Final Well Report 31/5-6

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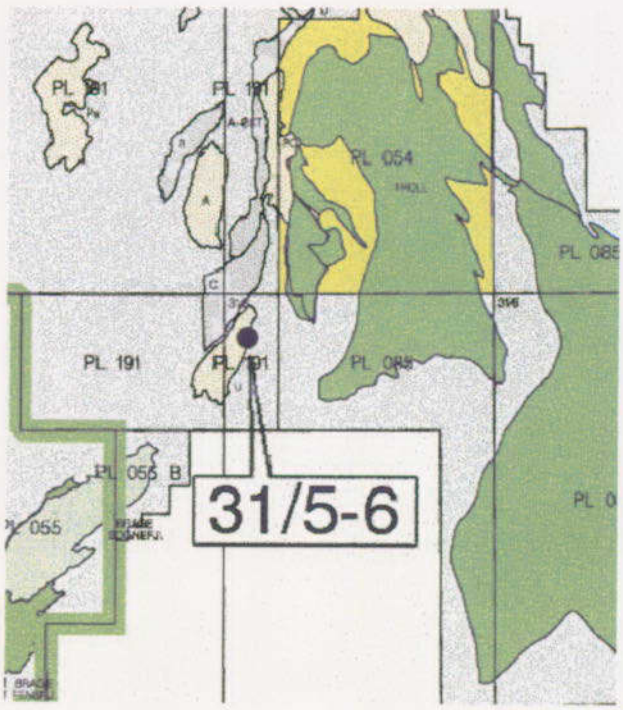

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NORSK HYDRO

FINAL WELL REPORT

WELL 31/5-6

MARCH 2001

E&P Norway
TROLL UTFORSKNING

Classific.: INTERNAL E&P

REPORT

Title: WELL 31/5-6
FINAL WELL REPORT

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LIST OF CONTENTS, WELL 31/5-6

PREFACE

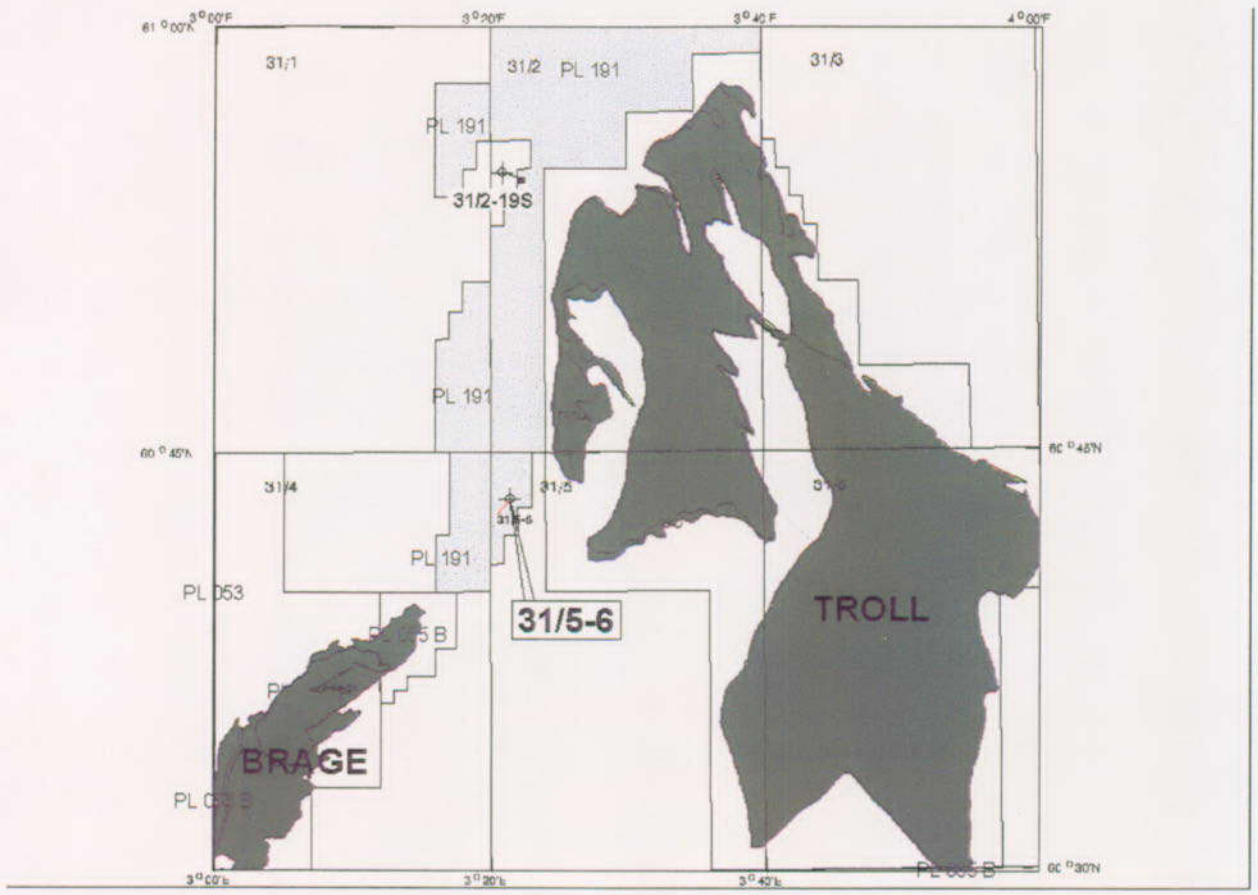
Licence PL 191 was awarded in 1993 with Hydro as Operator.

The licensees' percentage share is as follows

Norsk Hydro Produksjon a.s. (Operator)	30 %
Den Norske Stats Oljeselskap a.s.	15 %
Mobil Exploration Norway Inc.	10 %
SDØE	45 %

The well was drilled by Norsk Hydro Produksjon a.s, on behalf of the group, during July 2000 (see Location Map, page 3).

All depths in this report are in mMD RKB (RKB elevation is 26m) unless otherwise stated.



Location map: 31/5-6.

SUMMARY OF WELL DATA	
LOCATION:	60° 43' 19.69"N 03° 21' 26.32" E 6 732 050.3mN 519 495.0mE ED-50, UTM Zone 31, SM 3°E
OPERATOR: RIG: CONTRACTOR:	Norsk Hydro ASA Scarabeo 6 Saipem
KB ELEVATION (to MSL): WATER DEPTH (MSL):	26 m 328 m
START OF OPERATIONS: WELL SPUDDED: REACHED TD ON: COMPLETED: STATUS: FORMATION AT TD:	30.06.00 04.07.00 18.07.00 26.07.00 Plugged and abandoned Drake
TD DRILLER (mRKB): TD LOGGER (mRKB):	2370m MD, 2368m TVD N/A
DRILLING DEPTHS:	36" to 430.0 m 26" to 435.0 m 17 1/2" to 1201.0m 12 1/4" to 1709.0m 8 1/2" to 2370.0m
CASING DEPTHS:	30" at 430.0 m 13 3/8" at 1196.0 m 9 5/8" at 1704.0 m

SECTION A

GEOLOGY

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FIGURES

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1 Objectives

The objective for well 31/5-6 was to test the hydrocarbon potential of the U-structure in PL191.
- The primary target was to test the hydrocarbon potential of the Sognefjord Formation of the Viking Group
- The secondary target was to test the hydrocarbon potential of the Fensfjord Formation of the Viking Group
- The third target was to test the hydrocarbon potential of the Brent Group
- There was also a slight possibility for presence of hydrocarbons in the Våle Formation of the Rogaland Group.

2 Results

More than 400m of upper Jurassic Viking Group sediments was penetrated in well 31/5-6 on the U-structure. About half of the Viking Group is composed of the sandrich, shallow marine Sognefjord, Fensfjord and Krossfjord Fms., the remaining is assigned the Heather Fm. and a very thin Draupne Fm. The potential Sognefjord and Fensfjord reservoirs were found waterbearing. Weak shows were reported in the uppermost part of the Sognefjord Fm. The well did also test the Brent Group as a third objective. The Brent Group was 126m thick and consist of the Tarbert, Ness, Etive, Rannoch and Oseberg Fm. Weak shows were reported in the uppermost part of the Tarbert Formation. The main conclusion is that all prognosed reservoir intervals were waterbearing and well 31/5-6 is classified as a dry hole

FORMATIONS/GROUPS:	Depth mRKB	Depth m TVD MSL
Hordaland Gp	494m	468m
Balder Fm	1 528m	1 501m
Sele Fm.	1 589m	1 562m
Lista Fm	1 644m	1 618m
Våle Fm.	1 761m	1 734.5m
Shetland Gp.	1 789m	1 762m
Cromer Knoll Gp.	1 792m	1 765m
Draupne Fm.	1 795m	1 768m
Sognefjord Fm.	1 798m	1 771m
Heather B Fm.	1 862m	1 835m
Fensfjord Fm.	1 954m	1 927m
Krossfjord Fm.	2 056m	2 028m
Heather A Fm.	2112m	2084m
Tarbert Fm.	2214m	2187m
Ness Fm.	2226m	2198m
Etive Fm.	? 2292/2268m	? 2264/2240m
Rannoch Fm.	2302m	2274m
Oseberg Fm.	2317m	2289m
Dunlin Gp	2336m	2308m
TD	2370m	2341m

Table 2.1: Formation Tops 31/5-6

3 Biostratigraphy

The biostratigraphical evaluation of Well 31/5-6 was carried out by GeoStrat.
The analyses were based on studies of lithology, micropaleontology and palynology, which were performed on ditch cutting samples (DCS) and sidewall cores (SWC) covering the interval 1201 to 2370 m RKB.

Table 3.1 on the next page shows a summarised chronostratigraphic subdivision of the well. Further details may be found in the GeoStrat Report; "Norsk Hydro 31/5-6 Biostratigraphy of the Interval 1201m - 2370m."

The oldest sediments studied are from the Dunlin Group, Drake Fm., deposited in a marine, inner shelf setting. During the period Early Toarcian to Late Oxfordian-Early Kimmeridgian the Oseberg, Rannoch, Etive, Ness and Tarbert Formations of the Brent Group and the Heather, Krossfjord, Fensfjord and Sognefjord Formations of the Viking Group were continuously deposited in this main setting.

Following a hiatus, sediment accumulation resumed in a marine, mid shelf setting with the Draupne Formation of Early to Middle Volgian age.

Following a hiatus during latest Middle Volgian to Hauterivian times, deposition resumed with Cromer Knoll Group sediments of Early Barremian age. Deposition was in a marine, inner shelf setting, and continued after a further hiatus with sediments of Aptian age.

A further period of erosion and/or non-deposition followed, with a brief resumption of deposition of Shetland Group sediments during Early-Late Maastrichtian times.

Following a hiatus during Early Paleocene times, deposition resumed with the Rogaland Group; Våle, Lista, Sele and Balder Formations during late Paleocene to earliest Early Eocene times, and continued with the Hordaland Group during Early to Middle Eocene times. The environment was marine, mainly outer shelf to upper bathyal setting.

Following a hiatus during late Eocene, deposition continued during Early Oligocene in the same setting as above. The youngest sediments studied in the well are from the Hordaland Group of this age.

CHRONOSTRATIGRAPHICAL BREAKDOWN, WELL 31/5-6

Period/Epoch	Age	Depth m RKB
Tertiary	Early Oligocene	1220
----------	unconformity	----------
	Middle Eocene	1290
	Early Eocene	1420
	Late Paleocene	1630
----------	unconformity	----------
Late Cretaceous	Late-Early Maastrichtian	1790
----------	unconformity	----------
Early Cretaceous	Aptian	1792,5 (log)
----------	unconformity	----------
	Early Barremian	1793 (swc)
----------	unconformity	----------
Late Jurassic	Middle Volgian	1797 (swc)
	Early Volgian	1798 (swc)
----------	unconformity	----------
	Early Kimmeridgian - Late Oxfordian	1803 (swc)
	Late Oxfordian	1840 (swc)
	Middle Oxfordian	1875
	Early Oxfordian	1925
Middle Jurassic	Late Callovian	1947
	Middle Callovian	1975
	Early Callovian	2180
	Late Mid Bathonian	2190
	Early Bathonian - Late Bajocian	2215
	Late Bajocian	2225
	Early Bajocian	2240
Middle-Early Jurassic	Aalenian-Late Toarcian	2315 (swc)
Early Jurassic	Early Toarcian	2360

Table 3.1 : Chronostratigraphy

4 Lithostratigraphy

This summary is compiled predominantly from ditch cuttings descriptions. 30 sidewall cores were obtained from the well, of which two were empty, see Appendix 1. MWD logs were used to aid lithological interpretation and the placement of formation boundaries. The depths are in mMD RKB and mTVD RKB (RKB is 26m).
The well was drilled with returns to seabed from the seafloor at 354 m to 1201 m before setting 13 3/8" casing at 1196m. Lithology interpretation through this interval is based on MWD logs and drilling parameters. The first drill cuttings samples were taken at 1210 m.

4.1 Nordland Group 354 - 494 m MD RKB

354 - 494m MD RKB
This interval was drilled with returns to seabed, and based on MWD log and drilling parameters, is interpreted to consist of clay with minor sand beds.

4.2 Hordaland Group 494 - 1528 m MD RKB (494-1527m TVD RKB)

494-1201 m MD RKB
This interval was drilled with returns to seabed.Based on MWD and drilling parameters the interval consist of predominantly clay/claystones with minor sand beds.

1201-1289 m MD RKB
This interval comprises Claystones with minor Limestones, and traces of Sandstones.

Claystones:	medium grey - medium dark grey, light brown grey - brown grey, slightly sticky, subblocky, soft-firm, slightly calcareous, silty,occasional very fine sandy,occasional glauconittic, Trace micromicaceous,Trace micropyrite.
Limestones:	white - very light grey,occasional black spechs, blocky, predominantly cryptocrystalline,occasional microcrystalline,generally soft to hard.
Sandstones:	Clear translucent Quartz, very coarse ,angular, well sorted, hard,silica cemented,with mica laminations

1289 - 1505m (1289-1504m TVD RKB)
Claystones with stringers of Limestones and rare laminae of Sandstones.

Claystone:	generally greenish grey to light olive grey,occasionally dark greenish grey,blocky to fissile, soft - firm, generally non calcareous, in parts slightly calcareous, silty,glauconittic, trace micromicaceous and rare micropyrittic.

Limestone: white - yellow grey- very light grey,generally cryptocrystalline,occasional microcrystalline, firm.

Sand: light grey-lt brownish grey,clear to milky Quartz,generally fine,subangular to subrounded,occasional rounded,well sorted, friable to loose,traces of calcareous dolomittic cement,traces of silica cement.

Age: Eocene

1505 - 1528m (1505-1527mTVD RKB)

Claystones : moderately brown,blocky,firm, non calcareous, in parts silty.

4.3 Rogaland Group 1528 - 1789m (1527-1788mTVD RKB)

The Rogaland Group consists of the Balder, Sele, Lista and Våle Fms.

Age: Early Eocene - Late Paleocene

Balder Formation 1528 - 1589m (1527-1588m TVD RKB)

Claystones with tuffaceous Claystones and stringers of Limestones

Claystone: predominantly medium dark grey,minor green grey- blue grey,traces olive grey,subfissile to blocky, firm, non calcareous-calcareous, occasionally slightly silty, Trace micromicaceous,rare Trace Glauconite.

Tuffaceous Claystones: varicolored light olive grey,dark green grey,grey,blue grey,subfissile-fissile, firm, Tuff with black shards, micromicaceous,Trace Glauconite,Trace Pyrite.

Limestone: white - light grey,blocky-amorph,locally pasty,generally microcrystalline soft-firm,occasionally argillaceous.

Age: Early Eocene

Sele Formation 1589 - 1644m (1588-1643 m TVD RKB)

Claystones with rare Limestone and Dolomite stringers.

Claystone: olive grey - brown grey-medium dark grey, blocky -amorphous firm,non calcareous- calcareous,silty,micromicaceous.

Limestones: white - light grey, pasty,amorphous,firm,arillaceous.

Dolomites: moderate brown,cryptocrystalline,hard.

Age: Early Eocene - Late Paleocene

Lista Formation 1644 - 1761m (1643-1759m TVD RKB)
Claystones with stringers of Limestones.

Claystone:	olive grey - medium dark grey, green grey - greenblack,light olive grey,brown gray- light brown grey, blocky - subblocky,firm, non - slightly calcareous,occasional calcareous,silty,micromicaceous, Trace Glauconite.
Limestone:	white-light gray,microcrystalline,firm-hard, occasional argillaceous.
Age:	Late Paleocene

Våle Formation 1761 - 1789m (1759-1788m TVD RKB)
Claystones with stringers of Limestones.

Claystone:	Varicolored green grey - medium dark grey,medium grey-dark grey,green black-grey black, blocky, firm,none calcareous - very calcareous, in part silty.
Limestone:	pale yellow brown, platy-subblocky,moderate hard,microcrystalline.
Age:	Late Paleocene

4.4 Shetland and Cromer Knoll Group 1789 - 1795m (1788-1793m TVD RKB)

Claystone:	pale green,moderate yellowish brown-moderate brown, blocky- soft,calcareous-very calcareous,grading marl,Trace Mica, silty
Limestone:	white - off white, blocky - platy, firm - soft,microcrystalline.
Age:	Maastrichtian - Aptian - Barremian

Viking Group 1795 - 2214m (1793-2212m TVD RKB)

Predominantly Sandstones and Claystones.
Age: Mid Volgian - Mid Bathonian

Draupne Formation 1795 - 1798m TVD RKB)
Claystones: moderate yellow brown, blocky, soft, calcareous, silty, carbonaceous, micaceous.
Age: Mid - Early Volgian

Sognefjord Formation:1798-1862m (1796-1860m TVD RKB)
Sandstones(C -sand):
light grey,clear - milky Quartz,fine -very coarse,predominately medium-coarse, subangular-subrounded,moderately sorted,loose,Trace carbonaceous,rare Pyrite.

Sandstones(Calc):
very light grey,clear - milky Quartz,fine to very coarse, angular- subrounded, poor to moderate sorted,hard,calc cemented,Trace argillaceous.

Sandstones(M-sand):
medium dark grey,clear - milky Quartz,very fine-fine, subangular-subrounded, moderate sorted,friable,slightly calcareous,silty,very argillaceous grading Claystone, micromicaceous,carbonaceous.

Age: Early Kimmeridgian - Late Oxfordian

Heather "B" Formation :1862 - 1954m (1860 - 1953m TVD RKB)

Siltstones with stringers of Limestones.

Siltstones : medium dark grey-olive grey,becoming medium light grey-light grey towards base, blocky-amorphous,soft-firm,occasional moderately hard,generally non-slightly calcareous, in part very calcareous grading Marl,locally very argillaceous grading Claystone,locally very fine sandy,rare coarse,grading Sandstone, carbonaceous, micromicaceous, Trace Pyrite.

Limestones: white-light grey,blocky,amorphous,cryptocrystalline,moderately hard,generally sandy.

Age: Late Oxfordian - Late Callovian

Fensfjord Formation : 1954 - 2056m (1953 - 2054m TVD RKB)

Sandstones with Siltstone beds and stringers of Limestones.

Sandstone: light grey - very light grey, clear translucent Quartz,very fine - coarse, predominantly very fine - medium, subangular - subrounded,poor to moderately sorted,friable - loose,occasional calcareous cement,general argillaceous matrix,locally very silty grading Siltstone, Mica, carbonaceous,locally micropyrittic.

Siltstone : olive grey,amorphous,soft,sticky,calcareous,very argillacerous,very fine sandy,Trace micromicaceous,rare carbonaceous material.

Limestone : olive grey-white,blocky-amorphous,cryptocrystalline, moderately hard,very argillaceous grading Marl.

Age: Late - Mid Callovian

Krossfjord Formation : 2056 - 2112m (2054 - 2110m TVD RKB)

Sandstone: light grey,clear-milky Quartz,very fine - coarse,predominantly fine-medium, angular-subrounded,moderately sorted,loose, rare hard calcareous cemented grading Limestone, silty,rare micaceous,rare carbonaceous,rare pyrite nodules.

Age: Mid Callovian

Heather "A"Formation 2112 - 2214m (2110 - 2212m TVD RKB)
Siltstones with stringers of Limestones.
Siltstone: olive grey,blocky-amorphous,sticky,soft,slightly calcareous,generally argillaceous grading Claystones in parts,occasional very sandy grading Sandstone,very fine medium,micromicaceous,Trace carbonaceous,Trace glauconittic,rare Trace pyrittic.
Limestone: white - very light grey, blocky, moderately hard,locally argillaceous.
Age: Mid Callovian - Mid Bathonian

4.5 Brent Group 2214 - 2336m (2212 - 2333m TVD RKB)

Sandstones and Siltstones with minor Coal beds.
Age: Early Bathonian to Aalenian-Late Toarcian.

Tarbert Formation : 2214 - 2226m (2212 - 2224m TVD RKB)
Sandstones: light grey-brown grey,clear-milky Quartz,very fine - coarse,predominantly fine,angular - subrounded,moderately sorted, friable-loose,Trace calcareous cement,Trace Kaloline cement,trace micaceous,Trace carbonaceous,Trace silty.
Age: Early Bathonian - Late Bajocian.

