Oil & Energy

HYDRO

# Final Well Report

## Well 31/4-12 Idun

November 2005

Partners:

STATOIL | Eni Norge | TALISMAN ENERGY | Paladin Resources plc | Endeavour | revus energy | petoro

**CONFIDENTIAL**

**REPORT**
**Hydro Oil & Energy**
Operations
Deepsea Trym - Rig team

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|---|---|---|---|---|
| Title: | **Final Well Report, well 31/4-12** | No. | : | NH/OD-4492/05 |
| | | Rev. | : | Rev 1 |
| | | Page | : | A-1 of 35 |
| | | Date | : | 2005-11-23 |

Licence PL055

**Drilling permit** **L-1090**

**Completion Date** **16.03.2005**

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|---|---|---|---|---|
| Prepared by | : | Cecilie L. Gildseth, Finn Sollie, Lisbeth Søyseth, Kjersti Hevrøy | Sign. | : |
| Verified by | : | Kjersti M. Bratsberg, Project Manager BU | Sign. | : for. K.M. Bratsberg |
| Approved by | : | Jan Reidar Johnsen, Manager Ops. Geology | Sign. | : |

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WELL SUMMARY

Well 31/4-12 was drilled by Norsk Hydro, on behalf of PL 055, during February 2005 – March 2005.

The primary objective of well 31/4-12 to prove hydrocarbons in the Sognefjord Fm of the Viking Group within the Idun Prospect in block 31/4 was not fullfilled. The Sognefjord 5BC sand was water filled.

The secondary objective was to investigate the stratigraphic distribution and the reservoir potential for the Fensfjord formation.

All depths in this report have reference to RKB (RKB elevation is 25 m) unless otherwise stated.

## *License owners*

Production License 055 / 291 was awarded by Royal Decree of 4 June 1995 with Norsk Hydro ASA as the operator

The licensee's percentage share of PL055 at the time of drilling of well 31/4 is as follows:

N.Hydro Production 20 %
Paladin 20 %
Esso 14,9 %,
Petoro 13.4 %
Eni Norge 13.2 %
Statoil 12,6 %,
OER Oil 3.2 %
Revus Energy 2.7 %

## *Summary of Well Data*

| | |
|---|---|
| | Geo: 60°35'45,41 N<br>03°09'51,96 E<br>UTM: 6 717 953.21 mN<br>509 006.75 mE<br>ED 50, UTM Zone31, CM 31°E |
| OPERATOR: | Norsk Hydro ASA |
| RIG: | Deepsea Trym |
| CONTRACTOR: | Odfjell Drilling |
| KB ELEVATION(to MSL): | 25m |
| WATER DEPTH (MSL): | 210 m |
| START OF OPERATION: | 02.02.2005 |
| WELL SPUDDED: | 06.02.2005 |
| REACHED TD: | 05.03.2005 |
| OFF LOCATION: | 16.03.2005 |
| STATUS: | Plugged and abandoned |
| FORMATION AT TD: | Fensfjord Formation |
| TD DRILLER(mRKB): | 2226m MD |
| TD LOGGER(mRKB): | 2227.8m MD |
| Drilling depths (MD): | 36" 232 m to 308 m<br>26" 308 m to 312 m<br>17 ½" 312 m to 1184 m<br>12 ¼" 1184 m to 2062 m<br>8 ½" 2062 m to 2226 m |
| Casing / Liner depths: | 30" 308 m<br>13 3/8" 1177.8 m<br>9 5/8" 2056.5 m |

OBJECTIVES AND RESULTS

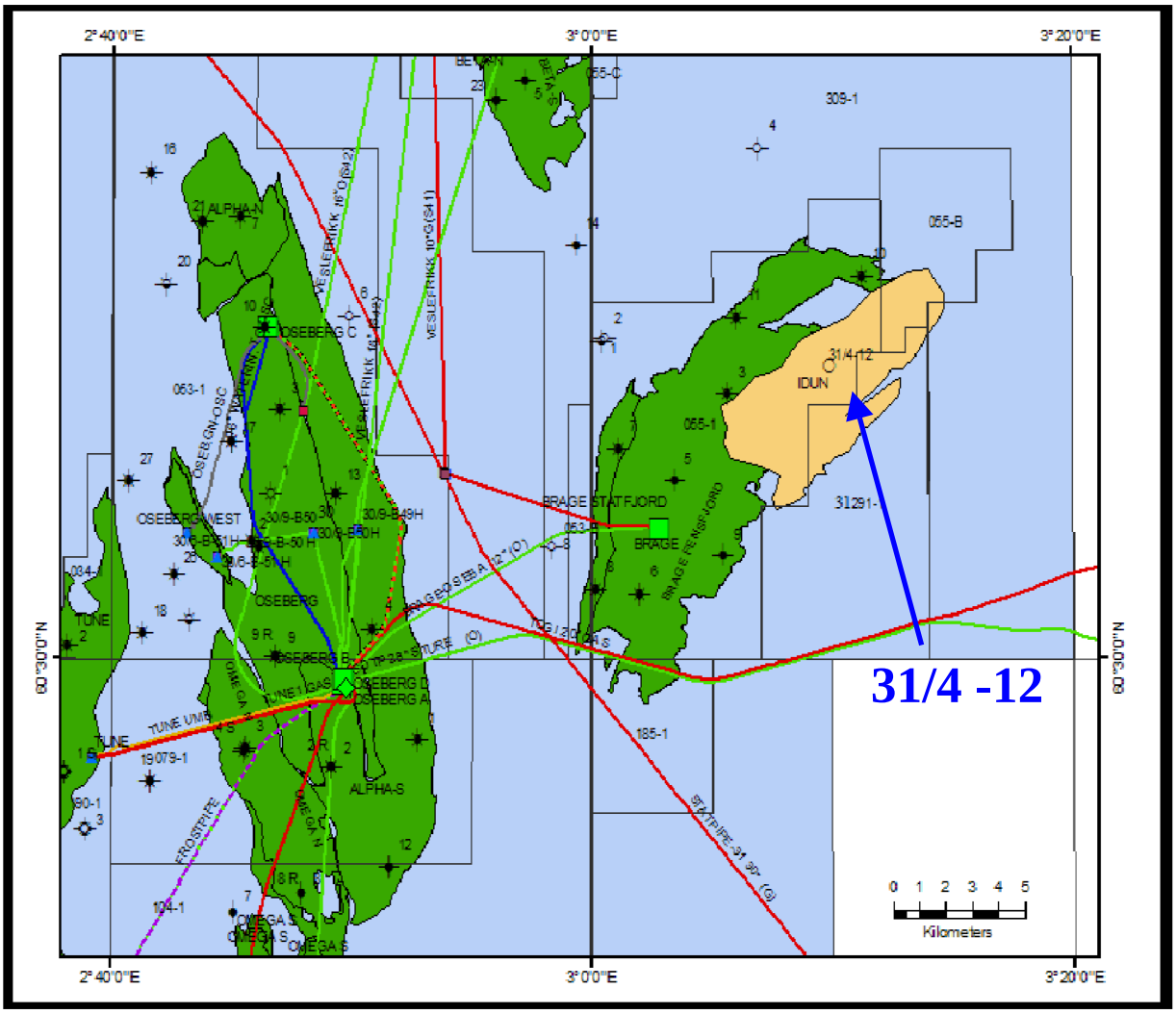
## *Objectives*

The main objective of the exploration well 31/4-12 was to prove hydrocarbon volume of economic interest in the Sognefjord formation of the Viking Group within the Idun Prospect in block 31/4.

The secondary objective was to investigate the stratigraphic distribution and the reservoir potential of the Fensfjord formation

Sidetracking into the SE segment was only to be performed in the case of a discovery.

## *Location map*



Results
The well was spudded 6th February 2005 and reached a total depth of 2226 m MD RKB in the Fensfjord formation 5th March 2005.

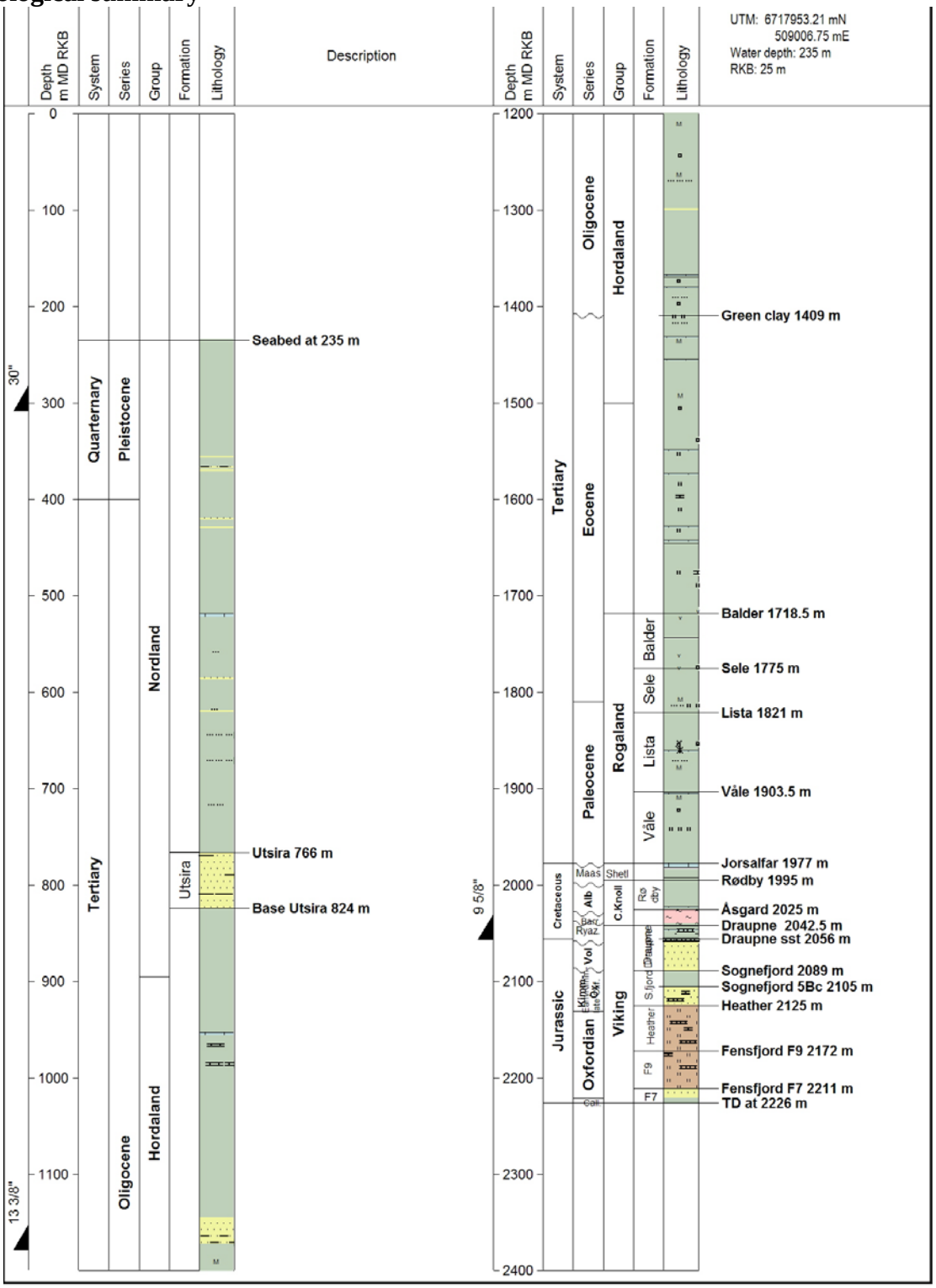
The well did not prove any commercial hydrocarbons, and no oil shows were observed. The Sognefjord reservoir was encountered within the defined reservoir interval, but was water bearing and slightly thinner than expected. The Fensfjord reservoir was found as prognosed, but was tighter than expected.

No cores were taken.

The wireline logging programme was reduced as no commercial discovery was made.

Since the drilling objectives were not met, as no commercial hydrocarbons were proven, the well was permanently plugged and abandoned as a dry well on the 16th March 2005.

## Geological summary




| Final Well Report | Revision: 1.0 | Geological Well Summary 31/4-12 |
|---|---|---|

Winlog template v3.02 [20031210] - AJC Figure output 2005-10-27 13:18:21

SECTION A: GEOLOGY, GEOPHYSICS AND PETROPHYSICS.

# 1 DATA ACQUISITION

## *1.1 Lithostratigraphy.*

This summary is compiled predominantly from ditch cuttings.

Wireline and MWD logs were used to aid lithological interpretation and the placement of formation boundaries.
The well was drilled with returns to seabed from the sea floor at 235 m to 1184 m before setting 13 3/8" casing at 1177.8 m. For details on sampling descriptions see attached Composite log.

**Nordland Group (235 – 895 m MD)**
Undifferentiated (235 – 895 m MD ) - Sandy and silty clay
Utsira Formation (766.5 – 824 m MD) – Sandstone
Undifferentiated (824 – 895 m MD ) - Claystone

**Hordaland Group (895 – 1718.5 m MD)**
Undifferentiated (824 – 1718.5 m MD) – Claystone, occasional sandstone, local limestone/dolomite stringers
Green clay (1409 –1718.5 m MD) - Claystone, local limestone/dolomite stringers

**Rogaland Group ( 1718.5 – 1977 m MD)**
Balder Formation (1718.5 – 1775 m MD) – Tuffaceous claystone, occasional limestone stringers
Sele Formation (1775 – 1821 m MD) – Claystone
Lista Formation (1821 – 1903.5 m MD) – Claystone with rare dolomite stringers
Våle Formation (1903.5 – 1977 m MD) – Claystone, locally grading marl

**Shetland Group ( 1977 – 1995 m MD)**
Jorsalfar (1977 – 1995 m MD) – Calcareous claystone with occasional limestones

**Cromer Knoll Group ( 1995 – 2042.5 m MD)**
Rødby **(** 1995 – 2025 m MD) - Calcareous claystone
Åsgard ( 2025 – 2042.5 m MD) – Marly Claystone with limestone stringers

**Viking Group (2042.5 – 2226 m MD)**
Draupne Formation (2042.5 – 2056 m MD) – Claystone with limestone stringers
Draupne Sandstone (2056 – 2089 m MD) – Sandstone, occasionally very calcareous
Sognefjord Formation (2089 – 2125 m MD) – Sandstone, locally very calcareous
Fensfjord Formation (2172 – 2226 m MD) – Siltstone with minor sandstone

## *1.2 Hydrocarbon shows description table.*

No shows were observed in this well.

## *1.3 Logging table, MWD / LWD / Wireline*

| Run | Log type | Interval (m) | Comments: |
|---|---|---|---|
| 1 | DIR | 235 - 308 | 36” hole |
| 2 | DIR - GR - RES | 308 - 1170 | 17 ½” hole |
| 3 | DIR - GR - RES | 1169 - 1912 | 12 ¼” hole |
| 4 | DIR - GR - RES | 1888 - 2057 | 12 ¼” hole |
| 5 | DIR - GR - RES | 2048 - 2226 | 8 ½” hole |
| 1A | PEX -HRLA-ECS-DSI | 2057-2228 (DSI: 1778-2221) | 8 ½” hole |
| 1A | VSI-GR | 1378 - 2150 | 8 ½” hole |
| 1A | MDT-GR | 2081 - 2215 | 8 ½” hole |

## *1.4 Sidewall coring table.*

No sidewall cores were collected for this well.

## *1.5 Conventional Coring table.*

No conventional core was collected for this well.

# 2 GEOLOGICAL AND GEOPHYSICAL EVALUATION

## *2.1 Geological and Geophysical Results*

In well 31/4-12 both Draupne Formation sands and the Sognefjord 5Bc sand were penetrated. The TD of the well was within the uppermost sandy part of the Fensfjord Formation.

A total of 20m of the main reservoir Sognefjord 5Bc was penetrated in the well. Appr. 17m of this interval has reservoir quality. The Sognefjord 5Bc was 5.5m shallower than prognosed, both at the top and the base. The sand was as thick as prognosed, and the sand quality excellent (close to the P10 values simulated in H-risk).

The Draupne sands are of Kimmeridgian age, while the Sognefjord 5Bc sand is of Oxfordian age. The lower Fensfjord reservoir sand, penetrated close to TD of the well, is of Late Callovian – Early Oxfordian age. All sands are water bearing, and no shows were observed.

The MDT pressure tests show that the Draupne / Sognefjord reservoir is depleted by appr. 10 bars.

A normal incident VSP was run in the well.

## *2.2 Discussion*

The presence of a thick, good quality Sognefjord 5Bc sand confirms the depositional model for this terminal part of the Troll delta.

However, the absence of HC's or shows indicate that migration into the prospect, or at least into the vicinity of the well, has never taken place.

The migration model assumed migration into the prospect from southwest, where oil filled Fensfjord might be juxtaposed to Sognefjord 5Bc. Two plausible scenarios for migration failure are:

1) No good Sognefjord 5Bc sand present in the southern area. Either the sand lobe terminated further north, or the sand is too thin / poor in that area. The sand can also be cemented, which often happens when the sands are thinning or shaling out.
2) No juxtaposition of Sognefjord 5Bc against Fensfjord. The juxtaposition requires a fault throw of several meters, and with a fine-grained Sognefjord 5Bc and possible some Heather shales these small faults are likely to be sealing.

The depletion of the Draupne / Sognefjord system indicates a common aquifer with a producing reservoir, most likely the Brage Nord Sognefjord reservoir. Thus, trapping of HC's is unlikely.

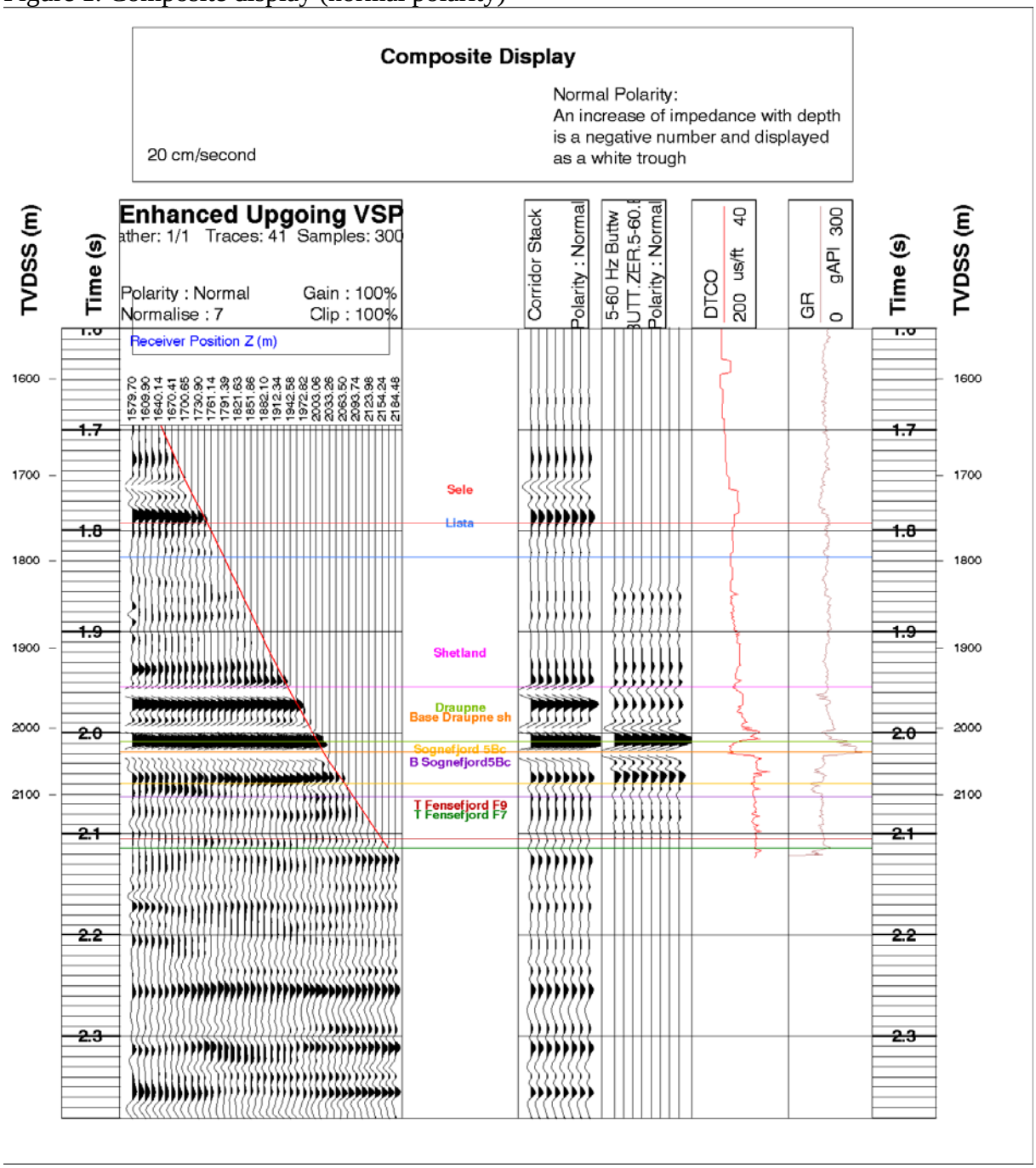
## *2.3 Input data*

Input data to the interpretation has been seismic data NH0302, logs from 31/4-12 and nearby wells in addition to pressure data.

## *2.4 VSP*

A Zero Offset VSP survey was recorded from 2209m to 1378 m MD in normal operating wireline mode. VSP stations were recorded at 15.12 m MD intervals using a four level VSI tool. An array of 3X155 cu.in. airguns were used as a source, deployed from the crane of the rig. The data quality was considered to be good, but with some casing arrivals on the shallowest levels.
All results are in the VSP processing report created by Schlumberger.

Figure 1. Composite display (normal polarity)




## 2.5 Biostratigraphy

The biostratigraphic evaluation of well 31/4-12 (1350m- 2226m) was carried out by Geostrat Ltd. Micropalaeontological and palynological analyses have formed basis for the biostratigraphic interpretation of the well. The analyses were carried out on ditch cuttings samples. Results are

documented in the report : " Biostratigraphy of Norsk Hydro Well 31/4-12 over the interval 1,350m- 2,226m. "
83 ditch cuttings samples were analysed for palynology, and 83 ditch cuttings samples for micropalaeontology.
Table 2.5.2 shows the summarised geochronologic and lithostratigraphic succession of the well.
The interpretation is in accordance with Norsk Hydro's standard zonation for the area.
All sample depths are mMD RKB.

**Major points from 31/4-12**

- The youngest sediments analysed in the well were assigned to palyno subzone PT7A2, the benthic micro zone MOB1 and the planktonic MOP1, Early Oligocene, Rupelian age.

- The oldest sediments encountered were assigned to palyno subzone zone PJ6A2 Middle Jurassic, Late Callovian age.

Several stratigraphical breaks are registered in the well:

- An unconformity is seen between the Rogaland Group and the Shetland Group, where sediments of the earliest Early Paleocene are missing.

- A major break was encountered between the Jorsalfar Formation (Shetland Group) and the Rødby Formation (Cromer Knoll Group), where sediments of the Late Maastrichtian overlie sediments of the Late Albian. An unconformity is also seen within the Cromer Knoll Group, where sediments of of Middle Albian (Rødby Formation) rest on sediments of Early Barremian age (Åsgard Formation). The Cromer Knoll Group is relatively thin, and only the Rødby and Åsgard Formations are present.

- A break is also interpreted between the Cromer Knoll Group and the underlying Viking Group, as sediments of Hauterivian and Valanginian age are missing.

- There is an unconformity within the Draupne Formation, where sediments of Early Ryazanian age rest on Middle Volgian sediments.

- Between the Draupne Formation and the Sognefjord Formation there is a break and sediments of Late Kimmeridgian and latest Early Kimmeridgian age are missing.

**Biostratigraphic summary of the sand units within the Viking Group**
Reservoir sands are present within Sognefjord and Fensfjord formations

- The Fensfjord Formation (F7 sand at 2211m log) is of Late Callovian- Early Oxfordian age, assigned to palyno subzone PJ6A2-PJ6B1. Sognefjord Formation (5Bc Idun Member 2105m-2125m) is of Late Oxfordian-Kimmeridgian age,assigned to palyno subzone PJC2-PJ6D.

## *2.6 Figures*

FIGURE LIST

## 2.6.1 Formation tops table

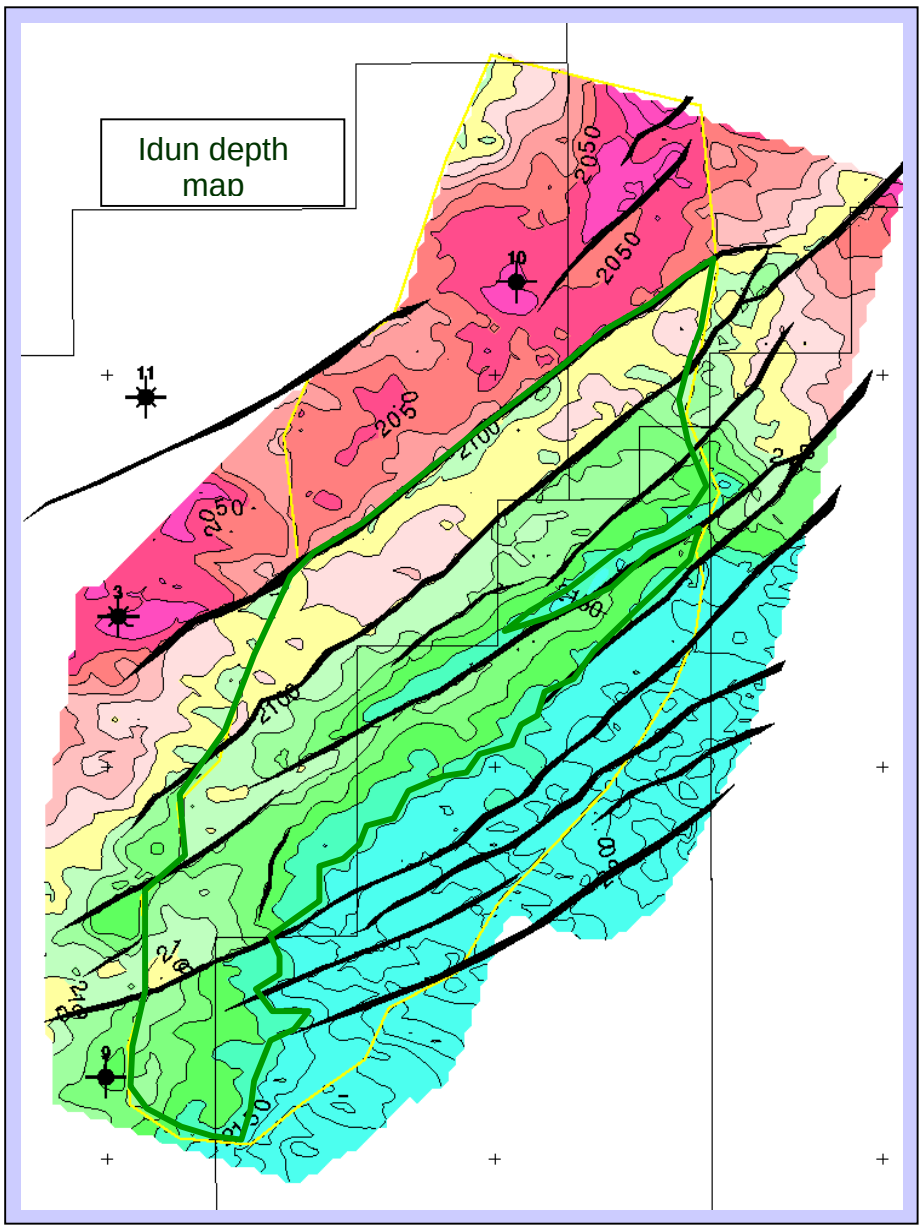
| Formation | m MD | m TVD | Prognosis | Actual - prognosis |
|---|---|---|---|---|
| **Utsira** | 766.0 | 766.0 | 778.0 | -22 |
| **Balder** | 1718.5 | 1718.0 | 1719.0 | -1.0 |
| **Sele** | 1775.0 | 1774.5 | 1770 | +4.5 |
| **Lista** | 1821.0 | 1820.5 | 1806 | +14.5 |
| **Våle** | 1903.5 | 1903.0 | | |
| **Shetland** | 1977.0 | 1976.5 | 1975 | +1.5 |
| **Jorsalfar** | 1977.0 | 1976.5 | | |
| **Cromer Knoll** | 1995.0 | 1994.5 | | |
| **Rødby** | 1995.0 | 1994.5 | | |
| **Åsgard** | 2025.0 | 2024.5 | | |
| **Draupne** | 2042.5 | 2042.0 | 2035 | +7.0 |
| **Base Draupne shale** | 2056.0 | 2055.5 | 2045 | +9.5 |
| **Sognefjord** | 2089.0 | 2088.5 | | |
| **Sognefjord 5Bc** | 2105.0 | 2104.5 | 2109 | -5.5 |
| **Base Sognefjord 5Bc** | 2125.0 | 2124.5 | 2130 | -5.5 |
| **Heather** | 2125.0 | 2124.5 | | |
| **Top Fensfjord F9** | 2172.0 | 2171.5 | 2165 | +6.5 |
| **Top Fensfjord F7 (sand)** | 2211.0 | 2210.5 | 2200 | +10.5 |

