



Daily Drilling

COPRC MIRROR LAKE N-20 65-00 126-45
Rig: Beaver Drilling Ltd. 2

Report Date: 3/6/2013

Report #: 14

Depth Progress: 327.00 m

Depth End: 1,385.00 mKB

Rig Release Date:

API / UWI 200/C-011-L/094-P-16/99		Surface Legal Location C-011-L/94-P-16		MaxWell Job Number JOB01@2006		License No. EL470	
Ground Elevation (m) 281.30		Original KB/RT Elevation (m) 286.50		Casing Flange Elevation (m)		Original Spud Date 2/25/2013	
Days From Spud (days) 9.29							
Daily Cost Total 129,824.89		Cumulative Cost 1,866,392.47		Total Job AFE Amount 10,274,600.00		Total AFE+Sup 10,274,600.00	
AFE / RFE / Maint.# 10343209		Estimated Days 36.29					
Planned Depth (TMD) (mKB) 2,156.00		Override TVD (mKB)		Head Count 43.0		Personnel Total Hours (hrs) 462.00	
Cum Personnel Total Hours (hrs) 6,308.00							
Avg Connection Gas 58		Avg Background Gas 35		Avg Trip Gas		Max H2S (ppm) 0	
Road Condition Good		Weather Clear		Temperature (°C) -36		Wind East 9 km	
Ops and Depth @ Morning Report Drill 222mm hole @ 1470 mkb						Wellbore Original Hole	

Last 24hr Summary

No accidents or incidents 4 Hazard ID's: 0 Job observations: Drill ahead from 1058m to 1385m with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 15.2 m/hr.

24hr Forecast

Drill ahead to Core point

Daily Contacts

WS Supervisor, Brian Neigum, 403-548-5013; Drilling Superintend, Sheldon Vamplew, 403-999-1302; Command, Center, 587-794-4599; WS Supervisor, Mike Hobmaier, 403-844-3210; Rig Manager, Rick Yavis; Drilling Engineer, Mike Greener, 403-771-5039

Last Casing String

Surface, 599.00mKB

Time Log

Start Time	End Time	Dur (hrs)	Phase	Op Code	Activity Code	Time P-T-X	Operation
00:00	00:15	0.25	INTRM1	RIGMNT	SVRG	P	Rig service function test hydrill 13 sec crown saver operating properly
00:15	07:30	7.25	INTRM1	DRILL	DRLG	P	Drill 222mm hole from 1058m to 1174m with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 21m/hr.
07:30	07:45	0.25	INTRM1	DRILL	SRVY	P	Accumilated directional surveys
07:45	08:00	0.25	INTRM1	DRILL	SFTY	P	Crew change safety meeting
08:00	08:15	0.25	INTRM1	RIGMNT	SVRG	P	Rig service function test pipe rams 3 seconds to close function test crown saver working proper
08:15	15:30	7.25	INTRM1	DRILL	DRLG	P	Drill 222mm hole from 1174m to 1289m with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 21m/hr.
15:30	16:00	0.50	INTRM1	DRILL	SRVY	P	Accumulated survey time
16:00	16:30	0.50	INTRM1	DRILL	DRLG	P	Drill 222mm hole from 1289m to 1299m with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 21m/hr.
16:30	16:45	0.25	INTRM1	RIGMNT	SVRG	P	Rig service function test annular 13 seconds to close function test crown saver
16:45	17:00	0.25	INTRM1	DRILL	DRLG	P	Drill 222mm hole from 1299m to 1326m with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 21m/hr.
17:00	17:15	0.25	INTRM1	DRILL	SFTY	P	Crew change safety meeting
17:15	23:30	6.25	INTRM1	DRILL	DRLG	P	Drill 222mm hole from 1326m to 1385m with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 21m/hr.
23:30	00:00	0.50	INTRM1	DRILL	SRVY	P	Accumilated directional surveys

Fluid / Mud Checks: Mud Engineer: Tri Pham

Time 07:15	Depth (mKB) 1,164.00	Density (kg/m³) 990.0	Funnel Viscosity (s/L) 68	pH	PV Override (cp) 15.0	YP Override (Pa) 5.0
Low Gravity Solids (%) 7.6	MBT (kg/m³)	Oil Water Ratio 82.2/17.8	Chlorides (mg/L) 252,039	Calcium (mg/L) 45,000	Lime (kg/m³) 21	Potassium (mg/L)
Electric Stab (V) 630.0	ECD - Manual Entry (...) 1060.9	Sand (%)	Solids, Corr. (%) 8.1	T (fl) (°C) 26	HTHP Pressure (kPa) 3,500	HTHP Filt (mL/30min) 6.3
Mud Lost to Surface (m³) 5.90		Mud Lost to Hole (m³)		Daily Mud Cost 30,346.09		
Cum Mud Lost to Surface (m³) 28.80		Cum Mud Lost to Hole (m³)		Cumulative Mud Cost 65,036.82		



Daily Drilling

COPRC MIRROR LAKE N-20 65-00 126-45
Rig: Beaver Drilling Ltd. 2Report Date: 3/6/2013
Report #: 14
Depth Progress: 327.00 m
Depth End: 5.00 mKB
Rig Release Date:

Hazard IDs, Near Misses & PJHAs

Days Since Last Time Incident (days)	Days Since Recordable Incident (days)	No. Rpts
391.00	391.00	11,220
Comment "DESCRIPTION: black liner underneath the rig was slippery with fresh snow on it. ACTION TAKEN: reminded everyone to watch there footing when walking on it REPORTED BY: leasehand CORRECTED: YES LIKELYHOOD: 2 SEVERITY: 2 DATE NOTED: 03/06/13 DATE CORRECTED: 03/06/13"		

Last BOP Drill

Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date
BOP Drill (Pit)	1	3/5/2013	0	3/6/2013

Safety Incidents

Time	Comment	Type

Drill Strings: BHA # 2

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm ²)	BHA ROP (m/hr)
1	222.0mm, REED, MSR616M-A2C, A141415	0.28	-----	581	15.7
Nozzles (mm)	String Length (m)	OD (mm)	Rotating Hook Load (maximum) (daN)		
11.1/11.1/11.1/11.1/11.1/11.1	1,385.52	168.0	52,000		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled ...	Job Drill Hrs (hrs)
601.00	1,385.00	15.7	784.00	1,385.00	50.00
Total Drill Hrs (hrs)					
50.00					

Comment

Dyna-Drill 7/8 5 Stage set @ 1.15*

Drill String Components

Item Description	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Kelly	70.0	109.0	1	12.77	1,385.52
Drill pipe - Stands	109.0	127.0	63	1,212.47	1,372.75
X/O SUB	59.0	123.0	1	0.61	160.28
X/O Sub	58.0	134.0	1	0.51	159.67
6 D.C	60.0	160.0	12	112.00	159.16
X/O 4 H-90	62.0	162.0	1	0.48	47.16
Jar	76.0	157.0	1	9.18	46.68
N.M. DC	72.0	168.0	2	18.96	37.50
Landing Sub	86.0	164.0	1	0.55	18.54
X-PULSE	70.0	164.0	1	9.48	17.99
MUD MOTOR	34.0	131.0	1	8.23	8.51