Ness Formation : 2226 - 2292/2268m (2224 - 2289/2265m TVD RKB)
Sandstones and Siltstones with Coal seams.
Sandstone : very light grey- olive grey,clear-milky Quartz,very fine - coarse, predominantly very fine to medium,subangular-subrounded,occasional angular,moderately - well sorted, friable-loose,Trace calcareous/Kaolinite cement,Trace micaceous,Trace carbonaceous.
Siltstone : olive grey-dusky yellow brown,brown black,blocky-fissile,firm,non calcareous, micromicaceous,carbonaceous-very carbonaceous becoming bituminous siltstone,gen very argillaceous partly grading Claystone,Trace Pyrite
Coal : black-brown black,gen blocky-fissile,generally dull,occasional brittle, vitreous, in parts earthy,generally argillaceous grading Bituminous Shale.
Age: Late - Early Bajocian.

Etive Formation : 2292/2268 - 2302m (2289/2265 - 2299m TVD RKB)
Sandstones: light grey,clear-milky Quartz,very fine-coarse,generally medium - coarse, angular - subrounded,moderately sorted,loose,Trace Kaoline cement,general Trace micaceous,Trace carbonaceous.
Age: Early Bajocian.

Rannoch Formation : 2302 - 2317m (2299 - 2315m TVD RKB)

Siltstones: light olive grey,subfissile-fissile,firm, calcareous,micromicaceous,locally sandy grading Sandstone.

Age: Early Bajocian.

Oseberg Formation : 2317 - 2336m (2315 - 2333m TVD RKB)

Sandstone: light grey - olive grey,clear-milky Quartz,very fine-very coarse,predominantly medium-coarse,angular-subrounded,poorly sorted,loose,general Kaoline cemented,micaceous,Trace carbonaceous.

Age: Aalenian-Late Toarcian.

4.6 Dunlin Group 2336- 2370m (2333 - 2367m TVD RKB)

Drake Formation: 2336 - 2370m (2333 - 2367m TVD RKB)

Alternating Sandstones and Siltstones with stringers of Limestones.

Sandstones :light grey-olive grey,clear - milky Quartz,very fine - coarse,predominantly fine - medium,subangular - subrounded,poorly sorted,friable -loose, generally very argillaceous,rare micaceous,rare carbonaceous.

Siltstones: olive grey,subfissile - fissile,firm,non calcareous , micromicaceous,very sandy, very fine,Trace carbonaceous.

Age: Aalenian to Late - Mid Toarcian.

5 Hydrocarbon Shows

The evaluation of hydrocarbon shows at the wellsite was carried out in a conventional manner. A detector measuring the total gas by volume (THA-Sperry Sun) and a separate cromatograph detector recording the volume of C1 through nC4, were operational below 1201m down to the TD of the well at 2370m.

Hydrocarbon shows on ditch cuttings and sidewall cores were evaluated according to procedures described in Norsk Hydro's "Wellsite Geologist's Manual".

Description of shows on depth:

1817-1827m, Sognefjord Formation in Calcareous Sandstone:
Occassional trace of patchy weak white direct flourescence, moderately streaming white crushed flourescence cut, no visible residual.

@2214m, near topTarbert Formation in Calcareous cemented Sandtone:
Friable light brown oil stain on Quartz grains, dull or direct fluorescence, moderately streaming yellow to white flourescence, no visible cut, black to white fluorescence residual, No Visible residual.

5.1 Gas Record

For gas record in the well, see "Gas Ratio Log" in Appendix II, and End of Well Report from Sperry Sun, Halliburton, Well 31/5-6.

5.2 Oil stain and Fluorescence

A summary of the observed shows is given in Table 5.2 below:

INTERVAL (mRKB)	SOURCE	LITHOLOGY	SHOWS DESCRIPTION
1817-1827m	Cuttings	Calc. Sandstone	Occasional trace of patched weak white direct fluorescence, moderately streaming white crushed fluorescence cut, no visible residual.
2214m	Cuttings	Calc. cement Sandstone	Friable light brown oil stain on Quartz grains, dull or direct fluorescence, moderately streaming yellow to white fluorescence, no visible cut, black to white fluorescence residual, no visible residual.

Table 5.2 Shows summary 31/5-6

6 Coring

6.1 Conventional Cores

No conventional cores were cut.

6.2 Sidewall Cores

Ran CST for 30 sidewall cores. Recovered 28 out of 30 samples. See Appendix 1 for description.

7 Logging

7.1 MWD Logs

An MWD service (Schlumberger/Anadrill Drilling and Measurement) yielding gamma ray, resistivity and survey measurements was run in all sections. Furthermore, density/neutron and a resistivity at bit was run in the 8.5" hole (reservoir section), see also ref. 8.1.

Run no.	Log Depth Interval (m MD RKB)	Hole section	Tool	Comments
1	356 - 430	36"	CDR	
2	430 - 1201	17 1/2"	CDR	
3	1201 - 1709	12 1/4"	CDR	
4	1609 - 2370.0	8 1/2"	VIS675/ADN/RAB	

Table 7.1: MWD/LWD logs, well 31/5-6

Detailed MWD results can be found in the report "End of Well Report, MWD, for Norsk Hydro, Well 31/5-6."

7.2 Wireline Logs

The following table is a summary of wireline logs run in the well and shows log type, date run, logged intervals and run number for each log.

Logs	Date	Logged interval (mRKB)	Run
CST-GR	19/7-2000	1775.0 - 2363.0	1A

Table 7.2: Wireline logs 31/5-6

7.3 MDT Sampling

No MDT sampling was performed in the well

7.4 Velocity Surveys

No velocity survey was performed in the well.

7.5 Bottom Hole Temperatures From Wireline Logs

Bottom hole temperature was not measured from wireline logs in the well.

8 Petrophysical Results

8.1 Summary

Well 31/5-6 penetrated 3 predicted reservoir targets; Sognefjord Formation and Fensfjord Formation in the Viking Group and the Brent Group. Sandstones of good to excellent quality were encountered in the the Sognefjord, Fensfjord and Krossfjord Formations. In the Brent Group, the sandstones in Tarbert, Ness, Etive and Oseberg Formations were of fair to good quality. All reservoirs were water-wet.

The reservoirs were evaluated with respect to average effective porosity, average effective water saturation and net sand. The petrophysical evaluation was based on log analysis.

8.2 Log Data Acquisition

Tables 7.1 and 7.2 summarize the logs aquired in well 31/5-6.

There were no significant operational problems associated with the logging. The well was drilled with KCl mud. Anadrill's MWD/LWD tools were run throughout the well, and the overall log quality was very good. An Azimuthal Density Neutron was run over the reservoir section in the 8 1/2" hole. To enable early picking of coring points in the reservoir section, the Resistivity at Bit tool was run directly at bit, providing resisitivities and gamma ray measurements within 1.61 m of the bit.

Reservoir logging was performed using Anadrill's Vision675 tool. The phase resistivity has a higher accuracy and vertical resolution, but a shallower and smaller depth of investigation than the attenuation resistivity. The logs clearly show that the phase resistivity has a higher vertical resolution than the attenuation resistivity. The 2 MHz resisitivity is more influenced by mud invasion (KCl) than the 400 kHz resistivity. The 400 kHz (low) frequency logs were applied as input to the petrophysical model.

All data were subjected to quality control. A continuous composite log was generated by editing, depth shifting and merging the individual MWD runs.

8.3 Core Data

No cores were cut in this well. CST was run on wire to collect sidewall cores, see Table 7.2.

8.4 MDT Pressure and Sampling

No MDT (Modular formation Dynamics Tester) or DST (Drill Stem Test) were carried out in well 31/5-6

8.5 Petrophysical Evaluation Procedure

The reservoirs consist of interbedded sandstones, shales and cemented sandstones. In the Brent Group, coals were distinguished using the density log. Log analysis was conducted using an effective porosity approach with shale volume determined from the gamma ray log and the neutron-density log, porosity from the density log and water saturation from the Indonesia equation The log derived porosity was not overburden corrected.

Net reservoir cutoff criteria were defined using shale volume and effective porosity as discriminators. Likewise, net pay criteria were defined using net reservoir and effective water saturation. The following cutoff criteria were applied to evaluate the reservoirs with respect to average effective porosity, average effective water saturation and net reservoir:

Cutoff criteria:
net sand $> 12\% \ \phi_e$ and $< 50\% \ V_{sh}$
net pay $> 12\% \ \phi_e$ and $< 50\% \ V_{sh}$ and $< 60 \% \ S_{we}$

8.6 Petrophysical Results

The results are reported as averages according to the zonation and graphically displayed as a computer processed interpretation (CPI), see Tables 8.1 and 8.2 and Figures 8.1 to 8.4.

The resisitivity logs and cuttings confirmed that the reservoirs were water wet. Hydrocarbon-water contacts were thus not encountered in this well.

Zonal Averages, Well 31/5-6					
Formation	**Interval (m MD RKB)**	**Gross (m MD RKB)**	**NTG (frac)**	**Phie (frac)**	**Swe (frac)**
Sognefjord	1798 - 1862	64.0	0.83	0.31	1.0
Fensfjord	1954.5 - 2055	100.5	0.50	0.24	1.0
Krossfjord	2055 - 2112	57.0	0.93	0.26	1.0
Tarbert	2214.5 - 2226	11.5	0.65	0.22	1.0
Ness	2226 - 2292	66.0	0.59	0.22	1.0
Etive	2292 - 2302	10.0	0.69	0.24	1.0
Oseberg	2317.5 - 2336	18.5	0.67	0.21	1.0

Table 8.1: Zonal averages in well 31/5-6. Thin Etive Formation

Zonal Averages, Well 31/5-6					
Formation	**Interval (m MD RKB)**	**Gross (m MD RKB)**	**NTG (frac)**	**Phie (frac)**	**Swe (frac)**
Sognefjord	1798 - 1862	64.0	0.83	0.31	1.0
Fensfjord	1954.5 - 2055	100.5	0.50	0.24	1.0
Krossfjord	2055 - 2112	57.0	0.93	0.26	1.0
Tarbert	2214.5 - 2226	11.5	0.65	0.22	1.0
Ness	2226 - 2268	42.0	0.42	0.23	1.0
Etive	2268 - 2302	34.0	0.82	0.22	1.0
Oseberg	2317.5 - 2336	18.5	0.67	0.21	1.0

Table 8.2: Zonal averages in well 31/5-6. Thick Etive Formation

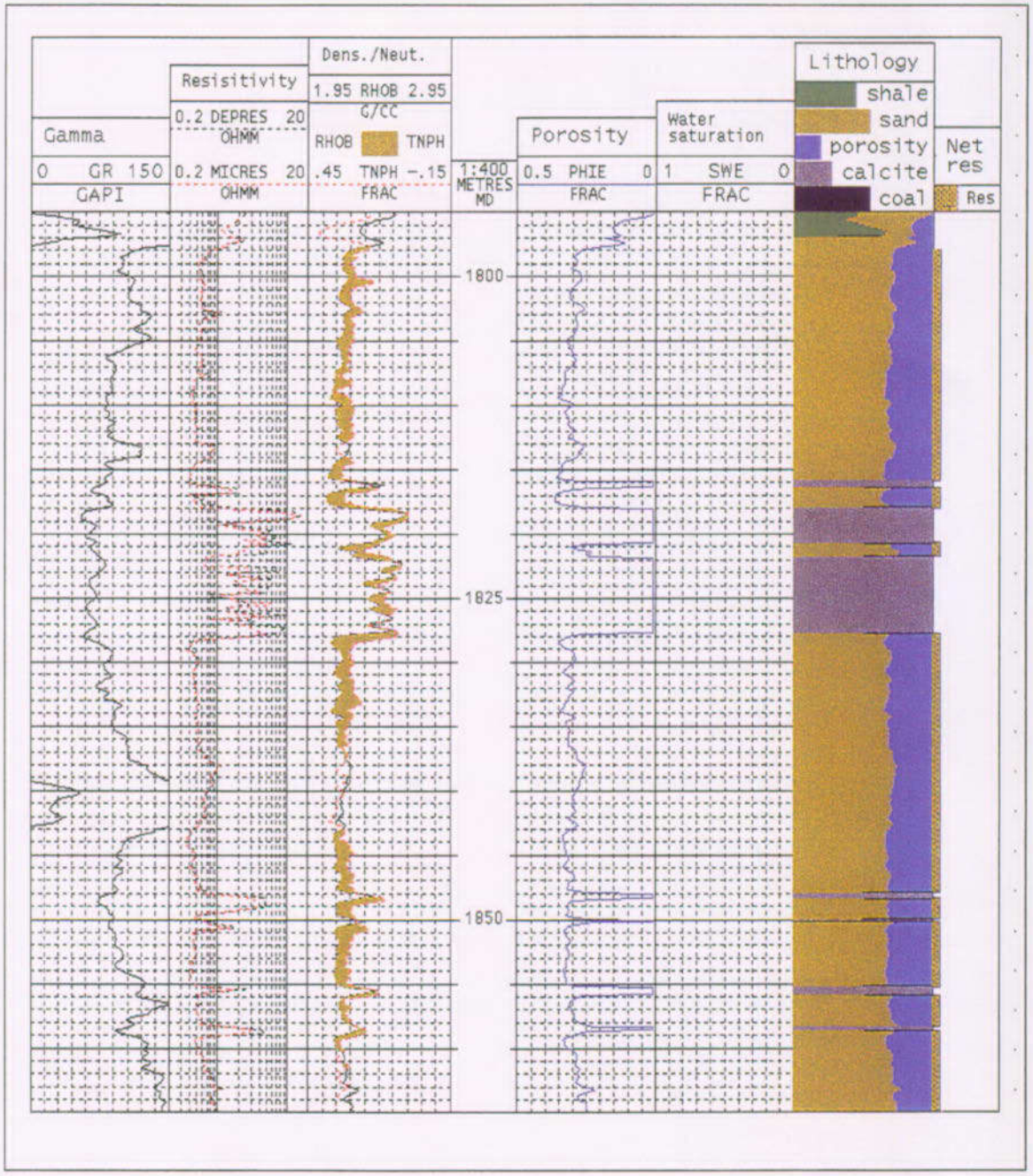


Figure 8.1: CPI, Sognefjord Formation

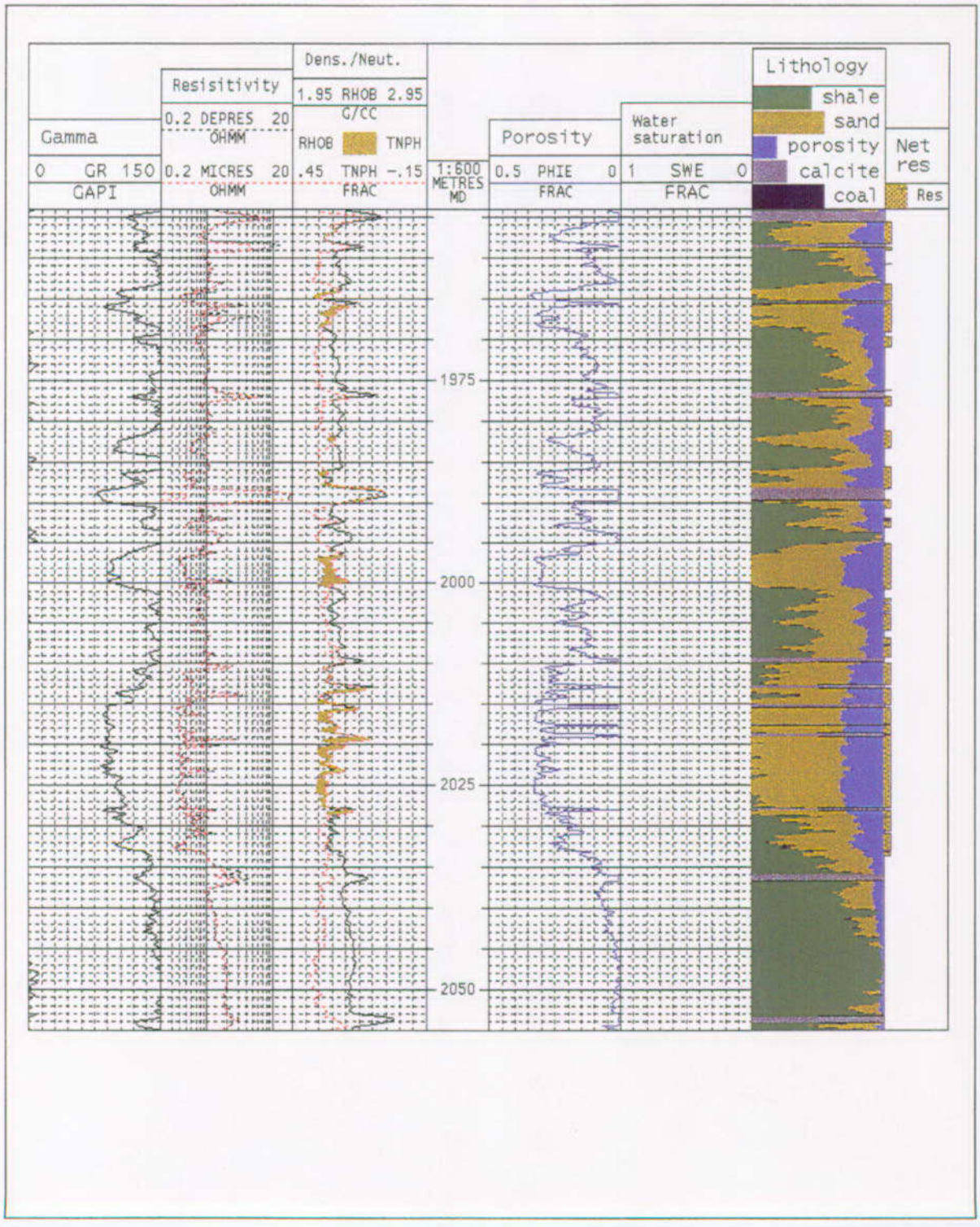


Figure 8.2: CPI, Fensfjord Formation.

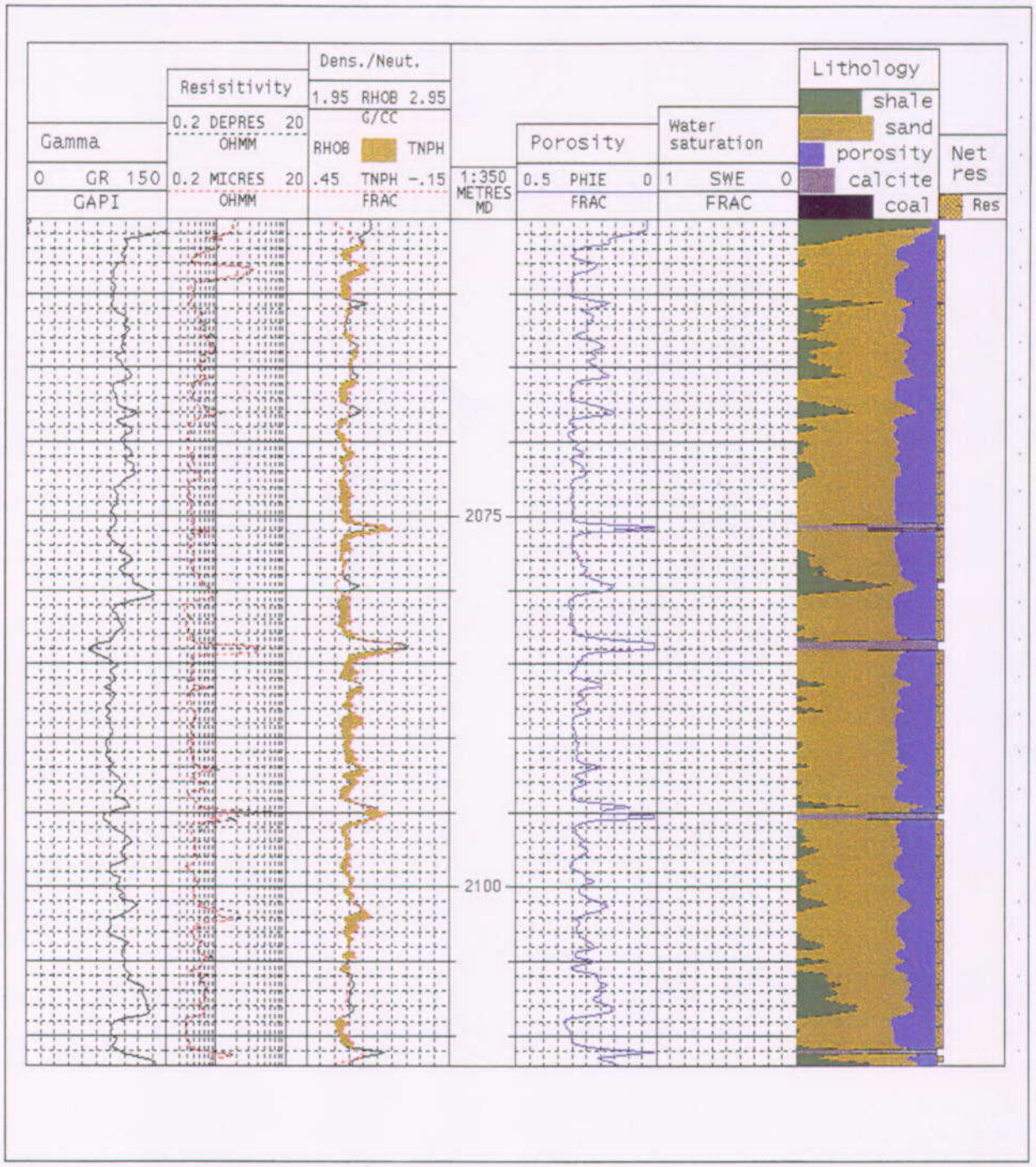


Figure 8.3: CPI, Krossfjord Formation.

