Title: FINAL WELL REPORT
WELL 31/4-11
PL 055

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PREFACE

License PL 055 was awarded to the Norsk Hydro/Statoil/ExxonMobil/Fortum Petroleum group in 1979 with Norsk Hydro as the operator.

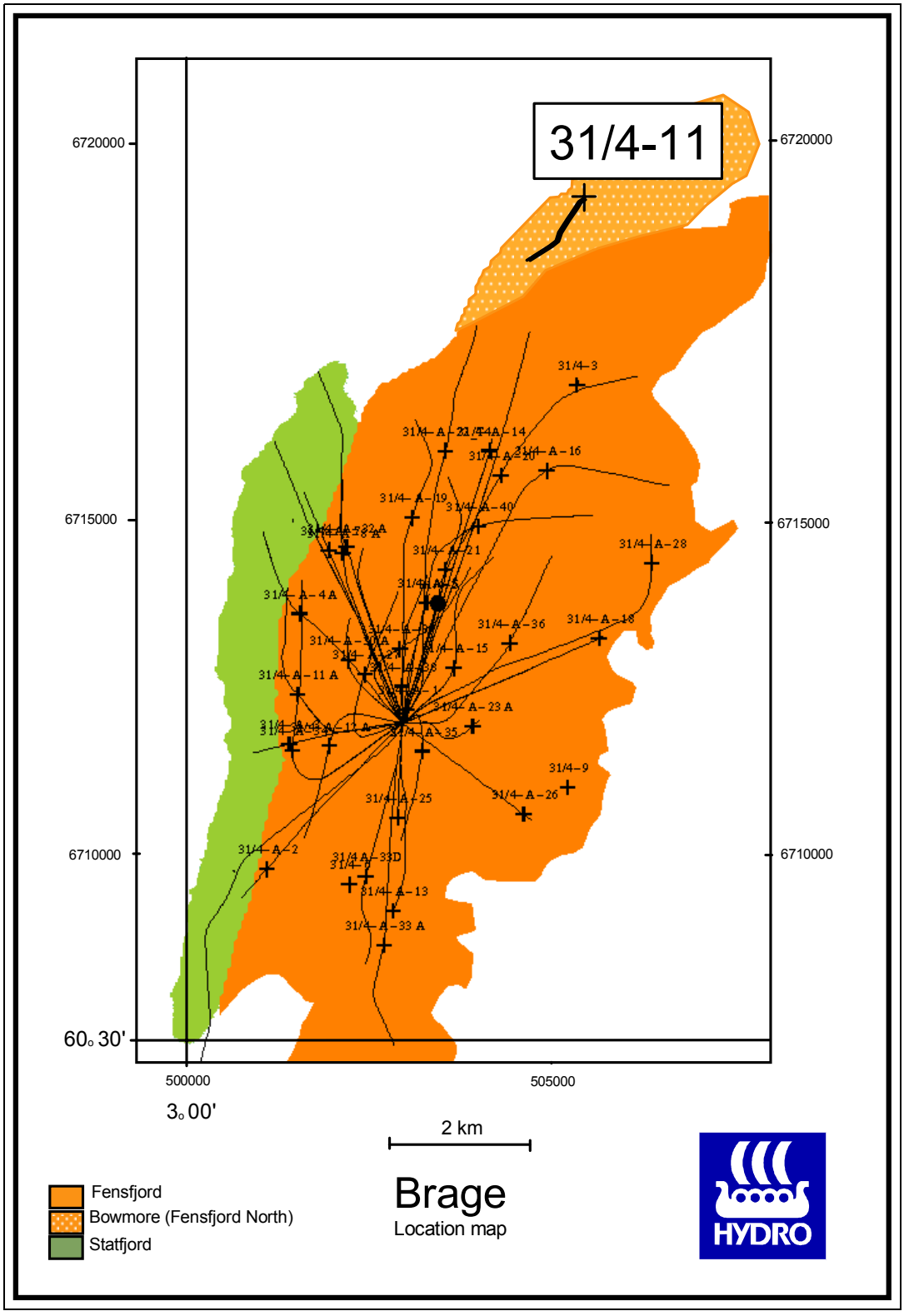
The licensees' percentage share of the block is as follows:

Den Norske Stats Oljeselskap a.s. (Statoil)	46,9567%
Norsk Hydro a.s. (operator)	24,4424%
ExxonMobil	16,3434%
Fortum Petroleum AS	12,2575%

The well was drilled by Norsk Hydro ASA, on behalf of the group, during the period July 26th to September 12th, 2000 (see Location Map, page 3).

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

Location map:



SUMMARY OF WELL DATA	
LOCATION:	60° 36' 42.61" N 03° 06' 01.82" E 6 719 715.7 mN 505 502.4 mE 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 183 m
START OF OPERATIONS: WELL SPUDDED: REACHED TD ON: OFF COST (LOCATION): STATUS: FORMATION AT TD:	26.07.00 27.07.00 04.09.00 12.09.00 Plugged and abandoned Statfjord Formation
TD DRILLER (mRKB): TD LOGGER (mRKB):	3271m MD, 2764,7m TVD N/A
DRILLING DEPTHS:	36" to 283.0 m 17½" to 1100.0 m 12¼" to 2176.0 m 8½" to 3271,0 m
CASING DEPTHS:	30" at 283.0 m 13 3/8" at 1100.0 m 9 5/8" at 2166.0 m

S E C T I O N A

G E O L O G Y

SECTION A: LIST OF FIGURES, TABLES AND APPENDICES

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1 Objectives

Well 31/4-11 was drilled on the Bowmore structure (previously named Fensfjord North structure), in the northern part of the Brage Field as a combined appraisal/exploration well in PL 055.

The Bowmore structure is situated about 6-8 km NNE of the Brage platform. It is a NE-SW trending wedge shaped horst, rising and tapering towards the SW. Before the 31/4-11 was drilled, the Bowmore structure had been mapped as part of the Brage Fensfjord Formation and Sognefjord Formation reservoirs, and as a separate structural closure on the Shetland Group, Brent Group and Statfjord Formation levels, respectively.

The primary objective of the well was to reduce reserves uncertainties in the Fensfjord Formation reservoir. The secondary objective was to reduce reserves uncertainties in the Sognefjord Formation reservoir and to explore the hydrocarbon potential in the Brent Group

To determine whether the respective reservoirs are suitable for future oil production, ie. prove that minimum economic reserves are present, sufficient data should be collected within each reservoir interval. In order to obtain this for each reservoir, the following items were focused on:

Primary objective: Fensfjord Formation reservoir:

- presence of hydrocarbons in the reservoir,
- oil zone pressure gradient,
- structural depth to main reservoir zones(F8, F7-2, F3-2, F2),
- petrophysical properties: porosity, permeability, and water saturation with high accuracy,

Secondary objective 1: Brent Group reservoir:

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- presence of hydrocarbons in the reservoir,
- structural depth and thickness to main reservoir zones (Ness, ORE, Lower Oseberg sandstone),
- oil and water zone pressure gradient, FWL,
- porosity in this interval.

Secondary objective 2: Draupne and Sognefjord Formations reservoir

- presence and age of reservoir sand
- structural depth to main reservoir zones
- depth of erosion at base Lower Kimmiridgian unconformity at the well location

- permeability and porosity of Draupne sand and Middle Sognefjord reservoir sands, if present
- oil, gas and water zone pressure gradient, FWL

During drilling of the well, it was decided to extend the well and explore the hydrocarbon potential in the Statfjord Formation.

2 Results

The results are presented below with emphasise on the formations which were objectives of the well. The tops of the formations are presented in Table 3.1.

Draupne- Sognefjord Formations Reservoir

In well 31/4-11 both Draupne Formation sands (previously termed Upper Sognefjord) and Middle Sognefjord sands were penetrated. A total of 41 m TVD Draupne Formation was penetrated, of which 29.9 m TVD was sandstone in the reservoir section.

A total of 18 m TVD Sognefjord reservoir sequence was penetrated. The main reservoir units in the Sognefjord Fm were found 10 m TVD deeper than prognoses, and the Sognefjord sands are thinner than predicted by existing geological model. The fine-grained interval in Upper Sognefjord was thicker than expected.

The reservoir sands in the Draupne-Sognefjord Formations reservoir are of both Kimmeridgian (Draupne Fm) and Oxfordian (Sognefjord Fm) age. The depth of erosion at the lower Kimmeridgian unconformity is limited to the extent that the high permeable sandstones of Oxfordian age are probably present all over the Bowmore structure.

Draupne Fm. sandstones are gas saturated. Gas and water was encountered in the Sognefjord Formation. Fluid sampling yielded water up to 2205.8 m MD RKB (2020.76 m TVD MSL). Based on geochemical analysis on core extracts, the Draupne-Sognefjord Fms have an oil column defined by the interval 2189 - 2217 m MD (core depth). This corresponds to 2010.3 - 2025.8 m TVD MSL (loggers depth).

The shaly beds in Upper Sognefjord (USo2) is acting as a pressure barrier. Pressure tests show reservoir depletion of 6.4 bar in the gas zone and 7.2 bar in the water zone.

VSP results indicate a possible small fault in the reservoir section.

Fensfjord Formation

The structure came in 8 m TVD deeper than prognosed (but inside the uncertainty range).
A total of 39.2 m TVD Fensfjord reservoir sequence was penetrated.

Fensfjord stratigraphy was found as expected, except the age of the upper sands. The difference is that the upper sands were defined by biostratigraphy as being F9 (Early Oxfordian) not F8 and F7-2 (Late Callovian) as prognosed.

Movable oil was only proved in upper Fensfjord down to zone F6-1 (ODT 2113 m TVD MSL). This was 36 m shallower than the expected FWL at the Brage Main structure.

Zone F6-1 is acting as a pressure barrier, and pressure tests show reservoir depletion of 1 - 1.5 bar in the oil zone and about 2 bar in the water zone.

In the Bowmore Structure the Fensfjord Fm reservoir might be an isolated segment (HC fill different from 31/4-10 well) but it is difficult to determine the mechanism isolating this structure from the 31/4-10 well.

Brent Group

Top Brent came in 14 m TVD deeper than prognosed. A total of 99.1 m TVD of the Brent Group was penetrated.

The Brent Group in 31/4-11 is subdivided in the following succession from top to bottom: Tarbert Fm, Upper Ness sandstone, Intra Ness (shale 1), Lower Ness sandstone, Ness shale 2, ORE, Lower Oseberg shale and Lower Oseberg sandy unit.

The Tarbert Fm. consists of shale and sand. The Ness Fm. is characterized by two blocky fining upwards sand units, called Upper and Lower Ness sandstone. Between the two good sands there is a 'transition' zone with shale, sand and cemented sand (Intra Ness (shale 1)). Ness shale 2 consists of shale and occasional coal layers. The ORE interval consists of Etive Formation, Rannoch Formation and the upper sandy interval of the Oseberg Formation. This interval is sand dominated, except from the Rannoch part, which consists of more fine-grained sandstone and silt.

The well is an oil discovery in Brent (Ness Formation). In place hydrocarbon volumes proven in the Ness and Tarbert Formations are estimated to 3.93 Msm^3 oil with an up-dip potential of 1.92 Msm^3 oil in ORE and Lower Oseberg sst.

The well did not penetrate the oil/water contact within the Ness Fm. (ODT 2307.5 m TVD MSL). An assumed oil/water contact was taken from formation pressure interpretation (FWL at 2317 m TVD MSL). The well shows hydrostatic pressure in the reservoir zone.

Statfjord Formation

A total of 72.1m TVD of the Statfjord Formation was penetrated. The Statfjord Formation was water bearing.

GROUP	FORMATION	R K B mMD / mTVD	MSL m TVD	Thickness m TVD	TVT ms
Nordland Gp	Sea floor	209,0 / 209,0	183,0		
	Top Utsira Formation	782,5 / 782,5	756,5	19,5	
Hordaland Gp	(Base Utsira Fm)	802,0 / 802,0	776,0	340,0	
	Base of last Oligocene Sst	1142,0 / 1142,0	1116,0	299,9	
	Top Green Clay	1444,0 / 1442,0	1416,0	274,0	
Rogaland Gp	Top Balder Fm	1725,0 / 1716,0	1690,0	46,0	
	Top Sele Fm	1777,0 / 1761,9	1736,9	36,3	
	Top Lista Fm	1820,0 / 1798,2	1772,2	114,6	
	Top Våle Fm	1980,0 / 1912,8	1886,8	24,2	
Shetland Gp		2019,0 / 1937,0	1911,0	47,2	
Cromer Knoll Gp		2098,0 / 1984,2	1958,2	18,7	
Viking Gp	Top Draupne Fm	2130,0 / 2002,9	1976,9	11,1	
	Top intra Draupne sst	2149,0 / 2014,0	1988,0	29,9	
	Top Sognefjord Fm	2201,0 / 2043,9	2017,9	18,0	
	Top Heather Fm	2233,0 / 2061,9	2035,9	64,1	
	Top Fensfjord Fm	2351,0 / 2126,1	2100,1	39,3	
	Top Heather Fm	2426,0 / 2165,3	2139,3	57,7	
	Top Krossfjord Fm	2521,5 / 2223,0	2197,0	10,9	
	Top Heather Fm	2538,0 / 2233,9	2207,9	73,0	
Brent Gp	Top Tarbert Fm	2644,0 / 2306,9	2280,9	7,0	
	Top Upper Ness Fm	2654,0 / 2313,9	2287,9	30,2	
	Top Intra Ness Shale	2668,0 / 2323,7	2297,7		
	Top Lower Ness Sst	2671,0 / 2325,8	2299,8		
	Top Ness Shale	2683,0 / 2334,3	2308,3		
	Top ORE Fm	2697,0 / 2344,1	2318,1	61,9	
	Top Lower ORE Shale	2713,5 / 2355,8	2329,8		
	Top Lower ORE Sst	2742,0 / 2376,0	2350,0		
Dunlin Gp	Top Drake Fm	2785,0 / 2406,0	2380,0	121,7	
	Top Cook Fm	2957,0 / 2527,8	2501,8	20,4	
	Top Amundsen Fm	2985,0 / 2548,2	2522,2	144,4	
	Top Statfjord Fm	3178,0 / 2692,6	2666,6	72,1	
TD		3271,0 / 2764,7	2738,7		

Table 3.1: Formation Tops 31/4-11

3 Biostratigraphy

The biostratigraphical evaluation (1100m - 3271m TD) of well 31/4-11 was carried out by Ichron Ltd. Micropaleontological and palynological analyses have formed the basis for the biostratigraphical interpretation of the well. The analyses were carried out on cuttings and core samples. Results are documented in the report "A Biostratigraphical Evaluation of the Early Oligocene to Early Jurassic interval in well 31/4-11, Brage Field, NOCS"
Tables 3.1a and 3.1b show a summarised geochronological and lithostratigraphic subdivision of the well. The interpretation is in accordance with Norsk Hydro's standard zoning for the area.

Some major points are summarised below:

The youngest sediments analysed at 1100 m are of Early Oligocene age.

The oldest sediments at 3271m (Statfjord Formation) yielded no dateable material.

The top of the Rogaland Group (Balder Fm.) was encountered at 1720m.

An unconformity probably within the lower part of the Sele Formation (Early Eocene). Formation

An unconformity was also identified between the Rogaland Group (Early Paleocene) and the Shetland Group (Late Campanian), at 2035m.

A major unconformity exists at the base of the Shetland Group, where Campanian sediments rest on sediments of Albian age.

Presence of the Cromer Knoll Group is confirmed by occurrence of Late Albian micro faunas at 2110 m and by caved occurrence of Aptian dinoflagellate cysts at 2126m.

Still another unconformity exists at the base of the Cromer Knoll Group (Early Barremian age) which overlies the Viking Group of Middle Volgian age.

The Sognefjord and Fensfjord Formations are present in the well.

The Sognefjord Formation is given an Late Oxfordian to Early Kimmeridgian age. Palynozone PJ6C2b - PJ6D was registered within this unit.

The Fensfjord Formation is assigned to palynozone PJ6A1, PJ6A2 and PJ6B (Middle Callovian to Early Oxfordian)
After penetrating the Brent Group and Dunlin Group the well was terminated in the Statfjord Formation.

The Tarbert Formation is of Early Bathonian - Late Bajocian age, assigned to palynozone PJ4D/E-PJ5A.

The Ness Formation is assigned to palynozone PJ4A-PJ4D/E (Early Bajocian- Late Bajocian).

The Etive/Rannoch Formation is assigned to palynozone PJ4A (Early Bajocian).

The Oseberg Formation belongs to palynozone PJ3C2-PJ3D (Late Toarcian-Aalenian).

Thin sands are also present in the Drake Formation of the Dunlin Group. The Drake Formation was dated as Late Pliensbachian - Late Toarcian (palynozone PJ3A-PJ3C, micro zone MJ5 -MJ6).

The Cook Formation and the Amundsen Formation were present in the well. Both belong to palynozone PJ2C and micro zone MJ3 (Early Pliensbachian)

The Statfjord Formation, which was penetrated at 3178m, was impossible to date and to assign to a palynozone.

GEOCHRONOLOGICAL BREAKDOWN, WELL 31/4-11

SAMPLE DEPTH m	PERIOD	AGE	Palyno Zone	Mikro Zone
1100	TERTIARY	Early Oligocene	PT7A	
1390		Late Eocene		MEB4
1450		Middle Eocene	PT5-2	
1600		Early Eocene	PT3C-1	
1780		earliest Eocene	PT3A-1	
		---?UNCONFORMITY----		
1810		Late Paleocene		MPB2B
2005		Early Paleocene	PT1C-2	MPP2
		----UNCONFORMITY----		
2035	LATE CRETACEOUS	Late Campanian		MK12B
2080		Early Campanian	NPK8B1	
		----UNCONFORMITY----		
2110	EARLY CRETACEOUS	Albian - Aptian		MK6-MK5
2123,01		Late Barremian	N-PK3D	
2123,51		Early Barremian	N-PK3A4	
		----UNCONFORMITY----		
2131,40	LATE JURASSIC	Middle Volgian	PJ8B	
2146,01		Early Volgian	PJ7C3	
2149,98		Late Kimmeridgian	PJ7B	
2158,71		Early Kimmeridgian	PJ6D	
2203,93		Early Kimmeridgian -?Late Oxfordia	PJ6D-?PJ6C2c	
2227,99		Late Oxfordian	PJ6C2b	
2280		Middle Oxfordian		MJ9D
2329,99		Early Oxfordian	PJ6B	
2364,51	MIDDLE JURASSIC	Late Callovian	PJ6A2	
2380,99		Middle Callovian	PJ6A1	
2425,89		Early Callovian	PJ5C	
2540		Late - Early Bathonian		MJ8B
2650		Late Bajocian	PJ4D/E	
2670		Early Bajocian	PJ4C	
2720		Aalenian	PJ3D	
2770	EARLY JURASSIC	Late Toarcian	PJ3C	
2870		Middle Toarcian		MJ5
2880		Early Toarcian- ?Late Pliensbachia	PJ3B	
2940		Late Pliensbachian		MJ4
2970		Early Pliensbachian	PJ2C	
3180		?Late Sinemurian	Not assigned	
3278TD			Not assigned	

Tab. 3.1a

LITHOSTRATIGRAPHICAL BREAKDOWN, WELL 31/4-11

GROUP	FORMATION	DEPTH mMDRKB
Nordland		
Hordaland		802
Rogaland	Balder Formation	1725
	Sele Formation	1777
----------	-------?unconformity-----	----------
	Lista Formation	1820
----------	Våle Formation	1980
	--------unconformity------	----------
Shetland		2019
----------	--------unconformity------	----------
Cromer Knoll		2098
----------	--------unconformity------	----------
Viking	Draupne Formation	2130
----------	--------unconformity------	----------
	Sognefjord Formation	2201
	Heather B Formation	2233
	Fensfjord Formation	2351
	Heather A Formation	2426
Brent	Tarbert Formation	2644
	Ness Formation	2654
	ORE Formation	2697
Dunlin	Drake Formation	2785
	Cook Formation	2957
	Amundsen Formation	2985
	Statfjord	3178
		TD 3271

Tab.3.1b

4 Litostratigraphy

The depths are in mMD RKB and m TVD RKB (RKB is 26 m).
This summary is compiled predominantly from ditch cuttings descriptions. MWD logs were used to aid lithological interpretation and the placement of formation boundaries.
The well was drilled with returns to seabed from the seafloor at 209 m to 1103 m before setting 13-3/8" casing at 1100 m MD. Lithology interpretation through this interval is based on MWD logs and drilling parameters. The first drill cuttings samples were taken at 1103 m.

4.1 Nordland Group 209 - 802 m MD RKB

209 - 802m 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 and silt beds.

4.2 Hordaland Group 802 - 1725 m MD RKB (802-1716m TVD RKB)

802-1103 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.

1103-1142 m MD RKB
This interval comprises Claystones and Oligocene Sandstones.

Claystones: dark yellow brown, grey brown - olive grey, firm, subblocky, slightly silty, trace carbonaceous material, occasional micropyrittic and micromicaceous.

Sandstones: clear translucent Quartz, fine-coarse, predominantly fine to medium, rounded to subrounded, moderate to well sorted.

1142 - 1444m (1142-1442m TVD RKB)
Claystones with minor Limestone and Dolomite.

Claystone: dark yellow brown, grey brown - olive grey, very light brown, soft-firm, subblocky to blocky, occasional slight silty and micropyrittic, trace Micromica, non-slight calcareous.

Limestone: white - very light grey, firm to hard, subblocky-blocky, cryptocrystalline.

Dolomite: greyish orange- dark yellow orange, moderate hard, blocky, microcrystalline.

Age: Oligocene-Eocene

1444 - 1725m (1442-1716mTVD RKB)
Claystones with minor Limestone.

Claystones : green grey-dark green grey, olive grey, brown grey- dark yellow brown, greyish brown-dusky yellow brown, firm, subblocky, occasional slight silty and micropyrittic, trace Micromica, non-slight calcareous.

Limestone: white-very light grey, firm to hard, subblocky to blocky, cryptocrystalline.

4.3 Rogaland Group 1725- 2019m (1716-1937mTVD RKB)

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

4.3.1 Balder Formation 1725 - 1777m (1716-1761,9m TVD RKB)

Claystones with tuffaceous Claystones and minor Limestones.

Claystone: olive grey-dark green grey, medium bluish grey, grey brown to dusky brown, firm, subbblocky, non to slight calcareous, traces of Micromica and Glauconite, tuffaceous.

Limestone: white - light grey, pale yellow orange-dark yellow orange, firm to moderate hard, subblocky.

Age: Early Eocene

4.3.2 Sele Formation 1777 - 1820m (1761,9-1798,2 m TVD RKB)

Claystones with minor Limestone.

Claystone: olive grey - medium grey, brown grey- moderate brown, soft to firm, in part moderate hard, subblocky, occasional slight silty, trace micromica, non-slight calcareous.

Limestones: white - light grey, light yellow grey, firm to moderate hard, subblocky, microcrystalline.

Age: Early Eocene - Late Paleocene

4.3.3 Lista Formation 1820 - 1980m (1798,2-1912,8m TVD RKB)

Claystones with minor Limestones and Dolomites.

Claystone: green grey - dark green grey, light grey,brown gray- medium grey, moderate brown,firm, subblocky, occasional slight silty, general non calcareous, trace micromica, rare to trace carbonaceous.

Limestone: white-light gray,firm-moderate hard, subblocky-blocky, microcrystalline.

Dolomite: pale yellow orange-dark yellow brown, moderate hard to hard, blocky, microcrystalline.

Age: Late Paleocene

4.3.4 Våle Formation 1980 - 2019m (1912,8-1937m TVD RKB)

Claystones.

Claystone: Varicolored medium dark grey-dark grey-olive grey, subblocky, soft-firm, sticky, very calcareous, in part slightly silty, trace Glauconite.

Age: Early Paleocene

4.4 Shetland Group 2019 - 2098m (1937-1984,2m TVD RKB)

Claystones and Limestones.

Claystones: dark green grey-olive grey-dark greenish grey-olive black, moderate brown, soft to firm, occasional sticky, subblocky to blocky, in part very calcareous graded Marl, trace gGauconite.

Limestone: white - yellowish white-light grey, blocky, firm-hard, slightly argillaceous.

Age: Upper Campanian - early Paleocene.

4.5 Cromer Knoll Group 2098 - 2130m (1984,2-2002,9m TVD RKB)

Claystones and Limestones.

Claystones: dark green grey-olive grey-dark greenish grey-olive black, moderate brown, soft to firm, occasional sticky, subblocky to blocky, in part very calcareous graded Marl, trace gGauconite.

Limestone: white - yellowish white-light grey, blocky, firm-hard, slightly argillaceous.

Age: Upper Campanian - early Paleocene.

4.6 Viking Group 2130 - 2644m (2002,9-2306,9m TVD RKB)

4.6.1 Draupne Formation 2130 - 2201m (2002,9-2043,9m TVD RKB)

Claystones with intra Sandstones.

Draupne Claystones:

2130-2149m: medium dark grey-dark grey-olive black, firm to hard, subfissile to subblocky, non calcareous, micromicaceous, trace organic material.

Draupne intra Sandstones with thin Claystone laminae:

2149-2201m: medium dark grey-light olive grey-light greenish grey,translucent to opaque quartz grains, very fine to fine, well sorted, soft to hard, non to slight calcareous, argillaceous matrix, trace Glauconite and Mica.

Claystones: greyish black to olive black, firm to hard, subfissile, micromicaceaous, non to slight calcareous.

Age: Lower Kimmeridgian - Middle Volgian.

4.6.2 Sognefjord Formation 2201-2233m (2043,9-2061,9m TVD RKB)

Sandstones and sandy Siltstone.

Sandstones: olive grey, clear to opaque quartz, fine to medium, occasional coarse becoming very fine to fine, subrounded to subangular, friable to firm, moderate to well sorted, non to slight calcite cemented, becoming argillaceous, trace micromica, Pyrite, good visible porosity.

Siltstones: greyisk black-dark grey, firm, partly laminated, very fine sandy lamina, occasional biotite, trace micromica, moderate calcareous, occasional very hard calcite cemented.

Age: Upper Oxfordian - Lower Kimmeridgian.

4.6.3 Heather Formation :2233 - 2351m (2061,9 - 2126,1m TVD RKB)

Siltstones.

Siltstones : olive grey-olive black, soft to firm, rare hard, subblocky, in part sandy graded very fine sandstone, trace micromica and carbonaceous material, slight to moderate calcareous.

Age: Lower Oxfordian - Upper Oxfordian.

4.6.4 Fensfjord Formation : 2351 - 2426m (2126,1 - 2165,3m TVD RKB)

Sandstones with interbedded Siltstones.

Sandstone: dark grey-olive grey, clear translucent quartz,very fine, subangular-subrounded-well rounded, wll sorted, rgillaceous, trace Glauconite, Mica, Kaolin, carbonaceous, general poor visible porosity.

Siltstone: olive grey-dark grey, firm to friable, very fine sandy, trace Mica, Kaolin, carbonaceous in lamina, slight to moderate calcareous.

Age: Middle Callovian - Lower Oxfordian

4.6.5 Heather Formation : 2426 - 2521,5m (2165,3 - 2223m TVD RKB)

Siltstones.

Siltstones: olive grey becoming olive grey-light olive grey, soft to firm, amorphous, slight to moderate very fine sandy, moderate to very calcareous, trace Mica and Limestone, carbonaceous.

Age: Lower Callovian

4.6.6 Krossfjord Formation : 2521,5 - 2538m (2223 - 2233,9m TVD RKB)

Siltstones with interbedded sandstones.

Siltstones: olive grey, soft to firm, predominantly soft, subblocky- amorphus, sandy graded Sandstone, non to slight calcareous, trace Mica and carbonaceous.

Sandstones: medium grey, clear-milky Quartz, loose, very fine-fine,well sorted, non-slight calcareous.

Age: Lower Callovian

4.6.7 Heather Formation : 2538 - 2644m (2233,9 - 2306,9m TVD RKB)

Siltstones.

Siltstone: olive grey-light olive grey, amorphous, soft-firm, moderate-very calcareous, very fine sandy, trace carbonaceous, trace Mica, trace Limestone: general amorphus, soft to firm, argillaceous, occasional very fine sandy.

Age: Lower-Upper Bathonian

4.7 Brent Group 2644 - 2785m (2306,9 - 2406m TVD RKB)

4.7.1 Tarbert Formation :2644 - 2654m(2306,9 - 2313,9m TVD RKB)

Siltstones.

Siltstones: olive grey-light olive grey, soft, amorphus, very fine sandy, trace Mica, trace carbonaceous, trace Pyrite, calcareous- very calcareous.

Age: Upper Bajocian-Lower Bathonian

4.7.2 Ness Formation : 2654 - 2697m (2313,9 - 2344,1m TVD RKB)

Sandstones with interbedded claystones.

Sandstones: light olive grey, clear-milky Quartz, very fine - coarse, predominantly fine to medium, subangular-subrounded, occasional rounded, poor to moderate sorted, predominantly loose grains, trace calcareous cement.

Claystones: olive grey-light olive grey, also brown black, soft to firm occasional moderate hard, subblocky-subfissile, generally silty, slightly micaceous, trace micropyrite, trace Coal.

Age: Lower Bajocian-Upper Bajocian

4.7.3 ORE Formations : 2697 - 2785m (2344,1 - 2406m TVD RKB)

Sandstones with interbedded claystones.

Sandstones: light olive grey, clear-milky Quartz,very fine - coarse, predominantly fine to medium, subangular-subrounded, occasional rounded, poor to moderate sorted, predominantly loose grains, trace calcareous cement.

Claystones: olive grey-light olive grey, also brown black, soft to firm occasional moderate hard, subblocky-subfissile, general silty, slight micaceous, trace micropyrite, trace Coal.

Age: Upper Toarcian-Lower Bajocian

4.8 Dunlin Group 2785- 3271m (2406 - 2764,7m TVD RKB)

4.8.1 Drake Formation :2785 - 2957m (2406 - 2527,8m TVD RKB)

Claystones with thin Sandstone beds.

Claystones: olive grey-dark grey, occasional light olive grey, soft -firm,subblocky, general non calcareous, general silty, micromicaceous, locally Mica, micropyrite, carbonaceous.

Sandstones: white-very light grey, occasional light olive brown, firm-moderate hard, subblocky, clear-translucent Quartz grains, very fine-fine, rare medium, moderate sorted, subangular, calcareous cemented grading sandy Limestone, in part argillaceous, rare-trace Mica, local predominantly loose fine to medium Quartz grains.

Limestone: trace, yellow grey-very light grey, firm to hard,subblocky-blocky, very fine sandy grading calcareous Sandstone, microcrystalline.

Age: Upper Pliensbachian-Upper Toarcian

4.8.2 Cook Formation :2957 - 2985m (2527,8 - 2548,2m TVD RKB)

Sandstones with minor Claystones and trace of Limestones.

Sandstones: clear-translucent Quartz grains, very fine-coarse, occasional very coarse, predominantly fine to medium, moderate-poor sorted, subangular.

Claystones: brownish grey, olive grey-dark grey, firm, subblocky, silty, occasional grading Siltstone, non to slight calcareous, micromicaceous, Mica, trace micropyrite, carbonaceous, Pyrite nodules.

Limestones: trace, white-light grey, pale yellow orange-grey orange, firm to moderate hard, blocky, cryptocrystalline, in part sandy.

Age: Lower Pliensbachian-Upper Pliensbachian

4.8.3 Amundsen Formation :2985 - 3178m (2548,2 - 2692,6m TVD RKB)

Claystones with thin Sandstone beds.

Claystones: brownish grey-olive grey, brownish black, firm to rare moderate hard, subblocky, silty, local garding argillaceous Siltstone, non to occasional slight silty, micromicaceous, occasional Mica, trace micropyrite, carbonaceous specks.

Sandstones: white-light grey, light olive grey, predominantly calcareous cemented, firm to moderate hard, subblocky, very fine-fine, well sorted, slight argillaceous, slight carbonaceous, no visible porosity, in part loose Quartz grains: clear-translucent, fine to coarse.

Limestones: trace, white-light brown, firm-moderate hard, subblocky-blocky, in part argillaceous, local very fine sandy.

Age: Lower Pliensbachian

4.8.4 Statfjord Formation :3178 - 3271m (2692,6 - 2764,7m TVD RKB)

Sandstones interbedded with Claystones.

Sandstones: clear-milky white Quartz grains, very fine to very coarse, predominantly fine to coarse, moderate-poor sorted, local well sorted, subangular-subrounded, predominantly loose Quartz grains, local calcareous cement, Mica, Pyrite nodules.

Claystones: medium grey-brownish grey, olive grey, occasional medium light grey, firm-occasional moderate hard, subblocky, silty in part, non-occasional slight calcareous, micromicaceous, in part mocropyrite and carbonaceous, occasional grading argillaceous Coal.

Limestones: trace, white-light grey, pale yellowish brown, firm, blocky, argillaceous, occasional sandy.

Coal: trace, black-brownish black, brittle, blocky-subfissile, slight argillaceous.

Age: Upper Sinemurian

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 seprate cromatograph detector recording the volume of C1 through nC4, were operational below 1100m down to the TD of the well at 3271m.

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

5.1 Gas Record

209 - 1100m:
The interval was drilled with returns to sea bed.

1100 - 3271m:
For gas record in the well, see "Lithology Log" attached in Section 3, and End of Well Report from Halliburton, Sperry-sun, Well 31/4-11.

5.2 Oil stain and Fluorescence

INTERVAL (mRKB)	SOURCE	LITHOLOGY	SHOWS DESCRIPTION
2156-2161	Core	Sandstone	no - r dull yel flor, slw strmg bl-wh cut, bl - wh ring upon evap
2170-2175	Cuttings	Sandstone	no od, no stn, v wk or yel fluor, slw strmg blsh wh cut, bl wh res
2175-2176	Cuttings	Sandstone	no od, no stn, fr yel or-gold yel fluor, mod-fst strmg mod blsh wh cut, blsh wh res
2204-2221	Core	Sandstone	mod hydc od, no stn, wk yel-gold yel dir fluor, wk slo-mod strmg yel wh-bl wh cut, bl wh res, no vis res
2349-2367	Core	Sandstone	vk-mod pet od, gen no stn, bri-dull lt yl-gold yel dir flu, mod-slo strmgyel-wh bl-wh flu cut, bri-dull bl-wh yel-wh flu res, gen no vis res
2370-2395	Core	Sandstone	no-mod pet od, 5-70% dull yel lt yel dir fluor, slo-v slo strmg bl-wh fluor cut, dull-bri yel fluor cut, dull yel-wh bri lt bl-yel wh fluor res, no vis res
2395-2412	Core	Sandstone	wh pet od, no stn, 50-70% bri yel-yel wh dir fluor, slo strmg bl wh fluor cut, yel wh fluor res, no vis res
3162-3209	Cuttings	Sandstone and silty Claystone	no - r dull yel flor, slw strmg bl-wh cut, bl - wh ring upon evap
3209-3271	Cuttings	Sandstone and silty Claystone	no dir flor, loc slw strmg bl - wh cut

Table 5.2 Shows summary Well 31/4-11

6 Coring

6.1 Conventional Cores

A total of 16 cores were cut. The cores and core shift are presented in the Table 6.1 below and the core description can be found in Appendix I.

No	C: Cut (m) R: Recovery (m)	Rec. m	Rec. %	Lithology	Depth shift m	Formations
1	C: 2123,0 - 2134,0 R: 2123,0 - 2133,6	10,6	96,4	Claystone & Limestone		Shetland Gp & Draupne Fm
2	C: 2134,0 - 2144,0 R: 2134,0 - 2138,1	4,1	41,0	Claystone		Draupne Fm
3	C: 2144,0 - 2149,0 R: 2144,0 - 2149,0	5,0	100	Claystone		Draupne Fm
4	C: 2149,0 - 2157,0 R: 2149,0 - 2156,6	7,6	95,0	Claystone & Sandstone	-0.5	Draupne Fm
5	C: 2157,0 - 2163,0 R: 2157,0 - 2161,0	4,0	66,7	Sandstone	-0.9	Draupne Fm
6	C: 2179,0 - 2187,0 R: 2179,0 - 2179,5	0,5	6,3	Sandstone & Claystone	0	Draupne Fm
7	C: 2187,0 - 2204,5 R: 2187,0 - 2204,5	17,5	100	Sandstone	-1.5	Draupne Fm & Sognefjord Fm
8	C: 2204,5 - 2222,0 R: 2204,5 - 2221,6	17,1	97,7	Sandstone	-1.9	Sognefjord Fm
9	C: 2222,0 - 2240,0 R: 2222,0 - 2240,0	18,0	100	Sandy Siltstone	-2.05	Sognefjord Fm & Heather Fm
10	C: 2316,0 - 2343,0 R: 2316,0 - 2333,5	17,5	65,0	Siltstone	1.9	Heather Fm
11	C: 2343,0 - 2361,0 R: 2343,0 - 2354,2	11,2	62,2	Siltstone & Sandstone	-0.5	Heather Fm & Fensfjord Fm
12	C: 2361,0 - 2370,0 R: 2361,0 - 2367,0	6,0	66,6	Sandstone	-0.8	Fensfjord Fm
13	C: 2370,0 - 2377,0 R: 2370,0 - 2376,7	6,7	95,7	Sandstone	-0.8	Fensfjord Fm
14	C: 2377,0 - 2395,0 R: 2377,0 - 2394,4	17,4	96,6	Sandstone & Siltstone	-0.5	Fensfjord Fm
15	C: 2395,0 - 2413,0 R: 2395,0 - 2412,9	17,9	99,4	Sandstone & Siltstone	-0.88	Fensfjord Fm
16	C: 2413,0 - 2431,0 R: 2413,0 - 2431,0	18,0	100	Sandstone & Siltstone	0	Fensfjord Fm & Heather Fm

Table 6.1.1: Conventional Cores Well 31/4-11

7 Logging

7.1 MWD Logs

Run #	Section	Tool string	Sensors	Start depth logging	End depth logging	Total logged interv	Comment
1	36 & 26	PowerPulse-CDR	GR-Res	209,0	276,7	67,7	Sparce RT data due to high ROP and low flowrate
2	17½	PowerPulse-CDR	GR-Res	285,0	1092,8	807,8	
3	12¼	PowerPulse-CDR	GR-Res-PWD	1068,0	2108,0	1040,0	Coring from 2123-2163m MD
4	12¼	PowerPulse-CDR	GR-Res-PWD	2123,0	2176,0	53,0	
5	8½	ARC-VISION675-ADN	GR-Res-Den/Neu-PWD	1950,0	2176,0	226,0	ONLY Logg/ream over cored interval 2123-2163m MD
6	8½	GST-VISION675-ADN	GR-Res-Den/Neu	2160,0	2316,0	156,0	ALSO Logg/ream over cored interval 2160-2240m MD
7	8½	GST-VISION675-ADN	GR-Res-Den/Neu	2316,0	2806,0	490,0	ALSO Logg/ream over cored interval 2316-2431m MD
8	8½	GST-VISION675-ADN	GR-Res-Den/Neu-PWD	2806,0	3258,0	452,0	

Table 7.1: MWD logs 31/4-11

7.2 Wireline Logs

The following table is a summary of wireline logs run in the well.

Run #	Tool string		Start date	Start time	End date	End time	Tot hrs	TD	Start depth	End depth	Comment
1A	PEX-HALS	Wireline	09 aug	00:45	10 aug	01:00	00:15	2176	---	---	Misrun. Could not pass 2002m MD
2A	DSI	Wireline	23 aug	00:15	23 aug	01:00	01:15	2835	2835,0	2000,0	Good
2A	CSAT-GR	Wireline	23 aug	00:30	23 aug	00:45	01:15	2835	2825,0	2000,0	Good (VSP)
2A	MDT	Wireline	23 aug	00:00	26 aug	01:00	75:00	2835	2182,5	2362,0	Lost and fished MDT. Got 9 pressuretests prior to loose the tool.
2B	MDT	TLC	27 aug	00:45	29 aug	00:30	38:00	2835	2178,0	2784,5	Lower seal valve failure. Unable to pump through the tool
2C	MDT	TLC	29 aug	01:00	31 aug	00:45	49:15	2835	2701,0	2357,0	Power cartrige failure. Changed tool before sampling
2A	CRFT	Wireline	31 aug	01:20	01 sept	00:00	00:30	2835	2157,0	2162,0	1 samplepoint behind casing.
2D	MDT	TLC	01 sept	01:30	02 sept	01:30	37:00	2835	2372,5	2182,5	Good

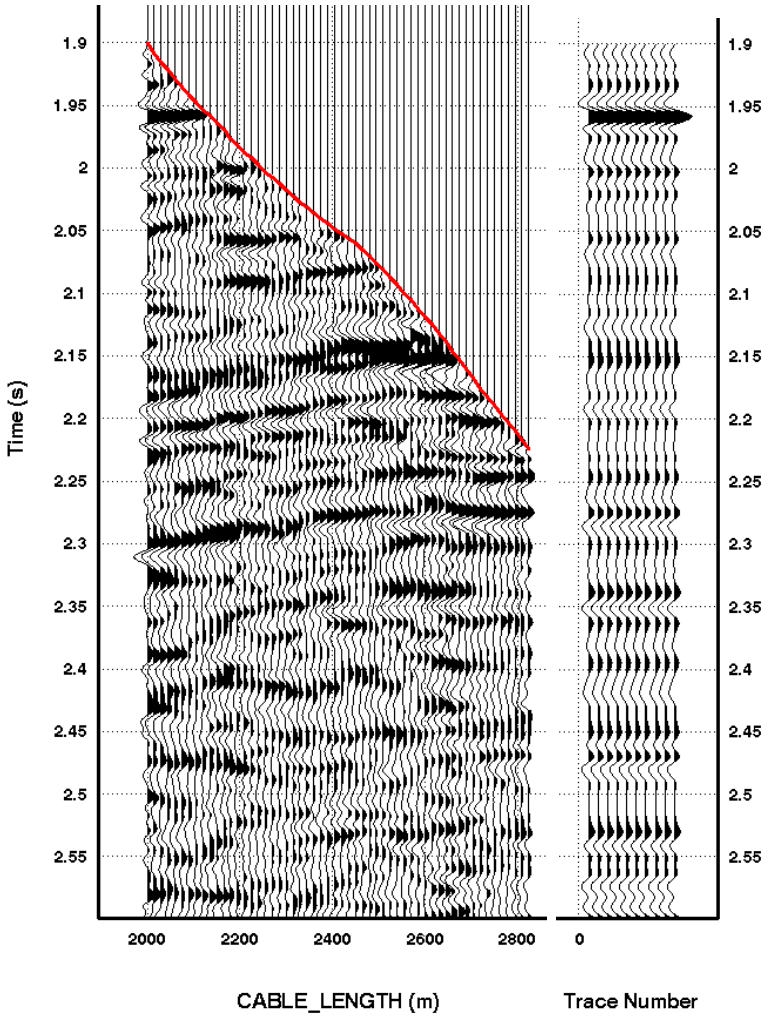
Table 7.2: Wireline logs 31/4-11

7.3 Velocity survey

A Normal Incidence VSP was aquired and processed by Schlumberger. A total of 60 levels were recorded from 2825 m to 2000 m measured depth bellow kelly bushing (KB). Three clustered 155 cu. in. air guns, located vertically above each geophone position in the deviated well, were used as the source. The tool used was a 2 level CSI, 3 component geophone tool.

The data quality is quite good, and the match of travel times with prognosis is good.

For more information see the VSP report.



VSP GATHER **CORRIDOR STACK**

7.4 Bottom Hole Temperatures From Wireline Logs

The table below gives a summary of the bottom hole temperatures measured from wireline logs.

Log suite	Run #	Depth m TVD RKB	Temp ° C	Time since circ. (hrs)
PEX-HALS	1A	---	N/A	---
DSI	2A	2000,0	N/A	---
CSAT-GR	2A	2000,0	90	17,00
MDT	2A	2362,0	84	25,75
MDT	2B	2784,5	93	35,00
MDT	2C	2357,0	N/A	---
CRFT	2A	2162,0	N/A	---
MDT	2D	2182,5	90	118,50

Table 7.3: Bottom Hole Temperatures Well 31/4-11

8 Petrophysical Results

8.1 Summary

Petrophysical analysis was carried out using logs, pressure measurements, core plug data and PVT data derived from MDT fluid samples.

