STATOIL

COMPLETION REPORT
WELL 6507/3-3A &3B
PL 159

Exploration and Development
Halten/Nordland

December 1999

Enterprise Oil

saga

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Completion Report
Well 6507/3-3A & 3B

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APPENDIX I
Wellsite sample description, 6507/3-3A

APPENDIX II
Wellsite sample description, 6507/3-3B

ENCLOSURES
Statoil Completion Log, 6507/3-3A
Geoservices Formation Evaluation Log, 6507/3-3A
Geoservices Pressure Evaluation Log, 6507/3-3A

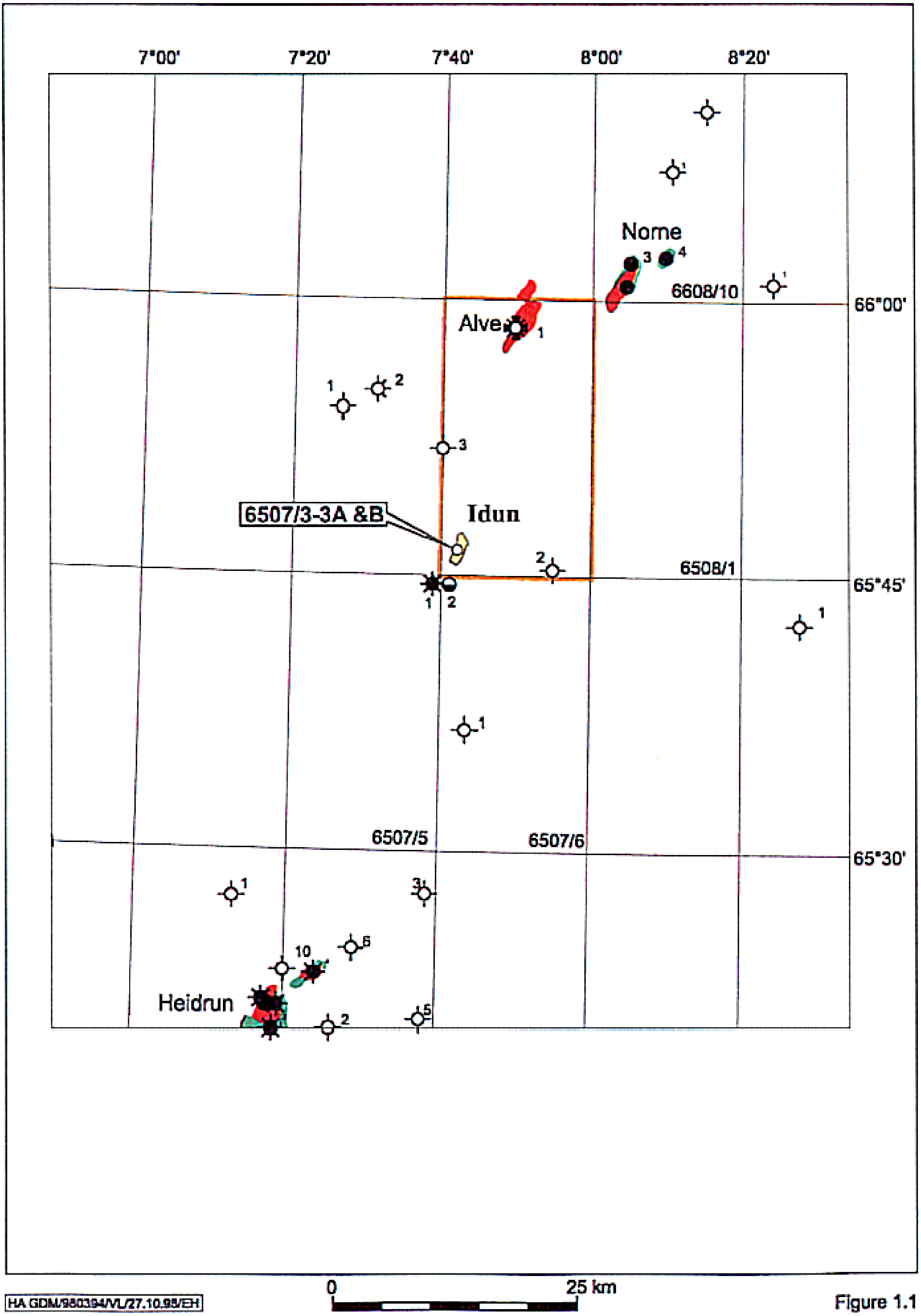
Statoil Completion Log, 6507/3-3B
Geoservices Formation Evaluation Log, 6507/3-3B
Geoservices Pressure Evaluation Log, 6507/3-3B

1 General Information

1 .1 Well Data Record

Well Designation	6507/3-3A & 3B	
Well Classification	Exploration	
Prospect	Idun	
Well Location		
Country	Norway	
Area	Nordland II	
Licence	PL 159	
	Statoil (Operator)	50 %
	Enterprise Oil Norge LTD.	40 %
	Saga Petroleum ASA	10 %
Geographic co-ordinates	Latitude N 65° 48' 03.73"	
	Longitude E 07° 43' 28.69"	
	Datum ED-1950	
UTM co-ordinates	N 7 298 510 m	
	E 441 665 m	
	UTM zone 32, CM 09 E	
Seismic reference	3D ST9717	
	Inline 3260, Crossline 2590	
Water depth	391m	
Total depth of the wells		
6507/3-3A	4528 mMD RT (Drillers depth), 3692.5 mTVD MSL	
6507/3-3B	4275 mMD RT (Drillers depth), 3816 mTVD MSL	
Formations at TD		
6507/3-3A	Melke Formation	
6507/3-3B	Tilje Formation	

PL 159, Well 6507/3-3A &B
INDEX MAP



HA GDM/980394/VL/27.10.98/EH

Figure 1.1

PL159, Block 6507/3
Structural Cross Section through
Idun North, Idun and Idun East

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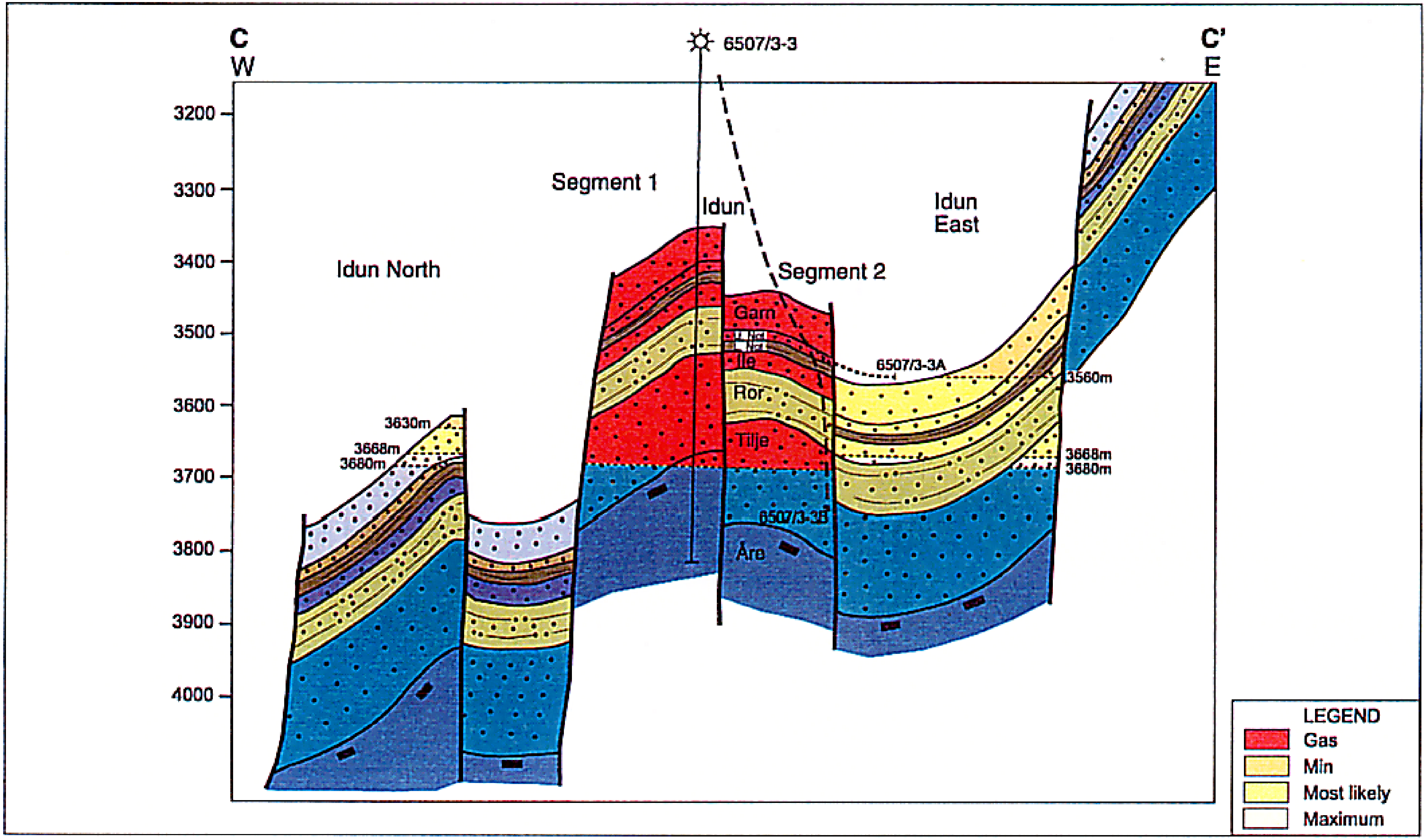

Fig 1.2

HA KTJ/990452b/ML/01.11.99/EH

PL159, Block 6507/3

Structural depth map- Top Fangst

JURASSIC DISC . AND PROSP.- IDUN/SKARV AREA

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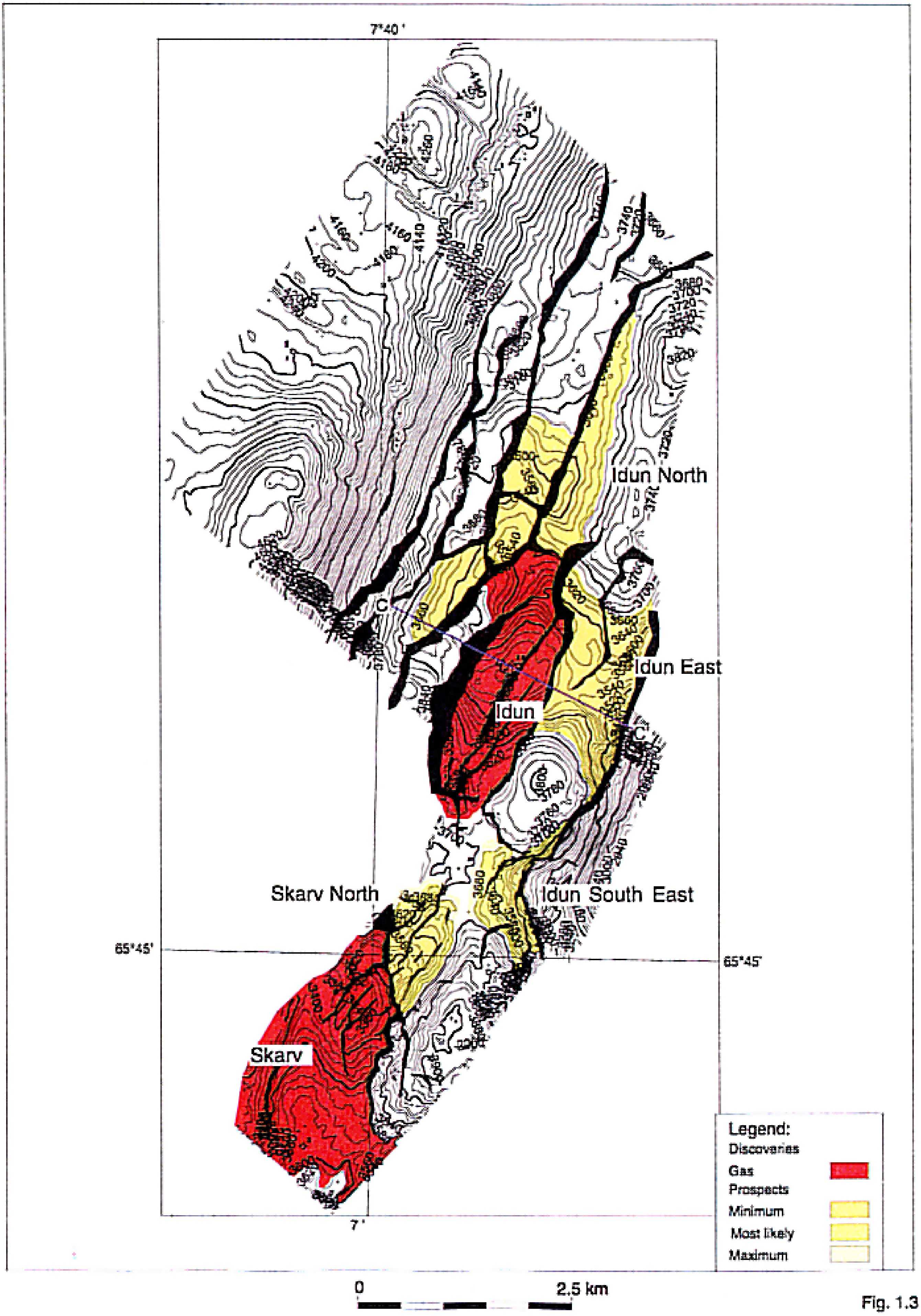


Fig. 1.3

1 .2 Rig Data

Rig name	Byford Dolphin
Rig contractor	Dolphin a.s.
KB elevation	25 m

1 .3 Purpose of the wells

The main objectives for the wells were to test a possible oil leg in the downtfaulted eastern segment of the Idun structure, and to establish the hydrocarbon-water contact.

1 .4 Results of the wells

The original well, 6507/3-3, was sidetracked from 1785 mMD RT and drilled to depth 4528 mMD RT/3717,5 mTVD RT. The sidetrack is named 6507/3-3A. When drilling the Not Formation in this well, the wellpath re-entered the stratigraphic younger Melke Formation through an unprognosed fault. A new sidetrack was drilled from 6507/3-3A with kick off point at 3754 mMD RT, by milling through the 9 5/8" casing. The new sidetrack, 6507/3-3B, was drilled to a total depth 4275 mMD RT/3841 mTVD RT into the Tilje Formation. (See fig. 1.2)

Gas was proven in the Jurassic sandstones (fig. 1.3). The wells were permanently plugged and abandoned.

1 .5 Well History

1 .5 .1 General

On licence	8th of December 1998
On location	14th of December 1998
Start drilling date	
6507/3-3A	25th of March 1999
6507/3-3B	7th of May 1999
Finished drilling	
6507/3-3A	24th of April 1999
6507/3-3B	11th of June 1999
Rig release	20th of June 1999
Status	The wells were plugged and abandoned.

1.5.2 Contractors

Casing	Weatherford
Cementing	Halliburton
Core analysis	Oilphase
Coring	Baker Hughes Inteq
Diving	Oceaneering
Drilling contractor	Dolphin Doc AS
Electric logging	Schlumberger Wireline
Helicopters	Helicopter Service A/S
Mud	Dowell Schlumberger
Mud logging	Geoservices
MWD	Baker Hughes Inteq
Paleodating	GeoStrat
Rig positioning	Racal Survey
Site Survey	Geoteam
Supply boats	Helgelandsbase
VSP	Baker Atlas
Wellhead system	ABB Vetco

1.5.3 Casing

Casing size	Shoe depth (mMD RT)		Leak off tests (equiv. mud weight)
	6507/3-3A	6507/3-3B	
9 5/8"	3794	(3757 window in csg.)	1.58 g/cm^3 (FIT)
7" scab liner		3899	

1.5.4 Conventional Cores

No cores were cut in these wells.

1.5.5 Sidewall Cores

No sidewall cores were run in these wells.

1.5.6 Mud Logging

A standard North Sea Mudlogging unit running Geoservices software was used for these wells. The unit recorded, among others, the following parameters:

i) Drilling rate (ROP)

ii) Lithology
iii) Cutting gas
iv) Mud gas
v) Chromatograph analysis

For details, see separate report, Geoservices "End of Well Report".

1.5.7 Logging

1.5.7.1 Electric Logging : Schlumberger

Well 6507/3-3A and 3B

Type of log	Run no.	Interval (mRKB) from	to	Comments
		6507/3-3A		
MDT-GR	1A	3802	3875	Pressure points and sampling
DSI-GR	2A	3892	3050	Also log top cement at 2410m
		6507/3-3B		
LDT-CNL-GR-MDT	1A	4252	3894	Nuclear log and pressure points, PCL

1.5.7.2 MWD Logging : Baker Hughes Inteq

Well 6507/3-3A

Type of tool	Collar (inches)	Run no.	Interval (mMD RT) from	to	Comments
GR-MPR	12 1/4"	1	1758	1998	Drilling 12 1/4" hole
GR-MPR	12 1/4"	2	1998	2617	Drilling 12 1/4" hole
GR-MPR	12 1/4"	3	2617	3079	Drilling 12 1/4" hole
GR-MPR	12 1/4"	4	3079	3260	Drilling 12 1/4" hole
GR-MPR	12 1/4"	5	3260	3396	Drilling 12 1/4" hole
GR-MPR	12 1/4"	6	3396	3555	Drilling 12 1/4" hole
GR-MPR	12 1/4"	7	3555	3805	TD of 12 1/4" hole
RNT-TC	6 3/4"	8	3805	3891	Drilling 8 1/2" hole incl. float/shoe Navigator (Triple-Combo)
RNT-TC	6 3/4"	9	3891	4147	Navigator (Triple-Combo)
RNT-TC	6 3/4"	10	4147	4528	No response from density tool
RNT-TC	6 3/4"	11	3837	4100	Timedrilling, no new hole made
RNT-TC	6 3/4"	12	3638	3895	Timedrilling, no new hole made
DIR	6 3/4"	13	3752	3761	Directional only, run with whipstock

Well 6507/3-3B

Type of tool	Collar (inches)	Run no.	Interval (mMD RT) from	to	Comments
RNT-TC	6 3/4"	1	3752	3820	Drilling 8 1/2" hole. Navigator (TC)
RNT-TC	6 3/4"	2	3820	3889	Dens and Neutron not trustworthy (TC)
RNT-TC	6 3/4"	3	3889	3899	No Dens or Neutron tool included due to junk in hole (Triple-Combo)
GR-MPR	6 3/4"	4	3899	3952	Navigator
GR-MPR	6 3/4"	5	3952	4121	Navigator
RNT-TC	6 3/4"	6	3790	4174	Reamed from shoe, drilled ahead with Triple-Combo
RNT-TC	6 3/4"	7	4174	4275	Drilled to TD with Triple-Combo

1.5.8 Velocity Survey

No VSP were run these wells.

1.6 List of additional available Reports from well 6507/3-A & 3B

Baker Hughes Inteq	- MWD End of Well Report - Reservoir Navigation Sevrices, Post-Well report - End of well report, dir. drilling
Geoservices	- End of Well Report, Mudlogging
GeoStrat	- Statoil wells 6507/3-3A Biostratigraphy of the interval 3080 - 4520m and 6507/3-3B Biostratigraphy of the interval 3980 - 4275m
Geoteam	- Site survey at location 6507/3-C, Vol. I & II
Oilphase	- PVT Report - MDT chamber well 650773-3A - Determination of Olefin in mud sample, well 6507/3-3A
Racal Survey	- Positioning report of drilling rig "Byford Dolphin" at well location 6507/3-3
Schlumberger	- DSI Sonic Relabelling, well 6507/3-3A
Statoil	- Well Programme PL 159, well 6507/3-3A - HMS-dokumentasjon, PL 159

- Water analysis, MDT sample well 6507/3-3B
- Block 6507/3 Prospect evaluation and well proposal C-Fangst (Idun), well 6507/3-3, September 1998

2 Geological Report

2.1 Geological Setting

The production licence 159, block 6507/3 was awarded on the 3rd of March 1989 in the 12B concession round, and the well 6507/3-3 was the fourth well drilled in the licence.
The Idun prospect is situated in the SW corner of block 6507/3, structurally located at the Dønna Terrace adjacent to the Revfallet Fault Complex to the East. The Skarv discovery is situated to the South (app. 5 km) of the Idun prospect.

2.2 Stratigraphy

The stratigraphy is based on GeoStrat biostratigraphic report and Statoil's own interpretation. Samples were collected and logs were run from the kick off point in both wells. The biostratigraphic analyses are performed over the interval 3080 mMD to 4520 mMD in 6507/3-3A, and over the interval 3980 mMD to 4275 mMD in 6507/3-3B.
An overview of the stratigraphy and the lithology is presented in Fig. 2.1. - 2.2. The depths are in meters with drill floor as datum unless otherwise stated.

2.2.1 *Table of Biostratigraphy, well 6507/3-3A*

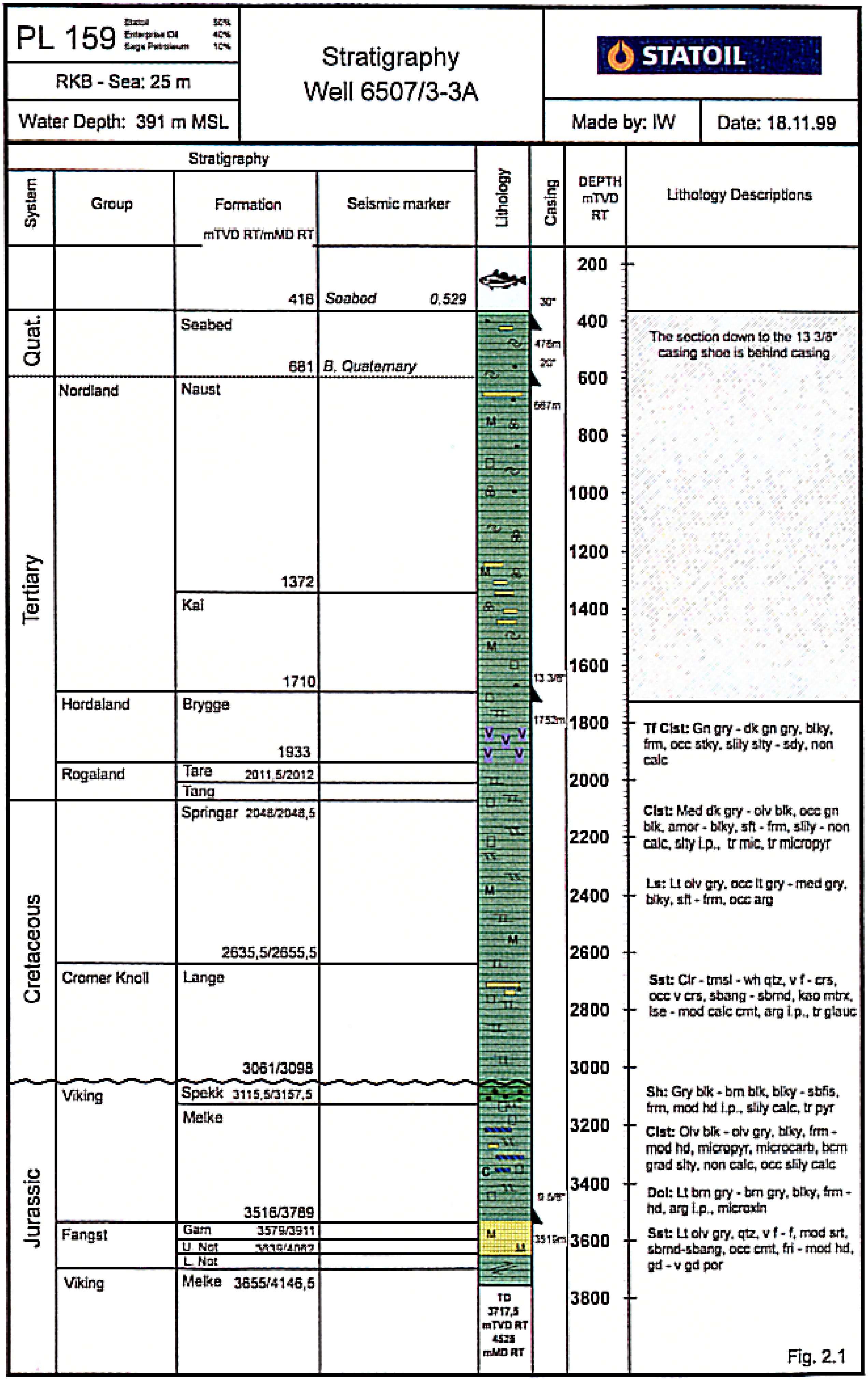
Stratigraphic Succession 6507/3-3A		mMD RT From	mMD RT To
Lower Cretaceous	Middle Albian?-?Upper Aptian	3080	3080
	--------- ?Unconformity ----------		
	Upper Barremian	3095	3095
	Lower Barremian	3110	3110
---------- Unconformity ----------			
Upper Jurassic	Lower Volgian	3125	3125
	Kimmeridgian	3140	3155
	Lower Kimmeridgian	3170	3170
	Upper Oxfordian	3185	3200
	Middle Oxfordian	3215	3215
	Lower Oxfordian	3230	3230
Middle Jurassic	Upper Callovian	3230	3230
	Mid-Lower Callovian	3245	3305
	Lower Callovian	3320	3320
	Lowermost lower Callovian - Upper Bathonian	3335	3350
	Middle Bathonian	3365	3455
	Lower Bathonian - ?Upper Bajocian	3470	3680
	Upper Bajocian	3695	3695
	Lower Bajocian	3710	3755
	Lowermost lower Bajocian - Aalenian	3760	4140
	---------- Fault ----------		
	Upper Bajocian? - Lower Bathonian	4150	4520

2.2.2 *Table of Biostratigraphy, well 6507/3-3B*

Stratigraphic Succession 6507/3-3B		mMD RT From	mMD RT To
Middle Jurassic	Aalenian	3980	4015
	---------- ?Fault ----------		
	Lowermost Lower Bajocian - Aalenian	4020	4080
	Lowermost Aalenian	4085	4130
Lower Jurassic	Upper Toarcian	4135	4245
	Lower Toarcian	4250	4275

2.2.3 Table of Lithostratigraphy, wells 6507/3-3A & 3B

Lithostratigraphic tops	6507/3-3A		6507/3-3B	
	mMD	**mTVD**	**mMD**	**mTVD**
Hordaland Group	**1710**	**1710**		
Brygge Formation	1710	1710		
Rogaland Group	**1933**	**1933**		
Tare Formation	1933	1933		
Tang Formation	2012	2011.5		
Shetland Group	**2048.5**	**2048**		
Springar Formation	2048.5	2048		
Cromer Knoll Group	**2655.5**	**2635.5**		
Lange Formation	2655.5	2635.5		
Viking Group	**3098**	**3061**		
Spekk Formation	3098	3061		
Melke Formation	3157.5	3115.5		
Fangst Group	**3789**	**3516**		
Garn Formation	3789	3516	3792	3517.5
Upper Not Formation	3911	3579	3920.5	3579.5
Lower Not Formation	4007	3621	3980.5	3615
Ile Formation			4020	3640
Båt Group			**4110**	**3705**
Upper Ror Formation			4110	3705
Lower Ror Formation			4170.5	3778
Tilje Formation			4215.5	3790.5
Viking Group	***4146.5***	***3655***		
Melke Formation	*4146.5*	*3655*		
TD	**4528**	**3717.5**	**4275**	**3841**


PL 159
Statoil 50%
Enterprise Oil 40%
Saga Petroleum 10%
RKB - Sea: 25 m
Water Depth: 391 m MSL
Stratigraphy
Well 6507/3-3A
STATOIL
Made by: IW
Date: 18.11.99
Stratigraphy
System
Group
Formation
mTVD RT/mMD RT
Seismic marker
Lithology
Casing
DEPTH mTVD RT
Lithology Descriptions
200
418
Seabed 0,529
30"
400
Quat.
Seabed
476m
20"
681
B. Quaternary
600
667m
Tertiary
Nordland
Naust
800
1000
1200
1372
Kai
1400
1600
1710
13 3/8"
1753m
Hordaland
Brygge
1800
1933
Rogaland
Tare 2011,5/2012
2000
Tang
Cretaceous
Springar 2048/2048,5
2200
2400
2600
2635,5/2655,5
Cromer Knoll
Lange
2800
3000
3061/3098
Jurassic
Viking
Spekk 3115,5/3157,5
Melke
3200
3400
9 5/8"
3516/3789
Fangst
Garn 3579/3911
3519m
3600
U. Not
L. Not
Viking
Melke 3655/4146,5
3800
TD 3717,5 mTVD RT 4528 mMD RT
The section down to the 13 3/8" casing shoe is behind casing
Tf Clst: Gn gry - dk gn gry, blky, frm, occ stky, slily slty - sdy, non calc
Clst: Med dk gry - olv blk, occ gn blk, amor - blky, sft - frm, slily - non calc, slty i.p., tr mic, tr micropyr
Ls: Lt olv gry, occ lt gry - med gry, blky, sft - frm, occ arg
Sst: Clr - trnsl - wh qtz, v f - crs, occ v crs, sbang - sbrnd, kao mtx, lse - mod calc cmt, arg i.p., tr glauc
Sh: Gry blk - brn blk, blky - sbfis, frm, mod hd i.p., slily calc, tr pyr
Clst: Olv blk - olv gry, blky, frm - mod hd, micropyr, microcarb, bcm grad slty, non calc, occ slily calc
Dol: Lt brn gry - brn gry, blky, frm - hd, arg i.p., microxln
Sst: Lt olv gry, qtz, v f - f, mod srt, sbrnd-sbang, occ cmt, fri - mod hd, gd - v gd por
Fig. 2.1

PL 159 — Statoil 50%, Enterprise Oil 40%, Saga Petroleum 10%	Stratigraphy Well 6507/3-3B	STATOIL	
RKB - Sea: 25 m			
Water Depth: 391 m MSL		Made by: IW	Date: 17.11.99

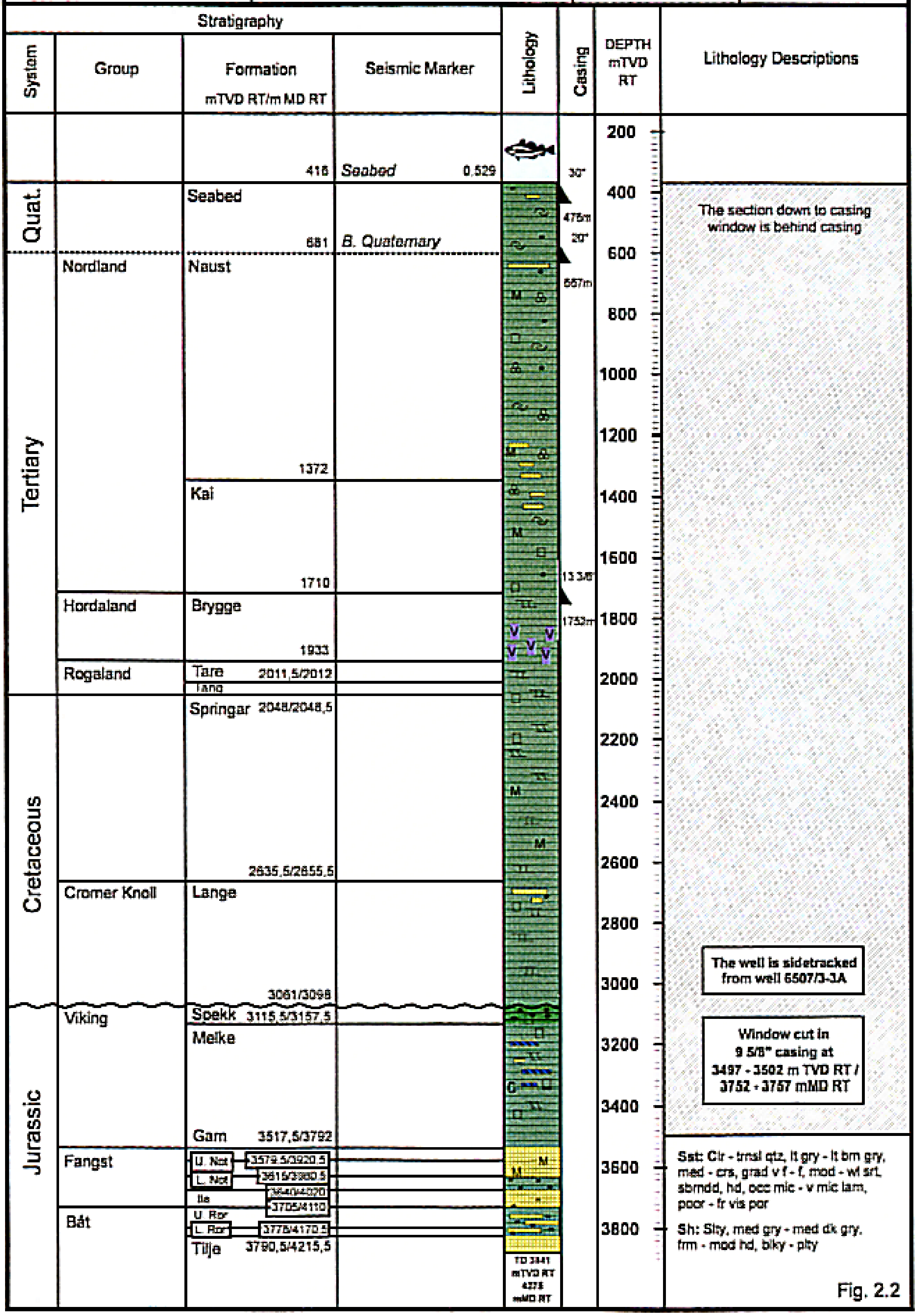


Fig. 2.2

2.3 Lithological Description

The lithogical description of the two wells are summarised in one description in this report, unless otherwise informed. An overview over the groups and formations from/to depths pertinent to the wells are given in table 2.2.3.

2.3.1 General Information

System, Series and Stage: Partly based on log interpretation, correlation and partly on biostratigraphic report

Depositional environment: Based on biostratigraphic report and core analysis, as well as earlier regional and biostratigraphic reports.

Lithology: The lithological description is based on the sample descriptions, Appendix I - II.

2.3.2 Geological Summary

HORDALAND GROUP 1710 - 1933 mMD RT, 1685 - 1908 mTVD MSL

The Hordaland Group consists of the Brygge Formation in well 6507/3-3A. The sidetrack well starts in the Brygge Formation.

Brygge Formation 1710 - 1933 mMD RT, 1685 - 1908 mTVD MSL

Series: Tertiary
Stage: Lower Eocene to Lower Miocene
Depositional environment: Marine, outer shelf

The Brygge Formation consists of silty to sandy claystone with stringers of sandstone and limestone in the middle part of the formation. Tuffaceous claystone is recorded in the lower and partly in the middle part. Limestone is also present in the formation, particularly in the upper part.

The claystone is brownish grey, medium dark grey to olive grey, dark greenish grey, soft to firm, and amorphous to blocky. It is generally silty to sandy with traces of glauconite and micromica, and non calcareous.

The sandstone consists of loose quartz grains, predominantly fine to medium grained. The siltstone is grading to claystone and is brownish black to brownish grey, firm, sandy and slightly glauconitic.

The limestone is very light grey, white, soft to firm and amorphous to blocky.

The lower and partly in the middle part of the Brygge Formation consists of tuffaceous claystone which is predominantly greenish grey to dark greenish grey, in parts brownish grey and occasionally the dark yellowish brown. It is predominantly blocky to firm, slightly silty to sandy and non calcareous. Occasionally the tuffaceous claystone is sticky.

ROGALAND GROUP 1933 - 2048.5 mMD RT, 1908 - 2023 mTVD MSL

The top of the Rogaland Group is picked where a slight decrease in the sonic transit time readings corresponds with a peak on the gamma ray log. The "barrel" shaped log characteristic seen from other wells in the area is absent in this well. The Rogaland Group consists of the Tare and Tang Formations.

Tare Formation 1933 - 2012 mMD RT, 1908 - 1986.5 mTVD MSL

Series: Tertiary
Stage: Lowermost Lower Eocene
Depositional environment: Marine, outer shelf

The Tare Formation consists predominantly of claystone with thin limestone stringers.

The claystone is predominantly olive black, but also medium grey to dark grey, dark greenish grey. It is blocky, firm, non to slightly silty and non calcareous. Slight traces of micropyrite occur.

The limestone is light brownish grey, blocky, firm and massive, and slightly argillaceous. Occasionally it is dolomitic; dusky yellowish brown, blocky and firm to moderately hard.

Tang Formation 2012 - 2048.5 mMD RT, 1986.5 - 2023 mTVD MSL

Series: Tertiary
Stage: Upper Paleocene
Depositional environment: Marine, outer shelf to upper bathyal

The top of the Tang Formation is represented by a drop in the gamma ray readings and a peak on the sonic velocity, density values and resistivity values. The Tang Formation consists of claystone with a few stringers of limestone.

The claystone is medium dark grey to dark grey, blocky, firm to soft, occasionally slightly silty and non calcareous. Traces of micropyrite occur.

The limestone stringers are light grey, light olive grey, yellowish brown, blocky, firm and argillaceous in part. Yellowish grey, translucent, crystalline and hard limestone also occur.

SHETLAND GROUP 2048.5 - 2655.5 mMD RT, 2023 - 2610.5 mTVD MSL

The top of the Shetland Group is seen as a decrease in the transit time readings, increasing resistivity and gamma ray readings, and a shift to higher density values compared to the Tang Formation. The Shetland Group consists only of the Springar Formation in this well.

Springar Formation 2048.5 - 2655.5 mMD RT, 2023 - 2610.5 mTVD MSL

Series: Upper Cretaceous
Stage: Lower Maastrichtian to N/A
Depositional environment: Marine, outer shelf to upper bathyal

The Springar Formation consists predominantly of claystone with stringers of limestone and dolomite.

The claystone is medium dark grey to dark grey, greyish black, occasionally greenish to dark greenish black. It is soft to firm, amorphous to blocky, silty in parts, and slightly calcareous to non calcareous. Traces of mica and micropyrite are present in the claystone.

The limestone is light brownish grey, occasionally very light to medium grey, soft to firm, blocky and occasionally argillaceous. Also moderate yellowish brown, crystalline, firm to hard and blocky limestone occur.

The dolomite is dusky yellowish brown to pale brown, blocky, firm to moderately hard and argillaceous in parts.

CROMER KNOLL GROUP 2655.5 - 3098 mMD RT, 2610.5 - 3036 mTVD MSL

The top of the Group is picked at a peak on the resistivity- and sonic log. The Cromer Knoll Group comprises only the Lange Formation in this well.

Lange Formation **2655.5 - 3098 mMD RT, 2610.5 - 3036 mTVD MSL**

Series: Lower Cretaceous
Stage: N/A to Lower Barremian
Depositional environment: Marine, mid shelf

The Lange Formation is predominantly claystone with stringers of sandstone and limestone/ dolomite.

The claystone is dark grey to olive black grading to medium bluish grey to greyish black at increasing depth. In the lower part dark reddish brown to moderate brown claystone occurs. It is soft to firm, has blocky to amorphous cuttings and is non to slightly calcareous. At the top the claystone is slightly silty and the silt content decrease towards the base of the formation. Traces of micromica and pyrite are present.

The sandstone is brownish grey and consists of clear to translucent and white quartz. The grains are very fine to coarse, predominantly fine, occasionally very coarse, poor to moderate sorted and subangular to subrounded. The sandstone is loose to moderate calcareous and silica cemented and a light brown kaolinite matrix occur in some parts. It is friable and with traces of micromica and glauconite, occasionally with coal fragments and is argillaceous in parts. The visible porosity is poor to moderate.

The limestone is very light grey in parts dark yellowish brown becoming light yellowish brown. The cuttings are blocky to flaky, firm to moderately hard, occasionally fine sandy and slightly argillaceous, microcrystalline to crystalline. It is occasionally glauconitic

The dolomite occur as traces and is dark yellowish brown to moderate brown, blocky and massive, firm to moderately hard and occasionally microcrystalline.

VIKING GROUP **3A: 3098 - 3789 mMD RT, 3036 - 3491 m TVD MSL**
Re-enter Viking Group in 3A:
4146.5 - 4528 (TD) mMD RT, 3630 - 3692.5 mTVD MSL
3B: 3098 - 3792 mMD RT, 3036 - 3492.5 mTVD MSL

The Viking Group comprises the Spekk and Melke Formations. The top of the Viking Group is characterised by a significant increase in gamma ray readings and a drop in density- and sonic velocity values. In sidetrack 6507/3-3A the Viking Group was re-entered from the Fangst Group drilling through a fault into a down faulted block. On the logs a small shift in the gamma ray to a lower level and a more quite pattern. The same small shift to a slightly lower level and a quite pattern can be found on the resistivity logs. The part of the Viking Group penetrated in this hole section is dated to be part of the Melke Formation.

Spekk Formation **3098 - 3157.5 mMD RT, 3036 - 3090.5 mTVD MSL**

Series: Upper Jurassic
Stage: Lower Volgian to Kimmeridgian
Depositional environment: Marine, mid to outer shelf

The Spekk Formation consist of dark organic rich claystone with traces of limestone and dolomite.

The claystone is dark grey to greyish black, soft to moderately hard and amorphous to blocky, subfissile in parts. It is carbonaceous and non to slightly calcareous. Traces of pyrite occur.

Dolomite occur as traces and is light olive grey to dark brownish grey, blocky, firm to hard, argillaceous and microcrystalline.

The limestone traces are very light grey and white, soft and blocky, subangular to subrounded They are argillaceous and crystalline.

Melke Formation **3A: 3157.5 - 3789 mMD RT, 3090.5 - 3491 mTVD MSL**
Re-enter Melke Formation in 3A:
4146.5 - 4528 (TD) mMD RT, 3630 - 3692.5 mTVD MSL
3B: 3157.5 - 3792 mMD RT, 3090.5 - 3492.5 mTVD MSL

Series: Upper to Middle Jurassic
Stage: Lower Kimmeridgian to Lowermost Lower Bajocian - Aalenian
Depositional environment: Marine, inner shelf, marginal marine

The top of the Melke Formation is observed as a major drop in the gamma ray readings compared to claystones of the Spekk Formation which have a high concentration of radioactive minerals. When drilling Not Formation in sidetrack 6507/3-3A, the well path crossed a fault and continued into a down faulted block containing the Melke Formation. The lithology of the Melke Formation in this section is very similar to the one logged in the Not Formation (see below) and no difference was noted when drilling. The fault was established later based on paleodata and reinterpretation of the seismic. The paleodata indicates that the well path is moving upwards in the Melke Formation.

The Melke Formation penetrated in 6507/3-3A is very homogeneous, and comprises claystones which are more or less silty and sandy. Only in the very last meters some argillaceous dolomites are present.

The claystones are olive black to olive grey and brownish black to greyish black, firm to moderate hard and blocky to subfissile. The claystones are silty, locally very silty, occasionally sandy, micropyritic, carbonaceous, occasionally micromicaceous to micaceous and non calcareous.

The dolomites are yellowish brown to brownish grey, firm to moderate hard, micritic, very argillaceous and calcareous grading limestone.

FANGST GROUP **3A: 3789 - 4146.5 mMD RT, 3491 - 3630 mTVD MSL**
3B: 3792 - 4110 mMD RT, 3492.5 - 3680 mTVD MSL

Top of the Garn Formation is characterised by a significant change in lithology from homogeneous claystone in the Melke Formation above to a massive sandstone in the Garn Formation. On the logs the top of the Garn Formation is seen as a sharp decrease in the gamma ray- and density readings. The Fangst Group consists of the Garn, Not and Ile Formation.

Garn Formation **3A: 3789 - 3911 mMD RT, 3491 - 3554 mTVD MSL**
3B: 3792 - 3920.5 mMD RT, 3492.5 - 3554.5 mTVD MSL

Series: Middle Jurassic
Stage: Lowermost Lower Bajocian - Aalenain
Depositional environment: Marginal marine to marine, inner shelf

The Garn Formation is dominated by massive sandstones with some thin very carbonaceous claystone beds in the upper part.

The sandstone consists predominantly of clear to translucent quartz, locally pink translucent quartz grains. The colour varies from light grey to light brown grey. The grain sizes are predominantly fine to medium with occasionally coarse to very coarse sequences. The grains are moderate sorted, changing to well sorted with decreasing grain size, and subangular to subrounded. Good traces of light grey argillaceous matrix occur, and it is calcareous and silicaceous cemented. The visual porosity estimated from cuttings varies from poor to good.

The claystones are brownish black to olive black and black, firm to moderately hard, blocky and occasionally brittle and subfissile. The claystones are very carbonaceous grading to argillaceous coals in part, locally silty to very silty and occasionally grading into siltstone. They are occasionally micromicaceous to micaceous, micropyritic in part and non calcareous.

Upper Not Formation **3A: 3911 - 4007 mMD RT, 3554 - 3596 mTVD MSL**
3B: 3920.5 - 3980.5 mMD RT, 3554.5 - 3590 mTVD MSL

Series: Middle Jurassic
Stage: Lowermost Lower Bajocian - Aalenain
Depositional environment: Marginal marine to marine, inner shelf

Top Upper Not Formation is defined by a high gamma peak and corresponding decrease in resistivity readings. The density response slightly increase at this level. The Upper Not Formation consists of sandstone with stingers of claystone at the base.

The sandstone consist predominantly of clear to translucent quartz, locally pink translucent quartz grains. The grains are very fine to fine, occasional medium, well sorted and subangular to subrounded. The sandstone is calcareous and silicaceous cemented, friable to firm and micaceous. The visible porosity is poor.

The claystone is brownish black to black, hard to very hard, blocky to occasionally subfissile and silty in parts.

Lower Not Formation **3A: 4007 - 4146.5 mMD RT, 3596 - 3630 mTVD MSL**
3B: 3980.5 - 4020 mMD RT, 3590 - 3615 mTVD MSL

Series: Middle Jurassic
Stage: Lowermost Lower Bajocian - Aalenain
Depositional environment: Marginal marine to marine, inner shelf

The top of the Lower Not Formation is picked on the logs where the gamma ray is levelling out on a high level after the fining down sequence in the Upper Not Formation. Resistivity readings are decreasing and the density logs indicates homogeneous claystones. The Lower Not Formation is dominantly claystone with layers of bioturbated sandstone at the top and rare traces of dolomite.

The claystone is brownish black to greyish black. The cuttings are firm to moderate hard, blocky to fissile, occasional splintery and has a shiny lustre. The claystone is locally arenaceous, silty to very silty, locally grading to siltstone, becoming less silty downwards. Rare black carbonaceous laminae occur and it is non calcareous. Micropyrite are common.

The sandstone is grading to siltstone, light grey to light brown grey. The grains are very fine to silty, occasional fine, subrounded to subangular and well sorted. The sandstone is calcareous to silicaceous cemented, firm to friable, micaceous in parts and argillaceous and bioturbated.

Traces of dolomite are white to very light grey, firm, subblocky and argillaceous laminated.

Ile Formation **4020 - 4110 mMD RT, 3615 - 3680 mTVD MSL**

Series: Middle Jurassic
Stage: Aalenian to Lowermost Aalenian
Depositional environment: Marginal marine to marine, inner shelf

Top Ile Formation is seen as an sharp decrease in gamma ray, an increase in resistivity responses and an decrease in neutron porosity. The formation consists of argillaceous sandstone with minor claystone stringers in the upper parts.

The argillaceous sandstone is light olive grey to medium grey and off white. The grains are dominantly fine, occasionally very fine to fine and locally medium, subangular to angular, slightly spherical and well sorted. It is calcareous and silica cemented and firm to hard. Locally there are loose clear medium to coarse subangular quartz grains. Traces of glauconite and mica occur and it is in parts very micaceous. In upper parts there are rare traces of pyrite nodules. The visible porosity is poor to fair at the top, becoming poor at the base of the formation. In the sidetrack 6507/3-3B at 4070m MD, a pale yellowish brown sandstone occur. This change in colour may indicate a fracture zone (either related to the fault observed in 6507/3-3A, or an older/younger(?) fracture system).

The stringers of claystones are medium grey to medium dark grey and greyish brown, very firm to hard and blocky. They are micromicaceous in parts, locally silty and non calcareous.

BÅT GROUP **4110 - 4275 (TD) mMD RT, 3680 - 3816 mTVD MSL**

The top of the Båt Group is characterised by increasing gamma ray readings followed by an reduction in resistivity values. The Båt Group consists of the Ror, Tilje, and Åre Formations.

Upper Ror Formation **4110 - 4170.5 mMD RT, 3680 - 3753 mTVD MSL**

Series: Middle to Lower Jurassic
Stage: Lowermost Aalenian to Upper Toarcian
Depositional environment: Marine inner shelf becoming marginal marine to marine, inner shelf

The Upper Ror Formation is dominated of siltstone grading to sandstone and silty sandstone. Thin claystone layers occur in the top of the formation.

The sandstone is very light grey to light grey, rare yellowish grey. The grains are very fine to fine grading to silt with increasing depth, moderate to well sorted and subangular to subrounded. The sandstone is soft to firm, occasionally argillaceous and weak silicaceous cemented. Rare loose quartz grains occur. The visible porosity is poor.

The siltstone is grading to very fine sandstone in at the top of the formation. The colours are dark grey to medium grey and brownish grey. Cuttings are firm to moderate hard and blocky, occasionally splintery. The siltstone is arenaceous and non calcareous. The visible porosity is poor. Traces of pyrite nodules occur.

The claystone is greyish black to black, blocky to angular, hard to very hard and non calcareous.

Lower Ror Formation **4170.5 - 4215.5 mMD RT, 3753 - 3765.5 mTVD MSL**

Series: Lower Jurassic
Stage: Upper Toarcian
Depositional environment: Marine inner shelf becoming marginal marine to marine, inner shelf

The boundary to the Lower Ror Formation is a slightly increase in gamma ray and resistivity readings. The Lower Ror Formation is dominated of siltstone grading to sandstone and thin layers if silty sandstone.

The siltstone is the same as occur in the Upper Ror Formation, but is grading to sandstone toward the base of the formation.

The sandstone is mainly the same as in the Upper Ror Formation, but is grading to siltstone throughout the formation. The amount of loose translucent to clear fine quartz grains is higher in this formation compare to the overlaying formation.

Tilje Formation **4215.5 - 4275 (TD), 3765.5 - 3816 mTVD MSL**

Series: Lower Jurassic
Stage: Upper to Lower Toarcian
Depositional environment: Marginal marine to marine, inner shelf

Top Tilje Formation is seen as transition in gamma ray readings to a lower and more irregular trend. The resistivity responses increases. The Tilje Formation is dominated by sandstone with some claystone/shale layers at the base.

The colour of the sandstone varies between medium light grey to light brown grey to olive grey and light olive grey to light brown grey. Translucent to clear quartz grains occur occasionally. The sandstone is very fine to medium, rare coarse, grading to fine with increasing depth. The grains are moderate to well sorted, subangular to subrounded and slightly spherical. It is moderate to good silica cemented, firm to moderate hard, occasional soft. The amount of loose very fine to fine quartz grains increases with depth. Traces of mica occur in the entire formation. The argillaceous content and argillaceous lamination increases toward the base. The visible is porosity poor.

The claystone/shale is medium dark grey to dark grey, soft to firm and splintery. It is interlaminated with sandstone and siltstone.

2 .4 Hydrocarbon Shows

Hydrocarbon shows occurs in sandstones in the Fangst Group and in the Ror Formation in the Båt Group.

Lange Sandstone
The MWD log indicates a gas saturated sandstone sequence in the interval 2703.5 to 2706 mMD RT in the Lange Formation. Background gas at 1-2% and maximum gas peak at 9% are associated to this thin sandstone layers. The drill cuttings contained 50% quartz sand, and has a very dull yellow white patchy fluorescence and a very slow to slow cloudy blue white cut fluorescence. There are no oil stain or hydrocarbon odour.

Garn Formation
The Garn Formation penetrated in these wells are gas filled. The background gas readings are in the areas 1-10% in 6507/3-3A and 0.5-3.5% in 6507/3-3B. The sandstones show a even dull greenish yellow to yellow white fluorescence with only trace of weak blue white fluorescence. A slow streaming/weak blooming blue white cut fluorescence is common. Crushed cuttings has a very weak light brown hydrocarbon stain, and also a very weak hydrocarbon odour. No relative change in the shows quality from top to bottom indicates homogeneous reservoir fluid throughout the Garn Formation. Relatively high formation gases were logged, which when plotted on ratio diagrams indicate a dry gas system. The MWD resistivity shows very low water saturation. HC shows, MWD data and MDT log all indicate a dry gas system similar to what was found in the vertical well.

Ile Formation
The sandstones in Ile Formation have even dull yellowish green to yellowish white fluorescence, and very slow weak blue white to white cut fluorescence. The residue is pale greenish white. There are no oil stain or HC odour.

Ror Formation
The siltstone in Ror Formation shows very weak gas shows. There are no direct fluorescence and very slow weak blue white streaming cut fluorescence.

3 Engineering Report

3 .1 Pressure Plot

The pressure plot for wells 6507/3-3 A and 6507/3-3 B is combined and shown in Figure 3.1.
The plot is presented in meter RT TVD.
The pressure profile correspond well with pressure profiles observed from the vertical well.

3 .1 .1 Pore pressure

A normal pore pressure gradient of 1.03 g/cc is estimated down to approximately 1720 m RT where a increase starts. At 2000 m RT the pressure gradient has reached 1.40 g/cc equivalent mud weight, and a small decline starts.
In the Lange sandstone two formation pressure measurements were obtained in well 6507/3-3, and these pressure points confirms the gradual increase in formation pressure gradient in the Lange formation towards depth as seen else in the area.
At 3200 m RT a pressure of 1.51 g/cc is estimated which is the maximum calculated pore pressure gradient for the well. From this depth a decline is calculated, and at top Garn formation a pressure gradient of 1.07 g/cc is measured.
In the Fangst Group a continuous gas gradient of 0.2 g/cc is measured down to the gas/water contact at approximately 3695 m RT TVD and from this depth down to TD a pressure gradient of 1.045 g/cc is assumed.

To calculate the pressure profile, drilling and wireline data has been used. Well 6507/3-3A penetrated the Cretaceous section, but no wireline logs were run in open hole. The sonic log was run in cased hole and data indicate a lower formation pressure below 3120 meter TVD RT compared with the vertical well. On the other hand resistivity from MWD shows very similar resistivity for the vertical and sidetrack wells indicating similar formation pressure for the two wells. Since the sonic was logged after the casing was run and cemented the data may be questionable and is not used in the lower section of the well.
In sandy sections actual formation pressure data from MDT is used .

The pressure plot for well 6507/3-3 A and B is shown in figure 3.1. The plot is presented in meter RT TVD.

