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## PREFACE

License PL 107 was awarded 1st of March 1985 as part of the 9th licence round with Norsk Hydro as the operator. The licence is located in block 6407/7 in the southern part of the Halten Terrace. The location map is shown on page 3.

The licencees percentage share at the time of operation is as follows:

Norsk Hydro a.s. (operator)	22.5%
Den Norske Stats Oljeselskap a.s. (Statoil)	20%
ExxonMobil	20%
PetroCanada	7.5%
SDFI	30%

The well was drilled by Norsk Hydro ASA, on behalf of the group, during October-December 2000.

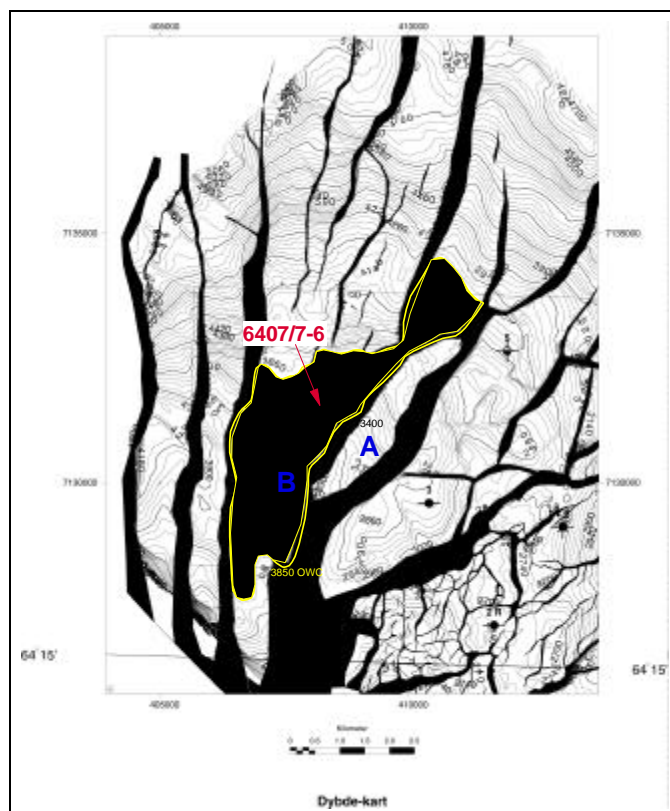
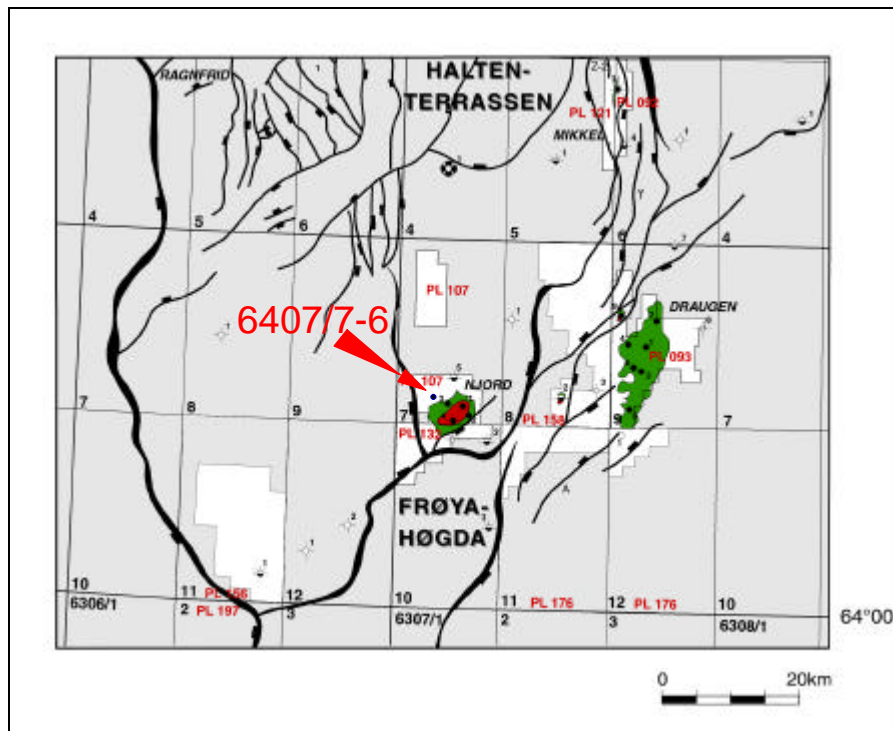
All depths in this report are in mMD RKB (RKB elevation is 26m) unless otherwise stated.



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Location map:





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<b>SUMMARY OF WELL DATA</b>	
LOCATION:	64° 17' 40.66"E 07° 06' 16.21" E  7 131 390.0mN 408 270.3mE  ED-50, UTM Zone 32, SM 9°E
OPERATOR: RIG: CONTRACTOR:	Norsk Hydro ASA Scarabeo 6 Saipem
KB ELEVATION (to MSL):	26 m
WATER DEPTH (MSL):	336 m
START OF OPERATIONS:	14.10.00
WELL SPUDDED:	18.10.00
REACHED TD ON:	16.11.00
COMPLETED:	17.12.00
STATUS:	Plugged and Abandoned
FORMATION AT TD:	Åre Fm
TD DRILLER (mRKB):	3930m MD, 3926,1m TVD (Ext.TD 3975m)
TD LOGGER (mRKB):	3931m MD (Ext. TD n/a)
DRILLING DEPTHS:	36" to 449.0 m 26" to 1229.0 m 12¼" to 3100.0 m 8½" to 3930.0 m (extended to 3975,0m)
CASING DEPTHS:	30" at 446.5 m 20" at 1224.0 m 9 5/8" at 3094.3 m



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## **SECTION A**

## **GEOLOGY**



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## **1 Objectives**

The objective for the exploration well 6407/7-6 was to test the hydrocarbon potential of the B-segment on the NW flank of the Njord field.

- The primary target was to test the hydrocarbon potential of the Tilje formation of the Båt Group
- The secondary target was to test the hydrocarbon potential of the Ile Formation of the Fangst Group
- There existed also a possibility of encountering hydrocarbons in the Upper Jurassic Melke formation of the Viking Group, and in the Lower Cretaceous Lange Formation of the Cromer Knoll Group.



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## 2 Results

The exploration well 6407/7-6 is located within Njord Unit on the western flank of the Njord Field. The NW-flank structure consists of five fault blocks defined by faults trending SSW-NNE, with throw towards west. The drilled B-segment is one of these segments separated from the main Njord Field by the A-segment.

The main result of the well was the discovery of gas-condensate in the Tilje Formation as proven by a DST and MDT fluid samples.

Well 6407/7-6 was spudded October 18, 2000, and reached TD at 3931m MD RKB in the Åre Formation November 11, 2000. The TD was extended to 3975m MD RKB to get space for test equipment. The well was drilled with Scarabeo 6. The rig operations were terminated December 17, 2000, after logging and production testing.

A total of 127m Upper Jurassic, 111m Ile Formation and 197m Tilje Formation was penetrated in the well. The sand encountered in the Lange Formation, the Viking Group and the Ile Formation were water bearing. Hydrocarbon shows have been described in the approximate 20m net Lange sandstone and an increasing amount of background gas were measured while drilling in the upper part of the Ile Formation. MDT sample attempts made in the Lange sandstone and the Ile sandstone were unsuccessful due to poor reservoir quality, probably caused by a high degree of cementation. The reservoir evaluation is based on the log data and sidewall cores in these intervals. A total of 32 sidewall cores were recovered from 60 attempts.

The Tilje3 and 2 Formation is saturated with a heavy gas-condensate with a density of 0.41g/cc. The GWC at 3777m MD RKB in the Tilje 2B was determined from the resistivity log. The FWL could not be identified from MDT data since no pressure points were obtained in the water zone. 6 cores were cut in the Tilje Formation with a recovery of 98% giving a total of 129m. The Tilje reservoir sand shows low porosity and permeability. Reservoir properties are evaluated from logs, core analysis, MDT data, fluid samples and production test data.

The well was production tested with a perforation interval between 3686-3770 m MD RKB in the Tilje Formation. With 24 hours production the flow rate was measured to 155 000 Sm<sup>3</sup>/D gas and 220 Sm<sup>3</sup>/D oil. The GOR was 705 Sm<sup>3</sup>/Sm<sup>3</sup>. A low Pi and declining rates indicate a narrow system with two or more barriers present within the area investigated by the test. The bottom hole temperature was 136.5deg C and the initial pressure was 524,5bar. The B-segment is not in pressure communication with the Njord field, measurements from both the Ile Fm. and the Tilje Fm. indicate an approximate overpressure of 160-170bar compared to the Njord East flank.

Shallow gas was neither expected, nor encountered in this well.



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Formation tops are listed in Table 2.1 below.

<b>Group:</b>	<b>Formation:</b>	<b>Depth m MD RKB</b>	<b>Depth m TVD RKB</b>	<b>Depth m TVD MSL</b>	<b>TWT (ms)</b>
Nordland	Naust	362,00	362,00	336,00	
	Kai	1148,00	1147,90	1121,90	
Hordaland	Brygge	1169,00	1168,90	1142,90	
Rogaland	Tare	1840,00	1839,90	1813,90	
	Tang	1922,00	1921,80	1895,80	
Shetland	Springar	2105,00	2104,80	2078,80	
	Nise	2142,00	2141,80	2115,80	
	Kvitnos	2352,00	2351,80	2325,80	
Cromer Knoll	Lange	2747,20	2747,00	2721,00	
	Lyr	Not present	Not present	Not present	
Viking	Spekk	3337,60	3337,20	3311,20	3038
	Melke	3350,90	3350,50	3324,50	3046
Fangst	Not	3407,00	3406,50	3380,50	3081
	Ile	3447,90	3447,40	3421,40	3104
Båt	Ror	3558,00	3557,20	3531,20	3166
	Tilje	3684,00	3682,70	3656,70	3238
	Åre	3882,00	3878,70	3852,70	3338
TD		3931,00	3927,00	3901,00	

Table 2.1: Formation Tops 6407/7-6



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### 3 Biostratigraphy

The biostratigraphical evaluation of Well 6407/7-6 was carried out by Stratlab/APT.

The analyses were based on studies of micropaleontology (118 samples) and palynology (212 samples), which were made on ditch cutting samples (DCS), sidewall cores (SWC) and conventional cores (CCO) covering the interval 1240 to 3930 m RKB.

Table 3.1 shows a summarised chronostratigraphic subdivision of the well.

At the boundary between the Late Palaeocene and Middle Campanian a hiatus is detected. A major break is present between the sand of ?Cenomanian age and the Ryazanian - Late Oxfordian Spekk formation.

#### CHRONOSTRATIGRAPHICAL BREAKDOWN, WELL 6707/7-6

CHRONOSTRATIGRAPHY	DEPTH mMDRKB
Early Miocene -?Late Oligocene	1240,00
Early Oligocene	1300,00
Late - ?Middle Eocene	1400,00
Middle Eocene	1440,00
Early Eocene	1780,00
Late Paleocene	1990,00
-----unconformity-----	
Middle Campanian	2140,00
Early Campanian	2200,00
Santonian	2300,00
Early Santonian - Coniacian	2520,00
Coniacian - ?Late Turonian	2680,00
Late - Middle Turonian	2760,00
Early Turonian	3150,00
Late Cenomanian	3250,00
?Cenomanian	3300,00
-----unconformity-----	
Ryazanian - Late Oxfordian	3337,60
Middle - Early Oxfordian	3360,00
Callovian - ?Bathonian	3380,00
?Bajocian	3407,00
Early Bajocian - Aalenian	3500,00
Late Toarcian	3558,00
Early Toarcian	3670,00
Pliensbachian	3687,00
Pliensbachian - Sinemurian	3862,27
Sinemurian	3890,00
TD	3930,00

Table 3.1: Chronostratigraphy



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## **4 Lithostratigraphy**

The depths are in mMD RKB and m TVD RKB(RKB is 26m).

This summary is compiled predominantly from ditch cuttings descriptions. 32 sidewall cores were obtained from the well, see Table 6.1. MWD logs were used to aid lithological interpretation and the placement of formation boundaries.

The well was drilled with returns to seabed from the seafloor at 362 m to 1229 m before setting 20" casing at 1224m. Lithology interpretation through this interval is based on MWD logs and drilling parameters. The first drill cuttings samples were taken at 1240 m.

### **4.1 Nordland Group 362 - 1169 m MD (362 - 1169 m TVD) RKB**

#### **Naust Formation 362 - 1148m (362-1148m TVD RKB)**

This interval was drilled with returns to seabed, and based on MWD log and drilling parameters, is interpreted to consist of clay with minor sand beds and traces of limestone.

#### **Kai Formation 1148 - 1169m (1148-1169m TVD RKB)**

This interval was drilled with returns to seabed, and based on MWD log and drilling parameters, is interpreted to consist of clay with minor sand beds and limestone stringers.



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## 4.2 Hordaland Group 1169 - 1840 m MD (1169-1840m TVD) RKB

### Brygge Formation 1169 - 1840 m MD (1169 - 1840 m TVD) RKB

The interval down to 1229 m was drilled with returns to seabed, and based on MWD log and drilling parameters, is interpreted to consist of clay with minor sand beds and limestone stringers. From this depth the formation consists of Claystone with minor Limestone stringers and traces of Sandstone.

#### 1240 - 1310m (1240-1310m TVD)

Claystone

Clst: med dk gry-olv gry, blk, occ sbfis, occ slily slty, Tr Micromic, Tr Glauc

#### 1310 - 1360m(1310-1360m TVD)

Claystone with Traces of Sandstone

Clst: olv blk-olv gry-brnsh blk, frm, blk, occ sbfis, non - slily calc, Tr Micromic, Tr Micropyr, r Glauc

Sst: clr-trnsl Qtz Gr, lse, f-med

#### 1360-1640m(1360-1640m TVD)

Claystone with Traces of Limestone

Clst: olv blk-olv gry-brnsh blk, frm, blk, occ sbfis, non-slily calc, Tr Micromic, Tr Micropyr, r Glauc

Ls: lt olv gry-med lt gry, frm-hd, blk, microxln, arg

#### 1640-1780m(1640-1780m TVD)

Claystone with Traces of Limestone and Sandstone

Clst: olv gry, frm, blk, non calc, slily slty, occ slily calc, Tr Micromic, Tr Micropyr, r Glauc, r carb mat

Ls: lt olv gry-med lt gry, frm-mod hd, blk, microxln, dol

Sst: v lt gry-yel gry, slty-v f,w rnd, w srt, sft-frm, occ hd, calc-dol cmt, no vis por

#### 1780-1840m(1780-1840m TVD)

Claystone with minor Limestone and Traces of Sandstone

Clst: olv gry-olv blk, med bl gry- bl gry, blk, frm, non-occ slily calc, occ slty, Tr micromic, Tr Glauc, occ v f carb frag

Ls: wh- lt brn gry-pl yel org, sft-frm, occ dol, pred arg, occ microxln.

Sst: clr trnsl, f-med, pred med, sbang-ang, hd, v wl sil cmt, occ slily dol cmt, pred lsegrns, no vis por



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#### **4.3 Rogaland Group 1840 - 2105 m MD (1840 - 2105 m TVD) RKB**

##### **Tare Formation 1840 - 1922m MD (1840 - 1922 m TVD) RKB**

###### **1840 - 1870m (1840 - 1870m TVD)**

Claystone with minor Limestone and Traces of Sandstone

Clst: varicol, mod rd brn-gry rd, olv gry-olv blk, med bl gry- bl gry, blk, sft-frm, pred frm, non calc-calc, occ slily sdy, occ slily slty, Tr Micromic, Tr Glauc, occ v f carb frag

Ls: wh- lt brn gry-pl yel org, sft-frm, occ dol, pred arg, occ microxln

Sst: clr trns, v f-f, sbrndd-rndd, w srt, hd, occ sil cmt, occ slily dol cmt, pred lse grns, no vis por

###### **1870 - 1922m (1870 - 1922m TVD)**

Claystone with minor Limestone and Traces of Sandstone

Clst: olv gry-olv blk, occ med bl gry- bl gry, blk, sft-frm, pred frm, pred non-slily calc, occ v calc, occ slily slty, Tr Micromic, Tr Glauc, occ v f carb frag

Ls: lt brn gry-pl yel org, blk, frm-hd, occ dol, occ arg, pred microxln

Sst: clr trns-wh, vf-f, sbang-sbrndd, w srt, frm-hd, occ sil cmt, occ slily calc cmt, pred lse grns, no vis por

##### **Tang Formation 1922 - 2105 m MD (1870 - 2105 m TVD) RKB**

###### **1922 - 2010m (1922 - 2010m TVD)**

Claystone with minor Limestone and Traces of Sandstone

Clst: olv gry-olv blk, blk, frm, pred non-slily calc, occ v calc, occ slily slty, Tr Micromic, r Tr Glauc

Ls: lt brn gry-pl yel org, blk, frm-hd, occ dol, occ arg, pred microxln

Sst: med lt gry-lt gry, clr trns-wh qtz, v f-f, sbrndd-rndd, w srt, frm-hd, occ sil cmt, occ slily calc cmt, arg, pred lse grns, Tr vis por

###### **2010 - 2105m (2010 - 2105m TVD)**

Claystone with minor Limestone

Clst: olv gry-olv blk, gnsh gry, dk gry, frm, blk, non-slily calc, r micromic

Ls: wh-lt gry, yelsh gry, mod yelsh brn-dk yelsh or, blk, frm-hd, occ Dol, occ arg lam, pred microxln



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#### 4.4 **Shetland Group 2105 - 2747 m MD (2105 - 2747 m TVD) RKB**

##### **Springar Formation 2105 - 2142 m MD (2105 - 2142 m TVD) RKB**

###### **2105 - 2142m (2105 - 2142m TVD)**

Claystone with minor Limestone

Clst: med dk gry-med gry, occ grad olv blk, frm, blk, slily slty, non-slily calc, Tr micromic, Tr micropyr

Ls: wh-lt gry, yelsh gry, mod yelsh brn, frm-mod hd, I.P. arg

##### **Nise Formation 2142 - 2352 m MD (2142 - 2352 m TVD) RKB**

###### **2142 - 2200m (2142 - 2200m TVD)**

Claystone with minor Limestone

Clst: med dk gry-med gry, occ grad olv blk, frm, blk, slily slty, non-slily calc, Tr micromic, Tr micropyr

Ls: wh-lt gry, yelsh gry, mod yelsh brn, frm-mod hd, I.P. arg

###### **2200 - 2352m (2200 - 2352m TVD)**

Claystone with minor Limestone

Clst: med dk gry-med gry, frm, blk, slty grad Sltst, non-occ slily calc, Micromic, Tr Micropyr, Tr Galuc, r Tr Carb frag

Ls: wh-lt gry, occ dol yel gry, occ v f blk spt, frm-hd, occ arg, pred microxln

##### **Kvitnos Formation 2352 - 2747 m MD (2352 - 2747 m TVD) RKB**

###### **2352 - 2360m (2352 - 2360m TVD)**

Claystone with Traces of Limestone and Sandstone

Clst: med dk gry-med gry, frm, blk, slty grad Sltst, non-occ slily calc, Micromic, Tr Micropyr, Tr Glauc, r Tr Carb frag

Ls: wh-lt gry, occ dol yel gry, occ v f blk spt, frm-hd, occ arg, pred microxln

Sst: clr trnsf, f- v crs, sbrndd-rnd, pr srt, hd, lse Qtz grns

###### **2360 - 2510m (2360 - 2510m TVD)**

Claystone with Traces of Limestone

Clst: med dk gry-med gry, frm, blk, slily slty, non-occ slily calc, Tr Micromic

Ls: wh-lt gry, occ dol yel gry, occ v f blk spt, frm-hd, occ arg, pred microxln



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**2510 - 2564m (2510 - 2564m TVD)**

Claystone with Traces of Limestone and Sandstone

Clst: med dk gry-med gry, frm, blk, non-slily slty, non-occ slily calc, Tr Micromic

Ls: wh-med lt gry, occ yel gry, frm-hd, occ dol, occ arg lam, occ slty, pred microxln

Sst: clr trnsl, v f-f, sbang-sbrnnd, w srt, hd, lse Qtz grns

**2564 - 2650m (2564 - 2650m TVD)**

Claystone with Traces of Limestone and rare Traces of Sandstone

Clst: med dk gry-med gry, frm, blk, slily slty, non-occ slily calc, Tr Micromic

Ls: wh-med lt gry, occ yel gry, frm-hd, occ dol, occ arg lam, occ slty, pred microxln

Sst: clr trnsl, v f-f, lse Qtz grns, sbang-sbrnnd, w srt

**2650 - 2747m (2650 - 2747m TVD)**

Claystone with Traces of Limestone

Clst: dk gry-med dk gry, frm, blk, slily slty, non-occ slily calc, Tr Micromic

Ls: wh-med lt gry, occ yel gry, frm-hd, occ dol, occ arg lam, occ slty, pred microxln



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#### **4.5 Cromer Knoll Group 2747-3337,6 m MD (2747-3337,6 m TVD) RKB**

##### **Lange Formation 2747 - 3337,6 m MD (2747 - 3337,6 m TVD) RKB**

###### **2747 - 2830m (2747 - 2830m TVD)**

Claystone with Traces of Limestone

Clst: dk gry-med dk gry, frm, blkly, slily slty, non-occ slily calc, Tr Micromic

Ls: wh-med lt gry, occ yel gry, frm-hd, occ dol, occ arg lam, occ slty, pred microxln

###### **2830 - 3000m (2830 - 3000m TVD)**

Claystone with Traces of Limestone

Clst: dk gry-med dk gry, frm, blkly, slily slty, non-occ slily calc, Tr Micromic

Ls: pred dk yelsh brn, occ wh-lt gry, frm, blkly, pred microxln, I.P. arg, occ dol

###### **3000 - 3080m (3000 - 3080m TVD)**

Claystone with Traces of Limestone

Clst: dk gry-med dk gry, frm, blkly, slily slty, non-occ slily calc, Tr Micromic

Ls: wh-lt gry, occ yel brn, frm, blkly, pred arg, occ microxln, occ dol

###### **3080 - 3120m (3080 - 3120m TVD)**

Claystone with Traces of Limestone

Clst: dk gry-med dk gry, frm, blkly, slily slty, non-occ slily calc, Tr Micromic, occ Micropyr  
Nod

Ls: lt gry-lt brn gry, occ yel brn, frm, blkly, pred arg, occ microxln, occ dol

###### **3120 - 3145m (3120 - 3145m TVD)**

Claystone with minor Limestone and Sandstone

Clst: olv blk-dk gry, firm-mod hd, sbfis-fis, gen sl calc-calc, micromic, slty, Tr Micropyr

Sst: lt gry-med lt gry, clr-mky Qtz, v f-f, occ med-crs, sbang-sbrndd, wl-mod srt, frm-mod hd,  
slily calc-dol cmt, r Tr Carb, n.v.p, n/s

Ls: wh-v lt gry, frm, occ slily arg, pred microxln

###### **3145 - 3187m (3145 - 3187m TVD)**

Claystone with Sandstone beds and minor Limestone stringers

Clst: olv blk-dk gry, firm-mod hd, sbfis-fis, calc-v calc, occ grad Mrl, micromic, slty

Sst: med lt gry-med gry, clr-mky Qtz, v f-m, pred f-m, r crs, sbang-sbrndd, wl-mod srt,  
frm-mod hd, slily calc-calc cmt, pred arg, n.v.p, n/s

Ls: wh-med lt gry, frm, slily slty, occ arg



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**3187 - 3205m (3187 - 3205m TVD)**

Claystone and Sandstone beds with minor Limestone stringers

Clst: olv blk-dk gry, firm-mod hd, sbfis-fis, calc-v calc, occ grad Mrl, micromic, slty-v slty  
Sst: med gry-med dk gry, clr-mky wh Qtz, v f-f, r med, sbang-sbrndd, wl srt, frm, slily-v calc  
cmt, v arg grad sdy Slst, r Tr Carb Frag, Tr Mic, n.v.p, n/s  
Ls: wh-med lt gry, occ clr trnsl microxln, frm, slily slty, pred arg

**3205 - 3250m (3205 - 3250m TVD)**

Sandstone and Siltstone with minor Limestone

Sst: med gry-med dk gry, occ med lt gry, clr-mky wh Qtz, v f-f, r med, ang-sbang, wl srt,  
fri-frm, slily-v calc cmt, pred v calc, slty-arg, r Tr Carb Frag, Tr Micromic, r Tr Glau, nvp, n.s  
Slst: olv blk-dk gry, firm-mod hd, sbfis-fis, calc-v calc grad Mrl, micromic, arg, occ slily sdy  
Ls: w lt gry-med lt gry, occ clr trnsl microxln, frm-mod hd, pred arg

**3250 - 3302m (3250 - 3302m TVD)**

Claystone with minor Sandstone and Limestone

Clst: (1) olv blk-dk gry, firm-mod hd, sbfis, calc grad Mrl, gen slty loc grad Slst, Tr carb, Tr  
sdy vf (2) med gry-olv gry, mod hd, sbfis-fis, non calc, micromic, slty r vf sdy  
Sst: m gry, clr-mky Qtz, f-r m, sbang-sbrndd, mod srt, fri, calc cmt, micromic, Tr carb, v arg,  
slty. Slo strmg yel wh Fluor cut, no vis cut, wk wh Fluor Res, no vis Res  
Ls: lt brn gry-m gry-olv gry, mod hd, blk, microxln, loc v arg grad Mrl

**3302 - 3325m (3302 - 3325m TVD)**

Sandstone with minor Claystone and Limestone

Sst: m gry, clr-mky Qtz, v f-m, Tr crs, ang-sbrndd, pr srt, fri-mod hd, gen calc cmt, gen  
v arg/slty grad Clst/Slst, gen micromic, Tr carb, nvp, n/s  
Clst: brn blk-gy blk, mod hd, sbfis-fis, non calc, micromic, Tr carb, sl slty  
Ls: v lt gry-v pl org, occ wh, microxln, fri-mod hd, gen arg

**3325 - 3337,6m (3325 - 3337,6m TVD)**

Siltstone with minor Sandstone and Limestone

Slst: med dk gry-dk gry, sbfis, frm, v calc grad Mrl, v sdy grad Sst, micromic, Tr carb  
Sst: m gry-med dk gry, clr-mky Qtz, v f-m, pred f-m, ang-sbrndd, mod srt, fri-frm, calc-v calc  
cmt, pred arg/slty grad Clst/Slst, micromic, Tr carb.nvp.ns  
Ls: wh-v lt gry, blk, frm, microxln



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#### **4.6 Viking Group 3337,6 - 3407 m MD (3337,6 - 3407 m TVD) RKB**

##### **Spekk Formation 3337,6 - 3350,9 m MD (3337,6 - 3350,9 m TVD) RKB**

###### **3337,6 - 3350,9m (3337,6 - 3350,9m TVD)**

Claystone with minor Siltstone, Marl and Limestone and Traces of Sandstone

Clst: dk gry-gry blk, sbfis, frm, calc, occ slily slty, Tr Micromic

Sltst: med dk gry-dk gry, sbfis, frm, v calc grad Mrl, v sdy, micromic, Tr carb

Mrl: lt gry, lt bl gry, sbblky, frm, only sl arg grad Ls

Ls: wh-v lt gry, blk, frm, microxln

Sst: m lt gry-med dk gry, clr-mky Qtz, v f-m, pred f-m, sbang-sbrnidd, wl- mod srt, fri-frm, pred fri, calc-v calc cmt, pred arg/slty grad Clst/Sltst, micromic, Tr carb, nvp, n/s

##### **Melke Formation 3350,9 - 3407 m MD (3350,9 - 3407 m TVD) RKB**

###### **3350,9 - 3381m (3350,9 - 3381m TVD)**

Claystone with minor Sandstone and Traces of Limestone

Clst: dk gry-gry blk, sbfis-fis, slily brit, frm, slily calc, slty, Tr Mic

Sst: m gry-m dk gry, clr Qtz, v f-f, sbang-rnidd, pred sbrnidd, wl srt, fri-frm, pred lse Qtz grns, calc cmt, arg/slty grad Clst/Sltst, Tr Mic, r Tr carb, n.v.p, n/s

Ls: clr-wh, frm-mod hd, microxln

###### **3381 - 3407m (3381 - 3407m TVD)**

Sandstone and Claystone with minor Limestone

Sst: lt gry-m dk gry, clr-mky Qtz, vf-f, Tr m, ang - sbrnidd, mod srt, fri-mod hd, gen v calc I.P. grad sdy Ls, arg/slty Mtrx loc grad Sltst/Clst sdy, micromic, Tr carb, n.v.p., n/s

Clst: dk gry-gry blk, sbfis-fis, frm-mod hd, non-slily calc, Tr Micromic

Ls: lt gry-olv gry, microxln, hd, I.P arg.



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#### **4.7 Fangst Group 3407 - 3558 m MD (3407 - 3558 m TVD) RKB**

##### **Not Formation 3407 - 3447,9 m MD (3407 - 3447,9 m TVD) RKB**

###### **3407 - 3447,9m (3407 - 3447,9m TVD)**

Claystone with minor Sandstone, Traces of Limestone and rare Traces of Coal

Clst: dk gry-gry blk, mod hd, sbfis-fis, gen non calc, micromic, gen v slty grad Sltst, loc sdy vf, Tr carb

Sst: v lt gry, clr-mky Qtz, f, sbang-sbrndd, wl srt, fri, calc/sil cmt, r Dol cmt, Tr micromic, Tr Carb, n.v.p. n/s

Ls: pl yel brn-olv gry, microxln, mod hd, arg

C: blk-brn blk, Anthr, r vit/brit, arg, mod hd

##### **Ile Formation 3447,9 - 3558 m MD (3447,9 - 3558 m TVD) RKB**

###### **3447,9 - 3507m (3447,9 - 3507m TVD)**

Sandstone and Siltstone with minor Limestone, Traces of Claystone and rare Traces of Coal

Sst: lt gry-lt olv gry, clr-mky Qtz, vf-f, pred f, sbang-sbrndd, wl srt, pred v calc, I.P grad sdy Ls, micromic, carb, loc v arg /slty grad Sltst/Clst, n.v.p. , n/s

Sltst: lt gry-med lt gry, amor, sft-frm, v calc grad Mrl, v sdy, v arg, micromic, Tr Carb, Tr Micropyr

Ls: v lt gry-yel gry, sft, pred slily arg, occ microxln

Clst: dk gry-gry blk, sbfis-fis, brit, frm, non calc

C: blk-brn blk, Anthr, r vit/brit, arg, mod hd

###### **3507 - 3558m (3507 - 3558m TVD)**

Marl and Sandstone with minor Limestone and Traces of Claystone and Siltstone

Mrl: lt gry-lt olv gry, amor, sft-occ frm, slty, v sdy, Tr Micromic, Tr Carb, Tr Micropyr

Sst: med lt gry-lt olv gry, clr-mky Qtz, vf-f, pred v f, sbang-sbrndd, wl srt, v calc, v arg/slty grad Sltst, micromic, Tr Carb, n.v.p. , n/s

Ls: wh, blk, sft-frm, microxln

Clst: dk gry-gry blk, sbfis, brit, frm, slily slty, non calc

Sltst: lt gry-med lt gry, amor, sft-frm, v calc, v sdy grad v f-f Sst, v arg, micromic, Tr Carb.



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#### 4.8 **Båt Group 3558 - TD 3931 m MD (3507 - TD 3931 m TVD) RKB**

##### **Ror Formation 3558 - 3684 m MD (3558 - 3684 m TVD) RKB**

###### **3558 - 3620m (3558 - 3620m TVD)**

Sandstone with minor Claystone and Limestone

Sst: med lt gry-med gry, clr-mky Qtz, v f-f, pred v f, sbang-sbrnidd, wl srt, fri-sft, calc-v calc, arg, micromic Tr Carb, n.v.p, n/s

Clst: olv gry-m dk gry,sbfis-fis,mod hd,calc-sl calc,micromic,Tr carb,slty I.P.grad

Ls: lt gry-v lt gry,microxln,mod hd,loc arg

###### **3620 - 3684m (3620 - 3684m TVD)**

Claystone with minor Sandstone and Traces of Limestone

Clst: olv blk-dk gry, mnv olv gry, sbfis-fis, mod hd, gen non calc, micromic, carb, gen slty loc v slty grad Slt, loc vf sdy

Sst: lt gry-lt olv gry, clr-mky Qtz, vf-f, Tr m, sbang -sbrnidd, mod srt, fri-mod hd, gen calc cmt, micromic, I.P.v slty grad Sltst, n.v.p, gen n/s

Ls: wh-lt gry, microxln-crptoxln, mod hd, I.P arg

##### **Tilje Formation 3684 - 3882 m MD (3684 - 3882 m TVD) RKB**

###### **3684 - 3701m (3684 - 3701m TVD)**

Sandstone with minor Siltstone and Traces of Limestone

Sst: (1) lt gry-lt olv gry, clr-mky Qtz, f, sbang-sbrnidd, mod srt, fri, sl sil cmt, Tr carb, Tr micromic, I.P.slty

Sst: (2) lt brn gry-.lt olv gry, clr-mky Qtz, gen f, sbang-sbrnidd, mod srt, fri-mod hd, var dol cmt, Tr micromic, Tr carb, var slty, n.v.p

Sst: (3) lt gry, clr-mky Qtz, f, sbang-sbrnidd, mod srt, mod hd, calc cmt, Tr carb, Tr micromic, n.v.p

Sltst: brn blk-olv blk-olv gry, firm-mod hd, blk, var calc, loc v arg grad Clst, gen sdy vf grad Sst

Ls: pl yel brn-lt olv gry, crptoxln, v hd

###### **3701 - 3708m (3701 - 3708m TVD)**

Claystone with trace of Sandstone

Clst: gry blk - olv blk, hd - v hd, fis, dol cmt, micromic, Mic, carb, slty, w/ isolated Sst lens, loc biotrub

Sst: lt gry - lt olv gry, clr - mky Qtz, vf, sbang - sbrnidd, mod srt, hd - v hd, dol cmt, micromic, n.v.p



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**3708 - 3743m (3708 - 3743m TVD)**

Sandstones with minor Claystones

Sst: wh - v lt gry, lt olv gry, clr - trnsl, occ mky Qtz, vf - f, occ m, sbang - ang, occ sbrnidd, mod srt, loc calc cmt, loc sil cmt, loc Kao Mtrx, occ carb, loc Mic

Sst: pl yel or, lt gry - lt olv gry, clr - trnsl, occ mky Qtz, vf - f, r m, sbang - sbrnidd, mod - wl srt, Mic, Tr carb, r micromic

Clst: dk gry - m dk gry, bcm occ blk, frm - mod hd, blkly - sbblky, non calc, slty, occ v slty grd Sltst, Mic, Tr bcm loc abd micropyr, Tr micromic

Clst: dk yel brn - gry brn, occ m brn gry, olv gry, frm - mod hd, sbblky, v slty, loc grd Sltst, I.P. vf sdy, non calc, Tr micromic, Tr carb, r Pyr, r Coal frag

**3743 - 3801m (3743 - 3801m TVD)**

Sandstones with minor - trace of Claystones

Sst: pl yel brn - dk yel brn, clr - trnsl, pl yel brn - dk yel brn Qtz, vf - f, occ m, v hd - hd, sbang - ang, wl - mod srt, dol cmt, bcm sil cmt, loc Mic, loc carb, loc Clst lam

Sst: v lt gry - pk gry, clr - trnsl, pk gry Qtz, vf - m, bcm vf - f, v hd - hd, sbrnidd - ang, mod srt bcm mod - wl srt, gen sil cmt, loc calc cmt, loc Kao Mtrx, r Mic, r carb, loc r Pyr Nod, loc Clst lam

Clst: m dk gry - dk gry, occ brn blk, mod hd, non calc, slty loc I.P. vf sdy, Mic, carb, loc r Wd frag, loc Sst Rpl, loc Sst Len

**3801 - 3811m (3801 - 3811m TVD)**

Sandstone

Sst: pl yel or - dk yel brn, clr - trnsl, pl yel or Qtz, f - m, sbang - ang, mod srt, mod hd - hd, sil cmt, loc calc cmt, r Mic, loc Rpl lam

**3811 - 3837m (3811 - 3837m TVD)**

Sandstone with trace of Claystone

Sst: lt gry - pl yel or, loc dk yel brn, clr - trnsl, pl yel brn Qtz, pred f, occ vf, sbang-ang, mod - wl srt, mod hd - hd, calc cmt, loc sil cmt, Tr Mic, r - Tr carb.

Sst: lt gry - lt olv gry, clr - trnsl, r pl yel or Qtz, f, sbang - ang, wl srt, mod hd - hd, loc sil cmt, loc calc cmt, r - Tr carb

Clst: m dk gry - dk gry, mod hd, non calc, slty, micromic, carb, loc grd coaly Sh



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**3837 - 3865m (3837 - 3865m TVD)**

Sandstones with trace of Claystones

Sst: lt gry - m gry, clr - mky Qtz, f - m, loc r crs, mod srt, hd, calc cmt, tr Mic, tr carb, loc tr Sh clasts, n.v.p

Sst: lt gry - m lt gry, clr - mky Qtz, f - m, sbang, mod srt, mod hd - hd, calc cmt, Tr Pyr Nod, var Mic, loc abd Wd frag, loc Sh lam, p.v.p.

Sst: lt gry, clr - mky Qtz, f - m, sbang - sbrndd, mod srt, hd, calc cmt, r Mic, r carb

Clst: m dk gry - dk gry, mod hd, sl calc, slty, I.P. vf sdy, Mic, micropyr, carb, loc bioturb

**3865 - 3882m (3865 - 3882m TVD)**

Sandstone with minor Claystone

Sst: wh-v lt gry, lt olv gry, clr-mky Qtz, f-m, bcm f-crs, sbang-sbrndd, mod srt-bcm pr srt, calc cmt, loc Pyr Nod, r carb, bcm sl arg

Clst: dk gry-gry blk, frm-mod hd, sbblky, slty, non calc, micromic, micropyr

**Åre Formation 3882 - TD 3931 m MD (3882 - TD 3931 m TVD) RKB**

**3882 - 3917m (3882 - 3917m TVD)**

Sandstone with interbedded Claystone and Siltstone

Sst: lt gry, pl yel brn-yel brn, f-crs, r v crs, bcm vf-f, ang-sbrndd, pr srt, bcm mod-wl srt, frm, calc cmt, loc arg

Clst: dsky yel brn - brn blk, bcm lt olv gry, mod hd, sbblky, non calc, slty, I.P. vf sdy, micromic, carb, micropyr, I.P. grd coaly Sh

Slst: pl yel brn - dk yel brn, frm - mod hd, non - sl calc, r micromic, r micropyr

**3917 - 3931m (3917 - 3931m TVD)**

Sandstone with interbedded silty Claystone, minor Limestone

Sst: pl yel brn - yel brn, clr - mky Qtz, vf - f, r m, r crs, ang - sbrndd, mod - pr srt, frm, calc cmt, arg

Clst: olv gry, dk yel brn, frm, v slty grd Slst, I.P. vf sdy, non calc, v carb, Mic, r miropyr, Tr C: blk, brit

Ls: wh, frm, microxln, r Mic



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## **5 Hydrocarbon shows**

The evaluation of hydrocarbon shows at the wellsite was carried out in a conventional manner. A total gas by volume detector (THA-Sperry Sun) and a separate FID chromatograph detector recording the volume of C1 through nC4, was used.

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

### **5.1 Gas chromatograph**

One of the coring criterias was to only cut cores if "live" hydrocarbons from the reservoir was present. To accomplish this a gas chromatograph that could analyse in the range C1 to beyond n-C30 was mobilized. The objective of the work was to analyse drill cuttings and subsequently core chips by gas chromatography in order to detect heavy hydrocarbons which could suggest the presence of migrated petroleum in a system being drilled using oil-based drilling fluids. The base oil added to the mud is a distillation cut of a mineral oil and contains more or less the same compounds as naturally occurring petroleum in this specific distillation cut. The pure base oil and the composed drilling fluid were first analysed to establish good reference samples against which to compare the subsequent analyses.

For detailed information on the work see APT report, ref Chpt 12.

### **5.2 Gas Record**

For gas record in the well, see "Lithology Log" attached in Section 3, and End of Well Report from Sperry Sun, Halliburton, Well 6407/7-6.



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### 5.3 Oil stain and Fluorescence

A summary of the observed shows is given in Table 5.2.1 below:

INTERVAL (mRKB)	SOURCE	LITHOLOGY	SHOWS DESCRIPTION
3449	Sidewall core	Sandstone	wk pet od, no O stn, ptchy bri yel wh dir Fluor, wk straw vis cut, mod stmng bl wh Fluor cut, bl wh Fluor Res, wk straw vis Res
3452-3461	Sidewall core	Sandstone	v wk pet od, no O stn, unif dull yel wh dir Fluor, slo stmng bl wh cut, stmng bl wh Flu cut, ptchy mky wh Fluor Res, no vis Res
3476	Sidewall core	Sandstone	v wk pet od, no O stn, unif bri yel wh dir Fluor, slo stmng mky wh Fluor cut, no vis cut, ptchy mky wh Fluor Res, no vis Res
3484	Sidewall core	Sandstone	v wk pet od, no O stn, unif bri yel wh dir Fluor, slo stmng mky wh Fluor cut, no vis cut, ptchy mky wh Fluor Res, no vis Res
3489	Sidewall core	Sandstone	v wk pet od, no O stn, ptchyh bri yel wh dir Fluor, wk straw vis cut, slo stmng mky wh Fluor cut, ptchy mky wh Fluor Res, no vis Res
3550	Sidewall core	Sandstone	wk pet od, no O stn, unif bri yel wh dir Fluor, mod blmng dull yel wh Fluor cut, pychy mky wh Fluor Res, wk straw vis Res
3684	Sidewall core	Sandstone	v wk pet od, no O stn, ptchy dull or dir Fluor, wk stmng p.p. mky wh Fluor cut, mky wh Fluor Res, straw vis Res
3687	Sidewall core	Sandstone	v wk pet od, no O stn, ptchy dull bl wh dir Fluor, wk stmng p.p. mky wh Fluor cut, mky wh Res Fluor, straw vis Res
3720	Sidewall core	Sandstone	v wk pet od, no O stn, ptchybri yel wh dir Fluor, wk stmng p.p. mky wh Fluor cut, mky wh Fluor Res, straw vis Res
3870	Sidewall core	Sandstone	v wk pet od, no O stn, ptchy bri yel dir Fluor, wk stmng p.p. mky wh Fluor cut, mky wh Fluor Res, straw vis Res
3877	Sidewall core	Sandstone	v wk pet od, no O stn, ptchy bri yel dir Fluor, wk stmng p.p. mky wh Fluor cut, mky wh Fluor Res, straw vis Res
3900	Sidewall core	Sandstone	no pet od, no O stn, unif dull or dir Fluor, wk straw vis cut, v slo blmng dull yel wh Fluor cut, mky wh Res Fluor, straw vis cut
3701	core	Sandstone	Fr pet od, Fr uni lt brn O stn, Gd brt yel direct Fluor, ex fast - mod stmng yel wh p.p. Fluor cut, straw vis cut, strg bri yel Fluor Res, lt brn vis Res.
3702-3705	Core	Sandstone	Wk pet od, no O stn, pr dull or direct Fluor, wk mod stmng wh p.p. Fluor cut, no vis cut, wk bl wh Fluor Res, no vis Res
3743-3746	Core	Sandstone	wk pet od, no O stn, unif dull yel or dir Fluor, slo blmng bl wh Fluor cut, no vis cut, dull bl wh Fluor Res, no vis Res
3747-3748	Core	Sandstone	wk pet od, no O stn, unif dull yel or dir Fluor, slo blmng bl wh Fluor cut, no vis cut, dull bl wh Fluor Res, no vis Res
3749	Core	Sandstone	wk pet od, 40% bri yel wh dir Fluor, mod stmng bl wh Fluor cut, no vis cut, dull bl wh Fluor Res, no vis Res



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INTERVAL (mRKB)	SOURCE	LITHOLOGY	SHOWS DESCRIPTION
3750-3752	Core	Sandstone	wk pet od, no O stn, dull yel or dir Fluor, slo blmg bl wh Fluor cut, no vis cut, dull bl wh Fluor Res, no vis Res
3753-3754	Core	Sandstone	wk pet od, bri yel wh dir Fluor, mod strng yel wh Fluor cut, no vis cut, bri mky wh Fluor Res, wk straw vis Res
3755-3758	Core	Sandstone	wk pet od, bri yel wh dir Fluor, mod - fast strng yel wh Fluor cut, bri mky wh fluor Res, wk straw vis res
3761	Core	Sandstone	wk pet od, uni bri yel wh dir Fluor, mod - fast strng p.p. yel wh Fluor cut, straw vis cut, bri mlky wh Fluor Res, wk straw vis Res
3762	Core	Sandstone	80% bri yel wh dir Fluor cut, else as 3761
3763	Core	Sandstone	40% bri yel wh dir Fluor, mod - fast strng yel wh Fluor cut, straw vis cut, bri mlky wh Fluor Res, wk straw vis Res
3764-3766	Core	Sandstone	wk pet od, dull yel or dir Fluor, slo blmg bl wh Fluor cut, no vis cut, dull bl wh Fluor Res, no vis Res
3767	Core	Sandstone	uni bri yel wh dir Fluor, mod - fast strng yel wh Fluor cut, straw vis cut, bri mlky wh Fluor Res, wk straw vis Res
3770,5	Core	Sandstone	wk pet od, no vis cut, ptchy bri yel wh dir Fluor, slo strng p.p. mky wh Fluor cut, no vis Res
3771-3776	Core	Sandstone	wk pet od, ptchy dull or dir Fluor, no vis cut, slo strng p.p. mky wh Fluor cut, wk dull yel Fluor Res, no vis Res
3777	Core	Sandstone	wk pet od, no stn, unif dull yel wh dir Fluor, no vis cut, mod strng p.p. mky wh Fluor cut, dull yel wh Fluor Res, no vis Res
3778-3784	Core	Sandstone	wk pet od, no stn, unif dull yel wh dir Fluor, no vis cut, mod strng, p.p. mky wh Fluor cut, dul yel wh Fluor Res, no vis Res
3785-3786	Core	Sandstone	v wk pet od, no stn, ptchy dull yel wh dir Fluor, no vis cut, slo strng p.p. bl wh Fluor cut, wk dull yel wh Fluor Res, no vis Res
3789	Core	Sandstone	v wk pet od, no stn, no vis cut, ptchy dull or dir Fluor, slo blmg mky wh Fluor cut, dull yel wh Fluor Res, no vis Res
3790	Core	Sandstone	wk pet od, no stn, no vis cut, ptchy dull yel wh dir Flur, slo strng, p.p. mky wh Fluor cut, dull yel wh Fluor Res, no vis Res
3791	Core	Sandstone	v wk pet od, no stn, no vis cut, ptchy dull or, ptchy dull yel wh dir Fluor, slo strng mky wh Fluor cut, dull mky wh Res Fluor, no vis Res
3793-3795	Core	Sandstone	no - v wk pet od, no stn, no vis cut, unif dull or dir Fluor, v slo strng p.p. mky wh Fluor cut, wk mky wh Res Fluor, no vis Res
3796	Core	Sandstone	a.a but also ptchy dull yel wh dir Fluor
3798-3800	Core	Sandstone	no - v wk pet od, no stn, no vis cut, unif dull or dir Fluor, v slo strng p.p. mky wh Fluor cut, wk mky wh Res Fluor, no vis Res
3802-3808,7	Core	Sandstone	wk pet od, no stn, straw vis cut, ptchy bri yel wh, ptchy dull



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			yel wh dir Fluor, slo - mod stmng, p.p. mky wh Fluor cut, bl wh Res Fluor, wk straw vis Res
3809	Core	Sandstone	wk pet od, no stn, ptchy bri yel & ptchy dull yel wh dir Fluor, wk straw vis cut, mod stmng p.p. mky wh Fluor cut, mky wh Res Fluor, Tr straw vis Res
3810	Core	Sandstone	v wk pet od, no stn, ptchy bri yel wh & ptchy dull yel wh dir Fluor, wk straw vis cut, mod stmng p.p. mky wh Fluor cut, mky wh Res Fluor, no vis Res
<b>INTERVAL (mRKB)</b>	<b>SOURCE</b>	<b>LITHOLOGY</b>	<b>SHOWS DESCRIPTION</b>
3812	Core	Sandstone	v wk pet od, no stn, no vis cut, unif dull or dir Fluor, wk slo stmng p.p mky wh Fluor cut, dull mky wh Fluor Res, no vis Res
3815	Core	Sandstone	wk pet od, no stn, unif dull or dir Fluor, no vis cut, slo stmng p.p.mky wh Fluor cut, mky wh Res Fluor, Tr straw vis Res
3816-3818	Core	Sandstone	stky pet od, no stn, ptchy mod yel wh & ptchy dull or dir Fluor, no vis cut, wk slo stmng p.p. mky wh Fluor cut, wk dull mky wh Fluor Res, no vis Res
3819-3820	Core	Sandstone	no - v wk pet od, no stn, unif dull or dir Fluor, no vis cut, wk slo stmng p.p. dull mky wh Fluor cut, wk dull mky wh Res Fluor, no vis Res
3821-3823	Core	Sandstone	v wk pet od, no stn, unif dull or, dir Fluor, wk stmng dull mky wh Fluor cut, wk dull mky wh Res Fluor, no vis Res
3824	Core	Sandstone	v wk pet od, no stn, unif dull or dir Fluor, no vis cut, wk slo stmng mky wh Fluor cut, Tr mky wh Res Fluor, no vis Res
3825-3826	Core	Sandstone	no - v wk pet od, no stn, unif dull or dir Fluor, wk slo stmng mky wh Fluor cut, Tr dull mky wh Res Fluor, no vis Res
3827	Core	Sandstone	ptchy bri yel & ptchy dull or dir Fluor, else a.a
3828-3829	Core	Sandstone	no - v wk pet od, no stn, unif dull or dir Fluor, wk slo stmng dull mky wh Fluor cut, Tr dull mky wh Res Fluor, no vis Res
3830	Core	Sandstone	no - v wk pet od, no stn, ptchy bri yel wh & ptchy dull or dir Fluor, wk slo stmng mky wh Fluor cut, Tr mky wh Res Fluor, no vis Res
3831-3837,6	Core	Sandstone	no - v wk pet od, no stn, wk unif dull or dir Fluor, wk slo stmng mky wh Fluor cut, tr mky wh Res Fluor, no vis Res
3841	Core	Sandstone	Mod pet od,uni dull or dir Fluor,v wk bl wh Fluor cut,no vis cut,v wk bl wh Fluor Res,no vis Res.
3843	Core	Sandstone	wk pet od, no stn, unif dull or dir Fluor, no vis cut, slo stmng p.p.mky wh Fluor cut, mky wh Res Fluor, no vis Res
3850	Core	Sandstone	Wk stky pet od,no O stn,r sptd bri yel dir Fluor(on bd boundaries),wk slo strmg bl wh Fluor cut,no vis cut,v wk bl wh Fluor Res,no vis Res.
3853	Core	Sandstone	Stky pet od,no O stn,r ptchy/sptd gen dull brn dir Fluor(on bd boundaries),wk slo-mod stmng bl wh Fluor cut,no vis cut,wk bl wh Fluor Res,no vis Res.
3858	Core	Sandstone	v wk pet od, no O stn, dull yel dir Fluor, no vis cut, v wk slo stmng p.p.mky wh Fluor cut, Tr wk dull yel wh Res Fluor, no vis Res
3860	Core	Sandstone	wk pet od, no O stn, ptchy bri yel wh dir Fluor, no vis cut, slo wk stmng p.p. dull mky wh Fluor cut, mky wh Res Fluor, Tr straw vis Res
3861-3862	Core	Sandstone	stky pet od, no O stn, ptchy bri yel wh dir Fluor, no vis cut,



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			slo - mod stmng p.p. mky wh Fluor cut, wk dull mky wh Res Fluor, Tr wk straw vis Res
3863	Core	Sandstone	wk stky pet od, no O stn, unif dull brn dir Fluor, v slo wk stmng p.p. mky wh Fluor cut, Tr dull yel wh Res Fluor, no vis Res

## 6 Coring

### 6.1 Conventional Cores

A total of 6 cores were cut. The cores is presented in the table below and the core description can be found in Appendix I.

No	C: Cut (m RKB) R: Recovery (m RKB)	Rec. %	Lithology	Formations	Depth shift (m)
1	C: 3701,0-3709,0 R: 3701,0-3707,6	82,5	Shale w/ thin Sandstone beds	Tilje	-0,25
2	C:3743,0-3770,5 R:3743,0-3769,1	94,8	Sandstone w/ minor Shale	Tilje	1,2 for 3743,0 - 3752,0 1,0 for 3752,0 - 3770,0
3	C:3770,5-3786,0 R:3770,5-3785,7	97,7	Sandstone w/ minor Shale	Tilje	-0,50
4	C:3786,0-3809,0 R:3786,0-3808,7	98,7	Sandstone w/ minor Shale	Tilje	-0,50 for 3786,0 - 3801,5 -0,40 for 3801,5 - 3809,0
5	C:3809,0-3837,0 R:3809,0-3837,3	101,2	Sandstone w/ minor Shale	Tilje	-0,10
6	C:3837,4-3864,0 R:3837,4-3864,9	101,7	Sandstone w/ minor Shale	Tilje	-0,25 for 3807,4 - 3846,0 -0,50 for 3846,0 - 3865,0

Table 6.1.1: Conventional Cores 6407/7-6

### 6.2 Sidewall Cores

A 28 core MSCT (Mechanical Sidewall Core Tool) was first run but failed. The backup CST with 60 shots gave a recovery of 57%; 32 samples, 2 were empty and 26 bullits were lost in the hole. The samples are listed below. Description can be found in Appendix I.

No	Depth m RKB	Recovered cm	Lithology	Formations
1	3900	1,0	Sandstone	Åre
2	3890	1,0	Shale	Åre
3	3877	2,0	Sandstone	Åre
4	3870	2,0	Sandstone	Tilje
5	3725	0,5	Shale	Tilje
6	3720	1,0	Shale	Tilje
7	3698	Empty		
8	3693	Lost		
9	3687	1,0	Sandstone	Tilje
10	3684	2,0	Siltstone	Tilje
11	3650	1,0	Shale	Ror



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12	3625	2,0	Sandstone	Ror
13	3600	Lost		
14	3581	1,5	Shale	Ror
15	3550	1,5	Sandstone	Ile
16	3553	Lost		

Table 6.2.1a: Sidewall Cores 6407/7-6



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No	Depth m RKB	Recovered cm	Lithology	Formations
17	3523	Lost		
18	3515	2,0	Sandstone	Ile
19	3500	Lost		
20	3489	1,5	Sandstone	Ile
21	3484	1,5	Sandstone	Ile
22	3476	1,0	Sandstone	Ile
23	3472	Lost		
24	3466	1,5	Sandstone	Ile
25	3461	1,5	Sandstone	Ile
26	3459	1,5	Sandstone	Ile
27	3457	1,0	Sandstone	Ile
28	3454	1,0	Sandstone	Ile
29	3452	1,0	Sandstone	Ile
30	3450	Lost		
31	3449	1,5	Sandstone	Ile
32	3448	Lost		
33	3444	Lost		
34	3425	Lost		
35	3400	Lost		
36	3390	Lost		
37	3380		Shale	Melke
38	3370		Shale	Melke
39	3360	Lost		
40	3350	Lost		
41	3320	1,5	Shale	Lange
42	3305	2,0	Shale	Lange
43	3302	Lost		
44	3300	Lost		
45	3298	Lost		
46	3296	Lost		
47	3285	1,0	Shale	Lange
48	3260	Empty	(Small bits of Sst)	(Lange)
49	3251	0,5	Shale	Lange
50	3244	Lost		
51	3228	2,0	Sandstone	Lange
52	3227	Lost		
53	3216	Lost		
54	3213	1,5	Sandstone	Lange
55	3208	Lost		
56	3190	Lost		
57	3187	2,0	Shale	Lange
58	3175	Lost		
59	3150	Lost		
60	3125	Lost		

Table 6.2.1b: Sidewall Cores 6407/7-6



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## 7 Logging

### 7.1 MWD Logs

A MWD service (Schlumberger Drilling and Measurement, Anadrill) yielding gamma ray, resistivity, ECD and survey measurements was run as listed in the table below. The RAB tool yields Resistivity At Bit and near bit gamma ray readings.

