



REPORT

Title: WELL 6507/11-6
FINAL WELL REPORT

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PREFACE

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

| | |
|------------------------|------|
| Norsk Hydro (operator) | 40 % |
| Statoil | 30 % |
| Chevron | 30 % |

The well was drilled by Norsk Hydro ASA., on behalf of the group, during June - July 1 (see Location Map, page 3).

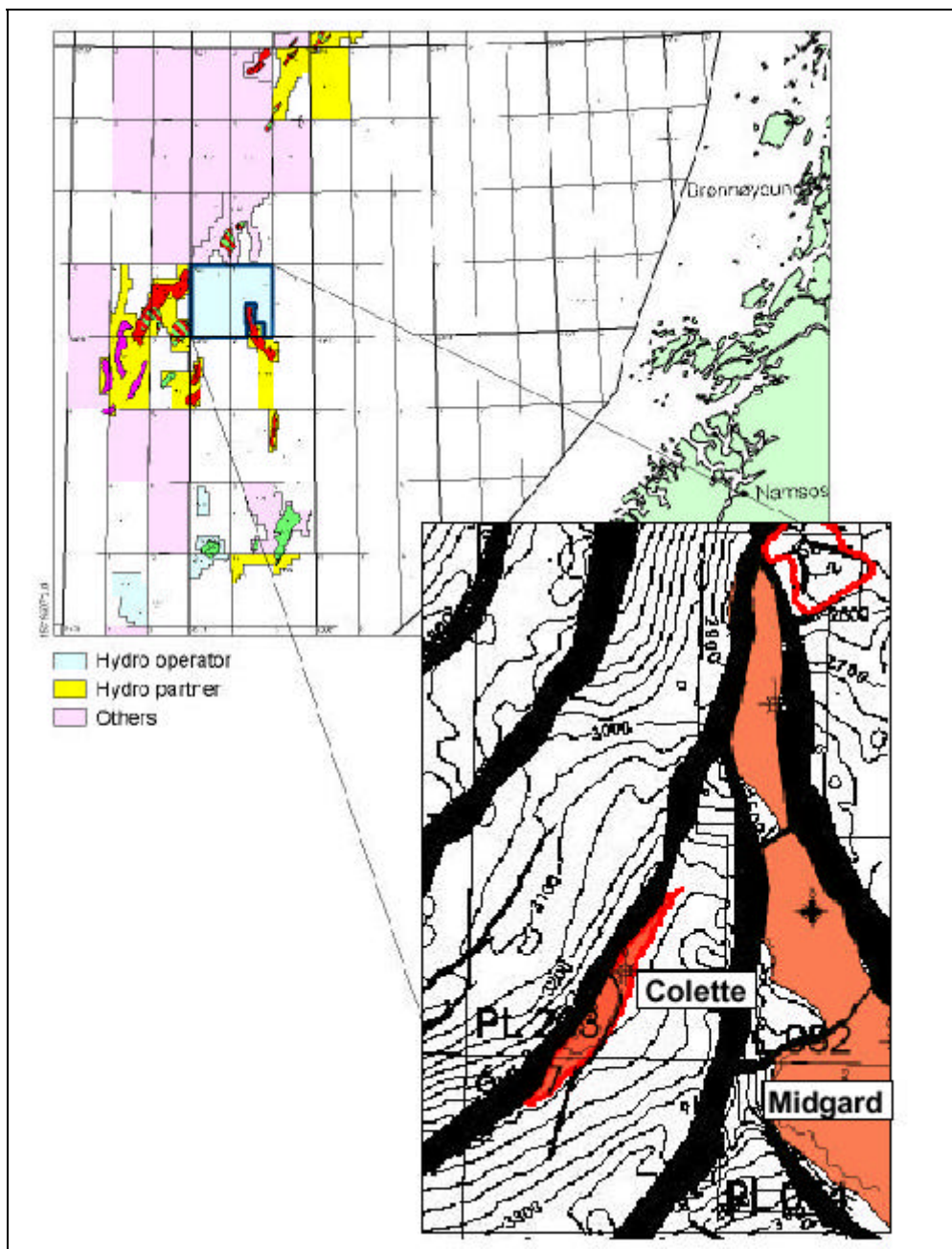
All depths in this report are mMD RKB unless otherwise stated.



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Location Map 6507/11-6





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| SUMMARY OF WELL DATA | |
|------------------------|--|
| LOCATION: | Geo: 65° 01' 09.01" N 07° 24' 52.17" E UTM 7 211 708.4m N 425 288.6m E ED 50, UTM Zone 32, CM 09°E |
| OPERATOR: RIG: | Norsk Hydro Transocean Arctic |
| CONTRACTOR: | Transocean |
| KB ELEVATION (to MSL): | 315m |
| WATER DEPTH (MSL): | 24m |
| START OF OPERATIONS: | 11.06.2001 |
| WELL SPUDDED: | 13.06.2001 |
| WELL RE-SPUDDED: | 14.06.2001 |
| WELL REENTERED: | 30.06.01 |
| REACHED TD ON: | 08.07.2001 |
| COMPLETED: | |
| STATUS: | Plugged and abandoned |
| FORMATION AT TD: | Åre Fm |
| TD DRILLER (mRKB): | 3440 m MD |
| TD LOGGER (mRKB): | 3440 mMD |
| DRILLING DEPTHS: | 36" to 375.5 m 26" to 459 m 17 1/2" to 1608 m 12 1/4" to 2917 m 8 1/2" to 3340 m |



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| | |
|----------------|-------------------|
| CASING DEPTHS: | 30" to 375 m |
| | 20" to 454 m |
| | 13 3/8" to 1602 m |
| | 9 5/8" to 2913 m |



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SECTION A

GEOLOGY



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1 Objectives

The exploration well 6507/11-6 was drilled on the Colette structure, which is a downfaulted structure west of the Midgard Field, and situated in the southern part of license PL 263.

The main objectives of the well were:

- to test the hydrocarbon potential of the Mid Jurassic Garn and Ile Formations of the main Colette prospect
- to investigate the secondary target for the well, the prognosed stratigraphical trap at top Lysing Formation level above the Colette prospect
- to investigate the possible hydrocarbon trapping in the uppermost part of the Lower Jurassic Tilje Formation, depending of internal sealing by the overlying Ror Formation

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2 Results

Well 6507/11-6 was spudded June 13 2001 and reached a total depth of 3440 m MD RKB in Åre Formation on June 30 2001. The well was permanently plugged and abandoned as a minor gas discovery July 8 2001.

The main result of the well was the discovery of a 30 m column of gas from the top of the Mid Jurassic Garn Formation at 3030 m MD RKB. The sandstones in lower part of the Garn Formation as well as the sandstones in the Ile, Tilje and Åre Formations were water bearing. There were no Lysing Formation sandstones in the well position. The gas discovery was not production tested.

One core was cut covering 27.6 m of the 47 m thick Garn Formation. The core contains almost 100% clean sandstone and the reservoir quality is excellent. There are very good reservoir quality sandstones also in the Ile, Tilje and Åre Formations. A total of 27 rotary sidewall cores were recovered (100% recovery) from the Jurassic section.

Fluid samples were obtained from three levels within the Garn Formation. A pressure gradient within the gas zone of 0.22 g/cc (similar to Midgard) is defined by the good quality MDT pressure measurements. The formation pressure in the Jurassic was hydrostatic.

No shallow gas was encountered in the well, in accordance with the weak shallow gas warning issued in the pre drill well documentation.



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3 Biostratigraphy

The biostratigraphical evaluation of well 6507/11-6 was carried out by Robertson Research Ltd. The analysed interval is from 460m - 3440m RKB.

Micropaleontological and palynological analyses have formed the basis for the biostratigraphical interpretation of the well. The analyses were carried out on cuttings, sidewall core and core samples. The results are documented in the following report: "Norsk Hydro 6507/11-6 Norwegian Sea Biostratigraphy of the Interval 460m - 3440m TD".

Tables 3.1, and 3.2 on the following pages show a summarised lithostratigraphic subdivision and geochronological breakdown of well 6507/11-6. The interpretation is in accordance with Norsk Hydro's standard interpretation for the area and differs slightly from Robertson Research's interpretation.

Some of the major points from well 6507/11-6 are summarised below:

- The youngest sediments analysed at 460m are of Late Pliocene age.
- The oldest sediments at 3040m are of Early Pliensbachian age (Åre Formation).
- The Hordaland Gp. (Brygge Fm.) was penetrated at 1542m (log)
In the Hordaland Gp. sediments from Early Miocene are not identified, and parts of the Middle Eocene also appear to be missing.
- The Rogaland Gp. (Tare Fm.) was penetrated at 2022m (log)
- The Shetland Gp. (Springar Fm.) was penetrated at 2062m (log)
- An unconformity is indicated between the Rogaland Group and the Shetland Group, where sediments of Early Paleocene rests on sediment of Early Maastrichtian age.

Cromer Knoll Group (2697m - 2885m)

- An unconformity was identified between the Shetland Group and the under-



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lying Cromer Knoll Group, where Late Coniacian sediments rest on sediments of Late Albian age.

- Two other unconformities are also indicated in the Cromer Knoll Group (Lange Formation) where sediments from the Late Aptian and Late Barremian seems to be absent.

Viking Group (2885m - 3030m)

- A stratigraphical break is also indicated between the Cromer Knoll Group and the underlying Viking Group, with Early Barremian sediments resting on Late-?Early Ryazanian strata of the Spekk Formation.

- Three unconformities are indicated within the Viking Group. In the Spekk Formation sediments of Early Volgian age seems to be absent, and within the Melke Formation sediments of Late Oxfordian age seem to be missing, and there is also a hiatus between the Middle Callovian and Early Bathonian age.

Fangst Group (3030m - 3160m)

- No unconformities are indicated with certainty.

Båt Group (3160m - 3040m TD)

- An unconformity is indicated in the Båt Group (Tilje Formation) where sediments of Early Toarcian age seem to be missing.

Biostratigraphic summary of sand units

- Sands of the Garn Formation are of Bajocian- Aalenian age, assigned to palynozones PJ4 - PJ3.

- Sands of the Ile Formation are of Aalenian age, assigned to Palynozone PJ3.

- Sands of the Tilje Formation are of Late - Middle Toarcian to Early Pliensbachian age assigned to the palynozones PJ3C and PJ3A



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CHRONO- AND LITHOSTRATIGRAPHICAL BREAKDOWN, WELL 6507/11-6

| GROUP | FORMATION | DEPTH mMDRKB |
|--------------|------------------|-------------------------|
| Nordland | | 315 |
| | Naust | 443 |
| | Kai | 1392 |
| Hordaland | Brygge | 1542 |
| Rogaland | Tare | 2022 |
| | Tang | 2102 |
| Shetland | Springar | 2162 |
| | Nise | 2243 |
| | Kvitnos | 2452 |
| Cromer Knoll | Lange | 2697 |
| | Lyr | 2870 |
| Viking | Spekk | 2885 |
| | Melke | 2983 |
| Fangst | Garn | 3030 |
| | Not | 3077 |
| | Ile | 3094 |
| Båt | Ror | 3160 |
| | Tilje | 3261 |
| | Åre | 3387 |
| | | 3040-TD |

Table 3.1: Chrono- and lithostratigraphy



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GEOCHRONOLOGICAL BREAKDOWN, WELL 6507/11-6

| SAMPLE DEPTH m | PERIOD | AGE | Palyno Zone | Mikro Zone | | | |
|----------------|---|---|-------------|------------|---------------|------|--------------|
| 460 | NEOGENE | Late Pliocene | PT13 | ?MNB3D | | | |
| ?1440 | | ?Early Pliocene | | | | | |
| 1460 | | Early Pliocene | PT12 | | | | |
| 1480 | | Late Miocene | PT10 | MNB3C | | | |
| 1500 | | Middle Miocene ----UNCONFORMITY---- | | | | | |
| 1600 | PALEOGENE | Late Oligocene - ?Early Oligocene | PT7A | MOP4 | | | |
| 1780 | | Early Oligocene | | | | | |
| 1800 | | Late Eocene - ?Middle Eocene | PT4A-A | MEB4 | | | |
| 1900 | | Middle Eocene | | | | | |
| 1980 | | Early Eocene | | | | | |
| 2020 | | earliest Eocene | | | | | |
| 2100 | | Late Paleocene | PT2B | | | | |
| | | Early Paleocene pres as caved ----UNCONFORMITY---- | | | | | |
| 2160 | LATE CRETACEOUS | Early Maastrichtian | PK8C | MK13 | | | |
| 2170 | | Late Campanian | | | | | |
| 2230 | | Middle Campanian | | | | | |
| 2290 | | Early Campanian | | | | | |
| 2430 | | Late - Middle Santonian | | | | | |
| 2510 | | Early Santonian | | | | | |
| 2670 | | Late Coniacian ----UNCONFORMITY---- | | | | | |
| 2700 | | EARLY CRETACEOUS | | | Late Albian | PK5A | MK6D MK6B |
| 2720 | | | | | Middle Albian | | |
| 2770 | Early Albian ----UNCONFORMITY---- | | | | | | |
| 2810 | Early Aptian ----UNCONFORMITY---- | | | | | | |
| 2830 | Early Barremian ----UNCONFORMITY---- | | | | | | |
| 2890 | Late - ?Early Ryazanian | | | | | | |
| 2916 | LATE JURASSIC | Late Volgian ----UNCONFORMITY---- | PJ9 | | | | |
| 2970 | | Kimmeridgian ----UNCONFORMITY---- | PJ7B | | | | |
| 2985 | | Middle Oxfordian | PJ6C1 | | | | |
| 2995 | Early Oxfordian | PJ6B | | | | | |
| 3002,5 | MIDDLE JURASSIC | Late - Middle Callovian ----UNCONFORMITY---- | | PJ6A | | | |
| 3025 | | Early Bathonian | | PJ5A | | | |
| 3035 | Bajocian / Aalenian | PJ4 / PJ3D | | | | | |
| 3090 | Aalenian | PJ3D | | | | | |
| 3165 | EARLY JURASSIC | Late - Middle Toarcian ----UNCONFORMITY---- | | PJ3C | | | |
| 3305 | | Late Pliensbachian | PJ3A | | | | |



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| | | | | |
|---------|--|---------------------|------|--|
| 3385 | | Early Pliensbachian | PJ2C | |
| 3440 TD | | | | |

Table 3.2: Geochronological breakdown, Well 6507/11-6



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4 Lithostratigraphy

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

This summary is compiled predominantly from ditch cuttings descriptions. A total of 1 conventional core was cut in the interval from 3036m to 3064m in the well.

Wireline and MWD logs were used to aid lithological interpretation and the placement of formation boundaries.

The well was drilled with returns to seabed from the seafloor at 315 m to 459 m before setting 20" casing at 454 m. The first drill cuttings samples were taken at 460 m. The lithology interpretation is based on MWD logs and cuttings descriptions.

4.1 Nordland Group (315 - 1542m MD)

Quaternary (315 - 443 m MD)

315 - 443 m MD: From MWD logs: Clays interbedded with Sands.

Naust Formation (443 - 1392 m MD)

443 - 459 m MD: From MWD logs: Clays interbedded with Sands.

459 - 516 m MD: The interval comprises of Claystones and Sands with traces of Limestones
Claystone: Grnsh gry, sft, blk, sli stky, micromic, calc - v calc
Sandstones: Trnsl clr - mlky Qtz, occ rose Qtz, f - crs, occ v crs, pred f - m, sbrndd - ang, mica, Tr rock frag, pyr, mica.
Limestone: wh - lt gry, hd, brit, microxln, shell frag

516 - 900 m MD: The interval comprises of Claystones with Sandstone beds and traces of Limestones
Claystone: Med dk gry dk grnsh gry, amor, slily stky, sft - frm, calc, slily slty, Tr Carb Frag, Tr microfos
Sandstones: Trnsl clr - mlky Qtz, occ lt rd trnsl Qtz, f - m, pred m, sbrnd - sbang, mod srt, tr calc cmt, no agg, nvp



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Limestone: Wh - trnsl wh, sft - frm, occ hd, microxln

900 - 1100 m MD: The interval comprises of Claystones and Sandstones with traces of Limestones

Claystone: Med gry - lt olv gry, amor - occ sbblky, occ slily stky, sft - occ frm, sdy, slty, calc, tr carb frag, tr shl frag

Sandstones: Trnsl clr - mlky Qtz, occ lt rd trnsl Qtz, f - m, r crs, pred f, sbrnd - sbang, wl - mod srt, occ tr calc cmt, lse Qtz gr, nvp

Limestone: Wh - mlky wh, occ brn blk, blky, hd, microxln

1100 - 1392 m MD: The interval comprises of Claystones grading to Siltstones with traces of Limestones

Claystone: Med gry - lt olv gry - grnsh gry, blky, slty grd sltst, occ sdy, sft - occ frm, sdy, calc, tr shl frag.

Limestone: Wh - mlky wh, occ brn blk, blky, hd, microxln

Age: Late Pliocene

Kai Formation (1392 - 1542 m MD)

1392 - 1467 m MD: The interval comprises of Claystones grading to Siltstones with traces of Limestones

Claystone: Med gry - lt olv gry - grnsh gry, blky, slty grd sltst, occ sdy, sft - occ frm, sdy, calc, tr shl frag.

Limestone: Wh - mlky wh, occ brn blk, blky, hd, microxln

1467 - 1542 m MD: The interval comprises of Claystones grading to Siltstones and traces of Limestones

Claystone: Med gry - lt olv gry - grnsh gry, blky, slty grd sltst, occ sdy, sft - occ frm, sdy, calc, tr shl frag

Limestone: Wh - lt gry - lt brn, frm -hd, occ arg, microxln

Age: Late Pliocene - Middle Miocene

4.2 Hordaland Group (1542 - 2022m MD)



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Brygge Formation (1542 - 2022 m MD)

1542 - 1608 m MD: The interval comprises of Claystones and Siltstones

Claystone: Med gry - brnsh gry, occ tr lt olv gry, sft - frm, pred sft, slty, occ sdy, blk, sli calc - calc

Siltst: Med - dk gry - brnsh gry, sft - frm, occ sdy, arg, blk, calc

1608 - 1860 m MD: The interval comprises of Claystones grading to Siltstones with traces of Limestones

Claystone: Med gry - med dk gry - brn gry, sbblk, sft - frm, slily stky, v slty occ grad sltst, occ slily sdy, non - slily calc, r slily carb.

Limestone: Dk gn gry, occ trns, dk yel org - pl yel org, wh - clr, bl gry, blk, frm, occ slily arg, microxln

1860 - 1980 m MD: The interval comprises of Claystones with minor Limestones

Claystone: Gn gry - gry bl gry, v lt gry, grad olv gry, sbblk - blk, non stky, sft - frm, non calc.

Limestone: Dk gn gry, occ trns, dk yel org - pl yel org, occ v lt gry-pl yel brn, wh - clr, bl gry, blk, frm, occ slily arg, microxln

1980 - 2022 m MD: The interval comprises of Claystones and traces of Limestones

Claystone: Mod rd brn - mod brn - grysh rd, blk, frm, non calc and dk grnsh gry - med bl - gn gry, frm, blk, non calc

Limestone: Wh - v lt gry, frm, brit, slily dol, microxln

Age: Middle Miocene - Early Eocene

4.3 Rogaland Group (2022 - 2162m MD)**Tare Formation (2022 - 2102 m MD)**

2022 - 2102 m MD: The interval comprises of Claystones with traces of Limestones and Tuff

Claystone: Dk grnsh gry - olv gry - grnsh gry - lt grnsh gry, occ rd brn, sft-frm, non calc, blk, glau, occ tuff mat

Limestone: Lt yel or - lt yel gry, blk, brit, sli dol, microxln, occ arg

Age: Early Eocene



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Tang Formation (2102 - 2162 m MD)

2102 - 2162 m MD: The interval comprises of Claystones and traces of Limestones

Claystone: Grnsh gry - lt grnsh gry - med dk gry, grad dk grnsh gry, sft - frm, slily calc - non calc, blk, slty i/p

Limestone: Lt olv gry, lt brn gry, occ trnsl, frm - hd, slily dol, blk, micromic.

Age: Late - Early Paleocene

4.4 Shetland Group (2162 - 2697 m MD)

Springar Formation (2162 - 2243 m MD)

2162 - 2243 m MD: The interval comprises of Claystones and Limestones

Claystone: Lt - dk grnsh gry, pred gn gry, r olv gry, slily calc - calc, blk, sft - frm, micromic, glauc i/p

Limestone: Wh, lt brn i/p, brit, blk, microxln, occ arg

Age: Early Maastrichtian - Middle Campanian

Nise Formation (2243 - 2452 m MD)

2243 - 2353 m MD: The interval comprises of Claystones grading to Siltstone and traces of Limestones

Claystone: Dk grnsh gry - med dk gry - grnsh gry, slty - v slty, sdy i/p, blk, sft - frm, non calc, occ glau, micromic.

Limestone: Lt gry - lt grnsh gry, lt brn gry - lt olv gry, blk, brit, sft - frm, microxln, dol, arg i/p

2353 - 2452 m MD: The interval comprises of Claystones grading to Siltstones and occasional traces of Limestones

Claystone: Dk grnsh gry - med dk gry - grnsh gry, slty - v slty, sdy i/p, blk, frm, non calc, glau

Limestone: Pl yel brn - grysh or, blk, brit, frm, microxln, dol, arg i/p

Age: Middle Campanian - Middle Santonian



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Kvitnos Formation (2452 - 2697 m MD)

2452 - 2697 m MD: The interval comprises of Claystones with Limestone stringers
Claystone: Med dk gry - olv gry, sbblky - blkly, sli stky, frm , pred slily calc - calc, occ slty, r slily sdy, occ micromic.
Limestone: Grading dol i/p, grysh or - pl yel brn - lt brn yel, frm, brit, blkly, arg i/p, Microxln

Age: Middle Santonian - Late Coniacian

4.5 Cromer Knoll Group (2697 - 2885 m MD)**Lange Formation (2697 - 2870 m MD)**

2697 - 2819 m MD: The interval comprises of Claystones with abundant Limestone stringers
Claystone(1): Med gry - dk gn gry, dk gry - olv gry, blkly - sbblky, sft - frm , non calc - calc i/p, micromic.
Claystone(2): Mod rd brn, sbblky, stky, sft, non calc - v calc, tr glau
Limestone: Gry or - yel gry, occ vf blk spt, frm, brit, blkly, slily arg - arg i/p, occ grad dol, microxln

2819 - 2870 m MD: The interval comprises of Claystones with Limestone stringers
Claystone: Med gry - dk gn gry, dk gry - olv gry, blkly - sbblky, sft - frm, non calc - calc i/p, micromic
Limestone: Gry or - yel gry, occ vf blk spt, frm, brit, blkly, slily arg - arg i/p, occ grad dol, microxln

Age: Late Albian - Early Barremian

Lyr Formation (2870 - 2885 m MD)

2870 - 2885 m MD: The interval comprises of calcareous Claystone grading Marl
Claystone(1): Med gry - dk gn gry, dk gry - olv gry, blkly - sbblky, sft - frm , non calc - calc, micromic.
Claystone(2): Mod rd brn, blkly, frm, non calc - v calc
Limestone: Lt gn gry - gn gry - pl gn, frm, brit, blkly, slily arg - v arg i/p, microxln

Age: Early Barremian



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4.6 Viking Group (2885 - 3030 m MD)

Spekk Formation (2885 - 2983 m MD)

2885 - 2983 m MD: The interval comprises of Claystones/Shales

Claystone: Dk gry - grysh blk, grd brn blk, blk, occ lam, sft - frm, non calc, occ pyr, loc carb, slty I.P.

Age: Late Ryazanian - Kimmeridgian

Melke Formation (2983 - 3030 m MD)

2983 - 3002 m MD: The interval comprises of Silty claystone

Claystone: Dk gry - gn blk - brn blk, frm - hd, blk, occ grd sbfiss, slily calc - non calc, silty, grd Sltst I.P.

3002 - 3030 m MD: The interval comprises of Siltstone and Claystone with Limestone stringers

Siltstone: Dk gry - grysh blk, arg, sli calc - calc, blk, frm, occ sli sdy.

Claystone: Dk brn gry - gry blk, occ gn blk, occ brn gry, blk, non - sli calc, occ grd sbfiss, slty I.P.

Limestone: Pl yel brn - gry or, wh, dk gry strks, frm, brit, arg, microxln.

Age: Middle Oxfordian - Early Bathonian

4.7 Fangst Group (3030 - 3160m MD)

Garn Formation (3030 - 3077 m MD)

3030 - 3077 m MD: The interval comprises of Sandstone

Sandstone: V lt gry - lt gry, clr trnsl - mky Qtz, f - crs, pred m, sbang - sbrnrd, wl - mod srt, fri - hd, pred lse, occ sli calc cmt, occ sli sil cmt, kao, gd vis por.

Age: Bajocian - Aalenian

Not Formation (3077 - 3094 m MD)

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3077 - 3094 m MD: The interval comprises of Siltstone with minor Sandstone and Limestone
Siltstone: M gry - m dk gry, bcm also m brn gry, frm, non - sli calc, sdy, bcm occ sli sdy,
Tr micromic, occ Tr carb frag.
Sandstone: V lt gry - lt gry, clr trnsl - mky Qtz, f - crs, pred m, sbang - sbrnrd, wl - mod
srt, fri - hd, pred lse, occ sli calc cmt, occ sli sil cmt, kao, gd vis por.
Limestone: wh - lt gry, sft - frm, slty, occ sdy, dol I.P.

Age: Bajocian - Aalenian

Ile Formation (3094 - 3160 m MD)

3094 - 3160 m MD: The interval comprises of Sandstone with interbeds of Siltstone and minor
Limestones
Sandstone: V lt gry - m gry, clr trnsl - mky Qtz, f - crs, occ v crs, pred m, sbang - sbrnrd,
wl - mod srt, occ pr srt, fri, pred lse grns, occ calc cmt, bcm non calc cmt, kao,
occ v kao, fr - gd vis por.
Sandstone: M gry - lt olv gry, occ m dk gry, clr trnsl - mky, smoky clr Qtz, f - crs, pred m,
sbang - rndd, pred sbang - sbang, pr - mod srt, fri - frm, occ sli Slty, occ calc
cmt, kao, tr Mic, pred fr vis por.
Siltstone: M gry - m dk gry, bcm also m brn gry, frm, non - sli calc, sdy, bcm occ sli sdy,
Tr micromic, occ Tr carb frag.
Limestone: wh - lt gry, sft - frm, slty, occ sdy, occ arg, dol I.P.

Age: Aalenian

4.8 Båt Group (3160 - 3440 m MD = TD)**Ror Formation (3160 - 3261 m MD)**

3159 - 3261 m MD: This interval comprises Siltstone with minor Claystone and Trace of
Limestone
Siltstone: M gry - brn gry, frm, arg, blk, non calc.
Claystone: M gry - brn gry, grn gry, sft - frm, non calc, sli slty.
Limestone: Wh - lt gry, dk gry strks, arg, blk, brit, microxln.

Age: Late Toarcian



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Tilje Formation (3261 - 3372 m MD)

3261 - 3275 m MD: This interval comprises of Siltstone with Traces of Limestone

Siltstone: M gry - brn gry, occ grd gn gry, frm, blk, non calc, arg I.P.
Limestone: Wh, lt gry strks I.P., brit, blk, arg, microxln.

3275 - 3290 m MD: This interval comprises of Siltstone with interbeds of Kaolin and Sandstone

Siltstone: M gry - brn gry, occ grd gn gry, frm, blk, non calc, arg I.P.
Kaolin: Wh - lt gry, pred sft, loc brit, blk, sdy, dk gry strks, microxln.
Sandstone:Clr trnsl Qtz, f - m, occ vf, occ crs, kao Mtrx, pr srt, pred lse, non calc, gd vis por.

3290 - 3312 m MD: Sandstone with minor Kaolin and Trace of Siltstone

Sandstone:Clr trnsl Qtz, f - m, occ vf, occ crs, kao Mtrx, pr srt, pred lse, non calc, gd vis por
Kaolin: Wh - lt gry, pred sft, loc brit, blk, sdy dk gry strks, microxln
Siltstone: M gry - brn gry, occ grd gn gry, frm, blk, non calc, arg I.P.

3312 - 3330 m MD: Sandstone with minor Siltstone

Sandstone:Clr trnsl Qtz, vf - crs, pred f - m, mod srt, sbang - sbrnd, non calc, kao Mtrx, low vis por
Siltstone: Gry brn - m gry, frm - grd hd, blk, arg, occ sdy, non calc

3330 - 3360 m MD: Sandstone interbedded with Siltstone

Sandstone: v lt gry - lt olv gry, occ gry or - dk yel or, clr - trnsl Qtz, vf - m, r crs, sbang - brndd, mod - pr srt, non - sl calc, arg, I.P. v arg, kao Mtrx I.P., Tr Mic, no - pr vis por
Siltstone: brn gry - m dk gry, frm, occ mod hd, blk, occ grd slty Shale, occ sdy I.P., non calc

3360 - 3372 m MD: Sandstone with minor Siltstone

Sandstone: v lt gry - lt olv gry, r gry or, clr - trnsl Qtz, vf - f, sbang - sbrndd, frm - fri, wl srt, calc, occ v calc, non - sl calc I.P., r kao Mtrx, pr vis por, n/s
Siltstone: gry brn - m gry, frm, blk, arg, occ sdy, non - sli calc

3372 - 3387 m MD: Sandstone with interbeds of Siltstone

Sandstone: wh - gry or, clr - trnsl Qtz, vf - f, sbrndd - sbang, wl srt, frm, fri I.P., Kao Mtrx, v calc I.P., no - por vis por, n/s
Siltstone: olv blk - brn blk, dk gry - gry blk, frm, loc fri, micromic, loc vf sdy, carb, I.P.



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grd coaly Shale

Age: Middle Toarcian - Late Pliensbachian

Åre Formation (TD) (3372 - 3440 m MD)

3387 - 3410 m MD: Siltstone with interbeds of Sandstone

Siltstone: olv blk, dk gry - gry blk, frm, blk, non - sl calc, arg, I.P. f sdy, coaly I.P., carb, Mic

Sandstone: wh - v lt gry, lt gry, clr - trnsl Qtz, vf - crs, r v crs, pred lse Qtz gr, sbrndd - sbang, pr srt, non - sl calc, I.P. kao Mtrx, I.P. Mic

3410 - 3435 m MD: Sandstone with minor Siltstone

Sandstone: wh - v lt gry, lt gry, clr - trnsl Qtz, vf - f, r crs, sbrndd - sbang, wl - mod srt, non - sl calc, abd Kao cmt, Mic I.P.

Siltstone: olv blk - dk gry - gry blk, frm, blk, pred non calc, sli calc I.P., arg

3435 - 3440 m MD: Sandstone with minor Siltstone

Sandstone: wh - lt gry, vf - m, pred vf - f, sbang - sbrndd, abd Kao cmt, grad Sltst I.P.

Siltstone: lt gry - mod dk gry - gry blk, bcm dk gry - olv blk - brn blk, frm, blk, non calc, arg, occ sdy, micopyr I.P.

Age: Early Pliensbachian



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5 Hydrocarbon Shows

The evaluation of hydrocarbon shows at the wellsite was carried out in a conventional manner. A standard (Geoservice) hydrocarbon total gas detector system(Geoservices Gaslogger) together with a gas chromatograph for automatic and continuous gas analysis, recorded as ppm by volume of C1 through nC5, were operational below 459m down to the TD of the well.

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

5.1 Gas Record

315 - 459m: This interval was drilled with returns to sea bed.

459- TD: The gas record was made by the Reserval system providing C₁ to C₅ breakdown.

The gas summary for the well is presented in the Appendices; Gas Ratio Log.



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5.2 Oil stain and Fluorescence

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

| INTERVAL (mRKB) | SOURCE | LITHOLOGY | SHOWS DESCRIPTION |
|-----------------|----------------|-----------|---|
| 3030-3036 | Drill cuttings | Sandstone | No HC od, no dir fluor, no stn, slw strmg wh cut fluor, dull yel wh res, no vis res |
| 3036-3037 | Core | Sandstone | No od, no stn, v wk lt yel - yel dir flor, v slw strmg mlky wh yel cut flor, no vis cut, mlky wh flor, no vis res |
| 3037-3038 | Core | Sandstone | No od, no stn, mod wh - yel dir flor, mod - fst strmg wh cut flor, no vis cut, mlky wh res flor, no vis res |
| 3038-3039 | Core | Sandstone | No od, no stn, mod wh - yel dir flor, mod - fst strmg wh cut flor, no vis cut, mlky wh res flor, no vis res |
| 3039-3056 | Core | Sandstone | No od, no stn, v wk lt yel - yel dir flor, v slw ml strmg wh yel cut flor, no vis cut, mlky wh res fl no vis res |
| 3056-3058 | Core | Sandstone | No od, no stn, v wk yel - wh dir cut, v slw cldy yel wh cut flor, no vis cut, wk res flor, no vis res |
| 3058-3062 | Core | Sandstone | No od, no stn, r spt of yel wh flor, v wk slw cldy wh cut flor, no vis cut, wk wh res flor, no vis res |
| 3062-3063 | Core | Sandstone | No od, no stn, r spt of yel wh flor, v wk slw cldy wh cut flor, no vis cut, spt wh res flor, no vis res |
| 3063- 3063.65 | Cores | Sandstone | No od, no stn, no dir flor, no cut, wk spt of res flor, no vis res |

Table 5.2 Shows summary 6507/11-6



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6 Coring

6.1 Conventional Cores

A total of 1 core was cut in Upper Jurassic Sandstone, Garn Formation. A summary of the core is presented in Table 6.1 below and the core description can be found in Appendix I.

| No | C: Cut(m) R: Recovery(m) | Rec. % | Lithology | Formations |
|----|------------------------------|-----------|-----------|------------|
| 1 | 3036-3064m (3036-3063.95) | | Sand | Garn Fm |

Table 6.1.1: Conventional Cores 6507/11-6

| Core no. | top (m RKB) | bottom (m RKB) | recovery (%) | depth shift (m) |
|----------|-------------|----------------|--------------|-----------------|
| 1 | 3036,00 | 3063,95 | 98.8% | |

Table 6.1.2: Core Depth Shift 6507/11-6

6.2 Sidewall Cores

Using the MSCT/GR 27 sidewall cores were drilled. All were recovered and the length of each core varied between 4.3 and 5.2 cm. The following depths were cored:

| Core No. | Depth | Lithology | Length | Formation |
|----------|--------|-----------|--------|-----------|
| 1 | 3197 | Sltst | 5.2 | Ror Fm |
| 2 | 3148.5 | Sst | 4.6 | Ile Fm |
| 3 | 3137 | Sst | 4.6 | Ile Fm |
| 4 | 3128 | Clst | 4.7 | Ile Fm |
| 5 | 3118 | Sst | 4.8 | Ile Fm |
| 6 | 3112.5 | Sst | 4.6 | Ile Fm |
| 7 | 3107 | Sst | 4.7 | Ile Fm |
| 8 | 3097 | Sst | 4.8 | Ile Fm |
| 9 | 3003.3 | Clst | 4.7 | Melke Fm |
| 10 | 3002.5 | Clst | 4.5 | Melke Fm |
| 11 | 2989 | Clst | 4.8 | Melke Fm |



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| | | | | |
|----|--------|------|-----|----------|
| 12 | 2982 | Clst | 5.0 | Melke Fm |
| 13 | 3075 | Sst | 4.6 | Garn Fm |
| 14 | 3071 | Sst | 4.6 | Garn Fm |
| 15 | 3067 | Sst | 4.6 | Garn Fm |
| 16 | 3064 | Sst | 4.6 | Garn Fm |
| 17 | 3061 | Sst | 4.6 | Garn Fm |
| 18 | 3048 | Sst | 4.6 | Garn Fm |
| 19 | 3295 | Sst | 4.5 | Tilje Fm |
| 20 | 3283 | Sst | 4.7 | Tilje Fm |
| 21 | 3274 | Sst | 4.6 | Tilje Fm |
| 22 | 3268 | Sst | 4.6 | Tilje Fm |
| 23 | 3398 | Sst | 4.5 | Åre Fm |
| 24 | 3371 | Sst | 4.3 | Åre Fm |
| 25 | 3329 | Sst | 4.5 | Tilje Fm |
| 26 | 3312 | Sst | 4.5 | Tilje Fm |
| 27 | 3299.5 | Sst | 4.6 | Tilje Fm |

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7 Logging

This section contains an overview of the logging data collected in this well.