PL 159	Statoil 50% Hydro 20% Total Marine 20% Saga Petroleum 10%	Pressure Composite Plot WELL 6507/3-3A + B	STATOIL
RKB - Sea: 23 m			Made by: TM
Water Depth: 390 m MSL			Date:08.11.99

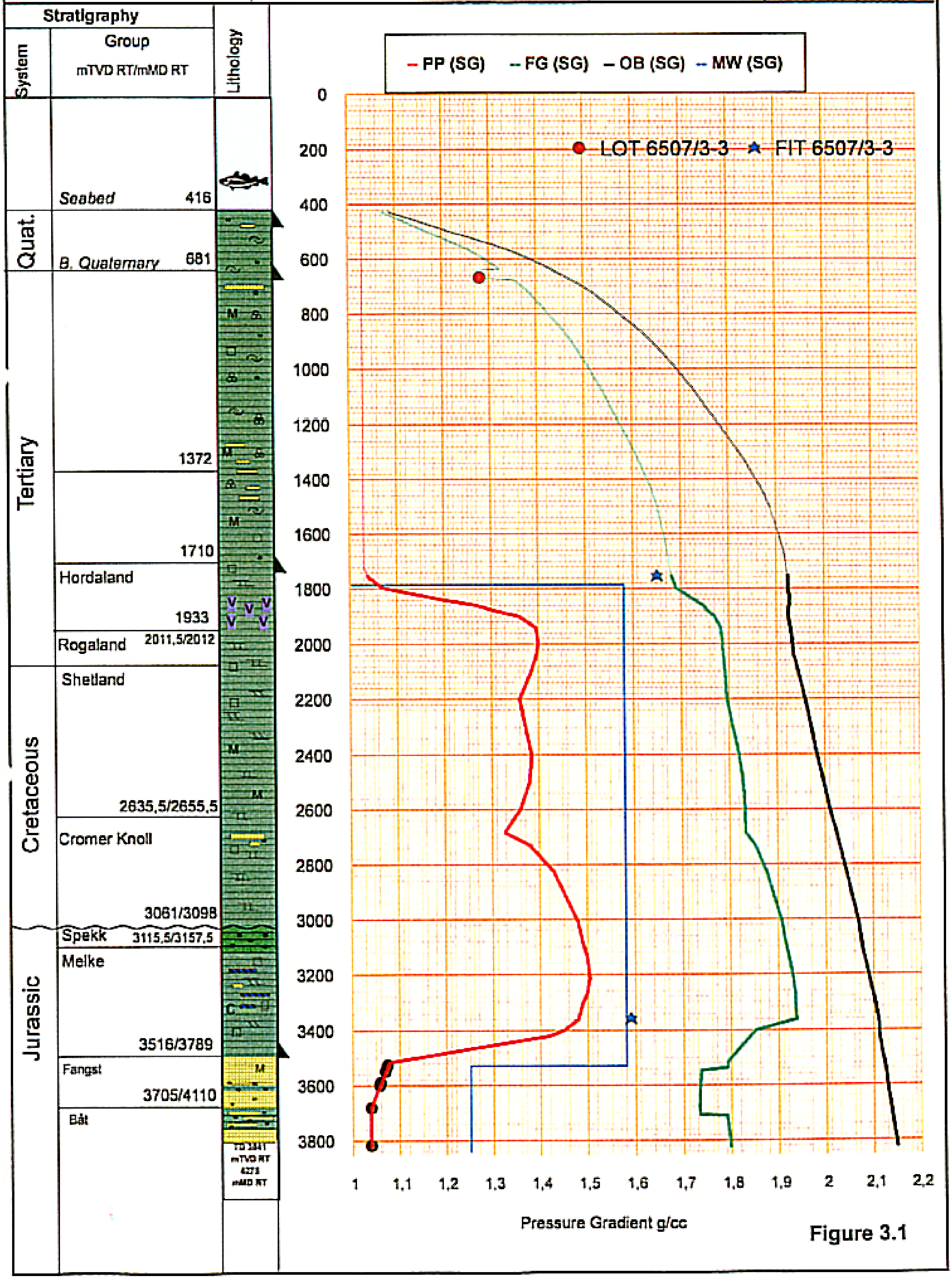


Figure 3.1

3.1.2 Fracture gradient

The only LOT in well 6507/3-3 is below the 20" casing shoe at 667 m RT and showed a value of 1.28 g/cc. The value was lower than expected which may be explained by the sandy lithology in this interval (casing was set higher than prognosed due to a influx in a sand at 699 m RT). No LOT or FIT were performed in the sidetrack wells.

To calculate the fracture gradient LOT and FIT data from well 6507/3-3 is used. Since only one LOT test is performed data from other wells in the area is also been taken into consideration.

Poisson's relation has been calculated from shear and compression waves below 1330 m MD RT where sonic data is available. This data does not indicate any weak zone.

3.1.3 Overburden gradient

Overburden gradient is calculated from the density data. Density data is collected from 1750 m RT and above this depth data from other wells in the area is used.

In the top section the nearest logged well is 6507/12-1 and data from this well is used down to 1065 meter MD RT (corrected for difference in sea depth). In the section 1065 to 1750 meter data from 6507/5-1 is applied, while in the section below 1750 meter RT top of the Garn formation data from 6507/3-3 is used. The density in the sandy interval in well 6507/3-3 is adjusted to show a clay response.
From top of Garn down to TD density data from the sidetrak well is used.

3 .2 Temperature Data

An average temperature gradient of 4.0 ^{0}C/100 meter is calculated down to top of the Garn Formation. Below this depth a temperature gradient of 3.0 ^{0}C/100 meter is assumed.
The temperature profile is presented in figure 3.2 in meter RT TVD.

Temperature data from well 6507/3-3A and 6507/3-3B have been combined to get a temperature profile including both wells. Log data from well 6507/3-3 and DST data from well 6507/5-1 have also been looked at.

Well 6507/3-3A was logged on wireline and temperature measurements were performed at the top of the Garn formation in connection with the MDT log.

Due to poor hole condition well 6507/3-3B had to be logged on pipe. Temperature measurements were performed on the two logging runs. The first run has a slightly higher temperature than the last run and subsequently no Horner analysis was performed. Since no increase in temperature versus time is observed it is believed that the measured temperature is close to formation temperature. This is also supported by the evaluated temperature from wells 6507/3-3 and 6507/5-1.

Table 3.2.2 Temperature measurements from wireline logs.

Well	Log combination	Run	Depth m RT TVD	Temperature ^{o}C	Time since sirk
6507/3-3 A	MDT-GR	1	3527.2	115.3	16.0
6507/3-3 B	MDT-ZDL-CN	1A	3821.5	139	23.5
6507/3-3 B	MDT	1B	3817.3	136	92.8

PL 159	Statoil Enterprise Saga Petroleum	50% 40% 10%
RKB - Sea: 25 m		
Water Depth: 392 m MSL		

Temperature Profile WELL 6507/3-3A + B

STATOIL

Made by: TM | Date: 12.11.99

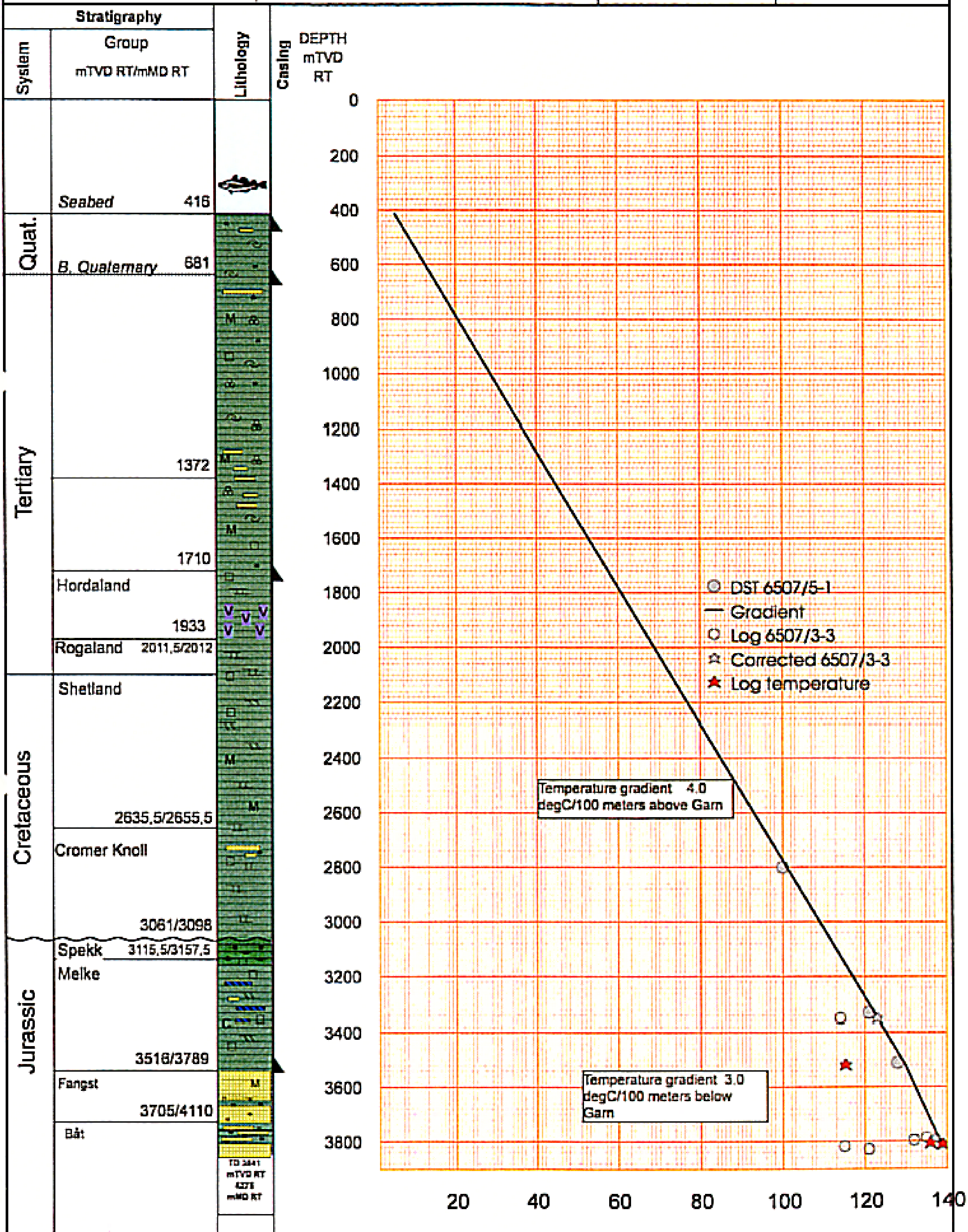


Figure 3.2

3 .3 Wireline pressure measurements/sampling

One MDT run was performed in well 6507/3-3A. This run was performed on wireline and pressure information and one sample was collected in the upper Garn. The hole was drilled deviated and was building angle through the Garn formation, and the high angle in the lower part limited the TD on the log (the TD of the log was when the tool stopped) .

Well 6507/3-3B was logged on two runs with pipe conveyed logging (PLC). One sample containing mud filtrate, gas and traces of formation water was collected in Ile formation. No water sample could be collected in the Tilje formation due to tight formation. The MDT tool was also used pump fluid from the lower part of the Garn formation to confirm gas.

Figure 3.3 Shows the measured formation. The plot is presented in meter TVD MSL. On this plot pressure measures from 6507/6-2 and 6507/5-1 is marked.

Table 3.3.1 6507/3-3A. Formation pressure run 1A well.

No.	Depth. m MD RKB	Depth. m TVD RKB	Hydrost. pressure before Bar	Hydrost. pressure after Bar	Formation pressure Bar	Mobility mD/cp	Formation	Remarks
1	3800,0	3521,9	441,47	441,32	-	-	Garn	No seal, set in 12 1/4" rat hole
2	3805,0	3524,5	441,66	441,53	371,450	980,1	Garn	Excellent
3	3810,0	3527,1	441,98	441,90	371,519	1671,9	Garn	Excellent
4	3820,0	3532,3	442,65	442,54	371,626	367,5	Garn	Excellent
5	3830,0	3537,5	443,35	443,22	371,729	19,6	Garn	Good
6	3850,0	3547,8	444,82	444,63	371,907	20,9	Garn	Good
7	3875,0	3560,7	446,55	446,37	372,167	1088	Garn	Excellent

Table 3.3.2 Well 6507/3-3B MDT run 1A

No.	Depth. m MD RKB	Depth. m TVD RKB	Hydrost. pressure before kPa	Hydrost. pressure after kPa	Formation pressure kPa	Mobility mD/cp	Formation	Remarks
1	3920,0	3579,8	440,30	440,40	372,59	296,7	Garn	Excellent
2	3935,0	3587,9	441,30	441,50	372,73	33,8	Garn	Good
3	3946,0	3594,0	442,10	442,40	372,83	13,7	Garn	Good
4	3953,5	3598,2	442,70	442,90	372,94	7,4	Garn	Good
5	3914,8	3577,1	437,20	437,50	372,49	3,4	Garn	Fair
6	3912,4	3575,8	437,50	437,70	372,52	1,3	Garn	Good, probe 2
7	3958,4	3601,0	440,50	440,50	373,01	3,5	Garn	Poor
8	3961,5	3602,7	440,70	440,70	373,18	1,5	Garn	Poor
9	4075,5	3679,2	450,70	450,90	375,07	8,7	Ile	Fair
10	4089,0	3689,1	452,70	452,70	389,14	0,7	Ile	Poor, supercharged
11	4220,0	3794,4	467,40	467,40	387,98	2	Tilje	Poor, probe 2
12	4223,0	3797,0	468,30	468,40	406,69	1	Tilje	Poor/supercharged
13	4227,9	3801,1	469,00	469,00	389,27	1,4	Tilje	Poor
14	3920,0	3579,8	437,70	437,70	372,46	0,9	Garn	Fair, testing probe 1
15	3917,5	3578,5	437,20	437,20	372,45	91,7	Garn	Good testing probe 2

Table 3.3.2 Well 6507/3-3B MDT run 1B

No.	Depth. m MD RKB	Depth. m TVD RKB	Hydrost. pressure before kPa	Hydrost. pressure after kPa	Formation pressure kPa	Mobility mD/cp	Formation	Remarks
1	4075,4	3679,1	451,00	451,00	375,05	5,2	Ile	Fair
2	4075,6	3679,2	451,20	451,20	375,02	7,2	Ile	Good
3	4075,8	3679,4	451,40	451,40	375,06	5,1	Ile	Good
4	4076,1	3679,6	451,50	451,50	375,07	4,8	Ile	Fair
5	4075,6	3679,2	451,20	451,20	375,00	7,7	Ile	Sample
6	4244,5	3815,1	482,60	482,70	389,00	4,2	Tilje	Poor
7	4245,0	3815,5	482,90	482,90	389,00	4,5	Tilje	Poor
8	3953,6	3598,3	447,60	447,60	372,86	4,3	Garn	Poor
9	3953,4	3598,2	447,20	447,30	372,91	9,1	Garn	Fair
10	3953,2	3598,1	447,00	446,90	372,93	8,1	Garn	Fair
11	3953,0	3597,9	446,80	446,80	372,89	2,1	Garn	Poor
12	3952,7	3597,8	445,80	445,80	373,00	2,1	Garn	Poor
13	3953,1	3598,0	445,70	445,70	372,91	3,5	Garn	Good
14	3953,3	3598,1	445,70	445,70	373,00	4,1	Garn	Confirming gas

Table 3.4.3 Samples collected

Well	Depth. m MD RKB	Depth. m TVD RKB	Formation	Pumped volume litre	FormationFluid	Sampled	Remarks
6507/3-3 A	3807,0	3525,6	Garn	68	Gas	3 MS 2 3/4 Gallon	Good sample
6507/3-3 B	3805,0	3679,2	Ile	239	Gas/Water	1 MS 1 Gallon	Poor quality

MS: Schlumberger multisampler chamber 450 ml

6507/3-3 A and B
Formation pressure measurements
(data from 6507/3-3 also plotted)

STATOIL

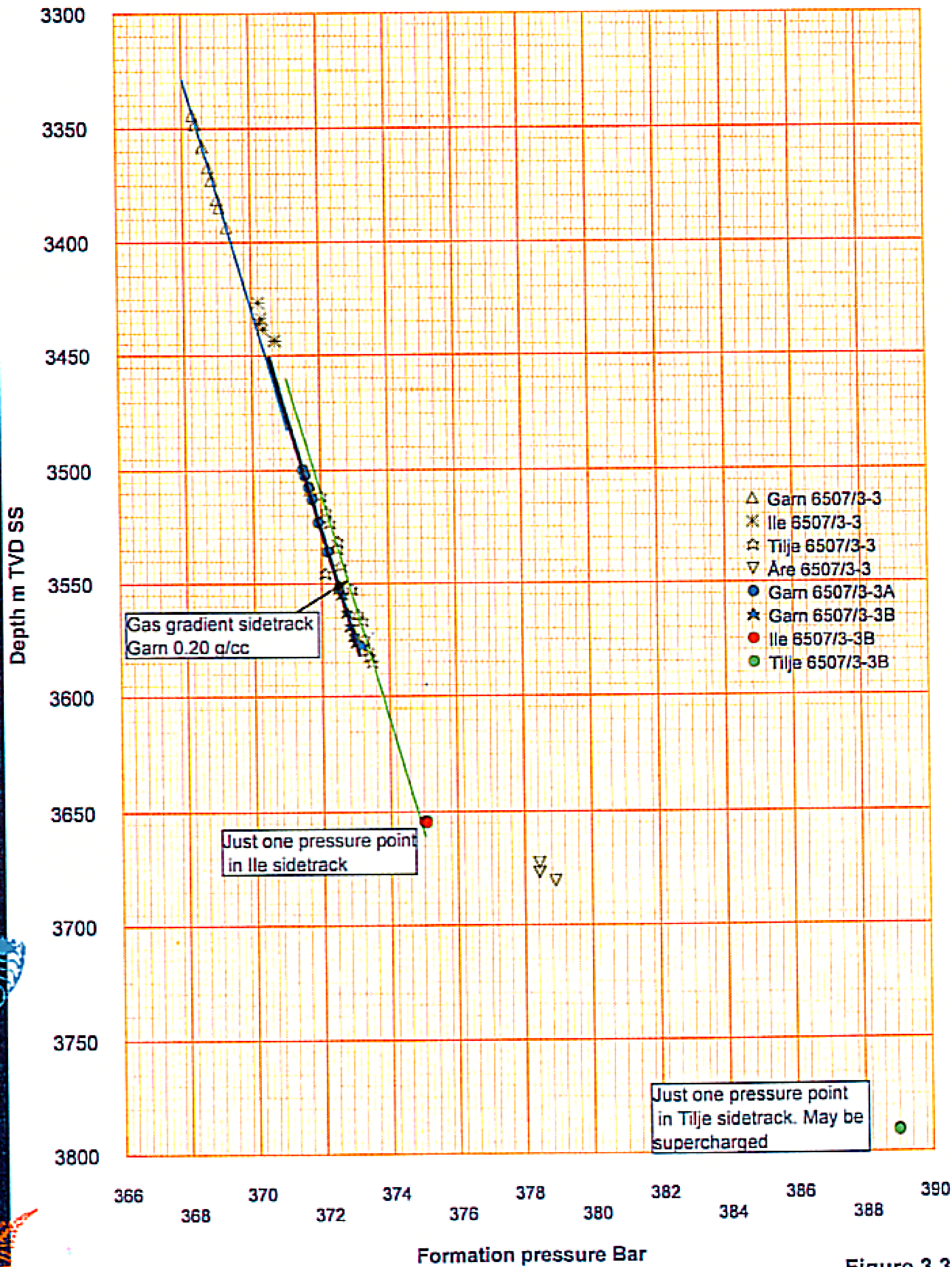


Figure 3.3

4 Drilling Report

4 .1 General well data

AFE # (optional)	
Drilling rig:	Byford Dolphin
Licence number:	159
Well name:	6507/3-3A, geological sidetrack 6507/3-3B, geological sidetrack
Type of well:	Exploration
Water depth / air gap:	391 m MSL / 25 m RT
Wellhead:	412.5 m
Primary objective:	Test HC potential in Jurassic Fm.
Drilling started:	25.03.99 at 15:00 hrs
Drilling completed:	20.06.99 at 13:00 hrs
Well status:	Permanently plugged

Structure centre co-ordinates :

Geographic:	Lat. 65° 48' 03.73" N	Long. 07° 43' 28. 69" E
UTM:	7 298 510 m N	441 665 m E

Uncertainty: +- 3 m
Rig heading: 316° (True)
Deviation from planned position: 10 m towards 279° (True)

4 .2 Exemptions

Exemption from	Report no.	Date	Title
NPD			No exemptions
KP-10			No exemptions
Drilling Program			No exemptions

4 .3 Health, environment, safety and quality (HES&Q)

4 .3 .1 RUH

Number of RUH's	:	97
Number of lost time accident's	:	0
Number of investigation's	:	1

4.3.2 Experience listing

System / event	D time hrs	Experience	Immediate solution	Solution recommended for future	Ref.
12 1/4" section, 6507/3-3A					
Directional drilling		A stable tool face was very difficult to achieve with PDC bits. 5" drill pipe has a lower ability to hold back torque compared to 5 1/2" drill pipe	The reactive torque had to be reduced by changing to rock bit to reduce the bit created torque	A rotational steer able system as AUTOTRAK, would improve the drilling performance by allowing a smooth weight transfer and aggressive PDC bits.	
Directional drilling, kick off		Difficulty in keeping a steady tool face resulted in low dog-leg figures, minimal displacement from old hole and difficulty to achieve further build angle	Pulled out of hole and changed the MT44LTM PDC bit to a Smith 15MD insert bit to increase the steer ability.	Under similar conditions a less aggressive bit choice would give a better chance of completing the sidetrack successfully	EOW report, BHI
Directional drilling, second build		The Lyng LA270 BW+G PDC bit gave erratic tool face in Lange formation. The bit has proved its steer ability and success on other locations	Low hole curvature severity figures necessitated a bit trip in order to build the necessary angle	Where well profiles dictate build and/or turn in this region and at this depth, even a less aggressive bit or assemblies which require a minimum amount of steering will have to be used	EOW report, BHI
Directional drilling, Viking Group		As more hole was oriented, steering became more difficult and build rate erratic. Rates of penetration were poor later in the run		Future well profiles should try to align the azimuth of the well prior to drilling these formations, and some form of rotary assembly used in order to control the inclination	EOW report, BHI
Directional drilling, 8" motor		9 1/2" motor was replaced with a 8" motor with out a top stabilizer to complete the build. The BHA had a strong build in rotary.	Needed to orient low side to cut build rate back to required 2,0 degrees per 30 m. Orientation was slow and became too slow at the end	A 9 1/2" motor with a 11 3/4" top stabilizer should be run instead	EOW report, BHI
Seal assembly	23	Pressure test of seal assembly failed due wash out in metal area	Redressed BOP test tool and set wear bushing before seal assembly was changed and a elastomer seal was set.	Change seal assembly when leak is observed and no marks on BOP test tool are found.	
Casing		99 joints were re used from the vertical well after a inspection of threads		The cost savings were significant and this approach can be used again under similar conditions	
Cementing		No losses were encountered during the cement job		Hydraulic simulation and optimization prevented losses while cementing	
8 1/2" section, 6507/3-3A					
geology		Garn Fm. had a dip angle between 10-13°. The prognoses for the dip angle were 18-23°.	The change of formation required an additional build 8° -10° to place the well inside the marker in the reservoir	Under similar conditions, an additional trip to change BHA even more, may be justified based on the lack of directional response experienced.	
directional response		Could not obtain more than 1,5- 2,5°/30 m building rate in	Pulled out and changed to rock bit,	A build rate greater than 2,5°/30 m in Garn Fm may	

		Garn FM. Came close to the theoretical 5,5 degrees with 4,5 + in NOT claystone	but were still not able to increase build rate before the NOT shale	be difficult to achieve in this structure	
sidetrack, open hole	19	time drilled to sidetrack in open hole- negative	pulled out and set kick off plug	To sidetrack in competent formations as here, consider turbine and special kick off bits or open hole whip stocks	
sidetrack, cement plug #1	31	The kick off plugged was soft, most probably due to too little volume of cement, slurry design and placement technique	Set another kick off plug with increased volume, optimum slurry design and placement technique	KOP plugs at similar conditions requires enough volume, short setting time and good placement technique	App.2
sidetrack, cement plug #2	92,5	The kick off plug was found hard down hole, but farther down cement was soft. Most probably due to over displacement when it was set.	the well was kicked off using a casing whip stock	Cement kick off plugs in highly deviated wells with SBHT > 130° and OBM will remain a challenge	App.2
sidetrack, casing whip stock		Sidetracked well with a single trip casing whip stock tool, "Window master".		The tool proved to be a success and is recommended for similar jobs	
8 1/2" section, 6507/3-3B					
drilling		Low ROP and difficulties to slide was experienced in Top Garn	the BHA was pulled	Top Garn consists of hard, abrasive Dolomitic sand. This makes it very difficult to slide with a PDC bit.	
drilling	121,5	had abnormal bit wear while attempting to drop the well and 3 cones were left in the hole	the junk was fished and crushed before drilling could continue	it should be considered to reduce the recommended bit "life" with a similar drop of well path in this location	
fishing after junk		A magnet was the most efficient fishing tool. Very little junk were caught in the junk basket and reverse circulation basket		A magnet should be run after an attempt to crush the junk	
drilling		the formation between the window and top Garn Fm. seemed to "creep" into the hole and gave excessive drilling problems	the interval had be reamed on every trip, stopped the PCL tool and finally a 7" "scab" liner was set to isolate the formation to be able to get down with the PCL tool.	seal off Melke Fm. above Garn Fm with casing, and avoid to expose this cap rock to low mud weights	
directional drilling		A smooth weight transfer to bit was difficult, most probably due to the hole problem above Garn fm.	Improved existing BHA as good as possible to drop as required	Use a rotational steer able assembly with PDC bits in future deviated wells	
Plugging, 6507/3-3B					
plug and abandonment		had high gas readings while circulating bottoms up after cutting of 13 3/8" casing	redesigned bottom part of last plug to a gas tight slurry		
bulk system		The silica cement could not be transferred to the day tank due to plugged line.	mobilized silica cement to rig from a supply boat near Kristiandsund	Check bulk system a day or two before cement jobs	

4.3.3 Time distribution

Distribution of down time	**Hrs**	**Cause of waiting time**	**hrs**
Statoil	315	Weather	61,5
Dolphin	52	Wait to get volume control	0,5
ABB Offshore	28,5		
Halliburton	0		
Dowell	0		
BHI mwd	7,5		
BHIdir	0		
Oceaneering	0,5		
Weatherford	0		
Baker Atlas	9,5		
Halliburton	0		
Weatherford	0		
Other	0,5		
TOTAL D-TIME	413,5	TOTAL W-TIME	62

Activity, 6507/3-3A	**Days**	**Hrs**	**%**
Planned total operation time	23,9	573,5	
Actual total operation time	42,6	1022,5	
Days ahead of plan	-18,7		
Total D+W-time		252	24,7
Total K-time		202	19,8
Efficiency			75,3

Activity, 6507/3-3B	**Days**	**Hrs**	**%**
Planned total operation time	N/A	N/A	
Actual total operation time	44,3	1063	
Days ahead of plan	N/A		
Total D+W-time		223,5	21,0
Total K-time		136,5	12,8
Efficiency			83,8

4.3.4 Cost

Actual cost: 174 mill NOK

4 .4 Activity highlights

4.4.1 12 1/4" Hole section, 6507/3-3A

Activity start :	25.03.99 at 15:00 hr
Activity end:	18.04.99 at 15:30
Actual duration:	24 days (576.5 hr)
Planned duration:	13,6 days

The complexity of the directional work was underestimated.7 trips and a ROP reduction of more than 50% due to unexpected BHA behavior increased the actual duration. 2.2 days were lost because of technical down time.

Technical objectives were to place well into Garn Fm with 65° into top reservoir in 2 bit runs and set 9 5/8" casing shoe into Garn Fm. The target was hit, but the well landed with 58, ° and 7 trips were necessary to perform the directional work. Top Garn Fm came in deeper than predicted.

Drilling performance

Mud system: Inter drill NT , with mineral based base oil, and mudweight at 1.58 s.g. was used down to TD

The drilling performance was poor, especially for the lower part of the section. The main cost drivers were reduced ROP due to limited possibility to get proper WOB , extra trips to optimize BHA for directional response and bits for proper toolface control. With a rotational steerable system, i.e. AUTOTRAK, the section can probably be drilled with maximum 2 bit runs and ROP 2-3 times higher in the lower part.

The first run was aborted after 357 m drilling due to improper tool face control and difficulties with achieving the planned build rate. The PDC bit cutters were placed with 15 degrees back rake and each cutter had a slanted edge of 45 degrees, and adding together this should give 60 degrees back rake, which should give a steer able bit. The concept did not work in the medium soft formation and created to much reactive torque. The 5" drill pipe had a low ability to with stand the torque and tool face could not be controlled.

A rock bit, IADC 445X, was used to adjust the well path to 15 degrees and drilled parts of the tangent section. The bit drilled 619 m with 17,4 m/hr and was pulled and replaced with a PDC bit, that drilled 462 m with 14,1 m/hr. It was pulled when the second build up started due to erratic tool face. The last 296 m down to 3079 m MD, was drilled with only 26 m in rotary mode. Most likely the 5" drill pipe, combined with high torque created from the bit caused the problem when higher WOB and to adjust and build angle.

A 9/10 lobe motor replaced the 5/6 lobe motor and a rock bit, IADC 437, drilled 191 m with 5,0 m/hr. The ROP dropped to 1/3 of the expected and only 18,3% of the run were in rotary mode.

To improve the progress it was necessary to rotate more and improve hydraulic pressure drop over the bit.

A 8" motor with 1,2° AKO setting replaced the 9,5" motor and 1 stand 5" HWDP was removed and TFA reduced from 1.335 to 135 in^2. The BHA created a build rate of 2.9-3,7°/ 30m in rotary mode and it was not possible to put enough WOB to drill formation faster. The run was aborted after 126 m drilled with 4,6 m/hr.

The rock bit was replaced with a PDC bit (rerun) and AKO set to 0,8° . The directional company advised that increased RPM and reduced AKO angle would reduce the build rate. This advice turned out to be wrong and the same high build rate was experienced on the next run. Again this limited the WOB that could be put on the bit and therefore only 4,7 m/hr was achieved during the 159 m drilled. If an under gage stabilizer had been put in between the motor and MPR sub, it is thought that the wanted response could have been created.

The BHA was pulled because the well was lined up too high to hit within target with existing BHA behavior. It was necessary to drill a tangent section, 250 m, of 58,7 degrees into the Garn reservoir. The motor stalled out when higher WOB was set down and is the reason for the poor ROP of 4,3 m/hr.

If higher WOB could have been set down, (at least 7 tons,) a doubling of ROP could probably have been achieved.

No well bore stability problems or lost circulation situations occurred while drilling or pulling out of hole.

A EMS survey was performed to ensure correct directional data from the well.

Wire line logging
No wire line runs were done.

Running and cementing of 9 5/8" casing
The casing shoe was set 9 m into reservoir to prevent formation collapse in Melke fm. when mud weight was lowered. The 9 5/8" casing was run w/ 8.4 joints/hr and w/ 5.5 stands/hr on pipe. No tight hole experienced while running casing. The mud weight in casing was reduced to 1.55 s.g. , spacer and base oil volume were balanced to minimize the risk of fracturing formation around 13 3/8" and 9 5/8" shoe before 46 m^3 1.90 s.g. silica cement was pumped. There were no losses to formation.

HC bearing sands in Lange formation were covered with cement to fulfill barrier requirements and to avoid cutting 9 5/8" deep at permanent plug and abandonment.

The seal assembly leaked due to a wash out in the seal area for the metal to metal seal. A combined rubber/metal seal (emergency seal) was set and the seal could be pressure tested.

Hrs	Section down timee
0.5	Replaced broken shear pin on upper racking arm
0.5	Serviced top drive
2	Software failure on mwd computer
3	Repaired broken hydraulic hose to top drive
2	Repaired mail function on main hydraulic feed to upper racking arm
1.5	Repaired mail function on upper racking arm
4.5	Performed 3 years PM on SCR'S
2.5	Stopped drilling when only one mud pump was operational
0.5	Attempted to open IBOP on top drive
23	Pressure test of seal assembly failed due wash out in metal area
1	Repaired IBOP on top drive and changed out wash pipe
6	Repaired electrical and hydraulic loop on top drive
1.5	Repaired crank on IBOP
1	Repaired hydraulic leak on top drive

4.4.2 8 1/2" Hole section, 6507/3-3A

Activity start :	18.04.99 at 15:30
Activity end:	07.05.99 at 06:00
Actual duration:	18.6 days (446.5 hr)
Planned duration:	6.0 days

Technical objectives were to drill and geosteer along a radioactive marker inside the Garn Fm. until the HC/ water contact was identified. Garn Fm. had a predicted dip between 18-23° at target, with a slight increase in dip angle further away on the vertical section. The actual dip was close to 10° and this, in combinations with difficulties to build angle within the Garn Fm., meant the well could not be placed along the radioactive marker. Finally, the precentage of an unprognosed fault where Melke Fm. was downfaulted made attainment of the objectives impossible. To meet the objective the well it was decided to sidetrack from the existing well path, this operation lasted for 11.7 days and explains the gap from the planned time.

Drilling performance

Mud system: Inter drill NT , with mineral based base oil, and mud weight at 1.25 s.g. was used down to TD.

The first BHA had to be pulled after 86 m because the stabilizers hung up on stringers and it was difficult and time consuming to get weight to the bit. It was also clear that Garn Fm dipped with ~10°, compared to an estimated dip between 18-23°.

A slick assembly with AKO set at 1.0° was run and eliminated the hanging problem and a rock bit replaced the PDC bit for faster directional response. It was not possible to obtain more than 1.5-2.5°/30 m in the sand and the well could not be geo steered along the radioactive marker in Garn Fm. The build rate increased to 4° /30 m in Not Fm. This was 2-3 ° lower than theoretical build rate for the BHA.

Inclination was increased up to 89° in an attempt to place the well inside Garn Fm. again, but MWD log and cuttings indicated Not Fm. It was decided to drop off the well path to "chase" the sand interval below Not Fm. The drilling was stopped when it became clear that a fault not seen from seismic had been drilled through.

No formation problems were experienced while drilling the Melke Fm. under balanced.

Sidetrack attempts:

The BHA was pull back to 4020 m (Top Not Fm, inclination 69°) in an attempt to open hole sidetrack with the BHA already in hole(Navigator AKO sat at 1° and Lyng "LA250BYG" PDC bit. The attempt failed after 20 hours circulation and the method used, i.e. Statfjord, did not work out in this formation.

A cement kick-off plug from 4090 - 3910 m (6.6 m3 @1.95 sg.) was set, NaviGator AKO adjusted to 1.1 and tricone insert bit put on in the next attempt to sidetrack. The plug was drilled/washed from 3905 - 4100 m, indication of hard cement from 4085 m. Two intervals were time drilled with no indication of sidetracking.

The second kick off plug was set from 4000 - 3700 m (12.5 m3 @ 2.0 sg.) and NaviGator AKO increased to 1.2°. The plug was drilled with hard cement from bottom of rat hole at 3806 m to 3820 m and time drilled from 3820 - 3830 m in 17 hrs. Hard cement was confirmed with 7 ton down weight, with out indications of sidetracking . Time drilling continued from 3830 - 3840 m for 12 hours, where the cement became soft and was washed from 3840 - 3873 m, where time drilling again continued from 3873 - 3876 m for 4 hrs. and was washed from 3876 - 3895 m. The attempt to kick off on cement plugs failed. See 6.2 *Cement kick off plugs* for further details.

A cement plug was set into 9 5/8" casing and dressed down to set a Baker Oil Tool single trip type whip stock, "Window Master". It milled a window from 3752-3757 m, on the 4. joint from shoe to avoid potential problems in the window from centralizers. The previous drilling in Melke Fm with out collapse of the hole, encouraged to start the sidetrack above Garn Fm.

Wire line logging:
A DSI/GR was run on wire line in the well down to 3892 w/ a well inclination >60°

Problem time

Hrs	Section down time
0,5	Mud bucket did not open
19,0	Not able to perform open hole side-track
0,5	Serviced Topdrive 1 hrs. reprogrammed MWD tool
1	Reprogrammed MWD tool
27,0	Attempt to sidetrack. Kick-off plug did not set up.
32,0	Set new kick-off plug #2
60,5	Attempted to sidetrack on KOP #2
16,0	Set KOP #3 as seat for whipstock
26,0	Dress off cement plug
14,5	RIH w/ whipstock
1,0	MWD software problem
0,5	Orient and set whipstock
3	Cut window
1	Water melon mill stalled entering window.

4.4.3 8 1/2" Hole section, 6507/3-3B

Activity start :	07.05.99 at 06:00
Activity end:	05.06.99 at 17:00
Actual duration:	29.5 days (707 hr)
Planned duration:	N/A

The "ad hoc" operation was delayed when three cones were left in hole and 5.8 days were used to fish them out. A hole problem above Garn Fm. made it very difficult to trip and drill efficiently. The problem area had to be seal off with a 7" liner to be able to get the logging tools down.

Technical objectives were to drop and turn well path towards south to hit targets inside Ile and Tilje Fm to identify the HC type and water contact. These objectives were met.

Drilling performance

Mud system: Inter drill NT , with mineral based base oil, and mud weight at 1.25 s.g. was used down to TD.

One full gage melon mill went through the milled window. The drilling was slow due to too tough formation for the starter mill.

A BHA with a Navigator motor and LA250BWZ PDC bit drilled from 3758 - 3820 m, but was pulled when ROP went from 10-20 m/hr in Melke Fm. to 1-2 m/hr in Garn Fm. It was a difficult to get a smooth weight transfer to bit, causing motor stall out with only 40-50 psi differential pressure. Bit pulled was measured as 2/16" under gauge after only 59 m drilled. A closer investigation onshore later has measured the bit as in gage with abnormal wear, probably caused from metal grinding on the bit.

A rock bit drilled 69 m with average ROP 3.3 m/hr when a sudden pressure loss indicated bit failure. All cones were lost in hole. It is uncertain what caused the bit to fail , (lost junk in hole, pinched shanks due to under gauged hole or simply a "Monday bit"). With a power full PDM it is very difficult to get any indications on torque/pressure in advance.

4 separate runs with different milling tools and junk baskets were performed before drilling continued for 5 m @ 6.4 m/hr with tricone bit when drill pipe got stuck. The jar was fired and the string was pulled free with 73 ton over pull. It was clear indications of more junk in hole and a fishing magnet and junk basket recovered 1.5 kg steel. The magnet was the most efficient fishing tool.

It was necessary to continue the drilling to TD at 4275 m with rock bits. 4 runs were done and bit was pulled on hours. The formation was tough with excessive wear on the bits. A bit was pulled where the cones was loose and the last bit pulled had left 2 cones in the hole.

The sidetrack started in Melke Fm. approx 19 m TVD above top Garn Fm. The interval where tripping in and out became a problem in all runs with extensive reaming to be able to pass. It was difficult to interpretate what caused the problems in this area . It seemed like formation moved into the hole in a more plastic movement than the traditional caving break out. In addition the hole geometry was not too smooth due to the high dog legs created from the kick off.

Efficient and smooth weight transfer down to bit was very difficult in sliding mode due to hanging of string / BHA. The problem is thought to be created from the plastic/creeping behavior of the Melke shale. The reduction of ROP and excessive bit wear can be explained with this theory.

Pipe conveyed logging:
The logging tools could not pass 3767 m with 3.2 ton down weight and a wiper trip was done to ream the problem area properly. The wiper trip confirmed formation related problems as "creeping shale/ledges" below window.

A new attempt with PCL could not pass 3777 m with 3.2 ton down weight. A rubber path finder and knuckle joint were incorporated to increase the flexibility of the tool with out further success.

A 7" liner was set to seal off the problem area and there by made it possible to get the logging tools down and get the required fluid samples and pressure points.

Hrs	Section down time
82.5	3 cones left in hole. Junk fished out with: #1 bit+junk basket #2 rev. circ. basket #3 flat bottom mill
1	Repaired hydraulic pump for stand lift
1	Repaired hydraulic hose for upper racking arm.
0,5	Repaired ELMACO
1	Wash pipe leaked on top drive
2	Stand pipe valve leaked
34	Penetration stopped and stuck due to more junk. Fished out with magnet.
0.5	6m³ base oil transferred to active system
4	Not able to get tool verification on surface. Changed out MWD tool
9,5	Short circuited in logging cable. Found cable dented 50 m from connector. Cut cable and re terminated same
1.5	Performed high critical maintenance on top drive

4.4.4 Plugging

Activity start : 05.06.99 at 17:00
Activity end: 21.06.99 at 13:00
Actual duration: 15.8 days (380 hr)
Planned duration: 9.1 days

Rough weather stopped anchor handling for 2,6 days. A plugged line from the cement tank delayed the operation with 0,6 days. A KOS operation for YME took 0,4 days

Technical objectives were to prevent on permanent basis formation fluid to flow between reservoirs or up to surface. These objectives were met.

Discussion :
The reservoir section was cemented and a cement plug into 9 5/8" casing was load and pressure tested as barrier no. 1. Top of cement behind 9 5/8" casing was verified with a sonic log and no further isolation of Lange reservoirs were necessary. 9 5/8" casing could be cut inside 13 3/8" shoe and a cement plug were set above to plug the hole. A mechanical packer was pressure tested as barrier 2 , before the 13 3/8" was cut deep enough to ensure that the sand interval below 20" shoe could be sealed off with cement. The gas readings were high from the mud from the volume behind 13 3/8" casing, and as a precaution was the bottom part of the top plug made gas tight. The well head was cut 5 m below seabed and location left without leaving any restriction for the fishing industry.

Hrs	Section down time
14.5	Flow line from silica cement day tank plugged. Waited on cement arriving with boat.
5.5	2 attempts to retrieve seal assembly.
0.5	Refilled hydraulic oil on ROV
1.5	Spliced wire could not pass sleave for yellow pod
2	Burned off guides on BOP crane
0.5	Anchor winch broke down
61.5	Wait on weather

4 .5 Formation evaluation

4 .5 .1 Coring

No cores taken

4 .5 .2 Geological formation tops

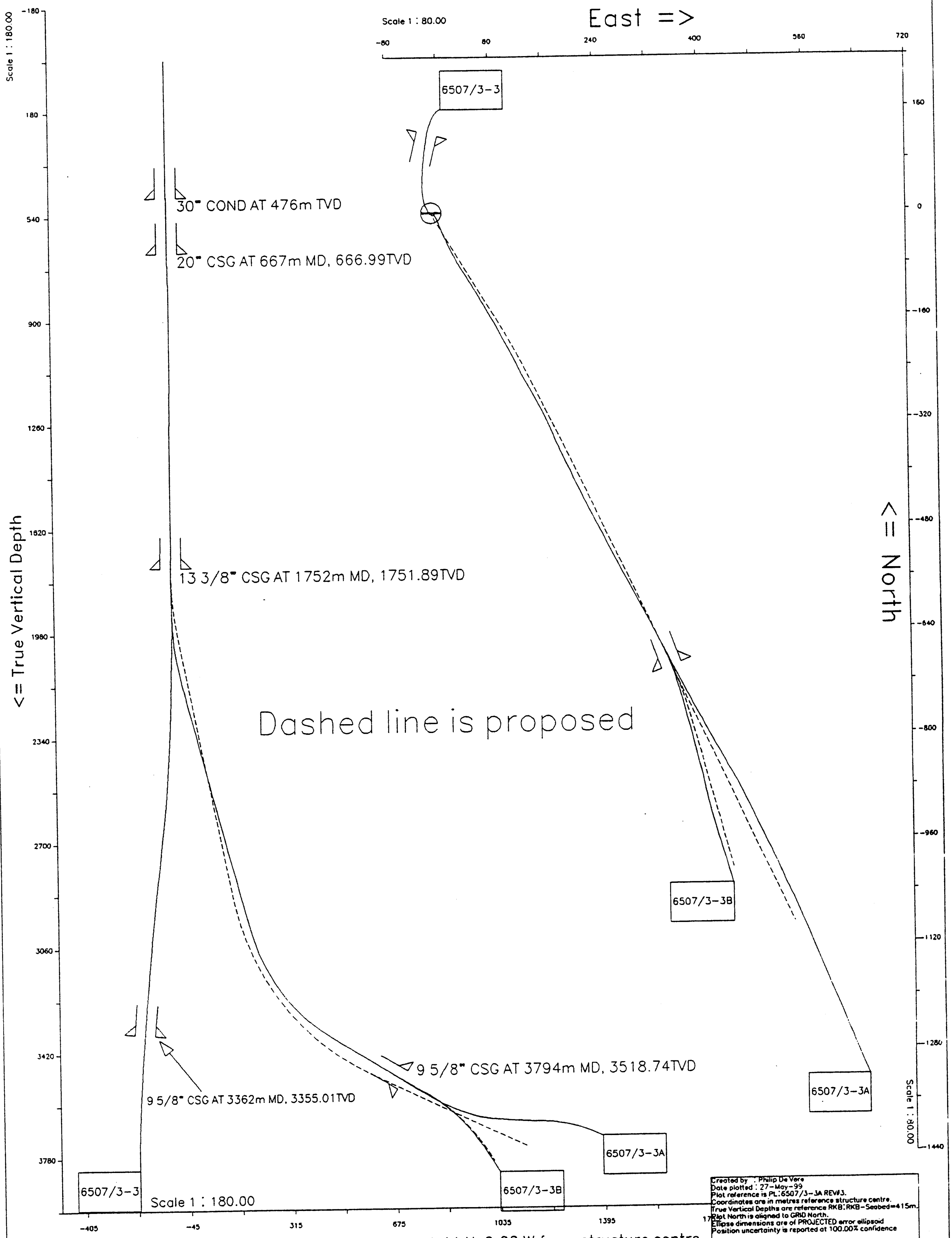
Formation	Actual m MD RKB	Actual m TVD RKB	Prognosed m MD RKB	Prognosed m TVD RKB	Deviation m TVD
Hordaland Group	**1 710**	**1 710**	**1 760**	**1 760**	
Rogaland Group	**1 933**	**1 933**	**1 956**	**1 955**	**-22**
Shetland Group	**2 048,5**	**2 048**	**2 119**	**2 118**	**-70**
Cromer Knoll Group	**2 655,5**	**2 635,5**	**2 652**	**2 620**	**15,5**
Viking Group	**3 098**	**3 061**	**3 059**	**3 033**	**28**
Fangst Group	**3 789**	**3 516**	**3 738**	**3 510**	**6**
Garn Formation	3 789	3 516	3 738	3 510	**6**
Upper Not Formation	3 911	3 579			
Lower Not Formation	4 007	3 621			
Viking Group	***4 146,5***	***3 655***			
Melke Formation	*4 146,5*	*3 655*			
TD	**4 528**	**3 717,5**	**4 484**	**3 825**	**N/A**
6507/3-3B					
Garn Formation	3 792	3 517,5			
Not Formation	3 982,5	3 613,5			
Ile Formation	4 020	3 640			
Båt Group	**4 110**	**3 705**			
Upper Ror Formation	4 110	3 705			
Lower Ror Formation	4 170,5	3 778			
Tilje Formation	4 215,5	3 790,5			
TD	**4 275**	**3 841**			

4 .6 Appendix 1 : Directional data

Statoil

Structure : Byford Dolphin: 6507/3-3 | Well : 6507/3-3A

Field : Nordland 2 | Location : Norwegian North Sea



Vertical Section on 152.44 azimuth with reference 1.11 N, 9.00 W from structure centre

Statoil
Byford Dolphin: 6507/3-3
Exploration well
Nordland 2
Norwegian North Sea

S U R V E Y   L I S T I N G

Well name : 6507/3-3B

Your ref : Definitive 6507/3-3B TD@4275
Our ref : svy2199

Date printed : 17-Aug-99
Date created : 26-May-99
Last revised : 17-Aug-99

Field is centred on 441665.210,7298509.863,9.00000,N

Structure is centred on 441665.210,7298509.863,9.00000,N

DEFINITIVE

Support Eng. Sign.
18/8-99
Oddvar Løkberg

Statoil
Byford Dolphin: 6507/3-3 6507,6507/3-3B
Nordland 2,Norwegian North Sea

SURVEY LISTING Page 1
Your ref : Definitive 6507/3-3B TD@4275
Last revised : 17-Aug-99

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	RECTANGULAR COORDINATES		Dogleg Deg/30m	Vert Sect
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	0.00
416.00	0.00	0.00	416.00	0.00 N	0.00 E	0.00	0.00
526.00	0.80	206.70	526.00	0.69 S	0.35 W	0.22	0.45
586.00	0.50	154.60	585.99	1.30 S	0.42 W	0.32	0.95
641.00	0.60	175.20	640.99	1.80 S	0.29 W	0.12	1.46
671.00	0.50	159.90	670.99	2.08 S	0.24 W	0.18	1.73
681.00	0.80	147.90	680.99	2.18 S	0.18 W	0.98	1.85
729.00	1.00	140.10	728.98	2.79 S	0.26 E	0.15	2.59
758.00	1.00	136.30	757.98	3.16 S	0.60 E	0.07	3.08
786.00	1.00	127.60	785.97	3.49 S	0.96 E	0.16	3.54
815.00	1.00	120.60	814.97	3.77 S	1.38 E	0.13	3.98
844.00	1.10	103.40	843.96	3.96 S	1.87 E	0.34	4.38
874.00	1.10	93.30	873.96	4.05 S	2.44 E	0.19	4.72
902.00	1.10	81.50	901.95	4.02 S	2.97 E	0.24	4.94
932.00	1.10	67.00	931.95	3.87 S	3.52 E	0.28	5.06
[illegible]	1.20	58.40	958.94	3.62 S	4.00 E	0.22	5.06
988.00	1.10	47.10	987.94	3.27 S	4.46 E	0.26	4.96
1018.00	1.10	27.60	1017.93	2.82 S	4.81 E	0.37	4.72
1046.00	0.90	24.40	1045.93	2.38 S	5.02 E	0.22	4.43
1073.00	0.70	5.80	1072.93	2.02 S	5.13 E	0.36	4.17
1104.00	0.60	349.30	1103.92	1.68 S	5.12 E	0.20	3.85
1133.00	0.70	341.70	1132.92	1.36 S	5.03 E	0.14	3.53
1162.00	0.70	336.50	1161.92	1.03 S	4.91 E	0.07	3.18
1190.00	0.80	339.20	1189.92	0.69 S	4.77 E	0.11	2.82
1215.00	0.70	327.60	1214.91	0.40 S	4.62 E	0.22	2.49
1248.00	0.70	322.40	1247.91	0.07 S	4.39 E	0.06	2.09
1275.00	0.50	308.60	1274.91	0.14 N	4.20 E	0.27	1.82
1305.00	0.50	300.90	1304.91	0.29 N	3.99 E	0.07	1.59
1335.00	0.50	321.20	1334.91	0.46 N	3.79 E	0.18	1.35
1363.00	0.50	286.80	1362.91	0.59 N	3.60 E	0.32	1.14
1393.00	0.50	260.70	1392.91	0.60 N	3.34 E	0.23	1.01
1421.00	0.40	283.40	1420.91	0.61 N	3.13 E	0.22	0.91
1451.00	0.20	285.90	1450.90	0.64 N	2.98 E	0.20	0.81
1479.00	0.30	258.50	1478.90	0.64 N	2.86 E	0.16	0.75
1507.00	0.40	268.40	1506.90	0.63 N	2.69 E	0.12	0.69
[illegible]	0.60	253.70	1535.90	0.58 N	2.44 E	0.24	0.61
1565.00	0.50	223.00	1564.90	0.45 N	2.21 E	0.32	0.63
1594.00	0.50	264.10	1593.90	0.34 N	2.00 E	0.36	0.62
1623.00	0.40	240.60	1622.90	0.28 N	1.78 E	0.21	0.58
1651.00	0.40	233.20	1650.90	0.17 N	1.62 E	0.06	0.60
1680.00	0.60	266.50	1679.90	0.10 N	1.39 E	0.36	0.55
1709.00	0.50	287.50	1708.90	0.13 N	1.11 E	0.23	0.40
1738.00	0.70	268.10	1737.90	0.16 N	0.82 E	0.29	0.23
1778.00	0.70	218.70	1777.89	0.04 S	0.42 E	0.44	0.23
1790.40	0.91	328.25	1790.29	0.01 S	0.32 E	3.20	0.16
1819.30	0.52	350.32	1819.19	0.31 N	0.18 E	0.49	-0.19
1848.30	0.59	97.56	1848.19	0.42 N	0.30 E	0.93	-0.23
1905.90	2.10	121.70	1905.77	0.17 S	1.50 E	0.82	0.84
1963.70	3.52	127.93	1963.50	1.82 S	3.80 E	0.75	3.37
1992.50	4.31	136.01	1992.23	3.14 S	5.25 E	1.00	5.21
2021.30	6.18	148.24	2020.91	5.24 S	6.81 E	2.26	7.80
2050.10	8.75	154.44	2049.47	8.53 S	8.57 E	2.80	11.53
2078.90	11.06	158.71	2077.84	13.08 S	10.52 E	2.52	16.47
2107.80	12.79	160.88	2106.11	18.69 S	12.58 E	1.85	22.39
2136.70	13.88	158.10	2134.23	24.93 S	14.92 E	1.31	29.00
21[illegible]50	14.10	158.25	2162.18	31.39 S	17.51 E	0.23	35.93

All data is in metres unless otherwise stated
Coordinates are from structure centre and TVDs are from RKB:RKB-Seabed=415m.
Vertical section is from wellhead on azimuth 152.44 degrees.
Calculation uses the minimum curvature method.

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Byford Dolphin: 6507/3-3 6507,6507/3-3B Your ref : Definitive 6507/3-3B TD@4275
Nordland 2,Norwegian North Sea Last revised : 17-Aug-99

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	R E C T A N G U L A R C O O R D I N A T E S		Dogleg Deg/30m	Vert Sect
2194.20	15.03	154.32	2189.96	37.99 S	20.41 E	1.42	43.13
2223.00	15.21	153.05	2217.76	44.73 S	23.74 E	0.39	50.64
2252.10	15.18	153.42	2245.84	51.54 S	27.18 E	0.10	58.26
2280.90	15.16	153.37	2273.64	58.27 S	30.55 E	0.02	65.80
2309.90	15.12	153.43	2301.63	65.05 S	33.95 E	0.04	73.37
2338.80	15.16	154.37	2329.53	71.82 S	37.27 E	0.26	80.92
2367.50	14.53	148.34	2357.27	78.27 S	40.78 E	1.74	88.26
2396.40	14.56	146.30	2385.25	84.38 S	44.70 E	0.53	95.49
2425.30	14.71	146.83	2413.21	90.47 S	48.72 E	0.21	102.75
2454.10	14.82	147.50	2441.06	96.64 S	52.70 E	0.21	110.06
2483.00	14.87	148.34	2468.99	102.92 S	56.63 E	0.23	117.44
2511.80	14.86	148.77	2496.83	109.22 S	60.49 E	0.12	124.81
2540.60	14.90	149.27	2524.66	115.56 S	64.29 E	0.14	132.19
2569.30	14.85	149.65	2552.40	121.91 S	68.04 E	0.11	139.55
2598.20	14.88	149.83	2580.33	128.31 S	71.77 E	0.06	146.96
[illegible]	14.99	149.74	2608.16	134.72 S	75.51 E	0.12	154.37
2655.90	14.99	150.54	2636.08	141.21 S	79.23 E	0.21	161.84
2684.80	15.05	150.61	2663.99	147.73 S	82.91 E	0.07	169.33
2713.60	15.02	150.66	2691.80	154.24 S	86.57 E	0.03	176.79
2742.40	15.04	150.99	2719.62	160.76 S	90.22 E	0.09	184.26
2771.30	15.05	151.11	2747.53	167.33 S	93.85 E	0.03	191.76
2800.10	15.08	151.73	2775.34	173.90 S	97.43 E	0.17	199.24
2828.90	15.07	151.64	2803.15	180.49 S	100.98 E	0.03	206.73
2857.70	15.12	151.68	2830.95	187.09 S	104.54 E	0.05	214.23
2886.60	15.16	151.96	2858.85	193.75 S	108.10 E	0.09	221.78
2915.40	15.26	152.11	2886.64	200.42 S	111.65 E	0.11	229.34
2944.40	15.27	152.08	2914.62	207.17 S	115.22 E	0.01	236.97
2973.10	15.23	152.12	2942.31	213.84 S	118.75 E	0.04	244.52
3002.00	15.89	153.96	2970.15	220.75 S	122.27 E	0.86	252.27
3030.90	17.41	154.22	2997.84	228.20 S	125.88 E	1.58	260.55
3059.80	18.30	155.00	3025.34	236.20 S	129.68 E	0.96	269.40
3088.60	20.20	154.27	3052.53	244.78 S	133.75 E	1.99	278.89
3117.40	23.04	150.72	3079.31	254.18 S	138.67 E	3.26	289.50
3146.30	26.82	149.08	3105.51	264.71 S	144.79 E	3.99	301.66
3175.20	29.39	150.65	3131.00	276.49 S	151.61 E	2.78	315.26
[illegible]	30.65	152.46	3156.80	289.60 S	158.71 E	1.56	330.17
[illegible]	32.24	153.38	3180.52	302.51 S	165.31 E	1.79	344.67
3261.60	34.84	155.65	3204.52	316.87 S	172.14 E	3.01	360.56
3290.40	38.17	156.55	3227.67	332.54 S	179.08 E	3.51	377.66
3319.20	41.52	156.94	3249.78	349.49 S	186.36 E	3.50	396.06
3348.00	43.72	154.64	3270.97	367.27 S	194.36 E	2.81	415.52
3376.80	47.15	154.54	3291.18	385.80 S	203.17 E	3.57	436.02
3405.80	50.65	154.92	3310.24	405.56 S	212.49 E	3.63	457.85
3434.80	53.28	154.07	3328.10	426.17 S	222.33 E	2.81	480.68
3463.70	55.32	153.22	3344.97	447.20 S	232.75 E	2.24	504.14
3492.40	55.25	152.59	3361.31	468.20 S	243.50 E	0.55	527.73
3521.20	57.33	152.70	3377.29	489.48 S	254.50 E	2.17	551.69
3550.00	59.45	152.65	3392.39	511.27 S	265.76 E	2.21	576.21
3578.90	59.21	152.47	3407.13	533.33 S	277.22 E	0.30	601.07
3607.70	59.09	152.43	3421.90	555.25 S	288.65 E	0.13	625.80
3636.50	59.02	152.74	3436.71	577.18 S	300.03 E	0.29	650.50
3665.30	58.85	152.54	3451.57	599.09 S	311.36 E	0.25	675.17
3694.10	58.71	152.58	3466.50	620.94 S	322.71 E	0.15	699.80
3723.00	58.60	152.78	3481.53	642.87 S	334.04 E	0.21	724.48
3751.90	58.37	152.36	3496.64	664.74 S	345.39 E	0.44	749.11
37[illegible].00	59.70	159.20	3518.83	698.42 S	360.52 E	4.19	785.97

All data is in metres unless otherwise stated
Coordinates are from structure centre and TVDs are from RKB:RKB-Seabed=415m.
Vertical section is from wellhead on azimuth 152.44 degrees.
Calculation uses the minimum curvature method.