Drilling Parameters: 1,289.00 - 1,385.00 mKB

Cum Depth (m)	Cum Drill...	Int ROP (...)	Flow Rat...	WOB (daN)	RPM (r...	SPP (kPa)	Drill Str Wt (d...	SO Str Wt (da...	PU Str Wt (da...	Off-Btm Str ...	Drill Tq
784.00	50.00	13.7	1.800	7,000.0	60	11,500	52,000	57,000	57,000	57,000	1,600.0

Hydraulic Calculations

Bit Hydraulic Pow...	HP/Area (kW/mm²)	% P @ bit (%)	Jet Vel (m/s)	Bit dP (kPa)	Ann. dP (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)	
44.5	0.00115	13	51.7	1,482.8	211.6	990.0	1005.6	
Drill String Volume (...)	Bit to Shoe Volume (...)	Shoe to Top of Casin...	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m...	Max Open Hole AV (...)		
11.85	41.85	16.14	59.6	67.0	27.0	108.8		

Error

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

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

Pump Checks

Date	Depth (mKB)	Q (m ³ /min)	Pres (kPa)	Strokes (spm)
3/6/2013 08:00	1,174.00	0.665	2,234	68
3/6/2013 16:00	1,341.00	0.929	11,300	95

Pump Operations

Start Date	End Date	Liner Size (mm)	P (max) (kPa)	Vol/Stk OR (m ³ /stk)
1/29/2013		140.0		

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

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

Pump Checks

Date	Depth (mKB)	Q (m ³ /min)	Pres (kPa)	Strokes (spm)
3/6/2013 08:00	1,171.00	0.899	10,600	92
3/6/2013 16:00	1,298.00	0.645	2,318	66



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Depth End: 1,385.00 mKB
Rig Release Date:

Pump Operations

Start Date	End Date	Liner Size (mm)	P (max) (kPa)	Vol/Stk OR (m³/stk)
1/29/2013		140.0		
2/5/2013		140.0		

Shaker Screens

Description	Make	Model	Deck No.	Start Date	End Date	Screen No.	Scr Sz X	Scr Sz Y
1	NOV	KING COBRA	2	2/25/2013	3/3/2013	1	84	84

Centrifuges/Cyclones: HGS Centrifuge, Brandt, 4000

Number	Make	Model	Diameter (mm)
1	Brandt	4000	

Centrifuge/Cyclone Checks

Date	Hrs (hrs)	RPM (rpm)	Dens OF (kg/m³)	Q (ovrflw) (L/min)	Dens UF (kg/m³)	Q (undrflw) (L/min)

Fluid / Mud Additive Amounts

Description	Consumed	Cost	Size	Units
VERSAMUL - 208LT	1.0			brl
VERSTROL M - 22KG	2.0			sks
OPTISEAL IV 25KG	3.0	61.180		sks
CAL-CHLR 94-97%-40KG	8.0	46.970		sks
VERSAMUL - 208LT	1.0	940.470		bbl
VERSTROL M - 22KG	5.0			sks
OPTISEAL III 25KG	5.0	99.950		sks
VERSAMUL - 208LT	1.0	940.470		bbl
VERSAMUL - 208LT	1.0			brl
OPTISEAL IV 25KG	5.0	61.180		sks
VERSTROL M - 22KG	5.0			sks
LIME - 20KG	15.0	8.680		sks
VERSACLEAN INVERT	18.6	1,450.000		m3

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
3/6/2013	1,034.96	2.50	91.49	1,034.74					
3/6/2013	1,053.95	1.49	101.99	1,053.72					
3/6/2013	1,073.33	1.19	105.60	1,073.09					
3/6/2013	1,074.17	1.19	105.60	1,073.93					
3/6/2013	1,092.66	1.19	95.62	1,092.42					
3/6/2013	1,111.93	1.41	79.58	1,111.68					
3/6/2013	1,131.20	1.71	79.41	1,130.95					
3/6/2013	1,150.43	1.32	80.81	1,150.17					
3/6/2013	1,169.86	0.88	81.38	1,169.60					
3/6/2013	1,188.82	1.71	76.20	1,188.55					
3/6/2013	1,208.02	2.59	55.98	1,207.74					
3/6/2013	1,227.25	2.02	65.70	1,226.95					
3/6/2013	1,246.32	1.41	78.40	1,246.01					
3/6/2013	1,265.44	1.49	81.21	1,265.13					
3/6/2013	1,284.64	1.58	66.31	1,284.32					
3/6/2013	1,303.85	2.50	51.02	1,303.52					
3/6/2013	1,313.60	2.59	50.89	1,313.26					
3/6/2013	1,323.16	2.29	43.28	1,322.81					
3/6/2013	1,332.61	1.89	48.91	1,332.25					
3/6/2013	1,342.37	1.32	56.12	1,342.01					
3/6/2013	1,351.96	0.79	79.32	1,351.60					
3/6/2013	1,361.53	0.79	88.62	1,361.17					
3/6/2013	1,390.50	1.00	90.00	1,390.13					

Formations

Formation Name	Drill Top MD (mKB)
Little Bear	20.00
Slater River	241.00
Arctic Red	829.00
Sans Sault	988.00
Martin House	1,138.00
Imperial	1,172.00
Upper Canol	
Lower Canol	
Hare Indian	
Bluefish Member	
Hume	

697792

v12



Daily Drilling

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

Rig: Beaver Drilling Ltd. 2

Report Date: 3/5/2013

Report #: 13

Depth Progress: 326.00 m

Depth End: 1,058.00 mKB

Rig Release Date:

API / UWI 200/C-011-L/094-P-16/99		Surface Legal Location C-011-L/94-P-16		MaxWell Job Number JOB01@2006		License No. EL470					
Ground Elevation (m) 281.30		Original KB/RT Elevation (m) 286.50		Casing Flange Elevation (m)		Original Spud Date 2/25/2013		Days From Spud (days) 8.29			
Daily Cost Total 111,958.30		Cumulative Cost 1,734,967.58		Total Job AFE Amount 10,274,600.00		Total AFE+Sup 10,274,600.00		AFE / RFE / Maint.# 10343209		Estimated Days 36.29	
Planned Depth (TMD) (mKB) 2,156.00		Override TVD (mKB)		Head Count 43.0		Personnel Total Hours (hrs) 502.00			Cum Personnel Total Hours (hrs) 5,894.00		
Avg Connection Gas 28		Avg Background Gas 21		Avg Trip Gas				Max H2S (ppm) 0			
Road Condition Good		Weather Clear		Temperature (°C) -30				Wind East 9 km			
Ops and Depth @ Morning Report Drill 222mm hole @ 1155 mkb									Wellbore Original Hole		

Last 24hr Summary

No accidents or incidents 4 Hazard ID's: 1 Job observations: Drill ahead from 732m to 1058m with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 16.71 m/hr.