Run #	Section	Sensors	Drilled from	Drilled to	Logged from	Logged to	Comments
1	36"	CDR; GR-Res-PWD-Dir	365,00	423,00	365,00	416,00	Respud due to high incl.
2	36"	CDR; GR-Res-PWD-Dir	363,00	448,70	363,00	442,20	Good
3	26"	CDR; GR-Res-PWD-Dir	448,70	1229,00	448,70	1220,00	PWD & T failed at 1077m
4	12¼"	CDR; GR-Res-PWD-Dir	1229,00	3100,00	1220,00	3100,00	Good
5	8½"	RAB-CDR; GR-Res-Den/Neu-PWD	3100,00	3701,00	3090,00	3701,00	PWD & T failed at 3642m. Poor RAB measurements
6	8½"	RAB-CDR; GR-Res-Den/Neu-PWD	3709,00	3743,00	3673,00	3743,00	Logged cored intervals. Poor RAB measurements
7	8½"	RAB-CDR; GR-Res-Den/Neu-PWD	3864,00	3930,00	3722,00	3924,00	No real time RAB data.

Table 7.1.1: MWD logging sequence

An extension of the well from 3930m to 3975 m was drilled in order to test the well. For this no MWD service was run.

Detailed MWD results can be found in the report "End of Well Report, MWD, for Norsk Hydro, Well 6407/7-6."

### 7.2 Wireline Logs

The following table is a summary of wireline logs run in the well. Run 1A MSCT (Mechanical SideWall Core Tool w/28 cores) was a misrun, no sidewall cores taken. CST was run instead. The CMR tool failed on Run 1A CMR-ECS-VSP, CMR+/GR was run as backup.

Run #	Tool string	Logged from	Logged to	Tot hrs	Comments
1A	AIT-IPLT (LDS-APS-HNGS)	3930,0	3092,8	09:50	
1A	UBI-DSI	3925,0	2900,0	11:15	UBI outside spec. tolerances, Good data
1A	MDT	3925,0	3880,0	21:40	52 attempts, 16 good, 2 lost seal
	MSCT	-----	-----	05:05	Short circuit. No response from tool.
1A	CMR-ECS-VSP	3913,0	2900,0	21:30	Unable to tune CMR
1A	CMR+	3881,5	3440,0	18:40	
1A	CST	3900,0	3125,0	13:50	60 shots, 32 recovered, 2 empty, 26 lost in hole

Table 7.2.1: Wireline logging sequence



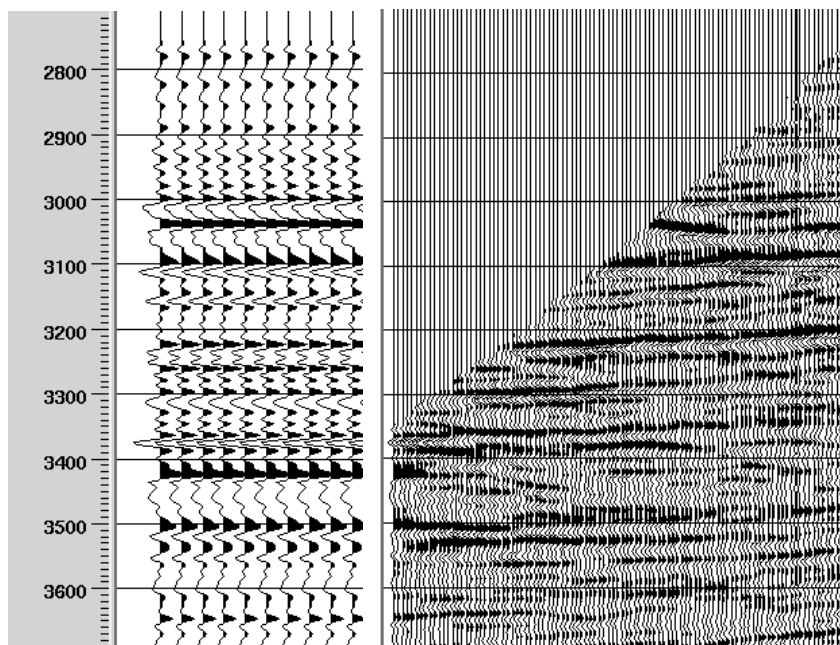
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### 7.3 Velocity Surveys

A zero offset VSP was acquired by Schlumberger and processed by Read Well Services. The data quality is quite good, and the match of travel times with prognosis is good. The tool used was a 2 level CSI, 3 component geophone tool.

For more information see the VSP report.



**Corridor Stack**

**VSP Gather**

*Figure 7.3.1*



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#### 7.4 Bottom Hole Temperatures From Wireline Logs

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

Log suite	Run #	Depth (mRKB)	Temp ° C	Time since circ. (hrs)
AIT-IPLT	1A	3 930	134	7,0
UBI-DSI	1A	3 925	138	24,0
MDT	1A	3 925	138	36,3

Table 7.4.1: Bottom Hole Temperatures



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## **8 Petrophysical Results**

### **8.1 Summary**

Well 6407/7-6 penetrated three potential reservoir targets; the Lange, Ile and Tilje Formations. An extensive formation evaluation program was carried out in the well.

A Recall database, UPN\_NORD62, was established, containing digital core, pressure and log data. The data was subjected to quality control and prepared for processing, interpretation and analysis. All calculations, processing, analysis and interpretation were performed using the Review software.

The petrophysical interpretation was based on a simple shaly sand model. Coal and cemented sandstone was distinguished. For each of the reservoir zones identified, cutoff criteria were applied to determine Net Sand and Net Pay. For a detailed description of the petrophysical interpretation, see Ref./8-9-1/.

The Tilje Fm, Ile Fm. and the Intra Lange sandstone were low porosity-low permeability reservoirs (well cemented).

#### Tilje Formation

In the Tilje reservoir, 6 cores were taken. Horizontal Klinkenberg corrected permeabilities in the range of 0.02 - 12.2 mD was measured. The core porosity seldom exceeded 0.2 porosity units. A synthetic permeability log was generated from the CMR data.

The Tilje Formation was saturated with a heavy gas condensate with an in-situ density of 0.483 g/cc. A GWC was interpreted at 3777 m MD RKB (3749 m TVD MSL) from the induction resistivity log. The FWL was not identified from MDT data, as no pressure points were obtained in the low permeability water zone in the Tilje Formation.

The zones, Tilje 1 and Tilje 2B, clearly displayed the best reservoir properties. Net pay column of hydrocarbons was calculated to approximately 36 meters.

#### Ile Formation

The Ile reservoir was water bearing, which was confirmed by a water gradient from the MDT pressure data and the induction resistivity log.

#### Intra Lange sandstone

In the intra Lange sandstone, shows description from rig and log interpretation indicate residual hydrocarbons or non-movable hydrocarbons.



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All petrophysical results were reported as averages according to the zonation and graphically displayed as computer processed interpretations (CPI), see *Tables 8.7.3* and *8.7.6* and *Figures 8.8.5* to *8.8.7*. The petrophysical averages were input to general reservoir evaluation applications and in particular reservoir fluid volume calculations.

## 8.2 Log Data Acquisition

*Tables 7.1.1* and *7.2.1* summarizes the logs acquired in well 6407/7-6.

The two uppermost sections (36" and 26" hole sections) of the well was drilled with waterbased mud. The watermud was replaced with Versavert oilbased in the 12¼" hole.

Anadrill's MWD GR-RES-DIR (CDR) tools was run throughout the well. The log quality was fair to good. Some noise on the resistivity tools was observed in the 36" hole section. In 26" hole section, high viscous pills were pumped to ensure good hole cleaning. These pills were responsible for the high gamma readings and abnormal resistivity responses, see also Ref/8-9-2/. In 12¼" hole, the high rate of penetration (ROP) reduced the tool samplingrate and the data was somewhat smeared.

The Resistivity at Bit tool (RAB) was run over the reservoir section in the 8½" hole as a help to pick coring point. Due to the oilbased mud, measurements from the ring and button electrodes were not available. It was also difficult to base the core point on the bit resistivity, as the measurements were 10 times higher than expected (ref. CDR resistivities) and fairly spiky.

There were a few operational problems associated with the wireline logging of the 8½" section. The caliper log indicates that borehole conditions were reasonably good. Apart from caved interval below casing shoe and at 3780 m MD RKB, a thin mudcake is observed throughout the 8½" section. The MDT tool went stuck a couple of times in the Tilje and Åre Formations.

The MSCT tool experienced an electrical failure and no cores were taken. A back-up tool was not provided, and the MSCT was replaced by the traditional CST tool.

Furthermore, the CMR-200 failed on tuning in hole. A CMR plus was mobilized onshore and run succesfully. The logging was however very timeconsuming, as it was necessary to tune the tool repeatedly. The multistationaries (stationary measurements at spesific depths using different wait times) were a complete failure. Schlumberger suspect that this failure relate to a software problem.

High quality data was obtained from the AIT, IPLT, ECS and UBI tools. The UBI was processed and interpreted by Geoquest, see Ref./8-9-3/. The AIT provided 5 resistivity curves; of which A10, A90 and



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A30 were input to composite. High resolution density/neutron logs from the IPLT input to composite. ECS logs provided valuable information about minerals Fe, Si, S and Ca.

The DSI data was generally of good quality. In the composite log, the DTCO compressional has been taken from monopole P in openhole and monopole S in casing. The dipole shear wave detection was good in open hole, but poor in cased hole.

In casing, the monopole compressional (P-wave) is actually the monopole shear (S-wave). In house relabeling was performed to account for this. The Monopole P&S run shows a good compressional arrival over most of section, but it weakens when cement gets bad (as seen by increase in the 57 $\mu$ s/ft arrival, for instance over the interval 3035 - 3057 m MD RKB). Cycle skipping in casing was patched using either DTRS or DTTS. Data of poor quality were excluded from the composite.

In casing, the shear arrival on the lower dipole, DT1, was much stronger than upper dipole, DT2. Except from skips at around 2900 and 3080 m MD RKB, the DT1 was labelled properly. The signal was very weak, but still visible, above 2960 m MD RKB. The shear wave quality in casing is considered poor, and should not be included in composite. If used, the DT1 is preferred to the DTSM. PR and VPVS are incorrect in casing and should be recomputed.

All MWD logs were environmentally corrected at the well site by the Service contractor. Environmental corrections are presently a part of Schlumbergers Platform Express Service. As a consequence, the wireline logs was not subjected to further environmental correction.

The overall impression is that we obtained high quality wireline data. All data were subjected to quality control. A continous composite log was generated by editing, depth shifting and merging the individual MWD and WL runs.

### **8.3 Core**

Six cores were cut in the Tilje Formation, see *Table 6.1.1*. A total of 475 core plugs were subjected to conventional core analysis, see Ref./8-9-4/. The program involved measurements of horisontal porosity, Klinkenberg corrected horisontal and vertical air permeabilities, grain density at approximately 0.25 m depth increment. In addition; Dean Stark water saturation measurements were performed on plugs at approximately 1.0 m depth increment from cores 2, 3 and 4.

Using the Review software, the core gamma log was depth shifted to match the reference wireline gamma log (from AIT/IPLT). To obtain the best possible match, the cores were shifted dynamically. For cored interval, recovery factor and applied depth shifts see *Table 6.1.1*.



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CST was run to collect sidewall cores used for petrographical studies. The Njord project has an ongoing SCAL study (resistivity index and confining pressure measurements) on 5 plugs taken from Seal Peals.

## 8.4 MDT Pressure

The MDT program involved pressure measurements in Tilje, Ile and the Lange Formations. One MDT (Modular formation Dynamics Tester) was carried out in well 6407/7-6. Two probes, a conventional and a large diameter probe was used. The majority of tests were performed using the conventional probe. Fluid and contact interpretation is based on pressure tests measured using the conventional probe. All pressure points were adjusted - 0.5 m on depth, due to the wire/cable stretch during logging.

Of 41 attempted pressure tests, only 13 were considered successful. The low success rate was due to extremely tight (low permeability) formations.

Mobilities less than 2.7 mD/cP were measured. As a rule of thumb, pressure tests measuring drawdown mobilities less than 1 mD/cP are suspected to be seriously supercharged. It is thus likely that all tests are supercharged (unknown degree). As a consequence, the reservoir pressure is probably overestimated. Pressure tests are seldom supercharged by more than 2 bar, but supercharging up to 10 bar may occur. This is possibly also reflected in the somewhat lower reservoir pressure estimated from the production test, see Ref./8-10-1/. In this context, it should be mentioned that DST pressures are estimated by extrapolation to reservoir pressure. Because of this, wireline formation pressure data are usually considered to be more accurate than pressures obtained from DST.

The Tilje reservoir pressure was estimated to 558.5 bar at top reservoir based on MDT data (3684 m MD RKB).

To prepare the data for pressure analysis, all pressure tests were quality controlled. The formation pressure quality control is summarised in *Table 8.7.1*.

The main objectives were to identify formation fluids and contacts. The Njord field is compartmentalized and pressure barriers exist, see Ref./8-9-4/. The pressure data suggests that well 6407/7-6 is 160 - 170 bar overpressured compared to the Njord East flank (Ref./8-9-6/).

Fluid densities was obtained from formation pressure analysis and PVT, chemical or compositional analysis of fluid samples from production test. The pressure data suggests that the Tilje Formation is saturated with a heavy gas-condensate of density 0.41 g/cc, see *Figure 8.8.1*. However, PVT analysis of a high quality sample (obtained from production test) gave an in-situ gas density of 0.483 g/cc. One possible explanation for the large discrepancy is a distortion of the gradients interpreted from test due to poor quality pressure data. Thus, a gas density,  $\rho_{\text{gas\_Tilje}}$ , of 0.483 g/cc was used as input to Njord Design basis.



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The Ile reservoir rock was water filled. A water gradient of 0.1 bar/m was interpreted from the pressure data, see *Figure 8.8.2*. This corresponds to a water density,  $\rho_{\text{water_Ile}}$ , of 1.02 g/cc. As for the Intra Lange sandstone, only one representative pressure point was obtained, see *Figure 8.8.3*.

The Free Water Level (FWL) was interpreted from wireline formation pressure data. Since no pressure points were obtained in the low permeability water zone in the Tilje Formation, the certainty in the contacts is questionable, see discussion in Ref./8-10-1/. The FWL was thus not identified from MDT data.

The Gas Water Contact (GWC) was primarily based on resistivity log, but fluorescence core photographs and water saturation from core serve as corroborative data. A PLT logs was not available. The typical density-neutron gas-signature was not identified. It is probably masked by the minerals, the heterogeneous character of the reservoir and the high density of the gas condensate.

$$\text{GWC} = 3777 \text{ m MD RKB} = 3749 \text{ m TVD MSL}$$

## 8.5 Petrophysical Evaluation Procedure

Since no movable hydrocarbons were encountered in the intra Lange sandstone and Ile Formation, an emphasis was put on analysing the reservoir quality and hydrocarbon saturation in the Tilje Formation.

The reservoir consists of interbedded sandstones, shales and cemented sandstones (calcareous and silica). Log analysis was conducted using an effective porosity approach with shale volume determined from the gamma ray log and the neutron-density log, porosity from the density log and water saturation from the Indonesia equation. In the Tilje Formation, the initial log derived porosity was calibrated to overburden corrected core porosity (overburden factor of 0.97) to yield a final log porosity. The final water saturation was then computed using the final log derived porosity. For input parameters, see *Table 8.7.2*.

A synthetic permeability model for the Tilje Formation was generated based on CMR data. This model is represented by this equation:

$$k(\text{mD}) = c \cdot 10000 \cdot (\text{TCMR}^4) \cdot [(\text{FF}/\text{BF})^b]$$

where  $c=0.1$  and  $b=-0.15$ . The TCMR is the total CMR porosity, while bound (BF) and free (FF) fluid volume was found using a 20 ms T2-cutoff. For synthetic CMR permeability function, see track 6 in *Figure 8.8.8*.



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

Tilje Formation cutoff criteria:

- net sand > 9%  $\phi_e$
- net pay > 9%  $\phi_e$  and < 60 %  $S_w$

Intra Lange sst. and Ile Formation cutoff criteria:

- net sand > 12%  $\phi_e$
- net pay > 12%  $\phi_e$  and < 60 %  $S_{we}$

Figure 8.8.4 shows the Tilje Fm. porosity cutoff in a porosity-permeability crossplot.

## 8.6 Petrophysical Results

The results are reported as averages according to the zonation and graphically displayed as a computer processed interpretation (CPI), see Tables 8.7.3 and 8.7.6 and Figures 8.8.5 to 8.8.7.

## 8.7 Tables

Run 1A Test #	Depth (m MD RKB)	Adjusted depth (m MD RKB)	Drawdown mobility (mD/cp)	Initial mud Pressure CQG (bar)	Final mud Pressure CQG (bar)	Formation Pressure CQG (bar)	Draw-down Pretest Type
1	3880.5	3880.0	----	615.8020	615.4839	----	Dry test
2	3880.1	3979.6	----	615.2875	614.9901	465.4839	Dry test
3	3861.5	3861.0	----	611.1454	610.6411	460.5583	Dry test
4	3860.5	3860.0	----	610.7573	610.6411	411.3238	Dry test
5	3827.5	3827.0	----	605.3648	605.4142	387.2086	Dry test
6	3808.6	3808.1	----	602.3823	602.4400	337.9762	Dry test
7	3803.5	3803.0	----	601.5939	601.6498	413.9651	Dry test
8	3789.5	3789.0	----	599.5408	599.5396	473.6714	Dry test
9	3783.5	3783.0	----	598.5438	598.5861	305.7643	Lost seal
10	3778.5	3778.0	0.14	597.7708	597.8578	569.0071	Supercharged
11	3768.5	3768.0	----	596.2275	596.3140	560.1706	Dry test
12	3756.5	3756.0	----	594.3304	594.4547	547.0790	Dry test
13	3748.5	3748.0	1.22	593.3270	592.3907	561.1294	Large D. probe supercharged?
14	3748.5	3748.0	1.50	593.2098	593.2391	560.9507	supercharged?
15	3744.5	3744.0	0.53	592.5617	592.6384	560.8301	supercharged?



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16	3744.0	3743.5	----	592.5538	592.5323	466.8706	Dry test
17	3736.5	3736.0	----	591.2925	591.3502	252.7366	Dry test
18	3710.5	3710.0	0.57	587.3167	587.3443	559.4883	supercharged?
19	3699.5	3699.0	0.64	585.6219	585.7048	559.1371	supercharged?
20	3694.0	3693.5	0.08	584.7927	584.8401	559.2583	supercharged?
21	3688.0	3687.5	----	583.8371	583.8944	258.0004	Dry test
22	3550.0	3549.5	2.7	562.6235	562.6025	529.6276	supercharged?
23	3542.5	3542.0	----	561.3388	561.3990	276.8443	Dry test
24	3489.5	3489.0	0.24	553.1428	553.1877	524.3807	supercharged?
25	3488.9	3488.4	0.51	553.0583	553.0323	524.0541	supercharged?
26	3484.5	3484.0	----	552.4830	552.4865	498.4985	Large D. probe Dry test
27	3476.5	3476.0	1.21	550.9971	551.1251	522.1783	supercharged?
28	3466.0	3465.5	----	549.4191	549.5038	523.1906	Supercharged
29	3465.5	3465.0	0.38	549.4189	549.3890	523.7835	Supercharged
30	3453.0	3452.5	----	547.3755	547.4154	263.3871	Dry test
31	3449.4	3448.9	0.22	546.8359	546.8753	519.4917	supercharged?
32	3320.5	3320.0	----	527.5211	526.8975	257.9871	Dry test
33	3302.5	3302.0	----	523.9816	524.0228	270.0444	Dry test
34	3259.6	3259.1	----	517.3998	517.3755	270.4766	Dry test
35	3252.7	3252.2	----	516.2060	516.2693	288.2733	Dry test
36	3243.0	3242.5	----	514.7358	514.7681	298.9639	Dry test
37	3228.6	3228.1	1.17	512.4830	512.5376	483.2056	supercharged?
38	3215.5	3215.0	----	510.3930	510.4780	317.9939	Dry test
39	3213.4	3212.9	----	510.1299	510.1135	307.7189	Dry test
40	3188.0	3187.5	----	506.0768	506.2128	291.3786	Dry test
41	3228.4	3227.9	1.42	512.8467	512.7726	483.7716	Large D. probe supercharged?

Table 8.71: Formation pressure data in well 6407/7-6



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Input Parameters	Intra Lange sst.	Ile Fm.	Tilje Fm.
GR sand (GAPI)	40	35	20
GR shale (GAPI)	80	105	95
Formation water	1.0 g/cc	1.0 g/cc	1.0 g/cc
Rshale	8 Ohmm	8 Ohmm	6 Ohmm
Shale density	2.5 g/cc	2.55 g/cc	2.55 g/cc
Matrix density	2.65	2.65	from core else 2.67
Neutron shale porosity	0.3	0.18	0.25
a	1	1	1
m	2	2	2 above 3800 m 2.3 below 3800 m
n	2	2	1.95
Formation temperature	141°C@ 3749 m TVD MSL	141°C@ 3749 m TVD MSL	141°C@ 3749 m TVD MSL
Temperature gradient	+/-3°C/100m	+/-3°C/100 m	+/-3°C/100 m
Rmf, Ohmm@ °C	OBM	OBM	OBM
Rw, Ohmm@ °C	0.038@123.4	0.038@123.4	0.035@123.4

*Table 8.7.2: Input parameters to petrophysical interpretation in well 6407/7-6*



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Tilje Formation							
Zonal Averages, Syntetic CMR permeability							
Formation	Interval (m MD RKB)	Net sand kh_arith (mD)	Net sand kh_geo (mD)	Net sand kh_harm (mD)	Net pay kh_arith (mD)	Net pay kh_geo (mD)	Net pay kh_harm (mD)
Tilje 4	3685 - 3693	1.2	0.8	0.7	2.5	2.5	2.5
Tilje 3A	3693 - 3739	0.8	0.5	0.3	0.8	0.5	0.3
Tilje 2B	3739 - 3788.5	0.8	0.4	0.2	0.8	0.4	0.1
Tilje 2A	3788.5 - 3801.5	1.0	0.8	0.5	----	----	----
Tilje 1C2	3801.5 - 3810.8	2.2	1.0	0.8	----	----	----
Tilje 1C1	3810.8 - 3837.4	0.6	0.5	0.4	----	----	----
Tilje 1B	3837.4 - 3851	0.4	0.3	0.2	----	----	----
Tilje 1A	3851 - 3882	0.6	0.4	0.3	----	----	---
Total Tilje	3685 - 3882	0.8	0.5	0.3	0.8	0.4	0.2

Table 8.7.3: Arithmetic, geometric and harmonic thickness weighted CMR permeability averages.

Tilje Formation							
Zonal Averages, Horizontal Kl. corrected core permeability							
Formation	Interval (m MD RKB)	Net sand kh_arith (mD)	Net sand kh_geo (mD)	Net sand kh_harm (mD)	Net pay kh_arith (mD)	Net pay kh_geo (mD)	Net pay kh_harm (mD)
Tilje 4	3685 - 3693	-----	-----	-----	-----	-----	-----
Tilje 3A	3693 - 3739	-----	-----	-----	-----	-----	-----
Tilje 2B	3739 - 3788.5	1.15	0.58	0.40	1.36	0.65	0.41
Tilje 2A	3788.5 - 3801.5	0.24	0.21	0.18	-----	-----	-----
Tilje 1C2	3801.5 - 3810.8	0.18	-----	-----	-----	-----	-----
Tilje 1C1	3810.8 - 3837.4	0.46	0.30	0.22	-----	-----	-----
Tilje 1B	3837.4 - 3851	0.45	0.33	0.22	-----	-----	-----
Tilje 1A	3851 - 3882	0.59	0.39	0.30	-----	-----	-----
Total Tilje	3685 - 3882	0.74	0.38	0.26	1.36	0.65	0.41

Table 8.7.4: Arithmetic, geometric and harmonic porosity weighted horizontal Klinkenberg corrected core permeability averages.



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<b>Tilje Formation Zonal Averages</b>						
<b>Formation</b>	<b>Interval (m MD RKB)</b>	<b>Thickness (m)</b>	<b>NTG (frac)</b>	<b>Phie (frac)</b>	<b>Swe (frac)</b>	<b>Net Pay (m)</b>
Tilje 4	3685 - 3693	8.0	0.1	0.115	0.53	-----
Tilje 3A	3693 - 3739	46.0	0.28	0.134	0.28	12.8
Tilje 2B	3739 - 3788.5	49.5	0.59	0.144	0.41	23.2
Tilje 2A	3788.5 - 3801.5	13.1	0.10	0.155	0.64	0.4
Tilje 1C2	3801.5 - 3810.8	9.2	0.82	0.155	0.76	-----
Tilje 1C1	3810.8 - 3837.4	26.6	0.81	0.128	0.83	-----
Tilje 1B	3837.4 - 3851	13.6	0.21	0.128	0.84	-----
Tilje 1A	3851 - 3882	31.0	0.40	0.136	0.80	-----
Total Tilje	3685 - 3882	197.0	0.45	0.138	0.59	36.4

*Table 8.7.5: Net Sand and Net Pay Averages based on Tilje Fm. CPI.*

<b>Ile Formation Zonal Averages, Well 6407/7-6</b>						
<b>Formation</b>	<b>Interval (m MD RKB)</b>	<b>Thickness (m MD RKB)</b>	<b>NTG</b>	<b>Phie (frac)</b>	<b>Swe (frac)</b>	<b>Net Pay (m)</b>
Ile 4	3447.9 - 3475.5	27.6	0.50	0.144	1.0	----
Ile 3	3475.5 - 3554.1	78.6	0.15	0.142	1.0	----
Ile 2	3554.1 - 3555.4	1.3	1.0	0.135	1.0	----
Ile 1	3555.4 - 3558.0	2.6	0.0	----	----	----
Total	3447.9 - 3558.0	110.1	0.25	0.143	1.0	----

*Table 8.7.6: Net Sand and Net Pay Averages based on Ile Fm. CPI.*



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### 8.8 Figures

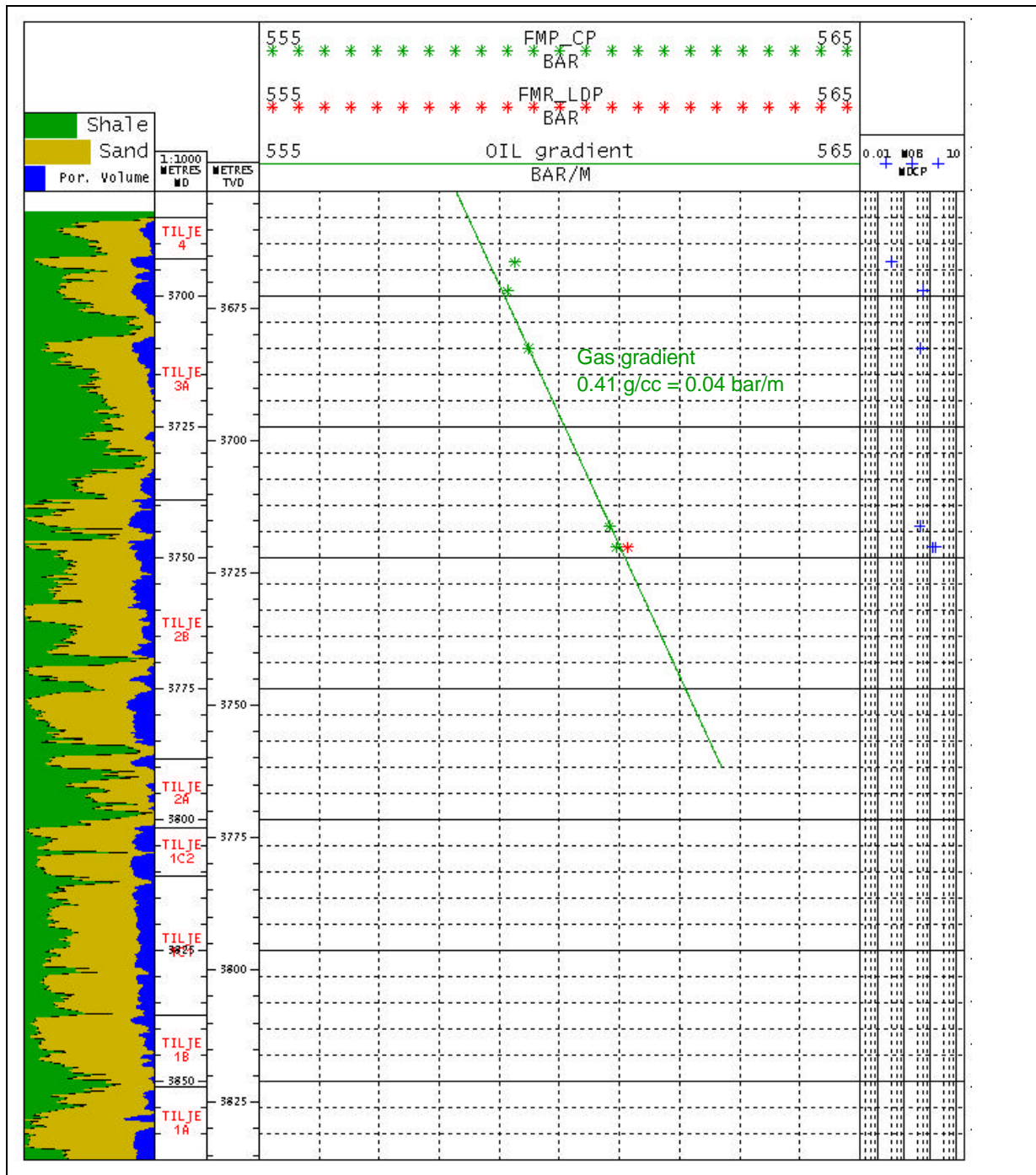


Figure 8.8.1: Formation pressure interpretation, Tilje Fm., well 6407/7-6



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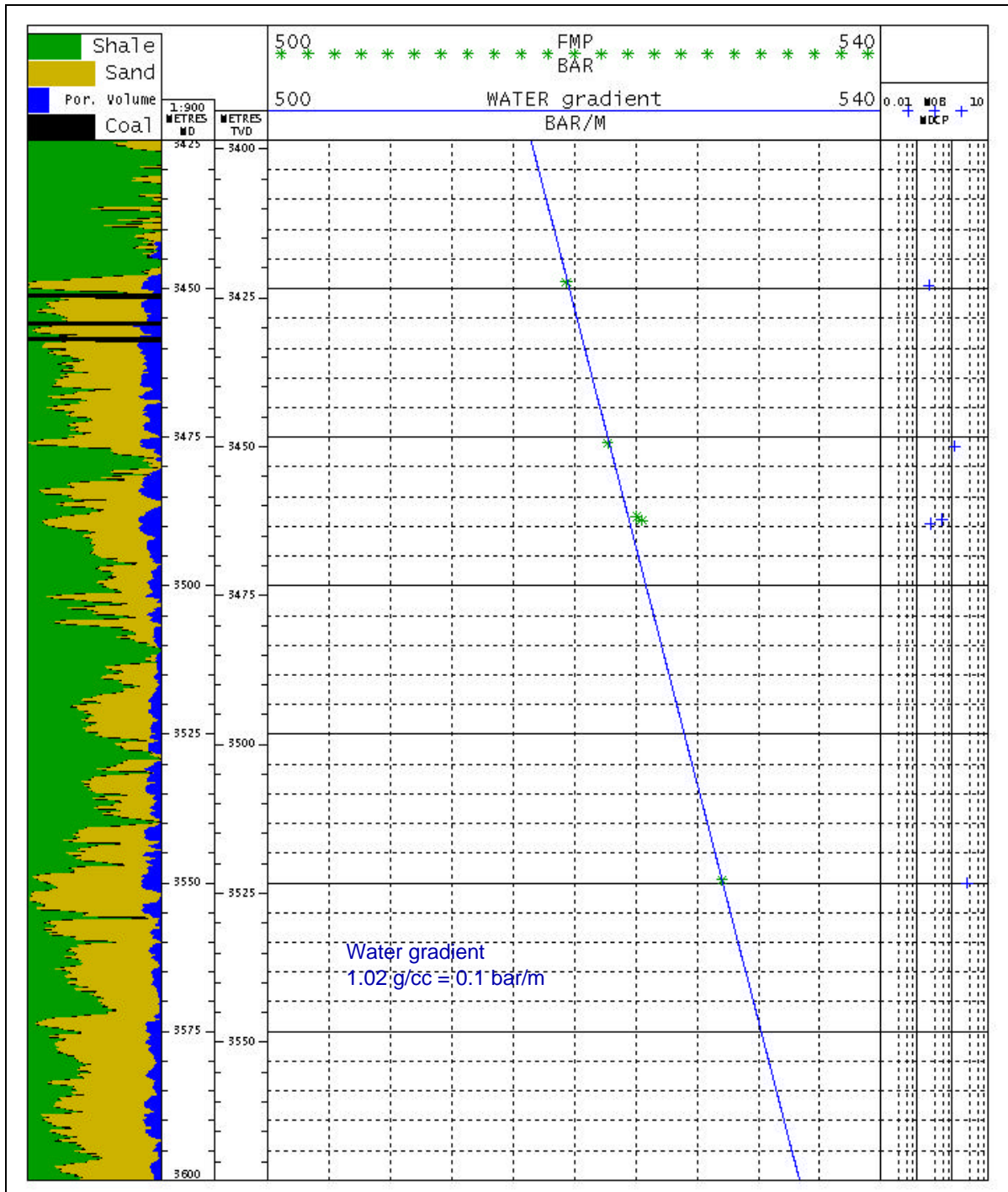


Figure 8.8.2: Formation pressure interpretation, Ile Fm., well 6407/7-6



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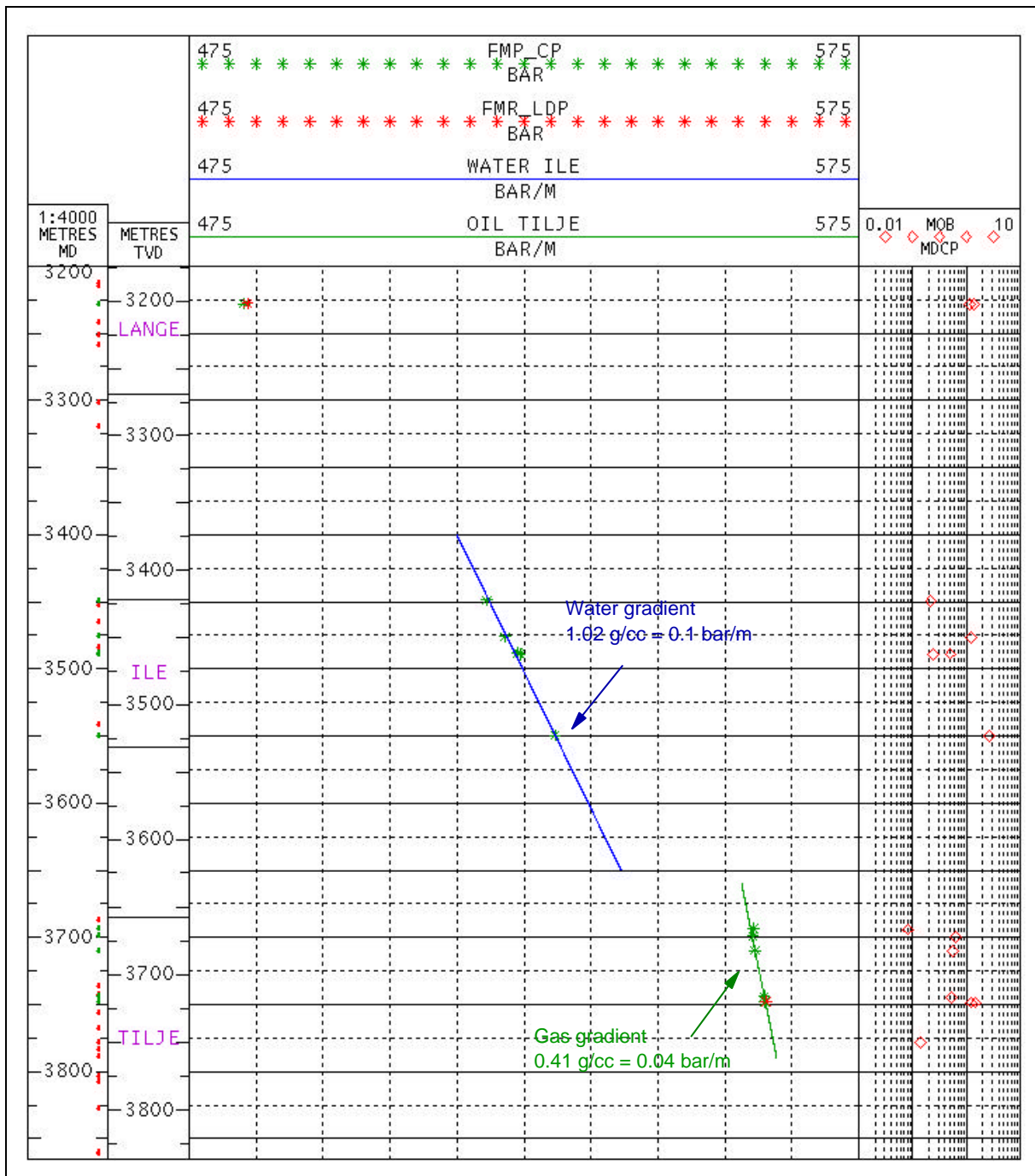


Figure 8.8.3: Formation pressure interpretation, well 6407/7-6



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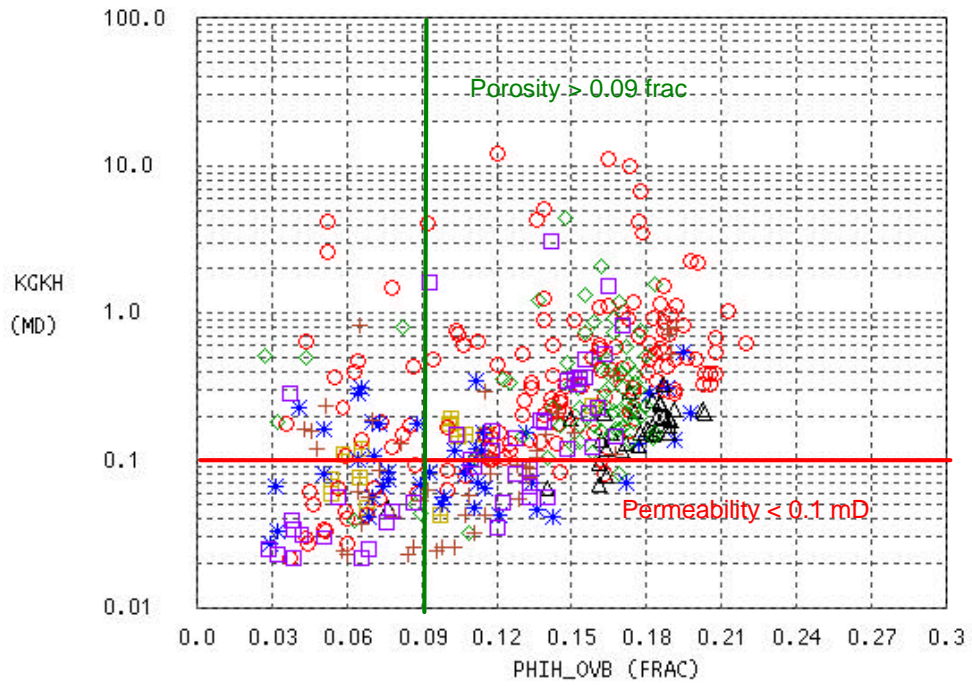


Figure 8.8.4: Tilje Fm. cutoff criteria.



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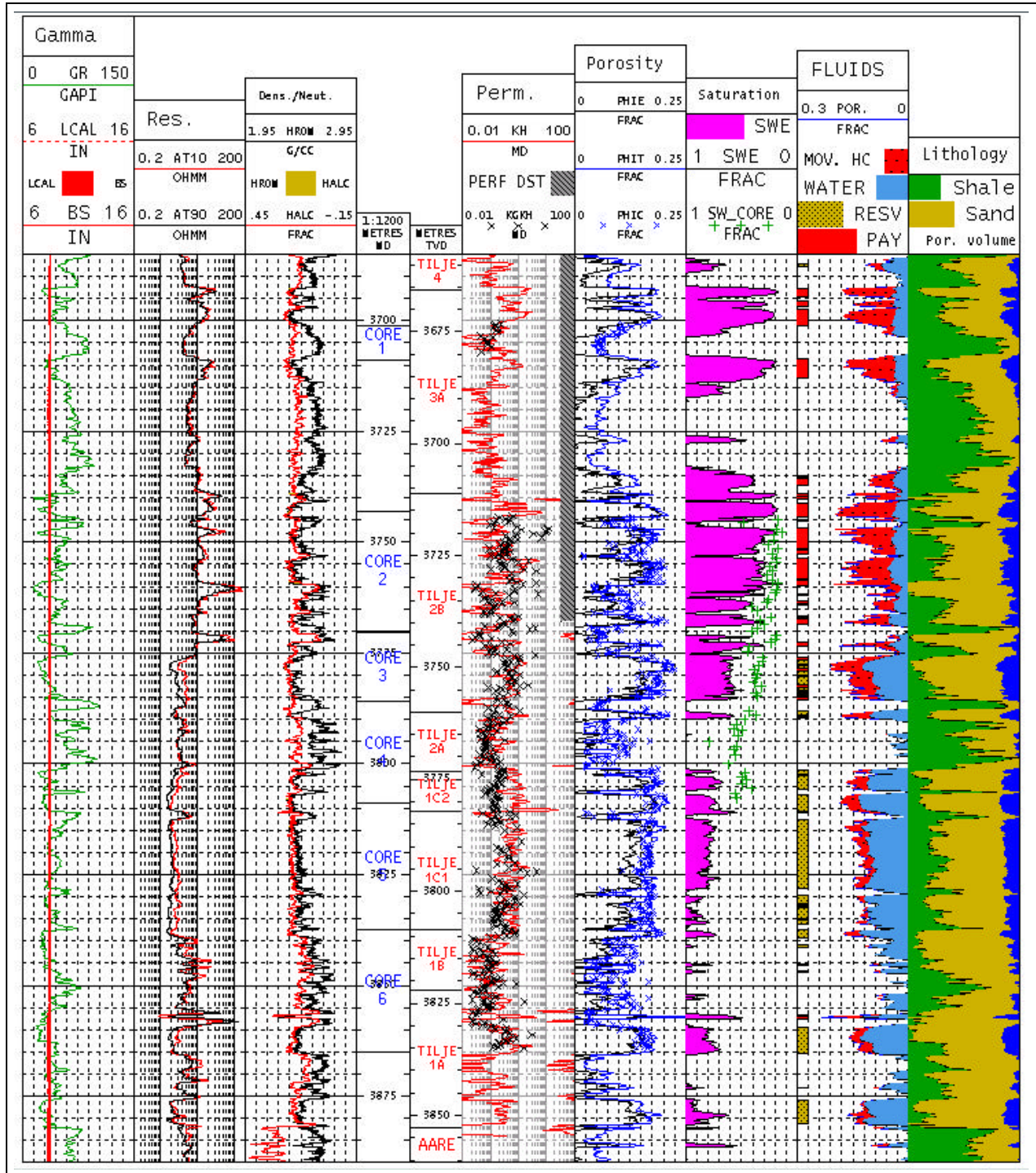


Figure 8.8.5: CPI, Tilje Formation.



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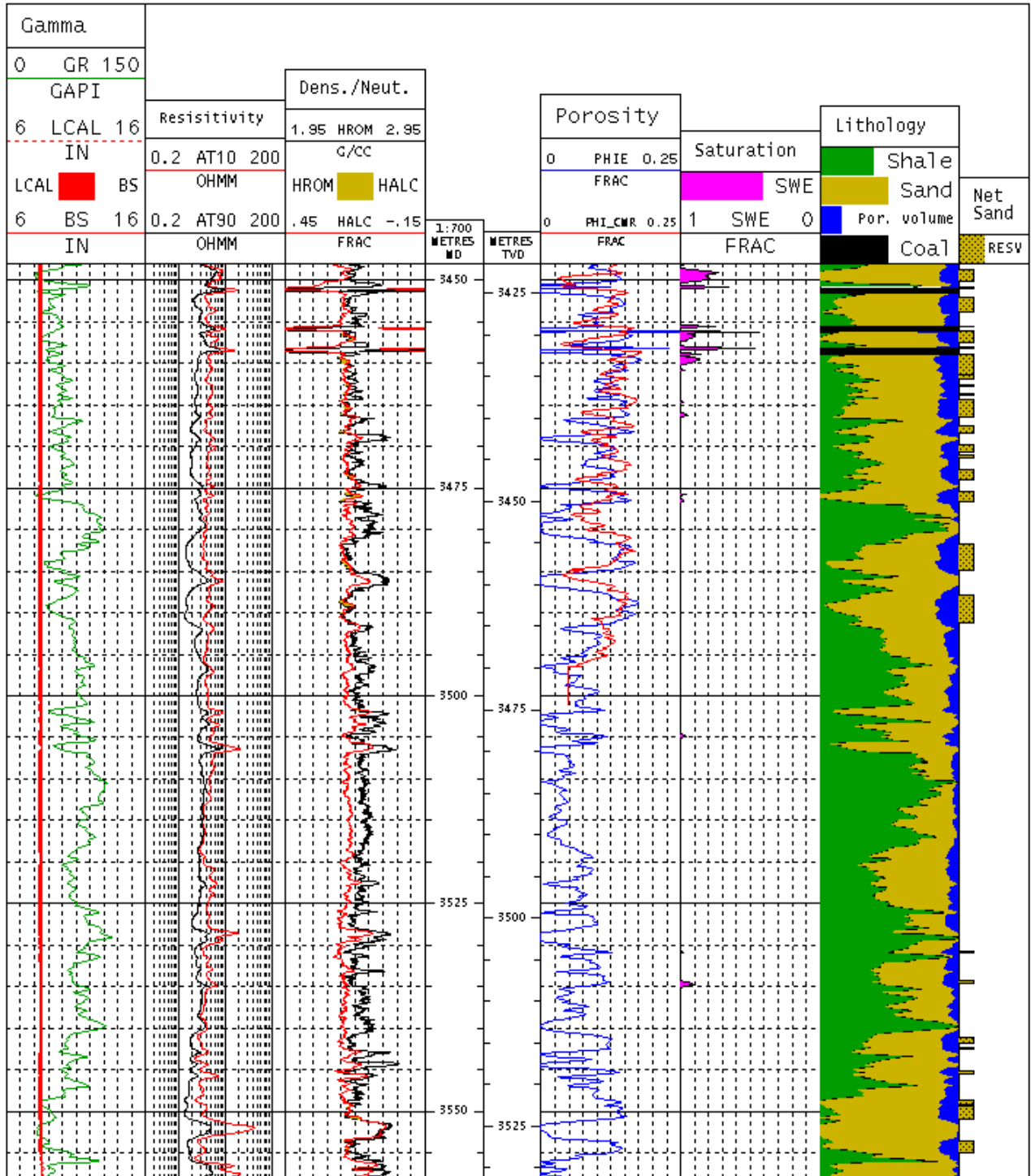


Figure 8.8.6: CPI, Ile Formation.



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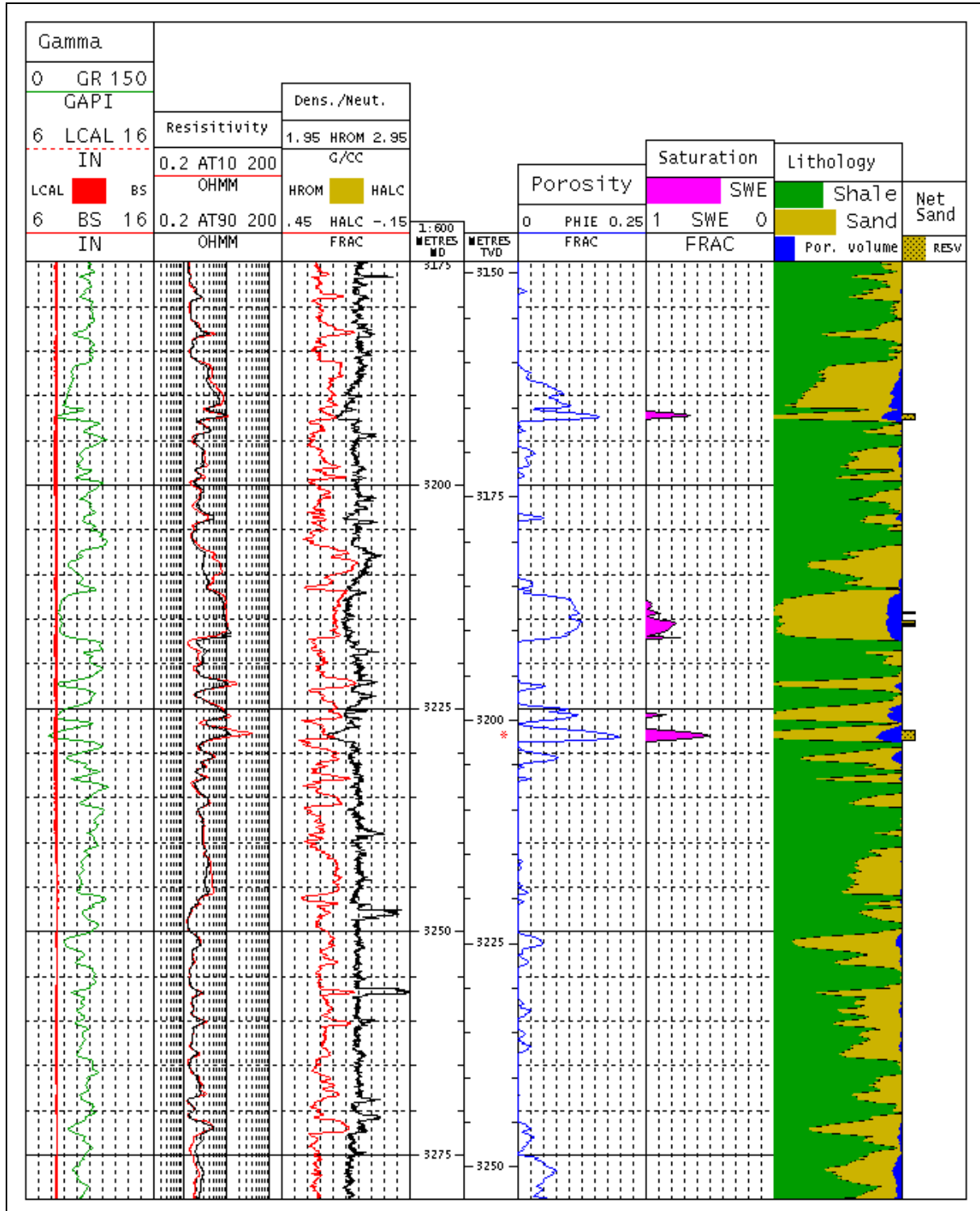


Figure 8.8.7: CPI, Intra Lange sandstone. The red star points out the sand in which we obtained pressure points.



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### 8.9 Fluid sampling

On basis of the logs and pressure points it was decided to take samples from three different depths; one in Tilje, one in Lange and one in the Ile formation.

No samples could be taken in Lange and Ile formations due to tight formations.

In the Tilje formation one point @3748 m MD was defined as good enough for sampling. This point experienced a mobility of 1.2 md/cP, which proved to be sufficient for the reservoir fluid to flow.

An overview of the samples taken can be seen in .

Sample bottle	MPSR 152	MPSR 173	MPSR 750	GA 142	GA 148
Sample depth (m MD)	3 748	3 748	3 748	3 748	3 748
Formation	Tilje	Tilje	Tilje	Tilje	Tilje
Formation pressure (bar)	561	561	561	561	561
Mobility (md/cP)	1.2	1.2	1.2	1.2	1.2
Dead space fluid	Water	Water	Water	Water	Water
Filling technique	Direct	Direct	Direct	Direct	Direct
Time opened	10:43	11:31	11:59	12:06	12:44
Volume pumped (litres)	5	9	13	13.7	18.7
Pump-out load (rpm)	300	200	200	200	200
Observed fluid on OFA	Oil	Oil	Oil	Oil	Oil
Sampling temp (deg. C)	135.6	135.6	135.7	135.8	135.9
Flowing pressure (bar)	443.5	490.3	476.5	475.2	477.5
Draw-down (bar)	106	68	75	74	74
Shut in pressure (bar)	693	693	693	693	693
Filling time (minutes)	4	5	7	38	39

*Table 8.9.1: MDT sampling overview.*

The large diameter probe was used due to the tight formation, but still a relatively high draw-down was experienced. For the first sample the draw-down was 106 bar, and between 68 and 75 bar for the next four. The reason for this was a higher pump speed on the first sample.

In spite of the high draw-down, the sampling pressure was above the dew point of the reservoir gas, and good samples could have been taken. However, the time spent for cleaning up was very short in order to save time, as flow was proven, and samples would be collected in the succeeding DST. The first sample was taken after 10 minutes (5 litres) of pumping, and the last sample was filled two hours later. The short clean-up time caused the samples to be highly contaminated with base oil from the drilling mud. The contamination results can be seen in .



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Sample	Contamination (%)
MPSR 152	60 +/- 6
MPSR 173	45 +/- 5
MPSR 750	Not analysed
GA 142	36 +/- 4
GA 148	32 +/- 4

*Table 8.9.2: Contamination of MDT fluid samples. (Ref. /8-10-5/)*

APT did all contamination measurements with the use of a gas chromatograph (GC). clearly indicates that a longer clean-up time would have resulted in less contaminated samples.

Due to the high contamination level, all the MDT samples are regarded to be worthless with regards to PVT fluid analysis.

## **8.10 References**

- /8-10-1/ Formation Evaluation Report, 6407/7-6, Norsk Hydro, 2001
- /8-10-2/ End of well report/Logs, 6407/7-6, Halliburton Sperry-sun, 2001
- /8-10-3/ UBI Image processing and interpretation-Well 6407/7-6, Schlumberger, 2001
- /8-10-4/ Conventional Core Analysis -Well 6407/7-6, Corpro, 2001
- /8-10-5/ APT, Contamination in fluid samples, well 6407/7-6, 2001
- /8-10-6/ Petrophysical Evaluation Report Well 6407/7-5, Norsk Hydro, 1991



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

### **9.1 Pore Pressure**

The pore pressures in well 6407/7-6 are based on well site observations, log correlation, gas data, calculations based on logs (MWD and Dxc), MDT and DST. The Pore Pressure-, Fracture- and Overburden gradients are given in Fig. 9.1.1

Shallow gas was not registered in the upper sediments.

From sea bottom to 1224m a hydrostatic pressure is regarded as most likely.

At 1224m a change in Dxc, Resistivity-log and gas-readings indicates a steady build-up in pore pressure to 1,46sg at 1840m TVD RKB (base Hordaland).

From base Hordaland, a slight increase in pore pressure through Rogaland and into top Shetland was interpreted peaking at 1.48sg at 2200m. This is lower than expected in the prognosis (1.54sg).

Below 2200m there is a gradual decrease in pore pressure down to approximately 1,30sg at 2450m.

The pore pressure stayed at approximately 1.30 to 1.31sg towards top Lange formation where an increase in pore pressure was observed on logs and possibly confirmed by two MDT points within the Lange sandstones giving a pore pressure of 1.53sg at 3226 and 3227m respectively. However, the MDT points taken in the Lange sandstone are of somewhat uncertain nature due to possible supercharging (see text below for explanation). Based on correlation wells and calculations the maximum expected pore pressure was prognosed to 1.54sg within the Lange sandstone. This indicates that the MDT points taken in the Lange sandstone was of good quality.

In the Jurassic section the pore pressure has been evaluated based on MDT, DST and theoretical calculations. As can be seen from Fig. 9.1.1 the MDT pressure points and the DST pressure differs substantially. The reservoir sands was very tight. Most MDT pressure points was rejected due to bad data quality. Some points (plotted in Fig. 9.1.1) are regarded to be supercharged by the mud column and do not represent the true pore pressure of the reservoir section.