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Statoil
Byford Dolphin: 6507/3-3 6507,6507/3-3B
Nordland 2,Norwegian North Sea

SURVEY LISTING Page 3
Your ref : Definitive 6507/3-3B TD@4275
Last revised : 17-Aug-99

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	R E C T A N G U L A R	C O O R D I N A T E S	Dogleg Deg/30m	Vert Sect	
3804.00	59.80	160.90	3523.37	705.73 S	363.18 E	4.91	793.68	
3833.00	61.10	162.90	3537.67	729.71 S	371.01 E	2.25	818.56	
3880.00	62.10	165.70	3560.03	769.50 S	382.19 E	1.70	859.01	
3889.00	61.60	164.70	3564.27	777.17 S	384.22 E	3.38	866.75	
3919.00	58.40	166.20	3579.27	802.32 S	390.75 E	3.45	892.06	
3938.00	56.00	166.20	3589.56	817.82 S	394.56 E	3.79	907.58	
3968.00	52.40	166.10	3607.11	841.44 S	400.38 E	3.60	931.21	
3997.00	49.20	167.00	3625.44	863.30 S	405.61 E	3.39	953.00	
4026.00	48.30	168.60	3644.56	884.61 S	410.22 E	1.55	974.03	
4053.00	45.20	167.10	3663.06	903.83 S	414.35 E	3.65	992.98	
4082.00	42.70	165.70	3683.93	923.39 S	419.08 E	2.77	1012.51	
4102.00	41.40	165.00	3698.78	936.35 S	422.47 E	2.07	1025.57	
4110.00	39.90	164.00	3704.85	941.37 S	423.86 E	6.13	1030.66	
4140.00	37.10	163.30	3728.33	959.29 S	429.11 E	2.83	1048.98	
4168.00	34.50	163.30	3751.04	974.98 S	433.82 E	2.79	1065.06	
[illegible].00	33.40	164.10	3775.92	991.06 S	438.52 E	1.19	1081.49	
4226.00	32.90	164.30	3799.37	1005.79 S	442.69 E	0.55	1096.48	
4250.00	32.20	163.90	3819.60	1018.21 S	446.23 E	0.92	1109.13	TIE ON TO 8.5" BHI MWD: 6507/3-3B
4275.00	32.20	163.90	3840.75	1031.01 S	449.92 E	0.00	1122.19	26-5-99 EXTRAPOLATED TO TD

All data is in metres unless otherwise stated
Coordinates are from structure centre and TVDs are from RKB:RKB-Seabed=415m.
Vertical section is from wellhead on azimuth 152.44 degrees.
Calculation uses the minimum curvature method.

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Comments in wellpath
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MD	TVD	Rectangular Coords.		Comment
4250.00	3819.60	1018.21 S	446.23 E	TIE ON TO 8.5" BHI MWD: 6507/3-3B
4275.00	3840.75	1031.01 S	449.92 E	26-5-99 EXTRAPOLATED TO TD

Casing positions in string 'ABC'
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Top MD	Top TVD	Rectangular Coords.		Shoe MD	Shoe TVD	Rectangular Coords.		Casing
0.00	0.00	0.00N	0.00E	476.00	476.00	0.20S	0.10W	30" COND AT 476m TVD
0.00	0.00	0.00N	0.00E	667.00	666.99	2.05S	0.25W	20" CSG AT 667m MD, 666.99TV
0.00	0.00	0.00N	0.00E	1752.00	1751.89	0.13N	0.66E	13 3/8" CSG AT 1752m MD, 175
0.00	0.00	0.00N	0.00E	3794.00	3518.33	697.61S	360.22E	9 5/8" CSG AT 3794m MD, 3518

All data is in metres unless otherwise stated
Coordinates are from structure centre and TVDs are from RKB:RKB-Seabed=415m.
Vertical section is from wellhead on azimuth 152.44 degrees.
Calculation uses the minimum curvature method.

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Statoil
Byford Dolphin: 6507/3-3
Exploration well
Nordland 2
Norwegian North Sea

S U R V E Y   L I S T I N G

Well name : 6507/3-3A

Your ref : Definitive 6507/3-3A TD@4528
Our ref : svy2169

Date printed : 17-Aug-99
Date created : 21-Apr-99
Last revised : 17-Aug-99

Field is centred on 441665.210,7298509.863,9.00000,N

Structure is centred on 441665.210,7298509.863,9.00000,N

DEFINITIVE

Support Eng. Sign.

18/8-99

Oddvar Lotsberg

Statoil
Byrord Dolphin: 6507/3-3 6507,6507/3-3A
Nordland 2,Norwegian North Sea

SURVEY LISTING Page 1
Your ref : Definitive 6507/3-3A TD@4528
Last revised : 17-Aug-99

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	R E C T A N G U L A R C O O R D I N A T E S		Dogleg Deg/30m	Vert Sect
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	0.00
416.00	0.00	0.00	416.00	0.00 N	0.00 E	0.00	0.00
526.00	0.80	206.70	526.00	0.69 S	0.35 W	0.22	0.45
586.00	0.50	154.60	585.99	1.30 S	0.42 W	0.32	0.95
641.00	0.60	175.20	640.99	1.80 S	0.29 W	0.12	1.46
671.00	0.50	159.90	670.99	2.08 S	0.24 W	0.18	1.73
681.00	0.80	147.90	680.99	2.18 S	0.18 W	0.98	1.85
729.00	1.00	140.10	728.98	2.79 S	0.26 E	0.15	2.59
758.00	1.00	136.30	757.98	3.16 S	0.60 E	0.07	3.08
786.00	1.00	127.60	785.97	3.49 S	0.96 E	0.16	3.54
815.00	1.00	120.60	814.97	3.77 S	1.38 E	0.13	3.98
844.00	1.10	103.40	843.96	3.96 S	1.87 E	0.34	4.38
874.00	1.10	93.30	873.96	4.05 S	2.44 E	0.19	4.72
902.00	1.10	81.50	901.95	4.02 S	2.97 E	0.24	4.94
932.00	1.10	67.00	931.95	3.87 S	3.52 E	0.28	5.06
[illegible]	1.20	58.40	958.94	3.62 S	4.00 E	0.22	5.06
988.00	1.10	47.10	987.94	3.27 S	4.46 E	0.26	4.96
1018.00	1.10	27.60	1017.93	2.82 S	4.81 E	0.37	4.72
1046.00	0.90	24.40	1045.93	2.38 S	5.02 E	0.22	4.43
1073.00	0.70	5.80	1072.93	2.02 S	5.13 E	0.36	4.17
1104.00	0.60	349.30	1103.92	1.68 S	5.12 E	0.20	3.85
1133.00	0.70	341.70	1132.92	1.36 S	5.03 E	0.14	3.53
1162.00	0.70	336.50	1161.92	1.03 S	4.91 E	0.07	3.18
1190.00	0.80	339.20	1189.92	0.69 S	4.77 E	0.11	2.82
1215.00	0.70	327.60	1214.91	0.40 S	4.62 E	0.22	2.49
1248.00	0.70	322.40	1247.91	0.07 S	4.39 E	0.06	2.09
1275.00	0.50	308.60	1274.91	0.14 N	4.20 E	0.27	1.82
1305.00	0.50	300.90	1304.91	0.29 N	3.99 E	0.07	1.59
1335.00	0.50	321.20	1334.91	0.46 N	3.79 E	0.18	1.35
1363.00	0.50	286.80	1362.91	0.59 N	3.60 E	0.32	1.14
1393.00	0.50	260.70	1392.91	0.60 N	3.34 E	0.23	1.01
1421.00	0.40	283.40	1420.91	0.61 N	3.13 E	0.22	0.91
1451.00	0.20	285.90	1450.90	0.64 N	2.98 E	0.20	0.81
1479.00	0.30	258.50	1478.90	0.64 N	2.86 E	0.16	0.75
1507.00	0.40	268.40	1506.90	0.63 N	2.69 E	0.12	0.69
[illegible]	0.60	253.70	1535.90	0.58 N	2.44 E	0.24	0.61
[illegible]	0.50	223.00	1564.90	0.45 N	2.21 E	0.32	0.63
1594.00	0.50	264.10	1593.90	0.34 N	2.00 E	0.36	0.62
1623.00	0.40	240.60	1622.90	0.28 N	1.78 E	0.21	0.58
1651.00	0.40	233.20	1650.90	0.17 N	1.62 E	0.06	0.60
1680.00	0.60	266.50	1679.90	0.10 N	1.39 E	0.36	0.55
1709.00	0.50	287.50	1708.90	0.13 N	1.11 E	0.23	0.40
1738.00	0.70	268.10	1737.90	0.16 N	0.82 E	0.29	0.23
1778.00	0.70	218.70	1777.89	0.04 S	0.42 E	0.44	0.23
1790.40	0.91	328.25	1790.29	0.01 S	0.32 E	3.20	0.16
1819.30	0.52	350.32	1819.19	0.31 N	0.18 E	0.49	-0.19
1848.30	0.59	97.56	1848.19	0.42 N	0.30 E	0.93	-0.23
1905.90	2.10	121.70	1905.77	0.17 S	1.50 E	0.82	0.84
1963.70	3.52	127.93	1963.50	1.82 S	3.80 E	0.75	3.37
1992.50	4.31	136.01	1992.23	3.14 S	5.25 E	1.00	5.21
2021.30	6.18	148.24	2020.91	5.24 S	6.81 E	2.26	7.80
2050.10	8.75	154.44	2049.47	8.53 S	8.57 E	2.80	11.53
2078.90	11.06	158.71	2077.84	13.08 S	10.52 E	2.52	16.47
2107.80	12.79	160.88	2106.11	18.69 S	12.58 E	1.85	22.39
2136.70	13.88	158.10	2134.23	24.93 S	14.92 E	1.31	29.00
[illegible]	14.10	158.25	2162.18	31.39 S	17.51 E	0.23	35.93

All data is in metres unless otherwise stated
Coordinates are from structure centre and TVDs are from RKB:RKB-Seabed=415m.
Vertical section is from wellhead on azimuth 152.44 degrees.
Calculation uses the minimum curvature method.

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	RECTANGULAR COORDINATES		Dogleg Deg/30m	Vert Sect
2194.20	15.03	154.32	2189.96	37.99 S	20.41 E	1.42	43.13
2223.00	15.21	153.05	2217.76	44.73 S	23.74 E	0.39	50.64
2252.10	15.18	153.42	2245.84	51.54 S	27.18 E	0.10	58.26
2280.90	15.16	153.37	2273.64	58.27 S	30.55 E	0.02	65.80
2309.90	15.12	153.43	2301.63	65.05 S	33.95 E	0.04	73.37
2338.80	15.16	154.37	2329.53	71.82 S	37.27 E	0.26	80.92
2367.50	14.53	148.34	2357.27	78.27 S	40.78 E	1.74	88.26
2396.40	14.56	146.30	2385.25	84.38 S	44.70 E	0.53	95.49
2425.30	14.71	146.83	2413.21	90.47 S	48.72 E	0.21	102.75
2454.10	14.82	147.50	2441.06	96.64 S	52.70 E	0.21	110.06
2483.00	14.87	148.34	2468.99	102.92 S	56.63 E	0.23	117.44
2511.80	14.86	148.77	2496.83	109.22 S	60.49 E	0.12	124.81
2540.60	14.90	149.27	2524.66	115.56 S	64.29 E	0.14	132.19
2569.30	14.85	149.65	2552.40	121.91 S	68.04 E	0.11	139.55
2598.20	14.88	149.83	2580.33	128.31 S	71.77 E	0.06	146.96
[illegible]7.00	14.99	149.74	2608.16	134.72 S	75.51 E	0.12	154.37
2655.90	14.99	150.54	2636.08	141.21 S	79.23 E	0.21	161.84
2684.80	15.05	150.61	2663.99	147.73 S	82.91 E	0.07	169.33
2713.60	15.02	150.66	2691.80	154.24 S	86.57 E	0.03	176.79
2742.40	15.04	150.99	2719.62	160.76 S	90.22 E	0.09	184.26
2771.30	15.05	151.11	2747.53	167.33 S	93.85 E	0.03	191.76
2800.10	15.08	151.73	2775.34	173.90 S	97.43 E	0.17	199.24
2828.90	15.07	151.64	2803.15	180.49 S	100.98 E	0.03	206.73
2857.70	15.12	151.68	2830.95	187.09 S	104.54 E	0.05	214.23
2886.60	15.16	151.96	2858.85	193.75 S	108.10 E	0.09	221.78
2915.40	15.26	152.11	2886.64	200.42 S	111.65 E	0.11	229.34
2944.40	15.27	152.08	2914.62	207.17 S	115.22 E	0.01	236.97
2973.10	15.23	152.12	2942.31	213.84 S	118.75 E	0.04	244.52
3002.00	15.89	153.96	2970.15	220.75 S	122.27 E	0.86	252.27
3030.90	17.41	154.22	2997.84	228.20 S	125.88 E	1.58	260.55
3059.80	18.30	155.00	3025.34	236.20 S	129.68 E	0.96	269.40
3088.60	20.20	154.27	3052.53	244.78 S	133.75 E	1.99	278.89
3117.40	23.04	150.72	3079.31	254.18 S	138.67 E	3.26	289.50
3146.30	26.82	149.08	3105.51	264.71 S	144.79 E	3.99	301.66
3175.20	29.39	150.65	3131.00	276.49 S	151.61 E	2.78	315.26
[illegible]0	30.65	152.46	3156.80	289.60 S	158.71 E	1.56	330.17
[illegible]2.80	32.24	153.38	3180.52	302.51 S	165.31 E	1.79	344.67
3261.60	34.84	155.65	3204.52	316.87 S	172.14 E	3.01	360.56
3290.40	38.17	156.55	3227.67	332.54 S	179.08 E	3.51	377.66
3319.20	41.52	156.94	3249.78	349.49 S	186.36 E	3.50	396.06
3348.00	43.72	154.64	3270.97	367.27 S	194.36 E	2.81	415.52
3376.80	47.15	154.54	3291.18	385.80 S	203.17 E	3.57	436.02
3405.80	50.65	154.92	3310.24	405.56 S	212.49 E	3.63	457.85
3434.80	53.28	154.07	3328.10	426.17 S	222.33 E	2.81	480.68
3463.70	55.32	153.22	3344.97	447.20 S	232.75 E	2.24	504.14
3492.40	55.25	152.59	3361.31	468.20 S	243.50 E	0.55	527.73
3521.20	57.33	152.70	3377.29	489.48 S	254.50 E	2.17	551.69
3550.00	59.45	152.65	3392.39	511.27 S	265.76 E	2.21	576.21
3578.90	59.21	152.47	3407.13	533.33 S	277.22 E	0.30	601.07
3607.70	59.09	152.43	3421.90	555.25 S	288.65 E	0.13	625.80
3636.50	59.02	152.74	3436.71	577.18 S	300.03 E	0.29	650.50
3665.30	58.85	152.54	3451.57	599.09 S	311.36 E	0.25	675.17
3694.10	58.71	152.58	3466.50	620.94 S	322.71 E	0.15	699.80
3723.00	58.60	152.78	3481.53	642.87 S	334.04 E	0.21	724.48
3751.90	58.37	152.36	3496.64	664.74 S	345.39 E	0.44	749.11
3[illegible]10	58.23	152.82	3507.25	680.00 S	353.30 E	0.62	766.30 TIE ON TO BHI EMS: 3A

All data is in metres unless otherwise stated
Coordinates are from structure centre and TVDs are from RKB:RKB-Seabed=415m.
Vertical section is from wellhead on azimuth 152.44 degrees.
Calculation uses the minimum curvature method.

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	R E C T A N G U L A R C O O R D I N A T E S		Dogleg Deg/30m	Vert Sect	
3825.00	58.80	151.60	3534.88	719.90 S	374.34 E	0.67	811.41	20-APR-99 8 1/2" BHI MWD 3A
3852.00	58.90	152.90	3548.85	740.35 S	385.09 E	1.24	834.52	
3882.00	59.30	152.00	3564.25	763.18 S	397.00 E	0.87	860.26	
3909.00	60.20	152.50	3577.86	783.82 S	407.86 E	1.11	883.58	
3938.00	61.80	152.30	3591.92	806.29 S	419.61 E	1.67	908.94	
3967.00	64.60	150.50	3604.99	829.01 S	432.00 E	3.34	934.82	
3996.00	67.00	149.90	3616.88	851.96 S	445.15 E	2.55	961.25	
4024.00	69.40	151.20	3627.28	874.60 S	457.93 E	2.88	987.23	
4053.00	72.40	153.20	3636.76	898.84 S	470.70 E	3.67	1014.63	
4083.00	76.20	154.90	3644.88	924.81 S	483.33 E	4.14	1043.49	
4111.00	80.40	154.70	3650.56	949.61 S	495.01 E	4.50	1070.88	
4139.00	84.60	155.00	3654.21	974.73 S	506.80 E	4.51	1098.61	
4168.00	85.50	155.50	3656.71	1000.97 S	518.90 E	1.06	1127.47	
4198.00	86.00	156.20	3658.94	1028.27 S	531.14 E	0.86	1157.33	
4226.00	86.50	155.80	3660.77	1053.79 S	542.50 E	0.69	1185.22	
4[illegible].00	86.60	156.10	3662.51	1080.23 S	554.30 E	0.33	1214.11	
4283.00	87.50	156.60	3663.96	1105.84 S	565.51 E	1.10	1242.01	
4312.00	89.10	157.40	3664.82	1132.52 S	576.84 E	1.85	1270.90	
4341.00	84.80	156.90	3666.36	1159.20 S	588.08 E	4.48	1299.76	
4370.00	80.70	156.40	3670.02	1185.61 S	599.48 E	4.27	1328.44	
4399.00	77.60	157.20	3675.48	1211.78 S	610.70 E	3.31	1356.84	
4427.00	75.50	157.60	3681.99	1236.92 S	621.17 E	2.29	1383.97	
4457.00	71.80	157.60	3690.43	1263.53 S	632.13 E	3.70	1412.63	
4485.00	67.50	157.20	3700.17	1287.76 S	642.22 E	4.62	1438.78	
4504.00	65.90	156.50	3707.68	1303.81 S	649.08 E	2.72	1456.18	
4528.00	65.90	156.50	3717.48	1323.90 S	657.81 E	0.00	1478.03	24-APR-99 EXTRAPOLATED TO TD

All data is in metres unless otherwise stated
Coordinates are from structure centre and TVDs are from RKB:RKB-Seabed=415m.
Vertical section is from wellhead on azimuth 152.44 degrees.
Calculation uses the minimum curvature method.

Comments in wellpath

MD	TVD	Rectangular Coords.		Comment
3772.10	3507.25	680.00 S	353.30 E	TIE ON TO BHI EMS: 3A
3825.00	3534.88	719.90 S	374.34 E	20-APR-99 8 1/2" BHI MWD 3A
4528.00	3717.48	1323.90 S	657.81 E	24-APR-99 EXTRAPOLATED TO TD

Casing positions in string 'ABC'

Top MD	Top TVD	Rectangular Coords.		Shoe MD	Shoe TVD	Rectangular Coords.		Casing
0.00	0.00	0.00N	0.00E	476.00	476.00	0.20S	0.10W	30" COND AT 476m TVD
0.00	0.00	0.00N	0.00E	667.00	666.99	2.05S	0.25W	20" CSG AT 667m MD, 666.99TV
0.00	0.00	0.00N	0.00E	1752.00	1751.89	0.13N	0.66E	13 3/8" CSG AT 1752m MD, 175

Targets associated with this wellpath

Target name	Position	T.V.D.	Local rectangular coords.		Date revised
Top Garn rev#2	441990.40,7297886.70	3510.00	623.39S	325.31E	15-Mar-99

All data is in metres unless otherwise stated
Coordinates are from structure centre and TVDs are from RKB:RKB-Seabed=415m.
Vertical section is from wellhead on azimuth 152.44 degrees.
Calculation uses the minimum curvature method.

4 .7 Appendix 2 : Operational experience

4 .7 .1 Appendix 2.1 : Operational listing

Date	From hrs	To hrs	Duration	Depth mMD	Act. code	Main mode	Sub mode	Description
99/03/25	1500	2400	9,00	1886,0	DDOU	OK	OK	CONTINUED DRILLING TO KICK OFF FROM VERTICAL HOLE, FROM 1805 TO 1886 M.
99/03/26	0000	0600	6,00	1930,0	DDOU	OK	OK	CONTINUED TIME DRILLING FROM 1886 TO 1930 M TO BUILD ANGLE.
	0600	1430	8,50	1998,0	DDOU	OK	OK	CONTINUED DRILLING/ORIENTATING 12 1/4" HOLE FROM 1930 TO 1998 M.
	1430	1600	1,50	1998,0	DTBK	OK	OK	CIRCULATED BTMS UP. FLOW CHECKED.
	1600	2100	5,00		DTBK	OK	OK	SLUGGED PIPE. POOH FROM 1998 TO 1752 M. FLOW CHECKED AT 13 3/8" SHOE . CONTINUED POOH WITH BHA NO 21 TO SURFACE.
	2100	2130	,50		DERD	FAIL	E FAIL	REPLACED BROKEN SHEAR PIN ON UPPER RACKING ARM.
	2130	2230	1,00		DTBK	OK	OK	CONTINUED RACK BHA.
	2230	2300	,50		DTBK	OK	OK	DUMPED MWD MEMORY.
	2300	2400	1,00		DTBK	OK	OK	CHANGED BIT. CHECKED SCRIBELINE. STARTED RIH WITH 12 1/4".
99/03/27	0000	0600	6,00	1750,0	DTBK	OK	OK	RIH WITH BHA NO 22, 12 1/4" FROM SURFACE TO 1750 M.
	0600	0630	,50	1750,0	PAOD	FAIL	O FAIL	SERVICED TDS
	0630	0700	,50	1975,0	DTBK	OK	OK	CONTINUED RIH WITH BHA NO 22 FROM 1750 TO 1975 M.
	0700	0800	1,00	1752,0	DEMD	FAIL	E FAIL	PULLED BACK TO SHOE DUE TO SOFTWARE FAILURE ON MWD COMPUTER.
	0800	0900	1,00	1998,0	DEMD	FAIL	OK	RIH TO 1998 M. BROKE CIRCULATION.
	0900	1200	3,00	2008,0	DDOU	OK	OK	DRILLED/ORIENTATED 12 1/4" HOLE FROM 1998 TO 2008 M.
	1200	2400	12,00	2122,0	DDOU	OK	OK	CONT. DRILLED/ORIENTED 12 1/4" HOLE FROM 2008 M TO 2122 M.
99/03/28	0000	0200	2,00	2187,0	DDOU	OK	OK	DRILLED/ORIENTATED 12 1/4" HOLE FROM 2122 TO 2187 M. BACKREAMING EAC H STAND TWICE.
	0200	0300	1,00	2187,0	ZNON	OK	OK	NONE OPERATIONAL TIME DUE TO SWITCHING TO SUMMER TIME.
	0300	0600	3,00	2217,0	DDOU	OK	OK	CONT. DRILLED/ORIENTED 12 1/4" HOLE FROM 2122 M TO 2217 M. BACKREAMI NG EACH STAND TWO TIMES.
	0600	2400	18,00	2498,0	DDOU	OK	OK	DRILLED/ORIENTATED 12 1/4" FROM 2217 TO 2498 M. BACKREAMED EACH STAN D TWICE.
99/03/29	0000	0600	6,00	2584,0	DDOU	OK	OK	CONTINUED DRILL/ORIENTATED 12 1/4" HOLE FROM 2498 TO 2584 M. BACKREAMING EACH STAND TWICE.
	0600	1000	4,00	2617,0	DDOU	OK	OK	DRILLED/ORIENTATED 12 1/4" HOLE FROM 2584 TO 2617 M. BACKREAMED EACH STAND TWICE.
	1000	1130	1,50	2617,0	DTBK	OK	OK	CIRCULATED BTMS UP. FLOW CHECKED.
	1130	1700	5,50		DTBK	OK	OK	SLUGGED PIPE. POOH.
	1700	1730	,50		DTBK	OK	OK	DUMPED MWD MEMORY.
	1730	1800	,50		DTBK	OK	OK	RACKED BHA. BROKE BIT.
	1800	2000	2,00	414,0	BBOU	OK	OK	MU JET SUB AND BOP TEST TOOL. RIH AND JET WELL HEAD PRIOR TO LAND TE ST TOOL.
	2000	2400	4,00	414,0	BBDU	OK	OK	PRESSURE TESTED BOP ON BLUE POD TO 35/345 BARS FOR 5/10 MINUTES.TEST ED ANNULARS TO 35/240 BARS FOR 5/10 MINUTES.
99/03/30	0000	0030	,50	414,0	BBDU	OK	OK	FUNCTION TEST OF BOP ON YELLOW POD.
	0030	0230	2,00		BBOU	OK	OK	POOH WITH TEST TOOL ASSEMBLY. LD JET SUB.
	0230	0300	,50		BBUU	OK	OK	PRESSURE TESTED UPPER AND LOWER INSIDE BOP TO 35/345 BARS F/ 5/10 MI N.
	0300	0530	2,50		BBOD	OK	OK	RU CIRCULATION HOSE. TESTED SPARE KELLY COCK, LOWER AND UPPER IBOP A ND KELLY HOSE TO 35/345 BAR 5/10 MINUTES. RD CIRCULATION EQUIPMENT. FUNCTION TESTED SHEAR RAMS.
	0530	0600	,50		DTBK	OK	OK	STARTED MU 12 1/4" BHA.
	0600	1130	5,50	1975,0	DTBK	OK	OK	RIH WITH 12 1/4" BIT TO 1975 M. TOOK WEIGHT.
	1130	1200	,50	2096,0	DTBK	OK	OK	REAMED/WASHED FROM 1975 TO 2096 M.
	1200	1300	1,00	2424,0	DTBK	OK	OK	RIH FROM 2096 TO 2424 M WITH 12 1/4" BIT. TOOK WEIGHT.
	1300	1430	1,50	2617,0	DTBK	OK	OK	REAMED/WASHED FROM 2424 TO 2617 M.
	1430	2400	9,50	2695,0	DDOU	OK	OK	DRILLED 12 1/4" HOLE FROM 2617 TO 2695 M. BACKREAMED EACH STAND TWIC E.
99/03/31	0000	0600	6,00	2783,0	DDOU	OK	OK	CONTINUED DRILLED 12 1/4" HOLE TO 2783 M. BACKREAMED EACH STAND TWIC E.
	0600	2400	18,00	3030,0	DDOU	OK	OK	DRILLED 12 1/4" HOLE FROM 2783 TO 3030 M. BACKREAMED EACH STAND TWIC E.
99/04/01	0000	0600	6,00	3066,0	DDOU	OK	OK	DRILLED 12 1/4" HOLE FROM 3030 TO 3066 M. BACKREAMED EACH STAND TWIC E.
	0600	0830	2,50	3079,0	DDOU	OK	OK	DRILLED 12 1/4" HOLE FROM 3066 TO 3079 M. REAMED TWICE BEFORE CONNEC T. NOT ABLE TO BUILD SUFFICIENT HOLE ANGLE.
	0830	1100	2,50	3079,0	DTBK	OK	OK	CIRCULATED HOLE CLEAN. BOOSTED RISER WHILE CIRCULATING.
	1100	1630	5,50		DTBK	OK	OK	FLOW CHECKED. SLUGGED PIPE. POOH. FLOW CHECKED AT SHOE AND PRIOR TO PULL BHA THROUGH BOP.
	1630	1730	1,00		DTBK	OK	OK	RACKED BHA.
	1730	1800	,50		DTBK	OK	OK	DUMPED MWD MEMORY.
	1800	1900	1,00		DTBK	OK	OK	CONTINUED RACKING BHA. BROKE BIT. LD NAVIDRILL MUD MOTOR.
	1900	2100	2,00		CAOU	OK	OK	MU CEMENT HEAD AND RACKED IN DERRICK.
	2100	2400	3,00		CAOU	OK	OK	MU 9 5/8" CASING HANGER RUNNING TOOL. LOADED WIPER PLUGS. RACKED SAM E IN DERRICK.
99/04/02	0000	0300	3,00		DERD	FAIL	O FAIL	MU LOWER KELLY COCK TO TDS. REPAIRED BROKEN HYDRAULIC HOSE TO TORQUE WRENCHE ON TDS. MU KELLY COCK AND NEW SAVER SUB TO TDS.
	0300	0600	3,00	700,0	DTBK	OK	OK	MU BHA. CHANGED MUD MOTOR. RIH TO 700 M.
	0600	1100	5,00	3016,0	DTBK	OK	OK	RIH WITH 12 1/4" BHA TO 3016 M.
	1100	1200	1,00	3079,0	DTBK	OK	OK	REAMED AND WASHED FROM 3016 TO TD AT 3079 M.
	1200	2400	12,00	3139,0	DDOU	OK	OK	DRILLED/ORIENTATED 12 1/4" HOLE FROM 3079 TO 3139 M. BACKREAMED TWIC E AT EACH CONNECTION.
99/04/03	0000	0600	6,00	3180,0	DDOU	OK	OK	CONTINUED DRILLING 12 1/4" HOLE TO 3180 M. BACKREAMED TWICE AT EACH CONNECTION.
	0600	2400	18,00	3242,0	DDOU	OK	OK	DRILLED 12 1/4" HOLE FROM 3180 TO 3242 M. BACKREAMED EACH STAND TWIC E.
99/04/04	0000	0600	6,00	3258,0	DDOU	OK	OK	DRILLED/ORIENTATED 12 1/4" HOLE FROM 3242 TO 3258 M.
	0600	1100	5,00	3270,0	DDOU	OK	OK	DRILLED/ORIENTATED 12 1/4" HOLE FROM 3258 TO 3270 M. REAMED TWICE ON CONNECTION.
	1100	1130	,50	3270,0	DTBK	OK	OK	CIRCULATED FOR 20 MINUTES. FLOW CHECKED.
	1130	1700	5,50	420,0	DTBK	OK	OK	PUMPED SLUG. POOH. FLOW CHECKED AT CASING SHOE AND BEFORE PULLING BH A THROUGH BOP. CONTINUED POOH TO 420 M.
	1700	1900	2,00	420,0	DERD	FAIL	E FAIL	HAD MALEFUNCTION ON MAIN HYDRAULIC FEED LINE TO UPPER RACKING ARM.

								REPAIRED SAME.
	1900	2000	1,00		DTBK	OK	OK	POOH WITH 5" DP AND HWDP.
	2000	2330	3,50		DTBK	OK	OK	LAID DOWN MWD TOOL, STABILIZERS AND MUD MOTOR.
	2330	2400	,50		DTBK	OK	OK	PU NEW 12 1/4" BIT, MUD MOTOR AND MWD TOOL.
99/04/05	0000	0600	6,00	1425,0	DTBK	OK	OK	RIH WITH 12 1/4" BHA ON 5" DP TO 1425 M.
	0600	0730	1,50	1752,0	DTBK	OK	OK	CONTINUED RIH WITH 12 1/4" HBA TO 1752 M.
	0730	0900	1,50	1752,0	DERD	FAIL	E FAIL	HAD MALEFUNCTION ON UPPER RACKING ARM. REPAIRED SAME.
	0900	1200	3,00	3270,0	DTBK	OK	OK	CONTINUED RIH WITH 12 1/4" BHA TO 3270 M.
	1200	2400	12,00	3328,0	DDOU	OK	OK	DRILLED 12 1/4" HOLE FROM 3270 TO 3328 M.
99/04/06	0000	0600	6,00	3342,0	DDOU	OK	OK	DRILLED 12 1/4" HOLE FROM 3328 TO 3342 M.
	0600	1900	13,00	3396,0	DDOU	OK	OK	DRILLED 12 1/4" HOLE FROM 3342 TO 3396 M. REAMED TWICE AT CONNECTION .
	1900	1930	,50	3396,0	DTBK	OK	OK	CIRCULATED FOR 20 MINUTES. FLOW CHECKED.
	1930	2400	4,50	300,0	DTBK	OK	OK	SLUGGED PIPE. POOH FROM 3396 TO 300 M.
99/04/07	0000	0100	1,00		DTBK	OK	OK	CONTINUED POOH AND RACKED BHA.
	0100	0200	1,00		DTBK	OK	OK	DUMPED MWD MEMORY.
	0200	0330	1,50		DTBK	OK	OK	MADE UP 12 1/4" PDC BIT AND SET AKO ON NAVIDRILL @ 0,8 DEGREES.
	0330	0530	2,00	1745,0	DTBK	OK	OK	RIH WITH 12 1/4" BIT TO 1745 M.
	0530	0600	,50	1745,0	RMRU	OK	OK	CUT AND SLIP 32 M DRILLINE.
	0600	0700	1,00	1745,0	RMRU	OK	OK	CUT AND SLIPPED DRILLINE.
	0700	0730	,50	1745,0	DERD	OK	OK	SERVICED TOPDRIVE.
	0730	1130	4,00	3396,0	DTBK	OK	OK	RIH TO TD AT 3396 M.
	1130	2400	12,50	3448,0	DDOU	OK	OK	DRILLED / ORIENTATED 12 1/4" HOLE FROM 3396 M TO 3448 M.
99/04/08	0000	0600	6,00		DDOU	OK	OK	CONTINUED TO DRILL / ORIENTATE 12 1/4" HOLE FROM 3448 M TO 3474 M.
99/04/08	0600	2400	18,00	3546,0	DDOU	OK	OK	DRILLED / ORIENTED 121/4" HOLE FROM 3474 M TO 3546 M.
99/04/09	0000	0400	4,00	3555,0	DDOU	OK	OK	CONTINUED TO DRILL / ORIENT 12 1/4" HOLE FROM 3546 M TO 3555 M.
	0400	0430	,50	3555,0	DCAU	OK	OK	CIRCULATED HOLE.
	0430	0600	1,50	3390,0	DTAK	OK	OK	OBSERVED WELL - STATIC. SLUGGED PIPE AND POOH.(BACKREAMED THROUGH TIGHT SPOT AT 3475 M, MOP 30 MT).
	0600	1130	5,50	25,0	DTAK	OK	OK	POOH.
	1130	1230	1,00	25,0	DTAK	OK	OK	DUMPED MWD MEMORY.
	1230	1300	,50		DTAK	OK	OK	BROKE BIT AND L/D 8" NAVI-DRILL.
	1300	1500	2,00	95,0	DTAK	OK	OK	P/U 9,5" NAVI-DRILL. M/U BIT. SAT AKO TO 0.8 DEG. RIH WITH BHA.
	1500	1730	2,50	1752,0	DTAK	OK	OK	RIH WITH 5" DP TO CSG SHOE AT 1752 M.
	1730	2200	4,50	1752,0	DERD	OK	OK	PERFORMED 3 YEARS PM ON SCR'S.
	2200	2400	2,00	2700,0	DTAK	OK	OK	TESTED MWD AND CONTINUED TO RIH TO 2700 M.
99/04/10	0000	0200	2,00	3555,0	DTAK	OK	OK	CONTINUED TO RIH, WASHED DOWM LAST 20 M TO TD AT 3555 M.
	0200	0600	4,00	3576,0	DDOU	OK	OK	DRILLED 12 1/4" HOLE FROM 3555 M TO 3576 M.
	0600	2400	18,00	3667,0	DDOU	OK	OK	DRILLED 12 1/4" HOLE FROM 3576 M TO 3667 M.
99/04/11	0000	0600	6,00	3693,0	DDOU	OK	OK	CONTINUED TO DRILL 12 1/4" HOLE FROM 3667 M TO 3693 M.
	0600	2400	18,00	3760,0	DDOU	OK	OK	DRILLED 12 1/2" HOLE FROM 3693 M TO 3760 M.
99/04/12	0000	0600	6,00	3777,0	DDOU	OK	OK	CONTINUED TO DRILL 12 1/4" HOLE FROM 3760 M TO 3777 M.
	0600	1900	13,00	3803,0	DDOU	OK	OK	DRILLED 12 1/4" HOLE FROM 3777 M TO 3803 M. LOST SUCTION ON MUDPUMPS .
	1900	2130	2,50	3803,0	DERD	FAIL	E FAIL	CIRCULATED WITH MP # 2 WHILE CHANGING 3 VALVES ON MP # 1 AND STARTED TO CHANGE VALVES ON MP # 3. WENT BACK TO DRILLING FOR 5 MIN, THEN MU D STARTED TO SPRAY OUT FROM MP # 2. COMPLETED TO CHANGE VALVES ON MP # 3 TOTAL 5 VALVES.
	2130	2200	,50	3805,0	DDOU	OK	OK	CONTINUED TO DRILL 12 1/4" HOLE FROM 3803 M TO 3805 M.
	2200	2400	2,00	3805,0	DCAU	OK	OK	CIRCULATED HOLE CLEAN. BOOSTED RISER.
99/04/13	0000	0030	,50	3805,0	DUSU	OK	OK	OBSERVED WELL - STATIC. DROPPED MULTISHOT. TAGGED BOTTOM AND TOOK SURVEYS.
	0030	0600	5,50	1500,0	DTCU	OK	OK	SLUGGED PIPE AND POOH. TOOK SURVEYS ON ALL CONNECTIONS IN OPEN HOLE. TOOK 8 SURVEYS USING DIFFERENT TOOLFACE (CLUSTER SHOTS) AT 1881 M - 3 STANDS BELOW CASING SHOE. STRAPPED PIPE.
	0600	0900	3,00	70,0	DTCU	OK	OK	POOH. STRAPPED PIPE - NO CORRECTIONS.
	0900	1130	2,50		DTPU	OK	OK	RECOVERED MULTISHOT SURVEY. L/D 12 1/4" BHA.
	1130	1530	4,00		CTTU	OK	OK	RIH AND PULLED WEARBUSHING WITH 20 MT O/P. JETWASHED WH AREA. DRIFTE D LANDING STRING.
	1530	1800	2,50		CARU	OK	OK	R/U TO RUN CASING. HELD PRE-JOB MEETING.
	1800	2400	6,00	520,0	CARU	OK	OK	RAN 9 5/8" CASING (53.5 LB/FT / P-110 / BDS COUPLINGS) TO 520 M. BAKERLOCKED 3 FIRST CONNECTIONS. CHECKED SHOE AND FC.
99/04/14	0000	0600	6,00	1110,0	CARU	OK	OK	CONTINUED TO RUN 9 5/8" CASING TO 1110 M.
	0600	2400	18,00	2970,0	CARU	OK	OK	RAN 9 5/8" CASING (53,5 LB/FT / P-110 / BDS COUPLINGS) FROM 1110 M T O 2970 M.
99/04/15	0000	0400	4,00	3374,0	CARU	OK	OK	CONTINUED TO RUN 9 5/8" CASING TO 3374 M. 1 JNT REJECTED, DAMAGED PIN.
	0400	0500	1,00	3380,0	CARU	OK	OK	M/U CASING HANGER. CASING WT: UP 222 MT. DOWN 206 MT.
	0500	0600	1,00	3380,0	CARU	OK	OK	L/D CASING RUNNING EQUIPMENT.
	0600	0830	2,50	3770,0	CARU	OK	OK	RAN 9 5/8" CASING ON DP LANDING STRING.
	0830	0900	,50	3770,0	CARU	OK	OK	M/U CEMENT STAND.
	0900	0930	,50	3794,0	CARU	OK	OK	BROKE CIRC, WASHED AND LANDED CASING WITH SHOE AT 3794 M. FC AT 3771 M TOTAL 299 JNTS.
	0930	1300	3,50	3794,0	CCCU	OK	OK	CIRCULATED 1.55 SG MUD TO SHOE, INCREASED PUMPRATE IN STEPS TO 1000 LOSSES.
	1300	1400	1,00	3794,0	CSSU	OK	OK	PRESSURE TESTED SURFACE LINE TO 245 BAR. PUMPED 7 M3 BASEOIL AND 15 M3 1.6 SG SPACER 500E.
	1400	1530	1,50	3794,0	CSSU	OK	OK	DROPED BALL. MIXED AND PUMPED 46 M3 1.9 SG SILICA CEMENT SLURRY AS P ER PROGRAM. DROPPED DART.
	1530	1600	,50	3794,0	DERD	FAIL	OK	ATTEMPTED TO OPEN IBOP ON TOPDRIVE, NO SUCCESS.
	1600	1800	2,00	3794,0	CSSU	OK	OK	RE-INSTALLED CEMENT HOSE. PUMPED 300 LTR FW WITH CEMENT PUMP. SWITCH ED TO MUDPUMPS AND CONTINUED TO DISPLACE CEMENT WITH OBM (SHEARED TOP PLUG WITH 100 BAR) TO SHOE AT 1000 LPM. INCREASED PUMPRATE TO 2000 L PM

								(127 BAR) WHEN CEMENT ENTERED OPEN HOLE. BUMPED PLUG AT CALCULATED STROKES (9776) WITH 70 BAR. BLED OFF AND CHECKED FLOATS, OK. NO LOSS ES
	1800	1900	1,00	3794,0	CAOU	OK	OK	SAT SEAL ASSEMBLY.
	1900	2000	1,00	3794,0	DERD	FAIL	OK	ATTEMPTED TO PRESSURE TEST SEAL ASSEMBLY. NO SUCCESS.
	2000	2030	,50	3497,0	BHSD	FAIL	OK	HAD PROBLEMS TO BRAKE CEMENT STAND DUE TO FAILURE ON WRENCH ASSY.
	2030	2130	1,00		BHSD	FAIL	OK	POOH WITH CASING RUNNING TOOL. FOUND O-RING OK.
	2130	2230	1,00	413,0	BHSD	FAIL	OK	M/U BOP TESTPLUG AND RIH.
	2230	2300	,50	413,0	BHSD	FAIL	OK	ATTEMPTED TO TEST SEAL ASSEMBLY, NO SUCCESS.
	2300	2400	1,00		BHSD	FAIL	OK	POOH WITH TEST PLUG.
99/04/16	0000	0030	,50		BHSD	FAIL	OK	CONTINUED TO POOH WITH TEST PLUG, FOUND O-RING OK.
	0030	0230	2,00	413,0	BHSD	FAIL	OK	RIH WITH JETSUB, 3 STANDS HWDP, TESTPLUG DRESSED WITH LIPSEAL. WASHE D WH AND LANDED PLUG IN HANGER.
	0230	0300	,50	413,0	BHSD	FAIL	OK	ATTEMPTED TO TEST SEAL ASSEMBLY, NO SUCCESS.
	0300	0530	2,50		BHSD	FAIL	OK	POOH WITH TEST PLUG, LIPSEAL OK. L/D PLUG AND CONTINUED TO POOH WITH 3 STANDS HWDP + JETSUB.
	0530	0600	,50		BHSD	FAIL	OK	M/U AND RIH WITH WEARBUSHING.
	0600	0800	2,00	413,0	BHSD	FAIL	OK	SAT WEARBUSHING.
	0800	0900	1,00	413,0	BHSD	FAIL	OK	RIH WITH TEST TOOL.
	0900	1030	1,50		BHSD	FAIL	OK	ATTEMPTED TO PRESSURE TEST SEAL ASSEMBLY, NO SUCCESS. POOH WITH TEST TOOL.
	1030	1200	1,50	413,0	BHSD	FAIL	OK	PULLED WEARBUSHING.
	1200	1300	1,00	413,0	BHSD	FAIL	OK	PULLED SEAL ASSEMBLY (17 MT TO PULL FREE). FOUND FLUID WASHOUT ON METAL AREA.
	1300	1500	2,00	413,0	BHSD	FAIL	OK	RIH WITH FLUSH AND MILL TOOL.
	1500	1900	4,00	413,0	DCAU	OK	OK	DISPLACED RISER TO 1.25 SG MUD. BACKLOADED 1.58 SG MUD TO BOAT.
	1900	2000	1,00	413,0	BHSD	FAIL	OK	FLUSHED AND MILLED SEAL ASSEMBLY AREA. POOH.
	2000	2200	2,00	413,0	BHSD	FAIL	OK	RIH WITH EMERGENCY SEAL ASSEMBLY AND SAT SAME.
	2200	2400	2,00	413,0	BBDU	OK	OK	PRESSURE TESTED SEAL ASSEMBLY TO 35/345 BAR, 5/10 MIN. CONTINUED TO PRESSURE TEST BOP: RAMS AND VALVES TO 35/345 BAR, ANNULARS TO 35/240 BAR, 5/10 MIN.
17	0000	0130	1,50	413,0	BBDU	OK	OK	CONTINUED TO PRESSURE TEST BOP. TESTED ON BLUE AND FUNCTION TESTED O N YELLOW POD.
	0130	0230	1,00		BBOU	OK	OK	POOH WITH SEAL ASSEMBLY RUNNING TOOL. TESTED ACOUSTIC SIGNALS TO THE BOP FUNCTIONS.
	0230	0500	2,50	413,0	BBOU	OK	OK	SAT WEARBUSHING.
	0500	0530	,50	3805,0	CATU	OK	OK	PRESSURE TESTED CASING TO 345 BAR/10 MIN. PUMPED AND BLED BACK 2.4 M 3.
	0530	0600	,50		DERD	OK	OK	CHANGED WASHPIPE AND MADE REPAIR TO INSIDE BOP.
	0600	0630	,50		DERD	FAIL	E FAIL	MADE REPAIR TO UPPER IBOP ACTUATOR AND CHANGED OUT WASHPIPE.
	0630	0900	2,50		BBOU	OK	OK	PRESSURE TESTED MUDHOSE, UPPER AND LOWER IBOP AND SPARE KELLY COCK T O 35/345 BAR, 5/10 MIN.
	0900	1500	6,00		DERD	FAIL	E FAIL	MADE REPAIR TO ELECTRICAL AND HYDRAULIC LOOP ON TOPDRIVE.
	1500	2000	5,00	25,0	DTPU	OK	OK	P/U AND M/U 8 1/2" BIT, NAVIGATOR WITH 8 3/8" STAB AND AKO SET TO 1 DEG, MODULAR DENSITY SUB, MODULAR POROSITY SUB, AND MODULAR MWD COLLAR. TESTED SAME AND LOADED RADIOACTIVE SOURCE.
	2000	2330	3,50	1100,0	DTDU	OK	OK	CONTINUED TO P/U BHA AND RIH WITH 5" DP TO 1100 M. FILLED PIPE AND TESTED MWD.
	2330	2400	,50	1130,0	DTPU	OK	OK	P/U 5" DP FROM DECK AND RIH.
99/04/18	0000	0230	2,50	1500,0	DTPU	OK	OK	CONTINUED TO P/U 5" DP (TOTAL 39 JNTS) AND RIH.
	0230	0330	1,00	2100,0	DTDU	OK	OK	CONTINUED TO RIH TO 2100 M.
	0330	0500	1,50	2100,0	DCAU	OK	OK	DISPLACED HOLE TO 1,25 SG MUD.
	0500	0600	1,00	2500,0	DTDU	OK	OK	CONTINUED TO RIH TO 2500 M.
	0600	0700	1,00	3268,0	DTDU	OK	OK	RIH TO 3268 M.
	0700	0830	1,50	3268,0	DERD	FAIL	E FAIL	MADE REPAIR TO CRANK ON IBOP.
	0830	0900	,50	3400,0	DTDU	OK	OK	CONTINUED TO RIH TO 3400 M.
	0900	1000	1,00	3400,0	DERD	FAIL	E FAIL	REPAIRED HYDRAULIC LEAK ON TOPDRIVE. INSTALLED CRANK ON IBOP.
	1000	1030	,50	3700,0	DTDU	OK	OK	CONTINUED TO RIH TO 3700 M.
	1030	1100	,50	3769,0	CDDU	OK	OK	WASHED DOWN AND TAGGED TOP OF PLUG AT 3769 M.
	1100	1300	2,00	3769,0	DCAU	OK	OK	DISPLACED HOLE TO 1,25 SG MUD.
	1300	1330	,50	3769,0	DCAU	OK	OK	HELD BOP/KICK DRILL.
	1330	1530	2,00	3805,0	CDDU	OK	OK	DRILLED OUT WIPER PLUG, FC AT 3771 M, FIRM CEMENT IN SHOETRACK, SHOE AT 3794 M, AND CLEANED OUT RATHOLE TO TD AT 3805 M.
	1530	2400	8,50	3871,0	DDOU	OK	OK	DRILLED 8 1/2" HOLE FROM 3805 M TO 3871 M.
99/04/19	0000	0600	6,00	3887,0	DDOU	OK	OK	CONTINUED TO DRILL 8 1/2" HOLE FROM 3871 M TO 3887 M.
	0600	0900	3,00	3891,0	DDOU	OK	OK	DRILLED 8 1/2" HOLE FROM 3887 M TO 3891 M.
	0900	0930	,50	3794,0	DCAU	OK	OK	PUMPED OOH TO SHOE AT 3794 M.
	0930	1600	6,50	25,0	DTAK	OK	OK	OBSERVED WELL - STATIC. SLUGGED PIPE AND POOH.
	1600	1700	1,00	25,0	DTAK	OK	OK	REMOVED RADIOACTIVE SOURCE. DUMPED MWD MEMORY.
	1700	1830	1,50		DTAK	OK	OK	BROKE BIT AND NB SLEAVE. TORQUE-TESTED MUD MOTOR, OK.
	1830	2030	2,00		DTAK	OK	OK	M/U NEW 8 1/2" BIT AND ATTEMPTED TO UNSCREW SLEAVE STAB, NEG. HAD TO CUT OFF STABILIZER.
	2030	2200	1,50	25,0	DTAK	OK	OK	CHECKED SCRABELINE AND INSTALLED RADIOACTIVE SOURCE.
	2200	2400	2,00	1100,0	DTAK	OK	OK	RIH TO 1100 M.
99/04/20	0000	0330	3,50	3794,0	DTAK	OK	OK	CONTINUED TO RIH TO CASING SHOE AT 3794 M.
	0330	0430	1,00	3794,0	RMRU	OK	OK	SLIPPED AND CUT DRILLING LINE.
	0430	0500	,50	3891,0	DTAK	OK	OK	RIH TO 3870 M. WASHED DOWN TO TD AT 3891 M.
	0500	0600	1,00	3892,0	DDOU	OK	OK	ORIENTED TOOLFACE AND DRILLED 8 1/2" HOLE FROM 3891 M TO 3892 M.
	0600	2400	18,00	4037,0	DDOU	OK	OK	DRILLED 8 1/2" HOLE FROM 3892 M TO 4037 M.
99/04/21	0000	0600	6,00	4071,0	DDOU	OK	OK	CONTINUED TO DRILL 8 1/2" HOLE TO 4071 M.
	0600	1800	12,00	4147,0	DDOU	OK	OK	DRILLED 8 1/2" HOLE FROM 4037 M TO 4147 M. STOPPED DRILLING DUE TO H RS ON BIT.
	1800	1930	1,50	4003,0	DCAU	OK	OK	CIRCULATED WELL FOR 15 MIN. PUMPED OUT OF HOLE FROM 4147 M TO 4003 M . NO DRAG.
	1930	2030	1,00	3900,0	DCBK	OK	OK	BACKREAMED TIGHT HOLE FROM 4003 M TO 3900 M.
	2030	2100	,50	3794,0	DCAU	OK	OK	PUMPED OUT OF HOLE FROM 3900 M TO 9 5/8" CSG SHOE AT 3794 M, WITH 15 MT DRAG.
	2100	2230	1,50	3794,0	DCAU	OK	OK	CIRCULATED B/U, BOOSTED RISER.
	2230	2400	1,50	3150,0	DTBK	OK	OK	PUMPED SLUG, FLOWCHECKED AND POOH.

