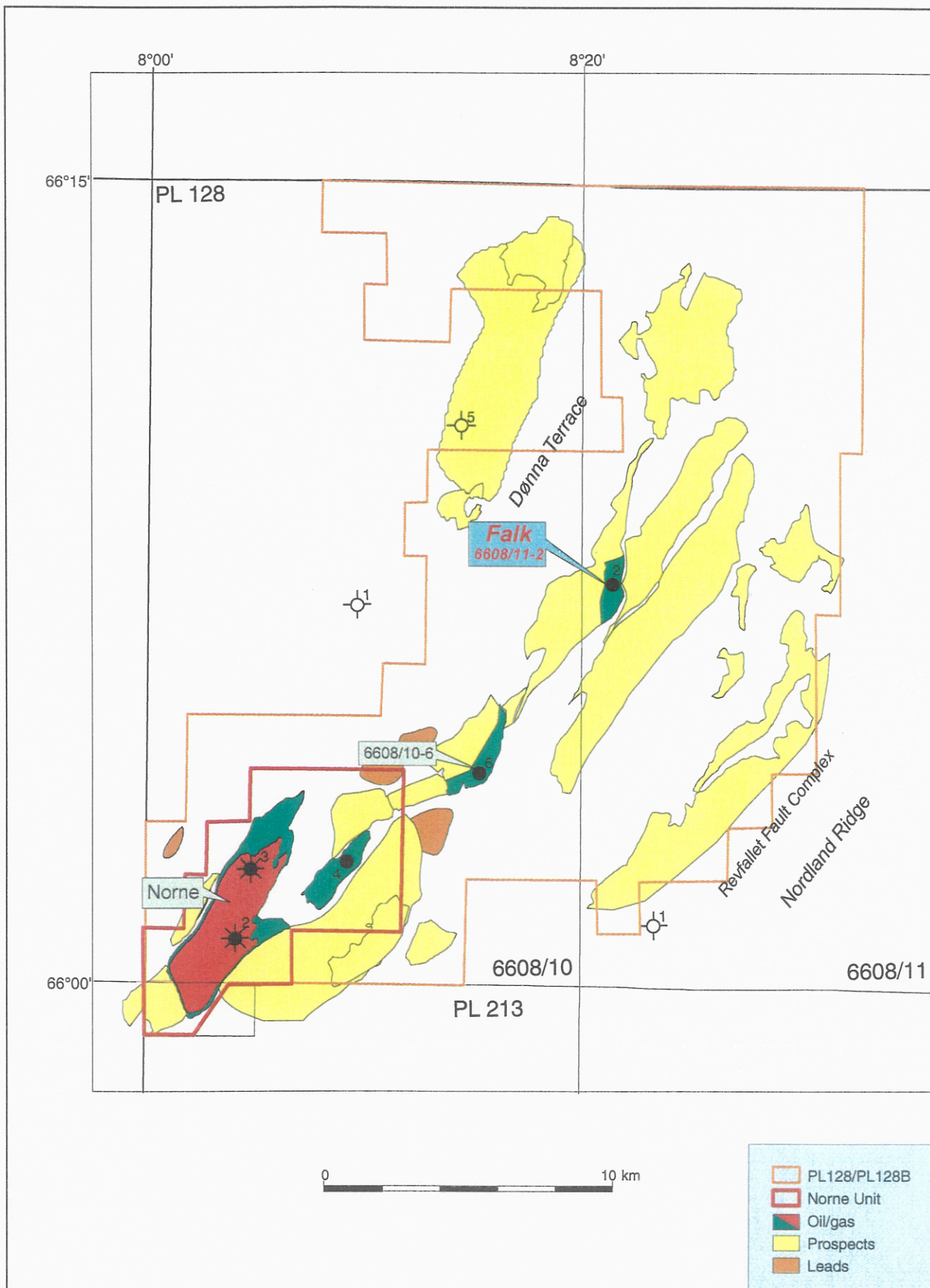


FINAL WELL REPORT
PL 128,
EXPLORATION WELL 6608/11-2



UPN
NOM OPR

Harstad, May 2001



FINAL WELL REPORT

**PL 128
Well 6608/11-2**

01A05*206

Title:		
FINAL WELL REPORT PL 128 Well 6608/11-2		
Document no.:	Contract no./project no.:	Filing no.:
01A05*206		