## 2.6.2 Biostratigraphic table

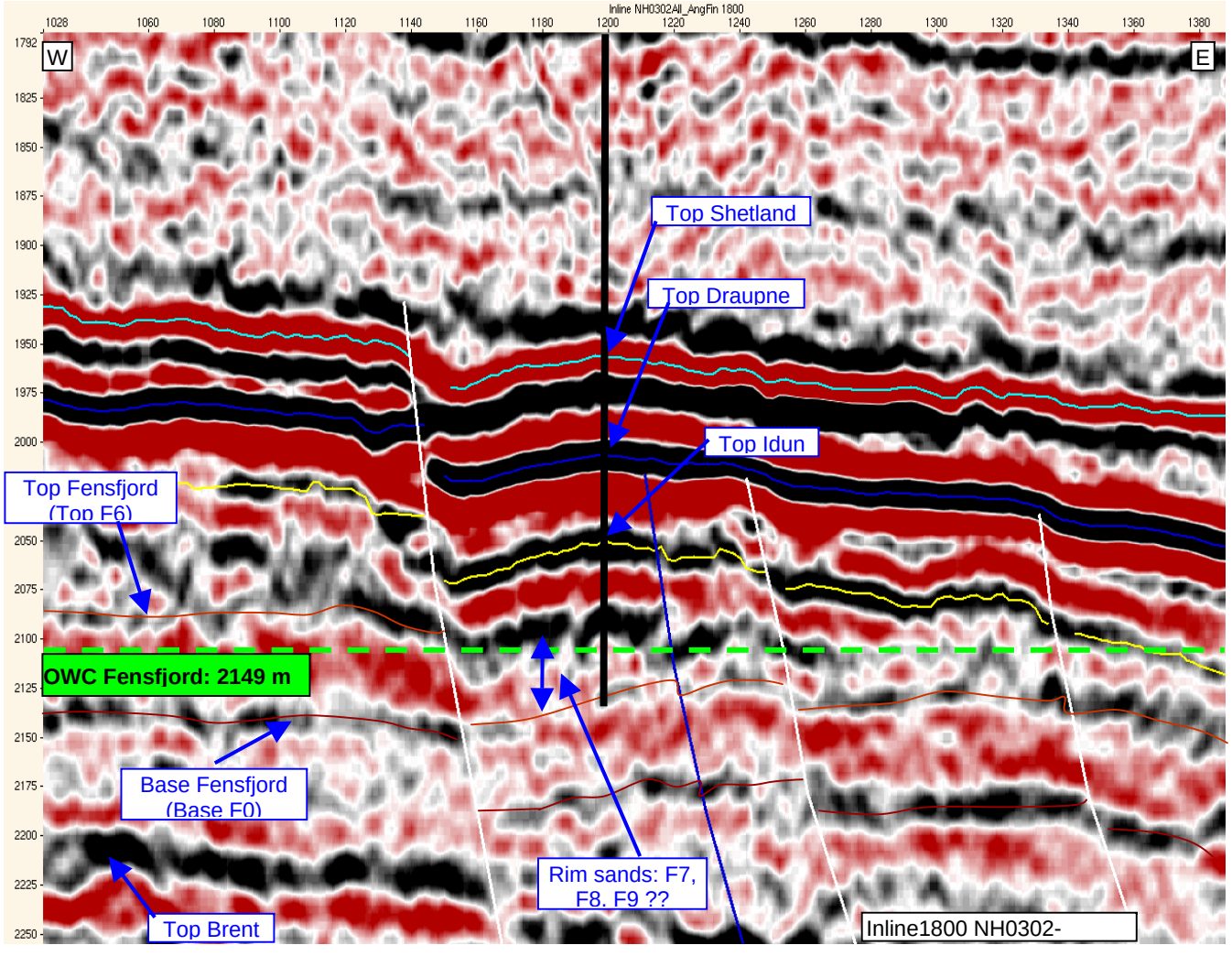
**GEOCHRONOLOGIC AND LITHOSTRATIGRAPHIC SUCCESSION WELL 31/4-12 IDUN**

| Biostratigraphy | | | Litostratigraphy | | | |
|---|---|---|---|---|---|---|
| **Period** | **Epoch/age** | **Top Depth mMD** | **Group** | **Formation** | **Member** | **Top Depth mMDRKB** |
| PALEOGENE | Early Oligocene (top not seen) | 1350.00m | Hordaland | | | |
| | UNCONFORMITY | | | | | |
| | Late Eocene | 1410.00m | | | | |
| | Middle Eocene | 1430.00m | | | | |
| | Early Eocene | 1570.00m | | | | |
| | earliest Eocene | 1720.00m | Rogaland | Balder | | 1718.50m log |
| | | | | Sele | | 1775.00m log |
| | Late Paleocene | 1810.00m | | Lista | | 1821..00m log |
| | | | | Våle | | 1903.50m log |
| | Early Paleocene | 1970.00m | | | | |
| | UNCONFORMITY | | | | | |
| LATE | Late Maastrichtian | 1980.00m | Shetland | Jorsalfar | | 1977.00m log |
| | UNCONFORMITY | | | | | |
| EARLY CRETACEOUS | Late Albian | 2000.00m | Cromer Knoll | Rødby | | 1995.00m log |
| | Midle Albian | 2020.00m | | | | |
| | UNCONFORMITY | | | | | |
| | Early Barremian | 2030.00m | | Åsgard | | 2025.00m log |
| | UNCONFORMITY | | | | | |
| | Late Ryazanian | 2040.00m | Viking | Draupne | | 2042.50m log |
| | Early Ryazanian | 2050.00m | | | | |
| | UNCONFORMITY | | | | | |
| LATE JURASSIC | Middle Volgian | 2060.00m | | | Draupne sandstone | 2056.00m log |
| | UNCONFORMITY | | | | | |
| | earliest Kimmeridgian-Late Oxfordian | 2089.00m | | Sognefjord | | 2089.00m |
| | | | | | Sognefjord 5Bc | 2105.00m log |
| | | | | Heather | | 2125.00m log |
| | Late Oxfordian | 2131.00m | | | | |
| | Middle Oxfordian | 2164.00m | | | | |
| | Early Oxfordian | 2191.00m | | | | |
| MIDDLE JURASSIC | Late Callovian (base not seen) | 2221.00m | | Fensfjord F7 | | 2211.00m log |

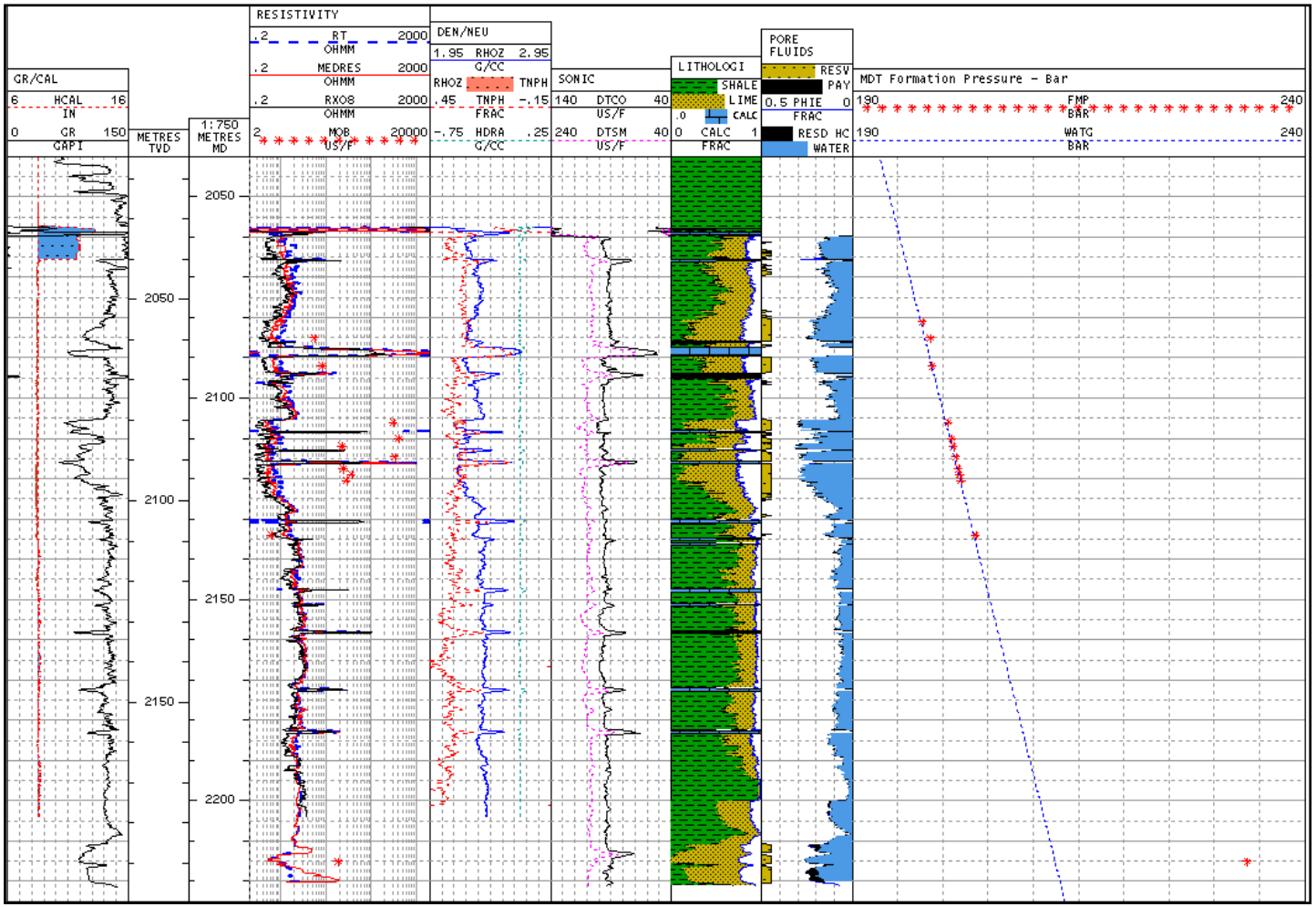
## 2.6.3 Reservoir / Formation depth map



## 2.6.4 Geophysical seismic profile along well path



## 2.6.5 Raw logs


RESISTIVITY
DEN/NEU
SONIC
LITHOLOGI
PORE FLUIDS
MDT Formation Pressure - Bar
GR/CAL
HCAL
GR
GAPI
METRES TVD
1:750 METRES MD
RT
MEDRES
RXO8
MOB
RHOZ
TNPH
HDRA
DTCO
DTSM
US/F
SHALE
LIME
CALC
FRAC
RESV
PAY
PHIE
RESD HC
WATER
FMP
WATG
BAR
2050
2100
2150
2200

# 3 PETROPHYSICAL EVALUATION

## *3.1 Petrophysical summary*

A total of 39m net sand has been defined in the Draupne, Sognefjord and Fensfjord formations. The best reservoir was found in the Sognefjord fm., which exhibits an average porosity of 24.4%. The reservoirs were entirely water bearing, no hydrocarbons were interpreted from either log analysis or shows descriptions. The MDT pressure survey indicates a depletion of the Draupne and Sognefjord aquifers.

## *3.2 Discussion*

Wireline logging was only carried out in the 8.5” hole from the Draupne to Fensfjord fm. In the larger hole sizes above only LWD (GR/RES) was logged. Hence CPI was only generated for the 8.5” hole section.

## *3.3 CPI input data*

The Composite log compiled by LogTek was used as input for CPI evaluation. Specifically the logs from the PEX and DSI tools were employed. The Resistivity tool run with the PEX tool was the HRLA and Rt was derived from the laterolog curves generated by this instrument. Microresistivity, Rxo input was the MCFL from the PEX.

### 3.3.1 Log quality

The quality of the Wireline logs were of excellent quality as was the hole conditions of the 8.5” section.

### 3.3.2 Corrections

No special corrections were applied to the raw logs.

## *3.4 Evaluation method and results*

### 3.4.1 Petrophysical model and input parameters

CPI was generated with the Recall/Review application employing a simple sand-shale model.

Porosity was computed from the density log. Both effective, PHIE and total PHIT, porosities were computed. PHIE is the density porosity corrected for shale volume.

Vsh, shale volume, was computed from the minimum of GR and Density/Neutron shale indicators.

Sw, water saturation was computed from the Indonesia equation.

Tight calcite cemented layers were defined where the density log exceeded 2.45 g/cc.

Net sand was defined by these cutoffs: PHIE < 0.15 and Vsh >0.50

Below are listed CPI input parameters used:

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Formation temperature | FTEM | 88@2200m (0.04/m) | DEGC |
| Formation water resistivity | RW | 0.04@88 DEGC | OHMM |
| Shale resistivity | RSH | 10 | OHMM |
| Matrix density | RHOM | 2.65 | G/CC |
| Shale density | RHOSH | 2.45 | G/CC |
| Shale neutron porosity | PHINSH | 0.35 | FRAC |
| GR - clean sand | GRMIN | 60 (90 Fensfj.) | GAPI |
| GR - shale | GRMAX | 150 | GAPI |
| Archie constant | a | 1.0 | - |
| Archie m exponent | m | 2.1 | - |
| Archie n exponent | n | 1.9 | - |

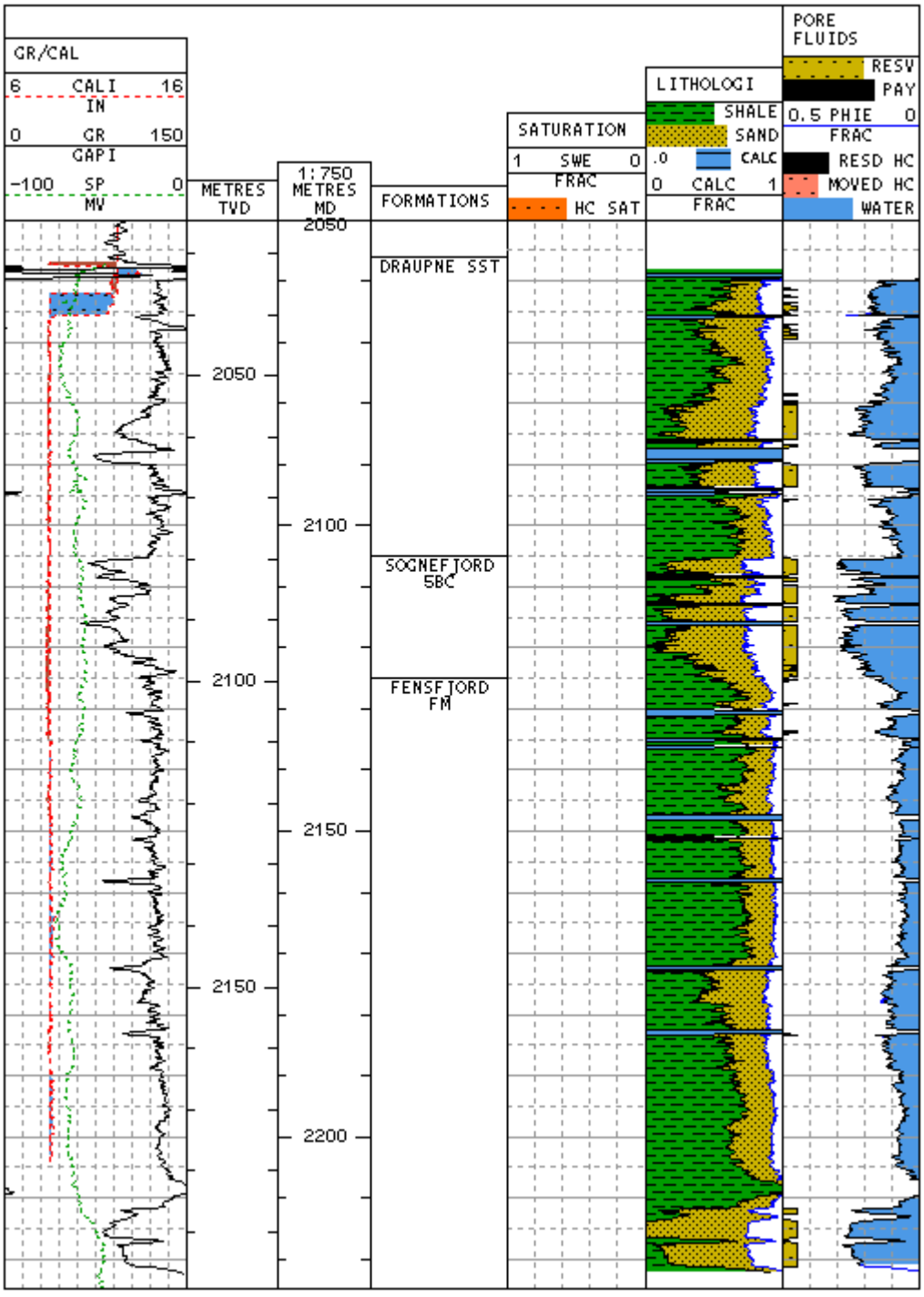
## 3.4.2 Petrophysical results

Below is a table summarising the reservoir properties from the CPI analysis:

| ZONE | TOP | BOTTOM | THICKN | NET | NTG | PHI FRAC AR-TW NET | SW FRAC AR-P&TW NET |
|---|---|---|---|---|---|---|---|
| DRAUPNE SST | 2056.0 | 2105.0 | 49.0 | 13.4 | 0.274 | 0.195 | 1.000 |
| SOGNEFJORD 5BC | 2105.0 | 2125.0 | 20.0 | 16.8 | 0.838 | 0.244 | 1.000 |
| FENSFJORD FM | 2125.0 | 2226.0 | 101.0 | 8.7 | 0.086 | 0.230 | 1.000 |
| TOTAL INTERVAL | 2056.0 | 2226.0 | 170.0 | 38.9 | 0.229 | 0.224 | 1.000 |

Cutoffs defining net sand; Phie < 0.15 and Vsh > 0.50

Graphical presentation of the CPI:



## *3.5 Fluid System*

### 3.5.1 Formation pressure analysis

One run of MDT pressure measurements was carried out. Below can be found the results. As can be seen 5 tests showed tight formation (dry test) and one test (#3) gave a very high formation pressure. This latter test at 2215mRKB (2190mMSL) in the Fensfjord fm. had a good mobility ratio, hence it should not in theory be supercharged. Another explanation for this high formation pressure could be charging of this aquifer due to injection operations in nearby fields. However, this test was not repeated.

| DEPTH | TEST | COMMENT | FMP | HYDA | HYDB | MOB |
|---|---|---|---|---|---|---|
| M | No | Text | BAR | BAR | BAR | MDCP |
| 2081.00 | 25. | Volumetric Limited draw-down | 197.791 | 239.503 | 239.513 | 10.74 |
| 2084.99 | 22. | Volumetric Limited draw-down | 198.648 | 239.956 | 239.975 | 56.26 |
| 2091.99 | 21. | Volumetric Limited draw-down | 198.833 | 240.740 | 240.751 | 83.92 |
| 2106.01 | 20. | Volumetric Limited draw-down | 200.628 | 242.324 | 242.334 | 3134.04 |
| 2110.01 | 19. | Volumetric Limited draw-down | 201.026 | 242.783 | 242.792 | 4146.92 |
| 2111.99 | 18. | Volumetric Limited draw-down | 201.222 | 243.001 | 243.000 | 230.40 |
| 2114.51 | 17. | Volumetric Limited draw-down | 201.468 | 243.294 | 243.287 | 3368.37 |
| 2117.50 | 16. | Volumetric Limited draw-down | 201.761 | 243.630 | 243.632 | 244.08 |
| 2119.01 | 15. | Volumetric Limited draw-down | 201.915 | 243.798 | 243.803 | 371.92 |
| 2120.50 | 14. | Volumetric Limited draw-down | 202.059 | 243.961 | 243.974 | 290.83 |
| 2134.01 | 13. | Volumetric Limited draw-down | 203.671 | 245.483 | 245.504 | 6.16 |
| 2173.97 | 12. | Dry Test | **** | 249.994 | 250.000 | **** |
| 2177.01 | 10. | Dry Test | **** | 250.339 | 250.333 | **** |
| 2180.00 | 9. | Dry Test | **** | 250.667 | 250.657 | **** |
| 2185.99 | 7. | Dry Test | **** | 251.353 | 251.349 | **** |
| 2194.99 | 5. | Dry Test | **** | 252.377 | 252.395 | **** |
| 2214.99 | 3. | Draw-down Pretest | 233.643 | 254.673 | 254.716 | 190.97 |

Fig. 3.5.1.1 MDT 1A pressure survey – Quartz gauge.

| DEPTH | TEST | COMMENT | FMP | HYDA | HYDB | MOB |
|---|---|---|---|---|---|---|
| M | No | ASCI | BAR | BAR | BAR | MD/CP |
| 2081.00 | 25. | Volumetric Limited draw-down | 197.776 | 239.487 | 239.494 | 10.62 |
| 2084.99 | 22. | Volumetric Limited draw-down | 198.651 | 239.828 | 239.965 | 55.63 |
| 2091.99 | 21. | Volumetric Limited draw-down | 198.838 | 240.720 | 240.730 | 81.78 |
| 2106.01 | 20. | Volumetric Limited draw-down | 200.612 | 242.308 | 242.302 | 3914.05 |
| 2110.01 | 19. | Volumetric Limited draw-down | 201.010 | 242.661 | 242.759 | 4235.00 |
| 2111.99 | 18. | Volumetric Limited draw-down | 201.210 | 242.970 | 242.980 | 228.37 |
| 2114.51 | 17. | Volumetric Limited draw-down | 201.456 | 243.197 | 243.267 | 3360.81 |
| 2117.50 | 16. | Volumetric Limited draw-down | 201.751 | 243.542 | 243.612 | 234.03 |
| 2119.01 | 15. | Volumetric Limited draw-down | 201.912 | 243.793 | 243.794 | 365.87 |
| 2120.50 | 14. | Volumetric Limited draw-down | 202.065 | 243.962 | 243.955 | 272.49 |
| 2134.01 | 13. | Volumetric Limited draw-down | 203.664 | 245.468 | 245.473 | 6.15 |
| 2173.97 | 12. | Dry Test | **** | 249.939 | 249.939 | **** |
| 2177.01 | 10. | Dry Test | **** | 250.270 | 250.253 | **** |
| 2180.00 | 9. | Dry Test | **** | 250.570 | 250.556 | **** |
| 2185.99 | 7. | Dry Test | **** | 251.220 | 251.192 | **** |
| 2194.99 | 5. | Dry Test | **** | 252.166 | 252.127 | **** |
| 2214.99 | 3. | Draw-down Pretest | 233.228 | 254.112 | 254.197 | 165.63 |

Fig. 3.5.1.2 MDT 1A pressure survey – Strain gauge.

Below is a formation pressure plot where pressures from 31/4-12 are compared to well 31/4-10 – assumed virginal pressure. A depletion of about 10 Bar is seen in the Draupne and Sognefjord aquifers. The sole (high) Fensfjord pressure measured is commented on above.

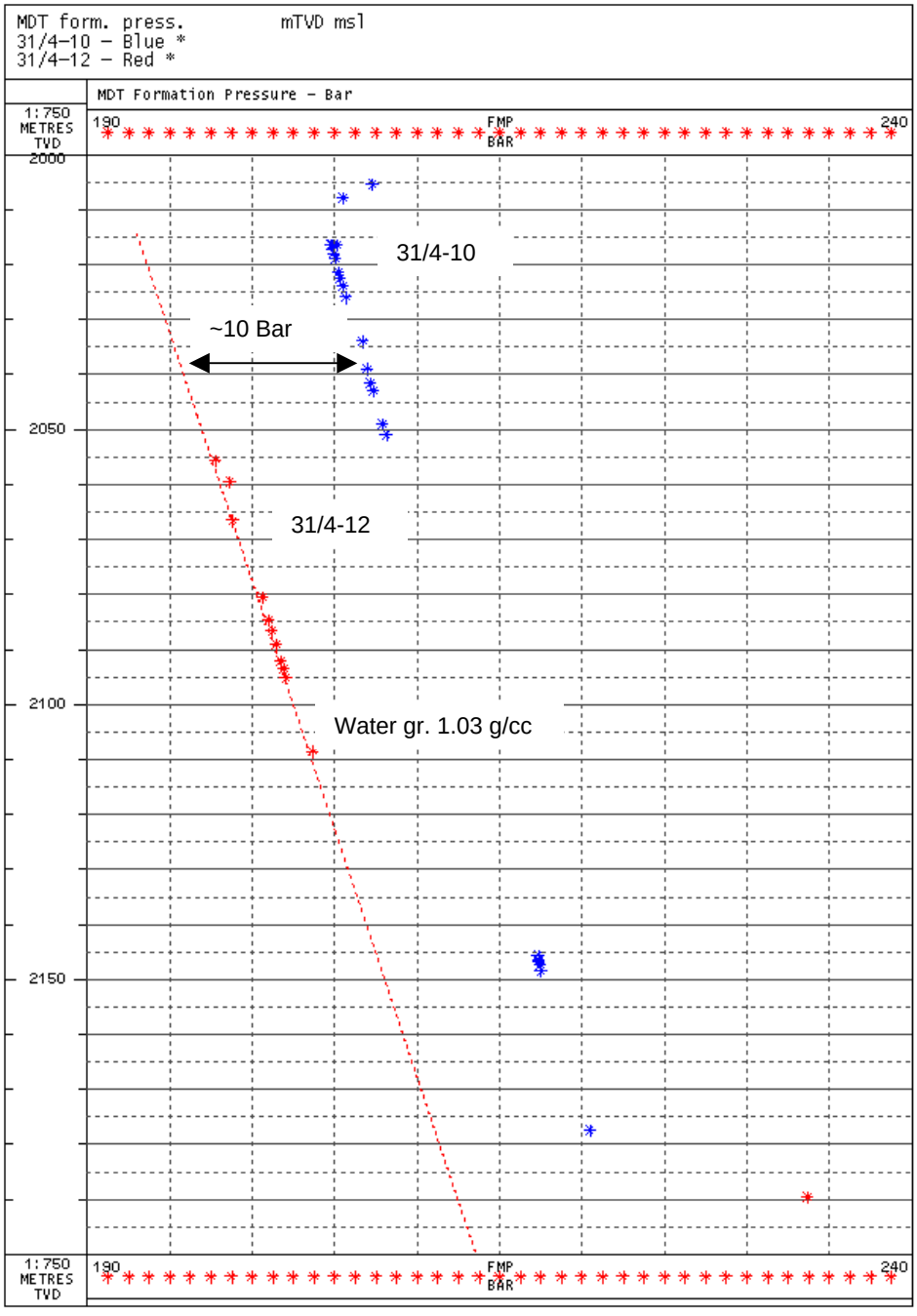



Fig. 3.5.1.3 Formation pressures: 31/4-12 vs. 31/4-10 ref. mMSL.

### 3.5.2 Fluid Contacts

No fluid contacts can be derived in this entirely water bearing well.

### 3.5.3 Depletion

Reference is made to chapter 3.5.1 – the reservoir is depleted by about 10 Bar.

### 3.5.4 Fluid Sampling

No fluid sampling with the MDT tool was performed.

## *3.6 Pore Pressure, Overburden and Temperature gradients*

General:
All depths are in m TVD RKB unless otherwise stated. All pressures are given in sg.

The pressure interpretations in well 31/4-12 are based on well site observations, gas data, MDT pressure readings, LOT/FIT and calculations based on logs (MWD and Dxc).

Shallow gas was not observed in the upper sediments.

From sea bottom to approximately 1389m a hydrostatic pressure is regarded as most likely. At 1389m a change in Dxc, Resistivity-log and gas-readings indicate a steady build-up in pore pressure to 1,31sg at 1590m TVD RKB. Between 1600m and 1887m the pore pressure stays at 1,30sg. Below 1887m there is a gradual decrease in pore pressure down to 1,04sg at base Draupne.
In 8 1/2" section MDT-readings were taken in sands of the Heather, Sognefjord and Fensfjord. The results are lower than expected in the Heather and Sognefjord due to regional draw down of pressure from production. The pressure in Fensfjord was higher than experienced in the area and must represent a closed compartment laterally and vertically.

**Formation strength**

No mudlosses were observed in this well.
One normal LOT was performed. At 1178m TVD it gave 1,81sg, prognosed minimum was 1,65sg. A FIT to 1,77sg was performed at 2056m TVD.

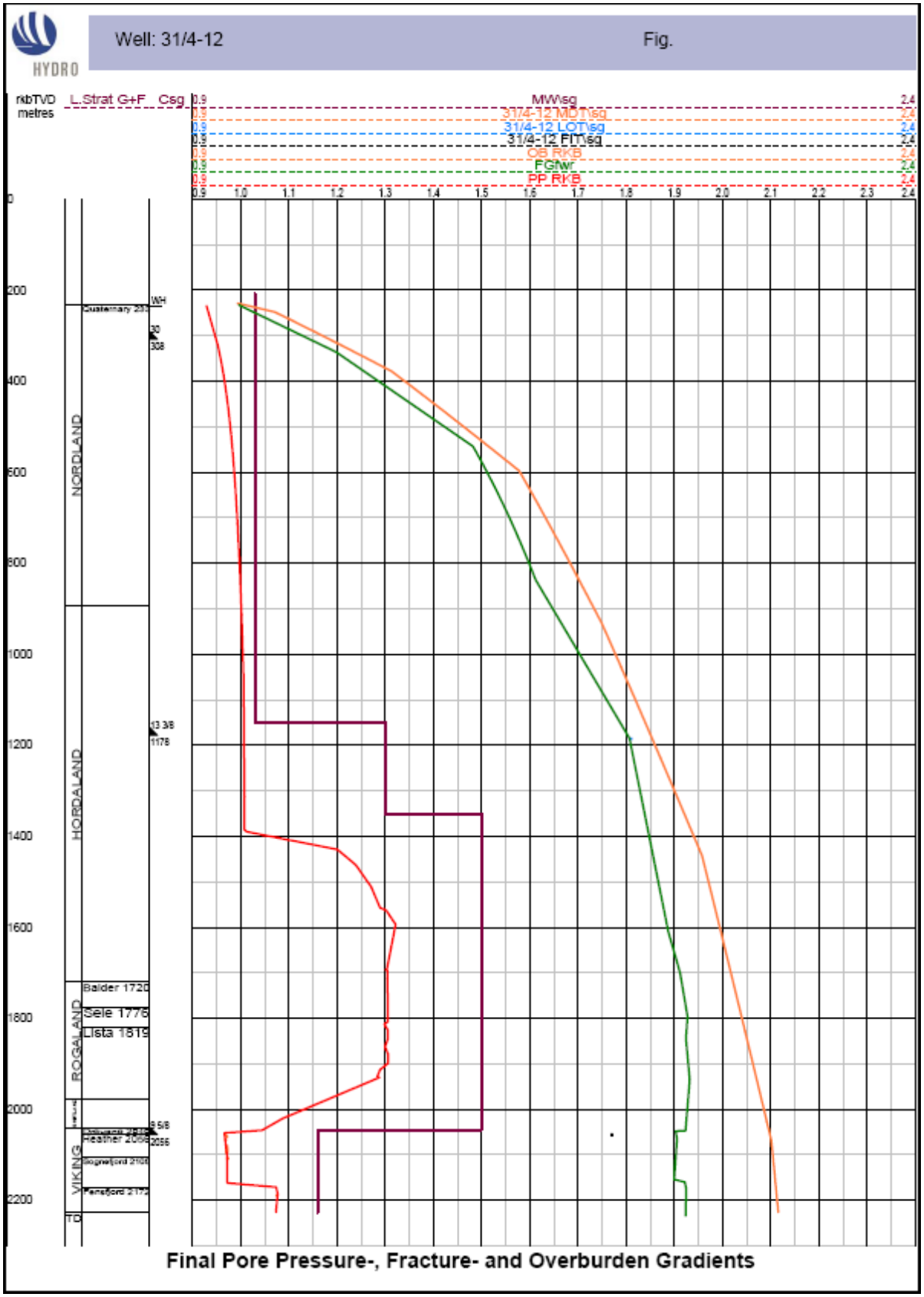
**Overburden gradient**

Overburden gradient is based on the prognosis.