24hr Forecast

Drill ahead to Core point

Daily Contacts

Drilling Superintendent, Sheldon Vamplew, 403-999-1302; WS Supervisor, Brian Neigum, 403-548-5013; Drilling Engineer, Mike Greener, 403-771-5039; Command, Center, 587-794-4599; WS Supervisor, Mike Hobmaier, 403-844-3210; Rig Manager, Rick Yavis

Last Casing String

Surface, 599.00mKB

Time Log

Start Time	End Time	Dur (hrs)	Phase	Op Code	Activity Code	Time P-T-X	Operation
00:00	00:15	0.25	INTRM1	RIGMNT	SVRG	P	Rig service function test pipe rams 3 sec & crown saver
00:15	07:15	7.00	INTRM1	DRILL	DRLG	P	Drill 222mm hole from 732 m to 847m with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 21m/hr.
07:15	07:45	0.50	INTRM1	DRILL	SRVY	P	Accumulated time for surveys
07:45	08:00	0.25	INTRM1	DRILL	SFTY	P	Crew hand over meeting
08:00	08:15	0.25	INTRM1	RIGMNT	SVRG	P	Rig service function test hydri13 sec crown saver operating properly
08:15	12:30	4.25	INTRM1	DRILL	DRLG	P	Drill 222mm hole from 847m to 915m with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 21m/hr.
12:30	13:30	1.00	INTRM1	DRILL	DHEQ	T	Trouble shoot MWD tool for gamma ray
13:30	14:30	1.00	INTRM1	DRILL	DRLG	P	Drill 222mm hole from 915m to 934m with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 21m/hr.
14:30	14:45	0.25	INTRM1	DRILL	SFTY	P	Bop drill crew in position well secure in 90 sec
14:45	15:15	0.50	INTRM1	DRILL	DRLG	P	Drill 222mm hole from 934m953mto with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 21m/hr.
15:15	15:45	0.50	INTRM1	DRILL	SRVY	P	Accumulated directional surveys
15:45	16:00	0.25	INTRM1	DRILL	SFTY	P	Crew change safety meetings
16:00	16:15	0.25	INTRM1	RIGMNT	SVRG	P	Rig service function test pipe rams 4 seconds to close function test crown saver
16:15	18:00	1.75	INTRM1	DRILL	DRLG	P	Drill 222mm hole from 953m982m to with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 26m/hr.
18:00	18:15	0.25	INTRM1	DRILL	SFTY	P	BOP drill well secure in 90 seconds crew in positions
18:15	18:30	0.25	INTRM1	DRILL	SFTY	P	Man down drill crew walked through rescue routes
18:30	23:30	5.00	INTRM1	DRILL	DRLG	P	Drill 222mm hole from 982m 1058m to with Reed MSR616M bit,Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130,table RPM 50,WOB 2 to 3dan,Average ROP 21m/hr.
23:30	23:45	0.25	INTRM1	DRILL	SRVY	P	Accumulated survey time
23:45	00:00	0.25	INTRM1	DRILL	SFTY	P	Crew change safety meeting



Daily Drilling

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Rig: Beaver Drilling Ltd. 2

Report Date: 3/5/2013

Report #: 13

Depth Progress: 326.00 m

Depth End: 328.00 m

Rig Release Date:

Fluid / Mud Checks: Mud Engineer: Tri Pham

Time	Depth (mKB)	Density (kg/m³)	Funnel Viscosity (s/L)	pH	PV Override (cp)	YP Override (Pa)
16:30	965.00	975.0	62		13.0	5.0
Low Gravity Solids (%)	MBT (kg/m³)	Oil Water Ratio	Chlorides (mg/L)	Calcium (mg/L)	Lime (kg/m³)	Potassium (mg/L)
7.7		82.3/17.7	227,135	40,000	19	
Electric Stab (V)	ECD - Manual Entry (...)	Sand (%)	Solids, Corr. (%)	T (fl) (°C)	HTHP Pressure (kPa)	HTHP Filt (mL/30min)
595.0	1048.0		7.9	25	3,500	6.3
Mud Lost to Surface (m³)	Mud Lost to Hole (m³)		Daily Mud Cost			
5.90			8,977.80			
Cum Mud Lost to Surface (m³)	Cum Mud Lost to Hole (m³)		Cumulative Mud Cost			
22.90			34,690.73			

Hazard IDs, Near Misses & PJHAs

Days Since Last Time Incident (days)	Days Since Recordable Incident (days)
390.00	390.00

Comment

"OBSERVATION: Observed third party contractor not wearing proper PPE. Contractor that hard hats are required on any lease are are important for safety.

No. Rpts

12,000

OBSERVER: Leasehand DATE NOTED: 03/05/13"

Last BOP Drill

Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date
BOP Drill (Pit)	0	3/5/2013	1	3/6/2013

Safety Incidents

Time	Comment	Type

Drill Strings: BHA # 2

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)
1	222.0mm, REED, MSR616M-A2C, A141415	0.28	-----	581	16.0
Nozzles (mm)	String Length (m)	OD (mm)	Rotating Hook Load (maximum) (daN)		
11.1/11.1/11.1/11.1/11.1	1,058.88	168.0	49,000		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled ...	Job Drill Hrs (hrs)
601.00	1,058.00	16.0	457.00	1,058.00	28.50
					Total Drill Hrs (hrs)
					28.50

Comment

Dyna-Drill 7/8 5 Stage set @ 1.15*

Drill String Components

Item Description	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Kelly	70.0	109.0	1	12.77	1,058.88
Drill pipe - Stands	109.0	127.0	46	885.83	1,046.11
X/O SUB	59.0	123.0	1	0.61	160.28
X/O Sub	58.0	134.0	1	0.51	159.67
6 D.C	60.0	160.0	12	112.00	159.16
X/O 4 H-90	62.0	162.0	1	0.48	47.16
Jar	76.0	157.0	1	9.18	46.68
N.M. DC	72.0	168.0	2	18.96	37.50
Landing Sub	86.0	164.0	1	0.55	18.54
X-PULSE	70.0	164.0	1	9.48	17.99
MUD MOTOR 7/8 5 Stage set @ 1.15*	34.0	131.0	1	8.23	8.51

Drilling Parameters: 953.00 - 1,058.00 mKB

Cum Depth (m)	Cum Drill...	Int ROP (...)	Flow Rat...	WOB (daN)	RPM (r...	SPP (kPa)	Drill Str Wt (d...	SO Str Wt (da...	PU Str Wt (da...	Off-Btm Str ...	Drill Tq
457.00	28.50	15.6	1.800	5,000.0	60	10,000	49,000	49,000	49,000	49,000	1,600.0

