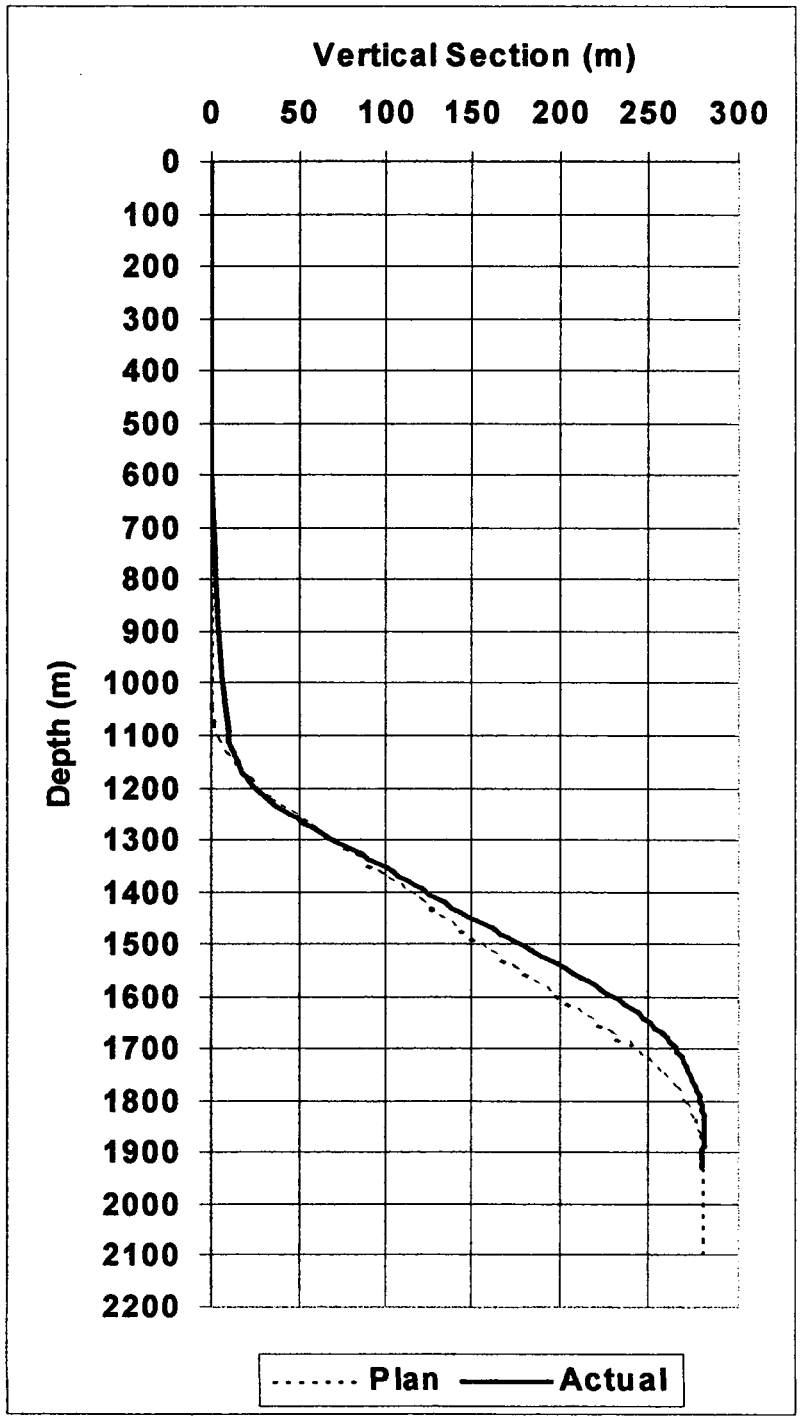
Survey No.	Measured Depth (m)	Drift (degrees)	Direction (degrees)	True Vertical Depth (m)	Subsea (m)	Latitude +N/-S (m)	Departure +E/-W (m)	Vertical Section (m)	DLS (deg/30 m)
97	1888.20	2.20	6.40	1828.89	-1203.69	264.70	-93.54	280.64	3.29
98	1897.80	1.90	32.40	1838.48	-1213.28	265.02	-93.43	280.90	3.02
99	1906.90	2.30	54.20	1847.57	-1222.37	265.26	-93.20	281.04	2.92
100	1916.60	2.60	76.00	1857.27	-1232.07	265.42	-92.83	281.06	3.01
101	1926.20	2.80	86.40	1866.85	-1241.65	265.49	-92.39	280.96	1.65
102	1945.40	2.00	104.20	1886.04	-1260.84	265.44	-91.59	280.63	1.69
103	1955.10	1.50	118.90	1895.73	-1270.53	265.33	-91.32	280.44	2.07
104	1974.20	0.60	171.60	1914.83	-1289.63	265.11	-91.08	280.15	1.94
105	1976.00	0.60	178.40	1916.63	-1291.43	265.10	-91.08	280.13	1.19
106	1990.00	0.60	178.00	1930.63	-1305.43	264.95	-91.08	279.99	0.01

Last survey was extrapolated.

