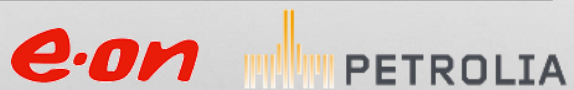


Partners:



PL 674 BS | Zulu

Final Well Report

Well 26/10-1

Rig: Island Innovator

13.08.2015 | Document no.: PL674BS-LUN-G-RA-3001


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- Section A : Geology and Geophysics
- Section B : Drilling and HSE Experience
- Section C : Enclosures

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1 General Information

1.1 Well data record, 26/10-1

Well name	:	26/10-1
Type of well	:	Exploration
Prospect	:	Zulu
Country	:	Norway
Area	:	North Sea
License	:	PL 674 BS
Partners	:	Lundin Norway AS (Operator) 35 % Petrolia Norway AS 35 % E.ON E & P Norge AS 30 %
Rig name	:	Island Innovator
Type	:	Semi-submersible
Air gap (RT – MSL)	:	30 m
Water depth	:	139.6 m MSL
Total depth of well	:	Driller's depth: 1025.00 m MD RKB 1024.95 m TVD RKB 994.95 m TVD MSL Logger's depth: 1023.20 m MD RKB 1023.15 m TVD RKB 993.15 m TVD MSL
Formation at TD	:	Hordaland Group / Lark Formation. /
Geographic coordinates	:	Latitude: 59° 00' 01.87" N Longitude: 03° 04' 14.70" E
UTM coordinates	:	ED-1950, International Ellipsoid, UTM Zone 31, Central Meridian 03° East 6 540 262.88 m North 504 064.90 m East
Seismic reference	:	Survey: MC-3D Utstord Inline: 1712 Crossline: 4769
Rig heading	:	316.10° True / 316.04° Grid
Convergence	:	0.06° World Standard
Final position	:	The rig was 0.30 m on a bearing of 20.15 °T from intended spud location.
NPD wellbore Code	:	L-1550
NPD wellbore ID	:	7609
NPD Rig Code	:	426940

Unless otherwise stated, all depths are in meters measured depth (m MD) with the drillfloor (RKB) as reference datum.

1.2 Purpose of the well

Well 26/10-1 was a vertical exploration well designed to investigate the hydrocarbon potential of the Zulu prospect in license PL 674 BS. The prospect is a prominent fan complex consisting of Miocene age sands and sandstones of the Utsira Formation.

The well had the following objectives:

Primary objectives

- Evaluate the reservoir properties and prove the presence of hydrocarbons (oil) within the sands / sandstones of the Utsira Formation.
- Prove the presence of high quality reservoir facies.
- Determine an oil-water contact.
- Drill through and verify the top Hordaland Group reflector.
- Acquire information to aid planning of development wells in the Zulu area.

1.3 Results of the well

The well encountered approximately 24 meters of dry gas filled reservoir in Utsira Formation sands with good reservoir qualities. Data acquisition and fluid sampling was carried out to evaluate the reservoir contents.

Well 26/10-1 was drilled to a measured depth of 1025 m MD RKB (1024.95 m TVD RKB). Total depth was set in claystones of the Lark Formation.

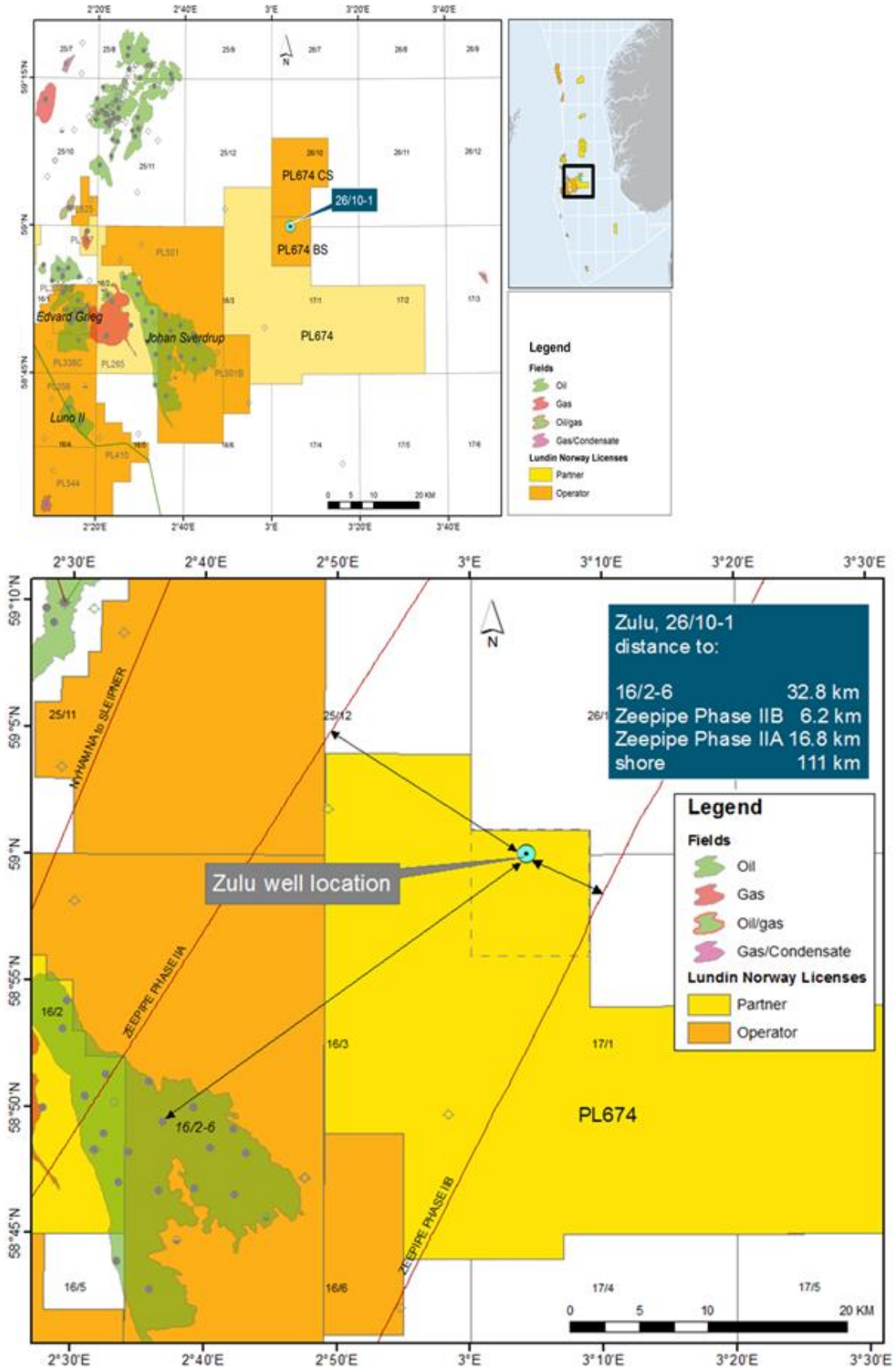
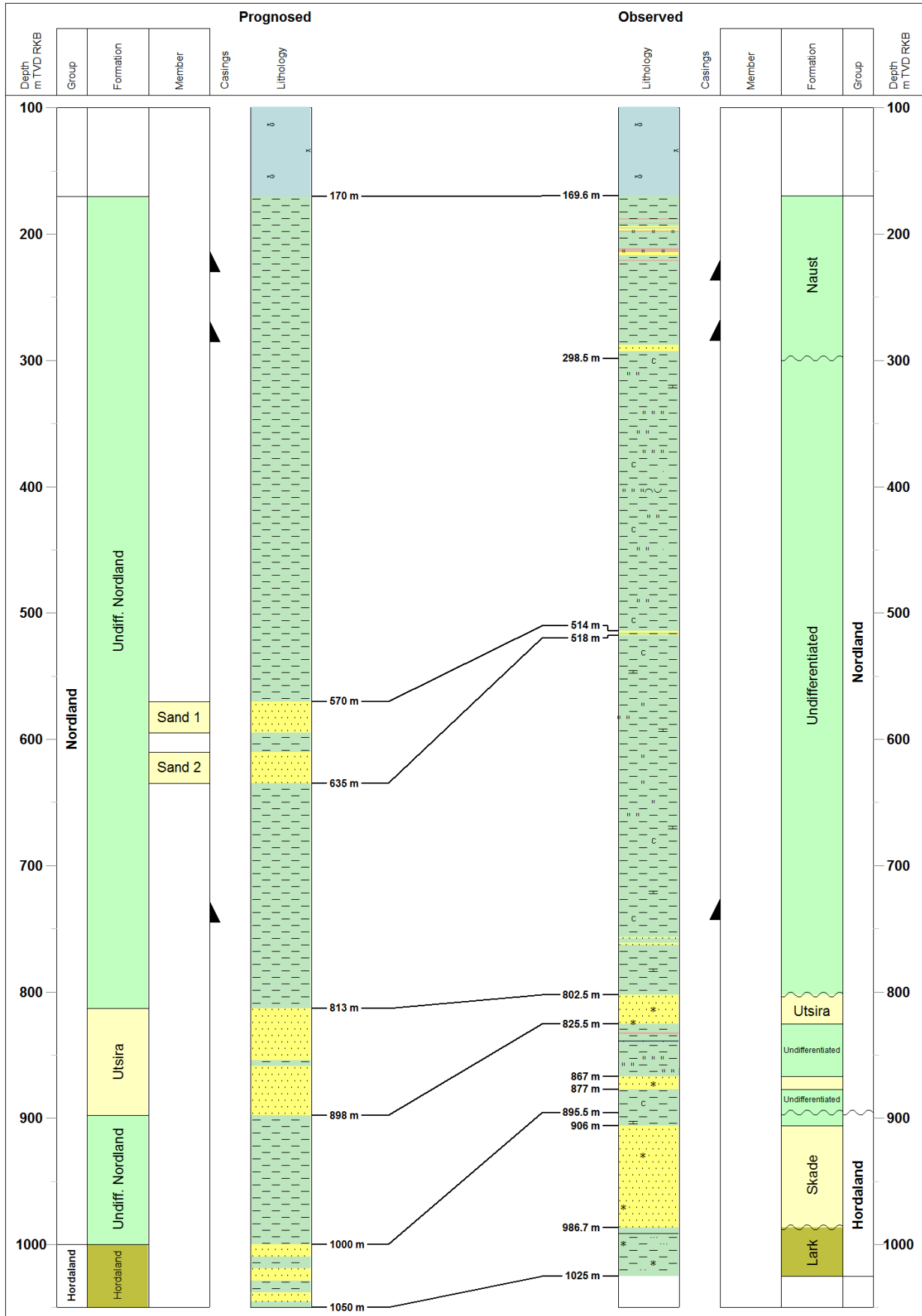


Figure 1-1: Location map, well 26/10-1 Zulu.



Well: 26/10-1

Gravitas template v2.05 [20110802] - A-JC Document date 14.08.2015

Figure 1-2: Well 26/10-1, pre and post drilling correlation.

1.4 Well history, Zulu.

Rig on license	18.01.2015 at 14:30 hrs
Rig on location	18.01.2015 at 18:40 hrs
Spud date	20.01.2015 at 01:00 hrs
Start wireline logging	04.02.2015 at 14:30 hrs
Finish wireline logging	05.02.2015 at 14:30 hrs
At m MD RKB (TD)	04.02.2015 at 04:50 hrs
Drilled interval	169.6-1025 m MD RKB
Start P&A	05.02.2015 at 16:00 hrs
Finish P&A	13.02.2015 at 02:30 hrs
Rig off license	13.02.2015 at 17:30 hrs

2 Geological Report

2.1 Geological and structural setting

PL 674 BS is located on the Patch Bank Ridge in the southernmost part of the Stord Basin, east of the Utsira High in the Central North Sea.

2.2 Prospect Definition

The Zulu prospect is a well-defined structure on the Miocene age Utsira Formation level. It is a structurally uplifted area with anomalous strong seismic events and a flat-spot and it has a distinct and well-defined 4-way dip closure with a structural spill point to the North.

The well tested a model in which oil spilling from the Johan Sverdrup discovery could potentially leak into shallow Paleocene intervals and migrate into the Zulu prospect.

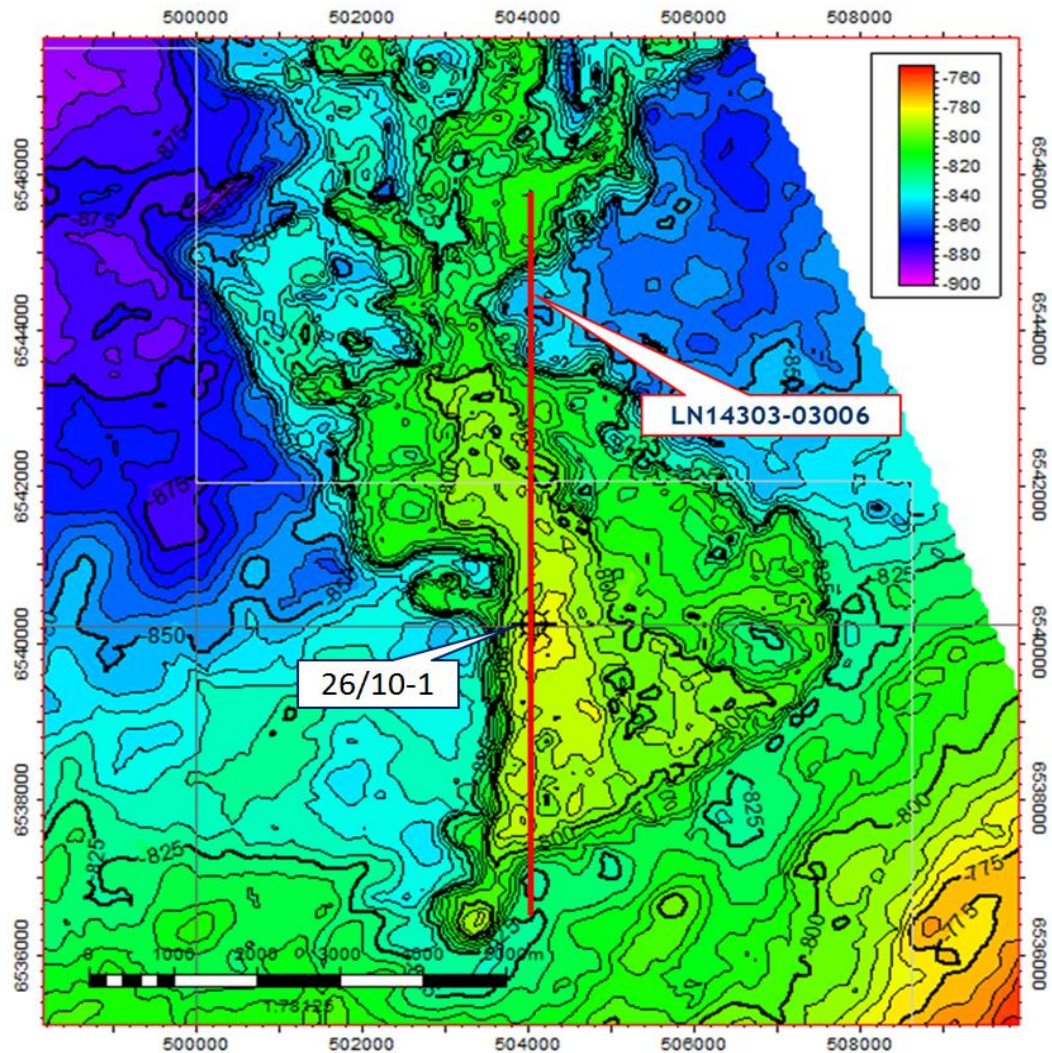


Figure 2-1: Well 26/10-1, Top Utsira Formation depth map.
(Line location for seismic line in Figure 2-4)

2.3 Depositional setting

Three Miocene sandstone units are recognised in this well: The Lower Miocene Skade, Middle Miocene Eir (informal) and Upper Miocene Utsira Formations. These are considered to represent three depositional cycles within the large-scale fan complex defined by seismic mapping. Attribute analysis suggests this fan complex has a broadly south to north and northeast, elongate form of coalescing fan packages sourced from a series of feeder channels in the southwest. The well data is consistent with this interpretation and these sand units are considered to be amalgamated and stacked gravity flows deposited in a relatively deep marine basin. The thickest, 80.7 m TVD, cycle of sandstones (Skade Formation) has the most massive and 'blocky' log profile which suggests a mid-fan position. The overlying Eir sandstones (10 m TVD thickness) and Utsira Formation (23 m TVD thickness) are less massive and represent gravity flows introduced into lower fan settings within this large-scale fan complex. Both the upper and lower boundaries of this fan complex are considered to be unconformities. An internal boundary, the mid Miocene unconformity, is also developed based on irregular seismic reflectors and abrupt changes observed on the logs.

The majority of the thick overlying Pliocene succession (504 m TVD thickness) is dominated by fine-grained silici-clastic sediments (undifferentiated Nordland Group sediments) is typical of a muddy basin floor deposited in a gradually shallowing outer shelf to upper slope setting. The prominent base Pleistocene reflector at 298.5 m MD RKB at the base of the Naust Formation shows a change in depositional style from gradual, continuous marine deposition to irregular infill above the unconformity in response to the effects of Pleistocene glaciation. The present day water depth is 139.6 m MSL.

2.4 Stratigraphy

The lithostratigraphy is based on cuttings descriptions, interpretation of MWD/LWD logs, wireline logs, biostratigraphy, seismic and log correlations based on reference to offset wells. No cores were taken in this well.

Note there is an apparent -2 to -3 m offset between wireline logs and LWD logs used at wellsite. At the top of the Utsira Formation the difference is -3 m and at the base of the Skade Formation the difference is -2.3 m.

The Neogene lithostratigraphic nomenclature follows Eidvin et al. (2013) and the NPD (2014) standard recommendation. The use of the relatively new formation names (for the area) e.g. 'Naust Formation' and informal units e.g. 'Eir Formation' are discussed in the appropriate sections.

The chronostratigraphy and lithostratigraphy of well 26/10-1 are summarised in Table 2-1, Table 2-2 and Figure 2-2.

2.4.1 Table of chronostratigraphy, well 26/10-1

The chronostratigraphy of well 26/10-1 is presented in Table 2-1.

Table 2-1: Chronostratigraphy of well 26/10-1

Stratigraphic succession		Depth interval		
Period/Epoch	Age tops	m MD RKB	m TVD RKB	m TVD MSL
RKB		0.0	0.0	0.0
MSL		30.0	30.0	30.0
Quaternary	Pleistocene (no biostrat control)	169.6	169.6	139.6
	-----Stratigraphic Break-----	298.5 log	298.5	268.5
Neogene	Late Pliocene (Piacenzian)	298.5 log (first biostrat 300 dc)	298.5	268.5
	Early Pliocene (Zanclean)	750 dc	750.0	720.0
	-----Stratigraphic Break-----	802.5 log	802.5	772.5
	Late Miocene (Messinian)	804 dc / 802.5 log	802.5	772.5
	Late Miocene (Tortonian)	819 dc	819.0	789.0
	Middle Miocene (Serravalian)	846 dc	846.0	816.0
	-----Stratigraphic Break-----	895.5 log	895.5	865.5
	Early Miocene (Burdigalian)	908 dc / 906 log	906.0	876.0
	-----Stratigraphic Break-----	986.7 log	986.7	956.7
Early Miocene (Aquitainian)	1002 dc / 986.7 log	986.7	956.7	
TD		1025.0	1025.0	995.0

Sample depths unless otherwise stated; dc = ditch cuttings

2.4.2 Table of lithostratigraphy, well 26/10-1

The lithostratigraphy of well 26/10-1 is presented in Table 2-2.

Table 2-2: Lithostratigraphy of well 26/10-1

Lithostratigraphic tops	Depth mMDRT	Depth mTVDRT	Depth mTVDMSL	TWT msec	Thickness mTVD	Diff. from prognosis mTVD
RKB	0.0					
MSL	30.0					
Nordland Group	169.6	169.6	139.6	0.187	725.9	-0.4
Naust Formation (Pleistocene)	169.6	169.6	139.6	0.187	128.9	
Nordland Group undiff. (Pliocene)	298.5	298.5	268.5	0.339	504.0	
Utsira Formation	802.5	802.5	772.5	0.861	23.0	-10.5
Base Utsira Formation	825.5	825.5	795.5	0.886	41.5	-72.5
'Eir Formation' (informal)	867.0	867.0	837.0	0.927	10.0	
Base 'Eir Formation' (informal)	877.0	877.0	847.0	0.936	18.5	
Hordaland Group	895.5	895.5	865.5	0.955	129.5	
undiff. Hordaland Group	895.5	895.5	865.5	0.955	10.5	
Skade Formation	906.0	906.0	876.0	0.965	80.7	-94.0
Base Skade Formation / top Lark Formation (informal)	986.7	986.7	956.7	1.049	38.3	
TD	1025.0	1025.0	995.0	1.089		-25.0

2.5 Lithological evaluation

2.5.1 General information

The lithological interpretations are based on ditch cuttings made at the wellsite only. No cores or sidewall cores were taken in the well.

All depths are referenced to drill floor (30 m RT / RKB) unless otherwise stated.

2.5.2 Biostratigraphical evaluation

The biostratigraphy of the well was determined from analyses of ditch cutting samples and supported by correlation with offset wells and integrated with other disciplines.

Micropaleontological and palynological analyses were performed as alternating analyses over the entire section of the well between 300 m (Pliocene) and the well TD by consultants Applied Petroleum Technology (APT). These analyses were undertaken as either a hot-shot service of critical levels during drilling of the well and the subsequent, standard, routine work. Full details of these analyses can be found in a separate report (APT, 2015) and all data has been integrated into one stratigraphic interpretation within this report. The samples spacing was initially at 10 m spacing (from 300 m) and this was refined to between 6 m and 9 m spacing below the 7" liner at 742 m until the well TD at 1025 m.

The age interpretation follows the standard stratigraphic zonation of Lundin Norway following Gradstein et al. (2012), which in some instances, differs slightly from that of APT. In general these differences are minor and the overall geological interpretations are similar.

All depths are sample depths (m MD RKB) based on a reference of 30 m RT/RKB unless otherwise stated.

2.5.3 Lithological summary, well 26/10-1

Nordland Group

169.6 - 895.5 m MD RKB
169.6 - 895.5 m TVD RKB
139.6 – 865.5 m TVD MSL
TWT 0.187 secs

Age: Middle Miocene to Pleistocene.

Depositional environment: Normal marine, outer shelf shallowing to present day water depth as 139.6 m MSL.

Stratigraphic comments: The Nordland Group is penetrated at the seabed (169.6 m MD RKB). The majority of this 725.9 m TVD thick succession is dominated by undifferentiated claystones not assigned to any formation with the exception of the Naust Formation for the interval above the Base Pleistocene Unconformity at 298.5 m MD RKB. Two sandstone units are assigned to the Upper Miocene Utsira Formation and Middle Miocene Eir Formation (see additional comments in sections below).

Naust Formation (Pleistocene)

169.6 - 298.5 m MD RKB
169.6 - 298.5 m TVD RKB
139.6 – 268.5 m TVD MSL
TWT 0.187 secs

Age: Pleistocene
(no biostratigraphic analysis until 300 m dc).

Depositional environment: Normal marine, outer shelf (inferred).

Stratigraphic comments: The heterolithic Pleistocene sequence of clays, sands and silts between 169.6 m MD seabed and the base Pleistocene unconformity at 298.5 m MD is assigned to the Naust Formation following the NPD recommendation (2014) to extend the use of this formation into the North Sea.

Lithology: The interbedded sequence of clays, sands and silts of the Naust Formation are based on log interpretation (returns to sea bed above 290 m).

The clays are most likely dark grey to medium light grey, soft, sticky, slightly calcareous, silty and sandy, common disseminated carbonaceous material, shell fragments.

The sand is most likely loose quartz grains, clear, rare pale orange, very fine to fine, subangular to subrounded, moderately sorted.

Undifferentiated Nordland Group (Pliocene)

298.5 - 802.5 m MD RKB
298.5 - 802.5 m TVD RKB
268.5 – 772.5 m TVD MSL
TWT 0.339 secs

Age: Early Pliocene (Zanclean) to Late Pliocene (Piacenzian).

Depositional environment: Normal marine, outer shelf. This is a thick unit of fine-grained sediments represents the passive infill and gradually shallowing of the depositional system.

Note biostratigraphic analysis from 300 m DC.

The top of this interval is defined on the logs by a rapid downward increase in gamma ray values and a corresponding downward decrease in sonic interval transit time.

Stratigraphic comments: This thick, undifferentiated interval (504 m TVD gross thickness) representing the majority of the Nordland Group, is developed between the base of the Pleistocene Naust Formation and the top of the Miocene Utsira Formation.

Lithology: The undifferentiated Pliocene Nordland Group consists of claystones with minor interbeds of sands/sandstones around 513 m and 757 m MD.

The claystones are dark grey to medium light grey, soft, sticky, amorphous, slight to non-calcareous, slight silty to moderate silty, in parts slightly sandy, common disseminated carbonaceous material, rare shale fragments, rare mica, rare pyrite.

The sands/sandstones are loose quartz grains, colourless, minor yellowish, clear translucent to transparent, predominantly fine to medium, minor coarse, well sorted, subrounded to rounded.

Utsira Formation

802.5 - 825.5 m MD RKB
802.5 - 825.5 m TVD RKB
772.5 – 795.5 m TVD MSL
TWT 0.861 secs

Age: Late Miocene (Tortonian - Messinian).

Depositional environment: The sandstones are less massive than the Skade Formation but are still considered to be stacked, gravity flows (no core for conformation) introduced into a relatively deep marine, paleo-low setting. These form the uppermost unit of a large-scale fan complex sourced from the south-east by feeder channels seen by attribute mapping.

The top of the Utsira Formation is defined on the logs by an abrupt downward decrease in gamma ray values and sonic interval transit time. Due to the presence of dry gas in the sandstone, there is also a rapid downward increase in resistivity values and a downward decrease in density values..

Stratigraphic comments: This sandstone unit (41.4 m TVD gross thickness) is considered to represent the third and uppermost cycle of the large scale fan complex developed between the top Utsira Formation and base Skade Formation. On seismic, both the upper and lower boundaries of the Utsira Formation, are represented by irregular reflectors with terminations indicating both boundaries are unconformities.

Lithology: The Utsira Formation consists of sandstones.

These sandstones are loose quartz grains, clear, very fine to fine, subangular to subrounded, well sorted.

Undifferentiated Nordland Group (Miocene)

825.5 - 867.0 m MD RKB
825.5 - 867.0 m TVD RKB
795.5 – 837.0 m TVD MSL
TWT 0.886 secs

Age: Middle Miocene (Serravalian) to Late Miocene (Tortonian).

Depositional environment: Normal marine, muddy outer shelf.

The top of this interval is defined by a sudden downward increase in gamma ray values and a corresponding downward increase in sonic interval transit time.

Stratigraphic comments: This is an undifferentiated unit of Miocene claystones positioned between the sandstones of the Utsira Formation and the Eir Formation. Genetically, it is considered to represent the fine-grained, transgressive part of the underlying Eir system, showing a gradually 'fining-upward' gamma ray profile.

Lithology: The undifferentiated Miocene Nordland Group consists of claystones with minor siltstones and limestones.

The claystones are predominantly olive grey, in parts dark greenish grey, soft to firm, amorphous to sub-blocky, in part sticky, slightly calcareous.

The siltstones are greenish black to dark grey, friable, sandy, in part grading sandstone, sub-blocky to sucrosic, common glauconite, argillaceous, non to slightly calcareous.

The limestones are very pale orange to pale yellowish brown, hard, brittle, homogenous, rare laminated.

Eir Formation (informal)

867.0 - 877.0 m MD RKB
867.0 - 877.0 m TVD RKB
837.0 – 847.0 m TVD MSL
TWT 0.927 secs

Age: Middle Miocene (Serravalian)

Depositional environment: Normal marine, distal gravity flow sandstones.

The top of the Eir Formation is defined by a downward decrease in gamma ray values and a slight downward decrease in sonic interval transit time. There also downward increases in density and neutron porosity values.

Stratigraphic comments: This informal formation of sandstones (10 m TVD gross thickness in this well) was recognised by the NPD and Eidvin et al. (2014) lying between the Upper Miocene Utsira and Lower Miocene Skade Formations. The recovered Middle Miocene Bolboforma microfossils in this unit fits in well with their definition. It is considered to represent part of the basal infilling of the Nordland Group above the mid Miocene top Hordaland Group Unconformity. In this area, it represents the second of three deposition cycles of gravity flows within a large scale fan sequence developed between top Utsira and base Skade Formation. The overlying muds being the transgressive part of the cycle.

Lithology: The Eir Formation consists of sandstones.

These sandstones are loose quartz grains, clear translucent, colorless, minor orange quartz, very fine to medium, moderately sorted, subrounded to rounded, common glauconite grains. No shows.

Undifferentiated Nordland Group (Miocene)

877.0 - 895.5 m MD RKB
877.0 - 895.5 m TVD RKB
847.0 – 865.5 m TVD MSL
TWT 0.936 secs

Age: Middle Miocene (Serravalian)

Depositional environment: Normal marine, muddy. outer shelf to upper slope.

The base of the Eir Formation is defined by a downward increases in gamma ray values and sonic interval transit time.

Stratigraphic comments: This is an undifferentiated unit of Middle Miocene claystones between the Eir Formation and the top Hordaland Group. It is considered to represent the earliest, muddy infill unit above the top Hordaland Unconformity at 895.5 m MD.

Lithology: This undifferentiated part of the lowermost Nordland Group consists of claystones.

The claystones are dark greenish grey, olive grey, dark yellowish brown, soft, amorphous, sticky, slight calcareous to very calcareous, abundant carbonaceous material.

Hordaland Group

895.5 – 1025.0 m MD RKB TD

895.5 – 1025.0 m TVD RKB

865.5 – 995.0 m TVD MSL

TWT 0.955 secs

Age: Early Miocene (Aquitanean) to Middle Miocene (Serravalian).

Depositional environment: Poorly oxygenated, gradually shallowing, muddy, upper slope to outer shelf sequence with massive, sandy gravity flows introduced during Lower Miocene (Skade Formation) times.

Stratigraphic comments: The top Hordaland Group is defined at 895.5 m MD and is typically mid Miocene age. It is primarily recognised as a downhole increase in density values and associated increase in gamma ray values. This level represents the regional mid Miocene / top Hordaland Unconformity.

In this well no middle Miocene (Langhian) ages have been defined suggesting the break is in the order of 2 MY duration. This is a feature within the large-scale fan complex developed between top Utsira Formation and base Skade Formation.

Undifferentiated Hordaland Group

895.5 – 906.0 m MD RKB

895.5 – 906.0 m TVD RKB

865.5 – 876.0 m TVD MSL

TWT 0.955 secs

Age: Middle Miocene (Serravalian).

Depositional environment: Poorly oxygenated, muddy, upper slope to outer shelf. These claystones probably represent the fine-grained, transgressive part of the underlying Skade system.

Stratigraphic comments: The 10.5 m of claystones below the top Hordaland Unconformity and above the Skade sandstones are considered to be the transgressive 'waning part' of the Skade depositional system and therefore genetically linked to the Skade Formation rather than part of the Nordland Group. Top Hordaland undiff. Group has slightly higher Gamma ray value compared to the overlying undiff. Nordland Group and higher Density value.

Lithology: This undifferentiated part of the uppermost Hordaland Group above the Skade Formation consists of claystones.

The claystones are dark greenish grey to olive black, soft, sticky, amorphous, calcareous, carbonaceous material.

Skade Formation

906.0 – 986.7 m MD RKB

906.0 – 986.7 m TVD RKB

876.0 – 956.7 m MD MSL

TWT 0.965 secs

Age: Early Miocene (Burdigalian).

Depositional environment: These massive sandstones exhibit a 'blocky' gamma ray log profile are considered to be amalgamated, mid-fan gravity flows (no core for conformation) introduced into a relatively deep marine, paleo-low setting. These form the lowest unit of a large-scale fan complex sourced from the south-east by feeder channels seen by attribute mapping.

The top of the Skade Formation is defined by an abrupt downward decrease in gamma ray values and downward increase in density and neutron porosity values. There is also a downward decrease in resistivity values indicating water filled formation.

Stratigraphic Comments: This formation is represented by massive sandstones (80.7 m TVD gross thickness). The base of this formation, corresponding to the top of the Lark Formation, is sharp and well defined and represents an intra-Early Miocene unconformity defining the base of a complex fan system (see further comments below and in next section).

Lithology: The Skade Formation consists of sandstones.

The sandstones are clear, translucent, colourless, minor orange and yellow quartz, very fine to medium, rare coarse, moderately sorted, subrounded to rounded, in part subangular, occasionally glauconite grain, predominantly loosely grain, occasionally very light grey, soft calcareous and slight argillaceous matrix, minor mica. No shows.

Lark Formation (informal)

986.7 – 1025.0 m MD RKB TD

986.7 – 1025.0 m TVD RKB

956.7 – 995.0 m TVD MSL

TWT 1.049 secs

Age: Early Miocene (Aquitanean).

Depositional environment: Open marine, muddy, upper slope to outer shelf.

The base of the Skade Formation sandstone / top of the Lark Formation claystones is defined by a sudden downward increase in gamma ray and resistivity values and an associated downward decrease in density values.

Stratigraphic comments: The oldest ages defined by planktonic foraminifera and marine dinocysts in this section suggest an age no older than the Early Miocene (Aquitanian). No Oligocene microfossils were encountered although the well is probably close to the Oligocene/Miocene boundary at the well TD. The irregular seismic reflector defining the top of this unit and the base of Skade sandstones is considered to reflect an intra-Early Miocene unconformity between the Aquitanian and Burdigalian stages. The boundary is marked by an abrupt lithological and log change.

Lithology: The upper part of the Lark Formation penetrated above the well TD at 1025 m MD consists of claystones with minor limestones.

The claystones are dark greenish grey, olive grey, dark yellowish brown, soft, amorphous, sticky, slight calcareous to very calcareous, abundant carbonaceous material.

The limestones are very pale orange to pale yellowish brown, angular to subangular, moderately hard to hard, brittle, homogenous.

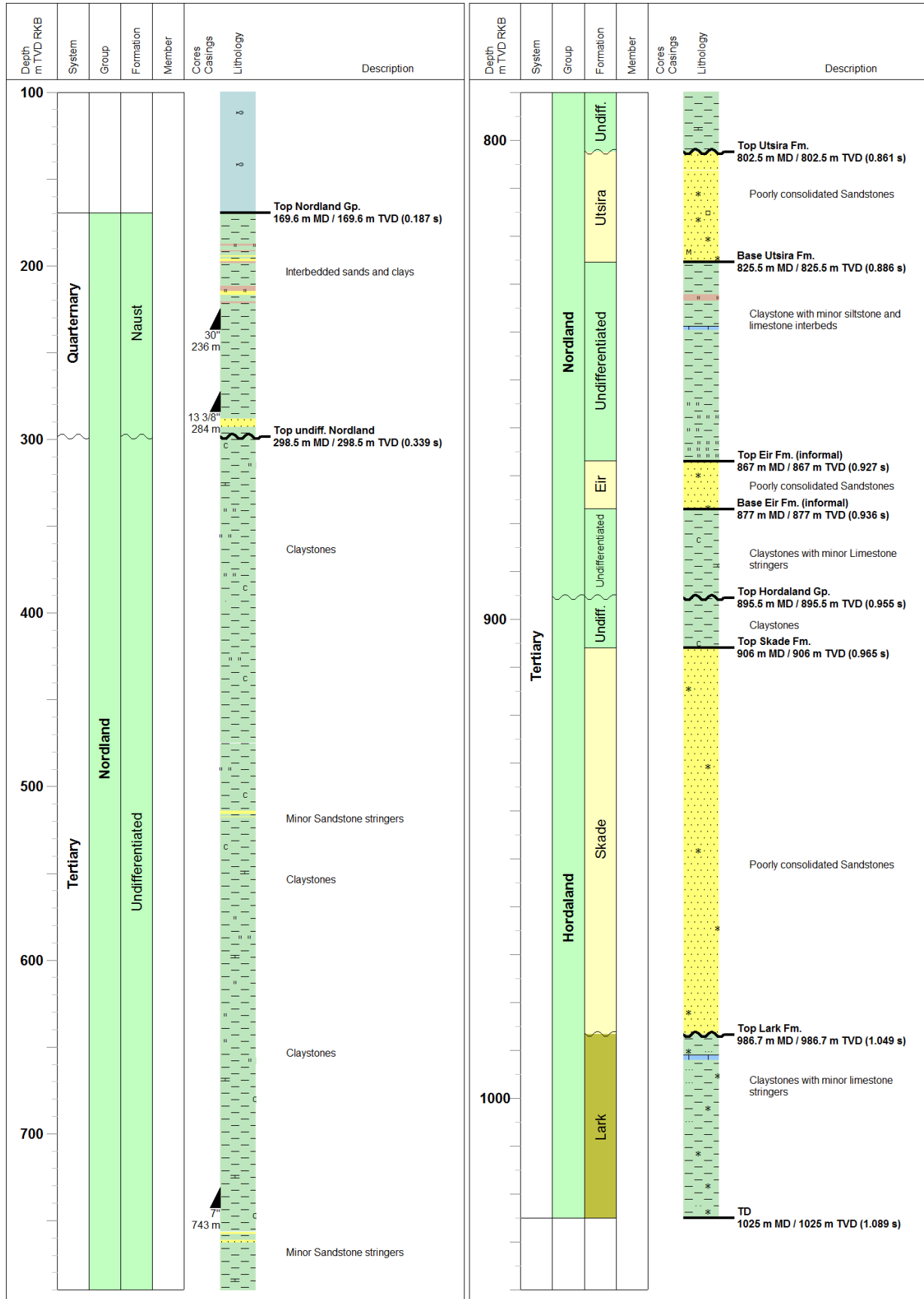
REFERENCES

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Eidvin, T., Riis, F, Rasmussen, E.S. and Rundberg, Y. 2013. Investigation of Oligocene to Lower Pliocene deposits in the Nordic offshore area and onshore Denmark. NPD Bulletin No. 10. (interactive on www.npd.no).

Gradstein, F.M., Ogg, J., Schmitz, M. and Ogg, G. (2012). The Geologic Time Scale. Elsevier, 1176 pages.

NPD (2014) Lithostratigraphic Chart Norwegian North Sea (on www.npd.no).



26/10-1 Revision: 1 13.08.2015

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Figure 2-2: Well 26/10-1, geological summary (depths are log depths)

2.6 Hydrocarbon shows

2.6.1 Oil shows

No oil shows were seen during drilling of well 26/10-1.

2.6.2 Hydrocarbon gas shows

The Utsira sandstone was filled with gas from top at 802.5 m MD RKB.

A potential gas-water contact (GWC) is estimated at 838 m MD RKB in the Nordland Group claystones, based on the gas and water gradients established from the MDT log run.

The hydrocarbon gas shows for the well are summarised in the 1: 2500 scale Gas Ratio log included as an enclosure to this report (Section C).

2.7 Geophysical results

The 3D surveys used for the prospect interpretation were the 3D surveys MC3D Utstord and MC3D-SBS-2009. As the prospect is at a shallow level, the site survey acquired for the well location, LN14303, was also used.

Table 2-3: Seismic survey summary

Survey	Operator	Year
LN14303 (Site Survey)	Lundin	2014
MC3D-SBS2009	PGS	2009
MC-3D Utstord	Dolphin	2013/14

The main horizons interpreted for the 3D seismic survey prior to drilling included top and base of the Utsira Formation and top of the Hordaland group.

The depth conversion for the 26/10-1 well prognosis has been performed by using the stacking velocities from survey MC3D-Utstord. For top Utsira Formation (top of reservoir) and the Hordaland Group reflector, respectively, the time-grid was multiplied by an average velocity grid. The average velocity grids were created by multiplying the stacking velocity by a scaling factor of 0.975. The scaling factor represents the difference between the well velocities in wells 16/3-3 and 25/12-1 and stacking velocities at the well locations for the Top Hordaland Group.

A Top Utsira Formation depth map is shown in Figure 2-1 and a seismic cross-section is shown in Figure 2-3. Figure 2-4 illustrates the seismic tie to the well.

2.7.1 Results versus prognosis

The formation tops associated with the main interpreted seismic reflectors were within their given uncertainty ranges, with top Utsira Formation and top of the Hordaland Group 8 and 11 m shallow, respectively. The prognosed base of the Utsira Formation prognosed at 898 m TVD RKB corresponds to the base of the sandy Eir Formation at 877 m TVD RKB.

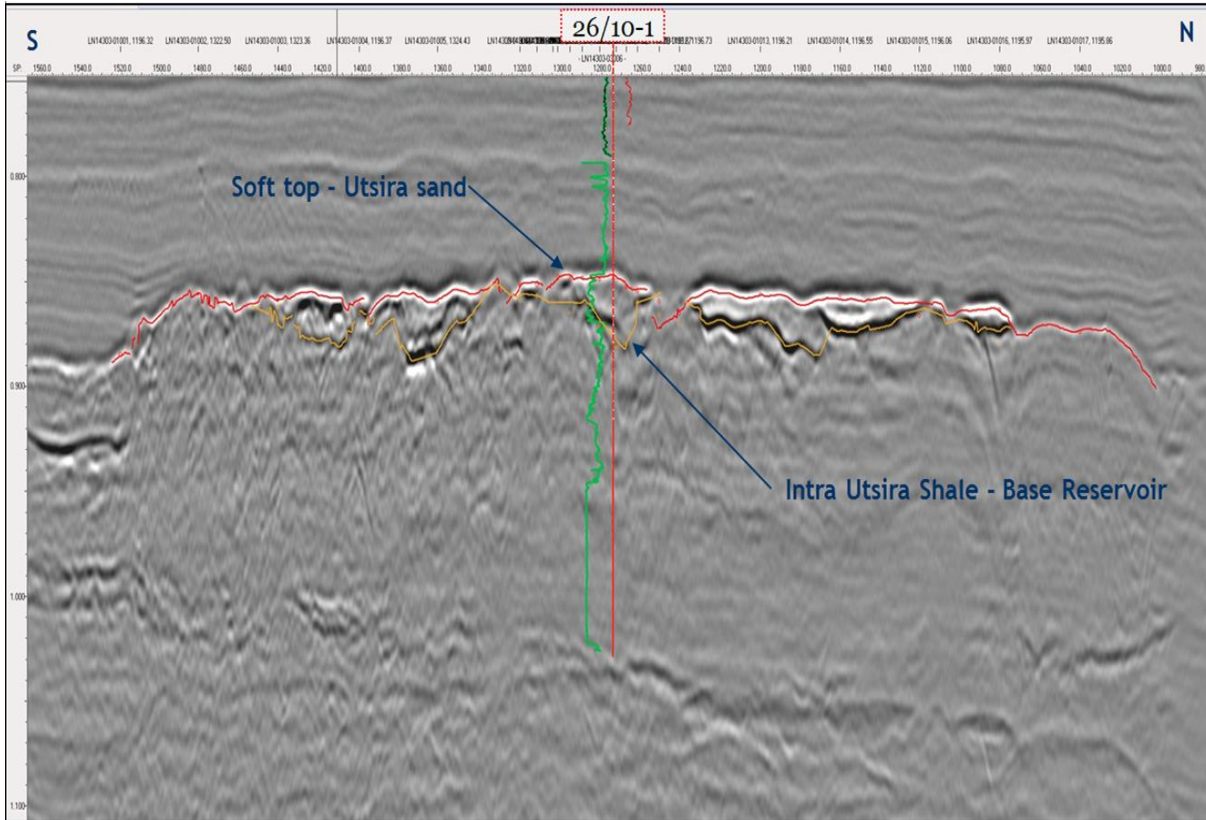


Figure 2-3: Seismic line LN14303-03006 across the Zulu structure through well 26/10-1. Line location is shown in Figure 2-1

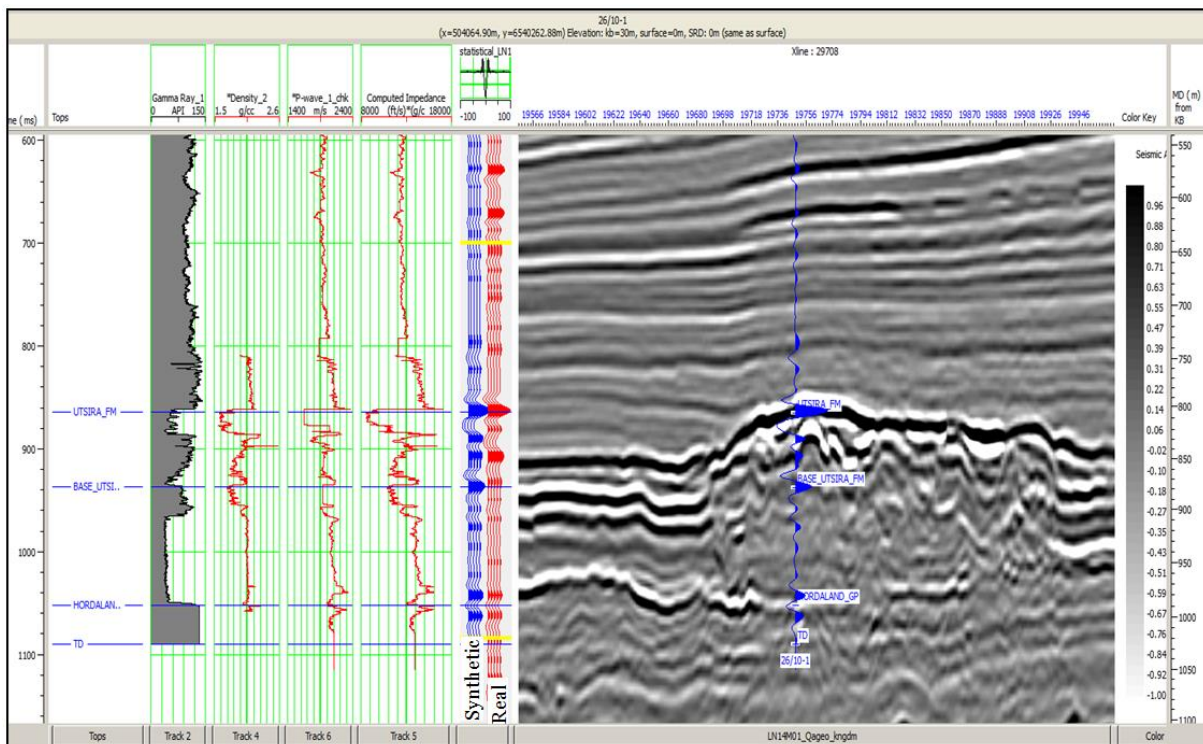


Figure 2-4: Seismic tie to well 26/10-1

2.8 Data acquisition

2.8.1 Mud logging

Baker Hughes was the mudlogging contractor for well 26/10-1. The mudlogging service included monitoring, display and storage of surface drilling and lagged parameters using Baker Hughes' WellLink system. Real-time data transfer from rig to shore via Baker Hughes WellLink system was used for data distribution. Further details for the wellbore are available in the Baker Hughes report: 26/10-1 End Of Well Report Mudlogging

2.8.2 Drilled cuttings and geochemical samples

Table 2-4: Well 26/10-1, sampling intervals

5 kg bulk wet samples for onshore processing (1 set)		
Depth interval (m MD RKB)	Sampling interval (m)	Missed samples (m MD RKB)
295-749	5	410, 415, 585, 730, 735, 759, 762, 795 m
749-1026	3	

150 g bulk wet samples for hot-shot biostratigraphy (1 set)		
Depth interval (m MD RKB)	Sampling interval (m)	Missed samples (m MD RKB)
295-749	5	410, 415, 585, 730, 735, 759, 762, 795 m
749-1026	3	

1 litre composite geochemical canned samples (1 set)		
Depth interval (m MD RKB)	Sampling interval (m)	Missed samples (m MD RKB)
295-749	10	415, 585, 735
749-1026	9	759

Isotube gas samples (1 set)		
Depth interval (m MD RKB)	Sampling interval (m)	Missed samples (m MD RKB)
295-749	20	415, 735
749-1020	9	

1 litre mud samples	
Sample depths	Sample depths
	305, 795, 1011, 1020

100 g dry samples		
Depth interval (m MD RKB)	Sampling interval (m)	Missed samples (m MD RKB)
295 – 749	5	410, 415, 585, 730, 735, 759, 762, 795 m
749-1026	3	

2.8.3 Conventional coring

No conventional coring was performed in well 26/10-1.

2.8.4 Sidewall cores

No sidewall cores were acquired.

2.8.5 MWD and LWD logging

Baker Hughes was the contractor for MWD/LWD logging and Directional Drilling services for the well 26/10-1.

Further information can be found in the Baker Hughes report: *End of Well Report Directional Drilling, LWD [January 2015]*.

Table 2-5: Well 26/10-1, summary of MWD/LWD logging runs

BHA run no.	Hole size (in)	LWD logging suite	LWD logging tools	Bit depth interval (m MD RKB)		Data interval (m MD RKB)	
				Top	Bottom	Top	Bottom
1	36"	GR-RES-DIR-PWD	OnTrak	169.6	242	169.6	228.4
2	9 7/8"	GR-RES-DIR-PWD-SONIC	OnTrak-SoundTrak	242	290	242	288.0
3	17 1/2"	NBGR-GR-RES-DIR-PWD	ZoneTrak-OnTrak	242	290	242	288.7
4	12 1/4"	GR-RES-DIR-PWD-SONIC	OnTrak-SoundTrak	290	749	284	748.4
5	6"	GR-RES-DIR-PWD-CALIPER-DEN-NEUTRON	OnTrak-ORD 2.6	-	-	-	-
6	6"	GR-RES-DIR-PWD-CALIPER-DEN-NEUTRON	OnTrak-ORD 2.6	749	1026	742.6	1022.7

2.8.6 Wireline logging

The wireline contractor for 26/10-1 was Schlumberger. Two wireline runs were performed at well TD, these are summarised in Table 2-6 below:

Table 2-6: Well 26/10-1, summary of wireline logging runs

Run no.	Hole size (in)	Logged interval (m MD RKB)	Logging suite	Comments
1A	6"	730-1024	PEX-HRLA-MSIP	MSIP in CBL mode from 762-350 m
1B	6"	803.4-976	MDT	Sampling and pressure points.

2.8.7 Velocity survey

No vertical seismic survey (VSP) was performed in well 26/10-1.

2.8.8 List of additional reports and logs

Lundin

Drilling Program Lundin Norway AS Well 26/10-1 P674-LUN-D-TF-4001

Baker Hughes

End of well report Directional Drilling, MWD, Mudlogging Well 26/10-1.

End of well report Cementing Well 26/10-1 Zulu.

Baker Hughes End of well report – Bits. Lundin Norway – Zulu.

Baker Hughes Drilling Fluids End of well report Lundin Norway - Zulu.

Baker Hughes Drilling End of well report – Wellbore Intervention (P&A).

APT

Geochemistry Data Report – Gas and Cutting Analysis Well 26/10-1
(Zulu Prospect)

Biostrat Report - Well 26/10-1 (Zulu Prospect)

Weatherford Labs

Final Report. Composition Analysis of MDT Gas and Water Samples from Well
26/10-1, Zulu Prospect

Logtek

WLC Petrophysical Composite Report 26/10-1.

WLC Composite Report 26/10-1.

Fugro

Site Survey at Zulu Planned Well Location LN14303.

Schlumberger

MDT Report 26/10-1 Zulu

Fugro Survey AS

Final Position Well 26/10-1 Zulu.

3 Geological Hazards

3.1 Formation pressure, overburden and fracture gradient

All pressure gradients in this section are referenced to m RKB TVD on Island Innovator, air gap = 30 m. A summary of the pore pressure, fracture and overburden gradients is presented in Figure 3-1 and a 1:2500 scale pressure evaluation log is included as an attachment to this report.

3.1.1 Overburden gradient

The overburden gradient was recalculated post-well, based on formation density values derived from data acquired during the well. LWD density logs were available from 745 m to TD. In the overlying interval pseudo densities derived from LWD sonic data were used.

The revised post-well overburden curve shows that the actual overburden value is similar to the prognosed overburden all way from start and down to TD.

3.1.2 Formation pressure gradient

The formation pressure gradient analysis is based primarily on the sonic data from LWD acquired while drilling 26/10-1, together with gas data and observation of well behaviour.

The pore pressure is normal down to the top of the reservoir, Top Utsira sandstone at 802.5 m MD RKB, where the pressure gradient at the top of the gas column was measured with wireline MDT to 1.049 sg.

Through the reservoir, the pore pressure gradient decreases downwards following the gas gradient. MDT measurements at the base of the sandstone showed a pressure gradient of 1.027 sg. From MDT pressures obtained in the Utsira Formation sandstones and the underlying Eir Formation, the gas and water gradients indicate a gas/water contact at 838 m TVD RKB. The Eir sandstone, encountered from 867 to 877 m MD RKB was confirmed to be normally pressured.

Similarly, in the Skade Formation sandstones from 906 to 986.7 m MD RKB, MDT pressure measurements confirm a normal pressure gradient.

3.1.3 Fracture gradient

The estimated fracture gradient is presented in Figure 3-1. The gradient is calculated using the Eaton method; the Poisson coefficients have required minor adjustments to correlate with the leak off tests in offset wells. Only formation integrity tests were performed in well 26/10-1, the results are shown in Table 3-1:

Table 3-1: Well 26/10-1, summary of FITs.

Type	Result (g/cc)	Depth (m MD RKB)	Depth (m TVD RKB)
FIT	1.24	284	284
FIT	1.55	743	743

3.1.4 Hole stability

36" hole.

