



# **Final Well Report**

**Well 30/6-27**



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WELL 30/6-27  
PL 053

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## PREFACE

Licence PL 053

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

Norsk Hydro ASA(operator)	22.23462 %
Statoil ASA	14.00000 %
Petoro AS	50.78379 %
Total Fina Elf	8.65439 %
ExxonMobil	4.32720 %

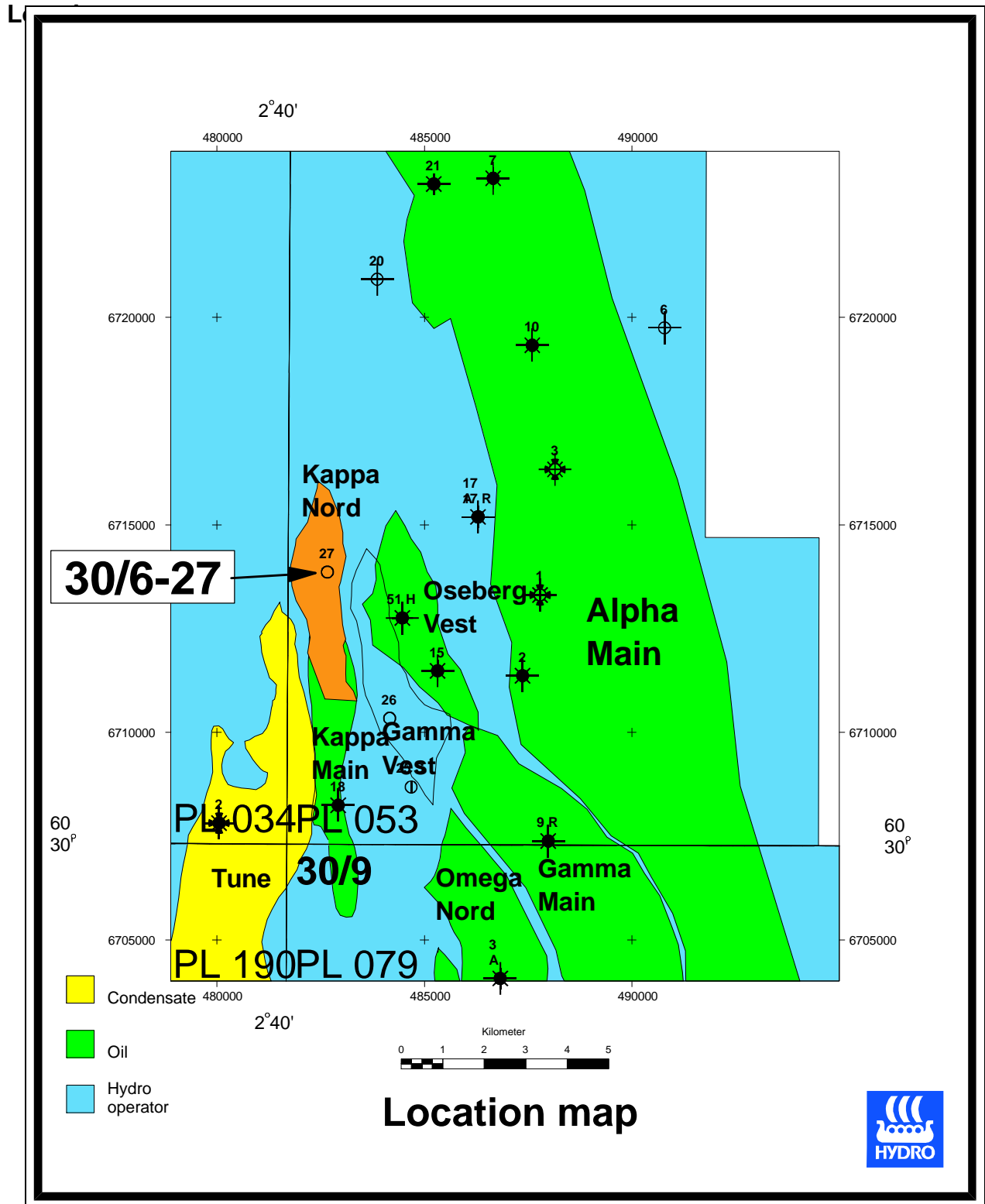
The well was drilled by Norsk Hydro ASA., on behalf of the group, during October 2001 (see Location Map, page 3).

All depths in this report are in mMD RKB (RKB elevation at Transocean Arctic is 24m) unless otherwise stated.



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<b>SUMMARY OF WELL DATA</b>	
LOCATION:	Geo: 60° 33' 28.85" N 02° 40' 45.60" E  UTM 6 713 759.6m N 482 415.2m E  ED 50, UTM Zone 31, CM 03°E
OPERATOR:	Norsk Hydro ASA
RIG:	Transocean Arctic
CONTRACTOR:	Transocean
KB ELEVATION (to MSL):	24m
WATER DEPTH (MSL):	112m
START OF OPERATIONS:	07.10.2001 @ 15:00 hrs
WELL SPUDDED:	08.10.2001 @ 00:30 hrs
WELL SIDETRACKED:	No Sidetrack
REACHED TD ON:	20.10.2001 @ 02:30 hrs
LEFT THE LOCATION / OFF COST:	30.10.2001 @ 20:30 hrs
STATUS:	Plugged and abandoned
FORMATION AT TD:	Lower Statfjord Formation
TD DRILLER (mRKB):	3432 m MD / 3378m TVD
TD LOGGER (mRKB):	N/A
DRILLING DEPTHS:	36" to 210.0m MD / 210.0m TVD 17½" to 1287.0m MD / 1287.0m TVD 12¼" to 3061.0m MD / 3007.5m TVD 8½" to 3432.0m MD / 3378.0m TVD
CASING DEPTHS:	30" to 210.0m MD / 210.0m TVD 13-3/8" to 1280.0m MD / 1280.0m TVD 9 5/8" to 3055.0m MD / 3001.5m TVD



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## **SECTION A**

## **GEOLOGY**



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## **APPENDICES**

- I Core descriptions
- II Well Summary
  - Geological Well Summary



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## **1 Objectives**

The well 30/6-27 was an exploration well, located in the Oseberg Field area, in block 30/6 on the Kappa Nord structure on PL053 Oseberg Unit.

The main objectives of the well was to prove sufficient volumes of oil and/or gas in The Statfjord Formation on the Kappa Nord structure for a joint sub sea development with the Kappa Main and Gamma Vest structures, and to confirm the seismic interpretation.

## **2 Results**

The well was spudded 08. October 2001 and reached a total depth of 3432m MD RKB in Lower Statfjord Fm. on 20. October 2001. The well was permanently plugged and abandoned as a discovery well 30.10.2001.

The main results were as follows:

- The well made an oil and gas discovery in the Upper Statfjord Fm. and an oil discovery in the Lower Statfjord Fm.
- Top reservoir was penetrated 49 m shallower than prognosed. This was mainly due to an erroneous seismic pick of the Statfjord horizon.
- The uppermost 25 m of the Statfjord Fm. may be missing due to a fault.
- A 50 m gas column and a 7 m oil column with an oil down-to situation was penetrated in the uppermost Statfjord Fm.
- A second gas/oil contact was detected in an underlying sandstone.
- The oil/water contact is not well defined due to mudstone rich part of the Statfjord Fm. A total oil column of 30 m is indicated.

A 5 m thick oil-bearing sandstone was penetrated in the Lower Statfjord Fm.



**E&P Norway**  
**OSEBERG EXPLORATION**  
**KAPPA NORD**

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GROUP	SERIES and FORMATION	m MD RKB	m TVD RKB	m MSL	Thickness m TVD
NORDLAND	Sea floor (Quaternary)	136,00	136,00	112,00	208,00
	Base Pleistocene	344,00	344,00	320,00	308,00
	Intra Pliocene Sand	Not present			
	Base Intra Pliocene Sand	Not present			
	UTSIRA Fm	652,00	652,00	628,00	295,00
HORDALAND		947,00	947,00	923,00	68,00
	SKADE Fm	1015,00	1015,00	991,00	32,90
	Base SKADE Fm	1048,00	1047,90	1023,90	187,00
	Intra Hordaland Sand	1235,00	1234,90	1210,90	68,00
	Base Intra Hordaland Sand	1303,00	1302,90	1278,90	
	GRID Fm	Not present			
	Base GRID Fm	Not present			
	Green Clay Marker	1825,00	1809,90	1785,90	180,40
Brown Marker	2025,00	1990,30	1966,30	23,40	
ROGALAND	BALDER Fm	2051,00	2013,70	1989,70	74,90
	SELE Fm	2133,00	2088,60	2064,60	103,00
	LISTA Fm	2241,00	2191,60	2167,60	132,20
	VÅLE Fm	2377,00	2323,80	2299,80	19,00
SHETLAND	EKOFISK Fm	2396,00	2342,80	2318,80	9,00
	JORSALFARE	2405,00	2351,80	2327,80	271,20
	KYRRE	2676,50	2623,00	2599,00	323,50
	TRYGGVASON	3000,00	2946,50	2922,50	94,80
DUNLIN (STATFJORD)	AMUNDSEN / BURTON / DRAKE	3095,00	3041,30	3017,30	6,00
	STATFJORD Fm	3101,00	3047,50	3023,30	
	TD	3432,00	3378,00	3354,00	

Table 2.1: Formation Tops (All depths from RKB)



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### **3 Biostratigraphy**

The biostratigraphical evaluation of well 30/6-27 was carried out by Millennia Ltd. The analysed interval is 1300m - 3432m TD RKB.

Micropaleontological and palynological analyses have formed the basis for the biostratigraphical interpretation of the well. The analyses were carried out on ditch cuttings and core samples. The results are documented in the report "Biostratigraphic analysis of the Norsk Hydro Well 30/6-27 (interval: 1300m -3432m TD) NOCS". 154 ditch cuttings samples and 4 core samples were analysed for palynology, and 154 ditch cuttings and 4 core samples were analysed for micropalaeontology. In general, alternating depths were selected for the palyno and micro samples. The evaluation also include three palyno samples taken at rig by ATP in the uppermost Jurassic section.

Tables 3.1 and 3.2 on pages 13-14 show a summarised geochronological and lithostratigraphical subdivision of the well. The interpretation is in accordance with Norsk Hydro's standard zonation for the area.

#### **Major points**

- The youngest sediments analysed at 1300 m are of Early Oligocene age
- The uppermost analysed sample in the Jurassic section (3095m) is of Early Pliensbachian age
- The oldest sediments at 3432m are of Rhaetian age
- The Rogaland Group was penetrated at 2051m
- The Shetland Group was penetrated at 2396m
- The Dunlin Group was penetrated at 3095m
- There is an unconformity between the Rogaland Group and the Shetland Group, where sediments from the earliest Early Paleocene are missing.
- A major unconformity is seen between the Shetland Group and the Dunlin Group, where sediments of Late Turonian age rest on Early Pliensbachian strata.



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**Biostratigraphic summary of the Statfjord Formation (3101m - 3432TD)**

Age: Sinemurian - Late Rhaetian

No dinoflagellate cysts or microfossils were found below 3095m. Below this depth Pollen and spores were dominant. The first downhole occurrence of common *Deltoidospora toralis* at 3100m may indicate Late Sinemurian age. At 3110m *Deltoidospora toralis* is dominant, indicating late Sinemurian age. The first downhole occurrence of *Trachysporites fuscus* at 3175m indicates earliest Early Sinemurian age. A decrease in *?Cerebropollenites* spp. at 3205m indicates Hettangian age from this depth. The presence of *Riccisporites tuberculatus* from 3280m is indicating Rhaetian age from this depth to TD.

The Statfjord Formation is assigned to palynozone: PJ2B - Tr1B

SAMPLE DEPTH m MD	PERIOD	AGE	Palyno Zone	Mikro Zone
	TERTIARY			
1300	Early Oligocene	Rupelian	PT7C-2	
1700	Late Eocene - Middle Eocene	Priabonian - Bartonian	PT6-PT5	
1725	Middle Eocene	Lutetian	PT4B	
1925	Early Eocene	Ypresian	PT3C-3	
2075	earliest Eocene	earliest Ypresian	PT3A	
2175	Late Paleocene	Thanetian	PT2C	
2310		Selandian	PT4A-4	
2390	Early Paleocene	Danian	PT1C-2	
		---UNCONFORMITY---		
2410	LATE CRETACEOUS	Late Maastrichtian		MK16
2530		Early Maastrichtian	PK9B.1	
2670		Late Campanian	PK8C	
2370		Middle Campanian	PK8B2	
2810		?Early Campanian	?PK8B1	
2890		Early Campanian	PK8B1	
2920		Late Santonian		MK10D
2940		Middle Santonian - Early Santonian		MK10A
2970		Coniacian	PK8A.1	
3080		Late Turonian	PK7A	MK8C
		---UNCONFORMITY---		
3095	EARLY JURASSIC	Early Pliensbachian	PJ2C	
3100		?Late Sinemurian	?PJ2B	
3110		Late Sinemurian - Early Sinemurian	PJ2B-PJ2A	
3175		Early Sinemurian	PJ2A1	
3205		Hettangian	PJ1	
3280	LATE TRIASSIC	Rhaetian	Tr1A	
3432TD				

Tabel 3.1: GEOCHRONOLOGICAL BREAKDOWN, WELL 30/6-26



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GROUP	FORMATION	MEMBER	DEPTH mMDRKB
Nordland			136
Hordaland			947
Rogaland	Balder		2051
	Sele		2133
	Lista		2241
	Våle		2377
Shetland	Ekofisk		2405
	Jorsalfar		2405
	Kyrre		2676.5
	Tryggvason		3000
Dunlin	Amundsen		3095
	Statfjord		3101
			TD 3432

*Tabel 3.2 LITHOSTRATIGRAPHICAL BREAKDOWN, WELL 30/6-27*



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## **4 Lithostratigraphy**

All depths are in mMD RKB (RKB elevation is 24 m).

This summary is compiled predominantly from MWD log interpretation and ditch cuttings descriptions. A total of 1 conventional core was cut in the interval from 2690 m to 2717,7 m in the well, see Table 2.1.

The well was drilled with returns to seabed from the seafloor at 136 m to 1287 m before setting 13 3/8" casing at 1280 m. The first drill cuttings samples were taken at 1300 m. The lithology interpretation is based on MWD logs and cuttings descriptions.

### **4.1 Nordland Group 136-947m MD (136.0-947.0 m TVD)**

**136-652 m MD: From MWD logs: Clays interbedded with Sands.**

#### **4.1.1 Utsira Formation 652-947 m MD (652.0-947.0 m TVD)**

**652-947 m MD: From MWD logs: Sands**





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## **4.2 Hordaland Group 947-2051 m MD (947.0-2013.7 m TVD)**

### **Undifferentiated Hordaland 947-1015 m MD (947.0-1015.0 m TVD)**

From MWD logs : Clays

#### **4.2.1 Skade Formation 1015-1048 m MD (1014.9-1047.9 m TVD)**

##### **Undifferentiated Hordaland 1048 -1235 m MD (1047.9-1234.9 m TVD)**

From MWD logs: Claystones with minor Sand beds

#### **4.2.2 Intra Hordaland Sand 1235-1303 m MD (1234.9-1302.9 m TVD)**

**1235-1287 m MD: From MWD logs: Sandstones with minor Claystone beds.**

**1287-1303 m MD: The interval comprises of Sandstones with Traces of Claystones.**

Sst: med gry, pred clr trnsl Qtz, lse grn, f-m, occ crs, rndd, occ sbrnnd, mod srt, fri, r-Tr calc, gd por.

Clst: med dk gry-dk gry, brn gry, blk-y-sbblk, slily stky, sli lam, frm, mod hd.

### **Undifferentiated Hordaland 1303 -2051 m MD (1302.9-2013.7 m TVD)**

**1303-1375 m MD: The interval comprises of Claystones and Minor Sandstone beds**

Sst: med gry, pred clr trnsl Qtz, lse grn, f-m, occ crs, rndd, occ sbrnnd, mod srt, fri, r-Tr calc, gd por.

Clst: med dk gry-dk gry, brn gry, blk-y-sbblk, slily stky, sli lam, frm, mod hd.

Age: **Rupelian**

**1375-1625 m MD: The interval comprises of Sandstones and Claystones**

Sst: med gry-med lt gry, clr trnsl Qtz, m-crs, occ f, occ v crs, sbrnnd-rndd, pr-mod srt, occ wl srt, fri-lse, r-Tr calc, Tr Glauc, gd por.

Clst: med dk gry-brn gry, blk-y-sbblk, sft-frm, occ mod hd, slily stky, Tr micromic, Tr Glauc, non calc, occ sli calc, r pyr nod.

Age: **Rupelian**

**1625-1825 m MD: The interval comprises of Claystones and Dolomites**

Clst: med dk gry-med gry, lt brn gry-lt olv gry, olv blk-olv gry, grnsh blk-dk grnsh gry, blk-y-sbblk, sft-frm, r mod hd, Tr micromic, r sli slty, r Glauc, non calc, r sdy:f.

Dol: pl yel org-gry org, blk, frm, occ sli arg lam, microxln.

Age: **Rupelian/Priabonian-Bartonian/Lutetian**



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**1825-1925 m MD:            The interval comprises of Claystones with rare Dolomites**

Clst:            grnsh gry-dk grnsh gry, m blush gry-med dk gry, blky-sbblky, sft, non calc

Dol:            pl yel org-gry org, blky, frm, occ sli arg lam, microxln.

Age: **Lutetian/Ypresian**

**1925-2010 m MD:            The interval comprises of Claystones and Limestones**

Clst:            grnsh blk-olv blk, blky, r blush gry-grnsh gry, blky-sbblky, frm-mod hd, sli slty, r sdy,  
non calc, I.P. sli calc, r pyr nod

Ls:            mod yelsh brn-dk yelsh brn, blky, frm, microxln, r sdy

Age: **Ypresian**

**2010-2051 m MD:            The interval comprises of Claystones and Limestones**

Clst(1):        grnsh blk-olv blk, blky, r blush gry-grnsh gry, blky-sbblky, frm-mod hd, sli slty, r sdy,  
non calc, I.P. sli calc, r pyr nod

Clst(2):        dusky brn, blky, frm-mod hd, sli slty, non calc

Ls:            mod yelsh brn-dk yelsh brn, blky, frm, microxln, r sdy

Age: **Ypresian**



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### **4.3 Rogaland Group 2051-2396 m MD (2013.7- 2342.8m TVD)**

#### **4.3.1 Balder Formation 2051-2133 m MD (2013.7-2088.6 m TVD)**

**2051-2150 m MD: The interval comprises of Claystones, Tuff and Limestones**

Clst: grysh blk-olv blk, blk, frm, sli slty, non calc, micropyr, r pyr nod  
Tf: m dk gry-m blush gry, blk-sbblk, sft, r blk spec, sli slty, sli sdy, non-sli calc  
Ls: mod yelsh brn-dk yelsh brn, blk, frm, microxln, r sdy

Age: **Ypresian**

#### **4.3.2 Sele Formation 2133-2241 m MD (2088.6-2191.6 m TVD)**

**2150-2225 m MD: The interval comprises of Claystones and Limestones with minor Sandstones**

Clst: m lt gry-m dk gry, grysh blk, sbblk, sft, sli slty, sli sdy, r Glauc, r calc  
Ls: m lt gry-m gry, sbblk, sft, sli arg, microxln.  
Sst: clr trnsl Qtz, f-m, r crs, sbrn, lse

Age: **Ypresian/Thanetian**

#### **4.3.3 Lista Formation 2241-2377 m MD (2191.6-2323.8 m TVD)**

**2225-2330 m MD: The interval comprises of Claystones and minor Limestones**

Clst(1): gn gry-dk gnsh gry, blk, sft-frm, r micropyr, r Glauc, non calc-calc, Tr foss spec  
Clst(2): dusky brn, blk, frm, non calc, r blk spec  
Ls: gnsh gry-lt gry, occ pl yel org, sbblk, sft-frm, pred arg, occ Tr micromic, microxln

Age: **Thanetian/Selandian**

**2330-2377 m MD: Claystones and Trace of Limestones**

Clst: med gry-med blu gry-olv gry, sbblk-blk, non-sli stky, frm, non-sli calc, r-Tr slty, vf carb frag, Tr micromic, Tr Glauc  
Ls: wh-occ lt gry, blk, frm, microxln.

Age: **Selandian/Danian**

#### **4.3.4 Våle Formation 2377-2396 m MD (2323.8-2342.8 m TVD)**

**2377-2396 m MD: Claystones and Trace of Limestones**

Clst: med gry-med blu gry-olv gry, sbblk-blk, non-sli stky, frm, non-sli calc, r-Tr slty, vf carb frag, Tr micromic, Tr Glauc  
Ls: wh-occ lt gry, blk, frm, microxln.

Age: **Selandian/Danian**



**E&P Norway**  
**OSEBERG EXPLORATION**  
**KAPPA NORD**

Classific.: INTERNAL E&P

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#### **4.4 Shetland Group 2396-3095m MD(2342.8-3041.3 m TVD)**

##### **4.4.1 Ekofisk Formation 2396-2405 m MD (2342.8-2351.8 m TVD)**

**2396-2405 m MD: The interval comprises of Limestones**

Ls: wh-occ lt gry, blk, frm, microxln.

Age: **Danian**

##### **4.4.2 Jordsalfare Formation 2405-2676.5 m MD (2351.8-2623.0 m TVD)**

**2405-2543 m MD: The interval comprises of Claystones and Trace of Limestones**

Clst: med gry-med blu gry-olv gry, sbblk-blk, non-sli stky, frm, non-sli calc, r-Tr slty, vf carb frag, Tr micromic, Tr Glauc

Ls: wh-occ lt gry, blk, frm, microxln.

Age: **Late Maastrichtian/Early Maastrichtian**

**2543-2645 m MD: The interval comprises of Claystones and minor Limestones**

Clst: med gry-brn gry, occ dk gnsh gry, olv gry-lt olv gry, sbblk-blk, frm, non-sli calc, r-occ sli slty, vf carb frag, r micromic

Ls: wh-occ lt gry, blk, frm, microxln.

Age: **Early Maastrichtian**

**2645-2670 m MD: The interval comprises of Claystones and minor Limestones**

Clst(1): med gry-brn gry, occ dk gnsh gry, olv gry-lt olv gry, sbblk-blk, frm, non-sli calc, r-occ sli slty, vf carb frag, r micromic

Clst(2) : lt brn-mod yel brn, blk, sft-frm, calc grad Mrl

Ls: wh-occ lt gry, blk, frm, microxln.

Age: **Early Maastrichtian/Late Campanian**

##### **4.4.3 Kyrre Formation 2676.5-3000 m MD (2623.0-2946.5 m TVD)**

**2670-2915 m MD: The interval comprises of Claystones and minor Limestones**

Clst: m dk gry-olv gry, m lt gry-lt olv gry, grad olv blk-grysh blk, blk, frm-mod hd, non calc-calc, non-pred sli slty, occ Tr micromic

Ls: lt gry-v lt gry, lt brnsh gry-lt brn, blk, sft-frm, occ arg, occ vf sdy-slty, microxln

Age: **Late Campanian/Early Campanian-Middle Campanian/Early Campian**

**2915-2978 m MD: The interval comprises of Claystones and Traces of Limestone**

Clst: grysh blk-blk, blk, frm-mod hd, sli lam, calc, I.P. sli slty, r micropyr, r micromic, r microfoss

Ls: lt brnsh gry-lt gry, blk, frm, arg, microxln



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Age: **Late Santonian/Early Santonian-Middle Santonian/Coniacian**

**4.4.4 Tryggvason Formation 3000-3095 m MD (2946.5-3041.3 m TVD)**

**2978-3015 m MD: The interval comprises of Claystones and Traces of Limestone**

Clst: grysh blk blk, blk, frm mod hd, sli lam, calc, I.P. sli slty, r micropyr, r micromic, r microfoss

Ls: lt brnsh gry lt gry, blk, frm, arg, microxln

Age: **Coniacian**

**3015-3030 m MD: The interval comprises of Claystones and Limestones**

Clst: grysh blk pred olv blk, blk, frm mod hd, sli lam, calc, I.P. sli slty, r micropyr, r micromic

Ls: dk yel brn dusky yel brn, blk, lam, mod hd, arg, sli slty, sli sdy, microxln

Age: **Coniacian**

**3030-3096 m MD: The interval comprises of Claystones and Limestone**

Clst(1): grysh blk pred olv blk, blk, frm mod hd, sli lam, calc-v calc grad Mrl, I.P. sli slty, r micropyr, r micromic

Clst(2): gnsh gry, blk, frm, microxln, non calc

Ls: brn blk drk yel brn, gry org pk lt gry, blk, frm, arg v arg, r microfoss, Tr slty, sli sdy, microxln

Age: **Coniacian/Late Turonian/Early Pliensbachian**



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#### **4.5 Dunlin Group 3095-3101m MD (3041.3-3047.5 m TVD)**

**3096-3121 m MD: The interval comprises of Claystones with minor Sandstones, Trace of Limestone**

Clst(1): gry blk-brn blk, blk, frm-mod hd, sli lam, non-occ sli calc, loc sli slty, carb  
Clst(2): m dk gry-m gry, blk, frm-mod hd, slty, occ calc, Tr micromic  
Sst: lt brn gry-lt gry, clr-trnsl occ smky Qtz, f-crs, bcm vf-f, sbrnnd-occ rndd, pr-mod srt, bcm wl-mod srt, fri-frm, calc cmt, occ slty, Kao Mtrx, Tr Pyr, Tr vf carb Frag  
Ls: m lt gry-lt brn gry, occ wh, blk, frm, arg, microxln

Age: **Early Pliensbachian/?Sinemurian/Early Sinemurian-Late Sinemurian**

#### **4.5.1 Statfjord Formation (3101-3375m MD / 3047.5-3432.0 m TVD)**

**3121-3166m MD: The interval consist of Sandstones with minor Claystones, rare Limestone**

Sst(1): lt brn-gry brn, m gry, clr-trnsl Qtz, f-v crs, pred m-v crs, sbang-sbrnnd, pr srt, fri-frm, occ sli calc, sli kao Mtrx, occ arg, occ vf carb lam, r Tr Pyr, r Tr micromic  
Sst(2): dk yel brn, gen clr Qtz, f-crs, ang-sbrnnd, mod srt, fri-mod hd, wk sil cmt, mic, r carb, fr -mod vis por  
Clst: m gry-gry blk, occ brn blk, blk, occ sli lam, non-occ sli calc, occ slty, occ carb, r micromic  
Ls: wh-v lt gry, blk, frm, vf sdy, microxln