7.1 MWD and LWD Logs

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

| Run no. | Log Depth Interval m MD RKB | Hole section | Tool | Comments |
|---------|--------------------------------|--------------|----------------------------|---|
| 1 | 315 - 377 | 36" | MWD | |
| 2 | 377 - 459 | 26" | MWD&CDR | |
| 3 | 459 - 1465 | 17 1/2" | MWD&CDR | POOH due to motor failure. CDR GR affected by KCL mud |
| 4 | 1465 - 1608 | 17 1/2" | MWD&CDR | CDR GR affected by KCL mud |
| 5 | 1608 - 2917 | 12 1/4" | MWD, CDR , Isonic & CDN | CDN had 3 x a tool reset |
| 6 | 2917 - 3036 | 8 1/2" | MWD, VISION, ADN & RAB | Includes reaming data from 3014-3063m (ADN 3031-3063m (VISION) and 3036 -3063 m (RAB) after coring. |
| 7 | 3036 - 3440 | 8 1/2" | MWD, VISION, ADN & RAB | |

Table 7.1.1: MWD and LWD summary table



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Using field software the following log corrections were applied at the wellsite:

| Tool | Corrections |
|--------------------------|--|
| GR | Corrected for bit size, tool size, mud weight and presence of barite |
| CDR | Borehole compensated for bit size, tool size mud resistivity and temperature |
| ISONIC | Log based on STC (slowness time coherence) projection |
| CDN&ADN density | Borehole compensated |
| CDN&ADN neutron porosity | Corrected for bit size, mud salinity, temperature, and mud hydrogen index |
| VISION | Borehole compensated for bit size, tool size mud resistivity and temperature |
| RAB | |

Table 7.1.2: LWD log corrections

A full report on the MWD/LWD services is provided in the Schlumberger End of Well Report (Reference /8.9-1/). An operational summary of all tools is given in the next chapter.

7.2 Wireline Logs

The limited wireline logging-program included pressure points, fluid sampling, sidewall coring, sonic logg and a zero-offset VSP survey. A summary is given below:

| Run no. | Log Depth Interval m MD RKB | Tool | Comments |
|---------|--|------------------|--|
| 1A | 3398 – 3034m (Pressure) 3075 – 3034m (Sampling) | MDT/GR | 33 pressure points, 1 tight. 3 fluid samples |
| 1A/1B | 3398 - 2982 m | CMST/GR | Hydraulic leak in run1A. 27 samples attempted in run 1B and 27 recovered. |
| 1A | 3440 - 2075 m | DSI/GR/ACTS | |
| 1A | 3400 - 2140 m | ZO VSP DUAL CSAT | 127 levels recorded |

Table 7.2: Wireline logs summary table



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Three MDT fluid samples were collected. Results are extensively discussed in Reference /8.9-3/. More information on the VSP survey can be found in the VSP report, Reference /8.9-2/.

7.3 Bottom Hole Temperatures from Logs

Table 7.3.1 gives a summary of the maximum-recorded bottom hole temperatures measured by wireline logs:

| Tool | Run | Depth m MD RKB | Temperature deg C | Time since circ.stopped |
|-------------|------------|---------------------------|--------------------------|------------------------------------|
| MDT/GR | 1A | 3398m | 111 | 9hrs 20min |
| CMST/GR | 1A/1B | 3398m | 118 | 35hrs 40min |
| DSI/GR/ACTS | 1A | 3440m | 118 | 44hrs 30min |

Table 7.3.1: BHT from wireline logs



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8 Petrophysical Evaluation

8.1 Summary

Well 6507/11-6 proved a 29.5m gas column in the Mid Jurassic Garn Formation. The gas-water-contact is interpreted at 3059.5 mMD RKB (= 3035.0m TVD MSL). The Ile and Tilje sandstones are water-filled. No potential reservoir or hydrocarbons were found in the Cretaceous Lysing Formation. Below the gas column, there are indications of an additional 4.5m hydrocarbon column. However, whereas some condensate together with water and mud filtrate were captured in this interval, the core saturation and pressure measurements indicate that the formation water is the mobile phase.

The petrophysical interpretation is based on a shaly sand model. The log interpretation is core calibrated. One core was taken in the Garn Formation. A 12% effective porosity and 40% shale volume cut-off criteria was applied to determine net sand.

The Garn Formation is a clean sandstone and shows very good reservoir properties. Average effective porosity in the net sand fraction is 23.4%. Average core permeability, not corrected for overburden, is 5100 mD. Net sand fraction is 95%. The average net sand water saturation in the gas zone is 5.8%.

The water-filled Ile reservoir is a heterogeneous formation. It has a 72 % net sand fraction and effective net sand porosity is 22.1%.

The water-filled Tilje reservoir is also a heterogeneous unit. Best reservoir properties were found in the upper part. Total net sand fraction is 38% and effective net sand porosity is 19.0%.

The Not and Ror shale units are not considered as reservoir units.

8.2 Log Data Acquisition

Table 7.1.1 and Table 7.2.1 summarise the logging-while-drilling and wireline logs acquired in well 6507/11-6. More details on the MWD and LWD services can be found in the Reference /8.9-1/.

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The two uppermost sections (36" and 26" hole sections) of the well were drilled with seawater, the 17½" section with water-based KCL mud, and the 12¼" and 8½" hole with oil-based drilling mud.

Schlumberger provided a total of 7 MWD-LWD runs in this well. In addition, a limited wireline-logging program was performed. The LWD CDR tool was run in the 26", 17½", and 12¼" hole sections. The log quality is generally good. However, the CDR gamma ray read too high in the 17½" section, which is mainly due to the KCl content in the mud. Corrections were applied for hole size and mud weight for the CDR gamma ray, to take into account the effect of gamma ray absorption by the mud, but there is no correction available for KCl content of the mud itself. For the composite gamma ray curve, a baseline type shift (- 161 GAPI) to the CDR gamma ray in the 17½" section has been applied to match the CDR gamma ray readings in the 26" hole section. In addition, the two CDR resistivities showed some "spikyness" in the 17½" section due to a combination of a large annular volume between the tool and wellbore and the super saturated KCl mud system.

In addition to the CDR tool, the ISONIC-CDN tool combination was run in the 12¼" hole section, and the VISION-ADN-RAB was run in 8½" hole. Generally the log quality in the 12¼" hole section is good. An exception is the compressional transit time from ISONIC between 2218-2250 mMD and 2520-2535 mMD. It is unlikely that the labelled data in these two intervals are the correct transit times. Therefore, in the composite log, this data was replaced with the compressional transit time from the wireline DSI-in-casing. Furthermore, three times a CDN tool reset was encountered with subsequent spikes on the CDN logs over 5m intervals. The spikes on the CDN logs were removed on the composite logs. In order to obtain a continuous density log for seismic calibration, the spikes were replaced by a synthetic density log, generated from the ISONIC travel times by means of Gardner's empirical relationship between density and velocity.

Around the 9 5/8" casing shoe there is a 35m missing section on the LWD logs (2880-2915m MD). The wireline DSI-in-casing log was used to create a continuous composite compressional sonic log and gamma ray log. Subsequently, a synthetic density log was calculated from the sonic log to fill up the missing section on the composite density log.

The Resistivity at Bit (RAB) in the 8½" hole usually gives laterolog based formation resistivity measured a bit. However, since this section was drilled with OBM only the bit resistivity and gamma ray were used for geo-stopping service. For formation evaluation purposes in the 8½" hole, phase shift and attenuation resistivities at different transmitter-receiver distances were measured by means of the VISION675 tool. The resistivity at bit (RAB) shows the same trend as the VISION resistivities except from the RAB reaming data between 3036 and 3063m MD. In this cored interval, the OBM acted as an insulator and there was no path for the current to flow because the bit resistivity needs to be in contact with the formation in order to work in an OBM environment. Therefore over this interval, when the bit was off bottom, the bit resistivity was reading maximum value. The bit resistivity started to respond again when the bit was back c

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bottom with some WOB (@ 3063m MD). Finally, the Azimuthal Density Neutron (ADN) tool was used to measure formation bulk density, bulk density correction, and neutron porosity. The LWD log quality in this 8½" section is generally good.

Besides this extensive LWD program only a limited wireline-logging program was performed as only a limited hydrocarbon interval was found. The only wireline surveys in the 8½" section were DSI-VSP (0-offset) and MDT-MSCT. The DSI was run in upper and lower dipole and P&S mode. In addition, the DSI was run in casing to check cement quality. It turned out that the DSI-in-casing logs were very suitable to fill up the missing section around the 9 5/8" casing shoe on the LWD logs. The MDT formation tester collected both pressure data and three fluid samples. Finally, the MSCT recovered 27 sidewall cores. The acquired wireline data in this section is also of good quality.

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

8.3 Core Data

One 27.65m core, with 98.8% recovery, was cut in the Garn Formation (3036-3063.65m drillers depth). On arrival at the Corpro laboratory the state of preservation of the core was good. Besides the measurement of the natural gamma ray emission of the core and the CT (Computer Tomography) scanning of the core, an extensive conventional core analysis program was performed. For this, a total of 84 horizontal core plugs (every 25cm) and 45 vertical plugs (every 50cm) were cut. The vertical plugs were cut perpendicular to apparent bedding. The analysis program involved measurements of helium porosity, grain density, standard air permeability, extrapolated air permeability at $1/P_m=1$ (where P_m is the average pressure in the sample), and the Klinkenberg corrected permeability (determined empirically for each sample). The vertical plugs were only subjected to the permeability measurements. Fluid saturation measurements included a Core Retort oil and water saturation analysis on 13 plugs from the interval between 3051.5-3036.25m drillers depth, and a Dean-Stark water saturation analysis on 8 plugs from the interval between 3052-3063m drillers depth.

Using the GeoFrame-WellEdit software, the core gamma ray log was depth shifted to match the reference LWD gamma ray log (from VISION tool). The whole core was shifted +1.95m to match the log data.

MCST was run to collect sidewall cores. The recovery was good and 27 cores were taken. Klinkenberg corrected air permeability, Helium porosity, and grain density was measured on 26 sidewall cores.

A crossplot of core porosity and permeability measurements is shown in Figure 8.8.1. More information about the core analysis can be found in Reference /8.9-4/.



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8.4 Formation Testing

The Schlumberger MDT (Modular Dynamic Tester) wireline tool was used for formation pressure testing and fluid sampling. Pressure data was taken at several depths over the complete reservoir interval collecting data from both the hydrocarbon and the water zone. In total 33 pressure pretests were attempted of which 32 were successful with generally very good mobilities, ranging between 28 and almost 14000 mD/cP. Only one pretest was tight. The MDT run was depth correlated to the LWD logs twice during data acquisition. The pressure pretests were performed with the standard probe. Both quartz gauge and strain gauge data was collected. The large diameter probe was used for fluid sampling. Three fluid samples were taken in the Garn formation, at 3035m, 3060m, and 3075m MD.

The pressure data is shown in Figure 8.8.2 and 8.8.3 and listed in Table 8.4.1. The interpretation is discussed in the next section. Fluid sampling results are extensively discussed in Reference /8.9-3/.

No Drill Stem Testing was performed.

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| Run 1A Test # | Depth (m MD RKB) | Depth (m TVD MSL) | Drawdown mobility (mD/cp) | Initial mud Pressure CQG (bar) | Final mud Pressure CQG (bar) | Formation Pressure CQG (bar) | Remarks |
|---------------------|---------------------|-------------------------|---------------------------------|--------------------------------------|------------------------------------|------------------------------------|---------|
| 1 | 3 398.2 | 3 373.4 | 599.1 | 422.74 | 422.42 | 342.674 | |
| 2 | 3 396.7 | 3 371.8 | 757.2 | 421.64 | 421.32 | 342.534 | |
| 3 | 3 385.6 | 3 360.7 | 48.6 | 419.09 | 418.79 | 341.449 | |
| 4 | 3 382.5 | 3 357.2 | 14.5 | 418.10 | 417.86 | 341.136 | |
| 5 | 3 379.0 | 3 354.2 | 118.7 | 417.41 | 417.30 | 340.802 | |
| 6 | 3 311.0 | 3 286.4 | 51.8 | 409.18 | 409.17 | 333.757 | |
| 7 | 3 309.5 | 3 284.9 | 91.6 | 408.88 | 408.93 | 333.551 | |
| 8 | 3 295.5 | 3 270.9 | 211.7 | 407.21 | 407.25 | 332.115 | |
| 9 | 3 285.0 | 3 260.4 | 1293.6 | 405.94 | 406.01 | 331.063 | |
| 10 | 3 274.3 | 3 250.7 | 321 | 404.64 | 404.75 | 329.958 | |
| 11 | 3 149.0 | 3 124.5 | 271.8 | 389.64 | 389.62 | 316.059 | |
| 12 | 3 141.5 | 3 117.0 | 723.3 | 388.72 | 388.75 | 315.289 | |
| 13 | 3 132.0 | 3 107.4 | 1551.6 | 387.47 | 387.59 | 314.353 | |
| 14 | 3 124.0 | 3 099.5 | 1970.9 | 386.53 | 386.65 | 313.534 | |
| 15 | 3 112.5 | 3 088.0 | 27.6 | 385.13 | 385.27 | 312.380 | |
| 16 | 3 107.0 | 3 082.5 | 393.9 | 384.56 | 384.59 | 311.826 | |
| 17 | 3 098.5 | 3 074.0 | 350.9 | 383.51 | 383.60 | 310.967 | |
| 18 | 3 114.5 | 3 090.5 | 542.8 | 386.02 | 385.76 | 312.590 | |
| 19 | 3 075.5 | 3 051.0 | | | | | tight |
| 20 | 3 075.5 | 3 051.0 | 1049.3 | 380.63 | 380.61 | 308.238 | |
| 21 | 3 072.0 | 3 047.4 | 868.7 | 380.16 | 380.99 | 307.892 | |
| 22 | 3 069.0 | 3 044.5 | 905.9 | 379.78 | 379.84 | 307.598 | |
| 23 | 3 066.0 | 3 041.5 | 380.6 | 379.42 | 379.48 | 307.293 | |
| 24 | 3 064.0 | 3 039.5 | 316.4 | 379.22 | 379.25 | 307.109 | |
| 25 | 3 063.0 | 3 038.4 | 1094.3 | 379.11 | 379.14 | 307.003 | |
| 26 | 3 062.0 | 3 037.5 | 1497.7 | 379.00 | 379.01 | 306.884 | |
| 27 | 3 061.0 | 3 036.4 | 1289.8 | 378.87 | 378.90 | 306.792 | |
| 28 | 3 059.0 | 3 034.5 | 9118.1 | 378.61 | 378.67 | 306.648 | |
| 29 | 3 057.0 | 3 032.5 | 11426.1 | 378.40 | 378.44 | 306.612 | |
| 30 | 3 052.0 | 3 027.5 | 12807.1 | 377.78 | 377.88 | 306.511 | |
| 31 | 3 042.0 | 3 017.6 | 1268.8 | 376.59 | 376.67 | 306.293 | |
| 32 | 3 038.0 | 3 013.4 | 7735.7 | 376.11 | 376.20 | 306.204 | |
| 33 | 3 034.0 | 3 009.5 | 13975.3 | 375.68 | 375.72 | 306.112 | |



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Table 8.4.1: MDT formation pressure data.

8.5 Fluid contacts

The fluid contacts have been estimated based on the combined interpretation of formation pressure data, log readings, core photographs and fluid sampling. A more detailed discussion on fluid contacts is given in Reference /8.9-3/. A gas-water contact in the Garn Formation is interpreted at 3059.5m MD (= 3035.0m TVD MSL). This follows from the intersection between the water and gas gradient (free fit) in the pressure plot. The pressure data is shown in Figure 8.8.2 and 8.8.3 . The presence of gas is confirmed by the log response and the analysis result of the fluid sample at 3035m MD.

Below 3059.5m MD the pressure and sample data indicate a mobile water phase. However, the log response does indicate some form of hydrocarbon present. There is some separation between the density-neutron logs and also a slightly higher resistivity than in the obvious water zone below 3064m MD. However, the observed log response is most likely a result from a residual hydrocarbon saturation. The pressure data interpretation is supported by the water saturation measurements on core and the samples taken at 3060m MD.

The Dean&Stark water saturation from core in this interval between 3059.5m MD and 3064m MD shows values between 50 and 60%. In such a high permeability interval (Darcy sand) the only reasonable interpretation would be that this is a water saturation typical for a free water phase. In addition, no obvious fluorescence is seen on the core in this interval. Only the invasion of oil-based mud results in fluorescence on the outsides of the core. The results from the fluid samples at 3060m MD support the pressure and core saturation results between 3059.5m MD and 3064m MD. An extensive discussion on the observation of the samples are given in Reference /8.9-3/. The main result from the samples were that they contained gas, OBM filtrate and formation water. The samples captured at this depth clearly show that the formation water is one of the mobile fluids. More than 20% of the volume captured was formation water.

Finally, pressure data from the water zone indicates that there are possible small pressure barriers between Garn, Ile, and Tilje. Free fit gradients through the pressure data in the water zone of Garn, Ile, and Tilje, resulted in 1.01 g/cc, 1.03 g/cc, and 1.05 g/cc equivalent water density, respectively. These free fit gradients resulted in 0.5 bar pressure difference between the formations (see Figure 8.8.2).

8.6 Petrophysical Interpretation

The main reservoirs in well 6507/11-6 are the Mid Jurassic Garn and Ile Formations and the Lower Jurassic Tilje Formation. The Garn and Ile Formation are separated by the Not Formation, a relatively thin shale unit. The Tilje Formation is separated from the Ile Formation by a thick shale



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unit, the Ror Formation. The well TD was in the Åre Formation. The reservoir zonation mentioned above is also used for calculating average reservoir properties.

The petrophysical interpretation is based on a shaly-sand model calibrated to the available core data. Total porosity is calculated using the density log. In the Garn Formation, the log derived total porosity is calibrated to overburden corrected core porosity (assumed overburden correction factor of 0.95). Shale volume is calculated by taking the minimum of shale volume determined from the gamma ray log and the density-neutron crossplot. Effective porosity is evaluated by subtracting from the total porosity the porosity associated with the shale volume. The water saturation is calculated by means of the Indonesia equation. Input parameters to the log analysis are listed in Table 8.6.1:

| Input Parameters | Garn (gas) | Garn (water) Not – Ile - Ror | Tilje |
|----------------------------|--------------------------|--|--------------------------|
| GR sand (GAPI) | 30 | 30 | 35 |
| GR shale (GAPI) | 120 | 125 | 100 |
| Formation water (eq. g/cc) | 0.2 | 1.0 | 1.0 |
| Rshale ohm.m | | | |
| Shale density (g/cc) | 2.53 | 2.53 | 2.55 |
| Matrix density (g/cc) | 2.66 (from core) | 2.66 | 2.66 |
| Fluid density (g/cc) | 0.15 | 0.78 (3059.5 - 3064m) 0.93 (3064 - 3070m) 1.00 | 1.00 |
| Neutron shale porosity | 0.30 | 0.30 | 0.27 |
| A | 1 | 1 | 1 |
| M | 1.7 | 1.7 | 1.7 |
| N | 1.9 | 1.9 | 1.9 |
| Formation temperature | 105°C@ 3010 m TVD MSL | 110°C@ 3125 m TVD MSL | 111°C@ 3354 m TVD MSL |
| Temperature gradient | +/-3°C/100m | +/-3°C/100 m | +/-3°C/100 m |
| Rmf. ohm.m @ °C | OBM | OBM | OBM |
| Rw. ohm.m @ °C | 0.031@ 110 | 0.031@ 110 | 0.031@ 110 |

Table 8.6.1: Input parameters to petrophysical interpretation.

The core from the Garn Formation and the sidewall cores provided the permeability data for this well. Mainly permeability data from good sands were collected. Hardly any data is available from the intermediate permeability interval between 10 and 1000 mD. The permeability data below 1 mD shows a wide spread in porosity. Therefore, based on data from this well only, no useful core porosity-permeability



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regression can be found. Core data crossplots are shown in Figure 8.8.1. Both the core porosity-permeability and a core vertical-horizontal permeability crossplot are shown. The average core porosity from the Garn Formation is 24.7 %. As mentioned before, for the log porosity calibration an overburden correction factor of 0.95 was assumed. The arithmetic mean of the Klinkenberg corrected horizontal core permeability in the Garn Formation is 5100 mD, the geometric mean 3440 mD. It should be noted that these plug permeability measurements are not overburden corrected to reservoir conditions. Generally, the overburden correction factors for permeability vary with the type of rock. No SCAL program is initiated to quantify overburden corrections for this well. The sidewall core permeabilities show similar high permeability values with a maximum permeability of 14900 mD at 3137 mD. All core data is also plotted on the CPI plots (Figure 8.8.4 and 8.8.5).

The net sand fraction is calculated by means of cut-off criteria on shale volume and effective porosity. The following cut-off criteria were used:

$$\text{effective porosity} < 0.12 \text{ and shale volume} > 0.4$$

In the homogeneous Garn formation, the sensitivity of net sand fraction to cut-off criteria is small and the net sand fraction is very high. The heterogeneous Ile and Tilje Formation are more sensitive to cut-off criteria. Especially the Tilje Formation is sensitive to the extra shale volume cut-off. Core data, to confirm the quality of intervals that are not being regarded as net sand due to the shale volume cut-off, is not available.

More details on the petrophysical evaluation can be found in Reference /8.9-3/.

8.7 Petrophysical Results

The average reservoir properties in the net sand are listed in Table 8.7.1:

| Well 6507/11-6 Zone Averages | | | | | |
|------------------------------|---------------------|---------------|------------|-----------------|----------------|
| Formation | Interval (m MD RKB) | Thickness (m) | NTG (frac) | Net Phie (frac) | Net Swe (frac) |
| Garn | 3030-3077 | 47 | 0.950 | 0.234 | 0.403 |
| Garn – gas | 3030.0-3059.5 | 29.5 | 0.935 | 0.230 | 0.058 |
| Garn – apparent HC | 3059.5-3064.0 | 4.5 | 1.000 | 0.243 | 0.680 |
| Not | 3077-3094 | 17 | 0.000 | | |
| Ile | 3094-3160 | 66 | 0.716 | 0.221 | 0.967 |



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| | | | | | |
|-------|-----------|-----|-------|-------|-------|
| Ror | 3160-3261 | 101 | 0.000 | | |
| Tilje | 3261-3387 | 126 | 0.380 | 0.190 | 0.931 |

Table 8.7.1: Net sand averages

CPI plots, including core data, are shown in Figure 8.8.4 and 8.8.5. The CPI legend is as follows:

Legend CPI plots:

- Track1 : GR = Gamma Ray (green) - from VISION
- Track2 : RD = Deep resistivity (red) - P28H curve from VISION
: RS = Shallow resistivity (blue) - P16H curve from VISION
: RES_BIT = Bit resistivity (black) - from RAB tool
- Track3 : RHOB = Bulk density (red) - from ADN
: TNPH = Neutron porosity (blue) - from ADN
: DRHO = Density correction (dotted blue) - from ADN
- Track4 : DT = compressional slowness (blue) - from DSI
: DTSM = shear slowness (red) – from DSI
- Track5 : PHIE = effective porosity (green)
: PHIT = total porosity (blue)
: CPORC = overburden corrected core porosity (red)
: SPOR = sidewall core porosity (yellow)
- Track6 : NET = Net sand flag (yellow)
- Track7 : CKHK = Klinkenberg corrected horizontal core permeability (red)
: CKVK = Klinkenberg corrected vertical core permeability (blue)
: SKHK = Klinkenberg corrected sidewall core permeability (yellow)
- Track8 : SWE = effective water saturation (black)
: CSW = Dean&Stark core water saturation (red)
- Track9 : SAND = sandstone volume relative to total volume (yellow)
: SHALE = shale volume relative to total volume (green)
: HC = hydrocarbon volume relative to total volume (black)



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8.8 Figures Petrophysical Evaluation

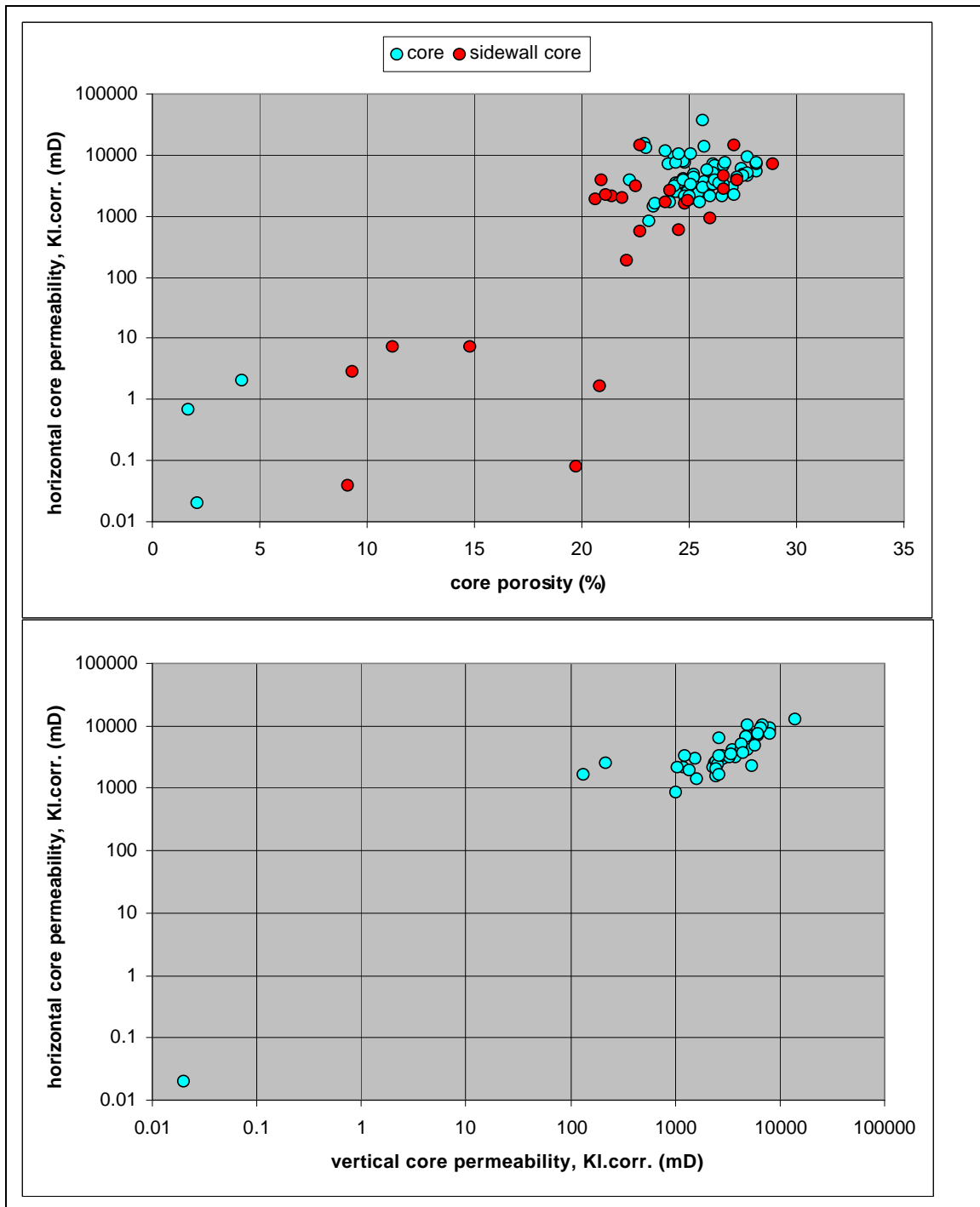


Figure 8.8.1: Core porosity and permeability crossplots.



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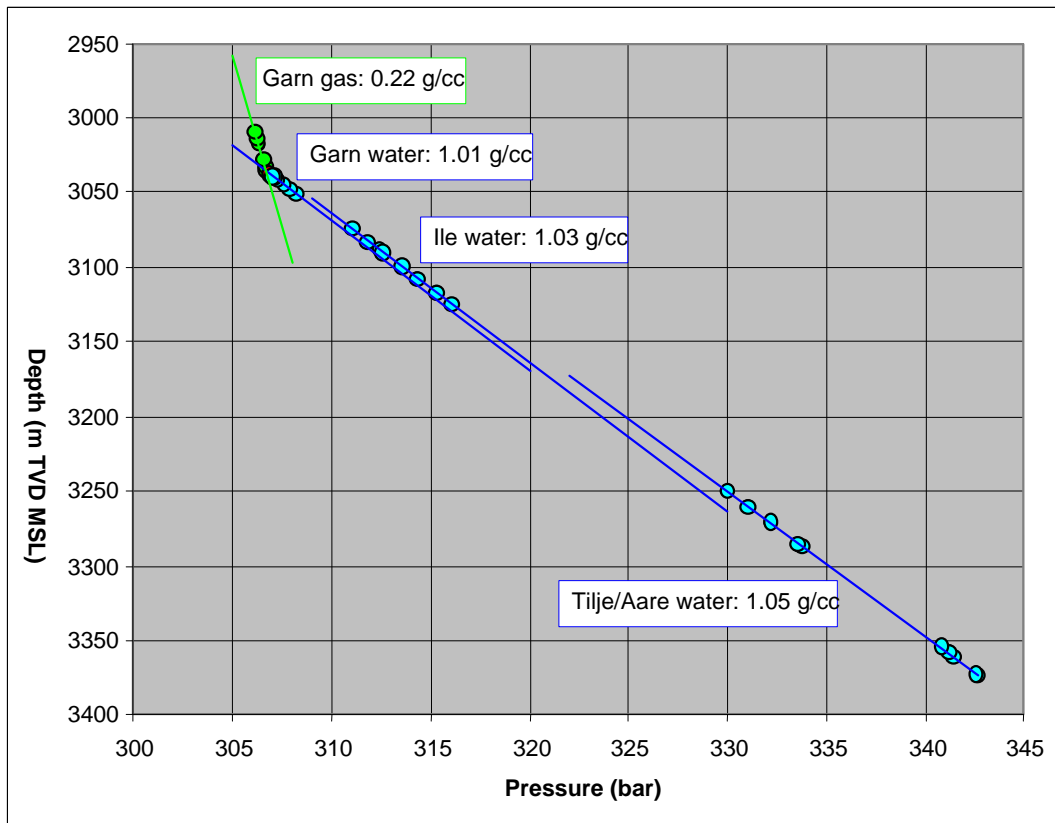


Figure 8.8.2: MDT pressure data and water gradient (in equivalent fluid density units)



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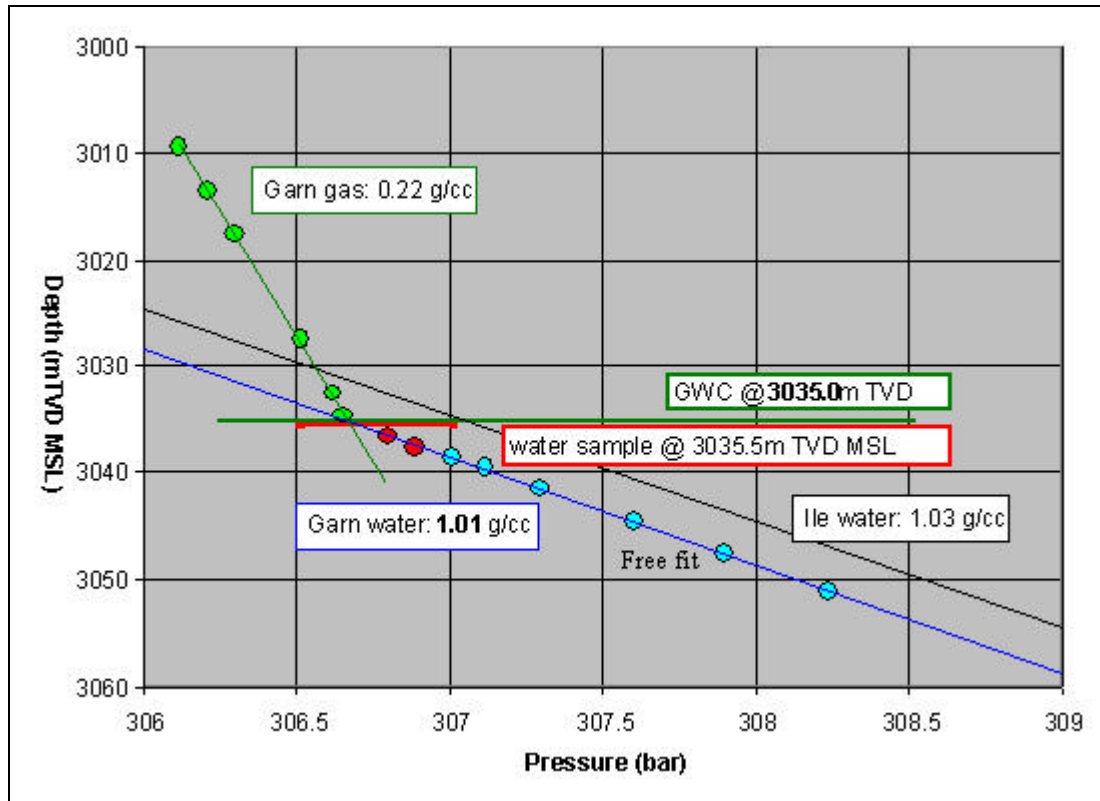


Figure 8.8.3: Gas-water-contact (GWC) interpretation in Garn Formation.



