

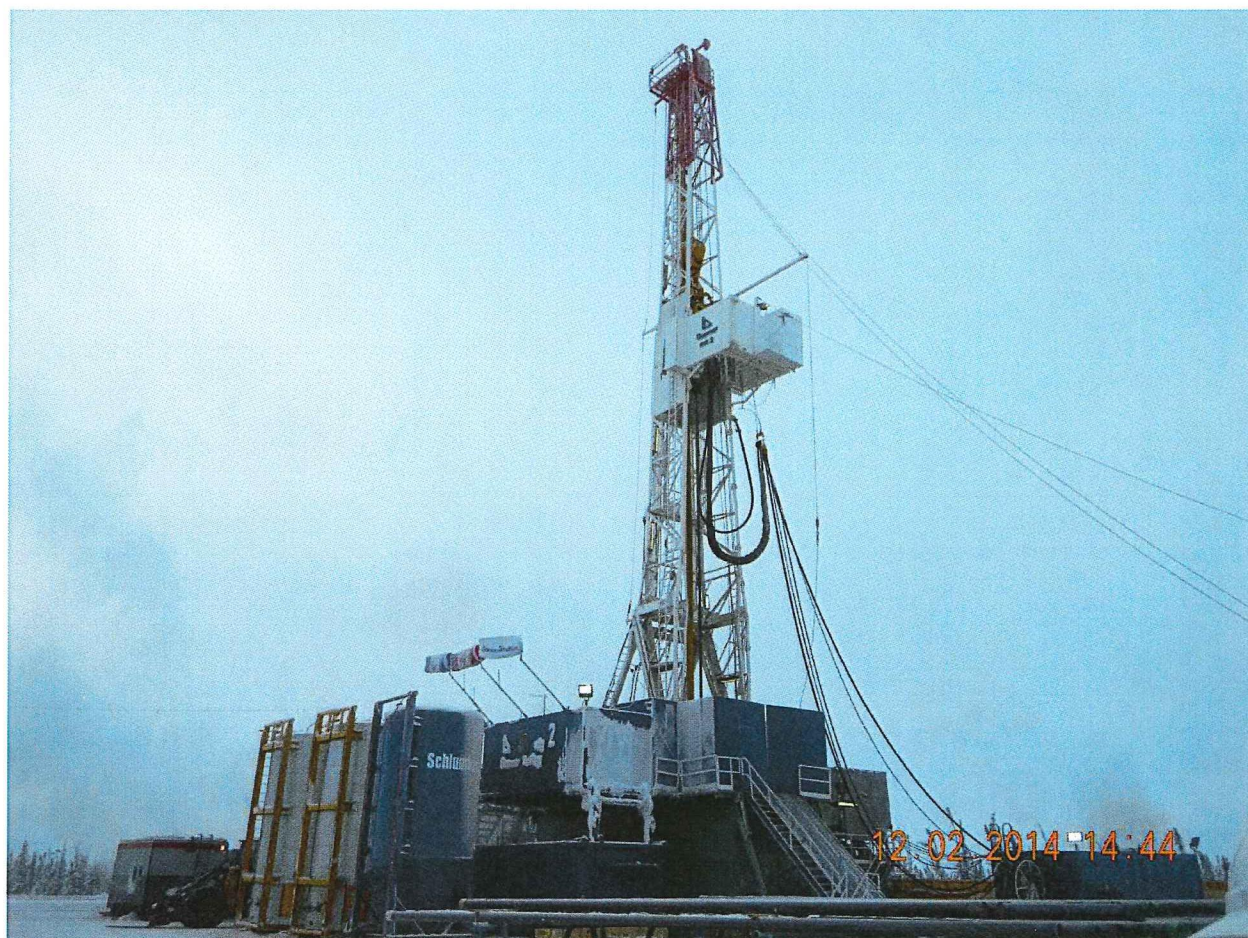
ConocoPhillips Resources Canada CORP.

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# COPRC Dodo Canyon E-76 Final Well Report

*Grid # 65°10', 126°45'*

*2014/04/12*



# COPRC Dodo Canyon E-76

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### 1.0 Introduction

#### 1.1 Summary

The COPRC Loon Creek well was spudded on December 28, 2013 and the rig was released on January 21 2014 after reaching a total depth of 2910 m KB with a total of 27 operating days on the well.

