STATOIL

FINAL WELL REPORT

PL 128

WELL 6608/10-8 & 6608/10-8A

UPN

NOM OPR

Harstad, November 2002

HYDRO petoro Eni Norsk Agip Enterprise Oil

STATOIL

Final Well Report
PL128
Well 6608/10-8 & 6608/10-8A

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Table of contents

1 Introduction

1.1 Well data record

Well name	:	6608/10-8 & 6608/10-8A	
Type of well	:	Exploration	
Prospect	:	Stær	
Country	:	Norway	
Area	:	Nordland II	
License	:	PL 128	
Licencees	:	Statoil	40.45 %
		Petoro	24.55 %
		Norsk Hydro	13.50 %
		Norsk Agip	11.50 %
		Enterprise Oil	10.00 %
Drilling unit	:	Stena Don	
Type	:	Semi submersible drilling rig	
Water depth	:	376 mMSL	
Air gap	:	24 m	
On license	:	21.12.01	
Rig release	:	25.04.02	
Formation at TD	:	Åre Formation in well 6608/10-8	
		Tilje Formation in well 6608/10-8A	
Geographic co-ordinates	:	66^{o} 03' 34.07" N	
		08^{o} 10' 42.92" E	
Datum/Spheroid	:	ED-1950 / Int. 1924	
UTM	:	UTM Zone 32, CM 09^{o} E	
		7 326 968N	
		462 805E	
Seismic location	:	Seismic survey ST9203R98, Inline 1165, Cross-line 2220.	

All depths in this report refer to RKB (Rotary Kelly Bushing) unless otherwise stated.

PL128, Blocks 6608/10 & 11

Location map

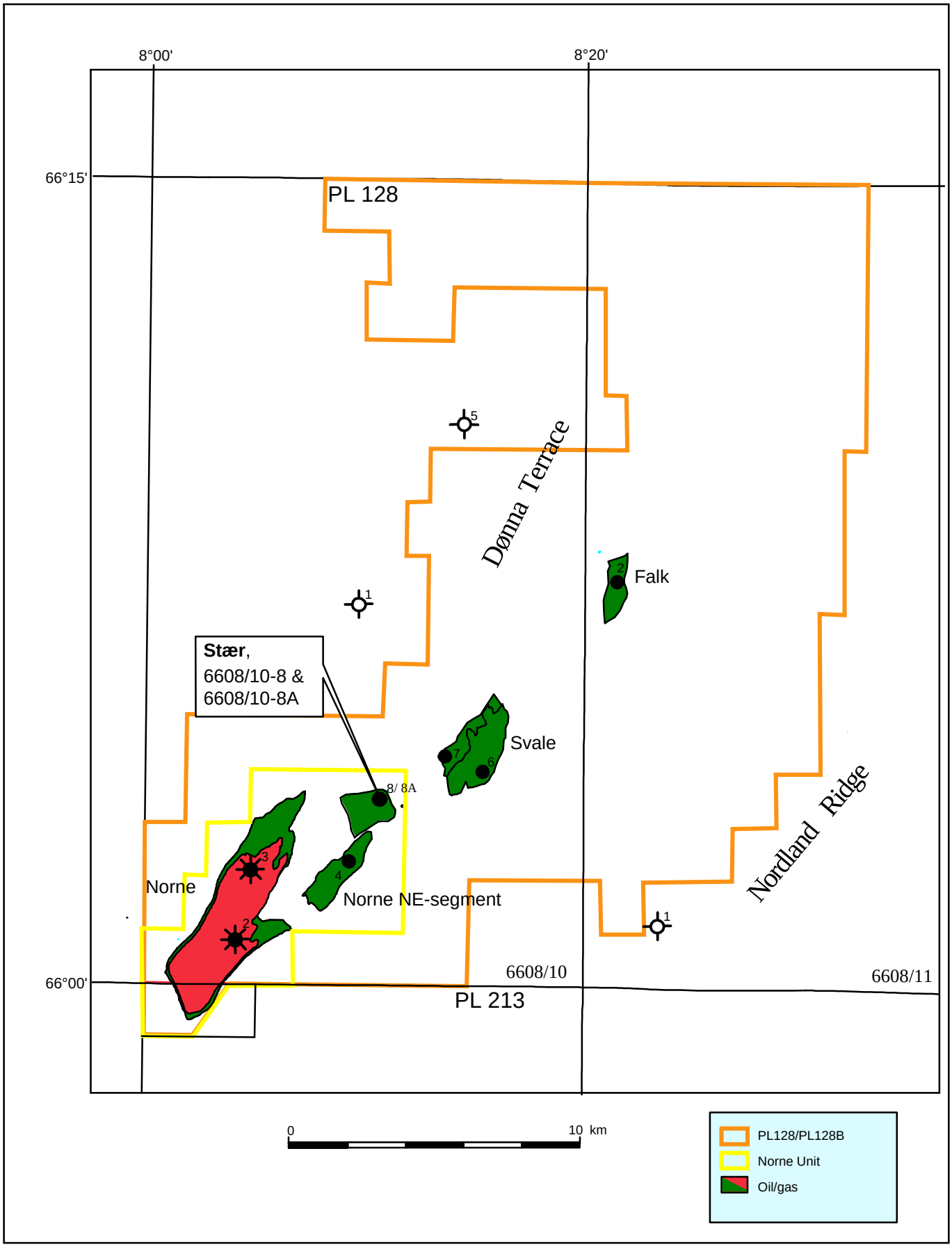


Fig. 1.1

1.2 Well objectives

The main objective of well 6608/10-8 was to prove hydrocarbons in the sandstones of the Garn, Ile, Tofte and Åre Formations in the Stær prospect.

Well 6608/10-8 proved an oil-water contact in the Åre Formation. A sidetrack, 6608/10-8A was drilled in order to verify the oil–water contact down flank on the Stær prospect.

1.3 Result of the wells

Well 6608/10-8 was spudded in a water depth of 376 mMSL and drilled to a total depth of 2652 mMD. No shallow gas was observed by the ROV at the wellhead.

Five reservoir zones were penetrated and proven to be oil-bearing: the Melke Sandstone, the Not Formation, the Ile Formation, the Tilje Formation and the Åre Formation. An oil-water contact was proven in the Åre Formation at 2483.7 mMD/2458.1 mTVD. This was verified both by shows in cores, logs, samples and laboratory studies of the cores. The main part of the oil bearing reservoir zone was cored in 6608/10-8.

WFT oil samples were collected from all oil bearing reservoir zones in 6608/10-8. The oil in the samples collected from the Not Formation and Åre Formation showed a composition very similar to the "Norne oil".

Well 6608/10-8A was kicked off from well 6608/10-8 at 1340 mMD, and drilled to a total depth of 2660 mMD. No cores were cut. The oil water contact was verified to be in the Tilje Formation, approximately 5-10 m deeper than in well 6608/10-8 (see chapter 4.8.1). Water samples were acquired in 6608/10-8A.

1.4 Drilling summary

1.4.1 Casing

A 30" conductor was run with the shoe at 459 mMD. In addition a 13 3/8" casing was run with the shoe at 1290 mMD.

Table 1.1

Casing	Shoe depth	Leak off tests
30"	459 mMD	
13 3/8"	1290 mMD	1.57 sg (extended LOT))

1.4.2 Drilling fluids

Section	Section TD (mMD)	Maximum mud weight [g/cm³]	Mud type
36"	459	1.03	Sea water / high visc. sweeps
17 ½"	1315	1.03	Sea water / high visc. Sweeps
8 ½"	2652	1.38	Aquadril (KCl/polymer/glycol)
8 ½" sidetrack	2660	1.38	Aquadril (KCl/polymer/glycol)

1.5 Data acquisition summary

See figures 1.2-4.

PL 128

RKB - MSL: 24 m

Water Depth: 376 m MSL

Formation Evaluation
Well 6608/10-8

STATOIL

Made by: TAWJ

Date: 01.10.02

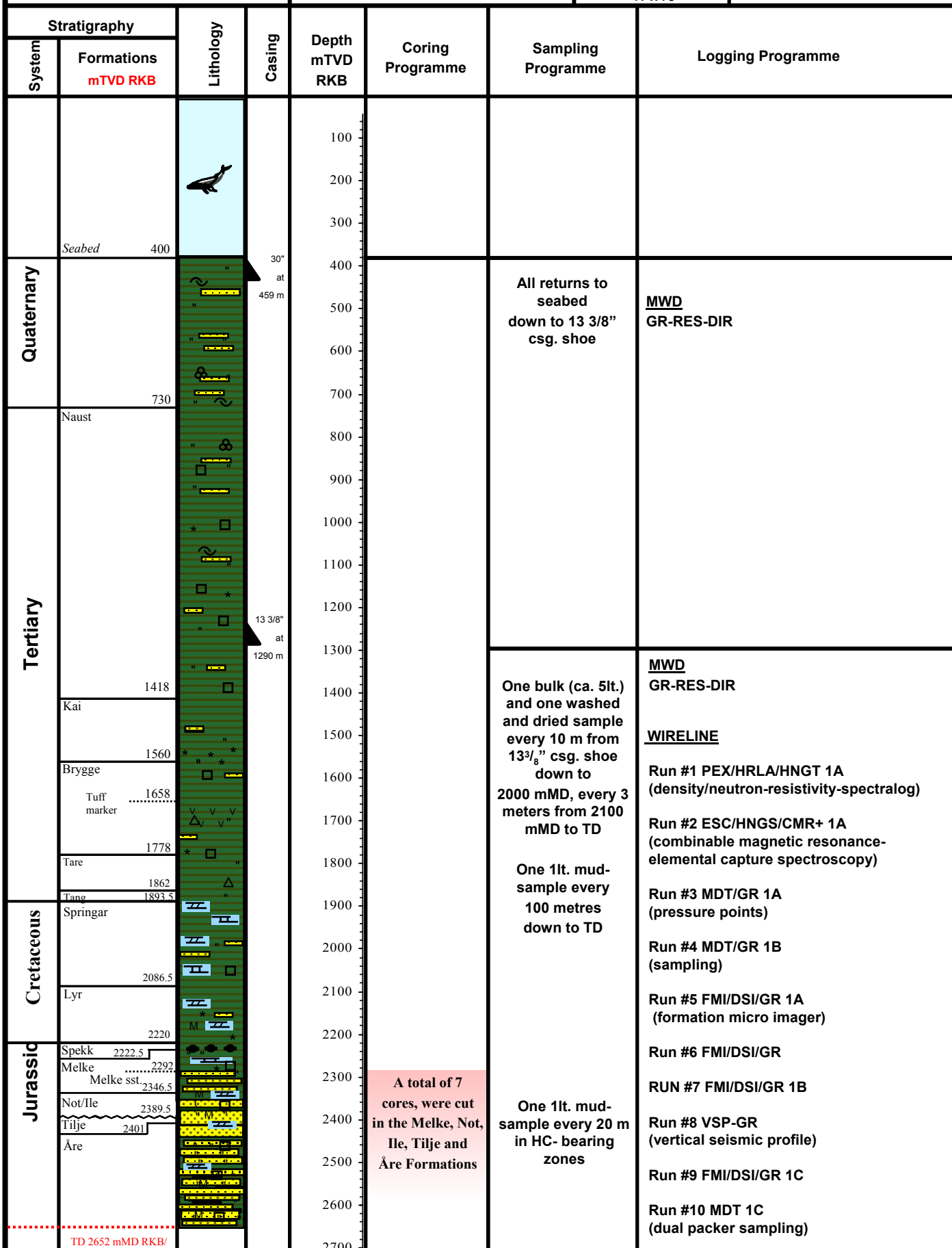
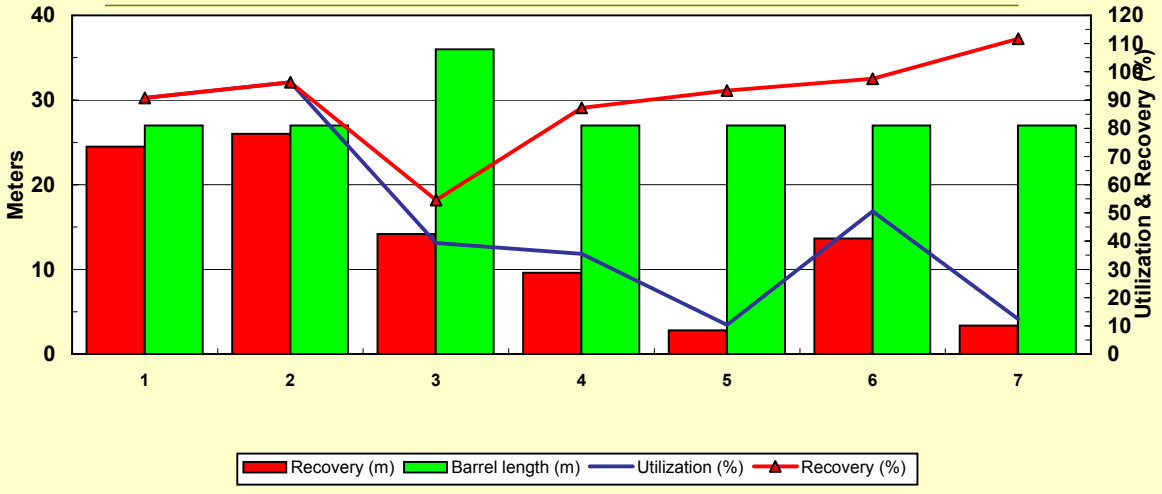
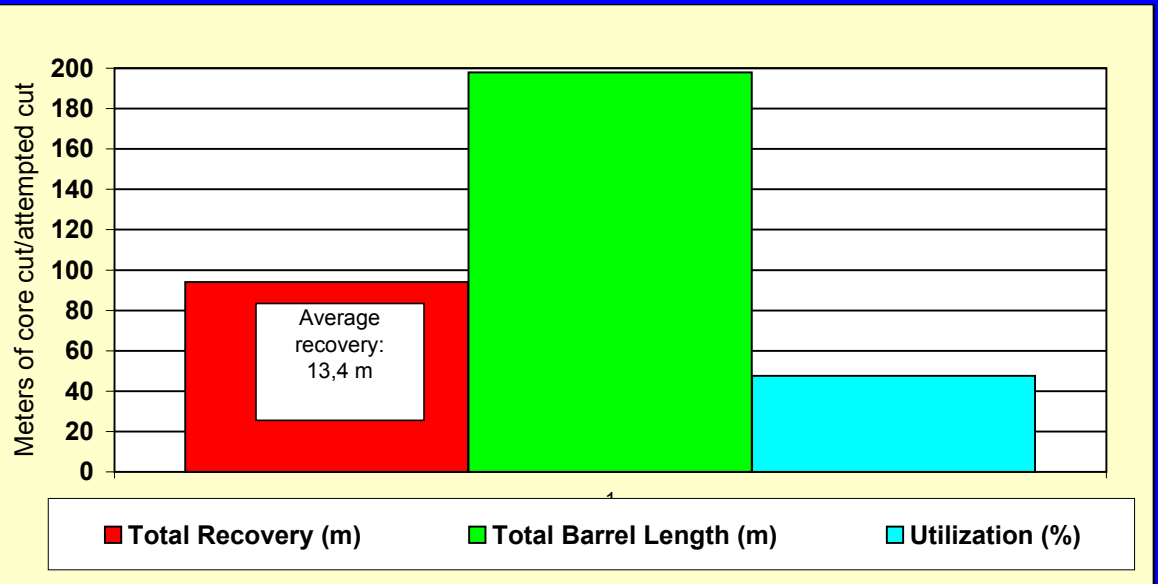


Fig. 1.2

PL 128: Coring summary

Core No.	Top of cored interval (mMD)	Bottom of cored interval (mMD)	Core recovery (m)	Core recovery (%)	ROP m/hr	Attempted core length	Utilization (%)
1	2 295,0	2 322,0	24,50	90,7	5,9	27	90,7
2	2 371,0	2 398,0	26,00	96,3	6,9	27	96,3
3	2 398,0	2 424,0	14,18	54,5	5,2	36	39,4
4	2 424,0	2 435,0	9,60	87,3	6,1	27	35,6
5	2 435,0	2 438,0	2,80	93,3	1,8	27	10,4
6	2 438,0	2 452,0	13,65	97,5	4,2	27	50,6
7	2 452,0	2 455,0	3,35	111,7	3,0	27	12,4





PL 128

RKB - MSL: 24 m

Water Depth: 376 m MSL

Formation Evaluation
Well 6608/10-8A

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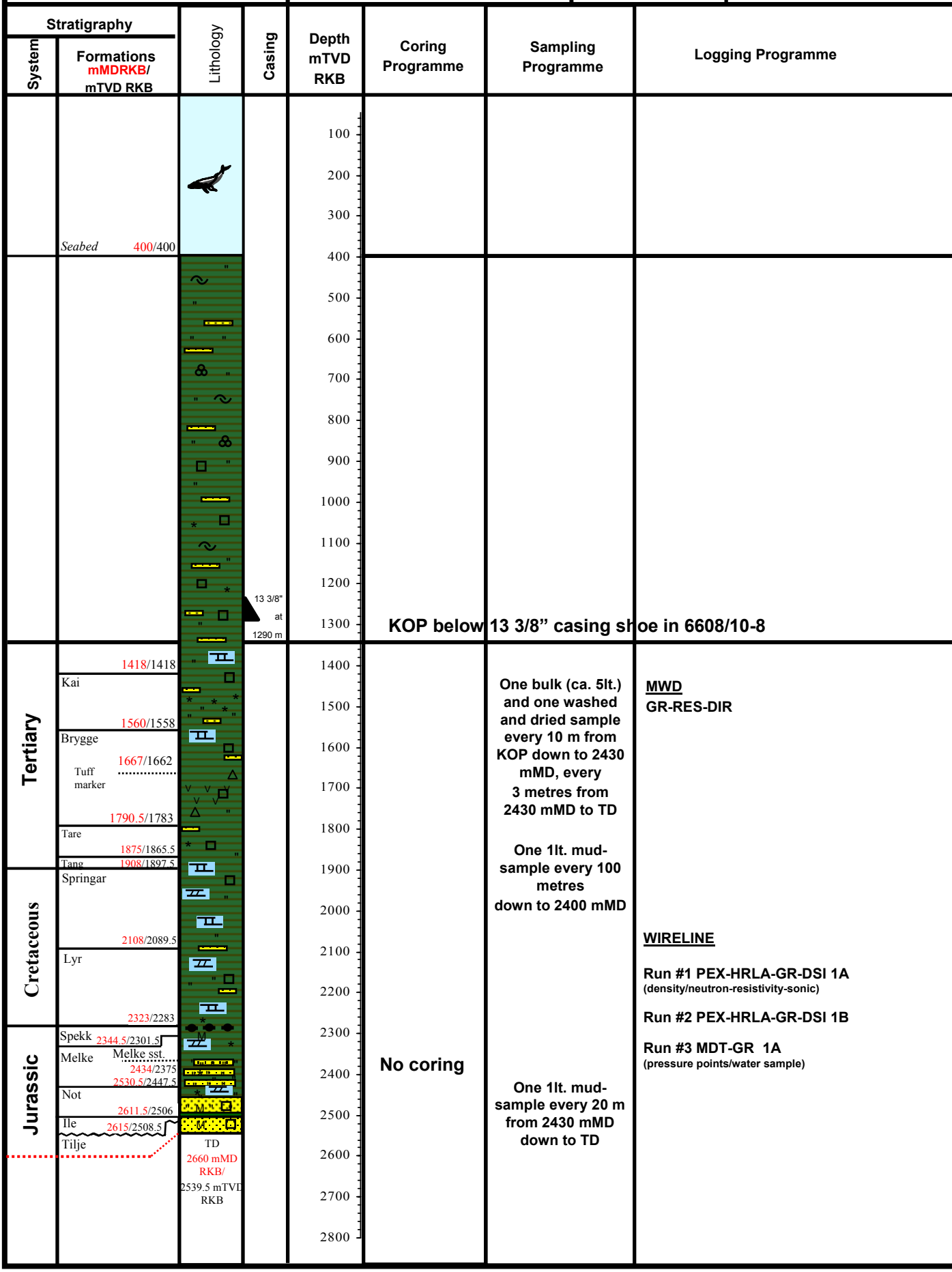


Fig. 1.4

2 Exemptions and non-conformances

The following exemptions has been identified and approved during the operations.

Table 2.1

Exemption from	Date	Title
KP10-K110 – Handbook for Drilling and Well Activities. Section 4.6.3	03.02.02	"Barriere mellom åpent hull og casing settes 250 m under brønnhodet"
KP10-K110 – Handbook for Drilling and Well Activities. Section 4.6.3	04.02.02	"Kun èn mekanisk plugg ved midlertidig tilbakeplugging i forbindelse med trekking av BOP for reparasjon. "

3 Health, safety, environment and quality (HSE&Q)

3.1 RUH

RUH - reporting				
	No RUH	**Stena**	**Service**	**Statoil**
HSE	28	23	4	1
Quality	26	17	8	1
HSE/Quality	5	4	1	
Total	59	44	13	2

Two RUH's from the Stær well are still outstanding. The first concerns repairs to damages caused by movement of deck cargo during transit from Sandnes, and the second relates to improvement of the anti-slip (floor) covering. Both items are being followed up through management meetings and are on the work program to be completed prior to the coming winter.

3.2 Comments to RUH

A number of the RUH's during the Stær well clearly reflect the fact that Stena Don is a brand new rig with "typical" run-in problems. On the "accidental discharge side" some incidents occured due to lack of understanding and knowledge of the technical systems. During the operation there was a significant improvement.

3.3 Experience summary

Item	Experience	Immediate solution	Solution recommended	D-time hrs Ref.
Rig Equipment				
Hydraracker/ racking of 36" BHA	36" BHA including 2 x 9 1/2" DC had to be laid down prior to running of 30" conductor due to too low lifting capacity on the Hydraracker.		Use only full stds of 9 1/2" DC. Lifting subs must have 7 5/8" reg.	
Rig movement / pattern	Experienced roll/pitch up to 6° in 7 m waves. Crane operations also have a large influence on the rigs roll and pitch.		It is necessary to thoroughly plan all equipment needs/deck cargo prior to the different operations, as well as heavy lifts.	
36" section				
spud	Carried out the following prior to spud: 1. Rig arrived location in drilling draft. 2. Placed out transponders and carried out DP trails. 3. RIH with 36" BHA and determined spud position by placing the ROV by the drill string and log the position for 30 minutes. Verified that the drill string was vertical. 4. Placed out 3 bouys and spudded.		Evaluate the possibility of spudding immediately after determining the position by using the ROV and the HPR system. Transponders can be placed out when pulling out of hole.	
ROV marker bouys	It proved to be problematic to see the marker bouys (w/2.6 m ropes) due to poor visibility.		The marker bouy ropes should be extended by 1 one meter.	
Top hole drilling para-meters	• Maximum flow • High rotational speed (130 RPM) • Low WOB There were no problems maintaining a vertical hole, even though boulders were encountered.			
Excess	Used 300% excess based on open hole volume plus 15 m³ fixed tail cement volume.			
17 1/2" section				
Cementing 13 3/8" casing	Due to an operator failure the two first attempts to cement the 13 3/8" casing failed.		Improved training of personnel. Unit specific check lists for every cement unit.	25
Displacing of 13 3/8"	During displacement of cement, approx. 20 strokes	The displacement was halted, and the 18 ¾" wellhead / 13		4.5

Item	Experience	Immediate solution	Solution recommended	D-time hrs Ref.
cement	before theoretical bump, the 18 ¾" housing *floated* 6 –7 m out of the 30" conductor housing.	3/8" casing was re-landed with correct down weight without problems.		
Running of riser and BOP				
BOP: Leak on hydraulic system at POD	The BOPs hydraulic system started to leak close to the POD, and the hydraulic pressure dropped to a level where disconnect or normal operation of rams were not feasible. The accumulator bottles on the BOP and on surface could not deliver sufficient hydralic pressure. The pilot pressure was lost and disconnect was possible only by use of the acoustic system.	In order to get sufficient pressure and volume of hydralic fluid, a ROV with a hydralic pump was used to hot stab the BOP.The riser and BOP were pulled for repairs.	Localised the origin of the leak (a burst o-ring in a flange), and repaired this. In addition, the BOP was modified with an isolating valve between the blue and yellow PODs to prevent a total hydralic pressure loss in case a similar incident occurs.	
8 1/2" section				
Wrench lost in hole.	An adjustable spanner was lost in hole when changing out the PS30 slips. The spanner was not secured.	The major part of the spanner was recovered by running in with a rock bit and junk basket.	It is of utmost importance to secure all tools to be used close to/above the rotary table.	39
Lyng LD575 bit graded 6-6	After drilling from 1300 to 1871 m, the bit (Lynd LD575) was heavily worn and was graded 6-6. This does not reflect the formation and was most likely caused by a compensator which was not tuned in.		This section should be easily drillable with a PDC bit in future wells.	
Incorrect threads 'premade' 8-1/2" BHA	The premade assembly was delivered with incorrect threads on the NB stabilizer; 4 ½" IF instead of the planned 4 ½" Regular. Hence, the bit could not be made up directly to the stabilizer.	Added a 4 ½" IF Box up x 4 ½" Reg box down x-over. This added 0.5 m to the BHA and resulted in that the stabilizer no longer acted as a near bit stabilizer.	Sperry-sun's QA system must be improved.	0.5
8 ½" Premade BHA	Premade BHA consisted of: 8 3/8" NB stab, 8.402" fixed sleeve stab on MWD and a 8 ½" stab at the top. This can give a slight building tendency with high WOB. The afore-mentioned change from 8 3/8" NB to string stab. and the worn bit (high WOB) increased this building tendency. The BHA built 0.2°-0.3° / stand.	The 8 3/8" NB stabilizer was originally chosen to get the formation evaluation sensors as close to the bit as possible. The original plan was to make up the bit directly to the stabilizer as it was supposed to be delivered with 4 ½" REG box down.	All stabilizers in the packed BHA should be full gauge.	
Design core bits	Very heavy set core heads tend to drill with a smoother torque than standard PDC core			

Item	Experience	Immediate solution	Solution recommended	D-time hrs Ref.
	heads. This seems to reduce the potential for core jamming off in interbedded formations.			
Mud para-meters	Had indications of bit balling while coring with KCl levels at around 100 kg/m³.	Increased the KCl content to 130–140 kg/m³, and glycol content to 4%. No indications of bit balling was observed afterwards.	The KCl should be at 130-140 kg/m³ throughout the entiree section. Glycol must be around 4%.	
WL logging Run #2 - CMR	Got stuck while taking station points with CMR, tool with sources left in hole. Tool was static for 1 hr.	Had to retrieve tool with cut and thread operation. The sources makes it necessary to not pull weak point until the fish is engaged and pulled into the casing shoe.	WL program indicated 15 min static for each station. Due to technical problems this was prolonged to 1 hour. Tool should be moved during trouble shooting.	
8 ½" sidetrack				
Kick-off	Time drilled with 1-2 m/hr for 8 hrs when kicking off from the open hole cmt plug. Formation easily drilled / steered with conventional motor.		Consider to kick-off earlier without time drilling if cement has set up in so soft formations. Orientate motor and apply WOB from beginning.	
WL log#3	MDT-GR. Cable became differential stuck while sampling in water zone in Tilje at 2614 m, static 2.5 hrs. Experienced also sticking tendencies while taking pressure points upfront.	Successfully carried out reverse cut & thread operation.	Consider to cut cable, build rope socket immediately and do not perform cut and thread down to above reservoir. At the same time, work pipe to avoid getting stuck. This is dependent of no presence of radioactive sources in the tool.	40 hrs
P&A				
Circulating BU prior to OH plugs	Experienced hole packing of when circulated BU prior to 1. cmt plug.	Circulated and worked string to establish returns again.	Break circulation and stage up pumps carefully prior to high rates while circulating BU.	

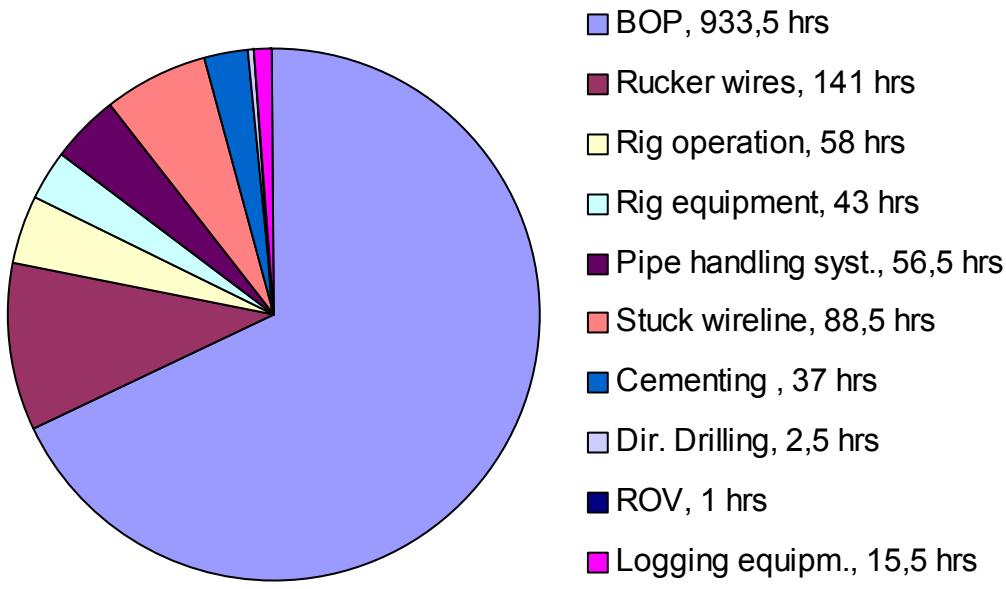
3.4 Time distribution

Time distribution on wells 6608/10-8 and 8A:

Time distribution	
Planned total time (including sidetrack)	65.3 days
Actual total time	125.2 days
Total down time	1376.5 hrs
Waiting on weather (WOW)	141 hrs

Ops. Factor: $= \frac{Total\_time - Down\_time - WOW}{Total\_time - WOW} * 100$	**51.9%**

The down time divides as follows:



The two major contributors to the unproductive time are the BOP failures (933.5 hours/38.9 days) and replacement of the riser rucker wires (141 hours/5.9 days), which make for 67.8% and 10.2% of the total down time, respectively.

4 Geology and formation data report

4.1 Geological setting and results

The structural framework on the Dønna Terrace was established during the Upper Jurassic/Lower Cretaceous extensional tectonics in the region. Later structuring is mainly related to the Cretaceous and Tertiary basinal subsidence. The structure is defined on a dipping fault block. It has faults on three sides, and is separated from the Norne field by a saddle to the SW, and from the Norne NE segment by a fault to the south.

Block 6608/10 is situated in the southern part of the Nordland II area. The NE-SW trending Revfallet Fault Complex separates the block in two structural provinces, the Nordland Ridge and the Dønna Terrace (Fig. 1.1). Wells 6608/10-8 and 6608/10-8A are located on the Dønna Terrace in the south central part of block 6608/10.

Wells 6608/10-8 and 6608/10-8A penetrates rocks of Quaternary, Tertiary, Cretaceous and Jurassic age. TD of the wells is in rocks of Jurassic age. TD of well 6608/10-8 is in the Åre Formation, while TD of well 6608/10-8A is in the Tilje Formation (Fig. 4.1 and 4.4).

4.2 Shallow gas results

The well was classified as class 0 - no shallow gas expected. The well was drilled with seawater down to 1315 mMD. No shallow gas was observed.

4.3 Stratigraphy

The stratigraphical division is based on the biostratigraphic report, wireline log curves and on correlation with nearby wells. The stratigraphy of the entire wells and the reservoir sections are shown in Figures 4.1-6.

4.3.1 Table of chronostratigraphy

Table 4.1 Well 6608/10-8

Stratigraphic succession		mMD	
	Studied interval 1320 – 2652 mMD	From	To
Tertiary	Lower? Pliocence (top not seen)	1320	1400
	Upper Miocene	1400	1550
	Middle Miocene	1550	1620
	Lower Miocene	1620	1639.2
	Base Miocene unconformity	1639.2	
	Oligocene	1639.2	1658.2
	Lower Oligocene/Top Eocene unconformity	1658.2	
	Middle Eocene	1658.2	1742.8
	Lower Eocene	1742.8	1842.3
	Upper Paleocene	1842.3	1894
	----- intra Paleocene unconformity ----------	1863	
---------- Base Tertiary unconformity ---------			
Cretaceous	Lower Maastrichtian	1894	1913
	Upper Campanian	1913	1948.3
	Middle Campanian	1948.3	2002.6
	Lower Campanian	2002.6	2087
	---- intra Lower Cretaceous unconformity ---	2087	
	?Lower Aptian	2087	2155
	Lower Aptian	2155	2163
	Upper Barremian	2163	2220
---------- Base Cretaceous unconformity ---------			
Jurassic	Volgian - Kimmeridgian	2223	
	~~ Hiatus ~~~	2223	
	Upper? Callovian	2223	2232
	Mid – Lower Callovian	2235	2241
	~~ ?Hiatus ~~~	2243	
	Lower Bathonian	2250	2271
	Upper Bajocian	2295.3	2317.2
		2304	2364
	Lower Bajocian	2376.5	2377.6
		2380.7	
		2382.7	2383.9
	Upper Aalenian	2385.2	2385.4
	Upper Toarcian	2385.7	2387.4
	---------- Hiatus ---------		
	Upper Pliensbachian	2390.8	2396.5
	Lower Pliensbachian	2398.7	2652.0

	TD	2652	

Table 4.2 6608/10-8A

Stratigraphic succession		mMD	
	Studied interval 2460 – 2660 mMD	**From**	**To**
Jurassic	Upper Bajocian	2460	2565
	Lower Bajocian	2568	2601
		2607	2619
	Upper Aalenian	2625	
	Middle Aalenian	2628	
	?	2628	2660
	TD	2660	

4.3.2 Table of lithostratigraphy

Table 4.3 Well 6608/10-8

Table of lithostratigraphy					
Period	**Group / Formation**	**Observed depth**			**TWT**
		mMD	**m TVD**	**m MSL**	**sec.**
QUATERNARY	NORDLAND GROUP. (Sea Floor)	400.0	400.0	376.0	0.508
TERTIARY	Naust Formation	730.0	730.0	706.0	0.840
	Kai Formation	1418.0	1418.0	1394.0	1.392
	HORDALAND GROUP	1560.0	1560.0	1536.0	1.519
	Brygge Formation	1560.0	1560.0	1536.0	1.519
	Tuff Marker	1658.5	1658.0	1634.0	1.611
	ROGALAND GROUP	1778.5	1778.0	1754.0	1.732
	Tare Formation	1778.5	1778.0	1754.0	1.732
	Tang Formation	1863.0	1862.0	1838.0	1.807
CRETACEOUS	SHETLAND GROUP	1894.5	1893.5	1869.5	1.839
	Springer Formation	1894.5	1893.5	1869.5	1.839
	CR. KNOLL GROUP	2087.5	2086.5	2062.5	2.006
	Lyr Formation	2087.5	2086.5	2062.5	2.006
JURASSIC	VIKING GROUP	2221.5	2220.0	2196.0	2.096
	Spekk Formation	2221.5	2220.0	2196.0	2.096
	Melke Formation	2224.0	2222.5	2198.5	2.098
	Melke Fm, Sst mbr	2293.5	2292.0	2268.0	2.147
	FANGST GROUP	2348.0	2346.5	2322.5	2.183
	Not Formation	2348.0	2346.5	2322.5	2.183
	Not Fm, Sst mbr	2368.5	2367.0	2343.0	2.197
	Ile Formation	2389.0	2387.5	2363.5	2.210
	BÅT GROUP	2391.0	2389.5	2365.5	2.211
	Tilje Formation	2391.0	2389.5	2365.5	2.211
	Åre Formation	2402.5	2401.0	2377.0	2.219
	TD	2652.0	2650.0	2626.0	-

Table 4.4 Well 6608/10-8A

Table of lithostratigraphy					
Period	**Group / Formation**	**Observed depth**			**TWT**
		mMD	**m TVD**	**m MSL**	**sec.**
QUATERNARY	NORDLAND GROUP. (Sea Floor)	-	-	-	
TERTIARY	Naust Formation	-	-	-	
	Kai Formation	1418.0	1418.0	1394.0	1.392
	HORDALAND GROUP	1560.0	1558.0	1534.0	-
	Brygge Formation	1560.0	1558.0	1534.0	-
	Tuff Marker	1667.0	1662.0	1638.0	-
	ROGALAND GROUP	1790.5	1783.0	1759.0	-
	Tare Formation	1790.5	1783.0	1759.0	-
	Tang Formation	1875.0	1865.5	1841.5	-
CRETACEOUS	SHETLAND GROUP	1908.0	1897.5	1873.5	-
	Springer Formation	1908.0	1897.5	1873.5	-
	CR. KNOLL GROUP	2108.0	2089.5	2065.5	-
	Lyr Formation	2108.0	2089.5	2065.5	-
JURASSIC	VIKING GROUP	2323.0	2283.0	2259.0	-
	Spekk Formation	2323.0	2283.0	2259.0	-
	Melke Formation	2344.5	2301.5	2277.5	-
	Melke Fm., Sst. mbr.	2434.0	2375.0	2351.0	-
	FANGST GROUP	2530.5	2447.5	2423.5	-
	Not Formation	2530.5	2447.5	2423.5	-
	Not Fm., Sst. mbr.	2568.0	2475.0	2451.0	-
	Ile Formation	2611.5	2506.0	2482.0	-
	BÅT GROUP	2615.0	2508.5	2484.5	-
	Tilje Formation	2615.0	2508.5	2484.5	-
	TD	2660.0	2539.5	2515.5	-

4.4 Lithostratigraphic description 6608/10-8

NORDLAND GROUP **400.0 - 1560.0 mMD, 400.0 – 1560.0 mTVD (376.0 - 1536.0 mTVD MSL)**

The Nordland Group comprises the Quaternary, the Naust and the Kai Formations.
The upper part of the Nordland Group, including the Quaternary and the major part of the Naust Formation, was drilled with all returns to the seabed. Lithology down to 1315 mMD is inferred from the MWD memory logs and information from the offset wells.

Quaternary **400.0 - 730.0 mMD, 400.0 – 730.0 mTVD (376.0 - 706.0 mTVD MSL)**

System: Quaternary
Series: Pleistocene

The Quaternary sediments consist mainly of thick clay units interbedded with thinner silty sand layers or stringers. Based on the gamma ray log, the sand layers seem to be silty or argillaceous.

Naust Formation **730.0 - 1418.0 mMD, 730.0 – 1418.0 mTVD (706.0 - 1394.0 mTVD MSL)**

System: Tertiary
Series: Lower? Pliocene (samples analysed from 1320 mMD)

The boundary to the overlying Quaternary sediments is picked below a slight increase on the resistivity log, consistent with previous wells in the area. The MWD logs suggest that the predominant lithology in the Naust Formation is claystone, slightly sandy and silty in parts with no distinct sandstone units encountered. Cuttings returns were initiated below 1320 mMD, from which depth well-site descriptions were undertaken.

The claystone is medium dark grey to slightly dark greenish grey and occasionally olive grey towards the base. The claystone is predominantly soft, amorphous and slightly silty to sandy with occasional very fine carbonaceous specks (and shell fragments). It is non calcareous throughout.

The sparse sand is generally seen as loose quartz and feldspar, with at first quite frequent rock (mafic) fragments, mostly translucent, occasionally smoky and rarely organic red. The sand is poorly sorted, angular to subangular, occasionally subrounded. The occasional metamorphic rock fragments and pebble fragments are generally dark grey, black and medium grey, and are also mottled, very hard, shiny, vitreous in part and frequently micaceous.

There are good traces of shell fragment mollusca and forams microfossils, and shale fragments.

Kai Formation **1418.0 - 1560.0 mMD, 1418.0 – 1560.0 mTVD (1394.0 - 1536.0 mTVD MSL)**

System: Tertiary
Series: Upper - Middle Miocene
Depositional environment: Marine, inner to mid shelf

The top of the Kai Formation is picked at a slight downward shift in trend towards lower values on resistivity log readings. This shift is also seen on density, porosity and sonic logs. The top of the formation is also associated with a slight shift towards higher gamma ray response than seen in the overlying Naust Formation.

The Kai Formation consists mainly of claystone with minor traces of sand/rock fragments. In the upper part of the formation the claystone is olive grey to medium dark grey and dark green grey. The claystone is persistently soft, with silty and sandy laminae or floating arenaceous components. There are traces to abundant amounts of glauconite specks, increasing traces of pyrite, slight to moderate traces of micromica and it is all non calcareous.

The sand is present as loose quartz grains which are clear, transparent, milky white and translucent in colour. The sand is composed of fine to very coarse grains, though it is predominantly coarse to very coarse. It is poorly sorted, angular to subrounded, has moderate to poor sphericity, traces of pyrite and of micromica and is non calcareous. The sand also contains prolific dark green to black glauconite grains towards the base of this unit. Traces of shell and fossil fragments are prevailing. Traces of pyrite and traces of dark grey to medium grey metamorphic rock fragments and pebbles are commonly associated.

HORDALAND GROUP **1560.0 - 1778.5 mMD, 1560.0 – 1778.0 mTVD (1536.0 – 1754.0 mTVD MSL)**

The top of the Hordaland Group and Brygge Formation is defined by the sonic log, which has a clear trend shift towards lower velocity. The Hordaland Group comprises the Brygge Formation.

Brygge Formation **1560.0 - 1778.5 mMD, 1560.0 – 1778.0 mTVD (1536.0 - 1754.0 mTVD MSL)**

System: Tertiary
Series: Middle Miocene - Lower Eocene
Depositional environment: Marine, mid to outer shelf to upper bathyal

The Brygge Formation consists of an upper claystone unit with some siltstone, some sand occurring below 1640 mMD. From 1690 mMD an undifferentiated tuffaceous zone was encountered.

The claystone is predominantly olive grey to medium dark green grey. Some brown grey zones were also described. It is soft with some abundance of glauconite specks and it is all non calcareous.

The silt component is presented as predominantly grading claystone and is non calcareous.

The sand is present predominantly as loose quartz grains similar to those seen in the overlying Kai Formation. The grains are clear, transparent to milky white. The sand is composed of fine to coarse grains, becoming predominantly medium grained with depth. It is poorly sorted, angular to subrounded, has moderate to poor sphericity. The sand is also rich in glauconite, with only traces of shell and fossil fragments and pyrite nodules/pyritisized fossils.
Some infrequent thin dolomite also occurs.

The increasing occurrence of altered/redeposited? tuff, first described from 1690 mMD, is light to medium green grey, becoming bluish grey claystone with depth. The transition is quite subtle and not easily recognized on the MWD logs. A more irregular appearance on the resistivity log is seen when the maximum frequency of tuff events is observed from the ditch cuttings towards the base of Brygge Formation.

ROGALAND GROUP **1778.5 - 1894.5 mMD, 1778.0 – 1893.5 mTVD (1754.0 - 1869.5 mTVD MSL)**

The top of the Rogaland Group is picked at the base of a subtle gamma-ray correlation with neighbour well 6608/10-4 logs. The resistivity log response generally builds to lower conductivity than the variable lower resistivity in the Brygge Tuff/Tuffaceous unit above.

Tare Formation **1778.5 - 1863.0 mMD, 1778.0 – 1862.0 mTVD (1754.0 - 1838.0 mTVD MSL)**

System: Tertiary
Series: Lower Eocene - Upper Paleocene
Depositional environment: Marine, outer shelf

The Tare Formation is composed of claystone and tuffaceous claystone with minor stringers of dolomite, limestone and sand.

In the upper part of the Tare Formation the claystone is medium dark grey to medium dark olive grey. It is soft to firm with abundant glauconite specks. An increasingly tuffaceous looking appearance dominates further down. The claystone is pale green grey to bluish grey cast colour and has a slightly waxy appearance.

The tuffaceous claystone is found predominantly from to medium green grey to blue grey and moderate brown in colour. It is firm and has a waxy appearance. Below 1800 mMD the claystone is light grey, platy to subblocky, slightly sticky to sticky, non calcareous and has locally abundant microglauconitic specks

The traces of sand are seen as loose quartz grains. The traces of limestone and dolomite are pale grey and brown. Traces of pyrite are also found.

Tang Formation **1863.0 - 1894.5 mMD, 1862.0 – 1893.5 mTVD (1838.0 – 1869.5.0 mTVD MSL)**

System: Tertiary
Series: Upper Paleocene
Depositional environment: Marine, outer shelf to upper bathyal, shallowing to marine outer shelf

The top of the Tang Formation is defined at a gamma ray peak where the sonic log has a trend shift towards lower values. The Tang Formation consists predominantly of claystone with traces of limestone.

The claystone is predominantly dark green grey in colour, though it is also light green grey, medium dark green grey, occasionally black grey. It is firm and amorphous to blocky. In parts tuffaceous and is occasionally slightly silty. It is also non calcareous.

The limestone is light grey to light brown grey, soft to firm. It is argillaceous, microcrystalline in part with traces of micropyrite.

SHETLAND GROUP **1894.5 - 2087.5 mMD, 1893.5 – 2086.5 mTVD (1869.5 - 2062.5 mTVD MSL)**

The top of the Shetland Group is picked at a high gamma ray peak followed by a continuously high, uniform gamma log response interrupted by low gamma troughs due to limestone stringers. The top of the Shetland Group represents a trend shift in the resistivity log response to higher levels than seen in the overlying Tang Formation. In this well the Shetland Group is comprised of only the Springar Formation.

Springar Formation **1894.5 - 2087.5 mMD, 1893.5 – 2086.5 mTVD (1869.5 - 2062.5 mTVD MSL)**

System: Cretaceous
Series: Upper Cretaceous
Stage: Lower Maastrichtian – Lower Campanian
Depositional environment: Marine, outer shelf to upper bathyal

The Springar Formation consists of claystone with minor stingers of limestone and dolomite.

The claystone is predominantly dark greenish grey, medium dark to dark grey and olive grey in colour. The claystone is firm in the top and becoming soft to firm in the lower section. It is blocky and is occasionally silty. It is predominantly non calcareous and has traces of glauconite, micropyrite and micromica. In the lower part the claystone is slightly glauconitic.

The limestone is light grey and light brown grey in colour. It is soft to firm, microcrystalline and argillaceous.

Traces of sand are seen as loose quartz, and glauconite is seen as both grains and occasionally nodules. Traces of pyrite are also found.

CROMER KNOLL GROUP **2087.5 - 2221.5 mMD, 2086.5 – 2220.0 mTVD (2062.5 - 2196.0 mTVD MSL)**

The top of the Cromer Knoll Group, which comprises the Lyr Formation in this well, is defined by a conspicuous increase in resistivity values compared to the Shetland Group.
The gamma ray readings increase slightly compared to the general level in the Shetland Group.

Lyr Formation **2087.5 - 2221.5 m, 2086.5 – 2220.0 mTVD (2062.5 - 2196.0 m MSL)**

System: Cretaceous
Series: Lower Cretaceous
Stage: Upper Barremian
Depositional environment: Marine, outer shelf

The Lyr Formation consists of claystone with interbedded limestone, dolomite and occasional sandstone stringers.

The claystone of the Lyr Formation is slightly lighter in colour in the upper parts (down to about 2160 mMD), than in the lower parts of the formation. The claystone is described as medium grey to medium dark grey, but also olive grey and occasional dark greenish grey colours are seen. The claystone is soft to firm, slightly silty, occasionally silty grading almost to siltstone. It is occasionally slightly glauconitic and pyritic and non calcareous throughout. Below 2160 mMD the formation becomes slightly darker and more greyish. The formation also seems to be more soluble to water than in the upper parts.

The limestone is white to yellowish white, and in the lower parts of the formation also as light grey to yellowish grey while pale brownish grey is seen throughout the formation. It is soft to firm, and slightly silty to occasionally silty. Glauconite and mica is occasionally seen in the limestone.

The dolomite is yellow brown to greyish brown in colour. It is moderate hard to very hard, slightly argillaceous to argillaceous, and microcrystalline to micritic. It occasionally occurs as sucrosic grains.

The sandstone is composed of clear, and translucent quartz grains. In a few samples brownish grey colours is also observed. It is predominantly very fine to fine, occasionally medium in grain size, moderately sorted, subrounded and appears as loose grains throughout the entire formation.

There are traces of pyrite as nodules and occasionally as cubes as well as occasional glauconite throughout the entire formation.

VIKING GROUP **2221.5 - 2348.0 mMD, 2220.0 – 2346.5 mTVD (2196.0 - 2322.5 mTVD MSL)**

The top of the Viking Group is picked at a drop in the resistivity log readings associated with a sharp increase in the gamma ray log response. The Viking Group comprises the Spekk and the Melke Formations in this well.

Spekk Formation **2221.5 - 2224.0 mMD, 2220.0 – 2222.5 mTVD (2196.0 - 2198.5 mTVD MSL)**

System: Jurassic
Series: Middle Jurassic
Stage: Volgian – Kimmeridgian
Depositional environment: Marine, mid to outer shelf

The Spekk Formation is only 3.5 meters thick in the well and consists of a dark organic rich claystone.

The claystone is described as brownish black to greyish black and dusky brown to dusky yellowish brown, firm, very carbonaceous, micropyritic and non calcareous.

Melke Formation **2224.0 - 2348.0 mMD, 2222.5 – 2346.5 mTVD (2198.5 – 2322.5 mTVD MSL)**

System: Jurassic
Series: Middle Jurassic
Stage: Upper Callovian – Upper Bajocian
Depositional environment: Marine, inner shelf to marginal marine

The Melke Formation is picked at a sharp decrease in gamma ray log response.
The Melke Formation can be divided into three parts, an upper part consisting of a very carbonate rich, 17 meter thick bed with interbedded claystone stringers, followed by mainly claystone with thin carbonate stringers, and a third part comprising mainly sandstone and siltstone seen as three sequences coarsening upwards.

The claystone is predominantly medium dark grey to dark greenish grey, occasionally olive grey and occasionally brown black to grey black. It is soft to firm, sticky, slightly silty to silty. It is occasionally both slightly glauconitic and pyritic. The claystone is non calcareous throughout.

The limestone is white to light grey and pale brown grey and occasionally medium dark grey, it is firm to very hard, micritic and argillaceous.

Sand is seen as loose quartz. They are loose, transparent, clear, and occasionally pale brown in colour. The sand is very fine to fine, occasionally medium, moderately sorted, subangular to subrounded, and occasionally rounded.

The dolomite is yellow brown to dark brownish grey, very hard and micritic to microcrystalline.

The sandy section of the Melke Formation (Melke Sandstone Member), from 2293.5 mMD to approx. 2348 mMD, comprises sandstone with thin siltstone beds grading into claystone, and dolomite stringers.

The sandstone is composed of clear, translucent and occasionally pale brown quartz grains. The sandstone is silty to fine grained, though predominantly very fine, it is moderate sorted, subrounded to rounded. It is slightly to non calcareous, firm to moderate hard, contains mica, pyrite and occasionally glauconite, and has poor to fair visible porosity.

The siltstone is dark grey to medium dark grey, also becoming olive grey when grading into claystone. It varies from moderate hard to hard, it is micaceous, argillaceous, calcareous, and has sandy laminae in parts and locally grades into claystone.

The dolomite is yellow brown to dark brownish grey, microcrystalline to micritic and very hard.

FANGST GROUP **2348.0 - 2391.0 mMD, 2346.5 – 2389.5 mTVD (2322.5 - 2365.5 mTVD MSL)**

The top of the Fangst Group is seen as an increase in the gamma ray readings. The Fangst Group consists of the Not and Ile Formations in this well.

Not Formation **2348.0 - 2389.0 mMD, 2346.5 – 2387.5 mTVD (2322.5 - 2363.5 m MSL)**

System: Jurassic
Series: Middle Jurassic
Stage: Upper Bajocian – Upper Toarcian
Depositional environment: Marginal marine to marine, inner shelf

The upper part of the Not Formation consists of claystone with thin limestone and sandstone stringers.

The claystone is medium dark grey to dark greenish grey, soft to firm, and sticky. It is locally silty and grades to siltstone in part. It is occasionally slightly glauconitic and pyritic and non calcareous throughout.

The lower part of the Not Formation consists of sandstone with claystone present as thin laminae or interbeds, with a thicker claystone bed at the bottom.

The sandstone is brownish grey, typically HC stained, very fine to fine, occasionally medium, well sorted, subrounded, firm to moderately hard, slightly argillaceous, non calcareous, micaceous, non to slightly glauconitic, occasionally carbonaceous and with fair visible porosity

The claystone in the lower part is medium dark grey to dark grey, firm to moderately hard, non to slightly silty, carbonaceous, micaceous and non calcareous.

Ile Formation **2389.0 - 2391.0 mMD, 2387.5 – 2389.5 mTVD (2363.5 - 2365.5 mTVD MSL)**

System: Jurassic
Series: Middle Jurassic
Stage: Upper Pliensbachian
Depositional environment: Marginal marine to marine, inner shelf

The top of the Ile Formation is seen as a decrease in the gamma ray readings and as an increase in resistivity readings.

The Ile Formation consists of sandstone and is only 2 m thick in this well, interpreted from core description. The sandstone consists of clear to translucent quartz with very apparent HC stain. The grains are dark green grey, fine to medium, occasionally coarse, moderate to well sorted and subangular to subrounded. The sandstone is friable to firm, slightly calcareous cemented, occasionally with very abundant pyritic coating on quartz grains, occasionally with slightly micaceous, glauconitic and with good to excellent visible porosity.

BÅT GROUP **2391.0- 2652.0 mMD, 2389.5 –2650.0 mTVD (2365.5 - 2626.0 mTVD MSL)**

The top of the Båt Group is consists of the Tilje and Åre Formations in this well.

Tilje Formation **2391.0 – 2402.5.0 mMD, 2389.5 – 2401.0 mTVD (2365.5 - 2377.0 mTVD MSL)**

System: Jurassic
Series: Lower Jurassic
Stage: Upper - Lower Pliensbachian
Depositional environment: Marginal marine

The Tilje Formation consists of very fine sandstone grading to siltstone interbedded with beds of siltstone, claystone and minor stringers of limestone or carbonate cemented sandstone.

The sandstone/siltstone is medium brownish grey, typically HC stained, very fine grained and grades to siltstone in parts. Common feldspar exists together with general quartz lithology. All section are generally friable, locally loose, with laminated claystone. The cement is generally non calcareous and slightly micaceous. Micropyrite overgrowth are registered in parts. The sandstone has fair to good visual porosity.

The siltstone is medium grey to brownish grey (HC stain) and olive brown in colour, it is generally firm, but also soft in parts. The siltstone is laminated, fissile, micaceous, non calcareous and very carbonaceous in parts. The siltstone grades, in general, to very fine sandstone and in places it grades to claystone.

The claystone is medium light grey, laminated and generally firm to moderately hard. It is amorphous, non calcareous and locally very micaceous, in parts grading to micaceous siltstone. At the base of the formation the claystone becomes medium dark brownish grey in colour. It is firm, laminated, locally moderately fissile, slightly micropyritic and carbonaceous specks are increasingly common.

Only a few traces of limestone are seen. They are light grey to white in colour and hard.

Åre Formation **2402.5 - 2652.0 mMD, 2401.0 – 2650.0 mTVD (2377.0 - 2626.0 mTVD MSL)**

System: Jurassic
Series: Lower Jurassic
Stage: Lower Pliensbachian
Depositional environment: Marginal marine to fluviodeltaic

The top of the Åre Formation is picked at the lower part of a sequence coarsening upwards. The formation consists of sandstone interbedded with claystone and with occasional beds of coal in the lower part.

The sandstone is medium light to moderate grey in colour and is comprised of clear, light brown quartz and minor feldspar grains which are predominantly fine to very fine grained. The sandstone is occasionally silty and furthermore crumbly and friable to loose in parts and well to moderately well sorted. The grains are angular to subrounded. In parts there is abundant silty to argillaceous matrix and a moderate presence of mica and pyrite. Locally there are abundant to very abundant coal specks. In places the sandstone is well clay cemented with non to poor visible porosity, but some zones comprise fair to good visible porosity.

The claystone is brownish to olive grey to lighter white grey below the inferred OWC at 2483.7 mMD/ 2458.1 mTVD MSL. The claystone is soft to firm and hard in parts, it is fissile and is in part laminated with more silty claystone. It is also calcareous, very micromicaceous, commonly carbonaceous and has good traces of pyrite in general.

The coal is black, shiny, blocky and brittle.

Trace amounts of micropyrite and pyrite nodules are also seen in the Åre Formation.

TD: 2652.0 mMD, 2650.0 mTVD, (2626.0 mTVD MSL)

4.4.1 Lithostratigraphic description 6608/10-8A

NORDLAND GROUP **N/A – 1560.0 mMD, N/A – 1558.0 mTVD (N/A – 1534.0 mTVD MSL)**

Only the lower part of the Nordland Group was penetrated in this sidetrack that was kicked off from 6608/10-8 in the Naust Formation at 1340 mMD. In this well the Nordland Group comprises the lower part of the Naust Formation and the Kai Formation.

Naust Formation **N/A – 1418.0 mMD, N/A – 1418.0 mTVD (N/A – 1394.0 mTVD MSL)**

System: Tertiary
Series: Pliocene

The Naust Formation is dominated by claystones with abundant sands as floating grains, thin laminas or lenses.

The claystones are olive grey to medium dark grey, amorphous, soft, sticky and soluble. They are silty, sandy and commonly micromicaceous to micaceous. They appear to be generally non calcareous, but commonly contain calcareous fragments.

The sands are seen as loose grains, washed out from the clay matrix, or as thin lamina or lenses. Clear to translucent quartz grains are dominating, but milky to smokey quartz and rock fragments are common. The sands are fine to very coarse grained, poorly sorted and subangular to subrounded.

There are good traces of shell fragments, forams, mica and pyrite.

Kai Formation **1418.0 - 1560.0 mMD, 1418.0 –1558.0 mTVD (1394.0 - 1534.0 mTVD MSL)**

System: Tertiary
Series: Lower Pliocene - Middle Miocene
Depositional environment: Marine, inner to mid shelf

The top of the Kai Formation is picked at slight downward shift in trend on resistivity log readings associated with a thin sharp trough in the gamma-ray followed by a gradually higher

gamma-ray response than seen in the overlying Naust Formation. The Kai Formation consists mainly of claystone with minor traces of sand/rock fragments.

In the upper part of the formation the claystone is olive grey to medium dark grey and dark green grey. The claystone is persistently soft, with silty and sandy lamina or floating arenaceous components. There are traces to abundant amounts of glauconite either as specks or as loose grains, increasing traces of pyrite, slight to moderate traces of micromica and the claystone is non calcareous throughout the formation.

The sand is present as loose quartz grains which are clear, translucent and occasionally milky white. The sand is composed of fine to coarse grains, though it is predominantly medium to coarse. It is moderately sorted, subangular to subrounded, with traces of pyrite and of micromica. The sand also contains dark green to black glauconite grains throughout the entire unit. Traces of shell and fossil fragments are common. Traces of pyrite and traces of dark grey to medium grey metamorphic rock fragments are commonly associated.

HORDALAND GROUP **1560.0 – 1790.5 mMD, 1558.0 – 1783.0 mTVD (1534.0 – 1759.0mTVD MSL)**

The top of the Hordaland Group and Brygge Formation is picked at the base of an increasing gamma ray sequence and a slight decreasing trend in resistivity. The gamma log response at the top of the Brygge Formation follows a gradually decreasing trend. The Hordaland Group comprises the Brygge Formation only.

Brygge Formation **1560.0 – 1790.5 mMD, 1558.0 – 1783.0 mTVD (1534.0 – 1759.0mTVD MSL)**

System: Tertiary
Series: Middle Miocene - Lower Eocene
Depositional environment: Marine, mid to outer shelf to upper bathyal

The Brygge Formation consists of an upper, mainly brownish grey claystone down to 1650 mMD, where the general colour changes to a more greenish hue. From 1770 mMD an undifferentiated tuffaceous zone was encountered.

The upper claystone unit is mainly brownish grey and occasionally light olive grey to greenish grey, it is soft to firm, often soluble, both silty and sandy throughout and slightly micromicaceous. There is an abundance of glauconite specks as well as loose grains, and it is generally non calcareous but some slightly calcareous claystone is observed.
The claystone below 1650 mMD is predominantly olive grey to green grey. Some brown grey zones were also described. It is slightly less sandy than the upper claystone.

The silt component are presented as predominantly grading claystone and is non calcareous.

The sand is present predominantly as loose quartz grains similar to those seen in the overlying Kai Formation. The grains are clear, transparent to occasionally milky white. The sand is composed of fine to medium grains. It is moderately sorted, and subangular to subrounded. The sand is also rich in glauconite, with occasional traces of shell and fossil fragments, while pyrite and mica is seen throughout in trace amounts.

The tuff, first described from 1770 mMD, is light olive to medium green grey and later bluish grey claystone, light to dark grey colours are also seen. The transition is quite subtle and not easily recognized on the MWD logs. A more "spikey" appearance on the on the resistivity log is seen when the maximum frequency of tuff is observed from the ditch cuttings towards the base of Brygge Formation.

ROGALAND GROUP **1790.5 – 1908.0 mMD, 1783.0 – 1897.5 mTVD (1759.0 - 1873.5 mTVD MSL)**

The top of the Rogaland Group is picked at the basis of a subtle gamma-ray correlation with neighbour well 6608/10-4 logs. The resistivity log response is generally building to higher resistivity than the variable lower resistivity in the Brygge tuffaceous unit above.

Tare Formation **1790.5 – 1875.0 mMD, 1783.0 – 1865.5 mTVD (1759.0 – 1841.5 mTVD MSL)**

System: Tertiary
Series: Lower Eocene - Upper Paleocene
Depositional environment: Marine, outer shelf

The Tare Formation is composed of claystone and tuffaceous claystone with minor stringers of sand.

The claystone is varicoloured green grey and red brown to moderate brown, with minor amounts of light grey to dark grey. It is soft to mainly firm with abundant glauconite specks.
It is slightly micromicaceous and non calcareous.

The tuffaceous claystone is found predominantly in blue grey, grey and moderate brown claystone. It is firm and has a waxy appearance, and only present in trace amount up to a few percent

The traces of sand are seen as loose quartz grains. Traces of pyrite are also found.

Tang Formation **1875.0 – 1908.0 mMD, 1865.5 – 1897.5 mTVD (1841.5 – 1873.5 mTVD MSL)**

System: Tertiary
Series: Upper Paleocene
Depositional environment: Marine, outer shelf to upper bathyal, shallowing to marine outer shelf

The top of the Tang Formation is defined at a gamma ray peak where the sonic log has a trend shift towards lower values. The Tang Formation consists of claystone with traces of pyrite and glauconite.

The claystone is predominantly dark green grey in colour, though it is also light green grey, dark grey to light grey, and brownish red. It is predominantly firm and subblocky to blocky. It is also predominantly non calcareous except for the light grey claystone which is calcareous.

SHETLAND GROUP **1908.0 – 2108.0 mMD, 1897.5 – 2089.5 mTVD (1873.5 – 2065.5 mTVD MSL)**

The top of the Shetland Group is picked at a high gamma ray peak followed by a continuously high, uniform gamma log response interrupted by low gamma troughs due to limestone stringers. The top of the Shetland Group represents a trend shift in the resistivity log response to higher levels than seen in the overlying Tang Formation. In this well the Shetland Group is comprised of only the Springar Formation.

Springar Formation **1908.0 – 2108.0 mMD, 1897.5 – 2089.5 mTVD (1873.5 – 2065.5 mTVD MSL)**

System: Cretaceous
Series: Upper Cretaceous
Stage: Lower Maastrichtian – Lower Campanian
Depositional environment: Marine, outer shelf to upper bathyal

The Springar Formation consists of claystone with thin stringers of limestone.

The claystone is medium dark to dark grey and olive grey in colour. The claystone is soft in the top of the formation becoming firm in the lower section. It is blocky to subblocky and silty. It is predominantly non calcareous and has minor traces of glauconite.

The limestone is white to light grey and yellowish grey in colour. It is soft to firm, microcrystalline to micritic and argillaceous.

Traces of sand are seen as loose quartz, consisting of clear to translucent quartz, very fine to fine grained, moderate sorted and subrounded.

CROMER KNOLL GROUP **2108.0 – 2323.0 mMD, 2089.5 – 2283.0 mTVD (2065.5 – 2259.0 mTVD MSL)**

The top of the Cromer Knoll Group, which comprises the Lyr Formation in this well, is defined by a conspicuous increase in resistivity values compared to the Shetland Group.
The gamma-ray readings increase slightly compared to the general level in the Shetland Group.

Lyr Formation **2108.0 – 2323.0 mMD, 2089.5 – 2283.0 mTVD (2065.5 – 2259.0 mTVD MSL)**

System: Cretaceous
Series: Lower Cretaceous
Stage: Upper Barremian
Depositional environment: Marine, outer shelf

The Lyr Formation consists of claystone with interbedded limestone, dolomite and occasional sandstone stringers.

The claystone of the Lyr Formation is described as medium grey to dark grey, but also olive grey and occasional dark greenish grey colours are seen. The claystone is soft to firm, silty to occasionally very silty. It is occasionally slightly glauconitic, micromicaceous and pyritic and non calcareous throughout.

The limestone is white to light grey. It is soft to firm, sucrosic to micritic and occasionally micropyritic and micromicaceous.

The dolomite is dark yellow brown, moderately hard to hard and micritic.

The sandstone is composed of clear, and translucent quartz grains. It is predominantly very fine to fine, moderately sorted, subrounded and appears as loose grains throughout the entire formation.