**Temperature Gradient**

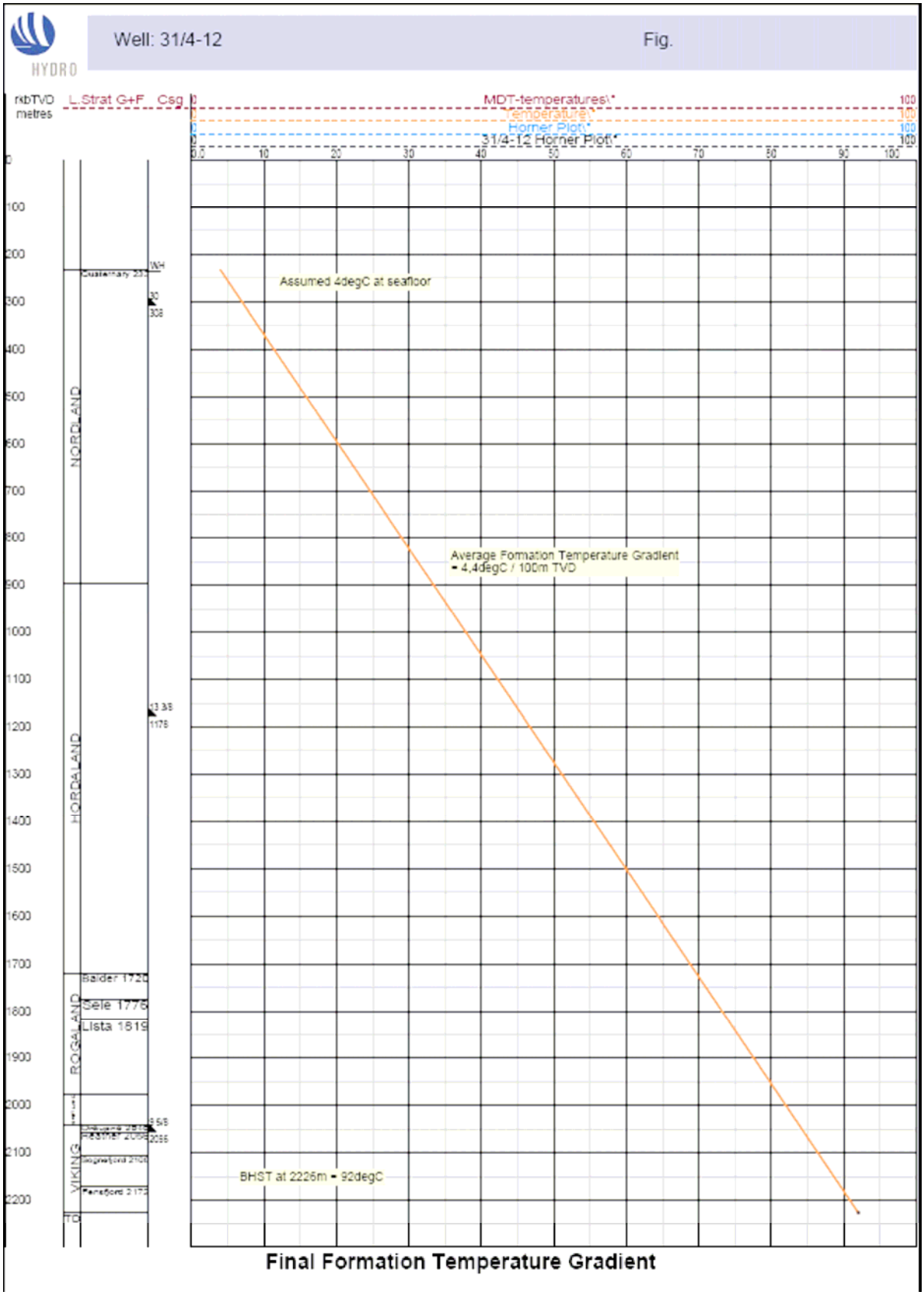
A Horner plot was made based on three logging runs. The calculated value is 92$^{o}$C at 2226m TVD. Based on a seafloor temperature of 4 $^{o}$C the average formation temperature is 4,4 $^{o}$C / 100m TVD.

## 3.6.1 Formation Pressure, Overburden- and Fracture Pressure plot




Final Pore Pressure-, Fracture- and Overburden Gradients

## 3.6.2 Formation Temperature plot



# 4 POST SITE SURVEY

## *4.1 Well data*

| | | |
|---|---|---|
| 1 | Distance from rig floor to sea level: | 25m |
| 2 | Water depth (MSL): | 210m |
| 3a | Setting depth for conductor (m RKB): | 308m |
| 3b | Leak Off / Formation Integrity Test (g/cc): | N/A |
| 4a | Setting depth (m RKB TVD) for casing on which BOP mounted: | 1177,5m |
| 4b | Formation Integrity Test (g/cc): | 1.81 sg |
| 5 | Depth (m RKB TVD & Two Way Time) to formation/section/layer tops: | |

| | | |
|---|---|---|
| R40: | 318m | (377ms) |
| R50: | 367m | (424ms) |
| R53: | 379m | (439ms) |
| Base Pleistocene: | 420,5m | (488ms) |
| R80: | 582m | (626ms) |
| Base Pliocene | 766m | (798ms) |
| Base Miocene | 823m | (852ms) |

Note:
No chrono stratigraphic information was obtained in the top-hole section of the well (from seabed down to 1184m RKB MD). Consequently, the interpretation of the different formations in this interval is based on the MWD logs, seismic character and previous work.

Mud logging commenced at 1184m RKB MD.

**6 Depth interval (m RKB TVD & Two Way Time) and age of sand bodies shallower than 1000m under the seabed. Note, which layers if any contain gas:**

Pleistocene Interval [*]
367m – 368m
379m – 380m

Late Miocene Interval (Utsira Formation)
766m – 823m

**7 By what means is the presence of gas proven:**

The well was drilled with returns to seabed from sea floor (235m RKB) to 1184 m RKB MD before setting 13 3/8" casing at 1177,5 m RKB TVD. Hence, no data exists on background gas levels from this interval. However, no gas-related incidents were reported. Below 1184m RKB MD gas analyses were performed using flame-ionisation detectors (FID) with gas measured as percentage methane (C1) equivalent in air, and chromatographic analyses expressed in parts per million.

**8 Composition and origin of gas:**

N/A

**9 Describe all measurements taken in gas bearing layers:**

N/A

[*] No LWD logs above 295m RKB

## *4.2 Seismic data*

**10 Given depth and extent of any gas blanking ("gass-skygging"), seismic anomalies etc.:**

No shallow gas warning was issued as no seismic anomalies were observed at or near Location, and since no shallow gas-problems were experienced in the tie wells.

**11 Note any indication of gas originating from deeper levels. Give description in cases where gas comes from deeper layers:**

N/A

**12 How does the interpretation of the site survey correspond to the well data with respect to?**

**12a Shallow Gas:**

No shallow gas was anticipated and no shallow gas was observed in the well.

**12b Sand Bodies:**

The Pleistocene sand stringers were anticipated, but their exact position was not estimated. The Base Pleistocene sand layer was anticipated.

Two intra-Pliocene sand layers were expected, but none were observed on the LWD logs.

The Miocene sand (Utsira Formation) occurred as expected.

**12c Boulders:**

Boulders were predicted between 235±1m RKB and 430±12m RKB, but boulders were not encountered.

**12d Unconformities (depths in metres RKB (TVD)):**

| Horizon | Prognosis, P (m) *) | Observation, O (m) | O-P (m) |
|---|---|---|---|
| Base Pleistocene | 430m ± 12m | 420,5m | -9.5m (Shallower) |
| Base Pliocene | 778m ± 27m | 766m | -12m (Shallower) |
| Base Miocene | 826m ± 29m | 823m | -3m (Shallower) |

*) From Site Survey Report

The differences between the anticipated and observed depths to different formation tops were within the uncertainty limits, except for Base Pliocene. The difference between the predicted

and observed depths at Base Pliocene is most likely caused by erroneous seismic picks and/or interval velocities.

### 12e Correlation to Nearby Wells:

The drilling conditions experienced in well 31/4-12 are as predicted and similar to those encountered in the tie-wells.

# 5 LISTING OF STANDARD AND SPECIAL STUDIES

Hydro Oil and Energy, 2005: Post Site survey at 31/4-12, Log Panel. No.: **NH-01127425**

Hydro Oil and Energy, 2005: Biostratigraphy of Well 31/4-12. No.: **NH-001155875**

GeoStrat, 2005: Biostratigraphy of Norsk Hydro Well 31/4-12 over the interval 1,350m-2,226m

Schlumberger, 2005 : VSP processing using the VSI tool, Well 31/4-12. Ref. G00450. No.: NH-01097343

Schlumberger, 2005 : Q-Borehole Survey Report. Zero Offset VSP. 31/4-12. No.: NH-01097449

Baker Hughes, 2005 : End of Well Report, Directional Drilling, MWD and Surface Logging. Well 31/4-12. BHI Job ID: NOR1583.

**CONFIDENTIAL**

**REPORT**
**Hydro Oil & Energy**
Operations
Deepsea Trym - Rig team

| | | | |
|---|---|---|---|
| Title: | **Final well report, well 31/4-12** | No. | : NH/OD-B-4492/05 |
| | | Rev. | : Rev 1 |
| | | Page | : B-1 of 7 |
| | | Date | : 2005-11-16 |

| | | | | |
|---|---|---|---|---|
| Prepared by | : | Helge Aagotnes, Drill. Eng. | Sign. | : |
| Verified by | : | Geir Smaaskjær, Drill Eng. | Sign. | : |
| Approved by | : | Svein Dybdahl, Drill. Sup. | Sign. | : |

**CONTENTS SECTION B**

TABLES



FIGURES

# 1 Operations and experiences

All depths are referenced to RKB, 25 m above MSL. Seabed was located at 210 m below MSL.

The semi submersible drilling rig "Deepsea Trym" drilled the 31/4-12 well on the Idun field. Deepsea Trym arrived the location the 2nd of February 2005, and spudded the well the 5th of February. The 31/4-12 well was plugged and permanently abandoned on the 16th of March 2005.

Total time used on the well was ~41,5 days (997 hours), of which ~30,5 days (731,5 hours) were operational time (73.4 %).

# 2 Transit and positioning

Total time used for mobilization from CCB and anchoring of Deepsea Trym for well 31/4-12 was 81.0 hours. This includes rig move, positioning, testing of anchor lines and anchoring, installation of transponders and 33 hrs waiting on weather.

# 3 36" section

| | | |
|---|---|---|
| TD 17 ½" hole (MD, TVD) | 310 m | 310 m |
| TD 30" casing (MD, TVD) | 308 m | 308 m |
| Total time consumption | 208.5 hrs | |
| Operational time (hrs, %) | 91.5 hrs | 43.9 % |
| Downtime (hrs, %) | 117 hrs | 56.1 % |

## 3.1 Drilling

The section was drilled with a 17 1/2" Hughes Christensen MXT305HDX2 bit and a two-step 26" x 36" hole opener. There was also a directional MWD tool in the bottom hole assembly. The hole was washed down from seabed at 235 m to 246 m. The bit drilled 75 m in 15.5 hours with an average ROP of 8.52 m/hr. The drilling fluid consisted of seawater and 1.05 SG. spud mud, pumping high viscous pills to optimize hole cleaning. Reaming was necessary to keep the angle below 1 degree. The hole was displaced to 1.5 SG Bentonite displacement fluid prior to running the 30"conductor.

| BHA no | Bit name | Bit Type | Bit meters | Rotating hours | Effective ROP, m/hr | Pull reason |
|---|---|---|---|---|---|---|
| 1 | MXT305HDX2 | Insert | 73 | 8.80 | 8.5 | TD |

## 3.2 30" Conductor

Ran the Conductor to 308 m and sat down with 10 tons. Cemented the conductor from TD up to seabed with 22 $m^3$ 1.56 SG lead slurry and 25.7 $m^3$ 1.95 SG tail slurry. Displaced the cement with seawater. When checking for top of cement, TOC, it could not be tagged. Ran in with cement stinger and performed three grouting cementing jobs. The grouting jobs were performed at 19.5 m, 24 m and 7 m below seabed, and they were grouted according to program.

Waited on weather 88 hrs for running the 30" conductor. Excluding the WOW from the operational efficiency would have been 75,9 %.

# 4 26” and 17 1/2" section

| | | |
|---|---|---|
| TD 17 1/2" (MD, TVD) | 1184 m | 1184 m |
| TD 20”x13 3/8” csg. (MD, TVD) | 1178 m | 1178 m |
| Total time consumption | 227 hrs | |
| Operational time (hrs, %) | 175,5 hrs | 77.3 % |
| Downtime (hrs, %) | 51.5 hrs | 22.7 % |

## 4.1 Drilling

The 30” shoe track, 17 ½” rat hole and 2 meters of new formation was drilled to 312 m MD, using a 26” roller cone bit type XT02PC. This section was drilled without an MWD tool. The 26” bit was then pulled, and a new bottom hole assembly, consisting of a 17 1/2” Hughes Christensen HCR606 PDC bit was run. A vertical hole was drilled from 312 m to 1184 m MD. This section was extended 34 m further than planned due to the longer Utsira sand interval, before entering clay stone at 1172m.

The 26” bit drilled 4 m in 0,6 hours, with an average penetration rate, ROP, of 6.7 m/hr. The 17 ½” bit drilled 872 m in 25.6 rotating hours. This gives an average effective ROP of 34.1 m/hr.

The section was drilled with seawater and 1.05 SG spud mud. Hi Vis pills were pumped in the middle of each stand and prior to each connection to secure proper hole cleaning. At TD, a wiper trip to 755 m was made. Prior to the trip, the hole was displaced with 70 m3 1.40 SG KCL mud, to above the Utsira formation. When pulling out of the hole, a 10 ton over-pull was experienced at 874 m MD. Lubricated through the tight spot. Running in the hole, 10 ton weight was needed to pass 1065 m MD. The string was worked from 1065 m to TD: Circulated bottoms up using 1.4 SG KCL mud prior to pulling out of hole. No tight spots observed on the trip out.

| BHA no | Bit name | Bit type | Bit meters | Rotating hours | Effective ROP, m/hr | Pull reason |
|---|---|---|---|---|---|---|
| 2 | XT02PC | Insert | 4 | 0.6 | 6.7 | TD |
| 3 | HCR606Z | PDC | 872 | 25.6 | 34.1 | TD |

## 4.2 20” x 13 3/8" Surface casing

When running the 20” x 13 3/8” casing, tight hole was experienced at 1172 m. The casing was washed down from 1172m to 1178 m. The 18 ¾” wellhead was landed and verified locked with 25 tons over pull. Cemented the surface casing from TD up to seabed with 136 $m^3$ 1.44 SG lead slurry, 27.5 $m^3$ 1.92 SG tail slurry, displaced with 68.4 m3 seawater and pressure tested the 20” surface casing to 160 bar.

## 4.3 BOP

When running the BOP and riser, it was discovered, that the kill and choke lines cross-over for the two riser joint types used on the rig, had incorrect dimensions and that the riser could not be assembled. This resulted in 13 hours downtime, waiting for equipment from shore. Later, a leakage between two riser joints caused additional 32.5 hours downtime.

## 5 12 1/4 section

| | | |
|---|---|---|
| TD (MD, TVD) | 2062 m | 2062 m |
| TD 9 5/8" liner (MD, TVD) | 2056.5 m | 2056 m |
| Total time consumption | 169 hrs | |
| Operational time (hrs, %) | 147.5 hrs | 87.3 % |
| Downtime (hrs, %) | 21.5 hrs | 12.7 % |

### 5.1 Drilling

The section was drilled with a 12 ¼" HC606 bit. The float, shoe track, shoe and 17 ½" rat hole was drilled out to 1184 m, and reamed several times. The float collar and cement was drilled with seawater, and the well was displaced to 1,30 SG Aqua-Drill whilst drilling the shoe track and the 3 m of new formation to 1187 m MD. A leak off test was performed to 1.81 SG at 1177.7 m MD using 1.3 SG mud.

The section was drilled and oriented to from 1184 m to 2062 m. The mud weight was increased from 1.30 SG to 1.50 SG when drilling from 1275 m to 1393 m MD before entering the Green Clay. At 1924 m, the BHA was pulled out of the hole and rebuild from motor to rotary assembly. In order to move the On Track tool with resistivity and gamma ray readings as close to the bit as possible. The well was re-logged with the MWD tool from 1280 to 1311 m and from 1890 m to 1924 m MD while running in the hole. Before logging could start at 1890, the MWD computer had to be re-booted and the mud pumps started several times to obtain a MWD signal

The drilling of the section continued from 1924 m until TD was reached at 2062 m. At TD, the mud weight was increased to 1.54 SG, prior to tripping out of the hole.

| BHA no | Bit name | Bit type | Bit meters | Rotating hours | Effective ROP, m/hr | Pull reason |
|---|---|---|---|---|---|---|
| 4 | HC606 | PDC | 740 | 20.6 | 35.9 | BHA |
| 5 | HC606 | PDC | 138 | 13.10 | 10.5 | TD |

### 5.2 9 5/8" Production casing

The 9 5/8" casing was ran and landed with the shoe at 2056.5 m, leaving a 5.4 m rathole. Cemented the production casing from TD up to 200 m above the shoe with 13.2 $m^3$ 1.90 SG cement slurry. The casing was pressure tested to 165 bars.

Experienced problems setting the 9 5/8" wear bushing probably caused by rubber parts from the annular preventers. The wellhead was washed several times before the wear bushing could be set leading to 17.5 hours down time.

## 6 8 1/2" section

| | | |
|---|---|---|
| TD (MD, TVD) | 2226 m | 2225.5 m |
| Total time consumption, drilling | 90.5 hrs | |
| Operational time (hrs, %) | 90 hrs | 99.4 % |
| Downtime (hrs, %) | 0.5 hrs | 0.6 % |

### 6.1 Drilling

The section was drilled with an 8 ½" bit, MX-LR18DDT. The float, shoe track, shoe and 12 ½" rat hole was drilled out to 2062 m, and reamed several times. The well was displaced to 1.16 SG Aqua-Drill whilst drilling the shoe track and the 3 m of new formation to 2065 m MD. A formation integrity test was performed to 1.77 SG at 2057 m MD, 2056.6 m TVD using 1.16 SG mud.

The 8 ½" hole section was drilled to well TD at 2226 m MD and the hole was circulated bottoms up prior to pulling out of hole. The well inclination was held below 1.00º in this section.

| BHA no | Bit name | Bit type | Bit meters | Rotating hours | Effective ROP, m/hr | Pull reason |
|---|---|---|---|---|---|---|
| 6 | MXLR18DDT | ISRT | 164 | 14.10 | 11.6 | TD |

### 6.2 Coring

The maximum formation gas of this section was 0.11 %, recorded at 2188 m MD, and the average gas value for this section was 0.05 %. As there was no oil to be found, only water-wet sand. The planned coring was cancelled.

## 7 Electric Wireline Logging

Logging run number 1, HRLA-PEX-DSI-ELS was performed in the interval from 2226 m to 2054,5 m.

Logging run number 2, MDT pressure point survey was performed. 17 surveys were made from 2215 m to 2081 m, where 12 tests were good, and 5 were dry.

Logging run number 3, A Zero Offset VSP survey was performed. The data quality for the VSP was considered to be good throughout the survey. One of the 3 guns in the gun cluster did not fire during gun test prior to running in hole, resulting in a survey-run with 2 guns. The data for the Zero Offset VSP was recorded from 2150 m to 1257 m MD at 15 m MD intervals.
Casing arrivals were evident on levels above 1600 m MD. At least 5 good repeatable shots were recorded at each VSP level.

## 8 Plug and Abandonment

| | | |
|---|---|---|
| TD 8 ½" (MD, TVD) | 2226 m | 2225.5 m |
| Total time consumption | 175,5 hrs | |
| Operational time (hrs, %) | 145 hrs | 82.6 % |
| Downtime (hrs, %) | 30,5 hrs | 17.4 % |

### 8.1 Plugs

A balanced plug was sat, from 2226 m to 1955 m with a 3 ½" cement stinger, by pumping 3 $m^3$ 1.60 SG spacer ahead of 10 $m^3$ 1.90 SG tail cement slurry, followed by 0.98 m3 spacer behind. The cement plug was displaced with 16.8 m3 1.16 SG mud. The excess cement and spacer was circulated at 1886 and 26 m3 of cement/spacer contaminated mud was retrieved.

Ran in hole with 8 ½" bottom hole assembly to 1855 m, washed down and tagged cement with 15 tons at 2051. Pulled out of hole with the 8 ½" bottom hole assembly and ran in hole to 117m with mule shoe on 3 ½ " drill pipe. Pressure tested the cement plug against the shear ram with 1.20 SG mud to 105 bar.

Sat the second balanced cement plug from 2051 m to 1950 m. Closed the Annular Preventer and kept pressure on the annulus pumping 3 $m^3$ drill water ahead of 3.7 $m^3$ 1.9 SG cement slurry, followed by 0.83 $m^3$ drill water behind. The cement plug was sat 106,5 m over the 9 5/8" casing shoe and displaced with 15.5 m3 1.20 SG mud.

A casing cutting assembly was made up and run to 495 m, where the 9 5/8" casing was cut, and afterwards retrieved with a spear assembly. It was not possible to release the 9 5/8" casing spear from the casing hanger and the spear/hanger was therefore laid out in one piece.

A 13 3/8" bridge plug was sat at 485 m. The plug was tested to 142 bar with 1.54 SG mud. The kill line, choke line and riser were displaced to seawater. A balanced cement plug was sat from 485 m to 285 m (50 m below sea bed.). It required mixing and pumping 15.5 m3 1.9 SG cement slurry displaced with 1.53 $m^3$ seawater.

### 8.2 BOP

Prepared to pull the BOP, but the weather conditions were too rough to launch the man overboard boat. Pulling of the BOP was delayed for 9.5 hours until the conditions improved.

### 8.3 Casing retrieval

A 30" x 20"casing cutting and retrieving motor assembly were run and the casings attempted cut at 238.5 m. After the cutting operation, it was not possible to pull the 20" x 30" casing. The assembly was pulled and inspected. Found the 8" fishing bumper sub bent. The 18 3/4" extended catcher had slide down on the motor housing and was missing 2 catcher segments. The bolts on the 17 1/2" stabilizer sleeve were sheared off and the stabilizer had moved up towards the lower part of the cutter. Inspection of the knives indicated that only the 20" casing was cut.

The casing cutting assembly was rebuild to a rotary system, and the casing was cut at 238,36 m. An 18 ¾" spear was ran and the 20" x 30" casing and permanent guide base was pulled free with 15 ton over pull. Observed no cement on the 30" casing surface. This indicated a good effect of the cement protection applied on the 30" housing.

A final seabed survey with the ROV was performed, and the rig was mobilized to the new location Astero, 35/11-13, on the 16$^{th}$ of March 2005.

# GENERAL INFORMATION

**Well** : 31/4-12 **PO** : 1

**Field** : IDUN **Country** : NORWAY **Wellbore Type :** WELL
**Licence** : PL 055 **Installation** : DEEPSEA TRYM
**UTM zone** : 31 **Central Median** : 3' E **Horiz. Datum:** ED50

| Location coordinates: | | Surface | Target |
|---|---|---|---|
| **UTM** | **North [m]:** | 6717953,21 | |
| **UTM** | **East [m]:** | 509006,75 | |
| **Geographical** | **North :** | 60 35'45.41" | |
| **Geographical** | **East :** | 03 09'51.96" | |

**Water Depth:** 210,0 **m** **Reference Point Height:** 25,0 **m**
**Formation at TD:** FENSFJORD at 2172 m MD

| | | |
|---|---|---|
| **Operator:** | NORSK HYDRO PRODUKSJON AS | **Share:** 20.00 **%** |
| **Partners:** | PALADIN RESOURCES NORGE AS | **Share:** 20,00 **%** |
| | TALISMAN ENERGY NORGE AS | 14,91 **%** |
| | PETORO AS | 13,40 **%** |
| | ENI NORGE AS | 13,20 **%** |
| | STATOIL ASA | 12,60 **%** |
| | ENDEAVOUR ENERGY NORGE AS | 3,20 **%** |
| | REVUS ENERGY AS | 2,69 **%** |

**Total depth (RKB) :** 2226,0 **m MD** 2225,5 **m TVD**

**TIME SUMMARY**
**Start Time** : 2005-02-02 17:30:00
**Spudding date** : 2005-02-06
**Abandonment date** : 2005-03-16

| Main operation | Hours | Days | % |
|---|---|---|---|
| MOBILIZATION | 82,0 | 3,4 | 8,2 |
| DRILLING | 483,0 | 20,1 | 48,4 |
| FORMATION EVALUATION LOGGING | 21,5 | 0,9 | 2,2 |
| PLUG AND ABANDONMENT | 145,0 | 6,0 | 14,5 |
| DOWNTIME MOBILIZATION | 44,5 | 1,9 | 4,5 |
| DOWNTIME DRILLING | 191,0 | 8,0 | 19,2 |
| DOWNTIME PLUG AND ABANDONMENT | 30,0 | 1,3 | 3,0 |
| **Sum:** | **997,0** | **41,5** | |

**Hole and casing record**

| Hole | Track | Depth [m MD] | Casing/Tubing | Track | Depth [m MD |
|---|---|---|---|---|---|
| 36" | | 308,0 | 30" | | 308 |
| 17 1/2" | | 1184,0 | 13 3/8" | | 1177 |
| 12 1/4" | | 2062,0 | 9 5/8" | | 2056 |
| 8 1/2" | | 2226,0 | | | |

**Well status:** Permanently abandoned Exploration Well

**CONTRACTORS:**

**Mwd/Lwd Contractor :** BAKER HUGHES INTEQ
**Rig Contractor :** ODFJELL DRILLING BERGEN A/S
**Wireline Logg Contractor :** SCHLUMBERGER OFFSHORE SERVICES LTD

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 1 **Date:** 2005-02-02

**Midnight depth :** m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

| Stop time | Description |
|---|---|
| 17:30 | |
| 23:59 | Rig departure from CCB: 02.02.05 at 17:36 hrs. Rig under tow to Idun location from yard stay at CCB. |

**Daily report no :** 2 **Date:** 2005-02-03

**Midnight depth :** m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

| Stop time | Description |
|---|---|
| 07:30 | Rig under tow to Idun location from yard stay at CCB. |
| 23:59 | Waiting on weather to resume the towing toward the Idun location. |

**Daily report no :** 3 **Date:** 2005-02-04

**Midnight depth :** m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

| Stop time | Description |
|---|---|
| 12:00 | Waiting on weather to resume the towing toward the Idun location. |
| 14:00 | Deballasted the rig before resumption of the towing toward the Idun location. |
| 15:30 | Rig under tow to the Idun location from yard stay at CCB while dropping anchor number 5 from Deepsea Trym. |
| 18:00 | Failure on main generator cooling system. |
| 18:30 | Rig under tow to the Idun location from yard stay at CCB while running anchors. |
| 20:00 | Deepsea Trym arrived at the Idun location. |
| 21:00 | Anchor number 9 at bottom. |
| 23:30 | Anchor number 2 and 6 at bottom. |
| 23:59 | Olympic Hercules disconnected the bridle. |

**Daily report no :** 4 **Date:** 2005-02-05

**Midnight depth :** m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

| Stop time | Description |
|---|---|
| 02:00 | Anchor number 3 and 7 on bottom. |
| 03:30 | Anchor number 8 on bottom. |
| 04:00 | Anchor number 4 on bottom. |
| 05:30 | Anchor number 5 rerunned by Norman Master. |
| 12:30 | Ballasted the rig. |
| 14:30 | Sat tension on anchor number 2. |
| 15:30 | Completed tensioning up anchor number 3. |
| 16:00 | Completed tensioning up anchor number 4. |
| 18:30 | Completed tensioning up anchor number 5. |
| 20:00 | Completed tensioning up anchor number 6. |
| 22:00 | Completed tensioning up anchor number 7. |
| 23:59 | Completed tensioning up anchor number 8. |

**Daily report no :** 5 **Date:** 2005-02-06

**Midnight depth :** 265 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 01:30 | Completed tensioning up anchor number 9. |
| 02:00 | Completed tensioning up anchor number 2. |
| 02:30 | Moved rig into spudding position. |
| 03:00 | Continued making up 8" collars in the 36" bottom hole assembly, (BHA). |
| 05:00 | Made up the 36" BHA. |
| 05:30 | Tested MWD prior to tagging the seabed. |
| 12:00 | Had failure in the MWD surface equipment. |
| 18:00 | Pulled out of the hole, reset and reprogrammed the MWD, ran back in again and retested the MWD. |
| 19:00 | Ran in and tagged seabed. |
| 19:30 | Placed out marker buoys around the spudpoint. A total of 3 buoys was set on the bottom. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 5 **Date:** 2005-02-06
**Midnight depth :** 265 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 20:30 | Washed down with 17 1/2" x 36" hole opener from seabed at 235 m to 246 m. |
| 23:59 | Drilled 17 1/2" x 36" hole from 246 m to 265 m. |

**Daily report no :** 6 **Date:** 2005-02-07
**Midnight depth :** 310 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 01:00 | Reamed the last single. |
| 03:00 | Drilled 17 1/2" x 36" hole from 262 m to 275 m. |
| 03:30 | Reamed the last single after drilling 17 1/2" x 36" hole from 246 m to 265 m.. |
| 05:30 | Drilled 17 1/2" x 36" hole from 275 m to 296 m. |
| 06:00 | Reamed the last single. |
| 07:30 | Drilled 17 1/2" x 36" hole from 296 m to 306 m. |
| 08:00 | Reamed the last single. |
| 10:00 | Stopped drilling, and had the ROV to check the elevation from the seabed and up to the mark on the drilling string. |
| 11:00 | Drilled 17 1/2" x 36" hole from 296 m to 310 m. The TD of the 36" cutters was 307,83 m. |
| 11:30 | Circulated and cleaned the hole. |
| 13:00 | Stopped circulating and verified correct drilling depth with the ROV. |
| 13:30 | Displaced the well from seawater to 1.50 sg mud. |
| 16:00 | Pulled out of the hole after drilling to section TD. |
| 23:59 | Waiting on weather before running the 30" conductor. |

**Daily report no :** 7 **Date:** 2005-02-08
**Midnight depth :** 310 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 23:59 | Waiting on weather before running 30" conductor. |