VERTICAL SECTION

VERTICAL SECTION VS TRUE VERTICAL DEPTH

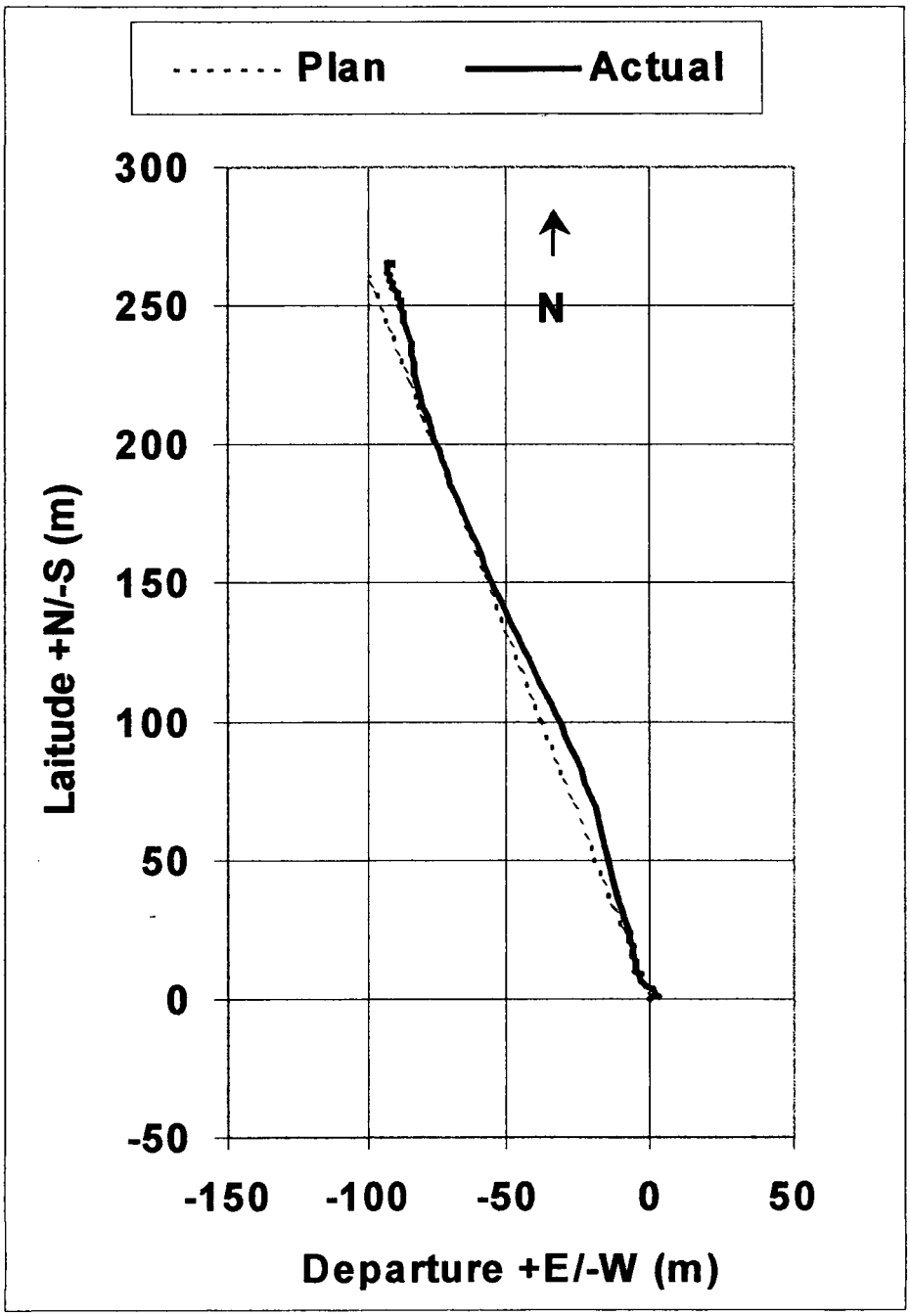
Vertical section @ 339°



SUNCOR NETLA K-77-60-50-122-30

PLAN VIEW

LATITUDE VS DEPARTURE



SUNCOR NETLA K-77-60-50-122-30

OPEN HOLE LOG SUMMARY

INTERMEDIATE

Contractor:	Schlumberger	***Engineer:***	Tony Daniel
District:	Grande Prairie	***Truck No.:***	2028
Circulation End:	99/02/26 12:45	***Finish Trip:***	99/02/26 18:15
On Location:	99/02/26 15:30	***Off Location:***	99/02/27 14:00
Rig Up:	99/02/26 19:45	***Rig Down:***	99/02/27 09:15

Mud Properties: ***Type:*** K2SO4
Density: 1205 ***pH:*** 7.2
Viscosity: ***WL:*** 10

BHT: 80°C ***Total Depth:*** ***Driller*** 1990 meters
Logger 1990 meters

Services:

Log	***Interval Logged From***	***To***	***Meters Logged***	***Comments***
AITE-RXO	1987.6	535.5	1452.1	Combo platform express
BHC-XY CAL	1968.0	535.5	1432.5	Combo platform express
CNL-LDT-D	1984.4	535.5	1448.9	Combo platform express
DIS	535.5	0.0	535.5	Logged through casing

Times:

Tool Combo	***Date***	***Run in***	***First on bottom***	***Last on bottom***	***Clear Hole***	***Total Hours***
AIT-BHC-CNL-LDT	99/02/27	0:30:00	01:40	02:00	04:30	4.00
DIS	99/02/27	06:15	07:30	07:40	08:30	2.25

Logging Time:	6.25 Hrs	***Rig Up/Down:***	4.50 Hrs
Time Losses:	2.75 Hrs	***Total Time:***	13.50 Hrs

SUNCOR NETLA K-77-60-50-122-30

Remarks: Viscosity was to high to measure. Problems getting tools to communicate on initial rig up. 2 hours allowed for rig up the balance of time taken prior to starting in the hole was considered lost time. Some of this time may have been saved if tools were tested as soon as crew arrived on location. Multiple attempts were made to get LDT calliper in axis of hole over the build section but they failed. With dual density callipers did get a reasonable calliper. Overall good job. Personnel were experienced and kept representative informed.

Copies: 2 field, 6 final - 8 Total. ***Cost:*** $44,302.06

SUNCOR NETLA K-77-60-50-122-30

MAIN

Contractor:	Schlumberger	***Engineer:***	Kim Baker
District:	Grande Prairie	***Truck No.:***	3010
Circulation End:	99/03/09 18:45	***Finish Trip:***	99/03/10 03:30
On Location:	99/03/09 19:00	***Off Location:***	To production 99-03-12 22:00
Rig Up:	99/03/10 03:45	***Rig Down:***	99/03/10 14:30
Rig Up VSP:	99/03/12 08:00	***Rig Down VSP:***	99/03/12 22:00

Mud Properties: ***Type:*** Carbonate Polymer
Density: 1050 ***pH:*** 10.5
Viscosity: 90 ***WL:*** 6.5

BHT: 88°C ***Total Depth:*** ***Driller:*** 2118 meters
Logger: 2117 meters

Services:

Log	***Interval Logged From***	***To***	***Meters Logged***	***Comments***
AITE-RXO	2115.6	1986.8	128.8	Combo platform express
BHC-XY CAL	2094.3	1986.8	107.5	Combo platform express
CNL-LDT-D	2111.3	1986.8	124.5	Combo platform express
MEL	2111.3	1988.0	123.3	Combo platform express
MSCT	2064.5	1997.5	67.0	22 cores cut & recovered
FMI	2113.0	1986.8	126.2	2 passes
VSP	2117.0	600.0	1517.0	Zero offset & Vib 1

Times:

Tool Combo	***Date***	***Run in***	***First on bottom***	***Last on bottom***	***Clear Hole***	***Total Hours***
Platform Express	99/03/10	11:30	12:45	15:15	17:00	5.50
MSCT	99/03/10	19:40	21:30	00:10	01:15	5.70
FMI	99/03/11	10:30	11:45	12:30	13:45	3.25
VSP	99/03/12	09:00	10:20	16:00	21:30	12.50

Logging Time:	26.95 Hrs	***Rig Up/Down:***	8.95 Hrs
Time Losses:	13 Hrs	***Total Time:***	48.90 Hrs

SUNCOR NETLA K-77-60-50-122-30

Remarks: Problems with tool bridle on initial rig up. Unable to run HALs. 6 hours lost time to tool failure. Some of this time may have been saved if tools were tested as soon as crew arrived on location and/or this tool configuration was checked prior to field use. 7 hours lost time waiting on FMI tool was due to addition of tool after logging job ordered out. Overall good job with very good job done by MSCT operator. Personnel were experienced and kept representative well informed. VSP job followed after equipment on location. Location of zero vib was 80 meters west of source line 19 on receiver line 24. Location of first vib was 180 meters west of source line 23 on receiver line 24. Both locations were chained in from center of intersection of the 2 lines.