99/[illegible]/22	0000	0430	4,50		DTBK	OK	OK	CONTINUED POOH.
	0430	0600	1,50		DTBK	OK	OK	REMOVED RADIOAKTIVE SOURCES. DOWNLOADED MWD MEMORY. REPLACED DENSITY SUB.
	0600	0630	,50		DTBK	OK	OK	REPLACED DENSITY SUB.
	0630	0730	1,00		DTBK	OK	OK	PROGRAMMED MWD TOOL.
	0730	0800	,50		DTBK	OK	OK	TORQUE TESTED MOTOR ASSEMBLY. M/U NEW BIT.
	0800	0830	,50		DTBK	OK	OK	LOADED RADIOACTIVE SOURCES ON MWD TOOL.
	0830	1430	6,00	3818,0	DTBK	OK	OK	RIH W/ 8 1/2" BHA TO 1000 M. FILLED PIPE AND TESTED MWD TOOL. CONTINUED RIH W/ 8 1/2" BHA. FILLED PIPE EVERY 1000 M.
	1430	1830	4,00	4147,0	DTBK	OK	OK	TOOK WEIGHT AT 3818 M. WASHED/ REAMED TO 4000 M. WORKED TIGHT SPOTS FROM 3906 M TO 3945 M W/ 20-30000 FTLB AND 20 BAR PRESSURE INCREASE. WASHED FROM 4000 M TO 4147 M AS PRECAUTION.
	1830	1900	,50	4147,0	DTBK	OK	OK	TOOK SCR READINGS. ESTABLISHED BIT PROFILE AND CUTTER PATTERN AT BOTTOM.
	1900	2400	5,00	4190,0	DDOU	OK	OK	DRILLED 8 1/2" HOLE FROM 4147 M TO 4190 M.
99/04/23	0000	0600	6,00	4240,0	DDOU	OK	OK	DRILLED 8 1/2" HOLE FROM 4190 M TO 4240 M.
	0600	2400	18,00	4364,0	DDOU	OK	OK	DRILLED 8 1/2" HOLE FROM 4240 M TO 4364 M. ORIENTED TO REDUCE ANGLE FROM 4310 M. BACKREAMED EACH STAND.
99/04/24	0000	0600	6,00	4387,0	DDOU	OK	OK	DRILLED 8 1/2" HOLE FROM 4364 M TO 4387 M, ORIENTED TO REDUCE ANGLE. BACKREAMED EACH STAND.
	0600	0900	3,00	4403,0	DDOU	OK	OK	DRILLED 8 1/2" HOLE FROM 4387 M TO 4403 M. ORIENTED TO REDUCE ANGLE.
	0900	1100	2,00	4403,0	DCBK	OK	OK	BACKREAMED HOLE FROM 4403 M TO 4277 M, REAMED HOLE TO 4403 M. TORQUE 8000 FTLB.
	1100	2400	13,00	4528,0	DDOU	OK	OK	DRILLED 8 1/2" HOLE FROM 4403 M TO TD AT 4528 M. DRILLING BREAK AT 4425 M, FLOWCHECKED AT 4427 M. BACKREAMED EACH STAND.
99/04/25	0000	0030	,50	4528,0	DCAU	OK	OK	CIRCULATED WELL FOR 20 MIN. FLOWCHECKED.
	0030	0100	,50	4528,0	DEOD	FAIL	E FAIL	PREPARED TO PUMP OUT OF HOLE, RIGGED UP MUD BUCKED. MUD BUCKET DID N OT OPEN, L/D SAME.
	0100	0300	2,00	4020,0	DCAU	OK	OK	PUMPED OUT OF HOLE FROM 4528 M TO 4020 M. NO DRAG.
	0300	0330	,50	4020,0	DDSU	OK	OK	LOCATED SIDETRACK POINT AND MARKED PIPE AT 4020 M.
	0330	0400	,50	4020,0	DDSU	OK	OK	ROTATED AND WORKED PIPE DOWN TO MARK IN ORDER TO CLEAN HOLE OG CUTTI NG BEDS AND PREPARE FOR OPEN HOLE SIDETRACK.
	0400	0500	1,00	4020,0	DDSU	OK	OK	SET TOOL FACE ON LOW SIDE, WORKED PIPE UP AND DOWN.
	0500	0600	1,00	4020,0	SDTD	FAIL	O FAIL	TIME DRILLED TO SIDETRACK HOLE AT 4020 M.
	0600	2400	18,00	4026,0	SDTD	FAIL	O FAIL	TIME DRILLED TO SIDETRACK HOLE FROM 4020 M TO 4028 M, 0.5 M/HR. NO INDICATIONS OF STARTING KICK OFF.
99/04/26	0000	0200	2,00	3794,0	DCAU	OK	OK	FLOWCHECKED. PUMPED OUT OF HOLE FROM 4028 TO 9 5/8" CSG SHOE AT 3794 M, NO DRAG.
	0200	0600	4,00	680,0	PTTU	OK	OK	FLOWCHECKED. PUMPED SLUG. POOH.
	0600	0730	1,50		PTTU	OK	OK	CONTINUED POOH W/ 8 1/2" BHA.
	0730	0930	2,00		PTTU	OK	OK	REMOVED RADIOACTIVE SOURCES. DOWNLOADED MWD MEMORY. BROKE BIT. RACKED MOTOR ASSEMBLY BACK IN DERRICK.
	0930	1000	,50		DDOD	OK	OK	SERVICED TOP DRIVE.
	1000	1330	3,50		PTTU	OK	OK	RIH W/ MULESHOE, 3 1/2" DP STINGER AND 5" DP.
	1330	1400	,50		PTTU	OK	OK	M/U CMT STAND AND RACKED BACK IN DERRICK.
	1400	1800	4,00	4520,0	PTTU	OK	OK	CONTINUED TO RIH W/ 3 1/2" DP STINGER AND 5" DP TO 4520 M MD.
	1800	1900	1,00	4520,0	PTTU	OK	OK	ESTABLISHED CIRCULATION AND SPOT 15 M3 1.90 SG MUD FROM 4520 M MD TO 4110 M MD.
	1900	2000	1,00	4090,0	PTTU	OK	OK	POOH FROM 4520 M TO 4200 M. SPOT 4 M3 1.90 SG MUD FROM 4200 M MD TO 4090 M MD. POOH FROM 4200 M TO 4090 M.
	2000	2300	3,00	4090,0	PCCU	OK	OK	INSTALLED CMT STAND. CIRCULATED AND CONDITIONED MUD 1 1/2 TIMES B/U, AND UNTIL GAS BELOW 3%. RECIPROCATED STRING. PUMP RATE 2600 LPM. MAX GAS 25.8 %. MEANTIME HELD PREJOB CMT MEETING AND PRESSURE TESTED CMT LINE TO 200 BAR.
	2300	2400	1,00	4090,0	PSSU	OK	OK	PUMPED 5 M3 1.60 SG SPACER W/ CMT UNIT. MIXED AND PUMPED 6.6 M3 1.95 SG CMT SLURRY, FOLLOWED BY 0.6 M3 1.60 SG SPACER.
99/[illegible]/27	0000	0030	,50	4090,0	PSSU	OK	OK	CHANGED TO MUD PUMPS, DISCONNECTED CMT LINE. DISPLACED CMT W/ 32.2 M3 1.25 SG OBM W/ 1590 LPM. ROTATED STRING W/ 50 RPM WHEN CMT ENTERED ANNULUS.
	0030	0130	1,00	3890,0	PTTU	OK	OK	PUMPED AND ROTATED SLOWLY OUT OF HOLE, 158 L/STD, FROM 4090 M MD TO 3890 M MD. DRY PIPE.
	0130	0300	1,50	3890,0	PTTU	OK	OK	CIRCULATED B/U W/ 2500 LPM. GOT CMT IN RETURN (APPROX. 0.5 M3). MAX GAS 4.44 %.
	0300	0600	3,00	1600,0	PTTU	OK	OK	FLOWCHECKED. PUMPED SLUG. POOH.
	0600	0830	2,50		PTTU	OK	OK	CONTINUED POOH W/ CMT STINGER. RACKED BACK 3 1/2" DP STINGER.
	0830	0930	1,00		PTTU	OK	OK	L/D MWD-TOOL AND NAVIGATOR MOTOR.
99/04/27	0930	1100	1,50		PTTU	OK	OK	P/U NAVIGATOR MOTOR, SET AKO TO 1.1 DEGREE, REMOVED SLEEVE STABS.
	1100	1200	1,00		PTWD	OK	OK	P/U NEW MWD TOOL. ATTEMPTED TO PROGRAMME MWD TOOL, NO GO.
	1200	1330	1,50		PTTU	OK	OK	RE-PROGRAMMED MWD-TOOL.
	1330	1400	,50		PTTU	OK	OK	PERFORMED TORQUE TEST ON MOTOR.
	1400	1730	3,50		PTTU	OK	OK	M/U BIT, CHECKED SCRIBE LINE AND LOADED RADIOACTIVE SOURCES. M/U BHA, RIH, TESTED MWD TOOL.
	1730	2100	3,50	1000,0	PTTU	OK	OK	CONTINUED TO RIH W/8 1/2" KICK-OFF ASSEMBLY. FILLED PIPE EVERY 1000 M.
	2100	2200	1,00	3794,0	RMRU	OK	OK	SLIPPED AND CUT DRILLING LINE.
	2200	2330	1,50	3900,0	PCCU	OK	OK	CONTINUED RIH. WASHED AND REAMED TIGHT SPOT FROM 3845 M - 3850 M. CONTINUED TO WASH AND REAM HOLE FROM 3850 M TO 3900 M.
	2330	2400	,50	3905,0	PCCU	OK	OK	LOGGED W/ MWD TOOL FROM 3900 - 3905 M MD TO CHECK RESISTIVITY DATA FROM PREVIOUS MWD RUN. INDICATIONS OF SOFT CMT FROM 3903 M MD, INCREASE IN TORQUE, WEIGHT AND PUMP PRESSURE.
99/04/28	0000	0100	1,00	3940,0	PCCU	OK	OK	DRILLED/ WASHED SOFT CMT FROM 3905 - 3940 M MD. MAX GAS 21.85 %.
	0100	0330	2,50	3944,0	SDTD	FAIL	O FAIL	TIME DRILLED FROM 3940 - 3944 M MD TO SIDETRACK WELL. NO INDICATION OF PROGRESS.
	0330	0500	1,50	3965,0	SDTD	FAIL	O FAIL	WASHED SOFT CMT FROM 3944 - 3965 M, CHECKED FOR HARD CMT, NO CHANGES .
	0500	0600	1,00	3965,0	SDTD	FAIL	O FAIL	ORIENTED AND MOVED PIPE UP AND DOWN FROM 3960 - 3965 M, TO MAKE A GROOVE FOR SIDETRACKING W/ TOOL FACE LOW SIDE.
	0600	0800	2,00	3965,0	SDTD	FAIL	O FAIL	ATTEMPTED TO MAKE A GROOVE FOR SIDE TRACKING FROM 3960 M TO 3965 M

								W/TOOL FACE LOW SIDE. NO SUCCESS.
	0800	0930	1,50	3861,0	SDTD	FAIL	O FAIL	RIH TO FROM 3965 M TO 3991 M W/ NO PUMP. NO HARD CMT IN THE SECTION. CIRC 15 MIN AND POOH TO 3861 M.
	0930	1630	7,00	3868,0	SDTD	FAIL	O FAIL	TIME DRILLED FROM 3861 M TO 3868 M. NO INDICATION OF SIDETRACKING.
	1630	1800	1,50	3867,0	SDTD	FAIL	O FAIL	CONTINUED TO WORK SECTION 3861 M TO 3867 M WITH TOOL FACE LOW SIDE I N ORDER TO CREATE A LEDGE TO SIDETRACK WELL. NO SUCCESS.
	1800	2030	2,50	4100,0	SDTD	FAIL	O FAIL	WASHED IN HOLE TO 4100 M. 15 T RESISTANCE IN SECTION 4085 M TO 4088 M
	2030	2200	1,50	4100,0	SDTD	FAIL	O FAIL	CIRCULATED HOLE CLEAN. SOFT CMT ON SHAKERS. MAX GAS 1,3%.
	2200	2400	2,00	3830,0	STOD	FAIL	OK	FLOW CHECKED. PUMPED OUT OF HOLE WITH 2200 LPM FROM 4100 M TO 3830 M .
99/04/29	0000	0030	,50	3789,0	STOD	FAIL	OK	CONTINUED PUMP INTO CSG SHOE. EXPERIENCED PACK OFF WHEN BIT ENTERED CSG SHOE. CIRC 15 MIN.
	0030	0200	1,50	3789,0	STOD	FAIL	OK	PERFORMED WIPER TRIP TO 3950 M. POOH TO INSIDE CSG SHOE. WIPED SECTI ON AT 3855 TO 3850 M. MAX 12 T O/ PULL OVER NORMAL DRAG OF 10 T.
	0200	0600	4,00	610,0	STOD	FAIL	OK	PUMPED SLUG AND POOH.
	0600	0730	1,50		STOD	FAIL	OK	CONTINUED POOH W/ DRILLING BHA.
	0730	0800	,50		STOD	FAIL	OK	REMOVED RADIOACTIVE SOURCES FROM MWD AND RACK BACK SAME.
	0800	1030	2,50		ELWU	OK	OK	RIG UP FOR WIRELINE LOGGING. MADE UP AND CHECKED LOGGING TOOLS.
	1030	1800	7,50		ELWU	OK	OK	RAN SCHLUMBERGER MDT LOG
	1800	1900	1,00		ELWU	OK	OK	LAID DOWN LOGGING TOOLS AND RIGGED DOWN WIRELINE.
	1900	2000	1,00		STOD	OK	OK	RE-ARR 5" DP IN DERRICK IN ORDER TO RUN 3 1/2" DP.
	2000	2400	4,00	913,0	STOD	OK	OK	RIH WITH MULE-SHOE ON 3 1/2" DP, TOTAL 324 M. CONTINUED RIH ON 5" DP . DRIFTED ALL TUBULARS.
99/04/30	0000	0600	6,00	3177,0	STOD	OK	OK	CONTINUED RIH. DRIFTED PIPE.
	0600	0800	2,00	3790,0	STOD	OK	OK	CONTINUED RIH TO CSG SHOE W/CMT STINGER. DRIFTED DP. BROKE CIRCULATI ON
	0800	0930	1,50	4100,0	STOD	OK	OK	WASHED FROM CSG SHOE TO 4100 M AS PRECAUTION.
	0930	1100	1,50	4000,0	SDSD	OK	OK	SET 3,7 M3 WITH 105 KG/M3 BENTONITE PILL FROM 4100 TO 4000 M. POOH T O 4000 M.
	1100	1430	3,50	4000,0	SDSD	OK	OK	CIRCULATED AND CONDITION MUD. 2 FULL CIRC WITH 2600 LPM.
	1430	1500	,50	4000,0	SDSD	OK	OK	RIGGED UP CMT STAND. PRESSURE TESTED LINE WITH 200 BAR.
	1500	1630	1,50	4000,0	SDSD	OK	OK	PUMPED 3 M3 LTO FOLLOWED BY 8 M3 1,50 SG E500 SPACER WITH RIG PUMP. MIXED AND PUMPED 12,5 M3 2,0 SG CMT SLURRY. PUMPED 2,0 M3 SPACER BEHIND. INSTALLED 3 1/2" X 5" WIPER PLUG AND REMOVED SIDE INLET SUB. HELD STRING CLOSED WITH INSIDE BOP. DISPLACED CMT WITH RIG PUMPS UP TO 2600 LPM AND 100 RPM. TOTAL DISPLACED 2313 STR.
99/04/30	1630	1730	1,00	3640,0	SDSD	OK	OK	PUMPED OUT OF HOLE WITH 12 STR/STAND WITH SLOW ROTATION TO 3700 M. POOH TO 3640 M.
	1730	2030	3,00	3640,0	SDSD	OK	OK	CIRCULATED HOLE CLEAN WITH 2600 LPM. TRACES OF CMT AT B/U. BOOSTED RISER AND FLUSHED KILL/CHOKE LINES.
	2030	2400	3,50	958,0	STOD	OK	OK	FLOW CHECKED AND PUMP SLUG. POOH.
99/05/01	0000	0300	3,00		STOD	OK	OK	CONTINUED POOH. RACKED BACK 3 1/2" DP.
	0300	0500	2,00	412,0	BBDU	OK	OK	MADE UP BOP TEST PLUG ASSY. RIH AND LANDED IN WELLHEAD.
	0500	0600	1,00	412,0	BBDU	OK	OK	TESTING BOP.
	0600	0900	3,00	412,0	BBDU	OK	OK	CONTINUED BOP TEST FROM YELLOW POD; ALL PIPE RAMS AND FAILSAFE VALVE S 35/345 BAR IN 5/10 MIN. UPPER AND LOWER ANNULAR PREVENTERS 35/245 BA R 5/10 MIN. FUNCTION TESTED BOP FROM DRILLERS PANEL AND BLUE POD.
	0900	1030	1,50		BBDU	OK	OK	POOH WITH BOP TEST ASSY AND LAID DOWN SAME. BROKE OUT IBOP AND SPACE R SUB FROM STD DP.
	1030	1300	2,50		BBUU	OK	OK	TESTED UPPER AND LOWER IBOP AND ROTARY HOSE, 35/345 BAR, 5/10 MIN.
	1300	1530	2,50		STOD	OK	OK	CHANGED OUT POROSITY SUB ON MWD, SET AKO MOTOR TO 1,2 DGR TILT. LOAD ED MWD.
	1530	1700	1,50		STOD	OK	OK	PERFORMED MOTOR TORQUE TEST, CHECKED SCRIBE LINE AND LOADED RADIOACTIVE SOURCES.
	1700	2300	6,00	3640,0	STOD	OK	OK	MADE UP 8 1/2" BHA AND RIH. FILLED PIPE AND TESTED MWD ON 1000 M. CO NT RIH. MADE UP DRILLING STAND WITH IBOP IN CSG SHOE. CONTINUED RIH TO 3640 M.
	2300	2400	1,00	3659,0	STOD	OK	OK	BROKE CIRCULATION. WASHED FROM 3640 M TO 3659. SPOTS WITH CMT.
99/05/02	0000	0300	3,00	3821,5	SDSD	OK	OK	WASHED FROM 3659M TO 3695M. DRILLED SOFT CMT WITH UNLIMITED ROP TO CSG SHOE AT 3794 M. CLEANED RAT HOLE FOR SOFT CMT AND TOOK RESISTANC E FROM 3806 M. CONTINUED DRESS CMT TO 3820M. PARAMETERS LAST 3 M; 5 T WOB AND 240 RPM= ROP 40 M/HR.
	0300	0600	3,00		SDSD	OK	OK	STARTED SIDE TRACK OPERATION. TIME DRILLED FROM 3820 TO 3821.5M. TOO L FACE IN 120 DGR.
	0600	2000	14,00	3829,0	SDSD	OK	OK	CONTINUED TIME DRILLING FROM 3821,5 TO 3829,7 M.
	2000	2100	1,00	3829,0	SDSD	OK	OK	CONFIRMED HARD CMT WITH 7 T DOWN WT, NO PUMPS. TURNED TOOLFACE TO LO W SIDE AND WORK PIPE IN INTERVAL 3829,7 TO 3823,7M TO CREATE GROOVE.
	2100	2400	3,00	3831,0	SDSD	OK	OK	CONTINUED TIME DRILL FROM 3829,4 M TO 3831 M WITH TOOL FACE LOW SIDE .
99/05/03	0000	0600	6,00	3834,0	SDSD	OK	OK	CONTINUED TIME DRILLING FROM 3831 M TO 3834 M. 100 % CMT W/TRACES OF SAND IN RETURNS.
	0600	0900	3,00	3836,0	SDSD	OK	OK	CONTINUED TIME DRILLING FROM 3834 M TO 3838 M. NO SIGN OF SIDETRACKI NG WELL.
	0900	0930	,50	3840,0	SDSD	OK	OK	WASHED FROM 3836 M TO 3840 M.
	0930	1030	1,00	3840,0	SDSD	OK	OK	CONTINUED TIME DRILLING AT 3840 M TO ESTABLISH KICK OFF POINT. NO SUCCESS.
	1030	1130	1,00	3873,0	SDSD	OK	OK	WASHED F/3840 M TO 3873 M. REAMED TIGHT SPOT AT 3861 M.
	1130	1530	4,00	3876,0	SDSD	OK	OK	CONTINUED TIME DRILLING FROM 3873 M TO 3876 M TO ETABLISH KICK OFF POINT. NO SUCCESS.
	1530	1600	,50	3895,0	PTTU	OK	OK	CLEANED OUT CMT FROM 3876 M TO 3895 M.
	1600	1800	2,00	3895,0	SCAD	OK	OK	CIRCULATED HOLE CLEAN. BOOSTED RISER. FLOW CHECKED.
	1800	2400	6,00	120,0	STOD	OK	OK	PUMPED SLUG. POOH TO CSG SHOE. FLOW CHECKED, CONTINUED POOH.
99/05/04	0000	0100	1,00		STOD	OK	OK	CONTINUED POOH WITH BHA.
	0100	0200	1,00		STPD	OK	OK	REMOVED RADIOACTIVE SOURCES AND L/DOWN MWD AND AKO MOTOR.
	0200	0300	1,00		ELWU	OK	OK	RIGGED UP ATLAS WIRELINE AND CHECKED LOGGING TOOLS.
	0300	0600	3,00		ELWU	OK	OK	RAN DSI/GR LOG. STARTED POOH.
	0600	0700	1,00		ELWU	OK	OK	CONTINUED POOH WITH WIRELINE LOGGING TOOLS. DSI/GR
	0700	0730	,50		ELWU	OK	OK	RIGGED DOWN LOGGING TOOLS AND SHEAVES.
	0730	1230	5,00	3650,0	PTTU	OK	OK	RIH W/ 3 1/2" DP CMT STINGER ON 5" DP TO 3650 M.

	1230	1300	,50	3650,0	PTTU	OK	OK	MADE UP CMT STAND AND RACKED BACK.
	1300	1400	1,00	3895,0	PTTU	OK	OK	CONTINUED RIH TO CSG SHOE AT 3794 M. WASHED TO 3895 M.
99/05/04	1400	1600	2,00	3895,0	PCCU	OK	OK	CIRCULATED WELL PRIOR TO CMT PLUG.
	1600	1930	3,50	3895,0	SDSD	OK	OK	CHANGED WORKSCOPE: CIRCULATED AND PREPARED TO SET KICK OFF PLUG FOR WELL 3B. HELD PRE CMT JOB MEETING WITH INVOLVED PERSONNEL.
	1930	2030	1,00	3895,0	SDSD	OK	OK	MADE UP NEW CMT STAND WITH KELLY COCKS AND SIDE INLET SUB.
	2030	2130	1,00	3895,0	SDSD	OK	OK	CIRCULATED PRIOR TO CMT JOB. TESTED CMT LINE TO 200 BAR. TRANFERED SPACER TO CMT ROOM.
	2130	2200	,50	3895,0	SDSD	OK	OK	PUMPED 8 M3 500E 1.5 SG SPACER WITH CMT UNIT. PREPARED CMT MIXING FLUID.
	2200	2300	1,00	3895,0	SDSD	OK	OK	MIXED AND PUMPED 8,1 M3 2.0 SG CMT SLURRY, FOLLOWED BY 2.0 M3 1,5 SG 500E SPACER. REMOVED SIDE INLET SUB AND DISPLACED CMT W/2300 LPM, 1. 25 SG MUD. 150 RPM TO TOTAL 26.5 M3.
	2300	2400	1,00	3705,0	SDSD	OK	OK	POOH. PUMPED 32 STR/STAND WITH 150 RPM. PIPE DRY.
99/05/05	0000	0030	,50	3600,0	SDSD	OK	OK	CONTINUED PUMPING OUT OF HOLE TO 3695 M. POOH TO 3600 M. PIPE WET FR OM 3690 M. TOTAL DISPLACEMENT 29.5 M3.
	0030	0200	1,50	3600,0	SDSD	OK	OK	CIRCULATED HOLE CLEAN W/ 110% FULL CIRC. TRACES OF CMT AT BTM UP. USED 2600 LPM AND 130 RPM.
	0200	0500	3,00	1090,0	SDSD	OK	OK	PUMPED SLUG AND POOH. FLOW CHECKED AT 1090 M.
	0500	0600	1,00	830,0	SDSD	OK	OK	REPAIRED HYDR SPINNER MOTOR ON IRON ROUGHNECK. TRIPPED WITH CHAIN TO NG AS POOH WITH REDUCED SPEED.
	0600	0700	1,00		SDSD	OK	OK	COMPLETED POOH WITH CMT STRING.
	0700	0800	1,00		SDSD	OK	OK	RACKED 3 1/2" CEMENT STRINGER IN DERRICK.
	0800	0900	1,00		RMRU	OK	OK	SLIP AND CUT OFF 32 M DRILLING LINE.
	0900	0930	,50		RMRU	OK	OK	ASSEMBLED NEW BHA. SERVICED TDS.
	0930	1200	2,50		DTPU	OK	OK	PU 8 1/2" CLEAN OUT ASSEMBLY.
	1200	1730	5,50	3577,0	SDSD	OK	OK	RIH WITH 8 1/2" CLEAN UP ASSEMBLY ON 5" DP.
	1730	1830	1,00	3676,0	SDSD	OK	OK	WASHED/REAMED FROM 3577 TO 3676 M. LOAD TESTED CEMENT TO 8 TONS.
	1830	2330	5,00	3761,0	SDSD	OK	OK	DRILLED CEMENT FROM 3676 TO 3761 M. VERIFIED GOOD CEMENT BY SETTING DOWN 10 TONS AT 3761 M.
	2330	2400	,50	3761,0	SDSD	OK	OK	WORKED STRING FROM 3751 TO 3761 M SEVERAL TIMES. CIRCULATED HOLE CLE AN
99/05/06	0000	0130	1,50	3761,0	SDSD	OK	OK	CONTINUED CIRCULATING HOLE CLEAN. BOOSTED RISER.
	0130	0600	4,50	1630,0	SDSD	OK	OK	SLUGGED PIPE AND POOH WITH 8 1/2" CLEAN OUT ASSEMBLY FROM 3761 TO 1630 M. STRAPPED PIPE WHILE POOH.
	0600	1000	4,00		SDSD	OK	OK	COMPLETED POOH WITH 8 1/2" CLEAN OUT ASSEMBLY. LD STRING STABILIZERS AND NEAR BIT STABILIZER.
	1000	1400	4,00		SDSD	OK	OK	MU WHIPSTOCK AND MILLING ASSEMBLY INCLUDING MWD.
	1400	2400	10,00	3523,0	SDSD	OK	OK	RIH WITH 8 1/2" MILLING ASSEMBLY TO 3523 M.
99/05/07	0000	0100	1,00	3761,0	SDSD	OK	OK	CONTINUED RIH WITH WHIPSTOCK AND MILLING ASSEMBLY TO 3761 M.
	0100	0130	,50	3761,0	SDSD	FAIL	O FAIL	STARTED MUDPUMPS TO SURVEY AND SET CORRECT TOOL FACE ON WHIPSTOCK. H AD SOFT WARE PROBLEMS ON MWD COMPUTER.
	0130	0200	,50	3752,0	SDSD	OK	OK	ORIENTED AND RECIPROCATED PIPE UNTIL CORRECT TOOL FACE. SET WHIPSTOC K FACING TO 65 R DEG AT 3761 M. RELEASED MILLING ASSEMBLY WITH 17 TON S DOWN WEIGHT. STARTER MILL AT 3752 M WHEN MILLING ASSEMBLY RELEASED.
	0200	0400	2,00	3754,0	SDTD	OK	OK	STARTED MILLING WINDOW IN CASING FROM 3752 M TO 3754 M.
	0400	0500	1,00	3754,0	SDTD	FAIL	O FAIL	WATER MELON MILL STALLED OUT AS ENTERING WINDOW. WORKED PIPE CAREFUL LY TO AVOID PULLING LOOSE WHIPSTOCK. PULLED 55 TONS TO RELEASE MILL.
	0500	0600	1,00	3755,0	SDTD	OK	OK	CONTINUED MILLING AT 3754 M TO GRIND WINDOW SMOOTH AND TILL TORQUE W AS REDUCED. CONTINUED MAKING HOLE TO 3755 M.

Well: 6507/03-003B

Date	From hrs	To hrs	Duration	Depth mMD	Act. code	Main mode	Sub mode	Description
99/05/07	0600	1600	10,00	3761,0	DDOU	OK	OK	MILLING WINDOW FROM 3755 TO 3761 M. TOP WINDOW AT 3752M, BTM WINDOW AT 3757 M.
	1600	1800	2,00	3761,0	DDOU	OK	OK	REAMED AND POLISHED WINDOW. GAUGED WINDOW WITHOUT CIRCULATING.
	1800	2400	6,00		DTPU	OK	OK	POOH.
99/05/08	0000	0200	2,00		DTPU	OK	OK	LAID OUT MILLING ASSEMBLY AND REARRANGED BHA PRIOR TO BUILD DRILLING ASSEMBLY.
	0200	0600	4,00		DTPU	OK	OK	BUILT 8 1/2" DRILLING ASSEMBLY.
	0600	0800	2,00		DTPU	OK	OK	CONTINUED BUILDING 8 1/2" DRILLING ASSEMBLY.
	0800	1500	7,00	3752,0	DTDU	OK	OK	RIH WITH 8 1/2" DRILLING ASSEMBLY TO 3752 M.
	1500	1530	,50	3758,0	DTDU	OK	OK	SET TOOL FACE AND ORIENTED THROUGH WINDOW.
	1530	1830	3,00	3761,0	DDOU	OK	OK	WASHED/DRILLED FROM 3758 TO 3761 M.
	1830	2400	5,50	3790,0	DDOU	OK	OK	SLIDED FROM 3761 TO 3776 M. ROTATED FROM 3776 TO 3784 M. SLIDED FROM 3784 TO 3790 M.
99/05/09	0000	0600	6,00	3800,0	DDOU	OK	OK	SLIDED FROM 3790 TO 3800 M.
	0600	2230	16,50	3820,0	DDOU	OK	OK	DRILLED/ SLIDED 8 1/2" HOLE FROM 3800 TO 3820 M.
	2230	2300	,50	3752,0	DTBK	OK	OK	FLOW CHECKED. POOH FROM 3820 TO 3770 M. ORIENTED TOOL FACE TO 65R AN D OPENED COMPENSATOR. GOT PRESSURE BUILD UP WHILE PUMPING DUE TO PACKO FF TENDENCY. PULLED SLOWLY THROUGH WINDOW WITH OPEN COMPENCATOR.
	2300	2400	1,00	3443,0	DTBK	OK	OK	SLUGGED PIPE. POOH WITH DRILLING ASSEMBLY FROM 3752 TO 3443 M.
99/05/10	0000	0400	4,00		DTBK	OK	OK	CONTINUED POOH WITH DRILLING ASSEMBLY.
	0400	0500	1,00		DTBK	OK	OK	BROKE 8 1/2" BIT, CHECKED MUD MOTOR.
	0500	0600	1,00		DTBK	OK	OK	MADE UP NEW 8 1/2" ROCK BIT. DOWNLOADED MEMORY ON MWD.
	0600	0700	1,00		DTBK	OK	OK	DOWNLOADED MEMORY FROM MWD. INSTALLED RADIOACTIVE SOURCE IN MWD.
	0700	1430	7,50	3752,0	DTBK	OK	OK	RIH WITH 8 1/2" ON 5" DP TO 3752 M. TESTED MWD AT 1000 AND 2000 M.
	1430	1500	,50	3752,0	DDOU	OK	OK	ORIENTED TO ENTER WINDOW AND RUN THROUGH.
	1500	1800	3,00	3774,0	DDOU	OK	OK	CONTINUED RIH TO 3764 M. TOOK WEIGHT. PICKED UP OFF BOTTOM. STARTED PUMPING. PUMPED STRING OOH AND PACKED OFF. WORKED STRING FROM 3764M AND TOP OF WINDOW SEVERAL TIMES. MAX OVERPULL 10 TONS. ROTATED STRIN G

								WITH BIT AT 3764 M. MANAGED TO RUN THROUGH FROM 3764 TO 3774M. TOOK WEIGHT. WORKED THROUGH.
	1800	1930	1,50	3820,0	DDOU	OK	OK	WASHED AND REAMED FROM 3774 TO 3820 M.
	1930	2400	4,50	3831,0	DDOU	OK	OK	SLIDED FROM 3820 TO 3823 M. DRILL/ROTATED FROM 3823 TO 3825 M DUE TO HARD FORMATION/HUNG UP WITH BHA. CONTINUED SLIDING FROM 3825 TO 3831 M.
99/05/11	0000	0600	6,00	3846,0	DDOU	OK	OK	CONTINUED SLIDING FROM 3831 TO 3834 M. ROTATED FROM 3834 TO 3838 M D UE TO HARD FORMATION. CONTINUED SLIDING FROM 3838 TO 3846 M.
	0600	0800	2,00	3856,0	DDOU	OK	OK	ROTATED FROM 3846 TO 3856 M.
	0800	1030	2,50	3865,0	DDOU	OK	OK	SLIDED FROM 3856 TO 3865 M.
	1030	1330	3,00	3882,0	DDOU	OK	OK	ROTATED FROM 3865 TO 3882 M.
	1330	1600	2,50	3884,0	DDOU	OK	OK	SLIDED FROM 3882 TO 3884 M.
	1600	2200	6,00	3889,0	DDOU	OK	OK	ROTATED FROM 3884 TO 3889 M.
	2200	2300	1,00	3878,0	DDOU	OK	OK	REAMED LAST STAND. REAMED DOWN TIGHT HOLE. HAD HIGH TORQUE READINGS. HUNG UP AT 3886 M. PULLED 60 TONS TO RELEASE. REAMED BACK TO 3878 M.
	2300	2400	1,00	3800,0	DDOU	OK	OK	PUMPED OUT OF HOLE TO 3860 M. FLOW CHECKED. CONTINUED PUMPING OOH. HUNG UP. PULLED 50 TONS TO RELEASE. PUMPED OOH TO 3800 M AND ORIENTE D TOOL FACE TO 65R.
99/05/12	0000	0030	,50	3747,0	DTBK	OK	OK	PULLED BHA THROUGH WINDOW INTO 9 5/8" CASING WITH OPEN COMPENSATOR.
	0030	0600	5,50		DTBK	OK	OK	SLUGGED PIPE AND POOH WITH 8 1/2" DRILLING ASSEMBLY. RACKED BHA. FOUND WEAR ON MWD, DP TOOL JOINT AND PIPE BODY ON HW AT 37M ABOVE BI T. FOUND ALL THREE CONES OF BIT LOST IN HOLE.
	0600	0700	1,00		DTBK	OK	OK	DOWNLOADED MEMORY FROM MWD TOOL.
	0700	0900	2,00		DTBK	OK	OK	LAID DOWN 8 1/2" BHA.
	0900	1000	1,00		RMRU	OK	OK	SLIP AND CUT 32 METER DRILL LINE.
99/05/12	1000	1800	8,00	3764,0	DDOD	FAIL	OK	RIH WITH 8 1/2" BIT AND JUNK BASKET TO 3752 M. RUN THROUGH WINDOW TO 3764 M.
	1800	2100	3,00	3889,0	DDOD	FAIL	OK	WASHED AND ROTATED FROM 3764 TO 3884 M. REAMED FROM 3884 TO 3889 M. PUMP PRESSURE/RATE WHILE REAMING: 90 BAR/1500 LPM.
	2100	2330	2,50	3889,0	DDOD	FAIL	OK	WORKED JUNK BASKET ASSEMBLY WITH VARIABLE PARAMETERS TO COLLECT JUNK . HAD INDICATIONS OF JUNK AT BTM.
	2330	2400	,50	3889,0	DDOD	FAIL	OK	FLOW CHECKED FOR 10 MIN. SLUGGED PIPE.
99/05/13	0000	0500	5,00		DDOD	FAIL	OK	POOH WITH BIT AND JUNK BASKET. NO PROBLEMS TO PULL OUT IN OPEN HOLE AND THROUGH WINDOW. LD BHA.
	0500	0530	,50		DDOD	FAIL	OK	SERVICED AND MU REVERSE CIRCULATION JUNK BASKET.
	0530	0600	,50		DDOD	FAIL	OK	MADE UP BHA WITH REVERSE CIRCULATING JUNK BASKET.
	0600	0830	2,50	1700,0	DDOD	FAIL	OK	SERVICED REVERSE CIRCULATING JUNK BASKET. RIH WITH SAME TO 1700 M.
	0830	0930	1,00	1700,0	DDOD	FAIL	E FAIL	REPAIRED HYDRAULIC PUMP FOR STANDLIFT. MEANWHILE, RESPOOLED DRAWWORKS, GREASED TDS AND CHECKED DOLLY TRACK.
	0930	1330	4,00	3889,0	DDOD	FAIL	OK	RIH WITH REVERSE CIRCULATION JUNK BASKET ASSEMBLY. RAN CAREFULLY THROUGH WINDOW. RIH IN OPEN HOLE WITH 1000 LPM CIRCULATING. TAGGED JUNK AT 3890 M. PULLED UP 5 M.
	1330	1500	1,50	3889,0	DDOD	FAIL	OK	CIRCULATED BTMS UP. MAX TRIP GAS 6.1 %.
	1500	1530	,50	3889,0	DDOD	FAIL	OK	DROPPED BALL FOR REVERSE CIRCULATING JUNK BASKET AND CIRCULATED SAME DOWN.
	1530	1630	1,00	3889,0	DDOD	FAIL	OK	WORKED REVERSE CIRCULATING JUNK BASKET ON BOTTOM. MILLED 0,3 M WITH 2200 LPM AND 4 TO 7 TONS WOB, AND 30 - 40 RPM. STOPPED PUMPS AND ROTATION. PULLED OFF BOTTOM WITHOUT OVERPULL.
	1630	2200	5,50		DDOD	FAIL	OK	FLOW CHECKED WELL FOR 10 MIN. SLUGGED PIPE. POOH.
	2200	2230	,50		DDOD	FAIL	OK	BROKE REVERSE CIRCULATION JUNK BASKET. RECOVERED SHALE CAVINGS ONLY, NO STEEL.
	2230	2400	1,50	414,0	DDOD	FAIL	OK	MU 8 1/2" MILL AND DOUBLE JUNK BASKETS. RIH WITH NEW BHA TO 414 M.
99/05/14	0000	0600	6,00	3810,0	DDOD	FAIL	OK	CONTINUED RIH WITH MILL AND DOUBLE JUNK BASKET TO 3768 M. TOOK WEIGH T. ROTATED SLOWLY TO CONTINUE RIH. TOOK WEIGHT. PUMPED AT 600 LPM WHEN RIH FROM 3768 TO 3773 M. STOPPED PUMPS. CONTINUED RIH FROM 3773 TO 3804 M. TOOK WEIGHT. WASHED 3804 TO 3806 M. STOPPED PUMPS. RIH TO 3810 M.
	0600	1000	4,00	3889,0	DDOD	FAIL	OK	REAMED FROM 3810 TO 3850 M. RATE/PRESSURE 2000 LPM/160 BAR. WOB 2-4 TONS. WASHED FROM 3850 TO 3880 M. REAMED FROM 3880 TO 3889 M . RATE/PRESSURE 2300 LPM/180 BAR, WOB 2-7 TONS.
	1000	1530	5,50	3892,0	DDOD	FAIL	OK	MILLED ON JUNK AND WORKED MILL AND JUNK SUBS FROM 3889 TO 3892 M. RPM: 40 - 100, WOB: 5 - 20 TONS, FLOW: 2200 LPM, TORQUE: 6 - 19 KNM
	1530	1600	,50	3892,0	RMRD	FAIL	E FAIL	REPLACED BROKEN BOLT ON BRACKET ON STARBOARD DOLLY TRACK. INSPECTED DOLLY TRACKS.
	1600	1700	1,00	3740,0	DDOD	FAIL	OK	BACK REAMED INTO CASING AT 3740 M.
	1700	1730	,50	3750,0	DDOD	FAIL	OK	WORKED ON ELECTRICAL PROBLEM ON ELMACO
	1730	1830	1,00	3750,0	DDOD	FAIL	OK	CIRCULATED BOTTOMS UP. BOOSTED RISER. FLOW CHECKED. SLUGGED PIPE.
	1830	2400	5,50		DDOD	FAIL	OK	POOH WITH MILL AND TANDEM JUNK BASKET. RACKED BHA. FOUND MILL GRINDE D/ ROUNDED.
99/05/15	0000	0030	,50		DDOD	FAIL	OK	BROKE MILL AND JUNK BASKETS. RECOVERED FORMATION CAVINGS AND METAL FROM JUNK BASKET. AMOUNT OF CLEANED METAL 250 G, MAINLY FLAT GRINDED PIECES.
	0030	0130	1,00	300,0	DDOD	FAIL	OK	MADE UP AND RIH WITH FLAT BOTTOM MILL TO 300 M.
	0130	0230	1,00	300,0	RMRD	FAIL	E FAIL	REPAIRED HYDRAULIC HOSE ON UPPER RACKING ARM.
	0230	0600	3,50	2600,0	DDOD	FAIL	OK	CONTINUED RIH WITH FLAT BOTTOM MILL FROM 300 TO 2600 M.
	0600	1100	5,00	3892,0	DDOD	FAIL	OK	CONTINUED RIH FROM 2600 M TO 3800 M. HAD TIGHT HOLE AT 3800 M. REAME D THROUGH TO 3808 M. WASHED DOWN TO 3822 M. REAMED FROM 3822 TO 3856 M . WASHED 3856 TO 3888 M AND REAMED FROM 3888 TO 3892 M. REAMING PARAMETERS; WOB:0 - 3 TONS, TORQUE: 6 - 15 KNM, RPM: 60 - 12 0, FLOW: 2200 LPM.
99/05/15	1100	1700	6,00	3894,0	DDOD	FAIL	OK	MILLED ON BOTTOM. MADE 2 M HOLE FROM 3892 TO 3894 M. WOB: 15 - 25 TONS, TORQUE: 12 - 19 KNM, RPM: 70 - 120, FLOW: 2200 LP M.
	1700	2300	6,00		DDOD	FAIL	OK	SLUGGED PIPE. POOH TO 2450 M. FLOW CHECKED. CONTINUED POOH WITH FLAT BOTTOM MILL. MILL WORN ON BOTTOM, JUNK MARKS ON SIDE AND 1/16" UNDERGAUGE.
	2300	2400	1,00	250,0	BBDU	OK	OK	MU TEST TOOL TO TEST BOP. RIH TO 250 M.
99/05/16	0000	0030	,50	412,0	BBDU	OK	OK	CONTINUED RIH AND LANDED TEST TOOL IN WELLHEAD.
	0030	0330	3,00	412,0	BBDU	OK	OK	TESTED BOP FROM BLUE POD. ALL PIPE RAMS AND FAILSAFE VALVES 35/345 B AR

								FOR 5/10 MIN. UPPER AND LOWER ANNULAR PREVENTERS 35/245 BAR FOR 5/10 MIN. FUNCTION TESTED BOP FROM MINI PANEL AND YELLOW POD.
	0330	0430	1,00		BBDU	OK	OK	POOH WITH BOP TEST ASSEMBLY AND LAID DOWN SAME.
	0430	0600	1,50		BBUU	OK	OK	TESTED LOWER AND UPPER IBOP'S, KELLY COCK, KELLY HOSE TO 35/345 BAR FOR 5/10 MIN.
	0600	0730	1,50		BBUU	OK	OK	CONTINUED TEST OF SURFACE EQUIPMENT TO COMPLETE CHOKE MANIFOLD TEST. TESTED KELLY COCK VALVES 35/345 BAR 5/10 MIN.
	0730	0830	1,00		BBUD	FAIL	E FAIL	HAD LEAK ON WASH PIPE SWIVEL. CHANGED SAME.
	0830	1200	3,50		DTDU	OK	OK	MU NEW 8 1/2" BIT, PU NAVIGATOR AND MWD TOOL. CONTINUED BUILDING BHA . MEANWHILE TESTED STAND PIPE MANIFOLD. FOUND 1 LEAKING VALVE ON STAND PIPE MANIFOLD AND 3 LEAKING VALVES IN PUMP ROOM.
	1200	1830	6,50	3745,0	DTDU	OK	OK	RIH WITH 8 1/2" DRILLING ASSEMBLY ON 5 " DRILL PIPE TO 3745 M. FILLE D PIPE EVERY 1000 M. MEANWHILE REPAIRED STAND PIPE VALVE NO 1. REDRESSED VALVES NO 13, 14 AND 15.
	1830	2030	2,00	3745,0	DERD	FAIL	E FAIL	ATTEMPTED TO TEST STAND PIPE VALVE NO 1, 13, 14 AND 15. HAD LEAKS IN SURFACE FLUID LINE SYSTEM. REDRESSED VALVE NO 14. FOUND DAMAGED SEAL AND WASH OUTS ON GATE.
	2030	2100	,50	3745,0	DERD	OK	OK	COMPLETED TESTING STAND PIPE MANIFOLD.
	2100	2130	,50	3766,0	DDOU	OK	OK	ORIENTED TOOL FACE TO 65 R. SLIDED THROUGH WINDOW WITHOUT CIRCULATIN G/ ROTATING. TOOK WEIGHT AT 3766 M.
	2130	2300	1,50	3803,0	DDOU	OK	OK	WASHED/REAMED DOWN FROM 3768 TO 3786 M W/ 1500 LPM. TOOK WEIGHT AT 3786 M. INCREASED FLOW RATE TO 1920 LPM. ROTATRD STRING WITH 30 RPM. MOTOR STALLED OUT. BHA STUCK AT 3786 M. WORKED PIPE/JARRED UPWARDS T O 3771 M. WASHED/REAMED DOWN FROM 3771 TO 3775 M AND BACK UP TO 3771 M W/ 400 LPM. REAMED DOWN TO 3803 M. BHA FREE UP/DOWN.
	2300	2330	,50	3840,0	DDOU	OK	OK	RIH FROM 3803 TO 3840 M.
	2330	2400	,50	3855,0	DDOU	OK	OK	ROTATED STRING W/ 40 RPM FROM 3840 TO 3855 M.
99/05/17	0000	0030	,50	3890,0	DDOU	OK	OK	CONTINUED RIH FROM 3855 TO 3890 M.
	0030	0230	2,00	3899,0	DDOU	OK	OK	ORIENTED TOOL FACE. WASHED/REAMED 3890 TO 3894 M. DRILLED AND SLIDED FROM 3894 TO 3899 M. WOB 7 TONS, RPM 115, FLOW 2200 LPM. ROP 6,4 MPH .
	0230	0330	1,00	3899,0	DDOU	OK	OK	LOST ROP. HAD ROTATION ON BIT. NOT ABLE TO ROTATE STRING. PULLED MAX 73 TONS OVERPULL. JARRED UP SEVERAL TIMES. JAR DID NOT WORK DOWNWARD S. WORKED DRILL STRING WITH SOME TORQUE AND JARRING. ACHIEVED ROTATION ON DRILL STRING. WORKED STRING FREE.
	0330	0400	,50	3869,0	DDOU	OK	OK	BACK REAMED TIGHT HOLE FROM 3899 TO 3869 M.
	0400	0530	1,50	3745,0	DDOU	OK	OK	POOH FROM 3869 TO 3790 M. ORIENTED TOOL FACE TO 65 R. CONTINUED POOH . PULLED THROUGH WINDOW TO 3745 M. HAD SLIGHT OVERPULL INSIDE CSG AT 3745 M. CHECKED ROTATION OK. FLOW CHECKED. SLUGGED PIPE.
	0530	0600	,50	3366,0	DDOU	OK	OK	POOH FROM 3745 TO 3366 M.
	0600	1100	5,00		DDOU	OK	OK	CONTINUED POOH WITH 8 1/2" DRILLING ASSEMBLY FROM 3366 M. FLOW CHECK ED PRIOR TO PULLING BHA THROUGH BOP. HAD JUNK MARKS ON MWD AND MUDMOTOR . BROKE BIT.
	1100	1200	1,00		DDOU	OK	OK	MADE UP FISHING MAGNET AND JUNK BASKETS ON HWDP. CHANGED JAR.
	1200	1600	4,00	2100,0	DDOD	OK	OK	RIH WITH MAGNET ASSEMBLY ON 5" DRILL PIPE TO 2100 M.
	1600	1700	1,00	2100,0	DDOD	OK	OK	SLIP AND CUT 34 M DRILLING LINE.
	1700	2100	4,00	3899,0	DDOD	OK	OK	CONTINUED RIH TO 3768 M. TOOK WEIGHT. CIRCULATED W/ 1400 LPM. ROTATI NG W/ 70 RPM TO BE ABLE TO PASS 3768 M. CONTINUED RIH TO 3795 M. TOOK WEIGHT. CIRCULATED W/ 1400 LPM. ROTATING W/ 70 RPM TO BE ABLE TO PAS S 3795 M. CONTINUED RIH TO TD AT 3899 M. TOOK 13 TONS WEIGHT AT 3897 M .
	2100	2200	1,00	3899,0	DDOD	OK	OK	WORKED MAGNET/JUNK BASKET ASSEMBLY. PU TO 3875 M WITHOUT PUMPING. RI H TO TD WHILE PUMPING AT 1000 TO 1500 LPM. TAGGED BTM AND REPETED SEQUENCE 9 TIMES. PULLED UP TO 3875 M. SLUGGED PIPE. PULLED UP TO 3847 M. RIH WITHOUT PUMPING AND TAGGED BTM.
	2200	2400	2,00	2895,0	DDOD	OK	OK	POOH TO 3795 M. TOOK 32 TONS OVERPULL. SLACKED OFF A COUPLE OF METER S. PULLED UP AND JAR STROKED AT 32 TONS. CONTINUED POOH TO 2895 M.
99/05/18	0000	0600	6,00		DDOD	OK	OK	CONTINUED POOH WITH MAGNET/JUNK BASKET ASSEMBLY. LAID DOWN MAGNET AN D JUNK BASKETS. CLEANED MAGNET AND JUNK BASKETS. COLLECTED APPROXIMATE LY 1,5 KG METAL.
	0600	0800	2,00		DDOD	OK	OK	MU NEW 8 1/2" DRILLING ASSEMBLY.
	0800	1300	5,00	3745,0	DDOD	OK	OK	RIH WITH 8 1/2" DROP ASSEMBLY TO CASING WINDOW.
	1300	1330	,50	3802,0	DDOD	OK	OK	ORIENTED THROUGH CASING WINDOW AND CONTINUED RIH TO 3802 M.
	1330	1630	3,00	3822,0	DDOD	OK	OK	REAMED FROM 3802 TO 3822 M. HAD CLEAR INDICATIONS OF JUNK. MOTOR STALLED SEVERAL TIMES. FLOW: 1700 TO 2200 LPM, SPP 170 - 210 BAR, RPM 170 - 240, TORQUE 7 - 15 KNM.
	1630	1800	1,50	3894,0	DDOD	OK	OK	WASHED AND REAMED FROM 3822 TO 3894 M, OK. FLOW 1700 LPM, TORQUE 8 - 15 KNM, RPM 140 - 230, PUMP PRESSURE 160 TO 280 BAR.
	1800	2100	3,00	3899,0	DDOD	OK	OK	CONTINUED REAMING FROM 3894 TO 3899 M. HAD CLEAR INDICATIONS OF JUNK . MOTOR STALLED SEVERAL TIMES. FLOW 1600 - 2000 LPM, SPP 170 - 225 BAR , RPM 185 - 230, TORQUE 8 - 10 KNM.
	2100	2400	3,00	3914,0	DDOU	OK	OK	DRILLED/SLIDED 8 1/2" HOLE FROM 3899 TO 3914 M. FLOW 2200 LPM, SPP 290 BAR, RPM 190, WOB 8 - 18 TONS.
99/05/19	0000	0130	1,50	3919,0	DDOU	OK	OK	CONTINUED DRILLING/SLIDING FROM 3914 TO 3919 M. FLOW 2200 LPM, SPP 280 - 290 BAR, RPM 190, WOB 12 - 19 TONS. GOT PROBLEMS TO TRANSF ER WEIGHT TO BIT DURING FINAL PART OF SLIDING MODE.
	0130	0600	4,50	3933,0	DDOU	OK	OK	DRILLED/ROTATED FROM 3919 TO 3923 M. FLOW 2200 LPM, SPP 280 BAR, RPM 260, WOB 15 TONS, TORQUE 10 -14 KNM. CONTINUED SLIDING. STILL PROBLEMS TO TRANSFER WEIGHT TO BIT. DRILLED/SLIDED F/ 3923 TO 3933 M .
	0600	1530	9,50	3952,0	DDOU	OK	OK	DRILLED IN ORIENTED MODE FROM 3933 M TO 3952 M. PROBLEMS TO TRANSFER WEIGHT TO BIT.
	1530	2100	5,50		DTBK	OK	OK	FLOW CHECKED. PUMPED SLUG AND POOH. NO OBSTRUCTIONS IN OPEN HOLE. FLOW CHECKED BEFORE PULLED INTO BOP.
	2100	2300	2,00		DTBK	OK	OK	DOWN LOADED MWD, CHANGED AKO/NAVIGATOR AND BIT. LOADED MWD AND SET AKO TO 1,1 DGR. CHECKED SCRIBE LINE.
	2300	2400	1,00	101,0	DTBK	OK	OK	RIH WITH BHA.
99/05/20	0000	0100	1,00	917,0	DTBK	OK	OK	CONTINUED RIH TO 917 M.
	0100	0130	,50	917,0	DTBK	OK	OK	FILLED PIPE AND TESTED MWD.
	0130	0600	4,50	3777,0	DTBK	OK	OK	CONTINUED RIH. FILLED PIPE EACH 1000 M. ORIENTED TOOL FACE AND ENTER ED OPEN HOLE. EXPERIENCED RESISTANCE FROM 3774 M. START WASH AND ROTATE

								TO 3777M.
	0600	0700	1,00	3977,0	DCRK	OK	OK	CONTINUED ROTATE AND WASH IN SECTION 3770 M TO 3777 M W/MAX 1500 LPM , 50 RPM AND 12K FT/LBS. EXPERIENCED PACK OFF/STALLED MOTOR WITH O/PUL L FIRED JAR. REMOVED 1 STAND AND REGAINED CIRC BY ROTATING STRING.
	0700	1000	3,00	3952,0	DCRK	OK	OK	CONTINUED WASHING AND REAMING TO BTM AT 3952 M. WORKED SPOT AT 3871 M.
	1000	2400	14,00	4032,0	DDTU	OK	OK	DRILLED IN ORIENTED AND ROTATIONAL MODE TO DROP INCLINATION FROM 395 2M TO 4032 M.
99/05/21	0000	0400	4,00	4050,0	DDTU	OK	OK	CONTINUED ORIENTING DRILLING FROM 4032 M TO 4050 M.
	0400	0430	,50	4050,0	DDOD	FAIL	O FAIL	6 M3 SLOP WAS TRANSFERED INTO ACTIVE MUD TANK. INVESTIGATED GAIN AND RECIPROCATED PIPE. ORIENTED TOOL FACE TO COMMENCE DRILLING.
	0430	0600	1,50	4058,0	DDTU	OK	OK	CONTINUED ORIENTING DRILLING FROM 4050 M TO 4058 M.
	0600	1600	10,00	4121,0	DDTU	OK	OK	ORIENTED AND DRILLED TO DROP INCLINATION FROM 4058 M TO 4121 M.
	1600	1730	1,50	4121,0	DCAU	OK	OK	CIRCULATED BTM UP.
99/05/21	1730	2400	6,50	418,0	DTBK	OK	OK	FLOW CHECKED AND PUMPED SLUG. POOH TO 3762 M. RIH AND STOOD UP WITH 20 MT AT 3781M. CONTINUED POOH TO INSIDE 9 5/8" CSG. FLOW CHECKED. CONTINUED POOH, RE-SLUGGED AT 3100 M. CONT POOH TO 440 M. FLOW CHECK ED BEFORE BOP.
99/05/22	0000	0130	1,50		DTBK	OK	OK	CONTINUED POOH. BROKE OUT PROTECTION SLEEVE ON AKO MOTOR.
	0130	0200	,50		DTBK	OK	OK	DOWN LOADED MWD TOOL.
	0200	0230	,50		DTAK	OK	OK	LAID DOWN AKO AND MWD TO DECK.
	0230	0430	2,00		DEMD	OK	OK	MADE UP NEW AKO AND MWD TRIPLE-COMBO.
	0430	0500	,50		DEMD	FAIL	E FAIL	LOADED MWD TOOL. NOT ABLE TO GET TOOL VERIFICATION WITH EL CABLE CONNECTED TO MWD.
	0500	0600	1,00		DEMD	FAIL	OK	RIGGED DOWN EL CABLE AND PUMPED WITH 1835 LPM. FOUND DENSITY SUB NOT FUNCTIONING. STARTED CHANGING OUT DENSITY SUB.
	0600	0830	2,50		DEMD	FAIL	OK	CHANGED DENSITY SUB AND TESTED. FOUND FOULT LOCATED TO MWD/RNT SUB. LAID DOWN SAME. PICKED UP NEW MWD TOOL AND TESTED OK.
	0830	0930	1,00		DTAK	OK	OK	CHECKED SCRIBE LINE AND INSTALLED RADIOACTIVE SOURCES. MADE UP NEW ROCK BIT.
	0930	1600	6,50	3720,0	DTAK	OK	OK	RIH TO 3720M. FILLED STRING AND TESTED MWD AT 1000 M.
	1600	1700	1,00	3720,0	RMRU	OK	OK	SLIPPED AND CUTTED DRILLING LINE.
	1700	1900	2,00	3720,0	RMRU	OK	OK	SERVICED TOP DRIVE; CHANGED OIL ON TDS TRANSMISSION, CHANGED DIES ON TDS PIPE HANDLER. PERFORMED DUE MAINTANCE AND ADJUSTED IBOP ACTUATOR .
	1900	2000	1,00	3740,0	DTAK	OK	OK	STAGED UP PUMPS TO AVOID SHAKER OVERFLOW DUE TO COLD MUD. ORIENTATED TOOL FACE TO 60L AND ENTERED CSG WINDOW WITHOUT PUMPS.
	2000	2300	3,00	3792,0	DCRK	OK	OK	RIH TO 3765 M. ESTABLISHED CIRULATION WITH 1500 LPM/50 RPM. ROTATED/ WASHED TO 3768M AND GOT PUMP PRESSURE VARIATION TO 3778M. EXPERIENCE D TIGHT HOLE IN SECTION 3778 TO 3785M. REDUCED FLOW TO 1000 LPM TO OBTAIN PROGRESS. PROCEEDED TO 3789M. ATTEMPTED TO INCREASE FLOW TO 2000 LPM, NO SUCCESS DUE TO STALLING.TIGHT HOLE F/3789-3792 M.
	2300	2400	1,00	3811,0	ELOU	OK	OK	ESTABLISHED 2000 LPM FLOW RATE AND LOGGED W/ MWD FROM 3792M TO 3811M . WORK TIGHT SPOT AT 3811M.(MWD STAB AT 3794M)
99/05/23	0000	0600	6,00	4030,0	ELOU	OK	OK	CONTINUED LOGGING WITH MWD TRIPLE-COMBO F/3811M TO 4030M. RESTRICTED SPEED TO 3900M DUE TO ERRATIC TORQUE.
	0600	1000	4,00	4121,0	ELOU	OK	OK	CONTINUED LOGGING WITH MWD TRIPLE-COMBO F/4030M TO 4121M.
	1000	2400	14,00	4169,0	DDTU	OK	OK	ORIENTED AND DRILLED TO DROP INCLINATION FROM 4121M TO 4169M.
99/05/24	0000	0300	3,00	4174,0	DDTU	OK	OK	CONTINUED ORIENTING AND DRILLING FROM 4169M TO 4174M. ROP SHOWED DECLINING RATE, FROM 4173M; HAD SENSITVE TOOLFACE, AT 4174M, AKO STALLED ONCE DURING SLIDING.
	0300	0600	3,00	2914,0	DTBK	OK	OK	PULLED PIPE WET TO 4102M. FLOW CHECKED AND PUMPED SLUG. POOH TO CSG. TIGHT SPOTS AT: 3868M/14 MT, 3852M/14 MT, 3792-3790M/18 MT, 3780-377 5M /18 MT O/PULL. FLOW CHECKED INSIDE CSG. CONTINUED POOH.
	0600	1100	5,00		DTBK	OK	OK	CONTINUED POOH. REMOVED RADIOACTIVE SOURCES FROM MWD.
	1100	1230	1,50	32,0	DTBK	OK	OK	CHANGED BIT AND CHECKED MOTOR. LOADED MWD AND INSTALLED RADIOACTIVE SOURCES.
	1230	1800	5,50	3740,0	DTAK	OK	OK	RIH TO CSG WINDOW. FILLED PIPE EACH 1000 M. TESTED MWD W/2000 LPM AT 1000 M.
	1800	2000	2,00	3820,0	DTAK	OK	OK	ORIENTATED TOOL FACE AND ENTERED OPEN HOLE. TOOK WEIGHT AT 3768M. ATTEMPTED TO SLIDE WITHOUT PUMP AND VARIED TOOL FACE. NO SUCCESS. PUMPED WITH 800 LPM AND 10 RPM ROTATION ON STRING AND PROGRESSED TO 3820M. VARIATION ON PUMP PRESSURE OBSERVED: MAX 10-12 BAR.
	2000	2130	1,50	4008,0	DCRK	OK	OK	RIH. STOOD UP AT 3920M. REAMED TO 3927M. CONTINUED RIH HOLE STARTED TO TAKE INCREASING DOWN WEIGHT FROM 4008M. HOLE TIGHT. STARTED WORK STRING OBTAIN ROTATION ON BIT. INSTALLED WORKING SINGLE DP.
	2130	2230	1,00	4012,0	DCRK	OK	OK	CONTINUED WORKING STRING AND OBTAINED BIT ROTATION WITH MAX 800 LPM BEFORE STALLING. REAMED SECTION 4008M TO 4012M. STAGED PUMPS TO MAX 1200 LPM.
	2230	2400	1,50	4020,0	DCRK	OK	OK	CONTINUED REAMING FROM 4012 TO 4020M.
99/05/25	0000	0200	2,00	4030,0	DCRK	OK	OK	CONTINUED REAMING. TIGHT HOLE FROM 4020M TO 4030M.
	0200	0400	2,00	4174,0	DCRK	OK	OK	OBTAINED 2000 LPM AND REAMED IN HOLE FROM 4030M TO 4174M. HOLE IN GO OD CONDITION. WORK BIT AND PUMPS TO CLEAR JUNK OFF BTM 5-6 TIMES WITH LIGHT ROTATION. ESTABLISHED BIT PATTERN.
	0400	0600	2,00	4180,0	DDTU	OK	OK	DRILLED FROM 4174M TO 4180M. ROP IN ORIENT MODE 2.5 M/HR. ROP IN ROTARY MODE 3 M/HR
	0600	2400	18,00	4272,0	DDTU	OK	OK	DRILLED IN ROTARY MODE FROM 4180M TO 4272M.
99/05/26	0000	0030	,50	4275,0	DDTU	OK	OK	CONTINUED DRILLING FROM 4272 TO TD AT 4275M, 3840.87M TVD.
	0030	0200	1,50	4275,0	ECSU	OK	OK	CIRCULATED FOR GEOLOGICAL SAMPLES. ROTATED AND RECIPROCATED STRING.
	0200	0300	1,00	4275,0	DCAU	OK	OK	CONTINUED CIRC HOLE CLEAN WITH 2200 LPM AND BOOSTED RISER DURING PERIODE, TOTAL FLOW ON RISER 3400 LPM. ROTATED AND RECIPROCATED PIPE . HAD PIPE STALLING AT 4272M AT END OF CIRCULATION. CONTINUED CIRC AND GOT PRESSURE BUILD UP FROM 4270M. CIRCULATED 2 TIMES BTM UP.
	0300	0600	3,00	3500,0	DTLU	OK	OK	POOH WET TO 4170M. FLOW CHECKED AND PUMPED SLUG. DROPPED 2 3/4" DP DRIFT. POOH, WIPED ALL OBSTRUCTIONS TO MINOR RESISTANCE EXCEPT FOR SPOT AT 3794M. MAX DOWN WT 15 T. ENTERED CSG WINDOW AND FLOW CHECKED . CONTINUED POOH.
	0600	1200	6,00		DTLU	OK	OK	CONTINUED POOH FOR LOGGING OPERATION.
	1200	1400	2,00		DTLU	OK	OK	REMOVED RADIOACTIVE SOURCES FROM MWD AND DOWNLOADED SAME. BROKE DOWN MWD IN COMPONENTS AND LAID DOWN AKO MOTOR. LEFT 2 CONES FROM BIT IN HOLE. HELD PRE LOG SAFETY MEETING WITH ALL PERSONNEL.