Construction operations to support ConocoPhillips' winter 2013/14 exploration program began on November 22, 2013 with the start of construction of access roads from ConocoPhillips' staging area to the E-76 well site. Initial profiling of the Mackenzie River ice cover was done on November 30 2013 and construction of the ice bridge was undertaken working from both the EL470 and Norman Wells sides of the river. Clearing of the ice bridge route was conducted with flooding and thickening of the 6 km ice bridge beginning in early December. The ice bridge was considered thick enough to support normal loads on December 11 2013 and it was capable of taking full loads by January 30, 2014.

The Dodo Canyon E-76 well pad was completed on December 10 2013 and Beaver Rig 2 was mobilized from the storage site to the E-76 well site beginning on December 11, 2013 and rig up was complete by December 22. Dodo Canyon E-76 was spudded on December 28 2013 and the rig was released on January 21 2014 after reaching a total depth of 2910 metres of which 1002 metres was drilled horizontally in the Canol formation. The well required a total of 27 days for operations from spud to rig release.

Drilling operations were conducted with no major issues and no safety incidents. The top of the Canol target zone was encountered at 1689 meters (TVD). Intermediate hole was drilled to 1908 M MD and logged with Schlumberger open hole tools down to 1814 m. The log run consisted of the AIT-PEX-BHC-TLD2-ERCD logging tools. An intermediate 177.8 mm casing string was run and cemented to surface without any issues. The horizontal hole was logged using logging while drilling (LWD) tools which provides Gamma Ray data. A 114.3 mm liner was run to bottom, set and cemented full length in preparation for completion operations.

Completion operations began on January 29 2014 with the setup of water tanks, a C-ring frac pond and well site trailers. The GNWT Mackenzie Valley Winter road opened on January 20 2014 and completions equipment began arriving on EL470 on January 27 2014. Rig up was completed by February 2, 2014 and completions operations commenced February 5 2014 when coil tubing was used to clean out the wellbore. Hydraulic fracturing operations began February 9 and were completed by February 17 2014. A total of 10 stages were fracked in the E-76 well, with each frac consisting of about 550 m<sup>3</sup> of water and 100 tonnes of sand proppant.

The well was again cleaned out using a coil tubing rig and then a production packer was set at 1798 m KB on wireline. A tubing head was made up on the wellhead in preparation for Flowback operations. Nabors Service Rig #414 was rigged up on the