There are traces of pyrite as nodules and occasionally as cubes as well as occasional glauconite and mica throughout the entire formation.

VIKING GROUP **2323.0 – 2530.5 mMD, 2283.0 – 2447.5 mTVD (2259.0 – 2423.5 mTVD MSL)**

The top of the Viking Group is picked at a drop in the resistivity log readings associated with an increase in the gamma log response. The Viking Group comprises the Spekk and the Melke Formations in this well.

Spekk Formation **2323.0 – 2344.5 mMD, 2283.0 – 2301.5 mTVD (2259.0 – 2277.5 mTVD MSL)**

System: Jurassic
Series: Middle Jurassic
Stage: Volgian -Kimmeridgian
Depositional environment: Marine, mid to outer shelf

The Spekk Formation is 21.5 meters thick and consists of a dark organic rich claystone with thin limestone stringers, and occasional stringers of dolomite.

The claystone is described as brownish black to greyish black, soft to firm, silty, carbonaceous, micropyritic, micromicaceous and calcareous.

The limestone is white to light grey. It is soft to firm, sucrosic to micritic, micromicaceous and occasionally micropyritic.

The dolomite is dark yellow brown, hard and microcrystalline to micritic.

Melke Formation **2344.5 – 2530.5 mMD, 2301.5 – 2447.5 mTVD (2277.5 – 2423.5 mTVD MSL)**

System: Jurassic
Series: Middle Jurassic
Stage: Upper Callovian – Upper Bajocian
Depositional environment: Marine, inner shelf to marginal marine

The Melke Formation can be divided into three parts, an upper part consisting of very carbonate rich beds with interbedded claystone stringers, followed by mainly claystone with thin carbonate stringers, and a third part comprising mainly sandstone and siltstone seen as three coarsening upwards sequences.

The claystone is predominantly medium dark grey to dark greenish grey, but olive grey is also occasionally seen. It is soft to firm, sticky, occasionally carbonaceous and silty. The claystone is non calcareous throughout.

The limestone is white to light grey occasionally medium dark grey, it is firm to moderate hard, micritic, argillaceous and occasionally micropyritic.

Sand is seen as loose, transparent and clear quartz grains. The sand is very fine to fine, occasionally medium, moderately sorted, subrounded to rounded, and micropyritic.

The dolomite is dark yellow brown, moderate hard to hard and micritic to microcrystalline.

The sandy section of the Melke Formation (Melke Sandstone Member), from 2434.0 mMD to approx. 2529.0 mMD, comprises sandstone with claystone beds grading into siltstone, and limestone and minor dolomite stringers.

The sandstone is as previously described in the upper parts of the Melke Formation, but occasionally aggregates of fine grained sandstone are seen.

FANGST GROUP **2530.5 – 2615.0 mMD, 2447.5 – 2508.5 mTVD (2423.5 – 2484.5 mTVD MSL)**

The top of the Fangst Group is seen as an increase in the gamma ray readings. The Fangst group consists of the Not and Ile Formations in this well.

Not Formation **2530.5 – 2611.5 mMD, 2447.5 – 2506.0 mTVD (2423.5 – 2482.0 mTVD MSL)**

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

The upper part of the Not Formation consists of claystone with thin limestone and sandstone stringers. The lower part of the Not Formation consists of sandstone with interbeds of claystone and minor limestone stringers, with a claystone bed at the bottom.

The sandstone consists of clear to translucent, loose quartz grains, which are very fine to fine, occasionally medium and moderate to occasionally well sorted. It is subrounded to rounded, firm to moderately hard, non calcareous, micromicaceous, micropyritic and occasionally in aggregates.

The claystone is medium dark grey to medium grey, light olive grey to occasionally greenish grey, firm to moderately hard, silty, micromicaceous and non calcareous.

The limestone is white to light grey, occasionally medium grey, firm to moderate hard and occasionally micropyritic and argillaceous.

Traces of pyrite and mica are seen in all of the samples

Ile Formation **2611.5 – 2615.0 mMD, 2506.0 – 2508.5 mTVD (2482.0 – 2484.5 mTVD MSL)**

System: Jurassic
Series: Middle Jurassic
Stage: Lower Bajocian
Depositional environment: Marginal marine to marine, inner shelf

The top of the Ile Formation is seen as a decrease in the gamma ray and resistivity readings. The Ile Formation consists of sandstone with thin stringers of limestone.

The sandstone consists of clear to translucent quartz. The grain size are very fine to fine, subrounded to rounded, moderate to well sorted, pyritic, loose and occasionally present as aggregates. The limestone is white to light grey, firm to moderate hard, blocky to subblocky, occasionally micropyritic and occasionally argillaceous. Trace of pyrite and mica are seen.

BÅT GROUP **2615.0 – 2660.0 (TD) mMD, 2508.5 – 2539.5 mTVD (2484.5 – 2515.5 mTVD MSL)**

The Båt Group consists of the Tilje Formations in this well.

Tilje Formation **2615.0 – 2660.0 (TD) mMD, 2508.5 – 2539.5 mTVD (2484.5 – 2515.5 mTVD MSL)**

System: Jurassic
Series: Lower Jurassic
Stage: Lower Bajocian – Middle Aalenian
Depositional environment: Marginal marine

The Tilje Formation consists of sandstone interbedded with occasional claystone stringers and very minor limestone laminaes**.**

The sandstone is composed of clear to translucent quartz, very fine to fine, subrounded to rounded, pyritic, moderate to well sorted, apparently as loose grains.

The claystone is medium dark grey to medium grey, light olive grey to occasionally green grey, blocky to subblocky, firm to moderate hard, silty, micromicaceous and non calcareous.

The limestone is white to light grey, occasionally medium grey, firm to moderatly hard, blocky to subblocky, occasionally micropyritic and occasionally argillaceous. Pyrite and mica are also seen throughout the formation in trace amounts.

TD: 2660.0 mMD, 2539.5 mTVD, (2515.5 mTVD MSL)

4.5 Hydrocarbon indications

Well 6608/10-8

Shows are reported from 2262 mMD and down to 2486 mMD. In cuttings between 2262 and 2295 mMD, shows have only been reported as direct fluorescence and residual cut fluorescence. No proper cut fluorescence has been reported in this interval.

In the core from the Melke sandstone member, direct as well as cut fluorescence is reported. There is generally a strong HC odour in the sandy parts together with a brownish oil staining. The direct fluorescence is described as even moderate yellow white. The cut is described as instant flashy blue white cut fluorescence followed by fast streaming blue white cut.

In sandstones and siltstones from the Fangst Group, as well as in the Båt Group, both good fluorescence and cut fluorescence indicators have been observed down to 2486 mMD.

Moderate to good HC odour is reported together with a common brownish HC staining in the sandy/silty sections. The proper claystone section has no shows.

The direct fluorescence is described as even to patchy moderate to bright yellow white and also pale yellow in more tight zones. While the cut fluorescence is described as moderate bright to bright blue white fast streaming to in some cases instant to flashy blue white cut.

Table 4.5 Gas peaks: (FID)

DEPTH m RKB	GAS %	C_1 ppm	C_2 ppm	C_3 ppm	iC_4 ppm	nC_4 ppm	C_5 ppm	TYPE	BG %

1577.0	0.2	1 445	172	8	3	2	2	FG	0.1
1824.0	0.2	2 266	16	-	-	-	-	FG	0.1
2053.0	0.32	3 623	88	50	8	12	-	FG	0.25
2189.0	1.29	7 742	478	613	132	204	73	FG	0.3
2193.0	3.90	25 458	2 975	2 244	338	539	122	FG	0.6
2230.0	2.50	18 451	935	826	193	359	145	FG	0.8
2295.0	4.40	41 532	3 194	1 592	273	465	96	FG	0.2
2295.0	3.20	25 978	1 508	1 319	308	514	186	TG	0.2
2306.0	1.20	11 975	902	504	81	125	43	FG	0.5
2322.0	2.10	12 767	994	731	121	178	123	TG	0.4
2336.0	2.80	27 528	947	952	134	207	62	FG	0.7
2371.0	1.60	16 467	1 028	472	54	105	39	FG	0.5
2371.0	2.60	23 832	1 584	808	162	313	166	TG	0.9
2371.0	5.90	53 459	2 105	1 881	469	751	297	TG	2.2
2377.0	3.10	31 173	1 516	835	120	214	89	FG	1.1
2380.0	3.40	35 468	2 137	884	104	200	74	FG	2.1
2384.0	4.70	42 088	2 686	1 485	253	445	297	FG	1.1
2407.0	3.70	24 656	1 086	567	95	159	93	FG	0.9
2424.0	2.40	22 690	1 446	682	115	224	139	TG	0.7
2435.0	0.60	5 805	323	162	29	65	66	TG	0.3
2438.0	1.00	8 825	499	230	35	70	47	TG	0.4
2452.0	2.60	24 746	696	431	85	119	60	TG	0.3
2455.0	3.10	31 916	910	651	99	179	78	TG	1.0
2468.0	8.40	76 700	4 555	1 746	182	313	76	FG	0.1
2479.0	10.20	80 657	2 269	1 476	200	308	75	FG	5.1
2525.0	2.50	15 147	1 144	660	120	220	89	FG	0.3

Well 6608/10-8A

Shows of varying quality are reported from the Melke sandstone in samples from 2436, 2442 and 2463 mMD. In the Not Formation shows are reported in the uppermost parts in the sandstone, again of varying quality.

In the Melke Sandstone Member, direct as well as cut fluorescence are reported, but together only in the 2463 mMD sample. The other samples gave direct fluorescence only together with residual fluorescence. The direct fluorescence varied from pale blue to bright yellow and blue white in the best sample, while the cut fluorescence is described as yellow fast streaming.

In sandstones from the Not Formation only poor shows have been described. Between

2571 and 2604 mMD very weak pale yellow direct fluorescence, often only in 10 percent of the cuttings, together with a very weak and very slow steaming blue cut fluorescence, are described.

Table 4.6 Gas peaks: (FID)

DEPTH m RKB	GAS %	C_1 ppm	C_2 ppm	C_3 ppm	iC_4 ppm	nC_4 ppm	C_5 ppm	TYPE	BG %
1580.0	1.2	12993	87	15	4	4	12	FG	0.4
2165.0	1.1	11777	818	933	159	206	44	FG	0.4
2420.0	3.4	40436	1917	1173	176	238	75	FG	1.6
2452,0	6.1	91388	1836	3056	330	490	119	FG	2.0
2480.0	7.5	109354	5829	3918	445	643	167	FG	2.8
2509.0	7.0	98582	5155	3400	396	626	178	FG	1.5
2585.0	3.7	37775	2224	1030	101	170	87	FG	0.6
2660.0	1.4	11135	695	494	75	118	89	TG	0.6

4.6 Geophysical results

Refer to Figure 4.3.

The observed formation tops in the Tertiary and Cretaceous sections were in general deeper than prognosed, leading to the assumption that the velocity model for the area has to be refined. The reservoir section tops were encountered well within the prognosed uncertainties, however, the expected reservoir zonation was not as expected with most of the Fangst Group and upper part of the Båt Group being absent. The seismic resolution limits the possibility to interpret from seismic which formations that are present in the Fangst and Båt Group.

4.7 Data acquisition

4.7.1 Cuttings and mud samples

A standard mud logging unit was used for the wells (details in End of Well Report, Halliburton Sperry Sun).

- 6608/10-8. Cuttings were sampled every 10 m from 1310 mMD to 2100 mMD, and then every 3 m down to TD. Mud samples were sampled every 100 m from 1310 mMD to TD, and every 20 m in hydrocarbon zones (Figure 4.7).
- 6608/10-8A. Cuttings were sampled every 10 m from 1340 mMD to 2430 mMD, and then every 3 m down to TD. Mud samples were sampled every 100 m from 1340 mMD to TD, and every 20 m in hydrocarbon zones (Figure 4.8).

4.7.2 Conventional coring

In the 6608/10-8 well a total of 111 m was cored and 94.1 m was recovered. No cores were cut in the 6608/10-8A well

Table 4.7

Core no.	Cored interval (m)	Recovered interval (m)	Recovered m	Recovered %	Barrel length	Date	Comments
1	2295 - 2322	2295 - 2319.5	24.5	90.7	27m	11-mar-02	Cored 27m
2	2371 - 2398	2371 - 2397	26	96.3	27m	14-mar-02	Cored 27m
3	2398 - 2424	2398 - 2412.18	14.18	54.5	36m	15-mar-02	Core Jammed
4	2424 - 2435	2424 - 2433.6	9.6	87.3	27m	16-mar-02	Core Jammed
5	2435 - 2438	2435 - 2437.8	2.8	93.3	27m	17-mar-02	Core Jammed
6	2438 - 2452	2438 - 2451.65	13.65	97.5	27m	19-mar-02	Core Jammed
7	2452 - 2455	2452 - 2455.35	3.35	111.7	27m	20-mar-02	Core Jammed

4.7.3 MWD/LWD

The MWD-logging was performed by Halliburton Sperry Sun. The BAT sonic tool was run in memory mode in the 8 1/2" section in well 6608/10-8 as a part of this tool's commercial qualification program.

Table 4.8 Well 6608/10-8

Run no.	Depth interval mMD	Collar diam.	Tool type	Comments
1	459 - 1303	9 1/2"	MPT	Problems with Hitech depth system
2		6 3/4"	MPT	Aborted due to spanner lost in hole
3	1315 - 1871	6 3/4"	MPT	Problems with Hitech depth system
4	1871 - 2230	6 3/4"	MPT	Good log quality
5	2230 - 2295	6 3/4"	MPT	Good log quality
6	2254 - 2371	6 3/4"	MPT	Good log quality
7	2355 - 2652	6 3/4"	MPT	Good log quality

Table 4.9 Well 6608/10-8A

Run no.	Depth interval mMD	Collar diam.	Tool type	Comments
8	1340 – 2660	6 ¾””	MPT	Gaps on log data due to depth adjustments in the Hitech depth system!

4.7.4 Wireline logging

Table 4.10 Logging 6608/10-8

LOGGING PROGRAM			
#	TOOL COMBINATION	RUN	INTERVAL m MD RT
1	PEX/ HRLA	1A	1292 – 2650 m
2	ECS/ HNGS/ CMR+	1A	2215.1 – 2519.5 m
3	MDT (pretests)	1A	2295 – 2535.5 m
4	MDT (sampling)	1B	2375.5 – 2464.5 m
5	FMI/DSI/GR	1A	1289 - 2478 m (downlog only, tension wire)
6	FMI/DSI/GR	_	Not able to pass restriction below 13 3/8" casing shoe. No data collected.
7	FMI/DSI/GR	1B	473 – 1974 m (restriction at 1974 m)
8	VSP/GR (CSI)	1A	1260 – 2615 m
9	FMI/DSI/GR	1C	1940 – 2620 m
10	MDT (Dual-packer sampling)	1C	2295 – 2332

The CMR tool got stuck after a stationary reading at 2404 m RT. Planned time on this station was 15 minutes, but it was prolonged to 1 hr due to technical problems. The stuck tool resulted in cut and thread fishing followed by a wiper trip.

A zero-offset VSP was performed by Schlumberger in the 6608/10-8 well. 60 levels were shot from 2615 to 1260 mMD with a single level CSI tool. No VSP logging was performed in the 6608/10-8A well.

Table 4.11 Logging 6608/10-8A

LOGGING PROGRAM			
#	TOOL COMBINATION	RUN	INTERVAL m MD RT
1	PEX/HRLA/DSI/HNGS	1A	1292 - 2650
2	PEX/HRLA/DSI/HNGS	1B	1292 - 2650
3	MDT/GR	1A	2438 - 2636

Run 1: Failure in HRLA tool.
Run 3: MDT tool got stuck when collecting a water sample at 2614 m RKB. The MDT had to be fished with cut and thread method.

4.7.5 Data quality

In general the data quality from wireline logging was good. Due to an error, data in DLIS format during logging run 1 and 2 in well 6608/10-8A were not stored when logging up. Data had to be digitized from plotting files. This was done with single curves without introducing too much extra uncertainty, but could not be done on image data.

During the VSP logging the ancor/caliper arm failed at 1940m, causing noise in data from this depth and the need for more shots. VSP logging was stopped at 1500m as a result of this.

A new mixed KCL mud with low sulphate content was used in the reservoir section. This mud should give a concentration of approximately 50 mg/l sulphate and increase the quality of the water samples. Unfortunately the mud was polluted with seawater during the drilling operation resulting in a sulphate content of 333 mg/l. This fact resulted in reduced quality of the water sample, but the sample is believed to be of sufficient quality.

Generally good quality on Mud logging and MWD data delivered from Sperry Sun, but problems with Hitech depth system caused gaps in data at some levels. Most problems were solved before the 8 ½" section in the 6608/10-8 well. A major part of the reservoir consists of interbedded sandstone and shale. This caused some problems for the coring operation. Several of the cores jammed off before the barrel was filled, but the cores were of good quality.

4.8 Formation pressure

6608/10-8 and 6608/10-8A

The pore pressure profile shows a normal pressure down to approximately 1420 m where an increase starts. At 1870 m MD the formation pressure reaches 1.29 sg, the maximum pressure gradient calculated for the well.

The formation pressure is calculated using several methods. Both sonic and resistivity logs seem to give too high calculated values. The section was drilled with a rock bit and the drilling exponent (Dxc) seems to give the best estimate of the formation pressure.

The overburden gradient is calculated from the density log. Above the 13 3/8 " casing density data from the wells 6506/12-1 and 6608/11-2 is used.

An extended LOT was performed below the 13 3/8" casing. The rathole was planned to be 3 meters, but due to a tool that was lost in the borehole the rathole was extended 25 meters. The XLOT showed that an existing fracture was reopened at leak off pressure corresponding to 1.57 sg. The in-situ stress is calculated to 1.49 sg

Figure 4.8 and 4.9 shows the pressure profile for the two wellbores

4.8.1 Reservoir pressure summary

6608/10-8:
In the first MDT run a total of 46 pre-tests were taken where the probe sealed well to the formation. 9 pretests were tight or supercharged, while 1 pre-test did not seal. The second run was to collect oil samples in the Not, Tilje and Åre Formations.
The last run was with a dual packer in the Melke Formation. 3 pressure points were collected after 3-4 litres of fluid were pumped. After oil samples were collected at 2295 m MD a 'mini DST' was performed in the Melke formation.
A standard quartz gauge was used.

6608/10-8A
One MDT run was performed in this well. The intentions on this run were to take pressure measurements and a water sample. A total of 22 pretests were taken where the probe sealed well to the formation. 7 pretests were tight or supercharged. A standard quartz gauge was used during all pre-tests.

Summary
The middle and lower Jurassic reservoir pressure is depleted due to production at the Norne Field. Both the water and oil zones are depleted. As a general observation the Not Formation has the biggest reduction in pressure and there is a gradual decrease in the depletion down to the TD of the wells.

The reservoir consists of sand layers divided by shale sections. The degree of depletion is varying in each sand and this makes it nearly impossible to establish a oil gradient from pressure measurements. The most reliable downhole oil gradient is believed to be the one from the PVT analysis.

The sandstones in the upper Jurassic (Melke Formation) is not affected by the depletion in the Norne field.

Due to the depletion the OWC can not be estimated from the MDT pressure data. Petrophysical interpretation shows an OWC at 2483.7 mMD/2458.1 mTVD MSL in well 6608/10-8. In well 6608/10-8A the contact is in a shale, and can not be clearly defined. The OWC in well 6608/10-8A is 5 to 10 m deeper than in well 6608/10-8.

Figure 4.7 shows the reservoir pressure

Table 4.12 6608/10-8 pressure points

Test no	Depth m MD	Depth m TVDRT	Depth mMSL	Hydr pressure Before Bar	Hydr pressure After Bar	Formation pressure Bar	Mobility mD/cp	Temp Deg C	Comments
1	2294.6	2293.2	2269.2	311.30	311.37	243.61	26.8	58.5	OK
2	2303.1	2301.7	2277.7	312.47	312.45	244.56	0.9	60.7	Not stable, but OK
3	2305.9	2304.5	2280.5	312.80	312.50	244.35	13.7	61.4	Not stable, but OK
4	2306.1	2304.7	2280.7	312.85	312.00	184.00		61.1	Tight
5	2312.1	2310.7	2286.7	313.30	313.50	245.59	0.5	62.3	Supercharged ?
6	2318.1	2316.7	2292.7	314.10	314.20	205.00	0.1	62.7	Tight
7	2320.6	2319.2	2295.2	314.50	314.50	134.00	0.8	62.7	Tight
8	2332.1	2330.7	2306.7	316.04	316.02	246.10	16		Good
9	2335.1	2333.7	2309.7	317.40	316.50	246.56			
10	2338.1	2336.7	2312.7	317.03	318.00	155.00	0.5		Tight, aborted
11	2370.6	2369.2	2345.2	321.25	321.38	237.56	1.1	64.7	Poor
12	2370.7	2369.3	2345.3	321.20	321.20	239.50		68.5	Tight, aborted
13	2373.4	2372.0	2348.0	321.55	321.52	237.15	10.9		Medium
14	2373.6	2372.2	2348.2	321.66	321.70	237.27	14.7	65.4	Good
15	2375.6	2374.2	2350.2	321.80	321.90	237.78	0.9	66	Poor
16	2375.6	2374.2	2350.2	321.85	321.80	237.28	16	70.4	Good
17	2379.6	2378.2	2354.2	322.45	322.50	238.10	41.1	66.5	Good
18	2382.6	2381.2	2357.2	322.90	322.85	238.46	51.1	67.5	Good
19	2384.6	2383.2	2359.2	326.70	323.20	239.70	0.6	68.3	Poor, double pretest, not stable
20	2390.6	2389.3	2365.3	324.00	324.00	240.32	644	68.6	Very good
21	2394.6	2393.3	2369.3	324.45	324.50	241.03	7.7	69	Medium
22	2402.6	2401.2	2377.2	325.60	325.60	239.80	93.7	69.7	Good
23	2408.7	2407.3	2383.3	326.40	326.40	240.13	281.2	70.1	Very good
24	2412.1	2410.7	2386.7	326.81	326.85	240.36	59.7	70.7	Good
25	2422.1	2420.7	2396.7	328.20	328.20	243.40	98.9	71	Good
26	2428.1	2426.7	2402.7	329.00	329.00	243.90	8.6	71.4	Medium
27	2432.2	2430.8	2406.8	329.60	329.60	244.60	305.1	71.9	Very good
28	2437.6	2436.2	2412.2	330.30	330.30	130.00	0.01	72.3	Tight, aborted
29	2445.1	2443.7	2419.7	331.30	331.30	247.77	184.2	72.7	Very good
30	2451.6	2450.1	2426.1	332.20	332.20	248.80	1.4	72.9	Very poor to tight
31	2459.6	2458.1	2434.1	333.30	333.20	249.90	6.6	73.2	Medium
32	2463.1	2461.9	2437.9	333.70	333.70	250.12	575.9	73.4	Very good
33	2469.1	2467.9	2443.9	334.50	334.60	250.85	3.4	73.8	Medium
34	2469.6	2468.4	2444.4	334.60	334.70				Lost seal
35	2472.1	2470.9	2446.9	334.90	335.00	250.89	120.3	74	Very good
36	2478.6	2477.3	2453.3	335.80	335.90	251.38	185.8	74.1	Very good
37	2481.6	2480.3	2456.3	336.30	336.25	251.63	79	74.2	Good
38	2484.6	2483.3	2459.3	336.60	336.65	252.30	52.3	74.3	Medium
39	2487.1	2485.8	2461.8	337.00	337.00			74.7	Tight
40	2491.6	2490.3	2466.3	337.65	337.60	256.10	2.5	74.8	Poor

41	2498.6	2497.2	2473.2	338.60	338.60	253.64	629.6	74.9	Very good

Test no	Depth m MD	Depth m TVDRT	Depth mMSL	Hydr pressure Before Bar	Hydr pressure After Bar	Formation pressure Bar	Mobility mD/cp	Temp Deg C	Comments
42	2501.6	2500.2	2476.2	338.90	339.00	254.40	5.3	75.3	Medium
43	2506.1	2504.7	2480.7	339.60	339.60			75.5	Tight, aborted
44	2511.6	2510.2	2486.2	340.35	340.35	254.93	211.5	75.7	Very good
45	2519.6	2518.1	2494.1	341.40	341.48	255.74	86.6	75.9	Good -> Very good
46	2526.6	2525.1	2501.1	342.35	342.40	256.42	62.8	76.3	Good -> Very good
47	2531.1	2529.6	2505.6	343.00	343.00	256.88	1404.8		Very good

Table 4.13 6608/10-8 Sampling run

Test no	Depth m MD	Depth m TVDRT	Depth mMSL	Hydr pressure Before Bar	Hydr pressure After Bar	Formation pressure Bar	Mobility mD/cp	Temp Deg C	Comments
48	2431.5	2430.1	2406.1	329.30	329.30	244.56	229	67.1	Sampling, very good point.
49	2431.5	2430.1	2406.1	329.30	329.30	244.48	240	75.8	Pre-test after pumping.
50	2463.5	2462.0	2438.0	333.90	333.90	274.00		75.8	For sampling…but tight
51	2462.3	2460.8	2436.8	333.80	333.80	250.14	5.1	75.7	Leaking seal, re-tract, poor mobility
52	2464.0	2462.5	2438.5	334.00	334.00	250.50	47.1	76.3	Too low mobility for sampling.
53	2464.5	2463.0	2439.0	334.00	334.00	250.24	68.9	76.7	Stopped sampling due to high drawdown
54	2463.7	2462.2	2438.2	333.90	333.90	250.14	65.4	76.8	Sampling dropped due to bad mobility
55	2463.5	2462.0	2438.0	333.90	333.70	250.13	302	79.7	Very good mobility. Sample point.
56	2375.5	2374.1	2350.1	321.65		237.22	13.2	73	

Table 4.14 6608/10-8 Dual packer run

Test no	Depth m MD	Depth m TVDRT	Depth mMSL	Hydr pressure Before Bar	Hydr pressure After Bar	Formation pressure Bar	Mobility mD/cp	Temp Deg C	Comments
57	2314.0	2312.8	2288.8	318.32	318.32	245.02	N/A	N/A	Very tight, Dual packer used
58	2314.0	2312.8	2288.8	318.32	318.32	244.81	N/A	N/A	Dual Packer. Move tool to better perm.
59	2295.0	2293.8	2269.8	315.62	315.62	243.54	20.6	69	Used Large Diameter Probe
60	2295.0	2293.8	2269.8	316.03	316.03	243.80	N/A	69	Used Dual Packer
61	2332.0	2330.8	2306.8	320.90	320.90	246.32	N/A	N/A	Used Dual Packer
62	2332.0	2330.8	2306.8	320.90	320.90	246.29	N/A	N/A	Used Dual Packer

Table 4.15 6608/10-8A Pretest and sampling

Test no	Depth m MD	Depth m TVDRT	Depth mMSL	Hydr pressure Before Bar	Hydr pressure After Bar	Formation pressure Bar	Mobility mD/cp	Temp Deg C	Comments
1	2438.0	2378.2	2354.2	328.57	328.56	250.15	5.2	78.8	OK, stable
2	2446.0	2384.5	2360.5	329.36	329.33	250.68	6.8	79.1	OK, stable
3	2455.5	2391.7	2367.7	330.43	330.42	251.07	17.6	79.3	OK, stable
4	2467.5	2400.8	2376.8	331.71	331.69	251.95	1.4	79.6	Tight
5	2478.0	2408.7	2384.7	332.77	332.77	260.58	0.6	80.3	Supercharged?
6	2504.5	2428.4	2404.4	335.61	335.59	253.77	4.4	81	OK, stable
7	2511.5	2433.5	2409.5	336.30	336.31	254.98	2.7	81.8	OK, stable
8	2574.0	2479.3	2455.3	342.91	342.87	247.66	1.3	88.5	Tight, not stable, had to pull 11000 lbs
9	2575.5	2480.4	2456.4	342.96	342.96	-	0.6	84.2	Tight, abort pretest
10	2577.0	2481.5	2457.5	343.08	343.11	245.72	24.9	84.5	Good permeability
11	2579.0	2482.9	2458.9	343.29	343.32	-	-	84.7	1st: tight/leaking.2nd:tight, aborted
12	2580.5	2484.0	2460.0	343.42	343.29	245.94	6.6	84.9	Good permeability, decreasing pressure
13	2588.5	2489.7	2465.7	344.21	344.28	263.50	0.6	85	Supercharged?
14	2593.5	2493.3	2469.3	344.79	344.83	247.43	1.1	85.3	Poor permeability, decreasing pressure
15	2597.0	2495.8	2471.8	345.09	345.12	248.00	0.8	85.4	OK, stable
16	2599.5	2497.5	2473.5	345.39	345.42	247.22	1.2	85.6	OK, stable
17	2601.5	2499.0	2475.0	345.56	345.58	276.33	0.6	86.8	Supercharged?
18	2614.0	2507.8	2483.8	346.83	346.88	250.19	134.6	86.8	OK, stable
19	2619.0	2511.4	2487.4	347.38	347.42	250.58	108.3	86.2	OK, stable
20	2624.0	2514.9	2490.9	347.88	347.91	250.93	68	86.4	OK, stable
21	2630.0	2519.0	2495.0	348.52	348.48	251.35	32.1	86.6	OK, stable
22	2636.0	2523.2	2499.2	349.18	349.16	251.78	193.5	86.8	OK, stable
23	2614.0	2508.0	2484.0	346.83	346.83	250.19	191.1	86.9	OK, stable

4.9 Reservoir fluid sampling

Oil samples were collected in well 6608/10-8 while a water sample was collected in well 6608/10-8A

6608/10-8
Two separate sampling runs were performed. In the first run oil samples were collected in the Not, Tilje and Åre Formations with the large diameter probe. In the second run oil samples were collected in the Melke Formation using the dual packer.
One water sample was collected in well 6608/10-8A.

Although one of the samples had to be collected with high drawdown due to the reservoir properties, all of the samples were of good quality.

Table 4.16 Samples collected

Depth mRKB	Formation	Chamber no.	Petrotech bottle no.	Chamber volume	Dradown Bar	Sample type	Volume cc
Run 1							
2431,5m	Not	MPSR 784	PT 1117	450 cc	7	Oil	375
2431,5m	Not	MPSR 974	PT 1121	450 cc	7	Oil	400
2431,5m	Not	MRSC 194	TS 47401	1 gallon	7	Oil	3590
2463,5m	Tilje	MPSR 856	PT 1122	450 cc	15	Oil	350
2463,5m	Tilje	MPSR 971	PT 1105	450 cc	15	Oil	410
2463,5m	Tilje	MRSC 131	TS 47304	1 gallon	15	Oil	3580
2375,5m	Åre	MPSR 970	PT 1069	450 cc	44	Oil	350
2375,5m	Åre	MRSC 165	PT 4019	1 gallon	44	Oil/mudfiltrate	3250
Run 2							
2295m	Melke	MPSR 930	TS 4702	450 cc	54.8	Oil	410
2295m	Melke	MPSR 786	TS 2901	450 cc	54.8	Oil	415
2295m	Melke	MPSR 785	PT 1094	450 cc	54.8	Oil	395
2295m	Melke	MPSR 649	C 23404	450 cc	54.8	Oil	420
2295m	Melke	MPSR 931	TS 46504	450 cc	54.8	Oil	160
2295m	Melke	MPSR 787	PT 2024	450 cc	54.8	Oil	410
2295m	Melke	MRSC 232	PT 4008	450 cc	54.8	Oil	3260

6608/10-8A
Water samples were collected at 2614 m RKB in connection with MDT run 1A.

Table 4.17 Samples collected

Depth mRKB	Formation	Chamber no.	Petrotech bottle no.	Chamber volume	Dradown Bar	Sample type	Volume cc
Run 1							
2614m	Tilje	MPSR 926	PT 3118	450 cc	6.6	Water	375
2614m	Tilje	MPSR 1041	PT 3102	450 cc	5.8	Water	410
2614m	Tilje	MPRS 804	PT 3165	450 cc	5.9	Water	400
2614m	Tilje	MRSC 194	-	1 gallon	5.6	Water	-
2614m	Tilje	MPSR 790	PT 3111	450 cc	7	Water	380

1 gallon chamber emptied offshore and transferred to bottles. Mud contamination varies from 7.7 to 15%. The quality of the water sample is acceptable.

For analysis performed see Appendix G.

4.10 Formation temperature

Based on log temperatures, an average temperature gradient of 4.2 ^{o}C/100 meter is calculated from seabed down to TD of the well. This gradient gives a formation temperature of 97.3 ^{o}C at TD of the well.
The distance to the Norne Field is approximately 5 km and as expected calculated formation temperature for well 6608/10-8 corresponds to the temperature gradient for the Norne field.

Formation temperature is calculated using an inhouse formula that take into consideration recorded temperature and time since circulation. Use of the Horner method has also been considered, but due to the different depths of the measurements this method was not used. The wipertrips performed in well 6608/10-8 also makes it difficult to use the Horner method.

Temperature data is plotted in figure 4.12.

6608/10-8
Temperature measurements are available from all the logging runs. A wipertrip had to be performed after the ESC/CMR log due to a stuck tool. The first attempt to log FMI had to be aborted due to failure on the riser tension wires. The riser had to be pulled and two wiper trips had to be performed before the logging could be continued.

6608/10-8A
Well 6608/10-8A was drilled to TD without any coring, and no wipertrip had to be performed in connection with the logging. The temperature data shows that the cooling effect from cold well is considerable less than in well 6608/10-8.

Table 4.18 Well 6608/10-8: Measured and evaluated temperatures

TOOL COMBINATION	Depth of measurement m TVD RT	Recorded max temperature ^{0}C	Time since last circulation hrs	Evaluated temperature ^{0}C
PEX/ HRLA	2642.5	75	15.1	94.0
ECS/ HNGS/ CMR+	2499	75	27.5	86.7
* MDT (pretests)	2532	76	17.6	93.0
MDT (sampling)	2464.5	80	41.6	87.7
* VSP/GR (CSI)	2620	69	11.8	91.3
FMI/DSI/GR	2618.7	74	21.8	88.4
MDT (Dual-packer)	2332	74	42.8	81.4

* Wipertrips were performed before these logs.

Table 4.19 Well 6608/10-8A: Measured and evaluated temperatures

TOOL COMBINATION	Depth of measurement m TVD RT	Recorded max temperature ^{0}C	Time since last circulation hrs	Evaluated temperature ^{0}C
PEX/ HRLA	2532.8	82	35.7	91.1
MDT/GR	2523.2	88	50.5	94.1

4.11 Experiences / recommendations

If water sampling is important, low sulphate mud should be considered. All employed personnel should know the importance of not getting salt water into the mud.
In this area stuck wireline logging tools have been experienced several times. This has always occured when the tool was not moving.

Coring in the Åre Formation with interbedded sandstone and claystone is difficult. 5 out of 7 cores jammed off. The equipment choice was based on experience from 6608/10-6 and 6608/10-7. Approximately 12 m of core was probably lost when pulling out with core number 3, due to very loose formation.

The most important factors for optimizing the coring in this area may be to use a full closure system and oil based mud if possible.

PL 128

RKB - MSL: 24 m

Water Depth: 376 m MSL

Stratigraphy
Well 6608/10-8

STATOIL

Made by: TAWJ | Date: 01.10.2002

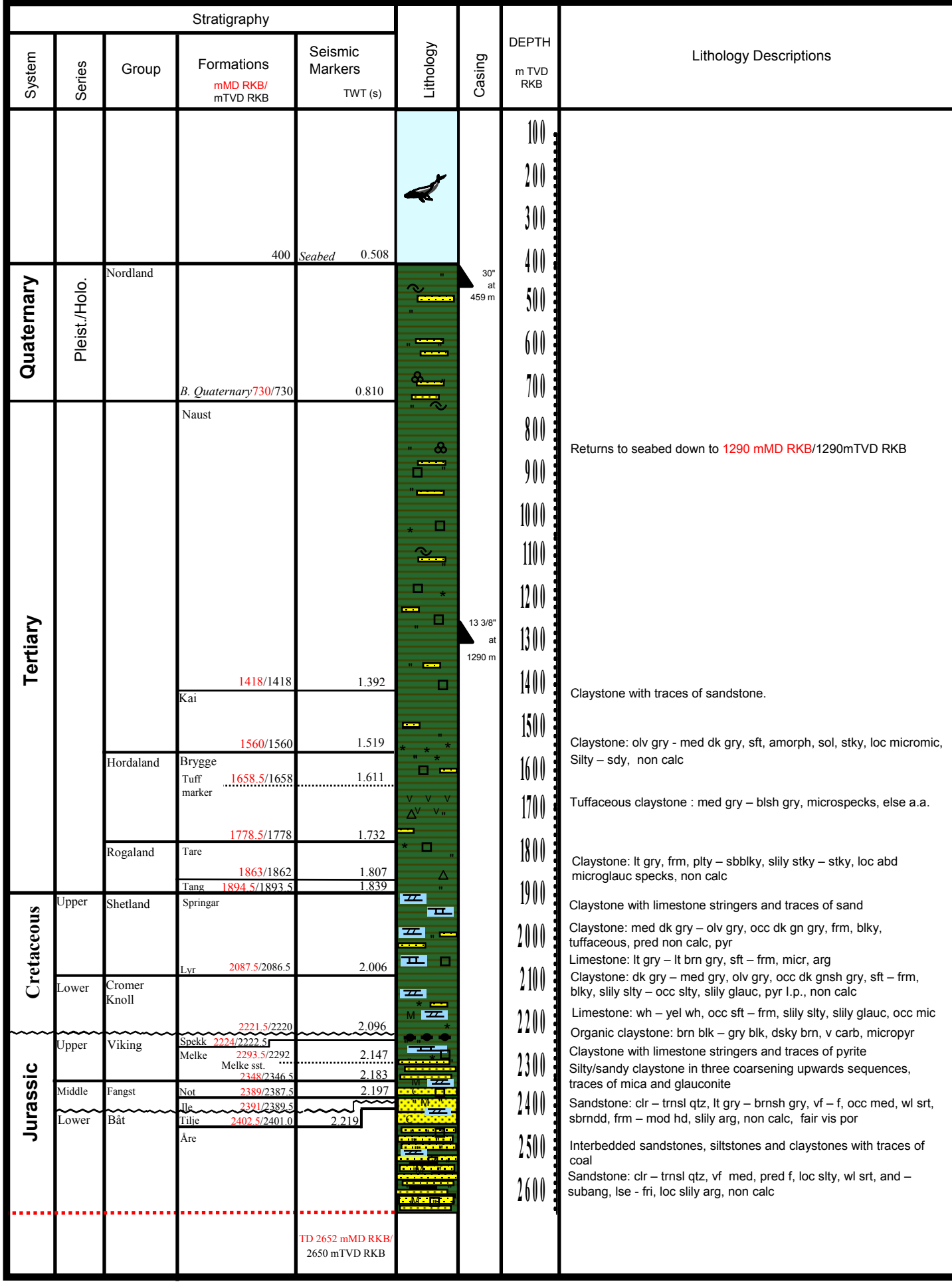


Fig. 4.1

PL 128

RKB - MSL: 24 m

Water Depth: 376 m MSL

Reservoir section
Well 6608/10-8

STATOIL

Made by: TAWJ | Date: 01.10.2002

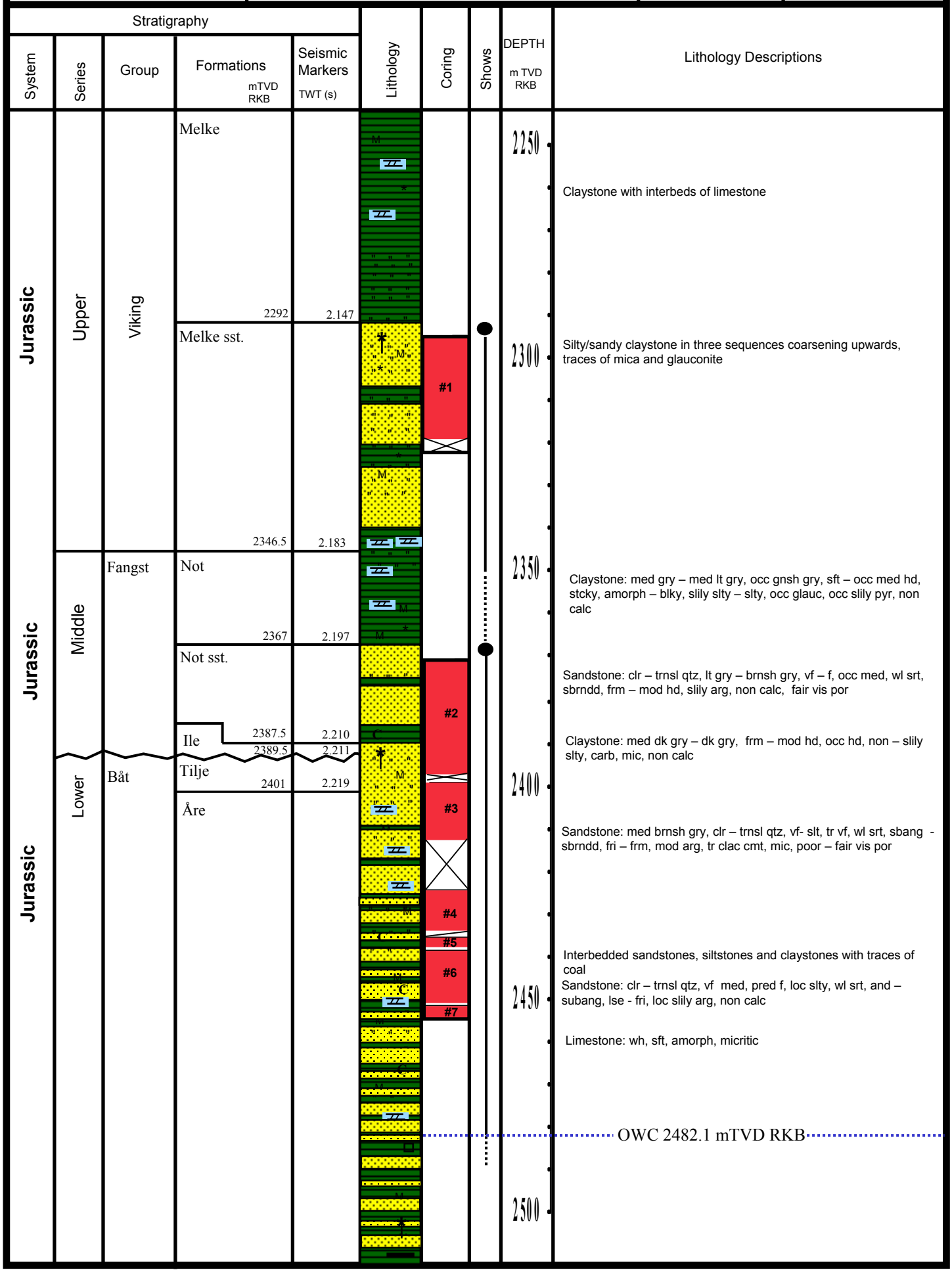


Fig. 4.2

PL 128

RKB – Sea: 24 m

Water depth: 376 m

Well 6608/10-8
Prognosis vs. observed stratigraphy

STATOIL

Made by: TAWJ | Date: 01.10.02

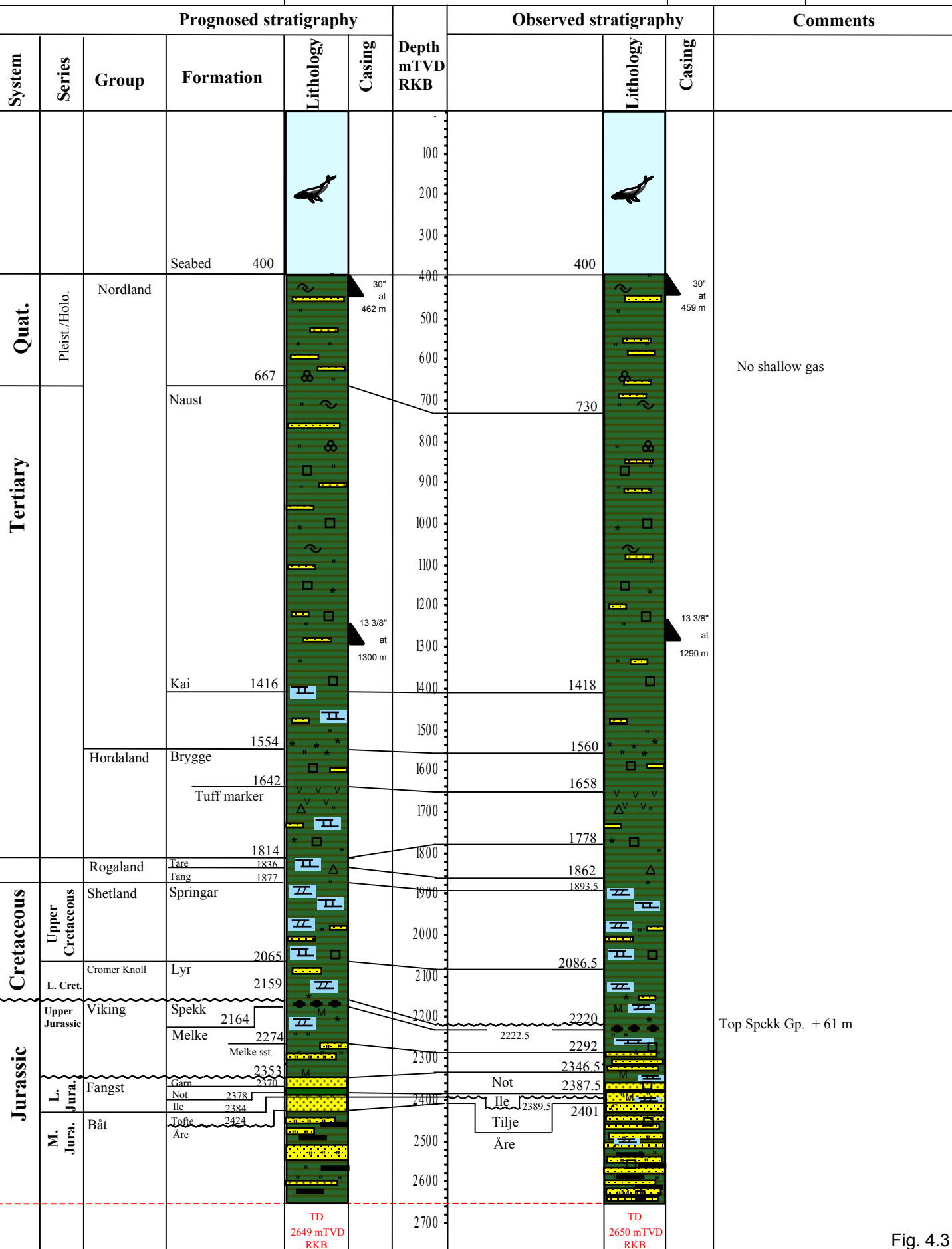


Fig. 4.3

PL 128

RKB - MSL: 24 m

Water Depth: 376 m MSL

Stratigraphy
Well 6608/10-8A

STATOIL

Made by:TAWJ | Date: 01.10.2002

Stratigraphy					Lithology	Casing	DEPTH m TVD RKB	Lithology Descriptions
System	Series	Group	Formations mMD RKB / mTVD RKB	Seismic Markers TWT (s)				
			400	*Seabed*			100 200 300 400	
							500 600 700 800 900 1000 1100 1200	
						13 3/8" at 1290 m	1300	**KOP below 13 3/8" casing shoe at 1340 mMD RKB**
Tertiary		Nordland	1418/1418	1.392			1400	Claystone with traces of sandstone.
			Kai 1560/1558				1500	
		Hordaland	**Brygge**				1600	Claystone: olv gry - med dk gry, sft, amorph, sol, stky, loc micromic, Silty – sdy, non calc
			Tuff marker 1667/1662				1700	Tuffaceous claystone : med gry – blsh gry, microspecks, else a.a.
			1790.5/1783				1800	
		Rogaland	**Tare** 1875/1865.5				1900	Claystone: lt gry, frm, plty – sbblky, slily stky – stky, loc abd microglauc specks, non calc
			Tang 1908/1897.5					Claystone with limestone stringers and traces of sand
Cretaceous	**Upper**	Shetland	**Springar** 2108/2089.5				2000	Claystone: med dk gry – olv gry, occ dk gn gry, frm, blky, tuffaceous, pred non calc, pyr
	Lower	Cromer Knoll	**Lyr** 2323/2283				2100	Claystone: dk gry – med gry, olv gry, occ dk gnsh gry, sft – frm, blky, slily slty – occ slty, slily glauc, pyr l.p., non calc
Jurassic	Upper	Viking	**Spekk** 2344.5/2301.5				2200	Organic claystone: brn blk – gry blk, dsky brn, v carb, micropyr
			Melke **Melke sst.** 2434/2375 2530.5/2447.5				2300	Silty/sandy claystone in three coarsening upwards sequences, traces of mica and glauconite
	Middle	Fangst	**Not** 2611.5/2506				2400 2500	Sandstone: clr – trnsl qtz, vf – f, sbrndd – rndd, mod – occ wl srt, app as lse grns, pyr
			Ile 2615/2508.5				2600	
	Lower	Båt	**Tilje**		TD 2660 mMD RKB/ 2539.5 mTVD RKB		2700 2800	

Fig. 4.4

PL 128

RKB - MSL: 24 m

Water Depth: 376 m MSL

Reservoir section
Well 6608/10-8A

STATOIL

Made by: TAWJ | Date: 01.10.2002

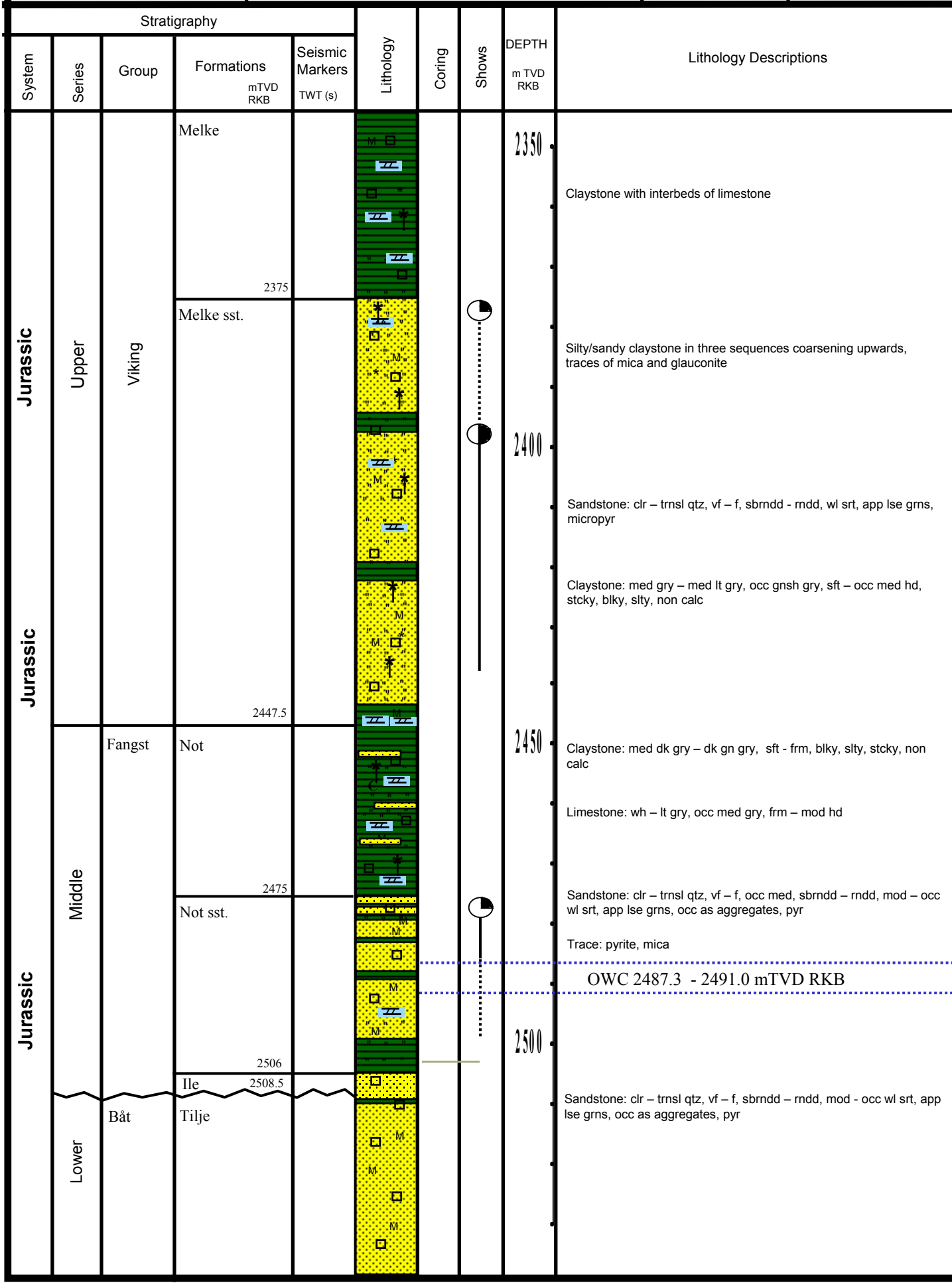


Fig. 4.5

PL 128

RKB – Sea: 24 m

Water depth: 376 m

Well 6608/10-8A
Prognosis vs. observed stratigraphy

STATOIL

Made by: TAWJ | Date: 01.10.02

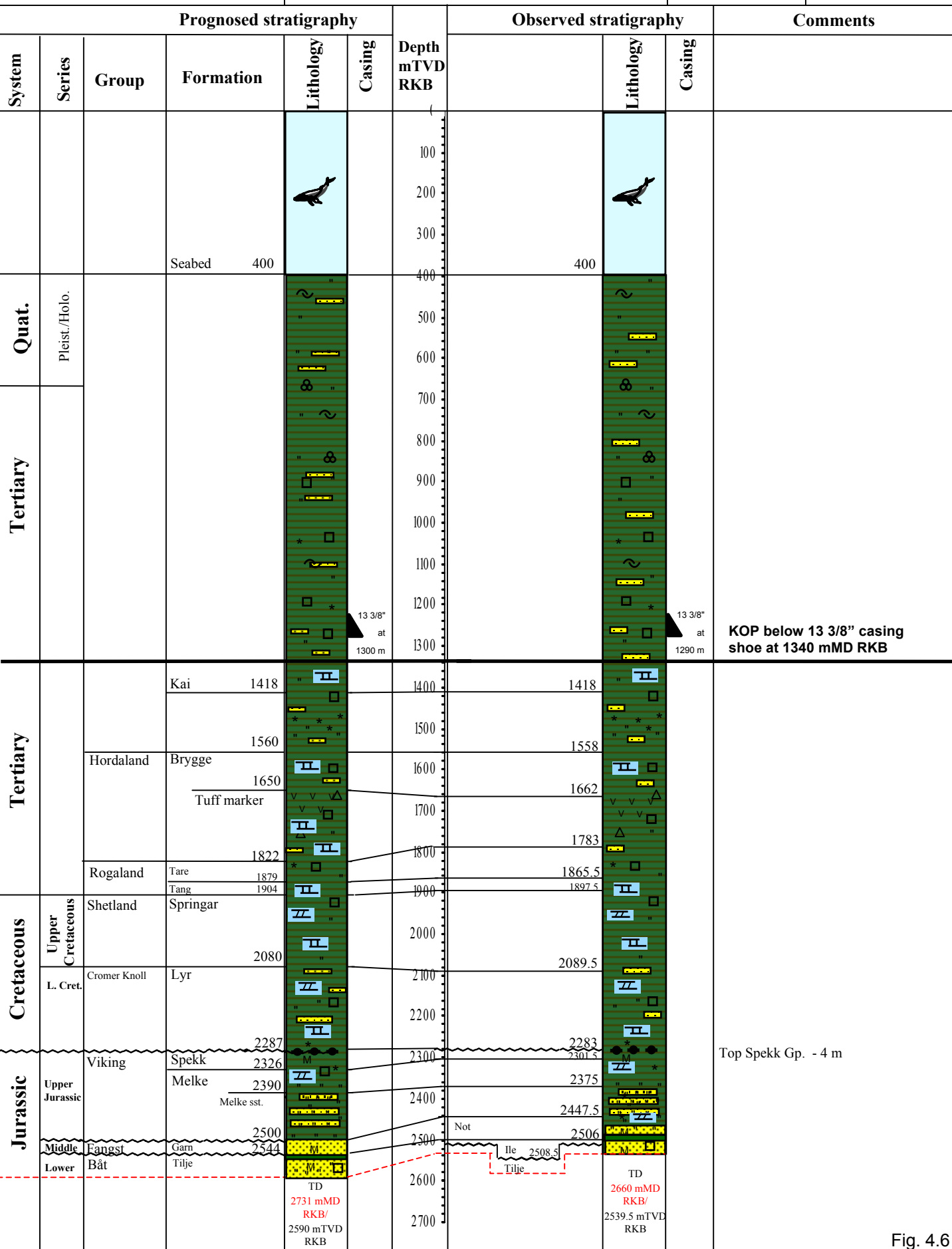


Fig. 4.6

PL 128, WELL: 6608/10-8 & 6608/10-8A RKB - Sea: 24 m Water Depth: 376 m MSL	Pressure Plot 6608/10-8 and 6608/10-8A	STATOIL Made by: TM Date:09.07.02