In Well 31/4-11, Draupne intra sands are gas saturated. Gas and water was encountered in the Sognefjord Formation. Water was observed up to 2205.8 m MD RKB (2020.76 m TVD MSL) during the fluid sampling. Based on geochemical analysis on core extracts, the Sognefjord Fm has an oil column defined by the interval 2189 - 2217 m MD (core depth). This corresponds to 2010.3 - 2025.8 m TVD MSL (loggers depth). The reservoir pressure is depleted about 6.4 bar in the gas zone and 7.2 bar in the water zone compared with reference well 31/4-3 on the main structure.

In the Fensfjord Formation oil was encountered down to 2113 m TVD MSL. Reservoir pressure is slightly depleted, 1-1.5 bar in the oil zone and 2 bar in the water zone. Petrophysical properties in the oil zone are moderate and show vertical heterogeneity.

Brent Group: Tarbert and Ness Formations are oil bearing down to 2307.5 m TVD MSL. The FWL derived from formation pressure interpretation is 2317.2 m TVD MSL. Ness and ORE sands are of good reservoir quality.

8.2 Log Data Acquisition and quality

There were no major operational problems associated with the logging and coring. The logs run in 31/4-11 are listed in Tables 7.1 and 7.2. Well 31/4-11 was drilled with Glydrill (KCL) water based mud with weight 1.2 g/cc. The pertophysical interpretation is based on the LWD tool combination GR, Azimuthal Density Neutron (ADN) and multidepth propagation resistivty Vision675. Vision675 resistivity is borhole compensated. Environmetal correction for Vision675 resistivity and KCL correction for GR is presently not available. The neutron porosity log is corrected for bit size, mud salinity, temperature and hydrocarbon index. The density log is calibrated to the gauge hole using the density correction curve. The overall log quality in the reservoir section is good. The small depth offsets between GR/Resistivity and Neutron/Density curves observed in sliding intervals were adjusted.

8.3 Core Data

A total of 16 cores were cut in 31/4-11 from 2123.0 - 2431.0 m MD RKB. Poore recovery and jamming off cores were problems in coring of the Draupne Formation. Conventional core measurements were carried out by Reslab on a total of 556 cleaned and dried plugs. These measurements yielded porosity, grain density and horizontal and vertical nitrogen permeabilities, (Ref.8.1). Core plug depth shifts have been made and are listed in Table.6.1.1.

8.4 MDT Pressure and Sampling

8.4.1 Objectives

The objectives for the MDT job are listed below:

- Define fluid gradients in the Draupne-Sognefjord and the Fensfjord Formation and in the Brent Group.
- Obtain representative samples for comparison with the Brage Main Field of oil in the Fensfjord and the Draupne-Sognefjord Formations.
- Obtain oil and water samples from the Brent Group.
- Obtain permeability information from minitests.
- Investigate type of fluid present in the upper part of the Draupne-Sognefjord Formations behind the 9 5/8" casing.

All the objectives were achieved with the exception of mini tests. This is discussed in more details in chapter 8.4.2 below. The fluid gradient definition within the Brent Group is good, within the Fensfjord Formation poor and within the Draupne-Sognefjord Formation fair. See chapter 8.4.5 for details regarding pre-test pressures and fluid gradients.

8.4.2 Summary

To achieve the objectives, four MDT run and one casing RFT run were performed . One MDT run was performed on wireline and three MDT run were performed using TLC.
44 pretest pressure points were taken and samples were collected at eight different depths located in:

- Draupne-Sognefjord Formation (2182.5 m and 2205.8 m)
- Fensfjord Formation (2357.5 m and 2372.3 m)
- Brent Group (2675.1 m, 2678.5 m, 2699.2 m and 2712.8 m)

Table 8.4.1 presents a summary of the samples collected.

Sample depths and fluid type related to Formation and Group. Depths in m MD RKB					
Sample type G/O/W	**Dr-Sognefj Fm.**	**Fensfjord Fm.**	**Brent Gp.**	**Mobility md/cp**	**Comments, number of sample bottles**
Gas	2162 (*)			na	Casing RFT. Segregated 2 3/4 + 1 gallon.
	2182.5			113	Sampled two 250 cc
Oil		2357.5		3.2	Sampled one 1 gallon, three 250cc and one 450 cc. Pb measured from 450 cc = 96 bar at 14 °C
		2372.3		5.8	Sampled one 450 cc Pb = 98 bar at 14 °C
			2678.5	1 463	Sampled one 2 3/4 gallon, one 1 gallon and five 250cc Pb measured from 1 gallon = 113 bar at 13 °C
			2675.1	308	Sampled two 250 cc
Water	2205.8			103	Sampled one 250 cc
			2699.2	126	Sampled one 1 gallon, four 450 cc and two 250cc
			2712.8	17.6	Sampled one 1 gallon

Table 8.4.1: Sample summary
* Segregated sample using the Casing RFT

Brent Group:
Water and oil samples were collected from the Brent Group. Due to tool failure during run 2B, the oil samples were collected by pumping formation fluid directly into to the chambers without cleaning up the near wellbore first. The degree of contamination in the samples are effected by the sampling method. The water samples were collected during run 2C and is approximately 20% contaminated by mudfiltrate. Because of tool failure during run 2B two extra oil samples were collected in the Brent Group during run 2C.

Fensfjord Formation:
Oil samples were collected from two different depths, 2357.5 m and 2372.3 m. The mobility measured at the sample depths are in the range of 3 - 6 md/cp. The low mobility caused a high drawdown during pumping and sampling. This could have effected the sample quality.

Draupne-Sognefjord Formation
In the Draupne-Sognefjord Formation samples were collected from two different depths. One sample depth at 2182.5 m in the gas zone and one sample depth at 2205.8 m. One segregated sample collected by use of the Casing RFT at 2162 m confirm gas in the upper part of the Draupne-Sognefjord Formation.

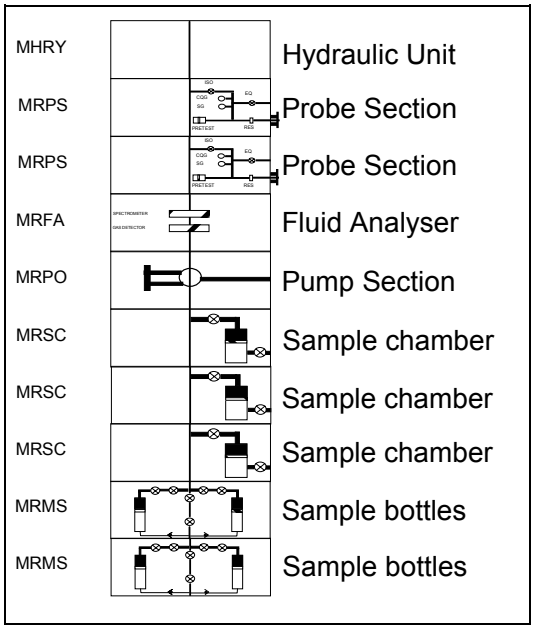
Mini tests
No minitests were performed. The Fensfjord Formation was considered too tight for mini testing. The Draupne-Sognefjord Formations were gas saturated and therfore minitest was not concidered as an objective. Minitest in the Brent was planned but not performed due to unreliable tool.
Table 8.4.2 presents the sampling operational summary and gives an overview of sampling depths, bottles, volumes, pressures and times.

8.4.3 Operational summary

All samples were collected using the low shock sampling technique. After the bottles were filled up an extra pressure of 270 bar was applied before the bottles were closed.

Table 8.4.2 presents an overview of the sampling conditions and the type of samples collected.

The Schematic MDT tool configuration is presented below. the tool configuration is identical to run 2C and 2D. On run 2A and 2B two MRSC were run instead of three and otherwise the configuration are identical to the schematic below.



Run 2A,MDT, (wireline)

After a total of 10 pretests pressures the tool got stuck in the Fensfjord Fm. During fishing operations the cable broke and the wireline was lost in the hole. Both the wireline and the tool were retrieved. No samples were collected during Run 2A.

Run 2B, MDT, (TLC run no. 1)

Oil sample at 2678.5 m:
After a total of 34 pretests (including repeat from Run 2A) the MDT was positioned at 2713 m to collect water samples. Due to tool failure it was not possible to pump through the tool and out to the wellbore. Based on the pretests and the mobility calculations it was decided that the possibility off achieving acceptable water samples was rather poor. Therefore it was decided to collect oil samples. The tool was positioned at 2678.5 m and the formation fluid was pumped directly into the chambers. Due to the tool configuration and the positioning of the bottles in the tool the 2 3/4 gallon chamber was used as a dump chamber. The content in the chamber was as expected mud and mudfiltrate and traces of oil. The FLUID ANALYSER indicated an oilfraction from 0 to 45 % while filling the 2 3/4 gallon chamber and increased to approximately 70 % when the chamber was filled up. After collecting the 1 gallon chamber and six 250 cc bottles (one 250 cc failed to open), the tool was pulled out of hole. The FLUID ANALYSER indicated an oilfraction from 75 - 80 % while sampling to the 250 cc bottles.

Run 2C, MDT, (TLC run no. 2)

Problems with the Electrical Power demanded that the tool had to be pulled out.

Run 2C, MDT, (TLC run no. 3)

Water samples at 2699.2 m:
The 1 gallon chamber was opened and filled first. During sampling to the 1 gallon chamber the pump stalled when 22.2 litres were pumped. A total of 4 hours and 15 minutes were used and 36 litres were pumped before the last sample bottle was filled. The fluid analyser showed water and stable conditions. The contamination level in the samples was 20 - 21 % and is the same in all bottles except one 450 cc bottle which was opened after the pump stalled. In this bottle the contamination level was measured to 23 %. Sampled totally one 1 gallon, four 450 cc and two 250 cc. The Large Diameter probe was used.

Water samples at 2712.8 m:
This sample was collected to investigate which type of fluid were present based on the log response. The sample contained highly contaminated formation water with approximately 55 % contamination of mud filtrate. One 1 gallon chamber was filled after pumping a total of 13 litres. The fluid analyser indicated water. The Large Diameter probe was used.

Oil sample at 2675.1 m:
Since the tool failed during run 2B it was decided to collect additional oil samples from the discovery in Brent Group. The seal was lost using the Martineau probe. Sampled by using the Large Diameter probe. Two 250 cc bottles were filled after pumping approximately 52 litres. The fluid analyser showed 80 - 85 % oil.

Run 2D, MDT, (TLC # 4)

Oil sample at 2357.5 m.
Due to low permeability in the Fensfjord Formation the draw down while pumping was high. Pumped a total of approximately 48 litres before sampling started. The pump stalled several times and the power shuts down the tool once due to software failure. This resulted in that the tool retracted while sampling to the 1 gallon chamber. The tool was set again and pumping continued. Sampled one 450 cc and four 250 cc bottles. The fluid analyser indicated oil after 1.5 hrs. The Large Diameter probe was used for sampling.

Oil sample at 2372.3 m.
This sample was carried out to investigate if movable hydrocarbons were present at this depth. Oil indications were seen on the fluid analyser after approximate 2.5 hours. Pumped a total of 65 litres before collecting one 450 cc bottle. The Large Diameter probe was used for sampling.

Gas samples at 2182.5 m
Good permeability and low draw down. Gas was seen after 6 minutes on the fluid analyser. Pumped for 2 hrs 35 min before two 250 cc bottles were collected. The Large Diameter probe was used for sampling.

Water sample at 2205.8 m.
This sample was collected to investigate if there where hydrocarbon or water at this depth. Pumped approximately 15 litres before sampling one 250 cc bottle. The fluid analyser and the sample indicated water. The Large Diameter probe was used for sampling.

Run 2A, Casing RFT, (wireline)

The Casing RFT was run to perforate the 9 5/8" casing and to collect samples in the upper part of the Draupne-Sognefjord Formation which was cased off. No significant pressure response was observed after the first attempt to perforate at 2157 m. On the second perforation attempt, at 2162 m, the pretest pressure was measured to anticipated formation pressure and segregated sampling was performed. Collected one 2 3/4 gallon and one 1 gallon chambers. The samples were bleed of at rig site. Two gas samples from the 1 gallon chamber were collected and analysed on-site. The gas breakedown is presented in table 8.4.5.

Run No.	Depth m MD RKB	Depth m TVD RKB	Form. or Group	Bottle No	Volume (gallon) or (cc)	Max. BH Flowing Temp (°C)	Min. Flowing Pressure (bar)	Max. Draw Down (bar)	Bottle Shut-in Press. (bar)	Vol. pumped (litres)	Pumptime before sampling (hrs)	Filling time (min)	Transport Bottles Number	Volume (litres)	Comments On site sample validation
2 B	2678.5	2 331	Brent	133	2 3/4 gal	91.6	228	6.6	504	None *	na	25.4	IATA Can	10 litre	99 %, Mud,
				153	1 gal	91.6	229	5.6	504	None *	na	8.5	5387-EA	600 cc	Oil, 10 % cont
													4576-EA	600 cc	Oil, Pb = 113 bar at 13 ^{0}C
													5052-EA	600 cc	Oil,10% cont
													Plastic B	1 liter	Oil
													Glass B	40 cc	Oil
				108	250 cc	91.6	232	2.6	233	None *	na	0.45	Stock TO	220 cc	99%mud,+ oil traces, drained
				109	250 cc	91.6	232	2.6	234	None *	na	1.1	Plastic B	120 cc	60%mud + oil, drained
				OO3	250 cc	91.6	229	5.6	233	None *	na	1.1	3896-MA	190 cc	Oil,approx. 15% cont.
													Stock TO	15 cc	Oil
				112	250 cc					None *	na			Failed	Not Fired
				007	250 cc	91.6	232	2.6	234	None *	na	1.1	3897-MA	171 cc	Oil,Emultion, cont difficult
													Stock TO	30 cc	Oil
				071	250 cc	91.6	232	2.6	234	None *	na	1.1	3905-MA	165 cc	Oil,approx. 20% cont
													Stock TO	50 cc	Oil
2C	2699.2	2 345.6	Brent	148	1 gal	96	121	115.6	505	10.5	2.06	36	4753-EA	600 cc	Water,21% cont
													5655-EA	600 cc	Water,21% cont
													4764-EA	600 cc	Water,21% cont
				974	450 cc	96.3	163	74	505	23.4	2.97	5	4602-EA	390 cc	Water, 23% cont.
				1 006	450 cc	96.3	163	74	505	27.1	3.04	5	4931-EA	320 cc	Water,21 % cont.
				712	450 cc	96.4	166	70	505	33.0	3.55	5	6108-EA	340 cc	Water,21 % cont.
				1 041	450 cc	96.4	165	72	505	34.1	3.70	5	4459-EA	340 cc	Water,21 % cont.
				122	250 cc	96.5	157	80	235	35,1	3.85	2	3900-EA	160 cc	Water,20 % cont.
				123	250 cc	96.5	157	80	235	36	3.93	3	3903-EA	170 cc	Water,20 % cont.
	2712.8	2355.4		172	1 gal	97.4	299	35	506	13	0.81	17	5128-EA	600 cc	Water,55 % cont.
													5469-EA	600 cc	Water,55 % cont.
													4678-EA	600 cc	Water 55 % cont.

Table 8.4.2: Sampling overview (continue)

Run No.	Depth m MD RKB	Depth m TVD RKB	Form. or Group	Bottle No	Volume (gallon) or (cc)	Max. BH Flowing Temp (°C)	Min. Flowing Pressure (bar)	Max. Draw Down (bar)	Bottle Shut-in Press. (bar)	Vol. pumped (litres)	Time Pumped before sampling (hrs)	Filling time (min)	Transport Bottles Number	Volume (litres)	Comments On site sample validation
2C	2675.1	2328.6	Brent	095	250 cc	96.2	234	0.45	234	52	1.48	3	3892-EA	200 cc	Oil, 10 % cont.
													Stock TO	20 cc	Oil
				075	250 cc	96.2	234	0.45	234	52	1.29	2	3899-EA	175 cc	Oil, 5-10% cont.
													Stock TO	40 cc	Oil
2D	2357.5	2129.5	Fens-fjord	142	1 gal	88.4	133	80	483	48	3.9	30	4754-EA	600 cc	Oil, Pb = 90 bar at 16 °C
													4748-EA	600 cc	Oil ,5-10 % cont.
													5399-EA	600 cc	Oil, 5-10 % cont.
				125	250 cc	88.6	136	90	213	52+2.3	3.9 + 0.24	2	1024-EA	130 cc	Oil, 40 % cont.
				120	250 cc	88.6	137	76	213	52+3.5	3.9 + 0.62	2	2509-EA	210 cc	Oil, approx. 8 % cont
				121	250 cc					52+5.9				Failed	No Sample
				124	250 cc	88.6	140	73	213	52+7.6	3.9+0.82	2	3893-MA	210 cc	Oil, approx. 8% cont.
				610	450 cc	88.6	135	78	213	52+8.7	3.9+1.08	4	5013-EA	330 cc	Oil, Pb = 96 bar at 14 °C
	2372.3	2137.2		649	450 cc	89	123	91	212	4.12	3.95	4	5682-EA	165 cc	Oil, Pb = 98 bar at 14 °C
	2182.5	2033.4	Sogne-fjord	127	250 cc	79.7	197	1.5	198	86	2.58	2	2546-EA	150 cc	Gas, approx. 6 cc water/filtrate
				126	250 cc	79.7	197	1.5	198	86	2.77	2	1592-EA	155 cc	Gas, approx. 6 cc water/filtrate
	2205.8	2046.3		O13	250 cc	82.4	80	118	198	15	0.71	2	1254-EA	110 cc	Water
2A	2 162		Sogne-fjord	2 3/4 gal	Casing RFT									0.8 l	Gas, Bleed off
				1 gal										0.2 l	Gas, Bleed off

Table 8.4.2: Sampling overview.
All bottles were overpressured by 270 bar before closing

8.4.4 Offshore Fluid Analysis

The bubble point pressure were measured on-site on four different sample bottles from three different depths. The Oil density was measured from the 1 gallon sample collected in the Brent Group. Table 8.4.3 presents the bubble point pressure measurements.

Formation /Group	Depth m MD RKB	Bubble point pressure bar / °C	Comments
Fensfjord	2357.5	90 / 16	From the 1 gallon chamber, transport bottle 4754-EA
Fensfjord	2357.5	96 / 14	From the 450 cc bottle no 610.
Fensfjord	2372.3	98 / 14	From the 450 cc bottle no 649.
Brent	2678.5	113 / 13	From the 1 gallon chamber, transport bottle 4576-EA. Oil density measured to 0.835 g/cm^3 at 17.5 ^{0}C.

Table 8.4.3: Bubble point pressure.

The sample chambers from the Casing RFT was bleed off on-site. The opening pressures on the 2 3/4 gallon and the one gallon chambers were identical. The gas was sampled in two aluminium balloons and analysed on-site. Table 8.4.4 presents the content in the segregated sample and table 8.4.5 presents the gas breakedown analysis carried out on two samples collected from the 1 gallon chamber.

Sample Chamber	2 3/4 gallon	1 gallon
Opening Pressure (bar)	115	115
Volume gas (cuft)	59.4	20
Volume mud/mudfiltrate/condensate ?(litres)	0.8	0.5

Table 8.4.4: The Casing RFT chambers content

Sample	C1 ppm	C2 ppm	C3 ppm	iC4 ppm	nC4 ppm	C5 ppm
#1	842 453	86 645	34 533	4 749	8 164	1 810
#2	929 015	89 949	37 796	4 710	7 986	1 953

Table 8.4.5: Break down on gas samples collected from the 1 gallon chamber, Casing RFT.

Validation of the watersamples were performed on-site. 12 ion analysis were also performed and the results from the Brent Group are presented in table 8.4.6. The samples are 20 % contaminated with mud filtrate. No corrections have been applied to the analysis due to the contamination of mud filtrate.
The SO_4^{2-} content in the mud was measured to be approximately 600 mg/l.
For further mud- and sample analysis ref.8.1

On-site water analysis. Refer to report, Trace element analysis of water by Petrotech		
Run Number.	2B	2B
Sample Depth (m MD RKB)	2 699	2 699
Chamber Number	123	122
Li^+ (mg/l)	11	10
Na^+ (mg/l)	15 487	15 213
K^+ (mg/l)	13 220	12 876
Mg^+ (mg/l)	369	369
Ca^+ (mg/l)	2 298	2 303
Sr^+ (mg/l)	325	323
Ba^+ (mg/l)	293	283
Cl^- (mg/l)	40 887	40 044
SO_4^{2-} (mg/l)	66	60
Br^- (mg/l)	231	214
SCN (mg/l)	83	84
Contamination (%)	20	20
Total Alkalinity (mg/l HCO_3	475	450
pH at ^0C	6,49 at 22,2	6,5 at 25,2
Conduct. (mS-cm) at ^0C	102,5 at 22,1	102,8 at 24,3
Resist. (Ohm m) at ^0C	0,1025 at 20	0,1074 at 20
Density (g/cm^3)at ^0C)	1,049 at 24,9	1,049 at 24,7

Table 8.4.6: On-site water analysis

8.4.5 Laboratory Fluid Analysis

The following fluid analysis program will be carried out onshore.

Formation/ Group	Sample Depth m MDRKB	Bottle No	Fluid Type	Analysis
Brent Group	2678.5	5387-EA	Oil	Constant mass expansion, single flash with GOR, Bo-factor and compositional analysis to C10+, a six stage differential depletion study, three stage separator test, single phase viscosity and density measurements
	2678.5	3896-MA	Oil	Constant mass expansion, single flash with GOR, Bo-factor and compositional analysis to C10+ and density measurements.
	2675.1	3892-EA	Oil	
	2699.2	MRSC148	Water	Measured organic acid's and Fe
Fensfjord	2357.5	5399-EA	Oil	Constant mass expansion, single flash with GOR, Bo-factor, compositional analysis to C10+ and density measurements
	2372.3	5682-EA	Oil	
	2357.5	1024-EA	Oil	Saturation pressure
	2357.5	2509-EA		
	2357.5	3893-MA		
Sognefjord		1254 EA	Water	Calculated Organic acid's and Fe from

8.5 Petrophysical Evaluation Method

In well 31/4-11 a petrophysical evaluation has been performed for the Draupne, Sognefjord and Fensfjord Formations and the Brent Group. The Statfjord Formation which is water bearing was not evaluated. The petrophysical interpretation was conducted using a different approach for each reservoir unit. Table 8.5.1 contains the parameters used in the petrophysical interpretation.

Parameter	Symbol	Unit	Draupne, Sognefjord	Fensfjord	Brent Gp.
Formation temp.	T	deg C	83.79	88.19	93.6
Depth of formation temp.		m MD RKB	2 300	2 500	2 795
Depth of formation temp.		m TVD MSL	2072.89	2182.92	2 387
Hydrocarbon density	RHOhc	g/cc	0.05967 (gas)	0.67937	0.6534
Apparent fluid density	RHOw	g/cc	1.00	1.00	1.00
Formation water resistivity @ 20 deg C	Rw	ohmm	0.078	0.65	0.10495
Mud filtrat resistivity@ 20 deg C	Rmf	ohmm	0.055	0.055	0.055
Bound water resistivity			0.08354	0.09606	----
Shale density	RHOsh	g/cc	2.41	2.41	2.5
Shale resistivity	Rsh	ohmm	--	--	3.5
GR shale	GRsh	API	--	--	165
Apparent grain density shale	RHOma shale	g/cc	3.0	3.0	3.1
Matrix density	RHOma	g/cc	2.65	2.65	2.65
GR clean	GRclean	API	---	---	50
Apparent grain density clean	RHOma clean	g/cc	2.62	2.68	2.62
Archie factor	a		1	1	1
Cementation exp	m		1.9	1.9	1.8
Saturation exp	n		2.1	2.1	1.8

Table 8.5.1:

8.5.1 Lithology

The coal and calcite cemented sandstone zones are determinated by visual inspection of the logs. In these sections porosity is set to zero and water saturation to one.

Different methods were used for shale volume calculation in each reservoir. The Fensfjord and Sognefjord Formation are enriched in mica the GR does not give reliable shale volume estimations. The shale volume in the Fensfjord and Draupne/Sognefjord Formations is calculated from the apparent grain density curve RGHA, derived from the appropriate Density-Neutron cross plot. The following non-linear equation was applied;

If the linear estimate I is less or equal to 0.55 then :

$$Vsh = \frac{0.06078 \bullet (100 \bullet I)^{1.58527}}{100}$$

If I is greater than 0.55 but less or equal to 0.73 then:

$$Vsh = \frac{2.1212 \bullet 100 \bullet I - 81.667}{100}$$

If I is greater than 0.73 then:

$$Vsh = I$$

In the Brent Group shale volume was determined by taking the minimum of the individual shale volumes from the apparent grain density curve RHOMA and linear gamma ray method.

8.5.2 Porosity

Porosity in all reservoir sections was derived from the bottom density curve RHOBB and corrected for shale and hydrocarbon effect according to the equations;

$$1) \quad \varphi_e = \frac{\rho_{ma} - \rho_b}{\rho_{ma} - \rho_f} - \frac{\rho_{ma} - \rho_{sh}}{\rho_{ma} - \rho_f} \cdot V_{sh}$$

The relevant fluid density in the invaded zone is:

$$2) \quad \rho_f = Sxo\rho w + (1 - Sxo)\rho_{hc}$$

where:
φ_e = effective porosity
ρ_{ma} = matrix density
ρ_b = bulk density
ρ_{sh} = shale density
ρ_{hc} = hydrocarbon density
ρ_f = apparent fluid density (formation and mudfiltrate)
ρ_w = density of formation water
V_{sh} = shale volume

Since Sw also depends on porosity, when hydrocarbons are present the equation 1) must be solved iteratively. The modification of fluid density due to the iteration process is called hydrocarbon correction. In the Drapne/Sognefjord and Fensfjord Formations, hydrocarbon corrected total porosity PHIT, was calibrated against overburden corrected core porosity to yield the final porosity PHIT. The overburden correction factor for Brage is 0.96. This calibrated PHIT was then used as an input for the final computation of effective porosity PHIE and fluid saturation value.

8.5.3 Water Saturation:

The phase shift 2 MHz P40H_UNC and P16H_UNC resistivity curves from Vision675 tool were used as Rt and Rxo respectively. The environmental correction is not available for the Vision tool and resistivities were only corrected for temperature effect. Formation water resistivity was calculated from the known water salinity which is for Sognefjord 33890 ppm NaCl (water analysis 31/4-A-14) and for Fensfjord 401000 ppm NaCl (production test 31/4-9). Formation water resistivity in the Brent Gp. is average from two resistivity measurements made by Petrotech off-shore.

The dual water model, DWM, was used for computation of water saturation in the Draupne/Sognefjord and Fensfjord Formations. This model assumes two types of water: bound water of conductivity *Cwb* tied to clay and formation (free) water of conductivity *Cw* in the remaining pore space. When the hydrocarbons displace free water the conductivity of the hydrocarbon-bearing sand is described by the equation :

$$Ct = \frac{\Phi_t^m * S_{wt}^n}{a} * \left[Cw + \frac{Swb}{Swt} * (Cwb - Cw) \right]$$

where:

$Ct = \frac{1}{Rt}$ - Conductivity in non invaded zone

$Cw = \frac{1}{Rw}$ - Formation water conductivity

Φt - Total porosity

Swt - Total water saturation

Swb - Bound water saturation

The total water saturation *Swt* is derived from the above equation. The effective water saturation *Swe* is also calculated as:

$$Swe = \frac{(Swt - Swb)}{(1 - Swb)}$$

A value of $Cwb = 10$ mmho for bound water conductivity is assumed for the interpretation. The bound water saturation is determined from:

$$Swb = \frac{\phi t - \phi e}{\phi t}$$

The calculation of the effective water saturation in the Brent Grop is based on the Poupon-Leveaux equation in both the invaded and un-invaded zones. Both Formation water resistivity and the Formation temperature are based on field values:

$$S_We = \left[\sqrt{R_t} \cdot \left(\frac{V_{sh}^{\left(1-\frac{1}{2}\cdot V_{sh}\right)}}{\sqrt{R_{sh}}} + \frac{\phi e^{\frac{m}{2}}}{\sqrt{a \cdot R_W}} \right) \right]^{-\frac{2}{n}},$$

where:
φ_e = effective porosity
V_{sh} = shale volume
S_{we} = water saturation, un-invaded zone
S_{xo} = water saturation, invaded zone
R_t = true resistivity, un-invaded zone
R_{sh} = shale resistivity
R_w = formation water resistivity
a = Archie factor
m = cementation exponent
n = saturation exponent

The cut-off limits applied for net sand and net pay discrimination in each formation are listed below:

Draupne/Sognefjord cut-off criteria:
net sand > 16% $Ø_e$
net pay > 16% $Ø_e$ and < 60 % S_{we}

Fensfjord cut-off criteria:
net sand > 17% $Ø_e$
net pay > 17% $Ø_e$ and < 60 % S_{we}

Brent Group cut-off criteria:
net sand > 10% $Ø_e$
net pay > 10% $Ø_e$ and < 60 % S_{we}

8.6 Petrophysical results

The log derived petrophysical averages are presented in Table 8.6.1, 8.6.3 and 8.6.5. Zone averages of core data are presented in Table 8.6.2 and 8.6.4. The log interpretation (CPI) is shown in Fig 8.6.1, 8.6.2 and 8.6.3.

Draupne/Sognefjord Formation
Petrophysical interpretation shows that the Draupne Fm contains intra sands of good reservoir quality. The best sand quality within the Sognefjord Formation represents USO1 with average core porosity 24 % and permeability about 1185 mD. Draupne intra sands are gas saturated. Gas and water was encountered in the Sognefjord Formation.

The porosity calibration coefficients applied in the Draupne and Sognefjord Formations are :

2130-2185 m MD	1.7348166
2185-2208 m MD	1.2858098
2208-2250 m MD	1.04371

Fensfjord Formation
The porosity calibration coefficients applied in the Fensfjord Formation are :

2300-2378 m MD	1.28132848137
2378-2500 m MD	1.22865215857

In despite of performed log porosity calibration there is a small discrepancy between log and core zone averages. Core averages are generally higher than log derived porosity value. About 7,5 m TVD oil column is observed in the F9, F7-2 and top of F6-2. Fluid samples confirm oil in this interval. F6-1 is of very poor quality and creates the pressure barrier.

Brent Group
Tarbert and Ness Formations are oil filled. The Tarbert Formation which comprises shallow marine deposits shows poorer reservoir quality with average porosity of 13% and NTG=0.38. Two Ness channel sandstones have good reservoir properties with porosity 20-22%. ORE (Etive,Rannoch and Oseberg Formations) is water filled. Properties of the sandstone intervals within ORE are similar to the Ness sandstone sections.

Table 8.6.1: Sognefjord , Net Sand and Net Pay Averages (from log)

Formation	Depth m MD RKB	Depth m TVD RKB	Depth m TVD MSL	Gross Thickness m MD RKB	Net Thickness m MD RKB	N/G frac	PHIE frac	SWE frac	Pay Thickness m MD RKB	N/G frac	PHIE frac	SWE frac
D30	2149.05	2014.04	1988.04	24.83	17.52	0.71	0.21	0.43	16.61	0.67	0.21	0.42
D20	2173.88	2028.48	2002.48	12.22	9.78	0.80	0.23	0.33	9.78	0.80	0.23	0.33
D10	2186.10	2035.49	2009.49	3.72	3.72	1.00	0.20	0.41	3.72	1.00	0.20	0.41
USO2	2189.82	2037.60	2011.60	12.22	6.30	0.22	0.18	0.40	2.66	0.22	0.18	0.40
USO1	2202.04	2044.52	2018.52	6.30	5.80	0.92	0.22	0.37	5.03	0.79	0.22	0.31
MSO	2208.34	2048.08	2022.08	23.96	16.14	0.67	0.22	0.73	1.83	0.07	0.24	0.51
LSO	2332.29	2061.57	2035.57	42.76	0.00	0.00	---	--	0.00	0.00	---	
	2275.05	2085.28	2059.28									
Total				126.00	55.63	0.44	0.22	0.49	46.94	0.37	0.22	0.39

Table 8.6.2: Sognefjord, Net Sand Averages (from log and core data)

Formation	Depth m MD RKB	Depth m TVD RKB	Depth m TVD MSL	Gross Thickness m MD RKB	Net Thickness m MD RKB	N/G frac	PHIE frac	SWE frac	CORE PHI frac	CORE Kh a mD	CORE Kh g mD	CORE kh h mD
D30	2149.05	2014.04	1988.04	24.83	17.68	0.71	0.22	0.38	0.24	28.652	18.653	12.967
D20	2173.88	2028.48	2002.48	12.22	9.78	0.80	0.24	0.29	------	------	------	------
D10	2186.10	2035.49	2009.49	3.72	3.72	1.00	0.23	0.33	0.24	24.280	18.659	12.319
USO2	2189.82	2037.60	2011.60	12.22	6.31	0.52	0.19	0.35	0.22	9.25	5.088	3.188
USO1	2202.04	2044.52	2018.52	6.30	5.95	0.94	0.24	0.32	0.27	1185.762	380.966	82.839
MSO	2208.34	2048.08	2022.08	23.96	15.99	0.67	0.22	0.68	0.22	40.622	10.078	3.653
LSO	2332.29	2061.57	2035.57	42.76	0.00	0.00	---	--	0.18	1.613	1.5727	1.447
	2275.05	2085.28	2059.28									
Total				126.00	59.44	0.47	0.22	0.43	0.23	123.22		3.907

Table 8.6.3: Fensfjord, Net Sand and Net Pay Averages (from log)

Formation	Depth m MD RKB	Depth m TVD RKB	Depth m TVD MSL	Gross Thickness m MD RKB	Net Thickness m MD RKB	N/G frac	PHIE frac	SWE frac	Pay Thickness m MD RKB	N/G frac	PHIE frac	SWE frac
F9	2351.00	2126.08	2100.08	7.50	7.22	0.96	0.22	0.49	7.22	0.96	0.22	0.49
F7-2	2358.50	2130.00	2104.00	4.50	3.90	0.87	0.21	0.55	3.29	0.73	0.21	0.54
F7-1	2363.00	2132.34	2106.34	3.00	0.00	0.00	---	---	0.00	0.00	---	---
F6-2	2366.00	2133.90	2107.90	10.00	7.32	0.73	0.21	0.59	3.96	0.39	0.23	0.55
F6-1	2376.00	2139.10	2113.10	6.00	0.00	0.00	---	--	0.00	0.00	---	---
F5	2382.00	2142.22	2116.22	16.50	13.09	0.79	0.23	0.83	0.00	0.00	---	---
F4	2398.50	2150.81	2124.81	8.00	4.95	0.62	0.22	0.74	0.76	0.09	0.26	0.49
F3-2	2406.50	2154.98	2128.98	2.50	2.50	1.00	0.21	0.63	0.88	0.35	0.21	0.27
F3-1	2409.00	2156.28	2130.28	2.50	0.04	0.01	0.19	0.04	0.04	0.01	0.19	0.04
F2	2411.50	2157.57	2131.59	6.50	6.07	0.93	0.26	0.86	0.46	0.07	0.26	0.49
F1	2418.00	2160.98	2134.98	8.00	4.65	0.58	0.20	0.85	0.00	0.00	---	---
	2426.00	2126.08	2139.19									
Total				75.73	49.43	0.66	0.22	0.71	16.61	0.22	0.22	0.50

Table 8.6.4: Fensfjord Net Sand and Averages (from log and core data)

Formation	Depth m MD RKB	Depth m TVD RKB	Depth m TVD MSL	Gross Thickness m MD RKB	Net Thickness m MD RKB	N/G frac	PHIE frac	SWE frac	CORE PHI frac	CORE Kh a mD	CORE Kh g mD	CORE Kh h mD
F9	2351.00	2126.08	2100.08	7.50	7.22	0.96	0.22	0.49	0.25	10.771	6.04	3.881
F7-2	2358.50	2130.00	2104.00	4.50	3.90	0.87	0.21	0.55	0.23	2.923	2.724	2.566
F7-1	2363.00	2132.34	2106.34	3.00	0.00	0.00	---	---	---	--	---	---
F6-2	2366.00	2133.90	2107.90	10.00	7.32	0.73	0.21	0.59	0.22	4.032	2.902	2.13
F6-1	2376.00	2139.10	2113.10	6.00	0.00	0.00	---	--	0.18	0.855	0.809	0.769
F5	2382.00	2142.22	2116.22	16.50	13.09	0.79	0.23	0.83	0.25	14.816	10.010	6.898
F4	2398.50	2150.81	2124.81	8.00	4.95	0.62	0.22	0.74	0.23	11.967	6.415	3.222
F3-2	2406.50	2154.98	2128.98	2.50	2.50	1.00	0.21	0.63	0.25	20.409	16.680	13.573
F3-1	2409.00	2156.28	2130.28	2.50	0.04	0.01	0.19	0.04	---	---	---	---
F2	2411.50	2157.57	2131.59	6.50	6.07	0.93	0.26	0.86	0.26	29.390	24.745	20.563
F1	2418.00	2160.98	2134.98	8.00	4.65	0.58	0.20	0.85	0.23	9.026	5.367	3.554
	2426.00	2126.08	2139.19									
Total				75.73	49.43	0.66	0.22	0.71	0.24	12.566	6.663	3.480

Table 8.6.5: Brent Group, Net Sand and Net Pay Averages (from log)

Formation	Depth m MD RKB	Depth m TVD RKB	Depth m TVD MSL	Gross Thickness m MD RKB	Net Thickness m MD RKB	N/G frac	PHIE frac	SWE frac	Pay Thickness m MD RKB	N/G frac	PHIE frac	SWE frac
Tarbert	2644.00	2313.94	2287.94	10.00	3.81	0.38	0.13	0.47	3.66	0.36	0.13	0.46
U.Ness SST	2654.00	2323.74	2297.74	14.00	11.62	0.83	0.20	0.25	11.47	0.82	0.20	0.25
intra Ness Shale	2668.00	2325.83	2299.83	3.00	1.17	0.39	0.13	0.47	1.17	0.39	0.13	0.47
L.Ness SST	2671.00	2334.21	2308.21	12.00	10.07	0.84	0.22	0.25	10.07	0.84	0.22	0.25
Ness Shale	2683.00	2344.08	2318.08	14.00	1.22	0.09	0.14	0.41	1.22	0.09	0.14	0.41
ORE	2697.00	2355.81	2329.81	16.50	13.84	0.84	0.20	0.89	1.34	0.08	0.16	0.48
L.ORE Shale	2713.50	2375.98	2349.98	28.50	1.07	0.04	0.13	0.87	0.03	0.001	0.15	0.48
L.ORE SST	2742.00	2388.61	2362.61	18.00	15.71	0.87	0.20	0.90	0.00	0.00	-----	-----
	2760.00	2388.61	2362.61									

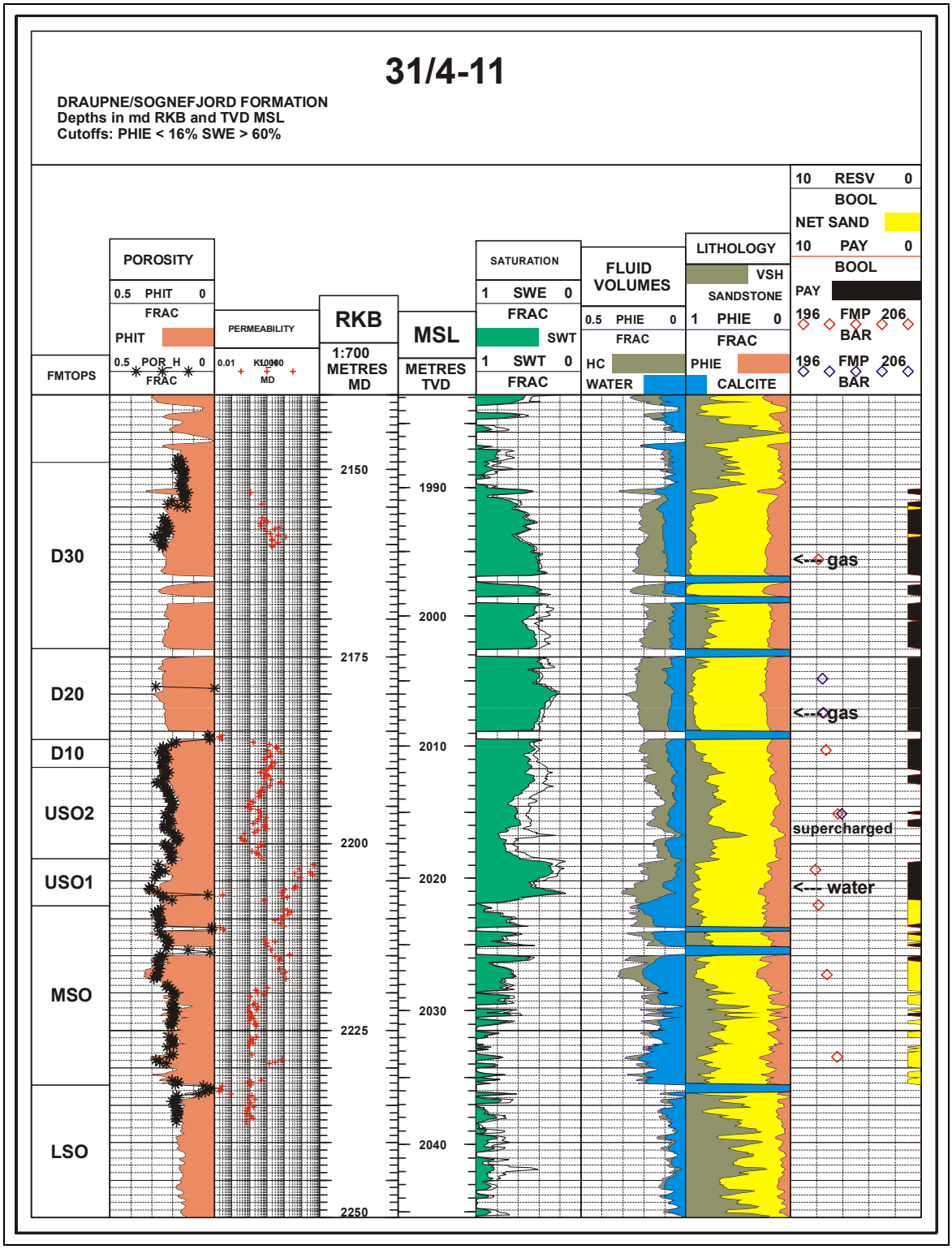


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Figure 8.6.1 CPI-plot Draupne / Sognefjord Formation

