

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/1/2014  
Report #: 24  
Depth Progress: 94.00m  
Depth End: 490.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

/UWI 300E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470					
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013		Days From Spud (days) 4.73			
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00		End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes	
Daily Cost Total (Cost) 75,264.33		Cumulative Cost (Cost) 2,135,131.45		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817		Estimated Days 34.19	
Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB)		Head Count 49.0		Personnel Total Hours (hr) 560.00		Cum Personnel Total Hours (hr) 21,401.00			
Avg Connection Gas		Avg Background Gas		Avg Trip Gas		Max H2S (ppm)					
Road Condition Ice/Snow		Weather Windy		Temperature (°C)		Wind -34 NW 20 kms					

Ops and Depth @ Morning Report  
Drill 311mm surface hole to 542m. Last survey at 508m was 0.7°.

Last 24hr Summary  
No incidents or accidents. 7 - HID, 0 - OBS and 0 - ASA (all closed out)

Wiper trip at 396m, back ream through tight spots. Drill 311mm surface hole from 396m to 490m with accumulated wireline surveys, rig services, connections and circulation times. Last survey at 508m was 0.7°.

24hr Forecast  
Drill 311mm surface hole with accumulated wireline surveys, rig services, connections and circulation times. Wiper trip at 590m+/- (strap out). Drill to 603m TD.

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  
Conductor, 20.00mKB

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	01:30	1.50	SURFAC	DRILL	WPRT	P		396.00	396.00	Trip out of hole back ream from 359m to 321m & clean up hole	
01:30	01:45	0.25	SURFAC	RIGMNT	SVRG	P		396.00	396.00	Rig service function test crown saver	
01:45	03:30	1.75	SURFAC	RIGMNT	RGRP	T	Rig	396.00	396.00	Replace broken fan belts in HPU	
03:30	06:30	3.00	SURFAC	DRILL	WPRT	P		396.00	396.00	Trip out of hole back ream from 321m to 120m circ hole clean	
06:30	07:30	1.00	SURFAC	DRILL	DRLG	P		396.00	396.00	Circulate pull 4" bag out of rotating head	
07:30	08:00	0.50	SURFAC	DRILL	SFTY	P		396.00	396.00	Crew hand over meeting with rig crews, rig manager, Conoco reps	
08:00	08:15	0.25	SURFAC	RIGMNT	SVRG	P		396.00	396.00	Rig service crown saver operating properly	
08:15	10:30	2.25	SURFAC	DRILL	WPRT	P		396.00	396.00	Wiper trip out of hole pump and back ream to 60m	
10:30	10:45	0.25	SURFAC	RIGMNT	SVRG	P		396.00	396.00	Check bit, Clean and prepare floor to trip in	
10:45	11:00	0.25	SURFAC	DRILL	WPRT	P		396.00	396.00	Trip in the hole to 30m	
11:00	11:15	0.25	SURFAC	RIGMNT	SVRG	P		396.00	396.00	Install 4inc bag into rotating head	
11:15	13:00	1.75	SURFAC	DRILL	WPRT	P		396.00	396.00	Wiper trip into the hole to 376m	
13:00	14:30	1.50	SURFAC	DRILL	CIRC	P		396.00	396.00	Ream tight spot at 377m and reamed to bottom	
14:30	16:00	1.50	SURFAC	DRILL	DRLG	P		396.00	415.00	Rotary drill 311mm hole from 396m to 415m	
16:00	16:15	0.25	SURFAC	RIGMNT	SVRG	P		415.00	415.00	Rig service crown saver operating properly	
16:15	19:00	2.75	SURFAC	DRILL	DRLG	P		415.00	433.00	Rotary drill 311mm hole from 415m to 433m	
19:00	19:15	0.25	SURFAC	DRILL	SFTY	P		433.00	433.00	Crew hand over meeting with rig crews, rig manager, Conoco reps	
19:15	23:15	4.00	SURFAC	DRILL	DRLG	P		433.00	490.00	Rotary drill 311mm hole from 433m to 490m	
23:15	00:00	0.75	SURFAC	DRILL	SRVY	P		490.00	490.00	Accumulated time for surveys	

Fluid/Mud Chks: Mud Engineer: Ed Thompson											
Time 15:30	Depth (mKB) 415.00	Density (kg/m³) 1,160.0	Funnel Viscosity (s/L) 42	pH 8.0	PV Override (Pa·s) 8.0	YP Override (Pa) 3.0					
Low Gravity Solids (%) 9.8	MBT (kg/m³)	Oil Water Ratio	Chlorides (mg/L) 2,100	Calcium (mg/L) 120	Lime (kg/m³)	Potassium (mg/L)					
Electric Stab (V)	ECD - Manual Entry (k... 1,176.0	Sand (%) 0.0	Solids, Corr. (%) 10.0	T Flowline (°C) 31	HTHP Pressure (kPa)	HTHP Filtrate (mL/30...					
API Filtrate (mL/30min) 11.0		Mud Lost to Surface (m³)		Mud Lost to Hole (m³)		Daily Mud Field Est (Cost) 29.80					
Cum Mud Lost to Surface (m³)		Cum Mud Lost to Hole (m³)		Cumulative Mud Cost (Cost) 2,485.08							

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/1/2014  
Report #: 24  
Depth Progress: 94.00m  
Depth End: 490.00mKB  
Rig Release Date: 1/23/2014

### BOP Drill

Type BOP Drill	Days Last Chk (...) 4	Last Date 12/28/2013	Days Until Next... -1	Next Check Date 12/31/2013
Days Since Lost Time Incident (days) 812.00		Days Since Recordable Incident (days) 812.00		

### Safety Incidents

Date	Com	Category

### Drill String: BHA # 1

Bit Run 1A	Drill Bit 311.0mm, J&L, B181332	Length (m) 0.34	IADC Bit Dull 1-2-NO-S-1-0-WT-TD	TFA (incl Noz) (mm²) 722	BHA ROP (m/hr) 12.1
Nozzles (mm) 15.9/15.9/15.9/12.7	String Length (m) 603.00	OD (mm) 311.0	Max Rotating Hook Load (daN) 55,000		
Depth In (mKB) 0.00	Depth Out (mKB) 603.00	Avg ROP (m/hr) 12.1	Depth This Job (m) 603.00	Total Depth Drilled b... 603.00	Job Drill Hrs (hr) 50.00
				Total Drill Hrs (hr) 50.00	

Comment  
Rotary drill 311mm slick

### Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
4" HW	70.0	132.0	51	464.80	603.00
X/O 4" H-90	62.0	162.0	1	0.80	138.20
6" D.C	60.0	160.0	9	84.00	137.40
Jar	76.0	157.0	1	4.73	53.40
6" D.C	60.0	160.0	3	27.90	48.67
Bell sub	69.0	232.0	1	0.66	20.77
9" D.C	71.0	233.0	2	18.50	20.11
Bit sub	70.0	255.0	1	0.93	1.61
311mm BIT	72.0	311.0	1	0.34	0.68

### Drilling Parameter: 415.00 - 490.00 mKB

Depth (m) 490.00	Cum Drill... 34.25	Int ROP (...) 11.1	Flow Rate... 2.600	WOB (daN) 15,000	RPM (r... 120	SPP (kPa) 14,500	Drill Str Wt (d... 54,000	SO Str Wt (daN) 53,000	PU Str Wt (daN) 56,000	Off-Btm Str W... 54,000	Drill Tq 6,600.0
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### Hydraulic Calculations

Bit Hydraulic Powe... 101.5	HP/Area (kW/mm²) 0.00134	% P @ bit (%) 16	Bit Jet Velocity (m/s) 60.0	Bit dP (kPa) 2,342.1	P Drop Annular (kPa) 27.1	Mud Density (kg/m³) 1,160.0	ECD End (kg/m³) 1,165.6
Drill String Volume (m³) 1.77	Bit to Shoe Volume (m³) 27.89	Vol Shoe to Top (m³) 3.43	Min Casing AV (m/min) 15.1	Max Casing AV (m/min) 15.1	Min Open Hole AV (m/... 41.7	Max Open Hole AV (m/... 104.4	

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)
1/20/2014 00:00	2,909.00	0.499	5,150	64
1/20/2014 00:00	2,909.00	1.014	17,500	130

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		127.0		

### Filter Screens

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

### Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

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

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/1/2014  
Report #: 24  
Depth Progress: 94.00m  
Depth End: 490.00mKB  
Rig Release Date: 1/23/2014

### Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
Sawdust	10.0	2.980	7.3	SX

### Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1/1/2014	396.00	0.60	0.00	395.98	3.22	3.22	0.00	1.56	0.33
1/1/2014	433.00	0.60	0.00	432.98	3.61	3.61	0.00	1.75	0.00
1/1/2014	461.00	0.60	0.00	460.98	3.90	3.90	0.00	1.89	0.00
1/1/2014	489.00	0.50	0.00	488.98	4.17	4.17	0.00	2.02	0.11

### Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/2/2014  
Report #: 25  
Depth Progress: 110.00m  
Depth End: 600.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

/ UWI 300E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013	
Days From Spud (days) 5.73							
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00		End Date 1/23/2014 23:59	
Final Job Status DRILLED		Final Report? Yes					
Daily Cost Total (Cost) 98,248.78		Cumulative Cost (Cost) 2,233,380.23		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00	
AFE / RFE / Maint.# 10351817		Estimated Days 34.19					
Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB)		Head Count 47.0		Personnel Total Hours (hr) 536.00	
Cum Personnel Total Hours (hr) 21,937.00							
Avg Connection Gas		Avg Background Gas		Avg Trip Gas		Max H2S (ppm)	
Road Condition Ice/Snow		Weather Windy		Temperature (°C) -28		Wind NW 20 kms	
Ops and Depth @ Morning Report Ream/wash to bottom from 569m. Last survey at 571m was 0.5°.							Wellbore Original Hole

### Last 24hr Summary

No incidents or accidents. 10 - HID, 0 - OBS and 0 - ASA (all closed out)

Drill 311mm surface hole from 490m to 592m with accumulated wireline surveys, rig services, connections and circulation times. Wiper trip at 592m, back ream through tight spots. Last survey at 571m was 0.5°.

### 24hr Forecast

Drill to 603m (TD). Pull out of the hole (Backream through tight spots). Lay down 6" and 9" drill collars, rig up power tongs and run 244.5mm surface casing.

### 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

Conductor, 20.00mKB

### 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	00:15	0.25	SURFAC	RIGMNT	SVRG	P		490.00	490.00	Rig service function test crown saver
00:15	07:15	7.00	SURFAC	DRILL	DRLG	P		490.00	555.00	Rotary drill 311 mm hole from 490 m to 555m
07:15	07:45	0.50	SURFAC	DRILL	SRVY	P		555.00	555.00	Accumulated time for surveys & connections
07:45	08:00	0.25	SURFAC	DRILL	SFTY	P		555.00	555.00	Crew hand over meeting with rig crews, rig manager, Conoco reps
08:00	09:15	1.25	SURFAC	DRILL	DRLG	P		555.00	564.00	Rotary drill 311mm hole from 555m to 564m
09:15	09:30	0.25	SURFAC	RIGMNT	SVRG	P		564.00	564.00	Rig service crown saver operating properly
09:30	15:15	5.75	SURFAC	DRILL	DRLG	P		564.00	592.00	Rotary drill 311mm hole from 564m to 592m
15:15	16:00	0.75	SURFAC	DRILL	CIRC	P		592.00	592.00	Circulate hole clean to wiper trip
16:00	16:15	0.25	SURFAC	RIGMNT	SVRG	P		592.00	592.00	Rig service function test crown saver and motor kills
16:15	19:00	2.75	SURFAC	DRILL	WPRT	P		592.00	592.00	Wiper trip out and pump and back ream
19:00	19:15	0.25	SURFAC	DRILL	SFTY	P		592.00	592.00	Crew hand over meeting with rig crews, rig manager, Conoco reps
19:15	00:00	4.75	SURFAC	DRILL	WPRT	P		592.00	592.00	Trip out of hole back ream from 462m to 223m. Strap out of hole, Drilling tally = 592.66m. Strap tally = 592.76m. Diff. = 0.10m.

### Fluid/Mud Chks: Mud Engineer: Ed Thompson

Time 14:15	Depth (mKB) 589.00	Density (kg/m³) 1,170.0	Funnel Viscosity (s/L) 80	pH 8.0	PV Override (Pa·s) 8.0	YP Override (Pa) 3.0
Low Gravity Solids (%) 9.8	MBT (kg/m³)	Oil Water Ratio	Chlorides (mg/L) 2,100	Calcium (mg/L) 120	Lime (kg/m³)	Potassium (mg/L)
Electric Stab (V)	ECD - Manual Entry (k... 1,176.0	Sand (%) 0.0	Solids, Corr. (%) 10.0	T Flowline (°C) 31	HTHP Pressure (kPa)	HTHP Filtrate (mL/30...
API Filtrate (mL/30min) 11.0		Mud Lost to Surface (m³)		Mud Lost to Hole (m³)		Daily Mud Field Est (Cost) 1,903.75
Cum Mud Lost to Surface (m³)		Cum Mud Lost to Hole (m³)		Cumulative Mud Cost (Cost) 4,388.83		

### Last BOP Drill

Type BOP Drill	Days Last Chk (...) 5	Last Date 12/28/2013	Days Until Next... -2	Next Check Date 12/31/2013
Since Lost Time Incident (days) 813.00	Days Since Recordable Incident (days) 813.00			

### Safety Incidents

Date	Com	Category

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/2/2014  
Report #: 25  
Depth Progress: 110.00m  
Depth End: 600.00mKB  
Rig Release Date: 1/23/2014

### String: BHA # 1

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)
1A	311.0mm, J&L, B181332	0.34	1-2-NO-S-1-0-WT-TD	722	12.1
Nozzles (mm)	String Length (m)	OD (mm)	Max Rotating Hook Load (daN)		
15.9/15.9/15.9/12.7	603.00	311.0	55,000		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled b...	Job Drill Hrs (hr)
0.00	603.00	12.1	603.00	603.00	50.00
					Total Drill Hrs (hr)
					50.00

Comment  
Rotary drill 311mm slick

### Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
4" HW	70.0	132.0	51	464.80	603.00
X/O 4" H-90	62.0	162.0	1	0.80	138.20
6" D.C	60.0	160.0	9	84.00	137.40
Jar	76.0	157.0	1	4.73	53.40
6" D.C	60.0	160.0	3	27.90	48.67
Bell sub	69.0	232.0	1	0.66	20.77
9" D.C	71.0	233.0	2	18.50	20.11
Bit sub	70.0	255.0	1	0.93	1.61
311mm BIT	72.0	311.0	1	0.34	0.68

### Drilling Parameter: 555.00 - 592.00 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
592.00	48.25	5.3	2.300	16,000	110		15,100	52,000	49,000	55,000	4,820.0

### Hydraulic Calculations

Bit Hydraulic Power (kW)	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)
70.9	0.00093	12	53.1	1,848.6	26.1	1,170.0	1,174.5
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/min)	Max Open Hole AV (m/min)	
2.17	34.24	3.43	13.4	13.4	36.9	92.4	

Error

### 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)
1/20/2014 00:00	2,909.00	0.499	5,150	64
1/20/2014 00:00	2,909.00	1.014	17,500	130

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		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)
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)
1/20/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

Number	Make	Model	Diameter (mm)
2	BOS Solutions	5500	

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/2/2014  
Report #: 25  
Depth Progress: 110.00m  
Depth End: 600.00mKB  
Rig Release Date: 1/23/2014

### Centrifuge/Cyclone Checks

Date	Hrs (hr)	RPM (rpm)	Dens OF (kg/m³)	Q OF (L/min)	Dens UF (kg/m³)	Q UF (L/min)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
Gel	58.0	7.200	40.0	SX
Kelzan	4.0	360.450	25.0	SX
Sawdust	10.0	2.980	7.3	SX
Soda Ash	1.0	14.550	22.68	SX

### Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1/2/2014	508.00	0.70	0.00	507.98	4.37	4.37	0.00	2.12	0.32
1/2/2014	544.00	0.40	0.00	543.97	4.71	4.71	0.00	2.29	0.25
1/2/2014	571.00	0.50	0.00	570.97	4.93	4.93	0.00	2.39	0.11

### Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/3/2014  
Report #: 26  
Depth Progress: 11.00m  
Depth End: 603.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

/UWI 000E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470					
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013		Days From Spud (days) 6.73			
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00		End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes	
Daily Cost Total (Cost) 76,202.91		Cumulative Cost (Cost) 2,309,583.14		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817		Estimated Days 34.19	
Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB)		Head Count 47.0		Personnel Total Hours (hr) 536.00		Cum Personnel Total Hours (hr) 22,473.00			
Avg Connection Gas			Avg Background Gas			Avg Trip Gas			Max H2S (ppm)		
Road Condition Ice/Snow			Weather Clear			Temperature (°C) -42			Wind NW 10 kms.		
Ops and Depth @ Morning Report Cement 603m (TD) of 244.5mm casing.									Wellbore Original Hole		

### Last 24hr Summary

No incidents or accidents. 13 - HID, 1 - OBS and 0 - ASA (all closed out)

Wiper trip at 592m, ream through tight spots. Drill to 603m (TD), work drill string and circulate hole clean. Pull out of the hole, lay down 6-1/2" and 9" drill collars, rig up power tongs and run 244.5mm surface casing.

### 24hr Forecast

Cement 244.5mm surface casing, nipple down diverter, weld on casing bowl, nipple up BOP and pressure test manifold and BOP components.