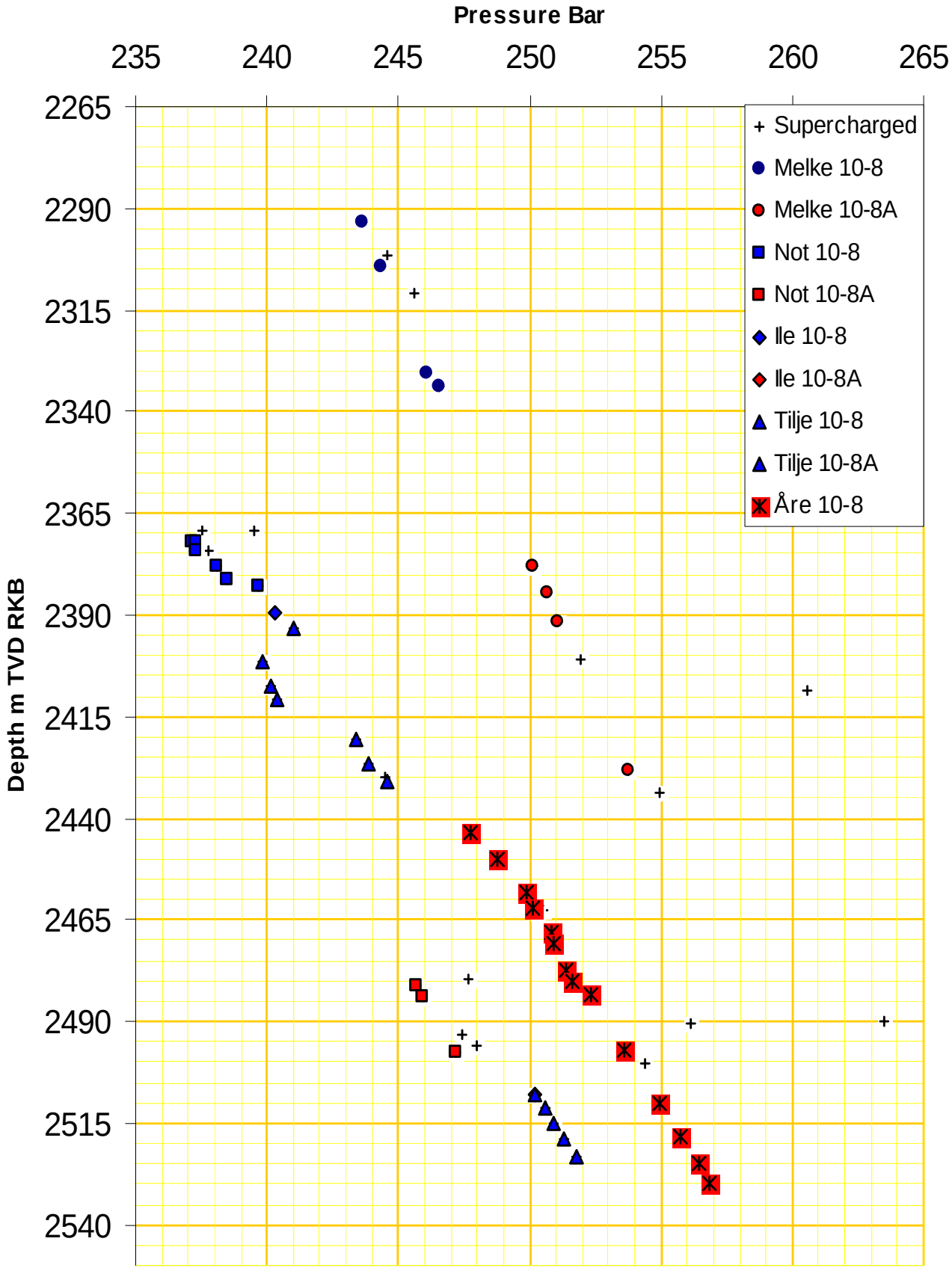


Figure 4.7

PL 128, WELL: 6608/10-8

RKB - Sea: 24 m

Water Depth: 376 m MSL

Pressure Plot 6608/10-8

STATOIL

Made by: TM

Date:17.10.02

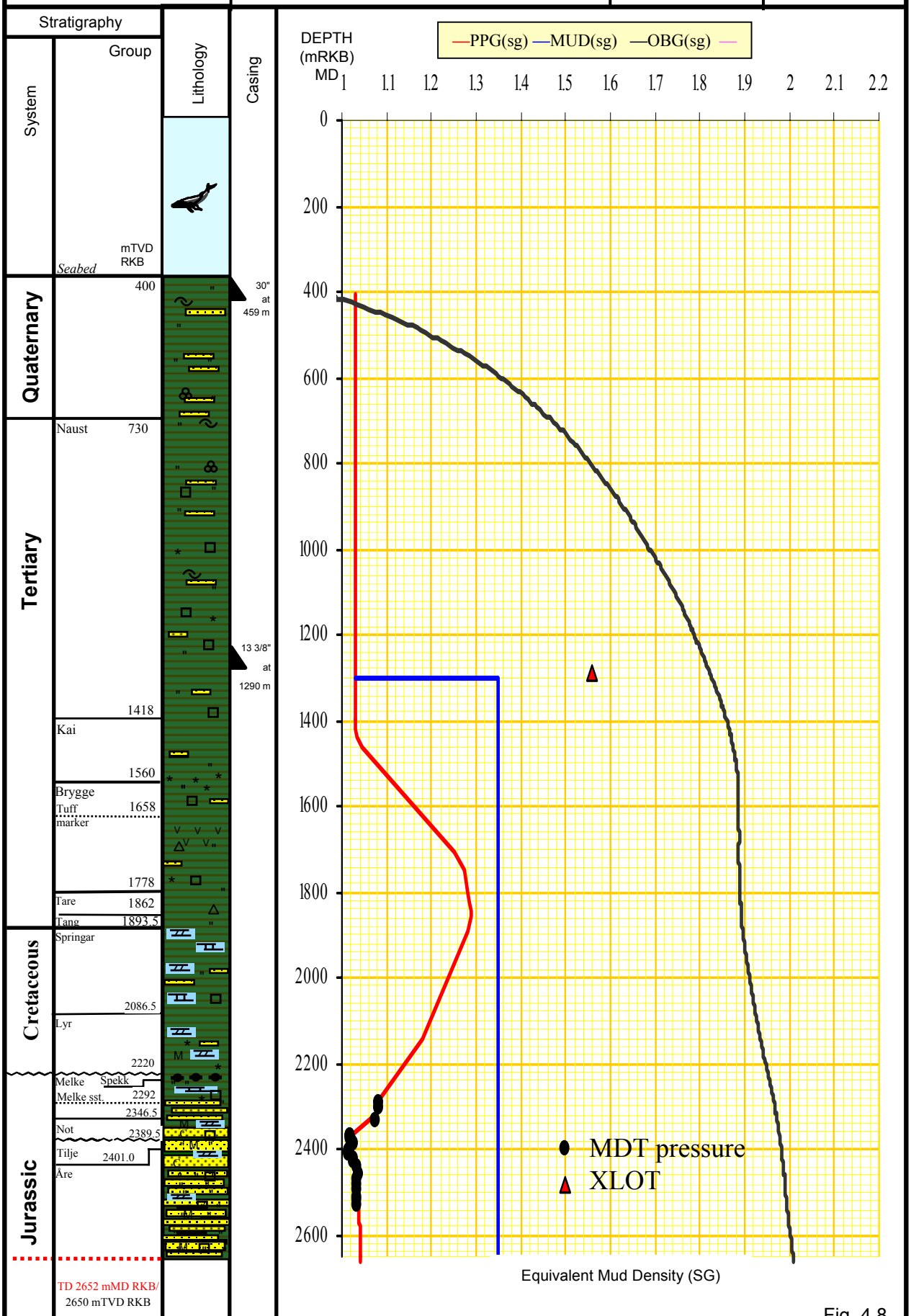


Fig. 4.8

PL 128, WELL: 6608/10-8A

RKB - Sea: 24 m

Water Depth: 376 m MSL

Pressure Plot 6608/10-8A

STATOIL

Made by: TM

Date:03.10.02

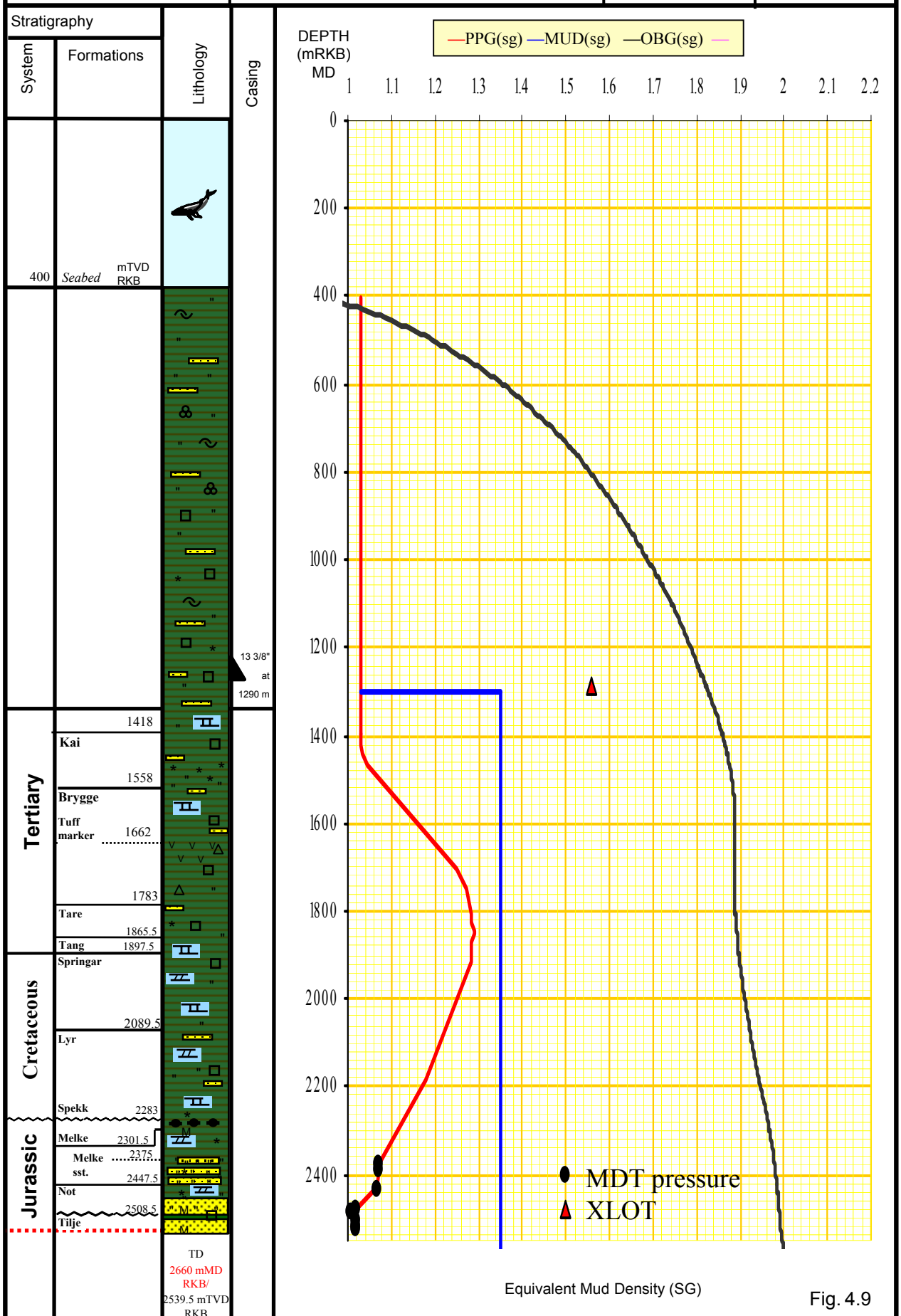


Fig. 4.9

Licence: PL 128

RKB - Sea 24 m

Water depth 345 m MSL

Composite plot
Well 6608/10-8

STATOIL

Made by: TM

Date:17.07.2002

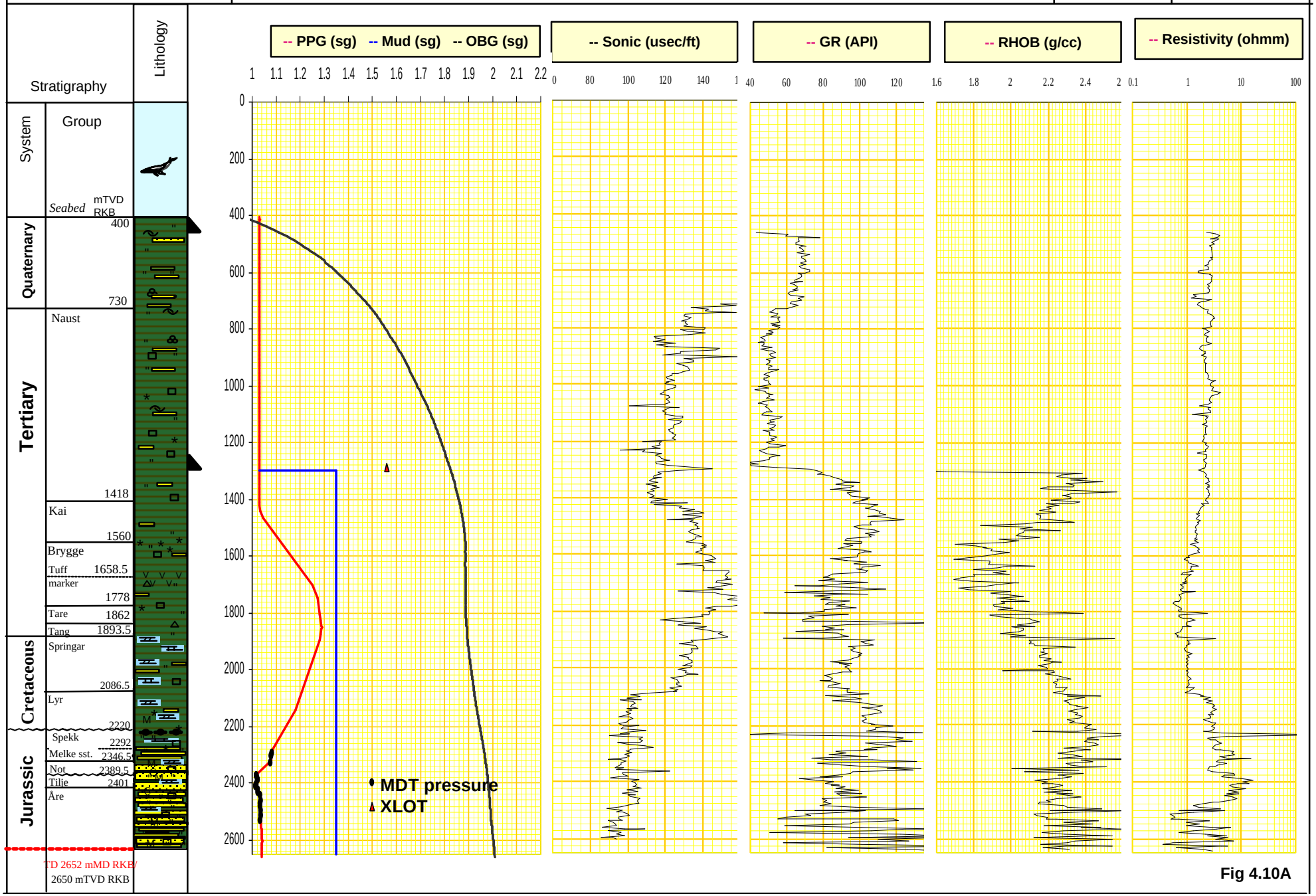


Fig 4.10A

Licence: PL 128

RKB - Sea 24 m

Water depth 345 m MSL

Composite plot
Well 6608/10-8

STATOIL

Made by: TM

Date:17.07.2002

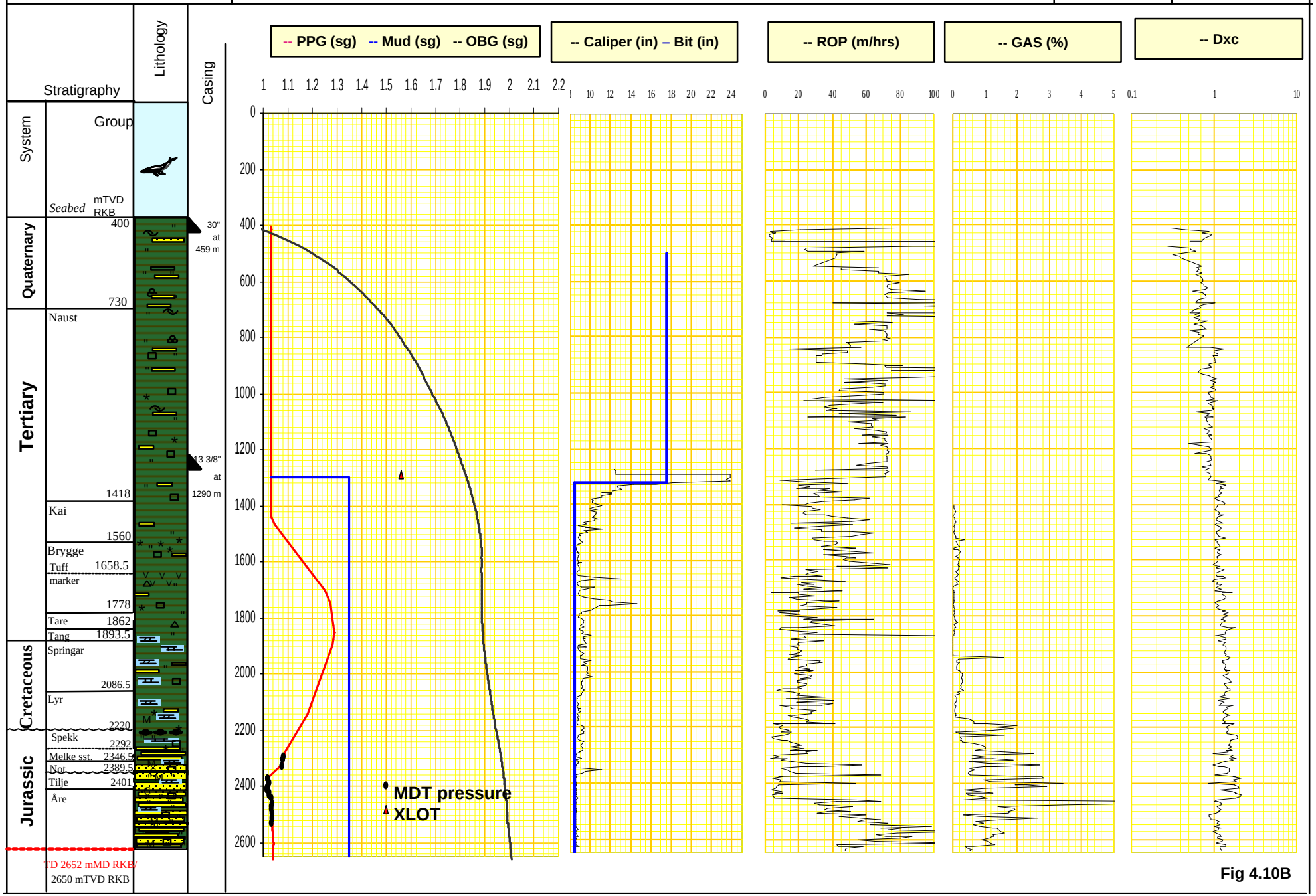


Fig 4.10B

Licence: PL 128

RKB - Sea 24 m

Water depth 345 m MSL

Composite plot
Well 6608/10-8A

STATOIL

Made by: TM

Date:03.10.2002

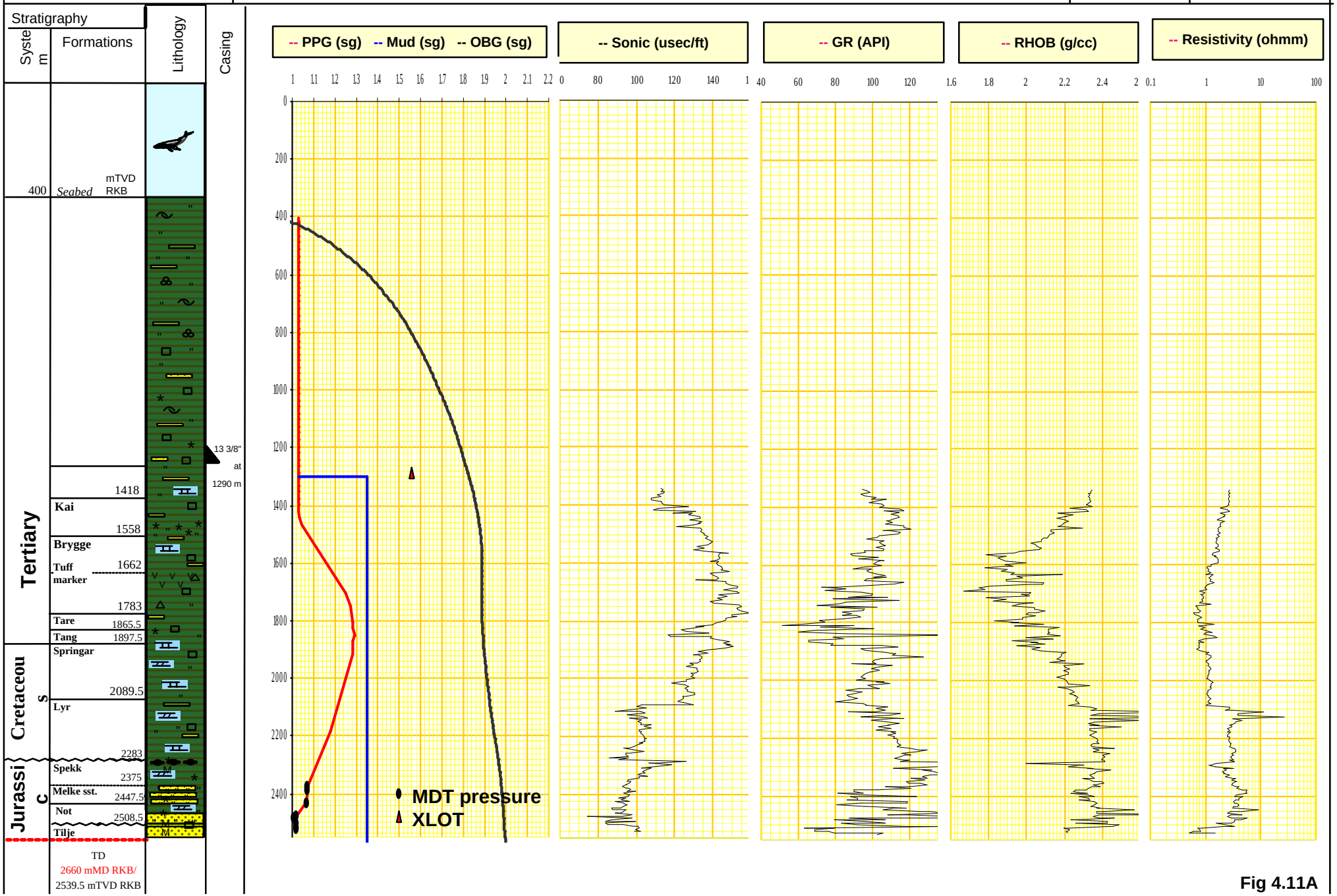


Fig 4.11A

Licence: PL 128

RKB - Sea 24 m

Water depth 345 m MSL

Composite plot
Well 6608/10-8A

STATOIL

Made by: TM

Date:03.10.2002

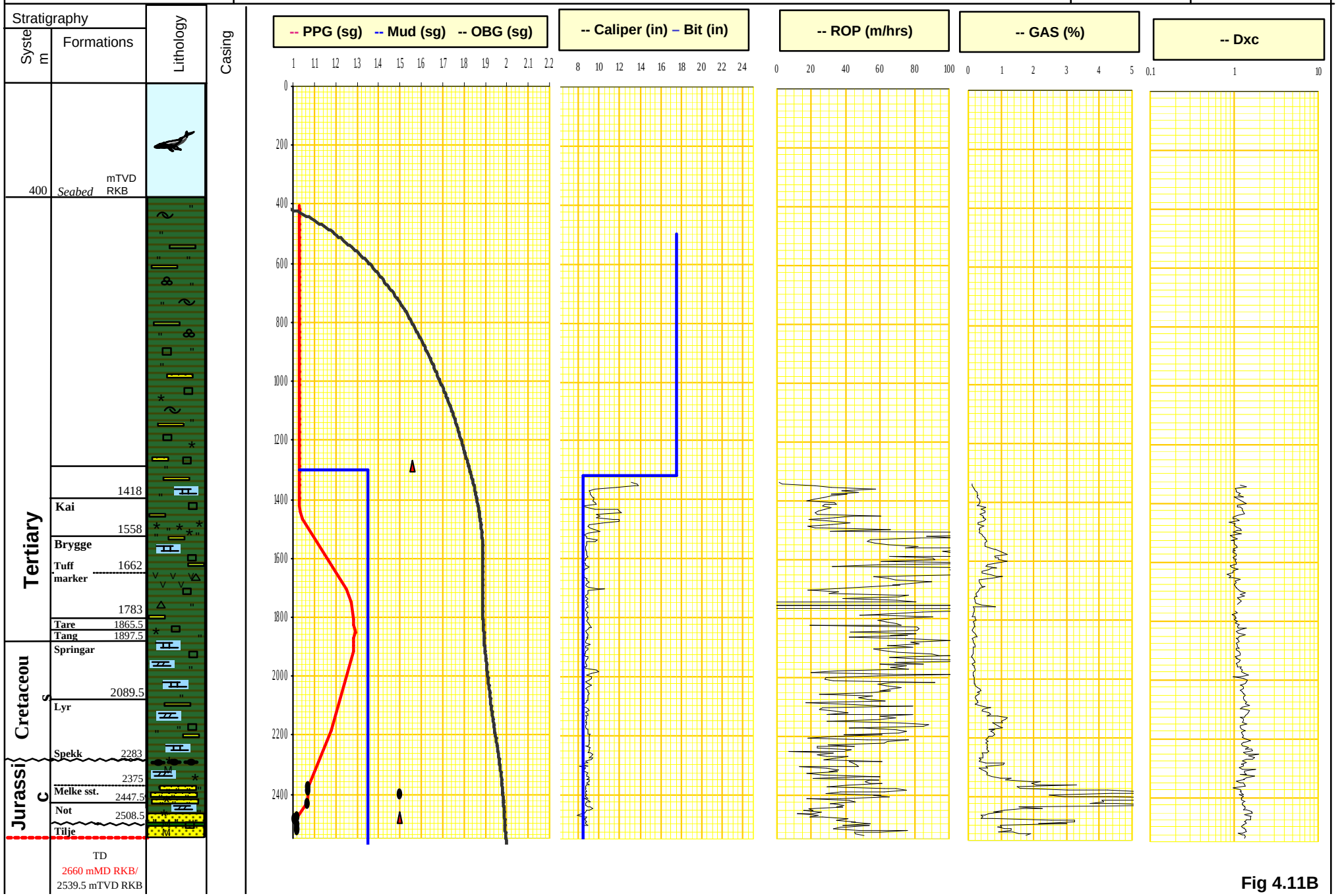


Fig 4.11B

PL 128, WELL: 6608/10-8 and 6608/10-8A

RKB - Sea: 24 m

Water Depth: 376 m MSL

Temperature Plot 6608/10-8 and 6608/10-8 A

STATOIL

Made by: TM

Date:02.10.02

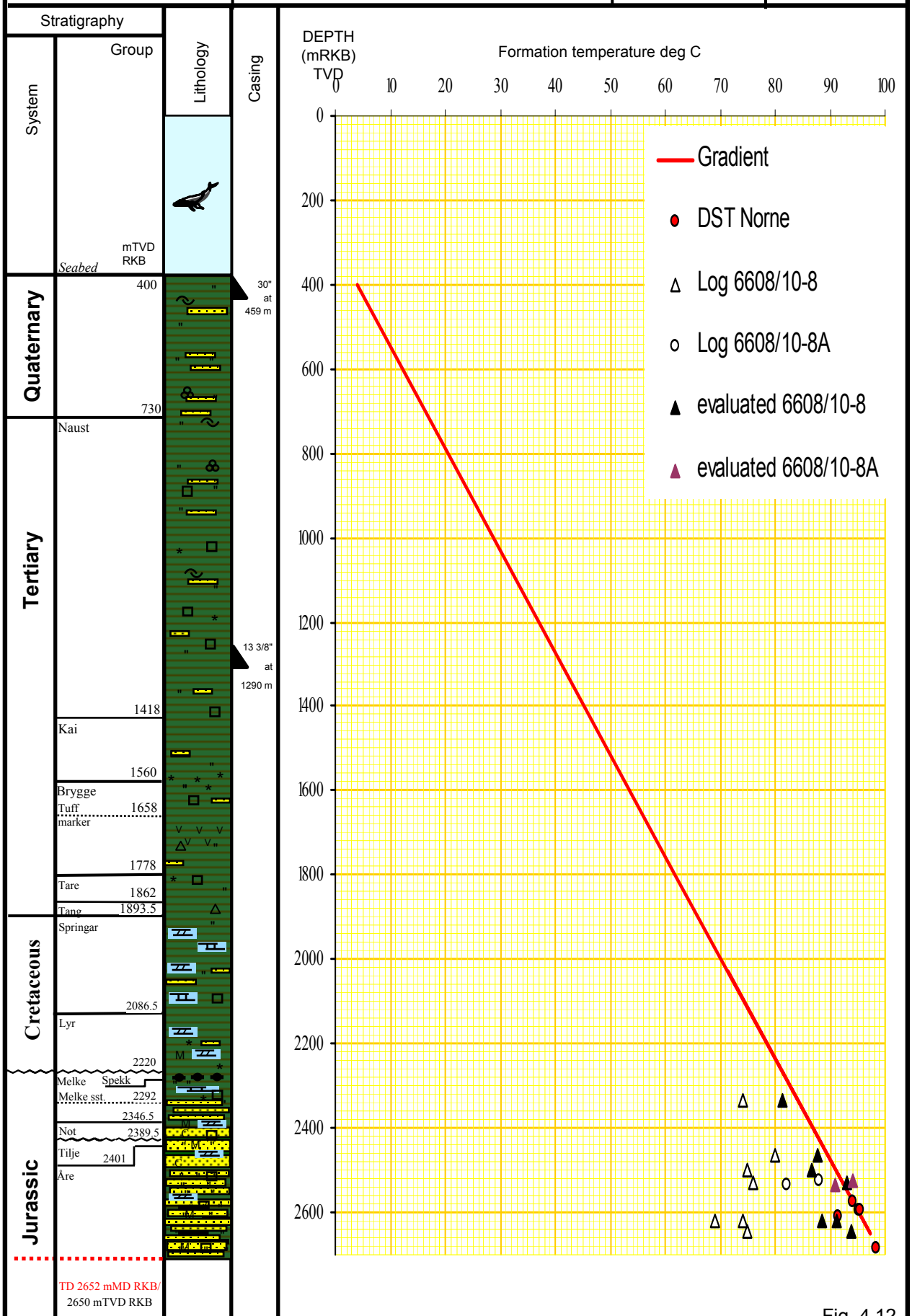


Fig. 4.12

5 Drilling operations report

5.1 Rig move and anchor handling

5.1.1 Summary

The semi-submersible drilling rig "Stena Don" sailed from the yard in Sandnes to the well location, a distance of 510 nm, with an average speed of 3.7 knots. During transit preparations for spudding were carried out, such as making up cement stand and CART tool. At location, the hole opener was picked up and spud mud was mixed while pumping down the rig.

When in transit draft, the rig had problems handling waves above 3 meters. Hence, the transit was mainly carried out with the rig in survival draft which severely hampered transit speed.

5.1.2 Experiences / recommendations

- Waves exceeding 3 meters pounds in to the cross beams, resulting in heavy vibrations. As mentioned above, the rig had to be moved whilst being in survival draft. In addition, it proved almost impossible to get the rig to move at all when heading in to swell/waves exceeding 5-6 meters. Again, heavy pounding and vibrations were the result, even with the rig in survival draft.

5.2 Drilling top hole section

5.2.1 Summary

After placing out transponders and marker buoys, a 36" hole was drilled from sea bed at 400 m to section TD at 459 m with an average ROP of 3 m/hr. The top hole section was drilled using sea water and high viscosity pills as drilling fluid. When drilling at 451 m, high torque was experienced while reaming. Worked string and back reamed to 424 m in order to clean the hole. At TD the Anderdrift tools measured a hole angle of 1.5°. A wiper trip to 425 m was carried out and the hole was displaced to 1.35 g/cm³ mud prior to pulling out.

The 30" conductor was run to 459 m and cemented in place with 2.7 meter stick up and an angle of 0.75°.

5.2.2 Experiences / recommendations

- Prior to spud the following preparations were carried out:
    1. Rig arrived location in drilling draft

2. Placed out transponders and executed Dynamic Positioning trials
3. RIH with 36" BHA and determined spud location by placing the ROV by the drill string and log the position for 30 minutes
4. Verified to strings verticality by using the Anderdrift tool
5. Placed out 3 marker buoys and tagged sea bed

However, time can be saved by spudding immediately after the well position is determined by the ROV and HPR systems. Transponders can be placed out when pulling out of hole, or prior to running the 30" conductor.

- The marker buoys had too short ropes (2.6 meters) and were hard to see due to limited visibility. It is recommended to increase rope length to approximately 3.5 meters.

- 30" conductor stick-up must be seen in relation to placement of the two bulls eyes. Due to the present design of the bulls eyes brackets, a stick up of 3 m is necessary to prevent the aforementioned bulls eyes to be buried under debris.

- Drilling parameters: the top hole was drilled maximum flow, high rotational speed (130 rpm) and low WOB. Even when drilling through boulders the hole was kept vertical.

- An analysis determining maximum stick-up was carried out prior to running the conductor, and this is a recommended procedure to follow.

- Cement excess: Used 300% excess lead cement based on open hole volume and 15 m³ tail cement. Returns were detected by ROV.

5.3 Drilling 17 ½" section

5.3.1 Summary

The 30" conductor shoe track and shoe was drilled out with the 17 ½" Smith MGGH and rotary assembly which drilled to TD at 1303 m. The shoe track and rat hole was reamed thoroughly. Seawater and high viscosity pills were used as drilling fluid and average ROP was 41.5 m/hr. At TD the hole was circulated clean and displaced to 1.30 g/cm³ mud.

Ran 13 3/8" casing to 1290 m with an average running speed of approximately 10 joints per hour. When landing the 18 ¾" well head in to the conductor well head, lock down was confirmed by pulling 25 ton over pull.

As a result of incorrect operation of the cement unit, two cement jobs had to be aborted and the cement circulated out of the hole. In addition, due to working hour restrictions the cement job was further delayed until arrival of a new cement crew.

The 13 3/8" casing was successfully cement on the third attempt. However, during cement displacement, with only 20 strokes to go before theoretical bump, the 13 3/8" casing and 18 3/4" housing was lifted approximately 7 m out of the 30" conductor. Consequently, all the hoses on the cement head were ripped off. Later it was discovered that driller only had put down 4 tons, and not the entire string weight as described in the procedure.

Running BOP and riser:
Harsh weather conditions postponed BOP and riser running for 4.5 days. When weather permitted the BOP was run and landed on the wellhead, and the well and wellhead connector was tested to 280 bars.

5.3.2 Experiences / recommendations

- Pre-made BHAs: there was no documentation following the pre-made BHA stating whether or not a float was installed. Therefore, the BHA had to be broken to check for a float.

- Two cement jobs had to be aborted due to incorrect operation of the cement unit. It is recommended that a check list specific for each single cement unit is prepared by the cementing company

- During displacement of cement, the 18 ¾" housing floated 6 –7 m out of the 30" conductor housing as the driller had placed only 4 tons of weight on the casing, and not the entire string weight as stated in the procedure.

5.4 Drilling 8 ½" section

5.4.1 Summary

The 13 3/8" casing shoetrack and shoe was drilled out with a 12 ¼" rock bit. Top of cement was tagged at 1260 m, i.e. a shoetrack length of 30 m. Drilled 3 m new formation to 1306 m, circulated the hole clean and pulled out of hole. Ran in hole with an 8 ½" Lyng LD575 PDC bit and motor BHA (See 'experiences' for more information regarding stabilizer problems). When running in at 135 m, a spanner was lost in hole. With that the 8 ½" BHA was pulled and a magnet was run to bottom. However, no fish was recovered. Made up a BHA comprising a 12 ¼" rock bit and a junk basket, ran in hole and drilled and worked junk basket from 1306 to 1315 m.

During this operation the BOP lost pressure in both the yellow and blue conduit lines and could therefore not operate any functions. The BOPs hydraulic system started to leak close to the POD, and the hydraulic pressure dropped to a level where disconnect or normal operation of

rams were not feasible. The accumulator bottles on the BOP and on surface could not deliver sufficient hydraulic pressure. The pilot pressure was lost and disconnect was possible only by use of the acoustic system. In order to get sufficient pressure and volume of hydraulic fluid, a ROV with a hydraulic pump was used to hot stab the BOP. The riser and BOP was pulled for repairs. Localized the origin of the leak (a bursted o-ring in a flange), and repaired this. In addition, the BOP was modified with an isolating valve between the blue and yellow PODs to prevent a total hydralic pressure loss in case a similar incident occurs.

A 8 ½" rotary assembly was run to TD and carried out an extended leak off test to 1.57 g/cm³ equivalent mud weight. Afterwards, the hole was displaced to 1.35 g/cm³ KCl/polymer/glycol drilling fluid. Drilled 8 ½" hole to 1871 m, drilling was halted due to weather conditions. The Lyng LA575 was dull graded to 6-6, and the abnormal bit wear was found to be caused by the compensator, which was not tuned correctly.

Due to harsh weather conditions is was necessary to disconnect the LMRP and riser from the well. Upon pulling the LMRP the choke line collet connector was damaged. The riser and LMRP were re-connected to the BOP on the second attempt, as the first set of modifications did not work. (This was done without displacing the well to heavier mud, and the loss of riser margin led to an effective mud weight 0.02 g/cm³ below the estimated stability curve at 1800 m).

After re-connecting, a RTTS packer was placed at 690 m, and the well was displaced to 1.60 g/cm³ mud from 690 to 450 m. The BOP was again pulled for repairs. Repair work started at well location, but it was deemed necessary to move the rig into sheltered waters in Stifjorden to be able to complete the repairs and carry out the necessary tests. The rig left well location 15.02.02 at 16:00 hours and returned at the well location 01.03.02 at 15:00 hours. Ran the BOP and recovered the RTTS. At this stage the well had been left unattended for approximately 27 days. An 8 ½" Reed HP21G bit and rotary BHA was run to TD of the hole at 1871 m. The hole proved to be in good condition. Drilled to 2230 m, where the bit was pulled due to very low penetration rate. The bit came out graded 2-4, and the slow drilling rate was later found to be caused by a 8 m thick limestone layer. A new HP21G bit was run in hole and drilled to the first core point at 2295 m. In all, seven cores were cut. See chapter 4.7.2 for additional information. Security DBS's tripax core heads performed superior to PDC core heads. See chapter 5.7.3 for additional information. The last core was cut down to 2455 m, and the remaining distance to total TD at 2652 m was drilled with a Smith MA89PX. Tight spots were encountered up to 2370 m when pulling out.

Carried out 7 logging runs. Logging run #2 got stuck, necessitating a cut and thread operation to recover the tool. After the fish was recovered, a wiper trip to TD was performed to push down two bow centralizers, which were lost from the stuck logging tool. The logging operation had to be (temporarily) aborted as two of the riser tension wires broke. Thus, the riser was displaced to seawater and the LMRP was disconnected from the BOP and the slip joint was pulled and landed in the rotary for repairs. All eight rucker wires were changed out. When resuming logging, it was not possible to pass 1316 m with the logging tool. A wiper trip was carried out, and there were tight spots at several intervals. In addition, the hole was prone to

pack off. After reaming to TD, the hole condition was good when pulling out. Logging was again resumed, but this time it proved impossible to pass 1974 m. Another wiper trip was performed, and this time the mud weight was increased from 1.35 g/cm³ to 1.38 g/cm³. This stabilized the hole, and the last 3 logging runs were carried out without incidents.

Plug back:

The reservoir section was plugged back with gas tight cement from 2630 to 2090 m. Placed a kick off cement plug from 1505 to 1280 m, i.e. 10 m into the 13 3/8" casing.

5.4.2 Experiences / recommendations

- Pendulum BHA:
  The section after the BOP repairs was drilled with a pendulum BHA (8.4" at 11 m, 8.5" at 23 m) and PDC bit. The hole angle built rapidly from 2.8° to 5.6° over 200 m. Drilling with a pendulum BHA together with a short gage PDC bit in formations that require excessive WOB, will give a building tendency. The PDC bit acts as a near bit stabilizer, which in conjunction with a not full gage middle stabilizer will build angle when applying WOB

- Mud parameters:
  Got indications of bit balling while coring with KCl levels at around 100 kg/m³. The drilling programme stated that the KCl content should be around 50-100 kg/m³ and glycol at 3% at these depths. The KCl level was increased to 130–140 kg/m³, and increase glycol content to 4%. No indications of bit balling were observed afterwards.

- Tripax core heads:
  The tripax core heads performed very well on this application. Even though the ROP was somewhat lower than what could be expected from a PDC core head, the smooth torque and drilling through the interbedded formations prevented the core from jamming off.

5.5 Geological sidetrack

5.5.1 Summary

A geological sidetrack was drilled from the 13 3/8" casing shoe to 2660 mMD. Used a 8 ½" motor assembly (1.15° bend) with a LA536BZHG PDC bit. Drilled cement from 1294 to 1337 m. Kicked off/time drilled 8 ½" hole from 1337 m to 1357 m and new formation from thereof. The well was built up to 46° and average ROP was 34.1 m/hr (including drilling cement for 2.5 hours and time drilling for 3.5 hours). After reaching TD, a wiper trip to the 13 3/8" casing

shoe was carried out. Back on bottom a electronic multishot was dropped to verify directional data prior to pulling out.

Carried out three logging run. Got stuck while sampling pressure points on the last logging run. Recovered fish by a cut and thread operation.

5.5.2 Experiences / Recommendations

- Kicked off from open hole cement plug by drilling cement from 1294 m to 1337 m, and time drilling thereof (1-2 m/hr) for 8 hours. The formations were easily drilled / steered with a conventional motor assembly.
    - If the cement has set up, consider to kick off earlier without time drilling when drilling formation as soft as these.

- The Lyng LA536BZHG PDC bit performed very well with an average ROP of 34 m/hr.

5.6 P&A

5.6.1 Summary

Ran in hole with cement stinger (265 m of 3 ½" DP and 5" DP to surface), and placed two gas tight cement plugs from 2660 to 2230 m. Lost 6 m³ to the formation while circulating prior to the cement job as the hole packed off several times. The drill pipe, however, was free at all times. Placed a third cement plug from 1350 m to 1140 m, i.e. 150 m into the 13 3/8" casing. Pressure tested cement plug number 3 to 100 bar. Placed a 13 3/8" EZSV plug at 650 m. The ESZSV was pressure tested to 100 bar, and the volume above the plug was displaced to sea water. A surface cement plug was placed from 650 m to 425 m and the BOP and riser was pulled. Ran in with a MOST tool and cut the 18 3/4" and 30" wellheads. When attempting to recover said wellheads, the 18 ¾" wellhead came free from the 30" wellhead with 30 tons overpull (refer to earlier incident where the 18 ¾" wellhead and 13 3/8" casing came out of the well during the 13 3/8" cement job). Thus, the 30" conductor wellhead was recovered by using the 30" CART tool. Pulled free with 140 ton over pull.

5.6.2 Experiences / Recommendations

Consider to use a rubber/canvas sleeve on the 30" conductor housing, to reduce the overpull needed to pull the conductor housing stump.

5.6.3 Permanent P&A well schematic

Well: 6608/10-8 and 8A
Field: Stær
Rig: Stena Don

WELL SCHEMATIC

All depths RKB depth
RKB - MSL Stena Don: 24 m

HOLE		CASING				LOT FIT	TOC		CSG. SHOE			WL LOGS	LWD LOGS	SURV CSG/ OH
SIZE	TVD MD	SIZE	TYPE / RAD. MARKERS	CENTRALIZERS	TEST PRESS [BAR]	s.g.	TVD	MD	TVD	MD	RKB			
SB	400													
36"	459 459	**30"**	Interval 400 - 462 m (62 m): Type: 309.7 #/ft, X-52, ST-2 Drift: 27.813"		**N/A**	**N/A**	Seabed	Seabed	459	459		None	None	Anderdrift
17 1/2"	1303 1303	**18 3/4" WH assy** **X** **13 3/8"**	Interval 400 - 1300 m: Type: 18 3/4" Wellhead x 20" Extension, X-65 Type: 13 3/8", 68 #/ft, BTC, L-80, 406-950 m Type: 13 3/8", 68 #/ft, BTC, C-95, 950-1300 m Drift : 12.259"	1 x Bow type / 4 first joints	**280** **1.03 sg**	**LOT** expected value: 1,73	Seabed	Seabed	1290	1290		None	Resistivity/ GR	MWD
8 1/2"	2650 2652		- Interval 1200 - 2474 m: Type: 7", 32#, New Vam, P-110 Drift: 6.008" *(will be run if a DST is decided)*	1 x spiraglider / joint	**240 bar** **1.35 sg**							PEX/HRLA/DSI/ GR MDT-GR VSP-GR *CST (if unexp-ected litology)	Resistivity/ GR	MWD

Well: 6608/10-8 and 10-8A
Field: Stær
Rig: Stena Don

WELL SCHEMATIC - PLUGGED WELL

Purpose of plugging: **Permanent P&A**
Date of abandonment: **25th of April, 2002**

HOLE		CASING and FORMATION				LOT / FIT	TOC		CSG. and PLUGS			TESTS	CUT
SIZE	TVD MD	SIZE	CASING TYPE	PERMEABLE HC BEARING ZONES	Mud [g/cm3]	s.g.	TVD	MD	TVD	MD	RT		
Sea Bed	400												
36"	459	**30"**	X-52, 309 lb/ft, ST-2 4 jnts 30" # 309,7, X-52, ST-2 + Housing jnt.	None	1.03 s.g.	N/A	425	425	459	459	Cmt Plug #4		405
17 1/2"	1303	**20"x 13 3/8"**	P110, 72 lb/ft, New Vam (Housing ext. joint: 20", X-65)	None	1.03 s.g.	1.57 s.g.	1140	1140	650	650	EZSV 1.38 SG WBM	70 bar above LOT 70 bar above LOT	
							1350	1350	1290	1290	Cmt Plug #3		
8 1/2"	2539 2660			Top Melke sst. 2433 mMD/2375 mTVD Top Garn fm. 2566 mMD / 2473,5 mTVD Top Tilje fm. 2601 mMD / 2498,5 mTVD	1.38 s.g.	N/A	2227 2388	2230 2450	2539	2660	1.38 SG WBM Cmt Plug #2 Cmt Plug #1		

5.7 Figures and tables

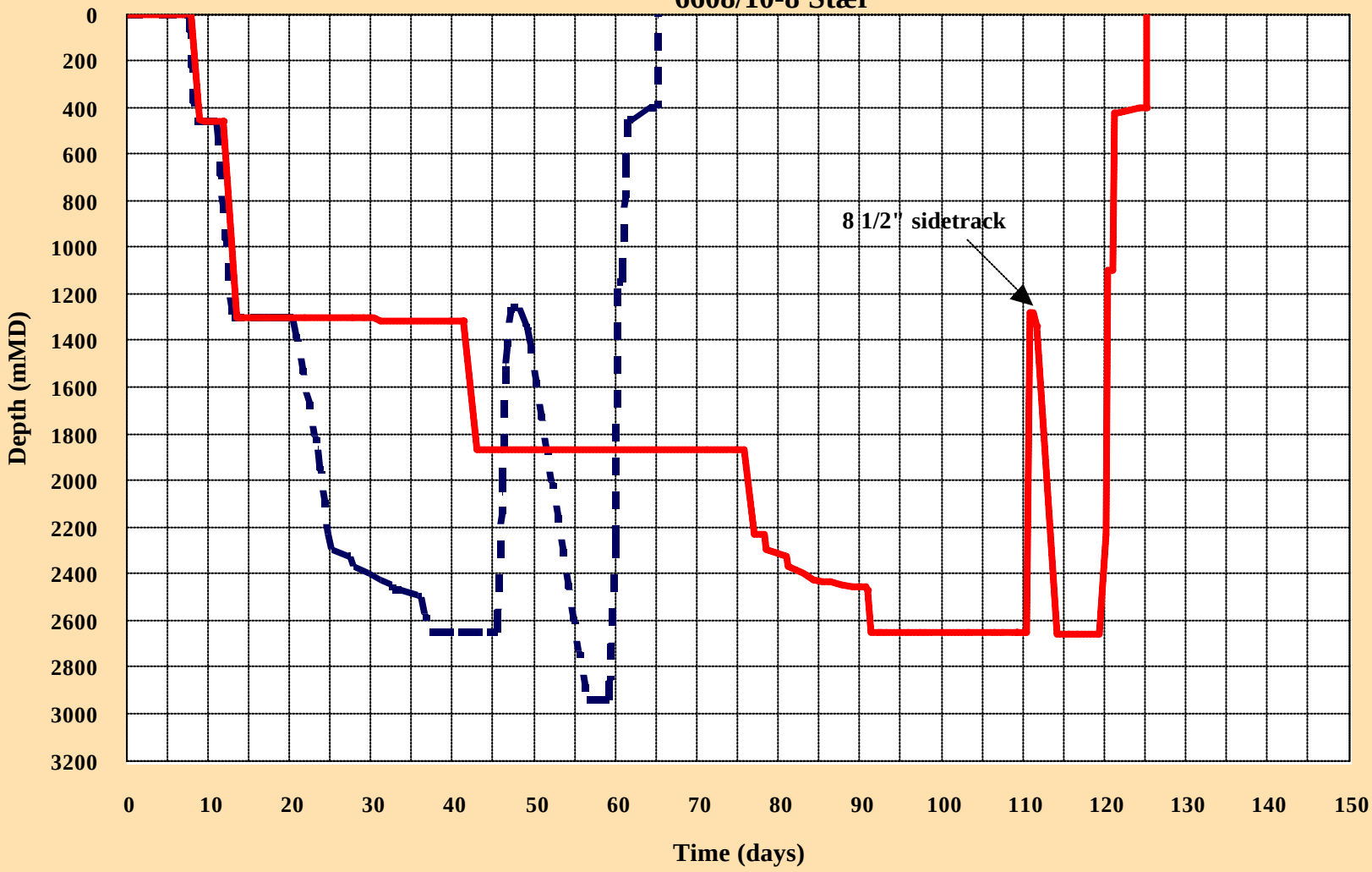
5.7.1 Time/depth curve

STATOIL

Time - Depth Plot

Stena Don

6608/10-8 Stær



Budget time (days)

Actual time (days)

Updated date/time:
Date: 18.11.2002
Time: 10:41

Start date/time:
Date: 21.12.2001
Time: 13:00

Est. finish date/time:
Date: 25.04.2002
Time: 18:00

Total budget time:
65,3 days

Time used:
125,2 days

Time behind budget:
59,9 days

Comments:

5.7.2 Timeplanner

Row	A	B	C	D	E	H	I	J	L	N	O	P	Q	R	S	U	V	W	X	Y
1	Mon	11/18/2002	10:40 AM	Updated		[redacted]					TIMEPLANNER				STATOIL					Down time/Waiting time
2	Fri	12/21/2001	01:00 PM	Start date		[redacted]					Stena Don				[redacted] Time behind budget:					Stena Don
3	Thu	04/25/2002	06:00 PM	Finish date							6608/10-8 Stær				59,9 days					6608/10-8 Stær
4	DAY	START DATE	START TIME	Budg. time (hrs)	Acc. budg. time (days)	Opt. time (hrs)	Acc. opt. time (days)	Budg./ Opt. depth (mMD)	Plan time (hrs)	Actual time (hrs)	Acc. actual time (days)	Actual Depth (mMD)	Sta	Activity description	Company	Down time (hrs)	Accum. down time (hrs)	Waiting time (hrs)	Accum. waiting time (hrs)	Comments (reason for down/waiting time)
5				[redacted]																
6		[redacted]		[redacted]										Move						Move
7	Fri	12/21/2001	01:00 PM	0.0	0.00	0.0	0.0	0	0.0	0.0	0.0	0	F	Start operation		2.5	2.5	0.0	0.0	Tested Nera satellite equipment (2.5 hrs),
8	Fri	12/21/2001	01:00 PM	174.0	7.30	120.0	5.0	0	162.0	162.0	6.8	0	F	Transit from Sandnes to location (485 nm)		10.5	13.0		0.0	Reduced transit speed. Secured cargo on deck
9	Fri	12/28/2001	07:00 AM	5.0	7.50	3.5	5.1	0	3.5	5.0	7.0	0	F	Verify rig position. Pump rig down to drilling draft. Place out transponders.			13.0		0.0	
10	Fri	12/28/2001	12:00 PM	0.0	7.50	0.0	5.1	0	10.0	10.0	7.4	0	F	DP trials. Repaired fwd. taut wire. Repaired Hydraracker.		10.0	23.0		0.0	Failure in HPR system and Hydraracker.
11	Section time (days)			7.5		5.1			7.3	7.4				Section time ahead of/behind (-) budg:0,1 days, Tot. time ahead of/behind (-) budg:0,1 days		23.0	hours	0.0	hours	Down time: 13,0% , Total Down time: 13,0% , Waiting time: 0,0% , Total Waiting time: 0,0%
12																				
13		[redacted]												36" sectin						36" sectin
14	Fri	12/28/2001	10:00 PM	8.0	7.80	6.0	5.4	0	6.0	11.0	7.8	0	F	M/U and RIH with 36" BHA		4.5	27.5		0.0	Problems with mud pump control system.
15	Sat	12/29/2001	09:00 AM	0.0	7.80	0.0	5.4	0	5.5	3.5	8.0	0	F	Tagged seabed at 400 m. Deployed marker buoys and verified position.			27.5		0.0	
16	Sat	12/29/2001	12:30 PM	15.0	8.46	10.0	5.8	462	25.0	27.0	9.1	453	F	Drill 36" hole from 400 to 460 m.			27.5		0.0	
17	Sun	12/30/2001	03:30 PM	6.0	8.76	4.0	6.0	462	4.0	15.5	9.8	459	F	Performed wipertrip.Circ. hole clean. Displ. to 1.35 g/cm³ mud. POOH.			27.5		0.0	
18	Mon	12/31/2001	07:00 AM	16.0	9.36	11.0	6.4	462	11.0	17.0	10.5	459	F	RU and run 30" conductor		2.0	29.5		0.0	Problems with main lifting cylinders (1hr) + Waiting on ROV rectifying umbilical/problems with cage thruster (1 hr)
19	Tue	01/01/2002	12:00 AM	12.0	9.86	8.5	6.8	462	8.5	3.0	10.6	459	F	Cement 30 conductor			29.5		0.0	
20	Tue	01/01/2002	03:00 AM	12.0	10.36	8.0	7.1	462	10.0	24.5	11.6	459	F	WOC. Relase RT. Wash bulls eyes. POOH with landing string. L/D 36" BHA		10.5	40.0	9.0	9.0	Repair on iron roughneck (1 hr) + Change jaws on torque wrench DDM (9,5 hrs)
21	Wed	01/02/2002	03:30 AM	16.0	11.06	11.0	7.6	462	11.0	8.0	11.9	459	F	M/U 17 1/2" BHA and RIH to 450 m. Wash down last singles			40.0		9.0	
22	Wed	01/02/2002	11:30 AM	4.0	11.26	3.0	7.7	462	3.0	1.5	12.0	460	F	Drill out cement and 30" shoe			40.0		9.0	
23	Section time (days)			3.7		2.6			3.5	4.6				Section time ahead of/behind (-) budg:-0,9 days, Tot. time ahead of/behind (-) budg:-0,8 days		17.0	hours	9.0	hours	Down time: 15,3% , Total Down time: 13,9% , Waiting time: 8,1% , Total Waiting time: 3,1%
24																				
25		[redacted]												17 1/2" hole section						17 1/2" hole section
26	Wed	01/02/2002	01:00 PM	44.0	13.0	30.0	9.0	1305	30.0	38.0	13.6	1303	F	Drill 17 1/2" hole to 1303 m.			40.0		9.0	
27	Fri	01/04/2002	03:00 AM	16.0	13.7	11.0	9.4	1305	11.0	15.5	14.2	1303	F	Circulate hole clean and displace to 1.30 g/cm³ mud. POOH.		4.5	44.5		9.0	Repaired Torque wrench (4,5 hr)
28	Fri	01/04/2002	06:30 PM	36.0	15.2	25.0	10.5	1305	25.0	28.5	15.4	1303	F	R/U and run 13 3/8" x 18 3/4" casing. Land and pull test.		2.5	47.0		9.0	Repaired hydr. supply to csg elevator (1,5 hr). Shut down of HPU system (1 hr)
29	Sat	01/05/2002	11:00 PM	8.0	15.5	5.5	10.7	1305	5.5	38.0	17.0	1303	F	Pressure test cement lines. Circ. and pump cement. Disp. cement		27.5	74.5		9.0	Leaking LTV on cmt head (2,5 hr). Failed to mix cement, circ. cmt out. Made 2 attempts (25 hr).
30	Mon	01/07/2002	01:00 PM	6.0	15.7	4.0	10.9	1305	4.0	11.0	17.5	1303	F	Check float, release RT. Wash bulls eyes. POOH with landing string. L/D running tool.			74.5	4.5	13.5	WOC 4,5 hrs.
31	Tue	01/08/2002	12:00 AM	0.0	15.7	0.0	10.9	1305	112.0	108.0	22.0	1303	F	WOW for running BOP			74.5	108.0	121.5	WOW
32	Sat	01/12/2002	12:00 PM	52.0	17.9	36.0	12.4	1305	110.0	117.5	26.9	1303	F	Run BOP and riser (test riser every 7th joint)		29.0	103.5	33.0	154.5	Tuned AHC (6,5 hrs). Repairing crane/riser yoke (17,5 Hrs). Spider lock dogs (2 Hrs). Test plug/riser jt (3 hrs)
33	Thu	01/17/2002	09:30 AM	5.0	18.1	4.0	12.5	1305	19.0	21.5	27.8	1303	F	Land BOP, pull and press. test WH conn. & csg. Func. test BOP. Emerg. disconn. (12 hr)		1.5	105.0		154.5	Wrong landing proc. (1,5 hrs).
34	Fri	01/18/2002	07:00 AM	0.0	18.1	10.0	12.9	1305	0.0	0.0	27.8	1303	F	L/D cement stand, CART stand and 17 1/2" BHA (while WOW)			105.0		154.5	
35	Fri	01/18/2002	07:00 AM	15.0	18.7	0.0	12.9	1305	6.0	19.0	28.5	1303	F	M/U 12 1/2" BHA and RIH to 1265 m. Wash down last stand.			105.0		154.5	
36	Sat	01/19/2002	02:00 AM	8.0	19.1	5.0	13.1	1305	6.0	10.0	29.0	1303	F	Drill out plugs and shoe track and 3 m of new formation using SW and high visc. pills.			105.0		154.5	
37	Sat	01/19/2002	12:00 PM	0.0	19.1	0.0	13.1	1305	5.0	6.0	29.2	1303	F	POOH with 12 1/4" BHA.			105.0		154.5	
38	Sat	01/19/2002	06:00 PM	0.0	19.1	0.0	13.1	1305	24.0	27.5	30.4	1303	F	Start to M/U 8 1/2" BHA. Fish in hole. M/U magnet BHA. RIH to 1306 m to fish spanner. POOH.		20.0	125.0		154.5	Threads on 6 3/4" stab. did not fit. M/U XO (0,5 hrs). Lost 8" adjustable spanner in hole (19,5 hrs)
39	Sun	01/20/2002	09:30 PM	0.0	19.1	0.0	13.1	1305	17.5	20.5	31.2	1315	F	M/U and RIH with 12 1/4" junk bit and junk basket 1306 m. Drill to 1316 m. POOH.		20.5	145.5		154.5	Lost spanner in hole (20,5 hrs)
40	Mon	01/21/2002	06:00 PM	0.0	19.1	0.0	13.1	1305	140.0	149.0	37.4	1315	F	M/U core barrels and R/B (3 hrs). Pull BOP and riser. Repair BOP control system.		142.0	287.5		154.5	Pulled riser and BOP. Repaired leakage in BOP controle system (hrs)
41	Sun	01/27/2002	11:00 PM	0.0	19.1	0.0	13.1	1305	60.0	56.5	39.8	1315	F	Run BOP and riser (test riser every 7th joint)		56.5	344.0		154.5	Re run of BOP due to leak in hydr. BOP contr. system. (WOW time recorded as D-time for Stena)
42	Wed	01/30/2002	07:30 AM	0.0	19.1	0.0	13.1	1305	8.0	21.0	40.6	1315	F	Land BOP, pull and pressure test WH connector. Function test BOP.		21.0	365.0		154.5	Re run of BOP due to leak in hydr. BOP contr. system.
43	Thu	01/31/2002	04:30 AM	20.0	19.9	14.0	13.7	1305	10.0	13.5	41.2	1315	F	MU and RIH with 8 1/2" BHA, Circ. and tag bottom.			365.0		154.5	
44	Thu	01/31/2002	06:00 PM	4.0	20.1	3.0	13.9	1305	3.0	3.0	41.3	1315	F	Spot a 10 m³ bentonite and polymer pill at TD. Pull into shoe and perform XLOT.			365.0		154.5	
45	Section time (days)			8.9		6.1			24.8	29.3				Section time ahead of/behind (-) budg:-20,4 days, Tot. time ahead of/behind (-) budg:-21,3 days		325.0	hours	145.5	hours	Down time: 46,2% , Total Down time: 36,8% , Waiting time: 20,7% , Total Waiting time: 15,6%
46																				
47		[redacted]												8 1/2" hole section						8 1/2" hole section
48	Thu	01/31/2002	09:00 PM	10.0	20.5	7.0	14.1	1305	4.0	2.5	41.4	1315	F	Displace to 1.35 g/cm³ AquaDrill mud.			365.0		154.5	
49	Thu	01/31/2002	11:30 PM	71.0	23.5	44.0	16.0	1871	40.0	39.0	43.1	1871	F	Drill 8 1/2" hole to 1871 m , circulate hole clean.			365.0		154.5	
50	Sat	02/02/2002	02:30 PM	0.0	23.5	0.0	16.0	1871	45.0	42.5	44.8	1871	F	POOH. Disconnect LMRP. WOW.			365.0	42.5	197.0	
51	Mon	02/04/2002	09:00 AM	0.0	23.5	0.0	16.0	1871	35.0	31.0	46.1	1871	F	Pull LMRP. Remove connector bucket.		31.0	396.0		197.0	Pull LMRP repair collet connector for choke line (all Stena D-time)
52	Tue	02/05/2002	04:00 PM	0.0	23.5	0.0	16.0	1871	96.0	86.0	49.7	1871	F	Rerun LMRP. Try to land same, - neg. Pull and rerun LMRP.		86.0	482.0		197.0	Re-run LMRP (all Stena D-time)
53	Sat	02/09/2002	06:00 AM	0.0	23.5	0.0	16.0	1871	14.0	14.0	50.3	1871	F	RIH w/ storm valve and secure well. Test same.	Halliburton	14.0	496.0		197.0	Secure well with RTTS+storm valve (all Stena D-time).
54	Sat	02/09/2002	08:00 PM	0.0	23.5	0.0	16.0	1871	478.0	504.0	71.3	1871	F	Disconnect BOP. Pull BOP and riser. Repair kill line connector.		504.0	1000.0		197.0	Pull BOP. Repair BOP. Transitt to Stifjord, completete repair. Transit back to location (all stena D-time)
55	Sat	03/02/2002	08:00 PM	0.0	23.5	0.0	16.0	1871	64.0	68.0	74.1	1871	F	Rerun BOP and riser. Land same. Conduct LMRP disconn test. Reland same. RD riser eq.		68.0	1068.0		197.0	Re-run BOP (all Stena D-time).
56	Tue	03/05/2002	04:00 PM	0.0	23.5	0.0	16.0	1871	16.0	14.0	74.7	1871	F	Test BOP. RIH. Displace riser to 1.35 SG mud. Retrieve RTTS. POOH.	BHI / Halliburton	11.0	1079.0		197.0	All Stena D-time.
57	Wed	03/06/2002	06:00 AM	0.0	23.5	0.0	16.0	1871	12.0	26.0	75.8	1871	F	RIH w. 8 1/2" BHA. Displace hole.		0.5	1079.5		197.0	Shear studs on elevator (0,5 stena)
58	Thu	03/07/2002	08:00 AM	33.5	24.9	28.0	17.1	2230	25.0	31.0	77.1	2230	F	Drill 8 1/2" hole to 2230 m.	Sperry Sun	0.5	1080.0		197.0	DP yellow alert (0,5 hr)
59	Fri	03/08/2002	03:00 PM	0.0	24.9	0.0	17.1	2230	23.0	29.0	78.3	2230	F	POOH to change bit. RIH.		1.0	1081.0		197.0	Hydraracker (1hrs)
60	Sat	03/09/2002	08:00 PM	6.5	25.1	5.5	17.4	2295	6.0	7.5	78.6	2295	F	Cont. drilling 8 1/2" hole to 2295 m.			1081.0		197.0	
61	Sun	03/10/2002	03:30 AM	57.5	27.5	45.0	19.3	2322	48.0	57.5	81.0	2322	F	*Circulate hole clean, POOH. RIH, cut 27 m core #1 and POOH. RIH to resume drilling*	DBS / Corepro	2.0	1083.0		197.0	Change slips due to slippage (0,5 hr), MWD pulser batteries (1,5 hrs)
62	Tue	03/12/2002	01:00 PM	8.0	27.9	5.5	19.5	2371	10.0	4.0	81.2	2371	F	Drill 8 1/2" hole to 2371 m ,		0.5	1083.5		197.0	Hydraracker (0,5 hrs)
63	Tue	03/12/2002	05:00 PM	47.0	29.8	38.0	21.1	2398	48.0	44.0	83.0	2398	F	*Circulate hole clean, POOH. RIH w/ 90' barrel, cut 27 m core# 2 and POOH.*	DBS / Corepro		1083.5		197.0	
64	Thu	03/14/2002	01:00 PM	35.0	31.3	28.0	22.2	2425	30.0	31.0	84.3	2424	F	*RIH w/ 120' barrel. Cut 26 m core # 3 and POOH.*	DBS / Corepro		1083.5		197.0	
65	Fri	03/15/2002	08:00 PM	35.0	32.7	45.0	24.1	2452	36.0	28.0	85.5	2435	F	*RIH w/ 90 ' barrel. Cut 11 m core # 4 and POOH.*	DBS / Corepro	1.0	1084.5		197.0	Hdraulic leak in retract system (1 hr)
66	Sun	03/17/2002	12:00 AM	0.0	32.7	0.0	24.1	2474	28.0	22.0	86.4	2438	F	*RIH w/ 90' barrel. Cut 3 m core # 5 and POOH.*		0.5	1085.0		197.0	Repaired torque wrench (0,5 hr)
67	Sun	03/17/2002	10:00 PM	0.0	32.7	0.0	24.1	2474	26.0	34.0	87.8	2452	F	*RIH w/ 90' barrel. Cut 14 m core #6 and POOH.*		5.0	1090.0		197.0	Bx frame 4 elevator (0,5 hr) + repair extend/retract function on top drive (4,5 hrs)
68	Tue	03/19/2002	08:00 AM	0.0	32.7	0.0	24.1	2474	26.0	31.0	89.1	2455	F	*RIH w/ 90' barrel. Cut 3 m core #7 and POOH.*		3.5	1093.5		197.0	Hydraracker (1 hr) + torque wrench (1,5 hr) + roller gripper on H. racker (1 hr)
69	Wed	03/20/2002	03:00 PM	0.0	32.7	0.0	24.1	2474	18.0	24.0	90.1	2455	F	*RIH with BOP test plug and test BOP to 280 bar*			1093.5		197.0	
70	Thu	03/21/2002	03:00 PM	18.0	33.5	0.0	24.1	2474	9.0	18.5	90.9	2455	F	*MU new BHA/change MWD and RIH to resume drilling. Raam cored interval*		1.5	1095.0		197.0	Damaged el.conn on MWD (0,5 hr) + Changed swivel packing on DDM (1 hr)
71	Fri	03/22/2002	09:30 AM	6.0	33.7	3.0	24.2	2474	3.0	2.0	90.9	2474	F	Drill 8 1/2" hole to 2474 m.	Sperry Sun		1095.0		197.0	
72	Fri	03/22/2002	11:30 AM	60.0	36.2	45.0	26.1	2501	0.0	0.0	90.9	2474	F	POOH. RIH, cut 27 m core #5 (Åre) and POOH. RIH to resume drilling	DBS / Corepro		1095.0		197.0	
73	Fri	03/22/2002	11:30 AM	25.0	37.3	17.0	26.8	2649	14.0	8.5	91.3	2653	F	Drill 8 1/2" hole to 2653 m (TD)	Sperry Sun		1095.0		197.0	
74	Fri	03/22/2002	08:00 PM	16.0	37.9	11.0	27.3	2649	20.0	23.5	92.3	2653	F	Circulate hole clean, wipertrip to 2300 m and POOH. Rack back BHA		0.5	1095.5		197.0	Unable to fill Triptank (0,5 hr)
75	Sat	03/23/2002	07:30 PM	1.0	38.0	1.0	27.3	2649	1.0	2.5	92.4	2653	F	R/U Schlumberger logging equipment.			1095.5		197.0	
76	Sat	03/23/2002	10:00 PM	14.0	38.6	9.5	27.7	2649	9.5	8.0	92.7	2653	F	Log run #1 (HRLA-PEX)	Schlumberger		1095.5		197.0	
77	Sun	03/24/2002	06:00 AM	18.0	39.3	12.5	28.2	2649	18.0	14.5	93.3	2653	F	Log run #2 (CMR+ECS-HNGS).	Schlumberger	3.5	1099.0		197.0	Logging computer (0,5 hr) + Tool failure (3 hrs)
78	Sun	03/24/2002	08:30 PM	0.0	39.3	0.0	28.2	2649	61.5	61.5	95.9	2653	F	Tool stuck. WOW. Fish logging tool using cut & thread method.		48.5	1147.5	12.5	209.5	Fishing operation
79	Wed	03/27/2002	10:00 AM	0.0	39.3	0.0	28.2	2649	35.0	38.0	97.5	2653	F	Wipertrip. Condition mud.		8.0	1155.5		209.5	IBOP (3 hrs) + IBOP/torque wrench (5 hrs)
80	Fri	03/29/2002	12:00 AM	36.0	40.8	22.0	29.1	2649	14.0	14.0	98.0	2653	F	Log run #3 (MDT-GR-ACTS (pressure)	Schlumberger		1155.5		209.5	
81	Fri	03/29/2002	02:00 PM	0.0	40.8	12.5	29.7	2649	22.0	31.0	99.3	2653	F	Additional Log run #4 (MDT-GR-ACTS) (HC sampling)	Schlumberger	0.5	1156.0		209.5	Reset computer (0,5 hrs)
82	Sat	03/30/2002	09:00 PM	0.0	40.8	0.0	29.7	2649	12.0	7.5	99.6	2653	F	Log run #5 (FMI-DSI-GR). Aborted logging due to broke riser tension wires.	Schlumberger	0.5	1156.5		209.5	Telemetry problems (0,5 hrs)
83	Sun	03/31/2002	04:30 AM	0.0	40.8	0.0	29.7	2649	86.0	85.5	103.2	2653	F	POOH w/logging string. Disconn. riser. Repair/change riser tension wires.		85.5	1242.0		209.5	
84	Wed	04/03/2002	06:00 PM	0.0	40.8	0.0	29.7	2649	3.0	6.0	103.5	2653	F	Reconnect riser.		6.0	1248.0		209.5	
85	Thu	04/04/2002	12:00 AM	15.0	41.4	8.0	30.0	2649	15.0	19.0	104.3	2653	F	RIH with BOP test tool. Displ. k/c lines, booster line and riser to 1 35 sg wbm. Test BOP.			1248.0		209.5	
86	Thu	04/04/2002	07:00 PM	0.0	41.4	0.0	30.0	2649	12.0	8.0	104.6	2653	F	Ru WL for log run #5. RIH, unable to pass 1314 m.		8.0	1256.0		209.5	D-time until log at 2389 m
87	Fri	04/05/2002	03:00 AM	0.0	41.4	0.0	30.0	2649	33.0	33.5	106.0	2653	F	Wiper trip. Condition mud.		33.5	1289.5		209.5	D-time until log at 2389 m
88	Sat	04/06/2002	12:30 PM	18.0	42.2	18.0	30.7	2649	18.0	12.5	106.5	2653	F	Log run #5 (FMI-DSI-GR)		9.0	1298.5		209.5	D-time until log at 2389 m
89	Sun	04/07/2002	01:00 AM	0.0	42.2	0.0	30.7	2649	17.0	24.5	107.5	2653	F	Wiper trip. Increase mud weight to 1,38 sg.			1298.5		209.5	
90	Mon	04/08/2002	01:30 AM	15.0	42.8	8.0	31.1	2649	8.0	10.5	108.0	2653	F	Log run #6 VSP	Schlumberger		1298.5		209.5	
91	Mon	04/08/2002	12:00 PM	0.0	42.8	0.0	31.1	2649	10.0	8.5	108.3	2653	F	Log FMI-DSI-GR			1298.5		209.5	
92	Mon	04/08/2002	08:30 PM	36.0	44.3	24.0	32.1	2649	18.0	20.0	109.1	2653	F	Log run #7 MDT sampling (HC sampling). R/D wire line equipment.	Schlumberger		1298.5		209.5	
93	Tue	04/09/2002	04:30 PM	9.0	44.7	6.0	32.3	2649	0.0		109.1	2653	F	L/D 8 1/2" BHA			1298.5		209.5	
94	Section time (days)			24.6		18.5			65.3	67.8				Section time ahead of/behind (-) budg:-38,6 days, Tot. time ahead of/behind (-) budg:-59,9 days		933.5	hours	55.0	hours	Down time: 57,4% , Total Down time: 49,6% , Waiting time: 3,4% , Total Waiting time: 8,0%
95																				
96		[redacted]												Plug back reservoir						Plug back reservoir
97	Tue	04/09/2002	04:30 PM	20.0	45.5	10.0	32.7	2649	12.0	7.5	109.5	2653	F	PU cement stinger and RIH to TD.			1298.5		209.5	
98	Wed	04/10/2002	12:00 AM	15.0	46.1	12.0	33.2	2050	12.0	19.0	110.3	2653	F	Plug back reservoir section with cement.		6.0	1304.5		209.5	Load cell surge tank (6 hrs)
99	Section time (days)			1.5		0.9			1.0	1.1				Section time ahead of/behind (-) budg:0,4 days, Tot. time ahead of/behind (-) budg:-64,1 days		6.0	hours	0.0	hours	Down time: 22,6% , Total Down time: 49,3% , Waiting time: 0,0% , Total Waiting time: 7,9%
100																				
101		[redacted]												6608/10-8A Geological Sidetrack						6608/10-8A Geological Sidetrack
102	Wed	04/10/2002	07:00 PM	8.0	46.5	6.0	33.5	1500	6.0	1.5	110.3	2653	F	POOH to 1450 mMD.			1304.5		209.5	
103	Wed	04/10/2002	08:30 PM	0.0	46.5	0.0	33.5	1500	3.0	3.0	110.4	2653	F	Mix new spacer		3.0	1307.5		209.5	Cement space contaminated, mix new (3 hrs).
104	Wed	04/10/2002	11:30 PM	18.0	47.2	20.0	34.3	1260	14.0	8.5	110.8	1280	F	Set kick off plug up to 1280 mMD. POOH			1307.5		209.5	
105	Thu	04/11/2002	08:00 AM	24.0	48.2	12.0	34.8	1260	16.0	14.5	111.4	1280	F	M/U 8 1/2" BHA. RIH with mud motor assembly			1307.5		209.5	
106	Thu	04/11/2002	10:30 PM	24.0	49.2	14.0	35.4	1350	14.0	7.5	111.7	1340	F	Tag cement. Drill cement to 1350 mMD. Kick off well.			1307.5		209.5	
107	Fri	04/12/2002	06:00 AM	0.0	49.2	0.0	35.4	1350	0.0	0.0	111.7	1340	F	NEW WELL NAME 6608/10-8A			1307.5		209.5	
108	Fri	04/12/2002	06:00 AM	177.0	56.6	115.0	40.2	2940	74.0	62.5	114.3	2660	F	Drill 8 1/2" hole to +/- 2770 mMD.			1307.5		209.5	
109	Sun	04/14/2002	08:30 PM	20.0	57.4	10.0	40.6	2940	23.0	32.0	115.6	2660	F	Circulate hole clean. Drop EMS and POOH.			1307.5		209.5	
110	Tue	04/16/2002	04:30 AM	10.0	57.9	10.0	41.0	2940	10.0	27.0	116.8	2660	F	Logging run #1 (PEX/DSI/HRLA)		11.0	1318.5		209.5	El failure on primary HLRA (12,5 hrs)
111	Wed	04/17/2002	07:30 AM	12.0	58.4	12.0	41.5	2940	55.0	58.5	119.2	2660	F	Logging run #2(MDT pressure points). Cut and thread		40.0	1358.5		209.5	Stuck MDT, cut and thread (40 hrs)
112	Section time (days)			12.2		8.3			9.0	9.0				Section time ahead of/behind (-) budg:3,3 days, Tot. time ahead of/behind (-) budg:-60,9 days		54.0	hours	0.0	hours	Down time: 25,1% , Total Down time: 47,5% , Waiting time: 0,0% , Total Waiting time: 7,3%
113																				
114		[redacted]				13.5								Plug & Abandon						Plug & Abandon
115	Fri	04/19/2002	06:00 PM	22.0	59.3	10.0	42.0	2940	7.0	7.0	119.5	2660	F	PU cement stinger and RIH to TD.			1358.5		209.5	
116	Sat	04/20/2002	01:00 AM	18.0	60.0	15.0	42.6	2300	10.0	15.0	120.1	2230	F	Plug back reservoir section with cement		0.5	1359.0		209.5	problems CMS unit (0,5 hrs)
117	Sat	04/20/2002	04:00 PM	8.0	60.4	5.0	42.8	1150	6.0	7.0	120.4	1100	F	POOH to 1400 m. Place a vis pill below and a balanced cmt plug from 1400 to 1150 m.			1359.0		209.5	
118	Sat	04/20/2002	11:00 PM	8.0	60.7	8.0	43.1	1150	10.0	9.0	120.8	1100	F	POOH. MU WB RR tool , pull WB			1359.0		209.5	
119	Sun	04/21/2002	08:00 AM	5.0	60.9	5.0	43.3	1150	5.0	2.5	120.9	1100	F	L/D ABB hang off tool and make up MOST tool. LD BHA from drk.			1359.0		209.5	
120	Sun	04/21/2002	10:30 AM	8.0	61.20	8.0	43.7	700	6.0	4.5	121.1	1100	F	MU 13 3/8" EZSV. RIH on 5" DP to 700m. Set same. Close UAP and pressure test EZSV to 100 bar			1359.0		209.5	
121	Sun	04/21/2002	03:00 PM	5.0	61.45	5.0	43.9	450	6.0	4.5	121.3	425	F	Displace hole to SW. Set surface cement plug from 700 to 450 m. POOH.		2.0	1361.0		209.5	Hydraracker (2 hrs)
122	Sun	04/21/2002	07:30 PM	16.0	62.15	16.0	44.5	450	0.0	8.5	121.6	425	F	Jetted BOP. WOW. Meanwhile rearranged derrick for Norne operation.			1361.0	3.5	213.0	
123	Mon	04/22/2002	04:00 AM	52.0	64.30	52.0	46.7	400	60.0	66.0	124.4	400	F	Pull riser and BOP. WOW.		7.0	1368.0	20.0	233.0	Install new riser tensioner (2 hrs) + Inspect LMRP (5 hrs)
124	Wed	04/24/2002	10:00 PM	22.0	65.20	22.0	47.6	400	26.0	20.0	125.2	400	F	RIH w/MOST tool and motor cutting assy. Cut WH, POOH. L/D WH.		8.5	1376.5		233.0	Sensor on upper gripper arm (1,5 hrs) + Pulled Wh with 30" CART tool (7 hrs)
125	Thu	04/25/2002	06:00 PM	3.0	65.30	3.0	47.7	0	0.0	0.0	125.2	400	F	Working on BOP. PU 5 1/2" DP. Prepare for Norne field. Clean seabed.			1376.5		233.0	
126	Thu	04/25/2002	06:00 PM	0.0	65.3		47.7	0	0.0	0.0	125.2	0	F	END WELL			1376.5		233.0	
127	Thu	04/25/2002	06:00 PM	7.0		6.2			5.7	6.0				Section time ahead of/behind (-) budg:1,0 days, Tot. time ahead of/behind (-) budg:-59,9 days		18.0	hours	23.5	hours	Down time: 12,5% , Total Down time: 45,8% , Waiting time: 16,3% , Total Waiting time: 7,8%
128	End of operation																			