Hydraulic Calculations

Bit Hydraulic Pow...	HP/Area (kW/mm²)	% P @ bit (%)	Jet Vel (m/s)	Bit dP (kPa)	Ann. dP (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
43.8	0.00113	15	51.7	1,460.4	161.3	975.0	990.6
Drill String Volume (...)	Bit to Shoe Volume (...)	Shoe to Top of Casin...	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m...	Max Open Hole AV (...)	
8.80	41.85	16.14	59.6	67.0	27.0	108.8	

Error

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

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

Pump Checks

Date	Depth (mKB)	Q (m³/min)	Pres (kPa)	Strokes (spm)
3/5/2013 08:00		856.00	0.645	2,047
3/5/2013 16:00		1,034.00	0.929	10,800

Pump Operations

Start Date	End Date	Liner Size (mm)	P (max) (kPa)	Vol/Stk OR (m³/stk)
1/29/2013		140.0		



Daily Drilling

COPRC MIRROR LAKE N-20 65-00 126-45
Rig: Beaver Drilling Ltd. 2Report Date: 3/5/2013
Report #: 13
Depth Progress: 326.00 m
Depth End: 1,058.00 mKB
Rig Release Date:

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

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

Pump Checks

Date	Depth (mKB)	Q (m³/min)	Pres (kPa)	Strokes (spm)
3/5/2013 08:00	849.00	0.880	10,600	90
3/5/2013 16:00	953.00	0.675	2,321	69

Pump Operations

Start Date	End Date	Liner Size (mm)	P (max) (kPa)	Vol/Stk OR (m³/stk)
1/29/2013		140.0		
2/5/2013		140.0		

Shaker Screens

Description	Make	Model	Deck No.	Start Date	End Date	Screen No.	Scr Sz X	Scr Sz Y
1	NOV	KING COBRA	2	2/25/2013	3/3/2013	1	84	84

Centrifuges/Cyclones: HGS Centrifuge, Brandt, 4000

Number	Make	Model	Diameter (mm)
1	Brandt	4000	

Centrifuge/Cyclone Checks

Date	Hrs (hrs)	RPM (rpm)	Dens OF (kg/m³)	Q (ovrflw) (L/min)	Dens UF (kg/m³)	Q (undrflw) (L/min)

Fluid / Mud Additive Amounts

Description	Consumed	Cost	Size	Units
CAL-CHLR 94-97%-40KG	40.0	46.970		sks
OPTISEAL III 25KG	5.0	99.950		sks
VERSAMUL - 208LT	2.0	940.470		bbl
VERSATROL M - 22KG	5.0	49.450		sks
VERSATROL M - 22KG	8.0	49.450		sks
VERSACOAT HF - 208LT	1.0	906.590		bbl
VERSAMUL - 208LT	1.0	940.470		bbl
OPTISEAL IV 25KG	5.0	61.180		sks
CAL-CHLR 94-97%-40KG	10.0	46.970		sks
VERSAMUL - 208LT	1.0	940.470		bbl
OPTISEAL IV 25KG	3.0	61.180		sks
CAL-CHLR 94-97%-40KG	7.0	46.970		sks

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
3/5/2013	717.69	2.20	21.71	717.62					
3/5/2013	737.87	2.59	18.50	737.78					
3/5/2013	756.53	1.80	11.60	756.43					
3/5/2013	756.53	1.80	11.60	756.43					
3/5/2013	775.49	1.89	7.99	775.38					
3/5/2013	795.33	2.20	12.61	795.20					
3/5/2013	804.51	1.58	7.20	804.38					
3/5/2013	814.26	1.32	9.40	814.13					
3/5/2013	852.78	0.62	8.08	852.64					
3/5/2013	872.25	0.62	112.89	872.11					
3/5/2013	891.44	1.19	125.50	891.30					
3/5/2013	938.56	1.71	98.92	938.40					
3/5/2013	958.42	1.71	96.90	958.25					
3/5/2013	977.66	2.11	85.60	977.48					
3/5/2013	996.46	2.20	82.48	996.27					
3/5/2013	1,015.67	2.29	86.09	1,015.47					
3/5/2013	1,024.91	2.11	85.51	1,024.70					
3/5/2013	1,034.96	2.50	87.81	1,034.74					
3/5/2013	1,044.46	2.20	99.71	1,044.23					
3/5/2013	1,060.00	1.40	105.00	1,059.76					

Formations

Formation Name	Drill Top MD (mKB)
Little Bear	20.00
Slater River	241.00
Arctic Red	829.00
Sans Sault	988.00
Martin House	1,103.00
Imperial	
Upper Canol	
Lower Canol	
Hare Indian	



Daily Drilling

COPRC MIRROR LAKE N-20 65-00 126-45
Rig: Beaver Drilling Ltd. 2

Report Date: 3/5/2013
Report #: 13
Depth Progress: 326.00 m
Depth End: 3.00 mKB
Rig Release Date:

Formations

Formation Name	Drill Top MD (mKB)
Bluefish Member	
Hume	

API / UWI 200/C-011-L/094-P-16/99		Surface Legal Location C-011-L/94-P-16		MaxWell Job Number JOB01@2006		License No. EL470					
Ground Elevation (m) 281.30		Original KB/RT Elevation (m) 286.50		Casing Flange Elevation (m)		Original Spud Date 2/25/2013		Days From Spud (days) 7.29			
Daily Cost Total 329,018.97		Cumulative Cost 1,623,009.28		Total Job AFE Amount 10,274,600.00		Total AFE+Sup 10,274,600.00		AFE / RFE / Maint.# 10343209		Estimated Days 36.29	
Planned Depth (TMD) (mKB) 2,156.00		Override TVD (mKB)		Head Count 43.0		Personnel Total Hours (hrs) 478.00		Cum Personnel Total Hours (hrs) 5,392.00			
Avg Connection Gas 21		Avg Background Gas 18		Avg Trip Gas				Max H2S (ppm) 0			
Road Condition Good		Weather O/C Snow		Temperature (°C) -23				Wind North West 20km/hr			
Ops and Depth @ Morning Report Drill 222mm hole ahead at 825m								Wellbore Original Hole			

Last 24hr Summary

No accidents or incidents 4 Hazard ID's: 1 Job observations: Pressure test BOP's and related equipment as per program. Make up directional BHA and run in hole, Hold BOP and man down drills, Drill out shoe track, Drill ahead 601m to 611m, Preform Formation Integrity Test, Fluid density 960kg/m3, Surface applied 7530kpa, Total pressure at 611m 11,484kpa, Gradient of 18.8kpa/m. Continue to drill ahead from 611m to 732m with Reed MSR616M bit, Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130, table RPM 50, WOB 2 to 3dan, Average ROP 14.5m/hr.