Classification:	Distribution:
Protected	According to distribution list

Distribution date:	Rev. date:	Rev. no.:	Copy no.:
	2001-04-18	0	

Author(s)/Source(s):	
Tor-Arild W. Johnsen, NOM OPR BEV HAR Terje Møgster, NOM OPR BEV HAR Nils Petter Norheim, NOM OPR BOR	
Subjects:	
General information Health , enviroment, safety and quality Geology and formation data report Drilling operations report	
Remarks:	
Valid from:	Updated:
Responsible publisher:	Authority to approve deviations:

Recommended:	Name:	Date/Signature:
Well Project Manager	Viggo Larsen	23/5-01 <i>Viggo Larsen</i>
Verified:	Name:	Date/Signature:
OPR BEV, Manager Well Eval.	Jan Skagen	22/5-01 <i>Jan Skagen</i>
Verified:	Name:	Date/Signature:
OPR BOR, Manager Expl. Drig.	Per Dalmar	22/5-01 <i>Per Dalmar</i>
Approved:	Name:	Date/Signature:
HNO LET NO, Area Manager	Roger I. Johansen	23/5-01 <i>Roger I. Johansen</i>

Table of contents

1 General well data	5
1.1 Well data record	5
1.2 Purpose of the well	7
1.3 Result of the well	7
1.4 Well history	7
1.4.1 Casing	7
1.4.2 Sidewall cores	7
1.4.3 Conventional cores	8
1.4.4 Mud logging	8
1.4.5 Logging	9
1.4.5.1 Electrical Logging	9
1.4.5.2 MWD Logging	9
1.4.6 Velocity Survey	9
1.4.7 Sampling programme	10
2 Exemptions and non-conformances	11
3 Health, environment, safety and quality (HES&Q)	12
3.1 RUH	12
3.1.1 Comments to RUH	12
3.1.1 Experience listing	13
3.1.2 Time distribution	15
4 Geology and formation data report	16
4.1 Geological setting	16
4.2 Stratigraphy	16
4.2.1 Table of chronostratigraphy	17
4.2.2 Table of lithostratigraphy	18
4.3 Lithological description	19
4.3.1 General information	19
4.3.2 Geological Summary	19
4.4 Hydrocarbon indications	26
4.5 Geophysical result	27
4.6 Formation pressure	27
4.6.1 Reservoir pressure summary	27
4.7 Formation strength	31
4.8 Formation temperature	32
5 Drilling operations report	41
5.1 Rig move and positioning	41
5.1.1 Summary	41
5.1.2 Experiences / recommendations	41
5.2 36" hole section	42
5.2.1 Summary	42
5.2.2 Experiences / recommendations	42
5.3 12 1/4" hole section	44



PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 4
0

5.3.1 Summary 44

5.3.2 Experiences / recommendations 44

5.4 8 1/2" hole section 46

5.4.1 Summary 46

5.4.2 Experiences / recommendations 46

5.5 Permanently plug and abandonment 49

5.5.1 Summary 49

5.5.2 Experiences / recommendations 49

5.5.3 Permanent P&A well schematic 50

5.6 Figures and tables 53

5.6.1 Time/depth curve 53

5.6.2 Timeplanner 55

5.6.3 Bit record 58

5.6.4 Bottom hole assemblies (BHA) 60

5.6.5 Drilling fluids program 63

5.6.6 Cement program 65

5.6.7 Wellhead system 67

- Appendix 1: Operational experience, operational listing**
- Appendix 2: Directional data, survey listing**
- Appendix 3: Contractors list**
- Appendix 4: Wellsite sample descriptions**
- Appendix 5: Core descriptions**
- Appendix 6: Sidewall core descriptions**
- Appendix 7: List of additional available reports**

