

## 2. Drilling

### 2.1. Drilling Summary

<b>Saturday, 05/10/2013:</b>	Started drilling conductor from 3.5 m to 14.7 m.
<b>Sunday, 06/10/2013:</b>	WOC. RIH 8 1/2" BHA, dill out conductor plug. M/up 8 1/2" hammer BHA, RIH. Setup blooie/sample lines. RIH, fracture in conductor cement returning air to surface. Re-cement conductor.
<b>Monday, 07/10/2013:</b>	Drill out csg shoe. WOC. 0800hrs, Drill from 14.7m to 254m. Water @ 124 and 182m.
<b>Tuesday, 08/10/2013:</b>	Drill to 304m. Water at 254 and 290m. POOH, run 7" casing.
<b>Wednesday, 09/10/2013:</b>	Casing run to 300m. Wait on cement contractor.
<b>Thursday, 10/10/2013:</b>	Wait on cement silo to arrive on site. PJSM with Trican. Rig up and pump cement.
<b>Friday, 11/10/2013:</b>	Wait on cement. Nipple up BOP, Koomey, Choke. Begin function testing.
<b>Saturday, 12/10/2013:</b>	Pressure test BOP. RIH 6 1/8" PDC, tag cement @ 219m, drill out cement. POOH, Bit Trip 6 1/4" Hammer.
<b>Sunday, 13/10/2013:</b>	Drill F/304m T/307m. Well making water. Formation Integrity Test. Unload well, drill ahead. Making about 60bbls/hr. water. Drill to 385m.
<b>Monday, 14/10/2013:</b>	Pull back, Attempt to unload well. POOH, change out hammer, RIH. Hammer won't fire, POOH.
<b>Tuesday, 15/10/2013:</b>	Run HWT casing. Rig up to run HQ gear. Set up gas agitator and sample lines. Drill HQ core.
<b>Wednesday, 16/10/2013:</b>	Drill ahead. Poor ground, short runs. Run 13 stuck pipe - 1.4m dropped core.
<b>Thursday, 17/10/2013:</b>	Replace bit, reamer & locking coupling, RIH. Drill ahead. Short runs, slow drilling.
<b>Friday, 18/10/2013:</b>	POOH to change out running gear for 3m Barrel. RIH. Drill on.
<b>Saturday, 19/10/2013:</b>	488.3-493.3m - lost core. POOH, change bit, RIH. Drill ahead.
<b>Sunday, 20/10/2013:</b>	Drill ahead F/511.5m. Good ground.
<b>Monday, 21/10/2013:</b>	POOH Bit Trip. Depth 540.5m. Replace top drive motor and undertake BOP test. Unload well on air.

**Tuesday, 22/10/2013:** Drill ahead F/545.2. Rig shutdown for extended maintenance.

**Wednesday, 23/10/2013:** Drill ahead F/545.2. Rig shutdown for extended maintenance. RIH, Drill @ 2300 Hrs

**Thursday, 24/10/2013:** Drill ahead. Diagnose pump pressure issues. POOH. Drill string parted @ 390m. RIH Fish

**Friday, 25/10/2013:** Retrieved fish @ 05:15. POOH to surface. Pump bentonite pill, RIH. Condition mud & circulate. Drill ahead.

**Saturday, 26/10/2013:** Drill ahead to 590m. Stuck tube. POOH. M/up new barrel, RIH. Drill 0.1m rubble. Block off. Stuck tube. Unable to retrieve. POOH

**Sunday, 27/10/2013:** Diagnose stuck tube problem.

**Monday, 28/10/2013:** Drill F/590.35 T/610.65

**Tuesday, 29/10/2013:** POOH

**Wednesday, 30/10/2013:** Rig Down

**Thursday, 31/10/2013:** Rig Down

**Friday, 01/11/2013:** Rig Down. Perforate casing and cement.

**Saturday, 02/11/2013:** Wait on cement. RIH, drill out cement. @ 287m midnight.

**Sunday, 03/11/2013:** Continue to drill out cement to 329m. POOH to check bit, bit face damaged, replace and RIH. Continue to drill out cement. Depth adjusted to 612.3m.