The DST point presented on Fig. 9.1.1 is recalculated from Gauge-depth to top reservoir and corrected for fluid weight. This gives a pore pressure in top Tilje of 1.46sg at 3684m.

The Hydrocarbon-Water Contact is set at 3777m. With an hydrocarbon gradient of 0.045bar / meter (based on fluid samples) the pore pressure at the Hydrocarbon-Water Contact is 1.435sg (531.7bar).

Based on regional data the prognosis assumed an overpressure of 140bar in the water zone. This correlates quite well with the data obtained from the DST. From top Tilje to base Shetland a pressure gradient of 0.1 bar / meter has been chosen as most likely (representing water). This gives a pressure of 1.51sg at top Viking (3294m).

No major hole problems were encountered during drilling.



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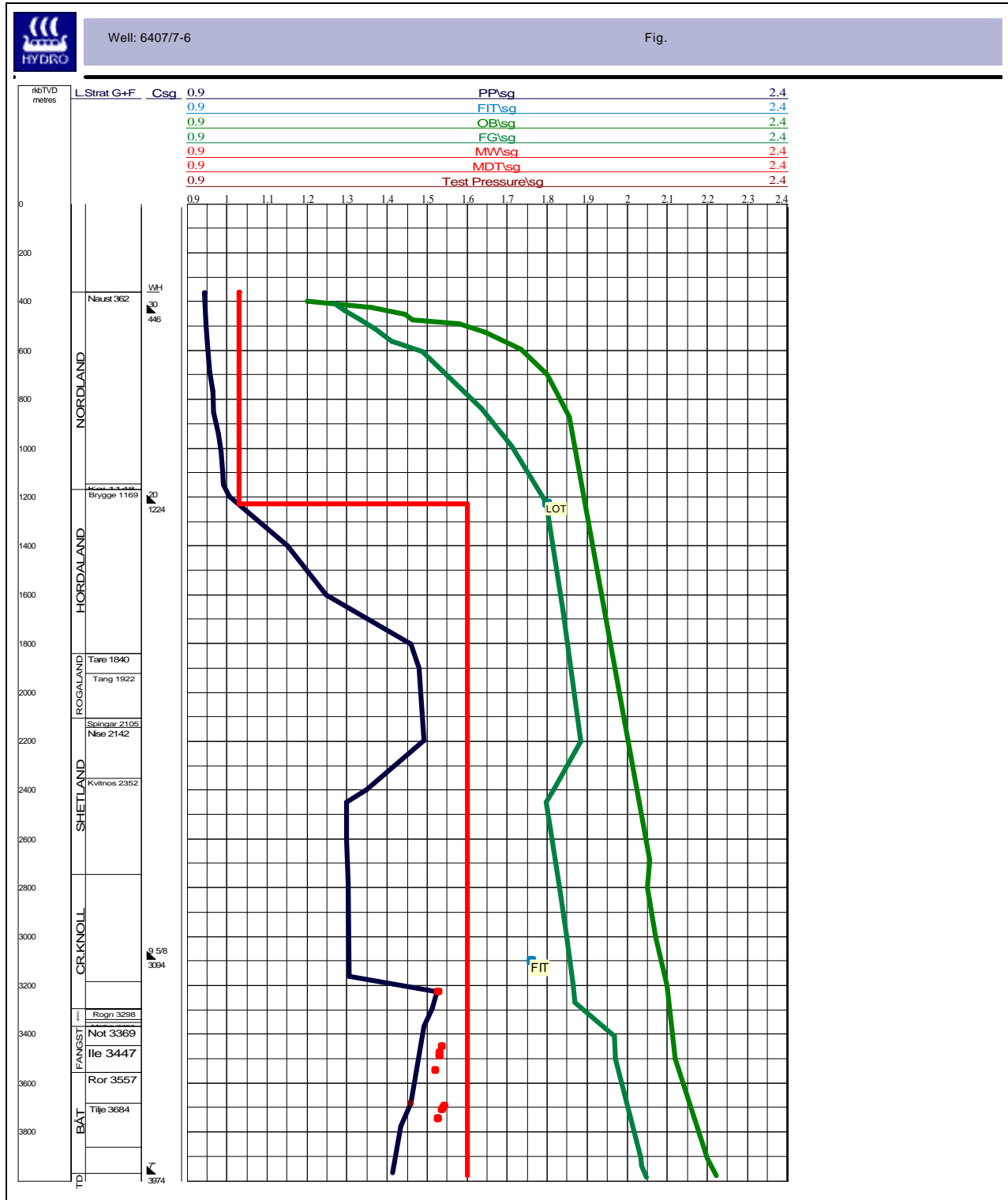


Figure 9.1.1: Pore Pressure-, Fracture- and Overburden gradients with LOT, FIT, MDT



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## **9.2 Formation strength**

No mud losses were observed in this well.

One normal LOT was performed. At 1224m it gave 1,80sg, prognosed 1,75sg. The prognosis was low in order to cover up for worst case values even though the majority of data from the region indicated that a LOT at this depth on an average should be in the range of 1,68sg to 1,80sg. As such this LOT falls within the regional normality.

A FIT to 1,76sg was performed at 3100m. Prognosed Leak Off strength at this depth was 1.85sg.

## **9.3 Overburden gradient**

Overburden gradient is based on regional data and calculated values and does not differ from the prognosis.

## **9.4 Temperature Gradient**

Based on the Horner Plot we had a BHST at 3926m of 141 degrees Celsius. The DST yielded a temperature of 136.5 degrees Celcius at 3684m. The DST measurement is generally slightly low due to the cooling effect of the riser, but based on the DST there was an BHST at TD of 147.8 degrees Celsius and a Formation Temperature Gradient of 3.99 degrees Celsius assuming 4 degrees Celsius at seafloor.

The prognosis had a 3.8 degrees Celsius gradient.

The Formation Temperature gradient is given in Fig.9.4.1.



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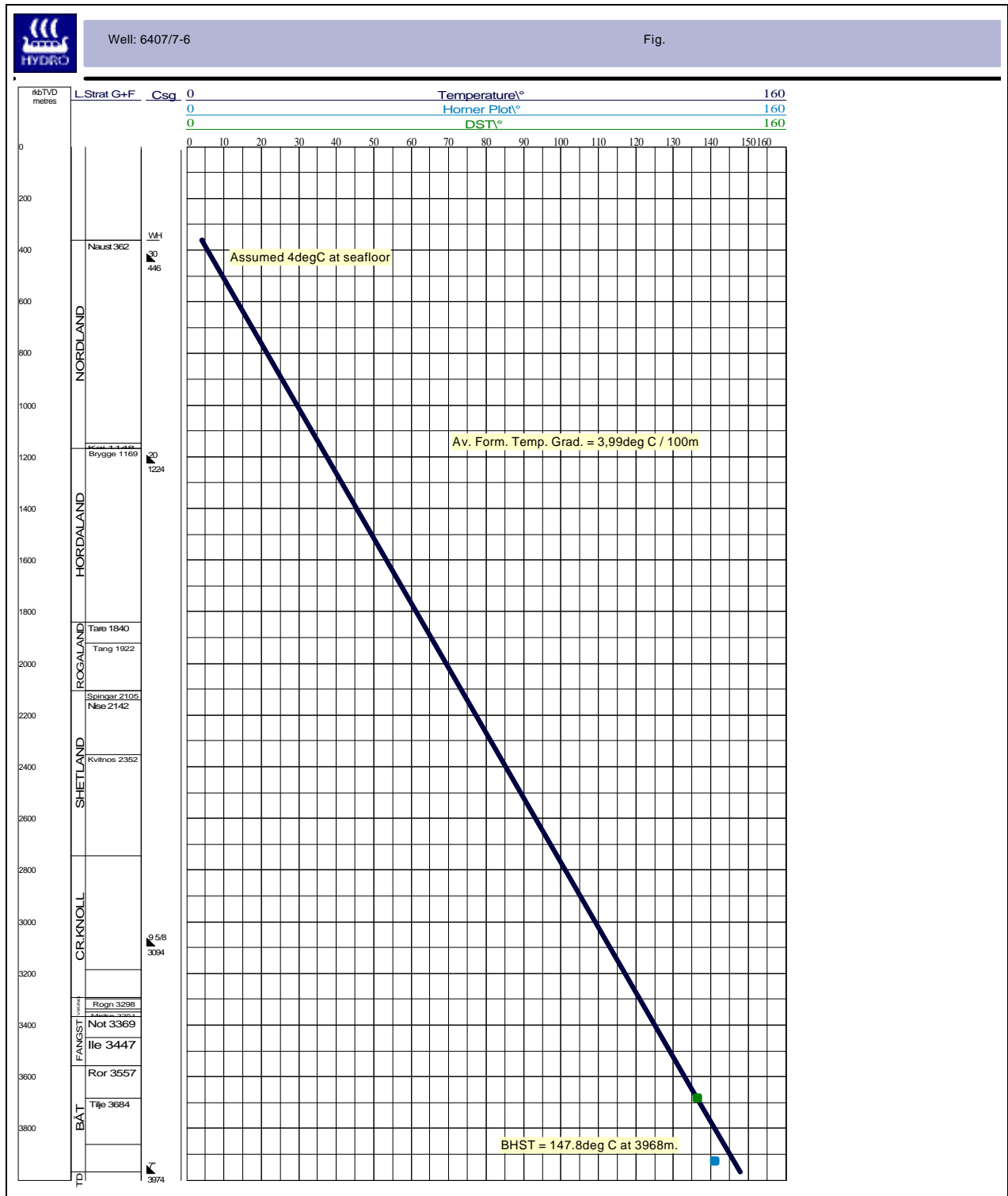


Figure 9.4.1: Temperature gradient



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## 10 Geophysical Results

The actual depths are generally deeper than prognosed, but within the uncertainty range. Largest discrepancy is observed at top Hordaland Group and at the top Viking Group. The error is probably due to wrong velocities in the layer between Seabed and top Hordaland and in the "Geodepth" method of the depth conversion from Seabed to BCU (the method is described in the Well programme). The seismic picks of all horizons within the check shot interval give a very good match with a maximum of 10ms difference at top Åre.

A synthetic seismogram with tie to well 6407/7-6 is shown in Figure 10.1

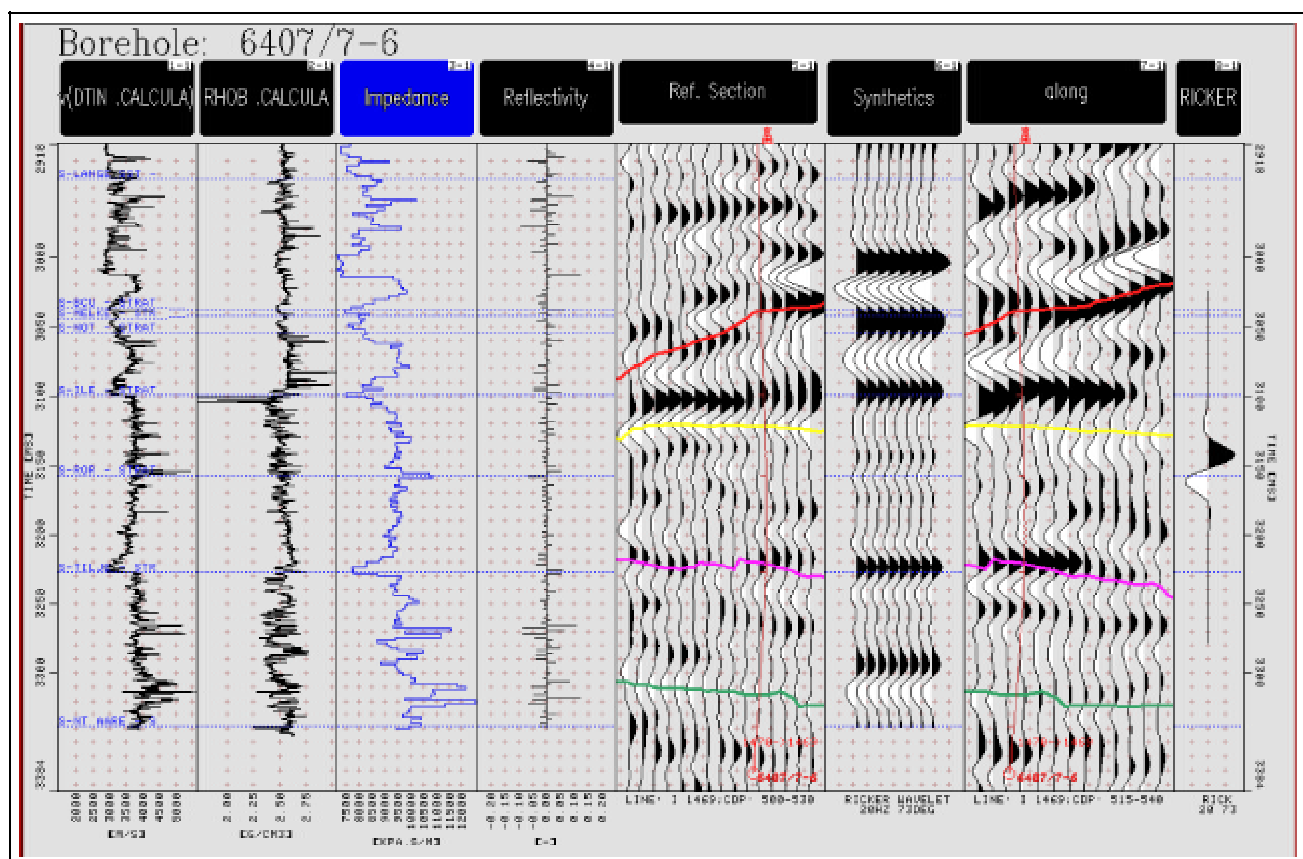


Figure 10.1: Seismic tie to well 6407/7-6



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Formation tops	TWT (ms)	Int. Time (s)	TVD (mRKB)	TVD (mMSL)	Int. D (m)	Int. Vel. (m/s)
Survey NH9701	Inline 1478					
	xline 521					
seabed			362	336		
					807	
top Brygge			1169	1143		
					671	
top Tare			1840	1814		
					265	
top Springar	2152		2105	2079		
		496			642	2589
top Lange	2648		2747	2721		
		288			440	3055
intra Lange sst.	2936		3187	3161		
		102			151	2961
top Spekk	3038		3337	3312		
		8			13	3250
top Melke	3046		3351	3325		
		35			56	3200
top Not	3081		3407	3381		
		23			41	3565
top Ile	3104		3448	3422		
		134			236	3522
top Tilje	3238		3684	3658		
		100			198	3960
top Åre	3338		3882	3856		
					93	
TD			3975	3949		

Table 10.1: Geophysical Summary



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## 11 Post Site Survey Report

The results are based on:

- 2D high resolution reflection seismic (NH0063)
- 3D reflection seismic (SG9603)
- MWD logs (resistivity and gamma)
- Drilling results from exploration and production wells (6407/7-1, 6407/7-2, 6407/7-3, 6407/7-4, 6407/7-5 and FPU wells)
- Site Survey, PL107, Interpretation Report, Well 6407/7-6, R-092708

### 11.1 Well data

1	Distance from rig floor to sea level:	26,0 m
2	Water depth (MSL):	336,0 m
3a	Setting depth for conductor (m RKB):	446.4 m
3b	Leak Off / Formation Integrity Test (g/cc):	N/A
4a	Setting depth (m RKB TVD) for casing on which BOP mounted:	123.9 m
4b	Formation Integrity Test (g/cc):	1.80 sg
5	Depth (m RKB TVD & Two Way Time) to formation/section/layer tops:	
	Reflector R2a:	391.5 m (485 ms)
	Reflector R3:	404 m (499 ms)
	Reflector R4:	416 m (520 ms)
	Reflector R7:	537.5 m (627 ms)
	Reflector R10: (Base Pleistocene):	606 m (697 ms)
	Reflector R11:	700 m (800 ms)
	Reflector R12:	768 m (851 ms)
	Reflector R12a:	801 m (882 ms)
	Reflector R13:	885 m (954 ms)
	Reflector R13a:	951.5 m (1005 ms)
	Reflector R14:	1001 m (1045 ms)
	Reflector R15: (Top Kai)	1147.9 m (1157 ms)
	Reflector R16: (Top Brygge)	1168.9 m (1180 ms)



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Note:

No chronostratigraphic information was obtained in the tophole section of the well (from seabed down to 1223.9 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 1224 m RKB MD.

- 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 1223.9 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 6407/7-6:

Pleistocene Interval:

391.5 m	-	394.0 m	
476.0 m	-	479.0 m	
534.0 m	-	537.5 m	Sandy silty layer

Pliocene/Miocene Interval:

648.0 m	-	652.0 m	Sandy silty layer
661.5 m	-	666.0 m	Sandy silty layer
768.0 m	-	776.0 m	Sandy silty layer
1074.0 m	-	1079.0 m	Sandy silty layer

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

The well was drilled with returns to seabed down to 1223.9 m RKB TVD. The MWD logs do not indicate any major gas zones in the section. Below 1223.9 m RKB TVD gas analyses were accomplished using flame ionisation detectors (FID) with gas measured as percentage methane (C1) equivalent in air, and chromatographic analyses expressed in parts per million.

- 8 Composition and origin of gas:

Trip gas at 1228.9 m RKB TVD: Background gas was 0.20% and gas peak shows 0.80%.

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



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## 11.2 Seismic data

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

The 2D high resolution and 3D exploration seismic have been examined for indications of shallow gas. No amplitude anomalies were mapped at the 6407/7-6 Well Location.

The tophole section of the well was drilled with returns to seabed to 1223.9 m RKB TVD. Background gas levels were consequently not monitored. However, no gas-related problems were experienced over this section.

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

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

12a Shallow Gas:

No amplitude anomalies were mapped at the 6407/7-6 Location and no gas warning was given for Well 6407/7-6.

**No gas related problems were experienced in the well.**

12b Sand Bodies:

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

12c Boulders:

No boulders layers were predicted, but scattered boulders were predicted in the shallow section between 401 m - 441 m RKB TVD. 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:	603 ± 10 m	606 m	+ 3 m (deeper)
Top Kai:	1150 ± 15 m	1147.9 m	- 2.1 m (shallower)
Top Brygge:	1180 ± 15 m	1168.9 m	- 11.1 m (shallower)



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

12e Correlation to Nearby Wells:

The drilling conditions experienced in well 6407/7-6 are as predicted and similar to those encountered in tie-wells (6407/7-1, 6407/7-2, 6407/7-3, 6407/7-4, 6407/7-5 and FPU-wells)



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## 12 Standard and Special Studies

- Norsk Hydro 2000: Well Programme 6407/7-6
- Svitzer: Site Survey PL107. Interpretation Report, Well 6407/7-6. August 2000.
- Svitzer: Site Survey PL 107, Well 6407/7-6, Field Report for Norsk Hydro ASA, August 2000.
- Fugro-Geoteam: Navigation and Positioning of Scarabeo 6 to Well 6407/7-6. Report No.34768.01 August 2000
- OASIS: Drilling Optimization Study, Well 6407/7-6. September 2000.
- SecurityDBS: Kjerneboringsanbefalinger for brønn 6407/7-6. 2000.
- Schlumberger: UBI Image processing and interpretation-Well 6407/7-6. 2001
- Schlumberger: VSP, Sonic Calib. & Synthetic Seism., Final Processing Report, Well 6407/7-6, 2001
- Halliburton Sperry-sun: End of Well Report, Surface Logging data Well 6407/7-6. February 2001
- Corpro: Conventional Core Analysis Report, Well 6407/7-6. February 2001
- Corpro: Core Photographs Well 6407/7-6, Core # 1-6, Scale 1:4, White Light and UV Light. January 2001
- Corpro: Autocar Core Photographs, Well 6407/7-6, Core # 1-6, Scale 1:4. January 2001
- Corpro: CT-scans of Whole Core, Well 6407/7-6. January 2001
- APT: Biostratigraphy, Well (NOCS) 6407/7-6. May 2001
- APT: Well-site Petroleum Detection using Gas Chromatography, Well 6407/7-6. January 2001.
- APT: Use of Gas Chromatography to Identify the Degree of Contamination in Fluid Samples, Well 6407/7-6. January 2001
- Norsk Hydro: Standard Core Description, Well 6407/7-6. 2001



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- Norsk Hydro: Petroleum Geochemical Study of Well 6407/7-6. 2001
- Norsk Hydro: Well Test Programme, Well 6407/7-6. October 2000
- Norsk Hydro: Formation Evaluation Report, 6407/7-6, June 2001
- Norsk Hydro: Permanent Plug & Abandonment Programme, Well 6407/7-6.



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## **APPENDIX I**

### **CORE DESCRIPTIONS**





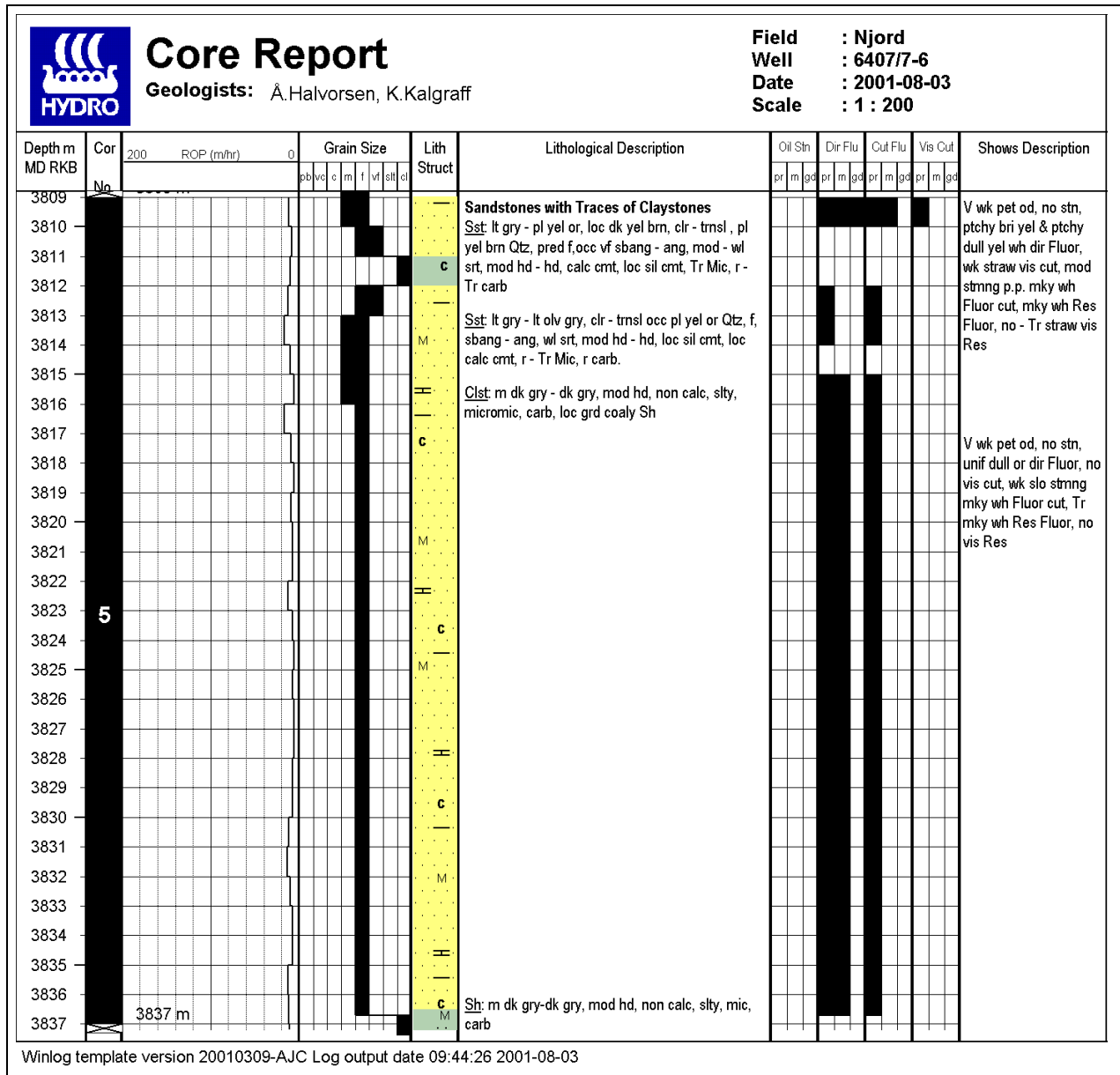






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## **APPENDIX II**

### **SIDEWALL CORE DESCRIPTIONS**



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Run	1A	Date	Logging Co: CST(Schlumberger)			Page	1 of 6							
Shot	60	Misfire	0	Lost	26	Empty	2	Recovered	32	Geologist	V.Aggerholm / Å.Halvorsen			
No.	Depth m RKB	Recovered cm	Lithology and shows description						Fluorescence					
									Direct			Cut		
									Tr	M	G	Tr	M	G
1	3900	1,0	<b>Sst:</b> olv gry, clr - trnsl Qtz, vf, r f, sbang - ang, wl srt, frm, sil cmt, arg grd Slts. <b>Shows:</b> no pet od,no O stn,unif dull or dir Fluor,wk straw vis cut, v slo blmng dull yel wh Fluor cut,mky wh Res Fluor,Straw viscut						X			X		
2	3890	1,0	<b>Sh:</b> m dk gry - dk gry, mod hd - hd, non - sl calc, Tr Mic, arg I.P. vf sdy											
3	3877	2,0	<b>Sst:</b> v lt gry - lt gry, clr - mky Qtz, vf - f, sbang - sbrndd, wl - mod srt, calc cmt, I.P. arg Tr carb, Tr Mic. <b>Shows:</b> v wk pet od, no O stn, ptchy bri yel dir Fluor, wk stmng p.p. mky wh Fluor cut, mky wh Res Fluor, straw vis Res						X			X		
4	3870	2,0	<b>Sst:</b> lt gry - olv gry, clr - mky Qtz, sbrndd - sbang, f, r vf, r m, wl - mod srt, mod hd, calc cmt, I.P. arg, carb, Mic, Tr Pyr <b>Shows:</b> a.a						X			X		
5	3725	0,5	<b>Sh:</b> dk gry - gry blk, frm, calc, slty, I.P. vf sdy, carb, r Mic											
6	3720	1,0	<b>Sh:</b> dk gry - gry blk, brn blk, frm - mod hd, calc, slty, I.P. vf sdy, v carb, r Mic, r micropyr, Len of Sst: vf - f, clr - mky Qtz, sbang - sbrndd, mod srt, calc cmt, arg <b>Shows on Sst:</b> ptchy bri yel wh dir Fluor, else a.a						X			X		
7	3698		Empty											
8	3693		Lost											
9	3687	1,0	<b>Sst:</b> dk gry, clr - mky, occ smky Qtz, vf - f, sbrndd - sbang, mod srt, frm - mod hd, calc cmt, carb, r - Tr Mic, v arg grd Slts, I,P, grd vf sdy Clst <b>Shows:</b> ptchy dull bl wh dir Fluoe, else a.a						X			X		
10	3684	2,0	<b>Sst:</b> gry brn, mod hd, calc cmt, carb, I.P. vf sdy grd vf Sst, I.P. v arg grd slty Clst. <b>Shows:</b> ptchy dull or dir Fluor, else a.a						X			X		
11	3650	1,0	<b>Sh:</b> gry brn, hd, sl slty, non - sl calc, Tr carb, r micromic											
12	3625	2,0	<b>Sst:</b> dk gry - gry brn, clr - pl yel brn Qtz, vf grd Slst, wl srt, sbang - sbrndd, frm - mod hd, calc cmt, abd Pyr, abd carb, micromic, I.P. grd vf sdy Clst <b>Shows:</b> n/s											



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No.	Depth m RKB	Recoverd cm	Lithology and shows description	Fluorescence						
				Direct			Cut			
				Tr	M	G	Tr	M	G	
13	3600		Lost							
14	3581	1,5	<b>Sh:</b> dk gry - gry blk, frm - mod hd, calc, sl slty, micromic, Tr carb, I.P. vf sdy, loc Sst Len: lt gry - gry or, vf - f, clr - pl yel brn Qtz, sbang, wk calc cmt, Tr Pyr  <b>Shows:</b> n/s							
15	3550	1,5	<b>Sst:</b> olv gry, clr - trnsf Qtz, vf - f, sbang - sbrndd, mod srt, mod hd, sil cmt, Tr carb, r Pyr, r Mic  <b>Shows:</b> wk pet od, no stn, unif bri yel wh dir Fluor, mod blmng dull yel wh Fluor cut, ptchy mky wh Res Fluor, wk straw vis Res		X		X			
16	3553		Lost							
17	3523		Lost							
18	3515	2,0	<b>Sst:</b> lt gry - pl yel brn, clr - pl yel brn Qtz, vf - f, mod srt, sbang - sbrndd, frm - mod hd, wk sil cmt, r carb. r Mic  <b>Shows:</b> n/s (unif pl brn dir Fluor)							
19	3500		Lost							
20	3489	1,5	<b>Sst:</b> v lt gry - lt olv gry, clr - mky Qtz, vf - f, wl - mod srt, sbang - sbrndd, calc cmt, mod hd, r carb, r Mic  <b>Shows:</b> v wk pet od, no stn, ptchy bri yel wh dir Fluor, wk straw vis cut, slo stmng mky wh Fluor cut, ptchy mky wh Fluor Res, n.v.R.	X			X			
21	3484	1,5	<b>Sst:</b> lt gry - lt olv gry, clr - mky Qtz, vf - f, sbang - sbrndd, wl - mod srt, calc cmt, mod hd, r Mic  <b>Shows:</b> v wk pet od, no stn, unif bri yel wh dir Fluor, slo stmng mky wh Fluor cut, no vis cut, ptchy mky wh Fluor Res, no vis Res	X			X			
22	3476	1,0	<b>Sst:</b> lt gry - lt olv gry, clr - mky qtz, vf - f, mod - pr srt, sbang - sbrndd, calc cmt, I.P. sil cmt, mod hd, r carb  <b>Shows:</b> v wk pet od, no stn, unif bri yel wh dir Fluor, slo stmng mky wh Fluor cut, no vis cut, ptchy mky wh Fluor Res, no vis Res	X			X			
23	3472		Lost							
24	3466		<b>Sst:</b> lt gry - olv gry, clr - pl yel brn Qtz, vf - f, sbang, wl - mod srt, sil cmt, I.P. calc cmt, mod hd - hd, r carb, r Pyr  <b>Shows:</b> n/s							
25	3461	1,5	<b>Sst:</b> lt gry - lt olv gry, clr - mky Qtz, vf - f, sbang, wl - mod srt, sil cmt, I.P. calc cmt, mod hd - hd, r carb, r Pyr  <b>Shows:</b> v wk pet od, no stn, unif dull yel wh dir Fluor, slo stmng bl wh cut, slo stmng bl wh Fluor Cut, ptchy mky wh Fluor Res, n.v.R	X			X			



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No.	Depth m RKB	Recoverd cm	Lithology and shows description	Fluorescence					
				Direct			Cut		
				Tr	M	G	Tr	M	G
26	3459	1,5	<b>Sst:</b> lt gry - lt olv gry, clr - mky Qtz, vf - f, sbang, wl - mod srt, sil cmt, I.P.calc cmt, mod hd - hd, r carb, r Pyr <b>Shows:</b> v wk pet od,no stn,unif dull yel wh dir Fluor,slo stmng bl wh cut,slo stmng bl wh Fluor Cut,ptchy mky wh Fluor Res,n.v.R	X			X		
27	3457	1,0	<b>Sst:</b> lt gry - lt olv gry, clr - mky Qtz, vf - f, sbang, wl - mod srt, sil cmt, I.P.calc cmt, mod hd - hd, r carb, r Pyr <b>Shows:</b> v wk pet od,no stn,unif dull yel wh dir Fluor,slo stmng bl wh cut,slo stmng bl wh Fluor Cut,ptchy mky wh Fluor Res,n.v.R	X			X		
28	3454	1,0	<b>Sst:</b> lt gry - lt olv gry, clr - mky Qtz, vf, sbang, wl srt, calc cmt, mod hd - hd, r carb, r Pyr <b>Shows:</b> v wk pet od,no stn,unif dull yel wh dir Fluor,slo stmng bl wh cut,slo stmng bl wh Fluor Cut,ptchy mky wh Fluor Res,n.v.R	X			X		
29	3452	1,0	<b>Sst:</b> lt gry - lt olv gry, clr - mky Qtz, vf - f, sbang, wl - mod srt, sil cmt, I.P.calc cmt, mod hd - hd, r carb, r Pyr <b>Shows:</b> v wk pet od,no stn,unif dull yel wh dir Fluor,slo stmng bl wh cut,slo stmng bl wh Fluor Cut,ptchy mky wh Fluor Res,n.v.R	X			X		
30	3450		Lost						
31	3449	1,5	<b>Sst:</b> lt gry-pl yel brn,clr-mkyQtz,vf-f,sbang-sbrndd,wl-mod srt,sil cmt,I.P.kao Mtrx,mod hd,carb,r-Tr Mic,r Pyr,carb bands <b>Shows:</b> wk pet od,no stn,ptchy bri yel wh dir Fluor,wk straw vis cut,mod stmng bl wh Fluor cut,bl wh Fluor Res,wk straw vis Res	X			X		
32	3448		Lost						
33	3444		Lost						
34	3425		Lost						
35	3400		Lost						
36	3390		Lost						
37	3380		<b>Sh:</b> dsky yel gry, mod hd, calc, loc slty, I.P. vf sdy, Tr micromic						
38	3370		<b>Sh:</b> dk gry - brn blk, gry brn, mod hd, calc, sl slty, Tr micromic						
39	3360		Lost						
40	3350		Lost						
41	3320	1,5	<b>Sh:</b> dk gry - gry blk, mod hd - hd, v calc, slty, micromic, r Pyr, I.P. f sdy						



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				Direct			Cut			
				Tr	M	G	Tr	M	G	
42	3305	2,0	<b>Sh:</b> dk gry - gry blk, mod hd - hd, v calc, slty, v arg grd f Sst, Mic, r Pyr.							
43	3302		Lost							
44	3300		Lost							
45	3298		Lost							
46	3296		Lost							
47	3285	1,0	<b>Sh:</b> dsky yel brn, brn blk, non calc, mod hd - hd, r micromic							
48	3260		Empty (Small bits: <b>Sst:</b> lt gry - pl yel brn, clr - pl yel brn Qtz, vf, r f, sbang - sbrnrd, wl srt, calc cmt, arg grd Slst							
49	3251	0,5	<b>Sh:</b> dusky yel brn, mod hd- hd, v calc, Tr micromic							
50	3244		Lost							
51	3228	2,0	<b>Sst:</b> pl yel brn - dk yel brn, clr - dk yel brn Qtz, vf - f, occ m, mod srt, ang - sbang, calc cmt, mod hd, r Mic, r carb <b>Shows:</b> n/s							
52	3227		Lost							
53	3216		Lost							
54	3213	1,5	<b>Sst:</b> dk yel brn, clr - dk yel brn Qtz, vf - f, wl - mod srt, ang - sbang, v calc cmt, mod hd, v arg grd Slts & sdy Sh, Mic, carb, Tr Pyr <b>Shows:</b> n/s							
55	3208		Lost							
56	3190		Lost							
57	3187	2,0	<b>Sh:</b> gry blk, mod hd, v calc, v slty, v arg I.P.grd f - m Sst, Mic, Tr Pyr							
58	3157		Lost							
59	3150		Lost							
60	3125		Lost							



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**APPENDIX III**

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



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**WELL SUMMARY**

<b>Coord:</b> 64°17' 40.66"N UTM: 7 131 390.0 mN 07°06' 16.21"E 408 270.3 mE  <b>Zone:</b> ED-50 UTM Zone 32 CM 9° E  <b>Line:</b> NH9701, inline 1478, xline 521  <b>Rig:</b> Scarabeo 6  <b>Waterdepth:</b> 336 m MSL <b>KB:</b> 26 m  <b>Stopped in:</b> Åre Formation		<b>On location:</b> 14.10.00 <b>Spud 1:</b> 18.10.00 <b>Respod:</b> 19.10.00 <b>At TD:</b> 16.11.00 <b>P&amp;A finished:</b> 17.12.00  <b>TD Driller:</b> 3931 m (Ext. to 3975m) <b>TD Logger:</b> 3931 m (Ext.TD not logged) <b>Wireline Logg:</b> Schlumberger WS <b>MWD:</b> Schlumberger Anadrill <b>Mudlogging:</b> Halliburton Sperry-sun		<b>WELL:</b> <b>6407/7-6</b>  <b>LICENCE:</b> <b>PL 107</b>  <b>COUNTRY:</b> <b>Norway</b>	
<b>OPERATOR: NORSK HYDRO OWNED BY: Hydro, Statoil, ExxonMobil, Petro-Canada, SDØE</b>					
<b>TARGETS:</b> <b>Primary:</b> Tilje Formation <b>Secondary:</b> Ile Formation Also possible HC in Upper Jura , Melke Fm and Lower Cretaceous, Lange Formation			<b>RESULTS:</b>  - Discovery of gas-condensate in the Tilje Formation.		
<b>CASING</b> 30" at 446.5 mRKB 20" at 1224.0 mRKB 9 5/8" at 3094.0 mRKB TD at 3975.0 mRKB					
<b>LOGS</b>			<b>CORES</b>		
AIT-IPLT UBI-DSI MDT w/samples MSCT CMR-ECS-VSP CMR+ CST		1A 3930,4 - 3092,8 m 1A 3925,0 - 2900,0 m 1A 3880,0 - 3187,5 m Failed 1A 3913,0 - 2900,0 m 1A 3881,5 - 3440,0 m 1A 3900,0 - 3125,0 m		<b>Core #1:</b> 3701,0 - 3709,0 m Rec.: 3701,0 - 3707,6 m, 82,5% <b>Core #2:</b> 3743,0 - 3770,5 m Rec.: 3743,0 - 3769,1 m, 94,8% <b>Core #3:</b> 3770,5 - 3786,0 m Rec.: 3770,5 - 3785,7 m, 97,7% <b>Core #4:</b> 3786,0 - 3809,0 m Rec.: 3786,0 - 3808,7 m, 98,7% <b>Core #5:</b> 3809,0 - 3837,0 m Rec. 3809,0 - 3837,3 m, 101,2% <b>Core #6:</b> 3837,0 - 3864,0 m Rec.: 3837,0 - 3864,9 m, 101,7%	





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## **SECTION B**

## **OPERATIONS**

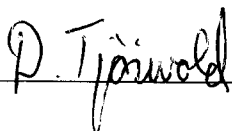
## SECTION B

## OPERATIONS

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# 1 DRILLING SUMMARY AND EXPERIENCES

## 1.1 Mobilising

Total time used:	97 hrs	
Operational time:	97 hrs	(100.0 %)
Downtime:	0 hrs	(0 %)

The rig was towed by Troms Titan and Far Grip. Average speed during transit was 4,5 knots.

Wellhead co-ordinates:

7131390,0 mN                      408270,3 mE

## 1.2 36" Hole Section / 30" Conductor

Water depth:	335,0 m	
Total depth of section:	448,5 m	
Total time used:	89.0 hrs	
Operational time:	60,5 hrs	(68,0 %)
Downtime:	28.5 hrs	(32,0 %)

25 hrs. downtime due to re-spud.

### 1.2.1 Drilling

The well was spudded on October 18., 2000, at 22:00 hrs.

A 36" rotary BHA with 17-1/2" MAXGTPT03 insert bit and 36" hole opener was run, but because of unacceptable inclination, the well had to be respudded. The bit was changed to MAXT03 and the section was drilled to TD at 448,5 m. Reaming was necessary to minimise inclination. Heavy vibrations from boulders were experienced while drilling this section. The 36" hole was drilled with sea water and hi-visc pills. After drilling, a wiper trip was performed to 6 m below seabed and back to TD. 10 m<sup>3</sup> of high visc mud was pumped before the hole was displaced to 1.50 SG mud.

### 1.2.2 Casing

The 30" conductor with the Permanent Guide Base was run to 446,5 m and cemented back to the sea bed.

## 1.3 26" Hole Section / 20" Casing

Total depth of section:	1229 m	
Total time used:	134.0 hrs	
Operational time:	127.5 hrs	(95,1 %)
Downtime:	6.5 hrs	(4,9 %)

**1.3.1**      **Drilling**

Drilled to TD of section with a 26" GTXCMG1 bit in one run. Used sea water and high viscous pills for hole cleaning. Displaced hole to 1,40 SG mud and performed wiper trip to 30" casing shoe (over pull of 25 ton at 1178 m). Displaced hole once more to 1,40 SG mud prior to running casing.

**1.3.2**      **Casing**

The 20" casing with the 18-3/4" wellhead was run to 1224 m. The casing was cemented in place with returns to seabed. Grouted performed with 15 m3 prior to running BOP. Riser was pressure tested after joint no. 2 and 6. Lost time due to leaking seal on choke line after joint no.6 and a leaking seal on support ring, kill side. The casing was pressure tested to 90 bar. A test tool was run and the wellhead connector was pressure tested to 470 bar.

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

Total depth of section:	3100 m	
Total time used:	167.5 hrs	
Operational time:	155.5 hrs	(92,8 %)
Downtime:	12 hrs	(7,2 %)

**1.4.1**      **LOT**

The cement in the 20" shoe track and 3 m new formation was drilled out with 17 1/2" MXT03 using sea water and high viscous pills. The leak off test (LOT) confirmed formation strength of 1,79 SG equivalent mud weight (EMW) at 1232 m. The hole was displaced to 1,60 SG Versavert oil based mud before drilling was continued.

**1.4.2**      **Drilling**

A 12-1/4" BHA with a BD536 PDC bit was run and the section was drilled to TD at 3100 m. The entire section was drilled with 1,60 s.g. Versavert oil based mud. The hole was circulated clean before pulling out. There was no need for a wiper trip.

**1.4.3**      **Casing**

The 9-5/8" casing was run to 3094 m and cemented in place. The casing was pressure tested against shear ram to 470 bar.

**1.5**            **8-1/2" Hole Section**

Total depth of section:	3975 m.	
Total time used:	437 hrs	
Operational time:	423,5 hrs	(96.9 %)
Downtime:	13,5 hrs	(3.1 %)

**1.5.1**      **FIT**

The shoe track 9 5/8" shoe track and 3 m of new formation was drilled and a formation integrity test (FIT) was performed. The FIT result was 1,76 SG EMW at 3103 m.

1.5.2 Drilling

A CDR tool was included in the 8-1/2" BHA in order to be able to detect the core points as early as possible. Down to the first core point at 3701 m MD the section was drilled with a PDC BD445 drilling bit. Hydraulic leaks in the top drive and change out of MWD and CDR tool were the major contributors to downtime in the 8 1/2" section. Stopped for flow check at 3298 m after drilling break. Qualified losses of 280 l/h, mixed and pumped LCM pill with 63 kg/m<sup>3</sup> Mica Fine. Drilled to core point at 3701 m with intermittent circulation's for samples.

Continued drilling with PDC bit BD445 after jamming of core #1, from 3709 m down to next core point at 3743 m. Cored interval # 1 was logged twice (w/LWD) to qualify tie-in.

After having cored the interval 3743 - 3864 m (5 cores), the section was drilled to 3930 m where 7 wire line logging runs were made. After logging the section was drilled to TD of well at 3975 m with previously used BD445 bit to accommodate for extended DST logging sump.

1.5.3 Coring

30 m core barrels with fluted aluminium inner barrels were used for coring.

The following cores were cut:

Run #	Cored interval m MD	ROP m/h	Recovery %	Reason pulled
1	3701-3709	6,5	82,5	Jam
2	3743-3770,5	18,2	94,8	Full
3	3770,5-3786	7,5	97,7	Jam
4	3786-3809	5,8	98,7	Jam
5	3809-3837	6	101,2	Full
6	3837-3864	7,7	101,7	Full

1.5.4 Logging

The following wire line logging runs were performed :

Log suite	Logged interval mMD	Comments
AIT/LDS/APS/HNGS	3930,4 m - 3092,8 m	Smooth job
UBI/DSI	3925,0 m - 2900,0 m	UBI outside spec. Tolerances. Good data.
MDT	3880,0 m - 3187,5 m	52 attempts, 16 good, 2 lost seals. Stuck several times, but able to free tool.
MSCT	No sidewall cores taken	Circuit shortage. Tool not responding.
CMR/ECS/VSP	2913,0 m - 2900,0 m	Unable to tune CMR. VSP and ECS ok.
CMR	3881,5 m - 3440,0 m	OK
CST	3900,0 m - 3125,m	60 shots, 32 recovered, 2 empty, 26 lost in hole

1.5.5 Casing

A 7" liner was run and set at 2939 m with the shoe at 3974 m. The liner was successfully tested to 270 bar, the integrated packer however, leaked. For that

reason a 7" scraper and PBR mill run was performed prior to running a JM packer. Prior to running the JM packer the integrated packer was successfully tested to 470 bar.

## 1.6 Testing

Total time used:	420,0 hrs	
Operational time:	297,5 hrs	(70,8 %)
Downtime:	122,5 hrs	(29,2 %)

A separate test report has been written.

## 1.7 Plug and Abandonment

Total time used:	192,0 hrs	
Operational time:	143,5 hrs	(74,7 %)
Downtime:	48,5 hrs	(25,3 %)

A 9 5/8" bridge plug was run and set at 2900 m. After a pressure test of the bridge plug to 360 bar a 250 m high cement plug was spotted on top.

The seal assembly was then pulled and the 9 5/8" casing cut and retrieved from 1164 m. A cement plug (45 m<sup>3</sup>) was set on parabow at 1150 m and afterwards load tested with 10 ton and pressure tested to 106 bar.

After retrieving the BOP, the 20" and 30" casing was cut at 367 m in two attempts, first with motor then successfully with rotating assembly. Guide base with 20" and 30" casing was retrieved.

A final seabed survey performed while anchor handling and prior to leaving location 17 December 2000 at 05:30 hrs.

## 1.8 Recommendations

1.8.1 When inclination increases in top hole, consider time spent reaming against time spent re-spud.

1.8.2 When cutting casing with motor, always install spacer to accommodate for a second cutting attempt +/- 1 m higher. Alternatively omit the motor.

**GENERAL INFORMATION ON WELL 6407/7-6**

Field : NJORD Country : NORWAY  
 Licence : 107  
 UTM zone : 32 Central Median : 9' E Horiz. Datum: ED50

Location coordinates:		Surface	Target
UTM	North [m]:	7131390,0	
UTM	East [m]:	408270,3	
Geographical	North :	64 17'40.66"	
Geographical	East :	07 06'16.21"	

Water Depth: 335,0 m Reference Point Height: 26,0 m  
 Formation at TD: AARE at 3975 m MD

Operators:	NORSK HYDRO PRODUKSJON A/S	Share:	22,50 %
Partners:	SDØE	Share:	30,00 %
	MOBIL EXPLORATION NORWAY INC.		20,00 %
	DEN NORSKE STATS OLJESELSKAP A/S		20,00 %
	PETRO-CANADA		7,50 %

Total depth (RKB) : 3975,0 m MD 3970,4 m TVD

TIME SUMMARY	Start Time	:	2000-10-14 16:00:00
	Spudding date	:	2000-10-18
	Abandonment date	:	

Main operation	Hours	Days	%
MOBILIZATION	97,0	4,0	6,4
DRILLING	453,0	18,9	29,7
FORMATION EVALUATION MWD	3,0	0,1	0,2
FORMATION EVALUATION LOGGING	109,0	4,5	7,1
FORMATION EVALUATION CORING	202,0	8,4	13,2
TESTING (PRODUCTION TEST)	297,5	12,4	19,5
PLUG AND ABANDONMENT	132,5	5,5	8,7
DOWNTIME DRILLING	58,0	2,4	3,8
DOWNTIME FORM. EVAL. LOGGING	1,0	0,0	0,1
DOWNTIME FORM. EVAL. CORING	1,5	0,1	0,1
DOWNTIME TESTING (PROD. TEST)	122,5	5,1	8,0
DOWNTIME PLUG AND ABANDONMENT	48,5	2,0	3,2
<b>Sum:</b>	<b>1525,5</b>	<b>63,6</b>	

**Hole and casing record**

Hole	Track	Depth [m MD]	Casing/Tubing	Track	Depth [m MD]
36"		448,5	30"		446,4
26"		1229,0	20"		1224,0
17 1/2"		1232,0	9 5/8"		3094,3
12 1/4"		3100,0	7"		3974,0
8 1/2"		3975,0			

Well status: PERMANENTLY ABANDONED

Rig name: SCARABEO 6

NORSK HYDRO A.S  
DRILLING SECTOR

WELL : 64077-6 Drilling  
 LICENS : NJORD  
 RIG : Scarabeo 6  
 DEPTH : 3 865  
 ACCOUNT : 2015431  
 WELL START : 14 Oktober 2000  
 DAYS PLANNED : 38,000  
 DAYS PLANNED : 46,042

30.08.01

EDI	DESCRIPTION	ESTIMATED FINAL COST	
		AFE-2	AFE-3
<b>0</b>	<b>EMPLOYEE RELATED COSTS</b>	<b>8 746 000</b>	<b>8 542 829</b>
<b>1</b>	<b>RIG COSTS</b>	<b>42 363 200</b>	<b>41 877 534</b>
<b>2</b>	<b>RIG SUPPORT COSTS /REIMBURSABLES</b>	<b>6 403 202</b>	<b>12 971 610</b>
3A	FUEL/LUB	1 531 200	1 614 079
3C	BITS	2 608 815	2 409 238
3D	CASING/CASING EQUIPMENT	3 938 850	5 020 708
3E	WELLHEAD/XMASTREE	1 404 266	1 411 603
3F	CEMENT/CEMENT ADDITIVES	1 220 000	2 065 324
3G	MUD & MUD CHEMICALS	3 157 191	3 940 841
<b>3</b>	<b>CONSUMABLES COSTS, SUB TOTAL</b>	<b>13 860 322</b>	<b>16 461 793</b>
4B	CHARTERFLY	0	0
4C	OTHER TRANSPORTATION	232 000	67 533
4D	STANDBY VESSEL	3 248 000	2 402 751
4F	HELICOPTER TRANSPORT	1 392 000	1 225 214
4G	SUPPLY VESSELS	14 120 000	23 496 179
<b>4</b>	<b>TRANSPORTATION COSTS, SUB TOTAL</b>	<b>18 992 000</b>	<b>27 191 677</b>
5A	CORING	558 400	1 265 066
5B	DRILLING TOOLS	300 000	859 144
5B	DIRECTIONAL DRILLING/FRILLING TOOLS	1 288 043	0
5C	CUTTING OF CASING	444 757	599 686
5D	COMPLETION	0	0
5F	MWD-SERVICES	1 306 713	1 508 767
5G	CASING OPERATIONS	750 000	643 614
5H	MUD LOGGING & MUD SERVICE	1 386 740	796 004
5I	CEMENTING/PRESS.TEST	1 039 360	699 484
5J	EL. LOGGING	5 736 653	4 823 715
5K	VSP	407 710	0
5L	PROD.TESTING	697 888	561 500
5M	DIVING/ROV	881 715	1 164 272
5N	RIGPOOL	928 000	0
5N	DIVERSE	564 275	1 900 923
5O	COILED TUBING	0	0
<b>5</b>	<b>SERVICE COSTS, SUB TOTAL</b>	<b>16 290 254</b>	<b>14 822 175</b>
6A	SITE SURVEY	2 200 000	0
6B	RIG MOVING/POSITIONING	500 000	279 031
6C	DRILLING SITE CLEAN UP		
<b>6</b>	<b>SURVEY COSTS, SUB TOTAL</b>	<b>2 700 000</b>	<b>279 031</b>
<b>7</b>	<b>WAREHOUSE COSTS</b>	<b>1 020 800</b>	<b>733 526</b>
<b>8</b>	<b>LAB COST</b>	<b>800 000</b>	<b>397 337</b>
<b>TOTAL OPERATION COSTS</b>		<b>111 175 778</b>	<b>123 277 512</b>

MERKNAD:

Avvik skyldes hovedsakelig økte riginntaks-kostnader samt økte ankerhåndteringsbåt-kostnader

**DOWNTIME REPORT SCARABEO 6**

Last 319 days

Inst. Wellname	Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
SCA6 64077-6	2000-10-18	1	1,0	Equipment failure	SAIPEM S.P.A. TO BE NAMED		Malfunctioning crown saver and floor saver sensors on travelling block. Checked and repaired same.	HOISTING EQUIPMENT	DRILLING	RIG UTILITIES	303.00	Traveling Equipment	
SCA6 64077-6	2000-10-19	4	25,0	Other	NORSK HYDRO A/S		Respud due to boulders/high inclination.		DRILLING				
SCA6 64077-6	2000-10-19	4.1	0,5	Equipment failure	SAIPEM S.P.A. TO BE NAMED		1/2" bolt dropped from elevator. Changed out elevator	HOISTING EQUIPMENT	DRILLING	DRILLING CONTRACTO	303.00	Traveling Equipment	
SCA6 64077-6	2000-10-20	6	0,5	Equipment failure	SAIPEM S.P.A. OILWELL		Pump 6 m3 HV is mill. Shutdown mudpump #1 for repair. Trouble shoot to get mudpump #3 running.	MUD AND BULK SYSTEMS	DRILLING	DRILLING CONTRACTO	325.00	Mud Supply(incl. HP mudpumps)	
SCA6 64077-6	2000-10-21	7	1,0	Equipment failure	SAIPEM S.P.A. MARITIME HYDRAULICS A/S		Work on DDM speed sensor.	DRILL FLOOR EQUIPMENT/SYS	CASING	RIG UTILITIES	317.00	Other Drill Floor Eq./Syst.	
SCA6 64077-6	2000-10-21	8	0,5	Equipment failure	BJ SERVICES	BJ SERVICES	Service seized cement head.	SERVICE EQUIPMENT/SYS	DRILLING	CEMENTING	371.02	Cement: Head	
SCA6 64077-6	2000-10-23	9	0,5	Equipment failure	SAIPEM S.P.A. MARITIME HYDRAULICS A/S		Fix loose dyce in top drive torque wrench.	DRILL FLOOR EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTO	317.00	Other Drill Floor Eq./Syst.	
SCA6 64077-6	2000-10-25	11	1,0	Equipment failure	BJ SERVICES	BJ SERVICES	Replaced bursted hose on cement pump transmission.	SERVICE EQUIPMENT/SYS	CEMENTING	CEMENTING	371.01	Cement: Unit/pipe	
SCA6 64077-6	2000-10-26	12	3,5	Equipment failure	SAIPEM S.P.A. CAMERON NORGE		Leaking choke line after 6 joints run. Pull riser and test every joint.	WELLCONTROL EQUIPMENT/SYS	BOP INSTALLATIO AND TESTING	DRILLING CONTRACTO	331.00	BOP Stack	
SCA6 64077-6	2000-10-26	13	0,5	Other	NORSK HYDRO A/S		Shut down cranes due to helicopter arrival.		BOP INSTALLATIO AND TESTING				
SCA6 64077-6	2000-10-27	14	1,0	Equipment failure	SAIPEM S.P.A. CAMERON NORGE		Replaced leaking seals on leaking kill stab on support ring.	WELLCONTROL EQUIPMENT/SYS	BOP INSTALLATIO AND TESTING	DRILLING CONTRACTO	331.00	BOP Stack	