	1400	1630	2,50		ELDU	OK	OK	RIGGED UP MDT TOOL AND TESTED TOOL STEM. INSTALLED RADIOACTIVE SOURCES.
	1630	2400	7,50	3350,0	ELDU	OK	OK	RIH WITH LOGGING TOOLS ON 5" DP. BROKE CIRC EACH 10 STAND.
99/05/27	0000	0100	1,00	3677,0	ELDU	OK	OK	CONTINUED RIH WITH PIPE CONVEYED LOGS TO 3677M.
	0100	0400	3,00	3677,0	ELDU	OK	OK	CIRCULATED 1 STRING CONTENT. HELD PRE JOB SAFETY MEETING WITH ALL INVOLVED PERSONNEL. INSTALLED SHEAVES FOR LOGGING WIRE. INSTALLED SIDE ENTRY SUB. RIH WITH WET CONNECTOR ON WIRELINE W/70 M/MIN, LATCH ED LOGGING TOOLS WITH 1000 LPM ON PUMP. PULL TESTED WET CONNECTOR TO 19 32 KG.
	0400	0600	2,00	3677,0	ELOD	FAIL	E FAIL	SCHLUMBERGER TROUBLE SHOOTING TOOLS. CHANGED TROLEX CABLE BETWEEN BAKER ATLAS UNIT AND SCHLUMBERGER. STILL PROBLEMS WITH TOOLS. SHEARED OUT WET CONNECTOR WITH 2636 KG PULL ON WIRE. CONTINUED POOH WITH BAKER ATLAS WET CONNECTOR TO CHECK TOOL AND LOGGING WIRE.
	0600	1330	7,50	3677,0	ELOD	FAIL	OK	CONTINUED POOH WITH BAKER ATLAS WIRELINE WET CONNECTOR. FOUND DENTED LOGGING WIRE 50 M FROM WET CONNECTOR. CUT 140M WIRE AND RE TERMINATE D WET CONNECTOR AND CHECKED OK. RIH AND PUMPED 1000 LPM AND CONNECTED OK TO LOGGING TOOLS. CONFIRMED WITH O/PULL.
	1330	1500	1,50	3677,0	ELDU	OK	OK	CONTINUED TESTING OUT LOGGING TOOLS AND HELD PRE JOB MEETING AND SJA . MADE UP WIRE CLAMP TO SES AND PULL TESTED SAME.
	1500	1600	1,00	3768,0	ELDU	OK	OK	RIH WITH LOGGING TOOLS ON DP AND ENTERED WINDOW AT 3752-3757M NO OBSTRUCTIONS. RIH AND TOOK WEIGHT AT 3768M SEVERAL TIMES.
	1600	1800	2,00	3677,0	ELHK	FAIL	O FAIL	TURNED STRING 1/2 TURN AND WORKED TORQUE DOWN. ATTEMPTED TO PASS AND STOOD UP AT 3767M. INCREASED DOWN WEIGHT TO MAX 3,2 T, NO PROGRESS. PULLED INTO CSG.
	1800	2000	2,00	3677,0	ELHK	FAIL	OK	UNCLAMPED WIRE AT SES AND POOH WITH LOGGING CABLE. RIGGED DOWN BAKER ATLAS WIRELINE AND SHEAVES.
	2000	2400	4,00	527,0	ELHK	FAIL	OK	PUMPED SLUG AND POOH TO 527M.
99/05/28	0000	0200	2,00		ELHK	FAIL	OK	CONTINUED POOH. REMOVED RADIOACTIVE SOURCES AND LAID DOWN LOGGING TOOLS.
	0200	0600	4,00	584,0	ELWK	FAIL	OK	MADE UP ROTARY BHA WITH MWD. RE CONFIGURATED MWD TO DIRECTIONAL ONLY . RIH AND MADE UP NEW JAR TO BHA. RIH.
	0600	1030	4,50	3760,0	ELWK	FAIL	OK	CONTINUED RIH TO 3760M. TESTED MWD AT 1000M.
	1030	1730	7,00	3790,0	ELWK	FAIL	OK	RIH AND STOOD UP AT 3768M. REAMED FROM 3768M TO 3790M. HAD 91 MT O/PULL AT 3780M. REAMED SECTION MULTIPLE TIMES. WHEN LAST STAB BELOW CSG WINDOW, INCREASE TO 180 RPM/ 2000 LPM. NO OBSTRUCTIONS ON UPSTRO KE NOT ABLE TO SLIDE PASS SECTION 3773-3788M. ROTATED AND PUMPED F/3764 - 3790M.
	1730	2300	5,50	4273,0	ELWK	FAIL	OK	REAMED FROM 3790M TO 4273M WITH 180 RPM, 2100 LPM. NO OBSTTRUCTIONS.
	2300	2400	1,00	4273,0	ELWK	FAIL	OK	CIRCULATED BTMS UP WITH 2200 LPM, 130 RPM, RECIPROCATED PIPE.
99/05/29	0000	0030	,50	4273,0	ELWK	FAIL	OK	CONTINUED CIRCULATING BTMS UP. FLOW CHECKED
	0030	0300	2,50	3788,0	ELWK	FAIL	OK	POOH HAD 7-8 T O/P AT 3788M.
	0300	0500	2,00	3782,0	ELWK	FAIL	OK	WHEN STARTED TO REAM SPOT AT 3788M, STRING TORQUED UP. INSTALLED SINGLE DP AND JARRED 3 TIMES UP AND DOWN AND REGAINED ROTATION. CONTINUED BACKREAM TO INSIDE CSG WITH MAX 35 BAR ON DP TO AVOID STRING STALLING. PUMPED WITH 2000 LPM/10 MIN INSIDE CSG, ENTERED OPEN HOLE AND STOOD UP AT 3768M. ROTATED TO 3782M W/FREQUENT PACKOFF S
	0500	0600	1,00	3783,0	ELWK	FAIL	OK	CONTINUED ROTATE AND CIRCULATE IN SECTION 3768M TO 3783. INCREASED PUMPS TO 2000 LPM WITHOUT PACK OFF AND STALLING. CONT WORK SECTION. SOME CUTTINGS ON SHAKERS CORRESPONDING FROM CIRCULATION OUTSIDE WIND OW
	0600	1030	4,50	3815,0	ELWK	FAIL	OK	CONTINUED WORKING SECTION 3768M TO 3784M WITH 1500 LPM, 180 RPM. HOLE OK WHEN ROTATING AND WASHING DOWN, NOT ABLE TO SLIDE PASS 3772M . CONTINUED WORKING SECTION 3784M TO 3815M. HOLE OK BELOW 3790M.
	1030	1100	,50	3731,0	ELWK	FAIL	OK	POOH FROM 3815M TO 3731M INSIDE CSG. NO OVER PULL OR DRAG IN OPEN HO LE SECTION.
	1100	1300	2,00	3731,0	ELWK	FAIL	OK	CIRCULATED HOLE CLEAN. BOOSTED RISER.
	1300	1900	6,00		ELWK	FAIL	OK	POOH. LAID DOWN 2 STABS, 1 DC AND MWD.
	1900	2030	1,50		ELHK	FAIL	OK	RIGGED UP SCHLUMBERGER PCL LOGS IN ROTARY. CHECKED TOOL STEM. HELD PRE JOB MEETING WITH INVOLVED PERSONNEL AND INSTALLED RADIOACTI VE SOURCES.
	2030	2400	3,50	1598,0	ELHK	FAIL	OK	RIH WITH PCL/LDT-MDT-GR TO 1598M. RESTRICED SPEED TO 3 MIN/ STAND TO BELOW BOP. 1 MIN/ STAND TRAVEL SPEED THEREAFTER. FILLED PIPE EACH 10 STAND.
99/05/30	0000	0430	4,50	3672,0	ELHK	FAIL	OK	CONTINUED RIH TO 3672M.
	0430	0600	1,50	3672,0	ELHK	FAIL	OK	HELD PRE JOB SAFETY MEETING WITH PERSONNEL INVOLVED AND RIGGED UP WIRELINE SHEAVES IN DERRICK WHILST CIRCULATED 1 STRING CONTENT WITH MAX 1000 LPM. MEGGED LOGGING WIRE. INSTALLED SIDE ENTRY SUB. STARTED RIH WET CONNECTOR ON WIRELINE.
	0600	0830	2,50	3672,0	ELHK	FAIL	OK	CONTINUED RIH WITH WET CONNECTOR AND LATCHED OK. PULL TESTED AND FUCTIONED LOGGING TOOLS, OK. CLAMPED WIRE TO SES.
	0830	1100	2,50	3677,0	ELHK	FAIL	OK	RIH TO OUTSIDE WINDOW AND LOGGED FROM 3757M. GOT RESISTANCE FROM 376 8M AND STOOD UP WITH 3,2 MT AT 3777M. ATTEMPTED TO WORK PASS, RESULTED IN LOOSING DEPTH EACH ATTEMPT.
	1100	1130	,50	3675,0	ELHK	FAIL	OK	PULLED BACK INTO CSG WITH LOGGING TOOLS TO 3675M.
	1130	1300	1,50	3675,0	ELHK	FAIL	OK	SHEARED OUT WET CONNECTOR AND POOH WITH SAME. R/D BAKER ATLAS WIRELI NE SHEAVES. REMOVED SES.
	1300	1400	1,00	3675,0	RMRU	OK	OK	SLIPPED AND CUT DRILLING LINE.
	1400	1800	4,00		ELHK	FAIL	OK	POOH WITH PCL TO SURFACE. FLOW CHECKED BEFORE PULLING INTO BOP.
	1800	1900	1,00		ELHK	FAIL	OK	LAID DOWN LOGGING TOOLS. FOUND RUBBER END OF HOLE FINDER LOST IN HOL E, SIZE; 80 MM DIA, 350 MM LENGTH, WITH RUBBER GUIDE FINS.
	1900	2000	1,00		CERU	OK	OK	RIGGED UP TO RUN 7" LINER. HELD PRE JOB MEETING WITH INVOLVED PERSONNEL.
	2000	2400	4,00	161,0	CARU	OK	OK	RAN 7" SCAB LINER, P110, 32 PPF, BDS CONN. FIRST JT CUT AS MULESHOE BROKE ALL COLLARS AND BAKER LOCKED. RIH TO 161M.
99/05/31	0000	0130	1,50	204,0	CARU	OK	OK	CONTINUED RUNNING 7" SCAB LINER, RAN TOTAL 16 JTS AND TYPE "R" HNGR. FILLED HNGR CAVITY WITH 100L WATER.
	0130	0600	4,50	2638,0	CARU	OK	OK	RIH WITH 7" SCAB LINER ON 2 STANDS HWDP AND 5"DP. REDUCED SPEED DUE TO HEAVY BACK FLOW INSIDE PIPE. PUMPED SLUG AT 856M. CONTINUED RIH TO

								2638 M.
99/ 31	0600	0930	3,50	3899,0	CARU	OK	OK	CONTINUED RIH W/ 7" SCAB LINER ON 5" DP TO CSG WINDOW. RECORDED TORQUE, DRAG AND PRESSURE READINGS. CONTINUED RIH TO 3765M. ROTATED LINER PAST OBSTRUCTIONS W/10-20 RPM TO SETTING DEPTH 3899,35 MD, 3569.3 M TVD. TOP OF LINER 3707 MD.
	0930	1030	1,00	3899,0	CARU	OK	OK	BROKE CIRC AND STAGED UP TO 400 LPM. DROPPED BALL AND SET HANGER WIT H 30 MT DOWN WEIGHT. SET PACKER APPLYING 60 MT DOWN WEIGHT.
	1030	1530	5,00		CARU	OK	OK	FLOW CHECKED AND PUMPED SLUG. POOH AND LAID DOWN LINER R/TOOL.
	1530	1600	,50		ELWK	OK	OK	RIGGED UP TO PICK UP SLIM HOLE TUBULARS.
	1600	1800	2,00	280,0	ELWK	OK	OK	MADE UP CLEAN OUT BHA. 5 7/8" FLAT BTM MILL AND 5 15/16" WATER MELLO N MILL, PICKED UP 6 X 4 3/4" DC'S AND 24 JT 3 1/2" DP.
	1800	2200	4,00	1805,0	ELWK	OK	OK	CONTINUED RIH TO 1805 M.
	2200	2330	1,50	1805,0	DERD	FAIL	E FAIL	PERFORMED CRITICAL MAINTANANCE OF TOP DRIVE. CIRC HOLE WITH 680 LPM.
	2330	2400	,50	2150,0	ELWK	OK	OK	CONTINUED RIH WITH CLEAN OUT BHA.
99/06/01	0000	0200	2,00	3707,0	ELWK	OK	OK	CONTINUED RIH TO TOP OF LINER AT 3707M. BROKE CIRC EACH 1000 M.
	0200	0530	3,50		ELWK	OK	OK	WORKED MILLS ON TOP OF LINER. ROTATED AND WASHED 7" SCAB LINER TO SH OE AT 3899M. WORKED MILLS IN LINER MULESHOE. CONTINUED ROTATE AND WASH TO 4155M. WASHED IN HOLE TO 4273M.
	0530	0600	,50	4272,0	ELWK	OK	OK	CIRCULATING HOLE CLEAN W/2000 LPM AND 295 BAR.
	0600	0800	2,00	4273,0	ELWK	OK	OK	CONTINUED CIRCULATING HOLE CLEAN. HAD TORQUE AND STRING STALLING AT 4250M SEVERAL TIMES. BOOSTED RISER DURING CIRCULATION.
	0800	1600	8,00		ELWK	OK	OK	FLOW CHECKED AND PUMPED SLUG. DROPPED 2 3/4" DRIFT. POOH. CHANGED TO 3 1/2" HANDLING EQUIPMENT AND CONT POOH. LAID DOWN CLEAN OUT BHA. FOUND JUNK MARKS ON FLAT BOTTOM MILL.
	1600	1800	2,00		ELHK	OK	OK	RIGGED UP SCHLUMBERGER PCL TOOLS IN ROTARY. CHECKED TOOL STEM. HELD PRE JOB MEETING WITH INVOLVED PERSONNEL. INSTALLED RADIOACTIVE SOURCES.
	1800	2400	6,00	2354,0	ELHK	OK	OK	RIH WITH PCL/LDT-MDT-GR TO 2354M. RESTRICTED SPEED TO 3 MIN/ STAND T O BELOW BOP. CHANGED TO 5"EQUIPMENT. 1 MIN/STAND TRAVEL SPEED THEREAFT ER FILLED EACH 10 STAND.
../02	0000	0200	2,00	3619,0	ELHK	OK	OK	CONTINUED RIH TO 3619M.
	0200	0600	4,00	3625,0	ELHK	OK	OK	HELD PRE JOB SAFETY MEETING WITH PERSONNEL INVOLVED AND RIGGED UP WIRELINE SHEAVES IN DERRICK WHILST CIRCULATED 1 STRING CONTENT WITH MAX 1000 LPM. MEGGED LOGGING WIRE. INSTALLED SIDE ENTRY SUB. RIH W/ WET CONNECTOR AND LATCHED WITH 750 LPM ON 2ND ATTEMPT. PULL TESTED AND FUNCTIONED LOGGING TOOLS,OK. CLAMPED WIRE TO SES, TESTED, OK
	0600	0730	1,50	3920,0	ELOU	OK	OK	RIH W/SCHLUMBERGER PCL ON 5" DP TO 3920 M.
	0730	2400	16,50		ELOU	OK	OK	PERFORMED OH LOGGING.
99/06/03	0000	0200	2,00		ELOU	OK	OK	CONT PERFORMED OH LOGGING.
	0200	0300	1,00	3633,0	ELOU	OK	OK	PULLED OUT OF HOLE UNTIL SIDE ENTRY SUB AT DRILL FLOOR.
	0300	0430	1,50	3621,0	ELOU	OK	OK	PULLED WET CONNECTOR FREE. PULLED OOH W/LOGGING CABLE. L/D SAME. R/D SHEAVE IN DERRICK.
	0430	0600	1,50	2896,0	ELOU	OK	OK	POOH FROM 3621 M TO 2896 M.
	0600	1100	5,00		ELOU	OK	OK	POOH W/SCHLUMBERGER LOGGING STRING ON 3 1/2"/5" DP.
	1100	1230	1,50		ELOU	OK	OK	L/D LOGGING TOOL.
	1230	1730	5,00		ELOU	OK	OK	RECONFIGURATED LOGGING STRING AND PREPARED FOR NEW LOGGING RUN.
	1730	1830	1,00		ELOU	OK	OK	R/U EQUIPMENT AND TESTED WET CONNECTOR.
	1830	2400	5,50	2500,0	ELOU	OK	OK	RIH W/LOGGING TOOL ON 3 1/2"/5" DP TO 2500 M.
99/06/04	0000	0130	1,50	3617,0	ELOU	OK	OK	CONT RIH W/LOGGING STRING TO 3617M.
	0130	0300	1,50	3617,0	ELOU	OK	OK	PUMP ONE STRING VOLUME WHILE R/U BAKER ATLAS SHEAVE AND SIDE ENTRY SUB.
	0300	0500	2,00	3617,0	ELOU	OK	OK	INSTALLED SIDE ENTRY SUB. RIH W/WET CONNECTOR AND LATCHED SAME. PULL AND FUNCTION TESTED. CLAMPED WIRE TO SIDE ENTRY SUB. PERFORMED SAFET Y MEETING.
	0500	0600	1,00	3868,0	ELOU	OK	OK	RIH W/LOGGING STRING ON 3 1/2"/5" DP TO 3868M.
99/06/04	0600	0700	1,00	4075,0	ELOU	OK	OK	RIH W/LOGGING STRING ON 3 1/2"/5" DP FROM 3868M TO 4075M.
	0700	2230	15,50	4075,6	ELOU	OK	OK	TOOK SAMPLE IN ILE FM AT 4075,6M.
	2230	2400	1,50	4089,5	ELOU	OK	OK	RIH W/LOGGING STRING ON 3 1/2" /5" DP FROM 4075M TO 4089,5M.
16/05	0000	0100	1,00	4247,0	ELOU	OK	OK	ATTEMPTED TO TAKE SAMPLE IN TILJE FM. NO GO DUE TO TIGHT FM.
	0100	0230	1,50	3953,3	ELOU	OK	OK	PULLED UP FROM 4247M TO 3953,3M.
	0230	0600	3,50	3953,0	ELOU	OK	OK	START TAKING SAMPLE IN GARN FM AT 3953,3 M.
	0600	0630	,50	3953,3	ELOU	OK	OK	ATTEMPTED TO TAKE SAMPLE IN GARN FM AT 3953,3M. OPERATION ABORTED DU E TO GAS.
	0630	0730	1,00	3617,0	ELOU	OK	OK	SLUG PIPE AND POOH W/SCHLUMBERGER LOGGING TOOL ON 3 1/2" /5" DP UNTI L SIDE ENTY SUB AT DRILL FLOOR.
	0730	0900	1,50	3616,0	ELOU	OK	OK	PULL WET CONNECTOR FREE AND POOH W/CABLE. R/D WIRELINE EQUIPMENT.
	0900	1000	1,00	3616,0	RMRU	OK	OK	SLIPPED & CUT DRILLING LINE.
	1000	1530	5,50		ELOU	OK	OK	POOH W/SCHLUMBERGER LOGGING STRING ON 3 1/2" /5" DP.
	1530	1700	1,50		ELOU	OK	OK	L/D SCHLUMBERGER LOGGING STRING.
	1700	2300	6,00	4273,0	PAOU	OK	OK	M/U CEMENT STINGER AND RIH W/ SAME ON 3 1/2" /5" DP 4273M.
	2300	2400	1,00	4273,0	PAOU	OK	OK	R/U PUMP IN SUB, TIW AND LO TORQUE VALVE. FLUSH AND PRESS TEST LINE FROM CMT UNIT TO DRILL FLOOR, 345 BAR/5 MIN.
99/06/06	0000	0400	4,00	4273,0	PAOU	OK	OK	CIRC TWO WELL VOLUMES TO COOL DOWN WELL PRIOR TO CEMENTING, AND TO CONDITION MUD. MAX GAS 48%.
	0400	0600	2,00	4273,0	PAOD	FAIL	E FAIL	NOT ABLE TO BRING SILICA CEMENT FROM BULK TANK TO DAY TANK. FOUND HA RD CEMENT IN LINE. WORK TO SOLVE PROBLEM.
	0600	1730	11,50	4273,0	PAOD	FAIL	OK	NOT ABLE TO BRING SILICA CEMENT FROM BULK TANK TO DAY TANK.
	1730	1900	1,50	4273,0	PAOU	OK	OK	HELD PRE CEMENT MEETING. PUMPED 5,0 M3 1,58 SG SPACER 500E+, 6,0 M3 1,9 SG CEMENT SLURRY, GLASS G, AND 0,5 M3 1,58 SG SPACER 500E+. DISPLACE SAME AND SAT AS BALANCED PLUG.
	1900	2200	3,00	4120,0	PAOU	OK	OK	PULLED OUT OF PLUG TO 4120 M. CIRCULATED AND CONDITIONED MUD. HAD TRACES OF SPACER IN RETURN.
	2200	2300	1,00	4120,0	PAOD	FAIL	E FAIL	CONT CIRCULATING WHILE RECIEVING NEW SILICA CEMENT FROM BOAT.
	2300	2400	1,00	4120,0	PAOU	OK	OK	HELD PRE JOB CEMENT MEETING. INSTALLED CEMENT STD AND HOSE. RAN BACK IN TO 4120M.
99 07	0000	0100	1,00	4120,0	PAOU	OK	OK	PUMPED 5,0 M3 1,58 SG SPACER 500E+, 10,58 M3 1,90 SG CEMENT SLURRY,

								SILICA, AND 0,84 M3 1,59 SG SPACER 500E+. DISPLACED SAME AND SAT AS BALANCED PLUG.
	0100	0430	3,50	3854,0	PAOU	OK	OK	PULLED OUT OF PLUG TO 3854 M. CIRCULATED AND CONDITIONED MUD. HAD TRACES OF SPACER IN RETURN.
	0430	0530	1,00	3854,0	PAOU	OK	OK	PUMPED 5 M3 1,58 SG SPACER 500E+, 7,20 M2 1,90 SG CEMENT SLURRY, SILICA, AND 0,55 M3 1,58 SG SPACER 500E+. DISPLACED SAME AND SAT AS BALANCED PLUG.
	0530	0600	,50	3769,0	PAOU	OK	OK	START PULLING OUT OF CEMENT PLUG AT 3769M.
	0600	0630	,50	3557,0	PAOU	OK	OK	CONT PULLED OUT OF CEMENT PLUG TO 3557M.
	0630	0830	2,00	3557,0	PCCU	OK	OK	CIRCULATED AND CONDITIONED MUD. HAD TRACES OF SPACER AND CEMENT IN RETURN.
	0830	1100	2,50	1175,0	PTTU	OK	OK	PUMPED SLUG AND POOH TO 1175M.
	1100	1500	4,00	410,0	PTPU	OK	OK	CONT POOH TO 410M LAYING DOWN EXCESS 5" (60 JTS) AND 3 1/2" (19JTS) DP
	1500	1600	1,00		PTTU	OK	OK	CONT POOH.
	1600	2130	5,50	3537,0	PTTU	OK	OK	M/U NEW BHA AND RIH TO 3537M.
	2130	2230	1,00	3627,0	PSTU	OK	OK	WASHED DOWN FROM 3537M. SAT DOWN 10 T AT 3627M.
	2230	2400	1,50	3627,0	PAOU	OK	OK	CIRCULATED TO CONDITION MUD PRIOR TO PRESS TEST CEMENT PLUG.
99/06/08	0000	0100	1,00	3627,0	PSTU	OK	OK	R/U FOR AND PRESSURE TESTED CEMENT PLUG TO 230 BAR.
	0100	0200	1,00	3627,0	PAOU	OK	OK	PUMPED 15 M3 SLOP AND DISPLACED SAME.
	0200	0300	1,00	3460,0	PTPU	OK	OK	POOH TO 3460 M WHILE L/D 5" DP.
	0300	0530	2,50	1800,0	PTTU	OK	OK	POOH TO 1800 M.
	0530	0600	,50	1800,0	PSSU	OK	OK	PUMP AND DIPLACED HI-VISC PILL FROM 1800M TO 1700M. PULLED OUT SAME TO 1700M.
99/06/08	0600	0900	3,00	1700,0	PCCU	OK	OK	DISPLACED TO 1,50 SG OBM.
	0900	1500	6,00		PTTU	OK	OK	POOH AND L/D EXCESS 5" DP (167 JNTS).
	1500	1600	1,00		PTPU	OK	OK	L/D BHA. P/U JAR W/STUCK RABBIT, REMOVED SAME.
	1600	1800	2,00	1290,0	PTPU	OK	OK	MADE UP 9 5/8" CSG CUTTER ASSY.
	1800	2030	2,50	1703,0	PTTU	OK	OK	M/U ANNULAR MARINE SWIVEL, ANNULAR SWIVEL, PUP JNTS AND X-OVERS. INSTALL DIVERTER INSERT PACKER AND CONT RIH. LAND OUT IN WH. HELD PR E JOB/SAFETY MEETING.
	2030	2130	1,00	1703,0	PACU	OK	OK	CUT 9 5/8" CASING AT 1703,4 MMD W/CLOSED ANNULAR AND RETURN THROUGH CHOKE.
	2130	2230	1,00	1703,0	PACU	OK	OK	OPERATED ANNULARS TO CHECK FOR PRESS. DIVERTER CLOSED. OBSERVED WELL ON TRIP TANK.
	2230	2400	1,50	1600,0	PTTU	OK	OK	SLUGGED PIPE AND POOH TO 1600M.
99/06/09	0000	0330	3,50		PCCU	OK	OK	CONT POOH. L/D SWIVELS AND CASING CUTTING EGUIPMENT.
	0330	0500	1,50	412,0	PAOU	OK	OK	M/U JET SUB AND WEAR BUSHING RETRIEVING TOOL. RIH TO WELL HEAD AT 412 M.
	0500	0600	1,00	412,0	PAOU	OK	OK	WASHED WELL HEAD. EGAGED WEAR BUSHING RETRIEVING TOOL AND PULLED WEAR BUSHING FREE W/ 30 TONNS O/P. JETTED SEAL AREA.
	0600	0800	2,00		PACU	OK	OK	POOH WITH WEAR BUSHING AND LAID DOWN SAME.
	0800	1200	4,00	412,0	PACU	OK	OK	MADE UP SEAL ASSEMBLY PULLING TOOL AND JET SUB. RIH AND JETTED WELL HEAD. ATTEMPTED TO LATCH SEAL ASSEMBLY. PULLED BACK TO WELL HEAD AND JETTED SAME. RIH. CLOSED UPPER ANNULAR PREVENTER. HELD 45 BAR TO CHE CK SEAL ASSEMBLY. ATTEMPTED TO ENGAGED TOOL. BLED OFF PRESSURE AND PULL ED WITH 40 TONS OVERPULL.
	1200	1300	1,00	412,0	PACU	OK	OK	CHECKED FOR PRESSURE. FLOW CHECKED WELL OVER CHOKE. CIRCULATED CHOKE AND KILL LINES AND CYCLED ANNULARS. NO GAS.
	1300	1530	2,50		PACU	OK	OK	POOH WITH SEAL ASSEMBLY PULLING TOOL. FOUND SEAL ASSEMBLY LEFT IN WE LL HEAD. CHANGED OUT TOOL AND RACKED SAME IN DERRICK.
	1530	1900	3,50	412,0	PACD	FAIL	O FAIL	RIH WITH 1 STAND HWDP, JET SUB AND 3 X 6 1/2" DC BELOW NEW PULLING TOOL.
	1900	2100	2,00		PACD	FAIL	O FAIL	ENGAGED AND POOH WITH SEAL ASSEMBLY. RACKED 6 1/2" DC'S AND 1 STD HW DP IN DERRICK.
	2100	2400	3,00	412,0	PACU	OK	OK	MADE UP 9 5/8" SPEAR ASSEMBLY ON U-170 DP. RIH TO 416 M. ENGAGED SPE AR AND PULLED CASING FREE AND PU TO 412 M.
99/06/10	0000	0200	2,00	1704,0	PACU	OK	OK	FILLED TRIP TANK. CIRCULATED BETWEEN CASINGS THROUGH CHOKE AND KILL LINE 46 M3 AT 700 LPM.
	0200	0230	,50	1704,0	PACU	OK	OK	CLOSED DIVERTER PACKER. CLOSED LOWER AND OPENED UPPER ANNULAR AND REPEATED PROCESS TO RELEASE GAS BUBBLES TO SURFACE. CONFIRMED NO GAS .
	0230	0330	1,00	1704,0	PACU	OK	OK	CIRCULATED RISER, 76 M3 AT 1200 LPM.
	0330	0400	,50	1704,0	PACU	OK	OK	FLOW CHECKED AND SLUGGED PIPE.
	0400	0500	1,00	1704,0	PACU	OK	OK	WORKED 9 5/8" CASING HANGER THROUGH BOP CAVITIES AND FLEX JOINT BY OPERATING ANNULARS ALTERING WITH 28 BAR OPENING/CLOSING PRESSURE.
	0500	0600	1,00	1435,0	PACU	OK	OK	POOH WITH 9 5/8" CASING TO 1435 M.
	0600	0700	1,00		PACU	OK	OK	CONTINUED POOH FROM 1435 M W/ 9 5/8" CASING. RELEASED SPEAR ASSEMBLY .
	0700	1630	9,50		PAOU	OK	OK	LAID OUT 9 5/8" CASING AND HANGER.
	1630	1730	1,00		PAOU	OK	OK	RIG DOWN WEATHERFORD CASING EQUIPMENT.
	1730	2000	2,50	1704,0	PTWU	OK	OK	M/U MULESHOE TO 3 1/2" STINGER, AND RIH W/ 14 STANDS. CONTINUED W/ 5 " DRILL PIPE AND RIH TO 1704 M.
	2000	2230	2,50	1704,0	PCCU	OK	OK	CONDITIONED MUD AND CIRCULATED 1,5 X BTMS UP AT 2800 LPM PRIOR TO CEMENT JOB.
	2230	2300	,50	1704,0	PSSU	OK	OK	R/U CEMENT HOSE. TESTED CEMENT LINE TO 200 BAR/5 MIN.
	2300	2330	,50	1704,0	PSSU	OK	OK	MIXED CEMENT AND PERFORMED CEMENT JOB WITH 1,95 SG CEMENT. SET A 124 M CEMENT PLUG FROM 1704 TO 1580 M.
	2330	2400	,50	1704,0	PTWU	OK	OK	BROKE AND LAID DOWN CIRCULATION SUB.
99/06/11	0000	0100	1,00	1400,0	PTWU	OK	OK	POOH 10 STANDS OF 5" DRILL PIPE TO 1400 M.
	0100	0200	1,00	1400,0	PCCU	OK	OK	CIRCULATED BTMS UP AT 2700 LPM AT 270 BAR. SLUGGED PIPE.
99/06/11	0200	0600	4,00	503,0	PTPU	OK	OK	POOH W/ CEMENT STINGER AND LAYING DOWN DRILL PIPE TO 503 M.
	0600	0830	2,50		PTWU	OK	OK	CONTINUED POOH. L/D 5" AND 3 1/2" DRILL PIPE.
	0830	1230	4,00	730,0	PSMU	OK	OK	M/U 13 3/8" BRIDGE PLUG TO 5" DRILL PIPE. RIH TO 730 M. FILLED PIPE AND SET PLUG AT 730 M. PRESSURE TESTED BRIDGE PLUG TO 100 BAR.
	1230	1500	2,50	730,0	PCCU	OK	OK	CIRCULATED BTMS UP. DISPLACED WELL FROM 1,5 SG OBM TO 1,05 SG WBM. CIRCULATED/ CONDITIONED SAME. SLUGGED PIPE WITH 5 M3 1,15 SG KCL-BRI NE
	1500	2030	5,50		PTWU	OK	OK	POOH. LAID OUT EXCESS DRILL PIPE AND BRIDGE PLUG RUNNING TOOL.
	2030	2130	1,00		PACU	OK	OK	HELD TOOLBOX MEETING FOR CUTTING OF CASING. M/U 13 3/8" CASING CUTTE R AND SERVICED SAME.
	2130	2400	2,50	724,0	PTWU	OK	OK	RIH TO 724 M WITH 13 3/8" CASING CUTTER.

99/[illegible]2	0000	0100	1,00	724,0	PACU	OK	OK	LINED UP TO START CUTTING CASING. CUT 13 3/8" CASING. FLOW CHECKED.
	0100	0400	3,00		PTWU	OK	OK	POOH WITH CASING CUTTER ASSEMBLY.
	0400	0600	2,00	412,0	PTWU	OK	OK	MU JET SUB AND 13 3/8" SEAL ASSEMBLY RETRIEVING TOOL ON 5" DP. RIH T O 412,5 M. STARTED WASHING WELL HEAD AREA.
	0600	0630	,50	412,0	PCCU	OK	OK	CONTINUED JETTING WELL HEAD.
	0630	0700	,50	412,0	PCCU	OK	OK	LATCHED SEAL ASSEMBLY. PULLED SEAL ASSEMBLY FREE WITH 45 TON OVERPUL L. OBSERVED PRESSURE AT 10 BAR. BLED OFF PRESSURE. OBSERVED PRESSURE AT ZERO FOR 10 MIN. LINED UP TO CROSS CIRCULATE BOP.
	0700	0800	1,00	412,0	PCCU	OK	OK	CIRCULATED THROUGH CHOKE. FLOW CHECKED. OPENED ANNULAR AND DIVERTER. FLOW CHECKED.
	0800	0930	1,50		PTWU	OK	OK	POOH WITH SEAL ASSEMBLY AND LAID OUT SAME. RACKED 6 1/2" DRILL COLLA RS IN DERRICK.
	0930	1200	2,50	660,0	PTWU	OK	OK	M/U 13 3/8" CASING SPEAR/PACK OFF ASSEMBLY. RIH. ENGAGED CASING. CLOSED ANNULAR. PULLED CASING FREE WITH 55 TONS O/P. PULLED UP 7 M.
	1200	1500	3,00	660,0	PCCU	OK	OK	FLOW CHECKED. 14 BAR ON DP. CIRCULATED CONTENT BETWEEN 13 3/8" AND 20" CASING. HAD 50 % RETURNS DURING CIRCULATION. FLOW CHECKED.
	1500	1530	,50	510,0	PTWU	OK	OK	OPENED ANNULAR. PULLED 5 STANDS. BACKFLOWED AT FIRST STDS.
	1530	1700	1,50	510,0	PCCU	OK	OK	CONTINUED CIRCULATING AT RATE UP TO 1300 LPM. MAX GAS 35 % AT BTMS U P. FLOW CHECKED.
	1700	1830	1,50	255,0	PTWU	OK	OK	POOH WITH 5" DRILL PIPE AND 13 3/8" CASING. LANDED CASING IN SLIPS. RELEASED SPEAR FROM CASING. RACKED ASSEMBLY IN DERRICK.
	1830	2000	1,50	255,0	PACU	OK	OK	R/U TO PULL AND LAY OUT 13 3/8" CASING.
	2000	2400	4,00		PACU	OK	OK	POOH WITH 13 3/8" CASING AND LAID OUT SAME. RIGGED DOWN CASING EQUIPMENT.
99/06/13	0000	0130	1,50	720,0	PTWU	OK	OK	RIH WITH 5" OPEN ENDED DRILL PIPE TO 720 M.
	0130	0330	2,00	720,0	PCCU	OK	OK	CIRCULATED 1,5 TIMES BTMS UP TO CONDITION MUD W/ 2400 LPM CIRC RATE. MAX GAS PEAK OF 99,7 % AT BTMS UP. NO LOSSES TO FORMATION.
	0330	0430	1,00	720,0	PSSU	OK	OK	TESTED CEMENT HOSE AND SURFACE LINES TO 200 BAR/5 MIN. PUMPED 5 M3 SPACER. MIXED AND PUMPED 10,6 M3 GAS TIGHT CEMENT AND SET BALANCED CEMENT PLUG FROM 720 TO 660 M.
	0430	0600	1,50	650,0	PCCU	OK	OK	POOH FROM 720 TO 650 M. CIRCULATED BTMS UP WITH INCREASING RATE IN STEPS TO 2650 LPM WHILE ROTATING PIPE.
	0600	0630	,50	650,0	PCCU	OK	OK	CIRCULATED BTMS UP. MAX 2,5 % GAS AT BTMS UP.
	0630	0800	1,50	650,0	PSSU	OK	OK	TESTED CEMENT HOSE AND LINES TO 200 BAR/5 MIN. PUMPED 36,6 M3 1,90 S G CEMENT SLURRY AND SET BALANCED CEMENT PLUG FROM 650 TO 445 M.
	0800	0830	,50	440,0	PTWU	OK	OK	POOH FROM 650 TO 440 M. CIRC BTMS UP AT 2650 LPM. DISPLACED RISER TO SEA WATER.
	0830	0930	1,00	440,0	PCCU	OK	OK	CIRCULATED AND CONDITIONED MUD. CYCLED RAMS ON BOP TO CLEAN FOR CMT. FLOW CHECKED.
	0930	1630	7,00		PTWU	OK	OK	POOH. LAID OUT EXCESS DP, DC, HWDP. LAID OUT HANG OFF TOOL ASSEMBLY, 13 3/8" SPEAR ASSEMBLY AND MARINE SWIVEL-ASSEMBLY.
	1630	1730	1,00		RMRU	OK	OK	SLIP AND CUT 32 M DRILLING LINE.
	1730	2030	3,00		BBRU	OK	OK	RIGGED UP TO PULL RISER AND BOP. HELD PREJOB SAFETY MEETING WITH CRE W INVOLVED IN OPERATION.
	2030	2330	3,00	412,0	BBRU	OK	OK	LAID OUT DIVERTER. PICKED UP HANDLING JOINT. COLLAPSED AND NIPPLED U P JOINT.
99/06/13	2330	2400	,50	412,0	BBRU	OK	OK	UNLATCHED BOP. PULLED CLEAR OFF GUIDE POSTS.
99/06/14	0000	0500	5,00	412,0	BBRU	OK	OK	NIPPLED DOWN KILL, CHOKE AND BOOSTER LINES. REMOVED POD SADDLES. PICKED UP AND LATCHED SUPPORT RING TO DIVERTER HOUSING.
	0500	0600	1,00	398,0	BBRU	OK	OK	PULLED AND LAID OUT HANDLING JOINT AND SLIP JOINT.
	0600	0800	2,00	350,0	BBRU	OK	OK	CONTINUED POOH WITH RISER AND BOP FROM 398 TO 350 M.
	0800	0930	1,50	350,0	BBRD	FAIL	O FAIL	WIRE FOR YELLOW POD WAS SPLICED W/ WIRE CLAMPS. FIRST SPLICING SLEEV E WAS TOO RIGID TO ENTER SHEAVE. SECOND SPLICING SLEEVE SLIPPED.
	0930	2400	14,50	50,0	BBRU	OK	OK	CONTINUED POOH WITH RISER AND BOP FROM 350 TO 50 M.
99/06/15	0000	0030	,50		BBRU	OK	OK	CONTINUED POOH WITH RISER AND BOP FROM 50 M.
	0030	0400	3,50		BBRU	OK	OK	LANDED BOP ON BEAMS. NIPPLED DOWN.
	0400	0600	2,00		BBOD	FAIL	E FAIL	BURNED OFF GUIDES ON BOP CRANE. NOT ABLE TO SKID CRANE PAST FIRST GR IP BARS. STARTED TO DISCONNECT LMRP.
	0600	0900	3,00		BBRU	OK	OK	SPLIT LMRP AND PARKED SAME ON STUMP.
	0900	1000	1,00		BBOU	OK	OK	CLEANED AND LUBRICATED TRACK FOR BOP CRANE. PERFORMED TEST RUN OF BO P CRANE.
	1000	1200	2,00		LXXD	FAIL	OK	REMOVED BOP TEST STUMP. INSTALLED KOS ALIGNMENT JIG.
	1200	1500	3,00		LXXD	FAIL	OK	CONNECTED OVER HEAD CRANE TO STACK. MOVED STACK AND LANDED SAME ON K OS ALIGNMENT JIG.
	1500	1700	2,00		BBOU	OK	OK	LAID OUT 2 X 50 FT RISER. RIGGED DOWN RISER EQUIPMENT. CHANGED BAILS AND ELEVATORS.
	1700	2030	3,50		LXXD	FAIL	O FAIL	ATTEMPTED TO MOUNT KOS ORIENTATION PIN TO STACK. WRONG TYPE X-OVER SENT TO RIG. ABORTED OPERATION. MOVED STACK BACK ON BEAMS. REMOVED K OS ALIGNMENT JIG. INSTALLED BOP TEST STUMP AND LANDED STACK.
	2030	2400	3,50		PAHU	OK	OK	HELD PREJOB MEETING FOR CUTTING OPERATION WITH INVOLVED PERSONNEL. P /U 3 JNTS OF 8" DC'S. MU 20" AND 30" CASING CUTTING ASSY.
99/06/16	0000	0230	2,50		PAHU	OK	OK	CONTINUED M/U CASING CUTTING ASSY. ENGAGED TDS AND FUNCTION TESTED SAME. INSTALLED GUIDE ROPES AND LOCK PINS FOR ROV ON MOST TOOL.
	0230	0400	1,50	421,0	PAHU	OK	OK	JUMPED ROV. RIH WITH CUTTING ASSEMBLY TO TOP WELL HEAD. STABBED IN T O 18 3/4" HOUSING.
	0400	0430	,50	421,0	PACU	OK	OK	STARTED TO CUT CASING. SHUT DOWN DUE TO HYDRAULIC LEAK ON ROV.
	0430	0500	,50	421,0	PACD	FAIL	E FAIL	PULLED ROV TO SURFACE. REFILLED HYDRAULIC OIL. JUMPED ROV BACK INTO WATER.
	0500	0600	1,00	421,0	PAHU	OK	OK	CONTINUED TO CUT 20" X 30" CASINGS.
	0600	0630	,50	421,0	PAHU	OK	OK	CONTINUED CUTTING 20" X 30" CASINGS. GOT INDICATIONS OF COMPLETED CU T.
	0630	0700	,50	420,0	PAHU	OK	OK	LATCHED MOST TOOL TO 18 3/4" HOUSING. ROV ENGAGED LOCK PINS. CONFIRM ED CASING CUT AND FREE.
	0700	0930	2,50		PAHU	OK	OK	PULLED PGB AND CASING STUMPS TO SURFACE. LANDED PGB ON BEAMS. RELEAS ED MOST TOOL AND RACKED SAME BACK IN DERRICK.
	0930	1400	4,50		PAHU	OK	OK	SECURED PGB ON BEAMS. RELEASED 30" HOUSING FROM PGB AND PULLED 20" A ND 30" CASING STUMPS TO DRILL FLOOR AND LAID DOWN SAME. STARTED TO DEBALLAST RIG AT 11:00 HRS.
	1400	1900	5,00		MNBU	OK	OK	CONTINUED DEBALLASTING RIG TO MIDDLE DRAFT, 9.3 M. SIMULTANEOUSLY LAID DOWN CUTTING ASSEMBLY AND EXCESS TUBULARS FROM

							DERRICK.
	1900	2030	1,50	MARU	OK	OK	STARTED ANCHOR HANDLING OPERATIONS WITH AHV'S MAERSK DETECTOR, MAERS K PUNCHER AND OLYMPIC SUPPLIER. SIMULTANEOUSLY LAYING DOWN EXCESS TUBULARS FROM DERRICK.
	2030	2100	,50	MARD	FAIL	E FAIL	STARTED HANDLING ANCHOR NO 9 AND NO 12. CHAIN ON ANCHOR NO 9 PARTED AT 20.48 HRS. SLACK WAS GIVEN FOR BOAT TO HANDLE ANCHOR. BRAKES ON ANCH OR WINCH COULD NOT HOLD BACK TENSION. STOPPER WAS ACTIVATED WHEN TENTIO N WAS REDUCED. CHAIN PARTED. ALSO LOST ANCHOR-TENTION ON NO 7 AND ANCHOR CHAIN DROPPED OVER BOARD.
	2100	2300	2,00	MARU	OK	OK	SLACKED OFF TENSION TO ANCHOR NO 1, 2 AND 3. ANCHOR NO 12 ON DECK ON MAERSK DETECTOR AT 21:44 HRS. LIFTED ANCHOR NO 3 OFF BTM WITH OLYMPI C SUPPLIER.
99/06/16	2300	2400	1,00	MARU	OK	OK	ANCHOR NO 3 IN BOLSTER AT 23:20 HRS, (OLYMPIC SUPPLIER). SAME VESSEL STARTED ON ANCHOR NO 4. MAERSK PUNCHER RETRIEVED NO 9 ANCHOR AND CHA IN
99/06/17	0000	0100	1,00	MARU	OK	OK	OLYMPIC SUPPLIER LIFTED ANCHOR NO 4 OFF BTM. OPERATION WAS STOPPED A T 00:50 HRS DUE TO TOO ROUGH WAVES. CRANED LAID DOWN DUE TO WIND UP TO 50 KNOTS.
	0100	0600	5,00	MNWW	OK	OK	WAITING ON WEATHER DUE TO STRONG WIND AND HIGH WAVES. AT 04:30 HRS CHASER RING ON ANCHOR NO 4 PARTED FROM PENNANT ON OLYMP IC SUPPLIER.
	0600	2400	18,00	MNOW	OK	OK	WOW. AT 15:25 HRS BYFORD DOLPHIN STARTED PULLING IN ANCHOR NO 12, USING M'RSK DETECTOR. NO 12 ANCHOR IN BOLSTER AT 17:17 HRS AND PENNA NT SECURED AT 17:29 HRS. AT 19:50 HRS STARTED BALLASTING RIG TO SURVIVAL DRAFT, COMPLETED AT 23:25 HRS.
99/06/18	0000	0600	6,00	MNOW	OK	OK	CONTINUED WOW DUE TO HIGH WAVES. A.H.VESSELS NOT ABLE TO WORK. MEANWHILE CHANGING ELMAGCO ON DRILL FLOOR.
	0600	2400	18,00	MNOW	OK	OK	CONTINUED WOW DUE TO HIGH WAVES. A.H.VESSELS NOT ABLE TO WORK. MEANWHILE CHANGING ELMAGCO ON DRILL FLOOR.
.19	0000	0600	6,00	MNOW	OK	OK	CONTINUED WOW DUE TO HIGH WAVES. A.H.VESSELS NOT ABLE TO WORK. MEANWHILE CHANGING ELMAGCO ON DRILL FLOOR.
	0600	1430	8,50	MNOW	OK	OK	CONTINUED WOW DUE TO HIGH WAVES. A.H VESSELS NOT ABLE TO WORK. NORMAND ATLANTIC STARTED GRAPPLING FOR ANCHOR # 7 AT 0715, GRAPPLED AT 0720, SECURED ANCHOR ON DECK 0755, STORED IN CHAIN LOCKER, NORMAND ATLANTIC, AT 1050 HRS. DEBALLASTED RIG, IN TRANSIT DRAUGHT AT 1330 HRS.
	1430	2400	9,50	MARU	OK	OK	PULLED ANCHORS (SEE REMARKS). NORTHERN ATLANTIC STARTET ANCHOR HANDLING AT 1423 HRS. M'RSK PUNCHER STARTET ANCHOR HANDLING AT 1513 HRS. OLYMPIC SUPPLIER STARTED ANCHOR HANDLING AT 1815 HRS. CONNECTED UP M'RSK PUNCHER TO BRIDLE AT 21:25 HRS (4 ANCHORS LEFT).
99/06/20	0000	0600	6,00	MARU	OK	OK	PULLED ANCHORS (SEE REMARKS).
	0600	0830	2,50	RMMU	OK	OK	BACKLOADED EXCESS EQUIPMENT TO OLYMPIC SUPPLIER.
	0830	1300	4,50	MARU	OK	OK	ANCHOR HANDLING, SEE GENERAL REMARKS. COMPLETED ANCHOR HANDLING AND RACKED ANCHOR NO 8 ON BOLSTER. MEANWHILE SECURED ANCHOR NO 3 W/WIRE. OPERATION COMPLETED ON 6507/3-3B. RIG UNDER TIGHT TOW FROM 13:00 HRS . M'RSK PUNCHER IN TOWING BRIDLE. RIG ON CONTRACT ON 9/2-9S FROM 04:30 HRS. AT 20/6/99 DUE TO 8.5 HRS. W/KOS OPERATIONS DURING WELL 6507/3- 3B

4.7.2 Sidetrack Cement Plugs

Problem description:
1. sidetrack plug, 3A: After an unsuccessful attempt to open hole sidetrack the well, a kick off plug was set from 4090 mMD to 3940 mMD using a 3 1/2" cement stinger. 4 m^3 of 1.90 SG OBM was set as a base for the plug prior to circulating 1.5 times bottoms up. Pumped 5 m^3 of 1.60 SG spacer prior to mixing and pumping 6.6 m^3 of 1.95 SG cement slurry, followed by 0.6 m^3 of 1.60 SG spacer. Displaced cement with 32.2 m^3 of 1.25 SG OBM at 1590 lpm. Rotated string slowly at 50 RPM when cement entered annulus. Pumped and rotated slowly from 4090 mMD to 3890 mMD at 158 l/std. Circulated bottoms up at 3890 mMD prior to pulling out of hole, getting 0.5 m^3 of cement in returns. When running in hole with the kick-off assembly, no hard cement was found downhole. Attempts were made to make grooves for sidetracking without success.

2. sidetrack plug, 3A: A 3.7 m^3 of 105 kg/m^3 bentonite pill was set from 4100 mMD to 4000 mMD. 2 full circulations were made prior to pumping 3 m^3 of LTO, 8 m3 of 1.50 SG spacer. Mixed and pumped 12.5 m^3 of 2.0 SG cement slurry, followed by 2.0 m^3 of spacer and a 3 1/2" x 5" wiper plug. Displaced cement at 2600 lpm and 100 RPM with a total of 2313 strokes. Pumped and rotated slowly out of hole to 3700 mMD at 168 l/std. Circulated hole clean prior to pulling out of hole, getting traces of cement at bottoms up. Ran in hole with kick-off assembly and washed soft cement down to 3806 mMD, 12 meters below 9 5/8" casing shoe, where it was observed resistance. Several attempts of sidetracking the well were performed from 3806 mMD down to 3876 mMD, without success. Hard cement was confirmed at 3829 mMD by 7 tons down weight and no pumps on, and soft cement was washed from 3840 mMD - 3873 mMD and 3876 mMD - 3895 mMD.