Age: **Early Sinemurian-Late Sinemurian/Early Sinemurian**

**3167-3189m MD: The interval comprises of Sandstones interbedded with Claystones, Trace of Siltstone**

Sst(1): mod brn, gen clr Qtz, f, ang-sbrnnd, mod srt, mod hd, wk calc/dol cmt, Tr Kao cmt/Mtrx, mic, Tr carb, n.v.p.  
Sst(2): lt olv gry, clr Qtz, f, sbang-.sbrnnd, mod srt, mod hd, wk sil cmt, arg cmt/Mtrx, mic, n.v.p.  
Sst(3): dk yel brn, clr-mky Qtz, f-crs, Tr v crs, gen m-crs, ang-sbrnnd, pr srt, fri, mod calc cmt, arg I.P., mic Tr carb, pr vis por.  
Clst(1): dk gry-brn blk, hd, fid, non calc, Tr micromic, I.P. slty  
Clst(2): olv gry, hd, fis, non calc, micromic, I.P. slty, plt Rem/rooted  
Sltst: dk gry, nd, blk, non calc, I.P. lam, r vf sdy, micromic, r carb, gen v arg grad Clst

Age: **Early Sinemurian-Late Sinemurian/Early Sinemurian/Hettangian**





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**3189-3319m MD: The interval comprises Sandstones with interbeds of Claystones**

Sst(1): lt gry-m gry, clr-trnsl, occ mky Qtz, f-v crs, pred m-crs, ang-sbrndd, pr-mod srt, fri-lse, Tr sil cmt, loc Tr kao cmt, loc Tr Pyr, loc r Mic  
Sst(2): brn gry-dsky yel brn, olv gry, lt gry-m gry, clr-trnsl Qtz, f, r m, ang-sbrndd, mod srt, sil cmt, loc kao cmt, gen v arg, Tr carb, n.v.p.  
Sst(3): m gry-dk gry, clr-trnsl Qtz, vf-f, sbang-sbrndd, mod hd, arg, loc grd Slts, loc Mic  
Clst(1): dk gry-gry blk, brn blk-olv blk, blk, mod hd, non calc, loc sl slty, r micromic  
Clst(2): brn gry-brn blk, dsky yel brn, blk, mod hd, non calc, loc sl slty, I.P. vf sdy, Tr micromic, carb-v carb, loc grd Coaly Sh

Age: **Early Sinemrian/Hettangian/Rhaetian**

**3319-3349m MD: The interval comprises of Claystones with minor Sandstones**

Clst(1): brn gry-olv gry, loc brn blk, blk, frm-mod hd, non calc, r micromic  
Clst(2): mod brn, blk, mod hd, non calc, loc sl calc  
Sst: v lt gry, m gry, clr-trnsl Qtz, f-crs, pred m, sbang-sbrndd, Kao Mtrx, r sil cmt, loc sli arg

Age: **Rhaetian**

**3349-3375m MD: The interval comprises Sandstones with minor Claystones**

Sst: wh-v lt gry, m gry, loc pl yel brn, clr-trnsl Qtz, f-v crs, bcm pred f-m, ang-sbrndd, pr-mod srt, fri-lse, arg, loc Kao cmt, loc sil cmt, loc calc cmt, arg I.P., Tr Pyr, r carb  
Clst(1): m gry-m dk gry, olv gry, loc brn blk, blk, mod hd, non calc  
Clst(2): mod brn, blk, frm-mod hd, non calc

Age: **Rhaetian**

**3375-3396m MD: The interval comprises of Claystones with minor Sandstones**

Clst(1): mod brn, loc dk yel brn, blk, frm-mod hd, loc sl calc  
Clst(2): brn blk-olv blk, blk, mod hd, carb, loc v carb  
Sst(1): wh-v lt gry, lt gry, occ pl yel brn, f-v crs, pred m-crs, clr-trnsl Qtz, occ mky Qtz, loc calc cmt, abd Kao Mtrx, I.P. carb, r Pyr  
Sst(2): dk yel brn, loc olv gry, clr-trnsl Qtz, vf-f, arg, loc v arg grd Slts, loc sl calc, Mic, carb

Age: **Rhaetian**

**3396-3404m MD: The interval comprises Sandstones**

Sst: wh-v lt gry, lt gry, occ pl yel brn, clr-trnsl Qtz, occ mky Qtz, r smky Qtz, f-v crs, pred m-crs, loc calc cmt, abd Kao Mtrx, I.P. carb, r Pyr

Age: **Rhaetian**



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**3404-3432m MD: The interval comprises of Claystones with minor Sandstones, Trace of Limestones**

Clst(1): mod brn, loc dk yel brn, frm-mod hd, blk, loc sl calc

Clst(2): m dk gry-dk gry, olv gry-dk olv gry, loc m gry, frm-mod hd, blk, occ carb lam

Sst: wh, lt gry-m gry, yel gry, f-v crs, pred f, fri-frm, loc mod hd, sbang-sbrndd, calc, arg, I.P. abd Kao Mtrx, sli sil cmt, Tr Pyr

Ls: wh, lt gry, yel gry, frm, blk, I.P. vf sdy

Age: **Rhaetian**



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#### **4.6 Hydrocarbon Shows**

The evaluation of hydrocarbon shows at the wellsite was carried out in a conventional manner. A standard (Geoservices) hydrocarbon total gas detector system (Geoservices Gaslogger) together with a gas chromatograph for automatic and continuous gas analysis, recorded as ppm by volume of C1 through nC5, were operational below 1287m MD down to the TD of the well.

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

#### **4.7 Gas Record**

136 - 1287m MD: This interval was drilled with returns to sea bed. No gas detection possible. For gas chromatograph record in the well, see Lithology Log attached in Section C, and End of Well Report from Geoservices, Well 30/6-27.



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#### 4.8 Oil stain and Fluorescence

A summary of the observed shows is given in Table 4.8.1 below:

INTERVAL (mRKB)	SOURCE	LITHOLOGY	SHOWS DESCRIPTION
3162-3163	Core	Sandstone	Mod Pet od,lt brn O stain,uni bl wh dir Fluor,inst strmg p.p. Fluor cut,lt straw vis cut,strng bl wh Fluor Res,no vis Res.
3163-3167	Core	Sandstone	Strg Pet od,dk brn O stain,100% strg uni bri yel dir Fluor,inst strmg yel wh Fluor cut,amber vis cut,strg bri yel Fluor Res,lt brn vis res.
3170-3172	Core	Sandstone	Pr Hydc od,lt brn O stn,uni dull or dir Fluor,inst strmg p.p. yel wh Fluor cut,no vis cut,bri yel Fluor Res,no vis Res.
3176,5-3186	Core	Sandstone	Pr Hydc od,lt brn O stn,uni dull or dir Fluor,inst strmg p.p. yel wh Fluor cut,no vis cut,bri yel Fluor Res,no vis Res.
3186-3189	Core	Sandstone	Fr Hydc od,brn blk O stn,80% sptd bri yel-20% dull or dir Fluor,fast-mod strmg bri yel Fluor cut,straw-lt amber vis cut,wk-mod yel wh Fluor Res,lt brn vis Res.
3189	Core	Sandstone	Mod Hydc od,brn blk O stn,20% sptd bri yel dir Fluor,fast-inst strmg,p.p.yel wh Fluor cut,lt straw vis cut,wk wh Fluor Res,no vis Res.

Table 4.8.1 Shows summary 30/6-27



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## 5 Coring

### 5.1 Conventional Cores

One core was cut in the Upper Statfjord Formation. The core was cut in 1 m lengths. A summary of the core is presented in Table 5.1.1 below and the core description can be found in Appendix I.

No	C: Cut(m) R: Recovery(m)	Rec. %	Lithology	Formations
1	C: 3162-3189m R: 3162-3189m	100	Sandstone	Upper Statfjord Formation.

*Table 5.1.1: Conventional Cores 30/6-27*

### 5.2 Sidewall Cores

No sidewall cores were taken in this well.



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## 6 Logging

### 6.1 MWD Logs

A MWD service (Schlumberger Anadrill) yielding gamma ray, resistivity, density, neutron and survey measurements was run in the following sections:

Run no.	Hole section	Drill Depth Interval m MD RKB	Log Depth Interval m MD RKB	Tool	Comments
1	36"	136 - 209	136 - 209	PowerPulse	
2	36"	209 - 211	209 - 211	Power Pulse	Cleaned out cement and drilled rathole.
3	17½"	211 - 1287	196 - 1272	PowerPulse-CDR	
4	12¼"	1287 - 3062	1280 - 3042	PowerPulse-CDR	
5	8½"	3062 - 3080	2923 - 2966	PowerPulse-ADN-Vision675R	LWD RealTime failure.
6	8½"	3080 - 3162	3055 - 3151	PowerPulse-ADN-Vision675R	Pulled out for coring.
7	8½"	3162 - 3432	3151 - 3423	PowerPulse-ADN-Vision675R	TD of the well.

Table 6.1.1: MWD runs

More detailed MWD results can be found in the report "End of Well Report"/Logs, (Schlumberger/Geoservices) Well 30/6-27.

### 6.2 Wireline Logs

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

Run:	Toolstring:	Date:	Logged interval (mRKB)	Comments:
1A	GR-MDT	20/10 - 21/10-01	3404,5 - 3126,5	50 pressure tests, 7 tight or lost seal. LFA failure on start of sampling.
1B	GR-MDT	21/10 - 23/10-01	3352,5 - 3129,0	4 pressure tests, 2 tight. 18 fluid samples
1A	GR-VSP-DSI	23/10.01	3400,0 - 2185,0	0 offset, normal incident VSP

Table 6.2.1: Wireline log runs



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### **6.2.1 MDT pressure data and fluid sampling**

A total of 54 pressure data points were recorded not including pretests for sampling. Fluid sampling were performed at 3129.0 (gas), 3150.5 (oil), 3162.5 (oil), 3179.5 (oil), 3202.5 (water) and 3352.5m (oil). The pressure data is shown in Table 7.4.1 and Figures 7.7.1 and 7.7.2.



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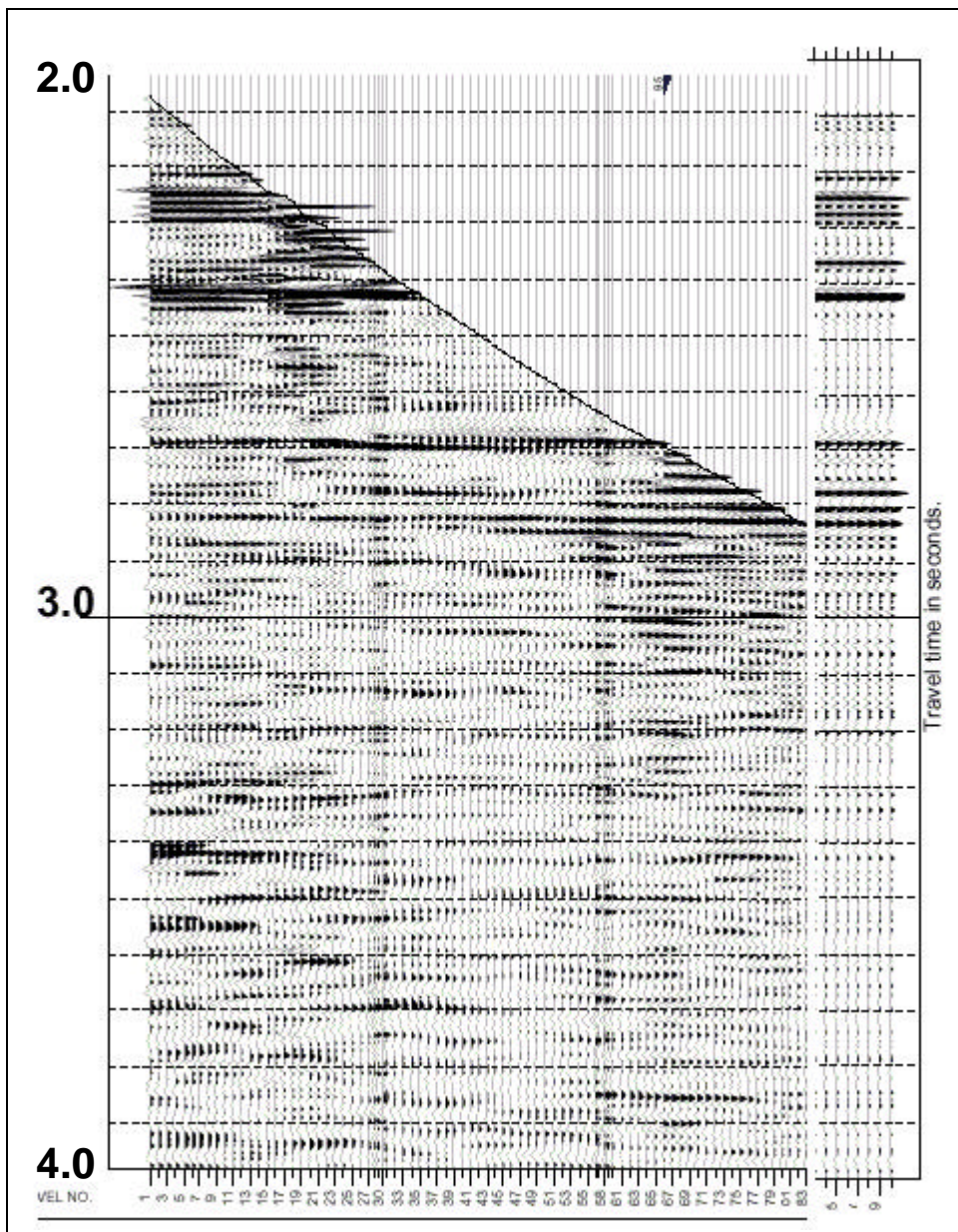
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### 6.3 Velocity Surveys

The VSP data was collected by Schlumberger on 23rd. of October 2001. The survey ranged from 3400 m to 2184 m MD RKB. The spacing between levels was 15 m. The seismic source employed was a 3x150 cu.in. G-guns cluster.

The VSP processing and the sonic calibration were performed by Read Well Services.

Figure 6.3.1 below shows a **Final upgoing VSP gather** to the left and a **Corridor Stack** to the right. The data quality is good. For more information see the VSP contractor report.







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*Figure 6.3.1: Final upgoing VSP gather and Corridor Stack*

#### **6.4 Bottom Hole Temperatures From Wireline Logs**

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

<b>Log suite</b>	<b>Run</b>	<b>Depth (mRKB)</b>	<b>Temp ° C</b>	<b>Time since circ. (hrs)</b>
GR-MDT	1A	3404,50	N/A	
GR-MDT	1B	3352,50	124,00	41.66 hrs
GR-VSP-DSI	1A	3400,00	124,00	75.58 hrs

*Table 6.4.1: Bottom Hole Temperatures 30/6-27*

When entered into a Horner plot, this give a static formation temperature estimate of 124.8 °C at 3385 m.



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## **7 Petrophysical Evaluation**

### **7.1 Summary**

Well 30/6-27 proved two gas columns (respectively 25 m and 4 m) and two oil columns in the Upper Statfjord Formation. Gas-oil-contacts are interpreted at 3067m and 3084 mTVDSS. The shallowest oil column (7 m) has only an oil-down-to and for the second oil column an oil-water contact is difficult to interpret. This is because no obvious oil and water gradients can be derived from the pressure data but an oil-down-to is assumed at 3109 mTVDSS (oil column thickness 25 m). A third oil column (5m) is proven in the Lower Statfjord Formation (LS3).

The petrophysical interpretation is based on a shaly sand model. The log interpretation is core calibrated. One core was taken in the US1 Formation. A 12% effective porosity cut-off criteria was applied to determine net sand. An additional cut-off on water saturation (40%) was applied to determine net pay.

The Upper Statfjord Formation shows reasonable reservoir properties. Average effective porosity in the net sand fraction ranges from 18.2 % (US1) to 13.3 % (US5). Average core permeability in US1, not corrected for overburden, is 168 mD. Net sand fraction ranges from 92.1 % (US3) to 0 % (US2). The average net pay water saturation ranges from 8.4 % (US3) to 26.7 % (US5).

The Middle Statfjord Formation consists mainly of claystone. Total net sand fraction is 28.2 % and effective net sand porosity is 17.3%. Net pay is absent.

The Lower Statfjord Formation shows similar reservoir properties as the Upper Statfjord Formation, but it should be noted that in the Lower Statfjord, zonation is only defined for the sand intervals and the shales in between are not part of this zonation.



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## **7.2 Log Data Acquisition and Quality**

Table 6.1.1 and 6.2.1 summarise the logging-while-drilling (including log corrections) and wireline logs acquired in well 30/6-27. More details on the MWD and LWD services can be found in the "End of well report/LWD logs. 30/6-27. Schlumberger Anadrill".

The two uppermost sections (36" and 17½" hole sections) of the well were drilled with seawater, and the 12¼" and 8½" hole sections with Versavert oil-based drilling mud.

Schlumberger provided a total of 7 MWD-LWD runs in this well (run 1-7). In addition, a limited wireline-logging program was performed. The LWD CDR tool was run in the 17½", and 12¼" hole sections and provides a phase and attenuation resistivity. The log quality is generally good.

In the 8½" hole section, phase shift and attenuation resistivities were measured at multiple depths of investigation and two different frequencies by means of the VISION675 tool. In addition, the Azimuthal Density Neutron (ADN) tool was used to measure formation bulk density, bulk density correction, and neutron porosity. All LWD logs were environmentally corrected by Schlumberger at the wellsite. The LWD log quality in this 8½" section is generally good.

Besides this LWD program only a limited wireline-logging program was performed. The only wireline surveys in the 8½" section were DSI-VSP (0-offset) and MDT. The DSI was run in upper and lower dipole and P&S mode. In addition, the DSI was run in casing to check cement quality. The MDT formation tester collected both pressure data and fluid samples. The acquired wireline data in this section is also of good quality. A wireline correlation pass is used as depth reference for the reservoir section in this well.

By editing, depth shifting and merging the individual MWD and WL runs, continuous composite logs were generated.



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### **7.3 Core**

One 27m core, with 100 % recovery, was cut in the US1 Formation (3162-3189 m drillers depth). A total of 85 core plugs were subjected to Conventional Core Analysis, performed by Reslab, for details see the report "Conventional Core Analysis. 30/6-27. Reslab".

The program involved measurements of helium porosity, Klinkenberg corrected horizontal and vertical air permeabilities, grain density, and a lithological description. Furthermore, by recording the natural gamma radiation from the cores using a NaI crystal scintillator, a spectral core gamma log of the cores was obtained.

Finally, core photos, white light and UV-light, were taken of the B-cut of the core, after all samples had been drilled, with each frame covering up to 5 m of core. Digital core images, white and UV-light, were taken of the entire core. Photos are also delivered as separate reports.

Using the GeoFrame-WellEdit software, the core gamma ray log was depth shifted to match the reference wireline MDT-GR log. The core was shifted - 1.52 m to match the log data. A crossplot of core porosity and permeability measurements is shown in figure. 7.7.3.



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#### 7.4 Formation testing

More information about the core analysis can be found in the report; "Conventional Core Analysis. 30/6-27" by Reslab.

The Schlumberger MDT wireline tool was used for formation pressure testing (run 1A and 1B) and fluid sampling (only run 1B). Pressure data was taken at several depths over the complete reservoir interval collecting data from both the hydrocarbon and the water zone. In all pressure pretests from run 1A and 1B are listed and remarks are included about the quality or type of test. A wireline MDT-GR correlation pass was used as depth reference for the MDT pressure and fluid sampling. The pressure pretests were performed with the standard probe. Both quartz gauge and strain gauge data was collected. The large diameter probe was used for fluid sampling. Sampling was performed at 3352.5m (oil), 3202.5m (water), 3179.5m (oil showing on OFA), 3162.5 (oil), 3150.5m (oil), and 3129m MD RKB (gas). The pressure data is shown in and . The interpretation is discussed in the next section. Fluid sampling results are extensively discussed in the; "Formation Evaluation Report. 30/6-27" by Norsk Hydro.

Run 1A / 1B*	Depth (m MD RKB)	Depth (m TVDSS)	Drawdown mobility (mD/cp)	Initial mud Pressure CQG (bar)	Final mud Pressure CQG (bar)	Formation Pressure CQG (bar)	Test type/ Remarks
1	3126.50	3048.71					Lost seal
2	3126.50	3048.71	174	408.11	408.18	377.76	Drawdown
3	3129.00	3051.20	1244	408.42	408.49	377.81	Drawdown
4	3133.00	3055.19	1605	408.90	408.99	377.90	Drawdown
5	3136.00	3058.19	226	409.33	409.37	377.96	Drawdown
6	3141.00	3063.18	264	409.95		378.08	Drawdown
7	3142.50	3064.68	62	410.13	410.19	378.11	Drawdown
8	3144.00	3066.17	1420	410.26	410.37	378.14	Drawdown
9	3148.50	3070.66	15	410.77	410.89	378.36	Drawdown
10	3150.50	3072.66		411.04			Lost seal
11	3150.50	3072.66	35	411.07	411.08	378.48	Drawdown
12	3151.50	3073.66	1	411.11	411.21	378.54	Tight
13*	3159.50	3081.64	2.3	412.71	412.70	379.79	Drawdown
14	3160.00	3082.14	128	412.25	412.29	379.77	Drawdown
15*	3160.30	3082.44		412.06			Tight
16	3161.50	3083.64	274	412.42	412.49	379.81	Drawdown
17*	3162.50	3084.64	674	412.95	412.91	379.82	Drawdown
18	3163.50	3085.64	84	412.63	412.73	379.91	Drawdown
19	3169.50	3091.63	19	413.36	413.51	380.50	Drawdown
20	3179.50	3101.61	84	414.72	414.79	381.67	Drawdown
21	3185.50	3107.60	3.1	415.56	415.59	383.30	Drawdown



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Run 1A / 1B*	Depth (m MD RKB)	Depth (m TVDSS)	Drawdown mobility (mD/cp)	Initial mud Pressure CQG (bar)	Final mud Pressure CQG (bar)	Formation Pressure CQG (bar)	Test type/ Remarks
22	3202.50	3124.57	65	417.69	417.76	384.33	Drawdown
23*	3205.50	3127.56		420.20			Tight
24	3208.00	3130.06	24	418.40	418.45	384.86	Drawdown
25	3211.00	3133.06		418.68			Lost seal
26	3211.00	3133.06	7.1	418.71	418.77	385.28	Drawdown
27	3225.50	3147.53	19	420.51	420.57	386.95	Drawdown
28	3232.00	3154.02	24	421.38	421.41	389.20	Drawdown
29	3244.50	3166.50	0.8	422.95	423.01	391.48	Tight
30	3248.50	3170.50	39	423.50	423.51	391.85	Drawdown
31	3251.00	3172.99	17	425.27	423.83	392.10	Drawdown
32	3258.50	3180.48	107	425.91	424.79	392.83	Drawdown
33	3268.00	3189.97	39	426.06	426.01	393.75	Drawdown
34	3272.00	3193.97	37	426.34	426.45	394.10	Drawdown
35	3299.50	3221.43	63	430.00	430.02	401.70	Drawdown
36	3304.00	3225.93	66	430.50	430.58	401.80	Drawdown
37	3307.00	3228.92	60	431.00	431.33	402.11	Drawdown
38	3315.00	3236.92	73	432.04	432.03	402.90	Drawdown
39	3351.50	3273.38	38	436.79	436.83	404.10	Drawdown
40	3352.50	3274.38					Low draw.
41	3352.50	3274.38	204	436.88	436.92	404.16	Drawdown
42	3354.00	3275.88	10	437.00	437.05	404.25	Drawdown
43	3355.00	3276.88	82	437.09	437.13	404.31	Drawdown
44	3360.50	3282.37		438.30			Tight
45	3362.00	3283.88	25	437.97	437.88	405.45	Drawdown
46	3364.00	3285.87	8.6	438.17	438.23	405.64	Drawdown
47	3368.00	3289.87	24	438.71	438.74	406.98	Drawdown
48	3371.00	3292.87	3.1	438.08	439.09	406.48	Drawdown
49	3372.00	3293.87	3.7	439.20	439.19	406.43	Drawdown
50	3372.50	3294.36		439.26			Tight
51	3397.50	3319.35	39	442.46	442.48	410.10	Drawdown
52	3400.00	3321.85	46	442.79	442.79	410.36	Drawdown
53	3403.50	3325.35	20	443.23	443.22	410.68	Drawdown
54	3404.50	3326.35		443.35			Tight

Table 7.4.1: MDT formation pressure data



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## 7.5 Fluid contacts

The fluid contacts have been estimated based on the combined interpretation of formation pressure data, log readings, core observations, and fluid sampling. The fluid densities plotted in and are based on the pressure gradients and not on the properties measured on the fluid samples. At this stage only the results from the water sample analysis are available.

Two obvious fluid contacts can be interpreted. From the pressure data, a GOC in US3 at 3067 mTVDSS (= 3145 mMD RKB) can be interpreted. The log analysis supports this fluid contact and the fluid sampling confirms the fluid types. From log analysis, fluid sampling, and pressure gradient, another GOC at 3084 mTVDSS (= 3161.9 mMD RKB) is interpreted. The gas cap interpretation is based on an equivalent fluid density of 0.218 g/cc from the pressure data, and the large density/neutron crossover seen on the logs. The oil leg is confirmed by the oil sample at 3084.6 mTVDSS (=3162.5 mMD RKB). The US2 Formation acts as the pressure and fluid barrier between the two gas-oil columns in the Upper Statfjord.

The exact OWC in the Upper Statfjord is difficult to determine. Both the log analysis and a geochemical analysis of the core data indicate an OWC around 3109 mTVDSS (=3187 mMD RKB). The log analysis shows a slight increase in water saturation below this depth (although the residual hydrocarbon saturation is still significant) and from the geochemical analysis of the core data a sharp decrease in aromatic HC's can be observed. Furthermore, from the fluid sample at 3101.6 mTVDSS (= 3179.5 m MD RKB), the MDT OFA identified oil as the movable fluid, although sampling produced a mixture of fluids (final analysis not yet finished). However, the pressure data cannot be used to identify an exact OWC in the Upper Statfjord. The first three pressure measurements below the GOC fit on a gradient with an equivalent fluid density of 0.951 g/cc, obviously too high for an oil gradient. With an assumed fluid density of 0.620 g/cc, only the second pressure point at 3085.6 mTVDSS (=3163.5 mMD RKB) intersects with the GOC at 3084 mTVDSS (= 3161.9 mMD RKB). Possibly, none of the oil filled sands in this part of the Upper Statfjord are in pressure communication.

The next 4 pressure points in US1 and MS (below the oil sample at 3101.6 mTVDSS (= 3179.5 m MD RKB) fit perfectly on a water gradient with an equivalent fluid density of 1.173 g/cc. However, it should be noted that this fluid density does not match the fluid density from the water sample at 3124.5 m TVDSS (= 3202.5 m MD RKB); 0.993 g/cc at 118°C. Also the water leg is probably influenced by small pressure barriers as the deepest pressure point in the MS Formation does not fit on the same gradient as the other water pressure points in the US1 and MS Formation.

