

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 2/18/2014
Report #: 26
Depth Progress: 305.00m
Depth End: 3,142.00mKB
Rig Release Date: 2/23/2014

Fluid/Mud Chks: Mud Engineer: Ed Thompson

Time 10:30	Depth (mKB) 3,070.00	Density (kg/m³) 1,140.0	Funnel Viscosity (s/L) 68	pH	PV Override (Pa·s) 22.0	YP Override (Pa) 4.5
Low Gravity Solids (%) 7.2	MBT (kg/m³)	Oil Water Ratio 86/14	Chlorides (mg/L) 266,597	Calcium (mg/L) 36	Lime (kg/m³) 13	Potassium (mg/L)
Electric Stab (V) 615.0	ECD - Manual Entry (k... 1,372.0	Sand (%) 3.2	Solids, Corr. (%) 12.4	T Flowline (°C) 39	HTHP Pressure (kPa)	HTHP Filtrate (mL/30... 4.0
API Filtrate (mL/30min)		Mud Lost to Surface (m³) 6.00	Mud Lost to Hole (m³) 1.00		Daily Mud Field Est (Cost) 7,443.31	
Cum Mud Lost to Surface (m³) 82.00		Cum Mud Lost to Hole (m³) 12.00		Cumulative Mud Cost (Cost) 143,633.39		

Last BOP Drill

Type BOP Drill	Days Last Chk (...) 1	Last Date 2/17/2014	Days Until Next... 4	Next Check Date 2/22/2014
Days Since Lost Time Incident (days) 859.00	Days Since Recordable Incident (days) 859.00			

Safety Incidents

Date	Com	Category

Drill String: BHA # 5

Bit Run 5	Drill Bit 156.0mm, MS1613UBPXX, JH8401	Length (m) 0.19	IADC Bit Dull -----	TFA (incl Noz) (mm²) 581	BHA ROP (m/hr) 23.7
Nozzles (mm) 11.1/11.1/11.1/11.1/11.1/11.1	String Length (m) 3,142.00	OD (mm) 131.0	Max Rotating Hook Load (daN) 68,000		
Depth In (mKB) 2,152.00	Depth Out (mKB) 3,152.00	Avg ROP (m/hr) 23.7	Depth This Job (m) 1,000.00	Total Depth Drilled b... 1,000.00	Job Drill Hrs (hr) 42.25
Total Drill Hrs (hr) 42.25					

Comment
Smith 156mm MSi613 PDC bit, Pathfinder 7/8 lobe, 3.8 stage, set at 1.36 deg. rotate at 0.135/L, 1.66m from bit to bend, (rpm at 0.135/L) mud motor, MWD and LWD tools 2 JOINTS HWDP, Jars, 1 joint of HWDP.

Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Drill pipe - Stands	68.0	101.0	80	1,521.47	3,142.94
4" H.W	65.0	101.0	36	335.34	1,620.00
4" D.P	70.0	101.0	126	1,198.30	1,285.19
4" H.W	65.0	101.0	1	9.12	86.89
Jar	59.0	131.0	1	5.07	77.77
4" H.W	65.0	101.0	3	28.27	72.70
X/O	58.0	128.0	1	0.82	44.43
Slick monel	67.0	119.0	1	9.50	43.61
x/o	56.0	120.0	1	0.87	34.11
4.75 LWD ABS	70.0	131.0	1	4.79	33.24
4.75 LWD SAWR	70.0	130.0	1	6.18	28.45
Landing Sub	63.0	119.0	1	0.58	22.27
Slick monel	67.0	119.0	1	9.47	21.69
NM Pony Monel	57.0	119.0	1	3.10	12.22
Mud motor	54.0	123.0	1	8.93	9.12

Drilling Parameter: 3,015.00 - 3,142.00 mKB

Cum Depth (m) 990.00	Cum Drill... 41.75	Int ROP (...) 24.2	Flow Rate... 1.000	WOB (daN) 10,000	RPM (r... 80	SPP (kPa) 17,100	Drill Str Wt (d... 66,000	SO Str Wt (daN) 72,000	PU Str Wt (daN) 60,000	Off-Btm Str W... 66,000	Drill Tq 11,100.0
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Hydraulic Calculations

Bit Hydraulic Powe...	HP/Area (kW/mm²)	% P @ bit (%)	Bit Jet Velocity (m/s)	Bit dP (kPa)	P Drop Annular (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
8.8	0.00046	3	28.7	527.0	1,374.1	1,140.0	1,209.2
Drill String Volume (m³)	Bit to Shoe Volume (m³)	Vol Shoe to Top (m³)	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m/...	Max Open Hole AV (m/...	
11.53	10.79	25.67	83.7	83.7	14.7	177.5	

Error

Mud Pump: 1, NATIONAL, 8-P-80

Pump Number 1	Make NATIONAL	Model 8-P-80	Rod Diameter (mm) 140.0	Stroke Length (mm) 216.0
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Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/16/2014 16:00	2,209.00	0.608	5,153	
2/16/2014 16:00	2,209.00	1.045	15,600	134

Pump Operations

Start Date 2/15/2014	End Date 2/15/2014	Liner Size (mm) 127.0	P Max (kPa)	Vol/Stk OR (m³/stk)
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Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/18/2014
Report #: 26
Depth Progress: 305.00m
Depth End: 3,142.00mKB
Rig Release Date: 2/23/2014

Rig: Beaver Drilling Ltd. 2

Drilling Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
2/16/2014	2/16/2014	127.0		

Mud Pump: 2, NATIONAL, 8-P-80

Pump Number	Make	Model	Rod Diameter (mm)	Stroke Length (mm)
2	NATIONAL	8-P-80	140.0	216.0

Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/19/2014 23:45	3,152.00	0.975	12,600	125
2/20/2014 00:00	3,143.00	0.647	6,414	83

Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
2/20/2014	2/20/2014	127.0		
2/21/2014	2/21/2014	127.0		

Shaker Screens

Des	Start Date	End Date	Scr Sz X	Scr Sz Y	Note

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number	Make	Model	Diameter (mm)
2	BOS Solutions	5500	

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,040.0	0.400	1,710.0	0.200

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number	Make	Model	Diameter (mm)
1	BOS Solutions	5500	

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,100.0	0.400	1,790.0	0.200

Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
VERT	7.0	1,063.330	1.0	M3

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2/18/2014	2,818.00	89.70	286.60	2,023.02	912.99	235.36	-882.13	912.99	0.65
2/18/2014	2,818.00	89.70	286.60	2,023.02	912.99	235.36	-882.13	912.99	0.65
2/18/2014	2,837.00	89.90	286.60	2,023.09	931.98	240.78	-900.34	931.98	0.32
2/18/2014	2,856.00	89.90	284.70	2,023.12	950.98	245.91	-918.64	950.98	3.00
2/18/2014	2,875.00	88.80	283.80	2,023.34	969.98	250.58	-937.05	969.98	2.24
2/18/2014	2,894.00	89.00	285.50	2,023.70	988.97	255.39	-955.43	988.97	2.70
2/18/2014	2,913.00	89.10	286.00	2,024.02	1,007.97	260.55	-973.71	1,007.97	0.81
2/18/2014	2,932.00	89.10	285.60	2,024.31	1,026.96	265.72	-991.99	1,026.96	0.63
2/18/2014	2,951.00	89.40	285.80	2,024.56	1,045.96	270.86	-1,010.28	1,045.96	0.57
2/18/2014	3,008.00	89.70	284.50	2,025.01	1,102.96	285.76	-1,065.30	1,102.96	0.70
2/18/2014	3,027.00	89.90	285.10	2,025.08	1,121.96	290.61	-1,083.67	1,121.95	1.00
2/18/2014	3,046.00	89.70	284.30	2,025.14	1,140.96	295.43	-1,102.04	1,140.95	1.30
2/18/2014	3,065.00	89.80	283.80	2,025.23	1,159.95	300.04	-1,120.48	1,159.95	0.81
2/18/2014	3,065.00	89.90	284.90	2,025.23	1,159.95	300.04	-1,120.48	1,159.95	0.81
2/18/2014	3,103.00	89.90	283.70	2,025.29	1,197.95	309.43	-1,157.30	1,197.95	0.95

Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	43.00	43.00	20.85
Slater River	207.00	207.00	197.35
Arctic Red	954.00	953.52	932.35
Martin House	1,110.00	1,109.49	1,084.35
Imperial	1,140.00	1,139.48	1,118.35
KOP (5deg/30m)	1,731.00	1,730.40	1,730.73
Canol (7deg/30m)	1,817.00	1,815.65	1,816.00
er Canol	1,902.70	1,896.20	1,897.35
Lower Canol	1,935.80	1,924.43	1,929.35

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/19/2014
Report #: 27
Depth Progress: 10.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig: Beaver Drilling Ltd. 2

/ UWI 200/D-020/L094P1699		Surface Legal Location P-20 65-00 126-45		MaxWell Job Number JOB01@2006		License No. EL 470					
Ground Elevation (m) 284.15		Original KB/RT Elevation (m) 289.35		Casing Flange Elevation (m) 283.95		Original Spud Date 1/29/2014		Days From Spud (days) 27.00			
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 1/24/2014 00:00		End Date 2/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes	
Daily Cost Total (Cost) 109,050.85		Cumulative Cost (Cost) 4,945,271.15		Total AFE (Cost) 7,122,600.00		AFE+Supp Amt (Cost) 7,122,600.00		AFE / RFE / Maint.# 10351812		Estimated Days	
Planned Depth (TMD) (mKB)		Override TVD (mKB)		Head Count 53.0		Personnel Total Hours (hr) 618.00		Cum Personnel Total Hours (hr) 15,540.00			
Avg Connection Gas 2,580		Avg Background Gas 1,060		Avg Trip Gas 19		Max H2S (ppm) 0					
Road Condition Ice/Snow		Weather Cloudy		Temperature (°C) -38		Wind NW 10 kms					
Ops and Depth @ Morning Report Laydown drill pipe at 1282m.								Wellbore Original Hole			

Last 24hr Summary

No incidents or accidents. 5 - HID, 0 - OBS and 0 - ASA (all closed out)

Pull out of the hole due to mud motor failure, lay down directional tools, make up bit, run in the hole, wash in from 2152m to 3142m, drill 156mm lateral hole to 3152mMD (TD), circulate 2 bottoms up. Projected survey at bit: 3152mMD (TD), inclination= 89.9°, azimuth= 283.7°, TVD - 2025m.