**Daily report no :** 8 **Date:** 2005-02-09
**Midnight depth :** 310 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 23:59 | Waiting on weather before running 30" conductor. |

**Daily report no :** 9 **Date:** 2005-02-10
**Midnight depth :** 310 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 23:59 | Waiting on weather before running 30" conductor. |

**Daily report no :** 10 **Date:** 2005-02-11
**Midnight depth :** 310 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 05:30 | Waiting on weather before running 30" conductor. |
| 07:30 | Rigged up to run 30" conductor. |
| 10:00 | Ran the 30" casing and landed the wellhead in the rotary table. |
| 12:00 | Ran the 5" innerstring using false rotary. |
| 12:30 | Made up the conductor running tool, and landed the conductor housing in the guidebase on the trolly. |
| 15:30 | Picked up the guidebase and ran the conductor from 84 m and down to the seafloor at 235 m. |
| 16:30 | Ran the 30" conductor from 235 m to TD at 308 m, and sat down 10 tons. |
| 17:30 | Pulled the conductor up 1 m from 308 m to 307 m,and circulated 20 m3 of seawater w/ 700 lpm. |
| 18:00 | Pressure tested the cement line, and started to mix and pump 1.56 sg cement. |
| 20:00 | Had to displace the cement out of the hole due failure on the cement mixing unit. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 10 **Date:** 2005-02-11

**Midnight depth :** 310 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 21:00 | Pulled the ROV to surface due to broken hydraulic system. |
| 22:00 | Cemented the 30" casing according to progamme. |
| 22:30 | Displaced the cement with 5.75 m3 seawater, and checked for backflow. |
| 23:59 | Held the conductor in tension while waiting on cement to cure. |

**Daily report no :** 11 **Date:** 2005-02-12

**Midnight depth :** 310 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 06:30 | Held the conductor in tension while waiting on cement to cure. |
| 09:00 | Released 30" running tool. Racked back the cement stand, pulled out of the hole with the running tool and cement stinger. |
| 11:00 | Held pre job meeting and laid down 36" bottom hole assembly. |
| 11:30 | Prepared to pick up 5 1/2" drillpipe from deck. Meanwhile greased the topdrive. Checked visually the dolly, retrack, monkeyboard and crown block. |
| 12:00 | Picked up 5 1/2" drill pipe from deck. |
| 12:30 | Repaired the iron roughneck. |
| 18:30 | Continued to pick up 5 1/2" drill pipe from deck. Meanwhile the ROV dived to check the cement around the 30" housing/PGB. Could not check the cement due to malfunction on the ROV. |
| 19:30 | Changed pipe handling equipment and prepared to run in with 3 1/2" stinger. |
| 22:00 | Ran in with the 5 1/2" x 3 1/2" cement stinger, and entered the guide funnel to check for grouting. |
| 22:30 | Stung in 7.5 m to locate top of cement, had no tag. |
| 23:30 | Pulled out to 235 m and added one single to the string. Installed the cement stand. |
| 23:59 | Stung in 19.5 m, and started flushing the string with seawater at low rate. |

**Daily report no :** 12 **Date:** 2005-02-13

**Midnight depth :** 310 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 01:00 | Grouted the 30" conductor according to programme. |
| 03:30 | Pulled out of the hole with the 5 1/2" x 3 1/2" cement stinger. |
| 04:30 | Laid down the cmt stand. |
| 07:00 | Changed the washpipe. |
| 10:00 | Held pre job meeting prior to make up 26" bottomhole assembly. Prepared to go in with stinger. |
| 12:00 | Repaired top drive. |
| 15:00 | Ran 3 1/2" x 5 1/2" cement stinger and stabbed into the guidebase grouting funnel. |
| 15:30 | Tagged cement 24 m below the seabed. |
| 18:00 | Spaced out drillpipe and prepared for grouting. |
| 19:00 | Pumped cement. Total 16 m3. |
| 21:00 | Pulled out of the hole with the 5 1/2" x 3 1/2" cement stinger. |
| 21:30 | Held pre job meeting prior to make up 17 1/2" bottom hole assembly. |
| 22:00 | Troubleshoot on the torque wrench. |
| 23:59 | Made up 17 1/2" bottom hole assembly. |

**Daily report no :** 13 **Date:** 2005-02-14

**Midnight depth :** 310 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 01:00 | Continued to make up 17 1/2" bottom hole assembly and racked back same. |
| 03:30 | Changed pipe handling equipment and ran in with 3 1/2" x 5 1/2" drillpipe to 211 m to check the cement for grouting. |
| 06:00 | Attempted to stab in to the grouting funnel, this was not possible due to rough weather. Pulled back out again. |
| 08:30 | Prepared 17 1/2" bottom hole assembly and tested the MWD tool. |
| 10:00 | Changed to 5" pipe handling equipment and rearranged pipe to be able to pick up 5" drillpipe. Cleaned and performed maintenance on drawwork brake. |
| 12:30 | Picked up and drifted 5" drillpipe from deck. |
| 15:00 | Ran 3 1/2" x 5 1/2" cement stinger and stabbed into the guidebase grouting funnel, tagged cement 7 m below seabed. |
| 16:30 | Spaced out drillpipe and made up cement stand. Pumped cement, total 5.2 m3. |
| 19:00 | Pulled out of the hole with the 3 1/2" x 5 1/2" cement stinger. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 13 **Date:** 2005-02-14
**Midnight depth :** 310 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 23:59 | Held pre job meeting. Ran in hole with 26" bottomhole assembly. Washed down from 292 m. Tagged firm cement at 303 m. |

**Daily report no :** 14 **Date:** 2005-02-15
**Midnight depth :** 570 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 02:30 | Drilled cement from 303 m to 308m. Pumped hivis pill before drilling through the shoe. Drilled and reamed shoe and rathole in steps from 308 m to 312m. |
| 03:00 | Pumped 20 m3 hi-visc pill at TD and circulated the hole clean. |
| 06:00 | Pulled out with 26" bottom hole assembly and laid down same. |
| 06:30 | Inspected derrick and equipment for loose objects. |
| 07:00 | Held pre job meeting and picked up 17 1/2 bottom hole assembly. |
| 10:30 | Continued to pick up 17 1/2" bottom hole assembly and ran in hole with same. Tagged bottom at 312 m. |
| 23:59 | Drilled 17 1/2" hole from 312 m to 570 m. |

**Daily report no :** 15 **Date:** 2005-02-16
**Midnight depth :** 945 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 23:59 | Drilled 17 1/2" hole from 673 m to 945 m. |

**Daily report no :** 16 **Date:** 2005-02-17
**Midnight depth :** 1184 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

| Stop time | Description |
|---|---|
| 03:30 | Drilled 17 1/2" hole from 945 m to 1012 m. |
| 16:00 | Drilled/orient 17 1/2" hole from 1012 m to 1184 m. |
| 17:30 | Pumped 20 m3 hi-visc pill and circulated the hole clean. |
| 18:00 | Displaced the hole to above the Utsira fm with 70 m3 1.40 sg KCL mud. |
| 20:30 | Made a wipertrip to 730 m. |
| 22:30 | Ran in the hole from 730 m to 1165 m. Took weight (10 ton). |
| 23:00 | Worked obstruction |
| 23:59 | Lubricated with 300 lpm from 1160 m to 1129 m. Displaced the hole to 1.40 sg KCL mud. |

**Daily report no :** 17 **Date:** 2005-02-18
**Midnight depth :** 1184 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,40 sg

| Stop time | Description |
|---|---|
| 04:00 | Pulled out of the hole from 1099 m to 308 m. |
| 05:00 | Continued to pull out of the hole from 308 m to 245 m. Installed guideframe. |
| 06:30 | Pulled the 17 1/2" bottom hole assembly out of the wellhead. Positioned the rig and started to wash the PGB. |
| 07:00 | Pulled out from 232 m to 190 m. Picked up the guideframe to the moon pool and disconnected same. |
| 09:00 | Pulled out the bottom hole assembly and racked same in the derrick. |
| 10:30 | Made up the cement stand, installed cement hose and control lines on same. |
| 12:00 | Performed planned rig maintenance. |
| 14:00 | Rigged up casing equipment. |
| 15:00 | Function tested the BX elevator, no go. Troubleshoot on same, no go. Changed to manual 13 3/8" elevator. |
| 21:30 | Picked up the 13 3/8" casing shoe and started to run in the sea with the 13 3/8" casing. Positioned the rig prior to stabing into the wellhead. |
| 23:59 | Troubleshot on the active and passive heave compensators. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 18 **Date:** 2005-02-19

**Midnight depth :** 1184 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,40 sg

| Stop time | Description |
|---|---|
| 09:30 | Stabbed into the wellhead with the 13 3/8" casing and continued to run 13 3/8" casing to 931 m. Performed pre job meeting prior to pick up 18 3/4" wellhead. |
| 10:00 | Changed to 5 1/2" elevator. Made up well head housing. |
| 11:00 | Installed iron roughneck guide rails. Continued to run in hole from 931 m to 964 m. Filled the hanger with fresh water, installed ball valve on top of the hanger runnning tool. |
| 13:00 | Ran in the hole from 946 m to 1164 m. Picked up cement stand from the derrick. |
| 13:30 | Ran in the hole from 1164 m to 1172 m. Took 10 tons weight at 1172 m. Circulated and washed down to 1178 m. Landed the wellhead housing. Performed 25 tons overpull test. |
| 15:30 | Broke circulation carefully and pumped two annulus volumes of seawater. Performed pre job meeting prior to the cement job. |
| 19:30 | Flushed the lines from the cement unit and pressure tested same to 160 bar. Launched bottom dart. Mixed and pumped 136 m3 1.44 sg lead slurry and 27.5 m3 1.92 sg tail slurry. |
| 21:30 | Launched the top dart. Displaced the cement with 1500 lpm seawater, slow down to 500 lpm at 3800 strokes. Bumped the plug after 4230 strokes with 70 bar. Pressure tested the casing to 160 bar for 10 min. Checked for back flow. |
| 23:59 | Released and pulled the running tool to surface. Laid down the cement stand and the running tool. |

**Daily report no :** 19 **Date:** 2005-02-20

**Midnight depth :** 1184 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,40 sg

| Stop time | Description |
|---|---|
| 00:30 | Moved the casing tong from drillfloor to deck. |
| 01:00 | Laid down the cement head and picked up 1 single drillpipe. |
| 03:00 | Laid down the 17 1/2" bottom hole assembly. |
| 06:00 | Made up 12 1/4" bottom hole assembly. Tested the MWD tool. |
| 07:00 | Made up and racked back the hang off tool. |
| 08:30 | Changed to 5" drill pipe equipment. Made up and racked back one stand 5" ITAG with riser running tool. Changed to 5 1/2" drill pipe equipment. |
| 11:00 | Picked up and racked back 33 joints 5 1/2" drillpipe in the derrick |
| 13:00 | Performed pre job meeting prior to run the BOP. Rigged up to run the BOP. |
| 16:00 | Picked and made up two riser joints and pup. Installed test tool with test hose on the top of the last riser joint. Prepared to skid the BOP in the center. |
| 18:00 | Waited on weather to run the BOP. |
| 19:00 | Prepared to run the BOP. |
| 19:30 | Performed pre job meeting prior to run the BOP. |
| 22:00 | Continued to prepare moonpool for BOP. Ran guide post # 1down on the PGB and latched.Tested with 2000 lbs. Installed the VX ring and checked the pre-installed 13 3/8" wear bushing with ROV. |
| 23:59 | Moved the BOP into the well center. Connected the riser to the BOP. Moved the rig 25 m to the west. |

**Daily report no :** 20 **Date:** 2005-02-21

**Midnight depth :** 1184 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,30 sg

| Stop time | Description |
|---|---|
| 03:30 | Continued to prepare the BOP in the moonpool. Installed guide wires. Filled and pressure tested the kill and choke lines to 35 / 250 bar for 5 / 10 min. |
| 04:30 | Lifted the BOP off the carrier. Greased and seviced the connector. |
| 05:00 | Moved the carrier out of the well center. |
| 07:30 | Ran the BOP through the splash zone to 63 m. Performed pre job meeting with crew prior to run BOP and riser. Picked up and attempted to connect the firrst DSB riser joint to the fixed cross-over. |
| 11:00 | Laid down the DSB riser joint on deck. Pulled the BOP from 63 m to 48 m. Disconnected and laid down the riser crossover. Picked up one DST riser joint and ran in with the BOP to 63 m. |
| 16:00 | Continued to run in with the BOP from 63 m to 169 m. |
| 23:59 | Waited on new riser joints from shore. |

**Daily report no :** 21 **Date:** 2005-02-22

**Midnight depth :** 1184 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,30 sg

| Stop time | Description |
|---|---|
| 01:30 | Waited on riser joints from shore. |
| 04:00 | Continued to run BOP and riser. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 21 **Date:** 2005-02-22

**Midnight depth :** 1184 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,30 sg

| Stop time | Description |
|---|---|
| 05:00 | Picked up and ran in with the slip joint. Laid down the running tool and made up the landing string. |
| 10:00 | Installed dobbel Yoke. Overpulled and release the support ring with 5 tons. Moved the rig to the well location. Installed the pod saddles. Installed the guide lines to the guide posts. Pressure tested the kill and choke lines to 35 / 250 bar for 5 / 10 min. |
| 10:30 | Landed the BOP. Set down 30 tons and locked the wellhead connector. Performed 25 tons overpull test. |
| 13:00 | Stroke out the inner barrel. Racked back the landing stand. Picked up and installed the diverter. Removed the diverter running tool and rigged down the riser handling equipment. Cleaned the drill floor. |
| 13:30 | Installed iron roughneck guide rails and chenged to 5 1/2" equipment. |
| 17:00 | Performed pre job meeting prior to use manual rig tongs. Made up and ran in with the BOP test tool. Performed wellhead connector test to 35 / 250 bar and 5 / 10 min. |
| 18:00 | Function tested the BOP and continued with standpipe tests # 3 and 4. |
| 18:30 | Pulled out with the BOP test tool from 232.7 m to 205 m. |
| 19:00 | Problems to open the elevator due to hose squeezed in the bail link. |
| 20:00 | Continued to pull out with the BOP test tool to 60 m. Performed pre job meeting prior to use manual rig tongs. Pulled out and laid down the BOP test tool. Function tested the shear ram. |
| 21:30 | Pressure tested the auto kelly cock and the kelly hose to 35 / 345 bar for 5 / 10 min. |
| 23:00 | Troubleshot leakage in the riser. Found a leakage at the slip joint. |
| 23:59 | Started to pump down the kill line. Checked the riser connection with the ROV. Found a leakage between riser joint # 7 and 8. Performed a pre job meeting prior to pull the BOP. |

**Daily report no :** 22 **Date:** 2005-02-23

**Midnight depth :** 1184 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,30 sg

| Stop time | Description |
|---|---|
| 03:00 | Prepared to disconnect the BOP. Disconnected and pulled the BOP from 233 m to 225 m. Disconnected the guidelines from the guide posts. |
| 03:30 | Moved the rig 25 m off location. Removed the pod saddles. |
| 05:30 | Disconnected the dobble Yoke and hung off the support ring. Pulled out from 225 m to 200 m. Laid out the slip joint. |
| 08:00 | Continued to pull out with the BOP / riser from 200 m to 108 m. Installed new o-rings in the riser. |
| 10:30 | Ran in with the BOP / riser from 108 m to 140 m. Pressure tested the kill and choke lines to 35 / 250 bar for 5 / 10 min. Continued to run in with the BOP / riser from 140 m to 200 m. |
| 13:00 | Performed pre job meeting prior to pick up the slip joint. Picked up and installed the slip joint. Installed the VX ring in the well head. Lowered the BOP / slip joint and installed the support ring. |
| 16:30 | Pressure tested the kill and choke lines to 35 / 250 bar for 5 / 10 min. Installed saddle on the blue pod umbilical. Moved the rig on location and installed the guide lines. |
| 18:30 | Installed saddle on the yellow pod umbilical. |
| 20:00 | Landed the BOP with 30 tons down weight. Locked the BOP connector and performed 25 tons overpull test. Stroked out, hung off and secured the inner barrel in the slips. |
| 21:30 | Cleared the drill floor. Rigged up 20" casing tong. Held pre job meeting prior to break out the inner barrel. |
| 23:59 | Broke out the head of the inner barrel. Found the o-ring broken. Installed new o-ring. Racked back the landing stand in the derrick and cleared the drill floor. |

**Daily report no :** 23 **Date:** 2005-02-24

**Midnight depth :** 1235 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,31 sg

| Stop time | Description |
|---|---|
| 01:30 | Picked up and installed the diverter. Cleared the drill floor. Changed to 5 1/2" handling equipment and installed the iron roughneck guide rails. |
| 03:30 | Made up and ran in with the BOP test tool. Closed the middle pipe ram and pressure tested the well head connector to 35 / 250 bar for 5 / 10 min. |
| 05:00 | Function tested the BOP. |
| 06:00 | Pulled out and laid down the BOP test tool. |
| 09:30 | Performed pre job meeting prior to make up 12 1/4" bottom hole assembly. Made up and ran in the hole with 12 1/4" bottom hole assembly to 242 m. |
| 11:30 | Ran in the hole with 12 1/4" bottom hole assembly on 5 1/2" drill pipe from 242 m to 1100 m. |
| 13:00 | Installed the drilling pup, filled the pipe and broke the circulation. Performed choke drill test to 30 bar against upper annular. |
| 13:30 | Washed down from 1100 m and tagged hard cement at 1133 m. |
| 19:00 | Drilled out the float, shoetrack and shoe from 1134.5 m to 1184 m. Displaced the well to 1.30 sg KCL mud. Reamed the shoe and shoetrack several times. |
| 20:00 | Drilled 3 m new formation from 1184 to 1187 m. Spotted 10 m3 hivis pill at TD. Pulled out to the casing shoe at 1178 m. Closed the middle pipe ram. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 23 **Date:** 2005-02-24
**Midnight depth :** 1235 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,31 sg

| Stop time | Description |
|---|---|
| 21:30 | Performed a leak off test with 1.30 sg mud. Observed leak off point at 59 bars equals 1.81 sg. |
| 23:59 | Drilled and oriented 12 1/4" hole from 1187 m to 1235 m. |

**Daily report no :** 24 **Date:** 2005-02-25
**Midnight depth :** 1718 m MD **Estimated PP:** 1,30 sg **Mud weight:** 1,50 sg

| Stop time | Description |
|---|---|
| 07:30 | Drilled/oriented the 12 1/4" hole from 1235 m to 1393 m. Started to increase the mud weight from 1.30 sg to 1.50 sg at 1275 m. |
| 08:00 | Displaced the Kill & Choke Line to 1.50 sg. mud. Performed and recorded slow circulation rate. |
| 15:00 | Drilled/oriented the 12 1/4" hole from 1393 m to 1540 m. |
| 16:30 | Experienced problems to read correct depth on the Baker Screen. Correlated and adjusted the Baker depth line. |
| 23:59 | Drilled/oriented the 12 1/4" hole from 1540 m to 1718 m. |

**Daily report no :** 25 **Date:** 2005-02-26
**Midnight depth :** 1924 m MD **Estimated PP:** 1,30 sg **Mud weight:** 1,50 sg

| Stop time | Description |
|---|---|
| 10:00 | Drilled/oriented the 12 1/4" hole from 1718 m to 1924 m |
| 12:00 | Circulated the hole clean. |
| 14:30 | Pulled out of the hole with the 12 1/4" bottom hole assembly on 5 1/2" drillpipe from 1924 m to 1775 m. Pumped slug and continued to pull out of the hole to 1126 m. |
| 15:00 | Performed kick drill with the crew. Flow checked the well. |
| 15:30 | Performed planned rig maintenance. |
| 16:30 | Pulled out of the hole from 1126 m to 537 m. |
| 17:00 | Flow checked prior to pull the 12 1/4" bottom hole assembly through the BOP. |
| 18:00 | Pulled out of the hole from 537 m to 132 m. |
| 19:30 | Pulled out of the hole with the 12 1/4" bottom hole assembly from 132 m to 17 m. |
| 20:00 | Dumped the memory and re-programmed the MWD tool. |
| 21:00 | Broke off the bit. Drained out the steerable motor and laid it down on the deck. |
| 23:00 | Made up and racked the cement stand in the derrick. |
| 23:59 | Made up the 12 1/4" rotary assembly and ran in the hole to 49 m. |

**Daily report no :** 26 **Date:** 2005-02-27
**Midnight depth :** 2041 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,50 sg

| Stop time | Description |
|---|---|
| 01:30 | Ran in the hole with the 12 1/4" bottom hole assembly to 234 m. |
| 03:30 | Ran in the hole with the 12 1/4" bottom hole assembly on 5 1/2" drillpipe from 234 m to 1175 m. |
| 04:00 | Broke the circulation at 1175 m. Staged up the mud pumps in steps of 200 LPM from 200 LPM to 4000 LPM. |
| 04:30 | Ran in the hole with the 12 1/4" bottom hole assembly on 5 1/2" drillpipe from 1175 m to 1280 m. |
| 05:00 | Broke the circulation at 1280 m. Staged up the mud pumps in steps of 200 LPM from 200 LPM to 4000 LPM. |
| 06:00 | Performed logging with the MWD tool from 1280 m to 1311 m. |
| 08:00 | Ran in the hole with the 12 1/4" bottom hole assembly on 5 1/2" drillpipe from 1311 m to 1890 m. |
| 09:00 | Broke the circulation at 1890 m. Staged up the mud pumps in steps of 200 LPM from 200 LPM to 4000 LPM. |
| 10:00 | Not able to read the signals from the MWD tool. Restarted the mud pumps and the computer several times. |
| 11:00 | Performed logging with the MWD tool from 1890 m to 1924 m. |
| 23:59 | Drilled the 12 1/4" hole from 1924 m to 2041 m. |

**Daily report no :** 27 **Date:** 2005-02-28
**Midnight depth :** 2062 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 02:30 | Drilled the 12 1/4" hole from 2041 m to 2058 m. |
| 03:30 | Circulated bottoms up. |
| 05:00 | Drilled the 12 1/4" hole from 2058 m to TD at 2062 m. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 27 **Date:** 2005-02-28

**Midnight depth :** 2062 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 09:00 | Circulated the hole clean and increased the mud weight from 1,50 sg. to 1,54 sg. |
| 09:30 | Flushed the kill and choke lines to 1,54 sg. mud. Flow checked the well. |
| 10:30 | Pulled out of the hole wet, with the 12 1/4" bottom hole assembly on 5" drillpipe from 2062 m to 1915 m. Pumped 4,5 m3 1,80 sg slug. |
| 12:30 | Pulled out of the hole with the 12 1/4" bottom hole assembly on 5" drillpipe from 1915 m to 1147 m. |
| 13:30 | Performed kick drill with the crew. flow checked the well. |
| 14:30 | Pulled out of the hole with the 12 1/4" bottom hole assembly on 5" drillpipe from 1147 m to 526 m. |
| 15:00 | Flow checked the well. |
| 15:30 | Pulled out of the hole with the 12 1/4" bottom hole assembly on 5" drillpipe from 526 m to 230 m. |
| 17:30 | Pulled out of the hole with the 12 1/4" bottom hole assembly from 230m to surface. Broke off the bit and removed the float. |
| 18:00 | Installed the 9 5/8" casing tong on the rig floor. |
| 22:00 | Made up the wear bushing running tool and ran in the hole to 218 m. Washed down to the wellhead at 232.8 m and landed the wear bushing running tool in the wear bushing. Sat down 5 ton weight and performed measurements by use of the laser and the index line. Pulled the wear bushing free and pulled out of the hole. Laid down the wear bushing and the wear bushing running tool. |
| 23:30 | Held pre-job/safety meeting and rigged up to run the 9 5/8" casing. |
| 23:59 | Ran in the hole with the 9 5/8" casing shoe and the intermediate joint to 24 m. Adjusted the casing tong. |

**Daily report no :** 28 **Date:** 2005-03-01

**Midnight depth :** 2062 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 10:00 | Ran in the hole with the 9 5/8" casing from 24 m to 1172 m. |
| 15:30 | Ran in the hole with the 9 5/8" casing from 1172 m to 1817 m. |
| 16:00 | Changed to 5 1/2" drillpipe elevator. Made up the 9 5/8" casing hanger. |
| 18:00 | Installed the remaining 5 1/2" handling equipment. Ran in the hole with the 9 5/8" casing on 5 1/2" landing string from 1817 m to 2042 m. Picked up the cement head and landed the 9 5/8" casing hanger in the wellhead with the shoe at 2056,5 m.. |
| 19:30 | Broke circulation carefully and circulated the casing with 1800 LPM 45 bar. |
| 20:30 | Pumped 10 m3 soap pill followed by 10 m3 spacer. |
| 21:30 | Launched the bottom ball. Mixed and pumped 13.2 m3 1.9 sg cement slurry. |
| 23:30 | Launched the top dart and displaced the dart with 2000 litre drill water. Displaced the cement with 1.54 sg mud. Bumped the plug with 70 bar after 4050 strks . Equalized the pressure against the cement unit and pressure tested the casing to 165 bar for 10 minutes. Bled of the pressure and checked for back flow. Pumped and bled back 452 litre. |
| 23:59 | Pressured up and sat the seal assembly with 345 bar. |

**Daily report no :** 29 **Date:** 2005-03-02

**Midnight depth :** 2062 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 04:00 | Pressure tested the BOP to 35/250 bar on the yellow pod. Fuction tested the BOP from the auxiliary panel on the blue pod. |
| 06:00 | Released the 9 5/8" casing running tool and pulled up 4 meter. Flushed through the landing string. Landed the 9 5/8" casing running tool in the 9 5/8" casing hanger. Pressure tested the seal assembly to 345 bar. Pulled out of hole with the landing string. Laid down the 9 5/8" casing running tool. |
| 08:00 | Ran in the hole and attempted to set the 9 5/8" wear bushing at 233.82 m. Pulled out of the hole with the wear bushing. |
| 10:30 | Ran in the hole and attempted to set the 9 5/8" wear bushing at 233.82 m. Washed the wear bushing latch area. Pulled out of the hole with the wear bushing to 183 m. |
| 11:30 | Observed a 40 mm brass washer at the aft drillpipe setback. Inspected the pipe handling system and found a broken bolt with missing brass washer on the intermediate racking arm wire guide roller. Dismanteled the wire guide roller. |
| 13:30 | Pressure tested the DDM to 35/250 bar. |
| 14:00 | Installed the overhauled wire guide roller on the intermediate racking arm |
| 15:30 | Pulled out of the hole from 184 m to surface. Observed that the wear bushing was not set. |
| 17:30 | Installed the jet-sub on one stand 5" drill pipe below the wear bushing running tool. |
| 20:00 | Ran in the hole with the jet-sub and the 9 5/8" wear bushing to 212 m. Washed the wellhead area at 233 m. with 2500 LPM, 130 bar and 4 RPM. |
| 20:30 | Attempted to set the 9 5/8" wear bushing at 233.82 m. |
| 21:00 | Washed the wellhead area at 233 m. with 2500 LPM, 130 bar and 4 RPM. |
| 21:30 | Attempted to set the 9 5/8" wear bushing at 233.82 m. |
| 22:30 | Pulled out of the hole with the 9 5/8" wear bushing. Inspected and laid out the wear bushing and the wear bushing running tool. |
| 23:30 | Inspected the jet-sub and ran in hole to 233 m with the jet sub on 5 1/2" drillpipe. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 29 **Date:** 2005-03-02
**Midnight depth :** 2062 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 23:59 | Washed the well head area at 233 m. with 3500 LPM 255 bar 5 RPM. |

**Daily report no :** 30 **Date:** 2005-03-03
**Midnight depth :** 2062 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,16 sg

| Stop time | Description |
|---|---|
| 00:30 | Washed the wellhead area at 233 m with 3500 LPM 255 bar 5 RPM. |
| 02:00 | Installed the wear bushing and the wear bushing running tool on the 5 1/2" drillpipe string. |
| 04:00 | Ran in the hole and sat the 9 5/8" wear bushing at 233.82 m. Pulled out of the hole with the 9 5/8" wear bushing running tool. |
| 05:00 | Pulled out of the hole with the jet sub. |
| 05:30 | Rigged down the casing tong. |
| 06:30 | Laid down the cement stand. |
| 07:00 | Cleaned the rig floor and re-arranged the stands in the derrick. |
| 11:30 | Made up the 8 1/2" bottom hole assembly. |
| 13:00 | Ran in the hole with the 8 1/2" bottom hole assembly on 5" pipe from 178 m to 470 m. |
| 17:30 | Picked up 5" drill pipe, from 470 m to 1063 m, while running in hole with the 8 1/2" bottom hole assembly. |
| 18:00 | Filled the pipe and function tested the MWD tool |
| 19:30 | Slipped and cut the drilling line. |
| 20:30 | Performed planned rig maintenance. |
| 23:59 | Picked up 5" drill pipe, from 1063 m to 1682 m, while running in hole with the 8 1/2" bottom hole assembly. |

**Daily report no :** 31 **Date:** 2005-03-04
**Midnight depth :** 2142 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,16 sg

| Stop time | Description |
|---|---|
| 02:00 | Picked up 5" drill pipe, from 1682 m to 1955 m, while running in hole with the 8 1/2" bottom hole assembly. |
| 03:30 | Changed from 5" to 5 1/2" drillpipe handling equipment. Installed one stand 5 1/2" drillpipe. Filled the pipe and broke the circulation. Closed the upper annular preventer and performed choke drill. |
| 04:00 | Ran in the hole with the 8 1/2" bottom hole assembly on 5 1/2" drill pipe from 1955 m to 1984 m. Installed the 5 1/2" drilling pup and the depth line. |
| 04:30 | Washed from 1984 m with 500 LPM 27 bar and tagged the float at 2014 m. |
| 11:00 | Drilled the float, shoe track and shoe from 2014.5 m to 2056.5 m. Displaced the well to 1.16 sg. mud while drilling the cement. Cleaned the rathole from 2056,5 m to 2062 m. |
| 12:00 | Drilled 3 m new formation from 2062 m to 2065 m. Pulled out to the casing shoe at 2056,5 m and closed the BOP. |
| 13:00 | Performed formation integrity test with 1,16 sg. mud equivalent to 1,77 sg. |
| 23:59 | Drilled the 8 1/2" hole from 2065 m to 2142 m. |