For the Lower Statfjord, based both on the pressure data and the log analysis, all sand intervals are interpreted to be water filled, except for US3 which is oil filled. This oil fill is confirmed by the oil sample at 3274.4 mTVDSS (= 3352.5 m MD RKB). Furthermore, the pressure data indicates that the sand intervals in the Middle and Lower Statfjord are not in pressure communication.



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## 7.6 Petrophysical interpretation

The main reservoirs in well 30/6-27 are the Upper and Lower Statfjord Formation. These intervals comprise of sandstones with minor claystone and traces of calcite cementation. The Middle Statfjord Formation comprises of claystones with minor sandstone.

The petrophysical interpretation is based on a shaly-sand model calibrated to the available core data and analyzed by means of the GeoFrame PetroViewPlus module. All input curves to the CPI are shown on the CPI plots (figure 7.7.4 and figure 7.7.5). Total porosity is calculated using the density log. In the cored interval, the log derived total porosity is calibrated to overburden corrected core porosity (assumed overburden correction factor of 0.95). To reduce the effect of non-clay radioactive minerals on the gamma ray readings, the shale volume was determined from a non-linear gamma ray response (Larionov). Effective porosity is evaluated by subtracting from the total porosity the porosity associated with the shale volume (estimated at 0.05 from core porosity measurements in shale sections). The water saturation is calculated by means of the Indonesia equation. Formation fluid properties are taken from the water sample at 3202.5m MD RKB. The P40H\_UNC LWD resistivity curve was used as true resistivity. Input parameters to the log analysis are listed in table 7.6.1.

Core data crossplots are shown in figure 7.7.3. Both the core porosity-permeability and a core vertical-horizontal permeability crossplot are shown. The core porosity-permeability regression is reasonable, but with different regressions below and above 15% porosity. Permeability increases significantly for porosity values above 15%. Furthermore, from the core vertical-horizontal permeability crossplot, some heterogeneity effects can be observed, as the horizontal permeability is generally higher than the vertical permeability.

The average core porosity is 14.6 %. As mentioned before, for the log porosity calibration we assumed an overburden correction factor of 0.95. The arithmetic mean of the Klinkenberg corrected horizontal core permeability is 168 mD, the geometric mean 5 mD. It should be noted that these plug permeability measurements are not overburden corrected to reservoir conditions. Generally, the overburden correction factors vary with rock type. No SCAL program is initiated to quantify overburden corrections for this well. All core data is also plotted on the CPI plots (figure 7.7.4 and figure 7.7.5).

The net sand was determined using an effective porosity cut-off:  $PHIE < 0.12$ .

The net pay was based on an additional cut-off on water saturation:  $SWE > 0.40$ .

Furthermore, calcite stringers were discriminated from density and neutron log responses. In this well they are defined by density  $> 2.45$  g/cc and neutron porosity  $< 20\%$ .





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Reservoir Zone	US5-4	US4-3	US3	US3-2	US2-1	US1	US1	US1	MS
Top (m MD RKB)	3101	3119	3137	3145	3156	3162	3164	3180	3218
Bottom (m MD RKB)	3119	3137	3145	3156	3162	3164	3180	3218	3242.3
Shale parameters									
GRma (API)	40	40	40	40	40	40	40	40	40
GRsh (API)	110	110	110	110	110	110	110	110	110
$\rho_{sh}$ (g/cc)	2.60	2.56	2.56	2.56	2.56	2.56	2.58	2.63	2.63
Porosity parameters									
$\rho_{ma}$ (g/cc)	2.70	2.64	2.64	2.64	2.64	2.64	2.66	2.70	2.70
$\rho_{fluid}$ (g/cc)	0.8	0.4	0.6	0.8	0.8	0.8	0.8	0.8	0.8
Saturation parameters									
Rw @ 21.5 °C ( $\Omega m$ )	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128
Rmf @ 20 °C ( $\Omega m$ )	OBM	OBM	OBM	OBM	OBM	OBM	OBM	OBM	OBM
Rsh ( $\Omega m$ )	5	5	5	5	5	5	5	5	5
A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
M	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8

Reservoir Zone	LS5		LS4		LS3		LS2		LS1
Top (m MD RKB)	3242.3	3278.3	3297.7	3320.3	3350	3355	3361.5	3376.5	3396
Bottom (m MD RKB)	3278.3	3297.7	3320.3	3350	3355	3361.5	3376.5	3396	3424.4
Shale parameters									
GRma (API)	40	40	40	40	40	40	40	40	40
GRsh (API)	110	110	110	110	110	110	110	110	110
$\rho_{sh}$ (g/cc)	2.57	2.63	2.57	2.63	2.58	2.63	2.58	2.63	2.58
Porosity parameters									
$\rho_{ma}$ (g/cc)	2.64	2.70	2.64	2.70	2.64	2.70	2.65	2.70	2.65
$\rho_{fluid}$ (g/cc)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Saturation parameters									
Rw @ 21.5 °C ( $\Omega m$ )	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128
Rmf @ 20 °C ( $\Omega m$ )	OBM	OBM	OBM	OBM	OBM	OBM	OBM	OBM	OBM
Rsh ( $\Omega m$ )	5	5	5	5	5	5	5	5	5
A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
M	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8

Table 7.6.1: Input parameters to petrophysical interpretation



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## 7.7 Petrophysical Results

The average reservoir properties for all Statfjord Formations in net sand and net pay are listed in table 7.7.1 and table 7.7.2 respectively. It should be noted that in the Lower Statfjord, zonation is only defined for the sand intervals and the shales in between are not part of this zonation. The total net sand fraction for the entire Lower Statfjord is 0.421. CPI plots including core data are shown in figure 7.7.4 and figure 7.7.5.

Well 30/6-27 Net Sand Zone Averages

Zone	Top m MD RKB	Bottom m MD RKB	Gross (m)	Net Sand (m)	NTG (frac)	Net Sand Phie (frac)
US5	3101.0	3109.5	8.5	0.5	0.054	0.133
US4	3109.5	3125.0	15.5	1.8	0.118	0.154
US3	3125.0	3151.8	26.8	24.7	0.921	0.178
US2	3151.8	3157.6	5.8	0.0	0	n.a.
US1	3157.6	3218.2	60.6	22.9	0.377	0.182
MS	3218.2	3242.3	24.1	6.8	0.282	0.173
LS5	3242.3	3278.3	36.0	28.1	0.780	0.169
LS4	3297.7	3320.3	22.6	16.3	0.720	0.168
LS3	3350.0	3355.0	5.0	5.0	1.000	0.231
LS2	3361.5	3376.5	15.0	13.0	0.865	0.163
LS1	3396.0	3405.2	9.2	6.2	0.676	0.148

Table 7.7.1: Net Sand Avreages

Well 30/6-27 Net Pay Zone Averages

Zone	Top m MD RKB	Bottom m MD RKB	Gross (m)	Net Pay (m)	NPTG (frac)	Net Pay Phie (frac)	Net Pay Swe (frac)
US5	3101.0	3109.5	8.5	0.5	0.054	0.136	0.267
US4	3109.5	3125.0	15.5	0.8	0.049	0.156	0.241
US3	3125.0	3151.8	26.8	24.5	0.916	0.178	0.084
US2	3151.8	3157.6	5.8	0.0	0	n.a.	n.a.
US1	3157.6	3218.2	60.6	7.3	0.121	0.194	0.163
MS	3218.2	3242.3	24.1	0.0	0	n.a.	n.a.
LS5	3242.3	3278.3	36.0	0.5	0.013	0.163	0.315
LS4	3297.7	3320.3	22.6	0.2	0.007	0.180	0.363
LS3	3350.0	3355.0	5.0	4.9	0.980	0.232	0.079
LS2	3361.5	3376.5	15.0	0.0	0	n.a.	n.a.



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LS1	3396.0	3405.2	9.2	0.0	0	n.a.	n.a.
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Table 7.7.2: Net Pay Averages

The CPI legend is as follows:

- Track1 : GR = Gamma Ray (green) - from VISION  
: HORD = caliper (red) – from ADN
- Track2 : Depth track in m MD RKB
- Track3 : P40H = Deep resistivity (red) – from VISION  
: P28H = Medium resistivity (blue) – from VISION  
: P16H = Shallow resistivity (green) - from VISION
- Track4 : RHOB = Bulk density (blue) - from ADN  
: TNPH = Neutron porosity (red) - from ADN  
: DRHO = Density correction (dotted blue) - from ADN
- Track5 : DT = compressional slowness (blue) - from DSI  
: DTSM = shear slowness (red) – from DSI
- Track6 : Zonation
- Track7 : PHIE = effective porosity (blue)  
: PHIT = total porosity (green)  
: CPORC = overburden corrected core porosity (red)
- Track8 : NET = Net sand flag (yellow)
- Track9 : CKHK = Klinkenberg corrected horizontal core permeability (red)
- Track10 : SWE = effective water saturation (black)
- Track11 : SAND = sandstone volume relative to total volume (yellow)  
: SHALE = shale volume relative to total volume (brown)  
: GAS = gas volume relative to total volume (red)  
: OIL = oil volume relative to total volume (green)  
: CALCITE = calcite flag (black/white)



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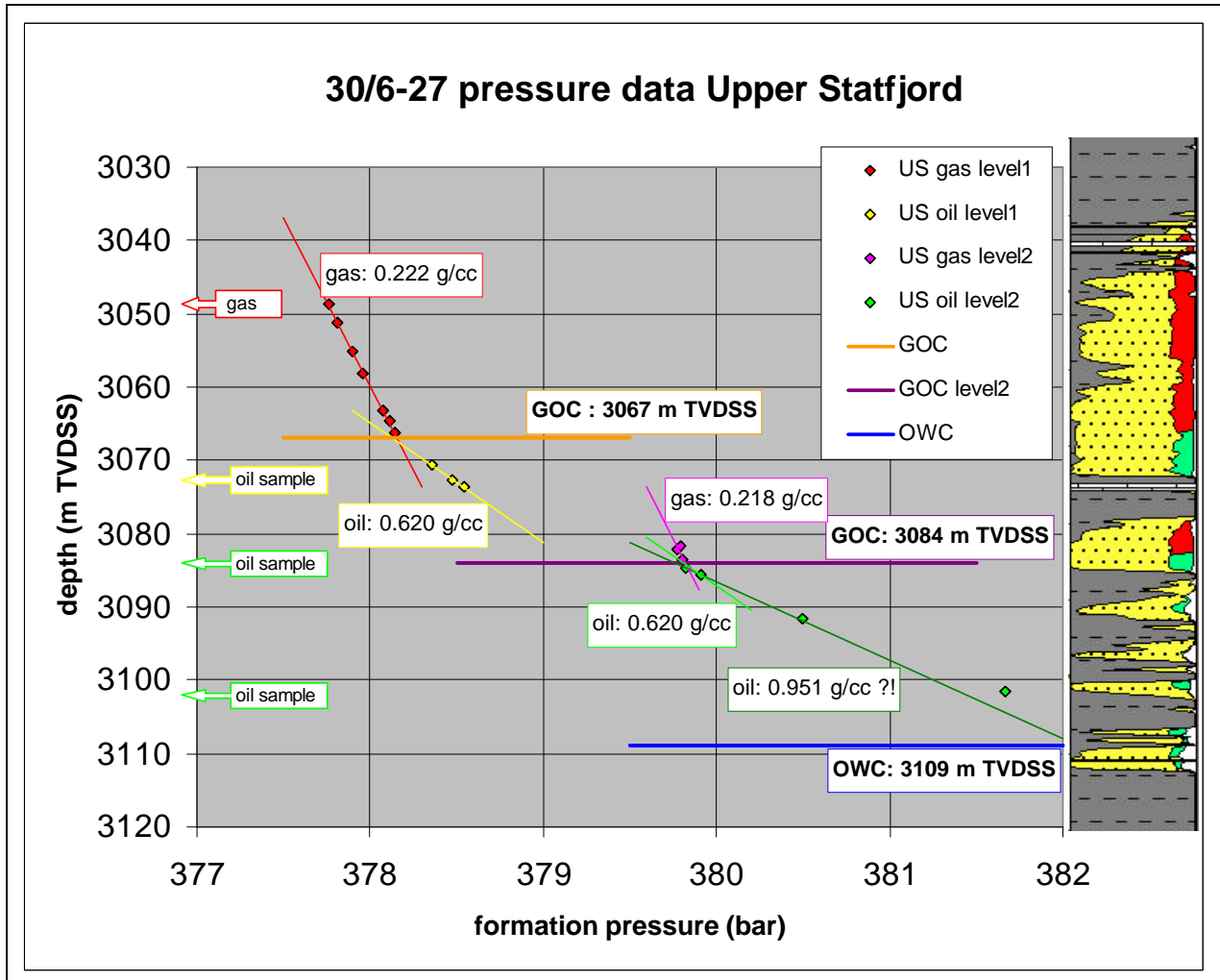


Figure 7.7.1: MDT pressure data from Upper Statfjord



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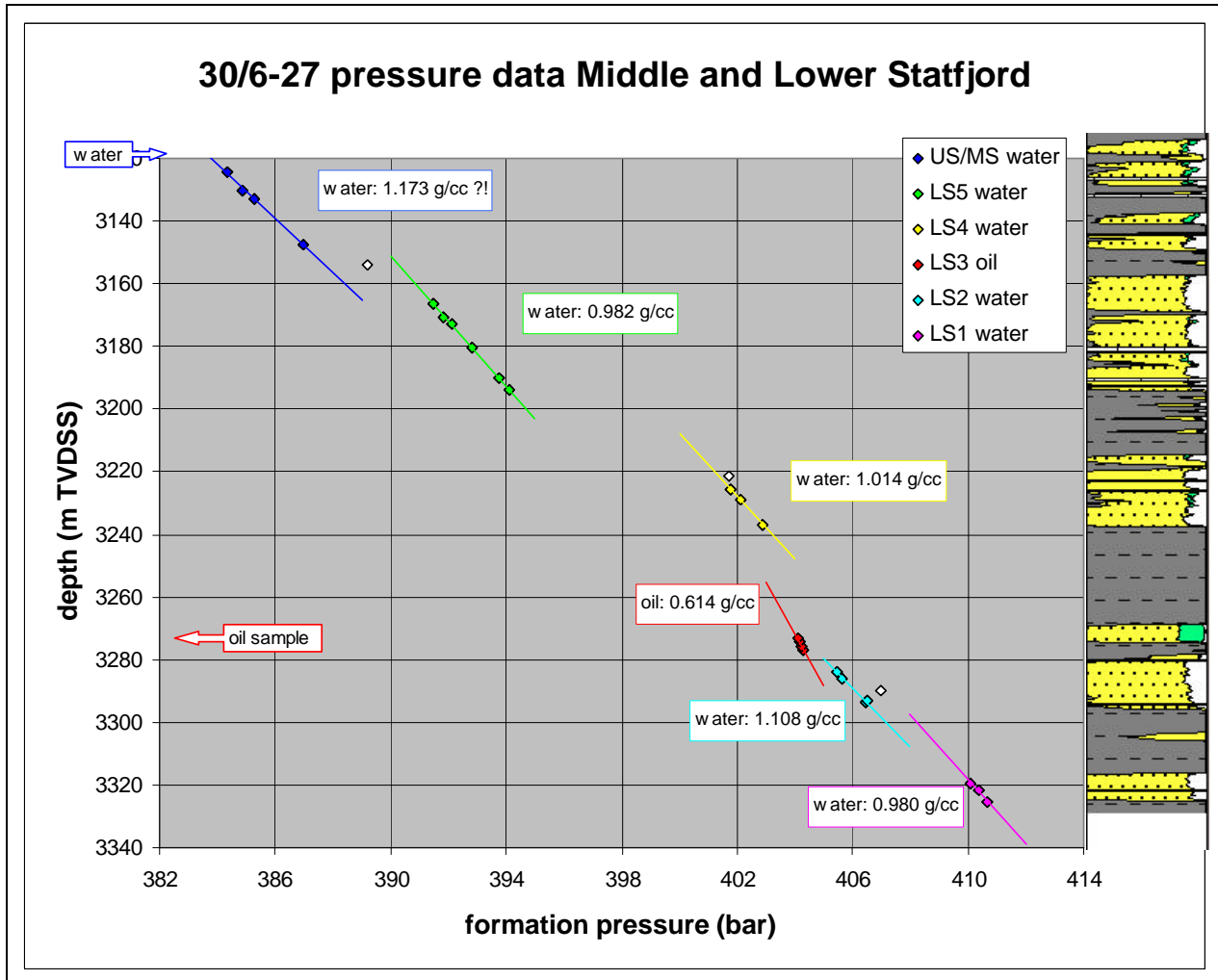


Figure 7.7.2: MDT pressure data from Middle and Lower Statfjord



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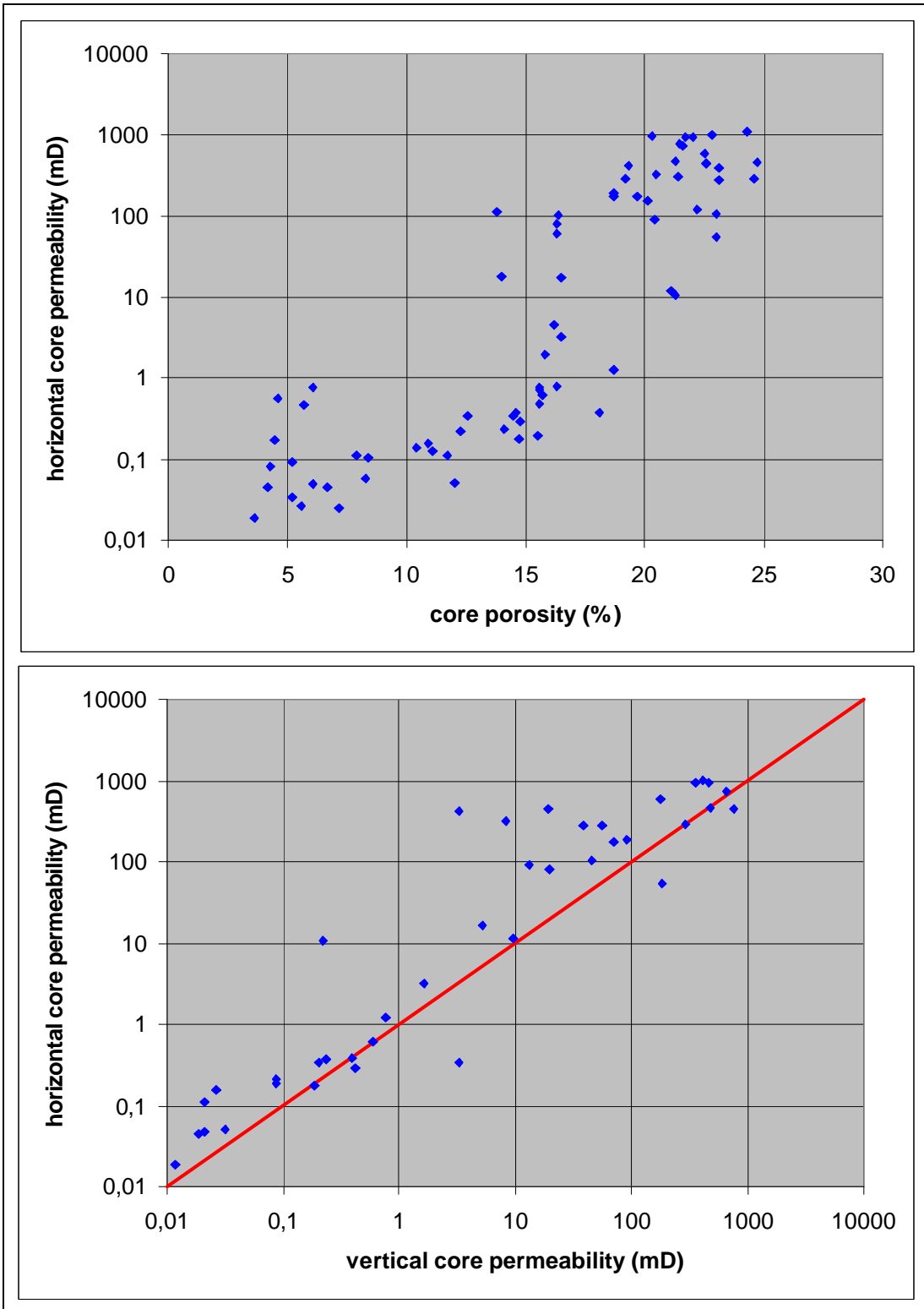


Figure 7.7.3: Core porosity and permeability crossplots



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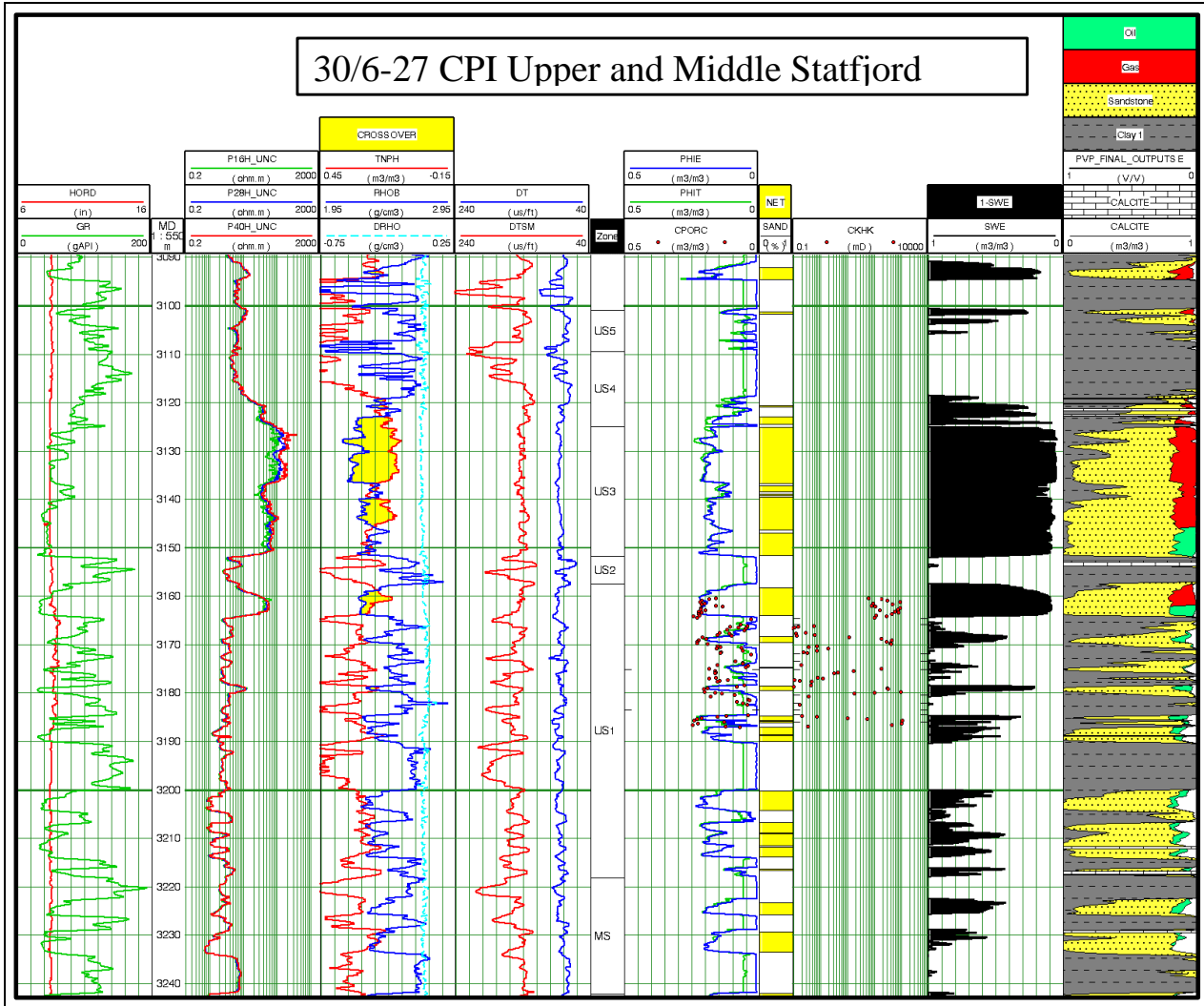


Figure 7.7.4: 30/6-7 CPI Upper and Middle Statfjord

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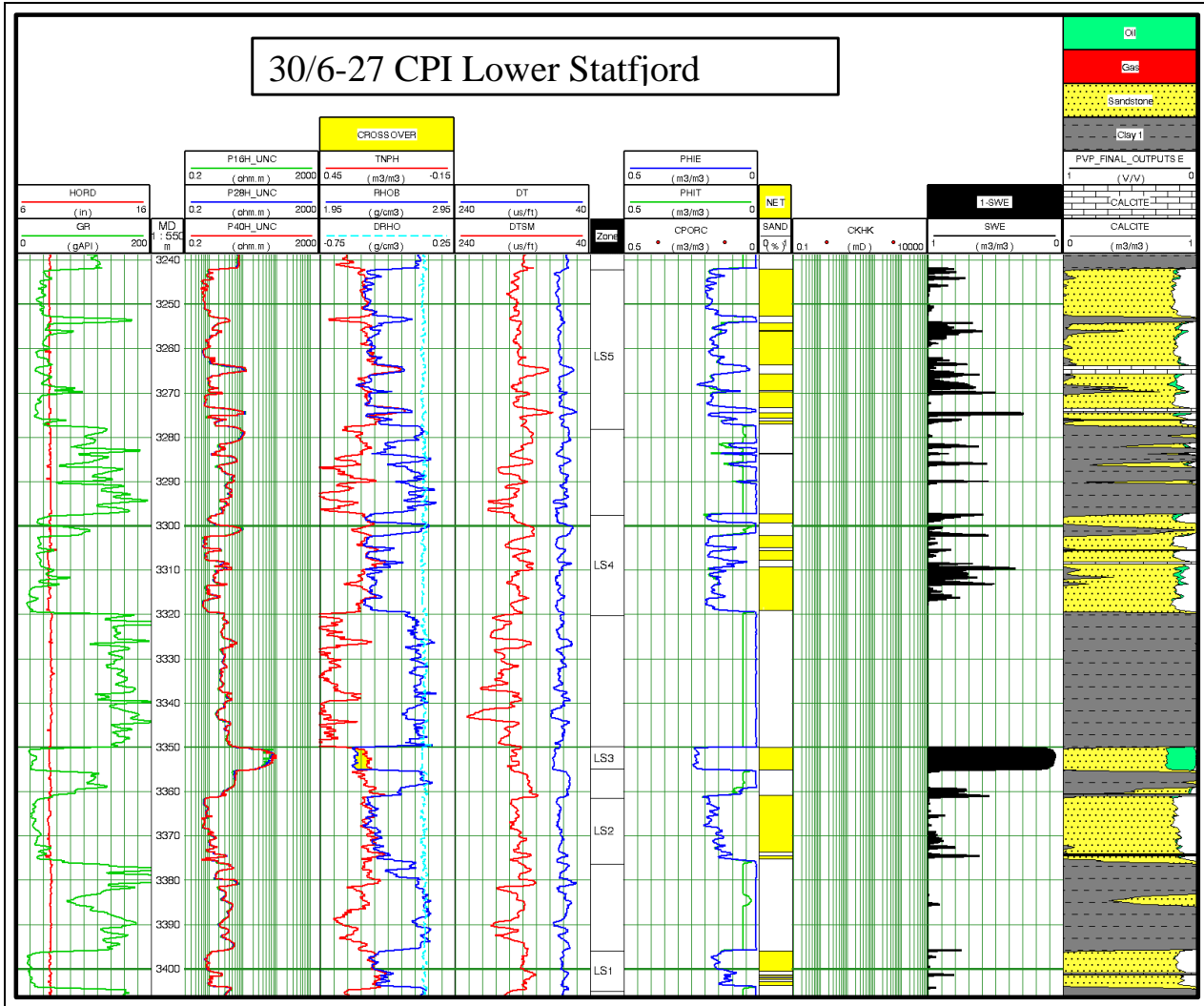


Figure 7.7.5: 30/6-27 CPI Lower Statfjord





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## **8 Estimated Pore Pressure, Fracture, Overburden and Temperature Gradients**

### **8.1 Pressure prognosis**

The pore pressure-, fracture -, and overburden gradients are presented graphically in figure 8.1. All depths are in meters true vertical depth TVD, relative to rotary table. Air gap 24m and water depth 136m RKB. The pore pressure-, fracture -, and overburden gradient are given in Equivalent Mud Density, g/cm<sup>3</sup> or sg. The pore pressure interpretation is based on MWD-logs and MDT logging..