Copies: 2 field, 6 final - 8 Total. ***Cost:*** $132,641.95

SUNCOR NETLA K-77-60-50-122-30

SIDEWALL CORING REPORT

Attempts: 22 cores
Recovery: 22 cores
Analysis: Core Labratories
Core Hand: Tony Smith

Core No.	Depth (m)	Core Length (cm)	Lithology	Condition	Permeability (mD)	Porosity (%)	Comments
22	1997.5	2.5	Limestone	minor broken	<.01	0.5	tight
21	2003.6	4.6	Limestone	solid	0.01	0.5	tight
20	2010.5	-	Limestone	rubble	NA	NA	fossiliferous
19	2014.5	4.4	Limestone	top break	0.01	0.5	sulphur odour
18	2016.2	3.9	Limestone	broken in half	0.01	0.8	hairline frac - fossil ghosts
17	2019.5	4.5	Limestone	solid	0.01	0.8	thamnapora & stroms
16	2021.6	4.8	Limestone	broken in half	<.01	0.5	strom massive?
15	2023.2	3.2	Limestone	broken in half	0.05	1.4	fracture / calcite fill
14	2026.2	4.8	Limestone	broken in pieces	0.02	1.1	calcite rhombs floating
13	2028.6	4.5	Limestone	solid	0.03	1.3	hairline fractures
12	2030.5	4.2	Limestone	solid	0.03	1.9	fractures & euhedral xstals
11	2032.0	4.2	Limestone	chipped	0.01	1.8	fractures & euhedral xstals
10	2034.5	2.6	Limestone	fractured	0.07	2.7	molds & stroms
9	2036.6	4.4	Limestone	solid	0.01	1.4	tight
8	2039.0	3.7	Limestone	solid	0.01	1.1	tight into calcite mold
7	2041.5	4.0	Limestone	solid	0.05	1.8	tight / thamnapora
6	2043.5	4.7	Limestone	solid	0.01	1.5	tight
5	2046.7	4.5	Limestone	Broken	0.03	1.8	tight brachiopod shale fill
4	2050.5	4.1	Limestone	Broken	<.01	1.1	tight fragmental LS
3	2054.6	4.5	Limestone	Solid	0.01	1.1	tight strom??

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Core No.	Depth (m)	Core Length (cm)	Lithology	Condition	Permeability (mD)	Porosity (%)	Comments
2	2060.5	4.5	Limestone	Solid	0.03	1.1	tight corals
1	2064.5	4.5	Limestone	Solid	0.01	1.4	tight corals

SAMPLE DESCRIPTIONS

15-41 m	Siltstone with minor Shale laminae. SILTSTONE - light grey, clay cement, moderately cemented, friable. Very poor samples.
41-75 m	Siltstone with Sandstone stringers and interbeds. SILTSTONE - light grey, clay cement, moderately cemented, friable, scattered fish scales. SANDSTONE - grey white, quartz minor lithics, very fine to fine grained trace medium grained, well sorted, subangular to angular, calcareous and siliceous cement, well cemented, trace micaceous, tight, no shows. Very poor samples.
75-98 m	Shale with Siltstone stringers. SHALE - light to medium grey, blocky, subfissile, abundant scattered fish scales, arenaceous.
98-134 m	Interbedded and interlaminated Shale and Siltstone with minor Sandstone. SHALE - medium grey, blocky, subfissile, arenaceous to highly arenaceous. SILTSTONE - light grey, clay cement, moderately to well cemented, friable in part, sandy in part, micaceous. SANDSTONE - grey white, quartz, very fine grained, well sorted, subangular, calcareous and siliceous cement, well cemented, tight, no shows.
134-154 m	Shale with interlaminated Siltstone. SHALE - medium grey, blocky, subfissile, arenaceous, carbonaceous matter & plant fossils, disseminated pyrite.
154-173 m	Shale with minor Siltstone laminae. SHALE - medium to dark grey, platy to blocky, subfissile to fissile, scattered fish scales and chitinous fish remains, disseminated pyrite. Trace Inoceramus.
173-192 m	Interbedded and interlaminated Shale and Siltstone. SHALE - medium to dark grey, platy to blocky, subfissile to fissile, arenaceous to highly arenaceous. SILTSTONE - light grey, siliceous & clay cement, moderately to well cemented, friable in part, sandy in part.

192-221 m	Sandstone with interbeds and interlaminated Shale. SANDSTONE - grey white, quartz, very fine to occasionally fine grained, well sorted, subangular, siliceous cement, well cemented, argillaceous in part, trace glauconite, carbonaceous fragments, poor porosity to tight, (3-5%), no shows. SHALE - medium to dark grey, platy to blocky, subfissile, arenaceous in part.
221-254 m	SHALE - dark grey, platy, highly fissile, trace fossiliferous, micromicaceous.
254-279 m	Shale with interlaminae of Siltstone. SHALE - medium to dark grey trace white specks, platy to blocky, highly fissile to fissile, scattered fish scales and amber chitinous fish remains, trace micromicaceous.
279-285 m	SHALE - dark grey, platy, highly fissile, trace fossiliferous, micromicaceous.
285-302 m	Interbedded and interlaminated Shale and Siltstone. SHALE - medium to dark grey, platy to blocky, subfissile to fissile, arenaceous to highly arenaceous. SILTSTONE - light grey, siliceous & clay cement, moderately to well cemented, friable in part, sandy in part.
302-315 m	Siltstone with interbedded and interlaminated Shale. SILTSTONE - light grey, siliceous & clay cement, moderately to well cemented, friable in part, sandy in part. SHALE - medium to dark grey, platy to blocky, subfissile to fissile, arenaceous to highly arenaceous.
315-329 m	Siltstone with Sandstone stringers. SILTSTONE - light tan, calcareous and siliceous cement, well cemented, sandy.
329-353 m	Sandstone with interbedded and interlaminated Siltstone. SANDSTONE - snow white to light tan, clear to frosted quartz, very fine grained, well sorted, subangular, calcareous cement, moderately to well cemented, semifriable in part, trace kaolinitic, poor to fair porosity (3-8%), minor streaks good porosity (10-12%), no shows. SILTSTONE - light tan, calcareous and siliceous cement, well cemented, sandy.

353-371 m	Interbedded & interlaminated Siltstone, Sandstone & Shale. SILTSTONE - light tan, calcareous and siliceous cement, well cemented, sandy. SANDSTONE - snow white to light tan, clear to frosted quartz, very fine grained, well sorted, subangular, calcareous cement, moderately to well cemented, semifriable in part, trace kaolinitic, silty, poor porosity (3-4%), no shows. SHALE - dark grey, platy to blocky, subfissile, arenaceous in part.
371-396 m	Interbedded & interlaminated Siltstone & Shale with minor Sandstone. SILTSTONE - light to buff tan, calcareous with clay cement increasing downsection, well to highly cemented, glauconitic in part, sandy in part. SHALE - dark grey, platy to blocky, subfissile, arenaceous in part. SANDSTONE - light tan, clear to frosted quartz, very fine grained, well sorted, subangular, loose, silty, poor to fair porosity (3-7%), no shows. Presence of Sandstone is questionable, abundant loose grains in bottom of examination tray, could be cavings. Trace black hematite nodules.
396-419 m	Shale with minor laminae & stringers of Siltstone decreasing downsection. SHALE - medium to dark grey, platy to blocky, subfissile, arenaceous in part, micromicaceous, trace fish scales, rare fossil fragments.
419-443 m	Shale with Siltstone stringers and interbeds. SHALE - medium to dark grey, platy to blocky, subfissile, arenaceous in part, micaceous. SILTSTONE - light grey, clay cement, well cemented.
443-461 m	Shale with Siltstone stringers and interbeds. SHALE - medium to dark grey, platy to blocky, subfissile, arenaceous in part, micaceous. SILTSTONE - light grey, calcareous cement, well cemented, trace glauconite.
461-486 m	Shale with Siltstone stringers. SHALE - medium to dark grey, platy to blocky, fissile to subfissile, arenaceous to minor highly arenaceous, micromicaceous.
486-515 m	Shale with minor Sandstone interbeds and Siltstone laminae. SHALE - medium to dark grey, platy to blocky, fissile to subfissile, arenaceous to minor highly arenaceous, micromicaceous. SANDSTONE - grey white, clear to frosted quartz, silt to very fine grained, well sorted, subangular, siliceous cement, well cemented, tight, no shows.