### 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

Conductor, 20.00mKB

### 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	01:30	1.50	SURFAC	DRILL	WPRT	P		592.00	592.00	Trip out of hole & strap out
01:30	01:45	0.25	SURFAC	RIGMNT	SVRG	P		592.00	592.00	Rig service function test crown saver
01:45	04:45	3.00	SURFAC	DRILL	WPRT	P		592.00	592.00	Trip in hole, hit bridge at 336 m clean up hole from 336 m to 345 m and run in hole
04:45	06:30	1.75	SURFAC	DRILL	REAM	P		592.00	592.00	Ream and clean to bottom from 541 m to 592 m
06:30	07:45	1.25	SURFAC	DRILL	DRLG	P		592.00	600.00	Rotary drill 311mm hole from 592m to 600m
07:45	08:00	0.25	SURFAC	DRILL	SFTY	P		600.00	600.00	Crew hand over meeting with rig crews, rig manager, Conoco reps
08:00	08:30	0.50	SURFAC	DRILL	DRLG	P		600.00	603.00	Rotary drill 311mm hole from 600m to 603m
08:30	08:45	0.25	SURFAC	RIGMNT	SVRG	P		603.00	603.00	Rig service function test rig smart function test crown saver
08:45	09:30	0.75	SURFAC	DRILL	CIRC	P		603.00	603.00	Circ and condition mud and prepare to come out of hole at surface
09:30	11:15	1.75	SURFAC	DRILL	TRIP	P		603.00	603.00	Trip out of hole to 126m, drill collars, to run casing
11:15	11:30	0.25	SURFAC	DRILL	SFTY	P		603.00	603.00	Safety meeting reviewed jsa#161 lay down drill collars
11:30	13:30	2.00	SURFAC	DRILL	PULD	P		603.00	603.00	Lay down BHA, 6" and 9" drill collars
13:30	14:00	0.50	SURFAC	RIGMNT	SVRG	P		603.00	603.00	Clean and prepare floor to run csg
14:00	16:00	2.00	SURFAC	CASING	RNCS	P		603.00	603.00	Rig up power tongs & laydown truck to run 244.5mm surface casing/rig out lay down truck due to broken hyd ram
16:00	16:15	0.25	SURFAC	RIGMNT	SVRG	P		603.00	603.00	Rig service, function, crown saver, operating properly
16:15	16:30	0.25	SURFAC	CASING	SFTY	P		603.00	603.00	Safety meeting with Hallmark power tongs Reviewed jsa#97 Rig up power tongs, jsa#99 install, 244.5mm float and shoe and run casing
16:30	19:00	2.50	SURFAC	CASING	RNCS	P		603.00	603.00	Run surface, 244.5mm, 53.6kg/m, K-55, LT&C casing with hallmark power tongs
19:00	19:15	0.25	SURFAC	CASING	SFTY	P		603.00	603.00	Crew hand over meeting with rig crews, rig manager, Conoco reps
19:15	19:30	0.25	SURFAC	CASING	SFTY	P		603.00	603.00	Safety meeting with night crew, jsa #99, running casing
19:30	00:00	4.50	SURFAC	CASING	RNCS	P		603.00	603.00	Run 244.5mm, 53.6kg/m, K-55, LT@C casing, with Hallmark power tongs

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/3/2014  
Report #: 26  
Depth Progress: 11.00m  
Depth End: 603.00mKB  
Rig Release Date: 1/23/2014

d/Mud Chks: Mud Engineer: Ed Thompson

Time	08:00	Depth (mKB)	603.00	Density (kg/m³)	1,210.0	Funnel Viscosity (s/L)	95	pH	8.5	PV Override (Pa·s)	27.0	YP Override (Pa)	11.5
Low Gravity Solids (%)	12.9	MBT (kg/m³)		Oil Water Ratio		Chlorides (mg/L)	2,300	Calcium (mg/L)	120	Lime (kg/m³)		Potassium (mg/L)	
Electric Stab (V)		ECD - Manual Entry (kPa)	1,240.0	Sand (%)	0.0	Solids, Corr. (%)	13.1	T Flowline (°C)	37	HTHP Pressure (kPa)		HTHP Filtrate (mL/30min)	
API Filtrate (mL/30min)	9.0	Mud Lost to Surface (m³)		Mud Lost to Hole (m³)		Daily Mud Field Est (Cost)							17.88
Cum Mud Lost to Surface (m³)		Cum Mud Lost to Hole (m³)		Cumulative Mud Cost (Cost)									4,406.71

### Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	6	Last Date	12/28/2013	Days Until Next...	-3	Next Check Date	12/31/2013
Days Since Last Time Incident (days)		Days Since Recordable Incident (days)							
		814.00							814.00

### Safety Incidents

Date	Com	Category

### Drill String: BHA # 1

Bit Run	1A	Drill Bit	311.0mm, J&L, B181332	Length (m)	0.34	IADC Bit Dull	1-2-NO-S-1-0-WT-TD	TFA (incl Noz) (mm²)	722	BHA ROP (m/hr)	12.1
Nozzles (mm)	15.9/15.9/15.9/12.7	String Length (m)	603.00	OD (mm)	311.0	Max Rotating Hook Load (daN)				55,000	
Depth In (mKB)	0.00	Depth Out (mKB)	603.00	Avg ROP (m/hr)	12.1	Depth This Job (m)	603.00	Total Depth Drilled b...	603.00	Job Drill Hrs (hr)	50.00
										Total Drill Hrs (hr)	50.00

Comment  
Rotary drill 311mm slick

### Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
4" HW	70.0	132.0	51	464.80	603.00
4" H-90	62.0	162.0	1	0.80	138.20
D.C	60.0	160.0	9	84.00	137.40
Jar	76.0	157.0	1	4.73	53.40
6" D.C	60.0	160.0	3	27.90	48.67
Bell sub	69.0	232.0	1	0.66	20.77
9" D.C	71.0	233.0	2	18.50	20.11
Bit sub	70.0	255.0	1	0.93	1.61
311mm BIT	72.0	311.0	1	0.34	0.68

### Drilling Parameter: 600.00 - 603.00 mKB

Cum Depth (m)	603.00	Cum Drill...	50.00	Int ROP (...)	6.0	Flow Rate...	2.200	WOB (daN)	17,000	RPM (r...)	110	SPP (kPa)	15,000	Drill Str Wt (d...)	55,000	SO Str Wt (daN)	53,000	PU Str Wt (daN)	57,000	Off-Btm Str W...	55,000	Drill Tq	8,800.0
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### Hydraulic Calculations

Bit Hydraulic Powe...	64.1	HP/Area (kW/mm²)	0.00084	% P @ bit (%)	12	Bit Jet Velocity (m/s)	50.8	Bit dP (kPa)	1,749.1	P Drop Annular (kPa)	143.0	Mud Density (kg/m³)	1,210.0	ECD End (kg/m³)	1,234.2
Drill String Volume (m³)	2.21	Bit to Shoe Volume (m³)	34.93	Vol Shoe to Top (m³)	3.43	Min Casing AV (m/min)	12.8	Max Casing AV (m/min)	12.8	Min Open Hole AV (m/...	35.3	Max Open Hole AV (m/...	88.4		

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)
1/20/2014 00:00		2,909.00	0.499	5,150
1/20/2014 00:00		2,909.00	1.014	17,500

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	127.0		

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

p Number		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)
1/19/2014 00:00		2,513.00	0.647	6,855
1/19/2014 00:00		2,513.00	0.897	15,000



# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/3/2014  
Report #: 26  
Depth Progress: 11.00m  
Depth End: 603.00mKB  
Rig Release Date: 1/23/2014

### Drilling Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		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)
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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### 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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
Sawdust	6.0	2.980	7.3	SX

### 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	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
tin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/4/2014  
Report #: 27  
Depth Progress: 0.00m  
Depth End: 603.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

UWI 00JE7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013	
Days From Spud (days) 7.73		Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00	
End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes		Daily Cost Total (Cost) 329,910.69	
Cumulative Cost (Cost) 2,639,493.83		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817	
Estimated Days 34.19		Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB) 2,881.00		Head Count 47.0	
Personnel Total Hours (hr) 536.00		Cum Personnel Total Hours (hr) 23,009.00		Avg Connection Gas		Avg Background Gas	
Avg Trip Gas		Max H2S (ppm)		Road Condition Ice/Snow		Weather Windy	
Temperature (°C) -34		Wind SW		Ops and Depth @ Morning Report Pressure test manifold.		Wellbore Original Hole	

**Last 24hr Summary**  
No incidents or accidents. 12 - HID, 1 - OBS and 0 - ASA (all closed out)

Run 244.5mm surface casing, tag bottom at 603m, circulate and clean the hole. Cement 244.5mm surface casing: full returns, 8.0m3 of good cement returns, plug down at 7:45hrs, pressure test surface casing to 11,500kPa, pressure held ok. Rig out cementers, wait on cement and clean substructure, nipple down diverter, weld on casing bowl, nipple up BOP, clean mud tanks, strip surface mud using the BOS III flocking system, transfer surface mud and clean water to 400bbl tanks to later run water through dehydrator.

**24hr Forecast**  
Pressure test manifold and BOP components, conduct an accumulator function test. Pick and make up 222mm directional BHA and run in the 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**  
Surface, 603.00mKB

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	02:30	2.50	SURFAC	CASING	RNCS	P		603.00	603.00	Run 244.5mm, 53.57kg/m, K-55, LTC surface casing from 603m to 5.20m with Hallmark power tongs. Total length of 244.5mm surface casing: 603.83m. Landed at 603m, tagged bottom at 603m, float at 589.01m.	
02:30	02:45	0.25	SURFAC	RIGMNT	SVRG	P		603.00	603.00	Rig service function test crown saver	
02:45	05:00	2.25	SURFAC	CASING	CIRC	P		603.00	603.00	Circulate & condition mud & hole	
05:00	05:15	0.25	SURFAC	CEMENT	SFTY	P		603.00	603.00	Hold safety meeting with cementers and everyone on location prior to cementing 244.5mm surface casing.	
05:15	06:30	1.25	SURFAC	CEMENT	CMNT	P		603.00	603.00	Rig up Schlumberger cementers to cement 244.5mm surface casing, pump 5m3 of 1000kg/m3 fresh water, stop and pressure test line to 21,000kPa (held OK), bleed off pressure.	
06:30	07:00	0.50	SURFAC	CEMENT	CMNT	P		603.00	603.00	Then pump 5m3 of 1300kg/m3 MudPush II pre-flush spacer and then pump 32 tonnes/29.5m3 (50% excess) of RFC 1740 cement with 0.2% Anti-Foam + 1.0% CaCl2 + 1.1% Low Temp Fluid Loss + 0.6% Dispersant from 603m to 5.20m. Drop plug and displace 23.8m3 of fresh water.	
07:00	07:30	0.50	SURFAC	CEMENT	CMNT	P		603.00	603.00	Bump plug 3,500kPa over final circulating pressure of 6,500kPa at 7:45hrs on January 4th 2014, bleed pressure and check floats (holding OK). Pressure test casing to 11,500kPa for 10 minutes (holding OK).	
07:30	07:45	0.25	SURFAC	CEMENT	CMNT	P		603.00	603.00	Bleed pressure, flush diverter and rig out cementers. Good cement returns: 8.0m3.	
07:45	08:00	0.25	SURFAC	DRILL	SFTY	P		603.00	603.00	Crew hand over meeting with rig crews, rig manager, Conoco reps	
08:00	08:30	0.50	SURFAC	CEMENT	CMNT	P		603.00	603.00	flush stack	
08:30	12:00	3.50	SURFAC	CEMENT	CMNT	P		603.00	603.00	Wait on cement for 4 hrs	
12:00	14:00	2.00	SURFAC	WHDBOP	NUND	P		603.00	603.00	Cut conductor, cut surface casing, tear out diverter and dress casing for casing bowl	
14:00	16:00	2.00	SURFAC	WHDBOP	NUND	P		603.00	603.00	Install and weld on casing bowl	
16:00	16:15	0.25	SURFAC	RIGMNT	SVRG	P		603.00	603.00	Rig service function test crown saver & motor kills	
16:15	18:30	2.25	SURFAC	WHDBOP	NUND	P		603.00	603.00	Install and weld on casing bowl	
18:30	18:45	0.25	SURFAC	WHDBOP	NUND	P		603.00	603.00	Wait on bowl to cool, hook up flair lines and strip back mud	
18:45	19:00	0.25	SURFAC	WHDBOP	SFTY	P		603.00	603.00	Crew handover meeting with both crews and conoco reps	
19:00	21:45	2.75	SURFAC	WHDBOP	NUND	P		603.00	603.00	Wait on bowl to cool, hook up flair lines and strip back mud	

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/4/2014  
Report #: 27  
Depth Progress: 0.00m  
Depth End: 603.00mKB  
Rig Release Date: 1/23/2014

### e 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
21:45	00:00	2.25	SURFAC	WHDBOP	NUND	P		603.00	603.00	Pick up and nipple up multi-bowl, install and nipple up BOP

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

Time	05:00	Depth (mKB)	603.00	Density (kg/m³)	1,200.0	Funnel Viscosity (s/L)	53	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)					128.10
Cum Mud Lost to Surface (m³)		Cum Mud Lost to Hole (m³)		Cumulative Mud Cost (Cost)							4,534.81

### Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	7	Last Date	12/28/2013	Days Until Next...	-4	Next Check Date	12/31/2013
Days Since Lost Time Incident (days)		Days Since Recordable Incident (days)							
			815.00						815.00

### 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

### ...l 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)
1/20/2014 00:00	2,909.00	0.499	5,150	64
1/20/2014 00:00	2,909.00	1.014	17,500	130

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		127.0		

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/4/2014  
Report #: 27  
Depth Progress: 0.00m  
Depth End: 603.00mKB  
Rig Release Date: 1/23/2014

### Filter 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)
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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### 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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
Desco	2.0	64.050	11.34	SX

### 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	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/5/2014  
Report #: 28  
Depth Progress: 0.00m  
Depth End: 603.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

/UWI 000E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470					
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013		Days From Spud (days) 8.73			
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00		End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes	
Daily Cost Total (Cost) 152,793.03		Cumulative Cost (Cost) 2,792,286.86		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817		Estimated Days 34.19	
Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB)		Head Count 47.0		Personnel Total Hours (hr) 536.00		Cum Personnel Total Hours (hr) 23,545.00			
Avg Connection Gas		Avg Background Gas			Avg Trip Gas			Max H2S (ppm)			
Road Condition Ice/Snow		Weather Snowing			Temperature (°C) -25			Wind NW			
Ops and Depth @ Morning Report Run in hole with 222mm bit and directional tools to drill out.									Wellbore Original Hole		

### Last 24hr Summary

No incidents or accidents. 8 - HID, 4 - OBS and 0 - ASA (all closed out)

Nipple up BOP, clean mud tanks, strip surface mud using the BOS III flocking system, transfer surface mud and clean water to 400bbl tanks to later run water through dehydrator. Pressure test manifold and BOP components to 1400kPA-low and 20,000kPA-high (Annular: 17,500kPA-high), perform an accumulator function test. Complete rig and pre-drill out inspection. Fill mud tanks with invert. Pick and make up directional BHA and run in the hole.

### 24hr Forecast

Run in the hole, tag cement, displace to invert mud, conduct BOP drill and high angle rescue safety meetings, drill out cement float and shoe. Drill 222mm directional hole with accumulated MWD surveys, rig services, connections and circulation times.

### 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

Surface, 603.00mKB

### 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	00:15	0.25	SURFAC	RIGMNT	SVRG	P		603.00	603.00	Rig service function test, crown saver
00:15	07:45	7.50	SURFAC	WHDBOP	NUND	P		603.00	603.00	Pick up and nipple up multi-bowl, install and nipple up BOP and flare lines
07:45	08:00	0.25	SURFAC	WHDBOP	SFTY	P		603.00	603.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
08:00	08:15	0.25	SURFAC	RIGMNT	SVRG	P		603.00	603.00	Rig service function test motor shut off, ok.
08:15	08:30	0.25	SURFAC	WHDBOP	SFTY	P		603.00	603.00	Safety meeting with Schlumberger pressure testers, rig crew, Conoco rep, prior to rig up
08:30	16:00	7.50	SURFAC	WHDBOP	BOPE	P		603.00	603.00	Pressure test all manifold valves and chocks, low of 1,400kpa, high 21,000kpa with Schlumberger, all manifold valves, all ok.
16:00	16:15	0.25	SURFAC	RIGMNT	SVRG	P		603.00	603.00	Rig service function test, crown saver & motor kills
16:15	19:30	3.25	SURFAC	WHDBOP	BOPE	P		603.00	603.00	Pressure test with schlumberger, BOP stack, HCR valves, kill line, inside BOP, stabbing valve, pipe rams, blind rams at low 1,400kpa., high 21,000kpa., Annular low 1,400kpa., high 17,500kpa. All ok.
19:30	19:45	0.25	SURFAC	WHDBOP	SFTY	P		603.00	603.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
19:45	23:15	3.50	SURFAC	WHDBOP	BOPE	P		603.00	603.00	Accumulator function test, initial pressure-19,500kpa., function HCR, pipe rams, annular, final pressure-9,000kpa, re-charge pump time 3min. 45sec., prepare floor and directional tools to be picked up, crew hazard hunt and rig inspection, pre-drill out CAODC complete rig inspection, by AD and Conoco rep.
23:15	23:30	0.25	SURFAC	DRILL	SFTY	P		603.00	603.00	Safety meeting with Pathfinder directional hands, rig crew, hoe hand and Conoco rep, on picking up directional tools
23:30	00:00	0.50	SURFAC	DRILL	PULD	P		603.00	603.00	Pick up and make up, 222mm PDC bit, dog sub, directional tools

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/5/2014  
Report #: 28  
Depth Progress: 0.00m  
Depth End: 603.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

d/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	8	12/28/2013	-5	12/31/2013
Days Since Lost Time Incident (days)	816.00	Days Since Recordable Incident (days)	816.00	

### 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)

ling Parameter: <depthstart> - <depthend> mKB

in 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)
1/20/2014 00:00	2,909.00	0.499	5,150	64
1/20/2014 00:00	2,909.00	1.014	17,500	130

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
/2014		127.0		

### Shaker Screens

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



# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/5/2014  
Report #: 28  
Depth Progress: 0.00m  
Depth End: 603.00mKB  
Rig Release Date: 1/23/2014

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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	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	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/6/2014  
Report #: 29  
Depth Progress: 158.00m  
Depth End: 761.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

/UWI 300E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470					
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013		Days From Spud (days) 9.73			
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00		End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes	
Daily Cost Total (Cost) 103,134.43		Cumulative Cost (Cost) 2,895,421.29		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817		Estimated Days 34.19	
Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB)		Head Count 48.0		Personnel Total Hours (hr) 540.00		Cum Personnel Total Hours (hr) 24,085.00			
Avg Connection Gas 125		Avg Background Gas 90		Avg Trip Gas				Max H2S (ppm) 0			
Road Condition Ice/Snow		Weather Windy		Temperature (°C) -24				Wind SE			
Ops and Depth @ Morning Report Drill 222mm intermediate hole at 800m. Last survey at 781m, Inc: 0.71°, Azm: 129.47°.									Wellbore Original Hole		

### Ops and Depth @ Morning Report

Drill 222mm intermediate hole at 800m. Last survey at 781m, Inc: 0.71°, Azm: 129.47°.