### **8.2 Pore pressure gradient**

A hydrostatic pore pressure was interpreted down to 1570m in the Oligocene fm. This depth corresponds to approximately 60°C which is the temperature needed to start major clay metamorphism and thus excess pore water. The pore pressure increases steadily through Eocene and continues to increase through the Rogaland Group reaching 1.28sg at middle Lista formation. This pressure was maintained through the Shetland Group until a pressure drop is expected towards base Shetland, continuing into the Dunlin Group where it levels out at 1.25sg. In the top of Statfjord of the Kappa North structure a maximum pore pressure of 1.26sg was recorded. This indicates only minor, if any, depletion from nearby production from the main Oseberg field.

### **8.3 Fracture gradient**

The fracture gradient is based on the assumed rock mechanical properties to each stratigraphic layer (Daines (1982)), Eckels & van Breckelen and adjusted to leak off tests in nearest reference wells and to the LOT obtained in this well. One LOT was performed to 1.68sg at 1280m confirming the high LOT at this level in well 30/6-26. One FIT was taken to 1.60sg at 3002m.

### **8.4 Overburden gradient**

Overburden gradient is based on density log readings and theoretical densities.

### **8.5 Temperature gradient**

The temperature gradient ( fig 8.2) is based on Horner plot obtained after logging. An average formation temperature gradient of approximately 4.16°C / 100m TVD was calculated against prognosed 4.45°C / 100m TVD. Assuming 4°C at sea floor, this gave a static formation temperature of 139.3 °C at TD in 30/6-27.



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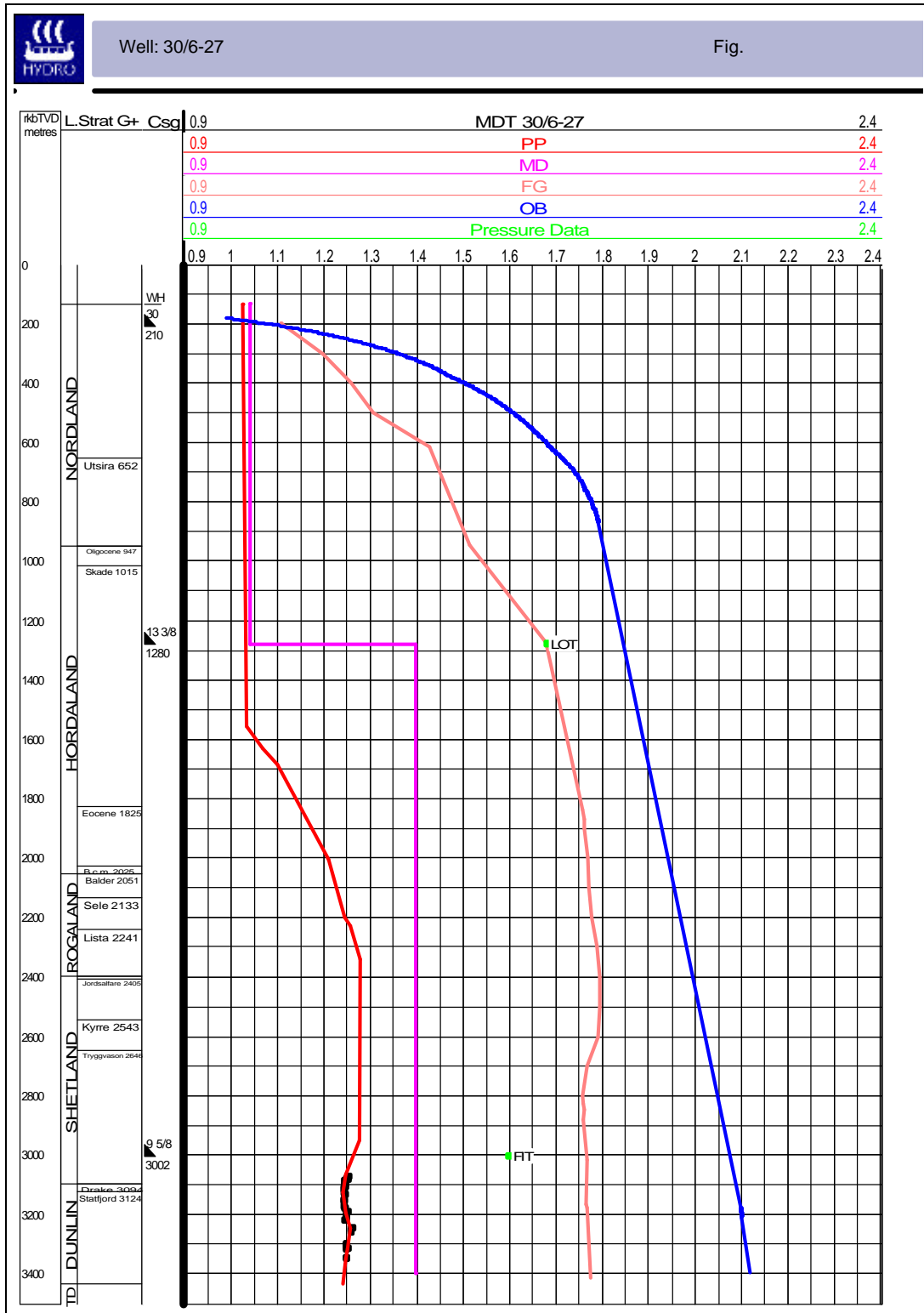


Figure 8.5.1: Porepressure, Fracture- and Overburden gradients



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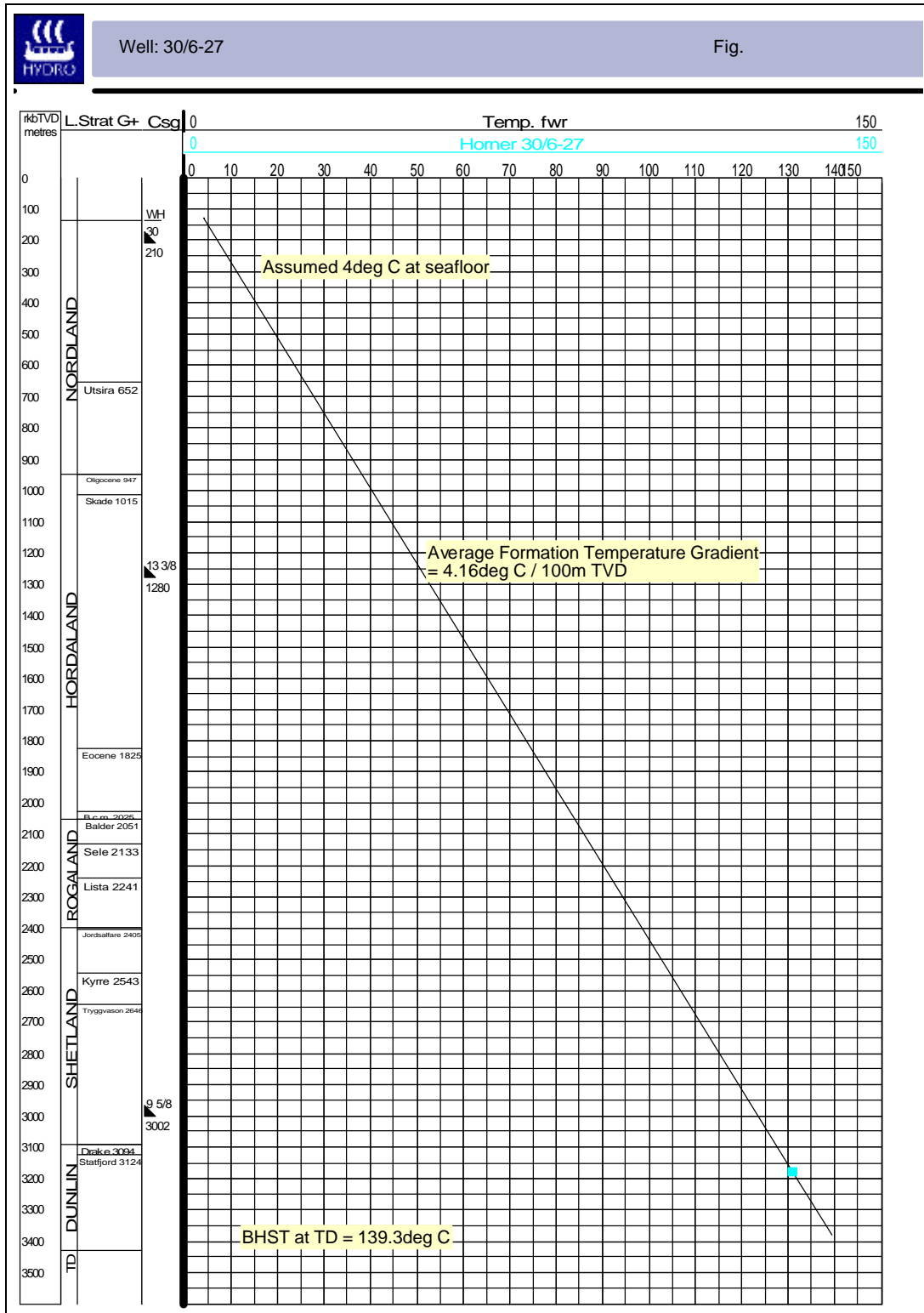


Figure 8.5.2: Temperature gradient



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## 9 Geophysics

A normal zero offset VSP was acquired in the well in the range from 2184 m to 3400 m RKB MD. For more detailed information see the Read Well Service report "Normal incidence VSP, well 30/6-27", containing check shot report, sonic calibration and synthetic seismograms.

Actual versus prognosed formation tops with two-way times are shown in Table 9.1.

Formation	Prognosed TWT(ms)	Result TWT (ms)	Prognosed Depth mTVD MSL	Result Depth mTVD MSL	Discrepancy (result-prog) mTVD	Prognosed UTM	Result UTM
Sea Floor	145	No VSP	112.0	112.0	0.0	6713760 482415	6713760 482415
Top Utsira	665	No VSP	635.0	628.0	-7.0	6713760 482415	6713759 482418
Base Utsira	946	No VSP	942.0	923.0	-19.0	6713760 482415	6713762 482417
Top Balder	1966	No VSP	2001.0	1989.7	-11.3	6713853 482635	6713812 482594
Top Shetland	2246	2238	2265.0	2318.8	53.8	6713864 482662	6713871 482670
Base Cretaceous	2699	2730	3017.0	3017.3	0.3	6713864 482662	6713867 482684
Top Statfjord	2744	2735	3072.0	3023.3	-48.7	6713864 482662	6713866 482684

Table 9.1 Geophysical prognosis and results, well 30/6-27



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## 10 Post Site Survey Report

### 10.1 Well data

1	Distance from rig floor to sea level:	24.0 m
2	Water depth (MSL):	112.0 m
3a	Setting depth for conductor (m RKB ):	210.0 m
3b	Leak Off / Formation Integrity Test (g/cc):	N/A
4a	Setting depth (m RKB TVD) for casing on which BOP mounted:	1279.9 m
4b	Formation Integrity Test (g/cc):	N/A
5	Depth (m RKB TVD & Two Way Time) to formation/section/layer tops:	
	Intra Pleistocene3:	268 m (306 ms)
	Intra Pleistocene4:	302 m (338 ms)
	Base Pleistocene:	336 m (371 ms)
	Base Pliocene:	652 m (681 ms)
	Intra Miocene 1:	706 m (714 ms)
	Miocene 2:	767 m (781 ms)
	Miocene 3:	829 m (842 ms)
	Base Miocene:	947 m (953 ms)
	Intra Oligocene:	1015 m (1000 ms)

Note:

No chronostratigraphic information was collected in the tophole section of the well (from seabed down to 1279.9 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 1280 m RKB TVD.



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- 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 1279.9 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 30/6-27:

Pleistocene

220 m (start of log) - 268 m

Pliocene

A high peak on the medium deep resistivity log (MEDRES), a small peak on the deep resistivity log (DEPRES), coinciding with decreasing gamma ray values on the MWD logs between 350,5-351 m RKB, is interpreted to be caused by a thin, carbonate cemented silty sand.

Miocene

652 - 667 m, 673 - 767 m, 772 - 829 m, 841 - 947 m

Oligocene

959 - 962 m, 1015 - 1019 m, 1067 - 1070 m

- 7 By what means is the presence of gas proven: N/A.

The well was drilled with returns to seabed above 1279.9 m RKB TVD.

- 8 Composition and origin of gas:

N/A

- 9 Describe all measurements taken in gas bearing layers:

N/A



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## 10.2 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 amplitude anomalies and other indications of shallow gas down to the Upper Oligocene (970 m RKB). No amplitude anomalies have been mapped at the 30/6-27 Well Location. The nearest anomaly to location occurs approximately 500 m to the ENE associated with the Intra Pliocene 2 reflector and 680 m SE and 680 m NW associated with the Intra Pleistocene 2 reflector. No shallow gas warning was issued for the Well Location 30/6-27.

- 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 gas warning were given and no gas related problems were experienced in the well.

12b Sand Bodies:

The Pleistocene sands were not predicted. The Miocene sand were predicted and the encountered sand correspond with the interpretation. Oligocene sand stringers were expected and predicted, but the individual layers/stringers were not annotated with exact depth.

12c Boulders:

Scattered boulders were predicted in the shallow section between 143 m - 343m RKB. No boulder layers were predicted. No boulders were encountered.

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

<i>Horizon</i>	<i>Prognosed (P)</i>	<i>Observed (O)</i>	<i>Difference (O-P)</i>
Base Pleistocene	: 343 ± 5 m	336 m	- 7 m (shallower)
Base Pliocene (T.U.)	: 664 ± 15 m	652 m	- 12 m (shallower)
Intra Miocene 1	: 698 ± 15 m	706 m	+ 8 m (deeper)
Intra Miocene 2	: 765 ± 20 m	767 m	+ 2 m (deeper)
Intra Miocene 3	: 829 ± 20 m	829 m	0 m difference
Base Miocene	: 948 ± 25 m	947 m	- 1 m (shallower)



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Intra Oligocene : 998 ± 25 m 1015 m + 17 m (deeper)

The differences between the prognosed and observed depths to different formation tops were within the uncertainty limits, except for Base Pleistocene. 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 30/6-27 are similar to those encountered in tie-well 30/6-25S. The Pleistocene interval in 30/6-27 was more sandy in the upper part than was encountered in tie-well 30/6-15, -17 and 18 and what was predicted in well 30/6-27.





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## 11 Standard and Special Studies

- ResLab: Conventional Core Analysis Report, 2002
- ResLab: Digital Autocar Photographs, 2002
- Security DBS: Kjerneboringsrapport brønn 30/6-27. Norsk Hydro ASA
- Oilphase: Field Operations Report, Well 30/6-27, October 2001. NH-00042103
- Fugro Survey AS: Navigation and Positioning of Transocean Arctic to Well Kappa-N 30/6-27. Norsk Hydro ASA, October 2001
- Norsk Hydro ASA: PL053 Oseberg Unit, Kappa Nord Structure. Discovery Evaluation Report, Well 30/6-27.
- Norsk Hydro ASA, 2002: Formation Evaluation Report, Well 30/6-27
- Norsk Hydro ASA, 2002: Biostratigraphic Analysis of the Norsk Hydro Well 30/6-27
- Norsk Hydro ASA, 2002: Standard Core Description, Well 30/6-27
- Fugro Survey AS: Site Survey at Location. Well 30/6-27 Norsk Hydro ASA. NH-00027030
- Read: VSP Data Processing Report. 30/6-27 Zero Offset VSP. Norsk Hydro ASA
- Petrotech: Validity Checks and Analysis of MDT Samples, Well 30/6-27
- Schlumberger: End of well report/LWD logs. Well 30/6-27



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## APPENDIX I



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**Core Report Core #1 (Part 1)**

Geologists: Å. Halvorsen, K.Kalgraff,  
 F.Liestøl

Field : Oseberg Kappa Nord  
 Well : 30/6-27  
 Date : 2002-02-22  
 Scale : 1 : 50

Depth m MD RKB	Core No.	Grain Size						Lith Struct	Lithological Description	Oil Stri				Dir Flu				Cut Flu				Vis Cut				Shows Description		
		pb	bl	vc	c	m	f			vf	sl	el	pr	m	gd	pr	m	gd	pr	m	gd	pr	m	gd	pr		m	gd
3162									<b>c</b> Sst: dk yel brn, gen clr Qtz, f-crs, gen m, ang-sbrndd, mod srt, fri-mod hd, wk sil cmt, mic, r carb, fr vis por.																		Mod Pet od, lt brn O stain, uni bl wh dir Fluor, inst strmg p.p. Fluor cut, lt straw vis cut, strng bl wh Fluor Res, no vis Res.	
3163									Sst: dk yel brn, gen clr Qtz, f-crs, pred crs, ang-sbrndd, mod srt, fri-mod hd, wk sil cmt, mic, r carb, mod vis por.																		Strg Pet od, dk brn O stain, 100% strg uni bri yel dir Fluor, inst strmg yel wh Fluor cut, amber vis cut, strg bri yel Fluor Res, lt brn vis res.	
3164									Sst: dk yel brn, gen clr Qtz, f-crs, pred crs, ang-sbrndd, mod srt, fri-mod hd, wk sil cmt, mic, r carb, fr vis por.																		as above	
3165									Sst: dk yel brn, gen clr Qtz, f-crs, pred crs, ang-sbrndd, mod srt, fri-mod hd, wk sil cmt, mic, r carb, mod vis por.																		as above	
3166									Sst: dk yel brn, gen clr Qtz, f-crs, pred f-m, ang-sbrndd, mod srt, fri-mod hd, wk sil cmt, mic, r carb, mod vis por.																		as above	
3167									<b>c</b> Clst: dk gry-brn blk, hd, fis, non calc, Tr micromic, I.P. slty.																			
3168									Slst: dk gry, nd, blk, non calc, I.P. lam, r vf sdy, micromic, r carb, gen v arg grad Clst.																			
3169									Clst: olv gry, hd, fis, non calc, micromic, I.P. slty, pt Rem/ rooted.																			
3170									Sst: mod brn, gen clr Qtz, f, ang-sbrndd, mod srt, mod hd, wk calc/dol cmt, Tr Kao cmt/Mtr, mic, Tr carb, n.v.p.																			
3171									Sst: mod brn, gen clr Qtz, f-m, ang-sbrndd, mod srt, mod hd, wk calc/dol cmt, Tr Kao cmt/Mtr, mic, Tr carb, n.v.p.																		Pr Hydc od, lt brn O stn, uni dull or dir Fluor, inst strmg p.p. yel wh Fluor cut, no vis cut, bri yel Fluor Res, no vis Res.	



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**Core Report Core #1 (Part 2)**

Geologists: Å. Halvorsen, K.Kalgraff,  
 F.Liestøl

Field : Oseberg Kappa Nord  
 Well : 30/6-27  
 Date : 2002-02-22  
 Scale : 1 : 50

Depth m MD RKB	Core No.	Grain Size							Lith Struct	Lithological Description	Oil Str		Dir Flu		Cut Flu		Vis Cut		Shows Description
		pb	lv	c	m	f	vf	sl			el	pr	m	gd	pr	m	gd	pr	
3172	1									Sst: lt olv gry,clr Qtz,f, sbang-sbrmdd,mod srt,mod hd,wk sil cmt,wh arg cmt/Mtrx,mic,n.v.p.									n/s.
									" "										
3173										Clst: dk gry-brn blk,hd,fis,non calc,Tr micromic,I.P. slty.									
3174										Clst: dk gry-brn blk,hd,fis,non calc,Tr micromic,I.P. slty.									
3175										Clst: As for 3174m.									
3176									M	Clst: olv gry,hd,fis,non calc,micromic,I.P. slty,pt Rem/ rooted.									
3177										Sst: dk yel brn,clr-mky Qtz,f,crs,Tr v crs,gen m-crs,ang-sbrmdd,pr srt,fri,mod calc cmt,arg I.P.,mic,Tr carb,pr vis por.									Mod Hydc od,brn O stn,20% sptd bri yel dir Fluor,fast-inst stmg, p.p.yel wh Fluor cut,lt straw vis cut,wk wh Fluor Res,no vis Res.
3178									c	Clst: dk gry-brn blk,hd,fis,non calc,Tr micromic,I.P. slty.									
3179										Sst: lt brn gry,clr-mky Qtz,f, sbang-sbrmdd,mod srt,fri-mod hd,wk sil cmt,gen lt gry arg Mtrx/cmt,Tr mic,n.v.p.									Mod Hydc od,brn O stn,20% sptd bri yel dir Fluor,fast-inst stmg, p.p.yel wh Fluor cut,lt straw vis cut,wk wh Fluor Res,no vis Res.
3180										Clst: dk gry-brn blk,hd,fis,non calc,Tr micromic,I.P. slty.									
3181									Sst: dk yel brn,clr-mky Qtz,f,crs,Tr v crs,gen m-crs,ang-sbrmdd,pr srt,fri,Tr lt gry arg Mtrx/cmt,mic,Tr carb,pr vis por.									Mod Hydc od,brn O stn,20% sptd bri yel dir Fluor,fast-inst stmg, p.p.yel wh Fluor cut,lt straw vis cut,wk wh Fluor Res,no vis Res.	
									" "										



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**Core Report Core #1 (Part 3)**

Geologists: Å. Halvorsen, K.Kalgraff,  
 F.Liestøl

Field : Oseberg Kappa Nord  
 Well : 30/6-27  
 Date : 2002-02-22  
 Scale : 1 : 50

Depth m MD RKB	Core No.	Grain Size							Lith Struct	Lithological Description	Oil Str		Dir Flu		Cut Flu		Vis Cut		Shows Description
		pb	bl	vc	c	m	f	vf			st	el	pr	m	gd	pr	m	gd	
3182									.. ..	Sst: dk gry,nd,blky,non calc,l.P.lam,r vf sdy,micromic.r carb.gen v arg grad Clst.									
3183										Clst: dk gry-brn blk,hd,fis,non calc,Tr micromic,l.P. slty.									
3184										Sst: olv blk,clr Qtz,vf-crs,ang-sbrmdd,pr srt,hd,calc cmt,gen arg Mtrx grad Clst,n.v.p.									n/s
3185										Clst: dk gry-brn blk,hd,fis,non calc,Tr micromic,l.P. slty.									
3186										Clst: dk gry-brn blk,hd,fis,non calc,Tr micromic,l.P. slty.									Fr Hydc od,brn blk O stn,80%sptd bri yel-20%dull or dir Fluor, fast-mod strmg bri yel Fluor cut,straw-lt amber vis cut,wk-mod yel wh Fluor Res,lt brn vis Res.
3187										Sst: dk yel brn,clr-Tr mlky Qtz,f-crs,gen m-crs,ang-sbrmdd,mod srt,fr,wk calc cmt,mod lt gry arg Mtrx/cmt,mica,Tr carb,pr vis por.									Fr Hydc od,brn blk O stn,80%sptd bri yel-20%dull or dir Fluor, fast-mod strmg bri yel Fluor cut,straw-lt amber vis cut,wk-mod yel wh Fluor Res,lt brn vis Res.
3188										Sst: dk yel brn,clr-Tr mlky Qtz,f-crs,gen m-crs,ang-sbrmdd,mod srt,fr,wk calc cmt,mod lt gry arg Mtrx/cmt,mica,Tr carb,pr vis por.									Fr Hydc od,brn blk O stn,80%sptd bri yel-20%dull or dir Fluor, fast-mod strmg bri yel Fluor cut,straw-lt amber vis cut,wk-mod yel wh Fluor Res,lt brn vis Res.
3189										Sst: lt brn gry,clr-mky Qtz,f,sbang-sbrmdd,mod srt,fr,mod									



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**APPENDIX II**

**WELL SUMMARY**  
**GEOLOGICAL WELL SUMMARY**



**E&P Norway**  
**OSEBERG EXPLORATION**  
**KAPPA NORD**

Classific.: INTERNAL E&P

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**WELL SUMMARY**

<p><b>Coord:</b> 60°33' 28.85"N UTM: 6 713 759.6 mN          02°40' 45.60"E 482 415.2 mE</p> <p><b>Zone:</b> ED-50 UTM Zone 31 CM 3° E</p> <p><b>Line:</b> NH-154-115, NH-154-403</p> <p><b>Rig:</b> Transocean Arctic</p> <p><b>Waterdepth:</b> 112 m MSL KB: 24 m</p> <p><b>Stopped in:</b> Lower Statfjord Formation</p>	<p><b>On location:</b> 07.10.01 @ 15:00hrs</p> <p><b>Spud:</b> 08.10.01 @ 00:30hrs</p> <p><b>At TD:</b> 20.10.01 @ 02:30hrs</p> <p><b>P&amp;A finished:</b> 30.10.01 @ 20:30hrs</p> <p><b>TD Driller:</b> 3432 m MD (3378mTVD)</p> <p><b>TD Logger:</b> N/A</p> <p><b>Wireline Logg:</b> Schlumberger WS</p> <p><b>MWD:</b> Schlumberger Anadrill</p> <p><b>Mudlogging:</b> Geoservices</p>	<p><b>WELL:</b>  <b>30/6-27</b></p> <p><b>LICENCE:</b>  <b>PL 053</b></p> <p><b>COUNTRY:</b>  <b>Norway</b></p>
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**OPERATOR: NORSK HYDRO**