24hr Forecast

Laydown drill pipe, rig up power tongs and laydown truck, run 114.3mm production liner and Volant Hydroforms with liner top packer followed by drill pipe and heavy weight drill pipe, strap in and drift drill pipe and heavy weight drill pipe, tag bottom, circulate bottoms up and clean hole.

Daily Contacts

Drilling Superintendent, Sheldon Vamplew, 403-999-1302; Drilling Engineer, Mike Greener, 403-771-5039; WS Supervisor, Richard Turgeon, 780-387-1706; WS Supervisor, Dave Oppen, 403-863-8205; Rig Manager, Rick Yavis, 780-718-2962; Command Centre, 403-910-0357

Last Casing String

Intermediate, 2,152.00mKB

Time Log

Start Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
00:00	02:15	2.25	PROD1	DRILL	TRIP	P		3,142.00	3,142.00	Pull out of hole for piled-up mud motor flow checks at 519 m and out of hole
02:15	02:30	0.25	PROD1	RIGMNT	SVRG	P		3,142.00	3,142.00	Rig service function test rig smart anti-collision system, function test crown saver,grease all moving parts, check oil levels in floor motor, pumps and HPU
02:30	02:45	0.25	PROD1	DRILL	SFTY	P		3,142.00	3,142.00	Safety meeting with directional hands
02:45	05:30	2.75	PROD1	DRILL	PULD	P		3,142.00	3,142.00	Handle directional tools and lay down tools
05:30	06:00	0.50	PROD1	RIGMNT	SVRG	P		3,142.00	3,142.00	Clean up rig floor and prepare to run in hole
06:00	07:45	1.75	PROD1	DRILL	PULD	P		3,142.00	3,142.00	Make up, 156mm Smith MSI613 PDC bit with float sub and float, run in hole
07:45	08:00	0.25	PROD1	DRILL	SFTY	P		3,142.00	3,142.00	Crew handover meeting, Conoco reps and tool push present, daily walk around rig inspection R/T
08:00	09:30	1.50	PROD1	DRILL	TRIP	P		3,142.00	3,142.00	Trip into the hole to 1022m.
09:30	09:45	0.25	PROD1	RIGMNT	SVRG	P		3,142.00	3,142.00	Rig service function test rig smart anti-collision system, function test crown saver,grease all moving parts, check oil levels in floor motor, pumps and HPU
09:45	10:30	0.75	PROD1	RIGMNT	SLPC	P		3,142.00	3,142.00	Slip and cut 30m of drill line 10884m]
10:30	12:30	2.00	PROD1	DRILL	TRIP	P		3,142.00	3,142.00	Trip in the hole from 1022m to 1595m fill pipe and flow check at 1595m
12:30	13:00	0.50	PROD1	RIGMNT	RGRP	T	Rig	3,142.00	3,142.00	Repair grabber box dies, on top drive
13:00	14:15	1.25	PROD1	DRILL	TRIP	P		3,142.00	3,142.00	Trip in the hole from 1595m to 2138m
14:15	16:00	1.75	PROD1	DRILL	REAM	P		3,142.00	3,142.00	Wash and ream from 2152m to 2320m
16:00	16:15	0.25	PROD1	RIGMNT	SVRG	P		3,142.00	3,142.00	Rig service function test rig smart anti-collision system, function test crown saver function test pipe rams 8 seconds close open,grease all moving parts, check oil levels in floor motor, pumps and HPU
16:15	18:45	2.50	PROD1	DRILL	REAM	P		3,142.00	3,142.00	Wash and ream from 2320m to 2604m
18:45	19:00	0.25	PROD1	DRILL	SFTY	P		3,142.00	3,142.00	Crew handover meeting, Conoco reps and tool push present, daily walk around rig inspection D/O
19:00	22:45	3.75	PROD1	DRILL	REAM	P		3,142.00	3,142.00	Wash and ream from 2604m to 3142m
22:45	23:15	0.50	PROD1	DRILL	DRLG	P		3,142.00	3,152.00	Drill 156mm hole, with Smith 156mm MSI613 PDC bit, from 3142m to 3152m
23:15	00:00	0.75	PROD1	DRILL	CIRC	P		3,152.00	3,152.00	Circulate condition hole at 3152m

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 2/19/2014
Report #: 27
Depth Progress: 10.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Fluid/Mud Chks: Mud Engineer: Ed Thompson

Time 17:00	Depth (mKB) 3,142.00	Density (kg/m³) 1,140.0	Funnel Viscosity (s/L) 70	pH	PV Override (Pa*s) 20.0	YP Override (Pa) 5.0
Low Gravity Solids (%) 11.6	MBT (kg/m³)	Oil Water Ratio 86/14	Chlorides (mg/L) 277,984	Calcium (mg/L) 38	Lime (kg/m³) 11	Potassium (mg/L)
Electric Stab (V) 671.0	ECD - Manual Entry (k... 1,345.0	Sand (%) 2.9	Solids, Corr. (%) 16.0	T Flowline (°C) 19	HTHP Pressure (kPa)	HTHP Filtrate (mL/30... 4.0
API Filtrate (mL/30min)		Mud Lost to Surface (m³) 2.00		Mud Lost to Hole (m³) 0.00		Daily Mud Field Est (Cost) 4,969.00
Cum Mud Lost to Surface (m³) 84.00		Cum Mud Lost to Hole (m³) 12.00		Cumulative Mud Cost (Cost) 148,602.39		

Last BOP Drill

Type BOP Drill	Days Last Chk (...) 2	Last Date 2/17/2014	Days Until Next... 3	Next Check Date 2/22/2014
Days Since Lost Time Incident (days) 860.00	Days Since Recordable Incident (days) 860.00			

Safety Incidents

Date	Com	Category

Drill String: BHA # 6

Bit Run 5 RR	Drill Bit 156.0mm, MS1613UBPXX, JH8401	Length (m) 0.19	IADC Bit Dull 1-1-NO-G-1-1-NO-TD	TFA (incl Noz) (mm²) 581	BHA ROP (m/hr) 20.0
Nozzles (mm) 11.1/11.1/11.1/11.1/11.1/11.1	String Length (m) 3,155.92	OD (mm) 152.0	Max Rotating Hook Load (daN) 66,000		
Depth In (mKB) 2,152.00	Depth Out (mKB) 3,152.00	Avg ROP (m/hr) 23.7	Depth This Job (m) 1,000.00	Total Depth Drilled b... 1,000.00	Job Drill Hrs (hr) 42.25
					Total Drill Hrs (hr) 42.25

Comment
Smith 156mm MS1613 PDC bit, HWDP slick

Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Drill pipe - Stands			83	1,578.72	3,155.92
4" H.W	65.0	101.0	30	279.16	1,578.72
4" D.P	70.0	101.0	126	1,198.30	1,298.04
4" H.W	65.0	101.0	1	9.12	99.74
Jar	59.0	131.0	1	5.07	90.62
4" H.W	65.0	101.0	9	84.45	85.55
152mm BIT SUB	60.0	152.0	1	0.91	1.10

Drilling Parameter: 3,142.00 - 3,152.00 mKB

Cum Depth (m) 10.00	Cum Drill... 0.50	Int ROP (...) 20.0	Flow Rate... 1.000	WOB (daN) 8,000	RPM (r...) 80	SPP (kPa) 12,600	Drill Str Wt (d...) 66,000	SO Str Wt (daN) 59,000	PU Str Wt (daN) 71,000	Off-Btm Str W... 66,000	Drill Tq 12,300.0
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Hydraulic Calculations

Bit Hydraulic Powe... HP/Area (kW/mm²)	% P @ bit (%)	Bit Jet Velocity (m/s)	Bit dP (kPa)	P Drop Annular (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
Drill String Volume (m³)	Bit to Shoe Volume (m³)	Vol Shoe to Top (m³)	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m/...)	Max Open Hole AV (m/...)

Error
A drill string component contains a null value in OD

Mud Pump: 1, NATIONAL, 8-P-80

Pump Number 1	Make NATIONAL	Model 8-P-80	Rod Diameter (mm) 140.0	Stroke Length (mm) 216.0
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Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/16/2014 16:00	2,209.00	0.608	5,153	78
2/16/2014 16:00	2,209.00	1.045	15,600	134

Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
2/15/2014	2/15/2014	127.0		
2/16/2014	2/16/2014	127.0		

Mud Pump: 2, NATIONAL, 8-P-80

Pump Number 2	Make NATIONAL	Model 8-P-80	Rod Diameter (mm) 140.0	Stroke Length (mm) 216.0
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Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/19/2014 23:45	3,152.00	0.975	12,600	125
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2/20/2014	2/20/2014	127.0		
2/21/2014	2/21/2014	127.0		

Shaker Screens

Des	Start Date	End Date	Scr Sz X	Scr Sz Y	Note

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number	Make	Model	Diameter (mm)
2	BOS Solutions	5500	

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,040.0	0.400	1,710.0	0.200

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number	Make	Model	Diameter (mm)
1	BOS Solutions	5500	

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,100.0	0.400	1,790.0	0.200

Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
Barite	42.0	17.040	40.0	SX
INVERT	4.0	1,063.330	1.0	M3

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)

Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	43.00	43.00	20.85
Water River	207.00	207.00	197.35
Mc Red	954.00	953.52	932.35
Martin House	1,110.00	1,109.49	1,084.35
Imperial	1,140.00	1,139.48	1,118.35
KOP (5deg/30m)	1,731.00	1,730.40	1,730.73
KOP (7deg/30m)	1,817.00	1,815.65	1,816.00
Upper Canol	1,902.70	1,896.20	1,897.35
Lower Canol	1,935.80	1,924.43	1,929.35

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/20/2014
Report #: 28
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig: Beaver Drilling Ltd. 2

UWI 200/D-020/L094P1699		Surface Legal Location P-20 65-00 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 284.15		Original KB/RT Elevation (m) 289.35		Casing Flange Elevation (m) 283.95		Original Spud Date 1/29/2014	
						Days From Spud (days) 28.00	
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 1/24/2014 00:00		End Date 2/23/2014 23:59	
Final Job Status DRILLED		Final Report? Yes					
Daily Cost Total (Cost) 158,174.35		Cumulative Cost (Cost) 5,103,445.50		Total AFE (Cost) 7,122,600.00		AFE+Supp Amt (Cost) 7,122,600.00	
AFE / RFE / Maint.# 10351812		Estimated Days					
Planned Depth (TMD) (mKB)		Override TVD (mKB)		Head Count 52.0		Personnel Total Hours (hr) 582.00	
						Cum Personnel Total Hours (hr) 16,122.00	
Avg Connection Gas		Avg Background Gas		Avg Trip Gas 290		Max H2S (ppm) 0	
Road Condition Ice/Snow		Weather Clear		Temperature (°C) -41		Wind Calm	
Ops and Depth @ Morning Report Cement 114.3mm production liner						Wellbore Original Hole	

Last 24hr Summary

No incidents or accidents. 9 - HID, 0 - OBS and 0 - ASA (all closed out)

Circulate 2 bottoms up, pull out of the hole, rig up laydown truck, laydown drill pipe, rig up power tongs and laydown truck, run 114.3mm production liner and Volant Hydroforms with liner top packer followed by drill pipe and heavy weight drill pipe, strap in and drift drill pipe and heavy weight drill pipe.