**Daily report no :** 32 **Date:** 2005-03-05
**Midnight depth :** 2226 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,17 sg

| Stop time | Description |
|---|---|
| 12:00 | Drilled the 8 1/2" hole from 2142 m to 2226 m. |
| 13:00 | Circulated bottoms up at TD, 2226 m. |
| 14:30 | Pulled out of the hole with the 8 1/2" bottom hole assembly on 5 1/2" drill pipe from 2226 m to the shoe at 2050 m. |
| 15:00 | Performed kick drill with the crew and flow checked the well. |
| 15:30 | Performed planned maintenance. |
| 16:30 | Pulled out of the hole with the 8 1/2" bottom hole assembly on 5 1/2" drill pipe from 2050 m to 1954 m |
| 17:00 | Changed from 5 1/2" to 5" drillpipe handling equipment. |
| 20:00 | Pulled out of the hole with the 8 1/2" bottom hole assembly on 5" drill pipe from 1954 m to 986 m. |
| 20:30 | Changed broken hydraulic hose on the iron roughneck. |
| 22:30 | Pulled out of the hole with the 8 1/2" bottom hole assembly on 5" drill pipe from 986 m TO 178 m. |
| 23:59 | Pulled out of the hole with the 8 1/2" bottom hole assembly to surface. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 33 **Date:** 2005-03-06

**Midnight depth :** 2226 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,17 sg

| Stop time | Description |
|---|---|
| 00:30 | Dumped data and laid down the 6 3/4" MWD tool on deck. |
| 02:00 | Picked up the 8" MWD stand from the derrick and dumped data. |
| 03:00 | Laid down the 8" BHA on deck. |
| 03:30 | Rigged up to run wireline logs. |
| 05:30 | Made up the wireline tool string, HRLA PEX DSI ECS. |
| 09:00 | Ran in the hole with the wire line logging tool, HRLA PEX DSI ECS to TD. |
| 09:30 | Logged HRLA PEX DSI ECS from TD at 2226 m to the casing shoe at 2054,5 m. |
| 10:30 | Pulled out of the hole from 2056 m to surface with the HRLA PEX DSI ECS logging tool. |
| 11:30 | Rigged down the HRLA PEX DSI ECS logging tool. |
| 13:00 | Rigged up VSP logging tool. Prepared seismic guns. |
| 17:00 | Ran in the hole and performed VSP logging from 2226 m to 1242 m. Pooh due to poor signal quality from 1242 m. |
| 18:00 | Rigged down the VSP logging tool. |
| 19:00 | Rigged up the MDT logging tool. |
| 23:59 | Ran in the hole and performed MDT pressure point surveys. Made 17 surveys from 2215 m to 2081 m, where 12 tests were good and 5 were dry. Pulled out of the hole from 2081 m to surface. |

**Daily report no :** 34 **Date:** 2005-03-07

**Midnight depth :** 2226 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,17 sg

| Stop time | Description |
|---|---|
| 00:30 | Rigged down the MDT logging tool. Rigged down surface logging equipment. |
| 01:30 | Performed planned maintenance. |
| 04:30 | Ran in the hole with the mule shoe on 3 1/2" cement stinger to 317 m. |
| 06:00 | Ran in the hole with the 3 1/2" cement stinger on 5" drill pipe from 317 m to 868 m. |
| 06:30 | Changed broken chain on the iron roughnck. |
| 11:00 | Ran in the hole with the 3 1/2" cement stinger on 5" drill pipe from 868 m 2181 m. |
| 12:30 | Broke circulation and washed down from 2181 m to 2210 m. Staged up the mud pumps in steps of 200 litre from 200 LPM to 1900 LPM. |
| 14:30 | Washed down from 2210 m to TD at 2226 m and tagged bottom. Circulated bottom up. |
| 15:30 | Sat a balanced cement plug from TD to 1955 m. |
| 17:00 | Pulled out of the cement plug with the 3 1/12" cement stinger from 2226 m to 1886 m. |
| 19:00 | Circulated out excess cement and spacer at 1886 m. |
| 20:00 | Circulated the wiper dart down the drill string to clean for cement residues. |
| 23:59 | Pulled out of the hole with the 3 1/2" cement stinger from 1886 m to 200 m. |

**Daily report no :** 35 **Date:** 2005-03-08

**Midnight depth :** 2226 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,20 sg

| Stop time | Description |
|---|---|
| 00:30 | Changed broken hydraulic hose on the upper racking arm. |
| 01:00 | Pulled out of the hole with the 3 1/2" cement stinger from 200 m to surface. |
| 03:00 | Laid out the cement mule shoe. Made up 8 1/2" bottom hole assembly and ran in the hole to 156 m. |
| 06:00 | Ran in hole with 8 1/2" bottom hole assembly on 5" drill pipe to 1855 m. |
| 09:30 | Washed down from 1855 m to 2046 m. |
| 11:00 | Circulated bottms up at 2046 m. |
| 12:00 | Washed down to 2051 m and tagged the cement with 15 ton. |
| 14:00 | Pulled out of the hole with the 8 1/2" bottom hole assembly on 5" drill pipe from 2051 m to 1886 m. |
| 15:00 | Performed planned maintenance. |
| 17:00 | Pulled out of the hole with the 8 1/2" bottom hole assembly from 1886 m to 156 m. |
| 17:30 | Racked the bottom hole assembly in the derrick. |
| 19:00 | Ran in the hole with mule shoe on 3 1/2" drillpipe to 117 m. Pressure tested the cement plug against the shear ram with 1,20 sg mud to 105 bar. |
| 23:59 | Ran in the hole with the 3 1/2" cement stinger on 5" drill pipe from 117 m to 2003 m. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 36 **Date:** 2005-03-09

**Midnight depth :** 2226 m MD **Estimated PP:** 1,05 sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 00:30 | Broke circulation and tagged the cement plug at 2051 m. |
| 02:00 | Closed the upper annular preventer and sat a balanced cement plug from 2051m to 1950 m. Kept back pressure on the annulus when the pumping and displacing the cement. |
| 03:00 | Pulled out of the cement plug with the 3 1/2" cement stinger on 5" drill pipe from 2051 m to 1900 m. |
| 04:00 | Circulated bottom up. |
| 04:30 | Circulated the wiper dart down the drill string to clean for cement residues. |
| 07:00 | Pulled out of the hole with the 3 1/2" cement stinger on 5" drill pipe from 1900 m to 500 m. |
| 07:30 | Displaced the well from 1.20 sg. mud to 1.54 sg mud from 500 m to 220 m. |
| 10:00 | Pulled out of the hole with the 3 1/2" cement stinger on 5" drill pipe from 500 m to surface. Displaced the riser, through the kill and choke lines, from 1.20 sg. mud to 1.54 sg. mud while pulling out of the hole with the 3 1/2" stinger. |
| 11:30 | Installed the casing tong |
| 14:30 | Ran in the hole with the 9 5/8" wear bushing retrieving tool. Washed the well head area and sat down 10 ton on the wear bushing. Pulled the wear bushing free with 30 ton over pull. Pulled out of the hole and laid down the wear bushing and the wear bushing retrieving tool. |
| 15:00 | Changed the top drive saver sub. |
| 15:30 | Made up and function tested the 9 5/8" casing cutting assembly. |
| 17:00 | Ran in the hole with the 9 5/8" casing cutting assembly on 5" drill pipe to 302 m. Spaced out and installed the rotation sub and marine swivel. |
| 17:30 | Ran in the hole with the 9 5/8" casing cutting assembly on 5" drill pipe to 495 m. |
| 19:00 | Landed the rotation sub in the wellhead and closed the upper annular preventer on the marine swivel. Cut the 9 5/8" casing at 495 meter with 120 RPM 5400 - 8100 kNm and 500 LPM 50 bar. |
| 19:30 | Flow checked the well after cutting the 9 5/8" casing. |
| 20:30 | Pulled out of the hole with the 9 5/8" casing cutting assembly on 5" drill pipe to 302 m. |
| 22:30 | Laid down the marine swivel and the rotation sub. Pulled out of the hole and laid down the 9 5/8" casing cutting assembly. |
| 23:59 | Drifted 17 stand 5" drill pipe in the derrick. Made up the 9 5/8" casing spear assembly. |

**Daily report no :** 37 **Date:** 2005-03-10

**Midnight depth :** 2226 m MD **Estimated PP:** sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 01:00 | Ran in the hole with the 9 5/8" casing spear assembly to 234 m. |
| 02:00 | Sat down 5 ton weight on the 9 5/8" casing hanger and turned the string 1/4 turn anti-clockwise. Applied 30 bar pressure on the string and pulled the casing loose with 25 ton overpull. Pulled out of the hole with the 9 5/8" casing to 214 m, while circulating the 13 3/8" x 9 5/8" casing annulus volume. |
| 04:00 | Pulled out of the hole with the 9 5/8" casing on 5" drill pipe. |
| 07:30 | Unable to release the 9 5/8" casing spear form the casing hanger. Laid down the casing hanger/casing spear and pulled out of the hole with the 9 5/8" casing. |
| 08:30 | Rigged down the 9 5/8" casing tong. Installed 5" pipe handling equipment. |
| 09:00 | Made up 13 3/8" bridge plug. |
| 11:00 | Ran in the hole with the 13 3/8" bridge plug on 5" drillpipe to 485 m. |
| 12:00 | Washed setting area for the 13 3/8" bridge plug. Dropped the 1 1/4" ball and sat the bridge plug at 485 meter. Sheared out running tool with 27 ton overpull. |
| 12:30 | Pressure tested the 13 3/8" bridge plug to 142 bar with 1,54 sg. mud. |
| 13:30 | Displaced the kill line, choke line and riser from 1.54 sg. mud to sea water. |
| 14:00 | Sat a balanced cement plug from 485 m to 285 m. |
| 15:00 | Pulled out from 485 m to 250 m with the 13 3/8" casing retainer setting tool on 5" drill pipe. |
| 15:30 | Displaced out excess cement. Pulled through and washed the BOP . |
| 16:00 | Pulled out of the hole from 220 m to surface and laid down the 13 3/8" bridge plug setting tool. |
| 21:30 | Prepared to pull the BOP. Laid out the diverter. Installed the slip joint handling tool and collapsed the slip joint inner barrel. Activated the hydraulic locking device between the slip joint inner and the outer barrel. |
| 23:59 | Waited on the weather to pull the BOP. |

**Daily report no :** 38 **Date:** 2005-03-11

**Midnight depth :** 2226 m MD **Estimated PP:** sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 07:00 | Waited on the weather to pull the BOP. |
| 08:30 | Installed the slip joint handling tool and collapsed the slip joint inner barrel. Activated the hydraulic locking device between the slip joint inner and the outer barrel. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 38 **Date:** 2005-03-11

**Midnight depth :** 2226 m MD **Estimated PP:** sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 10:30 | Hung off and secured the support ring. Dismanteled the suspension for the pod hoses. Sat the slip joint in the spider and racked the landing stand. |
| 12:00 | Installed the handling joint and racked the slip joint in the derrick. |
| 14:00 | Observed 9 stands 3 1/2" drill pipe came loose from its stored position in the finger board. Pulled the stands back in to stored position. |
| 18:00 | Pulled the BOP and riser. |
| 22:00 | Inspected the well head connector, landed and secured the BOP on the BOP carrier. Laid down 2 riser joints and 1 pup joint. Rigged down the riser handling equipment. |
| 23:59 | Picked up the 9 5/8" casing hanger with 9 5/8" casing spear and released the spear. Broke off the bumper sub and laid down the hanger and the spear. |

**Daily report no :** 39 **Date:** 2005-03-12

**Midnight depth :** 2226 m MD **Estimated PP:** sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 04:30 | Rebuild the 20"x 30" housing cutting and retrieval assembly. |
| 06:00 | Ran in to 30 m with the 20" x 30" casing cutting and retrieval assembly on 8" drill collar. |
| 07:00 | Function tested the motor and verified function of the 20" x 30 2 casing cutters. Secured the cutters. |
| 09:30 | Ran in to above the 20" well head. Stung in the well head and sat down 5 ton weight. |
| 22:30 | Cut 20" x 30" casing. Attempted to pull the casings free with 100 ton overpull. |
| 23:59 | Released the 20" x 30" casing cutting and retrieval assembly and pulled out to 20 m. |

**Daily report no :** 40 **Date:** 2005-03-13

**Midnight depth :** 2226 m MD **Estimated PP:** sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 01:30 | Pulled the 20" x 30" casing cutting and retrieval assembly to surface. |
| 09:00 | Rebuild the 20" x 30" cutting assembly from motor to rotation system. |
| 10:30 | Ran in with 20" x 30" casing cutting assembly and stung in to the well head at 232,8 m. |
| 14:30 | Cut 20" x 30" casing at 238,36 m. Pulled the cutting assembly out of the well head. Inspection of the cutting fingers with the ROV, indicated the casings were cut. |
| 16:30 | Pulled out to surface and laid down the the 20" x 30" cutting assembly. |
| 18:00 | Made up 18 3/4" spear assembly. |
| 20:00 | Ran in and engaged the spear in the 18 3/4" housing. Pulled the 20" x 30" casing and permanent gude base free with 15 ton overpull. |
| 22:30 | Pulled the 20" x 30" casing and permanent gude base to the cellar deck. |
| 23:59 | Secured the permanent guide base on the guide base trolly. Released and laid down the 18 3/4" spear. |

**Daily report no :** 41 **Date:** 2005-03-14

**Midnight depth :** 2226 m MD **Estimated PP:** sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 03:30 | Installed the 18 3/4" housing running tool in the 18 3/4" housing. Released the 30" wellhead housing from the guide base and laid out the 20" x 30" casing. |
| 09:00 | Laid down excess 8 1/2" bottom hole assembly from the derrick. |
| 11:00 | Handed over pennant # 3 to Far Scout. |
| 12:00 | Far Scout had anchor # 3 on deck. |
| 14:00 | Heaved in on anchor chain # 3. |
| 20:00 | Performed tensioning tests on anchor chain # 3. |
| 21:00 | Anchor # 3 was on bolster. |
| 21:30 | Handed over pennant # 4 to Far Scout. |
| 22:00 | Far Scout had anchor # 4 on deck. |
| 23:00 | Heaved in on anchor chain # 4. |
| 23:30 | Performed tensioning tests on anchor chain # 4. |
| 23:59 | Continued heaving in on anchor chain # 4. |

# DAILY REPORT

**Well:** 31/4-12 **PO:** 1

**Daily report no :** 42 **Date:** 2005-03-15

**Midnight depth :** 2226 m MD **Estimated PP:** sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 00:30 | Anchor # 4 was on bolster. |
| 01:00 | Handed over pennant # 7 to Far Scout. |
| 02:00 | Far Scout had anchor # 7 on deck. |
| 03:00 | Heaved in on anchor chain # 7. |
| 03:30 | Performed tensioning tests on anchor chain # 7. |
| 04:30 | Anchor # 7 was on bolster. |
| 05:00 | Handed over pennant # 8 to Far Scout. |
| 05:30 | Far Scout had anchor # 8 on deck. |
| 07:30 | Heaved in on anchor chain # 8. |
| 10:30 | Performed tensioning tests on anchor chain # 8. |
| 15:30 | Delivered pennant # 8 back to the rig. |
| 17:00 | Changed the satellite equipment due to interference with Deepsea Delta. |
| 17:30 | Deballasted the rig. |
| 18:00 | Far Scout had anchor # 2 on deck. |
| 21:30 | Anchor # 2 was on bolster. |
| 22:00 | Handed over pennant # 6 to Vidar Viking and pennant # 5 to Far Scout. |
| 22:30 | Vidar Viking had anchor # 6 on deck, and Far Scout had anchor # 5 on deck. |
| 23:59 | Heaved in on anchor chains # 5 & # 6. |

**Daily report no :** 43 **Date:** 2005-03-16

**Midnight depth :** 2226 m MD **Estimated PP:** sg **Mud weight:** 1,54 sg

| Stop time | Description |
|---|---|
| 01:00 | Anchor # 5 was on bolster. |
| 02:00 | Anchor # 6 was on bolster. |
| 06:30 | Anchor # 9 was on bolster. Used Deepsea Trym`s own winch due to weather situation. |
| 23:59 | Rig in transit to the new location Astero, 35/11-13. |

# TIME DISTRIBUTION

**Well:** 31/4-12 **PO:** 1 **Rig:** DEEPSEA TRYM **Depth:** 2226,3 **m MD**

**All sections**

| Operations | Hours | % | Hours | % | Acc. total |
|---|---|---|---|---|---|
| MOBILIZATION | | | | | |
| MOVING | 14,0 | 1,40 | | | |
| MOORING; RUNNING ANCHORS | 39,5 | 3,96 | | | |
| MOORING; PULLING ANCHORS | 28,5 | 2,86 | | | |
| **Sum.** | | | 82,0 | 8,22 | 82,0 |
| DRILLING | | | | | |
| BHA HANDLING/TESTING | 38,5 | 3,86 | | | |
| EQUIPMENT TEST | 2,0 | 0,20 | | | |
| MWD HANDLING/TESTING/SURVEYING | 2,5 | 0,25 | | | |
| TRIPPING IN CASED HOLE | 44,0 | 4,41 | | | |
| TRIPPING IN OPEN HOLE | 18,5 | 1,86 | | | |
| DRILLING | 143,0 | 14,34 | | | |
| OTHER | 19,5 | 1,96 | | | |
| REAMING | 2,5 | 0,25 | | | |
| CIRC. AND COND. MUD/HOLE | 20,0 | 2,01 | | | |
| WIPER TRIP | 5,0 | 0,50 | | | |
| CASING HANDLING/TESTING | 30,0 | 3,01 | | | |
| RUNNING CASING IN CASED HOLE | 10,0 | 1,00 | | | |
| RUNNING CASING IN OPEN HOLE | 21,5 | 2,16 | | | |
| PRIMARY CEMENTING | 27,0 | 2,71 | | | |
| TRIPPING FOR CEMENT JOB | 23,0 | 2,31 | | | |
| DRILLING OUT CEMENT PLUG | 14,5 | 1,45 | | | |
| FORMATION STRENGTH TESTING | 2,5 | 0,25 | | | |
| BOP HANDLING | 21,0 | 2,11 | | | |
| BOP RUNNING/RETRIEVING | 14,5 | 1,45 | | | |
| BOP TESTING | 11,5 | 1,15 | | | |
| WELLHEAD EQUIPMENT HANDLING | 6,0 | 0,60 | | | |
| RIG MAINTENANCE | 4,5 | 0,45 | | | |
| SLIP AND CUT DRILLING LINE | 1,5 | 0,15 | | | |
| **Sum.** | | | 483,0 | 48,45 | 565,0 |
| FORMATION EVALUATION LOGGING | | | | | |
| LOGGING | 14,0 | 1,40 | | | |
| LOGGING EQUIPMENT HANDLING/TESTING | 7,5 | 0,75 | | | |
| **Sum.** | | | 21,5 | 2,16 | 586,5 |
| PLUG AND ABANDONMENT | | | | | |
| BHA HANDLING/TESTING | 8,0 | 0,80 | | | |
| TRIPPING IN CASED HOLE | 7,5 | 0,75 | | | |
| PREPARE TO RUN OR RETRIEVE TUBING HANGER | 2,0 | 0,20 | | | |
| CIRC. AND COND. MUD/HOLE | 10,5 | 1,05 | | | |
| CASING HANDLING/TESTING | 5,0 | 0,50 | | | |
| TRIPPING FOR CEMENT JOB | 27,5 | 2,76 | | | |
| BOP HANDLING | 4,0 | 0,40 | | | |
| BOP RUNNING/RETRIEVING | 14,5 | 1,45 | | | |
| WELLHEAD EQUIPMENT HANDLING | 3,0 | 0,30 | | | |
| SET CEMENT PLUG | 10,5 | 1,05 | | | |
| SET/RELEASE MECHANICAL PLUG | 2,0 | 0,20 | | | |
| TRIPPING OF CASING CUTTING EQUIPMENT | 17,0 | 1,71 | | | |
| CUT CASING/WELLHEAD | 14,5 | 1,45 | | | |
| CASING RETRIEVING | 17,5 | 1,76 | | | |

# TIME DISTRIBUTION

**Well:** 31/4-12 **PO:** 1 **Rig:** DEEPSEA TRYM **Depth:** 2226,3 **m MD**

**All sections**

| Operations | Hours | % | Hours | % | Acc. total |
|---|---|---|---|---|---|
| PLUG AND ABANDONMENT | | | | | |
| RIG MAINTENANCE | 1,5 | 0,15 | | | |
| **Sum.** | | | 145,0 | 14,54 | 731,5 |
| DOWNTIME MOBILIZATION | | | | | |
| EQUIPMENT FAILURE AND REPAIR | 12,5 | 1,25 | | | |
| WAITING | 30,5 | 3,06 | | | |
| OTHER | 1,5 | 0,15 | | | |
| **Sum.** | | | 44,5 | 4,46 | 776,0 |
| DOWNTIME DRILLING | | | | | |
| EQUIPMENT FAILURE AND REPAIR | 75,5 | 7,57 | | | |
| WAITING | 98,0 | 9,83 | | | |
| OTHER | 17,5 | 1,76 | | | |
| **Sum.** | | | 191,0 | 19,16 | 967,0 |
| DOWNTIME PLUG AND ABANDONMENT | | | | | |
| EQUIPMENT FAILURE AND REPAIR | 18,5 | 1,86 | | | |
| WAITING | 9,5 | 0,95 | | | |
| OTHER | 2,0 | 0,20 | | | |
| **Sum.** | | | 30,0 | 3,01 | 997,0 |
| Reported time ( 100,0 % of well total 997,0 hours) : | | | | | 997,0 |

Norsk Hydro

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# HOLE DEVIATION

**Well:** 31/4-12 **PO:** 1 **Reference point:** RKB ; 25,0 **m** ABOVE MSL

**Waterdepth:** 210,0 **m** **Vertical to:** 233,5 **m** **Total Depth:** 2226,0 **m MD**

**Utm zone:** 31 **Central Median:** 3° E **Horizontal datum:** ED50

**Template Centre Coordinates, UTM:** **North :** **m,** **East :** **m**

**Wellhead Coordinates, UTM:** **North :** 6717953,21 **m,** **East :** 509006,75 **m**

**Official Surveys:** Y **Track :**

**Coordinates are measured from the wellhead centre.**

| Depth MD [m] | Incli-nation [Deg] | Direc-tion [Deg] | Tool Type | # | Depth TVD [m] | Coordinates North [m] | Coordinates East [m] | Vert. Sect [m] | Dogleg [D/30m] | Build [D/30m] | Turn [D/30m] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 235,00 | 0,00 | 0,00 | MWD | 1 | 235,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| 245,51 | 0,49 | 339,61 | MWD | 1 | 245,51 | 0,04 | -0,02 | 0,04 | 1,40 | 1,40 | -58,20 |
| 253,40 | 0,12 | 315,03 | MWD | 1 | 253,40 | 0,08 | -0,03 | 0,09 | 1,46 | -1,41 | -93,46 |
| 263,70 | 0,64 | 198,26 | MWD | 1 | 263,70 | 0,03 | -0,06 | 0,07 | 2,05 | 1,51 | -340,11 |
| 271,90 | 0,48 | 142,47 | MWD | 1 | 271,90 | -0,04 | -0,05 | 0,06 | 1,99 | -0,59 | -204,11 |
| 283,30 | 0,50 | 174,47 | MWD | 1 | 283,30 | -0,13 | -0,02 | 0,13 | 0,71 | 0,05 | 84,21 |
| 292,50 | 1,06 | 200,41 | MWD | 1 | 292,50 | -0,25 | -0,04 | 0,25 | 2,11 | 1,83 | 84,59 |
| 340,30 | 0,86 | 169,81 | MWD | 1 | 340,29 | -1,01 | -0,13 | 1,02 | 0,34 | -0,13 | -19,21 |
| 369,00 | 0,96 | 178,29 | MWD | 1 | 368,99 | -1,46 | -0,09 | 1,47 | 0,17 | 0,10 | 8,86 |
| 395,90 | 1,09 | 173,09 | MWD | 1 | 395,88 | -1,94 | -0,05 | 1,94 | 0,18 | 0,14 | -5,80 |
| 426,60 | 1,23 | 179,89 | MWD | 1 | 426,58 | -2,56 | -0,02 | 2,56 | 0,19 | 0,14 | 6,64 |
| 454,60 | 1,14 | 179,53 | MWD | 1 | 454,57 | -3,14 | -0,01 | 3,14 | 0,10 | -0,10 | -0,39 |
| 484,20 | 1,25 | 182,31 | MWD | 1 | 484,16 | -3,76 | -0,02 | 3,76 | 0,13 | 0,11 | 2,82 |
| 514,10 | 1,25 | 186,16 | MWD | 1 | 514,06 | -4,41 | -0,07 | 4,41 | 0,08 | 0,00 | 3,86 |
| 543,50 | 1,18 | 186,32 | MWD | 1 | 543,45 | -5,03 | -0,14 | 5,03 | 0,07 | -0,07 | 0,16 |
| 575,10 | 1,25 | 186,45 | MWD | 1 | 575,04 | -5,70 | -0,21 | 5,70 | 0,07 | 0,07 | 0,12 |
| 602,50 | 1,23 | 181,70 | MWD | 1 | 602,44 | -6,29 | -0,26 | 6,29 | 0,11 | -0,02 | -5,20 |
| 630,90 | 1,10 | 184,63 | MWD | 1 | 630,83 | -6,86 | -0,29 | 6,87 | 0,15 | -0,14 | 3,10 |
| 662,70 | 1,08 | 193,09 | MWD | 1 | 662,63 | -7,46 | -0,38 | 7,47 | 0,15 | -0,02 | 7,98 |
| 691,50 | 1,15 | 196,09 | MWD | 1 | 691,42 | -8,00 | -0,52 | 8,02 | 0,09 | 0,07 | 3,13 |
| 721,70 | 1,20 | 198,12 | MWD | 1 | 721,61 | -8,59 | -0,70 | 8,62 | 0,06 | 0,05 | 2,02 |
| 750,60 | 1,29 | 201,85 | MWD | 1 | 750,51 | -9,18 | -0,92 | 9,23 | 0,13 | 0,09 | 3,87 |
| 781,10 | 0,54 | 186,98 | MWD | 1 | 781,00 | -9,64 | -1,06 | 9,70 | 0,77 | -0,74 | -14,63 |
| 810,20 | 0,60 | 139,13 | MWD | 1 | 810,10 | -9,89 | -0,98 | 9,94 | 0,48 | 0,06 | -49,33 |
| 840,00 | 0,55 | 136,13 | MWD | 1 | 839,90 | -10,12 | -0,78 | 10,15 | 0,06 | -0,05 | -3,02 |
| 869,20 | 0,54 | 148,92 | MWD | 1 | 869,10 | -10,33 | -0,61 | 10,35 | 0,12 | -0,01 | 13,14 |
| 901,80 | 0,65 | 145,67 | MWD | 1 | 901,70 | -10,62 | -0,43 | 10,63 | 0,11 | 0,10 | -2,99 |
| 928,60 | 0,67 | 145,17 | MWD | 1 | 928,50 | -10,87 | -0,25 | 10,88 | 0,02 | 0,02 | -0,56 |
| 957,80 | 0,50 | 149,62 | MWD | 1 | 957,69 | -11,12 | -0,09 | 11,12 | 0,18 | -0,17 | 4,57 |
| 987,10 | 0,57 | 139,91 | MWD | 1 | 986,99 | -11,35 | 0,07 | 11,35 | 0,12 | 0,07 | -9,94 |
| 1015,90 | 1,02 | 148,68 | MWD | 1 | 1015,79 | -11,67 | 0,29 | 11,68 | 0,48 | 0,47 | 9,14 |
| 1045,10 | 1,57 | 144,60 | MWD | 1 | 1044,98 | -12,22 | 0,66 | 12,24 | 0,57 | 0,57 | -4,19 |
| 1074,30 | 2,31 | 144,36 | MWD | 1 | 1074,17 | -13,03 | 1,23 | 13,08 | 0,76 | 0,76 | -0,25 |
| 1104,50 | 3,12 | 145,19 | MWD | 1 | 1104,33 | -14,20 | 2,06 | 14,34 | 0,81 | 0,80 | 0,82 |
| 1133,80 | 3,71 | 144,32 | MWD | 1 | 1133,58 | -15,62 | 3,07 | 15,92 | 0,61 | 0,60 | -0,89 |
| 1159,50 | 2,95 | 150,02 | MWD | 1 | 1159,24 | -16,87 | 3,88 | 17,31 | 0,97 | -0,89 | 6,65 |