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515-540 m	Interbedded & interlaminated Siltstone, Sandstone, Siderite & Shale. SILTSTONE - light tan to light grey green, sideritic, calcareous and clay cement, well cemented, sandy, glauconitic, scattered stain, very light fluorescence, yellow white streaming cut. SANDSTONE - light tan to grey green, clear quartz trace lithics, silt to very fine grained, well sorted, subangular to subround, sideritic cement, moderately to well cemented, semifriable in part, highly glauconitic, trace kaolinitic, poor to fair porosity (4-11%), Sneider ID - III (.07-1.0 md), patchy stain, scattered very light yellow fluorescence, fast yellow white streaming cut. SIDERITE - light brown, bedded, argillaceous. SHALE - dark grey, platy to blocky, subfissile, arenaceous in part.
540-568 m	Siltstone with interbeds and stringers of Shale. SILTSTONE - medium to dark grey to light grey tan, clay minor sideritic cement, calcareous in part, well cemented, sandy in part, trace glauconitic, trace disseminated pyrite. SHALE - dark grey to grey brown, platy to blocky, subfissile, arenaceous, micromicaceous.
568-582 m	Shale with minor Siltstone interbeds and laminae. SHALE - medium to dark grey, platy to blocky, fissile to subfissile, trace arenaceous, micromicaceous. SILTSTONE - light brown, clay cement, highly cemented.
582-597 m	Shale with minor Siltstone interbeds and laminae. SHALE - medium to dark grey, platy to blocky, fissile to subfissile, trace arenaceous, micromicaceous. SILTSTONE - light brown, clay cement, highly cemented.
597-613 m	Shale with interbedded Siderite and Siltstone. SHALE - medium to dark grey, platy to blocky, fissile to subfissile, trace arenaceous, micromicaceous. SIDERITE - light to medium brown, bedded, argillaceous. SILTSTONE - light grey to grey tan, sideritic & clay cement, well cemented.
613-639 m	Shale with minor interbeds of Siderite and minor Siltstone laminae. SHALE - medium to dark grey to grey brown, platy to blocky, fissile to subfissile, trace arenaceous, sideritic in part, trace bituminous downsection, trace fossiliferous, micromicaceous. SIDERITE - light to medium brown, bedded, argillaceous. Traces sparry calcite throughout.

639-652 m — Shale with Siltstone laminae.
SHALE - medium to dark grey, platy to blocky, highly fissile to subfissile, trace arenaceous, bituminous, glauconitic, trace disseminated pyrite, micromicaceous.

Kotcho Shale 652.0 m

652-658 m — Siltstone with minor Limestone stringers.
SILTSTONE - buff to grey white, calcareous cement, well cemented, argillaceous in part.

658-681 m — Interlaminated and interbedded Siltstone and Shale with minor Limestone.
SILTSTONE - grey tan, calcareous cement, well cemented, argillaceous.
SHALE - light grey to light brown, blocky, subfissile, calcareous, arenaceous, (silty), micromicaceous.
LIMESTONE - light tan, calcilutite, biomicrite, mudstone, argillaceous, arenaceous, tight, no shows.
Scattered loose sand grains.

681-696 m — Shale with Limestone and Siltstone stringers.
SHALE - light to medium grey, blocky, subfissile, calcareous to highly calcareous, arenaceous in part, disseminated pyrite, micromicaceous.
Abundant loose crinoid stems at base of section.

696-708 m — Shale with Limestone stringers.
SHALE - light to medium grey, blocky, subfissile, calcareous to highly calcareous, arenaceous in part, disseminated pyrite, micromicaceous.
Scattered loose crinoid stems.

Kotcho Carbonate 708 m

708-727 m — Limestone with Marlstone and Shale interbeds.
LIMESTONE - buff white to grey white, calcilutite to fine calcarenite with very coarse calcarenite, brachiopod crinoid intramicrite, packstone, arenaceous, argillaceous, disseminated pyrite, tight, no shows.
MARLSTONE - grey white, calcareous, highly argillaceous, fossiliferous.
SHALE - light to medium grey, blocky, subfissile, highly calcareous, micromicaceous.

727-754 m	Interbedded and interlaminated Siltstone, Limestone, Marlstone and Shale. SILTSTONE - buff to grey white, calcareous cement, well cemented, argillaceous. LIMESTONE - buff white to grey white, calcilutite to fine calcarenite, sparse crinoid intramicrite, wackestone, arenaceous, argillaceous, disseminated pyrite, tight, no shows. MARLSTONE - grey white, calcareous, highly argillaceous, fossiliferous. SHALE - light to medium grey, blocky, subfissile, highly calcareous, micromicaceous.
754-773 m	Interbedded and interlaminated Marlstone, Limestone, Siltstone and Shale. MARLSTONE - grey white, calcareous, highly argillaceous, fossiliferous. LIMESTONE - buff white to grey white, calcilutite to fine calcarenite, sparse crinoid intramicrite, wackestone, arenaceous, argillaceous, disseminated pyrite, tight, no shows. SILTSTONE - buff to grey white, calcareous cement, well cemented, argillaceous. SHALE - light to medium grey, blocky, subfissile, highly calcareous, micromicaceous.
773-794 m	Marlstone with interbedded Limestone and Shale. MARLSTONE - light to medium grey to grey white, calcareous, highly argillaceous, fossiliferous. LIMESTONE - buff white to grey white, calcilutite to fine calcarenite, pelecypod brachiopod crinoid biomicrite, wackestone, argillaceous, disseminated pyrite, tight, no shows. SHALE - light to medium grey, blocky, subfissile, highly calcareous, micromicaceous.
794-811 m	Limestone with interbedded Marlstone. LIMESTONE - buff white to grey white, calcilutite to fine calcarenite, pelecypod brachiopod crinoid biomicrite, wackestone, argillaceous, scattered pyrite nodules, tight, no shows. MARLSTONE - light to medium grey to grey white, calcareous, highly argillaceous, fossiliferous.
811-840 m	Marlstone with interbedded Limestone and Shale. MARLSTONE - light to medium grey to grey white, calcareous, highly argillaceous. LIMESTONE - buff white to grey white, calcilutite to fine calcarenite, biomicrite, wackestone, argillaceous, tight, no shows. SHALE - light to medium grey, blocky, subfissile, highly calcareous, micromicaceous. Scattered sparry calcite.