The well was spudded at 169 m with a 36" drilling assembly. Encountered some hard spots/boulders at 202 m, 207 m, 220 m. Reamed same interval and continued to drill to TD at 242 m. Pulled out of hole and went back for a wiper run. No restrictions were encountered when running back in hole to TD. Ran 30" conductor and landed it at 236.5 m.

9 7/8" pilot hole.

Ran in hole with 9 7/8" pilot hole assembly and drilled to TD at 920 m. No shallow gas was observed and no restrictions were encountered pulling out.

17 1/2" hole.

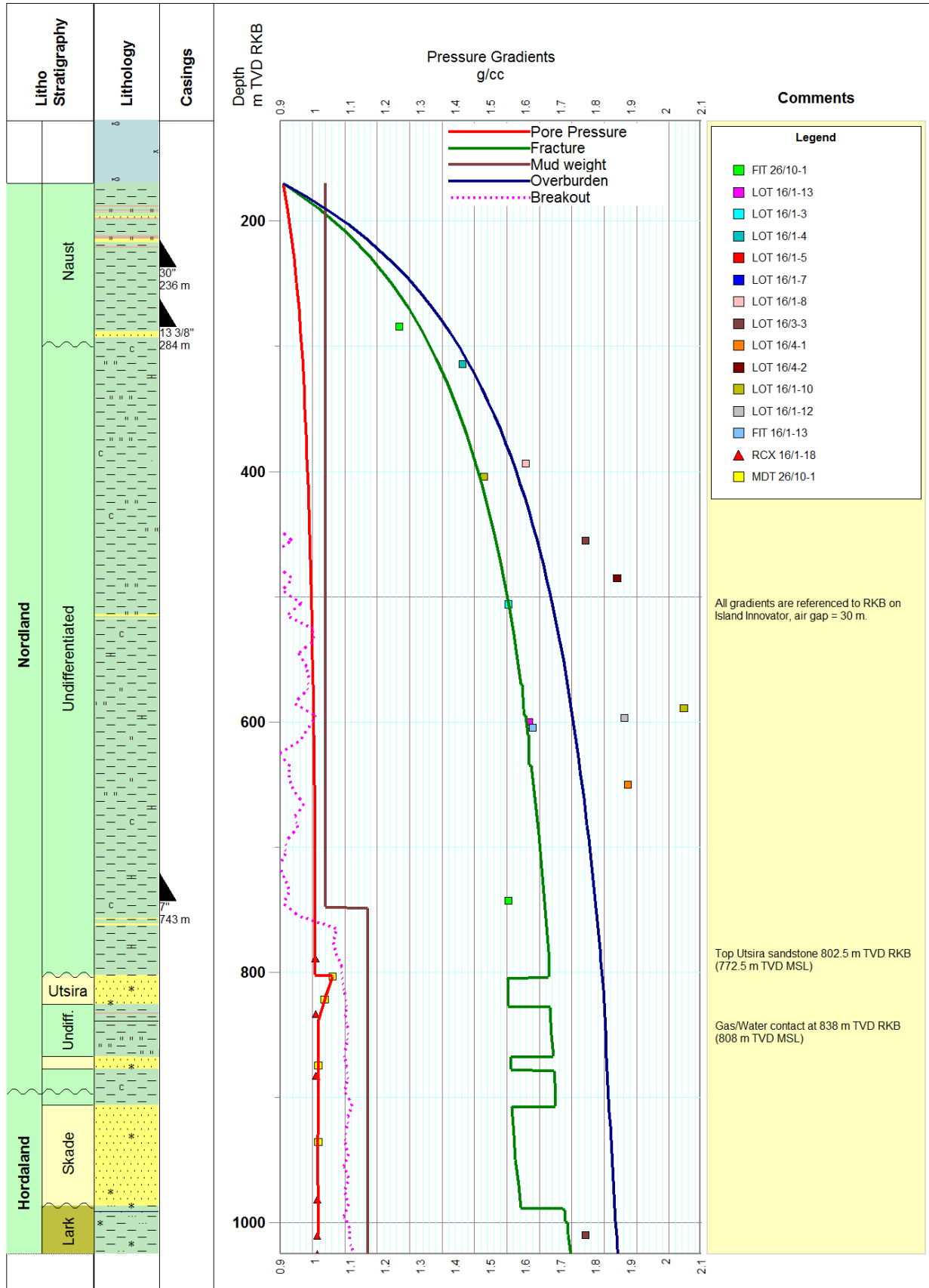
Ran in hole with 17 1/2" hole opening assembly and drilled to 290 m. No restrictions were encountered when pulling out of hole.

The 12 1/4" hole.

Ran in hole with 12 1/4" bottom hole assembly and drilled one meter of new formation to 291 m. Performed FIT to 1.24 sg. Continued drilling to section TD at 749 m. Section was drilled with controlled ROP to control the increasing trend of ECD. No restrictions were encountered when pulling out of hole.

The 6" section

Ran in hole with 6" BHA and drilled cement and 5 m new formation, and performed FIT to 1.55 sg. Continued drilling with 6" BHA to well TD at 1025 m. Section was drilled with controlled ROP to control the increasing trend of ECD. Pulled of bottom and reamed when experienced increasing ECD values. No restrictions were encountered when pulling out of hole.



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Figure 3-1: Well 26/10-1 pore pressure, fracture and overburden gradients.

3.2 Formation temperature

A formation temperature gradient plot is presented in Figure 3-2.

The formation temperature gradient for well 26/10-1Zulu is estimated to be 4.37 °C/100 m when assuming a seabed temperature of 3 °C. Both corrected wireline temperatures and temperatures from well testing of offset wells are taken into consideration when estimating the temperature.

Estimated temperature at Top reservoir, Utsira formation, is 31.5 °C.

At well TD, 1025 m TVD RKB, temperature is: 41.2 °C.

3.3 Shallow gas

No shallow gas was seen drilling the 9 7/8" pilot hole to 290 m. No shallow gas was seen when drilling through the prognosed shallow gas warning depths at 302 m, 515 m, 576 m and 618 m. Sands were seen in cuttings from 514 m, and also indicated by GR response on logs. Corresponding resistivity readings indicated water saturated sand, no gas.

3.4 Shallow water flows

No shallow water flow observed in this well.

3.5 Lost circulation

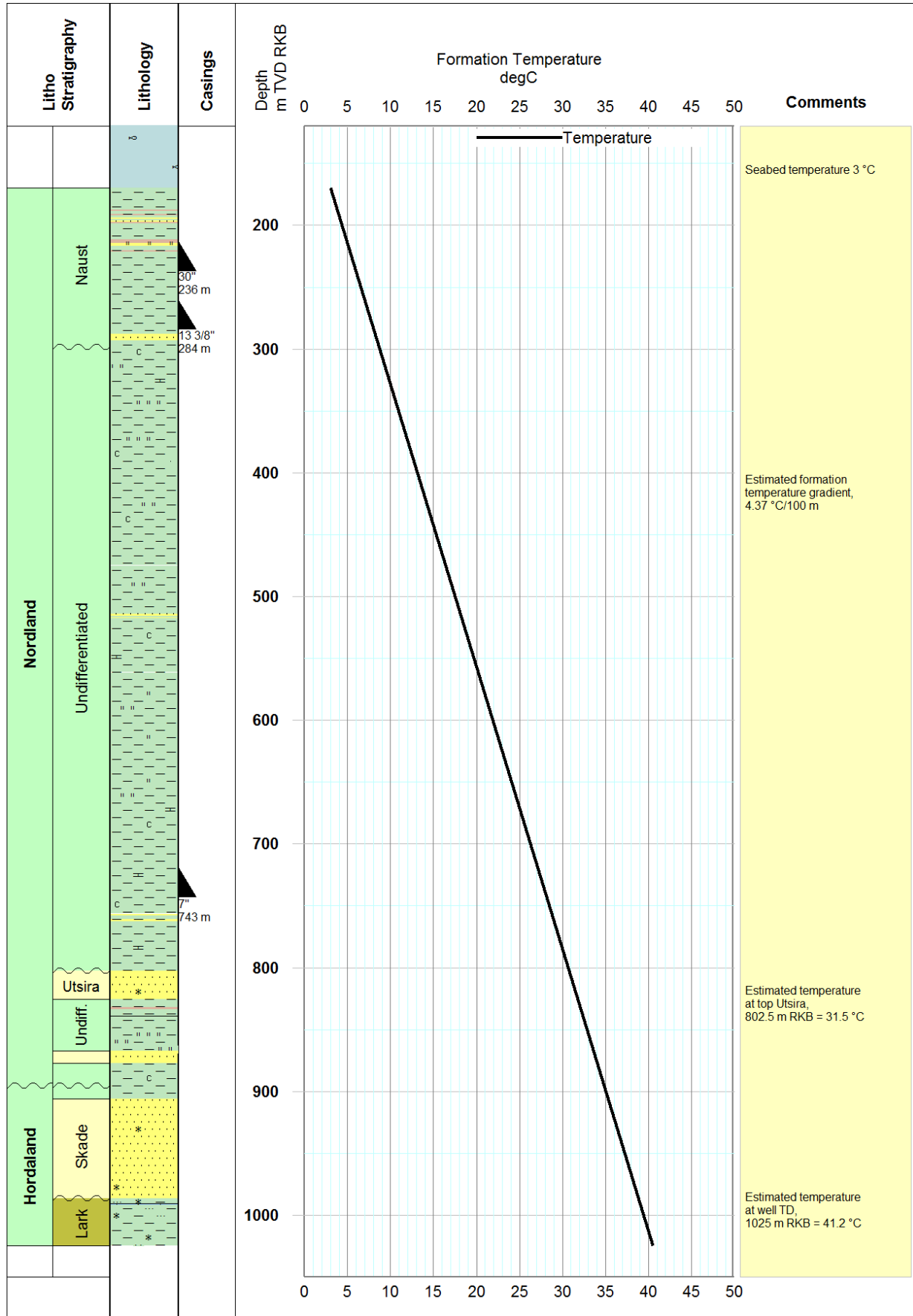
No lost circulation incidents during drilling of this well.

3.6 Boulders

Boulders were encountered at 202 m, 207 m and 220 m.

3.7 H₂S / CO₂

No H₂S was observed in this well. No CO₂ measurements were obtained.



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Figure 3-2: Well 26/10-1, formation temperature gradient.

4 Petrophysical Report

Both MWD/LWD and wireline data were acquired in well 26/10-1.

4.1 Log data acquisition and log quality

MWD/LWD logging was performed by Baker Hughes, and wireline logging was performed by Schlumberger. A summary of the data acquisition program is shown in Section 2, Table 2-5 for MWD/LWD and Table 2-6 for wireline.

The MWD/LWD and wireline data is of generally good quality. However there is a very strong gas effect on the data in the Utsira Formation. No environmental corrections, apart from the corrections applied by Baker Hughes and Schlumberger during acquisition have been applied.

4.2 Reservoir Pressure

Pressure points were acquired using MDT with a large diameter probe.

A total of 11 pressure points were attempted out of which 10 were good and 1 was tight. The pressure points are listed in Table 4-1 below. For further reference, see the Schlumberger MDT Report.

Table 4-1: Well 26/10-1, MDT pressure points

Run no	Test no	Probe type	Depth (m MD RKB)	Depth (m TVD MSL)	FORMATION Pressure (bars)	Drawdown Mobility (mD/cP)	Remarks
1B	1	LDP	803,4	773,38	82,649	135,3	Good test
1B	2	LDP	811,6	781,57	82,701	2520,2	Good test
1B	3	LDP	817,6	787,58	82,718	256,8	Good test
1B	4	LDP	821,8	791,79	82,772	245,5	Good test
1B	5	LDP	868,4	838,35	-	-	Tight
1B	6	LDP	872,2	842,18	86,315	306,5	Good test
1B	7	LDP	874,6	844,57	86,550	671,2	Good test
1B	8	LDP	915,6	885,59	90,608	795,1	Good test
1B	9	LDP	935,7	905,67	92,612	732,2	Good test
1B	10	LDP	955,2	925,16	94,569	881,3	Good test
1B	11	LDP	976,0	945,95	96,648	386,0	Good test
1B	12	LDP	811,6	781,60	82,726	376,1	Pre sampling. Not stable
1B	13	LDP	811,6	781,60	82,703	14554,9	Post sampling. Good test
1B	14	LDP	874,6	844,53	86,573	199,2	Pre sampling. Good test
1B	15	LDP	874,6	844,53	86,562	805,7	Post sampling. Good test

Based on the pressure points a gas gradient and a water gradient can be interpreted with a GWC at 808 m TVD MSL (838 m TVD RKB), see Figure 4-1.

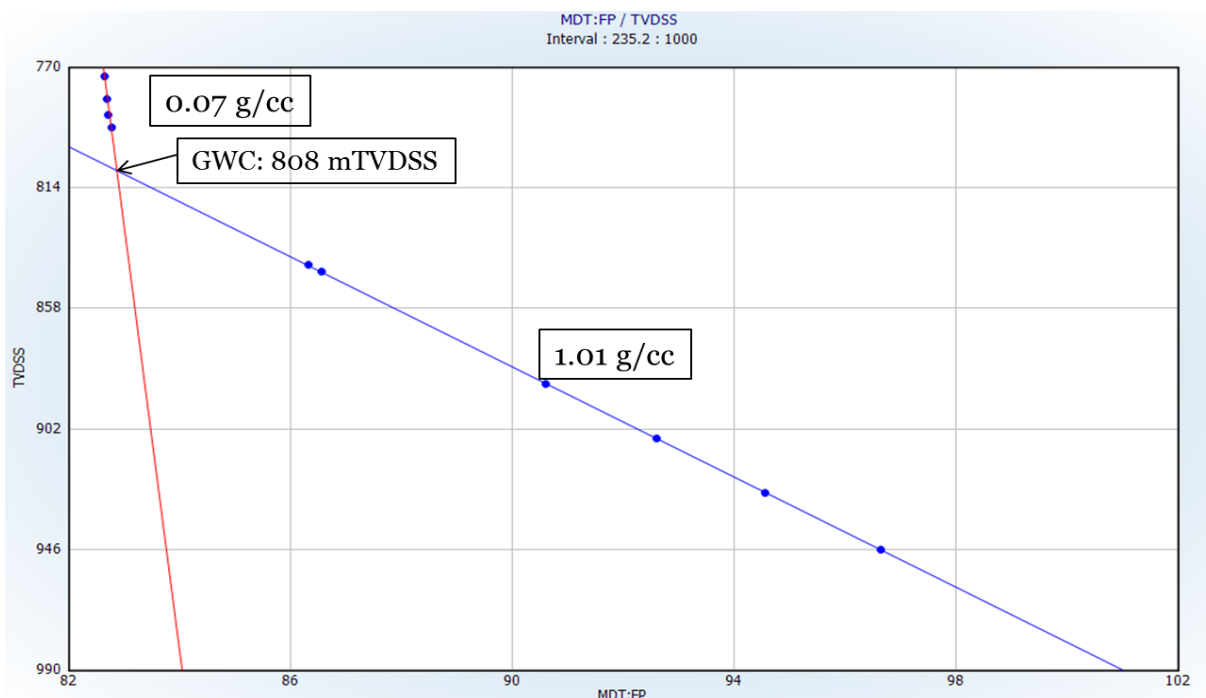


Figure 4-1: Formation pressure well 26/10-1

4.3 Fluid sampling

Gas and water was sampled at two stations. The details are summarized in Table 4-2 below.

Table 4-2: Well 26/10-1, Fluid sampling

Sampling depth m MD RKB	Run no	Probe	Fluid type	MPSR Bottle Serial No	Sampling date	Flowline Temp (deg C)	Sampling DD* (bar)	Formation Pressure (bar)
811,6	1B	LDP	Gas	2531	05.02.2015	28,4	0,03	82,703
811,6	1B	LDP	Gas	2520	05.02.2015	28,7	0,01	82,703
811,6	1B	LDP	Gas	2528	05.02.2015	28,7	0,01	82,703
811,6	1B	LDP	Gas	2689	05.02.2015	28,7	0,01	82,703
874,6	1B	LDP	Water	3267	05.02.2015	31,4	2,36	86,562
874,6	1B	LDP	Water	3050	05.02.2015	31,5	3,46	86,562

4.4 Petrophysical interpretation

In the 6" section massive sands were encountered in the Utsira Formation, interbedded with shales.

4.5 Interpretation methods

Input to the petrophysical interpretation is wireline data. The data quality is generally good, apart from strong gas effects. No environmental corrections, other than those applied by Schlumberger, have been performed.

A basic deterministic approach has been used in the interpretation.

Volume of clay

The volume of clay has been calculated by using the Gamma Ray-method.

Porosity

Porosity has been calculated using the Density-neutron method. The matrix density used is 2.65 g/cc.

Water saturation

The water saturation has been calculated by using the Archie equation. The water salinity from water samples is 32 kppm, with a R_w of 0.19@20 °C.

Default parameters have been used for electrical parameters.

4.6 Input parameters

The petrophysical input parameters are presented in Table 4-3

Table 4-3: Well 26/10-1, petrophysical input parameters

Parameter	Symbol	Unit	Source	Utsira	Nordland/ Hordaland
Gamma ray, clean	GRclean	gAPI	Log	50	38
Gamma ray, clay	GRclay	gAPI	Log	133	108
Temperature gradient	T	°C/100 m TVD	Drilling program	4.37	4.37
Formation water density	RHOwater	g/cm3	Water sample	1.02	1.02
Formation resistivity @ temp. (°C)	Rw	ohm.m	Water sample	0.19 @ 20	0.19 @ 20
Oil density	RHOoil	g/cm3	Area	0.75	0.75
Gas density	RHOgas	g/cm3	Gas sample	0.06	0.06
Clay density	RHOcl	g/cm3	Log	2.3	2.3
Matrix density	RHOma	g/cm3	Default	2.65	2.65
Archie factor	a	-	Default	1	1
Cementation exponent	m	-	Default	2	2
Saturation exponent	n	-	Default	2	2

4.7 Reservoir properties

The average reservoir properties for the reservoir sections are shown in Table 4-4:

Table 4-4: Well 26/10-1, average reservoir properties

Zone Name	Interval	Gross	Reservoir Summary			
			Net	N/G	PHIE	SW*
	m MD RKB	m	m		frac	frac
Gas Zone	802.5-838.0	35.5	23.45	0.661	0.362	0.162
Water Zone	838.0-986.9	148.7	92.35	0.621	0.350	1

The cut-off criteria used for all formations:

Net reservoir:

Volume of clay: ≤ 0.5

Porosity: ≥ 0.1

The petrophysical interpretation plot is presented in Figure 4-1.

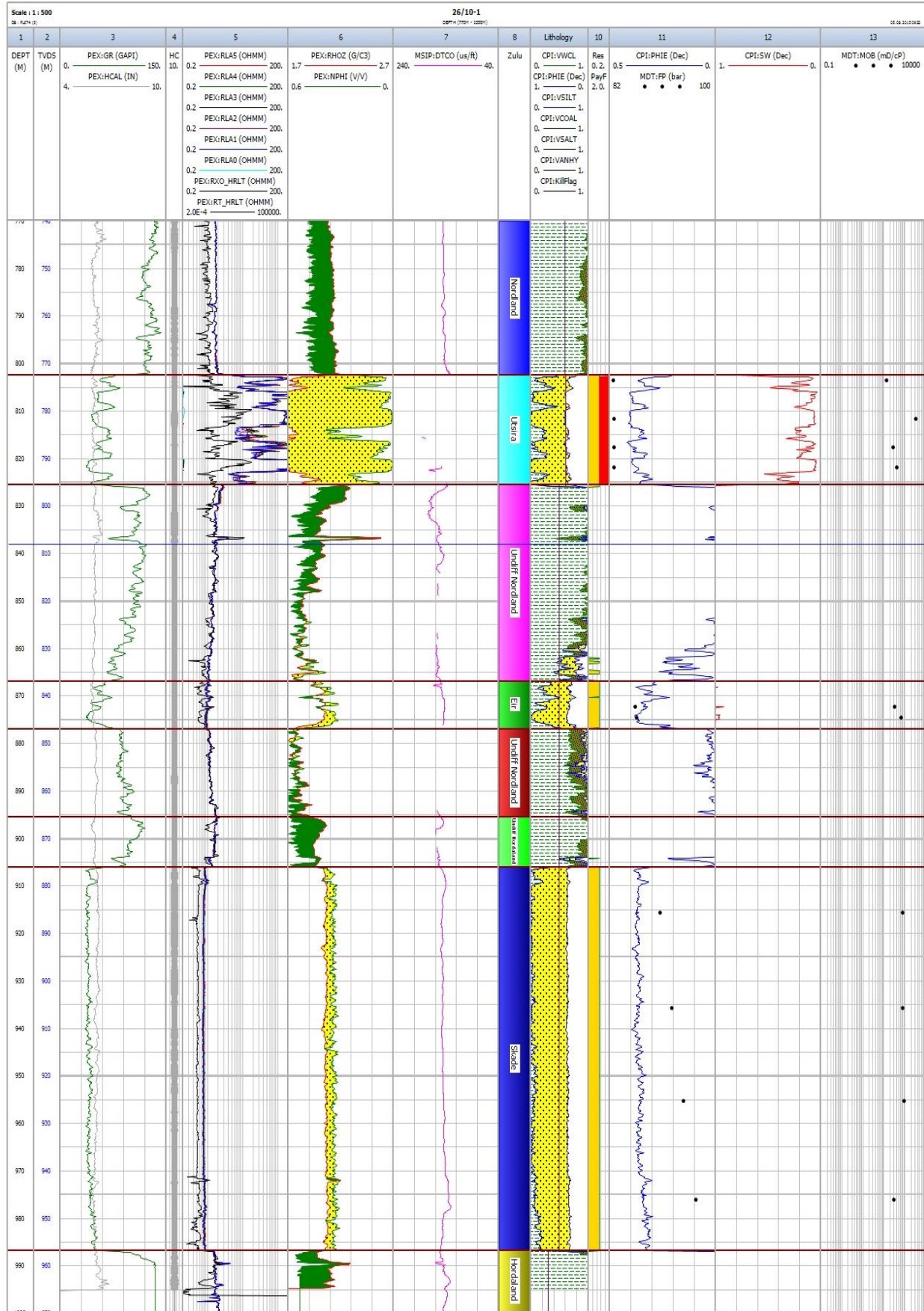


Figure 4-2: Computed petrophysical interpretation, 26/10-1

5 Geological Appendices

5.1 Wellsite sample descriptions, well 26/10-1

Depth (m RKB)	Lithology	%	Lithological description.	Remarks / Shows
291	Sandstone	100	Loose quartz grains, clear, rare pale orange, very fine to fine, sub-angular to sub-rounded.	
295	Sandstone	90	As above.	
	Claystone	10	Medium light grey, soft, sticky, amorphous.	
300	Claystone	100	Dark grey, greyish black, soft, sticky, calcareous, sandy, carbonaceous material in part, amorphous.	
305	Claystone	95	As above.	
	Sandstone	5	As above.	
310	Claystone	90	As above.	
	Sandstone	10	As above.	
315	Claystone	90	As above.	
	Sandstone	10	As above.	
320	Claystone	95	Dark grey, soft, sticky, slight calcareous, slightly silty, carbonaceous material in part, amorphous.	
	Sandstone	5	As above.	
325	Claystone	100	Dark grey, soft, sticky, slight to non-calcareous, slight silty, carbonaceous material in part, amorphous.	
330	Claystone	100	Dark grey, medium dark grey, soft, sticky, slightly calcareous, slightly sandy to sandy, carbonaceous material in part.	
335	Claystone	100	Medium dark grey to dark grey, soft, sticky, amorphous, slightly calcareous, slightly silty, sandy in part disseminated carbonaceous material.	Calcite mud additive.
	Sand	Trace	Loose, colourless, clear, translucent, very fine to medium, sub-rounded to rounded .	
340	Claystone	100	Medium dark grey to dark grey, soft, sticky, amorphous, moderately calcareous, silty and sandy in part disseminated carbonaceous material.	
345	Claystone	100	As above.	
350	Claystone	100	As above.	
355	Claystone	100	Medium dark grey, soft, sticky, silty, amorphous, in part sandy, non to slightly calcareous, disseminated carbonaceous material, rare shale fragment, rare pyrite.	
360	Claystone	100	As above but no pyrite, slightly silty.	
365	Claystone	100	Medium dark grey, soft, sticky, amorphous, non to slightly calcareous, silty, in part grading argillaceous sltst, in part sandy, disseminated carbonaceous material, rare shale fragment.	
370	Claystone	100	As above but less silty, non-calcareous.	
375	Claystone	100	As above minor shale fragment.	
380	Claystone	100	As above more silty and sandy, minor mica.	
385	Claystone	100	Dark grey to greenish black, medium dark grey, soft, sticky, amorphous to blocky, silty, in part slightly sandy, non-calcareous, disseminated carbonaceous material, rare shale fragment.	
390	Claystone	100	As above.	
395	Claystone	100	As above.	

Depth (m RKB)	Lithology	%	Lithological description.	Remarks / Shows
400	Claystone	100	Predominantly medium dark grey, soft, sticky, amorphous, in part blocky, non-calcareous, slightly silty, minor sandy in part, slightly carbonaceous.	
405	Claystone	100	As above more silty.	
410	Missed			
415	Missed			
420	Claystone	100	Medium dark grey, soft, in part sticky, amorphous to blocky, non-calcareous, silty, slightly carbonaceous, rare shale fragment.	
425	Claystone	100	As above.	
430	Claystone	100	As above.	
435	Claystone	100	As above rare foraminifer.	
440	Claystone	100	Medium dark grey, soft, in part sticky, amorphous to blocky, non-calcareous, slightly silty, slightly carbonaceous, rare shale fragment.	
445	Claystone	100	As above.	
450	Claystone	100	Medium dark grey, soft, in part firm, amorphous to blocky, in part sticky, silty, slightly carbonaceous, non-calcareous, rare shale fragment.	
455	Claystone	100	As above in part medium grey.	
460	Claystone	100	As above slightly silty.	
465	Claystone	100	As above .	
470	Claystone	100	As above.	
475	Claystone	100	Dark grey, soft, sticky, amorphous, silty, carbonaceous.	
480	Claystone	100	As above.	
485	Claystone	100	As above.	
490	Claystone	100	As above.	
495	Claystone	100	As above.	
500	Claystone	100	As above.	
505	Claystone	100	As above.	
510	Claystone	100	Dark grey, medium dark grey, soft, sticky, amorphous, silty, grading to sandy, calcareous, carbonaceous.	
515	Sandstone	95	Loose quartz grains, clear, very fine to fine, sub-angular to sub-rounded, moderately sorted.	
	Claystone	5	Dark grey, medium dark grey, soft, sticky, amorphous, sandy, calcareous.	
520	Claystone	100	Olive grey, soft, sticky, amorphous, calcareous, silty to sandy, carbonaceous.	
525	Sandstone	100	Loose quartz grains, clear, rare milky white, very fine to fine, sub-angular to sub-rounded, moderately sorted, carbonaceous, rare mica.	
530	Sandstone	70	As above.	
	Claystone	30	Dark grey, medium dark grey, soft, sticky, amorphous, slight calcareous, sandy, carbonaceous, rare mica.	
540	Claystone	100	As above.	
545	Claystone	100	Olive grey, rare olive black, soft, sticky, amorphous, rare blocky to sub-blocky, silty, slight calcareous to calcareous.	

Depth (m RKB)	Lithology	%	Lithological description.	Remarks / Shows
550	Claystone	100	Dark grey, rare olive black, soft, sticky, amorphous, silty, slight calcareous, carbonaceous.	
550	Claystone	100	As above.	
560	Claystone	100	As above.	
565	Claystone	100	Medium dark grey, dark grey, soft, sticky, amorphous, silty, slight calcareous, carbonaceous.	
570	Claystone	100	Dark grey, soft, sticky, amorphous, silty, slight calcareous, carbonaceous.	
575	Claystone	100	As above.	
580	Claystone	100	As above.	
585	Missed			
590	Claystone	100	Dark grey, soft, firm, sticky, amorphous, silty to sandy, slight calcareous, carbonaceous.	
595	Claystone	100	Dark grey, soft, firm, sticky, amorphous, silty, slight calcareous, carbonaceous.	
600	Claystone	100	Dark grey, soft, sticky, amorphous, slight silty, slight calcareous, carbonaceous.	
605	Claystone	100	As above.	
610	Claystone	100	As above.	
615	Claystone	100	As above.	
620	Claystone	100	As above.	
625	Claystone	100	As above.	
630	Claystone	100	As above.	
635	Claystone	100	As above.	
640	Claystone	100	Dark grey, soft, in part firm, amorphous to sub-blocky, very slightly calcareous, slightly silty, in part slightly carbonaceous, minor mica.	
650	Claystone	100	As above.	
655	Claystone	100	As above.	
660	Claystone	100	As above.	
665	Claystone	100	As above.	
670	Claystone	100	As above.	
675	Claystone	100	Dark grey, soft, in part firm, in part sticky, amorphous to sub-blocky, slightly calcareous, slightly silty, slight carbonaceous material.	
680	Claystone	100	As above rare fossils fragment (foraminifer).	
685	Claystone	100	As above.	
690	Claystone	100	As above very slightly calcareous.	
695	Claystone	100	As above.	
700	Claystone	100	Olive grey, soft, in part firm, amorphous to sub-blocky, moderately calcareous, very slightly silty, rarely glauconitic, rarely pyritic.	
705	Claystone	100	Medium dark grey to olive grey, else as above.	
710	Claystone	100	Medium dark grey to olive grey, soft to firm, sub-blocky, in part slightly sticky, slight carbonaceous material, in part minor pyrite, slight to moderately calcareous.	
715	Claystone	100	Medium dark grey, soft, sticky, amorphous, in part sub-blocky, moderately calcareous, disseminated	

Depth (m RKB)	Lithology	%	Lithological description.	Remarks / Shows
			carbonaceous material, in part minor pyrite.	
720	Claystone	100	As above.	
725	Claystone	100	As above.	
730			Missed.	
735			Missed.	
740	Claystone	100	As above in part slightly silty.	
745	Claystone	100	As above rare fossils fragment (foraminifer).	
749	Claystone	100	As above.	
753	Claystone	100	Dark grey to medium dark grey, soft to firm, amorphous to sub-blocky, in part sticky, slightly silty, slightly calcareous.	90 % cement, Aluminium (plugs).
756	Claystone Sand	70 30	As above. Loose grain, colourless, minor yellowish quartz, clear translucent to transparent, predominantly fine to medium, minor coarse, well sorted, sub-rounded to rounded.	No shows.
759	Claystone Sand	60 40	As above. As above.	No shows.
762	Claystone Sand	40 60	Medium dark grey, soft, in part firm, amorphous, in part sub-blocky, sticky, moderately calcareous. As above.	No shows.
765	Claystone Sand	60 40	Dark grey, soft, amorphous, sticky, carbonaceous material common, slightly calcareous, minor fossils (foraminifer). Loose grain as above.	Calcite mud additive, Aluminium (plugs).
768	Claystone Sand	60 40	As above no fossils. As above minor glauconite grain.	
771	Claystone Sand	90 10	As above. As above.	
774	Claystone Sandstone	95 5	Dark grey, soft, sticky, amorphous, carbonaceous material, calcareous. Loose grain, clear, very fine to fine, well sorted, sub-rounded to rounded.	
777	Claystone Sandstone	90 10	As above. As above.	
780	Claystone Sandstone	90 10	As above. As above.	
783	Claystone Sandstone	90 10	As above. As above.	
786	Claystone Sandstone	90 10	As above. As above.	
789	Claystone Sandstone	90 10	As above. As above.	
792	Claystone Sandstone	90 10	As above. As above.	
795	Claystone Sandstone	95 5	As above. As above.	
798	Claystone	100	Dark grey, greyish black, soft, sticky, amorphous, carbonaceous material in part, slaty calcareous.	
801	Claystone	100	As above.	
804	Claystone	100	Rare pyrite, else as above.	

Depth (m RKB)	Lithology	%	Lithological description.	Remarks / Shows
808	Sandstone	80	Loose grains, predominantly clear, rare light orange quartz, very fine to fine, rare medium, sub-rounded to rounded, well to moderately sorted.	No shows.
	Claystone	20	Dark grey, soft, amorphous, slight calcareous, carbonaceous material in part.	
811	Sandstone	80	Loose grains, predominantly clear, rare light orange, very fine to fine, rare medium, sub-rounded to rounded, well to moderately sorted, rare pyrite.	No shows.
813	Sandstone	100	As above.	No shows.
816	Sandstone	100	As above.	No show.
819	Sandstone	80	As above.	No show.
	Claystone	20	As above.	
822	Sandstone	90	Loose grains, clear translucent, colourless, minor orange quartz, fine to medium, well sorted, sub-rounded to rounded, in part glauconitic, minor pyrite, minor mica, rare foraminifer.	No shows.
	Claystone	10	As above.	
825	Sandstone	90	Loose grains, clear translucent, colourless, minor orange quartz, fine to medium, minor coarse, well sorted, sub-rounded to rounded, in part glauconitic, minor pyrite, minor mica, fossil fragment.	No shows.
	Claystone or siltstone	10	Olive black, soft, in part firm, amorphous to sucrosic, argillaceous, non-calcareous, carbonaceous material, in part glauconitic, common siliceous spicules.	
828	Sandstone	90	Loose grains, clear translucent, colourless, minor orange quartz, very fine to medium, moderately sorted, sub-rounded to rounded, commonly glauconitic, fossil fragment (limestone).	No shows.
	Siltstone	10	Dark grey to greenish black, firm, sub-blocky to sucrosic, sandy, glauconitic, non-calcareous.	
831	Sandstone	90	As above glauconitic abundant.	No shows.
	Siltstone or claystone	10	As above.	
834	Sandstone	50	Loose grains, clear translucent, colourless, minor orange quartz, very fine to medium, rare coarse, moderately sorted, sub-rounded to rounded, abundant glauconitic grains, minor pyrite, minor mica.	No shows.
	Siltstone	20	Greenish black, friable, sub-blocky to sucrosic, sandy, in part grading sandstone, common glauconite, argillaceous, calcareous.	
	Claystone	10	Dark grey, soft to firm, sub-blocky, sticky, calcareous.	
	Limestone	20	Very pale orange to pale yellowish brown, hard, brittle, homogenous, rare weak laminated.	
837	Sandstone	80	As above.	No shows.
	Claystone	10	Dark grey to olive black, firm, sub-blocky, minor fossils fragment, calcareous.	
	Limestone	10	As above.	
840	Sandstone	40	As above occasionally foraminifer.	No shows.
	Claystone	50	Greenish black to dark grey, soft to firm, sub-blocky, slight calcareous to calcareous.	
	Limestone	10	As above.	
843	Sandstone	20	As above.	No shows.
	Claystone	80	Dark greenish grey, soft, in part firm, amorphous, in part sub-blocky, sticky, moderately calcareous.	
	Limestone	Trace	As above.	

Depth (m RKB)	Lithology	%	Lithological description.	Remarks / Shows
846	Sandstone	10	As above.	No shows.
	Claystone	90	As above.	
	Limestone	Trace	As above.	
849	Claystone	100	Predominantly olive grey, I.P dark greenish grey, soft to firm, amorphous to sub-blocky, in part sticky, slightly calcareous.	No shows.
	Sand	Trace	As above.	
852	Sandstone	60	Loose grain, clear translucent, colourless, minor yellowish quartz, very fine to medium, minor coarse, moderately sorted, sub-rounded to rounded, abundant glauconite grain.	No shows.
	Claystone	30	Olive grey, soft to firm, amorphous to sub-blocky, sticky, non to very slightly calcareous.	
	Limestone	10	As above.	
855	Claystone	100	As above.	
858	Claystone	100	As above.	
861	Claystone	100	As above.	
864	Claystone	90	As above.	No shows.
	Sandstone	10	Loose grain, clear translucent, colourless, minor yellowish quartz, very fine to fine, well sorted, sub-rounded to rounded, abundant glauconite grain.	
	Limestone	Trace	Very pale orange to pale yellowish brown, hard, brittle, homogenous, rare weak laminated.	
867	Claystone	90	As above.	No shows.
	Sandstone	10	As above.	
870	Claystone	60	As above (sandy might been from washing of samples).	No shows.
	Sandstone	40	Loose grain, clear translucent, colourless, minor yellowish quartz, very fine to fine, occasionally medium well sorted, sub-rounded to rounded, abundant glauconite grain.	
873	Sandstone	80	Loose grain, clear translucent, colourless, minor orange quartz, very fine to medium, moderately sorted, sub-rounded to rounded, common glauconite grain.	No shows.
	Claystone	20	As above.	
	Limestone	Trace	As above.	
876	Sandstone	80	Loose grains, clear, very fine to fine, well sorted, sub-rounded to sub-angular, abundant glauconite grains.	No shows.
	Claystone	20	Dark yellowish brown, olive grey, soft, sticky, amorphous, slight calcareous, carbonaceous material.	
879	Sandstone	80	As above.	No shows.
	Claystone	20	As above.	
882	Sandstone	60	As above.	No shows.
	Claystone	40	Olive grey, soft, amorphous, sticky, abundant carbonaceous material.	
885	Sandstone	40	As above.	No shows.
	Claystone	60	As above.	
888	Claystone	90	Medium olive brown, soft, sticky, amorphous, silty, slight calcareous, abundant carbonaceous material.	No shows.
	Claystone or grading to LS	5	Pale blue, soft, amorphous, calcareous, abundant glauconite.	
	Sandstone	5	Loose grains, clear, very fine to fine, well sorted, sub-rounded to sub-angular, abundant glauconite grains.	

Depth (m RKB)	Lithology	%	Lithological description.	Remarks / Shows
891	Sandstone	20	Loose grains, clear, very fine to fine, well sorted, sub-rounded to sub-angular, abundant glauconite grains.	No shows.
	Claystone	80	Dark greenish grey, olive grey, soft, amorphous, sticky, slight calcareous to very calcareous, abundant carbonaceous material.	
894	Sandstone	20	As above.	No shows.
	Claystone	80	As above.	
897	Sandstone	60	Loose grains, clear, very fine to fine, well sorted, sub-rounded to sub-angular, abundant glauconite grains.	No shows.
	Claystone	40	As above.	
900	Sandstone	40	As above.	No shows.
	Claystone	60	As above.	
903	Sandstone	30	As above.	No show.
	Claystone	70	Olive black, soft, sticky, amorphous, calcareous, carbonaceous material.	
906	Sandstone	20	As above.	No shows.
	Claystone	80	As above.	
909	Sandstone	10	As above.	No shows.
	Claystone	90	As above.	
912	Sandstone	100	Loose grains, clear, rare light orange, very fine to fine, rare medium, well sorted, sub-angular to sub-rounded, abundant glauconite.	No shows.
	Claystone	Trace	As above.	
915	Sandstone	60	As above.	No shows.
	Claystone	40	As above.	
918	Sandstone	100	As above.	No shows.
921	Sandstone	100	As above.	No show.
	Claystone	Trace	As above.	
924	Sandstone	100	As above.	No shows.
927	Sandstone	90	As above.	No show.
	Limestone	10	Very light grey, soft, sticky, amorphous, microcrystalline, sandy.	
930	Sandstone	100	Loose grains, clear, rare light orange, rare light pink, very fine to fine, well sorted, sub-angular to sub-rounded.	No shows.
933	Sandstone	70	As above.	No show.
	Claystone	30	As above.	
936	Sandstone	90	As above.	No shows.
	Claystone	10	As above.	
	Limestone	Trace	As above.	
939	Sandstone	100	As above.	No shows.
942	Sandstone	100	Loose grains, clear, translucent, colorless, minor orange quartz, very fine to medium, moderately sorted, sub-rounded to rounded, in part sub-angular, common glauconite.	No shows.
945	Sandstone	100	Loose grains, clear, translucent, colorless, minor orange quartz, very fine to medium, rare coarse, moderately sorted, sub-rounded to rounded, in part sub-angular, occasionally glauconite, minor mica.	No show.
	Claystone and limestone	Trace	As above.	
948	Sandstone	90	As above.	No shows.

Depth (m RKB)	Lithology	%	Lithological description.	Remarks / Shows
	Claystone	10	Olive grey, soft, amorphous to sub-blocky, slightly silty, non-calcareous.	
951	Sandstone	100	As above.	No shows.
	Claystone	Trace	As above.	
954	Sandstone	80	As above trace fossils fragment.	No shows.
	Claystone	20	Olive black, dark greenish grey, firm, sub-blocky, non to very slightly calcareous, slightly glauconitic.	
957	Sandstone	100	As above but predominantly rounded.	No shows.
	Claystone	Trace		
	Limestone	Rare trace		
960	Sandstone	100	As above.	No shows.
	Claystone	Trace	As above.	
	Limestone	Rare trace	Very pale orange to pale yellowish brown, hard, brittle, homogenous.	
963	Sandstone	100	As above rare fossils fragment (foraminifer).	No shows.
	Claystone	Trace	As above.	
966	Sandstone	100	Clear, translucent, colourless, minor orange quartz, very fine to medium, rare coarse, moderately sorted, sub-rounded to rounded, in part sub-angular, occasionally glauconite grain, predominantly loosely grain, occasionally very light grey, soft calcareous and slight argillaceous matrix, minor mica.	No shows.
969	Sandstone	100	Clear, translucent, colourless, minor orange quartz, very fine to medium, rare coarse, moderately sorted, sub-rounded to rounded, in part sub-angular, occasionally glauconite grain, loosely grain.	No shows.
972	Sandstone	100	As above.	No shows.
975	Sandstone	100	As above.	No show.
978	Sandstone	100	As above.	No show.
981				Missed.
984	Sandstone	100	As above.	No shows.
987	Sandstone	100	As above.	No shows.
990	Sandstone	100	As above predominantly loosely grain, occasionally very light grey, soft calcareous and slight argillaceous matrix, minor mica.	No show.
993	Sandstone	90	As above.	No show.
	Claystone	10	Dark greenish grey to dark olive grey, dark brownish grey, soft to firm, occasionally plastic, amorphous to sub-blocky, sticky, non to slightly calcareous, very sandy in part, abundant glauconitic.	
996	Claystone	70	As above.	
	Sandstone	30	Clear, translucent, colourless, minor orange quartz, very fine to medium, rare coarse, moderately sorted, sub-rounded to rounded, in part sub-angular, very glauconitic .	
	Limestone	Trace	Very pale orange to pale yellowish brown, angular to sub-angular, moderately hard to hard, brittle, homogenous. .	
999	Claystone	100	Dark greenish grey to dark olive grey, dark brownish grey, soft to firm, occasionally plastic, amorphous to sub-blocky, sticky, non to slightly calcareous, very sandy in part, abundant glauconitic.	
	Limestone	Trace	As above.	

Depth (m RKB)	Lithology	%	Lithological description.	Remarks / Shows
1002	Claystone	80	Olive grey to olive black, dark greenish grey to greenish grey, soft to firm, plastic, amorphous to sub-blocky, occasionally very sandy, non to slightly calcareous, very glauconitic, micromicaceous.	
	Sandstone	20	Colourless to light greyish white, transparent to translucent loose quartz grained, fine to medium, occasionally coarse, sub-spherical, sub-angular to sub-rounded, occasionally very rounded, moderately sorted.	
1005	Claystone	90	As above.	
	Sandstone	10	As above.	
1008	Claystone	100	Olive grey to olive black, greenish grey to brownish grey, soft to firm, plastic, sticky, amorphous to sub-blocky, non to slightly calcareous, abundant glauconite.	
1011	Claystone	100	Olive grey to dark greenish grey, occasionally brownish grey, soft to firm, sticky, amorphous to sub-blocky, non to slightly calcareous, occasionally very sandy, trace glauconite.	
	Limestone	Trace	Very pale orange to greyish orange, angular to sub-angular, moderately hard to hard, brittle, homogenous.	
1014	Claystone	100	As above.	
	Sandstone	Trace	Colourless, transparent to translucent loose quartz grain, very fine to medium, occasionally coarse, sub-spherical, sub-angular to sub-rounded, occasionally very rounded, moderately sorted.	
	Limestone	Trace	As above.	
1017	Claystone	100	Olive grey to dark greenish grey, occasionally brownish grey, soft to firm, sticky, amorphous to sub-blocky, non to slightly calcareous, occasionally very sandy, good trace glauconite.	
	Sandstone	Trace	As above.	
	Limestone	Trace	As above.	
1020	Claystone	100	Olive grey to dark greenish grey, occasionally brownish grey, soft to firm, sticky, amorphous to sub-blocky, non to slightly calcareous, occasionally very sandy, good trace glauconite.	
	Sandstone	Trace	Colourless, transparent to translucent loose quartz grain, very fine to medium, occasionally coarse, sub-spherical, sub-angular to sub-rounded, occasionally very rounded, moderately sorted.	
	Limestone	Trace	Very pale orange to greyish orange, angular to sub-angular, moderately hard to hard, brittle, homogenous.	
1023	Claystone	100	As above.	
	Sandstone	Trace	As above.	
1026	Claystone	100	As above.	
	Sandstone	Trace	As above.	

5.2 Press release

Lundin Petroleum AB
Company Announcement

Zulu exploration well, offshore Norway has been completed as a gas discovery

Stockholm, 2015-02-06 08:30 CET (GLOBE NEWSWIRE) --

Lundin Petroleum AB (Lundin Petroleum), through its wholly owned subsidiary Lundin Norway AS (Lundin Norway), has completed the drilling of wildcat well 26/10-1. The well investigated the hydrocarbon potential of the Zulu prospect in PL674BS, which is located 100 km west of Stavanger on the Norwegian west coast and approximately 30 km northeast of the Johan Sverdrup discovery.

The main objective of well 26/10-1 was to test the hydrocarbon potential in the Miocene Utsira Formation sand.

The well encountered Utsira Formation sand with very good reservoir quality. The well encountered gas in an upper 24 metres sand sequence. Pressure measurements imply a gas column of 36 metres at the well. Thorough logging and sampling has been performed. Fluid data will be analysed and detailed mapping performed for resource potential evaluation. The well is being plugged and abandoned as a gas discovery.

The well was drilled by the drilling rig Island Innovator to a total depth of 995 metres subsea and was terminated in sediments of presumed Oligocene age Hordaland Group. The well was drilled in a water depth of 140 metres on the Patch Bank Ridge.

This well was the first exploration well in licence PL674BS, which was awarded as a part of PL674 in APA 2012 and carved out as a separate licence in 2014. Lundin Norway is operator with a 35 percent working interest. Petrolia Norway and E.ON E&P Norge are partners with 35 and 30 percent working interest respectively.

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Section B – Drilling and HSE Experience

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Partners:



PL 674 | Zulu

Final Well Report

Drilling and HSE Experience

Well 26/10-1



Rig: Island Innovator

13.05.2015 | Document no.: P674-LUN-D-RA-3006

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1 General Information

1.1 Summary

Well 26/10-1 is a vertical exploration well designed to investigate the hydrocarbon potential of the Zulu prospect in license PL 674 BS. The prospect is a prominent fan complex expected to consist of Miocene age sands/sandstones of the Utsira Formation.

The semisubmersible rig Island Innovator was utilized to drill and test the well, with the following benchmarks:

- Rig on contract for PL674: 14:00 18.01.2015
- Spudded well 26/10-1: 01:00 20.01.2015
- Well TD (1025 m MD) reached: 05:00 04.02.2015
- Started P&A: 16:00 05.02.2015
- Rig released from PL674 06:00 13.02.2015

This report covers the Drilling and HSE results of the operation.

1.2 Well Location

Table 1-1 Well information

Area	North Sea	
Block	26/10	
Prospect	Zulu	
PL number	674 (Lundin Norway AS 35 %, E. On 30 %, Petrolia 35 %.	
Well Classification	Exploration	
Well Identification	26/10-1	
Actual location	6 540 262.9 m N 504 064.9 m E UTM Zone 31	Lat: 59° 00' 01.87" North Long: 003° 04' 14.70" East (European Datum 1950- International Ellipsoid, South of 62°)
Final Gyro Heading	316.1° True / 316.04° Grid	
Water Depth	140.0 m (MSL)	
26/10-1 TD	6 545 256.29 N 459 850.60 m E	1025.00 m MD RKB 1024.95 m TVD RKB

1.3 Drilling Rig

Table 1-2 Rig information

Name:	Island Innovator	Rig Contractor:	Island Drilling
Type:	GMC GM 4000-WI	Year Built:	2012
RKB-MSL:	30 m	Last Class Survey:	2012
BOP Rating:	15.000 psi	NPD RID ID:	426940

1.4 Well control equipment

The Island Innovator BOP stack is set up with the following configuration:

- Upper Annular (10000psi)
- Lower Annular (10000psi)
- BSR (CDVS)(15000psi)
- SSR (Super Shear Ram)
- UPR (15000psi) 3 1/2" – 7 5/8" VBR
- MPR (15000psi) 3 1/2" – 7 5/8" VBR
- LPR (15000psi) 3 1/2" – 7 5/8" VBR

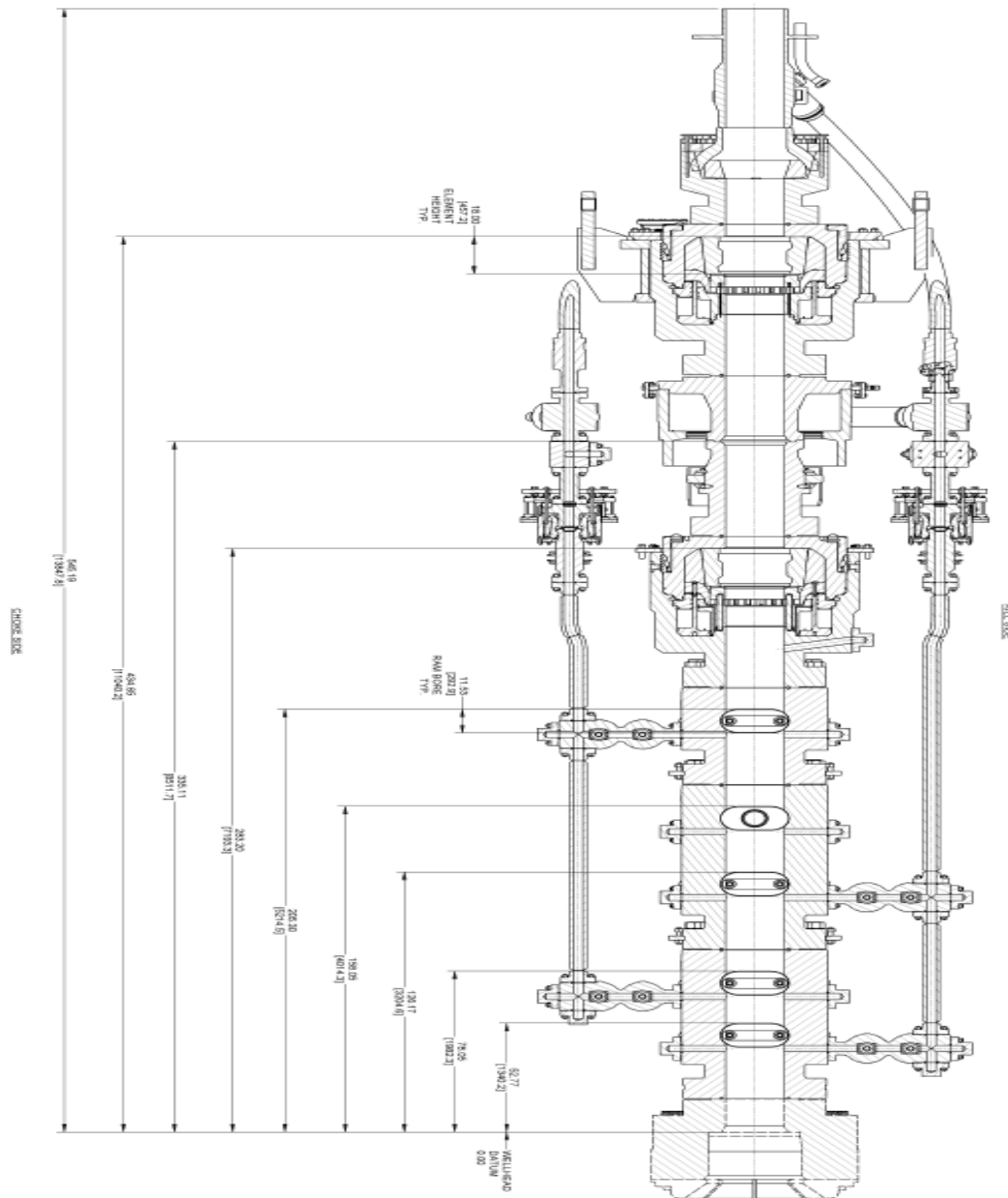


Figure 1-1 Island Innovator BOP stack

1.5 Organization

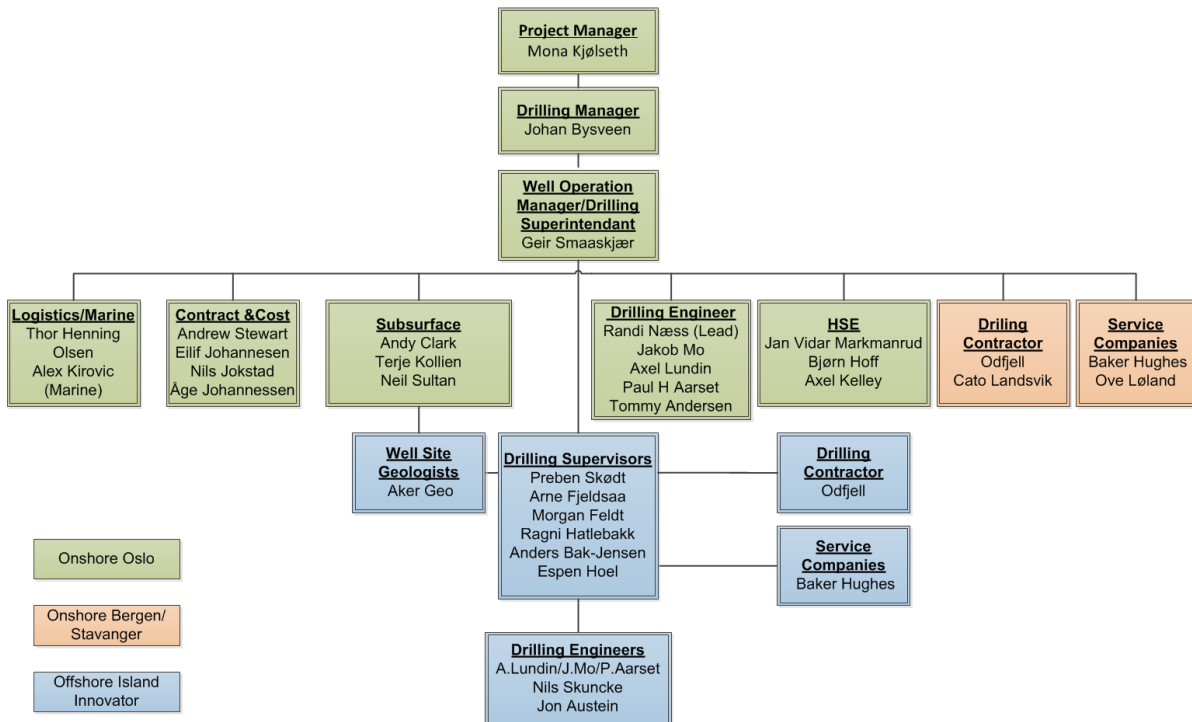


Figure 1-2 Drilling organization chart

1.6 List of main contractors

Table 1-3 List of main contractors

Anchor Handlers / Tugs	Mob: Havila Venus, Havila Jupiter
Bits	Baker Hughes
Conductor 30"	Dril-Quip
Casing Running Services	Weatherford
Cement & Services	Baker Hughes
Communications	Harris Caprock
Coring	Baker Hughes
Directional Drilling	Baker Hughes
Drilling Contractor	Odfjell
Drilling Fluids	Baker Hughes
Fishing Equipment	Baker Hughes
Helicopter Booking Services	CHC Helicopter Services
Helicopters	CHC Helicopter Services
Location Site Survey	Fugro Survey
Mud Logging	Baker Hughes
MWD / LWD Logging	Baker Hughes
P & A Equipment	Baker Hughes
Rig Move / Positioning Equipment	Fugro Survey
ROV Services	Oceaneering
Shorebase	Asco
Standby Vessel / Supply Vessel	Island Contender
Standby Vessel / Supply Vessel	Island Crusader
Casing	Mitsui
Weather Forecasting	Storm Geo
Well Test Equipment	Halliburton / Schlumberger / IOT
Wellhead	Dril-Quip
Wellsite Geologists	Aker Geo, Lundin Norway AS
Wireline Logging Services	Baker Hughes

2 Well objective and results

2.1 Target

Well 26/10-1 is a vertical exploration well designed to investigate the hydrocarbon potential of the Zulu prospect in license PL 674 BS. The prospect is a prominent fan complex expected to consist of Miocene age sands/sandstones of the Utsira Formation.