**Monday, 04/11/2013:** Drill cement, 6am depth 352m. 1800 hrs 612.3m. Drill on.

**Tuesday, 05/11/2013:** 627.1m. RIH drill to 642m. Pooh 240m and DAF pipe to reduce torque. RIH, 2 hangups, drill out rubble. Drill on from 642m @ 2140hrs.

**Wednesday, 06/11/2013:** Drill on from 647.3m. 2030hrs POOH change bit.

**Thursday, 07/11/2013:** RIH. 0300hrs, drill on. Depth @0600hrs 677.8m. Drfill to 694.75m, core barrel not seating - POOH - BOP test.

**Friday, 08/11/2013:** Run BOP test. RIH, 0410hrs, drill on.

**Saturday, 09/11/2013:** Drill on. Bit change 779.7m @ 2045hrs

**Sunday, 10/11/2013:** Bit change. Drill on from 779.7 @ 0345hrs.

**Monday, 11/11/2013:** Drill on from 828.85m. POOH to change bit.

**Tuesday, 12/11/2013:** POOH, change bit, RIH, drill on from 874.88m.

**Wednesday, 13/11/2013:** Drill on from 912.09m.

**Thursday, 14/11/2013:** Drill on from 948.15m. POOH @957.25m run 6m core barrel and RIH. Rig maintenance. RIH and re-commence drilling @2025hrs. Drill on.

**Friday, 15/11/2013:** Drill on from 965.2m.

**Saturday, 16/11/2013:** Drill on from 1015.61m. Down for 2 hrs ( 0220hrs-0420hrs) due to faulty extension cable. POOH @1043.1m, bit change. RIH.

**Sunday, 17/11/2013:** Drill on from 1043.1m.

**Monday, 18/11/2013:** Drill on from 1084.75m. 1430 hrs, winch cable damaged, replace cable. Resume drilling 23:00 hrs.

**Tuesday, 19/11/2013:** Drill on from 1114.8m.

**Wednesday, 20/11/2013:** Drill on from 1161.95m to 1185m. POOH change bit, replace main winch cable, RIH.

**Thursday, 21/11/2013:** RIH, ream 18m to bottom, drill on from 1185m.

**Friday, 22/11/2013:** Drill on from 1198.52m.

**Saturday, 23/11/2013:** Drill to 1275m, TD called, circulate and condition hole; WO loggers

**Sunday, 24/11/2013:** Standby; WO orders & weather

**Monday, 25/11/2013:** Log well, rig down

**Tuesday, 26/11/2013:** rig down, WO weather

**Wednesday, 27/11/2013:** rig down, WO weather

**Thursday, 28/11/2013:** rig down, WO weather

**Friday, 29/11/2013:** rig down, WO weather

**Saturday, 30/11/2013:** rig down, WO weather

**Sunday, 1/12/2013:** rig down, WO weather

**Friday, 2/12/2013:** rig released

## 2.2. Equipment Installed in and on the Well

### Wellhead

- None-plugged with well name on metal plate

### Conductor Casing

- Drill 12-1/4" hole to 12.0 m
- Case with 36lb/ft J-55 to 12.0m
- Burst 3520 psi
- Collapse 2020 psi

### Surface Casing

- Drill 8-1/2" hole to 304 m
- Case with 23lb/ft API 5CT J55 to 304m
- Burst 4360 psi
- Collapse 3270 psi

### Intermediate Casing

- Drill 6-1/4" hole to 391 m
- Case with 11.6 lb/ft. API 5CT J55 to 391m
- Burst 5350 psi
- Collapse 4960 psi