840-867 m	Interbedded Marlstone and Shale with minor Limestone. MARLSTONE - light to medium grey to grey white, calcareous, highly argillaceous. SHALE - light to medium grey, blocky, subfissile, highly calcareous, trace disseminated pyrite, micromicaceous. LIMESTONE - buff white to grey white, calcilutite to very fine calcarenite, intrabiomicrite, wackestone, argillaceous, tight, no shows.
867-896 m	Marlstone with Limestone and Shale interbeds. MARLSTONE - light to medium grey, calcareous, highly argillaceous. LIMESTONE - buff white to grey white to grey tan, calcilutite to very fine calcarenite, crinoid intrabiomicrite, wackestone to mudstone, argillaceous, disseminated pyrite, tight, no shows. SHALE - light to medium grey, blocky, subfissile, highly calcareous, micromicaceous.
896-920 m	Interbedded Marlstone and Shale with minor Limestone. MARLSTONE - light to medium grey, calcareous, platy in part, highly argillaceous. SHALE - light to medium grey, platy to blocky, subfissile to fissile, highly calcareous, micromicaceous. LIMESTONE - light grey to grey tan, calcilutite to very fine calcarenite, biomicrite, mudstone, argillaceous, tight, no shows.
920-933 m	Marlstone with Limestone and Shale interbeds. MARLSTONE - light to medium grey, calcareous, platy in part, highly argillaceous. LIMESTONE - light grey to grey tan, calcilutite to very fine calcarenite, crinoid biomicrite, mudstone, argillaceous, tight, no shows. SHALE - light to medium grey, platy, subfissile to fissile, highly calcareous, micromicaceous.
933-952 m	Interbedded Shale and Marlstone with Limestone stringers. SHALE - light to medium grey, platy, subfissile to fissile, highly calcareous, disseminated pyrite, micromicaceous. MARLSTONE - light to medium grey, calcareous, platy in part, highly argillaceous.
952-960 m	Shale with Limestone stringers. SHALE - light to medium grey, platy, subfissile to fissile, highly calcareous, disseminated pyrite, micromicaceous.

960-972 m — Interbedded Marlstone and Shale with minor Limestone.
MARLSTONE - light to medium grey, calcareous, platy in part, highly argillaceous.
SHALE - light to medium grey, platy to blocky, subfissile to fissile, highly calcareous, micromicaceous.
LIMESTONE - light grey to grey tan, calcilutite to very fine calcarenite, biomicrite, mudstone, argillaceous, tight, no shows.

972-981. — Shale with Limestone stringers.
SHALE - light to medium grey, platy, subfissile to fissile, highly calcareous, micromicaceous.

Tetcho Carbonate 981 m

981-995 m — Limestone with minor Shale interbeds.
LIMESTONE - buff tan, calcilutite with interbeds of fine to medium calcarenite, brachiopod pelmicrite with interbeds of intrapelmicrite, packstone, argillaceous, tight, trace scattered gilsonite.
SHALE - grey green t light grey, platy, fissile, calcareous.

995-1008 m — Interbedded & interlaminated Limestone, Marlstone & Shale.
LIMESTONE - buff tan to grey white, calcilutite, biopelmicrite, packstone, argillaceous, tight, no shows.
MARLSTONE - light grey to buff white, calcareous, argillaceous.
SHALE - grey green, platy, fissile, highly calcareous, micromicaceous.

1008-1030 m — Limestone with Marlstone and minor Shale.
LIMESTONE - buff tan to grey white, calcilutite, brachiopod? pelmicrite, packstone, argillaceous, tight, no shows.
MARLSTONE - light grey to buff white, calcareous, argillaceous.
SHALE - grey green, platy, fissile, highly calcareous, micromicaceous.

1030-1048 m — LIMESTONE - light to buff tan to grey white, calcilutite, crinoid brachiopod? pelmicrite, packstone, argillaceous, tight, no shows.

1048-1062 m — Limestone with Marlstone interbeds.
LIMESTONE - buff tan to grey white, calcilutite, pelmicrite, packstone, argillaceous, arenaceous in part, tight, no shows.
MARLSTONE - light grey to buff white, calcareous, argillaceous, arenaceous.

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Trout River 1062 m

1062-1078 m	Interbedded Limestone and Siltstone with Shale. LIMESTONE - buff white to grey white, calcilutite with very fine calcarenite scattered coarse calcarenite, pelmicrite with brachiopod intramicrite, packstone to wackestone, arenaceous, argillaceous, tight, no shows. SILTSTONE - buff white to light grey, calcareous cement, highly cemented, trace anhydrite. SHALE - grey green to light to medium grey, platy, subfissile to fissile, calcareous, micromicaceous.
1077-1091 m	Interbedded Limestone, Marlstone and Siltstone stringers minor Shale. LIMESTONE - buff white to light reddish brown, calcilutite with medium to coarse calcarenite, gastropod intrasparite with pelmicrite, grainstone with packstone, arenaceous, argillaceous, tight, no shows. MARLSTONE - medium grey, calcareous, arenaceous, argillaceous. SILTSTONE - buff white to light grey, calcareous cement, highly cemented. SHALE - light grey to grey green, platy, fissile, micromicaceous. Base unit Fe stained gastropod grainstone.
1091-1105 m	Shale with stringers and interbeds of Siltstone. SHALE - olive brown to light to medium grey, platy to blocky, subfissile, non-calcareous to slightly calcareous, arenaceous, trace black carbonaceous? flakes. SILTSTONE - light grey, calcareous cement, well cemented, argillaceous.
1105-1126 m	Shale with interbeds and stringers of Siltstone minor interbeds and stringers of Limestone. SHALE - light to medium grey, platy, subfissile, slightly calcareous, arenaceous, scattered black flakes. SILTSTONE - light to yellowish brown to grey white, calcareous cement, well cemented, argillaceous, micromicaceous. LIMESTONE - light tan to reddish orange, medium to coarse calcarenite, crinoid brachiopod intramicrite to intrasparite, packstone to grainstone, friable, Fe stained, tight, no shows. Limestones are mostly as fine laminae within Shale sequence.
1126-1132 m	Shale with Limestone stringers. SHALE - light to medium grey, platy, subfissile, slightly calcareous, arenaceous.

1132-1150 m Siltstone with interbedded Shale and minor Limestone interbeds and stringers.
SILTSTONE - light to yellow tan to buff white to light grey, calcareous cement, well cemented, fossiliferous in part, argillaceous in part, trace disseminated pyrite.
SHALE - light to medium grey to grey tan, platy to splintery, fissile, slightly calcareous, micromicaceous, arenaceous in part.
LIMESTONE - buff white to tan to trace orange red, medium to coarse calcarenite, brachiopod intrasparite, grainstone, tight, no shows.
Limestones highly fragmented.