The well has the following objectives:

Primary objectives

- Evaluate the reservoir properties and prove the presence of hydrocarbons (oil) within the sands / sandstones of the Utsira Formation.
- Prove the presence of high quality reservoir facies.
- Determine an oil-water contact.
- Drill through and verify the top Hordaland Group reflector.
- Acquire information to aid planning of development wells in the Zulu area.

2.2 Results

The well encountered about 24 metres of gas filled reservoir in Utsira with good reservoir qualities.

Some data acquisition and sampling was carried out.

Well 26/10-1 was drilled to respective vertical and measured depths of 1026 m, and was terminated in the Lark formation.

2.3 Health, safety and environment

The objective was to drill, possibly test and permanently abandon the well in a safe manner without any injuries to personnel or spills to sea. A total of 13 Key Performance Indicators (KPIs) were defined for the project, and these are listed together with the results in chapter 8.

2.4 Budget

The budget-related objective was to drill and abandon the main well and within the AFE estimated time, which was 23.6 days (dry hole case; with no wireline runs and no coring) including 7 % WOW and 10 % NPT. The well was drilled and permanently abandoned in 26.13 days.

2.5 Operation

The 26/10-1 well was drilled according to the well design. A 36" hole was drilled to 242 m. 9 7/8" pilot hole was drilled to 290 m MD RKB to check for shallow gas, followed by the 17 1/2", 12 1/4" and 6" sections. The 17 1/4", 12 1/4" and 6" hole sections were drilled as planned.

Seawater and high viscosity pills were used as drilling fluid on the riserless sections, while Aquadrill water based mud was used in the 12 ¼" and 6" hole sections.

After completing the drilling and data acquisition program, the well was permanently plugged back and abandoned.

- Total days on contract was 26.13 days
- Days from spud to TD was 24.69 days
- Formation evaluation days after drilling to TD was 1.08 days
- The Permanent P&A including rig move took 8.06 days

NPT hours as a percentage of total time was 11.1 % (69,5 hrs NPT out of 627.0 hrs total). In addition 4.3 % (27 hrs) time was spent waiting on weather.

2.6 Drilling time curve

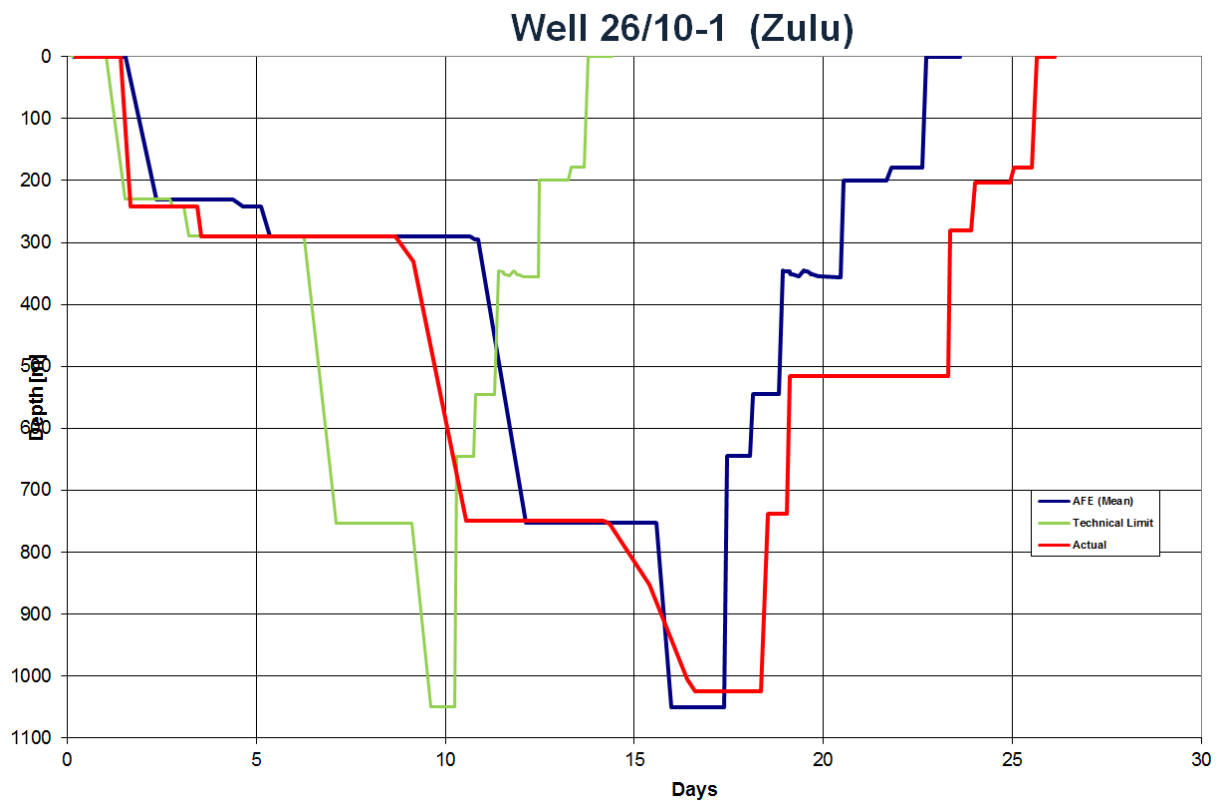


Figure 2-1 Drilling time curve

3 Conclusions and recommendations

3.1 CAN installation

Due to soft to very soft silty clay prognosed in the Upper Witch Ground Formation and Lower Witch Ground Formation it was decided to install a Conductor Anchor Node (CAN) on location. According to CPT evaluations, the upper 2,5 meters showed very low to extremely low shear strength. The CAN installed was 7,5 m long with 6 m diameter and weighing approximately 60 Te in air.

Wellhead movement was detected on well 16/2-20 S and 16/1-18.

The CAN was mobilized by NeoDrill. The CAN was installed by Normand Reach prior to Island Innovator reaching location.

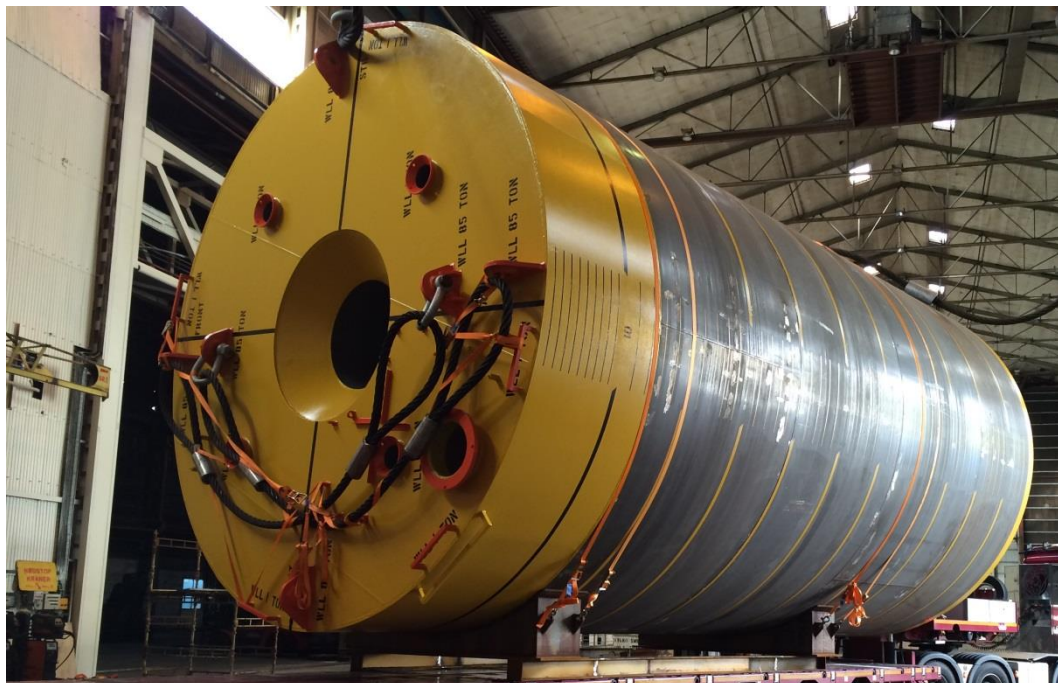


Figure 3-1 Zulu CAN

The 30" conductor was installed inside the CAN. After completing the well the 30" conductor was cut at the bottom of the CAN. The 30" conductor and wellhead was attempted to be pulled free with 200 MT overpull without success. Knives were inspected and they indicated cut all the way through 30" conductor. CAN and 30" conductor was left on site by Island Innovator and pulled four month later by the intervention wessel Normand Reach at 6th of June 2015. The operation ws performed according to plan.

3.2 20"x13 3/8" casing depth

The plan was to set the 20"x13 3/8" casing above the slight level 2 gas warning at 290-314 m for Fugro preliminary site survey report. When the final sitesurvey report arrived the slight level 2 gas warning was moved to 286-306 m without that

being highlighted. The 13 3/8" casing shoe was sat 284 m with rathole to 290 m. The sand was 288-292 m. It was drilled 12 1/4" hole from 290 m to 293 m prior to performing FIT to be below sandzone. FIT was planned to minimum 1.32 sg. Due to very small volumes to pressure up and very low pressure it was decided to use sea water to perform FIT. The well was pressured up using subsea pump, but leaked off. LOT achieved was 1.24 sg/6 bar with sea water.

3.3 Wellhead movement monitoring

Wellhead integrity monitoring was provided for the Zulu well to detect weather impact on wellhead movement and wellhead fatigue. 3 SMS-3000WAG sensors was placed at riser adapter near the bullseye above the flex joint, near the bullseye below the flex joint and low on the BOPs lower ram. These sensors measured linear accelerations and rotation rates. ROV dived to read values off sensors and sent values to 4Subsea. 4Subsea provided an internet solution to show stiffness trend and fatigue. Monitoring fatigue and weather showed a clear relation of one another, but the weather in this period was relatively nice compared to what can be expected in January in the North Sea. The Zulu well was only connected for monitoring for 16,25 days. It was only used a total of 2.65 % of total Utilization of expected strength. Well stiffness, the wells ability to resist BOP movements, was estimated to 3000 kNm/deg. New calculations were made after monitoring well and showed analysis was conservative. Calculated stiffness based on monitoring was calculated to 3600 kNm/deg.



Figure 3-2 4Subsea Motion sensor installed on BOP

Sensor locations

SN036



SN034



SN041



Figure 3-3 Location of the 3 4Subsea Motion sensor installed on BOP for Zulu

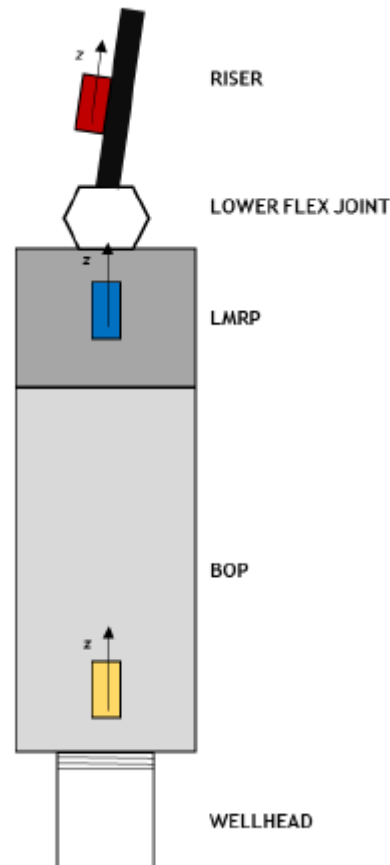


Figure 3-4 Location of the 3 4Subsea Motion sensor installed on BOP for Zulu drawing

3.4 Shallow test BCPM in 6" hole

Made up 6" assembly and ran in hole to 500 m prior to performing shallow test on MWD. BCPM didn't pulse. Pulled out of hole to change out BCPM. Had 12 hours down time due to changing out BCPM pulser. Building the 6" BHA and changing from 4" to 5" inserts was time consuming. Recommendations for next time we drill with an assembly like this is to test the MWD/BCPM below rotary.

3.5 Drilling 6" section

6" section was drilled with a milled tooth bit and a 5 7/8" stabilizer and a 5 3/4" stabilizer. The hole was drilled with 1.15 sg aquadril mud. It was experienced high pressure and high ECD in the clay zones in this section. ECD ranged from 1.30 sg to 1.51. sg. There were several pressure spikes and ECD spikes showing the hole was packing off. Needed to pull off bottom several times and ream single or stand.

3.6 Wireline

2 wireline runs was performed in this well. Rigging up, performing the two logging runs and rigging down equipment was performed in an efficient and safe manner.

It was used 26 hours for the entire operation. The logging runs was #1 A PPC-MSIP-PPC-HRLA-PEX-GR and #1B MDT.

4 Well status

4.1 P&A schematic

The well has been permanently plugged and abandoned. A side-scan sonar survey was performed with the ROV before leaving the location. A diagrammatic representation of the P&A program is presented in figure 4.1 and the final barrier status is presented in figure 4.2.

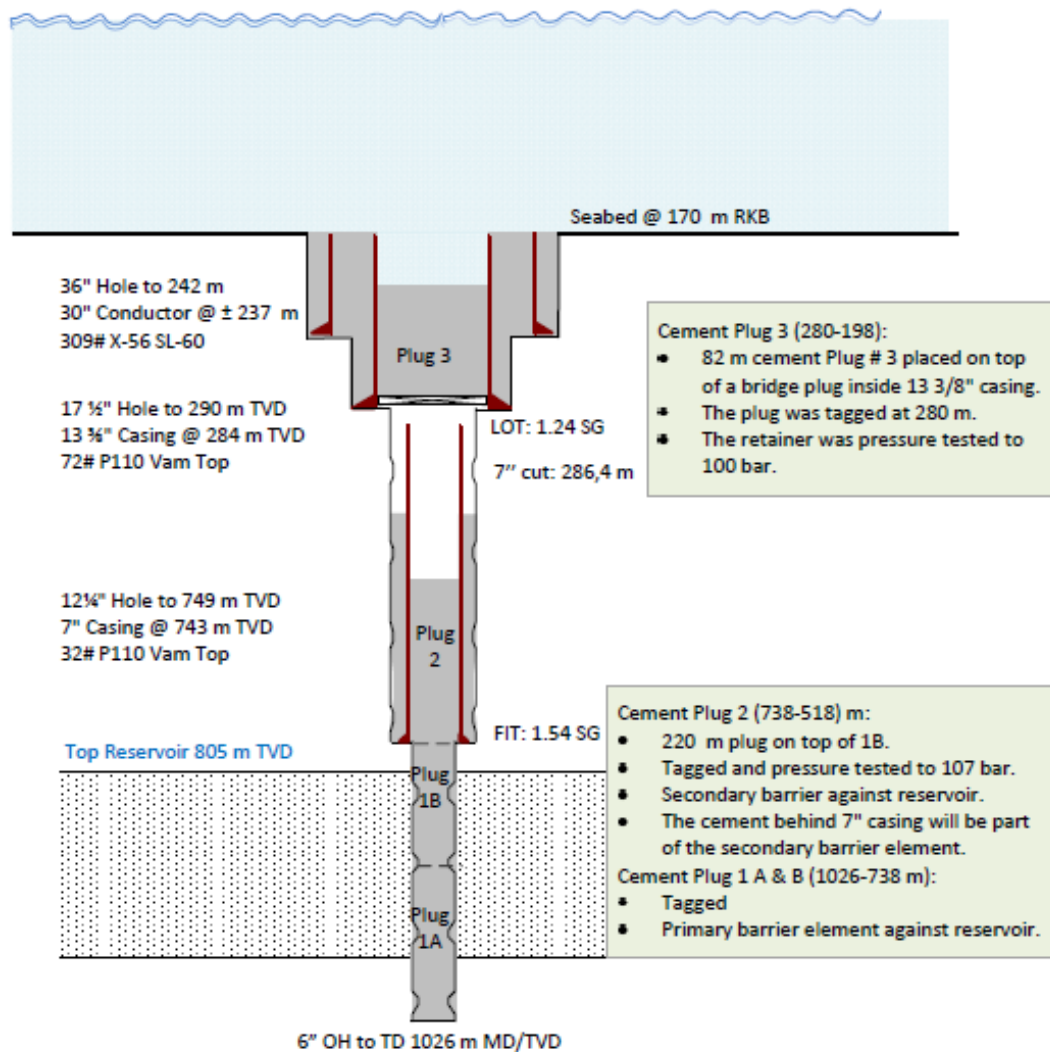

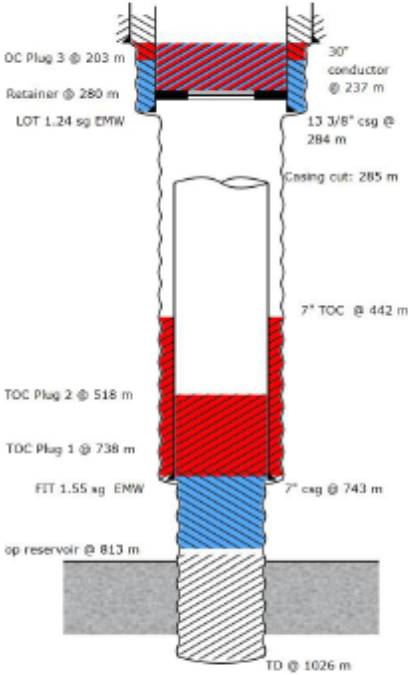
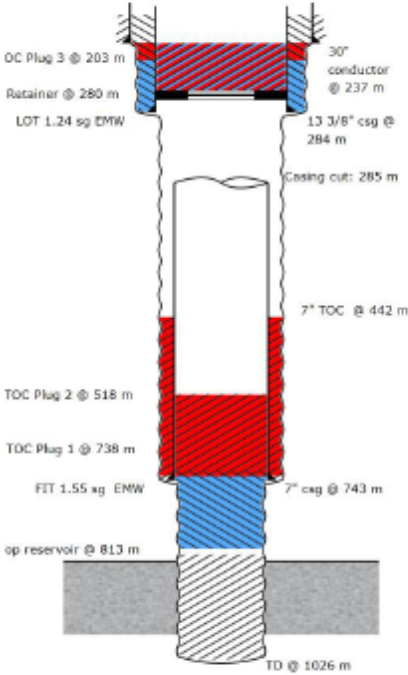


Figure 4-1 Well status, permanent P&A

4.2 P&A barrier status

		Field : Zulu Well : 26/10-1 Schematic : LU 5.4-b rev.11 Date : 22.Apr.2015	Rig: Island Innovator Type: Exploration Prepared By : Ragni Hatlebakk Verified By : Jakob Mo
Permanent abandonment			
13 3/8" casing, 7" casing and 6" open hole			
Well handed over to owner			
Primary well barrier			
	Element	As built	Monitoring
 <p>OC Plug 3 @ 203 m Retainer @ 280 m LOT 1.24 sq EMW 30" conductor @ 237 m 13 3/8" csg @ 284 m Casing cut: 285 m 7" TOC @ 442 m TOC Plug 2 @ 518 m TOC Plug 1 @ 738 m FIT 1.55 sq EMW 7" csg @ 743 m op reservoir @ 813 m TD @ 1026 m</p>	Cement plug #1	Tagged at 738 m RKB. Confirmed 50 m cement above top reservoir.	Not accessible
	Cement plug #3	Retainer set as fundament and pressure tested to 100 bar. Cement plug tagged at 196 m. Dressed off to 203 m.	Not accessible
	13 3/8" Surface casing cement	Formation test, job performance. LOT performed to 1.24 sq below 20" shoe.	Not accessible
Secondary well barrier			
	Element	As built	Monitoring
	Cement plug #3	Retainer set as fundament and pressure tested to 100 bar. Cement plug tagged at 196 m. Dressed off to 203 m.	Not accessible
	Cement Plug #2	Pressure tested to 107 bar and tagged at 518 m RKB	Not accessible
	7" Casing cement	Formation test, job performance	Not accessible
	7" Casing cement	FIT performed to 1.54 sq below 7" shoe.	Not accessible
Healthy well, no or minor issue			
<p>Note: Plug 1 was set from TD up to 738 m. Plug 1 was tagged and verified to minimum 50 m above top reservoir. This will be the primary barrier against the reservoir.</p> <p>Top of Plug 1 used as foundation for Plug 2. Plug 2 was tagged and pressure tested to 70 bar above 7" fracture gradient/107 bar for 10 minutes. This will be the secondary barrier against the reservoir together with the casing cement.</p> <p>7" casing to be cut at +/- 285 m. Cut was tagged and verified at 284 m.</p> <p>Plug 3 was set from top of a bridge plug inside 13 3/8" casing. Bridge plug was pressure tested to 100 bar. TOC shall not be closed than 30 m to BOP. Plug was dressed off from 196 m until confirmed hard at 203 m.</p>			

Modified by Lundin

Figure 4-2 Barrier status, permanent P&A

5 Deviations

The deviations covered in this chapter are operational deviations only, and not deviations related to the rig itself (SUT-deviations).

5.1 From well program

Table 5-1 Deviations from well program

Document affected	Change description	New Barrier Envelope?	New program or DI?	New risk asesment? (LINK)
Drilling Program 26/10-1	Change to: Relief well location. Description: Change of relief well locations, the tabel 2.4 is replace by the RWL described in the Blowout Contingency plan, P674-LUN-D-KA-4001 Information: The drilling program has already been submitted with the old relief well locations.	No	Updated in Blow out contingency.	No
Drilling Program 26/10-1	Change to: Change kill mud from 2 times hole volume to 2,5 times. Description: The premix of kill mud has been increased to 2,5 times the hole volume.	No	HSG	N/A
Drilling Program 26/10-1	The well will be displaced to 1.40 sg bentonite mud as described in the mud program, not KCl.	No	HSG	No
Drilling Program 26/10-1	BOP configuration is changed due to use of 4" DP to all rams being 3 1/2" – 7 5/8" variable rams.	No	No	No
17 1/2" HSG	One bullet point taken out regarding 13 3/8" casing Wam Top connections due to not relevant. Use 2 ea anti-rotation keys on the 18 3/4" wellhead housing.	No	DI	No

5.2 From Lundin governing documents

Sat 13 3/8" casing shoe closer than two times the uncertainty of the shallowest slightly warning of shallow gas prognosed at 302 m RKB. The reason was to get the surface casing shoe as deep as possible, and obtain as high integrity as possible.

The plan is to drill down to 290 m RKB with the 9 7/8" pilot hole and open up the 17 1/2" hole to same depth. The surface casing will be run to 285 m RKB (ref. NCR no 26/10-1-01).

The 12 1/4" section was drilled with kick margins below 4 m³ for the deeper parts of the section [APOS K-11212]. As the previous shoe was drilled out the kick margin would become "Infinite" down to the depth of 370 m, further down to 523 m the kick margin stays at 3.5 m³, as it gradually dropped down to 3.2 m³ for the deepest prognosed slight warning of shallow gas sand and ended up at 2.6 m³ at TD of the 12 1/4" section at 749 m RKB.

Compensating measures performed during drilling of the 12 ¼" section was described in the risk register for the specific risk related to drilling 12 ¼" with kick margin below 4 m³ (ref. NCR no 26/10-1-02).

5.3 From regulations

The shallow gas zone at 289 m was plugged back with one common cement plug as well barrier element. This plug, plug #3, was placed on a bridge plug installed at 280 m to become a fixed fundament. The bridge plug was pressure test to 100 bar and tagged with 3 MT. Plug #3 was after setting up tagged and dressed of according to NORSOK D-010, table 24 – Cement plug.

6 Operations summary

TOTAL WELL	Hours	Days	% of Total
Operational time:	530.5	22.1	84.6 %
NPT:	69.5	2.9	11.1 %
WOW:	27	1.1	4.3 %
Total time used:	627	26.1	100.00 %
	Time	Date	
START OPERATION	14:30	18. Jan. 2015	
END OPERATION	17:30	13. Feb. 2015	

6.1 Rig move and preparations

	Hours	Days	% of Total
Operational time:	25.00	1.04	100.00 %
NPT:	0.00	0.00	0.00 %
WOW:	00.00	0.00	00.00 %
Total time used:	25.00	1.04	100.00 %
	Hours	Date	
START OPERATION	14:30	18. Jan. 2015	
END OPERATION	15:30	19. Jan. 2015	

Summary of operations

This phase covers all operations from departing the 500 m zone on departure from the 25/10-12 ST2 location, which marked the rig going on contract, performing anchor handling operations, making up and running the 36" hole assembly, and until ready to spud the well on the 26/10-1 location.

Sailing and anchor handling

The rig sailed from the 500 m zone on 25/10-12 ST2, and entered the 500 m zone at the 26/10-1 location at 18:40 on the 18th of January 2015. The rig covered a distance of approx. 24 nautical miles before arriving at the 26/10-1 location.

The anchors were pre-laid, so the total hours spent hooking up to the anchors was 25 hrs, including cross tensioning of lines and ballasting the rig to drilling draft and.

Anchor Handling

Anchor Handling was performed with boats Havila Venus and Havila Jupiter. Anchor handling operations started at 18:40 on the 18th of January and were concluded at 15:30 on the 19th of January.

NPT encountered

None experienced.

6.2 36" section and 30" conductor

	Hours	Days	% of Total
Operational time:	47.50	1.98	89.62 %
NPT:	5.50	0.23	10.38 %
WOW:	0.00	0.00	0.00 %
Total time used:	53.00	2.21	100.00 %
Operational Time			
	Hrs	Date	
START OPERATION	15:30	19. Jan. 2015	
END OPERATION	20:30	21. Jan. 2015	

Summary of operations

This phase covers all operations from running in hole with 36" assembly, drilling of the 36" hole section, running and cementing of the 30" conductor, and drilling of the shoetrack with the 26" hole assembly.

Drilling

The 36" drilling BHA, consisting of a 26"x36" Boulder Buster (hole opener) and a 17 ½" bit was made up and run down to 165 m (5 m above seabed). The 36" section was drilled from seabed at 170 m to 242 m (17 ½" depth, 26" cutters at 238.17 m) with a rotary BHA consisting of a 17 ½" pilot bit and a two-stage 26" x 36" hole opener (Boulder Buster). An MWD tool was used for inclination measurements.

The seabed was tagged at 170.0 m and the well was drilled with the 36" x 26" hole opener by starting to wash down to 178 m with 1000-2000 lpm and 19 bar. At 178 m, the BHA started taking weight and rotation was engaged before drilling down to 189 m with 15 rpm.

From 189 m and down to section TD at 242 m, the flow was increased to 3000-5000 lpm, with 55-150 bar, 30-60 rpm, 3-18 kNm and 0-2 tons WOB.

The interval from 190 to 218 m was reamed twice with 3500 lpm, 76 bar, 60 rpm and 2-15 kNm due to drilling of hard spots at 202 m and 207 m. Swept hole with 10 m3 hivi pill after reaming.

The section was drilled with seawater and 10 m3 hi-vis sweeps pumped every 15 m (half stand and before connection) down to TD.

Two 15 m3 hi-vis pills were pumped to sweep the hole clean with 5000 lpm and 140 bar. The well was flow-checked and found to be static. The hole was then displaced to 1.40 sg Bentonite mud before pulling out to 184 m and re-running back in hole without observing any tight spots. No fill on bottom was encountered. Displaced the hole to 1.40 sg Bentonite mud. The BHA was pulled

out of hole to 184 m where the hole was topped up with 1.40 sg Bentonite mud. The BHA was then pulled out of hole and laid out on deck.

Run summary:

Drilling Hours: 2.7 hours

Meters Drilled: 73 m (170-242)

Average ROP: 27 m/hr

Bit: Baker 17 ½" MXL-1X, IADC code 115M (milled tooth)

Bit Grade: 0-0-NO-A-E-0-NO-TD (rig)

Mud: Seawater and hi-vis pills. 1.40 sg Bentonite displacement mud

Pump rate: 3000-5000 lpm

LWD/MWD: Directional only

Running and cementing the 30" conductor

The 30" conductor, consisting of a shoe joint, 3 intermediate joints and the 30" wellhead housing, was made up and landed in the rotary with the wellhead housing clamp. An aluminum inner string was run inside the 30" conductor to 12 m above the 30" conductor shoe, and made up to the running tool before engaging the running tool in the wellhead.

The 30" conductor was stabbed into the CAN at 170 m and run down to 226 m where the cement head was installed. The conductor was then run in hole to 236.5 m where conductor stickup was adjusted to 1.5 m with the help of the ROV. PGB heading was confirmed at 315 degrees and CAN bullseye was 0.5 degree aft (same as prior to installing 30").

The conductor was cemented in place with 64 m³ of 1.56 sg Light Set cement slurry. The cement was displaced to 5 m above the shoe with 4.0 m³ of seawater. No backflow was observed after pumping the cement. The conductor was held in tension until the cement had set up. The ROV confirmed the CAN bullseye at 0.5 deg aft. The running tool was then released from the wellhead and laid out / racked back without any significant issues.

NPT encountered

Lost 5.5 hrs due to waiting to load 30" conductor prior to spudding well.

Preparations to drill next section

The 26" drilling BHA was made up and run down to above seabed where the rig was moved to above well center. The 26" bit was stabbed into the 30" wellhead housing and cement was tagged at 232 m with 5 tons. The cement in the conductor was drilled out from 232 to 237 m before cleaning out the rathole in 1 m steps down to 242 m.

6.3 9 7/8" Pilot hole

	Hours	Days	% of Total
Operational time:	12.00	0.50	96.00 %
NPT:	0.50	0.02	4.00 %
WOW:	0.00	0.00	0.00 %
Total time used:	12.50	0.52	100.00 %
<hr/>			
	Hrs	Date	
START OPERATION	20:30	21. Jan. 2015	
END OPERATION	09:00	22. Jan. 2015	

Summary of operations

This phase covers all operations from drilling of the 9 7/8" pilot hole section.

Drilling 9 7/8" pilot hole

The 9 7/8" pilot hole section was drilled from 242 to 290 m with a rotary BHA and a milled tooth 9 7/8" bit. Drilling of new formation was initiated at 242 m with 4000 lpm, 153 bar and 60 rpm. Survey at TD showed an inclination of 0.31 deg.

7 m³ hi-vis sweeps were pumped every 15 m (halfway down each stand and prior to connections) to clean the hole.

The well was cleaned at TD by pumping 2 x 15 m³ hi-vis pills at 4000 lpm, 153 bar and 10 rpm. The well was then flow checked before displacing the well to 1.25 sg bentonite mud. The well was topped up with 10 m³ 1.25 sg mud at 213 m.

Run summary:

Drilling Hours: 1.5 hours

Meters Drilled: 48 m (242-290)

Average ROP: 32 m/hr

Bit: Baker 9 7/8" MX-1, IADC code 117M (milled tooth)

Bit Grade: 0-0-NO-A-E-0-NO-TD (rig)

Mud: Seawater and hi-vis pills. 1.25 sg bentonite displacement mud

Pump rate: 4000 LPM

LWD/MWD: GR-RES-ACOUSTIC-PWD-DIR

NPT encountered

Lost 0.5 hrs due to troubleshooting on Hydra Racker. Replaced fuse.

6.4 17 1/2" section and 13 3/8" casing

	Hours	Days	% of Total
Operational time:	81.50	3.40	72.77 %
NPT:	16.50	0.69	14.73 %
WOW:	14.00	0.58	12.50 %
Total time used:	112.00	4.67	100.0 %
Summary of operations			
	Hrs	Date	
START OPERATION	09:00	22. Jan. 2015	
END OPERATION	07:00	27. Jan. 2015	

Summary of operations

This phase covers all operations from drilling of the 17 1/2" hole section, running of the 13 3/8" casing, running BOP and riser, running in with the 12 1/4" drilling BHA, drill-out of the 13 3/8" shoetrack and 3 m of new formation until verifying the shoe integrity with a LOT/FIT.

Drilling

The 17 1/2" section was drilled from 242 to 290 m with a rotary BHA and a 17 1/2" milled tooth bit opening up the pilot hole. Drilling of new formation was initiated at 242 m with 4000 lpm, 135 bar, 60 rpm, 2-3 kNm and 0-1 MT WOB.

10 m³ hi-vis sweeps were pumped every 15 m (halfway down each stand and prior to connections) to clean the hole.

The well was cleaned at TD by pumping 2 x 15 m³ hi-vis pills at 5000 lpm, 205 bar and 20 rpm. The well was then flow checked before displacing the well to 1.40 sg bentonite mud. The well was topped up with 10 m³ 1.40 sg mud at 190 m.

Run # 1 summary:

Drilling Hours: 1.2 hours

Meters Drilled: 48 m (242-290)

Average ROP: 23.8 m/hr

Bit: Baker 17 1/2" GTX-CG1,IADC code: M115

Bit Grade: 0-0-NO-A-E-0-NO-TD

Mud: sea water and havis sweeps

Pump rate: 4000-5000 LPM.

ECD: 1.05 sg EMW

LWD/MWD: GR-RES-PWD-DIR

Running of the 13 3/8" casing

The shoetrack, consisting of a float shoe joint, one intermediate joint and a float collar joint was made up, thread locked and tested for flow through. All joints in the shoetrack had centralizers installed.

The casing was filled with sea water every joint on the way in hole.

Experienced problems making up 18 ¾" wellhead connection due to movement on wellhead assembly. Broke out wellhead and checked threads. Filled void with sea water. No indications of void filling. Pulled up and broke out 18 ¾" wellhead assembly. Visually verified that 13 ⅜" wiper plugs was installed and correctly installed. Made up wellhead connection. Made up box connection as this had loosened when breaking out wellhead. Installed CLA tool. Ran in hole with 13 ⅜" casing on 5" HWDP landing string. Positioned rig and stabbed casing into wellhead housing. Ran casing to 284 m and installed cement head.

The string was washed down with 200 lpm and 4 bar. The casing hanger was landed in the wellhead using the CLA tool, with the casing shoe at 284 m. Staged up pumps to 1700 lpm and 9 bar. Displaced annulus to sea water.

16 m³ of 1.0 sg fresh water spacer was pumped followed by 21 m³ of 1.56 sg cement slurry with 700 lpm and 12 bar. Mixed and pumped 11.3 m³ 1.95 sg tail slurry with 750 lpm and 15 bar. The cement was displaced with 7.15 m³ of fresh water. The plug was bumped. The casing was pressure tested against bump to 100 bar for 10 minutes. No backflow observed. The casing running tool was then pulled out of hole and laid out.

Running BOP

The BOP and riser were run and installed according to plan. A wellhead connector test against the casing was performed to 150 bar for 10 minutes. Function tested BOP on yellow POD from drillers panel and on blue POD from toolpushers panel. The blind shear ram was function tested using the acoustic system.

Preparations to drill

The 12 ¼" assembly was a rotary BHA with a 12 ¼" Milled tooth bit. The BHA was run in hole down to 216 m. Broke circulation and washed down with 3900 lpm and 128 bar. Tagged cement at 249,5 m. Drilled soft cement from 249,5 m to 254 m with 3900 lpm, 128 bar, 60 rpm, 4 kNm and 5-9 MT WOB. Varied parameters while drilling wiper plugs. Continued drilling firm cement from 254 m to 273 m with average ROP at 32 m/hr. Continued drilling hard cement from 273 m to 284 m with 3900 lpm 131 bar, 80 rpm, 4 kNm and 4 MT WOB. Average ROP was 14 m/hr. Pumped 10 m³ havis every half stand to sweep hole clean.

The rathole was drilled in 1 m increments to 290 m. before drilling 1 m of new formation down to 291 m. Circulated hole clean. Decided to displace well to 1.0 sg drill water prior to performing FIT due to very small volumes needed to pressure up formation. Spotted a 1.5 m³ LCM pill. Attempted to pressure up well

with BOP test pump to 1.32 sg FIT. Unable to build pressure above 5 bar. Confirmed FIT line-up. Opened upper annular and flushed with drill water. Lined up to cement unit and circulated at low flow down kill line and string up riser. Opened choke line with fully open choke and closed upper annular while continuing to circulate from cement unit. Closed in choke line and stopped cement pumps. Lined up to BOP test pump and reattempted FIT to 1.32 sg. Commenced pumping without seeing pressure build up. Observed pressure building up to 6 bar prior to leveling out. Stopped pumping and observed pressure bleeding off to 4 bar. Repeated set-up and re-attempted FIT pumping up in small steps using cement pumps. Observed pressure building up to 6 bar. A LOT was performed to 1.18 sg EMW.

NPT encountered

Lost 0.5 hr due to replaced broken fitting on BX elevator.

Lost 7.0 hrs due to void on 18 ¾" wellhead not filling.

Lost 6.0 hrs due to replacing guideposts on CAN.

Lost 14.0 hr due to waiting on weather for lifting in riser spider and running BOP and riser.

Lost 2.5 hrs due to flushing to clear gravel on inside of BOP.

Lost 0.5 hrs due to troubleshooting on POD wire system.

6.5 12 ¼" section and 7" casing

	Hours	Days	% of Total
Operational time:	122.00	5.08	90.00 %
NPT:	13.50	0.56	10.00 %
WOW:	0.00	0.00	0.00 %
Total time used:	135.50	5.65	100.00 %
<hr/>			
	Hrs	Date	
START OPERATION	07:00	27. Jan. 2015	
END OPERATION	22:30	01. Feb. 2015	

Summary of operations

This phase covers all operations from starting the drilling of the 12 ¼" hole section, running and cementing of the 7" casing, running in with the 6" drilling BHA, drill-out of the 7" shoetrack and 5 m of new formation until verifying the shoe integrity with a successful LOT, above minimum value to drill to 6" section TD.

Drilling

After performing the LOT, the 12 ¼" section was drilled in one run from 291 m to 749 m with rotary BHA and a 12 ¼" Milled tooth bit. Mud weight was reduced from 1.18 sg to 1.12 sg due to the low LOT achieved.

The section was drilled slowly from 291 m to 301 m with sea water while preparing mud weight from 1.18 sg to 1.12 sg. Drilled with 4000 lpm, 128 bar, 80 rpm, 3-6 kNm and 0-1 MT WOB. Displaced well to 1.12 sg aqua-drill mud. Continued drilling 12 ¼" hole from 301 m to 331 m with 4000 lpm, 138 bar, 80 rpm, 2-4 kNm and 3 MT WOB. Pumped and pulled 12 ¼" BHA into shoe. Ran in hole to 301 m and spotted LCM pill from 301 m to 284 m and pulled into 13 ⅜" shoe. Attempted to perform FIT to 1.32 sg with 1.12 sg WBM. Was able to pressure up to 4.3 bar which equaled LOT of 1.24 sg EMW.

Continued drilling 12 ¼" hole from 331 m to 373 m with 4000 lpm, 130-135 bar, 80 rpm, 2-6 kNm and 2-5 MT WOB. Continued drilling 12 ¼" hole from 373 m to TD at 749 m with 3800-4400 lpm, 165-170 bar, 80-100 rpm, 2-6 kNm and 0-5 MT WOB. Pulled off bottom and flow checked well due to increase in active volume at 373 m and 635 m. Well was static Pulled off bottom and flow checked well due to drilling break at 576 m. Well was static.

At TD, the hole was circulated clean with 4500 lpm and 100 rpm. Reduced rotation to 30 rpm after circulating one bottoms-up. One stand was racked back on every second bottoms-up. A total of 6 bottoms-up was circulated.

Pumped 10 m3 havis pills with 4100-4500 lpm, 158-184 bar. Circulated one bottoms-up. Ran in hole and tagged bottom at 749 m. No fill observed. The well was flow checked for 15 minutes before pulling out of hole. The well was static. Pumped out of hole with 12 ¼" BHA from 749 m to 248 m with 616 lpm and 10

bar. Flow checked well inside 13 3/8" casing prior to pulling out of hole with 12 1/4" BHA.

Run summary:

Drilling Hours: 28.7 hours

Meters Drilled: 459 m (290 – 749 m)

Average ROP: 16.0 m/hr

Bit: Baker 12 1/4" RC117 (Milled tooth bit), IADC code: M117

Bit Grade: 1-1-WT-A-E-0-NO-TD (rig)

Mud: 1.12-1.16 sg Aquadril WBM (82-111 kg/ m³ of KCl content)

Pump rate: 3800-4400 LPM.

ECD: 1.14-1.23 sg

LWD/MWD: GR-RES-ACOUSTIC-PWD-DIR

Running and cementing of the 7" casing

The shoetrack, consisting of a float shoe joint, one intermediate joint and a float collar joint was made up, thread locked and tested for flow through.

The liner was filled every 5th joints while running in hole. The liner was run to 567 m before preparing to pick up the 9 5/8x7" liner hanger.

Average running speed was 5.87 joints/hrs. The liner hanger was picked up and installed in the string before running the liner on the 5" HWDP landing string to 742.6 m. Landed casing hanger in wellhead.

Broke circulation. Started circulating bottoms-up with 1230 lpm and 16+ bar. Observed a 4.8% gas peak and a slight gain in active. Flow checked well. Well was static. Continued circulating bottoms-up with 500 lpm and 5 bar. Circulated one more bottoms-up with 1200 lpm and 15 bar.

6 m³ of 1.0 sg soap spacer followed by 16.3 m³ of 1.92 sg gas tight cement slurry was pumped. The cement was displaced with 1.15 sg Aquadrill WBM mud pumped with 600 lpm until sheared dart with cement unit. Increased pumprate to 1200 lpm. Reduced pumprate 2 m² prior to theoretical bump. Plug didn't bump. Bled off pressure. No backflow observed. Sat seal assembly and pressure tested same to 345 bar for 10 minutes. Released running tool with 51 MT overpull. Relanded running tool and sat down weight. Verified seal assembly with pressure testing to 345 bar for 10 minutes.

BOP was pressure tested to 20/150 bar for 5/10 minutes. The BOP test tool and jet sub were then pulled out of hole and laid down.

Preparations to drill

After waiting for the cement to set, the 6" assembly was made up. It consisted of a rotary BHA with near-bit gamma and resistivity sensors. Pressure tested casing to 150 bar for 10 minutes when running in hole with 6" BHA. The blind shear ram was tested with acoustic. Function tested casing super shear ram. Picked up 4¾" drill collars and 4" HWDP. Ran in hole on 4" DP. The string was filled at 500 m before testing the MWD several times with 800-1300 lpm. BCPM was not working. Ran in hole and tagged cement at 683 m, 15 m above theoretical top of cement at 698 m. Pumped havis pill to celan BCPM. Drilled cement from 683 m to 686 m. Decided to pull out of hole to change BCPM. Performed a shallow test after changing BCPM on surface.

The wiper plugs were drilled in 5 hours with 820-970 lpm, 10-95 rpm, 1-11 tons WOB. Firm cement was drilled from 686 to 696 m with 970-1120 lpm, 90-95 rpm and 3-8 tons WOB. Drilled out the rathole in 1 m increments. Pack-off tendencies were observed while drilling the rathole, and the bit was pulled into the 9 5/8" shoe several times to ensure the string was free. Experienced problems getting weight down on bit. Worked float collar and shoe area with stabilizers.

New formation was drilled from 749 to 754 m and the hole was circulated clean until even mud weight in/out (1.15 sg) was observed. A FIT was performed to 1.54 sg EMW.

NPT encountered

Lost 1.5 hrs due to wrong depth while drilling.

Lost 12.0 hrs due to BCPM failure.

6.6 6" section (including wireline logging)

	Hours	Days	% of Total
Operational time:	88.00	367	98.32 %
NPT:	1.50	0.06	1.68 %
WOW:	0.00	0.00	0.00 %
Total time used:	89.50	3.73	100.00 %
<hr/>			
	Hours	Date	
START OPERATION	22:30	01. Feb. 2015	
END OPERATION	16:00	05. Feb. 2015	

Summary of operations

This phase covers all operations from drilling the 6" hole section to TD and wireline logging until ready to pick up the 3 ½" cement stinger.

Drilling to TD

The 6" section was drilled from 754 - 1026 m with a rotary BHA (with near-bit sensors for picking potential core point) and milled tooth bit. Drilled to 760 m where sand was detected on gamma ray. Circulated up sample. Verified sand in sample. Continued drilling from 760 m to 780 m. Due to high ECD (1.45 sg with 1.15 sg mud) it was decided to pull assembly into shoe to verify float not attached to 5 7/8" stabilizer. Continued drilling 6" hole from 780 m to 803 m. Reamed single due to ECD readings at 1.50 sg. Experienced drilling break at 808 m and 812 m. Continued drilling from 803 m to 825 m. Pulled out of hole to add more 4" DP. Ran back in hole on 4" DP. Crossed over to 5" DP drilling stand. Continued drilling from 825 m to 853 m. Reamed 5-10 meters at 831 m, 833 m, 834 m, 836 m and 840 m due to pressure peaks and high ECD readings. Continued drilling 6" hole from 853 m to 940 m. Reamed single at 895 m and 936 m due to high ECD. Observed 1.3 m3 gain in active. Flow checked well. Well was static. Continued drilling 6" hole from 940 m to 953 m. Flow checked well at 946 m and 953 m after 1.4 m3 and 1.3 m3 gain observed. Well was static. Continued drilling 6" hole from 953 m to 968 m . Tripped out of hole with 5" DP. Ran in hole with 4" DP and changed to 5" DP drilling stand. Continued drilling 6" hole from 968 m to 1026 m. Pulled off bottom due to pressure spikes at 992 m, 993 m and 994 m. Reamed single at 995 m due to high ECD.

Circulated one bottoms up with 1200 lpm. Decreased flowrate due to high ECD and circulated 1.5 bottoms up with 930 lpm. Increased flowrate and circulated hole clean with 1120 lpm.

Experienced in general that ECD was very high and erratic on the clay section. No problems while drilling in the sand sections. The assembly might have been more packed than what was suitable for this formation.

No obstructions were observed while pulling out of hole.

Expro Sodium Thiocyanate Tracer was added to the mud system for coring/logging purposes.

Run summary, run #1:

Drilling Hours: 30.1 hours

Meters Drilled: 272.0 m (754-1026 m)

Average ROP: 9.0 m/hr

Bit: Baker Hughes MX-1 Milled tooth bit, IADC code: 117

Bit Grade: 1-1-WT-A-E-1-PN-TD (rig)

Mud: 1.15 SG Aquadril WBM (101-118 kg/m³ KCl content and 240-450 mg/liter Sodium Thiocyanate)

Pump rate: 890-1150 LPM

LWD/MWD: GR-Res-Neu-Den-PWD-Dir

Wireline logging

Wireline BHA #1a PPC-MSIP-PPC-HRLA-PEX-GR was run in hole, logged, pulled out and laid down in 10,5 hours. No problems encountered.

Wireline BHA #1b MDT was run in hole, logged, pulled out and laid down in 13,5 hours. No problems encountered.

NPT

Lost 1,5 hrs due to Baker needed to reset depth and relog area with wrong depth.

6.7 Permanent P&A

Permanent P&A	Hours	Days	% of Total
Operational time:	129.50	5.40	72.55 %
NPT:	34.00	1.41	19.05 %
WOW:	15.00	0.62	8.40 %
Total time used:	178.50	7.43	100.00 %
	Hours	Date	
START OPERATION	16:00	05. Feb. 2015	
END OPERATION	2:30	13. Feb. 2015	

Summary of operations

This phase starts when picking up the cement stinger to plug back the open hole and covers all operations until the rig is ready to start with anchor handling operations.

Plug #1A and #1B (1023 – 738 m)

380 m of open ended 3 ½" drill pipe was run in hole on 4" drill pipe to 727 m. Ran in hole with cement stinger on 5" DP to 1016 m. Circulation was established and the string was washed down to 1023 m with 500-1300 lpm. Observed pressure peak of 88 bar. Stopped pumping and rotation. Observed 32 bar trapped pressure. Pulled up 10 meters and observed pressure bleeding off. Increased flowrate in steps to 1300 lpm. Circulated two bottoms up. Observed significant amounts of soft formation over shakers.

3.0 m³ of 1.0 sg soap was pumped before pumping 3.4 m³ of 1.90 sg gas tight cement slurry. The cement slurry was displaced with 0.85 m³ soap wash and 2.4 m³ 1.15 sg WBM 20. No losses or backflow were observed.

The string was pulled out slowly to 884 m. Observed pipe was dry while pulling. After dropping 1 wiper ball, 1.5x bottoms up was circulated and approximately 9 m³ of spacer and cement contaminated WBM in returns was diverted.

Plug 1B was set by pumping 3 m³ of 1.0 sg soap before mixing and pumping 3.4 m³ 1.90 sg gas tight cement slurry. The cement slurry was displaced with 0.8 m³ soap wash and 1.7 m³ of 1.15 sg WBM. No losses or back flow was observed.

The string was pulled out to 737 m with no noticeable overpull. Observed pipe was dry while pulling. Sponge balls were inserted in the string and circulated hole clean. Approximately 10.7 m³ spacer and cement contaminated WBM in returns were diverted.

After waiting on cement, the string was washed down with 500 lpm and tagged hard cement at 738 m with 5 tons.

Plug #2 (738 – 518 m)

Plug #2 was set by pumping 3 m³ of 1.0 sg soap before mixing and pumping 4.2 m³ 1.90 sg of gas tight cement slurry. The cement slurry was displaced with 0.82

m3 of soap wash and 0.75 m3 of 1.15 sg WBM at 2000 lpm. No losses were observed. The string was pulled out of hole dry to 515 m where a sponge ball was inserted into the string and circulated out excess cement. Approximately 10.2 m3 spacer and cement contaminated WBM in returns were diverted.

After waiting on cement, the string was washed down with 500 lpm and tagged hard cement at 518 m with 5 tons.