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Last 319 days

Inst. Wellname	Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
SCA6 64077-6	2000-10-28	15	3,0	Other	MINORGE		Circulated seawater at low rate while waiting and weighting new OBM to 1.60.		DRILLING				
SCA6 64077-6	2000-10-28	16	2,0	Other	MINORGE		Stopped pumping due to excessive mud viscosity. Cleared up under the shakers. Conditioned mud.		DRILLING				
SCA6 64077-6	2000-10-29	17	1,0	Other	SAIPEM S.P.A.		Cuttings screw jammed. Cleared same.		DRILLING				
SCA6 64077-6	2000-10-29	19	1,0	Equipment failure	SAIPEM S.P.A.	OILWELL	Changed piston on MP #1. Mud pump #2 down.	MUD AND BULK SYSTEMS	DRILLING	RIG UTILITIES	325.00	Mud Supply (incl. HP mudpumps)	
SCA6 64077-6	2000-10-29	20	2,5	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Leak on washpipe. Repaired same while circulating w/circulating sub and cement hose.	DRILLSTRING/DC EQUIPMENT	DRILLING	RIG UTILITIES	357.01	Drillstring Motor	
SCA6 64077-6	2000-10-31	21	1,0	Other	NORSK HYDRO A/S		Circulated for cuttings. Changed to direct skip filling.		DRILLING				
SCA6 64077-6	2000-11-01	22	1,5	Other	NORSK HYDRO A/S		The wear bushing had not been locked down in the wellhead, so the wellhead was jettied.		DRILLING				
SCA6 64077-6	2000-11-04	23	1,5	Equipment failure	SAIPEM S.P.A.	SAIPEM S.P.A.	Jetting line in header box below gas trap plugged. Cleaned same.	MUD AND BULK SYSTEMS	DRILLING	DRILLING CONTRACTO	326.00	Mud Solids Control	
SCA6 64077-6	2000-11-04	24	1,0	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Repaired oil leak on topdrive. Changed o-ring.	HOISTING EQUIPMENT	DRILLING	DRILLING CONTRACTO	313.02	Top Drive	
SCA6 64077-6	2000-11-05	25	0,5	Other	SAIPEM S.P.A.		Changed pistons and liners on 2 mudpumps.		DRILLING				
SCA6 64077-6	2000-11-05	29	3,0	Other	NORSK HYDRO A/S		Spotted 5 m3 of LCM pill in open hole. Left to soak for 40 min.		DRILLING				

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Last 319 days

Inst. Wellname	Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
SCA6 64077-6	2000-11-05	26	3,5	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Repaired hydraulic leak on topdrive.	HOISTING EQUIPMENT	DRILLING	DRILLING CONTRACTO	313.02	Top Drive	
SCA6 64077-6	2000-11-06	27	0,5	Equipment failure	SAIPEM S.P.A.	IDECO	Trouble shoot pressure integrity of surface equipment due to loss of 11 bar surface pressure after connection. Flow checked 15 min.	MUD AND BULK SYSTEMS	DRILLING	DRILLING CONTRACTO	328.00	Hp Equipment	
SCA6 64077-6	2000-11-08	28	1,0	Equipment failure	ANADRILL	ANADRILL	Not able to down load memory CDR tool. Laid out tool.	DRILLSTRING/DC EQUIPMENT	DOWNHOLE COMPLETION ACTIVITIES	MWD/LWD	357.02	MWD/LWD	
SCA6 64077-6	2000-11-08	26.1	1,0	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Calibrated torque wrench on topdrive and checked Baylor brake motor unit.	HOISTING EQUIPMENT	CORING	DRILLING CONTRACTO	313.02	Top Drive	
SCA6 64077-6	2000-11-15	30	0,5	Equipment failure	ANADRILL	ANADRILL	Changed out power pulse tool.	DRILLSTRING/DC EQUIPMENT	DRILLING	MWD/LWD	357.02	MWD/LWD	
SCA6 64077-6	2000-11-19	31	1,0	Equipment failure	SCHLUMBERG NORGE A/S	SCHLUMBERG LOGELCO INC.	Checked cale, head and tool string.	DRILLSTRING/DC EQUIPMENT	LOGGING	ELECTRIC LOGGING	357.07	Other Drilling/Downl Equipment	
SCA6 64077-6	2000-11-22	32	1,5	Equipment failure	ODFJELL WELL SERVICES	ODFJELL WELL SERVICES	Charged nitrogen dampener on casing tong guide arm, was discharged and not working.	DRILL FLOOR EQUIPMENT/SYS	CASING	CASING RUNNING	317.00	Other Drill Floor Eq./Syst.	
SCA6 64077-6	2000-11-24	33	20,5	Equipment failure	BAKER OIL TOOLS	BAKER OIL TOOLS	Liner hanger packer failed pressure test. Waited on cement to set and re-tested linerlap successfully. Ran JM packer as backup.	SERVICE EQUIPMENT/SYS	CASING	LINERHANGE	376.07	Liner Hanger	
SCA6 64077-6	2000-11-26	34	2,5	Equipment failure	HALLIBURTON OILFIELD SERVICES NORWAY INC.	HALLIBURTON OILFIELD SERVICES NORWAY INC.	Perforating gun waterflooded due to leak. Laid out gun, pulled back and re-checked all guns.	SERVICE EQUIPMENT/SYS	DRILL STEM TEST	PERFORATIN	372.11	Tubing conveyed perforating gun	
SCA6 64077-6	2000-11-28	35	22,5	Equipment failure	BJ SERVICES	BJ SERVICES	BJ changed bleed off valve at cement unit due to leak.	SERVICE EQUIPMENT/SYS	DRILL STEM TEST	CASING/TUBI RUNNING	371.03	Cement: Other	

**DOWNTIME REPORT SCARABEO 6**

Last 319 days

Inst. Wellname	Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
SCA6 64077-6	2000-11-29	36	1,0	Other	HALLIBURTON OILFIELD SERVICES NORWAY INC.		Attempted to RIH with GR / CCL, stopped at lower lubricator valve. Cycled valve, still no go. Equalized pressure and opened valve.		DRILL STEM TEST				
SCA6 64077-6	2000-11-29	37	6,5	Waiting on weather			Stopped to monitor annulus pressure on trip tank - statick. Opened wireline BOP, POOH to check cable for damage - OK.		DRILL STEM TEST				
SCA6 64077-6	2000-12-03	38	14,0	Waiting on weather			POOH due to increasing heave (max 2.65 m). Bled off annulus, closed and inflow tested LPP-N test valve with 310 bar below. Pulled wireline tools in tool catcher. SSTT with 250 bar below. Bled off pressure in landing string.		DRILL STEM TEST				
SCA6 64077-6	2000-12-04	39	37,5	Other	MARITIME WELL SERVICE		When unlatching the PLT/BHS tool from the tool catcher in the wireline BOP, the wire broke in the rope socket, and the tool was lost on top of the closed upper SSLV.		DRILL STEM TEST				

**DOWNTIME REPORT SCARABEO 6**

Last 319 days

Inst. Wellname	Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
SCA6 64077-6	2000-12-04	40	6,0	Equipment failure	HALLIBURTON OILFIELD SERVICES NORWAY INC.	HALLIBURTON OILFIELD SERVICES NORWAY INC.	Set STT in mousehole. Discovered that swivel joint was partly backed out from Lower Master Valve connection. Remade connection with chain tongs (Right Hand). Pressure tested connection OK to 600 bar. Later made up to 4500 ft.lbs.	WELLCONTROL EQUIPMENT/SYS	DRILL STEM TEST	PRODUCTION TESTING	337.05	Other Well Control Related Equipment	
SCA6 64077-6	2000-12-05	39.1	3,5	Waiting on weather			WOW. Ballasted rig to drilling draft.		DRILL STEM TEST				
SCA6 64077-6	2000-12-06	41	0,5	Equipment failure	HALLIBURTON OILFIELD SERVICES NORWAY INC.	HALLIBURTON OILFIELD SERVICES NORWAY INC.	Attempted to open kill valve. No indications of valve open. Troubleshot and found valve to be open.	WELLCONTROL EQUIPMENT/SYS	LOGGING	PRODUCTION TESTING	337.05	Other Well Control Related Equipment	
SCA6 64077-6	2000-12-06	42	3,0	Equipment failure	HALLIBURTON OILFIELD SERVICES NORWAY INC.	HALLIBURTON OILFIELD SERVICES NORWAY INC.	Pressured up string to open USSLV. Problem to open USSLV. Troubleshot valve problems.	WELLCONTROL EQUIPMENT/SYS	LOGGING	PRODUCTION TESTING	337.05	Other Well Control Related Equipment	
SCA6 64077-6	2000-12-06	43	3,5	Waiting on weather			WOW. Heave max 2.3 m. Wind 30-40 knots.		LOGGING				
SCA6 64077-6	2000-12-10	44	1,0	Equipment failure	SAIPEM S.P.A. VARCO BJ OIL TOOLS	SAIPEM S.P.A. VARCO BJ OIL TOOLS	Unable to function BX-elevator. Changed to 350 ton bails and side door elevator.	PIPE HANDLING EQUIPMENT/SYS	PLUG AND ABANDON	CASING RUNNING	345.00	Elevator	NL 22641
SCA6 64077-6	2000-12-10	45	0,5	Equipment failure	SAIPEM S.P.A. BJ TUBULAR SERVICES	SAIPEM S.P.A. BJ TUBULAR SERVICES	Changed from 150 ton to 350 ton sidedoor elevators due to oversized casing. The BX elevator was already down. The oversized casing slowed the overall operation.	PIPE HANDLING EQUIPMENT/SYS	PLUG AND ABANDON	DRILLING CONTRACTO	345.00	Elevator	SLX 33851

**DOWNTIME REPORT SCARABEO 6**

Last 319 days

Inst. Wellname	Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
SCA6 64077-6	2000-12-11	47	1,0	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Repaired damaged hose on standliff. The hose was broken with the cherry picker.	PIPE HANDLING EQUIPMENT/SYS	PLUG AND ABANDONMEI	RIG UTILITIES	341.00	Vertical Pipe Handling	MH 1647-01
SCA6 64077-6	2000-12-11	48	0,5	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Changed out sheared bolt on IRN die carrier.	PIPE HANDLING EQUIPMENT/SYS	PLUG AND ABANDONMEI	RIG UTILITIES	342.00	Drillfloor Tubular Handling	
SCA6 64077-6	2000-12-12	49	1,0	Other	SAIPEM S.P.A.		Hung off the block, slipped & cut drilling line.		PLUG AND ABANDONMEI				
SCA6 64077-6	2000-12-13	50	0,5	Equipment failure	SAIPEM S.P.A.	NATIONAL	Brakeband on drawwork slipping due to hydraulic oil leak from piping above.	HOISTING EQUIPMENT	PLUG AND ABANDONMEI	RIG UTILITIES	305.00	Other Hoisting Equipment	E-3000
SCA6 64077-6	2000-12-14	51	6,0	Other	SAIPEM S.P.A.		Ran to big stabilizer. Attempted to stab cutting assy into wellhead. No go.		PLUG AND ABANDONMEI				
SCA6 64077-6	2000-12-15	52	34,5	Waiting on weather			Monitored for heave. Max heave 3,5 m.		PLUG AND ABANDONMEI				
SCA6 64077-6	2000-12-16	53	1,0	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Trouble shoot and repair leak on iron roughneck.	PIPE HANDLING EQUIPMENT/SYS	PLUG AND ABANDONMEI	DRILLING CONTRACTO	342.00	Drillfloor Tubular Handling	
SCA6 64077-6	2000-12-16	54	2,5	Equipment failure	SAIPEM S.P.A.	MARITIME HYDRAULICS A/S	Landed in well head. Compensator locked in on isolation valve. Not able to open isolation valve. Re-calibrated compensator.	HOISTING EQUIPMENT	PLUG AND ABANDONMEI	DRILLING CONTRACTO	304.00	Heave Compensator (Traveling Block Mounted)	

Sum: 231,5

Total Sum: 231,5

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 1                      **Date:** 2000-10-14  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 0,00 sg

Stop time	Description
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16:00	No activity on well 6407/7-6.
23:59	On tow to new location 6407/7-6 With Troms Titan and Far Grip on towing gear. Sailed distance 27 Nm. Distance to go 293 Nm. Average speed 4.5 Knots.

**Daily report no :** 2                      **Date:** 2000-10-15  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 0,00 sg

Stop time	Description
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23:59	On tow to new location 6407/7-6.
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**Daily report no :** 3                      **Date:** 2000-10-16  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 0,00 sg

Stop time	Description
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23:59	On tow to new location 6407/7-6 Troms Titan and Far Grip on towing gear.
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**Daily report no :** 4                      **Date:** 2000-10-17  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 0,00 sg

Stop time	Description
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11:00	On tow to new location 6707/7-6
23:59	Ran anchor no.5, 4, 1, 8, 6, 2, and 7.

**Daily report no :** 5                      **Date:** 2000-10-18  
**Midnight depth :** 391 m MD          **Estimated PP:** 1,03 sg                      **Mud weight:** 1,05 sg

Stop time	Description
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06:00	Repositioned anchor no 5 and set anchor no 3. Picked up landing string while anchor handling and waiting on Fire & Gas detection system to be DNV approved.
08:00	Continued picking up a total of 13 stands dedicated landing string.
09:30	Slip and cut drilling line
10:30	Checked crown saver and floor saver sensors on travelling block.
17:00	Ran in hole with 36" hole opener assembly.
18:00	Made up and racked back cement stand.
19:30	Continued to RIH with 5" drillpipe
22:00	Took survey 0.4 deg. Spudded well and drilled to 389 meter.
23:30	Reamed hole from 378 m to 389 meter. Inclination dropped to 1.90 deg
23:59	Continued drilling from 389 m. to 391 meter.

**Daily report no :** 6                      **Date:** 2000-10-19  
**Midnight depth :** 387 m MD          **Estimated PP:** 1,03 sg                      **Mud weight:** 1,05 sg

Stop time	Description
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06:30	Cont. reaming from 390 to 401 m
07:30	Take connection & ream to bottom @ 412 m. Survey: 2.85 deg. Continue to drill from 412 m.
09:00	Pump 5.5 m3 HiVis pill @ 417 m. Continue to drill to 423 m.
09:30	Survey @ 406 m 3.72 deg. Ream stand.
10:00	Survey @ 406 m 3.42 deg. Ream stand.
10:30	POOH to re-spud. ROV to check hole opener at seabed.
11:30	POOH.
12:00	Change elevator.
14:00	Changed out the bit and the hole opener. Strap drillstring. Change elevators.
15:00	RIH to respud. Moved rig 12 m south.
15:30	Change drilling stand. RIH.
16:00	Stop with bit @ 351 m. ROV to survey. Bit at seabed @ 363 m MSL. Survey w/bit 5 m in seabed: 0.84 deg.
17:00	Washed down to 370 m. Survey: 0.92 deg. Drilled to 377 m. 140 SPM / 80 RPM, 0-3 t WOB. Survey @ 360 m: 0.12 deg.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 6                      **Date:** 2000-10-19  
**Midnight depth :** 387 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,05 sg

Stop time	Description
20:00	Continue drilling 36" hole. Survey @ 375 m (bit depth) = 2.47 deg.
22:00	Moved rig 1 m x 350 deg. while reaming 370-382 m.
23:00	Drill ahead 2-3 ton WOB=200-600 DNM. 2660 lpm, 47 bar.
23:30	Survey @ 365 m = 1.34 deg. Drill ahead with 8-10 ton WOB.
23:59	Survey @ 369 m = 3.6 deg. Reamed while moving rig 2 m x 265 deg.

**Daily report no :** 7                      **Date:** 2000-10-20  
**Midnight depth :** 449 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,05 sg

Stop time	Description
01:30	Finished moving the rig 00:15. Survey @ 368 m = 1.04 deg. Cont. drilling w/5 t WOB. 3000 lpm, 61 bar.
06:00	Cont. drilling to 414 m. First survey @ 378,6 m = 1.61 deg. Ream once down to 1.26 deg.
09:00	Continue drilling to 417 m. Survey @ 401,1 m = 1.37 deg.
09:30	Pump 6 m3 HiVis pill. Shutdown mudpump #1 for repair. Trouble shoot to get mudpump #3 running.
12:00	Continue drilling to 429 m. Survey @ 3980 m 1.37 deg.
12:30	Ream stand. Pump 5.5 m 3 HiVis pill.
15:00	Continue drilling to 448. Survey @ 409 m 1.32 deg. @ 419 m 1.52 deg.
16:00	Pump 25 m3 HiVis pill. Displace w/58 m3 1.5 SG mud. Survey @ 430 m 1.67 deg. Drill till pipe mark, survey pipe marks w/ROV.
16:30	Survey @ 433 m 2.02 deg. Recheck pipe marks.
17:00	Ream stand.
18:00	Wiper trip to 6 m below seabed. RIH to TD.
19:00	Pump 10 m3 HiVis pill. Displace hole to 1.5 SG. POOH.
19:30	Rack drilling stand and pull to 372 m. ROV reset transponder.
21:00	Cont. POOH. Anadrill download MWD. Rack back bit & hole opener.
21:30	Check DDM and torque wrench after heavy vibration during drilling.
22:00	Rig up to run 30" casing. Held SJA meeting.
23:59	Stabbed casing through PGB on transporter. Check float. Run casing.

**Daily report no :** 8                      **Date:** 2000-10-21  
**Midnight depth :** 449 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,05 sg

Stop time	Description
02:00	Run and land 30" casing in PGB.
03:00	M/U cement stinger & 30" running tool and land in 30" casing.
04:00	Lowered 30" casing/PGB to seabed.
05:00	Stabbed in 30" casing and RIH to 446,5 m. 25 ton drag on last stand. Circulated and worked pipe down from 436 m.
06:30	Worked conductor from 1.75 deg to 1 deg. by moving the rig 20 m stb/aft.
07:30	Rig up for cement job.
09:00	Mix and pump 26 m3 lead and 28 m3 tail cement. Displace w/seawater. Check for back flow OK.
15:00	WOC. Meanwhile sorting out various mud system related issues.
18:00	Move rig over location in 2 stages. Back out landing string and POOH.
18:30	Change bails and service top drive.
19:30	Work on DDM speed sensor.
20:00	Service seized cement head.
21:30	M/U cement stand/head and rack back.
23:00	Lay out 36" BHA.
23:59	P/U 26" BHA

**Daily report no :** 9                      **Date:** 2000-10-22  
**Midnight depth :** 902 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,05 sg

Stop time	Description
01:30	M/U 26" BHA. Test MWD tool OK.
04:00	RIH 26" BHA. Stab into 30" casing and RIH and tag TOC @ 442 m.
06:00	Drilled 30" shoe, cement and new formation @ 460 m. Incl. = 1.28 deg.
10:00	Continue drilling from 460-518 m. Survey + HiVis pill every single.
17:30	Continue drilling to 730 m.

**DAILY REPORT ON WELL 64077-6**

**Daily report no :** 9                      **Date:** 2000-10-22  
**Midnight depth :** 902 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,05 sg

Stop time	Description
18:00	Drilling break. Flowcheck. ROV to survey wellhead.
23:59	Continue drilling to 902 m.

**Daily report no :** 10                      **Date:** 2000-10-23  
**Midnight depth :** 1229 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,40 sg

Stop time	Description
10:00	Drilled 26" hole from 902 to 1086 m.
10:30	Backreamed last stand 3 times to improve high torque and inclination. Survey @ 1065.7 = 1.15 deg.
17:00	Continued drilling from 1086 to 1229 m.
18:30	Pumped 25 m3 HiVis pill & displaced with seawater. Flowchecked OK.
20:00	Displaced to 1.40 SG mud.
21:30	Made wiper trip to 30" shoe. 25 t overpull @ 1178 m.
22:00	Serviced torque wrench.
23:30	Wiper trip to TD. No fill. Hole in good condition.
23:59	Pumped 15 m3 HiVis and displaced with seawater while mixing 1.4 SG mud.

**Daily report no :** 11                      **Date:** 2000-10-24  
**Midnight depth :** 1229 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,05 sg

Stop time	Description
04:00	Circulated seawater while mixing 1.40 SG mud.
06:00	Displaced hole to 1.40 SG mud.
06:30	ROV observed returns for Mica marker. Continued pumping 1.4 SG HiVis. POOH.
11:00	POOH. Dumped CDR & continued POOH. Racked BHA in derrick.
13:00	Rigged up to run 20" casing. Held prejob meeting.
21:30	Checked shoe and float collar, ran 20" casing.
22:30	Changed elevator and slips. Picked up and installed 18 3/4" wellhead, installed valves and topped up w/seawater.
23:59	RIH with 20" casing on HWDP.

**Daily report no :** 12                      **Date:** 2000-10-25  
**Midnight depth :** 1229 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,05 sg

Stop time	Description
02:00	Continued to run in with 20" casing. Made up cement stand, broke circulation and circulated down and landed casing with 20 spm. Took overpull 25 t - OK.
03:00	Pumped 100 m3 seawater.
03:30	Started to mix and pump lead slurry
04:30	Replaced bursted hose on cement pump transmission.
09:30	Continued to mix and pump 267.5 m3 lead and 2.6 m3 tail slurry. Abandoned 23 m3 tail slurry due to problems with cement unit.
11:00	Dropped dart and sheared wiper plug w/20 bar. Displaced w/seawater @ 2800 lpm and 90 bar. Bumped plug with 60 bar.
12:00	Checked for backflow - OK. Released running tool. POOH with landing string.
15:00	M/U grouting stinger and RIH. Penetrated seabed 9 m through grouting funnel. Mixed and pumped 15 m3 cement.
16:30	R/D cement hose. POOH and L/D cementing equipment.
19:00	Cleaned up rig floor. R/U to run BOP.
19:30	Moved rig 15 m off location. Held safe job analysis.
23:59	Prepared to run BOP.

**Daily report no :** 13                      **Date:** 2000-10-26  
**Midnight depth :** 1229 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,05 sg

Stop time	Description
00:30	Continued to prepare to run BOP.
04:30	Ran BOP through splash zone and pressure tested kill & choke lines to 690 bar. Continued to RIH 6 joints of riser. Pressure test after 2 and 6 joints.
08:00	Leaking choke line after 6 joints run. Pulled 2 riser joints and retested OK. Continued to run riser & BOP.
08:30	Continue to run riser joint #7.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 13                      **Date:** 2000-10-26  
**Midnight depth :** 1229 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,05 sg

Stop time	Description
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09:00	Shut down cranes due to helicopter arrival.
20:00	Continue to run BOP & riser.
23:59	P/U slip joint and M/U support ring, tensioners and hoses.

**Daily report no :** 14                      **Date:** 2000-10-27  
**Midnight depth :** 1232 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,05 sg

Stop time	Description
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01:00	Continued to rig up kill & choke lines. Connected support ring. Started to pressure test kill & choke lines.
02:00	Replaced leaking seals on leaking kill stab on support ring.
02:30	Continued to pressure test kill, choke & auxiliary lines.
05:30	Moved rig over location and landed BOP w/ 50 t down.
08:00	Pressure tested connector and casing to 90 bar. OK.
09:00	Disconnected inner barrel. Installed diverter. R/D riser handling equipment.
09:30	Changed bails and elevator. Installed top drive torque wrench.
13:00	RIH w/BOP test tool, close MPR and pressure tested wellhead connector to 470 bar/10 min. OK. Function tested BOP rams and POOH w/BOP test tool.
13:30	Loaded cement stand. Racked back same in derrick.
16:00	M/U 9 5/8" casing hanger assy and racked same back in derrick.
21:00	M/U 17 1/2" BHA and RIH to 1196 m. Broke circulation. Filled up pipe, washed down and tagged TOC @ 1209 m.
22:00	Drilled floats, shoe track and 3 m new hole to 1232 m.
23:30	Circulated B/U. Pumped 8 m3 HiVis pill and displaced same w/seawater.
23:59	Lined up for LOT. Flushed and tested surface lines.

**Daily report no :** 15                      **Date:** 2000-10-28  
**Midnight depth :** 1232 m MD              **Estimated PP:** 1,03 sg              **Mud weight:** 1,60 sg

Stop time	Description
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01:00	Continued to test surface lines. Performed LOT to 1.79 SG EMW.
04:00	Circulated seawater at low rate while and weighting new OBM to 1.60 SG.
06:30	Displaced the hole to 1.60 SG OBM.
08:30	Stopped pumping due to excessive mud viscosity. Cleared up under the shakers. Conditioned mud.
11:30	Flowchecked OK. POOH.
14:00	RIH w/wear bushing running/retrieving tool and POOH bore protector.
17:00	RIH and set extended wear bushing. POOH w/running tool.
17:30	M/U Hang off tool.
18:30	L/D 26" BHA.
23:30	M/U 12 1/4". Loaded CDR. RIH till HWDP & tested MWD. OK.
23:59	RIH w/12 1/4" BHA to 1031 m.

**Daily report no :** 16                      **Date:** 2000-10-29  
**Midnight depth :** 1840 m MD              **Estimated PP:** 1,42 sg              **Mud weight:** 1,60 sg

Stop time	Description
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01:00	Continued to RIH w/12 1/4" BHA and tagged bottom.
03:00	Drilling 12 1/4" hole from 1232 m to 1290 m.
04:00	Cuttings screw jammed. Cleared same while circulating at slow rate.
06:00	Continued drilling from 1290 m to 1320 m.
07:00	Changed piston on MP #1. Mud pump #2 down. Continued to circulate at low rate w/MP #3.
17:30	Continued drilling from 1320 m to 1715 m.
20:00	Leak in washpipe. Repaired same while circulating w/circulating sub and cement hose.
23:59	Continued drilling to 1840 m.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 17                      **Date:** 2000-10-30  
**Midnight depth :** 2564 m MD              **Estimated PP:** 1,30 sg              **Mud weight:** 1,60 sg

Stop time	Description
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23:59	Continued drilling 12 1/4" hole from 1840 m to 2564 m.
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**Daily report no :** 18                      **Date:** 2000-10-31  
**Midnight depth :** 3100 m MD              **Estimated PP:** 1,42 sg              **Mud weight:** 1,60 sg

Stop time	Description
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10:30	Continued drilling from 2564 m to 2882 m.
11:30	Circulated for cuttings.
19:30	Continued drilling from 2882 m to section TD at 3100 m.
23:59	Circulated hole clean.

**Daily report no :** 19                      **Date:** 2000-11-01  
**Midnight depth :** 3100 m MD              **Estimated PP:** 1,42 sg              **Mud weight:** 1,60 sg

Stop time	Description
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00:30	Finished circulating to clean the hole.
04:00	Flowchecked OK. Slugged pipe and POOH to 1200 m.
06:00	Slipped and cut drilling line.
09:00	Continued to POOH to 1200 m to run casing.
10:30	L/D 12 1/4" BHA. Cleaned up rig floor.
15:00	RIH w/Multi Purpose tool on 3 std HWDP. Unseated wear bushing without any overpull and POOH. Functioned and flushed BOP, jetted wellhead..
16:30	RIH w/jet sub and jetted wellhead. POOH.
19:00	R/U to run casing. Cleaned up rig floor.
23:59	Started to run 9 5/8" casing.

**Daily report no :** 20                      **Date:** 2000-11-02  
**Midnight depth :** 3100 m MD              **Estimated PP:** 1,42 sg              **Mud weight:** 1,60 sg

Stop time	Description
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05:30	Ran 9 5/8" casing from 306 m to 1210 m.
06:00	Broke circulation at 20" casing shoe on 1224 m.
14:00	Ran casing from 1224 m to 2727 m.
15:30	Changed to 5" handling equipment. Picked up and installed casing hanger
17:30	Ran in hole with casing on 5" HWDP landing string from 2727 m to land off hanger with shoe at 3094 m.
19:30	Circulated bottoms up with 2040 lpm / 104 bar.
20:00	Installed cement hose and low torque valve..
21:00	Pumped 2 m3 baseoil. Displaced line with drill water. Pressure tested surface lines to 150 bar. Pumped 15 m3 of 1.7 SG spacer with mudpumps. Dropped ball.
21:30	Mixed and pumped 14 m3 of 1.9 SG cement slurry. Dropped dart and displaced same with cement pump. Good indication of top plug shearing.
23:00	Displaced cement with rig pumps at 2000 lpm / 125 bar. Note: did not bump plug. Checked for back flow.
23:59	Set seal assembly with 5 1/2 right hand rotation. String dropped ok. Established circulation from cement unit through choke line. Closed BOP and pressured up to 210 bar / 5 min.

**Daily report no :** 21                      **Date:** 2000-11-03  
**Midnight depth :** 3100 m MD              **Estimated PP:** 1,42 sg              **Mud weight:** 1,60 sg

Stop time	Description
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02:30	Pressured up in increments to 480 bar to set and test 9 5/8" seal assembly.
05:30	Tested BOP to 35/470 bar.
07:00	Released casing running tool and POOH.
08:30	Cleared catwalk and rearranged 8" drill collars in derrick.
09:30	Laid out 8" jar and 5 pcs 8" drill collars from derrick.
11:00	Made up wear bushing running tool and cup tester. Ran in hole and landed with 10 ton. Confirmed latch with 3 ton over pull.
12:00	Closed BOP and pressured up to 170 bar to confirm seal assembly fully set. Sheared out running tool with 10 ton over pull. POOH and laid out running tool.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 21                      **Date:** 2000-11-03  
**Midnight depth :** 3100 m MD              **Estimated PP:** 1,42 sg              **Mud weight:** 1,60 sg

Stop time	Description
12:30	Installed diverter bag. Cleared rig floor and catwalk.
17:00	Picked up 8 1/2" BHA and ran in hole to 256 m.
20:30	Rigged up and tested IBOP and stabbing valves.
23:00	Tested casing against shear ram in increments of 50 bar to 470 bar / 15 minutes.
23:59	Ran in hole with 8 1/2" drilling assembly from 256 m to 857 m.

**Daily report no :** 22                      **Date:** 2000-11-04  
**Midnight depth :** 3205 m MD              **Estimated PP:** 1,43 sg              **Mud weight:** 1,60 sg

Stop time	Description
01:00	Ran in hole with 8 1/2" drilling assembly from 857 m to 1370 m.
04:30	Picked up 51 joints 5" drill pipe while running in hole.
05:00	Changed elevator and bails. Checked tong alignment on topdrive.
07:30	Ran in hole from 1850 m to 2989 m.
08:00	Washed down from 2989 m to tag float collar at 3053 m.
09:30	Performed kick drill and choke drill.
11:00	Drilled float equipment and shoe to 3094 m. Cleaned out rathole to 3100 m.
11:30	Drilled new formation from 3100 m to 3103 m.
13:00	Circulated and conditioned mud prior to FIT test.
14:00	Spaced out and closed middle pipe rams. Performed FIT to EMW 1.76 SG.
14:30	Held safety meeting prior to commence drilling.
16:00	Cleared header box jetting line below gastrap.
23:30	Drilled 8 1/2" hole from 3103 m to 3205 m.
23:59	Repaired oil leak on topdrive.

**Daily report no :** 23                      **Date:** 2000-11-05  
**Midnight depth :** 3362 m MD              **Estimated PP:** 1,44 sg              **Mud weight:** 1,61 sg

Stop time	Description
00:30	Repaired oil leak on topdrive.
02:00	Circulated for sample.
05:30	Drilled 8 1/2" hole from 3205 m to 3249 m.
06:00	Changed pistons and liners on 2 mudpumps.
10:30	Drilled 8 1/2" hole from 3249 m to 3302 m.
12:00	Flow checked well 10 min. Circulated bottoms up for sample. Flow checked 10 min when boots up at 700 m. Finished bottoms up circulation. Max gas 0.5 pct.
13:00	Circulated while mixing LCM pill.
15:00	Spotted 5 m3 of LCM pill in open hole. Left to soak for 40 min.
16:00	Circulated bottoms up while boosting riser.
22:00	Drilled 8 1/2" hole from 3302 m to 3362 m.
23:59	Repaired hydraulic leak on topdrive.

**Daily report no :** 24                      **Date:** 2000-11-06  
**Midnight depth :** 3562 m MD              **Estimated PP:** 1,50 sg              **Mud weight:** 1,60 sg

Stop time	Description
00:30	Repaired hydraulic leak on topdrive. Changed torque cell.
04:00	Drilled 8 1/2" hole from 3362 m to 3387 m.
05:00	Calibrated new torque cell on topdrive.
10:00	Drilled 8 1/2" hole from 3387 m to 3455 m.
10:30	Circulated for sample from 3448 m.
11:00	Drilled from 3455 to 3461 m.
11:30	Circulated for sample from 3461 m.
12:30	Drilled 8 1/2" hole from 3461 m to 3475 m
13:00	Trouble shoot pressure integrity of surface equipment due to loss of 11 bar surface pressure after connection. Flow checked 15 min.
13:30	Circulated bottoms up from 3475 m to 700 m.
14:00	Flow checked well 30 min.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 24                      **Date:** 2000-11-06  
**Midnight depth :** 3562 m MD              **Estimated PP:** 1,50 sg              **Mud weight:** 1,60 sg

Stop time	Description
14:30	Circulated bottoms up from 700 m to surface.
23:59	Drilled 8 1/2" hole from 3475 m to 3562 m.

**Daily report no :** 25                      **Date:** 2000-11-07  
**Midnight depth :** 3701 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,60 sg

Stop time	Description
12:00	Drilled 8 1/2" hole from 3562 m to 3691 m. Had drilling break.
13:30	Flow checked 10 min. Circulated bottoms up for sample.
14:30	Circulated while analyzing sample.
15:30	Drilled at controlled rate from 3691 m to 3701 m. Flow checked 10 min.
17:00	Circulated bottoms up for sample.
19:00	Circulated well while analyzing sample.
19:30	Flow checked well. Pumped slug.
22:00	POOH from 3701 m to 9 5/8" casing shoe at 3100 m.
22:30	Flow checked at shoe. Held kick drill.
23:59	POOH from 3100 m to 1796 m.

**Daily report no :** 26                      **Date:** 2000-11-08  
**Midnight depth :** 3709 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,62 sg

Stop time	Description
03:00	POOH from 1796 m to surface. Broke out bit.
03:30	Down loaded memory from RAB tool.
04:30	Not able to down load memory from CDR tool. Picked up single and racked stand in dererick. Laid out CDR, ILS and RAB.
07:00	Made up 30 m core barrel with fluted aluminum inner barrels.
09:00	Ran in hole with core barrel on run no. 1 to 1374 m.
09:30	Picked up 12 joints 5" drill pipe from 1374 m to 1488 m.
12:30	Ran in hole with core barrel from 1488 m to casing shoe at 3100 m.
13:30	Calibrated torque wrench on topdrive and checked Baylor brake motor unit.
14:30	Ran in hole with core barrel from 3100 m to 3555. Took weight.
16:30	Washed and reamed from 3555 m to 3701 m.
19:00	Tagged bottom and circulated bottoms up from 3701 m to 700 m. Flow checked 10 min. Circulated same to 400 m. Flow checked 10 min. Finished bottoms up circulation.
19:30	Dropped ball and circulated down same with 800 l/min. Seated same with 10 bar. Took SCR.
21:00	Cut core from 3701 m to 3709 m.
21:30	Core jammed. Flow checked 10 min. Pumped slug.
23:59	POOH from 3709 m to 2797 m.

**Daily report no :** 27                      **Date:** 2000-11-09  
**Midnight depth :** 3720 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,60 sg

Stop time	Description
08:30	POOH with core barrel from 2797 m to 490 m.
09:30	Held pre-job safety meeting. Recovered core no 1. Racked back BHA.
10:00	Initialized CDR tool.
11:30	Made up 8 1/2" BHA. Shallow tested MWD.
13:00	Ran in hole with rest of BHA.
18:30	Ran in hole with 8 1/2" drilling assembly to 3673 m.
19:00	Reamed down while logging cored interval to 3709 m.
19:30	Drilled 8 1/2" hole from 3709 m to 3714 m.
20:00	POOH from 3714 m to 3674 m.
20:30	Reamed down while re-logging cored interval from 3674 m to 3678 m to qualify tie-in. Flow checked well 10 min due to bottoms up at +/- 700 m.
23:00	Logged down from 3678 m to 3688 m. Rerouted returns to poorboy degasser due to increase in gas readings (4,2 pct). Continued logging from 3688 m to 3714 m.
23:59	Drilled 8 1/2" hole from 3714 m to 3720 m.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 28                      **Date:** 2000-11-10  
**Midnight depth :** 3743 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,61 sg

Stop time	Description
03:00	Drilled 8 1/2" hole from 3720 m to 3743 m. Had drilling break at 3741 m. Resistivity increase at 3738 m.
03:30	Flow checked 10 min. Circulated bottoms up from 3743 m to +-600 m.
04:00	Flow checked well 30 min.
07:30	Circulated bottoms up for sample and evaluated same. Max gas 3,9 pct.
08:00	Pulled 3 stands wet from 3743 m to 3640 m.
08:30	Flow checked well 10 min. Pumped slug.
10:00	POOH from 3640 m to 3076 m.
14:00	POOH from 3076 m to 284 m.
15:30	POOH with BHA and racked same.
16:30	Ran in hole core barrel from derrick. Picked up aluminum innerbarrels.
17:30	Ran in hole with core barrel no 2 on BHA from 30 m to 284 m.
23:00	Ran in hole with core barrel no 2 on drill pipe from 284 m to 3685 m.
23:30	Washed down from 3685 m to 3743 m to tag bottom.
23:59	Commenced circulating bottoms up from 3743 m.

**Daily report no :** 29                      **Date:** 2000-11-11  
**Midnight depth :** 3771 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,61 sg

Stop time	Description
00:30	Continued circulating bottoms up from 3743 m to 650 m. Flow checked 15 min.
01:00	Dropped ball and circulated same down with 1000 lpm/78 bar. Seated same after 1026 strokes with 90 bar. Took SCR.
03:00	Cut core from 3743 m to 3770 m.
03:30	Broke core with 5 ton over pull. Flow checked 15 min.
06:00	POOH with core barrel from 3770,5 m to 9 5/8" casing shoe.
08:30	POOH with core barrel from 3055 m to 2258 m.
09:30	POOH with core barrel from 2258 m to 1500 m.
13:00	POOH with core barrel from 1500 m to 426 m.
14:00	POOH with core barrel from 426 m to 200 m.
15:00	POOH with core barrel from 200 m to surface.
16:00	Held prejob safety meeting. Recovered core no 2 and laid out inner barrels.
18:30	Evaluated core.
19:30	Made up core assembly, made up safety joint and core head.
20:30	Ran in hole with core assembly no 3 on BHA.
23:59	Ran in hole with core assembly from 284 m to 3113 m.

**Daily report no :** 30                      **Date:** 2000-11-12  
**Midnight depth :** 3786 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,61 sg

Stop time	Description
01:30	Ran in hole with core assembly no 3 from 3113 m to 3714 m.
02:00	Washed down from 3714 m to tag bottom at 3771 m.
02:30	Dropped ball and circulated down same with 1000 lpm/81 bar. Seated same after 1035 strokes with 100 bar. Took SCR.
04:30	Cut core no 3 from 3771 m to 3786 m.
05:00	Flow checked well.
07:00	POOH with core no 3 from 3786 m to 3094 m.
09:00	POOH from 3094 m to 1500 m.
12:30	POOH from 1500 m to 426 m.
13:30	POOH from 426 m to 228 m.
14:30	POOH from 228 m to surface.
15:30	Held safety meeting and laid out core no 3.
16:30	Made up new alluminum inner barrels and new core head.
17:30	Ran in hole with coring assembly no 4 on BHA.
21:30	Ran in hole with coring assembly from 289 m to 3070 m.
23:00	Performed slip and cut on drilling line.
23:59	Ran in open hole from 3070 m to 3726 m with coring assembly.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 31                      **Date:** 2000-11-13  
**Midnight depth :** 3809 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,61 sg

Stop time	Description
01:00	Washed down to tag bottom at 3786 m.
01:30	Dropped ball and circulated same down with 1000 lpm/82 bar. Landed ball with 102 bar after 1300 strk..
05:30	Cut core no 4 from 3786 m to 3809 m.
06:00	Flow checked and pumped slug.
09:30	POOH from 3809 m to 1500 m.
12:30	POOH from 1500 m to 460 m.
13:30	POOH from 460 m to 230 m.
15:00	POOH from 230 m to surface.
16:00	Held pre-job safety meeting and laid out core no 4.
16:30	Made up new alluminum inner barrels and core head.
23:00	Ran in hole with coring assembly no 5 from surface to 3759 m.
23:30	Washed down and tagged bottom at 3809 m.
23:59	Dropped ball and circulated down same with 1000 lpm/84 bar. Seated ball with 102 bar.

**Daily report no :** 32                      **Date:** 2000-11-14  
**Midnight depth :** 3852 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,61 sg

Stop time	Description
04:30	Cut core no 5 from 3809 m to 3837 m.
05:00	Flow checked well and pumped slug.
08:30	POOH with core no 5 from 3837 m to 1500 m
11:00	POOH from 1500 m to 700 m.
13:00	POOH from 700 m to 231 m.
14:00	POOH from 231 m to surface.
15:00	Held safety meeting and laid out core no 5.
16:00	Made up new alluminum innerbarrels. Inspected corehead and made up again.
20:30	Ran in hole with coring assembly no 6 from surface to 3074 m.
22:00	Ran in open hole with core barrel from 3074 m to 3809 m. Washed down last stand and tagged bottom at 3837 m.
22:30	Dropped ball and circulated down same with 1000 lpm/79 bar. Seated same with 95 bar.
23:59	Cut core no 6 from 3837 m to 3852 m.

**Daily report no :** 33                      **Date:** 2000-11-15  
**Midnight depth :** 3864 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,61 sg

Stop time	Description
02:00	Continued cutting core no 6 from 3852 m to 3864 m.
02:30	Flow checked 15 min. Pumped slug.
04:00	POOH with core no 6 from 3864 to 3068 m.
05:30	POOH from 3068 m to 1500 m.
08:00	POOH from 1500 m to 700 m.
09:30	POOH from 700 m to 230 m.
11:30	POOH from 230 m to surface.
12:30	Held prejob safety meeting and laid out core no 6. Racked core barrel in derrick.
13:00	Cleared rig floor.
14:00	Made up 8 1/2" drilling BHA with new bit. Initialized RAB and CDR tools.
14:30	Changed out power pulse tool.
19:30	Tested MWD tool and ran in hole with drilling assembly to 3720 m.
20:00	Attempted to establish communication with downhole tools.
20:30	Lost mud on shakers. Changed screens.
21:00	Attempted to get communication with downhole tools. Circulating 2000 l/min.
23:59	Reamed for logging of cored interval from 3720 m to 3785 m.

**Daily report no :** 34                      **Date:** 2000-11-16  
**Midnight depth :** 3930 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,60 sg

Stop time	Description
03:00	Continued to ream for logging over cored section from 3785 m to 3864 m.
11:00	Drilled 8 1/2" hole from 3864 m to 3930 m.

Norsk Hydro

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 34                      **Date:** 2000-11-16  
**Midnight depth :** 3930 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,60 sg

Stop time	Description
12:30	Circulated for samples, flow checked for 15min.
17:30	Pumped slug, pulled out of hole. Flowchecked 10min. at shoe and performed kick drill, 45 seconds to install valve.
18:00	Laid out monel DC, stabs and MWD tools.
19:00	Laid out core bbls.
19:30	Started to rig up Schlumberger.
20:00	Prepared Schlumberger tools and held pre job meeting.
21:00	Made up AIT/ LDS/ APS tool string.
23:59	RIH with log no. 1- AIT/ LDS/ APS.

**Daily report no :** 35                      **Date:** 2000-11-17  
**Midnight depth :** 3930 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,60 sg

Stop time	Description
05:00	Continued to run log no.1 - AIT/ LDS /APS.
06:00	Laid out AIT/ LDS/ APS tool string.
08:00	Made up UBI / DSI tool string.
16:30	RIH with log no.2 - UBI / DSI.
17:30	Laid out UBI / DSI tool string.
19:30	Prepared and picked up MDT / GR- samplig tool string.
23:59	RIH with MDT/GR-sampling tools, stuck at 3705 and 3929m ,worked tool loose with max pull 8300lbs.to 3921m. Pulled out to above 3705m stuck point, RIH to 3918m, checked tool free up and started to to take press. points from TD.

**Daily report no :** 36                      **Date:** 2000-11-18  
**Midnight depth :** 3930 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,60 sg

Stop time	Description
20:00	Continued to run MDT/ GR taking pressure points from 3880m and samples from 3748m.
21:30	Laid down MDT/ GR - sampling tool string.
22:00	Prepared MSCT while moved deck cargo away from area restricted by Schlumberger cable.
23:00	Rigged up Schlumberger MSCT.
23:59	RIH with MSCT- sidewall coring assembly.

**Daily report no :** 37                      **Date:** 2000-11-19  
**Midnight depth :** 3930 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,60 sg

Stop time	Description
03:00	Continued to RIH with MSCT, experiensed power failure to core cutter motor, POOH with MSCT.
04:00	Checked cable, head and tool string. Laid down MSCT.
07:00	Prepared and made up Schlumberger CMR- ECS- VSP tool string.
23:59	RIH with Schlumberger CMR- ECS- VSP.

**Daily report no :** 38                      **Date:** 2000-11-20  
**Midnight depth :** 3930 m MD              **Estimated PP:** 1,47 sg              **Mud weight:** 1,60 sg

Stop time	Description
01:00	Broke down and laid out Schlumberger CMR- ECS- VSP.
01:30	Rigged down Schlumberger.
03:00	Pulled diverter, made up jet tool and BOP test tool, RIH to test BOP.
04:00	Made up top drive, broke circulation, experienced problems with cold Hi-Viscosity mud.
08:00	Landed BOP test tool and commenced BOP testing.
10:00	POOH with BOP test tool, laid down same.
10:30	Rigged up Schlumberger.
23:59	Made up new Schlumberger CMR tool and RIH with same.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 39                      **Date:** 2000-11-21  
**Midnight depth :** 3930 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
04:00	Continued to run new Schlumberger CMR tool, broke down and laid out same.
07:30	Prepared and picked up Schlumberger CST.
16:30	Run Schlumberger CST.
17:30	Laid down tools and rigged down Schlumberger.
18:00	Cleaned up drill floor, installed mouse hole and prepared to pick up cement head.
19:30	Prepared cement head and racked back in derrick.
23:59	Made up 8 1/2" BHA and RIH while circulating on riser.

**Daily report no :** 40                      **Date:** 2000-11-22  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
02:00	Continued to RIH, broke circulation at casing shoe - OK.
04:30	Continued to RIH to TD.
05:00	Made up top drive, broke circulation and established full circulation rate. Work pipe to bottom at controlled rate to clean hole. 2m fill on bottom.
12:00	Drilled 8 1/2" hole from 3930 to 3975m.
14:00	Circulated to clean hole, flow checked-neg. Dropped 2 1/2" drift.
16:00	POOH to csg. shoe, flow checked-neg.
16:30	Continued to POOH, record torque and press readings at liner hanger depth.
21:00	Continued to POOH, racked back BHA.
21:30	Laid out rotary bushings and installed FM slips for 7" liner.
22:30	Cleaned up rig floor and rigged up to run liner.
23:00	Held pre-job meeting and picked up 7" liner shoe joint.
23:59	Charged nitrogen dampener on casing tong guide arm, was discharged and not working.

**Daily report no :** 41                      **Date:** 2000-11-23  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
00:30	Continued to charge nitrogen to casing tong guide arm cylinder dampener.
07:00	Continued to run 7" liner to 652m.
10:00	Held pre-job meeting with new crew and continued to run 7" liner to 1019m.
12:00	Changed out bails and elevators, picked up hanger and circulated liner with 1000LPM at 76 bar.
16:30	Continued to RIH with 7" liner on 5" DP to 9 5/8" casing shoe.
17:00	Took readings as per Baker OIL Tools instruction, Circulated liner - 800lpm at 80bar.
19:30	Continued to run liner to 3930m.
20:00	Picked up last stand and washed down from 3930 to 3959m with 830LPM at 60bar.
20:30	Picked up cement stand, washed to bottom at 3975m with 800LPM at 60bar.
21:30	Tagged bottom, checked all figures while circulating annulus volume. Spaced out liner, dropped ball and circulated down same with 800LPM.
22:00	Landed ball, pressured up string to 130bar to set hanger-no success. Repeated procedure with 140bar, sat hanger at 2939,5m and shoe at 3974m. Sheared ball seat at 217bar.
23:59	Circulated well at 1300LPM at 65bar to reduce BHT while preparing to pump spacers and cement.

**Daily report no :** 42                      **Date:** 2000-11-24  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
01:00	Continued to circulate well at 1300LPM with 65bar to reduce BHT.
02:00	Held pre-job meeting, pumped 4,2m3 base oil and 8m3 spacer . Dropped dart no.1.
03:00	Mixed and pumped 18,2m3 cement slurry and displaced to rig floor. Dropped dart no.2.
03:30	Displaced cement with rig pumps at 1300LPM. Bumped plug 3304 strokes, pressure tested liner to 270bar -10 min - OK.
04:00	Sat liner hanger packer with 60 ton.
05:00	Released from liner hanger and POOH, sat back cement head and prepared for reverse circulation.
06:00	Reverse circulated excess cement with 950LPM at 145bar.
08:00	Circulated bottoms up from liner top.
09:30	Attempted to pressure test liner lap- no success. Bled from 200 to 103bar in 5 min, next attempt from 127 to 116bar in 5 min.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 42                      **Date:** 2000-11-24  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
13:00	WOC.
14:00	Flow checked , rigged down cement hose.
15:00	Slipped and cut drill line.
19:00	Slugged pipe, POOH with liner running tool.
20:30	Laid out liner running tool and cement head.
21:00	Cleaned drill floor and greased blocks.
22:30	Picked up 4 3/4" DC's, made up bit and 7" scraper.
23:59	Picked up 3 1/2" DP while RIH.

**Daily report no :** 43                      **Date:** 2000-11-25  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
03:30	Continued to pick up 3 1/2" DP while RIH
04:00	Made up PBR mills and 9 5/8" casing scraper.
10:00	Moved HWDP in derrick and continued to RIH with 5" DP to 3640m, started to work pipe and casing scraper running in hole.
11:00	Broke circulation, entered PBR with mill and sat down 70 ton. Top PBR- 2942,6m.
12:00	Pressure tested liner / casing and liner lap to 270bar for 10min-OK.
14:00	Dressed off PBR with PBR and Top Dress mill, circulated bottoms up.
21:00	Flow checked, slugged pipe and POOH.
21:30	Circulated down kill line, closed blind / shear rams. Pressure tested liner / casing and liner lap to 470 bar for 10 min. - OK.
22:30	Picked up and made up JM packer, prepared to RIH with same.
23:59	RIH with JM packer at controlled slack off rate- 3 min. per stand.

**Daily report no :** 44                      **Date:** 2000-11-26  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
07:30	Continued to RIH with JM packer, slack off rate 3min. per stand.
09:00	Sat JM packer as per Baker procedure, top of PBR- 2935.6M.
12:30	POOH, laid down packer R/T.
13:00	Cleared rig floor, laid out mouse hole and rigged up to run Schlumberger.
13:30	Made up Schlumberger tools.
18:00	Ran Schlumberger CBL-VDL.
19:30	Laid down and rigged down Schlumberger.
20:30	Rigged up Odfjell to run perforation guns, BHA and tubing for DST no.1.
22:00	Started to RIH with perf. guns. Found gun contaminated with SW when removing protector.
23:00	Laid out guns from rotary and checked same -OK
23:59	Picked up guns and continued to RIH with same.

**Daily report no :** 45                      **Date:** 2000-11-27  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
01:00	Continued to RIH with perforating guns.
03:30	Changed elevator, picked up firing head and gun release assies and RIH with same.
06:00	Continued to RIH with gauge assies, perforated tubing, packer and DST bottom hole assembly.
10:30	Continued to RIH with 4 3/4" DC's.
11:30	Rigged up and pressure tested DST / BHA to 620bar - 10min. -OK.
22:00	Continued to RIH picking up 3 1/2" PH6 tubing to 1822m.
22:30	Rigged up and pressure tested tubing to 620bar-10min.-OK.
23:59	Continued to RIH picking up 3 1/2" PH6 tubing to 2023m.

**DAILY REPORT ON WELL 64077-6**

**Daily report no :** 46                      **Date:** 2000-11-28  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
08:00	Continued to RIH picking up 3 1/2" PH6 tubing to 3410m.
08:30	Filled pipe and removed diverter bag.
09:30	Prepared to pressure test DST.
10:30	Prepared equipment for SSTT and 5 1/2" termo tubing.
12:30	Made up x/o, hanger and SSTT. Attached controll lines and checked unlatch function on SSTT.
13:30	Filled up SSTT and pressure tested string / SSTT to 620bar.
14:00	Tested controll lines, inflow tested check valves and SSTT.
19:00	RIH with 5 1/2" termo tubing to 3732m.
21:00	Ran lower and upper lubricator valves and centralizers, installed injection lines and pressure tested same - OK.
23:30	Filled string with diesel and function tested lubricator valves as per programme.
23:59	BJ changed bleed off valve at cement unit due to leak.

**Daily report no :** 47                      **Date:** 2000-11-29  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
01:30	Continued to pressure test while de-ballasting rig 1,5m, laid down test tools.
02:30	RIH with 5 1/2" termo tubing, changed bails and elevators, connected sub to top drive and attach winch.
03:00	Held pre-job and SJA meeting prior to pick up surface tree.
07:00	Picked up surface test tree, sat in mouse hole, installed production and kill line Coflexip hoses on same. Made up surface tree to test string.
10:00	Rigged up wireline BOP and controll hoses. Hooked up Halliburton controll lines for flowhead. Function tested wireline BOP.
11:30	Continued to pressure test surface system according to programme.
12:30	Investigate leak on cement unit and bleed off valve.
15:00	Continued to pressure test bleeding off through mud manifold to trip tank.
16:00	Rigged up Maritime Well for corr. logging.
17:00	Attempted to RIH with GR / CCL, stopped at lower lubricator valve. Cycled valve, still no go. Equalized pressure and opened valve.
18:00	Continued to RIH with GR / CCL, shut in well on wireline BOP when well discharged diesel.
18:30	Stopped to monitor annulus pressure on trip tank - negative. Opened wireline BOP, POOH to check cable for damage - OK.
23:30	Continued to RIH with wire line, performed corr. and POOH. Retrieved 1000m of damaged cable. Rigged down Maritime.
23:59	Walked lines, started to perform PSD1 and PSD2 testing.

**Daily report no :** 48                      **Date:** 2000-11-30  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
01:00	Continued to perform PSD1 and PSD2 testing.
02:00	Sat packer, closed MPR and tested annulus to 35bar- OK. Pressured up tubing to 200bar and annulus to 140bar.
05:00	Pressured up tubing to 600bar to fire perforating guns. Bled down to 197bar, no indication of guns firing. Made two attempts in tester valve opening and guns firing procedures, no success.
09:30	Rigged up Maritime Wireline to verify LPR-N test valve position. Maintained 145-150 bar on annulus. Well closed in on HB choke.
10:00	Closed LPR. Bled off choke line and opened MPR. Circulated 2 x choke volume down choke line and up riser w/20 SPM. Choke line friction = 48 bar.
12:30	Continued to rig up wireline and pressure tested lubricator to 600 bar.
13:30	RIH w/wireline. Unable to pass through Subsea Lubricator Valve. Made several attempts to open same.
15:30	Passed through SSLV and RIH w/wireline to 3630 m. Tagged and found LPR-N test valve closed.
18:00	POOH w/wireline. Pulled tools into tool catcher.
20:00	Bled back tubing. 179 l back. Pressured up tubing to 200 bar. 222 l. Bled annulus volume back 1050 l.
22:00	Pressured up tubing to 20 bar, pressured annulus to 250 bar. Down hole test valve opened and the tubing pressure increased suddenly from 115 bar, stabilized at 80 bar.
23:00	Closed lubricator valve and rigged down wireline tool.
23:59	Held prejob meeting, checked surface lines & valves. Pressured up tubing to 600 bar, with 250 bar on annulus. Bled tubing down to 180 bar and fired TCP guns.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 49                      **Date:** 2000-12-01  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
02:00	Pressure build up against Halliburton choke manifold. Max WHP: 238.4 bar
23:59	Flowed well for clean up and main flow. Choke: 40/64". Oil rate 214 Sm <sup>3</sup> /d. Gas rate: 140.000 Sm <sup>3</sup> /d. WHP: 75 bar.

**Daily report no :** 50                      **Date:** 2000-12-02  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
02:00	Continued to flow with 40/64" choke.
23:59	Shut in well at LPR-N for main build up and bled down tubing to 55 bar before closing Halliburton choke manifold.

**Daily report no :** 51                      **Date:** 2000-12-03  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
02:00	Continued with shut in well for main build up.
02:30	Bled annulus pressure to 0. Opened MPR and displaced 2.5 m <sup>3</sup> baseoil down chokeline. Closed MPR.
03:30	Pressured 272 bar down annulus and opened LPR-N test valve. Closed lower SSLV with 310 bar surface pressure below.
06:00	R/U PLT and 4 bottom hole samplers on wireline.
10:00	RIH w/PLT and BHS on wireline to 3780 m.
12:00	POOH due to increasing heave (max 2.65 m). Bled off annulus and closed and inflow tested LPR-N test valve. Pulled wireline tools in tool catcher. Closed SSTT. Bled off pressure in landing string.
23:59	WOW. 12:00 hrs: Max heave 3.0, period 10 s. 24:00 hrs: Max heave 2.0 m, period 8 s.