3. sidetrack plug, 3A: This plug was originally planned to be a P&A plug, but while circulating the well prior to cementing this plan was changed. A sidetrack plug was set at 3895 mMD by pumping 8 m^3 of 1.5 SG 500E spacer, 8.1 m^3 of 2.0 SG cement slurry followed by 2.0 m^3 of 1.5 SG 500E spacer. Displaced cement with 1.25 SG OBM at 2300 lpm and 150 RPM to a total of 26.5 m^3. Pumped out of hole to 3695 mMD at 448 l/stand with 150 RPM. Total displacement was 29.5 m^3. Circulated hole clean prior to pulling out of hole, getting only traces of cement in returns at bottoms up. Ran in hole with a clean out assembly and drilled firm cement from 3676 to 3761 mMD. Verified good cement at 3761 mMD by setting down 10 tons of weight. Circulated hole clean prior to pulling out with the clean out assembly. A whipstock was set at 3761 mMD and a window was milled through the 9 5/8" casing at 3752 mMD.

Findings
1. Kick-Off Plug:

- The drilling supervisor offshore wanted to increase the thickening time of the recommended slurry in order to prevent going stuck in cement. Since the slurry is designed to be set in a sensitive temperature area, increasing the thickening time from 3 hours to 4,5 hours decreased the cement slurry density from 2.0 SG to 1.95 SG.

- The B&B adviser in cementing was not consulted prior to designing and planning of the first cement plug, but was consulted prior to setting the next cement plugs.
- No special attention was paid to setting procedure and cement volume to be pumped by the onshore personnel prior to the job. The plug was set as a 150 meter balanced plug with 20% excess volume.

2. Kick-Off Plug:

- This plug was recommended to be set by the Pump & Pull Method, but this was not done.
- Many things had been optimised prior to setting the second kick-off plug:
  - A Hi-Vis Bentonite pill was set as a base for the cement plug
  - The cement slurry volume was doubled compared to the first plug to give a 300 meters plug.
  - The cement slurry design was based upon a static temperature of 100 degrees Celsius - this was a 24 hours undisturbed temperature logged by the MWD tool, and hence only 1/3 of the retarder volume used in the first plug was necessary.
- The cement plug being hard at the top and softer towards bottom was post well explained by cement contamination due to overdisplacing plug with 2.5 m^3 mud.

3. Plug:

- P&A was planned for, but while circulating before pumping the cement, it was decided that another kick-off plug was to be pumped. This plug was finally used as a seat for a casing whipstock.
- The 200 meters plug was correctly set by the advised Pump & Pull Method.
- Filter loss control was optimised due to the permeable Garn Formation (Halad 600LE content was doubled from 3 l to 6 l)

Conclusions

After it was decided to kick-off the well from vertical, several options of what to do next were always present. This forced the involved personnel, both Statoil and Halliburton, to continuously accommodate new plans and options with the best available solutions.

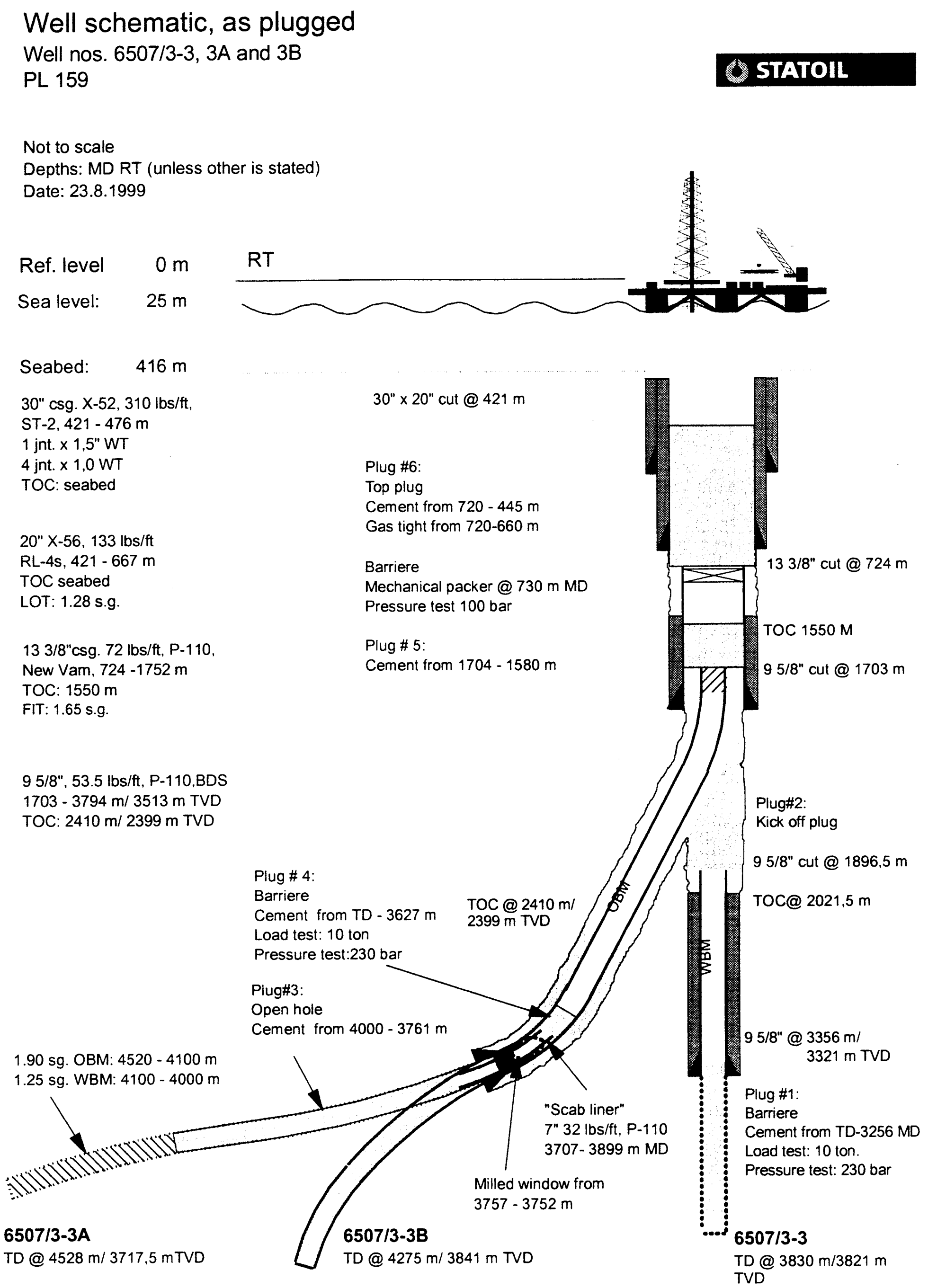
- Planning the first plug, more focus was being put on thickening time of the cement slurry than on optimising other aspects of the job like properties of the plug, placement procedure and recommended volume of the plug. It seems that the complexity of setting cement plug in this well with the given angle and temperature, was underestimated. More effort should be put on optimising the design and procedures prior to the job, both from Statoil and Halliburton, to do it right the first time.
- The well project being situated in Harstad, and the Statoil support team and the Halliburton co-ordinator being based in Stavanger, is a factor that complicates the communication and

the planning phase prior to the cementing jobs. Working with many different alternatives, and a short period of time to optimise the chosen solution, makes it even more challenging.

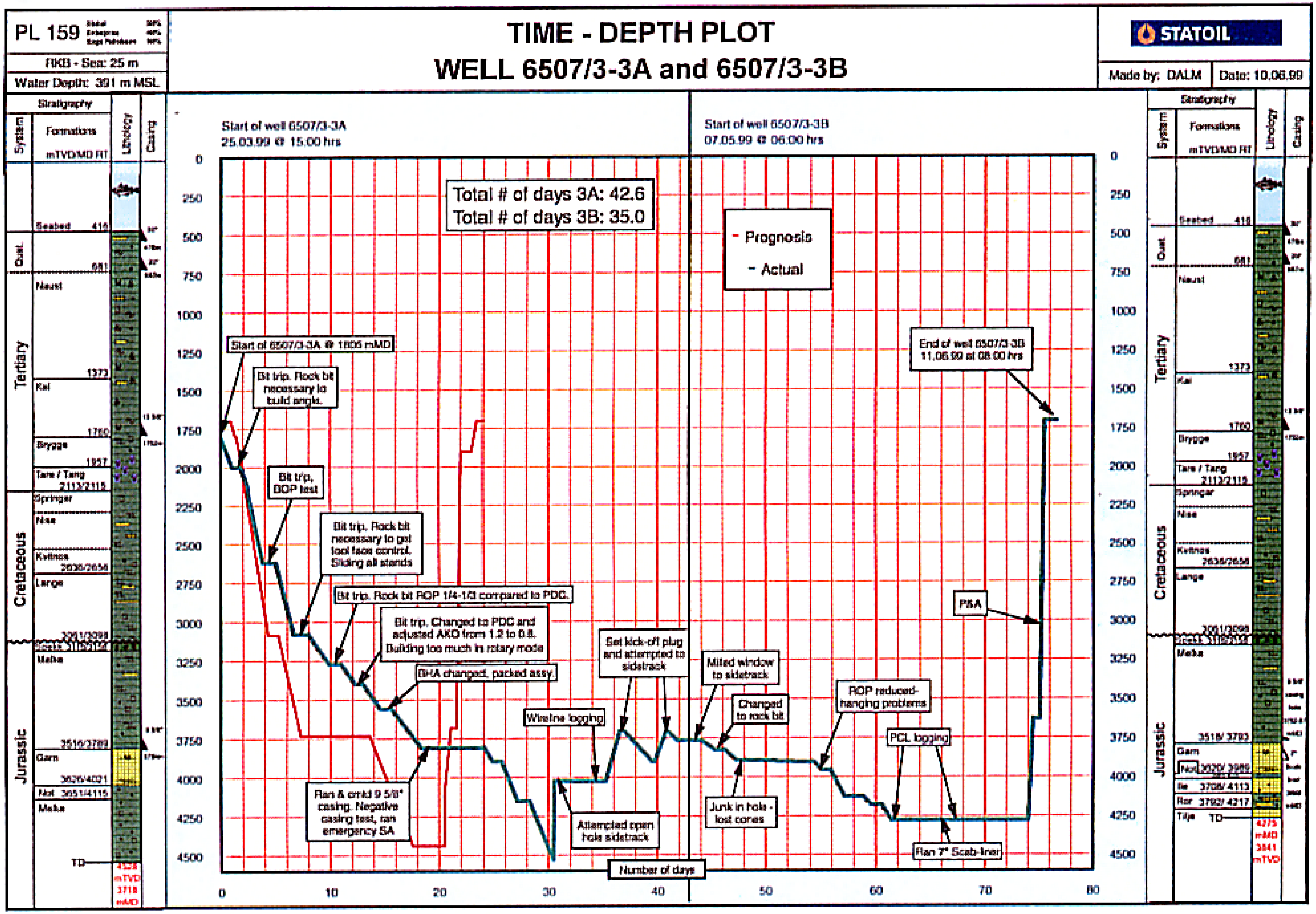
- The actual causes for the second plug to fail was not proven prior to setting plug no. 3, however the reported overdisplacement is the most probable cause and was discovered at a later stage. The cement plug being hard at the top and softer towards bottom support this theory. Errors in displacement calculations is unnecessary and could easily be avoided. All calculations prior to a job should always be double-checked by the involved personnel, especially from the Statoil and Halliburton representatives. The control routines need to be improved.
- Setting the third plug, all recommendations given prior to the job were followed, hence this seemed to be a successful plug. The recommended Pump & Pull Method was used.
- For optimum plug setting:
  - More circulation prior to cementing to reduce the circulating temperature, especially in temperature sensitive area, will improve the strength development of the cement plug.
  - Use of the Pump & Pull Method, pumping 1/3-1/2 of the volume before pulling.
  - Rotate the string with 100-150 RPM while pulling the string.
  - Use of a bentonite pill as a base for the cement plug.
  - At least a 200 meters plug plus excess is needed to get a good sidetrack plug.

4.8 Appendix 3 : Figures and tables

4.8.1 Well bore schematic



4.8.2 Time/depth curve



PL 159
RKB - Sea: 25 m
Water Depth: 391 m MSL
TIME - DEPTH PLOT
WELL 6507/3-3A and 6507/3-3B
STATOIL
Made by: DALM
Date: 10.06.99
Stratigraphy
System
Formations
mTVD/MD RT
Lithology
Casing
Seabed 416
Quat
681
Naust
Tertiary
1373
Kai
1760
Brygge
1957
Tare / Tang
2113/2115
Springar
Nise
Kvitnos
2636/2656
Lange
Cretaceous
3061/3098
Melke
Jurassic
3516/3789
Garn
Not
Melke
TD
Start of well 6507/3-3A
25.03.99 @ 15.00 hrs
Start of well 6507/3-3B
07.05.99 @ 06.00 hrs
Total # of days 3A: 42.6
Total # of days 3B: 35.0
Prognosis
Actual
Start of 6507/3-3A @ 1805 mMD
Bit trip. Rock bit necessary to build angle.
Bit trip, BOP test
Bit trip. Rock bit necessary to get tool face control. Sliding all stands
Bit trip. Rock bit ROP 1/4-1/3 compared to PDC.
Bit trip. Changed to PDC and adjusted AKO from 1.2 to 0.8. Building too much in rotary mode
BHA changed, packed assy.
Ran & cmtd 9 5/8" casing. Negative casing test, ran emergency SA
Wireline logging
Attempted open hole sidetrack
Set kick-off plug and attempted to sidetrack
Milled window to sidetrack
Changed to rock bit
Junk in hole - lost cones
ROP reduced-hanging problems
PCL logging
Ran 7" Scab-liner
P&A
End of well 6507/3-3B
11.06.99 at 08.00 hrs
Number of days
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
3750
4000
4250
4500
0
10
20
30
40
50
60
70
80

4.8.3 Time planner

21.09.99 16:54 Updated

25.03.99 15:00 Start date

20.06.99 13:00 Finish date

TIMEPLANNER

6507/3-3A & 6507/3-3B

B&B

STATOIL

Down time/Waiting time

6507/3-3A & 6507/3-3B

START DATE	START TIME	Budg. time (hrs)	Acc. budg. time (days)	Plan depth (mMD)	Opt. time (hrs)	Actual time (hrs)	Acc. actual time (days)	Actual Depth (mMD)	Stat	Activity description	Company	Down time (hrs)	Accum. down time (hrs)	Waiting time (hrs)	Accum. waiting time (hrs)	Comments (reason for down/waiting time)
										12 1/4" hole section (1780 - 3738 mMD)						**12 1/4" hole section (1780 - 3738 mMD)**
25.03.99	15:00		0.0	1780	0.0	0.0	0.0	1805	F	Perform FIT to 1.65 s.g.		0.0	0.0	0.0	0.0	
25.03.99	15:00	18.0	0.8	2004	12.0	23.5	1.0	1998	F	Drill and orient, build angle to 11.4 degrees @ 1.5 deg/30 m. (12 m/hrs)		0.0	0.0		0.0	Sliding. Change to rock bit. Could not build enough angle w/ PDC.
26.03.99	14:30		0.8	2004	0.0	18.5	1.8	1998	F	Circ. b/up.POOH. Dump MWD. Change bit & BHA. RIH.		3.0	3.0		0.0	0.5 hrs Broken shear pin u racking arm 0.5 hrs service TDS 2 hr MWD software problems
27.03.99	09:00		0.8	2004	8.0	15.0	2.4	2122	F	Drill and orient, build angle to 11,4 degrees @ 1.5 deg/30 m. (12 m/hrs)		0.0	3.0		0.0	
28.03.99	00:00		0.8	2004		2.0	2.5	2187	F	Drill and hold 11.4 degree angle. (15 m/hrs)		0.0	3.0		0.0	
28.03.99	02:00		0.8	2004		1.0	2.5	2187	F	CHANGED TO SUMMERTIME (NONE OPERATIONAL TIME)		0.0	3.0		0.0	
28.03.99	03:00	60.0	3.3	2910	50.0	31.0	3.8	2617	F	Drill and hold 11,4 degree angle. (15 m/hrs)		0.0	3.0		0.0	
29.03.99	10:00	20.0	4.1	2910	28.0	28.5	5.0	2617	F	Circ. b/up.POOH. Dump MWD. Change bit & BHA. RIH.		0.0	3.0		0.0	BOP test 11.5 hrs
30.03.99	14:30	70.0	7.0	3738	73.0	39.5	6.6	3079	F	Drill and build to 65 degrees @ 2,0deg./30 m to top Garn Fm.(12 m/hrs)		0.0	3.0		0.0	
01.04.99	06:00		7.0	3738	18.0	30.0	7.9	3079	F	Circ. b/up.POOH. Dump MWD. Change bit & BHA. RIH.		3.0	6.0		0.0	3 hrs: Broke hydr. hose TDS
02.04.99	12:00		7.0	3738	40.0	47.0	9.8	3270	F	Drill and build to 65 degrees @ 2,0deg./30 m to top Garn Fm.(12 m/hrs)		0.0	6.0		0.0	
04.04.99	11:00		7.0	3738	24.0	25.0	10.9	3270	F	Circ. b/up.POOH. Dump MWD. Change bit & BHA. RIH.		3.5	9.5		0.0	1,5 hrs+2,0 hrs. Upper racking arm
05.04.99	12:00		7.0	3738	45.0	31.0	12.2	3396	F	Drill and build to 65 degrees @ 2,0deg./30 m to top Garn Fm.(12 m/hrs)		0.0	9.5		0.0	
06.04.99	19:00		7.0	3738	25.0	16.5	12.9	3396	F	Circ. b/up.POOH. Dump MWD. Change bit & BHA. RIH.		0.0	9.5		0.0	
07.04.99	11:30		7.0	3738	49.0	40.5	14.5	3555	F	Drill and build to 65 degrees @ 2,0deg./30 m to top Garn Fm.(7 m/hrs)		0.0	9.5		0.0	
09.04.99	04:00		7.0	3738	24.0	22.0	15.5	3555	F	Circ. b/up.POOH. Dump MWD. Change bit & BHA. RIH.		0.0	9.5		0.0	
10.04.99	02:00		7.0	3738	36.0	68.0	18.3	3805	F	Drill and hold angle to top Garn Fm.(7 m/hrs)		7.0	16.5		0.0	4.5 hrs performed 3 years PM on SCR's + 2.5 hrs change valves on MP's
12.04.99	22:00	6.0	7.3	3738	3.0	2.0	18.4	3805	F	Circ b/up, Top Garn. Verified by MWD.		0.0	16.5		0.0	
13.04.99	00:00	12.0	7.8	3738	12.0	11.5	18.9	3805	F	Drop EMS, POOH. Dump MWD.		0.0	16.5		0.0	
13.04.99	11:30	10.0	8.2	3738	10.0	6.5	19.1	3805	F	RIH pull wear bushing, MU csg.hgr. w/seal assy & cmt.plugs, MU cmt.head		0.0	16.5		0.0	
13.04.99	18:00	38.0	9.8	3738	39.0	38.5	20.7	3805	F	Run 9 5/8" casing (9 jts./hr)		0.0	16.5		0.0	
15.04.99	08:30	12.0	10.3	3738	38.0	37.5	22.3	3805	F	Circ. and reduce MW to +/- 1.55 sg. Pump and disp.cmt. set seal assy. and test same		23.5	40.0		0.0	0.5 hrs Attempt to open IBOP. 23 hrs. Leak in seal assembly
16.04.99	22:00	16.0	10.9	3738	16.0	17.0	23.0	3805	F	RIH 9 5/8" WB, LD 12 1/4" BHA. test surface equip. and BS-ram/casing		7.0	47.0		0.0	1.0 hrs: change wash pipe and repair inside BOP. 6 hrs: Repaired el and hydr. loop TDS
17.04.99	15:00	12.0	11.4	3738	12.0	0.0	23.0	3805	F	Test BOP		0.0	47.0		0.0	
17.04.99	15:00	24.0	12.4	3738	24.0	24.5	24.0	3805	F	MU 8 1/2" BHA w/Navigator, RIH, drill out shoe track and rat hole while disp. to 1.25 sg mud		2.5	49.5		0.0	1.5 hrs. Crank on IBOP. 1.0 hrs: Hydr- leak TDS
18.04.99	15:30	14.0	13.0	3738	14.0	0.0	24.0	3805	F	Expected time WOW (March (10%)		0.0	49.5		0.0	
18.04.99	15:30	14.0	13.6	3738	14.0	0.0	24.0	3805	F	Expected technical problem time (10%)		0.0	49.5		0.0	
Section time (days)					25.6	24.0				Section efficiency: 0.0% , Total job efficency: 56.5%		49.5 hours		0.0 hours		Down time: 8.6% , Total Down time: 8.6% , Waiting time: 0.0% , Total Waiting time: 0.0%
										8 1/2" hole section (3738 - 4498 mMD)						**8 1/2" hole section (3738 - 4498 mMD)**
18.04.99	15:30	96.0	17.6	4498	96.0	17.5	24.8	3891	F	Drill and geo-steer 8 1/2" to +/-4498 m (+/- 8 m/hr)		0.0	49.5	0.0	0.0	
19.04.99	09:00		17.6	4498	24.0	20.0	25.6	3891	F	Circ. b/up.POOH. Dump MWD. Change bit & BHA. RIH.		0.0	49.5		0.0	
20.04.99	05:00		17.6	4498	30.0	37.0	27.1	4147	F	Build to 86 degree and adjust azimuth to 155 .			49.5		0.0	
21.04.99	18:00		17.6	4498	24.0	25.0	28.2	4147	F	Circ. b/up.POOH. Dump MWD. Change bit & BHA. RIH.			49.5		0.0	
22.04.99	19:00		17.6	4498	63.0	53.0	30.4	4528	F	Drill and geo-steer 8 1/2" to +/-4498 m (+/- 8 m/hr)		0.5	50.0		0.0	Mud bucket did not open
25.04.99	00:00		17.6	4498		3.0	30.5	4020	F	Pull back to 4020 to perform open hole side-track			50.0		0.0	
25.04.99	03:00		17.6	4498	10.0	21.0	31.4	4020	F	Time drill side-track area		19.0	69.0		0.0	Not able to perform open hole side-track
26.04.99	00:00		17.6	4498	48.0	32.5	32.7	4020	F	POOH, RIH w/cement stinger, set kick-off plug, POOH		1.5	70.5		0.0	0,5 hrs: Serviced Topdrive 1 hrs. reprogrammed MWD tool
27.04.99	08:30		17.6	4498	48.0	25.0	33.8	4020	F	RIH, Drill and orient to 4343 m MD/3800 mTVDR (10 m/hr)		0.0	70.5		0.0	
28.04.99	09:30		17.6	4498	20.5	22.5	34.7	4020	F	Attempted to side track, POOH		27.0	97.5		0.0	Attempt to sidetrack ,Kick-off plug did not set up
29.04.99	08:00	48.0	19.6	4498	48.0	11.0	35.2	4020	F	RU Baker Atlas and perform el.logging, RD Baker Atlas (TLC)			97.5		0.0	
29.04.99	19:00		19.6	4498	36.0	32.0	36.5	3700	F	RIH w/cmt st, set kick off plug, POOH		32.0	129.5		0.0	Set new kick-off plug #2
01.05.99	03:00		19.6	4498	8.0	10.0	36.9	3700	F	Test BOP"s			129.5		0.0	
01.05.99	13:00		19.6	4498	70.0	61.0	39.5	3895	F	M/up BHA, RIH, drill and orient to geological targets, circ. and POOH (ROP-10 m/hr)		60.5	190.0		0.0	Attempted to sidetrack on KOP #2
04.05.99	02:00		19.6	4498	10.0	5.5	39.7	3895	F	RU Baker Atlas and perform el.logging, RD Baker Atlas			190.0		0.0	
04.05.99	07:30		19.6	4498	30.0	25.5	40.8	3695	F	RIH w/cmt st, set plug, POOH		16.0	206.0		0.0	Set KOP #3 as seat for whipstock
05.05.99	09:00		19.6	4498	20.0	25.0	41.8	3761	F	M/up BHA, RIH, dress off cmt. plug (further operations are based on cmt. qulity)		26.0	232.0		0.0	Dress off cmnt plug
06.05.99	10:00		19.6	4498	13.0	14.5	42.4	3761	F	M/U and RIH wipstock		14.5	246.5		0.0	RIH w/ whipstock
07.05.99	00:30		19.6	4498	2.0	1.5	42.5	3761	F	Orient and set wipstock		1.5	248.0		0.0	1 hr MWD software problem , 0,5:Orient and set whipstock
07.05.99	02:00		19.6	4498	8.5	4.0	42.6	3761	F	Cut window in 9 5/8" casing		4.0	252.0		0.0	1 hr water melon mill stalled entering window, 3hr Cut window
07.05.99	06:00		19.6	4498	5.0	12.0	43.1	3761	F	Drill new Fm. and clean out window area (WELL 6507/3-3B @ 07.05.99 - 06:00 HRS.)			252.0		0.0	
07.05.99	18:00		19.6	4498	8.0	8.0	43.5	3761	F	POOH			252.0		0.0	
08.05.99	02:00		19.6	4498	10.0	13.5	44.0	3761	F	M/U and RIH with drilling assy.			252.0		0.0	
08.05.99	15:30		19.6	4498	48.0	31.0	45.3	3820	F	Drill and orient to 4230 m MD/3800 mTVDR (10 m/hr)			252.0		0.0	
09.05.99	22:30		19.6	4498	10.0	6.5	45.6	3820	F	POOH			252.0		0.0	
10.05.99	05:00		19.6	4498	10.0	14.5	46.2	3820	F	M/U and RIH with drilling assy.			252.0		0.0	
10.05.99	19:30		19.6	4498	58.0	26.5	47.3	3889	F	Drill and orient to 4230 m MD/3800 mTVDR (8 m/hr)			252.0		0.0	
11.05.99	22:00		19.6	4498	10.0	12.0	47.8	3889	F	POOH			252.0		0.0	
12.05.99	10:00		19.6	4498	12.0	11.0	48.3	3889	F	M/U and RIH with 8 1/2" junk bit to open undergauge hole		11.0	263.0		0.0	See activity description

12.05.99	21:00		19.6	4498	5.0	2.5	48.4	3889	F	Work on junk	2.5	265.5		0.0	See activity description
12.05.99	23:30		19.6	4498	8.0	5.5	48.6	3889	F	POOH	5.5	271.0		0.0	See activity description
13.05.99	05:00		19.6	4498	10.0	10.5	49.0	3889	F	M/U and RIH with reverse circulating basket	10.5	281.5		0.0	1,0 hrsRep hydr.pump for std lift
13.05.99	15:30		19.6	4498	5.0	1.0	49.1	3889	F	Drill 1 m	1.0	282.5		0.0	See activity description
13.05.99	16:30		19.6	4498	8.0	6.0	49.3	3889	F	POOH	6.0	288.5		0.0	See activity description
13.05.99	22:30		19.6	4498	10.0	11.5	49.8	3889	F	M/U and RIH with mill and junk basket	11.5	300.0		0.0	See activity description
14.05.99	10:00		19.6	4498	5.0	5.5	50.0	3892	F	Work mill	5.5	305.5		0.0	See activity description
14.05.99	15:30		19.6	4498	8.0	8.5	50.4	3892	F	POOH	8.5	314.0		0.0	0.5 hr Electrical problems on ELMACO+ 0.5 hr replace broken bolt on dolly track
15.05.99	00:00		19.6	4498	10.0	11.0	50.8	3892	F	M/U and RIH with mill and junk basket	11.0	325.0		0.0	1,0 hrs: Rep hydr hose on upper racking arm
15.05.99	11:00		19.6	4498	5.0	6.0	51.1	3894	F	Work mill	6.0	331.0		0.0	See activity description
15.05.99	17:00		19.6	4498	8.0	6.0	51.3	3894	F	POOH	6.0	337.0		0.0	See activity description
15.05.99	23:00		19.6	4498	10.0	8.5	51.7	3894	F	Test BOP's	1.0	338.0		0.0	1,0 hrs Leak on wash pipe swivel
16.05.99	07:30		19.6	4498	12.0	17.0	52.4	3894	F	M/U and RIH with drilling assy.	2.0	340.0		0.0	2,0 hrs Washed out gate and damaged seal on st. pipe valve no. 14
17.05.99	00:30		19.6	4498	43.0	3.5	52.5	3899	F	Drill & orient to 4230 m MD/3800 mTVD (8 m/hr)		340.0		0.0	
17.05.99	04:00		19.6	4498	7.0	7.0	52.8	3899	F	POOH		340.0		0.0	
17.05.99	11:00		19.6	4498	10.0	10.0	53.3	3899	F	M/U and RIH with fishing magnet and junk basket	10.0	350.0		0.0	See activity description
17.05.99	21:00		19.6	4498	2.0	1.0	53.3	3899	F	Work magnet to TD	1.0	351.0		0.0	See activity description
17.05.99	22:00		19.6	4498	7.0	8.0	53.6	3899	F	POOH	8.0	359.0		0.0	See activity description
18.05.99	06:00		19.6	4498	12.0	15.0	54.3	3899	F	M/U and RIH with drilling assy.	15.0	374.0		0.0	See activity description
18.05.99	21:00		19.6	4498	42.0	18.5	55.0	3952	F	Drill & orient to 4230 m MD/3800 mTVD (8 m/hr)		374.0		0.0	
19.05.99	15:30		19.6	4498	7.0	7.5	55.3	3952	F	POOH		374.0		0.0	
19.05.99	23:00		19.6	4498	12.0	11.0	55.8	3952	F	M/U and RIH with drilling assy.		374.0		0.0	
20.05.99	10:00		19.6	4498	28.0	31.5	57.1	4121	F	Drill & orient to 4230 m MD/3800 mTVD (7 m/hr)	0.5	374.5		0.0	0,5 hrs. 6 m3 slop into active
21.05.99	17:30		19.6	4498	8.0	9.0	57.5	4121	F	POOH		374.5		0.0	
22.05.99	02:30		19.6	4498	15.0	31.5	58.8	4121	F	M/U and RIH with drilling assy.	4.0	378.5		0.0	4 hrs;MWD failed at surface test
23.05.99	10:00		19.6	4498	18.0	17.0	59.5	4174	F	Drill & orient to 4230 m MD/3800 mTVD (7 m/hr) 3.8 m/hr		378.5		0.0	
24.05.99	03:00		19.6	4498	8.0	8.0	59.8	4174	F	POOH		378.5		0.0	
24.05.99	11:00		19.6	4498	15.0	17.0	60.5	4174	F	M/U and RIH with drilling assy.		378.5		0.0	
25.05.99	04:00		19.6	4498	20.0	20.5	61.4	4275	F	Drill & orient to 4250 m MD/3800 mTVD (4 m/hr)		378.5		0.0	
26.05.99	00:30		19.6	4498	10.0	13.5	62.0	4275	F	POOH		378.5		0.0	
26.05.99	14:00		19.6	4498	72.0	25.0	63.0	4275	F	RU Baker Atlas and perform el.logging, RD Baker Atlas (TLC)	9.5	388.0		0.0	Dented logging wire 50 m from wet connector
27.05.99	15:00		19.6	4498		11.0	63.5	4275	F	Unable to pass 3767m . POOH.		388.0		0.0	
28.05.99	02:00		19.6	4498	30.0	41.0	65.2	4275	F	Make wipertrip w/ rotary assy.		388.0		0.0	
29.05.99	19:00		19.6	4498	72.0	24.0	66.2	4275	F	RU Baker Atlas and perform el.logging, RD Baker Atlas (TLC)		388.0		0.0	
30.05.99	19:00	1.0	19.6	4498	1.0	1.0	66.2	4275	F	R/U to run 7" scab-liner. Hold safety meeting		388.0		0.0	
30.05.99	20:00	6.0	19.9	4498	6.0	5.5	66.4	4275	F	Run liner		388.0		0.0	
31.05.99	01:30	18.0	20.6	4498	12.0	8.0	66.8	4275	F	Run liner on 5" DP. Break circ. as req.		388.0		0.0	
31.05.99	09:30	1.0	20.7	4498	1.0	1.0	66.8	4275	F	Dropp ball and pressure up to set liner. Set down weight and set packer, rotate to release r/t.		388.0		0.0	
31.05.99	10:30	8.0	21.0	4498	8.0	5.0	67.0	4275	F	POOH. L/D r/tool		388.0		0.0	
31.05.99	15:30	24.0	22.0	4498	24.0	24.5	68.0	4275	F	P/U 4 3/4" DC and 3 1/2" DP. Performe clean out run w/flat bottom mill & mellon mill	1.5	389.5		0.0	critical maintenance on top drive
01.06.99	16:00	72.0	25.0	4498	45.0	44.5	69.9	4275	F	RU Baker Atlas and perform el. logging. RD Baker Atlas (TLC)		389.5		0.0	
03.06.99	12:30	48.0	27.0	4498	48.0	52.5	72.1	4275	F	RU Baker Atlas and perform MDT run . RD baker Atlas (TLC)		389.5		0.0	
05.06.99	17:00	7.0	27.3	4498	0.0		72.1	4275	F	Expected time WOW March/April(5%)		389.5		0.0	
05.06.99	17:00	14.0	27.9	4498	0.0		72.1	4275	F	Expected technical problem time (10%)		389.5		0.0	
Section time (days)		14.3			61.1	48.1				Section efficiency: 37.2% , Total job efficency: 42.5%	340.0 hours		0.0 hours		Down time: 29.5% , Total Down time: 22.5% , Waiting time: 0.0% , Total Waiting time: 0.0%
										DST test, included 7" liner					**DST test, included 7" liner**
05.06.99	17:00		27.9	4498	0.0		72.1	4275	F	No option		389.5		0.0	
05.06.99	17:00		27.9	4498	0.0		72.1	4275	F			389.5		0.0	
05.06.99	17:00		27.9	4498	0.0		72.1	4275	F			389.5		0.0	
Section time (days)					0.0										
										P & A					**P & A**
05.06.99	17:00	30.0	29.1	4498	30.0	47.0	74.0	4275	F	MU cmt.stinger, RIH, set cement plug from TD to 3607 m in 3 steps, PO & circ. POOH	14.5	404.0	0.0	0.0	Not able to transfer silica cement bulk-daytank
07.06.99	16:00	8.0	29.5	3607	8.0	9.0	74.4	3627	F	RIH and tag top of cmt.plug w/10 tons, p.test to 70 bar over eq.1.74		404.0		0.0	
08.06.99	01:00	8.0	29.8	1800	8.0	14.0	75.0	3627	F	PO to 1800 m, set hi-vis pill to 1700 m , PO to 1700 and displace to 1,50 s.g. mud. POOH		404.0		0.0	
08.06.99	15:00	10.0	30.2	1700	10.0	12.5	75.5	1700	F	RIH to 1700 m. cut 9 5/8" csg. POOH LD cutting assy.		404.0		0.0	
09.06.99	03:30	8.0	30.5	1700	8.0	17.5	76.3	1700	F	Retrieve wear bushing and seal assy.	5.5	409.5		0.0	2 attempts to retrieve seal assy
09.06.99	21:00	14.0	31.1	1700	22.0	20.5	77.1	1700	F	RIH, retrieve 9 5/8" casing		409.5		0.0	
10.06.99	17:30	4.0	31.3	1700	4.0	2.5	77.2	1700	F	RIH cement stinger to 1700 m.		409.5		0.0	
10.06.99	20:00	20.0	32.1	1600	20.0	12.0	77.7	1580	F	Set balanced cement plug f/1700 to 1600 m. PO & circ. POOH, L/D dril pipe		409.5		0.0	
11.06.99	08:00	8.0	32.5	730	8.0	12.0	78.2	730	F	RIH 13 3/8" bridge plug @730 m. Pr. test to 100 bar w/1,5. sg. Disp. 1.05 sg WBM, POOH.		409.5		0.0	
11.06.99	20:00	6.0	32.7	730	6.0	1.0	78.3	730	F	MU 13 3/8" cut.assy,		409.5		0.0	
11.06.99	21:00	6.0	33.0	720	6.0	6.5	78.5	724	F	RIH and cut 13 3/8" csg. POOH and LD cutting assy.		409.5		0.0	
12.06.99	03:30	4.0	33.1	720	4.0	5.5	78.8	724	F	Retrieve seal assy.		409.5		0.0	
12.06.99	09:00	10.0	33.5	720	10.0	14.5	79.4	720	F	RIH, retrieve 13 3/8" casing		409.5		0.0	
12.06.99	23:30	4.0	33.7	720	4.0	3.5	79.5	720	F	RIH cement stinger to 720 m		409.5		0.0	
13.06.99	03:00	12.0	34.2	445	12.0	14.5	80.1	440	F	Set balanced cement plug f/720 to 445 m, PO & circ. POOH, L/D drill pipe		409.5		0.0	
13.06.99	17:30	36.0	35.7	445	36.0	42.5	81.9	440	F	Nipple down diverter,disconnect BOP and pull riser, split BOP and rack	3.5	413.0		0.0	spliced wire yellow pod. burn off guides BOP crane
15.06.99	12:00		35.7	445	12.0	8.5	82.2	440	F	KOS operation for YME.		413.0		0.0	
15.06.99	20:30	8.0	36.0	419	8.0	17.5	83.0	25	F	MU and RIH 20 x 30" cutting assy. to min. 419 m, cut and retrieve HP/LP housing	0.5	413.5		0.0	ROV hydraulic

16.06.99	14:00	22.0	37.0	25	22.0	95.0	86.9	25	F	Pull anchors				0.5	414.0	61.5	61.5	Anchorwinch # 8/9 + wow
20.06.99 End of operation	13:00	9.1			9.9	14.8				Section efficiency: 61.2% , Total job efficency: 42.5%				24.5	hours	61.5	hours	Down time: 6.9% , Total Down time: 19.8% , Waiting time: 17.3% , Total Waiting time: 2.9%

STATOIL

4.8.4 *Bit record*

Well: 6507/03-003A

Run no.	Bit Size	Bit no.	BHA no.	Bit type	IADC code	Manufacturer	Serial no.	Nozzles no x n	(n/32") no x n	no x n	no x n	Flow area in2
23	12 1/4"	16	21	MT44LTM	M233	DIAMOND PR.INT.	BHA NO :	6 x 16	x	x	x	1,178
24	12 1/4"	17	22	15MD	445X	SMITH	LK2780	2 x 22	1 x 18	1 x 20	x	1,298
25	12 1/4"	18	23	LA270BW+G	M649	LYNG	2392	2 x 16	4 x 18	x	x	1,387
26	12 1/4"	19	24	MXC09DDT	437	HUGHES	E63BD	1 x 14	2 x 22	1 x 24	x	1,335
27	12 1/4"	20	25	MXC09DDT	437	HUGHES	E64DB	1 x 14	2 x 20	1 x 22	x	1,135
28	12 1/4"	18RR1	26	LA270BW+G	M649	LYNG	2392	2 x 16	4 x 18	x	x	1,387
29	12 1/4"	16RR1	27	MT44LTM	M233	DIAMOND PR.INT.	1962447	1 x 15	1 x 16	3 x 18	1 x 20	1,421
30	8 1/2"	21	28	LA250BZG	M649	LYNG	2047	2 x 15	2 x 16	x	x	,738
31	8 1/2"	22	29	EHP44HFDLH	447	REED	MM9397	3 x 18	x	x	x	,746
32	8 1/2"	23	30	LA250BYG	M649	LYNG	2250	2 x 15	2 x 16	x	x	,738
33	8 1/2"	24	31	15MFDPD	447X	SMITH	LK3247	3 x 18	x	x	x	,746
34	8 1/2"	25	32	15MFDPD	447X	SMITH	LK 3241	3 x 18	x	x	x	,746
35	8 1/2"	12RR4	33	DS66DGNSW	M432	HYCALOG	H45575	4 x 19	x	x	x	1,108
36	8 1/2"	26	34	MILL	117	HOMCO	TSN38625	x	x	x	x	1,000

Run no.	Flow-rate l/min	Pump pres bar	Depth In mMD	Depth Out mMD	Made m.	HR. Drlg.	ROP m/hr	WOB Min ton	WOB Max ton	RPM Min	RPM Max	I	O	DC	L	B	G	OC	RP	Remarks
23	3010	265	1641,0	1998,0	357,0	26,5	13,5		4	107	177	1	1	BT	N	X	I	NO	BHA	3 BROKEN TEETH
24	3118	295	1998,0	2617,0	619,0	35,5	17,4		12	127	294	1	2	WT	A	F	2	RG	PR	TOTAL CIRC. TIME: 48,5 HRS TOTAL REV ON BIT: 550000
25	2920	304	2617,0	3079,0	462,0	32,7	14,1	3	14	117	137	2	1	WT	N	X	1/16	CT	BHA	CIRC.TIME ON BIT: 44,27 HRS REVS ON BIT : 550 800
26	2790	287	3079,0	3270,0	191,0	38,0	5,0	8	20	87	87	3	1	BT	M	E	2	NO	BHA	CIRC.TIME: 38 HRS/REV'S:289 K 4 TEETH BROKEN, MIDDLE ROW.
27	2930	305	3270,0	3396,0	126,0	27,2	4,6	3	14	159	271	3	2	BT	M	E	I	JD	HR	CIRCULATION TIME: 33,0 HRS ACCUMULATED REV'S: 424 800
28	2785	305	3396,0	3555,0	159,0	33,6	4,7	1	9	157	336	3	2	WT	A	X	I	CT	BHA	
29	2799	301	3555,0	3805,0	250,0	58,6	4,3	3	6	211	236	1	1	BT	N	X	I	NO	TD	
30	2118	285	3805,0	3891,0	86,0	8,6	10,0	2	11	158	268	1	3	WT	S	X	1/16"	NO	BHA	
31	1948	252	3891,0	4147,0	256,0	30,0	8,5	2	52	160	180	2	2	ER	A	E	1/16"	NO	HR	BIT REVS : TOTAL 418 K. "ON BOTTOM" 310 K.
32	2000	250	4147,0	4528,0	381,0	39,9	9,5	1	16	153	316	0	0	NO	A	X	I	NO	TD	

33					,0		,0					0 0	NO A	E I	SD LOG	NO DRILLING. ATTEMPTED SIDE TRACKING.
34	2362	316			,0	26,5	,0			210		0 0	NO A	E I	NO LOG	TOTAL REVOLUTIONS ON BIT:478K
35	2340	235	3693,0	3761,0	68,0	3,3	20,6	1	4	115	132					CIRC HRS: 7,9 HRS
36	1055	75	3752,0	3755,0	3,0	1,6	1,9		2	70	85					

Well: 6507/03-003B

Run no.	Bit Size	Bit no.	BHA no.	Bit type	IADC code	Manufacturer	Serial no.	Nozzles (n/32") no x n	no x n	no x n	no x n	Flow area in2
36	8 1/2"	26	34	MILL	117	HOMCO	TSN38625	x	x	x	x	1,000
37	8 1/2"	23RR1	35	LA250BYG	M649	LYNG	2250	2 x 15	2 x 16	x	x	,738
38	8 1/2"	27	36	EHP44HFLDH	447	REED	LLQ4054	3 x 18	x	x	x	,746
39	8 1/2"	28	37	ATJG8	3-4-7	HUGHES	X67CA	3 x 22	x	x	x	1,114
40	8 1/2"	29	39	MILL	117	HOMCO	AGR850C	x	x	x	x	
41	8 1/2"	30	40	MILL	117	HOMCO	32434	x	x	x	x	
42	8 1/2"	31	41	MX18DDX	447	HUGHES	X43CV	3 x 18	x	x	x	,746
43	8 1/2"	32	43	EHP44HFLDH	447	REED	LMM9396	3 x 18	x	x	x	,746
44	8 1/2"	33	43	EHP44HFLDH	447	REED	LMM9956	3 x 18	x	x	x	,746
45	8 1/2"	34	44	MX18DDX	447	HUGHES	X34CR	3 x 18	x	x	x	,746
46	8 1/2"	35	44	EHP44HFLDH	447	REED	MM9955	3 x 16	x	x	x	,589
47	8 1/2"	21RR	45	LA250BZG	M649	LYNG	2047	2 x 15	2 x 16	x	x	,738
48	8 1/2"	31RR	47	MX18DDX	447	HUGHES	X43CV	1 x 32	2 x 32	3 x 32	x	4,712

Run no.	Flow-rate l/min	Pump pres bar	Depth In mMD	Depth Out mMD	Made m.	HR. Drlg.	ROP m/hr	WOB Min ton	WOB Max ton	RPM Min	RPM Max	I	O	DC	L	B	G	OC	RP	Remarks
36	1202	80	3755,0	3761,0	6,0	12,6	,5		4	52	130									
37	2225	280	3761,0	3820,0	59,0	8,0	7,4		4	193	264	3	4	CT	A	X	2/16"	BT	PR	8 BROKEN TEETH
38	2220	290	3820,0	3889,0	69,0	19,1	3,6	8	18	194	300	8	8	LC	A	F	31/16	JD	PR	CIRCULATIO TIME: 32,4 HRS ACCUMULATED REV'S: 352 900
39	2200	180	3889,0	3889,0	,0	,4	,0		14	30	120	2	5	BT	M	E	1/16"	JD	BHA	CIRCULATION TIME: 5,0 HRS. TOTAL REV'S: 21 000
40	2200	186	3889,0	3892,0	3,0	4,4	,7	5	20	40	100						1/16"			TYPE MILL: HOMCO,SHALL BE AGR.
41	2550	180	3892,0	3894,0	2,0	4,9	,4	15	25	70	115						1/16"			MAKE: HOMCO, CORRECT IS: IPE STRING STAB: 2/16" UNDERGAUGE
42	2200	292	3894,0	3899,0	5,0	,8	6,3	6	8	115	115	1	2	CT	H	E	1/16"	JD	HP	
43	2200	283	3899,0	3952,0	53,0	9,7	5,5	10	24	194	260	2	2	ER	A	E	2	NO	HR	REVS ON BIT; 300,1K
44	2140	280	3952,0	4121,0	169,0	22,5	7,5	7	25	175	250	2	2	ER	A	E	2	NO	HR	REV'S 430K. 34,8 CIRC HRS
45	2025	245	4121,0	4174,0	53,0	14,0	3,8	11	25	180	260	8	7	WT	A	F	2	CR	PR	CIRC HRS: 31.3 TOTAL REV'S: 409.3K
46	2140	285	4174,0	4275,0	101,0	17,2	5,9	3	15	180	275	8	8	LC	A	F	NA	JD	TD	LOST 2 CONES.TOTAL CIRC 29.5 HRS. ON BTM 17.2 HRS.REV 403K.

47	2200	250	,0	,0	50	180	2	3	WT	A	X	2	CT	LOG
48			,0	,0			1	2	CT	H	E	1/16	JD	TD NO NOZZLES. TAGGED CEMENT PLUG

4.8.5 Drilling fluids

Well: 6507/3-3A & B
Field: Idun
Rig: Byford Dolphin

DRILLING FLUIDS PROGRAM

HOLE SIZE	HOLE TVD MD	CASING SIZE	CASING TVD MD	MUD TYPE	MW [SG]	LGS [%]	10 sec. [Pa]	10 min. [Pa]	Fann 100 rpm	Fann 3 rpm	O / W ratio	PV [mPa]	API FL [ml]	HTHP FL [ml]	MBT [KG/m³]	pH	Kcl [KG/m³]	Glyc. [%]	ES [KV]	DFE [%]	Total Volume Old Volume New Volume Usage [m³]
12 1/4" A	3518 3805	**9 5/8"**	3518 3805	Interdrill NT	1,58		6-8	< 15	30 - 35	9 - 11	80/20	<38		< 2					0.87-1,2		876,8 0 876,8 342,8
				Comments: *For details refer to "Well Summary Byford Dolphin, Dowell Schlumberger"*																	
8 1/2" A	3717 4528		3717 4528	Interdrill NT	1,25		<7	< 13	23 - 27	8-10	80/20	21-28		< 2		8,1-9,5	125		0.87-1,2		419 337 82 69,2
				Comments: *For details refer to "Well Summary Byford Dolphin, Dowell Schlumberger"*																	
8 1/2" B	0 0		0 0	Interdrill NT	1,25		<7	< 13	23 - 27	8-10	80/20	21-28		< 2		8,1-9,5	125		0.87-1,2		97,5
				Comments: *For details refer to "Well Summary Byford Dolphin, Dowell Schlumberger"*																	

4.8.6 Cementing program

Well summary zonal isolation, 6507/3-3, 3 A and 3 B, Byford Dolphin

Challenges

This project was administrated from Statoil; Harstad, equipment etc. shipped out to the rig from Sandnessjøen and personnel travelled via Brønnøysund. These three facts were prior to spud recognised as the main parameters that would complicate this project compared to others.
After it was decided to kick off the well from vertical and drill a new, deviated hole (later 2 holes), several options were always present, this forced all involved personnel, both Statoil and Halliburton, to continuously accommodate new plans and options with the best available solutions.
A general advice from Halliburton is to implement a DPO and need list system. A need list distributed to service companies in ample time before a section commences will ease planning, and the DPO system will aid in keeping track of what is done and not.

Service summary

Job description	+	-	Comments
30" Conductor			Cemented as planned
Gas tight plug in 9 $^7/_8$" pilot hole	x		Slurry was tested prior to drilling the pilot hole, hence no down time was encountered as a result of shallow gas
20" Surface Casing	x		Several options due to shallow gas required several working hours on new simulations and lab tests prior to job.
13 $^3/_8$" Casing			Cemented as planned
13 $^3/_8$" Shoe squeeze		x	After placing the cement, tripping lasted for ± 2 hours. Due to lack of time, the squeeze job had to be performed without circulating BU, leaving hard cement in the stinger
FlexPlug OBM			During drilling of the 12 ¼" section, Halliburton provided a specialised contingency lost circulation material, with an additional technical specialist on the rig.
9 $^5/_8$" Casing	x		Mud losses was a concern prior to the job, hence thorough planning was necessary.
7" liner contingency			A liner was planned and mobilised for
Plugback of 6507/3-3	x	x	Start motor on cement unit had to be changed due to break down. Cementers used only 30 min to change motor prior to second plug job.
KOP below 13 $^3/_8$" Csg	x		The job was planned as a squeeze job, but due to losses during displacement no squeezing was performed. The job objective was met.
9 $^5/_8$" Casing	x		Mud losses was a concern prior to the job, hence thorough planning was necessary.
KOP I, 6507/3-3 A		x	Statoil did not approve the recommended slurry, hence a new plug with lower density and lower viscosity was tested and pumped. The plug was not found down-hole.
KOP II, 6507/3-3 A	x	x	+ good planning, - poor result Parameters considered to achieve a better job than the first one: • Temperature, 24 hrs logging temperature was used as "undisturbed temperature", hence test temperature was reduced 13°C to increase strength build-up • Spacer viscosity & volume was increased • Cement volume was increased • A HI-Vis pill was spotted below the plug TOC was hard, but farther down cement was soft. Most probable cause is believed to be cement contamination due to over-displacement or formation properties.
KOP III, seat for whipstock	x		Plug & abandonment was planned for, but while circulating prior to cementing it was decided that another KOP was to be pumped. This plug was used as seat for a casing whipstock. This plug was reported as "hard to drill down to planned whipstock depth".
Plug and abandonment	x		Due to bulk problems offshore, new silica cement had to be shipped from Kristiansund to Byford Dolphin. To minimise waiting time, 1 plug with Norcem G cement was designed by the duty engineer and pumped. As the new silica cement was older than the one used in all lab testing prior to P&A, Statoil decided to pump same recipe without any further testing.

\+ Plans were changed or revised prior to job, but service was provided with same quality
\- Indicate problems on job etc. (No mark indicates service provided as planned)

General

In general Halliburton finds that the cementing jobs on this project have been performed as expected and planned for. However a kick off from a cement plug was not obtained for the second sidetrack. Several causes for the kick off plug failures have been discussed, leaving over-displacement as the most probable one.