Cut and pull 7" casing

Made up jetsub, MPT and ran in hole on 5" HWDP landing string. Pulled wear bushing with 40 MT overpull. Redressed MPT for pulling seal assembly. Experienced some difficulty when removing wear bushing due to tool packed with debris. Waited on weather prior to pulling seal assembly. Ran in hole with 3 1/2" DP and MPT to retrieve seal assembly on 5" HWDP landing string. Closed lower annular preventer and pulled free with 57 MT overpull. The well was flow checked for 15 minutes and found to be static before cross circulating the well. Observed gas peak of 1.55 %. The well was flow checked again before opening up the LAP and u-tubing drill water back through kill and choke lines. The well was then flow checked for 30 minutes. Circulated riser volume. While circulating observed seal assembly hit ledge and set set off string weight due to heave. Observed gas increasing after pumping for two minutes. Maximum gas peak was 5.55 %. Observed string hanging up on rig heave and string weight was set down during circulation. This led to damage on lock ring. Seal assembly was stuck when pulling out at 157 m. Sat down 20 MT. Pulled with 25 MT overpull. No go. Closed lower annular preventer to centre 3 1/2" DP below seal assembly. Sat down 20 MT. No go. Sat down 12 MT and planned for moving rig around well center. Sudden heave made seal assembly free. Pulled out of hole and laid down seal assembly. Performed two mill and flush runs to wash away possible lock ring debris. Ok.

The 7" cutting assembly was made up and run in hole on 3 1/2" drill pipe to 116 m. The no go was made up at 116 m, and the string was run in hole to 286 m. After engaging the topdrive, the no go was landed in the 9 5/8"x7" casing hanger at 168 m with cutters at 285.28 m. The upper pipe ram was closed and the 7" casing was cut with 800 lpm and 59 bar. The pressure dropped to 33 bar after 2 minutes indicating that the casing had been cut. Losses were observed and a total of 7.5 m3 was lost in 15 minutes while cutting and circulating. Attempted to establish lossfree rate with 350 lpm/12 bar, then 300lpm/10 bar, then 250 lpm/9 bar, then 125 lpm/7,5 bar, then 105 lpm/6.8 bar. Lossrate with 105 lpm was 1.6 m3/hr. Total loss from started cutting at 02:17 to 06:00 was 13.2 m3. Max gas observed was 1.52 %. Continued circulating with 105 lpm and 6 bar. Not able to obtain lossfree rate.

Stopped circulating and closed choke. Monitored well for pressure. Monitored riser on trip tank. Cross circulated down choke line and up kill line with seawater with 100 lpm and 2 bar. Returns were observed when starting pumping. No static loss. Increased flow in stages to lossfree rate at 450 lpm and 3,5 bar. Displaced

kill and choke line to 1,15 sg WBM. Spotted 5 m³ 350 kg/m³ LCM pill in the 7" cut with 300 lpm and 12-13 bar. Closed IBOP and squeezed 1 M³ down choke line with 90 lpm and 4,5 bar. Standpipe pressure increased to 5 bar and kill line to 3,0 bar. Max gas observed was 1,51 % after poorboy degasser. Static pressure on choke line was 3,5 bar. Monitored pressure on kill and choke line. Pressure dropped to 1,5 bar. Bled off pressure and flow checked well through open choke.

Circulated down string and up choke and kil line with 300 lpm and 11-12 bar. Observed losses. Reduced flowrate to 240 lpm and 9 bar. Stabilized for a while, but then started to observe losses. Attempted to spot 2m³ 350 kg/m³ LCM pill, but clogged up mud pump strainer. Switched pump and spotted 2 m³ 350 kg/m³ LCM in 7" cut. Closed choke and bullheaded remaining 2 m³ LCM pill with 100 lpm and 12 bar down string. Observed 5 bar on kill and choke line. Stopped bullheading. Reduced to 1 bar while monitoring pressure. Total losses since 7" casing cut was 24.9 m³.

Displaced kill and choke line to sea water. Flow checked well. Well was static. Displaced kill and choke line to 1,15 sg WBM. Returns when starting pumping. Opened upper pipe ram and flow checked well on trip tank for 30 minutes. Well was static. Pulled out of hole with 7" cutting assembly and laid down same.

The 7" spear assembly was made up and run in the hole to 171 m. The spear was engaged, the lower annular preventer was closed, and the casing was pulled free with no overpull. Checked for pressure below lower annular preventer. Circulated 7 m³ through the choke with 110 lpm and 5 bar. Maximum gas was 0.9 % after poorboy degasser. The well was flow checked for 15 minutes and static.

The spear assembly was pulled out of the hole. The casing was then pulled out of hole. A total of 9 joints were pulled, and an 5,84 m stump was laid down.

13 3/8" HMBP and Cement plug #3 (280 - 203 m)

Ran in hole with 13 3/8" HM bridge plug on 5" DP to 280 m. Washed setting area. Set bridge plug and tagged plug with 3 MT. Pressure tested 13 3/8" HM bridge plug to 100 bar for 10 minutes. Pumped 10 m³ sea water spacer. Mixed and pumped 6,2 m³ 1,95 sg cement. Displaced cement with sea water and 1,15 sg WBM. No losses observed during cement job. Waited on cement. Tagged cement at 196 m. Drilled hard cement from 198 m. Dressed off plug to 203 m.

Pulled BOP and riser. Made up 13 3/8"x30" cutting assembly. Ran in hole on 8 1/4" in DC and 5" HWDP. Cut 13 3/8"x30" casing in bottom of CAN. Observed pressure drop from 140 bar to 60 bar indicating cutters all the way through 30" conductor. Attempted to pull stump. No go. Continued cutting. Pressure dropped from 140 bar to 40 bar. Pressure stayed at 40 bar with no pressure spikes. Attempted to pull free with 200 MT overpull. No go. Pulled out of sea with cutting assembly. Inspected 17" cutters. Indication of wear up to 16 5/8" indicating full sweep.

Planned for boat operation for remove CAN and wellhead stump.

NPT encountered

Lost 15.0 hrs due to waiting on weather prior to pulling seal assembly.

Lost 2.5 hrs due to seal assembly stuck in annular preventer.

Lost 12.0 hrs due to junk in hole after freeing seal assembly that was stuck in annular preventer.

Lost 16.5 hrs due to losses after cutting 7" casing.

Lost 1.5 hrs due to repair on gas trap.

Lost 1.5 hrs due to leak on riser running tool hose.

6.8 Rig demobilization

Demobilization & Rig Move	Hours	Days	% of Total
Operational time:	15.00	0.63	100.00 %
NPT:	0.00	0.00	0.00 %
WOW:	0.00	0.08	0.00 %
Total time used:	15.00	0.63	100.00 %
	Hrs	Date	
START OPERATION	02:30	13. Feb. 2015	
END OPERATION	17:30	13. Feb. 2015	

Summary of operations

This phase covers anchor handling operations, until the rig departed the 500 m zone.

The anchors were disconnected according to plan using 2 boats;

Havila Venus and Havila Jupiter

The anchors were left in place to be gathered at a later stage. The rig went off well 26/10-1 at 17:30 on February 13th 2015 and started sailing towards the next location (16/1-24).

NPT encountered

None.

7 Experience

7.1 Lessons Learned

Lessons learned log	
Section	Lessons Learned
17 ½"	Proposal from Weatherford to use "no-cross" collar on the last casing joint prior to the WH. "No-cross" collars have an extended box connection, the extension is slick thus acting as a guide/stabiliser for the pin end of the WH. Time saving and avoiding to damage threads.
17 ½"	13 3/8" piece on WH is very short, thus not possible to MU with casing tong. Also, WH is large and top heavy, thus difficult to make up to pup.
17 ½"	Inner string made up to RT was 9.18m long. Risk of breaking of inner string when pulling out of WH, especially in rough weather. Also, more challenging to handle on surface. Top heavy, limited space. An as short as possible inner string will be less risky to pull and easier to handle on surface.
12 ¼"	Improvement proposals when using cement unit for cement displacement: <ul style="list-style-type: none"> - Use DW/SW if possible: Less risk for air in system. Better volume control when filling mixing tanks due to adjustable inlet valve (mud inlet is on/off). - Have one person at mixing tanks for accurate volume control: When to change suction to the other tank and accuracy when filling tank. - Displace through downhole tub: Downhole tub has an accurate flow meter at low pressure side. This will involve using mix tub and downhole tub in addition to mixing tanks, thus more difficult for tank volume control. (Mix tub will be held full at all times). NB, mud can not be used when pumping through downhole tub.
6"	Utilized smallest active pit, 39 m3 while drilling. Experienced efficient volume control while drilling. Picked changes in return flow down to ~250 litre.
P&A	The original plan was to displace plugs with Cement unit, changed to pumping spacer behind with cmt unit and mud using rig pumps. This change made the operation easier than contaminating the cmt unit with mud when two small plugs will be made in short time. Volume control pumping mud on pump strokes is adequate using rig pumps for such small volumes.
P&A	Optimize procedure to minimize time with MPT/Seal Assy in BOP when there is rig heave. With the light string weight, the stiffness/friction in the compensator will cause the tool to move inside the BOP. Look at space out of the BOP. Check where there is an area with no shoulders or groove.
P&A	UCA time was 17 hrs. Bucket sample was hard after 13 hrs. Dressed off hard cement.
P&A	Facilitate a hook on the ROV basket for securing the floating buoy through the splash zone. Ref. safe card #452 sent on 13/02/15.

8 HSE Summary

8.1 HSE results versus targets

Table 8-1 Key performance indicators

Key Performance Indicator		Well target	Results 26/10-1
1	Lost Time Incidents (H1 cases)	0	0
2	Recordable injuries (H2 cases)	≤ 1	0
3	Incident reporting (RUH + safe cards – average per day)	≥ 40	~ 41
4	Dropped objects (> 40J)	0	0
5	Loss of well barrier	0	0
6	High potential incidents	≤ 1	0
7	Acute discharges to sea	0	0
8	Near miss discharges	≤ 2	2
9	Number of weekly HSE inspections where chemical inventory check is part of the focus	≥ 3	4
10	Sorting of industrial waste (weight %)	≥ 90%	~ 78%
11	Sick leave	< 3%	~ 2.8% *
12	Management visits to the rig with HSEQ on the agenda	≥ 1	0
13	Overdue actions from incident / RUH reports classified as red or yellow	0	0
14	Delayed/overdue scheduled maintenance (all preventive / corrective maintenance work)	≤ 20	6 *

* Based on reporting in bi-weekly HSE meeting week 7, 2015

All figures in Table 8-1 are based on incidents/numbers on board the rig only.

Lost Time Incidents:

No LTIs occurred during the operation.

The KPI was met.

Recordable injuries;

No recordable injuries occurred during the operation.

The KPI was met.

One (1) first aid injury occurred (non-recordable, but included for completeness);

- 2015-01-30 (ODAS Synergi 197905): Person felt pain in hand after slipping when walking stairs up to skylobby.

Target was met.

Sick leave

Sick leave was reported as approximately 1% short term sick leave and approximately 1.8% long term sick leave.

Target was met.

Incident reporting (RUH + safe cards – average per day)

Total incident reporting was above the target value of 40 reports / day.

Target was met.

High potential incidents (red + yellow incidents)

There were no high potential incidents during the operation on the 26/10-1 well.

- 2015-02-03 (ODAS Synergi 197960): One near-miss fire incident occurred during welding. All precautions were in place and there was no escalation potential. All traces of fire were extinguished immediately. Event was therefore considered low risk, but is included here as it was reported to the PSA.

Target was met.

Dropped objects (> 40J)

There were no dropped objects.

The target was met.

Reportable discharges to sea

There were no reportable discharges to sea:

The target was met.

Near miss discharges (> 1 liter)

There were several events involving discharges / spills larger than 1 l internally on the rig. Some also resulted in releases to sea, but were not of the type / quantity that mandated reporting to the authorities. Releases internally on the rig,

and not reportable to authorities are classed as "near miss discharges", and include:

- 2015-01-30 (ODAS Synergi 197860): Estimated 2 l inhibitor fluid leaked inside container.
- 2015-02-03 (ODAS Synergi 197943): Estimated 5 l hydraulic fluid released from failed connection in hydraulic line.

The target was met.

Management visits to the rig with HSEQ on the agenda

There were no management visits to the rig during the 26/10-1 drilling operation.

The target was not met.

Overdue actions from incident / RUH reports classified as red or yellow

At end of well there was no overdue actions.

The target was met.

Loss of well barrier

There were no situations with loss of well barriers during this operation.

The target was met.

Sorting of industrial waste (weight %)

The sorting level of industrial waste was reported to 94%.

The target was met.

Delayed/overdue scheduled maintenance (all preventive / corrective maintenance work)

There were 6 overdue maintenance activities on average during the period of the 26/10-1 drilling operation. These were followed up weekly in the maintenance meetings onboard the rig and bi-weekly in the HSE meetings between onshore and offshore.

The target was met.

8.2 HSE experience summary

The overall HSE impression is that the drilling operation of the well has been performed in a satisfactory manner. Out of 14 KPI's, 12 were met.

8.3 Verifications/ audits/ inspections

No audits were carried out during this period.

8.4 Observation reporting

Odfjell is operating a system for observation reporting (SAFE-cards). The observations are forwarded to the onshore organization on a daily basis together with a picture for the day ("dagens bilde") illustrating the current activities on the rig. The daily HSE update also lists all Synergies in the last 24 hours and the current daily HSE focus. This is the basis for discussion in the daily management meeting on board and on the morning meetings between the rig and the onshore organizations.

8.5 Pre-start activities

Risk assessments on rig move & anchoring operations, as well as project risk assessment and wells specific risk assessments were performed prior to commencement of well operation. No unacceptable risks were identified.

8.6 HSE meetings

HSE meetings with involvement of people from the rig and representatives from Lundin and Odfjells onshore organization was held on a bi-weekly basis.

The LNAS drilling supervisor onboard the Island Innovator attends the rig FS-AMU meetings.

8.7 Environmental performance

The usage and discharge of chemicals is shown in the table below.

Table 8-2 Usage and discharge of chemicals

Activity	Usage (tons)		Discharge (tons)	
	Green	Yellow	Green	Yellow
Planned	2669	36	1917	17
Real	356	8,0	206	5,6

Emissions to air from the well operation are shown in the table below.

Table 8-3 Emissions to air from well operation

Activity	Fuel consumption		Emissions (tons)			
			CO ₂	NO _x	NMVOC	SO _x
Diesel consumption	Boiler	77 tonnes	243	0,3	0,4	0,1
	Engines	649 tonnes	2056	34,3	3,2	0,7
Total			2298	34,6	3,6	0,7

The degree of sorting industrial waste (excluding metal waste) was 94 %.

8.8 Health issues

On previous operations with the Island Innovator, several persons have complained about exhaust in the accommodation and in certain outdoors working area on this and preceding wells drilled using the Island Innovator. A modification project aiming to eliminate this issue has now been finalized.

9 Time breakdown and analysis

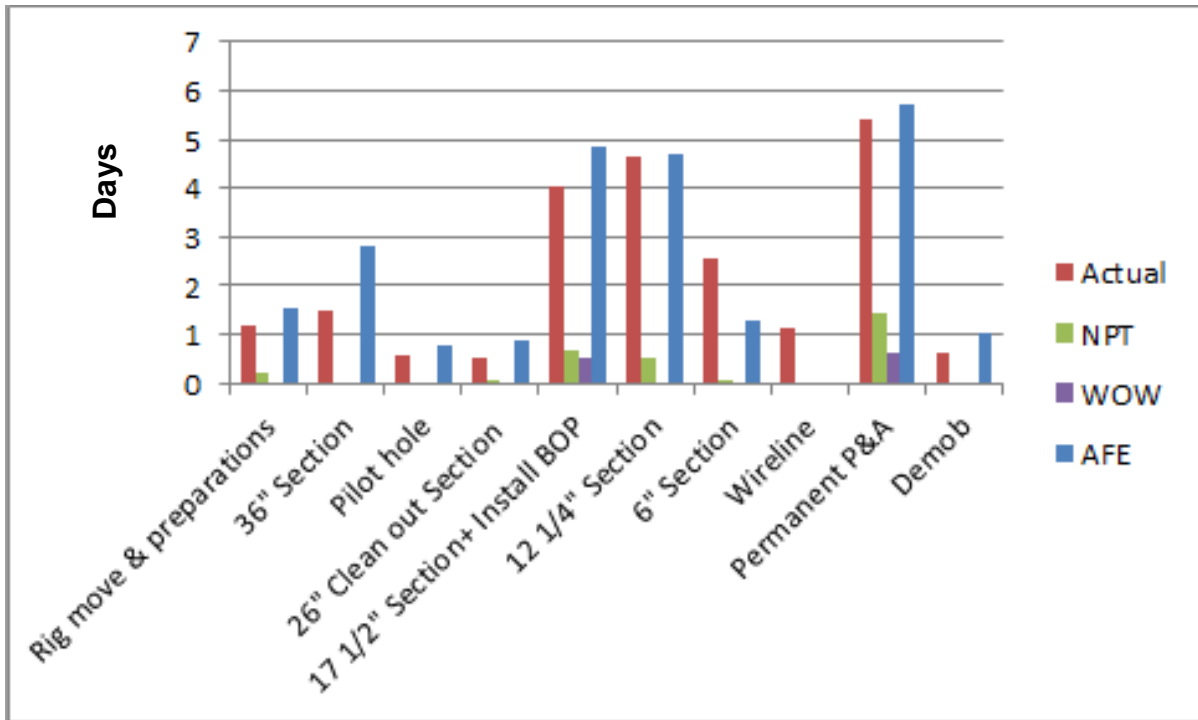


Figure 9-1 Planned vs. actual time per phase

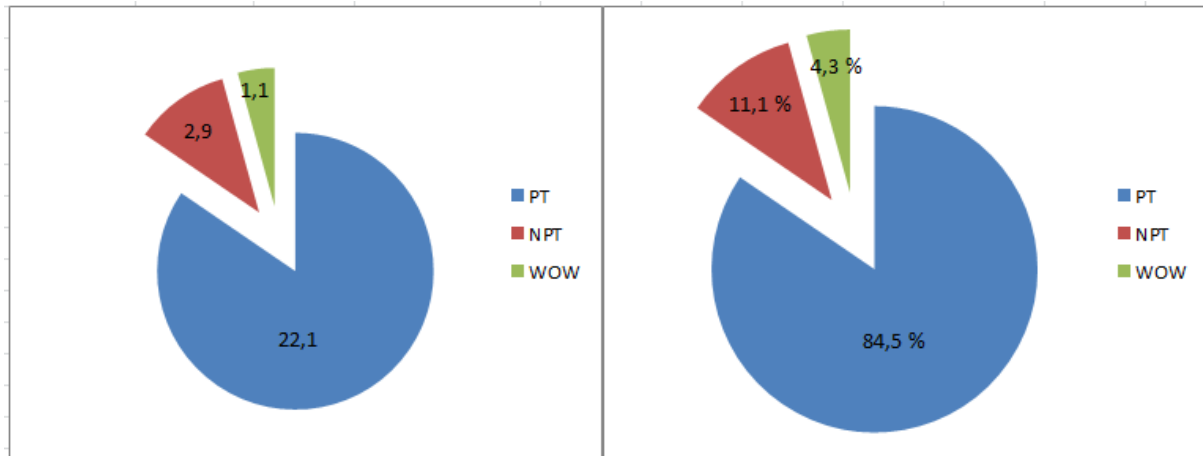


Figure 9-2 Productive time vs. NPT and WOW (days and percentages respectively)

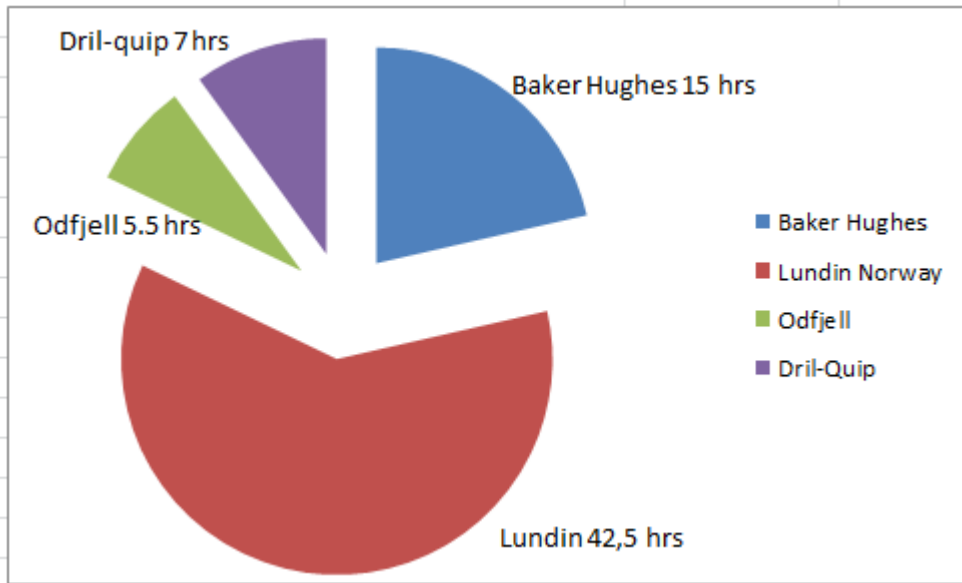


Figure 9-3 NPT divided by company

Table 9-1 NPT Listing

PHASE	DESCRIPTION OF NPT	COMPANY	Dur (hr)	NPT (%)
36"	Waited on 30" conductor prior to spud	Lundin Norway	5,5	0,09 %
9 7/8"	Troubleshoot on HydraRacker	Odfjell	0,5	0,08 %
17 1/2"	Broke out wellhead assembly and inspected plugs	Dril-Quip	7,0	1,12 %
17 1/2"	Replaced guide posts on CAN	Lundin Norway	5,0	0,80 %
17 1/2"	Replaced broken fittings on BX elevator	Odfjell	0,5	0,08 %
17 1/2"	Function test BOP and flushed due to possible gravel inside.	Odfjell	2,5	0,40 %
17 1/2"	Troubleshooting on pod winches	Odfjell	0,5	0,08 %
12 1/4"	BCPM failure	Baker Hughes	12,0	1,91 %
6"	Depth corrolation problems,	Baker Hughes	1,5	0,24 %
P&A	Stuck with seal assembly in upper annular prevente	Lundin Norway	14,5	2,31 %
P&A	Losses downhole after cutting 7" casing.	Lundin Norway	16,5	2,63 %
P&A	Pump in gas trap failed.	Baker Hughes	1,5	0,24 %
P&A	Hydraulic leak on riser running tool hose.	Odfjell	1,5	0,24 %

Table 9-2 WOW Listing as percentage of total time

PHASE	DESCRIPTION OF WOW	WOW (hrs)	WOW (%)
17 1/2"	Waited on weather for running BOP and Riser.	12,00	1,9 %
P&A	Waited on weather for pulling seal assembly prior to cutting 7" casing.	15,00	2,4 %

10 Daily activity summary

Table 10-1 Daily activity summary

Report Start Date: 18.01.2015				Days from Spud/Start (days): -1				Report Number: 1			
End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com		
0,00	14:30	18:30	4,00	MOB, RIG	MOB	RIG	PT		Completed rig move from 25/10-12 ST2 Kopervik well location to 26/10-1 Zulu well location. Sailed with rig in deep transit draft at 12.5 m. Total distance: 24 nm. Average speed: 6 kn. Passed Zulu 500 m zone at 18:40 hrs. Meanwhile, performed general rig maintenance.		
0,00	18:30	21:30	3,00	MOB, RIG	MOB	RIG	PT		Completed field arrival check list prior to commencing anchor handling operations. Moved rig to 100 m off well location. Meanwhile, Havila Venus buoyed off lines #5, #3 and #2.		
0,00	21:30	00:00	2,50	MOB, RIG	MOB	RIG	PT		Commenced anchor handling operations. Havila Venus: - Buoyed off lines #1, #8 and #7. Havila Jupiter: - Received rig wire #5 at 21:26 and commenced connecting line. Meanwhile: - Prepared guideposts. - Performed general rig maintenance. - Commenced mixing 1.40 sg kill mud and hi-visc sweeps. - Held tabletop exercise with crew #6 on shallow gas and Well Control Case #4.		

Report Start Date: 19.01.2015				Days from Spud/Start (days): 0				Report Number: 2			
End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com		
0,00	00:00	06:00	6,00	MOB, RIG	MOB	RIG	PT		Continued anchor handling operations. Havila Venus: - Buoyed off lines #6 and #4. - Received rig wire #4 at 01:59 and commenced connecting line. Havila Jupiter: - Continued connecting line #5. Dropped buoy #5 at 00:40. - Received rig wire #1 at 01:26 and commenced connecting line. Dropped buoy #1 at 04:02. - Received rig wire #8 at 04:30 and commenced connecting line. Performed emergency release test of lines #5, #1, #4 and #8 following delivery to boat. Meanwhile, continued general maintenance and preparing for spud.		

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
31,00	06:00	15:30	9,50	MOB, RIG	MOB	RIG	PT		Continued anchor handling operations. Deballasted rig to drilling draft from 10:30 to 13:15 hrs. Havila Venus: - Continued connecting line #4. Dropped buoy #4 at 06:29. - Received rig wire #6 at 07:15 and commenced connecting line. Dropped buoy #6 at 11:47. - Received rig wire #3 at 12:21 and commenced connecting line. Dropped buoy #3 at 14:29. Havila Jupiter: - Continued connecting line #8. Dropped buoy #8 at 07:18. - Received rig wire #2 at 07:55 and commenced connecting line. Dropped buoy #2 at 09:48. - Received rig wire #7 at 10:10 and commenced connecting line. Dropped buoy #7 at 13:10. Performed emergency release test of lines #6, #2, #7 and #3 following delivery to boat. Completed cross tension test on all lines. ROV placed 4 x marker buoys and 2 x transponders on seabed, installed 4 x guidepost, and performed seabed survey. Meanwhile, performed general rig maintenance and held pre-job meeting prior to picking up 17 1/2" x 26" x 36" BHA.
58,00	15:30	16:00	0,50	CON1, DRL	PUL D	BHA	PT		Picked up and ran in hole with 17 1/2" x 26" x 36" BHA to 58 m.
58,00	16:00	21:30	5,50	CON1, DRL	WAIT ON	EQUIP	NPT	LOW E	Waited on 30" conductor being loaded prior to spudding well. Loaded spud equipment including 30" conductor and wellhead housing (WHH). Meanwhile, commenced surveying anchor lines. Observed grommet hooked on shackle on anchor line #4 and twist on line #5. Havila Jupiter completed re-running line #4 and started re-run on line #5.
58,00	21:30	22:30	1,00	CON1, DRL	SAFETY	MTG	PT		Held pre-job meeting with drill crew, service companies and marine on shallow gas prior to spudding well. Conducted shallow gas exercise involving ROV, drill floor and bridge. Meanwhile, Havila Venus continued surveying anchor lines while Havila Jupiter continued re-run of line #5.
130,00	22:30	23:30	1,00	CON1, DRL	TRIP	BHA	PT		Ran in hole with 17 1/2" x 26" x 36" BHA from 58 m to 130 m. Meanwhile, Havila Venus continued surveying anchor lines. Observed repeated problem on line #4. Havila Jupiter completed re-run of line #5. Decided to spud well and postpone re-run of anchor line #4 to after drilling of 36" section.
165,00	23:30	00:00	0,50	CON1, DRL	TRIP	DP	PT		Ran in hole with 17 1/2" x 26" x 36" BHA on 5" DP from 130 m to 165 m. Meanwhile, Havila Venus continued surveying remaining anchor lines.

Report Start Date: 20.01.2015

Days from Spud/Start (days): 1

Report Number: 3

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
165,00	00:00	00:30	0,50	CON1, DRL	MOB	RIG	PT		Positioned rig above well.
169,00	00:30	01:00	0,50	CON1, DRL	CIRC	CFL	PT		Brought pumps up to 4000 lpm, 83 bar and recorded survey showing 0.18 deg inclination. Stabbed 17 1/2" bit into CAN and recorded top of CAN at 169 m.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
189,00	01:00	01:30	0,50	CON1, DRL	DRIL L	ROT	PT		Spudded well and washed down 17 1/2" x 26" x 36" BHA from 189 m with 1000 lpm, 4 bar without rotation. Increased flow in steps to 2000 lpm, 19 bar while continuing to wash down seeing 0 - 3 t WOB. Started rotation at 15 rpm at 178 m due to increasing weight on bit. Drilled from 178 m to first connection at 189 m with 2000 lpm, 19 bar, 15 rpm, 2 - 4 kNm and 0 - 1 t WOB. Recorded survey at 189 m showing 0.179 deg inclination.
218,00	01:30	03:00	1,50	CON1, DRL	DRIL L	ROT	PT		Drilled 36" section from 189 m to 218 m with 3000 - 4000 lpm, 55 - 95 bar, 30 - 45 rpm, 3 - 9 kNm, 0 - 2 t WOB. Pumped 10 m3 hi-visc sweep at every half stand. Inclination increased to 0.41 deg at 209 m and to 0.55 deg at 218 m. Passed hard spots at 202 m and 207 m.
218,00	03:00	04:00	1,00	CON1, DRL	REA M	OH	PT		Reamed open hole interval from 190 m to 218 m twice with 60 rpm, 2 - 15 kNm, 0 - 1 t WOB while pumping at 3500 lpm, 76 bar. Swept hole with 10 m3 hi-visc pill after reaming interval.
228,00	04:00	05:00	1,00	CON1, DRL	DRIL L	ROT	PT		Drilled 36" section from 218 m to 228 m with 4500 - 5000 lpm, 125 - 150 bar, 60 rpm, 4 - 10 kNm, 0 - 2 t WOB. Recorded survey at 228 m showing 0.67 deg inclination. Passed hard spot at 220 m.
228,00	05:00	05:30	0,50	CON1, DRL	REA M	OH	PT		Reamed open hole interval from 214 m to 228 m twice with 60 rpm, 2 - 9 kNm, 0 - 1 t WOB while pumping at 4500 lpm, 125 bar.
236,00	05:30	06:00	0,50	CON1, DRL	DRIL L	ROT	PT		Drilled 36" section from 228 m to 236 m with 4500 lpm, 126 bar, 60 rpm, 8 - 14 kNm, 1 - 2 t WOB. Pumped 10 m3 hi-visc sweep at 234 m.
242,00	06:00	06:30	0,50	CON1, DRL	DRIL L	ROT	PT		Drilled 36" section from 236 m to section TD at 242 m with 4500 lpm, 126 bar, 60 rpm, 10 - 18 kNm, 1 - 2 t WOB.
242,00	06:30	07:30	1,00	CON1, DRL	CIRC	MUD	PT		Circulated hole clean pumping and displacing out 2 x 15 m3 hi-visc sweeps at 5000 lpm, 140 bar while reciprocating string. Flow checked well prior to displacing hole to mud. Displaced hole to 1.40 sg displacement mud at 3500 lpm, 95 bar while rotating string with 20 rpm, 1 kNm and reciprocating string.
242,00	07:30	08:30	1,00	CON1, DRL	TRIP	DP	PT		Pulled out of hole for wiper trip with 17 1/2" x 26" x 36" BHA on 5" DP from 242 m to 184 m. Performed drops check in derrick due to vibrations while drilling and reaming 36" section. Ran in hole with 17 1/2" x 26" x 36" BHA from 184 m to 242 m. No restrictions running in and no fill at TD.
242,00	08:30	09:00	0,50	CON1, DRL	CIRC	MUD	PT		Displaced hole to 1.40 sg mud at 3500 lpm, 100 bar following wiper trip. Reciprocated and rotated string with 20 rpm, 1 kNm.
184,00	09:00	09:30	0,50	CON1, DRL	TRIP	DP	PT		Pulled 17 1/2" x 26" x 36" BHA out of hole from 242 m to 184 m. Topped up hole with 1.40 sg mud pumping 10 m3 at 500 lpm, 4 bar.
169,00	09:30	10:00	0,50	CON1, DRL	CIRC	CFL D	PT		Pulled 17 1/2" x 26" x 36" BHA out of hole from 184 m to 169 m. Brought up pumps to 4900 lpm, 125 bar and jetted CAN to clear cutting build up. Checked bullseye at 0.5 deg aft - no change.
10,00	10:00	11:30	1,50	CON1, DRL	TRIP	BHA	PT		Pulled 17 1/2" x 26" x 36" BHA out of hole from 169 m to 10 m.
0,00	11:30	12:30	1,00	CON1, DRL	PUL D	BHA	PT		Pulled 17 1/2" x 26" x 36" BHA out of hole and laid down to deck. Cleared clay off stabiliser, hole opener and 17 1/2" bit.
0,00	12:30	14:30	2,00	CON1, CSG	RUR D	CSG	PT		Rigged up casing running equipment for running 30" conductor. Installed 12' bails on topdrive.
0,00	14:30	15:00	0,50	CON1, CSG	SAF ETY	MTG	PT		Held debrief after rigging up casing running equipment. Held pre-job meeting prior to running 30" conductor.
67,00	15:00	17:00	2,00	CON1, CSG	RUN	CSG	PT		Picked up 30" conductor shoe and tested float with seawater. Continued running 30" conductor to 67 m. Landed wellhead housing (WHH) in rotary on handling clamp.
67,00	17:00	19:00	2,00	CON1, CSG	RUN	CSG	PT		Changed handling equipment. Picked up and ran aluminum inner string in 30" conductor. Connected inner string to wellhead housing running tool (WHHRT). Installed WHHRT in 30" conductor WHH.

Activity Report for 26/10-1

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
67,00	19:00	20:00	1,00	CON1, CSG	RUN	CSG	PT		Picked up 30" conductor and removed handling clamp. Installed vent valves on running tool leaving valves in open position.
67,00	20:00	20:30	0,50	CON1, CSG	PUL	EQIP	PT		Build cement stand and laid same down to deck.
165,00	20:30	21:30	1,00	CON1, CSG	RUN	CSG	PT		Ran 30" conductor on 5" HWDP landing string from 67 m to 165 m. Filled pipe with seawater at 100 m.
172,00	21:30	22:30	1,00	CON1, CSG	RUN	CSG	PT		Positioned rig to stab 30" conductor shoe into CAN. Observed 30" conductor moving due to currents. Stabbed 30" conductor into well.
237,00	22:30	23:30	1,00	CON1, CSG	RUN	CSG	PT		Ran 30" conductor in open hole to 226 m. Picked up and installed cement stand. Ran in and landed 30" conductor in CAN with conductor shoe at 237 m. Gradually slacked off weight of conductor while ROV observing CAN. Checked CAN bullseye at 0.5 deg aft - no change. Meanwhile, held pre-job meeting prior to cementing 30" conductor in place.
237,00	23:30	00:00	0,50	CON1, CSG	RUR	CMT	PT		Installed and pressure tested cement hose to 100 bar for 5 min. Observed closed vent valve on WHHRT. ROV opened and then closed vent valves on WHHRT.

Report Start Date: 21.01.2015

Days from Spud/Start (days): 2

Report Number: 4

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
237,00	00:00	01:00	1,00	CON1, CSG	CIRC	CFL	PT		Broke circulation with 1000 lpm, 3 bar. Observed air bobbles flowing from edge of well head housing running tool (WHHRT). Opened air evacuation valves on WHHRT and flushed with 500 lpm, 1 bar until clear flow of water observed. Closed air evacuation valves. No further bobbles seen escape from WHHRT. Brought up pumps to 3500 lpm, 40 bar and pumped 17 m3 seawater ahead of cement job. Closed IBOP with 30 bar behind. Opened lo-torque valve and observed pressure drop to confirm line-up. ROV confirmed CAN bullseye at 0.5 deg aft - no change.
237,00	01:00	03:00	2,00	CON1, CSG	PUM	CMT	PT		Mixed and pumped 64 m3 of 1.56 sg Liteset cement slurry at 780 lpm, 15 bar. Displaced cement with 4.0 m3 seawater at 1200 lpm, 20 bar from the cement unit. Checked for backflow and confirmed float holding. ROV observed cement flow at seabed while pumping final part of cement slurry.
227,00	03:00	04:00	1,00	CON1, CSG	RUR	CMT	PT		Rigged down cement hose. ROV cleared cement off CAN and confirmed bullseye at 0.5 deg aft - no change. ROV opened air evacuation valves on WHHRT prior to releasing this. Released WHHRT rotating string 5 times clockwise. Pulled WHHRT out of wellhead housing (WHH).
165,00	04:00	04:30	0,50	CON1, CSG	TRIP	DP	PT		Pulled out of hole with WHHRT and aluminum inner string.
165,00	04:30	06:00	1,50	CON1, CSG	CIRC	CFL	PT		Observed aluminum inner string drift 12 m off well location when pulled out of WHH due to currents. Repositioned rig to have inner string over CAN. Flushed CAN with 5000 lpm, 48 bar to clear cement and cuttings.
50,00	06:00	06:30	0,50	CON1, CSG	TRIP	BHA	PT		Pulled out with WHHRT and inner string to 50 m.
50,00	06:30	07:00	0,50	CON1, CSG	PUL	EQIP	PT		Picked up and broke out cement stand.
0,00	07:00	08:00	1,00	CON1, CSG	PUL	EQIP	PT		Laid down WHHRT. Broke out and laid down aluminum inner string.
0,00	08:00	09:30	1,50	CON1, CSG	RUR	EQIP	PT		Changed to 8" bails on topdrive. Cleared rig floor after running and cementing 30" conductor.
166,00	09:30	12:00	2,50	CON1, CSG	PUL	BHA	PT		Held pre-job meeting prior to picking up BHA. Picked up and ran in hole with 26" clean out BHA to above WHH. Picked up jar and accelerator from deck and made up with 8 1/4" DC. Lifted in and installed cement filter unit to drill floor prior to drilling pilot hole.
166,00	12:00	14:30	2,50	CON1, CSG	WAIT	CMT	PT		Waited on cement bucket sample to set up prior to stabbing in and drilling out 30" conductor shoe and 17 1/2" rat hole.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
232,00	14:30	15:30	1,00	CON1, CSG	TRIP	DP	PT		Stabbed 26" clean out BHA into WHH and continued running in hole. Broke circulation at 222 m and washed down with 1000 lpm, 4 bar. Tagged top of cement at 232 m setting down 5 t (theoretical top of cement at 231.5 m)
242,00	15:30	16:30	1,00	CON1, CSG	DRIL	CMT	PT		Drilled cement from 232 m with 3000 lpm, 56 bar, 50 rpm, 4 - 8kNm, 5 - 9 t WOB. Drilled through 30" conductor shoe at 237 m. Cleaned out 17 1/2" x 26" rat hole in 1 m steps to section TD at 242 m pulling back inside 30" conductor shoe to check pipe free.
242,00	16:30	17:00	0,50	CON1, CSG	CIRC	MUD	PT		Circulated hole clean pumping and displacing out 2 x 15 m3 hi-visc sweeps at 3500 lpm, 68 bar while reciprocating and rotating string with 15 rpm, 1 kNm.
242,00	17:00	17:30	0,50	CON1, CSG	CIRC	MUD	PT		Displaced well to 1.40 sg displacement mud at 3500 lpm, 84 bar. Flow checked well with ROV observing at WHH prior to pulling 26" clean out BHA out of hole.
167,00	17:30	18:30	1,00	CON1, CSG	TRIP	DP	PT		Pulled 26" clean out BHA out of hole from 242 m to 175 m and topped hole up with 1.40 sg mud pumping at 560 lpm, 4 bar. Pulled 26" BHA to above CAN at 167 m. Brought up pumps to 5000 lpm, 130 bar and cleaned top of CAN for cuttings build up.
0,00	18:30	20:00	1,50	CON1, CSG	TRIP	DP	PT		Pulled out of hole and laid down 26" clean out BHA out of hole from 167 m.
0,00	20:00	20:30	0,50	CON1, CSG	CLE	RIG	PT		Meanwhile, held shallow gas drill with full muster. Cleared rig floor following 26" clean out run.
0,00	20:30	21:00	0,50	PILOT, DRL	SAF	MTG	PT		Held debrief after laying down 26" clean out BHA. Held pre-job meeting prior to picking up 9 7/8" pilot hole BHA.
20,00	21:00	22:30	1,50	PILOT, DRL	PUL	BHA	PT		Picked up 9 7/8" pilot hole BHA. Plugged into MWD and verified tool.
162,00	22:30	00:00	1,50	PILOT, DRL	TRIP	BHA	PT		Picked up and ran in hole with 9 7/8" pilot hole BHA to above WHH at 162 m. Positioned rig for stabbing 9 7/8" BHA into WHH.

Report Start Date: 22.01.2015

Days from Spud/Start (days): 3

Report Number: 5

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
235,00	00:00	01:00	1,00	PILOT, DRL	TRIP	DP	PT		Positioned rig and stabbed 9 7/8" pilot hole BHA into wellhead housing (WHH). Ran in hole with 9 7/8" BHA to 235 m.
245,00	01:00	01:30	0,50	PILOT, DRL	CIRC	MUD	PT		Broke circulation and staged up pumps to 4000 lpm, 150 bar. Downlinked to MWD tool and cycled pumps. Decreased flow to 3500 lpm, 120 bar and washed down 9 7/8" BHA. Tagged formation at 242 m with 2 t. Started drilling new formation from 242 m with 4000 lpm, 153 bar, 60 rpm, 2 - 5 kNm, 0 - 1 t WOB. Pulled off bottom at 245 m due to loss of mud logging data. Re-set data logging system and resumed drilling.
290,00	01:30	03:30	2,00	PILOT, DRL	DRIL	ROT	PT		Drilled 9 7/8" pilot hole from 245 m to 290 m with 4000 lpm, 150 - 155 bar, 60 rpm, 2 - 5 kNm, 0 - 1 t WOB. Average on bottom ROP: 29 m/hr. ECD: 1.04 sg.
285,00	03:30	04:30	1,00	PILOT, DRL	CIRC	MUD	PT		Recorded TD survey showing 0.31 deg inclination. Circulated well clean pumping and displacing 2 x 15 m3 hi-visc sweeps with 4000 lpm, 153 bar while reciprocating and rotating string with 10 rpm, 1 kNm.
285,00	04:30	05:00	0,50	PILOT, DRL	FLO	CHE	PT		Flow checked well for 30 min with ROV observing at WHH prior to displacing well to 1.25 sg mud.
266,00	05:00	05:30	0,50	PILOT, DRL	CIRC	MUD	PT		Displaced well to 1.25 sg mud with 2500 lpm, 65 bar while pulling string back to 266 m.
189,00	05:30	06:00	0,50	PILOT, DRL	TRIP	DP	PT		Pulled out of hole with 9 7/8" pilot hole BHA from 266 m to 189 m. Held kick drill at 237 m and topped up well with 10 m3 1.25 sg displacement mud at 213 m.
166,00	06:00	06:30	0,50	PILOT, DRL	TRIP	DP	PT		Pulled out of hole with 9 7/8" pilot hole assembly from 189 m to above WHH at 166 m. Flushed wellhead area clean pumping at 5000 lpm, 224 bar.
76,00	06:30	07:00	0,50	PILOT, DRL	TRIP	BHA	PT		Pulled 9 7/8" pilot hole BHA out of hole from 166 m to 76 m. Moved rig to safe handling zone.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
76,00	07:00	07:30	0,50	PILOT, DRL	REP AIR	RIG	NPT	MST B	Troubleshoot issue on HydraRacker. Replaced fuse.
0,00	07:30	09:00	1,50	PILOT, DRL	PUL D	BHA	PT		Pulled out and laid down 9 7/8" pilot hole BHA. Plugged into MWD and verified data.
0,00	09:00	09:30	0,50	IN1, DRL	SAF ETY	MTG	PT		Held pre-job meeting prior to picking up 17 1/2" BHA.
5,00	09:30	11:00	1,50	IN1, DRL	PUL D	BHA	PT		Picked up 17 1/2" BHA. Plugged into MWD and verified tool.
30,00	11:00	11:30	0,50	IN1, DRL	PUL D	BHA	PT		Held pre-job meeting prior to using manual rig tongs. Picked up 17 3/8" stabiliser and made up with manual rig tongs.
165,00	11:30	13:00	1,50	IN1, DRL	TRIP	BHA	PT		Picked up and ran in hole with 17 1/2" BHA from 30 m to 165 m.
242,00	13:00	14:00	1,00	IN1, DRL	TRIP	DP	PT		Moved rig into position over well. Stabbed into wellhead housing and continued running in hole with 17 1/2" BHA to 220 m.
242,00	14:00	14:30	0,50	IN1, DRL	CIRC	MUD	PT		Broke circulation and washed 17 1/2" BHA down from 220 m with 4000 lpm, 130 bar. Tagged formation at 242 m. Recorded up and down weight.
290,00	14:30	16:00	1,50	IN1, DRL	DRIL L	ROT	PT		Drilled 17 1/2" section from 242 m to section TD at 290 m with 4000 lpm, 135 bar, 60 rpm, 2 - 3 kNm, 0 - 1 t WOB. Average on bottom ROP: 39 m/hr. MWD ECD: 1.05 sg. Pumped 10 m3 hi-visc sweep every half stand.
286,00	16:00	16:30	0,50	IN1, DRL	CIRC	MUD	PT		Circulated hole clean pumping and displacing out 2 x 15 m3 hi-visc sweeps at 5000 lpm, 205 bar while reciprocating and rotating the string at 20 rpm, 1 kNm.
275,00	16:30	17:00	0,50	IN1, DRL	CIRC	MUD	PT		Flow checked well for 10 min with ROV observing at seabed. Displaced well to 1.40 sg bentonite mud at 3500 lpm, 112 bar while rotating the string at 20 rpm, 1 kNm and pulling 17 1/2" BHA back to 275 m.
165,00	17:00	18:30	1,50	IN1, DRL	TRIP	DP	PT		Pulled 17 1/2" BHA out of hole from 275 m to 190 m. Topped up hole with 10 m3 1.40 sg mud. Continued pulling 17 1/2" BHA out of hole to 172 m. Broke circulation and pulled 17 1/2" BHA out of wellhead housing while pumping at 3500 lpm. Flushed wellhead area clean pumping at 4500 lpm, 145 bar. Moved rig to safe handling zone.
25,00	18:30	19:30	1,00	IN1, DRL	TRIP	BHA	PT		Pulled out of hole and racked back 17 1/2" BHA from 165 m to 25 m.
0,00	19:30	21:30	2,00	IN1, DRL	PUL D	BHA	PT		Pulled out laid down 17 1/2" BHA. Plugged into MWD and verified data.
0,00	21:30	22:00	0,50	IN1, DRL	CLE AN	RIG	PT		Cleared rig floor following drilling of 17 1/2" section.
0,00	22:00	22:30	0,50	IN1, CSG	SAF ETY	MTG	PT		Held pre-job meeting prior to rigging up casing running equipment.
0,00	22:30	23:30	1,00	IN1, CSG	RUR D	CSG	PT		Rigged up casing running equipment for running 20" x 13 3/8" casing with 18 3/4" wellhead. Held pre-job meeting prior to picking up and running 13 3/8" shoetrack.
25,00	23:30	00:00	0,50	IN1, CSG	RUN	CSG	PT		Picked up 13 3/8" float shoe. Tested float able to drain. Picked up and made up 13 3/8" intermediate joint.

Report Start Date: 23.01.2015

Days from Spud/Start (days): 4

Report Number: 6

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
35,00	00:00	00:30	0,50	IN1, CSG	RUN	CSG	PT		Picked up 13 3/8" float collar and checked float draining. Made up float collar. Ran 13 3/8" float shoe in water and picked up again to check float holding.
102,00	00:30	02:00	1,50	IN1, CSG	RUN	CSG	PT		Ran 13 3/8" casing according to tally from 35 m to 102 m. Filled joints with seawater while running in.
102,00	02:00	02:30	0,50	IN1, CSG	RUR	EQUIP D	PT		Changed handling equipment and prepared for picking up 18 3/4" wellhead.
110,00	02:30	03:30	1,00	IN1, CSG	RUN	CSG	PT		Picked up 18 3/4" wellhead. Difficulties making up connection due to movement of wellhead assembly. Broke out wellhead due to check treads - ok. Made up wellhead to string. Prepared for running 18 3/4" wellhead in water.
110,00	03:30	06:00	2,50	IN1, CSG	RUN	CSG	NPT	MSW H	Started filling void above wiper plugs with seawater - no indication of void filling. Troubleshoot on void not filling.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
110,00	08:00	10:30	4,50	IN1, CSG	RUN	CSG	NPT	MSW H	Pulled up and broke out 18 3/4" wellhead assembly. Visually verified that 13 3/8" wiper plugs installed and in correct place. Made up wellhead connection. Made up box connection as this had loosened when breaking out wellhead. Ran hanger through rotary. Extra time spend braking out and making up hanger assembly due to rig motions.
232,00	10:30	12:30	2,00	IN1, CSG	TRIP	DP	PT		Picked up and installed CLA tool. Removed safety clamp and stroked out CLA tool. Ran 13 3/8" casing on 5" HWDP landing string to 166 m. Positioned rig and stabbed casing into wellhead housing and continued running in hole to 232 m.
284,00	12:30	13:30	1,00	IN1, CSG	TRIP	DP	PT		Filled pipe with seawater and recorded up/down weights prior to running 13 3/8" casing in open hole. Continued running in hole to 260 m. Broke circulation and washed down 13 3/8" casing with 200 lpm, 4 bar. Landed 18 3/4" wellhead with 13 3/8" casing shoe at 284 m. Performed overpull test to 25 t. Closed ball air evacuation valves on wellhead running tool (WHRT). Ventilated string and collapsed CLA tool to mid stroke.
284,00	13:30	15:00	1,50	IN1, CSG	PUL D	EQIP	PT		Picked up cement head from deck and installed on string. Connected cement hose and pressure tested cement lines to 200 bar for 10 min.
284,00	15:00	15:30	0,50	IN1, CSG	CIRC	MUD	PT		Broke circulation and staged up pumps to 1700 lpm, 9 bar. Displaced annulus to seawater. Meanwhile, held pre-job meeting prior to cementing 13 3/8" casing in place.
284,00	15:30	16:00	0,50	IN1, CSG	CIRC	MUD	PT		Pumped 16 m3 fresh water spacer at 1700 lpm, 9 bar. Closed IBOP trapping 30 bar behind. Opened lo-torque valve and confirmed line-up to cement unit.
284,00	16:00	18:00	2,00	IN1, CSG	PUM P	CMT	PT		Released ball for bottom wiper plug. Mixed and pumped 21.0 m3 1.56 sg lead slurry at 700 lpm, 12 bar. Observed 50 bar pressure spike having pumped approx. 7 m3 slurry indicating burst of bottom wiper plug. Switched to mixing 1.95 sg tail slurry. Pumped 11.3 m3 at 750 lpm, 15 bar. Released dart for top wiper plug. Flag indicated dart launching. Displaced cement with fresh water from cement unit at 800 lpm, 5 bar. Observed pressure spike having pumped approx. 1 m3 indicating top wiper plug shearing. Zeroed displacement volume and continued displacing at 1600 lpm, 17 bar. Reduced pump rate to 600 ltr, 5 bar prior to theoretical bumping plugs. Bumped plugs at 7.15 m3 pumped. Pressure up and tested casing to 100 bar for 10 min. Bled off pressure and confirmed no back flow.
284,00	18:00	18:30	0,50	IN1, CSG	PUL D	EQIP	PT		Vented string and collapsed CLA tool. Rigged down and flushed cement hose. Laid down cement head to deck.
168,00	18:30	20:00	1,50	IN1, CSG	CIRC	MUD	PT		Stroked out CLA tool. Released wellhead running tool (WHRT) and pulled free of wellhead. Flushed wellhead area with 3500 lpm, 28 bar.
168,00	20:00	20:30	0,50	IN1, CSG	SAF ETY	MTG	PT		Held pre-job meeting prior to pulling out and laying down WHRT. Meanwhile, moved rig to safe handling zone.
0,00	20:30	21:30	1,00	IN1, CSG	TRIP	DP	PT		Pulled out of hole with WHRT on 5" HWDP landing string. Drained and collapsed CLA tool. Laid WHRT and CLA tool down to deck.
0,00	21:30	23:00	1,50	IN1, CSG	RUR D	CSG	PT		Rigged down casing running equipment. Changed to 8" drilling bails on topdrive.
0,00	23:00	01:00	2,00	IN1, CSG	RUR D	EQIP	NPT	MSW H	Replaced guide posts on CAN ahead of running BOP. Continued testing and preparing BOP for running. Meanwhile, performed drops inspection in derrick and greased topdrive.

Report Start Date: 24.01.2015

Days from Spud/Start (days): 5

Report Number: 7

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
0,00	00:00	04:00	4,00	IN1, CSG	RUR D	EQIP	NPT	MSW H	Completed replacing guide posts on CAN. Meanwhile, installed running tool in diverter and performed general maintenance. Continued testing and preparing BOP.
0,00	04:00	06:00	2,00	IN1, CSG	WAIT ON	WTH R	WO W	WD	Waited on weather to pick up riser spider. Meanwhile, continued general rig maintenance and removing old guide posts from cellar deck through rotary.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
0,00	06:00	10:00	4,00	IN1, CSG	WAIT ON	WTH R	WO W	WD	Waited on weather to pick up riser spider. Meanwhile, removing old guide posts from cellar deck through rotary. Changed to 4" handling equipment and prepared HydraRacker and finger board for racking 4" pipe. Deck crew tallied 4" DP.
0,00	10:00	11:00	1,00	IN1, CSG	BOP/RISE R	BOP E	PT		Started rigging up for running marine riser. Lifted riser spider and running tools to drill floor.
0,00	11:00	13:00	2,00	IN1, CSG	WAIT ON	WTH R	WO W	WD	Waited on weather for running BOP and riser. Meanwhile, picked up 3 sgl 4" DP from deck and tuned HydraRacker for handling 4" DP.
0,00	13:00	16:00	3,00	IN1, CSG	PUL D	DP	PT		Picked up 4" DP from deck and racked back in setback tower. Meanwhile, continued waiting on weather for running BOP and riser.
0,00	16:00	18:00	2,00	IN1, CSG	WAIT ON	WTH R	WO W	WD	Waited on weather for running BOP and riser. Held debrief after running and cementing 20" x 13 3/8" casing. Continued laying out and tallying 4" DP on deck.
0,00	18:00	21:30	3,50	IN1, CSG	PUL D	DP	PT		Resumed picking up and racking back 4" DP in setback tower. Total of 19 std 4" DP racked. Meanwhile, continued waiting on weather for running BOP and riser.
0,00	21:30	22:00	0,50	IN1, CSG	SAFETY	MTG	PT		Held de-brief after picking up and racking 4" DP. Held pre-job meeting prior to running BOP
0,00	22:00	00:00	2,00	IN1, CSG	BOP/RISE R	BOP E	PT		Continued rigging up for running BOP on marine riser. Installed riser spider and riser running tool.