### Wellbore

Original Hole

### Last 24hr Summary

No incidents or accidents. 10 - HID, 1 - OBS and 0 - ASA (all closed out)

Complete rig and pre-drill out inspection. Fill mud tanks with invert. Pick and make up directional BHA, run in the hole, tag cement, displace to invert mud, conduct BOP drill and high angle rescue safety meetings, drill out cement float and shoe. Drill 222mm intermediate directional hole from 603m to 761m with accumulated MWD surveys, rig services, connections and circulation times.

### 24hr Forecast

Drill 222mm intermediate directional hole with accumulated MWD surveys, rig services, connections and circulation times.

### 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

Surface, 603.00mKB

### 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
10	03:45	3.75	SURFAC	DRILL	PULD	P		603.00	603.00	Pick up and make up 222mm Ultrerra PDC bit, dog sub, mud motor and Pathfinder directional tools
03:45	04:00	0.25	SURFAC	RIGMNT	SVRG	P		603.00	603.00	Rig service function test hydril 14 sec. function crown saver
04:00	06:45	2.75	SURFAC	DRILL	TRIP	P		603.00	603.00	Run 10 stands of HWDP, in hole, lay down 10 jts of HWDP, & run in 15 stds h.w pick up 8 drill pipe
06:45	07:00	0.25	SURFAC	DRILL	SFTY	P		603.00	603.00	BOP drill with night crew, review warning signs and positions etc.
07:00	07:15	0.25	SURFAC	DRILL	SFTY	P		603.00	603.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
07:15	08:00	0.75	SURFAC	DRILL	SFTY	P		603.00	603.00	Safety meeting and rig inspection, hazard hunt and BOP drill review, with day crew
08:00	09:15	1.25	SURFAC	RIGMNT	SVRG	P		603.00	603.00	Rig service function test rig smart anticollision function test crown saver. Review top drive trouble shooting with top drive hand.
09:15	10:45	1.50	SURFAC	DRILL	PULD	P		603.00	603.00	Pick up drill pipe, run in hole and tag cement
10:45	13:30	2.75	SURFAC	DRILL	CIRC	P		603.00	603.00	Displace 21m3 of water to invert mud system
13:30	14:00	0.50	SURFAC	DRILL	SFTY	P		603.00	603.00	Pre drill out safety meeting held B.O.P drill held well secure in 90 sec crew in positions review stick diagram check manifold alignment Function test motor kills
14:00	15:15	1.25	SURFAC	CEMENT	DRLG	P		603.00	603.00	Drill out cement cement tagged at 586mKB float tagged at 589mKB shoe tagged at 603mKB
15:15	16:00	0.75	INTRM1	DRILL	DRLG	P		603.00	626.00	Drill 222mm intermediate hole with, Ultrerra bit and dog sub, Pathfinder mud motor set at 1.83 deg, 7:8 lobe, 5 stage, 70rpm/m3 from 603mKB to 626mKB
16:00	17:15	1.25	INTRM1	DRILL	DRLG	P		626.00	646.00	Drill 222mm intermediate hole, Ultrerra bit and dog sub, Pathfinder mud motor set at 1.83 deg, 7:8 lobe, 5 stage, 70rpm/m3 from 626mKB to 646mKB
17:15	17:30	0.25	INTRM1	RIGMNT	SVRG	P		646.00	646.00	Rig service function test rig smart anti collision function test crown saver function test pipe rams 9 sec C/O
17:30	19:00	1.50	INTRM1	DRILL	DRLG	P		646.00	665.00	Drill 222mm intermediate hole, Ultrerra bit and dog sub, Pathfinder mud motor set at 1.83 deg, 7:8 lobe, 5 stage, 70rpm/m3 from 646mKB to 665mKB
19:00	19:15	0.25	INTRM1	DRILL	SFTY	P		665.00	665.00	Crew handover meeting conoco reps present



# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/6/2014  
Report #: 29  
Depth Progress: 158.00m  
Depth End: 761.00mKB  
Rig Release Date: 1/23/2014

### 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
19:15	23:15	4.00	INTRM1	DRILL	DRLG	P		665.00	761.00	Drill 222 mm intermedeiate hole, Ultrera bit and dog sub, Pathfinder mud motor set at 1.83 deg, 7:8 lobe, 5 stage, 70rpm/m3 from 665 m to 761 m
23:15	23:30	0.25	INTRM1	DRILL	SRVY	P		761.00	761.00	Directional surveys and connection
23:30	00:00	0.50	INTRM1	DRILL	DRLG	P		761.00	761.00	Changed out liners in pump # 1 from 5 1/2 " to 5 " liners

### Fluid/Mud Chks: Mud Engineer: Corey Clark

Time	16:00	Depth (mKB)	646.00	Density (kg/m³)	950.0	Funnel Viscosity (s/L)	50	pH		PV Override (Pa-s)	0.0	YP Override (Pa)	4.0
Low Gravity Solids (%)	6.9	MBT (kg/m³)		Oil Water Ratio	78/22	Chlorides (mg/L)	114,259	Calcium (mg/L)	39	Lime (kg/m³)	20	Potassium (mg/L)	
Electric Stab (V)	400.0	ECD - Manual Entry (k...)	993.9	Sand (%)	8.0	Solids, Corr. (%)	7.1	T Flowline (°C)	13	HTHP Pressure (kPa)		HTHP Filtrate (mL/30...)	6.0
API Filtrate (mL/30min)		Mud Lost to Surface (m³)		Mud Lost to Hole (m³)	3.00	Daily Mud Field Est (Cost)							3,809.40
Cum Mud Lost to Surface (m³)		Cum Mud Lost to Hole (m³)	3.00	Cumulative Mud Cost (Cost)									8,344.21

### Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	0	Last Date	1/6/2014	Days Until Next...	5	Next Check Date	1/11/2014
Days Since Lost Time Incident (days)		817.00		Days Since Recordable Incident (days)		817.00			

### Safety Incidents

Date	Com	Category

### Drill String: BHA # 2

Bit Run	1	Drill Bit	222.0mm, 616, 21191	Length (m)	0.25	IADC Bit Dull	1-4-CT-G-3-0-WT-BHA	TFA (incl Noz) (mm²)	924	BHA ROP (m/hr)	17.2
es (mm)		String Length (m)	1,599.00	OD (mm)	222.0	Max Rotating Hook Load (daN)				65,000	
Depth In (mKB)	603.00	Depth Out (mKB)	1,588.00	Avg ROP (m/hr)	17.2	Depth This Job (m)	985.00	Total Depth Drilled b...	1,588.00	Job Drill Hrs (hr)	57.25
										Total Drill Hrs (hr)	57.25

### Comment

222mm Ultrera PDC bit, dog sub, Pathfinder mud motor set at 1.83 deg, 7:8 lobe, 5 stage, 70rpm/m3, NM Pony sub monel, MWD flex collar, 2 x NM flex Monels.

### Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Drill pipe - Stands	65.0	101.6	1	9.40	1,599.00
Drill pipe - Stands	65.0	101.6	62	1,172.38	1,589.60
4" HW	70.0	132.0	37	344.73	417.22
Jars	60.0	161.0	1	5.13	72.49
4" HW	70.0	132.0	3	27.54	67.36
6.75" X/O	59.0	168.0	1	0.80	39.82
6.75" NM Flex Mon	70.0	171.0	2	17.48	39.02
6.75" Gap Sub	88.0	162.0	1	0.54	21.54
6.75" Flex Monel	70.0	171.0	1	9.35	21.00
NM Pony Monel	70.0	171.0	1	2.97	11.65
Mud motor	56.0	169.0	1	8.28	8.68
Dog sub	60.0	222.0	1	0.15	0.40

### Drilling Parameter: 626.00 - 761.00 mKB

Cum Depth (m)	158.00	Cum Drill...	7.50	Int ROP (...)	20.0	Flow Rate...	1.400	WOB (daN)	7,000	RPM (r...	30	SPP (kPa)	9,500	Drill Str Wt (d...	44,000	SO Str Wt (daN)	43,000	PU Str Wt (daN)	45,000	Off-Btm Str W...	44,000	Drill Tq	8,500.0
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### Hydraulic Calculations

Bit Hydraulic Powe...	7.9	HP/Area (kW/mm²)	0.00021	% P @ bit (%)	4	Bit Jet Velocity (m/s)	25.3	Bit dP (kPa)	340.1	P Drop Annular (kPa)	187.8	Mud Density (kg/m³)	950.0	ECD End (kg/m³)	975.2
Drill String Volume (m³)	2.73	Bit to Shoe Volume (m³)	3.55	Vol Shoe to Top (m³)	18.01	Min Casing AV (m/min)	43.4	Max Casing AV (m/min)	52.5	Min Open Hole AV (m/...	55.9	Max Open Hole AV (m/...	88.9		

### Error

### 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	1/20/2014 00:00	Depth (mKB)	2,909.00	Q Flow (m³/min)	0.499	P (kPa)	5,150	Strokes (spm)	64
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# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/6/2014  
Report #: 29  
Depth Progress: 158.00m  
Depth End: 761.00mKB  
Rig Release Date: 1/23/2014

### np Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
1/20/2014 00:00	2,909.00	1.014	17,500	130

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		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)
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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### 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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
Barite	10.0	17.040	40.0	SX
INVERT	3.0	1,063.330	1.0	M3
Truvis	3.0	149.670	25.0	SX

### Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1/6/2014	627.50	0.31	124.14	627.47	5.09	5.09	0.13	2.36	0.38
1/6/2014	704.46	0.62	137.27	704.43	4.70	4.66	0.58	1.75	0.13

### Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/7/2014  
Report #: 30  
Depth Progress: 418.00m  
Depth End: 1,179.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

/ UWI 300E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470					
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013		Days From Spud (days) 10.73			
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00		End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes	
Daily Cost Total (Cost) 86,623.83		Cumulative Cost (Cost) 2,982,045.12		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817		Estimated Days 34.19	
Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB)		Head Count 55.0		Personnel Total Hours (hr) 612.00		Cum Personnel Total Hours (hr) 24,697.00			
Avg Connection Gas 68				Avg Background Gas 46		Avg Trip Gas			Max H2S (ppm) 0		
Road Condition Ice/Snow		Weather Snowing			Temperature (°C) -20			Wind N			
Ops and Depth @ Morning Report Drill 222mm intermediate hole at 1293m. Last survey at 1236.50m, Inc: 1.81°, Azm: 176.76°.									Wellbore Original Hole		

Drill 222mm intermediate directional hole from 761m to 1179m with accumulated MWD surveys, rig services, connections and circulation times. WOB: 6-8,000kDaN, RPM - 35 (Motor RPM - 112), Differential pressure: 3000-3500kPa, Pump rate: 1.6 m3/min. Torque: 1800 - 2400ft/lbs, Rotate: 414.0m - 99.0% / Slide: 4.0m - 1.0%, ROP: 26.5m/hr.

**24hr Forecast**  
Drill 222mm intermediate directional hole with accumulated MWD surveys, rig services, connections and circulation times.

**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**  
Surface, 603.00mKB

Start Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P. T-X	Trbl Code	Start Depth (mKB)	End Depth (mKB)	Operation
00:15	00:15	0.25	INTRM1	RIGMNT	SVRG	P		761.00	761.00	Rig service function test crown saver, function hydril o/c 14 sec
00:15	04:15	4.00	INTRM1	RIGMNT	RGRP	P		761.00	761.00	Changed out liners in pump # 1 from 5 1/2 " to 5 " liners & module seal in pump # 2 middle
04:15	07:30	3.25	INTRM1	DRILL	DRLG	P		761.00	875.00	Drill 222 mm intermedediate hole, Ulterra bit and dog sub, Pathfinder mud motor set at 1.83 deg, 7:8 lobe, 5 stage, 70rpm/m3 from 761 m to 875 m
07:30	07:45	0.25	INTRM1	DRILL	SRVY	P		875.00	875.00	Directional survey and connections
07:45	08:00	0.25	INTRM1	DRILL	SFTY	P		875.00	875.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
08:00	08:30	0.50	INTRM1	DRILL	DRLG	P		875.00	894.00	Drill 222mm intermediate hole, ulterra it and dog sub, pathfinder mud motor set at 1.83deg,7:8 lobe, 5 stage, 70rpm/m3 from 875m to 894m
08:30	08:45	0.25	INTRM1	RIGMNT	SVRG	P		894.00	894.00	Rig service function test rig smart anti collision function test crown saver function test H.C.R 3 sec O/C Grease all moving parts check fluid levels in Floor motor and HPU unit function test flair ignitor
08:45	14:00	5.25	INTRM1	DRILL	DRLG	P		894.00	989.00	Drill 222mm intermediate hole, ulterra it and dog sub, pathfinder mud motor set at 1.83deg,7:8 lobe, 5 stage, 70rpm/m3 from 894mKB to 989mKB
14:00	15:00	1.00	INTRM1	DRILL	CIRC	P		989.00	989.00	Circulate 2 bottoms up and prepair to do a formation test
15:00	15:15	0.25	INTRM1	DRILL	FIT	P		989.00	989.00	Formation integrity test hold pressure @ 2500 kpa for 10 min
15:15	16:00	0.75	INTRM1	DRILL	DRLG	P		989.00	1,016.00	Drill 222mm intermediate hole, ulterra bit and dog sub, pathfinder mud motor set at 1.83deg,7:8 lobe, 5 stage, 70rpm/m3 from 989mKB to 1016mKB
16:00	16:30	0.50	INTRM1	DRILL	DRLG	P		1,016.00	1,027.00	Drill 222mm intermediate hole, ulterra bit and dog sub, pathfinder mud motor set at 1.83deg,7:8 lobe, 5 stage, 70rpm/m3 from 1016mKB to 1027mKB
0	17:15	0.75	INTRM1	RIGMNT	SVRG	P		1,027.00	1,027.00	Rig service function test rig smart anti collision function test crown saver function test pipe rams 9 sec C/O Grease all moving parts Change oil on HPU unit

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/7/2014  
Report #: 30  
Depth Progress: 418.00m  
Depth End: 1,179.00mKB  
Rig Release Date: 1/23/2014

### 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
17:15	17:30	0.25	INTRM1	DRILL	DRLG	P		1,027.00	1,037.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1027mKB to 1037mKB
17:30	19:00	1.50	INTRM1	DRILL	DRLG	P		1,037.00	1,064.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1037mKB to 1064 mKB.
19:00	19:15	0.25	INTRM1	DRILL	SFTY	P		1,064.00	1,064.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
19:15	23:45	4.50	INTRM1	DRILL	DRLG	P		1,064.00	1,179.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1064mKB to 1179 mKB.
23:45	00:00	0.25	INTRM1	DRILL	SRVY	P		1,179.00	1,179.00	Directional survey and connections

### Fluid/Mud Chks: Mud Engineer: Corey Clark

Time	14:00	Depth (mKB)	1,008.00	Density (kg/m³)	920.0	Funnel Viscosity (s/L)	46	pH		PV Override (Pa·s)	8.0	YP Override (Pa)	3.5
Low Gravity Solids (%)	4.4	MBT (kg/m³)		Oil Water Ratio	81/19	Chlorides (mg/L)	147,126	Calcium (mg/L)	44	Lime (kg/m³)	20	Potassium (mg/L)	
Electric Stab (V)	410.0	ECD - Manual Entry (k...)	957.0	Sand (%)	4.0	Solids, Corr. (%)	4.5	T Flowline (°C)	30	HTHP Pressure (kPa)		HTHP Filtrate (mL/30...)	6.0
API Filtrate (mL/30min)		Mud Lost to Surface (m³)	3.00	Mud Lost to Hole (m³)	0.00	Daily Mud Field Est (Cost)							8,137.80
Cum Mud Lost to Surface (m³)	6.00	Cum Mud Lost to Hole (m³)		Cumulative Mud Cost (Cost)									16,482.01

### Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	1	Last Date	1/6/2014	Days Until Next...	4	Next Check Date	1/11/2014
Days Since Lost Time Incident (days)		818.00	Days Since Recordable Incident (days)		818.00				

### Safety Incidents

Date	Com	Category

### Drill String: BHA # 2

Bit Run	1	Drill Bit	222.0mm, 616, 21191	Length (m)	0.25	IADC Bit Dull	1-4-CT-G-3-0-WT-BHA	TFA (incl Noz) (mm²)	924	BHA ROP (m/hr)	17.2
Nozzles (mm)	14.0/14.0/14.0/14.0/14.0	String Length (m)	1,599.00	OD (mm)	222.0	Max Rotating Hook Load (daN)				65,000	
Depth In (mKB)	603.00	Depth Out (mKB)	1,588.00	Avg ROP (m/hr)	17.2	Depth This Job (m)	985.00	Total Depth Drilled b...	1,588.00	Job Drill Hrs (hr)	57.25
										Total Drill Hrs (hr)	57.25

### Comment

222mm Ultra PDC bit, dog sub, Pathfinder mud motor set at 1.83 deg, 7:8 lobe, 5 stage, 70rpm/m3, NM Pony sub monel, MWD flex collar, 2 x NM flex Monels.

### Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Drill pipe - Stands	65.0	101.6	1	9.40	1,599.00
Drill pipe - Stands	65.0	101.6	62	1,172.38	1,589.60
4" HW	70.0	132.0	37	344.73	417.22
Jars	60.0	161.0	1	5.13	72.49
4" HW	70.0	132.0	3	27.54	67.36
6.75" X/O	59.0	168.0	1	0.80	39.82
6.75" NM Flex Mon	70.0	171.0	2	17.48	39.02
6.75" Gap Sub	88.0	162.0	1	0.54	21.54
6.75" Flex Monel	70.0	171.0	1	9.35	21.00
NM Pony Monel	70.0	171.0	1	2.97	11.65
Mud motor	56.0	169.0	1	8.28	8.68
Dog sub	60.0	222.0	1	0.15	0.40

### Drilling Parameter: 1,016.00 - 1,179.00 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
576.00	23.25	27.2	1.670	7,000	30	12,500	53,000	51,000	55,000	53,000	8,100.0

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/7/2014  
Report #: 30  
Depth Progress: 418.00m  
Depth End: 1,179.00mKB  
Rig Release Date: 1/23/2014

### 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)
13.0	0.00034	4	30.1	468.7	173.8	920.0	935.0
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/...	
4.12	14.89	19.46	51.8	51.8	54.6	106.1	

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)
1/20/2014 00:00	2,909.00	0.499	5,150	64
1/20/2014 00:00	2,909.00	1.014	17,500	130

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		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)
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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### 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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
Barite	5.0	17.040	40.0	SX
CALCIUM CHLORIDE	36.0	43.920	40.0	SX
INVERT	3.0	1,063.330	1.0	M3
OPTISEAL	5.0	96.200	25.0	SX
Truvis	5.0	149.670	25.0	SX
Versacoat HF	2.0	883.570	55.0	BBL
Versatrol	6.0	47.500	50.0	SX

### Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1/7/2014	781.46	0.71	129.47	781.42	4.24	4.05	1.23	0.89	0.05
1/7/2014	896.50	1.28	113.56	896.45	4.28	3.09	2.96	-1.09	0.16
1/7/2014	970.50	0.88	151.56	970.43	4.58	2.26	3.99	-2.39	0.32
1/7/2014	1,008.50	1.02	147.85	1,008.43	4.64	1.71	4.31	-2.93	0.12
1/7/2014	1,046.85	1.19	133.05	1,046.77	4.92	1.15	4.78	-3.62	0.26
1/7/2014	1,084.50	1.50	124.45	1,084.41	5.51	0.61	5.47	-4.49	0.29
1/7/2014	1,122.50	1.10	145.78	1,122.40	6.09	0.02	6.09	-5.31	0.49

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/7/2014  
Report #: 30  
Depth Progress: 418.00m  
Depth End: 1,179.00mKB  
Rig Release Date: 1/23/2014

Formations			
Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/8/2014  
Report #: 31  
Depth Progress: 329.00m  
Depth End: 1,508.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

/ UWI 300E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013	
Days From Spud (days) 11.73		Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00	
End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes		Daily Cost Total (Cost) 122,564.36	
Cumulative Cost (Cost) 3,104,609.48		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817	
Estimated Days 34.19		Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB) 55.0		Head Count 612.00	
Personnel Total Hours (hr) 612.00		Cum Personnel Total Hours (hr) 25,309.00		Avg Connection Gas 44		Avg Background Gas 30	
Avg Trip Gas 30		Max H2S (ppm) 0		Road Condition Ice/Snow		Weather Cloudy	
Temperature (°C) -24		Wind N		Ops and Depth @ Morning Report Drill 222mm intermediate directional hole at 1555m.		Wellbore Original Hole	

### Last 24hr Summary

No incidents or accidents. 9 - HID, 1 - OBS and 0 - ASA (all closed out)

Drill 222mm intermediate directional hole from 1179m to 1508m with accumulated MWD surveys, rig services, connections and circulation times. WOB: 6-8,000kDaN, RPM - 35 (Motor RPM - 112), Differential pressure: 3000-3500kPa, Pump rate: 1.6 m3/min. Torque: 1800 - 2400ft/lbs, Rotate: 282m - 86% / Slide: 47m - 14%, ROP: 15.7m/hr. Last survey at 1531.5mMD, inclination= 9.81°, azimuth= 264.58°, TVD - 1530.7m. We are 0.3m below and 1.42m left the line - 1.2° behind in angle - 12.2m center to center - BURR: 4.5° to the 7° per 30m mark at 1630mMD, KOP: 1466mMD.

### 24hr Forecast

Drill 222mm intermediate directional hole with accumulated MWD surveys, rig services, connections and circulation times.

### 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

Surface, 603.00mKB

### Time Log

art ne	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	INTRM1	RIGMNT	SVRG	P		1,179.00	1,179.00	Rig service function test, crown saver and hydril 14 sec
00:15	07:30	7.25	INTRM1	DRILL	DRLG	P		1,179.00	1,331.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1179 mKB to 1331 mKB.
07:30	07:45	0.25	INTRM1	DRILL	SRVY	P		1,331.00	1,331.00	Directional survey and connections
07:45	08:00	0.25	INTRM1	DRILL	SFTY	P		1,331.00	1,331.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
08:00	08:45	0.75	INTRM1	DRILL	DRLG	P		1,331.00	1,350.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1331 mKB to 1350mKB.
08:45	09:00	0.25	INTRM1	RIGMNT	SVRG	P		1,350.00	1,350.00	Rig service function test rig smart anti collision system function test crown saver function test pipe rams 8 sec C/O function test flair ignitor grease all moving parts check engine fluid levels in floor motor HPU and pumps
09:00	13:15	4.25	INTRM1	DRILL	DRLG	P		1,350.00	1,417.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1350 mKB to 1417mKB.
13:15	13:30	0.25	INTRM1	DRILL	SFTY	P		1,417.00	1,417.00	Safety meeting with NEB personal and B.O.P drill well secure in 70 sec crew in positions
13:30	15:30	2.00	INTRM1	DRILL	DRLG	P		1,417.00	1,449.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1417 mKB to 1449 mKB.
15:30	16:00	0.50	INTRM1	DRILL	SRVY	P		1,449.00	1,449.00	Accumulated directional survey time
16:00	16:45	0.75	INTRM1	DRILL	DRLG	P		1,449.00	1,464.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1449 mKB to 1464 mKB.
16:45	17:00	0.25	INTRM1	RIGMNT	SVRG	P		1,464.00	1,464.00	Rig service function test rig smart anti collision system function test crown saver function test H.C.R 3sec O/C function test flair ignitor grease all moving parts check engine fluid levels in floor motor HPU and pumps
17:00	19:00	2.00	INTRM1	DRILL	DRLG	P		1,464.00	1,480.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1464 mKB to 1480mKB.
19:00	19:15	0.25	INTRM1	DRILL	SFTY	P		1,480.00	1,480.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/8/2014  
Report #: 31  
Depth Progress: 329.00m  
Depth End: 1,508.00mKB  
Rig Release Date: 1/23/2014

### 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
19:15	23:15	4.00	INTRM1	DRILL	DRLG	P		1,480.00	1,508.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1480 mKB to 1508 mKB.
23:15	00:00	0.75	INTRM1	DRILL	SRVY	P		1,508.00	1,508.00	Accumulated time for dir surveys

### Fluid/Mud Chks: Mud Engineer: Corey Clark

Time	14:00	Depth (mKB)	1,434.00	Density (kg/m³)	975.0	Funnel Viscosity (s/L)	48	pH		PV Override (Pa·s)	11.0	YP Override (Pa)	4.0
Low Gravity Solids (%)	4.7	MBT (kg/m³)		Oil Water Ratio	84/16	Chlorides (mg/L)	156,915	Calcium (mg/L)	39	Lime (kg/m³)	16	Potassium (mg/L)	
Electric Stab (V)	510.0	ECD - Manual Entry (k...)	1,016.0	Sand (%)	3.0	Solids, Corr. (%)	6.6	T Flowline (°C)	42	HTHP Pressure (kPa)		HTHP Filtrate (mL/30...)	6.0
API Filtrate (mL/30min)		Mud Lost to Surface (m³)	13.00	Mud Lost to Hole (m³)	5.00	Daily Mud Field Est (Cost)							22,657.33
Cum Mud Lost to Surface (m³)	19.00	Cum Mud Lost to Hole (m³)	5.00	Cumulative Mud Cost (Cost)									39,139.34

### Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	0	Last Date	1/8/2014	Days Until Next...	5	Next Check Date	1/13/2014
Days Since Lost Time Incident (days)				Days Since Recordable Incident (days)					
			819.00						819.00

### Safety Incidents

Date	Com	Category

### Drill String: BHA # 2

Bit Run	1	Drill Bit	222.0mm, 616, 21191	Length (m)	0.25	IADC Bit Dull	1-4-CT-G-3-0-WT-BHA	TFA (incl Noz) (mm²)	924	BHA ROP (m/hr)	17.2
Nozzles (mm)	7/14.0/14.0/14.0/14.0/14.0	String Length (m)	1,599.00	OD (mm)	222.0	Max Rotating Hook Load (daN)					65,000
Sh In (mKB)	603.00	Depth Out (mKB)	1,588.00	Avg ROP (m/hr)	17.2	Depth This Job (m)	985.00	Total Depth Drilled b...	1,588.00	Job Drill Hrs (hr)	57.25
										Total Drill Hrs (hr)	57.25

### Comment

222mm Ultra PDC bit, dog sub, Pathfinder mud motor set at 1.83 deg, 7:8 lobe, 5 stage, 70rpm/m3, NM Pony sub monel, MWD flex collar, 2 x NM flex Monels.

### Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Drill pipe - Stands	65.0	101.6	1	9.40	1,599.00
Drill pipe - Stands	65.0	101.6	62	1,172.38	1,589.60
4" HW	70.0	132.0	37	344.73	417.22
Jars	60.0	161.0	1	5.13	72.49
4" HW	70.0	132.0	3	27.54	67.36
6.75" X/O	59.0	168.0	1	0.80	39.82
6.75" NM Flex Mon	70.0	171.0	2	17.48	39.02
6.75" Gap Sub	88.0	162.0	1	0.54	21.54
6.75" Flex Monel	70.0	171.0	1	9.35	21.00
NM Pony Monel	70.0	171.0	1	2.97	11.65
Mud motor	56.0	169.0	1	8.28	8.68
Dog sub	60.0	222.0	1	0.15	0.40

### Drilling Parameter: 1,449.00 - 1,508.00 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
905.00	44.25	8.7	1.700	6,000	30	14,500	62,000	60,000	64,000	62,000	2,550.0

### 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)
14.6	0.00038	4	30.7	514.7	274.3	975.0	993.6
Drill String Volume (m³)	5.21	Bit to Shoe Volume (m³)	24.96	Vol Shoe to Top (m³)	19.46	Min Casing AV (m/min)	52.8
						Max Casing AV (m/min)	52.8
						Min Open Hole AV (m/...	55.6
						Max Open Hole AV (m/...	108.0

### Error

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

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

### Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
1/20/2014 00:00		2,909.00	0.499	5,150
1/20/2014 00:00		2,909.00	1.014	17,500



# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/8/2014  
Report #: 31  
Depth Progress: 329.00m  
Depth End: 1,508.00mKB  
Rig Release Date: 1/23/2014

### Drilling Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		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)
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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### 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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Mud Additive Amounts

Des	Consumed	Cost	Size	Units
CALCIUM CHLORIDE	15.0	43.920	40.0	SX
INVERT	18.0	1,063.330	1.0	M3
Lime	50.0	7.170	20.0	SX
OPTISEAL	5.0	96.200	25.0	SX
Truvis	6.0	149.670	25.0	SX
Versacoat HF	1.0	883.570	55.0	BBL
Versatrol	5.0	47.500	50.0	SX

### Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1/8/2014	1,160.50	1.19	131.15	1,160.40	6.61	-0.54	6.59	-6.02	0.24
1/8/2014	1,198.50	2.12	145.56	1,198.38	7.41	-1.38	7.28	-7.04	0.80
1/8/2014	1,236.50	1.81	176.76	1,236.36	8.13	-2.55	7.72	-7.99	0.87
1/8/2014	1,274.50	1.41	163.67	1,274.34	8.67	-3.60	7.88	-8.64	0.43
1/8/2014	1,312.50	1.90	156.64	1,312.33	9.47	-4.63	8.26	-9.47	0.42
1/8/2014	1,351.50	2.12	141.06	1,351.30	10.68	-5.78	8.97	-10.65	0.45
1/8/2014	1,389.50	2.90	172.66	1,389.27	12.00	-7.28	9.54	-11.87	1.23
1/8/2014	1,426.50	2.78	175.74	1,426.22	13.32	-9.11	9.72	-12.92	0.16
1/8/2014	1,446.00	4.20	204.66	1,445.69	13.93	-10.23	9.46	-13.23	3.41
1/8/2014	1,464.50	2.70	229.77	1,464.15	14.21	-11.13	8.84	-13.13	3.40
1/8/2014	1,474.50	4.02	247.44	1,474.14	14.14	-11.41	8.34	-12.83	4.99
1/8/2014	1,483.50	4.60	257.05	1,483.11	13.93	-11.61	7.70	-12.37	3.08
1/8/2014	1,493.50	6.32	262.42	1,493.07	13.58	-11.78	6.76	-11.63	5.38

### Formations

Formation Name	Drill Top MD (mKB)	Drill Top TVD (mKB)	Prog Top TVD (mKB)
Little Bear	31.00	31.00	31.00
er River	76.00	76.00	76.00
ic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40



# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/8/2014  
Report #: 31  
Depth Progress: 329.00m  
Depth End: 1,508.00mKB  
Rig Release Date: 1/23/2014

mations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/9/2014  
Report #: 32  
Depth Progress: 80.00m  
Depth End: 1,588.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

/ UWI 300E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013	
Days From Spud (days) 12.73		Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00	
End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes		Daily Cost Total (Cost) 101,242.18	
Cumulative Cost (Cost) 3,205,851.66		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817	
Estimated Days 34.19		Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB) 55.0		Head Count 612.00	
Personnel Total Hours (hr) 25,921.00		Cum Personnel Total Hours (hr) 25,921.00		Avg Connection Gas 52		Avg Background Gas 45	
Avg Trip Gas 25		Max H2S (ppm) 0		Road Condition Ice/Snow		Weather Cloudy	
Temperature (°C) -27		Wind NW		Ops and Depth @ Morning Report Slip and cut drill line.		Wellbore Original Hole	

### Last 24hr Summary

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

Drill 222mm intermediate directional hole from 1508m to 1588m with accumulated MWD surveys, rig services, connections and circulation times. WOB: 6-8,000kDaN, RPM - 35 (Motor RPM - 112), Differential pressure: 3000-3500kPa, Pump rate: 1.6 m3/min. Torque: 1800 - 2400ft/lbs, Rotate: 27.5m - 30% / Slide: 63.5m - 70%, ROP: 7.0m/hr. Last survey at 1580mMD, inclination= 15.60°, azimuth= 270.75°, TVD - 1578.02m. We are 3.2m below and 18.63m left the line - 0.7° behind in angle - 30° behind in azimuth - 15.72m center to center - BURR: 5.5° to the 7° per 30m mark at 1630mMD. Pull out of the hole, laydown mud motor, bit and dog sub. Change bit, mud motor and check MWD tool.

### 24hr Forecast

Finish slip and cut, run in the hole. Drill 222mm intermediate directional hole with accumulated MWD surveys, rig services, connections and circulation times.