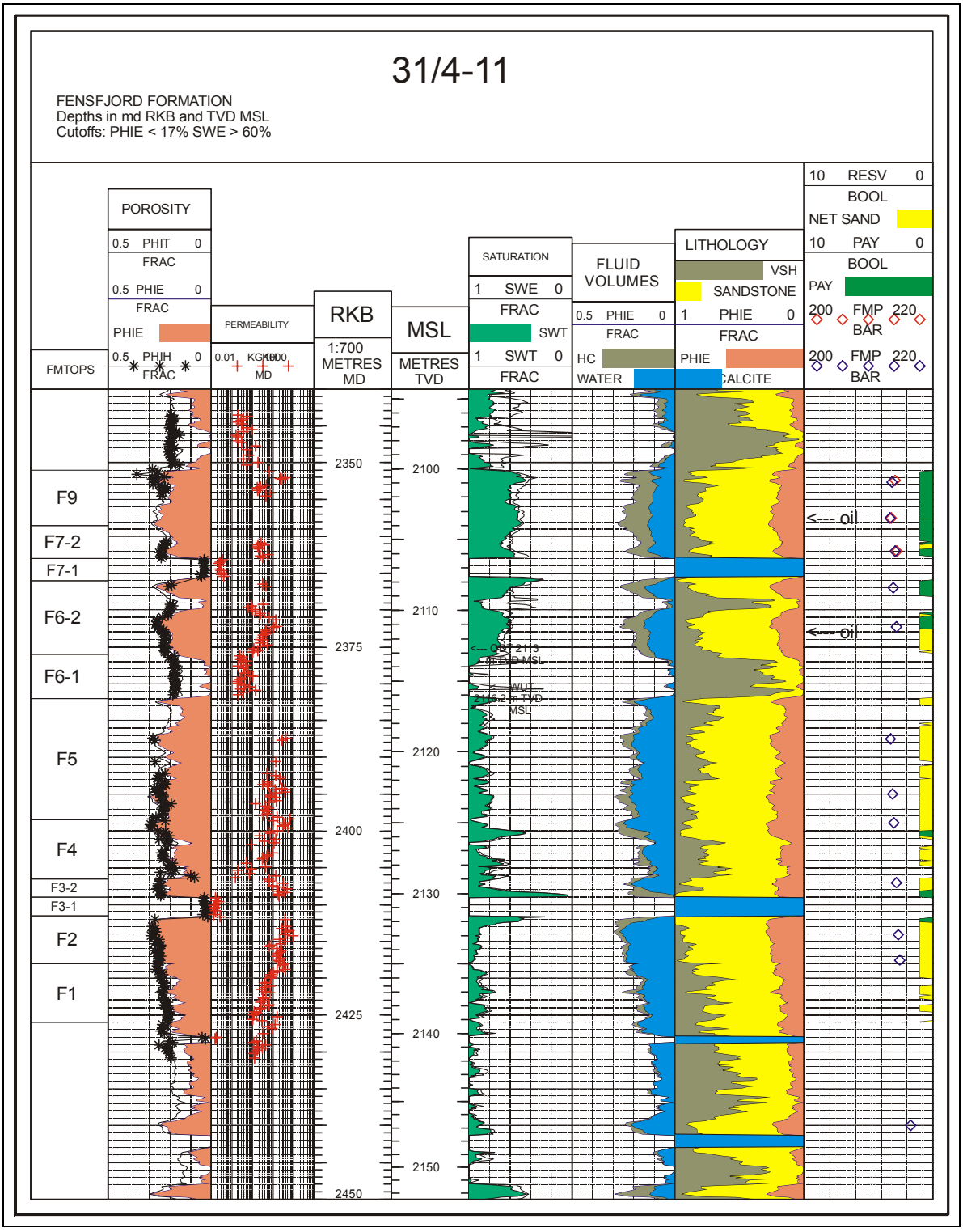


Figure 8.6.2 CPI-plot Fernsfjord Formation

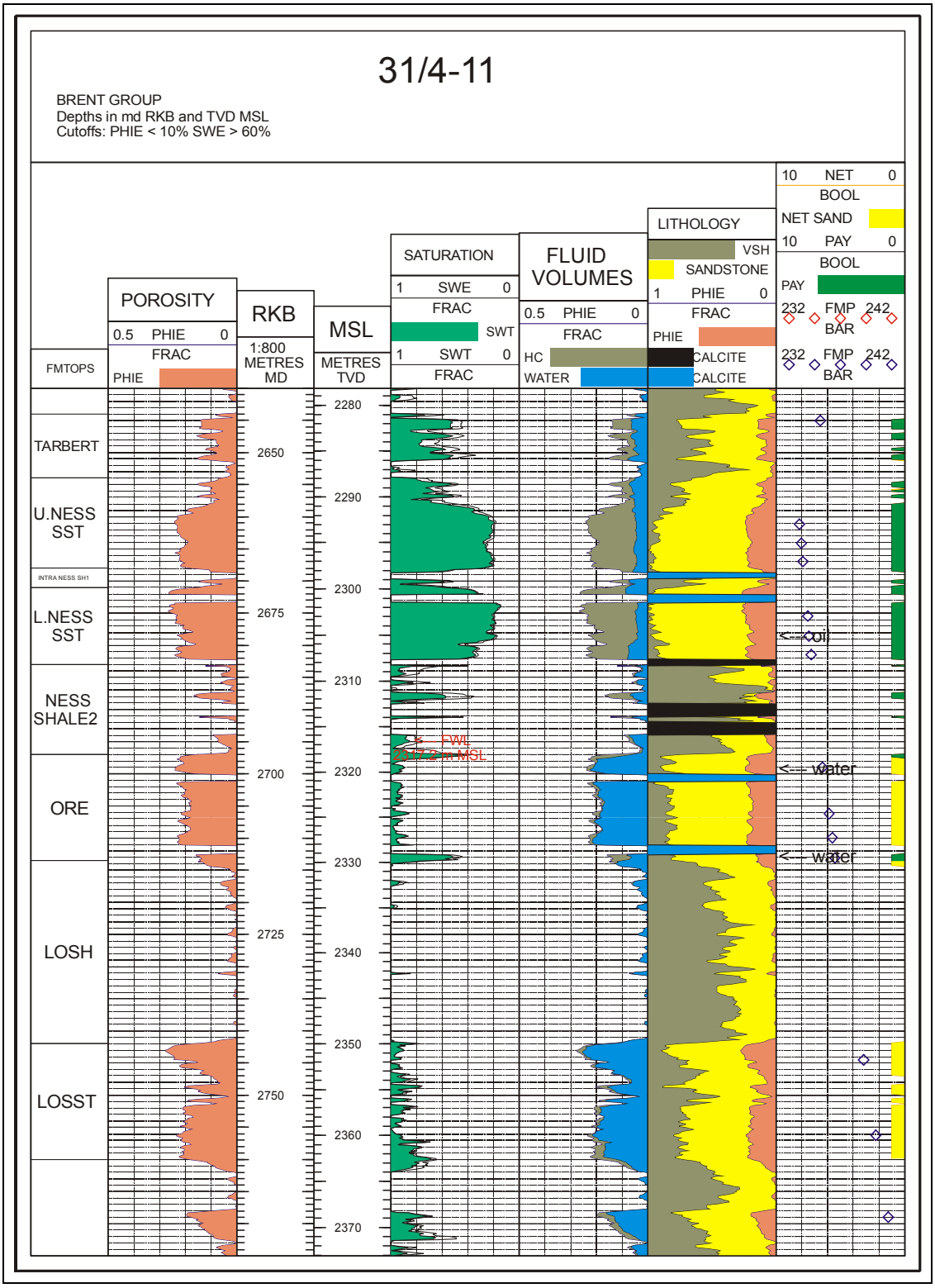


Figure 8.6.3 CPI-plot Brent Group

8.7 Formation pressure evaluation

MTD pressure survey results are presented in Tables 8.7.1 and 8.7.2. One MDT run 2A was performed on wireline and the tool became stuck at 2362 m MD. After fishing operation MDT run 2B was performed using TLC. Five pressure measurements have been repeated and show consistency between runs 2A and 2B. One pressure point has been taken by cased hole RFT tool at 2162 m MD.

Draupne/Sognefjord Formations
The pressure tests taken in D30, D20 and D10 zones define a fairly good gas gradient, Fig 8.7.1. Gas presence was confirmed by fluid samples. One pressure point in the USO2 do not fall on the gas gradient due to supercharging. The four lowermost pressure points define very well a water gradient. Shaly beds within USO2 acts as a vertical pressure barrier which is also indicated by different depletion for gas (6.4 bar) and water (7.2 bar) zones compared with well 31/4-3. Therefore it is impossible to determine free fluid level from gradient intersection. There is inconsistency between CPI and pressure interpretation. CPI shows net hydrocarbon saturation between 2202-2208 m MD while pressure gradient and fluid sample indicate water in this interval. At least from fluid analysis mobile water is observed up to 2205,8 m MD (2020,76 m TVD MSL).

Fensfjord Formation
Determination of a single oil gradient in the Fesfjord Formation is impossible due to the varying degree of depletion observed in the oil column, Fig.8.7.2. Since zone F6-1 creates a pressure barrier only the ODT= 2113 m TVD and WUT=2116.2 m TVD MSL is observed. Pressure tests in the water zone define a good water gradient and indicate good vertical communication. Reservoir pressure is depleted in the oil zone with about 1-1.5 bar and about 2 bar in the water zone compared with 31/4-3.

Brent Group
All data points in the Brent Group are good. High drawdown mobilities confirm the good reservoir properties in Ness, ORE and Oseberg Formations. Fig 8.7.3 shows the MDT pressure interpretation. A single pressure measurement in the Tarbert Formation suggests different pressure system from the remaining reservoir units. Since the mobility in this point is very low, supercharging is also very likely. Free regression oil gradient in the Ness Formation of 0.6352 g/cc differs slightly from the PVT analysis most representative pycnometer measurement of 0.6534 g/cc (Sample#5387-EA) . Intersection of the free regression oil and water gradients determine the free water level (FWL) at 2317.2 m TVD MSL.

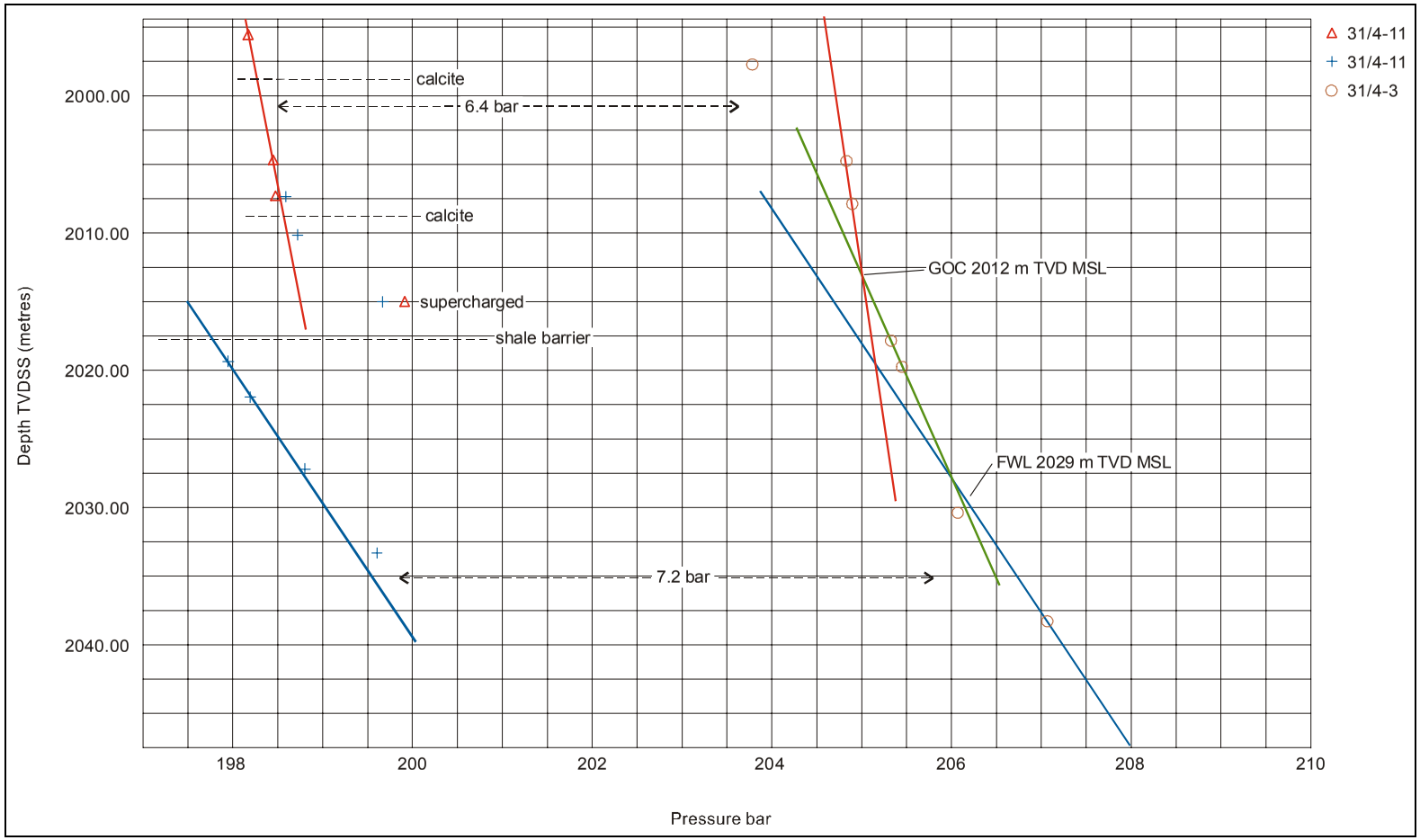


Figure 8.7.1
Draupne and Sognefjord FMT results of 31/4-11 compared with 31/4-3

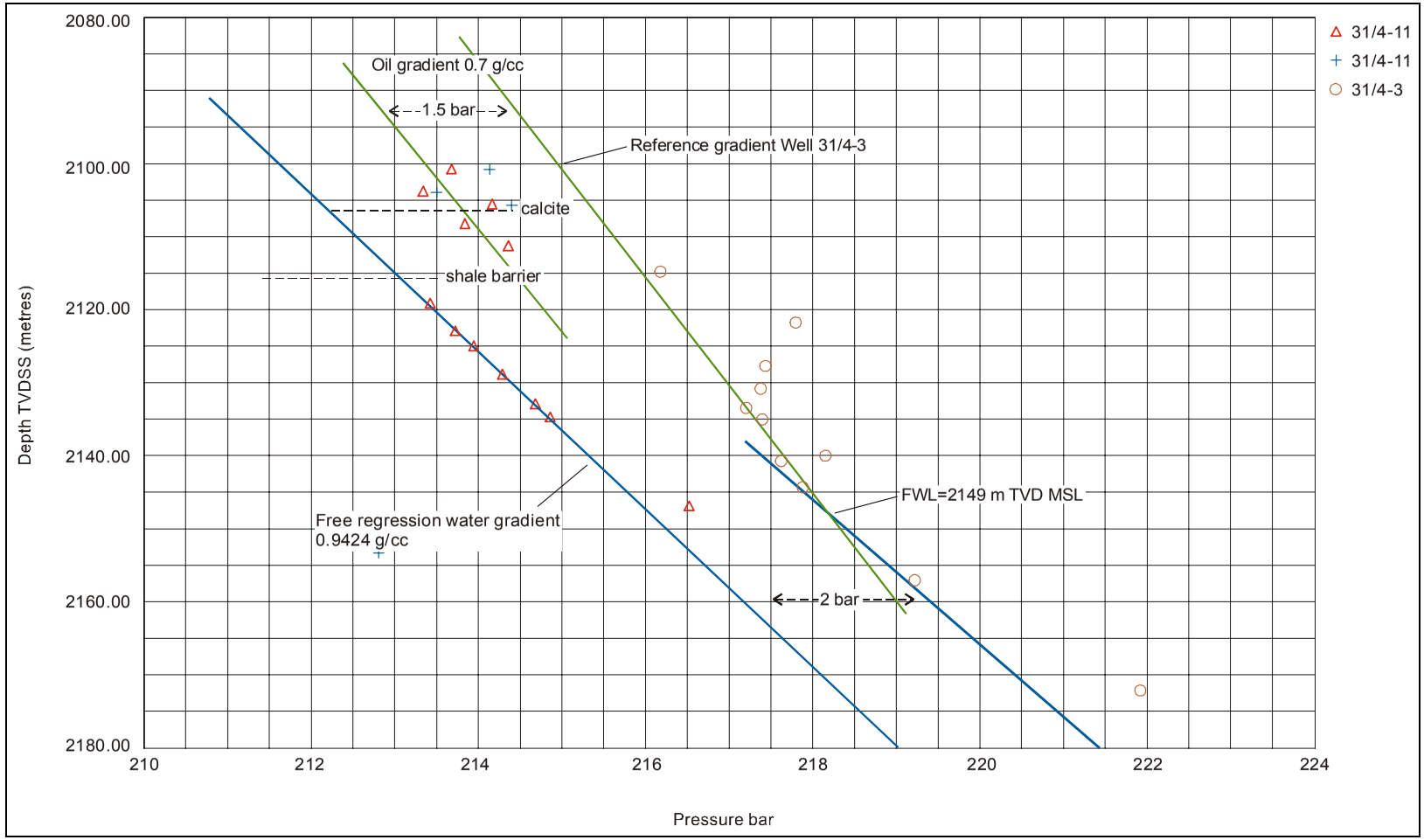


Figure 8.7.2
Fensfjord FMT results of 31/4-11 compared with 31/4-3

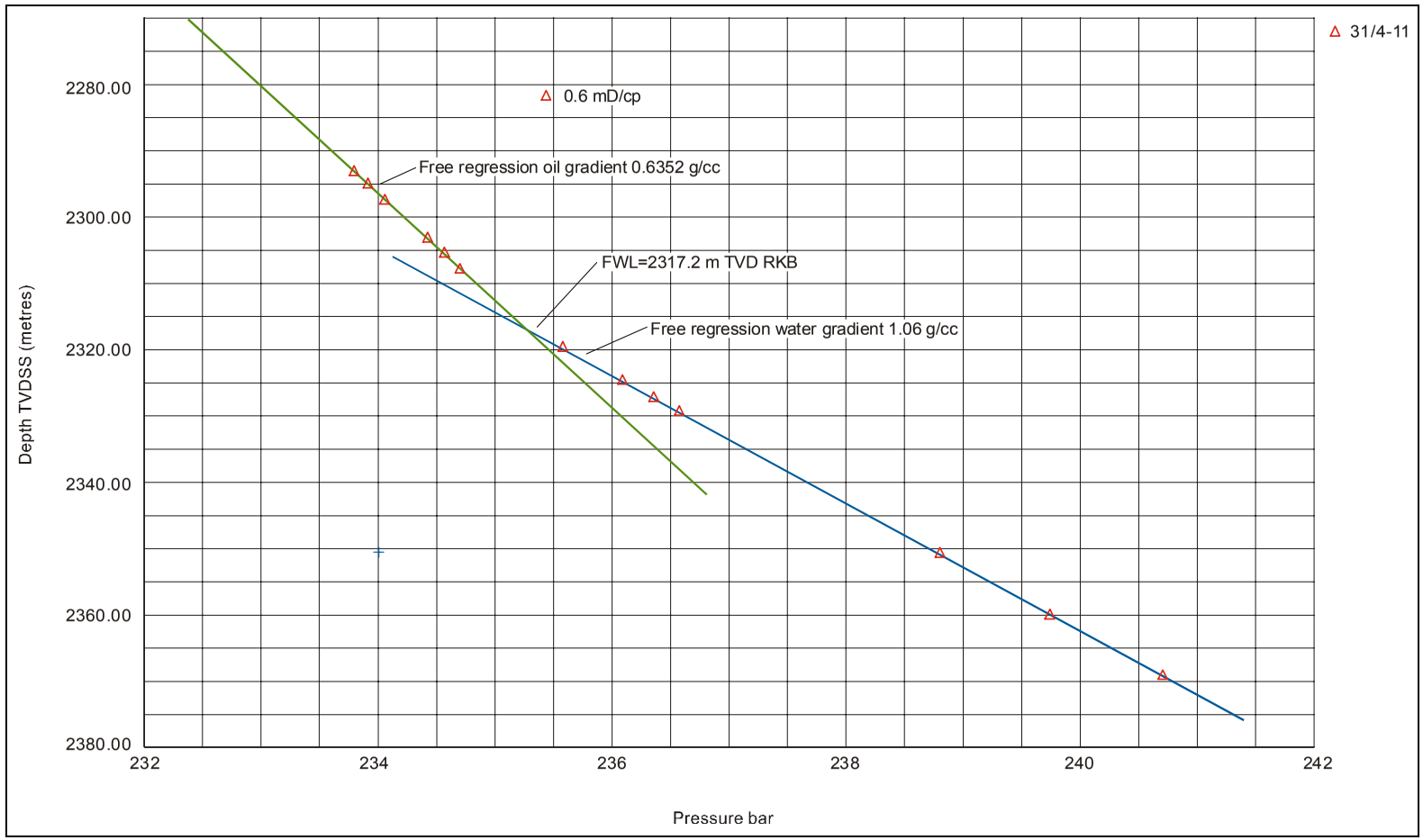


Figure 8.7.3
Brent Group FMT results of 31/4-11

8.8 Fluid Contacts

Draupne/Sognefjord

MDT interpretation of FWL within the Draupne/Sognefjord reservoir is impossible due to the pressure barrier created by shales in the USO2 layer. The geochemical analysis suggest shift in hydrocarbon composition on the core samples at 2189 m and 2217 m core depth (Ref. 8.4) which may correspond to the OGC and OWC respectively. After core shift -1.5 m suggested fluid contacts are; GOC= 2010.3 m TVD MSL and OWC= 2025.8 m TVD MSL. The gas oil contact is close to the contact defined in Well 31/4-3 at 2012 m TVD MSL. CPI log shows net pay hydrocarbons down to 2207,5 m MD RKB (2021,9 m TVD MSL). Mobile water was observed at 2205.8 m MD RKB (2020.7 m TVD MSL). The most likely OWC is between 2021 -2022 m TVD MSL and corresponds with shallowest Sognefjord OWC = 2023 m TVD MSL observed in Well 31/4-10. The OWC=2025.5 defined from geochemical analysis may indicate a paleocontact.

Fensfjord Formation

Oil down 2113 m TVD MSL and water up to 2119 m TVD MSL levels are encountered within the Fensfjord Formation. This is 36 m shallower than expected OWC.

Brent Group

ODT=2307.5 mTVD MSL in the Lover Ness SST is defined from log interpretation. The ORE Formation is water bearing. MDT interpretation determine FWL=2317.2 m TVD MSL.

Run No.	Depth m MD RKB	Depth m TVD RKB	Depth m TVD MSL	Init.Hydr. Press SG bar	Init.Hydr. Press HP bar	Formation Press SG bar	Formation Press HP bar	Final Hydr. Press SG bar	Final Hydr. Press HP bar	Drawdown Mobility MD / cp	Test Type
	*2162					198.16	198.8				
	2182,51	2 033,46	2 007,46	244,0671	244,0113	198,6399	198,5753	244,0650	244,0278	327,22	Draw-down Pretest
	2187,47	2036,29	2010,29	244,3641	244,3581	198,7746	198,7014	244,3881	244,2514	28,15	Draw-down Pretest
	2195,98	2041,12	2015,12	244,8162	244,9600	199,6327	199,6522	244,9473	244,7815	2,33	Draw-down Pretest
	2203,48	2045,36	2019,36	245,3865	245,4036	197,8998	197,9309	245,4357	245,2996	1010,58	Draw-down Pretest
2A	2208,10	2047,97	2021,97	245,5733	245,7466	198,1019	198,1723	245,7505	245,6280	1229,89	Draw-down Pretest
	2217,47	2053,26	2027,26	246,1907	246,3433	198,7279	198,7980	246,3739	246,2702	23,42	Draw-down Pretest
	2228,50	2059,47	2033,47	246,9622	247,0007	199,5408	199,5848	247,0659	246,9784	1,03	Draw-down Pretest
	2352,40	2126,83	2100,83	255,0397	255,1693	214,0776	214,1649	255,0257	254,9784	1,08	Draw-down Pretest
	2357,47	2129,48	2103,48	255,1453	255,2601	213,4050	213,4935	255,2790	255,2632	9,64	Draw-down Pretest
	2361,98	2131,84	2105,84	255,4807	255,5764	214,3319	214,4168	255,4862	255,5226	2,00	Draw-down Pretest

Table 8.7.1: MDT pressure results, run 2A.
*Cased hole RFT

Run No.	Depth m MD RKB	Depth m TVD RKB	Depth m TVD MSL	Init.Hydr. Press SG bar	Init.Hydr. Press HP bar	Formation Press SG bar	Formation Press HP bar	Final Hydr. Press SG bar	FinalHydr. Press HP bar	Drawdown Mobility MD / cp	Test Type
	2177,98	2030,87	2004,87	239,8237	242,0600	195,8383	198,4324	239,4597	241,6081	49,41	Draw-down Pretest
	2182,49	2033,45	2007,45	239,9667	242,1970	195,9232	198,4704	239,3605	241,8855	286,84	Draw-down Pretest
2B	2195,98	2041,12	2015,12	240,7185	243,1380	197,1773	199,9044	240,5649	242,8688	3,40	Super charged
	2196,84	2041,61	2015,61	241,0100	243,3991			240,4533	242,8308		Dry test
	2352,40	2126,83	2100,83	250,7065	252,9987			250,5200	252,8124		Dry test
	2352,61	2126,94	2100,94	250,4199	252,6978	211,1669	213,6723	250,4832	252,7593	1,15	Draw-down Pretest
	2357,50	2129,50	2103,50	251,1705	253,4426	210,8547	213,3460	250,6175	252,8772	1,76	Draw-down Pretest
	2362,04	2131,87	2105,87	251,5237	253,7856	211,7396	214,1991	250,9267	253,1718	1,65	Draw-down Pretest
	2366,99	2134,44	2108,44	251,9640	245,1946	211,3982	213,8431	251,2123	253,4187	1,78	Draw-down Pretest
	2372,28	2137,19	2111,19	252,2014	254,4199	211,9123	214,3331	251,5309	253,7361	3,65	Draw-down Pretest
	2387,54	2145,13	2119,13	252,9394	255,1410	211,0184	213,4219	252,6318	254,8472	10,08	Draw-down Pretest
	2395,00	2149,01	2123,01	254,0886	256,2911	211,3389	213,7343	253,0482	255,2567	20,16	Draw-down Pretest
	2398,91	2151,04	2125,04	253,8404	256,0296	211,5413	213,9208	253,2330	255,4108	25,24	Draw-down Pretest
	2406,96	2155,24	2129,24	254,4862	256,6704	211,9553	214,3247	253,8051	256,0096	17,53	Draw-down Pretest
	2414,11	2158,97	2132,97	255,0381	257,2154	212,3171	214,6768	254,2350	256,4250	54,57	Draw-down Pretest
	2417,53	2160,76	2134,76	255,2401	257,4081	212,5079	214,8495	254,3938	256,5570	34,79	Draw-down Pretest
	2439,97	2172,83	2146,83	256,4507	258,6400	214,1727	216,5191	255,7571	257,9268	4,90	Draw-down Pretest
	2479,55	2196,11	2170,11	259,4386	261,5959			258,5523	260,7022		Dry test
	2645,15	2307,74	2 281,74	273,5886	275,6365	233,2153	235,4393	271,4747	273,5787	0,57	Draw-down Pretest
	2661,16	2318,96	2292,96	273,7256	275,8696	231,5665	233,8179	272,7636	274,9066	1344,00	Draw-down Pretest
	2664,08	2321,00	2295,00	274,0955	276,2352	231,7072	233,9431	273,0977	275,2401	196,93	Draw-down Pretest
	2667,03	2323,07	2297,07	247,2167	276,3504	231,8365	234,0630	273,3159	275,4421	466,74	Draw-down Pretest
	2675,46	2328,94	2302,94	274,5804	276,7171	232,2200	234,4373	273,8333	275,9741	556,93	Draw-down Pretest
	2678,56	2331,11	2305,11	275,0594	277,1821	232,3764	234,5788	274,1094	276,2325	1462,81	Draw-down Pretest
	2681,50	2333,16	2307,16	274,8298	276,9445	232,5107	234,7021	274,3431	276,4504	58,56	Draw-down Pretest
	2699,03	2345,52	2319,52	276,6954	278,7820	233,4154	235,5869	275,7808	277,8650	126,57	Draw-down Pretest
	2706,23	2350,64	2324,64	277,3957	279,4927	233,9343	236,1111	276,4025	278,5161	61,76	Draw-down Pretest
	2710,04	2353,35	2327,35	277,5390	279,6356	234,1952	236,3692	276,7319	278,8457	67,11	Draw-down Pretest
	2713,05	2355,49	2329,49	277,8674	279,9715	234,4075	236,5777	276,9573	279,0570	13,63	Draw-down Pretest
	2742,50	2376,38	2350,38	280,7421	282,8443	236,6455	238,8130	279,7117	281,8110	392,87	Draw-down Pretest
	2756,29	2386,01	2360,01	281,4523	283,5640	237,5699	236,7474	280,7877	282,9217	217,96	Draw-down Pretest
	2769,03	2394,91	2368,91	282,6421	284,7602	238,5624	240,7255	281,7822	283,8843	0,78	Draw-down Pretest
	2784,52	2405,72	2379,72	283,9191	286,0265	239,8511	242,0118	282,9102	285,1561	6,91	Draw-down Pretest

Table 8.7.2: MDT Pressure results, run 2B.

8.9 PVT

PVT analysis have been carried out on MDT samples from 31/4-11 on the Fensfjord Formation (ref. 8.5), the Brent Group (ref. 8.6) and the Draupne-Sognefjord Formations (ref. 8.7) respectively. For the results the reader is referred to the reports.

8.10 References

8.1. RESLAB Report Conventional Core Measurements 34/4-11
8.2 Petrotech: Trace Element analysis of Water
8.3 Oilphase: sample Validation
8.4. N.Hydro Geochemistry well 31/4-11
8.5. N.Hydro PVT-Study, well 31/4-11, Fensfjord Formation
8.6. N.Hydro PVT-study, well 31/4-11, Brent Group
8.7. Core Lab: Reservoir Fluid Study for Norsk Hydro a.s. 31/4-11

9 Estimated Pore Pressure, Fracture, Overburden and Temperature Gradients

9.1 Pore pressure

The pore pressure interpretation in well 31/4-11 are based on well site observations, gas data, MDT pressure readings and calculations based on logs (MWD and Dxc).

Shallow gas was not registrated in the upper sediments.

From sea bottom to 1400m a hydrostatic pressure is regarded as most likely. At 1400m a change in Dxc, Resistivity-log and gas-readings indicates a steady build-up in porepressure to 1,30sg at 1600m TVD RKB. Between 1600m to 1700m the pore pressure stays at 1,30sg. Below 1700 there is a gradual decrease in porepressure down to 1,04sg at casing point.
In 8 1/2" section MDT-readings were taken in sands of the Sognefjord, Fensfjord and Brent. The results corresponds closely to the prognosis, all in the range of 1,00 - 1,03sg. The well was extended below TD of prognosis. The pressure development in the Dunlin Fm. and the upper part of Statfjord Gr. is uncertain as it has to based mainly on drilling parameters and gas values. Dxc values shows a sligth cutback in the Dunlin Fm. which might indicate a pressure increase. Drilling was controlled (ROP restricted to 50-60m/hr). This means that the Dxc trend becomes even less reliable. Gas values were low through Dunlin and Statfjord. No hole problems were encountered during drilling. Based on these scant evidence, the pore pressure shows either a constant or slightly increasing trend in Dunlin and upper Statfjord. A pore pressure range of 1,03sg to 1,04sg in top Statfjord seems reasonable based on the available information.
The Pore pressure-, Fracture- and Overburden gradients are given in Fig. 9.1

9.2 Formation strength

No mudlosses were observed in this well.
One normal LOT was performed. At 1106m MD it gave 1,68sg, prognosed 1,46sg. 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 the LOT taken falls within the regional normality.
A FIT to 1,55sg was performed at 2179m MD.

9.3 Overburden gradient

Overburden gradient is based on calculated values and the density log.

9.4 Temperature Gradient

MDT and Hornerplot -readings is used to estimate the formation temperature. This gives an average formation temperature gradient of 4.07° C/ 100m assuming 4°G at seafloor. BHST at TD is estimated to be 108,4°C. The Formation Temperature gradient is given in Fig. 9.2.

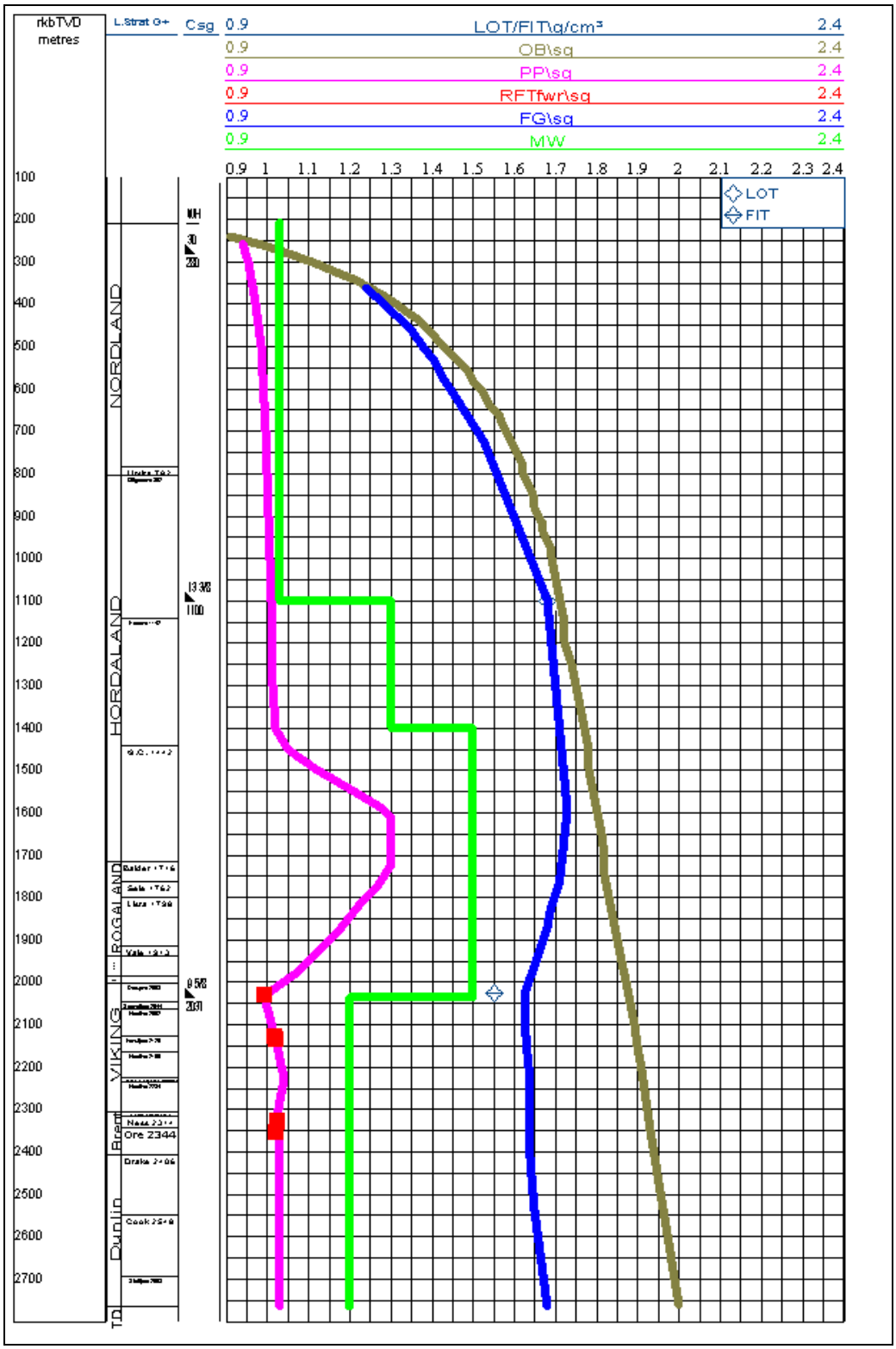

rkbTVD
metres
L.Strat G+
Csg
0.9
LOT/FIT\g/cm³
2.4
OB\sg
PP\sg
RFTfwr\sg
FG\sg
MW
0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4
LOT
FIT
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
NORDLAND
HORDALAND
ROGALAND
VIKING
Brent
Dunlin
Ore 2344
TD

Figure 9.1

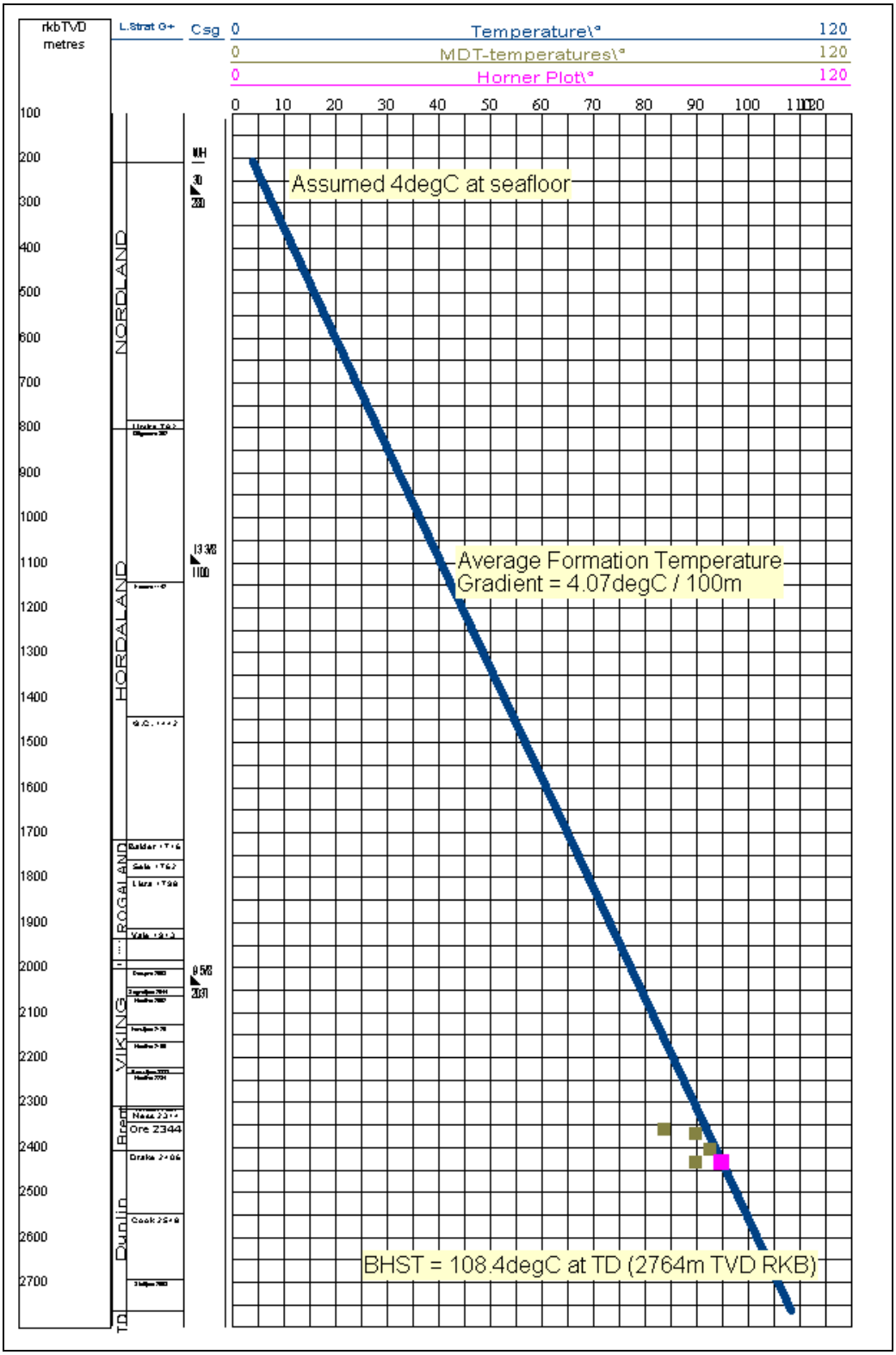

rkb TVD
metres
L.Strat G+
Csg
Temperature\°
MDT-temperatures\°
Horner Plot\°
0
120
Assumed 4degC at seafloor
Average Formation Temperature
Gradient = 4.07degC / 100m
BHST = 108.4degC at TD (2764m TVD RKB)
NORDLAND
HORDALAND
ROGALAND
VIKING
Brent
Dunlin
TD
Ore 2344

Figure 9.2

10 Geophysical Results

The prognosed depths were within the estimated uncertainty range, as shown in Table 10.1.

Despite the prognosed seismic time picks being consistantly greater than the check shot times, the prognosed formation top depths were shallower than encountered in the well. This indicates that the velocities are faster than had been used in the prognosis.

FORMATION	Prognosed T.W.T. (ms)	Result T.W.T. (ms)	Pognosed Depth (m TVD MSL)	Result Depth (m TVD MSL)	Difference (result-prog)	Prognosed UTM	Result UTM	Difference UTM
Sea Floor			183			505500 mE 6719714 mN		
Top Utsira	811		734	756.5	+ 22.5	505500 mE 6719713 mN		
Base Utsira	859		783	776	- 7	504500 mE 6719713 mN		
Base Oligocene sst	1180		1122	1116	- 6	505499 mE 6719712 mN		
Top Green Clay	1440		1385	1415	+30	505498 mE 6719711 mN		
Top Balder	1720		1688	1690	+ 2	505465 mE 6719664 mN		
Top Shetland	1905	1900	1902	1911	+ 9	505357 mE 6719513 mN	505343 m E 6719505 m N	14 m W 8 m S
Top Draupne	1955	1946	1980	1977	- 3	505299 mE 6719433 mN	505297 mE 6719430 m N	2 m W 3 m S
Top MS08	1981	1972	2006	2018	+ 12	505280 mE 6719406 mN	505264 mE 6719380 mN	16 mW 26 m S
Top F3-1	2056	2040	2121	2130	+9	505196 mE 6719289 mN	505176 m E 6719230 m N	20 m W 59 m S
Top Brent	2136	2130	2273	2287	+14	505084 mE 6719133 mN	505071 m E 6719077 m N	13 m W 66 m S

Table 10.1: Geophysical Summary

The random seismic profile along the well path and the VSP profile are shown in Figure 10.1. The seismic picks used in prognosing the formation tops can be compared to the check shot times, circled in blue.

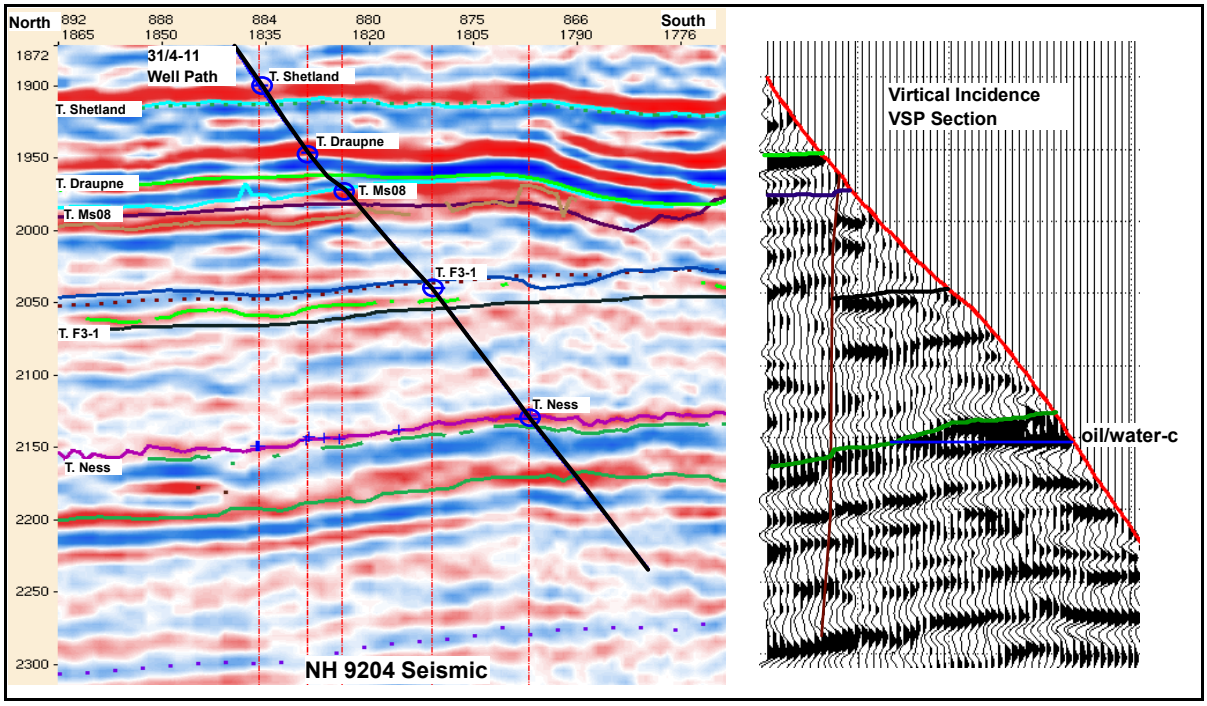

North
South
892
1865
888
1850
884
1835
880
1820
875
1805
866
1790
1776
1872
1900
1950
2000
2050
2100
2150
2200
2250
2300
31/4-11
Well Path
T. Shetland
T. Draupne
T. Ms08
T. F3-1
T. Ness
NH 9204 Seismic
Virtical Incidence
VSP Section
oil/water-c

Figure 10.1.