24hr Forecast

Cement liner to liner top, displace with fresh water, bump plug, set liner with liner top packer, circulate excess cement out and displace hole with fresh water, rig up laydown truck, laydown drill pipe and heavy weight drill pipe, run in the rest of the drill pipe in the derrick, laydown drill pipe, rig up USIT loggers, run USIT log, rig up to run pressure pass USIT log.

Daily Contacts

Drilling Superintend, Sheldon Vamplew, 403-999-1302; Drilling Engineer, Mike Greener, 403-771-5039; WS Supervisor, Richard Turgeon, 780-387-1706; WS Supervisor, Dave Oppen, 403-863-8205; Rig Manager, Rick Yavis, 780-718-2962; Command Centre, 403-910-0357

Last Casing String

Production, 3,148.70mKB

Time Log

t	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
00:00	01:00	1.00	PROD1	DRILL	CIRC	P		3,152.00	3,152.00	Circulate condition hole at 3152m. prior to trip out to run 114.3mm casing liner
01:00	01:15	0.25	PROD1	RIGMNT	SVRG	P		3,152.00	3,152.00	Rig service function test rig smart anti-collision system, function test crown saver function test Hdril 23 seconds close open,grease all moving parts, check oil levels in floor motor, pumps and HPU
01:15	05:30	4.25	PROD1	DRILL	TRIP	P		3,152.00	3,152.00	Pull out of hole, with flow checks 3152m to 1307m, to run 114.3mm production liner
05:30	05:45	0.25	PROD1	DRILL	SFTY	P		3,152.00	3,152.00	Safety meeting with Trotter Pipe Handlers, lay down machine
05:45	07:45	2.00	PROD1	DRILL	TRIP	P		3,152.00	3,152.00	Rig up lay down machine and lay down drill pipe from 1307m to 995m
07:45	08:00	0.25	PROD1	DRILL	SFTY	P		3,152.00	3,152.00	Crew handover meeting, Conoco reps and tool push present, daily walk around rig inspection R/T
08:00	09:00	1.00	PROD1	DRILL	PULD	P		3,152.00	3,152.00	Lay down drill pipe from 995m to 99m
09:00	10:00	1.00	PROD1	DRILL	TRIP	P		3,152.00	3,152.00	Trip out of the hole rack 5 stands of HWV and breakdown BHA
10:00	10:30	0.50	PROD1	DRILL	TRIP	P		3,152.00	3,152.00	Install bushing puller on drill pipe and pull wear bushing
10:30	10:45	0.25	PROD1	RIGMNT	SVRG	P		3,152.00	3,152.00	Rig service function test rig smart anti-collision system, function test crown saver, function test blind rams 8 sec to close and open,grease all moving parts, check oil levels in floor motor, pumps and HPU
10:45	11:45	1.00	PROD1	CASING	RNCS	P		3,152.00	3,152.00	Rig up power tongs to run 114.3mm production casing liner
11:45	12:00	0.25	PROD1	CASING	SFTY	P		3,152.00	3,152.00	Safety meeting with hallmark power tongs and trotter pipe handlers
12:00	15:15	3.25	PROD1	CASING	RNCS	P		3,152.00	3,152.00	Run 114.3mm, 17.26kg/m, P-110, LTC production casing liner, to 716m
15:15	15:30	0.25	PROD1	CASING	CIRC	P		3,152.00	3,152.00	Fill casing and break circulation at 716m
15:30	16:00	0.50	PROD1	CASING	RNCS	P		3,152.00	3,152.00	Run 114.3mm, 17.26kg/m, P-110, LTC production casing liner, from 716m to 1016m
16:00	16:30	0.50	PROD1	CASING	RNCS	P		3,152.00	3,152.00	Run 4 1/2 liner from 716m to 1016m
16:30	16:45	0.25	PROD1	RIGMNT	SVRG	P		3,152.00	3,152.00	Rig service function test rig smart anti-collision system, function test crown saver, function test H.C.R 3 sec to open and close,grease all moving parts, check oil levels in floor motor, pumps and HPU

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 2/20/2014
Report #: 28
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Time Log

Start Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
16:45	18:30	1.75	PROD1	CASING	RNCS	P		3,152.00	3,152.00	Run 1727.49m of 114.3mm, 17.26kg/m, P-110, LTC production casing liner
18:30	19:00	0.50	PROD1	CASING	CIRC	P		3,152.00	3,152.00	Run 1 stand of 4" drill pipe, break circulation
19:00	19:15	0.25	PROD1	CASING	SFTY	P		3,152.00	3,152.00	Crew handover meeting, Conoco reps and tool push present, daily walk around rig inspection D/O
19:15	20:00	0.75	PROD1	CASING	RNCS	P		3,152.00	3,152.00	Rig out Hallmark power tongs and Trotter lay down truck
20:00	22:45	2.75	PROD1	CASING	TRIP	P		3,152.00	3,152.00	Run in hole slow with drill pipe and HWDP on 114.3mm, 17.26kg/m, P-110, LTC production casing liner, packer hanger
22:45	23:00	0.25	PROD1	RIGMNT	RGRP	T	Rig	3,152.00	3,152.00	Replace hydraulic hose on top drive
23:00	00:00	1.00	PROD1	CASING	CIRC	P		3,152.00	3,152.00	Top fill and break circulation at 12m above 177.8mm casing shoe, 2140m

Fluid/Mud Chks: Mud Engineer: <Mud Engineer?>

Time	Depth (mKB)	Density (kg/m³)	Funnel Viscosity (s/L)	pH	PV Override (Pa*s)	YP Override (Pa)
Low Gravity Solids (%)	MBT (kg/m³)	Oil Water Ratio	Chlorides (mg/L)	Calcium (mg/L)	Lime (kg/m³)	Potassium (mg/L)
Electric Stab (V)	ECD - Manual Entry (k...	Sand (%)	Solids, Corr. (%)	T Flowline (°C)	HTHP Pressure (kPa)	HTHP Filtrate (mL/30...
API Filtrate (mL/30min)		Mud Lost to Surface (m³)		Mud Lost to Hole (m³)		Daily Mud Field Est (Cost)
Cum Mud Lost to Surface (m³)		Cum Mud Lost to Hole (m³)			Cumulative Mud Cost (Cost)	

Last BOP Drill

Type BOP Drill	Days Last Chk (...)	Last Date	Days Until Next...	Next Check Date
	3	2/17/2014	2	2/22/2014
Days Since Lost Time Incident (days)	861.00		Days Since Recordable Incident (days)	8

Safety Incidents

Date	Com	Category

Drill String: BHA # <BHA No.??>

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)
Nozzles (mm)	String Length (m)	OD (mm)	Max Rotating Hook Load (daN)		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled b...	Job Drill Hrs (hr)
					Total Drill Hrs (hr)

Comment

Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)

Drilling Parameter: <depthstart> - <depthend> mKB

Cum Depth (m)	Cum Drill...	Int ROP (...)	Flow Rate...	WOB (daN)	RPM (r...	SPP (kPa)	Drill Str Wt (d...	SO Str Wt (daN)	PU Str Wt (daN)	Off-Btm Str W...	Drill Tq
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Hydraulic Calculations

Bit Hydraulic Powe...	HP/Area (kW/mm²)	% P @ bit (%)	Bit Jet Velocity (m/s)	Bit dP (kPa)	P Drop Annular (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
Drill String Volume (m³)	Bit to Shoe Volume (m³)	Vol Shoe to Top (m³)	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m/...	Max Open Hole AV (m/...	

Error

Mud Pump: 1, NATIONAL, 8-P-80

Pump Number	Make	Model	Rod Diameter (mm)	Stroke Length (mm)
1	NATIONAL	8-P-80	140.0	216.0

Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/16/2014 16:00		2,209.00	0.608	5,153
2/16/2014 16:00		2,209.00	1.045	15,600

Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
2/15/2014	2/15/2014	127.0		
2/16/2014	2/16/2014	127.0		

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 2/20/2014
Report #: 28
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

1 Pump: 2, NATIONAL, 8-P-80

Pump Number	Make	Model	Rod Diameter (mm)	Stroke Length (mm)
2	NATIONAL	8-P-80	140.0	216.0

Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/19/2014 23:45	3,152.00	0.975	12,600	125
2/20/2014 00:00	3,143.00	0.647	6,414	83

Pump Operations

Start Date	End Date	Liner Size (mm) ^{3/4}	P Max (kPa)	Vol/Stk OR (m³/stk)
2/20/2014	2/20/2014	127.0		
2/21/2014	2/21/2014	127.0		

Shaker Screens

Des	Start Date	End Date	Scr Sz X	Scr Sz Y	Note

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number	Make	Model	Diameter (mm)
2	BOS Solutions	5500	

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,040.0	0.400	1,710.0	0.200

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number	Make	Model	Diameter (mm)
1	BOS Solutions	5500	

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,100.0	0.400	1,790.0	0.200

Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2/20/2014	3,153.00	89.90	283.90	2,025.38	1,247.94	321.36	-1,205.85	1,247.94	0.12

Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	43.00	43.00	20.85
Slater River	207.00	207.00	197.35
Arctic Red	954.00	953.52	932.35
Martin House	1,110.00	1,109.49	1,084.35
Imperial	1,140.00	1,139.48	1,118.35
KOP (5deg/30m)	1,731.00	1,730.40	1,730.73
KOP (7deg/30m)	1,817.00	1,815.65	1,816.00
Upper Canol	1,902.70	1,896.20	1,897.35
Lower Canol	1,935.80	1,924.43	1,929.35

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/21/2014
Report #: 29
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig: Beaver Drilling Ltd. 2