24hr Forecast

Drill ahead to Core point

Daily Contacts

WS Supervisor, Mike Hobmaier, 403-844-3210; Drilling Superintend, Sheldon Vamplew, 403-999-1302; WS Supervisor, Dave Forsberg, 780-361-6417; Command, Center, 587-794-4599; Drilling Engineer, Mike Greener, 403-771-5039; Rig Manager, Tony Hiemstra

Last Casing String

Surface, 599.00mKB

Time Log

Start Time	End Time	Dur (hrs)	Phase	Op Code	Activity Code	Time P-T-X	Operation
00:00	03:15	3.25	SURFAC	WHDBOP	BOPE	P	Continue to pressure test BOPs equipment pressure test Anular 1400kpa low and 17500kpa high 10 min. each, Stabbing, Inside BOP and Upper Kelly Cock 1400kpa low and 20,000kpa high 10 min. each, Blind ram, Casing Bowl and Casing 1400kpa Low and 19000kpa high 1
03:15	03:30	0.25	SURFAC	RIGMNT	SVRG	P	Rig service function test crown saver & motor kills
03:30	04:15	0.75	SURFAC	RIGMNT	SLPC	P	Slip & cut 30 m
04:15	04:30	0.25	SURFAC	DRILL	SFTY	P	Rig safety inspection
04:30	04:45	0.25	SURFAC	DRILL	SFTY	P	Held Man down drill
04:45	05:00	0.25	SURFAC	DRILL	SFTY	P	Held BOP drill well secured 85 seconds
05:00	05:15	0.25	SURFAC	DRILL	SFTY	P	Safety meeting picking up directional tools
05:15	08:00	2.75	SURFAC	DRILL	PULD	P	Pick up Directional tools
08:00	08:15	0.25	SURFAC	RIGMNT	SVRG	P	Rig service crown saver operating properly
08:15	11:30	3.25	SURFAC	DRILL	TRIP	P	Trip in the hole to 576m
11:30	11:45	0.25	SURFAC	DRILL	SFTY	P	Bop drill crew in position well secure in 90 sec
11:45	12:00	0.25	SURFAC	DRILL	SFTY	P	Man down drill
12:00	13:00	1.00	SURFAC	CEMENT	DRLG	P	Drill cement float and shoe from 581m to 601m tag cement @581m
13:00	14:45	1.75	SURFAC	DRILL	DRLG	P	Drill 222mm hole from 601m to 611m with Reed MSR616M bit, Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130, table RPM 50, WOB 2 to 3dan, Average ROP 5.7m/hr.
14:45	15:00	0.25	SURFAC	DRILL	CIRC	P	Circulate bottoms up/safety meeting w/peregrine pressure tester
15:00	15:30	0.50	SURFAC	DRILL	FIT	P	Preform Formation Integrity Test, Fluid density 960kg/m3, Surface applied 7530kpa, Total pressure at 611m 11,484kpa, Gradient of 18.8kpa/m
15:30	16:00	0.50	PROD1	DRILL	DRLG	P	Drill 222mm hole from 611m to 616m with Reed MSR616M bit, Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130, table RPM 50, WOB 2 to 3dan, Average ROP 5m/hr.
16:00	16:30	0.50	PROD1	DRILL	CIRC	T	Trouble shoot mwd tool
16:30	16:45	0.25	PROD1	DRILL	DRLG	P	Drill 222mm hole from 616m to 626m with Reed MSR616M bit, Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130, table RPM 50, WOB 2 to 3dan, Average ROP 40m/hr.
16:45	17:00	0.25	PROD1	RIGMNT	SVRG	P	Rig service function hydrill 13 sec crown saver operating properly
17:00	18:15	1.25	PROD1	DRILL	DRLG	P	Drill 222mm hole from 626m to 643m with Reed MSR616M bit, Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130, table RPM 50, WOB 2 to 3dan, Average ROP 13.2m/hr.
18:15	19:00	0.75	PROD1	RIGMNT	RGRP	T	Repair rad hose on #1 pump motor
19:00	19:15	0.25	PROD1	DRILL	SFTY	P	Crew change safety meeting
19:15	23:30	4.25	PROD1	DRILL	DRLG	P	Drill 222mm hole from 643m to 732m with Reed MSR616M bit, Dyna Drill 7/8 5stage motor set at 1.15* and Schlumberger directional BHA, Pumping at 1.7m3/min. motor RPM 130, table RPM 50, WOB 2 to 3dan, Average ROP 21m/hr.
23:30	00:00	0.50	PROD1	DRILL	SRVY	P	Accumulated time for surveys



Daily Drilling

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

Rig: Beaver Drilling Ltd. 2

Report Date: 3/4/2013

Report #: 12

Depth Progress: 131.00 m

Depth End: 2.00 mKB

Rig Release Date:

Fluid / Mud Checks: Mud Engineer: Tri Pham

Time	Depth (mKB)	Density (kg/m³)	Funnel Viscosity (s/L)	pH	PV Override (cp)	YP Override (Pa)
13:30	598.00	965.0	64		14.0	4.0
Low Gravity Solids (%)	MBT (kg/m³)	Oil Water Ratio	Chlorides (mg/L)	Calcium (mg/L)	Lime (kg/m³)	Potassium (mg/L)
5.7		81/19	171,410	33,000	22	
Electric Stab (V)	ECD - Manual Entry (...)	Sand (%)	Solids, Corr. (%)	T (fl) (°C)	HTHP Pressure (kPa)	HTHP Filt (mL/30min)
550.0	980.0		5.7	6	3,500	7.0

Mud Lost to Surface (m³)	Mud Lost to Hole (m³)	Daily Mud Cost
10.00		
Cum Mud Lost to Surface (m³)	Cum Mud Lost to Hole (m³)	Cumulative Mud Cost
17.00		25,712.93

Hazard IDs, Near Misses & PJHAs

Days Since Last Time Incident (days)	Days Since Recordable Incident (days)
389.00	389.00

Comment	No. Rpts
"OBSERVATION: Observed chain not properly positioned on BOP for pull back. Shut down operation and readjusted chain and continue operation	12,000

OBSERVER: Assistant Driller DATE NOTED: 03/04/13"

Last BOP Drill

Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date

Safety Incidents

Time	Comment	Type

Drill Strings: BHA # 2

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)
1	222.0mm, REED, MSR616M-A2C, A141415		-----	581	14.6
Nozzles (mm)	String Length (m)	OD (mm)	Rotating Hook Load (maximum) (daN)		
11.1/11.1/11.1/11.1/11.1/11.1	732.00	168.0	43,000		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled ...	Job Drill Hrs (hrs)
601.00	732.00	14.6	131.00	732.00	9.00
					Total Drill Hrs (hrs)
					9.00