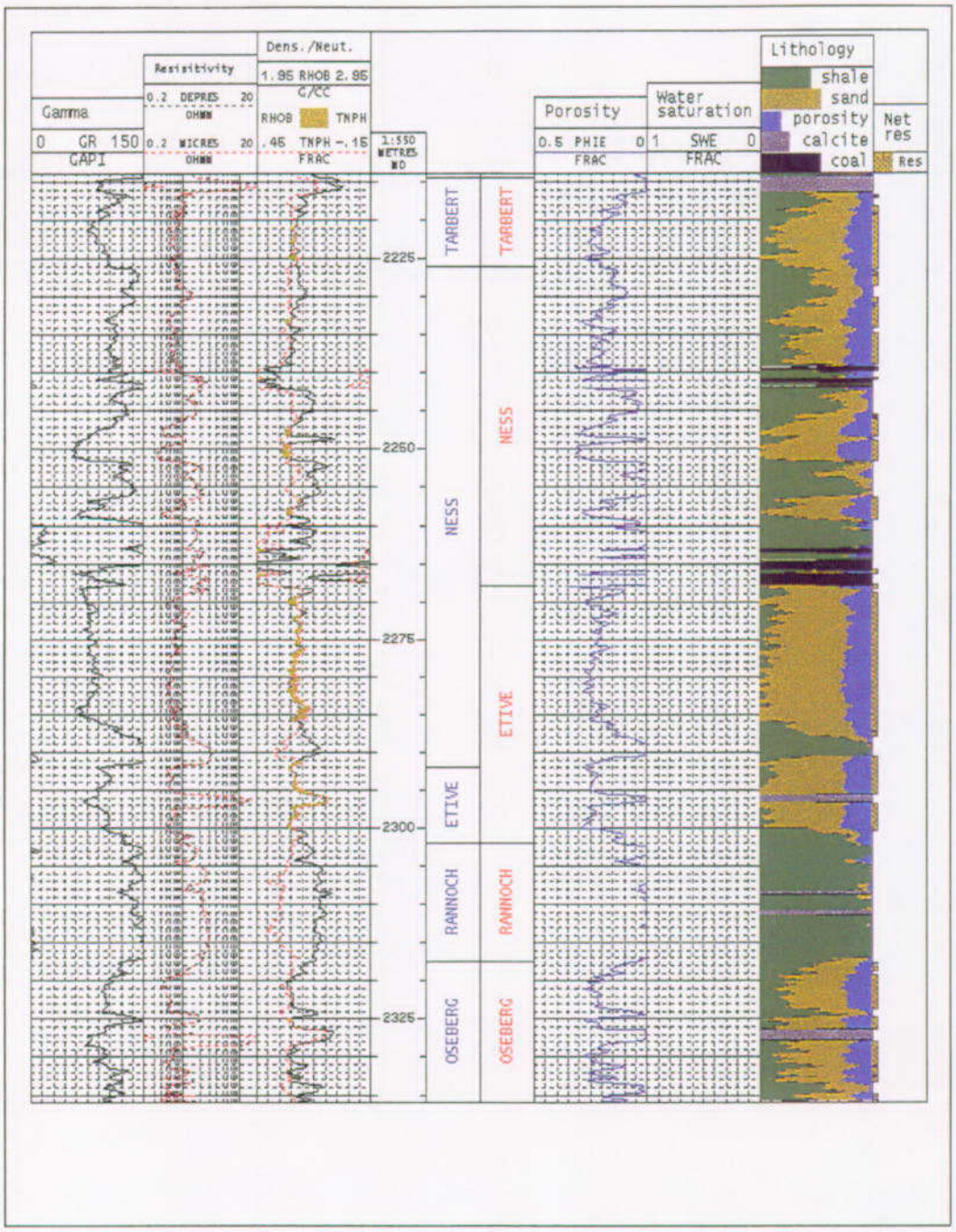


Figure 8.4: CPI, Brent Group.

9 Estimated Pore Pressure, Fracture, Overburden and Temperature Gradients

9.1 Pore Pressure

The pore pressures in well 31/5-6 are based on well site observations, log correlation, gas data and calculations based on logs (MWD and Dxc).

Shallow gas was not registrated in the upper sediments.

From sea bottom to 1270m a hydrostatic pressure is regarded as most likely. At 1270m a change in Dxc, Resistivity-log and gas-readings indicates a steady build-up in porepressure to 1,23sg at 1527m TVD RKB. Below 1575m there is a gradual decrease in porepressure down to 1,15sg at 9 5/8" casing point.

In 8 1/2" section the pore pressure continuous to fall steady to 1.06sg (1840m TVD RKB). From 1840m, a slight drop to 1.03sg at TD was assumed. The pressure development in the Viking, Brent and Dunlin Fm. is uncertain as it has to based mainly on drilling parameters and gas values. No major hole problems were encountered during drilling. The Pore Pressure-, Fracture- and Overburden gradients are given in Fig. 9.1

9.2 Formation Strength

No mud losses were observed in this well.

Two normal LOT was performed. At 1205m MD it gave 1,66sg, prognosed 1,50sg. The prognosis was low in order to cover up for worst case values even though the majority of data from the region indicated that a LOT at this depth on an average should be in the range of 1,65sg to 1,70sg. As such this LOT falls within the regional normality.

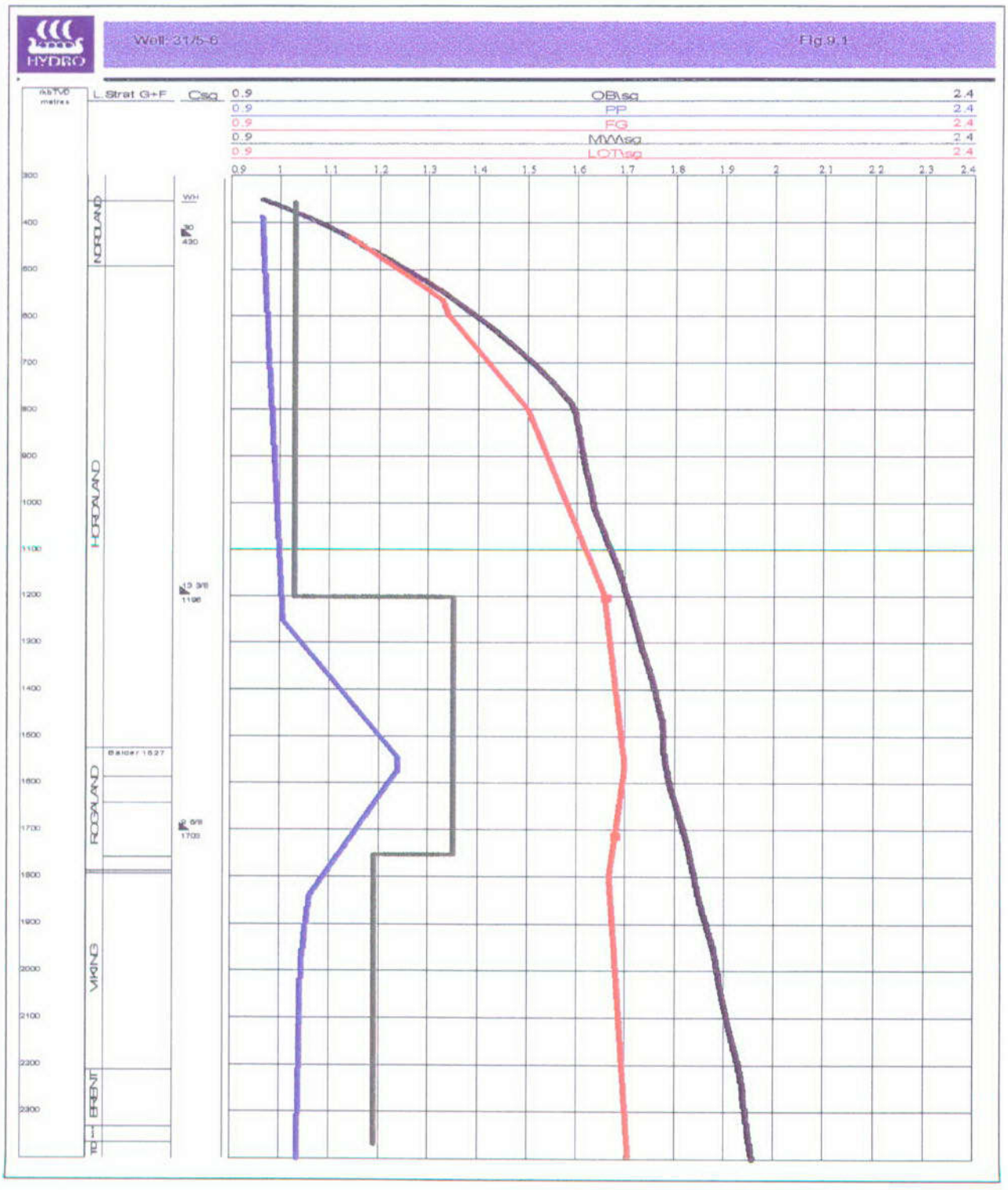
A LOT to 1,68sg was performed at 1714m TVD. Prognosed strength was 1.64sg. The Rogaland Gp. exhibits historically a wide range of LOT and this test falls within the dominant parts of this range.

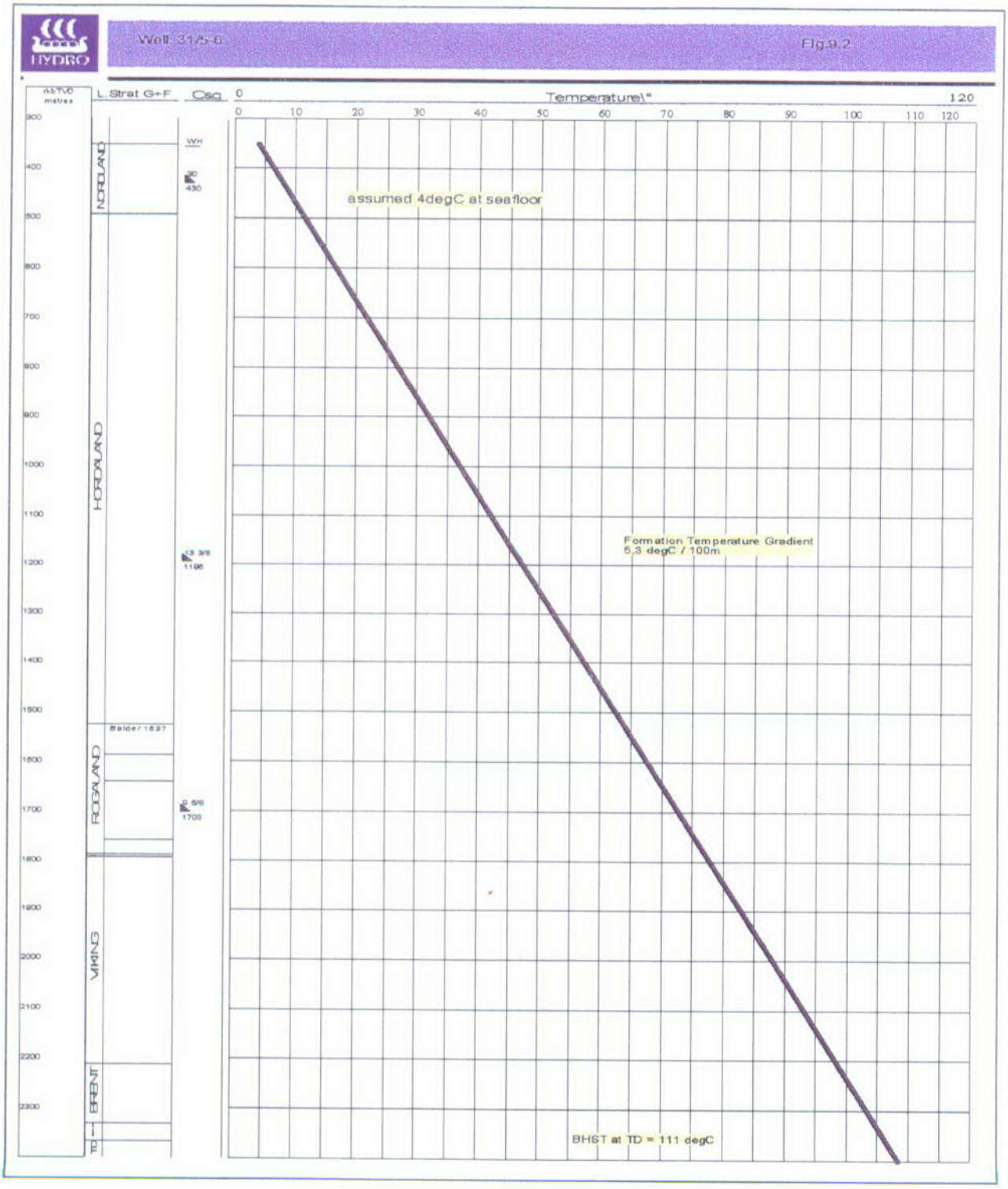
9.3 Overburden Gradient

Overburden gradient is based on calculated values. For details of Pore pressure-, Fracture- and Overburden gradients see Fig. 9.1

9.4 Temperature Gradient

No good downhole temperatures were recorded but there was no indications of discrepancy from prognosed values. This gives an average formation temperature gradient of 5.3° C/ 100m assuming 4°C at sea floor. BHST at TD is estimated to be 110.7°C.
The Formation Temperature gradient is given in Fig. 9.2.


Well: 31/5-6
Fig.9.1
L.Strat G+F
Csg
OB\sg
PP
FG
MW\sg
LOT\sg
NORDLAND
HORDALAND
ROGALAND
VIKING
BRENT
Balder 1527


Well 31/5-6
Fig.9.2
L.Strat G+F
Csg
Temperature\°
assumed 4degC at seafloor
Formation Temperature Gradient
6.3 degC / 100m
BHST at TD = 111 degC
NORDLAND
HORDALAND
ROGALAND
VIKING
BRENT
TD

10 Geophysical Results

Table 10.1 shows the depths to the main formation tops prognosed in 31/5-6, with a comparison to the results encountered in the well. No sonic log or VSP was run in the well, thus the geophysical results remain uncertain.

Formation	Prognosis			Result			
	Depth [m MSL]	Seismic pick [ms TWT]	Interval vel. [m/s]	Depth [m MSL]	Seismic pick [ms TWT]	Interval vel. [m/s]	Top diff. [m]
Seabed	328			328			
Balder	1 520	1 622		1 501	1 622		-19
Sele	1 583	1 676		1 562			-21
Lista	1 615			1 617,5			2,5
Våle	1 735	1 796	\	1 733,5	1 804	\	-1,5
Shetland Gp.	1 790	1 835	\ \ 2820	1 762	-	\	
Seis. Shetland			\	1 765	1 831	\ \ 2333	-25
Draupne	1 794	1 838	\	1 767,5	seismic	\	-26,5
Sognefjord	1 815	1 854	\	1 770,5	interference	\	-44,5
Heather B	1 875	1 898	\ 2698	1 834,5	1 880	\ 2837	-40,5
Fensfjord	1 943	1 946	2 833	1 927	1 946	2 803	-16
Krossfjord	2 041	2 008	\ 3161	2 028	2 010	\ 3156	-13
Heather A	2 102		\	2 084		\	-18
Tarbert	2 178	2 114	\ \ 2585	2 186,5	2 114	\ \ 3048	8,5
Ness	2 195		\	2 198		\	3
Etive	2 250		\	2239,5/2263,5		\	13,5
Rannoch	2 272		\	2 273,5		\	1,5
Oseberg	2 289		\	2 289		\	0
Drake	2 312	2 234	\ 2233	2 307,5	2180 ?	\ 3667 ?	-4,5

Table 10.1: Geophysical Summary

The prognosed depths were generally too deep, as shown in Table 10.1. The lack of geophysical data from the well makes it difficult to explain the results, but the errors mostly seem to be due to the use of too high velocities throughout the interval from seabed to top Shetland Gp.

The seismic prognosis was based on two different datasets with differing frequency range and possibly a slight difference in phase. In table 10.1 the seimic picks refer to the Troll dataset NH8901-9101R97.

The largest discrepancies between prognosis and result are found in the interval top Shetland Gp. - base Sognefjord Fm. This was also recognized in the prognosis, as the seismic picks were dubious. The well showed a thinner Draupne Fm. than anticipated, and the seismic responses of the top Shetland, top Draupne and top Sognefjord are believed to interfere. The MWD density log shows a strong increase at 1765 m MSL, which is correlated to the centre of a prominent trough on the

seismic. The entire interval top Shetland Gp. - top Sognefjord Fm. is believed to be contained within this signal.

In the deeper parts of the well, from top Fensfjord Fm. to TD there is a good correspondance between prognosis and result.

11 Post Site Survey Report, NOCS

WELL DATA :

1	Distance from rig floor to sea level:	26 m
2	Water depth (MSL):	328 m
3a	Setting depth for conductor (m RKB):	430 m
3b	Leak Off / Formation Integrity Test (g/cc):	N/A
4a	Setting depth (m RKB TVD) for casing on which BOP mounted:	1196 m
4b	Formation Integrity Test (g/cc):	1.66 sg
5	Depth (m RKB (TVD) & Two Way Time) to formation/section/layer tops:	

Base Unit 1	:	400.5 m	(501 ms)
Base Unit 2	:	413 m	(511 ms)
Base Unit 3	:	476 m	(579 ms)
Base Pleistocene	:	494 m	(597 ms)
Base Pliocene	:	787.5 m	(870 ms)
Base Miocene	:	804 m	(886 ms)
Intra Oligocene	:	1156m	(1269 ms)
Top Green Clay (Base Oligocene)	:	1249 m	(1349 ms)
Top Balder Formation:		1527 m	(1622 ms)

Note:
No chronostratigraphic information was collected in the tophole section of the well (from seabed down to 1201 m RKB TVD). Consequently, the interpretation of the different formations in this area is based on the MWD logs, seismic character and previous work.

Mud logging commenced at 1201 m RKB TVD. Samples for description were taken at 10 m intervals. All formation tops are based upon MWD logs and cuttings analysis.

6 Depth interval (m RKB (TVD) & Two Way Time) and age of sand bodies shallower than 1000 m under the seabed. Note which layers if any contain gas:
No data exists on background gas levels from seabed down to 1201 m (section drilled with returns to seabed). However, no gas related incidents were reported when drilling this interval.

The following sand bodies have been identified in well 31/5-6:

Pleistocene Interval:

400.5 m - 413 m
476 m - 484 m
486 m - 488 m
491 m - 494 m

The three lowermost sand intervals are part of a laterally extensive sand-rich diamicton (till) at Base Pleistocene.

Miocene Interval:

787.5 m - 789.5 m
793 m - 804 m

7 **By what means is the presence of gas proven:**
The well is drilled with returns to seabed above 1201 m RKB (TVD). Below 1201 m RKB (TVD) gas analyses were accomplished 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:**

Section 1201 m - 1550 m RKB (MD): Background gas levels 0.01-0.1 % with no gas peak.

9 **Describe all measurements taken in gas bearing layers:** N/A

SEISMIC DATA:

10 Given depth and extent of any gas blanking ("gass-skygging"), seismic anomalies etc.: The 2D high resolution and 3D exploration seismic have been examined for indications of shallow gas. No amplitude anomalies were mapped at the 31/5-6 Well Location.

The tophole section of the well was drilled with returns to seabed to 1201 m RKB (TVD). Background gas levels were consequently not monitored. However, no gas-related problems were experienced over this section.

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 amplitude anomalies were mapped at the well 31/5-6 location and no gas warning was given for the well 31/5-6.

No gas related problems were experienced in the well. However, the logs indicate small quantities of gas in the Unit 2 sands.

12b Sand Bodies:

The Pleistocene and Miocene sand layers were predicted and encountered sand layers correspond with the interpretation.

12c Boulders:

Scattered boulders were predicted in the shallow section between 403 m - 495 m RKB (TVD). No boulders layers were predicted. Boulders were encountered from 408 m to 417 m RKB (Unit 2 and upper part of Unit 3).

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

Horizon	*Prognosed (P)*	*Observed (O)*	*O-P*
Base Pleistocene	495 ± 10 m	494 m	- 1 m (shallower)
Base Pliocene	784 ± 10 m	787.5 m	+ 3.5 m (deeper)
Base Miocene	801 ± 10 m	804 m	+ 3 m (deeper)
Intra Oligocene	1159 ± 30 m	1156 m	- 3 m (shallower)
Top Green Clay	1240 ± 30 m	1249 m	+ 9 m (deeper)
Top Balder	1517 ± 40 m	1527 m	+ 10 m (deeper)

The differences between the prognosed and observed depths to different formation tops were within the uncertainty limits.

12e Correlation to Nearby Wells:

The drilling conditions experienced in well 31/5-6 are as predicted and similar to those encountered in tie-wells 31/5-3 and 31/2-5.