UWI 200/D-020/L094P1699		Surface Legal Location P-20 65-00 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 284.15		Original KB/RT Elevation (m) 289.35		Casing Flange Elevation (m) 283.95		Original Spud Date 1/29/2014	
Days From Spud (days) 29.00		Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 1/24/2014 00:00	
End Date 2/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes		Daily Cost Total (Cost) 86,237.67	
Cumulative Cost (Cost) 5,189,683.17		Total AFE (Cost) 7,122,600.00		AFE+Supp Amt (Cost) 7,122,600.00		AFE / RFE / Maint.# 10351812	
Estimated Days		Planned Depth (TMD) (mKB)		Override TVD (mKB)		Head Count 59.0	
Personnel Total Hours (hr) 637.00		Cum Personnel Total Hours (hr) 16,759.00		Avg Connection Gas		Avg Background Gas	
Avg Trip Gas		Max H2S (ppm)		Road Condition Ice/Snow		Weather Clear	
Temperature (°C) -41		Wind SW 10 kms		Ops and Depth @ Morning Report Run USIT log #1.		Wellbore Original Hole	

Last 24hr Summary
No incidents or accidents. 6 - HID, 0 - OBS and 0 - ASA (all closed out)

Run 114.3mm production liner with drill pipe and heavy weight drill pipe, strap in and drift drill pipe and heavy weight drill pipe, tag bottom at 3152mMD, circulate bottoms up and clean hole, rig up cementers, cement liner at 3148.7mMD up to liner top, drop dart and displace with fresh water, bump plug 3,500kPA over final circulating pressure, bleed off, check floats, pressure up to 28,000kPA and set liner with liner top packer at 1727.49mMD, circulate out pre-flush and 2m3 of excess cement out, displace hole with fresh water, rig out cementers, flowcheck, rig up laydown truck, laydown drill pipe and heavy weight drill pipe, run in the rest of the drill pipe in the derrick, laydown drill pipe, clean up catch can and flow-t, rig out flow-t and flowline.

24hr Forecast

Run USIT log #1, run USIT log #2 (pressure pass), rig out Schlumberger loggers and lubricator, rig up power tongs and laydown truck, run 114.3mm tie-back liner, space out, land mandrel seal assembly and tie onto top of liner top packer in compression, remove landing joint, pressure test 114.3mm x 177.8mm annulus to 15,000kPA using Schlumberger cementers, nipple down BOP.

Daily Contacts

Drilling Superintendent, Sheldon Vamplew, 403-999-1302; Drilling Engineer, Mike Greener, 403-771-5039; WS Supervisor, Richard Turgeon, 780-387-1706; WS Supervisor, Dave Oppen, 403-863-8205; Rig Manager, Rick Yavis, 780-718-2962; Command Centre, 403-910-0357

Last Casing String

uction, 3,148.70mKB

Log

Start Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
00:00	00:15	0.25	PROD1	RIGMNT	SVRG	P		3,152.00	3,152.00	Rig service function test rig smart anti-collision system, function test crown saver function test pipe rams 8 seconds close open,grease all moving parts, check oil levels in floor motor, pumps and HPU
00:15	03:30	3.25	PROD1	CASING	TRIP	P		3,152.00	3,152.00	Run in hole slow with drill pipe and HWDP on 114.3mm, 17.26kg/m, P-110, LTC production casing liner, packer hanger
03:30	06:00	2.50	PROD1	CASING	CIRC	P		3,152.00	3,152.00	Fill hole break circulation, circulate and clean hole
06:00	06:15	0.25	PROD1	CEMENT	SFTY	P		3,152.00	3,152.00	Safety meeting on cementing with Schlumberger prior to cementing 114.3mm production liner
06:15	07:45	1.50	PROD1	CEMENT	CMNT	P		3,152.00	3,152.00	Rig up Schlumberger cementers to cement 114.3mm production liner, pump 8m3 of 1000kg/m3 CW8 pre-flush, stop and pressure test lines to 35,000kpa (held OK), bleed off pressure, pump 5m3 of 1200kg/m3 MUDPUSH II pre-flush spacer
07:45	08:00	0.25	PROD1	CEMENT	SFTY	P		3,152.00	3,152.00	Crew handover meeting, Conoco reps and tool push present, daily walk around rig inspection R/T
08:00	10:15	2.25	PROD1	CEMENT	CMNT	P		3,152.00	3,152.00	Pump 20 tonne/14.7m3 (20% excess) of 1900kg/m3 Conventional Class "G" Tail Cement with 0.6% Fluid Loss + 0.5% Dispersant + 0.2% Retarder + 72L/tonne Gas Control Agent, from 3148.70mMD to 1727.49mMD. Drop dart and displace 19.8m3 of fresh water. Bump plug 3,500kpa over final circulating pressure of 19,200kPA at 9:05hrs on February 21st 2014, bleed pressure and check floats (holding OK). pressure up to 28,000kPA and set liner with liner top packer at 1727.49mMD, circulate out pre-flush and 2m3 of excess cement out, displace hole with fresh water, rig out cementers, flow check
10:15	10:45	0.50	PROD1	DRILL	PULD	P		3,152.00	3,152.00	Safety meeting with trotter pipe handlers, rig up Laydown truck
10:45	11:00	0.25	PROD1	RIGMNT	SVRG	P		3,152.00	3,152.00	Rig service function test rig smart anti-collision system, function test crown saver function test Hydill 23 seconds close open,grease all moving parts, check oil levels in floor motor, pumps and HPU

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 2/21/2014
Report #: 29
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Time Log

Start Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
11:00	16:00	5.00	PROD1	DRILL	PULD	P		3,152.00	3,152.00	Rig up lay down truck, lay down drill pipe and heavy weight drill pipe, run in the rest of drill pipe in the derrick, lay down drill pipe
16:00	16:15	0.25	PROD1	RIGMNT	SVRG	P		3,152.00	3,152.00	Rig service function test rig smart anti collision function test blind rams 8 second close open check fluids on floor motor and HPU
16:15	17:00	0.75	PROD1	DRILL	RNCS	P		3,152.00	3,152.00	Rig out Lay down truck to run USIT log and pressure USIT log
17:00	19:00	2.00	PROD1	RIGMNT	SVRG	P		3,152.00	3,152.00	Pull rotary table wash and clean invert out of table and bushings
19:00	19:15	0.25	PROD1	DRILL	SFTY	P		3,152.00	3,152.00	Crew handover meeting, Conoco reps and tool push present, daily walk around rig inspection D/O
19:15	21:30	2.25	PROD1	RIGMNT	SVRG	P		3,152.00	3,152.00	Clean up floor, clean out invert from bird baths
21:30	00:00	2.50	PROD1	WHDBOP	NUND	P		3,152.00	3,152.00	Tear out and clean flow line, flow nipple, rig out and clean catch can, clean ring seal seat and bolt holes in top of BOP for installing pressure stripper head for Pressure USIT log

Fluid/Mud Chks: Mud Engineer: <Mud Engineer?>

Time	05:30	Depth (mKB)	3,155.00	Density (kg/m³)	1,135.0	Funnel Viscosity (s/L)	130	pH		PV Override (Pa*s)		YP Override (Pa)	
Low Gravity Solids (%)		MBT (kg/m³)		Oil Water Ratio		Chlorides (mg/L)		Calcium (mg/L)		Lime (kg/m³)		Potassium (mg/L)	
Electric Stab (V)		ECD - Manual Entry (k...)		Sand (%)		Solids, Corr. (%)		T Flowline (°C)		HTHP Pressure (kPa)		HTHP Filtrate (mL/30...	
API Filtrate (mL/30min)		Mud Lost to Surface (m³)		Mud Lost to Hole (m³)		Daily Mud Field Est (Cost)							4,253.32
Cum Mud Lost to Surface (m³)		84.00		Cum Mud Lost to Hole (m³)		12.00		Cumulative Mud Cost (Cost)					152,851

Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	4	Last Date	2/17/2014	Days Until Next...	1	Next Check Date	2/22/2014
Days Since Lost Time Incident (days)		862.00		Days Since Recordable Incident (days)		862.00			

Safety Incidents

Date	Com	Category

Drill String: BHA # <BHA No.??>

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)
Nozzles (mm)	String Length (m)	OD (mm)	Max Rotating Hook Load (daN)		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled b...	Job Drill Hrs (hr)
					Total Drill Hrs (hr)

Comment

Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)

Drilling Parameter: <depthstart> - <depthend> mKB

Cum Depth (m)	Cum Drill...	Int ROP (...)	Flow Rate...	WOB (daN)	RPM (r...	SPP (kPa)	Drill Str Wt (d...	SO Str Wt (daN)	PU Str Wt (daN)	Off-Btm Str W...	Drill Tq
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Hydraulic Calculations

Bit Hydraulic Powe...	HP/Area (kW/mm²)	% P @ bit (%)	Bit Jet Velocity (m/s)	Bit dP (kPa)	P Drop Annular (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
Drill String Volume (m³)	Bit to Shoe Volume (m³)	Vol Shoe to Top (m³)	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m/...	Max Open Hole AV (m/...	