Kakisa 1156 m (1155.6 m TV)

1150-1156 m Shale with Siltstone & Limestone stringers.
SHALE - light to medium grey to grey tan, platy to splintery, fissile, slightly calcareous, micromicaceous, arenaceous in part.

1156-1176 m Limestone with Shale & minor Siltstone interbeds.
LIMESTONE - buff white to light grey, calcilutite to fine calcarenite with coarse calcarenite interbedded with well sorted medium calcarenite, brachiopod intrapelmicrite with interbeds of oosparite, packstone to grainstone, arenaceous in part, argillaceous in part, tight, no shows.
SHALE - light grey, blocky, calcareous to highly calcareous, arenaceous, micromicaceous.
SILTSTONE - grey white, calcareous cement, well cemented.

Redknife 1176 m (1175.2 m TV)

1176-1190 m Interbedded Siltstone and Shale with minor Marlstone and Limestone stringers.
SILTSTONE - light grey to grey white, calcareous cement, well cemented, argillaceous in part.
SHALE - light to medium grey, platy to splintery, calcareous, micromicaceous.
MARLSTONE - light grey, calcareous, argillaceous, arenaceous.
Scattered loose crinoid stems and oxidized shell fragments.

1190-1206 m Interbedded Shale and Siltstone with Limestone stringers.
SHALE - light to medium grey to grey green to dark grey purple, platy to splintery, fissile, slightly calcareous to calcareous, micromicaceous, arenaceous in part.
SILTSTONE - light grey to light tan, calcareous cement, highly cemented, argillaceous in part.
Scattered oxidized fossil fragments.

1206-1221 m	Interbedded Shale and Siltstone. SHALE - light to medium grey to grey green to dark grey purple, platy to splintery, fissile, slightly calcareous to calcareous, micromicaceous, arenaceous in part. SILTSTONE - light grey to light tan to grey brown, calcareous cement, highly cemented, argillaceous in part.
1221-1236 m	Interbedded Siltstone and Shale with Limestone stringers & interbeds. SILTSTONE - light tan to yellow brown to grey white, calcareous cement, well cemented, argillaceous. SHALE - grey green to grey purple to olive brown, platy to splintery, fissile, calcareous, arenaceous in part, micromicaceous. LIMESTONE - reddish white, fine to coarse calcarenite, brachiopod gastropod intrasparite, grainstone, Fe stained, tight, no shows.
1236-1260 m	Shale with Limestone & Siltstone stringers. SHALE - grey green to grey purple to medium grey, platy to splintery, fissile to highly fissile, slightly calcareous to calcareous, micromicaceous.
1260-1270 m	Shale with Limestone & Siltstone stringers. SHALE - grey green to grey purple to medium grey, platy to splintery, fissile to highly fissile, slightly calcareous, micromicaceous.
1270-1288 m	Shale with Siltstone stringers. SHALE - medium grey to grey green to grey purple to olive brown, platy to splintery, highly fissile, noncalcareous to slightly calcareous, micromicaceous.
1288-1302 m	Shale with minor interbeds & stringers of Limestone. SHALE - medium grey to grey purple to olive brown to grey green, platy to splintery, fissile to highly fissile, noncalcareous to slightly calcareous, micromicaceous. LIMESTONE - white with scattered orange red streaks, fine to coarse calcarenite, brachiopod intrasparite, grainstone, Fe stained, tight, no shows.
1302-1318 m	Shale with minor stringers of Limestone, Siltstone & Sandstone. SHALE - medium grey to trace grey purple to olive brown, platy to splintery, fissile to highly fissile, slightly calcareous, micromicaceous.

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Jean Marie 1318 m (1305.8 m TV)

1318-1338 m	Shale with interbedded Sandstone scattered Limestone stringers & laminae minor Siltstone stringers. SHALE - medium grey minor purple brown, platy, fissile to highly fissile, slightly calcareous to noncalcareous in part, micromicaceous. SANDSTONE - white to light tan, quartz, silt to very fine grained, well sorted, subround, calcareous trace siliceous cement, well cemented, tight, no shows.
1338-1355 m	Shale with minor Sandstone and Limestone interbeds & stringers. SHALE - medium grey minor purple brown, platy, fissile to highly fissile, slightly calcareous to noncalcareous in part, micromicaceous. SANDSTONE - white to light tan, quartz, silt to very fine grained, well sorted, subround, calcareous trace siliceous cement, well cemented, tight, no shows. LIMESTONE - buff white to tan, calcilutite, arenaceous intramicrite, wackestone, tight, no shows.
1355-1370 m	Shale with Marlstone interbeds & stringers of Siltstone and Sandstone. SHALE - medium grey minor purple brown, platy, fissile to highly fissile, slightly calcareous to noncalcareous in part, micromicaceous. MARLSTONE - light to medium grey, calcareous, arenaceous in part.
1370-1391 m	Shale with Sandstone interbeds & stringers minor Siltstone stringers. SHALE - medium grey minor purple brown, platy, fissile to highly fissile, slightly calcareous to noncalcareous in part, micromicaceous. SANDSTONE - buff grey to grey tan, quartz, silt to very fine grained, well sorted, subangular to subround, calcareous with minor siliceous cement, well cemented, tight, no shows.
1391-1405 m	Shale with rare Sandstone laminae. SHALE - light to medium grey, platy, fissile to highly fissile, slightly calcareous, fossil fragments, micromicaceous.
1405-1420 m	Shale with Sandstone and Limestone interbeds and stringers and Siltstone stringers. SHALE - light to medium grey, platy, fissile to highly fissile, slightly calcareous to calcareous, micromicaceous. SANDSTONE - light tan to mottled grey white, quartz, silt to very fine grained, well sorted, subround, calcareous with minor siliceous cement, well cemented, tight, no shows. LIMESTONE - white to tan minor Fe stained, fine with coarse calcarenite, intrasparite, grainstone, arenaceous in part, tight, no shows.

1420-1433 m Shale with Siltstone interbeds and stringers and Sandstone laminae.
SHALE - light to medium grey rare purple brown, platy to splintery, fissile to highly fissile, slightly calcareous to calcareous, trace disseminated pyrite, micromicaceous.
SILTSTONE - grey tan, calcareous cement, well cemented, sandy.

Ft. Simpson 1433 m (1407.1 m TV)

1433-1447 m Shale with minor Sandstone & Siltstone laminae.
SHALE - light to medium grey, platy to splintery, highly fissile to fissile, calcareous to slightly calcareous, micromicaceous.

1447-1467 m Shale with minor Siltstone laminae.
SHALE - light to medium grey, platy to splintery, highly fissile to fissile, calcareous in part, micromicaceous.

1467-1490 m Shale with minor Siltstone laminae.
SHALE - light to medium grey to purple brown, platy to splintery, highly fissile to fissile, calcareous to slightly calcareous, micromicaceous.

1490-1514 m Shale with minor Siltstone laminae.
SHALE - light to medium grey to rare purplish brown, platy to splintery, highly fissile to fissile, noncalcareous to slightly calcareous, micromicaceous.

1514-1539 m Shale with minor Siltstone laminae.
SHALE - light to medium grey to rare purplish brown, platy to splintery, highly fissile to fissile, noncalcareous to slightly calcareous, micromicaceous.