12 Standard and Special Studies

- Norsk Hydro 2000: Well Programme 31/5-6
- Norsk Hydro 2000; Site Survey Report
- Schlumberger 2000: End of Well Report / Logs
- Geostrat 2000: Biostratigraphy of the interval 1210 - 2370m, 31/5-6
- Norsk Hydro 2000: Reservoir Geochemistry of Well 31/5-6

APPENDIX I

SIDEWALL CORE DESCRIPTIONS

NORSK HYDRO

SIDEWALL CORE DESCRIPTION

WELL:31/5-6	RIG:Scarabeo 6

Run:	1A	Date: :	19.07.00	Logging: Co:	CST				
Shot:	10	Misfired:	No	Lost::	No	Empty :	No	Recoverd : :	10

No.	Depth m RKB	Recoverd cm	Lithology and shows description
30	1775	4	Clst: olv blk, sft-frm, fis, non - sli calc, sli slty, micromic
29	1781	3.5	Clst: olv blk, sft-frm, fis, sli calc, sli slty, micromic
28	1786	3.2	Clst: olv blk, sft-frm, fis, v calc, sli slty, micromic
27	1793	2.5	Clst: gn gry - dk gnsh gry, brnsh gry - brnsh blk, frm, fis-sbfis, v calc, slty, micromic, micropyr.
26	1797	5	Clst: dk gry - grysh blk, frm, fis, v calc, sli slty, micromic, micropyr.
25	1797.5	5	Clst: dk gry - grysh blk, dk gnsh gry, sft - frm, v calc, sli slty, micromic, micropyr, r carb mat.
24	1798	2.7	Sst: m dk gry - dk gry, clr trnsl - mlky Qtz, r rose Qtz, vf-v crs, pred m, sbang-sbrndd, pr srt, v arg, slty, Tr carb mat, micromic, r micropyr, v calc. Shows: fr mod blmg bl wh Fluor Cut, No vis Cut, Tr mod spty bl wh Fluor Res, Tr yel spty vis Res.
23	1803	0.5	Sst: m dk gry - dk gry, lt olv gry, clr trnsl - mlky Qtz, vf-f, sbang-sbrndd, wl srt, v arg grad Clst, slty, r calc, micromic, Tr carb mat.
22	1804	3.2	Sst: lt gry - m dk gry , clr trnsl - mlky Qtz, vf-v crs, sbang - sbrndd, pr srt, sli arg, slty, non calc, Tr carb mat, Tr micromic, r Glauc. Shows: slow blmg dull bl wh Fluor Cut, No vis Cut, Tr dull spty bl Fluor Res, No vis Res.
21	1805	3.2	Sst: lt gry, clr trnsl - mlky Qtz, vf - crs, pred vf-f,sbang - sbrndd, pr srt, slty, non - sli calc, Tr carb mat, Tr micromic, r Glauc. Shows: slow blmg dull bl wh Fluor Cut, No vis Cut, Tr dull spty bl Fluor Res, No vis Res.
20	1814	3.5	Sst: lt gry, clr trnsl - mlky Qtz, vf - crs, pred vf-f,sbang - sbrndd, pr srt, slty, non - sli calc, Tr carb mat, Tr micromic, r Glauc. Shows: slow blmg dull bl wh Fluor Cut, No vis Cut, Tr dull spty bl Fluor Res, No vis Res.
19	1817	3	Sst: clr trnsl Qtz, vf-crs, pred f-m, sbang-sbrndd, pr srt, sli slty, non - sli calc, Tr mic, No shows.
18	1822	-	No recovery
17	1828	-	No recovery
16	1840	2.7	Sst: dk gry, clr trnsl - mlky Qtz, vf, sbrndd, wl srt, slty, sli arg, Tr micromic, Tr carb mat, sli calc. Shows: slow blmg dull bl wh Fluor Cut, No vis Cut, Tr dull spty bl Fluor Res, No vis Res.

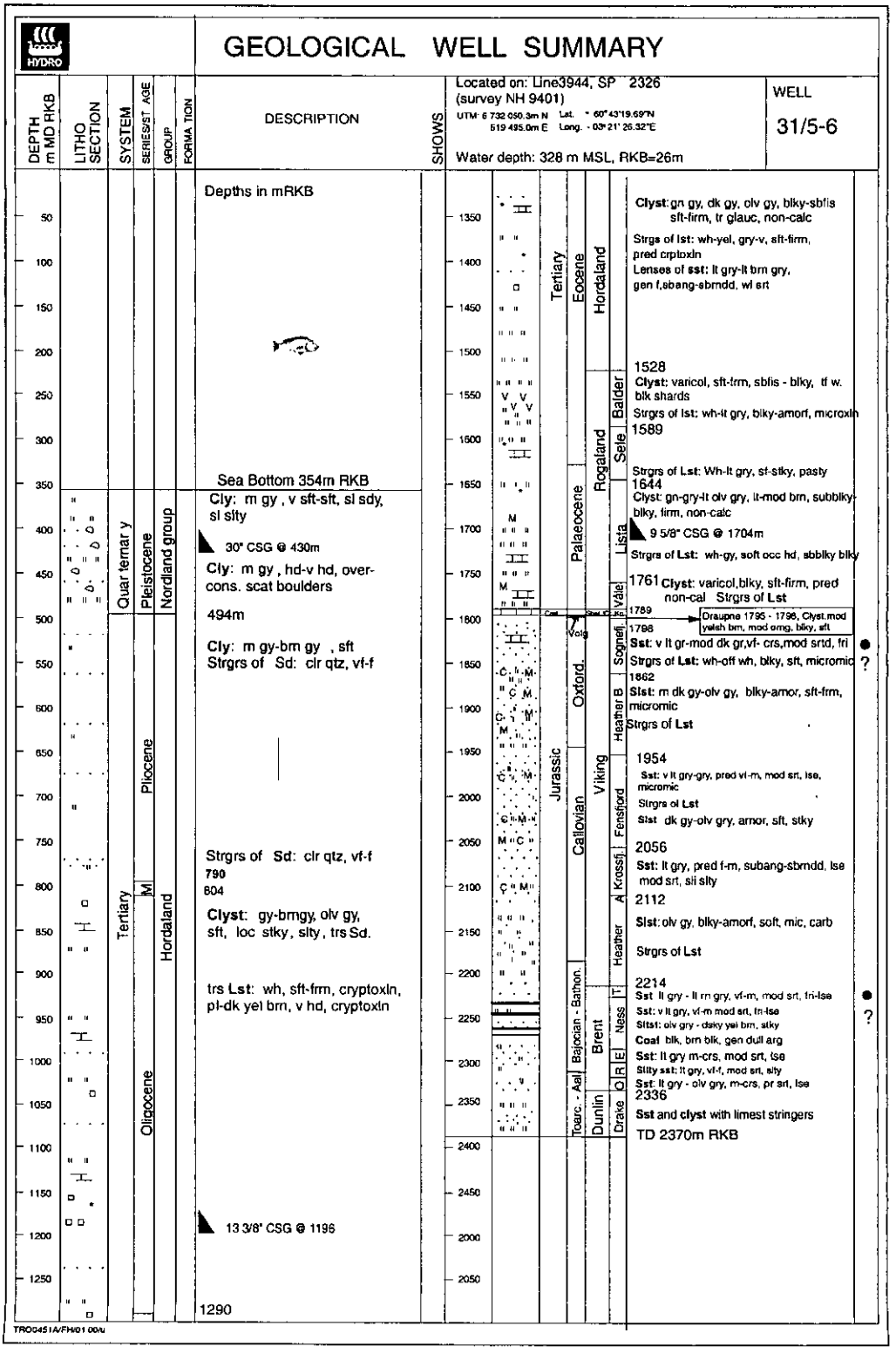
15	1841	2.8	Sst: dk gry, clr trnsl - mlky Qtz, vf, sbrndd, wl srt, slty, sli arg, Tr micromic, Tr carb mat, sli calc. Shows: slow blmg dull bl wh Fluor Cut, No vis Cut, Tr dull spty bl Fluor Res, No vis Res.
14	1843	3.8	Sst: dk gry, clr trnsl - mlky Qtz, vf-crs, sbrndd, pr srt, slty, sli arg, Tr micromic, Tr carb mat, sli calc. Shows: slow blmg dull bl wh Fluor Cut, No vis Cut, Tr dull spty bl Fluor Res, No vis Res.
13	1875	2.5	Sltst: olv gry - m dk gry, sft - frm, vf sdy grad Sst, v arg, Tr micromic, Tr carb mat, Tr micropyr, v calc.
12	1930	2.8	Sltst: olv gry - m dk gry, sft - frm, vf sdy grad Sst, v arg, Tr micromic, Tr carb mat, Tr micropyr, v calc.
11	1947	2.8	Sltst: olv gry, sft , sdy, v arg grad Clst, Tr micromic, r carb mat, r micropyr, v calc.

10	1972	3	Sst/Sltst:lt gry,clr-mky Qtz,vf-f,sbang-sbrndd,mod srt,fri,calc cmt,gen v slty grad Sltst,micromic,carb,pr vis por.Shows:No O stn,no Direct Fluor,v wk p.p. bl wh Fluor cut,no vis cut,wk bl wh Fluor Res,no vis Res.
9	2015	2.8	Sst:lt gry,clr-mky Qtz,f-m,Tr Crs,gen m,ang-sbrndd,mod srt,lse,Tr Mic,Tr Carb,fr vis por.Shows:No O stn,v wk dull or direct Fluor ,v wk slo strmg p.pbl wh Fluor cut,wk wh Fluor Res,no vis Res.
8	2048	2.5	Sltst:olv gry,blky,firm,calc,micromic,carb,gen vf sdy grad Sst,vf,micromic,carb.Shows:No O stn,no direct Fluor,v wk p.p.bl wh Fluor cut,no vis cut,v wk Fluor Res,no vis Res.
7	2056	2.3	Sst:lt olv gry,clr-mky Qtz,vf-f,sbang-sbrndd,pr-mod srt,fri,calc cmt,gen v micromic/carb,gen arg,slty grad Sltst,n.v.p.Shows:No O stn,no direct Fluor,v wk p.p.bl wh Fluor cut, no vis cut,v wk wh Fluor Res,no vis Res.
6	2180	2.5	Sltst:olv gry,blky,firm,sl calc,micromic,carb,gen sv sdy grad Sst vf.Shows:No O stn,no direct Fluor,slo strmg p.p.bl wh Fluor cut,no vis cut,wk bl wh Fluor Res,no vis Res.
5	2215	2.6	Sst:lt gry,clr-mky Qtz,vf-f,Tr crs,sbang-sbrndd,mod srt,fri,calc cmt,gen arg,micromic,carb,pr vis por.Shows:No O stn,lam dull yel direct Fluor,wk p.p.slo-mod strmg bl wh Fluor cut,no vis cut,gen wk yel wh-bl wh-sptd brt yel Fluor Res,no vis Res.
4	2220	3	Sst:lt brn gry,clr-mky Qtz,vf-crs,gen m-crs,ang-sbrndd,pr-mod srt,fri,mod Kao cmt,Tr Mica,Tr Slty,gd vis por.Shows:lt brn O stn,uni dull or-p.p.brt yel direct Fluor,fast strmg bl wh Fluor cut,no vis cut,gen yel wh-sptd brt yel Fluor Res,no vis Res.
3	2280	2.7	Sst:lt olv gry,clr-mky Qtz,f-m,sbang-sbrndd,wl srt,fri,Tr Kao cmt,Tr Mica,r Tr carb,fr vis por.Shows:No HC od,gen uni dull or i.p.sptd brt yel direct Fluor,mod strmg p.p. Fluor cut,no vis cut,gen yel wh-sptd brt yel Fluor Res,no vis Res.
2	2315	2.5	Sltst:lt olv gry,sbfis-fis,firm,calc,micromic,arg grad Clst. Shows:No O stn,no direct Fluor,slo strmg bl wh p.p. Fluor cut,no vis cut,wk wh Fluor Res,no vis Res.
1	2363	2.5	Sltst:olv gry,sbfis-fis,firm,non calc,micromic,v sdy(lam)vf,Tr carb.Shows:No O stn,no direct Fluor,slo strmg bl wh p.p.Fluor cut,no vis cut,wk bl wh Fluor Res,no vis Res.

APPENDIX II

GEOLOGICAL WELL SUMMARY

GAS RATIO LOG (1:500)


GEOLOGICAL WELL SUMMARY
DEPTH m MD RKB
LITHO SECTION
SYSTEM
SERIES/ST AGE
GROUP
FORMATION
DESCRIPTION
SHOWS
Located on: Line3944, SP 2326 (survey NH 9401)
UTM- 6 732 050.3m N 519 495.0m E
Lat. = 60° 43'19.69"N
Long. = 03° 21' 26.32"E
Water depth: 328 m MSL, RKB=26m
WELL 31/5-6
Depths in mRKB
Sea Bottom 354m RKB
Cly: m gy , v sft-sft, sl sdy, sl slty
30" CSG @ 430m
Cly: m gy , hd-v hd, over-cons. scat boulders
494m
Cly: m gy-brn gy , sft
Strgrs of Sd: clr qtz, vf-f
Strgrs of Sd: clr qtz, vf-f
790
804
Clyst: gy-brngy, olv gy, sft, loc stky, slty, trs Sd.
trs Lst: wh, sft-frm, cryptoxln, pl-dk yel brn, v hd, cryptoxln
13 3/8" CSG @ 1196
1290
Tertiary
Quar ternar y
Pleistocene
Pliocene
Miocene
Oligocene
Nordland group
Hordaland
Jurassic
Eocene
Palaeocene
Hordaland
Rogaland
Balder
Sele
Lista
Våle
Sogn
Heather B
Viking
Fensfjord
Krossfj. A
Heather
T.
Ness
E
R
Drake
Dunlin
Brent
Oxford.
Callovian
Bajocian - Bathon.
Toarc. - Aal
Volg
Clyst: gn gy, dk gy, olv gy, blky-sbfis sft-firm, tr glauc, non-calc
Strgs of lst: wh-yel, gry-v, sft-firm, pred crptoxln
Lenses of sst: lt gry-lt brn gry, gen f,sbang-sbrndd, wl srt
1528
Clyst: varicol, sft-frm, sbfis - blky, tf w. blk shards
Strgrs of lst: wh-lt gry, blky-amorf, microxln
1589
Strgrs of Lst: Wh-lt gry, sl-stky, pasty
1644
Clyst: gn-gry-lt olv gry, lt-mod brn, subblky-blky, firm, non-calc
9 5/8" CSG @ 1704m
Strgrs of Lst: wh-gy, soft occ hd, sbblky blky
1761 Clyst: varicol,blky, sft-firm, pred non-cal Strgrs of Lst
1789
1798
Draupne 1795 - 1796, Clyst.mod yelsh brn, mod omg, blky, sft
Sst: v lt gr-mod dk gr,vf- crs,mod srtd, fri
Strgrs of Lst: wh-off wh, blky, sft, micromic
1862
Slst: m dk gy-olv gy, blky-amor, sft-frm, micromic
Strgrs of Lst
1954
Sst: v lt gry-gry, pred vf-m, mod srt, lse, micromic
Strgrs of Lst
Slst dk gy-olv gry, amor, sft, stky
2056
Sst: lt gry, pred f-m, subang-sbrndd, lse mod srt, sli slty
2112
Slst: olv gy, blky-amorf, soft, mic, carb
Strgrs of Lst
2214
Sst lt gry - lt rn gry, vf-m, mod srt, fri-lse
Sst: v lt gry, vf-m mod srt, fri-lse
Sltst: olv gry - dsky yel brn, stky
Coal blk, brn blk, gen dull arg
Sst: lt gry m-crs, mod srt, lse
Slty sst: lt gry, vf-f, mod srt, slty
Sst: lt gry - olv gry, m-crs, pr srt, lse
2336
Sst and clyst with limest stringers
TD 2370m RKB
TRO0451A/FH/01.00/u

THIS PAGE IS LARGER THAN A3, SEE SEPARATE FILE.

FILE NAME:

GAS RATO
LOG
31|5-6

HYDRO **E&P division**

Classific.: INTERNAL E&P

REPORT

Title: WELL 31/5-6
FINAL WELL REPORT
SECTION B OPERATIONS

No. :
Rev. :
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TABLES

FIGURES

1 DRILLING SUMMARY AND EXPERIENCES

Well: 31/5-6

License: PL 191

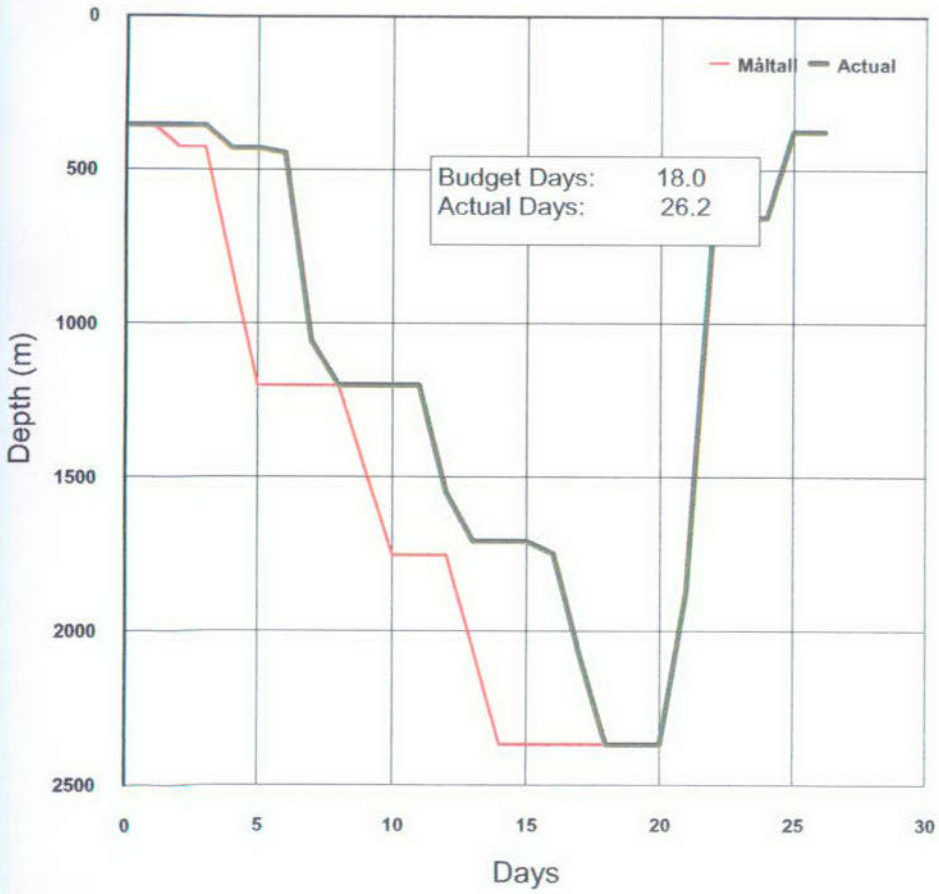
Rig:	Scarabeo 6	
Start Time:	2000-06-30	03:00 hrs
Spud Time:	2000-07-04	10:00 hrs
Finish Time:	2000-07-26	07:06 hrs
Well Status:	Permanently Abandoned	

Budgeted Cost:	45,5 MNOK
Total Actual Cost:	56,9 MNOK

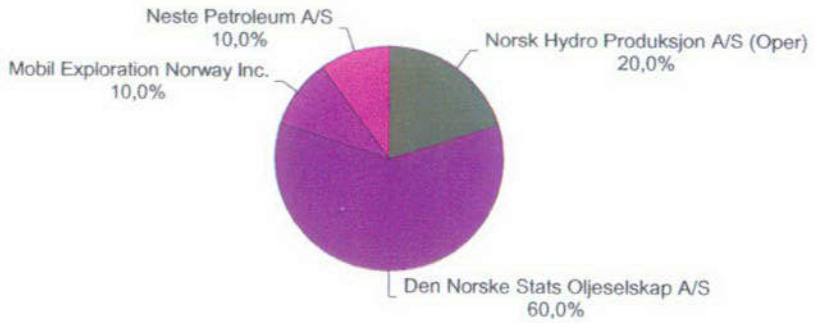
Cost overrun mainly caused by too optimistic budgeting. Rigmove in particular.

Total Depth:	2370 m MD	2367	m TVD
Formation at TD:	Drake at	2331	m MD

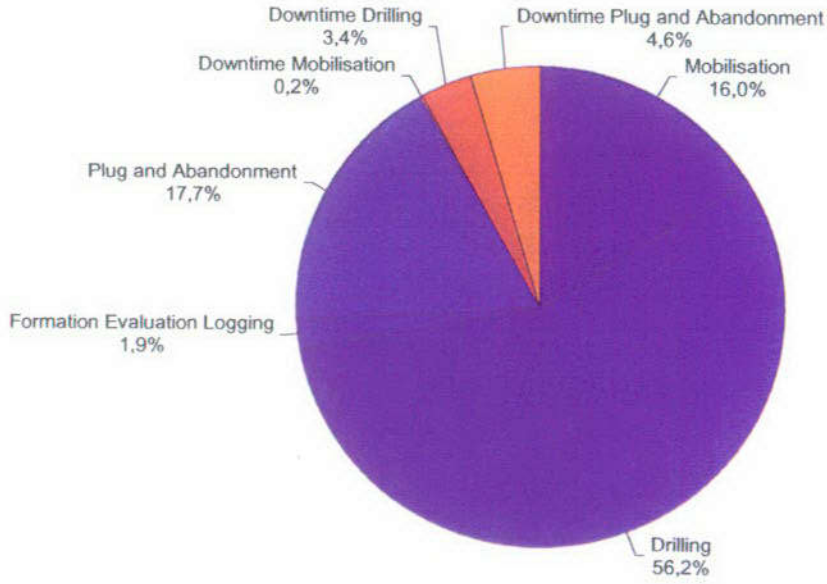
Days versus Depth



Partners



Time Distribution



1.2 Mobilising

Total time used:	101.5 hrs	
Operational time:	100.5 hrs	(99.0 %)
Downtime:	1.0 hrs	(1.0 %)

During the rig move all pipe and most bulk was removed from the rig to enable rig move in transit draft. This led to substansial time consumed in materials transfer.