**Daily report no :** 52                      **Date:** 2000-12-04  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
06:00	WOW. 0:00 hrs: max heave: 2 m, period = 8 s, 5:00 hrs: max heave 1.8 m, period 8 s. 6:00 hrs: max heave 1.5 m. Commence to rig up WL tools.
07:00	Commence to rig down wireline tool. @ 6:40 hrs wireline broke in rope socket, and droppet down on closed upper SSLV.
08:00	Held meeting to plan fishing operation. Performed SJA on fishing with jar on rig tigger. Max heave 1.25 m.
10:30	Rigged down wireline lubricator. Prepared equipment for fishing.
12:00	RIH w/fishing assy on air tigger. Latched and pulled part of fish OOH. 1.85 m fish left in hole.
14:30	RIH w/overshot on wireline. Two attempts. No go.
16:30	Installed and RIH extra hydraulic jar. Several attempts to jar. No go.
18:00	R/D wireline and wireline BOP.
21:00	Held prejob meeting. Flushed through Surface Test Tree with OBM to Halliburton tank. Closed LSSLV. Disconnected Sub Sea Test Tree w/30 ton overpull. Closed SBR.
23:59	Set STT in mousehole. Discovered that swivel joint was partly backed out from Lower Master Valve connection. Remade connection with chain tongs (Right Hand). Pressure tested connection OK to 600 bar.

**Daily report no :** 53                      **Date:** 2000-12-05  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
03:00	POOH upper SSLV. Removed remaining fish.
08:00	M/U back up SSLV to test string. M/U side-entry sub w/kelly cock and chicksan, and bled off gas in landing string through rig choke to poor boy degasser. Pressure tested new USSLV.
12:00	POOH to LSSLV and changed plugged injection line. Deballast rig 1 m.
13:30	P/U flowhead and installed same.
14:30	Closed USSLV. Commenced to rig up wireline. Suspended operation due to winds over 40 knots.
18:00	WOW. Ballasted rig to drilling draft.
18:30	Pressure tested string against swab, test choke and USSLV 500 bar/10 min. OK.
22:00	Rigged up wireline lubricator, BOP & grease injector head.
23:59	Flushed 3 m oilbased mud. Opened SBR. Displaced the landing string with 2000 ltr. baseoil. Landed and connected landing string to SSTT valve section. Overpull tested to 30 ton.

**DAILY REPORT ON WELL 64077-6**

**Daily report no :** 54                      **Date:** 2000-12-06  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
02:00	Opened SSTT. Pressure tested test string against LPR-N valve to 500 bar/10 min. Closed SSTT, bled off to 20 bar and inflow tested SSTT for 10 min. Equalized pressure and opened SSTT.
03:00	Bled back pressure to 220 bar to Halliburton choke. Pressured annulus to 250 bar and opened LPR-N. Pumped 1400 l. Closed LSSLV, bled to 5 bar above and inflow tested for 10 min. Bled off remaining pressure and closed USSLV.
06:00	Rigged up PLT/BHS tool. M/U wireline grease injector head.
06:30	Attempted to open kill valve. No indications of valve open. Troubleshoot and found hydraulic pump to be lacking oil. Opened kill valve.
09:30	Pressured up string to open USSLV. Problem to open USSLV. Leak in SSTT between control line and balance line. Troubleshoot valve problems.
13:00	WOW. Heave max 2.3 m. Wind 30-40 knots.
16:30	Rigged down wireline tool string, lubricator and WL BOP.
18:00	Held pre job meeting, and prepared to kill the well.
18:30	Bullheaded 16.3 m3 kill mud w/470 bar max pressure while keeping 230-240 bar on the annulus to retain the LPR-N valve open.
21:00	Monitored wellhead pressure dropping from 250-155 bar after 10 min.
23:00	Started mini frac procedure. Pumped 2,5 m3 kill mud to formation.
23:59	Opened choke and started bleeding down well head pressure in increments from 139 bar to 0 bar. Bled back totally 1,5 m3.

**Daily report no :** 55                      **Date:** 2000-12-07  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
01:00	Continued to bleed off the well down, 1.8 bar back pressure and less than 50 l returns, while displacing choke line to OBM.
02:00	Closed MPR and pressured up annulus to 330 bar and sheared the RD burst valve. Bled annulus down to 0 bar and monitored same.
04:00	Reverse circulated via degasser to condition mud. No noticeable gas detection, but some variations in mud weight.
04:30	Flowchecked well OK.
05:30	Opened MPR and unseated test packer w/115-120 ton upweight. No overpull. Landed string back in wellhead. Closed MPR. Bullheaded 3.7 m3 kill mud down choke line. Flowchecked well 30 min, 2 m3 returns before stabilization.
11:00	Circulated long way up choke line and via poor boy degasser. Gain in active pit @ 7:40 hrs. Flowchecked 15 min OK. 3% gas @ 10:15 hrs, flowchecked 15 min OK. Opened MPR, flowchecked 15 min OK.
14:30	Circulated bottoms up through riser w/1100 lpm and 305 bar. Gas peak @ 2.3% after 2500 stk. Flowchecked 15 min OK. Pumped 4 m3 1.90 SG slug.
15:00	Flushed all lines to separator.
18:00	R/D flowhead, 50 ft bails and flexible hoses. L/D on deck.
23:00	POOH 5 1/2" thermo tubing. L/D in singles.
23:59	L/D SSTT, control panels and elevator. Tidy rig floor while flow checking OK.

**Daily report no :** 56                      **Date:** 2000-12-08  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
00:30	Reinstalled SSTT & lined up latch for transport clamp. L/D SSTT.
06:00	Installed diverter insert packer. POOH & L/D 3 1/2" tubing. Increased speed inside 9 5/8" casing to up to 2 min/jnt.
15:00	Changed elevators & L/D slip joint assys. Racked 4 stds 4 3/4" DC.
17:30	Continued to pull & L/D tubing assys.
18:00	Changed to short bails & 5" auto elevator. Lay out csg tong & mousehole.
23:59	R/U & RIH w/7" bridge plug on wireline. Set same @ 3650 m. POOH.

**Daily report no :** 57                      **Date:** 2000-12-09  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
02:00	Continued to POOH w/wireline. R/D wireline equipment. Pressure tested bridge plug to 290 bar/ 15 min. OK. 1560 l pumped, and 1560 l in returns.
05:30	L/D 4 3/4" DC. Changed elevator, inserts on IRN and inserts on guidearm.
06:00	M/U 9 5/8" bridge plug on drill pipe.
07:30	RIH w/ 9 5/8" bridge plug on 12 stds of 3 1/2" drill pipe.
08:00	Changed elevator, racking arm lift head and IRN spacers.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 57                      **Date:** 2000-12-09  
**Midnight depth :** 3975 m MD              **Estimated PP:** 1,53 sg              **Mud weight:** 1,61 sg

Stop time	Description
12:00	RIH w/5" drill pipe from 352-2491 m.
13:00	Continued to RIH from 2492-2888 m. Dropped ball. M/U cement std to DDM & RIH to 2907 m.
14:00	Installed cement hose and POOH to 2900 m. Circulated ball down w/320 lpm & 29 bar. Ball seated after 563 stks. Increased pressure to 200 bar w/58 stks & released setting tool. Pulled back 10 m and closed MPR.
15:00	Lined up and pressure tested bridge plug to 360 bar. OK.
17:00	Pumped 5 m3 spacer, 10 m3 cement & displaced w/0.5 m3 spacer. Displaced cement w/20.7 m3 1.61 SG mud @ 1142 lpm & 185-199 bar. B/O cement std & rig down cement hose. Racked cement stand.
23:00	POOH w/cement stinger from 2887 m.
23:59	RIH D-Q Multi Purpose Tool w/jet sub, 1 std HWDP and bull nose jet sub. Unseated wear bushing.

**Daily report no :** 58                      **Date:** 2000-12-10  
**Midnight depth :** m MD              **Estimated PP:** sg              **Mud weight:** 1,61 sg

Stop time	Description
01:30	POOH w/ 9 5/8" wear bushing. Wash BOP & wellhead on the way out.
02:00	RIH w/ Multi Purpose Tool. Set down 5 ton on seal assy. Closed Lower Annular Preventer and unseated seal assy.
04:00	Flowchecked. No pressure on choke line. Opened LAP. Gained 550 l. Closed LAP. Flowchecked on trip tank. Negative. Attempted to circulate through kill & choke lines. No go. Repaired jammed push button for choke line fail safe valve.
04:30	Monitored 10 bar pressure on the string. Lined up w/ external hose to pump down chokeline and up string. Pumped chokeline and string volumes w/ 50 bar & 4-5 strokes. No gas.
06:30	Flowchecked to trip tank through string. 3.6 m3 returns. Opened annular and flowchecked. 500 l / 5 min. Decreasing trend.
08:00	POOH w/seal assy. Flowchecked 5 min prior to pulling diverter insert.
08:30	Tidied rig floor.
09:30	M/U 9 5/8" casing cutter & RIH to 1166 m.
10:30	M/U bumper sub and rotating swivel. Installed diverter element. RIH & land in 9 5/8" casing.
11:30	Cut 9 5/8" casing @ 1164.4 m. Pressure drop 52 bar. Picked up 125 ton and rotated string. Pumped slug.
13:30	POOH w/casing cutting assy & L/D same.
14:00	M/U & RIH casing spear assy to 30 m.
14:30	Tidied up rig floor. Greased blocks & DDM.
16:30	RIH, latched & POOH w/ 9 5/8" casing. Hanger in rotary.
17:30	Laid out master bushings & split outer ring. Installed FMS. L/D spear assy & casing cutting assy.
19:00	R/U to pull casing. Installed 500 ton bails and BX-elevator.
20:00	Unable to function BX-elevator. Changed to 350 ton bails and side door elevator.
22:30	POOH w/ 9 5/8" casing.
23:00	Changed from 150 ton to 350 ton sidedoor elevators due to oversized casing.
23:59	Continued to POOH w/ 9 5/8" casing.

**Daily report no :** 59                      **Date:** 2000-12-11  
**Midnight depth :** m MD              **Estimated PP:** sg              **Mud weight:** 1,60 sg

Stop time	Description
02:00	Continued to POOH 9 5/8" casing. Total pulled: 63 jnts + hanger + cut jnt.
03:00	R/D casing equipment.
04:00	Repaired damaged hose on standlift.
07:00	RIH w/ Parabow on cement stinger to 1150 m. M/U cement stand.
08:30	Circulate 10 m3 mud w/800 lpm while reciprocating pipe. Dropped and circulated ball down w/800 lpm & 57 bar. Seated ball after 484 strokes & pressure increase to 60 bar. Pulled back 3 m.
10:00	Pumped 10 m3 spacer & 45 m3 cement (39 m3 silica + 6 m3 'G'). Displaced w/ 200 l spacer & 5.7 m3 1.60 SG mud.
12:30	B/O cement hose & POOH from 1147-800 m. Circulated string volume w/2800 lpm, pumped slug & POOH to 655 m.
14:00	L/D 33 jnts 5" rental pipe.
14:30	Changed over to 3 1/2" equipment.
15:00	Changed out sheared bolt on IRN die carrier.
15:30	POOH 5 stds 3 1/2" pipe.
17:30	L/D 48 jnts rental 3 1/2" pipe.
19:00	Changed elevators & L/D 6 x 4 3/4" DC from derrick.
20:30	Changed elevator, inserts in standlift & IRN. Rearranged pipe to get access to 5" rental pipe (3 1/4" ID).
23:59	RIH w/ 5" pipe & L/D same.

**DAILY REPORT ON WELL 64077-6**

**Daily report no :** 60                      **Date:** 2000-12-12  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 1,60 sg

Stop time	Description
02:30	Continued to L/D 5" drill pipe.
03:30	Removed diverter insert. L/D hang off tool. R/U to run BHA.
04:30	M/U & RIH w/ 17 1/2" bit on 6 1/2" DC & HWDP.
06:00	Continued to RIH 17 1/2" bit.
07:30	Fill up pipe & wash down from 800-932 m w/2080 lpm, 124 bar. Tagged cement & set down 10 ton.
10:00	Circulated bottoms up w/2900 lpm, 230 bar. Soft to moderate hard cements over shakers. Closed MPR and tested cement plug 106 bar/10 min OK.
12:00	Pumped 7 m3 baseoil & 9 m3 HiVis spacer. Displaced w/seawater.
13:00	POOH to 360 m.
18:00	Flushed mud system & displaced soap pills. Pumped 13 m3 soap pill down to BOP & displaced to surface w/seawater. Pumped continuously to clean returns.
18:30	Installed rotary bushings. Flushed kill & choke lines.
19:30	POOH 5" drill pipe.
22:00	Change elevator & L/D 6 1/2" DC & bit.
23:00	Tidied rig floor.
23:59	Hung off the block, slipped & cut drilling line.

**Daily report no :** 61                      **Date:** 2000-12-13  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 1,60 sg

Stop time	Description
02:00	R/U to pull BOP & riser.
03:00	P/U & L/D diverter
04:00	P/U landing joint and collapsed slip joint.
05:00	Overpull tested 45 ton. Prepared to and disconnected BOP.
06:00	Moved rig 30 m starboard. Rigged hoses & lines.
08:30	Removed pump & hoses from load ring and cleaned same. Undid storm loops from hoses.
09:00	Brakeband on drawwork slipping due to hydraulic oil leak. Work brake.
10:00	Locked hydraulic loading into diverter housing. L/D landing joint.
11:00	P/U slip jnt. Removed mud bucket & L/D slip jnt.
17:00	Pulled & L/D riser from 330-50 m.
18:00	Prepared to pull BOP to surface.
20:00	Pulled BOP into guide funnels & secured same. Landed BOP on carrier.
23:59	B/O double riser. Pressure tested connector. Removed guide lines & pod lines. Moved BOP to park position. L/D double riser. R/D riser handling equipment.

**Daily report no :** 62                      **Date:** 2000-12-14  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 1,60 sg

Stop time	Description
00:30	Changed to 5" handling equipment.
01:00	Transferred cutting equipment from riser deck to rig floor. M/U lifting subs.
03:30	M/U cutting BHA.
05:00	RIH w/ casing cutting equipment. Attached guideropes to guidewires.
06:00	Attempted to stab cutting assy into wellhead. No go. POOH.
08:30	POOH and changed stabilizers.
11:00	Made up new guide ropes and ran in hole to 350 m. Stabbed into wellhead and landed cutting assembly in wellhead.
18:00	Cut casing at 367 m with 2800 lpm/55 bar.
18:30	Attempted to pull wellhead free. No success.
19:30	Released and POOH with cutting assembly.
23:00	Laid out motor, installed rotating spear and bumper sub. Attached guide ropes.
23:59	Ran in hole with cutting assembly on high tensile string to 351 m.

**Daily report no :** 63                      **Date:** 2000-12-15  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 1,60 sg

Stop time	Description
00:30	Changed to 500 t elevator and ran in hole from 351 m to wellhead with rotating spear assembly.
01:00	Pulled rig into center position.

**DAILY REPORT ON WELL 6407/7-6**

**Daily report no :** 63                      **Date:** 2000-12-15  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 1,60 sg

Stop time	Description
01:30	Made several attempts to stab assembly into wellhead. Succeeded at 01:24 hrs.
04:00	WOW. Monitored for heave. Max heave 3,5 m.
06:00	WOW. POOH to lay down drill pipe.
06:30	WOW. Laid out air operated elevator and 500 ton bails. Picked up 350 ton equipment.
11:30	WOW. Ran 5 stands 5" HWDP through rotary table. Laid out same. Changed to 3 1/2" handling equipment. Ran 3 1/2" drill pipe through rotary table to +/- 350 m. Laid out same. Totally laid out 45 joints of 3 1/2" drill pipe.
12:00	WOW. Changed to 5" handling equipment.
14:00	WOW. Ran 12 stands 5" drill pipe through rotary table. Waited for deck space to lay out pipe.
23:59	WOW. Laid out out 5" drill pipe.

**Daily report no :** 64                      **Date:** 2000-12-16  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 1,60 sg

Stop time	Description
04:00	WOW. Laid out 5" drill pipe.
04:30	WOW. Laid out long bails and 350 ton elevator. Installed 500 ton bails and elevator.
05:30	WOW. Picked up rotating cutting assembly from derrick. Changed stop collar and stabilizer and installed x/o with 5" drill pipe.
08:30	WOW.
09:00	Received go ahead from stand by boat on close stand by. Re-installed master bushings and prepared rig floor for tripping.
10:00	Made up cutting assembly. Installed guide ropes.
11:00	Trouble shoot and repaired leak on iron roughneck.
12:00	Ran cutting assembly to well head.
13:00	Centered rig over well head. Pulled back and installed 500 ton elevators.
15:30	Landed in well head. Compensator locked. Not able to open isolation valve. Re-calibrated compentator.
16:30	Engaged spear and attempted to pull casing with max. 325 ton on gauge. No success.
18:30	Made up topdrive and cut casing with rotating assembly. Pulled well head free with 10 ton o/p.
19:30	Called in the towing boats and handed out pennant wires. 19:30 started anchor handling.
21:30	Retrieved anchors
23:00	Retrieved anchors.
23:59	Retrieved anchors.

**Daily report no :** 65                      **Date:** 2000-12-17  
**Midnight depth :** m MD              **Estimated PP:** sg                      **Mud weight:** 1,60 sg

Stop time	Description
01:00	Retrieved anchors.
05:30	Retrieved anchors. 05:30 all boats ready for tow. Leaving location for well 6407/7-2R.

Norsk Hydro

**TIME DISTRIBUTION**

**Well:** 64077-6      **PO:** 1      **Start date:** 1980-01-01      **Rig:** SCARABEO 6      **Depth:** 3975,0 m MD  
**All sections**      **Stop date:** 2001-08-29

<b>Operations</b>	<b>Hours</b>	<b>%</b>	<b>Hours</b>	<b>%</b>	<b>Acc. total</b>
<b>MOBILIZATION</b>					
MOVING	67,0	4,39			
MOORING; RUNNING ANCHORS	19,0	1,25			
MOORING; PULLING ANCHORS	11,0	0,72			
<b>Sum.</b>			97,0	6,36	97,0
<b>DRILLING</b>					
BHA HANDLING/TESTING	41,0	2,69			
TRIPPING IN CASED HOLE	19,5	1,28			
TRIPPING IN OPEN HOLE	10,0	0,66			
DRILLING	172,0	11,27			
OTHER	7,0	0,46			
WELLHEAD EQUIPMENT INSTALLATION	5,5	0,36			
REAMING	13,0	0,85			
CIRC. AND COND. MUD/HOLE	22,5	1,47			
WIPER TRIP	4,0	0,26			
SURVEYING	0,5	0,03			
TRIPPING/CIRC. FOR PRESSURE DETECTION	0,5	0,03			
CASING HANDLING/TESTING	14,5	0,95			
RUNNING CASING IN CASED HOLE	10,5	0,69			
RUNNING CASING IN OPEN HOLE	30,5	2,00			
PRIMARY CEMENTING	27,0	1,77			
TRIPPING FOR CEMENT JOB	4,0	0,26			
DRILLING OUT CEMENT PLUG	1,5	0,10			
FORMATION STRENGTH TESTING	4,0	0,26			
BOP HANDLING	20,0	1,31			
BOP RUNNING/RETRIEVING	15,5	1,02			
BOP TESTING	18,5	1,21			
WELLHEAD EQUIPMENT HANDLING	8,0	0,52			
SLIP AND CUT DRILLING LINE	3,5	0,23			
<b>Sum.</b>			453,0	29,70	550,0
<b>FORMATION EVALUATION MWD</b>					
LOGGING WITH MWD	3,0	0,20			
<b>Sum.</b>			3,0	0,20	553,0
<b>FORMATION EVALUATION LOGGING</b>					
LOGGING	88,5	5,80			
LOGGING EQUIPMENT HANDLING/TESTING	20,5	1,34			
<b>Sum.</b>			109,0	7,15	662,0
<b>FORMATION EVALUATION CORING</b>					
BHA HANDLING/TESTING	3,5	0,23			
CIRCULATING FOR SAMPLE	17,0	1,11			
MWD HANDLING/TESTING/SURVEYING	9,5	0,62			
TRIPPING IN CASED HOLE	94,5	6,19			
CORING EQUIPMENT/CORE HANDLING	13,0	0,85			
TRIPPING IN OPEN HOLE	28,0	1,84			
OTHER	6,5	0,43			
CORING	17,5	1,15			
CIRC. AND COND. MUD/HOLE	11,0	0,72			
SLIP AND CUT DRILLING LINE	1,5	0,10			
<b>Sum.</b>			202,0	13,24	864,0
<b>TESTING (PRODUCTION TEST)</b>					
PERFORATE	1,0	0,07			
PRODUCTION LOGGING	11,0	0,72			
RIG UP TO PERFORATE	3,5	0,23			
RUN LOGS FOR CORRELATION	10,0	0,66			
BHA HANDLING/TESTING	10,0	0,66			
TRIPPING IN CASED HOLE	17,0	1,11			
TRIPPING IN OPEN HOLE	4,5	0,29			

**TIME DISTRIBUTION**

**Well:** 64077-6      **PO:** 1      **Start date:** 1980-01-01      **Rig:** SCARABEO 6      **Depth:** 3975,0 m MD  
**All sections**      **Stop date:** 2001-08-29

Operations	Hours	%	Hours	%	Acc. total
<b>TESTING (PRODUCTION TEST)</b>					
OTHER	13,0	0,85			
CIRC. AND COND. MUD/HOLE	10,0	0,66			
CASING HANDLING/TESTING	2,5	0,16			
RUNNING CASING IN CASED HOLE	16,0	1,05			
RUNNING CASING IN OPEN HOLE	4,0	0,26			
PERFORM SCRAPER RUN/CASING CLEANING	18,5	1,21			
PRIMARY CEMENTING	8,0	0,52			
PULLING OUT OF HOLE W/PRODUCTION STRING	28,0	1,84			
PRESSURE TESTING OF DOWNHOLE EQUIPMENT	13,0	0,85			
SET MECHANICAL PLUG	8,0	0,52			
INSTALLATION OF PRODUCTION STRING	44,0	2,88			
SLIP AND CUT DRILLING LINE	1,0	0,07			
RIG UP OR DOWN WIRELINE EQUIPMENT	2,0	0,13			
FLOW PERIOD	24,0	1,57			
KILL WELL/MINIFRAC	22,5	1,47			
SHUT IN PERIOD	26,0	1,70			
<b>Sum.</b>			297,5	19,50	1161,5
<b>PLUG AND ABANDONMENT</b>					
BHA HANDLING/TESTING	3,5	0,23			
TRIPPING IN CASED HOLE	21,5	1,41			
CIRC. AND COND. MUD/HOLE	7,5	0,49			
CASING HANDLING/TESTING	1,5	0,10			
TRIPPING FOR CEMENT JOB	15,0	0,98			
DRILLING OUT CEMENT PLUG	1,5	0,10			
BOP HANDLING	13,5	0,88			
BOP RUNNING/RETRIEVING	10,0	0,66			
WELLHEAD EQUIPMENT HANDLING	9,5	0,62			
SET CEMENT PLUG	7,5	0,49			
SET MECHANICAL PLUG	3,5	0,23			
TRIPPING OF CASING CUTTING EQUIPMENT	20,5	1,34			
CUT CASING/WELLHEAD	12,0	0,79			
CASING RETRIEVING	5,5	0,36			
<b>Sum.</b>			132,5	8,69	1294,0
<b>DOWNTIME DRILLING</b>					
EQUIPMENT FAILURE AND REPAIR	20,5	1,34			
CEMENTING	0,5	0,03			
LOST CIRCULATION	3,0	0,20			
OTHER	34,0	2,23			
<b>Sum.</b>			58,0	3,80	1352,0
<b>DOWNTIME FORM. EVAL. LOGGING</b>					
EQUIPMENT FAILURE AND REPAIR	1,0	0,07			
<b>Sum.</b>			1,0	0,07	1353,0
<b>DOWNTIME FORM. EVAL. CORING</b>					
EQUIPMENT FAILURE AND REPAIR	1,5	0,10			
<b>Sum.</b>			1,5	0,10	1354,5
<b>DOWNTIME TESTING (PROD. TEST)</b>					
EQUIPMENT FAILURE AND REPAIR	53,5	3,51			
WAITING	27,0	1,77			
FISHING	40,5	2,65			
OTHER	1,5	0,10			
<b>Sum.</b>			122,5	8,03	1477,0
<b>DOWNTIME PLUG AND ABANDONMENT</b>					
EQUIPMENT FAILURE AND REPAIR	7,0	0,46			
WAITING	34,5	2,26			

### TIME DISTRIBUTION

Well: 6407/7-6      PO: 1      Start date: 1980-01-01      Rig: SCARABEO 6      Depth: 3975,0 m MD  
 All sections      Stop date: 2001-08-29

Operations	Hours	%	Hours	%	Acc. total
DOWNTIME PLUG AND ABANDONMENT					
OTHER	6,0	0,39			
SLIP AND CUT DRILLING LINE	1,0	0,07			
<b>Sum.</b> .....			48,5	3,18	1525,5
Reported time ( 100,0 % of well total 1525,5 hours) :					1525,5

## HOLE DEVIATION

Well: 64077-6 Reference point: RKB ; 26,0 m ABOVE MSL  
 Waterdepth: 335,0 m Vertical to: 358,9 m Total Depth: 3975,0 m MD  
 Utm zone: 32 Central Median: 9' E Horizontal datum: ED50  
 Template Centre Coordinates, UTM: North : 7128620,00 m, East: 412890,00 m  
 Wellhead Coordinates, UTM: North : 7131390,01 m, East: 408270,30 m  
 Official Surveys: Y Track :  
 Coordinates are measured from the wellhead centre.

Depth MD [m]	Inclination [Deg]	Direction [Deg]	Tool Type	#	Depth TVD [m]	Coordinates		Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
						North [m]	East [m]				
359,0	0,12	249,36	MWD	5	359,0	0,00	0,00	0,0	0,00	0,00	0,00
365,0	1,34	256,39	MWD	5	365,0	-0,02	-0,07	0,1	6,15	6,14	35,39
368,1	1,04	283,81	MWD	5	368,0	-0,02	-0,14	0,1	6,18	-2,92	267,08
374,3	1,29	324,84	MWD	5	374,3	0,05	-0,23	0,2	4,08	1,20	196,94
378,4	1,26	321,89	MWD	5	378,4	0,12	-0,29	0,3	0,52	-0,22	-21,38
384,4	1,16	345,43	MWD	5	384,4	0,23	-0,34	0,4	2,53	-0,50	118,29
388,7	1,15	349,22	MWD	5	388,7	0,32	-0,36	0,5	0,54	-0,07	26,50
393,7	1,23	359,69	MWD	5	393,7	0,42	-0,37	0,6	1,39	0,48	62,82
398,0	1,37	11,15	MWD	5	398,0	0,52	-0,36	0,6	2,06	0,98	80,33
401,1	1,37	356,01	MWD	5	401,1	0,59	-0,36	0,7	3,50	0,00	-146,99
411,0	1,32	357,50	MWD	5	410,9	0,82	-0,37	0,9	0,18	-0,15	4,52
418,8	1,52	30,69	MWD	5	418,8	1,00	-0,32	1,1	3,18	0,76	126,52
427,6	1,69	6,81	MWD	5	427,5	1,23	-0,25	1,3	2,35	0,58	-82,06
428,8	1,73	2,51	MWD	5	428,8	1,27	-0,24	1,3	3,22	0,96	-103,20
430,9	2,02	12,36	MWD	5	430,9	1,34	-0,23	1,4	6,18	4,14	140,71
441,2	1,28	265,88	MWD	5	441,2	1,50	-0,31	1,5	7,81	-2,16	-310,14
451,1	1,25	10,67	MWD	5	451,1	1,60	-0,40	1,7	6,08	-0,09	317,87
459,1	1,17	8,71	MWD	5	459,1	1,77	-0,37	1,8	0,34	-0,30	-7,35
468,4	1,32	3,11	MWD	5	468,4	1,97	-0,35	2,0	0,62	0,48	-18,03
497,0	1,25	9,11	MWD	5	497,0	2,61	-0,28	2,6	0,16	-0,07	6,29
525,9	0,85	21,39	MWD	5	525,8	3,12	-0,16	3,1	0,47	-0,42	12,77
554,4	0,69	28,07	MWD	5	554,4	3,47	0,00	3,5	0,19	-0,17	7,01
582,1	0,63	17,65	MWD	5	582,1	3,76	0,13	3,8	0,14	-0,06	-11,29
612,9	0,97	3,46	MWD	5	612,9	4,18	0,19	4,2	0,38	0,33	-13,83
641,1	0,80	355,21	MWD	5	641,1	4,61	0,19	4,6	0,23	-0,18	-8,77
668,8	0,92	1,33	MWD	5	668,8	5,03	0,18	5,0	0,16	0,13	6,63
698,4	0,76	354,82	MWD	5	698,3	5,46	0,17	5,5	0,19	-0,16	-6,61
726,3	0,74	4,48	MWD	5	726,3	5,83	0,17	5,8	0,14	-0,02	10,36
755,0	0,62	354,11	MWD	5	755,0	6,17	0,16	6,2	0,18	-0,13	-10,84
783,4	0,67	10,30	MWD	5	783,3	6,48	0,18	6,5	0,20	0,05	17,13
811,5	0,69	356,53	MWD	5	811,4	6,81	0,20	6,8	0,18	0,02	-14,72
839,6	0,68	357,90	MWD	5	839,6	7,15	0,18	7,2	0,02	-0,01	1,46
868,2	0,81	3,35	MWD	5	868,1	7,52	0,19	7,5	0,16	0,14	5,72
896,3	0,77	3,77	MWD	5	896,2	7,91	0,21	7,9	0,04	-0,04	0,45
925,4	0,89	5,40	MWD	5	925,4	8,33	0,25	8,3	0,13	0,12	1,68
953,4	0,94	353,27	MWD	5	953,4	8,77	0,24	8,8	0,21	0,05	-13,00

## HOLE DEVIATION

**Well:** 64077-6      **Reference point:** RKB ; 26,0 m ABOVE MSL  
**Waterdepth:** 335,0 m      **Vertical to:** 358,9 m      **Total Depth:** 3975,0 m MD  
**Utm zone:** 32      **Central Median:** 9' E      **Horizontal datum:** ED50  
**Template Centre Coordinates, UTM:**      **North :** 7128620,00 m,      **East:** 412890,00 m  
**Wellhead Coordinates, UTM:**      **North :** 7131390,01 m,      **East:** 408270,30 m  
**Official Surveys:** Y      **Track :**  
**Coordinates are measured from the wellhead centre.**

Depth MD [m]	Inclination [Deg]	Direction [Deg]	Tool Type	#	Depth TVD [m]	Coordinates		Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
						North [m]	East [m]				
981,6	0,97	348,62	MWD	5	981,5	9,23	0,16	9,2	0,09	0,03	-4,95
1010,3	1,13	7,06	MWD	5	1010,2	9,75	0,15	9,8	0,39	0,17	19,26
1036,0	1,10	354,85	MWD	5	1035,9	10,25	0,16	10,3	0,28	-0,04	-14,25
1065,7	1,15	341,39	MWD	5	1065,6	10,82	0,04	10,8	0,27	0,05	-13,62
1095,7	0,95	331,72	MWD	5	1095,6	11,32	-0,17	11,3	0,27	-0,20	-9,68
1124,4	0,95	325,42	MWD	5	1124,2	11,73	-0,42	11,7	0,11	0,00	-6,59
1152,9	0,92	318,82	MWD	5	1152,8	12,09	-0,71	12,1	0,12	-0,03	-6,93
1181,1	1,00	345,62	MWD	5	1180,9	12,50	-0,92	12,5	0,48	0,09	28,58
1209,5	0,60	340,15	MWD	5	1209,3	12,88	-1,03	12,9	0,43	-0,42	-5,78
1262,4	0,78	336,49	MWD	5	1262,3	13,47	-1,27	13,5	0,10	0,10	-2,07
1291,2	0,76	334,12	MWD	5	1291,1	13,82	-1,43	13,9	0,04	-0,02	-2,47
1350,4	0,75	334,90	MWD	5	1350,2	14,53	-1,76	14,6	0,01	-0,01	0,40
1378,3	0,72	326,84	MWD	5	1378,2	14,84	-1,94	15,0	0,12	-0,03	-8,65
1433,0	0,57	297,16	MWD	5	1432,8	15,25	-2,37	15,4	0,20	-0,08	-16,28
1492,1	0,63	300,91	MWD	5	1492,0	15,55	-2,91	15,8	0,04	0,03	1,90
1549,7	0,58	292,67	MWD	5	1549,5	15,83	-3,45	16,2	0,05	-0,03	-4,29
1606,4	0,57	301,99	MWD	5	1606,3	16,09	-3,95	16,6	0,05	-0,01	4,93
1635,0	0,52	294,62	MWD	5	1634,8	16,22	-4,19	16,8	0,09	-0,05	-7,74
1693,1	0,49	290,08	MWD	5	1693,0	16,41	-4,66	17,1	0,03	-0,02	-2,34
1750,9	0,51	282,98	MWD	5	1750,7	16,56	-5,15	17,3	0,03	0,01	-3,69
1806,1	0,52	276,39	MWD	5	1805,9	16,64	-5,63	17,6	0,03	0,01	-3,58
1860,4	0,53	270,33	MWD	5	1860,2	16,67	-6,13	17,8	0,03	0,01	-3,35
1918,4	0,59	265,34	MWD	5	1918,2	16,64	-6,70	17,9	0,04	0,03	-2,58
1976,0	0,57	270,90	MWD	5	1975,8	16,62	-7,28	18,1	0,03	-0,01	2,89
2031,8	0,64	268,29	MWD	5	2031,6	16,62	-7,87	18,4	0,04	0,04	-1,40
2090,4	0,59	266,09	MWD	5	2090,3	16,59	-8,50	18,6	0,03	-0,03	-1,13
2146,3	0,73	272,31	MWD	5	2146,1	16,58	-9,14	18,9	0,08	0,08	3,34
2202,3	0,70	267,20	MWD	5	2202,1	16,58	-9,84	19,3	0,04	-0,02	-2,73
2232,6	0,71	278,27	MWD	5	2232,4	16,60	-10,21	19,5	0,14	0,01	10,99
2288,9	0,71	279,10	MWD	5	2288,7	16,71	-10,90	19,9	0,00	0,00	0,44
2346,3	0,64	279,69	MWD	5	2346,1	16,82	-11,56	20,4	0,04	-0,04	0,31
2403,3	0,56	282,39	MWD	5	2403,1	16,93	-12,15	20,8	0,04	-0,04	1,42
2458,5	0,45	266,39	MWD	5	2458,3	16,97	-12,63	21,2	0,10	-0,06	-8,68
2515,1	0,35	279,36	MWD	5	2514,9	16,99	-13,02	21,4	0,07	-0,05	6,88
2570,2	0,23	302,06	MWD	5	2570,0	17,07	-13,28	21,6	0,09	-0,07	12,35
2628,5	0,11	339,38	MWD	5	2628,3	17,19	-13,40	21,8	0,08	-0,06	19,22

## HOLE DEVIATION

**Well:** 64077-6      **Reference point:** RKB ; 26,0 m ABOVE MSL  
**Waterdepth:** 335,0 m      **Vertical to:** 358,9 m      **Total Depth:** 3975,0 m MD  
**Utm zone:** 32      **Central Median:** 9' E      **Horizontal datum:** ED50  
**Template Centre Coordinates, UTM:**      **North :** 7128620,00 m,      **East:** 412890,00 m  
**Wellhead Coordinates, UTM:**      **North :** 7131390,01 m,      **East:** 408270,30 m  
**Official Surveys:** Y      **Track :**  
**Coordinates are measured from the wellhead centre.**

Depth MD [m]	Inclination [Deg]	Direction [Deg]	Tool Type	#	Depth TVD [m]	Coordinates		Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
						North [m]	East [m]				
2683,3	0,12	353,43	MWD	5	2683,1	17,29	-13,43	21,9	0,02	0,01	7,69
2742,5	0,20	47,73	MWD	5	2742,3	17,42	-13,36	22,0	0,08	0,04	27,54
2772,6	0,28	59,54	MWD	5	2772,4	17,50	-13,25	22,0	0,09	0,08	11,77
2826,8	0,40	79,95	MWD	5	2826,6	17,60	-12,95	21,9	0,09	0,07	11,29
2883,6	0,83	88,16	MWD	5	2883,4	17,65	-12,35	21,5	0,23	0,23	4,34
2942,5	1,04	93,60	MWD	5	2942,3	17,63	-11,39	21,0	0,12	0,11	2,77
2999,8	1,23	88,06	MWD	5	2999,6	17,61	-10,25	20,4	0,11	0,10	-2,90
3031,1	1,09	90,01	MWD	5	3030,9	17,63	-9,62	20,1	0,14	-0,13	1,87
3074,8	0,96	100,87	MWD	5	3074,5	17,56	-8,85	19,7	0,16	-0,09	7,47
3112,7	1,25	118,48	MWD	5	3112,5	17,30	-8,17	19,1	0,35	0,23	13,92
3170,0	1,38	133,00	MWD	5	3169,7	16,53	-7,12	18,0	0,19	0,07	7,61
3226,8	1,62	119,33	MWD	5	3226,6	15,67	-5,92	16,7	0,23	0,13	-7,21
3281,3	2,41	142,51	MWD	5	3281,0	14,38	-4,55	15,1	0,62	0,43	12,76
3341,5	2,88	139,50	MWD	5	3341,1	12,23	-2,80	12,5	0,24	0,23	-1,50
3397,7	2,97	148,84	MWD	5	3397,3	9,91	-1,12	10,0	0,26	0,05	4,98
3453,6	3,72	178,51	MWD	5	3453,0	6,86	-0,33	6,9	1,00	0,40	15,95
3513,7	3,78	200,22	MWD	5	3513,0	3,05	-0,96	3,2	0,70	0,03	10,83
3571,4	4,21	210,82	MWD	5	3570,6	-0,55	-2,70	2,8	0,44	0,22	5,51
3629,4	4,93	224,43	MWD	5	3628,4	-4,16	-5,54	6,9	0,67	0,37	7,04
3686,9	7,50	248,94	MWD	5	3685,6	-7,28	-10,78	13,0	1,90	1,34	12,78
3714,5	7,69	250,88	MWD	5	3712,9	-8,53	-14,20	16,6	0,35	0,21	2,11
3741,9	8,11	256,63	MWD	5	3740,1	-9,58	-17,82	20,2	0,98	0,46	6,28
3770,7	8,12	256,71	MWD	5	3768,6	-10,51	-21,77	24,2	0,01	0,01	0,08
3800,2	8,33	257,00	MWD	5	3797,7	-11,47	-25,87	28,3	0,22	0,21	0,30
3827,8	8,32	259,36	MWD	5	3825,1	-12,29	-29,79	32,2	0,37	-0,01	2,56
3855,0	8,58	259,29	MWD	5	3852,0	-13,03	-33,72	36,1	0,29	0,29	-0,08
3882,5	8,93	261,85	MWD	5	3879,2	-13,71	-37,85	40,3	0,57	0,38	2,79
3913,8	9,58	263,34	MWD	5	3910,1	-14,36	-42,84	45,2	0,66	0,62	1,43
3930,0	9,58	263,34	NBI	1	3926,1	-14,67	-45,52	47,8	0,00	0,00	0,00
3975,0	9,58	263,34	NBI	1	3970,4	-15,54	-52,95	55,2	0,00	0,00	0,00

**BIT RECORD FOR WELL 640717-6 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	17.50	HTC	MAXGTP03	183CJ	415	14,16,22,22	1,089	1	423	61	3,00	20,3	60/123	35700	0/6	2500/4000	46,7/133	1 - 1 - RR - A - 4	4	NO	HP
	HO	36,00						0,000	1	423	61		0,0	60/123		0/6	2500/4000	46,7/133				
2	ISRT	17.50	HTC	MXT03	G59DM	415	16,22,22,22	1,310	2	449	87	15,30	5,7	60/122	77500	0/10	960/3845	48/105,5	1 - 1 - RR - A - 5	3	PN	TD
	HO	36,00	GRNT	MODIFIED	21471			0,000	2	449	87		0,0	60/122		0/10	960/3845	48/105,5				
3	MITO	26,00	HTC	GTXCMG1	D56DT	115M	14,20,20,20	1,071	3	1229	787	19,30	40,8	79/133	172300	1/25	2121/4851	104/223	2 - 3 - BT - A - E	1	NO	TD
2	1 ISRT	17.50	HTC	MXT03	G59DM	415	16,22,22,22	1,310	4	1232	23	0,30	76,7	63/65		1/6	3596/3598	47,1/147,1	1 - 1 - NO - - 6	3	NO	TD
4	PDC	12,25	HTC	BD536	1904582	M323	16,16,16,18,18,18	1,335	5	3100	1868	33,90	55,1	27/290	223000	0/17	565/3996	22/318	1 - 2 - WT - S - X	1	NO	TD
5	PDC	8.50	HTC	BD445	1213105	M333	18,18,18	0,746	6	3701	601	41,20	14,6	9/190	457000	2/15	1425/2304	163/317	2 - 6 - WT - S - X	1	NO	CP
6	CORE	8.50	SDBS	CD193RFDIL	BEL797102			0,000	7	3709	8	1,30	6,2	24/109	5800	10/65	777/1568	74/170	1 - 1 - NO - A - X	1	NO	CJ
7	PDC	8.50	HTC	BD445	1213104	M333	20,20,20	0,920	8	3743	34	3,20	10,6	40/114	19400	4/10	1493/2356	247/337	1 - 6 - WT - S - X	1	NO	CP
6	1 CORE	8.50	SDBS	CD193RFDIL	BEL797110			0,000	9	3771	28	1,70	16,2	78/117	11700	3/7	1000/1009	110/114	2 - 2 - NO - A - X	1	NO	CJ
8	CORE	8.50	SDBS	FC284RILI	7990559	M231		0,000	10	3786	16	2,00	7,8	73/98	9900	30/120	1000/1019	113/124	5 - 7 - WT - A - X	1	NO	CJ
8	1 CORE	8.50	SDBS	FC284RILI	7990559	M231		0,000	11	3809	23	3,90	5,9	71/109	21500	6/15	1044/1077	127/138	1 - 1 - NO - A - X	1	NO	CJ
8	2 CORE	8.50	SDBS	FC284RILI	79905597	M231		0,000	12	3837	28	4,20	6,7	39/66	16200	59/167	1086/1188	122/152	1 - 2 - PN - G - X	1	NO	NC
9	PDC	8.50	SDBS	FM2745DR	5997202	M433	18,18,18,18	0,994	14	3930	84	7,10	11,8	41/96	36	4/13	1900/2085	293/343	0 - 0 - NO - A - X	1	NO	TD
10	1 PDC	8.50	SDBS	FM2745DR	5997202	M433	18,18,18,18	0,994	15	3975	45	6,70	6,7	60/141	38	1/11	1172/2201	305/343	8 - 8 - LT - A - X	1	JD	TD

**BOTTOM HOLE ASSEMBLIES USED ON WELL 6407/7-6 PO: 1**

BHA no. 1:	No. / Element / OD(in) / Length(m)	Depth In: 362 m MD		Out: 423 m MD			
1	MAXGTPT03	17,5	0,42	2	HOLE OPENER	36,0	3,36
3	FLOAT SUB	9,5	0,88	4	X-OVER	8,0	0,69
5	CDR	8,25	8,67	6	MWD	8,188	8,30
7	X-OVER	9,0	0,49	8	NON MAG. STAB	26,0	2,35
9	X-OVER	9,0	0,48	10	NON MAG. COLLAR	8,0	9,07
11	DRILL COLLAR STEEL	7,813	55,67	12	JAR	7,813	9,58
13	DRILL COLLAR STEEL	7,813	18,55	14	X-OVER	7,625	0,52
15	HWDP	5,0	82,53				

Reason pulled: HOLE PROBLEMS Sum: 201,56

BHA no. 2:	No. / Element / OD(in) / Length(m)	Depth In: 362 m MD		Out: 449 m MD			
1	MXT03	17,5	0,42	2	MODIFIED	36,0	3,36
3	FLOAT SUB	9,5	0,88	4	X-OVER	8,0	0,69
5	CDR	8,25	8,67	6	MWD	8,188	8,30
7	X-OVER	9,0	0,49	8	NON MAG. STAB	26,0	2,35
9	X-OVER	9,0	0,48	10	NON MAG. COLLAR	8,0	9,07
11	DRILL COLLAR STEEL	7,813	55,67	12	JAR	7,813	9,58
13	DRILL COLLAR STEEL	7,813	18,55	14	X-OVER	7,625	0,52
15	HWDP	5,0	82,53				

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 201,56

BHA no. 3:	No. / Element / OD(in) / Length(m)	Depth In: 442 m MD		Out: 1229 m MD			
1	GTXCMG1	26,0	0,52	2	FLOAT SUB	9,688	
3	NEAR BIT STAB	25,875	2,46	4	SHORT DRILL COLLAR	9,875	3,66
5	NON MAG. STAB	26,0	2,15	6	X-OVER	8,0	0,69
7	MWD	8,188	6,78	8	MWD	8,188	8,24
9	X-OVER	9,0	0,49	10	NON MAG. STAB	26,0	2,35
11	X-OVER	9,0	0,48	12	NON MAG. COLLAR	8,0	9,07
13	DRILL COLLAR STEEL	7,75	83,34	14	JAR	8,0	9,58
15	X-OVER	7,625	0,52	15	DRILL COLLAR STEEL	7,75	18,55
16	HWDP	6,625	82,53				

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 231,41

BHA no. 4:	No. / Element / OD(in) / Length(m)	Depth In: 1209 m MD		Out: 1232 m MD			
1	MXT03	17,5	0,42	2	FLOAT SUB	9,5	
3	NEAR BIT STAB	17,5	2,02	4	X-OVER	8,375	0,79
5	NON MAG. COLLAR	9,5	9,07	6	DRILL COLLAR STEEL	7,75	83,34
7	JAR	8,0	9,58	8	DRILL COLLAR STEEL	7,75	18,55
9	X-OVER	7,625	0,52	10	HWDP	6,625	82,53

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 206,82

BHA no. 5:	No. / Element / OD(in) / Length(m)	Depth In: 1232 m MD		Out: 3100 m MD			
1	BD536	12,5	0,39	2	POWER DRIVE	9,5	9,22
3	FLOAT SUB	8,0	0,64	4	NON MAG. STAB	12,25	2,00
5	MWD	8,188	6,78	6	MWD	8,188	8,24
7	NON MAG. STAB	12,25	1,92	8	NON MAG. COLLAR	8,0	9,07
9	DRILL COLLAR STEEL	8,0	84,28	10	JAR	8,0	9,58
11	HWDP	6,625	82,53	11	DRILL COLLAR STEEL	7,75	18,55
12	X-OVER	7,625	0,52				

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 233,72

**BOTTOM HOLE ASSEMBLIES USED ON WELL 6407/7-6 PO: 1**

BHA no. 6:		No. / Element / OD(in) / Length(m)		Depth In: 3100 m MD Out: 3701 m MD			
1	BD445	8,5	0,33	2	NEAR BIT STAB	8,375	3,04
3	STEEL STAB	8,5	1,52	4	CDR	6,75	6,46
5	STEEL STAB	8,375	1,52	6	MWD	6,75	8,15
7	NON MAG. STAB	8,5	1,77	8	NON MAG. COLLAR	6,5	9,45
9	X-OVER	6,375	0,44	10	DRILL COLLAR STEEL	6,5	56,25
11	X-OVER	6,5	0,44	12	JAR	6,25	9,35
13	X-OVER	6,25	0,24	14	DRILL COLLAR STEEL	6,5	18,95
15	X-OVER	6,5	0,29	16	HWDP	5,0	110,06
17	DART SUB	6,5	0,62				

Reason pulled: CORE POINT Sum: 228,88

BHA no. 7:		No. / Element / OD(in) / Length(m)		Depth In: 3701 m MD Out: 3709 m MD			
1	CD193RFDIL	8,5	0,36	2	CORE BARREL	8,5	30,08
3	FLOAT SUB	6,5	0,91	4	X-OVER	6,375	0,44
5	DRILL COLLAR STEEL	6,5	56,25	6	X-OVER	6,5	0,44
7	JAR	6,25	9,35	8	X-OVER	6,25	0,24
9	DRILL COLLAR STEEL	6,5	18,95	10	X-OVER	6,5	0,29
11	HWDP	5,0	110,06	12	DART SUB	6,5	0,62
13	PUP JOINT	5,0	5,31				

Reason pulled: CORE JAMMED Sum: 233,30

BHA no. 8:		No. / Element / OD(in) / Length(m)		Depth In: 3709 m MD Out: 3743 m MD			
1	BD445	8,5	0,33	2	NEAR BIT STAB	8,375	3,04
3	STEEL STAB	8,5	1,52	4	CDR	6,75	6,47
5	STEEL STAB	8,375	1,52	6	MWD	6,75	8,15
7	NON MAG. STAB	8,5	1,77	8	NON MAG. COLLAR	6,5	9,45
9	X-OVER	6,375	0,44	10	DRILL COLLAR STEEL	6,5	84,65
11	X-OVER	6,5	0,44	12	JAR	6,25	9,35
13	X-OVER	6,25	0,24	14	DRILL COLLAR STEEL	6,5	18,95
15	X-OVER	6,5	0,29	16	HWDP	5,0	137,32
17	DART SUB	6,5	0,62				

Reason pulled: CORE POINT Sum: 284,55

BHA no. 9:		No. / Element / OD(in) / Length(m)		Depth In: 3743 m MD Out: 3771 m MD			
1	CD193RFDIL	8,5	0,36	2	CORE BARREL	8,5	30,08
3	FLOAT SUB	6,5	0,91	4	X-OVER	6,375	0,44
5	DRILL COLLAR STEEL	6,5	84,65	6	X-OVER	6,5	0,44
7	JAR	6,25	9,35	8	X-OVER	6,25	0,24
9	DRILL COLLAR STEEL	6,5	18,95	10	X-OVER	6,5	0,29
11	HWDP	5,0	137,32	12	DART SUB	6,5	0,62

Reason pulled: CORE JAMMED Sum: 283,65

BHA no. 10:		No. / Element / OD(in) / Length(m)		Depth In: 3771 m MD Out: 3786 m MD			
1	CD193RFDIL	8,5	0,36	2	CORE BARREL	8,5	30,08
3	FLOAT SUB	6,5	0,91	4	X-OVER	6,375	0,44
5	DRILL COLLAR STEEL	6,5	84,65	6	X-OVER	6,5	0,44
7	JAR	6,25	9,35	8	X-OVER	6,25	0,24
9	DRILL COLLAR STEEL	6,5	18,95	10	X-OVER	6,5	0,29
11	HWDP	5,0	137,32	12	DART SUB	6,5	0,62

Reason pulled: CORE JAMMED Sum: 283,65

**BOTTOM HOLE ASSEMBLIES USED ON WELL 6407/7-6 PO: 1**

BHA no. 11:		No. / Element / OD(in) / Length(m)		Depth In: 3786 m MD Out: 3809 m MD	
1	FC284RILI	8,5	0,36	2	CORE BARREL 8,5 30,08
3	FLOAT SUB	6,5	0,91	4	X-OVER 6,375 0,44
5	DRILL COLLAR STEEL	6,5	84,65	6	X-OVER 6,5 0,44
7	JAR	6,25	9,35	8	X-OVER 6,25 0,24
9	DRILL COLLAR STEEL	6,5	18,95	10	X-OVER 6,5 0,29
11	HWDP	5,0	137,32	12	DART SUB 6,5 0,62
13	PUP JOINT	5,0	5,31		

Reason pulled: CORE JAMMED Sum: 288,96

BHA no. 12:		No. / Element / OD(in) / Length(m)		Depth In: 3809 m MD Out: 3837 m MD	
1	FC284RILI	8,5	0,36	2	CORE BARREL 8,5 30,08
3	FLOAT SUB	6,5	0,91	4	X-OVER 6,375 0,44
5	DRILL COLLAR STEEL	6,5	84,65	6	X-OVER 6,5 0,44
7	JAR	6,25	9,35	8	X-OVER 6,25 0,24
9	DRILL COLLAR STEEL	6,5	18,95	10	X-OVER 6,5 0,29
11	HWDP	5,0	137,32	12	DART SUB 6,5 0,62
13	PUP JOINT	5,0	5,31		

Reason pulled: NEW CORE/FULL BARREL Sum: 288,96

BHA no. 13:		No. / Element / OD(in) / Length(m)		Depth In: 3837 m MD Out: 3864 m MD	
1	FC284RILI	8,5	0,36	2	CORE BARREL 8,5 30,08
3	FLOAT SUB	6,5	0,91	4	X-OVER 6,375 0,44
5	DRILL COLLAR STEEL	6,5	84,65	6	X-OVER 6,5 0,44
7	JAR	6,25	9,35	8	X-OVER 6,25 0,24
9	DRILL COLLAR STEEL	6,5	18,95	10	X-OVER 6,5 0,29
11	HWDP	5,0	137,32	12	DART SUB 6,5 0,62

Reason pulled: NEW CORE/FULL BARREL Sum: 283,65

BHA no. 14:		No. / Element / OD(in) / Length(m)		Depth In: 3846 m MD Out: 3930 m MD	
1	FM2745DR	8,5	0,31	2	NEAR BIT STAB 8,375 3,04
3	STEEL STAB	8,5	1,52	4	CDR 6,75 6,47
5	STEEL STAB	8,375	1,52	6	MWD 6,75 8,31
7	NON MAG. STAB	8,5	1,77	8	NON MAG. COLLAR 6,5 9,45
9	X-OVER	6,375	0,44	10	DRILL COLLAR STEEL 6,5 84,65
11	X-OVER	6,5	0,44	12	JAR 6,25 9,35
13	X-OVER	6,25	0,24	14	DRILL COLLAR STEEL 6,5 18,95
15	X-OVER	6,5	0,29	16	HWDP 5,0 137,32
17	DART SUB	6,5	0,62		

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 284,69

BHA no. 15:		No. / Element / OD(in) / Length(m)		Depth In: 3930 m MD Out: 3975 m MD	
1	FM2745DR	8,5	0,31	2	FLOAT SUB 6,5 0,88
3	DRILL COLLAR STEEL	6,5	84,65	4	X-OVER 6,5 0,44
5	JAR	6,25	9,35	6	X-OVER 6,25 0,24
7	DRILL COLLAR STEEL	6,5	18,95	8	X-OVER 6,5 0,29
9	HWDP	5,0	137,32	10	DART SUB 6,5 0,62

Reason pulled: TOTAL DEPTH/CASING DEPT Sum: 253,05

Norsk Hydro

**BOTTOM HOLE ASSEMBLIES USED ON WELL 6407/7-6 PO: 1**

BHA no. 16:		No. / Element / OD(in) / Length(m)		Depth In: 3923 m MD Out: 3923 m MD	
1	XS330P	5,875	0,19	2	CASING SCRAPER 4,25 0,96
3	FLOAT SUB	4,375	1,87	4	DRILL COLLAR STEEL 4,75 56,94
5	DRILL PIPE	3,5	910,00	6	POLISH MILL 4,93
7	CASING SCRAPER	5,75	1,17	8	X-OVER 6,5 0,88
9	X-OVER	6,312	0,52		

Reason pulled: Sum: 972,53

BHA no. 17:		No. / Element / OD(in) / Length(m)		Depth In: 900 m MD Out: 932 m MD	
1	MXT03		0,42	2	FLOAT SUB 9,5 0,90
3	X-OVER	9,5	0,79	4	X-OVER 8,0 0,85
5	DRILL COLLAR STEEL	6,5	84,65	6	X-OVER 6,25 0,44
7	JAR	6,25	9,35	8	X-OVER 6,25 0,24
9	DRILL COLLAR STEEL	6,5	18,95	10	X-OVER 6,5 0,29
11	HWDP	5,0	137,32		