Row	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
2	Referansebrønner										
3	+D-TIME &WOW	Input	34/7-7	34/7-13	34/7-16	34/7-19	34/7-20X	34/7-28X	34/7-28	Snitt	Eff. ROP
5	d-factor	0.114									
6	WOW fac	0.026									
7	50.2	44									
8	22.8	20									
9	4.6	4									
10	2.3	2									
11	0.0										
12	0.0										
13	0.0										
14	73.0	64	22.5	23	14.5	24.2	23.1			21.46	15.022
22	6.8	6									
23	0.0										
24	0.0										
25	0.0										
26	73.0	64	22	23	15	21	23	48	64	.8571428571	.4285714286
27	11.4	10									
41	22.8	20									
42	10.3	9									
43	4.6	4									
44	2.3	2									
45	0.0										
46	0.0										
47	0.0										
48	9.1	8									
80	16.0	14	23	15	14	19	32			45	22.5
81	9.1	8									
90	77.5	68	10	7	9	21	5		10	.3333333333	.2333333333
92	13.7	12									
93	4.6	4									
94	0.0										
95	0.0										
96	0.0										
97	11.4										
98	13.7										
99	0.0										
100	0.0										
101	0.0										
102	0.0										
111	0.0										
112	0.0										
113	0.0										
114	0.0										
115		10									
118		12									
119	13.7	12									
120	11.4	10									
121	6.8	6									
122	4.6	4									
123	9.1	8									
124	31.9	28									
125	13.7	12									
126	0.0										
127	0.0										
128	0.0										

5.7.3 Bit record

Bit record

Wellbore: 6608/10-008

Run No	Bit Size	Bit No	BHA No	Bit Type	IADC code	Bit manufacturer	Serial No	Nozzles (n/32") no x n	no x n	no x n	no x n	Flow Area in2
1	17 1/2"	1	1	MGSSH+ODC	115	Smith Bits	LW2339	1 x 18	2 x 20	1 x 13	x	,992
2	17 1/2"	2	2	MGGH+ODC	443	Smith Bits	MJ1673	1 x 16	2 x 18	1 x 12	x	,804
3	12 1/4"	3	3	SVH	215	Smith Bits	LK0893	2 x 16	1 x 14	1 x 18	x	,792
4	12 1/4"	3RR	4	SVH	215	Smith Bits	LK0893	2 x 16	1 x 14	1 x 18	x	,792
5	8 1/2"	4	5	LD575PDHG	M333	Lyng	2725	6 x 12	x	x	x	,663
6	8 1/2"	5	6	HP21G	217	REED	HA7990	3 x 16	x	x	x	,590
7	8 1/2"	6	7	HP21G	217	REED	JR 7914	3 x 16	x	x	x	,590
8	8 1/2"	7	8	CT103	M623	DIAMANT BOART S	7980540	x	x	x	x	,700
9	8 1/2"	8	9	MA89PX		Smith Bits	JS 7041	6 x 12	x	x	x	,663
10	8 1/2"	7RR1	10	CT103	M623	DIAMANT BOART S	7980540	x	x	x	x	,700
11	8 1/2"	9	11	CT103	M623	DIAMANT BOART S	7890540	x	x	x	x	
12	8 1/2"	9RR	12	CT103	M623	DIAMANT BOART S	7890540	x	x	x	x	
13	8 1/2"	10	13	FC264RI	M133	DIAMANT BOART S	7981321	x	x	x	x	
14	8 1/2"	11	14	CT103	M623	DIAMANT BOART S	7980830	x	x	x	x	
15	8 1/2"	12	15	CT103	M623	DIAMANT BOART S	7010607	x	x	x	x	
16	8 1/2"	8RR1	16	MA89PX		Smith Bits	JS7041	6 x 12	x	x	x	,663
17	8 1/2"	6RR1	17	HP21G	217	REED	JR7914	x	x	x	x	
18	8 1/2"	6RR1	18	HP21G	217	REED	JR7914	x	x	x	x	
19	8 1/2"	6RR2	19	HP21G	217	REED	JR7914	x	x	x	x	
20	8 1/2"	16	21	LA563BZHG	M649	Lyng	2732	2 x 13	4 x 10	x	x	,567

Run No	Bit Size	Pump Rate l/min	Pump Press bar	Depth in mMD	Depth out mMD	Drilled length m	Hours Drilled	ROP	Min WOB ton	Max WOB ton	Min RPM	Max RPM	Torque Min Nm	Torque Max Nm	Con drag Min 1000 daN	Con drag Max 1000 daN
1	17 1/2"	4760	150	400	459	59	19,6	3,0	0	8	45	125	2000	18000		
2	17 1/2"	4550	220	460	1303	843	20,3	41,5	4	15	100	150	5000	16000		
3	12 1/4"	3000	116	1303	1306	3										
4	12 1/4"	3275	164	1306	1315	9	0,9	10,0	2	15	40	50	2000	4800		
5	8 1/2"	2500	158	1315	1871	556	25,2	22,1	2	12	100	180	2	8		
6	8 1/2"	2500	180	1871	2230	359	25	14,4	6	12	100	150	3000	8000		
7	8 1/2"	2200	190	2230	2295	65	6,6	9,8	2	15	80	245	4000	7000		
8	8 1/2"	1080	110	2295	2322	27	4,6	5,9	2	13	80	110	4000	11000		
9	8 1/2"	2250	160	2322	2371	49	3,1	15,8	7	12	100	150	4000	8000		
10	8 1/2"	1100	140	2371	2398	27	3,9	6,9	3	17	80	120	3000	19000		
11	8 1/2"	1100	150	2398	2424	26	5	5,2	10	20	100	120	3000	18000		
12	8 1/2"	1100	124	2424	2435	11	1,8	6,1	2	14	100	120	4000	11000		
13	8 1/2"	1100	85	2435	2438	3	1,7	1,8	5	12	100	120	6000	25000		
14	8 1/2"	1100	115	2438	2452	14	3,3	4,2	8	14	60	120	4000	22000		
15	8 1/2"	1100	135	2452	2455	3	1	3,0	10	15	80	100	4000	22000		
16	8 1/2"	2320	230	2455	2652	197	4,5	43,8	5	10		180	6000	20000		
17	8 1/2"															
18	8 1/2"															
19	8 1/2"															
20	8 1/2"	1800	125	1337	1340	3	3,5	,9	1	2	110					

Run No	Bit Size	IADC dull grading I	O	DC	L	B	G	OC	RP	Remarks
1	17 1/2"	1	1	WT	A	E	I	NO	TD	17 1/2" bit run with 26x36" hole opener with 6x11 and 6x12 nozzles.
2	17 1/2"	3	4	WT	A	E	I	RG	TD	Outer row rounded.
3	12 1/4"	1	1	NO	A	E	I	NO	BHA	Drilled 13 3/8" shoe track.

4	12 1/4"	2	2	BT	N	E	IG		RIG	1broken tooth. Used to clean out junk.
5	8 1/2"	6	6	CT	A	X	I	NO	WC	
6	8 1/2"	2	4	WT	H	E	0	ER	PR	212 K revs on btm.
7	8 1/2"	1	1	NO	A	E	0	NO	CP	49 K revs on btm.
8	8 1/2"	1	2	WT	A	X	0	NO	TD	32 K bitrevs on btm.
9	8 1/2"	1	1	WT	A	X	0	NO	CP	27 K revs on btm.
10	8 1/2"	2	5	WT	A	X	I	NO	BHA	26 K revs on this run + 32 K revs on previous run.
11	8 1/2"	1	1	NO		X	I	NO	PR	
12	8 1/2"	4	5	WT	A	X	I	RO	PR	
13	8 1/2"	2	2	CT	N	X	I	NO	PR	
14	8 1/2"	2	4	WT	N	X	I		PR	
15	8 1/2"	2	2	WT	N	X	I	BU	PR	
16	8 1/2"	1	1	WT	A	X	I	CT	TD	Two cutters chipped
17	8 1/2"	2	2	BT	A	E	I	ER	LOG	Wiper trip prior to complete logging program. Broken teeth mainly on middle and inner rows. Erosion mainly on outer row.
18	8 1/2"									
19	8 1/2"									Wiper trip prior to complete logging program.
20	8 1/2"									Drilled firm cmt 1294 - 1337 m.

Bit record

Wellbore: 6608/10-008A

Run No	Bit Size	Bit No	BHA No	Bit Type	IADC code	Bit manufacturer	Serial No	Nozzles (n/32") no x n	no x n	no x n	no x n	Flow Area in2
1	8 1/2"	1	1	LA563BZHG	M649	Lyng	2732	2 x 13	4 x 10	x	x	,567

Run No	Bit Size	Pump Rate l/min	Pump Press bar	Depth in mMD	Depth out mMD	Drilled length m	Hours Drilled	ROP	Min WOB ton	Max WOB ton	Min RPM	Max RPM	Torque Min Nm	Torque Max Nm	Con drag Min 1000 daN	Con drag Max 1000 daN
1	8 1/2"	2270	250	1340	2660	1320	38,7	34,1	4	10	135	235	3000	12000		

Run No	Bit Size	IADC dull grading I	O	DC	L	B	G	OC	RP	Remarks
1	8 1/2"	5	7	BT	A	X	I	RO	TD	Drilled cmt 1294 - 1337 m for 2,5 hrs and time drilled 1337 - 1340 m for 3,5 hrs in 6608/10-008. Other bit characteristics: taper worn down to matrix.

5.7.4 Bottom hole assemblies (BHA)

BHA report

Wellbore: 6608/10-008

BHA seq: 1 BHA category: Drilling BHA description: 36" drlg assy

BHA no: 1

String component	OD in	ID in	Length m	Acc length m
BIT	17,500		0,41	0,41
FLOAT SUB	9,500		0,91	1,32
HOLE OPENER	36,000		4,30	5,62
ANDERDRIFT	9,500		2,98	8,60
DRILL COLLAR	9,500	3,000	46,01	54,61
XO SUB	8,000	3,000	0,90	55,51
DRILL COLLAR	8,000	2,813	56,35	111,86
XO SUB	8,000	2,813	0,90	112,76
H W DRILL PIPE			112,81	225,57

BHA seq: 2 BHA category: Drilling BHA description: 17 1/2" drlg assy

BHA no: 2

String component	OD in	ID in	Length m	Acc length m
BIT	17,500		0,42	0,42
MPT W/ GR & RES	9,500		13,27	13,69
FLOAT SUB	9,500		0,90	14,59
PONY COLLAR	9,500	2,380	6,17	20,76
STABILIZER	17,500	2,380	2,50	23,26
XO SUB	8,000	2,380	0,99	24,25
DRILL COLLAR	8,000	2,813	9,39	33,64
STABILIZER	17,500	2,380	2,09	35,73
DRILL COLLAR	8,000	2,813	84,28	120,01
JAR	7,750	3,000	9,61	129,62
DRILL COLLAR	8,000	2,831	18,76	148,38
XO SUB	6,630	2,813	0,90	149,28
H W DRILL PIPE	5,000	3,000	112,81	262,09

BHA seq: 3 BHA category: Drilling BHA description: 12 1/4" clean out assy

BHA no: 3

String component	OD in	ID in	Length m	Acc length m
BIT	12,250		0,33	0,33
BIT SUB	8,000	2,812	0,91	1,24
DRILL COL	8,000	2,812	28,18	29,42
X-OVER	8,000	2,812	0,91	30,33
DRILL COL	6,500	2,812	47,01	77,34
JAR	6,250	2,750	9,37	86,71
DRILL COL	6,500	2,812	28,40	115,11
HW DRILL PIPE	5,000		112,81	227,92

BHA seq: 4 BHA category: Drilling BHA description: 12 1/4" junk assy w/junk basket

BHA no: 4

String component	OD in	ID in	Length m	Acc length m
BIT	12,250		0,33	0,33
JUNK BASKET	7,750	3,500	0,82	1,15
BIT SUB	8,000	2,812	0,91	2,06
DRILL COL	8,000	2,812	28,18	30,24
X-OVER	8,000	2,812	0,91	31,15
DRILL COL	6,500	2,812	47,01	78,16
JAR	6,250	2,750	9,37	87,53
DRILL COL	6,500	2,812	28,40	115,93
HW DRILL PIPE	5,000		112,81	228,74

BHA seq: 5 BHA category: Drilling BHA description: 8 1/2" Drlg assy

BHA no: 5

String component	OD in	ID in	Length m	Acc length m
BIT, PDC	8,500		0,29	0,29
STABILIZER, NB	8,375		1,70	1,99
MWD TOOL	6,750		20,81	22,80
STAB STRING	8,500		1,96	24,76
FLOAT SUB	6,750		0,70	25,46
DRIL COL	6,500	2,813	47,01	72,47

		JAR	6,250	2,750	9,37	81,84
		DRIL COL	6,500	2,813	28,22	110,06
		HW DRILL PIPE	5,000		112,81	222,87

BHA seq: 6 BHA category: Drilling BHA description: 8 1/2" Drlg assy

BHA no: 6

String component	OD in	ID in	Length m	Acc length m
BIT	8,500		0,25	0,25
XO SUB	6,500	2,813	0,30	0,55
MWD TOOL	6,750		10,51	11,06
STABILIZER	8,400		0,58	11,64
MPT TOOL	6,750		2,88	14,52
XO SUB	6,750		0,65	15,17
BAT SONIC	6,750		6,19	21,36
STABILIZER	8,500		1,96	23,32
FLOAT SUB	6,750		0,70	24,02
DRIL COL	6,500	2,813	65,81	89,83
JAR	6,250	2,750	9,37	99,20
DRIL COL	6,500	2,813	37,62	136,82
HW DRILL PIPE	5,000		112,43	249,25

BHA seq: 7 BHA category: Drilling BHA description: 8 1/2" Drlg assy

BHA no: 7

String component	OD in	ID in	Length m	Acc length m
BIT	8,500		0,25	0,25
XO SUB	6,500	2,813	0,30	0,55
MWD TOOL	6,750		10,51	11,06
STABILIZER	8,400		0,58	11,64
MPT TOOL	6,750		2,88	14,52
XO SUB	6,750		0,65	15,17
BAT SONIC	6,750		6,19	21,36
STABILIZER	8,500		1,96	23,32
FLOAT SUB	6,750		0,70	24,02
DRIL COL	6,500	2,813	94,01	118,03
JAR	6,250	2,750	9,37	127,40
DRIL COL	6,500	2,813	37,62	165,02
HW DRILL PIPE	5,000		112,43	277,45

BHA seq: 8 BHA category: Drilling BHA description: 8 1/2" Coring assy

BHA no: 8

String component	OD in	ID in	Length m	Acc length m
BIT, CORE	8,500		0,25	0,25
CORE BARREL	8,469	4,000	30,19	30,44
SAFETY JOINT	6,750		0,86	31,30
FLOAT SUB	6,750		0,50	31,80
DRIL COL	6,500	2,813	94,01	125,81
JAR	6,250	2,750	9,37	135,18
DRIL COL	6,500	2,813	37,62	172,80
HW DRILL PIPE	5,000		112,43	285,23

BHA seq: 9 BHA category: Drilling BHA description: 8 1/2" Drlg assy

BHA no: 9

String component	OD in	ID in	Length m	Acc length m
BIT	8,500		0,30	0,30
XO SUB	6,500	2,813	0,30	0,60
MWD TOOL	6,750		10,51	11,11
STABILIZER	8,400		0,58	11,69
MPT TOOL	6,750		2,88	14,57
XO SUB	6,750		0,65	15,22
BAT SONIC	6,750		6,19	21,41
STABILIZER	8,500		1,96	23,37
FLOAT SUB	6,750		0,70	24,07
DRIL COL	6,500	2,813	94,01	118,08
JAR	6,250	2,750	9,37	127,45
DRIL COL	6,500	2,813	37,62	165,07
HW DRILL PIPE	5,000		112,43	277,50

BHA seq: 10 BHA category: Drilling BHA description: 8 1/2" Coring assy 90 ft

BHA no: 10

String component	OD in	ID in	Length m	Acc length m
BIT, CORE	8,500		0,25	0,25
CORE BARREL	8,469	4,000	30,19	30,44
SAFETY JOINT	6,750		0,86	31,30
FLOAT SUB	6,750		0,50	31,80
DRIL COL	6,500	2,813	94,01	125,81
JAR	6,250	2,750	9,37	135,18
DRIL COL	6,500	2,813	37,62	172,80
HW DRILL PIPE	5,000		112,43	285,23

BHA seq: 11 BHA category: Drilling BHA description: 8 1/2" Coring assy 120 ft

BHA no: 11

String component	OD in	ID in	Length m	Acc length m
BIT, CORE	8,500		0,36	0,36
CORE BARREL	8,469	4,000	37,78	38,14
SAFETY JOINT	6,750		0,86	39,00
FLOAT SUB	6,750		0,50	39,50
DRIL COL	6,500	2,813	94,01	133,51
JAR	6,250	2,750	9,37	142,88
DRIL COL	6,500	2,813	37,62	180,50
HW DRILL PIPE	5,000		112,43	292,93

BHA seq: 12 BHA category: Drilling BHA description: 8 1/2" Coring assy 90 ft

BHA no: 12

String component	OD in	ID in	Length m	Acc length m
BIT, CORE	8,500		0,25	0,25
CORE BARREL	8,469	4,000	30,19	30,44
SAFETY JOINT	6,750		0,86	31,30
FLOAT SUB	6,750		0,50	31,80
DRIL COL	6,500	2,813	94,01	125,81
JAR	6,250	2,750	9,37	135,18
DRIL COL	6,500	2,813	37,62	172,80
HW DRILL PIPE	5,000		112,43	285,23

BHA seq: 13 BHA category: Drilling BHA description: 8 1/2" Coring assy 90 ft

BHA no: 13

String component	OD in	ID in	Length m	Acc length m
BIT, CORE	8,500		0,36	0,36
CORE BARREL	8,469	4,000	28,64	29,00
SAFETY JOINT	6,750		1,44	30,44
FLOAT SUB	6,750		0,92	31,36
DRIL COL	6,500	2,813	94,01	125,37
JAR	6,250	2,750	9,37	134,74
DRIL COL	6,500	2,813	37,62	172,36
HW DRILL PIPE	5,000		112,43	284,79

BHA seq: 14 BHA category: Drilling BHA description: 8 1/2" Coring assy 90 ft

BHA no: 14

String component	OD in	ID in	Length m	Acc length m
BIT, CORE	8,500		0,36	0,36
CORE BARREL	8,469	4,000	28,64	29,00
SAFETY JOINT	6,750		1,44	30,44
FLOAT SUB	6,750		0,92	31,36
DRIL COL	6,500	2,813	94,01	125,37
JAR	6,250	2,750	9,37	134,74
DRIL COL	6,500	2,813	37,62	172,36
HW DRILL PIPE	5,000		112,43	284,79

BHA seq: 15 BHA category: Drilling BHA description: 8 1/2" Coring assy 90 ft

BHA no: 15

String component	OD in	ID in	Length m	Acc length m
BIT, CORE	8,500		0,36	0,36
CORE BARREL	8,469	4,000	28,64	29,00
SAFETY JOINT	6,750		1,44	30,44
FLOAT SUB	6,750		0,92	31,36
DRIL COL	6,500	2,813	94,01	125,37

	DRIL COL	6,500	2,813	37,62	172,36
	HW DRILL PIPE	5,000		112,43	284,79

BHA seq: 16 BHA category: Drilling BHA description: 8 1/2" Drlg assy

BHA no: 16

String component	OD in	ID in	Length m	Acc length m
BIT	8,500		0,30	0,30
XO SUB	6,500	2,813	0,30	0,60
MWD TOOL	6,750		10,58	11,18
STABILIZER	8,400		0,54	11,72
MPT TOOL	6,750		2,83	14,55
XO SUB	6,750		0,65	15,20
BAT SONIC	6,750		6,19	21,39
STABILIZER	8,500		1,96	23,35
FLOAT SUB	6,750		0,70	24,05
DRIL COL	6,500	2,813	94,01	118,06
JAR	6,250	2,750	9,37	127,43
DRIL COL	6,500	2,813	37,62	165,05
HW DRILL PIPE	5,000		112,43	277,48

BHA seq: 17 BHA category: Drilling BHA description: Wipertrip

BHA no: 17

String component	OD in	ID in	Length m	Acc length m
BIT, TRI CONE	8,500		0,25	0,25
BIT SUB	6,440	2,750	0,92	1,17
DRILL COLLAR	6,500	2,813	9,40	10,57
STAB STRING	8,375	2,875	1,58	12,15
DRILL COLLAR	6,500	2,813	28,20	40,35
JAR	6,250	2,750	9,37	49,72
DRILL COLLAR	6,500	2,813	9,41	59,13
H W DRILL PIPE	5,000		112,43	171,56

BHA seq: 18 BHA category: Drilling BHA description: Wipertrip

BHA no: 18

String component	OD in	ID in	Length m	Acc length m
BIT, TRI CONE	8,500		0,25	0,25
BIT SUB	6,440	2,750	0,92	1,17
DRILL COLLAR	6,500	2,813	9,40	10,57
STAB STRING	8,375	2,875	1,58	12,15
DRILL COLLAR	6,500	2,813	28,20	40,35
JAR	6,250	2,750	9,37	49,72
DRILL COLLAR	6,500	2,813	9,41	59,13
H W DRILL PIPE	5,000		112,43	171,56

BHA seq: 19 BHA category: Drilling BHA description: Wipertrip

BHA no: 19

String component	OD in	ID in	Length m	Acc length m
BIT, TRI CONE	8,500		0,25	0,25
BIT SUB	6,440	2,750	0,92	1,17
DRILL COLLAR	6,500	2,813	9,40	10,57
STAB STRING	8,375	2,875	1,58	12,15
DRILL COLLAR	6,500	2,813	28,20	40,35
JAR	6,250	2,750	9,37	49,72
DRILL COLLAR	6,500	2,813	9,41	59,13
H W DRILL PIPE	5,000		112,43	171,56

BHA seq: 20 BHA category: Drilling BHA description: Cement stinger

BHA no: 20

String component	OD in	ID in	Length m	Acc length m
DP 3 1/2"	3,500	2,602	263,78	263,78
XO SUB	6,500	2,250	0,91	264,69
DP 5"	5,000			264,69

BHA seq: 21 BHA category: Drilling BHA description: 8 1/2" kick of assy for sidetrack

BHA no:

String component	OD in	ID in	Length m	Acc length m
BIT	8,500		0,28	0,28
SPERRYDR 6/7L 1,15GR	6,500	2,813	7,59	7,87

STABILIZER	7,750	2,813	2,17	11,94
XO SUB	6,750	2,813	0,65	12,59
MWD TOOL	6,750		10,58	23,17
XO SUB	6,750	2,813	0,54	23,71
MPT TOOL	6,750		2,83	26,54
FLOAT SUB	6,750		0,70	27,24
DRIL COL, NM	6,750	2,813	16,33	43,57
DRIL COL	6,500	2,813	28,20	71,77
JAR	6,250	2,750	9,40	81,17
HW DRILL PIPE	5,000		112,48	193,65

BHA report

Wellbore: 6608/10-008A

BHA seq: 1 BHA category: BHA description:

BHA no:

String component	OD in	ID in	Length m	Acc length m
BIT, PDC	8,500		0,28	0,28
SPERRYDR 6/7L 1,15GR	6,437	2,812	7,59	7,87
PONY COLLAR	6,750	2,812	1,90	9,77
STAB SPIRAL IB	6,750	2,812	2,17	11,94
SUB PIN X PIN	6,750	2,812	0,65	12,59
RLL MWD TOOL	6,750	1,920	7,89	20,48
MPT TOOL	6,750	1,920	6,06	26,54
FLOAT SUB	6,750	3,000	0,70	27,24
DRIL COL, NM	6,750	2,812	16,33	43,57
DRIL COL	6,500	2,812	28,20	71,77
JAR	6,500	2,812	9,40	81,17
HW DRILL PIPE	5,000	3,000	112,48	193,65

BHA seq: 2 BHA category: BHA description:

BHA no:

String component	OD in	ID in	Length m	Acc length m
BULL NOSE	8,000	2,750	0,35	0,35
CASING CUTTER	12,000		1,83	2,18
TOP SUB	10,000	3,000	0,91	3,09
DRILL COLLAR	8,000		84,28	87,37
X-OVER	8,000		0,91	88,28
H W DRILL PIPE	5,000		84,60	172,88

5.7.5 Drilling fluids program

Well: 6608/10-8 and 8A
Field: Stær
Rig: Stena Don

DRILLING FLUIDS PROGRAMME

HOLE SIZE	HOLE TVD MD	CASING SIZE	CASING TVD MD	MUD TYPE	MW [SG]	FV (Sec.)	10 sec. [Pa]	10 min. [Pa]	Fann 100 rpm	Fann 3 rpm	O / W ratio	YP / PV [Pa/cP]	API FL [ml]	HTHP FL [ml]	MBT [kg/m³]	pH	LGS [kg/m³]	TH	Glycol [%]	KCl [kg/m³]	Total Volume Old Volume New Volume Usage [m³]
36"	459 459	**30"**	459 459	SW / High visc. pills	1.03-1.35	> 100										8.5 - 9.1					422 0 422 247
				Comments:	*70 m³ of 1.60 g/cm³ kill mud was prepared prior to spud.*																
17 1/2"	1303 1303	**13 3/8"**	1290 1290	SW / High visc. pills	1.03 - 1.30	> 100										8.4 - 9.1					790 137 578 790
				Comments:	*1.30 sg mud left in hole at TD*																
8 1/2"	2650 2652			Aquadrill WBM	1.33 - 1.38			1.5 - 6		5 - 10				5 - 10		7.9 - 9.9	56 - 71	< 1200	4 - 5 - 2 - 4	140 - 100 - 100 - 50	1277 360 917 767
				Comments:																	
8 1/2" sidetrack	2540 2660			Aquadrill WBM	1.38 - 1.42			4 - 8		5 - 7				8.2 - 9.4		8.3-11.2	67 - 7 1	< 1200	4 - 5 - 2 - 4	140 - 100 - 100 - 50	585 510 75 183
				Comments:																	

5.7.6 Cement program

Well: 6608/10-8 and 8A
Field: Stær
Rig: Stena Don

CEMENT PROGRAMME

HOLE		CASING SHOE		TOC	VOLUME/ EXCESS	CEMENT SLURRY DESIGN										SPACER	DISPLACEMENT
SIZE	TVD MD	SIZE	TVD MD	TVD MD		Components	Lead [ltr/100kg]	Tail [ltr/100kg]	Density [SG]	Yield [ltr/100kg]	Stat. / Circ. Temp [°C]	Thickening time [hrs to 30 Bc]	API Free Water [%]	API Fluid loss [cc/30min]	24 hrs C. S. [psi]		Fluids and Rates
36"	459	**30"**	459	Seabed Seabed	Lead: 36,5 m³ Tail: 15 m³ 300% OH	Norcem "G" Cement (100 kg) Econolite NF-6 CaCl2 Liquid Seawater	 3,20 0,10 95.07	 0,10 4,35 44.01	Lead: 1.56 Tail: 1.95	Code STL10: L:129.42 Code STT10: T:75.06	 BHST: 6 BHCT: 6 	 L: > 6 T: 3-4	 N/A N/A	 N/A N/A	 L: 150 T: 400	2x string volumes Seawater	Seawater 1200 LPM
17 1/2"	1303	**18 3/4" WH assy x 13 3/8"**	1290	Seabed Seabed	Lead: 124 m³ Tail: 15 m³ 123% OH	Norcem "G" Cement (100 kg) HR-4L Econolite NF-6 SeaWater Fresh Water	 2,00 3.20 0.10 93.65 -	 - - 0.10 - 43.78	Lead: 1.56 Tail: 1.92	Code STL40: L:130.01 Code STTNT: T:74.93	 BHST: 42 BHCT: 30 	 L: > 6 T: 3 - 4	 1-2 1-2	 N/A N/A	 L: 300 T: 1500	1x Annulus volume Seawater	Seawater 3000 lpm
Plugging of reservoirs						Norcem "G" Cement (100 kg) CFR-3L HR-5L FDP-613LE+ NF-6 Drill water	 2,00 0,60 7,00 0,10 33,40		1,90			4	0	50	2800		
Kick off plug						Norcem "G" Cement (100 kg) FDP-613LE+ HR-5L NF-6 Drill water	 0,60 0,50 0,10 42,77		1,92			4	1,4		1800		
Open hole - 13 3/8" casing cement plug						Norcem "G" Cement (100 kg) NF-6 Sea water	 0,10 46,84		1,90			4			600		

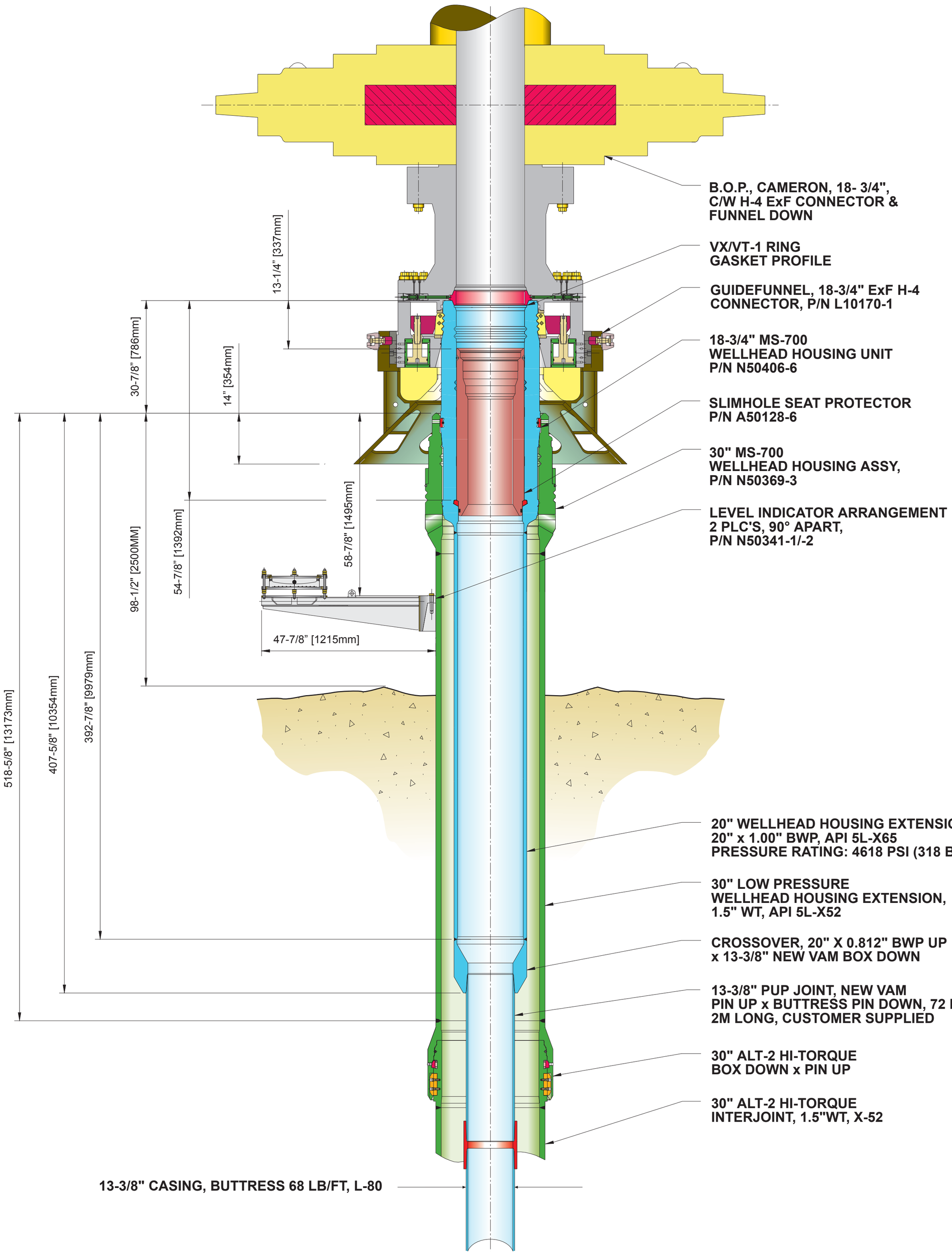
5.7.7 Wellhead system

Stena Don

Well 6608/10-8
‘Stær’

STATOIL

Stena Drilling



MS-700 Wellhead System
18-3/4” x 15,000 PSI

Concept AS

Drawing Number: N601021-1

ABB

ABB Oil, Gas and Petrochemicals

6 Appendics

App A Operational listing

Well 6608/10-8

Operations by section

Start first activity: 01.01.1980 00:00 **Start last activity: 13.08.2002 23:59**

Well: **6608/10-008**

Wellbore: 6608/10-008 INITIAL

Section: MOVE Start time: 21.12.2001 13:00 End time: 29.12.2001 12:30

Rig: STENA DON

Time from	Time to	Time used	Depth mMD	Act code	---- Status ---- During opr	End of opr	Description of activities
21.12.2001.13:00	15:30	2,5		MNMU	OK	OK	Released last shore line from OM Base at 13:00. Rig on contract. Sailed rig from OM Base to Horve fjorden.
21.12.2001.13:00	12:30	0,0		ZNON			
21.12.2001.15:30	00:00	8,5		MNMU	OK	OK	Took onboard spud equipment and bulk material from supply vessels.
22.12.2001.00:00	06:00	6,0		MNMU	OK	OK	Continued to take onboard spud equipment and bulk material from supply vessels.
22.12.2001.06:00	13:30	7,5		MNMU	OK	E FAIL	Continued to take onboard bulk (cement, bentonite and barite) from supply vessel.
22.12.2001.13:30	16:00	2,5		DERD	E FAIL	OK	Tested Nera satelite equipment.
22.12.2001.16:00	00:00	8,0		MNMU	OK	OK	Rig in transit from Horve fjorden to well location. Passed kvitsøy at 20:30 hrs. Picked up and made up 3 jnts 9 1/2" DC from deck during transit.
23.12.2001.00:00	06:00	6,0		MNMU	OK	OK	Rig in transit to well location. Position at 06:00 hrs N 59* 42', E 004* 09' Distanced sailed: 85 nm, distance to go 406 nm Avg speed: 5,5 knots. ETA 26.12.01 - 08:00 hrs
23.12.2001.06:00	00:00	18,0		MNMU	OK	OK	Rig in transit to well location
24.12.2001.00:00	06:00	6,0		MNMU	OK	OK	Rig in transit to well location. Position at 06:00 hrs N 61* 50', E 004* 05' Total distanced sailed 213 nm, distance to go 281 nm. Avg speed: 5,3 knots. ETA 26.12.01 - 12:00
24.12.2001.06:00	09:30	3,5		MNMU	OK	O FAIL	Rig in transit to well location. Deck cargo in well test area started to slide on the deck due to rig motion and lack of seafastning.
24.12.2001.09:30	20:00	10,5		DERD	O FAIL	OK	Reduced transit speed, changed rig heading to 310 deg and ballasted rig to survival draft. Moved and sea fastened deck cargo. (Sailed total 10,5 nm

							towards well location).
24.12.2001.21:00	00:00	3,0		MNMU	OK	OK	Continued transit to well location.
25.12.2001.00:00	06:00	6,0		MNMU	OK	OK	Rig in transit to well location. Total distanced sailed 284 nm, distance to go 223 nm. Avg speed: 4,4 knots, ETA 27.12.01 - 12:00 hrs.
25.12.2001.06:00	00:00	18,0		MNMU	OK	OK	Rig in transit to well location.
26.12.2001.00:00	06:00	6,0		MNMU	OK	OK	Rig in transit to well location. Position at 06:00 hrs: N63*17', E004*58* Slow speed last 24 hrs due to strong head wind (1,5 knots average) Total distance sailed 319 nm, distance to go 187 nm. Avg speed for total dist sailed 3,63 knots. ETA 28.12.01 20:00 hrs (with 3 knots speed).
26.12.2001.06:00	00:00	18,0		MNMU	OK	OK	Rig in transit to well location.
27.12.2001.00:00	06:00	6,0		MNMU	OK	OK	Rig in transit to well location. Position at 06:00 hrs N64*35', E 06*40' Total distance sailed 409 nm, distance to go 96 nm. Avg speed for total dist sailed 3,65 knots. ETA 28.12.01 06:00 hrs. Made up and racked CART tool and cement stand while in transit.
27.12.2001.06:00	00:00	18,0		MNMU	OK	OK	Rig in transit to well location.
28.12.2001.00:00	06:00	6,0		MNMU	OK	OK	Rig in transit to well location. Total distance sailed 506 nm, distance to go 4 nm. Avg speed for total dist sailed 3,7 knots. ETA 28.12.01 07:00 hrs. Picked up holeopener and 2 jnts 9 1/2" DC and M/U same. Mixed spud and displacement mud.
28.12.2001.06:00	07:00	1,0		MNMU	OK	OK	Rig in transit to well location. Ballasted rig to drilling draft.
28.12.2001.07:00	12:00	5,0		MNPU	OK	E FAIL	Deployed transponders for DP system. Commenced DP trials. Got poor quality on HPR signals. Troubleshot and tuned HPR system. Drilling dept worked on Hydraracker. Upper and lower trolley not synchronised.
28.12.2001.12:00	20:00	8,0		DERD	E FAIL	E FAIL	Continued with DP trials. Repaired fwd taut wire and ran same. DP trials completed at 20:20. Drilling dept continued to work on hydraracker.
28.12.2001.20:00	22:00	2,0		DERD	E FAIL	OK	Continued to work on hydraracker.
28.12.2001.22:00	00:00	2,0		DTDU	OK	OK	M/u BHA with 17 1/2" bit and 26x36" hole opener.
29.12.2001.00:00	02:30	2,5		DTDU	OK	E FAIL	Continued m/u bha and rih to 390 m.
29.12.2001.02:30	06:00	3,5	390,0	DERD	E FAIL	OK	Attempted to take check survey with Anderdrift. Not able to start mud pumps from Cyberbase. Troubleshot mud pump control system.
29.12.2001.06:00	07:00	1,0	390,0	DERD	E FAIL	OK	Troubleshot mud pump control system.
29.12.2001.07:00	09:00	2,0	390,0	DTDU	OK	OK	Took check surveys with Anderdrift tool and verified pulses after several attempts. Recieved 11 pulses which confirmed zero deg.
29.12.2001.09:00	10:30	1,5	400,0	DTDU	OK	OK	Tagged sea bed at 400 m RKB. ROV deployed 3 marker bouys on sea bed.
29.12.2001.10:30	12:30	2,0	400,0	DTDU	OK	OK	Recovered ROV. Replaced ROV transponder. Dived ROV. Verified string position with ROV. Repositioned marker bouys.
		190,5					

Section: 36" Start time: 29.12.2001 12:30 End time: 02.01.2002 13:00

Rig: STENA DON

Time from	Time to	Time used	Depth mMD	Act code	---- Status ---- During opr	End of opr	Description of activities
29.12.2001.12:30	00:00	11,5	443,0	DDRU	OK	OK	Drilled 17 1/2" x 36" from 400 m to 443 m, 1-2 ton WOB/90-130 rpm. Performed Anderdrift survey at 423 m, confirmed zero deg. Pumped high visc pills to clean hole.
29.12.2001.12:30	13:00	0,0		ZNON			
30.12.2001.00:00	03:00	3,0	451,0	DDRU	OK	OK	Cont drilling 17 1/2"x36" hole from 443 m to 451 m.
30.12.2001.03:00	06:00	3,0	451,0	DDRU	OK	OK	Prior to connection at 451 m experienced high torque while reaming . Worked string and back reamed from 451 m to 435 m to clean hole. Pumped high visc pills to clean hole.
30.12.2001.06:00	10:30	4,5	448,0	DDRU	OK	OK	Continued working string and reaming from 435 m to 424 m to clean hole. Ran back to bottom at 448 m.
30.12.2001.10:30	15:30	5,0	459,0	DDRU	OK	OK	Drilled 17 1/2" x 36" hole from 448 m to 459 m. Pumped high visc pills to clean hole. ROV verified TD mark on BHA at sea bed. Took survey with Anderdrift, 1,5 deg at 455 m.
30.12.2001.15:30	18:30	3,0	425,0	DCWK	OK	OK	Made wiper trip from 459 m to 425 m. Problems to break out DDM saver sub due to excessive torque created while drilling boulders.
30.12.2001.18:30	21:00	2,5	459,0	DCWK	OK	OK	Rih from 425 m. Took weight at 458 m. Washed 1 m fill to 459 m. Verified TD mark on BHA at sea bed using ROV.
30.12.2001.21:00	21:30	0,5	459,0	DCAU	OK	OK	Pumped 38 m3 high visc pill. Displaced hole with 63 m3 1,35 sg wbm.
30.12.2001.21:30	00:00	2,5		DTCU	OK	OK	Pooh with 36" bha. No drag. Had to use rig tongs to breake some dp and dc connections.
31.12.2001.00:00	04:00	4,0		DTCU	OK	OK	Continue pooh with bha. L/d 26"x36" hole opener assembly.
31.12.2001.04:00	06:00	2,0		CARU	OK	OK	Rig up to run 30" conductor.
31.12.2001.06:00	06:30	0,5		CARU	OK	OK	Continued rigging up to run 30" conductor.
31.12.2001.06:30	07:00	0,5		CARU	OK	OK	Held pre job safety meeting with involved personnel prior to run 30" conductor.
31.12.2001.07:00	11:00	4,0	62,0	CARU	OK	OK	Checked shoe valve for flow through. Ran 30"conductor to 62 m.
31.12.2001.11:00	13:30	2,5		CARU	OK	E FAIL	R/d 30" conductor handling equipment. P/u cement stinger and C.A.R.T.
31.12.2001.13:30	14:30	1,0		DERD	E FAIL	OK	Troubleshot problem on main lifting sylinders.
31.12.2001.14:30	16:30	2,0	62,0	CARU	OK	OK	Continued m/u C.A.R.T. Ran well head down to moonpool and installed slope indicators.
31.12.2001.16:30	00:00	7,5	459,0	CARU	OK	OK	Ran 30" conductor on 5" dp landing string from 62 m to at 400 m. Stabbed into 36" hole assisted by ROV. Continued rih. M/u cementing stand and circulated down last 9 m to td at 459 m, hole ok. Circulated two string volumes with sea water. ROV inspected slope indicators and confirmed 1 deg reading. Well head 2.7 m above sea bed.
01.01.2002.00:00	00:30	0,5	459,0	CSSU	OK	OK	Held pre job safety meeting with involved personnel prior to cement job. Pressure tested surface cmt lines to 100 bar for 5 min.
01.01.2002.00:30	01:30	1,0< TD>					

	ROVD OK		OK		Waited while ROV rectified problems with umbilical.			
01.01.2002.01:30		03:00	1,5	459,0	CSSU	OK	OK	Cemented 30" conductor. Mixed and pumped 36,5 m3 1,56 sg lead slurry followed by 15 m3 1,95 sg tail slurry. Displaced slurry with 10,7 m3 sea water.
01.01.2002.03:00		06:00	3,0	459,0	CSCW	OK	OK	Set down 26 mt weight. Held tension in landing string and WOC.
01.01.2002.06:00		12:00	6,0	459,0	CSCW	OK	OK	Continued waiting for cement to set up.
01.01.2002.12:00		13:00	1,0		CARU	OK	OK	Released CART from 30" well head and started to pooh. ROV checked well head slope indicators. Both showed 0,75 deg. angle. Confirmed 2,7 m stick up.
01.01.2002.13:00		13:30	0,5		CARU	OK	E FAIL	Fitting sheared on iron roughneck. Held pre job meeting and used rig tongs until cement stinger above 30" well head.
01.01.2002.13:30		14:30	1,0		DERD	E FAIL	OK	Repaired iron roughneck.
01.01.2002.14:30		16:30	2,0		CARU	OK	E FAIL	Continued pooh with landing string. Racked landing string and cement stinger. L/d CART.
01.01.2002.16:30		00:00	7,5		DERD	E FAIL	OK	Maintenance work on DDM. Changed out jaws on DDM torque wrench.
02.01.2002.00:00		02:00	2,0		DERD	E FAIL	OK	Continued changing out jaws on DDM torque wrench. Adjusted DDM thread compensator.
02.01.2002.02:00		03:00	1,0		CARU	OK	OK	L/d cementing stand. Inspected kelly valve for cement - ok.
02.01.2002.03:00		03:30	0,5		DTDU	OK	OK	Held pre-job meeting prior to m/u 17 1/2" bha.
02.01.2002.03:30		06:00	2,5		DTDU	OK	OK	M/u 17 1/2" bha. Loaded MWD tool.
02.01.2002.06:00		11:30	5,5	455,0	DTDU	OK	OK	Continued m/u 17 1/2" bha. Stabbed into 30" well head assisted by ROV. Rih. Washed down last stand and tagged cement at 455 m.
02.01.2002.11:30		13:00	1,5	460,0	CDDU	OK	OK	Drilled cement from 455 m, shoe at 459 m and cleaned out rat hole. Reamed shoe several times - ok.
			96,5					

Section: 17 1/2" Start time: 02.01.2002 13:00 End time: 31.01.2002 21:00

Rig: STENA DON

					---- Status ----		
Time from	Time to	Time used	Depth mMD	Act code	During opr	End of opr	Description of activities
02.01.2002.13:00	00:00	11,0	632,0	DDRU	OK	OK	Drilled and surveyed 17 1/2" hole from 460 m to 632 m. Swept hole every 15 m with 7 m3 high visc pill.
02.01.2002.13:00	21:00	0,0		ZNON			
03.01.2002.00:00	06:00	6,0	809,0	DDRU	OK	OK	Drilled and surveyed 17 1/2" hole from 632 m to 809 m. Swept hole with 7 m3 high visc pill every 15 m.
03.01.2002.06:00	00:00	18,0	1246,0	DDRU	OK	OK	Drilled and surveyed 17 1/2" hole from 809 m to 1246 m. Parameters: Wob 5-10 mt, RPM 100-175, 4525 lpm, 220 bar, 12-16 kNm torque. Swept hole with 7 m3 high visc pill every 15 m.
04.01.2002.00:00	03:00	3,0	1303,0	DDRU	OK	OK	Drilled and surveyed 17 1/2" hole from 1246 m to 1303 m. Parameters: Wob 5-10 mt, RPM 100-175, 4525 lpm, 225 bar, 12-16 kNm torque. Swept hole with 7 m3 high visc pill every 15 m.

04.01.2002.03:00	03:30	0,5	1303,0	DCAU	OK	E FAIL	Circulated hole clean using sea water.
04.01.2002.03:30	06:00	2,5	1303,0	DERD	E FAIL	OK	Attempted to break drilling stand with top drive torque wrench. R/d torque wrench. Meanwhile circulated sea water.
04.01.2002.06:00	08:00	2,0	1275,0	DERD	E FAIL	OK	Attempted to break out drilling stand with top drive - no success. R/u and broke same using rig tongs.
04.01.2002.08:00	10:00	2,0	1303,0	DCAU	OK	OK	Ran back to bottom at 1303 m. Pumped 40 m3 high visc pill. Displaced pill and filled hole with 1,30 sg. Rov checked returns during displacement.
04.01.2002.10:00	18:30	8,5		DTCU	OK	OK	Pooh with 17 1/2" bha from 1303 m. Hole ok. Racked bha in derrick.
04.01.2002.18:30	21:00	2,5		CSSU	OK	OK	M/u cementing head and racked back in derrick.
04.01.2002.21:00	22:00	1,0		CARU	OK	E FAIL	Cleared rig floor and r/u to run 13 3/8" casing.
04.01.2002.22:00	23:30	1,5		DERD	E FAIL	OK	Troubleshot and repaired hydraulic supply to Frame 3 casing elevator.
04.01.2002.23:30	00:00	0,5		CARU	OK	OK	R/u to run 13 3/8" casing.
05.01.2002.00:00	01:00	1,0		CARU	OK	OK	Continued rigging up to run 13 3/8" casing.
05.01.2002.01:00	01:30	0,5		CARU	OK	OK	Held pre-job safety meeting with crew prior to run 13 3/8" casing.
05.01.2002.01:30	06:00	4,5	156,0	CARU	OK	OK	M/u 13 3/8" shoe joint, intermittent joint and float collar joint. Checked shoe and float for flow through. Thread locked the three first connections and ran in hole to 156 m.
05.01.2002.06:00	09:00	3,0	300,0	CARU	OK	E FAIL	Continued running 13 3/8" casing from 156 m to 300 m. Filled every 5 joints with sea water as rih.
05.01.2002.09:00	10:00	1,0		DERD	E FAIL	OK	Investigated reson for complete shutdown of HPU system and reset same.
05.01.2002.10:00	16:30	6,5	880,0	CARU	OK	OK	Rih with 13 3/8" casing from 300 m to 880 m. Filled every 5 joints with sea water as rih.
05.01.2002.16:30	17:00	0,5	880,0	CARU	OK	OK	R/d 13 3/8" casing handling equipment. R/u for 18 3/4" well head housing.
05.01.2002.17:00	19:00	2,0	893,0	CARU	OK	OK	P/u 18 3/4" well head housing. M/u and checked housing.
05.01.2002.19:00	22:00	3,0	1279,0	CARU	OK	OK	Rih with 13 3/8" casing on 5" DP landing string from 893 m to 1279 m. Filled landing string with sea water as rih.
05.01.2002.22:00	23:00	1,0	1290,0	CARU	OK	OK	Landed 18 3/4" housing in 30" well head, observed by ROV. Set down 5 mt and took 25 mt over pull to confirm lock down. Slacked off weight and held 4 mt pull on landing string.
05.01.2002.23:00	00:00	1,0	1290,0	CCCU	OK	OK	Circulated sea water prior to cement 13 3/8" casing. Observed returns at well head with ROV. Held pre-job meeting with involved personnel prior to cementing job.
06.01.2002.00:00	01:00	1,0	1290,0	CCCU	OK	OK	Circulated sea water prior to cement 13 3/8" casing.
06.01.2002.01:00	03:30	2,5	1290,0	CSOD	OK	O FAIL	Attempted to pressure test surface lines to 200 bar prior to cmt job - leaking. Installed second low torque valve on cement head. Checked all connections and tested surface lines to 200 bar for 5 min.
06.01.2002.03:30	05:30	2,0	1290,0	CSOD	O FAIL	OK	Attempted to cement 13 3/8" casing. Job abandoned due to mixing problems. Mixed and pumped a total of 11,5 m3 slurry. Unable to achieve correct density.
06.01.2002.05:30	06:00	0,5	1290,0	CSOD	O FAIL	OK	Displaced cement slurry with 10 m3 sea water from cement unit. Circulated cement down landing string/ 13 3/8" casing with rig pumps. Bumped bottom wiper plug with 110 bar. Continued

							circulating cement out of hole.
06.01.2002.06:00	08:00	2,0	1290,0	CSOD	O FAIL	OK	Continued circ cement out of hole after aborted cement job.
06.01.2002.08:00	14:00	6,0	1290,0	CSOD	O FAIL	OK	Circ hole with seawater while checking cement unit and preparing for new cement job.
06.01.2002.14:00	16:30	2,5	1290,0	CSOD	O FAIL	OK	Mixed and pumped 7 m3 1,56 sg cement slurry through reverse circ line to test cement unit - ok. Attempted to cement 13 3/8" casing. Aborted due to problems after pumping 6,6 m3.
06.01.2002.16:30	18:00	1,5	1290,0	CSOD	O FAIL	OK	Circ cement out of hole after aborted cement job. Cementers out of working hours.
06.01.2002.18:00	00:00	6,0	1290,0	CSOD	O FAIL	OK	Circ hole with sea water while waiting on cementers coming from town.
07.01.2002.00:00	03:30	3,5	1290,0	CSOD	O FAIL	OK	Continued circ hole with sea water while planning for cement job.
07.01.2002.03:30	04:00	0,5	1290,0	CSOD	O FAIL	OK	Circ hole with sea water while performing pre-job meeting with involved personnel prior to cement job.
07.01.2002.04:00	04:30	0,5	1290,0	CSOD	O FAIL	OK	Prepared and lined up to pump cement.
07.01.2002.04:30	06:00	1,5	1290,0	CSSU	OK	OK	Mixed and pumped lead slurry, 1,56 sg, 15 bar, 1000 lpm. 80 m3 pumped at 0600 hrs.
07.01.2002.06:00	08:30	2,5	1290,0	CSSU	OK	OK	Continued mixing and pumping 124 m3, 1,56 sg lead slurry followed by 15 m3 1,92 sg tail slurry. Dropped dart and displaced cement with 4,5 m3 sea water from cement unit and 66,6 m3 seawater with rig pumpsat 3000 lpm, 25 bar. Displacement operation aborted 20 stks prior to bumping plug due to 18 3/4" well head housing suddenly was lifted approximately 7 m above 30" well head. Set down casing string weight and landed 18 3/4" housing in 30" well head.
07.01.2002.08:30	13:00	4,5	1290,0	CSCW	OK	OK	Waited on cement.
07.01.2002.13:00	15:30	2,5		CARU	OK	OK	Released CART from 18 3/4"housing. Pooh and l/d CART.
07.01.2002.15:30	00:00	8,5		DTPU	OK	OK	L/d 9 1/2" dc, mwd tool and cement stand from derrick.
08.01.2002.00:00	06:00	6,0		BBWW	OK	OK	WOW to run BOP and riser. Meanwhile performed general rig maintenance.
08.01.2002.06:00	00:00	18,0		BBWW	OK	OK	WOW to ron BOP and riser. Meanwhile serviced hydra racker, top drive, pipe handler and travelling assembley. M/u hang off stand and racked in derrick. Proceeded with PM and maintenance.
09.01.2002.00:00	06:00	6,0		BBWW	OK	OK	WOW to ron BOP and riser. Meanwhile performed PM and maintenance.
09.01.2002.06:00	00:00	18,0		BBWW	OK	OK	WOW to run BOP and riser. Meanwhile performed general rig maintenance and PM's. De-ballasted rig to survival draft, 18.5 m. Experienced hard wave-pounding. Ballasted rig to 20 m draft.
10.01.2002.00:00	06:00	6,0		BBWW	OK	OK	WOW to run BOP and riser. Meanwhile performed general rig maintenance and PM's. Ballasted rig to 20,8 m draft.
10.01.2002.06:00	00:00	18,0		BBWW	OK	OK	WOW to run BOP and riser. Meanwhile performed general rig maintenance and PM's. Held planning meetings for running BOP with both day and night shift.
11.01.2002.00:00	06:00	6,0		BBWW	OK	OK	WOW to run BOP and riser. Meanwhile performed general rig maintenance and PM's.
11.01.2002.06:00	00:00	18,0		BBWW	OK	OK	WOW to run BOP and riser. Meanwhile performed general rig maintenance and PM's.
12.01.2002.00:00	06:00	6,0		BBWW	OK	OK	WOW to run BOP and riser. Meanwhile PU 6 1/2"

							DC's and jar.
12.01.2002.06:00	12:00	6,0		BBWW	OK	OK	WOW to run BOP and riser. Meanwhile PU 6 1/2" DC's and laid down casing power scope.
12.01.2002.12:00	13:00	1,0		BBOU	OK	E FAIL	Performed risk assessment and toolbox meeting for running BOP and riser. Meanwhile tuned active heave compensator.
12.01.2002.13:00	15:00	2,0		RMDD	E FAIL	OK	Tuned active heave compensator. Modified software to include heave compensator in depth reference system.
12.01.2002.15:00	18:00	3,0		BBRU	OK	OK	Rigged up riser-head on Hydra racker and changed bails.
12.01.2002.18:00	21:00	3,0		BBRU	OK	OK	Rigged up to run riser. Installed riser gimble and spider.
12.01.2002.21:00	22:00	1,0		BBRU	OK	OK	Picked up and ran 40' riser joint.
12.01.2002.22:00	00:00	2,0		BBRU	OK	E FAIL	Rigged up riser yoke on port crane. Attempted to turn yoke for picking up 65' riser joint, neg.
13.01.2002.00:00	02:00	2,0		BBRU	OK	OK	Moved BOP from deck to BOP carrier. Secured BOP with lock bolts. Meanwhile investigated problems with riser yoke.
13.01.2002.02:00	06:00	4,0		BBOD	E FAIL	OK	Investigated problems with operating riser yoke. Failure found in hydraulic valve in top of crane boom.
13.01.2002.06:00	16:00	10,0		BBOD	E FAIL	OK	Awaited spare parts to arrive with helicopter, for repairing hydraulic valve in crane boom. Meanwhile moved BOP from BOP carrier back to deck due to upcoming weather.
13.01.2002.16:00	19:30	3,5		BBOD	E FAIL	OK	Repaired hydraulic valve in crane boom. Installed riser yoke and function tested same, ok.
13.01.2002.19:30	00:00	4,5		BBWW	OK	OK	WOW to run BOP and riser.
14.01.2002.00:00	06:00	6,0		BBWW	OK	OK	WOW to run BOP and riser.
14.01.2002.06:00	17:30	11,5		BBWW	OK	OK	WOW to run BOP and riser.
14.01.2002.17:30	19:00	1,5		BBRU	OK	OK	Moved BOP from deck to BOP carrier. Meanwhile MU 65' and 45' riser joints.
14.01.2002.19:00	19:30	0,5		BBRU	OK	OK	Skidded BOP under rotary.
14.01.2002.19:30	22:00	2,5		BBRU	OK	OK	MU riser to BOP and torqued up connection bolts. Secured mux cables and BOP hotline line. Aborted further operations due to upcoming weather.
14.01.2002.22:00	00:00	2,0		BBWW	OK	OK	WOW to run BOP and riser.
15.01.2002.00:00	06:00	6,0		BBWW	OK	OK	WOW to run BOP and riser.
15.01.2002.06:00	09:00	3,0		BBWW	OK	OK	WOW to run BOP and riser.
15.01.2002.09:00	11:00	2,0	66,0	BBRU	OK	OK	Held tool-box meeting and ran BOP through splash zone (09:25). PU and ran 65' riser joint.
15.01.2002.11:00	12:30	1,5	66,0	BBRU	OK	OK	RU and pressure tested kill and choke lines to 30/280 bar 5/10 min. Pressure tested conduite lines to 30/345 bar 5/10 min.
15.01.2002.12:30	17:30	5,0	205,0	BBRU	OK	OK	PU and ran 7 joints of 65' riser.
15.01.2002.17:30	19:30	2,0	205,0	BBRU	OK	OK	RU and pressure tested kill and choke lines to 30/280 bar 5/10 min. Pressure tested conduite lines to 30/345 bar 5/10 min.
15.01.2002.19:30	22:30	3,0	284,0	BBRU	OK	E FAIL	PU and ran 4 joints of 65' riser. Unable to proceed with operation due to problems with spider locking dogs.
15.01.2002.22:30	00:00	1,5	284,0	BBOD	E FAIL	OK	Investigated problem and found spider piston base plate bent. Repaired same.
16.01.2002.00:00	00:30	0,5	284,0	BBOD	E FAIL	OK	Continued to repair base plate on riser spider piston.
16.01.2002.00:30	03:30	3,0	340,0	BBRU	OK	OK	PU and ran 3 joints of 65' riser.