Error

Mud Pump: 1, NATIONAL, 8-P-80

Pump Number	1	Make	NATIONAL	Model	8-P-80	Rod Diameter (mm)	140.0	Stroke Length (mm)	
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Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/16/2014 16:00		2,209.00	0.608	5,153
2/16/2014 16:00		2,209.00	1.045	15,600

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/21/2014
Report #: 29
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig: Beaver Drilling Ltd. 2

np Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
2/15/2014	2/15/2014	127.0		
2/16/2014	2/16/2014	127.0		

Mud Pump: 2, NATIONAL, 8-P-80

Pump Number	Make	Model	Rod Diameter (mm)	Stroke Length (mm)
2	NATIONAL	8-P-80	140.0	216.0

Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/19/2014 23:45	3,152.00	0.975	12,600	125
2/20/2014 00:00	3,143.00	0.647	6,414	83

Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
2/20/2014	2/20/2014	127.0		
2/21/2014	2/21/2014	127.0		

Shaker Screens

Des	Start Date	End Date	Scr Sz X	Scr Sz Y	Note

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number	Make	Model	Diameter (mm)
2	BOS Solutions	5500	

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,040.0	0.400	1,710.0	0.200

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number	Make	Model	Diameter (mm)
1	BOS Solutions	5500	

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,100.0	0.400	1,790.0	0.200

d / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
INVERT	4.0	1,063.330	1.0	M3

Survey Data

Date	MD (mKB)	Incl (")	Azm (")	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS ("/30m)

Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	43.00	43.00	20.85
Slater River	207.00	207.00	197.35
Arctic Red	954.00	953.52	932.35
Martin House	1,110.00	1,109.49	1,084.35
Imperial	1,140.00	1,139.48	1,118.35
KOP (5deg/30m)	1,731.00	1,730.40	1,730.73
KOP (7deg/30m)	1,817.00	1,815.65	1,816.00
Upper Canol	1,902.70	1,896.20	1,897.35
Lower Canol	1,935.80	1,924.43	1,929.35

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/22/2014
Report #: 30
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig: Beaver Drilling Ltd. 2

/ UWI 200/D-020/L094P1699		Surface Legal Location P-20 65-00 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 284.15		Original KB/RT Elevation (m) 289.35		Casing Flange Elevation (m) 283.95		Original Spud Date 1/29/2014	
Days From Spud (days) 30.00		Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 1/24/2014 00:00	
End Date 2/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes		Daily Cost Total (Cost) 648,596.54	
Cumulative Cost (Cost) 5,838,279.71		Total AFE (Cost) 7,122,600.00		AFE+Supp Amt (Cost) 7,122,600.00		AFE / RFE / Maint.# 10351812	
Estimated Days		Planned Depth (TMD) (mKB)		Override TVD (mKB)		Head Count 55.0	
Personnel Total Hours (hr) 599.00		Cum Personnel Total Hours (hr) 17,358.00		Avg Connection Gas		Avg Background Gas	
Avg Trip Gas		Max H2S (ppm)		Road Condition Ice/Snow		Weather Clear	
Temperature (°C) -32		Wind W 10 kms		Ops and Depth @ Morning Report Finish nipping up and pressure testing wellhead.		Wellbore Original Hole	

Last 24hr Summary

No incidents or accidents. 5 - HID, 0 - OBS and 0 - ASA (all closed out)

Clean up catch can and flow-t, rig out flow-t and flowline, rig up Schlumberger lubricator, rig up Schlumberger tools, run USIT log #1, run USIT log #2 (pressure pass), rig out Schlumberger loggers and lubricator, rig up power tongs and laydown truck, run 114.3mm tie-back liner, space out, land mandrel seal assembly and tie onto top of liner top packer in compression (19,000dan), pressure test liner hanger to 35,000kPa for 15 minutes (held OK), pressure test 114.3mm x 177.8mm annulus to 15,000kPa for 10 minutes using Schlumberger cementers (held OK), nipple down BOP.

24hr Forecast

Finish nipping up and pressure testing wellhead, clean and organize rig to rack, move miscellaneous loads, rig out rig floor, laydown top drive and torque tube.

Daily Contacts

Drilling Superintendent, Sheldon Vamplew, 403-999-1302; Drilling Engineer, Mike Greener, 403-771-5039; WS Supervisor, Richard Turgeon, 780-387-1706; WS Supervisor, Dave Oppen, 403-863-8205; Rig Manager, Rick Yavis, 780-718-2962; Command Centre, 403-910-0357

Last Casing String

Production, 3,148.70mKB

Time Log

Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
00:00	00:15	0.25	PROD1	RIGMNT	SVRG	P		3,152.00	3,152.00	Rig service function test rig smart anti-collision system, function test crown saver, function test blind rams 8 sec to close and open,grease all moving parts, check oil levels in floor motor, pumps and HPU
00:15	02:30	2.25	PROD1	WHDBOP	NUND	P		3,152.00	3,152.00	Install flange for Pressure USIT log
02:30	02:45	0.25	PROD1	WHDBOP	SFTY	P		3,152.00	3,152.00	Safety meeting on pressure logging with schlumberger
02:45	05:00	2.25	PROD1	EVALWB	ELOG	P		3,152.00	3,152.00	Rig up pressure USIT log
05:00	07:45	2.75	PROD1	EVALWB	ELOG	P		3,152.00	3,152.00	Wire line log with Schlumberger
07:45	08:00	0.25	PROD1	EVALWB	SFTY	P		3,152.00	3,152.00	Crew handover meeting, Conoco reps and tool push present, daily walk around rig inspection R/T
08:00	11:15	3.25	PROD1	EVALWB	ELOG	P		3,152.00	3,152.00	Run USIT log #2 pressure pass
11:15	12:45	1.50	PROD1	EVALWB	ELOG	P		3,152.00	3,152.00	Rig out loggers and pressure pass head
12:45	13:00	0.25	PROD1	RIGMNT	SVRG	P		3,152.00	3,152.00	Rig service function test rig smart anti-collision system, function test crown saver, function test HCR 3 sec to open and close,grease all moving parts, check oil levels in floor motor, pumps and HPU
13:00	14:00	1.00	PROD1	CASING	RNCS	P		3,152.00	3,152.00	Rig up power tongs and lay down truck
14:00	14:15	0.25	PROD1	CASING	SFTY	P		3,152.00	3,152.00	Safety meeting with hallmark power tongs and trotter pipe handlers
14:15	19:00	4.75	PROD1	CASING	RNCS	P		3,152.00	3,152.00	Run 114.3mm, 17.26kg, p-110 casing tie back liner, space out
19:00	19:15	0.25	PROD1	CASING	SFTY	P		3,152.00	3,152.00	Crew handover meeting, Conoco reps and toolpush present, daily walk around, rig inspection D/O
19:15	21:30	2.25	PROD1	CASING	RNCS	P		3,152.00	3,152.00	Make up tie-back hanger and landing joint, land mandrel seal assembly and tie into top of liner top packer
21:30	21:45	0.25	PROD1	CASING	SFTY	P		3,152.00	3,152.00	Safety meeting with Schlumberger, on pressure testing pack-off seal assembly
21:45	22:15	0.50	PROD1	CASING	PRTS	P		3,152.00	3,152.00	Pressure test liner hanger seals to 35,000kPa for 15 minutes and 114.3mm x 177.8mm annulus to 15,000kPa for 10 minutes using Schlumberger cementers (held OK).
22:15	22:45	0.50	PROD1	CASING	SFTY	P		3,152.00	3,152.00	Safety meeting on rig out laydown truck and power tongs
22:45	23:30	0.75	PROD1	CASING	RURD	P		3,152.00	3,152.00	Rig out Trotter laydown truck and Hallmark power tongs
23:30	23:45	0.25	PROD1	WHDBOP	SFTY	P		3,152.00	3,152.00	Safety meeting on nipple down BOP's
23:45	00:00	0.25	DEMOB	WHDBOP	NUND	P		3,152.00	3,152.00	Nipple down BOP's

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/22/2014
Report #: 30
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig: Beaver Drilling Ltd. 2

Fluid/Mud Chks: Mud Engineer: <Mud Engineer?>

Time	Depth (mKB)	Density (kg/m³)	Funnel Viscosity (s/L)	pH	PV Override (Pa·s)	YP Override (Pa)
Low Gravity Solids (%)	MBT (kg/m³)	Oil Water Ratio	Chlorides (mg/L)	Calcium (mg/L)	Lime (kg/m³)	Potassium (mg/L)
Electric Stab (V)	ECD - Manual Entry (k...	Sand (%)	Solids, Corr. (%)	T Flowline (°C)	HTHP Pressure (kPa)	HTHP Filtrate (mL/30...
API Filtrate (mL/30min)		Mud Lost to Surface (m³)	Mud Lost to Hole (m³)		Daily Mud Field Est (Cost)	
Cum Mud Lost to Surface (m³)		Cum Mud Lost to Hole (m³)		Cumulative Mud Cost (Cost)		

Last BOP Drill

Type BOP Drill	Days Last Chk (...) 5	Last Date 2/17/2014	Days Until Next... 0	Next Check Date 2/22/2014
Days Since Lost Time Incident (days)	863.00	Days Since Recordable Incident (days)	863.00	

Safety Incidents

Date	Com	Category

Drill String: BHA # <BHA No.??>

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (Incl Noz) (mm²)	BHA ROP (m/hr)
Nozzles (mm)	String Length (m)	OD (mm)	Max Rotating Hook Load (daN)		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled b...	Job Drill Hrs (hr)
Total Drill Hrs (hr)					
Comment					

Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)

Drilling Parameter: <depthstart> - <depthend> mKB

Cum Depth (m)	Cum Drill...	Int ROP (...)	Flow Rate...	WOB (daN)	RPM (r...	SPP (kPa)	Drill Str Wt (d...	SO Str Wt (daN)	PU Str Wt (daN)	Off-Btm Str W...	Drill Tq
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Hydraulic Calculations

Bit Hydraulic Powe...	HP/Area (kW/mm²)	% P @ bit (%)	Bit Jet Velocity (m/s)	Bit dP (kPa)	P Drop Annular (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
Drill String Volume (m³)	Bit to Shoe Volume (m³)	Vol Shoe to Top (m³)	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m/...	Max Open Hole AV (m/...	
Error							

Mud Pump: 1, NATIONAL, 8-P-80

Pump Number 1	Make NATIONAL	Model 8-P-80	Rod Diameter (mm) 140.0	Stroke Length (mm) 216.0
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Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/16/2014 16:00	2,209.00	0.608	5,153	78
2/16/2014 16:00	2,209.00	1.045	15,600	134

Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
2/15/2014	2/15/2014	127.0		
2/16/2014	2/16/2014	127.0		

Mud Pump: 2, NATIONAL, 8-P-80

Pump Number 2	Make NATIONAL	Model 8-P-80	Rod Diameter (mm) 140.0	Stroke Length (mm) 216.0
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Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/19/2014 23:45	3,152.00	0.975	12,600	125
2/20/2014 00:00	3,143.00	0.647	6,414	83

Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
2/20/2014	2/20/2014	127.0		
2/21/2014	2/21/2014	127.0		

Shaker Screens

Des	Start Date	End Date	Scr Sz X	Scr Sz Y	Note

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 2/22/2014
Report #: 30
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number	Make	Model	Diameter (mm)
2	BOS Solutions	5500	

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,040.0	0.400	1,710.0	0.200

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number	Make	Model	Diameter (mm)
1	BOS Solutions	5500	

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,100.0	0.400	1,790.0	0.200

Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)

Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	43.00	43.00	20.85
Slater River	207.00	207.00	197.35
Arctic Red	954.00	953.52	932.35
Martin House	1,110.00	1,109.49	1,084.35
Imperial	1,140.00	1,139.48	1,118.35
KOP (5deg/30m)	1,731.00	1,730.40	1,730.73
KOP (7deg/30m)	1,817.00	1,815.65	1,816.00
Upper Canol	1,902.70	1,896.20	1,897.35
Lower Canol	1,935.80	1,924.43	1,929.35