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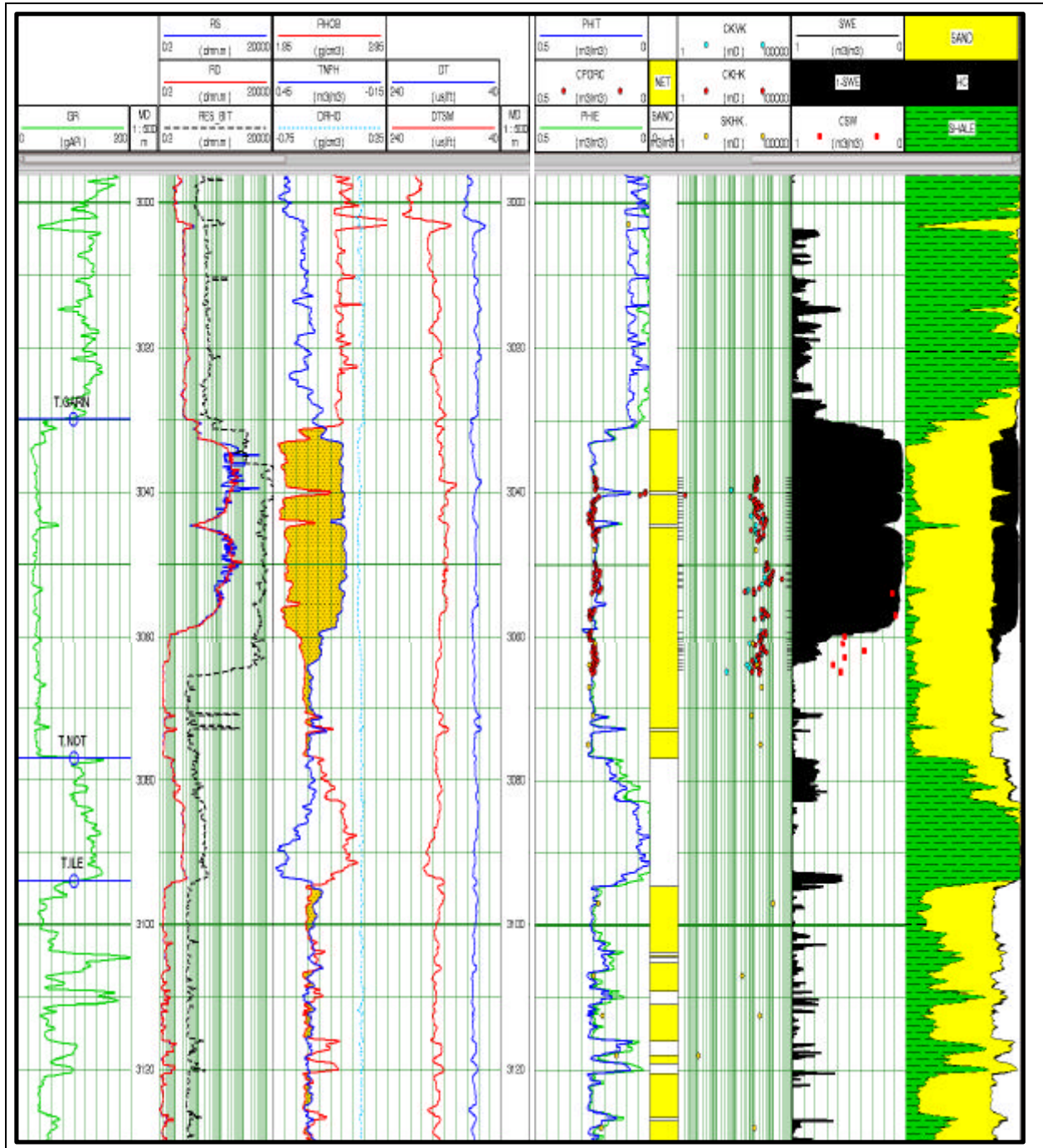


Figure 8.8.4: 6507/11-6 CPI upper reservoir interval.



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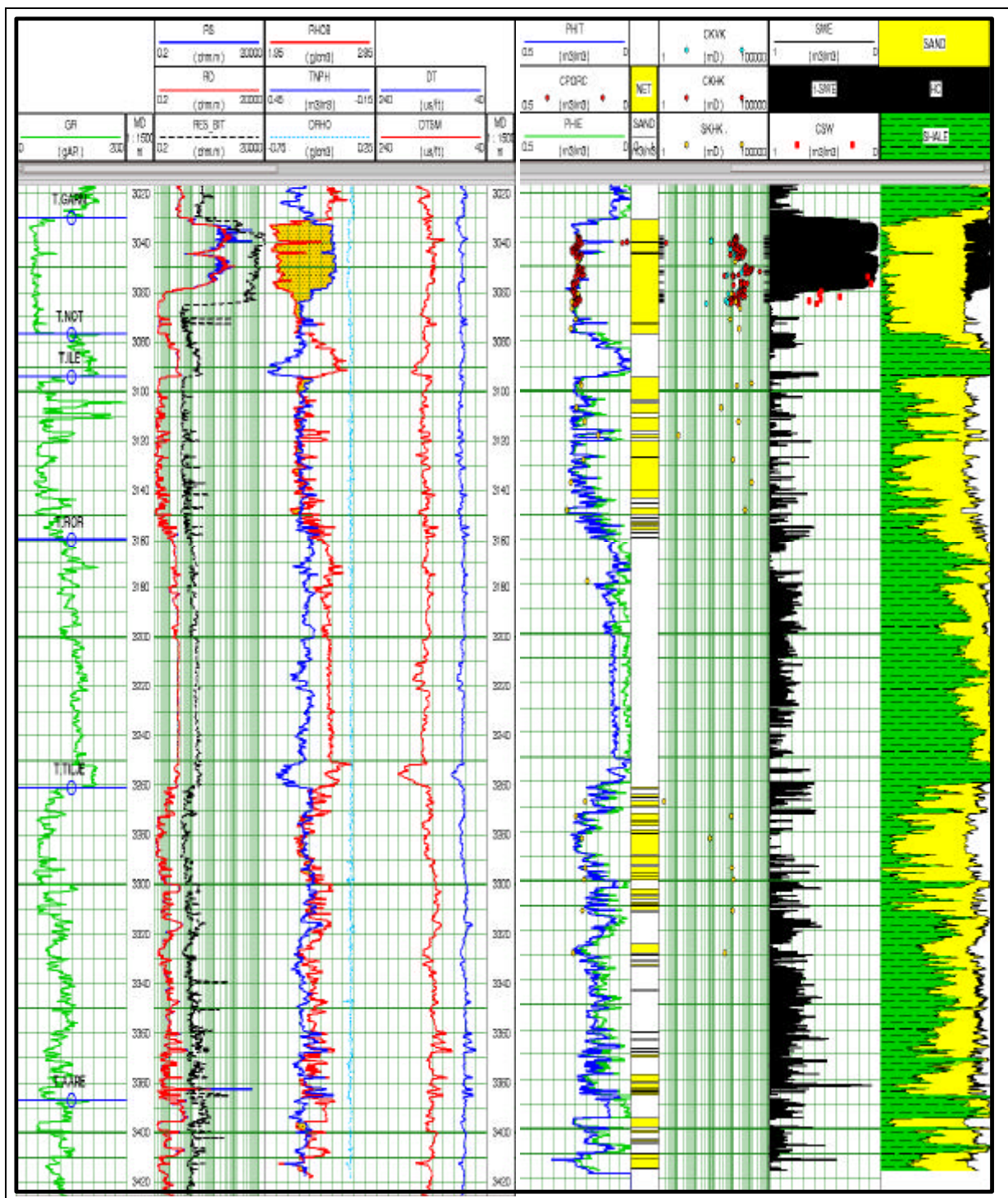


Figure 8.8.5: 6507/11-6 CPI entire reservoir interval.



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8.9 References

- /8.9-1/ End of well report/LWD logs, 6507/11-6, Schlumberger, 2001.
- /8.9-2/ VSP report, 6507/11-6, Read WS, 2001.
- /8.9-3/ Formation Evaluation Report, 6507/11-6, Norsk Hydro, 2001 (NH-00038636)
- /8.9-4/ Conventional Core Analysis, 6507/11-6, Corpro, 2001.



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9 Estimated Pore Pressure, Fracture, Overburden and Temperature Gradients

9.1 Pore Pressure

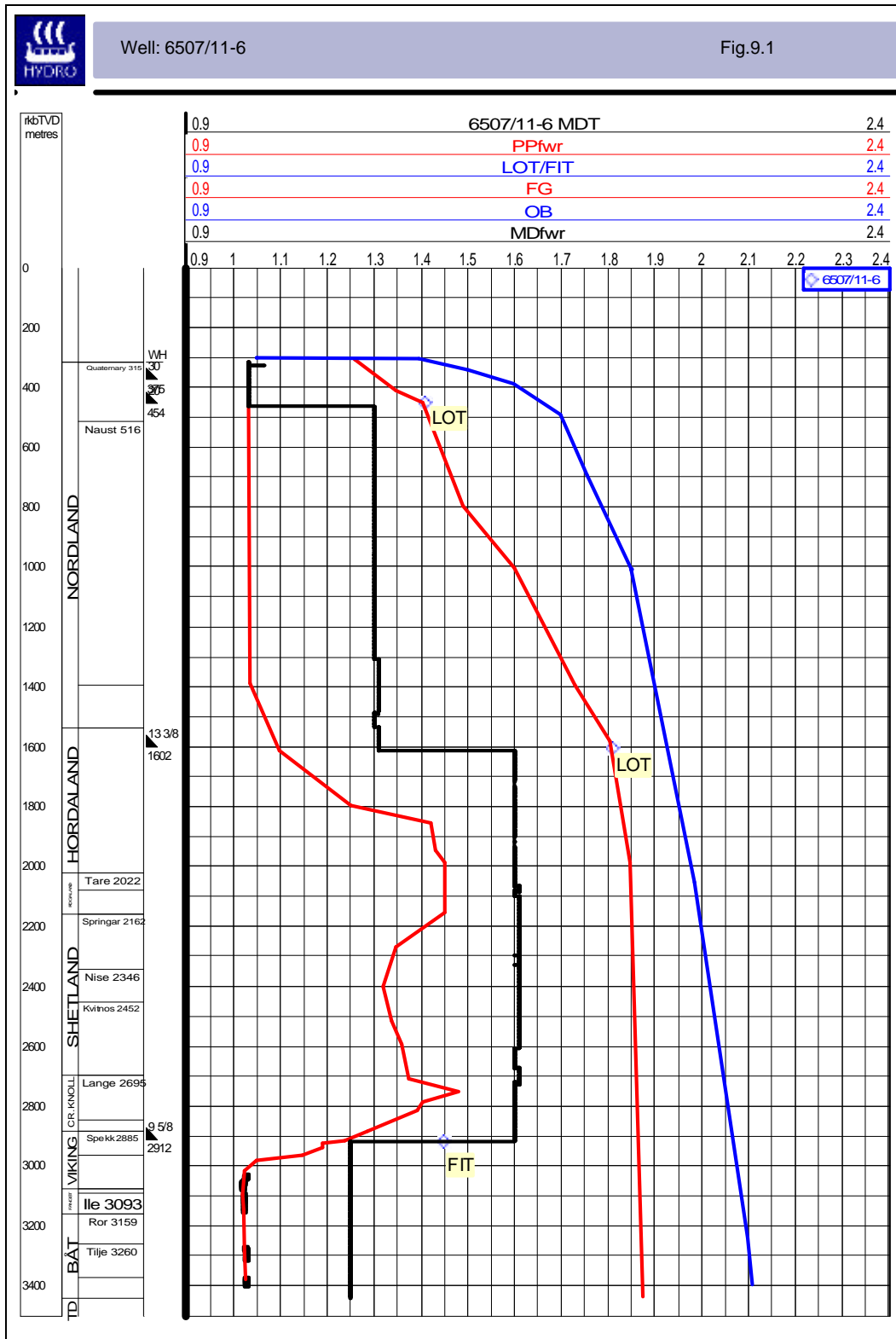
The pore pressure, fracture, and overburden gradients are presented graphically in Figure 9.1. All depths are in meters true vertical depth TVD, relative to rotary table. Air gap is 24 m and water depth is 315 m RKB. The pore pressure, fracture, and overburden gradients are given in Equivalent Mud Density, g/cm³ or sg.

The pore pressure prognosis was based predominantly on the wells 6507/11-1, -2, -3 -4 -5S.



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9.2 Pore Pressure Gradient

Pore pressure estimation based on acquired well data indicates normal pore pressure down to 1690m. No shallow gas was observed in the shallow section. At 1690m the pore pressure increased from hydrostatic to 1.49 sg at 2100m, the Tare/Tang transition. The pore pressure gradient decreases below Tang Formation to 1.24sg at base Shetland Group.

The pore pressure increased rapidly in the Cromer Knoll Group to 1.40sg within mid-Lange Formation. This was lower than expected, mainly because there was no hydrocarbons in this area. The pore pressure then dropped towards 1.22sg at base Cromer Knoll Group.

The reservoir structure was situated within an area with normal pressure in the water zone, as for the Midgard and Mikkel fields. The reservoir was thus assumed to be only slightly over-pressurized (max. 1.07sg) at the top and to exhibit a dropping gradient towards hydrostatic or slightly below hydrostatic at TD (min. 1.02sg) of this well. This corresponds closely to the observed pressures taken with MDT ranging from 1.03sg at the top towards 1.02sg at TD. The reduced maximum pressure compared to prognosis was due to less hydrocarbon column than expected.

9.3 Fracture Gradient

The fracture gradient is based on the assumed rock mechanical properties to each stratigraphic layer (Daines (1982)), Eckels & van Breckelen and adjusted to leak off tests in nearest reference wells. Two LOT's were performed, both showing slightly higher than minimum expected fracture gradient but well within the range of previous LOT's taken in the area.

9.4 Overburden Gradient

Overburden gradient is based on density log readings and standard formation weights.

9.5 Temperature Gradient

The temperature gradient (fig 9.2) is based on MDT data. The shift in temperature gradient seen in Viking, Fangst and Båt Groups is typical across a pressure barrier.

An average formation temperature gradient between 315m to 3002m of approximately 3.85C/ 100m TVD was calculated assuming 4 degrees Celsius at sea floor. From 3002m to 3436m an average of 1.73deg C / 100m TVD was calculated from MDT measurements. This lower gradient is possibly too low due to short time in hole since last circulation.



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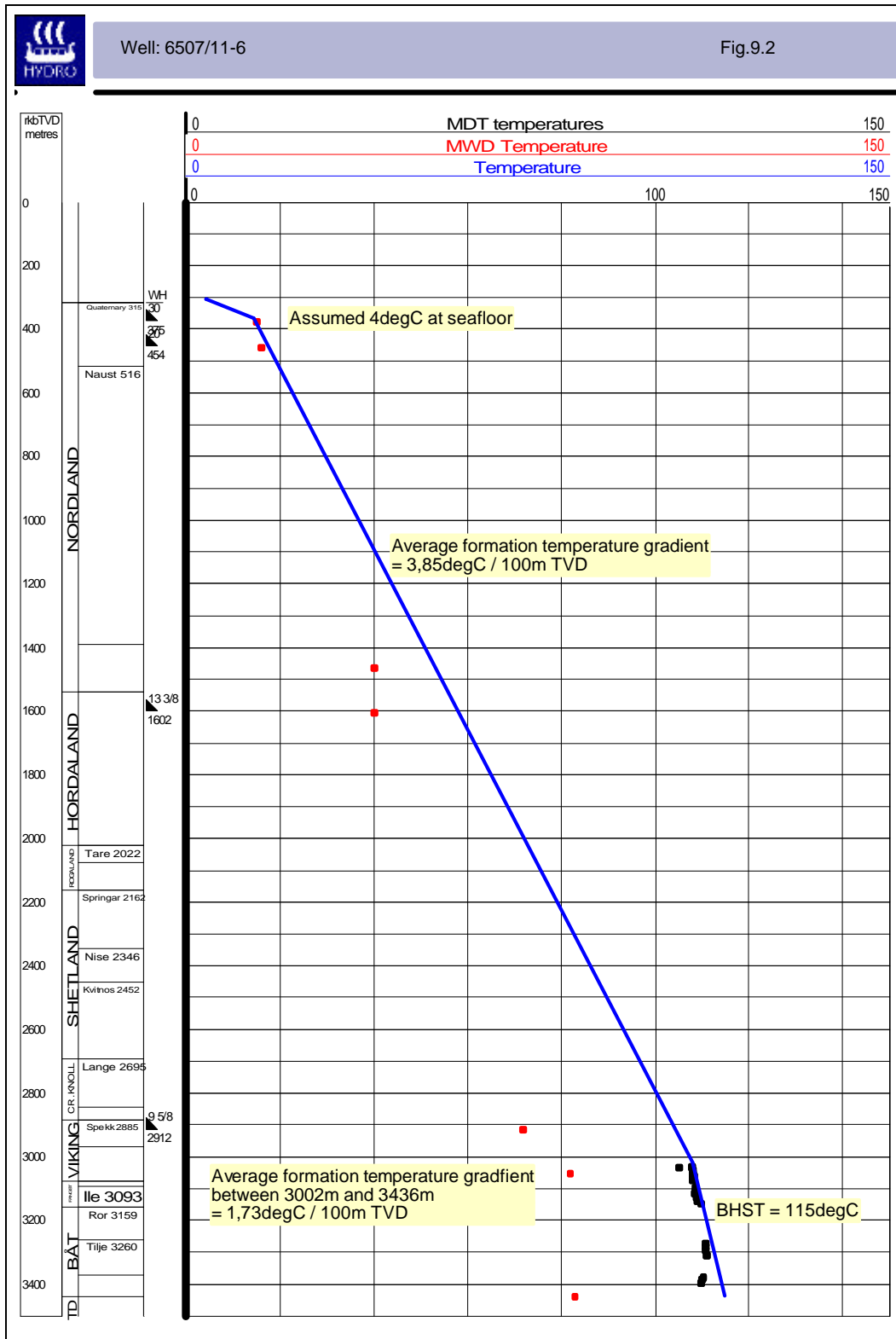
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This will give a static formation temperature at TD of 115°C.



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10 Geophysical Results

A normal incidence Zero offset VSP was acquired and processed by Read Well Services AS. The final data are generally of good quality. The prognosed and actual time/depths in well 6507/11-6 are listed in Table 10.1 and the time depth relation is provided in Figure 10.1.

Overall the well results were in good accordance with the prognosis. The actual depth to Top Garn Formation is two meters shallower than prognosed. The major deviation from the prognosis was that the prognosed thin Lysing Formation, was not penetrated in the well. The TWT and depth for the Top Lange Formation (Base Lysing Fm/Top Shetland Gp.) was however close to prognosis.

| Reflector | TWT | | dTWT | Depth | | dD |
|-----------------------------|-----------|------------------|--------|----------------|---------------|-----|
| | Prog. (s) | Act. (s) | | Prog. TVD mRKB | Act. TVD mRKB | |
| Seabed | 0,391 | 0,394 | 0,003 | 315 | 315 | 0 |
| Near B. Quart. | 0,603 | No velocity data | | 517 | 516 | -1 |
| I. Pliocene (T. Kai) | 1,352 | No velocity data | | 1397 | 1392 | -5 |
| M. Miocene (T. Brygge) | 1,486 | No velocity data | | 1541 | 1542 | 1 |
| T. Paleocene (T. Tare) | 1,948 | 1,946 | -0,002 | 2029 | 2022 | -7 |
| T. Cretaceous (T. Springar) | 2,081 | 2,090 | 0,009 | 2169 | 2162 | -7 |
| I. Turonian (T. Lysing) | 2,528 | N.P. | | 2685 | N.P. | |
| B. Lysing | 2,548 | 2,542 | -0,006 | 2709 | 2697 | -12 |
| B. Cret. Uncf. (T. Spekk) | 2,687 | 2,686 | -0,001 | 2883 | 2885 | 2 |
| T. Melke | 2,748 | 2,759 | 0,011 | 2983 | 2983 | 0 |
| T. Garn | 2,784 | 2,786 | 0,002 | 3032 | 3030 | -2 |
| T. Ile | 2,828 | 2,822 | -0,006 | 3099 | 3094 | -5 |
| T. Tilje | 2,927 | 2,916 | -0,011 | 3264 | 3260 | -4 |
| T. Are | 2,996 | 2,982 | -0,014 | 3384 | 3386 | 2 |
| TD | 3,033 | 3,011 | -0,022 | 3450 | 3439 | -11 |

Table 10.1: Geophysical Summary



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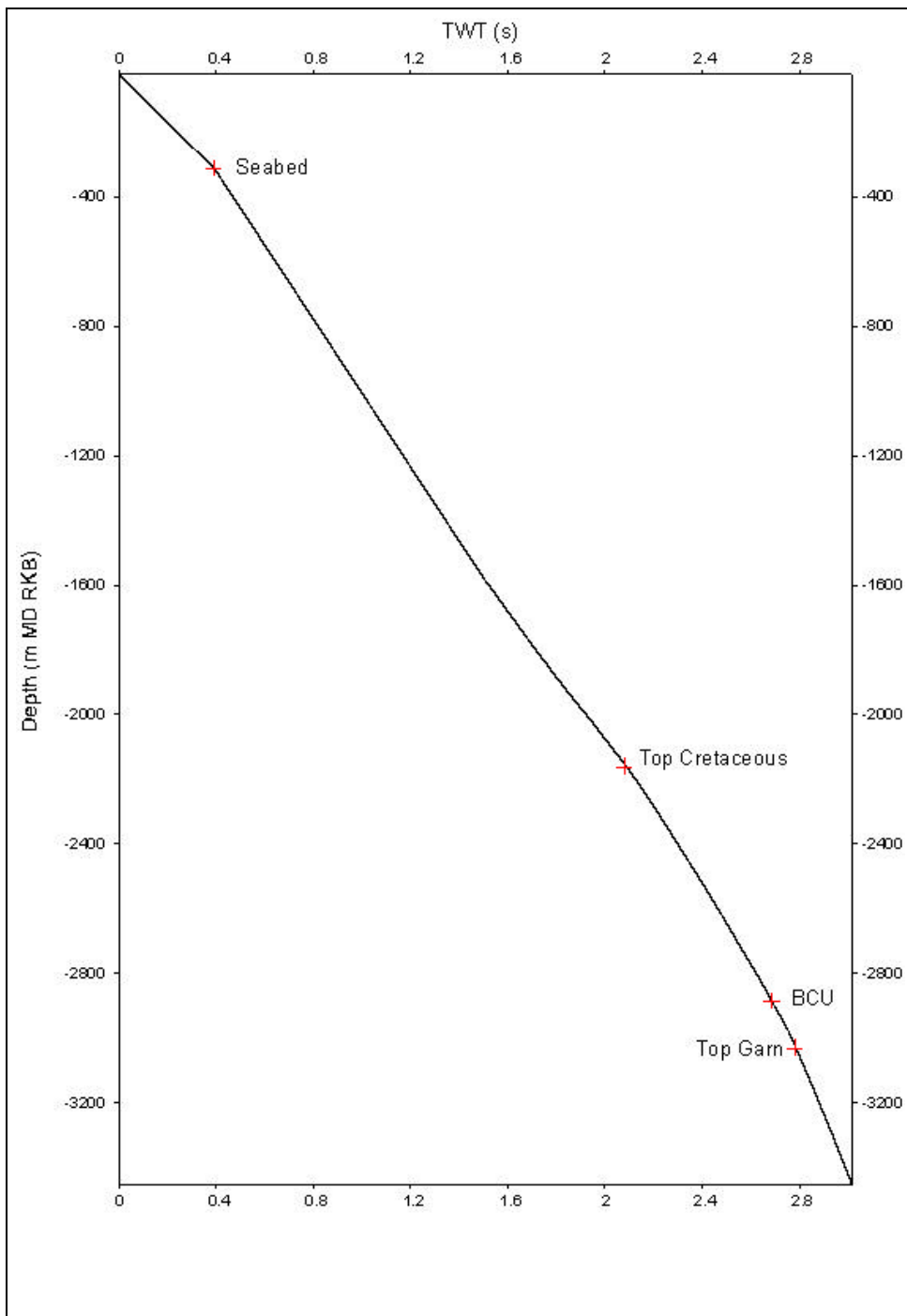


Figure 10.1: Time versus Depth Plot



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11 Post Site Survey Report

11.1 Well data

| | | |
|----|---|------------------|
| 1 | Distance from rig floor to sea level: | 24 m |
| 2 | Water depth (MSL): | 291 m |
| 3a | Setting depth for conductor (m RKB): | 374 m |
| 3b | Leak Off / Formation Integrity Test (g/cc): | N/A |
| 4a | Setting depth (m RKB TVD) for casing on which BOP mounted: | 454 |
| | m | |
| 4b | Formation Integrity Test (g/cc): | 1.41 |
| 5 | Depth (m RKB TVD & Two Way Time) to formation/section/layer tops: | |
| | mu_iku_B: | 384 m (464 ms) |
| | mu_iku_C: | 413 m (488 ms) |
| | mu_iku_D (Base Pleistocene): | 457 m (544 ms) |
| | mu_iku_F: | 518 m (603 ms) |
| | mu_iku_H: | 542 m (632 ms) |
| | mu_iku_I: | 652 m (727 ms) |
| | mu_iku_K: | 803 m (883 ms) |
| | mu_L2: | 852 m (913 ms) |
| | mu_L1: | 1048 m (1099 ms) |
| | mu_iku_L (Top Kai): | 1392 m (1352 ms) |
| | t?_MIO (Top Brygge) | 1542 m (1486 ms) |

Note:

No chronostratigraphic information was collected in the tophole section of the well (mud logging commenced at 459 m RKB TVD). Consequently, the interpretation of the different formations above this level is based on the MWD logs, seismic character and previous work.



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

No data exists on background gas levels from seabed down to 454 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 6507/11-6:

Pliocene Interval:
706 m - 709 m

7 By what means is the presence of gas proven:

The well is drilled with returns to seabed above 454 m RKB TVD. Below 459 m RKB TVD gas analyses were accomplished using flame ionisation detectors (FID) with gas measured as percentage methane (C1) equivalent in air, and chromatographic analyses expressed in parts per million.

8 Composition and origin of gas:

The results from the gas measurements in section 458.98 m -1590.93 m RKB TVD are as follows:

| Depth in RKB TVD | Minimum % | Maximum % | Composition |
|-----------------------|-----------|-----------|-------------|
| 458.98 m - 486.98 m | 0.20 | 1.60 | C1-C3 |
| 486.98 m - 1334.95 m | 1.20 | 3.60 | C1-C3 |
| 1334.95 m - 1590.93 m | 1.00 | 2.10 | C1-C3 |

Chromatographic Breakdown of Peaks:

| Depth in RKB TVD | Peak % | Background % | Composition |
|------------------|--------|--------------|-------------|
| 838 | 3.36 | 2.20 | C1 |
| 1003 | 6.84 | 2.60 | C1 |
| 1059 | 6.57 | 3.00 | C1 |
| 1113 | 4.73 | 2.80 | C1 |
| 1219 | 3.74 | 2.60 | C1 |
| 1245 | 4.37 | 2.20 | C1 |
| 1388 | 4.40 | 1.80 | C1 & C3 |
| 1464.9 | 5.70 | 2.00 | C1 |



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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.:

Seismic amplitude anomalies have been mapped at the following five levels/intervals:

| Stratigraphic Level | Depth RKB*) | Distance from Location |
|--|-------------------------------|------------------------------------|
| 1. mu_iku_D | 405 m ± 10 m | 630 m NNE of planned location (3D) |
| 2. Interval between Base Unit F & upper part of Unit I | 504 m ± 15 m - 568 m ± 15 m | 580 m SE of planned location (3D) |
| 3. mu_iku_K | 797 m ± 25 m | 2540 m NW of planned location (3D) |
| 4. mu_L1 | 1043 m ± 30 m | 100 m S of planned location (3D) |
| 5. Interval 20-120 ms below mu_L1 | 1058 m ± 30 m - 1186 m ± 30 m | 530 m SW of planned location (3D). |

*) At location

Small quantities of shallow gas have been observed in all of the seven tie-wells. However, the gas has not been a hazard to drilling. At well 6507/11-6, the reflection amplitudes are similar to those at tie-wells where gas was present. A weak shallow gas warning was therefore issued for the following intervals/levels:

- Between 504 m ± 15 m and 568 m ± 15 m RKB
- At 1043 m ± 30 m RKB

Due to the weak gas warning, it was decided to place 20" casing (with BOP) casing at 454 m RKB TVD (above the levels for predicted gas). The 17 1/2" hole was drilled down to 504 m where a 10 minutes flow check was taken due to a drill break. Maximum gas was measured to 1.32 %. Drilling continued down to 1335 m. A new flow check was carried out after a drill break at 707 m. Maximum gas was measured to 6.7 %. However, no gas related problems were experienced.

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

N/A



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

12a Shallow Gas:

Amplitude anomalies were observed near the 6507/11-6 Well Location and a week gas warning was therefore given.

No gas related problems were experienced in the well.

12b Sand Bodies:

The Pliocene sand layer was predicted and encountered sand layer correspond with the interpretation.

12c Boulders:

Scattered boulders were predicted in the shallow section between 315 m - 638 m RKB TVD. No boulders layers were predicted. Boulders were encountered at 379 m RKB TVD.

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

| Horizon | Prognosed (P) | Observed (O) | Difference (O-P) |
|-----------------------------|---------------|--------------|-------------------|
| Base Pleistocene (mu_iku_D) | 462 ± 10 m | 457 m *) | - 5 m (shallower) |
| Top Kai (mu_iku_L) | 1397 ± 30 m | 1392 m | - 5 m (shallower) |
| Top Brygge (t?_MIO) | 1541 ± 40 m | 1542 m | + 1 m (deeper) |

*) A gap in the MWD logs prevents firm confirmation of depth.

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

12e Correlation to Nearby Wells:

The drilling conditions experienced in well 6507/11-6 are as predicted and similar to those encountered in tie-wells 6507/11-1,-3, -4, -5, 6407/2-1, -2 and -3.