### 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

Surface, 603.00mKB

### Time Log

art 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	INTRM1	RIGMNT	SVRG	P		1,508.00	1,508.00	Rig service function test hydri 14 sec and crown saver
00:15	06:45	6.50	INTRM1	DRILL	DRLG	P		1,508.00	1,565.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1508 mKB to 1565 mKB.
06:45	07:45	1.00	INTRM1	DRILL	SRVY	P		1,565.00	1,565.00	Accumulated time for directional surveys
07:45	08:00	0.25	INTRM1	DRILL	SFTY	P		1,565.00	1,565.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
08:00	11:00	3.00	INTRM1	DRILL	DRLG	P		1,565.00	1,578.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1565 mKB to 1578 mKB.
11:00	11:30	0.50	INTRM1	RIGMNT	SVRG	P		1,578.00	1,578.00	Rig service function test rig smart system, function test crown saver, function test pipe rams 8sec c/o, grease all moving parts, function test flare stack, check engine fluid levels in the HPU, floor motor and pumps, change oil on pump #1
11:30	15:00	3.50	INTRM1	DRILL	DRLG	P		1,578.00	1,599.00	Drill 222mm intermediate hole, ultra bit and dog sub, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1578 mKB to 1599 mKB.
15:00	16:00	1.00	INTRM1	DRILL	SRVY	P		1,599.00	1,599.00	Accumulated directional surveys
16:00	17:00	1.00	INTRM1	DRILL	CIRC	P		1,599.00	1,599.00	Circulate bottoms up prior to formation fit test
17:00	17:15	0.25	INTRM1	DRILL	FIT	P		1,599.00	1,599.00	Fit test to 4500 kpa hold for 10 min., held good
17:15	17:30	0.25	INTRM1	RIGMNT	SVRG	P		1,599.00	1,599.00	Rig service function test H.C.R 3sec O/C function test rig smart function test crown saver
17:30	19:00	1.50	INTRM1	DRILL	TRIP	P		1,599.00	1,599.00	Trip out of hole to change bit with flow checks at 1502m,
19:00	19:15	0.25	INTRM1	DRILL	SFTY	P		1,599.00	1,599.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
19:15	00:00	4.75	INTRM1	DRILL	TRIP	P		1,599.00	1,599.00	Trip out of hole with flow checks, to change out PDC bit and mud motor

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/9/2014  
Report #: 32  
Depth Progress: 80.00m  
Depth End: 1,588.00mKB  
Rig Release Date: 1/23/2014

Mud/Mud Chks: Mud Engineer: Corey Clark											
Time 13:45	Depth (mKB) 1,597.00	Density (kg/m³) 1,000.0	Funnel Viscosity (s/L) 53	pH	PV Override (Pa·s) 13.0	YP Override (Pa) 3.5					
Low Gravity Solids (%) 4.8	MBT (kg/m³)	Oil Water Ratio 85/15	Chlorides (mg/L) 197,729	Calcium (mg/L) 47	Lime (kg/m³) 15	Potassium (mg/L)					
Electric Stab (V) 570.0	ECD - Manual Entry (k... 1,049.0	Sand (%) 3.1	Solids, Corr. (%) 6.8	T Flowline (°C) 49	HTHP Pressure (kPa)	HTHP Filtrate (mL/30... 5.0					
API Filtrate (mL/30min)		Mud Lost to Surface (m³) 6.00		Mud Lost to Hole (m³) 1.00		Daily Mud Field Est (Cost) 18,745.15					
Cum Mud Lost to Surface (m³) 25.00		Cum Mud Lost to Hole (m³) 6.00		Cumulative Mud Cost (Cost) 57,884.49							
<b>Last BOP Drill</b>											
Type BOP Drill	Days Last Chk (... 1	Last Date 1/8/2014	Days Until Next... 4	Next Check Date 1/13/2014							
Days Since Lost Time Incident (days) 820.00			Days Since Recordable Incident (days) 820.00								
<b>Safety Incidents</b>											
Date	Com					Category					
<b>Drill String: BHA # 2</b>											
Bit Run 1	Drill Bit 222.0mm, 616, 21191	Length (m) 0.25	IADC Bit Dull 1-4-CT-G-3-0-WT-BHA	TFA (incl Noz) (mm²) 924	BHA ROP (m/hr) 17.2						
Nozzles (mm) 14.0/14.0/14.0/14.0/14.0/14.0		String Length (m) 1,599.00	OD (mm) 222.0	Max Rotating Hook Load (daN) 65,000							
Depth In (mKB) 603.00	Depth Out (mKB) 1,588.00	Avg ROP (m/hr) 17.2	Depth This Job (m) 985.00	Total Depth Drilled b... 1,588.00	Job Drill Hrs (hr) 57.25	Total Drill Hrs (hr) 57.25					
<b>Comment</b> 222mm Ulterra PDC bit, dog sub, Pathfinder mud motor set at 1.83 deg, 7:8 lobe, 5 stage, 70rpm/m3, NM Pony sub monel, MWD flex collar, 2 x NM flex Monels.											
<b>Drill String Components</b>											
Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)						
Drill pipe - Stands	65.0	101.6	1	9.40	1,599.00						
pipe - Stands	65.0	101.6	62	1,172.38	1,589.60						
4" HW	70.0	132.0	37	344.73	417.22						
Jars	60.0	161.0	1	5.13	72.49						
4" HW	70.0	132.0	3	27.54	67.36						
6.75" X/O	59.0	168.0	1	0.80	39.82						
6.75" NM Flex Mon	70.0	171.0	2	17.48	39.02						
6.75" Gap Sub	88.0	162.0	1	0.54	21.54						
6.75" Flex Monel	70.0	171.0	1	9.35	21.00						
NM Pony Monel	70.0	171.0	1	2.97	11.65						
Mud motor	56.0	169.0	1	8.28	8.68						
Dog sub	60.0	222.0	1	0.15	0.40						
<b>Drilling Parameter: 1,565.00 - 1,588.00 mKB</b>											
Cum Depth (m) 985.00	Cum Drill... 57.25	Int ROP (... 3.5	Flow Rate... 1.700	WOB (daN) 7,000	RPM (r... 30	SPP (kPa) 14,800	Drill Str Wt (d... 65,000	SO Str Wt (daN) 63,000	PU Str Wt (daN) 67,000	Off-Btm Str W... 65,000	Drill Tq 2,800.0
<b>Hydraulic Calculations</b>											
Bit Hydraulic Powe... 14.6	HP/Area (kW/mm²) 0.00038	% P @ bit (%) 3	Bit Jet Velocity (m/s) 30.7	Bit dP (kPa) 514.7	P Drop Annular (kPa) 289.2	Mud Density (kg/m³) 975.0	ECD End (kg/m³) 993.6				
Drill String Volume (m³) 5.48	Bit to Shoe Volume (m³) 27.41	Vol Shoe to Top (m³) 19.46	Min Casing AV (m/min) 52.8	Max Casing AV (m/min) 52.8	Min Open Hole AV (m/... 55.6	Max Open Hole AV (m/... 108.0					
Error											
<b>Mud Pump: 1, NATIONAL, 8-P-80</b>											
Pump Number 1	Make NATIONAL	Model 8-P-80	Rod Diameter (mm) 140.0	Stroke Length (mm) 216.0							
<b>Pump Checks</b>											
Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)							
1/20/2014 00:00	2,909.00	0.499	5,150	64							
1/20/2014 00:00	2,909.00	1.014	17,500	130							
<b>Pump Operations</b>											
Start Date 1/20/2014	End Date 1/21/2014	Liner Size (mm) 127.0	P Max (kPa)	Vol/Stk OR (m³/stk)							
1/22/2014	1/22/2014	127.0									
<b>Mud Pump: 2, NATIONAL, 8-P-80</b>											
Pump Number 2	Make NATIONAL	Model 8-P-80	Rod Diameter (mm) 140.0	Stroke Length (mm) 216.0							

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/9/2014  
Report #: 32  
Depth Progress: 80.00m  
Depth End: 1,588.00mKB  
Rig Release Date: 1/23/2014

### np Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		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)
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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### 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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
Barite	300.0	17.040	40.0	SX
Barite	30.0	17.040	40.0	SX
CALCIUM CHLORIDE	23.0	43.920	40.0	SX
INVERT	7.0	1,063.330	1.0	M3
e	81.0	7.170	20.0	SX
ISEAL	10.0	96.200	25.0	SX
Versacoat HF	3.0	883.570	55.0	BBL
Versatrol	10.0	47.500	50.0	SX

### Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1/9/2014	1,503.00	7.11	268.46	1,502.50	13.14	-11.86	5.66	-10.70	3.34
1/9/2014	1,512.50	8.09	268.37	1,511.92	12.68	-11.90	4.40	-9.62	3.09
1/9/2014	1,522.00	8.62	267.36	1,521.32	12.32	-11.95	3.02	-8.44	1.74
1/9/2014	1,531.50	9.81	264.58	1,530.69	12.15	-12.06	1.50	-7.16	4.01
1/9/2014	1,541.00	10.78	267.18	1,540.04	12.18	-12.18	-0.19	-5.74	3.40
1/9/2014	1,550.50	11.62	269.47	1,549.36	12.40	-12.23	-2.03	-4.16	3.00
1/9/2014	1,560.00	12.59	269.78	1,558.65	12.89	-12.24	-4.03	-2.42	3.07
1/9/2014	1,569.50	14.41	271.28	1,567.89	13.72	-12.22	-6.24	-0.47	5.85
1/9/2014	1,580.00	15.60	270.75	1,578.03	15.12	-12.17	-8.96	1.93	3.42

### Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/10/2014  
Report #: 33  
Depth Progress: 103.00m  
Depth End: 1,691.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

/ UWI 300E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470					
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013		Days From Spud (days) 13.73			
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00		End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes	
Daily Cost Total (Cost) 109,595.18		Cumulative Cost (Cost) 3,315,446.84		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817		Estimated Days 34.19	
Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB)		Head Count 54.0		Personnel Total Hours (hr) 600.00		Cum Personnel Total Hours (hr) 26,521.00			
Avg Connection Gas 500		Avg Background Gas 205		Avg Trip Gas 25		Max H2S (ppm) 0					
Road Condition Ice/Snow		Weather Clear		Temperature (°C) -40		Wind N 15 kms					
Ops and Depth @ Morning Report Trip out of the hole to dial up mud motor.									Wellbore Original Hole		

### Last 24hr Summary

No incidents or accidents. 4 - HID, 0 - OBS and 0 - ASA (all closed out)  
Make up directional BHA, run in the hole and drill 222mm intermediate directional hole from 1588m to 1691m with accumulated MWD surveys, rig services, connections and circulation times. WOB: 6-14,000kDaN, RPM - 35 (Motor RPM - 112), Differential pressure: 3000-3500kPa, Pump rate: 1.6 m3/min. Torque: 1800 - 2400ft/lbs, Rotate: 15m - 15% / Slide: 82.5m - 85%, ROP: 12.3m/hr. Last survey at 1683.5mMD, inclination= 31.2°, azimuth= 312.66°, TVD - 1673.53m. We are 1.11m below and 20.55m left the line - 4.55° behind in angle - 12.50° behind in azimuth - 22.32m center to center - BURR: 8.4°/30m

### 24hr Forecast

Pull out of the hole, dial up mud motor, change bits, run in the hole, drill 222mm intermediate directional hole with accumulated MWD surveys, rig services, connections and circulation times.

### 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

Surface, 603.00mKB

### 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	00:15	0.25	INTRM1	RIGMNT	SVRG	P		1,599.00	1,599.00	Rig service function test blind rams and crown saver
00:15	00:30	0.25	INTRM1	DRILL	SFTY	P		1,599.00	1,599.00	Safety meeting with Pathfinder, change out mud motor
00:30	03:30	3.00	INTRM1	DRILL	PULD	P		1,599.00	1,599.00	Change out mud motor, check MWD tool and make up bit # 2, Smith FHI18B, insert bit
03:30	05:15	1.75	INTRM1	DRILL	TRIP	P		1,599.00	1,599.00	Run in hole to the top of HWDP
05:15	05:30	0.25	INTRM1	DRILL	SFTY	P		1,599.00	1,599.00	Safety meeting with crew, on slip and cut drilling line
05:30	06:15	0.75	INTRM1	RIGMNT	SLPC	P		1,599.00	1,599.00	Slip and cut 30m drilling line
06:15	07:45	1.50	INTRM1	DRILL	TRIP	P		1,599.00	1,599.00	Run in hole, with Smith FHI18B insert bit and Pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3
07:45	08:00	0.25	INTRM1	DRILL	SFTY	P		1,599.00	1,599.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
08:00	08:45	0.75	INTRM1	DRILL	TRIP	P		1,599.00	1,599.00	Run in hole from 799mKB to 950mKB
08:45	09:00	0.25	INTRM1	DRILL	SRVY	P		1,599.00	1,599.00	Fill pipe and pulse test MWD tool
09:00	09:15	0.25	INTRM1	RIGMNT	SVRG	P		1,599.00	1,599.00	Rig service function test rig smart function test crown saver function test annular 24 sec C/O grease all moving parts check fluid levels in floor motor and pump engines
09:15	11:00	1.75	INTRM1	DRILL	TRIP	P		1,599.00	1,599.00	Trip in hole, from 956mKB to 1588mKB Change hole depth from 1598mKB To 1588mKB
11:00	15:15	4.25	INTRM1	DRILL	DRLG	P		1,599.00	1,624.00	Drill 222mm intermediate hole, with Smith FHI18B insert bit and, Pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1599mKB to 1624mKB.
15:15	16:00	0.75	INTRM1	DRILL	SRVY	P		1,624.00	1,624.00	Accumulated directional surveys
16:00	17:15	1.25	INTRM1	DRILL	DRLG	P		1,624.00	1,636.00	Drill 222mm intermediate hole, with Smith FHI18B insert bit and, pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1624 mKB to 1636 mKB.
17:15	17:30	0.25	INTRM1	RIGMNT	SVRG	P		1,636.00	1,636.00	Rig service function test rig smart function test crown saver function test H.C.R 3 sec O/C grease all moving parts check fluid levels in floor motor and pump engines
0	19:00	1.50	INTRM1	DRILL	DRLG	P		1,636.00	1,654.00	Drill 222mm intermediate hole, with Smith FHI18B insert bit and, Pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1636 mKB to 1654 mKB.
19:00	19:15	0.25	INTRM1	DRILL	SFTY	P		1,654.00	1,654.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/10/2014  
Report #: 33  
Depth Progress: 103.00m  
Depth End: 1,691.00mKB  
Rig Release Date: 1/23/2014

### 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
19:15	00:00	4.75	INTRM1	DRILL	DRLG	P		1,654.00	1,691.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 1.83deg,7:8 lobe, 5 stage, 70rpm/m3 from 1654mKB to 1691mKB.

### Fluid/Mud Chks: Mud Engineer: Corey Clark

Time	14:30	Depth (mKB)	1,622.00	Density (kg/m³)	1,020.0	Funnel Viscosity (s/L)	54	pH		PV Override (Pa-s)	12.0	YP Override (Pa)	5.0
Low Gravity Solids (%)	5.0	MBT (kg/m³)		Oil Water Ratio	85/15	Chlorides (mg/L)	197,729	Calcium (mg/L)	47	Lime (kg/m³)	17	Potassium (mg/L)	
Electric Stab (V)	580.0	ECD - Manual Entry (k...)	1,064.0	Sand (%)	3.1	Solids, Corr. (%)	7.8	T Flowline (°C)	40	HTHP Pressure (kPa)		HTHP Filtrate (mL/30...)	5.0
API Filtrate (mL/30min)		Mud Lost to Surface (m³)	2.00	Mud Lost to Hole (m³)	0.00	Daily Mud Field Est (Cost)							2,781.15
Cum Mud Lost to Surface (m³)	27.00	Cum Mud Lost to Hole (m³)	6.00	Cumulative Mud Cost (Cost)									60,665.64

### Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	2	Last Date	1/8/2014	Days Until Next...	3	Next Check Date	1/13/2014
Days Since Lost Time Incident (days)			821.00	Days Since Recordable Incident (days)					821.00

### Safety Incidents

Date	Com	Category

### Drill String: BHA # 3

Bit Run	3	Drill Bit	222.0mm, FHi18B, RA3594	Length (m)	0.25	IADC Bit Dull	-----	TFA (incl Noz) (mm²)	429	BHA ROP (m/hr)	8.8
Nozzles (mm)	13.5/13.5/13.5	String Length (m)	1,712.22	OD (mm)	222.0	Max Rotating Hook Load (daN)				66,000	
Depth In (mKB)	1,588.00	Depth Out (mKB)	1,908.00	Avg ROP (m/hr)	5.2	Depth This Job (m)	320.00	Total Depth Drilled b...	1,908.00	Job Drill Hrs (hr)	61.75
										Total Drill Hrs (hr)	61.75

### Comment

222mm Smith FHi18B insert bit, Pathfinder mud motor set at 1.83 deg, 7:8 lobe, 5 stage, 70rpm/m3, NM Pony sub monel, MWD flex collar, 2 x NM flex Monels.

### Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Drill pipe - Stands			68	1,294.72	1,712.22
4" HW	70.0	132.0	37	344.73	417.50
Jars		161.0	1	5.13	72.77
4" HW	70.0	132.0	3	27.54	67.64
6.75" X/O	59.0	168.0	1	0.80	40.10
6.75" NM Flex Mon	70.0	171.0	2	17.48	39.30
6.75" Gap Sub	88.0	162.0	1	0.54	21.82
6.75" Flex Monel	70.0	171.0	1	9.35	21.28
NM Pony Monel	70.0	171.0	1	2.97	11.93
Mud motor		169.0	1	8.46	8.96
222 mm BIT	60.0	222.0	1	0.25	0.50

### Drilling Parameter: 1,624.00 - 1,691.00 mKB

Cum Depth (m)	103.00	Cum Drill...	11.75	Int ROP (...)	8.9	Flow Rate...	1.700	WOB (daN)	13,000	RPM (r...)	30	SPP (kPa)	15,500	Drill Str Wt (d...	66,000	SO Str Wt (daN)	64,000	PU Str Wt (daN)	69,000	Off-Btm Str W...	66,000	Drill Tq	2,480.0
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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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### mp Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
1/20/2014 00:00		2,909.00	0.499	5,150
1/20/2014 00:00		2,909.00	1.014	17,500

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/10/2014  
Report #: 33  
Depth Progress: 103.00m  
Depth End: 1,691.00mKB  
Rig Release Date: 1/23/2014

### Drilling Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		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)
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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### 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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Mud Additive Amounts

Des	Consumed	Cost	Size	Units
CALCIUM CHLORIDE	4.0	43.920	40.0	SX
INVERT	2.0	1,063.330	1.0	M3
Sawdust	10.0	2.980	7.3	SX
Truvis	3.0	149.670	25.0	SX

### Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1/10/2014	1,599.00	19.40	278.37	1,596.15	18.73	-11.68	-14.64	7.13	6.99
1/10/2014	1,608.50	19.31	287.85	1,605.11	20.82	-10.97	-17.70	10.15	9.92
1/10/2014	1,617.50	19.80	296.44	1,613.60	22.72	-9.83	-20.48	13.14	9.71
1/10/2014	1,627.00	20.19	300.14	1,622.52	24.77	-8.29	-23.34	16.38	4.18
1/10/2014	1,636.50	21.21	303.36	1,631.41	26.99	-6.52	-26.19	19.74	4.83
1/10/2014	1,645.50	22.80	306.18	1,639.75	29.32	-4.60	-28.96	23.09	6.36
1/10/2014	1,655.00	2.48	309.35	1,648.98	30.81	-3.37	-30.62	25.14	64.18
1/10/2014	1,664.50	27.22	309.27	1,658.09	32.54	-1.84	-32.49	27.52	78.13

### Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40



# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/11/2014  
Report #: 34  
Depth Progress: 35.00m  
Depth End: 1,726.00mKB  
Rig Release Date: 1/23/2014

/ UWI 300E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470					
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013		Days From Spud (days) 14.73			
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00		End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes	
Daily Cost Total (Cost) 88,691.30		Cumulative Cost (Cost) 3,404,138.14		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817		Estimated Days 34.19	
Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB)		Head Count 54.0		Personnel Total Hours (hr) 600.00		Cum Personnel Total Hours (hr) 27,121.00			
Avg Connection Gas 410		Avg Background Gas 180		Avg Trip Gas 25		Max H2S (ppm) 0					
Road Condition Ice/Snow		Weather Clear		Temperature (°C) -47		Wind SW 15 kms					
Ops and Depth @ Morning Report Drill 222mm intermediate directional hole at 1752m.								Wellbore Original Hole			

### Last 24hr Summary

No incidents or accidents. 13 - HID, 0 - OBS and 0 - ASA (all closed out)

Drill 222mm intermediate directional hole from 1691m to 1702m, circulate bottoms up, pull out of the hole, dial up mud motor from 1.83° to 2.12° due to the inability to attain build rates required, check bit, run in the hole and drill 222mm intermediate directional hole from 1702m to 1726m with accumulated MWD surveys, rig services, connections and circulation times. WOB: 6-14,000kDaN, RPM - 35 (Motor RPM - 112), Differential pressure: 3000-3500kPa, Pump rate: 1.6 m3/min. Torque: 1800 - 2400ft/lbs, Rotate: 0.0m - 0.0% / Slide: 24m - 100%, ROP: 4.7m/hr. Last survey at 1731mMD, inclination= 44.19°, azimuth= 306.67°, TVD - 1711.12m. We are 2.73m below and 16.65m left the line - 2.29° behind in angle - 6.67° behind in azimuth - 20.43m center to center - BURR: 8.0°/30m

### 24hr Forecast

Drill 222mm intermediate directional hole with accumulated MWD surveys, rig services, connections and circulation times.

### 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

Surface, 603.00mKB

### Time Log

Start Time	End Time	Dur (hr)	Phase	Op Code	Activity Code	Time P-T-X	Tri Code	Start Depth (mKB)	End Depth (mKB)	Operation
00:00	00:15	0.25	INTRM1	RIGMNT	SVRG	P		1,691.00	1,691.00	Rig service function test rig smart crown saver, function pipe ram's 4 sec
00:15	03:30	3.25	INTRM1	DRILL	DRLG	P		1,691.00	1,702.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 1.83deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1691 mKB to 1702 mKB.
03:30	03:45	0.25	INTRM1	DRILL	SRVY	P		1,702.00	1,702.00	Accumulated time for dir surveys
03:45	04:45	1.00	INTRM1	DRILL	CIRC	P		1,702.00	1,702.00	Circulate & condition hole, mix weighted pill
04:45	07:45	3.00	INTRM1	DRILL	TRIP	P		1,702.00	1,702.00	Trip out of hole to reset mud motor from 1.83 deg. to 2.12 deg. due to the inability to attain proper build rates.
07:45	08:00	0.25	INTRM1	DRILL	SFTY	P		1,702.00	1,702.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
08:00	10:00	2.00	INTRM1	DRILL	TRIP	P		1,702.00	1,702.00	Trip out of hole from 743mKB to 58mKB to reset mud motor from 1.83 deg. to 2.12 deg. due to the inability to attain proper build rates. flow checks @ 852m, 510m 87m OOH
10:00	10:15	0.25	INTRM1	RIGMNT	SVRG	P		1,702.00	1,702.00	Rig service function test rig smart anti-collision system, function test blind rams 8sec close/open, function test crown saver, grease all moving parts and check fluid levels floor motor, HPU, and pumps, monitor well
10:15	10:30	0.25	INTRM1	DRILL	SFTY	P		1,702.00	1,702.00	Safety meeting with Pathfinder directional services, prior to working with directional tools
10:30	11:30	1.00	INTRM1	DRILL	PULD	P		1,702.00	1,702.00	Change bend in the mud motor from 1.83 deg to 2.12deg and inspect bit
11:30	11:45	0.25	INTRM1	DRILL	PULD	P		1,702.00	1,702.00	Clean rig floor to prepare to trip in hole
11:45	14:30	2.75	INTRM1	DRILL	TRIP	P		1,702.00	1,702.00	Trip in hole from 48mKB to 686mKB
14:30	15:00	0.50	INTRM1	DRILL	SRVY	P		1,702.00	1,702.00	Fill pipe and test tool, outside surface casing shoe
15:00	15:30	0.50	INTRM1	RIGMNT	RGRP	T	Rig	1,702.00	1,702.00	Touble shoot mud saver valve on top drive
15:30	16:00	0.50	INTRM1	DRILL	TRIP	P		1,702.00	1,702.00	Trip in hole from 686mKB to 898mKB
16:00	17:00	1.00	INTRM1	DRILL	TRIP	P		1,702.00	1,702.00	Trip in hole from 686mKB to 1223mKB
17:00	17:15	0.25	INTRM1	RIGMNT	SVRG	P		1,702.00	1,702.00	Rig service function test rig smart anti-collision system, function test annular 24sec close/open, function test crown saver, grease all moving parts and check fluid levels floor motor, HPU, and pumps

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/11/2014  
Report #: 34  
Depth Progress: 35.00m  
Depth End: 1,726.00mKB  
Rig Release Date: 1/23/2014

### 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
17:15	19:15	2.00	INTRM1	DRILL	TRIP	P		1,702.00	1,702.00	Trip in hole from 1223mKB to 1702m, screw into top drive, start pumps, fill pipe and break circulation.
19:15	19:30	0.25	INTRM1	DRILL	SFTY	P		1,702.00	1,702.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
19:30	23:45	4.25	INTRM1	DRILL	DRLG	P		1,702.00	1,726.00	Drill 222mm intermediate hole, with Smith FHI18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1702 mKB to 1726 mKB.
23:45	00:00	0.25	INTRM1	DRILL	SRVY	P		1,726.00	1,726.00	Accumulated time for directional surveys

### Fluid/Mud Chks: Mud Engineer: Corey Clark

Time	21:30	Depth (mKB)	1,712.00	Density (kg/m³)	1,010.0	Funnel Viscosity (s/L)	55	pH		PV Override (Pa-s)	12.0	YP Override (Pa)	5.0
Low Gravity Solids (%)	5.0	MBT (kg/m³)		Oil Water Ratio	85/15	Chlorides (mg/L)	197,729	Calcium (mg/L)	47	Lime (kg/m³)	17	Potassium (mg/L)	
Electric Stab (V)	580.0	ECD - Manual Entry (k...)	1,053.0	Sand (%)	3.1	Solids, Corr. (%)	7.8	T Flowline (°C)	36	HTHP Pressure (kPa)		HTHP Filtrate (mL/30...)	5.0
API Filtrate (mL/30min)		Mud Lost to Surface (m³)	4.00	Mud Lost to Hole (m³)	0.00	Daily Mud Field Est (Cost)							7,120.27
Cum Mud Lost to Surface (m³)	31.00	Cum Mud Lost to Hole (m³)	6.00	Cumulative Mud Cost (Cost)									67,785.91

### Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	3	Last Date	1/8/2014	Days Until Next...	2	Next Check Date	1/13/2014
Days Since Lost Time Incident (days)	822.00	Days Since Recordable Incident (days)	822.00						

### Safety Incidents

Date	Com	Category

### String: BHA # 4

Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)
3rr	222.0mm, FHI18B, RA3594	0.25	1-3-WT-S-1-CT-TD	429	4.3
Nozzles (mm)	13.5/13.5/13.5	String Length (m)	1,908.00	OD (mm)	171.0
Max Rotating Hook Load (daN)					69,000
Depth In (mKB)	1,588.00	Depth Out (mKB)	1,908.00	Avg ROP (m/hr)	5.2
Depth This Job (m)	320.00	Total Depth Drilled b...	1,908.00	Job Drill Hrs (hr)	61.75
Total Drill Hrs (hr)	61.75				

### Comment

222mm Smith FHI18B insert bit, Pathfinder mud motor set at 2.12 deg (1.91m bit to bend), 7:8 lobe, 5 stage, 70rpm/m3, NM Pony sub monel, MWD flex collar, 2 x NM flex Monels.

### Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Drill pipe - Singles	70.0	101.6	1	6.01	1,908.00
Drill pipe - Stands	70.0	101.6	78	1,484.74	1,901.99
4" HW	70.0	132.0	37	344.73	417.25
Jars	59.0	161.0	1	5.13	72.52
4" HW	70.0	132.0	3	27.54	67.39
6.75" X/O	59.0	168.0	1	0.80	39.85
6.75" NM Flex Mon	70.0	171.0	2	17.48	39.05
6.75" Gap Sub	88.0	162.0	1	0.54	21.57
6.75" Flex Monel	70.0	171.0	1	9.35	21.03
NM Pony Monel	70.0	171.0	1	2.97	11.68
Mud motor	60.0	169.0	1	8.46	8.71

### Drilling Parameter: 1,702.00 - 1,726.00 mKB

Cum Depth (m)	35.00	Cum Drill...	7.50	Int ROP (...)	5.6	Flow Rate...	1,600	WOB (daN)	16,000	RPM (r...)	30	SPP (kPa)	15,500	Drill Str Wt (d...)	67,000	SO Str Wt (daN)	65,000	PU Str Wt (daN)	70,000	Off-Btm Str W...	67,000	Drill Tq	
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### Hydraulic Calculations

Bit Hydraulic Powe...	58.3	HP/Area (kW/mm²)	0.00151	% P @ bit (%)	14	Bit Jet Velocity (m/s)	62.1	Bit dP (kPa)	2,185.2	P Drop Annular (kPa)	305.9	Mud Density (kg/m³)	1,010.0	ECD End (kg/m³)	1,028.3
Drill String Volume (m³)	6.63	Bit to Shoe Volume (m³)	31.64	Vol Shoe to Top (m³)	19.46	Min Casing AV (m/min)	49.7	Max Casing AV (m/min)	49.7	Min Open Hole AV (m/...)	52.3	Max Open Hole AV (m/...)	101.6		

### 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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# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/11/2014  
Report #: 34  
Depth Progress: 35.00m  
Depth End: 1,726.00mKB  
Rig Release Date: 1/23/2014

### Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
1/20/2014 00:00	2,909.00	0.499	5,150	64
1/20/2014 00:00	2,909.00	1.014	17,500	130

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		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)
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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### Centrifuge/Cyclone: HGS Centrifuge, BOS Solutions, 5500

iber	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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
Barite	40.0	17.040	40.0	SX
INVERT	4.0	1,063.330	1.0	M3
OPTISEAL	10.0	96.200	25.0	SX
Truvis	5.0	149.670	25.0	SX
Versatrol	10.0	47.500	50.0	SX

### Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1/11/2014	1,674.00	29.12	310.94	1,666.46	35.93	1.05	-35.92	31.92	6.50
1/11/2014	1,683.50	31.20	312.66	1,674.67	39.70	4.23	-39.48	36.57	7.11
1/11/2014	1,693.00	33.41	312.66	1,682.70	43.88	7.67	-43.21	41.50	6.98
1/11/2014	1,702.50	36.10	310.68	1,690.51	48.58	11.27	-47.26	46.79	9.21

### Formations

Formation Name	Drill Top MD (mKB)	Drill Top TVD (mKB)	Prog Top TVD (mKB)
Little Bear	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/12/2014  
Report #: 35  
Depth Progress: 90.00m  
Depth End: 1,816.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

UWI 300E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470					
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013		Days From Spud (days) 15.73			
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00		End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes	
Daily Cost Total (Cost) 111,405.34		Cumulative Cost (Cost) 3,515,543.48		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817		Estimated Days 34.19	
Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB)		Head Count 54.0		Personnel Total Hours (hr) 600.00		Cum Personnel Total Hours (hr) 27,721.00			
Avg Connection Gas 640		Avg Background Gas 160		Avg Trip Gas				Max H2S (ppm) 0			
Road Condition Ice/Snow		Weather Clear		Temperature (°C) -45				Wind W. 15 kms			
Ops and Depth @ Morning Report Drill 222mm intermediate directional hole at 1832m.									Wellbore Original Hole		

### Last 24hr Summary

No incidents or accidents. 11 - HID, 2 - OBS and 0 - ASA (all closed out)

Drill 222mm intermediate directional hole from 1726m to 1816m with accumulated MWD surveys, rig services, connections and circulation times. WOB: 6-18,000DaN, RPM - 35 (Motor RPM - 112), Differential pressure: 500-1200kPa, Pump rate: 1.6 m3/min. Torque: 0ft/lbs, Rotate: 0.0m - 0% / Slide: 90m - 100%, ROP: 4.6m/hr. Last survey at 1807mMD, inclination= 63.1°, azimuth= 308.96°, TVD - 1756.4m. We are 2.91m below and 1.2m left of the 1777mTVD target line - 1.12° behind in angle - 8.9° behind in azimuth - 16.6m center to center - BURR: 9.0° for 1777mTVD target, BURR: 7.86° for 1780mTVD target.

### 24hr Forecast

Drill 222mm intermediate directional hole with accumulated MWD surveys, rig services, connections and circulation times.

### 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

Surface, 603.00mKB

### 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	00:45	0.75	INTRM1	DRILL	DRLG	P		1,726.00	1,731.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1726 mKB to 1731 mKB.
00:45	01:00	0.25	INTRM1	RIGMNT	SVRG	P		1,731.00	1,731.00	Rig service function test rig smart anti-collision system, function test pipe ram's 4sec to close function test crown saver, grease all moving parts and check fluid levels floor motor, HPU, and pumps
01:00	06:00	5.00	INTRM1	DRILL	DRLG	P		1,731.00	1,749.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1731 mKB to 1749 mKB.
06:00	07:15	1.25	INTRM1	RIGMNT	RGRP	T	Rig	1,749.00	1,749.00	Change out 5" head & liner in pump # 2 lube side
07:15	07:45	0.50	INTRM1	DRILL	SRVY	P		1,749.00	1,749.00	Accumulated time for directional surveys
07:45	08:00	0.25	INTRM1	DRILL	SFTY	P		1,749.00	1,749.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
08:00	08:15	0.25	INTRM1	RIGMNT	RGRP	T	Rig	1,749.00	1,749.00	Change liner wash basket on pump #2
08:15	11:15	3.00	INTRM1	DRILL	DRLG	P		1,749.00	1,768.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1749 mKB to 1768 mKB.
11:15	11:30	0.25	INTRM1	RIGMNT	SVRG	P		1,768.00	1,768.00	Rig service function test rig smart anti collision system function test crown saver function test, Annular 18 sec close/open, grease all moving and non moving parts, check fluid levels in floor motor, switch over light plants.
11:30	15:30	4.00	INTRM1	DRILL	DRLG	P		1,768.00	1,787.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1768 mKB to 1787 mKB.
15:30	16:00	0.50	INTRM1	DRILL	SRVY	P		1,787.00	1,787.00	Accumulated directional surveys
16:00	16:15	0.25	INTRM1	RIGMNT	SVRG	P		1,787.00	1,787.00	Rig service function test rig smart anti collision system function test crown saver function test, H.C.R 3 open/close, grease all moving and non moving parts, check fluid levels in floor motor, pump engines, HPU
16:15	19:00	2.75	INTRM1	DRILL	DRLG	P		1,787.00	1,796.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1787 mKB to 1796 mKB.
19:00	19:15	0.25	INTRM1	DRILL	SFTY	P		1,796.00	1,796.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/12/2014  
Report #: 35  
Depth Progress: 90.00m  
Depth End: 1,816.00mKB  
Rig Release Date: 1/23/2014

### 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
19:15	23:30	4.25	INTRM1	DRILL	DRLG	P		1,796.00	1,816.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1796 mKB to 1816 mKB.
23:30	00:00	0.50	INTRM1	DRILL	SRVY	P		1,816.00	1,816.00	Accumulated time for directional surveys

### Fluid/Mud Chks: Mud Engineer: Corey Clark

Time	16:00	Depth (mKB)	1,788.00	Density (kg/m³)	1,020.0	Funnel Viscosity (s/L)	56	pH		PV Override (Pa-s)	14.0	YP Override (Pa)	5.0
Low Gravity Solids (%)	5.7	MBT (kg/m³)		Oil Water Ratio	85/15	Chlorides (mg/L)	221,336	Calcium (mg/L)	53	Lime (kg/m³)	17	Potassium (mg/L)	
Electric Stab (V)	590.0	ECD - Manual Entry (kPa)	1,065.0	Sand (%)	3.0	Solids, Corr. (%)	8.1	T Flowline (°C)	51	HTHP Pressure (kPa)		HTHP Filtrate (mL/30...)	5.0
API Filtrate (mL/30min)		Mud Lost to Surface (m³)	4.00	Mud Lost to Hole (m³)	0.00	Daily Mud Field Est (Cost)							9,161.31
Cum Mud Lost to Surface (m³)	35.00	Cum Mud Lost to Hole (m³)	6.00	Cumulative Mud Cost (Cost)									76,947.22

### Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	4	Last Date	1/8/2014	Days Until Next...	1	Next Check Date	1/13/2014
Days Since Lost Time Incident (days)	823.00	Days Since Recordable Incident (days)	823.00						

### Safety Incidents

Date	Com	Category

### Drill String: BHA # 4

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)	
3rr	222.0mm, FHi18B, RA3594	0.25	1-3-WT-S-1--CT-TD	429	4.3	
Nozzles (mm)		String Length (m)	OD (mm)	Max Rotating Hook Load (daN)		
5/13.5/13.5		1,908.00	171.0	69,000		
h 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)
1,588.00	1,908.00	5.2	320.00	1,908.00	61.75	61.75

### Comment

222mm Smith FHi18B insert bit, Pathfinder mud motor set at 2.12 deg (1.91m bit to bend), 7:8 lobe, 5 stage, 70rpm/m3, NM Pony sub monel, MWD flex collar, 2 x NM flex Monels.

### Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Drill pipe - Singles	70.0	101.6	1	6.01	1,908.00
Drill pipe - Stands	70.0	101.6	78	1,484.74	1,901.99
4" HW	70.0	132.0	37	344.73	417.25
Jars	59.0	161.0	1	5.13	72.52
4" HW	70.0	132.0	3	27.54	67.39
6.75" X/O	59.0	168.0	1	0.80	39.85
6.75" NM Flex Mon	70.0	171.0	2	17.48	39.05
6.75" Gap Sub	88.0	162.0	1	0.54	21.57
6.75" Flex Monel	70.0	171.0	1	9.35	21.03
NM Pony Monel	70.0	171.0	1	2.97	11.68
Mud motor	60.0	169.0	1	8.46	8.71

### Drilling Parameter: 1,787.00 - 1,816.00 mKB

Cum Depth (m)	125.00	Cum Drill...	27.25	Int ROP (...)	4.1	Flow Rate...	1.700	WOB (daN)	17,000	RPM (r...	30	SPP (kPa)	16,000	Drill Str Wt (d...	68,000	SO Str Wt (daN)	66,000	PU Str Wt (daN)	70,000	Off-Btm Str W...	68,000	Drill Tq	
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### Hydraulic Calculations

Bit Hydraulic Powe...	70.6	HP/Area (kW/mm²)	0.00182	% P @ bit (%)	16	Bit Jet Velocity (m/s)	66.0	Bit dP (kPa)	2,491.3	P Drop Annular (kPa)	453.0	Mud Density (kg/m³)	1,020.0	ECD End (kg/m³)	1,046.2
Drill String Volume (m³)	6.98	Bit to Shoe Volume (m³)	34.39	Vol Shoe to Top (m³)	19.46	Min Casing AV (m/min)	52.8	Max Casing AV (m/min)	52.8	Min Open Hole AV (m/...	55.6	Max Open Hole AV (m/...	108.0		

### Error

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

g Number		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)
1/20/2014 00:00	2,909.00	0.499	5,150	64
1/20/2014 00:00	2,909.00	1.014	17,500	130

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/12/2014  
Report #: 35  
Depth Progress: 90.00m  
Depth End: 1,816.00mKB  
Rig Release Date: 1/23/2014

### Drilling Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		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)
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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### 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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
CALCIUM CHLORIDE	25.0	43.920	40.0	SX
INVERT	4.0	1,063.330	1.0	M3
OPTISEAL	10.0	96.200	25.0	SX
Truvis	5.0	149.670	25.0	SX
Versacoat HF	2.0	883.570	55.0	BBL
Versatrol	7.0	47.500	50.0	SX

### Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1/12/2014	1,712.00	38.62	308.96	1,698.06	53.81	14.96	-51.68	52.45	8.61
1/12/2014	1,721.50	41.71	305.96	1,705.32	59.55	18.68	-56.55	58.51	11.51
1/12/2014	1,759.50	50.91	309.66	1,731.50	85.95	35.52	-78.27	85.67	7.44
1/12/2014	1,769.00	52.32	310.15	1,737.40	93.15	40.30	-83.98	92.98	4.61
1/12/2014	1,778.50	55.50	312.17	1,742.99	100.56	45.35	-89.76	100.49	11.29
1/12/2014	1,788.00	57.58	311.87	1,748.23	108.23	50.66	-95.64	108.21	6.62

### Formations

Formation Name	Drill Top MD (mKB)	Drill Top TVD (mKB)	Prog Top TVD (mKB)
Little Bear	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/13/2014  
Report #: 36  
Depth Progress: 84.00m  
Depth End: 1,900.00mKB  
Rig Release Date: 1/23/2014

/ UWI 300E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013	
Days From Spud (days) 16.73		Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00	
End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes		Daily Cost Total (Cost) 102,743.95	
Cumulative Cost (Cost) 3,618,287.43		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817	
Estimated Days 34.19		Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB) 54.0		Head Count 600.00	
Cum Personnel Total Hours (hr) 28,321.00		Avg Connection Gas 630		Avg Background Gas 220		Avg Trip Gas Max H2S (ppm) 0	
Road Condition Ice/Snow		Weather Cloudy		Temperature (°C) -28		Wind SE 15kms	

Ops and Depth @ Morning Report  
Circulate and clean hole prior to tripping out of hole to log open hole.

Last 24hr Summary  
No incidents or accidents. 5 - HID, 1 - OBS and 0 - ASA (all closed out)

Drill 222mm intermediate directional hole from 1816m to 1900m with accumulated MWD surveys, rig services, connections and circulation times. WOB: 14-26,000kDaN, RPM - 25 (Motor RPM - 112), Differential pressure: 500-1200kPa, Pump rate: 1.6 m3/min. Torque: 7500-9000ft/lbs, Rotate: 27m - 32% / Slide: 57m - 68%, ROP: 4.1m/hr. Last survey at 1889.5mMD, inclination: 86.61°, azimuth: 302.26°, TVD: 1776.19mTVD. Projection at bit: Intermediate TD- 1908mMD, inclination: 89.46°, azimuth: 302.0°, TVD: 1776.82mTVD.

24hr Forecast  
Circulate and clean hole, trip out of the hole, lay down directional tools, rig up loggers, run open hole logs, pull wear bushing, rig up power tongs and laydown truck, run 177.8mm intermediate casing.

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  
Surface, 603.00mKB

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	02:45	2.75	INTRM1	DRILL	DRLG	P		1,816.00	1,825.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1816mKB to 1825mKB.
02:45	03:00	0.25	INTRM1	RIGMNT	SVRG	P		1,825.00	1,825.00	Rig service function test rig smart anti collision system function test crown saver function test, H.C.R 3 open/close, grease all moving and non moving parts, check fluid levels in floor motor, pump engines, HPU
03:00	03:30	0.50	INTRM1	DRILL	ELOG	P		1,825.00	1,825.00	Relog gamma from 1815 m to 1826 m
03:30	07:15	3.75	INTRM1	DRILL	DRLG	P		1,825.00	1,839.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1825mKB to 1839mKB.
07:15	07:45	0.50	INTRM1	DRILL	SRVY	P		1,839.00	1,839.00	Accumulated time for surveys
07:45	08:00	0.25	INTRM1	DRILL	SFTY	P		1,839.00	1,839.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
08:00	09:30	1.50	INTRM1	DRILL	DRLG	P		1,839.00	1,844.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1839mKB to 1844mKB.
09:30	09:45	0.25	INTRM1	RIGMNT	SVRG	P		1,844.00	1,844.00	Rig service function test rig smart anti collision system function test crown saver function test annular 18 sec close/open, Grease all moving and non moving parts, check fluid level in floor motor and pump engines
09:45	10:00	0.25	INTRM1	DRILL	SFTY	P		1,844.00	1,844.00	B.O.P drill well secure in 90 sec crew in positions. Function test flair stack ignitor function test motor kills.
10:00	15:30	5.50	INTRM1	DRILL	DRLG	P		1,844.00	1,863.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1844mKB to 1863mKB.
15:30	16:00	0.50	INTRM1	DRILL	SRVY	P		1,863.00	1,863.00	Accumulated directional surveys
16:00	16:15	0.25	INTRM1	RIGMNT	SVRG	P		1,863.00	1,863.00	Rig service function test rig smart anti collision system function test crown saver function test pipe rams 5 sec close/open Grease all moving and non moving parts, check fluid level in floor motor and pump engines
16:15	20:00	3.75	INTRM1	DRILL	DRLG	P		1,863.00	1,882.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1863mKB to 1882mKB.

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/13/2014  
Report #: 36  
Depth Progress: 84.00m  
Depth End: 1,900.00mKB  
Rig Release Date: 1/23/2014

### 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
20:00	20:15	0.25	INTRM1	DRILL	SFTY	P		1,882.00	1,882.00	B.O.P drill well secure in 90 sec crew in positions. Function test flair stack ignitor function test motor kills.
20:15	23:30	3.25	INTRM1	DRILL	DRLG	P		1,882.00	1,900.00	Drill 222mm intermediate hole, with Smith FHi18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1882mKB to 1900 mKB.
23:30	00:00	0.50	INTRM1	DRILL	SRVY	P		1,900.00	1,900.00	Accumulated directional surveys

### Fluid/Mud Chks: Mud Engineer: Corey Clark

Time	15:00	Depth (mKB)	1,864.00	Density (kg/m³)	1,015.0	Funnel Viscosity (s/L)	59	pH		PV Override (Pa·s)	14.0	YP Override (Pa)	5.0
Low Gravity Solids (%)	4.8	MBT (kg/m³)		Oil Water Ratio	85/15	Chlorides (mg/L)	242,546	Calcium (mg/L)	55	Lime (kg/m³)	17	Potassium (mg/L)	
Electric Stab (V)	710.0	ECD - Manual Entry (k...)	1,061.0	Sand (%)	3.1	Solids, Corr. (%)	7.6	T Flowline (°C)	53	HTHP Pressure (kPa)		HTHP Filtrate (mL/30...)	4.5
API Filtrate (mL/30min)		Mud Lost to Surface (m³)	4.00	Mud Lost to Hole (m³)	0.00	Daily Mud Field Est (Cost)							10,041.92
Cum Mud Lost to Surface (m³)	39.00	Cum Mud Lost to Hole (m³)	6.00	Cumulative Mud Cost (Cost)									86,989.14

### Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	0	Last Date	1/13/2014	Days Until Next...	5	Next Check Date	1/18/2014
Days Since Lost Time Incident (days)		824.00	Days Since Recordable Incident (days)		824.00				

### Safety Incidents

Date	Com	Category

### Drill String: BHA # 4

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)
	222.0mm, FHi18B, RA3594	0.25	1-3-WT-S-1-CT-TD	429	4.3
zles (mm)	String Length (m)	OD (mm)	Max Rotating Hook Load (daN)		
13.5/13.5/13.5	1,908.00	171.0	69,000		
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled b...	Job Drill Hrs (hr)
1,588.00	1,908.00	5.2	320.00	1,908.00	61.75
					61.75

### Comment

222mm Smith FHi18B insert bit, Pathfinder mud motor set at 2.12 deg (1.91m bit to bend), 7:8 lobe, 5 stage, 70rpm/m3, NM Pony sub monel, MWD flex collar, 2 x NM flex Monels.

### Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Drill pipe - Singles	70.0	101.6	1	6.01	1,908.00
Drill pipe - Stands	70.0	101.6	78	1,484.74	1,901.99
4" HW	70.0	132.0	37	344.73	417.25
Jars	59.0	161.0	1	5.13	72.52
4" HW	70.0	132.0	3	27.54	67.39
6.75" X/O	59.0	168.0	1	0.80	39.85
6.75" NM Flex Mon	70.0	171.0	2	17.48	39.05
6.75" Gap Sub	88.0	162.0	1	0.54	21.57
6.75" Flex Monel	70.0	171.0	1	9.35	21.03
NM Pony Monel	70.0	171.0	1	2.97	11.68
Mud motor	60.0	169.0	1	8.46	8.71

### Drilling Parameter: 1,863.00 - 1,900.00 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
209.00	47.75	5.3	1.700	20,000	20	16,000	69,000	66,000	72,000	69,000	8,900.0

### 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)
70.2	0.00181	15	66.0	2,479.1	375.6	1,015.0	1,036.5
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/min)	Max Open Hole AV (m/min)	
7.30	36.96	19.46	52.8	52.8	55.6	108.0	

### Error

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				

### Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
1/20/2014 00:00	2,909.00	0.499	5,150	64



# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/13/2014  
Report #: 36  
Depth Progress: 84.00m  
Depth End: 1,900.00mKB  
Rig Release Date: 1/23/2014

### Pump Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
1/20/2014 00:00	2,909.00	1.014	17,500	130

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		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)
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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### 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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
CALCIUM CHLORIDE	18.0	43.920	40.0	SX
INVERT	4.0	1,063.330	1.0	M3
Truvis	20.0	149.670	25.0	SX
Versacoat HF	2.0	883.570	55.0	BBL
Versatrol	5.0	47.500	50.0	SX

### Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1/13/2014	1,731.00	44.19	306.67	1,712.27	65.74	22.51	-61.76	64.93	7.98
1/13/2014	1,797.50	60.41	310.28	1,753.12	116.17	56.00	-101.78	116.17	9.92
1/13/2014	1,807.00	63.10	308.96	1,757.62	124.40	61.34	-108.23	124.40	9.25
1/13/2014	1,816.50	66.10	308.78	1,761.69	132.88	66.72	-114.91	132.85	9.49
1/13/2014	1,825.00	69.51	308.34	1,764.91	140.67	71.63	-121.06	140.61	12.12
1/13/2014	1,835.00	73.49	307.55	1,768.08	150.07	77.46	-128.54	149.98	12.15
1/13/2014	1,845.00	76.71	307.55	1,770.65	159.68	83.35	-136.20	159.53	9.66
1/13/2014	1,854.50	79.10	305.56	1,772.64	168.93	88.88	-143.66	168.74	9.73
1/13/2014	1,864.00	80.20	304.07	1,774.35	178.26	94.21	-151.33	178.04	5.79
1/13/2014	1,873.50	82.02	303.67	1,775.81	187.64	99.44	-159.13	187.39	5.88

### Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Arctic	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/14/2014  
Report #: 37  
Depth Progress: 8.00m  
Depth End: 1,908.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

UWI 3u0E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470					
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013		Days From Spud (days) 17.73			
Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00		End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes	
Daily Cost Total (Cost) 189,894.92		Cumulative Cost (Cost) 3,808,182.35		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817		Estimated Days 34.19	
Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB)		Head Count 54.0		Personnel Total Hours (hr) 600.00		Cum Personnel Total Hours (hr) 28,921.00			
Avg Connection Gas 365		Avg Background Gas 170		Avg Trip Gas 28		Max H2S (ppm) 0					
Road Condition Ice/Snow		Weather Snowing		Temperature (°C) -26		Wind NW 15kms					
Ops and Depth @ Morning Report Run 177.8mm intermediate casing at 590m. Fill every 20 joints and break circulation every 600m+/-.									Wellbore Original Hole		

### Ops and Depth @ Morning Report

Run 177.8mm intermediate casing at 590m. Fill every 20 joints and break circulation every 600m+/-.

### Wellbore

Original Hole

### Last 24hr Summary

No incidents or accidents. 13 - HID, 4 - OBS and 0 - ASA (all closed out)

Drill 222mm intermediate directional hole from 1900m to 1908m. Projection at bit: Intermediate TD- 1908mMD, inclination: 89.46°, azimuth: 302.0°, TVD: 1776.82mTVD. Circulate, wiper trip to 1466m (KOP), circulate 2 bottoms up and clean hole, trip out of the hole, lay down directional tools, rig up loggers. Run open hole logs with Schlumberger, log 1 run: AIT-PEX-BHC-TLD2-ECRD to 1814m (65°) at 18:15hrs. Pull wear bushing, slip and cut drill line, change out saver sub on top drive.

### 24hr Forecast

Run 177.8mm intermediate casing, tag bottom, circulate bottoms up, lay down tag joint, make up and land mandrel hanger and landing joint, circulate, rig up cementers, cement 177.8mm intermediate casing, rig out cementers, pick and make up lateral BHA.