Reason pulled: Sum: 253,78

**CEMENT SLURRY REPORT ON WELL 6407/7-6**

Norsk Hydro

Date	CsgSize	Jobtype	Slurry Type	Pumped Volume [m3]	Density [sg]	BHCT [DegC]	Yield [l/100 kg]	Additive	Unit	Additives [./100 kg Cement]	Additives [./m3 Slurry]
2000-10-21	30"	CASING CEMENTING	LEAD	25,80	1,56	7,00	129,60	A-3L	l	3,50	
			TAIL SLURRY	27,80	1,95	7,00	74,73	FP-14L	l	0,20	
			DISPLACEMENT	4,80	0,00	7,00		FP-14L	l	0,20	
			DISPLACEMENT	267,50	1,44	29,00	169,30	A-7L	l	3,50	
2000-10-25	20"	CASING CEMENTING	LEAD	23,00	1,92	29,00	75,02	A-3L	l	5,30	
			DISPLACEMENT	153,20	1,03	29,00		R-15L	l	1,25	
			DISPLACEMENT	14,90	1,95	29,00		FP-14L	l	0,20	
			DISPLACEMENT	23,00	1,92	29,00		R-12L	l	0,40	
2000-11-02	9 5/8"	CASING CEMENTING	TAIL SLURRY	15,00	1,70	76,00		FP-14L	l	0,20	
			DISPLACEMENT	3,60	1,03	7,00		A-7L	l	3,50	
			DISPLACEMENT	2,00	0,80	76,00		FP-14L	l	0,20	
			DISPLACEMENT	15,00	1,70	76,00		GEL	kg	30,00	
2000-11-25	7"	LINER CEMENTING	MCS-G SPACER	13,30	1,90	76,00	78,63	FP-14L	l	0,20	
			DISPLACEMENT	100,00	1,60	76,00		CD-31L	l	0,40	
			DISPLACEMENT	2,00	0,80	76,00		MICRO	l	4,00	
			DISPLACEMENT	15,00	1,70	76,00		R-12L	l	0,80	
2000-11-25	7"	LINER CEMENTING	BASEOIL	15,00	1,70	76,00		NAOHL	l	0,30	
			DISPLACEMENT	100,00	1,60	76,00		BARITC	kg	903,00	
			DISPLACEMENT	2,00	0,80	76,00		FP-14L	l	0,20	
			DISPLACEMENT	15,00	1,70	76,00		MCS-G	l	104,00	
2000-11-25	7"	LINER CEMENTING	MCS-G SPACER	15,00	1,70	76,00		NAOHL	l	0,30	
			DISPLACEMENT	100,00	1,60	76,00		BARITC	kg	903,00	
			DISPLACEMENT	2,00	0,80	76,00		FP-14L	l	0,20	
			DISPLACEMENT	15,00	1,70	76,00		MCS-G	l	104,00	

**CEMENT SLURRY REPORT ON WELL 6407/7-6**

Date	CsgSize	Jobtype	Slurry Type	Pumped Volume [m3]	Density [sg]	BHCT [DegC]	Yield [l/100 kg]	Additive	Unit	Additives [./100 kg Cement]	Additives [./m3 Slurry]
2000-11-25	7"	LINER CEMENTING	MCS-G SPACER		1,75	108,00		BARITC	kg		967,00
								FP-14L	l		10,00
			FILLER	18,20	1,90	108,00	110,39	GEL	kg		20,00
								FP-14L	l		0,40
								MICRO	l		12,00
								R-15L	l		0,60
								CD-31L	l		1,30
								D-19L	l		5,50
2000-12-09	9 5/8"	PLUG IN CASED HOLE	DISPLACEMENT			108,00		BARITC	kg		957,00
			MCS-G SPACER		1,75	76,00		FP-14L	l		10,00
								GEL	kg		25,00
								MCS-G	l		104,00
								NAOHL	l		5,00
			FILLER	10,00	1,95	76,00	72,76	FP-14L	l		0,20
								R-12L	l		1,00
2000-12-11	20"	PLUG IN CASED HOLE	DISPLACEMENT			76,00		BARITC	kg		758,00
			MCS-G SPACER		1,75	31,00		FP-14L	l		10,00
								GEL	kg		30,00
								MCS-G	l		52,00
								NAOHL	l		1,00
			LEAD	38,60	1,95	31,00	98,88	FP-14L	l	0,20	
			TAIL SLURRY	6,00	1,95	31,00	72,66	R-12L	l	0,50	
								FP-14L	l	0,20	
			DISPLACEMENT			31,00		R-12L	l	0,45	

## CEMENT CONSUMPTION PER JOB ON WELL 6407/7-6

Date	CsgSize	Job Type	Cement/ Additive	Description	Unit	Actual Amount Used
2000-10-21	30"	CASING CEMENTING	A-3L	EXTENDER: LIQUID LODENSE		788
			A-7L	ACCELERATOR: LIQUID CACL2		1432
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L		222
			G	API CLASS G	MT	57
2000-10-25	20"	CASING CEMENTING	A-3L	EXTENDER: LIQUID LODENSE		8792
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L		460
			G	API CLASS G	MT	164
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 [		54
	30"	GROUT	R-15L	RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DE		2058
			A-7L	ACCELERATOR: LIQUID CACL2		749
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L		50
			G	API CLASS G	MT	20
2000-11-02	9 5/8"	CASING CEMENTING	CD-31L	DISPERSANT: CD-31L LIQUID		72
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L		1130
			G	API CLASS G	MT	46
			GEL	EXTENDER: BENTONITE	kg	540
			MCS-G	SPACER ADDITIVE: MCS-G		2000
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF		721
			NAOHL	SPACER ADDITIVE: CAUSTIC SODA LIQUID		5
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 [		1540
2000-11-25	7"	LINER CEMENTING	CD-31L	DISPERSANT: CD-31L LIQUID		
			D-19L	FLUID LOSS ADDITIVE: D-19L LIQUID		
			FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L		
			GEL	EXTENDER: BENTONITE	kg	
			MCS-G	SPACER ADDITIVE: MCS-G		
			MICRO	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF		
			NAOHL	SPACER ADDITIVE: CAUSTIC SODA LIQUID		
			R-15L	RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DE		
2000-12-09	9 5/8"	PLUG IN CASED HOLE	FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L		
			GEL	EXTENDER: BENTONITE	kg	
			MCS-G	SPACER ADDITIVE: MCS-G		
			NAOHL	SPACER ADDITIVE: CAUSTIC SODA LIQUID		
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 [		
2000-12-11	20"	PLUG IN CASED HOLE	FP-14L	SPECIAL ADDITIVE: DEFOAMER FP-14L		
			GEL	EXTENDER: BENTONITE	kg	
			MCS-G	SPACER ADDITIVE: MCS-G		
			NAOHL	SPACER ADDITIVE: CAUSTIC SODA LIQUID		
			R-12L	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 [		

**TOTAL CONSUMPTION OF CEMENT ADDITIVES ON WELL 6407/7-6**

<b>Section</b>	<b>Cement/Additive</b>	<b>Unit</b>	<b>Total Amount Used</b>
36"	API CLASS G	MT	77,00
	SPECIAL ADDITIVE: DEFOAMER FP-14L		272,00
	EXTENDER: LIQUID LODENSE		788,00
	ACCELERATOR: LIQUID CACL2		2181,00
26"	EXTENDER: LIQUID LODENSE		8792,00
	SPECIAL ADDITIVE: DEFOAMER FP-14L		460,00
	API CLASS G	MT	163,90
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC		54,00
	RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DEGC		2058,00
12"	SPACER ADDITIVE: MCS-G		2000,00
	SPECIAL ADDITIVE: DEFOAMER FP-14L		1130,00
	SPACER ADDITIVE: CAUSTIC SODA LIQUID		5,00
	EXTENDER: BENTONITE	kg	540,00
	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION		721,00
	DISPERSANT: CD-31L LIQUID		72,00
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC		1540,00
	API CLASS G	MT	46,00
8 1/2"	DISPERSANT: CD-31L LIQUID		
	SPACER ADDITIVE: MCS-G		
	FLUID LOSS ADDITIVE: D-19L LIQUID		
	SPECIAL ADDITIVE: DEFOAMER FP-14L		
	EXTENDER: BENTONITE	kg	
	SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION		
	SPACER ADDITIVE: CAUSTIC SODA LIQUID		
	RETARDER: HIGH TEMP. BETWEEN 93 AND 149 DEGC		
0.0	SPECIAL ADDITIVE: DEFOAMER FP-14L		
	EXTENDER: BENTONITE	kg	
	SPACER ADDITIVE: CAUSTIC SODA LIQUID		
	RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC		
	SPACER ADDITIVE: MCS-G		

**DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 6407/7-6 PO: 1**

Hole section : 36"

**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					
2000-10-18 23:00	392		392	BENTONITE MUD	0,0	1,05		0	0	0	0	0	0				
2000-10-19	386		386	BENTONITE MUD	0,0	1,05	20,0	0	0	0	0	0					
2000-10-20	448		448	BENTONITE MUD	0,0	1,05	20,0	0	0	0	0	0					
2000-10-21	448		448	BENTONITE MUD		1,05	20,0	0	0	0	0	0					

Hole section : 26"

**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					
2000-10-22	935		935	BENTONITE MUD	0,0	1,05	20,0	0	0	0	0	0					
2000-10-23	1229		1229	BENTONITE MUD	70,0	1,40	20,0	0	0	0	0	0					
2000-10-24	1229		1229	BENTONITE MUD	0,0	1,05	20,0	0	0	0	0	0					
2000-10-25	1229		1229	BENTONITE MUD	0,0	1,05	20,0	0	0	0	0	0					
2000-10-26	1229		1229	BENTONITE MUD	0,0	1,05	20,0	0	0	0	0	0					
2000-10-27	1231		1231	BENTONITE MUD		1,05	20,0	0	0	0	0	0					

Hole section : 12 1/4"

**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
2000-10-28	1232		1232	VERSAVERT	115,0	1,60	20,0	169	97	71	43	0	0	12	10	12,5	8,0	24,0
2000-10-29	1842		1842	VERSAVERT	117,0	1,60	26,0	108	66	50	34	0	0	14	12	12,0	11,0	18,0
2000-10-30	2541		2541	VERSAVERT	113,0	1,60	20,0	98	60	46	32	0	0	14	12	11,0	10,5	17,5
2000-10-31 22:30	3083		3083	VERSAVERT	102,0	1,60	35,0	110	66	48	31	0	0	12	11	11,0	10,0	19,0
2000-11-01	3100		3100	VERSAVERT		1,60	20,0	106	63	48	32	0	0	13	12	10,0	11,0	16,0
2000-11-02 18:00	3100		3100	VERSAVERT	118,0	1,60	24,0	101	61	48	31	0	0	18	10	10,5	10,0	16,0

Hole section : 8 1/2"

**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	3
2000-11-03 23:00	3100		3100	VERSAVERT	118,0	1,60	25,0	109	64	48	32	0	0	13	12	50,0	45,0	10,0	16,0	
2000-11-04	3205		3205	VERSAVERT	94,0	1,60	40,0	110	66	49	32	0	0	12	10	50,0	44,0	9,0	14,0	
2000-11-05 22:00	3377		3377	VERSAVERT	85,0	1,61	38,0	107	65	49	33	0	0	12	11	50,0	42,0	11,5	8,5	14,5

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 640717-6 PO: 1

Hole section : 8 1/2"

OIL BASED SYSTEM

Date	MD	Depth [m]	Mud Type	Funnel Visc [sec]	Dens Mudtmp Out [sg]	Fann Readings	3	6	30	60	100	200	300	600	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2000-11-06 23:00	3558	3557	VERSAVERT	66,0	1,60	40,0	87	54	41	28	0	0	0	11	10	10,5	8,5	13,0	
2000-11-07 17:00	3700	3699	VERSAVERT	66,0	1,60	38,0	88	55	41	28	0	0	0	11	10	11,0	8,0	13,0	
2000-11-08 22:00	3709	3707	VERSAVERT	80,0	1,62	30,0	89	56	42	29	0	0	0	12	10	11,5	8,0	13,0	
2000-11-09 21:00	3720	3718	VERSAVERT	98,0	1,60	1,6	88	54	40	27	0	0	0	9	8	10,0	6,0	11,0	
2000-11-10 20:00	3743	3741	VERSAVERT	98,0	1,61	1,6	89	55	40	27	0	0	0	10	9	10,5	6,0	11,0	
2000-11-11 17:00	3771	3768	VERSAVERT	99,0	1,61	1,6	87	54	39	27	0	0	0	9	8	10,5	6,5	11,0	
2000-11-12 21:00	3786	3784	VERSAVERT	101,0	1,61	30,0	95	58	45	28	0	0	0	9	8	10,5	7,0	11,0	
2000-11-13 15:00	3809	3807	VERSAVERT	102,0	1,61	30,0	94	58	43	28	0	0	0	9	8	11,0	7,0	10,5	
2000-11-14 21:00	3852	3849	VERSAVERT	109,0	1,61	28,0	93	57	41	25	0	0	0	9	8	10,5	6,0	11,0	
2000-11-15 21:00	3864	3861	VERSAVERT	99,0	1,61	39,0	88	54	40	24	0	0	0	9	8	10,0	6,0	11,0	
2000-11-16 21:00	3930	3926	VERSAVERT	101,0	1,60	40,0	92	58	44	39	0	0	0	9	8	12,0	6,0	11,0	
2000-11-17	3930	3926	VERSAVERT	99,0	1,60	38,0	92	58	43	39	0	0	0	9	8	11,0	7,0	10,0	
2000-11-18 14:00	3930	3926	VERSAVERT	99,0	1,60	28,0	92	57	43	39	0	0	0	9	8	11,0	6,0	11,0	
2000-11-19 20:00	3930	3926	VERSAVERT	101,0	1,60	24,0	91	57	43	39	0	0	0	9	8	11,5	6,0	11,0	
2000-11-20 03:30	3930	3926	VERSAVERT	102,0	1,60	19,0	92	58	43	39	0	0	0	9	8	12,0	6,0	11,0	
2000-11-21	3930	3926	VERSAVERT	101,0	1,61	20,0	92	58	43	39	0	0	0	9	8	12,0	6,0	11,0	
2000-11-22	3975	3970	VERSAVERT	102,0	1,61	35,0	92	58	43	39	0	0	0	9	8	12,0	6,0	11,0	
2000-11-23	3975	3970	VERSAVERT	102,0	1,61	36,0	92	58	43	39	0	0	0	9	8	12,0	6,0	11,0	
2000-11-24	3975	3970	VERSAVERT	102,0	1,61	36,0	92	58	43	39	0	0	0	9	8	12,0	6,0	12,0	
2000-11-25	3975	3970	VERSAVERT	101,0	1,61	38,0	92	58	43	39	0	0	0	9	8	12,0	6,0	11,0	
2000-11-26	3975	3970	VERSAVERT	102,0	1,61	38,0	92	58	43	39	0	0	0	9	8	12,0	6,0	11,0	
2000-11-27	3975	3970	VERSAVERT	102,0	1,61	39,0	92	58	43	39	0	0	0	9	8	12,0	6,0	11,0	
2000-11-28	3975	3970	VERSAVERT	102,0	1,61	29,0	92	58	43	39	0	0	0	9	8	12,0	6,0	11,0	
2000-11-29	3975	3970	VERSAVERT	102,0	1,61	26,0	92	58	43	39	0	0	0	9	8	12,0	6,0	11,0	
2000-11-30 11:15	3975	3970	VERSAVERT	102,0	1,61	20,0	106	60	43	26	0	0	0	7	6	7,0	4,5	9,0	
2000-12-01 18:00	3975	3970	VERSAVERT	101,0	1,61	20,0	106	60	43	26	0	0	0	7	6	7,0	5,0	9,0	
2000-12-02 20:00	3975	3970	VERSAVERT	101,0	1,61	20,0	106	61	43	26	0	0	0	7	6	8,0	4,5	9,0	
2000-12-03 16:00	3975	3970	VERSAVERT	102,0	1,61	20,0	106	60	43	26	0	0	0	7	6	7,0	5,0	9,0	
2000-12-04 15:00	3975	3970	VERSAVERT	102,0	1,61	20,0	106	60	43	26	0	0	0	7	6	7,0	5,0	9,0	
2000-12-05 15:00	3975	3970	VERSAVERT	102,0	1,61	20,0	106	61	44	26	0	0	0	7	6	8,0	4,5	9,0	
2000-12-07	3975	3970	VERSAVERT	102,0	1,61	34,0	111	61	44	26	0	0	0	7	5	5,0	4,5	9,0	
2000-12-08	3975	3970	VERSAVERT	102,0	1,61	30,0	110	60	44	26	0	0	0	7	5	5,0	5,0	9,0	
2000-12-09	3975	3970	VERSAVERT	102,0	1,61	30,0	110	60	44	26	0	0	0	7	5	5,0	5,0	9,0	
2000-12-11	3975	3970	VERSAVERT	102,0	1,60	18,0	110	60	44	26	0	0	0	7	5	5,0	5,0	9,0	
2000-12-12	3975	3970	VERSAVERT	102,0	1,60	20,0	110	60	44	26	0	0	0	7	5	12,0	9,0	15,0	
2000-12-13	3975	3970	VERSAVERT	101,0	1,60	35,0	110	60	44	26	0	0	0	7	5	5,0	5,0	9,0	

## DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 6407/7-6 PO: 1

Hole section : 8 1/2"

## OIL BASED SYSTEM

Date	Depth [m]	Mud Type	Funnel Visc [sec]	Dens Mudtmp Out [DegC]	Fann Readings						Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel10 [Pa]	Gel10 [Pa]				
					600	300	200	100	60	30						6	3		
2000-12-14	3975	VERSAVERT	101,0	1,60	34,0	110	60	44	26	0	0	7	5	50,0	50,0	5,0	5,0	9,0	9,0
2000-12-15	3975	VERSAVERT	102,0	1,60	34,0	110	60	44	26	0	0	7	5	50,0	50,0	5,0	5,0	9,0	9,0

**DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 6407/7-6 PO: 1**

Hole section : 36" WATER BASED SYSTEM

Date	Depth [m]	Mud Type	Dens [sg]	Filtrate API [mm]	Filtcake API [mm]	HPHT Press/Temp [bar/DegC]	HPHT pH	Alcalinity Pm [ml]	Inhib Chem [ml]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid Oil Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS
	MD TVD			HPHT [ml]	HPHT [mm]													
2000-10-18 23:00	392	BENTONITE MUD	1,05	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2000-10-19	386	BENTONITE MUD	1,05	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2000-10-20	448	BENTONITE MUD	1,05	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2000-10-21	448	BENTONITE MUD	1,05	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Hole section : 26" WATER BASED SYSTEM

Date	Depth [m]	Mud Type	Dens [sg]	Filtrate API [mm]	Filtcake API [mm]	HPHT Press/Temp [bar/DegC]	HPHT pH	Alcalinity Pm [ml]	Inhib Chem [ml]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid Oil Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS
	MD TVD			HPHT [ml]	HPHT [mm]													
2000-10-22	935	BENTONITE MUD	1,05	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2000-10-23	1229	BENTONITE MUD	1,40	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2000-10-24	1229	BENTONITE MUD	1,05	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2000-10-25	1229	BENTONITE MUD	1,05	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2000-10-26	1229	BENTONITE MUD	1,05	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2000-10-27	1231	BENTONITE MUD	1,05	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Hole section : 12 1/4" OIL BASED SYSTEM

Date	Depth [m]	Mud Type	Density [sg]	Filtrate HPHT [ml]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	HPHT	Electrical stability [V]	Alcalinity Pm [ml]	CaCl2 [mg/l]	Oil/Water Ratio	Solid [%]	Oil [%]	Sand [%]	ASG [sg]	LGS
	MD TVD			HPHT [ml]	HPHT [mm]											
2000-10-28	1232	VERSAVERT	1,60	10,4	3	/ 150	346	346	89	64/36	24,0	48,5	2,5	3,9	123	
2000-10-29	1842	VERSAVERT	1,60	3,6	2	/ 150	777	777	181	75/25	23,5	57,5	1,5	4,0	67	
2000-10-30	2541	VERSAVERT	1,60	4,6	2	/ 150	974	974	176	78/22	23,5	59,5	1,2	4,0	60	
2000-10-31 22:30	3083	VERSAVERT	1,60	6,8	2	/ 150	767	767	172	74/26	23,0	57,0	0,8	4,1	43	
2000-11-01	3100	VERSAVERT	1,60	3,9	2	/ 150	817	817	150	74/26	23,0	57,0	0,8	4,1	43	
2000-11-02 18:00	3100	VERSAVERT	1,60	4,0	2	/ 121	846	846	176	74/26	23,0	57,0	0,3	4,1	43	

Hole section : 8 1/2" OIL BASED SYSTEM

Date	Depth [m]	Mud Type	Density [sg]	Filtrate HPHT [ml]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	HPHT	Electrical stability [V]	Alcalinity Pm [ml]	CaCl2 [mg/l]	Oil/Water Ratio	Solid [%]	Oil [%]	Sand [%]	ASG [sg]	LGS
	MD TVD			HPHT [ml]	HPHT [mm]											
2000-11-03 23:00	3100	VERSAVERT	1,60	4,0	2	/ 121	901	901	177	74/26	23,0	58,0	0,3	4,1	43	
2000-11-04	3205	VERSAVERT	1,60	3,2	2	/ 135	988	988	168	74/26	23,0	57,0	0,3	4,1	46	
2000-11-05 22:00	3377	VERSAVERT	1,61	3,2	2	/ 138	1051	1051	173	75/25	24,0	57,0	0,3	4,0	75	
2000-11-06 23:00	3558	VERSAVERT	1,60	3,0	2	/ 135	1156	1156	170	80/20	24,0	61,0	0,0	4,0	86	

## DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 6407/7-6 PO: 1

Hole section : 8 1/2"		OIL BASED SYSTEM													
Date	Depth [m]	Mud Type	MD TVD	Density [sg]	Filtrate HPHT [ml]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	Electrical stability [V]	Alcalinity Pm [ml]	CaCl2 [mg/l]	Oil/Water Ratio	Percentage		LGS [Kg/m3]	
												Solid [%]	Sand [%]		
2000-11-07 17:00	3700	3699	VERSAVERT	1,60	4,0	2	500 / 121	1180		159	79/21	24,0	60,0	4,0	89
2000-11-08 22:00	3709	3707	VERSAVERT	1,62	4,0	2	500 / 121	1131		164	79/21	24,5	60,0	4,0	82
2000-11-09 21:00	3720	3718	VERSAVERT	1,60		4	500 /	810		155	79/21	24,0	60,0	4,1	57
2000-11-10 20:00	3743	3741	VERSAVERT	1,61	3,9	1	500 / 121	875		150	79/21	24,0	60,0	4,0	81
2000-11-11 17:00	3771	3768	VERSAVERT	1,61	4,0	1	500 / 121	795		155	79/21	24,0	60,0	4,0	81
2000-11-12 21:00	3786	3784	VERSAVERT	1,61	3,5	1	500 / 121	805		159	79/21	24,0	60,0	4,0	81
2000-11-13 15:00	3809	3807	VERSAVERT	1,61	3,9	1	500 / 121	775		159	79/21	24,0	60,0	4,0	81
2000-11-14 21:00	3852	3849	VERSAVERT	1,61	3,8	1	500 / 121	670		159	79/21	24,0	60,0	4,0	81
2000-11-15 21:00	3864	3861	VERSAVERT	1,61	3,6	1	500 / 121	710		158	79/21	24,0	60,0	4,0	81
2000-11-16 21:00	3930	3926	VERSAVERT	1,60	3,8	1	500 / 121	702		150	79/21	23,5	60,5	4,0	71
2000-11-17	3930	3926	VERSAVERT	1,60	3,8	2	500 / 121	665		142	79/21	24,0	60,0	4,0	120
2000-11-18 14:00	3930	3926	VERSAVERT	1,60	3,8	1	500 / 121	655		141	79/21	24,0	60,0	4,0	95
2000-11-19 20:00	3930	3926	VERSAVERT	1,60	3,8	2	/ 150	642		141	79/21	24,0	60,0	4,0	95
2000-11-20 03:30	3930	3926	VERSAVERT	1,60	3,8	2	500 / 150	661		146	79/21	24,5	60,0	3,9	118
2000-11-21	3930	3926	VERSAVERT	1,61	4,0	2	500 / 130	665		135	79/21	24,5	60,0	4,0	120
2000-11-22	3975	3970	VERSAVERT	1,61	4,0	2	150 / 130	750		132	78/22	25,0	60,0	4,0	54
2000-11-23	3975	3970	VERSAVERT	1,61	4,0	2	150 / 130	800		135	79/21	25,0	60,0	4,0	30
2000-11-24	3975	3970	VERSAVERT	1,61	4,0	2	150 / 134	800		129	79/21	25,0	60,0	4,0	28
2000-11-25	3975	3970	VERSAVERT	1,61	4,0	2	150 / 130	801		133	78/22	24,0	60,0	4,0	32
2000-11-26	3975	3970	VERSAVERT	1,61	4,0	2	150 / 121	900		133	78/22	23,0	60,0	4,0	24
2000-11-27	3975	3970	VERSAVERT	1,61	4,0	2	150 / 121	900		133	78/22	25,0	60,0	4,0	21
2000-11-28	3975	3970	VERSAVERT	1,61	4,0	2	150 / 121	901		133	78/22	24,0	60,0	4,0	21
2000-11-29	3975	3970	VERSAVERT	1,61	4,0	2	150 / 121	900		133	78/22	24,0	60,0	4,0	21
2000-11-30 11:15	3975	3970	VERSAVERT	1,61	4,0	2	150 / 121	944		133	78/22	24,0	60,0	4,0	21
2000-12-01 18:00	3975	3970	VERSAVERT	1,61	4,0	2	150 / 121	938		133	78/22	24,0	60,0	4,0	24
2000-12-02 20:00	3975	3970	VERSAVERT	1,61	4,4	2	150 / 121	935		133	78/22	23,0	60,0	4,1	21
2000-12-03 16:00	3975	3970	VERSAVERT	1,61	4,4	2	150 / 121	942		133	78/22	23,0	60,0	4,1	21
2000-12-04 15:00	3975	3970	VERSAVERT	1,61	4,0	2	150 / 121	937		133	78/22	23,0	60,0	4,1	21
2000-12-05 15:00	3975	3970	VERSAVERT	1,61	4,0	2	150 / 121	595		140	82/18	24,0	62,0	4,0	67
2000-12-07	3975	3970	VERSAVERT	1,61	4,0	2	150 / 121	445		181	82/18	24,0	62,0	4,0	66
2000-12-08	3975	3970	VERSAVERT	1,61	2,0	2	150 / 121	479		181	82/18	24,0	62,0	4,0	66
2000-12-09	3975	3970	VERSAVERT	1,61	4,0	2	150 / 121	460		181	82/18	24,0	62,0	4,0	66
2000-12-11	3975	3970	VERSAVERT	1,60	4,0	2	150 / 121	420		181	82/18	24,0	62,0	4,0	82
2000-12-12	3975	3970	VERSAVERT	1,60	4,0	2	150 / 121	400		180	82/18	24,0	62,0	4,0	82

## DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 6407/7-6 PO: 1

Hole section : 8 1/2"		OIL BASED SYSTEM													
Date	Depth [m]	Mud Type	Density [sg]	Filtrate HPHT [ml]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	Electrical stability [V]	Alcalinity Pm [ml]	CaCl2 [mg/l]	Oil/Water Ratio	Solid [%]	Oil [%]	Sand [%]	ASG [sg]	LGS [Kg/m3]
	MD TVD														
2000-12-13	3975	3970	VERSAAVERT	1,60	4,0	2	150 / 121	400		181	82/ 18	24,0	62,0	0,0	80
2000-12-14	3975	3970	VERSAAVERT	1,60	4,0	2	150 / 121	401		181	82/ 18	24,0	62,0	0,0	82
2000-12-15	3975	3970	VERSAAVERT	1,60	4,0	2	150 / 121	420		181	82/ 18	24,0	62,0	0,0	82

**TOTAL CONSUMPTION OF MUD ADDITIVES ON WELL 6407/7-6**

<b>Section</b>	<b>Product/ Additive</b>	<b>Unit</b>	<b>Total Amount Used</b>
36"	BARITE	kg	237000,00
	BENTONITE	kg	44800,00
	CMC EHV	kg	325,00
	DUOTEC NS	kg	50,00
	SODA ASH	kg	575,00
26"	BARITE	kg	182000,00
	BENTONITE	kg	52000,00
	CMC EHV	kg	375,00
	MICA FINE	kg	1150,00
	SODA ASH	kg	825,00
17 1/2"	BARITE	kg	12000,00
	BENTONE 128	kg	75,00
12 1/4"	BARITE	kg	247000,00
	BENTONE 128	kg	4125,00
	CALCIUM CHLORIDE	kg	16100,00
	EDC 95/11	l	167982,00
	LIME	kg	8750,00
	VERSAMOD	kg	1842,00
	VERSAVERT F	l	2860,00
	VERSAVERT PE	l	8000,00
	VERSAVERT SE	l	4100,00
8 1/2"	BARITE	kg	276000,00
	BENTONE 128	kg	2023,00
	DUOTEC NS	kg	125,00
	EDC 95/11	l	102991,00
	LIME	kg	3000,00
	MICA FINE	kg	375,00
	NOVATEC B	l	11839,00
	SAFE SOLV OE	L	600,00
	VERSAMOD	kg	564,00
	VERSAVERT F	l	1930,00
	VERSAVERT PE	l	7000,00
	VERSAVERT SE	l	2000,00

**64077-6 WIRELINE LOGGING SEQUENCE OF EVENTS**

Report date	Run #	Tool string	Wireline	Start date	Start time	End date	End time	Tot hrs	TD	Start depth	End depth	Witness	Comment
17.11.2000	1A	AIT-IPLT (LDS-APS-HNGS)	Wireline	16 nov	19:30	17 nov	06:00	09:50	3930	3930,4	3092,8	Å.Halvorsen/V.Aggerholm	Smooth job.
17.11.2000	1A	UBI-DSI	Wireline	17 nov	06:10	17 nov	17:25	11:15	3930	3925,0	2900,0	V.Aggerholm/Å.Halvorsen	UBI outside spec.tolerances. Good data.
18.11.2000	1A	MDT	Wireline	17 nov	17:25	18 nov	21:40	28:15	3925	3880,0	3187,5	J.Irvine-Fortescue	52 attempts, 16 good, 2 lost seal. Stuck several times
19.11.2000		MSCT	Faulted	18 nov	22:30	19 nov	03:25	05:05	---	---	---	Å.Halvorsen/V.Aggerholm	Circuit shortage. Tool not responding
20.11.2000	1A	CMR-ECS-VSP	Wireline	19 nov	03:30	20 nov	01:00	21:30	3930	2913,0	2900,0	V.Aggerholm/Å.Halvorsen	Unable to tune CMR. VSP & ECS ok.
21.11.2000	1A	CMR+	Wireline	20 nov	10:10	21 nov	03:50	18:40	3930	3881,5	3440,0	V.Aggerholm/Å.Halvorsen	OK
21.11.2000	1A	CST	Wireline	21 nov	04:00	21 nov	17:50	13:50	3930	3900,0	3125,0	V.Aggerholm/Å.Halvorsen	60 shots, 32 recovered, 2 empty, 26 lost in hole.

**LEAK OFF TEST ON WELL 6407/7-6**

Depth	Section	Date	Mudtype	Mudweight SG	Test pressure	LOT SG
1 224	12.25"	2000-10-27	Seawater	1,03	92 bar	1,79
3 094	8.5"	2000-11-04	Oil Base Mud	1,6	48,7	1,76

Note: Test on 1224 m was a LOT  
Test on 3094 m was a FIT

**HYDRO**

**E&P Division**

Grading : Confidential

Drilling Sector/FMU/Formation Testing

Revision : 0

Title:

Summary Well Test Report, well 6407/7-6

Date : 13.07.01

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Well 6407/7-6 was a vertical exploration well which tested the hydrocarbon potential of the B-segment on the NW-flank of the Njord field. The primary target of this well was the Tilje formation. A secondary target, the Ile formation, was found to be water wet during drilling and was not tested. Hydrocarbons were encountered in the Upper Jurassic Melke Formation and the Lower Cretaceous Lange Formation, and were sampled using the MDT.

The 8 1/2" section was drilled through the target to a TD of 3958 m MD using oil based mud. The TD criterium was a sufficient rathole below any perforated interval to allow the Perforating (TCP) guns to be dropped, while leaving sufficient room for A PLT log across the entire perforated interval.

Based on open hole logs and core analysis, one production test in the Tilje formation was carried out in the interval 3686-3770m

The primary objectives of the welltest were:

- Determine the productivity.
- Determine the reservoir properties (i.e. kh, skin, etc.)
- Collect sufficient produced fluid samples to allow production chemistry and fluid compatibility trials to be conducted.
- Measure the inflow profile with a PLT.
- Establish the formation mechanical properties by conducting a mini-frac.

The full results of the production test can be found in the Formation Evaluation Report and Well Test Operations Report for well 6407/7-6.

The well was permanently abandoned after the test.

D S T R E P O R T

BASIC WELL DATA

```

=====
Company: Norsk Hydro           Field : NJORD           Rig Type : SEMI SUBMERSIBLE
Country: NORWAY               Well  : 6407/7-6       Spud Date: 2000-10-18
                              DST No: 1
    
```

DST BACKGROUND DATA

```

=====
DST String Type: Standard DST string with downhole shut-in Last Mud Weight      :      1,61 SG
Packer Type      : Changeable                    Repr Flow Gas      : 5261885,38 mmscf/d
Mud Type         : VERSAVERT                     Repr Flow Oil      :      1346,05 bpd
Top Perf RKB    : 3686,00 m MD                   Repr Flow Condensate :      0,00 bpd
Total Test Time: 297 hours                       Repr Flow Water    :      0,00 bpd
Planned Budget  : 48 hours
    
```

```

Repr Bottom Press: 8100,37 psi                    Peak Surface Pressure : 7469,46 psi
Repr Bottom Temp : 140,00 Celcius                 Peak Surface Temp    : 72,00 Celcius
Repr H2S conc    : 7,00 ppm                       Liner Run Time       : 124 hours
Repr CO2 conc_mol: 3,00 Mol %                     Flow PBU Time        : 48 hours
Repr CO2 conc_ppm: 30000,00 ppm
    
```

```

GOR      : 654 Sm3/Sm3                            Oil Gravity          : 0,83 SG
WOR      : 0 Sm3/Sm3                              Gas Gravity (Air = 1) : 0,74
    
```

```

Produced Water      : 0 Sm3                        Produced and Burned Oil: 201 Sm3
Stored-up Oil       : 0 Sm3                        Produced and Burned Gas: 146500 MSm3
    
```

LOST TIME

```

=====
Other Drill Floor Eq./Syst.      1,5 Charged nitrogen dampener on casing tong guide arm, was discharged
                                   and not working.
Other Well Control Related Equipmen 9,5 Pressured up string to open USSLV. Problem to open USSLV.
                                   Troubleshoot valve problems.
                                   Attempted to open kill valve. No indications of valve open.
                                   Troubleshoot and found valve to be open.
                                   Set STT in mousehole. Discovered that swivel joint was partly
                                   backed out from Lower Master Valve connection. Remade connection
                                   with chain tongs (Right Hand). Pressure tested connection OK to 600
                                   bar. Later made up to 4500 ft.lbs.
Cement: Other                    22,5 BJ changed bleed off valve at cement unit due to leak.
Tubing conveyed perforating gun  2,5 Perforating gun waterflooded due to leak. Laid out gun, pulled back
                                   and re-checked all guns.
Liner Hanger                     20,5 Liner hanger packer failed pressure test. Waited on cement to set
                                   and re-tested linerlap successfully. Ran JM packer as backup.
Other                             66,0 WOW. Heave max 2.3 m. Wind 30-40 knots.
                                   When unlatching the PLT/BHS tool from the tool catcher in the
                                   wireline BOP, the wire broke in the rope socket, and the tool was
                                   lost on top of the closed upper SSLV.
                                   WOW. Ballasted rig to drilling draft.
                                   POOH due to increasing heave (max 2.65 m). Bled off annulus, closed
                                   and inflow tested LPR-N test valve with 310 bar below. Pulled
                                   wireline tools in tool catcher. SSTT with 250 bar below. Bled off
                                   pressure in landing string.
                                   Stopped to monitor annulus pressure on trip tank - statick. Opened
                                   wireline BOP, POOH to check cable for damage - OK.
                                   Attempted to RIH with GR / CCL, stopped at lower lubricator valve.
                                   Cycled valve, still no go. Equalized pressure and opened valve.
    
```

```

-----
Total time                122,5 hours
    
```

REMARKS









## Well Testing Operations: 6407/7-6

Report no : 53 Date : 2000-12-05 Section size :  
 Midnight depth : 3975 m MD Estimated PP : 1,53 sg Mudweight : 1,61 sg

Main Operation	Sub Operation	Description (* = Extended description)	Oper. Time
DNTES	FISH	POOH upper SSLV. Removed remaining fish.	3,00
DNTES	FISH	M/U back up SSLV to test string. M/U side-entry sub w/kelly cock and chicksan, and bled off gas in landing string through rig choke to poor boy degasser. Pressure tested new USSLV.	5,00
DNTES	FISH	POOH to LSSLV and changed plugged injection line. Deballast rig 1 m.	4,00
DNTES	FISH	P/U flowhead and installed same.	1,50
DNTES	FISH	Closed USSLV. Commenced to rig up wireline. Suspended operation due to winds over 40 knots.	1,00
		* Started booster the riser down tje kill line at 14:30 hrs. Stopped boosting at 17:00 hrs.	
DNTES	WAIT	WOW. Ballasted rig to drilling draft.	3,50
DNTES	FISH	Pressure tested string against swab, test choke and USSLV 500 bar/10 min. OK.	0,50
DNTES	FISH	Rigged up wireline lubricator, BOP & grease injector head.	3,50
DNTES	FISH	Flushed 3 m oilbased mud. Opened SBR. Displaced the landing string with 2000 ltr. baseoil. Landed and connected landing string to SSTT valve section. Overpull tested to 30 ton.	2,00

Report no : 54 Date : 2000-12-06 Section size :  
 Midnight depth : 3975 m MD Estimated PP : 1,53 sg Mudweight : 1,61 sg

Main Operation	Sub Operation	Description (* = Extended description)	Oper. Time
DNTES	FISH	Opened SSTT. Pressure tested test string against LPR-N valve to 500 bar/10 min. Closed SSTT, bled off to 20 bar and inflow tested SSTT for 10 min. Equalized pressure and opened SSTT.	2,00
DNTES	FISH	Bled back pressure to 220 bar to Halliburton choke. Pressured annulus to 250 bar and opened LPR-N. Pumped 1400 l. Closed LSSLV, bled to 5 bar above and inflow tested for 10 min. Bled off remaining pressure and closed USSLV.	1,00
		* Pressure in tubing increased to 302 bar when the LPR-N opened.	
DNTES	FISH	Rigged up PLT/BHS tool. M/U wireline grease injector head.	3,00
		* Heave 1.5-1.7 m. Wind 30 knots.	
DNTES	EQUIP	Attempted to open kill valve. No indications of valve open. Troubleshoot and found hydraulic pump to be lacking oil.. Opened kill valve.	0,50
DNTES	EQUIP	Pressured up string to open USSLV. Problem to open USSLV. Leak in SSTT between control line and balance line. Troubleshoot valve problems.	3,00
		* Test suspended due to leaking control line.	
DNTES	WAIT	WOW. Heave max 2.3 m. Wind 30-40 knots.	3,50
TEST	PLT	Rigged down wireline tool string, lubricator and WL BOP.	3,50
TEST	KILL	Held pre job meeting, and prepared to kill the well.	1,50
TEST	KILL	Bullheaded 16.3 m3 kill mud w/470 bar max pressure while keeping 230-240 bar on the annulus to retain the LPR-N valve open.	0,50
TEST	KILL	Monitored wellhead pressure dropping from 250-155 bar after 10 min.	2,50
TEST	KILL	Started mini frac procedure. Pumped 2,5 m3 kill mud to formation.	2,00

Report no : 55 Date : 2000-12-07 Section size :  
 Midnight depth : 3975 m MD Estimated PP : 1,53 sg Mudweight : 1,61 sg

Main Operation	Sub Operation	Description (* = Extended description)	Oper. Time
TEST	KILL	Continued to bleed off the well down, 1.8 bar back pressure and less than 50 l returns, while displacing choke line to OBM.	1,00
TEST	KILL	Closed MPR and pressured up annulus to 330 bar and sheared the RD burst valve. Bled annulus down to 0 bar and monitored same.	1,00
TEST	KILL	Reverse circulated via degasser to condition mud. No noticable gas detection, but some variations in mud weight.	2,00
TEST	KILL	Flowchecked well OK.	0,50
TEST	KILL	Opened MPR and unseated test packer w/115-120 ton upweight. No overpull. Landed string back in wellhead. Closed MPR. Bullheaded 3.7 m3 kill mud down choke line. Flowchecked well 30 min, 2 m3 returns before stabilization.	1,00
TEST	KILL	Circulated long way up choke line and via poor boy degasser. Gain in active pit @ 7:40 hrs. Flowchecked 15 min OK. 3% gas @ 10:15 hrs, flowchecked 15 min OK. Opened MPR, flowchecked 15 min OK.	5,50
		* Start to circulate 800 lpm w/208 bar standpipe pressure: 7% gas. Circulated 1000 lpm w/306 bar and reduced gas from 7-3.2%.	
TEST	KILL	Circulated bottoms up through riser w/1100 lpm and 305 bar. Gas peak @ 2.3% after 2500 stk. Flowchecked 15 min OK. Pumped 4 m3 1.90 SG slug.	3,50
TEST	KILL	Flushed all lines to separator.	0,50
TEST	POHTBG	R/D flowhead, 50 ft bails and flexible hoses. L/D on deck.	3,00





Date	Time	Sequence of Events
26-nov-00	17:20:00	*****
26-nov-00	17:20:00	***** DST # 1, WELL NO: 6407/7-6 *****
26-nov-00	17:20:00	*****
26-nov-00	17:21:00	Start HMR GT 400 Gauge SN 10548
26-nov-00	17:32:00	Start HMR GT 400 Guge SN 10636
26-nov-00	17:44:00	Start HAMR Gauge SN 25022
26-nov-00	17:52:00	Start HAMR Gauge SN 25045
26-nov-00	20:30:00	Start RIH Perforating guns
26-nov-00	21:05:00	Lay down gun # 4 due to water inside, inspect guns on deck ok.
26-nov-00	21:05:00	Retrieve guns in hole and inspect ok
26-nov-00	22:55:00	Start to run back in with guns
27-nov-00	01:35:00	Guns below rotary
27-nov-00	02:30:00	Start to RIH DHT, Omni pos 2.5
27-nov-00	04:45:00	Pressure test BHA against TST valve ok
27-nov-00	05:35:00	Close LPR-N and shear open TST valve continue RIH BHA
27-nov-00	05:35:00	Fill string with diesel
27-nov-00	06:00:00	Stab on one single DC
27-nov-00	06:30:00	Stab on OMNI valve
27-nov-00	07:00:00	Stab on RD valve
27-nov-00	07:15:00	Start to RIH 12 singles DC
27-nov-00	09:25:00	Start to RIH slipjoints
27-nov-00	10:10:00	Finish running slipjoints
27-nov-00	10:30:00	Stab on 1 single 3 1/2" PH 6 tubing
27-nov-00	11:10:00	Pressuretest BHA against LPR-N valve 620 bar
27-nov-00	11:30:00	Good test, continue RIH test tubing
28-nov-00	10:25:00	Pick up SSTT
28-nov-00	11:30:00	Pressure test control line to 3000 psi, Test ok
28-nov-00	11:30:00	Pressure test balance line to 3000 psi, Test ok
28-nov-00	11:45:00	Unlatch SSTT and relatch, measured return 1150 ml. Pressure 104 bar
28-nov-00	12:30:00	SSTT through table
28-nov-00	12:35:00	Pressure test string to 620 bar
28-nov-00	13:36:00	Pump through chemical inj line on SSTT
28-nov-00	13:40:00	Bleed down to 20 bar to inflow test chemical injection check valve on SSTT
28-nov-00	13:45:00	Test ok, Close SSTT and inflow test same
28-nov-00	14:00:00	Test ok
28-nov-00	14:02:02	Equalize pressure and open SSTT
28-nov-00	14:08:00	Bleed down string to zero
28-nov-00	19:10:00	Pick up lower SSLV
28-nov-00	19:40:00	Pressure test control lines, Test ok
28-nov-00	20:05:00	Open lower SSLV
28-nov-00	20:15:00	Pick up upper SSLV
28-nov-00	20:30:00	Pressure test control lines , Test ok
28-nov-00	21:00:00	Open upper SSLV, Liquid drop ok
28-nov-00	21:10:00	Pressure test string to 550 bar
28-nov-00	22:08:00	Pressure test Chemical inj lines on upper and lower SSLV
28-nov-00	22:13:00	Test ok, Bleed off to 20 bar for inflow test same
28-nov-00	22:19:00	Test ok, Bleed off to zero
28-nov-00	22:30:00	Close lower SSLV and bleed off to 40 bar for inflow test
28-nov-00	23:10:00	Test ok , Pressure up to 650 bar
28-nov-00	23:15:00	Open lower SSLV
28-nov-00	23:18:00	Close upper SSLV
28-nov-00	23:19:00	Bleed down to 20 bar and inflow test upper SSLV
28-nov-00	23:32:00	Test ok, Pressure upp to 640 bar and open upper SSLV
28-nov-00	23:38:00	Test not ok, Valve leak at cement unit
28-nov-00	00:22:00	Pressure test lower SSLV from above to 620 bar
29-nov-00	00:45:00	Test ok, Bleed off to zero
29-nov-00	00:50:00	Open lower SSLV , Close upper SSLV and pressure test from above to 620 bar
29-nov-00	01:15:00	Test ok , Bleed off to zero and open upper SSLV
29-nov-00	01:45:00	Pick up long bailes
29-nov-00	03:00:00	Pick up Flowhead
29-nov-00	03:40:00	Pick up coflexip hoses
29-nov-00	05:40:00	Make up Flowhead
29-nov-00	08:00:00	Rig up coflexip hoses on Flowhead and W/L BOP
29-nov-00	10:10:00	Open Flow valve
29-nov-00	10:45:00	Start flush lines through choke

Customer Norsk Hydro  
Start Date 27-11-00



Field Njord  
Well no. 64077-6

Date	Time	Sequence of Events
29-nov-00	10:52:00	Stop flush, Close choke, Total flushed 4.4 m3
29-nov-00	11:05:00	Close Swab valve
29-nov-00	11:15:00	Start pressuretest choke manifold against lower master valve 620 bar
29-nov-00	11:35:00	Good test. Close kill and open choke manifold
29-nov-00	11:45:00	Leak at BJ unit
29-nov-00	12:25:00	Pressure test Swab and Lower Master valves
29-nov-00	12:35:00	Good test. Pressure test Kill valve
29-nov-00	13:20:00	Good test. Close Flow valve and Upper SSLV
29-nov-00	13:30:00	Open Master valve
29-nov-00	13:40:00	Pressure test Upper SSLV, Flow valve and Swab valve 620 bar
29-nov-00	13:57:00	Good test
29-nov-00	14:00:00	Close Lower Master valve and inflo test
29-nov-00	14:25:00	Good test
29-nov-00	14:30:00	Open Master valve, close Kill valve and inflo test same
29-nov-00	14:45:00	Good test
29-nov-00	14:55:00	Open Kill valve
29-nov-00	15:05:00	Close Kill valve
29-nov-00	15:07:00	Rig up W/L
29-nov-00	15:08:00	Open Flow valve
29-nov-00	15:09:00	Choke manifold open
29-nov-00	15:25:00	Open upper SSLV
29-nov-00	16:15:00	RIH W/L
29-nov-00	17:00:00	Open lower SSLV, continue RIH
29-nov-00	17:45:00	Leak through Swab from separator when W/L at 1120 m
29-nov-00	18:00:00	Close BOP ram on W/L, failiure on cable
29-nov-00	21:30:00	Correlating completed POOH with W/L
30-nov-00	01:06:00	Set Champ packer
30-nov-00	01:10:00	Close Choke manifold and Swab valve
30-nov-00	01:20:00	Close MPR
30-nov-00	01:24:00	Pressure up annulus to 120 bar, TBG 0 bar
30-nov-00	01:24:00	Bled off , No indication of opening
30-nov-00	01:34:00	Pressure up TBG to 200 bar with cement unit
30-nov-00	01:36:00	Pressure up annulus 140 bar to open LPR-N. No indication
30-nov-00	02:00:00	Walk the flow lines
30-nov-00	02:00:00	Open Kill valve
30-nov-00	02:13:00	Start pressure up TBG 600 bar to fire guns
30-nov-00	02:18:00	Start bleed off to 195 bar at Choke manifold
30-nov-00	02:18:00	No indication of guns fired
30-nov-00	02:45:00	Bleed off TBG to 100 bar. No indication of guns fired
30-nov-00	03:14:00	Bleed off annulus to zero
30-nov-00	03:28:00	Pressure up annulus to 150 bar .No indication of opening LPR-N
30-nov-00	03:50:00	Bleed off annulus
30-nov-00	04:12:00	Pressure up TBG to 370 bar
30-nov-00	04:14:00	Close Kill valve
30-nov-00	04:18:00	Pressure up annulus to 150 bar .No indication of opening LPR-N
30-nov-00	05:25:00	Bleed of TBG to 10 bar
30-nov-00	07:00:00	Start rig up W/L
30-nov-00	09:30:00	Close Lower Pipe Ram
30-nov-00	09:35:00	Open Middle Pipe Ram.Close Rig choke
30-nov-00	09:37:00	Pump down TBG and up Riser to circulate mud in Kill and Choke line
30-nov-00	09:37:00	Pump pressure 19 bar
30-nov-00	09:50:00	Close Middle Pipe Ram, Open Lower Pipe Ram
30-nov-00	10:05:00	Bleed off TBG pressure , 8 bar to zero
30-nov-00	10:10:00	Close Upper and Lower SSLV
30-nov-00	11:50:00	Pressure Test W/L lubricator
30-nov-00	12:57:00	RIH to verify LPR-N is open
30-nov-00	12:58:00	Open Kill valve, pressure up below lower SSLV 15 bar
30-nov-00	13:25:00	TBG pressure 19 bar, RIH W/L
30-nov-00	15:27:00	W/L tag LPR-N. Valve closed, OMNI pos 6,5
30-nov-00	15:27:00	Bleed off annulus, 60 liters back.
30-nov-00	15:27:00	Pressure up TBG to 150 bar. 230 bar Annulus pressure
30-nov-00	16:25:00	POOH W/L
30-nov-00	17:41:00	W/L at surface. TBG pressure 2 bar
30-nov-00	17:43:00	Open Kill valve
30-nov-00	17:48:00	Pressure up TBG 150 bar, 180 liter

Customer Norsk Hydro  
 Start Date 27-11-00



Field Njord  
 Well no. 64077-6

Date	Time	Sequence of Events
30-nov-00	17:50:00	TBG pressure 161,7 bar, Annulus 220 bar
30-nov-00	18:18:00	Bleed off TBG to zero, 179 liter back
30-nov-00	18:30:00	Pressure up TBG 200 bar, 222 liter
30-nov-00	18:32:00	Bleed off annulus. OMNI pos 7,5
30-nov-00	19:00:00	Meeting at Hydro office
30-nov-00	20:00:00	Bleed off TBG to 20 bar
30-nov-00	20:10:00	Pressure up TBG to 370 bar, volume 360 litres
30-nov-00	20:14:00	Bleed off TBG to 20 bar
30-nov-00	20:16:00	Pressure up annulus to 250 bar. Bleed of from 140 bar by mistake
30-nov-00	20:54:00	Pressure up annulus 250 bar. TBG increase to 80 bar. LPR-N open
30-nov-00	22:00:00	Rig down W/L
30-nov-00	23:23:00	Pressure up TBG to 100 bar
30-nov-00	23:25:00	Open upper SSLV
30-nov-00	23:42:00	Start to pressure up to fire guns
30-nov-00	23:45:00	Pressure at 600 bar
30-nov-00	23:46:00	Start bleed off to 195 bar at Choke manifold
30-nov-00	23:48:00	Choke manifold closed at 191 bar
30-nov-00	23:49:00	Guns fired. Build up for 2 hours
01-des-00	01:49:00	*****
01-des-00	01:49:00	***** INITIAL AND MAIN FLOW *****
01-des-00	01:49:00	*****
01-des-00	01:50:00	Open well at choke manifold. Choke size 16/64" adj. Initial tank 1,5 m3
01-des-00	01:55:00	Tank 2,5 m3
01-des-00	02:00:00	Tank 3,5 m3
01-des-00	02:05:00	Tank 4,6 m3
01-des-00	02:10:00	Tank 5,7 m3
01-des-00	02:15:00	Tank 7,1 m3
01-des-00	02:16:00	Divert flow through separator, 1,5" oil meter
01-des-00	02:24:00	Increase adj. Choke to 20/64"
01-des-00	02:25:00	Open oil flow from separator to tank
01-des-00	02:36:00	Start pump out tank to port flare
01-des-00	02:38:00	Gas to surface
01-des-00	02:40:00	Start flaring gas
01-des-00	02:47:00	Increase glycol inj. to 3 litres/min
01-des-00	02:48:00	Choke plugged with mud
01-des-00	02:50:00	Stopped pumping out tank. Tank 4,8 m3. BS&W 100% Mud
01-des-00	02:50:00	BSW = 100 % mud
01-des-00	02:56:00	Increase adj. Choke to 24/64"
01-des-00	03:04:00	Tank 8 m3
01-des-00	03:08:00	Start pump out tank to port flare
01-des-00	03:16:00	Increase adj. Choke to 28/64"
01-des-00	03:17:00	Stopped pumping out tank. Tank 3,0 m3
01-des-00	03:17:00	Increase adj. Choke to 32/64"
01-des-00	03:24:00	Increase adj. Choke to 36/64"
01-des-00	03:25:00	Increase adj. Choke to 40/64"
01-des-00	03:30:00	BSW = 100 % mud, trace solids
01-des-00	03:37:00	Increase adj. Choke to 44/64"
01-des-00	03:42:00	Increase adj. Choke to 48/64"
01-des-00	03:50:00	BSW = 0 %, trace of solids
01-des-00	03:55:00	Increase adj. Choke to 52/64"
01-des-00	04:10:00	BSW = 0 %, trace of solids
01-des-00	04:11:00	Increase adj. Choke to 56/64"
01-des-00	04:15:00	H2S = < 0.2 ppm, CO2 = 3.5 %
01-des-00	04:30:00	Tank 11,0 m3
01-des-00	04:32:00	Start pump out tank to port flare
01-des-00	04:50:00	Stop pumping out tank. Tank 3m3
01-des-00	04:51:00	Increased adj. Choke to 60/64"
01-des-00	05:00:00	H2S = < 0.2 ppm, CO2 = 3.8 %
01-des-00	05:00:00	BSW 0 %, trace of solids
01-des-00	05:01:00	Increase adj. Choke to 64/64"
01-des-00	05:06:00	Increase adj. Choke to 64/64"
01-des-00	05:08:00	Increase adj. Choke to 68/64"
01-des-00	05:10:00	When increasing choke to 72/64" sudden drop in WHP occurd
01-des-00	05:10:00	Adj. Choke been partially plugged
01-des-00	05:10:00	Increase adj. Choke to 72/64"