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/23/2014
Report #: 31
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig: Beaver Drilling Ltd. 2

UWI 200/D-020/L094P1699		Surface Legal Location P-20 65-00 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 284.15		Original KB/RT Elevation (m) 289.35		Casing Flange Elevation (m) 283.95		Original Spud Date 1/29/2014	
Days From Spud (days) 31.00		Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 1/24/2014 00:00	
End Date 2/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes		Daily Cost Total (Cost) 326,061.20	
Cumulative Cost (Cost) 6,164,340.91		Total AFE (Cost) 7,122,600.00		AFE+Supp Amt (Cost) 7,122,600.00		AFE / RFE / Maint.# 10351812	
Planned Depth (TMD) (mKB)		Override TVD (mKB)		Head Count 50.0		Personnel Total Hours (hr) 550.00	
Cum Personnel Total Hours (hr) 17,908.00		Avg Connection Gas		Avg Background Gas		Avg Trip Gas	
Max H2S (ppm)		Road Condition Ice/Snow		Weather Clear		Temperature (°C) -27	
Wind W 10 kms		Ops and Depth @ Morning Report Tear out to rack rig.		Wellbore Original Hole		Last 24hr Summary No incidents or accidents. 6 - HID, 0 - OBS and 0 - ASA (all closed out) Nipple down BOP, nipple up and pressure test wellhead, clean and organize rig to rack, move miscellaneous loads, rig out rig floor, laydown top drive and torque tube, rig out derrick, laydown derrick. Rig release at 23:59hrs on February 23rd, 2014.	
24hr Forecast Clean and organize rig to rack, move miscellaneous loads south and to rack site, tear out rig to rack.		Daily Contacts Drilling Superintendent, Sheldon Vamplew, 403-999-1302; Drilling Engineer, Mike Greener, 403-771-5039; WS Supervisor, Richard Turgeon, 780-387-1706; WS Supervisor, Dave Oppen, 403-863-8205; Rig Manager, Rick Yavis, 780-718-2962; Command Centre, 403-910-0357		Last Casing String Production, 3,148.70mKB		Time Log	

Start Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
00:00	00:15	0.25	DEMOB	RIGMNT	SVRG	P		3,152.00	3,152.00	Rig service function test rig smart anti-collision system, function test crown saver,grease all moving parts, check oil levels in floor motor, pumps and HPU
00:15	03:00	2.75	DEMOB	WHDBOP	NUND	P		3,152.00	3,152.00	Nipple Down BOP's & rack back in sub
03:00	03:15	0.25	DEMOB	WHDBOP	SFTY	P		3,152.00	3,152.00	Safety meeting on Installing Well head with Stream-Flo
03:15	06:30	3.25	DEMOB	WHDBOP	SEQP	P		3,152.00	3,152.00	Install Well Head and pressure test seal assembly
06:30	07:45	1.25	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	Tear out flare lines, flare stack, pick up all planks and boards
07:45	08:00	0.25	DEMOB	MOVE	SFTY	P		3,152.00	3,152.00	Crew handover meeting, Conoco reps and toolpush present, daily walk around, rig inspection R/T
08:00	08:15	0.25	DEMOB	RIGMNT	SVRG	P		3,152.00	3,152.00	RIG SERVICE
08:15	09:30	1.25	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	Tear out pumps, all lines to pumps, prep pipe tubs and rentals, move off location to rack site
09:30	16:00	6.50	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	Rig out top drive, torque tube and prepare derrick to lay down
16:00	16:15	0.25	DEMOB	RIGMNT	SVRG	P		3,152.00	3,152.00	RIG SERVICE
16:15	17:15	1.00	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	Continue to rig out top drive, HPU, torque tube and prepare derrick to lay down
17:15	18:45	1.50	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	Tear out steam and water lines, tear out boilers and prepare small boiler to send to Nisku for inspection. Winterize rig to move to rack site
18:45	19:00	0.25	DEMOB	MOVE	SFTY	P		3,152.00	3,152.00	Crew hand over meeting
19:00	21:45	2.75	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	Tear out and prepare to lay down derrick
21:45	22:15	0.50	DEMOB	MOVE	SFTY	P		3,152.00	3,152.00	Safety meeting, complete safety inspection of derrick prior to lay down, RY CD BB ER
22:15	00:00	1.75	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	Continue to tear out rig to move to rack site

Fluid/Mud Chks: Mud Engineer: <Mud Engineer?>						
Time	Depth (mKB)	Density (kg/m³)	Funnel Viscosity (s/L)	pH	PV Override (Pa*s)	YP Override (Pa)
Gravity Solids (%)	MBT (kg/m³)	Oil Water Ratio	Chlorides (mg/L)	Calcium (mg/L)	Lime (kg/m³)	Potassium (mg/L)
Electric Stab (V)	ECD - Manual Entry (k...)	Sand (%)	Solids, Corr. (%)	T Flowline (°C)	HTHP Pressure (kPa)	HTHP Filtrate (mL/30...
API Filtrate (mL/30min)		Mud Lost to Surface (m³)		Mud Lost to Hole (m³)		Daily Mud Field Est (Cost)
Cum Mud Lost to Surface (m³)		Cum Mud Lost to Hole (m³)		Cumulative Mud Cost (Cost)		

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 2/23/2014
Report #: 31
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Last BOP Drill

Type BOP Drill	Days Last Chk (...) 6	Last Date 2/17/2014	Days Until Next... -1	Next Check Date 2/22/2014
Days Since Lost Time Incident (days)	864.00			Days Since Recordable Incident (days) 864.00

Safety Incidents

Date	Com	Category

Drill String: BHA # <BHA No.??>

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)
Nozzles (mm)	String Length (m)	OD (mm)	Max Rotating Hook Load (daN)		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled b...	Job Drill Hrs (hr)
Total Drill Hrs (hr)					

Comment

Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)

Drilling Parameter: <depthstart> - <depthend> mKB

Cum Depth (m)	Cum Drill...	Int ROP (...)	Flow Rate...	WOB (daN)	RPM (...)	SPP (kPa)	Drill Str Wt (d...	SO Str Wt (daN)	PU Str Wt (daN)	Off-Btm Str W...	Drill Tq
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Hydraulic Calculations

Bit Hydraulic Powe...	HP/Area (kW/mm²)	% P @ bit (%)	Bit Jet Velocity (m/s)	Bit dP (kPa)	P Drop Annular (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
Drill String Volume (m³)	Bit to Shoe Volume (m³)	Vol Shoe to Top (m³)	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m/...	Max Open Hole AV (m/...	

Error

Mud Pump: 1, NATIONAL, 8-P-80

Pump Number 1	Make NATIONAL	Model 8-P-80	Rod Diameter (mm) 140.0	Stroke Length (mm) 216.0
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Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/16/2014 16:00	2,209.00	0.608	5,153	78
2/16/2014 16:00	2,209.00	1.045	15,600	134

Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
2/15/2014	2/15/2014	127.0		
2/16/2014	2/16/2014	127.0		

Mud Pump: 2, NATIONAL, 8-P-80

Pump Number 2	Make NATIONAL	Model 8-P-80	Rod Diameter (mm) 140.0	Stroke Length (mm) 216.0
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Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
2/19/2014 23:45	3,152.00	0.975	12,600	125
2/20/2014 00:00	3,143.00	0.647	6,414	83

Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
2/20/2014	2/20/2014	127.0		
2/21/2014	2/21/2014	127.0		

Shaker Screens

Des	Start Date	End Date	Scr Sz X	Scr Sz Y	Note
1	2/23/2014				4
1	2/23/2014		100		2
1	2/23/2014		80		1

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number 2	Make BOS Solutions	Model 5500	Diameter (mm)
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Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,040.0	0.400	1,710.0	0.200

Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number 1	Make BOS Solutions	Model 5500	Diameter (mm)
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Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 2/23/2014
Report #: 31
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
2/21/2014 00:00	3.00	2100	1,100.0	0.400	1,790.0	0.200

Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)

Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	43.00	43.00	20.85
Slater River	207.00	207.00	197.35
Arctic Red	954.00	953.52	932.35
Martin House	1,110.00	1,109.49	1,084.35
Imperial	1,140.00	1,139.48	1,118.35
KOP (5deg/30m)	1,731.00	1,730.40	1,730.73
KOP (7deg/30m)	1,817.00	1,815.65	1,816.00
Upper Canol	1,902.70	1,896.20	1,897.35
Lower Canol	1,935.80	1,924.43	1,929.35

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/24/2014
Report #: 32
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig:

/ UWI 200/D-020/L094P1699		Surface Legal Location P-20 65-00 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 284.15		Original KB/RT Elevation (m) 289.35		Casing Flange Elevation (m) 283.95		Original Spud Date 1/29/2014	
Days From Spud (days) 32.00							
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 1/24/2014 00:00		End Date 2/23/2014 23:59	
Final Job Status DRILLED		Final Report? Yes					
Daily Cost Total (Cost) 102,682.00		Cumulative Cost (Cost) 6,267,022.91		Total AFE (Cost) 7,122,600.00		AFE+Supp Amt (Cost) 7,122,600.00	
Planned Depth (TMD) (mKB)		Override TVD (mKB)		Head Count 50.0		Personnel Total Hours (hr) 550.00	
Cum Personnel Total Hours (hr) 18,458.00							
Avg Connection Gas		Avg Background Gas		Avg Trip Gas		Max H2S (ppm)	
Road Condition Ice/Snow		Weather Clear		Temperature (°C) -28		Wind NW	
Ops and Depth @ Morning Report Wait until morning to rack the rig and rental equipment and truck some misc equipment south.							Wellbore Original Hole

Last 24hr Summary

No incidents or accidents. 4 - HID, 0 - OBS and 0 - ASA (all closed out)

Laydown derrick, clean and organize rig to rack, move miscellaneous loads south and to rack site, tear out rig to rack, spots rig mats at rack site, haul some rig loads to rack site. Wait until morning to rack the rig and rental equipment and truck some misc equipment south.

24hr Forecast

Rack the rig and rental equipment and truck some misc equipment south.

Daily Contacts

Drilling Superintendent, Sheldon Vamplew, 403-999-1302; Drilling Engineer, Mike Greener, 403-771-5039; WS Supervisor, Richard Turgeon, 780-387-1706; WS Supervisor, Dave Oppen, 403-863-8205; Rig Manager, Rick Yavis, 780-718-2962; Command Centre, 403-910-0357

Last Casing String

Production, 3,148.70mKB

Time Log

Start Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
0	21:00	21.00	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	Laydown derrick, clean and organize rig to rack, move miscellaneous loads south and to rack site, tear out rig to rack, spots rig mats at rack site, haul some rig loads to rack site.
21:00	00:00	3.00	DEMOB	MOVE	WODL	P		3,152.00	3,152.00	Wait until morning to rack the rig and rental equipment and truck some misc equipment south.