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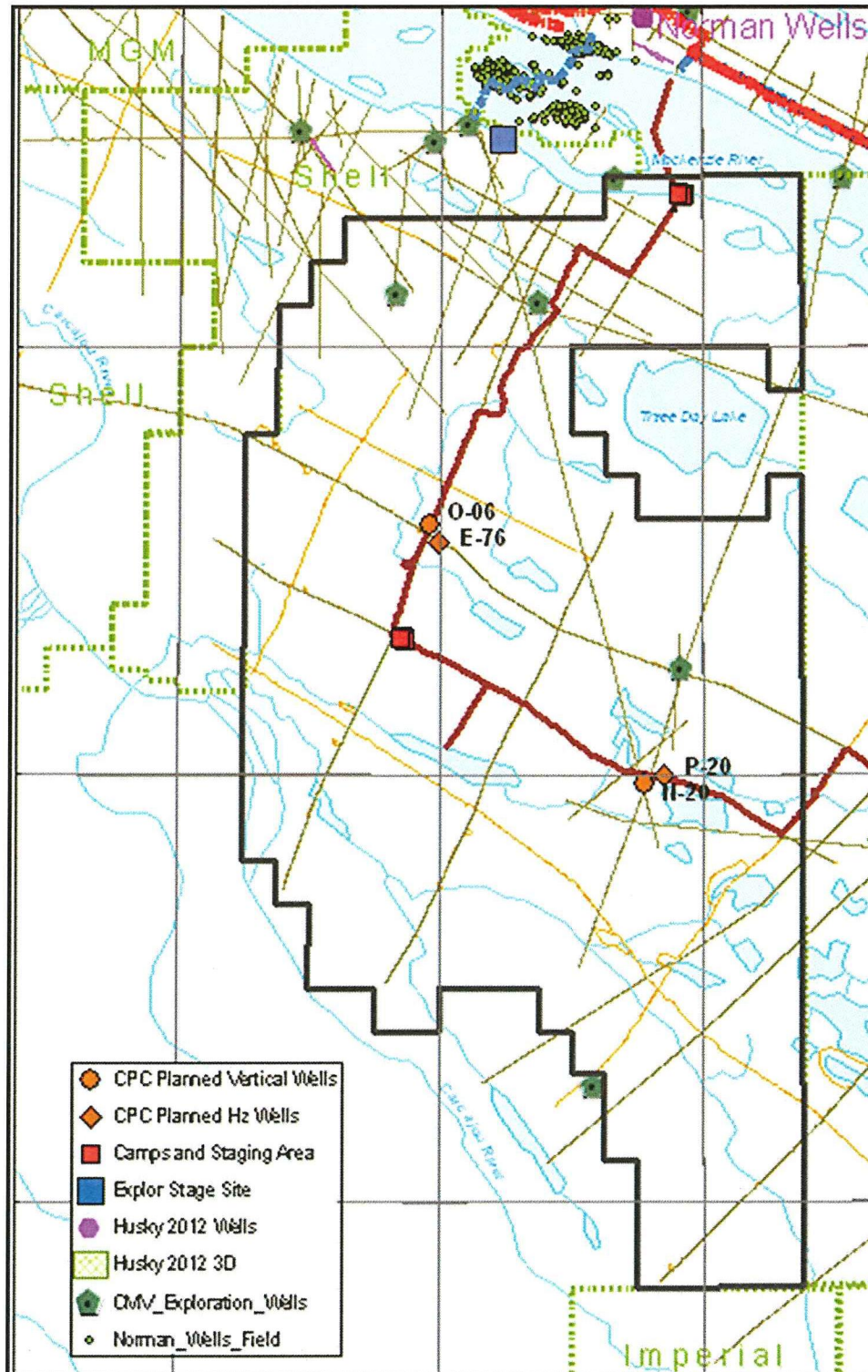
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well on February 26 and ran a string of 60.3 mm tubing complete with Weatherford surface readout down hole gauges and landed the tubing string in the packer. All wellhead and down hole pressure tests were good. Nabors Service Rig was released on March 3 2014 after the wells was swabbed and had flowed to testers for 42 hours.

Dodo Canyon E-76 began flowing on March 2 and was flowed until March 20. The well was flowed for a total 421 hours. Down hole pressure gauges were left in the well to monitor pressure build up following flowback; these gauges will be recovered next season. All completions equipment was rigged out by March 28 2014 and the well was left with wellhead installed and valves locked.



## 1.2 Locality Map



**2.0 General Data**

**2.1 Well Name**

COPRC Dodo Canyon E-76

**2.2 Unique Well Identifier**

300E766510126450

**2.3 Operator and Drilling Contractor**

ConocoPhillips Canada Resources Corporation

Beaver Drilling Ltd. Rig #2

**2.4 Difficulties and Delays**

There were no significant drilling issues or delays experienced on this well.

### **3.0 Summary of Drilling Operations**

#### **3.1 Elevations**

Ground Level: 268.20 m

Kelly Bushing: 273.40 m

KB – Ground Level: 5.20 m

#### **3.2 Total depth**

2910 m KB

#### **3.3 Spud Date and Time**

December 28 2013 @ 0630 Hours

#### **3.4 Date Drilling Completed**

Drilling completed 1/20/2104

#### **3.5 Rig Release Date and Time**

Rig Released 01 /23/13 @2400 Hrs.

#### **3.6 Well Status**

Suspended

#### **3.7 Hole sizes and depths**

Surface Hole: 311 mm to 603 m KB

Intermediate Hole: 222 mm to 1908 m KB

Main Hole: 156 mm to 2910 m KB (TD)

#### **3.8 Casing and Cementing Record**

##### **3.8.1 Conductor Hole**

508 mm conductor set at 20 m. Cemented to surface with 10 t class 'G' Arctic blend cement.

##### **3.8.2 Surface Hole**

244.5 mm, 53.57 kg/m, J-55 LTC set at 603.0 m KB. Cemented to surface with 32 t RFC 1740 cement.