1539-1552 m Shale with minor Claystone trace Limestone laminae.
SHALE - light to medium grey, platy to splintery, highly fissile to fissile, calcareous to slightly calcareous, trace arenaceous, micromicaceous.
CLAYSTONE - light grey, soft, slightly calcareous.

1552-1570 m Shale with minor Claystone.
SHALE - light to medium grey to rare purplish brown, platy to splintery, highly fissile to fissile, calcareous to slightly calcareous, micromicaceous.
CLAYSTONE - light grey, soft, slightly calcareous.

1570-1577 m Shale with Claystone interbeds.
SHALE - light to medium grey, platy to splintery, highly fissile to fissile, calcareous to slightly calcareous, micromicaceous.
CLAYSTONE - light grey, soft, slightly calcareous.

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1577-1597 m	Shale with Claystone interbeds. SHALE - light to medium grey trace purple brown, platy to splintery, highly fissile to fissile, slightly calcareous, micromicaceous. CLAYSTONE - light grey, soft, fissile, slightly calcareous.
1597-1613 m	SHALE - light to medium grey to grey tan trace purple brown, platy to splintery, highly fissile to fissile, slightly calcareous to calcareous, micromicaceous.
1613-1630 m	Interbedded Shale and Claystone. SHALE - light to medium grey, platy to splintery, highly fissile to fissile, slightly calcareous, micromicaceous. CLAYSTONE - light grey, soft, fissile, slightly calcareous.
1630-1645 m	Interbedded Shale and Claystone minor Siltstone. SHALE - light to medium grey, platy to splintery, highly fissile to fissile, non calcareous to slightly calcareous, micromicaceous. CLAYSTONE - light grey, soft, fissile, slightly calcareous.
1645-1650 m	SHALE - light to medium grey trace purple brown, platy to splintery, highly fissile to fissile, non calcareous to trace calcareous, micromicaceous.
1650-1660 m	Interbedded Shale and Claystone. SHALE - light to medium grey, platy to splintery, highly fissile to fissile, slightly calcareous, micromicaceous. CLAYSTONE - light grey, soft, fissile, calcareous.
1660-1677 m	Shale with interbeds of Claystone. SHALE - light to medium grey, platy to splintery, highly fissile to fissile, trace calcareous in part to non calcareous, micromicaceous. CLAYSTONE - light grey, soft, fissile, slightly calcareous.
1677-1699 m	SHALE - light to medium grey, platy to splintery, highly fissile to fissile, slightly calcareous to calcareous, micromicaceous.
1699-1716 m	Shale with interbeds of Claystone trace Limestone. SHALE - light to medium grey, platy to splintery, highly fissile to fissile, slightly calcareous to calcareous, micromicaceous. CLAYSTONE - light grey, soft, fissile, slightly calcareous.
1716-1731 m	SHALE - light to medium grey trace purple brown, platy to splintery, highly fissile to fissile, slightly calcareous to noncalcareous, trace arenaceous, micromicaceous.

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1731-1744 m	Shale with minor Siltstone stringers. SHALE - light to medium grey, platy to splintery, highly fissile to fissile, slightly calcareous to noncalcareous, trace arenaceous, micromicaceous.
1744-1754 m	Shale with minor Claystone interbeds trace Siltstone and Limestone stringers. SHALE - light to medium grey, platy to splintery, highly fissile to fissile, slightly calcareous to noncalcareous, trace arenaceous, micromicaceous. CLAYSTONE - light grey, soft, fissile, slightly calcareous.
1754-1768 m	Interbedded Marlstone and Shale with Limestone stringers. MARLSTONE - light grey, finely laminated, calcareous, argillaceous, trace arenaceous. SHALE - light to medium grey, platy to splintery, highly fissile to fissile, slightly calcareous to noncalcareous, waxy in part, trace arenaceous, micromicaceous.
1768-1780 m	Interbedded Shale and Marlstone. SHALE - light to medium grey, platy to splintery, highly fissile to fissile, slightly calcareous to calcareous, trace arenaceous, micromicaceous, trace disseminated pyrite. MARLSTONE - light grey, finely laminated, calcareous, argillaceous, trace arenaceous.
1780-1798 m	Shale with minor interbedded Marlstone and Claystone. SHALE - light to medium grey trace purple brown, platy to splintery, highly fissile to fissile, calcareous to slightly calcareous, trace arenaceous, micromicaceous. MARLSTONE - light grey, calcareous, argillaceous, trace arenaceous. CLAYSTONE - light grey, soft, fissile, slightly calcareous.
1798-1815 m	Shale with interbedded Claystone. SHALE - light to medium grey trace purple brown, platy to splintery, highly fissile to fissile, calcareous to slightly calcareous, trace arenaceous, micromicaceous. CLAYSTONE - light grey, soft, fissile, slightly calcareous. Rare stringers of Fe stained ostracod grainstone.
1815-1833 m	Shale with minor Claystone interbeds and Siltstone stringers. SHALE - light to medium grey minor grey green to purple brown trace laminated, platy to splintery, highly fissile to fissile, noncalcareous to calcareous, trace arenaceous, micromicaceous. CLAYSTONE - light grey, soft, fissile, slightly calcareous.

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1833-1845 m	Shale with minor Limestone and Marlstone stringers. SHALE - light to medium grey, platy to splintery, highly fissile to fissile, noncalcareous to calcareous, waxy in part, trace arenaceous, micromicaceous.
1845-1857 m	Shale with minor Claystone interbeds and Limestone stringers. SHALE - light to medium grey minor purple brown, platy to splintery, highly fissile to fissile, noncalcareous to calcareous, trace arenaceous, micromicaceous. CLAYSTONE - grey tan, calcareous, soft.
1857-1875 m	Shale with minor Marlstone interbeds and Siltstone stringers. SHALE - light to medium grey to grey tan, platy to splintery to blocky, fissile to subfissile, noncalcareous to calcareous in part, trace arenaceous, trace disseminated pyrite, micromicaceous. MARLSTONE - light grey, calcareous, argillaceous. Trace loose fossil fragments.
1875-1895 m	Shale with trace Marlstone stringers. SHALE - light to medium grey to grey tan to purple brown, platy to splintery to trace blocky, highly fissile to subfissile, noncalcareous to slightly calcareous, trace disseminated pyrite, micromicaceous.
1895-1915 m	SHALE - light to medium grey minor olive tan to purple brown, platy to splintery rare blocky, highly fissile to fissile, noncalcareous to slightly calcareous, trace disseminated pyrite, trace arenaceous with Siltstone inclusions.
1915-1930 m	Shale with minor Siltstone stringers. SHALE - light to medium grey to olive tan to purple brown to grey green, platy to splintery rare blocky, highly fissile to fissile, calcareous to slightly calcareous, trace disseminated pyrite, trace arenaceous.
1930-1944 m	Shale with minor Claystone interbeds trace Siltstone stringers. SHALE - light to medium grey rare dark grey to minor purple brown to grey green, platy to splintery rare blocky, highly fissile to fissile, noncalcareous to slightly calcareous, trace disseminated pyrite, micromicaceous. CLAYSTONE - grey tan, calcareous, soft.
1944-1955 m	Shale with minor Siltstone stringers. SHALE - light to medium grey rare dark grey to minor purple brown, platy to splintery rare blocky, highly fissile to subfissile, noncalcareous to slightly calcareous, trace disseminated pyrite, micromicaceous.