16.01.2002.03:30	05:00	1,5	340,0	BBRU	OK	E FAIL	RU for pressure testing kill, choke and conduite lines. Unable to fit the test plug for conduite line.
16.01.2002.05:00	06:00	1,0	340,0	BBOD	E FAIL	OK	Troubleshot on conduite line test plug. Pin end on conduite line on riser joint bent. Commenced changing out riser joint.
16.01.2002.06:00	08:00	2,0	340,0	BBOD	E FAIL	OK	Changed out damaged 65' riser joint.
16.01.2002.08:00	09:30	1,5	340,0	BBRU	OK	OK	RU and pressure tested kill and choke lines to 30/280 bar 5/10 min. Pressure tested conduite lines to 30/345 bar 5/10 min.
16.01.2002.09:30	11:30	2,0	340,0	BBRU	OK	OK	PU and MU slip joint.
16.01.2002.11:30	12:00	0,5	358,0	BBRU	OK	OK	PU and MU landing joint.
16.01.2002.12:00	13:00	1,0	362,0	BBRU	OK	OK	Opened compensator, Olmstead valve on forward cylinder sticking. Ran in to required height for installing goose necks.
16.01.2002.13:00	17:30	4,5	362,0	BBRU	OK	OK	Installed goose necks for kill, choke and conduite lines.
16.01.2002.17:30	19:00	1,5	362,0	BBRU	OK	OK	Flushed lines and pressure tested kill and choke lines to 30/345 bar 5/10 min. Pressure tested Conduite lines to 30/345 bar 5/10 min.
16.01.2002.19:00	22:00	3,0	362,0	BBRU	OK	OK	Installed mux cable clamp and safety slings to kill, choke and conduite lines.
16.01.2002.22:00	00:00	2,0	362,0	BBRU	OK	OK	Installed riser tensioners and mux cable saddles
17.01.2002.00:00	02:00	2,0	362,0	BBRU	OK	OK	Continued to install mux cable saddles.
17.01.2002.02:00	04:00	2,0	362,0	BBRU	OK	OK	Tensioned up riser tensioners and initiated tension cylinders.
17.01.2002.04:00	04:30	0,5	362,0	BBRU	OK	OK	Initiated active hiv compensator and verified system set up.
17.01.2002.04:30	05:00	0,5	362,0	BBRU	OK	E FAIL	Moved rig to 5 m off location and verified active hiv compensator operating in correct direction, using well head as reference mark.
17.01.2002.05:00	06:00	1,0	362,0	RMRD	E FAIL	OK	Moved rig to 10 m off location. Commisioned and fine tuned active hiv compensator system.
17.01.2002.06:00	09:30	3,5	362,0	RMRD	OK	OK	Continued commisioning and adjustment of active heave compensator system.
17.01.2002.09:30	10:00	0,5	362,0	BBRU	OK	O FAIL	Prepared and Landed BOP on wellhead with active compensator. Set down 50 tons on wellhead. BOP was lifted off wellhead when active compensator was closed.
17.01.2002.10:00	11:30	1,5	362,0	BBRD	O FAIL	OK	Stena and Hydralift evaluated situation and discussed landing procedure. landed BOP with active heave compensator.
17.01.2002.11:30	13:30	2,0	362,0	BBRU	OK	OK	Set down 40 ton. Performed 50 tonn overpull test. Pressure tested WH connector / casing to 280 Bar / 15 min.
17.01.2002.13:30	14:00	0,5	362,0	BBRU	OK	OK	Held tool box meeting. Unlocked and stroked out slip joint.
17.01.2002.14:00	14:30	0,5	362,0	BBRU	OK	OK	Performed emergency disconnect test with casing shear ram and blind shear ram closing sequence. All functions were activated and the LMRP disconnected after 42 sec. Performed operational checks prior to re-latching LMRP.
17.01.2002.14:30	16:30	2,0	362,0	BBRU	OK	OK	Closed slip joint and locked same. Positioned rig. Landed LMRP. Performed 30 ton overpull test, ok.
17.01.2002.16:30	18:00	1,5	362,0	BBRU	OK	OK	Unlocked and stroke out slip joint. Laid down riser landing joint.
17.01.2002.18:00	23:00	5,0		BBRU	OK	OK	Installed diverter and diverter control block.
17.01.2002.23:00	00:00	1,0		BBRU	OK	OK	Rigged down riser handling equipment and hydraracker riser guide head.

18.01.2002.00:00	02:00	2,0		BBRU	OK	OK	Continued to rig down hydraracker riser guide head.
18.01.2002.02:00	05:30	3,5		BBRU	OK	OK	Changed bails and elevator. Installed bail knuckles and rotators.
18.01.2002.05:30	06:00	0,5		BBRU	OK	OK	Installed mouse holes.
18.01.2002.06:00	07:00	1,0		BBRU	OK	OK	Continued to clear drill floor.
18.01.2002.07:00	10:00	3,0	228,0	DTDU	OK	OK	Made up and RIH with 12 1/4" BHA to 228 m.
18.01.2002.10:00	12:00	2,0	228,0	BBDU	OK	OK	Function tested diverter system. Function tested pipe shear ram on blue and yellow pod and from acoustic panel.
18.01.2002.12:00	15:30	3,5	1150,0	DTDU	OK	OK	RIH with 12 1/4" BHA on 5" DP to 1150 m.
18.01.2002.15:30	18:00	2,5	1150,0	BBDU	OK	OK	Flushed kill and choke lines. Pressure tested choke/kill line LMRP mini connectors to 30/280 bar for 5/10 min.
18.01.2002.18:00	19:30	1,5	1150,0	BBDU	OK	OK	Pressure tested LMRP connector to 30/280 bar for 5/10 min.
18.01.2002.19:30	21:00	1,5	1150,0	BBDU	OK	OK	Function tested BOP on yellow and blue pods.
18.01.2002.21:00	22:00	1,0	1150,0	DDOU	OK	OK	Performed choke drill with crew.
18.01.2002.22:00	23:00	1,0	1150,0	BBDU	OK	OK	Performed acoustic function test on BOP. Operated LPR and UPR.
18.01.2002.23:00	00:00	1,0	1177,0	DTDU	OK	OK	Washed down from 1150 m to 1177 m with 3000 lpm.
19.01.2002.00:00	02:00	2,0	1260,0	DTDU	OK	OK	Continued to wash down with 3000 lpm. Tagged cmt / wiper plug at 1260 m with 5 ton.
19.01.2002.02:00	06:00	4,0	1288,0	CDDU	OK	OK	Drilled wiper plugs, float and hard cement from 1260 m to 1288 m. Drilling parameters: WOB 2-4 tons, 60-80 RPM, 3000 LPM, 116 bar.
19.01.2002.06:00	10:00	4,0	1303,0	CDDU	OK	OK	Drilled shoe track and cleaned out rathole.
19.01.2002.10:00	10:30	0,5	1306,0	DDRU	OK	OK	Drilled 3 m new formation from 1303 m to 1306 m.
19.01.2002.10:30	12:00	1,5	1306,0	DCAU	OK	OK	Pumped 32 m3 hivis pill and circulated hole clean. Flow checked, ok.
19.01.2002.12:00	18:00	6,0		DTAK	OK	OK	POOH with 12 1/4" BHA.
19.01.2002.18:00	18:30	0,5		DTAK	OK	OK	Cleared rig floor.
19.01.2002.18:30	21:30	3,0		DTAK	OK	O FAIL	M/U 6 3/4" MWD assembly. Tested and programed MWD tools. Attempted to make up bit to NB stab, no go. 4 1/2" Reg connection on bit and 4 1/2" IF connection on NB stab.
19.01.2002.21:30	22:00	0,5		DEOD	O FAIL	OK	Broke off and made up new stabilizer and x-over sub.
19.01.2002.22:00	00:00	2,0		DTAK	OK	OK	M/U 8 1/2 bit and RIH with BHA.
20.01.2002.00:00	00:30	0,5	135,0	DTAK	OK	OK	Continued RIH with 8 1/2" BHA to 135 m.
20.01.2002.00:30	02:00	1,5	135,0	DTAK	OK	O FAIL	Dressed and installed PS-30 Slips. Lost 8"adjustable spanner in hole.
20.01.2002.02:00	03:00	1,0	135,0	FIJD	O FAIL	OK	Removed PS-30 slips from rotary.
20.01.2002.03:00	05:00	2,0	135,0	FIJD	O FAIL	OK	POOH with 8 1/2" BHA.
20.01.2002.05:00	06:00	1,0		FIJD	O FAIL	OK	Connected to MWD BAT tool to stop data sampling. Not able to get communication with tool.
20.01.2002.06:00	07:30	1,5		FIJD	O FAIL	OK	Racked back MWD tool.
20.01.2002.07:30	09:00	1,5		FIJD	O FAIL	OK	M/U 9 1/4" magnet and 4 stds 5" HWDP.
20.01.2002.09:00	13:00	4,0	1288,0	FIJD	O FAIL	OK	RIH w/magnet on 5" dp to 1288 m.
20.01.2002.13:00	14:00	1,0	1306,0	FIJD	O FAIL	OK	Washed down last stand with 3800 lpm/100 bar. Worked magnet and tagged bottom with 4 ton.
20.01.2002.14:00	15:30	1,5	1306,0	FIJD	O FAIL	OK	R/U PS 30 slips.

20.01.2002.15:30	21:00	5,5		FIJD	O FAIL	OK	POOH with 5" DP and magnet assy.
20.01.2002.21:00	21:30	0,5		FIJD	O FAIL	OK	Inspected magnet and laid out same. No fish recovered.
20.01.2002.21:30	23:30	2,0		FIJD	O FAIL	E FAIL	M/U 12 1/4" rock bit and junk basket assembly. RIH with same.
20.01.2002.23:30	00:00	0,5		DEOD	E FAIL	OK	Damaged indicator on hydraracker tail arm. Repaired same.
21.01.2002.00:00	00:30	0,5		DEOD	E FAIL	OK	Continued to repair indicator on hydraracker tail arm.
21.01.2002.00:30	01:30	1,0	60,0	FIJD	O FAIL	OK	Continued to make up and RIH with 12 1/4" BHA to 60 m.
21.01.2002.01:30	02:30	1,0	90,0	FIJD	O FAIL	OK	Dressed PS-30 slips to run 6 1/4" jar. Ran stnd with 6 1/4"Jar and re-dressed PS-30 slips.
21.01.2002.02:30	03:00	0,5	230,0	FIJD	O FAIL	OK	Continued to make up and RIH with 12 1/4" BHA to 230 m.
21.01.2002.03:00	03:30	0,5	230,0	FIJD	O FAIL	OK	Changed out PS-30 insert carriers to run 5" DP/HWDP.
21.01.2002.03:30	06:00	2,5	866,0	FIJD	O FAIL	OK	RIH with 12 1/4" BHA on 5" DP to 866 m
21.01.2002.06:00	08:00	2,0	1294,0	FIJD	O FAIL	OK	RIH with 12 1/4" rock bit and junk basket assembly to 1294 m.
21.01.2002.08:00	10:30	2,5	1315,0	FIJD	O FAIL	OK	Washed down with 500 lpm and tagged bottom at 1306 m. Drilled and worked junk basket from 1306 m to 1315 m. Parameters: 4500 lpm / 230 bar, torque 2 - 5 kNm, 40-50 RPM
21.01.2002.10:30	17:30	7,0		FIJD	O FAIL	OK	POOH with 12 1/4" junk basket assembly. Recovered adjustable spanner from junk basket.
21.01.2002.17:30	18:00	0,5		FIJD	O FAIL	OK	Cleared rig floor.
21.01.2002.18:00	21:00	3,0		EECU	OK	E FAIL	Held pre-job meeting. M/U 90 ft core barrel and racked back same in derrick.
21.01.2002.21:00	21:30	0,5		BBRD	E FAIL	OK	Held pre-job meeting to pull BOP. Lost pressure in blue and yellow conduit line at 08:00 hrs. Not able to operate any BOP functions.
21.01.2002.21:30	00:00	2,5		BBRD	E FAIL	OK	Prepared to pull BOP.
22.01.2002.00:00	04:30	4,5		BBRD	E FAIL	OK	Changed to 750 ton bails and rigged up hydraracker riser head assembly. Launched ROV and confirmed LMRP in latch position and verified hot stab function ok.
22.01.2002.04:30	06:00	1,5		BBRD	E FAIL	OK	Cleared rig floor. M/U Diverter running tool. Started to install riser gimble and spider.
22.01.2002.06:00	07:00	1,0		BBRD	E FAIL	OK	Installed riser spider and gimbal.
22.01.2002.07:00	08:30	1,5		BBRD	E FAIL	OK	Pulled and laid down diverter.
22.01.2002.08:30	09:30	1,0		BBRD	E FAIL	OK	Installed riser saddle on catwalk tolley.
22.01.2002.09:30	11:00	1,5		BBRD	E FAIL	OK	Picked up riser landing joint and M/U same.
22.01.2002.11:00	12:00	1,0		BBRD	E FAIL	OK	Collapsed slip joint and locked same. Nippled down control lines.
22.01.2002.12:00	13:00	1,0		BBRD	E FAIL	OK	Installed hot stab with ROV. Unlatched BOP and pulled clear. Moved rig 40 m off location
22.01.2002.13:00	21:30	8,5		BBRD	E FAIL	OK	Nippled down tensioners, choke, kill, booster and conduit coflexips.
22.01.2002.21:30	00:00	2,5		BBRD	E FAIL	OK	Pulled and L/D riser handling joint and slip joint.
23.01.2002.00:00	01:00	1,0		BBRD	OK	OK	Removed slip jnt from aft trolley. Installed riser handling yoke to port crane.
23.01.2002.01:00	06:00	5,0		BBRD	OK	OK	Pulled BOP and riser. (Pulled 7 out of 17 jnts)
23.01.2002.06:00	11:00	5,0		BBDD	E FAIL	OK	Continued to pull riser and BOP. Laid out same.

23.01.2002.11:00	12:00	1,0	BBDD	E FAIL	OK	Pulled BOP through splash zone. Secured in guiding system.
23.01.2002.12:00	15:00	3,0	BBDD	E FAIL	OK	Retracted acoustic arms. Landed BOP on carrier at 12:45 hrs. Nippled down BOP.
23.01.2002.15:00	17:00	2,0	BBDD	E FAIL	OK	Skidded BOP to park position in moon pool and secured same.
23.01.2002.17:00	00:00	7,0	BBDD	E FAIL	OK	Installed hotline to BOP. Trouble shot and repaired BOP. Removed booster / choke / kill and conduite swivels from lines.
24.01.2002.00:00	06:00	6,0	BBDD	E FAIL	OK	Continued with repair to BOP and carried out modifications to same. Removed swivels from booster / choke / kill and conduite lines.
24.01.2002.06:00	00:00	18,0	BEDD	E FAIL	OK	Continued repair to BOP and carried out modifications to same. Completed hot line modification. Tested same to 200 bar. Replaced one pod accumulator for blue pod. Installed subsea flowmeter.
25.01.2002.00:00	06:00	6,0	BEDD	E FAIL	OK	Continued repair to BOP and carried out modifications to same. Bled accumulators to surface pressure. Pressured up pilot system and bled through same.
25.01.2002.06:00	10:30	4,5	BEDD	E FAIL	OK	Continued repair to BOP and carried out modifications to same. Bled through BOP pilot system.
25.01.2002.10:30	11:00	0,5	BEDD	E FAIL	OK	Transfered BOP from carrier to test area. Secured same.
25.01.2002.11:00	00:00	13,0	BEDD	E FAIL	OK	Continued repair to BOP and carried out modifications to same. Removed flex joint conduit lines. Installed test jumper hoses. Removed swivels from moonpool conduit lines. Secured same. Commenced function test of BOP through both pods.
26.01.2002.00:00	06:00	6,0	BEDD	E FAIL	OK	Continued repair to BOP and carried out modifications to same. Continued function test of BOP through both pods. Installed ROV isolation valve and gauge for subsea accumulator bottles.
26.01.2002.06:00	10:00	4,0	BEDD	E FAIL	OK	Continued installing gauge for subsea accumulator bottles.
26.01.2002.10:00	14:00	4,0	BEDD	E FAIL	OK	Installed test pipe in BOP. Prepared for pressure testing.
26.01.2002.14:00	20:00	6,0	BBDU	OK	OK	Performed periodic 14 days BOP pressure test, 21/ 324 bar for 5/ 10 min on blue pod.
26.01.2002.20:00	00:00	4,0	BEDD	E FAIL	E FAIL	Removed test pipe. Tested shear ram. Prepared BOP for transfer to carrier.
27.01.2002.00:00	06:00	6,0	BEDD	E FAIL	OK	Observed leak on 2" check valve on blue conduit line. Trouble shot and changed out same. Commenced testing new check valve.
27.01.2002.06:00	08:30	2,5	BEDD	E FAIL	OK	Completed tested new installed check valve on blue conduit line
27.01.2002.08:30	19:00	10,5	BEDD	E FAIL	OK	Transfered BOP from test area to BOP carrier. Secured same. Charged accumulator bottles. Repaired pipe work for hot line isolation valve. Tested same.
27.01.2002.19:00	20:30	1,5	BEDD	E FAIL	E FAIL	Conducted prejob safety meeting. Skidded BOP under rotary. Nippled up double of marine riser to BOP.
27.01.2002.20:30	21:30	1,0	BEDD	E FAIL	OK	Attempted to repair moonpool riser torque tool.

							Changed out same.
27.01.2002.21:30	23:00	1,5		BEDD	E FAIL	OK	Torqued up riser to BOP. Installed bulls eyes. Secured mux control cables.
27.01.2002.23:00	00:00	1,0	50,0	BEDD	E FAIL	OK	Ran BOP through splash zone on double riser to 50 m. 2 jts run, 15 jts remaining. RU to fill up and test conduit and choke/ kill lines.
28.01.2002.00:00	02:30	2,5	50,0	BEDD	E FAIL	OK	Tested lines to 30/ 280 bar. Problems with ice plugs in test lines. Also possible problem with trapped air in test line at coil tbg manifold.
28.01.2002.02:30	06:00	3,5	103,0	BEDD	E FAIL	OK	Ran BOP on marine riser to 103 m. Total 5 jts run, 12 jts remaining.
28.01.2002.06:00	09:00	3,0	157,0	BEDD	E FAIL	OK	Ran BOP on marine riser to 283 m. Total 8 joints run, 9 jts remaining.
28.01.2002.09:00	11:00	2,0	157,0	BEDD	E FAIL	OK	Tested conduit, kill and choke lines to 30/ 280 bar for 5/ 10 min.
28.01.2002.11:00	16:30	5,5	283,0	BEDD	E FAIL	OK	Ran BOP on marine riser to 283 m. Total 15 joints run, 2 jts remaining.
28.01.2002.16:30	00:00	7,5	283,0	BEDD	E FAIL	OK	WOW due to loss of close stand-by coverage.
29.01.2002.00:00	06:00	6,0	283,0	BEDD	E FAIL	OK	WOW due to loss of close stand-by coverage.
29.01.2002.06:00	10:00	4,0	283,0	BEDD	E FAIL	OK	WOW due to lack of close stand-by coverage.
29.01.2002.10:00	13:00	3,0	361,0	BEDD	E FAIL	OK	Ran BOP on riser to 361m. Total 18 joints run (incl pup jnt).
29.01.2002.13:00	14:00	1,0	361,0	BEDD	E FAIL	OK	Pressure tested conduit, kill and choke line to 30/ 280 bar for 5/ 10 min.
29.01.2002.14:00	15:00	1,0	361,0	BEDD	E FAIL	OK	Transfered slip joint from deck to catwalk.
29.01.2002.15:00	17:00	2,0	388,0	BEDD	E FAIL	OK	Ran slip joint and landing joint.
29.01.2002.17:00	18:00	1,0	388,0	BEDD	E FAIL	OK	Installed mux cable clamp on slip joint at moonpool level.
29.01.2002.18:00	00:00	6,0	388,0	BEDD	E FAIL	OK	Installed goose necks and safety slings for conduit, kill, choke and booster line on slip joint. Had problems with installing goose neck on booster line due to damage to threads.
30.01.2002.00:00	00:30	0,5	388,0	BEDD	E FAIL	OK	Continued installing safety slings on goose necks.
30.01.2002.00:30	01:30	1,0	388,0	BEDD	E FAIL	OK	Tested choke, kill and booster line to 30/ 280 bar for 5/ 10 min. Conduit lines tested to 30 / 345 bar for 5/ 10 min.
30.01.2002.01:30	02:30	1,0	388,0	BEDD	E FAIL	OK	Installed mux cable saddles for storm loops.
30.01.2002.02:30	04:30	2,0	388,0	BEDD	E FAIL	OK	Installed riser tensioners.
30.01.2002.04:30	05:00	0,5	388,0	BEDD	E FAIL	OK	Installed hydraulics for slip joint.
30.01.2002.05:00	06:00	1,0	392,0	BEDD	E FAIL	OK	Moved rig over location. Meanwhile lowered down BOP and engaged riser tensioners.
30.01.2002.06:00	07:00	1,0	392,0	BEDD	E FAIL	OK	Trouble shot problem with main HPU. Rectified same. Restarted HPU.
30.01.2002.07:00	07:30	0,5	392,0	BEDD	E FAIL	OK	Fine positioned rig over wellhead.
30.01.2002.07:30	08:30	1,0	396,0	BEDD	E FAIL	OK	Activated AHC. Landed BOP on wellhead. Set down 60 ton. Locked connector. Verified OK with 25 ton O-pull.
30.01.2002.08:30	10:30	2,0		BEDD	E FAIL	OK	Unlocked inner barrel. Stroked out slip joint. Removed landing joint.
30.01.2002.10:30	12:00	1,5		BEDD	E FAIL	OK	Installed and locked diverter. Confirmed OK with 5 ton O-pull.
30.01.2002.12:00	20:00	8,0		BEDD	E FAIL	OK	Removed diverter R-tool. RD riser handling equipment. Had problems with installing outer ring for rotary table for one hour. Had to grind out gouges on same.

30.01.2002.20:00	23:00	3,0	397,0	BEDD	E FAIL	OK	RIH with jet sub and BOP test tool. Landed out in wellhead.
30.01.2002.23:00	00:00	1,0	397,0	BEDD	E FAIL	OK	Tested w.head connector against UPR to 20/ 280 bar for 5/ 10 min on blue pod.
31.01.2002.00:00	02:30	2,5	397,0	BEDD	E FAIL	OK	Function tested BOP on blue pod from TP remote panel. Function tested UPR and LPR with acoustic system.
31.01.2002.02:30	04:00	1,5		BEDD	E FAIL	OK	POOH. LD BOP test tool and jet sub.
31.01.2002.04:00	04:30	0,5		BEDD	E FAIL	OK	Function tested shear ram from drillers panel on blue pod and acoustic. Meanwhile cleared rigfloor and installed mouse hole.
31.01.2002.04:30	05:30	1,0		DTPU	OK	OK	Change out stabilizer/ bit sub for 8 1/2" BHA.
31.01.2002.05:30	06:00	0,5		DTPU	OK	OK	Programmed MWD at surface.
31.01.2002.06:00	08:00	2,0	135,0	DDOD	E FAIL	OK	RIH with BHA to 135 m.
31.01.2002.08:00	09:00	1,0	222,0	DTDU	OK	OK	Cont RIH with BHA to 222 m.
31.01.2002.09:00	14:30	5,5	1016,0	DTDU	OK	OK	RIH to 1016 m.
31.01.2002.14:30	15:30	1,0	1016,0	DEOU	OK	OK	Filled pipe. Tested MWD.
31.01.2002.15:30	16:00	0,5	1300,0	DTDU	OK	OK	RIH to 1300 m.
31.01.2002.16:00	17:00	1,0	1315,0	DTDU	OK	OK	MU drilling stand. RIH and tagged TD at 1315 m. Spotted 10 m3 hivis on btm.
31.01.2002.17:00	18:00	1,0	1285,0	EXLU	OK	OK	Pulled back into csg shoe. Lined up cmt unit. Tested surface system to 200 bar.
31.01.2002.18:00	21:00	3,0	1285,0	EXLU	OK	OK	Performed XLOT. EMD 1,52 sg.
		704,0					

Section: 8 1/2" Start time: 31.01.2002 21:00 End time: 09.04.2002 16:30

Rig: STENA DON

Time from	Time to	Time used	Depth mMD	Act code	---- Status ---- During opr	End of opr	Description of activities
31.01.2002.21:00	23:30	2,5	1315,0	DCAU	OK	OK	Pumped 15 m3 hivis pill. Displaced hole to 1.35 sg KCL mud.
31.01.2002.21:00	16:30	0,0		ZNON			
31.01.2002.23:30	00:00	0,5	1317,0	DDRU	OK	OK	Drilled 8 1/2" hole 1315 - 1317 m. Parameters: 0-2 t WOB, 2600 lpm, 150 bar, 50-100 rpm, 2-3 KNM.
01.02.2002.00:00	06:00	6,0	1405,0	DDRU	OK	OK	Drilled 8 1/2" hole 1317 - 1405 m. Parameters: 3-10 t WOB, 2600-2700 lpm, 150-175 bar, 100-180 rpm, 3-8 KNM.
01.02.2002.06:00	00:00	18,0	1715,0	DDRU	OK	OK	Drilled 8 1/2" hole from 1405 m to 1715 m. Drlg parameters: Flow 2400 lpm, Press 160 bar,WOB 4-10 ton, torque 5-8 kNm.
02.02.2002.00:00	06:00	6,0	1785,0	DDRU	OK	OK	Drilled 8 1/2" hole from 1715 m to 1785 m. Drlg parameters: Flow 2400 lpm, Press 169 bar,WOB 4-10 ton, RPM 140-180, torque 3-8 kNm. MWD ECD 1,46-1,50
02.02.2002.06:00	12:30	6,5	1871,0	DDRU	OK	OK	Drilled 8 1/2" hole from 1785 m to 1871 m. Drlg parameters: Flow 2430 lpm, Press 177 bar,WOB 8-12 ton, RPM 160-170, torque 4-6 kNm. MWD ECD 1,44-1,50
02.02.2002.12:30	14:30	2,0	1871,0	DCAU	OK	OK	Circulated hole clean.
02.02.2002.14:30	18:00	3,5	1290,0	DDWW	OK	OK	POOH to casing shoe at 1290 m. Had 15 ton

								overpull at 1850 m.
02.02.2002.18:00	21:30		3,5		DDWW	OK	OK	Continued POOH. Racked back MWD. Displaced riser to seawater through kill/choke line when bit above BOP.
02.02.2002.21:30	22:30		1,0		DDWW	OK	OK	Prepared for controlled disconnect of LMRP due to weather conditions. De-ballast rig from 20,5 m draft to 19,5 m.
02.02.2002.22:30	23:00		0,5		DDWW	OK	OK	Closed blind shear ram and unlatched LMRP. Moved rig 40 m off location. Ballasted rig down to 20,5 m draft.
02.02.2002.23:00	00:00		1,0		DDWW	OK	OK	Waited on weather.
03.02.2002.00:00	06:00		6,0		DDWW	OK	OK	Waited on weather.
03.02.2002.06:00	00:00		18,0		DDWW	OK	OK	Waited on weather.
04.02.2002.00:00	06:00		6,0		DDWW	OK	OK	Waited on weather.
04.02.2002.06:00	08:00		2,0		DDWW	OK	OK	waited on weather.
04.02.2002.08:00	09:00		1,0		DDWW	OK	E FAIL	Deployed ROV to inspect kill & choke collet connectors on LMRP. Found choke collet connector parted and left on BOP.
04.02.2002.09:00	15:00		6,0		BBRD	E FAIL	OK	Rigged up to pull LMRP.
04.02.2002.15:00	16:30		1,5		BBRD	E FAIL	OK	Pulled and laid down diverter. P/U riser landing joint and M/U same.
04.02.2002.16:30	20:00		3,5		BBRD	E FAIL	OK	Collapsed slip joint and locked same. Nippled down tensioners, choke, kill, booster and conduit coflexips.
04.02.2002.20:00	22:30		2,5		BBRD	E FAIL	OK	Pulled and L/D riser landing joint and slip joint.
04.02.2002.22:30	00:00		1,5		BBRD	E FAIL	OK	Remove slip jnt from aft trolley. Installed riser handling yoke to port crane.
05.02.2002.00:00	00:30		0,5		BBRD	E FAIL	OK	Continued to install riser handling yoke to port crane.
05.02.2002.00:30	06:00		5,5		BBRD	E FAIL	OK	Pulled riser and LMRP (Pulled 12 out of 17 jnts)
05.02.2002.06:00	10:00		4,0		BBRD	E FAIL	OK	Continued to pull riser and LMRP.
05.02.2002.10:00	16:30		6,5		BBRD	E FAIL	OK	Landed LMRP on trolley and commenced repair work on mini connector assembly. Repaired damaged mux cable.
05.02.2002.16:30	18:00		1,5		BBRD	E FAIL	OK	Raised LMRP out of trolley and lowered LMRP into hull guidance system. Installed mux cables. Lowered LMRP through splash zone
05.02.2002.18:00	19:00		1,0		BBRD	E FAIL	OK	Rigged up and attempted to pressure test choke and yellow conduit line. Negative, both lines leaking.
05.02.2002.19:00	21:30		2,5		BBRD	E FAIL	OK	Troubleshoot and found two valves on Halliburton cement unit leaking. Changed valves. Meanwhile, attempted to pressure test yellow conduit line, negative. Re-tested choke line to 20/200 bar, OK.
05.02.2002.21:30	22:30		1,0		BBRD	E FAIL	OK	Attempted to pressure test blue conduit line, Negative.
05.02.2002.22:30	00:00		1,5		BBRD	E FAIL	OK	Pulled LMRP back to surface and attempted to trace leak.
06.02.2002.00:00	01:00		1,0		BBRD	E FAIL	OK	Traced leak to pilot line. Repaired leak and pressure tested conduit line to 340 bar. Ok.
06.02.2002.01:00	06:00		5,0	200,0	BBRD	E FAIL	OK	Ran LMRP on riser to 195 m (Ran 10 out of 17 jnts).
06.02.2002.06:00	13:00	7,0	366,0		BBRD	E FAIL	OK	Ran LMRP on riser to 346 m. Ran slip joint and landing joint.
06.02.2002.13:00	19:00		6,0	366,0	BBRD	E FAIL	OK	Installed goose necks and safety slings for conduit line and choke line on slip joint. Installed riser tensioners.

06.02.2002.19:00	21:30	2,5	388,0	BBRD	E FAIL	OK	Lowered LMRP over BOP mandrel. Made several attempts to engage the shroud over the mini connector for the kill line, Negative. Mini connector on BOP not vertical and aligned with shroud for mini connector on LMRP
06.02.2002.21:30	00:00	2,5	378,0	BBRD	E FAIL	OK	Pulled LMRP clear of BOP and moved rig 20 m aft. Awaited decision from town. Meanwhile started to install guide wire for ROV cursor system.
07.02.2002.00:00	02:30	2,5	378,0	BBRD	E FAIL	OK	Attempted to install guide wire for cursor system. Not able to install shear bolt for wire. Deployed ROV without cursor system.
07.02.2002.02:30	04:00	1,5	388,0	BBRD	E FAIL	OK	Pulled mini connector to vertical with ROV. Lowered LMRP over BOP mandrel. Made several attempts to engage the shroud over the mini connector for the kill line, Negative.
07.02.2002.04:00	04:30	0,5	378,0	BBRD	E FAIL	OK	Pulled LMRP clear of BOP and moved rig 20 m aft.
07.02.2002.04:30	06:00	1,5	378,0	BBRD	E FAIL	OK	Prepared to run C-plate on the ROT guideline to make an attempt to pull the mini connector of the BOP.
07.02.2002.06:00	08:00	2,0	378,0	BBRD	E FAIL	OK	Prepared to run c-plate on ROT guideline.
07.02.2002.08:00	10:00	2,0	388,0	BBRD	E FAIL	OK	Ran c-plate on ROT guideline and installed same on mini connector with ROV. Attempted to pull mini connector off BOP with c-plate, negative. Made an attempt to land LMRP on BOP, negative. Not able to engage shroud over mini connector.
07.02.2002.10:00	12:00	2,0	378,0	BBRD	E FAIL	OK	Held pre-job safety meeting. Removed tension wires and goosenecks for conduit and choke line.
07.02.2002.12:00	20:30	8,5		BBRD	E FAIL	OK	Pulled and L/D riser landing joint and slip joint. Continued pulling riser and LMRP. Landed LMRP on trolley.
07.02.2002.20:30	00:00	3,5		BBRD	E FAIL	OK	Disconnected riser from LMRP and skidded LMRP to parking position. Commenced LMRP modifications.
08.02.2002.00:00	06:00	6,0		BBRD	E FAIL	OK	Continued LMRP modifications. Removed shroud for mini connector and welded funnel segments onto receiver plate.
08.02.2002.06:00	09:00	3,0		BBRD	E FAIL	OK	Continued LMRP modifications. Welded 8 funnel segments onto receiver plate.
08.02.2002.09:00	17:00	8,0	346,0	BBRD	E FAIL	OK	M/U riser to LMRP. Ran LMRP on riser to 346 m.
08.02.2002.17:00	20:00	3,0	378,0	BBRD	E FAIL	OK	Rig down riser yoke on port crane. P/U slip joint and landing joint. Ran same.
08.02.2002.20:00	23:00	3,0	378,0	BBRD	E FAIL	OK	Installed goose necks for conduit line and choke line. Installed mux cables. Pressure tested choke and conduit lines.
08.02.2002.23:00	23:30	0,5	378,0	BBRD	E FAIL	OK	Installed riser tensioners.
08.02.2002.23:30	00:00	0,5	378,0	BBRD	E FAIL	OK	Moved rig over to BOP. Set up riser tensioners and compensator.
09.02.2002.00:00	01:30	1,5	388,0	BBRD	E FAIL	OK	Made final position of rig. Landed LMRP on BOP. Locked connector. Took 50 overpull test, ok.
09.02.2002.01:30	02:30	1,0		BBRD	E FAIL	OK	Pressure tested choke line to 345 bar. ok. Meanwhile started to pressured up riser tensioners.
09.02.2002.02:30	05:00	2,5		BBRD	E FAIL	OK	Continued to pressure up riser tensioners to 360 ton.
09.02.2002.05:00	06:00	1,0		BBRD	E FAIL	OK	Unlocked and stroke out slip joint. Removed landing joint. Installed diverter.
09.02.2002.06:00	07:00	1,0		BBRD	E FAIL	OK	Continued to install diverter. L/D diverter running tool.
09.02.2002.07:00	09:00	2,0		BBRD	E FAIL	OK	Rigged down riser handling equipment. Opened

							choke and monitored pressure, ok. Opened BSR.
09.02.2002.09:00	15:00	6,0	690,0	BBRD	E FAIL	OK	M/U and RIH with bullnose, 1 stnd 6 1/2" DC, 5 stnd HWDP and 1 stnd 5" DP. M/U RTTS packer with storm valve and RIH to 690 m.
09.02.2002.15:00	17:30	2,5	450,0	BBRD	E FAIL	OK	Displaced well to 1,6 sg mud from 690 m to 450 m. Set RTTS packer at 450 m. Released from storm valve and pressure tested RTTS packer to 110 bar/ 15 min, ok.
09.02.2002.17:30	20:00	2,5		BBRD	E FAIL	OK	POOH. Displaced riser to sea water through choke line.
09.02.2002.20:00	20:30	0,5		BBRD	E FAIL	OK	Cleared rig floor.
09.02.2002.20:30	00:00	3,5		BBRD	E FAIL	OK	Installed riser gimble and spider. Replaced steel hydraulic line on hydraracker and installed hydraracker riser head assembly.
10.02.2002.00:00	02:30	2,5		BBRD	E FAIL	OK	Installed diverter running tool and pulled diverter. Installed landing joint. Collapsed and locked slip joint.
10.02.2002.02:30	03:00	0,5		BBRD	E FAIL	OK	Unlatched BOP and moved rig off location.
10.02.2002.03:00	04:30	1,5		BBRD	E FAIL	OK	Removed riser tensioners and goosenecks for conduit and choke line.
10.02.2002.04:30	06:00	1,5		BBRD	E FAIL	OK	Pulled and L/D riser landing joint and slip joint. Continued pulling riser and BOP.
10.02.2002.06:00	12:00	6,0		BBRD	E FAIL	OK	Continued to pull riser and BOP.
10.02.2002.12:00	14:00	2,0		BBRD	E FAIL	OK	Pulled BOP through splash zone and landed BOP on trolley. Disconnected riser from LMRP.
10.02.2002.14:00	18:00	4,0		BBRD	E FAIL	OK	Skidded BOP to parking position. Unlatched and moved LMRP to set back posts.
10.02.2002.18:00	00:00	6,0		BBRD	E FAIL	OK	Started work on removing kill line connector and mandrill on BOP.
11.02.2002.00:00	06:00	6,0		BBRD	E FAIL	OK	Continued to work on BOP.
11.02.2002.06:00	00:00	18,0		BBRD	E FAIL	OK	Continued to work on BOP. Carried out inspection and modification work.
12.02.2002.00:00	06:00	6,0		BBRD	OK	OK	Continued to work on BOP. Installed mini connector on kill line.
12.02.2002.06:00	00:00	18,0		BBRD	E FAIL	OK	Continued to work on BOP. Carried out inspection and modification work.
13.02.2002.00:00	06:00	6,0		BBRD	E FAIL	OK	Moved BOP onto transporter. Continued to work on LMRP. Not able to transfer LMRP to the BOP due to weather conditions / rig motion.
13.02.2002.06:00	00:00	18,0		BBRD	E FAIL	OK	Moved LMRP to BOP on transporter and latched same. Moved BOP to test stump. Prepared for testing of BOP. Found electrical failure on blue RMJB (Riser mounted junction box).
14.02.2002.00:00	06:00	6,0		BBRD	E FAIL	OK	Continued to work on BOP. Prepared for testing.
14.02.2002.06:00	00:00	18,0		BBRD	E FAIL	OK	Worked on BOP and compensator. Removed kill line from above mini connector.
15.02.2002.00:00	06:00	6,0		BBRD	E FAIL	OK	Cont. working on BOP and compensator. Removed kill line and mini connector.
15.02.2002.06:00	16:00	10,0		BBRD	E FAIL	OK	Repaired BOP and active heave compensator.
15.02.2002.16:00	00:00	8,0		BBOD	E FAIL	OK	Commenced passage to Stifjorden (near Sandnessjøen) at 16:00 hrs. Continued work on BOP and active heave compensator. Position at 24:00 hrs: Latitude: 66°07.7' N Longitude: 09°24.3' E Distance travelled: 29 nm Distance to go: 70 nm Average speed: 3.6 knots

16.02.2002.00:00	06:00	6,0	BBOD	E FAIL	OK	Continued passage to Stifjorden. Continued work on BOP and active heave compensator. Position at 06:00 hrs: Latitude: 66°11.1' N Longitude: 10°24.1' E Distance travelled: 53.5 nm Distance to go: 45 nm Average speed: 3.9 knots ETA at pilot station: 17:50 hrs
16.02.2002.06:00	17:00	11,0	BBOD	E FAIL	OK	Completed passage to Pilot station outside Stifjorden. Worked on BOP and compensator.
16.02.2002.17:00	22:00	5,0	BBOD	E FAIL	OK	Continued passage from from Pilot station to advised position in Stifjorden (near Sandnessjøen). Arrived location at 21:00 hrs. Continued working on BOP and compensator. Rig position: Latitude: 66 ° 11,8' N Longitude: 12 ° 40,0 ' E Distance travelled: 113,5 NM. Average speed : 3,98 knots.
16.02.2002.22:00	00:00	2,0	BBOD	E FAIL	OK	Prepared equipment to lift LMRP off BOP.
17.02.2002.00:00	03:00	3,0	BBOD	E FAIL	OK	Lifted LMRP off BOP, moved over and landed LMRP on storage posts.
17.02.2002.03:00	06:00	3,0	BBOD	E FAIL	OK	Took measurements from various parts of LMRP and BOP.
17.02.2002.06:00	00:00	18,0	BBOD	E FAIL	OK	Worked on BOP and compensator.
18.02.2002.00:00	06:00	6,0	BBOD	E FAIL	OK	Continued working on BOP and compensator.
18.02.2002.06:00	00:00	18,0	BBOD	E FAIL	OK	Rig in Stifjord (near Sandnessjøen). Worked on BOP and compensator.
19.02.2002.00:00	06:00	6,0	BBOD	E FAIL	OK	Continued working on BOP.
19.02.2002.06:00	00:00	18,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP and compensator.
20.02.2002.00:00	06:00	6,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP and compensator.
20.02.2002.06:00	00:00	18,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP and compensator.
21.02.2002.00:00	06:00	6,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP and compensator.
21.02.2002.06:00	00:00	18,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP.
22.02.2002.00:00	06:00	6,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP.
22.02.2002.06:00	00:00	18,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP.
23.02.2002.00:00	06:00	6,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP.
23.02.2002.06:00	00:00	18,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP.
24.02.2002.00:00	06:00	6,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP.
24.02.2002.06:00	00:00	18,0	BBOD	E FAIL	OK	
Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP.						
25.02.2002.00:00	06:00	6,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP.
25.02.2002.06:00	00:00	18,0	BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP.

26.02.2002.00:00	06:00	6,0		BBOD	E FAIL	OK	Rig pos N 066 deg 11,8' in Stifjord (near Sandnessjøen). Worked on BOP.
26.02.2002.06:00	00:00	18,0		BBOD	E FAIL	OK	Rig in Stifjord (near Sandnessjøen). Worked on BOP.
27.02.2002.00:00	06:00	6,0		BBOD	E FAIL	OK	Rig in Stifjord (near Sandnessjøen). Worked on BOP.
27.02.2002.06:00	00:00	18,0		BBOD	E FAIL	OK	Rig in Stifjord (near Sandnessjøen). Worked on BOP.
28.02.2002.00:00	06:00	6,0		BBOD	E FAIL	OK	Rig in Stifjord (near Sandnessjøen). Worked on BOP.
28.02.2002.06:00	07:30	1,5		BEDD	E FAIL	OK	Rig in Stifjord (near Sandnessjøen). Worked on BOP. Continued preparations for acceptance tests of BOP. Hooked up hydraulics and activated pods.
28.02.2002.07:30	09:00	1,5		BEDD	E FAIL	OK	Pressure tested BOP. Tested LMRP connector and Mini-collets against UAP to 20 bar/ 690 bar for 5/ 10 min. Tested UPR and choke/ kill isolation valves to 20/ 1035 bar for 5/ 10 min.
28.02.2002.09:00	00:00	15,0		BEDD	E FAIL	OK	Rig in transit from Stifjorden to Stær 6608 / 10-8. Position at 2400 hrs: 66 dgr 12.55 min North, 10 dgr 27.1 min East. Distance travelled: 57.3 nm. Distance to go: 56 nm. Avg speed: 3.8 kts.
01.03.2002.00:00	06:00	6,0		BEDD	E FAIL	OK	Rig in transit to Stær 6608 / 10-8. Position at 0600 hrs: 66 dgr 08.6 min North, 9 dgr 26.5 min East. Total distance travelled: 82.3 nm. Distance to go: 31 nm. Total avg speed: 3.9 kts. ETA Stær: 01.03.02 1500 hrs.
01.03.2002.06:00	15:00	9,0		BEDD	E FAIL	OK	Rig in transit to Stær location.
01.03.2002.15:00	19:30	4,5		BEDD	E FAIL	OK	Ballasted rig to operational draft. Conducted DP tests.
01.03.2002.19:30	20:30	1,0		BEDD	E FAIL	OK	RD conduit hoses in moonpool and secured same. Prepared BOP for transfer to transporter.
01.03.2002.20:30	21:30	1,0		BEDD	E FAIL	OK	WOW due loss of close stand-by cover.
01.03.2002.21:30	00:00	2,5		BEDD	E FAIL	OK	Transfered BOP to transporter.
02.03.2002.00:00	00:30	0,5		BEDD	E FAIL	OK	Secured BOP on transporter.
02.03.2002.00:30	06:00	5,5		BEDD	E FAIL	OK	WOW due loss of close stand-by cover. Meanwhile carried out risk assessment for removing bridge crane hooks from BOP.
02.03.2002.06:00	15:30	9,5		BEDD	E FAIL	OK	WOW. Lack of stand-by boat cover.
02.03.2002.15:30	16:30	1,0		BEDD	E FAIL	OK	Removed bridge crane hooks from BOP. Skidded BOP under rotary.
02.03.2002.16:30	18:30	2,0		BEDD	E FAIL	OK	Mu double riser joint to BOP. Secured MUX-cables
02.03.2002.18:30	20:00	1,5		BEDD	E FAIL	OK	Function tested kill/ choke line mini-collet connectors at 120 bar with 20 ton O-pull on LMRP.
02.03.2002.20:00	21:30	1,5	45,0	BEDD	E FAIL	OK	Conducted pre job safety meeting. Ran BOP through splash zone to 45 m.
02.03.2002.21:30	23:00	1,5	45,0	BEDD	E FAIL	OK	Pressure tested hydraulic coduits to 340 bar/ 10 min and choke/ kill lines to 20/ 280 bar for 5/ 10 min.
02.03.2002.23:00	00:00	1,0	65,0	BEDD	E FAIL	OK	Ran BOP on marine riser to 65 m. Total 3 jts run. 15 jts remaining.
03.03.2002.00:00	02:00	2,0	105,0	BEDD	E FAIL	OK	Ran BOP on marine riser to 105 m. Total 6 jts run. 12 jts remaining.
03.03.2002.02:00	06:00	4,0	105,0	BEDD	E FAIL	OK	WOW due to loss of stand-by boat cover.
03.03.2002.06:00	19:30	13,5	105,0	BEDD	E FAIL	OK	WOW. Partly lack of stand-by boat cover.

							Attempted to run riser with different rig headings. Weather condition to rough to proceed operation.
03.03.2002.19:30	20:00	0,5	105,0	BEDD	E FAIL	O FAIL	Held pre job safety meeting.
03.03.2002.20:00	21:00	1,0	105,0	BEDD	E FAIL	OK	Unable to start HPU main lifting pumps. Problem traced to power management system and rectified.
03.03.2002.21:00	23:30	2,5	205,0	BEDD	E FAIL	OK	Ran BOP on marine riser to 205 m. Total 10 jts run. 8 remaining.
03.03.2002.23:30	00:00	0,5	205,0	BEDD	E FAIL	OK	Pressure tested hydraulic conduits to 345 bar/ 10 min and C/ K-lines to 20/ 280 bar for 5/ 10 min.
04.03.2002.00:00	00:30	0,5	205,0	BEDD	E FAIL	OK	Completed pressure test of C/K-lines.
04.03.2002.00:30	05:30	5,0	362,0	BEDD	E FAIL	OK	Ran BOP on marine riser to 362 m. Total 18 jts run.
04.03.2002.05:30	06:00	0,5	362,0	BEDD	E FAIL	OK	Commenced pressure test of hydraulic conduits to 345 bar/ 10 min and C/ K-lines to 20/ 280 bar for 5/ 10 min.
04.03.2002.06:00	06:30	0,5	362,0	BEDD	E FAIL	OK	Completed pressure test of hydraulic conduits to 345 bar/ 10 min and C/ K-lines to 20/ 280 bar for 5/ 10 min.
04.03.2002.06:30	18:30	12,0	362,0	BEDD	E FAIL	OK	WOW prior to PU slip joint. Two attempts were made and aborted due to excessive movement. RU spreader beam arrangement to riser yoke swivel on port crane
04.03.2002.18:30	20:00	1,5	362,0	BEDD	E FAIL	OK	Transferred slip joint to catwalk.
04.03.2002.20:00	22:00	2,0	388,0	BEDD	E FAIL	OK	Ran slip joint and landing joint.
04.03.2002.22:00	00:00	2,0	388,0	BEDD	E FAIL	OK	Installed goose necks and safety slings for conduits and choke line on slip joint.
05.03.2002.00:00	01:00	1,0	388,0	BEDD	E FAIL	OK	Installed goose necks and safety slings for kill and booster line on slip joint.
05.03.2002.01:00	02:00	1,0	388,0	BEDD	E FAIL	OK	Pressure tested hydraulic conduits to 345 bar/ 10 min and C/ K-lines to 20/ 280 bar for 5/ 10 min.
05.03.2002.02:00	03:00	1,0	388,0	BEDD	E FAIL	OK	Installed riser tensioners.
05.03.2002.03:00	04:00	1,0	392,0	BEDD	E FAIL	OK	Moved rig and positioned over wellhead. Meanwhile lowered down BOP and engaged riser tensioners.
05.03.2002.04:00	04:30	0,5	396,0	BEDD	E FAIL	OK	Activated AHC. Landed and latched BOP. Confirmed latch with 25 ton O-pull.
05.03.2002.04:30	05:00	0,5	396,0	BBOU	OK	OK	Disconnected K/ C mini connectors and pod stingers. Verified function by ROV. Disconnected LMRP with 25 ton O-pull
05.03.2002.05:00	06:00	1,0	396,0	BBOU	OK	OK	Moved rig 6 m off location. Activated AHC. Positioned rig. Landed and latched LMRP. Verified latch with 60 ton O-pull. Latched mini connectors and pod stingers. Verified function by ROV.
05.03.2002.06:00	07:30	1,5		BBOU	OK	OK	Pressure tested mini-collet connectors to 20/ 280 bar for 5/ 10 min.
05.03.2002.07:30	09:00	1,5		BEDD	E FAIL	OK	Monitored weather condition and rig motion. Unlocked and stroked out slip joint. LD riser landing joint.
05.03.2002.09:00	11:00	2,0		BEDD	E FAIL	OK	Installed diverter. Locked and confirmed same with 5 ton O-pull.
05.03.2002.11:00	16:00	5,0		BEDD	E FAIL	OK	RD riser handling equipment. Installed rotary adaptor ring and bushings.
05.03.2002.16:00	18:00	2,0		BEDD	E FAIL	OK	RU 500 ton bails and links.
05.03.2002.18:00	20:30	2,5	430,0	BEDD	E FAIL	OK	MU RTTS retrieval tool. RIH to 430 m.
05.03.2002.20:30	22:30	2,0	430,0	BEDD	E FAIL	E FAIL	Displaced C/ K/ booster lines to 1,35 sg mud. Pumped 15 m3 hivis mud and 50 m3 drwater. Displaced riser to 1.35 sg mud.

05.03.2002.22:30	00:00	1,5	430,0	BEDD	E FAIL	OK	Stand of drillpipe dropped across derrick. RU and recovered same.
06.03.2002.00:00	01:00	1,0	450,0	BEDD	E FAIL	OK	RIH to top of RTTS with 70 lpm/ 2 bar. Stung into RTTS at 450 m. Engaged R.tool to RTTS by 22 turns. Observed no pressure inside string.
06.03.2002.01:00	02:00	1,0	450,0	BEDD	E FAIL	OK	Tested riser and wellhead connectors against UAP and RTTS packer to 20/ 280 bar for 5/ 10 min. Released RTTS packer with 2 ton O-pull. Flow checked.
06.03.2002.02:00	04:00	2,0		BEDD	E FAIL	OK	POOH with RTTS assy.
06.03.2002.04:00	06:00	2,0		BEDD	E FAIL	OK	Broke and LD STB, x-o, bumper sub and RTTS assy. Racked RTTS BHA.
06.03.2002.06:00	08:00	2,0		DTPU	OK	OK	PU BHA stand from derrick. LD NB STB and changed bit.
06.03.2002.08:00	11:30	3,5	24,0	DTPU	OK	OK	Installed new batteries in MWD. Downloaded data from MWD and LWD sonic. Programmed same. RIH w. stand.
06.03.2002.11:30	12:30	1,0	42,0	DTPU	OK	E FAIL	PU and ran 2 x 6 1/2" DC.
06.03.2002.12:30	13:00	0,5	42,0	DERD	E FAIL	OK	Replaced 3 ea sheared studs in BX DP-elevator (frame no 4 for hydraulic connection).
06.03.2002.13:00	15:00	2,0	249,0	DTDU	OK	OK	RIH with 8 1/2" BHA. PU 2 x 6 1/2" DC.
06.03.2002.15:00	18:00	3,0	1275,0	DTDU	OK	OK	RIH to 1275 m.
06.03.2002.18:00	20:00	2,0	1275,0	DCAU	OK	OK	Displaced hole to new 1.35 sg mud. Conditioned mud.
06.03.2002.20:00	00:00	4,0	1445,0	DCRK	OK	OK	RIH to 1305 m. Bit stood up with 8 ton. Washed and reamed from 1305 - 1445 m. Parameters: 2000-2300 lpm/ 130-160 bar/ 0-5 t WOB/ 100-135 rpm/ 3-9 KNM.
07.03.2002.00:00	06:00	6,0	1809,0	DCRK	OK	OK	Washed and reamed from 1445 - 1809 m. Parameters: 2300 lpm/ 160-170 bar/ 0-6 t WOB/ 130-150 rpm/ 3-10 KNM.
07.03.2002.06:00	08:00	2,0	1871,0	DCRK	OK	OK	Washed and reamed from 1809 - 1871 m. Parameters: 2300 lpm/ 160-170 bar/ 0-6 t WOB/ 130-150 rpm/ 3-10 KNM.
07.03.2002.08:00	00:00	16,0	2096,0	DDRU	OK	E FAIL	Drilled 8 1/2" hole 1871 - 2096 m. Parameters: 2500 lpm/ 170-180 bar/ 2-12 t WOB/ 130-150 rpm/ 3-7 KNM.
08.03.2002.00:00	00:30	0,5	2096,0	DERD	E FAIL	OK	Aborted operation due to loss of DP class 3. Spaced out, hung off drill string on UPR and prepared for circulation over choke while rig in yellow alert due to lack of backup on main DP-controller. Integrated Automation System (IAS) DP controller "A" had a fault whilst running its self diagnostics and switched automatically to controller "B". Reset IAS "A" and monitored same for 10 min.
08.03.2002.00:30	06:00	5,5	2164,0	DDRU	OK	OK	Drilled 8 1/2" hole 2096 - 2164 m. Parameters: 2300-2500 lpm/ 160-180 bar/ 8-12 t WOB/ 130-150 rpm/ 3-7 KNM.
08.03.2002.06 :00	14:30	8,5	2230,0	DDRU	OK	OK	Drilled 8 1/2" hole 2164 - 2230 m. Parameters: 2300-2500 lpm/ 160-180 bar/ 8-12 t WOB/ 100-150 rpm/ 3-7 KNM. Penetration rate gradually decreased to zero in the end.
08.03.2002.14:30	20:00	5,5	2135,0	DTAK	OK	OK	Flow checked. POOH to 1640 m. Reamed tight spot from 2140 - 2135 m. Max O-pull 25 ton. Tight at 1640 m. Max O-pull 15 ton.

08.03.2002.20:00	21:00	1,0	1530,0	DCRK	OK	OK	Washed and backreamed from 1640 - 1530 m with 1800-2000 lpm/ 120-140 bar/ 0-80 RPM/ 3-7 KNM.
08.03.2002.21:00	00:00	3,0	735,0	DTAK	OK	OK	POOH to 735 m. Flow checked at shoe.
09.03.2002.00:00	01:00	1,0	220,0	DTAK	OK	E FAIL	POOH to 220 m.
09.03.2002.01:00	02:00	1,0	220,0	DEOD	E FAIL	OK	Hydraracker upper arm stuck on hard banding on HWDP stand. Troubleshot and freed same.
09.03.2002.02:00	04:00	2,0		DTAK	OK	OK	POOH. Changed bit.
09.03.2002.04:00	05:30	1,5		DEOU	OK	OK	Downloaded MWD-tool.
09.03.2002.05:30	06:00	0,5		DTPU	OK	OK	LD Bat Sonic tool.
09.03.2002.06:00	06:30	0,5		DTPU	OK	OK	MU new Bat Sonic tool.
09.03.2002.06:30	09:00	2,5	276,0	DTPU	OK	OK	PU 3 x 6 1/2" DC from deck. RIH with 8 1/2" BHA to 276 m.
09.03.2002.09:00	14:30	5,5	1610,0	DTAK	OK	OK	RIH to 1610 m. String stood up with 8 ton.
09.03.2002.14:30	15:30	1,0	1640,0	DCRK	OK	OK	Washed / reamed tight section 1610 - 1640 m with 1500 lpm/ 88 bar/ 120 rpm.
09.03.2002.15:30	18:00	2,5	2166,0	DTAK	OK	OK	RIH to 2166 m.
09.03.2002.18:00	19:00	1,0	2230,0	DCRK	OK	OK	Washed / reamed down last 3 stands 2166 - 2230 m with 1500-2250 lpm/ 90 - 180 bar/ 120 RPM/ 0-3 t WOB. No fill.
09.03.2002.19:00	20:30	1,5	2235,0	DDRU	OK	OK	Drilled 8 1/2" hole 2230 - 2235 m. ROP very low. Parameters: 2-15 t WOB/ 80-145 rpm/ 2000-2300 lpm/ 160-190 bar/ 4-5 KNM.
09.03.2002.20:30	21:00	0,5	2235,0	DCAU	OK	OK	Spotted 6 m3 KCL/ Glycol bit-unballing pill at bit to confirm reason for very low ROP. Alternate let soak and hesitate pumped for total 30 min.
09.03.2002.21:00	00:00	3,0	2250,0	DDRU	OK	OK	Drilled 8 1/2" hole 2235 - 2250 m. Parameters: 11-15 t WOB/ 80-130 rpm/ 2000-2200 lpm/ 160-190 bar/ 4-7 KNM. Observed no increase in ROP after pumping pill. ROP gradually increased from 2238 m.
10.03.2002.00:00	03:30	3,5	2295,0	DDRU	OK	OK	Drilled 8 1/2" hole 2250 - 2295 m. Flow checked drilling break at 2292 m. Parameters: 11-15 t WOB/ 100-130 rpm/ 2000-2200 lpm/ 160-190 bar/ 4-7 KNM.
10.03.2002.03:30	05:30	2,0	2295,0	ECSU	OK	OK	Circulated btms up for samples. Flow checked.
10.03.2002.05:30	06:00	0,5	2225,0	DTRU	OK	OK	POOH to 2225 m.
10.03.2002.06:00	06:30	0,5	2205,0	DTRU	OK	OK	POOH to 2005 m. Hole tight. Max O-pull 15 ton.
10.03.2002.06:30	07:00	0,5	2195,0	DCBK	OK	OK	Backreamed tight section 2205 - 2195 m with 1500 lpm/ 90 bar/ 4-7 KNM/ 100 rpm.
10.03.2002.07:00	12:30	5,5	1060,0	DTRU	OK	E FAIL	POOH to 600 m.
10.03.2002.12:30	13:00	0,5	1060,0	DEOD	E FAIL	OK	Changed slips due to slippage.
10.03.2002.13:00	17:30	4,5		DTRU	OK	OK	POOH. Broke off bit. Racked BHA.
10.03.2002.17:30	19:30	2,0		EECU	OK	OK	MU corehead to core barrel. Spaced out inner barrel.
10.03.2002.19:30	23:00	3,5	1280,0	ETCU	OK	OK	RIH to 1280 m.
10.03.2002.23:00	23:30	0,5	1280,0	ECFU	OK	OK	Filled pipe and broke circulation.
10.03.2002.23:30	00:00	0,5	1350,0	ETCU	OK	OK	PU single DP and pup joint for core space out. RIH to 1350 m.
11.03.2002.00:00	03:00	3,0	2247,0	ETCU	OK	OK	RIH to 2247 m.
11.03.2002.03:00	04:00	1,0	2295,0	ECFU	OK	OK	Washed/ reamed 2247 - 2295 m with 1500-1800 lpm/ 80-90 bar/ 80-100 rpm/ 0-5 t WOB/ 4-10 KNM. Harder reaming from 2278 - 2295 m. Confirmed btm tagging with 4 ton.
11.03.2002.04:00	05:00	1,0	2295,0	ECFU	OK	OK	Circulated btms up with 1800 lpm/ 90 bar.

11.03.2002.05:00	05:30	0,5	2295,0	ECFU	OK	OK	Dropped ball. Pumped same down with 500 lpm/ 24 bar. Took SCR`s.
11.03.2002.05:30	06:00	0,5	2299,0	ETCU	OK	OK	Cut core 2295 - 2299 m. Parameters: 2-12 t WOB/ 1080 lpm/ 70-102 bar/ 80-110 rpm/ 4-11 KNM.
11.03.2002.06:00	10:00	4,0	2322,0	ERCU	OK	OK	Cut core 2299 - 2322 m. 5 ton O-pull when picking off btm. Parameters: 9-14 t WOB/ 1080 lpm/ 90-110 bar/ 100-130 rpm/ 4-11 KNM.
11.03.2002.10:00	20:00	10,0		ETCU	OK	OK	POOH. Flow checked prior to POOH and at shoe. Reduced pulling speed from 500 m.
11.03.2002.20:00	23:00	3,0		EECU	OK	OK	Broke off corehead and recovered core no 1. LD same in three sections. Recovered 24,5 m - 90.7 %. Racked core barrel.
11.03.2002.23:00	23:30	0,5		DTPU	OK	OK	PU MWD stand. MU new bit.
11.03.2002.23:30	00:00	0,5		DEOU	OK	E FAIL	Downloaded MWD.
12.03.2002.00:00	01:30	1,5		DEMD	E FAIL	OK	Low battery status on the pulsar. Run the activation program for the pulser batteries. Ran new test on the tool to varify functionallity of the tool.
12.03.2002.01:30	03:00	1,5		DEOU	OK	OK	Downloaded MWD and Sonic. Checked tools.
12.03.2002.03:00	06:00	3,0	655,0	DTPU	OK	OK	RIH to 655 m.
12.03.2002.06:00	06:30	0,5	830,0	DTAK	OK	E FAIL	RIH to 830 m.
12.03.2002.06:30	07:00	0,5	830,0	DEOD	E FAIL	OK	Hydraracker stuck on DP-stand. Freed same.
12.03.2002.07:00	11:00	4,0	2254,0	DTAK	OK	OK	RIH ro 2254 m.
12.03.2002.11:00	13:00	2,0	2322,0	DCRK	OK	OK	Washed/ reamed 2254 - 2322 m. Logged cored section. No fill. Parameters: 2060 lpm/ 160 bar/ 0-3 t WOB/ 4-6 KNM.
12.03.2002.13:00	17:00	4,0	2371,0	DDRU	OK	OK	Drilled 8 1/2" hole 2322 - 2371 m. Flow checked drilling brake at 2368 m. Drilling parameters: 2-10 t WOB/ 2250 lpm/ 210 bar/ 140-150 rpm/ 3-10 KNM.
12.03.2002.17:00	19:00	2,0	2371,0	ECSU	OK	OK	Circulated btms up for samples. Max gas 1,6 %. Flow checked.
12.03.2002.19:00	00:00	5,0	1290,0	DTRU	OK	OK	POOH to shoe at 1290 m.
13.03.2002.00:00	01:00	1,0	1290,0	DTRU	OK	OK	Flow checked . Changed to PS 30 slips.
13.03.2002.01:00	06:00	5,0		DTRU	OK	OK	POOH. Racked BHA. Removed PS 30 slips.
13.03.2002.06:00	06:30	0,5		DTRU	OK	OK	Broke off bit. Racked MWD stand.
13.03.2002.06:30	08:00	1,5		ETCU	OK	OK	MU corehead to core barrel. Mu catcher and inner barrels. Spaced out same.
13.03.2002.08:00	12:30	4,5	1290,0	ETCU	OK	OK	RIH to shoe at 1290 m.
13.03.2002.12:30	13:00	0,5	1290,0	ECFU	OK	OK	Filled pipe and broke circulation. PU pup joint for core space out.
13.03.2002.13:00	16:30	3,5	2349,0	ETCU	OK	OK	RIH to 2349 m.
13.03.2002.16:30	17:30	1,0	2371,0	ECFU	OK	OK	Washed / reamed 2349 - 2371 m with 0-4 ton / 1000 lpm / 54 bar / 40 rpm / 3-5 KNM. No fill.
13.03.2002.17:30	18:00	0,5	2371,0	ECFU	OK	OK	Dropped ball. Circulated same down with 500 lpm / 25 bar. Took SCR`s.
13.03.2002.18:00	22:00	4,0	2398,0	ERCU	OK	OK	Cut core 2371 - 2398 m. No O-pull when picking off btm. Parameters: 3-17 t WOB / 1100 lpm / 85 - 140 bar / 4 - 19 KNM.
13.03.2002.22:00	00:00	2,0	2398,0	ECFU	OK	OK	Circulated btms up due to high gas content (max gas 4 %).