**OWNED BY: Hydro, Petoro, Statoil, ExxonMobil, TotalFinaElf**

**TARGETS:**

**Primary: Upper Statfjord Fm.**  
**Secondary: Lower Statfjord Fm.**

**RESULTS:**

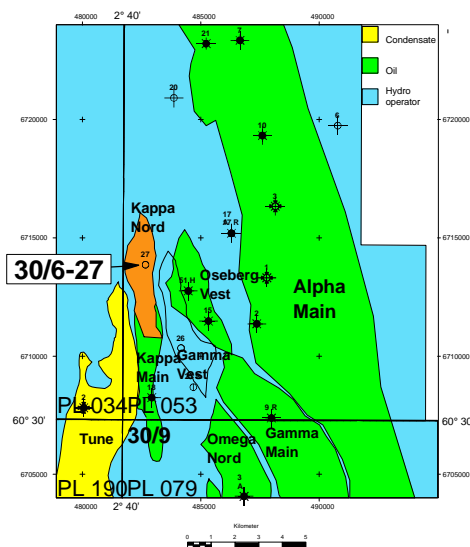
- Oil and Gas in Upper and Lower Statfjord Formation

**CASING (MD / TVD RKB)**

30" at 210.0 m / 210.0m  
 13 3/8" at 1280.0 m / 1280.0m  
 9 5/8" at 3055.0 m / 3001.5m  
 TD at 3432.0 m / 3378.0m

**MUD TYPE / WEIGHT**

Seawater -HiVis pills  
 Seawater -HiVis pills  
 OBM.Versavert 1.45sg  
 OBM.Versavert 1.35sg



**LOGS**

**MWD/LWD**

PowerPulse	36"	136,0 - 210,0 m
PowerPulse-CDR	17½"	196,0 - 1272,0 m
PowerPulse-CDR	12¼"	1280,0 - 3042,0 m
PowerPulse-ARC-ADN	8½"	2923,0 - 2966,0 m
PowerPulse-ARC-ADN	8½"	3055,0 - 3423,0 m

**Wireline**

MDT (Pressure only)	1A	3404,5 - 3126,5 m
MDT (Pressure + fluid)	1B	3352,5 - 3129,0 m
VSP-DSI (0-offset)	1A	3400,0 - 2185,0 m

**CORES**

**Core #1:** 3162 - 3189 m  
 Rec.: 3162 - 3189 m 100%



# E&P Norway

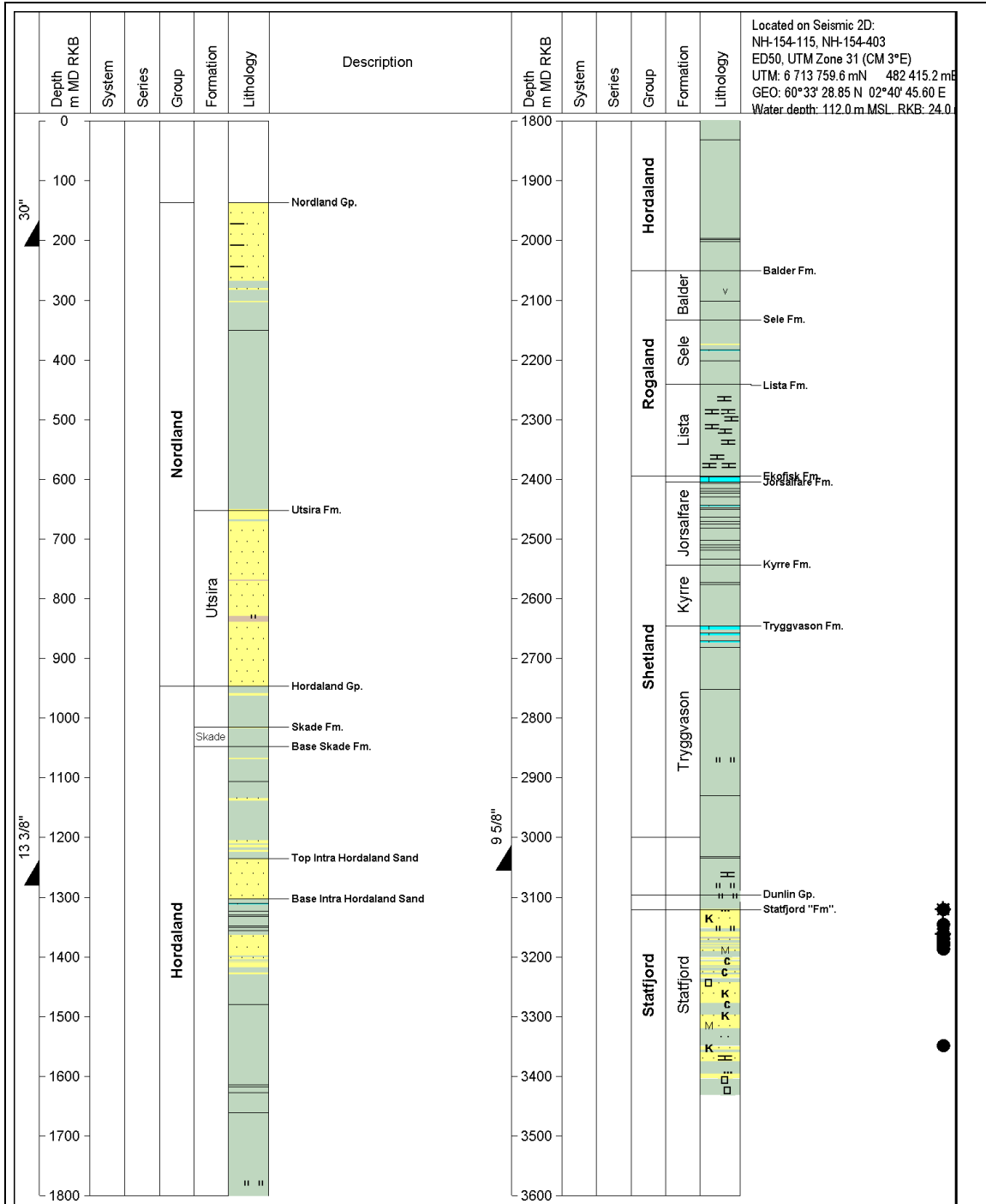
## OSEBERG EXPLORATION

### KAPPA NORD

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Located on Seismic 2D:  
 NH-154-115, NH-154-403  
 ED50, UTM Zone 31 (GM 3°E)  
 UTM: 6 713 759.6 mN 482 415.2 mE  
 GEO: 60°33' 28.85 N 02°40' 45.60 E  
 Water depth: 112.0 m MSL\_RKB: 24.0

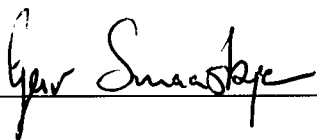
<p><b>Final Well Report</b>          30/6-27          PL 053, Oseberg          Kappa Nord</p>	<p><b>Revision: 1.0</b>          APPEND 2.2</p>	<p><b>Geological Summary</b></p> 
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## SECTION B

## OPERATIONS

Prepared by: G. Smaaskjær



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Approved by: T. Skram



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# 1 DRILLING SUMMARY AND EXPERIENCES

## 1.1 Mobilising

Total time used:	11.0 hrs	
Operational time:	11.0 hrs	(100 %)
Downtime:	0 hrs	

Wellhead co-ordinates :

6 713 759.6 mN                      0 482 415.2 mE

Rig heading:

220 degrees

The rig move towards well 30/6-27 started on 07 October 2001 at 15:00 and anchor handling was finished on 08 October 2001 at 02:00.

## 1.2 36" Hole Section / 30" Conductor

Water depth:	136.0 m	
Total depth of section:	210.0 m	
30" Conductor shoe:	210.0 m	
Total time used:	31.0 hrs	
Operational time:	31.0 hrs	(100 %)
Downtime:	0.0 hrs	

### 1.2.1 Drilling

The well was spudded on 08 October 2001, at 02:10 hrs.

A 36" rotary BHA with 17 1/2" Smith 10GMODPD insert bit and 36" hole opener was run and the section was drilled to TD at 210.0 m (17 1/2" bit at 212 m). The section was drilled with sea water and hi-visc pills. After drilling, high-visc was pumped and the hole displaced to 1,50 SG mud before a wiper trip was performed to 5 m below seabed. The hole was displaced once more to 1.5 SG mud prior to pulling out of hole.

### 1.2.2 Casing

The 30" conductor with the Permanent Guide Base. The conductor was cemented back to the sea bed with good returns and held for 6 hrs prior to releasing the conductor running tool. The wellhead inclination was less than 1 degree after releasing the conductor running tool. A 3 1/2" cement stinger was run and stabbed into the grouting funnel assisted by the ROV. No cement was tagged down to 156 m. Mixed and pumped 8 m3 of 1.95 cement into funnel and moved to other funnel and spotted another 8 m3.

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

Total depth of section:	1287.0 m
13 3/8" casing shoe	1280.0 m
Total time used:	80.5 hrs
Operational time:	78.0 hrs (96.9 %)
Downtime:	2.5 hrs ( 3.1 %)

**1.3.1 Drilling**

Ran in hole with a 26" Smith Milltooth bit and drilled out hard cement from 204 m to shoe at 210 m. Drilled out shoe and cleaned out 17 1/2" rathole to 212 m. The rathole was reamed several times until able to pass through without rotation, and the hole was swept with hi-visc pill and prior to pulling out.

Ran in with a 17 1/2" motor assembly Smith Insert MXT03DDT bit and a motor bend setting off 1.15 degrees and drilled 17 1/2" hole down to 629 m. Had increase in returns and circulated until normal retur flow. Continued and drilled 17 1/2" hole to section TD of 1287 m. Displaced hole with 65 m3 of 1.4 SG bentonite mud and 100 m3 of 1.4 SG KCL mud prior to pulling out.

**1.3.2 Casing**

Started to run the 13 3/8" casing but casing stood up at 212 m. Worked joint down and continued to run casing to 675 m. String took weight at this depth and the circulating swedge and hose was engaged an casing was washed down from 675 m to 697 m. The casing was then run to 1280 m without any further problems

Cemented the 13 3/8" casing with full returns to sea bed and bumped cement plug with 70 bar and continued to pressure test the casing to 125 bar.

Ran BOP and riser and pressure tested wellhead connector to 330 bar.

**1.4 12-1/2" Hole Section / 9-5/8" Casing**

Total depth of section:	3061.0 m
9 5/8 casing shoe:	3055.2 m
Total time used:	112.0 hrs
Operational time:	110.0 hrs (98.2 %)
Downtime:	2.0 hrs ( 1.8 %)

**1.4.1 LOT**

The cement in the 13 3/8" shoe track and 3 m new formation was drilled out with a Smith 12 1/4" MRS82PX bit using 1.40 SG KCL water based mud. A leak off test (LOT) was performed and gave a formation strength of 1.68 SG equivalent mud weight (EMW) at 1290m MD.

**1.4.2 Drilling**

Displaced hole to 1,2 SG oil based mud after the leak off test and continued drilling with the 12 1/4" Power Drive and a Smith MRS82PX PDC bit. Drilled and oriented 12 1/4" hole down to 1640 m and where mud weight was gradually raised to 1.45 SG. The 12 1/4" hole was then drilled and oriented to section TD of 3061.0 m.

**1.4.3**      **Casing**

The 9 5/8" casing was run to 2631.6 m without any problems. The cement plug was bumped and the casing was pressure test to 330 bar. The 9 5/8" seal assembly was set and both seal assembly and BOP was pressure tested to 345 bar.

**1.5**      **8-1/2" Hole Section**

Total depth of section:	2865.0 m
Total time used:	151.0 hrs
Operational time:	133.0 hrs (88.1 %)
Downtime:	18.0 hrs (11.9 %)

**1.5.1**      **FIT**

The cement in the 9 5/8" shoe track and 4 m new formation was drilled out with a rotary assembly and a Smith 8 1/2" MA74PX bit using 1,35 SG Oil based mud. A formation integrity test (FIT) confirmed formation strength of 1,60 SG equivalent mud weight (EMW) at 3064m MD.

**1.5.2**      **Drilling**

Continued drilling 8 1/2" hole with the motor assembly and a Smith 8 1/2" MA74PX bit using 1.35 SG oil base mud as drilling fluid and drilled down 3070 m. Lost signal from LWD logging tools. Drilled 8 1/2" hole down to from 3070 m to 3080 m while attempting to get logging tool to communicate. Pulled out of hole and changed out LWD logging tool. Ran in hole and reamed interval from 3060 m to 3080 m and drilled 8 1/2" hole to coring point at 3161 m. Pulled out of hole for coring.

Ran in hole after coring with a rotary assembly and a Smith 8 1/2" MA74PX bit and reamed interval from 3060 m to 3189 m prior to drilling 8 1/2" hole to well TD at 3432.0 m A wiper trip was performed prior to pulling out of hole

**1.5.3**      **Coring**

A core was cut from 3162 to 3189 m using a Sequirity Diamond Board 8 1/2" FC274RLI core bit from. The core recovery was 27.0 m or 100 %.

1.5.4 Logging

The well was logged according to the logging program. The following runs were run;

WIRELINE logs:

Run:	Toolstring:	Date:	Logged interval (mRKB)	Comments:
1A	GR/MDT	20/10 - 23/10.01	3404.5 - 3126.5	54 pressure points, 45 good + 5 samples.
1A	GR/VSP/DSI	23/10.01	3425.5 - 2185.0	0 offset VSP. DSI logged on separate run

**1.6 Plug and Abandonment**

Total time used: 172.0 hrs  
 Operational time: 81.5 hrs (47.4 %)  
 Downtime: 32.0 hrs (52.6 %)

The well was permanently abandoned with cement plug from TD to 150 m inside the 9 5/8" casing. The cement plug was not tagged with the required 10 mT down force and a 9 5/8" Bridge plug was run as pressure barrier and set at 2870 m. The Bridge plug was then pressure tested to 191 bar (70 bar above LOT).

A 240 m cement plug was dumped on top of the bridge plug after the pressure test

The 9 5/8" casing was then cut at 360 m and the 9 5/8" casing and seal assembly was pulled in one go (no lock-ring installed on the 9 5/8" casing).

A 13 3/8" Bridge plug was set at 352 m . The Bridge plug was run as pressure barrier and the plug was then pressure tested to 98 bar (70 bar above LOT).

A 200 m cement plug was dumped on top of the bridge plug after the pressure test, from 350 to 150 m, 14 m below seabed.

The 20" was cut 5 meters below seabed and pulled to together with the 18 5/8" wellhead. The 30" casing was then cut and retrieved together with the PGB.

However due to bad weather the pulling of the anchors where greatly delayed and 85 hours of down time was recorded for this.

A final seabed survey was performed as well while anchor handling and location was left 30 October 2001 at 20:30 hrs.

**1.7 Recommendations**

Drilling of long 12 1/4" section with OBM and full removal off all cuttings to shore for destruction requires a good logistics plan. A 12 1/4" hole requires 1 skip per stand drilled, while in the 8 1/2" section one can drill 3 stands per skip as a rule of thumb.

The use of motor together with a proper bit and oil based mud greatly increases the ROP even if a motor is not required for steering purposes.

The bit selection was optimised to use both new and rerun bits. In summary there were ten hole sections drilled all together on Wells: 30/6-26 and 30/6-27. This was achieved using only four new drill bits (three on 30/6-26 and one on 30/6-27). Two of the new bits used on 30/6-26 were rerun on the second well 30/6-27. The remaining four sections were drilled using rerun bits from wells drilled prior to 30/6-26 and 30/6-27. This methodology allowed a considerable bit cost save in with no compromise in drilling performance.

During the Plug and Abandonment of well 30/6-26, considerable time was spent waiting for cement to set up. In the end the bottom plug could not be tagged even after waiting for 24 hrs after the cement was pumped.

For the 30/6-27 well the open hole was cemented from TD into the 9 5/8" casing. The cement was dressed off and a 9 5/8" bridge plug was run as the pressure barrier. Considerable time was saved compared to waiting for cement to cure. In addition a 200 m cement plug was dumped on top of the plugs in order to comply with Norsk Hydro's Steering documentation on Plug and Abandonment.

The same conclusion can be given for the top barrier set in the 30/6-27. Based on the recommendation from the 30/6-26 well, the 9 5/8" casing was cut and a 13 3/8" Bridge plug was run just above the cut. This plug was pressure tested to 70 bar above the 13 3/8" leak of pressure and a 200 m cement plug was then dumped on top of the bridge plug. No time is spend waiting for cement to cure and this saved time.

**GENERAL INFORMATION ON WELL 30/6-27**

**Field** : KAPPA NORD                      **Country** : NORWAY  
**Licence** : 53                                **Installation** : TRANSOCEAN ARCTIC  
**UTM zone** : 31                              **Central Median** : 3' E                      **Horiz. Datum:** ED50

Location coordinates:		Surface	Target
<b>UTM</b>	<b>North [m]:</b>	6713759.6	6713864.0
<b>UTM</b>	<b>East [m]:</b>	482415.2	482662.0
<b>Geographical</b>	<b>North :</b>	60 33'28.85"	603332,263
<b>Geographical</b>	<b>East :</b>	02 40'45.60"	02411,770

**Water Depth:** 112.0 m                      **Reference Point Height:** 24.0 m  
**Formation at TD:** STATFJORD at 3432 m MD

**Operators:** NORSK HYDRO PRODUKSJON A/S                      **Share:** 22.23 %

**Partners:** PETORO                      **Share:** 50.78 %  
DEN NORSKE STATS OLJESELSKAP A/S                      14.00 %  
TOTALFINAELF                      8.65 %  
EXXON MOBIL                      4.33 %

**Total depth (RKB) :** 3432.0 m MD                      3377.8 m TVD

**TIME SUMMARY**                      **Start Time** : 2001-10-07 15:00:00  
**Spudding date** : 2001-10-08  
**Abandonment date** : 2001-10-30

Main operation	Hours	Days	%
MOBILIZATION	28.5	1.2	5.1
DRILLING	256.0	10.7	45.9
FORMATION EVALUATION LOGGING	73.0	3.0	13.1
FORMATION EVALUATION CORING	23.0	1.0	4.1
PLUG AND ABANDONMENT	64.0	2.7	11.5
DOWNTIME MOBILIZATION	85.0	3.5	15.2
DOWNTIME DRILLING	16.5	0.7	3.0
DOWNTIME FORM. EVAL. LOGGING	6.0	0.3	1.1
DOWNTIME PLUG AND ABANDONMENT	5.5	0.2	1.0
<b>Sum:</b>	<b>557.5</b>	<b>23.2</b>	

**Hole and casing record**

Hole	Track	Depth [m MD]	Casing/Tubing	Track	Depth [m MD]
36"		209.0	30"		210.0
17 1/2"		1287.0	13 3/8"		1280.0
12 1/4"		3061.0	9 5/8"		3055.2
8 1/2"		3432.0			

**Well status:** PERMANENTLY ABANDONED



**BRØNN 30/6-27 DRILLING**

Periode 01/2002

EDI	TEKST	BOKFØRT TOTAL	DAGRAPP ESTIMAT	EVT. KORR.	NY FINAL COST	BUDSJ. TOTAL	AVSETN. 01/2002
0	EMPLOYEE RELATED COSTS	3,383,559	4,985,313	-770,458	4,214,855	6,235,000	831,296
1	RIGCOSTS	40,614,796	41,424,330	-809,534	40,614,796	51,808,326	-0
2	RIG SUPPORT COSTS/REIMB	2,523,329	4,974,555	-451,226	4,523,329	6,221,546	2,000,000
3A	FUEL/LUB	1,313,983	1,159,375	154,608	1,313,983	1,450,000	0
3C	BITS	579,336	2,545,686	-966,350	1,579,336	3,700,845	1,000,000
3D	CASING/CASING EQUIPMENT	4,739,926	3,932,175	1,037,043	4,969,218	3,932,175	229,292
3E	WELLHEAD/X-MASTREE	1,160,747	1,608,000	-193,237	1,414,763	1,608,000	254,016
3F	CEMENT/CEMENT ADDITIVES	1,365,291	1,267,063	142,877	1,409,940	1,267,063	44,649
3G	MUD	2,114,594	4,660,332	0	4,660,332	3,343,885	2,545,738
0	0	0	0	0	0	0	0
					0	0	0
4B	CHARTERFLY	0	79,957	-79,957	-0	100,000	-0
4C	OTHER TRANSPORTATION	28,981	115,938	0	115,938	145,000	86,957
4D	STANDBY VESSEL	2,146,117	1,623,125	522,992	2,146,117	2,030,000	n/a
4F	HELICOPTER TRANSPORTAT	676,770	973,875	-297,105	676,770	1,218,000	n/a
4G	POOL VESSEL -*	9,687,028	7,896,875	1,790,153	9,687,028	9,350,000	n/a
							0
5A	CORING	155,366	275,000	0	275,000	0	119,634
5B	DRILLING TOOLS	416,202	4,018,953	-3,018,953	1,000,000	4,266,928	583,798
5C	CUTTING OF CASING	393,638	421,897	0	421,897	421,897	28,259
5D	COMPLETION SERVICES	0	0	0	0	0	0
5E	PERFORATION	0	0	0	0	0	0
5F	MWD SERVICES	5,394,481	2,304,340	3,090,141	5,394,481	2,476,334	0
5G	CASING OPERATIONS	68,039	500,000	0	500,000	500,000	431,961
5H	MUD LOG - Noe tidsrel. + noe f	525,773	708,891	-183,118	525,773	877,442	0
5H	MUD SERVICES	0	0	0	0	0	0
5I	CEMENTING SERVICES	662,890	440,563	222,328	662,891	551,000	1
5J	ELECTRICAL LOGGING	5,003,126	3,750,000	1,253,126	5,003,126	3,750,000	0
5K	VSP- DSL	0	400,000	0	400,000	400,000	400,000
5L	PROD TESTING	0	260,859	0	260,859	326,250	260,859
5M	DIVING/ROV	693,092	884,418	0	884,418	1,106,118	191,326
5N	RIGPOOL	612,466	533,313	79,154	612,467	667,000	1
5N	DIVERSE	954,248	2,673,040	-514,490	2,158,550	2,673,040	1,204,302
		0				0	0
6A	SITE SURVEY	0	450,000		450,000	450,000	450,000
6B	RIG POSITIONING	150,850	500,000	-321,350	178,650	500,000	27,800
6C	DRILLING SITE CLEAN UP	0				0	0
						0	0
7	WAREHOUSE COSTS	601,658	1,275,313		1,275,313	1,595,000	n/a
					0		0
8	LAB COST	0	1,150,000		1,150,000	1,150,000	1,150,000
SUM		85,966,286	97,793,183	686,644	97,329,827	114,120,849	11,839,887

AVSETNING BORING 11,839,887  
AVS. KOMPLETTERING

TOTAL AVSETNING 11,839,887

BILAGSNUMMER:

**DOWNTIME REPORT TRANSOCEAN ARCTIC**

Last 207 days

Inst. Wellname	Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
TOA 30/6-27	2001-10-09	1	0.5	Equipment failure	TRANSOCEAN OFFSHORE EUROPE LIMITED	MARITIME HYDRAULICS A/S	Replaced broken wrench cylinder on iron roughneck.	PIPE HANDLING EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTOR	342.00	Drillfloor Tubular Handling	
TOA 30/6-27	2001-10-11	2	1.5	Other	NORSK HYDRO A/S		String took weight at 675m. Rigged up circulating swege and hose and washed 675m to 697m.		CASING				
TOA 30/6-27	2001-10-11	3	0.5	Equipment failure	BJ SERVICES	BJ SERVICES	Clear blockage in recirculation line on cement unit. Jets plugged with dry cement.	SERVICE EQUIPMENT/SYS	CEMENTING	CEMENTING	371.01	Cement: Unit/pipe	
TOA 30/6-27	2001-10-15	4	1.0	Other	BJ SERVICES		Changed out pup joint on top of cement head and racked assembly back in derrick. BJ supplied wrong grade of drill pipe pup on top of 750T cement head.		CASING				
TOA 30/6-27	2001-10-16	5	1.0	Equipment failure	BJ SERVICES	BJ SERVICES	Attempted to drop ball to release bottom plug. Due to hydraulic lines for remote actuation being made up incorrectly, released dart instead. De-ballasted rig, broke connection below cement head and recovered dart.	SERVICE EQUIPMENT/SYS	CEMENTING	CEMENTING	371.02	Cement: Head	
TOA 30/6-27	2001-10-17	6	0.5	Equipment failure	TRANSOCEAN OFFSHORE EUROPE LIMITED	MARITIME HYDRAULICS A/S	Wash pipe leaked when started drilling. Changed same.	HOISTING EQUIPMENT	DRILLING	DRILLING CONTRACTOR	313.02	Top Drive	
TOA 30/6-27	2001-10-17	7	11.5	Equipment failure	ANADRILL	ANADRILL	Downhole tool failure. Attempted to get tool started by changing pumping and rotating schedule.	DRILLSTRING/DC EQUIPMENT	DRILLING	MWD/LWD	357.02	MWD/LWD	

**DOWNTIME REPORT TRANSOCEAN ARCTIC**

Last 207 days

Norsk Hydro

Inst. Wellname	Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
TOA 30/6-27	2001-10-21	8	5.5	Equipment failure	SCHLUMBERG WIRELINE & TESTING	SCHLUMBERG WIRELINE & TESTING	Live fluid analyser (LFA) not working. Trouble shoot same.	SERVICE EQUIPMENT/SYS	LOGGING	ELECTRIC LOGGING	372.17	Bottom hole sampling	
TOA 30/6-27	2001-10-22	9	0.5	Equipment failure	SCHLUMBERG WIRELINE & TESTING	SCHLUMBERG WIRELINE & TESTING	Indication of failure on down hole valve in sampling tool. Reboot computer.	SERVICE EQUIPMENT/SYS	LOGGING	ELECTRIC LOGGING	374.02	Formation Tester (RFT)	
TOA 30/6-27	2001-10-24	10	1.0	Equipment failure	TRANSOCEAN OFFSHORE EUROPE LIMITED	MARITIME HYDRAULICS A/S	Not able to break out topdrive connection. Dismounted torque wrench and broke out stand with rig tongs (threads damaged). Re-installed torque wrench.	PIPE HANDLING EQUIPMENT/SYS	PLUG AND ABANDONMEI	DRILLING CONTRACTOR	341.00	Vertical Pipe Handling	
TOA 30/6-27	2001-10-25	11	4.5	Waiting on weather			Not bale to get close stand-by. Waited on weather.		PLUG AND ABANDONMEI				
TOA 30/6-27	2001-10-26	12	8.0	Waiting on weather			WOW for anchor handling. POOH with 20/30" casing with guide frame and landed same in moonpool.		RIG MOVE/SKIDDI				
TOA 30/6-27	2001-10-27	13	77.0	Waiting on weather			Waited on weather for anchor handling.		RIG MOVE/SKIDDI				
<b>Sum:</b>											113.0		
<b>Total Sum:</b>											113.0		

**DAILY REPORT ON WELL 30/6-27**

**Daily report no :** 1                      **Date:** 2001-10-07  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 1.05 sg

Stop time	Description
-----------	-------------

15:00	No activity.
16:30	Rig in transit from well 30/6-26.
23:59	Running anchors on location.