Report Start Date: 25.01.2015

Days from Spud/Start (days): 6

Report Number: 8

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
0,00	00:00	01:00	1,00	IN1, CSG	BOP/RISE R	BOP E	PT		Picked up 40' riser pup joint and made up with 5' pup joint. Laid down pup stand.
0,00	01:00	03:00	2,00	IN1, CSG	WAIT ON	WTH R	WO W	WD	Waited on weather while testing BOP and preparing to run same. Meanwhile, held pre-job meeting and prepared for rigging up for testing topdrive.
0,00	03:00	04:00	1,00	IN1, CSG	TEST	BOP E	PT		Pressure tested topdrive auto and manual IBOP and mud hose to 20 / 345 bar for 5 / 10 min.
0,00	04:00	04:30	0,50	IN1, CSG	BOP/RISE R	BOP E	PT		Picked up 2 x riser flotation joints and build riser double for running BOP through splash zone.
0,00	04:30	06:00	1,50	IN1, CSG	REP AIR	RIG	NPT	MSB O	Function tested BOP following flushing to clear possible gravel on inside. Prepared BOP for skidding from park position to well centre.
0,00	06:00	07:00	1,00	IN1, CSG	REP AIR	RIG	NPT	MSB O	Continued skidding BOP from park position to well centre.
0,00	07:00	08:00	1,00	IN1, CSG	BOP/RISE R	BOP E	PT		Made up riser double to BOP and prepared reels on cellar deck for running BOP.
0,00	08:00	08:30	0,50	IN1, CSG	REP AIR	RIG	NPT	MSO T	Troubleshoot on pod wire tensioning system.
0,00	08:30	09:00	0,50	IN1, CSG	SAFETY	MTG	PT		Held pre-job meeting prior to running BOP on marine riser.
44,00	09:00	09:30	0,50	IN1, CSG	BOP/RISE R	BOP E	PT		Ran BOP through splash zone at 09:10 hrs. Landed riser double in riser spider and installed test tool.
44,00	09:30	11:00	1,50	IN1, CSG	TEST	BOP E	PT		Pressure tested choke, kill, boost and conduit lines to 20 / 345 bar for 5 / 10 min.
133,00	11:00	13:00	2,00	IN1, CSG	BOP/RISE R	BOP E	PT		Ran BOP on marine riser from 44 m to 133 m. Total of 6 joints run including pre-made up pup stand.
133,00	13:00	15:00	2,00	IN1, CSG	TEST	BOP E	PT		Pressure tested kill, choke, boost and conduit lines to 20 / 345 bar for 5 / 10 min. Meanwhile, held pre-job meeting prior to lifting slip joint from deck to catwalk. Installed catwalk extension trolley. Lifted slip joint from deck to catwalk.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
153,00	15:00	16:30	1,50	IN1, CSG	BOP/RISE R	BOP E	PT		Picked up and installed slip joint. Picked up landing joint. Engaged slip joint in support ring.
153,00	16:30	18:00	1,50	IN1, CSG	TEST	BOP E	PT		Pressure tested kill and choke line to 20 / 345 bar for 5 / 10 min and tested boost line to 100 bar for 10 min.
160,00	18:00	23:00	5,00	IN1, CSG	BOP/RISE R	BOP E	PT		Established landing loops in moonpool prior to landing BOP on wellhead.
160,00	23:00	00:00	1,00	IN1, CSG	BOP/RISE R	BOP E	PT		Positioned rig over wellhead. Established guide wire connecting these to CAN guide posts. Removed dust cap on wellhead.

Report Start Date: 26.01.2015

Days from Spud/Start (days): 7

Report Number: 9

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
160,00	00:00	00:30	0,50	IN1, CSG	BOP/RISE R	BOP E	PT		Calibrated 4subsea sensors on BOP and LMRP prior to landing BOP.
0,00	00:30	02:00	1,50	IN1, CSG	BOP/RISE R	BOP E	PT		Landed BOP at 00:50 hrs and sat down 25 t. Engaged and locked wellhead connector. Performed 25 t overpull test. Disconnected guide wires. Stroked out slip joint inner barrel and measured tension ring to rotary distance.
0,00	02:00	02:30	0,50	IN1, CSG	REP AIR	RIG	NPT	MST D	Replaced broken fitting on BX elevator.
0,00	02:30	03:00	0,50	IN1, CSG	PUL D	EQUIP	PT		Laid down landing joint and riser running tool.
0,00	03:00	04:00	1,00	IN1, CSG	PUL D	EQUIP	PT		Held pre-job meeting prior to installing diverter. Picked up and installed diverter. Meanwhile, closed blind shear rams and lined up for BOP connector test. Pressure tested BOP connector against blind shear and 13 3/8" casing to 150 bar for 10 min.
0,00	04:00	05:00	1,00	IN1, CSG	BOP/RISE R	BOP E	PT		Rigged down riser running equipment. Lifted riser spider down to deck.
0,00	05:00	05:30	0,50	IN1, CSG	CLE AN	RIG	PT		Cleared rig floor following running of BOP and riser.
0,00	05:30	06:00	0,50	IN1, CSG	BOP/RISE R	BOP E	PT		Changed handling equipment for picking up 12 1/4" BHA. Meanwhile, function blind shear ram with acoustic control.
0,00	06:00	06:30	0,50	IN1, CSG	SAF ETY	MTG	PT		Held pre-job meeting prior to picking up 12 1/4" BHA.
0,00	06:30	07:00	0,50	IN1, CSG	PUL D	BHA	PT		Started picking up 12 1/4" BHA.
0,00	07:00	07:30	0,50	IN1, CSG	SAF ETY	MTG	PT		Held pre-job meeting prior to using manual rig tons.
56,00	07:30	10:30	3,00	IN1, CSG	PUL D	BHA	PT		Broke out 9 7/8" bit using rig tongs. Checked non-ported float installed. Made up 12 1/4" bit and continued picking up 12 1/4" BHA. Plugged into MWD and verified tool.
56,00	10:30	11:00	0,50	IN1, CSG	TEST	BOP E	PT		Performed diverter drill. Functioned diverter sequence on both starboard and port line-up. Flushed through both lines with seawater at 1000 lpm.
225,00	11:00	11:30	0,50	IN1, CSG	TRIP	DP	PT		Ran in hole with 12 1/4" BHA on 5" DP from 225 m in order to have DP across BOP for function test. Held kick-drill.
25,00	11:30	12:00	0,50	IN1, CSG	CIRC	MUD	PT		Broke circulation and shallow tested MWD at 4000 lpm, 98 bar.
225,00	12:00	13:00	1,00	IN1, CSG	TEST	BOP E	PT		Function test BOP on yellow pod from Drillers panel and on blue pod from Toolpushers panel.
225,00	13:00	13:30	0,50	IN1, CSG	SAF ETY	DRIL	PT		Held choke-drill setting 10 bar pressure on well.
56,00	13:30	14:00	0,50	IN1, CSG	TRIP	DP	PT		Pulled out of hole with 12 1/4" BHA on 5" DP from 225 m to 56 m.
216,00	14:00	15:00	1,00	IN1, CSG	TRIP	BHA	PT		Ran in hole with 12 1/4" BHA to 216 m on 5" HWDP.
250,00	15:00	16:00	1,00	IN1, CSG	CIRC	MUD	PT		Broke circulation and washed down 12 1/4" BHA from 216 m with 3900 lpm, 128 bar. Tagged cement at 249.5 m

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
273,00	16:00	18:30	2,50	IN1, CSG	DRIL L	CMT	PT		Drilled soft cement from 250 m to 254 m. Continued drilling wiper plugs and cement from 254 m with 3900 lpm, 128 bar, 60 rpm, 4 kN, 5 - 9 t WOB. Varied parameters while drilling wiper plugs. Drilled firm cement from 255 m with average on bottom ROP of 32 m/hr. Pumped 10 m3 hi-visc pill every half stand to sweep hole clean.
275,00	18:30	20:00	1,50	IN1, CSG	DRIL L	CMT	PT		Continued drilling cement from 273 m to 275 m to have HWDP connection below BOP. Circulated hole clean pumping and circulating out a 10 m3 hi-visc pill.
275,00	20:00	21:00	1,00	IN1, CSG	CIRC	MUD	PT		Recorded slow circulation pressure and choke line friction. Performed choke drill with night shift pressuring up to 10 bar.
290,00	21:00	22:00	1,00	IN1, CSG	DRIL L	CMT	PT		Drilled firm cement from 275 m to casing shoe at 284 m with 3900 lpm, 131 bar, 80 rpm, 4 kNm, 4 t WOB. Average on bottom ROP of 14 m/hr. Drilled out 13 3/8" casing shoe at 284 m. Cleaned out rat hole in 1 m steps to 290 m without seeing resistance. Pulled 12 1/4" BHA back into 13 3/8" casing shoe to check string free.
291,00	22:00	23:00	1,00	IN1, CSG	CIRC	MUD	PT		Drilled 1 m of formation with 3900 lpm, 132 bar, 80 rpm, 2 kNm, 0 - 1 t WOB. Circulated hole clean pumping and displacing out 2 x 10 m3 hi-visc pills. Continued circulating until even mud weight of 1.07 sg in and out. Decided to displace well to 1.00 sg drill water prior to FIT.
290,00	23:00	23:30	0,50	IN1, CSG	FLO W	CHE K	PT		Flow checked well prior to displacing to drill water.
290,00	23:30	00:00	0,50	IN1, CSG	CIRC	MUD	PT		Displaced well to drill water at 4000 lpm, 128 bar.

Report Start Date: 27.01.2015

Days from Spud/Start (days): 8

Report Number: 10

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
270,00	00:00	00:30	0,50	IN1, CSG	FLO W	CHE K	PT		Flow checked well following displacement to 1.00 sg drill water. Spotted 1.5 m3 LCM pill on bottom and racked back one stand.
270,00	00:30	02:30	2,00	IN1, CSG	TEST	LOT	PT		Lined up for performing FIT using BOP test pump. Flushed lines from cement unit down kill line and down string. Flushed lines with mud pump down string. Flushed line from BOP test pump. Pressure up to 6 bars against closed IBOP and kill line fail-safe valves. Closed upper annular (UA) and opened IBOP and fail-safe valves. Attempted FIT to 1.32 sg pressuring up with BOP test pump. Unable to build pressure above 5 bar having pumped approximately 450 ltr.
270,00	02:30	06:00	3,50	IN1, CSG	TEST	LOT	PT		Confirmed FIT line-up. Opened UA and flushed lines with drill water. Lined up to cement unit and circulated at low flow down kill line and string and up riser. Opened choke line with fully open choke and closed UA while continuing to circulate from cement unit. Closed in choke line and stopped cement pumps. Lined up to BOP test pump and re-attempted FIT. Commenced pumping from test pump without seeing pressure build up. Shut in test pump and closed IBOP and kill line fail safe valves. Pressure up to 6 bar using cement unit and continued pressuring up to 8 bar using test pump. Opened IBOP and fail safe valves and observed pressure drop. Re-attempted FIT pumping with BOP test pump. Pressure build up to 6 bar before leveling out giving LOT of 1.18 sg EMW. Stopped pumping and observed pressure bleeding off to 4 bar. Repeated set-up and re-attempted FIT pumping up in small steps using cement unit. Unable to pressure up to above 6 bar. Stopped pumps and observed pressure bleed off to 4 bar.
290,00	06:00	07:00	1,00	IN1, CSG	CIRC	MUD	PT		Opened UA and lined over to mud pumps. Broke circulation and pumped up MWD survey showing 32.3 bar downhole pressure giving LOT of 1.16 sg EMW. Ran back in hole with 12 1/4" BHA to 290 m.
290,00	07:00	07:30	0,50	PR1, DRL	CIRC	MUD	PT		Displaced well to seawater prior to drilling ahead. Meanwhile, held pre-job meeting.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
293,00	07:30	09:00	1,50	PR1, DRL	DRIL L	ROT	PT		Ran in hole to 291 m and drilled 2 m new formation at 4000 lpm, 128 bar, 80 rpm, 3 - 6 kNm, 0 - 1 t WOB. Circulated bottoms up from 293 m at 4000 lpm, 130 bar while reciprocating and rotating the string at 30 rpm, 1 kNm. Spotted LCM pill on bottom. Samples showed sand formation. Meanwhile, commenced preparing 1.12 sg WBM.
297,00	09:00	09:30	0,50	PR1, DRL	DRIL L	ROT	PT		Continued drilling new formation in 2 m steps to get past sand formation. Drilled with 4000 lpm, 128 bar, 80 rpm, 3 - 6 kNm, 0 - 1 t WOB. Circulated bottoms up from 295 m at 3150 lpm, 83 bar while reciprocating and rotating the string at 30 rpm, 1 kNm. Drilled ahead to 297 m and commenced circulating samples up.
297,00	09:30	10:00	0,50	PR1, DRL	FLO W	CHE K	PT		Observed increase in active volume while circulating up samples. Stopped pumps and flow checked on trip tank - well stable.
284,00	10:00	10:30	0,50	PR1, DRL	CIRC	MUD	PT		Pulled 12 1/4" BHA back into 13 3/8" casing and circulated samples up at 3000 lpm, 81 bar. Re-calibrated Gamma Ray for changed mud parameters.
301,00	10:30	11:00	0,50	PR1, DRL	DRIL L	ROT	PT		Ran back in hole with 12 1/4" BHA to 297 m and drilled new formation to 301 m with 3000 lpm, 82 bar, 40 rpm, 2 - 5 kNm, 0 - 1 t WOB.
301,00	11:00	11:30	0,50	PR1, DRL	LOG	OH	PT		Pumped 12 1/4" BHA back into 13 3/8" casing shoe with 3000 lpm, 80 bar. Washed down and re-logged open hole from 13 3/8" shoe at 284 m to 301 m with 3000 lpm, 82 bar and 40 rpm, 2 kNm.
301,00	11:30	12:30	1,00	PR1, DRL	CIRC	MUD	PT		Displaced well to 1.12 sg WBM at 3000 lpm, 80 bar while pulling back into 13 3/8" casing shoe at 284 m. Increased flow to 4000 lpm, 132 bar. Ran back in hole to 301 m.
331,00	12:30	14:00	1,50	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 301 m to 331 m with 4000 lpm, 138 bar, 80 rpm, 2 - 4 kNm, 3 t WOB. MWD ECD: 1.14 sg. Average on bottom ROP: 25 m/hr. Max gas: 0.15%. Gamma ray log indicated end of sand interval at 292 m.
284,00	14:00	14:30	0,50	PR1, DRL	FLO W	CHE K	PT		Pumped out 12 1/4" BHA to 13 3/8" casing shoe at 284 m with 3000 lpm, 85 bar. Flow checked well prior to performing FIT - well stable.
278,00	14:30	16:00	1,50	PR1, DRL	CIRC	MUD	PT		Ran in to 301 m with 12 1/4" BHA. Spotted LCM pill from 301 m to 284 m and pulled above into 13 3/8" casing shoe. Displaced kill and choke lines and poorboy to 1.12 sg WBM. Racked back one stand. Circulated well clean at 3150 lpm, 98 bar until even mud weight of 1.12+ sg in and out. Max gas: 0.14%.
278,00	16:00	18:00	2,00	PR1, DRL	TEST	LOT	PT		Lined up for performing FIT using BOP test pump. Flushed lines circulating from cement unit down string and kill line taking returns up through the riser. Opened choke line with fully open choke and closed UA. Closed remote choke and stopped cement pumps. Closed choke line valves. Flushed line from BOP test pump to drill floor. Opened line to BOP test pump and performed LOT. Observed pressure increase to 4.3 bar before becoming stable. Stopped BOP test pump and observed pressure bleed down to 3.9 bar. Repeated LOT with same result of 4.3 bar giving 1.24 sg EMW.
301,00	18:00	19:00	1,00	PR1, DRL	CIRC	MUD	PT		Lined back up to mud pumps and ran in hole to 301 m. Washed 12 1/4" BHA down from 301 m to 331 m with 3100 lpm, 87 bar. Pumped up MWD survey showing LOT pressure of 33.6 bar giving 1.20 sg EMW.
373,00	19:00	22:00	3,00	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 301 m to 373 m with 4000 lpm, 130 - 135 bar, 80 rpm, 2 - 6 kNm, 2 - 5t WOB. MWD ECD: 1.15 - 1.17 sg.
373,00	22:00	22:30	0,50	PR1, DRL	FLO W	CHE K	PT		Pulled off bottom and flow checked well due to increase in active volume - well stable. Ran back in hole to 371 m.
390,00	22:30	00:00	1,50	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 373 m to 390 m with 4400 lpm, 165 bar, 80 rpm, 2 - 6 kNm, 2 - 5 t WOB. MWD ECD: 1.17 sg. Max gas: 0.18%.

Report Start Date: 28.01.2015

Days from Spud/Start (days): 9

Report Number: 11

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
403,00	00:00	00:30	0,50	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 390 m to 403 m with 4400 lpm, 167 bar, 100 rpm, 2 - 6 kNm, 3 - 5 t WOB. MWD ECD: 1.17 - 1.19 sg. Average on bottom ROP: 20 m/hr. Max gas: 0.12%.
403,00	00:30	01:00	0,50	PR1, DRL	CIRC	MUD	PT		Pulled off bottom to cure losses over shaker. Reduced flow to 2000 lpm, 40 bar while changing screens from 140 mesh to 170 mesh on shakers. Continued reciprocating and rotating string at 100 rpm, 2 kNm.
488,00	01:00	06:00	5,00	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 403 m to 488 m with 4400 lpm, 168 bar, 100 rpm, 2 - 4 kNm, 2 - 5 t WOB. Gradually increased ROP from 20 m/hr controlling ECD. MWD ECD at 1.20 sg with average on bottom ROP of 26 m/hr. Max gas: 0.24%. Changed shaker screens to 3 x 170 mesh and 2 x 140 mesh.
515,00	06:00	07:30	1,50	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 488 m to 515 m with 4400 lpm, 170 bar, 100 rpm, 2 - 4 kNm, 0 - 2 t WOB. MWD ECD: 1.19 sg. Average on bottom ROP: 19 m/hr. Max gas: 0.22%.
515,00	07:30	08:00	0,50	PR1, DRL	FLO W	CHE K	PT		Pulled off bottom and flow checked well due to drilling break - well stable. Ran back to bottom.
576,00	08:00	12:30	4,50	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 515 m to 576 m with 4100 lpm, 150 bar, 100 rpm, 2 - 4 kNm, 0 - 3 t WOB. MWD ECD increased from 1.18 sg to 1.20 sg. On bottom average ROP: 22 m/hr. Max gas: 0.42%.
576,00	12:30	13:00	0,50	PR1, DRL	FLO W	CHE K	PT		Pulled off bottom and flow checked well following drilling break - well stable. Ran back to bottom.
608,00	13:00	15:30	2,50	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 576 m to 608 m with 4100 lpm, 155 bar, 100 rpm, 2 - 4 kNm, 0 - 2 t WOB. MWD ECD at 1.20 sg. Average on bottom ROP: 14 m/hr. Max gas: 0.36%.
635,00	15:30	17:30	2,00	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 608 m to 620 m with 3800 lpm, 120 bar, 100 rpm, 2 - 4 kNm, 0 - 2 t WOB. Flow checked well at 620 m prior to making connection due to entering zone with slight shallow gas warning and seeing reduced pump pressure - well stable. Continued drilling to 635 m with same parameters. Observed ECD having erratic trends and slowly increasing to 1.22 sg. Increased flow to 4100 lpm, 155 bar in attempt to stabilise. Average on bottom ROP: 18 m/hr. Max gas: 0.36%.
635,00	17:30	18:00	0,50	PR1, DRL	FLO W	CHE K	PT		Pulled off bottom and flow checked well due to gain in active volume - well stable. Ran back to bottom. Drill floor alerted after 0,28 m3 increase and observed another 4 min before FC initiated. Total increase 0,41 m3.
649,00	18:00	18:30	0,50	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 635 m to 649 m with 3800 lpm, 145 bar, 100 rpm, 1 - 3 kNm, 1 - 3 t WOB. MWD ECD 1.21 - 1.23 sg. Average on bottom ROP: 21 m/hr. Max gas: 0.25%.
649,00	18:30	19:00	0,50	PR1, DRL	CIRC	MUD	PT		Circulated well clean with 1 x bottoms up due to increasing ECD level. ECD reduced from 1.23 sg prior to circulation to 1.20 sg upon resuming drilling.
695,00	19:00	22:30	3,50	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 649 m to 695 m with 3800 - 4100 lpm, 140 - 155 bar, 100 rpm, 1 - 5 kNm, 0 - 4 t WOB. ECD continued increasing trend from 1.20 sg to 1.24 sg. Reduced ROP to improve ECD. Average on bottom ROP: 16 m/hr. Max gas: 0.22%.
695,00	22:30	23:00	0,50	PR1, DRL	FLO W	CHE K	PT		Pulled off bottom and flow checked well due to gain in active volume - well stable. Circulated 1/2 x B/U at 4100 lpm, 155 bar due to ECD increasing to 1.24 sg prior to flow check. ECD stabilized at 1.20 sg. Increase of 0,49 m3 occurred in connection with start of mix pump.
706,00	23:00	00:00	1,00	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 695 m to 706 m with 4100 lpm, 158 bar, 100 rpm, 2 - 4 kNm, 0 - 4 t WOB. MWD ECD stable at 1.21 sg. Average on bottom ROP: 14 m/hr. Max gas: 0.27%.

Report Start Date: 29.01.2015

Days from Spud/Start (days): 10

Report Number: 12

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
749,00	00:00	03:30	3,50	PR1, DRL	DRIL L	ROT	PT		Drilled 12 1/4" section from 706 m to section TD at 749 m with 4100 lpm, 160 bar, 100 rpm, 2 - 5 kNm, 0 - 3 t WOB. ECD increased from 1.21 sg to 1.24 sg. Continued restricting ROP attempting to reduce ECD. Average on bottom ROP: 13 m/hr. Max gas: 0.22%.
749,00	03:30	06:00	2,50	PR1, DRL	CIRC	MUD	PT		Recorded TD survey showing 0.14 deg inclination. Circulated well clean with 4500 lpm, while reciprocating and rotating string at 100 rpm, 2 kNm. Reduced rotation to 30 rpm after 1 x bottoms up. Racked back 1 stand every 2 bottoms up. Circulated total of 6 bottoms up. Commenced mixing hi-visc pill to sweep hole.
749,00	06:00	07:00	1,00	PR1, DRL	CIRC	MUD	PT		Pumped 10 m3 havis pill with 4100-4500 lpm, 158-184 bar. Circulated bottoms up. Tagged bottom at 749 m. No fill. Flow checked well for 15 minutes. Well was static.
281,00	07:00	11:00	4,00	PR1, DRL	CIRC	MUD	PT		Pumped out of hole with 12 1/4" BHA from 749 m to 281 m with 616 lpm and 10 bar.
281,00	11:00	11:30	0,50	PR1, DRL	FLO W	CHE K	PT		Flow checked well inside 13 3/8" casing prior to pulling 12 1/4" BHA through BOP.
10,00	11:30	13:30	2,00	PR1, DRL	TRIP	BHA	PT		Pulled out of hole with 12 1/4" BHA from 281 m to 10 m. Laid down same. Performed prejob meeting prior to laying out and racking 12 1/4" BHA.
5,00	13:30	14:30	1,00	PR1, DRL	TRIP	BHA	PT		Dumped MWD data memory.
0,00	14:30	15:00	0,50	PR1, DRL	TRIP	BHA	PT		Continued laying out 12 1/4" BHA.
0,00	15:00	15:30	0,50	PR1, DRL	CLE AN	RIG	PT		Cleaned and cleared rig floor.
0,00	15:30	16:00	0,50	PR1, DRL	SAF ETY	MTG	PT		Performed debrief for laying out 12 1/4" BHA and prejob meeting prior to running in to retrieve wearbushing.
287,00	16:00	16:30	0,50	PR1, DRL	TRIP	DP	PT		Ran in hole with bullnose on 5" HWDP to 117 m. Made up Multi Purpose Tool [MPT] on 5" HWDP to 287 m.
310,00	16:30	17:00	0,50	PR1, DRL	CIRC	MUD	PT		Washed BOP and wellhead with 3000 lpm and 28 bar.
147,00	17:00	18:00	1,00	PR1, DRL	TRIP	DP	PT		Landed out in wearbushing. Sat down 12 MT. Pulled 35 MT overpull to release wearbushing. Pulled out of hole with MPT from 310 m to 147 m.
147,00	18:00	19:00	1,00	PR1, DRL	TRIP	BHA	PT		Laid down wearbushing. Broke connection on MPT with rig tongs. Laid down MPT.
0,00	19:00	19:30	0,50	PR1, DRL	TRIP	DP	PT		Pulled out of hole with 5" HWDP. Broke down bullnose and laid out.
0,00	19:30	20:00	0,50	PR1, CSG	SAF ETY	MTG	PT		Performed prejob meeting prior to rigging up casing handling equipment.
0,00	20:00	21:30	1,50	PR1, CSG	RUR D	CSG	PT		Meanwhile cleaned and cleared rig floor. Rigged up casing handling equipment.
0,00	21:30	22:00	0,50	PR1, CSG	SAF ETY	MTG	PT		Performed prejob meeting prior to running 7" casing.
49,00	22:00	22:30	0,50	PR1, CSG	RUN	CSG	PT		Picked up shoe joint. Inspected same. Made up intermediate joint and landing collar. Cleaned and tube-locked all shoetrack connections.
98,00	22:30	00:00	1,50	PR1, CSG	RUN	CSG	PT		Ran in hole with 7" casing from 49 m to 98 m. Average running speed was 3.3 joints/hr. Filled casing every 5th joint.

Report Start Date: 30.01.2015

Days from Spud/Start (days): 11

Report Number: 13

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
567,00	00:00	06:00	6,00	PR1, CSG	RUN	CSG	PT		Ran in hole with 7" casing from 98 m to 567 m. Average running speed was 6.4 joints/hr. Filled casing every 5th joint.
572,00	06:00	07:00	1,00	PR1, CSG	PUL D	EQUIP	PT		Changed handling equipment. Picked up and made up casing hanger. Moved casing tong and slips.
579,00	07:00	07:30	0,50	PR1, CSG	TRIP	DP	PT		Ran hanger through rotary. Took up/down weight 59/57 MT.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
743,00	07:30	08:30	1,00	PR1, CSG	TRIP	DP	PT		Ran in hole with casing hanger from 579 m to 742.6 m on 5" HWDP.
743,00	08:30	09:30	1,00	PR1, CSG	TRIP	DP	PT		Landed casing hanger in wellhead. Sat down 10 MT. Verified that space out was ok. Sat down weight and collapsed CLA.
743,00	09:30	10:30	1,00	PR1, CSG	PUL	EQUIP	PT		Picked up and installed cement head. Made up connection with rig tongs due to pup length on cement head. Connected cement hose and control lines.
743,00	10:30	13:00	2,50	PR1, CSG	CIRC	MUD	PT		Broke circulation. Started circulation bottoms up with 1230 lpm and 16 bar. Observed 4.8 % gas peak and slight gain in active. Flow checked well. Well was static. Continued circulating bottoms up with 500 and 5 bar until bottoms up. Circulated bottoms up with 1200 lpm and 15 bar.
743,00	13:00	14:30	1,50	PR1, CSG	PUM	CMT	PT		Pumped 6.0 m3 1.0 sg soap wash spacer. Released bottom wiper plug. Mixed and pumped 16.3 m3 1.92 sg cement. Released top wiper dart. Displaced with 1.15 sg WBM with 600 lpm until shear dart with cement pump. Increased pumprate to 1200 lpm. Reduced pumprate 2 m3 prior to theoretical bump. Plug didn't bump. Bled off pressure. No backflow observed.
743,00	14:30	15:30	1,00	PR1, CSG	PUL	EQUIP	PT		Broke cement head connection with rig tongs and laid out same.
743,00	15:30	16:30	1,00	PR1, CSG	PUL	EQUIP	PT		Picked up single and collapsed CLA. Sat down all weight and rotated 5 1/2" turns to the right. Sat seal assembly with 345 bar pressure down kill line for one minute. Bled off pressure.
743,00	16:30	18:00	1,50	PR1, CSG	TEST	BOP	PT		Pressure tested seal assembly to 20/345 bar for 5/10 minutes. Opened lower pipe ram [LPR] and picked up 51 MT overpull. Circulated with 2500 lpm and 20 bar for 3 minutes. Relanded running tool and sat down weight. Closed LPR. Verified seal assembly with 20/345 bar for 5/10 minutes.
100,00	18:00	19:00	1,00	PR1, CSG	TRIP	EQUIP	PT		Laid down single. Dropped sponge balls. Stroked out CLA and pulled above BOP. Circulated pipe clean with 3000 lpm and 27 bar. Laid down CLA and 5" pup.
0,00	19:00	20:00	1,00	PR1, CSG	TRIP	DP	PT		Pulled out of hole with casing running tool. Cleaned and flushed running tool. Laid down same.
0,00	20:00	21:00	1,00	PR1, CSG	CLE	RIG	PT		Cleaned and cleared rig floor. Lifted casing tong from drill floor. Changed BX elevator.
168,00	21:00	23:30	2,50	PR1, CSG	TRIP	EQUIP	PT		Picked up Multi Purpose Tool and changed configuration on tool. Made up wear bushing and ran in hole with same on 3 1/2" DP to 168 m. Landed wear bushing in wellhead.
168,00	23:30	00:00	0,50	PR1, CSG	TEST	BOP	PT		Pressure tested BOP to 20/150 bar for 5/10 minutes according to Odfjell procedures.

Report Start Date: 31.01.2015

Days from Spud/Start (days): 12

Report Number: 14

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
168,00	00:00	03:00	3,00	PR1, CSG	TEST	BOP	PT		Continued pressure testing BOP to 20/150 bar for 5/10 minutes according to Odfjell procedure.
0,00	03:00	04:30	1,50	PR1, CSG	TRIP	EQUIP	PT		Pulled out of hole with Multi Purpose Tool [MPT] on 5" HWDP. Built MPT back to standard configuration.
0,00	04:30	06:00	1,50	PR1, CSG	TEST	BOP	PT		Pressure tested 2x1BOP on Top Drive and kelly hose to 20/345 bar for 5/10 minutes.
0,00	06:00	08:00	2,00	PR1, CSG	TEST	BOP	PT		Continued pressure testing 2x1BOP on Top Drive and kelly hose to 20/345 bar for 5/10 minutes.
0,00	08:00	08:30	0,50	PR1, CSG	RUR	EQUIP	PT		Changed bails on top drive.
0,00	08:30	09:00	0,50	PR1, CSG	SAF	MTG	PT		Performed prejob meeting prior to making up 6" BHA.
10,00	09:00	09:30	0,50	PR1, CSG	TRIP	BHA	PT		Made up 6" BHA and ran in hole with same to 10 m.
10,00	09:30	10:30	1,00	PR1, CSG	TRIP	BHA	PT		Verified MWD tool.
145,00	10:30	14:00	3,50	PR1, CSG	TRIP	BHA	PT		Continued making up 6" BHA and ran in hole from 10 m to 145 m with same.
145,00	14:00	15:30	1,50	PR1, CSG	TEST	CSG	PT		Pressure tested casing to 20/150 bar for 5/10 minutes. Tested blind shear ram with acoustic. Function tested casing super shear ram from drillers cabin.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
275,00	15:30	17:30	2,00	PR1, CSG	TRIP	BHA	PT		Continued making up 6" BHA and ran in hole from 145 m to 275 m with same. Picked up 13 single 4 3/4" DC. Picked up 12 single 4" HWDP.
500,00	17:30	19:00	1,50	PR1, CSG	TRIP	DP	PT		Ran in hole with 6" BHA on 4" DP from 275 m to 500 m. Made up cross over. Filled pipe.
500,00	19:00	20:00	1,00	PR1, CSG	TRIP	DP	NPT	MDM W	Performed shallow test on MWD. No signal from pulser/turbine [BCPM]. Attempted several times with different flow from 800 lpm to 1300 lpm.
650,00	20:00	20:30	0,50	PR1, CSG	TRIP	DP	PT		Continued running in hole with 6" BHA on 4" DP from 500 m to 650 m. Changed handling equipment to 5" DP. Made up crossover and picked up one stand of 5" DP.
650,00	20:30	21:30	1,00	PR1, CSG	SAF ETY	DRIL	PT		Filled string. Performed choke drill. Took SCR with mud pump 1 and 2 down string and up choke line and down string up riser.
686,00	21:30	22:30	1,00	PR1, CSG	CIRC	MUD	PT		Established circulation with 800 lpm and 62 bar. Washed down from 650 m to 683 m. Tagged cement at 683 m. Ran booster pump with 1200 lpm. Pumped 4.3 m3 havis pill to attempt to start MWD tool. No go. Started drilling cement plug from 683 m to 686 m with 1100 lpm, 110 bar, 60 rpm and 2-5 MT WOB.
360,00	22:30	00:00	1,50	PR1, CSG	TRIP	DP	NPT	MDM W	Pumped 1.5 m3 slug and pulled out of hole to change out BCPM from 686 m to 360 m.

Report Start Date: 01.02.2015

Days from Spud/Start (days): 13

Report Number: 15

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
7,00	00:00	03:00	3,00	PR1, CSG	TRIP	BHA	NPT	MDM W	Pulled out of hole with 6" BHA from 360 m to 7 m. Racked same. Removed radio active sources.
6,00	03:00	05:30	2,50	PR1, CSG	TRIP	BHA	NPT	MDM W	Plugged into OnTrak and verified tool. Laid down stabilizer, short drill collar, non mag stop sub and SDN. Changed BCPM. Made up new BCPM. Plugged into OnTrak and verified same.
35,00	05:30	06:00	0,50	PR1, CSG	TRIP	BHA	NPT	MDM W	Picked up 4 3/4" DC and ran in hole. Installed crossover and performed shallow test. Good test.
275,00	06:00	08:00	2,00	PR1, CSG	TRIP	BHA	NPT	MDM W	Installed radioactive sources. Made up and ran in hole with 6" BHA from 35 m to 275 m
680,00	08:00	09:30	1,50	PR1, CSG	TRIP	BHA	NPT	MDM W	Ran in hole with 6" BHA from 275 m to 680 m. Installed crossover and filled pipe at 500 m. Changed handling equipment. Installed crossover and made up 5" DP.
698,00	09:30	14:30	5,00	PR1, CSG	DRIL	CMT	PT	L	Drilled cement plugs from 686 m to 698 m with 820-970 lpm, 54-70 bar, 2-3 kNm, 10-95 rpm, 1-11 MT and 2.7 m/hr ROP.
749,00	14:30	19:00	4,50	PR1, CSG	DRIL	CMT	PT	L	Drilled firm cement in shoetrack from 698 m to 742.6 m with 970 -1120 lpm, 70-85 bar, 2-3 kNm, 90-95 rpm, 3-8 MT and 17.8 m/hr ROP. Cleaned out 12 1/4" rathole in steps. Problems to get weight down on bit. Worked float collar and shoe area with stabilizers.
754,00	19:00	20:30	1,50	PR1, CSG	DRIL	ROT	PT	L	Drilled 5 m new formation from 749 m to 754 m with 1120 lpm, 100 bar, 2-3 kNm, 90 rpm, 5-6 MT and 5 m/hr ROP.
754,00	20:30	21:30	1,00	PR1, CSG	CIRC	MUD	PT		Circulated and conditioned mud. Even mud weight in/out was 1.15 sg.
736,00	21:30	22:30	1,00	PR1, CSG	TEST	LOT	PT		Performed FIT to 28.9 bar equal 1.54 sg EMW. Pumped 20 liters and bled back same.
736,00	22:30	23:30	1,00	PR2, DRL	CIRC	MUD	PT		Pumped up pressure data was 110.12 bar at 732.91 m equal 1.53 sg EMW. Downlinked to change data rate.
755,00	23:30	00:00	0,50	PR2, DRL	DRIL	ROT	PT	L	Drilled 6" hole from 754 m to 755 m with 1150 lpm, 95-102 bar, 2-3 kNm, 90 rpm, 3-6 MT and 1.33-1.41 sg ECD.

Report Start Date: 02.02.2015

Days from Spud/Start (days): 14

Report Number: 16

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
755,00	00:00	01:30	1,50	PR2, DRL	CIRC	MUD	NPT	SSC O	Observed that Baker logging depth was incorrect. Set depth. Pulled into shoe and relogged down to 755 m.
760,00	01:30	02:00	0,50	PR2, DRL	DRIL	ROT	PT	L	Drilled 6" hole from 755 m to 760 m with 1150 lpm, 101-114 bar, 2-3 kNm, 90 rpm, 3-6 MT and 1.36-1.39 sg ECD. Observed sand on gamma ray.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
760,00	02:00	02:30	0,50	PR2, DRL	CIRC	MUD	PT		Circulated up sample with 1150 lpm and 92 bar. Verified sand in sample.
780,00	02:30	06:00	3,50	PR2, DRL	DRIL L	ROT	PT		Drilled 6" hole from 760m to 780 m with 1150 lpm, 93-115 bar, 2 -3 kNm, 90 rpm, 2-11 MT and 1.34-1.45 sg ECD.
780,00	06:00	06:30	0,50	PR2, DRL	FLO W	CHE K	PT		Observed gain in active after 200 liter inflow. Stopped pumps after 400 liters gain in active. Performed flow check. Well was static.
780,00	06:30	08:00	1,50	PR2, DRL	CIRC	MUD	PT		Circulated bottoms up to clean hole.
739,00	08:00	09:00	1,00	PR2, DRL	TRIP	DP	PT		Pumped and pulled out of open hole and into shoe to ensure no obstacle attached to 5 7/8" stabilizer. Circulated with 1300 lpm, 108 bar and 120 rpm.
778,00	09:00	09:30	0,50	PR2, DRL	TRIP	DP	PT		Ran in hole with 6" BHA from 739 m to 778 m.
803,00	09:30	13:30	4,00	PR2, DRL	DRIL L	ROT	PT		Drilled 6" hole from 780 m to 803 m with 890-930 lpm, 85-106 bar, 2-3 kNm, 90 rpm, 3-9 MT and 1.31-1.50 sg ECD.
803,00	13:30	14:00	0,50	PR2, DRL	REA M	OH	PT		Reamed single and circulated cuttings up to BOP due to high ECD.
825,00	14:00	17:30	3,50	PR2, DRL	DRIL L	ROT	PT		Drilled 6" hole from 803 m to 825 m with 930 lpm, 70-90 bar, 2-3 kNm, 90 rpm, 2-7 MT and 1.32-1.44 sg ECD. Experienced drilling break at 808 m. Circulated bottoms up. Experienced drilling break at 812 m. Circulated bottoms up. Gas peak 0.54 % at 808 m.
825,00	17:30	18:00	0,50	PR2, DRL	FLO W	CHE K	PT		Performed flow check. Well was static.
678,00	18:00	18:30	0,50	PR2, DRL	TRIP	DP	PT		Pulled out of hole with 6" BHA from 825 m to 678 m to insert more 4" DP. Changed to 4" handling equipment. Hole in good condition.
822,00	18:30	19:00	0,50	PR2, DRL	TRIP	DP	PT		Ran in hole with 6" BHA on 4" DP from 678 m to 822 m.
822,00	19:00	19:30	0,50	PR2, DRL	RUR D	EQUIP	PT		Changed to 5" handling equipment. Performed SCR with mud pump #1 and #2.
853,00	19:30	00:00	4,50	PR2, DRL	DRIL L	ROT	PT		Drilled 6" hole from 825 m to 853 m with 930 lpm, 72-109 bar, 2-3 kNm, 90 rpm, 1-9 MT and 1.36-1.51 sg ECD. Reamed 5-10 m at 831m, 833 m, 834 m, 836 m and 840 m due to high ECD.

Report Start Date: 03.02.2015

Days from Spud/Start (days): 15

Report Number: 17

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
902,00	00:00	06:00	6,00	PR2, DRL	DRIL L	ROT	PT		Drilled 6" hole from 853 m to 902 m with 930 lpm, 72-109 bar, 1-3 kNm, 90 rpm, 2-5 MT and 1.41-1.54 sg ECD. Reamed single at 895 m due to high ECD.
940,00	06:00	10:30	4,50	PR2, DRL	DRIL L	ROT	PT		Drilled 6" hole from 902 m to 940 m with 930 lpm, 78-90 bar, 1-2 kNm, 90 rpm, 2-7 MT and 1.39-1.50 sg ECD. Reamed single at 936 m prior to connection. Performed SCR at 936 m. Observed gaining trend in active.
940,00	10:30	11:00	0,50	PR2, DRL	FLO W	CHE K	PT		Stopped pumps and performed flow check after 1.3 m3 gain in active. Well was static.
946,00	11:00	11:30	0,50	PR2, DRL	DRIL L	ROT	PT		Drilled 6" hole from 940 m to 946 m with 930 lpm, 75 bar, 1-2 kNm, 90 rpm, 2-7 MT and 1.37-1.39 sg ECD. Observed gaining trend in active.
946,00	11:30	12:00	0,50	PR2, DRL	FLO W	CHE K	PT		Confirmed no change in mud parameters from hole.
946,00	11:30	12:00	0,50	PR2, DRL	FLO W	CHE K	PT		Stopped pumps and performed flow check after 1.4 m3 gain in active. Well was static.
953,00	12:00	13:00	1,00	PR2, DRL	DRIL L	ROT	PT		Drilled 6" hole from 946 m to 953 m with 930 lpm, 82 bar, 1-3 kNm, 90 rpm, 2-3 MT and 1.37-1.39 sg ECD. Observed gaining trend in active.
953,00	13:00	13:30	0,50	PR2, DRL	FLO W	CHE K	PT		Stopped pumps and performed flow check after 1.3 m3 gain in active. Well was static.
968,00	13:30	14:30	1,00	PR2, DRL	DRIL L	ROT	PT		Drilled 6" hole from 953 m to 968 m with 930 lpm, 80 bar, 1-3 kNm, 90 rpm, 1-3 MT and 1.37-1.38 sg ECD.
968,00	14:30	15:30	1,00	PR2, DRL	CIRC	MUD	PT		Circulated bottoms up prior to tripping with 930 lpm and 78 bar.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
968,00	15:30	16:30	1,00	PR2, DRL	TRIP	DP	PT		Trip out of hole with 5" DP. Changed to 4" handling equipment. Ran in hole with 4" DP. Changed to 5" handling equipment. Hole in good condition.
1 005,00	16:30	00:00	7,50	PR2, DRL	DRIL L	ROT	PT		Drilled 6" hole from 968 m to 1005 m with 930 lpm, 81-125 bar, 1-3 kNm, 90 rpm, 5-8 MT and 1.37-1.50 sg ECD. Pulled off bottom and decreased pumps due to pressure spikes at 992 m, 993 m and 994 m. Reamed single at 995 m due to high pressure and ECD. Formation change at 989 m caused high ECD.

Report Start Date: 04.02.2015

Days from Spud/Start (days): 16

Report Number: 18

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
1 025,00	00:00	05:00	5,00	PR2, DRL	DRIL L	ROT	PT		Drilled 6" hole from 1005 m to 1025 m with 930 lpm, 80 bar, 1-3 kNm, 90 rpm, 5-8 MT and 1.37-1.56 sg ECD. Pulled off bottom due to high ECD at 1009 m, 1012 m and 1019 m.
1 025,00	05:00	06:00	1,00	PR2, DRL	CIRC	MUD	PT		Circulated one bottoms up with 1200 lpm, 123-128 bar, 120 rpm and 1.38-1.50 sg ECD. Decreased flowrate due to high ECD. Circulated 1.5 bottoms up with 930 lpm, 120 rpm, 87-88 bar and 1.33-1.41 sg. Increased flowrate and circulated with 1120 lpm, 110 bar, 120 rpm and 1.38-1.41.
1 025,00	06:00	07:00	1,00	PR2, DRL	CIRC	MUD	PT		Circulated hole clean with 1100-1230 lpm, 110-126 bar, 120 rpm and 1.35-1.44 sg ECD.
1 025,00	07:00	07:30	0,50	PR2, DRL	FLO W	CHE K	PT		Flow checked well. Well was static. Ran in hole and tagged bottom. No fill.
737,00	07:30	09:00	1,50	PR2, DRL	TRIP	DP	PT		Pulled out of hole with 6" BHA wet from 1025 m to 967 m. Changed to 4" handling equipment. Continued pulling out with 6" BHA wet from 967 m to 737 m.
275,00	09:00	10:00	1,00	PR2, DRL	TRIP	DP	PT		Flow checked well inside 7" shoe. Well was static. Pumped slug. Pulled out of hole with 6" BHA from 737 m to 445 m. Flow checked well prior to pulling BHA through BOP. Well was static. Continued pulling out of hole with 6" BHA from 445 m to 275 m.
0,00	10:00	13:30	3,50	PR2, DRL	TRIP	BHA	PT		Pulled out of hole racked back 6" BHA. Removed radioactive sources. Verified MWD tool. Laid down logging tools and bit. Bit had 1 plugged nozzle and waterways partly obstructed by hard/burned clay.
0,00	13:30	14:00	0,50	PR2, DRL	CLE AN	RIG	PT		Cleaned and cleared rig floor. Meanwhile picked up BOP test tool and broke down tool.
0,00	14:00	14:30	0,50	PR2, EVL	SAF ETY	MTG	PT		Performed prejob meeting prior to rigging up wireline equipment.
0,00	14:30	15:00	0,50	PR2, EVL	RUR D	ELE C	PT		Rigged up wireline equipment.
170,00	15:00	18:00	3,00	PR2, EVL	RUR D	ELE C	PT		Made up wireline string #1. Installed radioactive sources and ran in hole to below BOP. Activated compensator.
170,00	18:00	23:30	5,50	PR2, EVL	LOG	OH	PT		Performed wireline run #1 [PPC-MSIP-PPC-HRLA-PEX-GR].
25,00	23:30	00:00	0,50	PR2, EVL	RUR D	ELE C	PT		Deactivated compensator. Pulled out of hole with wireline string #1. Hole in good condition. Removed radioactive sources.

Report Start Date: 05.02.2015

Days from Spud/Start (days): 17

Report Number: 19

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
0,00	00:00	01:30	1,50	PR2, EVL	RUR D	ELE C	PT		Laid out wireline string #1 A [PPC-MSIP-PPC-HRLA-PEX-GR].
100,00	01:30	03:00	1,50	PR2, EVL	RUR D	ELE C	PT		Made up wireline string #1 B [MDT].
822,00	03:00	06:00	3,00	PR2, EVL	LOG	OH	PT		Ran in hole with wireline string #1 B. Activated compensator below BOP. Logged according to plan. Max pore pressure 1.049 sg EMW at 803 m.
976,00	06:00	13:00	7,00	PR2, EVL	LOG	OH	PT		Continued logging according to plan with wireline string #1 B [MDT].
0,00	13:00	15:00	2,00	PR2, EVL	RUR D	ELE C	PT		Pulled out of hole with wireline string #1 B. Deactivated compensator. Broke out and laid down wireline string #1 B.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
0,00	15:00	15:30	0,50	PR2, EVL	RUR D	ELE C	PT		Rigged down wireline equipment. Meanwhile installed BX and rotator.
0,00	15:30	16:00	0,50	PR2, EVL	CLE AN	RIG	PT		Cleaned and cleared rig floor.
0,00	16:00	16:30	0,50	PLUG, AB	SAF ETY	MTG	PT		Performed prejob meeting prior to running in with 3 1/2" cement stinger.
727,00	16:30	18:30	2,00	PLUG, AB	TRIP	DP	PT		Made up 3 1/2" mule shoe and ran in hole with 3 1/2" cement stinger to 380 m. Changed to 4" handling equipment and ran in hole with cement stinger on 4" DP from 380 m to 727 m.
727,00	18:30	19:00	0,50	PLUG, AB	CIRC	MUD	PT		Changed to 5" handling equipment. Installed crossover in string. Closed upper annular and circulated through choke one bottoms up inside 7" shoe. Observed gas peak at 1.65 %.
1 016,00	19:00	20:00	1,00	PLUG, AB	TRIP	DP	PT		Changed to 4" handling equipment. Continued running in hole from 727 m to 1016 m. Changed to 5" handling equipment.
1 016,00	20:00	21:00	1,00	PLUG, AB	CIRC	MUD	PT		Closed upper annular and circulated bottoms up through choke. Observed gas peak at 3.05 %. Continued circulating bottoms up until gas dropped to 0 %. Stopped the mud pumps and opened upper annular. Meanwhile performed prejob meeting prior to setting P&A plug #1A and #1B.
1 023,00	21:00	22:30	1,50	PLUG, AB	CIRC	MUD	PT		Tagged bottom at 1023 m with 5 MT and 500 lpm. Circulated with 500 lpm, 22 bar and 80 rpm. Increased flow rate to 1230 lpm, 55 bar and 80 rpm to circulate one bottoms up with full flow rate prior to cement job. Observed pressure peak of 88 bar. Reduced flow rate. Turned off pumps and rotation. 32 bar trapped pressure. Pulled out of hole 10 m. Pressure bled off. Increased flow rate in steps to 1300 lpm. Observed gas peak at 1.76 %. Circulated 2xbottoms up with 1300 lpm, 56-71 bar and 80 rpm. Significant amount of soft formation over shaker.
1 023,00	22:30	23:30	1,00	PLUG, AB	RUR D	EQUIP	PT		Performed prejob meeting for oncoming crew. Rigged up cement swivel and connected cement hose. Tested surface lines to 200 bar for 5 minutes. Ok.
1 023,00	23:30	00:00	0,50	PLUG, AB	PUM P	CMT	PT		Pumped 3.0 m3 1.0 sg soap wash spacer with 900 lpm, 34 bar and 33 rpm. Mixed and pumped 3.4 1.90 sg cement while rotating string with 20 rpm. Displaced cement with 800 liters 1.0 sg drill water and 2.4 m3 1.15 sg WBM. Checked for backflow. Ok.

Report Start Date: 06.02.2015

Days from Spud/Start (days): 18

Report Number: 20

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
884,00	00:00	01:00	1,00	PLUG, AB	TRIP	DP	PT		Broke out cement swivel and dismantled hose and laid down same. Pulled slowly out of cement from 1023 m to 884 m. Dry pipe all the way.
884,00	01:00	02:30	1,50	PLUG, AB	CIRC	MUD	PT		Installed sponge balls and circulated hole clean. Dumped 9.0 m3 cement contaminated mud (increase in pH).
884,00	02:30	03:00	0,50	PLUG, AB	PUM P	CMT	PT		Pumped 3.0 m3 1.0 sg soap wash spacer with 900 lpm, 34 bar and 33 rpm. Mixed and pumped 3.4 m3 1.90 sg cement while rotating string with 20 rpm. Displaced cement with 800 liters 1.0 sg drill water and 1.7 m3 1.15 sg WBM. Checked for backflow. Ok.
737,00	03:00	04:00	1,00	PLUG, AB	TRIP	DP	PT		Broke out cement swivel and dismantled hose and laid down same. Pulled slowly out of cement from 884 m to 737 m. Dry pipe all the way.
737,00	04:00	05:00	1,00	PLUG, AB	CIRC	MUD	PT		Installed sponge balls and circulated hole clean. Dumped 10.7 m3 cement contaminated mud (increase in pH).
653,00	05:00	06:00	1,00	PLUG, AB	WAIT ON	CMT	PT		Waited on cement.
447,00	06:00	10:30	4,50	PLUG, AB	WAIT ON	CMT	PT		Meanwhile broke down and laid out 7 joints of 4" DP. Waited on cement.
									Meanwhile broke down and laid out 23 joints of 4" DP. Broke down and laid out 12 joints of 4" HWDP. Broke down and laid out 10 joints of 4 3/4" DC, jar and accelerator. Changed elevator.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
447,00	10:30	12:00	1,50	PLUG, AB	WAIT ON	CMT	PT		Waited on cement. Meanwhile performed general inspection and maintenance on top drive and sheave cluster.
725,00	12:00	13:30	1,50	PLUG, AB	WAIT ON	CMT	PT		Waited on cement. Meanwhile ran in hole with cement stinger from 447 m to 725 m.
725,00	13:30	15:00	1,50	PLUG, AB	WAIT ON	CMT	PT		Waited on cement. Meanwhile continued performing general inspection and maintenance on top drive and sheave cluster.
738,00	15:00	15:30	0,50	PLUG, AB	CIRC	MUD	PT		Broke circulation with 500 lpm and 23 bar. Tagged top of cement with 5 MT at 738 m.
738,00	15:30	16:00	0,50	PLUG, AB	CIRC	MUD	PT		Circulated bottoms up with 1270 lpm and 49 bar. Meanwhile performed prejob meeting prior to setting cement plug #2.
736,00	16:00	16:30	0,50	PLUG, AB	RUR D	EQUIP	PT		Racked back one stand. Installed 5' pup and cement swivel. Connected cement hose and low torque valve.
736,00	16:30	17:00	0,50	PLUG, AB	PUM P	CMT	PT		Pumped 3.0 m3 1.0 sg soap wash spacer. Mixed and pumped 4.2 m3 1.92 sg cement. Displaced cement with 820 liters drill water and 750 liters 1.15 sg WBM.
515,00	17:00	18:00	1,00	PLUG, AB	TRIP	DP	PT		Disconnected cement hose and checked for back flow. Ok. Laid down cement swivel and pup. Pulled slowly out of cement from 736 m to 515 m.
495,00	18:00	19:30	1,50	PLUG, AB	CIRC	MUD	PT		Installed sponge balls and circulated hole clean. Dumped 10.2 m3 cement contaminated mud (increase in pH). Pulled out of hole to 495 m. Broke out crossover.
495,00	19:30	23:30	4,00	PLUG, AB	WAIT ON	CMT	PT		Waited on cement. Meanwhile broke down and laid out 51 joints of 4" DP.
495,00	23:30	00:00	0,50	PLUG, AB	WAIT ON	CMT	PT		Waited on cement. Meanwhile picked up 6 5/8" no go stab assembly and changed out space out pup with single. Rigged up casing tong and running equipment.