Comment

Dyna-Drill 7/8 5 Stage set @ 1.15*

Drill String Components

Item Description	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Kelly	70.0	109.0	1	13.01	732.00
Drill Pipe	101.6	127.0	29	558.99	718.99
X/O SUB	59.0	123.0	1	0.61	160.00
X/O Sub	58.0	134.0	1	0.51	159.39
6 D.C	60.0	160.0	12	112.00	158.88
X/O 4 H-90	62.0	162.0	1	0.48	46.88
Jar	76.0	157.0	1	9.18	46.40
N.M. DC	72.0	168.0	2	18.96	37.22
Landing Sub	86.0	164.0	1	0.55	18.26
X-PULSE	70.0	164.0	1	9.48	17.71
MUD MOTOR 7/8 5 Stage set @ 1.15*	34.0	131.0	1	8.23	8.23

Drilling Parameters: 616.00 - 732.00 mKB

Cum Depth (m)	Cum Drill...	Int ROP (...)	Flow Rat...	WOB (daN)	RPM (r...	SPP (kPa)	Drill Str Wt (d...	SO Str Wt (da...	PU Str Wt (da...	Off-Btm Str ...	Drill Tq
131.00	9.00	20.2	1.700	6,000.0	50	7,200	43,000	43,000	43,000	43,000	1,600.0

Hydraulic Calculations

Bit Hydraulic Pow...	HP/Area (kW/mm²)	% P @ bit (%)	Jet Vel (m/s)	Bit dP (kPa)	Ann. dP (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
36.5	0.00094	18	48.8	1,289.2	211.8	965.0	994.5
Drill String Volume (...)	Bit to Shoe Volume (...)	Shoe to Top of Casin...	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m...	Max Open Hole AV (...)	
5.07	41.86	15.95	56.3	87.4	25.5	102.8	

Error

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

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

Pump Checks

Date	Depth (mKB)	Q (m³/min)	Pres (kPa)	Strokes (spm)
3/1/2013 23:45	601.00	1.124	5,800	115
3/4/2013 23:45	732.00	0.880	7,200	90

Pump Operations

Start Date	End Date	Liner Size (mm)	P (max) (kPa)	Vol/Stk OR (m³/stk)
1/29/2013		140.0		



Daily Drilling

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

Rig: Beaver Drilling Ltd. 2

Report Date: 3/4/2013

Report #: 12

Depth Progress: 131.00 m

Depth End: 732.00 mKB

Rig Release Date:

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

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

Pump Checks

Date	Depth (mKB)	Q (m³/min)	Pres (kPa)	Strokes (spm)
3/4/2013 23:30	732.00	0.782	2,680	80
3/4/2013 23:45	732.00	0.880	7,200	90

Pump Operations

Start Date	End Date	Liner Size (mm)	P (max) (kPa)	Vol/Stk OR (m³/stk)
1/29/2013		140.0		
2/5/2013		140.0		

Shaker Screens

Description	Make	Model	Deck No.	Start Date	End Date	Screen No.	Scr Sz X	Scr Sz Y
1	NOV	KING COBRA	2	2/25/2013	3/3/2013	1	84	84

Centrifuges/Cyclones: HGS Centrifuge, Brandt, 4000

Number	Make	Model	Diameter (mm)
1	Brandt	4000	

Centrifuge/Cyclone Checks

Date	Hrs (hrs)	RPM (rpm)	Dens OF (kg/m³)	Q (ovrflw) (L/min)	Dens UF (kg/m³)	Q (undrflw) (L/min)

Fluid / Mud Additive Amounts

Description	Consumed	Cost	Size	Units

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
3/4/2013	621.34	1.89	26.41	621.31					
3/4/2013	640.42	1.49	22.98	640.38					
3/4/2013	660.05	1.49	23.29	660.00					
3/4/2013	679.36	1.58	22.41	679.31					
3/4/2013	698.75	2.02	19.42	698.69					
3/4/2013	732.00	2.02	19.42	731.92					

Formations

Formation Name	Drill Top MD (mKB)
Little Bear	20.00
Slater River	241.00

697792

V10

COPCOPhillips

Daily Drilling

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

Rig: Beaver Drilling Ltd. 2

Report Date: 3/3/2013

Report #: 11

Depth Progress: 0.00 m

Depth End: 601.00 mKB

Rig Release Date:

API / UWI 200/C-011-L/094-P-16/99		Surface Legal Location C-011-L/94-P-16		MaxWell Job Number JOB01@2006		License No. EL470					
Ground Elevation (m) 281.30		Original KB/RT Elevation (m) 286.50		Casing Flange Elevation (m)		Original Spud Date 2/25/2013		Days From Spud (days) 6.29			
Daily Cost Total 97,033.45		Cumulative Cost 1,293,090.31		Total Job AFE Amount 10,274,600.00		Total AFE+Sup 10,274,600.00		AFE / RFE / Maint.# 10343209		Estimated Days 36.29	
Planned Depth (TMD) (mKB) 2,156.00		Override TVD (mKB)		Head Count 45.0		Personnel Total Hours (hrs) 522.00		Cum Personnel Total Hours (hrs) 4,914.00			
Avg Connection Gas			Avg Background Gas			Avg Trip Gas			Max H2S (ppm)		
Road Condition Good			Weather Clear			Temperature (°C) -25			Wind South 5km/hr		
Ops and Depth @ Morning Report Pick up Schlumberger Directional BHA									Wellbore		

Last 24hr Summary

No accidents or incidents 4 Hazard ID's: 1 Job observations: Circulate and condition mud, Rig to and cement surface casing, Received 10m3 good cement slurry returns, Nipple down diverter, Install casing bowl, Nipple up BOP's and pressure test as per program.

24hr Forecast

Make up Directional tools, Run in, Drill out and Drill ahead.

Daily Contacts

Command, Center, 587-794-4599; Drilling Engineer, Mike Greener, 403-771-5039; Drilling Superintendent, Sheldon Vamplew, 403-999-1302; WS Supervisor, Dave Forsberg, 780-361-6417; WS Supervisor, Mike Hobmaier, 403-844-3210; Rig Manager, Tony Hiemstra