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# HOLE DEVIATION

**Well:** 31/4-12 **PO:** 1 **Reference point:** RKB ; 25,0 **m** ABOVE MSL

**Waterdepth:** 210,0 **m** **Vertical to:** 233,5 **m** **Total Depth:** 2226,0 **m MD**

**Utm zone:** 31 **Central Median:** 3' E **Horizontal datum:** ED50

**Template Centre Coordinates, UTM:** **North :** **m,** **East :** **m**

**Wellhead Coordinates, UTM:** **North :** 6717953,21 **m,** **East :** 509006,75 **m**

**Official Surveys:** Y **Track :**

**Coordinates are measured from the wellhead centre.**

| Depth MD [m] | Incli-nation [Deg] | Direc-tion [Deg] | Tool Type | # | Depth TVD [m] | Coordinates North [m] | Coordinates East [m] | Vert. Sect [m] | Dogleg [D/30m] | Build [D/30m] | Turn [D/30m] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1193,50 | 2,69 | 159,08 | MWD | 1 | 1193,19 | -18,37 | 4,60 | 18,94 | 0,45 | -0,23 | 7,99 |
| 1222,40 | 2,69 | 158,45 | MWD | 1 | 1222,06 | -19,64 | 5,09 | 20,29 | 0,03 | 0,00 | -0,65 |
| 1251,50 | 2,53 | 157,17 | MWD | 1 | 1251,13 | -20,86 | 5,59 | 21,60 | 0,18 | -0,16 | -1,32 |
| 1281,80 | 2,40 | 154,06 | MWD | 1 | 1281,40 | -22,05 | 6,13 | 22,89 | 0,18 | -0,13 | -3,08 |
| 1310,70 | 2,27 | 143,52 | MWD | 1 | 1310,28 | -23,05 | 6,74 | 24,02 | 0,46 | -0,13 | -10,94 |
| 1340,00 | 1,90 | 147,08 | MWD | 1 | 1339,56 | -23,93 | 7,35 | 25,03 | 0,40 | -0,38 | 3,65 |
| 1370,30 | 0,76 | 142,71 | MWD | 1 | 1369,85 | -24,51 | 7,74 | 25,70 | 1,13 | -1,13 | -4,33 |
| 1398,60 | 0,88 | 144,61 | MWD | 1 | 1398,15 | -24,84 | 7,98 | 26,09 | 0,13 | 0,13 | 2,01 |
| 1427,50 | 0,42 | 173,69 | MWD | 1 | 1427,05 | -25,12 | 8,12 | 26,40 | 0,57 | -0,48 | 30,19 |
| 1457,80 | 0,85 | 289,59 | MWD | 1 | 1457,35 | -25,16 | 7,92 | 26,38 | 1,09 | 0,43 | 114,75 |
| 1487,30 | 0,88 | 283,80 | MWD | 1 | 1486,84 | -25,03 | 7,49 | 26,13 | 0,09 | 0,03 | -5,89 |
| 1517,80 | 0,74 | 291,14 | MWD | 1 | 1517,34 | -24,90 | 7,08 | 25,89 | 0,17 | -0,14 | 7,22 |
| 1547,60 | 0,88 | 282,49 | MWD | 1 | 1547,14 | -24,78 | 6,68 | 25,67 | 0,19 | 0,14 | -8,71 |
| 1576,20 | 0,69 | 287,35 | MWD | 1 | 1575,73 | -24,69 | 6,30 | 25,48 | 0,21 | -0,20 | 5,10 |
| 1606,50 | 0,72 | 292,66 | MWD | 1 | 1606,03 | -24,56 | 5,95 | 25,27 | 0,07 | 0,03 | 5,26 |
| 1635,50 | 0,71 | 288,32 | MWD | 1 | 1635,03 | -24,43 | 5,61 | 25,07 | 0,06 | -0,01 | -4,49 |
| 1664,90 | 0,77 | 288,79 | MWD | 1 | 1664,43 | -24,31 | 5,25 | 24,87 | 0,06 | 0,06 | 0,48 |
| 1694,60 | 0,60 | 278,65 | MWD | 1 | 1694,13 | -24,22 | 4,91 | 24,72 | 0,21 | -0,17 | -10,24 |
| 1724,60 | 0,73 | 274,05 | MWD | 1 | 1724,12 | -24,19 | 4,56 | 24,61 | 0,14 | 0,13 | -4,60 |
| 1753,30 | 0,70 | 271,02 | MWD | 1 | 1752,82 | -24,17 | 4,21 | 24,53 | 0,05 | -0,03 | -3,17 |
| 1783,30 | 0,68 | 277,47 | MWD | 1 | 1782,82 | -24,14 | 3,85 | 24,45 | 0,08 | -0,02 | 6,45 |
| 1813,00 | 0,63 | 283,31 | MWD | 1 | 1812,52 | -24,08 | 3,51 | 24,34 | 0,08 | -0,05 | 5,90 |
| 1841,70 | 0,65 | 276,69 | MWD | 1 | 1841,22 | -24,03 | 3,20 | 24,24 | 0,08 | 0,02 | -6,92 |
| 1870,90 | 0,67 | 272,03 | MWD | 1 | 1870,41 | -24,00 | 2,86 | 24,17 | 0,06 | 0,02 | -4,79 |
| 1900,90 | 0,51 | 287,74 | MWD | 1 | 1900,41 | -23,96 | 2,56 | 24,09 | 0,23 | -0,16 | 15,71 |
| 1929,80 | 0,59 | 294,86 | MWD | 1 | 1929,31 | -23,85 | 2,30 | 23,96 | 0,11 | 0,08 | 7,39 |
| 1959,10 | 0,45 | 302,24 | MWD | 1 | 1958,61 | -23,73 | 2,07 | 23,82 | 0,16 | -0,14 | 7,56 |
| 1989,00 | 0,61 | 314,70 | MWD | 1 | 1988,51 | -23,55 | 1,86 | 23,63 | 0,20 | 0,16 | 12,50 |
| 2018,30 | 0,55 | 317,59 | MWD | 1 | 2017,81 | -23,34 | 1,65 | 23,40 | 0,07 | -0,06 | 2,96 |
| 2044,60 | 0,60 | 314,45 | MWD | 1 | 2044,11 | -23,15 | 1,47 | 23,20 | 0,07 | 0,06 | -3,58 |
| 2066,70 | 0,72 | 333,71 | MWD | 1 | 2066,20 | -22,95 | 1,32 | 22,98 | 0,34 | 0,16 | 26,14 |
| 2122,60 | 0,72 | 335,35 | MWD | 1 | 2122,10 | -22,31 | 1,02 | 22,33 | 0,01 | 0,00 | 0,88 |
| 2153,60 | 0,72 | 349,25 | MWD | 1 | 2153,10 | -21,94 | 0,90 | 21,96 | 0,17 | 0,00 | 13,45 |
| 2184,60 | 0,66 | 336,86 | MWD | 1 | 2184,09 | -21,59 | 0,80 | 21,60 | 0,16 | -0,06 | -11,99 |
| 2214,60 | 0,83 | 335,48 | MWD | 1 | 2214,09 | -21,23 | 0,64 | 21,24 | 0,17 | 0,17 | -1,38 |

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## MAIN CONSUMPTION OF CASING/TUBING

**Well:** 31/4-12 **PO:** 1

| Size | Casing string | Grade | Weight [kg/m] | Weight [lb/ft] | Threads type | Length [m] | No. of joints |
|---|---|---|---|---|---|---|---|
| 30" | CONDUCTOR | X-52 | 460,86 | 309,70 | E60MT | 74,5 | 6 |
| 20" | SURFACE | X-56 | 247,02 | 166,00 | UNDEFINED | 9,2 | 1 |
| 13 3/8" | SURFACE | P-110 | 107,14 | 72,00 | VAM TOP | 936,0 | 74 |
| 9 5/8" | PRODUCTION | L-80 | 79,61 | 53,50 | VAM TOP | 1822,7 | 147 |

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# BITRECORD

**Well:** 31/4-12 **PO:** 1

| Bit No | RR | Type | Size (in) | Manu-fact-urer | Trade name | Serial no. | IADC code | Nozzles diameter (../32in) | Flow area (in2) | BHA no. | Depth out (m MD) | Bit meter (m) | Rot. hours (hrs) | ROP (m/hr) | Rotation min/max) (rpm) | Total bit revol. | Weight min/max (kN) | Flow min/max (l/min) | Pump min/max (bar) | Cutting Structure I - O -DC- L - B | Gauge 1/16 (in) | Other Remarks | Pull Cause |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | ISRT | 17,50 | HTC | MXT305HDX2 | 6009380 | 415 | 16,20,20,20 | 1,117 | 1 | 308 | 73 | 8,80 | 8,3 | 0/90 | 26543 | 0/56 | 3233/3514 | 57,9/81,8 | 1 - 1 - NO - A - E | I | WT | TD |
| | | HO | 36,00 | ODFW | STANDARDHO | OWSHO36 | | 12,12,12,12,12, | 0,663 | 1 | 308 | 73 | | 0,0 | 0/90 | | 0/56 | 3233/3514 | 57,9/81,8 | | | | |
| 2 | | ISRT | 26,00 | SDBS | XT02PC | 737582 | 415M | 20,20,20,20 | 1,227 | 2 | 312 | 4 | 0,60 | 6,7 | 0/73 | 2767 | 0/34 | 0/3241 | 0/54,5 | 1 - 1 - BT - A - F | I | | BHA |
| 3 | | BIT | 17,50 | HTC | HCR606Z | 7004037 | | 12,12,12,12,12, | 0,922 | 3 | 1184 | 872 | 25,60 | 34,1 | 0/234 | 300849 | 0/195 | 0/4985 | 0/255,5 | 1 - 1 - WT - A - X | I | | TD |
| 4 | | PDC | 12,25 | HTC | HC606 | 1213711 | M323 | 14,14,14,14,14, | 1,052 | 4 | 1924 | 740 | 20,60 | 35,9 | 0/310 | 348332 | 0/82 | 0/4205 | 0/282 | 1 - 1 - NO - A - X | I | NO | BHA |
| 4 | 1 | PDC | 12,25 | HTC | HC606 | 1213711 | M323 | 15,15,15,15,15, | 1,035 | 5 | 2062 | 138 | 13,10 | 10,5 | 0/283 | 124200 | 0/55 | 0/4132 | 0/265,4 | 1 - 2 - CT - G - X | 1 | NO | TD |
| 5 | | ISRT | 8,50 | HTC | MXLR18DDT | ZF88DW | 447 | 18,18,18 | 0,746 | 6 | 2226 | 164 | 14,10 | 11,6 | 0/124 | 101500 | 0/159 | 0/2543 | 0/172,7 | 1 - 1 - WT - A - E | 3 | ER | TD |

# BOTTOM HOLE ASSEMBLIES

**Well: 31/4-12 PO: 1**

BHA no. 1: No. / Element / Body OD(in) / Length(m) Depth In: 235 m MD Out: 308 m MD

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | MXT305HDX2 | 17,5 | 0,40 | 10 | X-OVER | 9,5 | 0,94 |
| 2 | STANDARDHO | 36,0 | 3,86 | 11 | STEEL STAB | 9,5 | 2,32 |
| 3 | BIT SUB | 9,5 | 0,91 | 12 | X-OVER | 9,25 | 0,60 |
| 4 | X-OVER | 9,5 | 0,77 | 13 | DRILL COLLAR STEEL | 8,0 | 27,23 |
| 5 | STOP SUB | 8,25 | 0,49 | 14 | JAR | 7,875 | 9,59 |
| 6 | MEASUREMENT WHILE DRILLING | 8,25 | 10,79 | 15 | DRILL COLLAR STEEL | 8,0 | 72,72 |
| 7 | SAVER SUB | 8,25 | 0,82 | 16 | X-OVER | 8,0 | 0,89 |
| 8 | STEEL STAB | 8,25 | 1,98 | 17 | HWDP | 5,5 | 82,55 |
| 9 | DRILL COLLAR STEEL | 8,25 | 8,74 | 18 | DRILL PIPE | 5,5 | 83,00 |

Reason pulled: TOTAL DEPTH/CASING DEPTH Total Length: 308,60 m

BHA no. 2: No. / Element / Body OD(in) / Length(m) Depth In: 308 m MD Out: 312 m MD

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | XT02PC | 26,0 | 0,55 | 8 | DRILL COLLAR STEEL | 8,0 | 27,23 |
| 2 | BIT SUB | 9,375 | 0,92 | 9 | JAR | 7,875 | 9,59 |
| 3 | STEEL STAB | 9,5 | 1,87 | 10 | DRILL COLLAR STEEL | 8,0 | 54,67 |
| 4 | DRILL COLLAR STEEL | 9,5 | 3,77 | 11 | X-OVER | 8,0 | 0,89 |
| 5 | STEEL STAB | 9,5 | 2,32 | 12 | HWDP | 5,5 | 110,35 |
| 6 | X-OVER | 9,25 | 0,60 | 13 | DRILL PIPE | 5,5 | 96,00 |
| 7 | FLOAT SUB | 7,938 | 0,59 | | | | |

Reason pulled: CHANGE BOTTOMHOLE ASSEMBLY Total Length: 309,35 m

BHA no. 3: No. / Element / Body OD(in) / Length(m) Depth In: 312 m MD Out: 1184 m MD

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | HCR606Z | 17,5 | 0,51 | 10 | NON MAG. STAB | 8,0 | 1,98 |
| 2 | DOWNHOLE MOTOR | 12,75 | 9,75 | 11 | FLOAT SUB | 7,938 | 0,59 |
| 3 | X-OVER | 12,625 | 0,65 | 12 | NON MAG. COLLAR | 8,25 | 8,74 |
| 4 | NEAR BIT STAB | 9,5 | 2,22 | 13 | DRILL COLLAR STEEL | 8,0 | 27,23 |
| 5 | PIN-PIN SUB | 9,5 | 0,69 | 14 | JAR | 7,875 | 9,59 |
| 6 | MULTIPLE PROPAGATION RESIST | 8,25 | 4,95 | 15 | DRILL COLLAR STEEL | 8,0 | 54,67 |
| 7 | MODULAR ADVANCED PRESSURE | 8,25 | 1,09 | 16 | X-OVER | 7,625 | 0,89 |
| 8 | MEASUREMENT WHILE DRILLING | 8,25 | 10,79 | 17 | HWDP | 5,5 | 110,35 |
| 9 | SAVER SUB | 8,25 | 0,82 | 18 | DRILL PIPE | 5,5 | 66,00 |

Reason pulled: TOTAL DEPTH/CASING DEPTH Total Length: 311,51 m

BHA no. 4: No. / Element / Body OD(in) / Length(m) Depth In: 1184 m MD Out: 1924 m MD

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | HC606 | 12,25 | 0,37 | 9 | NON MAG. STAB | 8,0 | 1,95 |
| 2 | DOWNHOLE MOTOR | 9,5 | 8,93 | 10 | NON MAG. COLLAR | 8,25 | 8,74 |
| 3 | NEAR BIT STAB | 8,0 | 1,86 | 11 | DRILL COLLAR STEEL | 8,0 | 27,23 |
| 4 | PIN-PIN SUB | 8,25 | 0,38 | 12 | JAR | 7,938 | 9,59 |
| 5 | MULTIPLE PROPAGATION RESIST | 8,25 | 4,99 | 13 | DRILL COLLAR STEEL | 8,0 | 54,67 |
| 6 | MODULAR ADVANCED PRESSURE | 8,25 | 1,19 | 14 | X-OVER | 7,625 | 0,89 |
| 7 | MEASUREMENT WHILE DRILLING | 8,25 | 10,86 | 15 | HWDP | 5,5 | 110,35 |
| 8 | SAVER SUB | 8,25 | 0,97 | 16 | DRILL PIPE | 5,5 | 66,00 |

Reason pulled: CHANGE BOTTOMHOLE ASSEMBLY Total Length: 308,97 m

BHA no. 5: No. / Element / Body OD(in) / Length(m) Depth In: 1924 m MD Out: 2062 m MD

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | HC606 | 12,25 | 0,37 | 9 | NON MAG. COLLAR | 8,25 | 8,74 |
| 2 | NEAR BIT STAB | 8,0 | 2,28 | 10 | DRILL COLLAR STEEL | 8,0 | 27,23 |
| 3 | PIN-PIN SUB | 8,25 | 0,38 | 11 | JAR | 7,938 | 9,59 |
| 4 | MULTIPLE PROPAGATION RESIST | 8,25 | 4,99 | 12 | DRILL COLLAR STEEL | 8,0 | 54,67 |
| 5 | MODULAR ADVANCED PRESSURE | 8,25 | 1,19 | 13 | X-OVER | 7,625 | 0,89 |
| 6 | MEASUREMENT WHILE DRILLING | 8,25 | 10,86 | 14 | HWDP | 5,5 | 110,28 |
| 7 | SAVER SUB | 8,25 | 0,96 | 15 | DRILL PIPE | 5,5 | 66,00 |
| 8 | NON MAG. NEAR BIT STAB | 8,0 | 1,96 | | | | |

Reason pulled: TOTAL DEPTH/CASING DEPTH Total Length: 300,39 m

Norsk Hydro 2005-11-16

## BOTTOM HOLE ASSEMBLIES

**Well: 31/4-12** **PO: 1**

BHA no. 6: No. / Element / Body OD(in) / Length(m) Depth In: 2062 m MD Out: 2226 m MD

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | MXLR18DDT | 8,5 | 0,24 | 7 | STOP SUB | 6,75 | 0,49 |
| 2 | NEAR BIT STAB | 6,5 | 1,98 | 8 | DRILL PIPE | 5,0 | 10,59 |
| 3 | STOP SUB | 6,75 | 0,47 | 9 | HWDP | 5,0 | 37,16 |
| 4 | ONTRAK, RESISTIVITY, GAMMA R/ | 6,75 | 5,08 | 10 | JAR | 6,5 | 9,41 |
| 5 | NON MAG. STAB | 6,75 | 1,20 | 11 | HWDP | 5,0 | 108,67 |
| 6 | BI-DIRECTIONAL COMMUNICATIOI | 6,75 | 3,20 | | | | |

Reason pulled: TOTAL DEPTH/CASING DEPTH Total Length: 178,49 m

Norsk Hydro

2005-11-16

# CEMENT SLURRY REPORT

**Well:** 31/4-12 **PO:** 1

| Date | CsgSize | Jobtype | Slurry Type | Pumped Volume [m3] | Density [sg] | BHCT [DegC] | Yield [l/100 kg] | Additive | Unit | Additives [../100 kg Cement] | Additives [../m3 Slurry] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005-02-11 | 30" | CASING CEMENTING | LEAD | 22,00 | 1,56 | 8,00 | 129,56 | A-3L | l | 3,50 | |
| | | | | | | | | FP16LG | l | 0,10 | |
| | | | TAIL SLURRY | 25,70 | 1,95 | 8,00 | 74,71 | A-7L | l | 3,50 | |
| | | | | | | | | FP16LG | l | 0,10 | |
| | | | DISPLACEMENT | | 1,03 | 8,00 | | | | | |
| 2005-02-13 | 30" | GROUT | TAIL SLURRY | 25,70 | 1,95 | 8,00 | 74,71 | A-7L | l | 3,50 | |
| | | | | | | | | FP16LG | l | 0,10 | |
| | | | DISPLACEMENT | | 1,03 | 8,00 | | | | | |
| | | | DISPLACEMENT | | | 8,00 | | | | | |
| 2005-02-14 | 30" | GROUT | TAIL SLURRY | | | 8,00 | | | | | |
| | | | TAIL SLURRY | 25,70 | 1,95 | 8,00 | 74,71 | FP16LG | l | 0,10 | |
| | | | DISPLACEMENT | | 1,03 | 8,00 | | | | | |
| | | | DISPLACEMENT | | | 8,00 | | | | | |
| 2005-02-19 | 13 3/8" | CASING CEMENTING | LEAD | 136,00 | 1,44 | 33,00 | 169,44 | A-3L | l | 5,30 | |
| | | | | | | | | FP16LG | l | 0,10 | |
| | | | | | | | | R-15L | l | 1,55 | |
| | | | TAIL SLURRY | 27,50 | 1,92 | 33,00 | 75,02 | FP16LG | l | 0,10 | |
| | | | | | | | | R-12L | l | 0,55 | |
| | | | DISPLACEMENT | | 1,00 | 33,00 | | | | | |
| | | | DISPLACEMENT | | 1,03 | 33,00 | | | | | |
| | | | DISPLACEMENT | | | 33,00 | | | | | |
| 2005-03-02 | 9 5/8" | CASING CEMENTING | CHEMICAL WASH (UNWEIGHTED) | | 1,00 | 52,00 | | FP16LG | l | | 10,00 |
| | | | | | | | | MCS-J | l | | 26,00 |
| | | | WEIGHTED SPACER | | 1,70 | 52,00 | | FP16LG | l | | 10,00 |
| | | | | | | | | GW-22 | kg | | 1,80 |
| | | | | | | | | MCS-J | l | | 52,00 |
| | | | | | | | | SODAA | kg | | 8,00 |
| | | | TAIL SLURRY | 13,20 | 1,90 | 52,00 | 82,02 | BA-58L | l | 11,00 | |
| | | | | | | | | CD-34L | l | 1,50 | |
| | | | | | | | | FL-67L | l | 2,00 | |
| | | | | | | | | FP16LG | l | 0,20 | |
| | | | | | | | | R-12L | l | 1,10 | |

Norsk Hydro

2005-11-16

# CEMENT SLURRY REPORT

**Well:** 31/4-12 **PO:** 1

| Date | CsgSize | Jobtype | Slurry Type | Pumped Volume [m3] | Density [sg] | BHCT [DegC] | Yield [l/100 kg] | Additive | Unit | Additives [../100 kg Cement] | Additives [../m3 Slurry] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005-03-02 | 9 5/8" | CASING CEMENTING | DISPLACEMENT | | 1,50 | 52,00 | | | | | |
| 2005-03-08 | 9 5/8" | PLUG IN CASED HOLE | SPACER | 3,00 | 1,00 | 68,00 | | | | | |
| | | | TAIL SLURRY | 3,70 | 1,90 | 68,00 | 76,70 | FP16LG | l | 0,20 | |
| | | | | | | | | R-12L | l | 0,75 | |
| | | | SPACER | 0,83 | 1,00 | 68,00 | | | | | |
| | | | DISPLACEMENT | 15,50 | 1,17 | 68,00 | | | | | |
| | | PLUG IN CASED TO OPEN HOLE | SPACER | 3,00 | 1,00 | 68,00 | | | | | |
| | | | TAIL SLURRY | 3,70 | 1,90 | 68,00 | 76,70 | FP16LG | l | 0,20 | |
| | | | | | | | | R-12L | l | 0,75 | |
| | | | SPACER | 0,83 | 1,00 | 68,00 | | | | | |
| | | | DISPLACEMENT | 15,50 | 1,17 | 68,00 | | | | | |
| 2005-03-10 | 13 3/8" | PLUG IN CASED HOLE | SPACER | | 1,03 | 16,00 | | | | | |
| | | | TAIL SLURRY | 15,50 | 1,95 | 16,00 | 73,64 | FP16LG | l | 0,20 | |
| | | | DISPLACEMENT | 1,50 | 1,03 | 16,00 | | | | | |
| | | | DISPLACEMENT | | | 16,00 | | | | | |

## CEMENT CONSUMPTION PER JOB

**Well:** 31/4-12 **PO:** 1

| Date | CsgSize | Job Type | Cement/ Additive | Description | Unit | Actual Amount Used |
|---|---|---|---|---|---|---|
| 2005-02-11 | 30" | CASING CEMENTING | G | API CLASS G | MT | 4 |
| | | | FP16LG | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 361 |
| | | | A-7L | ACCELERATOR: LIQUID CACL2 | l | 800 |
| | | | A-3L | EXTENDER: LIQUID LODENSE | l | 750 |
| 2005-02-13 | 30" | GROUT | G | API CLASS G | MT | 21 |
| | | | FP16LG | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 20 |
| | | | A-7L | ACCELERATOR: LIQUID CACL2 | l | 0 |
| 2005-02-14 | 30" | GROUT | G | API CLASS G | MT | 17 |
| | | | FP16LG | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 310 |
| 2005-02-19 | 13 3/8" | CASING CEMENTING | G | API CLASS G | MT | 126 |
| | | | R-12L | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D | l | 1760 |
| | | | R-15L | RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DE | l | 1176 |
| | | | A-3L | EXTENDER: LIQUID LODENSE | l | 4000 |
| | | | FP16LG | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 195 |
| 2005-03-02 | 9 5/8" | CASING CEMENTING | G | API CLASS G | MT | 17 |
| | | | BA-58L | BA-58L ANTI-GAS | l | 1700 |
| | | | R-12L | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D | l | 190 |
| | | | GW-22 | GW-22 VISCOSIFIER | kg | 50 |
| | | | MCS-J | MCS-J | l | 1100 |
| | | | SODAA | SODA ASH | kg | 150 |
| | | | FL-67L | FL-67LE | l | 320 |
| | | | FP16LG | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 300 |
| | | | CD-34L | DISPERSANT: CD-34L LIQUID | l | 260 |
| 2005-03-08 | 9 5/8" | PLUG IN CASED HOLE | G | API CLASS G | MT | 5 |
| | | | FP16LG | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 10 |
| | | | R-12L | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D | l | 40 |
| | 9 5/8" | PLUG IN CASED TO OPEN HOLE | G | API CLASS G | MT | 5 |
| | | | R-12L | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D | l | 40 |
| | | | FP16LG | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 10 |
| 2005-03-10 | 13 3/8" | PLUG IN CASED HOLE | G | API CLASS G | MT | 13 |
| | | | FP16LG | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 40 |

# TOTAL CONSUMPTION OF CEMENT ADDITIVES

**Well:** 31/4-12 **PO:** 1

| Section | Cement/Additive | Unit | Total Amount Used |
|---|---|---|---|
| 36" | EXTENDER: LIQUID LODENSE | l | 750,00 |
| | ACCELERATOR: LIQUID CACL2 | l | 800,00 |
| | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 691,00 |
| | API CLASS G | MT | 42,00 |

| Section | Cement/Additive | Unit | Total Amount Used |
|---|---|---|---|
| 17 1/2" | EXTENDER: LIQUID LODENSE | l | 4000,00 |
| | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 195,00 |
| | API CLASS G | MT | 126,00 |
| | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC | l | 1760,00 |
| | RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DEGC | l | 1176,00 |

| Section | Cement/Additive | Unit | Total Amount Used |
|---|---|---|---|
| 12 1/4" | BA-58L ANTI-GAS | l | 1700,00 |
| | DISPERSANT: CD-34L LIQUID | l | 260,00 |
| | FL-67LE | l | 320,00 |
| | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 300,00 |
| | API CLASS G | MT | 17,00 |
| | GW-22 VISCOSIFIER | kg | 50,00 |
| | MCS-J | l | 1100,00 |
| | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC | l | 190,00 |
| | SODA ASH | kg | 150,00 |

| Section | Cement/Additive | Unit | Total Amount Used |
|---|---|---|---|
| 8 1/2" | SPECIAL ADDITIVE: DEFOAMER FP-16LG | l | 60,00 |
| | API CLASS G | MT | 23,00 |
| | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC | l | 80,00 |

# DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS

**Well:** 31/4-12 **PO:** 1

**Hole section :** 36" **WATER BASED SYSTEM**

| Date | Depth [m] | | Mud Type | Funnel Visc | Dens | Mudtmp Out | Fann Readings | | | | | | | | Rheo Test | PV | YP | Gel0 | Gel10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MD | TVD | | [sec] | [sg] | [DegC] | 600 | 300 | 200 | 100 | 60 | 30 | 6 | 3 | [DegC] | [mPas] | [Pa] | [Pa] | [Pa] |
| 2005-02-06 21:00 | 264 | 264 | BENTONITE MUD | 120,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |
| 2005-02-07 13:00 | 310 | 310 | BENTONITE MUD | 118,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |
| 2005-02-08 12:00 | 310 | 310 | BENTONITE MUD | 118,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |
| 2005-02-09 21:00 | 310 | 310 | BENTONITE MUD | 116,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |
| 2005-02-10 14:00 | 310 | 310 | BENTONITE MUD | 112,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |
| 2005-02-11 16:00 | 310 | 310 | BENTONITE MUD | 119,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |
| 2005-02-12 13:00 | 310 | 310 | BENTONITE MUD | 131,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |
| 2005-02-13 | 310 | 310 | BENTONITE MUD | 125,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |
| 2005-02-14 | 310 | 310 | BENTONITE MUD | 140,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |

**Hole section :** 26" **WATER BASED SYSTEM**

| Date | Depth [m] | | Mud Type | Funnel Visc | Dens | Mudtmp Out | Fann Readings | | | | | | | | Rheo Test | PV | YP | Gel0 | Gel10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MD | TVD | | [sec] | [sg] | [DegC] | 600 | 300 | 200 | 100 | 60 | 30 | 6 | 3 | [DegC] | [mPas] | [Pa] | [Pa] | [Pa] |
| 2005-02-15 | 345 | 345 | BENTONITE MUD | 123,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |

**Hole section :** 17 1/2" **WATER BASED SYSTEM**

| Date | Depth [m] | | Mud Type | Funnel Visc | Dens | Mudtmp Out | Fann Readings | | | | | | | | Rheo Test | PV | YP | Gel0 | Gel10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MD | TVD | | [sec] | [sg] | [DegC] | 600 | 300 | 200 | 100 | 60 | 30 | 6 | 3 | [DegC] | [mPas] | [Pa] | [Pa] | [Pa] |
| 2005-02-16 | 820 | 820 | BENTONITE MUD | 123,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |
| 2005-02-17 | 1184 | 1184 | BENTONITE MUD | 140,0 | 1,05 | | | | | | 0 | 0 | | | | | | | |
| 2005-02-18 | 1184 | 1184 | AQUA-DRILL | | 1,40 | | 75 | 56 | 46 | 34 | 0 | 0 | 11 | 8 | 50,0 | 19,0 | 18,0 | 6,0 | 8,0 |
| 2005-02-19 | 1184 | 1184 | AQUA-DRILL | | 1,40 | | 75 | 56 | 46 | 34 | 0 | 0 | 11 | 8 | 50,0 | 19,0 | 18,0 | 6,0 | 8,0 |
| 2005-02-20 | 1184 | 1184 | AQUA-DRILL | | 1,40 | | 75 | 56 | 46 | 34 | 0 | 0 | 11 | 8 | 50,0 | 19,0 | 18,0 | 6,0 | 8,0 |
| 2005-02-21 | 1184 | 1184 | AQUA-DRILL | 75,0 | 1,30 | | 74 | 54 | 44 | 32 | 0 | 0 | 9 | 8 | 40,0 | 20,0 | 16,0 | 5,0 | 6,0 |
| 2005-02-22 10:00 | 1184 | 1184 | AQUA-DRILL | 75,0 | 1,30 | | 75 | 54 | 44 | 32 | 0 | 0 | 9 | 8 | 50,0 | 21,0 | 16,0 | 5,0 | 6,0 |
| 2005-02-23 10:00 | 1184 | 1184 | AQUA-DRILL | 75,0 | 1,30 | | 75 | 54 | 44 | 32 | 0 | 0 | 9 | 8 | 50,0 | 21,0 | 16,0 | 5,0 | 6,0 |

**Hole section :** 12 1/4" **WATER BASED SYSTEM**

| Date | Depth [m] | | Mud Type | Funnel Visc | Dens | Mudtmp Out | Fann Readings | | | | | | | | Rheo Test | PV | YP | Gel0 | Gel10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MD | TVD | | [sec] | [sg] | [DegC] | 600 | 300 | 200 | 100 | 60 | 30 | 6 | 3 | [DegC] | [mPas] | [Pa] | [Pa] | [Pa] |
| 2005-02-24 23:40 | 1224 | 1224 | AQUA-DRILL | 78,0 | 1,31 | | 68 | 50 | 42 | 30 | 0 | 0 | 8 | 7 | 50,0 | 18,0 | 15,3 | 8,0 | 12,0 |
| 2005-02-25 22:00 | 1670 | 1670 | AQUA-DRILL | 56,0 | 1,50 | | 80 | 60 | 49 | 37 | 0 | 0 | 12 | 8 | 50,0 | 20,0 | 20,0 | 5,0 | 9,0 |
| 2005-02-26 | 1924 | 1924 | AQUA-DRILL | 58,0 | 1,50 | 35,0 | 87 | 64 | 53 | 34 | 0 | 0 | 12 | 9 | 50,0 | 23,0 | 19,6 | 5,0 | 9,0 |
| 2005-02-27 | 2026 | 2026 | AQUA-DRILL | 58,0 | 1,50 | 37,0 | 86 | 64 | 54 | 39 | 0 | 0 | 12 | 8 | 50,0 | 22,0 | 20,1 | 5,0 | 9,5 |

# DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS

**Well:** 31/4-12 **PO:** 1

**Hole section :** 12 1/4" **WATER BASED SYSTEM**

| Date | Depth [m] | | Mud Type | Funnel Visc | Dens | Mudtmp Out | Fann Readings | | | | | | | | Rheo Test | PV | YP | Gel0 | Gel10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MD | TVD | | [sec] | [sg] | [DegC] | 600 | 300 | 200 | 100 | 60 | 30 | 6 | 3 | [DegC] | [mPas] | [Pa] | [Pa] | [Pa] |
| 2005-02-28 | 2062 | 2062 | AQUA-DRILL | 58,0 | 1,54 | 37,0 | 82 | 60 | 50 | 37 | 0 | 0 | 10 | 8 | 50,0 | 22,0 | 19,0 | 4,0 | 7,0 |
| 2005-03-01 | 2062 | 2062 | AQUA-DRILL | 64,0 | 1,54 | 37,0 | 85 | 62 | 52 | 38 | 0 | 0 | 11 | 8 | 50,0 | 23,0 | 19,0 | 4,0 | 8,0 |
| 2005-03-02 | 2062 | 2062 | AQUA-DRILL | 66,0 | 1,54 | 37,0 | 85 | 62 | 52 | 38 | 0 | 0 | 11 | 8 | 50,0 | 23,0 | 19,0 | 4,0 | 8,0 |
| 2005-03-03 | 2062 | 2062 | AQUA-DRILL | 60,0 | 1,16 | 50,0 | 68 | 50 | 40 | 29 | 0 | 0 | 9 | 7 | 50,0 | 18,0 | 15,0 | 3,0 | 3,0 |

**Hole section :** 8 1/2" **WATER BASED SYSTEM**

| Date | Depth [m] | | Mud Type | Funnel Visc | Dens | Mudtmp Out | Fann Readings | | | | | | | | Rheo Test | PV | YP | Gel0 | Gel10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MD | TVD | | [sec] | [sg] | [DegC] | 600 | 300 | 200 | 100 | 60 | 30 | 6 | 3 | [DegC] | [mPas] | [Pa] | [Pa] | [Pa] |
| 2005-03-04 | 2125 | 2124 | AQUA-DRILL | 76,0 | 1,16 | 50,0 | 67 | 49 | 41 | 29 | 0 | 0 | 9 | 7 | 50,0 | 18,0 | 15,0 | 4,0 | 4,0 |
| 2005-03-05 | 2226 | 2225 | AQUA-DRILL | 76,0 | 1,17 | 50,0 | 64 | 48 | 37 | 0 | 0 | 0 | 8 | 7 | 50,0 | 16,0 | 15,0 | 3,5 | 5,5 |
| 2005-03-06 | 2226 | 2225 | AQUA-DRILL | 75,0 | 1,17 | 50,0 | 62 | 47 | 36 | 0 | 0 | 0 | 8 | 7 | 50,0 | 15,0 | 15,0 | 3,5 | 5,5 |
| 2005-03-07 | 2226 | 2225 | AQUA-DRILL | 68,0 | 1,17 | 50,0 | 61 | 45 | 36 | 0 | 0 | 0 | 7 | 6 | 50,0 | 16,0 | 14,0 | 3,5 | 5,0 |

**Hole section :** P&A **WATER BASED SYSTEM**

| Date | Depth [m] | | Mud Type | Funnel Visc | Dens | Mudtmp Out | Fann Readings | | | | | | | | Rheo Test | PV | YP | Gel0 | Gel10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MD | TVD | | [sec] | [sg] | [DegC] | 600 | 300 | 200 | 100 | 60 | 30 | 6 | 3 | [DegC] | [mPas] | [Pa] | [Pa] | [Pa] |
| 2005-03-08 | 2052 | 2052 | AQUA-DRILL | 85,0 | 1,20 | 50,0 | 56 | 40 | 34 | 0 | 0 | 0 | 7 | 5 | 50,0 | 16,0 | 11,5 | 9,0 | 3,5 |
| 2005-03-09 | 500 | 500 | AQUA-DRILL | 75,0 | 1,54 | 50,0 | 73 | 53 | 45 | 0 | 0 | 0 | 10 | 8 | 50,0 | 20,0 | 15,8 | 6,0 | 3,5 |
| 2005-03-10 | 500 | 500 | AQUA-DRILL | 75,0 | 1,54 | 50,0 | 73 | 53 | 45 | 0 | 0 | 0 | 10 | 8 | 50,0 | 20,0 | 15,8 | 6,0 | 3,5 |
| 2005-03-11 | 500 | 500 | AQUA-DRILL | 75,0 | 1,54 | 50,0 | 73 | 53 | 45 | 0 | 0 | 0 | 10 | 8 | 50,0 | 20,0 | 15,8 | 6,0 | 3,5 |
| 2005-03-12 | 0 | 0 | AQUA-DRILL | 0,0 | 0,00 | 0,0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |

# DAILY MUD PROPERTIES : OTHER PARAMETERS

**Well:** 31/4-12 **PO:** 1

**Hole section :** 36" **WATER BASED SYSTEM**

| Date | Depth [m] MD | Depth [m] TVD | Mud Type | Dens [sg] | Filtrate API [ml] | Filtrate HPHT [ml] | Filtcake API [mm] | Filtcake HPHT [mm] | HPHT Press/Temp [bar/DegC] | pH | Alcalinity Pm [ml] | Alcalinity Pf [ml] | Alcalinity Mf [ml] | Inhib Chem [Kg/m3] | K+ [mg/l] | CL- [mg/l] | Ca++ [mg/l] | Mg++ [mg/l] | Tot hard [mg/l] | Percentage Solid [%] | Percentage Oil [%] | Percentage Sand [%] | CEC [Kg/m3] | ASG [sg] | LGS [Kg/m3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005-02-06 21:00 | 264 | 264 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |
| 2005-02-07 13:00 | 310 | 310 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |
| 2005-02-08 12:00 | 310 | 310 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |
| 2005-02-09 21:00 | 310 | 310 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |
| 2005-02-10 14:00 | 310 | 310 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |
| 2005-02-11 16:00 | 310 | 310 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |
| 2005-02-12 13:00 | 310 | 310 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |
| 2005-02-13 | 310 | 310 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |
| 2005-02-14 | 310 | 310 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |

**Hole section :** 26" **WATER BASED SYSTEM**

| Date | Depth [m] MD | Depth [m] TVD | Mud Type | Dens [sg] | Filtrate API [ml] | Filtrate HPHT [ml] | Filtcake API [mm] | Filtcake HPHT [mm] | HPHT Press/Temp [bar/DegC] | pH | Alcalinity Pm [ml] | Alcalinity Pf [ml] | Alcalinity Mf [ml] | Inhib Chem [Kg/m3] | K+ [mg/l] | CL- [mg/l] | Ca++ [mg/l] | Mg++ [mg/l] | Tot hard [mg/l] | Percentage Solid [%] | Percentage Oil [%] | Percentage Sand [%] | CEC [Kg/m3] | ASG [sg] | LGS [Kg/m3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005-02-15 | 345 | 345 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |

**Hole section :** 17 1/2" **WATER BASED SYSTEM**

| Date | Depth [m] MD | Depth [m] TVD | Mud Type | Dens [sg] | Filtrate API [ml] | Filtrate HPHT [ml] | Filtcake API [mm] | Filtcake HPHT [mm] | HPHT Press/Temp [bar/DegC] | pH | Alcalinity Pm [ml] | Alcalinity Pf [ml] | Alcalinity Mf [ml] | Inhib Chem [Kg/m3] | K+ [mg/l] | CL- [mg/l] | Ca++ [mg/l] | Mg++ [mg/l] | Tot hard [mg/l] | Percentage Solid [%] | Percentage Oil [%] | Percentage Sand [%] | CEC [Kg/m3] | ASG [sg] | LGS [Kg/m3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005-02-16 | 820 | 820 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |
| 2005-02-17 | 1184 | 1184 | BENTONITE MUD | 1,05 | | | | | / | | | | | | | | | | | | | | | | |
| 2005-02-18 | 1184 | 1184 | AQUA-DRILL | 1,40 | 3,5 | | 1 | | / | | | 0,0 | 0,6 | 202 | 105000 | | | | 200 | 13,0 | | 0,0 | | | 36 |
| 2005-02-19 | 1184 | 1184 | AQUA-DRILL | 1,40 | | | 1 | | / | | | 0,0 | | 202 | 105000 | | | | 240 | 13,0 | | 0,0 | | | |
| 2005-02-20 | 1184 | 1184 | AQUA-DRILL | 1,40 | 3,4 | | 1 | | / | | | 0,0 | 0,6 | 200 | 105000 | | | | 240 | 13,0 | | 0,0 | | | 36 |
| 2005-02-21 | 1184 | 1184 | AQUA-DRILL | 1,30 | 3,4 | | 1 | | / | | 0,0 | 0,0 | 0,7 | 200 | 105 | 90000 | | | 440 | 12,0 | | | | 3,9 | |
| 2005-02-22 10:00 | 1184 | 1184 | AQUA-DRILL | 1,30 | | | 1 | | / | | 0,0 | 0,0 | 0,7 | 200 | 90000 | 90000 | 440 | | 440 | | | | | 3,9 | 37 |
| 2005-02-23 10:00 | 1184 | 1184 | AQUA-DRILL | 1,30 | 3,4 | | 1 | | / | 8,1 | 0,0 | 0,0 | 0,7 | 200 | 105000 | 90000 | | | 440 | 16,0 | | | | 3,9 | 37 |

**Hole section :** 12 1/4" **WATER BASED SYSTEM**

| Date | Depth [m] MD | Depth [m] TVD | Mud Type | Dens [sg] | Filtrate API [ml] | Filtrate HPHT [ml] | Filtcake API [mm] | Filtcake HPHT [mm] | HPHT Press/Temp [bar/DegC] | pH | Alcalinity Pm [ml] | Alcalinity Pf [ml] | Alcalinity Mf [ml] | Inhib Chem [Kg/m3] | K+ [mg/l] | CL- [mg/l] | Ca++ [mg/l] | Mg++ [mg/l] | Tot hard [mg/l] | Percentage Solid [%] | Percentage Oil [%] | Percentage Sand [%] | CEC [Kg/m3] | ASG [sg] | LGS [Kg/m3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005-02-24 23:40 | 1224 | 1224 | AQUA-DRILL | 1,31 | 3,5 | | 1 | | / | 8,5 | 0,2 | 0,1 | 0,7 | 200 | 105000 | 88000 | | | 660 | 16,0 | 0,0 | 0,0 | 20 | 3,6 | 77 |
| 2005-02-25 22:00 | 1670 | 1670 | AQUA-DRILL | 1,50 | 3,2 | | 1 | | / | 8,0 | 0,0 | 0,0 | 0,7 | 181 | 95000 | 87000 | | | 840 | 13,0 | | 0,8 | 25 | 3,8 | 3 |
| 2005-02-26 | 1924 | 1924 | AQUA-DRILL | 1,50 | 3,2 | 0,0 | 1 | 0 | 0 / 0 | 8,5 | 0,0 | 0,0 | 0,8 | 179 | 94500 | 94000 | 0 | 0 | 860 | 14,8 | 0,0 | 0,4 | 35 | 3,8 | 3 |

# DAILY MUD PROPERTIES : OTHER PARAMETERS

**Well:** 31/4-12 **PO:** 1

**Hole section :** 12 1/4" **WATER BASED SYSTEM**

| Date | Depth [m] | | Mud Type | Dens [sg] | Filtrate | | Filtcake | | HPHT | pH | Alcalinity | | | Inhib | K+ | CL- | Ca++ | Mg++ | Tot | Percentage | | | CEC | ASG | LGS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | API | HPHT | API | HPHT | Press/Temp | | Pm | Pf | Mf | Chem | | | | | hard | Solid | Oil | Sand | | | |
| | MD | TVD | | | [ml] | [ml] | [mm] | [mm] | [bar/DegC] | | [ml] | [ml] | [ml] | [Kg/m3] | [mg/l] | [mg/l] | [mg/l] | [mg/l] | [mg/l] | [%] | [%] | [%] | [Kg/m3] | [sg] | [Kg/m3] |
| 2005-02-27 | 2026 | 2026 | AQUA-DRILL | 1,50 | 3,2 | 0,0 | 1 | 0 | 0 / 0 | 8,1 | 0,0 | 0,0 | 0,7 | 177 | 93000 | 87000 | 0 | 0 | 860 | 15,3 | 0,0 | 0,5 | 32 | 3,7 | 4 |
| 2005-02-28 | 2062 | 2062 | AQUA-DRILL | 1,54 | 3,4 | 0,0 | 1 | 0 | 0 / 0 | 8,4 | 0,0 | 0,0 | 0,8 | 175 | 92000 | 87000 | 0 | 0 | 920 | 16,9 | 0,0 | 0,5 | 32 | 3,7 | 5 |
| 2005-03-01 | 2062 | 2062 | AQUA-DRILL | 1,54 | 3,6 | 0,0 | 1 | 0 | 0 / 0 | 8,2 | 0,0 | 0,0 | 0,7 | 172 | 90000 | 86000 | 0 | 0 | 800 | 16,9 | 0,0 | 0,5 | 32 | 3,8 | 5 |
| 2005-03-02 | 2062 | 2062 | AQUA-DRILL | 1,54 | 3,6 | 0,0 | 1 | 0 | 0 / 0 | 8,2 | 0,0 | 0,0 | 0,7 | 172 | 90000 | 86000 | 0 | 0 | 800 | 16,9 | 0,0 | 0,5 | 32 | 3,8 | 5 |
| 2005-03-03 | 2062 | 2062 | AQUA-DRILL | 1,16 | 3,6 | 0,0 | 1 | 0 | 0 / 0 | 8,1 | 0,0 | 0,0 | 0,7 | 160 | 82000 | 81000 | 0 | 0 | 600 | 16,9 | 0,0 | 0,0 | 0 | 3,2 | 2 |

**Hole section :** 8 1/2" **WATER BASED SYSTEM**

| Date | Depth [m] | | Mud Type | Dens [sg] | Filtrate | | Filtcake | | HPHT | pH | Alcalinity | | | Inhib | K+ | CL- | Ca++ | Mg++ | Tot | Percentage | | | CEC | ASG | LGS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | API | HPHT | API | HPHT | Press/Temp | | Pm | Pf | Mf | Chem | | | | | hard | Solid | Oil | Sand | | | |
| | MD | TVD | | | [ml] | [ml] | [mm] | [mm] | [bar/DegC] | | [ml] | [ml] | [ml] | [Kg/m3] | [mg/l] | [mg/l] | [mg/l] | [mg/l] | [mg/l] | [%] | [%] | [%] | [Kg/m3] | [sg] | [Kg/m3] |
| 2005-03-04 | 2125 | 2124 | AQUA-DRILL | 1,16 | 3,2 | 14,0 | 1 | 2 | 14 / 120 | 9,2 | 0,7 | 0,2 | 0,7 | 156 | 82000 | 80000 | 0 | 0 | 600 | 3,8 | 0,0 | 0,4 | 5 | 3,0 | 3 |
| 2005-03-05 | 2226 | 2225 | AQUA-DRILL | 1,17 | 3,4 | 14,0 | 1 | 2 | 14 / 120 | 8,9 | 0,2 | 0,1 | 0,6 | 149 | 79000 | 78000 | 0 | 0 | 800 | 4,6 | 0,0 | 0,4 | 10 | 2,8 | 5 |
| 2005-03-06 | 2226 | 2225 | AQUA-DRILL | 1,17 | 3,4 | 0,0 | 1 | 0 | 0 / 120 | 8,8 | 0,0 | 0,1 | 0,6 | 147 | 77000 | 78000 | 0 | 0 | 800 | 4,6 | 0,0 | 0,4 | 10 | 2,8 | 5 |
| 2005-03-07 | 2226 | 2225 | AQUA-DRILL | 1,17 | 3,2 | 0,0 | 1 | 0 | 0 / 120 | 9,0 | 0,0 | 0,0 | 0,8 | 147 | 77000 | 82000 | 0 | 0 | 800 | 4,7 | 0,0 | 0,4 | 10 | 2,8 | 4 |

**Hole section :** P&A **WATER BASED SYSTEM**

| Date | Depth [m] | | Mud Type | Dens [sg] | Filtrate | | Filtcake | | HPHT | pH | Alcalinity | | | Inhib | K+ | CL- | Ca++ | Mg++ | Tot | Percentage | | | CEC | ASG | LGS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | API | HPHT | API | HPHT | Press/Temp | | Pm | Pf | Mf | Chem | | | | | hard | Solid | Oil | Sand | | | |
| | MD | TVD | | | [ml] | [ml] | [mm] | [mm] | [bar/DegC] | | [ml] | [ml] | [ml] | [Kg/m3] | [mg/l] | [mg/l] | [mg/l] | [mg/l] | [mg/l] | [%] | [%] | [%] | [Kg/m3] | [sg] | [Kg/m3] |
| 2005-03-08 | 2052 | 2052 | AQUA-DRILL | 1,20 | 3,6 | 0,0 | 1 | 0 | 0 / 120 | 11,0 | 0,0 | 0,0 | 0,8 | 153 | 80000 | 88000 | 0 | 0 | 1200 | 5,3 | 0,0 | 0,4 | 15 | 2,8 | 5 |
| 2005-03-09 | 500 | 500 | AQUA-DRILL | 1,54 | 3,4 | 0,0 | 1 | 0 | 0 / 120 | 9,0 | 0,0 | 0,0 | 0,6 | 149 | 78000 | 80000 | 0 | 0 | 600 | 14,6 | 0,0 | 0,1 | 5 | 4,2 | 0 |
| 2005-03-10 | 500 | 500 | AQUA-DRILL | 1,54 | 3,4 | 0,0 | 1 | 0 | 0 / 120 | 9,0 | 0,0 | 0,0 | 0,6 | 149 | 78000 | 80000 | 0 | 0 | 600 | 14,6 | 0,0 | 0,1 | 5 | 4,2 | 0 |
| 2005-03-11 | 500 | 500 | AQUA-DRILL | 1,54 | 3,4 | 0,0 | 1 | 0 | 0 / 120 | 9,0 | 0,0 | 0,0 | 0,6 | 149 | 78000 | 80000 | 0 | 0 | 600 | 14,6 | 0,0 | 0,1 | 5 | 4,2 | 0 |
| 2005-03-12 | 0 | 0 | AQUA-DRILL | 0,00 | 0,0 | 0,0 | 0 | 0 | 0 / 0 | 0,0 | 0,0 | 0,0 | 0,0 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0 | 0,0 | 0,0 | 0 | 0,0 | 0 |

# TOTAL CONSUMPTION OF MUD ADDITIVES

**Well:** 31/4-12 **PO:** 1

| Section | Product/ Additive | Unit | Total Amount Used |
|---|---|---|---|
| 36" | BARITE | kg | 84000,00 |
| | BENTONITE | kg | 33000,00 |
| | DRILL WATER | l | 129002,00 |
| | LIME | kg | 175,00 |
| | SODA ASH | kg | 375,00 |

| Section | Product/ Additive | Unit | Total Amount Used |
|---|---|---|---|
| 17 1/2" | AQUADRILL | l | 300000,00 |
| | BARITE | kg | 23000,00 |
| | BENTONITE | kg | 20000,00 |
| | CMC EHV | kg | 1000,00 |
| | DRILL WATER | l | 399000,00 |
| | LIME | kg | 125,00 |
| | SODA ASH | kg | 200,00 |

| Section | Product/ Additive | Unit | Total Amount Used |
|---|---|---|---|
| 12 1/4" | AQUACOL D | kg | 3200,00 |
| | AQUADRILL | l | 310000,00 |
| | BARITE | kg | 159000,00 |
| | CITRIC ACID | kg | 250,00 |
| | KCL BRINE | l | 13000,00 |
| | KCL BRINE/AQUACOL D | l | 80000,00 |
| | KCL POWDER | kg | 1000,00 |
| | LIME | kg | 100,00 |
| | MIL-PAC | kg | 825,00 |
| | PERMALOSE HT | kg | 675,00 |
| | PREMIXED MUD | l | 100000,00 |
| | SODA ASH | kg | 225,00 |
| | SODIUM BICARBONATE | kg | 600,00 |
| | XANTHAN GUM | kg | 625,00 |

| Section | Product/ Additive | Unit | Total Amount Used |
|---|---|---|---|
| 8 1/2" | AQUACOL D | kg | 6700,00 |
| | BARITE | kg | 14000,00 |
| | CITRIC ACID | kg | 750,00 |
| | DRILL WATER | l | 12000,00 |
| | PERMALOSE HT | kg | 575,00 |
| | PREMIXED MUD | l | 250000,00 |
| | SODIUM BICARBONATE | kg | 625,00 |
| | XANTHAN GUM | kg | 275,00 |

Norsk Hydro

2005-11-16

## LOGGING INFORMATION

**Well:** 31/4-12 **PO:** 1 **RKB:**25,0 **m** **Rig:** DEEPSEA TRYM

**WL Logging Contractor:** SCHLUMBERGER **LWD Contractor:** BHI

**Official Data:** ☑

**Max. Well Deviation:** 3,71 [Deg]

| Bit Run | LWD Run | WL Run | Run Char | Hole Section | Track | Drilled Top [m MD] | Drilled Bottom [m MD] | Log Suite | Log Tool Offset [m] | Logging Start | End Last Logging | Measured Temp [Deg C] | Circ. Prior to Log [min] | Time Since Circulation [min] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 2 | | | 17 1/2" | | 312,0 | 1184,0 | MPR | | 2005-02-15 00:00 | 2005-02-17 00:00 | | | |
| 4 | 3 | | | 12 1/4" | | 1184,0 | 1924,0 | MPR | 245,62 | 2005-02-24 00:06 | 2005-02-26 09:57 | | | |
| 4 RR | 4 | | | 12 1/4" | | 1924,0 | 2062,0 | MPR | 2,65 | 2005-02-27 00:00 | 2005-02-28 05:02 | | | |
| 5 | 5 | | | 8 1/2" | | 2062,0 | 2226,0 | OTK | | 2005-03-04 00:00 | 2005-03-05 00:00 | | | |
| | | 1 | A | 8 1/2" | | 2150,0 | 2150,0 | GR- VSP | | 2005-03-06 00:00 | 2005-03-06 00:00 | 76,0 | | |
| | | 1 | A | 8 1/2" | | 2028,0 | 2215,0 | GR- MDT | | 2005-03-06 00:00 | 2005-03-06 00:00 | 82,0 | | |
| | | 1 | A | 8 1/2" | | 1747,0 | 2228,0 | DSI- ECS- GR- HRLA- PEX- SP | | 2005-03-06 00:00 | 2005-03-06 00:00 | 76,0 | | |

# DOWNTIME REPORT All installations

**Installation:** DST **Well:** 31/4-12 **PO:** 1

| Startdate | # | Sum hrs | Downtime Type | Responsible Contractor | Manufacturer | Short description | Equipment Type | Activity | Service Type | NSFI Code | NSFI Type | Serial Number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005-02-03 | 1 | 30,5 | Waiting on weather | | | | | RIG MOVE/SKIDDI | | | | |
| 2005-02-04 | 2 | 2,5 | Equipment failure | ODFJELL DRILLING BERGEN A/S | ODFJELL DRILLING BERGEN A/S | Failure on the main generator cooling system | SERVICE EQUIPMENT/SYS | OTHER ACTIVITY | RIG UTILITIES | 370.00 | Other Service Equipment/Sy | |
| 2005-02-06 | 3 | 6,5 | Equipment failure | BAKER HUGHES INTEQ | BAKER HUGHES INTEQ | Experienced a broken fuse in the sarabox the MWD. | SERVICE EQUIPMENT/SYS | DRILLING | MWD/LWD | 372.18 | Surface data aquisition | |
| 2005-02-06 | 4 | 6,0 | Equipment failure | BAKER HUGHES INTEQ | BAKER HUGHES INTEQ | Wrong setup of the MWD tool. | DRILLSTRING/DO EQUIPMENT | DRILLING | ELECTRIC LOGGING | 357.02 | MWD/LWD | 8431 |
| 2005-02-07 | 5 | 88,0 | Waiting on weather | | | | | CASING | | | | |
| 2005-02-11 | 6 | 2,0 | Equipment failure | BJ SERVICES | HALLIBURTON OILFIELD SERVICES NORWAY INC. | Breakdown of the cement recirculating pump. | SERVICE EQUIPMENT/SYS | CEMENTING | CEMENTING | 371.01 | Cement: Unit/pipe | |
| 2005-02-11 | 7 | 1,0 | Equipment failure | OCEANEERING A/S | OCEANEERING A/S | Breakdown of the hydralic system in the ROV. | SERVICE EQUIPMENT/SYS | CEMENTING | SUB-SEA EQUIPMENT | 370.00 | Other Service Equipment/Sy | |
| 2005-02-11 | 12 | 8,0 | Waiting for cement to cure | OCEANEERING A/S | | | | CASING | | | | |
| 2005-02-12 | 8 | 0,5 | Equipment failure | ODFJELL DRILLING BERGEN A/S | HYDRALIFT | Chain on the iron roughneck broke off. | PIPE HANDLING EQUIPMENT/SYS | OTHER ACTIVITY | OTHER | 341.00 | Vertical Pipe Handling | |
| 2005-02-13 | 11 | 2,5 | Equipment failure | ODFJELL DRILLING BERGEN A/S | HYDRALIFT | Change washpipe | PIPE HANDLING EQUIPMENT/SYS | DRILLING | DRILLING CONTRACTOI | 345.00 | Elevator | |
| 2005-02-13 | 9 | 2,0 | Equipment failure | ODFJELL DRILLING BERGEN A/S | HYDRALIFT | Was not able to rotate the pipe handling system on the top drive. | PIPE HANDLING EQUIPMENT/SYS | CEMENTING | DRILLING CONTRACTOI | 345.00 | Elevator | |
| 2005-02-13 | 10 | 0,5 | Equipment failure | ODFJELL DRILLING BERGEN A/S | HYDRALIFT | Troubleshooting on the torque wrench. | PIPE HANDLING EQUIPMENT/SYS | OTHER ACTIVITY | DRILLING CONTRACTOI | 345.00 | Elevator | |
| 2005-02-18 | 13 | 1,0 | Equipment failure | ODFJELL DRILLING BERGEN A/S | VARCO BJ OIL TOOLS | The BX elevator did not work | PIPE HANDLING EQUIPMENT/SYS | CASING | CASING RUNNING | 345.00 | Elevator | |
| 2005-02-18 | 14 | 2,5 | Equipment failure | ODFJELL DRILLING BERGEN A/S | HYDRALIFT | Troubleshoot on the active and passive heave compensators. | HOISTING EQUIPMENT | CASING | DRILLING CONTRACTOI | 304.00 | Heave Compensator (Traveling Block Mounted) | |

# DOWNTIME REPORT All installations

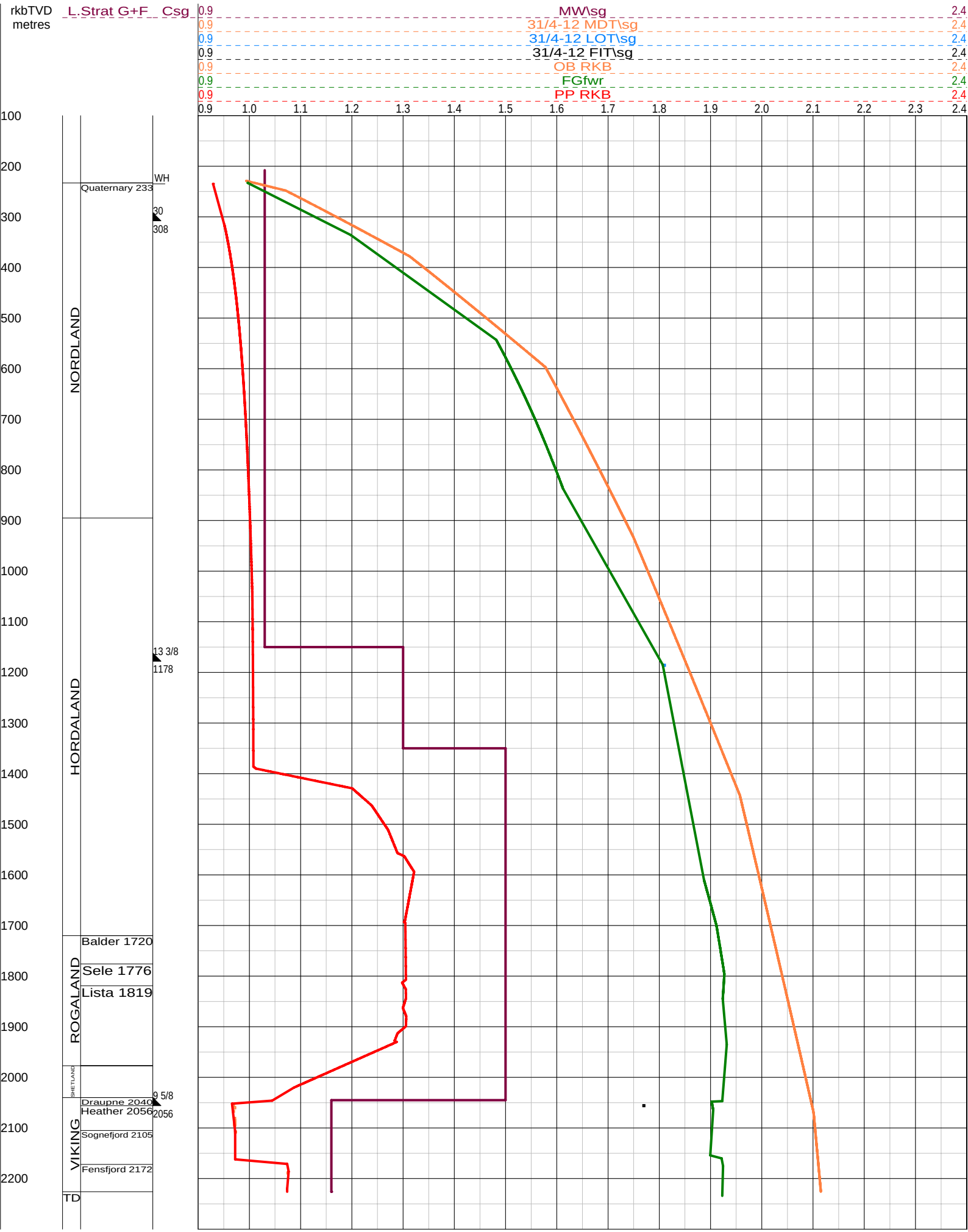
**Installation:** DST **Well:** 31/4-12 **PO:** 1

| Startdate | # | Sum hrs | Downtime Type | Responsible Contractor | Manufacturer | Short description | Equipment Type | Activity | Service Type | NSFI Code | NSFI Type | Serial Number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005-02-20 | 15 | 2,0 | Waiting on weather | | | | | BOP INSTALLATION AND TESTING | | | | |
| 2005-02-21 | 16 | 13,0 | Equipment failure | ODFJELL DRILLING BERGEN A/S | | Could not connect DSB riser joint to fixed x-over. Defect in assembling of kill and choke lines on the x-over | | BOP INSTALLATION AND TESTING | | | | |
| 2005-02-22 | 17 | 0,5 | Equipment failure | ODFJELL DRILLING BERGEN A/S | VARCO BJ OIL TOOLS | Hose to elevator squeezed in the bail link. | PIPE HANDLING EQUIPMENT/SYS | BOP INSTALLATION AND TESTING | DRILLING CONTRACTOI | 345.00 | Elevator | |
| 2005-02-22 | 18 | 32,5 | Equipment failure | ODFJELL DRILLING BERGEN A/S | CAMERON NORGE | Leakage in the slip joint and in a riser connection. | WELLCONTROL EQUIPMENT/SYS | DRILLING | SUB-SEA EQUIPMENT | 335.00 | Riser System (incl. K/C/B Lines) | |
| 2005-02-25 | 19 | 1,5 | Equipment failure | BAKER HUGHES INTEQ | BAKER HUGHES INTEQ | Problems to read correct depth on the Baker screen. | SERVICE EQUIPMENT/SYS | DRILLING | MUD LOGGING | 373.00 | Mud Logging | |
| 2005-02-27 | 20 | 1,0 | Equipment failure | BAKER HUGHES INTEQ | BAKER HUGHES INTEQ | Not able to read signals from the MWD tool. Restarted the mudpumps & the computer several times. | DRILLSTRING/DO EQUIPMENT | DRILLING | MWD/LWD | 357.02 | MWD/LWD | |
| 2005-03-02 | 21 | 17,5 | Other | NORSK HYDRO A/S | | Unable to set the 9 5/8" wear bushing | | WELLHEAD AND GUIDEBASE OPERATIONS | | | | |
| 2005-03-02 | 22 | 1,5 | Equipment failure | ODFJELL DRILLING BERGEN A/S | HYDRALIFT | Repaired broken guide roller on the intermedeate racking arm. | PIPE HANDLING EQUIPMENT/SYS | DRILLING | DRILLING CONTRACTOI | 341.00 | Vertical Pipe Handling | |
| 2005-03-05 | 23 | 0,5 | Equipment failure | ODFJELL DRILLING BERGEN A/S | HYDRALIFT | Changed hydraulic hose on the iron roughneck | PIPE HANDLING EQUIPMENT/SYS | DRILLING | DRILLING CONTRACTOI | 342.00 | Drillfloor Tubular Handling | |
| 2005-03-07 | 24 | 0,5 | Equipment failure | ODFJELL DRILLING BERGEN A/S | HYDRALIFT | Changed broken chain on the iron roughnck. | PIPE HANDLING EQUIPMENT/SYS | PLUG AND ABANDONMEI | DRILLING CONTRACTOI | 342.00 | Drillfloor Tubular Handling | |
| 2005-03-08 | 25 | 0,5 | Equipment failure | ODFJELL DRILLING BERGEN A/S | HYDRALIFT | Changed broken hydraulic hose on the upper racking arm. | PIPE HANDLING EQUIPMENT/SYS | PLUG AND ABANDONMEI | DRILLING CONTRACTOI | 342.00 | Drillfloor Tubular Handling | |
| 2005-03-10 | 26 | 9,5 | Waiting on weather | | | | | PLUG AND ABANDONMEI | | | | |