Wellhead co-ordinates:

6 732 050.3 mN 519 495.0 mE

The rig heading was 222°.

1.3 36" Hole Section / 30" Conductor

Total depth of section: 430 m.

Total time used:	47.0 hrs	
Operational time:	46.0 hrs	(97.9 %)
Downtime:	1.0 hrs	(2.1 %)

1.3.1 Drilling

The well was spudded on 4 July 2000, at 10:00 hrs.

A 36" rotay BHA with 17-1/2" insert bit and 36" hole opener was run and the 36" hole was drilled with sea water and hi-vis pills from 356 m to 430 m. Boulders were encountered in the interval from 408 m to 417m. After drilling, a wiper trip was performed to 370 m and back to TD, and the hole was displaced to 1.50 sg mud.

1.3.2 Casing

The 30" conductor with the Permanent Guide Base was run to 430 m and cemented back to the sea bed. The 30" casing was hung off on drillfloor while running the cement stinger inside. This caused a high stick up on the drillfloor, and consequently a long lasting operation.

1.4 17-1/2" Hole Section / 13-3/8" Casing

Total depth of section: 1,201 m.

Total time used:	127.0 hrs	
Operational time:	125.0 hrs	(98.4 %)
Downtime:	2.0 hrs	(1.6 %)

1.4.1 Drilling

After drilling out the 30" shoetrack with a 26" milled tooth bit, the section was drilled to TD at 1,201 m with a 17-1/2" rotary BHA. Sea water and hi-vis pills were used for cleaning the hole. After drilling, while still having seawater in the hole, a wiper trip to the conductor shoe was made. Some restistance was met and it was necessary to ream the hole in order to clear the hole for tight spots. The hole was displaced to 1.3 sg mud prior to running casing.

1.4.2 Casing

The 13-3/8" casing with the 18-3/4" wellhead was run to 1178m where it hung up and had to be circulated down to setting depth at 1196m. The casing was cemented in place and a pressure test was made to 110 bar with 1.06 sg mud.

The BOP was installed and tested.

1.5 12-1/4" Hole Section / 9-5/8" Casing

Total depth of section: 1,709 m.

Total time used:	111.0 hrs	
Operational time:	96.5 hrs	(86.9 %)
Downtime:	14.5 hrs	(13.1 %)

1.5.1 Drilling

A 12-1/4" steerable BHA with PDC bit was run and the shoetrack and 4 m of new formation were drilled whereafter a Leak Off Test to 1.65 sg was performed. The 12-1/4" section was then drilled to TD at 1,709 m using 1.42 - 1.38 sg KCl/Polymer mud. Drilling speed was hampered by a lot of time spent on steering operations induced by tight target tolerances. Pulling out of hole after drilling was smooth, so no wiper trip was performed.

1.5.2 Casing

The 9-5/8" casing was run to 1,704 m, and cemented in place. The casing was pressure tested to 175 bar with 1.35 sg mud.

1.6 8-1/2" Hole Section

Total depth of section: 2,370 m.

Total time used:	101.5 hrs	
Operational time:	97.5 hrs	(96.1 %)
Downtime:	4.0 hrs	(3.9 %)

1.6.1 Drilling

An 8-1/2" steerable BHA with PDC bit was made up, and a Resistivity At Bit tool was included to be able to detect possible core points as early as possible. The shoetrack and 5 m of new formation were drilled, the well was displaced to 1.20 sg Low Sulphate mud (premixed onshore) and a Leak Off Test to 1.47 sg was performed. The section was then drilled to well TD at 2,370 m.

1.6.2 Coring

No coring was done.

Run #	Cored interval m MD	ROP m/h	Recovery %	Reason pulled

1.6.3 Logging

The following logs were run:

Log suite	Logged interval mMD	Comments
CST	1,775 - 2,363	

1.7 Plug and Abandonment

Total time used: 140.0 hrs
Operational time: 111.0 hrs (79.3 %)
Downtime: 29.0 hrs (20.7 %)

The open hole was plugged back in three stages. From 2,370m to 2,120m, from 2,120m to 1,870m, and from 1,870m to 1,600m. Large interface volumes were reverseded out after each stage. The top of cement was located at 1,600m with an 8-1/2" bit, and dressed off to 1602m. The plug was load tested to 15 MT, and pressure tested to 118 bar with 1.20 sg mud. Afterwards a bridge plug was set at 658 m, and pressure tested to 118 bar with 1.20 sg mud.

The 9-5/8" casing was first attempted cut at 646m, but as it was not possible to retrieve the casing, it was re-cut at 637m and jarred free. The casing was retrieved, and a cement plug was set from 594m to 375m after uncuccessfull attempts had been made to enter the 13-3/8" x 20" x-over with a 13-3/8" bridge plug.

The BOP was retrieved, and the 20" and 30" casings were cut in compression at 359 m, using a motor assembly, pulled free and retrieved to surface with the cutting assembly.

The anchors were pulled, and on 26 July 2000 at 07:06 hrs the last anchor was on the bolster and the rig commenced the move to the 31/4-11 location.

1.8 Recommendations

1.8.1 Well design.

Consider omitting the 9-5/8" casing, as hole stability was good.

1.8.2 Transit (Scarabeo 6 only).

Consider moving the rig in drilling/survival draft to avoid removing all pipe and bulk volumes on the rig.

1.8.3 30" conductor installation.

Hang off 30" wellhead housing in moon pool while running cement stinger. Then drillpipe slips can be placed in rotary.

1.8.4 17-1/2" section.

Perform wiper trips with weighted mud in the hole to reduce hole problems.

1.8.5 13-3/8" casing.

Have circulation packer installed prior to running casing.

GENERAL INFORMATION ON WELL 31/5-6

Field : TROLL **Country:** NORWAY
Licence : 191
UTM zone : 31 **Central Median:** 3° E **Horiz. Datum:** ED50

Location coordinates:		Surface	Target
UTM	**North [m]:**	6732050,3	
UTM	**East [m]:**	519495,0	
Geographical	**North :**	60 43'19.69"	
Geographical	**East :**	03 21'26.32"	

Water Depth: 328,0 m **Reference Point Height:** 26,0 m
Formation at TD: DRAKE at 2331 m MD

Operators:	NORSK HYDRO PRODUKSJON A/S	**Share:** 20,00 %
Partners:	DEN NORSKE STATS OLJESELSKAP A/S	**Share:** 60,00 %
	MOBIL EXPLORATION NORWAY INC.	10,00 %
	NESTE PETROLEUM A/S	10,00 %

Total depth (RKB) : 2370,0 **m MD** 2367,0 **m TVD**

TIME SUMMARY

Start Time : 2000-06-30 03:00:00
Spudding date : 2000-07-04
Abandonment date :

Main operation	Hours	Days	%
MOBILIZATION	100,5	4,2	16,0
DRILLING	353,0	14,7	56,2
FORMATION EVALUATION LOGGING	12,0	0,5	1,9
PLUG AND ABANDONMENT	111,0	4,6	17,7
DOWNTIME MOBILIZATION	1,0	0,0	0,2
DOWNTIME DRILLING	21,5	0,9	3,4
DOWNTIME PLUG AND ABANDONMENT	29,0	1,2	4,6
Sum:	**628,0**	**26,2**	

Hole and casing record

Hole	Track	Depth [m MD]	Casing/Tubing	Track	Depth [m MD]
17 1/2"		1201,0	30"		430,0
12 1/4"		1709,0	13 3/8"		1196,0
8 1/2"		2370,0	9 5/8"		1704,0

Well status: PERMANENTLY ABANDONED

Rig name: SCARABEO 6

NORSK HYDRO A.S
DRILLING SECTOR

WELL: 31/5-6
LICENS: PL191
RIG: SCARABEO 6
RIG RATE: USD 110 000
ACCOUNT: 2014584
DAYS PLANNED: 18
ACTUAL DAYS: 26,167

Dato: **15.06.2001**

FINAL COST REPORT - DRILLING

EDI	DESCRIPTION	BUDGET	ACTUAL
0	**EMPLOYEE RELATED COSTS**	**4 541 000**	**3 119 202**
1	**RIG COSTS**	**16 434 000**	**22 178 909**
2	**RIG SUPPORT COSTS / REIMBURSABLES**	**2 096 442**	**5 790 466**
3A	FUEL/LUB	512 640	-0
3C	BITS	2 071 282	527 791
3D	CASING/CASING EQUIPMENT	2 201 986	3 611 506
3E	WELLHEAD/XMASTREE	1 404 266	1 235 395
3F	CEMENT/CEMENT ADDITIVES	1 170 000	898 665
3G	MUD & MUD CHEMICALS	1 425 000	1 106 171
3	**CONSUMABLES COSTS, SUB TOTAL**	**8 785 173**	**7 379 527**
4B	CHARTERFLY	0	
4C	OTHER TRANSPORTATION	90 000	0
4D	STANDBY VESSEL	1 260 000	1 378 836
4F	HELICOPTER TRANSPORT	540 000	572 971
4G	SUPPLY VESSELS	2 416 667	8 331 780
4	**TRANSPORTATION COSTS, SUB TOTAL**	**4 306 667**	**10 283 587**
5A	CORING	46 400	136 500
5B	DRILLING TOOLS /DIR DRLG	932 782	525 674
5C	CUTTING OF CASING	444 757	356 662
5D	COMPLETION	0	0
5E	PERFORATION	0	0
5F	MWD-SERVICES	1 226 388	1 796 244
5G	CASING OPERATIONS	750 000	0
5H	MUD LOGGING & MUD SERVICES	560 300	655 268
5I	CEMENTING/PRESS.TEST	403 200	0
5J	EL. LOGGING	500 000	1 014 448
5K	VSP	0	0
5L	PROD.TESTING	99 027	263 185
5M	DIVING/ROV	583 515	966 308
5N	RIGPOOL/DIVERSE	451 800	1 007 108
5	**SERVICE COSTS, SUB TOTAL**	**5 998 169**	**6 721 397**
6A	SITE SURVEY	450 000	0
6B	RIG MOVING/POSITIONING	500 000	277 600
6C	DRILLING SITE CLEAN UP	0	
6	**SURVEY COSTS, SUB TOTAL**	**950 000**	**277 600**
7	**WAREHOUSE COSTS**	**396 000**	**964 858**
8	**LAB COST**	**1 985 000**	**119 170**
TOTAL OPERATION COSTS		**45 492 451**	**56 834 715**

DOWNTIME REPORT SCARABEO 6

Last 347 days

Inst.	Wellname	Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
SCA6	31/5-6	2000-07-03	15	0,5	Equipment failure	SAIPEM S.P.A.	TO BE NAMED	Floor saver Malfunctioning. Troubleshot same.	HOISTING EQUIPMENT	DRILLING	DRILLING CONTRACTO	305.00	Other Hoisting Equipment	
SCA6	31/5-6	2000-07-03	16	0,5	Waiting for drilling operations			Waited while helicopter arrived/departed.		DRILLING				
SCA6	31/5-6	2000-07-04	1	0,5	Equipment failure	ANADRILL	ANADRILL	No response from power pulse tool when testing after having made up BHA. On a later test, the tool tested OK.	DRILLSTRING/DC EQUIPMENT	DRILLING	MWD/LWD	357.02	MWD/LWD	
SCA6	31/5-6	2000-07-04	2	0,5	Equipment failure	DRIL-QUIP	DRIL-QUIP	Changed out stand on conductor running tool.	DRILLSTRING/DC EQUIPMENT	CASING	WELLHEAD	357.07	Other Drilling/Downl Equipment	
SCA6	31/5-6	2000-07-06	3	2,0	Equipment failure	SAIPEM S.P.A.	VARCO BJ OIL TOOLS	BX elevator, malfunction. Most likely caused by interface problems with MH top drive.	PIPE HANDLING EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTO	345.00	Elevator	
SCA6	31/5-6	2000-07-11	17	4,5	Equipment failure	SAIPEM S.P.A.	TO BE NAMED	Leaking IBOP. Changed out same.	WELLCONTROL EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTO	337.03	Inside BOP, Kelly Cock etc.	
SCA6	31/5-6	2000-07-14	4	1,0	Other	SAIPEM S.P.A.		Wrong landing string spaceout while running 9-5/8" casing. Stood up with string one stand high. Racked back 1 stand and installed cement stand.		CASING				
SCA6	31/5-6	2000-07-15	5	8,0	Equipment failure	DRIL-QUIP	DRIL-QUIP	Trouble shearing casing hanger running tool off seal ring. Eventually came free. Made cleanout trip prior to setting wear bushing.	MISCELLANEOUS EQUIPMENT/SYS	DRILLING	CASING/TUBI RUNNING	381.01	Casing Running Tools	
SCA6	31/5-6	2000-07-15	5.1	2,5	Equipment failure	SAIPEM S.P.A.	TO BE NAMED	Broke topdrive torque wrench. Changed out same.	PIPE HANDLING EQUIPMENT/SYS	CASING	DRILLING CONTRACTO	347.00	Other Pipe Handling Equipment	

DOWNTIME REPORT SCARABEO 6

Last 347 days

Inst.	Wellname	Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
SCA6	31/5-6	2000-07-16	7	2,5	Equipment failure	ANADRILL	ANADRILL	No response from RAB logging tool during test. Pulled out of hole and cleaned connections. Ran back in hole and retested successfully.	DRILLSTRING/DC EQUIPMENT	DRILLING	MWD/LWD	357.02	MWD/LWD	
SCA6	31/5-6	2000-07-20	8	0,5	Other	BJ SERVICES		Problems with mix water chemical composition. To high consentration of CD-31L in receipe.		CEMENTING				
SCA6	31/5-6	2000-07-20	9	1,0	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Hydraulic connection on topdrive burst. Repaired same while rotating slowly.	HOISTING EQUIPMENT	PLUG AND ABANDONMEI	DRILLING CONTRACTO	313.02	Top Drive	
SCA6	31/5-6	2000-07-22	18	9,5	Other	SMITH RED BARON		Unable to pull casing after cut. Recut and jar casing free.		PLUG AND ABANDONMEI				
SCA6	31/5-6	2000-07-22	18.1	5,5	Equipment failure	SMITH RED BARON	TO BE NAMED	Not able to release spear after jarring. During attempts to free spear, casing came loose, and was pulled to surface.	DRILLSTRING/DC EQUIPMENT	PLUG AND ABANDONMEI	FISHING	356.00	Fishing Tools	
SCA6	31/5-6	2000-07-23	18.2	2,0	Equipment failure	SAIPEM S.P.A.	TO BE NAMED	Repaired hydraulic leak on topdrive.	HOISTING EQUIPMENT	PLUG AND ABANDONMEI	DRILLING CONTRACTO	313.02	Top Drive	
SCA6	31/5-6	2000-07-23	18.3	1,0	Equipment failure	SAIPEM S.P.A.	TO BE NAMED	Carried out post inspection of derrick and topdrive after jarring.	HOISTING EQUIPMENT	PLUG AND ABANDONMEI	DRILLING CONTRACTO	301.00	Derrick Structure	
SCA6	31/5-6	2000-07-23	12	6,5	Other	BJ SERVICES		Not able to pass 20"/13 3/8" x/o with bridge plug. Pulled out of hole with plug, and set cement plug instead.		PLUG AND ABANDONMEI				
SCA6	31/5-6	2000-07-24	13	0,5	Equipment failure	BJ SERVICES	BJ SERVICES	Leak on cement pump prior to cement job. Repaired same	SERVICE EQUIPMENT/SYS	CEMENTING	CEMENTING	371.01	Cement: Unit/pipe	

DOWNTIME REPORT SCARABEO 6

Last 347 days

Inst.	Wellname	Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
SCA6	31/5-6	2000-07-25	19	2,0	Other	SAIPEM S.P.A.		Stopped operation to carry out visual inside inspection on BOP. Filled same with sea water and pressure tested to 70 bar against shear ram		PLUG AND ABANDONME!				
SCA6	31/5-6	2000-07-25	14	0,5	Equipment failure	SAIPEM S.P.A.	CAMERON NORGE	Pop-off blew prior to conductor cutting operation. Reset same.	MUD AND BULK SYSTEMS	PLUG AND ABANDONME!	DRILLING CONTRACTO	325.00	Mud Supply(incl. HP mudpumps)	
		Sum:		51,5										
		Total Sum:		51,5										

DAILY REPORT ON WELL 31/5-6

Daily report no : 1 **Date:** 2000-06-30
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
03:00	No activity.
23:59	Rig handed over. On tow for location 31/5-6.

Daily report no : 2 **Date:** 2000-07-01
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
23:59	On tow for location.

Daily report no : 3 **Date:** 2000-07-02
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
04:00	On tow for location.
04:30	Held pre-meeting. Arranged boats.
15:00	Dropped anchors according to plan. 1st anchor on bottom 08:30 hrs. At 15:00 hrs all anchors on bottom and pretensioned to min 100 MTon. Pressure tested drillfloor equipment ballasting rig.
15:30	Ballasting complete. Rig on operation draught.
19:00	Performed final tension to stall.
23:59	Took on board 5" drillpipe and spud equipment.

Daily report no : 4 **Date:** 2000-07-03
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
11:00	Laid out, inspected, cleaned and drifted 5" drillpipe. 2 different IDs and several rejects. Picked up and racked good ones.
11:30	Troubleshot on floor saver. No go.
18:00	Continued picking up drillpipe. At 18:00 hrs totally 89 joints picked up.
20:30	Picked up and racked back 15 joints 5" heavy weight drillpipe. Prepared to receive conductor.
21:00	Waited while helicopter arrived/departed.
23:00	Continued laying out drillpipe and bottom hole assembly while working on hydraulic elevators.
23:59	Picked up 6 joints heavy weight drillpipe and racked in the derrick.

Daily report no : 5 **Date:** 2000-07-04
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 1,06 sg

Stop time	Description
05:30	Picked up hole opener and bit assembly with X-over. Picked up bottom hole assembly as per programme.
06:00	Tested power pulse tool with 2300 lpm 58 bar. No response.
07:00	Made up cement stand and conductor running tool. Racked both in the derrick.
07:30	Tested power pulse tool, OK.
08:30	Ran in hole to 314 m. Held prespud meeting.
10:00	Tagged bottom at 356 m. ROV installed buoys.
16:30	Spudded in well and drilled 36" hole from 356 m to 430 m. Encountered boulders from 408 m to 417 m.
17:30	Took survey, inclination 1.04 deg. Pumped 15 m3 high viscous pill. Wiper tripped the hole to 370 m. Ran in hole to TD. Hole condition good.
18:00	Displaced the hole to 70 m3 1.5 sg mud.
20:00	Pulled out of the hole with 36" bottom hole assembly. Broke out bit and racked the bottom hole assembly in the derrick.
20:30	Changed out stand on conductor running tool.
22:30	Prepared to run 30" conductor.
23:59	Picked up the shoe joint. Moved the PGB into position in the moonpool. Adjusted load ring to accommodate hoses. Commenced running conductor.

DAILY REPORT ON WELL 31/5-6

Daily report no : 6 **Date:** 2000-07-05
Midnight depth : 430 m MD **Estimated PP:** sg **Mud weight:** 1,06 sg

Stop time	Description
01:00	Ran 30" conductor. Picked up wellhead.
03:30	Picked up 5" elevator, false rotary table and spaced out stinger. Installed 30" conductor running tool.
04:00	Cleared drill floor.
05:30	Latched wellhead into permanent guide base in moon pool.
10:00	Ran wellhead and permanent guide base on drill pipe. Landed conductor with shoe at +/- 430 m.
11:00	Confirmed bullseye less than 1 deg. Broke circulation
13:00	Cemented conductor in place with 24 m3 1,56 SG Lead cement followed by 24 m3 1,95 SG Tail cement displaced to 425 m.
19:00	Waited on cement to set with conductor in tension.
21:00	Released running tool. Pulled out of hole while strapping pipe. Laid out running tool.
23:00	Laid out hole opener assembly.
23:59	Made up 26" assembly.

Daily report no : 7 **Date:** 2000-07-06
Midnight depth : 430 m MD **Estimated PP:** sg **Mud weight:** 1,06 sg

Stop time	Description
00:30	Continued to run in hole to x-over at 88.59 m.
02:00	Changed to man elevators. Picked up 5" drillpipe.
02:30	Changed the air operated elevators and racked back 4 stands.
03:30	Ran in hole with heavy weight drillpipe. Stabbed into wellhead at 03:15 hrs. Ran in hole, made up DDM, broke circulation and tagged cement at 425 m.
05:00	Drilled cement and shoe at 425 m, drilled 5 m new formation, reamed hole, pumped 15 m3 high viscous mud and displaced same.
06:00	Pulled out of hole and laid down 26" assembly.
08:00	Re-arranged derrick, laid out side entry and kelly cock assembly. Picked up cement head.
12:00	Made up 18 3/4" wellhead and running tool with WB and laid out on deck.
14:00	Trouble shot hydraulic elevator, no progress.
15:30	Made up 17 1/2" bottom hole assembly. B/out MWD stand and reloaded same.
17:00	Ran in hole with bottom hole assembly to 150 m.
18:00	Picked up 5" drillpipe from deck, inspected and drifted.
20:30	Picked up 5" drillpipe and racked back 39 joints in derrick.
22:30	Ran in hole and picked up remaining bottom hole assembly. Attempted to stab into wellhead - no go. Re-positioned rig, stabbed into wellhead at 22:13 hrs after several attempts.
23:30	Made up DDM, broke circulation and tagged bottom at 435 m, drilled from 435 to 447 m.
23:59	Attempted to take surveys, no success.