**Daily report no :** 2                      **Date:** 2001-10-08  
**Midnight depth :** 210 m MD              **Estimated PP:** 1.03 sg                      **Mud weight:** 1.05 sg

Stop time	Description
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00:30	Continued running anchors. Last anchor no 6 on bottom 00:07 hrs. Last bouy in water 00:15 hrs.
02:00	Performed final cross tension on all anchors to 180 ton.
05:30	Spudded in well at 02:10 hrs and drilled 36" hole from 136 m to 210 m.
06:00	Swept hole with 25 m3 hi-vis and displaced to 1,50 SG mud.
07:00	Performed wiper trip to seabed. No fill on bottom.
07:30	Swept hole with hi-vis and displaced to 1,50 SG mud.
08:30	POOH and racked hole opener assembly in derrick.
09:00	Made up cement stand and racked in derrick.
12:30	Rigged up and ran 30" conductor through guide base. Landed in guide base and released running tool.
13:30	Ran 5" stinger inside conductor. Installed running tool and engaged conductor.
14:30	Ran conductor with guide base in water and landed same at 210 m.
15:00	Installed surface cement lines.
15:30	Circulated seawater.
17:30	Mixed and pumped 26 m3 1,56 SG lead slurry, followed by 21 m3 1,95 SG tail slurry. Displaced with seawater. Checked for back flow.
23:59	Waiting on cement.

**Daily report no :** 3                      **Date:** 2001-10-09  
**Midnight depth :** 490 m MD              **Estimated PP:** 1.03 sg                      **Mud weight:** 1.05 sg

Stop time	Description
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01:30	Continued waiting on cement.
02:30	Released conductor running tool with 5 righthand turns and POOH.
03:00	Installed cement hose on cement stand and racked same in derrick.
04:00	Laid out 36" hole opener.
04:30	Made up 26" bit and racked assembly in derrick.
05:30	Made up 1 stand 3 1/2" drill pipe for grouting and ran in water on 5" drill pipe.
06:30	Stabbed into grouting funnel assisted by ROV. Ran in to 156 m. No cement tagged.
08:30	Mixed and pumped 8 m3 1,95 SG tail cement slurry. Moved to other funnel and spotted another 8 m3 1,95 SG tail slurry.
09:00	POOH with grouting string.
11:30	Ran in with 26" bit and tagged cement at 204 m.
13:30	Drilled hard cement from 204 m. Drilled shoe at 210 and cleaned rathole to 212m.
14:30	POOH with 26" assembly. Laid out bit.
15:00	Broke and laid out cement stand.
18:00	Ran in with 17 1/2" motor assembly from derrick and stabbed into well head.
18:30	Replaced broken wrench cylinder on iron roughneck.
19:00	Continued running in hole and tagged bottom at 212 m.
23:59	Drilled 17 1/2" hole from 212 m to 490 m.

**Daily report no :** 4                      **Date:** 2001-10-10  
**Midnight depth :** 1287 m MD              **Estimated PP:** 1.03 sg                      **Mud weight:** 1.40 sg

Stop time	Description
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02:30	Drilled 17 1/2" hole from 490 m to 629 m.
03:00	Had increase in returns. Circulated until normal return flow.
15:30	Drilled 17 1/2" hole from 629 m to section TD 1287 m.
16:30	Swept hole with 25 m3 hi-vis mud.
17:30	Displaced hole with 65 m3 1,40 SG bentonite mud and 100 m3 1,40 SG Glydrill mud.
20:30	Flow checked and POOH to 30" conductor shoe.
21:00	Topped up hole with 25 m3 1,40 SG bentonite mud.

### DAILY REPORT ON WELL 30/6-27

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**Daily report no :** 4                      **Date:** 2001-10-10  
**Midnight depth :** 1287 m MD              **Estimated PP:** 1.03 sg              **Mud weight:** 1.40 sg

Stop time	Description
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22:30	POOH and racked bottom hole assembly in derrick.
23:30	Cleaned rig floor and rigged up to run 13 3/8" casing.
23:59	Picked up 13 3/8" casing shoe and tested same.

**Daily report no :** 5                      **Date:** 2001-10-11  
**Midnight depth :** 1287 m MD              **Estimated PP:** 1.03 sg              **Mud weight:** 1.40 sg

Stop time	Description
-----------	-------------

02:00	Continued picking up 13 3/8" shoetrack and Bakerloked same. Checked float. Ran in hole to 30" conductor shoe at 210 m.
06:30	Ran into open hole. Stood up at 212m. Worked joint down. Continued running in hole with 13 3/8" casing to 675 m.
08:00	String took weight at 675m. Rigged up circulating swedge and hose and washed from 675m to 697m.
11:30	Continued to run 13 3/8" casing.
13:00	Picked up and made up 18 3/4" wellhead housing to the 13 3/8" casing.
14:00	Ran 13 3/8" casing into the well on 5" drill pipe.
14:30	Landed casing / 18 3/4" wellhead in 30" housing.
15:30	Circulated the casing contents.
17:30	Cemented 13 3/8" casing - mixed and pumped 179m <sup>3</sup> lead slurry at 1,44sg.
18:00	Cleared recirculation line on cement unit.
19:00	Cemented 13 3/8" casing - mixed and pumped 20m <sup>3</sup> tail slurry at 1,92sg. Dropped dart and displaced with BJ - no shear seen.
19:30	Displaced wiper plug with rig pumps. Bumped plug with 70 bar - 35 bar over final displacement pressure.
20:30	Pressure tested 13 3/8" casing to 125 bar. Bled pressure off and checked float equipment - o.k.
21:00	Released running tool. Racked cement stand and pulled out and laid out running tool.
23:59	Laid out 17 1/2" BHA. Poor weather forecast meant delaying BOP run.

**Daily report no :** 6                      **Date:** 2001-10-12  
**Midnight depth :** 1287 m MD              **Estimated PP:** 1.03 sg              **Mud weight:** 1.40 sg

Stop time	Description
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02:00	Made up and racked back the 12 1/4" BHA.
03:00	Serviced and loaded ball and dart into cement head and racked back in the derrick.
08:00	Rigged up and prepared BOP stack for running.
14:30	Ran BOP stack.
17:00	Moved rig over location. Landed BOP on wellhead and overpulled 25T. Installed diverter and rigged down BOP / riser equipment.
19:30	Ran test plug and tested connector to 330 bar. POOH and laid out test plug. Function tested stack on both pods.
20:30	Ran and set wear bushing in wellhead. POOH and laid out running tool.
22:30	Make up 12 1/4" BHA and ran into well.
23:30	Ran in hole with 12 1/4" BHA on 5" drill pipe.
23:59	Performed choke drill with drilling crew.

**Daily report no :** 7                      **Date:** 2001-10-13  
**Midnight depth :** 2010 m MD              **Estimated PP:** 1.20 sg              **Mud weight:** 1.45 sg

Stop time	Description
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04:00	Drill cement plugs and float collar.
06:00	Drill out shoe track and float shoe at 1280m.
06:30	Cleaned out rathole and drilled 3m of new hole 1287m to 1290m.
07:30	Pumped round hi vis pills and circulated the hole clean. Spotted 10m <sup>3</sup> hi vis pill on the bottom of the hole.
08:30	Performed leak off test. Formation took fluid at 1,68 sg EMW.
09:30	Displaced the well to 1,20sg oil based mud.
23:59	Drilled ahead in 12 1/4" hole 1290m to 2010m. Raised Mud Wt to 1,45sg from 1640m - (below lowest prognosed depth for Grid Sand)

**DAILY REPORT ON WELL 30/6-27**

**Daily report no :** 8                      **Date:** 2001-10-14  
**Midnight depth :** 2978 m MD              **Estimated PP:** 1.25 sg              **Mud weight:** 1.45 sg

Stop time	Description
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23:59	Drilled ahead in 12 1/4" hole from 2010m to 2978m.
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**Daily report no :** 9                      **Date:** 2001-10-15  
**Midnight depth :** 3061 m MD              **Estimated PP:** 1.20 sg              **Mud weight:** 1.50 sg

Stop time	Description
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09:00	Drilled ahead in 12 1/4" hole from 2978m to 3061m.
10:30	Circulated the well clean. Flowchecked well.
14:00	Pumped slug and pulled out of hole. Hole condition - good.
15:00	Continued to pull out of hole with 5" drill pipe.
17:00	Pulled and racked BHA. Laid out MWD,CDR,power drive and bit.
18:30	Retrieved wear bushing from wellhead.
19:30	Changed out pup joint on top of cement head and racked assembly back in derrick.
20:30	Rigged up to run 9 5/8" casing.
22:00	Ran casing shoetrack into well.
23:59	Continued to run 9 5/8" casing into well. Midnight depth 373m.

**Daily report no :** 10                      **Date:** 2001-10-16  
**Midnight depth :** 3061 m MD              **Estimated PP:** 1.20 sg              **Mud weight:** 1.50 sg

Stop time	Description
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04:30	Continued to run 9 5/8" casing down to 13 3/8" shoe at 1280m.
05:00	Changed bails and installed La Fleur circulating tool.
16:30	Ran casing in 12 1/4" open hole to 2914m.
17:30	Picked up and made up casing hanger assembly and ran in hole to 2924m.
18:30	Ran casing into the well on 5" drill pipe. Picked up cement stand and landed casing in wellhead with shoe at 3055m.
20:00	Broke circulation slowly and built up rate. Circulated casing contents at 2000 lpm. Began detailed derrick inspection.
20:30	Pumped 3 m3 base oil and 15 m3 1,65sg MSC-G as spacers ahead of the cement.
21:30	Attempted to drop ball to release bottom plug. Due to hydraulic lines for remote actuation made up incorrectly, released dart instead. De-ballasted rig, broke connection below cement head and recovered dart.
22:00	Dropped ball and mixed and pumped 13,6 m3 of 1,90sg cement slurry.
23:30	Dropped dart and sheared out top plug with cement unit. Continued displacement with rig pump at 2500 lpm. Bumped plug with 6883 strokes and 85 bar.
23:59	Pressure tested casing to 330 bar. Bled pressure off and confirmed floats holding.

**Daily report no :** 11                      **Date:** 2001-10-17  
**Midnight depth :** 3071 m MD              **Estimated PP:** 1.20 sg              **Mud weight:** 1.35 sg

Stop time	Description
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00:30	Set seal assembly and pressure tested to 345bar.
01:30	Released running tool and POOH. Racked cement stand and laid out running tool and sub sea plug launch system.
02:00	Ran wear bushing on running tool with cup tester below. Set wear bushing in wellhead.
04:00	Tested BOP's and related equipment to 330 bar.
04:30	Sheared off of wear bushing and POOH and laid out running tool and cup tester.
07:00	Tested surface well control equipment.
07:30	Changed bails to drilling bails.
08:30	Laid down 12 1/4" stabiliser and 8" monel collars.
12:00	Made up 8 1/2" rotary assembly.
13:00	Laid out cement head from derrick.
16:00	Ran in hole with 8 1/2" rotary assembly from 160 m to 2965 m.
17:00	Performed slip and cut of drilling line.
17:30	Performed choke drill with drilling crew.
20:30	Tagged at 3001 m. Displaced hole to 1,35 SG oil base mud while drilling plugs, float equipment and shoetrack. Cleaned rathole to 3061 m.
21:30	DRilled new formation from 3061 m to 3064 m. Circulated clean and to even mud weight
22:30	Performed formation integrity test to equivalent mudweight 1,60 SG.
23:00	Wash pipe leaked when started drilling. Changed same.
23:30	Drilled 8 1/2" hole from 3064 m to 3070 m. Lost signal from downhole logging tools.
23:59	Attempted to get tool started by changing pumping and rotating schedule.

### DAILY REPORT ON WELL 30/6-27

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**Daily report no :** 12                      **Date:** 2001-10-18  
**Midnight depth :** 3162 m MD              **Estimated PP:** 1.20 sg              **Mud weight:** 1.35 sg

Stop time	Description
01:00	Drilled 8 1/2" hole from 3070 m to 3080 m while attempting to get logging tools to communicate .
01:30	Circulated bottoms up.
02:00	Performed flow check and pumped slug.
06:30	POOH for MWD tool change. Retrieved radioactive sources and laid out MWD tool.
11:00	Made up new MWD tool. Installed radioactive sources. Ran in hole to 3060 m.
12:00	Reamed for logging from 3060 m to 3080 m.
16:00	Drilled 8 1/2" hole from 3080 m to 3150 m.
17:00	Circulated bottoms up for sample.
17:30	Drilled from 3150 m to 3162 m.
18:30	Circulated bottoms up. Performed flow check and slugged pipe.
21:30	POOH with 8 1/2" drilling assembly.
22:30	Removed radioactive sources. Down loaded logging data and broke out bit.
23:30	Made up 8 1/2" coring assembly and installed alluminum inner barrels.
23:59	Ran in hole with coring assembly to 265 m.

**Daily report no :** 13                      **Date:** 2001-10-19  
**Midnight depth :** 3410 m MD              **Estimated PP:** 1.16 sg              **Mud weight:** 1.36 sg

Stop time	Description
03:00	Ran in hole with 8 1/2" coring assembly from 265 m to 3162 m.
03:30	Dropped ball and circulated same down with 900 lpm/42 bar. Seated ball with 55 bar.
05:00	Cut core from 3162 m to 3189 m. Flow checked and pumped slug.
09:00	POOH with 8 1/2" coring assembly.
10:00	Held safety meeting and recovered core. 100 pct recovery.
11:00	Made up 8 1/2" drilling assembly. Programmed MWD tool and installed radioactive source
15:00	Ran in hole with drilling assembly to 3140 m.
16:30	Reamed in hole from 3140 m to 3189 m while logging cored interval.
23:59	Drilled 8 1/2" hole from 3189 m to 3410 m.

**Daily report no :** 14                      **Date:** 2001-10-20  
**Midnight depth :** 3432 m MD              **Estimated PP:** 1.25 sg              **Mud weight:** 1.35 sg

Stop time	Description
01:30	Drilled 8 1/2" hole from 3410 m to TD at 3432 m in lower Stadtfjord.
02:30	Ciculated bottoms up.
03:30	Performed wipertrip to 9 5/8" casing shoe at 3055 m.
04:30	Circulated bottoms up. Flow checked well and pumped slug.
05:00	POOH with 8 1/2" drilling assembly to casing shoe at 3050 m.
08:00	POOH from 3055 m to 65 m.
09:30	Removed radioactive source and laid out bottom hole assembly.
13:30	Rigged up to run wireline. Made up tool string and ran in hole.
23:59	Correlated logs and started pretests.

**Daily report no :** 15                      **Date:** 2001-10-21  
**Midnight depth :** 3432 m MD              **Estimated PP:** 1.25 sg              **Mud weight:** 1.35 sg

Stop time	Description
01:30	Continued FMT logging.
02:30	Commenced sampling. Problems with live fluid analyser (LFA). Trouble shoot same.
05:30	POOH with logging tools. Changed LFA tool to back up tool, an optical fluid analyser (OFA). Changed cable head. Tested tools.
07:00	Ran in hole with MDT logging tools. Correlated depth.
14:00	Performed clean up at 3150,5 m wireline depth and sampled oil.
21:00	Spaced out at 3162,5 m wireline depth. Performed clean up and sampled oil.
23:59	Spaced out at 3352,5 m wireline depth. Performed clean up.

### DAILY REPORT ON WELL 30/6-27

**Daily report no :** 16                      **Date:** 2001-10-22  
**Midnight depth :** 3432 m MD              **Estimated PP:** 1.25 sg              **Mud weight:** 1.35 sg

Stop time	Description
03:30	Continued clean up at 3352,5 m wireline depth. Took oil samples.
05:30	Continued to next station at 3179,5 m wireline depth. Performed clean up. Confirmed oil in sample. Looking for water.
09:30	Next station 3202,5 m wireline depth. Pumped to clean up and sampled water.
10:00	Moved to next station at 3129 m wireline depth and spaced out.
10:30	Indication of failure on down hole valve. Rebooted computer.
19:00	Cleaned up and sampled gas at 3129 m.
20:00	Moved tools and spaced out tool at 3162 m wireline depth.
22:00	Pumped to confirm fluids. Light oil or condensate confirmed.
23:30	POOH with MDT logging string.
23:59	Commenced laying out logging string.

**Daily report no :** 17                      **Date:** 2001-10-23  
**Midnight depth :** 3432 m MD              **Estimated PP:** 1.25 sg              **Mud weight:** 1.35 sg

Stop time	Description
00:30	Finished rigging down MDT tools.
02:00	Made up VSP/DSI tools and checked same.
04:00	Ran in hole with logging string.
07:00	Logged DSI coming out of hole from 3425,5 m to 2200 m.
14:30	Ran in hole to 3400 m and correlated depth. Started VSP logging at 3400 m and logged up to 2185 m with a new station every 15 m. POOH.
16:30	Laid out tools and rigged down sheaves.
20:00	Ran in hole with diverter shoe on 233 m 3 1/2" drill pipe to 3030 m. Installed 9 5/8" casing scraper spaced out to 2885 m.
21:00	Performed slip and cut on drilling line.
21:30	Ran in hole to TD 3432 m.
22:00	Took SCR and circulated bottoms up to 1000 m.
23:59	Closed lower annular preventer and continued circulating bottoms up through choke and poor boy degasser. Max gas 31,5 pct, continued circulating over choke until gas 16 pct. Opened BOP and circulated through riser. Max gas 46,1 pct.

**Daily report no :** 18                      **Date:** 2001-10-24  
**Midnight depth :** 3432 m MD              **Estimated PP:** 1.25 sg              **Mud weight:** 1.35 sg

Stop time	Description
00:30	Pumped 5 m <sup>3</sup> 1,65 sg MCS spacer with rig pumps. Mixed and pumped 10 m <sup>3</sup> 1,90 sg cement.
01:30	Displaced with rig pumps and spotted cement as balanced plug no 1 from 3432 m to 3180 m.
02:00	Pulled out of cement with controlled speed to 3180 m.
03:00	Circulated bottoms up.
03:30	Pumped 7 m <sup>3</sup> 1,65 sg MCS spacer. Mixed and pumped 10 m <sup>3</sup> 1,90 sg cement. Displaced same with rig pumps and spotted cement as balance plug no 2 from 3180 m to 2910 m.
04:00	Pulled out of cement with controlled speed to 2900 m.
05:30	Circulated bottoms up.
09:00	POOH with cement stinger.
09:30	Made up 9 5/8" bridge plug.
15:00	Ran in hole with bridge plug to 2870 m on 3 1/2" and 5" drill pipe.
16:30	Dropped ball and circulated same down. Set bridgeplug at 2870 m with 205 bar.
17:00	Released running tool and pressure tested plug to 70 bar above prognosed frac pressure.
18:00	Pumped 10 m <sup>3</sup> 1,65 sg MCS spacer with rig pumps. Mixed and pumped 9 m <sup>3</sup> 1,90 sg cement slurry. Displaced with rig pumps and spotted cement as balanced plug no 3 from 2868 m to 2628 m.
19:30	Pulled out of cement and spacer with controlled speed to 2360 m.
20:30	Displaced 78,5 m <sup>3</sup> of slop into well.
21:30	Not able to break out topdrive connection. Dismounted torque wrench and broke out stand with rig tongs. Re-installed torque wrench.
23:59	POOH with bridge plug running tool from 2360 m to 232 m.

**Daily report no :** 19                      **Date:** 2001-10-25  
**Midnight depth :** 3432 m MD              **Estimated PP:** 1.25 sg              **Mud weight:** 1.35 sg

Stop time	Description
01:00	Continued POOH and laid out bridge plug running tool.



### DAILY REPORT ON WELL 30/6-27

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**Daily report no :** 19                      **Date:** 2001-10-25  
**Midnight depth :** 3432 m MD              **Estimated PP:** 1.25 sg              **Mud weight:** 1.35 sg

Stop time	Description
02:30	Made up 9 5/8" casing cutter. Confirmed sweep. Spaced out and installed marine swivel on the way in hole. Landed in wellhead with knives spaced out to cut at 360 m.
03:00	Broke circulation with 640 lpm/60 bar and cut casing with 120 rpm/4-5 KNm.
04:00	Flow checked well. Pumped slug and POOH with casing cutter.
05:00	Made up 9 5/8" casing spear and ran in hole with same.
05:30	Engaged 9 5/8" spear in well head. Pulled casing free with 21 ton over pull.
06:00	POOH with 9 5/8" casing cut-off on spear assembly and landed in rotary. Released spear and racked same.
07:00	Rigged up to retrieve and lay out casing.
07:30	Laid out 9 5/8" casing hanger.
09:00	Retrieved and laid out 9 5/8" casing.
10:00	Rigged down casing equipment.
10:30	Made up 13 3/8" bridge plug on setting tool.
11:30	Ran in hole with bridgeplug.
12:30	Spaced out at 352 m. Dropped ball and displaced same. Set bridgeplug with 190 bar. Released running tool and tagged plug with 3 ton. Pressure tested bridgeplug to 70 bar above leak off pressure.
13:30	Displaced hole to sea water.
14:30	Pumped 10 m3 soap wash. Mixed and pumped 15,7 m3 1,95 sg cement. Displaced same with sea water to spot cement as balanced plug from 350 m to 150 m.
15:00	POOH with controlled speed to 150 m.
15:30	Circulated clean on top of cement plug.
16:00	POOH and laid out bridge plug setting tool.
18:00	Prepared to retrieve BOP. Held safety meeting.
23:30	Unlatched BOP and retrieved to moonpool. Secured BOP.
23:59	Not able to get close stand-by. Waited on weather.

**Daily report no :** 20                      **Date:** 2001-10-26  
**Midnight depth :** 3432 m MD              **Estimated PP:** sg              **Mud weight:** 1.35 sg

Stop time	Description
04:00	Continued waiting on weather for close stand by.
06:30	Disconnected BOP and skidded aside. Laid out double riser and terminal spool.
07:00	Broke down 9 5/8" cutting assembly from derrick.
09:00	Made up 20/30" cutting assembly.
11:00	Ran in hole with cutting assembly and landed in wellhead.
14:00	Cut 20/30" casing at 141 m. Pulled free with 15 ton overpull.
16:30	WOW for anchor handling. - POOH with 20/30" casing with guide frame and landed same in moonpool.
17:30	WOW. - Released spear and laid out cutting assembly.
20:00	WOW. - Made up running tool to drill pipe. Ran in and released wellhead from guide base.
22:00	WOW. -Laid out 5" drill pipe.
23:59	Retrieved anchors.

**Daily report no :** 21                      **Date:** 2001-10-27  
**Midnight depth :** 3432 m MD              **Estimated PP:** sg              **Mud weight:** 1.35 sg

Stop time	Description
07:00	Retrieving anchors. First anchor no 6 in bolster 02:10 hrs. Anchor 3 at 02:45 hrs, anchor 7 at 07:10 hrs
23:59	Waited on weather for anchor handling.

**Daily report no :** 22                      **Date:** 2001-10-28  
**Midnight depth :** m MD              **Estimated PP:** sg              **Mud weight:** 1.35 sg

Stop time	Description
23:59	Waited on weather for anchor handling.

### DAILY REPORT ON WELL 30/6-27

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**Daily report no :** 23                      **Date:** 2001-10-29  
**Midnight depth :** m MD              **Estimated PP:** sg              **Mud weight:** 1.35 sg

Stop time	Description
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23:59	Waited on weather for anchor handling.
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**Daily report no :** 24                      **Date:** 2001-10-30  
**Midnight depth :** m MD              **Estimated PP:** sg              **Mud weight:** 1.35 sg

Stop time	Description
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12:00	Waited on weather for anchor handling.
20:30	Retrieved last 5 anchors. All anchors except anchor no 1 changed to Bruce type.
23:59	No activity. Rig in transit for new location at 34/8-12S.