# DOWNTIME REPORT All installations

**Installation:** DST **Well:** 31/4-12 **PO:** 1

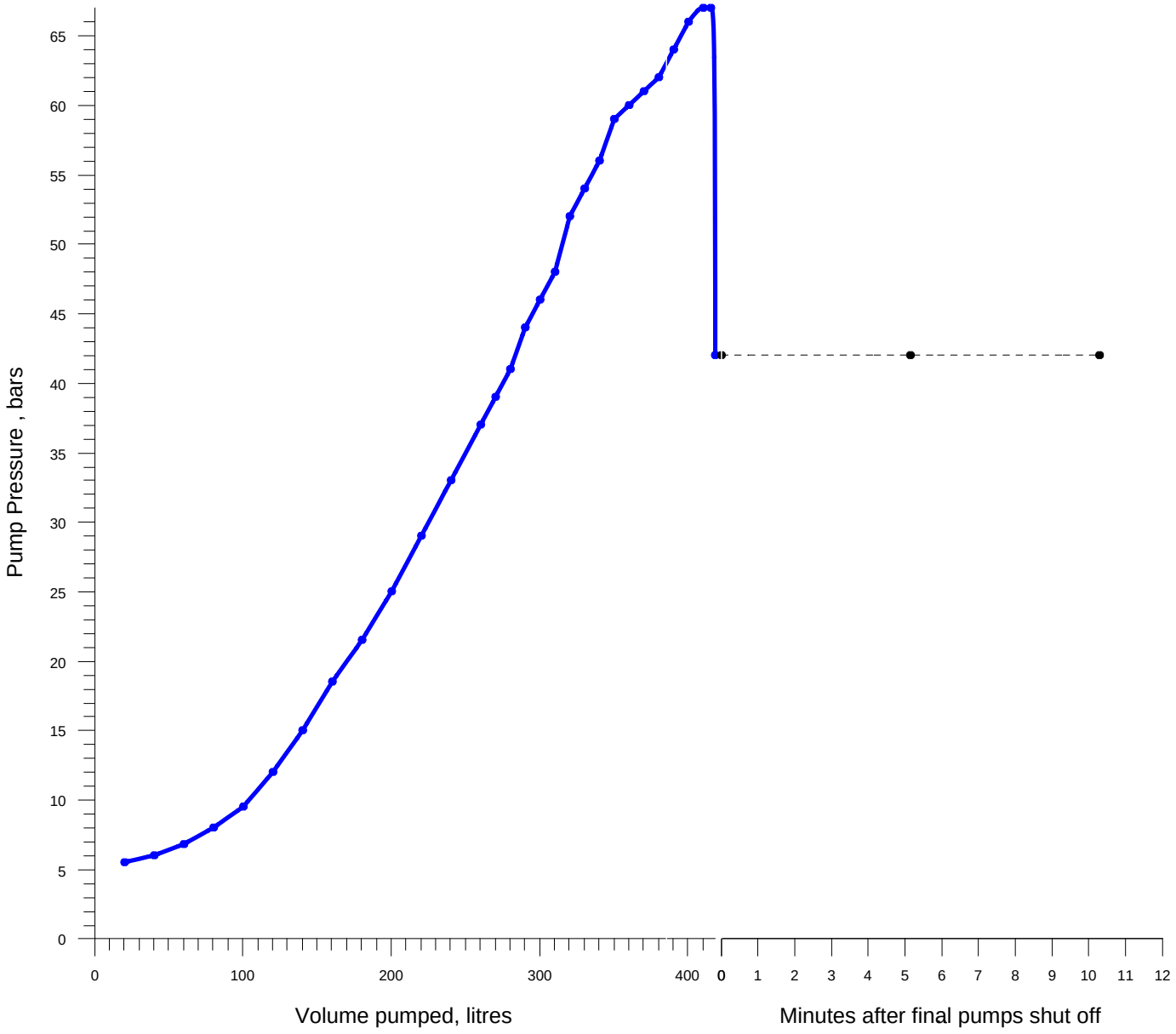
| Startdate | # | Sum hrs | Downtime Type | Responsible Contractor | Manufacturer | Short description | Equipment Type | Activity | Service Type | NSFI Code | NSFI Type | Serial Number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2005-03-11 | 27 | 2,0 | Other | ODFJELL DRILLING BERGEN A/S | | Observed 9 stands of 3 1/2" drill pipe came loose from its stored position in the finger board. Rearranged the stands back to stored position. | | PLUG AND ABANDONMEI | | | | |
| 2005-03-12 | 28 | 18,0 | Equipment failure | SMITH RED BARON | SMITH RED BARON | Unable to cut the 20" x 30" casing. | DRILLSTRING/DO EQUIPMENT | PLUG AND ABANDONMEI | CASING CUTTING | 357.04 | Casing cutting Equipment | |
| 2005-03-14 | 29 | 10,0 | Equipment failure | ODFJELL DRILLING BERGEN A/S | ODFJELL DRILLING BERGEN A/S | Testing friction loss across faileads due to locking. | MISCELLANEOUS EQUIPMENT/SYS | RIG MOVE/SKIDDI | ANCHOR HANDLING | 380.00 | Miscellaneous equipment, systems and services | |
| 2005-03-15 | 30 | 1,5 | Other | FUGRO GEOTEAM | | Had to change navigation package due to inteference with rig Deepsea Delta | | RIG MOVE/SKIDDI | | | | |
| | **Sum:** | 265,5 | | | | | | | | | | |
| | **Total Sum:** | 265,5 | | | | | | | | | | |




**Final Pore Pressure-, Fracture- and Overburden Gradients**

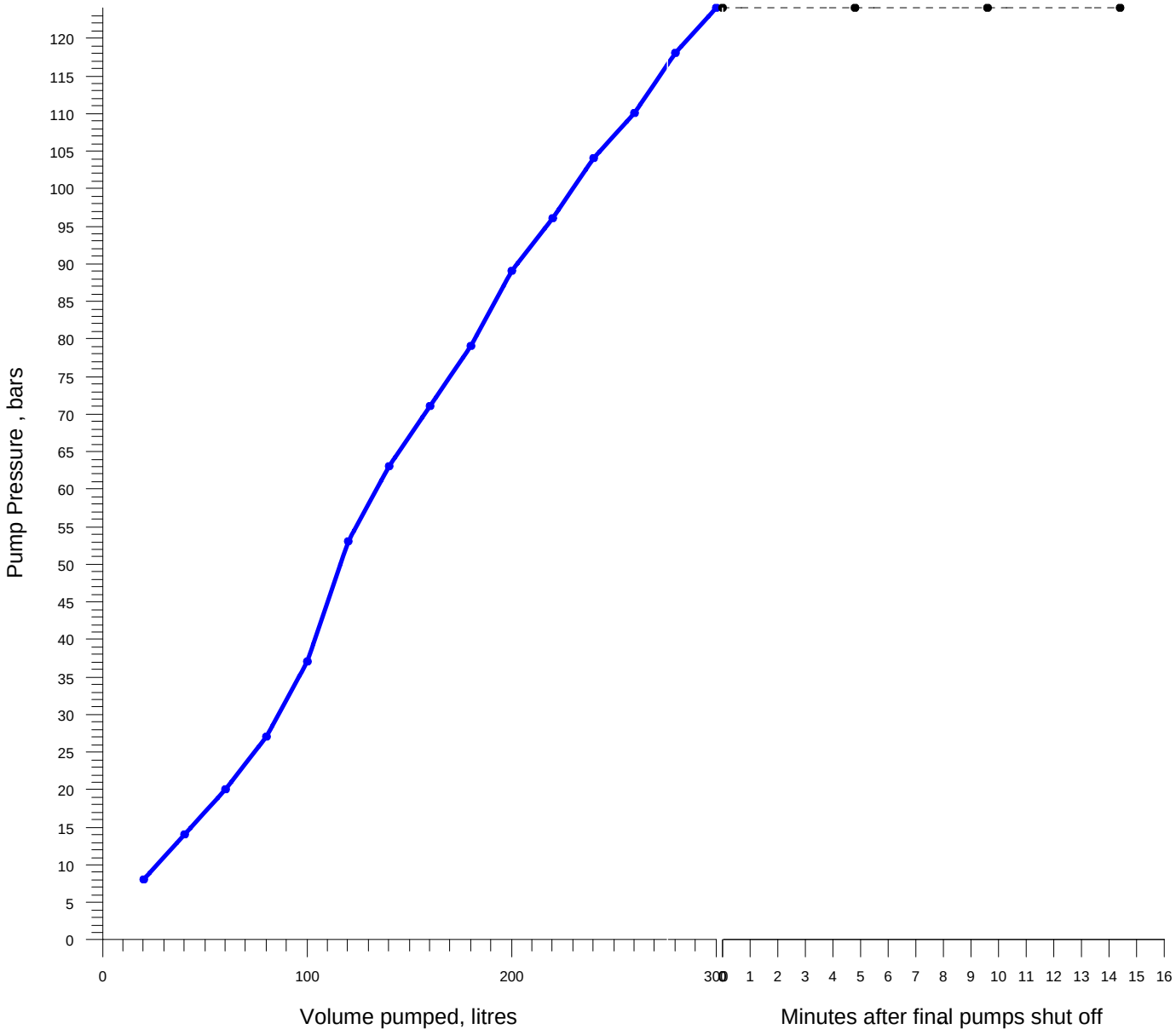
2005-11-17

| | | | | | |
|---|---|---|---|---|---|
| Well | **31/4-12** | Test type : | **LOT** | Test date : | 2005-02-24 |
| Rig DEEPSEA TRYM | Airgap (m) 25,00 | Water depth (m) | 210,00 | CsgOd" 20,000 | Hole angle (deg) 3 |
| Csg Shoe (mMD/mTVD) | 1177,80 / 1177,51 | OH depth (mMD/mTVD) | 1187,00 / 1186,70 | Lithology : | Clst |
| Dens1,30 | API WL(ml/30min) 3,50 | PV (cp) | 18,00 | YP (Pa) 15,00 | Gel0/Gel10 8,00 / 12,00 |
| Pump Rate (l/min) | 50,00 | Vol pumped (l.) | 418,00 | Vol bled back (l.) | 330,00 |
| Leakoff Pressure (bar) | 59,00 | Max pressure (bar) | 67,00 | Propagation press (bar) | |
| Test result (sg EMD) | 1,81 | Shut-in pressure | 38,20 | | |
| Comments | | | | | |



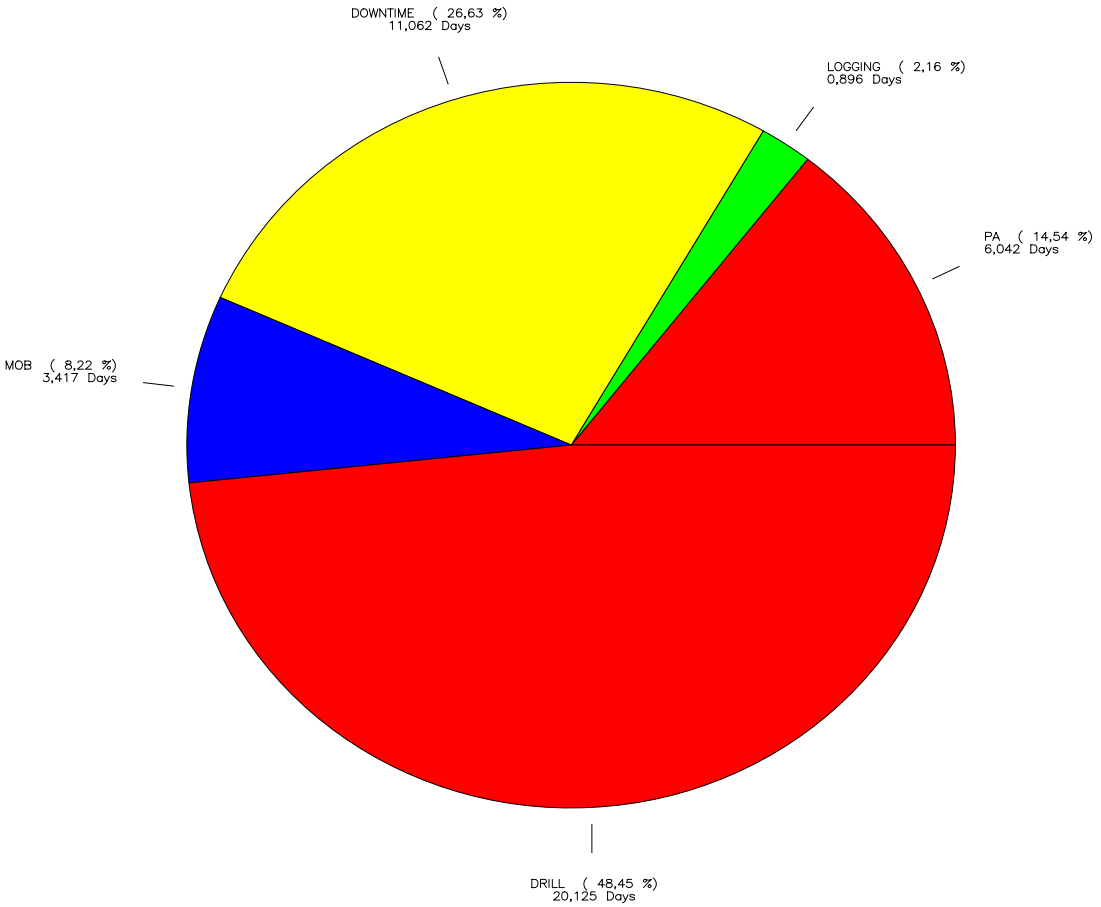

| | | | |
|---|---|---|---|
| End of Well Report **31/4-12** | Fig.: **2** | | **HYDRO** |

| | | | | | |
|---|---|---|---|---|---|
| Well | **31/4-12** | Test type : | **FIT** | Test date : | 2005-03-04 |
| Rig DEEPSEA TRYM | Airgap (m) 25,00 | Water depth (m) | 210,00 | CsgOd" 9,625 | Hole angle (deg) 1 |
| Csg Shoe (mMD/mTVD) | 2056,50 / 2056,00 | OH depth (mMD/mTVD) | 2065,00 / 2064,50 | Lithology : | Sst |
| Dens1,16 | API WL(ml/30min) 3,60 | PV (cp) | 14,00 | YP (Pa) 12,45 | Gel0/Gel10 3,00 / 8,00 |
| Pump Rate (l/min) | 50,00 | Vol pumped (l.) | 300,00 | Vol bled back (l.) | 300,00 |
| Leakoff Pressure (bar) | 124,00 | Max pressure (bar) | 124,00 | Propagation press (bar) | |
| Test result (sg EMD) | 1,77 | Shut-in pressure | 124,00 | | |
| Comments | | | | | |



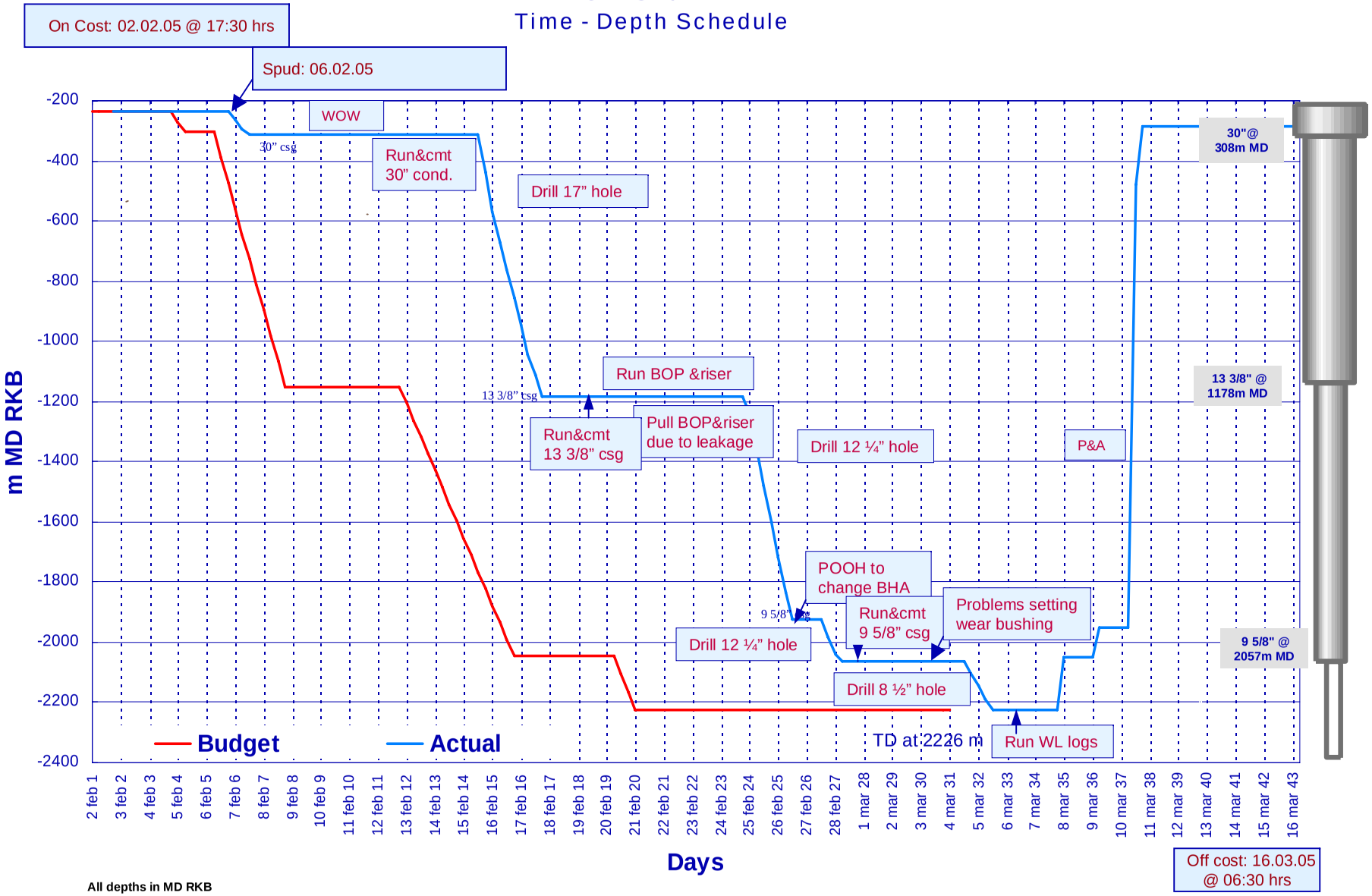

| | | | |
|---|---|---|---|
| End of Well Report **31/4-12** | Fig.: **3** | | **HYDRO** |

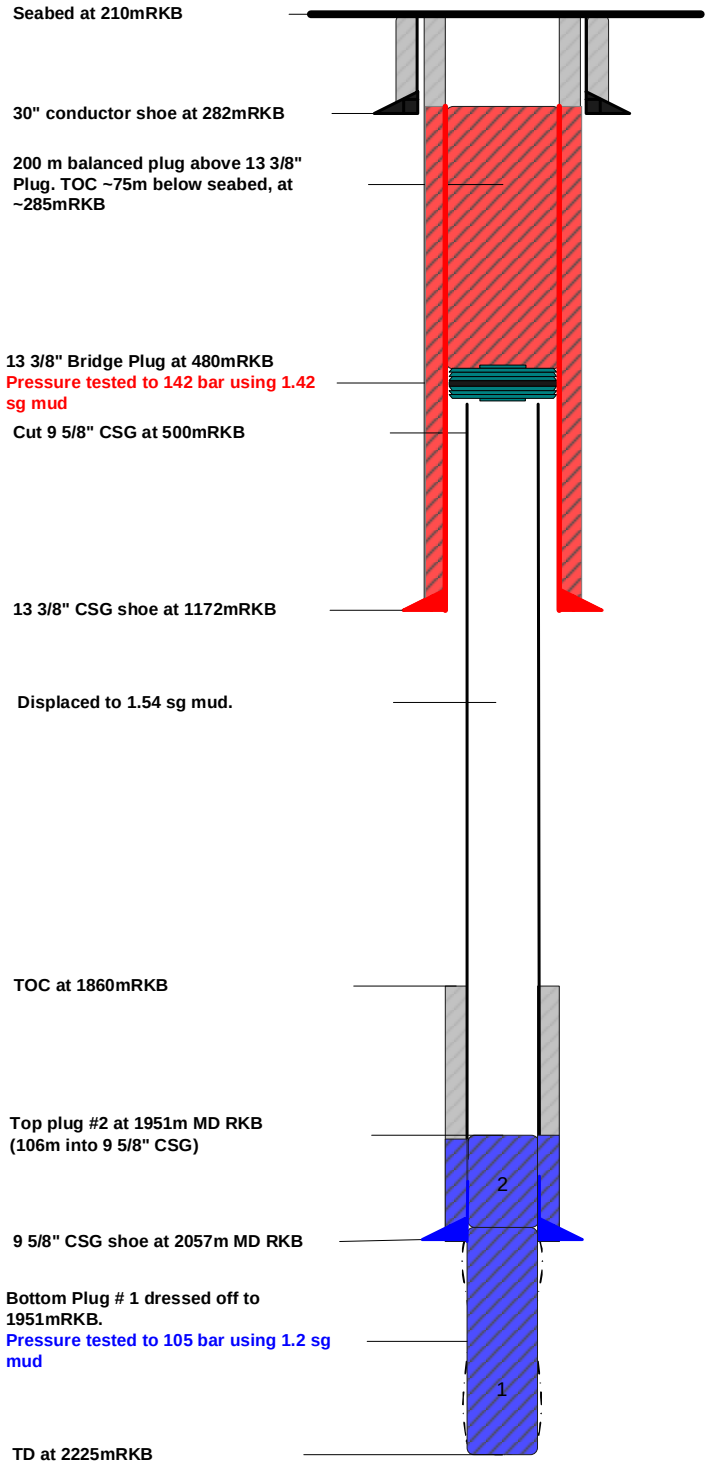
2005-11-17




| | | | |
|---|---|---|---|
| Figure 4 | | Time Distribution<br>31/4-12 | **HYDRO** |

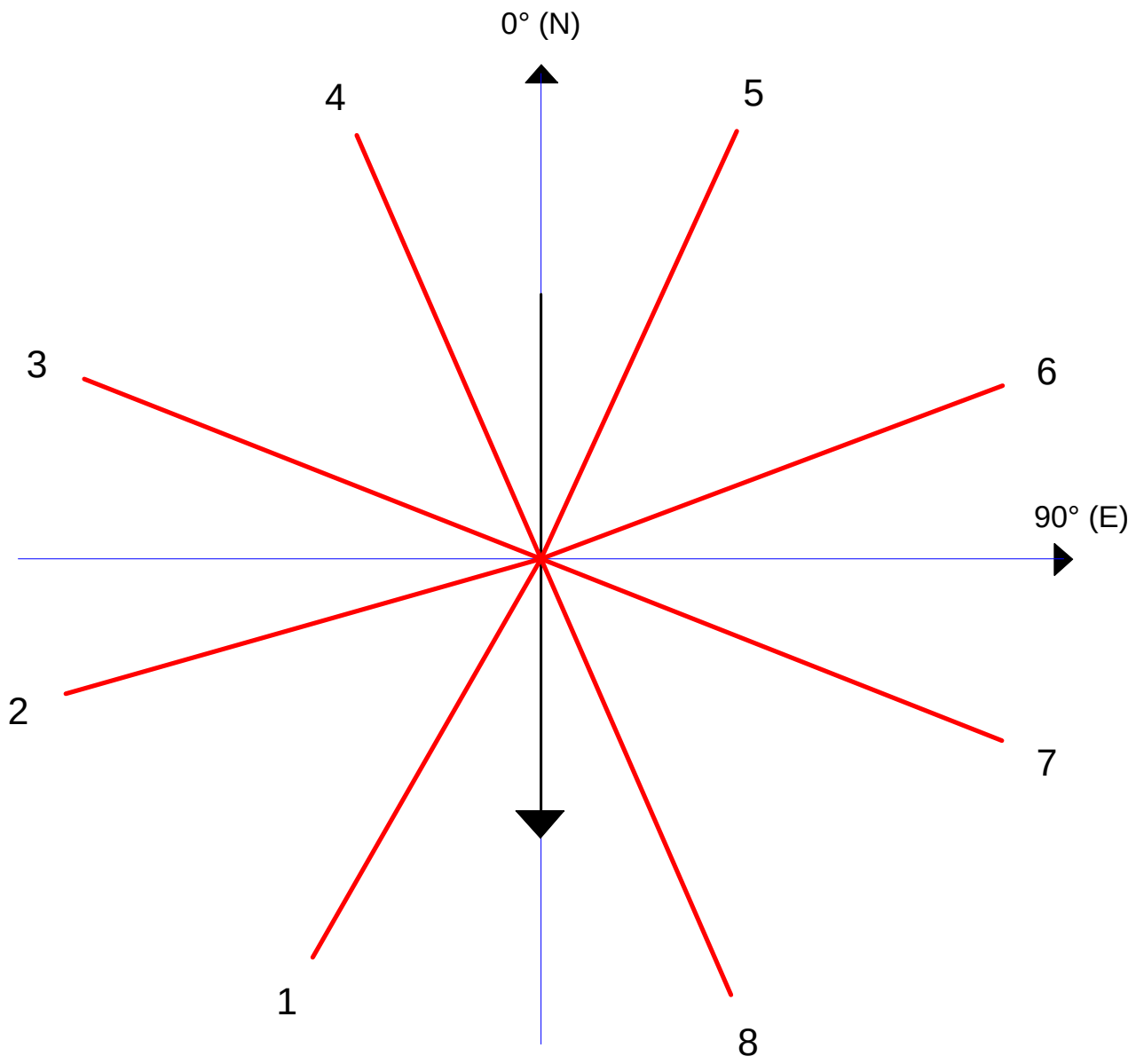
# Figure 5
# Well 31/4-12
## Time - Depth Schedule






| | DESCRIPTION OF BARRIER ELEMENTS | MONITORING OF BARRIER ELEMENTS |
|---|---|---|
| BARRIER # 1 | Production casing and cement<br><br>Cement plug in open hole/production casing | N/A after initial acceptance |

| | DESCRIPTION OF BARRIER ELEMENTS | MONITORING OF BARRIER ELEMENTS |
|---|---|---|
| BARRIER # 2 | Intermediate casing and cement<br><br>Cement plug in intermediate casing | N/A after initial acceptance |




RIGHEADING 180 DEG.

| ANCHOR NO | DIRECTION (DEG.) | LENGTH (m) |
|---|---|---|
| 1 | 208 | 1875 |
| 2 | 253 | 1917 |
| 3 | 293 | 1913 |
| 4 | 338 | 1898 |
| 5 | 23 | 1931 |
| 6 | 68 | 1921 |
| 7 | 113 | 1932 |
| 8 | 158 | 1954 |

| | | | |
|---|---|---|---|
| Figure 7 | | RIG ANCHORS<br>DEEPSEA TRYM<br>31/4-12 | **HYDRO** |

# SECTION C

# ATTACHMENTS

## Completion Log
## Site Survey Panel