Last Casing String

Surface, 599.00mKB

Time Log

Start Time	End Time	Dur (hrs)	Phase	Op Code	Activity Code	Time P-T-X	Operation
00:00	00:15	0.25	SURFAC	RIGMNT	SVRG	P	Rig service function test crown saver
00:15	01:15	1.00	SURFAC	CASING	CIRC	P	Circ casing
01:15	01:30	0.25	SURFAC	CEMENT	SFTY	P	Safety meeting on cementing
01:30	04:00	2.50	SURFAC	CEMENT	CMNT	P	Cement casing from 5m to 601m with 35 Tonne (33.90m3) Thixotropic D804A-P cement @1740kg/m3 with 2% CaCL2, 0.2% antifoam, Bumped plug and pressure tested casing to 11,500 kpa, Received 10m3 good cement slurry returns @ surface, Annulus remained static at surface
04:00	08:00	4.00	SURFAC	CEMENT	WOC	P	Wait on cement
08:00	08:15	0.25	SURFAC	RIGMNT	SVRG	P	Rig service
08:15	12:30	4.25	SURFAC	WHDBOP	NUND	P	Nipple down diverter reviewed jsa#113 nipple down bop
12:30	14:00	1.50	SURFAC	WHDBOP	NUND	P	Clean and prepare casing screw on casing bowl
14:00	16:00	2.00	SURFAC	WHDBOP	NUND	P	Nipple up BOP reviewed jsa#109 nipple up BOP
16:00	16:15	0.25	SURFAC	RIGMNT	SVRG	P	Rig service
16:15	20:15	4.00	SURFAC	WHDBOP	NUND	P	Nipple up BOP
20:15	20:30	0.25	SURFAC	WHDBOP	SFTY	P	Safety meeting j.s.a # 111
20:30	00:00	3.50	SURFAC	WHDBOP	BOPE	P	Pressure test BOP system, Pressure test all Manifold valves 1400kpa Low and 20,000kpa high min. each, Pipe rams, Choke line, Kill line, Kill line Check valve and HCR 1400kpa low and 20,000kpa high 10 min. each

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

Time	Depth (mKB)	Density (kg/m³)	Funnel Viscosity (s/L)	pH	PV Override (cp)	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 (...)	Sand (%)	Solids, Corr. (%)	T (fl) (°C)	HTHP Pressure (kPa)	HTHP Filt (mL/30min)
Mud Lost to Surface (m³)		Mud Lost to Hole (m³)		Daily Mud Cost		
				2,114.95		
Cum Mud Lost to Surface (m³)		Cum Mud Lost to Hole (m³)		Cumulative Mud Cost		
				25,712.93		

Hazard IDs, Near Misses & PJHAs

Days Since Lost Time Incident (days)	Days Since Recordable Incident (days)
388.00	388.00

Comment

"DESCRIPTION: While running casing make sure to watch hand placement on stump where pinch points are due to casin being raised in elevator

ACTION TAKEN: explained to hand the pinch point and hazards when running casing

REPORTED BY: derrickhand

CORRECTED: YES LIKELYHOOD: 3 SEVERITY: 3

DATE NOTED: 03/03/13 DATE CORRECTED: 03/03/13"

No. Rpts

11,330

Last BOP Drill

Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date

Safety Incidents

Time	Comment	Type

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

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

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

Drilling Parameters:

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

Bit Hydraulic Pow...	HP/Area (kW/mm²)	% P @ bit (%)	Jet Vel (m/s)	Bit dP (kPa)	Ann. dP (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
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Drill String Volume (...)	Bit to Shoe Volume (...)	Shoe to Top of Casin...	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m...	Max Open Hole AV (...)
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Error
Mud Pumps: 1, NATIONAL, 8-P-80

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

Pump Checks

Date	Depth (mKB)	Q (m³/min)	Pres (kPa)	Strokes (spm)
2/28/2013 23:45		474.00	1.271	5,800
3/1/2013 23:45		601.00	1.124	5,800

Pump Operations

Start Date	End Date	Liner Size (mm)	P (max) (kPa)	Vol/Stk OR (m³/stk)
1/29/2013		140.0		

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

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

Pump Checks

Date	Depth (mKB)	Q (m³/min)	Pres (kPa)	Strokes (spm)
2/28/2013 23:45		474.00	1.271	5,800
3/1/2013 23:45		601.00	1.124	5,800

Pump Operations

Start Date	End Date	Liner Size (mm)	P (max) (kPa)	Vol/Stk OR (m³/stk)
1/29/2013		140.0		
2/5/2013		140.0		

Shaker Screens

Description	Make	Model	Deck No.	Start Date	End Date	Screen No.	Scr Sz X	Scr Sz Y
1	NOV	KING COBRA	2	2/25/2013		1	84	84

Centrifuges/Cyclones: HGS Centrifuge, Brandt, 4000

Number	Make	Model	Diameter (mm)
1	Brandt	4000	

Centrifuge/Cyclone Checks

Date	Hrs (hrs)	RPM (rpm)	Dens OF (kg/m³)	Q (ovrflw) (L/min)	Dens UF (kg/m³)	Q (undrflw) (L/min)

Fluid / Mud Additive Amounts

Description	Consumed	Cost	Size	Units
CAL-CARB O - 25KG	50.0	7.980		sks
CELLOFLAKE 3/8- 25LB	25.0	67.880		sks
SAWDUST - 7.3KG	5.0	3.790		sks

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)
Little Bear	20.00
Slater River	241.00

697792
v9



Daily Drilling

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

Rig: Beaver Drilling Ltd. 2

Report Date: 3/2/2013
Report #: 10
Depth Progress: 0.00 m
Depth End: 601.00 mKB
Rig Release Date:

API / UWI 200/C-011-L/094-P-16/99		Surface Legal Location C-011-L/94-P-16		MaxWell Job Number JOB01@2006		License No. EL470					
Ground Elevation (m) 281.30		Original KB/RT Elevation (m) 286.50		Casing Flange Elevation (m)		Original Spud Date 2/25/2013		Days From Spud (days) 5.29			
Daily Cost Total 74,604.80		Cumulative Cost 1,005,936.86		Total Job AFE Amount 10,274,600.00		Total AFE+Sup 10,274,600.00		AFE / RFE / Maint.# 10343209		Estimated Days 36.29	
Planned Depth (TMD) (mKB) 2,156.00		Override TVD (mKB)		Head Count 44.0		Personnel Total Hours (hrs) 510.00		Cum Personnel Total Hours (hrs) 4,392.00			
Avg Connection Gas		Avg Background Gas			Avg Trip Gas			Max H2S (ppm)			
Road Condition Good		Weather Cloudy			Temperature (°C) -20			Wind Calm			
Ops and Depth @ Morning Report Wait on cement								Wellbore			

Last 24hr Summary
No accidents or incidents 3 Hazard ID's: 2 Job observations: Wiper trip, circulate condition hole to Log, pull out of hole to log, lay down 8" DCs, Rig in Schlumberger and run open hole logs. Rig to and run 244.5mm surface casing, circulate condition hole prior to cementing casing, NEB regulatory and environmental inspectors toured location and followed up on initial inspection,

24hr Forecast
Nipple up BOPs.