14.03.2002.00:00		00:30	0,5	2398,0	ECFU	OK	OK	Completed circulating btms up. Flow checked.
14.03.2002.00:30		06:00	5,5	600,0	ETCU	OK	OK	POOH to 600 m.
14.03.2002.06:00		10:00	4,0		ETCU	OK	OK	Continued POOH from 600m. Pulled with 4 min/stnd from 500 m.
14.03.2002.10:00		13:00	3,0		EECU	OK	OK	Broke of corehead and recovered core no 2. Recovered 26,0 m - 96,3%.
14.03.2002.13:00		15:00	2,0		ETCU	OK	OK	MU corehead to core barrel and M/U 120 ft corebarrel.
14.03.2002.15:00		23:00	8,0	2377,0	ETCU	OK	OK	RIH to 2377 m.
14.03.2002.23:00		00:00	1,0	2398,0	ETCU	OK	OK	M/U drilling stand. Washed down from 2377 m. Took weight 5 m high.
15.03.2002.00:00		01:00	1,0	2398,0	ETCU	OK	OK	Checked pipe tally, ok. Laid out one jnt 5" dp to allow full coring stand.
15.03.2002.01:00		01:30	0,5	2398,0	ETCU	OK	OK	Dropped ball. Circulated same down with 500 lpm. Took SCR's.
15.03.2002.01:30		06:00	4,5	2420,0	ERCU	OK	OK	Cut core # 3 from 2398 m to 2420 m Parameters:WOB 10 - 15 ton, flow 1100 lpm, press 150 bar, 120 rpm, torque 3-18 kNm.
15.03.2002.06:00		06:30	0,5	2424,0	ERCU	OK	OK	Continued to cut core # 3 from 2420 m to 2424 m. No further progress. Torque dropped. Flow: 1100 lpm, press 150 bar, WOB: 20 Ton, RPM 120, Torque: 10-20 kNm.
15.03.2002.06:30		08:30	2,0	2424,0	ETCU	OK	OK	Circulated bottoms up with 1100 lpm. Gas reduced from 2,2 to 1 %. Flow checked, ok.
15.03.2002.08:30		16:30	8,0	293,0	ETCU	OK	OK	POOH to 293 m with 5" DP
15.03.2002.16:30		19:00	2,5		ETCU	OK	OK	POOH with BHA.
15.03.2002.19:00		20:00	1,0		EECU	OK	OK	Held tool box meeting. Broke off safety joint, L/D same. L/D inner barrels. Recovered 14,18 m core - 54,5% recovery.
15.03.2002.20:00		21:30	1,5					
ETCU	OK	E FAIL	L/D one 9 m jnt outer barrel. Pulled back and checked corehead, ok.					
15.03.2002.21:30		22:30	1,0		DERD	E FAIL	OK	Investigated hydraulic leak from dolly retract system. Found a crack in valve block for over centre valve. Isolated leak with dolly in extended position (not able to retract).
15.03.2002.22:30		23:30	1,0		ETCU	OK	OK	M/U 90 ft core barrel and spaced out same.
15.03.2002.23:30		00:00	0,5	100,0	ETCU	OK	OK	RIH with BHA to 100 m
16.03.2002.00:00		00:30	0,5	285,0	ETCU	OK	OK	Continued RIH with BHA to 285 m.
16.03.2002.00:30		06:00	5,5	1880,0	ETCU	OK	OK	RIH with core barrel on 5" DP to 1880 m.
16.03.2002.06:00		07:30	1,5	2375,0	ETCU	OK	OK	RIH with core barrel from 1880 m to 2375 m.
16.03.2002.07:30		08:30	1,0	2424,0	ETCU	OK	OK	M/U top drive. Washed and reamed down from 2375 m to 2424 m. Tagged fill at 2419 m.
16.03.2002.08:30		09:00	0,5	2424,0	ETCU	OK	OK	Dropped ball and circulated down same with 500 lpm. Took SCR's.
16.03.2002.09:00		11:00	2,0	2435,0	ERCU	OK	OK	Cut core # 4 from 2424 m to 2435 m. No further progress. Pressure increased, torque dropped. Flow: 1100 lpm, press 124 bar, WOB: 14 Ton, RPM 110-120, Torque: 4-11 kNm.
16.03.2002.11:00		12:30	1,5	2435,0	ETCU	OK	OK	Circulated bottoms up with 1500 lpm. Boosted riser with 1500 lpm.
16.03.2002.12:30		21:00	8,5	1290,0	ETCU	OK	OK	Flowchecked, ok. Pumped slug and POOH to 293 m. Pulled 2 min/stnd from 1500 m and 4 min/stnd from 500 m. Flow checked at shoe.
16.03.2002.21:00		23:00	2,0		ETCU	OK	OK	POOH with BHA.
16.03.2002.23:00		00:00	1,0		ETCU	OK	OK	Broke off corehead. Broke of safety jnt and L/D

							same. L/D inner barrels. Recovered 9,6 m core - 87,3 % recovery.
17.03.2002.00:00	01:00	1,0		ETCU	OK	OK	M/U 90 ft core barrel assembly for core no 5.
17.03.2002.01:00	02:30	1,5	285,0	ETCU	OK	OK	RIH with BHA to 285 m.
17.03.2002.02:30	06:00	3,5	1543,0	ETCU	OK	OK	RIH with core barrel on 5" DP to 1543 m.
17.03.2002.06:00	08:00	2,0	2385,0	ETCU	OK	OK	RIH with core barrel from 1543 m to 2385 m.
17.03.2002.08:00	09:00	1,0	2435,0	ETCU	OK	OK	M/U top drive. Washed and reamed down from 2385 m to 2435 m. Tagged fill at 2430 m.
17.03.2002.09:00	09:30	0,5	2435,0	ETCU	OK	OK	Dropped ball and circulated down same with 500 lpm / 27 bar. Took SCR's.
17.03.2002.09:30	11:00	1,5	2438,0	ERCU	OK	OK	Cut core no 5 from 2435 m to 2438 m. String stalled out. Picked off bottom and broke core. Not able to restart coring. Flow: 1100 lpm, press 80 bar, WOB: 5 - 12 Ton, RPM 100-120, Torque: 6-25 kNm.
17.03.2002.11:00	12:00	1,0	2438,0	ETCU	OK	OK	Circulated bottoms up with 1500 lpm / 105 bar. Boosted riser with 1540 lpm.
17.03.2002.12:00	12:30	0,5	2438,0	ETCU	OK	E FAIL	Flowchecked, ok
17.03.2002.12:30	13:00	0,5	2438,0	DERD	E FAIL	OK	Trouble shoot and repaired top drive torque wrench.
17.03.2002.13:00	20:30	7,5	293,0	ETCU	OK	OK	POOH to 293 m. Pulled 2 min/stnd from 1500 m and 4 min/stnd from 500 m.
17.03.2002.20:30	22:00	1,5		ETCU	OK	OK	POOH with BHA.
17.03.2002.22:00	23:00	1,0		EECU	OK	OK	Broke off corehead. Broke off safety jnt and L/D same. L/D inner barrels. Recovered 2,8 m core - 93,3 % recovery.
17.03.2002.23:00	23:30	0,5		EECU	OK	OK	M/U 90 ft core barrel assembly for core no 6.
17.03.2002.23:30	00:00	0,5	80,0	ETCU	OK	OK	RIH with BHA for core no 6.
18.03.2002.00:00	01:00	1,0	285,0	ETCU	OK	OK	Continue RIH with BHA.
18.03.2002.01:00	04:00	3,0	1280,0	ETCU	OK	OK	RIH with core barrel assy to 1280 m.
18.03.2002.04:00	04:30	0,5	1280,0	ETCU	OK	OK	Serviced top drive and travelling assembly.
18.03.2002.04:30	06:00	1,5	1666,0	ETCU	OK	OK	Continued RIH to 1666 m
18.03.2002.06:00	08:30	2,5	2408,0	ETCU	OK	E FAIL	RIH with core barrel assy from 1666 m to 2408 m.
18.03.2002.08:30	09:00	0,5	2408,0	DERD	E FAIL	OK	Removed BX frame 4 elevator.
18.03.2002.09:00	09:30	0,5	2438,0	ETCU	OK	OK	M/U top drive. Washed and reamed down from 2405 m to 2438 m. No fill.
18.03.2002.09:30	10:00	0,5	2438,0	ETCU	OK	OK	Dropped ball and circulated down same with 500 lpm / 34 bar. Took SCR's.
18.03.2002.10:00	13:30	3,5	2452,0	ERCU	OK	OK	Cut core no 6 from 2438 m to 2452 m. No further progress. Pressure increased, torque dropped. Flow: 1100 lpm, press 115 bar, WOB: 8-14 Ton, RPM 120, Torque: 4-22 kNm.
18.03.2002.13:30	14:00	0,5	2452,0	ETCU	OK	E FAIL	Cirulated well. Flowchecked, ok.
18.03.2002.14:00	15:00	1,0	2452,0	DERD	E FAIL	OK	Installed hydralift auto elevator.
18.03.2002.15:00	19:30	4,5	1268,0	ETCU	OK	E FAIL	POOH to 1268 m.
18.03.2002.19:30	00:00	4,5	1268,0	DERD	E FAIL	OK	Removed pipe handler / torque wrench for servicing. Installed extend / retract pressure relief block. Function tested same. Installed BX frame 4 elevator.
19.03.2002.00:00	03:30	3,5	293,0	ETCU	OK	OK	POOH to 293 m.
19.03.2002.03:30	06:00	2,5		ETCU	OK	OK	POOH with BHA. Pulling speed 4 min/stnd.
19.03.2002.06:00	07:30	1,5		ETCU	OK	OK	POOH with BHA. Pulling speed 4 min/stnd.
19.03.2002.07:30	08:30	1,0		EECU	OK	OK	Broke off corehead. Held tool box meeting. Broke off safety jnt and L/D same. L/D inner barrels.

							Recovered 13,7 m core - 97,5% recovery.
19.03.2002.08:30	09:30	1,0		EECU	OK	OK	M/U 90 ft core barrel assy for core no 7.
19.03.2002.09:30	10:30	1,0	110,0	ETCU	OK	E FAIL	RIH with BHA.
19.03.2002.10:30	11:30	1,0	110,0	DERD	E FAIL	OK	Trouble shoot Hydraracker upper & lower sequence fault. Changed out dammaged BX frame 4 elevator with hydralift auto elevator.
19.03.2002.11:30	15:30	4,0	1290,0	ETCU	OK	E FAIL	Continued RIH with core barrel assy to 13 3/8" shoe at 1290 m.
19.03.2002.15:30	17:00	1,5	1290,0	DERD	E FAIL	OK	Installed torque wrench to top drive.
19.03.2002.17:00	17:30	0,5	1290,0	ETCU	OK	OK	Filled pipe and broke circulation. P/U pup joint for space out.
19.03.2002.17:30	21:30	4,0	2421,0	ETCU	OK	OK	Continued RIH to 2421 m.
19.03.2002.21:30	22:30	1,0	2452,0	ETCU	OK	OK	Broke circulation and reamed down from 2421 m to bottom at 2452 m.
19.03.2002.22:30	23:00	0,5	2452,0	ETCU	OK	OK	Dropped ball and circulated same down with 500 lpm. Took SCR's.
19.03.2002.23:00	00:00	1,0	2455,0	ERCU	OK	OK	Cut core no. 7 from 2452 m to 2455 m. Core jammed. Flow: 1100 lpm, press 135 bar, WOB: 5-15 Ton, RPM 100, Torque: 4-26 kNm.
20.03.2002.00:00	00:30	0,5	2455,0	ETCU	OK	OK	Cirulated well, flowchecked, ok.
20.03.2002.00:30	06:00	5,5	1258,0	ETCU	OK	OK	POOH to 1258 m.
20.03.2002.06:00	10:00	4,0	300,0	ETCU	OK	OK	POOH to 300 m.
20.03.2002.10:00	12:30	2,5		ETCU	OK	E FAIL	POOH with BHA. Pulling speed 4 min/stnd.
20.03.2002.12:30	13:30	1,0		DERD	E FAIL	OK	Unable to release upper roller gripper on hydraracker. Investigated problem. Adjusted pressure to roller griper.
20.03.2002.13:30	15:00	1,5		EECU	OK	OK	Racked back DC stand. Broke off corehead. Held tool box meeting. L/D inner barrels. Racked back 90 ft outer barrel.
20.03.2002.15:00	18:00	3,0	382,0	BBDU	OK	OK	M/U jet sub, 1 stnd DP and BOP test plug. RIH to 382 m. Washed BOP/wellhead.
20.03.2002.18:00	19:00	1,0	396,0	BBDU	OK	OK	Landed test plug in wellhead. Displaced choke and kill lines to seawater. Held tool box meeting.
20.03.2002.19:00	00:00	5,0	396,0	BBDU	OK	OK	Pressure tested BOP to 20/280 bar for 5/10 min.
21.03.2002.00:00	02:30	2,5	396,0	BBDU	OK	OK	Continue pressure test BOP to 20/280 bar for 5/10 min.
21.03.2002.02:30	04:30	2,0		BBDU	OK	OK	POOH with BOP test plug. L/D same. Pulled and L/D jet sub.
21.03.2002.04:30	06:00	1,5		BBDU	OK	OK	Rigged up and started to pressure test TDS, kelly cocks and Grey valve to 20/280 bar for 5/10 min.
21.03.2002.06:00	15:00	9,0		BBDU	OK	OK	Continued pressure testing surface equipment, stand pipe and cmt manifold.
21.03.2002.15:00	16:30	1,5		DTDU	OK	E FAIL	P/U MWD stnd. Changed out RLL and MPT tool.
21.03.2002.16:30	17:00	0,5		DEMD	E FAIL	OK	Changed out damaged electrical connector on MWD tool.
21.03.2002.17:00	18:30	1,5		DTDU	OK	OK	Powered up and programmed MWD tool.
21.03.2002.18:30	19:00	0,5		DTDU	OK	OK	M/U bit sub and bit.
21.03.2002.19:00	19:30	0,5		DTDU	OK	OK	Calibrated and powered up BAT tool.
21.03.2002.19:30	21:30	2,0		DTDU	OK	OK	RIH with BHA to 277 m.
21.03.2002.21:30	00:00	2,5	1207,0	DTDU	OK	OK	RIH on 5" dp to 1207 m.
22.03.2002.00:00	00:30	0,5	1290,0	DTDU	OK	E FAIL	Continued RIH on 5" DP to 1290 m.
22.03.2002.00:30	01:30	1,0	1290,0	DERD	E FAIL	OK	Changed out swivel packing on DDM. Pressure tested same to 200 bar, ok.

22.03.2002.01:30	02:00	0,5	1290,0	DTDU	OK	OK	Filled pipe, broke circulation and tested MWD.
22.03.2002.02:00	06:00	4,0	2365,0	DTDU	OK	OK	RIH from 1290 m to 2365 m.
22.03.2002.06:00	09:30	3,5	2455,0	DTDU	OK	OK	Logged from 2365 m to 2455 m with MWD. Flow 2300 lpm, 70 RPM.
22.03.2002.09:30	12:00	2,5	2510,0	DDRU	OK	OK	Drilled 8 1/2" hole from 2455 m to 2510 m. Gas increased to 10,3 %.
22.03.2002.12:00	13:00	1,0	2510,0	DCAU	OK	OK	Circulated bottoms up. Max gas on bottoms up 2,7 %.
22.03.2002.13:00	15:00	2,0	2510,0	DCAU	OK	OK	Stopped pumps for 10 min, circulated for 10 min and stopped pumps for 10 min. Circulated bottoms up to evaluate gas readings.Flow 2800 lpm, press 295 bar. Max gas on bottoms up 0,5%.
22.03.2002.15:00	20:00	5,0	2652,0	DDRU	OK	OK	Drilled 8 1/2" hole from 2510 m to 2652 m.
22.03.2002.20:00	23:00	3,0	2652,0	DCAU	OK	E FAIL	Circulated hole clean with 2800 lpm. Meanwhile broke and L/D 90 ft core barrel from derrick.
22.03.2002.23:00	23:30	0,5	2652,0	DERD	E FAIL	OK	Not able to fill trip tank. Investigated and repaired problem.
22.03.2002.23:30	00:00	0,5	2652,0	DTLU	OK	OK	Flowchecked well, ok.
23.03.2002.00:00	01:00	1,0	2565,0	DTLU	OK	OK	POOH from 2652 m to 2565 m. Several tight spots. Maximum overpull 25 ton at 2565 m.
23.03.2002.01:00	04:00	3,0	2434,0	DCBK	OK	OK	RIH to 2595 m. M/U to top drive. Broke circulation and pumped out to 2565 m with 1400 lpm. Had 20 ton overpull at 2565 m. Backreamed from 2565 m to 2434 m. Hole tight.
23.03.2002.04:00	06:00	2,0	2434,0	DCAU	OK	OK	Circulated hole clean.
23.03.2002.06:00	07:00	1,0	2263,0	DCWK	OK	OK	POOH from 2434 m to 2263 m. Worked through tight spot at 2380 m and 2370 m with maximum 30 ton overpull.
23.03.2002.07:00	08:30	1,5	2652,0	DCWK	OK	OK	RIH from 2263 m to bottom at 2652 m. Max 5 - 10 drag.
23.03.2002.08:30	10:30	2,0	2652,0	DCWK	OK	OK	Circulated hole clean with 2800 lpm. Boosted riser.
23.03.2002.10:30	12:00	1,5	2283,0	DTLU	OK	OK	Flowchecked well, ok. POOH from 2652 m to 2283 m. No excess drag.
23.03.2002.12:00	17:30	5,5	278,0	DTLU	OK	OK	Pumped slug. POOH from 2283 m to 278 m.
23.03.2002.17:30	19:30	2,0		DTLU	OK	OK	POOH with BHA. Broke off bit and racked MWD tools in derrick.
23.03.2002.19:30	20:30	1,0		ELWU	OK	OK	Held tool box meeting. Rigged up wireline equipment.
23.03.2002.20:30	22:00	1,5		ELWU	OK	OK	M/U tool string (HRLA-PEX). Checked tools, ok. Loaded radioactive sources.
23.03.2002.22:00	00:00	2,0		ELWU	OK	OK	RIH with wireline log #1 (HRLA-PEX). In at 22:05 hrs.
24.03.2002.00:00	06:00	6,0		ELWU	OK	OK	Continued with log # 1. Out of hole at 05:10 hrs. Removed radioactive sources. L/D tools.
24.03.2002.06:00	08:00	2,0		ELWU	OK	OK	Made up tool string for logging run # 2 (CMR-ECS-HNGS). Loaded radioactive sources.
24.03.2002.08:00	13:00	5,0		ELWU	OK	E FAIL	RIH with wireline log #2 (CMR-ECS-HNGS). Started down log at 10:20 hrs.
24.03.2002.13:00	13:30	0,5		ELOD	E FAIL	OK	Logging computer crashed. Restarted same.
24.03.2002.13:30	17:30	4,0		ELWU	OK	E FAIL	Continued logging.
24.03.2002.17:30	20:00	2,5		ELOD	E FAIL	OK	Attempted to power up tool for multi wait station, neg. Moved tool slowly up and downward while checking tool failure.
24.03.2002.20:00	20:30	0,5		ELOD	E FAIL	OK	Posisioned tool at 2404 m. Attempted to start station log, neg.
24.03.2002.20:30	21:00	0,5		ELWU	OK	STUCK	Took station log at 2404 m. Attempted to pull OOH.

							neg. Tool stuck. Top of tool at 2387 m.
24.03.2002.21:00	00:00	3,0		ELSD	STUCK	OK	Attempted to pull free. Maximum cable head tension 8000 lbs (11000 lbs cable tension). Meanwhile prepared equipment for cut and thread fishing operation.
25.03.2002.00:00	01:00	1,0		ELSD	STUCK	OK	Continued to prepare for cut and thread fishing operation. Held tool box talk.
25.03.2002.01:00	06:00	5,0		ELWW	OK	OK	Waited on weather. Not possible to install sheave in derrick due to strong wind.
25.03.2002.06:00	13:30	7,5		ELWW	OK	OK	Waited on weather. Not possible to install sheave in derrick due to strong wind.
25.03.2002.13:30	16:30	3,0		ELSD	STUCK	OK	Held pre-job meeting / risk assessment. Cut wireline and attached rope sockets. Rigged down compensator wire. Rigged up sheave at crown.
25.03.2002.16:30	23:30	7,0	583,0	ELSD	STUCK	OK	M/U fishing grapple assy. RIH on 5 " DP over wireline to 583 m.
25.03.2002.23:30	00:00	0,5	583,0	ELSD	STUCK	OK	Found wear on wire at surface. Slipped and cut wire. Made new rope socket.
26.03.2002.00:00	00:30	0,5	583,0	ELSD	STUCK	OK	Continued to build rope socket.
26.03.2002.00:30	06:00	5,5	1192,0	ELSD	STUCK	OK	RIH on 5" DP over wire from 583 m to 1192 m.
26.03.2002.06:00	06:30	0,5	1290,0	ELSD	STUCK	OK	Continued RIH on 5" DP over wireline from 1192 m to 1290 m.
26.03.2002.06:30	07:30	1,0	1290,0	ELSD	STUCK	OK	Slipped and cut wire. Buildt new rope socket.
26.03.2002.07:30	11:30	4,0	1803,0	ELSD	STUCK	OK	RIH with 5" DP over wireline from 1290 m to 1803 m.
26.03.2002.11:30	13:00	1,5	1803,0	ELSD	STUCK	OK	Hang off wire inside string. M/U to top drive and broke circulation. Pumped with 2000 lpm / 94 bar.
26.03.2002.13:00	16:30	3,5	2365,0	ELSD	STUCK	OK	RIH with 5" DP over wireline from 1803 m to 2365 m.
26.03.2002.16:30	18:30	2,0	2365,0	ELSD	STUCK	OK	Hang off wire inside string. M/U to top drive and broke circulation. Pumped with 2380 lpm / 138 bar. Pumped Slug.
26.03.2002.18:30	19:00	0,5	2383,0	ELSD	STUCK	OK	RIH and tagged fish at 2383 m. Latched on to fish with 10 ton down weight. Pulled free with 55 ton overpull. POOH to 2365 m.
26.03.2002.19:00	19:30	0,5	2365,0	ELSD	STUCK	OK	Held tool box talk. Discussed forward plan due to weather deteration.
26.03.2002.19:30	00:00	4,5	2365,0	ELSD	STUCK	OK	Prepared and fired electrical weak point. POOH with wireline. R/D Schlumberger wireline equipment.
27.03.2002.00:00	06:00	6,0	964,0	ELSD	STUCK	OK	POOH with fish from 2365 m to 964 m. Monitored weather.
27.03.2002.06:00	08:30	2,5	100,0	ELSD	STUCK	OK	POOH with fish from 964 m to 100 m.
27.03.2002.08:30	09:00	0,5		ELSD	STUCK	OK	Held safety meeting prior to pulling radioactive sources to surface. Continued POOH with fish.
27.03.2002.09:00	10:00	1,0		ELSD	STUCK	E FAIL	Removed radioactive sources and L/D logging tools (CMR-ECS-HNGS). Found two bow type centralizers lost in hole.
27.03.2002.10:00	13:00	3,0		DERD	E FAIL	OK	Removed IBOP from TDS for repair and installed manual kelly cock. Cleared rig floor.
27.03.2002.13:00	15:00	2,0	180,0	ELWK	OK	OK	M/U 8 1/2" rock bit and RIH with BHA to 180 m.
27.03.2002.15:00	18:00	3,0	1270,0	ELWK	OK	E FAIL	RIH on 5" DP from 180 m to 1270 m. Broke circulation.
27.03.2002.18:00	23:00	5,0	1270,0	DERD	E FAIL	OK	Replaced IBOP and saver sub. Changed out tourqe wrench lower jaws.
27.03.2002.23:00	00:00	1,0	1671,0	ELWK	OK	OK	RIH from 1270 m to 1671 m.
28.03.2002.00:00	01:30	1,5	2200,0	ELWK	OK	OK	Continued RIH from 1671 m to 2200 m

28.03.2002.01:30		05:00	3,5	2423,0	ELWK	OK	OK	Reamed down from 2200 m to 2423 m. Flow 2000 lpm, 40 RPM, torque 3-5 kNm. Took 15-20 ton weight between 2416 m - 2420 m. Got some torque peaks, 9 kNm. Reamed stand several times and moved pipe up/down without rotation, ok.
28.03.2002.05:00		06:00	1,0	2452,0	ELWK	OK	OK	Racked back one stand and pulled back to 2368 m. Continued ream down from 2368 m to 2452 m. Flow 2000 lpm, 40 RPM, torque 3-5 kNm.
28.03.2002.06:00		10:30	4,5	2652,0	ELWK	OK	OK	Washed and reamed down from 2452 m. Pushed junk down from 2628 m to TD at 2652 m. Flow rate 2050 lpm, 40 rpm, 4-6 kNm torque.
28.03.2002.10:30		13:30	3,0	2652,0	ELWK	OK	OK	Circ hole clean and cond mud prior to pooh for additional logging. Flow rate 2700 - 4800 lpm, 40 rpm, 3 kNm torque.
28.03.2002.13:30		19:30	6,0	810,0	ELWK	OK	OK	Pooh wet to 2350 m. Slugged pipe and continued pooh to 810 m. Wiped tight spot at 2503 m as pooh.
28.03.2002.19:30		20:30	1,0	810,0	ELWK	OK	OK	Discussed forward plans and performed risk assessment regarding riser tension wires.
28.03.2002.20:30		00:00	3,5		ELWK	OK	OK	Continued pooh. L/d bit and bit sub.
29.03.2002.00:00		02:00	2,0		ELWU	OK	OK	Held pre job meeting. R/u Schlumberger wireline.
29.03.2002.02:00		03:00	1,0		ELWU	OK	OK	M/u toolstring, logging run no 3: GR-MDT and tested tools.
29.03.2002.03:00		05:00	2,0	2295,0	ELWU	OK	OK	Rih with logging run no 3: GR-MDT, to 2295 m.
29.03.2002.05:00		06:00	1,0	2312,5	ELWU	OK	OK	Took 5 pressure points from 2295 m to 2312,5 m.
29.03.2002.06:00		12:00	6,0	2531,5	ELWU	OK	OK	Took 42 pressure points from 2318,5 m to 2531,5 m, 37 good, 1 lost seal and 9 tight points.
29.03.2002.12:00		14:00	2,0		ELWU	OK	OK	Pooh with logging run no 3: GR-MDT. L/d wireline tool string.
29.03.2002.14:00		16:00	2,0		ELWU	OK	OK	M/u wireline tool string for sampling, run no.4: GR-MDT. Changed sampling string configuration from 2 to 3 oil samples.
29.03.2002.16:00		17:30	1,5	2431,5	ELWU	OK	OK	RIH with logging run no 4: GR-MDT to first sampling point at 2431,5 m for Tilje oil sample.
29.03.2002.17:30		00:00	6,5	2431,5	ELWU	OK	OK	Took oil sample at 2431,5 m. Retracted probe. Tool free.
30.03.2002.00:00	02:30	2,5	2463,5	ELWU	OK	OK		Rih from 2431,5 m. Adjusted depths and made pre tests to find proper sampling point at 2463,5 m.
30.03.2002.02:30		06:00	3,5	2463,5	ELWU	OK	OK	Took oil sample at 2463,5 m.
30.03.2002.06:00		06:30	0,5	2463,5	ELWU	OK	OK	Took oil sample at 2463,5 m. Retracted probe and pulled stuck cable free with 3500 lbs overpull.
30.03.2002.06:30		12:30	6,0	2375,5	ELWU	OK	O FAIL	Attempted to take oil sample at 2375,5 m. Had to reset tool several times due to plugging.
30.03.2002.12:30		13:00	0,5	2375,5	ELOD	O FAIL	OK	Reset Schlumberger computer.
30.03.2002.13:00		19:00	6,0	2375,5	ELWU	OK	OK	Took oil sample at 2375,5 m. Had to reset tool due to plugging.
30.03.2002.19:00		21:00	2,0		ELWU	OK	OK	Retracted probe and pulled stuck cable free with 3500 lbs overpull. Pooh. L/d wireline tool string.
30.03.2002.21:00		00:00	3,0		ELWU	OK	OK	M/u wireline tool string, run no 5: FMI-DSI-GR.
31.03.2002.00:00		02:00	2,0	1980,0	ELWU	OK	OK	Checked tool string and rih to 1980 m.
31.03.2002.02:00		03:00	1,0		ELOU	OK	OK	Adjusted clock 1 hour for summer time.
31.03.2002.03:00		03:30	0,5	2430,0	ELWU	OK	E FAIL	Rih with logging string to 2430 m. Prepared for repeat run.
31.03.2002.03:30		04:00	0,5	2430,0	ELOD	E FAIL	OK	Had problems with telemetry.
31.03.2002.04:00		04:30	0,5	2389,0	ELWU	OK	E FAIL	Logged, run no 5: FMI-DSI-GR from 2430 m to 2389 m. Aborted logging and started pooh due to

							riser tension no 7 broken.
31.03.2002.04:30	06:00	1,5		DERD	E FAIL	OK	Pooh with wireline, out of hole at 0536 hrs. Displaced riser with sea water and prep to disconnect riser.
31.03.2002.06:00	12:00	6,0		DERD	E FAIL	OK	L/d wireline toolstring, run no 5: FMI-DSI-GR and rigged down wireline. R/u riser handling equipment and installed diverter handling tool. Pulled and l/d diverter assembley. Unlatched LMRP at 1147 hrs and pulled clear of BOP. Moved rig 20 m off location.
31.03.2002.12:00	00:00	12,0		DERD	E FAIL	OK	Monitored for integrity of slip joint inner barrel shoe. Held pre job meeting and performed risk assessment meeting prior to remove damaged riser tension wires. R/u to remove damaged tension wires. Removed tensioner, choke, kill and booster goose necks, conduit lines, mux saddles and Schlumberger heave compensating line from slip joint.
01.04.2002.00:00	01:30	1,5		DERD	E FAIL	OK	Continued removing of conduit lines and mux saddles from slip joint.
01.04.2002.01:30	02:00	0,5		DERD	E FAIL	OK	Pulled slip joint through rotary and landed in spider. Cleaned and greased inner barrel and locked same.
01.04.2002.02:00	06:00	4,0		DERD	E FAIL	OK	Bled down pressure on tensioners and removed sockets from same.
01.04.2002.06:00	00:00	18,0		DERD	E FAIL	OK	Held pre job meeting. Reeved new tension wires through sheaves and prepared for installing new sockets.
02.04.2002.00:00	02:30	2,5		DERD	E FAIL	OK	Continued to reeve new tension wires through sheaves and prepared for installing new sockets.
02.04.2002.02:30	04:00	1,5		DERD	E FAIL	OK	While reeving no 7 riser tension wire, 1" manilla rope parted causing loss of new wire into sea through moon pool. ROV carried out survey on LMRP and located wire on sea bed.
02.04.2002.04:00	06:00	2,0		DERD	E FAIL	OK	Continued reeving new wire to riser tensioners and prepared for installing new sockets.
02.04.2002.06:00	00:00	18,0		DERD	E FAIL	OK	Reeved new wires to riser tensioners. Prepared wires and installed sockets. Meanwhile m/u handling joint to slip joint. Pulled slip joint through rotary and inspected thrust bearing on tension ring bearing.
03.04.2002.00:00	06:00	6,0		DERD	E FAIL	OK	Continued preparing riser tension wires, installed sockets and moulded same. Held pre job meeting. Ran slip joint through rotary and nippled up kill and choke lines, booster line and conduit lines. Installed MUX saddles.
03.04.2002.06:00	17:00	11,0		DERD	E FAIL	OK	Installed MUX saddles and Schlumberger sheave. Installed riser tensioners to slip joint. Charged up and calibrated tensioners. Checked correct lengths of tension wires.
03.04.2002.17:00	19:00	2,0		DERD	E FAIL	OK	Moved rig to location, landed LMRP and locked same to BOP. Performed 25 mt over pull test.
03.04.2002.19:00	21:30	2,5		DERD	E FAIL	OK	Opened slip joint, l/d landing joint and connected slip joint control hoses. Installed and locked diverter. Performed 5 mt over pull test.
03.04.2002.21:30	00:00	2,5		DERD	E FAIL	OK	L/d diverter running tool and riser handling equipment. Checked for trapped pressure below shear ram - neg.
04.04.2002.00:00	03:00	3,0	375,0	BBDU	OK	OK	R/u 5" handling equipment. M/u jet sub, two stands 5" hwdp, BOP test tool and rih with 5" dp to 375 m.

04.04.2002.03:00	04:00	1,0		DDOW	OK	E FAIL	Continued preparing 1,35 sg wbm for displacing.
04.04.2002.04:00	05:00	1,0		DERD	E FAIL	OK	Held pre job meeting prior to displacement. Pumped 1 m3 drill water followed by 1,35 sg wbm and displaced kill/choke lines. Opened shear ram and displaced booster line to 1,35 sg mud.
04.04.2002.05:00	06:00	1,0	400,0	DERD	E FAIL	OK	Ran in with jet sub to 400 m. Pumped 14 m3 high visc spacer followed by 50 m3 drill water. Commenced to displace riser to 1,35 sg wbm.
04.04.2002.06:00	07:00	1,0	400,0	DERD	E FAIL	OK	Displaced riser to 1,35 sg wbm.
04.04.2002.07:00	13:00	6,0	400,0	BBDU	OK	OK	Landed BOP test tool in well head. Tested riser connector, pipe rams, annular preventers and failsafe valves to 20/280 bar for 5/10 min on blue pod from drillers panel. Function tested on both pods from tool pusher panel.
04.04.2002.13:00	14:30	1,5		BBDU	OK	OK	Pooh with BOP test tool and l/d same.
04.04.2002.14:30	18:00	3,5		BBDU	OK	OK	m/u drilling stand to TDS. R/u test line and pressure tested mud hose, inside bop and kelly valve to 20/280 bar for 5/10 min.
04.04.2002.18:00	19:00	1,0		BBDU	OK	OK	Pressure tested spare kelly valves and Gray valve to 20/280 bar for 5/10 min.
04.04.2002.19:00	21:00	2,0		DERD	E FAIL	OK	R/u wireline and m/u logging tool string. Meanwhile pressure tested choke manifold to 20/280 bar for 5/10 min.
04.04.2002.21:00	00:00	3,0		DERD	E FAIL	OK	Rih with logging run no 5: FMI-DSI-GR. Cont. Wireline tools stood up at 1313 m at 2200 hrs. Made several attempts to work tools down. Unable to pass 1316 m. Meanwhile pressure tested choke manifold to 20/280 bar for 5/10 min.
05.04.2002.00:00	02:00	2,0		DERD	E FAIL	OK	Pooh with logging run no 5: FMI-DSI-GR. L/d tool string and r/d wireline. Meanwhile cont. pressure testing choke manifold to 20/280 bar for 5/10 min.
05.04.2002.02:00	03:00	1,0		DERD	E FAIL	OK	Broke and l/d spare kelly valves and Gray valve. Meanwhile cont. pressure testing choke manifold to 20/280 bar for 5/10 min.
05.04.2002.03:00	06:00	3,0	867,0	DERD	E FAIL	OK	M/u 8 1/2" bit and bha for wiper trip. Rih to 867 m.
05.04.2002.06:00	07:00	1,0	1305,0	DERD	E FAIL	OK	Rih for wiper trip from 867 m to 1305 m.
05.04.2002.07:00	00:00	17,0	2450,0	DERD	E FAIL	OK	Washed and reamed from 1305 m to 2450 m. Took 4 mt weight at 1314 m. Reamed tight spots 1314-1334 m, 1339-1348 m, 1385-1816 m, 1890-1915 m, 1935-1970 m, 2032-2118 m and 2138-2140 m. Reaming parameters: 2250 lpm, 102 bar, 40 -120 rpm, 3 - 4 kNm torque. Hole occasionally packed off from 1935 m. Max gas 13,5 %.
06.04.2002.00:00	02:30	2,5	2630,0	DERD	E FAIL	OK	Continued reaming from 2450 m to 2630 m. Reaming parameters: 2130 lpm, 120 bar, 120 rpm, 0 - 8 mt wob, 3 - 6 kNm torque.
06.04.2002.02:30	04:30	2,0	2630,0	DERD	E FAIL	OK	Circulated hole clean and conditioned mud, 2130 lpm, 125 bar. Rotated and reciprocated string while circulating. Max gas 2,5 %.
06.04.2002.04:30	06:00	1,5	2320,0	DERD	E FAIL	OK	Flow checked for 10 min. Pooh wet from 2630 m to 2320 m. Hole ok.
06.04.2002.06:00	11:00	5,0	171,0	DERD	E FAIL	OK	Pooh from 2220 m to 171 m. Took 7 mt over pull at 1514 m. Wiped tight spot, ok. Flow checked in 13 3/8" csg shoe at 1290 m and prior to pull bha into BOP.
06.04.2002.11:00	12:30	1,5		DERD	E FAIL	OK	Pooh with bha. L/d bit and bit sub.
06.04.2002.12:30	14:30	2,0		DERD	E FAIL	OK	Held pre job meeting. R/u wireline and m/u tool string.

06.04.2002.14:30	17:30	3,0	1974,0	DERD	E FAIL	OK	Rih with logging run no 5: FMI-DSI-GR. Stood up at 1974 m.
06.04.2002.17:30	18:00	0,5	1974,0	ELWU	OK	OK	Made several attempts to pass 1974 m with different running speed. Observed 1000 lbs over pull on last attempt.
06.04.2002.18:00	23:30	5,5	400,0	ELWU	OK	OK	Logged out of hole from 1974 m to 400 m.
06.04.2002.23:30	00:00	0,5		ELWU	OK	OK	Pooh with wireline. Commenced l/d toolstring.
07.04.2002.00:00	01:00	1,0		ELWK	OK	OK	Cont l/d wire line tool string. R/d wireline.
07.04.2002.01:00	06:00	5,0	1530,0	DCWK	OK	OK	M/u 8 1/2" bit and bha and rih to 1530 m for wiper trip.
07.04.2002.06:00	07:30	1,5	1973,0	DCWK	OK	OK	Rih with 8 1/2" bit and bha from 1533 m. Took 5 mt weight at 1973 m.
07.04.2002.07:30	15:00	7,5	2630,0	DCWK	OK	OK	Reamed and washed tight spot at 1973 m, 2000 lpm, 90 bar, 80 rpm, 0-5 mt wob, 4 kNm torque. Cont rih. Wiped through tight spots at 1993 m and 2360 m. Took 7 mt weight at 2630 m. Reamed and washed from 2603 m to 2630 m, 2130 lpm, 120 bar, 40-100 rpm, 0-5 mt wob, 4-5 kNm torque.
07.04.2002.15:00	17:30	2,5	2630,0	DCWK	OK	OK	Circulated and increased mud weight from 1,35 sg to 1,38 sg. Max gas 21,4 %.
07.04.2002.17:30	00:00	6,5	170,0	DCWK	OK	OK	Pooh wet from 2630 m to 1900 m. Slugged pipe and cont pooh to 170 m. Flow checked at 13 3/8" csg shoe and prior to pull bha through bop.
08.04.2002.00:00	01:30	1,5		DCWK	OK	OK	Pooh with bha. L/d bit and bit sub. R/d mud bucket and cleared rig floor.
08.04.2002.01:30	03:00	1,5		ELWU	OK	OK	Held pre job meeting. R/u schlumberger wireline. M/u wireline tool string.
08.04.2002.03:00	05:00	2,0	2620,0	ELWU	OK	OK	Rih with logging run no 6: VSP - GR to 2620 m. Correlated and fired three check shots when rih. No hole restrictions observed.
08.04.2002.05:00	06:00	1,0		ELWU	OK	OK	Logged run no 6: VSP-GR from 2620 m to 2400 m.
08.04.2002.06:00	10:30	4,5	1500,0	ELWU	OK	OK	Logged run no.6: VSP-GR from 2400 m to 1500 m.
08.04.2002.10:30	12:00	1,5		ELWU	OK	OK	Pooh. r/d tool string.
08.04.2002.12:00	13:00	1,0		ELWU	OK	OK	M/u wireline tool string, logging run no 7: FMI-DSI-GR and checked tools.
08.04.2002.13:00	19:00	6,0	1540,0	ELWU	OK	OK	Rih and logged run no 7: FMI-DSI-GR from 2620 m to 1540 m.
08.04.2002.19:00	20:30	1,5		ELWU	OK	OK	Pooh with wireline. R/d tool string.
08.04.2002.20:30	22:00	1,5		ELWU	OK	OK	M/u wireline tool string, logging run no 8: MDT-GR (dual packer) and checked tools.
08.04.2002.22:00	00:00	2,0		ELWU	OK	OK	Rih with logging run no 8: MDT-GR.
09.04.2002.00:00	06:00	6,0	2295,0	ELWU	OK	OK	Continued rih. Correlated from 2350 m. Took pre tests and set packer at 2295 m for sampling.
09.04.2002.06:00	12:30	6,5	2295,0	ELWU	OK	OK	Logging run no 8: MDT-GR (dual packer). Sampled at 2295 m.
09.04.2002.12:30	14:30	2,0		ELWU	OK	OK	Pooh with wireline log no 8: MDT-GR.
09.04.2002.14:30	16:30	2,0		ELWU	OK	OK	L/d wireline tool string and r/d wireline.
		1627,5					

Well 6608/10-8A

Operations by section

Start first activity: **01.01.1980 00:00** **Start last activity:** **13.08.2002 23:59**

Well: **6608/10-008A**

Wellbore: 6608/10-008A SIDETRACK

Section: 8 1/2" Start time: 12.04.2002 06:00 End time: 19.04.2002 18:00

Rig: STENA DON

Time from	Time to	Time used	Depth mMD	Act code	---- Status ---- During opr	End of opr	Description of activities
12.04.2002.06:00	10:00	4,0	1357,0	DDLK	OK	OK	Kicked off for sidetrack/ time drilled 8 1/2" hole 1340 - 1357 m. Parameters: 1-3 t WOB/ 0 string RPM/ 120 bit RPM/ 1800 lpm/ 125 bar.
12.04.2002.06:00	18:00	0,0		ZNON			
12.04.2002.10:00	00:00	14,0	1647,0	DDTU	OK	OK	Drilled 8 1/2" hole 1357 - 1647 m. Parameters: 3-6 t WOB/ 0-100 String RPM/ 120-235 bit RPM/ 1800-2270 lpm/ 125-193 bar/ 3-8 KNM.
13.04.2002.00:00	06:00	6,0	1833,0	DDTU	OK	OK	Drilled 8 1/2" hole 1647 - 1833 m. Parameters: 4-7 t WOB/ 0-100 String RPM/ 135-235 bit RPM/ 2270 lpm/ 192-200 bar/ 3-8 KNM.
13.04.2002.06:00	00:00	18,0	2263,0	DDTU	OK	OK	Drilled 8 1/2" hole 1833 - 2263 m. Parameters: 4-10 t WOB/ 0-100 String RPM/ 135-235 bit RPM/ 2270 lpm/ 200-240 bar/ 3-9 KNM.
14.04.2002.00:00	06:00	6,0	2365,0	DDTU	OK	OK	Drilled 8 1/2" hole 2263 - 2365 m. Parameters: 4-10 t WOB/ 0-100 String RPM/ 135-235 bit RPM/ 2270 lpm/ 225-250 bar/ 5-10 KNM.
14.04.2002.06:00	20:30	14,5	2660,0	DDTU	OK	OK	Drilled 8 1/2" hole 2365 - 2660 m. Parameters: 4-10 t WOB/ 0-100 String RPM/ 135-235 bit RPM/ 2270 lpm/ 232-245 bar/ 6-12 KNM.
14.04.2002.20:30	23:00	2,5	2660,0	DCAU	OK	OK	Circulated hole clean with 2270 lpm/ 220-225 bar/ 0-100 String RPM/ 135-235 bit RPM. Racked back one stand at 2655 m to be able to work a full stand while circulating. Max O-pull 50 t to pull free after connection (8 min static pipe).
14.04.2002.23:00	00:00	1,0	2460,0	DCWK	OK	OK	POOH to 2460 m. Max 20 t O-pull at 2627 m (at connection, 3 min static pipe) and 2460 m.
15.04.2002.00:00	01:00	1,0	2380,0	DCRK	OK	OK	Backreamed 2460 - 2380 m. Parameters: 2770 LPM/ 210-215 bar/ 100 rpm/ 6-14 KNM.
15.04.2002.01:00	02:00	1,0	2205,0	DCWK	OK	OK	POOH to 2205 m. 20 t O-pull at 2205 m.
15.04.2002.02:00	03:00	1,0	2100,0	DCRK	OK	OK	Backreamed 2205 - 2100 m. Parameters: 2770 LPM/ 210-215 bar/ 100 rpm/ 6-14 KNM.
15.04.2002.03:00	04:30	1,5	1608,0	DCWK	OK	OK	POOH to 1608 m. Max O-pull 12 t at 1608 m.
15.04.2002.04:30	05:00	0,5	1492,0	DCRK	OK	OK	Backreamed 1608 - 1492 m. Parameters: 2770 LPM/ 210 bar/ 100 rpm/ 6-9 KNM.
15.04.2002.05:00	06:00	1,0	1280,0	DCWK	OK	OK	POOH to 1280 m.

15.04.2002.06:00	06:30	0,5	1288,0	DCWK	OK	OK	Flowchecked. Serviced top drive.
15.04.2002.06:30	13:30	7,0		DCWK	OK	OK	RIH from 1288 m. Tight spots at 1818 m, 2322 m, 2325 m, 2336 m. Reamed 2336 - 2363 m with 1800 lpm / 155 Bar / 90 RPM / 6-7 KNM / 0-2 t WOB. Continued RIH to 2660 m.
15.04.2002.13:30	16:00	2,5	2660,0	DCWK	OK	OK	Circulated BU with 2250 lpm / 218 Bar / 50 RPM. Flowchecked. Dropped electronic multi shot (EMS) survey tool.
15.04.2002.16:00	00:00	8,0	630,0	DTLU	OK	OK	POOH to 13 3/8" casing shoe. Flowchecked. POOH to 630 m.
16.04.2002.00:00	04:30	4,5		DTLU	OK	OK	POOH. Recovered EMS. Broke and LD bit, motor and MWD. Downloaded MWD tool in rathole meanwhile LD motor and clearing drillfloor for wireline logging.
16.04.2002.04:30	06:00	1,5		ELOU	OK	OK	Rigged up for wireline logging run #1. Performed pre-job meeting.
16.04.2002.06:00	07:30	1,5		ELOU	OK	OK	Rig up to run WL run #1 (PEX-HRLA-HNGS-DSI). Installed radio-active sources.
16.04.2002.07:30	19:00	11,5		ELOU	OK	E FAIL	RIH with WL run #1 and logged from 1288 m - 2660 m. Got unsufficient logging data from 2560 m - 2660 m. No data from DSI tool. POOH.
16.04.2002.19:00	00:00	5,0		ELOD	E FAIL	OK	Troubleshot tools and rearranged tool string configuration. Found possible electrical failure on primary HRLA.
17.04.2002.00:00	00:30	0,5		ELOD	E FAIL	OK	Tested toolstring, OK.
17.04.2002.00:30	06:00	5,5		ELOD	E FAIL	OK	RIH with WL run #2 (PEX-HRLA-HNGS-DSI). Logged from 1288 m - 2660 m. POOH at 800 m.
17.04.2002.06:00	07:30	1,5		ELOU	OK	OK	LD toolstring for WL run #2. Unloaded radioactive sources.
17.04.2002.07:30	11:00	3,5		ELOU	OK	OK	MU and RIH with WL run#3 (MDT-GR).
17.04.2002.11:00	18:30	7,5		ELRU	OK	OK	Took 23 pressure points from 2438 m - 2636 m. Cable became differential stuck at 2547 m (8. pressure point). Cable was pulled loose with max. tension of 12000 lbf (tool static for 20 mins).
17.04.2002.18:30	21:00	2,5	2614,0	ELRU	OK	STUCK	Set tool at 2614 m for water sample at 2614 m. Found cable differential stuck when started to move tool to next sample depth (tool static for 2.5 hrs). Top fish at 2603 m.
17.04.2002.21:00	00:00	3,0	2614,0	ELSD	STUCK	OK	Made several attempts to free cable with max tension - negative (tension on tool constant). Held tool box talk with involved personel and prepared for fishing tool by cut and thread method. Meanwhile sampled additional bottle #2.
18.04.2002.00:00	05:00	5,0	2614,0	ELSD	STUCK	OK	Rigged up for cut and thread operation. Rigged down compensator line. Cut wireline and attached rope sockets. Rigged up top sheave.
18.04.2002.05:00	06:00	1,0	30,0	ELSD	STUCK	OK	MU fishing grapple. RIH with DP over wireline to 30 m.
18.04.2002.06:00	16:00	10,0	1290,0	ELSD	STUCK	OK	Continued RIH with DP stripping over cable. Broke circulation at shoe with 500 lpm / 20 Bar.
18.04.2002.15:30	23:00	7,0	2600,0	ELSD	STUCK	OK	RIH with DP stripping over cable.
18.04.2002.23:00	00:00	1,0	2588,0	ELSD	STUCK	OK	Held toolbox meeting prior to engaging fish and POOH with reverse cut and thread method. Meanwhile MU circulation sub, broke circulation with 1200 lpm / 150 Bar. Pumped slug.
19.04.2002.00:00	03:00	3,0	2603,0	ELSD	STUCK	OK	Engaged fish at 2603 m, no overpull. Verified fish engaged by grapple and started to POOH by reverse cut and thread to 2400 m (above reservoar).
19.04.2002.03:00	06:00	3,0	2400,0	ELSD	STUCK	OK	Build new rope sockets. Made 2 attempts to fire electrical weak point, came loose on second attempt. Prepared to POOH with cable.
19.04.2002.06:00	08:30	2,5	2603,0	ELOU	OK	OK	POOH with wireline to surface.
19.04.2002.08:30	15:30	7,0		ELSD	STUCK	OK	POOH with 5" DP and fish. LD fishing grapple.
19.04.2002.15:30	17:30	2,0		ELOU	OK	OK	LD wireline toostring. Rig down wireline equipment.
19.04.2002.17:30	18:00	0,5		RMRU	OK	OK	Serviced topdrive and cleared drill floor.
		180,0					

Section: PA Start time: 19.04.2002 18:00 End time: 25.04.2002 18:00

Rig: STENA DON

Time from	Time to	Time used	Depth mMD	Act code	---- Status ---- During opr	End of opr	Description of activities
19.04.2002.18:00	19:00	1,0		PTTU	OK	OK	MU and RIH with 265 m of 3 1/2" cement stinger.
19.04.2002.18:00	18:00	0,0		ZNON			
19.04.2002.20:00	00:00	4,0	2294,0	PTTU	OK	OK	RIH with 5" DP to 2294 m. Broke circulation at casing shoe and at 2000 m.
20.04.2002.00:00	01:00	1,0	2660,0	PTTU	OK	OK	Continued RIH with 5" DP to 2660 m.
20.04.2002.01:00	03:00	2,0	2660,0	PTTU	OK	OK	Circulated with 1200 lpm / 75 Bar / 100 RPM. Hole packed off when flowrate was increased to 3000 lpm / 250 Bar. Pipe free with full rotation, no returns. Established returns by increasing pump rate in steps and working pipe. Hole packed off several times, pipe free at all times. Lost 6 m3 mud to the formation.
20.04.2002.03:00	06:00	3,0	2660,0	PTTU	OK	OK	Established full returns with 2000 lpm and circulated hole clean. Hole packed off occasionally while circulating.
20.04.2002.06:00	08:30	2,5	2660,0	PCCU	OK	OK	Circulate hole with 2500 lpm / 178 Bar / 100 RPM. Meanwhile held tool box talk prior to cementing.
20.04.2002.08:30	10:00	1,5		PSSU	OK	OK	PU cement single with swedge. Installed cement hose and pressure test same to 200 Bar / 10 min.
20.04.2002.10:00	11:00	1,0		PSSU	OK	O FAIL	OH cmt plug #1 : pumped 8,0 m3 1.60 SG spacer with cement unit. Started mixing and pumping of 8,5 m3 1.90 SG cement.
20.04.2002.11:00	11:30	0,5		PAOD	O FAIL	OK	Mixing operation aborted due to problems with CMS unit deli vering too low volume of retarder into mixing water. Pumped 4 m3 slurry overboard through reverse circulation line.
20.04.2002.11:30	12:30	1,0		PSSU	OK	OK	Remixed slurry by batchmixing and adding retarder manually to mixing tank. Displaced cement with rigpumps with 1700 lpm / 120-135 Bar.
20.04.2002.12:30	14:30	2,0	2445,0	PSSU	OK	OK	POOH to 2445 m, pipe wet. Installed cement single and circulated BU with 2400 lpm / 195 Bar. No cement in returns.
20.04.2002.14:30	16:00	1,5	2445,0	PSSU	OK	OK	OH cmt plug #2 : pumped 8,0 m3 1.60 spacer with cement unit. Batchmixed and pumped 8,9 m3 1.90 SG cement with 1150 lpm / 40-90 Bar.
20.04.2002.16:00	20:00	4,0		PSSU	OK	OK	POOH to 2200 m with reduced speed, pipe wet. Continued POOH to 1500 m. Dropped sponge ball and circulated string volume with 3500 lpm. Pumped and displaced 6 m3 Hi-Vis pill. POOH to 1350 m. Held toolbox talk with night crew prior to last cement plug.
20.04.2002.20:00	23:00	3,0	1350,0	PSSU	OK	OK	OH/CSG cmt plug #3 : Pumped 8,0 m3 1.60 SG spacer with cement unit. Batchmixed and pumped 15 m3 1.92 SG cement (plug #3) followed by 0.5 m3 spacer. Displaced cement with rig pumps with 2400 lpm / 50-160 Bar.
20.04.2002.23:00	00:00	1,0		PSSU	OK	OK	POOH with reduced speed to 1100 m, 9 std dry. POOH to 1000 m.
21.04.2002.00:00	03:00	3,0	260,0	PSSU	OK	OK	Circulated BU with 3500 lpm / 50 RPM / 180 Bar. No cement in returns. POOH with 5" DP to 260 m.
21.04.2002.03:00	05:00	2,0		PSSU	OK	OK	Changed to 3 1/2" DP handling equipment. POOH with 3 1/2" cmt stinger.
21.04.2002.05:00	06:00	1,0		BHRU	OK	OK	MU jet sub and ABB WBRRT. RIH to 370 m.
21.04.2002.06:00	08:00	2,0		BHRU	OK	OK	RIH to WH, flushed BOP and WB. Retrieved WB with 19 Tonn overpull. POOH and LD WBRRT.
21.04.2002.08:00	09:00	1,0		DTPU	OK	OK	PU and LD ABB hang-off tool.
21.04.2002.09:00	10:30	1,5		DTPU	OK	OK	PU and LD 6 3/4" jar and 2 x Sperry Sun NMDC's.

21.04.2002.10:30	15:00	4,5	650,0	PSMU	OK	OK	MU and RIH with 13 3/8" EZSV plug. Meanwhile pressure tested cmt plug #3 to 100 Bar / 15 min against shear ram. Set plug at 650 m and released from plug with 25 Tonn overpull. Closed upper annular and pressure tested plug to 100 Bar / 15 min.
21.04.2002.15:00	16:00	1,0		PCCU	OK	OK	Displaced hole to to seawater with 3500 spm / 100 Bar.
21.04.2002.16:00	17:00	1,0	650,0	PSSU	OK	OK	Surface cmt plug (#4) : mixed and pumped 17.4 m3 1.90 SG cement from 650 -425 m with 800 lpm. Displaced same from cmt unit with 3.14 m3 sea water / 1200 lpm / 15 Bar.
21.04.2002.17:00	19:30	2,5	420,0	PCCU	OK	OK	POOH to 420 m, pipe dry. Circulated BU with 3100 lpm / 9 Bar. No cement in returns. POOH and LD EZSV setting tool.
21.04.2002.19:30	21:30	2,0		PCCU	OK	E FAIL	MU jetsub and RIH with 5" DP. Jetted BOP and WH area with 3500 lpm.
21.04.2002.21:30	23:30	2,0		RMRD	E FAIL	OK	Investigated problem with Hydraracker. Fault with gripper head intermittent communication cable.
21.04.2002.23:30	00:00	0,5		PCCU	OK	OK	POOH.
22.04.2002.00:00	00:30	0,5		PCCU	OK	OK	POOH and LD jet sub.
22.04.2002.00:30	04:00	3,5		BBWW	OK	OK	WOW to allow for near standby from standby boat to pull BOP and riser. Meanwhile re-arranged forward set back for 5 1/2" DP required for Norne operations. Serviced topdrive and travelling assembly.
22.04.2002.04:00	06:00	2,0		BBRU	OK	OK	Prepare to pull BOP and riser. MU 500 Ton bails to topdrive. PU riser adapter arm for Hydraracker.
22.04.2002.06:00	10:30	4,5		BBRU	OK	OK	Rigged up handling equipment for pulling BOP. MU riser adapter arm for Hydraracker. Installed riser gimble/spider.
22.04.2002.10:30	12:00	1,5		BBRU	OK	E FAIL	Installed diverter RT and pulled diverter.
22.04.2002.12:00	14:00	2,0		BBRD	E FAIL	OK	Modified riser support on cat walk. Repaired electrictrical connection on yoke.
22.04.2002.14:00	16:30	2,5		BBRU	OK	OK	Installed riser yoke on port crane.
22.04.2002.16:30	19:00	2,5		BBRU	OK	OK	PU landing joint with riser yoke. Collapsed and locked slip joint. Unlatched BOP @ 18:30 with 25 Ton down and moved rig clear of WH.
22.04.2002.19:00	22:00	3,0		BBRU	OK	OK	RD riser tensioners wires and goosenecks for conduit / kill / choke / booster lines.
22.04.2002.22:00	22:30	0,5		BBRU	OK	OK	Pulled and LD riser landing joint.
22.04.2002.22:30	23:30	1,0	364,0	BBRU	OK	OK	Pulled and LD slip joint. Meanwhile started to remove riser yoke on port crane.
22.04.2002.23:30	00:00	0,5		BBRU	OK	OK	Continued removing riser yoke on port crane.
23.04.2002.00:00	01:30	1,5		BBRU	OK	OK	Completed removing riser yoke and installed chains and lifting assy on slip joint.
23.04.2002.01:30	06:00	4,5		BBWW	OK	OK	WOW. Too high pitch to lift slip joint from catwalk down to riser deck with port crane.
23.04.2002.06:00	21:30	15,5	364,0	BBWW	OK	OK	WOW. Lifting operation of slip joint from catwalk down to riser deck was delayed until high pitch/roll dropped. Meanwhile changed wire on one riser tensioner.
23.04.2002.21:30	22:00	0,5	364,0	BBRU	OK	OK	Lifted slip joint from cat walk down to riser deck.
23.04.2002.22:00	23:30	1,5	364,0	BBRU	OK	O FAIL	Installed yoke on port crane. Meanwhile started to change wire on no. 5 riser tensioner.
23.04.2002.23:30	00:00	0,5	364,0	BBRD	O FAIL	OK	Waited for riser tensioner work to be completed before pulling next riser joint.
24.04.2002.00:00	01:30	1,5	364,0	BBRD	O FAIL	OK	Continued waiting for riser tensioner work to be completed. LD first riser joint on catwalk.
24.04.2002.01:30	06:00	4,5	185,0	BBRU	OK	OK	Pulled BOP from 364-185 m (9 jts pulled, 8 jts remaining).
24.04.2002.06:00	10:30	4,5		BBRU	OK	OK	Pulled BOP from 185 m to surface (pulled 6 jnts).
24.04.2002.10:30	11:00	0,5		BBRU	OK	O FAIL	Pulled BOP through splash zone and landed same on BOP transporter.
24.04.2002.11:00	16:00	5,0		BBRD	O FAIL	OK	Split LMRP from BOP. Checked seal areas on LMRP / mini

							connectors and installed new gaskets. Replaced seals to stack stingers. Landed LMRP.
24.04.2002.16:00	17:00	1,0		BBRU	OK	OK	LD 2 ea riser joints. Meanwhile skidded BOP to parking position.
24.04.2002.17:00	22:00	5,0		BBRU	OK	OK	Rigged down riser handling equipment; riser spider, gimble, riser adapter arm, 750 Ton bails. Meanwhile removed riser yoke from port crane. Cleared drillfloor.
24.04.2002.22:00	00:00	2,0		BBRU	OK	OK	Rig up 500 Ton bails and DP elevator.
25.04.2002.00:00	00:30	0,5		PAHU	OK	E FAIL	PU and RIH with MOST tool BHA. Problems with Hydraracker.
25.04.2002.01:30	03:00	1,5		PAOD	E FAIL	OK	Repaired bent sensor arm on upper gripper head.
25.04.2002.03:00	05:00	3,0	405,0	PAHU	OK	OK	Continue RIH with WH cutting BHA.
25.04.2002.05:00	05:30	0,5	405,0	PAHU	OK	OK	Moved rig over WH and stabbed into WH with MOST tool. Set down 10 Ton.
25.04.2002.05:30	06:00	0,5	405,0	PAHU	OK	OK	Cut WH with knives spaced out at 405 m with 3000 lpm / 110 Bar. Increased flowrate to 3200 lpm / 150 Bar. Got indications of cutting through 20" WH after 20 min.
25.04.2002.06:00	06:30	0,5	405,0	PAHU	OK	OK	Cut 20" x 30" WH with 3200 lpm / 150 Bar. Observed flow at seabed indicating cut through 30" WH.
25.04.2002.06:30	07:00	0,5	405,0	PAHU	OK	OK	Engaged MOST tool on 20" WH. Locked tool mechanically with ROV.
25.04.2002.07:00	07:30	0,5		PAHU	OK	OK	Attempted to pull free 20" x 30" WH. 20" WH was released from 30" WH with 30 Ton overpull.
25.04.2002.07:30	09:00	1,5		PAHU	OK	OK	Pulled 20" WH to surface.
25.04.2002.09:00	10:00	1,0		PAHU	OK	OK	Released MOST tool from 20" WH. LD cutting BHA.
25.04.2002.10:00	11:00	1,0		PAHU	OK	O FAIL	LD 20" WH using the 18 3/4" C.A.R.T. tool.
25.04.2002.11:00	13:30	2,5	397,0	PAOD	O FAIL	OK	MU 30" C.A.R.T. tool and RIH to 30" WH.
25.04.2002.13:30	14:00	0,5	397,0	PAOD	O FAIL	OK	Engaged 30" C.A.R.T. tool in 30" WH. Attempted to pull 30" WH with 100 Ton overpull, negative.
25.04.2002.14:00	14:30	0,5	397,0	PAOD	O FAIL	OK	Attempted to pull free 30" WH with 50 Ton overpull meanwhile circulating with 2400 lpm. Observed returns at sea bed with ROV. Pulled 30" WH free with 140 Ton overpull.
25.04.2002.14:30	16:00	1,5		PAOD	O FAIL	OK	POOH with 30" WH.
25.04.2002.16:00	18:00	2,0		PAOD	O FAIL	OK	Removed level indicators. Installed 30" clamp on WH and LD same. LD 30" C.A.R.T. tool.
							* End of operation on well 6608/10-8A *
		143,0					

App B Directional data, survey listing

Statoil,6608/10-8
6608/10 Exploration,6608/10
EXPLORATION - UTM Zone 32,Norway

Wellbore: 6608/10-8
Wellpath: 6608/10-8 Definitive
(TD@2652)
Date Printed: 25-Sep-2002

Wellbore

Name	Created	Last Revised
6608/10-8	31-Jan-2002	25-Jun-2002

Well

Name	Government ID	Last Revised
6608/10-8		12-Feb-2002

Slot

Name	Grid Northing	Grid Easting	Latitude	Longitude	North	East
6608/10-8	7326967,4904	462804,7445	N66 3 34,0700	E8 10 42,9200	3830,94N	4139,31E

Installation

Name	Easting	Northing	Coord System Name	North Alignment
6608/10 Exploration	458666,999	7323138,001	ED50-UTM-32N on EUROPEAN DATUM 1950 datum	Grid

Field

Name	Easting	Northing	Coord System Name	North Alignment
EXPLORATION - UTM Zone 32	500000,000	7208634,841	ED50-UTM-32N on EUROPEAN DATUM 1950 datum	Grid

Created By

Comments

All data is in Metres unless otherwise stated
Coordinates are from Installation MD's are from Rig and TVD's are from Rig (Stena Don 24.0m above Mean Sea Level)
Vertical Section is from 3830,94N 4139,31E on azimuth 71,79 degrees
Bottom hole distance is 64,61 Metres on azimuth 71,79 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Statoil

Statoil,6608/10-8
6608/10 Exploration,6608/10
EXPLORATION - UTM Zone 32,Norway

Wellbore: 6608/10-8
Wellpath: 6608/10-8 Definitive
(TD@2652)
Date Printed: 25-Sep-2002