Date	Time	Sequence of Events
01-des-00	05:12:00	Decrease adj.Choke to 68/64"
01-des-00	05:14:00	Divert oilflow from tank to port flare
01-des-00	05:14:00	Decrease adj.Choke to 64/64"
01-des-00	05:19:00	Decrease adj.Choke to 60/64"
01-des-00	05:30:00	H2S = < 0.2 ppm , CO2 = 4 %
01-des-00	05:30:00	BSW = 0 % , trace of solids
01-des-00	05:30:00	Divert oilflow from port flare to tank
01-des-00	05:39:00	Start dump water from separator
01-des-00	05:46:00	Stop flowing oil from separator
01-des-00	05:50:00	Stop dump water from separator
01-des-00	05:54:00	Start flow oil from separator
01-des-00	05:58:00	Decrease to fixed 48/64" Choke
01-des-00	06:00:00	BSW = 0 % , trace of solids
01-des-00	06:02:00	Increase to 60/64" adj. Choke
01-des-00	06:09:00	Start pump out tank to port flare
01-des-00	06:29:00	Stop pumping out tank. Tank 2,5m3
01-des-00	06:30:00	Decrease to fixed 40/64" Choke
01-des-00	06:30:00	H2S = < 0.2 ppm , CO2 = 4 %
01-des-00	06:30:00	BSW 0 %
01-des-00	06:40:00	Oil SG = 0.812 @ 21 DegC
01-des-00	06:45:00	BSW = 0 % , trace of solids
01-des-00	07:00:00	H2S = 2.5 ppm , CO2 = 4 %
01-des-00	07:22:00	Start pump out tank to port flare
01-des-00	07:30:00	H2S = 3 ppm , CO2 = 3.5 %
01-des-00	07:50:00	Lower 2.250" Plate into daniels box
01-des-00	07:51:00	Stop pump out tank to port flare
01-des-00	08:00:00	BSW = 0 % ,
01-des-00	08:00:00	H2S = 3.5 ppm , CO2 = 3.2 %
01-des-00	08:20:00	Stop steam generator
01-des-00	08:30:00	H2S = 4 ppm , CO2 = 3.5 %
01-des-00	08:46:00	Start pump out tank to port flare
01-des-00	08:58:00	Stop pump out tank to port flare
01-des-00	09:00:00	BSW = 0 %
01-des-00	09:00:00	H2S = 4.2 ppm , CO2 = 3.7 %
01-des-00	09:00:00	Shrinkage factor = 0.93
01-des-00	09:13:00	Adjust level in Separator
01-des-00	09:30:00	BSW = 0 %
01-des-00	09:45:00	BSW = 0 %
01-des-00	10:00:00	BSW = 0 %
01-des-00	10:00:00	H2S = 5.5 ppm , CO2 = 3.5 %
01-des-00	10:02:00	Start pump out tank to port flare
01-des-00	10:15:00	BSW = 0 %
01-des-00	10:16:00	Stop pump out tank to port flare
01-des-00	10:18:00	Divert flow to port burner
01-des-00	10:30:00	BSW on Oil line = 0 %
01-des-00	10:30:00	Oil SG = 0.819 @ 22 DegC, Gas SG 0.738
01-des-00	10:30:00	BSW = 0 %
01-des-00	10:45:00	BSW = 0.0 %
01-des-00	10:45:00	Oil SG= 0.819 @ 22 DegC, Gas SG 0.738
01-des-00	11:00:00	H2S = 6 ppm , CO2 = 3.5 %
01-des-00	11:00:00	BSW = 0 % , Trace of solids
01-des-00	11:07:00	Divert flow to starboard side
01-des-00	12:20:00	Start meter factor on 1.5" oil line
01-des-00	12:20:00	Initial MAN meter = 108,21 m3
01-des-00	12:20:00	Initial SDA meter = 6,416 m3
01-des-00	12:20:00	Initial tank = 1,40m3,
01-des-00	12:30:00	H2S = 6.5 ppm , CO2 = 3.5 %
01-des-00	12:45:00	BSW = 0 %
01-des-00	13:00:00	BSW = 0 %
01-des-00	13:21:00	Final tank = 11,40 m3
01-des-00	13:21:00	Final Man mtr = 119,63 m3
01-des-00	13:21:00	Final SDA mtr = 17,792 m3
01-des-00	13:21:00	Meter factor MAN = 0,876 ,Meter factor SDA = 0,879
01-des-00	13:30:00	BSW = 0 %
01-des-00	14:00:00	BSW = 0 %

Date	Time	Sequence of Events
01-des-00	14:10:00	H2S = 7 ppm
01-des-00	14:30:00	BSW = 0 %
01-des-00	14:50:00	Start pump out tank to starboard flare
01-des-00	14:55:00	Stop pump out tank to starboard flare
01-des-00	15:00:00	BSW = 0 %
01-des-00	15:00:00	Oil SG = 0.818 @ 26 DegC
01-des-00	15:00:00	Shrinkage factor = 0.92
01-des-00	15:04:00	Close 2 burner heads to increase burner back pressure
01-des-00	15:30:00	BSW = 0 %
01-des-00	15:45:00	Gas SG = 0.738, H2S = 0 ppm, CO2 = 3.8 %
01-des-00	16:00:00	BSW = 0 %
01-des-00	16:30:00	BSW = 0 %
01-des-00	16:30:00	Oil SG = 0.817 @ 24 DegC
01-des-00	16:45:00	Gas SG 0.740
01-des-00	16:45:00	CO2 = 3.8 %, H2S = 0 ppm
01-des-00	16:55:00	Bleed off differential pressure to clean system
01-des-00	17:00:00	BSW = 0 %
01-des-00	17:30:00	BSW = 0 %
01-des-00	17:40:00	H2S = 7 ppm
01-des-00	18:00:00	Oil SG= 0.819 @ 26 DegC
01-des-00	18:00:00	Gas SG 0.739
01-des-00	18:00:00	H2S = 0 ppm, CO2 = 4 %
01-des-00	18:00:00	BSW = 0 %
01-des-00	18:30:00	BSW = 0 %
01-des-00	18:30:00	Start dumping water from Separator to tank
01-des-00	18:34:00	Stop dumping water from Separator to tank
01-des-00	19:00:00	BSW = 0 %
01-des-00	19:30:00	BSW = 0 %
01-des-00	19:30:00	Oil SG = 0.805 @ 23 DegC
01-des-00	19:55:00	Start pump out tank to starboard flare
01-des-00	20:05:00	Stop pump out tank to starboard flare
01-des-00	20:10:00	Start meterfactor
01-des-00	20:10:00	Initial tank 3,50 m3
01-des-00	20:10:00	Initial MAN meter 192,59 m3
01-des-00	20:10:00	Initial SDA mtr = 13,647 m3
01-des-00	21:00:00	BSW = 0 %
01-des-00	21:00:00	Gas SG = 0,742
01-des-00	21:06:00	Stop meterfactor
01-des-00	21:06:00	Final tank = 11,9 m3.
01-des-00	21:06:00	Final MAN meter = 202,33 m3
01-des-00	21:06:00	Final SDA mtr = 23,186 m3
01-des-00	21:06:00	Meter factor MAN = 0,862 ,Meter factor SDA = 0,881
01-des-00	21:11:00	Start pump out tank
01-des-00	21:22:00	Stop pump out tank
01-des-00	21:30:00	BSW = 0 %
01-des-00	22:10:00	Start pump out tank to starboard flare
01-des-00	22:18:00	Stop pump out tank to starboard flare
01-des-00	22:18:00	Tank level = 4.3 m3
01-des-00	23:00:00	BSW = 0 %
01-des-00	23:10:00	Petrotech start sample at 1,5" oil line
01-des-00	23:10:00	Start pump out tank to starboard flare
01-des-00	23:17:00	Stop pump out tank to starboard flare.Tank 3,9 m3
01-des-00	23:17:00	Shrinkage = 0.92
02-des-00	00:00:00	BSW = 0 %
02-des-00	00:00:00	H2S = 7 ppm, CO2 = 4 %
02-des-00	00:19:00	Start pump out tank to starboard flare
02-des-00	00:27:00	Stop pump out tank to starboard flare.Tank 3,8 m3
02-des-00	00:54:00	Start meterfactor
02-des-00	00:54:00	Initial tank 1,90 m3
02-des-00	00:54:00	Initial MAN meter 240,09 m3
02-des-00	00:54:00	Initial SDA mtr = 61,762 m3
02-des-00	01:21:00	Petrotech finished sample at 1,5" oil line
02-des-00	01:30:00	Start pump dewax and glycol
02-des-00	01:52:00	Lift orifice plate
02-des-00	01:55:00	Stop meterfactor

Customer Norsk Hydro  
Start Date 27-11-00



Field Njord  
Well no. 6407/7-6

Date	Time	Sequence of Events
02-des-00	01:55:00	Final tank = 10,45 m3.
02-des-00	01:55:00	Final MAN meter = 249,91 m3
02-des-00	01:55:00	Final SDA mtr =71,607 m3
02-des-00	01:55:00	Meter factor MAN = 0,866 ,Meter factor SDA = 0,863
02-des-00	02:00:00	Bleed off annulus to zero
02-des-00	02:00:00	Close in well at LPR-N
02-des-00	02:06:00	Close Choke manifold
02-des-00	02:28:00	Stop pumping glycol and dewax
03-des-00	01:55:00	Degas panel tripped.PSD 1.Set Degas panel in PSD bypass
03-des-00	02:05:00	Wing valve,SSV and SSTT open
03-des-00	02:15:00	Pressure up annulus to open LPR-N
03-des-00	02:30:00	Attempt to close lower SSLV
03-des-00	02:36:00	Cycle lower SSLV
03-des-00	02:40:00	Close lower SSLV
03-des-00	02:45:00	Start bleed down WHP at Choke manifold
03-des-00	03:02:00	Choke closed.WHP 5 bar.Inflo test
03-des-00	03:13:00	Test ok.Bleed down to zero
03-des-00	03:15:00	Pressure zero.Choke open
03-des-00	03:16:00	Close upper SSLV
03-des-00	03:20:00	Commence R/U W/L
03-des-00	05:09:00	Close Choke manifold
03-des-00	05:18:00	Open upper SSLV
03-des-00	05:24:00	P/T W/L BOP 500 bar
03-des-00	05:43:00	Bled down pressure to 340 bar at Choke manifold
03-des-00	05:48:00	Close Kill valve
03-des-00	05:50:00	Opened lower SSLV
03-des-00	05:57:00	Start RIH W/L PLT and Sampling
03-des-00	09:27:00	Initial tank = 1.73 m3
03-des-00	09:35:00	Start inj Metanol in SSTT
03-des-00	09:45:00	POO W/L with PLT, Weather is coming up
03-des-00	10:25:00	Bleed down Annulus pressure to close LPR-N
03-des-00	10:45:00	Bleed down pressure in test string to 247 bar at choke and inflow test LPR-N
03-des-00	11:15:00	W/L at surface
03-des-00	11:20:00	Test ok
03-des-00	11:21:00	Close SSTT, Bleed down to 25 bar and inflow test same
03-des-00	11:45:00	Test ok , Bleed down to zero at choke and leave choke open
04-des-00	05:30:00	Rig down W/L
04-des-00	05:35:00	W/L brake cable head
04-des-00	05:35:00	PLT string fell down on upper SSLV
04-des-00	10:55:00	Start fishing
04-des-00	11:15:00	Latch on fish POOH
04-des-00	12:15:00	Fish OOH.Missing 1,80 meter of PLT string
04-des-00	15:15:00	Try to fish rest of PLT string
04-des-00	17:00:00	W/L OOH.Start rig down
04-des-00	19:00:00	Commence pull landing string to change upper SSLV
04-des-00	19:15:00	Close lower SSLV
04-des-00	20:39:00	Try to unlatch SSTT
04-des-00	20:40:00	25 ton overpull
04-des-00	20:42:00	Set down 5 ton
04-des-00	20:43:00	Bleed back latch line to 0 bar
04-des-00	20:45:00	Pump up latch line to 3000 psi
04-des-00	20:47:00	30 ton overpull
04-des-00	20:48:00	Unlatch SSTT
04-des-00	21:30:00	Thread between lower master and swivel was backed off half way
04-des-00	23:23:00	Start pressure test flowhead to 620 bar against choke manifold
05-des-00	00:06:00	Good test, bleed down pressure to 0 bar at choke manifold
05-des-00	06:06:00	Open lower SSLV to bleed of 40 bar between lower SSLV and SSTT
05-des-00	06:43:00	Pressure test lower SSLV from above to 620 bar
05-des-00	07:20:00	Test ok, bleed down to 60 bar
05-des-00	07:35:00	Open SSLV
05-des-00	07:37:00	Circulate down tubing up riser
05-des-00	08:08:00	Close upper SSLV
05-des-00	08:12:00	Open upper SSLV, 1180 ml in return
05-des-00	08:13:00	Close lower SSLV
05-des-00	08:14:00	Open lower SSLV

Customer Norsk Hydro  
Start Date 27-11-00



Field Njord  
Well no. 64077-6

Date	Time	Sequence of Events
05-des-00	08:15:00	Drift 2.625" 15 m
05-des-00	08:45:00	Made up STT above lower master
05-des-00	10:00:00	Change check valve on lower SSLV
05-des-00	10:58:00	Upper SSLV in rotary
05-des-00	11:25:00	Make up 1 singel above SSLV
05-des-00	17:45:00	Start flushing across Choke
05-des-00	17:59:00	Start pressure testing against upper SSLV to 500 bar
05-des-00	18:26:00	Test ok, WOW
05-des-00	23:22:00	Pump through landing string and wash over latch receiver
05-des-00	23:30:00	Bleed off latch control pressure and measure returns
06-des-00	00:09:00	Relatch SSTT and open same
06-des-00	00:22:00	Pressure test string 500 bar 10 min against closed LPR-N
06-des-00	00:25:00	Close SSTT
06-des-00	00:40:00	Bleed off pressure above SSTT to 10 bar and inflo test
06-des-00	00:47:00	Equalize pressure across SSTT
06-des-00	00:50:00	Open SSTT
06-des-00	00:55:00	Bleed off to 220 bar on choke
06-des-00	01:01:00	Attempt to close Kill valve, close Flow valve instead.Lines crossed
06-des-00	01:01:00	Close Kill valve
06-des-00	02:16:00	Open LPR-N 250 bar
06-des-00	02:27:00	Close lower SSLV and bleed off to 5 bar above ,inflo test
06-des-00	02:40:00	Test ok.Bleed off to zero
06-des-00	02:45:00	Close upper SSLV
06-des-00	02:53:00	Open Swab valve
06-des-00	03:00:00	Commence R/U W/L
06-des-00	09:42:00	Close lower SSLV
06-des-00	13:20:00	Open Kill valve
06-des-00	13:22:00	Pressure up to 470 bar
06-des-00	13:23:00	Close Kill valve
06-des-00	13:38:00	Bleed of to zero at choke
06-des-00	13:45:00	Close upper SSLV
06-des-00	13:46:00	Rig down W/L
06-des-00	15:25:00	Start bleed down Separator to tank
06-des-00	15:45:00	Stop Bleed down Separator to tank
06-des-00	16:29:00	Close Swab valve
06-des-00	17:10:00	Equalize pressure across SSTT and open same
06-des-00	17:17:00	Bleed down to zero at choke
06-des-00	17:23:00	Close choke. Tank level = 4.7 m3
06-des-00	17:52:00	Start bullhead
06-des-00	18:27:00	Stop bullhead. Total pumped 16,3 m3
06-des-00	23:14:00	Open choke, start bleed off WHP from 137 bar
06-des-00	23:22:00	Pressure at zero.Closed choke, 1 m3 in returns
06-des-00	23:27:00	Open choke, bleed off pressure from 46 bar to zero
06-des-00	23:31:00	Closed choke. 0.25 m3 in returns
06-des-00	23:39:00	Open choke , bleed down pressure from 14 bar to zero
06-des-00	23:42:00	Closed choke. 0.15 m3 in returns
06-des-00	23:48:00	Open choke , bleed down pressure from 3.0 bar to zero
06-des-00	23:51:00	Close choke.0.1 m3 in returns
07-des-00	00:21:00	Open choke , bleed down pressure from 8.0 bar to zero
07-des-00	00:25:00	Close choke.0.05 m3 in returns
07-des-00	00:51:00	Open choke , bleed down pressure from 2.5 bar to zero
07-des-00	00:54:00	Close choke.
07-des-00	01:05:00	Pressure up annulus to 240 bar
07-des-00	01:18:00	Start pressure up annulus to shear RD circulation valve
07-des-00	01:23:00	Shear RD circulation valve
07-des-00	01:32:00	Bleed down pressure on the rig choke
07-des-00	02:00:00	Start reverse circulate
07-des-00	02:10:00	Close Flow Wing valve and Kill valve
07-des-00	03:40:00	Circulation complete
07-des-00	03:55:00	Monitor Flow
07-des-00	04:25:00	Open Middle Piperam
07-des-00	04:30:00	Unset packer
07-des-00	04:38:00	Land hanger
07-des-00	04:45:00	Close Middle Piperam
07-des-00	04:46:00	Close Kill valve

Customer Norsk Hydro  
Start Date 27-11-00



Field Njord  
Well no. 6407/7-6

Date	Time	Sequence of Events
07-des-00	04:59:00	Bullhead 2,5 m3 killmud
07-des-00	05:01:00	Open Kill valve
07-des-00	05:01:00	Commence circulate "the long way"
07-des-00	05:38:00	Bleed off pressure at choke from 25 bar to zero
07-des-00	18:50:00	Upper SSLV OOH
07-des-00	19:30:00	Lower SSLV OOH
07-des-00	23:55:00	SSTT OOH
08-des-00	14:00:00	Slip joint to surface
08-des-00	16:15:00	Lay down OMNI
08-des-00	16:40:00	Lay down LPR-N
08-des-00	17:15:00	Gauge carrier OOH
08-des-00	17:20:00	Gauge carrier on deck
08-des-00	17:23:00	OOH
08-des-00	17:43:00	Gauges out of carrier
08-des-00	19:05:00	Stopped gauge # 10636
08-des-00	19:09:00	Stopped gauge # 10548
08-des-00	19:13:00	Stopped gauge # 25045
08-des-00	19:16:00	Stopped gauge # 25022



10/12/00

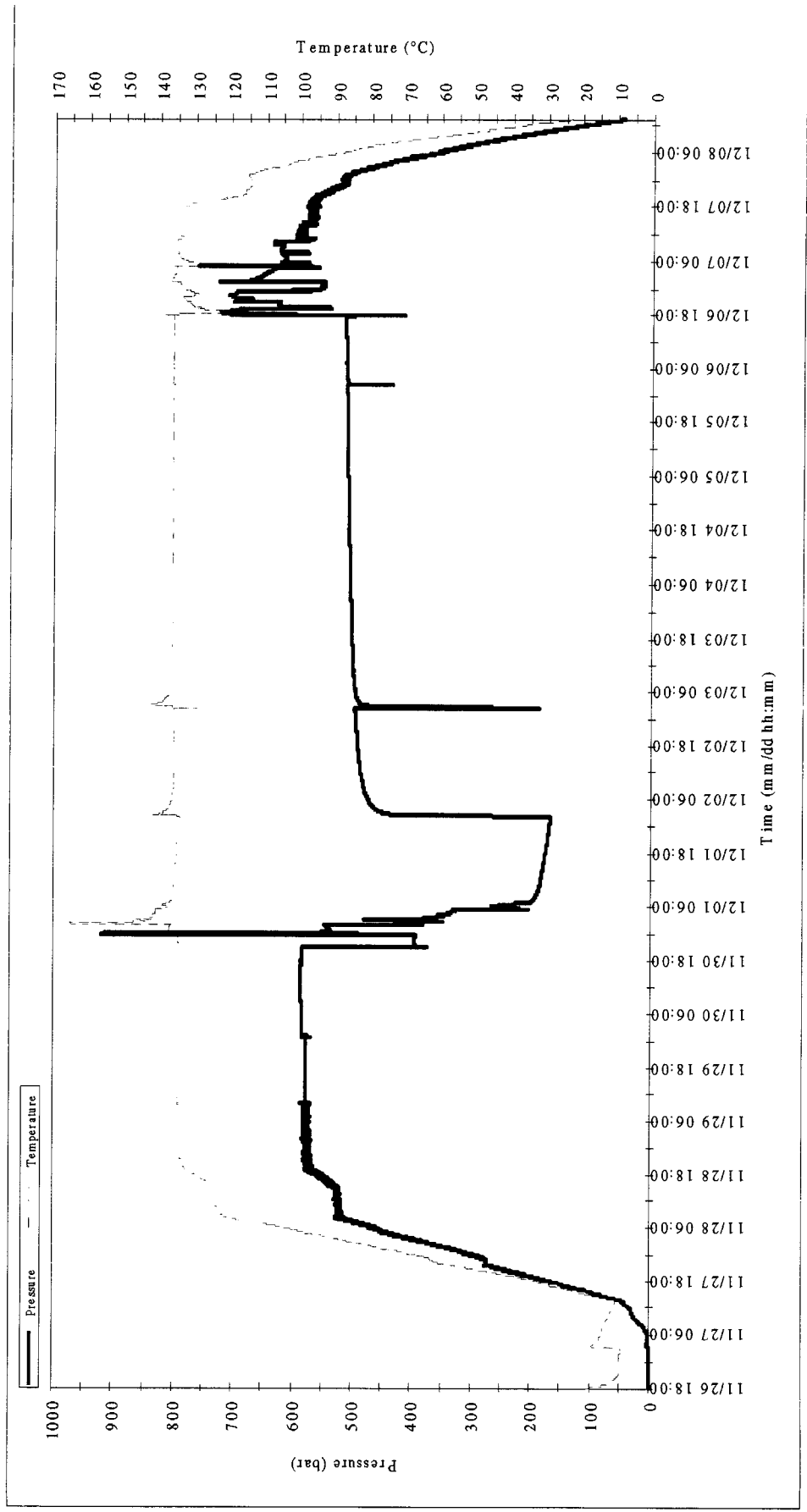
## Halliburton Electronic Gauge Service

### JOB INFORMATION:

Customer Name: NORSK HYDRO A/S  
Ticket No: 20206  
Gauge Start Date: 11/26/2000  
Well Name: Njord

Transducer SN: 25045  
Controller SN: 25045

### PRESSURE/TEMPERATURE HISTORY:



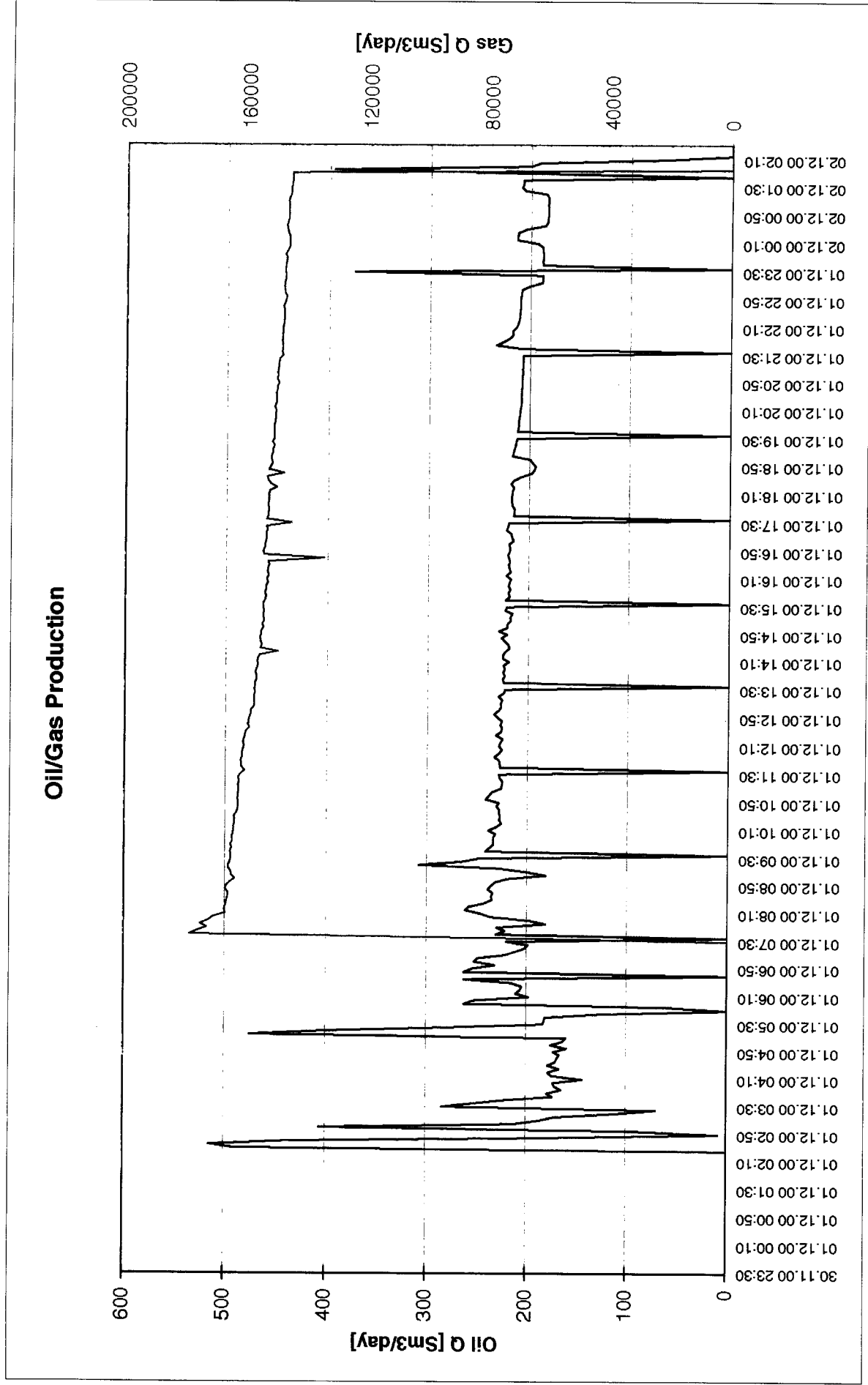
Customer  
Start Date

Norsk Hydro  
27-11-00



Field  
Well no.

Njord  
640717-6



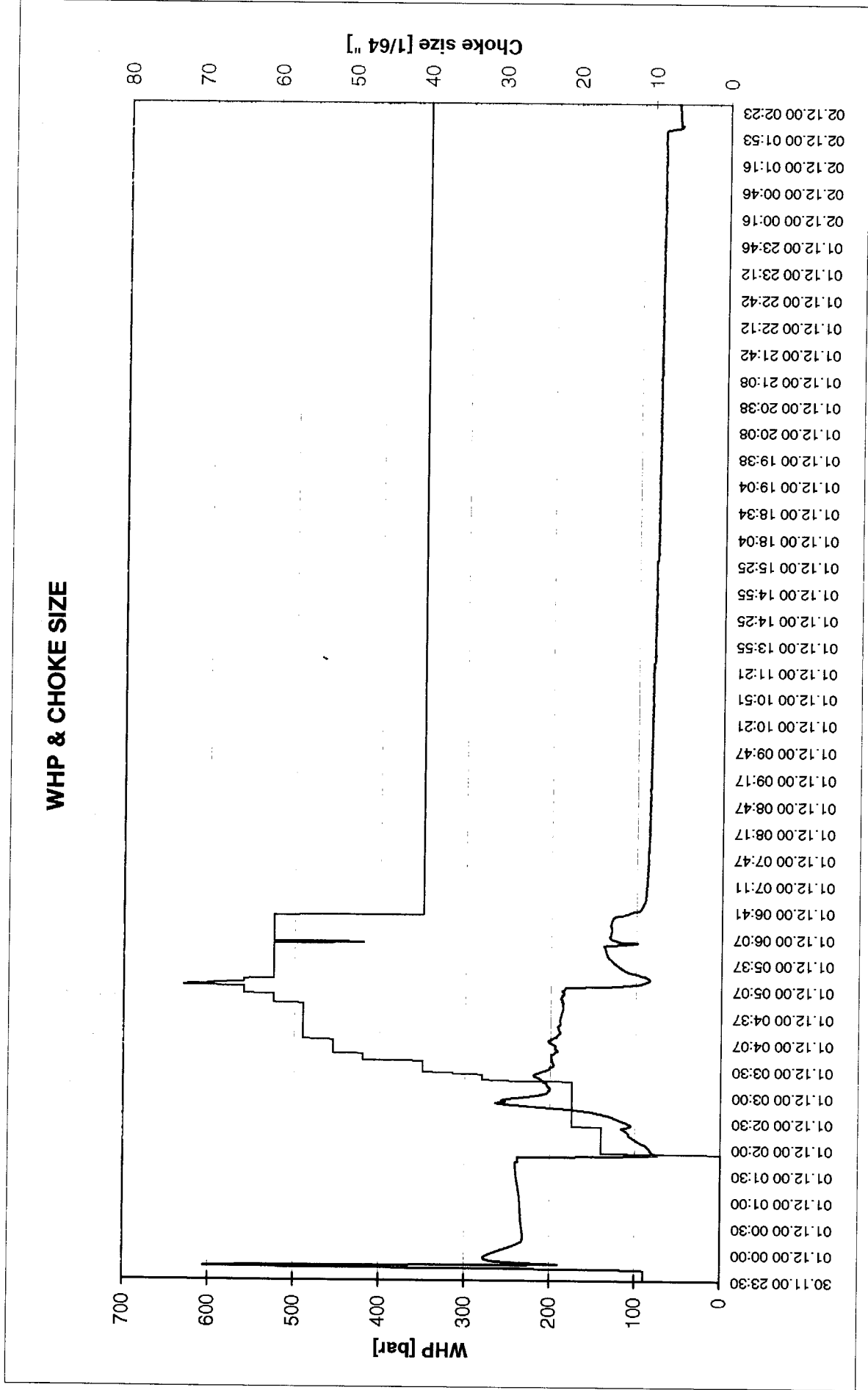
Customer  
Start Date

Norsk Hydro  
27-11-00



Field  
Well no.

Njord  
64077-6

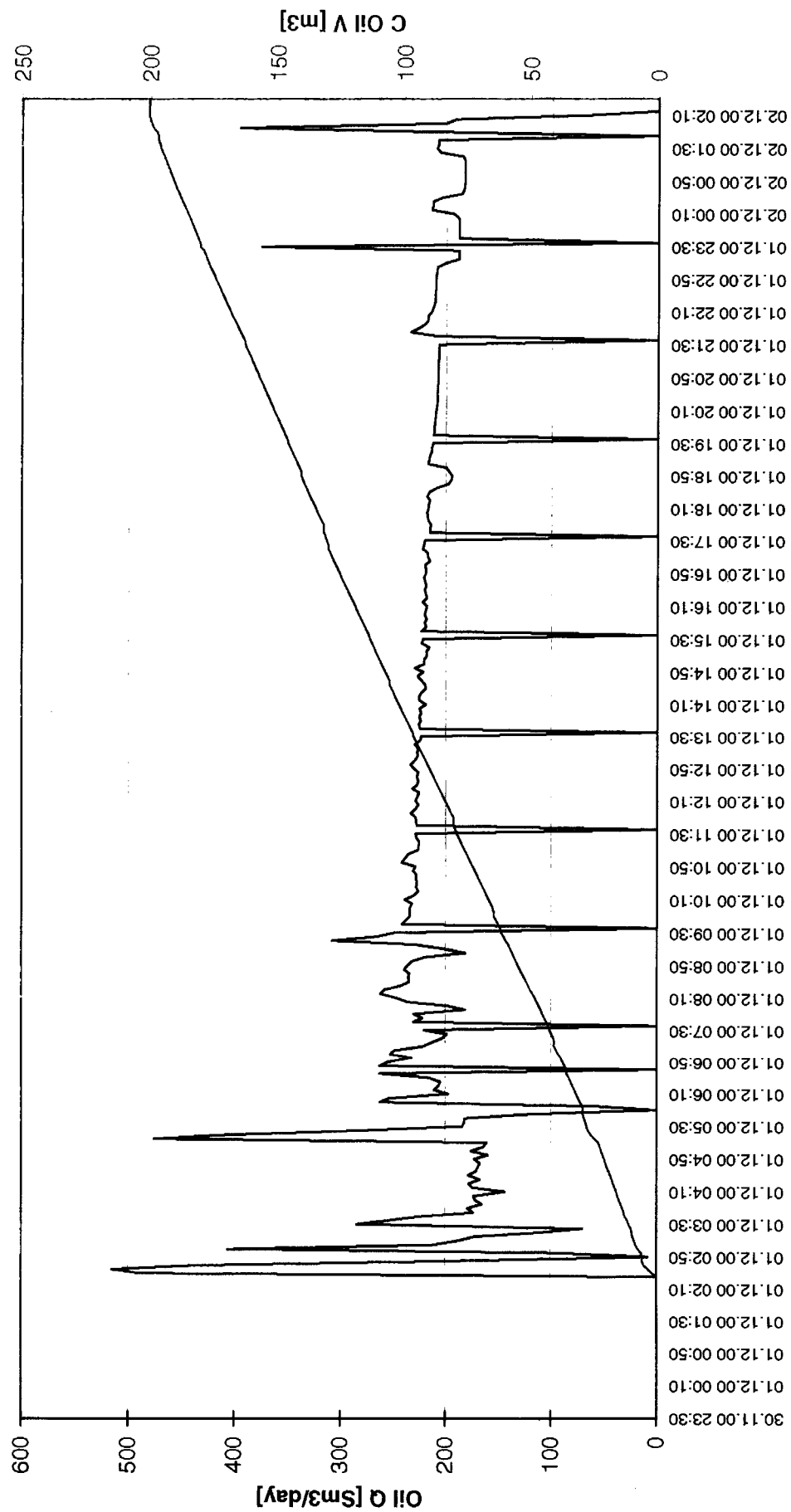




Customer Norsk Hydro  
Start Date 27-11-00

Field Njord  
Well no. 64077-6

### Oil Production



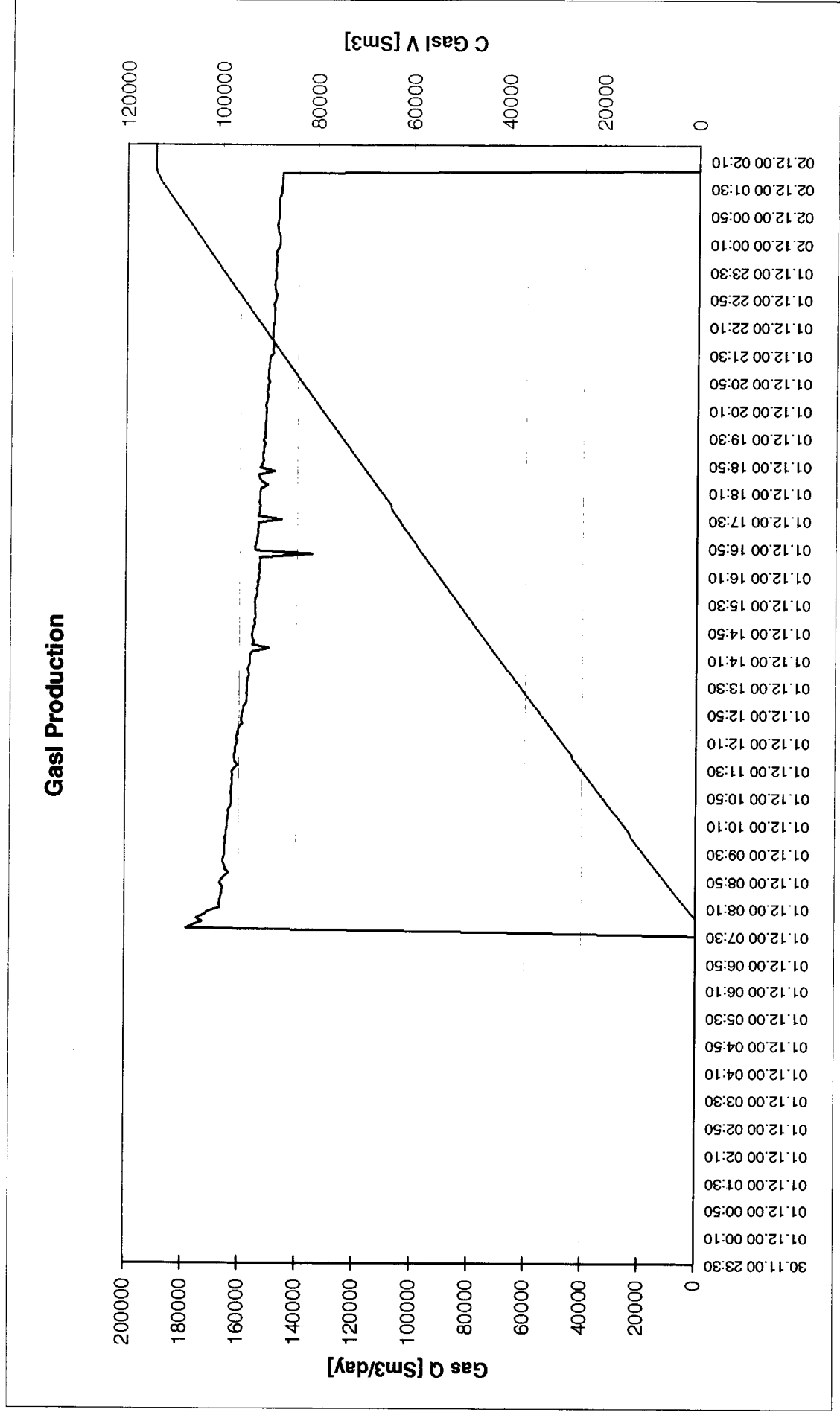
Customer  
Start Date

Norsk Hydro  
27-11-00




Field  
Well no.

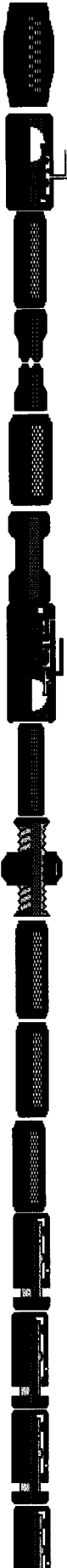
Njord  
64077-6




Depth given is bottom of Tool / Pipe


## TEST STRING WITH TCP PERFORATING GUNS

COMPANY:	NORSK HYDRO	WELL:	EXPLORATION			
AREA:	NORTH SEA	RIG:	SCARABEO 6			
SERVICE:	STE/OFD/DST/TCP	FIELD:	6407/7-6			
CUSTOM. REP:	MARK COOPER	BASE:	TANANGER			
HES REPR.:	EIRIK S. ARNESTAD	DATE:	08/09/2000			
	Threads	Description	Length (m)	OD (in)	ID (in)	Depth (m) MD
	5.75" 4SA Box	Handling Sub	1,10	5,00	2,50	
	5.75" 4SA Pin					
	5.75" 4SA Box	10k Flow Head	1,50		3,00	
	5.75" 4SA Box					
	5.75" 4SA Pin	Swivel	0,90		3,00	
	5.75" 4SA Pin					
	5.75" 4SA Box	LMW, Manual	0,45		3,00	-7,66
	5.75" 4SA Box					
	5.75" 4SA Pin	Crossover	0,3			-7,36
	5.5" New Vam Pin					
	5.5" New Vam Box	5 1/2" Thermal tubing 42,2lb/ft L80 (2jts+ 1 pup)	25	5,50	3,00	17,64
	5.5" New Vam Pin					
	5.5" New Vam Box	Crossover	0,3			17,94
	4.5" 4A Pin					
	4.5" 4A Box	Centralizer	1,04	14,50	3,00	18,98
	4.5" 4A Pin					
	4.5" 4A Box	10k Upper Lub. Valve	1,82	10,75	3,00	20,80
	4.5" 4A Box					
	4.5" 4A Pin	Crossover	0,58	5,50	3,00	21,38
	5.5" New Vam Pin					
5.5" New Vam Box	5 1/2" Thermal tubing 42,2lb/ft L80 (PUP JOINT)	9,6	5,50	3,00	30,98	
5.5" New Vam Pin						
5.5" New Vam Box	Crossover	0,58	5,50	3,00	31,56	
4.5" 4A Pin						

	Threads	Description	Length (m)	OD (In)	ID (In)	Depth (m) MD
	4.5" 4A Box	Centralizer	1,04	14,50	3,00	32,60
	4.5" 4A Pin					
	4.5" 4A Box	10k Lub. Valve	1,82	10,75	3,00	34,42
	4.5" 4A Box					
	4.5" 4A Pin	Crossover	0,54	5,50	3,00	34,96
	5.5" New Vam Pin					
	5.5" New Vam Box	5 1/2" Thermal tubing 42,2lb/ft L80	345	5,50	3,00	379,96
	5.5" New Vam Pin					
	5.5" New Vam Box	Crossover	0,49	5,50	3,00	380,45
	4.5" 4A Pin					
	4.5" 4A Box	Shearable H. Sub	1,53	5,00	3,00	381,98
	4.5" 4A Pin					
	4.5" 4A Box	10k Super Tree II	1,72	13,00	3,00	383,70
	4.5" 4A Box					
	4.5" 4A Pin	5" Slick Joint	1,90	5,00	3,00	385,60
	4.5" 4A Pin					
	4.5" 4A Box	Adjustable Mandrel	1,85	11,00	3,00	387,00
	4.5" 4A Pin					387,45
	4.5" 4A Box	Crossover	0,80	5,00	3,00	388,25
	3,5" PH6 Pin					
	3,5" PH6 Box	Tubing 3,5" PH6 L80 12,95lbs/ft	3079,15	3,50	2,75	3467,40
	3,5" PH6 Pin					
	3,5" PH6 Box	Crossover	0,35	4,75	2,75	3467,75
	3,875" CAS Pin					
	3,875" CAS Box	Slipjoint (open)	7,54	5,03	2,25	3475,29
	3,875" CAS Pin					
	3,875" CAS Box	Slipjoint (open)	7,54	5,03	2,25	3482,83
3,875" CAS Pin						
3,875" CAS Box	Slipjoint (closed)	6,02	5,03	2,25	3488,85	
3,875" CAS Pin						
3,875" CAS Box	Slipjoint (closed)	6,02	5,03	2,25	3494,87	

	Threads	Description	Length (m)	OD (In)	ID (In)	Depth (m) MD
	3,875" CAS Pin					
	3,875" CAS Box	RA Marker Sub	0,57	5,00	2,25	3495,44
	3,875" CAS Pin					
	3,875" CAS Box	Crossover	0,30	4,75	2,25	3495,74
	3.5" PH6 Pin					
	3.5" PH6 Box	<b>Weatherford 4,75" Drill Collars (4 stands)</b>	113,45	4,75	2,25	3609,19
	3.5" PH6 Pin					
	3.5" PH6 Box	Crossover	0,3	4,75	2,25	3609,49
	3,875" CAS Pin					
	3,875" CAS Box	RD Circ. Valve	0,93	5,03	2,28	3610,42
	3,875" CAS Pin					
	3,875" CAS Box	OMNI Circ. Valve	6,52	5,03	2,25	3616,94
	3,875" CAS Pin					
	3,875" CAS Box	Sliding Sleeve Drain Valve	1,05	5,03	2,28	3617,99
	3,875" CAS Pin					
	3,875" CAS Box	Crossover	0,30	4,75	2,25	3618,29
	3.5" IF Pin					
	3.5" IF Box	4,75" Drill Collars (1 single)	9,6	4,75	2,25	3627,89
	3.5" IF Pin					
	3.5" IF Box	Crossover	0,30	4,75	2,25	3628,19
	3,875" CAS Pin					
	3,875" CAS Box	LPR-N Tester Valve	5,14	5,03	2,25	3633,33
	3.5 PH6 BOX	XOVER				
	3,875" CAS Box	SCAR Gauge Carrier	5,54	5,50	2,25	3638,87
	3.5 PH6 PIN	XOVER				
	3,875" CAS Box	TST Valve	1,22	5,03	2,28	3640,09
	3,875" CAS Pin					
	3,875" CAS Box	Big John Jar	1,57	5,03	2,25	3641,66
	3,875" CAS Pin					
	3,875" CAS Box	Safety Joint	0,90	5,00	2,44	3642,56
	3,875" CAS Pin					

	Threads	Description	Length (m)	OD (in)	ID (in)	Depth (m) MD
	3.875" CAS Box	7" Champ IV Packer 35ppf	2,51	5,87	2,37	3645,07
	3.5" IF Pin					
	3.5" IF Box	Perforated pipe	0,5	5,00	2,25	3645,57
	3.5" IF Pin					
	3.5" IF Box	Crossover	0,3	5,00	2,25	3645,87
	3.875" CAS Pin					
	3.875" CAS Box	Instream Gauge Carrier	2,35	5,50	2,25	3648,22
	3.875" CAS Pin					
	3.875" CAS Box	Crossover	0,3	5,00	2,25	3648,52
	3.5" IF Pin					
	3.5" IF Box	Vertical Shock Absorber	1,48	5,00	2,25	3650,00
	3.5" IF Pin					
	3.5" IF Box	Crossover	0,3	3,50	2,25	3650,30
	2-7/8" EUE 8RD Pin					
	2-7/8" EUE 8RD Box	'Tubing 2-7/8" EUE 8RD	3,00	3,69	2,44	3653,30
	2-7/8" EUE 8RD Pin					
	2-7/8" EUE 8RD Box	Mechanical Tubing Release 2-7/8"	0,50	3,38	2,13	3653,80
	2-7/8" EUE 8RD Pin					
	2-7/8" EUE 8RD Box	Tubing 2-7/8" EUE 8RD	3,09	3,69	2,44	3656,89
	2-7/8" EUE 8RD Pin					
	2-7/8" 6P ACME Pin	Detonation Interruption Device 3-3/8"	0,93	3,38	N/A	3657,82
	2-7/8" 6P ACME Box					
	2-7/8" 6P ACME Pin	4-5/8" Blank Section	30,18	4,63	N/A	3688,00
	4,0" 6P ACME Box					
	4,0" 6P ACME Pin	4-5/8" Guns, 12spf HMX DP 22,7gr Low Debris	84	4,63	N/A	3772,00
	4,0" 6P ACME Box					
	4,0" 6P ACME Pin	4-5/8" Blank Section	0,30	4,63	N/A	3772,30
	2-7/8" 6P ACME Box					

	Threads	Description	Length (m)	OD (in)	ID (in)	Depth (m) MD
	2-7/8" EUE 8RD Pin	Bullplug	0,17			3772,47

## Running List DST, Well 6407/7-6

### Preparations prior to running DST # 1

Required handling eqmt. on rig floor:

#### Slips

3 1/2"  
4 1/2"  
5"  
5 1/2"

#### Elevators

3 1/2" slip type  
4 1/2" slip type  
5 1/2" slip type  
5" slip type

### Stab in safety valve

with x/o to

3 1/2" PH6 pin

**Last version: Rev # 2**

- ➔ Use safety clamp until sufficient weight of string.
- ➔ Use stab in guides on tubing.
- ➔ Contractor personnel to point out equipment to crane operator to enable picking up tools in correct sequence.
- ➔ Use minimum amount of pipe dope on tubing connections.
- ➔ Fill tubing with diesel every joint, but continue running in if joint is not filled in time.

Item	String description	Min ID (inch)	Max OD (inch)	Length (m)	Length run (m)	Depth fm. top (m)	Supplier	Comments
	Tail					3770,22		
1	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	6,99	6,99	3763,23	Halliburton	2 7/8" elevator
2	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	6,92	13,91	3756,31	Halliburton	4 3/4" DC slips
3	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	6,92	20,83	3749,39	Halliburton	
4	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	0,00	20,83	3749,39	Halliburton	Layed out # 4
5	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	6,92	27,75	3742,47	Halliburton	
6	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	6,92	34,67	3735,55	Halliburton	
7	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	6,92	41,59	3728,63	Halliburton	
8	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	6,92	48,51	3721,71	Halliburton	
9	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	6,92	55,43	3714,79	Halliburton	
10	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	6,92	62,35	3707,87	Halliburton	
11	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	6,92	69,27	3700,95	Halliburton	
12	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	5,10	74,37	3695,85	Halliburton	
13	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	0,00	74,37	3695,85	Halliburton	Layed out # 13
13,1	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	5,10	79,47	3690,75	Halliburton	Spare
13,2	4 5/8" gun, 12spf HMX DP, low debris	-	4,625	5,10	84,57	3685,65	Halliburton	Spare
14	4 5/8" Blank gun	-	4,625	6,92	91,49	3678,73	Halliburton	Top shot: 3688 m
15	4 5/8" Blank gun	-	4,625	6,92	98,41	3671,81	Halliburton	
16	4 5/8" Blank gun	-	4,625	6,92	105,33	3664,89	Halliburton	
17	4 5/8" Blank gun	-	4,625	6,81	112,14	3658,08	Halliburton	
8	3 3/8" Detonation Interruption Device	-	3,375	0,27	112,41	3657,81	Halliburton	5" manual slips
	3 3/8" Multiaction Firing head	-	3,375	1,03	113,44	3656,78	Halliburton	5" dog collar
	2 3/8" TDF F.H. w/Auto. gun release	(2,625)	3,375	1,51	114,95	3655,27	Halliburton	3 1/2" elevator
	2 7/8" EUE pup joint	2,440	3,690	3,09	118,04	3652,18	Halliburton	(Saipem supply)
	X-over	2,250	4,000	0,41	118,45	3651,77	Halliburton	
	Mechanical Gun Release	2,250	4,000	0,58	119,03	3651,19	Halliburton	
	X-over	2,250	4,000	0,35	119,38	3650,84	Halliburton	
	Vertical Shock Absorber	2,250	5,000	1,49	120,87	3649,35	Halliburton	8,73
19	X-over	2,250	5,000	0,21	121,08	3649,14	Halliburton	5" manual slips
	Instream Gauge Carrier	2,250	5,500	2,35	123,43	3646,79	Halliburton	5" dog collar
	X-over	2,250	5,000	0,19	123,62	3646,60	Halliburton	3 1/2" elevator
	Perforated tubing	2,250	5,000	1,43	125,05	3645,17	Halliburton	4,18
20	Champ IV Packer	2,370	5,650	2,51	127,56	3642,66	Halliburton	5" manual slips
	Safety joint	2,440	5,000	1,04	128,60	3641,62	Halliburton	5" dog collar
	Big John Jar	2,250	5,030	1,60	130,20	3640,02	Halliburton	3 1/2" elevator
	TST Valve	2,250	5,030	1,22	131,42	3638,80	Halliburton	6,37
21	X-over	2,250	5,000	0,19	131,61	3638,61	Halliburton	5" manual slips
	SCAR-C Gauge & BHS Carrier	2,250	5,500	5,54	137,15	3633,07	Schlumberger	5" dog collar
	X-over	2,250	5,000	0,21	137,36	3632,86	Halliburton	3 1/2" elevator
22	LPR-N Tester Valve	2,250	5,030	4,83	142,19	3628,03	Halliburton	
	X-over	2,250	4,750	0,42	142,61	3627,61	Halliburton	5,25
23	4 3/4" Premium Drill Collar	2,250	4,750	8,89	151,50	3618,72	Collar #(PH-6) 1	
24	X-over	2,250	4,750	0,46	151,96	3618,26	Halliburton	4 3/4" DC slips
	Sliding Sleeve Drain Valve	2,280	5,030	1,05	153,01	3617,21	Halliburton	
	OMNI Circulating Valve	2,250	5,030	6,53	159,54	3610,68	Halliburton	
	RD Circulating Valve	2,280	5,030	1,09	160,63	3609,59	Halliburton	

## Running List DST, Well 6407/7-6

Item	String description	Min ID (inch)	Max OD (inch)	Length (m)	Length run (m)	Depth fm. top (m)	Supplier	Comments
	X-over	2,250	4,750	0,40	161,03	3609,19	Halliburton	9,53
25	4 3/4" Premium Drill Collar	2,250	4,750	9,20	170,23	3599,99	Collar #(PH-6)	2
26	4 3/4" Premium Drill Collar	2,250	4,750	9,87	180,10	3590,12	Collar #(PH-6)	3
27	4 3/4" Premium Drill Collar	2,250	4,750	9,83	189,93	3580,29	Collar #(PH-6)	4
28	4 3/4" Premium Drill Collar	2,250	4,750	8,94	198,87	3571,35	Collar #(PH-6)	5
29	4 3/4" Premium Drill Collar	2,250	4,750	8,99	207,86	3562,36	Collar #(PH-6)	6
30	4 3/4" Premium Drill Collar	2,250	4,750	9,08	216,94	3553,28	Collar #(PH-6)	7
31	4 3/4" Premium Drill Collar	2,250	4,750	8,92	225,86	3544,36	Collar #(PH-6)	8
32	4 3/4" Premium Drill Collar	2,250	4,750	8,97	234,83	3535,39	Collar #(PH-6)	9
33	4 3/4" Premium Drill Collar	2,250	4,750	8,78	243,61	3526,61	Collar #(PH-6)	10
34	4 3/4" Premium Drill Collar	2,250	4,750	8,96	252,57	3517,65	Collar #(PH-6)	11
35	4 3/4" Premium Drill Collar	2,250	4,750	9,17	261,74	3508,48	Collar #(PH-6)	12
36	4 3/4" Premium Drill Collar	2,250	4,750	8,85	270,59	3499,63	Collar #(PH-6)	13
	RA Marker Sub	2,250	5,000	0,41	271,00	3499,22	Halliburton	
37	X-over	2,250	5,000	0,49	271,49	3498,73	Halliburton	
	Slipjoint (closed)	2,250	5,030	4,58	276,07	3494,15	Halliburton	5,48
38	Slipjoint (closed)	2,250	5,030	4,58	280,65	3489,57	Halliburton	
39	Slipjoint (open)	2,250	5,030	6,10	286,75	3483,47	Halliburton	
40	Slipjoint (open)	2,250	5,030	6,10	292,85	3477,37	Halliburton	
	X-over		4,750	0,42	293,27	3476,95	Halliburton	6,52
41	3 1/2" PH-6 tubing	2,750	4,313	9,55	302,82	3467,40	Joint #	357
42	3 1/2" PH-6 tubing	2,750	4,313	9,52	312,34	3457,88	Joint #	356
43	3 1/2" PH-6 tubing	2,750	4,313	9,56	321,90	3448,32	Joint #	355
44	3 1/2" PH-6 tubing	2,750	4,313	9,54	331,44	3438,78	Joint #	354
45	3 1/2" PH-6 tubing	2,750	4,313	9,58	341,02	3429,20	Joint #	353
46	3 1/2" PH-6 tubing	2,750	4,313	9,60	350,62	3419,60	Joint #	352
47	3 1/2" PH-6 tubing	2,750	4,313	9,62	360,24	3409,98	Joint #	351
48	3 1/2" PH-6 tubing	2,750	4,313	9,63	369,87	3400,35	Joint #	350
49	3 1/2" PH-6 tubing	2,750	4,313	9,54	379,41	3390,81	Joint #	349
50	3 1/2" PH-6 tubing	2,750	4,313	9,53	388,94	3381,28	Joint #	348
51	3 1/2" PH-6 tubing	2,750	4,313	9,56	398,50	3371,72	Joint #	347
52	3 1/2" PH-6 tubing	2,750	4,313	9,53	408,03	3362,19	Joint #	346
53	3 1/2" PH-6 tubing	2,750	4,313	9,59	417,62	3352,60	Joint #	345
54	3 1/2" PH-6 tubing	2,750	4,313	9,57	427,19	3343,03	Joint #	344
55	3 1/2" PH-6 tubing	2,750	4,313	9,56	436,75	3333,47	Joint #	343
56	3 1/2" PH-6 tubing	2,750	4,313	9,55	446,30	3323,92	Joint #	342
57	3 1/2" PH-6 tubing	2,750	4,313	9,57	455,87	3314,35	Joint #	341
58	3 1/2" PH-6 tubing	2,750	4,313	9,57	465,44	3304,78	Joint #	340
59	3 1/2" PH-6 tubing	2,750	4,313	9,45	474,89	3295,33	Joint #	339
60	3 1/2" PH-6 tubing	2,750	4,313	9,52	484,41	3285,81	Joint #	338
61	3 1/2" PH-6 tubing	2,750	4,313	9,58	493,99	3276,23	Joint #	337
62	3 1/2" PH-6 tubing	2,750	4,313	9,62	503,61	3266,61	Joint #	336
63	3 1/2" PH-6 tubing	2,750	4,313	9,61	513,22	3257,00	Joint #	335
64	3 1/2" PH-6 tubing	2,750	4,313	9,50	522,72	3247,50	Joint #	334
65	3 1/2" PH-6 tubing	2,750	4,313	9,60	532,32	3237,90	Joint #	333
66	3 1/2" PH-6 tubing	2,750	4,313	9,61	541,93	3228,29	Joint #	332
67	3 1/2" PH-6 tubing	2,750	4,313	9,60	551,53	3218,69	Joint #	331
68	3 1/2" PH-6 tubing	2,750	4,313	9,53	561,06	3209,16	Joint #	330
69	3 1/2" PH-6 tubing	2,750	4,313	9,61	570,67	3199,55	Joint #	329
70	3 1/2" PH-6 tubing	2,750	4,313	9,52	580,19	3190,03	Joint #	328
71	3 1/2" PH-6 tubing	2,750	4,313	9,58	589,77	3180,45	Joint #	327
72	3 1/2" PH-6 tubing	2,750	4,313	9,55	599,32	3170,90	Joint #	326
73	3 1/2" PH-6 tubing	2,750	4,313	9,60	608,92	3161,30	Joint #	325
74	3 1/2" PH-6 tubing	2,750	4,313	9,65	618,57	3151,65	Joint #	324
75	3 1/2" PH-6 tubing	2,750	4,313	9,52	628,09	3142,13	Joint #	323
76	3 1/2" PH-6 tubing	2,750	4,313	9,60	637,69	3132,53	Joint #	322
77	3 1/2" PH-6 tubing	2,750	4,313	9,61	647,30	3122,92	Joint #	321
78	3 1/2" PH-6 tubing	2,750	4,313	9,61	656,91	3113,31	Joint #	320
79	3 1/2" PH-6 tubing	2,750	4,313	9,51	666,42	3103,80	Joint #	319
80	3 1/2" PH-6 tubing	2,750	4,313	9,56	675,98	3094,24	Joint #	318