Daily report no : 8 **Date:** 2000-07-07
Midnight depth : 1201 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,06 sg

Stop time	Description
06:00	Drilled the 17 1/2" hole from 447 m to 561 m.
12:00	Drilled 17 1/2" hole from 561 to 711m
23:59	Drilled 17 1/2" hole from 711 to 1059 m

Daily report no : 9 **Date:** 2000-07-08
Midnight depth : 1201 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,06 sg

Stop time	Description
05:00	Drilled 17 1/2" hole from 1059 to 1201m
06:00	Pumped 15m3 hi-vis pill set back drilling stand. Displaced hi vis out of hole
08:00	Started on wiper trip-worked through tight spots to 735m. Max 15ton OP. Wiped clean
10:30	Pulled tight at 714m. 25ton OP and unable to worc clean-started pumping out of hole to shoe. Hole condition improved. Rotated and reciprocated while circulating at shoe to clean pipe
13:00	RIH to 1113m took 15ton. Worked down to 1120m took 25ton. Washed and reamed to TD. No progress without using pumps. Reamed several times

DAILY REPORT ON WELL 31/5-6

Daily report no : 9 **Date:** 2000-07-08

Midnight depth : 1201 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,06 sg

Stop time	Description
14:00	Pumped 15m3 hi vis sweep-displaced hole to 1.30 sg mud
16:00	POOH witout any problems
17:00	Moved rig back over well centre
17:30	Jetted wellhead and guide base
18:00	POOH to 118m - cleaned pipe for gumbo
19:00	Continued to POOH to surface. Laid out 17 1/2" bit
19:30	P/U CMT stand. Break cmt head and loaded ball and dart
20:30	Changed bails and installed automatic casing elevator fixed hydraulic hoses
22:00	Rigged up to run 13 3/8" casing
23:59	Ran 13 3/8" casing install centralizers and guide ropes

Daily report no : 10 **Date:** 2000-07-09

Midnight depth : 1201 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,06 sg

Stop time	Description
05:30	Ran 13 3/8" casing from 101m. Stabbed into wellhead OK and continued to run a total of 74 jts
06:00	P/U 18 3/4" wellhead assembly. M/U x/o and plug launching assy to DP stinger
07:30	M/U wellhead to casing string. Removed flush mounted slips and install rotary bushings. L/D pup jnt from wellhead assy
09:00	Continued to run casing to 1178m
09:30	Took 5/10 ton. Attempted to come down with 20ton down weight, installed DDM and established circ at 50SPM. Washed down to TD
11:00	Landed 18 3/4"wellhead and took 25ton OP. R/U cement hose. Pumped casing volume with rig pumps and held prejob meeting
11:30	Press tested cmt line to 150bar/10min - OK. Pumped 5m3 FW spacer w/BJ and dropped ball for bttm plug
14:00	Mixed and pumped 128m3 144SG lead slurry followed by 20m3 192SG tail slurry
15:00	Dropped dart. Displaced w/BJ no indication of shear out. Switched to rig pumps and displaced cmt and bumped plug after 3144strokes-press tested casing to 110bar for 10min - OK. Checked for back flow - neg
16:00	Disconnected cmt hose. Released R/T. Sat back cmt std and made up DDM
17:00	Moved rig over well centre. Cleaned guide base and wellhead
18:00	POOH laid down R/T with x/o and stinger
18:30	Clear and tidy rig floor
20:30	Rigged up to run BOP. Remove roughneck tracks/ master bushings and adaptor ring. Install riser handling equipment
21:00	P/U riser and made up one double
23:00	Moved transporter and BOP into position. Installed guide lines/ pod lines. Rigged cellar deck
23:30	Stabbed into BOP and made up riser adaptor coupling. Performed load test to 210ton/sat down. Held SJA MEETING
23:59	P/U BOP and riser. Lowered transporter and move aft/ adjust height. Lowered BOP into guide funnels and removed restraining tuggers

Daily report no : 11 **Date:** 2000-07-10

Midnight depth : 1201 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,35 sg

Stop time	Description
01:00	Ran BOP through splash zone. Pressure tested C&K lines to 35/690bar for 5/10min. Installed work platforms while testing conduit and booster lines to 35bar
12:00	Continued to run BOP on riser testing on every 5 jnts. Held pre job meeting with crew
13:00	Enganged load ring. Pressure tested C&K lines - OK.
14:00	Installed hose saddles
14:30	Moved rig to well centre
17:30	Lowered BOP to check positon. Attempted to turn anticlockwise several times. Attached tuggers and oriented loadring and land BOP at 1615hrs, sat down 40ton. Performed 25ton OP test OK. Unlocked dogs and stroked out inner barrel
18:00	L/D landing jnt and picked up diverter assembly
18:30	M/U diverter assembly inner bbl, land and lock, took 10ton OP - OK
20:00	Laid out spider and R/T , connected diverter controlls, installed adaptor ring and master bushings, laid out bails and elevators, adusted dwks. brakes, installed mouse hole and tidy rig floor.
22:30	P/U std of HWDP and RIH, made up test tool and RIH on DP. Tested BOP connector to 175bar-10min-OK. Function tested BOP - OK.
23:30	POOH with test tool, laid down same.
23:59	Broke out and L/D NMDC from derrick

DAILY REPORT ON WELL 31/5-6

Daily report no : 12 **Date:** 2000-07-11
Midnight depth : 1201 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,35 sg

Stop time	Description
01:30	Broke and laid out power pulse, CDR, 17 1/2" stabs and pony DC.
03:00	Made up EDP HOT, checked and cleaned same.
06:00	Picked up and made up 9 5/8" hanger with 13 3/8" dummy and seals and racked back in derrick.
10:30	Changed to hyd. elevators, picked up 12 1/4" bit and BHA, tested mud motor, L/out x/o, P/up CDR, power pulser and new stabs, RIH to150m and test MWD at 3405 L/min flow rate at 93bar.
13:00	Started RIH picking up 5" DP.
13:30	Picked up drilling stand, broke out pup and made up to DDM
16:00	Moved MWD sensor while pressure testing I-BOP and kelly cocks - leaking. Started changing out I-BOP on DDM.
18:00	Continued to change out DDM I-BOP, changed out dies on torque wrench.
19:00	Pressure tested kelly hose-OK, rigged down test subs.
20:00	Assembled DDM torque wrench assy.
21:00	P/U cmt std for derrick,laid out head, rabbit DP below head, installed ball and dart, made up same and rackked back in derrick.
21:30	Continued to RIH to 1118m.
22:00	P/U cmt std, broke off kelly cock, racked back cmt std.
22:30	Continued to RIH to 1162m, tagged soft cement.
23:59	Drilled soft cement from 1162 to 1168m, drilled plugs at 1168m, started to drill on float at 1169m.

Daily report no : 13 **Date:** 2000-07-12
Midnight depth : 1550 m MD **Estimated PP:** 1,23 sg **Mud weight:** 1,35 sg

Stop time	Description
02:00	Drilled on FC at 1170m, reamed 3 times and pumped hi-vis pill.
04:30	Drilled firm cement from 1170 to 1195m, drilled shoe at 1196m.
05:00	Cleaned out rat hole and pumped hi-vis pill.
05:30	Drilled new hole to 1205m while displacing to KCL / glycol mud.
07:00	Continued to displace hole to KCL/ glycol mud.
08:00	Prepared for and performed LOT to 36bar with 1.35 SG MW , equals EMW OF 1.65 SG.
09:00	Took SCR'S on riser and choke line, displaced booster line to mud.
18:00	Continued to drill 12 1/4" hole from 1205 to1430m. Oriented from 1252 to 1261, from 1304 to 1320, from 1334 to 1349 and from 1363 to 1370m.
23:30	Continued to drill 12 1/4" hole from 1430 to 1550m.
23:59	Circulated to clean hole, ECD reduced from 1.42 to 1.40 SG

Daily report no : 14 **Date:** 2000-07-13
Midnight depth : 1709 m MD **Estimated PP:** 1,13 sg **Mud weight:** 1,35 sg

Stop time	Description
00:30	Continued to circulate and condition hole reducing ECD from 1.40 to 1.38 SG.
11:30	Continued to drill 12 1/4" hole from 1550 m to 1709 m.
13:30	Circulated bottoms up and clean on the shakers.
15:30	Pulled out of hole from 1709 m to 1518 m. Pumped slug. Pulled out of hole from 1518 m to 1319 m.
17:00	Pumped out of hole from 1319 m to 13 3/8" casing shoe at 1169 m.
18:30	Circulated hole clean at 13 3/8" casing shoe.
21:00	Pulled out of hole from 1169 to bottom hole assembly.
23:30	Pulled out of hole with bottom hole assembly.
23:59	Made up multi purpose tool.

Daily report no : 15 **Date:** 2000-07-14
Midnight depth : 1709 m MD **Estimated PP:** 1,13 sg **Mud weight:** 1,35 sg

Stop time	Description
02:00	Ran in hole and retrieved wearbushing.
04:30	Perfomed roundtrip with flushing tool to casing hang off point. Circulated riser volume.
06:00	Rigged up and commenced running 9 5/8" casing.
16:30	Ran 9 5/8" casing while filling every 5 joint.

DAILY REPORT ON WELL 31/5-6

Daily report no : 15 **Date:** 2000-07-14
Midnight depth : 1709 m MD **Estimated PP:** 1,13 sg **Mud weight:** 1,35 sg

Stop time	Description
20:00	Installed 5" drill pipe equipment and ran in hole on landing string.
21:00	Stood up with string. Attempted to pass with and without circulation. Noted discrepancy in landing string. Racked back 1 stand and installed cement stand.
21:30	Landed wellhead. Verified depth.
22:30	Rigged up cement hose and pressure tested same to 300 bar / 5 min. Established max pumprate without inducing losses to 1450 LPM.
23:59	Pumped 5 m3 of freshwater and dropped ball. Then mixed and pumped 12,2 m3 of 1.9 SG cement slurry and dropped dart. Chased with 3.3 m3 mud from cement unit, noted shear of plug. Final displacement done with rig pumps at a rate of 1450 LPM.

Daily report no : 16 **Date:** 2000-07-15
Midnight depth : 1709 m MD **Estimated PP:** 1,13 sg **Mud weight:** 1,35 sg

Stop time	Description
00:30	Pressure tested casing to 175 bar. Rigged down cement hose.
01:00	Released running tool with 6 right hand turns. Set seal assembly with 172 bar and pressure tested to 245 bar.
05:00	Tested BOP to 245 bar / 10 min.
06:30	Attempted to shear running tool off seal ring
08:30	Trouble shoot on running tool.
09:30	Picked up 2 meter and broke circulation with 475 LPM/2 bar. Pipe moved upwards with 5 ton over pull only. Pulled out of hole with running tool.
10:30	Cleaned and laid out running tool. Laid out 2 drill pipes and 2 pup joints.
13:00	Made up jetting assembly and ran in hole to wellhead while picking up 33 joints 5" drill pipe.
14:00	Jetted wellhead and BOP with 3800 LPM/82 bar and circulated clean. Function tested shear ram.
14:30	Broke DDM and commenced pulling out of hole.
15:00	Broke and laid out torque wrench.
16:00	Pulled out of hole and laid out jetting assembly.
18:30	Ran in hole with wear bushing while picking up 33 jts of drill pipe.
19:30	Pulled out of hole and laid out running tool.
20:30	Laid out 12 1/4" assembly.
21:00	Installed diverter bag and cleared rigfloor of 12 1/4" equipment.
23:59	Made up 8 1/2" bottom hole assembly.

Daily report no : 17 **Date:** 2000-07-16
Midnight depth : 1750 m MD **Estimated PP:** 1,10 sg **Mud weight:** 1,19 sg

Stop time	Description
02:30	Attempted shallow test on logging tool. No response from RAB tool. Pulled out of hole and cleaned connections. Ran back in hole and re-tested. Good test.
04:30	Ran in hole while picking up 6 1/2" drill collars and jar from deck.
07:30	Ran in hole on 5" drill pipe to 1200 m.
09:00	Installed new saver sub and re-installed torque wrench.
09:30	Changed bails and elevator.
10:30	Ran in hole from 1200 m to 1655 m.
11:00	Washed down from 1655 m to 1667 m. Tagged float collar. Pulled back and performed choke drill.
13:30	Drilled cement plugs and float collar.
17:00	Drilled cement and float shoe from 1668 m to 1704 m.
17:30	Cleaned out rathole from 1704 m to 1709 m.
20:30	Drilled new formation from 1709 m to 1714 m and displaced hole to 1.19 SG mud. Circulated to even weight in and out.
21:00	Performed formation leak off test to EMW 1.47 SG
21:30	Established choke and kill line friction.
23:59	Drilled 8 1/2" hole from 1714 m to 1750 m.

DAILY REPORT ON WELL 31/5-6

Daily report no : 18 **Date:** 2000-07-17
Midnight depth : 2082 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,19 sg

Stop time	Description
02:30	Drilled 8 1/2" hole from 1750 m to 1799 m.
03:00	Circulating for sample to establish formation.
05:00	Drilled 8 1/2" hole from 1799 m to 1822 m.
05:30	Circulated for sample.
23:59	Drilled 8 1/2" hole from 1822 m to 2082 m.

Daily report no : 19 **Date:** 2000-07-18
Midnight depth : 2370 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,19 sg

Stop time	Description
19:00	Drilled 8 1/2" hole from 2082 m to TD of well at 2370 m.
22:00	Circulated hole clean and conditioned mud.
23:59	Flow checked and pulled out of hole to 2196 m.

Daily report no : 20 **Date:** 2000-07-19
Midnight depth : 2370 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,19 sg

Stop time	Description
02:30	Pulled out of hole from 2196 m to 9 5/8" casing shoe at 1704 m.
03:00	Flow checked 15 min. OK. Circulated riser volume.
04:30	Ran in hole to TD on wiper trip.
05:30	Circulated bottoms up.
08:00	Flow checked. Pulled out of hole from 2370 m to 9 5/8" casing shoe at 1704 m.
11:00	Flow checked. Pulled out of hole from 1704 m to 75 m.
14:30	Laid out 8 1/2" bottom hole assembly.
15:30	Laid out mouse hole. Rigged up wireline equipment.
17:30	Made up CST logging assembly.
23:59	Performed CST logging.

Daily report no : 21 **Date:** 2000-07-20
Midnight depth : 2370 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,20 sg

Stop time	Description
01:30	Performed CST logging.
02:30	Secured and broke out logging string.
03:00	Installed 3 1/2" elevators and slips.
05:30	Picked up muleshoe and 33 jts 3 1/2" drill pipe while running in hole.
07:30	Changed handling equipment. Ran in hole on 5" drill pipe to TD 2370 m.
10:30	Circulated bottoms up while rotating and reciprocating string.
11:30	Picked up cement stand and made up surface lines. Pressure tested to 200 bar.
12:30	Tagged bottom and spaced out. Pumped 4 m3 fresh water spacer.
13:00	Problems with mix water chemical composition.
13:30	Pumped 11 m3 1.9 SG cement slurry followed by 1.2 m3 fresh water.
14:00	Spotted cement as balanced plug.
14:30	Racked cement stand. Pulled out of hole to 2325 m.
15:30	Hydraulic connection on topdrive burst. Repaired same while rotating slowly.
16:30	Pulled out of cement plug. Picked up cement stand and spaced out at 2120 m.
19:30	Circulated out excess cement and spacer. Dumped totally 34 m3 cement contaminated mud and spacer.
20:00	Pressure tested surface lines to 200 bar. Held pre-job safety meeting.
21:00	Pumped 4.4 m3 fresh water and 11 m3 1.9 SG cement followed by 1.2 m3 fresh water. Spotted cement as balanced plug.
22:30	Pulled slowly out of cement to 1870 m.
23:30	Circulated out excess cement and spacer.
23:59	Flushed surface lines and pressure tested same to 200 bar.

DAILY REPORT ON WELL 31/5-6

Daily report no : 22 **Date:** 2000-07-21
Midnight depth : 2370 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,20 sg

Stop time	Description
01:00	Pumped 11.6 m3 1.9 SG cement and 1.3 m3 fresh water. Displaced same to spot cement as balanced plug.
02:30	Racked back cement stand and pulled slowly out of cement to 1600 m.
04:00	Reverse circulated out excess cement and spacer. Dropped drill pipe dart and circulated it down.
08:30	Pulled out of hole with cement stinger.
09:30	Changed to 5" handling equipment. Prepared for 8 1/2" bottom hole assembly.
10:30	Made up 8 1/2" bottom hole assembly.
13:30	Ran in hole with 5" drill pipe to 1540 m.
14:00	Washed down from 1540 m to 1600 m.
15:00	Dressed hard cement from 1600 m to 1602 m. Set down 15 ton. Weight test OK.
17:00	Pulled out of hole from 1600 m to 223 m.
18:00	Laid out 8 1/2" dress off assembly. Simultaneously closed shear ram and tested cement plug to 118 bar. OK.
21:00	Made up 9 5/8" bridge plug. Ran in hole to setting depth.
21:30	Dropped ball and spaced out. Set bridge plug with elements at 658 m. Set down 3 ton to confirm plug set.
22:30	Pulled out of hole with setting tool. When above BOP, closed shear ram and tested plug to 118 bar, while pulling out of hole.
23:59	Made up multi-purpose tool and ran in hole to well head. Retrieved wear bushing with 25 ton overpull.

Daily report no : 23 **Date:** 2000-07-22
Midnight depth : 2370 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,20 sg

Stop time	Description
00:30	Pulled out of hole with wear bushing.
02:30	Dressed multi-purpose tool for seal assembly retrieval. Ran in hole and enganged seal assembly. Closed annular preventer and pulled seal assembly free with 30 ton over pull.
03:00	Flow checked well 15 min on choke and 15 min on trip tank. OK.
04:00	Pulled out of hole with seal assembly.
07:00	Made up 9 5/8" casing cutting assembly and ran in hole to cutting depth 646 m. Landed marine swivel and cut casing at 646 m.
10:00	Flow checked and pulled out of hole with cutting assembly.
11:30	Made up 9 5/8" spear assembly.
12:00	Ran in hole with 9 5/8" spear assembly.
13:30	Engaged spear and attempted to pull casing free. No success.
15:00	Released spear and pulled out of hole.
18:00	Made up 9 5/8" casing cutting assembly. Ran in hole and landed off marine swivel.
18:30	Cut 9 5/8" casing at 637 m.
21:00	Pulled out of hole and laid out cutting assembly.
21:30	Made up 9 5/8" spear assembly.
22:00	Ran in hole with 9 5/8" spear assembly.
23:00	Engaged spear and attempted to free casing. No go. Jarred to free casing. No go.
23:59	Attempted to release spear.

Daily report no : 24 **Date:** 2000-07-23
Midnight depth : 2370 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,20 sg

Stop time	Description
01:30	Attempted to release 9 5/8" grapple on spear.
03:30	Repaired hydraulic leak on topdrive.
06:30	Attempted to release 9 5/8" grapple from casing.
07:00	Freed casing and pulled 1 stand out of hole
08:00	Carried out post jarring inspection in derric and on topdrive
11:00	Pulled out of hole with 9 5/8" spear assembly and casing Secured well head in rotary
12:30	Rigged up casing handling equipment
13:00	Attempted to break out well head. Welder used cutting torch
16:30	Rigged up intermediate bails Made several attempts to break out casing No success Welder used cutting torch
17:30	Changed bails and handling equipment to 5"
18:30	Made up 13 3/8" bridge plug

DAILY REPORT ON WELL 31/5-6

Daily report no : 24 **Date:** 2000-07-23

Midnight depth : 2370 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,20 sg

Stop time	Description
21:00	Ran in hole with 13 3/8" bridge plug. Not able to pass 20" x 13 3/8" crossover at 360 m No go
22:30	Pulled out of hole with 13 3/8" bridge plug
23:59	Laid out over torqued 5" drill pipe

Daily report no : 25 **Date:** 2000-07-24

Midnight depth : m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,22 sg

Stop time	Description
01:00	Re-arranged pipe in derrick to get to 3 1/2" cement stinger
03:30	Ran in hole with 3 1/2" cement stinger to 656 m
04:00	Pumped and displaced 6 m3 of hi-vis pill from 656 m to 570 m
06:00	Pulled slowly out of hole and spaced out cement stinger at 594 m
07:00	Reverse circulated to even mud weight
07:30	Attempted to pressure test surface line. No go. Leak on cement pump. Repaired same
09:30	Pumped 8 m3 fresh water spacer, 17,4m3 1,95 SG cement and 140 liter spacer. Displaced same to spot a cement plug from 594 m to 374 m.
10:30	Pulled out of hole to 375 m.
11:00	Rigged up to reverse circulate and circulated 3 times pipe volume.
13:00	Rigged down reverse lines and pulled out of hole with cement stinger.
15:30	Made up jetting assembly. Ran in hole and jetted BOP. Pulled out of hole.
17:00	Slipped and cut drilling line.
20:00	Rigged up to pull BOP.
20:30	Pulled diverter through rotary. Held safety meeting.
21:30	Laid out diverter. Made up landing joint.
22:00	Collapsed and locked slip joint.
23:59	Unlatched BOP and moved rig 20 m clear of well head. Unlatched saddles.