11 POST SITE SURVEY REPORT

The results are based on:
- 2D high resolution reflection seismic (NH0067/NH9555)
- 3D reflection seismic (NH9204)
- MWD logs (resistivity and Gamma ray)
- Drilling results from exploration and production wells (31/4-2, 31/4-3, 31/4-4 and 31/4-10).
- Site Survey at location 31/4-11, PL 055, R-090483.

11.1 Well data

1	Distance from rig floor to sea level:	26 m
2	Water depth (MSL):	183 m
3a	Setting depth for conductor (m RKB):	283.3 m
3b	Leak Off / Formation Integrity Test (g/cc):	N/A
4a	Setting depth (m RKB TVD) for casing on which BOP mounted:	1100 m
4b	Formation Integrity Test (g/cc):	1.68 sg

5 Depth (m RKB TVD & Two Way Time) to formation/section/layer tops:

Base Pleistocene:	418 m	(477 ms)
Base Pliocene:	782.5 m	(812 ms)
Base Late Miocene:	802 m	(859 ms)
Base Oligocene:	1441 m	(1465 ms)

Note:
No chronostratigraphic information was collected in the top hole section of the well (from seabed down to 1100 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 1100 m RKB TVD.

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 1100 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 31/4-11:

Late Miocene Interval

782.5 m - 802 m

Early Miocene/Oligocene Interval:

846 m - 848 m MWD logs indicate small amounts of gas in this layer (gamma low / resistivity high).
857 m - 860 m
871 m - 873 m MWD logs indicate small amounts of gas in this layer (gamma low / resistivity high).
905 m - 906 m
933 m - 935 m
975 m - 1012 m
1015 m - 1017 m
1119 m - 1141 m

7 By what means is the presence of gas proven:

The well is drilled with returns to seabed above 1100 m RKB TVD. MWD logs indicate small amounts of gas present in the Early Miocene/Oligocene sand layers (see above). Below 1100 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:

The results from gas (C1) measurements in section 1102.96 m - 519.23 m RKB TVD are as follows:

Depth m RKB TVD	*Minimum %*	*Maximum %*
1102.96 - 1323.94	0.00	0.30
1323.94 - 1519.23	0.50	1.10

Chromotographic Breakdown of Peak:

Depth m RKB TVD Peak %	*Background %*	
1358.9	1.50	0.80
1422.9	1.50	0.80

9 Describe all measurements taken in gas bearing layers:

N/A

11.2 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. The Proposed Well Location was interpreted as being free from shallow gas hazards and a shallow gas warning was not issued. Caution was, however, advised at a depth of 521 m ± 18 m MSL, where high reflection amplitude approach to within 45 m of location, to the east.

The tophole section of the well was drilled with returns to seabed to 1100 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 31/4-11 Location and no gas warning was given for Well 31/4-11.

No gas related problems were experienced in the well.

12b Sand Bodies:

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

12c Boulders:

Scattered boulders were predicted in the shallow section between 208m-417m RKB TVD. No boulder layers were predicted. No boulders were encountered.

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

Horizon	*Prognoses (P)*	*Observed (O)*	*Difference (O-P)*
Base Pleistocene:	417 ± 10 m	418.0 m	+ 1.0 m (deeper)
Base Pliocene:	760 ± 20 m	782.5 m	+ 22.5 m (deeper)
Base Late Miocene:	809 ± 60 m	802.0 m	- 7.0 m (shallower)
Base Oligocene:	1410 ± 40 m	1441.0 m	+ 31.0 m (deeper)

The differences between the prognoses and observed depths to different formation tops were within the uncertainty limits, except for Base Pliocene formation. The difference between the predicted and observed depths may be caused by discrepancies in either the seismic pick, the velocity model used for depth conversion or a combination of both.

12e Correlation to Nearby Wells:

The drilling conditions experienced in well 31/4-11 are as predicted and similar to those encountered in tie-wells 31/4-2, 31/4-3, 31/4-4 and 31/4-10.

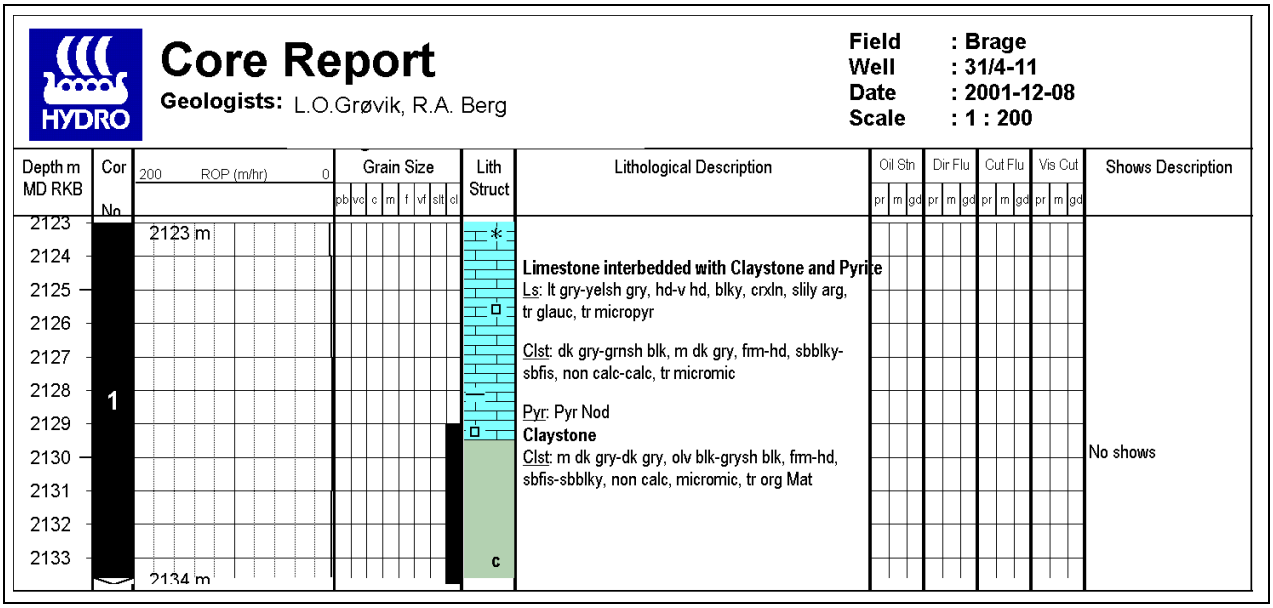
12 STANDARD AND SPECIAL STUDIES

- **Norsk Hydro: Well Programme**, 31/4-11. PL 055. June 2000.
- **Svitzer: Site Survey**, PL 055. Well 31/4-11. January 2000. NH-00012241.
- **Norsk Hydro: Site Survey at Locarion** 31/4-11. June 2000. R-090483
- **SecurityDBS: Kjerneboringsanbefalinger** for Scarabeo 6, brønn 31/4-11. July 2000
- **OASIS: Drilling Optimisation Study**, Well 31/4-11. July 2000
- **Andrews survey: Borehole Seismic Positioning Report** for Norsk Hydro, Well 31/4-11. October 2000. NH-00018279
- **BJ Services AS: End of Well Report Cementing**. Norsk Hydro, Scarabeo 6, Well 31/4-11. September 2000.
- **MI-Norge: Drilling Fluid Experience Summary**, Well 31/4-11. October 2000.
- **Halliburton Sperry-Sun Drilling Services: End of Well Report**,**Surface Logging** Data, Brage, 31/4-11. December 2000.
- **Schlumberger Anadrill: End of Well Report / Logs**, Well 31/4-11, Scarabeo 6. Sept 2000.
- **Oilphase: Field Operation Report**. Well 31/4-11. November 2000
- **Petrotech: Trace Element Analysis of Water**. Well 31/4-11. December 2000.
- **ResLab: Conventional Core Analysis**,Well 31/4-11. January 2001
- **ResLab: Core Photographs** Well 31/4-11, Core no 1 - 16, Scale 1:4, White Light and UV Light. January 2001
- **Norsk Hydro**: PL 055, Bowmore Structure. **Discovery Evaluation Report**, Well 31/4-11. March 2001. NH-00013918
- **Ichron: A Biostratigraphical Evaluation.....,** Well 31/4-11, Brager Area, NOCS. Feb 2001. NH-00014473
- **Ichron: Palynological Evaluation of the interval2635-2665m**, well 31/4-11, Brage Area, NOCS. April 2001.
- **Norsk Hydro: Biostratigraphy well 31/4-11**. Norsk Hydro Standard Zonation. March 2001. NH-00014476

- **Norsk Hydro: Geochemistry** Well 31/4-11. May 2001. NH-00018543
- **Norsk Hydro: A Stratigraphic Reconstruction of Bulk Volatile Chemistry** from Fluid Inclusions in Well 31/4-11, March 2001. NH-00014356
- **APT A/S: Data Report on Molecular and Stable Isotope** Composition of Gasbag samples from Well 31/4-11. July 2001.
- **APT A/S: Petroleum Geochemistry Data Report** - 3 Gas Samples from NOCS Well 31/4-11. December 2000.
- **Nork Hydro: Standard Core Description,** Well 31/4-11, May 2001. NH-00016972.
- **Norsk Hydro: PVT-Study,** Well 31/4-11, Fensfjord Formation, MDT samples. December 2000. NH-11656
- **Norsk Hydro: PVT-Study,** Well 31/4-11, Brent Group, MDT samples. December 2000. NH-00011655
- **Core Lab: Reservoir Fluid Study** for Norsk Hydro a.s. 31/4-11. February 2001.

APPENDIX I

CORE DESCRIPTIONS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Field : Brage
Well : 31/4-11
Date : 2001-12-08
Scale : 1 : 200
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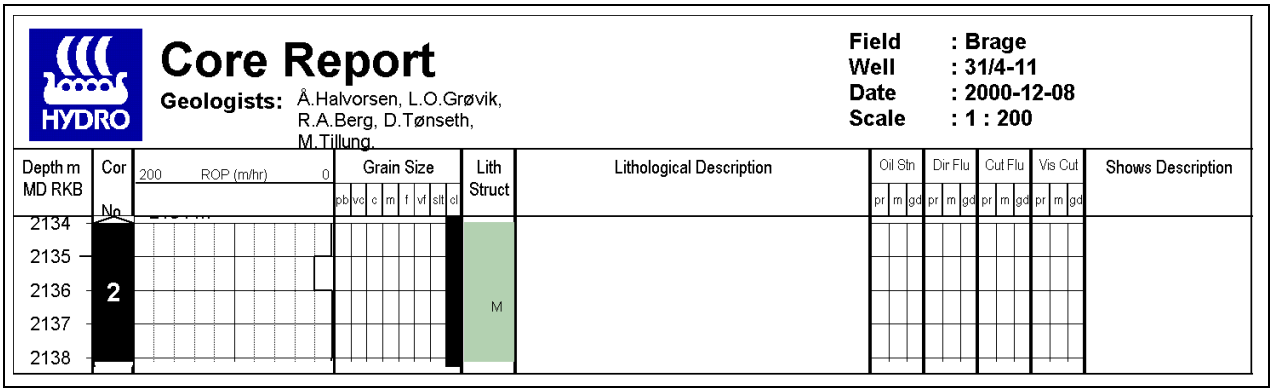
Cor No
200 ROP (m/hr) 0
Grain Size
pb vc c m f vf slt cl
Lith Struct
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
2123
2124
2125
2126
2127
2128
2129
2130
2131
2132
2133
2123 m
2134 m
1
c
Limestone interbedded with Claystone and Pyrite
Ls: lt gry-yelsh gry, hd-v hd, blky, crxln, slily arg, tr glauc, tr micropyr
Clst: dk gry-grnsh blk, m dk gry, frm-hd, sbblky-sbfis, non calc-calc, tr micromic
Pyr: Pyr Nod
Claystone
Clst: m dk gry-dk gry, olv blk-grysh blk, frm-hd, sbfis-sbblky, non calc, micromic, tr org Mat
No shows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Geologists: Å.Halvorsen, L.O.Grøvik, R.A.Berg, D.Tønseth, M.Tillung.
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Date : 2000-12-08
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Cor No
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Grain Size
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Lith Struct
Lithological Description
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Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
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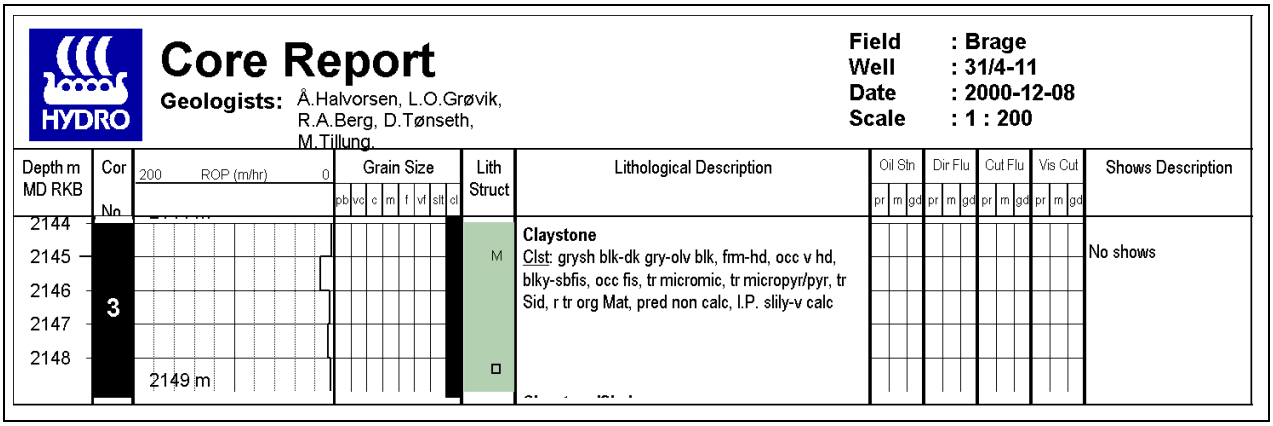
2135
2136
2137
2138
2
M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Date : 2000-12-08
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Cor No
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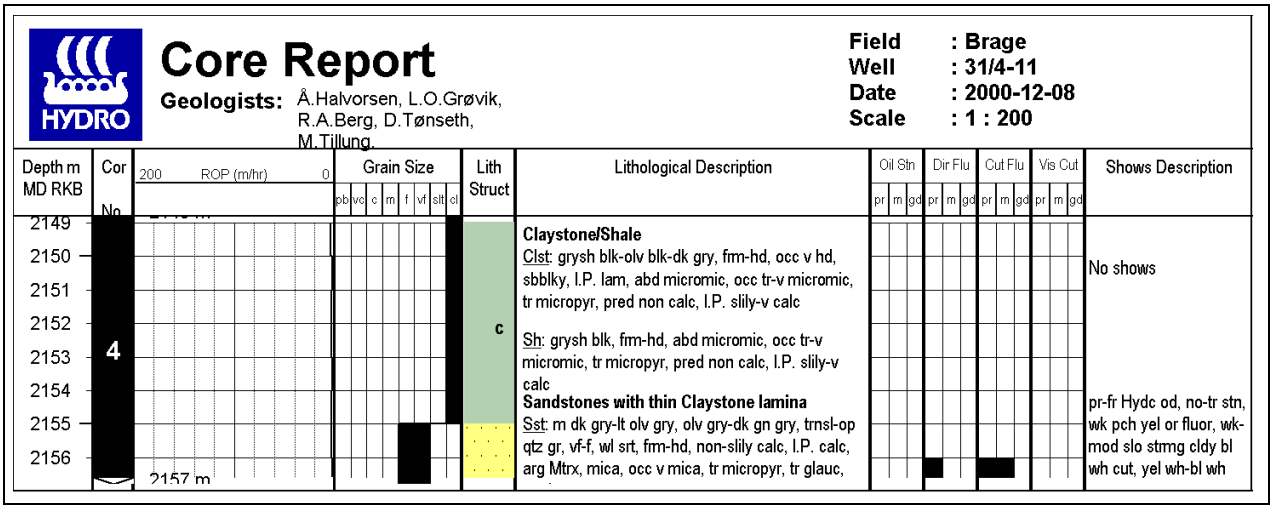
Lith Struct
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
2144
2145
2146
2147
2148
2149 m
3
M
Claystone
Clst: grysh blk-dk gry-olv blk, frm-hd, occ v hd, blky-sbfis, occ fis, tr micromic, tr micropyr/pyr, tr Sid, r tr org Mat, pred non calc, l.P. slily-v calc
No shows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Date : 2000-12-08
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Grain Size
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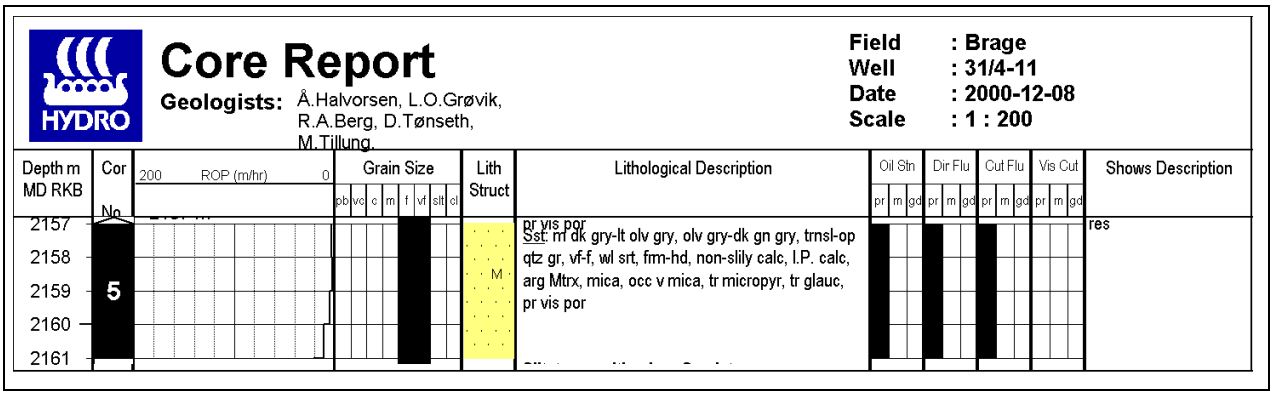
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
Shows Description
2149
2150
2151
2152
2153
2154
2155
2156
4
2157 m
c
Claystone/Shale
Clst: grysh blk-olv blk-dk gry, frm-hd, occ v hd, sbblky, l.P. lam, abd micromic, occ tr-v micromic, tr micropyr, pred non calc, l.P. slily-v calc
Sh: grysh blk, frm-hd, abd micromic, occ tr-v micromic, tr micropyr, pred non calc, l.P. slily-v calc
Sandstones with thin Claystone lamina
Sst: m dk gry-lt olv gry, olv gry-dk gn gry, trnsl-op qtz gr, vf-f, wl srt, frm-hd, non-slily calc, l.P. calc, arg Mtrx, mica, occ v mica, tr micropyr, tr glauc,
No shows
pr-fr Hydc od, no-tr stn, wk pch yel or fluor, wk-mod slo strmg cldy bl wh cut, yel wh-bl wh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Grain Size
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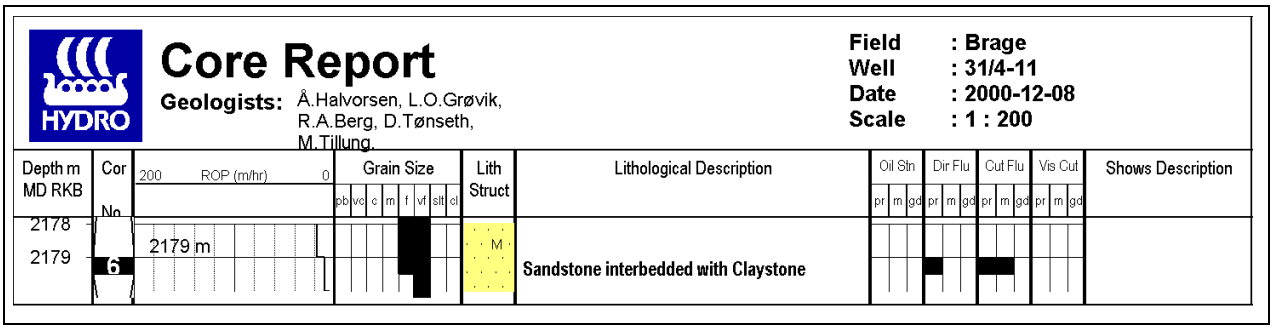
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
Shows Description
2157
2158
2159
2160
2161
5
M
pr vis por
Sst: m dk gry-lt olv gry, olv gry-dk gn gry, trnsl-op qtz gr, vf-f, wl srt, frm-hd, non-slily calc, l.P. calc, arg Mtrx, mica, occ v mica, tr micropyr, tr glauc,
pr vis por
res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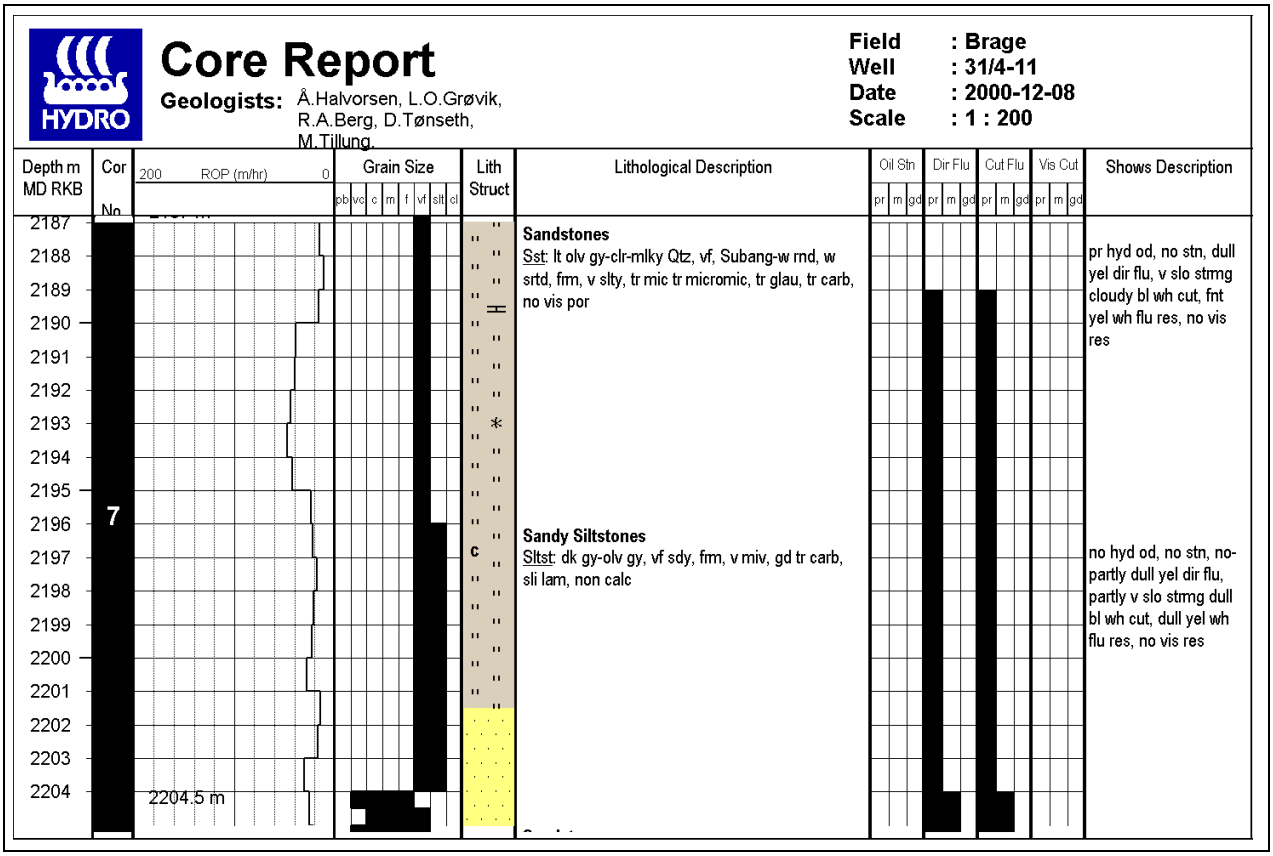
Dir Flu
Cut Flu
Vis Cut
Shows Description
2178
2179
2179 m
6
M
Sandstone interbedded with Claystone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Grain Size
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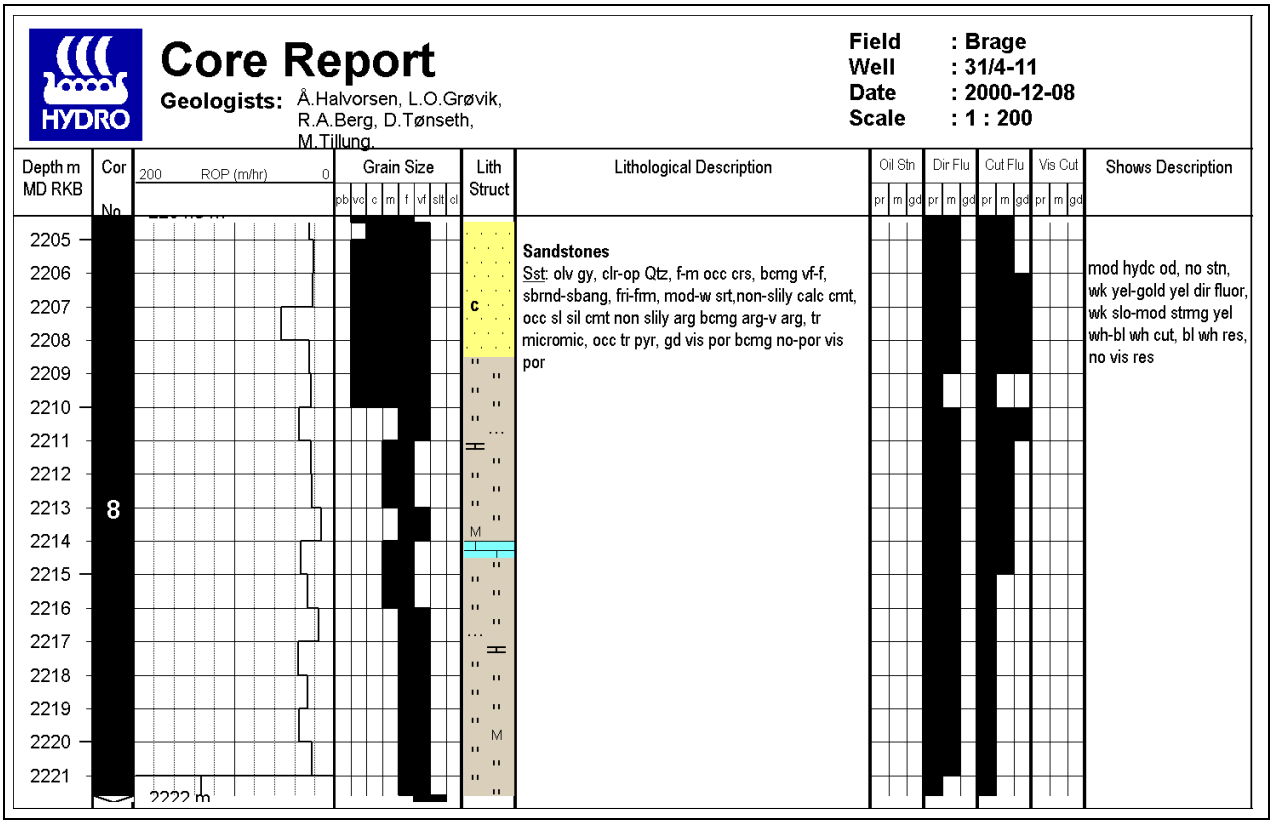
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
2187
2188
2189
2190
2191
2192
2193
2194
2195
2196
2197
2198
2199
2200
2201
2202
2203
2204
7
2204.5 m
Sandstones
Sst: lt olv gy-clr-mlky Qtz, vf, Subang-w rnd, w srtd, frm, v slty, tr mic tr micromic, tr glau, tr carb, no vis por
pr hyd od, no stn, dull yel dir flu, v slo strmg cloudy bl wh cut, fnt yel wh flu res, no vis res
Sandy Siltstones
Sltst: dk gy-olv gy, vf sdy, frm, v miv, gd tr carb, sli lam, non calc
no hyd od, no stn, no-partly dull yel dir flu, partly v slo strmg dull bl wh cut, dull yel wh flu res, no vis res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Grain Size
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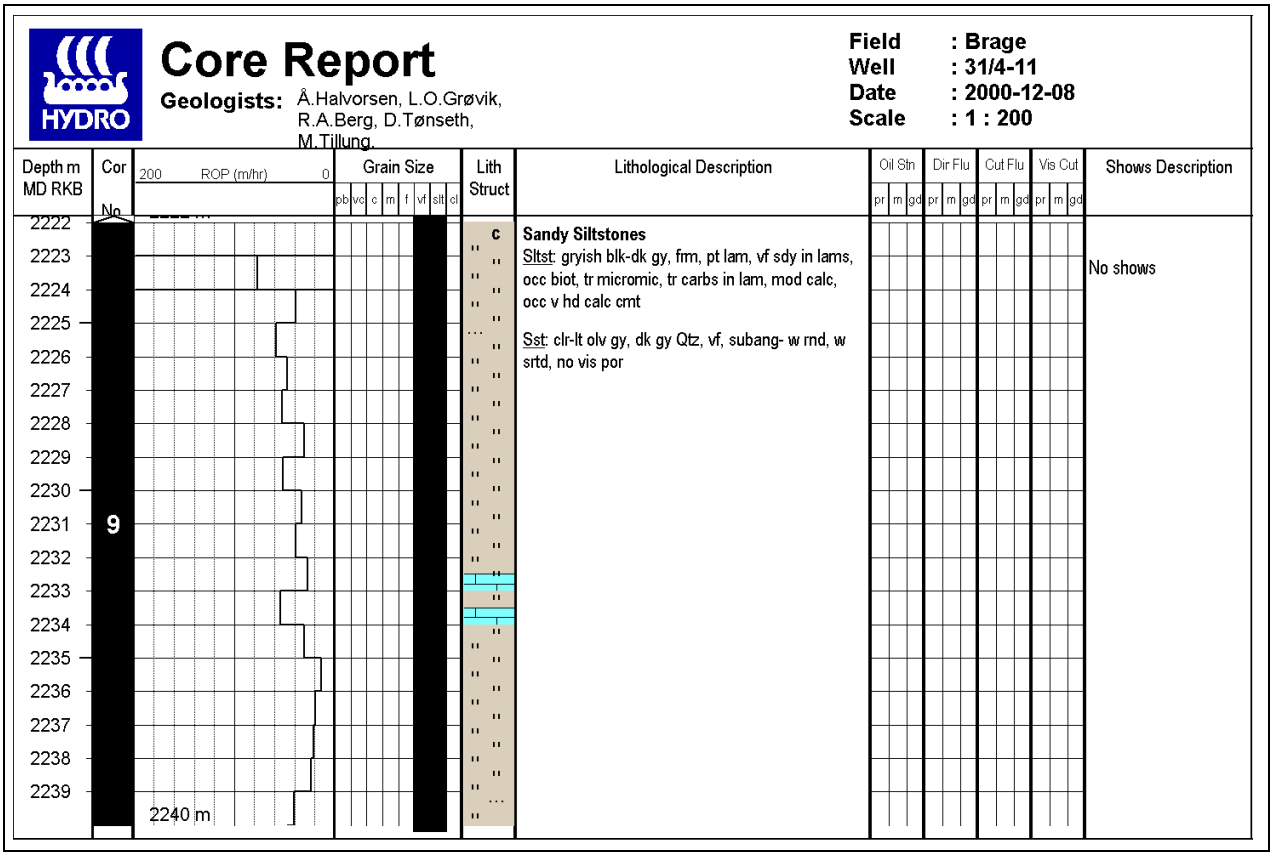
Lith Struct
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
2205
2206
2207
2208
2209
2210
2211
2212
2213
2214
2215
2216
2217
2218
2219
2220
2221
8
2222 m
Sandstones
Sst: olv gy, clr-op Qtz, f-m occ crs, bcmg vf-f, sbrnd-sbang, fri-frm, mod-w srt,non-slily calc cmt, occ sl sil cmt non slily arg bcmg arg-v arg, tr micromic, occ tr pyr, gd vis por bcmg no-por vis por
mod hydc od, no stn, wk yel-gold yel dir fluor, wk slo-mod strmg yel wh-bl wh cut, bl wh res, no vis res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Date : 2000-12-08
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Cor No
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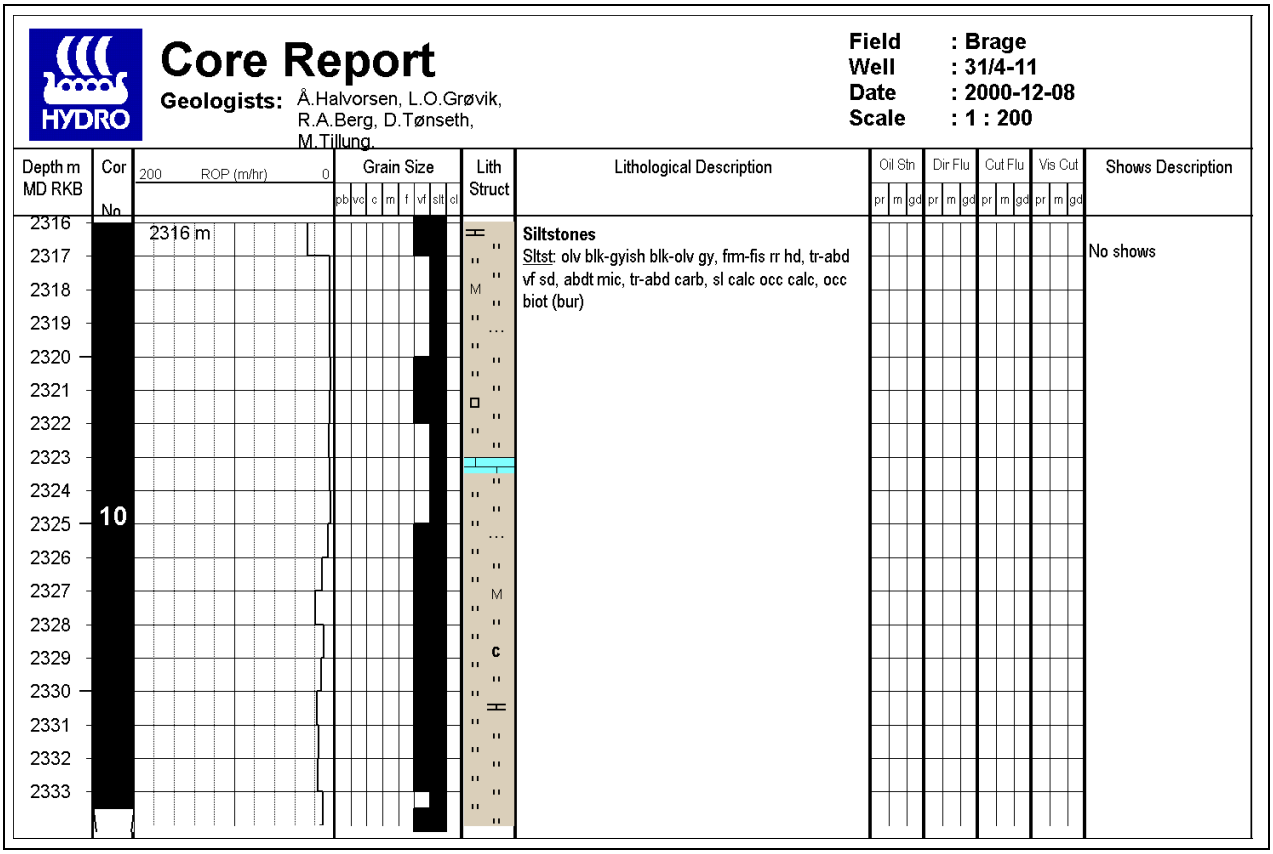
Grain Size
pb vc c m f vf slt cl
Lith Struct
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
2222
2223
2224
2225
2226
2227
2228
2229
2230
2231
2232
2233
2234
2235
2236
2237
2238
2239
9
2240 m
Sandy Siltstones
Sltst: gryish blk-dk gy, frm, pt lam, vf sdy in lams, occ biot, tr micromic, tr carbs in lam, mod calc, occ v hd calc cmt
Sst: clr-lt olv gy, dk gy Qtz, vf, subang- w rnd, w srtd, no vis por
No shows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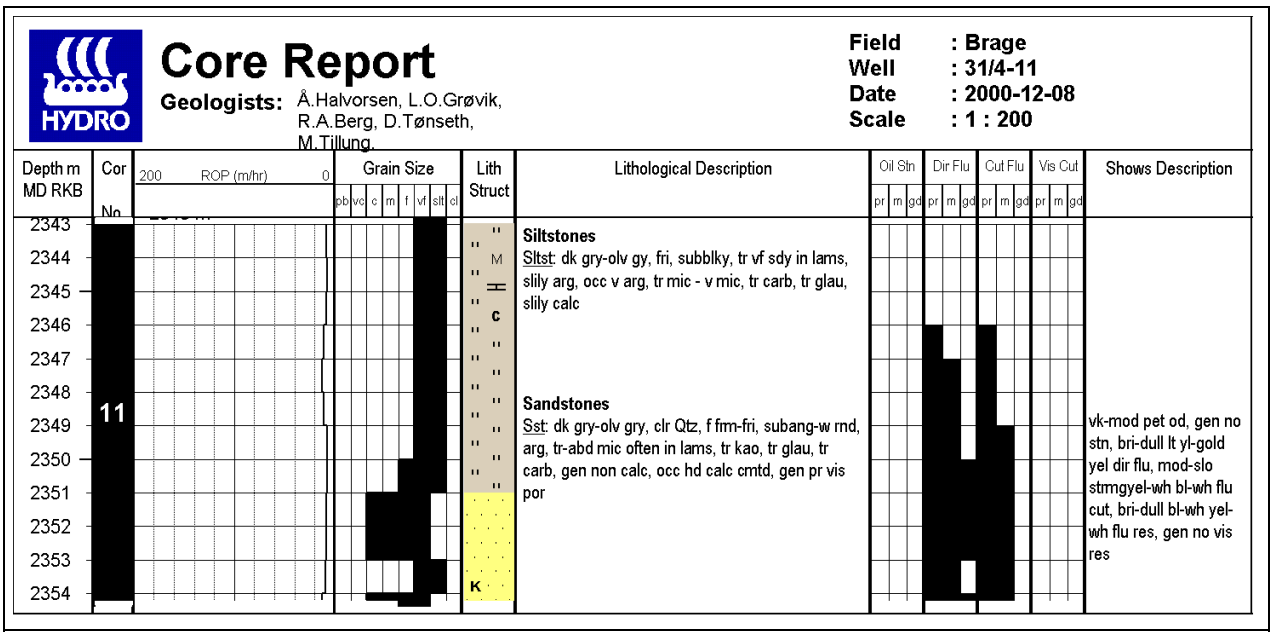
Cor No
200 ROP (m/hr) 0
Grain Size
pb vc c m f vf slt cl
Lith Struct
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
2316 m
10
Siltstones
Sltst: olv blk-gyish blk-olv gy, frm-fis rr hd, tr-abd vf sd, abdt mic, tr-abd carb, sl calc occ calc, occ biot (bur)
No shows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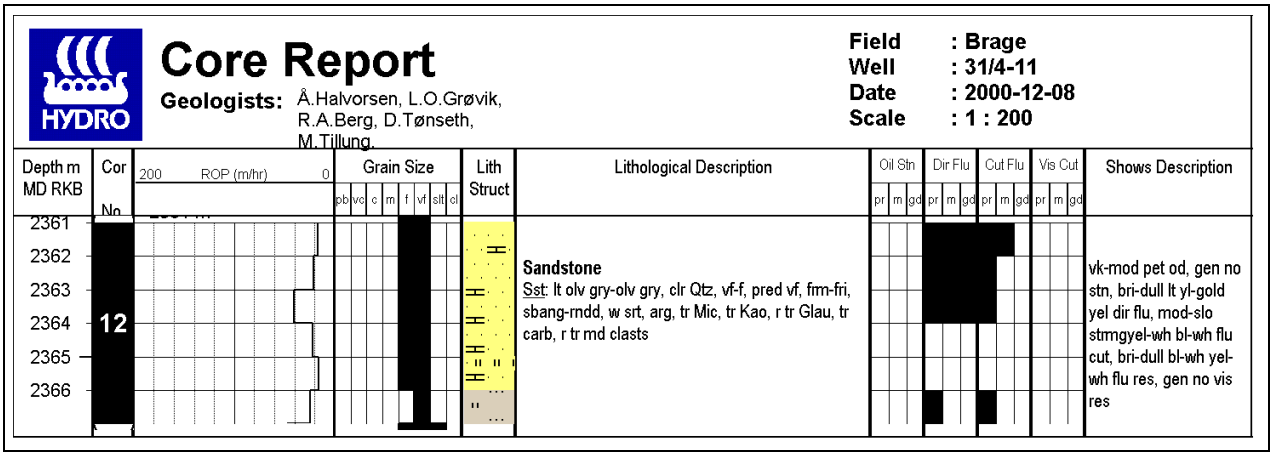
Date : 2000-12-08
Scale : 1 : 200
Depth m MD RKB
Cor No
200 ROP (m/hr) 0
Grain Size
pb vc c m f vf slt cl
Lith Struct
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
11
Siltstones
Sltst: dk gry-olv gy, fri, subblky, tr vf sdy in lams, slily arg, occ v arg, tr mic - v mic, tr carb, tr glau, slily calc
Sandstones
Sst: dk gry-olv gry, clr Qtz, f frm-fri, subang-w rnd, arg, tr-abd mic often in lams, tr kao, tr glau, tr carb, gen non calc, occ hd calc cmtd, gen pr vis por
vk-mod pet od, gen no stn, bri-dull lt yl-gold yel dir flu, mod-slo strmgyel-wh bl-wh flu cut, bri-dull bl-wh yel-wh flu res, gen no vis res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Date : 2000-12-08
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Cor No
200 ROP (m/hr) 0
Grain Size
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Lith Struct
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
2361
2362
2363
2364
2365
2366
12
Sandstone
Sst: lt olv gry-olv gry, clr Qtz, vf-f, pred vf, frm-fri, sbang-rndd, w srt, arg, tr Mic, tr Kao, r tr Glau, tr carb, r tr md clasts
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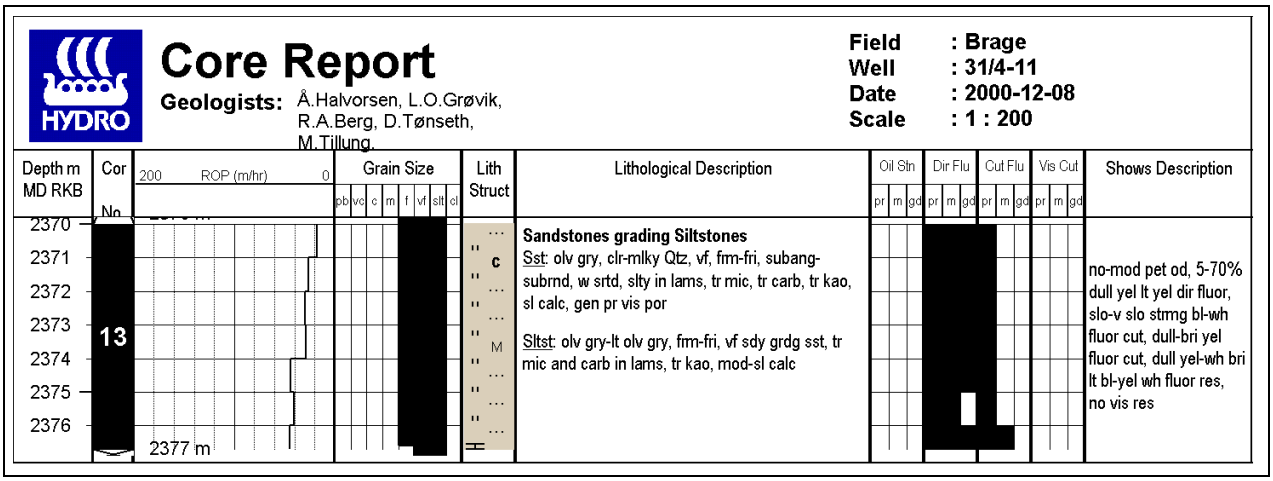
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200 ROP (m/hr) 0
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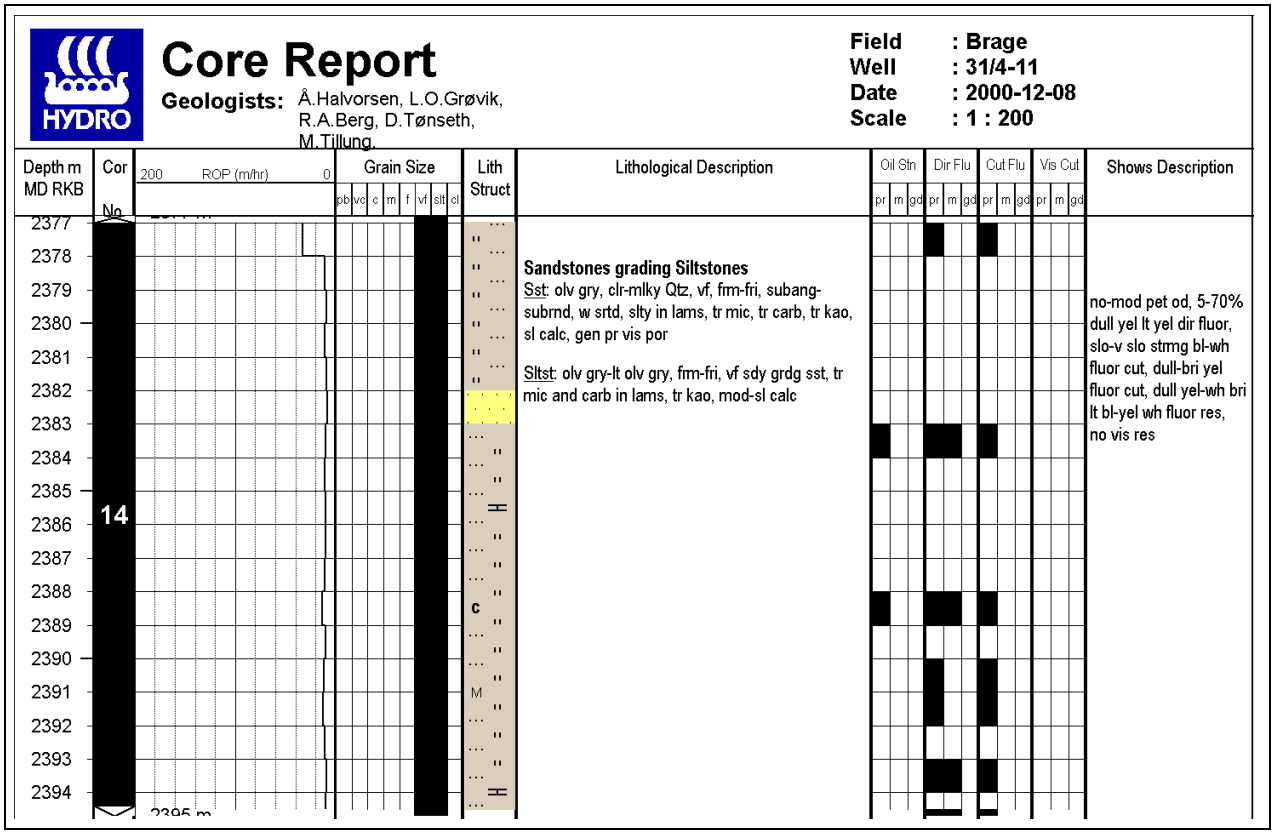
Lith Struct
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
2370
2371
2372
2373
2374
2375
2376
13
2377 m
Sandstones grading Siltstones
Sst: olv gry, clr-mlky Qtz, vf, frm-fri, subang-subrnd, w srtd, slty in lams, tr mic, tr carb, tr kao, sl calc, gen pr vis por
Sltst: olv gry-lt olv gry, frm-fri, vf sdy grdg sst, tr mic and carb in lams, tr kao, mod-sl calc
no-mod pet od, 5-70% dull yel lt yel dir fluor, slo-v slo strmg bl-wh fluor cut, dull-bri yel fluor cut, dull yel-wh bri lt bl-yel wh fluor res, no vis res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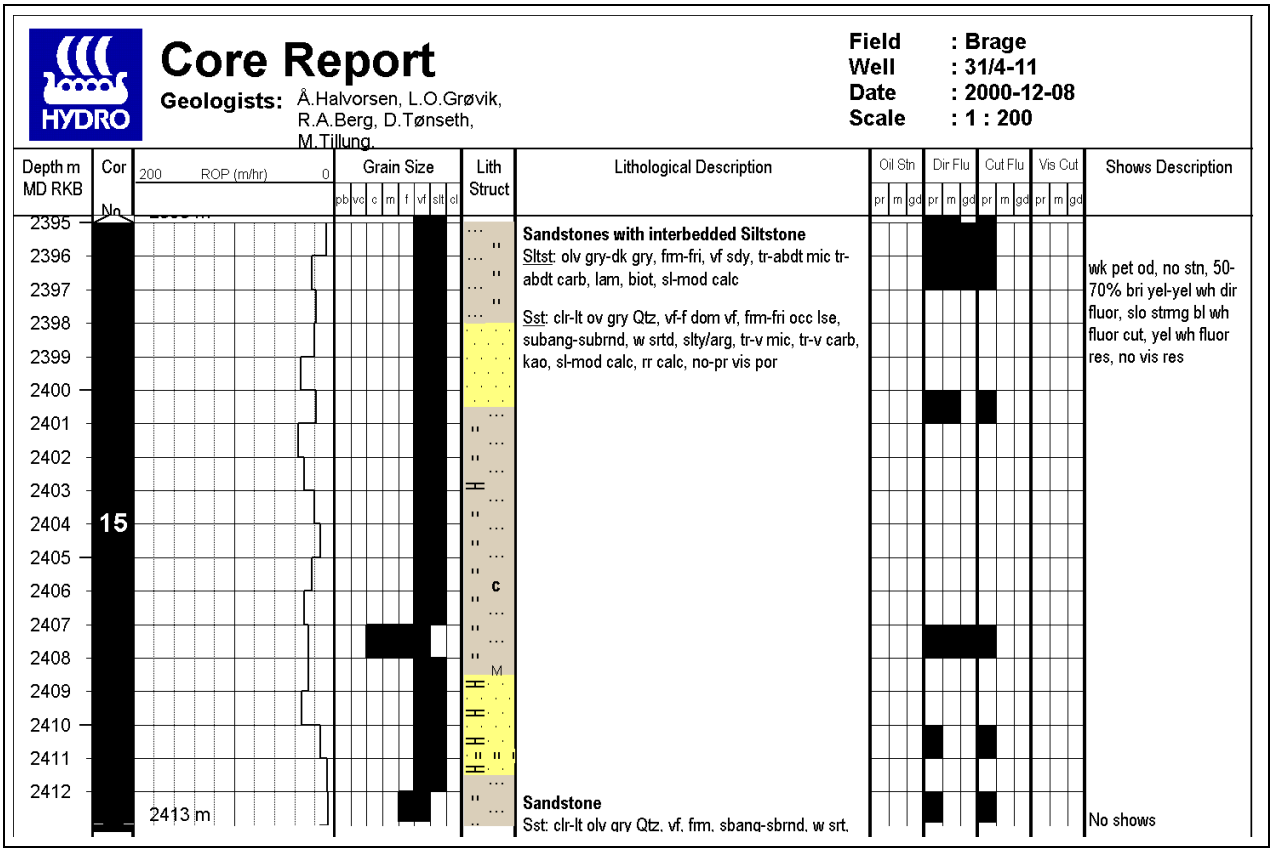
Cor No
200 ROP (m/hr) 0
Grain Size
cb vc c m f vf slt cl
Lith Struct
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
2377
2378
2379
2380
2381
2382
2383
2384
2385
2386
2387
2388
2389
2390
2391
2392
2393
2394
14
2395 m
Sandstones grading Siltstones
Sst: olv gry, clr-mlky Qtz, vf, frm-fri, subang-subrnd, w srtd, slty in lams, tr mic, tr carb, tr kao, sl calc, gen pr vis por
Sltst: olv gry-lt olv gry, frm-fri, vf sdy grdg sst, tr mic and carb in lams, tr kao, mod-sl calc
no-mod pet od, 5-70% dull yel lt yel dir fluor, slo-v slo strmg bl-wh fluor cut, dull-bri yel fluor cut, dull yel-wh bri lt bl-yel wh fluor res, no vis res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Date : 2000-12-08
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Lith Struct
Lithological Description
Oil Stn
Dir Flu
Cut Flu
Vis Cut
pr m gd
Shows Description
2395
2396
2397
2398
2399
2400
2401
2402
2403
2404
2405
2406
2407
2408
2409
2410
2411
2412
15
2413 m
Sandstones with interbedded Siltstone
Sltst: olv gry-dk gry, frm-fri, vf sdy, tr-abdt mic tr-abdt carb, lam, biot, sl-mod calc
Sst: clr-lt ov gry Qtz, vf-f dom vf, frm-fri occ lse, subang-subrnd, w srtd, slty/arg, tr-v mic, tr-v carb, kao, sl-mod calc, rr calc, no-pr vis por
wk pet od, no stn, 50-70% bri yel-yel wh dir fluor, slo strmg bl wh fluor cut, yel wh fluor res, no vis res
Sandstone
Sst: clr-lt olv gry Qtz, vf, frm, sbang-sbrnd, w srt,
No shows