## TIME DISTRIBUTION

**Well:** 30/6-27      **PO:** 1      **Start date:** 1980-01-01      **Rig:** TRANSOCEAN ARCTIC      **Depth:** 3432.0 m MD  
**All sections**      **Stop date:** 2002-05-02

Operations	Hours	%	Hours	%	Acc. total
<b>MOBILIZATION</b>					
MOVING	1.5	0.27			
MOORING; RUNNING ANCHORS	9.5	1.70			
MOORING; PULLING ANCHORS	17.5	3.14			
<b>Sum.....</b>			28.5	5.11	28.5
<b>DRILLING</b>					
BHA HANDLING/TESTING	14.5	2.60			
EQUIPMENT TEST	2.5	0.45			
TRIPPING IN CASED HOLE	18.5	3.32			
TRIPPING IN OPEN HOLE	8.0	1.43			
DRILLING	86.5	15.52			
OTHER	0.5	0.09			
CIRC. AND COND. MUD/HOLE	10.5	1.88			
WIPER TRIP	2.0	0.36			
CASING HANDLING/TESTING	8.5	1.52			
RUNNING CASING IN CASED HOLE	13.5	2.42			
RUNNING CASING IN OPEN HOLE	24.0	4.30			
DRILLING OUT OF CASING	6.0	1.08			
PRIMARY CEMENTING	25.0	4.48			
TRIPPING FOR CEMENT JOB	4.5	0.81			
DRILLING OUT CEMENT PLUG	5.0	0.90			
FORMATION STRENGTH TESTING	3.0	0.54			
BOP HANDLING	5.0	0.90			
BOP RUNNING/RETRIEVING	9.0	1.61			
BOP TESTING	5.0	0.90			
WELLHEAD EQUIPMENT HANDLING	3.5	0.63			
SLIP AND CUT DRILLING LINE	1.0	0.18			
<b>Sum.....</b>			256.0	45.92	284.5
<b>FORMATION EVALUATION LOGGING</b>					
LOGGING	3.0	0.54			
LOGGING EQUIPMENT HANDLING/TESTING	3.0	0.54			
FORMATION TESTER	56.0	10.04			
VERTICAL SEISMIC	11.0	1.97			
<b>Sum.....</b>			73.0	13.09	357.5
<b>FORMATION EVALUATION CORING</b>					
BHA HANDLING/TESTING	2.0	0.36			
CIRCULATING FOR SAMPLE	1.0	0.18			
TRIPPING IN CASED HOLE	14.5	2.60			
CORING EQUIPMENT/CORE HANDLING	2.0	0.36			
OTHER	1.5	0.27			
CORING	1.5	0.27			
CIRC. AND COND. MUD/HOLE	0.5	0.09			
<b>Sum.....</b>			23.0	4.13	380.5
<b>PLUG AND ABANDONMENT</b>					
BHA HANDLING/TESTING	2.5	0.45			
OTHER	1.0	0.18			
CIRC. AND COND. MUD/HOLE	1.0	0.18			
CASING HANDLING/TESTING	2.0	0.36			
TRIPPING FOR CEMENT JOB	9.5	1.70			
BOP HANDLING	4.5	0.81			
BOP RUNNING/RETRIEVING	5.5	0.99			
SET CEMENT PLUG	11.0	1.97			
SET MECHANICAL PLUG	14.0	2.51			
TRIPPING OF CASING CUTTING EQUIPMENT	5.5	0.99			
CUT CASING/WELLHEAD	4.0	0.72			
CASING RETRIEVING	2.5	0.45			
SLIP AND CUT DRILLING LINE	1.0	0.18			
<b>Sum.....</b>			64.0	11.48	444.5

**TIME DISTRIBUTION**

**Well:** 30/6-27      **PO:** 1      **Start date:** 1980-01-01      **Rig:** TRANSOCEAN ARCTIC      **Depth:** 3432.0 m MD  
**All sections**      **Stop date:** 2002-05-02

<b>Operations</b>	<b>Hours</b>	<b>%</b>	<b>Hours</b>	<b>%</b>	<b>Acc. total</b>
<b>DOWNTIME MOBILIZATION</b>					
WAITING	85.0	15.25			
<b>Sum.</b> .....			85.0	15.25	529.5
<b>DOWNTIME DRILLING</b>					
EQUIPMENT FAILURE AND REPAIR	14.0	2.51			
OTHER	2.5	0.45			
<b>Sum.</b> .....			16.5	2.96	546.0
<b>DOWNTIME FORM. EVAL. LOGGING</b>					
EQUIPMENT FAILURE AND REPAIR	6.0	1.08			
<b>Sum.</b> .....			6.0	1.08	552.0
<b>DOWNTIME PLUG AND ABANDONMENT</b>					
EQUIPMENT FAILURE AND REPAIR	1.0	0.18			
WAITING	4.5	0.81			
<b>Sum.</b> .....			5.5	0.99	557.5
Reported time ( 100.0 % of well total 557.5 hours ) :					557.5

**HOLE DEVIATION**

**Well:** 30/6-27      **Reference point:** RKB ; 24.0 m ABOVE MSL  
**Waterdepth:** 112.0 m      **Vertical to:** 99.9 m      **Total Depth:** 3432.0 m MD  
**Utm zone:** 31      **Central Median:** 3' E      **Horizontal datum:** ED50  
**Template Centre Coordinates, UTM:**      **North :**      m,      **East:**      m  
**Wellhead Coordinates, UTM:**      **North :** 6713759.61 m,      **East:** 482415.20 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		Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
						North [m]	East [m]				
0.00	0.00	0.00	MWD	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135.00	0.00	0.00	MWD	7	135.00	0.00	0.00	0.00	0.00	0.00	0.00
146.80	0.42	47.80	MWD	7	146.80	0.03	0.03	0.04	1.07	1.07	121.53
172.79	0.23	147.10	MWD	7	172.79	0.05	0.13	0.14	0.59	-0.22	114.62
198.39	0.59	91.40	MWD	7	198.39	0.00	0.29	0.29	0.58	0.42	-65.27
229.06	0.67	69.90	MWD	7	229.06	0.06	0.62	0.62	0.24	0.08	-21.03
257.73	0.95	78.00	MWD	7	257.72	0.17	1.01	1.02	0.32	0.29	8.48
287.04	0.51	88.70	MWD	7	287.03	0.22	1.37	1.39	0.47	-0.45	10.95
316.67	0.34	97.30	MWD	7	316.66	0.21	1.59	1.61	0.18	-0.17	8.71
405.92	0.49	109.40	MWD	7	405.91	0.05	2.22	2.22	0.06	0.05	4.07
434.44	0.41	131.50	MWD	7	434.43	-0.06	2.41	2.41	0.20	-0.08	23.25
462.79	0.34	134.30	MWD	7	462.78	-0.18	2.54	2.55	0.08	-0.07	2.96
492.53	0.23	132.10	MWD	7	492.52	-0.28	2.65	2.67	0.11	-0.11	-2.22
580.72	0.15	139.50	MWD	7	580.71	-0.49	2.86	2.90	0.03	-0.03	2.52
639.36	0.30	145.20	MWD	7	639.35	-0.67	3.00	3.07	0.08	0.08	2.92
670.18	0.34	352.00	MWD	7	670.17	-0.65	3.03	3.10	0.61	0.04	-149.12
698.47	0.46	5.60	MWD	7	698.46	-0.45	3.03	3.06	0.16	0.13	14.42
728.24	0.92	316.20	MWD	7	728.22	-0.16	2.87	2.88	0.72	0.46	-49.78
757.98	1.21	343.60	MWD	7	757.96	0.31	2.62	2.64	0.58	0.29	27.64
817.79	0.59	321.80	MWD	7	817.76	1.16	2.25	2.53	0.35	-0.31	-10.93
875.24	1.06	328.10	MWD	7	875.20	1.84	1.79	2.57	0.25	0.25	3.29
905.37	0.87	340.20	MWD	7	905.33	2.29	1.56	2.78	0.28	-0.19	12.05
993.71	0.69	3.80	MWD	7	993.66	3.46	1.37	3.72	0.12	-0.06	8.01
1023.09	0.77	9.10	MWD	7	1023.04	3.83	1.41	4.08	0.11	0.08	5.41
1052.74	0.69	22.80	MWD	7	1052.69	4.19	1.51	4.45	0.19	-0.08	13.86
1082.12	0.65	40.40	MWD	7	1082.07	4.48	1.69	4.79	0.21	-0.04	17.97
1111.63	0.82	52.60	MWD	7	1111.57	4.73	1.97	5.13	0.23	0.17	12.40
1170.29	0.69	30.30	MWD	7	1170.23	5.29	2.48	5.85	0.16	-0.07	-11.40
1200.12	0.62	325.90	MWD	7	1200.06	5.58	2.48	6.11	0.70	-0.07	-64.77
1229.46	1.23	299.90	MWD	7	1229.39	5.87	2.12	6.24	0.74	0.62	-26.58
1263.55	1.86	291.20	MWD	7	1263.47	6.25	1.28	6.38	0.59	0.55	-7.66
1296.62	2.47	273.60	MWD	7	1296.52	6.49	0.07	6.49	0.81	0.55	-15.97
1326.57	2.37	282.90	MWD	7	1326.44	6.67	-1.17	6.77	0.41	-0.10	9.32
1355.59	2.33	287.70	MWD	7	1355.44	6.99	-2.32	7.36	0.21	-0.04	4.96
1385.05	0.32	162.50	MWD	7	1384.89	7.09	-2.87	7.65	2.57	-2.05	-127.49
1414.39	2.81	124.10	MWD	7	1414.22	6.61	-2.25	6.98	2.62	2.55	-39.26

**HOLE DEVIATION**

**Well:** 30/6-27      **Reference point:** RKB ; 24.0 m ABOVE MSL  
**Waterdepth:** 112.0 m      **Vertical to:** 99.9 m      **Total Depth:** 3432.0 m MD  
**Utm zone:** 31      **Central Median:** 3' E      **Horizontal datum:** ED50  
**Template Centre Coordinates, UTM:**      **North :**      m,      **East:**      m  
**Wellhead Coordinates, UTM:**      **North :** 6713759.61 m,      **East:** 482415.20 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		Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
						North [m]	East [m]				
1444.12	6.06	118.90	MWD	7	1443.85	5.44	-0.27	5.45	3.30	3.28	-5.25
1474.35	8.74	116.20	MWD	7	1473.83	3.65	3.19	4.85	2.68	2.66	-2.68
1503.45	10.37	115.00	MWD	7	1502.52	1.57	7.55	7.71	1.69	1.68	-1.24
1532.98	11.31	108.10	MWD	7	1531.53	-0.45	12.71	12.72	1.63	0.95	-7.01
1562.75	13.02	103.40	MWD	7	1560.63	-2.14	18.75	18.87	1.99	1.72	-4.74
1592.16	14.67	99.20	MWD	7	1589.18	-3.50	25.65	25.88	1.97	1.68	-4.28
1621.60	16.00	96.60	MWD	7	1617.58	-4.56	33.36	33.67	1.53	1.36	-2.65
1650.88	15.34	97.60	MWD	7	1645.77	-5.54	41.20	41.57	0.73	-0.68	1.02
1680.39	15.56	99.00	MWD	7	1674.21	-6.67	48.98	49.43	0.44	0.22	1.42
1710.05	18.33	93.10	MWD	7	1702.58	-7.55	57.57	58.06	3.29	2.80	-5.97
1740.54	20.31	88.60	MWD	7	1731.36	-7.68	67.65	68.08	2.44	1.95	-4.43
1770.05	21.70	82.70	MWD	7	1758.91	-6.86	78.18	78.48	2.57	1.41	-6.00
1799.54	22.29	76.90	MWD	7	1786.25	-4.90	89.04	89.17	2.29	0.60	-5.90
1828.95	23.31	71.10	MWD	7	1813.37	-1.75	99.98	99.99	2.52	1.04	-5.92
1858.41	24.18	64.60	MWD	7	1840.34	2.73	110.94	110.98	2.81	0.89	-6.62
1887.95	25.22	58.60	MWD	7	1867.18	8.60	121.78	122.09	2.76	1.06	-6.09
1916.22	26.01	54.60	MWD	7	1892.67	15.33	131.98	132.87	2.02	0.84	-4.24
1946.42	26.59	50.90	MWD	7	1919.75	23.43	142.62	144.53	1.73	0.58	-3.68
1976.36	26.29	50.30	MWD	7	1946.56	31.89	152.92	156.21	0.40	-0.30	-0.60
2005.65	26.23	50.70	MWD	7	1972.82	40.14	162.92	167.79	0.19	-0.06	0.41
2035.34	26.32	51.10	MWD	7	1999.45	48.42	173.12	179.77	0.20	0.09	0.40
2064.03	25.58	51.20	MWD	7	2025.24	56.30	182.90	191.37	0.78	-0.77	0.10
2094.12	23.79	51.10	MWD	7	2052.58	64.18	192.69	203.09	1.79	-1.78	-0.10
2123.51	22.01	49.70	MWD	7	2079.66	71.47	201.50	213.80	1.90	-1.82	-1.43
2152.40	20.72	49.60	MWD	7	2106.56	78.28	209.52	223.67	1.34	-1.34	-0.10
2179.63	19.92	49.20	MWD	7	2132.10	84.43	216.70	232.57	0.89	-0.88	-0.44
2208.39	17.91	49.60	MWD	7	2159.30	90.50	223.78	241.39	2.10	-2.10	0.42
2236.55	16.14	51.30	MWD	7	2186.23	95.76	230.13	249.26	1.96	-1.89	1.81
2265.33	14.30	54.10	MWD	7	2214.00	100.34	236.13	256.57	2.06	-1.92	2.92
2294.11	12.03	56.30	MWD	7	2242.02	104.09	241.51	262.98	2.42	-2.37	2.29
2323.06	9.96	59.70	MWD	7	2270.44	107.03	246.18	268.44	2.25	-2.15	3.52
2350.38	8.19	63.60	MWD	7	2297.41	109.09	249.96	272.73	2.06	-1.94	4.28
2378.86	6.53	67.10	MWD	7	2325.66	110.62	253.27	276.37	1.81	-1.75	3.69
2407.61	4.88	73.30	MWD	7	2354.26	111.61	255.95	279.22	1.84	-1.72	6.47
2435.87	3.91	79.50	MWD	7	2382.44	112.13	258.05	281.36	1.15	-1.03	6.58
2468.05	1.78	85.30	MWD	7	2414.58	112.37	259.63	282.90	2.00	-1.99	5.41

**HOLE DEVIATION**

**Well:** 30/6-27      **Reference point:** RKB ; 24.0 m ABOVE MSL  
**Waterdepth:** 112.0 m      **Vertical to:** 99.9 m      **Total Depth:** 3432.0 m MD  
**Utm zone:** 31      **Central Median:** 3' E      **Horizontal datum:** ED50  
**Template Centre Coordinates, UTM:**      **North :**      m,      **East:**      m  
**Wellhead Coordinates, UTM:**      **North :** 6713759.61 m,      **East:** 482415.20 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		Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
						North [m]	East [m]				
2493.03	0.12	86.10	MWD	7	2439.55	112.40	260.04	283.29	1.99	-1.99	0.96
2521.92	0.08	321.40	MWD	7	2468.44	112.42	260.06	283.31	0.18	-0.04	-129.49
2551.08	0.06	174.20	MWD	7	2497.60	112.42	260.04	283.30	0.14	-0.02	-151.44
2579.73	0.15	53.00	MWD	7	2526.25	112.43	260.08	283.34	0.20	0.09	-126.91
2609.45	0.26	116.10	MWD	7	2555.97	112.42	260.17	283.42	0.24	0.11	63.69
2636.97	0.15	340.90	MWD	7	2583.49	112.43	260.21	283.46	0.42	-0.12	-147.38
2665.85	0.17	95.60	MWD	7	2612.37	112.46	260.24	283.50	0.28	0.02	119.15
2694.64	0.18	335.20	MWD	7	2641.16	112.50	260.27	283.54	0.32	0.01	-125.46
2724.27	0.30	272.10	MWD	7	2670.79	112.54	260.17	283.47	0.27	0.12	-63.89
2752.26	0.43	132.90	MWD	7	2698.78	112.47	260.17	283.44	0.73	0.14	-149.20
2780.79	0.13	345.40	MWD	7	2727.31	112.43	260.24	283.49	0.57	-0.32	-155.10
2809.04	0.22	120.80	MWD	7	2755.56	112.43	260.28	283.53	0.35	0.10	143.79
2838.93	0.12	92.00	MWD	7	2785.45	112.40	260.36	283.59	0.13	-0.10	-28.91
2867.34	0.18	134.20	MWD	7	2813.86	112.37	260.42	283.63	0.13	0.06	44.56
2896.39	0.72	135.10	MWD	7	2842.91	112.21	260.58	283.72	0.56	0.56	0.93
2925.18	1.16	120.90	MWD	7	2871.70	111.93	260.96	283.95	0.52	0.46	-14.80
2953.85	1.72	117.40	MWD	7	2900.36	111.59	261.59	284.40	0.59	0.59	-3.66
2982.64	2.27	120.60	MWD	7	2929.13	111.10	262.47	285.01	0.58	0.57	3.33
3012.68	2.84	120.10	MWD	7	2959.14	110.42	263.62	285.81	0.57	0.57	-0.50
3040.70	3.40	123.70	MWD	7	2987.12	109.61	264.92	286.70	0.63	0.60	3.85
3064.62	4.14	127.20	MWD	7	3010.99	108.70	266.19	287.53	0.97	0.93	4.39
3094.07	4.50	143.70	MWD	7	3040.36	107.12	267.72	288.36	1.31	0.37	16.81
3122.54	3.61	151.70	MWD	7	3068.75	105.43	268.81	288.75	1.11	-0.94	8.43
3151.33	3.45	150.50	MWD	7	3097.49	103.88	269.67	288.98	0.18	-0.17	-1.25
3180.45	3.39	149.70	MWD	7	3126.56	102.37	270.53	289.25	0.08	-0.06	-0.82
3209.07	3.27	153.50	MWD	7	3155.13	100.91	271.32	289.48	0.26	-0.13	3.98
3237.81	3.14	159.10	MWD	7	3183.82	99.44	271.97	289.58	0.35	-0.14	5.85
3265.87	3.04	158.90	MWD	7	3211.84	98.03	272.51	289.61	0.11	-0.11	-0.21
3294.66	2.67	170.40	MWD	7	3240.60	96.66	272.90	289.51	0.71	-0.39	11.98
3322.51	2.57	175.80	MWD	7	3268.42	95.40	273.05	289.24	0.29	-0.11	5.82
3351.10	2.21	183.10	MWD	7	3296.98	94.21	273.07	288.86	0.49	-0.38	7.66
3380.02	2.05	186.90	MWD	7	3325.88	93.14	272.98	288.43	0.22	-0.17	3.94
3408.29	1.72	202.40	MWD	7	3354.14	92.24	272.76	287.93	0.64	-0.35	16.45
3432.00	1.50	200.00	MWD	7	3377.84	91.62	272.51	287.50	0.29	-0.28	-3.04

**MAIN CONSUMPTION OF CASING/TUBING ON WELL 30/6-27 PO: 1**

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Size	Casing string	Grade	Weight		Threads type	Length [m]	No. of joints
			[kg/m]	[lb/ft]			
30"	CONDUCTOR	X-52	460.86	309.70	SL-60	75.5	6
13 3/8"	SURFACE	P-110	107.14	72.00	NS-CC	1146.4	92
9 5/8"	PRODUCTION	P-110	79.61	53.50	NS-CC	2920.6	247



## BITRECORD FOR WELL 30/6-27 PO: 1

No	Bit RR	Type	Size (in)	Manu- fact- urer	Trade name	Serial no.	IADC code	Nozzles diameter (./32in)	Flow area (in <sup>2</sup> )	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	SMIT	10GMODPD	LW8944	435	16,20,20,22	1.181	1	212	76	2.90	26.2	44/112	14000		2050/4480	32/113	1 - 1 - NO - A - E	I	NO	TD
		HO	36.00	DARR	TWOSTAGE	OR21478		11,11,11,11,11,11	0.557	1	212	76	2.90	26.2	44/112	14000		2050/4480	32/113	1 - 2 - NO - S - E	I	NO	
2		ISRT	26.00	SMIT	M02SODC	LK4720	415	19,22,22,22	1.391	2	212	0		0.0		54000				1 - 1 - NO - A - E	I	NO	BHA
3		ISRT	17.50	HTC	MXT03DDT	H39DG	415	14,16,24,24	1.230	3	1287	1075	14.10	76.2	133/238	261000	0/100	2651/4515	59/208	2 - 1 - CT - S - E	I	NO	TD
4		PDC	12.25	SMIT	MRS82PX	JS5914	M222	15,15,15,15,15,15	1.035	4	3061	1774	31.70	56.0	93/189	363	60/160	2913/3048	292/310	1 - 4 - WT - S - X	I	NO	PR
5		PDC	8.50	SMIT	MA74PX	JS1961	M223	12,12,12,13,13,13	0.720	5	3080	19	1.50	12.7	63/122	24000	60/80	1859/2652	173/296	1 - 2 - CT - G - X	I	NO	DTF
5	1	PDC	8.50	SMIT	MA74PX	JS1961	M223	12,12,12,13,13,13	0.720	6	3162	82	3.50	23.4	115/122	30000	20/100	2506/2577	285/302	1 - 2 - CT - G - X	I	NO	CP
6		BIT	8.50	SDBS	FC274RILI	7000940			0.000	7	3189	27	1.30	20.8	82/121	8000	40/80	1094/2534	76/293	1 - 1 - WT - A - X	I	NO	NC
5	2	PDC	8.50	SMIT	MA74PX	JS1961	M223	12,12,12,13,13,13	0.720	8	3432	243	8.20	29.6	105/123	72000	20/100	2357/2543	276/302	3 - 2 - CT - N - X	1	PN	TD

**BOTTOM HOLE ASSEMBLIES USED ON WELL 30/6-27 PO: 1**

BHA no. 1:	No. / Element / OD(in) / Length(m)	Depth In: 136 m MD	Out: 212 m MD
1	10GMODPD	17.5	0.44
2	TWOSTAGE	36.0	3.86
3	BIT SUB	9.5	1.22
4	MWD	7.625	8.96
5	NON MAG. STAB	17.0	2.14
6	NON MAG. COLLAR	9.5	17.58
7	DRILL COLLAR STEEL	9.5	17.85
8	X-OVER	9.25	0.75
9	DRILL COLLAR STEEL	8.0	46.05
10	JAR	7.938	9.63
11	DRILL COLLAR STEEL	8.0	18.32
12	X-OVER	7.75	1.00

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 127.80

BHA no. 2:	No. / Element / OD(in) / Length(m)	Depth In: 212 m MD	Out: 212 m MD
1	M02SODC	26.0	0.66
2	BIT SUB	9.5	0.85
3	MWD	9.063	8.96
4	NON MAG. STAB	17.0	2.14
5	NON MAG. COLLAR	9.5	17.58
6	DRILL COLLAR STEEL	9.5	17.85
7	X-OVER	9.25	0.75
8	DRILL COLLAR STEEL	8.0	54.94
9	JAR	7.938	9.63
10	DRILL COLLAR STEEL	8.0	18.32
11	X-OVER	7.75	1.00

Reason pulled: CHANGE BOTTOMHOLE ASSI Sum: 132.68

BHA no. 3:	No. / Element / OD(in) / Length(m)	Depth In: 212 m MD	Out: 1287 m MD
1	MXT03DDT	17.5	0.40
2	DOWN HOLE MOTOR WITH ST/	17.25	8.95
3	FLOAT SUB	9.5	0.84
4	NON MAG. STAB	17.25	2.37
5	CDR	7.12	8.48
6	MWD	9.063	8.48
7	NON MAG. STAB	17.0	2.14
8	NON MAG. COLLAR	9.5	17.58
9	DRILL COLLAR STEEL	9.5	17.85
10	X-OVER	9.25	0.75
11	DRILL COLLAR STEEL	8.0	46.05
12	JAR	7.938	9.63
13	DRILL COLLAR STEEL	8.0	18.32
14	X-OVER	7.75	1.00
15	HWDP	5.0	140.85

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 275.21

BHA no. 4:	No. / Element / OD(in) / Length(m)	Depth In: 1287 m MD	Out: 3061 m MD
1	MRS82PX	12.25	0.33
2	POWER DRIVE	12.125	9.43
3	MWD	8.31	8.43
4	CDR	8.44	6.88
5	NON MAG. STAB	12.0	2.27
6	NON MAG. COLLAR	8.13	8.50
7	DRILL COLLAR STEEL	8.0	46.05
8	JAR	8.0	9.63
9	DRILL COLLAR STEEL	8.0	18.32
10	X-OVER	8.0	1.00
11	HWDP	5.0	140.85

Reason pulled: PENETRATION RATE Sum: 251.69

BHA no. 5:	No. / Element / OD(in) / Length(m)	Depth In: 3061 m MD	Out: 3080 m MD
1	MA74PX	8.5	0.27
2	NEAR BIT STAB	8.25	1.78
3	NON MAG. COLLAR	6.5	3.09
4	NON MAG. STAB	8.438	1.77
5	LOGGING WHILE DRILLING TOOL	7.5	5.63
6	MWD	6.88	8.17
7	ADN	6.88	5.62
8	NON MAG. COLLAR	6.5	8.57
9	DRILL COLLAR STEEL	6.5	66.26
10	JAR	6.818	9.25
11	DRILL COLLAR STEEL	6.5	28.08
12	HWDP	5.0	140.85

Reason pulled: DOWNHOLE TOOL FAILURE Sum: 279.34

BHA no. 6:	No. / Element / OD(in) / Length(m)	Depth In: 3080 m MD	Out: 3162 m MD
1	MA74PX	8.5	0.27
2	NEAR BIT STAB	8.25	1.78
3	NON MAG. COLLAR	6.5	3.09
4	NON MAG. STAB	8.438	1.77
5	LOGGING WHILE DRILLING TOOL	7.5	5.63
6	MWD	6.875	8.15
7	ADN	6.88	5.62
8	NON MAG. COLLAR	6.5	8.57
9	DRILL COLLAR STEEL	6.5	66.26
10	JAR	6.818	9.25
11	DRILL COLLAR STEEL	6.5	28.08
12	HWDP	5.0	140.85

Reason pulled: CORE POINT Sum: 279.32

**BOTTOM HOLE ASSEMBLIES USED ON WELL 30/6-27 PO: 1**

BHA no. 7:	No. / Element / OD(in) / Length(m)	Depth In: 3162 m MD Out: 3189 m MD					
1	FC274RILI	8.5	0.36	2	CORE BARREL	6.75	30.44
3	FLOAT SUB	6.5	1.12	4	DRILL COLLAR STEEL	6.5	9.46
5	NON MAG. STAB	8.25	1.78	6	DRILL COLLAR STEEL	6.5	37.84
7	JAR	6.5	9.25	8	DRILL COLLAR STEEL	6.5	28.08
9	HWDP	5.0	140.85				

Reason pulled: NEW CORE/FULL BARREL Sum: 259.18

BHA no. 8:	No. / Element / OD(in) / Length(m)	Depth In: 3189 m MD Out: 3432 m MD					
1	MA74PX	8.5	0.27	2	NEAR BIT STAB	8.25	1.78
3	NON MAG. COLLAR	6.5	3.09	4	NON MAG. STAB	8.438	1.77
5	LOGGING WHILE DRILLING TOOL	7.5	5.63	6	MWD	6.875	8.15
7	ADN	6.88	5.62	8	NON MAG. COLLAR	6.5	8.57
9	DRILL COLLAR STEEL	6.5	66.26	10	JAR	6.818	9.25
11	DRILL COLLAR STEEL	6.5	28.08	12	HWDP	5.0	140.85

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 279.32

## CEMENT SLURRY REPORT ON WELL 30/6-27 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]
2001-10-08	30"	CASING CEMENTING	LEAD	26.00	1.56	7.00	129.60	A-3L	l	3.50	
			TAIL SLURRY	20.00	1.95	7.00	74.73	FP-14L	l	0.20	
			DISPLACEMENT					FP-14L	l	0.20	
2001-10-09	30"	GROUT	TAIL SLURRY	16.00	1.95	7.00	74.73	A-7L	l	3.50	
			DISPLACEMENT					FP-14L	l	0.20	
2001-10-11	13 3/8"	CASING CEMENTING	LEAD	179.10	1.44	38.00	169.46	A-3L	l	5.30	
			TAIL SLURRY	20.00	1.92	38.00	75.07	FP-14L	l	0.20	
			DISPLACEMENT					R-12L	l	0.65	
2001-10-16	9 5/8"	CASING CEMENTING	MCS-G SPACER	15.00	1.65	95.00		FP-14L	l		10.00
			TAIL SLURRY	13.60	1.90	95.00	102.54	BARITC	kg		846.00
			DISPLACEMENT					MCS-G	l		104.00
			SPACER	10.00	1.35	87.00		SODAA	kg		8.00
			DISPLACEMENT					GW-22	kg		1.80
2001-10-24	9 5/8"	PLUG IN CASED HOLE	SPACER	7.50	1.90	87.00	102.46	MICRO	l	3.00	
			DISPLACEMENT					FP-14L	l	0.20	
			TAIL SLURRY	7.50	1.90	87.00	102.46	R-12L	l	1.40	
			DISPLACEMENT					CD-31L	l	0.50	
			SPACER					GEL	kg		1.80
			DISPLACEMENT					MCS-J	l		104.00
			DISPLACEMENT					SODAA	kg		8.00
			DISPLACEMENT					FP-14L	l		10.00
			DISPLACEMENT					FP-14L	l	0.20	
			DISPLACEMENT					MICRO	l	3.00	
			DISPLACEMENT					R-12L	l	1.55	