### Running List DST, Well 6407/7-6

Item	String description	Min ID (inch)	Max OD (inch)	Length (m)	Length run (m)	Depth fm. top (m)	Supplier	Comments
81	3 1/2" PH-6 tubing	2,750	4,313	9,61	685,59	3084,63	Joint #	317
82	3 1/2" PH-6 tubing	2,750	4,313	9,55	695,14	3075,08	Joint #	316
83	3 1/2" PH-6 tubing	2,750	4,313	9,60	704,74	3065,48	Joint #	315
84	3 1/2" PH-6 tubing	2,750	4,313	9,60	714,34	3055,88	Joint #	314
85	3 1/2" PH-6 tubing	2,750	4,313	9,51	723,85	3046,37	Joint #	313
86	3 1/2" PH-6 tubing	2,750	4,313	9,57	733,42	3036,80	Joint #	312
87	3 1/2" PH-6 tubing	2,750	4,313	9,60	743,02	3027,20	Joint #	311
88	3 1/2" PH-6 tubing	2,750	4,313	9,48	752,50	3017,72	Joint #	310
89	3 1/2" PH-6 tubing	2,750	4,313	9,54	762,04	3008,18	Joint #	309
90	3 1/2" PH-6 tubing	2,750	4,313	9,58	771,62	2998,60	Joint #	308
91	3 1/2" PH-6 tubing	2,750	4,313	9,58	781,20	2989,02	Joint #	307
92	3 1/2" PH-6 tubing	2,750	4,313	9,53	790,73	2979,49	Joint #	306
93	3 1/2" PH-6 tubing	2,750	4,313	9,57	800,30	2969,92	Joint #	305
94	3 1/2" PH-6 tubing	2,750	4,313	9,48	809,78	2960,44	Joint #	304
95	3 1/2" PH-6 tubing	2,750	4,313	9,57	819,35	2950,87	Joint #	303
96	3 1/2" PH-6 tubing	2,750	4,313	9,55	828,90	2941,32	Joint #	302
97	3 1/2" PH-6 tubing	2,750	4,313	9,52	838,42	2931,80	Joint #	301
98	3 1/2" PH-6 tubing	2,750	4,313	9,53	847,95	2922,27	Joint #	300
99	3 1/2" PH-6 tubing	2,750	4,313	9,50	857,45	2912,77	Joint #	299
100	3 1/2" PH-6 tubing	2,750	4,313	9,51	866,96	2903,26	Joint #	298
101	3 1/2" PH-6 tubing	2,750	4,313	9,54	876,50	2893,72	Joint #	297
102	3 1/2" PH-6 tubing	2,750	4,313	9,51	886,01	2884,21	Joint #	296
103	3 1/2" PH-6 tubing	2,750	4,313	9,50	895,51	2874,71	Joint #	295
104	3 1/2" PH-6 tubing	2,750	4,313	9,57	905,08	2865,14	Joint #	294
105	3 1/2" PH-6 tubing	2,750	4,313	9,50	914,58	2855,64	Joint #	293
106	3 1/2" PH-6 tubing	2,750	4,313	9,63	924,21	2846,01	Joint #	292
107	3 1/2" PH-6 tubing	2,750	4,313	9,53	933,74	2836,48	Joint #	291
108	3 1/2" PH-6 tubing	2,750	4,313	9,51	943,25	2826,97	Joint #	290
109	3 1/2" PH-6 tubing	2,750	4,313	9,56	952,81	2817,41	Joint #	289
110	3 1/2" PH-6 tubing	2,750	4,313	9,63	962,44	2807,78	Joint #	288
111	3 1/2" PH-6 tubing	2,750	4,313	9,62	972,06	2798,16	Joint #	287
112	3 1/2" PH-6 tubing	2,750	4,313	9,59	981,65	2788,57	Joint #	286
113	3 1/2" PH-6 tubing	2,750	4,313	9,53	991,18	2779,04	Joint #	285
114	3 1/2" PH-6 tubing	2,750	4,313	9,58	1000,76	2769,46	Joint #	284
115	3 1/2" PH-6 tubing	2,750	4,313	9,53	1010,29	2759,93	Joint #	283
116	3 1/2" PH-6 tubing	2,750	4,313	9,50	1019,79	2750,43	Joint #	282
117	3 1/2" PH-6 tubing	2,750	4,313	9,56	1029,35	2740,87	Joint #	281
118	3 1/2" PH-6 tubing	2,750	4,313	9,60	1038,95	2731,27	Joint #	280
119	3 1/2" PH-6 tubing	2,750	4,313	9,61	1048,56	2721,66	Joint #	279
120	3 1/2" PH-6 tubing	2,750	4,313	9,57	1058,13	2712,09	Joint #	278
121	3 1/2" PH-6 tubing	2,750	4,313	9,62	1067,75	2702,47	Joint #	277
122	3 1/2" PH-6 tubing	2,750	4,313	9,56	1077,31	2692,91	Joint #	276
123	3 1/2" PH-6 tubing	2,750	4,313	9,55	1086,86	2683,36	Joint #	275
124	3 1/2" PH-6 tubing	2,750	4,313	9,55	1096,41	2673,81	Joint #	274
125	3 1/2" PH-6 tubing	2,750	4,313	9,57	1105,98	2664,24	Joint #	273
126	3 1/2" PH-6 tubing	2,750	4,313	9,53	1115,51	2654,71	Joint #	272
127	3 1/2" PH-6 tubing	2,750	4,313	9,61	1125,12	2645,10	Joint #	271
128	3 1/2" PH-6 tubing	2,750	4,313	9,57	1134,69	2635,53	Joint #	270
129	3 1/2" PH-6 tubing	2,750	4,313	9,50	1144,19	2626,03	Joint #	269
130	3 1/2" PH-6 tubing	2,750	4,313	9,60	1153,79	2616,43	Joint #	268
131	3 1/2" PH-6 tubing	2,750	4,313	9,53	1163,32	2606,90	Joint #	267
132	3 1/2" PH-6 tubing	2,750	4,313	9,52	1172,84	2597,38	Joint #	266
133	3 1/2" PH-6 tubing	2,750	4,313	9,53	1182,37	2587,85	Joint #	265
134	3 1/2" PH-6 tubing	2,750	4,313	9,53	1191,90	2578,32	Joint #	264
135	3 1/2" PH-6 tubing	2,750	4,313	9,58	1201,48	2568,74	Joint #	263
136	3 1/2" PH-6 tubing	2,750	4,313	9,55	1211,03	2559,19	Joint #	262
137	3 1/2" PH-6 tubing	2,750	4,313	9,59	1220,62	2549,60	Joint #	261
138	3 1/2" PH-6 tubing	2,750	4,313	9,53	1230,15	2540,07	Joint #	260
139	3 1/2" PH-6 tubing	2,750	4,313	9,54	1239,69	2530,53	Joint #	259
140	3 1/2" PH-6 tubing	2,750	4,313	9,52	1249,21	2521,01	Joint #	258

### Running List DST, Well 6407/7-6

Item	String description	Min ID (inch)	Max OD (inch)	Length (m)	Length run (m)	Depth fm. top (m)	Supplier	Comments
41	3 1/2" PH-6 tubing	2,750	4,313	9,61	1258,82	2511,40	Joint #	257
142	3 1/2" PH-6 tubing	2,750	4,313	9,56	1268,38	2501,84	Joint #	256
143	3 1/2" PH-6 tubing	2,750	4,313	9,55	1277,93	2492,29	Joint #	255
144	3 1/2" PH-6 tubing	2,750	4,313	9,57	1287,50	2482,72	Joint #	254
145	3 1/2" PH-6 tubing	2,750	4,313	9,52	1297,02	2473,20	Joint #	253
146	3 1/2" PH-6 tubing	2,750	4,313	9,60	1306,62	2463,60	Joint #	252
147	3 1/2" PH-6 tubing	2,750	4,313	9,61	1316,23	2453,99	Joint #	251
148	3 1/2" PH-6 tubing	2,750	4,313	9,62	1325,85	2444,37	Joint #	250
149	3 1/2" PH-6 tubing	2,750	4,313	9,54	1335,39	2434,83	Joint #	249
150	3 1/2" PH-6 tubing	2,750	4,313	9,53	1344,92	2425,30	Joint #	248
151	3 1/2" PH-6 tubing	2,750	4,313	9,49	1354,41	2415,81	Joint #	247
152	3 1/2" PH-6 tubing	2,750	4,313	9,58	1363,99	2406,23	Joint #	246
153	3 1/2" PH-6 tubing	2,750	4,313	9,59	1373,58	2396,64	Joint #	245
154	3 1/2" PH-6 tubing	2,750	4,313	9,49	1383,07	2387,15	Joint #	244
155	3 1/2" PH-6 tubing	2,750	4,313	9,50	1392,57	2377,65	Joint #	243
156	3 1/2" PH-6 tubing	2,750	4,313	9,61	1402,18	2368,04	Joint #	242
157	3 1/2" PH-6 tubing	2,750	4,313	9,57	1411,75	2358,47	Joint #	241
158	3 1/2" PH-6 tubing	2,750	4,313	9,56	1421,31	2348,91	Joint #	240
159	3 1/2" PH-6 tubing	2,750	4,313	9,58	1430,89	2339,33	Joint #	239
160	3 1/2" PH-6 tubing	2,750	4,313	9,57	1440,46	2329,76	Joint #	238
161	3 1/2" PH-6 tubing	2,750	4,313	9,49	1449,95	2320,27	Joint #	237
162	3 1/2" PH-6 tubing	2,750	4,313	9,60	1459,55	2310,67	Joint #	236
163	3 1/2" PH-6 tubing	2,750	4,313	9,58	1469,13	2301,09	Joint #	235
164	3 1/2" PH-6 tubing	2,750	4,313	9,53	1478,66	2291,56	Joint #	234
165	3 1/2" PH-6 tubing	2,750	4,313	9,57	1488,23	2281,99	Joint #	233
166	3 1/2" PH-6 tubing	2,750	4,313	9,58	1497,81	2272,41	Joint #	232
167	3 1/2" PH-6 tubing	2,750	4,313	9,48	1507,29	2262,93	Joint #	231
168	3 1/2" PH-6 tubing	2,750	4,313	9,56	1516,85	2253,37	Joint #	230
169	3 1/2" PH-6 tubing	2,750	4,313	9,55	1526,40	2243,82	Joint #	229
170	3 1/2" PH-6 tubing	2,750	4,313	9,52	1535,92	2234,30	Joint #	228
171	3 1/2" PH-6 tubing	2,750	4,313	9,51	1545,43	2224,79	Joint #	227
172	3 1/2" PH-6 tubing	2,750	4,313	9,56	1554,99	2215,23	Joint #	226
173	3 1/2" PH-6 tubing	2,750	4,313	9,70	1564,69	2205,53	Joint #	225
174	3 1/2" PH-6 tubing	2,750	4,313	9,60	1574,29	2195,93	Joint #	224
175	3 1/2" PH-6 tubing	2,750	4,313	9,53	1583,82	2186,40	Joint #	223
176	3 1/2" PH-6 tubing	2,750	4,313	9,57	1593,39	2176,83	Joint #	222
177	3 1/2" PH-6 tubing	2,750	4,313	9,51	1602,90	2167,32	Joint #	221
178	3 1/2" PH-6 tubing	2,750	4,313	9,61	1612,51	2157,71	Joint #	220
179	3 1/2" PH-6 tubing	2,750	4,313	9,60	1622,11	2148,11	Joint #	219
180	3 1/2" PH-6 tubing	2,750	4,313	9,60	1631,71	2138,51	Joint #	218
181	3 1/2" PH-6 tubing	2,750	4,313	9,57	1641,28	2128,94	Joint #	217
182	3 1/2" PH-6 tubing	2,750	4,313	9,53	1650,81	2119,41	Joint #	216
183	3 1/2" PH-6 tubing	2,750	4,313	9,61	1660,42	2109,80	Joint #	215
184	3 1/2" PH-6 tubing	2,750	4,313	9,61	1670,03	2100,19	Joint #	214
185	3 1/2" PH-6 tubing	2,750	4,313	9,52	1679,55	2090,67	Joint #	213
186	3 1/2" PH-6 tubing	2,750	4,313	9,60	1689,15	2081,07	Joint #	212
187	3 1/2" PH-6 tubing	2,750	4,313	9,51	1698,66	2071,56	Joint #	211
188	3 1/2" PH-6 tubing	2,750	4,313	9,47	1708,13	2062,09	Joint #	210
189	3 1/2" PH-6 tubing	2,750	4,313	9,57	1717,70	2052,52	Joint #	209
190	3 1/2" PH-6 tubing	2,750	4,313	9,43	1727,13	2043,09	Joint #	208
191	3 1/2" PH-6 tubing	2,750	4,313	9,56	1736,69	2033,53	Joint #	207
192	3 1/2" PH-6 tubing	2,750	4,313	9,60	1746,29	2023,93	Joint #	206
193	3 1/2" PH-6 tubing	2,750	4,313	9,60	1755,89	2014,33	Joint #	205
194	3 1/2" PH-6 tubing	2,750	4,313	9,55	1765,44	2004,78	Joint #	204
195	3 1/2" PH-6 tubing	2,750	4,313	9,56	1775,00	1995,22	Joint #	203
196	3 1/2" PH-6 tubing	2,750	4,313	9,57	1784,57	1985,65	Joint #	202
197	3 1/2" PH-6 tubing	2,750	4,313	9,48	1794,05	1976,17	Joint #	201
198	3 1/2" PH-6 tubing	2,750	4,313	9,51	1803,56	1966,66	Joint #	200
199	3 1/2" PH-6 tubing	2,750	4,313	9,60	1813,16	1957,06	Joint #	199
200	3 1/2" PH-6 tubing	2,750	4,313	9,51	1822,67	1947,55	Joint #	198
201	3 1/2" PH-6 tubing	2,750	4,313	9,53	1832,20	1938,02	Joint #	197

## Running List DST, Well 6407/7-6

Item	String description	Min ID (inch)	Max OD (inch)	Length (m)	Length run (m)	Depth fm. top (m)	Supplier	Comments
J2	3 1/2" PH-6 tubing	2,750	4,313	9,53	1841,73	1928,49	Joint #	196
203	3 1/2" PH-6 tubing	2,750	4,313	9,50	1851,23	1918,99	Joint #	195
204	3 1/2" PH-6 tubing	2,750	4,313	9,58	1860,81	1909,41	Joint #	194
205	3 1/2" PH-6 tubing	2,750	4,313	9,58	1870,39	1899,83	Joint #	193
206	3 1/2" PH-6 tubing	2,750	4,313	9,51	1879,90	1890,32	Joint #	192
207	3 1/2" PH-6 tubing	2,750	4,313	0,00	1879,90	1890,32	Joint # 191	Layed out
208	3 1/2" PH-6 tubing	2,750	4,313	9,90	1889,80	1880,42	Joint #	190
209	3 1/2" PH-6 tubing	2,750	4,313	9,56	1899,36	1870,86	Joint #	189
210	3 1/2" PH-6 tubing	2,750	4,313	9,61	1908,97	1861,25	Joint #	188
211	3 1/2" PH-6 tubing	2,750	4,313	9,53	1918,50	1851,72	Joint #	187
212	3 1/2" PH-6 tubing	2,750	4,313	9,51	1928,01	1842,21	Joint #	186
213	3 1/2" PH-6 tubing	2,750	4,313	9,49	1937,50	1832,72	Joint #	185
214	3 1/2" PH-6 tubing	2,750	4,313	9,56	1947,06	1823,16	Joint #	184
215	3 1/2" PH-6 tubing	2,750	4,313	9,60	1956,66	1813,56	Joint #	183
216	3 1/2" PH-6 tubing	2,750	4,313	9,50	1966,16	1804,06	Joint #	182
217	3 1/2" PH-6 tubing	2,750	4,313	9,57	1975,73	1794,49	Joint #	181
218	3 1/2" PH-6 tubing	2,750	4,313	9,52	1985,25	1784,97	Joint #	180
219	3 1/2" PH-6 tubing	2,750	4,313	9,54	1994,79	1775,43	Joint #	179
220	3 1/2" PH-6 tubing	2,750	4,313	9,54	2004,33	1765,89	Joint #	178
.1	3 1/2" PH-6 tubing	2,750	4,313	9,58	2013,91	1756,31	Joint #	177
222	3 1/2" PH-6 tubing	2,750	4,313	9,57	2023,48	1746,74	Joint #	176
223	3 1/2" PH-6 tubing	2,750	4,313	9,62	2033,10	1737,12	Joint #	175
224	3 1/2" PH-6 tubing	2,750	4,313	9,57	2042,67	1727,55	Joint #	174
225	3 1/2" PH-6 tubing	2,750	4,313	9,55	2052,22	1718,00	Joint #	173
226	3 1/2" PH-6 tubing	2,750	4,313	9,53	2061,75	1708,47	Joint #	172
227	3 1/2" PH-6 tubing	2,750	4,313	9,61	2071,36	1698,86	Joint #	171
228	3 1/2" PH-6 tubing	2,750	4,313	9,52	2080,88	1689,34	Joint #	170
229	3 1/2" PH-6 tubing	2,750	4,313	9,52	2090,40	1679,82	Joint #	169
230	3 1/2" PH-6 tubing	2,750	4,313	9,51	2099,91	1670,31	Joint #	168
231	3 1/2" PH-6 tubing	2,750	4,313	9,60	2109,51	1660,71	Joint #	167
232	3 1/2" PH-6 tubing	2,750	4,313	9,58	2119,09	1651,13	Joint #	166
233	3 1/2" PH-6 tubing	2,750	4,313	9,60	2128,69	1641,53	Joint #	165
234	3 1/2" PH-6 tubing	2,750	4,313	9,59	2138,28	1631,94	Joint #	164
235	3 1/2" PH-6 tubing	2,750	4,313	9,53	2147,81	1622,41	Joint #	163
236	3 1/2" PH-6 tubing	2,750	4,313	9,56	2157,37	1612,85	Joint #	162
237	3 1/2" PH-6 tubing	2,750	4,313	9,54	2166,91	1603,31	Joint #	161
238	3 1/2" PH-6 tubing	2,750	4,313	9,53	2176,44	1593,78	Joint #	160
239	3 1/2" PH-6 tubing	2,750	4,313	9,54	2185,98	1584,24	Joint #	159
0	3 1/2" PH-6 tubing	2,750	4,313	9,60	2195,58	1574,64	Joint #	158
241	3 1/2" PH-6 tubing	2,750	4,313	9,57	2205,15	1565,07	Joint #	157
242	3 1/2" PH-6 tubing	2,750	4,313	9,53	2214,68	1555,54	Joint #	156
243	3 1/2" PH-6 tubing	2,750	4,313	9,52	2224,20	1546,02	Joint #	155
244	3 1/2" PH-6 tubing	2,750	4,313	9,55	2233,75	1536,47	Joint #	154
245	3 1/2" PH-6 tubing	2,750	4,313	9,56	2243,31	1526,91	Joint #	153
246	3 1/2" PH-6 tubing	2,750	4,313	9,58	2252,89	1517,33	Joint #	152
247	3 1/2" PH-6 tubing	2,750	4,313	9,54	2262,43	1507,79	Joint #	151
248	3 1/2" PH-6 tubing	2,750	4,313	9,61	2272,04	1498,18	Joint #	150
249	3 1/2" PH-6 tubing	2,750	4,313	9,56	2281,60	1488,62	Joint #	149
250	3 1/2" PH-6 tubing	2,750	4,313	9,53	2291,13	1479,09	Joint #	148
251	3 1/2" PH-6 tubing	2,750	4,313	9,51	2300,64	1469,58	Joint #	147
252	3 1/2" PH-6 tubing	2,750	4,313	9,62	2310,26	1459,96	Joint #	146
253	3 1/2" PH-6 tubing	2,750	4,313	9,49	2319,75	1450,47	Joint #	145
254	3 1/2" PH-6 tubing	2,750	4,313	9,16	2328,91	1441,31	Joint #	144
255	3 1/2" PH-6 tubing	2,750	4,313	9,53	2338,44	1431,78	Joint #	143
256	3 1/2" PH-6 tubing	2,750	4,313	9,58	2348,02	1422,20	Joint #	142
257	3 1/2" PH-6 tubing	2,750	4,313	9,49	2357,51	1412,71	Joint #	141
258	3 1/2" PH-6 tubing	2,750	4,313	9,55	2367,06	1403,16	Joint #	140
.9	3 1/2" PH-6 tubing	2,750	4,313	9,54	2376,60	1393,62	Joint #	139
260	3 1/2" PH-6 tubing	2,750	4,313	9,54	2386,14	1384,08	Joint #	138
261	3 1/2" PH-6 tubing	2,750	4,313	9,61	2395,75	1374,47	Joint #	137
262	3 1/2" PH-6 tubing	2,750	4,313	9,54	2405,29	1364,93	Joint #	136

## Running List DST, Well 6407/7-6

Item	String description	Min ID (Inch)	Max OD (Inch)	Length (m)	Length run (m)	Depth fm. top (m)	Supplier	Comments
.3	3 1/2" PH-6 tubing	2,750	4,313	9,50	2414,79	1355,43	Joint #	135
264	3 1/2" PH-6 tubing	2,750	4,313	9,57	2424,36	1345,86	Joint #	134
265	3 1/2" PH-6 tubing	2,750	4,313	9,56	2433,92	1336,30	Joint #	133
266	3 1/2" PH-6 tubing	2,750	4,313	9,51	2443,43	1326,79	Joint #	132
267	3 1/2" PH-6 tubing	2,750	4,313	9,58	2453,01	1317,21	Joint #	131
268	3 1/2" PH-6 tubing	2,750	4,313	9,53	2462,54	1307,68	Joint #	130
269	3 1/2" PH-6 tubing	2,750	4,313	9,59	2472,13	1298,09	Joint #	129
270	3 1/2" PH-6 tubing	2,750	4,313	9,55	2481,68	1288,54	Joint #	128
271	3 1/2" PH-6 tubing	2,750	4,313	9,60	2491,28	1278,94	Joint #	127
272	3 1/2" PH-6 tubing	2,750	4,313	9,52	2500,80	1269,42	Joint #	126
273	3 1/2" PH-6 tubing	2,750	4,313	9,55	2510,35	1259,87	Joint #	125
274	3 1/2" PH-6 tubing	2,750	4,313	9,54	2519,89	1250,33	Joint #	124
275	3 1/2" PH-6 tubing	2,750	4,313	9,53	2529,42	1240,80	Joint #	123
276	3 1/2" PH-6 tubing	2,750	4,313	9,57	2538,99	1231,23	Joint #	122
277	3 1/2" PH-6 tubing	2,750	4,313	9,25	2548,24	1221,98	Joint #	121
278	3 1/2" PH-6 tubing	2,750	4,313	9,54	2557,78	1212,44	Joint #	120
279	3 1/2" PH-6 tubing	2,750	4,313	9,54	2567,32	1202,90	Joint #	119
280	3 1/2" PH-6 tubing	2,750	4,313	9,54	2576,86	1193,36	Joint #	118
281	3 1/2" PH-6 tubing	2,750	4,313	9,60	2586,46	1183,76	Joint #	117
.2	3 1/2" PH-6 tubing	2,750	4,313	9,53	2595,99	1174,23	Joint #	116
283	3 1/2" PH-6 tubing	2,750	4,313	9,59	2605,58	1164,64	Joint #	115
284	3 1/2" PH-6 tubing	2,750	4,313	9,56	2615,14	1155,08	Joint #	114
285	3 1/2" PH-6 tubing	2,750	4,313	9,58	2624,72	1145,50	Joint #	113
286	3 1/2" PH-6 tubing	2,750	4,313	9,54	2634,26	1135,96	Joint #	112
287	3 1/2" PH-6 tubing	2,750	4,313	9,57	2643,83	1126,39	Joint #	111
288	3 1/2" PH-6 tubing	2,750	4,313	9,52	2653,35	1116,87	Joint #	110
289	3 1/2" PH-6 tubing	2,750	4,313	9,57	2662,92	1107,30	Joint #	109
290	3 1/2" PH-6 tubing	2,750	4,313	9,52	2672,44	1097,78	Joint #	108
291	3 1/2" PH-6 tubing	2,750	4,313	9,56	2682,00	1088,22	Joint #	107
292	3 1/2" PH-6 tubing	2,750	4,313	9,54	2691,54	1078,68	Joint #	106
293	3 1/2" PH-6 tubing	2,750	4,313	9,54	2701,08	1069,14	Joint #	105
294	3 1/2" PH-6 tubing	2,750	4,313	9,60	2710,68	1059,54	Joint #	104
295	3 1/2" PH-6 tubing	2,750	4,313	9,59	2720,27	1049,95	Joint #	103
296	3 1/2" PH-6 tubing	2,750	4,313	9,49	2729,76	1040,46	Joint #	102
297	3 1/2" PH-6 tubing	2,750	4,313	9,54	2739,30	1030,92	Joint #	101
298	3 1/2" PH-6 tubing	2,750	4,313	9,60	2748,90	1021,32	Joint #	100
299	3 1/2" PH-6 tubing	2,750	4,313	9,60	2758,50	1011,72	Joint #	99
300	3 1/2" PH-6 tubing	2,750	4,313	9,55	2768,05	1002,17	Joint #	98
.1	3 1/2" PH-6 tubing	2,750	4,313	9,56	2777,61	992,61	Joint #	97
302	3 1/2" PH-6 tubing	2,750	4,313	9,59	2787,20	983,02	Joint #	96
303	3 1/2" PH-6 tubing	2,750	4,313	9,57	2796,77	973,45	Joint #	95
304	3 1/2" PH-6 tubing	2,750	4,313	9,60	2806,37	963,85	Joint #	94
305	3 1/2" PH-6 tubing	2,750	4,313	9,49	2815,86	954,36	Joint #	93
306	3 1/2" PH-6 tubing	2,750	4,313	9,53	2825,39	944,83	Joint #	92
307	3 1/2" PH-6 tubing	2,750	4,313	9,52	2834,91	935,31	Joint #	91
308	3 1/2" PH-6 tubing	2,750	4,313	9,52	2844,43	925,79	Joint #	90
309	3 1/2" PH-6 tubing	2,750	4,313	9,55	2853,98	916,24	Joint #	89
310	3 1/2" PH-6 tubing	2,750	4,313	9,55	2863,53	906,69	Joint #	88
311	3 1/2" PH-6 tubing	2,750	4,313	9,53	2873,06	897,16	Joint #	87
312	3 1/2" PH-6 tubing	2,750	4,313	9,52	2882,58	887,64	Joint #	86
313	3 1/2" PH-6 tubing	2,750	4,313	9,55	2892,13	878,09	Joint #	85
314	3 1/2" PH-6 tubing	2,750	4,313	9,51	2901,64	868,58	Joint #	84
315	3 1/2" PH-6 tubing	2,750	4,313	9,52	2911,16	859,06	Joint #	83
316	3 1/2" PH-6 tubing	2,750	4,313	9,56	2920,72	849,50	Joint #	82
317	3 1/2" PH-6 tubing	2,750	4,313	9,53	2930,25	839,97	Joint #	81
318	3 1/2" PH-6 tubing	2,750	4,313	9,55	2939,80	830,42	Joint #	80
319	3 1/2" PH-6 tubing	2,750	4,313	9,55	2949,35	820,87	Joint #	79
0	3 1/2" PH-6 tubing	2,750	4,313	9,51	2958,86	811,36	Joint #	78
321	3 1/2" PH-6 tubing	2,750	4,313	9,58	2968,44	801,78	Joint #	77
322	3 1/2" PH-6 tubing	2,750	4,313	9,54	2977,98	792,24	Joint #	76
323	3 1/2" PH-6 tubing	2,750	4,313	9,53	2987,51	782,71	Joint #	75

### Running List DST, Well 6407/7-6

Item	String description	Min ID (Inch)	Max OD (Inch)	Length (m)	Length run (m)	Depth fm. top (m)	Supplier	Comments
24	3 1/2" PH-6 tubing	2,750	4,313	9,55	2997,06	773,16	Joint #	74
325	3 1/2" PH-6 tubing	2,750	4,313	9,53	3006,59	763,63	Joint #	73
326	3 1/2" PH-6 tubing	2,750	4,313	9,57	3016,16	754,06	Joint #	72
327	3 1/2" PH-6 tubing	2,750	4,313	9,50	3025,66	744,56	Joint #	71
328	3 1/2" PH-6 tubing	2,750	4,313	9,61	3035,27	734,95	Joint #	70
329	3 1/2" PH-6 tubing	2,750	4,313	9,62	3044,89	725,33	Joint #	69
330	3 1/2" PH-6 tubing	2,750	4,313	9,56	3054,45	715,77	Joint #	68
331	3 1/2" PH-6 tubing	2,750	4,313	9,55	3064,00	706,22	Joint #	67
332	3 1/2" PH-6 tubing	2,750	4,313	9,52	3073,52	696,70	Joint #	66
333	3 1/2" PH-6 tubing	2,750	4,313	9,60	3083,12	687,10	Joint #	65
334	3 1/2" PH-6 tubing	2,750	4,313	9,53	3092,65	677,57	Joint #	64
335	3 1/2" PH-6 tubing	2,750	4,313	9,52	3102,17	668,05	Joint #	63
336	3 1/2" PH-6 tubing	2,750	4,313	9,61	3111,78	658,44	Joint #	62
337	3 1/2" PH-6 tubing	2,750	4,313	9,00	3120,78	649,44	Joint #	61
338	3 1/2" PH-6 tubing	2,750	4,313	9,54	3130,32	639,90	Joint #	60
339	3 1/2" PH-6 tubing	2,750	4,313	9,53	3139,85	630,37	Joint #	59
340	3 1/2" PH-6 tubing	2,750	4,313	9,49	3149,34	620,88	Joint #	58
341	3 1/2" PH-6 tubing	2,750	4,313	9,53	3158,87	611,35	Joint #	57
342	3 1/2" PH-6 tubing	2,750	4,313	9,53	3168,40	601,82	Joint #	56
13	3 1/2" PH-6 tubing	2,750	4,313	9,54	3177,94	592,28	Joint #	55
344	3 1/2" PH-6 tubing	2,750	4,313	9,54	3187,48	582,74	Joint #	54
345	3 1/2" PH-6 tubing	2,750	4,313	9,55	3197,03	573,19	Joint #	53
346	3 1/2" PH-6 tubing	2,750	4,313	9,51	3206,54	563,68	Joint #	52
347	3 1/2" PH-6 tubing	2,750	4,313	9,61	3216,15	554,07	Joint #	51
348	3 1/2" PH-6 tubing	2,750	4,313	9,57	3225,72	544,50	Joint #	50
349	3 1/2" PH-6 tubing	2,750	4,313	9,53	3235,25	534,97	Joint #	49
350	3 1/2" PH-6 tubing	2,750	4,313	9,54	3244,79	525,43	Joint #	48
351	3 1/2" PH-6 tubing	2,750	4,313	9,58	3254,37	515,85	Joint #	47
352	3 1/2" PH-6 tubing	2,750	4,313	9,60	3263,97	506,25	Joint #	46
353	3 1/2" PH-6 tubing	2,750	4,313	9,57	3273,54	496,68	Joint #	45
354	3 1/2" PH-6 tubing	2,750	4,313	9,62	3283,16	487,06	Joint #	44
355	3 1/2" PH-6 tubing	2,750	4,313	9,58	3292,74	477,48	Joint #	43
356	3 1/2" PH-6 tubing	2,750	4,313	9,49	3302,23	467,99	Joint #	42
357	3 1/2" PH-6 tubing	2,750	4,313	9,53	3311,76	458,46	Joint #	41
358	3 1/2" PH-6 tubing	2,750	4,313	9,58	3321,34	448,88	Joint #	40
359	3 1/2" PH-6 tubing	2,750	4,313	9,57	3330,91	439,31	Joint #	39
360	3 1/2" PH-6 tubing	2,750	4,313	9,52	3340,43	429,79	Joint #	38
361	3 1/2" PH-6 tubing	2,750	4,313	9,52	3349,95	420,27	Joint #	37
2	3 1/2" PH-6 tubing	2,750	4,313	9,53	3359,48	410,74	Joint #	36
363	3 1/2" PH-6 tubing	2,750	4,313	9,54	3369,02	401,20	Joint #	35
364	3 1/2" PH-6 tubing	2,750	4,313	9,61	3378,63	391,59	Joint #	34
365	3 1/2" PH-6 tubing	2,750	4,313	9,60	3388,23	381,99	Joint #	21
366	3 1/2" PH-6 tubing	2,750	4,313	2,83	3391,06	379,16	Pup#	4
367	3 1/2" PH-6 tubing	2,750	4,313	9,60	3400,66	369,56	Joint # 2	(for # 191)
	Length due to stretch	2,750	4,313	0,00	3400,66	369,56	NOT ON STRING	(BHA 29 klbs)
368	3 1/2" PH-6 tubing	2,750	4,313	9,58	3410,24	359,98	Joint #	28
								datum: 359,46
369	X-over 3 1/2" PH-6 pin X 4 1/2" SA box	3,000	7,000	0,40	3410,64	359,10		
	Fluted hanger below HOP	3,000	11,000	0,48	3411,12	359,10		
	Fluted hanger above HOP	3,000	11,000	1,49	3412,61	357,61		Halliburton
	Slickjoint	3,000	5,000	2,04	3414,65	355,57		Halliburton
	Subsea Test Tree	3,000	16,000	1,72	3416,37	353,85		Halliburton
	Shear sub	3,000	3,980	1,01	3417,38	352,84		Halliburton
	Shear sub (bigger OD)	3,000	15,000	0,53	3417,91	352,31		Halliburton
	X-over 4 1/2" SA pin X 5 1/2" NV box	3,000	6,500	0,90	3418,81	351,41		
	5 1/2" NV tbg. pup joint			3,05	3421,86	348,36	Pup on SSTT	
370	5 1/2" New Vam Thermo tubing	3,000	6,000	9,62	3431,48	338,74	Joint No.	45
371	5 1/2" New Vam Thermo tubing	3,000	6,000	9,59	3441,07	329,15	Joint No.	44
2	5 1/2" New Vam Thermo tubing	3,000	6,000	9,61	3450,68	319,54	Joint No.	43
373	5 1/2" New Vam Thermo tubing	3,000	6,000	9,59	3460,27	309,95	Joint No.	42
374	5 1/2" New Vam Thermo tubing	3,000	6,000	9,60	3469,87	300,35	Joint No.	41
375	5 1/2" New Vam Thermo tubing	3,000	6,000	9,58	3479,45	290,77	Joint No.	40

### Running List DST, Well 6407/7-6

Item	String description	Min ID (Inch)	Max OD (Inch)	Length (m)	Length run (m)	Depth fm. top (m)	Supplier	Comments
/6	5 1/2" New Vam Thermo tubing	3,000	6,000	9,55	3489,00	281,22	Joint No.	39
377	5 1/2" New Vam Thermo tubing	3,000	6,000	9,57	3498,57	271,65	Joint No.	38
378	5 1/2" New Vam Thermo tubing	3,000	6,000	9,63	3508,20	262,02	Joint No.	37
379	5 1/2" New Vam Thermo tubing	3,000	6,000	9,59	3517,79	252,43	Joint No.	36
380	5 1/2" New Vam Thermo tubing	3,000	6,000	0,00	3517,79	252,43	LAI D OUT	35
381	5 1/2" New Vam Thermo tubing	3,000	6,000	9,59	3527,38	242,84	Joint No.	34
382	5 1/2" New Vam Thermo tubing	3,000	6,000	9,63	3537,01	233,21	Joint No.	33
383	5 1/2" New Vam Thermo tubing	3,000	6,000	9,63	3546,64	223,58	Joint No.	32
384	5 1/2" New Vam Thermo tubing	3,000	6,000	9,58	3556,22	214,00	Joint No.	31
385	5 1/2" New Vam Thermo tubing	3,000	6,000	9,58	3565,80	204,42	Joint No.	30
386	5 1/2" New Vam Thermo tubing	3,000	6,000	9,63	3575,43	194,79	Joint No.	29
387	5 1/2" New Vam Thermo tubing	3,000	6,000	9,58	3585,01	185,21	Joint No.	28
388	5 1/2" New Vam Thermo tubing	3,000	6,000	9,59	3594,60	175,62	Joint No.	27
389	5 1/2" New Vam Thermo tubing	3,000	6,000	9,59	3604,19	166,03	Joint No.	26
390	5 1/2" New Vam Thermo tubing	3,000	6,000	9,52	3613,71	156,51	Joint No.	25
391	5 1/2" New Vam Thermo tubing	3,000	6,000	9,59	3623,30	146,92	Joint No.	24
392	5 1/2" New Vam Thermo tubing	3,000	6,000	9,59	3632,89	137,33	Joint No.	23
393	5 1/2" New Vam Thermo tubing	3,000	6,000	9,60	3642,49	127,73	Joint No.	22
394	5 1/2" New Vam Thermo tubing	3,000	6,000	9,58	3652,07	118,15	Joint No.	21
/5	5 1/2" New Vam Thermo tubing	3,000	6,000	9,64	3661,71	108,51	Joint No.	20
396	5 1/2" New Vam Thermo tubing	3,000	6,000	9,58	3671,29	98,93	Joint No.	19
397	5 1/2" New Vam Thermo tubing	3,000	6,000	9,58	3680,87	89,35	Joint No.	18
398	5 1/2" New Vam Thermo tubing	3,000	6,000	9,57	3690,44	79,78	Joint No.	17
399	5 1/2" New Vam Thermo tubing	3,000	6,000	9,58	3700,02	70,20	Joint No.	16
400	5 1/2" New Vam Thermo tubing	3,000	6,000	9,52	3709,54	60,68	Joint No.	15
401	5 1/2" New Vam Thermo tubing	3,000	6,000	9,59	3719,13	51,09	Joint No.	14
402	5 1/2" New Vam Thermo tubing	3,000	6,000	9,58	3728,71	41,51	Joint No.	13
403	5 1/2" New Vam Thermo tubing	3,000	6,000	3,03	3731,74	38,48		Pup joint # 5
404	X-over 5 1/2" NV pin X 4 1/2" SA pin			0,49	3732,23	37,99		
	Centralizer			1,53	3733,76	36,46		
	Lower Lubricator Valve (LSSLV)			1,82	3735,58	34,64		
	X-over 4 1/2" SA pin X 5 1/2" NV box			0,70	3736,28	33,94		
	5 1/2" New Vam Spacer joint			9,61	3745,89	24,33		
405	X-over 5 1/2" NV pin X 4 1/2" SA pin			0,65	3746,54	23,68		
	Upper Lubricator Valve (USSLV)			1,82	3748,36	21,86		
	Centralizer			1,13	3749,49	20,73		
	X-over 5 1/2" NV pin X 4 1/2" SA pin			0,86	3750,35	19,87		
	5 1/2" New Vam Tbg.jt on LV			9,60	3759,95	10,27		
/6	5 1/2" New Vam Thermo tubing	3,000	6,000	9,60	3769,55	0,67	Joint No.	12
407	5 1/2" New Vam Thermo tubing	3,000	6,000	9,59	3779,14	-8,92	Joint.	on flowhead
407	X-over	3,000		0,74	3779,88	-9,66		Halliburton
	Flow head to lift point	3,000		4,25	3784,13	-13,91		Halliburton
	Bails to lift point	-		13,41	3797,54	-27,32		IOT

# SUBSEA SPACE OUT

version 3.1 - April 2000

## WELL DATA

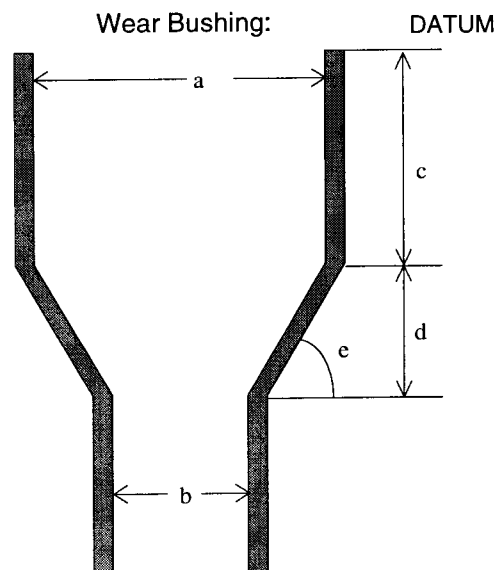
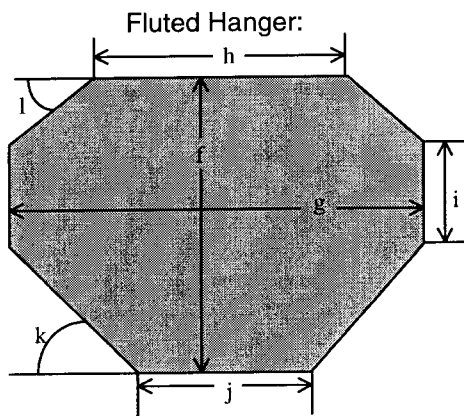
<b>Company:</b> Norsk Hydro	<b>Date:</b> oktober 6, 2000
<b>Location:</b> Njord	<b>Drawn by:</b> Janne Hauge
<b>Rig Name:</b> Scarabeo VI	<b>Customers Approval:</b>
<b>Well No.:</b> 6407/7-6	<b>Pressure:</b> 10K

### INPUT VALUES

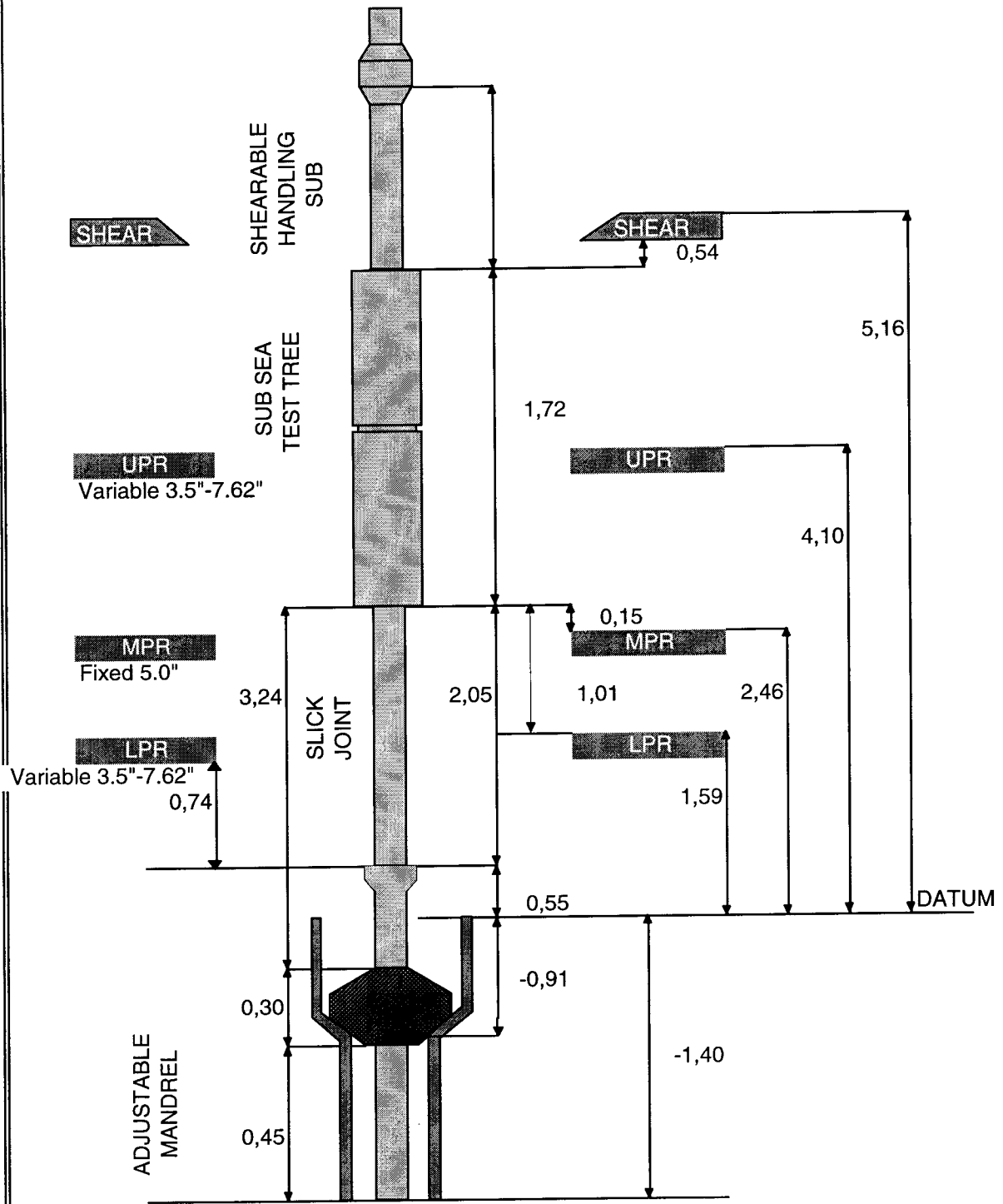
DISTANCES FROM DATUM: <i>(All distances to top of rams)</i>	
To Lower Pipe Rams	1,59 m
To Middle Pipe Rams	2,458 m
To Upper Pipe Rams	4,103 m
To Shear Rams	5,163 m
Ram Thickness	11,81 "
LENGTH OF:	
Sub Sea Test Tree	1,72 m
Slick Joint	2,05 m
Adjustable Mandrel	1,95 m
INPUT WEAR BUSHING:	
a Inner Diameter Top	13,31 "
b Inner Diameter Bottom	8,54 "
c See illustration below	0,802 m
d See illustration below	0,105 m
e See illustration below	60 °
INPUT FLUTED HANGER*:	
f Total Height	0,30 m
g Total Width	0,28 m
h Top Width	0,15 m
i Side	0,15 m
j Bottom Width	0,17 m
k Bottom Angle	60 °
l Top Angle	45 °
Distance between bottom shear rams and top sub sea test tree: 0,54 m	

### CALCULATED VALUES

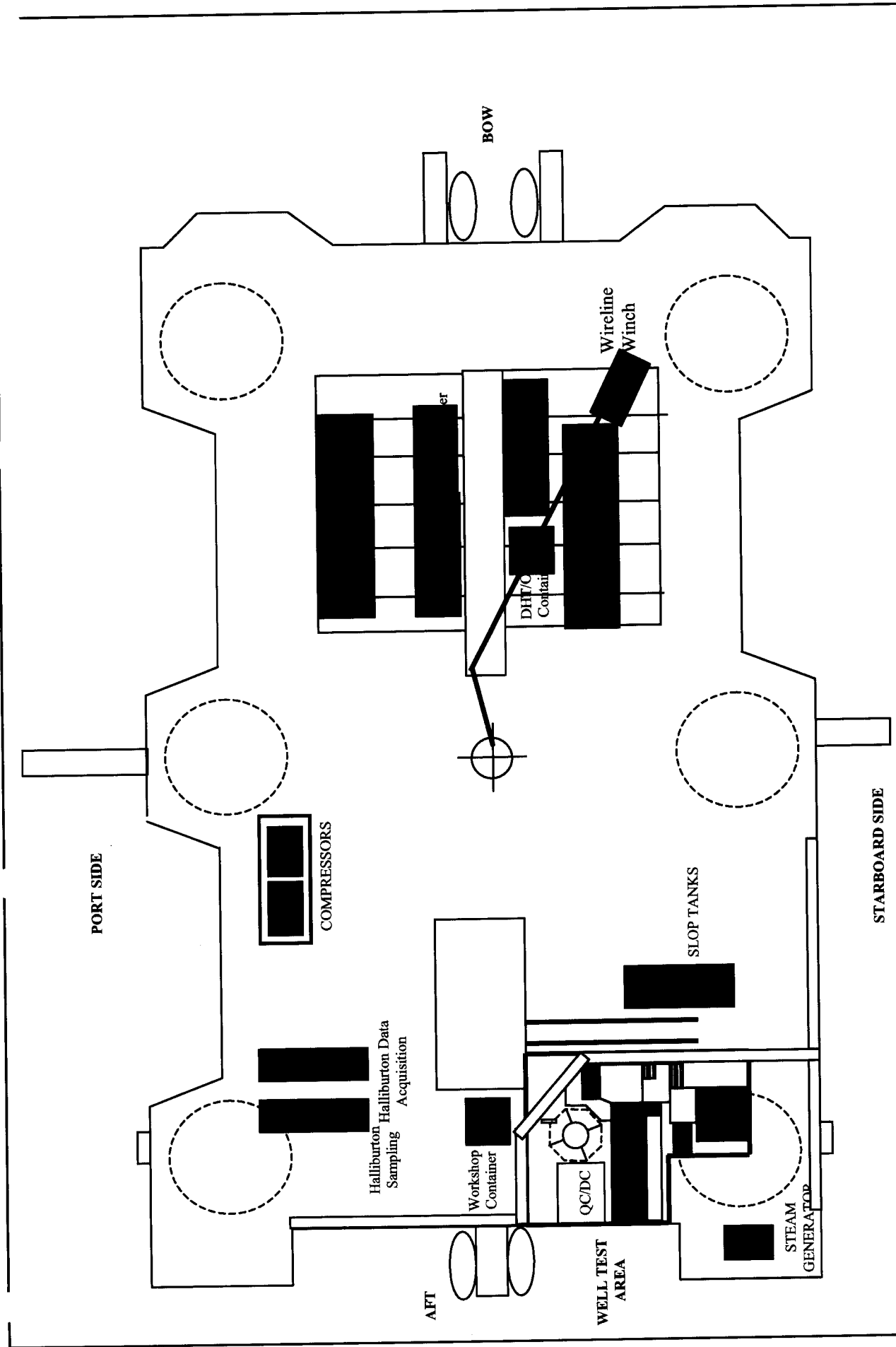
DISTANCES FROM DATUM:	
Bottom Shear Rams	4,86 m
Top Sub Sea Test Tree	4,32 m
Bottom Upper Pipe Rams	3,80 m
Bottom Sub Sea Test Tree	2,60 m
Bottom Middle Pipe Rams	2,16 m
Bottom Lower Pipe Rams	1,29 m
Top Adjustable Mandrel	0,55 m
Top Fluted Hanger	-0,64 m
Bottom Fluted Hanger	-0,91 m
Bottom Adjustable Mandrel	-1,40 m
Bottom LPR to top Adj. Mandrel	0,74 m
Top LPR to bottom SSTT	1,01 m
FLUTED HANGER DISTANCES	
Bottom SSTT - Top Hanger	3,24 m
Top Adj. Mandrel - Hanger	1,19 m
Bottom Hanger - Mandrel	0,45 m
SSTT - Top Midle RAM	0,15 m



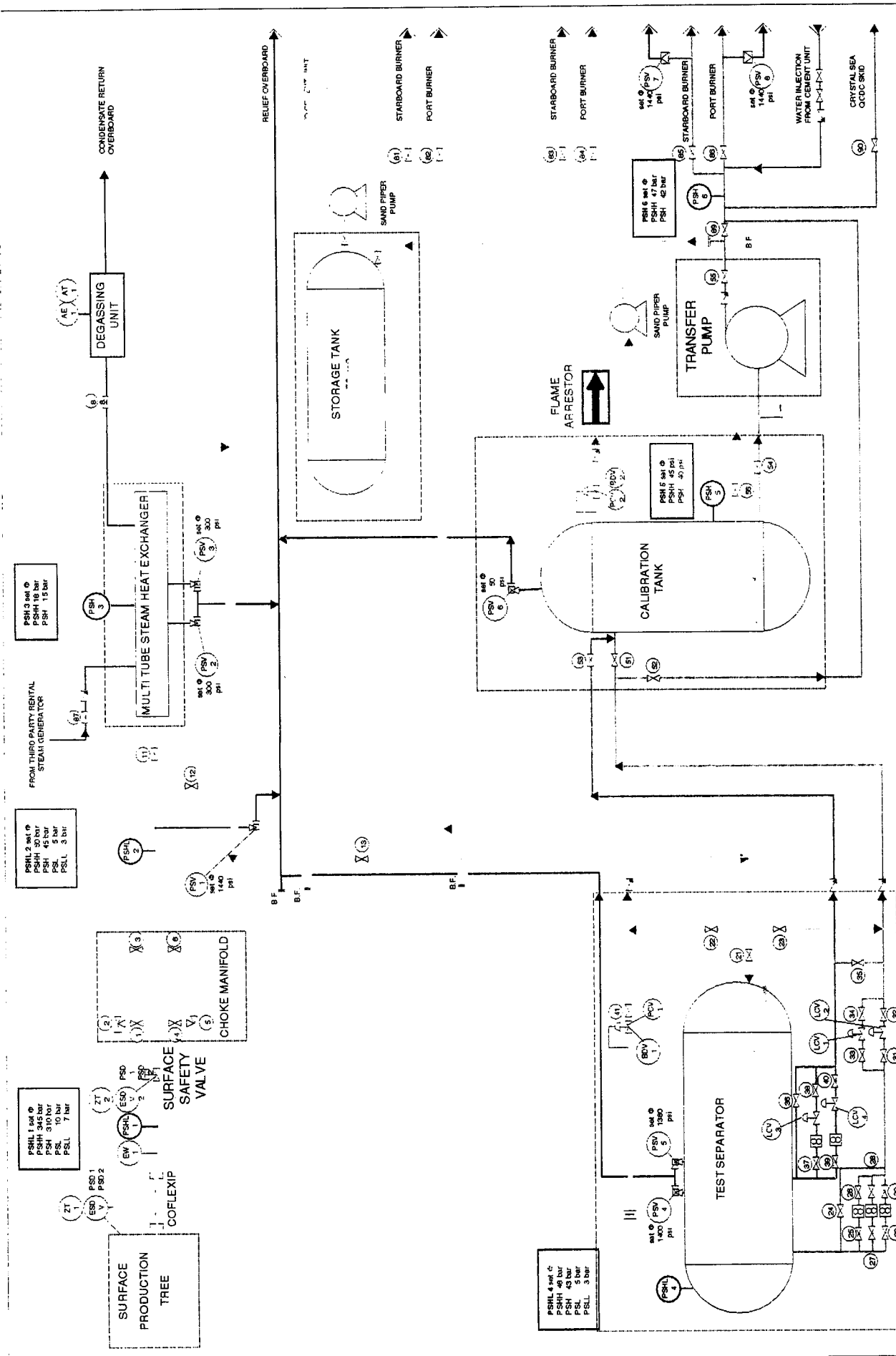
# SUBSEA SPACE OUT



Note: Drawing do not scale  
All dimensions in meter



<p>DATE: 03.05.2001          Rev.:          Ref.: o:\projects\hydro\Well 6407_7-6 Scarabeo 6          Contract: 2000189</p>	<p>3rd party control: Det Norske Veritas          Company: Norsk Hydro          Drawn: ESA          Checked: HA          Ref. Documents:</p>	<p>NOTES: Actual Layout used for testing</p>	<p><b>HALLIBURTON</b></p>	<p>TITLE: WELL TEST LAYOUT          SCARABEO VI          NORSK HYDRO          WELL 6407/7-6, NJORD</p>
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<p>DATE: 02.09.99          REV: E          DESCRIPTION: Update of valve numbers          REF.: SPID-SCAR6-001-E-PPT          CONTRACT: ANS021355</p>	<p>3rd party control:          Det Norske Veritas          Slatoli          Bart Elias          Olav Lundegard          Drawn:          Checked:          Ref. Documents:</p>	<p>NOTE:          OIL AND GAS IN PROCESS          OIL IN PROCESS          GAS IN PROCESS          WATER IN PROCESS</p>	<p>TITLE: SIMPLIFIED P&amp;ID          SURFACE TEST PLANT          SCARABEO 6          HEIDRUN          DRAWING NO: SPID-SCAR6-001          REV: E</p>
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Figure B-43