Daily report no : 26 **Date:** 2000-07-25

Midnight depth : m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,22 sg

Stop time	Description
01:30	Laid out landing joint and slip joint.
07:00	Retrieved and laid out marine riser.
08:00	Moved BOP transporter aft. Removed work platforms. Lowered transporter, oriented and secured load ring.
09:30	Pulled BOP through splash zone on double. Landed BOP on transporter.
10:00	Released double riser joints from flex joint and pulled clear.
12:00	Subsea engineer carried out visual inside inspection on BOP. Filled same with sea water and pressure tested to 70 bar against shear ram
15:00	Skidded BOP aft while laying out double riser joint.
17:00	Made up cutting assembly for 30 " conductor.
18:00	Connected guide ropes on guide wires and installed ROV handles on MOST tool.
19:30	Ran in with cutting assembly. Stabbed into well head. Set down 10 ton.
20:00	Attempted to circulate. No go.
22:30	Cut 20" and 30" casing at 359 m. Engaged Most tool and pulled casing/well head free.
23:00	Commenced de-ballasting rig 5,5 m.
23:59	Started anchor handling.

Daily report no : 27 **Date:** 2000-07-26

Midnight depth : m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,22 sg

Stop time	Description
03:00	Pulling anchors.
07:00	Pulling anchors. Last anchor on deck 07:06 hrs.
23:59	

TIME DISTRIBUTION

Well: 31/5-6 **PO:** 1 **Start date:** 1980-01-01 **Rig:** SCARABEO 6 **Depth:** 2370,0 m MD
All sections **Stop date:** 2001-06-12

Operations	Hours	%	Hours	%	Acc. total
MOBILIZATION					
MOVING	49,0	7,80			
MOORING; RUNNING ANCHORS	20,0	3,18			
MOORING; PULLING ANCHORS	8,5	1,35			
TRIPPING IN CASED HOLE	23,0	3,66			
Sum			100,5	16,00	100,5
DRILLING					
BHA HANDLING/TESTING	31,5	5,02			
TRIPPING IN CASED HOLE	25,0	3,98			
TRIPPING IN OPEN HOLE	18,0	2,87			
DRILLING	109,5	17,44			
OTHER	11,0	1,75			
WELLHEAD EQUIPMENT INSTALLATION	2,0	0,32			
CIRC. AND COND. MUD/HOLE	17,0	2,71			
WIPER TRIP	7,0	1,11			
SURVEYING EQ. HANDLING/TESTING	0,5	0,08			
CASING HANDLING/TESTING	33,0	5,25			
RUNNING CASING IN CASED HOLE	12,5	1,99			
RUNNING CASING IN OPEN HOLE	13,0	2,07			
PRIMARY CEMENTING	18,0	2,87			
DRILLING OUT CEMENT PLUG	13,0	2,07			
FORMATION STRENGTH TESTING	3,0	0,48			
BOP HANDLING	8,0	1,27			
BOP RUNNING/RETRIEVING	17,5	2,79			
BOP TESTING	10,0	1,59			
WELLHEAD EQUIPMENT HANDLING	3,5	0,56			
Sum			353,0	56,21	453,5
FORMATION EVALUATION LOGGING					
LOGGING EQUIPMENT HANDLING/TESTING	4,0	0,64			
SIDEWALL CORING	8,0	1,27			
Sum			12,0	1,91	465,5
PLUG AND ABANDONMENT					
BHA HANDLING/TESTING	6,5	1,04			
TRIPPING IN CASED HOLE	5,5	0,88			
WELLHEAD EQUIPMENT INSTALLATION	4,5	0,72			
CASING HANDLING/TESTING	1,0	0,16			
TRIPPING FOR CEMENT JOB	17,0	2,71			
DRILLING OUT CEMENT PLUG	1,0	0,16			
BOP HANDLING	7,0	1,11			
BOP RUNNING/RETRIEVING	15,5	2,47			
SET CEMENT PLUG	26,0	4,14			
SET MECHANICAL PLUG	4,0	0,64			
TRIPPING OF CASING CUTTING EQUIPMENT	13,5	2,15			
CUT CASING/WELLHEAD	3,0	0,48			
CASING RETRIEVING	5,0	0,80			
SLIP AND CUT DRILLING LINE	1,5	0,24			
Sum			111,0	17,68	576,5
DOWNTIME MOBILIZATION					
EQUIPMENT FAILURE AND REPAIR	0,5	0,08			
WAITING	0,5	0,08			
Sum			1,0	0,16	577,5
DOWNTIME DRILLING					
EQUIPMENT FAILURE AND REPAIR	20,5	3,26			
OTHER	1,0	0,16			
Sum			21,5	3,42	599,0

TIME DISTRIBUTION

Well: 31/5-6 **PO:** 1 **Start date:** 1980-01-01 **Rig:** SCARABEO 6 **Depth:** 2370,0 **m MD**
All sections **Stop date:** 2001-06-12

Operations	Hours	%	Hours	%	Acc. total
DOWNTIME PLUG AND ABANDONMENT					
EQUIPMENT FAILURE AND REPAIR	10,5	1,67			
CEMENTING	0,5	0,08			
OTHER	18,0	2,87			
Sum			29,0	4,62	628,0
Reported time (100,0 % of well total 628,0 hours) :					628,0

HOLE DEVIATION

Well: 31/5-6 **Reference point:** RKB ; 26,0 m ABOVE MSL

Waterdepth: 328,0 m **Vertical to:** 353,9 m **Total Depth:** 2370,0 m MD

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

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

Wellhead Coordinates, UTM: **North :** 6732050,26 m, **East :** 519494,96 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]
0,0	0,00	0,00	MWD	1	0,0	0,00	0,00	0,0	0,00	0,00	0,00
354,0	0,19	277,42	MWD	1	354,0	0,00	0,00	0,0	0,00	0,00	0,00
362,5	0,29	299,18	MWD	1	362,5	0,01	-0,03	0,0	0,47	0,35	76,62
372,0	0,37	300,83	MWD	1	372,0	0,04	-0,08	0,1	0,25	0,25	5,22
381,4	0,30	250,64	MWD	1	381,4	0,05	-0,13	0,1	0,93	-0,22	-160,18
390,5	0,69	329,46	MWD	1	390,5	0,09	-0,18	0,2	2,30	1,29	259,85
400,5	0,93	292,63	MWD	1	400,5	0,17	-0,29	0,3	1,68	0,72	-110,49
408,5	1,11	310,92	MWD	1	408,5	0,25	-0,40	0,5	1,38	0,67	68,42
413,0	1,04	309,41	MWD	1	413,0	0,30	-0,47	0,6	0,50	-0,47	-10,11
436,0	1,33	298,28	MWD	1	436,0	0,56	-0,86	1,0	0,48	0,38	-14,53
443,5	1,15	299,24	MWD	1	443,5	0,64	-1,01	1,2	0,72	-0,72	3,83
463,1	1,20	298,98	MWD	1	463,1	0,83	-1,36	1,6	0,08	0,08	-0,40
494,2	1,29	299,88	MWD	1	494,1	1,16	-1,95	2,3	0,09	0,09	0,87
522,1	1,16	299,87	MWD	1	522,1	1,46	-2,46	2,9	0,14	-0,14	-0,01
549,7	1,17	297,84	MWD	1	549,6	1,73	-2,95	3,4	0,05	0,01	-2,21
577,7	1,05	300,51	MWD	1	577,6	2,00	-3,43	4,0	0,14	-0,13	2,86
607,7	0,93	299,26	MWD	1	607,6	2,25	-3,88	4,5	0,12	-0,12	-1,25
636,6	0,94	286,24	MWD	1	636,5	2,44	-4,31	5,0	0,22	0,01	-13,52
664,7	0,76	287,28	MWD	1	664,6	2,55	-4,71	5,4	0,19	-0,19	1,11
693,2	0,70	287,51	MWD	1	693,2	2,66	-5,06	5,7	0,06	-0,06	0,24
721,7	0,73	283,28	MWD	1	721,7	2,76	-5,40	6,1	0,06	0,03	-4,45
750,9	0,75	279,79	MWD	1	750,9	2,83	-5,77	6,4	0,05	0,02	-3,59
779,6	0,71	272,74	MWD	1	779,5	2,87	-6,13	6,8	0,10	-0,04	-7,38
807,8	1,10	295,93	MWD	1	807,7	3,00	-6,55	7,2	0,56	0,41	24,64
836,1	1,06	294,15	MWD	1	836,0	3,23	-7,03	7,7	0,05	-0,04	-1,89
865,1	1,04	291,11	MWD	1	865,0	3,43	-7,52	8,3	0,06	-0,02	-3,14
889,1	1,08	290,61	MWD	1	889,0	3,59	-7,94	8,7	0,05	0,05	-0,63
919,7	0,77	277,64	MWD	1	919,6	3,72	-8,41	9,2	0,36	-0,30	-12,72
949,3	0,59	279,48	MWD	1	949,2	3,77	-8,76	9,5	0,18	-0,18	1,87
978,5	0,28	273,81	MWD	1	978,4	3,80	-8,98	9,7	0,32	-0,32	-5,82
1006,6	0,29	263,28	MWD	1	1006,5	3,79	-9,12	9,9	0,06	0,01	-11,23
1035,0	0,10	278,02	MWD	1	1035,0	3,79	-9,21	10,0	0,21	-0,20	15,55
1063,5	0,15	175,74	MWD	1	1063,4	3,76	-9,23	10,0	0,21	0,05	-107,89
1091,8	0,09	123,50	MWD	1	1091,7	3,71	-9,21	9,9	0,13	-0,06	-55,28
1120,8	0,20	131,87	MWD	1	1120,7	3,66	-9,16	9,9	0,12	0,11	8,66
1148,5	0,36	94,74	MWD	1	1148,4	3,62	-9,03	9,7	0,25	0,17	-40,18

Norsk Hydro

2001-06-12

HOLE DEVIATION

Well: 31/5-6 **Reference point:** RKB ; 26,0 m ABOVE MSL
Waterdepth: 328,0 m **Vertical to:** 353,9 m **Total Depth:** 2370,0 m MD
Utm zone: 31 **Central Median:** 3° E **Horizontal datum:** ED50
Template Centre Coordinates, UTM: **North :** m, **East :** m
Wellhead Coordinates, UTM: **North :** 6732050,26 m, **East :** 519494,96 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]
1176,1	0,44	108,97	MWD	1	1176,0	3,58	-8,85	9,5	0,14	0,09	15,48
1209,0	0,37	150,96	MWD	1	1208,9	3,45	-8,68	9,3	0,27	-0,06	38,31
1237,5	0,45	148,39	MWD	1	1237,4	3,27	-8,57	9,2	0,09	0,08	-2,71
1266,5	0,97	259,72	MWD	1	1266,4	3,13	-8,76	9,3	1,25	0,54	115,17
1294,0	0,83	269,44	MWD	1	1293,9	3,09	-9,18	9,7	0,22	-0,15	10,58
1324,0	2,71	271,19	MWD	1	1323,9	3,10	-10,11	10,6	1,88	1,88	1,75
1351,7	4,06	268,38	MWD	1	1351,6	3,08	-11,75	12,1	1,47	1,46	-3,04
1380,6	5,55	269,98	MWD	1	1380,3	3,05	-14,16	14,5	1,55	1,55	1,66
1409,3	5,71	270,88	MWD	1	1408,9	3,08	-16,98	17,3	0,19	0,17	0,94
1435,2	5,51	270,82	MWD	1	1434,6	3,11	-19,51	19,8	0,23	-0,23	-0,07
1463,9	5,42	270,39	MWD	1	1463,3	3,14	-22,25	22,5	0,10	-0,09	-0,45
1493,4	5,40	269,82	MWD	1	1492,6	3,15	-25,03	25,2	0,06	-0,02	-0,58
1522,2	5,27	271,66	MWD	1	1521,3	3,18	-27,71	27,9	0,22	-0,14	1,92
1551,7	5,28	270,92	MWD	1	1550,6	3,24	-30,41	30,6	0,07	0,01	-0,75
1580,3	5,28	271,35	MWD	1	1579,2	3,30	-33,05	33,2	0,04	0,00	0,45
1608,8	5,27	272,03	MWD	1	1607,5	3,37	-35,66	35,8	0,07	-0,01	0,72
1634,7	3,55	263,45	MWD	1	1633,3	3,32	-37,65	37,8	2,13	-1,99	-9,93
1666,6	2,80	263,07	MWD	1	1665,2	3,12	-39,41	39,5	0,71	-0,71	-0,36
1683,5	2,80	265,76	MWD	1	1682,1	3,04	-40,23	40,3	0,23	0,00	4,77
1709,0	2,85	270,00	MWD	1	1707,5	2,99	-41,48	41,6	0,25	0,06	4,99
1726,4	2,99	269,78	MWD	1	1724,9	2,99	-42,37	42,5	0,24	0,24	-0,38
1752,4	3,00	271,11	MWD	1	1750,8	3,00	-43,72	43,8	0,08	0,01	1,54
1782,9	2,91	272,00	MWD	1	1781,3	3,04	-45,30	45,4	0,10	-0,09	0,88
1797,0	2,95	270,00	MWD	1	1795,4	3,05	-46,02	46,1	0,23	0,08	-4,24
1809,2	2,91	274,04	MWD	1	1807,6	3,08	-46,64	46,7	0,52	-0,10	9,96
1838,4	2,98	275,73	MWD	1	1836,8	3,20	-48,14	48,2	0,11	0,07	1,74
1866,2	3,14	277,08	MWD	1	1864,5	3,37	-49,61	49,7	0,19	0,17	1,46
1894,0	3,20	276,61	MWD	1	1892,3	3,55	-51,14	51,3	0,07	0,06	-0,51
1922,6	3,35	276,59	MWD	1	1920,8	3,74	-52,76	52,9	0,16	0,16	-0,02
1951,2	3,48	276,60	MWD	1	1949,4	3,94	-54,45	54,6	0,14	0,14	0,01
1981,2	3,49	281,28	MWD	1	1979,3	4,22	-56,25	56,4	0,29	0,01	4,69
2009,5	3,59	279,82	MWD	1	2007,6	4,54	-57,97	58,1	0,14	0,11	-1,55
2037,5	3,64	280,85	MWD	1	2035,6	4,86	-59,71	59,9	0,09	0,05	1,10
2066,0	3,77	277,47	MWD	1	2064,0	5,15	-61,53	61,7	0,27	0,14	-3,56
2095,1	4,02	277,72	MWD	1	2093,0	5,41	-63,49	63,7	0,26	0,26	0,26
2122,7	4,19	282,07	MWD	1	2120,6	5,75	-65,43	65,7	0,39	0,18	4,73

Norsk Hydro

2001-06-12

HOLE DEVIATION

Well: 31/5-6 **Reference point:** RKB ; 26,0 m ABOVE MSL
Waterdepth: 328,0 m **Vertical to:** 353,9 m **Total Depth:** 2370,0 m MD
Utm zone: 31 **Central Median:** 3° E **Horizontal datum:** ED50
Template Centre Coordinates, UTM: **North :** m, **East :** m
Wellhead Coordinates, UTM: **North :** 6732050,26 m, **East :** 519494,96 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]
2151,6	4,24	282,21	MWD	1	2149,3	6,20	-67,50	67,8	0,05	0,05	0,15
2179,4	4,22	280,34	MWD	1	2177,1	6,60	-69,52	69,8	0,15	-0,02	-2,02
2237,1	4,49	282,79	MWD	1	2234,6	7,48	-73,80	74,2	0,17	0,14	1,28
2266,1	4,64	285,86	MWD	1	2263,5	8,05	-76,04	76,5	0,30	0,15	3,17
2295,0	4,80	286,80	MWD	1	2292,3	8,72	-78,32	78,8	0,18	0,17	0,98
2353,8	5,08	289,45	MWD	1	2350,9	10,30	-83,14	83,8	0,18	0,14	1,35
2370,0	5,08	289,45	NBI	1	2367,0	10,78	-84,49	85,2	0,00	0,00	0,00

MAIN CONSUMPTION OF CASING/TUBING ON WELL 31/5-6 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	SL-60	76,0	6
13 3/8"	SURFACE	L-80	107,14	72,00	NS-CC	843,0	74
9 5/8"	PRODUCTION	L-80	79,61	53,50	NS-CC	482,0	43
9 5/8"	PRODUCTION	P-110	79,61	53,50	NK 3 SB	36,0	3
9 5/8"	PRODUCTION	L-80	79,61	53,50	NK 3 SB	35,0	3
9 5/8"	PRODUCTION	P-110	69,94	47,00	NK 3 SB	528,0	45
9 5/8"	PRODUCTION	L-80	69,94	47,00	NK 3 SB	212,0	18
9 5/8"	PRODUCTION	L-80	79,61	53,50	NS-CC	58,0	5

BITRECORD FOR WELL 31/5-6 PO: 1

Bit No	Bit RR	Bit 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	MAXGTPT03	X749030	415	18,24,24	1,132	1	430	74	3,60	20,6	65/65	64800				3 - 6 - BT - H - E	2	RG	TD
2		HO	36,00	DARR	TOSTATE	21463		12,12,12,12,12,12	0,663	1	430	74	3,60	20,6	65/65	64800				1 - 1 - NO - A - E	I	NO	
3		MITO	26,00	HTC	GTXCMG1	D56DT	115M	14,16,22,22	1,089	2	430	0	21,34	0,0	50/120	65	3/6	4000/4000	200/200	1 - 1 - WT - A - 1	I	NO	TD
4		PDC	12,25	HTC	BD536	0324082	M323	16,16,16,16,16,16	1,178	4	1709	508	17,70	28,7	172/172	115900	0/108	3369/3369	214/214	1 - 1 - CT - S - X	2	NO	TD
5		PDC	8,50	HTC	BD548	1213152	M223	11,11,11,11,12,12	0,592	5	2370	661	33,20	19,9	115/115	237300	39/93	2026/2131	145/165	3 - 2 - WT - A - X	I	BU	TD

BOTTOM HOLE ASSEMBLIES USED ON WELL 31/5-6 PO: 1

BHA no. 1: No. / Element / OD(in) / Length(m) Depth In: 356 m MD Out: 430 m MD

1	MAXGTPT03	17,5	0,40	2	TOSTATE	36,0	3,05
3	FLOAT SUB	8,75	0,87	4	CDR	9,25	7,20
5	MWD	9,25	8,45	6	NON MAG. STAB	17,5	2,02
7	NON MAG. COLLAR	9,25	8,22	8	X-OVER	9,5	0,79
9	DRILL COLLAR STEEL	8,0	55,91	10	JAR	7,813	9,77
11	DRILL COLLAR STEEL	8,0	18,42	12	X-OVER	6,5	0,66
13	HWDP	5,0	137,56				

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 253,32

BHA no. 2: No. / Element / OD(in) / Length(m) Depth In: 430 m MD Out: 430 m MD

1	GTXCMG1	26,0	0,60	2	NEAR BIT STAB	26,0	2,44
3	X-OVER	9,5	0,79	4	DRILL COLLAR STEEL	8,0	55,91
5	JAR	7,813	9,77	6	DRILL COLLAR STEEL	7,813	18,42
7	X-OVER	6,5	0,66	8	HWDP	5,0	192,20

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 280,79

BHA no. 3: No. / Element / OD(in) / Length(m) Depth In: 430 m MD Out: 1201 m MD

1	MAXGTPT03			2	NEAR BIT STAB	17,375	1,87
3	SHORT DRILL COLLAR	9,875	3,66	4	NON MAG. STAB	9,875	2,12
5	CDR	9,25	7,20	6	MWD	9,25	8,45
7	NON MAG. STAB	17,5	2,02	8	NON MAG. COLLAR	9,25	8,22
9	X-OVER	9,5	0,79	10	DRILL COLLAR STEEL	8,0	55,91
11	JAR	7,813	9,77	12	DRILL COLLAR STEEL	8,0	18,42
13	X-OVER	6,5	0,66	14	HWDP	5,0	137,56

Reason pulled: Sum: 256,65

BHA no. 4: No. / Element / OD(in) / Length(m) Depth In: 1201 m MD Out: 1709 m MD

1	BD536	12,25	0,37	2	DOWN HOLE MOTOR WITH ST/	12,125	9,23
3	FLOAT SUB	8,0	0,87	4	STEEL STAB	8,0	1,76
5	X-OVER	9,5	0,70	6	MWD	9,25	15,69
7	NON MAG. STAB	12,125	2,27	8	NON MAG. COLLAR	9,313	8,22
9	X-OVER	9,5	0,79	10	DRILL COLLAR STEEL	8,0	55,91
11	JAR	7,813	9,77	12	DRILL COLLAR STEEL	8,0	18,42
13	X-OVER	6,5	0,66	14	HWDP	5,0	137,56

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 262,22

BHA no. 5: No. / Element / OD(in) / Length(m) Depth In: 1709 m MD Out: 2370 m MD

1	BD548	8,5	0,34	2	LOGGING WHILE DRILLING TO(	8,0	3,06
3	LOGGING WHILE DRILLING TOOL	8,0	1,53	4	LOGGING WHILE DRILLING TO(	6,5	5,71
5	MWD	6,75	8,34	6	LOGGING WHILE DRILLING TO(	8,25	6,01
7	NON MAG. COLLAR	6,25	8,75	8	X-OVER	6,25	0,24
9	DRILL COLLAR STEEL	6,5	65,80	10	X-OVER	6,5	0,44
11	JAR	6,25	9,35	12	HWDP	5,0	146,77
13	DART SUB	6,25	0,62				

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 256,96

BHA no. 6: No. / Element / OD(in) / Length(m) Depth In: 647 m MD Out: 647 m MD

1	EXTERNAL CUTTER	6,5	1,83	2	DRILL PIPE	5,0	291,32
3	X-OVER	8,0	0,50	4	OTHER	8,0	1,81
5	X-OVER	6,5	0,94				

Reason pulled: Sum: 296,40

BOTTOM HOLE ASSEMBLIES USED ON WELL 31/5-6 PO: 1

BHA no. 7: No. / Element / OD(in) / Length(m) Depth In: 360 m MD Out: 360 m MD

1	OTHER	6,0	0,82	2	X-OVER	8,0	0,50
3	SPEAR	8,0	1,41	4	STOP SUB	7,75	0,93
5	BUMPER SUB	8,0	3,42	6	DRILL COLLAR STEEL	8,0	28,16
7	X-OVER	6,5	0,94				