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12 **Standard and Special Studies**

- Norsk Hydro: Well Programme 6507/11-6, May 2001
- Norsk Hydro: Site Survey at location 6507/11-6, PL 263, May 2001
- Norsk Hydro: Standard Core Description, Well 6507/11-6, In prep
- Norsk Hydro: Formation Evaluation Report, Well 6507/11-6, In prep
- Fugro-Geoteam: Navigation and Positioning of Transocean Arctic to Well 6507/11-6, Report No. 7153, August 2001
- SecurityDBS: Kjerneboringsrapport for brønn 6507/11-6, July 2001
- Schlumberger: End of Well Report, Well 6507/11-6, Aug. 2001
- Corpro: Conventional Core Analysis Report, Well 6507/11-6, Sept. 2001
- Corpro: Core Photographs & Autocar core photographs, Well 6507/11-6, Core #1, Scale 1:4, White Light and UV Light, Aug. 2001
- Corpro: CT-scans of Whole Core, Well 6507/11-6, Sept. 2001
- Oilphase: Field Operations Report, Well 6507/11-6, July 2001
- West Lab Services AS: Laboratorierapport vannprøver, July 2001
- APT: Petroleum Geochemistry Report - NOCS Well 6507/11-6, Dec. 2001
- Robertson Research: Biostratigraphy of the Interval 460m-3440m TD, Well 6507/11-6, Dec. 2001
- Read: Zero offset VSP report, Well 6507/11-6, Nov. 2001



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APPENDIX I

CORE DESCRIPTIONS



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| HYDRO | | Core Report | | Geologists: Ø.Eikefet, E.Skottlien | | Field : Colette | | Well : 6507/11-6 | | Date : 2002-01-03 | | Scale : 1 : 200 | | | | | | | | | |
|-------------------|--------|------------------|------------|------------------------------------|---|-----------------|---|------------------|----|--|--------------------------|-----------------|---|---------|----|---------|----|---------|---|-------------------|---|
| Depth m MD RKB | Cor No | 200 ROP (m/hr) 0 | Grain Size | | | | | | | Lith Struct | Lithological Description | Oil Stn | | Dir Flu | | Cut Flu | | Vis Cut | | Shows Description | |
| | | | gb | vc | c | m | f | sl | cl | | | pr | m | gd | pr | m | gd | pr | m | | gd |
| 3036 | | 3036 m | | | | | | | | | | | | | | | | | | | |
| 3037 | | | | | | | | | | | | | | | | | | | | | |
| 3038 | | | | | | | | | | | | | | | | | | | | | |
| 3039 | | | | | | | | | | | | | | | | | | | | | |
| 3040 | | | | | | | | | | | | | | | | | | | | | |
| 3041 | | | | | | | | | | | | | | | | | | | | | |
| 3042 | | | | | | | | | | | | | | | | | | | | | |
| 3043 | | | | | | | | | | | | | | | | | | | | | |
| 3044 | | | | | | | | | | | | | | | | | | | | | |
| 3045 | | | | | | | | | | | | | | | | | | | | | No od, no stn no dir flor, slw - mod cldy wh - lt gn cut flor, no vis cut, mlky wh res flor, no vis res |
| 3046 | | | | | | | | | | | | | | | | | | | | | |
| 3047 | | | | | | | | | | | | | | | | | | | | | |
| 3048 | | | | | | | | | | | | | | | | | | | | | |
| 3049 | | | | | | | | | | | | | | | | | | | | | |
| 3050 | 1 | | | | | | | | | Sst: Med lt gry - med gry, clr, trnsl, Qtz, f - m, sbang - sbrnd, pred sbang, mod - wl srt, fm, slily calc and sil cmt, mod - gd vis por | | | | | | | | | | | |
| 3051 | | | | | | | | | | | | | | | | | | | | | |
| 3052 | | | | | | | | | | | | | | | | | | | | | |
| 3053 | | | | | | | | | | | | | | | | | | | | | |
| 3054 | | | | | | | | | | | | | | | | | | | | | |
| 3055 | | | | | | | | | | | | | | | | | | | | | |
| 3056 | | | | | | | | | | | | | | | | | | | | | No od, no stn, v wk yel - wh dir cut, v slw cldy yel wh cut flor, no vis cut, wk res flor, no vis res |
| 3057 | | | | | | | | | | | | | | | | | | | | | |
| 3058 | | | | | | | | | | | | | | | | | | | | | |
| 3059 | | | | | | | | | | | | | | | | | | | | | |
| 3060 | | | | | | | | | | | | | | | | | | | | | No od, no stn, no dir flor, no cut, wk spt of res flor, no vis res |
| 3061 | | | | | | | | | | | | | | | | | | | | | |
| 3062 | | | | | | | | | | | | | | | | | | | | | |
| 3063 | | | | | | | | | | | | | | | | | | | | | |
| 3064 | | 3064 m | | | | | | | | | | | | | | | | | | | |



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APPENDIX II

SIDEWALL CORE DESCRIPTIONS



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| | | |
|--------------------|---------------------------|-------------------------|
| NORSK HYDRO | SIDEWALL CORE DESCRIPTION | WELL: 6507/11-6 |
| | | RIG : Transocean Arctic |

| Run: 1A | Date: 02.07.01 | Logging: Co: MSCT-GR | | | | Page 3 of 5 | | | | | |
|-----------|----------------|----------------------|--|-------------------|-------------------------------------|-------------|-----|---|---|--|--|
| Shot 27 | Misfi 0 | Lost: 0 | Empty : 0 | Recoverd : : 27 | Geologist : Å. Halvorsen/ Ø Eikefet | | | | | | |
| No. | Depth m RKB | Reco verd cm | Lithology and shows description | Fluorescence | | | | | | | |
| | | | | Direct | | | Cut | | | | |
| | | | | Tr | M | G | Tr | M | G | | |
| 1 | 3 197 | 5.2 | Siltstone: Oliv gry - dk gry, hd, non calc, vf sdy I.P. No shows | | | | | | | | |
| 2 | 3148.5 | 4.6 | Sandstone: Wh - lt gry, frm - mod hd, gen non calc, vf - m, pred f, sbang - sbrnd, mod srt, arg, blk spk, (kao mtrx). No shows | | | | | | | | |
| 3 | 3 137 | 4.6 | Sandstone: Wh - lt gry, clr - trnsl, mky wh, gry or Qtz gr, frm - mod hd, fri I.P. vf - crs, occ v crs, sbrnd - ang, gen non calc, arg, blk spks, kao mtrx I.P. No Shows | | | | | | | | |
| 4 | 3 128 | 4.7 | Sandstone(50%): Wh - lt gry, clr - trnsl, mky wh, gry or Qtz gr, frm - mod hd, fri I.P. pred vf - m, r crs, sbrnd - ang, gen non calc, arg, blk spks, kao mtrx I.P. No Shows Claystone(50%): Oliv gry - dk gry, hd, non calc, sli slty, micromic | | | | | | | | |
| 5 | 3 118 | 4.8 | Sandstone: V lt gry - lt gry, clr - trnsl, occ mky, occ gry or Qtz gr, frm I.P. vf - f, r m, sbrnd - sbang, non calc, w/ 50% lam of Siltst: Dk gry, frm - mod hd, vf f sdy, carb, sli calc, mic, micromic I.P. No Shows | | | | | | | | |
| 6 | 3112.5 | 4.6 | Sandstone: Wh - lt gry, clr - trnsl, occ mky, occ smky Qtz, vf - crs, sbrnd - ang, kao mtrx, arg I.P. non calc, pr vis por, lam of Clst: dk gry, frm - mod hd, I.P. vf sdy, carb I.P. mic No Shows | | | | | | | | |
| 7 | 3 107 | 4.7 | Sandstone: Wh - lt gry, clr - trnsl, occ mky, occ smky Qtz, pred vf, occ f - m, sbrnd - ang, kao mtrx, arg I.P. non calc, pr vis por, I.P. fr vis por. No shows | | | | | | | | |
| 8 | 3 097 | 4.8 | Sandstone: Wh - lt gry, clr - trnsl, occ mky, occ smky Qtz, vf - crs, occ v crs, sbang - sbrnd, arg I.P. Kao mtrx, gen non calc, sli calc, sli calc I.P. fr vis por, pr srt, sli carb I.P. No Shows | | | | | | | | |
| 9 | 3003.3 | 4.7 | Claystone: Oliv gry, hd, v calc, grad Marl I.P. r micromic, r pyr, r glau | | | | | | | | |
| 10 | 3002.5 | 4.5 | Claystone: Brn blk, dsky yel brn, hd, micromic I.P. non calc | | | | | | | | |
| | | | | Tr:Trace M:Medium | | | | | | | |
| Comments: | | | | | | | | | | | |



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| | | |
|----------------------------------|----------------------------------|--------------------------------|
| NORSK HYDRO | SIDEWALL CORE DESCRIPTION | WELL: 6507/11-6 |
| | | RIG : Transocean Arctic |

| | | | |
|---------|----------------|------------------------------------|-------------------------------------|
| Run: 1A | Date: 02.07.01 | Logging: Co: MSCT-GR | Page 4 of 5 |
| Shot 27 | Misfi 0 | Lost:: 0 Empty : 0 Recoverd : : 27 | Geologist : Å. Halvorsen/ Ø Eikefet |

| No. | Depth m RKB | Reco verd cm | Lithology and shows description | Fluorescence | | | | | | |
|-----|----------------|--------------------|---|--------------|---|---|-----|---|---|---|
| | | | | Direct | | | Cut | | | |
| | | | | Tr | M | G | Tr | M | G | |
| 11 | 2 989 | 4.8 | Claystone: Brn blk, blk, hd, micromic, calc I.P. carb. | | | | | | | |
| 12 | 2 982 | 5.0 | Claystone: brn blk, blk, hd, micromic, carb I.P. sli calc | | | | | | | |
| 13 | 3 075 | 4.6 | Sandstone: Wh - lt gry, clr - trnsl, occ mky, occ smky Qtz gr, also occ gry or Qtz, frm - fri, sbrnd - sbang, vf - f, occ m, wl - mod srt, calc cmt I.P. fr - gd vis påor, sli arg. | | | | | | | |
| 14 | 3 071 | 4.6 | Sandstone: Wh - v lt gry, clr - trnsl, smky, occ mky Qtz, frm, fri, sbrndd, sbang, vf - f, wl srt, sli calc cmt I.P. gd vis por | | | | | | | |
| 15 | 3 067 | 4.6 | Sandstone: Wh - v lt gry, clr - trnsl, occ smky, r mky wh Qtz, sbrndd - sbang, vf - m, pred f, wl - mod srt, non calc, arg I.P. gd vis por. Shows: Wk unif mky wh dir fluor, no vis vis show, no stn, inst blmg wk wh fluor cut, ptchy wk yel wh res flour. (Mud filtrate?) | | x | | | | x | |
| 16 | 3 064 | 4.6 | Sandstone: Wh - v lt gry, clr - trnsl, occ smky, r mky wh Qtz, sbrndd - sbang, vf - m, pred f, wl - mod srt, non calc, arg I.P. gd vis por. Shows: No HC od, no vis fluor, wk lt yel - wh dir flour, slw mky wh cldy cut flour, no vis cut, wh - mky wh res flour, no vis res. (Mud filtrate?) | x | | | | | x | |
| 17 | 3 061 | 4.6 | Sandstone: Med - lt gry, trnsl - clr, Qtz, vf - m, pred f, sbrndd - sbang, occ ang, pred sbang, mod srt, tr mica, sli calc cmt, kao mtrx, mod - gd vis por. Shows: No HC od, no stn, no dir fluor, fst - inst strmg wh wk cut, no vis cut, wh res fluor, no vis res. | | | | | | | x |
| 18 | 3 048 | 4.6 | Sandstone: Olv gry - brnsh gry - med dk gry - med gry, clr - trnsl, occ mky Qtz, vf - m, pred f, sbrndd - sbang, occ ang, arg, pred sbang, mod srt, tr mica, sli calc cmt, kao mtrx, mod - gd vis por. Shows: No HC od, no stn, no dir fluor, fst - inst strmg wh wk cut, no vis cut, wh res fluor, no vis res. | | | | | | x | |
| 19 | 3 295 | 4.5 | Sandstone: Olv gry - brnsh gry - med dk gry - med gry, clr - trnsl, occ mky Qtz, vf - m, pred f, sbrndd - sbang, occ ang, arg, pred sbang, mod srt, tr mica, sli calc cmt, kao mtrx, gd vis por, Tr strks/lumps of Slst: dk gry - grysh blk, sdy, arg, hd, sbblky. Shows: No HC od, no stn, spts of dull yel dir fluor, fst wh strmg cut fluor, no vis | x | | | | | x | |

Tr:Trace M:Medium

Comments:



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| | | |
|----------------|---------------------------|-------------------------|
| NORSK HYDRO | SIDEWALL CORE DESCRIPTION | WELL: 6507/11-6 |
| | | RIG : Transocean Arctic |

| Run: 1A | Date: 02.07.01 | Logging: Co: MSCT-GR | | | | Page 5 of 5 | | | | |
|-----------|----------------|----------------------|--|-------------------|-------------------------------------|-------------|-----|---|---|--|
| Shot 27 | Misfi 0 | Lost: 0 | Empty : 0 | Recoverd : : 27 | Geologist : Å. Halvorsen/ Ø Eikefet | | | | | |
| No. | Depth m RKB | Reco verd cm | Lithology and shows description | Fluorescence | | | | | | |
| | | | | Direct | | | Cut | | | |
| | | | | Tr | M | G | Tr | M | G | |
| 20 | 3 283 | 4.7 | Sandstone: Lt olv gry - lt gry, trnsl - clr, occ mlky Qtz, vf - f, sbang, mica, mod srt, non calc, arg, strks of arg Slst: dk gry - blksh gry, non calc, blkly, sbfiss I.P. grad carb Clst I.P. Shows: No HC od, no stn, spts of dull yel - wh dir fluor, mod -fst wh blmg cut fluor. no vis cut. wk wh res fluor. no vis res. (residual?) | x | | | | x | | |
| 21 | 3 274 | 4.6 | Sandstone: Olv gry - med gry - lt gry, clr - trnsl, Qtz, vf - m, pred vf - f, mod srt, sbang - ang, arg, sli slty, kaol mtrx I.P. micamod vis por. Shows: No HC od, no stn, spts of dull yel - wh dir fluor, mod -fst yel - wh cldy cut fluor, no vis cut, wk wh res fluor, no vis res. (residual?) | x | | | | x | | |
| 22 | 3 268 | 4.6 | Sandstone: Med - med lt gry, vf, sbang - sbrndd, mod - wl srt, slty I.P. micromic, non calc, kaol, low - mod vis por Shows: No HC od, no stn, r spts of dull yel - wh dir fluor, mod -fst yel - wh cldy cut fluor, no vis cut, no res fluor, no vis res. (residual?) | x | | | | x | | |
| 23 | 3 398 | 4.5 | Sandstone: V lt gry - wh, dk gry spts, cl - mlky, Qtz, vf - crs, occ v crs, pred f - m, kaol mtrx, sbang - ang, occ sbrndd, pr srt, arg, slty I.P. non calc, low vis por. Shows: No HC od, no stn, r spts of dull yel - wh dir fluor, mod -fst yel - wh cldy cut fluor, no vis cut, yel wh res fluor, no vis res. (residual?) | x | | | x | | | |
| 24 | 3 371 | 4.3 | Sandstone: Lt gry, clr - mlky, Qtz, vf - m, occ crs, pred f - m, sbrnd - sbang, mod - pr srt, kao mtrx, non calc, strks of arg sltst: dk gry, carbo I.P. mod vis por, Shows: No HC od, no stn, r spts of dull yel - wh dir fluor, mod -fst yel - wh cldy cut fluor, no vis cut, yel wh res fluor, no vis res. (residual?) | x | | | | x | | |
| 25 | 3 329 | 4.5 | Sandstone: Lt olv gry - lt gry, Qtz, f - grad m I.P. occ vf, sbang, mod - wl srt, slily arg, kao mtrx, non calc, mod vis por. Shows: No HC od, no stn, r spts of dull yel - wh dir fluor, mod -fst yel - wh cldy cut fluor, no vis cut, yel wh res fluor, no vis res. (residual?) | x | | | | x | | |
| 26 | 3 312 | 4.5 | Sandstone: Lt olv gry - olv gry - lt gry, Qtz, f - m, occ vf, sbang - sbrndd, occ ang, mod srt, arg, kao mtrx, non calc, low vis por. Shows: No HC od, no stn, r spts of dull yel - wh dir fluor, mod -fst yel - wh cldy | (x) | | | | x | | |
| 27 | 3299.5 | 4.6 | Sandstone: Lt - m lt gry, vf - f, sbang - sbrnd, pred sbang, mod - wl srt, kaol mtrx, arg I.P. non calc, mod - low vis por. Shows: No HC od, no stn, r spts of dull yel - wh dir fluor, mod -fst yel - wh cldy cut fluor, no vis cut, yel wh res fluor, no vis res. (residual?) | (x) | | | x | | | |
| | | | | Tr:Trace M:Medium | | | | | | |
| Comments: | | | | | | | | | | |



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APPENDIX III

WELL SUMMARY

GEOLOGICAL WELL SUMMARY

MDT RESULTS

GAS RATIO LOG



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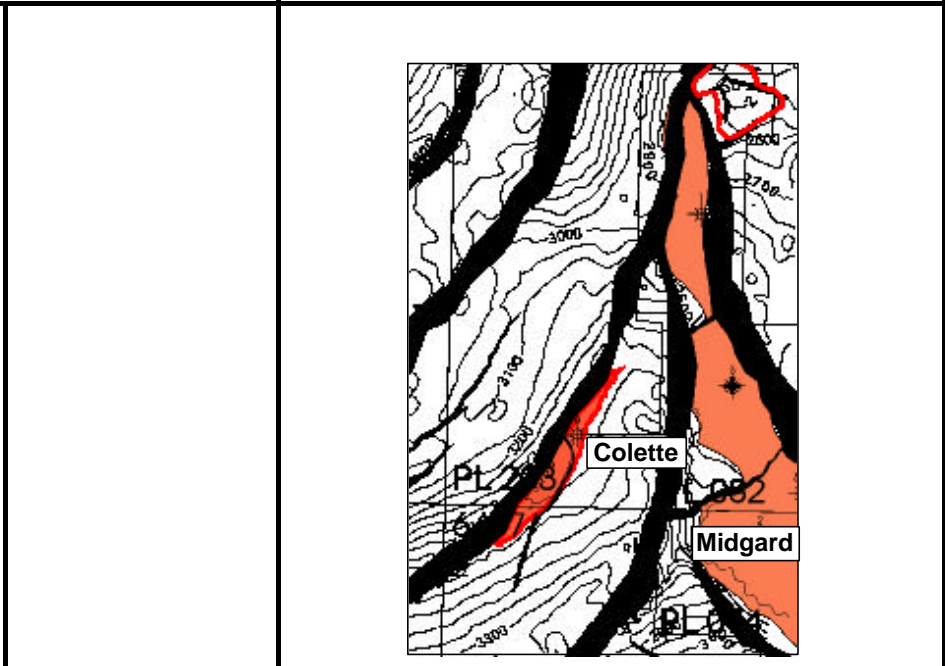
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| | | |
|--|---|--|
| Coord: 65°01' 09.01"N UTM: 7 211 708.4 mN 07°24' 52.17"E 425 288.6 mE Zone: ED-50 UTM Zone 32 Line: MC3D-MGW98, inline 4475, xline 2790 Rig: Transocean Arctic Waterdepth: 315 m MSL KB: 24 m Stopped in: Åre Formation | On location: 11.06.01 Spud 1: 13.06.01 At TD: 30.06.01 P&A finished: 08.07.01 TD Driller: 3440m MD (3439.1m TVD) TD Logger: 3440m MD (3439.1m TVD) Wireline Logg: Schlumberger WS MWD: Schlumberger Anadrill Mudlogging: Geoservices | WELL: 6507/11-6 LICENCE: PL 263 COUNTRY: Norway |
|--|---|--|

OPERATOR: NORSK HYDRO OWNED BY: Hydro(40%), Statoil(30%), Chevron(30%)

| | |
|---|---|
| TARGETS: Primary: Garn and Ile Fms. in the Colette prospect Secondary: The Lysing Fm. and the Tilje Fm. sandstones | RESULTS: - Discovery of gas in the Garn Formation sandstone. - The Lysing Formation was not present. |
|---|---|

| |
|---|
| <p align="center">CASING</p> <p>30" @ 375mMD(375m TVD) 20" @ 454mMD(454m TVD) 13 3/8" @ 1602mMD(1602m TVD) 9 5/8" @ 2913mMD(2912.6mTVD)</p> |
|---|

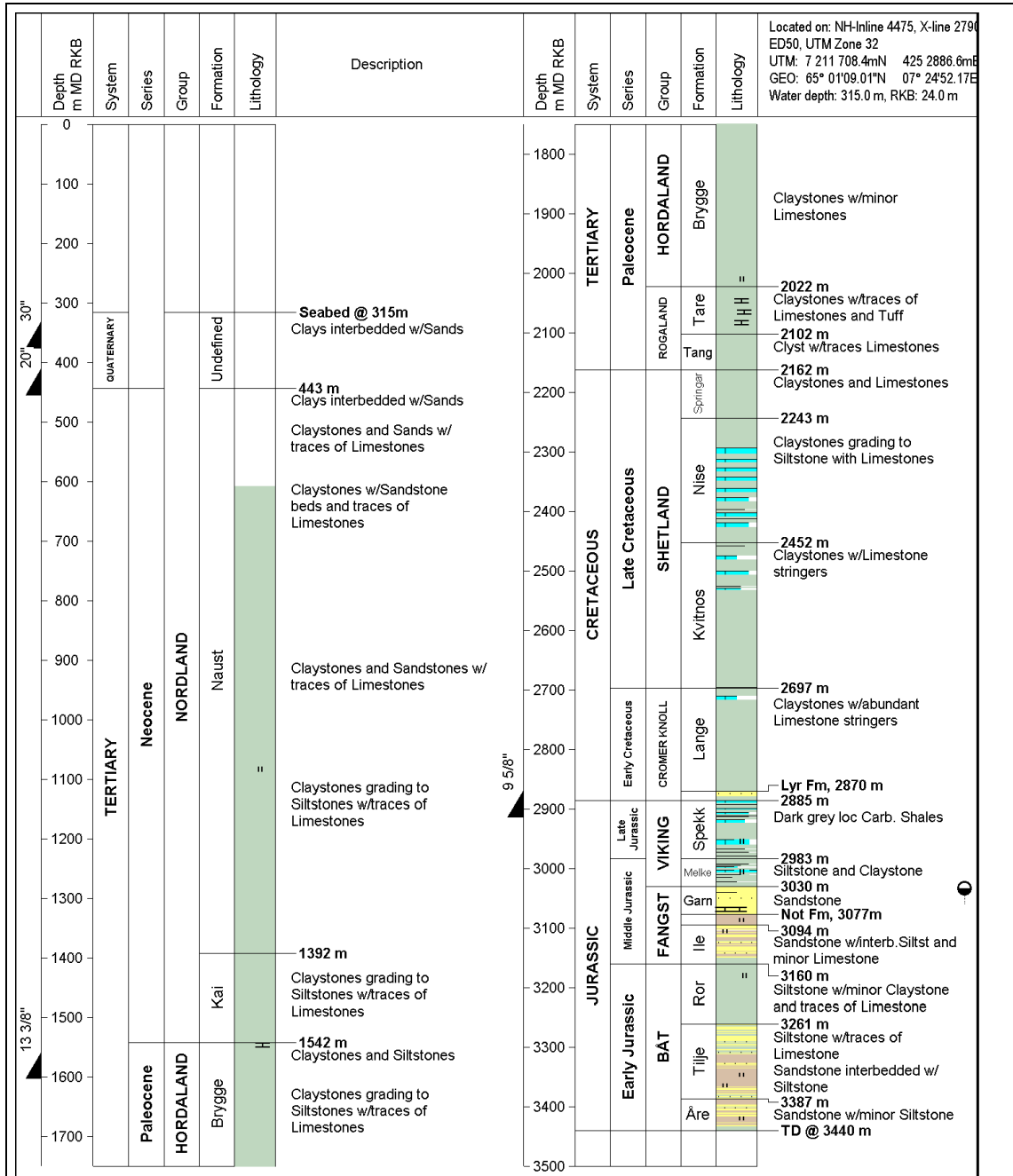


| | | |
|-------------|----|---|
| LOGS | | CORES |
| MDT/GR | 1A | 3398.0 - 3034.0 m |
| MSCT/GR | 1A | 3398.0 - 2982.0 m |
| DSI/CAL | 1A | 3420.0 - 2600.0 m |
| VSP | 1A | 3420.0 - 2100.0 m |
| | | Core #1: 3036,0 - 3064,0 m MD Rec.: 3036,0 - 3063,6 m MD, 27.6m 98,8% |



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Geological Summary



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Formation Pressure Worksheet

Run 1 A

| | | | | | |
|-----------------|--|----------|------------------|---------------|-------------------------|
| Well: | 6507/11-6 | Rig: | Transocean Artic | Date: | 30. juni -1. juli 2001 |
| Pressure Units: | Bars | RKB-MSL: | 24m | MSL-Sbed: | 291m |
| Toolstring: | PC-HY(Std)-HY-SP(LDP)-OFA-PO-IO-PO-SC1-MS(6x450)-MS(6x450) | | | Witnessed by: | Rokke/Eikefet/Halvorsen |
| | | | | Conveyance: | Wireline |

| Test No. | Depth | Depth | Initial Hydrostatic Pressure | | Formation Pressure | | Final Hydrostatic Pressure | | | Time | | Form. | Mud | Test | Good | Quartz | Remarks | Pre |
|----------|---------|---------|------------------------------|--------|--------------------|--------|----------------------------|--------|-------|-------|---------|----------|----------|-------|-------|----------|--------------------|------|
| | mMD | mTVD | Quartz | Strain | Quartz | Strain | Quartz | Strain | Diff | Set | Retract | Pressure | Pressure | Temp. | Data? | Mobility | | Test |
| | RKB | RKB | | | | | | | | | | | | | | | | |
| 1 | 3 398,2 | 3 397,4 | 422,74 | 422,80 | 342,674 | 342,77 | 422,42 | 422,44 | 0,32 | 19:09 | 19:12 | 1,028 | 1,268 | 110,0 | Y | 599,1 | Good perm. in sand | 20 |
| 2 | 3 396,7 | 3 395,8 | 421,64 | 421,70 | 342,534 | 342,64 | 421,32 | 421,40 | 0,32 | 19:18 | 19:20 | 1,028 | 1,266 | 110,0 | Y | 757,2 | | 20 |
| 3 | 3 385,6 | 3 384,7 | 419,09 | 419,15 | 341,449 | 341,55 | 418,79 | 418,85 | 0,30 | 19:27 | 19:30 | 1,028 | 1,262 | 110,1 | Y | 48,6 | | 20 |
| 4 | 3 382,5 | 3 381,2 | 418,10 | 418,17 | 341,136 | 341,25 | 417,86 | 417,93 | 0,24 | 19:34 | 19:37 | 1,028 | 1,260 | 110,5 | Y | 14,5 | | 20 |
| 5 | 3 379,0 | 3 378,2 | 417,41 | 417,48 | 340,802 | 340,93 | 417,30 | 417,39 | 0,11 | 19:43 | 19:48 | 1,028 | 1,260 | 110,5 | Y | 118,7 | | 20 |
| 6 | 3 311,0 | 3 310,4 | 409,18 | 409,28 | 333,767 | 333,90 | 409,17 | 409,28 | 0,00 | 19:58 | 20:03 | 1,028 | 1,260 | 111,1 | Y | 51,8 | | 20 |
| 7 | 3 309,5 | 3 308,9 | 408,88 | 408,99 | 333,551 | 333,69 | 408,93 | 409,03 | -0,05 | 20:06 | 20:10 | 1,028 | 1,260 | 111,1 | Y | 91,6 | | 20 |
| 8 | 3 295,5 | 3 294,9 | 407,21 | 407,31 | 332,115 | 332,26 | 407,25 | 407,37 | -0,05 | 20:15 | 20:17 | 1,027 | 1,260 | 111,0 | Y | 211,7 | | 20 |
| 9 | 3 285,0 | 3 284,4 | 405,94 | 406,05 | 331,063 | 331,21 | 406,01 | 406,13 | -0,07 | 20:24 | 20:26 | 1,028 | 1,260 | 111,0 | Y | 1 293,6 | | 20 |
| 10 | 3 274,3 | 3 274,7 | 404,64 | 404,75 | 329,958 | 330,11 | 404,75 | 404,87 | -0,11 | 20:31 | 20:34 | 1,027 | 1,260 | 110,9 | Y | 321,0 | | 20 |
| 11 | 3 149,0 | 3 148,5 | 389,64 | 389,81 | 316,059 | 316,26 | 389,62 | 389,79 | 0,02 | 20:49 | 20:50 | 1,023 | 1,262 | 109,9 | Y | 271,8 | | 20 |
| 12 | 3 141,5 | 3 141,0 | 388,72 | 388,86 | 315,289 | 315,46 | 388,75 | 388,88 | -0,03 | 21:00 | 21:04 | 1,023 | 1,262 | 109,2 | Y | 723,3 | | 20 |
| 13 | 3 132,0 | 3 131,4 | 387,47 | 387,59 | 314,353 | 314,52 | 387,59 | 387,72 | -0,12 | 21:08 | 21:11 | 1,023 | 1,261 | 109,0 | Y | 1 551,6 | | 20 |
| 14 | 3 124,0 | 3 123,5 | 386,53 | 386,66 | 313,534 | 313,70 | 386,65 | 386,78 | -0,12 | 21:00 | 21:19 | 1,023 | 1,261 | 108,9 | Y | 1 970,9 | | 20 |

E&P Norway

Classific.: INTERNAL E&P

REPORT

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| | | | | | | | | | | | | | | | | | | |
|-------------|---------|---------|--------|--------|---------|--------|--------|--------|-------|-------|-------|-------|-------|-------|---|---------|---|----|
| 15 | 3 112,5 | 3 112,0 | 385,13 | 385,25 | 312,380 | 312,54 | 385,27 | 385,40 | -0,14 | 21:24 | 21:27 | 1,023 | 1,262 | 108,9 | Y | 27,6 | | 20 |
| 16 | 3 107,0 | 3 106,5 | 384,56 | 384,68 | 311,826 | 311,99 | 384,59 | 384,73 | -0,04 | 21:33 | 21:35 | 1,023 | 1,262 | 108,6 | Y | 393,9 | | 20 |
| 17 | 3 098,5 | 3 098,0 | 383,51 | 383,64 | 310,967 | 311,13 | 383,60 | 383,73 | -0,08 | 21:39 | 21:43 | 1,023 | 1,262 | 108,6 | Y | 350,9 | | 20 |
| 18 | 3 114,5 | 3 114,5 | 386,02 | 386,14 | 312,590 | 312,75 | 385,76 | 385,86 | 0,26 | 21:55 | 21:57 | 1,023 | 1,263 | 108,4 | Y | 542,8 | 2m deep? | 20 |
| 19 | 3 075,5 | 3 075,0 | | | | | | | 0,00 | | | 0,000 | 0,000 | | | | tight, off depth? Correlating show 2m deep. | 2 |
| 20 | 3 075,5 | 3 075,0 | 380,63 | 380,74 | 308,238 | 308,38 | 380,61 | 380,73 | 0,03 | 21:26 | 21:28 | 1,022 | 1,262 | 108,2 | Y | 1 049,3 | | 20 |
| 21 | 3 072,0 | 3 071,4 | 380,16 | 380,28 | 307,892 | 308,74 | 380,99 | 380,32 | -0,83 | 21:25 | 22:30 | 1,022 | 1,262 | 108,1 | Y | 868,7 | | 20 |
| 22 | 3 069,0 | 3 068,5 | 379,78 | 379,90 | 307,598 | 307,74 | 379,84 | 379,96 | -0,06 | 22:37 | 22:42 | 1,022 | 1,262 | 108,1 | Y | 905,9 | | 20 |
| 23 | 3 066,0 | 3 065,5 | 379,42 | 379,66 | 307,293 | 307,44 | 379,48 | 379,60 | -0,06 | 22:45 | 22:48 | 1,022 | 1,262 | 108,1 | Y | 380,6 | | 20 |
| 24 | 3 064,0 | 3 063,5 | 379,22 | 379,33 | 307,109 | 307,25 | 379,25 | 379,37 | -0,03 | 22:51 | 22:55 | 1,022 | 1,262 | 108,1 | Y | 316,4 | | 20 |
| 25 | 3 063,0 | 3 062,4 | 379,11 | 379,23 | 307,003 | 307,14 | 379,14 | 379,26 | -0,02 | 22:59 | 23:02 | 1,022 | 1,262 | 108,1 | Y | 1 094,3 | | 20 |
| 26 | 3 062,0 | 3 061,5 | 379,00 | 379,12 | 306,884 | 307,03 | 379,01 | 379,12 | -0,01 | 23:05 | 23:08 | 1,022 | 1,262 | 108,9 | Y | 1 497,7 | condensate? | 20 |
| 27 | 3 061,0 | 3 060,4 | 378,87 | 378,99 | 306,792 | 306,93 | 378,90 | 379,01 | -0,03 | 23:11 | 23:15 | 1,022 | 1,262 | 108,5 | Y | 1 289,8 | | 20 |
| 28 | 3 059,0 | 3 058,5 | 378,61 | 378,72 | 306,648 | 306,78 | 378,67 | 378,78 | -0,06 | 23:19 | 23:21 | 1,022 | 1,262 | 108,2 | Y | 9 118,1 | gas? | 20 |
| 29 | 3 057,0 | 3 056,5 | 378,40 | 378,51 | 306,612 | 306,74 | 378,44 | 378,54 | -0,05 | 23:24 | 23:28 | 1,023 | 1,262 | 108,2 | Y | 11 426, | | 20 |
| 30 | 3 052,0 | 3 051,5 | 377,78 | 377,88 | 306,511 | 306,63 | 377,88 | 377,98 | -0,09 | 23:33 | 23:36 | 1,024 | 1,262 | 108,2 | Y | 12 807, | | 20 |
| | 3 046,5 | 3 046,0 | | | | | | | 0,00 | | | 0,000 | 0,000 | | | | skip point | |
| 31 | 3 042,0 | 3 041,6 | 376,59 | 376,69 | 306,293 | 306,42 | 376,67 | 376,78 | -0,08 | 23:40 | 23:43 | 1,027 | 1,262 | 108,1 | Y | 1 268,8 | | 20 |
| 32 | 3 038,0 | 3 037,4 | 376,11 | 376,21 | 306,204 | 306,34 | 376,20 | 376,31 | -0,09 | 23:46 | 23:50 | 1,028 | 1,262 | 108,0 | Y | 7 735,7 | | 20 |
| 33 | 3 034,0 | 3 033,5 | 375,68 | 375,78 | 306,112 | 306,25 | 375,72 | 375,84 | -0,04 | 23:55 | 00:00 | 1,029 | 1,262 | 107,9 | Y | 13 975, | | 20 |
| Sampl 34 | 3 035,0 | 3 034,5 | 375,90 | 376,20 | 306,181 | 306,51 | 377,35 | 377,70 | -1,48 | 00:26 | 03:30 | 1,029 | 1,263 | 105,3 | N | 3 892,9 | Sampling point for gas | 20 |
| Sampl 35 | 3 060,0 | 3 059,5 | 379,60 | 379,89 | 306,757 | 307,05 | 381,02 | 381,36 | -1,45 | 03:50 | 07:26 | 1,022 | 1,265 | 107,1 | N | 1 565,1 | Sampling point for oil/condesate | 20 |

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| | | | | | | | | | | | | | | | | | | |
|-------------|---------|---------|--------|--------|---------|--------|--------|--------|-------|--------|-------|-------|-------|-------|---|---------|--------------------------|----|
| Sampl 36 | 3 075,0 | 3 074,5 | 381,10 | 381,38 | 308,282 | 308,58 | 384,41 | 384,70 | -3,34 | 07:44r | 09:15 | 1,022 | 1,263 | 109,4 | N | 1 048,0 | sampling point for water | 20 |
|-------------|---------|---------|--------|--------|---------|--------|--------|--------|-------|--------|-------|-------|-------|-------|---|---------|--------------------------|----|

NB: Fmtn Press sg calculated from RKB

SECTION B

OPERATIONS

Prepared by: P.V. Fossum

Paul V. Fossum

Approved by: Terje Skram

T. Skram

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1 DRILLING SUMMARY AND EXPERIENCES

1.1 Mobilising

| | | |
|-------------------|----------|----------|
| Total time used: | 56.0 hrs | |
| Operational time: | 28.5 hrs | (50.9 %) |
| Downtime: | 27.5 hrs | (49.1 %) |

Wellhead co-ordinates:

7 211708.4 mN 0 425288.6 mE

The rig move towards well 6507/11-6 started on 11.06.2001 at 08:00 and anchor handling was finished on 13.06.2001 at 05:00.

Rig heading was 215 degrees.

All downtime refferes to waiting on weather.

1.2 36" Hole Section / 30" Conductor

| | | |
|-------------------------|----------|----------|
| Total depth of section: | 377.5 m | |
| Total time used: | 70.5 hrs | |
| Operational time: | 41.0 hrs | (58.2 %) |
| Downtime: | 29.5 hrs | (41.8 %) |

1.2.1 Drilling

The well was spudded on 13 June 2001, at 05:30 hrs.

A 36" rotay BHA with 17-1/2" insert bit and 36" hole opener was run. The 36" hole was drilled with sea water and hi-vis pills from 315 m to 375 m. At TD, a 30 m3 hi-visc. pill was circulated out to clean hole, and 1,50 sg mud were spotted in hole.

Pulled out of hole with no overpull. The 30" conductor with the Permanent Guide Base was run to 323 m. Attempted to pass but with no success which reflects the downtime of 29.5 hrs.

The rig was moved 10 m. New rig heading: 260 deg. Respudded the well and drilled 36" hole from 313 m to 377.5 m. At TD, a 30 m3 hi-visc. pill was circulated out to clean hole. The well was afterwards topped up with 1.50 sg mud.

Ran conductor and cemented as per plan.

1.3 26" Hole Section / 20" casing

| | | |
|-------------------------|----------|----------|
| Total depth of section: | 459.0 m | |
| Total time used: | 58.5 hrs | |
| Operational time: | 54.5 hrs | (93.2 %) |
| Downtime: | 4.0 hrs | (6.8 %) |

Ran in hole with a 26" bit and drilled to TD at 459 m MD in one go. There was scattered boulders experienced at +- 379 m MD, which reduced the ROP substantially. At bottom, a 20 m3 Hivisc-pill was pumped in order to clean out hole

followed by another 25 m3 pill at 1.40 sg weight. Performed a wiper trip to 30" shoe. Displaced the hole at bottom to 1.40 sg. No resistance was met while pulling out of hole and setting the casing.

Ahead of cementing, the cementhead was disconnected as it was mounted the wrong way causing 4 hours rig time. Instead, a premade pump-in sub assembly was made up and the operation was completed as planned.

18 3/4" wellhead, housing and BOP were installed and tested.

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

| | | |
|-------------------------|----------|----------|
| Total depth of section: | 1608.0 m | |
| Total time used: | 95.5 hrs | |
| Operational time: | 79.5 hrs | (83.2 %) |
| Downtime: | 15.0 hrs | (16.8 %) |

1.4.1 Drilling

The cement, shoetrack and rathole was drilled with seawater and pills. Performed a leak off test (LOT) to 1,41 sg with a 5 m3 LCM pill on bottom.

The hole was displaced to 1,30 sg KCl/polymer.

Continued to drill and orient with motor assembly and rollercone bit (type 10GMODC). At a depth of 1465 m, the ROP was reduced substantially and a pressure drop of 23 bar and reduced torque from 10-14 kNm to 1-2 kNm was indicating motor-failure.