Fluid/Mud Chks: Mud Engineer: <Mud Engineer?>

Time	Depth (mKB)	Density (kg/m³)	Funnel Viscosity (s/L)	pH	PV Override (Pa·s)	YP Override (Pa)
Low Gravity Solids (%)	MBT (kg/m³)	Oil Water Ratio	Chlorides (mg/L)	Calcium (mg/L)	Lime (kg/m³)	Potassium (mg/L)
Electric Stab (V)	ECD - Manual Entry (k...)	Sand (%)	Solids, Corr. (%)	T Flowline (°C)	HTHP Pressure (kPa)	HTHP Filtrate (mL/30...)

API Filtrate (mL/30min)	Mud Lost to Surface (m³)	Mud Lost to Hole (m³)	Daily Mud Field Est (Cost)
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Cum Mud Lost to Surface (m³)	Cum Mud Lost to Hole (m³)	Cumulative Mud Cost (Cost)
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Last BOP Drill

Type BOP Drill	Days Last Chk (...) 7	Last Date 2/17/2014	Days Until Next... -2	Next Check Date 2/22/2014
Days Since Lost Time Incident (days)	865.00	Days Since Recordable Incident (days)	865.00	

Safety Incidents

Date	Com	Category
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Drill String: BHA # <BHA No.??>

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)
Nozzles (mm)	String Length (m)	OD (mm)	Max Rotating Hook Load (daN)		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled b...	Job Drill Hrs (hr)
					Total Drill Hrs (hr)

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
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Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/24/2014
 Report #: 32
 Depth Progress: 0.00m
 Depth End: 3,152.00mKB
 Rig Release Date: 2/23/2014

Rig:

Drilling Parameter: <depthstart> - <depthend> mKB

Cum Depth (m)	Cum Drill...	Int ROP (...)	Flow Rate...	WOB (daN)	RPM (r...	SPP (kPa)	Drill Str Wt (d...	SO Str Wt (daN)	PU Str Wt (daN)	Off-Btm Str W...	Drill Tq
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Hydraulic Calculations

Bit Hydraulic Powe...	HP/Area (kW/mm²)	% P @ bit (%)	Bit Jet Velocity (m/s)	Bit dP (kPa)	P Drop Annular (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
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Drill String Volume (m³)	Bit to Shoe Volume (m³)	Vol Shoe to Top (m³)	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m/...	Max Open Hole AV (m/...
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Error

Mud Pump: <des>, <make>, <model>

Pump Number	Make	Model	Rod Diameter (mm)	Stroke Length (mm)
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Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
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Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
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Centrifuge/Cyclone: <typ>, <make>, <model>

Number	Make	Model	Diameter (mm)
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Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
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Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
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Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
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Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	43.00	43.00	20.85
Slater River	207.00	207.00	197.35
Arctic Red	954.00	953.52	932.35
Martin House	1,110.00	1,109.49	1,084.35
Imperial	1,140.00	1,139.48	1,118.35
KOP (5deg/30m)	1,731.00	1,730.40	1,730.73
KOP (7deg/30m)	1,817.00	1,815.65	1,816.00
Upper Canol	1,902.70	1,896.20	1,897.35
Lower Canol	1,935.80	1,924.43	1,929.35

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/25/2014
Report #: 33
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig:

UWI 200/D-020/L094P1699		Surface Legal Location P-20 65-00 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 284.15		Original KB/RT Elevation (m) 289.35		Casing Flange Elevation (m) 283.95		Original Spud Date 1/29/2014	
Days From Spud (days) 33.00							
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 1/24/2014 00:00		End Date 2/23/2014 23:59	
Final Job Status DRILLED		Final Report? Yes					
Daily Cost Total (Cost) 102,682.00		Cumulative Cost (Cost) 6,369,704.91		Total AFE (Cost) 7,122,600.00		AFE+Supp Amt (Cost) 7,122,600.00	
AFE / RFE / Maint.# 10351812		Estimated Days					
Planned Depth (TMD) (mKB)		Override TVD (mKB)		Head Count 58.0		Personnel Total Hours (hr) 672.00	
Cum Personnel Total Hours (hr) 19,130.00							
Avg Connection Gas		Avg Background Gas		Avg Trip Gas		Max H2S (ppm)	
Road Condition Ice/Snow		Weather Clear		Temperature (°C) -28		Wind NW	
Ops and Depth @ Morning Report Wait until morning to finish racking the rental equipment and truck some misc equipment south.							Wellbore Original Hole

Last 24hr Summary

No incidents or accidents. 4 - HID, 0 - OBS and 0 - ASA (all closed out)

Wait until morning, hold safety meeting prior to rack rig and equipment, lower A-legs, split the derrick, rack the rig buildings with derrick and substructure and rental equipment. Truck cuttings to disposal. Truck some misc equipment south. Wait until morning to finish racking the rig at the rack site, truck cuttings to disposal, unloading mud products at rack site, cover sawdust bins and mud products, locking and spotting buildings at rack site.

24hr Forecast

Rack the rig at the rack site, truck cuttings to disposal, unloading mud products at rack site, cover sawdust bins and mud products, lock up buildings at rack site, clean P-20 location.

Daily Contacts

Drilling Superintend, Sheldon Vamplew, 403-999-1302; Drilling Engineer, Mike Greener, 403-771-5039; WS Supervisor, Richard Turgeon, 780-387-1706; WS Supervisor, Dave Oppen, 403-863-8205; Rig Manager, Rick Yavis, 780-718-2962; Command Centre, 403-910-0357

Last Casing String

Production, 3,148.70mKB

Time Log

Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
00:00	07:00	7.00	DEMOB	MOVE	WODL	P		3,152.00	3,152.00	Wait until morning to rack the rig and rental equipment and truck some misc equipment south.
07:00	21:00	14.00	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	hold safety meeting prior to rack rig and equipment, lower A-legs, split the derrick, rack the rig buildings with derrick and substructure and rental equipment. Truck cuttings to disposal. Truck some misc equipment south.
21:00	00:00	3.00	DEMOB	MOVE	WODL	P		3,152.00	3,152.00	Wait until morning to finish racking the rig at the rack site, truck cuttings to disposal, unloading mud products at rack site, cover sawdust bins and mud products, locking and spotting buildings at rack site.

Fluid/Mud Chks: Mud Engineer: <Mud Engineer?>

Time	Depth (mKB)	Density (kg/m³)	Funnel Viscosity (s/L)	pH	PV Override (Pa·s)	YP Override (Pa)
Low Gravity Solids (%)	MBT (kg/m³)	Oil Water Ratio	Chlorides (mg/L)	Calcium (mg/L)	Lime (kg/m³)	Potassium (mg/L)
Electric Stab (V)	ECD - Manual Entry (k...)	Sand (%)	Solids, Corr. (%)	T Flowline (°C)	HTHP Pressure (kPa)	HTHP Filtrate (mL/30...

API Filtrate (mL/30min)	Mud Lost to Surface (m³)	Mud Lost to Hole (m³)	Daily Mud Field Est (Cost)
Cum Mud Lost to Surface (m³)	Cum Mud Lost to Hole (m³)	Cumulative Mud Cost (Cost)	

Last BOP Drill

Type BOP Drill	Days Last Chk (...) 8	Last Date 2/17/2014	Days Until Next... -3	Next Check Date 2/22/2014
Days Since Lost Time Incident (days)	866.00	Days Since Recordable Incident (days)	866.00	

Safety Incidents

Date	Com	Category

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/25/2014
Report #: 33
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig:

Drill String: BHA # <BHA No.??>

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm ²)	BHA ROP (m/hr)
Nozzles (mm)	String Length (m)	OD (mm)	Max Rotating Hook Load (daN)		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled b...	Job Drill Hrs (hr)
Total Drill Hrs (hr)					

Comment

Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
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Drilling Parameter: <depthstart> - <depthend> mKB

Cum Depth (m)	Cum Drill...	Int ROP (...)	Flow Rate...	WOB (daN)	RPM (r...)	SPP (kPa)	Drill Str Wt (d...	SO Str Wt (daN)	PU Str Wt (daN)	Off-Btm Str W...	Drill Tq
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Hydraulic Calculations

Bit Hydraulic Powe...	HP/Area (kW/mm²)	% P @ bit (%)	Bit Jet Velocity (m/s)	Bit dP (kPa)	P Drop Annular (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
Drill String Volume (m³)	Bit to Shoe Volume (m³)	Vol Shoe to Top (m³)	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m/...	Max Open Hole AV (m/...	

Error

Mud Pump: <des>, <make>, <model>

Pump Number	Make	Model	Rod Diameter (mm)	Stroke Length (mm)
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Pump Checks

Date	Depth (mKB)	Q Flow (m ³ /min)	P (kPa)	Strokes (spm)
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Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m ³ /stk)
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Centrifuge/Cyclone: <typ>, <make>, <model>

Number	Make	Model	Diameter (mm)
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Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m ³)	Q OF (L/min)	Dens UF (kg/m ³)	Q UF (L/min)
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Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
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Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
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Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	43.00	43.00	20.85
Slater River	207.00	207.00	197.35
Arctic Red	954.00	953.52	932.35
Martin House	1,110.00	1,109.49	1,084.35
Imperial	1,140.00	1,139.48	1,118.35
KOP (5deg/30m)	1,731.00	1,730.40	1,730.73
KOP (7deg/30m)	1,817.00	1,815.65	1,816.00
Upper Canol	1,902.70	1,896.20	1,897.35
Lower Canol	1,935.80	1,924.43	1,929.35

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/26/2014
Report #: 34
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig:

UWI 200/D-020/L094P1699		Surface Legal Location P-20 65-00 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 284.15		Original KB/RT Elevation (m) 289.35		Casing Flange Elevation (m) 283.95		Original Spud Date 1/29/2014	
						Days From Spud (days) 34.00	
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 1/24/2014 00:00		End Date 2/23/2014 23:59	
						Final Job Status DRILLED	
						Final Report? Yes	
Daily Cost Total (Cost) 102,682.00		Cumulative Cost (Cost) 6,472,386.91		Total AFE (Cost) 7,122,600.00		AFE+Supp Amt (Cost) 7,122,600.00	
						AFE / RFE / Maint.# 10351812	
						Estimated Days	
Planned Depth (TMD) (mKB)		Override TVD (mKB)		Head Count 58.0		Personnel Total Hours (hr) 672.00	
						Cum Personnel Total Hours (hr) 19,802.00	
Avg Connection Gas		Avg Background Gas		Avg Trip Gas		Max H2S (ppm)	
Road Condition Ice/Snow		Weather Clear		Temperature (°C) -28		Wind NW	
Ops and Depth @ Morning Report Wait until morning.							Wellbore Original Hole
Last 24hr Summary No incidents or accidents.							