Report Start Date: 07.02.2015

Days from Spud/Start (days): 19

Report Number: 21

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
496,00	00:00	03:30	3,50	PLUG, AB	WAIT ON	CMT	PT		Waited on cement. Meanwhile performed general maintenance. Cleaned and cleared rig floor. Calibrated compensator.
518,00	03:30	04:00	0,50	PLUG, AB	CIRC	MUD	PT		Washed down with 500 lpm and 8 bar. Tagged cement plug #2 at 518 m with 5 MT.
496,00	04:00	04:30	0,50	PLUG, AB	RUR D	EQUIP	PT		Racked back one stand and picked up pup. Made up pup and installed side entry sub and kelly cock on string. Meanwhile performed line test to 135 bar. Ok.
496,00	04:30	05:00	0,50	PLUG, AB	TEST	PLU G	PT		Installed cement hose. Positioned string. Activated compensator and closed middle pipe ram. Pressure tested with cement unit to 107 bar/10 minutes with 1.15 sg WBM. Pumped 48 liters. Good test. Bled back 48 liters.
496,00	05:00	05:30	0,50	PLUG, AB	RUR D	EQUIP	PT		Broke down and laid out pup, side entry sub and kelly cock. Removed cement hose. Dropped 2" drift.
424,00	05:30	06:00	0,50	PLUG, AB	TRIP	DP	PT		Pulled out of hole with 3 1/2" cement stinger from 496 m to 424 m on 4" DP.
0,00	06:00	07:00	1,00	PLUG, AB	TRIP	DP	PT		Continued pulling out of hole with 3 1/2" cement stinger from 424 m to surface. Laid out mule shoe. Recovered 2" drift.
0,00	07:00	07:30	0,50	PLUG, AB	RUR D	EQUIP	PT		Changed handling equipment. Installed and dressed Multi Purpose Tool [MPT] for retrieving wear bushing.
145,00	07:30	08:30	1,00	PLUG, AB	TRIP	DP	PT		Ran in hole with MPT with jetting sub on 5" HWDP to 145 m.
168,00	08:30	09:00	0,50	PLUG, AB	PULL	EQUIP	PT		Activated compensator. Washed down with 2300 lpm and 19 bar. Sat down 7 MT in wear bushing. Stopped pumping. Pulled wear bushing with 40 MT overpull. Dropped 2" drift.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
0,00	09:00	09:30	0,50	PLUG, AB	TRIP	DP	PT		Pulled out of hole with wear bushing attached to MPT on 5" HWDP. Recovered 2" drift.
0,00	09:30	10:30	1,00	PLUG, AB	RUR	EQIP	PT	D	Dril quip removed wear bushing and redressed MPT for pulling seal assembly. Difficult to remove wear bushing due to tool packed with debris.
0,00	10:30	00:00	13,50	PLUG, AB	WAIT ON	WTH R	WO W	WD	Waiting on upcoming weather for pulling seal assembly.
Time - Wnd [kn] - Wv max - Wv sign - Heave - Pitch - Roll									
12:00	30	8,3	4,6	2,0	2,0	2,2			
14:00	31	8,6	5,0	2,5	2,2	2,4			
16:00	32	9,0	5,2	3,0	2,5	2,8			
18:00	36	9,9	6,0	3,0	3,3	3,4			
20:00	42	10,1	6,3	4,2	3,6	3,5			
22:00	36	10,8	6,4	4,9	2,4	4,8			
00:00	29	11,4	6,4	4,5	3,0	3,8			
Meanwhile performed general maintenance and housekeeping. Prepared and tested casing slips frame.									

Report Start Date: 08.02.2015

Days from Spud/Start (days): 20

Report Number: 22

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
0,00	00:00	01:30	1,50	PLUG, AB	WAIT ON	WTH R	WO W	WD	Waiting on upcoming weather for pulling seal assembly.
Time - Wnd [kn] - Wv max - Wv sign - Heave - Pitch - Roll									
01:00	32	11,4	6,4	4,1	2,9	3,4			
Meanwhile performed general maintenance and housekeeping. Prepared and tested casing slips frame.									
169,00	01:30	04:00	2,50	PLUG, AB	TRIP	BHA	PT		Ran in hole with 6 stands of 3 1/2" DP. Made up Multi purpose tool [MPT] with jetting sub to string. Ran in hole on 5" HWDP. Washed down with 1000 lpm and 5 bar from top of BOP. Landed MPT in seal assembly and sat down 10 MT. Closed lower annular preventer. Pulled seal assembly free with 57 MT overpull. No pressure on choke. Flow checked well 15 minutes. Well was static.
169,00	04:00	04:30	0,50	PLUG, AB	CIRC	MUD	PT		Cross circulated down kill line and up choke line with sea water with 1000 lpm and 14 bar. Pumped 14 m3 sea water. Observed gas peak at 1.55 %. Circulated until gas was 0.4 %. Flow checked well 15 minutes. Well was static.
169,00	04:30	05:00	0,50	PLUG, AB	FLO	CHE	PT		Opened lower annular preventer and u-tubed water from kill and choke lines. Flow checked well for 30 minutes.
167,00	05:00	06:00	1,00	PLUG, AB	CIRC	MUD	PT		Circulated riser volume with 1000 lpm and 5 bar. Observed gas increasing after pumping for two minutes. Maximum gas peak was 5.55%. Observed string hanging up on a rig heave and string weight was set down during circulation.
167,00	06:00	06:30	0,50	PLUG, AB	CIRC	MUD	PT		Continued circulating riser volume with 1000 lpm and 5 bar.
157,00	06:30	09:00	2,50	PLUG, AB	TRIP	DP	NPT	MDO T	Pulled out of hole from 167 m to 157 m. No go. Seal assembly stuck in upper annular preventer. Sat down 20 MT on string. No go. Pulled 25 MT overpull. Verified rig in center. Closed lower annular preventer to center 3 1/2" DP below. Sat down 20 MT. No go. Sat down 12 MT and planned for moving rig around well center. Sudden heave made seal assembly free at 08:45.
0,00	09:00	10:00	1,00	PLUG, AB	TRIP	BHA	PT		Pulled above BOP while rotating with 5 rpm. No drag observed. Pulled out of hole with seal assembly from 150 m to surface.
173,00	10:00	10:30	0,50	PLUG, AB	RUR	EQIP	PT	D	Released seal assembly from Multi Purpose Tool [MPT]. Observed upper lock ring missing and visual damage on seal assembly. Laid out seal assembly and MPT on deck.
0,00	10:30	11:00	0,50	PLUG, AB	TRIP	DP	PT		Pulled out of hole with 3 1/2" DP from 173 m to surface.
150,00	11:00	12:00	1,00	PLUG, AB	TRIP	DP	NPT	MDO T	Picked up 5" single and jet sub. Ran in hole on 5" HWDP to 150 m.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
168,00	12:00	13:00	1,00	PLUG, AB	CIRC	MUD	NPT	MDO T	Activated compensator. Washed BOP and wellhead area working string up and down with 3200 lpm, 60 bar and 40 rpm. Observed max gas at 0.39 %.
168,00	13:00	14:00	1,00	PLUG, AB	TRIP	DP	NPT	MDO T	Pulled above BOP. Closed and opened casing shear ram. Closed blind shear ram and tagged with bullnose. Marked pipe. Opened blind shear ram. Ran in hole and tagged 9 5/8"x7" casing hanger crossover 8.1 m below blind shear ram mark. Spaced out and function tested BOP. Ok.
168,00	14:00	14:30	0,50	PLUG, AB	CIRC	MUD	NPT	MDO T	Circulated 1,5 bottoms up with 3200 lpm, 60 bar and 40 rpm. Observed max gas at 0,21 %.
0,00	14:30	15:00	0,50	PLUG, AB	TRIP	DP	NPT	MDO T	Pulled out of hole with jet sub from 168 m to surface. Laid down same.
0,00	15:00	15:30	0,50	PLUG, AB	RUR D	EQIP	NPT	MDO T	Picked up mill and flush tool on MPT. Made up tool to one single 5" DP.
152,00	15:30	16:30	1,00	PLUG, AB	TRIP	DP	NPT	MDO T	Ran in hole with mill and flush tool to 152 m.
168,00	16:30	17:00	0,50	PLUG, AB	CIRC	MUD	NPT	MDO T	Staged up pumps and washed down from 152 m to 168 m with 2500 lpm, 20 bar and 4 rpm. Sat down 1-6 MT on 9 5/8" hanger. Stalled out due to heave. Increased to 10 rpm.
0,00	17:00	18:00	1,00	PLUG, AB	TRIP	DP	NPT	MDO T	Pulled out of hole with mill and flush tool from 168 m to surface. Laid out same. Verified that tool had not been all the way into the seal assembly groove by checking wear on nylon screws on inside mill and flush tool. No wear on nylon indicators.
0,00	18:00	18:30	0,50	PLUG, AB	CLE AN	RIG	NPT	MDO T	Cleaned and cleared rig floor.
312,00	18:30	21:00	2,50	PLUG, AB	TRIP	DP	NPT	MDO T	Changed to 3 1/2" handling equipment. Ran in hole with 5 stands 3 1/2" DP to 145 m. Installed crossover and made up mill and flush tool to string using rig tongs. Ran in hole with mill and flush tool on 5" HWDP to 312 m/167 m [Mill].
315,00	21:00	21:30	0,50	PLUG, AB	CIRC	MUD	NPT	MDO T	Opened compensator and sat down 3 MT. No rotation and flow. Pulled up and established 1000 lpm flow and 10 rpm rotation. Sat down 2-6 MT and milled for 10 minutes with 1000 lpm, 5 bar and 10 rpm.
0,00	21:30	23:00	1,50	PLUG, AB	TRIP	DP	NPT	MDO T	Pulled out of hole with mill and flush tool from 315 m to 167 m on 5" HWDP. Broke connection on MPT with rig tongs and laid down mill and flush tool. Verified nylon screws all worn down indicating mill had been all the way down in the seal assembly groove. Continued pulling out of hole with 3 1/2" DP to surface.
0,00	23:00	23:30	0,50	PLUG, AB	CLE AN	RIG	PT		Cleaned and cleared rig floor. Performed debrief on mill and flush job. Performed prejob meeting prior to making up 7" cutting assembly.
19,00	23:30	00:00	0,50	PLUG, AB	TRIP	BHA	PT		Picked up and made up 7" cutting assembly. Verified knives working. Recorded parameters: 416 lpm/16 bar and 820 lpm/20 bar.

Report Start Date: 09.02.2015

Days from Spud/Start (days): 21

Report Number: 23

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
268,00	00:00	01:30	1,50	PLUG, AB	TRIP	DP	PT		Ran in hole with 7" cutting assembly from 19 m to 116 m on 3 1/2" DP. Picked up and made up no go assembly. Continued running in hole with 7" cutting assembly from 116 m to 268 m on 5" HWDP.
286,00	01:30	02:30	1,00	PLUG, AB	CUT	CSG	PT		Filled string. Recorded up/down weight 45/45 MT. Ran in and landed No Go in 9 5/8" x 7" casing hanger crossover with 10 MT. Closed upper pipe ram and performed cross circulation through kill and choke line to verify line up. Pumped with 800 lpm and 59 bar. After 2 minutes observed pressure dropping to 33 bar. Casing cut at 02:17. Observed losses. Continued to pump with 800 lpm and 30-33 bar to ensure casing was cut.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
286,00	02:30	06:00	3,50	PLUG, AB	CIRC	MUD	NPT	NDHI	Circulated with 800 lpm and 30 bar. Lost 7.5 m3 mud from casing was cut to 02:45. Observed 1.52 % gas in returns. Tried to establish loss free rate with 350 lpm/12 bar - 300 lpm/10 bar - 250 lpm/9 bar - 125lpm/7.5 bar and 105 lpm/6.8 bar. Loss rate with 105 lpm 1.6 m3/hr. Gas steady from 0.85-1.05 %. Total loss inn well from 02:17 to 06:00 was 13.2 m3.
286,00	06:00	07:30	1,50	PLUG, AB	CIRC	MUD	NPT	NDHI	Continued circulating with 105 lpm and 6 bar. No loss free rate obtained. Max gas was 1.17 % after poor boy degasser.
286,00	07:30	09:00	1,50	PLUG, AB	FLO W	CHE K	NPT	NDHI	Stopped circulation. Closed choke and monitored for pressure. Monitored riser on trip tank.
286,00	09:00	11:00	2,00	PLUG, AB	CIRC	CFL D	NPT	NDHI	Cross circulated down choke line and up kill line with sea water with 100 lpm and 2 bar. Return when starting pumping. Increased flow in stages to loss free rate at 450 lpm and 3.5 bar.
286,00	11:00	12:00	1,00	PLUG, AB	CIRC	MUD	NPT	NDHI	Displaced kill and choke line to 1,15 sg WBM. Spotted 5 m3 350 kg/m3 LCM pill in 7" cut with 300 lpm and 12-13 bar. Closed IBOP and squeezed 1m3 down choke line with 90 lpm and 4.5 bar. Standpipe pressure increased to 5 bar and kill line pressure to 3.0 bar. Max gas observed was 1.51 % after poor boy degasser.
286,00	12:00	13:00	1,00	PLUG, AB	FLO W	CHE K	NPT	NDHI	Static pressure on choke line was 3.5 bar. Monitored pressure on kill and choke line manometer. Pressure dropped to 1.5 bar.
286,00	13:00	13:30	0,50	PLUG, AB	FLO W	CHE K	NPT	NDHI	Bled off pressure and flow checked through open choke. Ok.
286,00	13:30	15:30	2,00	PLUG, AB	CIRC	MUD	NPT	NDHI	Circulated down string with returns up choke and kill line. Increased flow rate in stages to 300 lpm and 11-12 bar. Observed losses. Reduced flow rate to 240 lpm and 9 bar. Stabilized for some time, but then started loosing. Maximum gas observed after poor boy degasser was 1.66 %. Gas decreased to 0.7 %.
286,00	15:30	17:30	2,00	PLUG, AB	CIRC	MUD	NPT	NDHI	Attempted to spot 2 m3 350 kg/m3 LCM pill. Clogged mud pump strainer. Changed pump and spotted 2 m3 LCM in 7" cut. Closed choke and bullheaded remaining 2 m3 LCM with 100 lpm and 12 bar down drill string. Observed 5 bar on kill and choke manometers. Reduced to 4 bar when not pumping.
286,00	17:30	19:00	1,50	PLUG, AB	FLO W	CHE K	NPT	NDHI	Monitored pressure on kill and choke manometers. Pressure dropped to 1.0 bar. Total losses in well from start cutting was 24.9 m3.
286,00	19:00	19:30	0,50	PLUG, AB	CIRC	MUD	PT		Displaced kill and choke line to sea water.
286,00	19:30	20:00	0,50	PLUG, AB	FLO W	CHE K	PT		Flow checked well. Well was static.
286,00	20:00	21:00	1,00	PLUG, AB	CIRC	MUD	PT		Displaced kill and choke line to 1.15 sg WBM. Returns when starting pumping. Line up on trip tank and fill same.
286,00	21:00	21:30	0,50	PLUG, AB	FLO W	CHE K	PT		Opened upper pipe ram and flow checked well on trip tank for 30 minutes. Well was static.
0,00	21:30	23:30	2,00	PLUG, AB	TRIP	BHA	PT		Dropped ball to open circ sub. Pulled out of hole wet with 7" cutting assembly slowly below BOP on 5" HWDP. Broke out and laid out No go. Changed handling equipment and pulled out of hole wet with cutting BHA on 3 1/2" DP. Pulled out of hole with normal speed. Broke down and laid out cutting assembly.
0,00	23:30	00:00	0,50	PLUG, AB	CLE AN	RIG	PT		Cleaned and cleared rig floor.

Report Start Date: 10.02.2015

Days from Spud/Start (days): 22

Report Number: 24

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
171,00	00:00	02:30	2,50	PLUG, AB	TRIP	BHA	PT		Made up 7" spear assembly and ran in hole on 8 1/4" DC, jar and accelerator to 86 m. Continued running in hole with 7" spear assembly from 86 m to 171 m on 5" HWDP.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
286,00	02:30	03:00	0,50	PLUG, AB	RUR D	EQIP	PT		Activated compensator. Latched spear in 7" casing. Closed lower annular preventer with reduced pressure. Pulled 7" casing free with no overpull. Checked for pressure under lower annular preventer. No pressure.
286,00	03:00	04:00	1,00	PLUG, AB	CIRC	MUD	PT		Opened auto choke and circulated 7 m3 1.15 sg WBM down string with return up choke line. Circulated with 110 lpm and 5 bar. No losses observed. Max gas was 0.9 % after poor boy degasser.
286,00	04:00	04:30	0,50	PLUG, AB	FLO W	CHE K	PT		Opened lower annular preventer and flow checked well for 15 minutes. Well was static.
194,00	04:30	05:00	0,50	PLUG, AB	TRIP	DP	PT		Pulled out of hole with 7" casing on 5" HWDP from 286 m to 194 m.
118,00	05:00	06:00	1,00	PLUG, AB	TRIP	BHA	PT		Pulled out of hole with 7" casing BHA from 194 m to 118 m. 9 5/8"x7" casing hanger in rotary.
118,00	06:00	07:00	1,00	PLUG, AB	RUR D	EQIP	PT		Sat casing in slips. Released spear. Installed casing tong. Reengaged spear. Lifted hanger to correct working height. Released and laid down spear.
118,00	07:00	07:30	0,50	PLUG, AB	SAF ETY	MTG	PT		Performed handover and prejob meeting prior to pulling 7" casing.
118,00	07:30	08:00	0,50	PLUG, AB	RUR D	EQIP	PT		Laid out hanger. Changed handling equipment. Laid out pups.
0,00	08:00	09:00	1,00	PLUG, AB	LAY DWN	CSG	PT		Pulled out of hole with 7" casing. 9 casing joints and 5.84 m cut joint. Cut depth from casing tally was 285.28 m.
0,00	09:00	10:00	1,00	PLUG, AB	RUR D	CSG	PT		Rigged down casing pulling equipment. Cleaned and cleared rig floor.
0,00	10:00	10:30	0,50	PLUG, AB	RUR D	EQIP	PT		Picked up spear assembly and broke off 5" DP single. Laid down same.
28,00	10:30	11:30	1,00	PLUG, AB	TRIP	BHA	PT		Made up 12 1/4" junk bit, bit sub with non ported float and one stand 8 1/4" DC.
145,00	11:30	12:00	0,50	PLUG, AB	TRIP	DP	PT		Ran in hole with 12 1/4" junk bit from 28 m to 145 m on 5" DP.
247,00	12:00	14:00	2,00	PLUG, AB	CIRC	MUD	PT		Broke circulation and staged up pumps in increments to 3000 lpm, 22 bar and 50 rpm. Circulated one riser volume. Max gas was 1.04 %. Washed down from 145 m to 247 m. Observed malfunction on Baker gas trap. No losses.
247,00	14:00	15:30	1,50	PLUG, AB	CIRC D	CFL	NPT	MSO T	Reciprocated string with 3000 lpm, 22 bar and 50 rpm while Baker repaired gas trap in header box. No losses.
286,00	15:30	16:00	0,50	PLUG, AB	CIRC	MUD	PT		Continued washing down from 247 m to 286 m with 3000 lpm, 22 bar and 50 rpm. Tagged top of 7" casing cut at 286.4 m. Washed bridge plug setting area several times. Circulated bottoms up. Max gas 0.75 %. No losses.
260,00	16:00	16:30	0,50	PLUG, AB	FLO W	CHE K	PT		Flow checked well for 15 minutes. Well was static.
0,00	16:30	18:00	1,50	PLUG, AB	TRIP	DP	PT		Pumped slug and pulled out of hole with 12 1/4" junk bit BHA from 260 m to 28 m. Broke off 12 1/4" bit and bit sub. Racked 8 1/4" DC stand.
0,00	18:00	18:30	0,50	PLUG, AB	SAF ETY	MTG	PT		Performed prejob meeting prior to running 13 3/8" HM bridge plug. Picked up and made up 13 3/8" HM bridge plug and crossover.
280,00	18:30	20:00	1,50	PLUG, AB	TRIP	EQIP	PT		Ran in hole with 13 3/8" HM bridge plug on reduced speed. Compensated through BOP, wellhead and 13 3/8" casing shoe track.
280,00	20:00	21:00	1,00	PLUG, AB	SET REL	PLU G	PT		Activated compensator and washed setting area with 1000 lpm and 27 bar. Up/down weight was 44/43 MT. Positioned 13 3/8" HM bridge plug at 280 m. Dropped ball and pressured up to 300 bar for 2 minutes. Bled off pressure and pulled 19 MT overpull. Held for 5 minutes. Sat down 8 MT to confirm plug was set. Ok. Pulled free from plug with 25 MT overpull. Tagged plug with 3 MT.
278,00	21:00	22:00	1,00	PLUG, AB	TEST	PLU G	PT		Laid out single. Installed cement swivel in string. Installed cement hose. Lined up for pressure testing 13 3/8" HM bridge plug. Tested line to 200 bar for 5 minutes. Activated compensator and closed MPR. Pressure tested 13 3/8" HM plug to 100 bar for 10 minutes. Pumped 130 liters and bled back same.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
278,00	22:00	23:00	1,00	PLUG, AB	CIRC	MUD	PT		Circulated to get even mud weight in/out. Meanwhile performed prejob meeting prior to setting cement plug #3.
278,00	23:00	23:30	0,50	PLUG, AB	PUM P	CMT	PT		Pumped 10 m3 1.03 sg sea water spacer. Mixed and pumped 6.2 m3 1.95 sg cement. Displaced cement with 450 liters seawater and 800 liters 1.15 sg WBM.
190,00	23:30	00:00	0,50	PLUG, AB	TRIP	DP	PT		Dismantled hose. No back flow. Rigged down cement swivel. Picked up one single. Pulled out of cement from 278 m to 190 m. Pipe pulled dry.

Report Start Date: 11.02.2015

Days from Spud/Start (days): 23

Report Number: 25

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
190,00	00:00	00:30	0,50	PLUG, AB	CIRC	MUD	PT		Installed sponge ball and circulated hole clean. Dumped 15.5 m3 cement contaminated mud (increase in pH).
0,00	00:30	01:30	1,00	PLUG, AB	TRIP	DP	PT		Pulled out of hole with cement stinger.
0,00	01:30	02:00	0,50	PLUG, AB	CLE AN	RIG	PT		Cleaned and cleared rig floor.
185,00	02:00	02:30	0,50	PLUG, AB	WAIT ON	CMT	PT		Waited on cement.
0,00	02:30	05:30	3,00	PLUG, AB	WAIT ON	CMT	PT		Meanwhile made up jet sub and ran in hole to 185 m. Waited on cement.
0,00	05:30	06:00	0,50	PLUG, AB	WAIT ON	CMT	PT		Meanwhile wash wellhead and BOP area with 3500 lpm, 51 bar and 20 rpm. Continued washing with 3500 lpm, 37-51 bar and 20 rpm all the way to surface.
0,00	06:00	07:00	1,00	PLUG, AB	WAIT ON	CMT	PT		Waited on cement.
0,00	07:00	09:00	2,00	PLUG, AB	WAIT ON	CMT	PT		Meanwhile performed fault finding on elevator rotator. Waited on cement.
0,00	09:00	12:00	3,00	PLUG, AB	WAIT ON	CMT	PT		Meanwhile pressure tested choke manifold from subsea unit to 20/1034 bar for 5/10 minutes. Waited on cement.
0,00	09:00	12:00	3,00	PLUG, AB	WAIT ON	CMT	PT		Meanwhile broke off bullnose on multi purpose tool. Broke off pups and centralizer on wellhead running tool. Laid out same. Broke out damaged 3 1/2" DP used as weight stand below multi purpose tool. Pressure tested kill and choke line against inner and outer failsafes to 20/1034 bar for 5/10 minutes. Waited on cement.
0,00	09:00	12:00	3,00	PLUG, AB	WAIT ON	CMT	PT		Meanwhile performed general maintenance and housekeeping. Went through "Sharing to be better" - Case#11 Well control incident - 8 1/2" section, with crew #2, Data engineer, Mud Engineer and Cementers.
203,00	12:00	14:00	2,00	PLUG, AB	TRIP	BHA	PT		Made up 12 1/4" bit, bit sub and crossover on 8 1/4" DC. Ran in hole with 12 1/4" BHA to 175 m. Washed down from 175 m to 196 m with 1500 lpm, 5 bar and 40 rpm. Tagged cement at 196 m with 4 MT. Increased flow to 2000 lpm, 10 bar and 40 rpm. Dressed cement from 196 m to 203 m with 2000 lpm, 10 bar, 40 rpm and 2-5 MT. Firm cement from 198 m.
202,00	14:00	14:30	0,50	PLUG, AB	CIRC	MUD	PT		Circulated bottoms up with 2000 lpm, 10 bar and 40 rpm. Firm cement over shakers.
202,00	14:30	16:00	1,50	PLUG, AB	CIRC	CFL D	PT		Displaced kill and choke lines to sea water. Emptied trip tank. Pumped 10 m3 havis. Displaced well to sea water with 3500 lpm and 29 bar. Dumped 5.1 m3 contaminated havis and sea water. Flushed poor boy degasser.
175,00	16:00	16:30	0,50	PLUG, AB	FLO W	CHE K	PT		Filled trip tank with sea water and flow checked well. Well was static.
0,00	16:30	17:30	1,00	PLUG, AB	TRIP	BHA	PT		Pulled out of hole from 175 m with 12 1/4" BHA. Washed BOP with 4500 lpm and 37 bar. Continued pulling out 12 1/4" BHA to surface. Broke out bit, bit sub and cross over and laid down same. Racked 8 1/4" DC stand.
0,00	17:30	18:00	0,50	PLUG, AB	CLE AN	RIG	PT		Cleaned and cleared rig floor.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
0,00	18:00	21:30	3,50	PLUG, AB	RUR D	OTH R	PT		Prepared and rigged up equipment for pulling BOP and riser. Installed riser running tool on top drive. Removed master bushing and outer rings. Installed riser spider. Meanwhile flushed over board lines.
0,00	21:30	23:00	1,50	PLUG, AB	RUR D	OTH R	PT		Installed diverter running tool. Disconnected diverter and laid out to catwalk.
0,00	23:00	00:00	1,00	PLUG, AB	RUR D	OTH R	PT		Picked up landing joint from catwalk and connected same to slip joint.

Report Start Date: 12.02.2015

Days from Spud/Start (days): 24

Report Number: 26

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
0,00	00:00	01:30	1,50	PLUG, AB	RUR D	OTH R	NPT	MSB O	Hydraulic leak on riser running tool hose. Broke out landing joint and laid down same in catwalk. Repaired leak. Picked up landing joint and connected to slip joint. 7 liters hydraulic oil spilled to closed drain.
160,00	01:30	02:30	1,00	PLUG, AB	RUR D	OTH R	PT		Collapsed inner-barrel and disconnected BOP 02:00. Pulled up 6 m. Moved rig 30 m forward.
160,00	02:30	03:30	1,00	PLUG, AB	RUR D	OTH R	PT		Disconnected sheaves and pod saddles on cellar deck.
138,00	03:30	04:30	1,00	PLUG, AB	RUR D	OTH R	PT		Hung off support ring. Installed adjustment arrangement for kill, choke and booster line. Released support ring from slip joint. Landed slip joint in riser spider. Laid down landing joint.
126,00	04:30	05:30	1,00	PLUG, AB	RUR D	OTH R	PT		Laid down slip joint.
121,00	05:30	06:00	0,50	PLUG, AB	PULL	EQUIP	PT		Pulled BOP on riser from 126 m to 121 m. Laid out on 5 m riser pup.
80,00	06:00	06:30	0,50	PLUG, AB	PULL	EQUIP	PT		Continued to pull BOP on riser from 121 m to 80 m (2 riser joints).
80,00	06:30	07:00	0,50	PLUG, AB	SAF ETY	MTG	PT		Performed prejob meeting with on coming crew for pulling BOP.
0,00	07:00	09:30	2,50	PLUG, AB	PULL	EQUIP	PT		Continued to pull BOP on riser from 80 m to 44 m (3 riser joints). Pulled BOP through splash zone at 07:55 hrs. Skidded BOP carrier to well center and landed BOP on carrier at 08:30 hrs. Released riser double and skidded BOP starboard. Laid out riser double to deck.
0,00	09:30	10:00	0,50	PLUG, AB	SAF ETY	MTG	PT		Performed prejob meeting prior to rig down BOP equipment.
0,00	10:00	11:30	1,50	PLUG, AB	RUR D	OTH R	PT		Rigged down BOP pulling equipment.
0,00	11:30	12:00	0,50	PLUG, AB	SAF ETY	MTG	PT		Performed prejob meeting prior to make up cutting assembly. Made up 13 3/8" x 30" cutting assembly.
132,00	12:00	15:00	3,00	PLUG, AB	PUL D	EQUIP	PT		Made up 13 3/8" x 30" cutting assembly. Tested and secured cutters. RIH to 132 m on 8 1/4" drill collars. Meanwhile moved rig to well center. Continued RIH with cutter assembly on 5" HWDP.
179,00	15:00	15:30	0,50	PLUG, AB	TRIP	DP	PT		Stabbed cutter assembly into well head assisted by ROV. Landed Spear Grapple in 17 5/8" upset at the base of 18 3/4" well head. Engaged spear with 1/4 left turn and performed overpull test with 10 ton.
179,00	15:30	18:30	3,00	PLUG, AB	CUT	CSG	PT		Cut 13 3/8" casing and 30" conductor with 1000 - 1600 lpm, 34 - 140 bar, 70 rpm, 11-13 kNm. Observed returns through ports in 30" housing.
179,00	18:30	21:00	2,50	PLUG, AB	CUT	CSG	PT		Observed pressure drop from 140 bar to 60 bar indicating cutters through 30" conductor. Stopped cutting and attempted to pull 13 3/8" casing and 30" conductor with 130 ton overpull. Continued to cut 30" conductor with 1600 lpm, 100 rpm, 5 - 10 kNm. Observed pressure dropped from 120 bar to 40 bar. Pressure steady on 40 bar. No more torque spikes. Attempted to pull 30" conductor free with 200 ton overpull.
179,00	21:00	21:30	0,50	PLUG, AB	INSP CT	BHA	PT		Released spear and pulled cutters above wellhead. Inspected cutters visually with ROV. Wear indicating full sweep.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
0,00	21:30	00:00	2,50	PLUG, AB	TRIP	BHA	PT		POOH with cutting assembly on 5" HWDP and 8 1/4" DC. Inspected cutters on drill floor. 17" knives worn to 16 5/8" and wear marks indicating full sweep. Function tested cutter. Broke out and started to lay out cutting assembly. Meanwhile; - Disconnect guide posts and lifted up same with guide wires. - Ran down basked prior to lift up transponders.

Report Start Date: 13.02.2015

Days from Spud/Start (days): 25

Report Number: 27

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
0,00	00:00	02:30	2,50	PLUG, AB	PUL D	BHA	PT		Continued to lay out cutting assembly. Meanwhile; - Retrieved transponders and performed site survey. - Prepared to start de-ballast rig.
0,00	02:30	06:00	3,50	DEMOB, RIG	DEM OB	RIG	PT		Commenced anchor handling operation at 02:25 hrs. 1 out of 8 lines completed. Meanwhile de-ballast rig. Havila Jupiter: - Secured buoy #2 on deck at 02:31 and commenced disconnecting line. Delivered back rig wire #2 at 03:57. - Secured buoy #1 on deck at 04:26 and commenced disconnecting line. Havila Venus: - Secured buoy #8 on deck at 02:31 and commenced disconnecting line.
0,00	06:00	17:30	11,50	DEMOB, RIG	DEM OB	RIG	PT		Continued anchor handling operations. Completed anchor handling 17:20 hrs. Departed Zulu 500m zone at 17:30 hrs. Havila Jupiter: - Continued disconnecting line #1. Delivered back rig wire #1 at 08:30. - Secured buoy #7 on deck at 09:00. Delivered back rig wire #7 at 12:25. - Secured buoy #8 on deck at 12:35. Delivered back rig wire #5 at 15:50. Havila Venus: - Continued disconnecting line #6. Delivered back rig wire #6 at 06:34. - Secured buoy #5 on deck at 06:53. Delivered back rig wire #5 at 11:35. - Secured buoy #3 on deck at 11:57. Delivered back rig wire #3 at 13:20. - Secured buoy #4 on deck at 13:50. Delivered back rig wire #4 at 17:20. Meanwhile: - Went through "Sharing to be better" - Case#11 Well control incident - 8 1/2" section, with drill crew # 3, Data engineer, Mud Engineer, Cementers, DD, MWD, Drilling Engineer and Geologist. - General maintenance. - Tested electronic sensors on choke manifold & stand pipe manifold. Reporting continues on well 16/1-24.

End Depth (mKB)	Start Time	End Time	Dur (hr)	Phase	Ops Code	Activity Code	Ops Status	Trouble Code	Com
Start Date: 2014.12.04 DFS (days): 39 Rpt #: 46									
316	00:00	04:30	4.5	PR1, CSG	TEST	BOPE	PT		Performed BOP test to 20/270 bar for 5/10 min on yellow pod from drillers pannel. Meanwhile; - prepared 8 1/2" BHA. - preventive maintenance on mud pump # 3 and Hydra Racker. - washed and cleaned Mezz. deck and Cellar deck. - Rigged down liner equipment.
0	04:30	06:00	1.5	PR1, CSG	TRIP	DP	PT		POOH with BOP test tool and inspect same. Continued to POOH, broke out jet sub. Meanwhile start test choke line to 20/270 bar for 5/10 min.
0	06:00	09:30	3.5	PR1, CSG	TEST	BOPE	PT		Pressure tested manual and auto IBOP on top drive and mud hose to 20 / 410 bar for 5 /10 min. Rigged down test equipment.
0	09:30	10:00	0.5	PR1, CSG	SAFETY	MTG	PT		Held pre-job meeting prior to making up 8 1/2" BHA. Changed handling equipment and cleared rig floor.
0	10:00	11:30	1.5	PR1, CSG	PULD	BHA	PT		Picked up and made up 8 1/2" BHA from 0 m to 18 m. Plugged in and verified MWD. Racked back 8 1/2" BHA.
0	11:30	15:30	4	PR1, CSG	WAITON	CMT	PT		Waited on cement to set prior to pressure testing 9 5/8" liner and 13 3/8" casing against blind shear ram (BSR). Meanwhile: - cleared rig floor and completed maintenance on topdrive and rig floor equipment - pressure tested kill and choke manifold to 20 / 270 bar for 5 /10 min - held prejob meeting prior to picking up 8 1/2" BHA.
0	15:30	16:30	1	PR1, CSG	TEST	CSG	PT		Lined up and pressure tested 9 5/8" liner and 13 3/8" casing to 20 / 270 bar for 5 / 10 min against BSR. Pressure dropped 0.8 bar over 10 min. Pumped 1450 ltr and bled back same volume.
0	16:30	17:00	0.5	PR1, CSG	TEST	BOPE	PT		Function tested BSR on acoustic. Meanwhile, continued pressure testing choke manifold to 20 / 270 bar for 5 / 10 min.
240	17:00	19:00	2	PR1, CSG	TRIP	BHA	PT		Ran in hole with 8 1/2" BHA to 240 m.
1 350,00	19:00	20:30	1.5	PR1, CSG	TRIP	DP	PT		Ran in hole with 8 1/2" BHA on 5" DP from 240 m to 1350 m. Filled pipe at 961 m and tested MWD at 2020 lpm, 117 bar.
2 005,00	20:30	22:00	1.5	PR1, CSG	TRIP	DP	PT		Compensated string while running 8 1/2" bit through PBR at 1355 m. Engage rotation and sat down 5 t WOB to enter PBR. Continued running in hole with 8 1/2" BHA to 2005 m at reduced speed.
2 027,00	22:00	23:00	1	PR1, CSG	CIRC	MUD	PT		Broke circulation and washed down with 2000 lpm, 153 bar. Tagged top of cement (TOC) with 5 t at 2027 m - theoretical TOC at 2023 m. Recorded several restrictions while washing down setting down 2 - 5 t WOB.
2 027,00	23:00	00:00	1	PR1, CSG	SAFETY	DRIL	PT		Pulled 8 1/2" BHA back to 2013 and recorded SCRs and choke line friction. Performed choke drill pressuring well up to 20 bar. Established drilling parameters at 2000 lpm, 140 bar, 60 rpm, 5 - 10 kNm and ran back in hole to TOC.

Start Date: 2014.12.05 DFS (days): 40 Rpt #: 47									
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11 Survey listing

Table 11-1 Wellpath - Definite survey Report,

Project		PL 674								
Map System:	Universal Transverse Mercator	System Datum:		Mean Sea Level						
Geo Datum:	ED50 Common Offshore									
Map Zone:	Zone 31N (0 E to 6 E)	Using geodetic scale factor								
Site		26/10-1 Zulu, TBA								
Site Position:		Northing:	6 540 262,88 m	Latitude:	59° 0' 1,873 N					
From:	Map	Easting:	504 064,90 m	Longitude:	3° 4' 14,701 E					
Position Uncertainty:	0,00 m	Slot Radius:	13,200 in	Grid Convergence:	0,06 °					
Well		26/10-1								
Well Position	+N/-S	0,00 m	Northing:	6 540 262,88 m	Latitude:	59° 0' 1,873 N				
	+E/-W	0,00 m	Easting:	504 064,90 m	Longitude:	3° 4' 14,701 E				
Position Uncertainty		8,21 m	Wellhead Depth:	140,00 m	Water Depth:	140,00 m				
Wellbore		26/10-1								
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (µT)					
	IGRF2010	18.09.2014	-0,65	71,97	50 662					
Design		26/10-1 definitive								
Audit Notes:										
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0,00					
Vertical Section:	Depth From (TVD) (m)	+N/-S (m)	+E/-W (m)	Direction (°)						
	0,00	0,00	0,00	128,82						
Survey Program		Date: 06.02.2015								
From (m)	To (m)	Survey (Wellbore)	Tool Name	Description						
192,30	222,90	26/10-1 BH MWD 36" (26/10-1)	OWSG MWD+AX	MWD + Axial Correction						
262,80	279,80	26/10-1 MWD 17 1/2" (26/10-1)	OWSG MWD+AX	MWD + Axial Correction						
322,10	742,70	26/10-1 BH MWD 12 1/4" (26/10-1)	OWSG MWD+AX	MWD + Axial Correction						
758,30	1 017,20	26/10-1 BH MWD 6" (26/10-1)	OWSG MWD+AX	MWD + Axial Correction						
Survey										
Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Bull's Rate (°/30m)	Turn Rate (°/30m)	
170,00	0,00	0,00	170,00	0,00	0,00	0,00	0,000	0,000	0,000	
192,30	0,41	131,67	192,30	-0,05	0,06	0,08	0,552	0,552	0,000	
199,40	0,55	126,54	199,40	-0,09	0,11	0,14	0,618	0,592	-21,676	
208,90	0,67	123,23	208,90	-0,15	0,19	0,24	0,395	0,379	-10,453	
222,90	0,65	115,04	222,90	-0,23	0,33	0,40	0,208	-0,043	-17,550	
236,50	0,59	108,10	236,50	-0,28	0,47	0,54	0,215	-0,137	-15,307	
30"										
262,80	0,50	90,42	262,80	-0,32	0,71	0,75	0,215	-0,100	-20,168	
279,80	0,50	85,11	279,80	-0,32	0,86	0,87	0,082	0,000	-9,371	
284,05	0,48	83,54	284,05	-0,31	0,89	0,89	0,168	-0,138	-11,070	
13 3/8"										
322,10	0,33	61,75	322,09	-0,24	1,15	1,05	0,168	-0,119	-17,181	
351,80	0,19	67,69	351,79	-0,18	1,27	1,10	0,144	-0,141	6,000	
381,20	0,13	88,53	381,19	-0,17	1,35	1,15	0,084	-0,061	21,265	
409,90	0,07	112,97	409,89	-0,17	1,40	1,20	0,076	-0,063	25,547	
438,70	0,09	100,68	438,69	-0,18	1,43	1,23	0,027	0,021	-12,802	
467,50	0,04	234,13	467,49	-0,19	1,45	1,25	0,126	-0,052	139,010	

Survey										
Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)	
486,50	0,07	116,44	486,49	-0,21	1,46	1,26	0,098	0,031	-121,748	
553,10	0,07	160,87	553,09	-0,25	1,50	1,33	0,028	0,000	23,549	
582,50	0,11	89,53	582,49	-0,27	1,53	1,36	0,112	0,041	-72,796	
612,00	0,06	209,78	611,99	-0,28	1,55	1,39	0,152	-0,051	122,288	
641,60	0,16	147,13	641,59	-0,33	1,57	1,43	0,145	0,101	-63,497	
689,90	0,15	197,38	689,89	-0,40	1,58	1,46	0,140	-0,011	53,269	
699,10	0,16	173,36	699,09	-0,48	1,57	1,52	0,067	0,010	-24,678	
727,90	0,22	166,25	727,79	-0,57	1,59	1,60	0,067	0,063	-7,432	
742,58	0,14	191,35	742,57	-0,62	1,59	1,63	0,224	-0,161	50,947	
T*										
742,70	0,14	191,66	742,69	-0,62	1,59	1,63	0,224	-0,119	77,524	
758,30	0,54	162,53	758,29	-0,71	1,61	1,70	0,814	0,789	-56,019	
785,10	0,65	175,99	785,09	-0,98	1,66	1,91	0,198	0,123	15,067	
813,00	0,79	183,46	812,99	-1,33	1,66	2,12	0,178	0,147	8,028	
Miocene Sandstone (Utsira FM)										
815,60	0,80	184,02	815,59	-1,36	1,66	2,14	0,178	0,153	6,505	
845,70	0,99	178,17	845,69	-1,63	1,65	2,43	0,210	0,189	-5,831	
874,20	1,03	170,11	874,18	-2,33	1,70	2,79	0,155	0,042	-8,484	
902,20	0,99	170,82	902,18	-2,82	1,78	3,16	0,045	-0,043	0,761	
931,00	0,88	177,26	930,97	-3,28	1,83	3,49	0,158	-0,115	6,708	
958,20	1,05	179,49	958,17	-3,74	1,85	3,78	0,192	0,187	2,460	
988,10	1,23	187,09	988,08	-4,33	1,81	4,13	0,235	0,181	7,625	
1 017,20	1,51	178,28	1 017,15	-5,03	1,78	4,54	0,360	0,289	-9,082	
1 026,00	1,51	178,28	1 025,95	-5,26	1,79	4,89	0,000	0,000	0,000	

Casing Points					
Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)	
236,50	236,50	30"	30,000	38,000	
284,05	284,05	13 3/8"	13,375	17,500	
742,58	742,57	7"	7,000	12,250	

Checked by Project Leader: 

Accepted by Lundin: Rand No

Digitally signed by: Kieran Parrett
Date: 2015.02.13 10:28:07 +01'00'

Approved by: 

12 Casing reports

Table 12-1 Casing summary

Conductor , set at 236,50 mKB on 20.01.2015 23:30

String Nominal OD (in): 30,000

Centralizers:

Comment:

Casing Components:

Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Thread	Top (mKB)	Btm (mKB)	Len (m)	P Burst (bars)	P Collapse (bars)
1	Conductor Housing	30	27,000	456,00	X56/X60	SL-60	168,57	187,66	19,087	100,0	110,0
3	Conductor Joints	30	28,000	309,70	X56	SL-60	187,66	224,12	36,464	100,0	110,0
1	Conductor Shoe	30	28,000	309,70	X56	SL-60	224,12	236,50	12,377	100,0	110,0

Surface , set at 284,05 mKB on 23.01.2015 16:00

String Nominal OD (in): 13,875

Centralizers: Shoetrack + 4 joints with one centralizer/joint

Comment:

Casing Components:

Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Thread	Top (mKB)	Btm (mKB)	Len (m)	P Burst (bars)	P Collapse (bars)
1	18 3/4" wellhead	20	18,810	133,00	X-56	E60MT	168,81	181,19	12,375		
6	Casing Joints	13 7/8	12,419	72,00	P-110	E60MT	181,19	246,39	65,203		
1	Float Collar	13 7/8	12,419	72,00	P-110	E60MT	246,39	259,16	12,773		
1	Casing Joints	13 7/8	12,419	72,00	P-110	E60MT	259,16	271,46	12,295		103,4
1	Float Shoe	13 7/8	12,419	72,00	P-110	E60MT	271,46	284,05	12,594		

Production , set at 742,58 mKB on 30.01.2015 06:21

String Nominal OD (in): 7,000

Centralizers: Shoetrack + 28 joints with one centralizer

Comment:

Casing Components:

Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Thread	Top (mKB)	Btm (mKB)	Len (m)	P Burst (bars)	P Collapse (bars)
1	9 5/8"x7" casing hanger	9 5/8	8,610	53,50	P-110	Vam Top	169,32	175,29	5,969		
44	Casing Joints	7	6,140	32,00	P-110	Vam Top	175,29	705,60	530,317		
1	Float Collar	7	6,140	32,00	P-110	Vam Top	705,60	717,94	12,339		
1	Casing Joints	7	6,140	32,00	P-110	Vam Top	717,94	730,30	12,361		103,4
1	Float Shoe	7	6,140	32,00	P-110	Vam Top	730,30	742,58	12,277		

13 Cement reports

13.1 30" conductor cementing

Table 13-1 Cement job recap – 30" conductor



CEMENT RECAP BJ Services

30" Conductor

Job no.		Customer Company	Lundin
Rig	Island Innovator	Customer Rep.	Morgan Feldt
Well No	26/10-1 Zulu	Type of Job	30" Conductor
Cementing date/Year	21.01.2015	Job Objective	Cement 30" Conductor
BJ Cementer	Assad Jacob	Section (Inch)	36"
BJ Operator	Erlend Fedreheim	Lab test no.	NL-002-15
BJ Operator	Stein Horpestad		

Description of well		Hole Size	36	Inch	7	BHST
RKB - seabed	170	m				
Depth M MD (drilled)	242.5	m	Angle max	0	deg	12
Depth M TVD (drilled)	242.5	m	Horizontal section		m (depth)	

Casing Description	Size	Weight	Grade	Thread	FC mMD	FS mMD	FS mTVD	CSG depth	DP Depth
Drill pipe from top	5"HWDP	53,5 #		41/2 IF					170
Drill pipe from bottom	4 7/8" Alu Inner								225
Casing section Top	30"	310 #	X56	SL-60 QS		236.5	236.5		
Casing section Bottom									

Fluid Composition	
Mud	Bentonite mud
Slurry 1	
Slurry 2	
Slurry 3	LW Cement, SW56.64l/hk, FP16L0.2l/hk, A-7L5l/hk
Spacer	SW
Fluid displacing	SW

Fluid Properties	Name fluid	Density	Temp	300	200	100	6	3	gel/10sec	gel/10min
Fluid 1	Bentonite mud	1.40	50	32	24	18	6	3	4	8
Fluid 2										
Fluid 3										
Spacer	SW	1.03								
Slurry 1										
Slurry 2										
Slurry 3	Liteset	1.56	12	189	138	88	26.5	19.5	14	20
Displace	SW	1.03								

Volumes & Design		Slurry excess %	Milkwater excess m³	Top of Slurry 1 m (TVD)	Top of Slurry 1 m (MD)	Top of Slurry 2 m (TVD)	Top of Slurry 2 m (MD)	Top of Slurry 3 m (TVD)	Top of Slurry 3 m (MD)
Volume based on									
Gauge hole size (inch)									
Average hole size									
Caliper (m²)									
Assumed size	36								
Water chloride ppm								170	170

Pumping Sequences	Fluid Type	Density (SG)	Volume pumped (m³)	Rate max (lpm)	Fluid losses (m³)	Pressure (bar)	Milkwater Mixed (m³)	Milkwater Dumped (m³)
Prior to run casing	Bentonite	1.40	45	3500		100		
After casing is landed	SW	1.03	17	3000		40		
Cement job								
Spacer								
Slurry 1								
Slurry 2								
Slurry 3	Liteset	1.56	64	780		15	32	
Displacement	SW	1.03	4	1200		20		
	Total loss during cement job						press increase	

Job Results		Density Max (SG)	Density Min (SG)	Average 95% (SG)	TOC Planned (m MD)	TOC Actual (m MD)
Slurry 1						
Slurry 2						
Slurry 3	1,57	1,55	1,56	170	170	

13.2 13 3/8" surface casing cementing

Table 13-2 cement job recap – 13 3/8"x20" surface casing



CEMENT RECAP BJ Services

Casing cementing

Job no.		Customer Company	Lundin
Rig	Island Innovator	Customer Rep.	Preben Skødt
Well No	26/10-1 Zulu	Type of Job	Casing cementing
Cementing date/Year	23.01.2015	Job Objective	Cement 20" x 13 3/8" Casing
BJ Cementer	Åssad Jacob	Section (inch)	17 1/2
BJ Operator	Ove Jacobsen	Lab test no.	NL-018-15
BJ Operator	Torstein Thomassen		

Description of well		Hole Size	17 1/2	Inch		BHST
RKB - seabed	170	m				
Depth M MD (drilled)	290	m				BHCT
Depth M TVD (drilled)	290	m				

Casing Description	Size	Weight	Grade	Thread	FC mMD	FS mMD	FS mTVD	C-SG depth	DP Depth
Drill pipe from top	5" HW	51.64	Range 2	41/2 IF					170
Drill pipe from bottom									
Casing section Top	20"								
Casing section Bottom	13 3/8"	72	P-110	Vam Top					

Fluid Composition	
Mud	
Slurry 1	
Slurry 2	
Slurry 3	FW79.84l/hk, FP16L0.2l/hk, A-300L10l/hk, FL67LE7l/hk
Spacer	SW33,95,FP16L0.2l/hk, BA58L8l/hk, FL67LE3l/hk, CD34L1l/hk
Fluid displacing	FW

Fluid Properties	Name fluid	Density	Temp	300	200	100	6	3	gel/10sec	gel/10min
Fluid 1										
Fluid 2										
Fluid 3										
Spacer	FW	1.00								
Slurry 1										
Slurry 2	Lead	1.56	12	74	54	33	5	3.5	3	20.5
Slurry 3	Tail	1.95	12	223	163	95	12	12	10	65
Displace	FW	1.00								

Volumes & Design										
Volume based on										
Gauge hole size (inch)										
Average hole size										
Caliper (m ²)										
Assumed size	17 1/2	Slurry1	Slurry2	Slurry3	Top of Slurry 1 m (TVD)	Top of Slurry 1 m (MD)	Top of Slurry 2 m (TVD)	Top of Slurry 2 m (MD)	Top of Slurry 3 m (TVD)	Top of Slurry 3 m (MD)
Water chloride ppm	100	100 %	100 %		170	170	170	170		

Pumping Sequences	Fluid Type	Density (SG)	Volume pumped (m ³)	Rate max (lpm)	Fluid losses (m ³)	Pressure (bar)	Milkwater Mixed (m ³)	Milkwater Dumped (m ³)
Prior to run casing								
After casing is landed								
Cement job								
Spacer	FW	1.00	16.20	2500				
Slurry 1								
Slurry 2	Lead	1.56	20.9	770		10	15.8	
Slurry 3	Tail	1.95	11.3	700		12	12	5
Displacement	DW	1.00	7.3	1500		60		
	Total loss during cement/job						press increase	

Job Results		Density Max (SG)	Density Min (SG)	Average 95% (SG)	TOC Planned (m MD)	TOC Actual (m MD)
	Slurry 1					
	Slurry 2			1.56	170	
	Slurry 3			1.95		