Pulled out to change motor.

Ran back in hole and drilled to TD, average speed of 51.1 m/hr.

NOTE: Investigations of the motor proved no wear or failure to it. The sudden stop was likely to be caused by stringers in Kai formation (heating).

1.4.2 Casing

The casing was set and cemented as per plan.

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

| | | |
|-------------------------|-----------|----------|
| Total depth of section: | 2917.0 m | |
| Total time used: | 113.5 hrs | |
| Operational time: | 98.0 hrs | (86.3 %) |
| Downtime: | 15.5 hrs | (13.7 %) |

1.5.1 Drilling

Ran in hole with a motor assembly with a PDC bit type MA89HPX. Tagged hard cement at 1560 m, giving 48 m length of the cement in hole. After drilling 3 m of new formation, a LOT was performed to 1,81 sg. having old mud in hole and a 5 m3 pill on bottom.

The well was displaced to 1,60 sg oil base mud prior drilling.

The primary object in this section was to verify the Lysing sand. It was necessary to restrict ROP at +100 m/hr due to development of pressure prognosis and being able to follow this. In addition, the well started to drift west towards 2812 m, and corrections in orienting mode slowed down the ROP to 56,42 m/hr.

No indications of Lysing were given.

The hole condition at TD was good and after 1 1/2 bottoms up, the string was pulled out.

1.5.2 Casing

The casing was run as per plan. After the casing hanger was landed, attempts to establish circulation were made, but no go. Indications were fill on bottom, packing off when circulating down, and blocky cavings on the shakers from Lyr formation. Circulated casing down and lost returns last couple of meters.

Performed cement job without returns, but had good indications of cement coming up annulus.

NOTE: Not able to test seal assembly at first go as the tool bottom'ed out. Seal face was damaged, the resilient seal and lock ring were lost when pulling out. Made two additional mill and flush runs before it got installed and tested.

1.6 8-1/2" Hole Section

Total depth of section: 3440.0 m
Total time used: 132.5 hrs
Operational time: 129.0 hrs (97.4 %)
Downtime: 3.5 hrs (2.6 %)

1.6.1 Drilling

The cement in the 9 5/8" shoe track and 3 m new formation was drilled out with a 8 1/2" BD445 using 1,25 sg oil based mud. A formation integrity test (FIT) was performed to 1,45 sg EMW at 2920 m MD.

Drilled ahead from 2920 m MD to coring point at 3036 mMD. After having cored the interval 3036 m MD - 3064 mMD (1 core), the section was drilled to TD at 3440 m MD using the same bit. At this depth there were made 3 wire line logging runs.

No hole problems were encountered.

1.6.2 Coring

The run was performed using a 90 feet core barrel with fluted aluminium inner barrels and telescopic shoe.

| Run # | Cored interval m MD | ROP m/h | Recovery % | Reason pulled |
|-------|------------------------|------------|---------------|---------------|
| 1 | 3036-3064 | 27.6 | 100 | Full |

The core was run in Garn. It did not contain hydrocarbons.

1.6.3 Logging

The following wire line logging runs were performed :

| Log suite | Logged interval mMD | Comments |
|-----------|------------------------|--|
| MDT | 3398,2-3034 | 32/33 useful pressure tests |
| CMR-UBI | - | Cancelled due to high GWC in reservoir |
| MSCT | 3398-2982 | Hydraulic leakage-failure of first tool while RIH. 27 of 27 cores were recovered. All high quality cores - more than 4,5 cm long |
| DSI-VSP | 3420-2100 | OK |

1.7 Plug and Abandonment

Total time used: 124.5 hrs
Operational time: 109.5 hrs (88.0 %)
Downtime: 15.0 hrs (12.0 %)

The open hole was plugged back in three stages, see attached figure. Set three plugs to fill open hole from TD to approximately 150 m into the 9 5/8" casing. Plug no. 2 was set from 1500 m to 1250 m, and the third plug from 750 m to 350 m.

9 5/8" and 13 3/8" casing were cut at i.e. 1404 m and 434 m.

20"/30" casing were cut approximately 5 m below seabed.

Load and test of plugs

The bottom plug was pressure tested to 70bar above FIT-pressure at 9 5/8" with 1,25 sg mud and tagged at 2840 m/10 mT.

The second plug was tagged at 1290 m/10 mT and tested to 70 bar above LOT at 13 3/8" casing.

The third plug was tagged at 434 m/10 mT and tested to 87 bar.

The BOP and riser was retrieved, the anchors were pulled, and on 8 July 2001 at 11:00 hrs the last anchor was on the bolster and the rig commenced the move to 6305/9-1.

1.8 Recommendations

36" Hole Section / 30" Conductor

Drilling slowly through only scattered boulders. ROP +/- 6 m/hrs. Cutters on hole opener was insert type. Suggest using milled tooth type of cutters unless boulder beds are prognosed.

12-1/4" Hole Section / 9-5/8" Conductor

Drilling with motor good, with very long, dry PDC cuttings. Necessary to restrict ROP at +/- 100 mph due to development on pressure prognosis and being able to follow this. Cuttings handling and sampling able to keep up.

Well started drifting west and an attempt were made to correct. Result of steering hard to evaluate, but the drifting should be evaluated beforehand since a corebarrel possibly would have increased the building trend and quite possibly have necessitated correction.

On request from TOA 6" liners where used (pop off 320 bar). The argument is saving the heavy workload of changing liners between sections and introducing ceramic liners. I agree to these arguments however thought needs to be given to bit hydraulics and in case of long deviated holes, hole cleaning and the impact on surface pressures. TD of section 2917 m. Towards the end the circulating rate was as low as 2650 lpm/310 bar and not as desired 3200 lpm.

An issue concerning heating of motors may rise, and TO must know that we not accept downtime due to heating of motors.

A non-ported float was run and choke drill performed to establish pressure below float. We found it difficult to establish the correct pressure and came out too high every time. Conclusion on that is, that if non-ported float is run, it should be run below the motor since it is believed that the pressure drop over the motor after the flapper opened obscured the right pressure.

Encountered problems with getting casing down the last few meters. Indications were fill on bottom, packing off when circulating down and blocky cavings on the shakers from Lyr formation.

Circulated casing down and lost returns last couple of meters. Performed cement job without returns but had good indications of cement coming up annulus. Did not bump plug. PS

Not able to test seal assembly. When POOH seal assembly accidentally left in hole. Tool indication of seal bottomed out. Retrieved seal assembly (seal face damaged and resilient seal lost) but did not get lock ring. RIH mill & flush tool. Lock ring came out on top of tool. Made two additional mill & flush runs before indicators on tool were right.

Logging on wireline:

Generally the logging went very smoothly. The MDT was not optimally configured and the MSCT had to be replaced by the backup tool.

General:

Bottom hole assembly from Anadrill was not pre-made up from base which caused extra rigtime. Furthermore they were sent offshore in 10 m baskets which only just contained the lengths of the assemblies. If not possible for any reason to make up assemblies onshore, they still have to be shipped offshore in 13 m baskets which then enables us to lay them out in longer sections. Start-up package may have been a rush job, however the following sections should have been made up onshore.

GENERAL INFORMATION ON WELL 6507/11-6

Field : MIDGARD Country : NORWAY
 Licence : 263
 UTM zone : 32 Central Median : 9° E Horiz. Datum: ED50

| Location coordinates: | | Surface | Target |
|-----------------------|------------|--------------|--------|
| UTM | North [m]: | 7211708,4 | |
| UTM | East [m]: | 425288,6 | |
| Geographical | North : | 65 01'09.01" | |
| Geographical | East : | 07 24'52.17" | |

Water Depth: 291,0 m Reference Point Height: 24,0 m
 Formation at TD: AARE at 3372 m MD

Operators: NORSK HYDRO PRODUKSJON A/S Share: 40,00 %

Partners: DEN NORSKE STATS OLJESELSKAP A/S Share: 30,00 %
 NORSK CHEVRON A/S 30,00 %

Total depth (RKB) : 3440,0 m MD 3439,1 m TVD

TIME SUMMARY
 Start Time : 2001-06-11 08:00:00
 Spudding date : 2001-06-13
 Abandonment date : 2001-07-07

| Main operation | Hours | Days | % |
|-------------------------------|--------------|-------------|------|
| MOBILIZATION | 28,5 | 1,2 | 4,4 |
| DRILLING | 328,5 | 13,7 | 50,5 |
| FORMATION EVALUATION MWD | 1,5 | 0,1 | 0,2 |
| FORMATION EVALUATION LOGGING | 51,5 | 2,1 | 7,9 |
| FORMATION EVALUATION CORING | 21,5 | 0,9 | 3,3 |
| PLUG AND ABANDONMENT | 109,5 | 4,6 | 16,8 |
| DOWNTIME MOBILIZATION | 27,5 | 1,1 | 4,2 |
| DOWNTIME DRILLING | 66,0 | 2,8 | 10,1 |
| DOWNTIME FORM. EVAL. LOGGING | 1,5 | 0,1 | 0,2 |
| DOWNTIME PLUG AND ABANDONMENT | 15,0 | 0,6 | 2,3 |
| Sum: | 651,0 | 27,1 | |

Hole and casing record

| Hole | Track | Depth [m MD] | Casing/Tubing | Track | Depth [m MD] |
|---------|-------|--------------|---------------|-------|--------------|
| 36" | | 377,5 | 30" | | 374,0 |
| 26" | | 459,0 | 20" | | 397,6 |
| 17 1/2" | | 1608,0 | 13 3/8" | | 1598,0 |
| 12 1/4" | | 2917,0 | 9 5/8" | | 2912,0 |
| 8 1/2" | | 3440,0 | | | |

Well status: PERMANENTLY ABANDONED

Rig name: TRANSOCEAN ARCTIC

BRØNN 6507/11-6 DRILLING

Periode 09/2001

| EDI | TEKST | BOKFØRT | DAGRAPP | EVT. | NY BUDSJ. | OPPR. BUD | AVSETN. |
|-----|--------------------------------------|------------|-------------|------------|-------------|-------------|------------|
| | | TOTAL | ESTIMAT | KORR. | TOTAL | TOTAL | 09/2001 |
| 0 | EMPLOYEE RELATED COSTS | 4 062 163 | 4 983 750 | -421 587 | 4 562 163 | 6 268 000 | 500 000 |
| 1 | RIGCOSTS | 48368602 | 48 336 587 | 32 015 | 48 368 602 | 71 586 000 | 0 |
| 2 | RIG SUPPORT COSTS/REIMBURSAI | 1 283 168 | 5 048 774 | -1 765 606 | 3 283 168 | 3 966 468 | 2 000 000 |
| | | | | | | | 0 |
| 3A | FUEL/LUB | 2 403 164 | 1 356 250 | 1 046 914 | 2 403 164 | 1 940 000 | 0 |
| 3C | BITS | 1 860 562 | 2 132 604 | 0 | 2 132 604 | 2 096 694 | 272 042 |
| 3D | CASING/CASING EQUIPMENT | 6 292 220 | 4 881 337 | 1 900 680 | 6 782 017 | 4 881 336 | 489 797 |
| 3E | WELLHEAD/X-MASTREE | 1 422 034 | 1 560 766 | 0 | 1 560 766 | 1 410 766 | 138 732 |
| 3F | CEMENT/CEMENT ADDITIVES | 1 520 525 | 2 031 061 | 0 | 2 031 061 | 2 031 061 | 510 536 |
| 3G | MUD | 5 166 571 | 5 020 000 | 1 586 408 | 6 606 408 | 3 341 090 | 1 439 837 |
| 3G | CUTTING DISPOSAL | | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | 0 |
| 4B | CHARTERFLY | | 289 333 | | | 413 867 | 0 |
| 4C | OTHER TRANSPORTATION | 1 830 | 135 625 | 0 | 135 625 | 194 000 | 133 795 |
| 4D | STANDBY VESSEL | 1 132 599 | 1 898 750 | 0 | 1 898 750 | 2 134 000 | n/a |
| 4F | HELICOPTER TRANSPORTATION | 1 177 275 | 949 375 | 0 | 949 375 | 1 358 000 | n/a |
| 4G | POOL VESSEL -* | 7 169 101 | 6 512 500 | 0 | 6 512 500 | 6 710 000 | n/a |
| | | | | | | | 0 |
| 5A | CORING | 121 654 | 0 | 321 654 | 321 654 | 0 | 200 000 |
| 5B | DRILLING TOOLS | 0 | 550 134 | 0 | 550 134 | 472 586 | 550 134 |
| 5C | CUTTING OF CASING | | 584 183 | 0 | 584 183 | 584 183 | 584 183 |
| 5D | COMPLETION SERVICES | | 0 | 0 | 0 | 0 | 0 |
| 5E | PERFORATION | | 0 | 0 | 0 | 0 | 0 |
| 5F | MWD SERVICES | 3 038 032 | 2 224 869 | 1 813 163 | 4 038 032 | 2 262 269 | 1 000 000 |
| 5G | CASING OPERATIONS | 878 289 | 750 000 | 328 289 | 1 078 289 | 750 000 | 200 000 |
| 5H | MUD LOG - Noe tidsrel. + noe forbruk | 616 936 | 823 071 | 0 | 823 071 | 1 161 622 | 206 135 |
| 5H | MUD SERVICES | | 0 | 0 | 0 | 0 | 0 |
| 5I | CEMENTING SERVICES | 638 768 | 607 600 | 31 168 | 638 768 | 869 120 | 0 |
| 5J | ELECTRICAL LOGGING | 3 790 664 | 3 690 000 | 150 664 | 3 840 664 | 3 690 000 | 50 000 |
| 5K | VSP | | 700 000 | 0 | 700 000 | 700 000 | 700 000 |
| 5L | PROD TESTING | 798 325 | 167 616 | 630 709 | 798 325 | 239 761 | 0 |
| 5M | DIVING/ROV | 863 165 | 1 034 602 | 0 | 1 034 602 | 1 479 910 | 171 437 |
| 5N | RIGPOOL | 0 | 601 904 | 0 | 601 904 | 860 972 | 601 904 |
| 5N | DIVERSE | 1 632 018 | 2 724 040 | 0 | 2 724 040 | 2 724 040 | 1 092 022 |
| | | | | | | 0 | 0 |
| 6A | SITE SURVEY | 145 000 | 350 000 | | 350 000 | 350 000 | 205 000 |
| 6B | RIG POSITIONING | 395 200 | 500 000 | | 500 000 | 500 000 | 104 800 |
| 6C | DRILLING SITE CLEAN UP | | | | | 0 | 0 |
| | | | | | | 0 | 0 |
| 7 | WAREHOUSE COSTS | 2 701 959 | 1 627 500 | 1 274 459 | 2 901 959 | 2 328 000 | 200 000 |
| | | | | | 0 | | 0 |
| 8 | LAB COST | | 830 000 | | 830 000 | 830 000 | 830 000 |
| SUM | | 97 479 824 | 102 902 231 | 6 928 930 | 108 711 828 | 128 133 745 | 12 180 354 |

AVSETNING BORING 12 180 354
 AVS. KOMPLETTERING 0

TOTAL AVSETNING 12 180 354

BILAGSNUMMER:

DAILY REPORT ON WELL 6507/11-6

Daily report no : 1 **Date:** 2001-06-11
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

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

| | |
|-------|--|
| 08:00 | |
| 16:00 | In transit for well 6507/11-6. |
| 21:00 | First anchor no 8 on bottom 15:50 hrs. Ran a total of 5 anchors. |
| 23:59 | Waited on weather. |

Daily report no : 2 **Date:** 2001-06-12
Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0,00 sg

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

| | |
|-------|--------------------|
| 23:59 | Waited on weather. |
|-------|--------------------|

Daily report no : 3 **Date:** 2001-06-13
Midnight depth : 372 m MD **Estimated PP:** 1,03 sg **Mud weight:** 0,00 sg

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

| | |
|-------|--|
| 00:30 | Waited on weather. At the same time continued making up 36" bottom hole assembly. |
| 05:00 | Ran last 3 anchors. Pulled rig onto location and pretensioned anchors to 140 ton. At the same time ran in with 36" hole opener assembly to 280 m. Shallow tested MWD tool. Jumped ROV. |
| 23:59 | Tagged seabed at 315 m with 5 ton. Penetrated 3 m. Took survey, inclination 0,57 deg. Spudded well at 05:30 hrs and drilled 36" hole from 315 m to 372 m.. |

Daily report no : 4 **Date:** 2001-06-14
Midnight depth : 336 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,05 sg

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

| | |
|-------|--|
| 01:00 | Drilled 36" hole from 372 m to 375 m. |
| 01:30 | Circulated 30 m3 of hi-vis around and displaced it out with 1,50 sg bentonite mud. |
| 02:00 | Spotted bouys and transponder on seabed with ROV. |
| 03:30 | POOH with 36" hole opener assembly. No overpulls. Racked assembly in derrick. |
| 04:00 | Rigged up to run conductor. |
| 06:00 | Picked up shoe joint and ran 30" conductor. Installed running tool and landed in PGB on BOP transporter. |
| 07:00 | Ran 5" cement stinger in conductor. Installed conductor running tool. Ran and engaged same into conductor on BOP transporter |
| 09:30 | Ran 30" conductor on 5" landing string and stabbed into hole. |
| 11:30 | Attempted to pass 323 m with conductor. No success. |
| 12:00 | Pulled out with conductor. |
| 13:30 | Hung off conductor on BOP trolley. Laid out cement stinger. |
| 15:00 | Ran in with 36" hole opener assembly. Stabbed into hole. |
| 16:00 | Attempted to pass 323 m with 36" hole opener. No success. |
| 17:00 | Moved rig 10 m in direction 260 deg. |
| 17:30 | Tagged seabed at 315 m. Took survey. |
| 23:59 | Respudded well and drilled 36" hole from 313 m to 336 m. |

Daily report no : 5 **Date:** 2001-06-15
Midnight depth : 375 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,03 sg

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

| | |
|-------|---|
| 10:30 | Drilled 36" hole from 336-377,5 m. |
| 11:00 | Pumped 30 m3 HiVis pill and displaced hole with 50 m3 1.50 SG mud. |
| 11:30 | Pulled out to 325 m and topped up hole with 1.50 SG mud. ROV marked hole with 2 bouys. |
| 13:00 | Continued to pull out and racked BHA. |
| 15:00 | Held safety meeting. Made up 5" cement stinger & running tool. Ran in and stabbed into 30" casing. Ran in with 30" casing. |
| 16:30 | Stopped at 214 m and positioned rig. Stabbed in and landed guide base 1.5 m above seabed at 16:10 hrs. |
| 17:00 | Pressure tested surface equipment to 300 bar & pumped 10 m3 water with rig pumps. |
| 18:00 | Mixed and pumped 19 m3 1.56 SG lead slurry, and 19 m3 1.95 SG tail slurry. Displaced with 5.3 m3 seawater. Good indications of cement in returns. |
| 23:59 | Waited on cement. |

DAILY REPORT ON WELL 6507/11-6

Daily report no : 6 **Date:** 2001-06-16
Midnight depth : 459 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,40 sg

| Stop time | Description |
|-----------|---|
| 00:30 | Released weight and confirmed hard cement. Positioned rig and released 30" running tool. |
| 02:00 | Pulled out cement stinger and laid down 30" running tool. |
| 03:30 | Laid down 36" hole opener and bit. |
| 06:00 | Made up 26" BHA. |
| 06:30 | Tested MWD. |
| 07:30 | Made up cement head and racked same in derrick. |
| 08:00 | Run in 26" BHA. Positioned rig and stabbed in 30" wellhead. Continued to run in to 345 m. |
| 11:30 | Washed down from 345 m. Tagged cement at 372 m. Drilled hard cement from 372 m and through shoe at 375 m. |
| 17:00 | Drilled formation from 375 m-459 m. Pumped 5 m3 HiVis pill every stand. Boulders at 379 m, indications of scattered boulders. |
| 17:30 | Circulated bottoms. Pumped 20 m3 HiVis pill and pumped 25 m3 1.40 SG mud. |
| 18:00 | Wiper trip to 30" shoe. Ran back to bottom and displaced to 1.40 SG mud. |
| 20:30 | Pulled out. Topped up the hole from 370 m. Continued to pull out. Dumped MWD. |
| 21:00 | Cleaned rig floor. Rigged up for running casing. |
| 23:59 | Picked up casing shoe and tested same. Baker locked shoe and float joints. Ran in with 20" casing to 130 m. |

Daily report no : 7 **Date:** 2001-06-17
Midnight depth : 459 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,03 sg

| Stop time | Description |
|-----------|--|
| 02:00 | Picked up and installed wellhead. RIH 20" casing on landing string. Landed casing with shoe at 455 m and overpulled same 25 ton. |
| 04:00 | Attempted to circulate through cement head. No go. Trouble shoot same. |
| 05:00 | Ballasted rig 2.5 m to 27.5 m draft. Rigged up and prepared to disconnect cement head and single. |
| 06:00 | Held safe job meeting. Disconnected cement head and laid down same. Installed pre made pump in sub assy with dart above kelly cock. |
| 07:00 | Circulated 45 m3 seawater. |
| 09:00 | Mixed and pumped 16.9 m3 1.44 SG lead and 23 m3 1.95 SG tail slurry. Displaced same with rig pumps. Bumped plug with 21,65 m3. Pressure tested casing to 70 bar. Checked for backflow. Negative. |
| 10:00 | Waiting on cement. Bled back 400 ltr to BJ. Checked floats holding OK. |
| 11:30 | Released running tool. Pulled rig 20 m off wellhead. Pulled running tool and laid down same. |
| 16:00 | Held safe job meeting. Prepared to run BOP. Picked up termination spool and 2 riser joints. Skidded BOP and nipples up same. |
| 19:00 | Ran BOP stack and riser through splash zone. Tested kill & choke lines to 35/345 bar. |
| 23:59 | Ran BOP and riser. Tested kill & choke lines at 150 m and before picking up slip joint to 35/345 bar. Picked up slip joint at 23:00 hrs. |

Daily report no : 8 **Date:** 2001-06-18
Midnight depth : 487 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,40 sg

| Stop time | Description |
|-----------|--|
| 02:00 | Made up support ring, installed guide lines. Landed BOP at 01:40 hrs, locked connector and overpulled tested 20 ton. |
| 03:00 | Installed diverter assy. |
| 03:30 | Rigged down BOP handling equipment. |
| 05:00 | Made up BOP test plug w/1 stand HWDP below. Functioned test plug, RIH and landed same. |
| 07:30 | Closed MPR using accoustics and tested wellhead connector to 35/ 345 bar / 10 min. Tested kill & choke lines against failsafes to 345 bar with blue pod. Functioned BOPs with blue and yellow pod. |
| 08:00 | POOH test tool and laid down same. |
| 09:00 | Picked up cement head, backed out single and pup. Laid down cement head, single, pump in sub, x-over and pups. |
| 11:00 | Pressure tested drilling stand, top drive and kelly hose to 35/345 bar. Leak on lower kelly cock. Changed out same and retested 35 / 345 bar OK. |
| 13:30 | Made up 13 3/8" casing hanger, seal assy, running tool and cement plugs. |
| 14:00 | Laid down 26" bit and stabiliser. |
| 15:00 | Made up 17 1/2" BHA. |
| 15:30 | Initialized MWD-tool. |
| 17:30 | Continued to make up 17 1/2" BHA and RIH to 435 m. |
| 18:00 | Filled string, circulated and tested MWD tool, washed down and tagged float collar at 441 m. |
| 18:30 | Performed kick drill. |
| 20:00 | Drilled out floats and hard cement from 442-454 m. |
| 20:30 | Drilled out 20" casing shoe at 454 m and shoe track to 459 m. Drilled 3 m new formation from 459-462 m. |
| 21:30 | Pumped 10 m3 HiVis pill and circulated hole clean. Spotted 5 m3 LCM pill at TD. |

DAILY REPORT ON WELL 6507/11-6

Daily report no : 8 **Date:** 2001-06-18
Midnight depth : 487 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,40 sg

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

| | |
|-------|---|
| 22:30 | Pressure tested test lines to 70 bar. Performed LOT to 1.41 SG EMW. |
| 23:00 | Displaced hole to 1.30 SG KCl mud. |
| 23:59 | Drilled 17 1/2" hole from 462-487 m. |

Daily report no : 9 **Date:** 2001-06-19
Midnight depth : 1335 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,30 sg

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

| | |
|-------|--|
| 01:00 | Continued to drill 17 1/2" hole from 487-504 m. Flowchecked 10 min due to drill break. |
| 02:30 | Circulated bottoms up. Max gas 1.32%. Shut off pumps 10 min. Circulated bottoms up. Max gas 0.45%. |
| 23:59 | Continued drilling 17 1/2" hole from 504-1335 m. Flowcheck after drilling break at 707 m, well static. Max gas 6.7%. |

Daily report no : 10 **Date:** 2001-06-20
Midnight depth : 1591 m MD **Estimated PP:** 1,10 sg **Mud weight:** 1,31 sg

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

| | |
|-------|--|
| 04:00 | Continued drilling 17 1/2" hole from 1335 m -1467 m. Flow checked at 1419 m due to possible pit gain. Negative. At 1465 m observed pressure drop of 23 bar and reduced torque from 10-14 kNm to 1-2 kNm. |
| 05:30 | Checked mud motor while circulating hole clean. No change in pressure on/off bottom. |
| 12:00 | Flow checked. POOH from 1465 m to surface. |
| 12:30 | Laid out motor and bit. |
| 14:00 | Made up cement head to landing string and racked in derrick. |
| 17:30 | Made up new motor on bottom hole assembly and ran in hole to 1435 m. |
| 18:30 | Washed down from 1435 m to 1465 m. Drilled 17 1/2" hole from 1465 m to 1485 m. |
| 21:00 | Circulated with 800-1100 lpm due to heavy loading on shakers. |
| 23:59 | Drilled 17 1/2" hole from 1485 m to 1591 m. |

Daily report no : 11 **Date:** 2001-06-21
Midnight depth : 1608 m MD **Estimated PP:** 1,10 sg **Mud weight:** 1,30 sg

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

| | |
|-------|--|
| 00:30 | Drilled 17 1/2" hole from 1591 m to 1608 m. |
| 03:00 | Circulated hole clean. |
| 05:30 | POOH with 17 1/2" bottom hole assembly from 1608 m to 454 m. |
| 06:00 | Circulated bottoms up at 20" casing shoe. |
| 08:00 | POOH from 454 m. Racked bottom hole assembly. Laid out bit and motor. |
| 10:00 | Made up retrieving tool. Ran in hole, washed wellhead and retrieved bore protector. POOH and laid out protector and retrieving tool. |
| 11:30 | Rigged up to run 13 3/8" casing. Held pre-job safety meeting. |
| 22:00 | Ran 13 3/8", 72 lbs/ft, L-80 casing to 1289 m. |
| 22:30 | Installed 13 3/8" hanger. |
| 23:59 | Ran 13 3/8" casing on landing string. Broke circulation on cement stand and landed in wellhead with 5 ton setdown weight. Confirmed depth with Vetco line. |

Daily report no : 12 **Date:** 2001-06-22
Midnight depth : 1608 m MD **Estimated PP:** 1,10 sg **Mud weight:** 1,30 sg

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

| | |
|-------|--|
| 01:00 | Circulated casing volume with 2300 lpm. No losses. |
| 03:00 | Pressure tested surface lines to 345 bar. Pumped 10 m3 of freshwater. Dropped ball. Mixed and pumped 29 m3 gastight 1,56 SG lead slurry followed by 36,4 m3 1,92 SG tail slurry. Dropped dart and displaced same from cement unit to shear plug. |
| 04:00 | Displaced cement from rig pumps with 2500 lpm. Bumped plug and pressure tested casing to 220 bar. Casing shoe at 1602 m. Lost 14 m3 mud during displacement. |
| 05:00 | Set seal assembly and pressure tested same. |
| 08:00 | Tested BOP. |
| 09:30 | POOH with casing running tool. Re-dressed and laid out same. |
| 11:00 | Installed wear bushing. |

DAILY REPORT ON WELL 6507/11-6

Daily report no : 12 **Date:** 2001-06-22
Midnight depth : 1608 m MD **Estimated PP:** 1,10 sg **Mud weight:** 1,30 sg

| Stop time | Description |
|-----------|--|
| 11:30 | Picked up casing running tool. Broke out 2 x-overs and laid all out. |
| 13:30 | Laid out 17 1/2" bottom hole assembly. |
| 14:30 | Picked up motor, 12 1/4" bit, float sub 12 1/4" stabilizer and CDR. |
| 15:30 | Broke off x-over at bottom of back up CDR. No lifting sub with correct threads available to continue picking up Anadrill equipment.. |
| 17:00 | Continued making up downhole logging assembly. |
| 18:00 | Shallow tested MWD. Installed radioactive sources. |
| 19:00 | Ran in hole with 12 1/4" motor assembly to 350 m. |
| 19:30 | Loaded cement head and racked in derrick. |
| 21:00 | Ran in hole with 12 1/4" motor assembly from 350 m to 1534 m. |
| 22:00 | Performed slip and cut of drilling line. |
| 22:30 | Washed down to tag cement at 1560 m. |
| 23:30 | Performed choke drill. |
| 23:59 | Drilled on cement plugs. |

Daily report no : 13 **Date:** 2001-06-23
Midnight depth : 2242 m MD **Estimated PP:** 1,32 sg **Mud weight:** 1,60 sg

| Stop time | Description |
|-----------|---|
| 03:00 | Continued drilling cement plugs. |
| 04:30 | Drilled float equipment and firm cement from 1563 m to 1602 m. |
| 05:00 | Cleaned out rathole to 1608 m and drilled new formation to 1611 m |
| 07:00 | Circulated clean and to even mudweight. Spotted 5 m3 LCM pill in open hole. |
| 08:00 | Performed LOT to 1,81 EMW. |
| 11:00 | Displaced well, kill, choke and booster lines to 1,6 SG oilbase mud. |
| 23:59 | Drilled 12 1/4" hole from 1611 m to 2242 m. |

Daily report no : 14 **Date:** 2001-06-24
Midnight depth : 2917 m MD **Estimated PP:** 1,13 sg **Mud weight:** 1,60 sg

| Stop time | Description |
|-----------|---|
| 08:30 | Drilled 12 1/4" hole from 2242 m to 2630 m. ROP +/- 100 m/hr. |
| 14:00 | Drilled 12 1/4" hole from 2630 m to 2735 m with 25 m/hr. looking for Lysing sand. |
| 15:30 | Drilled 12 1/4" hole from 2735 m to 2812 m. ROP +/- 100 m/hr. |
| 16:30 | Changed leaking wash pipe. |
| 17:30 | Orientated hole from 2812 m to 2831 m. |
| 20:30 | Drilled 12 1/4" hole from 2831 m to 2917 m. Section TD. |
| 23:00 | Circulated hole clean with 150 rpm, 2750 lpm/310 bar. |
| 23:59 | POOH 5 stands wet. Hole condition good. Pumped slug. Continued POOH to 2328 m. |

Daily report no : 15 **Date:** 2001-06-25
Midnight depth : 2917 m MD **Estimated PP:** 1,13 sg **Mud weight:** 1,60 sg

| Stop time | Description |
|-----------|--|
| 02:30 | Continued POOH with 12 1/4" motor assembly from 2328 m to 65 m. |
| 03:30 | Held safety meeting and removed radioactive sources. |
| 05:30 | Laid out 12 1/4" bottom hole assembly. |
| 07:00 | Picked up 9 5/8" hanger, made up to running tool and racked in derrick. |
| 09:00 | Made up retrieving tool. Ran in hole and washed well head area. Engaged wear bushing and took index line measurements. Retrieved wearbushing and POOH. |
| 10:00 | Held pre-job safety meeting and rigged up to run casing. |
| 20:00 | Commenced running 9 5/8" casing. Checked float equipment and ran in hole from surface to previous casing shoe at 1602 m. |
| 23:59 | Ran 9 5/8" casing in open hole from 1602 m to 2391 m. |

DAILY REPORT ON WELL 6507/11-6

Daily report no : 16 **Date:** 2001-06-26
Midnight depth : 2917 m MD **Estimated PP:** 1,13 sg **Mud weight:** 1,60 sg

| Stop time | Description |
|-----------|---|
| 01:00 | Continued running in hole with 9 5/8" casing from 2391 m to 2590 m. |
| 01:30 | Made up 9 5/8" x 18 3/4" casing hanger. |
| 03:00 | Ran in hole with casing hanger on landing string. |
| 03:30 | Established circulation with 500 lpm through string and 400 lpm through choke and kill line. Attempted to land hanger. Stood up with 25 ton at 2907 m. Attempted to land without pumping. No go. |
| 04:30 | Pulled hanger above BOP and established circulation in increments to 1400 lpm/56 bar. Full returns. |
| 09:30 | Washed down from 2895 m to 2900 m with 1400 lpm/56 bar. Increased circulating rate to 1500 lpm/66 bar. Washed and worked string down to 2910 m. Losses from 2910 m to land 200 lpm. When casing landed with shoe at 2913 m, lost returns. |
| 10:00 | Attempted to pump spacer through kelly hose and cement hose. No success, obstruction in flow path. |
| 12:00 | Pressure tested cement line to 345 bar. Pumped 15 m3 weighed spacer through topdrive. Mixed and pumped 16,6 m3 1,75 sg lead cement followed by 7,3 m3 1,90 sg tail cement. |
| 13:30 | Displaced from cement pump with 2300 l. Good indication of shearing wiper plug. Displaced wiper plug with 2300 lpm from rigpumps. No returns but good indication of cement entering annulus. Did not bump plug. |
| 15:00 | Set 9 5/8" seal assembly. Attempted to pressure test same. No go. Picked up 3 m, got 15 ton over pull. Washed well head and re-landed seal assembly. Re-set seal assembly and attempted to test same. No success. |
| 16:30 | POOH with casing hanger running tool. Seal assembly accidentally left in hole. |
| 18:00 | Made up and ran in hole with seal assembly retrieving tool. Washed well head area and engaged seal assembly. Pulled seal assembly free with 7 ton over pull and POOH. Lock ring and resilient seal accidentally left in hole. |
| 20:30 | Dressed up mill & flush tool and ran in hole with same. Performed mill & flush while circulating riser volume twice. POOH. Found whole lock ring on top of tool. No indications on mill & flush tool have bottomed out. |
| 22:00 | Performed another mill & flush run. Set down weight 10 ton. POOH. No indication of bottoming out of tool. |
| 23:00 | Ran in hole 5 stands HWDP below mill & flush tool. Painted single above white. |
| 23:59 | Ran in hole and performed mill & flush. Before pulling out, closed middle pipe ram on pipe. POOH. Indicators on tool confirmed bottoming out of tool. |