APPENDIX II

WELL SUMMARY

GEOLOGICAL WELL SUMMARY

Coord: 60°37' 42.61"N UTM: 6 719 715.7 mN
03°06' 01.82"E 505 502.4 mE

Zone: ED-50 UTM Zone 31 CM 3° E

Line: NH-9204, Inline 1855, X-line 891.

Rig: Scarabeo 6

Waterdepth: 183 m MSL **KB:** 26 m

Stopped in: Statfjord Formation

On location: 26.07.00 @ 07:00hrs
Spud: 07.07.00 @ hrs
At TD: 04.09.00 @ hrs
P&A finished: 12.09.00 @ 01:30hrs
Status: Plugged and Abandoned

TD Driller: 3271 m MD (2765mTVD)
TD Logger: Not logged to TD
Wireline Logg: Schlumberger WS
MWD: Schlumberger Anadrill
Mudlogging: Halliburton Sperry-sun

WELL:
31/4-11

LICENCE:
PL 055

COUNTRY:
Norway

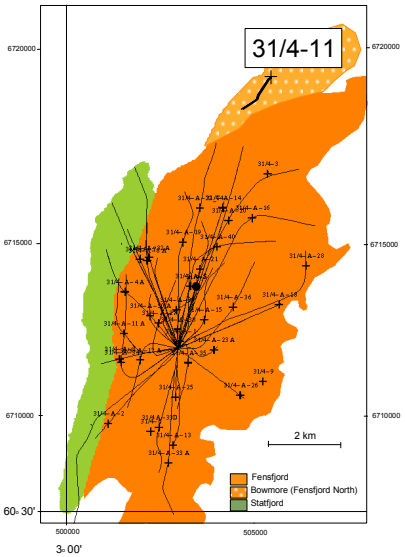
OPERATOR: NORSK HYDRO

OWNED BY: Hydro, Statoil, ExxonMobil, Fortum Petroleum

TARGETS:
Primary: Fensfjord Formation
Secondary: 1. Brent Group
2. Draupne & Sognefjord Formation

RESULTS:
- Gas & Oil discovery in Draupne & Statfjord Fm, Sandstones.
- Oil discovery in Fensfjord Fm, Sandstone.
- Oil discovery in Brent Group

CASING (MD / TVD RKB)	**MUD TYPE / WEIGHT**
30" at 283.0m / 283.0m	Seawater -HiVis pills
13 3/8" at 1100.0m / 1100.0m	Waterb.Glydrill 1.32sg
1600.0m / 1598.0m	Waterb.Glydrill 1.50sg
9 5/8" at 2166.0m / 2023.9m	Waterb.Glydrill 1.50sg
2316.0m / 2107.0m	Waterb.Glydrill 1.20sg
2835.0m / 2441.0m	Waterb.Glydrill 1.21sg
TD at 3271.0m / 2765.0m	Waterb.Glydrill 1.21sg

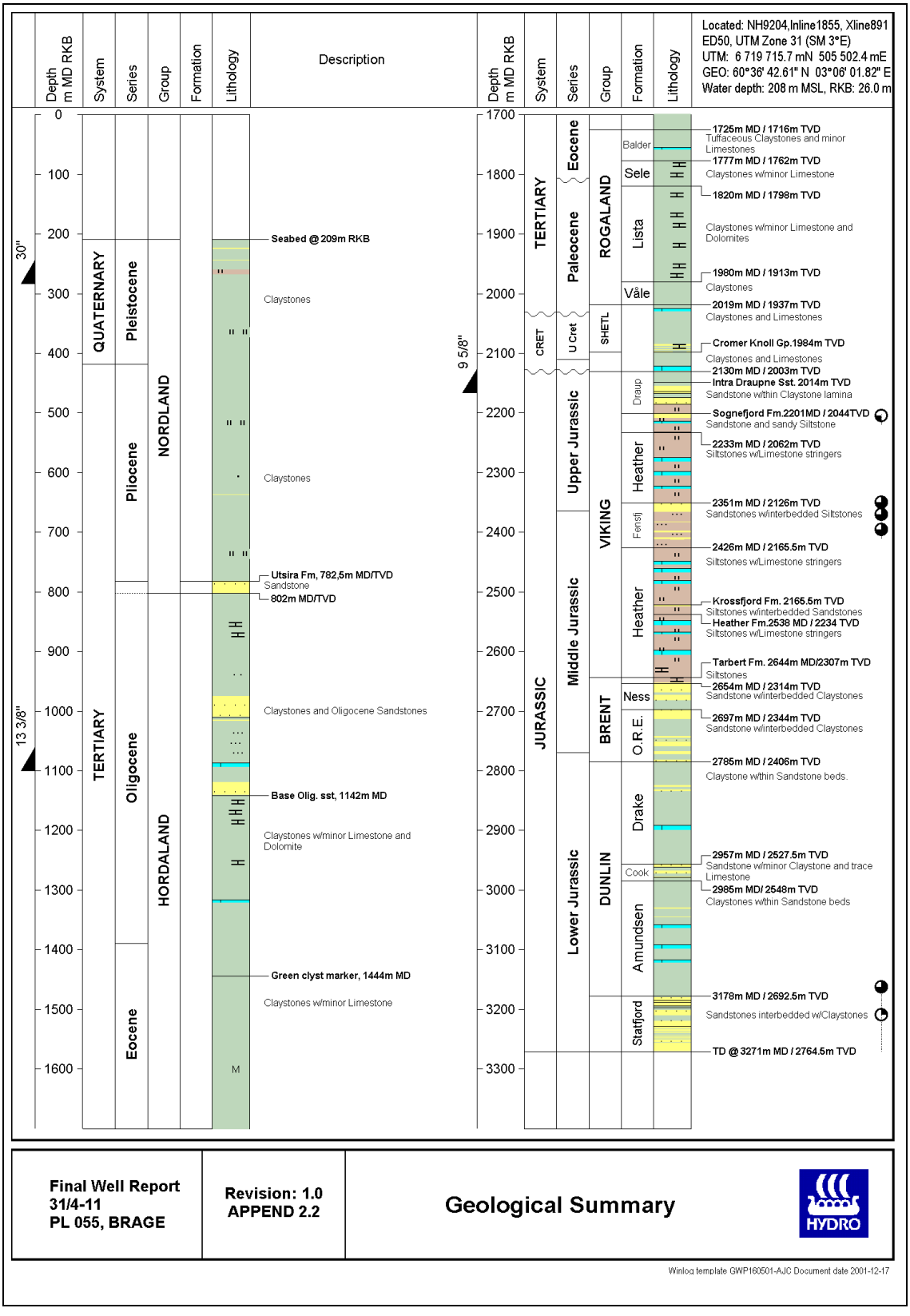


LOGS

MWD/LWD		
PowerPulse-CDR	36"	209,0 - 276.7 m
PowerPulse-CDR	17½"	285,0 - 1092.8 m
PowerPulse-CDR	12¼"	1068,0 - 2108,0 m
PowerPulse-CDR	12¼"	2123,0 - 2176,0 m
ARC-Vision675-ADN	8½"	1950.0 - 2176.0 m
GST-Vision675-ADN	8½"	2160.0 - 2316.0 m
GST-Vision675-ADN	8½"	2316.0 - 2806.0 m
GST-Vision675-ADN	8½"	2806.0 - 3258.0 m
Wireline		
PEX-HALS	1A	1110.0 - 2005.0 m
DSI	2A	2000.0 - 2835.0 m
CSAT (VSP)	2A	2000.0 - 2835.0 m
MDT	2A	2182.5 - 2362.0 m
MDT	2B	2178.0 - 2784.5 m
MDT	2C	2357.0 - 2701.0 m
CRFT (Cased hole)	2A	2157.0 - 2162.0 m
MDT	2D	2182.5 - 2372.5 m

CORES

Core # 1
C: 2123 - 2134.0m
R: 2123 - 2133.6m, 96.4%
Core # 2
C: 2134 - 2144m
R: 2134 - 2138.1m, 41%
Core # 3
C: 2144 - 2149m
R: 2144 - 2149m, 100%
Core # 4
C: 2149 - 2157m
R: 2149 - 2156.6m, 95%
Core # 5
C: 2157 - 2163m
R: 2157 - 2161m, 66.7%
Core # 6
C: 2179 - 2187m
R: 2179 - 2179.5m, 6.3%
Core # 7
C: 2187 - 2204.5m
R: 2187 - 2204.5m, 100%
Core # 8
C: 2204.5 - 2222m
R: 2204.5- 2221.6m, 97.7%
Core # 9
C: 2222 - 2240m
R: 2222 - 2240m, 100%
Core # 10
C: 2316 - 2343m
R: 2316 - 2333.5m, 65%
Core # 11
C: 2343 - 2361m
R: 2343 - 2354.2m, 62.2%
Core # 12
C: 2361 - 2370m
R: 2361 - 2367m, 66.6%
Core # 13
C: 2370 - 2377m
R: 2370 - 2376.7m, 95.7%
Core # 14
C: 2377 - 2395m
R: 2377 - 2394.4m, 96.6%
Core # 15
C: 2395 - 2413m
R: 2395 - 2412.9m, 99.4%
Core # 16
C: 2413 - 2431m
R: 2413 - 2431m, 100%


Depth m MD RKB
System
Series
Group
Formation
Lithology
Description
Located: NH9204,Inline1855, Xline891
ED50, UTM Zone 31 (SM 3°E)
UTM: 6 719 715.7 mN 505 502.4 mE
GEO: 60°36' 42.61" N 03°06' 01.82" E
Water depth: 208 m MSL, RKB: 26.0 m
30"
13 3/8"
9 5/8"
QUATERNARY
Pleistocene
Pliocene
Oligocene
Eocene
TERTIARY
NORDLAND
HORDALAND
Seabed @ 209m RKB
Claystones
Claystones
Utsira Fm, 782,5m MD/TVD
Sandstone
802m MD/TVD
Claystones and Oligocene Sandstones
Base Olig. sst, 1142m MD
Claystones w/minor Limestone and Dolomite
Green clyst marker, 1444m MD
Claystones w/minor Limestone
CRET
JURASSIC
Paleocene
Eocene
U Cret
Upper Jurassic
Middle Jurassic
Lower Jurassic
ROGALAND
SHETL
VIKING
BRENT
DUNLIN
Balder
Sele
Lista
Våle
Draup
Heather
Fensfj
Heather
Ness
O.R.E.
Drake
Cook
Amundsen
Statfjord
1725m MD / 1716m TVD
Tuffaceous Claystones and minor Limestones
1777m MD / 1762m TVD
Claystones w/minor Limestone
1820m MD / 1798m TVD
Claystones w/minor Limestone and Dolomites
1980m MD / 1913m TVD
Claystones
2019m MD / 1937m TVD
Claystones and Limestones
Cromer Knoll Gp.1984m TVD
Claystones and Limestones
2130m MD / 2003m TVD
Intra Draupne Sst. 2014m TVD
Sandstone w/thin Claystone lamina
Sognefjord Fm.2201MD / 2044TVD
Sandstone and sandy Siltstone
2233m MD / 2062m TVD
Siltstones w/Limestone stringers
2351m MD / 2126m TVD
Sandstones w/interbedded Siltstones
2426m MD / 2165.5m TVD
Siltstones w/Limestone stringers
Krossfjord Fm. 2165.5m TVD
Siltstones w/interbedded Sandstones
Heather Fm.2538 MD / 2234 TVD
Siltstones w/Limestone stringers
Tarbert Fm. 2644m MD/2307m TVD
Siltstones
2654m MD / 2314m TVD
Sandstone w/interbedded Claystones
2697m MD / 2344m TVD
Sandstone w/interbedded Claystones
2785m MD / 2406m TVD
Claystone w/thin Sandstone beds.
2957m MD / 2527.5m TVD
Sandstone w/minor Claystone and trace Limestone
2985m MD/ 2548m TVD
Claystones w/thin Sandstone beds
3178m MD / 2692.5m TVD
Sandstones interbedded w/Claystones
TD @ 3271m MD / 2764.5m TVD
Final Well Report
31/4-11
PL 055, BRAGE
Revision: 1.0
APPEND 2.2
Geological Summary
Winlog template GWP160501-AJC Document date 2001-12-17

SECTION B

OPERATIONS

Prepared by: Høgni Hansen Verified by: David Tjøswold Approved by: Terje Skram

LIST OF CONTENTS Page

TABLES

FIGURES

1 DRILLING SUMMARY AND EXPERIENCES

1.1 Mobilising

Total time used:	26.0 hrs	
Operational time:	26.0 hrs	(100.0 %)
Downtime:	0.0 hrs	(0.0 %)

Wellhead co-ordinates:

6 719 715.7 mN 5059 502.4 mE

The rig heading was 216°.

1.2 36" Hole Section / 30" Conductor

Total depth of section: 283 m.

Total time used:	37.5 hrs	
Operational time:	35.5 hrs	(94.7 %)
Downtime:	2.0 hrs	(5.3 %)

1.2.1 Drilling

The well was spudded on 27 July 2000, at 07:10 hrs.

The 36" hole was drilled with sea water and hi-vis pills from 209 m to 283 m. After drilling, a wiper trip was performed, and the hole was displaced to 1.50 sg mud.

1.2.2 Casing

The 30" conductor with the Permanent Guide Base was run to 283 m and cemented back to the sea bed.

1.3 17-1/2" Hole Section / 13-3/8" Casing

Total depth of section: 1,103 m.

Total time used:	92.0 hrs	
Operational time:	79.5 hrs	(86.4 %)
Downtime:	12.5 hrs	(13.6 %)

1.3.1 Drilling

After drilling out the 30" shoetrack with a 26" bit, the section was drilled to TD at 1,103 m with a 17-1/2" BHA. Sea water and hi-vis pills were used for cleaning the hole. After drilling, a wiper trip to the conductor shoe was made on which the pipe became stuck with the bit at 1079m. The pipe was worked free and the hole was reamed in the interval 1,055 m to 1,103 m in order to clear the hole for tight spots. The hole was displaced to 1.3 sg mud prior to running casing.

1.3.2 Casing

The 13-3/8" casing with the 18-3/4" wellhead was run to 1,100m and cemented in place. The casing was pressure tested to 70 bar with 1.03 sg mud.

The BOP was installed and tested.

1.4 12-1/4" Hole Section / 9-5/8" Casing

Total depth of section: 2,176 m.

Total time used:	273.0 hrs	
Operational time:	271.5 hrs	(99.5 %)
Downtime:	1.5 hrs	(0.5 %)

1.4.1 Drilling

The shoetrack and 3 m of new formation were drilled whereafter a Leak Off Test to 1.68 sg was performed. The 12-1/4" section was then drilled, oriented and cored to TD at 2,176 m using 1.50 sg KCl/Polymer mud. The well was attempted logged on wireline, but as it was not possible to pass 2,005m, LWD logging across the interval 1,950 m to 2,176 m was performed instead.

1.4.2 Coring

A total of 5 cores were taken in the 12-1/4" section.

Run #	Cored interval m MD	Recovery %	Reason pulled
1	2,123 - 2,134	96.4	Planned
2	2,134 - 2,144	41.0	Jammed
3	2,144 - 2,149	100.0	Lost ROP
4	2,149 - 2,157	95.0	Lost ROP
5	2,157 - 2,163	66.7	Lost ROP

1.4.3 Logging

The following log was run:

Log suite	Logged interval mMD	Comments
PEX/HALS	1,110 - 2,005	Unable to pass 2,005m. Logged 1,950m - 2,176m with LWD

1.4.4 Casing

The 9-5/8" casing was run to 2,166 m, and cemented in place. The last interval from 1,986 m to TD down the casing had to be washed down. The casing was pressure tested to 195 bar with 1.50 sg mud.

1.5 8-1/2" Hole Section

Total depth of section: 3,271 m.

Total time used:	542.0 hrs	
Operational time:	428.5 hrs	(79.1 %)
Downtime:	113.5 hrs	(20.9 %)

1.5.1 Drilling

The shoetrack and 3 m of new formation were drilled, the well was displaced to 1.20 sg Sulphate free mud and a Leak Off Test to 1.55 sg was performed. The section was then drilled, oriented and cored to well TD at 3,271 m. Wireline logging was performed in between bit runs, and the last interval of the well from 2,835 m to 3,271 m was drilled after logging was finished.

1.5.2 Coring

A total of 11 cores were taken in the 8-1/2" section.

Run #	Cored interval m MD	Recovery %	Reason pulled
6	2,179.0 - 2,187.0	6.3	Jammed
7	2,187.0 - 2,204.5	100.0	Planned
8	2,204.5 - 2,222.0	97.7	Planned
9	2,222.0 - 2,240.0	100.0	Planned
10	2,316.0 - 2,343.0	64.8	Planned
11	2,343.0 - 2,361.0	62.2	Planned
12	2,361.0 - 2,370.0	66.7	Jammed
13	2,370.0 - 2,377.0	95.7	Jammed
14	2,377.0 - 2,395.0	102.4	Planned
15	2,395.0 - 2,413.0	99.4	Planned
16	2,413.0 - 2,431.0	100.0	Planned

1.5.3 Logging

The following logs were run:

Log suite		Logged interval mMD	Comments
DSI	W/L	2,835.0 - 2,000.0	Good
CSAT	W/L	2,825.0 - 2,000.0	Good (VSP)
MDT	W/L	2,182.5 - 2,362.0	Lost and fished MDT. Got 9 pressuretests prior to loosing the tool
MDT	TLC	2,178.0 - 2,784.5	Lower seal valve failure. Unable to pump through the tool.
MDT	TLC	2,701.0 - 2,357.0	Power cartridge failure. Changed tool before sampling.
CRFT	W/L	2,157.0 - 2,162.0	1 samplepoint behind casing.
MDT	TLC	2,371.5 - 2,182.5	Good

1.6 Plug and Abandonment

Total time used:	171.0 hrs	
Operational time:	106.5 hrs	(62.3 %)
Downtime:	64.5 hrs	(37.7 %)

The open hole was plugged back in three stages. From 2,700m to 2,475m, from 2,475m to 2,250m, and from 2,250m to 2,087m. As the top of cement washed away when attempting to locate, the plug was pressure tested using the hesitation squeeze method. When 138 bar had been obtained on the plug (1.21sg mud), it was successfully located and weight tested to 20 MT.at 2,087 m. Afterwards a

bridge plug was set at 2,053 m, and pressure tested to 175 bar with 1.21 sg mud. A cement plug to 1850 m was set on top of the bridge plug.

A shallow set bridge plug was set at 525 m, whereafter casing hanger packoff was retrieved and the 9-5/8" casing was cut and retrieved at 522 m.

The 13-3/8" casing was plugged with a 13-3/8" bridge plug at 496 m tested to 122 bar with 1.21 sg mud. A cement was set from the bridge plug up to 250 m.

The BOP was retrieved, and the 20" and 30" casings were cut at 213 m. When pulling free, the pulling string parted, whereafter unsuccessfull attempts were made to retrieve the wellhead and casings with the wellhead tools. Eventually, the casings were re-cut, pulled free and retrieved to surface.

The anchors were pulled, and on 12 September 2000 at 01:30 hrs the last anchor was on the bolster and the rig commenced the move to the 25/7-6 location.

GENERAL INFORMATION ON WELL 31/4-11

Field : BRAGE
Licence : 55
UTM zone : 31
Country : NORWAY
Installation : SCARABEO 6
Central Median : 3' E
Horiz. Datum: ED50

Location coordinates:		**Surface**	**Target**
UTM	**North [m]:**	6719715,7	6719430,0
UTM	**East [m]:**	505502,4	505297,0
Geographical	**North :**	60 36'42.61"	60 36'33.38"
Geographical	**East :**	03 06'01.82"	03 05'48.29"

Water Depth: 183,0 **m** **Reference Point Height:** 26,0 **m**
Formation at TD: STATFJORD at 3271 m MD

Operators:	NORSK HYDRO PRODUKSJON A/S	**Share:** 24,44 **%**
Partners:	DEN NORSKE STATS OLJESELSKAP A/S	**Share:** 46,96 **%**
	EXXON MOBIL	16,34 **%**
	FORTUM	12,26 **%**

Total depth (RKB) : 3271,0 **m MD** 2764,7 **m TVD**

TIME SUMMARY
Start Time : 2000-07-26 07:00:00
Spudding date : 2000-07-27
Abandonment date : 2000-09-12

Main operation	**Hours**	**Days**	**%**
MOBILIZATION	26,0	1,1	2,3
DRILLING	402,5	16,8	35,1
FORMATION EVALUATION MWD	5,0	0,2	0,4
FORMATION EVALUATION LOGGING	163,5	6,8	14,3
FORMATION EVALUATION CORING	244,0	10,2	21,3
PLUG AND ABANDONMENT	106,5	4,4	9,3
DOWNTIME DRILLING	28,5	1,2	2,5
DOWNTIME FORM. EVAL. LOGGING	106,0	4,4	9,2
DOWNTIME PLUG AND ABANDONMENT	64,5	2,7	5,6
Sum:	**1146,5**	**47,8**	

Hole and casing record

Hole	**Track**	**Depth [m MD]**	**Casing/Tubing**	**Track**	**Depth [m MD]**
36"		283,0	30"		283,3
17 1/2"		1100,0	13 3/8"		1100,0
12 1/4"		2176,0	9 5/8"		2166,0
8 1/2"		3271,0			

Well status: PERMANENTLY ABANDONED

CONTRACTORS:

Rig Contractor : SAIPEM S.P.A.

BRØNN 31/4-11 DRILLING		TOTAL DRILLING		
Start dato	26-jul-2000	DAGER	DAGER	DAGER
Antall dgr. brukt	47,728	47,728	33,400	14,328
Kostn. pr. dg	2 167 023			
EDI	TEKST	DRILLING SUM	DRILLING BUDSJETT	DRILLING AVVIK
0	EMPLOYEE RELATED COSTS	7 199 539	5 927 000	1 272 539
1	RIG COSTS	42 688 520	32 331 200	10 357 320
2	RIG SUPPORT COSTS/REIMBURSABLES	10 479 806	3 906 765	6 573 041
		0	0	0
3A	FUEL/LUB	934 765	2 004 000	-1 069 235
3C	BITS	1 793 756	2 460 058	-666 302
3D	CASING/CASING EQUIPMENT	3 384 096	2 846 140	537 956
3E	WELLHEAD/X-MASTREE	915 455	1 404 266	-488 811
3F	CEMENT/CEMENT ADDITIVES	478 711	890 000	-411 289
3G	MUD	1 856 823	1 485 000	371 823
3G	CUTTING DISPOSAL	0	0	0
		0	0	0
4B	CHARTERFLY	0	0	0
4C	OTHER TRANSPORTATION	2 854	167 000	-164 146
4D	STAND BY VESSEL	2 486 331	2 338 000	148 331
4F	HELICOPTER TRANSPORTATION	1 050 428	1 002 000	48 428
4G	SUPPLY/AH VESSELS	6 980 133	3 571 667	3 408 466
4G		0	0	0
		0	0	0
5A	CORING	1 677 553	956 000	721 553
5B	DRILLING TOOLS/DIR DRLG	2 200 560	1 453 650	746 910
5C	CUTTING OF CASING	0	444 757	-444 757
5D	COMPLETION SERVICES	0	0	0
5E	PERFORATION	0	0	0
5F	MWD SERVICES	3 588 654	1 698 489	1 890 165
5G	CASING OPERATIONS	296 236	750 000	-453 764
5H	MUD LOG	867 282	737 900	129 382
5H	MUD SERVICES	367 484	270 540	96 944
5I	CEMENTING SERVICES	1 203 440	748 160	455 280
5J	ELECTRICAL LOGGING	7 744 203	3 256 795	4 487 408
5K	VSP	0	1 015 000	-1 015 000
5L	PROD TESTING	518 594	194 820	323 774
5M	DIVING/ROV	1 071 346	745 215	326 131
5N	RIGPOOL	-0	668 000	-668 000
5N	DIVERSE	2 947 214	170 340	2 776 874
5O	COILED TUBING	0	0	0
		0	0	0
6A	SITE SURVEY	629 443	2 750 000	-2 120 557
6B	RIG POSITIONING	331 450	500 000	-168 550
6C	DRILLING SITE CLEAN UP	0	0	0
		0	0	0
7	WAREHOUSE COSTS	4 751 938	734 800	4 017 138
		0	0	0
8	LAB COST	20 241	1 485 000	-1 464 759
		0	0	0
	SUM	108 466 853	78 912 562	29 554 291

Norsk Hydro

2001-08-07

DOWNTIME REPORT SCARABEO 6

Last 377 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	31/4-11	2000-07-26	1	6,5	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Carried out alignment check on topdrive.	HOISTING EQUIPMENT	DRILLING	DRILLING CONTRACTO	303.00	Traveling Equipment	
SCA6	31/4-11	2000-07-28	2	2,0	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Checked and adjusted top drive alignment.	HOISTING EQUIPMENT	DRILLING	DRILLING CONTRACTO	313.02	Top Drive	
SCA6	31/4-11	2000-07-29	3	1,0	Equipment failure	SAIPEM S.P.A.	BAYLOR	Eddy current brake failure.	DRILL FLOOR EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTO	312.00	Drawworks and Machinery	
SCA6	31/4-11	2000-07-29	4	0,5	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Sheared actuator top drive IBOP.	HOISTING EQUIPMENT	DRILLING	DRILLING CONTRACTO	313.02	Top Drive	
SCA6	31/4-11	2000-07-30	5	1,0	Other	NORSK HYDRO A/S		Stuck pipe.		DRILLING				
SCA6	31/4-11	2000-07-30	5.1	1,0	Other	NORSK HYDRO A/S		Reestablished rotation and circulation.		CASING				
SCA6	31/4-11	2000-07-30	5.2	6,5	Other	NORSK HYDRO A/S		Wiper trip		CASING				
SCA6	31/4-11	2000-07-31	6	1,0	Equipment failure	SAIPEM S.P.A.	HALLIBURTON OILFIELD SERVICES NORWAY INC.	Leaking Lo-Torque valve.	SERVICE EQUIPMENT/SYS	CEMENTING	DRILLING CONTRACTO	371.02	Cement: Head	
SCA6	31/4-11	2000-07-31	8	1,0	Equipment failure	BJ SERVICES	BJ SERVICES	Data failure in Liquid Additive System.	SERVICE EQUIPMENT/SYS	CEMENTING	CEMENTING	371.01	Cement: Unit/pipe	
SCA6	31/4-11	2000-08-01	7	0,5	Equipment failure	SAIPEM S.P.A.	ABB VETCO GRAY A.S	Locking dogs for slip joint inner barrel.	WELLCONTROL EQUIPMENT/SYS	BOP INSTALLATIOI AND TESTING	DRILLING CONTRACTO	335.00	Riser System (incl. K/C/B Lines)	
SCA6	31/4-11	2000-08-14	9	1,5	Equipment failure	TO BE NAMED	MARITIME HYDRAULICS A/S	Repair hyd hose on stand lift.	PIPE HANDLING EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTO	341.00	Vertical Pipe Handling	
SCA6	31/4-11	2000-08-15	14	2,0	Equipment failure	TO BE NAMED	PROSERV	Tested floor saver system.	HOISTING EQUIPMENT	CORING	DRILLING CONTRACTO	303.00	Traveling Equipment	
SCA6	31/4-11	2000-08-16	15	0,5	Equipment failure	TO BE NAMED	OILWELL	Inspect dwks. clutch.	HOISTING EQUIPMENT	DRILLING	DRILLING CONTRACTO	305.00	Other Hoisting Equipment	
SCA6	31/4-11	2000-08-23	16	3,0	Other	SCHLUMBERG WIRELINE		Logging tool stuck with top of tool at 2350.7 m wireline dyb. Tool length 34.1 m. Pulled max parameters to free tool. No success.		LOGGING				

Norsk Hydro

2001-08-07

DOWNTIME REPORT SCARABEO 6

Last 377 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	31/4-11	2000-08-24	17	52,5	Other	SCHLUMBERG WIRELINE		When transferring weigth to "T-bars", the cable broke and disapered into hole.		LOGGING				
SCA6	31/4-11	2000-08-24	17.1	6,5	Waiting for materials/equip	SCHLUMBERG WIRELINE		While waiting on fishing tools, removed torque wrench and changed dies. Inspected saver sub and IBOP actuator	DRILLSTRING/DC EQUIPMENT	LOGGING	ELECTRIC LOGGING	357.07	Other Drilling/Downl Equipment	
SCA6	31/4-11	2000-08-27	18	3,0	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Changed out IBOP on topdrive.	WELLCONTROL EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTO	337.03	Inside BOP, Kelly Cock etc.	
SCA6	31/4-11	2000-08-27	19	1,0	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Trouble shoot on topdrive hydraulic system.	PIPE HANDLING EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTO	342.00	Drillfloor Tubular Handling	
SCA6	31/4-11	2000-08-29	20	1,5	Equipment failure	SCHLUMBERG OFFSHORE SERVICES LTD	SCHLUMBERG NORGE A/S	Attempted to open flush valve on sampling tool. No success.	DRILLSTRING/DC EQUIPMENT	LOGGING	ELECTRIC LOGGING	357.07	Other Drilling/Downl Equipment	
SCA6	31/4-11	2000-08-30	21	19,5	Equipment failure	SCHLUMBERG WIRELINE	SCHLUMBERG NORGE A/S	Malfunction of power to logging tools. POOH from 2207 m and back inside casing shoe to 2122 m.	SERVICE EQUIPMENT/SYS	LOGGING	ELECTRIC LOGGING	372.17	Bottom hole sampling	
SCA6	31/4-11	2000-08-31	22	14,0	Equipment failure	SCHLUMBERG WIRELINE	SCHLUMBERG NORGE A/S	Problems with sample pump. Trouble shoot same.	SERVICE EQUIPMENT/SYS	LOGGING	ELECTRIC LOGGING	372.17	Bottom hole sampling	
SCA6	31/4-11	2000-08-31	23	3,5	Equipment failure	SCHLUMBERG WIRELINE	SCHLUMBERG WIRELINE	Problems with primary RFT tool. Replaced it with back-up tool and tested same. OK.	SERVICE EQUIPMENT/SYS	LOGGING	ELECTRIC LOGGING	374.02	Formation Tester (RFT)	
SCA6	31/4-11	2000-09-01	24	3,0	Equipment failure	SCHLUMBERG WIRELINE	SCHLUMBERG WIRELINE	Problems with power voltage. Trouble shoot on problem and changed out power cartridge.	SERVICE EQUIPMENT/SYS	LOGGING	ELECTRIC LOGGING	374.01	Electric Logging Eq. in General	
SCA6	31/4-11	2000-09-02	25	1,0	Equipment failure	SCHLUMBERG WIRELINE	SCHLUMBERG WIRELINE	Computer shut down. Probe retractec automatic.	SERVICE EQUIPMENT/SYS	LOGGING	ELECTRIC LOGGING	374.01	Electric Logging Eq. in General	

Norsk Hydro

2001-08-07

DOWNTIME REPORT SCARABEO 6

Last 377 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	31/4-11	2000-09-03	26	0,5	Equipment failure	SAIPEM S.P.A.	SAIPEM S.P.A.	Unable to obtain correct torque on connection. Laid out 2 joints of 5" HWDP with damaged threads.	DRILLSTRING/DC EQUIPMENT	DRILLING	DRILLING CONTRACTO	351.00	Drillpipe	
SCA6	31/4-11	2000-09-04	27	0,5	Equipment failure	SAIPEM S.P.A.	SAIPEM S.P.A.	Tested floorsaver.	DRILL FLOOR EQUIPMENT/SYS	PLUG AND ABANDONMEI	DRILLING CONTRACTO	317.00	Other Drill Floor Eq./Syst.	
SCA6	31/4-11	2000-09-04	28	1,0	Equipment failure	BJ SERVICES	BJ SERVICES	Started to mix cement plug # 1. Problems with cement unit. Dumped chemicals and started again.	SERVICE EQUIPMENT/SYS	PLUG AND ABANDONMEI	CEMENTING	371.01	Cement: Unit/pipe	
SCA6	31/4-11	2000-09-05	29	2,5	Equipment failure	BJ SERVICES	BJ SERVICES	Swivel on cement head leaking. Laid out cement head. Made up pump-in sub.	SERVICE EQUIPMENT/SYS	PLUG AND ABANDONMEI	CEMENTING	371.02	Cement: Head	
SCA6	31/4-11	2000-09-06	30	20,5	Other	NORSK HYDRO A/S		Performed a hesitation squeeze on top of cement plug in cased hole. Tagged same with 20 MT, but the plug did not hold pressure. Had to RIH to set a 9 5/8" bridge plug. Dumped 200 m cement on top.		CEMENTING				
SCA6	31/4-11	2000-09-08	31	21,0	Waiting on weather			WOW to pull BOP, held prejob safety meeting.		PLUG AND ABANDONMEI				
SCA6	31/4-11	2000-09-08	32	2,0	Equipment failure	SAIPEM S.P.A.	DET NORSKE VERITAS	Worked on port crane main block function.	HOISTING EQUIPMENT	PLUG AND ABANDONMEI	RIG UTILITIES	305.00	Other Hoisting Equipment	
SCA6	31/4-11	2000-09-10	33	9,5	Other	SAIPEM S.P.A.		Made up "eye" sub, sling and hock assy to DP and RIH.		PLUG AND ABANDONMEI				
SCA6	31/4-11	2000-09-10	35	2,0	Other	SAIPEM S.P.A.		POOH from guide base with DC'S, clamped and slinged with two tuggers from rig floor. Held SJA meeting.		PLUG AND ABANDONMEI				

Norsk Hydro

2001-08-07

DOWNTIME REPORT SCARABEO 6

Last 377 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	31/4-11	2000-09-10	37	1,0	Other	SAIPEM S.P.A.		Changed out 1 jt HWDP, picked up 1 jt 8" DC and broke out damaged bumper sub unit.		RIG MOVE/SKIDDI				
SCA6	31/4-11	2000-09-10	39	1,5	Waiting for cement to cure	SAIPEM S.P.A.		Waited on fishing tools.		PLUG AND ABANDONMEI				
SCA6	31/4-11	2000-09-11	42	2,5	Other	SAIPEM S.P.A.		Tensioned guide lines and adjusted rig location. Enganged fish and latched on to same.		RIG MOVE/SKIDDI				
SCA6	31/4-11	2000-09-11	44	1,0	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Repaired hyd leak on top drive.	HOISTING EQUIPMENT	PLUG AND ABANDONMEI	DRILLING CONTRACTO	313.02	Top Drive	
			Sum:	199,0										
			Total Sum:	199,0										

DAILY REPORT ON WELL 31/4-11

Daily report no : 1 **Date:** 2000-07-26

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

Stop time	Description
07:00	No activity.
15:00	Last anchor on deck and secured 07:06 hrs. Rig under tow from well 31/5-6.
18:30	First anchor on bottom 14:54 hrs. Last anchor on bottom 18:37 hrs.
23:00	Tensioned op anchors. At 20:00 hrs, commenced final tension test on anchors. Final tension to stall (168 ton) finished at 23:00 hrs.
23:59	Carried out alignment check on topdrive.