Wellpath Report

MD[m]	Inc[deg]	Dir[deg]	TVD[m]	North[m]	East[m]	Dogleg [deg/30m]	Vertical Section[m]
400,00	0,00	0,00	400,00	3830,94N	4139,31E	0,00	0,00
476,40	0,27	92,98	476,40	3830,93N	4139,49E	0,11	0,17
563,40	0,32	83,17	563,40	3830,95N	4139,94E	0,02	0,60
595,80	0,15	84,04	595,80	3830,97N	4140,07E	0,16	0,73
680,60	0,31	201,35	680,60	3830,76N	4140,10E	0,14	0,69
712,50	0,07	269,29	712,50	3830,68N	4140,05E	0,27	0,62
740,50	0,30	220,81	740,50	3830,63N	4139,98E	0,28	0,54
769,10	0,38	232,74	769,10	3830,51N	4139,86E	0,11	0,38
831,40	0,13	307,05	831,40	3830,43N	4139,64E	0,18	0,15
856,40	0,11	234,06	856,40	3830,43N	4139,60E	0,17	0,11
941,30	0,24	11,28	941,30	3830,56N	4139,56E	0,12	0,12
1003,00	0,17	6,20	1003,00	3830,78N	4139,60E	0,04	0,22
1090,00	0,20	359,87	1089,99	3831,06N	4139,61E	0,01	0,32
1173,10	0,12	174,45	1173,10	3831,12N	4139,62E	0,12	0,35
1292,20	0,24	13,23	1292,19	3831,24N	4139,69E	0,09	0,45
1389,90	2,45	98,64	1389,87	3831,12N	4141,80E	0,75	2,42
1421,80	2,48	100,02	1421,73	3830,90N	4143,15E	0,06	3,64
1479,50	2,52	92,70	1479,38	3830,62N	4145,65E	0,17	5,92
1508,90	2,48	92,97	1508,75	3830,56N	4146,93E	0,04	7,12
1538,10	2,53	89,92	1537,93	3830,53N	4148,21E	0,15	8,32
1565,60	2,58	90,79	1565,40	3830,52N	4149,43E	0,07	9,48
1596,30	2,71	90,20	1596,06	3830,51N	4150,85E	0,13	10,82
1625,30	2,92	91,19	1625,03	3830,49N	4152,27E	0,22	12,17
1655,40	2,98	90,40	1655,09	3830,47N	4153,82E	0,07	13,64
1683,50	3,13	93,88	1683,15	3830,41N	4155,32E	0,25	15,04
1741,60	3,42	93,16	1741,16	3830,21N	4158,63E	0,15	18,12
1770,70	3,79	92,68	1770,20	3830,11N	4160,46E	0,38	19,83
1799,40	4,10	93,89	1798,83	3830,00N	4162,43E	0,34	21,67
1827,60	4,16	94,52	1826,96	3829,85N	4164,46E	0,08	23,54
1857,00	4,42	95,01	1856,27	3829,67N	4166,65E	0,27	25,57
1885,40	4,21	93,35	1884,59	3829,51N	4168,78E	0,26	27,54
1914,60	4,02	91,06	1913,72	3829,43N	4170,87E	0,26	29,51
1972,60	3,85	88,02	1971,58	3829,46N	4174,85E	0,14	33,30
2001,90	3,61	86,26	2000,82	3829,55N	4176,75E	0,27	35,13
2031,50	3,31	82,45	2030,37	3829,73N	4178,53E	0,38	36,87
2059,80	3,05	69,39	2058,62	3830,10N	4180,05E	0,81	38,43
2146,80	2,63	53,57	2145,52	3832,10N	4183,82E	0,31	42,64
2174,00	2,36	54,83	2172,69	3832,79N	4184,78E	0,30	43,77
2185,00	2,30	56,31	2183,68	3833,05N	4185,15E	0,23	44,20
2206,70	2,09	56,13	2205,36	3833,51N	4185,84E	0,29	45,00
2233,60	2,10	62,35	2232,25	3834,01N	4186,68E	0,25	45,96
2263,00	1,88	59,73	2261,63	3834,50N	4187,57E	0,24	46,96
2292,00	1,83	51,89	2290,61	3835,03N	4188,35E	0,27	47,86
2321,40	1,86	52,69	2320,00	3835,61N	4189,10E	0,04	48,75
2350,40	1,88	51,49	2348,98	3836,19N	4189,85E	0,05	49,64
2360,30	1,91	50,59	2358,88	3836,40N	4190,10E	0,13	49,95
2378,39	2,07	48,89	2376,96	3836,80N	4190,58E	0,28	50,53
2407,96	2,28	40,06	2406,51	3837,60N	4191,36E	0,40	51,52
2443,35	2,50	35,30	2441,86	3838,77N	4192,26E	0,25	52,74
2466,36	2,76	34,56	2464,85	3839,64N	4192,86E	0,34	53,59
2524,78	3,57	37,22	2523,18	3842,24N	4194,76E	0,42	56,20
2612,20	5,42	31,82	2610,33	3847,92N	4198,59E	0,65	61,61
2641,39	5,60	34,10	2639,38	3850,27N	4200,11E	0,29	63,79
2652,00	5,60	34,10	2649,94	3851,13N	4200,69E	0,00	64,61

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Coordinates are from Installation MD's are from Rig and TVD's are from Rig (Stena Don 24.0m above Mean Sea Level)
Vertical Section is from 3830,94N 4139,31E on azimuth 71,79 degrees
Bottom hole distance is 64,61 Metres on azimuth 71,79 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Statoil

Statoil,6608/10-8
6608/10 Exploration,6608/10
EXPLORATION - UTM Zone 32,Norway

Wellbore: 6608/10-8
Wellpath: 6608/10-8 Definitive
(TD@2652)
Date Printed: 25-Sep-2002

Hole Sections

Diameter [in]	Start MD[m]	Start TVD[m]	Start North[m]	Start East[m]	End MD[m]	End TVD[m]	End North[m]	Start East[m]	Wellbore
36,000	400,00	400,00	3830,94N	4139,31E	460,00	460,00	3830,94N	4139,43E	6608/10-8
17 1/2	459,00	459,00	3830,94N	4139,42E	1303,00	1302,99	3831,27N	4139,73E	6608/10-8
8 1/2	1303,00	1302,99	3831,27N	4139,73E	2652,00	2649,94	3851,13N	4200,69E	6608/10-8

Casings

Name	Top MD[m]	Top TVD[m]	Top North[m]	Top East[m]	Shoe MD[m]	Shoe TVD[m]	Shoe North[m]	Shoe East[m]	Wellbore
30,000in Conductor	400,00	400,00	3830,94N	4139,31E	459,00	459,00	3830,94N	4139,42E	6608/10-8
13 3/8in Casing	400,00	400,00	3830,94N	4139,31E	1289,80	1289,79	3831,22N	4139,69E	6608/10-8

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Bottom hole distance is 64,61 Metres on azimuth 71,79 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Statoil

Statoil,6608/10-8
6608/10 Exploration,6608/10
EXPLORATION - UTM Zone 32,Norway

Wellbore: 6608/10-8 A
Wellpath: 6608/10-8 A Definitive (TD@2660)
Date Printed: 25-Sep-2002

Wellbore

Name	Created	Last Revised
6608/10-8 A	10-Apr-2002	25-Jun-2002

Well

Name	Government ID	Last Revised
6608/10-8		12-Feb-2002

Slot

Name	Grid Northing	Grid Easting	Latitude	Longitude	North	East
6608/10-8	7326967,4904	462804,7445	N66 3 34,0700	E8 10 42,9200	3830,94N	4139,31E

Installation

Name	Easting	Northing	Coord System Name	North Alignment
6608/10 Exploration	458666,999	7323138,001	ED50-UTM-32N on EUROPEAN DATUM 1950 datum	Grid

Field

Name	Easting	Northing	Coord System Name	North Alignment
EXPLORATION - UTM Zone 32	500000,000	7208634,841	ED50-UTM-32N on EUROPEAN DATUM 1950 datum	Grid

Created By

Comments

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Coordinates are from Installation MD's are from Rig and TVD's are from Rig (Stena Don 24.0m above Mean Sea Level)
Vertical Section is from 3830,94N 4139,31E on azimuth 221,92 degrees
Bottom hole distance is 466,42 Metres on azimuth 224,14 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Statoil

Statoil,6608/10-8
6608/10 Exploration,6608/10
EXPLORATION - UTM Zone 32,Norway

Wellbore: 6608/10-8 A
Wellpath: 6608/10-8 A Definitive (TD@2660)
Date Printed: 25-Sep-2002

STATOIL

Wellpath Report

MD[m]	Inc[deg]	Dir[deg]	TVD[m]	North[m]	East[m]	Dogleg [deg/30m]	Vertical Section[m]
400,00	0,00	0,00	400,00	3830,94N	4139,31E	0,00	0,00
476,40	0,27	92,98	476,40	3830,93N	4139,49E	0,11	-0,11
563,40	0,32	83,17	563,40	3830,95N	4139,94E	0,02	-0,42
595,80	0,15	84,04	595,80	3830,97N	4140,07E	0,16	-0,52
680,60	0,31	201,35	680,60	3830,76N	4140,10E	0,14	-0,39
712,50	0,07	269,29	712,50	3830,68N	4140,05E	0,27	-0,30
740,50	0,30	220,81	740,50	3830,63N	4139,98E	0,28	-0,21
769,10	0,38	232,74	769,10	3830,51N	4139,86E	0,11	-0,04
831,40	0,13	307,05	831,40	3830,43N	4139,64E	0,18	0,16
856,40	0,11	234,06	856,40	3830,43N	4139,60E	0,17	0,19
941,30	0,24	11,28	941,30	3830,56N	4139,56E	0,12	0,12
1003,00	0,17	6,20	1003,00	3830,78N	4139,60E	0,04	-0,07
1090,00	0,20	359,87	1089,99	3831,06N	4139,61E	0,01	-0,29
1173,10	0,12	174,45	1173,10	3831,12N	4139,62E	0,12	-0,34
1292,20	0,24	13,23	1292,19	3831,24N	4139,69E	0,09	-0,47
1350,75	3,79	189,13	1350,70	3829,44N	4139,41E	2,06	1,05
1379,81	4,78	192,03	1379,68	3827,31N	4139,01E	1,05	2,91
1410,21	4,53	190,58	1409,98	3824,89N	4138,52E	0,27	5,03
1439,39	5,25	207,61	1439,06	3822,57N	4137,69E	1,66	7,31
1468,80	7,23	223,18	1468,29	3820,03N	4135,80E	2,64	10,47
1499,00	9,21	228,67	1498,18	3817,05N	4132,68E	2,11	14,77
1527,40	11,60	231,75	1526,11	3813,78N	4128,73E	2,58	19,84
1557,50	13,79	233,40	1555,48	3809,77N	4123,48E	2,22	26,34
1584,60	14,30	233,67	1581,77	3805,86N	4118,19E	0,57	32,78
1613,65	14,88	234,29	1609,88	3801,55N	4112,27E	0,62	39,93
1642,12	12,68	225,23	1637,53	3797,22N	4107,08E	3,24	46,63
1671,31	13,01	225,64	1665,99	3792,67N	4102,46E	0,35	53,10
1700,00	12,87	223,32	1693,95	3788,09N	4097,96E	0,56	59,52
1729,00	11,08	215,86	1722,32	3783,47N	4094,11E	2,44	65,52
1758,62	10,94	214,84	1751,40	3778,86N	4090,83E	0,24	71,14
1788,26	11,07	217,06	1780,49	3774,28N	4087,51E	0,45	76,77
1817,54	12,28	222,24	1809,17	3769,73N	4083,72E	1,64	82,68
1846,67	12,01	221,02	1837,64	3765,15N	4079,65E	0,38	88,81
1875,67	12,32	220,23	1865,99	3760,51N	4075,67E	0,36	94,92
1905,27	13,18	221,77	1894,86	3755,58N	4071,39E	0,93	101,45
1935,39	13,01	221,78	1924,20	3750,50N	4066,84E	0,17	108,28
1961,35	13,11	221,37	1949,49	3746,11N	4062,95E	0,16	114,14
1992,48	14,52	224,33	1979,72	3740,67N	4057,89E	1,52	121,57
2021,26	17,71	228,40	2007,36	3735,18N	4052,09E	3,53	129,53
2049,43	18,85	228,32	2034,11	3729,31N	4045,49E	1,21	138,31
2080,11	18,88	229,00	2063,14	3722,76N	4038,04E	0,22	148,16
2108,16	19,58	226,65	2089,63	3716,55N	4031,20E	1,12	157,35
2138,00	21,49	223,76	2117,57	3709,17N	4023,78E	2,17	167,80
2165,87	23,32	223,59	2143,34	3701,49N	4016,44E	1,96	178,41
2194,33	24,75	222,98	2169,33	3693,05N	4008,50E	1,53	190,00
2224,03	24,96	222,27	2196,28	3683,86N	4000,05E	0,37	202,48
2252,97	27,10	222,65	2222,28	3674,50N	3991,47E	2,23	215,18
2282,39	29,26	222,25	2248,21	3664,25N	3982,10E	2,21	229,07
2311,65	30,96	223,49	2273,53	3653,49N	3972,11E	1,85	243,74
2340,20	31,34	224,22	2297,96	3642,84N	3961,88E	0,56	258,50
2370,41	32,73	224,84	2323,57	3631,42N	3950,64E	1,42	274,51
2401,42	36,35	225,17	2349,11	3618,99N	3938,21E	3,51	292,06
2430,83	37,92	224,51	2372,55	3606,40N	3925,69E	1,65	309,80
2459,65	40,88	225,71	2394,82	3593,50N	3912,73E	3,18	328,06
2486,66	41,87	225,63	2415,09	3581,02N	3899,96E	1,10	345,87
2515,75	42,43	225,71	2436,66	3567,38N	3885,99E	0,58	365,35
2544,78	42,60	224,89	2458,05	3553,58N	3872,05E	0,60	384,93

All data is in Metres unless otherwise stated
Coordinates are from Installation MD's are from Rig and TVD's are from Rig (Stena Don 24.0m above Mean Sea Level)
Vertical Section is from 3830,94N 4139,31E on azimuth 221,92 degrees
Bottom hole distance is 466,42 Metres on azimuth 224,14 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Statoil

Statoil,6608/10-8
6608/10 Exploration,6608/10
EXPLORATION - UTM Zone 32,Norway

Wellbore: 6608/10-8 A
Wellpath: 6608/10-8 A Definitive
(TD@2660)
Date Printed: 25-Sep-2002

Wellpath Report

MD[m]	Inc[deg]	Dir[deg]	TVD[m]	North[m]	East[m]	Dogleg [deg/30m]	Vertical Section[m]
2573,60	44,14	225,42	2479,00	3539,63N	3858,01E	1,65	404,69
2602,72	44,67	224,69	2499,81	3525,24N	3843,59E	0,76	425,04
2632,19	46,01	225,18	2520,52	3510,40N	3828,79E	1,41	445,97
2637,96	46,41	225,14	2524,51	3507,46N	3825,84E	2,09	450,13
2660,00	46,41	225,14	2539,71	3496,20N	3814,52E	0,00	466,07

All data is in Metres unless otherwise stated
Coordinates are from Installation MD's are from Rig and TVD's are from Rig (Stena Don 24.0m above Mean Sea Level)
Vertical Section is from 3830,94N 4139,31E on azimuth 221,92 degrees
Bottom hole distance is 466,42 Metres on azimuth 224,14 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Statoil

Statoil,6608/10-8
6608/10 Exploration,6608/10
EXPLORATION - UTM Zone 32,Norway

Wellbore: 6608/10-8 A
Wellpath: 6608/10-8 A Definitive
(TD@2660)
Date Printed: 25-Sep-2002

Hole Sections

Diameter [in]	Start MD[m]	Start TVD[m]	Start North[m]	Start East[m]	End MD[m]	End TVD[m]	End North[m]	Start East[m]	Wellbore
36,000	400,00	400,00	3830,94N	4139,31E	460,00	460,00	3830,94N	4139,43E	6608/10-8
17 1/2	459,00	459,00	3830,94N	4139,42E	1303,00	1302,99	3831,21N	4139,69E	6608/10-8
8 1/2	1303,00	1302,99	3831,21N	4139,69E	2660,00	2539,71	3496,20N	3814,52E	6608/10-8 A

Casings

Name	Top MD[m]	Top TVD[m]	Top North[m]	Top East[m]	Shoe MD[m]	Shoe TVD[m]	Shoe North[m]	Shoe East[m]	Wellbore
30,000in Conductor	400,00	400,00	3830,94N	4139,31E	459,00	459,00	3830,94N	4139,42E	6608/10-8
13 3/8in Casing	400,00	400,00	3830,94N	4139,31E	1289,80	1289,79	3831,22N	4139,69E	6608/10-8

All data is in Metres unless otherwise stated
Coordinates are from Installation MD's are from Rig and TVD's are from Rig (Stena Don 24.0m above Mean Sea Level)
Vertical Section is from 3830,94N 4139,31E on azimuth 221,92 degrees
Bottom hole distance is 466,42 Metres on azimuth 224,14 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Statoil

App C Contractors list

Contractors list

Service	Company
Casing	Weatherford Norge AS
Cementing	Halliburton AS
Coring	DBS
Directional drilling	Sperry-Sun Drilling Services
Diving	Oceaneering AS
Drilling contractor	Stena Drilling AS
Electric logging	Schlumberger Offshore Services NV
Helicopter	Helikopter Service AS, Brønnøysund
Mud	Baker Hughes Inteq
Mud logging	Sperry-Sun Drilling Services
MWD	Sperry-Sun Drilling Services
Rig positioning	Thales
Production Testing	Halliburton AS
Site survey	Fugro Survey AS
Wellhead systems	ABB Offshore System AS

App D Wellsite sample description

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Stær structure
Well no: 6608/10-8		
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge	
Hole size: 8 1/2 "	Geologist: T.F. Kristensen	Date: 01.02. 2002

Depth (m RKB)	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.
1320	80	Clst: med dk gry, sft, amor, sol, stky, slty, sdy, loc micromic, non calc	No shows
	20	Sst: rk frags, op - mlky wh qtz, also smokey and yel trnsl qtz, med - gran, occ pbl, pr srt, ang - sbrndd, app as lse grns, washed out of Clst	
	Tr	Shl frags, microfoss	
1330	85	Clst: a.a.	a.a.
	15	Sst: a.a.	
	Tr	Shl frags	
1340	90	Clst: med dk gry, sft, amor, sol, stky, slty i.p., com sdy, non calc	a.a.
	10	Sst: rk frags, op - mlky qtz, smokey qtz, crs - gran, occ pbl, pr srt, ang - sbrndd, app as lse grns, washed out of Clst	
	Tr	Shl frags	
1350	90	Clst: a.a.	a.a.
	10	Sst: a.a.	
	Tr	Shl frags	
1360	90	Clst: a.a.	a.a.
	20	Sst: a.a.	
	Tr	Shl frags	
1370	90	Clst: med dk gry, sft, amor, sol, slty, occ sdy, non calc	a.a.
	10	Sst: clr - op qtz, occ mlky qtz, rk frags, f - crs, occ gran - pbl, pr srt, ang - sbrndd, app as lse grns, floating in Clst	
	Tr	Shl frags	
1380	90	Clst: a.a.	a.a.
	10	Sst: a.a.	
	Tr	Shl frags	
1390	90	Clst: a.a.	a.a.
	10	Sst: a.a.	
	Tr	Shl frags, foss Frags, Forams	
1400	90	Clst: a.a.	a.a.
	10	Sst: a.a.	
	Tr	Shl frags, Foss frags, Forams	
1410	90	Clst: a.a.	a.a.
	10	Sst: a.a.	
	Tr	Shl frags, Foss frags, Forams	
1420	100	Clst: olv gry - med dk gry, sft, amor, sol, stky, slty, sdy, non calc	a.a.
	Gd tr	Sst: a.a.	
	Tr	Shl frags, Mic	
1430	100	Clst: olv gry - dk gn gry, else a.a.	a.a.
	Gd tr	Sst: a.a.	
	Tr	Shl frags, Forams, Mic	

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Stær structure
Well no: 6608/10-8		
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge	
Hole size: 8 1/2 "	Geologist: T.F. Kristensen	Date: 01.02. 2002

Depth (m RKB)	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.
1440	100	Clst: olv gry - dk gn gry, sft, amor, sol, stky, slty, sdy, non calc	No shows
	Gd tr	Sst: clr - op qtz, occ mlky qtz, rk frags, f - crs, occ gran - pbl, pr srt, ang - sbrndd, app as lse grns, floating in Clst	
	Tr	Shl frags, Forams, Mic	
1450	100	Clst: a.a.	a.a.
	Gd tr	Sst: a.a.	
	Tr	Shl frags, Forams, Mic	
1460	100	Clst: a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Shl frags, Forams, Mic	
1470	100	Clst: a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Shl frags, Forams, Mic	
1480	100	Clst: a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Shl frags, Forams, Mic	
1490	100	Clst: a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Shl frags, Forams, Mic, Pyr	
1500	95	Clst: a.a.	a.a.
	5	Sst: a.a.	
	Tr	Shl frags, Forams, Mic, Pyr	
1510	95	Clst: a.a.	a.a.
	5	Sst: a.a.	
	Tr	Shl frags, Forams, Mic, Pyr	
1520	100	Clst: also brn gry, else a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Forams, Mic, Pyr	
1530	95	Clst: a.a.	a.a.
	5	Sst: a.a.	
	Tr	Shl frags, Forams, Mic, Pyr	
1540	95	Clst: a.a.	a.a.
	5	Sst: a.a.	
	Tr	Shl frags, Forams, Mic, Pyr	
1550	100	Clst: a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Shl frags, Forams, Mic, Pyr	

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Stær structure
Well no: 6608/10-8		
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge	
Hole size: 8 1/2 "	Geologist: L. Rasmussen / O.Beyer	Date: 01.02. 2002

Depth (m RKB)	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.
1560	100	Clst: olv gry - dk gn gry, also brn gry, sft, amor, sol, stky, slty, sdy, non calc glauc	No shows
	Gd tr	Sst: clr - op qtz, occ mlky qtz, rk frags, f - crs, pr srt, ang - sbrndd, app as lse grns, floating in Clst	
	Tr	Shl frags, Forams, Mic, Pyr	
1570	100	Clst: a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Shl frags, Forams, Mic, Pyr	
1580	100	Clst: mainly brn gry, also olv gry - dk gn gry, else a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Shl frags, Forams, Pyr	
1590	100	Clst: a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Shl frags, Mic, Pyr	
1600	100	Clst: a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Shl frags, Mic, Pyr	
1610	100	Clst: mainly brn gry - med dk gry, occ olv gry - dk gn gry, else a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Pyr, Shl frags	
1620	100	Clst: a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Shl frags, Pyr	
1630	100	Clst: a.a.	a.a.
	Tr	Sst: a.a.	
	Tr	Shl frags, Pyr	
1640	90	Clst: a.a.	
	10	Sd: Qtz/Glauc, tr Fspr, pred med, clr Qtz, dk gn - gn blk Glauc, pred lse	a.a.
	Tr	Shl frags, microfoss, pyr/microfoss, Dol	
1650	80	Clst: a.a.	a.a.
	20	Sd: Qtz/Glauc, a.a.	
	Tr	Shl frags, microfoss, pyr/microfoss, Dol	
1660	80	Clst: bec gen lt brn gry, sft, slily stky - stky, non calc	a.a.
	20	Sd: Qtz/Glauc, a.a.	
	Tr	Shl frags, microfoss, pyr/microfoss, Dol	
1670	90	Clst: bec pred lt - med gn gry, else a.a.	a.a.
	10	Sd: Qtz/Glauc, a.a.	
	Tr	microfoss, pyr/microfoss	

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Stær structure	
Well no: 6608/10-8			
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "	Geologist: L. Rasmussen / O.Beyer	Date: 01-02.02. 2002	

Depth (m RKB)	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.
1680	90	Clst: pred lt grn gry, med gn gry, min brn gry, sft, slily stky - stky, non calc	No shows
	10	Sd: Qtz/Glauc, tr Fspr, med grns, ang - sbang, rndd (Glauc), lse, all in arg mtrx	
	Tr	Shl frags, microfoss, Pyr/microfoss, Dol	
1690	90	Clst: bec pred lt - med gn gry, slily tuffac, else a.a.	a.a.
	10	Sd: Qtz/Glau, tr Fspr, a.a.	
	Tr	microfoss, Pyr/microfoss	
1700	5	Tuff/Tuffac Clst: med gry - bl gry, pred clr microspks, grad Clst a.a.	a.a.
	85	Clst: lt gn gry shades, wxy, frm - sft, sbblky - amor	
	5	Sd: Qtz, Glauc, a/a	
1710	10	Tuff/Tuffac Clst: gen a.a.	a.a.
	90	Clst: a.a.	
	Gd tr	Glauc	
1720	15	Tuff/Tuffac Clst: gen a.a.	a.a.
	85	Clst: lt grn gry shades, a.a.	
	Gd tr	Glauc	
1730	20	Tuff/Tuffac Clst: gen a.a.	a.a.
	80	Clst: a.a.	
	Gd tr	Glauc	
1740	10	Clst/Slst: dk brn, frm, slily fiss, earthy	a.a.
	20	Tuff/Tuffac Clst: gen a.a.	
	70	Clst: lt gn gry shades, a.a.	
	Gd tr	Glauc	
1750	10	Clst: brn – orng, frm, unif, non calc	a.a.
	30	Tuff/Tuffac Clst: gen a.a.	
	60	Clst: lt gn gry shades, a.a.	
	Gdtr	Glauc	
1760	20	Clst: med brn - orng, frm, blky - fiss, earthy, non calc	a.a.
	20	Tuff/Tuffac Clst: a.a.	
	60	Clst: lt gn gry shades, frm, plty - blky, slyli stky - stky, non calc, microglauc	
	Tr	Glauc, Pyr	
1770	10	Clst: med brn - orng, a.a.	a.a.
	20	Tuff/Tuffac Clst: a.a.	
	70	Clst: lt gn gry shades, a.a.	
	Tr	Glauc, Pyr	
1780	5	Clst: med brn - orng, a.a.	a.a.
	10	Tuff/Tuffac Clst: a.a.	
	85	Clst: lt gn gry shades, a.a.	
	Tr	Pyr	

WELLSITE SAMPLE DESCRIPTION				Page 5 of 19
Country: Norway		Area: Nordland II		Field: Stær structure
Well no: 6608/10-8				
RKB: 24	meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2	"	Geologist: L. Rasmussen / O.Beyer		Date: 01.02 – 07.03.2002

Depth (m RKB)	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.
1790	5	Clst: med brn - orng, frm, blky - fiss, earthy, non calc	No shows
	10	Tuff/Tuffac Clst: med gry - bl gry, pred clr microspks, grad Clst as below	
	85	Clst: lt gn gry shades, frm, plty - blky, slily stky - stky, non calc, microglauc	
	Tr	Ls: wh - pa yel wh, frm, blky, micr, arg i/p	
	Tr	Pyr	
1800	40	Clst: lt gn gry shades, waxy app, else a.a.	a.a.
	50	Tuff/Tuffac Clst: med gry - med dk gry, frm, blky, slily stky - stky, non calc, waxy app	
	5	Tuff/Tuffac Clst: med gry - bl gry, a.a.	
	5	Ls: a.a.	
	Tr	Pyr	
1810	30	Clst: lt gn gry, a.a.	a.a.
	70	Tuff/Tuffac Clst: med gry - med dk gry, minor bl gry, frm, blky, slily stky - stky, blk - gry - opq qtz microspcks, non calc, waxy app	
	Tr	Ls, Pyr	
1820	30	Clst: lt gn gry, a.a.	a.a.
	70	Tuff/Tuffac Clst: a.a.	
	Tr	Pyr, Ls	
1830	30	Clst: lt gn gry, a.a.	a.a.
	70	Tuff/Tuffac Clst: a.a.	
	Tr	Pyr, Ls	
1840	30	Clst: lt gn gry, a.a.	a.a.
	70	Tuff/Tuffac Clst: a.a.	
	Tr	Pyr, Ls	
1850	30	Clst: lt gn gry, a.a.	a.a.
	70	Tuff/Tuffac Clst: a.a.	
	Tr	Pyr, Ls, Sd grains, clr, v f - f, Mica	
1860	30	Clst: lt gn gry, a.a.	a.a.
	70	Tuff/Tuffac Clst: a.a.	
	Tr	Pyr, Ls, Sd grains, clr, v f - f	
1870	30	Clst: lt gn gry, a.a.	a.a.
	70	Tuff/Tuffac Clst: a.a.	
	Tr	Pyr, Ls, Sd grains, clr, v f - f, Mica	
1880	100	Clst: dk gn gry, lt gn gry, med dk gry, occ bl gry, frm, amor - blky, tuff i.p., occ slily slty, non calc	No shows, first samples after 4.5 weeks stop in operations due to BOP
	Sl tr	Pyr	
1890	100	Clst: dk gn gry - gn blk, lt gn gry, dk gry, occ bl gry, else a.a.	No shows
	Sl tr	Pyr	

WELLSITE SAMPLE DESCRIPTION				Page 6 of 19
Country: Norway		Area: Nordland II		Field: Stær structure
Well no: 6608/10-8				
RKB: 24 meters		Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "		Geologist: A. Fawke / T.F.Kristensen / L. Rasmussen		Date: 07.03. 2002

Depth (m RKB)	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.
1900	100	Clst: dk gn gry - olv gry, med dk gry - dk gry, frm, blky, pyr i.p., pred non calc, occ slily calc	No shows
	Sl tr	Ls: lt gry, sft - frm, micr, arg	
	Tr	Pyr	
1910	100	Clst: olv gry - med dk gry, dk gn gry - gn gry, frm, blky, occ slily slty, occ slily glauc, pyr i.p., pred non calc, occ slily calc	a.a.
	Tr	Ls: lt brn gry - lt gry, frm, micr, arg	
1920	100	Clst: a.a.	a.a.
1930	100	Clst: med dk gry - dk gry, olv gry, dk gn gry, frm, blky, occ slty, pyr i.p., non calc	a.a.
	Gd tr	Sst: lt gry, clr - trnsl Qtz, v f, mod srt, sbang - sbrndd, lse - fri, pred as lse grns, mic - v mic i.p.	
	Gd tr	Pyr	
1940	100	Clst: a.a.	a.a.
	Sl tr	Sst: lse Qtz grns a.a.	
1950	100	Clst: a.a.	a.a.
1960	100	Clst: a.a.	a.a.
1970	100	Clst: a.a.	a.a.
1980	100	Clst: a.a.	a.a.
1990	100	Clst: med dk gry - dk gry, olv gry, occ dk gn gry - gn gry, frm, blky, occ slily slty, occ slily glauc, non calc	a.a.
	Sl tr	Pyr, Mic, Glauc	
2000	100	Clst: a.a.	a.a.
	Sl tr	Dol: yel brn - gry brn, mod hd - v hd, micr - microxln, slily arg - arg	
	Sl tr	Pyr, Glauc, Mic	
2010	100	Clst: med dk gry - dk gry, olv gry, else a.a.	a.a.
	Sl tr	Dol: a.a.	
	Sl tr	Pyr, Glauc	
2020	100	Clst: med dk gry - dk gry, olv gry, occ dk gn gry, frm, blky, slily slty - occ slty, occ slily glauc, occ pyr, non calc	a.a.
	Sl tr	Dol: occ sucr, else a.a.	
	Sl tr	Pyr, Glauc	

WELLSITE SAMPLE DESCRIPTION				Page 7 of 19
Country: Norway		Area: Nordland II		Field: Stær structure
Well no: 6608/10-8				
RKB: 24	meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2	"	Geologist: A. Fawke / T.F. Kristensen / L. Rasmussen		Date: 07.03. 2002

Depth (m RKB)	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.
2030	100	Clst: med dk gry - dk gry, olv gry, occ dk gn gry, frm, blky, slily slty - occ slty, occ slily glauc, occ pyr, non calc	No shows
	Sl tr	Dol: yel brn - gry brn, mod hd - v hd, micr - microxln, slily arg - arg, occ sucr	
	Tr	Pyr, Sd (grains)	
2040	100	Clst: a.a.	a.a.
	Sl tr	Dol: a.a.	
	Tr	Pyr, Glauc, Sd (grains)	
2050	100	Clst: a.a.	a.a.
	Sl tr	Dol: a.a.	
	Sl tr	Pyr, Glauc	
2060	a.a.		a.a.
2070	100	Clst: a.a.	a.a.
	Sl tr	Dol: a.a.	
	Sl tr	Glauc, Sd (grains)	
2080	a.a.		a.a.
2090	100	Clst: a.a.	No shows
	Sl tr	Dol: a.a.	
	Sl tr	Pyr, Glauc, Sd (grains)	
2100	100	Clst: a.a.	a.a.
	Sl tr	Dol: a.a.	
	Sl tr	Ls: wh - yel wh, occ sft - frm, slily slty - occ slty, occ slily glauc, occ mic	
	Sl tr	Glauc, Pyr, Sd: clr - trnsl Qtz, v f - f, sbang - sbrndd	
2106	a.a.		a.a.
2109	a.a.		a.a.
2112	100	Clst: a.a.	a.a.
	Gd tr	Ls: a.a.	
	Sl tr	Dol: a.a.	
	Tr	Pyr, Sd, Mic, Glauc	
2115	100	Clst: a.a.	a.a.
	Tr	Ls: a.a.	
	Tr	Pyr, Sd	
2118	100	Clst: med gry - med dk gry, sft - frm, else a.a.	a.a.
	Tr	Ls: a.a.	
	Tr	Pyr, (Sd)	
2121	a.a.		a.a.
2124	a.a.		a.a.

WELLSITE SAMPLE DESCRIPTION				Page 8 of 19
Country: Norway		Area: Nordland II		Field: Stær structure
Well no: 6608/10-8				
RKB: 24	Meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2	"	Geologist: A. Fawke / T.F. Kristensen / L. Rasmussen		Date: 08.03. 2002

Depth (m RKB)	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.
2127	100	Clst: med gry - med dk gry, olv gry, occ dk gn gry, sft - frm, blky, slily slty - occ slty, occ slily glauc, occ pyr, non calc	No shows
	Gd tr	Ls: wh - yel wh, occ sft - frm, slily slty - occ slty, occ slily glauc, occ mic	
	Tr	Pyr, (Sd)	
2130	a.a.		a.a.
2133	a.a.		a.a.
2136	100	Clst: a.a.	a.a.
	Gd tr	Ls: a.a.	
	Tr	Pyr	
2139	95	Clst: a.a.	a.a.
	5	Ls: a.a.	
	Tr	Pyr	
2142	a.a.		a.a.
2145	a.a.		a.a.
2148	a.a.		a.a.
2151	100	Clst: a.a.	a.a.
	Gd tr	Ls: a.a.	
	Tr	Pyr	
2154	a.a.		a.a.
2157	100	Clst: a.a.	a.a.
	Tr	Ls: a.a.	
	Sl tr	Pyr	
2160	100	Clst: olv gry - med dk gry, sft - frm, sol, stky, amor - blky, slily slty - slty, occ slily glauc, non calc	a.a.
	Sl tr	Ls: lt gry - pa brn gry, sft - frm, arg	
	Sl tr	Pyr	
2163	100	Clst: a.a.	a.a.
	Sl tr	Ls: a.a.	
	Sl tr	Pyr	
2166	100	Clst: a.a.	a.a.
	Sl tr	Ls: a.a.	
	Sl tr	Pyr	
2169	100	Clst: a.a.	a.a.
	Sl tr	Ls: a.a.	
	Sl tr	Pyr	

WELLSITE SAMPLE DESCRIPTION				Page 9 of 19
Country: Norway		Area: Nordland II		Field: Stær structure
Well no: 6608/10-8				
RKB: 24 meters		Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "		Geologist: T.F. Kristensen / L. Rasmussen		Date: 08.03. 2002

Depth (m RKB)	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.
2172	100	Clst:	olv gry - med dk gry, sft - frm, sol, stky, amor - blky, slily slty - slty, occ slily glauc, non calc		No shows
	Sl tr	Ls:	lt gry - pa brn gry, sft - frm, arg		
	Sl tr	Pyr			
2175	100	Clst:	a.a.		a.a.
	Sl tr	Ls:	a.a.		
	Sl tr	Pyr			
2178	100	Clst:	a.a.		a.a.
	Sl tr	Ls:	a.a.		
	Sl tr	Pyr			
2181	100	Clst:	a.a.		a.a.
	Sl tr	Ls:	a.a.		
	Sl tr	Pyr			
2184	100	Clst:	a.a.		a.a.
	Sl tr	Ls:	a.a.		
	Sl tr	Pyr			
2187	100	Clst:	a.a.		a.a.
	Sl tr	Ls:	a.a.		
	Sl tr	Pyr			
2190	100	Clst:	a.a.		a.a.
	Sl tr	Ls:	a.a.		
	Sl tr	Pyr			
2193	100	Clst:	a..a		Sst: spotty dull yel fluor
	Gd tr	Ls:	a.a.		cloudy bl wh cut fluor
	Tr	Sst:	brn gry, clr - trnsl qtz, v f - slt, occ f, wl srt, sbrndd, app sft - lse, arg, grad Sltst		
2196	95	Clst:	a.a.		a.a.
	5	Ls:	a.a.		
	Tr	Sst:	a.a.		
2199	100	Clst:	olv gry - med dk gry, sft - frm, sol, stky, amor - blky, slily slty - slty, occ slily glauc, non calc		No shows
	Tr	Ls:	lt gry - pa brn gry, sft - frm, micr, arg		
	Sl tr	Sst:	clr - trnsl qtz, v f, wl srt, sbang - sbrndd, app as lse grns		
2202	100	Clst:	occ slily sdy, occ slily pyr, else a.a.		a.a.
	Gd tr	Ls:	lt gry - yel gry, pa brn gry, sft - frm, micr, arg		
	Tr	Sst:	v f - f, occ med grns, else a.a.		
	Tr	Pyr			

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II		Field: Stær structure
Well no: 6608/10-8			
RKB: 24 Meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "	Geologist: T.F. Kristensen / L. Rasmussen		Date: 08.03. 2002

Depth (m RKB)	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.
2205	100	Clst: olv gry - med dk gry, sft - frm, sol, stky, amor - blky, slily slty - slty, occ slily glauc, occ slily pyr, non calc	No shows
	Gd tr	Ls: lt gry - yel gry, pa brn gry, sft - frm, micr, arg	
	Tr	Sst: clr - trnsl Qtz, pred v f - f, occ med grns, mod srt, sbrndd, app as lse grns	
	Tr	Pyr	
2208	100	Clst: occ dk gn gry - gn gry, else a.a.	a.a.
	Tr	Ls: a.a.	
2211	100	Clst: a.a.	a.a.
	Tr	Ls: a.a.	
2214	100	Clst: a.a.	a.a.
	Tr	Ls: a.a.	
2217	100	Clst: a.a.	a.a.
	Tr	Ls: a.a.	
2220	95	Clst: olv gry - med dk gry a.a.	a.a
	5	Clst: brn blk - gry blk, frm, blky, v carb, micropyr, none calc	
	Gd tr	Ls: lt gry - yel gry, pa brn gry, sft - frm, micr, arg, dol i.p.	
	Tr	Dol: yel brn - dk brn gry, v hd, microxln	
2223	85	Clst: olv gry - med dk gry a.a.	a.a.
	10	Clst: brn blk - gry blk, dsky brn - dsky yel brn, frm, blky, v carb, micropyr, none calc	
	5	Ls: a.a.	
	Tr	Dol: a.a.	
2226	80	Clst: brn blk - gry blk a.a.	a.a.
	10	Clst: olv gry - med dk gry a.a.	
	10	Ls: a.a.	
	Tr	Dol: a.a.	
	Tr	Pyr	
2229	70	Clst: brn blk - gry blk a.a.	a.a.
	30	Ls: lt gry - pa brn gry, sft - frm, micr, slily arg - arg	
2232	80	Clst: olv gry - med dk gry, a.a.	No shows
	15	Clst: brn blk - gry blk, a.a.	(cavings?)
	5	Ls: a.a.	
	Tr	Dol: a.a.	
	Tr	Pyr	
2235	60	Clst: med dk gry - dk gn gry, occ olv gry, else a.a.	a.a.
	20	Clst: brn blk - gry blk, frm, blky, carb - v carb, micropyr i.p., non calc	
	10	Ls: a.a.	
	10	Dol: a.a.	
	Tr	Pyr	

STATOIL

WELLSITE SAMPLE DESCRIPTION			Page 11 of 19
Country: Norway	Area: Nordland II	Field: Stær structure	
Well no: 6608/10-8			
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "	Geologist: TFK / L. Rasmussen	Date: 10.03. 2002	

Depth (m RKB)	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.
2238	65	Clst: med dk gry - dk gn gry, occ olv gry, sft - frm, stky, amor - blky, slily slty - slty, occ slily glauc, occ slily pyr, non calc	No shows
	20	Clst: brn blk - gry blk, frm, blky, carb - v carb, micropyr i.p., non calc	
	10	Ls: wh - lt gry, occ med dk gry, also pa brn gry, frm - v hd, micr, arg	
	5	Dol: yel brn - dk brn gry, v hd, microxln - micr	
	Tr	Pyr	
2241	45	Ls: a.a.	a.a.
	30	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	
	20	Clst: brn blk - gry blk, a.a.	
	5	Dol: a.a.	
	Tr	Pyr	
2244	Not recovered		
2247	Not recovered		
2250	40	Ls: a.a.	a.a.
	40	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	
	20	Clst: brn blk - gry blk, a.a.	
	Tr	Dol: a.a.	
	Tr	Pyr	
2253	50	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	a.a.
	30	Ls: a.a.	
	20	Clst: brn blk - gry blk, a.a.	
	Tr	Dol: a.a.	
	Tr	Pyr	
2256	70	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	a.a.
	15	Clst: brn blk - gry blk, a.a.	
	10	Ls: a.a.	
	5	Dol: a.a.	
	Tr	Pyr	
2259	50	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	a.a.
	40	Ls: a.a.	
	10	Clst: brn blk - gry blk, a.a.	
	Tr	Dol: a.a.	
	Tr	Pyr	
2262	70	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	pa bl wh direct fluor (10%)
	20	Ls: a.a.	no direct strmg cut fluor
	5	Clst: brn blk - gry blk, a.a.	bl wh fluor residue
	5	Dol: a.a.	
	Tr	Pyr	
2265	Not recovered		

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Stær structure
Well no: 6608/10-8		
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge	
Hole size: 8 1/2 "	Geologist: T.F. Kristensen / L. Rasmussen	Date: 10.03. 2002

Depth (m RKB)	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.
2268	50	Clst: med dk gry - dk gn gry, occ olv gry, sft - frm, stky, amor - blky, slily slty - slty, occ slily glauc, occ slily pyr, non calc	pa bl wh direct fluor (10%) no direct strmg cut fluor
	40	Ls: wh - lt gry, occ med dk gry, also pa brn gry, frm - v hd, micr, arg	bl wh fluor residue
	5	Clst: brn blk - gry blk, frm, blky, carb - v carb, micropyr i.p., non calc	
	5	Dol: yel brn - dk brn gry, v hd, microxln - micr	
	Tr	Sd, Pyr	
2271	60	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	pa yel wh direct fluor (10%)
	25	Ls: a.a.	no direct strmg cut fluor
	5	Clst: brn blk - gry blk, a.a.	bl wh fluor residue
	5	Dol: a.a.	
	5	Sd: clr - trnsl Qtz, v f - f, occ med, mod srt, sbrndd - sbang, occ rndd, app as lse grains	
	Tr	Pyr	
2274	a.a.		a.a.
2277	65	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	a.a.
	20	Ls: a.a.	
	10	Sd: a.a.	
	5	Dol: a.a.	
	Gd tr	Clst: brn blk - gry blk, a.a.	
	Tr	Pyr	
2280	70	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	a.a.
	15	Sd: a.a.	
	10	Ls: a.a.	
	5	Dol: a.a.	
	Gd tr	Clst: brn blk - gry blk, a.a.	
	Tr	Pyr	
2283	70	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	a.a.
	15	Ls: a.a.	
	10	Dol: a.a.	
	5	Sd: a.a.	
	Gd tr	Clst: brn blk - gry blk, a.a.	
	Tr	Pyr	
2286	Not recovered		
2289	70	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	pa yel wh direct fluor (40%)
	15	Sd: a.a.	no direct strmg cut fluor
	10	Ls: a.a.	bl wh fluor residue
	5	Dol: a.a.	
	Tr	Pyr	

Country: Norway	Area: Nordland II		Field: Stær structure
Well no: 6608/10-8			
RKB: 24 Meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "	Geologist: T.F. Kristensen / L. Rasmussen		Date: 10.03. 2002

Depth (m RKB)	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.
2292	65	Clst: med dk gry - dk gn gry, occ olv gry, sft - frm, stky, amor - blky, slily slty - slty, occ slily glauc, occ slily pyr, non calc	pa bl wh direct fluor (40%) no direct strmg cut fluor
	15	Ls: wh - lt gry, occ med dk gry, also pa brn gry, frm - v hd, micr, arg	bl wh fluor residue
	15	Sd: clr - transl Qtz, v f - f, occ med, mod srt, sbrndd - sbang, occ rndd, app as lse grains	
	5	Dol: yel brn - dk brn gry, v hd, microxln - micr	
	Tr	Pyr	
2295	50	Clst: med dk gry - dk gn gry, occ olv gry, a.a.	pa yel wh direct fluor (60%)
	25	Sd: a.a.	no direct strmg cut fluor
	20	Ls: a.a.	bl wh fluor residue
	5	Dol: a.a.	
	Tr	Pyr	

2295-2322 Core No. 1

2322	60	Clst: med gry-med lt gry, occ gnsh gry, occ mod hd, else a.a	a.a
	40	Sst: a.a	
	Tr	Dol: a.a.	
	Tr	Mic	
2325	50	Clst: med dk gry - med gry else a.a	a.a
	50	Sst: occ crs w/ mic else a.a	
	Tr	Pyr, Dol, Ls	
2328	100	Clst: varic, occ olv gry, else a.a	fr pa yel wh direct fluor
	Tr	Sst: a.a	no direct strmg cut fluor
	Tr	Dol: calc else a.a	bl wh fluor residue
	Tr	Ls: a.a	
	Tr	Pyr	
2331	60	Clst: a.a	a.a
	40	Sst: a.a	
	Tr	Pyr, Mic	
2334	60	Clst: a.a	a.a
	40	Sst: a.a	
	Tr	Pyr, Mic	
2340	50	Clst: a.a	a.a
	50	Sst: occ yel brn, else a.a	
	Tr	Ls: a.a	
	Tr	Mic, Pyr	
2343	70	Clst: a.a	a.a
	30	Sst: a.a	
2346	70	Clst: a.a	a.a
	30	Sst: a.a	

WELLSITE SAMPLE DESCRIPTION				Page 14 of 19
Country: Norway		Area: Nordland II		Field: Stær structure
Well no: 6608/10-8				
RKB: 24 meters		Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "		Geologist: T.F. Kristensen / L. Rasmussen		Date: 10.03. 2002

Depth (m RKB)	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.
2349	80	Clst: med dk gry - dk gn gry, occ olv gry, sft - frm, stky, amor - blky slily slty - slty, occ slily glauc, occ slily pyr, non calc	fr pa bl wh direct fluor no direct strmg cut fluor
	20	Sst: clr - trnsl Qtz, v f - f, occ med, mod srt, sbrndd - sbang, occ rndd,	bl wh fluor residue app as lse grains
2352	70	Clst: a.a.	a.a.
	30	Sst: a.a.	
2355	80	Clst: a.a	a.a
	20	Sst: a.a	
	Tr	Mic	
2358	85	Clst: a.a	a.a
	15	Sst: a.a	
	Tr:	Ls: a.a	
2361	90	Clst: dk gry - med dk gry, sft - frm, occ hd, amor, calc	a.a
	10	Ls: med lt gry, sft, amor, arg	
	Tr	Sst: a.a	
	Tr	Mic, Pyr	
2364	80	Clst: a.a	a.a
	10	Ls: a.a	
	10	Sst: a.a	
2367	80	Clst: blk gry, occ hd, else a.a	a.a
	20	Sst: a.a	
	Tr	Pyr	
2370	100	Clst: a.a	a.a.
	Tr	Sst: a.a	
2371 (Spot)	70	Sst: clr - trnsl qtz, f - v f, wl srt, sbrndd - sbang, app as lse grains	yel wh fluor, blsh wh cut fluor, slow strmg cut fluor
	30	Clst: a.a	
	Tr	Mic, abd	

2371 – 2455 ,Core No. 2 – 7 - For descriptions please refer to Core discription section

2460	30	Sst: clr - trnsl Qtz, minor Flsp, vf - f, dom f, wl srt, ang - sbang, lse - fri, non calc cmt, cln - slily arg/slty mtx	Spty lt yel - yel direct Fluor, slow strmg cut fluor
	70	Clst: med dk gry - olv gry, gn gry, tr mod brn, blky, frm-mod hd, non calc	
	Gd tr	Pyr nods	
2463	50	Sst: also tr med Qtz, else pred a.a.	a.a.
	50	Clst: also blsh gry - gnsh gry, slily splin, else vgt, a.a.	
	Tr	Pyr nods, Mic	

STATOIL

WELLSITE SAMPLE DESCRIPTION				Page 15 of 19
Country: Norway	Area: Nordland II		Field: Stær structure	
Well no: 6608/10-8				
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge			
Hole size: 8 1/2 "	Geologist: O.Beyer / J.M. Østby		Date: 22.03. 2002	

Depth (m RKB)	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.
2466	40	Sst: clr - trnsl Qtz, minor Flsp, v f - med, dom f, wl srt, ang - sbang, lse - fri, cln - slily arg/slty mtx, non calc cmt	Spty lt yel - yel direct fluor, slow strmg cut fluor
	70	Clst: med dk gry - olv gry, gn gry, tr mod brn, blky, frm - mod hd, non calc	
	Gd tr	Pyr nods	
	Tr	Musc Mic, Dol	
2469	a.a.		a.a.
2472	a.a.		a.a.
2475	30	Sst/Sltst: bec gen slt - v f, min f, else a.a.	a.a.
	70	Clst/Ls: a.a.	
	Tr	Pyr, Musc mic, Dol	
	Sl tr	Coal/carb Sh: blk - dk brn, frm - hd, brit	
2478	a.a.	a.a. + tr crs Flsp	Tr spty dull yel direct Fluor
2481	30	Sst/Sltst: bec v ark w/abun Kaol, grad Slst/Clst	Shows a.a.
	70	Clst: a.a.	Water zone mineral assemblages appearing
	Tr	Pyr, Musc mic, Dol	
	Sl tr	Coal/carb Sh	
2484	Not recovered		
2487	Not recovered		
2490	20	Sst/Sltst: v ark and arg, a.a.	No shows (Water Zone)
	80	Clst: a.a.	
	Tr	Pyr, Musc mic, Dol	
	Sl tr	Coal/carb Sh	
2493	Not recovered		
2496	10	Sst/Sltst: v ark/arg, a.a.	No shows
	90	Clst/Sh: a.a.	
	Tr	Pyr, Musc mic, Dol	
	Sl tr	Coal/carb Sh	
2499	Not recovered		
2502	Not recovered		
2505	20	Sst/Slst: v ark/arg, a.a.	a.a.
	80	Clst/Sh: a.a.	
	Tr	Pyr, Musc mic, Dol	
	Sl tr	Coal/carb Sh	

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II		Field: Stær structure
Well no: 6608/10-8			
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "	Geologist: O.Beyer / J.M. Østby		Date: 22.03. 2002

Depth (m RKB)	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.
2508	100	Sst: clr - trnsl Qtz, v f - med, pred f, wl srt, ang - sbang, lse - fri, cln - slily arg/slty mtx, non calc cmt	No shows
	Tr	Clst: med dk gry - olv gry, gn gry, tr mod brn, blky, frm - mod hd, non calc	
	Tr	Ls: wh, sft, amor, micr	
2511	70	Sst: a.a.	a.a.
	20	Clst: a.a., carb i.p.	
	10	Ls: a.a.	
	Tr	Pyr, Glauc	
2514	70	Sst: arg i.p., mic i.p., else a.a.	a.a.
	30	Clst: a.a.	
	Tr	Ls: a.a.	
2517	Not recovered		
2520	80	Sst: clr - trnsl Qtz, slt - med, pred v f - f, mod srt, sbang - sbrndd, pred lse, occ fri, slty/kaol mtrx	Spotty yel fluor, cldy wh cut fluor
	20	Clst: pyr i.p., occ glauc, else a.a.	
	Tr	Ls: a.a.	
2523	90	Sst: slily calc cmt i.p., else a.a.	No shows
	10	Clst: a.a.	
	Tr	Ls: a.a.	
	Tr	Pyr	
2526	Not recovered		
2529	90	Sst: a.a.	a.a.
	10	Clst: a.a.	
	Tr	Ls: a.a.	
2532	90	Sst: v f - med, sbang - sbrndd, occ crs - gran, ang - sbang, mod srt, slily calc cmt, else a.a.	a.a.
	10	Clst: a.a.	
	Tr	Ls: a.a.	
2535	100	Sst: a.a.	a.a.
	Tr	Clst a.a.	
2538	a.a.		a.a.
2541	90	Sst: f - crs, occ v crs, sbang - sbrndd, occ ang, mod srt, else a.a.	a.a.
	10	Clst: med dk gry, olv gry, gn gry, blky - subfis, else a.a.	
	Tr	Coal: blk, hd, blky	
	Tr	Pyr	
2544	95	Sst: a.a.	a.a.
	5	Clst: pyr i.p., else a.a.	
	Tr	Pyr, Mic, Coal	
2547	Not recovered		

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Stær structure
Well no: 6608/10-8		
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge	
Hole size: 8 1/2 "	Geologist: O.Beyer / J.M. Østby	Date: 22.03. 2002

Depth (m RKB)	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.
2550	100	Sst: clr - trnsl Qtz, v f - med, occ crs, mod srt, sbang - sbrndd, lse	No shows
	Tr	Clst: med dk gry, olv gry, gn gry, blky - sbfis, frm - mod hd, non calc	
	Tr	Pyr, Coal, Mic	
2553	Not recovered		
2556	100	Sst: a.a., calc cmt i.p.	a.a.
	Tr	Clst: a.a.	
	Tr	Pyr	
2559	Not recovered		
2562	100	Sst: a.a., calc cmt i.p.	a.a.
	Tr	Clst: a.a.	
	Tr	Pyr	
2565	50	Sst: clr - trnsl Qtz, pred v f - med, occ v crs - gran, sbang - sbrndd, ang i.p. mod srt – pr srt, lse - fri, occ mod hd	a.a.
	30	Coal: blk, hd, blky	
	20	Clst: med dk gry, olv gry, gn gry, med blsh gry, blky - occ sbfis, frm - mod hd non calc	
	Tr	Pyr, crs xls, micropyr i.p.	
2568	70	Sst: v f - med, else a.a.	a.a.
	20	Coal: a.a.	
	10	Clst: a.a.	
2571	Not recovered		
2574	90	Sst: a.a.	a.a.
	10	Coal: a.a.	
	Tr	Clst: loc v mic, else a.a.	
2577	100	Sst: v f - gran, mod srt, slty mtrx, mica lam, else a.a.	a.a.
	Tr	Clst: v pyr i.p., else a.a.	
	Tr	Coal, Pyr	
2580	Not recovered		
2583	Not recovered		
2586	Not recovered		
2589	100	Sst: a.a.	a.a.
	Tr	Clst: a.a.	
	Tr	Coal, Pyr	
2592	100	Sst: v f - med, else a.a.	a.a.
	Tr	Clst: v carb i.p., else a.a.	
	Tr	Coal, Mic	
2595	Not recovered		

STATOIL

WELLSITE SAMPLE DESCRIPTION				Page 18 of 19
Country: Norway		Area: Nordland II		Field: Stær structure
Well no: 6608/10-8				
RKB: 24 meters		Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "		Geologist: O.Beyer / J.M. Østby		Date: 22.03. 2002

Depth (m RKB)	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.
2598	90	Sst: clr - trnsl Qtz, v f - med, sbang - sbrndd, loc crs - gran, ang - sbang, mod - wl srt, pred lse, occ slty/kaol mtrx	No shows
	10	Clst: med dk gry, olv gry, gn gry, med blsh gry, blky - sbfis, frm - mod hd non calc	
	Tr	Sh: brnsh gry, v carb, mod hd, non calc	
	Tr	Pyr, Mic, Coal	
2601	85	Sst: a.a.	a.a.
	10	Clst: carb, else a.a.	
	5	Coal: a.a.	
	Tr	Pyr, Mic	
2604	90	Sst: a.a.	a.a.
	10	Clst: a.a.	
	Tr	Coal, Mic, Pyr	
2607	Not recovered		
2610	90	Sst: a.a.	a.a.
	10	Clst: a.a.	
	Tr	Coal, Mic, Pyr	
2613	Not recovered		
2616	Not recovered		
2619	80	Sst: a.a.	a.a.
	20	Clst: a.a.	
	Tr	Coal, Mic, Pyr	
2622	80	Sst: a.a.	a.a.
	15	Clst: a.a.	
	5	Coal: a.a.	
	Tr	Mic, Pyr	
2625	Not recovered		
2628	60	Sst: a.a.	a.a.
	40	Clst: a.a.	
	Tr	Coal: a.a.	
	Tr	Ls: wh, mod hd, microxln	
	Tr	Mic, Pyr	
2631	a.a.		a.a.
2634	70	Sst: v f - med, occ crs, else a.a.	a.a.
	30	Clst: a.a.	
	Tr	Coal, Pyr, Mic	
2637	Not recovered		
2640	100	Sst: v f - med, sbang - sbrndd, wl srt, else a.a.	a.a.
	Tr	Clst: a.a.	

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Stær structure
Well no: 6608/10-8		
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge	
Hole size: 8 1/2 "	Geologist: O.Beyer / J.M. Østby	Date: 22.03. 2002

Depth (m RKB)	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.
2643	95	Sst: clr - trnsl Qtz, v f - med, sbang - sbrndd, wl srt, lse	No shows
	5	Clst: med dk gry, olv gry, gn gry, med blsh gry, blky - sbfis, frm - mod hd non calc	
2646	100	Sst: a.a.	a.a.
	Tr	Clst: a.a.	
2649	80	Clst: carb lam i.p., else a.a.	a.a.
	20	Sst: a.a.	
	Tr	Pyr, Mic	
2652	a.a.		a.a.

TD OF THE WELL: 2652 mMD, 2650 mTVD

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Stær structure
Well no: 6608/10-8 A		
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge	
Hole size: 8 1/2 "	Geologist: L. Rasmussen / T.F. Kristensen	Date: 12.04. 2002

Depth (m RKB)	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.
1350	100	Clst: med dk gry – olv gry, sft, amor, sol, stky, slty, sdy, loc micromic, pred non calc, occ slily – mod calc	No shows
	Gd tr	Sd: clr – trnsl qtz, occ mlky – smokey qtz, rk frags, f – crs, mod srt, sbang - sbrndd, app as lse grns, washed out of Clst or as laminae	
	Tr	Shl frags, microfoss	
1360	100	Clst: a.a.	a.a.
	Gd tr	Sd: a.a.	
	Tr	Shl frags, forams, mic	
1370	100	Clst: micromic – mic, else a.a.	a.a.
	Gd tr	Sd: f – v crs, pr srt, else a.a.	
	Tr	Shl frags, mic, pyr,	
1380	100	Clst: olv gry – med dk gry, sft, stky, sol, amor, slty, sdy, micromic – occ mic, non – slily calc, occ mod calc	a.a.
	Gd tr	Sd: clr – trnsl qtz, occ mlky qtz, occ rk frags, f – crs, pr srt, sbang – sbrndd, app as lse grns, washed out of sol Clst	
	Tr	Ls: lt gry – off wh, sft, micr, slily arg	
	Tr	Shl frags, Foss frags, Forams, mic, pyr	
1390	100	Clst: a.a.	a.a.
	Gd tr	Sd: a.a.	
	Tr	Ls: a.a.	
	Tr	Shl frags, Foss frags, Forams, mic, pyr	
1400	100	Clst: a.a.	a.a.
	Gd tr	Sd: a.a.	
	Tr	Ls: a.a.	
	Tr	Shl frags, Foss frags, Forams, mic, pyr	
1410	100	Clst: olv gry, sft, sol, amor, stky, slty, sdy, non – slily calc	a.a.
	Tr	Sd: clr – trnsl qtz, f – med, mod srt, sbang – sbrndd, app as grns	
	Sl tr	Ls: lt gry – off wh, sft, micr, slily arg	
	Tr	Rk frags, Shl frags, Pyr, Mic	
1420	100	Clst: olv gry – med dk gry, sft, sol, amor, stky, slty, sdy, slily micromic, non – slily calc	a.a.
	Tr	Sd: f – crs, pr srt, else a.a.	
	Tr	Rk frags, Shl frags, Forams, Mic, Pyr	
1430	100	Clst: a.a.	a.a.
	Tr	Sd: a.a.	
	Tr	Rk frags, Shl frags, Forams, Mic, Pyr	
1440	100	Clst: a.a.	a.a.
	Tr	Sd: a.a.	
	Tr	Rk frags, Shl frags, Forams, Mic, Pyr	
1450	a.a.		a.a.
1460	a.a.		a.a.

WELLSITE SAMPLE DESCRIPTION				Page 2 of 10
Country: Norway		Area: Nordland II		Field: Stær structure
Well no: 6608/10-8 A				
RKB: 24 meters		Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "		Geologist: L. Rasmussen / T.F. Kristensen / E. Undersrud		Date: 12.04. 2002

Depth (m RKB)	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.
1470	100	Clst: olv gry – med dk gry, sft, sol, amor, stky, slty, sdy, slily micromic, abd glauc, non – slily calc	No shows
	Tr	Sd: clr – trnsl qtz, f – crs, pr srt, sbang – sbrndd, app as grns	
	Tr	Rk frags, Shl frags, Forams, Mic, Pyr, Glauc	
1480	a.a.		a.a.
1490	a.a.		a.a.
1500	100	Clst: also brn gry, else a.a.	a.a.
	Tr	Sd: fn – med, mod srt, else a.a.	
	Tr	Pyr, Glauc, Mic, Pyr foss, shell frags	
1510	a.a.		a.a.
1520	a.a.		a.a.
1530	a.a.		a.a.
1540	100	Clst: predom brn gry, also olv gry – med dk gry, else a.a.	a.a.
	Tr	Sd: a.a.	
	Tr	Pyr, Glauc, Mic	
1550	a.a.		a.a.
1560	a.a.		a.a.
1570	a.a.		a.a.
1580	a.a.		a.a.
1590	a.a.		a.a.
1600	Lost		
1610	a.a.		a.a.
1620	a.a.		a.a.
1630	a.a.		a.a.
1640	Lost		
1650	100	Clst: brn gry, occ lt olv gry – gn gry, sft - frm, sol, amor, stky, slty, sdy, slily micromic, glauc, non – slily calc	a.a.
	Tr	Sd: clr – trnsl qtz, f – med, mod srt, sbang – sbrndd, app as grns	
	Tr	Pyr, Glauc, Mic	
1660	Lost		

STATOIL

WELLSITE SAMPLE DESCRIPTION					Page 3 of 10
Country: Norway			Area: Nordland II		Field: Stær structure
Well no: 6608/10-8 A					
RKB:	24	meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size:	8 1/2	"	Geologist: L. Rasmussen / T.F. Kristensen / E. Undersrud		Date: 13.04. 2002

Depth (m RKB)	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.
1670	100	Clst: lt olv gry – gn gry, also brn gry, sft - frm, i.p. sol, amor - sbblky, slily slty, slily sdy in brn gry clst, slily micromic, glauc, non calc	No shows
	Tr	Sd: clr – trnsl qtz, f – med, mod srt, sbang – sbrndd, app as grns	
	Tr	Pyr, Glauc, Mic	
1680	Lost		
1690	100	Clst: predom lt olv gry – gn gry, else a.a.	a.a.
	Sl Tr	Sd: a.a.	
	Tr	Glauc, Pyr, Mic	
1700	a.a.		a.a.
1710	100	Clst: only tr brn gry, else a.a.	a.a.
	Sl Tr	Sd: a.a.	
	Tr	Glauc, Pyr	
1720	a.a.		a.a.
1730	a.a.		a.a.
1740	a.a.		a.a.
1750	a.a.		a.a.
1760	Lost		a.a.
1770	100	Clst: lt olv gry – gn gry, orng brn – mod brn, sft – mainly frm, sbblky – blky, slily micromic, glauc, non calc	a.a.
	Tr	Pyr, Glauc, Sd	
1780	100	Clst: occ tuff, else a.a.	a.a.
	Tr	Pyr, Glauc	
1790	Lost		
1800	100	Clst: gn gry, rd-brn, sft - mainly frm, sbblky - blky, glauc, non calc.	a.a.
	Tr	Tuff: bl gry	
1810	a.a		a.a.
1820	a.a	Tr of sd	a.a.
1830	a.a	Tr of sd	a.a.
1840	a.a		a.a.
1850	a.a		a.a.
1860	a.a		a.a.
1870	a.a.		a.a.
1880	a.a.		a.a.