Daily report no : 17 **Date:** 2001-06-27
Midnight depth : 2989 m MD **Estimated PP:** 1,13 sg **Mud weight:** 1,25 sg

| Stop time | Description |
|-----------|--|
| 01:00 | Laid out mill & flush tool. POOH with HWDP and racked same. |
| 02:00 | Made up seal assembly on running tool. Ran in hole and landed same. Verified depth. |
| 02:30 | Flushed lines, closed rams and set seal assembly with 345 bar. Bled off pressure. |
| 03:00 | Pressure tested seal assembly to 35/345 bar. OK. |
| 04:00 | POOH with running tool and laid out same. Continued POOH with 5 stands HWDP and racked same. |
| 05:30 | Ran in hole and installed wear bushing. |
| 06:30 | Laid out cement head. |
| 07:00 | Laid out 8" jar and 2 pcs 8" drill collars |
| 09:00 | Picked up 8 1/2" bit, LWD assembly and MWD. Shallow tested tools and installed radioactive sources. |
| 10:00 | Picked up 11 drill collars and 6 1/2" jar from deck. Pressure tested well against shear ram to 340 bar. OK. |
| 13:30 | Ran in hole with 8 1/2" drilling assembly from 139 m to 2838 m. |
| 14:30 | Washed down from 2838 m to tag cement at 2845 m. Performed kill and choke drill. |
| 15:00 | Drilled wiperplug. |
| 17:00 | Drilled firm cement from 2846 m to 2873 m. Drilled float and washed down to 2888 m. Drilled soft cement from 2888 m to shoe at 2912 m. |
| 17:30 | Drilled shoe at 2913 m and cleaned out rathole to 2917 m. |
| 19:00 | Drilled 3 m virgin formation and circulated hole clean with even mud weight in/out. |
| 20:00 | Pulled into shoe and performed FIT to 1,45 sg EMW: |
| 23:59 | Drilled 8 1/2" hole from 2920 m to 2989 m. |

Daily report no : 18 **Date:** 2001-06-28
Midnight depth : 3064 m MD **Estimated PP:** 1,13 sg **Mud weight:** 1,25 sg

| Stop time | Description |
|-----------|---|
| 02:30 | Drilled 8 1/2" hole from 2989 m to 3036 m. |
| 03:30 | Circulating bottoms up for sample. |
| 08:00 | Flow checked well and POOH. |
| 08:30 | Recovered radioactive sources and racked assembly in derrick. |
| 10:00 | Held pre-job safety meeting. Picked up 30 m core barrel with aluminum inner barrels and 8 1/2" core head. |
| 13:30 | Made up float, drill collars and jar. Ran in hole to 3005 m. |
| 14:00 | Washed down from 3005 m to TD with 1770 lpm/125 bar. |

DAILY REPORT ON WELL 6507/11-6

Daily report no : 18 **Date:** 2001-06-28
Midnight depth : 3064 m MD **Estimated PP:** 1,13 sg **Mud weight:** 1,25 sg

| Stop time | Description |
|-----------|--|
| 14:30 | Dropped ball and circulated same down with 1000 lpm/49 bar. |
| 15:30 | Cut core from 3036 m to 3064 m with 1000 lpm and 100 rpm. |
| 16:00 | Circulated gas below 1 pct. Flow checked well and pumped slug. |
| 20:00 | POOH with core barrel from 3064 m. |
| 22:00 | Held pre-job safety meeting. Recovered core and laid out inner barrels. Broke out bit and laid out core barrels. |
| 23:30 | Ran 8 1/2" bottom hole assembly from derrick. Initialized tools and installed radioactive sources. |
| 23:59 | Ran in hole with 8 1/2" drilling assembly to 250 m. |

Daily report no : 19 **Date:** 2001-06-29
Midnight depth : 3385 m MD **Estimated PP:** 1,13 sg **Mud weight:** 1,25 sg

| Stop time | Description |
|-----------|--|
| 02:30 | Continued running in hole with 8 1/2" drilling assembly from 255 m to 2185 m. |
| 03:00 | Slipped and cut drilling line. |
| 04:00 | Ran in hole from 2185 m to 3030 m. |
| 04:30 | Reamed down logging from 3030 m to 3043 m with 60 m/hr. |
| 05:00 | Wash pipe leaked. Pulled back to 3015 m, installed swivel and circulated while changing wash pipe. |
| 06:00 | Reamed down logging from 3040 m to 3064 m with 60 m/hr. |
| 12:00 | Drilled 8 1/2" hole from 3064 m to 3202 m. |
| 12:30 | Changed leaking wash pipe. |
| 17:00 | Drilled 8 1/2" hole from 3202 m to 3322 m. |
| 17:30 | Changed leaking wash pipe. |
| 19:00 | Drilled 8 1/2" hole from 3322 m to 3343 m. |
| 19:30 | Changed leaking wash pipe. |
| 23:59 | Drilled 8 1/2" hole from 3343 m to 3385 m. |

Daily report no : 20 **Date:** 2001-06-30
Midnight depth : 3440 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,25 sg

| Stop time | Description |
|-----------|---|
| 07:00 | Drilled 8 1/2" hole from 3385 m to 3440 m, TD. |
| 09:00 | Circulated hole clean. |
| 13:30 | POOH with drilling assembly from 3440 m to 65 m. |
| 14:30 | Recovered radioactive sources. Laid out all bottom hole assembly. |
| 16:30 | Prepared for logging job. Rigged up wireline sheaves. |
| 19:00 | Ran in hole with MDT tool. |
| 23:59 | Logged MDT. |

Daily report no : 21 **Date:** 2001-07-01
Midnight depth : 3440 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,25 sg

| Stop time | Description |
|-----------|---|
| 03:30 | Started flushing for sample at 3035 m and filled 4x450 cc bottles with gas. |
| 07:30 | Changed station to 3060 m for sample. Filled 1x1 gal. and 3x450 cc bottles with oil/condensate. |
| 09:30 | Moved to last sample station at 3075 m and sampled 1x 1gal. and 4x450 cc. water. |
| 12:00 | POOH and laid out MDT tool. |
| 13:00 | Made up MSCT tool. |
| 13:30 | Ran in hole to 1000 m. |
| 15:00 | Not able to test MSCT tool. POOH and changed to back-up tool. Ran in hole to 1000 m. |
| 16:00 | Ran in hole to first core point. |
| 21:30 | Cored 27 side wall cores. |
| 23:59 | POOH with MSCT and laid out same. |

DAILY REPORT ON WELL 6507/11-6

Daily report no : 22 **Date:** 2001-07-02
Midnight depth : 3440 m MD **Estimated PP:** 1,03 sg **Mud weight:** 1,25 sg

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

| | |
|-------|---|
| 02:00 | Made up VSP/DSI tool. |
| 04:00 | Ran in hole with VSP/DSI tool. |
| 07:00 | Logged DSI. |
| 17:00 | Performed VSP logging. |
| 18:00 | POOH with VSP logging string. |
| 19:30 | Laid out logging tools and rigged down sheaves. |
| 21:30 | Ran in hole to 285 m while picking up 30 joint 3 1/2" drill pipe from deck. |
| 23:59 | Ran in hole with cement stinger from 285 m to 2390 m. |

Daily report no : 23 **Date:** 2001-07-03
Midnight depth : 3440 m MD **Estimated PP:** sg **Mud weight:** 1,25 sg

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

| | |
|-------|---|
| 01:00 | Ran in hole with cement stinger to 3440 m. |
| 03:30 | Circulated and conditioned mud to gas free. |
| 04:30 | Continued circulating and conditioning mud. |
| 05:00 | Lined up for reverse circulating and established circulating rare. |
| 06:00 | Pumped 5 m3 soap spacer, 9,1 m3 1,9 sg Silica cement and drill water to balance. |
| 07:00 | Spotted cement plug no 1 from 3440 m to 3190 m. POOH slowly to 3190 m. |
| 08:00 | Reverse circulated clean. |
| 09:30 | Lined up for conventional circulation. Pumped 5 m3 soap spacer, 9,1 m3 1,90 sg silica cement and drillwater to balance. Displaced with rig pumps and spotted plug no 2 from 3190 m to 2940 m. |
| 10:00 | POOH slowly from 3190 m to 2940 m. |
| 11:00 | Reverse circulated out excess cement and spacer. |
| 12:30 | Lined up for conventional circulation. Pumped 5 m3 soap spacer, 7,2 m3 1,90 sg G-neat cement and drill water to balance. Displaced with rig pumps to spot cement plug no 3 from 2938 m to 2750 m. |
| 13:30 | POOH slowly from 2938 m to 2750 m. |
| 14:30 | Reverse circulated clean. |
| 18:00 | POOH with cement stinger. |
| 21:00 | Ran in hole with 8 1/2" bit to 2739 m. |
| 22:00 | Washed down with 500 lpm from 2739 m to 2800 m. Ran in without pumping to 2808 m. No tag. |
| 23:30 | POOH to 2100 m. |
| 23:59 | Waited on cement. |

Daily report no : 24 **Date:** 2001-07-04
Midnight depth : 3440 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

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

| | |
|-------|--|
| 01:30 | Continued waiting on cement. |
| 02:30 | Ran in hole and tagged cement with 10 ton at 2840 m. |
| 03:30 | POOH to 1700 m. |
| 04:00 | Pumped 1,6 sg Hi-vis pill and spotted same from 1700 m to 1500 m. |
| 04:30 | POOH slowly to 1500 m. |
| 05:30 | Displaced well to 1,6 sg mud with 2700 lpm/160 bar. |
| 07:00 | POOH with 8 1/2" bit. |
| 09:30 | Made up wear bushing retrieving tool. Ran in hole, released wear bushing and retrieved same to surface. |
| 11:00 | Ran in hole with multi purpose tool. Engaged and released seal assy with 10 ton o/p and closed annular preventer. Gained 300 l on flow check. Circulated through choke line. |
| 12:00 | Opened BOP. Flow check OK. POOH with seal assembly and laid out same. |
| 13:30 | Ran in hole with 9 5/8" casing cutter assembly to 987 m. |
| 15:00 | Made up marine swivel and continued running in hole to land off in well head. |
| 15:30 | Cut 9 5/8" casing at 1404 m. |
| 18:00 | POOH with casing cutter. |
| 18:30 | Made up 9 5/8" spear assembly. |
| 19:30 | Ran in hole and engaged spear in well head. Pulled casing free with 30 ton over pull. |
| 20:30 | Circulated bottoms up. |
| 21:30 | POOH with casing spear and casing to 1078 m. |
| 22:00 | Released spear and laid out same. Racked BHA in derrick. |
| 22:30 | Prepared to retrieve 9 5/8" casing. Performed safety meeting. |

DAILY REPORT ON WELL 6507/11-6

Daily report no : 24 **Date:** 2001-07-04
Midnight depth : 3440 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

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

| | |
|-------|---------------------------------------|
| 23:59 | Retrieved and laid out 9 5/8" casing. |
|-------|---------------------------------------|

Daily report no : 25 **Date:** 2001-07-05
Midnight depth : 3440 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

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

| | |
|-------|---|
| 01:00 | Continued to retrieve and lay out 9 5/8" casing. |
| 02:00 | Installed flush mounted spider and casing Modem. |
| 06:00 | Completed retrieval and laying out of 9 5/8" casing. |
| 06:30 | Rigged down casing handling equipment and cleared rig floor. |
| 10:30 | Made up BJ Parabow and RIH on 5" drill pipe. |
| 11:00 | Dropped ball and circulated down to tool. Set Parabow. |
| 12:00 | Pumped 7 m3 MSG spacer, 15.5 m3 1.90 sg cement and displaced with 9.15 m3 mud to balance. |
| 13:00 | POOH slowly from 1500m to 1200m. |
| 14:00 | Circulated well clean conventionally. Bottoms up + 1000 strokes. |
| 15:30 | POOH and lay down Parabow sleeve. |
| 18:30 | Waited on cement. |
| 20:00 | Waited on cement. |
| 22:00 | Made up 12 1/4" bit and RIH to 1150m. |
| 23:00 | Performed slip and cut of drilling line. |
| 23:59 | Waited on cement. |

Daily report no : 26 **Date:** 2001-07-06
Midnight depth : 3440 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

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

| | |
|-------|--|
| 01:00 | RIH to 1208m and washed down at 400 l/min. Tagged hard cement at 1290m with 10 T. Circulated 2500 l/min for 10 mins. |
| 01:30 | Pressure tested cement plug to 103 bar. |
| 03:00 | Displaced 1.60sg OBM from the well with 1.30sg KCl water based mud. |
| 05:00 | POOH and laid out 12 1/4" bit. |
| 06:00 | Made up and RIH with 13 3/8" casing cutting assembly. |
| 06:30 | Cut 13 3/8" casing at 434m. Flowchecked well. |
| 08:00 | POOH with 13 3/8" casing cutter and racked back in derrick. |
| 08:30 | RIH with 13 3/8" casing spear and engaged casing. Pulled casing free with 70T overpull. |
| 09:00 | Attempted to circulate bottoms up. Hole packed off. Unable to regain circulation. Pumped slug. |
| 10:00 | Pulled casing to surface. Released and racked back spear. |
| 12:00 | Rigged up and laid out 13 3/8" casing. Rigged down. |
| 13:30 | Made up Parabow cementing tool and RIH on 5" drill pipe. |
| 14:00 | Dropped ball and set Parabow. |
| 16:00 | Displaced well and choke, kill and booster lines to seawater. |
| 17:00 | Mixed and pumped 24 m3 of 1.92sg cement and displaced to balance. |
| 18:00 | POOH and laid out Parabow setting tool. |
| 19:30 | Waiting on cement. |
| 20:00 | Made up 17 1/2" bit on 8" DC's and racked back in the derrick. |
| 21:00 | Waiting on cement. |
| 21:30 | Waiting on cement. |
| 22:00 | RIH with 17 1/2" bit to top of BOP stack. |
| 23:00 | Closed shear rams and tested cement plug to 87bar. |
| 23:30 | RIH, washed down and tagged top of cement plug with 10T at 354m. |
| 23:59 | POOH with 17 1/2" bit. |

Daily report no : 27 **Date:** 2001-07-07
Midnight depth : 0 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

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

| | |
|-------|--|
| 00:30 | Completed POOH and laid out 17 1/2" bit, bit sub and crossover. |
| 16:00 | Prepared, unlatched and pulled BOP stack. Moved stack to setback area and laid down BOP / riser handling equipment.. |

DAILY REPORT ON WELL 6507/11-6

Daily report no : 27 **Date:** 2001-07-07
Midnight depth : 0 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

| Stop time | Description |
|------------------|---|
| 18:30 | Made up 20" / 30" casing cutter assembly, run down and stab into the wellhead. |
| 20:30 | Cut 20" / 30" casing 5m below seabed. |
| 21:30 | Attempted to engage MOST tool - unable to do so. |
| 22:30 | Pulled MOST tool to moonpool for examination. |
| 23:00 | Found tool to be packed with metal swarf. Cleaned out tool and prepared for re-running. |
| 23:30 | Ran into seabed and stabbed into wellhead. |
| 23:59 | Engaged wellhead with MOST tool and pulled clear of seabed with 10T overpull. |

Daily report no : 28 **Date:** 2001-07-08
Midnight depth : 0 m MD **Estimated PP:** sg **Mud weight:** 1,60 sg

| Stop time | Description |
|------------------|---|
| 11:00 | Pulled anchors on 6507/11-6 location. Rig released from well on last anchor bolstered at 1100 hrs 8/7/01. |
| 23:59 | |

TIME DISTRIBUTION

Well: 6507/11-6 PO: 1 Start date: 1980-01-01 Rig: TRANSOCEAN ARCTIC Depth: 3440,0 m MD
 All sections Stop date: 2001-10-23

| Operations | Hours | % | Hours | % | Acc. total |
|--------------------------------------|-------|-------|-------|-------|------------|
| MOBILIZATION | | | | | |
| MOVING | 8,0 | 1,23 | | | |
| MOORING; RUNNING ANCHORS | 9,5 | 1,46 | | | |
| MOORING; PULLING ANCHORS | 11,0 | 1,69 | | | |
| Sum..... | | | 28,5 | 4,38 | 28,5 |
| DRILLING | | | | | |
| BHA HANDLING/TESTING | 20,5 | 3,15 | | | |
| EQUIPMENT TEST | 2,5 | 0,38 | | | |
| MWD HANDLING/TESTING/SURVEYING | 1,5 | 0,23 | | | |
| TRIPPING IN CASED HOLE | 18,0 | 2,76 | | | |
| TRIPPING IN OPEN HOLE | 11,0 | 1,69 | | | |
| DRILLING | 126,0 | 19,35 | | | |
| OTHER | 1,5 | 0,23 | | | |
| CIRC. AND COND. MUD/HOLE | 20,0 | 3,07 | | | |
| CASING HANDLING/TESTING | 8,0 | 1,23 | | | |
| RUNNING CASING IN CASED HOLE | 15,0 | 2,30 | | | |
| RUNNING CASING IN OPEN HOLE | 31,5 | 4,84 | | | |
| PRIMARY CEMENTING | 20,5 | 3,15 | | | |
| TRIPPING FOR CEMENT JOB | 5,5 | 0,84 | | | |
| DRILLING OUT CEMENT PLUG | 8,0 | 1,23 | | | |
| FORMATION STRENGTH TESTING | 3,0 | 0,46 | | | |
| BOP HANDLING | 4,5 | 0,69 | | | |
| BOP RUNNING/RETRIEVING | 11,5 | 1,77 | | | |
| BOP TESTING | 9,0 | 1,38 | | | |
| WELLHEAD EQUIPMENT HANDLING | 9,5 | 1,46 | | | |
| SLIP AND CUT DRILLING LINE | 1,5 | 0,23 | | | |
| Sum..... | | | 328,5 | 50,46 | 357,0 |
| FORMATION EVALUATION MWD | | | | | |
| LOGGING WITH MWD | 1,5 | 0,23 | | | |
| Sum..... | | | 1,5 | 0,23 | 358,5 |
| FORMATION EVALUATION LOGGING | | | | | |
| LOGGING | 3,0 | 0,46 | | | |
| LOGGING EQUIPMENT HANDLING/TESTING | 5,5 | 0,84 | | | |
| FORMATION TESTER | 17,0 | 2,61 | | | |
| SIDEWALL CORING | 9,5 | 1,46 | | | |
| VERTICAL SEISMIC | 16,5 | 2,53 | | | |
| Sum..... | | | 51,5 | 7,91 | 410,0 |
| FORMATION EVALUATION CORING | | | | | |
| BHA HANDLING/TESTING | 2,0 | 0,31 | | | |
| CIRCULATING FOR SAMPLE | 1,0 | 0,15 | | | |
| TRIPPING IN CASED HOLE | 12,5 | 1,92 | | | |
| CORING EQUIPMENT/CORE HANDLING | 3,5 | 0,54 | | | |
| CORING | 1,0 | 0,15 | | | |
| CIRC. AND COND. MUD/HOLE | 1,5 | 0,23 | | | |
| Sum..... | | | 21,5 | 3,30 | 431,5 |
| PLUG AND ABANDONMENT | | | | | |
| BHA HANDLING/TESTING | 0,5 | 0,08 | | | |
| TRIPPING IN CASED HOLE | 15,0 | 2,30 | | | |
| WELLHEAD EQUIPMENT INSTALLATION | 2,5 | 0,38 | | | |
| CIRC. AND COND. MUD/HOLE | 6,5 | 1,00 | | | |
| CASING HANDLING/TESTING | 3,0 | 0,46 | | | |
| TRIPPING FOR CEMENT JOB | 18,0 | 2,76 | | | |
| BOP RUNNING/RETRIEVING | 15,5 | 2,38 | | | |
| WELLHEAD EQUIPMENT HANDLING | 2,5 | 0,38 | | | |
| SET CEMENT PLUG | 19,0 | 2,92 | | | |
| TRIPPING OF CASING CUTTING EQUIPMENT | 9,0 | 1,38 | | | |
| CUT CASING/WELLHEAD | 3,0 | 0,46 | | | |

TIME DISTRIBUTION

Well: 6507/11-6 **PO:** 1 **Start date:** 1980-01-01 **Rig:** TRANSOCEAN ARCTIC **Depth:** 3440,0 m MD
All sections **Stop date:** 2001-10-23

| Operations | Hours | % | Hours | % | Acc. total |
|---|--------------|----------|--------------|----------|-------------------|
| PLUG AND ABANDONMENT | | | | | |
| CASING RETRIEVING | 14,0 | 2,15 | | | |
| SLIP AND CUT DRILLING LINE | 1,0 | 0,15 | | | |
| Sum. | | | 109,5 | 16,82 | 541,0 |
| DOWNTIME MOBILIZATION | | | | | |
| WAITING | 27,5 | 4,22 | | | |
| Sum. | | | 27,5 | 4,22 | 568,5 |
| DOWNTIME DRILLING | | | | | |
| EQUIPMENT FAILURE AND REPAIR | 33,0 | 5,07 | | | |
| OTHER | 28,5 | 4,38 | | | |
| WIPER TRIP | 4,5 | 0,69 | | | |
| Sum. | | | 66,0 | 10,14 | 634,5 |
| DOWNTIME FORM. EVAL. LOGGING | | | | | |
| EQUIPMENT FAILURE AND REPAIR | 1,5 | 0,23 | | | |
| Sum. | | | 1,5 | 0,23 | 636,0 |
| DOWNTIME PLUG AND ABANDONMENT | | | | | |
| EQUIPMENT FAILURE AND REPAIR | 3,0 | 0,46 | | | |
| WAITING | 12,0 | 1,84 | | | |
| Sum. | | | 15,0 | 2,30 | 651,0 |
| Reported time (100,0 % of well total 651,0 hours) : | | | | | 651,0 |

HOLE DEVIATION

Well: 6507/11-6 **Reference point:** RKB ; 24,0 m ABOVE MSL
Waterdepth: 291,0 m **Vertical to:** 314,9 m **Total Depth:** 3440,0 m MD
Utm zone: 32 **Central Median:** 9' E **Horizontal datum:** ED50
Template Centre Coordinates, UTM: **North :** m, **East:** m
Wellhead Coordinates, UTM: **North :** 7211708,40 m, **East:** 425288,60 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] | | | | |
| 315,0 | 0,00 | 0,00 | MWD | 1 | 315,0 | 0,00 | 0,00 | 0,0 | 0,00 | 0,00 | 0,00 |
| 329,3 | 0,20 | 285,20 | MWD | 1 | 329,3 | 0,01 | -0,02 | 0,0 | 0,42 | 0,42 | -156,92 |
| 339,4 | 0,50 | 254,80 | MWD | 1 | 339,4 | -0,00 | -0,08 | 0,1 | 1,02 | 0,89 | -90,30 |
| 348,6 | 0,70 | 212,60 | MWD | 1 | 348,6 | -0,06 | -0,15 | 0,2 | 1,53 | 0,65 | -137,61 |
| 358,1 | 1,00 | 209,80 | MWD | 1 | 358,1 | -0,18 | -0,23 | 0,3 | 0,96 | 0,95 | -8,84 |
| 367,4 | 0,70 | 220,20 | MWD | 1 | 367,4 | -0,29 | -0,30 | 0,4 | 1,08 | -0,97 | 33,55 |
| 380,0 | 0,80 | 228,70 | MWD | 1 | 380,0 | -0,41 | -0,42 | 0,6 | 0,36 | 0,24 | 20,24 |
| 409,8 | 1,20 | 236,70 | MWD | 1 | 409,8 | -0,72 | -0,83 | 1,1 | 0,43 | 0,40 | 8,05 |
| 439,2 | 0,90 | 240,60 | MWD | 1 | 439,2 | -1,00 | -1,29 | 1,6 | 0,31 | -0,31 | 3,98 |
| 498,1 | 0,60 | 226,50 | MWD | 1 | 498,1 | -1,44 | -1,92 | 2,4 | 0,18 | -0,15 | -7,18 |
| 558,2 | 0,60 | 236,70 | MWD | 1 | 558,2 | -1,83 | -2,41 | 3,0 | 0,05 | 0,00 | 5,09 |
| 586,1 | 0,60 | 241,30 | MWD | 1 | 586,1 | -1,98 | -2,66 | 3,3 | 0,05 | 0,00 | 4,95 |
| 615,4 | 0,50 | 237,10 | MWD | 1 | 615,4 | -2,12 | -2,90 | 3,6 | 0,11 | -0,10 | -4,30 |
| 644,8 | 0,50 | 257,60 | MWD | 1 | 644,8 | -2,22 | -3,14 | 3,8 | 0,18 | 0,00 | 20,92 |
| 674,0 | 0,40 | 238,90 | MWD | 1 | 674,0 | -2,30 | -3,35 | 4,1 | 0,18 | -0,10 | -19,21 |
| 703,8 | 0,20 | 230,65 | MWD | 1 | 703,8 | -2,39 | -3,48 | 4,2 | 0,21 | -0,20 | -8,31 |
| 733,6 | 0,20 | 217,00 | MWD | 1 | 733,6 | -2,46 | -3,55 | 4,3 | 0,05 | 0,00 | -13,74 |
| 762,8 | 0,10 | 267,20 | MWD | 1 | 762,8 | -2,50 | -3,61 | 4,4 | 0,16 | -0,10 | 51,58 |
| 792,5 | 0,30 | 305,30 | MWD | 1 | 792,5 | -2,46 | -3,69 | 4,4 | 0,23 | 0,20 | 38,48 |
| 822,6 | 0,60 | 311,60 | MWD | 1 | 822,6 | -2,31 | -3,88 | 4,5 | 0,30 | 0,30 | 6,28 |
| 881,9 | 0,60 | 319,00 | MWD | 1 | 881,9 | -1,87 | -4,31 | 4,7 | 0,04 | 0,00 | 3,74 |
| 911,3 | 0,60 | 312,60 | MWD | 1 | 911,3 | -1,65 | -4,53 | 4,8 | 0,07 | 0,00 | -6,53 |
| 941,0 | 0,50 | 298,60 | MWD | 1 | 941,0 | -1,48 | -4,76 | 5,0 | 0,17 | -0,10 | -14,14 |
| 970,7 | 0,40 | 302,50 | MWD | 1 | 970,7 | -1,36 | -4,96 | 5,1 | 0,11 | -0,10 | 3,94 |
| 1001,1 | 0,60 | 285,50 | MWD | 1 | 1001,1 | -1,26 | -5,20 | 5,4 | 0,24 | 0,20 | -16,78 |
| 1030,1 | 0,57 | 281,90 | MWD | 1 | 1030,1 | -1,19 | -5,49 | 5,6 | 0,05 | -0,03 | -3,72 |
| 1058,5 | 0,40 | 264,81 | MWD | 1 | 1058,5 | -1,17 | -5,72 | 5,8 | 0,23 | -0,18 | -18,03 |
| 1087,8 | 0,40 | 264,45 | MWD | 1 | 1087,8 | -1,19 | -5,93 | 6,0 | 0,00 | 0,00 | -0,37 |
| 1116,6 | 0,40 | 258,10 | MWD | 1 | 1116,6 | -1,22 | -6,13 | 6,2 | 0,05 | 0,00 | -6,61 |
| 1145,8 | 0,40 | 242,00 | MWD | 1 | 1145,8 | -1,29 | -6,32 | 6,4 | 0,11 | 0,00 | -16,54 |
| 1176,2 | 0,40 | 246,20 | MWD | 1 | 1176,2 | -1,38 | -6,51 | 6,7 | 0,03 | 0,00 | 4,14 |
| 1204,4 | 0,50 | 246,30 | MWD | 1 | 1204,4 | -1,47 | -6,71 | 6,9 | 0,11 | 0,11 | 0,11 |
| 1233,9 | 0,40 | 236,20 | MWD | 1 | 1233,9 | -1,58 | -6,91 | 7,1 | 0,13 | -0,10 | -10,27 |
| 1264,6 | 0,40 | 244,60 | MWD | 1 | 1264,6 | -1,69 | -7,10 | 7,3 | 0,06 | 0,00 | 8,21 |
| 1293,5 | 0,50 | 259,10 | MWD | 1 | 1293,4 | -1,76 | -7,31 | 7,5 | 0,16 | 0,10 | 15,08 |
| 1322,7 | 0,50 | 263,90 | MWD | 1 | 1322,7 | -1,79 | -7,57 | 7,8 | 0,04 | 0,00 | 4,92 |

HOLE DEVIATION

| | | |
|--|--|---------------------------------|
| Well: 6507/11-6 | Reference point: RKB ; 24,0 m ABOVE MSL | |
| Waterdepth: 291,0 m | Vertical to: 314,9 m | Total Depth: 3440,0 m MD |
| Utm zone: 32 | Central Median: 9' E | Horizontal datum: ED50 |
| Template Centre Coordinates, UTM: | North : m, | East: m |
| Wellhead Coordinates, UTM: | North : 7211708,40 m, | East: 425288,60 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] | | | | |
| 1353,9 | 0,60 | 259,80 | MWD | 1 | 1353,9 | -1,84 | -7,86 | 8,1 | 0,10 | 0,10 | -3,94 |
| 1383,4 | 0,60 | 255,10 | MWD | 1 | 1383,4 | -1,90 | -8,16 | 8,4 | 0,05 | 0,00 | -4,78 |
| 1412,2 | 0,60 | 254,90 | MWD | 1 | 1412,1 | -1,98 | -8,45 | 8,7 | 0,00 | 0,00 | -0,21 |
| 1468,4 | 0,70 | 253,50 | MWD | 1 | 1468,3 | -2,16 | -9,07 | 9,3 | 0,05 | 0,05 | -0,75 |
| 1558,8 | 0,70 | 252,30 | MWD | 1 | 1558,7 | -2,48 | -10,12 | 10,4 | 0,00 | 0,00 | -0,40 |
| 1654,2 | 1,00 | 243,10 | MWD | 1 | 1654,1 | -3,03 | -11,42 | 11,8 | 0,10 | 0,09 | -2,89 |
| 1683,3 | 1,00 | 249,20 | MWD | 1 | 1683,2 | -3,24 | -11,88 | 12,3 | 0,11 | 0,00 | 6,29 |
| 1741,9 | 1,00 | 249,60 | MWD | 1 | 1741,8 | -3,60 | -12,84 | 13,3 | 0,00 | 0,00 | 0,20 |
| 1771,6 | 0,90 | 248,10 | MWD | 1 | 1771,5 | -3,78 | -13,30 | 13,8 | 0,10 | -0,10 | -1,52 |
| 1802,7 | 1,00 | 244,60 | MWD | 1 | 1802,6 | -3,98 | -13,77 | 14,3 | 0,11 | 0,10 | -3,38 |
| 1832,2 | 1,00 | 239,00 | MWD | 1 | 1832,1 | -4,23 | -14,23 | 14,8 | 0,10 | 0,00 | -5,69 |
| 1861,8 | 1,00 | 230,70 | MWD | 1 | 1861,7 | -4,52 | -14,65 | 15,3 | 0,15 | 0,00 | -8,41 |
| 1891,8 | 1,00 | 225,40 | MWD | 1 | 1891,7 | -4,87 | -15,04 | 15,8 | 0,09 | 0,00 | -5,30 |
| 1921,6 | 0,90 | 220,00 | MWD | 1 | 1921,5 | -5,24 | -15,37 | 16,2 | 0,13 | -0,10 | -5,44 |
| 1951,3 | 0,90 | 226,20 | MWD | 1 | 1951,2 | -5,58 | -15,69 | 16,7 | 0,10 | 0,00 | 6,26 |
| 1980,6 | 0,90 | 224,30 | MWD | 1 | 1980,5 | -5,90 | -16,02 | 17,1 | 0,03 | 0,00 | -1,95 |
| 2010,0 | 0,90 | 227,90 | MWD | 1 | 2009,9 | -6,22 | -16,35 | 17,5 | 0,06 | 0,00 | 3,67 |
| 2039,2 | 1,00 | 222,40 | MWD | 1 | 2039,1 | -6,56 | -16,69 | 17,9 | 0,14 | 0,10 | -5,65 |
| 2067,6 | 1,10 | 230,70 | MWD | 1 | 2067,5 | -6,92 | -17,07 | 18,4 | 0,19 | 0,11 | 8,77 |
| 2125,4 | 1,20 | 233,10 | MWD | 1 | 2125,3 | -7,63 | -17,98 | 19,5 | 0,06 | 0,05 | 1,25 |
| 2154,8 | 1,10 | 228,40 | MWD | 1 | 2154,7 | -8,00 | -18,44 | 20,1 | 0,14 | -0,10 | -4,80 |
| 2184,2 | 1,20 | 227,80 | MWD | 1 | 2184,0 | -8,40 | -18,88 | 20,7 | 0,10 | 0,10 | -0,61 |
| 2213,4 | 1,20 | 225,80 | MWD | 1 | 2213,2 | -8,82 | -19,32 | 21,2 | 0,04 | 0,00 | -2,05 |
| 2242,8 | 1,30 | 228,50 | MWD | 1 | 2242,6 | -9,25 | -19,80 | 21,9 | 0,12 | 0,10 | 2,76 |
| 2273,1 | 1,20 | 228,00 | MWD | 1 | 2272,9 | -9,69 | -20,29 | 22,5 | 0,10 | -0,10 | -0,50 |
| 2302,6 | 1,20 | 222,20 | MWD | 1 | 2302,4 | -10,13 | -20,73 | 23,1 | 0,12 | 0,00 | -5,90 |
| 2332,9 | 1,20 | 226,90 | MWD | 1 | 2332,7 | -10,58 | -21,17 | 23,7 | 0,10 | 0,00 | 4,65 |
| 2362,4 | 1,30 | 223,60 | MWD | 1 | 2362,2 | -11,03 | -21,63 | 24,3 | 0,13 | 0,10 | -3,36 |
| 2392,2 | 1,30 | 225,00 | MWD | 1 | 2392,0 | -11,52 | -22,10 | 24,9 | 0,03 | 0,00 | 1,41 |
| 2423,1 | 1,30 | 226,80 | MWD | 1 | 2422,9 | -12,00 | -22,60 | 25,6 | 0,04 | 0,00 | 1,75 |
| 2451,5 | 1,30 | 222,30 | MWD | 1 | 2451,3 | -12,46 | -23,05 | 26,2 | 0,11 | 0,00 | -4,75 |
| 2481,3 | 1,40 | 220,00 | MWD | 1 | 2481,1 | -12,99 | -23,52 | 26,9 | 0,11 | 0,10 | -2,32 |
| 2510,4 | 1,50 | 220,30 | MWD | 1 | 2510,2 | -13,56 | -23,99 | 27,6 | 0,10 | 0,10 | 0,31 |
| 2540,2 | 1,50 | 220,70 | MWD | 1 | 2540,0 | -14,15 | -24,50 | 28,3 | 0,01 | 0,00 | 0,40 |
| 2569,4 | 1,70 | 221,70 | MWD | 1 | 2569,1 | -14,76 | -25,03 | 29,1 | 0,21 | 0,21 | 1,03 |
| 2657,2 | 1,70 | 224,40 | MWD | 1 | 2656,9 | -16,66 | -26,81 | 31,6 | 0,03 | 0,00 | 0,92 |