Halliburton cementing material discharge and usage well summary
Usage breakdown

Field: Exploration
Rig: Byford Dolphin

Year: 1999
Well: 6507/3-3 & 6507/3-3 A & 6507/3-3 B

Product	SFT class	Unit	Density [SG]	Watercont [Vol-%]	30" Conductor	Gas Tight 8 7/8" OH-plug	20" Surface Casing	13 3/8" Casing	13 3/8" shoe sq	Spacer for FlexPlug	9 5/8" casing	Plugback of 8 ½" hole	KOP-squeeze	9 5/8" Casing	KOP	KOP # 2
Bayferrox130	1	kg	5,000													
Bentonite	2	kg	2,650													
CaCl2 liquid	1	ltr	1,318	78	1 310											
Cement cl. "G"	1	MT	3,220		53	6	51	24	20				54		12	19
Cement , industrial	1	MT	3,100													
CFR-3L	13	ltr	1,178	78		120	135		120		407	253	1 146	553	260	
Econolite	2	ltr	1,363	74	619		979									
FDP-C-552	16	ltr	1,057													
Flexplug-OBM	3	kg	1,750													
Flexplug-W	3	kg	2,260													
Gascon469	1	ltr	1,100	85		548	810				1 642	1 258	833	2 270	436	533
Halad-344	5	kg	1,600													
Halad-344L	5	ltr	1,020	96												
Halad-413L	5	ltr	1,067	89												
Halad-600LE+	5	ltr	1,097	80		440	1 219				2 059	1 300	910	2 780	400	573
FDP-575	1	ltr	1,480													
HR-15	4	kg	1,940													
K-35	1	kg	2,530							100						
HR-15L	4	ltr	1,106	89												
HR-25L	2	ltr	1,040	95												
WG-17	5	kg	0,600							23						
HR-4L	4	ltr	1,182	71			617	218	163							
HR-6L	4	ltr	1,165	87												
Latex 2000	5	ltr	0,982	50												
Microblock	1	ltr	1,390	80												
Micromax	1	kg	4,800													
Musol E	16	ltr	0,950						208		411		615	613	402	416
NF-6	7	ltr	0,940	8	47	6	51	24	50	19	42	40	80	90	57	54
SCR-100L	2	ltr	1,078	86							703	653	729	1 170	[illegible]	500
Sem-7	16	ltr	1,000						104		200		266	328	[illegible]	223
Spacer 500E+	5	kg	2,300						205	113	340		315	343	250	340
SSA-1	1	kg	2,630													
SSA-1, blend	1	MT	3,043								42	36		65		
Stabiliser 434C	5	ltr	1,040	65												
X-lite	1	MT	2,055													

Halliburton cementing material discharge and usage well summary
Usage breakdown

Field: Exploration
Rig: Byford Dolphin

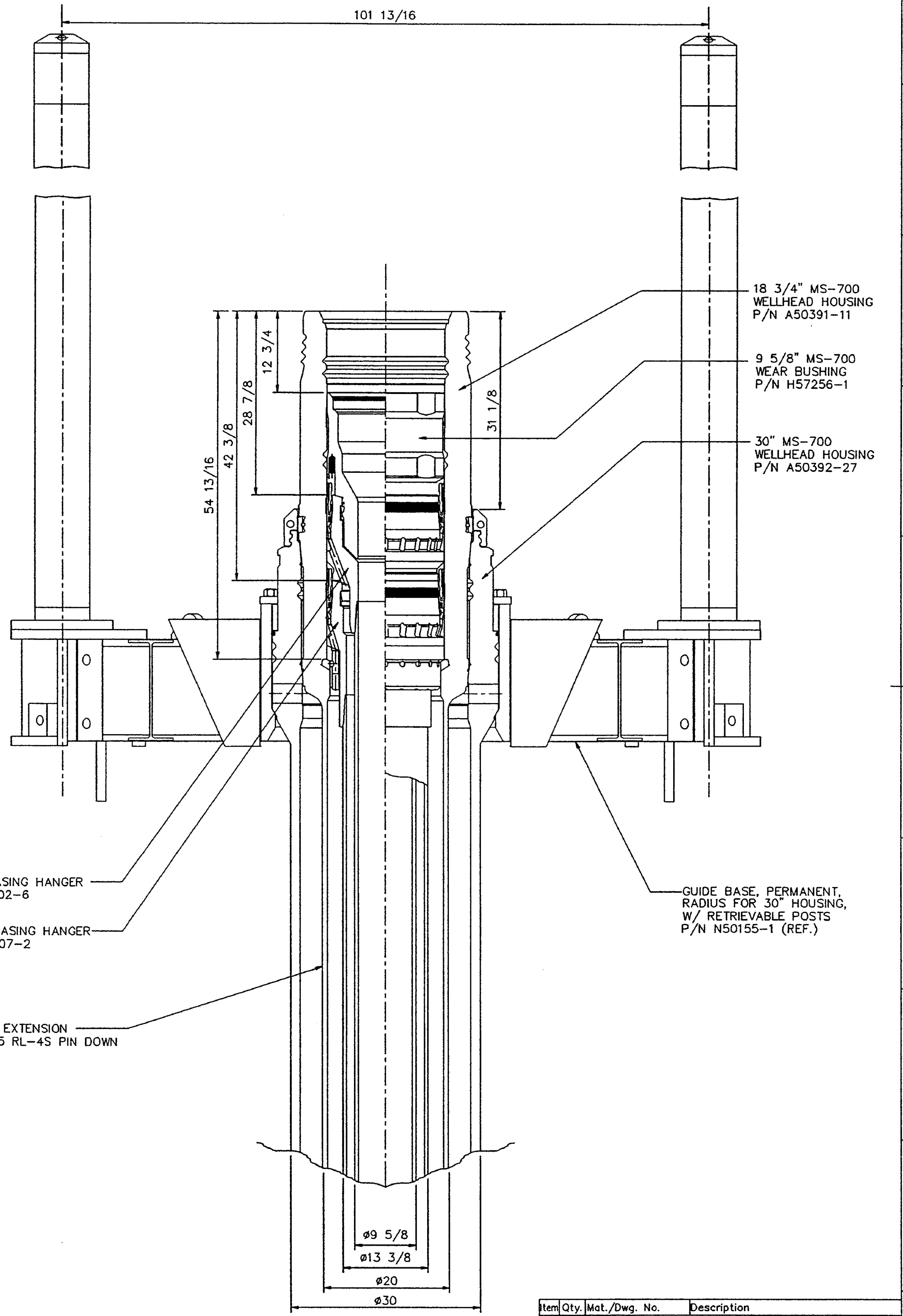
Year: 1999
Well: 6507/3-3 & 6507/3-3 A & 6507/3-3 B

Product	SFT class	Unit	Density [SG]	Watercont [Vol-%]	KOP # 3	P&A, Plug #1, 3 stage	P&A, Plug #2	Surface Plug, 2 stage								
Bayferrox130	1	kg	5,000													
Bentonite	2	kg	2,650													
CaCl2 liquid	1	ltr	1,318	78												
Cement cl. "G"	1	MT	3,220		12	9	14	14								
Cement , industrial	1	MT	3,100													
CFR-3L	13	ltr	1,178	78		275	66	68								
Econolite	2	ltr	1,363	74												
FDP-C-552	16	ltr	1,057													
Flexplug-OBM	3	kg	1,750													
Flexplug-W	3	kg	2,260													
Gascon469	1	ltr	1,100	85	300	1 299		533								
Halad-344	5	kg	1,600													
Halad-344L	5	ltr	1,020	96												
Halad-413L	5	ltr	1,067	89												
Halad-600LE+	5	ltr	1,097	80	700	1 687		750								
FDP-575	1	ltr	1,480													
HR-15	4	kg	1,940													
K-35	1	kg	2,530													
HR-15L	4	ltr	1,106	89												
HR-25L	2	ltr	1,040	95												
WG-17	5	kg	0,600													
HR-4L	4	ltr	1,182	71			80									
HR-6L	4	ltr	1,165	87												
Latex 2000	5	ltr	0,982	50												
Microblock	1	ltr	1,390	80												
Micromax	1	kg	4,800													
Musol E	16	ltr	0,950		468	900	394									
NF-6	7	ltr	0,940	8	50	96	70	30								
SCR-100L	2	ltr	1,078	86	300	868										
Sem-7	16	ltr	1,000		228	450	205									
Spacer 500E+	5	kg	2,300		340	510	258									
SSA-1	1	kg	2,630													
SSA-1, blend	1	MT	3,043			25		50								
Stabiliser 434C	5	ltr	1,040	65												
X-lite	1	MT	2,055													

4.8.7 Well head schematic

CAD RELEASE CHECK		
Release Date	Drafting Approval	Engineer Approval

REVISIONS				
Rev.	Rev. Code	Description	Release Date	Approved



Item	Qty.	Mat./Dwg. No.	Description

ABB Offshore Technology AS
Div. Vetco Gray Products

All dimensions in inches unless otherwise specified

Do not scale drawing

Prepared by	J.BRUSETH	
Checked by	O.IVERSEN	
Approved by	Ø.VAGSETER	
Materials review	N/A	
Date	11DEC98	
Reference		

Drawing Title
LAYOUT,SSWE,MS-700, 30" x 18 3/4" x 13 3/8" x 9 5/8"
STATOIL EXPL. WELL 6507/3-3
BYFORD DOLPHIN

Size A1 | Drawing Number N600835-1 | Rev. NC
Scale N/A | Weight (kg) N/A | Sheet 1 of 1

ACAD14

APPENDIX I

STATOIL

WELLSITE SAMPLE DESCRIPTION			Page 1 of 19
Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A			
R .T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 12 1/4"	Geologist: O. Hunnes / Å. Lauritsen		Date: 25.03.99

Depth (m RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
1770	100	Cmt		
1775	100	Cmt		
1790	100	Cmt		
1795	60	Cmt		
	40	Clst		
1800	100	Clst:	ol gry, lt gn gry, frm, blky, gen slty - vf sdy, tr micromic, occ grad arg vf sst, v glauc i.p., non calc	No shows
	Tr	Cmt		
1805	100	Clst:	a.a.	a.a.
	Tr	Cmt		
	Regular bagged samples commence at 1820 m.			
1820	90	Clst/Tf	Clst: olv gry, lt-dk gn gry, dk brn gry, sft, wxy i.p., tr pyr, micromic, tf i.p glass chards, non calc	a.a., cmt.cont. incr
	10	Ls:	lt gry, frm, mass	
	Gd tr	Cmt		
1835	100	Clst/Tf:	olv gry - olv blk, gn gry - dk gn gry, sft - frm, occ sticky, amor, blky, tf i.p. with blk spkld, non calc	No shows
	Tr	Glau, Mica		
	Tr	Ls:	a.a.	
	Tr	Cmt		
1850	90	Clst/Tf:	a.a.	No shows
	10	Cmt		
1865	95	Clst/Tf	predom gn gry - dk gn gry, occ dusky gn and olv blk, else a.a.	No shows
	5	Cmt		
1880	100	Clst/Tf	predom dk gnsh gry, gnsh gry, occ olv blk, frm, occ stky, blky, amor, slily slty, non calc - slily calc, tf i.p.	No shows
	GdTr	Ls	a.a.	
	Tr	Pyr, Mica, Qtz (clr gtz gr, f, subang - subrnd, lse)		
1895	100	Clst/Tf	becoming predom olv blk, occ med blsh gry els a.a.	No shows
	Tr	Ls	a.a.	
	Tr	Qtz	lse qtz gr (a.a.)	

STATOIL

WELLSITE SAMPLE DESCRIPTION				Page 2 of 19
Country: Norway		Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A				
R .T.: 25 meters		Company: Statoil, Enterprise, Saga		
Hole size: 12 1/4"		Geologist: O. Hunnes / Å. Lauritsen		Date: 26-27.03.99

Depth (m RT)	Lithology (%)		Lithological Description Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks Shows, cavings, mud additives, etc.
1910	100	Clst	becoming dk yel brn, mod calc, else dk gnsh gry, occ med gry, amor, frm, blky, slily slty, non calc	No shows
	Tr	Ls	a.a.	
1925	100	Clst:	a.a.	a.a.
	Tr	Ls:	a.a.	
1940	100	Clst:	pred a.a., also bec olv blk, firm, mass, sl micropyr, non calc	a.a.
1955	100	Clst:	50 % olv blk a.a., 50 % lt gn gry - gn gry a.a.	a.a.
1970	100	Clst:	pred olv blk a.a., also dk gry, frm, blky, mass, slily sdy - slty, non calc	a.a.
1985	100	Clst:	a.a.	
2000	100	Clst:	a.a.	Baryte contam. No shows
2015	100	Clst:	predom gry olv gn, frm - sft, amor, sl wxy, sft, non calc, else a.a	a.a..
2030	100	Clst:	a.a.	a.a.
2045	100	Clst:	lt olv gry - lt gry, also gry olv gn, occ olv blk, pred sft, occ frm, amor, glauc i.p., tr micropyr, non clac	a.a.
	Tr	Ls:	lt gry, sft - frm, blky, mass, sl arg	
2060	100	Clst:	pred med - dk gry, sft - frm, blky, occ slily slty - sdy, non calc	a.a.
	Tr	Ls:	a.a., also yelsh gry, transl, xln, hd, ang	
2075	100	Clst:	not slty, else a.a., occ med lt gry, sft, amor, non calc	a.a.
	Tr	Ls:	a.a.	
2090	100	Clst:	predom sft, else a.a. tr micropyr	a.a.
	Tr	Ls:	lt gry, frm, blky, mass, sl arg	
2105	100	Clst:	a.a., tr micropyr	a.a
	GdTr	Ls:	lt olv gry, pale - dk yelsh brn, mod brn, sft - frm, blky, arg	
2120	100	Clst:	a.a., also occ dk gnsh gry	a.a.
	Tr	Ls:	pale yelsh brn, med gry, frm, blky, arg	

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A			
R.T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 12 1/4"	Geologist: O. Hunnes / Å. Lauritsen		Date: 28.03.99

Depth (m RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
2135	95	Clst:	olv blk, occ dk gnsh gry, frm, occ sft, blky - amor, slily slty, non calc	No shows
	5	Dol:	pale yelsh brn, frm, blky, arg,	
	Tr	Ls:	mod yelsh brn, trnsl, xln, hd, ang	
2150	100	Clst:	a.a., occ gnsh blk, sft, amor	a.a.
	Tr	Ls/Dol:	a.a.	
2165	100	Clst:	olv blk, frm, amor, non calc, micropyr	a.a.
	Tr	Ls/Dol:	a.a.	
2180	100	Clst:	a.a., tr mica	a.a.
	Tr	Ls:	lt olv gry, frm, blky, arg	
2190	90	Clst:	a.a.	
(spot)	10	Dol:	pale brn, frm - mod hd, blky, arg,	
	Tr	Ls:	a.a.	
2195	95	Clst:	olv blk, frm, blky - amor, slily slty, non calc	a.a.
	5	Dol:	a.a., also mod brn, transl, xln, hd	
	Tr	Ls:	a.a.	
2210	100	Clst:	a.a., micropyr	a.a.
	GdTr	Dol:	a.a.	
	Tr	Glau		
2225	100	Clst:	a.a.	a.a.
	Tr	Dol:	a.a.	
2240	100	Clst:	a.a.	a.a.
	Tr	Dol:	a.a.	
2255	100	Clst:	a.a.	a.a.
	Tr	Dol:	a.a.	
2270	100	Clst:	a.a.	a.a.
	Tr	Dol:	a.a.	
2285	100	Clst:	a.a.	a.a.
	Tr	Dol:	a.a.	
2300	100	Clst:	a.a.	a.a.
	Tr	Dol:	a.a.	

STATOIL

WELLSITE SAMPLE DESCRIPTION			Page 4 of 19
Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A			
R .T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 12 1/4"	Geologist: O. Hunnes / Å. Lauritsen		Date: 28.03.99

Depth (m RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
2315	100	Clst:	olv blk, sft, occ frm, blky - amorph, sl - v slty i.p., sl tr mic, non calc	No shows
	Tr	Dol:	pale brn, frm - mod hd, blky, arg	
2330	100	Clst:	a.a.	a.a.
	Tr	Dol:	a.a.	
2345	100	Clst:	a.a., bec v sft	a.a.
	Tr	Dol:	a.a.	
2360	100	Clst:	occ frm, else a.a.	a.a.
	Tr	Dol:	a.a.	
2375	100	Clst:	bec pred frm, else a.a.	
	Tr	Dol.	a.a.	
2390	100	Clst:	a.a.	a.a.
	Sl Tr	Dol:	a.a.	
2405	100	Clst:	olv blk, frm, occ sft, blky - amor, slty i.p., non calc	a.a
	GdTr	Dol:	olv gry, mod yelsh brn, frm - mod hd, blky, microxln also dk yelsh brn, lt olv gry - olv gry, frm, blky, arg	
2420	100	Clst:	a.a.	a.a
	Tr	Dol:	a.a.	
2435	100	Clst:	a.a.	a.a.
	Tr	Dol:	a.a.	
2450	100	Clst:	a.a.	a.a.
	Tr	Dol:	a.a.	
2465	100	Clst:	a.a., tr mica	a.a.
	Tr	Dol:	predom mod brn, xln, hd, subang grains, else a.a.	
2480	100	Clst:	a.a.	a.a.
	Tr	Dol:	less of xln Dol, else a.a.	
2495	100	Clst:	dom frm, no mica, else a.a.	a.a.
	Tr	Dol:	dk yelsh gry, hd, microxln, blky, occ slily arg	
	Tr	Ls.	gnsh or pk, frm, blky, xln (elong krystals), also frm, arg i.p.	

WELLSITE SAMPLE DESCRIPTION			Page 5 of 19
Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A			
R.T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 12 1/4"	Geologist: O. Hunnes / Å. Lauritsen		Date: 29.03.99

Depth (m RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
2510	100	Clst:	olv blk, frm, occ sft, blky - amor, slty i.p., non calc	No shows
	Tr	Dol:		
2525	100	Clst:	a.a.	a.a.
	Tr	Dol:	a.a.	
2540	100	Clst:	a.a.	a.a.
	SlTr	Dol:	a.a.	
2555	100	Clst:	olv blk, frm, occ sft, blky - amor, slily slty i.p., non calc	a.a.
	Tr	Ls:	pale yelsh brn - mod brn, stf - frm, blky, occ microxln, else arg.	
2570	100	Clst:	a.a.	a.a.
	Tr	Ls:	a.a.	
2585	100	Clst:	a.a.	a.a.
	Tr	Ls:	a.a.	
2600	100	Clst:	a.a.	a.a.
	SlTr	Ls:	a.a.	
2615	100	Clst:	a.a.	a.a.
	SlTr	Ls:	a.a.	
2630	95	Clst:	a.a.	a.a.
	5	Ls:	a.a.	
2645	100	Clst:	a.a.	a.a.
	Tr	Ls:	a.a.	
2660	90	Ls:	med lt - dk gry, frm - mod hd, blky, arg, also pk gry, frm, blky, arg i.p., occ xln	a.a.
	10	Cls:	a.a., slily calc	
	Tr	Dol:	mod brn, wh - transl, xln, subang grains, hd	

Taking 5m spot samles from 2660 m......(in order to sample Lange Sst.)

2665	80	Clst:	a.a.	a.a.
(spot)	20	Ls:	a.a.	
	Tr	Dol:	a.a.	
2670	70	Ls:	a.a.	
(spot)	30	Clst:	a.a	
	Tr	Dol:	a.a.	
2675	a.a.			

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: C-Fangst
Well no 6507/3-3A		
R.T.: 25 meters	Company: Statoil, Enterprise, Saga	
Hole size: 12 1/4"	Geologist: O. Hunnes / Å. Lauritsen	Date: 31.03.99

Depth (m RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
2680	60	Clst:	olv gry - olv blk, sft - frm, blky - amor, slily slty	No shows
(spot)	40	Ls:	med lt - dk gry, frm - mod hd, blky, arg, also pk gry, frm, blky, arg i.p.,	
2685	70	Clst:	a.a.	a.a.
(spot)	30	Ls:	a.a.	
2690	60	Clst:	med gry - med dk gry, olv blk, dom sft, occ frm, amor - blky, slily slty i.p.	a.a.
	40	Ls:	brn gry, lt brn gry, frm, blky, arg i.p.	
	Tr	Dol:	mod brn, blky, mass, hd	
	SlTr	Pyr		
2695	60	Clst:	dom frm, else a.a.	a.a.
(spot)	40	Ls:	dom frm - mod hd, else a.a.	
2700	80	Clst:	bnsh blk, olv blk, sft - frm, blky - amor, slily slty i.p.	
(spot)	20	Ls:	a.a.	
	GdTr	Sst:	qtz, clr - trnsl - wh, vf - f, occ med - crs, mod srt, subang - subrnd, kaolin mtx, lse - mod calc cmt, gd tr glau	no stain/odur, patch dull yelwh fluor, v sl cloudy bl wh cut, bl wh res
	Tr	Dol:	a.a.	
2705	50	Sst:	qtz, clr - trnsl - wh, f- crs, occ v crs, poor srt, subang - subrnd, kaolin mtx, lse - mod calc cmt, arg i.p., tr glau	no stain/odur, pat dull yelwh fluo, sl cloudy blwh cut, blwh res
	30	Clst:	dk gry, olv blk, sft, occ frm, amor - blky, slty i.p.	
	20	Ls:	dk yelsh brn, frm, blky, arg	
	Tr	Dol:	a.a.	
2710	85	Clst:	a.a.	
(spot)	10	Ls:	a.a.	
	5	Sst:	dom f - med, else a.a.	No shows
2715	75	Clst:	a.a.	a.a.
(spot)	20	Ls:	a.a.	
	5	Sst:	a.a.	
2720	85	Clst:	olv blk, med gry, frm, blky, slty i.p.	a.a.
	10	Ls:	a.a.	
	5	Sst:	a.a.	
2725	90	Clst:	a.a.	a.a.
(spot)	10	Ls:	a.a.	
	GdTr	Sst:	a.a.	

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: C-Fangst
Well no 6507/3-3A		
R.T.: 25 meters	Company: Statoil, Enterprise, Saga	
Hole size: 12 1/4"	Geologist: O. Hunnes / Å. Lauritsen/O.Beyer	Date: 31.03.99

Depth (m RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
2730	85	Clst:	dk gry, olv blk, sft, occ frm, amor - blky, slty i.p.,	No stain, patchy dull,
(spot)	10	Ls:	dk yelsh brn, frm, blky, arg	yel wh fluor, v slw
	5	Sst:	qtz, clr - trnsl, lt brn, vf -f, v srt, subrnd, kaolin mtx, lse - mod calc cmt	bl wh cut, blwh res
	Tr	Glau		
2735	90	Clst:	a.a., v sndy i.p.	No shows
	10	Ls:	a.a.	
2750	90	Clst:	brn blk, lt gry - lt brn gry, dom sft, occ frm, amor - blky, non calc, slily slty i.p.	a.a.
	10	Ls:	dk yel brn, frm, blky, arg i.p.	
2755	95	Clst:	lt gry - lt brn gry, else a.a.	a.a.
	5	Ls:	a.a.	
2760	100	Clst:	a.a.	a.a.
	GdTr	Ls:	a.a.	
2765	100	Clst:	a.a.	a.a.
	GdTr	Ls:	a.a.	
2770	100	Clst:	a.a.	a.a.
	GdTr	Ls:	a.a.	
2780	90	Clst:	a.a.	a.a.
	10	Ls:	a.a.	
2795	100	Clst:	pred med- med dk gn gry, frm, unif, non calc, non slty	a.a.
	Tr	Ls:	a.a.	
2810	100	Clst:	a.a.	a.a.
	GdTr	Ls:	a.a.	
2825	100	Clst:	a.a.	boost riser
	GdTr	Ls:	a.a.	(cavings)
2840	100	Clst:	a.a.	a.a.
	GdTr	Ls:	a.a.	
2855	100	Clst:	incr dom med bluish gry, unif, frm, bec slily sft	a.a.
	Tr	Ls:	a.a.	
2870	100	Clst:	dom bluish gry, sft-frm, a.a.	a.a.
	Tr	Ls:	a.a.	
2885	100	Clst:	a.a.	a.a.
	GdTr	Ls:	a.a.	

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WELLSITE SAMPLE DESCRIPTION			Page 8 of 19
Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A			
R.T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 12 1/4"	Geologist: O.Beyer / I. Winsvold		Date: 31.03.99

Depth (m RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
2900	100	Clst:	med bluish gry - gryish blk, unif, frm - sft, also pa gry cly, slily calc	No shows
	Tr	Ls:	dk yel brn, flky - blky, mod hd - frm, arg	
2915	100	Clst:	gen less calc, else a.a.	a.a.
	Tr	Ls:	a.a.	
2930	100	Clst:	gen non calc, else a.a.	a.a.
	GdTr	Ls:	a.a.	
2945	80	Clst 1:	a.a.	No shows
	20	Clst 2:	red brn - mod brn, frm, blky, non calc	Boost riser
	GdTr	Ls:	a.a.	
2960	100	Clst:	a.a.	No shows
	10	Clst 2:	a.a.	Boost riser
	GdTr	Ls:	a.a.	
2975	70	Clst 1:	non - slily calc, else a.a.	No shows
	10	Clst 2:	a.a.	
	20	Ls:	dk yel brn - lt yel brn, mod hd - frm, flky - blky, arg	
2990	90	Clst 1:	a.a.	a.a.
	10:	Clst 2:	a.a.	
	Tr	Ls:	a.a.	
3005	90	Clst 1:	dom frm, else a.a.	a.a.
	10	Clst 2:	a.a.	
	Tr	Ls:	a.a.	
3020	70	Clst 1:	a.a.	a.a.
	10	Clst 2:	a.a.	
	20	Ls:	a.a.	
3035	90	Clst 1:	a.a.	a.a.
	10	Clst 2:	a.a.	
	Tr	Ls:	a.a.	
	Tr	Sd:	wh - trnsl qtz, f - med, mod srt, sbang, lse grns	
3050	80	Clst 1:	a.a.	a.a.
	10	Clst 2:	a.a.	
	10	Ls:	a.a.	
	Tr	Sd:	a.a.	
3065	85	Clst 1:	a.a.	a.a.
	10	Clst 2:	a.a.	
	5	Ls:	a.a.	

STATOIL

WELLSITE SAMPLE DESCRIPTION				Page 9 of 19
Country: Norway		Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A				
R.T.: 25 meters		Company: Statoil, Enterprise, Saga		
Hole size: 12 1/4"		Geologist: O.Beyer / I. Winsvold		Date: 01-02.04.99

Depth (m RT)	Lithology (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
3079	75	Clst (1):	gryish blk, unif, frm, incr med gry, slily - mod calc	No shows
Btms	15	Clst (2):	mod brn - gryish brn, unif, frm, incr med gry, slily calc	
Up	10	Ls:	dk yel brn, flky - blky, mod hd - frm, arg, loc dol	
3080	85	Clst 1:	a.a.	a.a.
	5	Clst 2:	a.a.	
	10	Ls:	a.a.	
3095	75	Clst 1:	loc bec frm - sft, else a.a.	a.a.
	15	Clst 2:	a.a.	
	10	Ls:	a.a.	
3110	90	Sh:	grysh blk, sft - frm, blky - sbfis, non calc, tr pyr	a.a.
	10	Clst 1:	a.a.	
	Tr	Clst 2:	a.a.	
	R Tr	Ls:	a.a.	
3125	100	Sh:	a.a.	a.a.
	R Tr	Clst 1&2:	a.a.	
3140	100	Sh:	a.a.	a.a.
	Tr	Dol:	lt olv gry - lt brn gry, blky, hd, micxln	
3155	100	Sh:	grysh blk - brnsh blk, frm, mod hd i.p., blky - sbfis, slily calc tr pyr	a.a.
	Tr	Dol:	a.a.	
	Tr	Ls:	v lt gry, wh, sbang - sbrndd, sft, arg, xln	
3170	100	Sh:	pred non - slily calc, else a.a.	a.a.
	Tr	Ls/Dol:	lt gry - off wh, olv gry - lt brn gry, blky, hd, micxln- amor, flky	
3185	100	Sh:	pred a.a.	a.a.
	Tr	Ls/Dol:	a.a.	
3200	95	Clst/Sh:	bec pred sft-frm, slily calc, else a.a.	a.a.
	5	Ls/Dol:	a.a.	
3215	90	Clst/Sh:	pred a.a.	a.a.
	10	Dol:	a.a.	
	Gd Tr	Ls:	off wh - lt gry	
3230	90	Clst:	brnsh blk - olv blk, sft - mod hd, sbblky, occ sbfis, non - slily calc, tr pyr	a.a.
	10	Dol:	lt brn gry - brn gry, blky, frm - hd, arg i.p., micxln	

STATOIL

WELLSITE SAMPLE DESCRIPTION			
Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A			
R.T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 12 1/4"	Geologist: O.Beyer / I. Winsvold		Date: 04-6.04.99

Depth (m RT)	Lithology (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
3245	70	Clst:	brnsh blk - olv blk, sft - mod hd, sbblky, occ sbfis, non - slily calc, tr pyr	No shows
	30	Dol:	lt brn gry - brn gry, blky, frm - hd, arg i.p., micxln	
	Tr	Ls:	v lt gry, wh, sbang, sft - frm, arg	
3260	85	Clst/Sh:	pred frm, else a.a.	a.a.
	10	Dol:	a.a.	
	5	Ls:	a.a.	
3275	90	Clst/Sh:	pred frm, bec loc slily crmbly/slty txt, else a.a.	a.a.
	5	Dol:	pred a.a., also bec slty appear, frm- fri	
	5	Slst:	Med brn - brnsh gry, frm - fri, grdg to Dol, a.a.	
	Tr	Ls:	a.a.	
	Tr	Pyr/Pyr foss		
3290	95	Clst/Sh:	pred frm, slily cmbly, a.a.	a.a.
	5	Dol/Slst:	pred slty appear, a.a.	
	Tr	Ls:	a.a.	
	Tr	Pyr/Pyr foss		
3305	60	Clst/Sh:	sbblky - blky, non sbfis, non calc, else a.a.	a.a.
	30	Dol:	a.a.	
	10	Ls:	a.a.	
3320	70	Clst:	also olv gry, else a.a.	a.a.
	30	Dol:	a.a.	
	Tr	Ls:	a.a.	
	Tr	Slst:	med gry - brnsh gry, sft, wl srt	
	Tr	Pyr		
3335	80	Clst:	olv blk - olv gry, frm - mod hd, blky, non calc, occ carb, tr pyr	a.a.
	20	Dol:	a.a.	
	Tr	Ls:	a.a.	
	R Tr	Slst:	a.a.	
3350	75	Clst:	pred a.a.	a.a.
	25	Dol:	a.a.	
	Tr	Ls:	a.a.	
	Tr	Pyr		
3365	90	Clst:	pred a.a.	a.a.
	10	Dol:	a.a.	
	Tr	Ls:	a.a.	
	Tr	Pyr		

STATOIL

WELLSITE SAMPLE DESCRIPTION					Page 11 of 19
Country: Norway		Area: Nordland II		Field: C-Fangst	
Well no 6507/3-3A					
R.T.: 25 meters		Company: Statoil, Enterprise, Saga			
Hole size: 12 1/4"		Geologist: O.Beyer / I. Winsvold /T. Klungsøyr		Date: 06-8.04.99	
Depth (m RT)	Lithology (%)	Lithological Description Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination			Remarks Shows, cavings, mud additives, etc.

3380	90	Clst:	olv blk - olv gry, frm - mod hd, blky, non calc, occ carb, tr pyr	No shws
	10	Dol:	lt brn gry - brn gry, blky- ang, also minor micxln frm - hd, arg i.p.,	
	Tr	Ls:	v lt gry, wh, sbang, sft - frm, arg	
3395	95	Clst:	bec pred abun disp micropyr, frm - mod hd, trace gnsh gry, frm	a.a.
	5	Dol:	a.a.	
	Tr	Ls:	a.a.	
	Tr	Pyr nods, Carb mat		
3410	95	Clst:	pred v. abun micropyr, also slily disp microcarb, else a.a.	a.a.
	5	Dol:	a.a.	
	Tr	Ls:	a.a.	
	Tr	Pyr nods		
3425	95	Clst:	pred v. abun micropyr, a.a.	a.a.
	5	Dol:	a.a.	
	Tr	Ls:	a.a.	
	Tr	Pyr nods		
3440	100	Clst:	bec only slily disp micropyr, bec pred olv blk, non - slily calc, mass, unif	a.a.
	Gdtr	Dol:	a.a.	
	Tr	Ls:	a.a.	
3455	100	Clst:	olv blk - olv gry, frm - mod hd, blky, occ abun micropyr, occ slily disp microcarb, non - occ slily calc	a.a.
	Gdtr	Dol:	a.a.	
	Tr	Lst:	a.a.	
3470	100	Clst:	a.a.	a.a.
	Gdtr	Dol:	a.a.	
	Tr	Lst:	a.a.	
3485	100	Clst:	a.a.	a.a.
	Tr	Dol, Ls:	a.a.	
3500	100	Clst:	a.a.	a.a.
	Tr	Dol, Ls:	a.a.	
3515	100	Clst:	bec pred dk olv gry, less microcarb and micropyr	a.a.
	Tr	Dol, Ls:	a.a.	
3530	100	Clst:	a.a.	a.a.
	Tr	Dol, Ls:	a.a.	

STATOIL

WELLSITE SAMPLE DESCRIPTION			Page 12 of 19
Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A			
R .T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 12 1/4"	Geologist: O.Beyer / T. Klungsøyr		Date: 08-11.04.99

Depth (m RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
3545	100	Clst:	Pred olv blk, sft - mod hd, blky, occ abun micropyr, occ slily disp microcarb, occ slily slty, non - slily calc	No shows
	SlTr	Dol:	Lt brn gry, blky, frm, arg	
3552	100	Clst:	a.a.	a.a.
3560	100	Clst:	Olv gry - olv blk, frm - mod hd, blky, less micropyr/microcarb, slty, occ sdy, non - slily calc	a.a.
3575	100	Clst:	Incr slty/sdy, else a.a.	a.a.
	Sltr	Dol:	Lt brn gry, lt blsh gry, blky - ang, frm - mod hd, arg	
3590	100	Clst:	Occ sl sdy, else a.a.	a.a.
	Sltr	Dol:	a.a.	
3605	100	Clst:	bec gen mod slty, non calc, disp micromic/micropyr	a.a.
	Sltr	Dol/Ls		
3620	100	Clst:	a.a.	a.a.
	Sltr	Dol/Ls:	a.a.	
3635	100	Clst:	gen less slty & micro-mic/-pyr, v unif	a.a.
	Tr	Dol/Ls:	a.a.	
3650	100	Clst:	Non - sl calc, else a.a.	a.a.
	Tr	Dol/Ls:	a.a.	
3665	100	Clst:	Incr. slty, else a.a.	a.a.
	Sltr	Dol/Ls:	Lt brn gry a.a.	
3680	100	Clst:	v unif., a.a.	a.a.
	Sltr	Dol/Ls:	a.a.	
3685	95	Clst:	Slty, else a.a.	a.a.
	5	Dol/Ls:	a.a.	
3695	100	Clst:	a.a.	a.a.
	Gdtr	Dol/Ls:	a.a.	
3705.5	100	Clst:	a.a.	a.a.
	Gdtr	Dol/Ls:	a.a.	
3710	100	Clst:	a.a.	a.a.
	Gdtr	Dol/Ls:	a.a.	

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: C-Fangst
Well no 6507/3-3A		
R.T.: 25 meters	Company: Statoil, Enterprise, Saga	
Hole size: 12 1/4"	Geologist: O.Beyer / T. Klungsøyr	Date: 08-11.04.99

Depth (m RT)	Lithology (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
3715	100	Clst:	Olv gry - olv blk, frm - mod hd, blky, slily micropyr/microcarb, occ aren, pred non calc, unif	No Shows
	Tr	Dol:	Lt - med brn gry, blky, tr ang, frm (dolomikr)- mod hd (ang), dom arg	
3720	90	Clst:	pred incr slty, else a.a.	a.a.
	10	Dol:	a.a.	
	Sltr	Pyr nods/pyr foss		
3725	85	Clst:	pred a.a.	a.a.
	15	Dol/Ls:	a.a.	
	Sltr	Pyr nods/pyr foss		
3730	95	Clst:	pred a.a.	a.a.
	5	Dol:	a.a.	
	Sltr	Pyr nods/pyr foss		
3735	90	Clst:	pred a.a.	a.a.
	10	Dol:	a.a.	
	Sltr	Pyr nods/pyr foss, Sd (Qtz)		
3740	85	Clst:	pred a.a.	a.a.
	15	Dol:	a.a.	
	Tr	Pyr nods/pyr foss, Sd (Qtz)		
3745	60	Clst:	pred a.a.	a.a.
	40	Dol:	pred v arg, grdg Clst	
	Gdtr	Sd:	Clr Qtz, vfn-med, ang - sbrnd , lse float grns	
	Tr	Pyr nods/pyr foss, Cal		
3750	70	Clst:	pred a.a.	a.a.
	30	Dol:	pred v arg dolomikr, grdg Clst	
	Gdtr	Sd:	Clr Qtz, vfn-med, ang - sbrnd , lse float grns	
	Tr	Pyr nods/pyr foss, Cal		
3755	80	Clst: a.a.		a.a.
	20	Dol: a.a.		
	Tr	Sd: a.a.		
3760	85	Clst: a.a.		a.a.
	15	Dol: a.a.		
	Tr	Sd: a.a.		

WELLSITE SAMPLE DESCRIPTION			Page 14 of 19
Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A			
R .T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 12 1/4"	Geologist: O.Beyer / T. Klungsøyr		Date: 12.04.99

Depth (m RT)	Lithology (%)		Lithological Description Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks Shows, cavings, mud additives, etc.
3765	95	Clst:	Dom olv blk, frm - mod hd, blky, occ slily micropyr, pred slty, non calc	No shows
	5	Dol:	Lt - med brn gry, blky, tr ang, frm - occ mod hd, pred v arg dolomicr, grdg Clst	
	Tr	Sd:	Clr Qtz, vfn-med, ang - sbrnd , lse float grns	
3770	100	Clst:	a.a.	a.a.
	Gdtr	Dol:	a.a.	
	Tr	Sd:	a.a.	
3775	100	Clst:	Grdg dk gry - grsh blk, slty - v slty, else a.a.	a.a.
	Tr	Dol:	a.a.	
	Gdtr	Sd:	a.a.	
3780	100	Clst:	Dom olv blk, else a.a.	a.a.
	Tr	Dol:	a.a.	
	Gdtr:	Sd:	a.a.	
3785	100	Clst:	slty - v slty occ grdg sltst, else a.a.	a.a.
	Sltr	Dol:	a.a.	
	Gdtr	Sd:	a.a.	
	Sltr	Pyr nods/pyr foss		
3790	100	Clst:	loc mod slty, else a.a.	a.a.
	Sltr	Dol:	a.a.	
3792.5 (Spot Sampl)	30	Sst:	lt brn gry (Kao mtx), clr-transl Qtz, vf-med, dom fn, mod srt, sbrnd, v abun Kao mtx/cmt, tr calc cmt, tight - pr vis por	Even mod-bri lt yel dir Flu, Slw strmg wh Cut. V wk lt brn HC Stn, V Wk HC odor on crsh cutngs
	70	Clst:	dom a.a.	
	Tr	Dol/Ls/Cal		
3795	100	Sst:	pred a.a.	Shws pred a.a.
	Tr	Dol/Ls/Cal		
3800	100	Sst:	pred a.a.	Shws pred a.a.
	Tr	Dol/Ls/Cal		
3805	100	Sst:	also tr crs-vcrs Qtz, slily less abun Kao mtx, else a.a.	Shws pred a.a.
	Tr	Dol/Ls/Cal		

TD 12 1/4" section

WELLSITE SAMPLE DESCRIPTION			Page 15 of 19
Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A			
R.T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 8 1/2"	Geologist: O. Hunnes / T. Kristensen		Date: 18.04.99

Depth (m RT)	Lithology (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
3810		Contam by cmt. Not representative		
3820	20	Sst:	qtz, clr - trnsl, occ lt brn gry, vf - f, mnr med, sbang - sbrnd, mod srt, pre lse, occ fri, abun kaol(?) mtrx i.p., mod vis por gry (Kao mtx), clr-transl Qtz, vf-med, dom fn, mod srt, sbrnd,	Even dull bl wh - gn yel fluor(mud?), wk blooming bl wh cut fluor
80	Cmt			
3825	100	Sst:	a.a.	a.a.
(spot)	Tr	Cmt		
3830	100	Sst:	clr - trnsl qtz, occ op qtz, f - med, mod srt, sbang - sbrndd, app lse, loc lt gry mtrx(kaol?), gd vis por	a.a.
	Tr	Cmt		
3840	100	Sst:	a.a.	a.a.
3850	60	Clst:	brn blk - gry blk - blk, brn gry, mod hd, blky - sbfis, v carb grdg Coal i.p., slty i.p., occ grdg Sltst, micromic - occ mic, micropyr i.p., non calc	a.a.
	40	Sst:	a.a.	
3860	70	Clst:	a.a.	a.a.
	30	Sst:	a.a.	
3870	70	Sst:	clr - trnsl qtz, f - crs, pr srt, sbang - sbrndd, app lse, occ fri, occ lt gry arg mtrx(kaol?), gd vis por	a.a.
	30	Clst:	a.a.	
3880	100	Sst:	clr - trnsl qtz, occ pk trnsl qtz, pred med - crs, occ f, occ v crs, wl srt, sbang - sbrndd, app lse, gd vis por	dull gn yel fluor(mud), v wk blooming bl wh cut fluor
	Tr	Clst:	a.a.	
	Tr	Cmt		
3890	100	Sst:	predom f - med, occ crs - v crs, else a.a.	a.a.
	Tr	Clst:	a.a.	
3900	100	Sst:	a.a.	a.a.
	Tr	Clst:	a.a.	
3910	100	Sst:	a.a.	a.a.
	Tr	Clst:	a.a.	
3920	100	Sst:	abun lt gry - wh mtrx (kaol?), poor - mod vis por, predd lse also sl cmt, else a.a.	a.a.
	Tr	Clst:	a.a.	

STATOIL

WELLSITE SAMPLE DESCRIPTION			
Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A			
R.T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 8 1/2"	Geologist: O. Hunnes / T. Kristensen		Date: 20.04.99

Depth (m RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
3930	100	Sst:	clr - trnsl qtz, occ pk trnsl qtz, pred f - med, occ f, occ v crs, wl srt, sbang - sbrndd, app lse, abd lt gry-wh mtrx, mod - gd vis por	dull gn yel fluor(mud), v wk blooming bl wh cut fluor
	Tr	Clst:	a.a.	
3940	100	Sst:	qtz, clr - trnsl, occ lt gry brn, pred f-med, rr crs - v cr, sbang - sbrnd, mod srt, pred lse, also fri, lt gry -wh cmt/mtrx, non calc, mic, tr blk min, mod- gd vis por	a.a., tr stn
	Tr	Clst, Mic		
3950	100	Sst:	gd tr of mic (muscov), else a.a.	a.a.
3960	100	Sst:	a.a.	a.a.
3960	100	Sst:	a.a.	a.a.
3970	100	Sst:	occ sl arg i.p., else a.a.	a.a.
3980	100	Sst:	pred abd lt gry-wh mtrx (kaol?), mod arg i.p., gen poor to mod vis por, gd vis por i.p., else a.a.	a.a.
3990	100	Sst:	a.a.	a.a.
4000	100	Sst:	lt gry - med gry, clr - trnsl qtz, v f - f, mod srt, sbang - sbrndd, app sft - mod hd, wk sil cmt, com arg mtrx, kaol? i.p., pr vis por	a.a.
4010	100	Sst:	lt gry - med gry, brn gry, clr - trnsl qtz, v f - f, grdg Sltst i.p., mod srt, sbang - sbrndd, app sft - mod hd, wk sil cmt, com arg mtrx, kaol? i.p., loc micropyr, occ slily carb, pr vis por	a.a.
	Tr	Clst:	brn blk - gry blk, frm - mod hd, blky - sbfis, v slty/sdy, carb, micropyr, non calc	
4020	100	Sst:	a.a.	a.a.
	Gd Tr	Clst:	a.a.	
4030	90	Sst:	a.a.	a.a.
	10	Clst:	a.a.	
4040	60	Sst:	a.a.	a.a.
	40	Clst:	brn blk - gry blk, frm - mod hd, blky - sbfis, v slty grdg Sltst, v sdy, carb, com micropyr, non calc	
4050	50	Sst:	a.a.	a.a.
	50	Clst:	a.a.	
4060	50	Sst:	a.a.	a.a.
	50	Clst:	a.a.	

STATOIL

WELLSITE SAMPLE DESCRIPTION				Page 17 of 19
Country: Norway		Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A				
R .T.: 25 meters		Company: Statoil, Enterprise, Saga		
Hole size: 8 1/2"		Geologist: O. Hunnes / T. Kristensen		Date: 21 - 23.04.99

Depth (m RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
4070	70	Clst:	brn blk - gry blk, frm - mod hd, blky - sbfis, v slty grdg Sltst, v sdy, carb, com micropyr, non calc	dull gn yel fluor(mud), v wk blooming bl wh cut fluor
	30	Sst:	lt gry - med gry, brn gry, clr - trnsl qtz, v f - f, grdg Sltst i.p., mod srt, sbang - sbrndd, app sft - mod hd, wk sil cmt, com arg mtrx, kaol? i.p.,	
4080	90	Clst:	v sdy - slty, else a.a.	Gen v wk - nil s shows a.a.
	10	Sst:	a.a.	
4090	90	Clst:	a.a.	a.a.
	10	Sst:	a.a.	
4100	100	Clst:	pred brn blk, dom v slty/sdy grad arg SLTST, carb i.p., else a.a.	No shows
	Tr	Sst:	a.a.	
4110	100	Clst:	a.a.	a.a.
	Tr	Sst:	a.a.	
4120	80	Clst:	a.a.	tr dull gn yel fluor (mud), tr v wk blooming bl wh cut fluor
	20	Sst:	lt gry - med gry, brn gry, clr - trnsl qtz, v f - f, grdg Sltst i.p., mod srt, sbang - sbrndd, app sft - fri, wk sil cmt, arg, kaol? i.p., carb i.p., pr vis por	
4130	80	Clst:	grdg Sltst a.a.	a.a.
	20	Sst:	a.a.	
4140	80	Clst:	a.a.	a.a.
	20	Sst:	a.a.	
4150	90	Clst:	a.a.	a.a.
	10	Sst:	a.a.	
4160	100	Clst:	a.a.	No shows
4170	a.a.			a.a.
4180	a.a.			a.a.
4190	a.a.			a.a.
4200	a.a.			a.a.
4210	a.a.			a.a.
4220	a.a.			a.a.
4230	a.a.			a.a.

WELLSITE SAMPLE DESCRIPTION				Page 18 of 19
Country: Norway		Area: Nordland II		Field: C-Fangst
Well no 6507/3-3A				
R.T.: 25 meters		Company: Statoil, Enterprise, Saga		
Hole size: 8 1/2"		Geologist: S. Bjerkenes / T.F. Kristensen		Date: 23 - 24.04.99

Depth (m RT)	Lithology (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
4240	100	Clst:	brn blk, occ gry blk, frm - mod hd, blky - sbfis, slty, occ v slty grdg Sltst, slily sdy, carb, micropyr, non calc	No shows
4250	100	Clst:	slty - v slty, occ grdg Sltst, sdy, else a.a.	a.a.
4260	100	Clst:	less slty/sdy, else a.a.	a.a.
4270	100	Clst:	a.a.	a.a.
	Tr	Sst:	clr - trnsl qtz, v f - f, mod srt, sbang - sbrndd, app lse	
4280	100	Clst:	a.a.	a.a.
4290	100	Clst:	slty - v slty i.p., occ sdy, else a.a.	a.a.
	Tr	Sst:	a.a.	
4300	100	Clst:	a.a.	a.a.
4310	100	Clst:	a.a.	a.a.
4320	100	Clst:	a.a.	a.a.
4330	100	Clst:	a.a.	a.a.
4340	100	Clst:	a.a.	a.a.
4350	100	Clst:	a.a.	a.a.
4360	100	Clst.	a.a.	a.a.
4370	100	Clst:	a.a.	a.a.
4380	100	Clst:	a.a.	a.a.
4390	100	Clst:	a.a.	a.a.
4400	100	Clst:	a.a.	a.a.
4410	100	Clst:	brn blk - gry blk, frm - mod hd, blky - sbfis, slty, occ v slty, loc sdy, micropyr, carb, occ micromic - mic, non calc	a.a.
4420	100	Clst:	a.a.	a.a.
4430	100	Clst:	a.a.	a.a.

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: C-Fangst
Well no 6507/3-3A		
R.T.: 25 meters	Company: Statoil, Enterprise, Saga	
Hole size: 8 1/2"	Geologist: S. Bjerkenes / T.F. Kristensen	Date: 24.04.99

Depth (m RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
4440	100	Clst:	brn blk - gry blk, frm - mod hd, blky - sbfis, slty - v slty, sdy i.p., micropyr - v micropyr, carb, occ micromic - mic, non calc	No shows
	V sl tr	Dol:	yel brn, frm, micr, arg, calc	
4450	100	Clst:	a.a.	a.a.
4460	100	Clst:	a.a.	a.a.
4470	100	Clst:	a.a.	a.a.
4480	100	Clst:	a.a.	a.a.
4490	100	Clst:	a.a.	a.a.
4500	100	Clst:	a.a.	a.a.
4510	100	Clst:	a.a.	a.a.
4520	90	Clst:	a.a.	a.a.
	10	Dol:	yel brn - brn gry, frm - mod hd, micr, v arg, calc	

TD for this well 4528mMD

APPENDIX II

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3B			
R .T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 8 1/2" "	Geologist: Å. Lauritsen / P. Furmyr		Date: 08.05.99

Depth (med RT)	Lithology (%)		Lithological Description Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks Shows, cavings, mud additives, etc.
3760	100	Clst:	olv blk, frm - mod hd, sbfis, slty, non calc, occ slily micropyr	Some contam. of metal shavings
	Gd Tr	Dol:	mod yel brn, frm, blky, cryptoxln	
3770	100	Clst:	a.a.	Less contam.
	Gd Tr	Dol:	a.a.	No shows
3780	95	Clst:	a.a.	No shows
	5	Dol:	a.a.	
3790	100	Clst:	a.a.	a.a.
	Gd Tr	Dol:	a.a.	
	Sli Tr	Sst:	clr qtz, vf - f, sbrndd, lse	
3795	90	Sst:	lt gry - lt brn gry -off wh, clr - trnsl qtz, vf - med, occ crs, mod srt, sbrnd, lt brn gry - off wh arg mtrx, tr calc cmt, tight	Spot sample No fluor, no - v wk, pl, bl wh, cldy cut
	10	Clst:	a.a.	
3800	80	Sst:	clr - trnsl qtz, vf - f, occ med - crs, mod srt, sbang - sbrnd, lse dom clr - trnsl qtz, vf - f, v srt, brnsh gry - lt gry arg mtrx, mod - v cmt,	No shows
	20	Clst:	a.a. occ v slty - v sdy (v f), gd tr micropyr	
	GdTr	Dol:	a.a.	

Lime added to the mud system is abundant in the cutting samples ! ! !

3810	70	Sst:	clr - trnsl qtz, dom f - crs, also v f and vcrs, mod srt, sbang - sbrnd, occ sbrnd, dom lse, els a.a	Even, mod gnsh yel (mud?) - yel wh - bl wh fluor, no cut fluor, no HC stain or odor
	Tr	Dol:	a.a.	
	30	Clst:	brn blk - olv blk, frm - mod hd, blky, occ slty - sdy, i.p. carb - coaly	
3815 (spot)	100	Sst:	dom lse qtz grains, els a.a.	V wk fluor a.a., No cut fluor
	Tr	Clst:	a.a.	
3820	100	Sst:	a.a.	a.a.
	Tr	Clst:	a.a.	
3830	100	Sst:	clr - trnsl - occ op qtz, dom f - crs, mod srt, sbang - sbrndd, loc lt gry arg mtrx, dom lse qtz gr in samples	a.a.
	Tr	Clst:	a.a.	
3840	100	Sst:	a.a.	a.a.
	Tr	Clst:	a.a.	

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country: Norway		Area: Nordland II		Field: C-Fangst	
Well no 6507/3-3B					
R .T.: 25 meters		Company: Statoil, Enterprise, Saga			
Hole size: 8 1/2" "		Geologist: Å. Lauritsen / P. Furmyr / J.Med. Østby		Date: 11. - 19.05.99	

Depth (med RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
3850	100	Sst:	clr - trnsl qtz, dom f - med, also v f and crs - v crs, mod srt, subang - subrnd, dom lse, occ mod - wl cmt, occ clr - wh non calc and pl yelsh brn mtrx, no - poor vis por	Even, dull yelhs gn - yelsh wh fluor, no cut fluor
	GdTr	Clst:	brn blk - olv blk, frm - mod hd, blky, occ slty - sdy, i.p. carb - coaly	
	Tr	Dol:	mod yel brn, frm, blky, cryptoxln, arg i.p.	
3853 (spot)	50	Sst:	a.a.	a.a.
	50	Clst:	brn blk - blk, mass - blky, frm - mod hd, occ brit, carb - coaly, slty i.p.	
	Tr	Pyr	nod of micropyr	
3860	60	Sst:	a.a.	a.a.
	40	Clst:	a.a.	
	Tr	Micropyr		
3870	100	Sst:	clr - trnsl qtz, occ trnsl pnk qtz, pred f - med, occ v f and crs, wl srt, sbang - sbrnd, pred lse, occ mod - wl cmt, no - poor vis por, occ sft calc yelsh wh - pl brn cmt	Even, dull yelsh gn - yelsh wh fluor, v slw v wk, pl, wh - blwh cut fluor, no HC stain
	Gd tr	Clst:	a.a.	
	Tr	Dol:	a.a.	
3880	100	Sst:	a.a.	dir fluor a.a. no cut fluor
	Gd tr	Clst:	a.a.	
	Tr	Dol:	a.a.	
3889 spot	80	Sst:	a.a.	Shows a.a. Poor quality sample, abd metal shavings
	20	Clst:	a.a.	
3890	100	Sst:	a.a.	Poor quality sample. Milling junk
	Tr	Clst:	a.a.	
3900	80	Sst:	a.a.	Yel wh fluor from calc cmt, no cut fluor
	20	Clst:	a.a.	
3910	a.a.			a.a.
3920	a.a.			a.a.
3930	100	Sst:	pred v f - f, wl cmt, calc/sil cmt, fri - mod hd, slily carb, else a.a.	a.a.
	Gd tr	Clst:	a.a.	
3940	100	Sst:	v f - med, mic, v wl cmt, else a.a.	a.a.
	Tr	Clst:	a.a.	
3950	100	Sst:	pred v f - f, else a.a.	a.a.

STATOIL

WELLSITE SAMPLE DESCRIPTION				Page 3 of 7
Country: Norway		Area: Nordland II		Field: C-Fangst
Well no 6507/3-3B				
R .T.: 25 meters		Company: Statoil, Enterprise, Saga		
Hole size: 8 1/2" "		Geologist: I. Winsvold / I. Clement		Date: 20.05.99

Depth (med RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
3960	50	Sst:	clr - wh qtz, occ trnsl pnk, v f - f, occ med, wl srtd, sbang - sbrnd, calc/sil cmt, fri - frm, mic, poor vis por	Yel wh fluor from calc cmt, no cut fluor
	50	Clst:	brn blk - blk, blky, sbfis, hd - v hd, slty i.p.	
3970	90	Sst:	also med lt gry - lt brn gry, v f - f, occ arg, occ bioturb, else a.a.	No dir fluor, v slow, pl wh yel strmg cut fluor, no stain
	10	Clst:	a.a.	
3980	100	Sst:	sil cmt, grad Slst i.p., incr arg & bioturb, else a.a.	a.a.
	Tr	Clst:	slty/sdy i.p., else a.a.	
3990	80	Sst:	grad Slst, dom med lt gry - lt brn gry, dom v f, occ f, arg & bioturb, else a.a., occ lse wh qtz gr, sbrnd, v crs	a.a.
	20	Clst:	slty/sdy, else a.a.	
3995	60	Sst:	clr - wh, lt gry - lt brn gry, dom vf - f, occ med, sbang - sbrndd, wl srt, calc - sil cmt, fri - frm, mic i.p., also lse v f - f qtz gr	a.a.
	40	Clst:	blk, brn blk, gry blk, hd, blky, sbfiss, slty, non calc	
4000	70	Sst:	lt gry, lt gry brn, dom vf - slty, occ f, sbrnd - sbang, wl srt, arg, r lse v f qtz gr, else a.a.	a.a.
	30	Clst:	a.a.	
4005	60	Clst:	gry brn - gry blk, occ med dk gry, v frm - hd, blky, v slty i.p., micropyr, non calc, loc sdy	
	40	Sst:	clr - off wh, dom f, occ med, sbrnd - sbang, wl srt, sil - mod calc cmt, abd wh arg mtx	Yel wh fluor from calc cmt, no cut fluor
4010	80	Clst:	a.a., r blk carb lam	
	20	Sst:	a.a.	none
4015	80	Clst:	a.a., r blk carb lam	
	20	Sst:	a.a.	a.a.
4020	90	Clst:	gry brn - gry blk, med gry - med dk gry, frm - hd, blky, occ splin, micropyr, i.p., slty, non calc	a.a.
	10	Sst:	a.a.	
4025	50	Clst:	med gry, gry brn, med dk gry, v frm - hd, blky, micromic i.p., loc slty, non calc	
	50	Sst:	lt gry, off wh, clr, dom vf, occ f, dom sbang, occ sbrnd, wl srt, dom lse, r wk sil cmt, loc wh arg mtx, off wh Rk Flr i.p.	Even dull yelsh grn-yelsh wh fluor, slw wk bl - wh cut, no stn
4030	80	Sst:	lt gry, off wh, occ yelsh gry, occ med gry, v f-f, sbang, occ sbrnd, wl srt, wk sil cmt, sft-frm, r pyr nod	a.a
	20	Clst:	a.a.	

STATOIL

WELLSITE SAMPLE DESCRIPTION			Page 4 of 7
Country: Norway	Area: Nordland II		Field: C-Fangst
Well no 6507/3-3B			
R.T.: 25 meters	Company: Statoil, Enterprise, Saga		
Hole size: 8 1/2" "	Geologist: I. Winsvold / I. Clement		Date: 21.05.99

Depth (med RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
4035	70	Sst:	lt gry, off wh, occ yelsh gry, occ med gry, v f - f, sbang, occ sbrnd, wl srt, wk sil cmt, sft - frm, r pyr nod	Even dull yelsh grn-yelsh wh fluor, slw wk bl - wh cut, no stn
	30	Clst:	med gry, gry brn, med dk gry, v frm - hd, blky, micromic i.p., loc slty, non calc	
4040	80	Sst:	lt gry, off wh, occ yelsh gry, occ med gry, v f - f, sbang, occ sbrnd, wl srt, wk sil cmt, sft-frm, r pyr nod, r Tr glauc	a.a
	20	Clst:	a.a.	
4045	70	Sst:	lt gry, off wh, med gry, v f - f, sbang, wl srt, wk - mod sil cmt, frm, r Tr glauc, tr wh arg mtx, r lse clr med - crs sbang qtz gr	a.a.
	30	Clst:	med gry, gry brn, med dk gry, v frm - hd, blky - ang, micromic i.p., loc slty, non calc	
4050	80	Sst:	lt gry, off wh, med gry, v f - f, sbang, wl srt, mod - gd sil - calc cmt, frm - mod hd, r Tr glauc, tr wh arg mtx, r lse clr med - crs sbang qtz gr	a.a.
	20	Clst:	a.a.	
4055	90	Sst:	loc pl yel brn, else a.a.	a.a.
	10	Clst:	a.a.	
4060	100	Sst:	dom lt gry, off wh, else a.a.	Even dull yelsh gn - yelsh wh fluor, v slw wk bl - wh cut, pl gn wh res
	Gd Tr	Clst:	a.a.	
4065	90	Sst:	lt gry, off wh, med gry, loc lt brn - pl yel bn, v f - f, sbang, wl srt, mod - wk calc/sil cmt, frm -mod hd, tr wh arg mtrx, r lse clr med - crs qtz gr, tr pyr nod	a.a.
	10	Clst:	a.a.	
4070	100	Sst:	lt gry, loc off wh, pl yel brn, v f - med, occ crs - v crs, sbang - sbrnd, mod - poor srt, frm - mod hd, calc/sil cmt, tr Glauc	a.a.
	Gr Tr	Clst:	a.a.	
4075	100	Sst:	lt gry, med lt gry, v f - med, loc lse crs qtz gr, sdang, mod srt, frm - mod hd, calc/sil cmt, tr Glauc	a.a.
	Tr	Clst:	a.a.	
4080	100	Sst:	lt gry, off wh, med lt gry, v f - med, dom f, sbang, wl srt, frm - mod hd, calc/sil cmt, tr wh arg mtrx, tr Glauc	a.a.
	Tr	Clst:	a.a.	
4085	100	Sst:	a.a.	a.a.
	Tr	Clst:	a.a.	