Daily report no : 2 **Date:** 2000-07-27

Midnight depth : 283 m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

Stop time	Description
04:00	Carried out aligningment check on topdrive.
07:00	Ran in hole with 36" hole opener assembly.
10:00	Tagged seabed at 209 m. 07:10 hrs, spudded well and drilled from 209 m to section TD at 283 m.
11:00	Performed wiper trip and displaced hole to 1,5 SG mud.
12:30	Pulled out of hole to bottom hole assembly.
13:00	Down loaded MWD tool. Racked back hole opener assembly.
13:30	Rigged up to run 30" conductor.
16:00	Picked up float shoe and ran casing and well head. Checked float
18:30	Ran housing to PGB on transporter. Released running tool and racked same in derrick. Ran stinger inside conductor. Ran running tool and latched onto PGB on transporter. Ran in to 267 m.
19:00	Took 15-20 ton weight at 267 m. Broke circulation and washed past to 276 m.
20:00	Made up cement stand. Broke circulation 1875 LPM and landed 30" conductor with 10 ton.
22:00	Flushed lines and pressure tested same to 100 bar. Cemented conductor in place with shoe on bottom at 283 m. Pumped 2 m3 dye, 24 m3 1,56 SG lead cement followed by 22,6 m3 1,95 SG tail cement. Displaced with sea water to 5 m inside shoe.
23:59	Waited on cement with conductor in tension.

Daily report no : 3 **Date:** 2000-07-28

Midnight depth : 362 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,03 sg

Stop time	Description
04:00	Waited on cement with conductor in tension. Observing with ROV.
06:00	Released running tool with 5 right hand turns and retrieved same to surface. Racked cement stand, laid out 30" running tool and racked back cement stinger.
07:30	Broke and laid out 36" bottom hole assembly.
09:30	Checked and adjusted top drive alignment.
12:30	Made up 26" bottom hole assembly. Ran in hole and tagged top of cement at 277 m.
13:30	Drilled cement and conductor shoe from 277 m to 283 m.
14:00	Drilled 26" hole from 283 m to 285 m. Swept hole with 7 m3 high viscosity mud.
15:00	Pulled out of hole. Laid out 26" bit and near bit stabilizer.
15:30	Loaded cement head and racked it back in derrick.
17:30	Picked up 18 3/4" well head. Installed wear bushing, stinger and running tool. Laid out well head.
21:30	Made up 17 1/2" bottom hole assembly. Ran in hole to 285 m.
23:59	Drilled 17 1/2" hole from 285 m to 362 m.

Daily report no : 4 **Date:** 2000-07-29

Midnight depth : 1087 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,03 sg

Stop time	Description
02:00	Drilled 17 1/2" hole from 362 m to 432 m.
03:00	Eddy current brake failure.
10:30	Continued drilling from 432 m to 690 m.
11:00	Removed sheared actuator for top drive IBOP.
23:59	Drilled 17 1/2" hole from 690 m to 1087 m.

DAILY REPORT ON WELL 31/4-11

Daily report no : 5 **Date:** 2000-07-30

Midnight depth : 1103 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,03 sg

Stop time	Description
01:00	Drilled 17 1/2" hole from 1087 m to 1103 m.
01:30	Swept hole with 15 m3 high viscosity mud.
03:00	Wiper trip to 946 m.
04:00	Displaced hole to 1,30 sg mud.
05:00	Pulled out of hole to 1079 m.
06:00	Worked stuck pipe free.
07:00	Reestablished rotation and circulation.
08:00	Washed/reamed down to 1103 m.
08:30	Swept hole with 20 m3 high viscosity mud.
10:30	Pulled out to 30" casing shoe.
12:30	Ran back in hole. Took 15 ton weight at 1055 m. Washed/reamed from 1055 m to 1103 m.
13:30	Pumped a 20 m3 high viscosity mud sweep and displaced hole to 1,30 sg mud.
15:30	Pulled out of hole to 205 m. Washed wellhead.
16:00	Continued pulling out of hole with bottom hole assembly. Downloaded MWD memory bank.
17:00	Rigged up to run 13 3/8" casing.
23:59	Ran 13 3/8" casing to 540 m.

Daily report no : 6 **Date:** 2000-07-31

Midnight depth : 1103 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,03 sg

Stop time	Description
03:00	Ran 13 3/8" casing from 540 m to 883 m.
05:00	Installed wiper plugs and made up wellhead housing.
06:00	Ran in with landing string. Landed casing and applied 15 ton overpull to verify proper latch in 30" housing.
06:30	Circulated casing volume.
07:00	Hooked up cement hose and attempted to pressure test.
08:00	Replaced leaking Lo-Torque valve and tested surface lines to 200 bar - 10 min.
09:00	Data failure in Liquid Additive System.
12:30	Mixed and pumped cement according to program.
14:00	Displaced cement and bumped wiper plug. Pressure tested casing and checked for backflow.
14:30	Released running tool and pulled rig 15 m off location.
15:30	Pulled out of hole with landing string and laid out cement stinger.
17:00	Rigged up to run marine riser.
18:00	Made up 2 joints of riser and skidded BOP below rotary table.
21:00	Made up marine riser to BOP. Installed guide and pod lines.
23:59	Ran BOP.

Daily report no : 7 **Date:** 2000-08-01

Midnight depth : 1103 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,32 sg

Stop time	Description
04:00	Continued running BOP.
05:00	Made up slip joint and landing joint.
05:30	Cleaned and lubricated locking dogs for slip joint inner barrel.
07:00	Made up support ring with kill and choke hoses. Tested kill and choke hoses.
09:30	Installed pod hose saddles. Pulled rig back on location. Oriented and landed BOP. Applied 25 ton overpull to verify proper connector latch.
10:30	Laid out landing joint and installed diverter.
12:00	Rigged down riser handling equipment.
13:30	Pressure tested top drive valves and mud hose to 35/310 bar - 5/10 min..
16:30	Made up 9 5/8" casing hanger to drillpipe and racked back in derrick.
17:00	Re-loaded cement head and racked it back in derrick.
21:30	Made up 12 1/4" bottom hole assembly.
23:59	Continued running in hole with 5" drillpipe from deck.

DAILY REPORT ON WELL 31/4-11

Daily report no : 8 **Date:** 2000-08-02

Midnight depth : 1652 m MD **Estimated PP:** 1,31 sg **Mud weight:** 1,50 sg

Stop time	Description
01:00	Continued running in hole with 5" drillpipe from deck.
02:00	Function tested BOP and held choke drill.
03:00	Continued running in hole and tagged top of cement with 5 tons at 1068 m.
05:30	Drilled float collar, cement and float shoe. Displaced hole to 1.30 sg Glydril mud while drilling shoetrack.
06:00	Cleaned out rat hole and drilled from 1103 m to 1106 m.
07:30	Circulated and conditioned mud. Pulled back into 13 3/8" casing shoe and performed a Leak Off Test.
15:00	Drilled 12 1/4" hole from 1106 m to 1406 m.
23:59	Drilled and oriented 12 1/4" hole from 1406 m to 1652 m.

Daily report no : 9 **Date:** 2000-08-03

Midnight depth : 2040 m MD **Estimated PP:** 1,31 sg **Mud weight:** 1,51 sg

Stop time	Description
15:30	Drilled and oriented 12 1/4" hole from 1652 to 1993m.
23:59	Drilled 12 1/4" hole from 1993 to 2040m.

Daily report no : 10 **Date:** 2000-08-04

Midnight depth : 2123 m MD **Estimated PP:** 1,06 sg **Mud weight:** 1,50 sg

Stop time	Description
06:00	Drilled 12 1/4" hole from 2040 to 2061m. Attempted to improve ROP by changing parameters, work string off bottom and soak/work BHA in 8m3 KCL/ Glycol pill. Only partly successful, ROP increased 100%, then dropped back to previous level 4m/h
16:30	Continued to drill 12 1/4" hole from 2061 to 2109m- oriented from 2094 to 2100m. Pumped nut plug pill, ROP increase from 2 to 15m/hr.
20:00	Continued with controlled drilling from 2109 to 2123m
21:30	Circulating bottoms up for sample.
23:30	POOH to 1805m.
23:59	Pumped slug and started to POOH to csg. shoe.

Daily report no : 11 **Date:** 2000-08-05

Midnight depth : 2134 m MD **Estimated PP:** 1,06 sg **Mud weight:** 1,50 sg

Stop time	Description
00:30	POOH to casing shoe.
01:00	Flow checked - negative.
03:30	POOH to surface, bit balled up.
04:00	Broke off bit and laid out motor,float sub and NM stab. Cleared rig floor and cleaned up.
05:30	Picked up core bbls and made up core head, innstall inner bbl.
10:00	RIH to1986m.
11:30	Washed and reamed from 1986 to 2120m
12:00	Circulated for 10 min., dropped ball and seat same. Took SCR`S.
21:30	Cut core no.1 from 2123 to 2134m.Torque dropped,core jammed.Picked up and broke core with 8ton OP.
23:59	Broke off top drive and started POOH. Hole in good condition, pumped slug at 1985m and continued to POOH with core no.1.

Daily report no : 12 **Date:** 2000-08-06

Midnight depth : 2144 m MD **Estimated PP:** 1,06 sg **Mud weight:** 1,50 sg

Stop time	Description
03:00	Continued to POOH at reduced speed from 350m and100m.
04:30	Held pre-job meeting, pulled core bbl and laid out core no.1.
05:30	Made up core bbl to 90ft., made up new inner bbl and DC`S.
08:00	RIH with core bbl to 13 3/8" csg. shoe, laid out 1 single, filled pipe and serviced DDM.
10:00	Continued to RIH to 2103m, reamed and washed to 2134m.
18:30	Cut core no. 2 from 2133 to 2144m. Core jammed off.
19:00	Pumped slug, flow checked - neg.
23:59	POOH to surface with core bbl.

DAILY REPORT ON WELL 31/4-11

Daily report no : 13 **Date:** 2000-08-07

Midnight depth : 2153 m MD **Estimated PP:** 1,06 sg **Mud weight:** 1,50 sg

Stop time	Description
02:00	Pulled core bbl, broke off core head, pulled inner bbl and recvered 4.1m core-41% recovery. Made up and spaced out inner bbl, made up new core head.
03:30	RIH to csg. shoe, filled pipe.
06:00	RIH to 2081m, made up top drive and washed down to TD.
06:30	Dropped ball, seated same, took SCR`S.
09:30	Cut core no.3 from 2144 to 2149m. Observed stop in penetration, stopped rotation and picked off bottom with 20ton OP. Attempted to restart coring, no go.Picked off bottom, 40 ton OP.
10:00	Flow checked and pumped slug.
13:00	POOH with core no.3, 20ton initial OP on first stand.
14:00	POOH with BHA, racked back same.
15:00	Broke off core head, laid out inner bbls.
15:30	Picked up new inner bbls and made up core head.
17:30	RIH to cut core no.4, stop at 13 3/8" csg. shoe.
18:00	Filled pipe and greased blocks.
20:30	Continued to RIH to cut core no.4, picked up DP pup joint and washed down last stand. Dropped ball and circulated down, seat same.
23:59	Cut core no.4 from 2149 to 2153m.

Daily report no : 14 **Date:** 2000-08-08

Midnight depth : 2163 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,50 sg

Stop time	Description
03:00	Continued to cut core no.4 from 2153 to 2157m, attempted to regain progress, no success.
03:30	Flow checked and pumped slug.
06:00	Started to POOH with core no.4, observed 20ton OP on first stand comming off bottom.
07:30	Continued to POOH with core no.4, laid out x/o and float, racked back BHA and broke off core head.
08:00	Laid out inner bbl, checked float valve.
11:00	Picked up inner bbl,made up core head and RIH to csg. shoe. Broke circulation, serviced block and top drive.
13:30	Continued to RIH, broke circulation and washed down last stand, dropped ball, circulated down and seated same.
16:00	Tagged botom and cut core no.5 from 2157 to 2163m. No progress.
16:30	Pulled back 2 stds.and rack back, flow checked and pumped slug.
18:00	POOH, flow checked in shoe and continued to POOH with core no.5.
20:30	Continued to POOH with core no.5, laid out x/o and float, racked back BHA.
21:00	Laid out inner bbl and 4m core - 66.67% recovery.
23:59	Picked up mud motor and 12 1/4" bit, checked motor alinment and reprogrammed MWD. RIH to 13 3/8" casing shoe and broke circulation.

Daily report no : 15 **Date:** 2000-08-09

Midnight depth : 2176 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,50 sg

Stop time	Description
01:00	Slip and cut drilling line.
03:00	Continued to RIH , tested motor and MWD below shoe. Took weight at 1819m, RIH to 1921m.
03:30	Filled pipe and washed down from 1921 to 1925m, hole packed off, no rotation or returns.
04:00	Worked pipe, regained rotation and partial returns. Worked pipe out to 1921m and racked back stand.
06:00	Worked stand and regained full circulation, started to wash and ream from 1921 to 2006m.
09:00	Continued to wash and ream from 2006 to 2123m.
13:00	Opened hole from 2123 to 2163m to 12 1/4".
14:30	Drilled new 12 1/4" hole from 2163 to 2176m.
15:30	Circulated bottoms up and shakers clean.
16:00	Pulled back 3 stds., flow checked and slug pipe.
18:00	POOH with 12 1/4" BHA
20:00	Continued to POOH with 12 1/4" BHA, rack back, service break NMS and laid out bit and motor.
21:00	Rigged up to run Schlumberger.
23:59	Held pre-job meeting, picked up wireline tools and RIH at 2220hrs. At shoe 2310hrs. Continued to run into open hole.

DAILY REPORT ON WELL 31/4-11

Daily report no : 16 **Date:** 2000-08-10

Midnight depth : 2176 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,50 sg

Stop time	Description
03:00	Continued to RIH with Sclumberger, made several attempts to pass 2005m, no success.Started out at 0100hrs. At surface 0215hrs. Laid out Sclumberger tools.
06:00	Picked up 8 1/2" bit and LWD tools, made up same to BHA and start RIH .
09:00	Continued to RIH with 8 1/2" assembly from 50 to 1950m.
16:00	Wash and log from 1950 to 2176m.
17:30	Circulated well clean.
18:00	Pulled and sat back 3 stds. Flow checked - neg.
23:30	POOH with LWD, broke off bit and laid down LWD tools. Racked back BHA.
23:59	Picked up bore protector R/R tool with washing stinger and made up same

Daily report no : 17 **Date:** 2000-08-11

Midnight depth : 2176 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,50 sg

Stop time	Description
01:00	Continued to RIH to retrieve bore protector, landed and latched R/R tool with 5ton OP. Controll messured with lazer line, pulled bore protector with 30ton OP. Worked pipe and jetted wellhead for 15 min.
02:00	POOH and laid out bore protector and R/R tool.
03:00	Rigged up to run 9 5/8" casing.
04:00	Held pre-job safety meeting, started to run 9 5/8" casing picking up and checking float in reaming shoe and float collar, bakerlocked same to intermediate joint.
06:00	Unable to make up intermediate joints, thread damaged .Laid out intermediate joint B, repair box on intermediate A.
07:00	Continued to repair threads on intermediate joint A. Picked up intm. joint D, made up and locked threads.
07:30	Held pre-job meeting with crew, continued to run 9 5/8" casing.
08:00	Experienced problem with BX-elevator to latch on to casing.
08:30	Continued to run casing.
09:00	Changed to side door elevator due to continuing problem with BX-elevator.
09:30	Attempted to make up circ. swedge to casing, found x/o not made up. Removed and made up same in I.Roughneck.
23:00	Continued to run 9 5/8" casing into open hole.
23:30	Changed out elevator,laid out TD circ. swedge and made up casing hanger assy.
23:59	Removed hyd. slips, ran hanger through R/T, innstalled bushings and started to RIH. Took weight at 1986m.

Daily report no : 18 **Date:** 2000-08-12

Midnight depth : 2176 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,50 sg

Stop time	Description
02:30	Screwed into TD and washed from 1986 to 2159m. Picked up cmt. stand, washed to TD and landed csg. hanger in wellhead at 0210hrs. Verified hanger depth with lazer line.
03:00	Circulated casing volume 5400stks with max flow rate at 2000LPM.
03:30	Installed cmt. hose and pumped through to verify line up.
05:00	Pumped 10m3 FW spacer, dropped ball, mixed and pumped 17.153m3 - 1.9SG cement slurry.
06:00	Dropped dart, displaced with 2400L FW, sheared out top plug, switched to rig pumps and displaced cement with 5200 stks.- bumped plug. Pressured up casing to 195bar.
06:30	Continued pressure testing casing to 195bar-OK. Bled off pressure and checked for back flow- OK.
10:00	Sat seal assembly, lined up and flush through chocke line, pressure test BOP.
10:30	Pulled out 10m with R/R tool, started boosting riser, sat down with 5ton and tested seal assy. to 300bar against MPR.
11:30	POOH with R/R tool, 20ton initial OP.
12:00	Made up WB R/R tool.
12:30	RIH with WB. Took weight 8-10ton down - no OP.
13:00	Washed down to well head, sat down 8ton. Closed annular and press. up to 190bar, in attempt to set WB. Took 5ton OP when picking up.
13:30	POOH with WB,inspect same.
14:00	RIH to set WB.
14:30	Washed from 3m above setting area several times.
15:00	Sat WB and took initial 15ton OP when POOH.
15:30	Laid down R/R tool, x/o`s, pup joint and 2x5"DP.
16:30	Installed mouse hole, diverter element, changed bails and re-arranged pipe in derrick.
20:00	Laid out MWD stand and 8" DC`S. Picked up Anadrill LWD - service broke and laid down.
20:30	RIH with drlg. stand , made up drilling pup and test hose.
22:00	Flushed lines, pressure tested mud hose, DDM I-BOP and drilling pup valve to 15/207bar for 5/10min.
22:30	Rigged down test hose and racked back pup/drilling stand.

DAILY REPORT ON WELL 31/4-11

Daily report no : 18 **Date:** 2000-08-12
Midnight depth : 2176 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,50 sg

Stop time	Description
23:30	Made up 8 1/2" bit, NBS and RIH on 2 stands of 6 1/2" DC`S. Tested crown saver and crown "o" matic systems.
23:59	Continued to pick up 6 1/2" DC`S and jars from deck.

Daily report no : 19 **Date:** 2000-08-13
Midnight depth : 2179 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,50 sg

Stop time	Description
01:30	Finished picking up 6 1/2" DC`S from deck and RIH with same.
04:30	RIH with 8 1/2" BHA to 2100m, washed down and tagged cmt at 2127m.
05:00	Performed choke drill.
07:00	Drilled plugs, float collar at 2130m and shoe track to 2139m.
09:00	Pumped 10m3 spacer, started to displace hole to 1.2SG mud while drilling cmt. to 2166m,
11:00	Drilled shoe at 2166m.
15:30	Worked string to improve ROP, assumed drilling on junk, continued to work string to 2169m.
16:00	Reamed/ drilled rat hole and new hole to 2179m.
17:00	Circulated hole clean, displaced kill and choke lines to 1.2SG mud. Took SCR`S and chokeline friction.
17:30	Performed FIT. 70bar = 1.55SG EQ MW.
18:00	RIH to 2179m, pumped 6m3 Hi-Vis pill.
18:30	Continued to circulate hole clean.
21:30	Pumped slug, POOH, racked back BHA and broke off bit.
22:00	Picked up core bbl, made up 3 new inner bbls and shoe.
22:30	Changed out bearing on core bbl.
23:00	Checked ball seat.
23:59	RIH with core bbl no.6.

Daily report no : 20 **Date:** 2000-08-14
Midnight depth : 2205 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,50 sg

Stop time	Description
00:30	Repair hyd hose on stand lift.
02:30	Continued to RIH with core bbl no.6. Broke circulation and picked up 2 DP pup joints.
03:30	Washed and reamed from 2166 to 2179m. Circulated 0.5m off bttm for 15min, dropped ball and seated same.
05:00	Cut core no.6 from 2179 to 2187m. Core jammed.
05:30	Attempted to restart core no.6 - no success.
06:00	Pulled into casing shoe, checked for flow- neg.
09:00	Laid out 2 DP pup joints and POOH.
10:00	Broke off core head and laid out inner bbl. Got 0.5m core - 6% recovery.
12:30	Laid out 30ft outer bbl, made up 60ft innerbbl, changed bearing, laid out safety joint and 30ft outer bbl due to bad threads in safety joint, picked up new safety joint and 30ft outer bbl, made up core head.
14:00	RIH with core assy. to 475m.
15:00	Serviced floor saver.
17:00	Continued to RIH from 475 to 2151m and laid out single.
19:00	Made up top drive and washed to bttm. at 2187m. Pumped 9m3 Hi-Vis pill and chased into riser. Dropped ball and seated same. Took SCR`S.
20:00	Cut core no. 7 from 2187 to 2204.5m.
23:59	POOH to shoe, flow checked - neg, pumped slug and continued to POOH.

Daily report no : 21 **Date:** 2000-08-15
Midnight depth : 2240 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,50 sg

Stop time	Description
00:30	Continued to POOH to surface.
01:00	Broke off core head and laid down inner bbl. Got 17,5m core-100% recovery.
01:30	Cleaned off cat walk and picked up 2 new inner bbls.
02:00	Made up inner bbls and core head to core bbl.
04:30	Started to RIH with core bbl no.8. Stopped to break circulaton at shoe.
05:00	Washed down to TD and cleaned hole at bottom.
05:30	Dropped ball and seated same while cleaning hole on bottom.

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Daily report no : 21 **Date:** 2000-08-15

Midnight depth : 2240 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,50 sg

Stop time	Description
06:30	Cut core no. 8 from 2204.5 to 2222m
07:00	Pulled into shoe, flowchecked and slug pipe.
10:00	Pulled out of hole to surface, flow checked at 507m - neg.
11:30	Broke off core head and safety joint, laid out inner bbls and recovered 17.2m core - 97.7% recovery. Picked up inner bbls and made up core head.
13:00	RIH to cut core no.9.
14:00	Tested floor saver system.
15:30	Continued to RIH to 2189m.
16:00	Washed from 2189 to 2222m.
17:00	Dropped ball, seated same and cut core no.9 from 2222 to 2240m.
17:30	POOH to 2227m, backreamed tight hole from 2227 to 2199m and continued to POOH from 2199 to 2161m.
18:00	Fllow checked - neg. Pumped slug.
22:30	Continued to POOH with core bbl no.9.
23:00	Broke off core head and laid down inner bbls.
23:30	Picked up single and racked core bbl back in derrick while checking core. Serviced rig.
23:59	Started to make up new BHA.

Daily report no : 22 **Date:** 2000-08-16

Midnight depth : 2316 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,20 sg

Stop time	Description
01:30	Continued to make up new BHA.
02:00	Innstalled rad. active source in LWD and tested same with 1600LPM - 72bar - OK.
05:00	RIH with new BHA.
05:30	Inspect dwks. clutch.
06:30	Continued to RIH with new BHA to 2161m.
07:00	Filled pipe and ran through 9 5/8" casing shoe.
10:00	Washed and reamed from 2166 to 2240m at controlled rate while logging with LWD.
16:30	Drilled 8 1/2" hole from 2240 to 2290m.
17:00	Circulated bttms up for sample.
17:30	Continued to drill 8 1/2" hole from 2290 to 2300m.
18:30	Circulated bttms up for sample from 2300m.
19:00	Continued to drill 8 1/2" hole from 2300 to 2308m.
20:00	Circulated bttms up for sample from 2308m
20:30	Continued to drill 8 1/2" hole from 2308 to 2316m.
21:00	Circulated bttms up for sample from 2316m.
22:00	Pulled into shoe and flow checked - neg.
23:59	Pumped slug and started to POOH to surface.

Daily report no : 23 **Date:** 2000-08-17

Midnight depth : 2343 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,20 sg

Stop time	Description
01:00	Continued to POOH to surface, laid out monel drill collars.
02:30	Removed radio active source, laid down ADM+PET, made up x/o and pup joint on pulser sub and dumped data. Broke off bit and racked back MWD.
04:00	Picked up core barrel and one single inner barrel and made up 90ft. assembly. Made up core head.
06:30	RIH with core bbl no.10 to 2173 m.
07:30	Washed down from 2173 m to bottom at 2316 m.
08:00	Broke circulation and dropped ball.
13:00	Cut core no. 10 from 2316 m to 2343 m.
14:00	POOH from 2343 m to 2144 m.
14:30	Flow checked and pumped slug.
18:00	POOH from 2144 m to 30 m.
19:00	Pulled back core barrel and laid out core head. Broke out safety joint. Retrieved inner barrel and laid out core.
21:00	Laid out 10 m core barrel. Made up 20 m core barrel with inner string and core head.
23:59	Ran in hole with core barrel no 11 to 2189 m.

DAILY REPORT ON WELL 31/4-11

Daily report no : 24 **Date:** 2000-08-18

Midnight depth : 2370 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
00:30	Ran in hole from 2189 m to 2275 m.
01:00	Washed down from 2275 m to 2343 m.
03:00	Dropped ball and cut core no 11 from 2343 m to 2361 m.
04:00	Pulled core barrel into casing shoe at 2166 m.
07:30	Pulled out of hole from 2166 m to 20 m.
08:30	Laid out corehead. Broke out safety joint and laid out inner barrels with core no 11. Recovered 11.2 m, 62 pct recovery.
09:30	Made up fiberglass inner barrels and corehead. Ran in hole on BHA.
12:00	Ran in hole with core barrel no 12 on drill pipe to 2332 m.
13:00	Washed down from 2332 m to 2361 m. Dropped ball and landed same with 950 lpm and 27 bar.
13:30	Cut core no 12 from 2361 m to 2370 m. Barrel jammed.
14:00	POOH from 2370 m to 2166 m.
17:30	Flow checked, pumped slug and POOH to 20 m.
18:30	Broke out core head and safety joint. Retrieved inner barrels and laid out core no 12. Recovered 6 m, 66.7 pct.
19:00	Made up fiberglas inner barrels and corehead for core no 13.
21:30	Ran in hole with core barrel to 9 5/8" casing shoe at 2166 m.
23:00	Slipped and cut drilling line.
23:30	Ran in hole from 2166 m to 2303 m.
23:59	Washed down to bottom at 2370 m.

Daily report no : 25 **Date:** 2000-08-19

Midnight depth : 2395 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,20 sg

Stop time	Description
01:00	Swept hole to clean. Dropped ball and seated same with 900 lpm 36 bar. 3-4 bar increase when ball seated.
01:30	Cut core no 13 from 2370 m to 2377 m. Core jammed,
02:30	Pulled out of hole from 2377 m to casing shoe at 2166 m.
06:00	Flow checked, pumped slug and POOH.
06:30	Broke out core head and laid out inner barrels with core no 13. Recovered 6.7 m, 96 pct.
07:30	Made up 2 new fibreglas inner barrels and core head.
10:30	Ran in hole to 2315 m with core assembly no 14.
11:00	Washed down from 2315 m to 2377 m. Dropped ball.
14:00	Cut core no 14 from 2377 m to 2395 m with 950 lpm.
14:30	POOH from 2395 m to casing shoe at 2166 m.
18:30	Flow checked, slugged pipe and POOH.
19:30	Laid out core head and inner barrels with core no 14. Recovered 18,43 m, 102 pct.
20:30	Made up 2 fibre glas inner barrels and core head.
23:30	Ran in hole with core assembly no 15 to 2331 m.
23:59	Washed down from 2331 m to 2395 m. Dropped ball and pumped same down with 950 lpm, 32 bar. Got 7 bar increase when ball seated.

Daily report no : 26 **Date:** 2000-08-20

Midnight depth : 2431 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,20 sg

Stop time	Description
01:30	Cut core no 15 from 2395 m to 2413 m.
02:00	Pulled out of hole from 2114 to 2166 m.
05:30	Flow checked, pumped slug and POOH.
07:00	Broke out core head and laid out inner barrels with core no 15. Recovered 17,9 m, 99,4 pct.
07:30	Made up 2 fibreglas inner barrels and core head.
10:00	Ran in hole with core assembly no 16 to 2350 m.
11:00	Washed down to 2413 m. Pumped ball down.
12:00	Cut core no 16 from 2413 m to 2431 m.
13:00	POOH from 2431 m to 2122 m.
16:30	Flow checked, pumped slug and POOH from 2122 m.
18:00	Broke off core head and laid out inner barrels. Recovered 18 m, 100 pct.
19:00	Laid down core barrels.
19:30	Picked up spare motor assembly and broke out stabilizer. Laid out motor again.
21:30	Made up 8 1/2" drilling assembly.
23:59	Ran in hole with 8 1/2" drilling assembly to 1320 m.

DAILY REPORT ON WELL 31/4-11

Daily report no : 27 **Date:** 2000-08-21

Midnight depth : 2607 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,20 sg

Stop time	Description
01:30	Ran in hole from 1320 m to 2300 m.
07:30	Logged down from 2300 m to 2431 m.
23:59	Drilled and orientated 8 1/2" hole from 2431 m to 2607 m.

Daily report no : 28 **Date:** 2000-08-22

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
16:30	Drilled 8 1/2" hole from 2607 m to 2835 m.
18:30	Circulated hole clean and conditioned mud.
19:00	Flow checked and pumped slug.
23:59	Pulled out of hole from 2835 m to 52 m.

Daily report no : 29 **Date:** 2000-08-23

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
01:30	Recovered radioactive sources and laid out 8 1/2" bottom hole assembly.
02:30	Rigged up for wireline logging.
03:00	Made up tool string no 1 : DSI/APS/GR.
04:30	Ran in hole with logging run no 1 to 9 5/8" casing shoe at 2166 m.
09:00	Tied in logs and logged DSI/APS/GR suite.
17:00	Performed VSP logging on wireline.
23:00	Performed MDT logging. Took 10 out of 37 points.
23:59	Logging tool stuck with top of tool at 2350.7 m wireline dyb. Tool length 34.1 m. Pulled max parameters to free tool. No success.

Daily report no : 30 **Date:** 2000-08-24

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
01:30	Attempted to free tool with max parameters.
02:00	Held prejob safety meeting. Installed "T-bars" for cutting cable and installing rope sockets.
03:00	When transferring weigth to "T-bars", the cable broke and disapered into hole. Rigged down logging sheaves.
05:00	Removed torque wrench and changed dies. Inspected saver sub and IBOP actuator
05:30	Picked up motor, broke out stabilizer and float sub.
10:00	While waiting on fishing tools performed yearly check on "Dead man anchor", installed pipe handler and aligned I-BOP actuater.
12:00	Made up new 8 1/2" drilling BHA and racked in derrick.
13:30	Prepared fishing tools, had safety meeting and made up rope spear with stop ring.
15:00	Ran in hole to 175 m. Rotated in hole from 175 m to 345 m with 30 rpm. Rotated out to 317 m with 30 rpm. Rotated in hole to 345 m with 80 rpm.
17:30	POOH with controlled speed from 345 m to surface. Recovered fished wire.
18:30	RIH to 461 m. Rotated in hole to 490 m. Reciprocated string twice.
20:00	POOH from 490 m to surface. No wire recovered.
21:00	RIH with spear to 519 m. Rotated with 10 rpm to 547 m. Reciprocated string once.
22:00	POOH from 547 to surface. No wire recovered.
23:00	RIH with spear to 603 m. Rotated with 10 rpm to 632 m.
23:59	POOH from 632 m to 232 m.

Daily report no : 31 **Date:** 2000-08-25

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
00:30	POOH from 232 m to surface.
01:30	Recovered wire in birdsnest by means of tugger and T-bar.
02:00	Rigged up wireline sheaves.
03:00	Recovered wire by means of wireline drum. Rigged down sheaves.

DAILY REPORT ON WELL 31/4-11

Daily report no : 31 **Date:** 2000-08-25

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
04:30	Made up rope spear and ran in hole to 1001 m. Rotated in hole to 1030 m with 10 rpm .
06:30	POOH from 1030 m to surface.
08:30	Rigged up wireline sheaves and spooled cable onto reel. Rigged down sheaves.
10:00	Ran in hole with rope spear on fishing run no 6 to 1319 m.
10:30	Rotated 5 rpm from 1319 to 1315 m. Wiped string from 1319 to 1291 m.
13:00	POOH from 1319 m to surface.
15:00	Ran in hole with rope spear on run no 7 to 1319 m. Ran carefully from 1319 m to 1433 m.
18:00	Applied 5 right hand tuns to string. POOH from 1433 m to surface.
20:00	Rigged up wireline sheaves and spooled cable onto reel. Recovered remaining cable with weak link on the end.
21:30	Laid out wireline sheaves and fishing equipment. Prepared and made up overshot.
23:59	Ran in hole with overshot assembly to 2110 m.

Daily report no : 32 **Date:** 2000-08-26

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
00:30	Ran in hole from 2110 m to casing shoe at 2166 m. Broke circulation and circulated internal pipe volume with 2706 lpm/ 107 bar.
01:00	Ran in hole to 2308 m. Broke circulation to clean pipe. Took pressure references and up/down weights.
01:30	Ran in hole while pumping 600 lpm/28 bar, 10 m before fish 200 lpm 17 bar. Tagged fish at 2350 m with 5 ton. No pressure increase. Made several attempts to swallow fish. No success.
05:00	Fish loose. Pushing fish ahead of overshot. Chase it while pumping 200 lpm.
05:30	Tagged fish at 2803 m. Attempted several times with different parameters to latch onto fish. No definite indications.
10:30	POOH from 2803 m to 2734 m. Hole swabbing. Pumped out of hole from 2734 m to 2160 m.
14:30	Flow checked at shoe. POOH from 2160 m to surface.
15:30	Laid out logging tools.
16:30	Picked up drilling stand and broke out pup joint.
17:00	Made up 2 stands HWDP and jetting sub. Made up BOP test tool and pup joint for space out.
18:00	Ran in hole with test tool. Washed BOP on the way in. Landed test tool.
23:00	Pressure tested BOP to 35/200 bar for 5/10 min.
23:59	POOH with test tool and laid out same.

Daily report no : 33 **Date:** 2000-08-27

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,20 sg

Stop time	Description
01:00	Changed out IBOP on topdrive.
01:30	Trouble shoot on topdrive hydraulic system.
02:30	Hooked up hose and pressure tested IBOP to 35/345 bar. Rigged down hose.
04:30	Installed IBOP actuator and aligned same. Installed torque wrench
05:30	Laid out pup joint and racked HWDP stand. Made up hang off tool . Installed diverter element.
11:00	Made up 8 1/2" bit and near bit stabilizer. Ran in hole with BHA to 2662 m where string stood up. Attempted to pass without success.
12:00	Washed down from 2662 m to 2835 m.
14:00	Circulated hole clean and conditioned mud while rotating and reciprocating pipe.
14:30	Pumped slug, flow checked well and dropped 2 1/2" ported drift.
16:00	POOH from 2835 m to 9 5/8" casing shoe at 2166 m.
20:00	POOH from 2166 m to surface.
20:30	Laid out bit and stabilizer.
21:00	Held safety meeting prior to rig up crown block sheave.
22:30	Rigged up compensator line sheave at crown block, and secured same.
23:30	Made up TLC logging string for MDT/GR. Tested same.
23:59	Made up x/o and ran in hole on HWDP to 175 m.

Daily report no : 34 **Date:** 2000-08-28

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
00:30	Ran in hole with MDT logging run no 1 from 175 m to 317 m.

DAILY REPORT ON WELL 31/4-11

Daily report no : 34 **Date:** 2000-08-28

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
01:00	Trouble shoot on mousehole tilt for topdrive.
04:30	Ran in hole with MDT logging run no 1 from 317 m to 2118 m.
08:00	While circulating 30 min 2500 lpm, made up side entry sub and rigged up wireline sheaves together with remaining parts of compensation rig up.
09:00	Circulated down wet connector and latched into docking head.
09:30	Tightened pack off seal and clamp. Held prejob meeting with new crew.
10:00	Re-alligned wires for compensation rig-up. Pull tested clamp to 1.5 ton.
23:59	Ran in hole to 2785 m while taking MDT surveys. Total number of stations 34 with 26 good tests

Daily report no : 35 **Date:** 2000-08-29

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,20 sg

Stop time	Description
01:00	Spaced out tool at 2713 m for sample.
02:30	Attempted to open flush valve on sampling tool. No success.
04:00	Spaced out and sampled oil with tool at 2678,5 m.
06:30	Pumped slug and POOH from 2678,5 m to 2120 m.
07:30	Released wet connector and POOH with logging cable.
08:00	Broke out side entry sub.
11:00	POOH with logging tools from 2120 m to surface.
12:30	Laid out logging tools.
14:00	Performed slip and cut of drilling line. Greased Dolly tracks and topdrive.
16:00	Made up MDT/GR sampling string no 2.
21:30	Ran in hole with sampling tools to 2120 m.
22:00	Installed side entry sub.
23:00	Ran in hole with wet connector and latched into docking station. Installed cable clamp and pull tested same to 1.6 ton.
23:59	Re-positioned floor saver sensor at crown.

Daily report no : 36 **Date:** 2000-08-30

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
00:30	Ran in hole with MDT tool string no 2 from 2122 m to 2207 m.
01:00	Malfunction of power to logging tools. POOH from 2207 m and back inside casing shoe to 2122 m.
01:30	Trouble shoot and qualify problem to downhole power cartridge.
02:30	Unlatched wet connector and POOH with same.
03:00	Laid out side entry sub and wet connector.
06:00	Pumped slug, flow checked and POOH with logging tools.
07:00	Changed out power cartridge tool.
10:30	Trouble shoot on logging string. Changed out tool accordingly.
16:30	Performed surface test on string and ran in hole to 2122 m.
17:00	Circulated 20 min with 2500 lpm to clean string while having safety meeting.
19:30	Installed side entry sub. Ran in hole with wire. Latched wet connector into docking head. Tested logging tools. Installed cable clamp and pull tested same to 1.6 ton.
20:00	Ran in hole from 2122 m to 2207 m.
22:00	Ran in hole from 2207 m to 2721 m with bottom of tool. Correlated depth and spaced out probe at 2699 m.
23:59	Commenced sample taking with probe at 2699 m.

Daily report no : 37 **Date:** 2000-08-31

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,20 sg

Stop time	Description
02:30	Took water sample with probe at 2699 m.
04:00	Moved sample point down to 2713 m. Had problems finding the exact place.
04:30	Correlated depth.
06:00	Pumped and flushed. Started sampling from 2713 m.
07:00	POOH and spaced out at next sampling point at 2678 m.
11:00	Problems with sample pump. Trouble shoot same.

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Daily report no : 37 **Date:** 2000-08-31

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,20 sg

Stop time	Description
12:30	POOH to 2381 m.
14:00	Attempted to sample at 2357 m. No success due to pump failure.
15:00	POOH to 9 5/8" casing shoe. Loosen cable clamp.
16:00	Unlatched wet connector and POOH with cable.
17:00	Laid out side entry sub. Rigged down cable and sheaves.
19:30	POOH with sampling tools to surface.
21:00	Laid out tools and rigged down from MDT.
23:00	Rigged up for RFT with compensator wire. Installed sheaves and made up tools.
23:30	Surface tested tools.
23:59	Problems with primary RFT tool.

Daily report no : 38 **Date:** 2000-09-01

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
03:00	Problems with primary RFT tool. Trouble shoot on same. Replaced it with back-up tool and tested same. OK.
05:00	Ran in hole with RFT tool on wireline and spaced out same at 2157 m.
05:30	Left tool to stabilize for temperature. Fired shot no 1 at 2157 m. Pressure build up to hydrostatic.
09:30	Spaced out at 2162 m. Fired shot no 2. Good pressure build up. Took samples. Retracted probe.
10:30	POOH with logging tools on wireline.
11:30	Laid out tools and rigged down from wireline logging.
12:30	Rigged up for TLC logging.
14:00	Made up MDT toolstring and commenced testing same.
17:00	Problems with power voltage. Trouble shoot on problem and changed out power cartridge.
21:00	Ran in hole with MDT logging run 2D to 2122 m.
23:00	Made up side entry sub and ran in hole with wet connector. Latched into docking head and checked connections. Tightened clamp and pull tested same to 1.6 Ton.
23:59	Ran in hole to 2375 m. Correlated depths to optimize probe depth.

Daily report no : 39 **Date:** 2000-09-02

Midnight depth : 2835 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
00:30	Spaced out string with sampling probe at 2357,5 m.
05:00	Flushed and performed sampling at 2357,5 m.
06:00	Computer shut down. Probe retractec automatic.
08:00	Finished sampling at 2357,5 m.
15:00	Spaced probe out at 2372 m and sampled.
19:30	Spaced probe out at 2182,5 m and sampled.
21:30	Spaced probe out at 2206 m and sampled.
22:00	Retracted probe and pulled into 9 5/8" casing shoe.
23:30	Loosened clamp and POOH with wireline. Laid out side entry sub.
23:59	POOH with MDT tools on drill pipe from 2122 m to 2036 m.

Daily report no : 40 **Date:** 2000-09-03

Midnight depth : 3209 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
02:30	POOH with MDT tools on drill pipe from 2036 m to surface.
03:30	Laid out MDT tools.
05:30	Made up 8 1/2" drilling assembly. Checked schribe line. Initialized tools and surface tested same.
06:00	Ran in hole with 8 1/2" drilling assembly to 180 m.
06:30	Shallow tested MWD. RIH to 229 m.
07:00	Unable to obtain correct torque on connection. Laid out 2 joints of 5" HWDP with damaged threads.
09:30	Ran in hole to 9 5/8" casing shoe at 2166 m and broke circulation.
10:30	Ran in open hole to 2812 m.
12:30	Washed down from 2812 m to 2835 m. Established full circulation of 2500 lpm and 150 rpm.
23:59	Drilled 8 1/2" hole from 2835 m to 3209 m.

DAILY REPORT ON WELL 31/4-11

Daily report no : 41 **Date:** 2000-09-04

Midnight depth : 3271 m MD **Estimated PP:** 1,04 sg **Mud weight:** 1,21 sg

Stop time	Description
02:30	Drilled 8 1/2" from 3209 m to TD of well at 3271 m.
03:30	Circulated bottoms up.
06:00	POOH with drilling assembly into 9 5/8" casing shoe at 2166 m.
10:00	Flowchecked for 15 min at 9 5/8" casing shoe, ok. Continued to POOH from 2145 m to BHA..
12:00	POOH laying out MWD tools, mud motor, x-overs etc.
12:30	Tested floorsaver.
14:00	Rigged up to handle 3 1/2" DP. RIH with 3 1/2" DP (11 stands + muleshoe).
15:00	Rigged up to handle 5" DP.
18:00	RIH to 2963 m.
19:00	Spotted 10 m3 Hi-vis and displaced same.
20:00	POOH slowly to 2700 m. Laid out single.
22:00	Picked up cement stand. Made up cement hose. Closed lower annular and reverse circulated contents of DP at 55 spm, 48 bar and 2100 strokes. Held pre-job safety meeting.
22:30	Pressure tested cement hose to 200 bar/5 min, ok. Pumped 4 m3 freshwater spacer.
23:30	Started to mix cement plug # 1. Problems with cement unit. Dumped chemicals and started again.
23:59	Pumped cement plug # 1: 2700 - 2475 m. 10 m3 of 1.90 sg cement. Pumped 1746 ltr freshwater spacer behind cement.