### Production Casing

- N/A

### 2.3. Wellbore Schematic

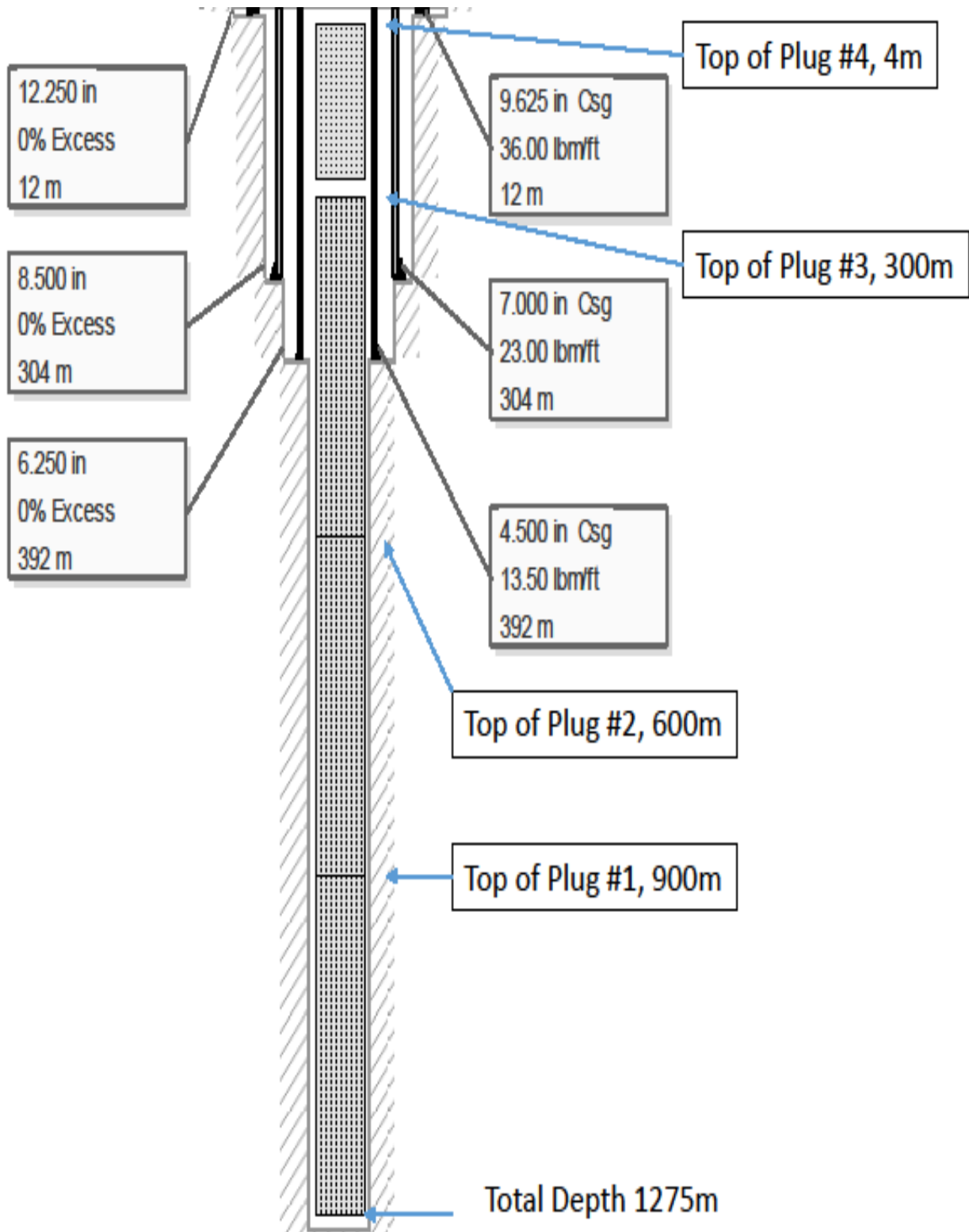


Figure 1: Drill Schematics.