HOLE DEVIATION

Well: 6507/11-6 **Reference point:** RKB ; 24,0 m ABOVE MSL
Waterdepth: 291,0 m **Vertical to:** 314,9 m **Total Depth:** 3440,0 m MD
Utm zone: 32 **Central Median:** 9' E **Horizontal datum:** ED50
Template Centre Coordinates, UTM: **North :** m, **East:** m
Wellhead Coordinates, UTM: **North :** 7211708,40 m, **East:** 425288,60 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] | | | | |
| 2685,3 | 1,90 | 222,70 | MWD | 1 | 2685,0 | -17,30 | -27,42 | 32,4 | 0,22 | 0,21 | -1,81 |
| 2714,6 | 2,00 | 221,70 | MWD | 1 | 2714,3 | -18,04 | -28,09 | 33,4 | 0,11 | 0,10 | -1,02 |
| 2744,2 | 2,00 | 220,70 | MWD | 1 | 2743,9 | -18,82 | -28,77 | 34,4 | 0,03 | 0,00 | -1,01 |
| 2773,8 | 2,00 | 217,10 | MWD | 1 | 2773,4 | -19,62 | -29,42 | 35,4 | 0,13 | 0,00 | -3,65 |
| 2804,1 | 2,00 | 219,50 | MWD | 1 | 2803,7 | -20,45 | -30,07 | 36,4 | 0,08 | 0,00 | 2,38 |
| 2834,0 | 2,10 | 212,90 | MWD | 1 | 2833,6 | -21,32 | -30,70 | 37,4 | 0,26 | 0,10 | -6,62 |
| 2890,1 | 2,00 | 213,70 | MWD | 1 | 2889,7 | -22,99 | -31,80 | 39,2 | 0,06 | -0,05 | 0,43 |
| 2938,9 | 1,72 | 201,71 | MWD | 1 | 2938,5 | -24,38 | -32,55 | 40,7 | 0,29 | -0,17 | -7,37 |
| 2997,2 | 1,76 | 172,40 | MWD | 1 | 2996,7 | -26,08 | -32,75 | 41,9 | 0,45 | 0,02 | -15,09 |
| 3026,2 | 1,40 | 177,70 | MWD | 1 | 3025,7 | -26,88 | -32,68 | 42,3 | 0,40 | -0,37 | 5,48 |
| 3055,1 | 1,60 | 178,00 | MWD | 1 | 3054,6 | -27,63 | -32,65 | 42,8 | 0,21 | 0,21 | 0,31 |
| 3085,0 | 1,50 | 188,10 | MWD | 1 | 3084,5 | -28,44 | -32,69 | 43,3 | 0,29 | -0,10 | 10,13 |
| 3114,9 | 1,20 | 192,50 | MWD | 1 | 3114,4 | -29,13 | -32,81 | 43,9 | 0,32 | -0,30 | 4,41 |
| 3144,6 | 1,30 | 200,30 | MWD | 1 | 3144,1 | -29,75 | -33,00 | 44,4 | 0,20 | 0,10 | 7,88 |
| 3174,0 | 1,17 | 214,30 | MWD | 1 | 3173,4 | -30,31 | -33,28 | 45,0 | 0,33 | -0,13 | 14,30 |
| 3204,2 | 1,20 | 231,40 | MWD | 1 | 3203,7 | -30,76 | -33,70 | 45,6 | 0,35 | 0,03 | 16,98 |
| 3262,3 | 2,70 | 277,70 | MWD | 1 | 3261,7 | -30,96 | -35,54 | 47,1 | 1,06 | 0,77 | 23,91 |
| 3291,4 | 3,00 | 276,40 | MWD | 1 | 3290,8 | -30,78 | -36,97 | 48,1 | 0,32 | 0,31 | -1,34 |
| 3320,1 | 3,80 | 277,80 | MWD | 1 | 3319,4 | -30,57 | -38,66 | 49,3 | 0,84 | 0,84 | 1,46 |
| 3350,1 | 3,80 | 278,30 | MWD | 1 | 3349,4 | -30,29 | -40,63 | 50,7 | 0,03 | 0,00 | 0,50 |
| 3380,3 | 3,80 | 276,40 | MWD | 1 | 3379,5 | -30,04 | -42,61 | 52,1 | 0,12 | 0,00 | -1,89 |
| 3409,8 | 3,70 | 277,50 | MWD | 1 | 3408,9 | -29,80 | -44,53 | 53,6 | 0,13 | -0,10 | 1,12 |
| 3423,1 | 3,70 | 276,90 | MWD | 1 | 3422,2 | -29,70 | -45,38 | 54,2 | 0,09 | 0,00 | -1,35 |

MAIN CONSUMPTION OF CASING/TUBING ON WELL 6507/11-6 PO: 1

| Size | Casing string | Grade | Weight | | Threads type | Length [m] | No. of joints |
|---------|---------------|-------|--------|---------|--------------|---------------|------------------|
| | | | [kg/m] | [lb/ft] | | | |
| 30" | CONDUCTOR | X-52 | 460,86 | 309,70 | SL-60 | 61,5 | 5 |
| 20" | SURFACE | X-56 | 197,92 | 133,00 | E60MT | 84,0 | 12 |
| 13 3/8" | INTERMEDIATE | L-80 | 107,14 | 72,00 | NS-CC | 1289,8 | 104 |
| 9 5/8" | PRODUCTION | P-110 | 79,61 | 53,50 | NS-CC | 2600,3 | 220 |

BITRECORD FOR WELL 6507/11-6 PO: 1

| No | Bit | | Size (in) | Manu- fact- urer | Trade name | Serial no. | IADC code | Nozzles diameter (./32in) | Flow area (in2) | BHA no. | Depth out (m MD) | Bit meter (m) | Rot. hours (hrs) | ROP (m/hr) | Rotation min/(max) (rpm) | Total bit revol. | Weight min/max (kN) | Flow min/max (l/min) | Pump min/max (bar) | Cutting Structure I-O-DC-L-B | Gauge 1/16 (in) | Other Remarks | Pull Cause |
|----|-----|------|-----------|------------------------|------------|------------|-----------|---------------------------|-----------------|---------|------------------|---------------|------------------|------------|--------------------------|------------------|---------------------|----------------------|--------------------|------------------------------|-----------------|---------------|------------|
| | RR | Type | | | | | | | | | | | | | | | | | | | | | |
| 1 | | ISRT | 17,50 | SMIT | 02M | LK6329 | 415X | 13,16,20,20 | 0,940 | 1 | 375 | 60 | 16,00 | 3,8 | 66/108 | 90000 | 1/7 | 2200/4700 | 48/188 | 1-1-NO-A-E | 1 | NO | TD |
| | | HO | 36,00 | REDB | HEAVYDUTY | C65510 | | 8,8,8,8,8,8,8,8 | 0,589 | 1 | 375 | 60 | 18,40 | 3,3 | 66/108 | 90000 | 1/7 | 2200/4700 | 48/188 | 1-1-BU-A-E | | LT | |
| 1 | 1 | ISRT | 17,50 | SMIT | 02M | LK6329 | 415X | 13,16,20,20 | 0,940 | 2 | 378 | 63 | 16,20 | 3,9 | 58/102 | 75000 | 0/60 | 1028/4486 | 3/182 | 1-1-NO-A-2 | 1 | NO | TD |
| | | HO | 36,00 | REDB | HEAVYDUTY | C65510 | | 8,8,8,8,8,8,8,8 | 0,589 | 2 | 378 | 63 | 16,20 | 3,9 | 58/102 | 75000 | 0/60 | 1028/4486 | 3/182 | 2-2-BT-H-1 | 1 | NO | |
| 2 | | MITO | 26,00 | SMIT | MSDSHCOD | LW6136 | 115 | 12,22,24,24 | 1,365 | 3 | 459 | 84 | 4,40 | 19,1 | | 34000 | 20/60 | 3721/4486 | 115/173 | 1-1-NO-A-1 | 1 | | TD |
| 3 | | ISRT | 17,50 | SMIT | 10GMODC | 00000 | 435 | 13,24,24,24 | 1,455 | 4 | 1465 | 1006 | 15,20 | 66,2 | 144/248 | 253000 | 30/200 | 1900/4050 | 72/240 | 1-1-BT-A-E | 1 | WT | PR |
| 3 | 1 | ISRT | 17,50 | SMIT | 10GMODC | LW8943 | 435 | 13,24,24,24 | 1,455 | 5 | 1608 | 143 | 2,80 | 51,1 | 242/243 | 41000 | 140/160 | 4016/4033 | 240/243 | 2-2-BT-A-E | 1 | WT | TD |
| 4 | | PDC | 12,25 | SMIT | MA89HPX | SC0371 | 223 | 16,16,16,16,18 | 1,479 | 6 | 2917 | 1309 | 23,20 | 56,4 | 76/212 | 313000 | 1/50 | 2550/3050 | 222/304 | 1-1-CT-A-X | 1 | NO | TD |
| 5 | | BIT | 8,50 | HTC | BD445 | 1213263 | M333 | 18,18,18 | 0,746 | 7 | 3036 | 119 | 5,70 | 20,9 | 140/153 | 60000 | 30/50 | 2500/2700 | 290/304 | 1-1-NO-A-X | 1 | NO | CP |
| 6 | | BIT | 8,50 | SDBS | FC274RILI | 7000940 | | | 0,000 | 8 | 3064 | 28 | 0,90 | 31,1 | 65/98 | 5000 | 1/60 | 984/997 | 63/90 | 1-1-NO-A-X | 1 | CT | NC |
| 5 | 1 | PDC | 8,50 | HTC | BD445 | 1213263 | M333 | 18,18,18 | 0,746 | 9 | 3440 | 376 | 19,20 | 19,6 | 82/165 | 118000 | 10/100 | 2466/2571 | 295/319 | 1-2-WT-S-X | 1 | NO | TD |

BOTTOM HOLE ASSEMBLIES USED ON WELL 6507/11-6 PO: 1

| BHA no. 1: | | | | Depth In: 315 m MD Out: 375 m MD | | | |
|------------------------------------|-----------------|------|-------|----------------------------------|--------------------|------|--------|
| No. / Element / OD(in) / Length(m) | | | | | | | |
| 1 | 02M | 17,5 | 0,42 | 2 | HEAVYDUTY | 36,0 | 3,35 |
| 3 | X-OVER | 9,5 | 0,29 | 4 | BIT SUB | 9,5 | 0,85 |
| 5 | MWD | 9,5 | 8,94 | 6 | NON MAG. STAB | 17,0 | 2,25 |
| 7 | NON MAG. COLLAR | 9,5 | 17,77 | 8 | DRILL COLLAR STEEL | 9,5 | 27,01 |
| 9 | X-OVER | 9,5 | 0,46 | 10 | DRILL COLLAR STEEL | 8,0 | 54,89 |
| 11 | JAR | 7,75 | 9,60 | 12 | DRILL COLLAR STEEL | 8,0 | 18,46 |
| 13 | X-OVER | 8,0 | 1,21 | 14 | HWDP | 5,0 | 135,83 |

Reason pulled: TOTAL DEPTH/CASING DEPT| Sum: 281,33

| BHA no. 2: | | | | Depth In: 315 m MD Out: 378 m MD | | | |
|------------------------------------|-----------------|------|-------|----------------------------------|--------------------|------|--------|
| No. / Element / OD(in) / Length(m) | | | | | | | |
| 1 | 02M | 17,5 | 0,42 | 2 | HEAVYDUTY | 36,0 | 3,35 |
| 3 | X-OVER | 9,5 | 0,29 | 4 | BIT SUB | 9,5 | 0,85 |
| 5 | MWD | 9,5 | 8,94 | 6 | NON MAG. STAB | 17,0 | 2,25 |
| 7 | NON MAG. COLLAR | 9,5 | 17,77 | 8 | DRILL COLLAR STEEL | 9,5 | 27,01 |
| 9 | X-OVER | 9,5 | 0,46 | 10 | DRILL COLLAR STEEL | 8,0 | 54,89 |
| 11 | JAR | 7,75 | 9,60 | 12 | DRILL COLLAR STEEL | 8,0 | 18,46 |
| 13 | X-OVER | 8,0 | 1,21 | 14 | HWDP | 5,0 | 135,83 |

Reason pulled: TOTAL DEPTH/CASING DEPT| Sum: 281,33

| BHA no. 3: | | | | Depth In: 375 m MD Out: 459 m MD | | | |
|------------------------------------|--------------------|------|--------|----------------------------------|-----------------|------|------|
| No. / Element / OD(in) / Length(m) | | | | | | | |
| 1 | MSDSHCOD | 26,0 | 0,66 | 2 | BIT SUB | 9,5 | 0,85 |
| 3 | CDR | 9,5 | 7,41 | 5 | MWD | 9,5 | 8,47 |
| 6 | NON MAG. STAB | 26,0 | 2,30 | 7 | NON MAG. COLLAR | 9,5 | 9,25 |
| 8 | DRILL COLLAR STEEL | 9,5 | 27,01 | 9 | X-OVER | 9,5 | 0,46 |
| 10 | DRILL COLLAR STEEL | 8,0 | 54,89 | 11 | JAR | 7,75 | 9,60 |
| 12 | DRILL COLLAR STEEL | 8,0 | 18,46 | 13 | X-OVER | 8,0 | 1,21 |
| 14 | HWDP | 5,0 | 135,83 | | | | |

Reason pulled: TOTAL DEPTH/CASING DEPT| Sum: 276,40

| BHA no. 4: | | | | Depth In: 459 m MD Out: 1465 m MD | | | |
|------------------------------------|--------------------|------|--------|-----------------------------------|-----------------|-------|------|
| No. / Element / OD(in) / Length(m) | | | | | | | |
| 1 | 10GMODC | 17,5 | 0,40 | 2 | DOWNHOLE MOTOR | 11,25 | 8,99 |
| 3 | FLOAT SUB | 9,5 | 0,69 | 4 | NON MAG. STAB | 17,25 | 2,49 |
| 5 | CDR | 9,5 | 7,41 | 5 | MWD | 9,5 | 8,47 |
| 6 | NON MAG. STAB | 17,0 | 2,25 | 7 | NON MAG. COLLAR | 9,5 | 9,25 |
| 8 | DRILL COLLAR STEEL | 9,5 | 27,01 | 9 | X-OVER | 9,5 | 0,46 |
| 10 | DRILL COLLAR STEEL | 8,0 | 54,89 | 11 | JAR | 7,75 | 9,60 |
| 12 | DRILL COLLAR STEEL | 8,0 | 18,46 | 13 | X-OVER | 8,0 | 1,21 |
| 14 | HWDP | 5,0 | 135,83 | | | | |

Reason pulled: PENETRATION RATE Sum: 287,41

| BHA no. 5: | | | | Depth In: 1465 m MD Out: 1608 m MD | | | |
|------------------------------------|--------------------|------|--------|------------------------------------|-----------------|-------|------|
| No. / Element / OD(in) / Length(m) | | | | | | | |
| 1 | 10GMODC | 17,5 | 0,40 | 2 | DOWNHOLE MOTOR | 11,25 | 8,97 |
| 3 | FLOAT SUB | 9,5 | 0,79 | 4 | NON MAG. STAB | 17,25 | 2,49 |
| 5 | CDR | 9,5 | 7,41 | 6 | MWD | 9,5 | 8,47 |
| 7 | NON MAG. STAB | 17,0 | 2,25 | 8 | NON MAG. COLLAR | 9,5 | 9,25 |
| 9 | DRILL COLLAR STEEL | 9,5 | 27,01 | 10 | X-OVER | 9,5 | 0,46 |
| 11 | DRILL COLLAR STEEL | 8,0 | 54,89 | 12 | JAR | 7,75 | 9,60 |
| 13 | DRILL COLLAR STEEL | 8,0 | 18,46 | 14 | X-OVER | 8,0 | 1,21 |
| 15 | HWDP | 5,0 | 135,83 | | | | |

Reason pulled: TOTAL DEPTH/CASING DEPT| Sum: 287,49

BOTTOM HOLE ASSEMBLIES USED ON WELL 6507/11-6 PO: 1

| BHA no. 6: | | No. / Element / OD(in) / Length(m) | | Depth In: 1608 m MD Out: 2917 m MD | | | |
|------------|-----------|------------------------------------|------|------------------------------------|--------------------------|--------|--------|
| 1 | MA89HPX | 12,25 | 0,37 | 2 | DOWN HOLE MOTOR WITH ST/ | 12,125 | 9,22 |
| 3 | FLOAT SUB | 8,0 | 0,86 | 4 | NON MAG. STAB | 12,125 | 2,33 |
| 5 | CDR | 9,0 | 7,00 | 6 | NON MAG. STAB | 12,25 | 1,49 |
| 7 | MWD | 8,375 | 8,14 | 8 | OTHER | 9,0 | 7,14 |
| 9 | CDN | 12,0 | 8,50 | 10 | DRILL COLLAR STEEL | 8,0 | 27,58 |
| 11 | JAR | 8,0 | 9,60 | 12 | DRILL COLLAR STEEL | 8,0 | 18,46 |
| 13 | X-OVER | 8,0 | 1,21 | 14 | HWDP | 5,0 | 135,83 |

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 237,73

| BHA no. 7: | | No. / Element / OD(in) / Length(m) | | Depth In: 2917 m MD Out: 3036 m MD | | | |
|------------|-----------------------------|------------------------------------|-------|------------------------------------|----------------------------|-------|--------|
| 1 | BD445 | 8,5 | 0,34 | 2 | LOGGING WHILE DRILLING TOI | 6,875 | 3,08 |
| 3 | LOGGING WHILE DRILLING TOOL | 7,438 | 5,64 | 4 | NON MAG. STAB | 8,5 | 1,50 |
| 5 | MWD | 6,75 | 8,31 | 6 | ADN | 8,25 | 5,89 |
| 7 | DRILL COLLAR STEEL | 6,5 | 85,31 | 8 | JAR | 6,375 | 9,45 |
| 9 | DRILL COLLAR STEEL | 6,5 | 18,95 | 10 | HWDP | 5,0 | 135,83 |

Reason pulled: CORE POINT Sum: 274,30

| BHA no. 8: | | No. / Element / OD(in) / Length(m) | | Depth In: 3036 m MD Out: 3064 m MD | | | |
|------------|--------------------|------------------------------------|-------|------------------------------------|-------------|-------|--------|
| 1 | FC274RILI | 8,5 | 0,36 | 2 | CORE BARREL | 8,5 | 30,08 |
| 3 | X-OVER | 6,5 | 0,81 | 4 | FLOAT SUB | 6,375 | 0,91 |
| 5 | DRILL COLLAR STEEL | 6,5 | 85,31 | 6 | JAR | 6,375 | 9,45 |
| 7 | DRILL COLLAR STEEL | 6,5 | 18,95 | 8 | HWDP | 5,0 | 135,83 |

Reason pulled: NEW CORE/FULL BARREL Sum: 281,70

| BHA no. 9: | | No. / Element / OD(in) / Length(m) | | Depth In: 3064 m MD Out: 3440 m MD | | | |
|------------|-----------------------------|------------------------------------|-------|------------------------------------|----------------------------|-------|--------|
| 1 | BD445 | 8,5 | 0,34 | 2 | LOGGING WHILE DRILLING TOI | 6,875 | 3,08 |
| 3 | LOGGING WHILE DRILLING TOOL | 7,438 | 5,64 | 4 | NON MAG. STAB | 8,5 | 1,50 |
| 5 | MWD | 6,75 | 8,31 | 6 | ADN | 8,25 | 5,89 |
| 7 | DRILL COLLAR STEEL | 6,5 | 85,31 | 8 | JAR | 6,375 | 9,45 |
| 9 | DRILL COLLAR STEEL | 6,5 | 18,95 | 10 | HWDP | 5,0 | 135,83 |

Reason pulled: TOTAL DEPTH/CASING DEPTI Sum: 274,30

CEMENT SLURRY REPORT ON WELL 6507/11-6 PO: 1

| Date | CsgSize | Jobtype | Slurry Type | Pumped Volume [m3] | Density [sg] | BHCT [DegC] | Yield [l/100 kg] | Additive | Unit | Additives [./100 kg Cement] | Additives [./m3 Slurry] |
|------------|---------|------------------|--------------|--------------------|--------------|-------------|------------------|----------|------|-----------------------------|-------------------------|
| 2001-06-15 | 30" | CASING CEMENTING | LEAD | 19,00 | 1,56 | 8,00 | 129,60 | A-3L | l | 3,50 | |
| | | | TAIL SLURRY | 19,00 | 1,95 | 8,00 | 74,73 | FP-14L | l | 0,20 | |
| | | | DISPLACEMENT | 5,50 | 1,03 | 8,00 | | FP-14L | l | 0,20 | |
| | | | DISPLACEMENT | 16,90 | 1,44 | 8,00 | 131,97 | A-7L | l | 3,50 | |
| 2001-06-15 | 20" | CASING CEMENTING | LEAD | 23,00 | 1,95 | 8,00 | 74,73 | FP-14L | l | 0,20 | |
| | | | TAIL SLURRY | 23,00 | 1,95 | 8,00 | | A-3L | l | 5,30 | |
| | | | DISPLACEMENT | 24,60 | 1,03 | 8,00 | | A-7L | l | 3,50 | |
| | | | DISPLACEMENT | 36,10 | 1,56 | 37,00 | 151,52 | FP-14L | l | 0,20 | |
| 2001-06-22 | 13 3/8" | CASING CEMENTING | LEAD | 28,60 | 1,92 | 37,00 | 75,07 | FL-45L | l | 7,00 | |
| | | | TAIL SLURRY | 28,60 | 1,92 | 37,00 | | FP-14L | l | 0,20 | |
| | | | DISPLACEMENT | 15,00 | 1,75 | 69,00 | | CD-31L | l | 0,80 | |
| | | | DISPLACEMENT | | 1,30 | 37,00 | | R-12L | l | 2,00 | |
| | | | DISPLACEMENT | | 1,30 | 37,00 | | MICRO | l | 38,00 | |
| | | | MCS-G SPACER | 15,00 | 1,75 | 69,00 | | FP-14L | l | 0,20 | |
| | | | LEAD | 16,60 | 1,75 | 69,00 | 93,55 | R-12L | l | 0,65 | |
| 2001-06-26 | 9 5/8" | CASING CEMENTING | LEAD | 16,60 | 1,75 | 69,00 | 93,55 | SODAA | kg | | 8,00 |
| | | | LEAD | 16,60 | 1,75 | 69,00 | | BARITC | kg | | 758,00 |
| | | | LEAD | 16,60 | 1,75 | 69,00 | | FP-14L | l | | 10,00 |
| | | | LEAD | 16,60 | 1,75 | 69,00 | | GW-22 | kg | | 1,80 |
| | | | LEAD | 16,60 | 1,75 | 69,00 | | MCS-G | l | | 104,00 |
| | | | LEAD | 16,60 | 1,75 | 69,00 | | CD-31L | l | | 0,30 |
| | | | LEAD | 16,60 | 1,75 | 69,00 | | FP-14L | l | | 0,20 |
| | | | LEAD | 16,60 | 1,75 | 69,00 | | GEL | kg | | 1,60 |
| | | | LEAD | 16,60 | 1,75 | 69,00 | | R-12L | l | | 0,90 |
| | | | LEAD | 16,60 | 1,75 | 69,00 | | CD-31L | l | | 0,40 |
| | | | LEAD | 16,60 | 1,75 | 69,00 | | FP-14L | l | | 0,20 |
| | | | LEAD | 7,30 | 1,90 | 69,00 | 78,65 | | | | |
| | | | TAIL SLURRY | 7,30 | 1,90 | 69,00 | | | | | |

CEMENT SLURRY REPORT ON WELL 6507/11-6 PO: 1

| Date | CsgSize | Jobtype | Slurry Type | Pumped Volume [m3] | Density [sg] | BHCT [DegC] | Yield [l/100 kg] | Additive | Unit | Additives [./100 kg Cement] | Additives [./m3 Slurry] |
|------------|---------|----------------------------|---------------------|--------------------|--------------|-------------|------------------|----------|------|-----------------------------|-------------------------|
| 2001-06-26 | 9 5/8" | CASING CEMENTING | TAIL SLURRY | 7,30 | 1,90 | 69,00 | 78,65 | MICRO | | 4,00 | |
| | | | | | | | | R-12L | | 0,90 | |
| 2001-07-03 | 9 5/8" | PLUG IN CASED TO OPEN HOLE | DISPLACEMENT SPACER | 5,00 | 1,00 | 79,00 | | FP-14L | | | 10,00 |
| | | | | | | | | MCS-G | | | 100,00 |
| | | | TAIL SLURRY | 7,20 | 1,90 | 79,00 | 82,49 | R-12L | | 0,95 | |
| | | | | | | | | CD-31L | | 0,70 | |
| | | | | | | | | FL-45L | | 7,00 | |
| | | | | | | | | FP-14L | | 0,20 | |
| | | | | | | | | MICRO | | 12,00 | |
| | | | FRESHWATER | 0,79 | 1,00 | 79,00 | | | | | |
| | | | DISPLACEMENT | | | 79,00 | | | | | |
| | | PLUG IN OPEN HOLE | SPACER | 5,00 | 1,00 | 87,00 | | FP-14L | | | 10,00 |
| | | | TAIL SLURRY | 9,20 | 1,90 | 87,00 | 107,86 | MCS-G | | | 100,00 |
| | | | | | | | | CD-31L | | 1,20 | |
| | | | | | | | | D-8 | kg | 0,00 | |
| | | | FRESHWATER | 0,79 | 1,00 | 87,00 | | FL-45L | | 9,00 | |
| | | | DISPLACEMENT | | | 87,00 | | FP-14L | | 0,20 | |
| | | PLUG IN CASED HOLE | SPACER | 7,00 | 1,75 | 39,00 | | MICRO | | 14,00 | |
| | 13 3/8" | | | | | | | R-12L | | 1,40 | |
| 2001-07-05 | 13 3/8" | PLUG IN CASED HOLE | FRESHWATER | 0,79 | 1,00 | 87,00 | | | | | |
| | | | DISPLACEMENT | | | 87,00 | | | | | |
| | | | SPACER | 7,00 | 1,75 | 39,00 | | FP-14L | | | 10,00 |
| | | | | | | | | GW-22 | kg | | 1,80 |
| | | | | | | | | MCS-G | | | 104,00 |
| | | | | | | | | SODAA | kg | | 8,00 |
| | | | TAIL SLURRY | 15,50 | 1,90 | 39,00 | 76,70 | R-12L | | 0,50 | |

CEMENT SLURRY REPORT ON WELL 6507/11-6 PO: 1

| Date | CsgSize | Jobtype | Slurry Type | Pumped Volume [m3] | Density [sg] | BHCT [DegC] | Yield [l/100 kg] | Additive | Unit | Additives [..100 kg Cement] | Additives [./m3 Slurry] |
|------------|---------|--------------------|--------------|--------------------|--------------|-------------|------------------|----------|------|-----------------------------|-------------------------|
| 2001-07-05 | 13 3/8" | PLUG IN CASED HOLE | TAIL SLURRY | 15,50 | 1,90 | 39,00 | 76,70 | FP-14L | l | 0,20 | |
| | | | SPACER | 0,60 | 1,75 | 39,00 | | GW-22 | kg | | 1,80 |
| 2001-07-06 | 20" | PLUG IN CASED HOLE | DISPLACEMENT | | | 39,00 | | MCS-G | l | | 104,00 |
| | | | SALTWATER | 10,00 | 1,03 | 11,00 | | SODAA | kg | | 8,00 |
| | | | TAIL SLURRY | 24,60 | 1,95 | 11,00 | 74,73 | A-7L | l | 3,55 | |
| | | | SALTWATER | 1,40 | 1,03 | 11,00 | | FP-14L | l | 0,20 | |
| | | | DISPLACEMENT | | | 11,00 | | | | | |
| | | | DISPLACEMENT | | | 11,00 | | | | | |

CEMENT CONSUMPTION PER JOB ON WELL 6507/11-6 PO: 1

| Date | CsgSize | Job Type | Cement/ Additive | Description | Unit | Actual Amount Used |
|------------|---------|----------------------------|---------------------|--|------|--------------------------|
| 2001-06-15 | 30" | CASING CEMENTING | A-3L | EXTENDER: LIQUID LODENSE | l | 512 |
| | | | A-7L | ACCELERATOR: LIQUID CACL2 | l | 1010 |
| | | | FP-14L | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 20 |
| | | | G | API CLASS G | MT | 47 |
| 2001-06-15 | 20" | CASING CEMENTING | A-3L | EXTENDER: LIQUID LODENSE | l | 560 |
| | | | A-7L | ACCELERATOR: LIQUID CACL2 | l | 1155 |
| | | | FP-14L | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 50 |
| | | | G | API CLASS G | MT | 41 |
| 2001-06-22 | 13 3/8" | CASING CEMENTING | CD-31L | DISPERSANT: CD-31L LIQUID | l | 166 |
| | | | FL-45L | FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEC | l | 1453 |
| | | | FP-14L | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 176 |
| | | | G | API CLASS G | MT | 82 |
| | | | MICRO | SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF | l | 8000 |
| 2001-06-26 | 9 5/8" | CASING CEMENTING | R-12L | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 [| l | 726 |
| | | | CD-31L | DISPERSANT: CD-31L LIQUID | l | 154 |
| | | | FP-14L | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 275 |
| | | | G | API CLASS G | MT | 27 |
| | | | GEL | EXTENDER: BENTONITE | kg | 425 |
| | | | GW-22 | GW-22 VISCOSIFIER | kg | 50 |
| | | | MCS-G | SPACER ADDITIVE: MCS-G | l | 2000 |
| | | | MICRO | SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF | l | 559 |
| | | | R-12L | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 [| l | 333 |
| | | | SODAA | SODA ASH | kg | 150 |
| 2001-07-03 | 9 5/8" | PLUG IN CASED TO OPEN HOLE | CD-31L | DISPERSANT: CD-31L LIQUID | l | 101 |
| | | | G | API CLASS G | MT | 11 |
| | | | MCS-G | SPACER ADDITIVE: MCS-G | l | 640 |
| | | | MICRO | SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF | l | 1047 |
| | | | R-12L | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 [| l | 83 |
| | | | FP-14L | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 80 |
| | | | FL-45L | FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEC | l | 611 |
| | 9 5/8" | PLUG IN OPEN HOLE | CD-31L | DISPERSANT: CD-31L LIQUID | l | 130 |
| | | | FL-45L | FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEC | l | 975 |
| | | | MCS-G | SPACER ADDITIVE: MCS-G | l | 630 |
| | | | MICRO | SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGF | l | 1520 |
| | | | R-12L | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 [| l | 152 |
| | | | FP-14L | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 83 |
| | | | D-8 | SPECIAL ADDITIVE: SILICA FLUOR, TEMP. TO 204 l | kg | 12 |
| 2001-07-05 | 13 3/8" | PLUG IN CASED HOLE | FP-14L | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 138 |
| | | | G | API CLASS G | MT | 24 |
| | | | GW-22 | GW-22 VISCOSIFIER | kg | 25 |
| | | | MCS-G | SPACER ADDITIVE: MCS-G | l | 1000 |
| | | | R-12L | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 [| l | 134 |
| 2001-07-06 | 20" | PLUG IN CASED HOLE | SODAA | SODA ASH | kg | 75 |
| | | | A-7L | ACCELERATOR: LIQUID CACL2 | l | 1135 |
| | | | FP-14L | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 70 |
| | | | G | API CLASS G | MT | 36 |

TOTAL CONSUMPTION OF CEMENT ADDITIVES ON WELL 6507/11-6 PO: 1

| Section | Cement/Additive | Unit | Total Amount Used |
|--|---|---------|-------------------|
| 36" | EXTENDER: LIQUID LODENSE | l | 512,00 |
| | API CLASS G | MT | 47,00 |
| | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 20,00 |
| | ACCELERATOR: LIQUID CACL2 | l | 1010,00 |
| 26" | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 50,00 |
| | EXTENDER: LIQUID LODENSE | l | 560,00 |
| | API CLASS G | MT | 41,00 |
| | ACCELERATOR: LIQUID CACL2 | l | 1155,00 |
| 17 1/2" | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 176,00 |
| | DISPERSANT: CD-31L LIQUID | l | 166,00 |
| | FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEGC | l | 1453,00 |
| | SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION | l | 8000,00 |
| | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC | l | 726,00 |
| | API CLASS G | MT | 82,00 |
| 12 1/4" | EXTENDER: BENTONITE | kg | 425,00 |
| | SPACER ADDITIVE: MCS-G | l | 2000,00 |
| | SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION | l | 559,00 |
| | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC | l | 333,00 |
| | SODA ASH | kg | 150,00 |
| | DISPERSANT: CD-31L LIQUID | l | 154,00 |
| | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 275,00 |
| | GW-22 VISCOSIFIER | kg | 50,00 |
| | API CLASS G | MT | 27,00 |
| 0.0 | SPECIAL ADDITIVE: MICROBLOCK, ANTI GAS MIGRATION | l | 2567,00 |
| | SPECIAL ADDITIVE: DEFOAMER FP-14L | l | 371,00 |
| | RETARDER: LIQUID LIGNOSULFONATE UP TO 93 DEGC | l | 369,00 |
| | SODA ASH | kg | 75,00 |
| | SPECIAL ADDITIVE: SILICA FLUOR, TEMP. TO 204 DEGC | kg | 11,50 |
| | API CLASS G | MT | 71,00 |
| | SPACER ADDITIVE: MCS-G | l | 2270,00 |
| | GW-22 VISCOSIFIER | kg | 25,00 |
| | ACCELERATOR: LIQUID CACL2 | l | 1135,00 |
| | DISPERSANT: CD-31L LIQUID | l | 231,00 |
| FLUID-LOSS ADDITIVE: BETWEEN 38 AND 177 DEGC | l | 1586,00 | |

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 6507/11-6 PO: 1

Hole section : 36"

WATER BASED SYSTEM

| Date | Depth [m] | Mud Type | Funnel Visc [sec] | Dens Mudtmp Out [DegC] | Fann Readings | | | | | Rheo Test [DegC] | PV [mPas] | YP [Pa] | Gel0 [Pa] | Gel10 [Pa] |
|------------------|-----------|----------|-------------------|------------------------|---------------|-----|-----|-----|----|------------------|-----------|---------|-----------|------------|
| | | | | | 600 | 300 | 200 | 100 | 60 | | | | | |
| | MD | TVD | | | | | | | | | | | | |
| 2001-06-14 22:00 | 336 | | BENTONITE MUD | 110,0 | 1,05 | | | | 0 | 0 | | | | |
| 2001-06-15 20:00 | 377 | | BENTONITE MUD | 110,0 | 1,03 | | | | 0 | 0 | | | | |
| 2001-06-16 | 459 | | BENTONITE MUD | 90,0 | 1,40 | | | | 0 | 0 | | | | |

Hole section : 26"

WATER BASED SYSTEM

| Date | Depth [m] | Mud Type | Funnel Visc [sec] | Dens Mudtmp Out [DegC] | Fann Readings | | | | | Rheo Test [DegC] | PV [mPas] | YP [Pa] | Gel0 [Pa] | Gel10 [Pa] |
|------------|-----------|----------|-------------------|------------------------|---------------|-----|-----|-----|----|------------------|-----------|---------|-----------|------------|
| | | | | | 600 | 300 | 200 | 100 | 60 | | | | | |
| | MD | TVD | | | | | | | | | | | | |
| 2001-06-17 | 459 | | BENTONITE MUD | 1,03 | 0,0 | | | | 0 | 0 | | | | |