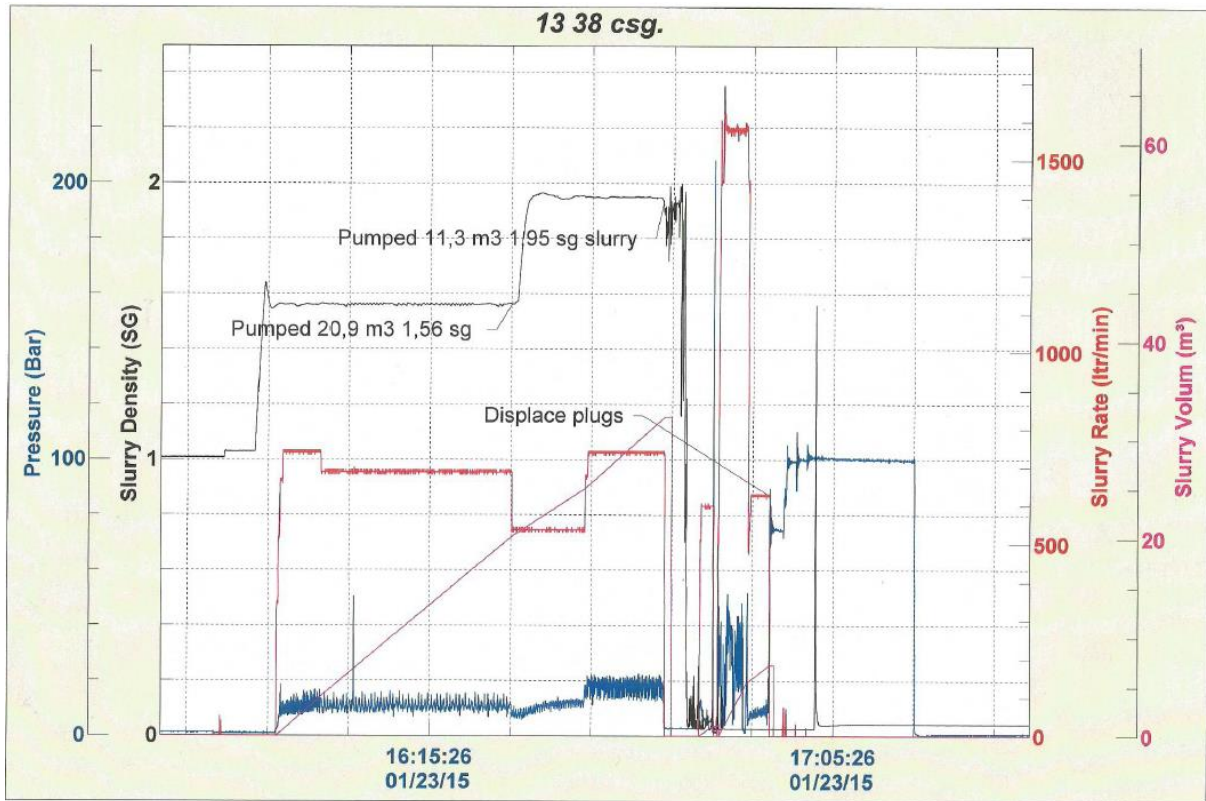
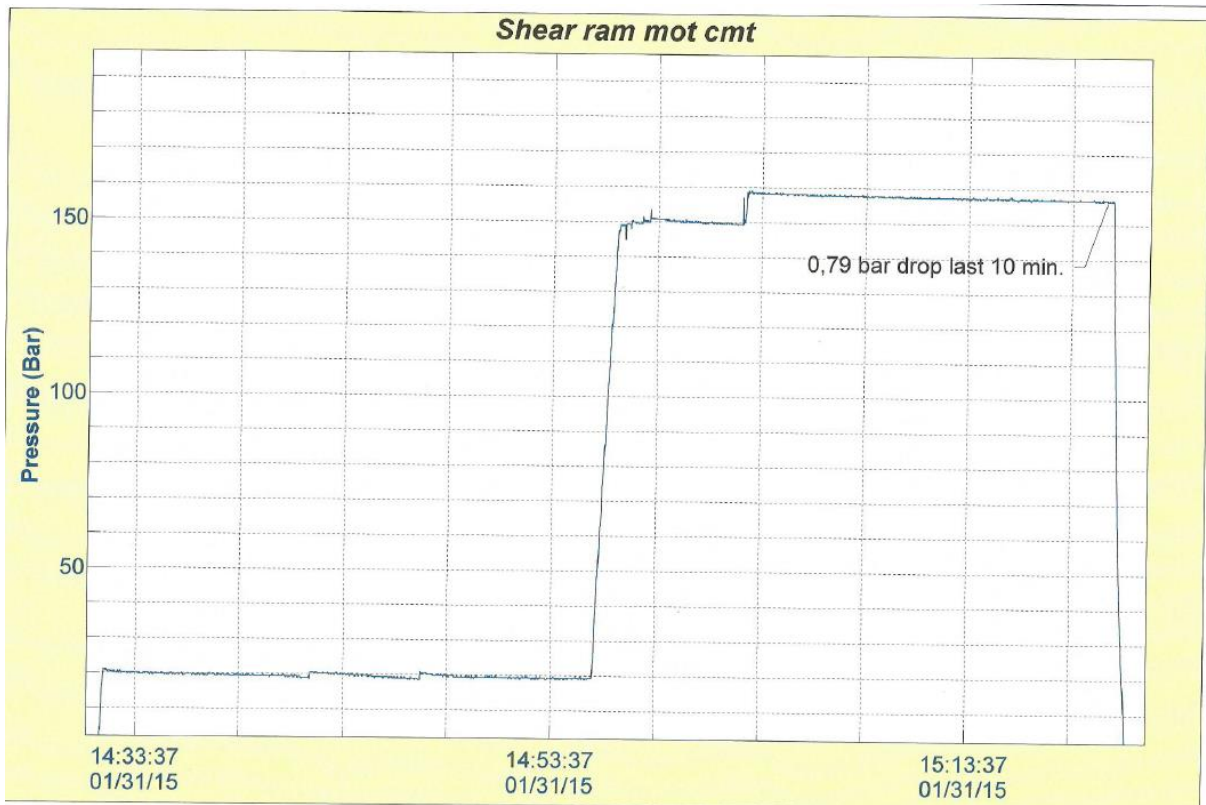


Figure 13-2 Cement job plot – 13 3/8"x20" surface casing



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Job Start: Friday, January 30, 2015

Figure 13-3 Casing pressure test – 13 3/8"x20" surface casing

13.3 7" Casing cementing

Table 13-3 Cement job recap – 7" casing



CEMENT RECAP BJ Services

Casing cementing

Job no.	Island Innovator	Customer Company	Lundin
Rig	26/10-1 Zulu	Customer Rep.	Preben Skødt
Well No	30.01.2015	Type of Job	Casing cementing
Cementing date/Year	Assad Jacob	Job Objective	Cement 7" Casing
BJ Cementer	Torstein Thomassen	Section (Inch)	12 1/4"
BJ Operator	Torbjørn Lillehammer	Lab test no.	NL-021-15

Description of well				
RKB - seabed	170	m	Hole Size	12 1/4" Inch
Depth M MD (drilled)	749	m	Angle max	29 deg
Depth M TVD (drilled)	749	m	Horizontal section	19 m (depth)

Casing Description	Size	Weight	Grade	Thread	FC mMD	FS mMD	FS mTVD	C-SG depth	DP Depth
Drill pipe from top	5" HW	51.64	Range 2	41/2 IF					170
Drill pipe from bottom									
Casing section Top	7"								
Casing section Bottom	7"	42.49	P-110	Vam Top					

Fluid Composition	
Mud	
Slurry 1	
Slurry 2	SpacerFW:Fc-16LG10lm3 Mcs25Lm3
Slurry 3	FW43,31lth,FP16L0,2lth,R-12L0,4LHK
Spacer	1,15 WBM Aquadrill
Fluid displacing	1,15 WBM Aquadrill

Fluid Properties	Name fluid	Density	Temp	300	200	100	6	3	gel/10sec	gel/10min
Fluid 1										
Fluid 2										
Fluid 3										
Spacer	FW	1.00								
Slurry 1										
Slurry 2										
Slurry 3	Tall	1.92	29	114	96	73	26,5	18	20,5	34
Displace	Aqua Drill	1.18		32	25	18	5	4	1.92	2.87

Volumes & Design										
Volume based on										
Gauge hole size (Inch)										
Average hole size										
Caliper (m ²)										
Assumed size	12 1/4"									
Water chloride ppm	100									

Pumping Sequences	Fluid Type	Density (SG)	Volume pumped (m ³)	Rate max (lpm)	Fluid losses (m ³)	Pressure (bar)	Mikswater Mixed (m ³)	Mikswater Dumped (m ³)
Prior to run casing								
After casing is landed								
Cement job								
Spacer	Soapwashi	1.00	7.20	1200				
Slurry 1								
Slurry 2								
Slurry 3	Tall	1.92	16.3	750		16		
Displacement	Aquadrill	1.15	12.2	1200		50		
	Total loss during cement/job						press Increase	

Job Results								
	Density Max (SG)	Density Min (SG)	Average 95% (SG)	TOC Planned (m MD)	TOC Actual (m MD)			
Slurry 1								
Slurry 2								
Slurry 3	1.93	1.91	1.92	443				

Pressure testing results	Test of casing (bar)	Test (date)	Time after cementing (hrs)	Test of Linerlap (bar)	Test (date)	Test ok (yes/no)
	150.0	31.01.2015	24.0			Yes

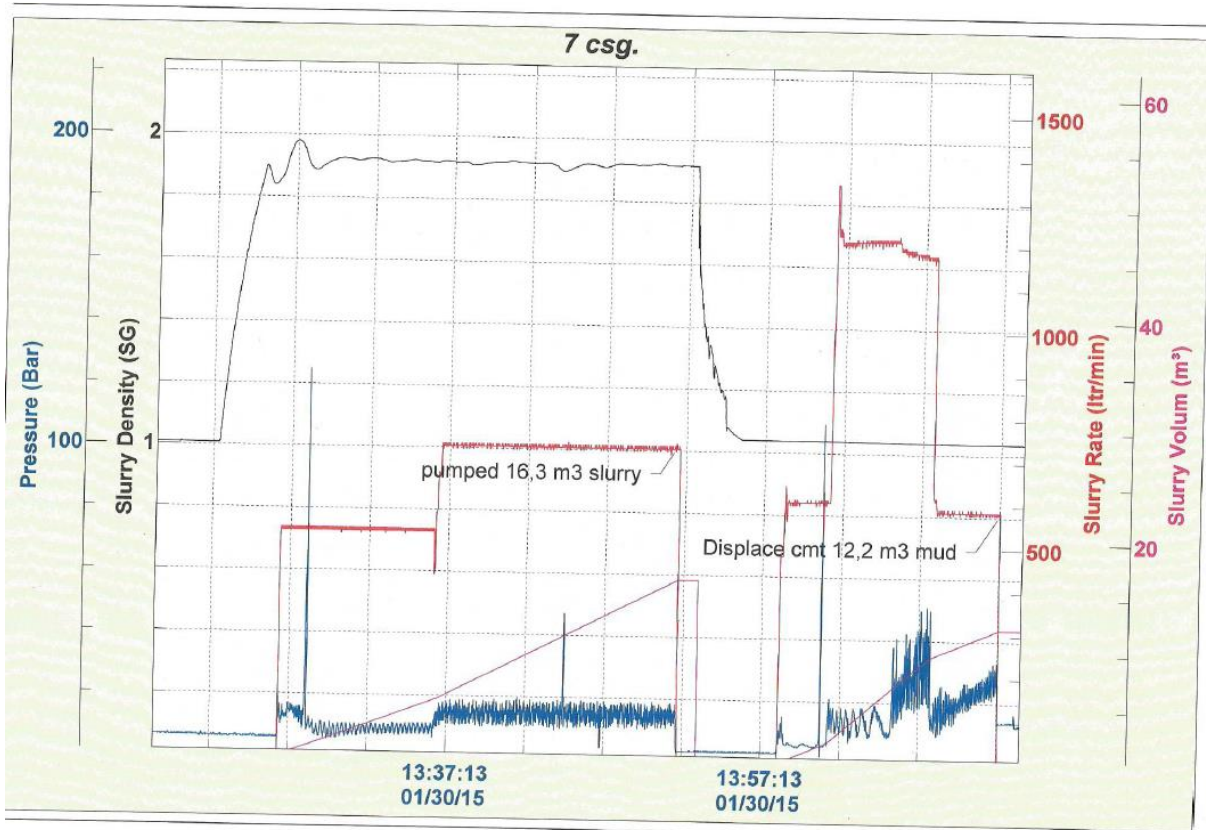
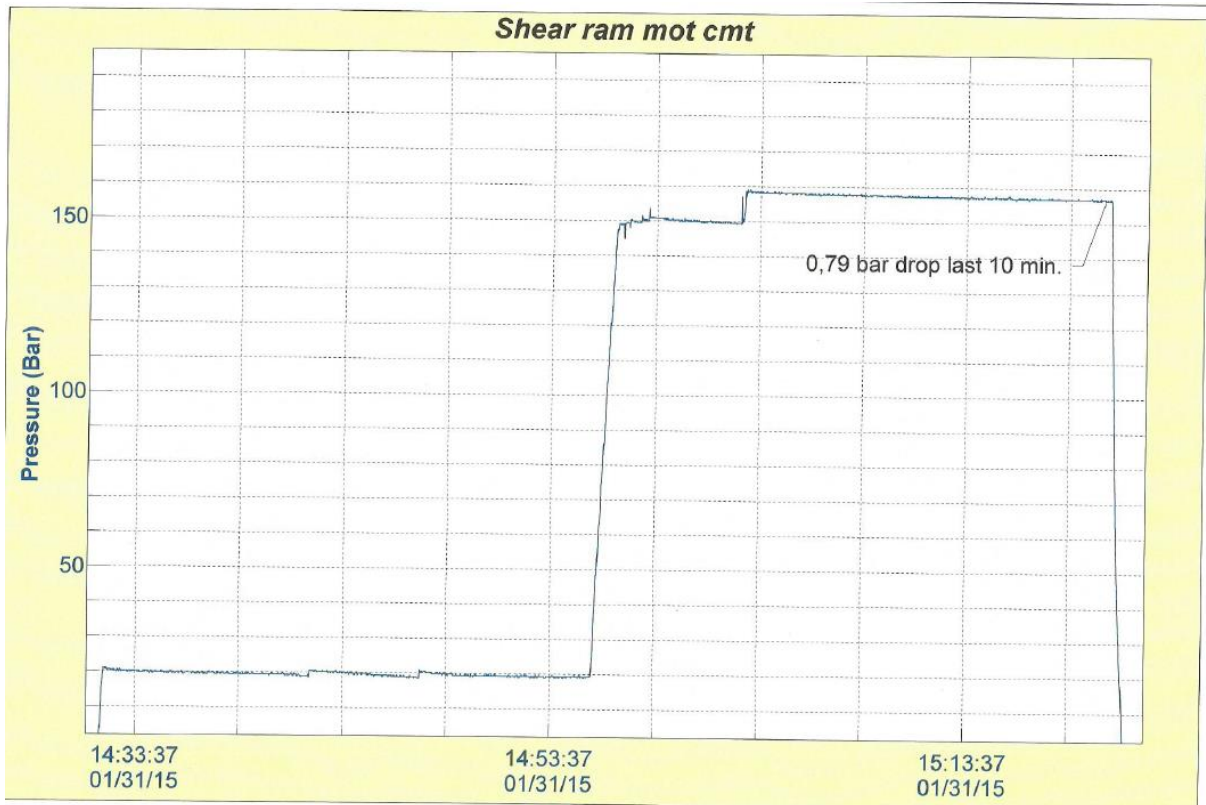


Figure 13-4 Cement job plot - 7" casing



Jaker Hughes

Job Start: Friday, January 30, 2015

Figure 13-5 Casing pressure test – 7" surface casing

13.4 P&A cementing

P&A plug #1A, #1B



CEMENT RECAP BJ Services

P&A Plug 1A

Job no.		Customer Company	Lundin
Rig	Island Innovator	Customer Rep.	Arne Fjeldsaa
Well No	26/10-1	Type of Job	P&A Plug 1A
Cementing date/Year	05.02.2015	Job Objective	P&A OH
BJ Cementer	Richie Allan	Section (Inch)	6
BJ Operator	Unni Lone	Lab test no.	NL-031-15
BJ Operator			

Description of well		Hole Size	6	Inch	42	BHST
RKB - seabed	170	m				
Depth M MD (drilled)	1026	m	Angle max	0	deg	22
Depth M TVD (drilled)	1025	m	Horizontal section		m (depth)	

Casing Description	Size	Weight	Grade	Thread	FC mMD	FS mMD	FS mTVD	CSG depth	DP Depth
Drill pipe from top	4" DP	14	S-135T	4					698
Drill pipe from bottom	3 1/2" DP	15.5	S-135	3 1/2 IF					1025
Casing section Top									
Casing section Bottom									

Fluid Composition	
Mud	Aqua drill
Slurry 1	
Slurry 2	
Slurry 3	G,FW36,15l/hk,FP16L0,2l/hk,CD34L0,8l/hk,FL67LE2,5l/hk,BA5811l/hk
Spacer	Pr m*,FW965l,FP-16LG10l, MCS-J25l
Fluid displacing	Aqua drill

Fluid Properties	Name fluid	Density	Temp	300	200	100	6	3	gel/10sec	gel/10min
Fluid 1	Aquadriil	1.15	50	37	30	22	7	6	3.35	6.7
Fluid 2										
Fluid 3										
Spacer	Soap Wash	1.00	18	6	4	3	0.5	0.5		
Slurry 1										
Slurry 2										
Slurry 3	Tail	1.90	22	120	85	48	4.5	2.5	2.5	11.5
Displace	Aquadriil	1.15	50	37	30	22	7	6	3.35	6.7

Volumes & Design										
Volume based on										
Gauge hole size (inch)	6									
Average hole size										
Caliper (m*)										
Assumed size										
Water chloride ppm	250									889

Pumping Sequences	Fluid Type	Density (SG)	Volume pumped (m³)	Rate max (lpm)	Fluid losses (m³)	Pressure (bar)	Mikswater Mixed (m³)	Mikswater Dumped (m³)
Prior to run casing								
After casing is landed								
Cement job								
Spacer	Soap Wash	1.00	3.00	935		40		
Slurry 1								
Slurry 2								
Slurry 3	Tail	1.90	3.4	846		60-8		
Displacement	FW	1.00	0.85	600		8		
	Aquadriil	1.15	2.4	700		10		
	Total loss during cement job						press increase	

Job Results	Density Max (SG)	Density Min (SG)	Average 95% (SG)	TOC Planned (m MD)	TOC Actual (m MD)
Slurry 1					
Slurry 2					
Slurry 3	1,91	1,89	1,9	884	

Chemicals used											
SC no.	Tradename	SG	unit	Last Inventory	Usage down hole	Dumped Storetank	Dumped sea	Usage Total	Present Inventory	Unit prize	Total prize
12057	G		KG	160000	5000			5000	155000		
12409	FP-16LG	0.76	LTR	1160	20			20	1140		
12006	BA-58L	1.38	LTR	4000	700			700	3300		
12088	FL-67LE	1.12	LTR	3800	170			170	3630		
12105	CD-34L	1.20	LTR	1130	60			60	1070		
12395	MCS-J	1.02	LTR	2250	30			30	2220		
12409	FP-16LG	0.76	LTR	1140	30			30	1110		
Chemicals used in more than 1 slurry/spacer			Soap Wash	lit/kg		lit/kg		Tail	lit/kg		

Table 13-4 Cement job recap – P&A plug #1A

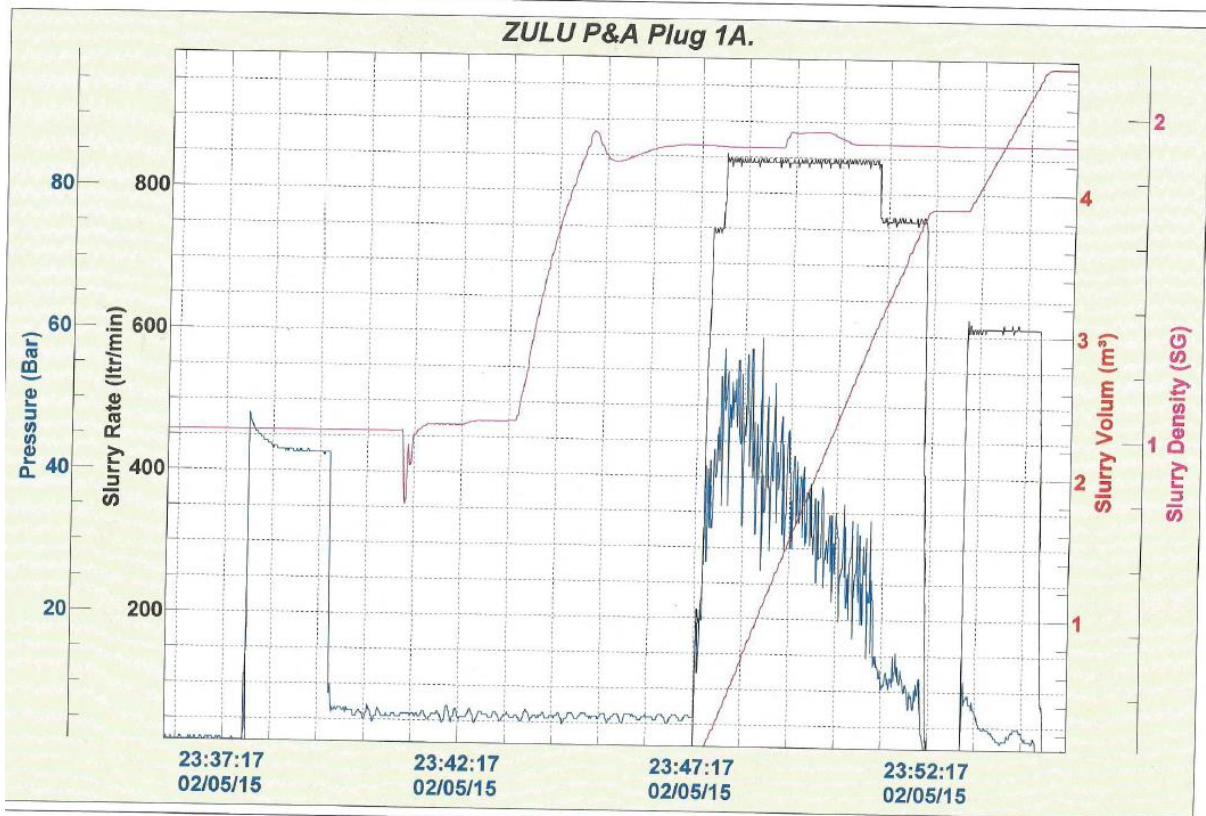


Figure 13-6 Cement job plot - P&A plug #1A

Table 13-5 Cement job recap – P&A plug #1B



CEMENT RECAP BJ Services

P&A Plug 1B

Job no.	Island Innovator	Customer Company	Lundin
Rig	26/10-1	Customer Rep.	Arne Fjeldsaa
Well No	06.02.2015	Type of Job	P&A Plug 1B
Cementing date/Year	Richie Allan	Job Objective	P&A OH
BJ Cementer	Unni Lone	Section (Inch)	6
BJ Operator		Lab test no.	NL-031-15
BJ Operator			

Description of well		Hole Size	6	Inch	42	BHST
RKB - seabed	170	m	Angle max	0	deg	22
Depth M MD (drilled)	1026	m	Horizontal section		m (depth)	
Depth M TVD (drilled)	1025	m				

Casing Description	Size	Weight	Grade	Thread	FC mMD	FS mMD	FS mTVD	C&S depth	DP Depth
Drill pipe from top	4" DP	14	S-135T	4					555
Drill pipe from bottom	3 1/2" DP	15.5	S-135	3 1/2 IF					882
Casing section Top									
Casing section Bottom									

Fluid Composition	Aqua drill
Mud	
Slurry 1	
Slurry 2	
Slurry 3	G,FW36,15l/hk,FP16L0,2l/hk,CD34L0,8l/hk,FL67LE2,5l/hk,BA5811l/hk
Spacer	Pr m²FW965l, FP-16LG10l, MCS-J25l
Fluid displacing	Aqua drill

Fluid Properties	Name fluid	Density	Temp	300	200	100	6	3	gel/10sec	gel/10min
Fluid 1	Aquadrill	1.15	50	37	30	22	7	6	3.35	6.7
Fluid 2										
Fluid 3										
Spacer	Soap Wash	1.00	18	6	4	3	0.5	0.5		
Slurry 1										
Slurry 2										
Slurry 3	Tail	1.90	22	120	85	48	4.5	2.5	2.5	11.5
Displace	Aquadrill	1.15	50	37	30	22	7	6	3.35	6.7

Volumes & Design	Volume based on	Slurry	Milkwater	Top of	Top of	Top of	Top of	Top of	Top of
Gauge hole size (inch)	6	excess %	excess m³	Slurry 1	Slurry 1	Slurry 2	Slurry 2	Slurry 3	Slurry 3
Average hole size				m (TVD)	m (MD)	m (TVD)	m (MD)	m (TVD)	m (MD)
Calliper (m²)									
Assumed size									
Water chloride ppm	250	Slurry3	30 %						743

Pumping Sequences	Density	Volume pumped	Rate max	Fluid losses	Pressure	Milkwater Mixed	Milkwater Dumped	
Prior to run casing	(SG)	(m³)	(lpm)	(m³)	(bar)	(m³)	(m³)	
After casing is landed								
Cement job								
Spacer								
Slurry 1								
Slurry 2								
Slurry 3								
Displacement								
	Soap Wash	1.00	3.00	1011	42			
	Tail	1.90	3.4	786	28.4			
	FW	1.00	0.8	700	10			
	Aquadrill	1.15	1.7	800	10			
	Total loss during cement job						press increase	

Job Results	Density	Density	Average	TOC	TOC
	Max (SG)	Min (SG)	95% (SG)	Planned (m MD)	Actual (m MD)
	1,91	1,89	1,9	743	738

Chemicals used											
SC no.	Tradename	SG	unit	Last Inventory	Usage down hole	Dumped Storetank	Dumped sea	Usage Total	Present Inventory	Unit prize	Total prize
12057	G		KG	155000	5000			5000	150000		
12409	FP-16LG	0.76	LTR	1110	20			20	1090		
12006	BA-58L	1.38	LTR	3300	700		100	800	2500		
12088	FL-67LE	1.12	LTR	3630	170		70	240	3390		
12105	CD-34L	1.20	LTR	1070	60		130	190	880		
12395	MCS-J	1.02	LTR	2220	30			30	2190		
12409	FP-16LG	0.76	LTR	1090	30			30	1060		
Chemicals used in more than 1 slurry/spacer			Soap Wash	lit/kg		lit/kg		Tail	lit/kg		

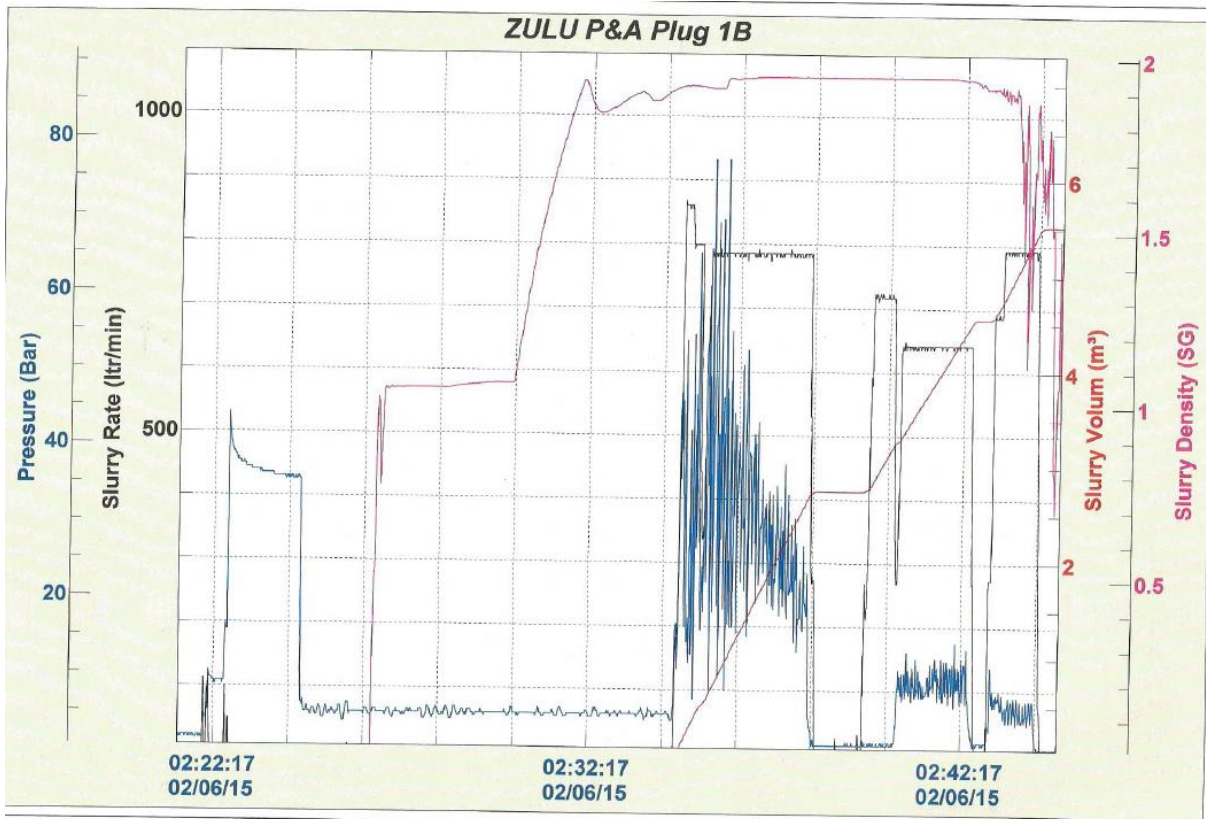


Figure 13-7 Cement job plot - P&A plug #1B

P&A plug #2

Table 13-6 Cement job recap – P&A plug #2



CEMENT RECAP BJ Services

P&A Plug 2

Job no.	Island Innovator	Customer Company	Lundin
Rig	26/10-1	Customer Rep.	Arne Fjeldsaa
Well No	06.02.2015	Type of Job	P&A Plug 2
Cementing date/Year	Richie Allan	Job Objective	P&A OH
BJ Cementer	Tor Jan Nilsen	Section (Inch)	6
BJ Operator		Lab test no.	NL- 034- 15
BJ Operator			

Description of well	170	m	Hole Size	6	Inch	25	BHST
RKB - seabed	1026	m	Angle max	0	deg	17	BHCT
Depth M MD (drilled)	1025	m	Horizontal section				
Depth M TVD (drilled)							

Casing Description	Size	Weight	Grade	Thread	FC mMD	FS mMD	FS mTVD	CSG depth	DP Depth
Drill pipe from top	4" DP	14	S-135T	4					409
Drill pipe from bottom	3 1/2" DP	15.5	S-135	3 1/2 IF					536
Casing section Top									
Casing section Bottom									

Fluid Composition	Aqua drill
Mud	
Slurry 1	
Slurry 2	
Slurry 3	G.SW43,45l/hk, FP16L0,2l/hk,A7L2l/hk
Spacer	Pr m² FW965l, FP-16LG10l, MCS-J25l
Fluid displacing	Aqua drill

Fluid Properties	Name fluid	Density	Temp	300	200	100	6	3	gel/10sec	gel/10min
Fluid 1	Aquadriil	1.15	50	37	30	22	7	6	3.35	6.7
Fluid 2										
Fluid 3										
Spacer	Soap Wash	1.00	18	6	4	3	0.5	0.5		
Slurry 1										
Slurry 2										
Slurry 3	Tail	1.92	17	110	91	69	29	27	28.5	35.5
Displace	Aquadriil	1.15	50	37	30	22	7	6	3.35	6.7

Volume & Design										
Volume based on										
Gauge hole size (inch)	6									
Average hole size										
Calliper (m²)										
Assumed size										
Water chloride ppm	250									543

Pumping Sequences	Fluid Type	Density (SG)	Volume pumped (m³)	Rate max (lpm)	Fluid losses (m³)	Pressure (bar)	Milkwater Mixed (m³)	Milkwater Dumped (m³)	
Prior to run casing									
After casing is landed									
Cement job									
Spacer	Soap Wash	1.00	3.00	405		14			
Slurry 1									
Slurry 2									
Slurry 3	Tail	1.92	4.2	805		11			
Displacement	FW	1.00	0.82	749		4			
	Aquadriil	1.15	0.75	482		3			
	Total loss during cement job						press Increase		

Job Results	Density Max (SG)	Density Min (SG)	Average 95% (SG)	TOC Planned (m MD)	TOC Actual (m MD)
Slurry 1					
Slurry 2					
Slurry 3	1.95	1.92	1.92	543	518

Pressure testing results	Test of casing (bar)	Test (date)	Time after cementing (hrs)	Test of Linerlap (bar)	Test (date)	Test ok (yes/no)
	107.0	07.feb.15	12.0			yes

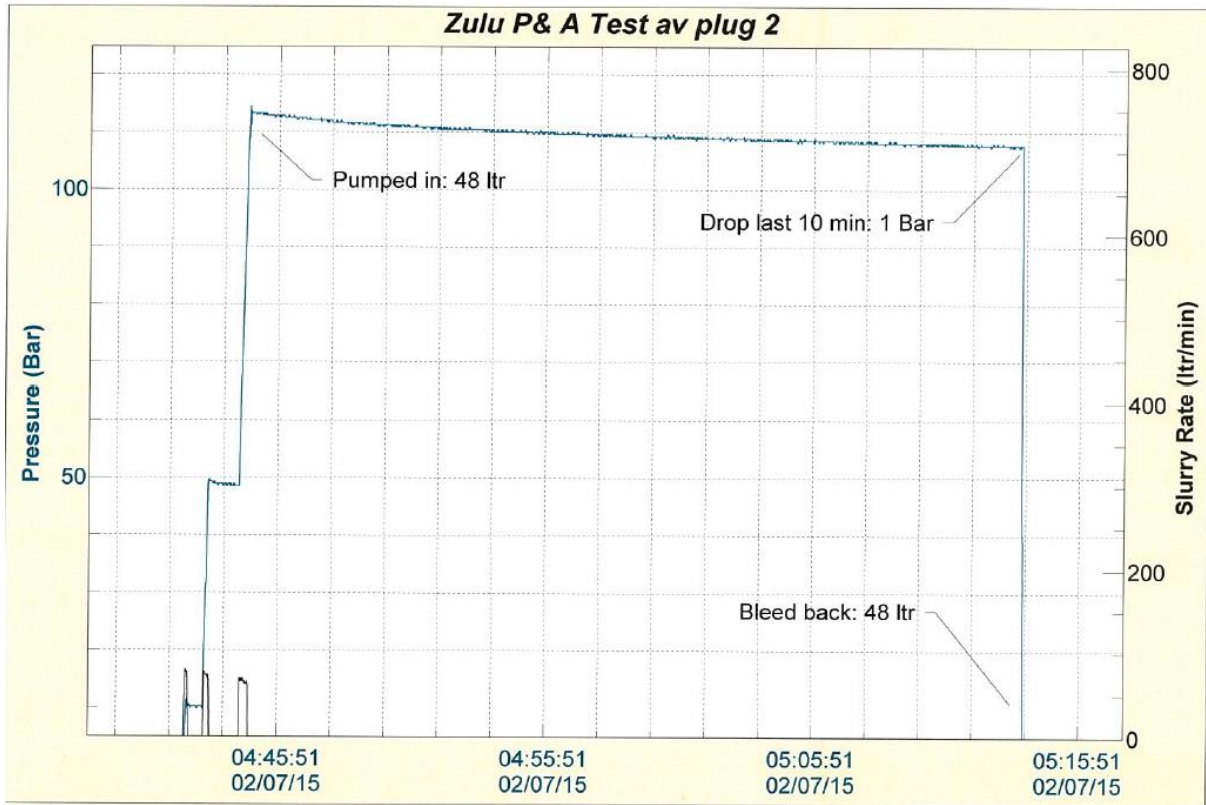


Figure 13-9 Pressure test cement plug #2

P&A plug #3

Table 13-7 Cement job recap - P&A plug #3



CEMENT RECAP BJ Services

P&A Plug 3

Job no.		Customer Company	Lundin
Rig	Island Innovator	Customer Rep.	Arne Fjeldsaa
Well No	26/10-1	Type of Job	P&A Plug 3
Cementing date/Year	10.02.2015	Job Objective	P&A
BJ Cementer	Bert Grødem	Section (Inch)	13 3/8
BJ Operator	Unni Lone	Lab test no.	NL- 037- 15
BJ Operator			

Description of well		Hole Size	13 3/8	Inch	11	BHST
RKB - seabed	170	Angle max	0	deg	12	BHCT
Depth M MD (drilled)	1026	Horizontal section		m (depth)		
Depth M TVD (drilled)	1025					

Casing Description	Size	Weight	Grade	Thread	FC mMD	FS mMD	FS mTVD	CSG depth	DP Depth
Drill pipe from top	5"	19.5	S-135T	4 1/2" IF					278
Drill pipe from bottom									
Casing section Top									
Casing section Bottom									

Fluid Composition	
Mud	Aqua drill
Slurry 1	
Slurry 2	
Slurry 3	G,SW39,54lhk,FP16L0,2lhk,A7L4lhk
Spacer	SW
Fluid displacing	Aqua drill

Fluid Properties	Name fluid	Density	Temp	300	200	100	6	3	gel/10sec	gel/10min
Fluid 1	Aquadriil	1.15	50	37	29	23	7	6	3.35	6.22
Fluid 2										
Fluid 3										
Spacer										
Slurry 1										
Slurry 2										
Slurry 3	Tall	1.95	12	148	123	98	42	28.5	31	38
Displace	Aquadriil	1.15	50	37	29	23	7	6	3.35	6.22

Volumes & Design		Slurry excess %	Mikswater excess m³	Top of Slurry 1 m (TVD)	Top of Slurry 1 m (MD)	Top of Slurry 2 m (TVD)	Top of Slurry 2 m (MD)	Top of Slurry 3 m (TVD)	Top of Slurry 3 m (MD)
Volume based on									
Gauge hole size (inch)									
Average hole size	13 3/8								
Calliper (m²)									
Assumed size									
Water chloride ppm									200

Pumping Sequences	Fluid Type	Density (SG)	Volume pumped (m³)	Rate max (lpm)	Fluid losses (m³)	Pressure (bar)	Mikswater Mixed (m³)	Mikswater Dumped (m³)
Prior to run casing								
After casing is landed	Aquadriil	1.15	77	2500		85		
Cement job	SW	1.03	10.00	1120		18		
Spacer								
Slurry 1								
Slurry 2								
Slurry 3	Tall	1.95	6.2	830		14		
Displacement	SW	1.03	0.65	420		1		
	Aquadriil	1.15	0.6	470		3		
	Total loss during cement job						press Increase	

Job Results		Density Max (SG)	Density Min (SG)	Average 95% (SG)	TOC Planned (m MD)	TOC Actual (m MD)
	Slurry 1					
	Slurry 2					
	Slurry 3	1.95	1.94	1.95	200	

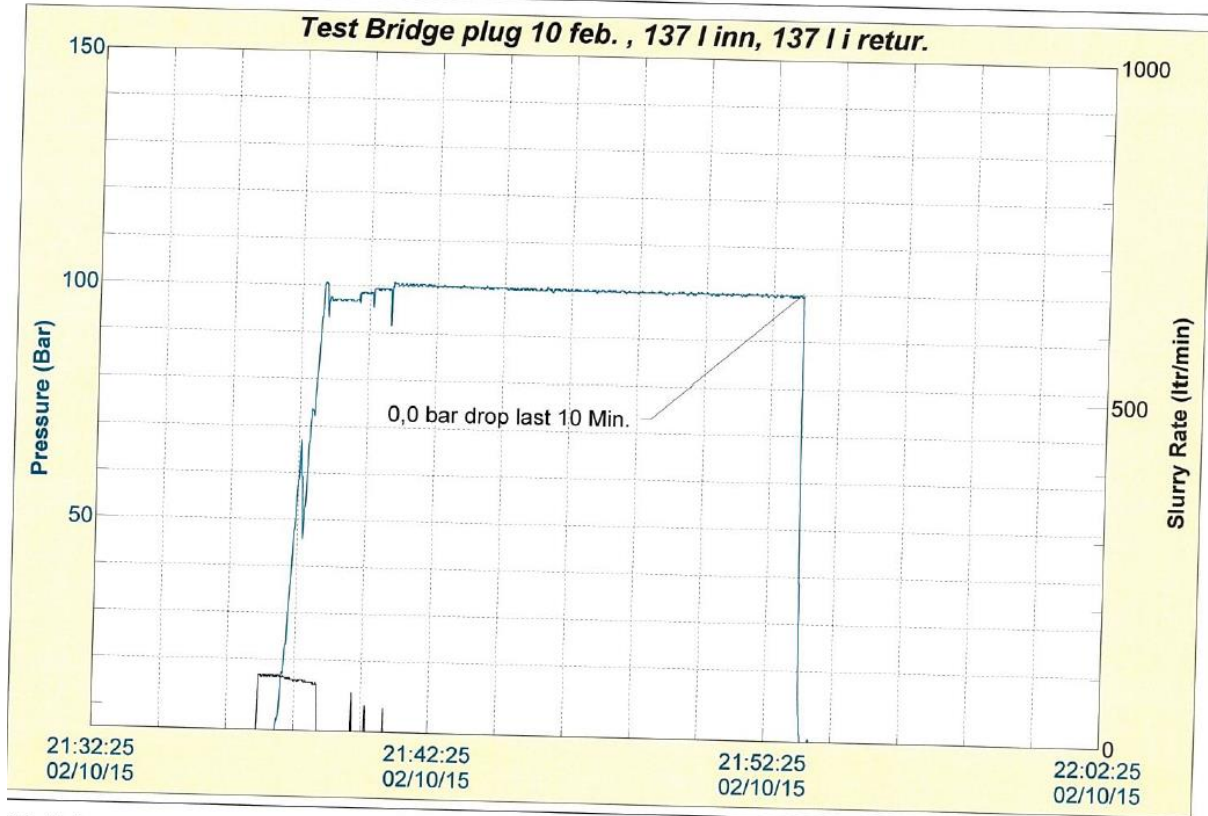


Figure 13-11 Pressure test 13 3/8" HMBP

14 Formation strength reports

14.1 LOT below 13 3/8" casing shoe 1

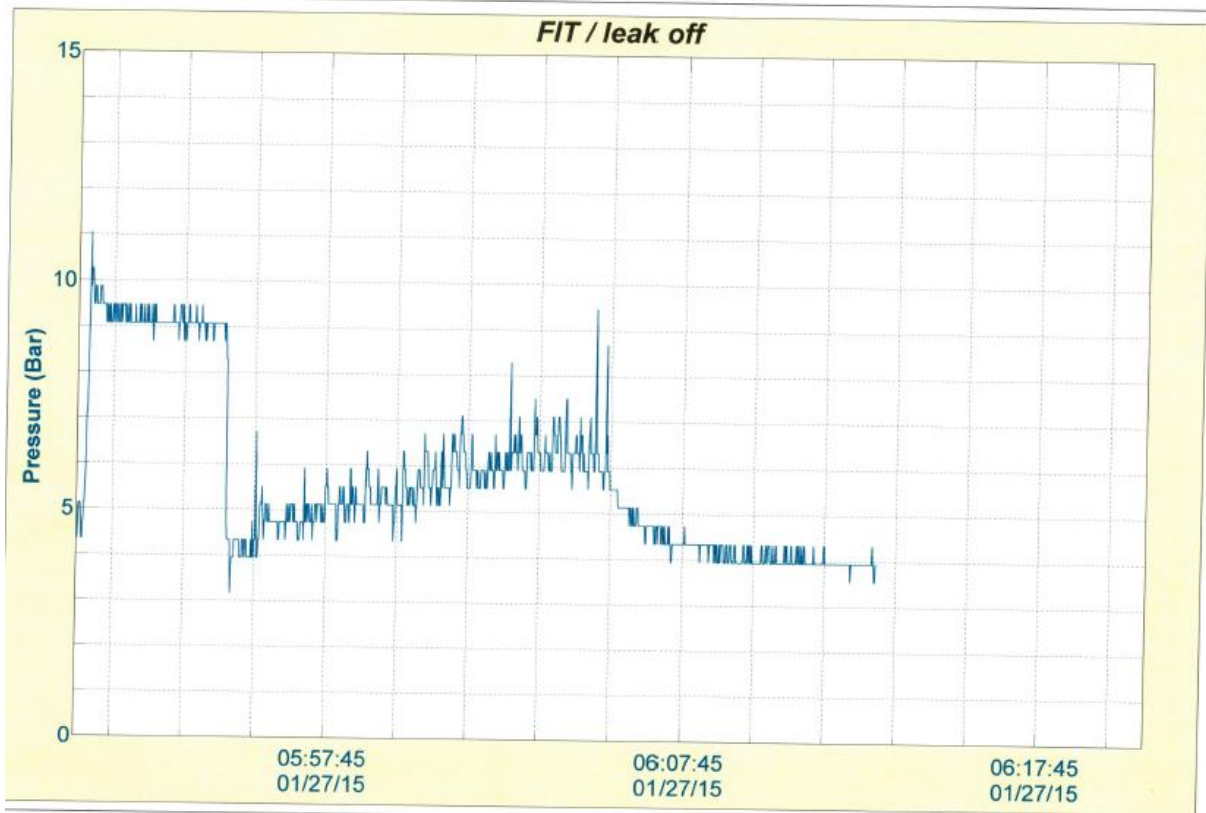


Figure 14-1 Leak Off Test below 13 3/8"x20" casing after drilling to 291 m.

14.2 LOT below 13 3/8" casing shoe 2

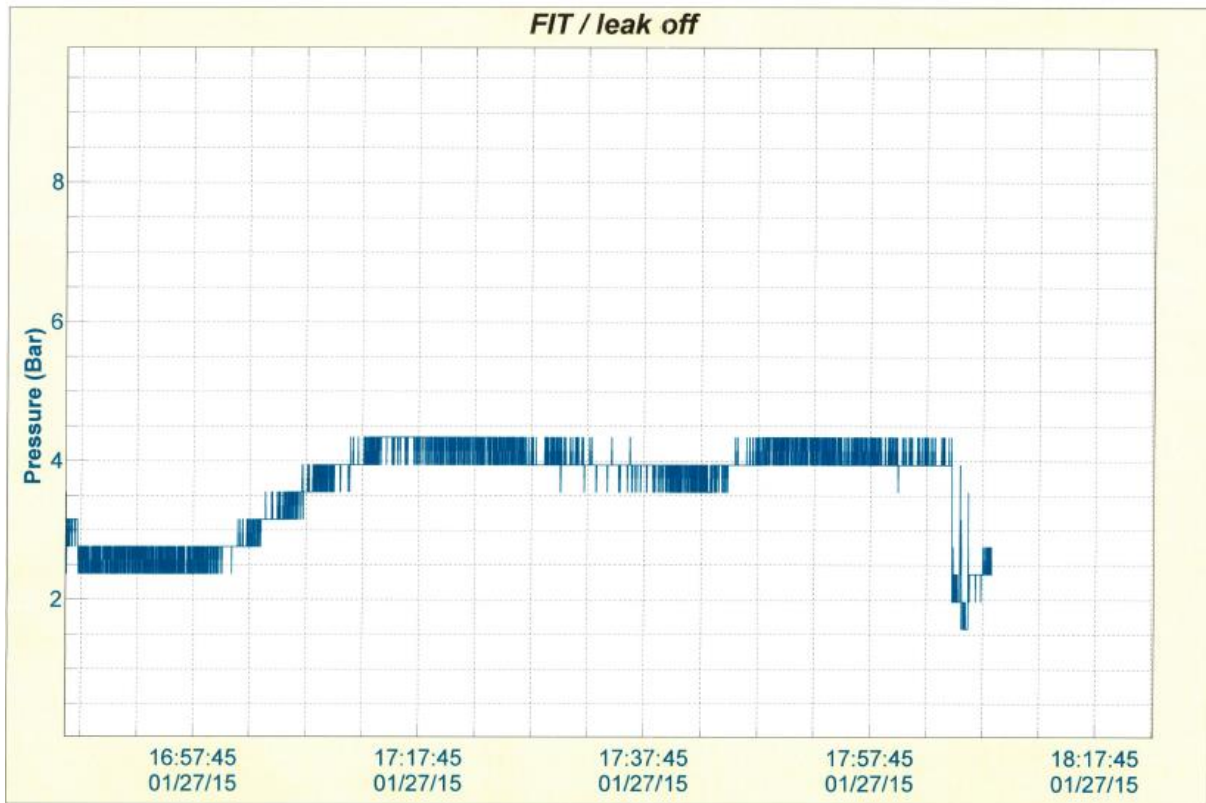


Figure 14-2 Leak Off Test below 13 3/8"x20" casing after drilling to 331 m.

14.3 FIT below 7" casing shoe

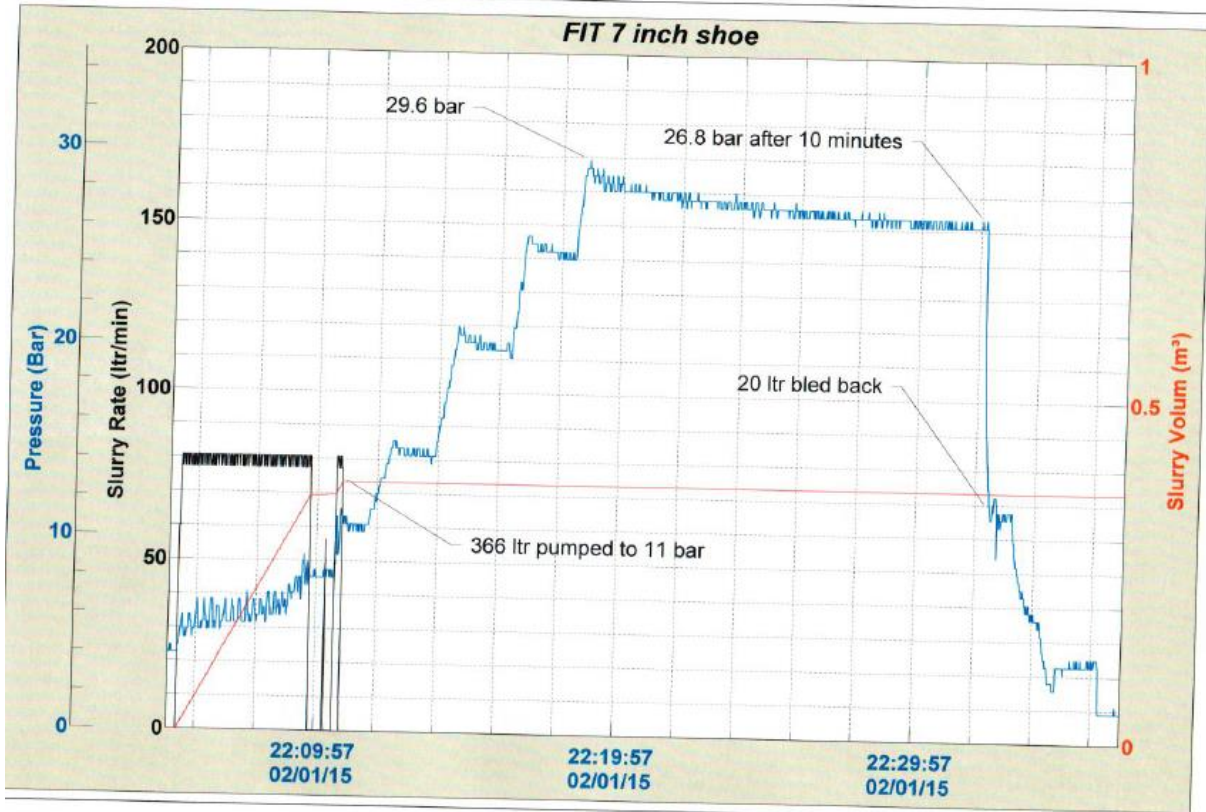


Figure 14-3 Formation Integrity Test below 7" casing

15 Drilling fluid properties summary

Table 15-1 Drilling fluids properties summary, 36" and 9 7/8"

Mud Property	Unit	Programmed	Minimum	Maximum	Typical
Density	sg	1.04 – 1.40 (1.25 in Pilot Hole)	1.03	1.40	1.03
Viscosity	sec	120+	120+	150	150
API Fluid Loss	cc	< 10			9.8

Table 15-2 Drilling fluids properties summary, 17 1/2"

Mud Property	Unit	Programmed	Minimum	Maximum	Typical
Density	sg	1,03 – 1.40	1.03	1.40	1.03
pH		9-10	9.5	10	9.8
API Fluid Loss (Disp't mud)	cc	< 10.0			9.6

Table 15-3 Drilling fluids properties summary, 12 1/4"

Mud Property	Unit	Programmed	Minimum	Maximum	Typical
Density	sg	1.18	1.12	1.16	1.15
3 rpm reading		8– 15	4	5	4
6 rpm reading		10– 16	4	5	4
YP	Pa	10-20	5.27	10.05	9.9
10 sec Gel Strengths	Pa	<12.0	1.92	2.39	2.07
API Fluid Loss	ml/30 min	< 4	3.0	4.4	3.6
KCl	kg/m ³	120-140	82	111	101
pH		9.0 – 9.5	8.4	9.2	9.0
Glycol	vol%	3.5 - 4%	2.1	3.5	3.0
MBT	kg/m ³	< 75	7	14	14
LGS/HGS	kg/m ³		16.29/51.59	108.30/104.62	70.01/76.66
MBT	kg/m ³	< 75	20	25	23.9

Table 15-4 Drilling fluids properties summary, 6"

Mud Property	Unit	Programmed	Minimum	Maximum	Typical
Density	sg	1.15	1.15	1.16	1.15
6 rpm reading	-	8 – 15	6	8	7
3 rpm reading	-	6 – 14	4	6	5
YP	Pa	10 - 20	9.58	12.45	10.4
10 sec Gel Strengths	Pa		1.92	3.83	2.87
API Fluid Loss	ml/30 min	< 4	3.4	4.0	3.6
KCl	kg/m ³	100 - 120	101	118	114
pH	-	9 – 9.5	8.9	10.6	9.6
Glycol	vol%	3.5 - 4	3.0	3.5	3.0
MBT	kg/m ³	< 40	14	14	14

LGS	%	< 6	1.85	3.68	2.68
Sand	%	< 1	0.1	0.15	0.11
LGS/HGS	kg/m ³		64.43/57.11	95.59/83.36	76.53/76.81

16 Bottomhole assemblies

16.1 36" hole section BHA

Table 16-1 BHA Performance report - 36" hole including bit dull.