## 2.4. Casing Runs

- **Conductor Casing 9-5/8” set @** 12.0 m
- **Surface Casing 7” set @** 304.0 m
- **Intermediate Casing 4-1/2” set @** 392.0 m

## 2.5. Drilling Equipment

**Table 1: Drilling Equipment.**

<b>Drilling Contractor</b>	
Name	Nitro Drilling
Address	L1, 1 Beach Road, Coolum Beach, QLD
<b>Drilling Rig</b>	
Make	“Xena” - Sandvik
Type	DE880
Capacity	50, 000lb Pullout
Engine	Cummins QSC 8.3 235kW (315HP) @ 1800rpm
Mast	12.3m, 82000 lb., 9m pipe pull capacity
Water Pump	Bean Pump, 140 l/min @ 7000kPa
<b>Air Compressor</b>	
Make	2 x Sullair
Type	DC 1150/350 C21
Max Output	350 psig - 24 bar
Engine	CAT C15 Acert
<b>BOP</b>	
Stack	Double Action Gate w/Blind & Pipe Rams, Rotating Head
Annular Size	11”
Working Pressure	3000psi
<b>Koomey Unit</b>	
Make	R & T Controls - Advanced Pressure Inc.
Working Pressure	3000psi
Volume	69.6 gallons
<b>Choke Manifold</b>	
Make	Sanya
Working Pressure	5000psi
Size	3 1/8”

## 2.6. Deviation Report

**Table 2: Deviation survey**

Depth [m]:	Deviation [degree]
588	89

## 2.7. Cementing Operation

**Table 3: Cementing Operation.**

	Conductor Casing	Surface Casing	Intermediate Casing	Core Hole
Hole Size (inches)	12-1/4"	8-1/2	6-1/4	3.5"
Casing Size (in)	9-5/8	7	4-1/2"	Nil
Setting depth (m)	12	304	392	1275
Est. BHT ©	26 deg	33 deg	48.6 deg	59 Deg
Tail / Lead	Tail:13.6-14.6 ppg*	Tail:13.6-14.6 ppg	Tail: 13.6-14.6ppg	Tail:13.6-14.6ppg
Cement type	Class A	Class A pozzollanic 25% fly ash	Class A pozzollanic 25% fly ash	Class A pozzollanic 25% fly ash
Yield (cu ft/s)	Tail: 1.25	Tail: 1.25	Tail: 1.25	Tail: 1.25
Mix water type	Fresh water	Fresh water	Fresh water	Fresh water
Excess (%)	10	20	25	25
TOC (m)	Cement to Surface	Cement to Surface	Cement to Surface	Cement to Surface
Displacement fluid	Water	Water	Water	Water
Centralisers	Nil	Shoe Only	Shoe only	

## 2.8. Bit Record

Table 4: Bit Record for Lamont Pass #3

Bit Record		Size	Make	Depth in [m]	Depth out [m]	Meters drilled	WOB	RPM
1	Conductor	12-1/4"	PDC	0	12	14	5	45
2		8.1/2"	Hammer	12	14	2	2	35
		8.1/2"	PDC	14	14.8	0.8	2	35
3		8.1/2"	Hammer	14.8	304	307.5	2	35
4	intermediate	6-1/8"	PDC	304	307.5	3.5	2	35
5		6-1/4"	Hammer	307.5	391	83.5	2	35
6		6-1/4"	Hammer	391	391	0		
7		HQ	Core	391	438.4	47.4	5 - 7	550
8				438.4	458	19.6	2.5	35
9				458	493	35	5- 7	370
10				493	540	47	5 - 8	350
11				540	569.9	29.9		512 - 550
12				569.9	590.45	20.55		512 - 550
13				590.45	590.45	0		512 - 550
14				590.45	612.45	22		
15			Foria Core bit	612.45	627.15	14.7		
16			Foria Core bit	627.15	672.15	45		
17				672.15	672.15	0		
18			Asahi	672.15	694.75	22.6		470
19			Asahi	694.75	779.75	85		470
20			Asahi	779.75	874.81	95.06		500
21			Fordia	874.81	957.15	82.34		500
22			Asahi	957.15	1043	85.85		500
23			Hayden	1043	1185	142	2 -4	500
24			Foria Core bit	1185	1275.2	90	3.5	470

## 2.9. Drilling Fluids

Air/Mist drilling w/soap: 4.2m – 392m; Native mud 392m – 1275.2m

Hole was drilled on air/mist. During coring & wireline logging operations the hole was loaded with a KCI native mud. Average loaded-hole fluid properties were:

- Density  $\rho$ : 1.02 g/c3
- Viscosity: 30 sec/qt