##### **3.8.3 Intermediate Hole**

177.8 mm, 38.69 kg/m P-110 LTC set at 1908.0 m KB. Cemented to surface with 20 t HiLITE 1400 lead cement followed by 13 t Class 'G' tail cement.

##### **3.8.4 Production Hole**

114.3 mm, 17.26 kg/m P-110 LTC liner set at 2909 m KB(TD). Cemented to liner top with 21 t Class 'G' cement.



### **3.9 Drilling Fluids**

#### **3.9.1 Surface Hole**

Gel Chemical (MI Swaco)

#### **3.9.2 Intermediate/Main Hole**

Versaclean Mineral Oil (MI Swaco)

### **3.10 Formation Leak Off Tests**

#### **3.10.1 Surface Casing Drill out**

A Formation Integrity Test (FIT) was conducted on Dodo Canyon E-76 on January 7, 2014 at a depth of 989 m KB after drilling out the surface casing shoe at 603 m KB and making 386 metres of new hole. The FIT at 989 m KB was conducted with 1008.0 kg/m<sup>3</sup> OBM in the hole and was taken to a pressure of 2500 kPa with no leak off. This equates to an equivalent fracture pressure of 12280 kPa or an equivalent mud weight of 1270 kg/m<sup>3</sup>.

### **3.11 Time Distribution**

Casing: 62.0 hrs.

Cementing: 17.75 hrs.

Drilling: 415.50 hrs.

Formation Evaluation: 14.25 hrs.

Rig Move: 433.50 hrs.

Rig Maintenance: 77.0 hrs.

Wellhead/BOP testing: 84.0 hrs.

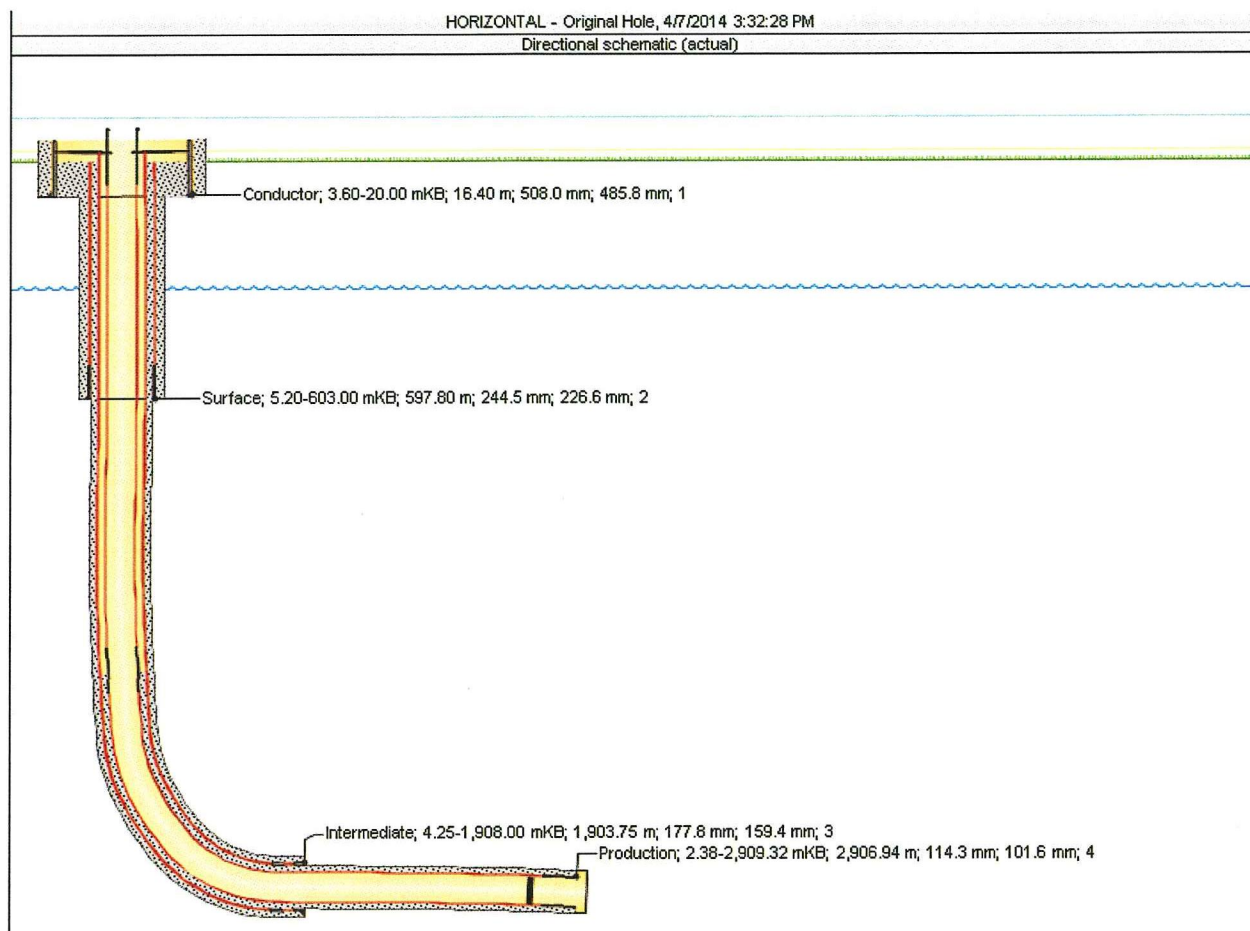
Trouble Time: 57.5 hrs.