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Stær structure
Well no: 6608/10-8 A		
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge	
Hole size: 8 1/2 "	Geologist: L. Rasmussen / T.F. Kristensen / E. Undersrud	Date: 13.04. 2002

Depth (m RKB)	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.
1890	80	Clst: varic gn gry, dk gry, brn rd, olv gry, sft - frm, sbblky, non calc	No shows
	20	Clst: lt gry, sft – frm, sbblky – blky, calc	
	Tr	Mic, Pyr, Glauc	
1900	a.a.		a.a
1910	100	Clst: slty, else a.a.	a.a.
1920	100	Clst: a.a	a.a.
1930	100	Clst: a.a.	a.a.
	Tr	Ls: wh – off wh, sft, arg	
1940	100	Clst: predom gn gry, else a.a.	a.a.
1950	100	Clst: a.a.	a.a.
1960	100	Clst: a.a.	a.a.
	Tr	Ls: wh – off wh, sft, micr	
	Tr	Sd: clr Qtz, med, sbrndd, lse grns	
1970	100	Clst: med gry – dk gry, occ olv gry, sft - frm, sbblky - blky, slty	
	Tr	Ls: wh, sft, arg, microxln	a.a
1980	a.a		a.a
1990	a.a		a.a
2000	a.a		a.a
2010	a.a		a.a
2020	a.a		a.a
2030	a.a		a.a
2040	a.a		a.a
2050	a.a		a.a
2060	100	Clst: a.a	a.a.
	Tr	Ls: wh – lt gry, sft - frm	
	Tr	Sst: predom lse Qtz, clr - transl , v f - f, mod srt, sbrnd	
2070	a.a		a.a
2080	a.a		a.a
2090	a.a		a.a
2100	a.a		a.a

STATOIL

WELLSITE SAMPLE DESCRIPTION			Page 5 of 10
Country: Norway	Area: Nordland II		Field: Stær structure
Well no: 6608/10-8 A			
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "	Geologist: L. Rasmussen / T.F. Kristensen / E. Undersrud		Date: 13.04. 2002

Depth (m RKB)	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.
2110	70	Clst: med gry – dk gry, occ olv gry, sft - frm, sbblky - blky, slty – v slty, micromic	No shows
	20	Ls: wh – lt gry, sft – frm, sucr – micr, occ micropyr, occ micromic	
	10	Sst: predom lse Qtz, clr - transl , v f - f, mod srt, sbrnd	
	Tr	Dol: dk yel brn, mod hd – hd, sbblky, micr	
	Tr	Pyr, Glauc, Mica	
2120	90	Clst: a.a.	a.a.
	10	Ls: a.a.	
	Tr	Sst: a.a.	
	Tr	Dol: a.a.	
	Tr	Pyr, Glauc, Mica	
2130	a.a.		a.a.
2140	a.a.		a.a.
2150	a.a.		a.a.
2160	85	Clst: a.a.	a.a.
	10	Ls: a.a.	
	5	Pyr	
	Tr	Dol: a.a.	
	Tr	Glauc, Sst: a.a.	
2170	90	Clst: a.a.	a.a.
	10	Ls: a.a.	
	Tr	Dol: a.a.	
	Tr	Pyr, Glauc, Sst	
2180	a.a.		a.a.
2190	a.a.		a.a.
2200	80	Clst: a.a.	a.a.
	20	Ls: a.a.	
	Gd Tr	Dol: a.a.	
	Tr	Pyr, Glauc, Mica, Sst	
2210	Lost		
2220	a.a.		a.a.
2230	90	Clst: a.a.	a.a.
	10	Ls: a.a.	
	Tr	Dol: a.a.	
	Tr	Pyr, Glauc, Mica, Sst	
2240	Lost		
2250	a.a.		a.a.
2260	a.a.		a.a.

STATOIL

WELLSITE SAMPLE DESCRIPTION			Page 6 of 10
Country: Norway	Area: Nordland II		Field: Stær structure
Well no: 6608/10-8 A			
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size: 8 1/2 "	Geologist: L. Rasmussen / T.F. Kristensen / E. Undersrud		Date: 14.04. 2002

Depth (m RKB)	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.
2270	90	Clst: med gry – dk gry, occ olv gry, sft - frm, sbblky - blky, slty – v slty, micromic	No shows
	10	Ls: wh – lt gry, sft – frm, sucr – micr, occ micropyr, occ micromic	
	Tr	Dol: dk yel brn, mod hd – hd, sbblky, micr	
	Tr	Pyr, Glauc, Mica, Sst	
2280	85	Clst: a.a.	a.a.
	10	Ls: a.a.	
	5	Dol: a.a.	
	Tr	Pyr, Glauc, Mica, Sst	
2290	a.a.		a.a.
2300	90	Clst: a.a.	a.a.
	10	Ls: a.a.	
	Tr	Dol: a.a.	
	Tr	Pyr, Glauc, Mica, Sst	
2310	80	Clst: a.a.	a.a.
	20	Ls: a.a.	
	Gd Tr	Dol: a.a.	
	Tr	Pyr, Glauc, Mica, Sst	
2320	a.a.		a.a.
2330	a.a		a.a
2340	a.a		a.a
2350	70	Clst: brn blk, sft - frm, sbblky, slty, carb, micropyr, micromic, calc	a.a
	30	Ls: wh – lt gry, sft - frm, sucr - micr, occ micropyr, micromic	
	Tr	Dol: dk yel brn, hd, sbblky, micrxln	
2360	a.a		a.a
2370	a.a		a.a
2380	a.a		a.a
2390	a.a	sli slty, sticky, occ carb	
2400	a.a		a.a
2410	a.a		a.a
2420	a.a	Incr. amt sst: clr – transl Qtz, v f, rnd, lse grains	a.a
2430	a.a		a.a
2433	a.a		a.a

STATOIL

WELLSITE SAMPLE DESCRIPTION				Page 7 of 10
Country: Norway	Area: Nordland II		Field: Stær structure	
Well no: 6608/10-8 A				
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge			
Hole size: 8 1/2 "	Geologist: L. Rasmussen / T.F. Kristensen / E. Undersrud		Date: 14.04. 2002	

Depth (m RKB)	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.
2436	85	Clst: med gry - dk gn gry,sft - frm, stky, slty	pa bl direct fluor
	15	Sst: clr – transl Qtz, v f - f, sbrnd - rnd, lse grains, pyr	pa bl residue
	Tr	Pyr, Glauc, Dol: yel brn, hd	
2442	a.a		a.a
2448	a.a		No shows
2451	a.a		a.a
2454	90	Clst: med gry - dk gn gry, sft - frm, stky, slty	
	10	Ls: wh - lt gry - hd	a.a
	Tr	Pyr, Glauc, Sst: v f - f	
2457	a.a		a.a
2460	a.a		a.a
2463	75	Clst: a.a	
	25	Sst: clr-transl Qtz, v f - f, occ med, sbrnd - rnd, lse	bright yel – wh bl direct fluor yel fst strmg cut fluor bl - wh fluor residue
2466	a.a		a.a
2469	a.a		a.a
2472	a.a		a.a
2481	a.a		a.a
2484	a.a	10% -5% sst	a.a
2487	a.a		a.a
2493	a.a		a.a
2499	a.a	Incr. amnt pyr	a.a
2505	a.a	10-15%sst	a.a
2511	a.a		a.a

STATOIL

WELLSITE SAMPLE DESCRIPTION				Page 8 of 10
Country: Norway	Area: Nordland II		Field: Stær structure	
Well no: 6608/10-8 A				
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge			
Hole size: 8 1/2 "	Geologist: L. Rasmussen / T.F. Kristensen / E. Undersrud		Date: 14.04. 2002	

Depth (m RKB)	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.
2514	85	Clst: med dk gry-dk gn gry, sft - frm,stky,blky,slty,non calc	No shows
	10	Sst: clr Qtz, v f - f, lse	
	5	Ls: wh – lt gry, occ med gry, frm – mod hd	
2520	a.a	sst: predom med – v f, else a.a.	a.a
2523	a.a	a.a	a.a
2529	a.a	5% Sst	a.a
2535	a.a		a.a
2541	a.a		a.a
2547	a.a		a.a
2553	a.a		a.a
2562	a.a		a.a
2568	60	Clst: med dk gry – med gry, lt olv gry - occ grn gry, blky – sbblky, frm – mod hd, slty, occ micromic, non calc	a.a.
	30	Sst: clr – transl Qtz, v f - f, occ med, sbrnd – rnd, mod srt, app as lse grains, occ agg, pyr	
	10	Ls: wh – lt gry, occ med gry, frm – mod hd, blky – sbblky, occ micropyr, occ arg	
	Tr	Dol: mod yel brn, blky, mod hd – hd	
	Tr	Pyr, Mica	
2571	Lost		
2574	70	Sst: a.a.	v wk pa yel direct fluor
	20	Clst: a.a.	in 10% og cuttings
	10	Ls: a.a.	v wk sl strmg bl cut fluor
	Tr	Dol, Pyr, Mica	
2577	Lost		
2580	85	Sst: a.a.	v wk pa yel direct fluor
	10	Clst: a.a.	in 10% of cuttings
	5	Ls: a.a.	no cut fluor
	Tr	Pyr, Mica	
2583	90	Sst: a.a.	a.a.
	5	Clst: a.a.	bl wh res ring
	5	Ls: a.a.	
	Tr	Dol, Pyr, Mica	
2586	Lost		
2589	a.a.		a.a. less than 10% cuttings w/ direct fluor no fluor res ring

STATOIL

WELLSITE SAMPLE DESCRIPTION				Page 9 of 10
Country: Norway	Area: Nordland II		Field: Stær structure	
Well no: 6608/10-8 A				
RKB: 24 meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge			
Hole size: 8 1/2 "	Geologist: L. Rasmussen / T.F. Kristensen / E. Undersrud		Date: 14.04. 2002	

Depth (m RKB)	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.
2592	Lost		
2595	Lost		
2598	85	Sst: clr – transl Qtz, v f - f, occ med, sbrnd – rnd, mod srt, app as lse grains, occ agg, pyr	v wk pa yel direct fluor in less than 10% of cuttings
	10	Clst: med dk gry – med gry, lt olv gry - occ grn gry, blky – sbblky, frm – mod hd, slty, micromic, non calc	v wk sl strmg bl cut fluor no fluor res ring
	10	Ls: wh – lt gry, occ med gry, frm – mod hd, blky – sbblky, occ micropyr, occ arg	
	Tr	Pyr, Mica, Dol	
2601	75	Sst: a.a.	a.a.
	15	Clst: a.a.	
	10	Ls: also yel wh, else a.a.	
	Tr	Pyr, Mica	
2604	Lost		
2607	a.a.		only pa yel direct fluor from Ls (min fluor)
2610	Lost		
2613	75	Sst: v f – f, mod – wl srt, else a.a.	No shows
	15	Clst: a.a.	
	10	Ls: a.a.	
	Tr	Pyr, Mica	
2616	Lost		
2619	60	Sst: a.a.	a.a.
	30	Clst: a.a.	
	10	Ls: a.a.	
	Tr	Pyr, Mica	
2622	Lost		
2625	85	Sst: a.a.	a.a.
	10	Clst: a.a.	
	5	Ls: a.a.	
	Tr	Pyr, Mica	
2628	70	Sst: a.a.	a.a.
	25	Clst: a.a.	
	5	Ls: a.a.	
	Tr	Pyr, Mica	
2631	Lost		
2634	Lost		

STATOIL

WELLSITE SAMPLE DESCRIPTION					Page 10 of 10
Country: Norway			Area: Nordland II		Field: Stær structure
Well no: 6608/10-8 A					
RKB:	24	meters	Company: Statoil ASA, Norsk Hydro ASA, Petoro, Norsk Agip AS, Enterprise Oil Norge		
Hole size:	8 1/2	"	Geologist: L. Rasmussen / T.F. Kristensen / E. Undersrud		Date: 14.04. 2002

Depth (m RKB)	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.
2637	95	Sst: clr – transl Qtz, v f - f, sbrnd – rnd, mod – wl srt, app as lse grains, pyr	No shows
	5	Clst: med dk gry – med gry, lt olv gry - occ grn gry, blky – sbblky, frm – mod hd, slty, micromic, non calc	
	Tr	Ls, Pyr, Mica	
2640	Lost		
2643	Lost		
2646	100	Sst: a.a.	a.a.
	Tr	Clst, Ls, Pyr, Mica	
2649	Lost		
2652	a.a.		a.a.
2655	Lost		
2658	a.a.		a.a.
2660	90	Sst: a.a.	a.a.
	10	Clst: a.a.	
	Tr	Ls, Pyr, Mica	

TD OF THE WELL: 2660 mMD, 2539 mTVD

App E Core descriptions

STATOIL

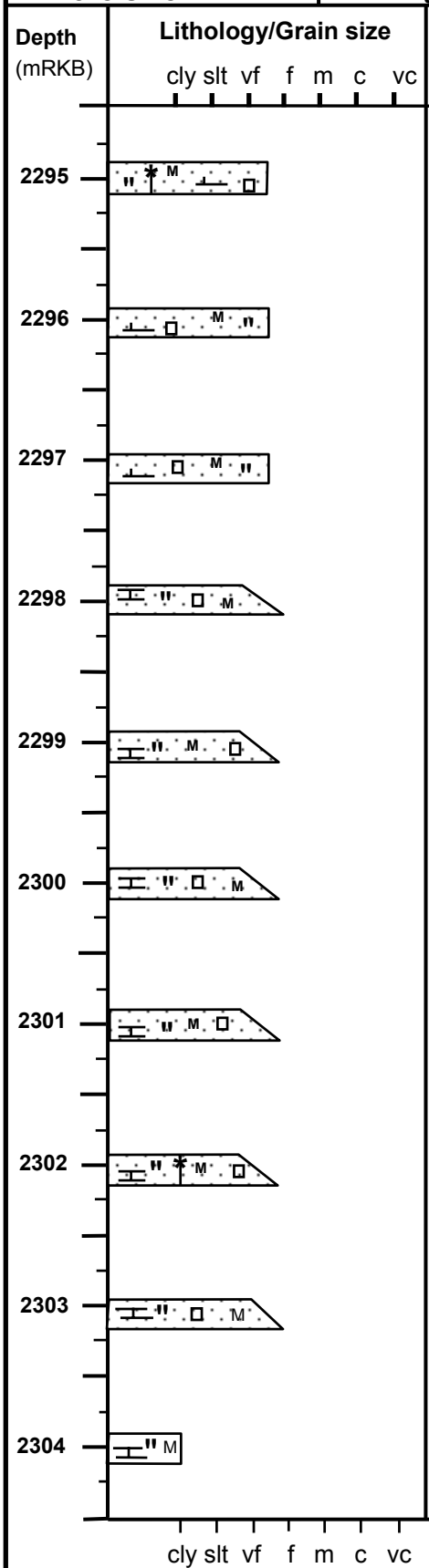
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Melke Fm.

Core no: 1 | **Interval:** 2295 – 2322m | **Cored:** 27.00 **Rec:** 24.50m 90.7 %

Core size: 4" | **Geologists:** Rasmussen / Hals / TFK | **Date:** 11.03.02



Lithological Description Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination	Remarks Shows, etc
SST: clr-trnsl qtz, also lt gry, v f - f, mod srt, sbrndd - rndd, frm – mod hd, occ slily slty, occ glauc, pyr l.p., v mic, slily calc, pr – fair vis por	Gd HC odour, even mod yel wh fluor, flash bl wh cut fluor followed by fast strm bl wh cut fluor
SST: non glauc, else a.a.	a.a
SST: a.a.	a.a
SST: slty, else a.a.	a.a.
SST: a.a.	a.a.
SST: none – slily calc, else a.a.	a.a.
SST: a.a.	a.a.
SST: occ glauc, else a.a.	a.a.
SST: clr – trnsl qtz, also lt gry, v f – f, mod srt, sbrndd – rndd, frm – mod hd, slty, occ glauc, occ pyr, v mic, none – slily calc, arg l.p., pr – fr vis por	Gd HC odour, pch mod yel wh fluor, flash bl wh cut fluor followed by fast strm bl wh cut fluor
CLST: med dk gry – olv blk, frm – mod hd, slily slty – slty, mic, slily calc - calc	Wk HC odour, pch pa yel fluor, slow – v slow strm bl wh cut fluor

STATOIL

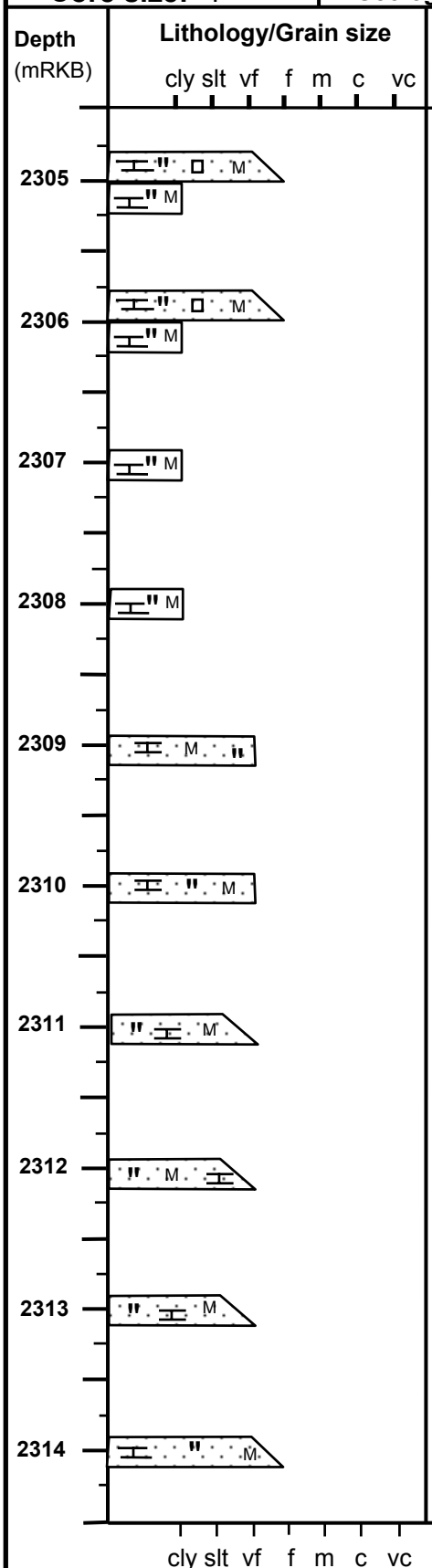
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Melke Fm.

Core no: 1 | **Interval:** 2295 – 2322m | **Cored:** 27.00 **Rec:** 24.50m 90.7 %

Core size: 4" | **Geologists:** Rasmussen / Hals / TFK | **Date:** 11.03.02



Lithological Description Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination	Remarks Shows, etc
Thinly lam CLST and SST **CLST:** med dk gry – olv blk, frm – mod hd, slily slty – slty, mic, slily calc - calc **SST:** clr – trnsl qtz, also lt gry, v f – f, mod srt, sbrndd – rndd, frm – mod hd, slty, occ glauc, occ pyr, v mic, none – slily calc, arg l.p., pr – fair vis por	Wk HC odour, Sst pa yel fluor, mod – flash bl wh cut fluor followed by slow strm bl wh cut fluor
Thinly lam CLST and SST a.a.	a.a.
CLST: med dk gry – olv blk, frm – mod hd, slily slty – slty, mic, slily calc - calc	Wk HC odour, pch pa yel fluor, v wk s slow strm bl wh cut fluor
CLST: a.a.	a.a.
SST: clr – trnsl qtz, also lt gry, v f, wl srt, rndd, frm, mic, slily calc, fr vis por	Gd HC odour, even yel wh fluor, flash bl wh cloudy cut fluor followed by mod strm bl wh cut fluor
SST: a.a	a.a.
SST: grad to Sltst, pr vis por, else a.a	a.a.
SST: a.a.	a.a.
SST: a.a.	a.a
SST: clr – trnsl qtz, also lt gry, v f – f, wl srt, sbrndd – rndd, frm, mic, slily calc, fr vis por	a.a.

STATOIL

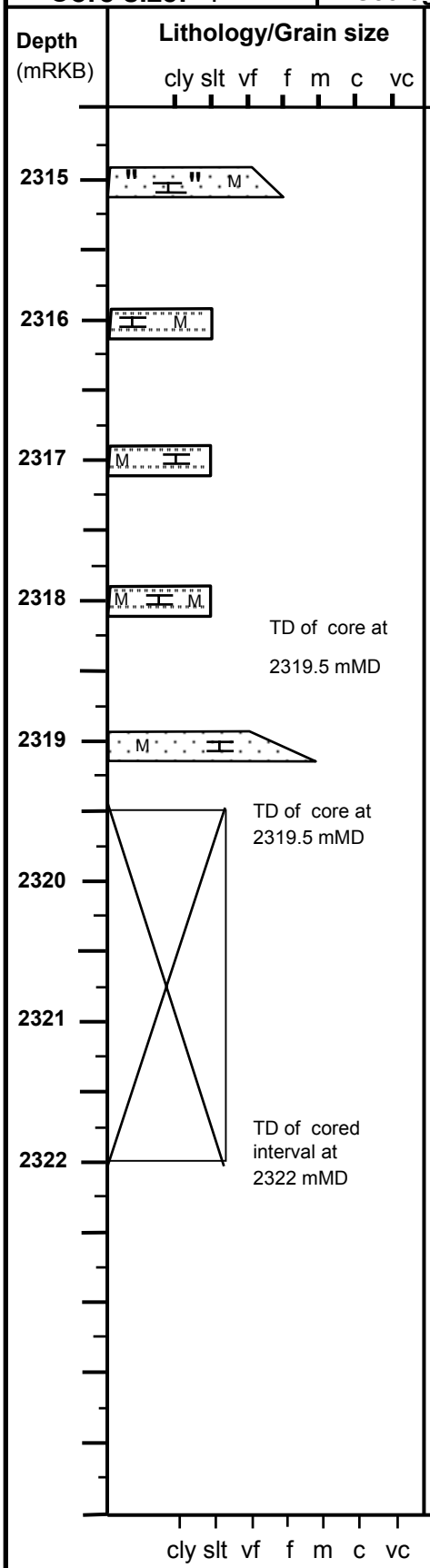
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Melke Fm.

Core no: 1 | **Interval:** 2295 – 2322m | **Cored:** 27.00 **Rec:** 24.50m 90.7 %

Core size: 4" | **Geologists:** Rasmussen / Hals / TFK | **Date:** 11.03.02



Shows			Porosity			Lithological Description	Remarks
STAIN	FLUOR	CUT	POOR	FAIR	GOOD	Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination	Shows, etc
						SST: clr-trnsl qtz, also lt gry, v f – f, wl srt, sbrndd – rndd, frm, mic – v mic, slily calc, fair vis por	Mod HC odour, pch pa yel wh fluor, dull bl wh cloudy cut fluor followed by slow strm bl wh cut fluor
						SLTST: med dk gry – dk gry, mod hd – hd, arg, mic, calc	Pr – mod HC odour, pch pa yel fluor, dull bl wh cloudy cut fluor followed by slow strm bl wh cut fluor
						SLTST: mod hd, else a.a.	Mod HC odour, even pa yel fluor, dull bl wh cloudy cut fluor followed by slow strm bl wh cut fluor
						SLTST: v mic, else a.a.	Pch pa yel fluor, else a.a.
						SST: clr – trnsl qtz, also lt gry, v f – f, wl srt, sbrndd – rndd, frm, mic, slily calc, fair vis por	a.a.

STATOIL

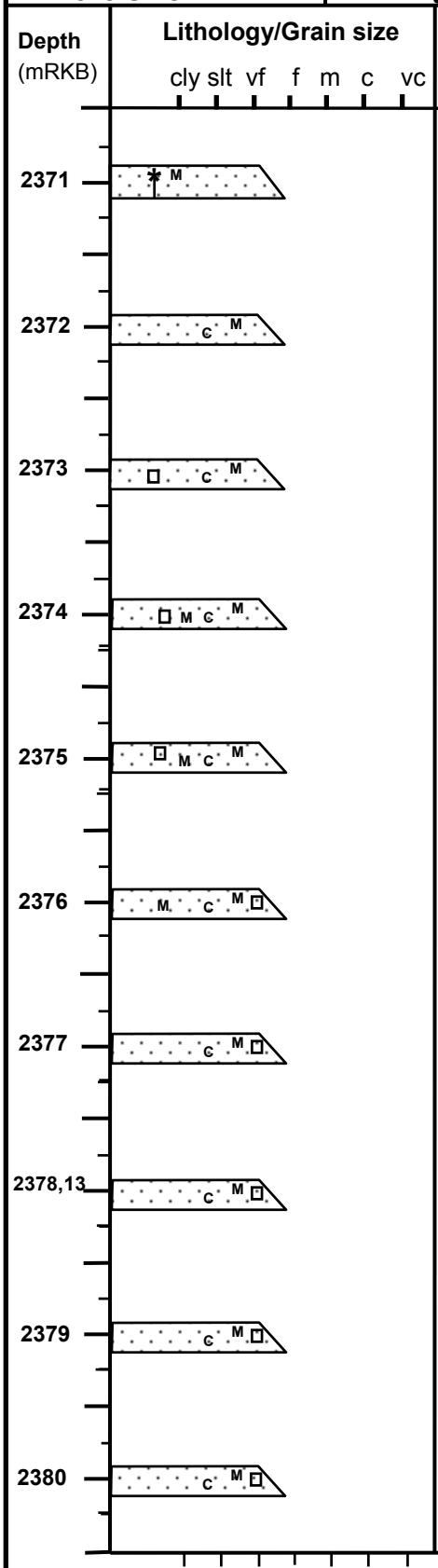
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Fangst Fm.

Core no: 2 | **Interval:** 2371 – 2398,0m | **Cored:** 27.00 **Rec:** 26.00m 96.3 %

Core size: 4" | **Geologists:** Rasmussen / Hals | **Date:** 14.03.02



Depth (mRKB)	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination)	Remarks (Shows, etc)
2371	**SST:** clr-trnsl qtz, HC stn, lt gry- brnsh gry, v f – f, occ med, wl srt, sbrndd, frm – mod hd, slily arg, mic, occ glauc, non calc, fr vis por	Gd HC odour, even mod yel wh fluor, mod fst bl wh cut fluor (isopropanol as cut fluid)
2372	**SST:** slily carb, non glauc, else a.a.	a.a
2373	**SST:** pyr, else a.a.	a.a
2374	**SST:** v mic, carb, else a.a.	Pch mod yel fluor, else a.a.
2375	**SST:** a.a.	a.a.
2376	**SST:** none – slily calc, else a.a.	a.a.
2377	**SST:** mic, slily carb, else a.a.	a.a.
2378,13	**SST:** occ pyr, else a.a.	Pch – even mod yel fluor, else a.a.
2379	**SST:** occ glauc, else a.a	a.a
2380	**SST:** a.a	Even mod yel fluor, else a.a

STATOIL

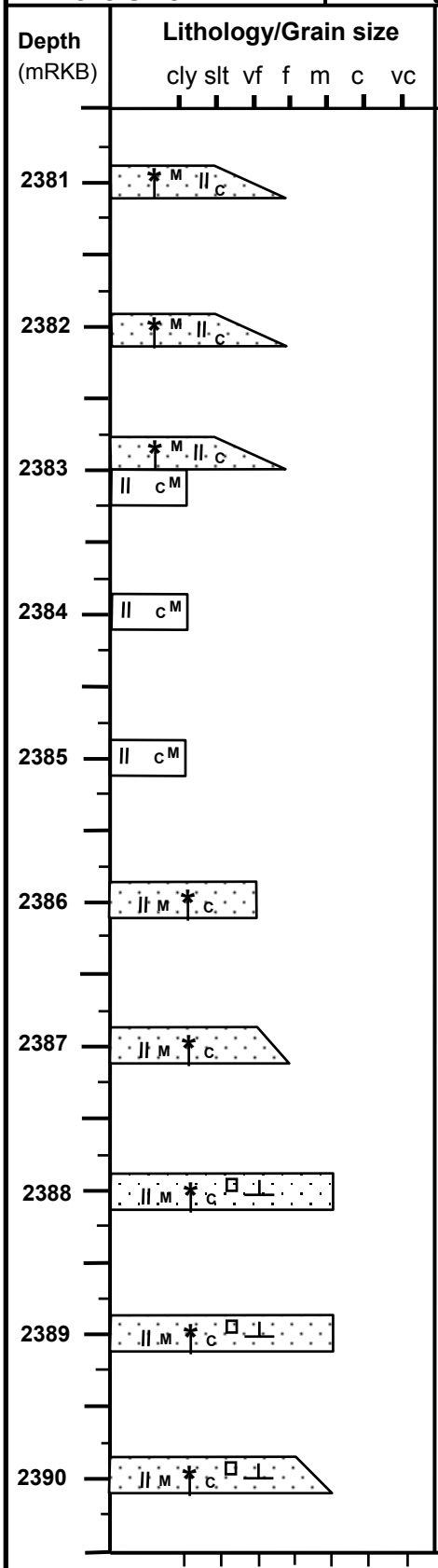
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Fangst Fm.

Core no: 2 | **Interval:** 2371 – 2398.0m | **Cored:** 27.00 **Rec:** 26.00m 96.3 %

Core size: 4" | **Geologists:** Rasmussen / Hals / Beyer | **Date:** 14.03.02



Lithological Description Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination	Remarks Shows, etc
SST: grad Slst, med gry – dk gry, occ clr – trnsl Qtz, slty – vf sdy, wl srt, sbrndd, mod hd, mic, carb, glauc, non calc cmt, no vis por	Gd HC odour, ptchy mod yel dir fluor, slw strmg bl wh cut fluor
SST: grad Slst, a.a.	a.a
SST: grad Slst a.a. **CLST:** med dk gry – dk gry, frm-mod hd, slily slty, carb, mic, non calc	a.a No HC shows
CLST: med hd-hd, non slty, else a.a.	No HC shows
CLST: slily slty, else a.a.	No HC shows
SST: clr – trnsl Qtz, lt gry –brnsh gry, vf, occ f, wl srt, sbrndd, occ slily carb, mod hd, mic, glauc, non calc, fr vis por	Gd HC odour/stn, even mod yel dir fluor, mod fst strmg bl wh cut fluor
SST: vf – f, frm, else a.a.	a.a.
SST: v app HC stn, clr- trnsl Qtz, dk gn gry, med, occ crs, mod wl srt, sbang – sbrndd, frm, slily calc cmt, pyr, occ slily mic, glauc, gd-excel vis por	Strng HC odour/Stn,even yel dir fluor, fst strmg bri bl wh cut fluor
SST: fri – frm, v abun pyr coat Qtz grns, else a.a	Fst strmg bl wh cut esle, else HC shows a.a
SST: f – med, hd, else a.a.	a.a

STATOIL

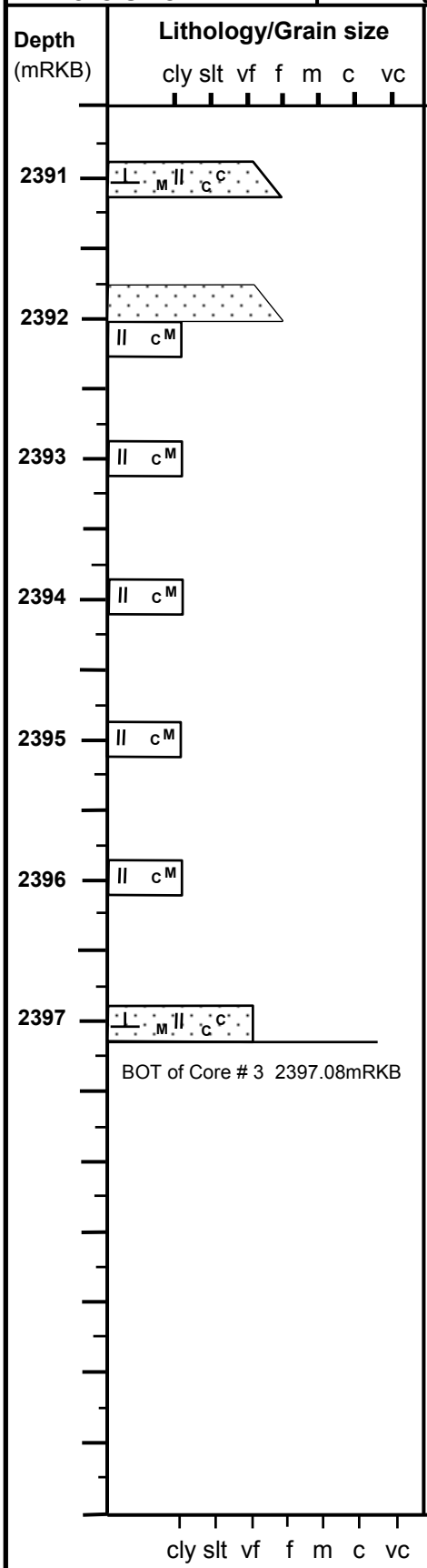
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Fangst Fm.

Core no: 2 | **Interval:** 2371 – 2398.0m | **Cored:** 27.00 **Rec:** 26.00m 96.3 %

Core size: 4" | **Geologists:** Rasmussen / Hals / Beyer | **Date:** 14.03.02



Shows			Porosity			Lithological Description	Remarks
STAIN	FLUOR	CUT	POOR	FAIR	GOOD	Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination	Shows, etc
						SST: clr- trnsl Qtz, brnsh gry, vf-f, wl srt, sbrndd, frm, carb ptch/lam,mic, fr vis por	Mod HC odour/Stn,even yel dir fluor, fst strmg bl wh cut fluor
						SST: vf, non slily carb, else a.a.	Pred shows a.a
						CLST: med dk gry – dk gry, frm – mod hd, carb, mic, non calc	Bec no HC shows
						CLST: gen slty, else a.a.	a.a.
						CLST: grad Slst, med gry - med dk gry, else a.a.	Mod HC odour/stn, even pa dull yel dir fluor, slw strmg bl wh cut fluor
						CLST: pred a.a.	No HC shows.
						CLST: slily slty, else a.a.	No HC shows.
						SST: app HC stn, clr- trnsl Qtz, pred vf, wl srt, sbrndd, fri – mod hd, calc cmt, mic, gd vis por	Strng HC odour/yel brn Stn,even bri yel dir fluor, mod fst strmg bl wh cut fluor

STATOIL

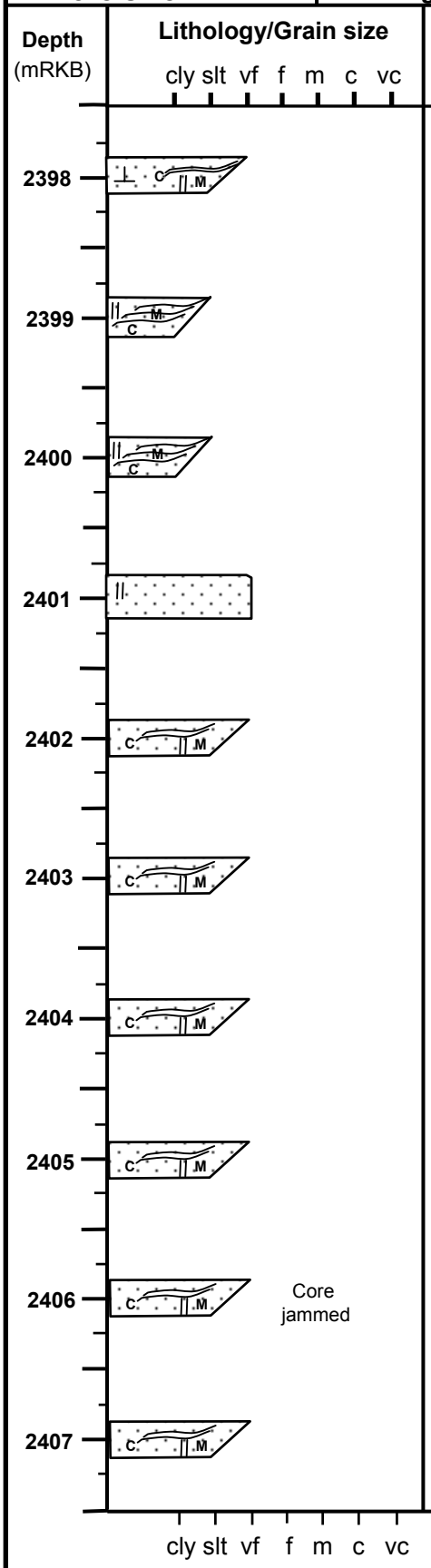
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Fangst - Båt Grp.

Core no: 3 | **Interval:** 2398 – 2424m | **Cored:** 26m | **Rec:** 14.18 m 54.5 %

Core size: 4" | **Geologists:** O.Beyer / L.Rasmussen | **Date:** 15.3.2002



Lithological Description

Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination

SST/SLST: med brn gry, clr- trnsl Qtz, also min Flsp, vf-slt, tr f, wl srt, sbang-sbrndd, fri – frm, mod arg mtx/cmt, tr calc cmt, mic, chlor, microcarb spks & microlam, pr - fr vis por

SLST/CLST: med dk gry-brn gry, clr- trnsl Qtz/Flsp, dom slt, min vf, mod wl srt, sbang, min sbrndd, frm, mod - abun arg mtx/cmt, mic, chlor, microcarb, tight - pr vis por, flazerbd mudst

SLST/CLST: pred a.a. + tr vf-f Qtz/Flsp

SST: med brn gry, clr- trnsl Qtz, also min Flsp, pred vf, grad slt, v wl srt, sbang-sbrndd, fri, cln, tr mic& microcarb, fr-gd vis por

SST/SLST: med brn gry, clr- trnsl Qtz/Flsp, vf-slt, wl srt, sbang-sbrndd, fri – frm, mod arg mtx/cmt, tr calc cmt, mic, chlor, microcarb, fr-gd vis por

SST/SLST: pred Qtz/Flsp, vf-slt, fr vis por, else pred a.a.

SST/SLST: pred Qtz/Flsp, vf-slt, fr vis por, else pred a.a.

SST/SLST: pred Qtz/Flsp, vf-slt, pred a.a.

SST/SLST: pred Qtz/Flsp, vf-slt, lse, else pred a.a. (Core at this point lost original grain coherence)

SST/SLST: pred Qtz/Flsp, vf-slt, fr vis por, else pred a.a.

Remarks

Shows, etc

Mod strng HC odour, mod yel brn Stn,var bri-dull lt yel dir Fluor, fst strmg bu wh cut Fluor, agent:Iso-Propanol

Banded shows quality,mod HC odour, no-mod yel brn Stn,var bri-dull lt yel dir Fluor, fst strmg bu wh cut Fluor, w/Iso-Prop

Banded shows quality,a.a.

V strng HC odour, gd lt brn Stn, even bri lt yel dir Fluor, flshy bl wh cut Fluor

Even shows quality,v strng HC odour, mod-rich yel brn Stn, mod bri lt yel dir Fluor,flshy- strmg bl wh cut Fluor w/Iso-P.

Even shows quality,a.a.

Even shows quality,a.a.

Even shows quality,a.a.

Even shows quality,a.a.

Even shows quality,a.a.

STATOIL

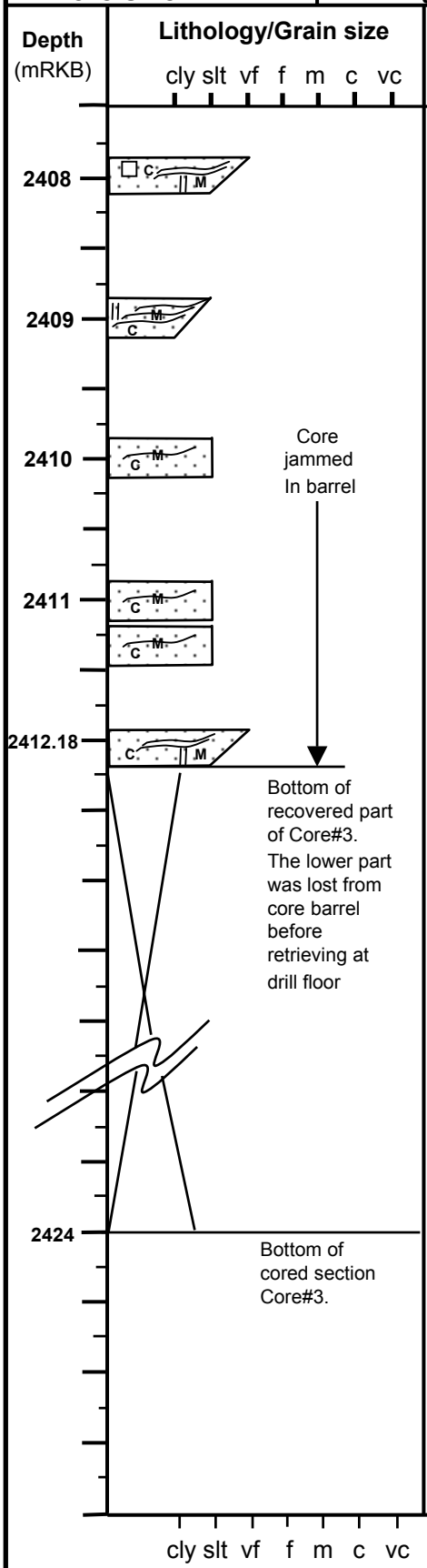
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Fangst - Båt Grp.

Core no: 3 | **Interval:** 2398 – 2424m | **Cored:** 26.0m | **Rec:** 14.18 m 54.5 %

Core size: 4" | **Geologists:** O.Beyer / L.Rasmussen | **Date:** 15.3.2002



Lithological Description

Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination

SST/SLST: med brn gry mtx, clr- trnsl Qtz, tr-abn Flsp, vf-slt, tr f, wl-mod srt, sbang-sbrndd, fri – frm, mod – abn arg mtx/cmt, no calc cmt, mic, tr chlor, microcarb, pr - fr vis por

SLST/CLST: med dk gry mtx, clr- trnsl Qtz/Flsp, dom slt, tr vf sd, mod wl srt, sbang, min sbrndd, frm-mod hd, abun arg mtx/cmt, mic, chlor, microcarb, tight - pr vis por, flazerbd mudst

SLST: pred Qtz/Flsp, pred slt, lse, else pred a.a. (Core at this point lost original grain coherence)

SLST: pred a.a. (lost original coherence)

SLST: pred a.a. (lost original coherence)

SST/SLST: med brn gry, clr- trnsl Qtz/Flsp, vf-slt, wl srt, sbang-sbrndd, fri – frm, mod arg mtx/cmt, tr calc cmt, mic, chlor, microcarb, fr-gd vis por

Remarks

Shows, etc

Banded quality of HC shows.Strng HC odour, wk-mod yel brn Stn,var bri-dull lt yel dir Fluor,inst- fst strmg bl wh cut Fluor w/Iso-Propanol

Banded shows quality, a.a -nil shows lamin

Banded shows quality,a.a.

Mod strng HC odour, gd lt brn Stn, even mod bri lt yel dir Fluor, instant bl wh cut Fluor

Shows quality a.a.

STATOIL

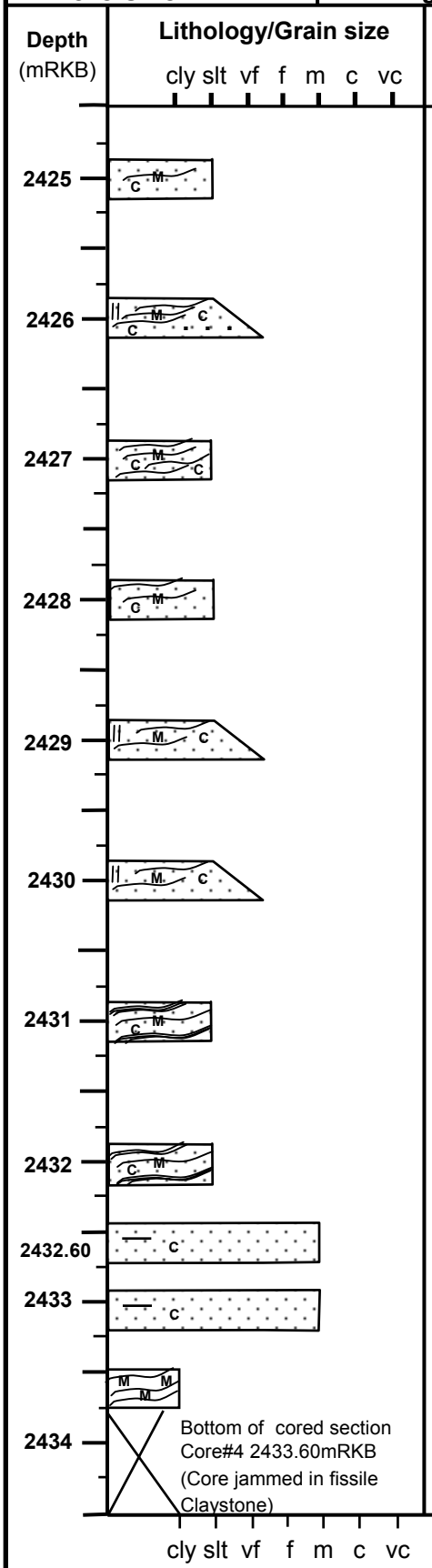
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Båt Grp.

Core no: 4 | **Interval:** 2424 - 2435m | **Cored:** 11.0m **Rec:** 9.60m 87.3%

Core size: 4" | **Geologists:** O.Beyer / L.Rasmussen | **Date:** 16.3.2002

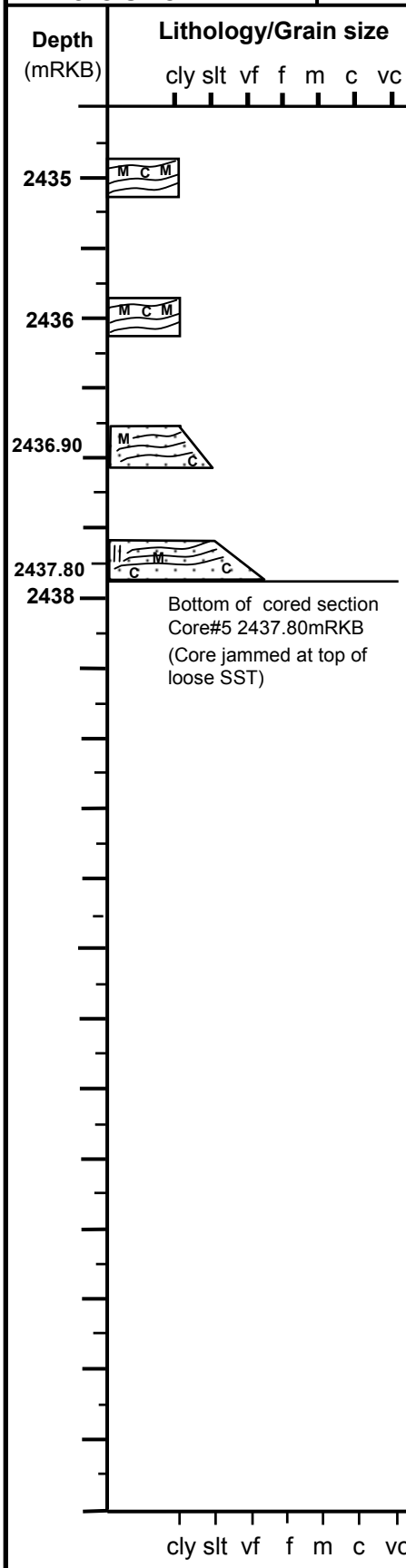


Depth (mRKB)	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination)	Remarks (Shows, etc)
2425	**SLTST:** med brn gry mtx, clr- trnsl Qtz, minor Flsp, tr vf sdy, wl srt, sbang, fri – frm, mod – abun arg mtx/cmt, no calc cmt, mic, tr chlor, microcarb, pr - fr vis por	Mod HC odour, wk-mod yel brn Stn,var bri-mod lt yel dir Fluor,inst- fst strmg bl wh cut Fluor w/Iso-Propanol
2426	**SLTST/SST:** med dk gry mtx&stn, clr- trnsl Qtz, tr Flsp, pred slt-vf sd, mod wl srt, sbang, min sbrndd, frm-fri, var arg mtx/cmt, mic, chlor, abun microcarb, pr-fr vis por	Banded var shows quality, a.a
2427	**SLTST:** pred Qtz/Flsp, pred slt, tr vf sd, else pred abun clay mtx microlam, a.a.	Banded shows quality a.a –pr shows
2428	**SLTST:** bec pred less clay mtx, gen fr vis por	Bec strng HC odour, gd lt brn Stn, even mod bri lt yel dir Fluor, instant bl wh cut Fluor
2429	**SLTST/SST:** med brn gry mtx/stn, clr- trnsl Qtz/Flsp, slt-vf, wl srt, sbang, tr sbrndd, fri – frm, cln, tr calc cmt, mic, microcarb, fr vis por	Shows quality a.a.
2430	**SLTST/SST:** pred slt-vf, wl srt, sbang, tr sbrndd, pred fri, cln, tr calc, slily mic, microcarb, fr vis por	Shows quality a.a.
2431	**SLTST:** bec incr arg microlam & mtx, mic, fr-pr vis por	Banded shows quality a.a –pr shows
2432	**SLTST:** arg microlam & mtx, fr-pr vis por, a.a.	Banded shows quality a.a –pr shows
2432.60	**SST:** med brn gry HC stn, dom clrl Qtz tr Flsp, pred med, v wl srt, sbrndd-sbang, fri-lse v cln, microcarb, gd vis por	Bec v strng HC odour,v gd lt brn Stn, even v bri lt yel dir Fluor,flshy bl wh cut Fluor
2433	**SST:** pred med Qtz, a.a.	
2434	**CLST/SH:** med dk gry, tr slt, mod hd, no calc, v abun micromic, microcarb, loc fiss & brit	No HCshows

STATOIL

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** Nordland II	**Field:** Stær - prospect
Well no: 6608/10-8	**Formation:** Båt Grp.	
Core no: 5	**Interval:** 2435 - 2438m	**Cored:** 3.0m **Rec:** 2.80m 93.3%
Core size: 4"	**Geologists:** O.Beyer / L.Rasmussen	**Date:** 17.3.2002



Lithological Description Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination	Remarks Shows, etc
CLST/SH: med dk gry, mod slty, mod hd, no calc, v abun micromic, microcarb, loc fiss & brit	No HC shows
CLST/SH: pred a.a.	No HC shows
CLYST/SLTST: med dk gry, mod slty, grad sltst, frm-mod hd, abun micromic, abun microcarb, tight (no inferred por)	No HC shows
SLTST/SST: ptchy med brn gry HC stn, clr-trnsl Qtz/Flsp, pred vf, wl srt, sbang, fri-lse mod arg mtx/cmt, abun microcarb, ptcy micropyr, micromic, pr -fr vis por	Mod HC odour, mod ptchy lt brn HC Stn, banded bri-mod lt yel dir Fluor,flshy bl wh cut Fluor

STATOIL

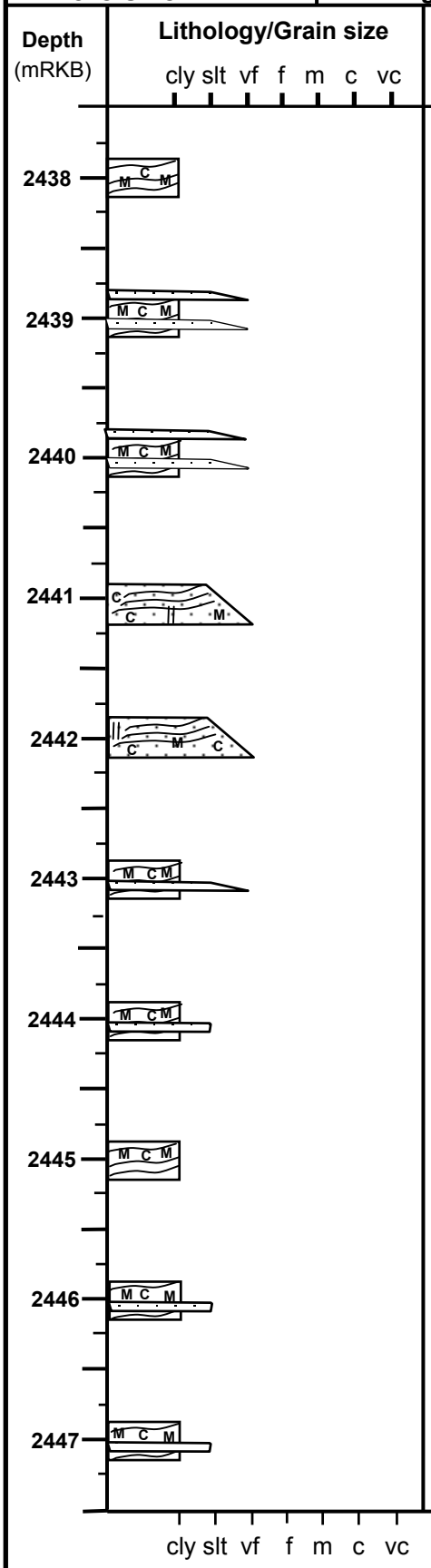
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Båt Grp.

Core no: 6 | **Interval:** 2438 - 2452m | **Cored:** 14 .0m **Rec:** 13.65m 97.5%

Core size: 4" | **Geologists:** O.Beyer / L.Rasmussen | **Date:** 19.03.2002



Lithological Description Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination	Remarks Shows, etc
CLST/SH: med dk gry-dk gry, v hd, v abun micromic, v microcarb, non calc	No shows
LAM SST/CLST: SST: lt brn gry HC stain, clr - trnsl Qtz, pred v f, wl srt, sbang - sbrnd, fri - frm, slty, slily microcarb, micromic, occ slily arg, non calc, pr – fr vis por CLST/SH: mod hd, else a.a.	Shows in sst: Ptchy lt brn grey HC stain Even pa yel direct fluor Sl strmg – blmg bl wh cut fluor
LAM SST/CLST: a.a.	Shows a.a.
SST: a.a.	Shows a.a.
SST: a.a.	Shows a.a.
THINLY LAM SST/CLST: SST: v slty, pr vis por, else a.a. CLST: frm – mod hd, else a.a.	Shows a.a.
THINLY LAM SLTST/CLST: SLTST: as for SST at 2443m CLST: slily calc, else a.a.	Shows a.a.
CLST/SH: slily slty, non calc, else a.a.	No Shows
THINLY LAM SLTST/CLST: a.a.	Shows in sst: Ptchy lt brn grey HC stain Even pa yel direct fluor Sl strmg – blmg bl wh cut fluor
THINLY LAM SLTST/CLST: a.a.	Shows a.a.

STATOIL

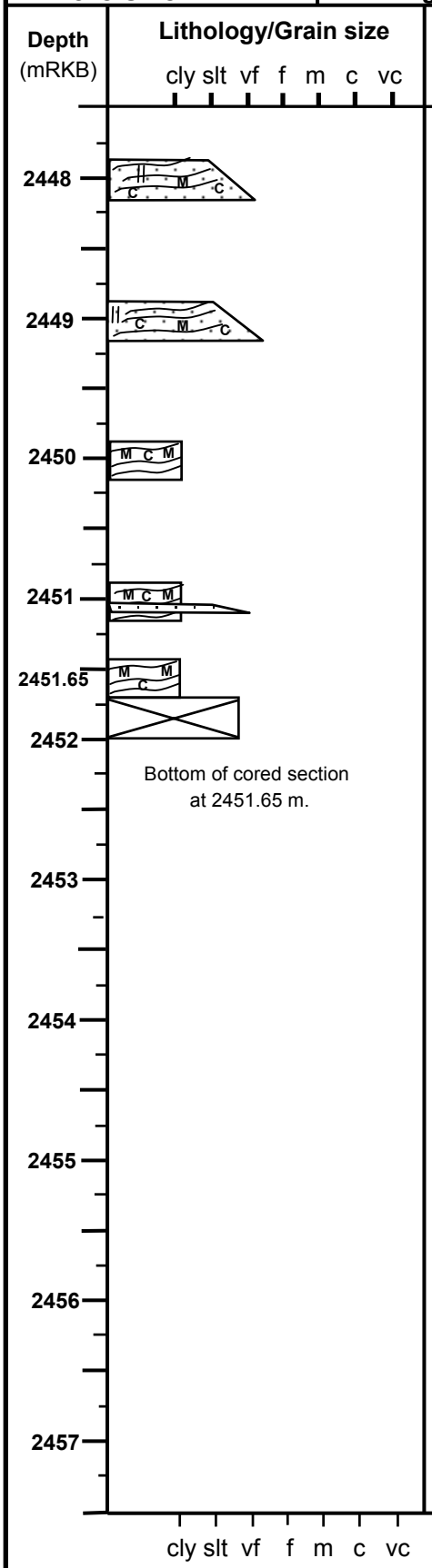
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Båt Grp.

Core no: 6 | **Interval:** 2438 - 2452m | **Cored:** 14 .0m **Rec:** 13.65m 97.5%

Core size: 4" | **Geologists:** O.Beyer / L.Rasmussen | **Date:** 19.03.2002



Lithological Description

Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination

SST:
SST: lt brn gry HC stain, clr - trnsl Qtz, pred v f, wl srt, sbang - sbrnd, fri - frm, v slty grad sltst, slily microcarb, micromic, occ slily arg, non calc, pr vis por

SST: a.a.

CLST/SH: slily slty, non calc, else a.a.

THINLY LAM SST/CLST:
SST: v slty, pr vis por, else a.a.
CLST: frm – mod hd, else a.a.

CLST/SH: non calc, else a.a.

Remarks

Shows, etc

Ptchy lt brn grey HC stain
Even pa yel direct fluor
Sl strmg – blmg bl wh cut fluor

Shows a.a.

No shows

Shows in Sst:
Ptchy lt brn grey HC stain
Even pa yel direct fluor
Sl strmg – blmg bl wh cut fluor

No shows

STATOIL

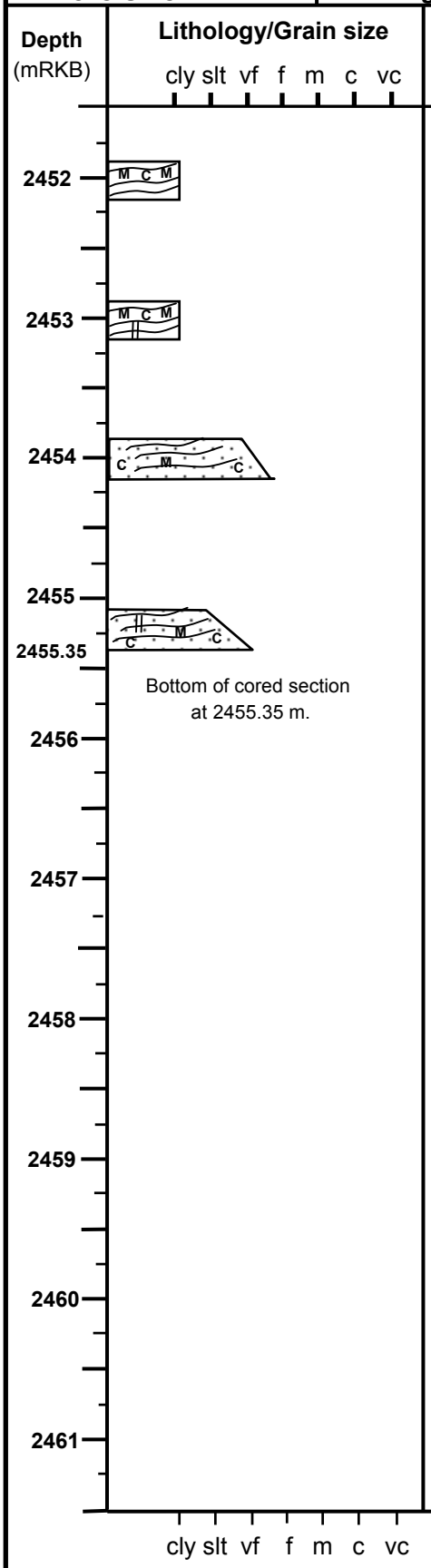
CONVENTIONAL CORE DESCRIPTION

Country: Norway | **Area:** Nordland II | **Field:** Stær - prospect

Well no: 6608/10-8 | **Formation:** Båt Grp.

Core no: 7 | **Interval:** 2452 - 2455m | **Cored:** 3 .0m **Rec:** 3.35m 100%

Core size: 4" | **Geologists:** O.Beyer / L.Rasmussen | **Date:** 20.03.2002



Lithological Description

Rock name, mod. lith., colour, grain size, sorting, round -ness, matrix, cementation, hardness, sed. struct.,accessories, fossils, porosity, contamination

CLST/SH: med dk grey – dk grey, frm – mod hd, slily slty, v mic, carb, non calc

CLST/SH: slty, else a.a.

SST: lt brn gry HC stain, clr - trnsl Qtz, v f - f, wl srt, sbang - sbrnd, fri - frm, slily carb, mic – v mic, occ slily arg, microglauc, slily calc, pr-fr vis por

SST: v f – occ slty, micromic, slily microcarb, slily arg, non calc, pr vis por, else a.a.

Remarks

Shows, etc

No shows

No shows

Ptchy lt brn grey HC stain
Ptchy - even pa yel direct fluor
Sl strmg bl wh cut fluor

Shows a.a.

App F NPD standard sheet for reporting shallow gas

1 .1 NPD standard form for reporting shallow gas

WELL DATA: 6608/10-8 and 6608/10-8A PL 128

1. Distance from drillfloor to sealevel: 24 m

2. Water depth (MSL): 376 m

3a. Setting depth for conductor (m RKB): 459 m

3b. Leak Off/Formation Integrity Test (g/cc). N/A

4a. Setting depth for casing on which BOP is installed: 1290 m

4b. Leak Off/Formation Integrity Test (g/cc): 1.57 sg

5. Depth (m TVD RKB) and two-way time to formation/section/layer tops:

Seabed	400 m / 0.508 sec.
Base Qaternary/ Top Naust Formation:	730 m / 0.840 sec
Top Kai Formation:	1418 m / 1.392 sec.
Top Brygge Formation:	1560 m / 1.519 sec.

6. Depth interval (m RKB & TWT) and age of sandlayers shallower than 1000 m below seabed. State which layers if any contain gas:

The well was classified as class 0 - no shallow gas expected. The section was drilled with sea water down to 1315 mMD. No shallow gas was observed.

Both the 36" and the 17 1/2" hole sections where drilled with returns to seabed. The 17 1/2" section (459 - 1315 m) was logged with MWD gamma ray and resistivity.

This section is from the MWD log interpreted to predominantly consist of clays, in parts sandy clays. Water wet sand layers were observed between 480 – 800 m.

7. How was presence of gas proven:

No shallow gas observed.

8. Composition and origin of gas:

N/A.

9. Describe all measurements performed in gas bearing layers:

Used realtime/memory MWD including gamma ray and resistivity sensors.

10. Indicate the depths (m RKB & TWT) of unconformities in the well bore:
Base Quaternary is interpreted to be at: 730 mTVD RKB/ 0.840 sec
Base Tertiary is interpreted to be at: 1894.5 mTVD RKB/ 1.839 sec.

11. **Indicate depth and extension of sand layers (communication, continuity, truncation etc.):**
Some water wet sand layers were observed between 480 – 800 m. Two distinct layers were observed at 593 m and 676 m. These reflectors are mapped within an area of 1.5 x 1.5 km from the well location.
Unit II 432 – 612 in the Quaternary section. The base of unit two consists of two reflectors that partly interfere with each other. The lowest reflector has medium to high amplitude and normal polarity. The reflector is discontinuous and has an undulating shape. The upper base reflector has low amplitude and is continuous with reversed polarity. The depth to this upper reflector is 602 m. The main dip of the reflector is towards the southwest.
At 677 m, the base reflector of unit III is interpreted. The reflector is continuous with medium amplitude an d normal polarity. Reflection amplitude has been observed on this reflector. The closest anomaly to the well is 1500 m to the Northeast. These anomalies are however dubious since they start to occur at the merging point between two 3D datasets.

12. Indicate depth and extension of any gas blanking, seismic anomalies etc:
- No gas blanking or seismic anomalies observed.

13. State possible seismic indications that the gas originates from deeper levels.
Description if gas originates from deeper levels: N/A

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

- shallow gas: No shallow gas was predicted . No shallow gas was observed.
- **sandlayers:** Possible sand layers was predicted at 612 m and 724 m.
  Sandlayers were from the resisitivity log interpreted to be at:
  593 m, approximately 10 m
  676 m, approximately 18 m
- unconformities: Base Quaternary predicted at 667 m. Base Quaternary is interpreted to be at 730 m
- correlation with adjacent wells: Naust Formation, Kai Formation and Brygge Formation are seen in the reference wells. Correlation in the Tertiary section was good.

App G Listing of other reports

List of additional available reports

Fugro Survey AS	-Location Report at Location 6608/10-8, ST0097.
Statoil	-Geological Prognosis/Pressure Prognosis, Drilling Programme, Well 6608/10-8.
Thales	- Navigation and Positioning Report "Stena Don"
Kirk	- A Report on Core Preservation and Handling on Well 6608/10-8.
Corpro Lab A/S	- Core Photographs, Core # 1-7, Well 6608/10-8 - Conventional Core Analysis Well:6608/10-8 Field: Stær, Including: Water Saturation - 6608/10-8 Conventional Core Analysis, Including Water Saturation - Digital photographs of thin sections, well 6608/10-8
Reslab	- PVT analysis of MDT samples from Well 6608/10-8, Melke Formation
Halliburton Sperry Sun	- BAT - Bi-modal Acoustic Tool, End of Well Report - Definitive Survey (Directional Drilling) Stær well 6608/10-8 & 8A - End of Well Report, Surface Logging Data, Mudlogging - End of Well Report, MWD data
Halliburton	- Kjerneboringsrapport, Brønn 6608/10-8 STENA DON
Petrotech	- Validity Check and Analysis of MDT Samples
Core Lab	- Reservoir Fluid Study, 6608/10-8 Åre - Reservoir Fluid Study, 6608/10-8 Garn - Reservoir Fluid Study6608/10-8 Tilje,
GeoStrat	- Well 6608/10-8 & 6608/10-8A, Biostratigraphy of the Interval 1320-2652m and the Int. 2460-2660m
Baker Hughes	- Zero Offset VSP

WestLab Services	- Fluid Analyses of Crude Oil from Stær Field Well 6608/10-8, Melke Formation - Fluid Analyses of Crude Oil from the Stær Field, well 6608/10-8, Åre Formation - Fluid analyses of crude oil from Stær, well 6608/10-8, Garn formation - TBP-distillation and hydrocarbon analysis of crude oil, Tilje Formation

7 Enclosures

Composite log

Formation evaluation log

Pressure evaluation log