Reason pulled: Sum: 36,18

BHA no. 8: No. / Element / OD(in) / Length(m) Depth In: 637 m MD Out: 637 m MD

1	EXTERNAL CUTTER	6,25	1,83	2	DRILL PIPE	5,0	283,65
3	X-OVER	8,0	0,50	4	OTHER	8,0	1,81
5	X-OVER	6,5	0,94				

Reason pulled: Sum: 288,73

BHA no. 9: No. / Element / OD(in) / Length(m) Depth In: 360 m MD Out: 360 m MD

1	OTHER	6,0	0,82	2	X-OVER	8,0	0,50
3	SPEAR	8,0	1,41	4	STOP SUB	7,75	0,93
5	BUMPER SUB	8,0	3,42	6	DRILL COLLAR STEEL	8,0	28,16
7	X-OVER	6,5	0,94	8	FISHING JAR	8,0	2,34

Reason pulled: Sum: 38,52

BHA no. 10: No. / Element / OD(in) / Length(m) Depth In: 359 m MD Out: 359 m MD

1	BULL NOZE	7,75	0,36	2	EXTERNAL CUTTER	9,75	2,10
3	OTHER	9,5	8,92	4	DRILL COLLAR STEEL	8,0	55,91
5	X-OVER	6,25	0,76	6	HWDP	5,0	82,47

Reason pulled: Sum: 150,52

CEMENT SLURRY REPORT ON WELL 31/5-6

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]
2000-07-05	30"	CASING CEMENTING	LEAD	24,00	1,56	8,00	129,63	FP-14L	l	0,20	
								A-3L	l	3,85	
			TAIL SLURRY	22,00	1,95	8,00	74,74	FP-14L	l	0,20	
								A-7L	l	3,55	
			DISPLACEMENT			8,00					
2000-07-09	13 3/8"	CASING CEMENTING	TAIL SLURRY	22,00	1,92	34,00	75,05	R-12L	l	0,55	
								FP-14L	l	0,20	
			LEAD	127,00	1,44	34,00	169,30	R-15L	l	1,20	
								A-3L	l	5,33	
								FP-14L	l	0,20	
			DISPLACEMENT			34,00					
2000-07-14	9 5/8"	CASING CEMENTING	DISPLACEMENT			45,00					
			TAIL SLURRY	12,00	1,90	45,00	78,16	CD-31L	l	0,50	
								FP-14L	l	0,20	
								R-12L	l	0,55	
								MICRO	l	3,00	
2000-07-20	UNDEFINED	PLUG IN OPEN HOLE	TAIL SLURRY	11,00	1,90	82,00	82,50	CD-31L	l	0,80	
								FL-45L	l	7,00	
								FP-14L	l	0,20	
								MICRO	l	12,00	
								R-12L	l	0,90	
			SPACER		1,00	82,00					
			DISPLACEMENT			82,00					
2000-07-20	UNDEFINED	PLUG IN OPEN HOLE	TAIL SLURRY	11,00	2,00	72,00	82,50	CD-31L	l	0,60	
								FL-45L	l	7,00	
								FP-9L	l	0,20	
								MICRO	l	12,00	
								R-12L	l	0,85	
			FRESHWATER		1,00	72,00					
2000-07-21	9 5/8"	PLUG IN CASED TO OPEN HOLE	TAIL SLURRY	11,00	1,90	63,00	82,47	R-12L	l	0,85	
								CD-31L	l	0,60	

CEMENT SLURRY REPORT ON WELL 31/5-6

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]
2000-07-21	9 5/8"	PLUG IN CASED TO OPEN HOLE	TAIL SLURRY	11,00	1,90	63,00	82,47	FL-45L	l	7,00	
								FP-9L	l	0,20	
								MICRO	l	12,00	
			FRESHWATER		1,00	63,00					
2000-07-24	13 3/8"	PLUG IN CASED HOLE	TAIL SLURRY	17,38	1,95	19,00	72,57	FP-9L	l	0,20	
			DISPLACEMENT		1,19	19,00					
			FRESHWATER		1,00	19,00					

CEMENT CONSUMPTION PER JOB ON WELL 31/5-6

Date	CsgSize	Job Type	Cement/ Additive	Description	Unit	Actual Amount Used
2000-07-05	30"	CASING CEMENTING	A-3L	EXTENDER: LIQUID LODENSE	l	1159
			A-7L	ACCELERATOR: LIQUID CACL2	l	1230
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	208
			G	API CLASS G	MT	50
2000-07-09	13 3/8"	CASING CEMENTING	A-3L	EXTENDER: LIQUID LODENSE	l	4148
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	204
			G	API CLASS G	MT	106
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D	l	147
			R-15L	RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DE	l	905
2000-07-14	9 5/8"	CASING CEMENTING	CD-31L	DISPERSANT: CD-31L LIQUID	l	93
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	42
			G	API CLASS G	MT	17
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	467
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D	l	124
2000-07-20	NDEFINE	PLUG IN OPEN HOLE	CD-31L	DISPERSANT: CD-31L LIQUID	l	159
			FL45LN	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEG	l	2204
			G	API CLASS G	MT	20
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D	l	203
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	2623
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	45
2000-07-20	NDEFINE	PLUG IN OPEN HOLE	CD-31L	DISPERSANT: CD-31L LIQUID	l	
			FP-9L	SPECIAL ADDITIVE: DEFOAMER	l	
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	1616
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D	l	117
			G	API CLASS G	MT	13
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	37
			CD31LN	DISPERSANT: CD-31LN LIQUID	l	83
			FL45LN	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEG	l	1100
			FL-45L	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEG	l	
2000-07-21	9 5/8"	PLUG IN CASED TO OPEN HOLE	CD31LN	DISPERSANT: CD-31LN LIQUID	l	196
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D	l	164
			FL45LN	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEG	l	1011
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	72
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	1787
			G	API CLASS G	MT	14
2000-07-24	13 3/8"	PLUG IN CASED HOLE	FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	69
			G	API CLASS G	MT	24

TOTAL CONSUMPTION OF CEMENT ADDITIVES ON WELL 31/5-6

Section	Cement/Additive	Unit	Total Amount Used
36"	EXTENDER: LIQUID LODENSE	l	1159,00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	208,00
	ACCELERATOR: LIQUID CACL2	l	1230,00
	API CLASS G	MT	50,00
17 1/2"	API CLASS G	MT	130,00
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC	l	147,00
	EXTENDER: LIQUID LODENSE	l	4148,00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	273,00
	RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DEGC	l	905,00
12 1/4"	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION	l	467,00
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC	l	124,00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	42,00
	API CLASS G	MT	16,50
	DISPERSANT: CD-31L LIQUID	l	93,00
8 1/2"	DISPERSANT: CD-31L LIQUID	l	159,00
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC	l	484,00
	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEGC	l	
	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEGC	l	4315,00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	154,00
	SPECIAL ADDITIVE: DEFOAMER	l	
	API CLASS G	MT	47,00
	DISPERSANT: CD-31LN LIQUID	l	279,00
	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION	l	6026,00

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 31/5-6 PO: 1

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

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2000-07-04 12:00	431	431	SPUD MUD	100,0	1,06						0	0			50,0				
2000-07-05 23:00	431	431	SPUD MUD	100,0	1,06						0	0			50,0				
2000-07-06	441	441	SPUD MUD	100,0	1,06						0	0							
2000-07-07	1065	1065	SPUD MUD	100,0	1,06						0	0							
2000-07-08	1201	1201	SPUD MUD	100,0	1,06						0	0							
2000-07-09	1201	1201	SPUD MUD	100,0	1,06						0	0							
2000-07-10	1201	1201	GLYDRIL	78,0	1,35						0	0				17,0	15,5	5,0	7,0
2000-07-11	1201	1201	GLYDRIL	79,0	1,35						0	0				17,0	15,5	5,0	7,0

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

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2000-07-12	1550	1549	GLYDRIL	78,0	1,35						0	0				16,0	15,5	6,0	10,0
2000-07-13	1606	1605	GLYDRIL	59,0	1,35		58	45	39	28	0	0	13	10		13,0	16,0	5,0	8,0
2000-07-14	1709	1708	GLYDRIL	61,0	1,35		65	49	43	33	0	0	13	11	50,0	16,0	16,5	6,0	9,0
2000-07-15	1709	1708	GLYDRIL	61,0	1,35		65	49	43	33	0	0	13	11	50,0	16,0	16,5	6,0	9,0
2000-07-16 12:00	1709	1708	GLYDRIL	52,0	1,19		46	33	26	28	0	0	9	8	0,5	13,0	10,0	5,0	7,0

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

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2000-07-17	2075	2073	GLYDRIL	60,0	1,19	26,0	49	38	30	22	0	0	10	8	0,5	11,0	13,5	6,0	8,0
2000-07-18	2370	2367	GLYDRIL	68,0	1,19	26,0	54	39	31	23	0	0	13	10	50,0	11,0	13,5	6,0	8,0
2000-07-19	2370	2367	GLYDRIL	68,0	1,19		52	38	30	22	0	0	11	9	50,0	14,0	12,5	6,0	8,0
2000-07-20	2370	2367	GLYDRIL	68,0	1,20		57	44	37	29	0	0	11	9	50,0	13,0	15,5	5,0	6,5
2000-07-21	2370	2367	GLYDRIL	68,0	1,20		52	40	34	26	0	0	10	8	50,0	12,0	14,0	4,5	7,0
2000-07-22	2370	2367	GLYDRIL	68,0	1,20		52	40	34	26	0	0	10	8	50,0	12,0	14,0	4,5	7,0
2000-07-23	2370	2367	GLYDRIL	68,0	1,20		52	40	34	26	0	0	10	8	50,0	12,0	14,0	4,5	7,0
2000-07-24	2370	2367	GLYDRIL	64,0	1,22		50	37	32	24	0	0	8	6	50,0	13,0	12,0	3,5	5,0
2000-07-25	2370	2367	GLYDRIL	0,0	0,00		0	0	0	0	0	0	0	0	50,0	0,0	0,0	0,5	0,0

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 31/5-6 PO: 1

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]
2000-07-04 12:00	431	431	SPUD MUD	1,06					/																
2000-07-05 23:00	431	431	SPUD MUD	1,06					/																
2000-07-06	441	441	SPUD MUD	1,06					/																
2000-07-07	1065	1065	SPUD MUD	1,06					/																
2000-07-08	1201	1201	SPUD MUD	1,06					/																
2000-07-09	1201	1201	SPUD MUD	1,06					/																
2000-07-10	1201	1201	GLYDRIL	1,35	2,8				/			0,0	0,1			80000	240			15,0		0,1			40
2000-07-11	1201	1201	GLYDRIL	1,35	2,8				/			0,0	0,1			80000	240			15,0		0,1			40

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]
2000-07-12	1550	1549	GLYDRIL	1,35	2,3				/			0,0	0,0			80000	320			15,0		0,1			24
2000-07-13	1606	1605	GLYDRIL	1,35	2,4		1		/	8,4				164		78000	380			9,0					45
2000-07-14	1709	1708	GLYDRIL	1,35	2,4		1		/	8,3				170	0	81000	380			8,9					37
2000-07-15	1709	1708	GLYDRIL	1,35	2,4		1		/	8,3				170		81000	380			8,9					37
2000-07-16 12:00	1709	1708	GLYDRIL	1,19	2,2		1		/					143	0	68000	280			4,7					53

Hole section : 8 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]
2000-07-17	2075	2073	GLYDRIL	1,19	2,3		1		/			0,0	0,0			67000	280			10,0		9,0	42	3,0	55
2000-07-18	2370	2367	GLYDRIL	1,19	2,2		1		/			0,0	0,0			68000	340			11,0			28	3,0	87
2000-07-19	2370	2367	GLYDRIL	1,19	2,3		1		/			0,0	0,0			68000	280			11,0			18	3,0	114
2000-07-20	2370	2367	GLYDRIL	1,20	5,2		1		/			0,1	2,1			63000	400			11,5			14	3,0	138
2000-07-21	2370	2367	GLYDRIL	1,20	2,8		1		/			0,3	1,8			60000	280			11,0			14	3,0	138
2000-07-22	2370	2367	GLYDRIL	1,20	2,8		1		/			0,3	1,8			60000	280			11,0			14	3,0	138
2000-07-23	2370	2367	GLYDRIL	1,20	2,8		1		/			0,3	1,8			60000	280			11,0			14	3,0	138
2000-07-24	2370	2367	GLYDRIL	1,22	3,5		1		/			0,1	1,9			53000	560			11,0			14	3,0	102
2000-07-25	2370	2367	GLYDRIL	0,00	0,0		0		/			0,0	0,0			0	0			0,0			0	0,0	0

TOTAL CONSUMPTION OF MUD ADDITIVES ON WELL 31/5-6

Section	Product/ Additive	Unit	Total Amount Used
36"	CMC EHV	kg	325,00
	M-I BAR	kg	83000,00
	SODA ASH	kg	150,00
	WYOMING BENTONITE	kg	26000,00
17 1/2"	CMC EHV	kg	425,00
	M-I BAR	kg	39000,00
	SODA ASH	kg	400,00
	WYOMING BENTONITE	kg	23000,00
12 1/4"	CELPOL ESL	kg	1700,00
	CITRIC ACID	kg	175,00
	DUOTEC NS	kg	1225,00
	KCL BRINE	l	110000,00
	M-I BAR	kg	74000,00
	POTASSIUM CARBONATE	kg	225,00
	SODA ASH	kg	100,00
	WYOMING BENTONITE	kg	7000,00
8 1/2"	BACL2	l	75,00
	CELPOL ESL	kg	3900,00
	CITRIC ACID	kg	100,00
	DUOTEC NS	kg	2125,00
	GLYDRIL MC	l	11390,00
	KCL POWDER	kg	48000,00
	M-I BAR	kg	45000,00
	POTASSIUM CARBONATE	kg	150,00
	SODA ASH	kg	175,00
P&A	BARITE	kg	12000,00
	BENTONITE	kg	2,00
	CITRIC ACID	kg	625,00
	CMC EHV	kg	125,00
	SODIUM BICARBONATE	kg	700,00

LOGGING INFORMATION ON WELL 31/5-6

Hole size: 8 1/2"

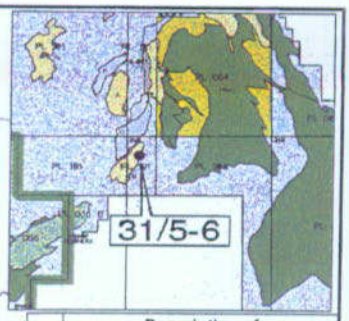
#	Run No.	Logging Company	Logged Bottom [m MD]	Logged Top [m MD]	Log Suite
1	A		2363	1775	CST

FIT TEST ON WELL 31/5-6

Depth	Section	Date	Mudtype	Mudweight SG	Test pressure	FIT SG
1 205	12.25"	2000-07-12	Glydril - KCl Brine	1,35	36 bar	1,66
1 709	8.5"	2000-07-16	Glydril - KCl Brine	1,19	-	1,48

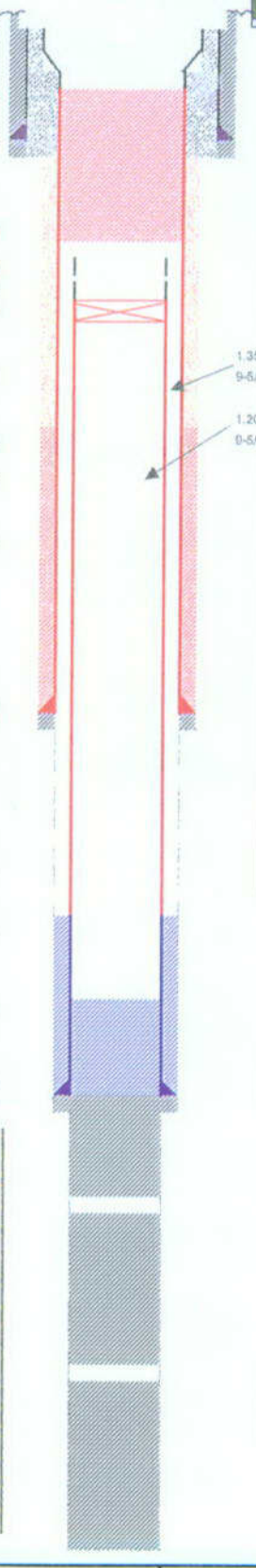
All depths, rig floor Scarabeo 6

	MD m	TVD m	OD inch	ID inch	Drift inch	Incl deg
RT at 0m (26m RT elev)	0	0				0.0
Mean Sea Level	26	26				0.0
Wellhead removed						
Seabed	356	356				0.2
Cut 30" and 20"	359	359				0.2
X-over 20", 0.812" wall thick X-56 X 13-3/8", 72#, NSCC, L80	361	361				0.3
Top of cement plug. From rev. circulation.	375	375				0.3
30" Casing Shoe. 309.7#, 1" wt, SL-80, X52	430	430	30	28		1.3
36" Section TD	450	430				1.3
Bottom of cement plug	594	594				1.0
Cut 9-5/8" casing, 53.5# NSCC L80	637	637	9.625	8.535	8.5	0.9
Attempt to cut 9-5/8" casing	646	646	9.625	8.535	8.5	0.9
Bridge plug, Baker 6AA. Test to 118 bar with 1.20 sg mud	658	658				0.8
X-over 9-5/8" 53.5# NSCC L80 box X 53.5# NK3SB P110 pin	835	835	9.625	8.535	8.5	1.1
9-5/8" casing 53.5# NK3SB P110			9.625	8.535	8.5	
Top of Tail cement 13-3/8" (theor. gauge hole)	858	858				1.0
X-over 9-5/8" 53.5# NK3SB P110 box X 53.5# NK3SB L80 pin	871	871	9.625	8.535	8.5	1.0
9-5/8" casing 53.5# NK3SB L80			9.625	8.535	8.5	
X-over 9-5/8" 53.5# NK3SB L80 box X 47# NK3SB P110 pin	906	906	9.625	8.535	8.5	0.9
9-5/8" casing 47# NK3SB P110			9.625	8.681	8.5	
13-3/8" Casing Shoe, 72# NSCC L80. Tested to 110 bar, 1.06sg mud	1178	1178	13.375	12.347	12.25	0.4
TD 17-1/2" section. LOT at 13-3/8" shoe 1.65 sg.	1201	1201				0.4
X-over 9-5/8" 47# NK3SB P110 box X 47# NK3SB L80 pin	1434	1433	9.625	8.681	8.5	5.5
9-5/8" casing 47# NK3SB L80			9.625	8.681	8.5	
9-5/8" TOC (planned)	1504	1503				5.4
Top of cmt plug. Load tested to 15MT. P.test to 118bar w/ 1.20sg mud	1600	1599				5.3
X-over 9-5/8" 47# NK3SB L80 box X 53.5# NSCC L80 pin	1646	1645	9.625	8.681	8.5	3.3
9-5/8" casing 53.5# NSCC L80			9.625	8.535	8.5	
9-5/8" Casing Shoe, various grades. Tested to 175 bar, 1.35sg mud	1704	1703	9.625		8.5	2.9
TD 12-1/4" Section. LOT at 9-5/8" shoe 1.47 sg	1709	1708				2.9
Top of log CST	1775	1773				2.9
Interface between cement plugs. Not tested.	1870	1868				3.1
Interface between cement plugs. Not tested.	2120	2118				4.2
Bottom of log CST	2363	2360				5.1
TD 8-1/2" Section	2370	2367		8.5		5.1



Wellhead Coordinates UTM zone 31:

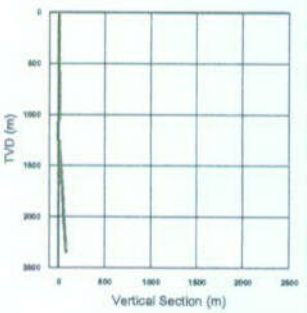
6 732 050.3 mN
519 495.0 mE



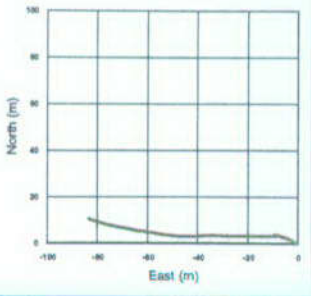
	Description of barrier elements
BARRIER # 1	9-5/8" casing cemented on the outside against formation. Leak off tested shoe to 1.47 sg. P.tested csg to 175 bar w/ 1.35 sg mud. Cement plug inside 9-5/8" casing P.tested to 118 bar with 1.20 sg mud. Load tested to 15 MT.

	Description of Barrier Elemants
BARRIER # 2	9-5/8" casing. Pressure tested to 175 bar with 1.35 sg mud. Mechanical plug in 9-5/8" casing tested to 118 bar with 1.20 sg mud. 13-3/8" casing cemented on the outside against formation. Leak off tested shoe to 1.65 sg. P.tested csg to 110 bar w/ 1.06 sg mud. Cmt plug in 13-3/8" csg Not tested

Vertical Section



Spider plot



Permanent P & A

31/5-6

Revision: 0

Date: 04.12.2000

BARRIER DESCRIPTION AFTER PERMANENT PLUG & ABANDONMENT