### 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

Surface, 603.00mKB

### 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	00:30	0.50	INTRM1	DRILL	DRLG	P		1,900.00	1,901.00	Drill 222mm intermediate hole, with Smith FHI18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1900mKB to 1901 mKB.
00:30	00:45	0.25	INTRM1	RIGMNT	SVRG	P		1,901.00	1,901.00	Rig service function test rig smart anti collision system function test crown saver function test H.C.R 3sec open/close Grease all moving and non moving parts, check fluid level in floor motor and pump engines
00:45	02:30	1.75	INTRM1	DRILL	DRLG	P		1,901.00	1,908.00	Drill 222mm intermediate hole, with Smith FHI18B insert bit and, Pathfinder mud motor set at 2.12deg, 7:8 lobe, 5 stage, 70rpm/m3 from 1901mKB to 1908mKB.
02:30	03:15	0.75	INTRM1	DRILL	CIRC	P		1,908.00	1,908.00	Circulate bottoms up, prepare to do a wiper trip to 1466mKB
03:15	03:30	0.25	INTRM1	DRILL	SFTY	P		1,908.00	1,908.00	Held safety meeting with crew on tripping out of hole
03:30	05:00	1.50	INTRM1	DRILL	TRIP	P		1,908.00	1,908.00	Trip out of hole from 1908mKB to 1466mKB flow checks @1816m, 1466m
05:00	05:45	0.75	INTRM1	DRILL	TRIP	P		1,908.00	1,908.00	Run back in hole
05:45	07:00	1.25	INTRM1	DRILL	CIRC	P		1,908.00	1,908.00	Circulate and prepare to trip out of the hole to lay down directional tools
07:00	07:15	0.25	INTRM1	DRILL	SFTY	P		1,908.00	1,908.00	Crew change and safety meeting, with rig crews, rig manager and Conoco reps.
07:15	08:00	0.75	INTRM1	DRILL	CIRC	P		1,908.00	1,908.00	Circulate and prepare to trip out of the hole to lay down directional tools
08:00	08:15	0.25	INTRM1	RIGMNT	SVRG	P		1,908.00	1,908.00	Rig service function test rig smart anti collision system function test crown saver function test pipe rams 5 sec open/close Grease all moving and non moving parts, check fluid level in floor motor and pump engines
08:15	13:15	5.00	INTRM1	DRILL	TRIP	P		1,908.00	1,908.00	Trip out of hole to lay down directional tools and open hole log Flow check at 1815m/958m/419m/74m
13:15	13:30	0.25	INTRM1	DRILL	SFTY	P		1,908.00	1,908.00	Safety meeting Schlumberger directional Reviewed jsa#161 lay down DC
13:30	14:30	1.00	INTRM1	DRILL	PULD	P		1,908.00	1,908.00	Lay down directional tools F/C OOH close/open blind rams 5 sec
14:30	15:15	0.75	INTRM1	DRILL	PULD	P		1,908.00	1,908.00	Pull wear bushing
15:15	15:30	0.25	INTRM1	EVALFM	SFTY	P		1,908.00	1,908.00	Safety meeting w/Schlumberger loggers reviewed jsa#153 Rig to and log well

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/14/2014  
Report #: 37  
Depth Progress: 8.00m  
Depth End: 1,908.00mKB  
Rig Release Date: 1/23/2014

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
15:30	16:00	0.50	INTRM1	EVALFM	ELOG	P		1,908.00	1,908.00	Wire line open hole log with Schlumberger. Run logs: AIT-PEX-BHC-TLD2-ECRD to 1814m (65°) at 18:15hrs.
16:00	16:15	0.25	INTRM1	RIGMNT	SVRG	P		1,908.00	1,908.00	Rig service, function test crown saver, brake linkage
16:15	21:00	4.75	INTRM1	EVALFM	ELOG	P		1,908.00	1,908.00	Open hole wire line logs with Schlumberger
21:00	22:30	1.50	INTRM1	EVALFM	ELOG	P		1,908.00	1,908.00	Rig out wire line equipment, clean and tidy floor
22:30	23:15	0.75	INTRM1	DRILL	PULD	P		1,908.00	1,908.00	Pick up stand of drill pipe and run in and pull wear bushing
23:15	23:45	0.50	INTRM1	RIGMNT	SLPC	P		1,908.00	1,908.00	Slip and cut 25m off drilling line, reset crown saver
23:45	00:00	0.25	INTRM1	RIGMNT	RGRP	T	Rig	1,908.00	1,908.00	Change out mud saver valve on top drive

### Fluid/Mud Chks: Mud Engineer: Corey Clark

Time	15:00	Depth (mKB)	1,908.00	Density (kg/m³)	1,015.0	Funnel Viscosity (s/L)	59	pH		PV Override (Pa·s)	14.0	YP Override (Pa)	5.0
Low Gravity Solids (%)	5.5	MBT (kg/m³)		Oil Water Ratio	86/14	Chlorides (mg/L)	263,512	Calcium (mg/L)	58	Lime (kg/m³)	16	Potassium (mg/L)	
Electric Stab (V)	720.0	ECD - Manual Entry (k...)	1,061.0	Sand (%)	3.2	Solids, Corr. (%)	9.0	T Flowline (°C)	26	HTHP Pressure (kPa)		HTHP Filtrate (mL/30...)	4.5
API Filtrate (mL/30min)		Mud Lost to Surface (m³)			3.00	Mud Lost to Hole (m³)			0.00	Daily Mud Field Est (Cost)			4,212.39
Cum Mud Lost to Surface (m³)			42.00	Cum Mud Lost to Hole (m³)			6.00	Cumulative Mud Cost (Cost)					91,201.53

### Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	1	Last Date	1/13/2014	Days Until Next...	4	Next Check Date	1/18/2014
Days Since Lost Time Incident (days)			825.00	Days Since Recordable Incident (days)					825.00

### Safety Incidents

Date	Com	Category

### String: BHA # 4

Bit Run	Drill Bit	Length (m)	IADC Bit Dull	TFA (incl Noz) (mm²)	BHA ROP (m/hr)
3rr	222.0mm, FHi18B, RA3594	0.25	1-3-WT-S-1--CT-TD	429	4.3
Nozzles (mm)	String Length (m)	1,908.00	OD (mm)	171.0	Max Rotating Hook Load (daN)
13.5/13.5/13.5					69,000
Depth In (mKB)	Depth Out (mKB)	Avg ROP (m/hr)	Depth This Job (m)	Total Depth Drilled b...	Job Drill Hrs (hr)
1,588.00	1,908.00	5.2	320.00	1,908.00	61.75
					61.75

### Comment

222mm Smith FHi18B insert bit, Pathfinder mud motor set at 2.12 deg (1.91m bit to bend), 7:8 lobe, 5 stage, 70rpm/m3, NM Pony sub monel, MWD flex collar, 2 x NM flex Monels.

### Drill String Components

Item Des	ID (mm)	OD (mm)	Jts	Len (m)	Cum Len (m)
Drill pipe - Singles	70.0	101.6	1	6.01	1,908.00
Drill pipe - Stands	70.0	101.6	78	1,484.74	1,901.99
4" HW	70.0	132.0	37	344.73	417.25
Jars	59.0	161.0	1	5.13	72.52
4" HW	70.0	132.0	3	27.54	67.39
6.75" X/O	59.0	168.0	1	0.80	39.85
6.75" NM Flex Mon	70.0	171.0	2	17.48	39.05
6.75" Gap Sub	88.0	162.0	1	0.54	21.57
6.75" Flex Monel	70.0	171.0	1	9.35	21.03
NM Pony Monel	70.0	171.0	1	2.97	11.68
Mud motor	60.0	169.0	1	8.46	8.71

### Drilling Parameter: 1,900.00 - 1,908.00 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
217.00	50.00	3.6	1,700	20,000	20	16,700	69,000	65,000	72,000	69,000	7,200.0

### 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)
70.2	0.00181	15	66.0	2,479.1	377.2	1,015.0	1,036.6
" 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/...	
7.33	37.20	19.46	52.8	52.8	55.6	108.0	

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

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/14/2014  
Report #: 37  
Depth Progress: 8.00m  
Depth End: 1,908.00mKB  
Rig Release Date: 1/23/2014

### ip Checks

Date	Depth (mKB)	Q Flow (m³/min)	P (kPa)	Strokes (spm)
1/20/2014 00:00	2,909.00	0.499	5,150	64
1/20/2014 00:00	2,909.00	1.014	17,500	130

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/21/2014	1/21/2014	127.0		
1/22/2014	1/22/2014	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)
1/19/2014 00:00	2,513.00	0.647	6,855	83
1/19/2014 00:00	2,513.00	0.897	15,000	115

### Pump Operations

Start Date	End Date	Liner Size (mm)	P Max (kPa)	Vol/Stk OR (m³/stk)
1/19/2014	1/19/2014	127.0	15,000	
1/21/2014		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)
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)
1/19/2014 07:00	2.00	1800	1,000.0	0.400	2,100.0	0.200

### 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)
1/19/2014 13:00	3.00	2000	990.0	0.400	1,700.0	0.200

### Fluid / Mud Additive Amounts

Des	Consumed	Cost	Size	Units
Barite	60.0	17.040	40.0	SX
INVERT	3.0	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)
1/14/2014	1,883.00	84.71	302.88	1,776.91	197.08	104.62	-167.02	196.80	8.85
1/14/2014	1,889.50	86.61	302.26	1,777.40	203.56	108.11	-172.48	203.27	9.22

### Formations

Formation Name	Drill Top MD (mKB)	Drill Top (TVD) (mKB)	Prog Top TVD (mKB)
Little Bear	31.00	31.00	31.00
Slater River	76.00	76.00	76.00
Arctic Red	800.50	800.46	76.40
Martin House	938.50	938.44	76.40
Imperial	975.50	975.43	76.40
Upper Canol	1,665.00	1,658.53	1,653.40
Lower Canol	1,700.72	1,689.07	1,694.40

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Report Date: 1/15/2014  
Report #: 38  
Depth Progress: 0.00m  
Depth End: 1,908.00mKB  
Rig Release Date: 1/23/2014

Rig: Beaver Drilling Ltd. 2

UWI 300E7665-10126-45		Surface Legal Location E-76 65-10 126-45		MaxWell Job Number JOB01@2006		License No. EL 470	
Ground Elevation (m) 268.20		Original KB/RT Elevation (m) 273.40		Casing Flange Elevation (m) 268.00		Original Spud Date 12/28/2013	
Days From Spud (days) 18.73		Job Category DRILLING		Primary Job Type DRILLING ORIGINAL		Actual Start Date 12/9/2013 00:00	
End Date 1/23/2014 23:59		Final Job Status DRILLED		Final Report? Yes		Daily Cost Total (Cost) 339,249.78	
Cumulative Cost (Cost) 4,147,432.13		Total AFE (Cost) 6,820,300.00		AFE+Supp Amt (Cost) 6,820,300.00		AFE / RFE / Maint.# 10351817	
Estimated Days 34.19		Planned Depth (TMD) (mKB) 2,881.00		Override TVD (mKB) 2,881.00		Head Count 54.0	
Personnel Total Hours (hr) 600.00		Cum Personnel Total Hours (hr) 29,521.00		Avg Connection Gas 170		Avg Background Gas 170	
Avg Trip Gas 27		Max H2S (ppm) 0		Road Condition Ice/Snow		Weather Cloudy	
Temperature (°C) -20		Wind W 10 kms		Ops and Depth @ Morning Report Attempt to set Stream-Flo packoff seal assembly above mandrel hanger.		Wellbore Original Hole	

### Last 24hr Summary

No incidents or accidents. 8 - HID, 3 - OBS and 0 - ASA (all closed out)

Change out saver sub on top drive, rig up power tongs and laydown truck, run 177.8mm intermediate casing, tag bottom at 1908mMD, circulate bottoms up, lay down tag joint, make up and land mandrel hanger and landing joint, circulate, rig up cementers, cement 177.8mm intermediate casing (plug down at 22:01hrs on January 15/14 - Full pre-flush returns: 8m3 of CW8 and 8m3 of MudPushII Spacer, cement at surface by calculated volume results), rig out cementers, lay down landing joint.

### 24hr Forecast

Lift BOP, fix Strem-Flo mandrel hanger issue, set Stream-Flo packoff seal assembly and pressure test, make up BHA, run in the hole, drill out cement, float and shoe, drill 156mm lateral hole with accumulated MWD surveys, rig services, connections and circulation times.

### 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, 1,908.00mKB

### 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	01:15	1.25	INTRM1	RIGMNT	RGRP	T	Rig	1,908.00	1,908.00	Change out mud saver valve
01:15	02:30	1.25	INTRM1	CASING	RNCS	P		1,908.00	1,908.00	Rig up Hallmark power tongs and Trotter laydown truck
02:30	02:45	0.25	INTRM1	CASING	SFTY	P		1,908.00	1,908.00	Safety meeting on running tong with Hallmark tong service and lay down truck hands
02:45	07:45	5.00	INTRM1	CASING	RNCS	P		1,908.00	1,908.00	Make up 1-177.8mm float shoe, 1-joint of 177.8mm, 38.69kg/m, P-110, LTC intermediate casing and 1-177.8mm float collar.
07:45	08:00	0.25	INTRM1	CASING	SFTY	P		1,908.00	1,908.00	Crew change and safety meeting, Rig manager and Conoco Reps where present
08:00	08:15	0.25	INTRM1	RIGMNT	SVRG	P		1,908.00	1,908.00	Rig service, check brake linkage
08:15	17:00	8.75	INTRM1	CASING	RNCS	P		1,908.00	1,908.00	Run 149-joints of 177.8mm, 38.69kg/m, P-110, LTC intermediate casing from 1908m to 5.20m. Run 32 x Volant Hydroform centralizers from 1511m to 1908m, run 10 Weatherford Micro Seal Packers from 1415m to 1535m then run 36 Topco bow spring centralizers, fill every 20 joints and break circulation every 700m, tag bottom at 1908mMD. Total length of 177.8mm intermediate casing: 1907.17m. Landed at 1907m, tagged bottom at 1908m, float at 1895.07m.
17:00	18:45	1.75	INTRM1	CASING	CIRC	P		1,908.00	1,908.00	Circulate bottoms up, laydown tag joint, make up mandrel hanger and landing joint. Land mandrel hanger and circulate.
18:45	19:00	0.25	INTRM1	CEMENT	SFTY	P		1,908.00	1,908.00	Hold safety meeting with Schlumberger cementers prior to cementing 177.8mm intermediate casing.

# Daily Drilling

## COPRC DODO CANYON E-76 65-10 126-45

Rig: Beaver Drilling Ltd. 2

Report Date: 1/15/2014  
Report #: 38  
Depth Progress: 0.00m  
Depth End: 1,908.00mKB  
Rig Release Date: 1/23/2014

### 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
19:00	23:00	4.00	INTRM1	CEMENT	CMNT	P		1,908.00	1,908.00	Rig up Schlumberger cementers to cement 177.8mm intermediate casing, pump 8m3 of 1000kg/m3 CW8 pre-flush, stop and pressure test line to 21,000kPa (held OK), bleed off pressure, then pump 8m3 of 1200kg/m3 MUDPUSH II pre-flush spacer and then pump 20 tonnes/24.8m3 (30% excess) of HiLITE 1400 Lead cement with 0.2% Anti Foam + 0.6% Fluid Loss + 0.6% Low Temp Dispersant + 60L/tonne Gas Control Agent + 0.3% Antisettling from 1369m to 5.20m then pump 13 tonnes/9.8m3 (30% excess) of 1900kg/m3 Conventional Class G Tail Cement with 0.6% Fluid Loss + 0.5% Dispersant + 0.2% Anti Foam + 0.2% Retarder + 72L/tonne Gas Control Agent from 1908m to 1369m. Drop plug and displace 37.8m3 of invert. Bump plug 3,500kpa over final circulating pressure of 6,500kpa at 22:01hrs on January 15th 2014, bleed pressure and check floats (holding OK). Pressure test casing to 18,500kpa for 10 minutes (holding OK). Bleed pressure and rig out cementers. Full pre-flush returns: 8m3 of CW8 and 8m3 of MudPushII Spacer, cement at surface by calculated volume results.
23:00	23:45	0.75	INTRM1	DRILL	RURD	P		1,908.00	1,908.00	Lay down landing joint.
23:45	00:00	0.25	INTRM1	DRILL	RURD	T	Non-rig Surface Eqp	1,908.00	1,908.00	Attempt to set Stream-Flo packoff seal assembly above mandrel hanger.

### Fluid/Mud Chks: Mud Engineer: Corey Clark

Time	15:20	Depth (mKB)	1,908.00	Density (kg/m³)	1,055.0	Funnel Viscosity (s/L)	68	pH		PV Override (Pa·s)	14.0	YP Override (Pa)	5.0
Low Gravity Solids (%)		MBT (kg/m³)		Oil Water Ratio	86/14	Chlorides (mg/L)	263,512	Calcium (mg/L)	58	Lime (kg/m³)	16	Potassium (mg/L)	
Electric Stab (V)	700.0	ECD - Manual Entry (k...)	1,061.0	Sand (%)	3.2	Solids, Corr. (%)	9.0	T Flowline (°C)	32	HTHP Pressure (kPa)		HTHP Filtrate (mL/30...)	4.5
API Filtrate (mL/30min)		Mud Lost to Surface (m³)	2.00	Mud Lost to Hole (m³)	0.00	Daily Mud Field Est (Cost)							2,126.66
Cum Mud Lost to Surface (m³)	44.00	Cum Mud Lost to Hole (m³)	6.00	Cumulative Mud Cost (Cost)									93,328.19

### Last BOP Drill

Type	BOP Drill	Days Last Chk (...)	2	Last Date	1/13/2014	Days Until Next...	3	Next Check Date	1/18/2014
Days Since Lost Time Incident (days)		826.00		Days Since Recordable Incident (days)		826.00			

### 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)
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

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