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: C-Fangst
Well no 6507/3-3B		
R.T.: 25 meters	Company: Statoil, Enterprise, Saga	
Hole size: 8 1/2" "	Geologist: I. Winsvold / I. Clement	Date: 23.05.99

Depth (med RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
4090	100	Sst:	lt gry, off wh, med lt gry, loc pl yel brn, v f - f, dom f, sbang, wl srt, frm - mod hd, calc/sil cmt, tr wh arg mtrx, tr Glauc	Even dull yelsh grn-yelsh wh fluor, v slw wk bl - wh cut, pl gn wh res
	Tr	Clst:	med gry, gry brn, med dk gry, v frm-hd, blky-ang, micromic i.p., loc slty, non calc	
4095	100	Sst:	a.a.	a.a.
	Tr	Clst:	a.a.	
4100	100	Sst:	r pl yel brn, v f - f, wk calc cmt, sil cmt, poor vis por	a.a.
	Tr	Clst:	a.a.	
4105	100	Sst:	a.a.	
	Tr	Clst:	a.a.	
4110	100	Sst:	lt gry, off wh, med lt gry, r pl yel brn, v f - f, sbang, wl srt, frm - mod hd, wk calc cmt, sil cmt, poor vis por, tr Glauc	a.a.
	R Tr	Clst:	a.a.	
4115	100	Sst:	a.a.	a.a.
	R Tr	Clst:	a.a.	
4120	100	Sst:	a.a.	a.a.
	R Tr	Clst:	a.a.	
4125	90	Slst:	grad v f Sst, dk gry - med dk gry, slt - v f, wl srt, sbang, frm - hd, v hd i.p., r mic, tr pyr nod, no vis por	No dir fluor, v slw wk bl wh stmg cut fluor
	10	Sst:	v lt gry - lt gry, f, r lse crs wh qtz gr, sbang, wl srt, sil cmt, sft - frm, poor vis por	
	Tr	Clst:	gry blk - blk, blky - ang, hd - v hd, non calc (cont from above?)	
4130	100	Slst:	occ slily calc, r tr lse v crs qtz gr, else a.a.	a.a.
	Tr	Clst:	a.a.	
4135	100	Slst:	a.a.	a.a.
	Tr	Clst:	a.a.	
4140	90	Slst:	a.a.	a.a.
	10	Sst:	v lt gry - lt gry, occ med gry, v f - f, wl srt, sbrnd, frm - mod hd, fri, tr pyr nod	
4145	60	Sst:	lt gry, v lt gry, r yelsh gry, v f - f, grad slt, sbang-sbrnd, wl srt, sft - occ frm, wk sil cmt, r lse v f - f qtz gr	a.a.
	40	Sltst:	dk gry, med dk gry, brnsh gry, v frm-hd, blky, occ splty, aren, non calc	
4150	60	Sltst:	a.a	
	40	Sst:	a.a	a.a.

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: C-Fangst
Well no 6507/3-3B		
R.T.: 25 meters	Company: Statoil, Enterprise, Saga	
Hole size: 8 1/2" "	Geologist: I. Winsvold / I. Clement	Date: 25.05.99

Depth (med RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
4155	80	Sltst:	dk gry, med dk gry, brnsh gry, v frm - hd, blky, occ splty, aren, non calc	No dir fluor, v slw wk bl wh stmg cut fluor
	20	Sst:	lt gry, v lt gry, r yelsh gry, v f - f, grag slt, sbang - sbrnd, wl srt, sft - occ frm, wk sil cmt, r lse v f - f qtz gr	
4160	60	Sltst:	a.a.	
	40	Sst:	a.a.	a.a.
4165	80	Sltst:	a.a.	
	20	Sst:	lt gry, v lt gry, r yelsh gry, v f - f, grad slt, sbang - sbrnd, wl srt, sft - occ frm, wk sil cmt, r lse v f - f qtz gr	a.a.
4170	70	Sst:	a.a.	a.a.
	30	Sltst:	a.a.	
4175	50	Sst:	a.a.	V poor sample
	50	Sltst:	a.a.	
4180	90	Slst:	a.a.	No dir fluor, v slw wk bl wh stmg cut fluor
	10	Sst:	a.a.	
4185	100	Slst:	a.a.	a.a.
	Tr	Sst:	a.a.	
4190	100	Slst:	loc grad v f Sst, else a.a.	a.a.
	R Tr	Sst:	trnsl - clr qtz gr, crs - v crs, sbrnd, mod srt, lse gr	
4195	100	Slst:	a.a.	a.a.
	R Tr	Sst:	a.a.	
4200	100	Slst:	grad v f Sst, else a.a.	a.a.
	Gd Tr	Sst:	trnsl - clr qtz gr, dom f, occ crs, sbrnd, mod srt, lse gr	
4205	90	Slst:	a.a.	a.a.
	10	Sst:	med lt gry - med gry, lt gry, v f - f, sbang - sbrnd, wl srt, frm, occ lse qtz gr, v calc cmt	
4210	90	Slst:	a.a.	a.a.
	10	Sst:	a.a.	
4215	60	Slst:	a.a.	No shows
	40	Sst:	grad Slst, med dk gry, brn gry, v f, occ f, sbrnd, mod - wl srt, frm, occ mod hd, wk calc cmt	
	Tr	Sst:	a.a.	

STATOIL

WELLSITE SAMPLE DESCRIPTION				Page 7 of 7
Country: Norway		Area: Nordland II		Field: C-Fangst
Well no 6507/3-3B				
R.T.: 25 meters		Company: Statoil, Enterprise, Saga		
Hole size: 8 1/2" "		Geologist: I. Winsvold / I. Clement		Date: 25.05.99

Depth (med RT)	Lithology (%)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
4217 (spot)	50	Sst1:	lt brn - mod yel brn, fri - frm, v f - f, sblky - sbrnd, mod srt, calc cmt, arg i.p., tr Glauc	No dir fluor, slw bl wh stmg/blmg cut fluor, no oil stn, brt gn gh res
	50	Sst2:	grad Slst, med dk gry, brn gry, v f, occ f, sbrnd - sbrnd, mod - wl srt, frm, occ mod hd, wk calc cmt, lse trnsl - clr qtz gr, f - crs, med - poor srt,	
4220	80	Sst1:	also v lt gry, else a.a.	No shows
	10	Sst2:	a.a.	
	10	Slst:	gradv f Sst, dk gry, med dk gry, brnsh gry, v frm - hd, blky, occ splty, aren, non calc	
4225	90	Sst:	lt brn, yelsh brn, lt gry - off wh, occ clr - trnsl, v f - f, occ med, sbang - sbrndd, mod srt, wk calc-mod gd sil cmt, sft-frm, loc abd lse qtz gr	a.a.
	10	Sltst:	a.a.	
4230	90	Sst:	a.a., loc abd dk gry-off wh arg mtx (kaol)	a.a.
	10	Clst:	dk gry, med gry, frm-mod hd, micromic i.p., blky, non calc	
4235	80	Sst:	lt brn, ylsh brn, lt gry-off wh, occ clr-trnsl, vf-m, r c, sbang-occ sbrndd, mod-occ pr srt, mod-gd sil cmt, frm-occ sft, abd arg mtx i.p.	a.a.
	20	Clst:	a.a.	
4240	90	Sst:	lt brn, yelsh brn, lt gry - off wh, occ clr - trnsl, v f - med, r c, sbang - occ sbrnd, mod-occ pr srt, mod-gd sil cmt, frm-occ sft, lse v f - f, occ med - crs, abd arg mtx i.p., inc amt qtz gr	a.a.
	10	Clst:	a.a.	
4245	100	Sst:	a.a., inc amt v f - f lse qtz	a.a.
4250	100	Sst:	a.a.	a.a.
4255	90	Sst:	a.a.	a.a.
	10	Clst:	dk gry, med gry, frm - mod hd, micromic i.p., blky, non calc	
4260	80	Sst:	lt brn, yelsh brn, lt gry - off wh, occ clr - trnsl, v f - med, r c, sbang - occ sbrnd, mod - occ poor srt, mod - gd sil cmt, frm - occ sft, lse v abd arg mtx i.p., inc amt, f - f, occ med - crs qtz gr	a.a.
	20	Clst:	a.a.	
4265	100	Sst:	a.a.	a.a.
4270	100	Sst:	lt gry - off wh, clr - trnsl, occ lt brn, v f - med, r c, sbang - occ sbrnd, mod - occ poor srt, mod - gd sil cmt, frm - occ sft, abd arg mtx i.p., inc amt lse v f - f, occ med - crs qtz gr	a.a.
4275	100	Sst:	a.a.	a.a.

ENCLOSURES

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STATOIL

PARTNERS **Enterprise Oil Norge Ltd, Saga Petroleum A/S**

WELL **6507/3-3A**

COMPOSITE LOG
1 : 500

PROSPECT STRUCTURE
Idun

AREA:	Norwegian North Sea
LICENCE:	PL 159
COORDINATES:	65° 48' 03.73" N 07° 43' 28.69" E
KB:	25m
WATER DEPTH:	391m
TOTAL DEPTH:	4528m MDRT
FM. AT T.D.:	Melke Formation
SPUD DATE:	23-03-98
RIG RELEASE:	20-06-99
WELL STATUS:	P & A - gas discovery
RIG:	Byford Dolphin
CONTRACTOR:	Dolphin Doc AS
GEOLOGISTS:	Hunnes, Lauritsen, Winsvold, Beyer, Kristensen, Bjerkenes, Furmyr
PREPARED BY:	I. Winsvold

LOCATION MAP

6507/3-3 A

CASING DATA

Casing	Depth	Leak off tests
30" casing	476 mMD	
20" casing	667 mMD	1.28 S.G.
13 3/8" casing	1752 mMD	1.63 S.G. (FIT)
9 5/8" casing	3794 mMD	1.58 S.G. (FIT)

LEAK OFF TESTS

VELOCITY SURVEY

LOGS RUN

CONTRACTOR: BHI(MWD), SCHLUMB.

MWD GR-RES (MPR)	MWD TRIPLE-COMBO	MDT-GR	DSI-GR
Run1: 1750-1998mMD Run2: 1998-2617mMD Run3: 2617-3079mMD Run4: 3079-3260mMD Run5: 3260-3396mMD Run6: 3396-3555mMD Run7: 3555-3805mMD	Run8: 3805-3891mMD Run9: 3891-4147mMD Run10:4147-4528mMD	Run1A: 3800-3875mMD	Run1A: 3050-3892mMD

COMMENTS:

Sidetrack from 6507/3-3 at 1785 mMD RT

MWD density started to fail at 4170 mMD RT

LITHOLOGICAL SYMBOLS

CONGLOMERATE, SHALE, MARL, COAL LIGNITE, FORAMS, MICA, SAND SANDSTONE, LIMESTONE, TUFF, WOOD FRAGS, BURROWS, KAOLINITE, SILT SILTSTONE, CHALK, SALT GEN'L, FOSSILS GEN'L, PYRITE, CHERT, CLAY CLAYSTONE, DOLOMITE, ANHYDRITE, SHELL FRAGS, GLAUCONITE, SIDERITE, OOZE

CUTTINGS/FLUORESCENCE, OIL SHOW, OIL/GAS SHOW, GAS SHOW

AZIMUTH & INCLINATION; SIDEWALL CORES: 1.5 SIDEWALL CORE, 2.8 NO RECOVERY, R 1.2 ROTARY SIDEWALL CORE; CORES: CORE NO; DST; RFT/FMT: SAMPLE; CASING SHOE / LINER; CHRONO STRAT UNCERTAINTY

Temperature measurements

Log combination	Run	Depth m RT TVD	Temperature °C	Time since sirk
MDT-GR	1	3527.2	115.3	16.0

Formation pressure run 1A

No.	Depth. m MD RKB	Depth. m TVD RKB	Hydrost. pressure before Bar	Hydrost. pressure after Bar	Formation pressure Bar	Mobility mD/cp	Formation	Remarks
1	3800,0	3521,9	441,47	441,32	-	-	Garn	No seal, set in 12 1/4" rat hole
2	3805,0	3524,5	441,66	441,53	371,450	980,1	Garn	Excellent
3	3810,0	3527,1	441,98	441,90	371,519	1671,9	Garn	Excellent
4	3820,0	3532,3	442,65	442,54	371,626	367,5	Garn	Excellent
5	3830,0	3537,5	443,35	443,22	371,729	19,6	Garn	Good
6	3850,0	3547,8	444,82	444,63	371,907	20,9	Garn	Good
7	3875,0	3560,7	446,55	446,37	372,167	1088	Garn	Excellent

Samples collected

Depth. m MD RKB	Depth. m TVD RKB	Formation	Pumped volume litre	FormationFluid	Sampled	Remarks
3807,0	3525,6	Garn	68	Gas	3 MS 2 3/4 Gallon	Good sample

MS: Schlumberger multisampler chamber 450 ml

FORMATION EVALUATION LOG

Geoservices

Spud Date	: 25-03-1999
TD reached	: 24-04-1999
Total Drill Days	: 31
Total Depth (m)	: 4528
TVD (m)	: 3717.5
RT - MSL (m)	: 25
MSL - Seabed (m)	: 391
Depth Reference	: ROTARY TABLE
Plot Scale	: 1/500

Generated by ALX Package

CLST dol · CLST sandy & calc · CLST sandy & dol · COAL · SST calc · SST dol · SAND arg · LST arg & dol · LST pyritic · LST oolitic · GYPSUM · ANHYDRITE · HALITE · Corals · Shell frags · CEMENT · DST · FIT/LOT · RFT/FMT · CG Pipe connection gas · POG Gas from pumps off

LITHOLOGY | GEOLOGICAL DESCRIPTION

SIDETRACK WELL 6507/3-3A

SVY: 1775.0mMD : 1777.9mTVD Inc 0.7 : Az 218.7

SVY: 1793.0mMD : 1792.9mTVD Inc 1.1 : Az 331.1

CLST: olv blk, dk gnsh gry, occ gnsh gry, sft-hd, blky, occ stky, non calc

SVY: 1821.0mMD : 1820.9mTVD Inc 0.4 : Az 352.1

CLST: olv blk, dk gnsh gry, occ gnsh gry, sft-hd, blky, non calc, wxy, occ stky

TR LS: gnsh gry, frm, microxln, arg

SVY: 1850.0mMD : 1849.9mTVD Inc 0.3 : Az 66.5

CLST: olv blk, dk gnsh gry, occ gnsh gry, sft-hd, blky, non calc, occ stky, wxy

SVY: 1879.0mMD : 1878.9mTVD Inc 1.1 : Az 116.3

CLST: dk gnsh gry, olv blk, sft-frm, blky, non calc

TR LS: gnsh gry, microxln, arg, frm

SVY: 1907.0mMD : 1906.9mTVD Inc 1.8 : Az 124.4

CLST: grysh brn, dk gnsh gry, olv gry, pa gn, dsky yelsh gn, grysh brn, sft-frm, blky, non calc

TR LS: pa yelsh brn, microxln, frm, I.P. brit

SVY: 1936.0mMD : 1935.9mTVD Inc 2.6 : Az 131.7

CLST: olv blk, med bish gry, mod brn, grysh gn, med dk gry, sft-frm, blky, non calc

TR LS: wh, microxln, sft

SVY: 1965.0mMD : 1964.8mTVD Inc 3.1 : Az 132.5

CLST: med dk gry, gnsh gry, sft-frm, blky, non calc

SVY: 1985.0mMD : 1984.8mTVD Inc 3.6 : Az 132.0

CLST: olv blk, med gry, grysh blk, dk gnsh gry, frm-hd, I.P brit, blky, silty calc, pyr

LS: gnsh gry, yelsh gry, frm, microxln

SVY: 2014.0mMD : 2013.7mTVD Inc 5.0 : Az 144.0

TR LS: gnsh gry, yelsh gry, frm, microxln

SVY: 2042.0mMD : 2041.5mTVD Inc 7.1 : Az 153.3

TR LS: gnsh gry, yelsh gry, frm, microxln

CLST: olv blk, grysh blk, sft-hd, stky, wxy, occ silty calc, occ slty, micromic

SVY: 2071.0mMD : 2070.2mTVD Inc 9.50 : Az 157.3

CLST: olv blk, grysh blk, sft-frm, stky, wxy, occ silty calc, occ slty

SVY: 2100.0mMD : 2098.8mTVD Inc 11.5 : Az 160.7

TR LS: gnsh gry, yelsh gry, frm, microxln

CLST: olv blk, grysh blk, sft-frm, stky, wxy, occ silty calc, occ slty, micromic

SVY: 2129.0mMD : 2127.1mTVD Inc 13.2 : Az 161.5

TR LS: gnsh gry, yelsh gry, frm, microxln

CLST: olv blk, grysh blk, sft-hd, stky, wxy, occ silty calc, occ slty, micromic

SVY: 2158.0mMD : 2155.3mTVD Inc 14.0 : Az 158.9

TR DOL: pa yelsh brn, v hd, crpxln

CLST: olv blk, occ med gry, sft-hd, blky, non calc, micromic

SVY: 2186.0mMD : 2182.4mTVD Inc 14.0 : Az 158.1

DOL: pa brn, crpxln, hd

SVY: 2216.0mMD : 2211.5mTVD Inc 15.2 : Az 154.5

CLST: olv blk, grysh blk, sft-hd, stky, wxy, occ silty silty, micromic

TR DOL: pa brn, v hd, crpxln

SVY: 2244.0mMD : 2238.5mTVD Inc 15.2 : Az 154.2

CLST: olv blk, occ med gry, non calc, micromic, frm, blky

TR DOL: pa brn, yelsh gry,

SVY: 3343.0mMD : 3270.8mTVD Inc 42.7 : Az 155.9

CLST: olv blk, grysh blk, olv gry, sft-frm, blky, I.P stky, silty, silty calc, pyr

SVY: 3372.0mMD : 3291.7mTVD Inc 45.2 : Az 155.0

CLST: olv blk, frm-hd, blky, brit, silty calc, pyr, micromic

TR LS: yelsh brn, frm-hd, brit

SVY: 3401.0mMD : 3311.0mTVD Inc 48.8 : Az 154.6

CLST: olv blk, frm-hd, blky, brit, glauc, pyr, micromic, silty silty

TR LS: yelsh brn, frm-hd, brit

TR Qtz: wh, hd, sbang-ang

SVY: 3430.0mMD : 3329.8mTVD Inc 52.4 : Az 154.9

CLST: olv blk, grysh blk, micromic, non- v calc I.P, frm-hd, brit

TR LS/DOL: dk yelsh brn, brnsh gry, arg, microxln, hd, brit

SVY: 3458.0mMD : 3346.6mTVD Inc 54.0 : Az 153.7

CLST: olv blk, frm-hd, non calc, brit, pyr

SVY: 3487.0mMD : 3363.3mTVD Inc 56.1 : Az 153.2

CLST: olv blk, frm-hd, non calc, brit

TR LS/DOL: dk yelsh brn, brnsh gry, arg, m xln, hd, brit

SVY: 3516.0mMD : 3379.5mTVD Inc 56.6 : Az 150.7

CLST: olv blk, frm-hd, non calc, brit

SVY: 3544.0mMD : 3394.7mTVD Inc 58.7 : Az 152.5

CLST: olv blk, occ brnsh blk, frm-hd, non calc, brit, glauc, pyr

SVY: 3573.0mMD : 3409.6mTVD Inc 59.2 : Az 152.5

CLST: olv blk, frm-hd, brit, non calc, I.P silty calc, I.P silty slty, pyr, glau

SVY: 3601.0mMD : 3423.9mTVD Inc 59.5 : Az 152.7

CLST: olv blk, brnsh blk, frm-hd, non calc, I.P silty calc, pyr, glau

SVY: 3631.0mMD : 3439.2mTVD Inc 59.2 : Az 152.4

CLST: brnsh blk, frm-hd, brit, non calc, pyr

SVY: 3660.0mMD : 3454.1mTVD Inc 59.2 : Az 152.4

CLST: olv blk, occ brnsh blk, frm-hd, silty calc, brit, glauc, pyr

SVY: 3689.0mMD : 3469.0mTVD Inc 58.9 : Az 152.2

CLST: olv blk, frm-hd, calc, brit, glauc, pyr

TR DOL/LS: pa yelsh brn, gnsh gry, sft/frm, brit

SVY: 3717.0mMD : 3483mTVD Inc 58.6 : Az 152.5

LS: pa yelsh brn, sft-frm, brit, occ calc xln

CLST: olv blk, dk gry, silty dolo, micromic, pyr, silty slty, frm-hd, brit

SVY: 3746.0mMD : 3498.6mTVD Inc 58.6 : Az 152.9

DOL: dsk brn-dsk yelsh brn, lt-med olv gry, microxln, arg frm-hd, brit

SVY: 3775.0mMD : 3513.8mTVD Inc 58.3 : Az 152.6

SVY: 3789.0mMD : 3516.1mTVD Inc 58.2 : Az 152.6

9 5/8" CASING SHOE AT 3794mMD

SST: wh, clr Qtz, yelsh gry, v f-m, v w srt, sbang-w rndd, kao, silty calc, p cmt, lse, pr-fr vis por, gd fluor

SVY: 3797.0mMD : 3520.4mTVD Inc 57.9 : Az 152.7

SST: clr-trnsl qtz gr, wh yelsh gry, sil cmt, vf-f, sbrnd-sbang, glauc, tr micromic

SVY: 3825.0mMD : 3535.1mTVD Inc 58.8 : Az 151.6

CLST: olv blk, occ grysh blk, frm-hd, blky, brit, glau

SST: clr-trnsl, wh-yelsh gry, sil cmt. vf-f. sbrnd. glau

C: blk, grysh blk, brnsh blk, frm-hd, brit

SVY: 3852.0mMD : 3549.0mTVD Inc 58.9 : Az 152.9

CLST: olv blk-blk, pred blk, pred hd, occ v hd, brit, tr micromic

CLST: brnsh gry, olv blk, hd-occ v hd, brit, tr micromic

SVY: 3882.0mMD : 3564.5mTVD Inc 59.3 : Az 152.0

SST: clr-trnsl qtz, wh-v lt gry, vf-c, sb elg, sb ang, p srt, lse

SVY: 3909.0mMD : 3578.1mTVD Inc 60.2 : Az 152.5

SST: clr trnsl qtz, lt olv gry, yelsh gry, vf-m, sb elg, sb ang, m srt, musc, kao matrx/cmt, m cmt, p ind, fri, gd fluor

SVY: 3938.0mMD : 3592.1mTVD Inc 61.8 : Az 152.3

SST: clr trnsl qtz, pl-dk yelsh brn, wh-yelsh gry, lt olv gry, vf-f, sb rndd, sb ang, wl srt, musc, kao matrx/cmt, p cmt, p ind, fri, gd fluor

SVY: 3967.0mMD : 3605.2mTVD Inc 64.6 : Az 150.5

SST: clr-trnsl qtz gr, pl dk-yelsh brn, wh-yelsh gry, vf-f, occ med f, sbrnd-rnd, wl srt, tr micromic, arg, kao matrx/cmt, m cmt, fri, gd fluor

SVY: 3996.0mMD : 3616.9mTVD Inc 17.0 : Az 149.9

CLST: olv gry-olv blk, olv blk-blk, brit, hd-v hd, slty, non calc

SST: clr-trnsl mky wh, lse qtz gr, occ pl yelsh brn-yelsh gry, vf-f, arg, sbrndd-rndd, wl srt

SVY: 4024.0mMD : 3627.4mTVD Inc 69.4 : Az 151.2

CLST: olv gry-olv blk, occ blk, frm-hd, blky, brit I.P., slty, non calc

SST: lt olv gry, yelsh gry, vf-f, sb ang, wl srt, v arg, cly matrx, p cmt, frm-hd, gd fluor

SVY: 4053.0mMD : 3636.8mTVD Inc 72.4 : Az 153.2

CLST: olv gry-olv blk, occ blk, frm-hd, blky, brit I.P., slty, non calc

SST: lt olv gry, yelsh gry, vf-f, sb ang, wl srt, v arg, cly matrx, p cmt, frm-hd, gd fluor

SVY: 4083.0mMD : 3644.9mTVD Inc 76.2 : Az 154.9

CLST: olv gry-olv blk, occ blk, frm-hd, occ v hd, slty, non calc

SVY: 4111.0mMD : 3650.5mTVD Inc 80.4 : Az 154.7

SST: lt olv gry, yelsh gry, vf, sbang-sbrnd, wl srt, v arg, cly mtrx, m cmt, frm/hd, p fluor

SVY: 4139.0mMD : 3654.2mTVD Inc 84.6 : Az 155.0

CLST: olv gry-olv blk, frm-hd blky, slty, non calc, tr pyr

SVY: 4168.0mMD : 3656.7mTVD Inc 85.5 : Az 155.5

SST: lt olv gry, yelsh gry, vf, frm-hd, sbang-sbrnd, wl srt, v arg

SVY: 4198.0mMD : 3658.9mTVD Inc 86.0 : Az 156.2

CLST: olv gry-olv blk, frm-hd, occ v hd, blky, slty, non calc

SVY: 4226.0mMD : 3660.8mTVD Inc 86.5 : Az 155.80

CLST: olv gry-olv blk, occ blk, frm-hd, occ v hd, slty, non calc

SST: clr-trnsl mky wh, lse qtz gr, occ pl yelsh brn-yelsh gry, vf-f, sbrnd-rnd, wl srt, sil cmt I.P., micromic, pyr, non calc

SVY: 4255.0mMD : 3662.5mTVD Inc 86.6 : Az 156.1

CLST: olv gry-olv blk, occ blk, frm-hd, occ v hd, slty, non calc

SVY: 4283.0mMD : 3663.9mTVD Inc 87.5 : Az 156.6

SST: clr-trnsl mky wh, lse qtz gr, occ pl yelsh brn-yelsh gry, vf-f, sbrnd-rnd, wl srt, sil cmt I.P., micromic, pyr, non calc

CLST: olv gry-olv blk, occ blk, frm-hd, occ v hd, slty, non calc

SVY: 4312.0mMD : 3664.8m TVD Inc 89.1 : Az 157.4

SVY: 4341.0mMD : 3666.3mTVD Inc 84.8 : Az 156.9

CLST: olv gry-olv blk, frm-hd, occ v hd, blky, slty, non calc

SVY: 4370.0mMD : 3670.0mTVD Inc 80.7 : Az 156.4

SST: clr-trnsl, mky wh, lse qtz gr, vf-f, sbrnd-rnd, wl srt, sil cmt I.P., micromic, pyr, non calc

CLST: olv gry-olv blk, frm-hd, occ v hd, blky, slty, non calc

SVY: 4399.0mMD : 3675.5mTVD Inc 77.6 : Az 157.2

CLST: olv gry-olv blk, occ blk, frm-hd, occ v hd, slty, non calc

SVY: 4427.0mMD : 3682.0mTVD Inc 75.5 : Az 157.8

CLST: olv gry-olv blk, occ blk, frm-hd, occ v hd, slty, non calc

SVY: 4457.0mMD : 3690.4mTVD Inc 71.8 : Az 157.6

CLST: olv gry-olv blk, occ blk, frm-hd, occ v hd, blky, slty, non calc

SVY: 4486.0mMD : 3700.2mTVD Inc 67.5 : Az 157.2

SVY: 4504.0mMD : 3707.7mTVD Inc 65.9 : Az 156.5

CLST: olv gry-olv blk, occ blk, frm-hd, occ v hd, blky, slty, non calc

PRESSURE EVALUATION LOG

Geoservices

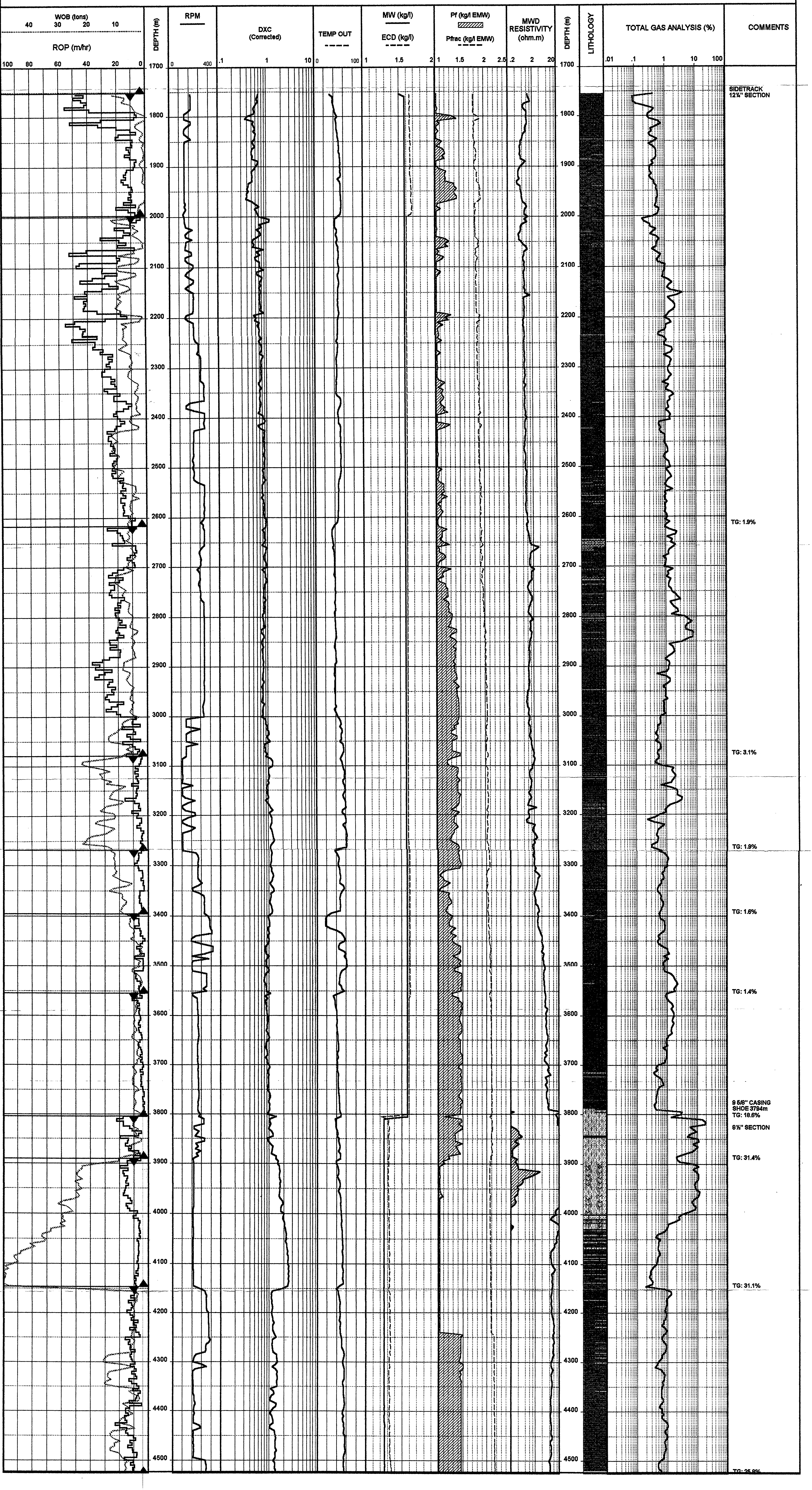
FROM :(m) 1700 TO :(m) 4525 SCALE : 1/ 5000

PEL1_N1Q.PR1

Well name	: 6507/3-3A	Location	: 07 43 29.40 E 65 48 03.70 N	Rig Name	: BYFORD DOLPHIN
Company name	: STATOIL	Country	: NORWAY	Rig Type	: SEMI-SUBMERSIBLE
Reference depth	: Rotary table (RKB)	Final TD (m)	: 4528	UTM coordinate N (m)	: 7298508
Water depth (m)	: 391	Final TVD (m)	: 3717.5	UTM coordinate E (m)	: 441674.2
Rot table - MSL (m)	: 25	Spud date	: 25-03-1999	Well type	: EXPLORATION
Rot table - seabed (m)	: 416	Reached TD	: 24-04-1999	Area	: NORWEGIAN SEA

Generated by ALX Package

CLAYSTONE	SHALE	CLST sandy	CLST silty	CLST silic	CLST calc	CLST dol	CLST sandy & calc	CLST sandy & dol
CLST anhydr	CLST pyritic	MARL	MARL silty	MARL sandy	MARL dol			COAL
SILT	SILTSTONE	SAND	SANDSTONE	SST coarse	CONGLOMERATE	SST calc	SST dol	SAND arg
LIMESTONE	LST argil	LST sandy	LST silty	LST arg & sandy	LST dol	LST arg & dol	LST pyritic	LST oolitic
DOLOMITE	DOL calc	DOL arg	CHALK	CHALK chert	GYPSUM	ANHYDRITE	HALITE	
Fossils unspec	Fossil frags	Forams	Spicules	Plant frags	Wood frags	Corals	Shell frags	
Tuff	Mica	Pyrite	Glauconite	Carbonaceous	Silty			CEMENT
Test	Mud loss	Mud gain	Deviation surve	Core	Sidewall Core	DST	FIT/LOT	RFT/FMT
Casing Shoe	Bit Change	Wiper Trip	TG Trip Gas	CG Pipe connection gas				



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STATOIL

PARTNERS **Enterprise Oil Norge Ltd, Saga Petroleum A/S**

WELL **6507/3-3B**

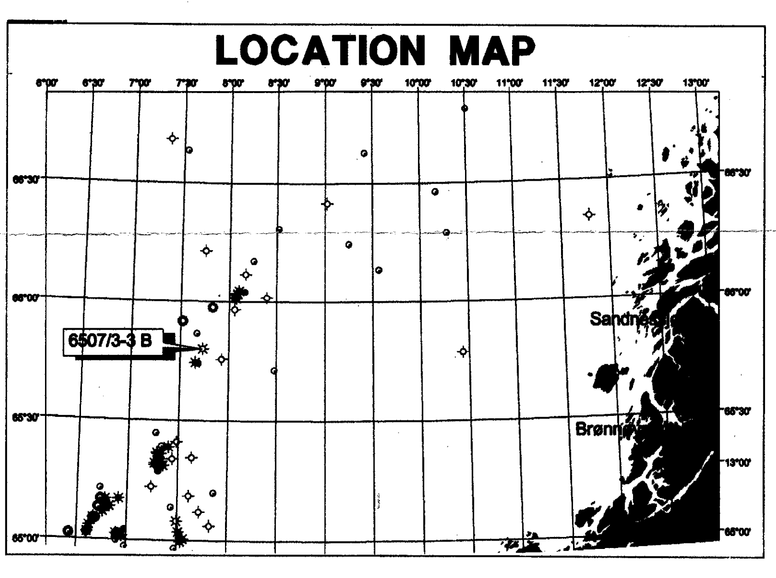
COMPOSITE LOG
1 : 500

PROSPECT STRUCTURE

Idun

AREA:	Norwegian North Sea
LICENCE:	PL 159
COORDINATES:	65° 48' 03.73" N 07° 43' 28.69" E
KB:	25m
WATER DEPTH:	416m
TOTAL DEPTH:	4275m MD / 3840,9 mTVD
FM. AT T.D.:	Tilje Formation
SPUD DATE:	08-05-99
RIG RELEASE:	20-06-99
WELL STATUS:	P & A - gas discovery
RIG:	Byford Dolphin
CONTRACTOR:	Dolphin Doc AS
GEOLOGISTS:	Lauritsen, Østby, Furmyr, Basset, Winsvold, Clement, Bjerkenes

LOCATION MAP



PREPARED BY: I. Winsvold

CASING DATA	LEAK OFF TESTS	VELOCITY SURVEY
9 5/8" casing at 3755 mMD		

LOGS RUN — **CONTRACTOR: Schlumberger tools, BA wirel.**

MWD Navigator
Triple-combo
Run 21: 3752-3820m
Run 22: 3820-3889m
Run 23: 3889-3899m
Run 24: 3899-3952m
Run 25: 3952-4121m
Run 26: 3790-4174m
Run 27: 4174-4275m

Depths are bit depths

LDT-CNT-GR-MDT
Run on pipe
Run1A: 3894-4252m

COMMENTS:

The well is sidetracked from well 6507/3-3A.
Window cut in 9 5/8" casning at 3752 - 3757 mMD RT (3497 - 3502 mTVD RT)

El-logs on pipe: Schlumberger tools were used on Baker Atlas wireline

LITHOLOGICAL SYMBOLS

CONGLOMERATE, SHALE, MARL, COAL LIGNITE, FORAMS, MICA, SAND SANDSTONE, LIMESTONE, TUFF, WOOD FRAGS, BURROWS, KAOLINITE, SILT SILTSTONE, CHALK, SALT GEN'L, FOSSILS GEN'L, PYRITE, CHERT, CLAY CLAYSTONE, DOLOMITE, ANHYDRITE, SHELL FRAGS, GLAUCONITE, SIDERITE, OOZE

CUTTINGS/FLUORESCENCE, OIL SHOW, OIL/GAS SHOW, GAS SHOW

AZIMUTH & INCLINATION; SIDEWALL CORES: 1.6 SIDEWALL CORE, 2.6 NO RECOVERY, 8 1.2 ROTARY SIDEWALL CORE; CORES: CORE NO; DST; RFT/FMT: SAMPLE; CASING SHOE / LINER; CHRONO STRAT: UNCERTAINITY

Chron Strat	Litho Strat	Well Log	Lithological Descriptions

Window milled in 9 5/8" casing in well 6507/3-3A from 3752 to 3761 mMD RT

CLAYSTONE: Olive black, firm - moderate hard, sub fissile, silty, non calcareous, occasionally silty micropyritic

GARN FORMATION 3792.0 mMD RT (-3492.5 mTVD MSL)

CLAYSTONE: Brown black - olive black, firm - moderate hard, blocky, occasional silty, carbonaceous - coaly in parts

SANDSTONE: Clear - translucent quartz, very fine - coarse, moderate sorted, subangular - subrounded, loose quartz grains, local light grey argillaceous matrix

SHOWS: Even moderate greenish yellow - yellow white - blue white fluorescence, no cut fluorescence, no HC odour or stain

SANDSTONE: Clear - translucent quartz, fine - medium, also very fine and coarse - very coarse, moderate sorted,subangular - subrounded, dominantly loose, occasional moderate - well cemented, non calcareous, no - poor visible porosity

CLAYSTONE: Brown black - black, massive - blocky, firm - moderate hard, occasional brittle, cabonaceous - coaly, silty in parts

SHOWS: Even, dull yellow green - yellow white fluorescence, no cut fluorescence, no HC stain

SANDSTONE: Clear - translucent quartz, occasionally translucent pink quartz, predominantly fine - medium, occasionally very fine and coarse, well sorted, subangular - subrounded, predominantly loose, occasionally moderately - well cemented, no - poor visible porosity, occasionally soft calcareous yellowish white - pale brown cement

U. NOT FORMATION 3920.5 mMD RT (-3654.0 mTVD MSL)

SANDSTONE: Clear - translucent quartz, occasionally translucent pink quartz, fine - very fine, well sorted, subangular - subrounded, firm - moderately hard, well calcareous/siliceous cemented, no - poor visible porosity, slightly carbonaceous

SHOWS: Yellow white fluorescence, no cut fluorescence

SANDSTONE: Grading siltstone, medium light grey - light brown grey, predominantly very fine, occasional fine, well sorted, subangular - subrounded, siliceous cemented, friable - firm, occasional loose white quartz grains, very coarse, subrounded, micaceous in parts, argillaceous and bioturbated

L. NOT FORMATION 3980.5 mMD RT (-3590.0 mTVD MSL)

CLAYSTONE: Brown black - black, blocky, subfissile, hard - very hard, silty in parts, non calcareous

CLAYSTONE: Grey brown - grey black, occasional medium dark grey, very firm - hard, blocky, very silty in parts, micropyritic, non calcareous, locally arenaceous

ILE FORMATION 4020.0 mMD RT (-3615.0 mTVD MSL)

SANDSTONE: Light grey, off white, occasionally yellowish grey, partly medium grey, very fine - fine, well sorted, dominantly subangular, occasionally subrounded, soft - firm, weak silica cemented, rare trace glauconite, rare pyrite nodules

SHOWS: Even dull yellowish green - yellowish white fluorescence, very slow weak blue - white cut fluorescence

CLAYSTONE: Medium grey, grey brown, medium dark grey, very firm - hard, blocky - angular, micromicaceous in parts, locally silty, non calcareous

SANDSTONE: Light grey, off white, medium grey, locally light brown - pale yellow brown, very fine - fine, subangular, well sorted, moderately - weak calcareous / silica cemented, firm - moderately hard, trace white argillaceous matrix, rare loose clear medium - coarse quartz grains, trace pyrite nodules

SANDSTONE: Light grey, offwhite, medium grey, occasional yellowish grey, very fine - fine, well sorted, subangular, trace white argillaceous matrix, silicaceous & calcareous cemented, firm - moderate hard, rare loose medium - coarse subangular quartz grains, trace glauconite, rare trace pyrite nodules

U. ROR FORMATION 4110.0 mMD RT (-3680.0 mTVD MSL)

SILTSTONE: Dark grey, medium dark grey, brownish grey, grading - very fine sandstone, very firm - hard, blocky, occasionally splintery, arenaceous, non calcareous, trace pyritic in parts

SHOWS: No direct fluorescence, very slow weak blue white streaming cut fluorescence

SANDSTONE: Light grey, very light grey, occasionally yellow grey, very fine - fine, subangular - subrounded, well sorted, soft - firm in parts, weak silica cemented, silty, poor visible porosity

L. ROR FORMATION 4170.5 mMD RT (-3653.0 mTVD MSL)

SILTSTONE: Dark grey, medium dark grey, brownish grey, grading - very fine sandstone, very firm - hard, blocky, occasionally splintery, arenaceous, non calcareous, trace pyritic in parts

SHOWS: No direct fluorescence, very slow weak blue white streaming cut fluorescence

TILJE FORMATION 4215.5 mMD RT (-3765.5 mTVD MSL)

SANDSTONE: Light brown, yellowish brown, light grey - off white, occasionally clear - translucent very fine - medium, partly medium - coarse, subangular - occasionally subrounded, moderate - occasionally poor sorted, moderately - well silica cemented, partly weak calcareous cement, locally abundant argillaceous matrix, increasingly very fine - medium, occasionally coarse loose quartz with depth

CLAYSTONE: Dark grey, medium grey, firm to moderately hard, blocky, non calcareous, micropyritic in parts

TD at 4275.0mMD RT/3816.0mTVD MSL

Chron Strat	Litho Strat	Well Log	Lithological Descriptions

Temperature measurements

Log combination	Run	Depth m RT TVD	Temperature °C	Time since sirk
MDT-ZDL-CN	1A	3821.5	139	23.5
MDT	1B	3817.3	136	92.8

Samples collected

Depth. m MD RKB	Depth. m TVD RKB	Formation	Pumped volume litre	FormationFluid	Sampled	Remarks
3805,0	3679,2	Ile	239	Gas/Water	1 MS 1 Gallon	Poor quality

MS: Schlumberger multisampler chamber 450 ml

MDT run 1A

No.	Depth. m MD RKB	Depth. m TVD RKB	Hydrost. pressure before kPa	Hydrost. pressure after kPa	Formation pressure kPa	Mobility mD/cp	Formation	Remarks
1	3920,0	3579,8	440,30	440,40	372,59	296,7	Garn	Excellent
2	3935,0	3587,9	441,30	441,50	372,73	33,8	Garn	Good
3	3946,0	3594,0	442,10	442,40	372,83	13,7	Garn	Good
4	3953,5	3598,2	442,70	442,90	372,94	7,4	Garn	Good
5	3914,8	3577,1	437,20	437,50	372,49	3,4	Garn	Fair
6	3912,4	3575,8	437,50	437,70	372,52	1,3	Garn	Good, probe 2
7	3958,4	3601,0	440,50	440,50	373,01	3,5	Garn	Poor
8	3961,5	3602,7	440,70	440,70	373,18	1,5	Garn	Poor
9	4075,5	3679,2	450,70	450,90	375,07	8,7	Ile	Fair
10	4089,0	3689,1	452,70	452,70	389,14	0,7	Ile	Poor, supercharged
11	4220,0	3794,4	467,40	467,40	387,98	2	Tilje	Poor, probe 2
12	4223,0	3797,0	468,30	468,40	406,69	1	Tilje	Poor/supercharged
13	4227,9	3801,1	469,00	469,00	389,27	1,4	Tilje	Poor
14	3920,0	3579,8	437,70	437,70	372,46	0,9	Garn	Fair, testing probe 1
15	3917,5	3578,5	437,20	437,20	372,45	91,7	Garn	Good testing probe 2

MDT run 1B

No.	Depth. m MD RKB	Depth. m TVD RKB	Hydrost. pressure before kPa	Hydrost. pressure after kPa	Formation pressure kPa	Mobility mD/cp	Formation	Remarks
1	4075,4	3679,1	451,00	451,00	375,05	5,2	Ile	Fair
2	4075,6	3679,2	451,20	451,20	375,02	7,2	Ile	Good
3	4075,8	3679,4	451,40	451,40	375,06	5,1	Ile	Good
4	4076,1	3679,6	451,50	451,50	375,07	4,8	Ile	Fair
5	4075,6	3679,2	451,20	451,20	375,00	7,7	Ile	Sample
6	4244,5	3815,1	482,60	482,70	389,00	4,2	Tilje	Poor
7	4245,0	3815,5	482,90	482,90	389,00	4,5	Tilje	Poor
8	3953,6	3598,3	447,60	447,60	372,86	4,3	Garn	Poor
9	3953,4	3598,2	447,20	447,30	372,91	9,1	Garn	Fair
10	3953,2	3598,1	447,00	446,90	372,93	8,1	Garn	Fair
11	3953,0	3597,9	446,80	446,80	372,89	2,1	Garn	Poor
12	3952,7	3597,8	445,80	445,80	373,00	2,1	Garn	Poor
13	3953,1	3598,0	445,70	445,70	372,91	3,5	Garn	Good
14	3953,3	3598,1	445,70	445,70	373,00	4,1	Garn	Confirming gas

FORMATION EVALUATION LOG

Geoservices

MA32_N1Q.PR1

Well name : 6507/3-3B

Client name : STATOIL

Rig Name	: BYFORD DOLPHIN	Country	: NORWAY	Spud Date	: 23-12-1998
Rig Type	: SEMI-SUBMERSIBLE	Area	: NORWEGIAN SEA	TD reached	: 26-05-1999
Contractor	: DOLPHIN DOC A/S	Block	: 6507/3	Total Drill Days	: 128

Geoservices crew:
P.O. Birkelund R. Eilertsen
M. Morley J.E. Eriksen
L.Ruiz-Castillo S.A. Haugen
R. Tyndall

Location lat : 65 48 03.70 N
Location long : 07 43 29.40 E

Total Depth (m) : 4275
TVD (m) : 3840.9
RT - MSL (m) : 25
MSL - Seabed (m) : 391
Depth Reference : ROTARY TABLE
Plot Scale : 1/ 500

Generated by ALX Package

CLAYSTONE	SHALE	CLST sandy	CLST silty	CLST silic	CLST calc	CLST dol	CLST sandy & calc	CLST sandy & dol
CLST anhydr	CLST pyritic	MARL	MARL silty	MARL sandy	MARL dol			COAL
SILT	SILTSTONE	SAND	SANDSTONE	SST coarse	CONGLOMERAT	SST calc	SST dol	SAND arg
LIMESTONE	LST argil	LST sandy	LST silty	LST arg & sandy	LST dol	LST arg & dol	LST pyritic	LST oolitic
DOLOMITE	DOL calc	DOL arg	CHALK	CHALK chert		GYPSUM	ANHYDRITE	HALITE
Fossils unspec	Fossil frags	Forams	Spicules	Plant frags	Wood frags	Corals	Shell frags	
Tuff	Mica	Pyrite	Glauconite	Carbonaceous	Silty		CEMENT	
Test	Mud loss	Mud gain	Deviation survey	Core	Sidewall Core	DST	FIT/LOT	RFT/FMT
Casing Shoe	Bit Change	Wiper Trip	Oil	Gas	TG Trip Gas	CG Pipe connection gas	POG Gas from pumps off	

GEOLOGICAL DESCRIPTION

SIDETRACK WELL 6507/3-3B
WINDOW MILLED IN 9 5/8" CASING
3752mMD (3496.7mTVD)-
3757mMD (3499.3mTVD)
KICKED OFF FROM 3761m

CLST: olv blk, dk gry, sft-frm, blky, non calc, pyr, glauc

DOL: pl yelsh brn, sft-frm, brit, microxln

SST: clr Qtz gr, pkish gry, f-m, v wl srt, ang-sbang, hd, lse

SVY: 3795.0mMD : 3518.5mTVD
Inc 57.9 : Az 160.0

SVY: 3804.0mMD : 3523.0mTVD
Inc 59.8 : Az 160.9

CLST: v dk gry-dk gry, blky-ang, I.P. slily calc, pyr, glauc

SLTST: olv blk, frm-sft, blky, non calc

SH: v dk gry, olv blk, hd, blky, non calc, micromic

SST: pred clr Qtz gr, trnsp-trnsl wh, f-m, occ crs, mod-wl srt, uncons, mic

DOL: yelsh-brnsh wh, brnsh gry, frm, ang-blky, brit, microxln

CLST: dk gry, occ dk brnsh gry, sft-frm, blky-ang, non calc

SST: pred clr Qtz gr, trnsp-trnsl wh, trnsp pk, trnsp brn, f-crs, occ v crs, ang-sbang, pr srt, lse, occ pr-mod cmt, sft calc cmt, pyr, mic

SVY: 3876.0mMD : 3558.4mTVD
Inc 60.6 : Az 164.7

SVY: 3889.0mMD : 3564.3mTVD
Inc 61.6 : Az 184.7

CLST: olv blk, m dk gry-dk gry, frm-hd, occ v hd, blky, I.P sity, non calc

SST: clr-trnsl Qtz gr, mky wh, v pl or, vf-f, dom f, occ m-crs, mod srt, sbang-sbrndd, occ rndd, fri-frm, calc/Sil cmt, pyr, mic

SVY: 3919.0mMD : 3579.3mTVD
Inc 58.4 : Az 166.2

SVY: 3938.0mMD : 3589.6mTVD
Inc 56.0 : Az 166.0

CLST: blk, hd-v hd, blky, sbfis, I.P. slty, non calc

SST: v pl or-pl yelsh brn, lse Qtz gr, vf-f, occ m, wl srt, sbang-sbrndd, fri-frm, calc/Sil cmt, mic, pyr

SVY: 3968.0mMD : 3607.1mTVD
Inc 52.4 : Az 166.1

SST: brnsh gry, lt brnsh gry-brnsh gry, v pl or-pl yelsh brn, lse Qtz gr, vf-f, occ m, wl srt, sbang-sbrndd, fri-frm, calc/Sil cmt, grad Sltst, pyr, mic

SVY: 3997.0mMD : 3625.4mTVD ,
Inc 49.2 : Az 167.0

CLST: grysh blk-v dk gry, hd-v hd, occ sft, blky, occ Splin, I.P. slty, I.P. sdy

SVY: 4026.0mMD : 3644.6mTVD
Inc 48.3 : Az 168.6

SST: lt gry-v lt gry, yelsh gry, m dk gry, vf-f, occ m, mod srt, sbang-sbrndd, sft-fri, occ hd, I.P. gd Sil cmt, Tr micromic nod

SVY: 4053.0mMD : 3663.1mTVD
Inc 45.2 : Az 167.1

SST: lt gry, off wh, brnsh gry, loc pl yelsh brn, vf-f, mod f, occ m, wl srt, sbang, frm-mod hd, calc/Sil cmt, slty, I.P sdy, Tr wh arg Mtrx, Tr Glauc

SVY: 4082.0mMD : 3683.9mTVD
Inc 42.7 : Az 165.7

Tr CLST: grysh blk-blk, brnsh blk, frm-hd, occ v hd, sbfis, occ Splin, slty, non calc

SST: lt olv gry, brnsh gry, vf-f, wl srt, sbang, frm-mod hd, calc/Sil cmt, slty, I.P sdy, Tr Glauc

SVY: 4110.0mMD : 3705.0mTVD
Inc 39.9 : Az 164.0

SLTST: brnsh gry, brnsh blk-olv blk, slt-vf, frm, I.P. v hd, grad Sst, pyr, mic

SST: v pl or-pl yelsh brn, brnsh gry, clr-trnsp wh Qtz gr, vf-f, occ m-crs, wl srt, sbang-sbrndd, sft-frm

SVY: 4140.0mMD : 3728.5mTVD
Inc 37.1 : Az 163.3

SLTST: brnsh gry, dk gry-grysh blk, occ olv blk, pred hd, occ frm, I.P. Splin, non calc, I.P sdy

SVY: 4168.0mMD : 3751.2mTVD
Inc 34.5 : Az 163.3

SLTST: blk, frm, I.P. v hd, I.P sdy, non calc, pyr

SST: yelsh gry, clr-trnsp wh Qtz gr, vf, v wl srt, sbrndd, sft-frm, I.P. calc cmt, slty

SVY: 4198.0mMD : 3776.0mTVD
Inc 33.4 : Az 164.1

SLTST: dk gry-grysh blk, hd-v hd, I.P. brit, blky, non calc

SVY: 4226.0mMD : 3799.5mTVD
Inc 32.9 : Az 165.1

SST: grysh wh-pl gry, dk yelsh brn-brnsh gry, clr-trnsl Qtz gr, vf-f, occ m, mod-wl srt, sbang-sbrndd, I.P. rndd, sft-hd, I.P brit, I.P. wk calc cmt, I.P. gd Sil cmt, I.P. mic, n.v.p

SVY: 4250.0mMD : 3819.7mTVD
Inc 32.2 : Az 164.7

TD OF WELL 6507/3-3B REACHED
26-5-1999 4275mMD 3840.9mTVD

PRESSURE EVALUATION LOG

Geoservices

FROM :(m) 3730 TO :(m) 4300 SCALE : 1/ 5000

PEL1_N1Q.PR1

Well name	: 6507/3-3B	Location	: 07 43 29.40 E 65 48 03.70 N	Rig Name	: BYFORD DOLPHIN
Company name	: STATOIL	Country	: NORWAY	Rig Type	: SEMI-SUBMERSIBLE
Reference depth	: Rotary table (RKB)	Final TD (m)	: 4275	UTM coordinate N (m)	: 7298508
Water depth (m)	: 391	Final TVD (m)	: 3840.9	UTM coordinate E (m)	: 441674.2
Rot table - MSL (m)	: 25	Spud date	: 07-05-1999	Well type	: EXPLORATION
Rot table - seabed (m)	: 416	Reached TD	: 26-05-1999	Area	: NORWEGIAN SEA

Generated by ALX Package

CLAYSTONE, SHALE, CLST sandy, CLST silty, CLST silic, CLST calc, CLST dol, CLST sandy & calc, CLST sandy & dol

CLST anhydr, CLST pyritic, MARL, MARL silty, MARL sandy, MARL dol, COAL

SILT, SILTSTONE, SAND, SANDSTONE, SST coarse, CONGLOMERATE, SST calc, SST dol, SAND arg

LIMESTONE, LST argil, LST sandy, LST silty, LST arg & sandy, LST dol, LST arg & dol, LST pyritic, LST oolitic

DOLOMITE, DOL calc, DOL arg, CHALK, CHALK chert, GYPSUM, ANHYDRITE, HALITE

Fossils unspec, Fossil frags, Forams, Spicules, Plant frags, Wood frags, Corals, Shell frags

Tuff, Mica, Pyrite, Glauconite, Carbonaceous, Silty, CEMENT

Test, Mud loss, Mud gain, Deviation surve, Core, Sidewall Core, DST, FIT/LOT, RFT/FMT

Casing Shoe, Bit Change, Wiper Trip, TG Trip Gas, CG Pipe connection gas