## CEMENT SLURRY REPORT ON WELL 30/6-27 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]
2001-10-24	9 5/8"	PLUG IN OPEN HOLE	SPACER	5.00	1.65	117.00		FP-14L	l		10.00
								GW-22	kg		1.80
								MCS-J	l		104.00
								SODAA	kg		8.00
			TAIL SLURRY	10.00	1.90	117.00	106.91	R-15L	l	1.35	
								CD-31L	l	2.00	
								D-8	kg	0.00	
								FL-63L	l	2.50	
								FP-14L	l	0.20	
								MICRO	l	11.00	
			SPACER	1.40	1.65	117.00					
			DISPLACEMENT			117.00					
2001-10-24	9 5/8"	PLUG IN CASED TO OPEN HOLE	SPACER	7.00	1.65	95.00		FP-14L	l		10.00
								GW-22	kg		1.80
								MCS-J	l		104.00
								SODAA	kg		8.00
			TAIL SLURRY	10.00	1.90	95.00	107.86	R-12L	l	1.40	
								CD-31L	l	1.20	
								D-8	kg	0.00	
								FL-45L	l	9.00	
								FP-14L	l	0.20	
								MICRO	l	14.00	
			SPACER		1.65	95.00					
			DISPLACEMENT			95.00					
2001-10-24	13 3/8"	PLUG IN CASED HOLE	TAIL SLURRY	15.70	1.95	14.00	74.73	A-7L	l	3.50	
								FP-14L	l	0.20	

CEMENT SLURRY REPORT ON WELL 30/6-27 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]
2001-10-24	13 3/8"	PLUG IN CASED HOLE	SALTWATER DISPLACEMENT	10.00	1.03	14.00					

## CEMENT CONSUMPTION PER JOB ON WELL 30/6-27 PO: 1

Date	CsgSize	Job Type	Cement/ Additive	Description	Unit	Actual Amount Used
2001-10-08	30"	CASING CEMENTING	A-3L	EXTENDER: LIQUID LODENSE	l	700
			A-7L	ACCELERATOR: LIQUID CACL2	l	940
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	100
			G	API CLASS G	MT	51
2001-10-09	30"	GROUT	A-7L	ACCELERATOR: LIQUID CACL2	l	864
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	50
			G	API CLASS G	MT	170
2001-10-16	9 5/8"	CASING CEMENTING	CD-31L	DISPERSANT: CD-31L LIQUID	l	67
			D-8	SPECIAL ADDITIVE: SILICA FLUOR, TEMP. TO 204 l	kg	20
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	243
			GW-22	GW-22 VISCOSIFIER	kg	50
			MCS-G	SPACER ADDITIVE: MCS-G	l	2288
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	400
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 l	l	200
			SODAA	SODA ASH	kg	50
2001-10-24	9 5/8"	PLUG IN CASED HOLE	D-8	SPECIAL ADDITIVE: SILICA FLUOR, TEMP. TO 204 l	kg	14
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	153
			GEL	EXTENDER: BENTONITE	kg	25
			MCS-J	MCS-J	l	1450
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	400
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 l	l	134
			SODAA	SODA ASH	kg	128
2001-10-24	9 5/8"	PLUG IN OPEN HOLE	CD-31L	DISPERSANT: CD-31L LIQUID	l	234
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l	-9986
			MCS-J	MCS-J	l	670
			SODAA	SODA ASH	kg	52
			R-15L	RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DE	l	156
			D-8	SPECIAL ADDITIVE: SILICA FLUOR, TEMP. TO 204 l	kg	16
			FL-63L	FL-63L	l	300
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	94
			GW-22	GW-22 VISCOSIFIER	kg	25
			2001-10-24	9 5/8"	PLUG IN CASED TO OPEN HOLE	CD-31L
MCS-J	MCS-J	l				880
GW-22	GW-22 VISCOSIFIER	kg				25
SODAA	SODA ASH	kg				70
R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 l	l				201
MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF	l				1578
D-8	SPECIAL ADDITIVE: SILICA FLUOR, TEMP. TO 204 l	kg				11
FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l				124
2001-10-24	13 3/8"	PLUG IN CASED HOLE	FL-45L	FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEC	l	982
			A-7L	ACCELERATOR: LIQUID CACL2	l	1115
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	45
			G	API CLASS G	MT	34

**TOTAL CONSUMPTION OF CEMENT ADDITIVES ON WELL 30/6-27 PO: 1**

Section	Cement/Additive	Unit	Total Amount Used
36"	ACCELERATOR: LIQUID CACL2	l	1804.00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	150.00
	EXTENDER: LIQUID LODENSE	l	700.00
	API CLASS G	MT	221.24
12 1/4"	GW-22 VISCOSIFIER	kg	50.00
	DISPERSANT: CD-31L LIQUID	l	67.00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	243.00
	SPECIAL ADDITIVE: SILICA FLUOR, TEMP. TO 204 DEGC	kg	20.00
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC	l	200.00
	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION	l	400.00
	SPACER ADDITIVE: MCS-G	l	2288.00
	SODA ASH	kg	50.00
8 1/2"	MCS-J	l	1550.00
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC	l	201.00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	218.00
	SPECIAL ADDITIVE: SILICA FLUOR, TEMP. TO 204 DEGC	kg	27.00
	RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DEGC	l	156.00
	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION	l	-8408.00
	DISPERSANT: CD-31L LIQUID	l	370.00
	FL-63L	l	300.00
	GW-22 VISCOSIFIER	kg	50.00
	SODA ASH	kg	122.00
FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEGC	l	982.00	
0.0	API CLASS G	MT	34.00
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC	l	134.00
	SODA ASH	kg	128.00
	EXTENDER: BENTONITE	kg	25.00
	SPECIAL ADDITIVE: DEFOAMER FP-14L	l	198.00
	MCS-J	l	1450.00
	SPECIAL ADDITIVE: SILICA FLUOR, TEMP. TO 204 DEGC	kg	14.00
	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION	l	400.00
	ACCELERATOR: LIQUID CACL2	l	1115.00



## DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 30/6-27 PO: 1

Hole section : 36"

## WATER BASED SYSTEM

Date	Depth [m]	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings						Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
						600	300	200	100	60	30					
2001-10-08 23:59	210	BENTONITE MUD	115.0	1.05		600	300	200	100	60	30	6	3			
2001-10-09	490	BENTONITE MUD	116.0	1.05		600	300	200	100	60	30	6	3			

Hole section : 17 1/2"

## WATER BASED SYSTEM

Date	Depth [m]	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings						Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]	
						600	300	200	100	60	30						6
2001-10-10 17:00	1287	GLYDRIL	58.0	1.40		600	300	200	100	60	30	6	3	50.0	16.0	13.5	8.0
2001-10-11 12:00	1287	GLYDRIL	60.0	1.40		600	300	200	100	60	30	6	3	50.0	16.0	13.5	8.0
2001-10-12 13:00	1287	GLYDRIL	60.0	1.40		600	300	200	100	60	30	6	3	50.0	16.0	13.5	8.0

Hole section : 12 1/4"

## OIL BASED SYSTEM

Date	Depth [m]	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings						Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]		
						600	300	200	100	60	30						6	3
2001-10-13 21:00	2010	VERSAVERT	73.0	1.45	43.0	76	47	36	25	0	0	11	10	50.0	29.0	9.0	6.0	9.5
2001-10-14 21:10	2978	VERSAVERT	73.0	1.45	49.0	76	47	36	25	0	0	11	10	50.0	29.0	9.0	7.0	11.0
2001-10-15 20:00	3061	VERSAVERT	73.0	1.50		78	48	36	24	0	0	11	10	50.0	30.0	9.0	7.0	11.0
2001-10-16 15:00	3061	VERSAVERT	73.0	1.50		79	49	36	24	0	0	11	10	50.0	30.0	9.5	7.0	11.0

Hole section : 8 1/2"

## OIL BASED SYSTEM

Date	Depth [m]	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings						Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]		
						600	300	200	100	60	30						6	3
2001-10-17 23:50	3070	VERSAVERT	65.0	1.35	41.0	60	37	27	19	0	0	8	7	50.0	23.0	7.0	5.5	10.0
2001-10-18 22:00	3160	VERSAVERT	68.0	1.35		77	47	36	25	0	0	12	11	50.0	30.0	8.5	8.5	14.0
2001-10-19	3420	VERSAVERT	68.0	1.36	40.0	73	45	35	25	0	0	11	10	50.0	28.0	8.5	9.0	15.0
2001-10-20 22:00	3432	VERSAVERT	72.0	1.35	16.0	72	46	36	26	0	0	12	10	50.0	26.0	10.0	9.0	15.0
2001-10-21 20:00	3432	VERSACLEAN	71.0	1.35	15.0	72	45	35	25	0	0	12	10	50.0	27.0	9.0	9.0	15.0
2001-10-22 22:00	3432	VERSAVERT	71.0	1.35	14.0	71	45	35	24	0	0	12	10	50.0	26.0	9.5	9.0	14.5

**DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 30/6-27 PO: 1**

Hole section : P&A

**OIL BASED SYSTEM**

Date	Depth [m]	MD	TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings						Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]	
								600	300	200	100	60	30						6
2001-10-23 22:00	3432		3378	VERSACLEAN	72.0	1.35	15.0	72	46	34	25	0	0	12	10	26.0	10.0	9.0	15.0
2001-10-24 22:00	2632		2579	VERSACLEAN	71.0	1.35	18.0	72	45	35	25	0	0	12	10	27.0	9.0	10.0	18.5
2001-10-25	360		360	VERSACLEAN				0	0	0	0	0	0	0	0				

Hole section : P&A

**WATER BASED SYSTEM**

Date	Depth [m]	MD	TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings						Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]	
								600	300	200	100	60	30						6
2001-10-26	136		136	SEA WATER								0	0						

## DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 30/6-27 PO: 1

## Hole section : 36" WATER BASED SYSTEM

Date	Depth [m]	Mud Type	Dens [sg]	Filtrate		Filtcake		HPHT		pH	Alcalinity		Inhib Chem	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Sand [%]	Oil [%]	Solid [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
				API [mm]	HPHT [mm]	API [mm]	HPHT [mm]	Press/Temp [bar/DegC]	Pm [ml]		Pf [ml]	Mf [ml]												
2001-10-08 23:59	210	210 BENTONITE MUD	1.05	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2001-10-09	490	490 BENTONITE MUD	1.05	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

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

Date	Depth [m]	Mud Type	Dens [sg]	Filtrate		Filtcake		HPHT		pH	Alcalinity		Inhib Chem	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Sand [%]	Oil [%]	Solid [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
				API [mm]	HPHT [mm]	API [mm]	HPHT [mm]	Press/Temp [bar/DegC]	Pm [ml]		Pf [ml]	Mf [ml]												
2001-10-10 17:00	1287	1287 GLYDRIL	1.40	4.4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2001-10-11 12:00	1287	1287 GLYDRIL	1.40	4.4	/	/	/	/	8.0	/	0.1	0.5	/	90000	800	/	/	18.0	/	/	/	3.0	/	110
2001-10-12 13:00	1287	1287 GLYDRIL	1.40	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

## Hole section : 12 1/4" OIL BASED SYSTEM

Date	Depth [m]	Mud Type	Density [sg]	Filtrate		Filtcake		HPHT		Electrical stability [V]	Alcalinity Pm [ml]	CaCl2 [mg/l]	Oil/Water Ratio	Solid [%]	Percentage Oil [%]	Sand [%]	ASG [sg]	LGS [Kg/m3]
				HPHT [ml]	HPHT [mm]	HPHT [mm]	HPHT [mm]	Press/Temp [bar/DegC]										
2001-10-13 21:00	2010	1977 VERSAVERT	1.45	1.2	1	3400	/	/	1084	/	143	74/ 26	19.0	60.0	0.1	4.0	70	
2001-10-14 21:10	2978	2924 VERSAVERT	1.45	1.3	1	3400	/	1123	/	154	78/ 22	20.0	62.5	0.1	3.8	114		
2001-10-15 20:00	3061	3007 VERSAVERT	1.50	1.2	1	3400	/	1020	/	167	78/ 22	21.0	62.0	0.2	3.9	86		
2001-10-16 15:00	3061	3007 VERSAVERT	1.50	1.3	1	3400	/	1148	/	163	78/ 22	21.0	62.0	0.2	3.9	86		

## Hole section : 8 1/2" OIL BASED SYSTEM

Date	Depth [m]	Mud Type	Density [sg]	Filtrate		Filtcake		HPHT		Electrical stability [V]	Alcalinity Pm [ml]	CaCl2 [mg/l]	Oil/Water Ratio	Solid [%]	Percentage Oil [%]	Sand [%]	ASG [sg]	LGS [Kg/m3]
				HPHT [ml]	HPHT [mm]	HPHT [mm]	HPHT [mm]	Press/Temp [bar/DegC]										
2001-10-17 23:50	3070	3016 VERSAVERT	1.35	2.3	1	/	/	865	/	158	79/ 21	16.0	66.0	0.1	4.0	58		
2001-10-18 22:00	3160	3106 VERSAVERT	1.35	2.3	1	/	/	1122	/	146	79/ 21	16.0	66.0	0.1	4.0	58		
2001-10-19	3420	3366 VERSAVERT	1.36	2.4	1	/	280	1140	/	142	78/ 22	17.0	65.0	0.3	3.8	97		
2001-10-20 22:00	3432	3378 VERSAVERT	1.35	2.4	2	/	260	1124	/	142	78/ 22	17.0	65.0	0.3	3.8	113		
2001-10-21 20:00	3432	3378 VERSACLEAN	1.35	2.4	2	/	250	1112	/	142	78/ 22	17.0	65.0	0.3	3.8	113		
2001-10-22 22:00	3432	3378 VERSAVERT	1.35	2.4	2	/	250	1102	/	142	78/ 22	17.0	65.0	0.3	3.8	113		



**TOTAL CONSUMPTION OF MUD ADDITIVES ON WELL 30/6-27 PO: 1**

<b>Section</b>	<b>Product/ Additive</b>	<b>Unit</b>	<b>Total Amount Used</b>
36"	BARITE	kg	90000.00
	BENTONITE	kg	25000.00
	CMC EHV	kg	75.00
17 1/2"	BARITE	kg	160000.00
	BENTONITE	kg	52000.00
	CMC EHV	kg	950.00
	GLYDRIL MC	l	160000.00
	PACSEAL LV	kg	875.00
12 1/4"	BARITE	kg	200000.00
	CALCIUM CHLORIDE	kg	3200.00
	EDC 95/11	l	144000.00
	LIME	kg	3320.00
	VERSAMOD	kg	675.00
	VERSAVERT F	l	549.00
	VERSAVERT PE	l	5000.00
	VERSAVERT SE	l	2613.00
	VERSAVERT VIS	kg	2675.00
8 1/2"	BARITE	kg	60000.00
	EDC 95/11	l	21000.00
	LIME	kg	800.00
	VERSAMOD	kg	325.00
	VERSAVERT PE	l	2000.00
	VERSAVERT SE	l	1000.00
	VERSAVERT VIS	kg	1400.00
0.0	EDC 95/11	l	6000.00

**LOGGING INFORMATION ON WELL 30/6-27**

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Hole size: 8 1/2"

#	Run No.	Logging Company	Logged Bottom [m MD]	Logged Top [m MD]	Log Suite
1	1A		3404.5	3126.5	MDT/GR
2	1B		3352.5	3150.5	MDT/GR
3	1A		3400	2185	DSI/VSP

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**HYDRO**

FINAL WELL REPORT 30/6-27

Revision: 0

**E&P Division**

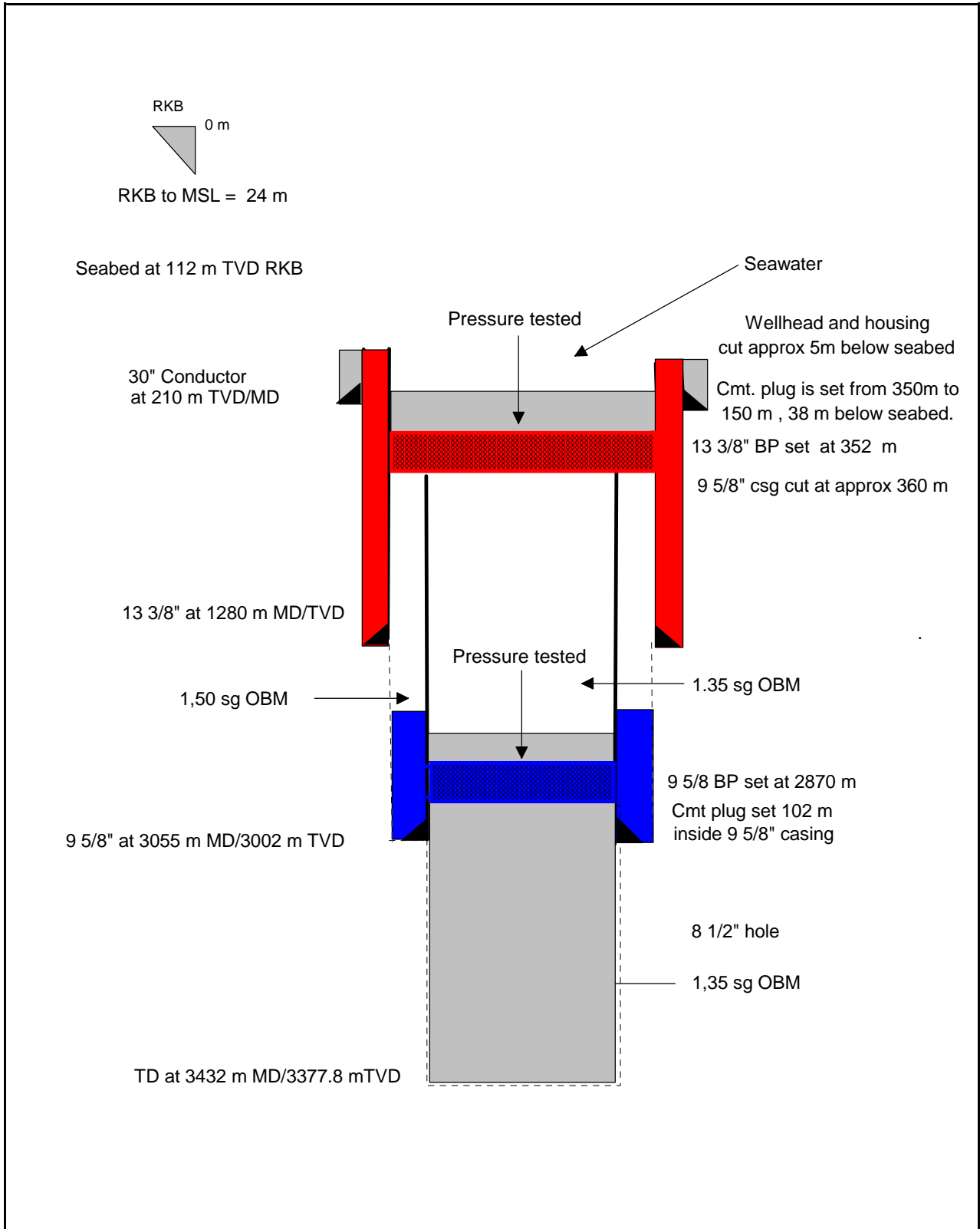
Grading: Internal

Date: 02.05.02

B-39

**LEAK OFF TEST ON WELL 30/6-27**

m MD RKB/ m TVD RKB	Section	Date	Mudtype	Mudweight SG	LOT SG
1290.0 / 1290.0	12,25"	2001-10-13	Seawater	1.03	1,68
3064.0/ 3010.5	8.5"	2001-10-17	Oil Base Mud	1.35	FIT 1,6



**Plug and Abandonment  
Program  
Well 30/6-27**

**Fig. B-1.1  
Revision: 1**

**Permanent Plug and Abandonment**



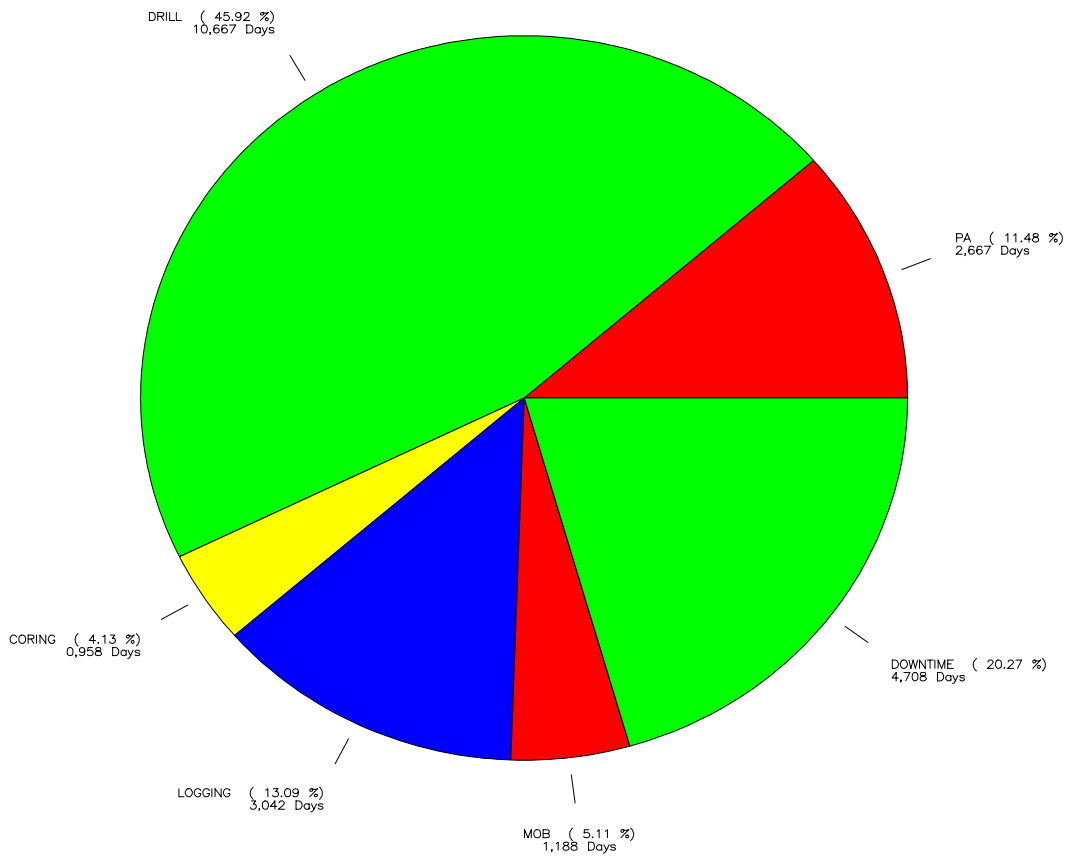
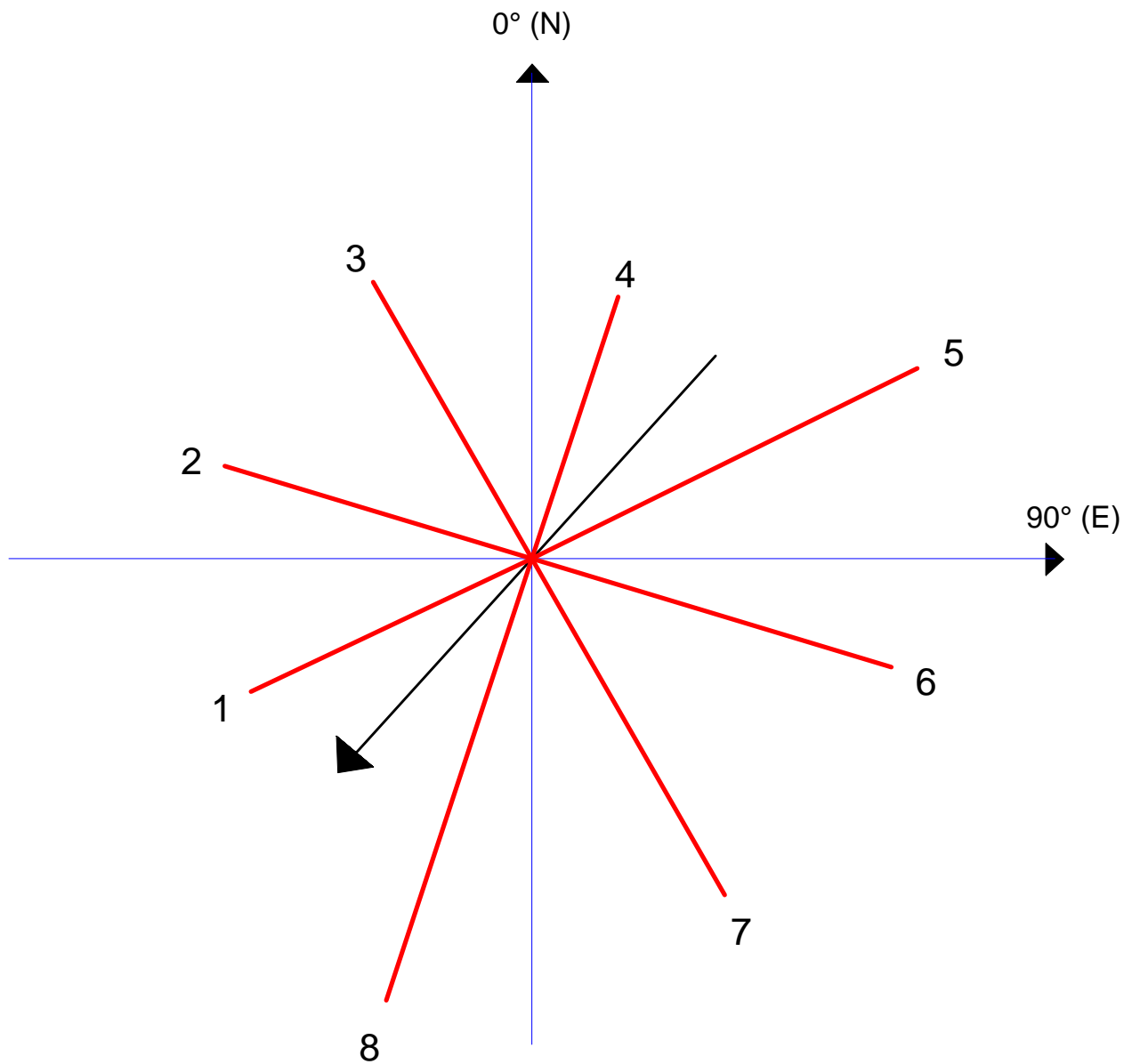


Figure 1.1

Time Distribution  
30/6-27

**HYDRO**



RIGHEADING 220 DEG.

ANCHOR NO	DIRECTION (DEG.)	LENGTH (m)
1	243	1286
2	288	1318
3	332	1378
4	17	1203
5	62	1782
6	108	1543
7	152	1674
8	197	2030

Figure 1.3

RIG ANCHORS  
 TRANSOCEAN ARCTIC  
 30/6-27

**HYDRO**

**SECTION C**

**COMPOSITE LOG**

**LITHOLOGY LOG**

**CORE LOG**

**GASRATIO LOG**

**POST SITE SURVEY LOG**