Daily report no : 42 **Date:** 2000-09-05

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 1,21 sg

Stop time	Description
00:30	Spotted cement plug # 1 as balanced plug.
02:00	POOH slowly from 2700 m to 2475 m.
03:00	Circulated hole clean of excess cement and spacer.
04:00	Installed cement stand and spaced out. Pressure tested hose.
06:30	Started pumping spacer. Swivel on cement head leaking. Laid out cement head. Made up pump-in sub. Pressure tested connections to 200 bar.
08:00	Pumped cement plug no 2 : 2475 m - 2250 m. 10 m3 of 1.9 SG cement. Displaced with 1346 l freshwater spacer and mud.
09:00	POOH slowly to 2250 m.
10:30	Made up cement stand and pressure tested to 100 bar. Reverse circulated out 9 m3 of cement contaminated mud. Dumped same.
11:30	Pumped cement plug no 3 : 2250 m - 2050 m. 9 m3 of 1.9 SG cement. Displaced with1068 liter freshwater spacer and mud.
13:00	POOH slowly from 2250 m to 1964 m.
14:00	Made up cement stand and pressure tested to 60 bar. Reverse circulated out 3 m of cement contaminated mud. Dumped same. Laid out cement hose.
15:00	Dropped drill pipe wiper and displaced same. Pumped slug.
17:00	POOH with 5" drill pipe.
18:00	Changed to 3 1/2" handling equipment. Spaced out for BOP and wellhead and jetted same.
18:30	Circulated and jetted wellhead and BOP. Laid out x-over. Pulled out and laid out muleshoe.
19:00	Rigged up to handle 8" DC.
22:00	Made up 2 stands 8" DC's and racked back in derrick. Made up 8 1/2" bit and 3 stands 6 1/2" DC's. Changed out one 6 1/2" DC with faulty thread.
23:59	RIH to tag cement.

Daily report no : 43 **Date:** 2000-09-06

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 1,21 sg

Stop time	Description
00:30	Continued to RIH from 1853 m to 1944 m.
01:30	Made up DDM and washed from 1944 m to 2086 m. Pulled back to 2077 m.
03:00	Circulated bottoms up with 1578 lpm, 85 bar while rotated at 5 rpm. After bottoms up through BOP, kicked in booster pump on riser. Dumped 56 m3 cement contaminated mud at shakers. Cleaned out header box.
04:30	Circulated clean with 2400 lpm, 164 bar.
06:30	Pressure tested cement plug by hesitation squeeze methode.
07:00	Bled off pressure. Opened annular preventer. Ran in hole and tagged cement at 2087 m with 20 ton. Confirmed twice.
10:00	Pumped slug and POOH to surface.
14:00	Made up 9 5/8" bridge plug and ran in hole with same. Spaced out to setting depth 2053 m. Dropped ball.
15:00	Pumped and seated ball with cement unit. Set bridge plug with 114 bar at 2053 m.
15:30	Spaced out and closed pipe rams. Pressure tested bridge plug to 140 bar/10 min. Increased to 175 bar/15 min.

DAILY REPORT ON WELL 31/4-11

Daily report no : 43 **Date:** 2000-09-06

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 1,21 sg

Stop time	Description
16:00	Picked up cement stand. Pressure tested set-up to 200 bar/10 min.
17:30	Pumped 4 m3 freshwater spacer and cement plug no 4: 2050 m - 1850 m. 7.5 m3 of 1.9 SG. Displaced with 1.5 m3 freshwater spacer. Removed cement hose and rotated 50 rpm while displacing with 14,4 m3 mud.
18:30	POOH from 2050 m to 1800 m.
21:30	Reverse circulated string content. Got pressure increase from 39 bar to 189 bar. Bridge plug setting ball obstructing flow ? Circulated clean conventionally. Dumped 52 m3 cement contaminated mud.
23:59	POOH with bridge plug setting tool from 1800 m to 550 m.

Daily report no : 44 **Date:** 2000-09-07

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 1,21 sg

Stop time	Description
01:00	POOH with bridge plug setting tool and laid out same.
03:00	Retrieved wear bushing while redressing bridge plug running tool.
05:00	Picked up 9 5/8" bridge plug. Ran in hole with same to 525 m.
05:30	Dropped ball. Sat bridge plug with 185 bar shear.
06:00	POOH.
06:30	Pressure tested bridge plug to 140 bar, while breaking out plug setting tools and L/ D same.
07:30	Made up and RIH with seal assy. retrieving tool. Spaced out and performed strip test. Landed tool and closed annular preventor. Pulled seal assy. with 35 ton OP, observed well for pressure build up.
08:30	POOH, laid down seal assy and retrieving tool.
10:30	Made up 9 5/8" casing cutter, tested same and RIH. Picked up marine swivel, RIH and landed same in well head.
11:00	Cut 9 5/8" casing at 522m.
12:30	POOH with marine swivel and casing cutting assembly and L/ D same.
14:30	Made up 9 5/8" casing spear, RIH and spear casing at 1420hrs. pulled free with no OP.
15:30	POOH to 9 5/8" hanger.
16:00	Rigged up casing equipment.
16:30	Broke out spear from hanger, racked back std. with spear and laid out hanger.
20:00	Changed out elevators, pulled out and laid down 27 jts and 3m stump of 9 5/8" casing.
21:00	Rigged down casing equipment, innstalled air opr. elevators.
23:00	Made up bridge plug assy. and RIH to 500M. Sat bridge plug with 204bar.
23:30	Pressure tested bridge plug to 122bar.
23:59	Rack back stand, picked up cmt. stand and RIH to 496m, installed cement hose.

Daily report no : 45 **Date:** 2000-09-08

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 1,23 sg

Stop time	Description
01:30	Finnished installing cmt hose, tested same to 200bar-OK. Pumped 8m3 FW spacer, mixed and pumped 15,5m3 - 1.95SG cement slurry followed by 1131L FW. Displaced cmt
03:00	Pulled out of cement plug to 250m and installed cement hose.
03:30	Reversed circulated at 250m, dumped 10m3 contaminated mud.
04:30	Racked back cement stand and POOH with stinger. L/ D same.
05:00	Made up jet sub.
06:00	RIH with jet sub to wash BOP and displace riser to sea wather.
06:30	Displaced riser, kill and choke lines to S.W.
07:00	POOH with jet sub and laid down same while flushing surface lines and equipment with S.W.
08:30	Rigged up to pull BOP.
09:00	Installed R/T and pulled diverter, cleaned off diverter and installed ball joint clamp.
10:30	Changed out catwalk saddles, serviced diverter locking dogs.
13:00	Laid out diverter assembly, picked up riser handling joint and serviced slip joint locking dogs.
16:00	WOW to pull BOP, held prejob safety meeting.
16:30	Closed slip joint and locked same, released wellhead connector and pulled BOP clear of guide posts.
17:30	Moved rig off base 15m to STB, ROV relocated due to strong current.
18:00	Removed pod hose support saddles.
19:00	Rigged up and removed moon pool kill line coflexip hose from cellar deck.
19:30	Held pre job meeting, docked support ring on diverter housing.
20:00	Pulled handling joint and L/ D on catwalk.
20:30	Pulled slipjoint and L/ D on catwalk, deck crew prepared to lift out. Could not slack off main block on port crane.
22:30	Worked on port crane main block function.

DAILY REPORT ON WELL 31/4-11

Daily report no : 45 **Date:** 2000-09-08

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 1,23 sg

Stop time	Description
23:59	Lifted out slip joint to deck, continued to pull BOP on riser.

Daily report no : 46 **Date:** 2000-09-09

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 1,23 sg

Stop time	Description
02:30	Continued to pull BOP on riser.
20:30	WOW to pull BOP through splash zone. Installed kill line coflexip hose in moon pool. Installed, acceptance tested and removed cuttings conveyor screw from shale shakers while WOW. Held pre-job meeting.
23:00	Pulled BOP into guides, moved transporter and sat BOP on stump.
23:59	Disconnected riser double, filled BOP with S.W. to perform test on new ring gasket and shear rams. Fit pod hose saddles to BOP.

Daily report no : 47 **Date:** 2000-09-10

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 1,23 sg

Stop time	Description
00:30	Pressure tested ring gasket against shear rams - OK
01:00	Laid down 2 x 50ft riser joints.
02:30	Rigged down riser handling equipment.
04:30	Made up 20" x 30" casing cutting assembly.
06:00	Surface tested motor and cutter operation, tied on guide ropes to guide wires. ROV found guide post no.4 disconnected from guide base, recovered guide post to surface.
06:30	RIH with cutting assembly. Move rig over wellhead.
07:00	ROV assisted in locating pipe and stabbing into wellhead.
09:30	Cut casing 4,21m below sea bed.
10:00	Attempted to pull wellheads and base with 180t O.P, string parted. POOH, inspection showed failure in x/o between HWDP and DC`S, and at bumper sub.
11:30	Made up "eye" sub, sling and hook assy to DP and RIH.
12:00	Slinged DC`S with ROV.
14:00	POOH from guide base with DC`S, clamped and slinged with two tuggers from rig floor. Held SJA meeting.
15:30	Laid out 6 x 8" DC`S.
16:30	Changed out 1 jt HWDP, picked up 1 jt 8" DC and broke out damaged bumper sub unit.
18:30	Picked up and racked back 3 stds of 8" DC`S, picked up 1 std DP and laid out "eye" sub.
20:00	Waited on fishing tools.
23:00	Messured and made up overshot with oversizise lip guide fishing assembly.
23:59	RIH with fishing assy, moved rig back over wellhead.

Daily report no : 48 **Date:** 2000-09-11

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 1,23 sg

Stop time	Description
00:30	Tensioned guide lines and adjusted rig location. Enganged fish and latched on to same.
02:30	POOH with fish to drill floor, released over shot and backed out bent bumper sub.
03:30	Repaired hyd leak on top drive.
04:30	Laid out cutter assy. on catwalk and prepared to RIH with 18 3/4" wellhead R/T.
05:30	RIH with 18 3/4" R/T and latched on to wellhead.
06:00	Attempted to pull casings and base plate free with 275T - no success. Released wellhead R/T.
06:30	POOH with 18 3/4" R/T.
07:00	Picked up overshot assy., broke out bumper sub and racked back on std of DC`S.
08:00	Picked up cutter/ motor assy, laid out spacer sub, made up to TD and tested system in moon pool.
09:00	Pulled assy to rig floor, installed guide ropes and secured cutter blades, checked out motor and catcher assembly.
12:30	RIH, stabbed into well ROV assist, sat down 5t, took 15t OP test and commenced cut of casings at 212,65m. At 12:15hrs, attempted to pull with 260T, no success.
13:00	Continued to cut at 212,65m, motor stalled and 50bar pressure increase was observed.
14:30	Pulled wellheads and guide base to surface and secured on transporter.
15:30	Removed guidelines and posts from guide base while laying out cutter assembly from drill floor.
23:59	Start pulling anchors while maintaining rig and de-ballast from 13:45hrs.

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DAILY REPORT ON WELL 31/4-11

Daily report no : 49 **Date:** 2000-09-12

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 1,23 sg

Stop time	Description
01:30	Pulling anchors while maintaining rig. End of well 31/4-11, under tow to new location 25/7-6 at 01:30hrs.
23:59	No activity on well 31/4-11.

TIME DISTRIBUTION

Well: 31/4-11 **PO:** 1 **Start date:** 1980-01-01 **Rig:** SCARABEO 6 **Depth:** 3271,0 **m MD**
All sections **Stop date:** 2001-08-07

Operations	Hours	%	Hours	%	Acc. total
MOBILIZATION					
MOORING; RUNNING ANCHORS	16,0	1,40			
MOORING; PULLING ANCHORS	10,0	0,87			
Sum.			26,0	2,27	26,0
DRILLING					
BHA HANDLING/TESTING	40,0	3,49			
EQUIPMENT TEST	1,5	0,13			
MWD HANDLING/TESTING/SURVEYING	0,5	0,04			
TRIPPING IN CASED HOLE	46,0	4,01			
TRIPPING IN OPEN HOLE	18,5	1,61			
DRILLING	144,0	12,56			
OTHER	1,5	0,13			
CIRC. AND COND. MUD/HOLE	14,5	1,26			
WIPER TRIP	1,5	0,13			
CASING HANDLING/TESTING	18,0	1,57			
RUNNING CASING IN CASED HOLE	5,0	0,44			
RUNNING CASING IN OPEN HOLE	31,0	2,70			
DRILLING OUT OF CASING	7,5	0,65			
PRIMARY CEMENTING	17,5	1,53			
DRILLING OUT CEMENT PLUG	6,5	0,57			
FORMATION STRENGTH TESTING	2,0	0,17			
BOP HANDLING	8,0	0,70			
BOP RUNNING/RETRIEVING	12,0	1,05			
BOP TESTING	17,5	1,53			
WELLHEAD EQUIPMENT HANDLING	8,0	0,70			
SLIP AND CUT DRILLING LINE	1,5	0,13			
Sum.			402,5	35,11	428,5
FORMATION EVALUATION MWD					
OTHER	3,5	0,31			
CIRC. AND COND. MUD/HOLE	1,5	0,13			
Sum.			5,0	0,44	433,5
FORMATION EVALUATION LOGGING					
LOGGING	78,0	6,80			
LOGGING EQUIPMENT HANDLING/TESTING	31,0	2,70			
FORMATION TESTER	6,0	0,52			
TRIPPING IN CASED HOLE	23,0	2,01			
TRIPPING IN OPEN HOLE	16,0	1,40			
VERTICAL SEISMIC	8,0	0,70			
OTHER	1,5	0,13			
Sum.			163,5	14,26	597,0
FORMATION EVALUATION CORING					
BHA HANDLING/TESTING	1,5	0,13			
CIRCULATING FOR SAMPLE	3,0	0,26			
TRIPPING IN CASED HOLE	94,0	8,20			
CORING EQUIPMENT/CORE HANDLING	28,0	2,44			
TRIPPING IN OPEN HOLE	52,0	4,54			
OTHER	4,0	0,35			
CORING	50,0	4,36			
CIRC. AND COND. MUD/HOLE	9,0	0,78			
SLIP AND CUT DRILLING LINE	2,5	0,22			
Sum.			244,0	21,28	841,0
PLUG AND ABANDONMENT					
BHA HANDLING/TESTING	6,0	0,52			
TRIPPING IN CASED HOLE	0,5	0,04			
TRIPPING IN OPEN HOLE	2,0	0,17			
OTHER	2,5	0,22			
WELLHEAD EQUIPMENT INSTALLATION	2,0	0,17			
CIRC. AND COND. MUD/HOLE	1,5	0,13			

TIME DISTRIBUTION

Well: 31/4-11 **PO:** 1 **Start date:** 1980-01-01 **Rig:** SCARABEO 6 **Depth:** 3271,0 **m MD**
All sections **Stop date:** 2001-08-07

Operations	Hours	%	Hours	%	Acc. total
PLUG AND ABANDONMENT					
TRIPPING FOR CEMENT JOB	14,5	1,26			
BOP HANDLING	2,0	0,17			
BOP RUNNING/RETRIEVING	18,0	1,57			
BOP TESTING	0,5	0,04			
WELLHEAD EQUIPMENT HANDLING	2,5	0,22			
SET CEMENT PLUG	18,0	1,57			
SET MECHANICAL PLUG	5,5	0,48			
TRIPPING OF CASING CUTTING EQUIPMENT	10,5	0,92			
CUT CASING/WELLHEAD	7,0	0,61			
CASING RETRIEVING	13,5	1,18			
Sum.			106,5	9,29	947,5
DOWNTIME DRILLING					
EQUIPMENT FAILURE AND REPAIR	20,0	1,74			
STICKING/GOING STUCK WITH EQUIPMENT	1,0	0,09			
WIPER TRIP	7,5	0,65			
Sum.			28,5	2,49	976,0
DOWNTIME FORM. EVAL. LOGGING					
EQUIPMENT FAILURE AND REPAIR	44,0	3,84			
WAITING	6,5	0,57			
STICKING/GOING STUCK WITH EQUIPMENT	2,5	0,22			
FISHING	53,0	4,62			
Sum.			106,0	9,25	1082,0
DOWNTIME PLUG AND ABANDONMENT					
EQUIPMENT FAILURE AND REPAIR	6,5	0,57			
WAITING	22,5	1,96			
CEMENTING	20,5	1,79			
FISHING	15,0	1,31			
Sum.			64,5	5,63	1146,5
Reported time (100,0 % of well total 1146,5 hours) :					1146,5

Norsk Hydro

2001-08-07

HOLE DEVIATION

Well: 31/4-11 **Reference point:** RKB ; 26,0 **m** ABOVE MSL

Waterdepth: 183,0 **m** **Vertical to:** 208,9 **m** **Total Depth:** 3271,0 **m MD**

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

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

Wellhead Coordinates, UTM: **North :** 6719715,70 **m,** **East :** 505502,40 **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]
209,00	0,00	0,00	MWD	1	209,00	0,00	0,00	0,00	0,00	0,00	0,00
212,23	0,03	301,25	MWD	1	212,23	0,00	-0,00	0,00	0,27	0,28	-545,67
222,08	0,14	59,90	MWD	1	222,08	0,01	0,01	0,01	0,48	0,34	361,37
234,80	0,29	341,02	MWD	1	234,80	0,05	0,01	0,05	0,70	0,35	-186,04
243,58	0,17	18,78	MWD	1	243,58	0,08	0,01	0,08	0,64	-0,41	129,02
253,59	0,46	280,72	MWD	1	253,59	0,10	-0,03	0,10	1,54	0,87	-293,89
263,41	0,63	307,60	MWD	1	263,41	0,14	-0,11	0,18	0,92	0,52	82,12
266,29	0,47	311,46	MWD	1	266,29	0,16	-0,13	0,21	1,71	-1,67	40,21
293,40	0,59	275,24	MWD	1	293,40	0,25	-0,35	0,43	0,39	0,13	-40,08
323,58	0,71	280,51	MWD	1	323,58	0,29	-0,69	0,75	0,13	0,12	5,24
352,12	0,73	282,33	MWD	1	352,11	0,36	-1,04	1,10	0,03	0,02	1,91
379,46	0,67	280,77	MWD	1	379,45	0,43	-1,37	1,44	0,07	-0,07	-1,71
408,86	0,64	280,12	MWD	1	408,85	0,49	-1,70	1,77	0,03	-0,03	-0,66
437,36	0,59	287,77	MWD	1	437,35	0,57	-2,00	2,08	0,10	-0,05	8,05
464,61	0,54	297,81	MWD	1	464,60	0,67	-2,24	2,34	0,12	-0,06	11,05
493,30	0,52	300,57	MWD	1	493,29	0,80	-2,48	2,60	0,03	-0,02	2,89
522,63	0,49	308,51	MWD	1	522,61	0,94	-2,69	2,85	0,08	-0,03	8,12
552,57	0,53	312,05	MWD	1	552,55	1,12	-2,89	3,10	0,05	0,04	3,55
581,34	0,44	306,38	MWD	1	581,32	1,27	-3,08	3,33	0,11	-0,09	-5,91
610,10	0,50	306,08	MWD	1	610,08	1,41	-3,27	3,56	0,06	0,06	-0,31
638,67	0,47	303,66	MWD	1	638,65	1,55	-3,47	3,80	0,04	-0,03	-2,54
666,95	0,49	294,53	MWD	1	666,93	1,66	-3,67	4,03	0,08	0,02	-9,69
695,92	0,50	295,00	MWD	1	695,90	1,77	-3,90	4,28	0,01	0,01	0,49
724,55	0,37	285,48	MWD	1	724,53	1,84	-4,10	4,50	0,16	-0,14	-9,98
755,24	0,32	279,58	MWD	1	755,22	1,89	-4,28	4,68	0,06	-0,05	-5,77
783,62	0,12	252,31	MWD	1	783,60	1,89	-4,39	4,78	0,23	-0,21	-28,83
812,13	0,62	298,54	MWD	1	812,11	1,95	-4,55	4,96	0,57	0,53	48,65
840,58	0,71	294,02	MWD	1	840,55	2,10	-4,85	5,29	0,11	0,09	-4,77
869,18	0,75	289,03	MWD	1	869,15	2,23	-5,19	5,65	0,08	0,04	-5,23
897,92	0,70	284,47	MWD	1	897,89	2,34	-5,54	6,01	0,08	-0,05	-4,76
924,64	0,56	282,55	MWD	1	924,61	2,41	-5,82	6,30	0,16	-0,16	-2,16
953,09	0,46	275,48	MWD	1	953,06	2,45	-6,07	6,55	0,12	-0,11	-7,46
981,56	0,37	230,30	MWD	1	981,53	2,40	-6,26	6,70	0,35	-0,09	-47,61
1008,84	0,54	204,42	MWD	1	1008,81	2,23	-6,38	6,75	0,29	0,19	-28,46
1038,82	0,75	194,17	MWD	1	1038,78	1,91	-6,48	6,76	0,24	0,21	-10,26
1066,28	0,83	195,57	MWD	1	1066,24	1,54	-6,58	6,76	0,09	0,09	1,53

HOLE DEVIATION

Well: 31/4-11 **Reference point:** RKB ; 26,0 **m** ABOVE MSL

Waterdepth: 183,0 **m** **Vertical to:** 208,9 **m** **Total Depth:** 3271,0 **m MD**

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

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

Wellhead Coordinates, UTM: **North :** 6719715,70 **m,** **East :** 505502,40 **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]
1081,79	0,85	191,39	MWD	1	1081,75	1,32	-6,63	6,76	0,12	0,04	-8,09
1123,46	0,68	214,87	MWD	1	1123,42	0,82	-6,84	6,88	0,25	-0,12	16,90
1151,79	0,79	209,72	MWD	1	1151,74	0,51	-7,03	7,05	0,14	0,12	-5,45
1180,38	0,73	225,82	MWD	1	1180,33	0,21	-7,26	7,26	0,23	-0,06	16,89
1209,03	0,78	235,80	MWD	1	1208,98	-0,03	-7,55	7,55	0,15	0,05	10,45
1237,54	0,71	252,25	MWD	1	1237,49	-0,19	-7,88	7,88	0,24	-0,07	17,31
1266,74	0,82	263,11	MWD	1	1266,68	-0,27	-8,26	8,26	0,19	0,11	11,16
1296,31	0,75	261,99	MWD	1	1296,25	-0,32	-8,66	8,67	0,07	-0,07	-1,14
1324,58	0,61	244,96	MWD	1	1324,52	-0,41	-8,98	8,99	0,26	-0,15	-18,07
1353,32	0,55	231,28	MWD	1	1353,26	-0,56	-9,23	9,24	0,16	-0,06	-14,28
1381,10	0,40	222,03	MWD	1	1381,04	-0,72	-9,39	9,42	0,18	-0,16	-9,99
1409,24	0,79	235,58	MWD	1	1409,17	-0,90	-9,62	9,66	0,44	0,42	14,45
1437,67	3,21	224,82	MWD	1	1437,59	-1,58	-10,34	10,46	2,57	2,55	-11,35
1466,28	7,54	217,22	MWD	1	1466,06	-3,64	-12,04	12,58	4,59	4,54	-7,97
1495,90	8,41	212,61	MWD	1	1495,40	-7,01	-14,39	16,01	1,09	0,88	-4,67
1524,30	8,62	213,70	MWD	1	1523,48	-10,53	-16,69	19,73	0,28	0,22	1,15
1552,72	9,70	215,62	MWD	1	1551,54	-14,25	-19,26	23,96	1,18	1,14	2,03
1580,78	10,97	218,85	MWD	1	1579,14	-18,25	-22,32	28,83	1,49	1,36	3,45
1610,06	13,64	219,08	MWD	1	1607,75	-23,10	-26,24	34,96	2,74	2,74	0,24
1637,43	16,42	224,23	MWD	1	1634,18	-28,38	-30,97	42,01	3,38	3,05	5,64
1666,87	19,50	221,22	MWD	1	1662,18	-35,06	-37,12	51,06	3,28	3,14	-3,07
1695,46	22,18	219,28	MWD	1	1688,90	-42,83	-43,68	61,17	2,90	2,81	-2,04
1723,92	24,89	217,40	MWD	1	1714,99	-51,75	-50,72	72,46	2,96	2,86	-1,98
1752,77	28,30	216,11	MWD	1	1740,79	-62,10	-58,44	85,27	3,60	3,55	-1,34
1781,32	30,40	217,13	MWD	1	1765,67	-73,33	-66,79	99,18	2,27	2,21	1,07
1809,65	33,39	217,94	MWD	1	1789,72	-85,19	-75,91	114,10	3,20	3,17	0,86
1837,03	37,12	215,76	MWD	1	1812,08	-97,84	-85,37	129,85	4,31	4,09	-2,39
1867,77	41,34	213,38	MWD	1	1835,88	-113,85	-96,39	149,17	4,37	4,12	-2,32
1896,06	44,88	212,89	MWD	1	1856,53	-130,04	-106,95	168,37	3,77	3,75	-0,52
1924,57	47,17	213,01	MWD	1	1876,33	-147,26	-118,11	188,77	2,41	2,41	0,13
1953,06	48,78	213,52	MWD	1	1895,40	-164,95	-129,72	209,85	1,74	1,70	0,54
1981,02	50,97	212,87	MWD	1	1913,42	-182,84	-141,42	231,15	2,41	2,35	-0,70
2010,34	51,72	213,86	MWD	1	1931,73	-201,96	-154,01	253,99	1,10	0,77	1,01
2038,12	52,63	213,52	MWD	1	1948,77	-220,22	-166,18	275,89	1,02	0,98	-0,37
2067,13	53,95	213,61	MWD	1	1966,11	-239,60	-179,04	299,11	1,37	1,37	0,09
2094,83	54,10	212,30	MWD	1	1982,38	-258,41	-191,24	321,48	1,16	0,16	-1,42

HOLE DEVIATION

Well: 31/4-11 **Reference point:** RKB ; 26,0 **m** ABOVE MSL

Waterdepth: 183,0 **m** **Vertical to:** 208,9 **m** **Total Depth:** 3271,0 **m MD**

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

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

Wellhead Coordinates, UTM: **North :** 6719715,70 **m,** **East :** 505502,40 **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]
2125,05	54,36	211,27	MWD	1	2000,05	-279,25	-204,15	345,92	0,87	0,26	-1,02
2151,13	54,29	212,07	MWD	1	2015,26	-297,28	-215,27	367,04	0,75	-0,08	0,92
2165,33	54,44	210,34	MWD	1	2023,53	-307,15	-221,25	378,54	2,99	0,32	-3,65
2193,77	55,54	210,61	MWD	1	2039,85	-327,23	-233,07	401,74	1,18	1,16	0,28
2215,50	55,63	209,62	MWD	1	2052,13	-342,74	-242,06	419,60	1,13	0,12	-1,37
2250,11	56,32	210,88	MWD	1	2071,49	-367,51	-256,51	448,18	1,08	0,60	1,09
2277,32	56,62	210,03	MWD	1	2086,52	-387,06	-268,01	470,79	0,85	0,33	-0,94
2291,64	57,09	211,08	MWD	1	2094,35	-397,39	-274,10	482,75	2,09	0,98	2,20
2308,34	57,26	210,14	MWD	1	2103,41	-409,47	-281,25	496,75	1,45	0,31	-1,69
2336,22	58,14	210,01	MWD	1	2118,30	-429,86	-293,06	520,25	0,95	0,95	-0,14
2366,06	58,68	211,47	MWD	1	2133,94	-451,71	-306,05	545,62	1,36	0,54	1,47
2394,44	58,65	209,87	MWD	1	2148,70	-472,55	-318,42	569,82	1,44	-0,03	-1,69
2420,91	58,45	211,46	MWD	1	2162,51	-491,98	-329,93	592,37	1,55	-0,23	1,80
2450,17	54,89	209,66	MWD	1	2178,58	-513,02	-342,37	616,77	3,96	-3,65	-1,85
2478,60	52,05	211,42	MWD	1	2195,50	-532,70	-353,97	639,58	3,35	-3,00	1,86
2504,46	49,91	210,02	MWD	1	2211,79	-549,96	-364,23	659,64	2,78	-2,48	-1,62
2534,26	48,00	212,36	MWD	1	2231,35	-569,19	-375,86	682,09	2,62	-1,92	2,36
2563,26	46,78	214,36	MWD	1	2250,99	-587,02	-387,60	703,43	1,98	-1,26	2,07
2591,90	46,33	218,50	MWD	1	2270,69	-603,74	-399,94	724,19	3,18	-0,47	4,34
2617,83	45,99	222,23	MWD	1	2288,65	-617,99	-412,04	742,76	3,14	-0,39	4,32
2646,43	45,38	225,38	MWD	1	2308,63	-632,76	-426,20	762,91	2,45	-0,64	3,30
2675,25	45,84	229,20	MWD	1	2328,80	-646,72	-441,33	782,95	2,88	0,48	3,98
2704,10	44,58	233,78	MWD	1	2349,13	-659,47	-457,34	802,53	3,62	-1,31	4,76
2733,90	45,03	234,19	MWD	1	2370,27	-671,81	-474,33	822,39	0,54	0,45	0,41
2761,80	45,75	234,37	MWD	1	2389,86	-683,41	-490,45	841,18	0,79	0,77	0,19
2790,67	45,84	234,44	MWD	1	2409,99	-695,45	-507,28	860,81	0,11	0,09	0,07
2807,95	45,87	235,15	MWD	1	2422,03	-702,60	-517,41	872,56	0,89	0,05	1,23
2822,03	46,16	236,32	MWD	1	2431,81	-708,31	-525,78	882,13	1,90	0,62	2,49
2851,68	45,60	236,67	MWD	1	2452,45	-720,06	-543,53	902,17	0,62	-0,57	0,35
2879,65	44,95	237,13	MWD	1	2472,13	-730,91	-560,18	920,88	0,78	-0,70	0,49
2907,29	44,22	237,13	MWD	1	2491,82	-741,44	-576,47	939,18	0,79	-0,79	0,00
2936,40	43,65	236,72	MWD	1	2512,78	-752,46	-593,40	958,29	0,66	-0,59	-0,42
2964,91	43,07	236,90	MWD	1	2533,51	-763,18	-609,78	976,87	0,62	-0,61	0,19
2993,16	42,98	237,12	MWD	1	2554,16	-773,67	-625,95	995,18	0,19	-0,10	0,23
3021,62	42,49	237,35	MWD	1	2575,06	-784,12	-642,19	1013,54	0,54	-0,52	0,24
3050,16	42,29	237,25	MWD	1	2596,14	-794,52	-658,38	1031,86	0,22	-0,21	-0,11

Norsk Hydro

2001-08-07

HOLE DEVIATION

Well: 31/4-11 **Reference point:** RKB ; 26,0 **m** ABOVE MSL

Waterdepth: 183,0 **m** **Vertical to:** 208,9 **m** **Total Depth:** 3271,0 **m MD**

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

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

Wellhead Coordinates, UTM: **North :** 6719715,70 **m,** **East :** 505502,40 **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]
3078,54	41,81	237,49	MWD	1	2617,22	-804,77	-674,39	1049,98	0,54	-0,51	0,25
3106,73	41,19	237,71	MWD	1	2638,33	-814,78	-690,16	1067,79	0,68	-0,66	0,23
3134,81	40,76	237,85	MWD	1	2659,53	-824,60	-705,74	1085,37	0,47	-0,46	0,15
3163,22	39,91	238,30	MWD	1	2681,19	-834,32	-721,34	1102,92	0,95	-0,90	0,48
3191,58	39,31	238,29	MWD	1	2703,03	-843,82	-736,73	1120,18	0,63	-0,63	-0,01
3219,66	38,99	238,47	MWD	1	2724,81	-853,12	-751,82	1137,12	0,36	-0,34	0,19
3248,72	39,01	238,87	MWD	1	2747,39	-862,63	-767,44	1154,60	0,26	0,02	0,41
3271,00	39,01	238,87	NBI	1	2764,71	-869,88	-779,45	1168,00	0,00	0,00	0,00

Norsk Hydro

2001-08-07

MAIN CONSUMPTION OF CASING/TUBING ON WELL 31/4-11 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	75,3	6
13 3/8"	SURFACE	L-80	107,14	72,00	NS-CC	894,2	78
9 5/8"	INTERMEDIATE	L-80	79,61	53,50	NS-CC	1958,2	171

BITRECORD FOR WELL 31/4-11 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	8,50	HTC	MAXGT03	X740357PT	415	16,20,20,25	1,289	1	283	75	2,70	27,8	61/61	21300	0/60	1000/4120	84/157	1 - 1 - BT - M - 4	I	CT	TD
1		HO	36,00	DARR	TOSTATE	21463		1,11,11,9,9,9	0,373	1	283	75	2,70	27,8	61/61	21300	0/60	1000/4120	84/157	1 - 1 - NO - A - 1	I	NO	
2		MITO	26,00	HTC	GTXCMG1	K06CC	115M	18,18,18,24	1,187	2	285	2	1,00	2,0						1 - 1 - NO - A - 2	I	NO	BHA
3		MITO	17,50	HTC	MX1	K91DE	115	14,16,22,22	1,089	3	1103	818	17,80	46,0	120/143	145000	1/155	2996/4310	133/227	1 - 1 - NO - A - 1	I	NO	TD
4		PDC	12,25	HTC	BX536	1904364	M323	14,14,14,14,15,15	0,946	4	2123	1020	11,50	88,7	200/200	117800	13/26	2886/3393	250/278	0 - 1 - WT - G - 0	2	BU	CP
5		CORE	8,50	SDBS	FC264RILI	7981106	M233		0,000	5	2134	11	9,60	1,1	105/105	62	1/15	797/1099	53,6/74,8	0 - 0 - NO - A - 0	I	NO	CJ
6	1	CORE	8,50	SDBS	FC264RILI	7981106	M233		0,000	6	2144	10	7,50	1,3	84/84	43	3/16	1088/1111	45,9/75,4	0 - 0 - NO - A - 0	I	NO	CJ
7		CORE	8,50	SDBS	CD93FDIL	7970790	O896		0,000	7	2149	5	2,13	2,3	103/103	22	9/17	979/1112	59,8/76,8	0 - 0 - NO - A - 0	I	ER	CJ
8	1	CORE	8,50	SDBS	CD93FDIL	7970790	O896		0,000	8	2157	8	5,80	1,4	102/102	34	10/11	986/1006	66,9/72,4	0 - 0 - NO - A - 0	I	ER	CJ
8	2	CORE	8,50	SDBS	CD93FDIL	7970790	O896		0,000	9	2163	6	1,50	4,0	115/115	11	9/11	897/1037	54,5/64,5	0 - 0 - NO - A - 0	I	ER	CJ
9	1	PDC	12,25	HTC	BX536	1904364	M323		0,000	10	2176	13	1,50	8,7	232/232	120	5/11	3450/3450	86,4/294,(	0 - 3 - BT - G - 0	3	WT	TD
10		MITO	8,50	HTC	JG8	A84J6850			0,000	11	2176	0	0,10	0,0	40/60	1	0/0	3000/3490	75/189	0 - 0 - NO - A - 1	I	NO	TD
11	1	MITO	8,50	HTC	JD8	8J9850	347		0,000	12	2179	3	2,90	1,0	72/72	12	2/17	2796/3098	122/196	6 - 4 - BT - A - 0	I	WT	CP
12		CORE	8,50	SDBS	FC264RILI	7981238	M233		0,000	13	2187	8	2,90	2,8	70/12072	12	3/8	900/900	34/38	0 - 0 - NO - A - 0	I	NO	CJ
13	1	CORE	8,50	SDBS	FC264RILI	7981238	M233		0,000	14	2204	17	1,00	17,0	74/74	6	3/9	1008/1327	41,1/46,4	0 - 0 - NO - A - 0	I	NO	NC
14	2	CORE	8,50	SDBS	FC264RILI	7981238	M233		0,000	15	2222	18	1,00	18,0	79/79		1/3	886/892	43/45	0 - 0 - NO - A - 0	I	NO	NC
15	3	CORE	8,50	SDBS	FC264RILI	7981238	M233		0,000	16	2240	18	0,80	22,5	85/85	4	2/12	889/963	42/45	0 - 0 - NO - A - 0	I	NR	TD
16		PDC	8,50	HTC	BD445	1213263	M333		0,000	17	2316	76	4,10	18,5	250/275	37	2/10	2019/2659	193/231	1 - 1 - NO - A - 0	I	NO	CP
17	4	CORE	8,50	SDBS	FC264RILI	7981238	M233		0,000	18	2344	28	5,00	5,6		30900	24/98	923/1647	45/69	1 - 1 - NO - A - X	I	NO	NC
18	5	CORE	8,50	SDBS	FC264RILI	7981238	M233		0,000	19	2361	18	0,80	22,5		11800	25/86	777/952	37/42	1 - 1 - OC - A - X	I	OC	NC
19	6	CORE	8,50	SDBS	FC264RILI	7981238	M233		0,000	20	2370	9	0,40	22,5		2800	18/32	1300/1920	48/65	1 - 1 - OC - A - X	I	OC	CJ
20	7	CORE	8,50	SDBS	FC264RILI	7981238	M233		0,000	21	2377	7	0,30	23,3	59/104	2000	44/53	906/951	42/45	1 - 1 - NO - A - X	I	NO	CJ
21	8	CORE	8,50	SDBS	FC264RILI	7981238	M233		0,000	22	2395	18	2,40	7,5	90/103	21100	45/107	918/959	43/48	1 - 1 - OC - A - X	I	NO	NC
22	9	CORE	8,50	SDBS	FC264RILI	7981238	M233		0,000	23	2413	18	1,10	16,4	48/99	8400	52/89	904/939	44/50	1 - 1 - NO - A - X	I	NO	NC
23	10	CORE	8,50	SDBS	FC264RILI	7981238	M233		0,000	24	2431	18	0,70	25,7	61/107	4300	30/117	927/965	43/50	1 - 1 - NO - A - X	I	NO	KOP
24		ISRT	8,50	HTC	MXLR09DDT	E58DA		14,16,16	0,543	25	2635	204	24,20	8,4	118/210	271	32/266	1867/1921	166/185	2 - 2 - ER - A - 2	I	NO	TD
25	1	ISRT	8,50	HTC	MXLR09DDT	E58DA		14,16,16	0,543	26	2635	0		0,0						2 - 2 - ER - A - 3	I	NO	TD
26	1	PDC	8,50	HTC	BD445	1213263	M333	15,15,15	0,518	27	3271	436	9,70	44,9	173/193	194100	2/72	2160/2412	198/268	2 - 2 - ER - A - X	I	HC	TD

BOTTOM HOLE ASSEMBLIES USED ON WELL 31/4-11 PO: 1

BHA no. 1: No. / Element / OD(in) / Length(m) Depth In: 208 m MD Out: 283 m MD

1	MAXGT03	17,5	0,42	2	TOSTATE	36,0	3,05
3	FLOAT SUB	8,75	0,87	4	CDR	9,5	7,25
5	MWD	9,0	8,37	6	NON MAG. STAB	17,5	2,04
7	NON MAG. COLLAR	9,5	9,48	8	X-OVER	9,5	1,01
9	DRILL COLLAR STEEL	8,0	55,91	10	JAR	8,0	9,77
11	DRILL COLLAR STEEL	8,0	18,42	12	X-OVER	7,5	0,66
13	HWDP	5,0	137,56				

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 254,81

BHA no. 2: No. / Element / OD(in) / Length(m) Depth In: 283 m MD Out: 285 m MD

1	GTXCMG1	26,0	0,56	2	NEAR BIT STAB	17,375	2,20
3	X-OVER	9,5	0,79	4	DRILL COLLAR STEEL	7,812	9,23
5	DRILL COLLAR STEEL	7,937	9,46	6	DRILL COLLAR STEEL	7,937	9,47
7	DRILL COLLAR STEEL	7,812	9,26	8	DRILL COLLAR STEEL	7,937	9,36
9	DRILL COLLAR STEEL	7,75	9,13	10	JAR	7,812	9,77
11	DRILL COLLAR STEEL	7,687	8,96	12	DRILL COLLAR STEEL	7,812	9,46
13	X-OVER	7,375	0,66	14	HWDP	5,0	137,56

Reason pulled: CHANGE BOTTOMHOLE ASSI Sum: 225,87

BHA no. 3: No. / Element / OD(in) / Length(m) Depth In: 285 m MD Out: 1103 m MD

1	MX1	17,5	0,43	2	NEAR BIT STAB	17,375	2,20
3	DRILL COLLAR STEEL	9,625	3,68	4	NON MAG. NEAR BIT STAB	17,5	1,87
5	CDR	9,562	7,16	6	MWD	9,0	8,37
7	NON MAG. NEAR BIT STAB	9,437	2,04	8	NON MAG. COLLAR	9,5	9,48
9	X-OVER	9,437	1,01	10	DRILL COLLAR STEEL	7,812	9,23
11	DRILL COLLAR STEEL	7,937	9,46	12	DRILL COLLAR STEEL	7,937	9,47
13	DRILL COLLAR STEEL	7,812	9,26	14	DRILL COLLAR STEEL	7,937	9,36
15	DRILL COLLAR STEEL	7,75	9,13	16	JAR	7,812	9,77
17	DRILL COLLAR STEEL	7,687	8,96	18	DRILL COLLAR STEEL	7,812	9,46
19	X-OVER	7,375	0,66	20	HWDP	5,0	137,56

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 258,56

BHA no. 4: No. / Element / OD(in) / Length(m) Depth In: 1103 m MD Out: 2123 m MD

1	BX536	12,25	0,37	2	DOWN HOLE MOTOR WITH ST/	12,125	9,26
3	FLOAT SUB	9,5	0,69	4	NON MAG. STAB	12,0	2,32
5	CDR	9,562	7,16	6	MWD	9,0	8,37
7	NON MAG. STAB	12,13	2,26	8	NON MAG. COLLAR	9,5	9,48
9	X-OVER	9,437	1,01	10	DRILL COLLAR STEEL	7,812	9,23
11	DRILL COLLAR STEEL	7,937	9,46	12	DRILL COLLAR STEEL	7,937	9,47
13	DRILL COLLAR STEEL	7,812	9,26	14	DRILL COLLAR STEEL	7,937	9,36
15	DRILL COLLAR STEEL	7,75	9,13	16	JAR	7,812	9,77
17	DRILL COLLAR STEEL	7,687	8,96	18	DRILL COLLAR STEEL	7,812	9,46
19	X-OVER	7,375	0,66	20	HWDP	5,0	137,56

Reason pulled: CORE POINT Sum: 263,24

BHA no. 5: No. / Element / OD(in) / Length(m) Depth In: 2123 m MD Out: 2134 m MD

1	FC264RILI	8,5	0,36	2	CORE BARREL	8,937	20,97
3	X-OVER	8,0	0,83	4	FLOAT SUB	12,0	0,92
5	DRILL COLLAR STEEL	7,812	55,91	6	JAR	7,75	9,64
7	DRILL COLLAR STEEL	7,812	18,42	8	X-OVER	7,375	0,66
9	HWDP	5,0	137,56				

Reason pulled: CORE JAMMED Sum: 245,27

BOTTOM HOLE ASSEMBLIES USED ON WELL 31/4-11 PO: 1

BHA no. 6: No. / Element / OD(in) / Length(m) Depth In: 2134 m MD Out: 2144 m MD

1	FC264RILI	8,5	0,36	2	CORE BARREL	8,937	30,12
3	X-OVER	6,375	0,24	4	FLOAT SUB	12,0	0,92
5	DRILL COLLAR STEEL	6,5	56,32	6	X-OVER	6,5	0,73
7	X-OVER	8,0	0,83	8	FLOAT SUB	8,25	0,92
9	DRILL COLLAR STEEL	7,812	55,91	10	JAR	7,75	9,64
11	DRILL COLLAR STEEL	7,812	18,42	12	X-OVER	7,375	0,66
13	HWDP	5,0	137,56				