Wait until morning, finish rack the rig at the rack site, truck cuttings to disposal, unloading mud products at rack site, cover sawdust bins and mud products, locking and spotting buildings at rack site. Wait until morning to finish trucking cuttings to disposal, cover sawdust bins and rack last mix off bin, lock buildings at rack site, fly home for breakup.

24hr Forecast
Finish trucking cuttings to disposal, cover sawdust bins and rack last mix off bin, lock buildings at rack site, fly home for breakup.

Daily Contacts
Drilling Superintendent, Sheldon Vamplew, 403-999-1302; Drilling Engineer, Mike Greener, 403-771-5039; WS Supervisor, Richard Turgeon, 780-387-1706; WS Supervisor, Dave Oppen, 403-863-8205; Rig Manager, Rick Yavis, 780-718-2962; Command Centre, 403-910-0357

Last Casing String
Production, 3,148.70mKB

Time Log										
Start Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
07:00	07:00	7.00	DEMOB	MOVE	WODL	P		3,152.00	3,152.00	Wait until morning.
07:00	19:00	12.00	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	Finish rack the rig at the rack site, truck cuttings to disposal, unloading mud products at rack site, cover sawdust bins and mud products, locking and spotting buildings at rack site.
19:00	00:00	5.00	DEMOB	MOVE	WODL	P		3,152.00	3,152.00	Wait until morning to finish trucking cuttings to disposal, cover sawdust bins and rack last mix off bin, lock buildings at rack site, fly home for breakup.

Fluid/Mud Chks: Mud Engineer: <Mud Engineer?>						
Time	Depth (mKB)	Density (kg/m³)	Funnel Viscosity (s/L)	pH	PV Override (Pa·s)	YP Override (Pa)
Low Gravity Solids (%)	MBT (kg/m³)	Oil Water Ratio	Chlorides (mg/L)	Calcium (mg/L)	Lime (kg/m³)	Potassium (mg/L)
Electric Stab (V)	ECD - Manual Entry (k...)	Sand (%)	Solids, Corr. (%)	T Flowline (°C)	HTHP Pressure (kPa)	HTHP Filtrate (mL/30...
API Filtrate (mL/30min)		Mud Lost to Surface (m³)	Mud Lost to Hole (m³)	Daily Mud Field Est (Cost)		
Cum Mud Lost to Surface (m³)		Cum Mud Lost to Hole (m³)		Cumulative Mud Cost (Cost)		

Last BOP Drill			
Type BOP Drill	Days Last Chk (...) 9	Last Date 2/17/2014	Days Until Next... -4
Next Check Date 2/22/2014			
Days Since Lost Time Incident (days) 867.00		Days Since Recordable Incident (days) 867.00	

Safety Incidents		
Date	Com	Category

Drill String: BHA # <BHA No.??>					
Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)
N-ables (mm)		String Length (m)	OD (mm)	Max Rotating Hook Load (daN)	
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled b...	Job Drill Hrs (hr)
Total Drill Hrs (hr)					

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/26/2014
Report #: 34
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig:

Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)

Drilling Parameter: <depthstart> - <depthend> mKB

Cum Depth (m)	Cum Drill...	Int ROP (...)	Flow Rate...	WOB (daN)	RPM (r...	SPP (kPa)	Drill Str Wt (d...	SO Str Wt (daN)	PU Str Wt (daN)	Off-Btm Str W...	Drill Tq

Hydraulic Calculations

Bit Hydraulic Powe...	HP/Area (kW/mm²)	% P @ bit (%)	Bit Jet Velocity (m/s)	Bit dP (kPa)	P Drop Annular (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
Drill String Volume (m³)	Bit to Shoe Volume (m³)	Vol Shoe to Top (m³)	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m/...	Max Open Hole AV (m/...	

Error

Mud Pump: <des>, <make>, <model>

Pump Number	Make	Model	Rod Diameter (mm)	Stroke Length (mm)

Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)

Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)

Centrifuge/Cyclone: <typ>, <make>, <model>

Number	Make	Model	Diameter (mm)

Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)

Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)

Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	43.00	43.00	20.85
Slater River	207.00	207.00	197.35
Arctic Red	954.00	953.52	932.35
Martin House	1,110.00	1,109.49	1,084.35
Imperial	1,140.00	1,139.48	1,118.35
KOP (5deg/30m)	1,731.00	1,730.40	1,730.73
KOP (7deg/30m)	1,817.00	1,815.65	1,816.00
Upper Canol	1,902.70	1,896.20	1,897.35
Lower Canol	1,935.80	1,924.43	1,929.35

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/27/2014
Report #: 35
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig:

/ UWI		Surface Legal Location		MaxWell Job Number		License No.					
200/D-020/L094P1699		P-20 65-00 126-45		JOB01@2006		EL 470					
Ground Elevation (m)		Original KB/RT Elevation (m)		Casing Flange Elevation (m)		Original Spud Date		Days From Spud (days)			
284.15		289.35		283.95		1/29/2014		34.67			
Job Category		Primary Job Type		Actual Start Date		End Date		Final Job Status		Final Report?	
DRILLING		DRILLING ORIGINAL		1/24/2014 00:00		2/23/2014 23:59		DRILLED		Yes	
Daily Cost Total (Cost)		Cumulative Cost (Cost)		Total AFE (Cost)		AFE+Supp Amt (Cost)		AFE / RFE / Maint.#		Estimated Days	
1,494,440.55		7,966,827.46		7,122,600.00		7,122,600.00		10351812			
Planned Depth (TMD) (mKB)		Override TVD (mKB)		Head Count		Personnel Total Hours (hr)		Cum Personnel Total Hours (hr)			
				58.0		672.00		20,474.00			

Start Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
00:00	07:00	7.00	DEMOB	MOVE	WODL	P		3,152.00	3,152.00	Wait until morning.
	16:00	9.00	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	Finish trucking cuttings to disposal, cover sawdust bins and rack last mix off bin, lock buildings at rack site, fly home for breakup.

24hr Forecast									
Break up.									
Daily Contacts									
Drilling Superintend, Sheldon Vamplew, 403-999-1302; Drilling Engineer, Mike Greener, 403-771-5039; WS Supervisor, Richard Turgeon, 780-387-1706; WS Supervisor, Dave Oppen, 403-863-8205; Rig Manager, Rick Yavis, 780-718-2962; Command Centre, 403-910-0357									
Last Casing String									
Production, 3,148.70mKB									

Time Log										
Start Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
00:00	07:00	7.00	DEMOB	MOVE	WODL	P		3,152.00	3,152.00	Wait until morning.
	16:00	9.00	DEMOB	MOVE	DMOB	P		3,152.00	3,152.00	Finish trucking cuttings to disposal, cover sawdust bins and rack last mix off bin, lock buildings at rack site, fly home for breakup.

Fluid/Mud Chks: Mud Engineer: <Mud Engineer?>						
Time	Depth (mKB)	Density (kg/m³)	Funnel Viscosity (s/L)	pH	PV Override (Pa·s)	YP Override (Pa)
Low Gravity Solids (%)	MBT (kg/m³)	Oil Water Ratio	Chlorides (mg/L)	Calcium (mg/L)	Lime (kg/m³)	Potassium (mg/L)
Electric Stab (V)	ECD - Manual Entry (k...)	Sand (%)	Solids, Corr. (%)	T Flowline (°C)	HTHP Pressure (kPa)	HTHP Filtrate (mL/30...

API Filtrate (mL/30min)		Mud Lost to Surface (m³)		Mud Lost to Hole (m³)		Daily Mud Field Est (Cost)			
Cum Mud Lost to Surface (m³)			Cum Mud Lost to Hole (m³)			Cumulative Mud Cost (Cost)			
Last BOP Drill									
Type		Days Last Chk (...)		Last Date		Days Until Next...		Next Check Date	
BOP Drill		9		2/17/2014		-4		2/23/2014	

Comment										

Drill String: BHA # <BHA No.??>						
Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)	
Nozzles (mm)		String Length (m)	OD (mm)	Max Rotating Hook Load (daN)		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled b...	Job Drill Hrs (hr)	Total Drill Hrs (hr)

Drilling Parameter: <depthstart> - <depthend> mKB										
Cum Depth (m)	Cum Drill...	Int ROP (...)	Flow Rate...	WOB (daN)	RPM (r...	SPP (kPa)	Drill Str Wt (d...	SO Str Wt (daN)	PU Str Wt (daN)	Off-Btm Str W...

Daily Drilling

COPRC MIRROR LAKE P-20 65-00 126-45

Report Date: 2/27/2014
Report #: 35
Depth Progress: 0.00m
Depth End: 3,152.00mKB
Rig Release Date: 2/23/2014

Rig:

Hydraulic Calculations

Bit Hydraulic Powe...	HP/Area (kW/mm²)	% P @ bit (%)	Bit Jet Velocity (m/s)	Bit dP (kPa)	P Drop Annular (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
Drill String Volume (m³)	Bit to Shoe Volume (m³)	Vol Shoe to Top (m³)	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m/...	Max Open Hole AV (m/...	

Error

Mud Pump: <des>, <make>, <model>

Pump Number	Make	Model	Rod Diameter (mm)	Stroke Length (mm)
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Pump Checks

Date	Depth (mKB)	Q Flow (m ³ /min)	P (kPa)	Strokes (spm)
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Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m ³ /stk)
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Centrifuge/Cyclone: <typ>, <make>, <model>

Number	Make	Model	Diameter (mm)
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Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m ³)	Q OF (L/min)	Dens UF (kg/m ³)	Q UF (L/min)
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Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
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Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
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Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	43.00	43.00	
Slater River	207.00	207.00	19.05
Arctic Red	954.00	953.52	932.35
Martin House	1,110.00	1,109.49	1,084.35
Imperial	1,140.00	1,139.48	1,118.35
KOP (5deg/30m)	1,731.00	1,730.40	1,730.73
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