### **3.12 Deviation Survey**

The maximum deviation encountered on surface hole on this well was 1.0° at 306.0 m KB. The well kick off point was at approximately 1400 m KB and the well was deviated to horizontal at approximately 1900 m KB at intermediate casing point. The horizontal section of the well comprised some 1002 meters of 156 mm hole.

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## 3.13 Composite Drilling Record

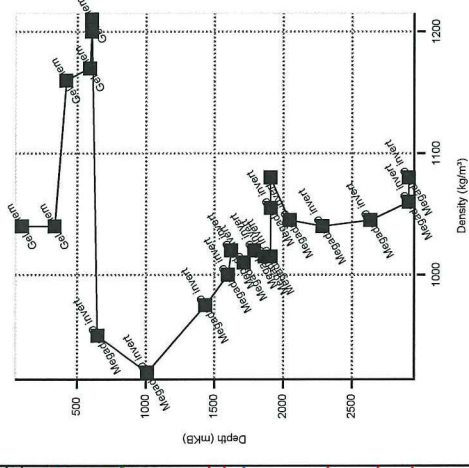


# Drilling Summary CANYON E-76 65-10 126-45

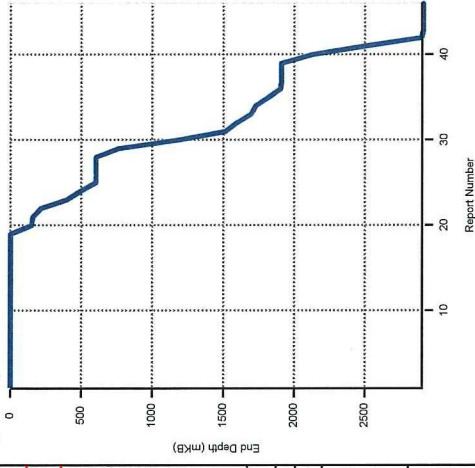
Job Summary Information		Well Config		Actual Start Date		End Date		Drilled Depth (m)	
Job Category	DRILLING	Well Config	HORIZONTAL	Actual Start Date	12/29/2013	End Date	1/23/2014	Drilled Depth (m)	2,910.00
REF/REF/ Maint#	10351817	Total AFE (Cost)	6,820,300.00	AFE/Supp Amt (Cost)	6,820,300.00	Total AFE (Cost)	6,820,300.00	Total PR Ext (Cost)	6,447,888.47
Agg ROP (m/hr)	12.8	Spud to TD duration (hr)	546.28	Cost Per Depth Drilled (Cost/m)	2,215.77				
Objective Land 1,000 meter horizontal in Lower Canal formation.									
Summary									
Beaver Drilling Ltd., 2									
Rig Supervisor RICK YAVIS									
Phone Mobile									
Time Log Summarized by Unscheduled Type									
P	Time P-T-X	End Depth (mKB)	1,046.50	% Total Time (%)	94.79				
T		End Depth (mKB)	57.50		5.21				
Interval Lessons									
Start Depth (mKB)	End Depth (mKB)	LL Activity Code	Com	Prod Savings (\$)	Cost				
Interval Problems									
Start Depth (mKB)	End Depth (mKB)	Trouble Code	Problem Summary	Problem Cost (Cost)					
2,115.00	2,115.00	Non-Hg Surface Esp	work on NOV system	6,407.00					
1,908.00	1,908.00	Wellhead/Tree	casing bowl needed work to set 7" seals	94,488.00					
1,749.00	1,749.00	Rig	change liners	9,610.00					
156.00	156.00	Rig	top drive motor failed wait on parts to repair	257,888.00					