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Muskwa 1955 m (1895.7 m TV)

1955-1971 m — SHALE - black to dark grey scattered white specks with interbeds of olive tan, blocky to platy, subfissile to fissile, mostly noncalcareous, olive tan is calcareous, siliceous in part with black chert, bituminous in part, abundant pyritic streaks and nodules, micromicaceous.

1971-1983 m — Shale with Limestone stringers increasing downsection.
SHALE - black to dark grey, blocky to platy, subfissile to fissile, noncalcareous to calcareous increasing downsection, bituminous in part, pyritic streaks and nodules, micromicaceous.

Slave Point 1983 m (1923.7 m TV)

1983-1990 m — LIMESTONE - mottled buff tan to medium to dark brown to grey white, fine to coarse calcarenite with very coarse calcarenite, brachiopod amphipora? intramicrite, packstone to wackestone, argillaceous, tight, no shows.
Abundant cavings.

1990-2001 m — Limestone with Shale laminae.
LIMESTONE - mottled brown to buff tan to medium brown to dark grey, fine to coarse calcarenite, brachiopod amphipora? intrabiomicrite with minor micrite, packstone to wackestone with minor mudstone, trace dolomitic, trace calcispheres, trace algal material, trace siliceous decreasing downsection, micrite is fractured with sparry calcite infilling, tight to poor fracture porosity, no shows.

2001-2015 m — LIMESTONE - light grey brown to light brown to tan to buff white, calcilutite to fine calcarenite minor very coarse calcarenite, micrite with brachiopod intramicrite, mudstone with packstone, intramicrite increases downsection, micrite is pyritic, algal material, tight, no shows.

Slave Point Reef 2015 m (1955.7 m TV)

2015-2026 m — LIMESTONE - snow white to light tan, calcilutite to medium calcarenite minor very coarse calcarenite, scattered coarse crystalline, stromatoporoid? biosparite with intrasparite and pelmicrite, boundstone to packstone, chalky in part, scattered euhedral calcite rhombs (mold infilling), trace disseminated pyrite, tight to poor moldic porosity (3-5%), no shows.

Slave Point Porosity 2026 m (1966.7 m TV)

2026-2046 m LIMESTONE - snow white to buff white, calcilutite to medium calcarenite with minor very coarse calcarenite scattered coarse to very coarse crystals, stromatoporoid? biosparite with intrasparite and pelmicrite, boundstone to packstone, chalky in part, styolitic, scattered euhedral calcite rhombs some with trace sphalerite & disseminated pyrite on crystal faces, trace euhedral quartz crystals (fracture fill?), tight to fair fracture porosity (3-6%), Archie ID, questionable trace gilsonite otherwise no shows.

Base Slave Point Porosity 2046 m (1986.7 m TV)

2046-2057 m LIMESTONE - snow white to buff tan, calcilutite to medium calcarenite with minor very coarse calcarenite, pelmicrite with intrasparite and strom biosparite, packstone to boundstone, chalky in part, tight to trace moldic porosity (2-3%), no shows.

2057-2069 m LIMESTONE - snow white to buff white, calcilutite to coarse calcarenite interbeds very coarse calcarenite, ostracod intrasparite and pelmicrite with stromatoporoid? biosparite, packstone to boundstone, chalky in part, trace sparry calcite rhombs, rare scattered euhedral quartz crystals floating in lime matrix, tight trace fracture & moldic porosity (2%), questionable trace gilsonite otherwise no shows.

2069-2075 m LIMESTONE - snow to buff tan, calcilutite to coarse calcarenite interbeds very coarse calcarenite, intrasparite with stromatoporoid? biosparite minor pelmicrite, packstone to boundstone, disseminated pyrite, tight, no shows.

2075-2088 m LIMESTONE - snow white to buff white to light tan, calcilutite to medium calcarenite with interbeds very coarse calcarenite, coralline ostracod intrasparite with stromatoporoid? biosparite minor pelmicrite, grainstone to boundstone with packstone, chalky in part, scattered sparry calcite, trace sphalerite, tight, no shows.

2088-2102 m LIMESTONE - buff white to buff tan, calcilutite with interbeds fine to coarse calcarenite minor very coarse calcarenite, intrasparite with pelmicrite and stromatoporoid? biosparite, grainstone with packstone & boundstone, chalky in part, trace disseminated pyrite, trace scattered molds, tight, no shows.

2102-2111 m LIMESTONE - buff white to buff tan, fine to coarse calcarenite with interbeds very coarse calcarenite minor calcilutite, intrasparite and stromatoporoid? biosparite with pelmicrite, boundstone & grainstone with packstone, trace chalky, tight, no shows.

Ft. Vermillion 2111 m (2051.7 m TV)

2111-2118 m	Limestone with trace Shale laminae. LIMESTONE - light tan to buff tan to buff white to black, fine to coarse calcarenite with minor interbeds very coarse calcarenite & calcilutite, intrasparite with stromatoporoid? biosparite & pelmicrite, grainstone with boundstone & packstone, abundant black algal? residue or styolites, trace chalky, tight, no shows.

Total Depth 2118 m (2058.7 m TV)

APPENDIX

SUNCOR NETLA K-77-60-50-122-30

Sneider Classification - Clastics
Type I - Abundant to common visible porosity, needle probe dislodges grains
IA > 100 md - excellent relief, loose, poor cement, no filler, usually fine >
IB - 10-100 md - excellent - good relief, moderate to loose, moderate cement, no to trace filler
IC - 1-10 md - mod - good relief, even por, mod consolidation, mod cement, low to mod clay
ID - .5-1 md - mod relief, patch por, mod-well consolidation, mod cement, varies
II - .07-.5 md - scat por, rare needle probe dislodge
III - <.07 - poor relief, no vis por, well consolidated, highly cemented, mod-abnt clay

Depth	Lithology	Grain Size	Visible Porosity	Non-Vis Porosity	Total Porosity	Est. Perm.	Sneider Class	Relief	Clay Level	Comments
515-520	Sltst & SS	.05-.10	1-5%	3-4%	4-9%	.07-1.0	III-II	p-fr	mod	glau, shows (stn&cut)
520-525	Sltst & SS	.10-.15	3-7%	3-4%	6-10%	.5-1.0	ID-II	fr	mod	glau, shows (stn&cut)
525-530	SS/Sltst	.10-.15	1-7%	3-4%	4-11%	.2-1.0	ID-II	p-fr	mod-hi	glau, shows (stn&cut)
530-535	SS/Sltst	.10-.15	1-7%	3-4%	4-11%	.2-1.0	ID-II	p-fr	mod-hi	glau, shows (stn&cut)
535-540	SS/Sltst	.05-.07	1-3%	3-4%	4-7%	.1-.5	II-III	p	mod	hi glau, shows
540-545	Sltst & SS	.05-.07	1-2%	2-3%	3-5%	.07-.5	III	p	hi	no shows