Hole section : 17 1/2"

WATER BASED SYSTEM

| Date | Depth [m] | Mud Type | Funnel Visc [sec] | Dens Mudtmp Out [DegC] | Fann Readings | | | | | Rheo Test [DegC] | PV [mPas] | YP [Pa] | Gel0 [Pa] | Gel10 [Pa] | | | | | |
|------------------|-----------|----------|-------------------|------------------------|---------------|------|-----|-----|----|------------------|-----------|---------|-----------|------------|------|------|------|-----|------|
| | | | | | 600 | 300 | 200 | 100 | 60 | | | | | | 30 | 6 | 3 | | |
| | MD | TVD | | | | | | | | | | | | | | | | | |
| 2001-06-18 23:30 | 489 | | BENTONITE MUD | 65,0 | 1,40 | 1,3 | 56 | 43 | 34 | 25 | 0 | 0 | 12 | 9 | 50,0 | 13,0 | 15,0 | 5,0 | 7,0 |
| 2001-06-19 22:30 | 1283 | | KCL/POLYMER | 64,0 | 1,30 | 27,0 | 61 | 45 | 37 | 28 | 0 | 0 | 11 | 10 | 50,0 | 16,0 | 14,5 | 5,0 | 10,0 |
| 2001-06-20 23:00 | 1591 | | KCL/POLYMER | 64,0 | 1,31 | 25,0 | 60 | 45 | 36 | 27 | 0 | 0 | 11 | 10 | 50,0 | 15,0 | 15,0 | 5,0 | 10,0 |
| 2001-06-21 12:00 | 1608 | | KCL/POLYMER | 68,0 | 1,30 | 18,0 | 61 | 46 | 36 | 27 | 0 | 0 | 11 | 10 | 50,0 | 15,0 | 15,5 | 5,0 | 10,0 |
| 2001-06-22 | 1608 | | KCL/POLYMER | 65,0 | 1,30 | | 60 | 45 | 35 | 27 | 0 | 0 | 11 | 10 | 50,0 | 15,0 | 15,0 | 5,0 | 10,0 |

Hole section : 12 1/4"

OIL BASED SYSTEM

| Date | Depth [m] | Mud Type | Funnel Visc [sec] | Dens Mudtmp Out [DegC] | Fann Readings | | | | | Rheo Test [DegC] | PV [mPas] | YP [Pa] | Gel0 [Pa] | Gel10 [Pa] | | | | | |
|------------------|-----------|----------|-------------------|------------------------|---------------|------|-----|-----|----|------------------|-----------|---------|-----------|------------|------|------|------|------|------|
| | | | | | 600 | 300 | 200 | 100 | 60 | | | | | | 30 | 6 | 3 | | |
| | MD | TVD | | | | | | | | | | | | | | | | | |
| 2001-06-23 | 2242 | | VERSAVERT | 84,0 | 1,60 | 1,6 | 93 | 55 | 40 | 25 | 0 | 0 | 10 | 8 | 50,0 | 38,0 | 8,5 | 4,5 | 10,5 |
| 2001-06-24 22:30 | 2917 | | VERSAVERT | 91,0 | 1,60 | 42,0 | 111 | 67 | 49 | 31 | 0 | 0 | 15 | 14 | 50,0 | 44,0 | 11,5 | 10,0 | 17,5 |
| 2001-06-25 22:00 | 2917 | | VERSAVERT | 102,0 | 1,60 | 18,0 | 110 | 67 | 50 | 31 | 0 | 0 | 15 | 14 | 50,0 | 43,0 | 12,0 | 9,5 | 18,0 |
| 2001-06-26 23:30 | 2917 | | VERSAVERT | 101,0 | 1,60 | 23,0 | 112 | 66 | 50 | 30 | 0 | 0 | 15 | 13 | 50,0 | 46,0 | 10,0 | 10,0 | 19,0 |

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 6507/11-6 PO: 1

Hole section : 8 1/2"

OIL BASED SYSTEM

| Date | MD | Depth [m] | Mud Type | Funnel Visc [sec] | Dens [sg] | Mudtmp Out [DegC] | Fann Readings | | | | | Rheo Test [DegC] | PV [mPas] | YP [Pa] | Gel0 [Pa] | Gel10 [Pa] | | | | |
|------------------|------|--------------|-----------|-------------------------|--------------|-------------------------|---------------|-----|-----|-----|----|------------------------|--------------|------------|--------------|---------------|------|------|-----|------|
| | | | | | | | 100 | 200 | 300 | 600 | 30 | | | | | | 6 | 3 | | |
| 2001-06-27 22:30 | 2960 | 2960 | VERSAVERT | 84,0 | 1,25 | 1,3 | 70 | 43 | 35 | 25 | 0 | 0 | 10 | 10 | 9 | 50,0 | 27,0 | 8,0 | 5,0 | 11,5 |
| 2001-06-28 22:00 | 3063 | 3062 | VERSAVERT | 76,0 | 1,25 | 1,3 | 72 | 46 | 36 | 26 | 0 | 0 | 10 | 10 | 9 | 50,0 | 26,0 | 10,0 | 5,0 | 11,5 |
| 2001-06-29 22:30 | 3385 | 3384 | VERSAVERT | 70,0 | 1,25 | 49,0 | 72 | 47 | 37 | 26 | 0 | 0 | 10 | 10 | 9 | 50,0 | 25,0 | 11,0 | 5,0 | 12,0 |
| 2001-06-30 22:30 | 3440 | 3439 | VERSAVERT | 80,0 | 1,25 | 28,0 | 75 | 50 | 39 | 28 | 0 | 0 | 11 | 10 | 10 | 50,0 | 25,0 | 12,5 | 6,0 | 14,0 |
| 2001-07-01 | 3439 | 3438 | VERSAVERT | 81,0 | 1,25 | 22,0 | 75 | 50 | 39 | 28 | 0 | 0 | 11 | 10 | 10 | 50,0 | 25,0 | 12,5 | 6,0 | 14,0 |
| 2001-07-02 22:30 | 3439 | 3438 | VERSAVERT | 81,0 | 1,25 | 21,0 | 75 | 50 | 39 | 28 | 0 | 0 | 11 | 10 | 10 | 50,0 | 25,0 | 12,5 | 6,0 | 14,0 |
| 2001-07-03 22:30 | 3439 | 3438 | VERSAVERT | 79,0 | 1,25 | 33,0 | 75 | 50 | 39 | 28 | 0 | 0 | 11 | 10 | 10 | 50,0 | 25,0 | 12,5 | 6,0 | 14,0 |
| 2001-07-04 | 3439 | 3438 | VERSAVERT | 76,0 | 1,60 | | | | | | 0 | 0 | | | | 50,0 | 36,0 | 10,5 | 5,0 | 11,0 |
| 2001-07-05 | 3439 | 3438 | VERSAVERT | 81,0 | 1,60 | | 93 | 57 | 40 | 26 | 0 | 0 | 10 | 10 | 8 | 50,0 | 36,0 | 10,5 | 5,0 | 11,0 |

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 6507/11-6 PO: 1

WATER BASED SYSTEM

Hole section : 36"

| Date | Depth [m] | Mud Type | Dens [sg] | Filtrate API [mm] | Filtcake API [mm] | HPHT Press [bar/DegC] | HPHT Temp [DegC] | pH | Alcalinity Pm [m] | Alcalinity Pf [m] | Inhib Chem [Kg/m3] | Inhib Mf [m] | K+ [mg/l] | CL- [mg/l] | Ca++ [mg/l] | Mg++ [mg/l] | Tot hard [mg/l] | Percentage Oil [%] | Sand [%] | CEC [Kg/m3] | ASG [sg] | LGS | |
|------------------|-----------|---------------|-----------|-------------------|-------------------|-----------------------|------------------|----|-------------------|-------------------|--------------------|--------------|-----------|------------|-------------|-------------|-----------------|--------------------|----------|-------------|----------|-----|---|
| MD | TVD | | | | | | | | | | | | | | | | | | | | | | |
| 2001-06-14 22:00 | 336 | BENTONITE MUD | 1,05 | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |
| 2001-06-15 20:00 | 377 | BENTONITE MUD | 1,03 | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |
| 2001-06-16 | 459 | BENTONITE MUD | 1,40 | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |

WATER BASED SYSTEM

Hole section : 26"

| Date | Depth [m] | Mud Type | Dens [sg] | Filtrate API [mm] | Filtcake API [mm] | HPHT Press [bar/DegC] | HPHT Temp [DegC] | pH | Alcalinity Pm [m] | Alcalinity Pf [m] | Inhib Chem [Kg/m3] | Inhib Mf [m] | K+ [mg/l] | CL- [mg/l] | Ca++ [mg/l] | Mg++ [mg/l] | Tot hard [mg/l] | Percentage Oil [%] | Sand [%] | CEC [Kg/m3] | ASG [sg] | LGS | |
|------------|-----------|---------------|-----------|-------------------|-------------------|-----------------------|------------------|----|-------------------|-------------------|--------------------|--------------|-----------|------------|-------------|-------------|-----------------|--------------------|----------|-------------|----------|-----|---|
| MD | TVD | | | | | | | | | | | | | | | | | | | | | | |
| 2001-06-17 | 459 | BENTONITE MUD | 1,03 | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |

WATER BASED SYSTEM

Hole section : 17 1/2"

| Date | Depth [m] | Mud Type | Dens [sg] | Filtrate API [mm] | Filtcake API [mm] | HPHT Press [bar/DegC] | HPHT Temp [DegC] | pH | Alcalinity Pm [m] | Alcalinity Pf [m] | Inhib Chem [Kg/m3] | Inhib Mf [m] | K+ [mg/l] | CL- [mg/l] | Ca++ [mg/l] | Mg++ [mg/l] | Tot hard [mg/l] | Percentage Oil [%] | Sand [%] | CEC [Kg/m3] | ASG [sg] | LGS | |
|------------------|-----------|---------------|-----------|-------------------|-------------------|-----------------------|------------------|------|-------------------|-------------------|--------------------|--------------|-----------|------------|-------------|-------------|-----------------|--------------------|----------|-------------|----------|-----|-----|
| MD | TVD | | | | | | | | | | | | | | | | | | | | | | |
| 2001-06-18 23:30 | 489 | BENTONITE MUD | 1,40 | 2,8 | 2 | / | 8,5 | 8,5 | 0,1 | 0,5 | 86 | 82000 | 600 | 600 | 600 | 600 | 600 | 12,0 | 0,2 | 7 | 3,9 | 41 | |
| 2001-06-19 22:30 | 1283 | KCL/POLYMER | 1,30 | 2,6 | 1 | / | 8,5 | 8,5 | 0,2 | 0,7 | 92000 | 88000 | 240 | 240 | 240 | 240 | 240 | 16,0 | 4,6 | 14 | 3,6 | 99 | |
| 2001-06-20 23:00 | 1591 | KCL/POLYMER | 1,31 | 2,6 | 1 | / | 8,2 | 8,2 | 0,1 | 0,6 | 92000 | 94000 | 400 | 400 | 400 | 400 | 400 | 16,5 | 4,5 | 0,1 | 14 | 3,5 | 108 |
| 2001-06-21 12:00 | 1608 | KCL/POLYMER | 1,30 | 2,6 | 1 | / | 8,2 | 8,2 | 0,1 | 0,6 | 92000 | 94000 | 400 | 400 | 400 | 400 | 400 | 16,0 | 4,5 | 0,1 | 14 | 3,6 | 97 |
| 2001-06-22 | 1608 | KCL/POLYMER | 1,30 | 2,8 | 1 | / | 4000,0 | 14,9 | | | | | | | | | | 16,0 | | | | | 11 |

OIL BASED SYSTEM

Hole section : 12 1/4"

| Date | Depth [m] | Mud Type | Density [sg] | Filtrate HPHT [ml] | Filtcake HPHT [mm] | HPHT Press [bar/DegC] | HPHT Temp [DegC] | Electrical stability [V] | Alcalinity Pm [m] | CaCl2 [mg/l] | Oil/Water Ratio | Solid [%] | Percentage Oil [%] | Sand [%] | ASG [sg] | LGS |
|------------------|-----------|-----------|--------------|--------------------|--------------------|-----------------------|------------------|--------------------------|-------------------|--------------|-----------------|-----------|--------------------|----------|----------|-----|
| MD | TVD | | | | | | | | | | | | | | | |
| 2001-06-23 | 2242 | VERSAVERT | 1,60 | 2,2 | 2 | 500 | 150 | 660 | | 126 | 76/24 | 26,0 | 56,0 | 0,3 | 3,7 | 131 |
| 2001-06-24 22:30 | 2917 | VERSAVERT | 1,60 | 2,2 | 1 | / | 150 | 816 | | 192 | 75/25 | 25,0 | 56,0 | 0,3 | 3,8 | 140 |
| 2001-06-25 22:00 | 2917 | VERSAVERT | 1,60 | 2,0 | 1 | / | 150 | 806 | | 192 | 75/25 | 25,0 | 56,0 | | 3,8 | 140 |
| 2001-06-26 23:30 | 2917 | VERSAVERT | 1,60 | 2,0 | 1 | / | 150 | 806 | | 192 | 75/25 | 25,0 | 56,0 | 0,3 | 3,8 | 140 |

OIL BASED SYSTEM

Hole section : 8 1/2"

| Date | Depth [m] | Mud Type | Density [sg] | Filtrate HPHT [ml] | Filtcake HPHT [mm] | HPHT Press [bar/DegC] | HPHT Temp [DegC] | Electrical stability [V] | Alcalinity Pm [m] | CaCl2 [mg/l] | Oil/Water Ratio | Solid [%] | Percentage Oil [%] | Sand [%] | ASG [sg] | LGS |
|------------------|-----------|-----------|--------------|--------------------|--------------------|-----------------------|------------------|--------------------------|-------------------|--------------|-----------------|-----------|--------------------|----------|----------|-----|
| MD | TVD | | | | | | | | | | | | | | | |
| 2001-06-27 22:30 | 2960 | VERSAVERT | 1,25 | 2,4 | 1 | / | 150 | 630 | | 102 | 75/25 | 17,0 | 63,0 | | 3,1 | 282 |
| 2001-06-28 22:00 | 3063 | VERSAVERT | 1,25 | 2,2 | 1 | / | 150 | 686 | | 111 | 76/24 | 16,0 | 64,0 | 0,2 | 3,3 | 228 |

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 6507/11-6 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 | | | | | | | | | | | | | | |
| 2001-06-29 22:30 | 3385 | 3384 | VERSAAVERT | 1,25 | 1,9 | 1 | / 150 | 765 | 114 | 76/24 | 15,0 | 65,0 | 0,3 | 3,5 | 173 |
| 2001-06-30 22:30 | 3440 | 3439 | VERSAAVERT | 1,25 | 2,0 | 1 | / 150 | 750 | 116 | 77/23 | 15,5 | 65,0 | 0,3 | 3,4 | 198 |
| 2001-07-01 | 3439 | 3438 | VERSAAVERT | 1,25 | 2,0 | 1 | / 150 | 740 | 116 | 77/23 | 15,5 | 65,0 | 0,3 | 3,4 | 198 |
| 2001-07-02 22:30 | 3439 | 3438 | VERSAAVERT | 1,25 | 2,0 | 1 | / 150 | 736 | 116 | 77/23 | 15,5 | 65,0 | 0,3 | 3,4 | 198 |
| 2001-07-03 22:30 | 3439 | 3438 | VERSAAVERT | 1,25 | 2,0 | 1 | / 150 | 730 | 116 | 77/23 | 15,5 | 65,0 | 0,3 | 3,4 | 198 |
| 2001-07-04 | 3439 | 3438 | VERSAAVERT | 1,60 | 2,2 | 1 | / | 690 | 15000 | 76/24 | 25,8 | 56,0 | 0,3 | 3,7 | 189 |
| 2001-07-05 | 3439 | 3438 | VERSAAVERT | 1,60 | 2,1 | 1 | / | 680 | 15000 | 75/25 | 25,5 | 56,0 | 0,3 | 3,7 | 189 |

TOTAL CONSUMPTION OF MUD ADDITIVES ON WELL 6507/11-6 PO: 1

| Section | Product/ Additive | Unit | Total Amount Used |
|---------|---------------------|------|-------------------|
| 36" | BARITE | kg | 80000,00 |
| | BENTONITE | kg | 35000,00 |
| | POTASSIUM CARBONATE | kg | 75,00 |
| | SODA ASH | kg | 325,00 |
| 26" | BARITE | kg | 20000,00 |
| | BENTONITE | kg | 10000,00 |
| | CMC EHV | kg | 125,00 |
| | MICA FINE | kg | 250,00 |
| | MICA MEDIUM | kg | 250,00 |
| | NUTPLUG F | kg | 250,00 |
| | NUTPLUG M | kg | 250,00 |
| 17 1/2" | BARITE | kg | 47000,00 |
| | CELPOL ESL | kg | 6450,00 |
| | DUOTEC NS | kg | 2725,00 |
| | GLYCOL | l | 15675,00 |
| | GLYDRIL MC | l | 180000,00 |
| | KCL | kg | 27000,00 |
| | KCL BRINE | l | 445000,00 |
| | SODA ASH | kg | 500,00 |
| 12 1/4" | BARITE | kg | 197000,00 |
| | BENTONE 128 | kg | 3275,00 |
| | CALCIUM CHLORIDE | kg | 4600,00 |
| | EDC 95/11 | l | 86000,00 |
| | LIME | kg | 3450,00 |
| | VERSAMOD | kg | 900,00 |
| | VERSAVERT F | l | 2438,00 |
| | VERSAVERT P | l | 3044,00 |
| | VERSAVERT PE | l | 5625,00 |
| 8 1/2" | BARITE | kg | 25000,00 |
| | BENTONE 128 | kg | 2075,00 |
| | CALCIUM CHLORIDE | kg | 6400,00 |
| | EDC 95/11 | l | 38000,00 |
| | LIME | kg | 6525,00 |
| | VERSAVERT F | l | 3437,00 |
| | VERSAVERT P | l | 2656,00 |
| | VERSAVERT PE | l | 3400,00 |
| 0.0 | CITRIC ACID | kg | 625,00 |
| | MICA FINE | kg | 125,00 |
| | MICA MEDIUM | kg | 125,00 |
| | NUTPLUG F | kg | 125,00 |
| | NUTPLUG M | kg | 125,00 |
| | POTASSIUM CARBONATE | kg | 50,00 |
| | SODA ASH | kg | -50,00 |
| | SODIUM BICARBONATE | kg | 625,00 |

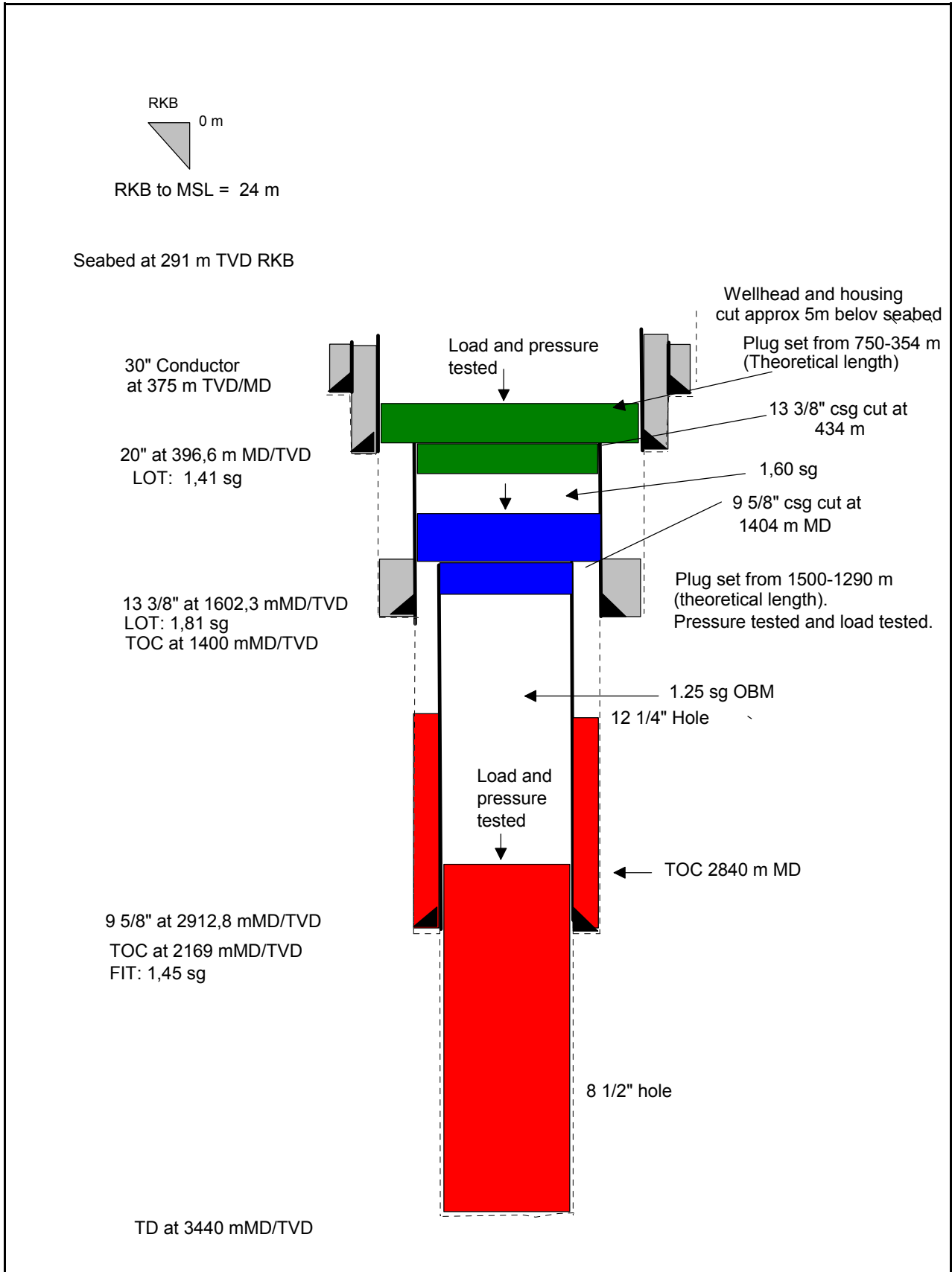
LOGGING INFORMATION ON WELL 6507/11-6

Hole size: 8 1/2"

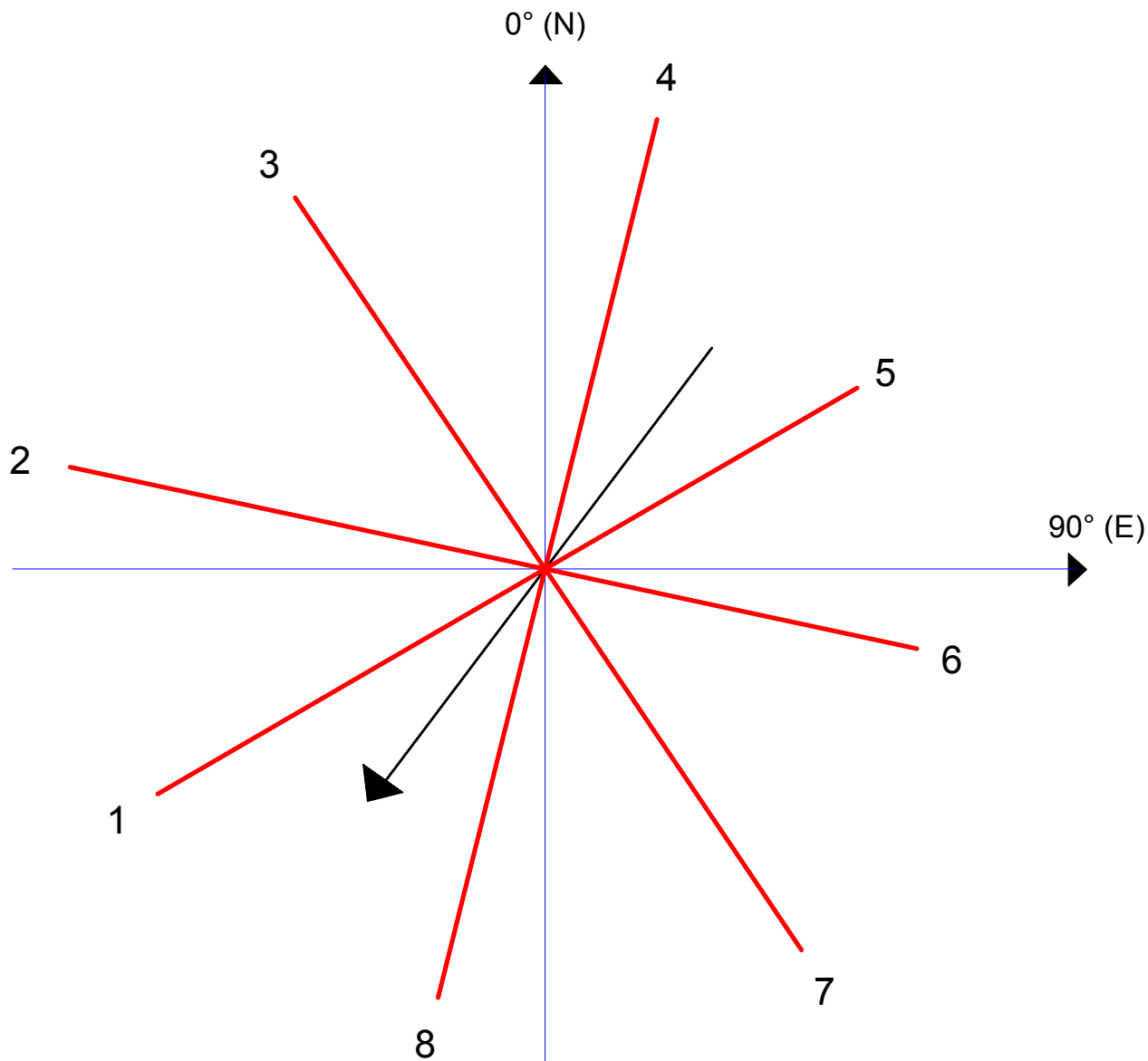
| # | Run No. | Logging Company | Logged Bottom [m MD] | Logged Top [m MD] | Log Suite |
|---|---------|-----------------|----------------------|-------------------|-----------|
| 1 | 1A | | 3398,2 | 3034 | MDT/GR |
| 2 | 1B | | 3398 | 2982 | MSCT/GR |
| 3 | 1A | | 3420 | 2600 | DSI/CAL |
| 4 | 1A | | 3420 | 2100 | VSP |

Downtimereport

| Well | Rep | # | Hrs | Date | Downtime Type | Short Description | Responsible Contractor | Nsfi Type | Equipment Type | Service Type | |
|-----------|-----|---|------|--------------|----------------|--|------------------------|---------------------|------------------|--------------|--|
| 6507/11-6 | 1. | | 27.5 | 2001-06-11 | Waiting on we | Waited on weather. | NORSK HYD | | | | |
| | 2. | | 29.5 | 2001-06-14 | Other | Not able to pass 323 m with conductor. | BJ SERVICES | Cement: Head | SERVICE EQUIPME | CEMENTING | |
| | 3. | | 4.0 | 2001-06-17 | Equipment fail | Attempted to circulate through cement head. No go. Trouble shoot same. Result: cement head was loaded the wrong way. Disconnected cement head and made up pump in sub. | NORSK HYD | Miscellaneous equi | MISCELLANEOUS E | OTHER | |
| | 4. | | 12.0 | 2001-06-20 | Equipment fail | Hard stringer. Checked mud motor while circulating hole clean. POOH to check motor. | NORSK HYD | | | | |
| | 5. | | 2.5 | 2001-06-20 | Other | Lots of mudcake over the shakers after motor change. Circulated with 800-1100 lpm | NORSK HYD | | | | |
| | 6. | | 0.5 | 2001-06-22 | Equipment fail | Casing running tool full of pebbles. Picked up casing running tool. Broke out 2 cross overs and laid all put. | DRIL-QUIP | Wellhead Running | MISCELLANEOUS E | WELLHEAD | |
| | 7. | | 1.0 | 2001-06-22 | Waiting for ce | | ANADRILL | | | | |
| | 8. | | 1.0 | 2001-06-24 | Equipment fail | Wash pipe leak. Changed same. | TRANSOCEA | Top Drive | HOISTING EQUIPME | DRILLING CO | |
| | 9. | | 0.5 | 2001-06-26 | Equipment fail | Obstruction in surface lines. Attempted to pump spacer through kelly hose and cement hose. No success. | TRANSOCEA | Other Drill Floor E | DRILL FLOOR EQUI | DRILLING CO | |
| | 10. | | 13.0 | 2001-06-26 | Equipment fail | Not able to set 9 5/8" seal assembly. | DRIL-QUIP | Wellhead | SERVICE EQUIPME | WELLHEAD | |
| | 11. | | 0.5 | 2001-06-29 | Equipment fail | Wash pipe leaked. Pulled back to 3015 m, installed swivel and circulated while changing wash pipe. | TRANSOCEA | Top Drive | HOISTING EQUIPME | DRILLING CO | |
| | 12. | | 0.5 | 2001-06-29 | Equipment fail | Changed leaking wash pipe. | TRANSOCEA | Top Drive | HOISTING EQUIPME | DRILLING CO | |
| | 13. | | 0.5 | 2001-06-29 | Equipment fail | Changed leaking wash pipe. | TRANSOCEA | Top Drive | HOISTING EQUIPME | DRILLING CO | |
| | 14. | | 0.5 | 2001-06-29 | Equipment fail | Changed leaking wash pipe. | TRANSOCEA | Top Drive | HOISTING EQUIPME | DRILLING CO | |
| | 15. | | 1.5 | 2001-07-01 | Equipment fail | Not able to test MSCT tool. POOH and changed to back-up tool Ran in hole to 1000 m. | SCHLUMBER | Side Wall Cores (| SERVICE EQUIPME | ELECTRIC LO | |
| | 16. | | 3.5 | 2001-07-03 | Waiting for ce | Waited on cement. | NORSK HYD | | | | |
| | 21. | | 5.5 | 2001-07-05 | Waiting for ce | Waited on cement. | NORSK HYD | | | | |
| | 22. | | 3.0 | 2001-07-06 | Waiting for ce | Waiting on cement. | NORSK HYD | | | | |
| | 23. | | 3.0 | 2001-07-07 | Equipment fail | Attempted to engage MOST tool - unable to do so. | WEATHERF | Casing cutting Equ | DRILLSTRING/DOW | CASING CUT | |
| | | | | 110.0 | | | | | | | |



| | | |
|--|---|------------------------------|
| <p>Final Well Well 6507/11-6</p> | <p>Fig. 9.3 Revision: 0</p> | <p>Barrier Figure</p> |
|--|---|------------------------------|



RIGHEADING 215 DEG.

| ANCHOR NO | DIRECTION (DEG.) | LENGTH (m) |
|-----------|------------------|------------|
| 1 | 238 | 1599 |
| 2 | 283 | 1706 |
| 3 | 328 | 1650 |
| 4 | 13 | 1739 |
| 5 | 58 | 1288 |
| 6 | 103 | 1334 |
| 7 | 148 | 1693 |
| 8 | 193 | 1658 |

Figure 2

RIG ANCHORS
 TRANSOCEAN ARCTIC
 6507/11-6

HYDRO

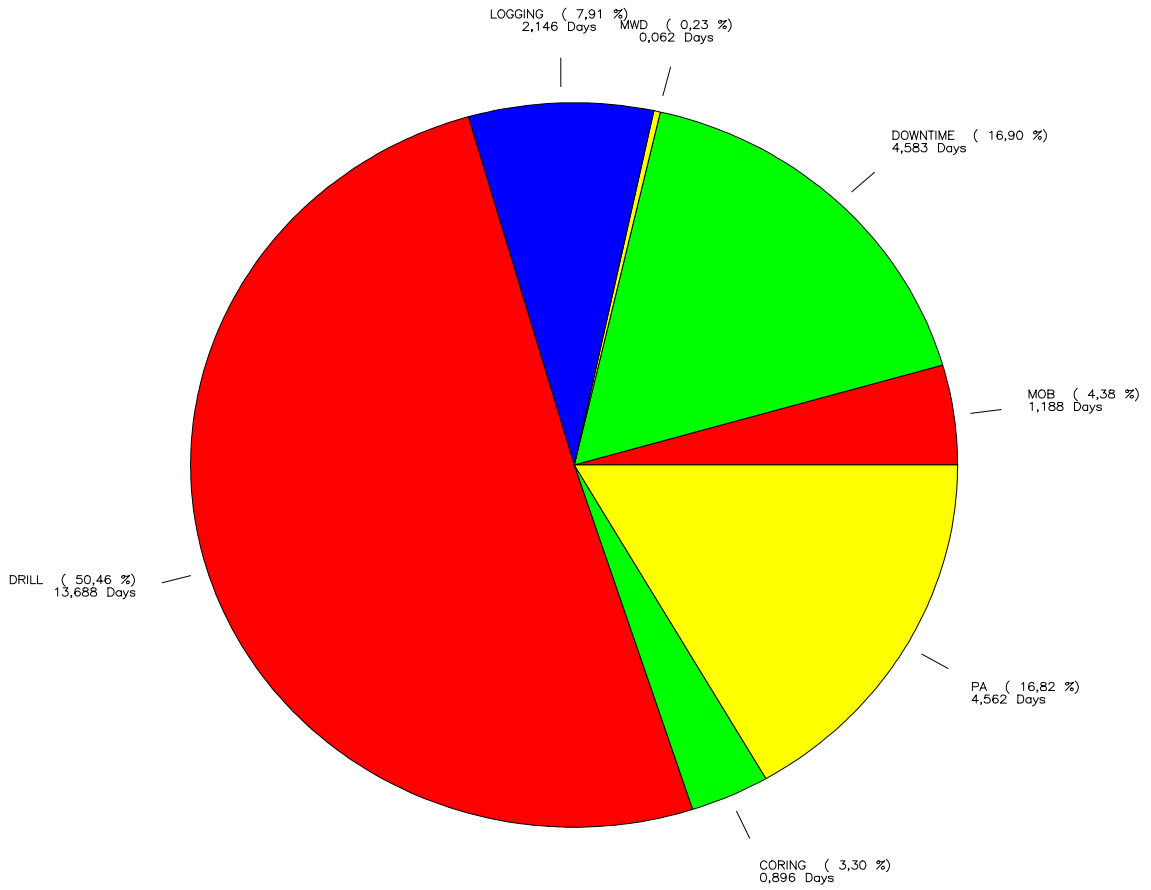


Figure 3

Time Distribution
6507/11-6

HYDRO

SECTION C

COMPOSITE LOG

LITHOLOGY LOG

CORE LOG

GASRATIO LOG

POST SITE SURVEY PANEL