Mud WT vs Depth		Original Spud Date		County		State/Province		Rig Release Date	
		12/28/2013 06:30				N.W.T.		1/23/2014 23:59	
		5.40							

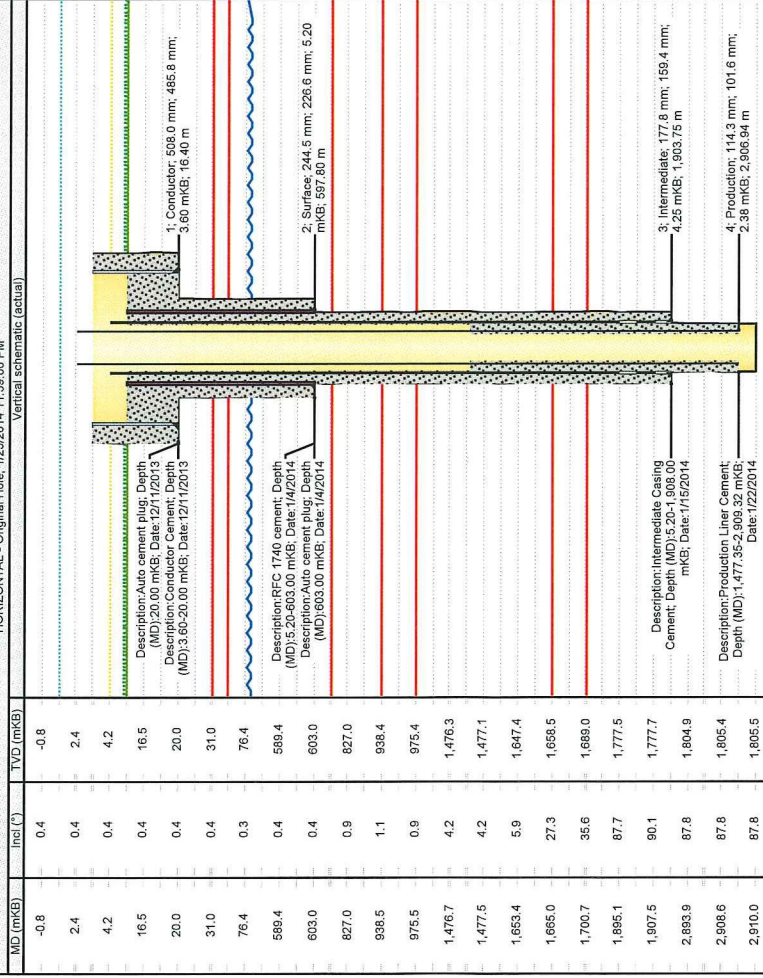
## Mud WT vs Depth



## Days vs Depth



## Vertical schematic (actual)



## Bit Summary

Bit Run	Drill Bit	Depth In (mKB)	Depth Out (mKB)	Drilled (m)	Drill Time (hr)	BHA ROP (m/hr)	WOB Max (daN)	WOB Min (daN)	Max RPM (rpm)	Min RPM (rpm)
1A	311.0mm, JKL B18132	0.00	603.00	603.00	50.00	12.1	17,000	3	120	100
1	222.0mm, G16, 21191	603.00	1,588.00	985.00	57.25	17.2	7,000	5,000	149	118
3	222.0mm, FHI188, RA3594	1,588.00	1,691.00	103.00	11.75	8.6	13,000	12,000	149	149
3r	222.0mm, FHI188, RA3594	1,691.00	1,908.00	217.00	50.00	4.3	20,000	13,000	149	120
4	155.0mm, G13, JH402	1,908.00	2,910.00	1,002.00	56.00	17.9	12,000	8,000	228	178