 Advantage BHA Performance Report 													
Operator Lundin Norway AS		Fields Zulu		Location North Sea		Hole Size 36 in							
Well 26/10-1		Wellbore 26/10-1		Rig Island Innovator		Job # 6839385		ASU S/N					
BHA Description													
36" BHA													
BHA Run Parameters													
BHA Run #	1	MTR Run #		Distance	64.50	m	P/U Date	19/Jan/2015 14:45					
ATK Run #		MTR Rerun #		Avg ROP	22.50	m/hr	L/D Date	20/Jan/2015 12:15					
ATK Rerun #				Max Temp	1.0	degC							
MWD #	1	MD In	178.00	On Btm Circ	2.9	hours	Start Drilling	20/Jan/2015 01:19					
Bit #	1	MD Out	242.50	Off Btm Circ	3.1	hours	Stop Drilling	20/Jan/2015 06:22					
String Parameters													
#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m				
13	HWDP	RIG	Tally		5	3		131.01	247.84				
12	Sub - X/O	RIG	Tally		8	2 13/16		1.26	116.83				
11	Drill collar	RIG	Tally		8 1/4	2 13/16		83.36	115.57				
10	Sub - X/O	INTEQ	OMM5590		9 1/2	2 13/16	8 1/4	0.82	32.21				
9	Drill collar - short	INTEQ	OMM3918		9 1/2	3	9 1/2	2.38	31.39				
8	Stab - string	INTEQ	SDT 7221	25 3/4	9 1/2	3	9 1/2	2.69	29.01				
7	Drill collar - short	INTEQ	SDT9287		9 1/2	3	9 1/2	3.05	26.32				
6	Sub - stop	INTEQ	10499915		9 1/2	2 3/8	9 1/2	0.70	23.27				
5	BCPM	INTEQ	10352183		9 1/2	2 3/8	9 1/2	3.64	22.57				
4	OnTrak - MWD	INTEQ	13126657	11 3/4	9 1/2	2 3/8	9 5/8	7.01	18.93				
3	Sub - stop	INTEQ	10179299		9 1/2	2 3/8	9 1/2	0.76	11.92				
2	Bit - hole opener	OWS	OWS-HO-3631	36	36	2 3/8	9 5/8	10.74	11.16				
1	Bit - mill tooth - roller cone	HC	5220679	17 1/2				0.42	0.42				
Bit Parameters													
Grade In	I	O	D	L	B	G	O	R	TBR/Run	Graded By			
Grade Out	0	0	NO	A	E	I	NO	TD	6900	Directional Driller			
Type	MXL-1X Hole Opener		IADC Code	TFA		0.9940 in^2	Jets	4x18		Gauge Len in			
Type				TFA		1.0523 in^2	Jets	7x14					
Stabilization Details													
Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in	Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m
8	Integral Sleeve	SDT 7221	Spiral	39.37	4	15.75						46	tonne
4			Spiral	5.25	3 1/2		11 3/4					0	tonne
Motor Details													
Manufacturer				Nozzle				in/32					
Type				Operating Delta P				bar					
S/N				No Load Delta P				bar					
Motor Size				Bit To AKO Bend				m					
Tilt Angle				Bit To UBHS				m					
UBHS To Stator Stab				PDM Gap In / Out				/ in					
Fluid Parameters													
Formation		Top MD m	Top TVD m	Description				Mud Type Sea Water					
								Mud Weight sg					
								PV cP					
								YP Pa					
								Gels Pa					
								% Sand %					
								% Solids %					
Survey Update													
Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m		Max DLS Plan deg/30m		DLS Range deg/30m					
0.41	0.65	131.67	115.40	242.00		0.000		0.000/0.000					
Drilling Parameters													
Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar		
Drill	64.50	2.9	22.50	0/2	15/60		4.00/16.00	2.00/10.00	4000	120.000			
Off Btm Circ		3.1											
Total	64.50	6.0	22.50	0/2	15/60		4.00/16.00	2.00/10.00	4000	120.000			

Table 16-2 BHA Performance report, comments - 36" hole

		<h3>Advantage BHA Performance Report</h3>					
Operator	Lundin Norway AS	Fields	Zulu	Location	North Sea	Hole Size	36 in
Well	26/10-1	Wellbore	26/10-1	Rig	Island Innovator	Job #	6839385 ASU S/N
BHA Objective							
Drill a 17 1/2" x 26" x 36" hole vertical from seabed at 169m and down to section TD at 242m. The BHA includes a heavy duty 26" x 36" Boulder Buster Hole Opener.							
BHA Performance / Observations							
BHA performed well throughout run. No problems were encountered with surveys or decoding and BHA was reamed to maintain vertical.							
Tested tools before spuding well. Observed good communication from tools and an inclination reading of .179 degrees.							
On reaching the top of the CAN on the seafloor the 17x26x36" BHA was stabbed into the guide with no flow. Broke circulation with 1000 l/min flow rate and washed in, increasing flow rate to 1500l/min and then 2000 l/min when the hole openers began to take weight. At 8m the BHA took 3 ton WOB and rotation was begun at a rate of 15 RPM. Maintained these parameters for the remainder of the single.							
After connection the drilling parameters were increased stepwise throughout the next stand, from 2000l/min and 30RPM to 4000l/min and 60RPM. Encountered some slower drilling at 202, 207, 211 m MD. No excessive vibration or string movement was noted on surface or in tool readings so boulders were not suspected. A survey mid stand showed an inclination of .4 degrees. Before connection another survey showed an increase to .55 degrees and so the stand was reamed to try and reduce angle and break build trend. Sections that had drilled slower showed higher torque on first pass while reaming but were reduced on the second pass.							
Drilling ahead in the next stand we encountered another slow section after 221m MD. Survey at mid stand showed another increase in inclination to .67 degrees so the stand was worked again from 215 to 228m which would be the section surrounding the final survey at TD.							
Drilled ahead to section TD without incident. Bottom hole survey was recorded with an inclination of .65 degrees.							
BHA Conclusions / Recommendations / Remarks							
Despite a slight build trend the BHA achieved the section goals. Reaming had been expected and was sufficient to maintain vertical.							
BHA Reason POOH							
TD 36" section.							
Directional Drillers							
S.Mac Neil, G.Nygaard							

16.2 26" cleanout assembly

Table 16-3 BHA Performance report – 26" clean out assembly including bit dull.





 Advantage BHA Performance Report 													
Operator Lundin Norway AS		Fields Zulu		Location North Sea		Hole Size 26 in							
Well 26/10-1		Wellbore 26/10-1		Rig Island Innovator		Job # 6839385		ASU S/N					
BHA Description													
26" Drillout BHA													
BHA Run Parameters													
BHA Run #	2	MTR Run #		Distance	0.00	m	P/U Date	21/Jan/2015 09:45					
ATK Run #		MTR Rerun #		Avg ROP		m/hr	L/D Date	21/Jan/2015 20:00					
ATK Rerun #				Max Temp		degC							
MWD #		MD In	242.00	m		On Btm Circ	0.0	hours	Start Drilling	21/Jan/2015 15:55			
Bit #	2	MD Out	242.00	m		Off Btm Circ	1.9	hours	Stop Drilling	21/Jan/2015 16:30			
String Parameters													
#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m				
13	HWDP	Rig			5	3		112.00	228.98				
12	Sub - X/O	Rig			8 1/4	2 13/16		1.00	116.98				
11	Drill collar	Rig			8 1/4	2 13/16		18.00	115.98				
10	Accelerator	Weatherford	1591-5032		8 1/8	3		9.70	97.98				
9	Drill collar	Rig	Tally		8 1/4	2 13/16		18.00	88.28				
8	Jar	Weatherford	1762-5232		8	3	8	10.73	70.28				
7	Drill collar	Rig			8 1/4	2 13/16		45.00	59.55				
6	Sub - X/O	INTEQ	SDT7285		9 1/2	3		1.05	14.55				
5	Drill collar - short	INTEQ	OMM2636		9 1/2	3		4.22	13.50				
4	Stab - string	INTEQ	SDT7718	25 3/4	9 1/2	3	9 1/2	2.87	9.28				
3	Drill collar - short	INTEQ	SDT9285		9 1/2	3		3.08	6.41				
2	Stab - NB	INTEQ	OMM6297	25 3/4	9 1/2	3		2.77	3.33				
1	Bit - insert - roller cone	HCC	5197448	26				0.56	0.56				
Bit Parameters													
	I	O	D	L	B	G	O	R	TBR/Run	Graded By			
Grade In													
Grade Out	0	0	NO	A	E	I	NO	TD	6600	Baker DD			
Type	VG-C1	IADC Code		TFA	1.1689	in^2	Jets	18,3x20	Gauge Len	in			
Stabilization Details													
Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in	Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m
4	Integral	SDT7718	Spiral	45.28	4	33.86	25 3/4	25 3/4	BHA Buoyed Wt			43	tonne
2		OMM6297		45.00					BHA Wt Below Jars			16	tonne
Motor Details													
Manufacturer				Nozzle				in/32					
Type				Operating Delta P				bar					
S/N				No Load Delta P				bar					
Motor Size				Bit To AKO Bend				m					
Tilt Angle				Bit To UBHS				m					
UBHS To Stator Stab				PDM Gap In / Out				/ in					
Component Details													
Geology													
Formation		Top MD m	Top TVD m	Description				Fluid Parameters					
								Sea Water					
								Mud Type					
								Mud Weight					
								PV					
								YP					
								Gels					
								% Sand					
								% Solids					
Survey Update													
Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m		Max DLS Plan deg/30m		DLS Range deg/30m					
Drilling Parameters													
Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar		
Drill	0.00	0.0		1/1	15/55		8.00/8.00	3.00/3.00	3000	55.000			
Off Btm Circ		1.9											
Total	0.00	1.9		1/1	15/55		8.00/8.00	3.00/3.00	3000	55.000			

Table 16-4 BHA Performance report, comments – 26" clean out assembly



		Advantage BHA Performance Report					
Operator	Lundin Norway AS	Fields	Zulu	Location	North Sea	Hole Size	26 in
Well	26/10-1	Wellbore	26/10-1	Rig	Island Innovator	Job #	6839385 ASU S/N
BHA Objective							
Drill out 30" Conductor shoe and clean out rathole.							
BHA Performance / Observations							
Tagged top of cement at 236.5m. Drilled cement and shoe. Cleaned out rathole in steps. Displaced hole to 1.4 sg prior to POOH.							
BHA Conclusions / Recommendations / Remarks							
No formation drilled. BHA performed as expected.							
BHA Reason POOH							
BHA							
Directional Drillers							

16.3 9 7/8" pilot hole

Table 16-5 BHA Performance report – 9 7/8" pilot hole including bit dull.

Lundin Norway										Advantage BHA Performance Report										BAKER HUGHES					
Operator Lundin Norway AS			Fields Zulu			Location North Sea			Hole Size in																
Well 26/10-1			Wellbore 26/10-1			Rig Island Innovator			Job # 6839385			ASU S/N													
BHA Description																									
9 7/8" Pilot Hole																									
BHA Run Parameters																									
BHA Run # 3		MTR Run #		Distance 48.00 m		P/U Date 21/Jan/2015 21:00																			
ATK Run #		MTR Rerun #		Avg ROP 32.00 m/hr		L/D Date 22/Jan/2015 08:45																			
ATK Rerun #				Max Temp																					
MWD # 2		MD In 242.00 m		On Btm Circ 1.5 hours		Start Drilling 22/Jan/2015 01:40																			
Bit # 3		MD Out 290.00 m		Off Btm Circ 2.2 hours		Stop Drilling 22/Jan/2015 03:40																			
String Parameters																									
#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m																
14	HWDP	Rig	Tally		5	3		112.30	219.40																
13	Sub - X/O	Rig			8 1/4	2 13/16		1.26	107.10																
12	Drill collar	Rig	Tally		8 1/4	3		28.00	105.84																
11	Accelerator	Weatherford	1591-5032		8	2 7/8		9.70	77.84																
10	Drill collar	Rig	Tally		8 1/4	2 13/16		18.00	68.14																
9	Jar	Weatherford	1762-5232		8	2 13/16		10.73	50.14																
8	Drill collar	Rig	Tally		8 1/4	2 13/16		17.98	39.41																
7	NMSub - stop	INTEQ	BHIN6806		8 1/4	2 3/8		0.68	21.43																
6	APX	INTEQ	12726658		8 1/4	2 3/8		9.96	20.75																
5	BCPM	INTEQ	10145293		8 1/4	2 3/8		3.48	10.79																
4	OnTrak - MWD	INTEQ	13068575		8 1/4	2 3/8		5.79	7.31																
3	NMSub - stop	INTEQ	10123601		8 1/4	2 13/16		0.50	1.52																
2	Sub - bit	INTEQ	OMM2865		8	2 13/16		0.76	1.02																
1	Bit - mill tooth - roller cone	HCC	5191915		8 1/2			0.26	0.26																
Bit Parameters																									
Grade In		I	O	D	L	B	G	O	R	TBR/Run	Graded By														
Grade Out		0	0	NO	A	E	I	NO	TD	5349	Directional Driller														
Type MX-1		IADC Code		TFA 0.9419 in^2		Jets 16,3x18		Gauge Len		in															
Stabilization Details											Drill Pipe Details														
Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in	Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m												
														BHA Buoyed Wt 46 tonne											
														BHA Wt Below Jars 12 tonne											
Motor Details											Component Details														
Manufacturer				Nozzle				Operating Delta P				in/32													
Type				S/N				No Load Delta P				bar													
Motor Size				Bit To AKO Bend				Bit To UBHS				m													
Tilt Angle				Bit To UBHS				Bit To UBHS				m													
UBHS To Stator Stab				PDM Gap In / Out				/ in																	
Geology											Fluid Parameters														
Formation			Top MD m		Top TVD m		Description				Mud Type Sea Water														
											Mud Weight				sg										
											PV				cP										
											YP				Pa										
											Gels				Pa										
											% Sand				%										
											% Solids				%										
Survey Update																									
Inc In deg		Inc Out deg		Azi In deg		Azi Out deg		Max TVD m		Max DLS Plan deg/30m		DLS Range deg/30m													
Drilling Parameters																									
Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar														
Drill	48.00	1.5	32.00	1/1	60/60		1.00/3.00	1.00/2.00	4000	155.000															
Off Btm Circ		2.2																							
Total	48.00	3.7	32.00	1/1	60/60		1.00/3.00	1.00/2.00	4000	155.000															

Table 16-6 BHA Performance report, comments – 9 7/8" pilot hole



		<h3>Advantage BHA Performance Report</h3>					
Operator	Lundin Norway AS	Fields	Zulu	Location	North Sea	Hole Size	in
Well	26/10-1	Wellbore	26/10-1	Rig	Island Innovator	Job #	6839385 ASU S/N
BHA Objective							
Drill a vertical 9 7/8" pilot hole from bottom of 26" rat hole.							
BHA Performance / Observations							
No problems were encountered while drilling the 9 7/8" section. Drilled to section TD @ 290m without encountering any rough drilling indicating boulders or other events which might lead to hole problems. The BHA maintained vertical through section without requiring any reaming.							
Stabbed into Can and ran in to 239m. Broke circulation and checked MWD tools for good communication. Drilled ahead with 4000l/min and 60 RPM with 1 ton WOB or less. Drilled to 290m with the same parameters without noting any changes in drilling. Spotted a high vis sweep on bottom and POOH.							
BHA Conclusions / Recommendations / Remarks							
BHA performed well and would be a viable choice in subsequent wells in the area.							
BHA Reason POOH							
Section TD.							
Directional Drillers							
S.Mac Neil, G.Nygaard							

16.4 17 1/2" hole section BHA

Table 16-7 BHA Performance report – 17 1/2" hole including bit dull.

Lundin Norway		Advantage BHA Performance Report					BAKER HUGHES						
Operator	Lundin Norway AS	Fields	Zulu	Location	North Sea	Hole Size	17 1/2 in						
Well	26/10-1	Wellbore	26/10-1	Rig	Island Innovator	Job #	6839385 ASU S/N						
BHA Description													
17 1/2" BHA													
BHA Run Parameters													
BHA Run #	4	MTR Run #		Distance	48.00 m	P/U Date	22/Jan/2015 09:30						
ATK Run #		MTR Rerun #		Avg ROP	40.00 m/hr	L/D Date	22/Jan/2015 21:15						
ATK Rerun #				Max Temp	13.0 degC								
MWD #	3	MD In	242.00 m	On Btm Circ	1.2 hours	Start Drilling	22/Jan/2015 14:20						
Bit #	4	MD Out	290.00 m	Off Btm Circ	1.4 hours	Stop Drilling	22/Jan/2015 16:00						
String Parameters													
#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m				
17	HWDP							108.00	248.17				
16	Sub - X/O							1.00	140.17				
15	Drill collar							27.00	139.17				
14	Accelerator				8	2 7/8		10.00	112.17				
13	Drill collar				8 1/4			18.00	102.17				
12	Jar				8			10.00	84.17				
11	Drill collar	RIG	Tally		8 1/4	2 13/16		45.00	74.17				
10	Sub - float		SDT6895		8			0.67	29.17				
9	Stab - string		10463869	12 1/8	8	2 7/8		2.36	28.50				
8	Drill collar		Tally		8 1/4	2 7/8		9.00	26.14				
7	Sub - X/O	INTEQ	SDT7772		9 1/2	2 7/8		1.24	17.14				
6	Stab - string	INTEQ	11615752	17 3/8	9 1/2	2 7/8	9 1/2	2.52	15.90				
5	Sub - stop	INTEQ	10499915		9 1/2	2 3/8	9 1/2	0.70	13.38				
4	BCPM	INTEQ	10352183		9 1/2	2 3/8	9 1/2	3.64	12.68				
3	OnTrak - MWD	INTEQ	13126657	11 3/4	9 1/2	2 3/8	9 5/8	7.01	9.04				
2	Near Bit Gamma		11723347					1.61	2.03				
1	Bit - mill tooth - roller cone	HC	5199711	17 1/2				0.42	0.42				
Bit Parameters													
Grade In	I	O	D	L	B	G	O	R	TBR/Run	Graded By			
Grade Out	0	0	NO	A	X	I	NO	TD	4106	Directional Driller			
Type	MXL-1X	IADC Code		TFA	1.1689 in^2	Jets	18,3x20	Gauge Len		in			
Stabilization Details								Drill Pipe Details					
Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in	Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m
9		10463869											
6	Integral Sleeve	11615752	Spiral	39.37	4	15.75							
3			Spiral	5.25	3 1/2		11 3/4						
Motor Details								Component Details					
Manufacturer		Nozzle											in/32 bar
Type		Operating Delta P											bar
S/N		No Load Delta P											m
Motor Size		Bit To AKO Bend											m
Tilt Angle		Bit To UBHS											m
UBHS To Stator Stab		PDM Gap In / Out											/ in
Geology								Fluid Parameters					
Formation	Top MD m	Top TVD m	Description	Mud Type	Sea Water								
				Mud Weight	1.0300 sg								
				PV	cP								
				YP	Pa								
				Gels	/ Pa								
				% Sand	%								
				% Solids	%								
Survey Update													
Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m	Max DLS Plan deg/30m	DLS Range deg/30m							
0.50	0.50	90.42	85.11	290.00	0.000	0.080/0.210							
Drilling Parameters													
Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar		
Drill	48.00	1.2	40.00	0/1	0/60		2.00/3.00	2.00/2.00	4000	130.000			
Off Btm Circ		1.4											
Total	48.00	2.6	40.00	0/1	0/60		2.00/3.00	2.00/2.00	4000	130.000			

Table 16-8 BHA Performance report, comments – 17 1/2" hole



		Advantage BHA Performance Report					
Operator	Lundin Norway AS	Fields	Zulu	Location	North Sea	Hole Size	17 1/2 in
Well	26/10-1	Wellbore	26/10-1	Rig	Island Innovator	Job #	6839385 ASU S/N
BHA Objective							
Open 9 7/8" Pilot hole to 17 1/2"							
BHA Performance / Observations							
Washed down to tag btm without rotation. Formation was very soft and washed away. Drilled with 60 RPM, 4000 lpm, 1t WOB at 40m/hr. Sweeps were pumped mid stand and spotted around BHA prior to connection.							
BHA Conclusions / Recommendations / Remarks							
The BHA stayed vertical and followed the 9 7/8" Pilot hole. (Max inclination 0.50 deg)							
BHA Reason POOH							
TD							
Directional Drillers							

16.5 12 1/4" hole section BHA

Table 16-9 BHA Performance report - 12 1/4" hole including bit dull.

Lundin Norway		Advantage BHA Performance Report				BAKER HUGHES								
Operator	Lundin Norway AS	Fields	Zulu	Location	North Sea	Hole Size	12 1/4 in							
Well	26/10-1	Wellbore	26/10-1	Rig	Island Innovator	Job #	6839385 ASU S/N							
BHA Description														
12 1/4" BHA, OTK-SDTK														
BHA Run Parameters														
BHA Run #	5	MTR Run #		Distance	459.00 m	P/U Date	26/Jan/2015 08:00							
ATK Run #		MTR Rerun #		Avg ROP	15.59 m/hr	L/D Date	29/Jan/2015 15:00							
ATK Rerun #				Max Temp	29.0 degC									
MWD #	4	MD In	290.00 m	On Btm Circ	29.4 hours	Start Drilling	26/Jan/2015 21:52							
Bit #	5	MD Out	749.00 m	Off Btm Circ	15.8 hours	Stop Drilling	29/Jan/2015 03:41							
String Parameters														
#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m					
16	HWDP	Rig	Tally		5	3		112.30	226.27					
15	Sub - X/O	Rig	INN X-O 121		8 1/4	2 13/16		1.26	113.97					
14	Drill collar	Rig	Tally		8 1/4	3		27.69	112.71					
13	Accelerator	Weatherford	1591-5032		8	2 7/8		10.73	85.02					
12	Drill collar	Rig	Tally		8 1/4	2 13/16		18.37	74.29					
11	Jar	Weatherford	1762-5232		8	2 13/16		9.70	55.92					
10	Drill collar	Rig	Tally		8 1/4	2 13/16		18.71	46.22					
9	Stab - string	INTEQ	SDT8310	12 1/8	8	2 7/8	8 3/8	2.34	27.51					
8	NMSub - stop	INTEQ	BHIN6806		8 1/4	2 3/8		0.68	25.17					
7	APX	INTEQ	12726658		8 1/4	2 3/8		9.96	24.49					
6	Flex sub w/ Stab	INTEQ	10646486	12 1/8	8 1/4	2 3/8		3.70	14.53					
5	BCPM	INTEQ	10145293		8 1/4	2 3/8		3.48	10.83					
4	OnTrak - MWD	INTEQ	13068575		8 1/4	2 3/8		5.79	7.35					
3	NMSub - stop	INTEQ	10123601		8 1/4	2 13/16		0.50	1.56					
2	Sub - bit	INTEQ	OMM2865		8	2 13/16		0.76	1.06					
1	Bit - mill tooth - roller cone	HC	5218471	12 1/4				0.30	0.30					
Bit Parameters														
Grade In	I	O	D	L	B	G	O	R	TBR/Run	Graded By				
Grade Out	1	1	WT	A	E	I	NO	TD	141418	Directional Driller				
Type	RC117	IADC Code	TFA	1.1137	in^2	Jets	3x22	Gauge Len		in				
Stabilization Details														
Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in	Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m	
9	Integral	SDT8310	Spiral	22.00	3 1/2	8.00						41	tonne	
6	Integral	10646486	Spiral	14.00	3 1/2	8.00						12	tonne	
Motor Details										Drill Pipe Details				
Manufacturer				Nozzle				in/32						
Type				Operating Delta P				bar						
S/N				No Load Delta P				bar						
Motor Size				Bit To AKO Bend				m						
Tilt Angle				Bit To UBHS				m						
UBHS To Stator Stab				PDM Gap In / Out				/ in						
Geology										Fluid Parameters				
Formation	Top MD m	Top TVD m	Description			Mud Type Water Based Mud								
						Mud Weight	1.1500							sg
						PV	11							cP
						YP	10.00							Pa
						Gels	1.90/3.80							Pa
						% Sand	0.10							%
						% Solids	3.80							%
Survey Update														
Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m	Max DLS Plan deg/30m	DLS Range deg/30m								
0.33	0.14	61.75	191.66	749.00	0.000	0.000/0.000								
Drilling Parameters														
Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar			
Drill	459.00	29.4	15.59	0/6	30/100		3.00/5.00	2.00/3.00	4000	155.000				
Off Btm Circ		15.8												
Total	459.00	45.2	15.59	0/6	30/100		3.00/5.00	2.00/3.00	4000	155.000				

Table 16-10 BHA Performance report, comments - 12 1/4" hole



		Advantage BHA Performance Report					
Operator	Lundin Norway AS	Fields	Zulu	Location	North Sea	Hole Size	12 1/4 in
Well	26/10-1	Wellbore	26/10-1	Rig	Island Innovator	Job #	6839385 ASU S/N
BHA Objective							
Drill 12 1/4" hole, maintaining vertical to section TD.							
BHA Performance / Observations							
Drilled plugs, shoe track and cement without any difficulties. BHA held vertical throughout the run without any need for reaming or any other intervention. Parameters were maintained @ 4000lpm, 0-4 ton WOB, 2-4 KN Torque.							
ROP was adjusted through the run in an attempt to keep the ECD below 1.2sq.							
BHA Conclusions / Recommendations / Remarks							
BHA performed well through the run and would be recommended for a similar hole section.							
BHA Reason POOH							
TD							
Directional Drillers							
S.Mac Neil, G.Nygaard							

16.6 6" hole section BHA

Table 16-11 BHA Performance report - 6" hole including bit dull.

Lundin Norway		Advantage BHA Performance Report				BAKER HUGHES							
Operator Lundin Norway AS		Fields Zulu	Location North Sea	Hole Size 6 in									
Well 26/10-1		Wellbore 26/10-1	Rig Island Innovator	Job # 6839385	ASU S/N								
BHA Description													
6" Section BHA with DC													
BHA Run Parameters													
BHA Run #	7	MTR Run #		Distance	277.00	m	P/U Date 01/Feb/2015 03:00						
ATK Run #		MTR Rerun #		Avg ROP	8.91	m/hr	L/D Date 04/Feb/2015 13:30						
ATK Rerun #				Max Temp	24.0	degC							
MWD #	6	MD In	749.00	On Btm Circ	31.1	hours	Start Drilling 01/Feb/2015 19:26						
Bit #	6RR	MD Out	1026.00	Off Btm Circ	18.0	hours	Stop Drilling 04/Feb/2015 04:50						
String Parameters													
#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m				
17	HWDP	Rig	Tally		4	2 1/2		109.73	275.24				
16	Sub - X/O	Rig	Tally		4	2 1/2		0.82	165.51				
15	Drill collar	Rig	Tally		4 3/4	2 1/4		28.37	164.69				
14	Accelerator	Weatherford	1421-7518		4 3/4	2 1/4		10.09	136.32				
13	Drill collar	Rig	Tally		4 3/4	2 1/4		19.01	126.23				
12	Jar	Weatherford	1420-7554		4 3/4	2 1/4		9.84	107.22				
11	Drill collar	Rig	Tally		4 3/4	2 1/4		75.52	97.38				
10	Stab - string	INTEQ	SDT7908	5 3/4	4 3/4	2 1/4		2.15	21.86				
9	Drill collar - short	INTEQ	SBS670		4 3/4	2		1.50	19.71				
8	NMSub - stop	INTEQ	1230451		4 3/4	1 3/8		0.91	18.21				
7	SDN	INTEQ	13733303		5	3		5.33	17.30				
6	BCPM	INTEQ	10265191		5	2 1/2		3.29	11.97				
5	NMStab - string	INTEQ	13116322	5 7/8	5	1 1/2		1.00	8.68				
4	OnTrak - MWD	INTEQ	1201111		5	2 1/4		5.98	7.68				
3	NMSub - stop	INTEQ	12649986		5	2 1/4	5	0.85	1.70				
2	Sub - bit	INTEQ	SDT7561		4 7/8	2 1/4		0.66	0.85				
1	Bit - insert - roller cone	HCC	S232477	6				0.19	0.19				
Bit Parameters													
Grade In	I	O	D	L	B	G	O	R	TBR/Run	Graded By			
Grade Out	1	1	WT	A	E	1.0	PN	TD	167521	Viktor Rubach			
Type	MX-1	IADC Code	117	TFA	0.7455	in^2	Jets 3x18	Gauge Len	9.00	in			
Stabilization Details								Drill Pipe Details					
Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in	Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m
10	Integral	SDT7908	Spiral				5 3/4					14	tonne
5	Integral	13116322	Spiral				5 7/8					6	tonne
Motor Details								Component Details					
Manufacturer				Nozzle				in/32					
Type				Operating Delta P				bar					
S/N				No Load Delta P				bar					
Motor Size				Bit To AKO Bend				m					
Tilt Angle				Bit To UBHS				m					
UBHS To Stator Stab				PDM Gap In / Out				/ in					
Geology								Fluid Parameters					
Formation	Top MD m	Top TVD m	Description	Mud Type									
Utsira				KCL Mud				1.1500 sg					
				Mud Weight				11 cP					
				PV				11.00 Pa					
				YP				3.35/4.79 Pa					
				Gels				0.15 %					
				% Sand				4.68 %					
				% Solids									
Survey Update													
Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m	Max DLS Plan deg/30m	DLS Range deg/30m							
0.54	1.51	162.53	178.28	1025.95		0.040/0.810							
Drilling Parameters													
Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar		
Drill	277.00	31.1	8.91	0/8	45/90		0.00/4.50	2.00/2.00	1000	90.000			
Off Btm Circ		18.0											
Total	277.00	61.1	8.91	0/8	45/90		0.00/4.50	2.00/2.00	1000	90.000			

Table 16-12 BHA Performance report, comments - 6" hole

		Advantage BHA Performance Report					
Operator	Lundin Norway AS	Fields	Zulu	Location	North Sea	Hole Size	6 in
Well	26/10-1	Wellbore	26/10-1	Rig	Island Innovator	Job #	6839385
BHA Objective							
Drill 6" hole, maintaining vertical to section TD our coring point.							
BHA Performance / Observations							
Cement was tagged at 686m and drilling was begun with 60 RPM and 4 ton on the bit. Drilled down to 688 m where the first plug was located. Progress was slow and parameters were adjusted from 4-8 tons WB and 15 to 60 RPM with limited success. RPM was then increased to 90 RPM while maintaining high WOB. Torque increased from 3 to 8 kNm and the plug was drilled out. The second plug was located at 695m and a similar approach was used. The 12.25" rat hole was cleaned out in 1 m intervals with a depth of 745 m. Picked off bottom several times and adjusted parameters to try and get past this point. Drilling past 745 required bringing the WOB above 8 ton. The rest of the rat hole was drilled without difficulty.							
Performed FIT, 110.12 bar.							
Drilling down to 780m required similar high WOB as in the final portion of rat hole. During this time the ECD level was much higher than expected and it was suspected that something was packing off the annular, potentially rings of junk from the float or plugs. Pulled back in to 7" casing to check for pack off on stabilizer in the BHA. Circulated with max flow and 120 RPM to clear BHA and ECD was reduced to acceptable levels. RIH and continued drilling but ECD quickly increased to previous levels. Suspect that we were experiencing packing off of the slots in stabilizers, increasing ECD as well as the drag on the BHA. Flow rate was decreased from 1100 lpm to 900 lpm to lower ECD. After Drilling in to the Utsira formations the ECD stabilized to expected levels and WOB required was much lower.							
Encountered another clay formation from (~828m - 850m) which was a repeat of earlier complications involving WOB and ECD.							
Drilled in good sand from 910m to 988m with reasonably good ROP and low ECD. After 988m and down to TD the ECD problems returned with slow ROP and tendency to pack off.							
BHA Conclusions / Recommendations / Remarks							
If possible, in the case of a BHA which employs tools with radioactive sources a shallow hole test should be performed prior to loading sources. In the event of an MWD failure it reduces the number of times that sources must be handled.							
The clay that was found above the Utsira formation caused some problems with elevated ECD. It was suspected that the flow slots in the stabilizers were becoming clogged with clay which was preventing efficient hole cleaning. This should be considered when planning the next well to determine if a larger hole size or a different BHA would allow better control and hole cleaning.							
This assembly did hold vertical well, not building to over 1 degree until we were assured of landing on target.							
BHA Reason POOH							
Section TD.							
Directional Drillers							
S.Mac Neil, V.Rubach							

17 Bit summary

Table 17-1 Bit summary

BHA #	Bit Run	Size (in)	Make	Model	SN	IADC Codes	TFA (incl Noz) (in ²)	Nozzles (1/32")	Depth In (mKB)	Drilled (m)	Drill Time (hr)	BHA ROP (m/hr)	WOB Max (daN)	WOB Min (daN)	Max RPM (rpm)	Min RPM (rpm)	Bit Dull
1	1	17 1/2	Baker Hughes	MXL-1X	5220679	115M	0,994	18/18/18/18	169	73	2,7	27	0	0	30	30	0-0-NO-A-E-0-NO-TD
2	2	26	Baker Hughes	VG-1	5197448	115	1,169	18/20/20/20	232	10	1	10	1	1	50	50	0-0-NO-A-E-0-NO-TD
3	3	9 7/8	Baker Hughes	MX-1	5191915	117	0,942	16/18/18/18	242	48	1,5	32	0	0	60	60	0-0-NO-A-E-0-NO-TD
4	4	17 1/2	Baker Hughes	GTX-CG1	5199711	115	1,169	18/20/20/20	242	48	1,2	40	0	0	60	60	0-0-NO-A-E-0-NO-TD
5	5	12 1/4	Baker Hughes	RC147	5215346	117	0,742	22/22	290	459	28,7	16	0	0	100	60	1-1-WT-A-E-0-NO-TD
6	6	6	Baker Hughes	MX-1	5232477	117	0,746	18/18/18	749	276	31,1	8,9	1	0	90	88	1-1-WT-A-E-1-PN-TD
15	7	12 1/4	Baker Hughes	RC347	5218235	347			0								1-1-NO-A-E-0-NO-TD
17	7	12 1/4	Baker Hughes	RC347	5218235	347			0		0,16						1-1-NO-A-E-0-NO-TD

17.1 36" section

Bit number	1	2
BHA run number	1	2
MWD run number	1	N/A
Bit size	17 1/2" x 26" x 36"	26"
Manufacturer	HCC	HCC
Bit type	MXL-01	VG-C1
Serial number	5220679	5197448
Nozzles	4x18	16, 3x18
TFA (in ²)	0.9940	1,1689
Motor type	N/A	N/A
Motor bend	N/A	N/A
MWD suite	OTK II-BCPM	
Depth IN (m)	169	242
Depth OUT (m)	242	242
Date IN	20/01/2015	21/01/2015
Date OUT	20/01/2015	21/01/2015
Meters formation drilled	73	0
HRS on bottom: formation	2.7	-
HRS on bottom: cement	-	0.6
Circulation HRS	6.3	2.2
Total Bit Revs (TBR)	6901	1640
Avg ROP (m/hr)	27.0	
Min - Max FLOW (l/min)	0-5000	3020
Min - Max PRESSURE (bar)	20-147	51
Min - Max WOB (tonnes)	0 - 3	
Min - Max STRING RPM	0-60	
Min - Max BIT RPM	0-60	
Min - Max TORQUE (kNm)	0 - 18	0 - 15
Average TORQUE (kNm)	8	8
Max Downhole T (°C)	13	
Start-End INCLINATION	0.41 – 0.65	
Max INCLINATION	0.67	
Start-End AZIMUTH	131.68 – 115.04	
Reason pulled	TD	CLEANOUT ASSEMBLY
Mud Type	Sea Water / Sweeps	Sea Water / Sweeps
DENSITY (SG)	1.03 - 1.04	1.03 - 1.04

Figure 17-1 Bit report - 36" section

17.2 9 7/8" pilot hole

Bit number	3
BHA run number	3
MWD run number	2
Bit size	9 7/8"
Manufacturer	HCC
Bit type	MXL-1X
Serial number	5191915
Nozzles	16, 3 x 18
TFA (in ²)	0.9419
Motor type	N/A
Motor bend	N/A
MWD suite	OTK SSDK BCPM
Depth IN (m)	242
Depth OUT (m)	290
Date IN	21/01/2015
Date OUT	22/01/2015
Meters formation drilled	48
HRS on bottom: formation	1.5
HRS on bottom: cement	N/A
Circulation HRS	3.7
Total Bit Revs (TBR)	5349
Avg ROP (m/hr)	32
Min - Max FLOW (l/min)	4000
Min - Max PRESSURE (bar)	148-151
Min - Max WOB (tonnes)	0-3
Min - Max STRING RPM	60
Min - Max BIT RPM	60
Min - Max TORQUE (kNm)	1.8-3.6
Average TORQUE (kNm)	2
Max Downhole T (°C)	13
Start-End INCLINATION	0.62 - 0.31
Max INCLINATION	0.62
Start-End AZIMUTH	83.16 -71.19
Reason pulled	TD
Mud Type	Sea Water / Sweeps
DENSITY (SG)	1.03 - 1.40

Figure 17-2 Bit report - 9 7/8" section

17.3 17 ½" section

Bit number	4
BHA run number	4
MWD run number	3
Bit size	17 ½"
Manufacturer	HCC
Bit type	MXL-1X
Serial number	51997711
Nozzles	3 x 20, 1 x 18
TFA (in ²)	1.1689
Motor type	N/A
Motor bend	N/A
MWD suite	OTKII /NBG/BCPM
Depth IN (m)	242
Depth OUT (m)	290
Date IN	22/01/2015
Date OUT	22/01/2015
Meters formation drilled	48
HRS on bottom: formation	1.2
HRS on bottom: cement	0
Circulation HRS	2.6
Total Bit Revs (TBR)	4106
Avg ROP (m/hr)	40
Min - Max FLOW (l/min)	3977
Min - Max PRESSURE (bar)	127-133
Min - Max WOB (tonnes)	0-2
Min - Max STRING RPM	60
Min - Max BIT RPM	60
Min - Max TORQUE (kNm)	1-2
Average TORQUE (kNm)	1
Max Downhole T (°C)	14°
Start-End INCLINATION	0.50° -0.50°
Max INCLINATION	0.50°
Start-End AZIMUTH	90.42° - 85.11°
Reason pulled	Section TD
Mud Type	Aqua-Drill
DENSITY (SG)	1.03 – 1.40

Figure 17-3 Bit report - 26" section

17.4 12 ¼" section

Bit number	5
BHA run number	5
MWD run number	4
Bit size	12 ¼"
Manufacturer	HCC
Bit type	RC117
Serial number	5218471
Nozzles	3X22
TFA (in ²)	1.1137
Motor type	n/a
Motor bend	n/a
MWD suite	OTK- SDK-BCPM
Depth IN (m)	290
Depth OUT (m)	749
Date IN	26/01/15
Date OUT	29/01/15
Meters formation drilled	459
HRS on bottom: formation	24.3
HRS on bottom: cement	3.3
Circulation HRS	47.9
Total Bit Revs (TBR)	141418
Avg ROP (m/hr)	18.9
Min - Max FLOW (l/min)	3800-4400
Min - Max PRESSURE (bar)	135-170
Min - Max WOB (tonnes)	1-4
Min - Max STRING RPM	80-100
Min - Max BIT RPM	30 - 100
Min - Max TORQUE (kNm)	1-10
Average TORQUE (kNm)	3
Max Downhole T (°C)	37
Start-End INCLINATION	0.33°/0.14°
Max INCLINATION	0.22°
Start-End AZIMUTH	61.75°/191.66°
Reason pulled	Section TD
Mud Type	Seawater, Aqua-Drill and Hi-Vis sweeps pill
DENSITY (SG)	1.03-1.18

Figure 17-4 Bit report – 12 ¼" section

17.5 6" section

Bit number	6	6RR
BHA run number	6	7
MWD run number	5	6
Bit size	6"	6"
Manufacturer	HCC	HCC
Bit type	MX-1	MX-1
Serial number	5232477	5232477
Nozzles	3x18	3x18
TFA (in ²)	0.7455	0.7455
Motor type	n/a	n/a
Motor bend	n/a	n/a
MWD suite	OTK-BCPM-SDN	OTK-BCPM-SDN
Depth IN (m)	749	749
Depth OUT (m)	749	1026
Date IN	31/01/2015	01/02/2015
Date OUT	01/02/2015	04/02/2015
Meters formation drilled	0	277
HRS on bottom: formation	0	31.1
HRS on bottom: cement	0.25	7.64
Circulation HRS	2.5	61.1
Total Bit Revs (TBR)	0	167521
Avg ROP (m/hr)	12	23.2
Min - Max FLOW (l/min)	1150	930-1150
Min - Max PRESSURE (bar)	70	70-116
Min - Max WOB (tonnes)	0	0-8
Min - Max STRING RPM	30-90	45-90
Min - Max BIT RPM	30-90	45-90
Min - Max TORQUE (kNm)	2	2-4
Average TORQUE (kNm)	2	3
Max Downhole T (°C)	n/a	23.5
Start-End INCLINATION	n/a	0.54-1.51
Max INCLINATION	n/a	1.51
Start-End AZIMUTH	n/a	162.53-178.28
Reason pulled	Downhole tool Failure	TD
Mud Type	Aqua-Drill	Aqua-Drill
DENSITY (SG)	1.15	1.16

Figure 17-5 Bit report – 6" section

18 Anchor Pattern

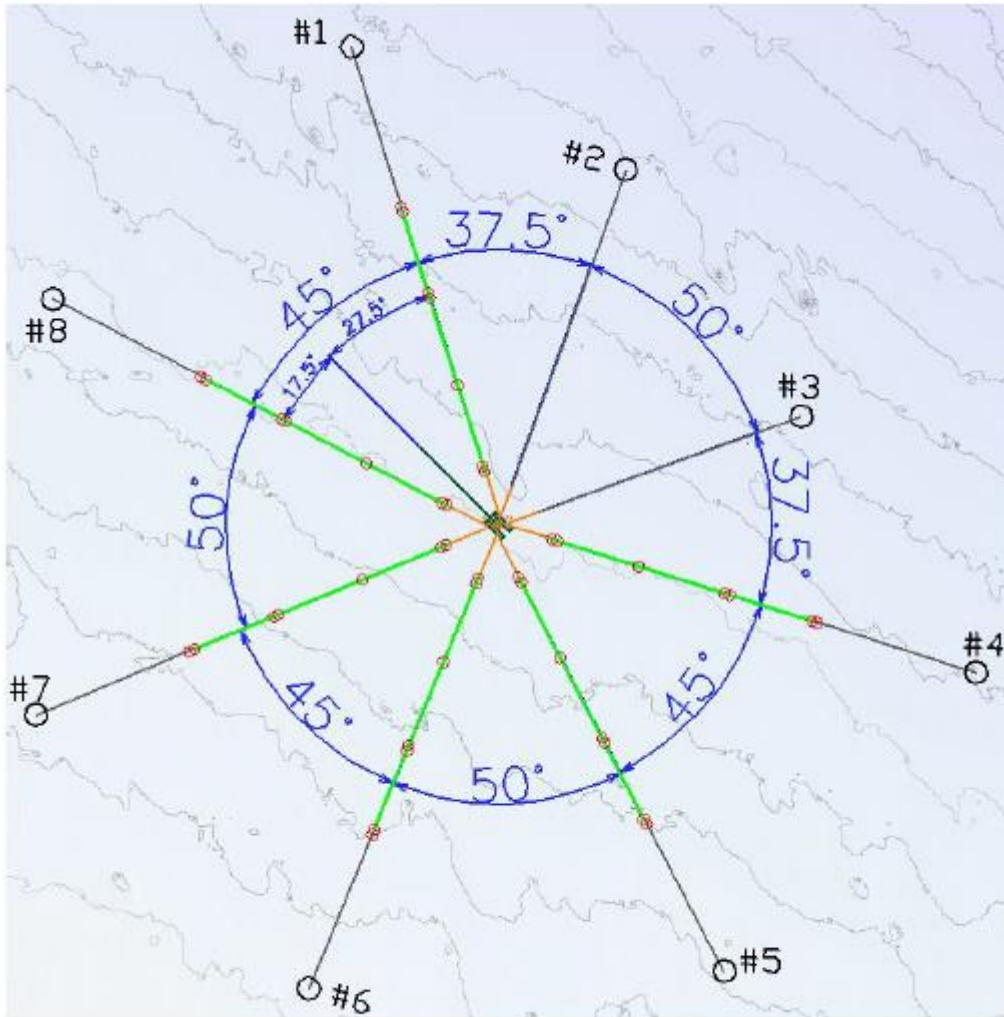


Figure 6-1, INN Mooring Spread – 26/10-1 Zulu (Red circles indicate subsurface buoys, orange lines indicate rig steel wire, green lines indicate fibre rope inserts.)

Figure 18-1 Anchoring pattern 26/10-1

19 Offset well data table

		25/10-12 ST2
Source of Information		EOWR
Well Classification		Exploration
License		PL674
Operator		Lundin Norway AS
Rig		Island Innovator
Spud date		20.01.2015
Completion Date		13.02.2015
Days		26.1
Well Status		Gas - P&A
Discovery / type		Gas
Shallow Gas (m RKB)		No
Max Angle		1.51 deg at 1026.0 m MD
RKB-MSL [m]		30
Water Depth [m]		140.0
Well TD [MD/TVD]		1029/1026
9 7/8" Pilot hole	TD [m RKB]	290
	Mud	SW and 1.04 sg sweep, displaced to 1.25-sg Bentonite mud
	Mud Weight [SG]	1.03 – 1.40-sg
	Bit/BHA	Baker Hughes 9 7/8" MX-1 Milled tooth, IADC code 117, TFA: 3 x18, 16 = 0.942 / rotary ass
	Runs	1
	AVG ROP	32.0-m/hr
	Shallow Gas Zones	No
	Experiences	Drilled after 36" hole. Drilled from 242 m to 290 m.
36" Hole	TD [m RKB]	242
	Mud	SW and 1.04 sg sweep, displ. to 1.40-sg Bentonite mud
	Mud Weight [SG]	1.03 – 1.40-sg
	Bit/BHA	Baker Hughes 17 1/2" MXL-1X Milled tooth, IADC code 115M, 26"x36" hole opener (Boulder Buster)
	Runs	1
	AVG ROP	27.0-m/hr
	Conductor depth/lenght	237-m / 68,5-m
	Experiences	The interval from 214-228 were reamed twice due to increase in angle. Experienced hards spots/tight spots at 202 m, 207 m and 220 m.No restrictions or fill was observed when the BHA was run back down to TD.
26" Hole	TD [m RKB]	242-m
	Mud	SW and 1.04 sg sweep, displaced to 1.40-sg KCl mud
	Mud Weight [SG]	1.03 – 1.40-sg

		25/10-12 ST2
	Bit/BHA	Baker Hughes 26" MX-1 milled tooth, IADC code 117, TFA: 3 x18, 16 = 1.169, Rotary assembly
	Runs	1
	AVG ROP	10.0-m/hr
	Pilot hole	
	Casing	
	FIT/LOT [SG EMW]	
	Experiences	Clean out run only.
17 1/2" Hole	TD [m RKB]	290
	Max incl. [deg]	0.5 degrees
	Mud	SW and 1.04 sg sweep, displ. to 1.40-sg Bentonite mud
	Mud Weight [SG]	1.03 – 1.40-sg
	Bit/BHA	Baker Hughes 17 1/2" GTX-CG1 Milled tooth, IADC code 117
	Runs	1
	AVG ROP	40.0
	Pilot hole	Yes
	Casing	20"x13 3/8" at 284 m MD.
	FIT/LOT [SG EMW]	1.18 sg LOT with seawater. Experience not to use sea water. Drilled to 331 m and performed LOT to 1.24 sg EMW.
	Experiences	Pumped 10 m3 havis sweeps every half stand.
12 1/4" Hole	TD [m RKB]	749
	Mud	Aquadrill WBM, KCl content 82-111 kg/m3
	Mud Weight [SG]	1.12-1.16
	Bit/BHA	Baker Hughes 12 1/4" RC117 Milled Tooth, IADC code:117 TFA: 7x15"=1.208
	AVG ROP	16.0-m/hr
	Runs	1
	Casing	7" @ 743-m
	FIT/LOT [SG EMW]	FIT 1.54 sg EMW
	HC Zones	No
	Experiences	Pulled off bottom at 695 m and performed flow check due to gain. Circulated bottoms up to reduce ECD from 1.24 sg to 1.20 sg.
6" Hole	TD [m RKB]	1026-m
	Mud	Aquadrill WBM, KCl content: 101-118 kg/m3
	Mud Weight [SG]	1.15-1.16 sg
	Bit/BHA	Baker Hughes MX-1 Milled tooth, IADC code: 117, TFA: 3x18=0.746, rotary BHA
	Runs	1
	Avg. ROP	8.9-m/hr
	Coring	No
	Casing	N/A
	FIT/LOT [SG EMW]	N/A
		HC Zones

		25/10-12 ST2
	Experiences	Observed several gains in active. Flow checked and well was static. Observed very high ECD in the claystone sections. Erratic ECD and pressure spikes. Good drilling in sandstones. Reamed single several times.

Section C – Enclosures

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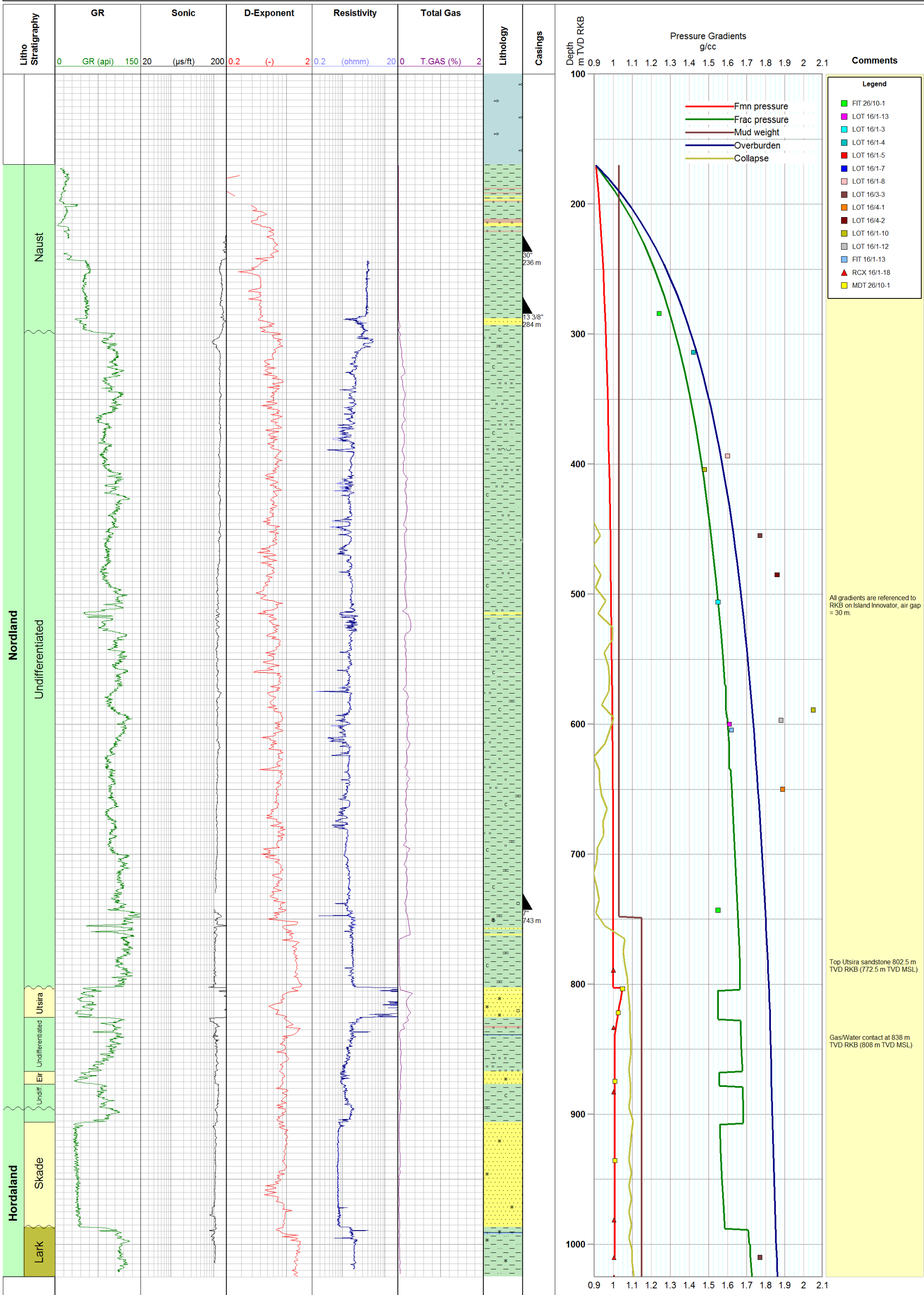
Pore Pressure Evaluation Log

Field: ZULU PROSPECT

Well: 26/10-1

Scale: 1/2500

All depths and pressure gradients are referenced to rig RKB (30 m)



**Geological
Final Well
Report**

PL 674 BS

Well: 26/10-1