Daily Contacts
Rig Manager, Tony Hiemstra; Command, Center, 587-794-4599; Drilling Superintend, Sheldon Vamplew, 403-999-1302; WS Supervisor, Mike Hobmaier, 403-844-3210; Drilling Engineer, Mike Greener, 403-771-5039; WS Supervisor, Dave Forsberg, 780-361-6417

Last Casing String

Time Log							
Start Time	End Time	Dur (hrs)	Phase	Op Code	Activity Code	Time P-T-X	Operation
00:00	00:45	0.75	SURFAC	DRILL	WPRT	P	Wiper trip to flow check @ 157 m
00:45	01:00	0.25	SURFAC	RIGMNT	SVRG	P	Rig service function test hydril 56 sec & crown saver
01:00	01:45	0.75	SURFAC	DRILL	TRIP	P	Run in hole to 469 m hit bridge @ 469 m
01:45	03:00	1.25	SURFAC	DRILL	REAM	P	Ream & clean from 469 m to 479 m 540 m
03:00	03:15	0.25	SURFAC	DRILL	TRIP	P	Run in hole
03:15	03:30	0.25	SURFAC	DRILL	REAM	P	Ream & clean from 585 m to 601 m
03:30	05:30	2.00	SURFAC	DRILL	CIRC	P	Circulate & condition hole
05:30	07:45	2.25	SURFAC	DRILL	TRIP	P	Pull out of hole to log flow checks @ 599 m 556 m
07:45	08:00	0.25	SURFAC	DRILL	SFTY	P	Crew hand over meeting
08:00	08:45	0.75	SURFAC	DRILL	TRIP	P	Trip out of hole lay down 9 inc DC flow check @ OOH reviewed jsa#159 Lay down DC
08:45	09:00	0.25	SURFAC	RIGMNT	SVRG	P	Rig service crown saver operating properly
09:00	09:15	0.25	SURFAC	DRILL	SFTY	P	Safety meeting with Schlumberger wire line reviewed jsa#151 rig up to and log well
09:15	14:00	4.75	SURFAC	DRILL	ELOG	P	Wire line log run #1 with Schlumberger on bottom @10:45 depth 601.5m tools ran ATI,DSI,GPIT,PPC NEB follow up inspection enviromental and regulatory
14:00	14:15	0.25	SURFAC	DRILL	SFTY	P	Safety meeting with hallmark tong hand reviewed jsa#97 install shoe and float and run csg
14:15	16:00	1.75	SURFAC	CASING	RNCS	P	Rig up to run casing
16:00	16:15	0.25	SURFAC	RIGMNT	SVRG	P	Rig service
16:15	23:00	6.75	SURFAC	CASING	RNCS	P	Ran 244.5mm 59.53kg/m J-55 casing as follows, guide shoe, float collar, 1 joint casing, float collar, 46 joints casing, Total length 598.86m, Landed @ 598m
23:00	00:00	1.00	SURFAC	DRILL	CIRC	P	Circulate casing, condition hole.

Fluid / Mud Checks: Mud Engineer: Tri Pham							
Time 16:15	Depth (mKB) 591.00	Density (kg/m³) 1150.0	Funnel Viscosity (s/L) 110	pH 9.0	PV Override (cp) 30.0	YP Override (Pa) 17.5	
Low Gravity Solids (%) 4.4	MBT (kg/m³) 63	Oil Water Ratio	Chlorides (mg/L) 320	Calcium (mg/L) 60	Lime (kg/m³)	Potassium (mg/L)	
Electric Stab (V)	ECD - Manual Entry (...) 1204.0	Sand (%)	Solids, Corr. (%) 4.8	T (fl) (°C) 22	HTHP Pressure (kPa)	HTHP Filt (mL/30min)	
Mud Lost to Surface (m³)			Mud Lost to Hole (m³)		Daily Mud Cost 409.30		
Cum Mud Lost to Surface (m³) 7.00			Cum Mud Lost to Hole (m³)		Cumulative Mud Cost 23,597.98		

Hazard IDs, Near Misses & PJHAs
Days Since Lost Time Incident (days) 387.00 Days Since Recordable Incident (days) 387.00

Comment
"OBSERVATION: Picking up gel bags always use proper lifting techniques to prevent strains and potential injury. Lift with knees not your back.
OBSERVER: Motorman DATE NOTED: 03/02/13"



Daily Drilling
COPRC MIRROR LAKE N-20 65-00 126-45
Rig: Beaver Drilling Ltd. 2

Report Date: 3/2/2013
Report #: 10
Depth Progress: 0.00 m
Depth End: 1.00 mKB
Rig Release Date:

Last BOP Drill

Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date

Safety Incidents

Time	Comment	Type

Drill Strings: 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)		Rotating Hook Load (maximum) (daN)	
Depth In (mKB)		Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled ...	Job Drill Hrs (hrs)	Total Drill Hrs (hrs)

Comment

Drill String Components

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

Drilling Parameters:

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

Hydraulic Calculations

Bit Hydraulic Pow...	HP/Area (kW/mm²)	% P @ bit (%)	Jet Vel (m/s)	Bit dP (kPa)	Ann. dP (kPa)	Mud Density (kg/m³)	ECD End (kg/m³)
Drill String Volume (...)	Bit to Shoe Volume (...)	Shoe to Top of Casin...	Min Casing AV (m/min)	Max Casing AV (m/min)	Min Open Hole AV (m...	Max Open Hole AV (...)	

Error

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

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

Pump Checks

Date	Depth (mKB)	Q (m³/min)	Pres (kPa)	Strokes (spm)
2/28/2013 23:45	474.00	1.271	5,800	130
3/1/2013 23:45	601.00	1.124	5,800	115

Pump Operations

Start Date	End Date	Liner Size (mm)	P (max) (kPa)	Vol/Stk OR (m³/stk)
1/29/2013		140.0		

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

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

Pump Checks

Date	Depth (mKB)	Q (m³/min)	Pres (kPa)	Strokes (spm)
2/28/2013 23:45	474.00	1.271	5,800	130
3/1/2013 23:45	601.00	1.124	5,800	115

Pump Operations

Start Date	End Date	Liner Size (mm)	P (max) (kPa)	Vol/Stk OR (m³/stk)
1/29/2013		140.0		
2/5/2013		140.0		

Shaker Screens

Description	Make	Model	Deck No.	Start Date	End Date	Screen No.	Scr Sz X	Scr Sz Y
1	NOV	KING COBRA	2	2/25/2013		1	84	84

Centrifuges/Cyclones: HGS Centrifuge, Brandt, 4000

Number	Make	Model	Diameter (mm)
1	Brandt	4000	

Centrifuge/Cyclone Checks

Date	Hrs (hrs)	RPM (rpm)	Dens OF (kg/m³)	Q (ovrflw) (L/min)	Dens UF (kg/m³)	Q (undrflw) (L/min)

Fluid / Mud Additive Amounts

Description	Consumed	Cost	Size	Units
FEDERAL GEL - 40KG	4.0	10.890		sks
XCD POLYMER - 25KG	1.0	365.740		sks

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)
Little Bear	20.00