Reason pulled: CORE JAMMED Sum: 312,63

BHA no. 7: No. / Element / OD(in) / Length(m) Depth In: 2144 m MD Out: 2149 m MD

1	CD93FDIL	8,5	0,36	2	CORE BARREL	8,937	30,12
3	X-OVER	6,375	0,24	4	FLOAT SUB	12,0	0,92
5	DRILL COLLAR STEEL	6,5	56,32	6	X-OVER	6,5	0,73
7	X-OVER	8,0	0,83	8	FLOAT SUB	8,25	0,92
9	DRILL COLLAR STEEL	7,812	55,91	10	JAR	7,75	9,64
11	DRILL COLLAR STEEL	7,812	18,42	12	X-OVER	7,375	0,66
13	HWDP	5,0	137,56				

Reason pulled: CORE JAMMED Sum: 312,63

BHA no. 8: No. / Element / OD(in) / Length(m) Depth In: 2149 m MD Out: 2157 m MD

1	CD93FDIL	8,5	0,36	2	CORE BARREL	8,937	30,12
3	X-OVER	6,375	0,24	4	FLOAT SUB	12,0	0,92
5	DRILL COLLAR STEEL	6,5	56,32	6	X-OVER	6,5	0,73
7	X-OVER	8,0	0,83	8	FLOAT SUB	8,25	0,92
9	DRILL COLLAR STEEL	7,812	55,91	10	JAR	7,75	9,64
11	DRILL COLLAR STEEL	7,812	18,42	12	X-OVER	7,375	0,66
13	HWDP	5,0	137,56				

Reason pulled: CORE JAMMED Sum: 312,63

BHA no. 9: No. / Element / OD(in) / Length(m) Depth In: 2157 m MD Out: 2163 m MD

1	CD93FDIL	8,5	0,36	2	CORE BARREL	8,937	30,12
3	X-OVER	6,375	0,24	4	FLOAT SUB	12,0	0,92
5	DRILL COLLAR STEEL	6,5	56,32	6	X-OVER	6,5	0,73
7	X-OVER	8,0	0,83	8	FLOAT SUB	8,25	0,92
9	DRILL COLLAR STEEL	7,812	55,91	10	JAR	7,75	9,64
11	DRILL COLLAR STEEL	7,812	18,42	12	X-OVER	7,375	0,66
13	HWDP	5,0	137,56				

Reason pulled: CORE JAMMED Sum: 312,63

BHA no. 10: No. / Element / OD(in) / Length(m) Depth In: 2163 m MD Out: 2176 m MD

1	BX536	12,25	0,37	2	DOWN HOLE MOTOR WITH ST/	12,125	9,26
3	FLOAT SUB	9,5	0,69	4	NON MAG. STAB	12,0	2,32
5	CDR	9,562	7,16	6	MWD	9,0	8,37
7	NON MAG. STAB	12,13	2,26	8	NON MAG. COLLAR	9,5	9,48
9	X-OVER	9,437	1,01	10	DRILL COLLAR STEEL	7,812	9,23
11	DRILL COLLAR STEEL	7,937	9,46	12	DRILL COLLAR STEEL	7,937	9,47
13	DRILL COLLAR STEEL	7,812	9,26	14	DRILL COLLAR STEEL	7,937	9,36
15	DRILL COLLAR STEEL	7,75	9,13	16	JAR	7,812	9,64
17	DRILL COLLAR STEEL	7,687	8,96	18	DRILL COLLAR STEEL	7,812	9,46
19	X-OVER	7,375	0,66	20	HWDP	5,0	137,56

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 263,11

BOTTOM HOLE ASSEMBLIES USED ON WELL 31/4-11 PO: 1

BHA no. 11: No. / Element / OD(in) / Length(m) Depth In: 2176 m MD Out: 2176 m MD

1	JG8	8,5	0,24	2	BIT SUB	6,875	30,12
3	LOGGING WHILE DRILLING TOOL	6,75	5,77	4	X-OVER	6,75	0,26
5	LOGGING WHILE DRILLING TOOL	6,75	6,11	6	NON MAG. COLLAR	6,75	9,36
7	X-OVER	6,687	0,83	8	DRILL COLLAR STEEL	6,5	28,41
9	X-OVER	6,5	0,73	10	X-OVER	8,0	0,80
11	DRILL COLLAR STEEL	7,812	55,91	12	JAR	7,812	9,64
13	DRILL COLLAR STEEL	7,687	18,42	14	X-OVER	7,375	0,66
15	HWDP	5,0	137,56				

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 304,82

BHA no. 12: No. / Element / OD(in) / Length(m) Depth In: 2176 m MD Out: 2179 m MD

1	JD8	8,5	0,24	2	NEAR BIT STAB	8,5	1,59
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: CORE POINT Sum: 254,44

BHA no. 13: No. / Element / OD(in) / Length(m) Depth In: 2179 m MD Out: 2187 m MD

1	FC264RILI	8,5	0,37	2	CORE BARREL	6,75	30,12
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: CORE JAMMED Sum: 283,10

BHA no. 14: No. / Element / OD(in) / Length(m) Depth In: 2187 m MD Out: 2204 m MD

1	FC264RILI	8,5	0,37	2	CORE BARREL	6,75	21,33
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: NEW CORE/FULL BARREL Sum: 274,31

BHA no. 15: No. / Element / OD(in) / Length(m) Depth In: 2204 m MD Out: 2222 m MD

1	FC264RILI	8,5	0,37	2	CORE BARREL	6,75	21,33
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: NEW CORE/FULL BARREL Sum: 274,31

BHA no. 16: No. / Element / OD(in) / Length(m) Depth In: 2222 m MD Out: 2240 m MD

1	FC264RILI	8,5	0,37	2	CORE BARREL	6,75	21,33
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 274,31

BOTTOM HOLE ASSEMBLIES USED ON WELL 31/4-11 PO: 1

BHA no. 17: No. / Element / OD(in) / Length(m) Depth In: 2240 m MD Out: 2316 m MD

1	BD445	8,5	0,37	2	DOWN HOLE MOTOR WITH ST/	6,75	10,43
3	LOGGING WHILE DRILLING TOOL	8,25	31,17	4	NON MAG. COLLAR	6,75	9,01
5	X-OVER	6,437	0,23	6	DRILL COLLAR STEEL	6,5	84,74
7	X-OVER	6,5	0,73	8	JAR	6,5	9,45
9	X-OVER	6,5	0,57	10	DRILL COLLAR STEEL	6,5	18,89
11	X-OVER	6,375	0,44	12	HWDP	5,0	137,56

Reason pulled: CORE POINT Sum: 303,59

BHA no. 18: No. / Element / OD(in) / Length(m) Depth In: 2316 m MD Out: 2344 m MD

1	FC264RILI	8,5	0,37	2	CORE BARREL	6,75	30,12
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: NEW CORE/FULL BARREL Sum: 283,10

BHA no. 19: No. / Element / OD(in) / Length(m) Depth In: 2343 m MD Out: 2361 m MD

1	FC264RILI	8,5	0,37	2	CORE BARREL	6,75	21,33
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: NEW CORE/FULL BARREL Sum: 274,31

BHA no. 20: No. / Element / OD(in) / Length(m) Depth In: 2361 m MD Out: 2370 m MD

1	FC264RILI	8,5	0,37	2	CORE BARREL	6,75	21,33
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: CORE JAMMED Sum: 274,31

BHA no. 21: No. / Element / OD(in) / Length(m) Depth In: 2370 m MD Out: 2377 m MD

1	FC264RILI	8,5	0,37	2	CORE BARREL	6,75	21,33
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: CORE JAMMED Sum: 274,31

BHA no. 22: No. / Element / OD(in) / Length(m) Depth In: 2377 m MD Out: 2395 m MD

1	FC264RILI	8,5	0,37	2	CORE BARREL	6,75	21,33
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: NEW CORE/FULL BARREL Sum: 274,31

BOTTOM HOLE ASSEMBLIES USED ON WELL 31/4-11 PO: 1

BHA no. 23: No. / Element / OD(in) / Length(m) Depth In: 2395 m MD Out: 2413 m MD

1	FC264RILI	8,5	0,37	2	CORE BARREL	6,75	21,33
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: NEW CORE/FULL BARREL Sum: 274,31

BHA no. 24: No. / Element / OD(in) / Length(m) Depth In: 2413 m MD Out: 2431 m MD

1	FC264RILI	8,5	0,37	2	CORE BARREL	6,75	21,33
3	X-OVER	6,437	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,375	0,44	10	HWDP	5,0	137,56

Reason pulled: REACHED KICK OFF POINT Sum: 274,31

BHA no. 25: No. / Element / OD(in) / Length(m) Depth In: 2431 m MD Out: 2635 m MD

1	MXLR09DDT	8,5	0,24	2	DOWN HOLE MOTOR WITH STA	6,75	10,43
3	NON MAG. STAB	8,25	1,56	4	LOGGING WHILE DRILLING TO(	8,25	31,17
5	NON MAG. COLLAR	6,75	9,01	6	X-OVER	6,437	0,23
7	DRILL COLLAR STEEL	6,5	84,74	8	X-OVER	6,5	0,73
9	JAR	6,5	9,45	10	X-OVER	6,5	0,57
11	DRILL COLLAR STEEL	6,5	18,89	12	X-OVER	6,375	0,44
13	HWDP	5,0	137,56				

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 305,02

BHA no. 26: No. / Element / OD(in) / Length(m) Depth In: 2635 m MD Out: 2635 m MD

1	MXLR09DDT	8,5	0,24	2	NEAR BIT STAB	8,5	1,59
3	X-OVER	6,5	0,23	4	DRILL COLLAR STEEL	6,5	84,74
5	X-OVER	6,5	0,73	6	JAR	6,5	9,45
7	X-OVER	6,5	0,57	8	DRILL COLLAR STEEL	6,5	18,89
9	X-OVER	6,5	0,44	10	HWDP	5,0	137,56

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 254,44

BHA no. 27: No. / Element / OD(in) / Length(m) Depth In: 2835 m MD Out: 3271 m MD

1	BD445	8,5	0,34	2	DOWN HOLE MOTOR WITH STA	8,375	7,67
3	LOGGING WHILE DRILLING TOOL	6,75	19,93	4	NON MAG. COLLAR	6,75	9,07
5	X-OVER	6,437	0,23	6	DRILL COLLAR STEEL	6,5	84,74
7	X-OVER	6,5	0,73	8	JAR	6,5	9,45
9	X-OVER	6,5	0,59	10	DRILL COLLAR STEEL	6,5	18,89
11	X-OVER	6,375	0,44	12	HWDP	5,0	146,25
13	FLOAT SUB	6,75	0,79	14	NON MAG. STAB	8,063	1,91

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 301,03

BHA no. 28: No. / Element / OD(in) / Length(m) Depth In: 213 m MD Out: 213 m MD

1	EXTERNAL CUTTER	11,75	2,93	2	REVERSE JET SUB	8,0	0,90
3	PIN-PIN SUB	8,0	0,56	4	DOWNHOLE MOTOR	9,5	8,67
5	BUMPER SUB	8,0	1,56	6	DRILL COLLAR STEEL	8,0	55,89
7	X-OVER	6,125	0,76				

Reason pulled: Sum: 71,27

Norsk Hydro

2001-08-07

BOTTOM HOLE ASSEMBLIES USED ON WELL 31/4-11 PO: 1

BHA no. 29: No. / Element / OD(in) / Length(m) Depth In: 213 m MD Out: 213 m MD

1	EXTERNAL CUTTER	11,75	4,53	2	REVERSE JET SUB	8,0	0,90
4	DOWNHOLE MOTOR	9,5	8,67	5	BUMPER SUB	8,0	1,56
6	DRILL COLLAR STEEL	8,0	55,89	7	X-OVER	6,125	0,76

Reason pulled: Sum: 72,31

CEMENT SLURRY REPORT ON WELL 31/4-11 PO: 1

Date	CsgSize	Jobtype	Slurry Type	Pumped Volume [m3]	Density [sg]	BHCT [DegC]	Yield [l/100 kg]	Additive	Unit	Additives [../100 kg Cement]	Additives [../m3 Slurry]
2000-07-27	30"	CASING CEMENTING	LEAD	24,00	1,56	7,00	129,63	A-3L	l	3,55	
								FP-14L	l	0,20	
			TAIL SLURRY	20,50	1,95	7,00	74,74	A-7L	l	3,55	
								FP-14L	l	0,20	
			DISPLACEMENT			7,00					
2000-07-31	13 3/8"	CASING CEMENTING	DISPLACEMENT		1,03	32,00					
			LEAD	127,40	1,44	32,00	169,23	A-3L	l	5,33	
								FP-14L	l	0,20	
								R-15L	l	1,10	
			TAIL SLURRY	26,90	1,90	32,00	76,60	FP-14L	l	0,20	
2000-08-13	9 5/8"	CASING CEMENTING	TAIL SLURRY	17,00	1,90	50,00	82,02	R-12L	l	0,95	
								FL45LN	l	6,50	
								FP14L	l	0,20	
								CD-31L	l	0,65	
								MICRO	l	11,00	
			DISPLACEMENT		1,50	50,00					
2000-09-04	UNDEFINED	PLUG IN OPEN HOLE	SPACER		1,03	74,00					
			TAIL SLURRY	10,00	1,90	74,00	82,50	CD-31L	l	0,65	
								FL45LN	l	7,00	
								FP-14L	l	0,20	
								MICRO	l	12,00	
								R-12L	l	1,05	
			DISPLACEMENT		1,20	74,00					
2000-09-05	UNDEFINED	PLUG IN OPEN HOLE	SPACER		1,03	69,00					
			TAIL SLURRY	10,00	1,90	69,00	82,50	CD-31L	l	0,65	
								FL45LN	l	7,00	
								FP-14L	l	0,20	
								MICRO	l	12,00	
								R-12L	l	1,05	
			DISPLACEMENT		1,20	69,00					
2000-09-05	UNDEFINED	PLUG IN CASED TO OPEN HOLE	SPACER		1,03	66,00					

CEMENT SLURRY REPORT ON WELL 31/4-11 PO: 1

Date	CsgSize	Jobtype	Slurry Type	Pumped Volume [m3]	Density [sg]	BHCT [DegC]	Yield [l/100 kg]	Additive	Unit	Additives [../100 kg Cement]	Additives [../m3 Slurry]
2000-09-05	UNDEFINED	PLUG IN CASED TO OPEN HOLE	TAIL SLURRY	9,00	1,90	66,00	82,47	CD-31L	l	0,65	
								FL45LN	l	7,00	
								FP-14L	l	0,20	
								MICRO	l	12,00	
								R-12L	l	0,90	
			DISPLACEMENT		1,20	66,00					
2000-09-06	9 5/8"	PLUG IN CASED HOLE	SPACER		1,03	66,00					
			TAIL SLURRY	7,50	1,90	66,00	82,47	CD-31L	l	0,65	
								FL45LN	l	7,00	
								FP-14L	l	0,20	
								MICRO	l	12,00	
								R-12L	l	0,85	
			DISPLACEMENT			66,00					
2000-09-08	13 3/8"	PLUG IN CASED HOLE	SPACER		1,03	13,00					
			TAIL SLURRY	15,50	1,95	13,00	74,73	A-7L	l	3,50	
								FP-14L	l	0,20	
			DISPLACEMENT		1,20	13,00					

CEMENT CONSUMPTION PER JOB ON WELL 31/4-11 PO: 1

Date	CsgSize	Job Type	Cement/ Additive	Description	Unit	Actual Amount Used
2000-07-27	30"	CASING CEMENTING	A-3L	EXTENDER: LIQUID LODENSE	l	850
			A-7L	ACCELERATOR: LIQUID CACL2	l	1160
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	121
			G	API CLASS G	MT	50
2000-07-31	13 3/8"	CASING CEMENTING	A-3L	EXTENDER: LIQUID LODENSE	l	4240
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	283
			G	API CLASS G	MT	113
			R-15L	RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DE	l	699
2000-08-13	9 5/8"	CASING CEMENTING	CD-31L	DISPERSANT: CD-31L LIQUID	l	187
			FL45LN	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEG	l	1347
			FP14L	FP-14L	l	131
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	4100
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D	l	257
2000-09-04	NDEFINE	PLUG IN OPEN HOLE	CD-31L	DISPERSANT: CD-31L LIQUID	l	253
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	111
			FL45LN	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEG	l	1133
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D	l	253
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	2487
2000-09-05	NDEFINE	PLUG IN OPEN HOLE	CD-31L	DISPERSANT: CD-31L LIQUID	l	80
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	1667
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D	l	133
			FL45LN	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEG	l	870
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	43
2000-09-05	NDEFINE	PLUG IN CASED TO OPEN HOLE	CD-31L	DISPERSANT: CD-31L LIQUID	l	105
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D	l	0
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	1522
			FL45LN	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEG	l	800
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	44
2000-09-06	9 5/8"	PLUG IN CASED HOLE	CD-31L	DISPERSANT: CD-31L LIQUID	l	64
			FL45LN	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEG	l	645
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	21
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	940
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 D	l	92
2000-09-08	13 3/8"	PLUG IN CASED HOLE	A-7L	ACCELERATOR: LIQUID CACL2	l	819
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	67

TOTAL CONSUMPTION OF CEMENT ADDITIVES ON WELL 31/4-11 PO: 1

Section	Cement/Additive	Unit	Total Amount Used
36"	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	121,00
	EXTENDER: LIQUID LODENSE	l	850,00
	API CLASS G	MT	50,00
	ACCELERATOR: LIQUID CACL2	l	1160,00
17 1/2"	RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DEGC	l	699,00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	283,00
	API CLASS G	MT	113,00
	EXTENDER: LIQUID LODENSE	l	4240,00
9 5/8"	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEGC	l	1347,00
	FP-14L	l	131,00
	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION	l	4100,00
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC	l	257,00
	DISPERSANT: CD-31L LIQUID	l	187,00
8 1/2"	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION	l	6616,00
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC	l	478,00
	ACCELERATOR: LIQUID CACL2	l	819,00
	DISPERSANT: CD-31L LIQUID	l	502,00
	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEGC	l	3448,00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	286,00

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 31/4-11 PO: 1

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

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2000-07-27 23:00	283	283	BENTONITE MUD								0	0			0,0				
2000-07-28	362	362	SPUD MUD	100,0	1,03						0	0			50,0				

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

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2000-07-29	1087	1087	SPUD MUD	100,0	1,03						0	0			50,0				
2000-07-31	1103	1103	SPUD MUD	100,0	1,03						0	0							

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

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2000-08-01 17:00	1100	1100	GLYDRIL	70,0	1,32		56	43	35	26	0	0	11	10	50,0	13,0	15,0	3,5	6,0
2000-08-02 21:00	1600	1598	GLYDRIL	59,0	1,50	35,0	78	60	50	40	0	0	15	13	50,0	18,0	21,0	6,0	10,0
2000-08-03 22:15	2034	1946	GLYDRIL	55,0	1,51	48,0	75	55	47	35	0	0	12	10	50,0	20,0	17,5	5,0	9,5
2000-08-04 22:00	2121	1998	GLYDRIL	62,0	1,50	49,0	88	65	54	41	0	0	15	12	50,0	23,0	21,0	6,0	12,0
2000-08-05 21:00	2135	2006	GLYDRIL	75,0	1,50	25,0	83	61	52	40	0	0	15	12	50,0	22,0	19,5	6,0	12,0
2000-08-06 14:35	2139	2008	GLYDRIL	73,0	1,50	27,0	81	60	52	39	0	0	14	12	50,0	21,0	19,5	6,0	12,0
2000-08-07 23:00	2152	2016	GLYDRIL	73,0	1,50	27,0	81	60	50	38	0	0	14	11	50,0	21,0	19,5	5,5	12,5
2000-08-08 21:00	2163	2022	GLYDRIL	75,0	1,50	24,0	83	62	53	40	0	0	14	12	50,0	21,0	20,5	6,5	13,5
2000-08-09 16:00	2176	2030	GLYDRIL	71,0	1,50	30,0	82	60	52	39	0	0	13	11	50,0	22,0	19,0	6,5	12,0
2000-08-10 17:00	2176	2030	GLYDRIL	60,0	1,50	39,0	83	61	51	38	0	0	13	11	50,0	22,0	19,5	6,0	12,5
2000-08-12	2176	2030	GLYDRIL								0	0			50,0				

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

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2000-08-13	2179	2031	GLYDRIL								0	0			50,0				
2000-08-14	2205	2046	GLYDRIL								0	0			50,0				
2000-08-15	2240	2066	GLYDRIL				58	44	37	28	0	0	10	8	50,0	14,0	15,0	4,0	6,0
2000-08-16 22:00	2316	2107	GLYDRIL	59,0	1,20	33,0	60	46	39	29	0	0	10	9	50,0	14,0	16,0	5,0	7,0

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 31/4-11 PO: 1

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

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2000-08-17 23:00	2343	2122	GLYDRIL	70,0	1,20	25,0	55	41	35	26	0	0	9	8	50,0	14,0	13,5	4,0	6,0
2000-08-18 22:00	2370	2136	GLYDRIL	70,0	1,21	22,0	55	41	35	26	0	0	9	7	50,0	14,0	13,5	3,5	6,5
2000-08-19	2398	2151	GLYDRIL	72,0	1,20	24,0	56	42	35	27	0	0	9	8	50,0	14,0	14,0	4,0	6,5
2000-08-20 23:00	2431	2168	GLYDRIL	74,0	1,20	24,0	57	43	36	27	0	0	9	8	50,0	14,0	14,5	4,0	6,5
2000-08-21	2607	2281	GLYDRIL	74,0	1,20	36,0	64	48	40	30	0	0	11	9	50,0	16,0	16,0	5,0	8,5
2000-08-22 19:00	2835	2441	GLYDRIL	76,0	1,21	35,0	71	53	45	34	0	0	11	9	50,0	18,0	17,5	5,0	9,5
2000-08-23 22:00	2835	2441	GLYDRIL	88,0	1,21	22,0	65	48	40	30	0	0	10	8	50,0	17,0	15,5	4,5	8,0
2000-08-24 22:00	2835	2441	GLYDRIL	93,0	1,21	20,0	65	48	40	30	0	0	10	8	50,0	17,0	15,5	4,5	7,0
2000-08-25 22:00	2835	2441	GLYDRIL	93,0	1,21	20,0	65	48	40	30	0	0	10	8	50,0	17,0	15,5	4,5	7,0
2000-08-26 22:00	2835	2441	GLYDRIL	97,0	1,21	21,0	63	47	39	30	0	0	10	8	50,0	16,0	15,5	4,5	7,5
2000-08-27 20:00	2835	2441	GLYDRIL	99,0	1,20	18,0	66	48	40	30	0	0	11	9	50,0	18,0	15,0	5,0	8,0
2000-08-28 21:00	2835	2441	GLYDRIL	68,0	1,21	24,0	59	44	37	29	0	0	10	8	50,0	15,0	14,5	4,5	7,0
2000-08-29 21:00	2835	2441	GLYDRIL	68,0	1,20	24,0	59	44	37	29	0	0	10	8	50,0	15,0	14,5	4,5	7,0
2000-08-30 20:30	2835	2441	GLYDRIL	72,0	1,21	21,0	60	45	38	29	0	0	10	8	50,0	15,0	15,0	4,5	7,0
2000-08-31 18:00	2835	2441	GLYDRIL	69,0	1,20		59	44	38	27	0	0	10	8	50,0	15,0	14,5	4,5	7,0
2000-09-01 19:00	2835	2441	GLYDRIL	70,0	1,21		60	45	39	30	0	0	10	8	50,0	15,0	15,0	4,5	7,0
2000-09-02 21:00	2835	2441	GLYDRIL	70,0	1,21	20,0	60	45	39	29	0	0	10	8	50,0	15,0	15,0	4,5	7,0
2000-09-03 21:45	3129	2655	GLYDRIL	68,0	1,21	38,0	64	49	43	33	0	0	12	10	50,0	15,0	17,0	5,5	10,0

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

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2000-09-04 15:00	3271	2765	GLYDRIL		1,21		122	93	83	68	0	0	42	37	50,0	29,0	32,0		
2000-09-05 14:30	3271	2765	GLYDRIL	70,0	1,21	25,0	59	45	38	29	0	0	10	9	50,0	14,0	15,5	5,0	8,5
2000-09-06 22:00	3271	2765	GLYDRIL	70,0	1,21	23,0	55	42	35	27	0	0	9	8	50,0	13,0	14,5	4,5	8,0
2000-09-07 22:00	3271	2765	GLYDRIL	70,0	1,21	23,0	55	42	35	27	0	0	9	8	50,0	13,0	14,5	4,5	8,0
2000-09-08 15:00	3271	2765	GLYDRIL	65,0	1,23		55	41	35	27	0	0	9	8	50,0	14,0	13,5	4,5	8,0
2000-09-09 15:00	3271	2765	GLYDRIL	65,0	1,23		55	41	35	27	0	0	9	8	50,0	14,0	13,5	4,5	8,0
2000-09-10		0	GLYDRIL				0	0	0	0	0	0	0	0	50,0				
2000-09-11		0	GLYDRIL				0	0	0	0	0	0	0	0	50,0				

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 31/4-11 PO: 1

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

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
2000-07-27 23:00	283	283	BENTONITE MUD						/																
2000-07-28	362	362	SPUD MUD	1,03					/																

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]
2000-07-29	1087	1087	SPUD MUD	1,03					/																
2000-07-31	1103	1103	SPUD MUD	1,03					/																

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]
2000-08-01 17:00	1100	1100	GLYDRIL	1,32	4,0		1		/		0,3	0,1	1,0			72000	900			14,0		9,0	29	4,0	54
2000-08-02 21:00	1600	1598	GLYDRIL	1,50	4,0		1		/		0,1	0,1	1,0			78000	950			20,5		9,0	35	4,0	98
2000-08-03 22:15	2034	1946	GLYDRIL	1,51	3,9		1		/			0,0	1,0			93000	840			21,6		9,0	36	4,0	108
2000-08-04 22:00	2121	1998	GLYDRIL	1,50	3,7		1		/			0,0	1,0			91000	400			21,4		9,0	37	4,0	119
2000-08-05 21:00	2135	2006	GLYDRIL	1,50	3,6		1		/		0,1	0,0	1,0			92000	440			21,4		9,0	37	4,0	117
2000-08-06 14:35	2139	2008	GLYDRIL	1,50	3,6		1		/		0,1	0,0	1,0			91000	540			21,0		9,0	38	4,0	97
2000-08-07 23:00	2152	2016	GLYDRIL	1,50	3,7		1		/		0,1	0,0	1,0			92000	480			21,0		9,0	38	4,0	95
2000-08-08 21:00	2163	2022	GLYDRIL	1,50	3,2		1		/		0,1	0,0	1,0			90000	520			21,0		9,0	38	4,0	100
2000-08-09 16:00	2176	2030	GLYDRIL	1,50	3,4		1		/			0,0	1,0			90000	600			21,0		9,0	39	4,0	100
2000-08-10 17:00	2176	2030	GLYDRIL	1,50	3,4		1		/			0,0	1,0			93000	440			21,4		8,0	39	4,0	115
2000-08-12	2176	2030	GLYDRIL						/																

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]
2000-08-13	2179	2031	GLYDRIL						/																
2000-08-14	2205	2046	GLYDRIL						/																
2000-08-15	2240	2066	GLYDRIL		3,0		1		/	8,6		0,0	1,5			86000	240			10,5			14		25
2000-08-16 22:00	2316	2107	GLYDRIL	1,20	3,6		1		/		0,0	0,0	2,0			86000	240			11,0			21		52
2000-08-17 23:00	2343	2122	GLYDRIL	1,20	3,1		1		/		0,0	0,0	1,0			88000	360			11,5			21		67

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 31/4-11 PO: 1

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]
2000-08-18 22:00	2370	2136	GLYDRIL	1,21	3,9		1		/			0,0	2,0			86000	400			11,6			21		68
2000-08-19	2398	2151	GLYDRIL	1,20	3,7		1		/			0,0	2,0			86000	400			11,0			21		51
2000-08-20 23:00	2431	2168	GLYDRIL	1,20	3,6		1		/			0,0	2,0			86000	400			11,2			21		62
2000-08-21	2607	2281	GLYDRIL	1,20	3,1		1		/			0,0	2,0			86000	600			11,6			14		80
2000-08-22 19:00	2835	2441	GLYDRIL	1,21	3,1		1		/			0,0	2,0			93000	400			11,8			21		62
2000-08-23 22:00	2835	2441	GLYDRIL	1,21	3,1		1		/			0,0	2,0			93000	400			11,8			21		55
2000-08-24 22:00	2835	2441	GLYDRIL	1,21	2,4		1		/			0,0	2,0			93000	400			11,8			21		55
2000-08-25 22:00	2835	2441	GLYDRIL	1,21	2,4		1		/			0,0	2,0			93000	400			11,8			21		55
2000-08-26 22:00	2835	2441	GLYDRIL	1,21	2,4		1		/		0,0	0,0	2,0			92000	400			12,0			21		75
2000-08-27 20:00	2835	2441	GLYDRIL	1,20	2,8		1		/		0,0	0,0	2,0			87000	420			11,8			18		94
2000-08-28 21:00	2835	2441	GLYDRIL	1,21	2,7		1		/		0,0	0,0	2,0			97000	400			11,7			21		45
2000-08-29 21:00	2835	2441	GLYDRIL	1,20	2,7		1		/		0,0	0,0	2,0			98000	400			11,7			21		59
2000-08-30 20:30	2835	2441	GLYDRIL	1,21	2,8		1		/		0,0	0,0	2,0			98000	400			11,7			21		43
2000-08-31 18:00	2835	2441	GLYDRIL	1,20	2,8		1		/		0,0	0,0	2,0			97000	400			11,5			21		51
2000-09-01 19:00	2835	2441	GLYDRIL	1,21	2,8		1		/		0,0	0,0	2,0			97000	400			11,7			21		45
2000-09-02 21:00	2835	2441	GLYDRIL	1,21	2,8		1		/		0,0	0,0	2,0			98000	400			11,7			21		43
2000-09-03 21:45	3129	2655	GLYDRIL	1,21	3,0		1		/			0,0	2,0			85000	380			12,5			21		114

Hole section : P&A **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]
2000-09-04 15:00	3271	2765	GLYDRIL	1,21					/																
2000-09-05 14:30	3271	2765	GLYDRIL	1,21	3,0		1		/			0,0	2,0			84000	460			12,4			21		116
2000-09-06 22:00	3271	2765	GLYDRIL	1,21	3,3		1		/			0,0	2,0			84000	650			12,4			21		116
2000-09-07 22:00	3271	2765	GLYDRIL	1,21	3,3		1		/			0,0	2,0			84000	650			12,4			21		116
2000-09-08 15:00	3271	2765	GLYDRIL	1,23	3,5		1		/			0,0	2,0			82000	650			12,6			21		100
2000-09-09 15:00	3271	2765	GLYDRIL	1,23	3,5		1		/			0,0	2,0			82000	650			12,6			21		100
2000-09-10		0	GLYDRIL						/								650			12,6			21		2271
2000-09-11		0	GLYDRIL						/																

TOTAL CONSUMPTION OF MUD ADDITIVES ON WELL 31/4-11 PO: 1

Section	Product/ Additive	Unit	Total Amount Used
17 1/2"	CMC EHV	kg	925,00
	M-I BAR	kg	93000,00
	SODA ASH	kg	150,00
	WYOMING BENTONITE	kg	3000,00
12 1/4"	CELPOL ESL	kg	3550,00
	CMC EHV	kg	125,00
	DUOTEC NS	kg	1250,00
	GLYDRIL MC	l	12000,00
	KCL BRINE	l	160000,00
	KCL POWDER	kg	27000,00
	M-I BAR	kg	182000,00
	NUTPLUG C	kg	250,00
	POTASSIUM CARBONATE	kg	950,00
	SODA ASH	kg	950,00
8 1/2"	BARITE	kg	4000,00
	CELPOL ESL	kg	7025,00
	CITRIC ACID	kg	375,00
	DUOTEC NS	kg	650,00
	GLYDRIL MC	l	4500,00
	KCL BRINE	l	329000,00
	KCL POWDER	kg	7000,00
	M-I BAR	kg	40000,00
	POTASSIUM CARBONATE	kg	1200,00
	RHODOPOL 23P	kg	1975,00
	SODA ASH	kg	375,00
	SODIUM BICARBONATE	kg	950,00
0.0	CITRIC ACID	kg	725,00
	M-I BAR	kg	2000,00
	RHODOPOL 23P	kg	50,00
	SODA ASH	kg	50,00
	SODIUM BICARBONATE	kg	725,00

LOGGING INFORMATION ON WELL 31/4-11

Hole size: 12 1/4"

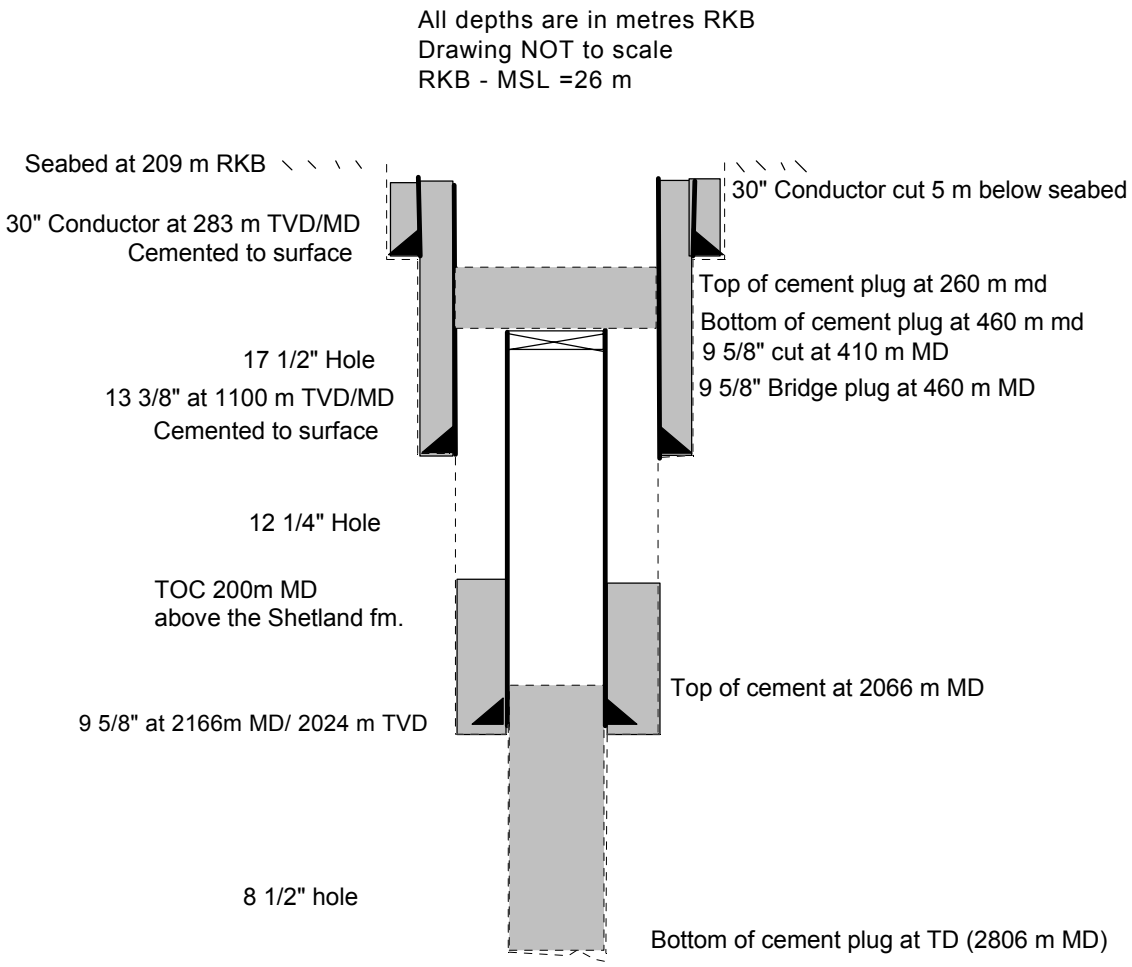
#	Run No.	Logging Company	Logged Bottom [m MD]	Logged Top [m MD]	Log Suite
1	1A		2005	1110	HALS/PEX
7	2A		2162	2157	RFT

Hole size: 8 1/2"

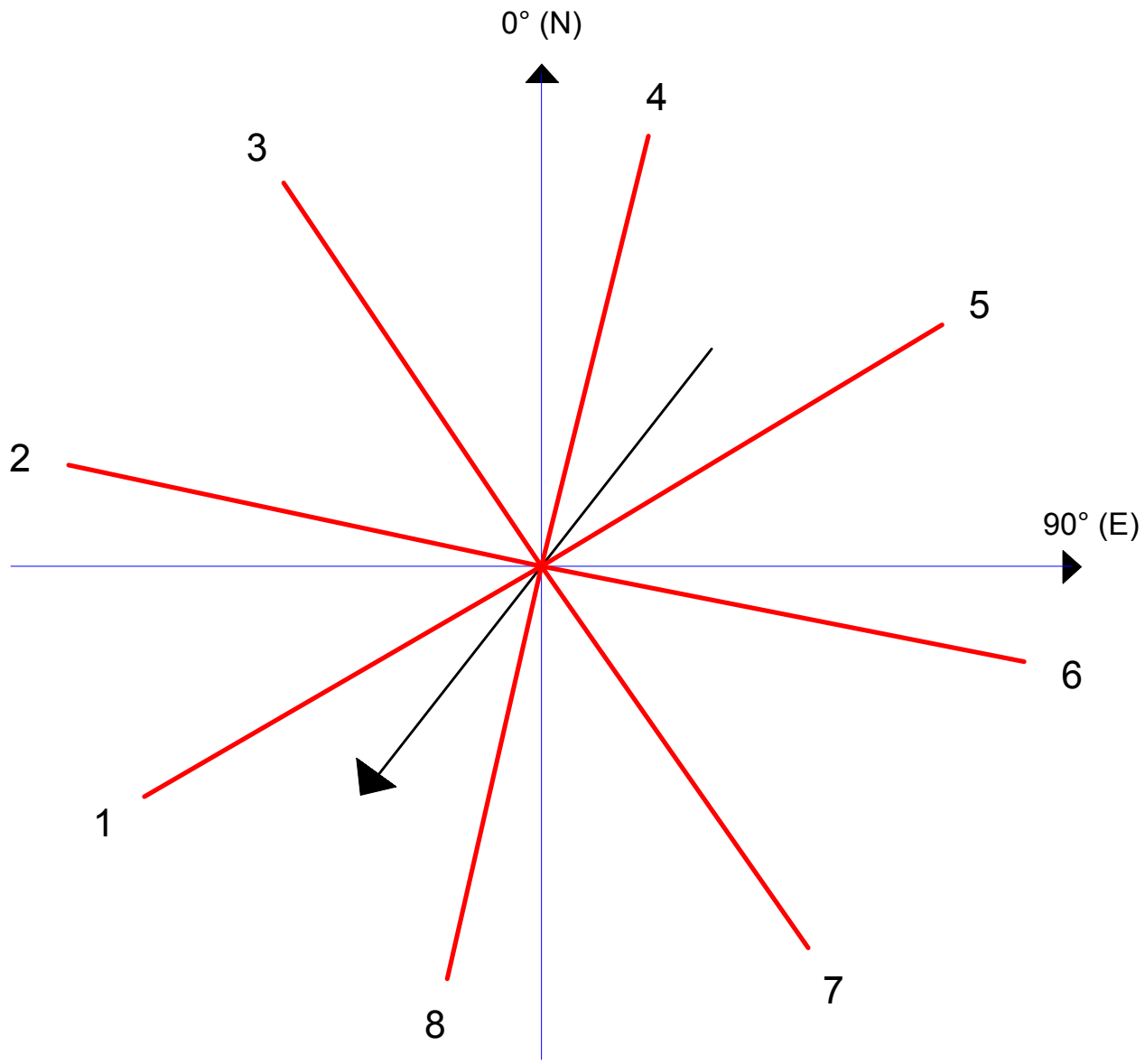
#	Run No.	Logging Company	Logged Bottom [m MD]	Logged Top [m MD]	Log Suite
2	2A		2835	2000	DSI
3	2A		2825	2000	VSP
4	2A		2362	2182,5	MDT
5	2B		2784,5	2178	MDT
6	2C		2701	2357	MDT
8	2D		2372,5	2182,5	MDT

LOT / FIT TEST ON WELL 31/4-11

Depth	Section	Date	Mudtype	Mudweight SG	Test pressure	LOT / FIT SG
1106,00	12¼"	2000-08-02	Glydril - KCl Brine	1,5	-	LOT 1,68
2179,00	8½"	2000-08-13	Glydril - KCl Brine	1,2	70 bar	FIT 1,55



Final Well Report Well 31/4-11	**Revision:0**	**Permanent Plug & Abandonment**



RIGHEADING 216 DEG.

ANCHOR NO		DIRECTION (DEG.)		LENGTH (m)	
	1		238		2014
	2		283		2087
	3		328		2095
	4		13		2045
	5		57		2054
	6		102		2123
	7		147		2108
	8		192		1954

Figure 3		RIG ANCHORS SCARABEO 6 31/4-11	**HYDRO**

2001-08-07

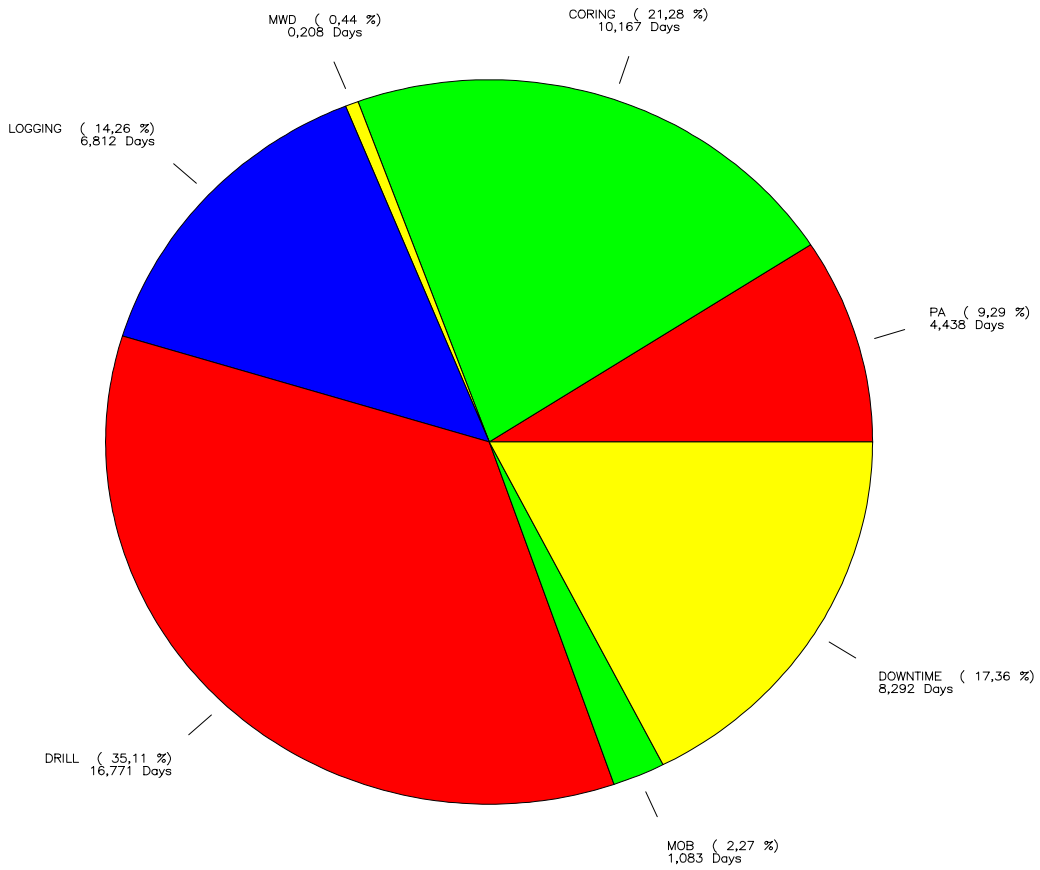


Figure 4		Time Distribution 31/4-11	**HYDRO**

SECTION C

COMPOSITE LOG

LITHOLOGY LOG

CORE LOG

POST SITE SURVEY LOG