- Enclosures:**
- Composite log**
 - Formation evaluation log (Geoservices)**
 - Pressure evaluation log (Geoservices)**

PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 5 of 68
0

1 General well data

1.1 Well data record

Well name	:	6608/11-2	
Type of well	:	Exploration	
Prospect	:	Falk	
Country	:	Norway	
Area	:	Nordland II	
License	:	PL 128	
Licensees	:	Statoil (Operator)	65.0 %
		Norsk Hydro ASA	13.5 %
		Norsk Agip A/S	11.5 %
		Enterprise Oil Norge Ltd.	10.0 %

Drilling unit	:	West Navion
Type	:	Drill ship
Water depth	:	351 m MSL
Air gap	:	36 m
On license	:	27.10.00
Rig release	:	24.11.00
Formation at TD	:	Triassic Grey beds

Geographic co-ordinates:	66° 07' 29.32" N	
	08° 20' 57.39" E	
Datum/Spheroid	:	ED-1950/Int. 1924

UTM	:	UTM Zone 32, CM 09° E
		7 334 161 N
		470 609 E

Seismic location	:	ST9301, Inline 3066, Crossline 2248
------------------	---	-------------------------------------

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

PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 7 of 68
0

1.2 Purpose of the well

The main objective of well 6608/11-2 was to prove hydrocarbons in the sandstones in the Melke and the Åre Formations in the Falk prospect.

1.3 Result of the well

The well was spudded in a water depth of 351 m MD. Boulders were encountered from 387 - 420 m MD. Due to boulders the ROP was very low and inclination built uncontrolled to above 2.5 degrees. It was decided to respud the well. The well was respudded 15 m to the west in a water depth of 351 m MD and drilled to a total depth of 2215 m MD. No shallow gas was observed by the ROV at the wellhead.

Several good reservoir zones were penetrated, in the Åre Formation and Triassic Grey beds. A silty Melke Formation was also encountered, but did not have the same reservoir quality as the two previously mentioned. The reservoir sequence at the top of the Åre Formation proved to be oil bearing. The reservoirs in the Melke Formation, the lower part of Åre Formation and the Grey beds Formation were water wet. This was verified both by shows on cuttings and cores, logs, samples and laboratory studies of the cores. The oil bearing reservoir zone was cored. The oil-water contact was not encountered in the well.

The observed formation tops were not in accordance with the prognosis. The difference between the prognosis for Tertiary formation tops seem to be consistent, leading to the assumption that the velocity model for the area has to be refined for future wells within the licence area. A thin Cretaceous sequence which was not prognosed was encountered in the well. (see Figure 4.3).

1.4 Well history

1.4.1 Casing

Table 1.1

Casing	Shoe depth	Leak off tests
30"	447.5 m MD	
9 5/8"	1249 m MD	1.52 sg

1.4.2 Sidewall cores

1 run with sidewall cores was taken in this well. 60 cores were attempted, 55 were recovered, 3 misfired, 1 was lost and 1 was empty (see Table 1.3 and Appendix 6).

1.4.3 Conventional cores

Table 1.2

Core no.	Cored interval (m)	Recovered			Barrel length (m)	Depth shifted to log depth (m)	Comments
		interval (m)	m	%			
1	1742 - 1757	1742 - 1756,15	14,15	94	27	0.7	Jammed, Åre Fm.
2	1757 - 1760	1757 - 1760,15	3,15	105	27	0.7	Jammed, Åre Fm.
3	1760 - 1765	1760 - 1763,65	3,65	73	27	0.7	Jammed, Åre Fm.
4	1765 - 1767	1765 - 1766,65	1,65	83	27	0.7	Jammed, Åre Fm.

1.4.4 Mud logging

A standard mud logging unit was used for the well (details in End of Well Report, Geoservices). Cuttings were sampled every 5 m from 1260 m MD to 1400 m MD, and every 3 m from 1400 m MD to TD.

1.4.5 Logging

1.4.5.1 Electrical Logging

Table 1.3

Run no.	Tool combination	Interval m MD	Comments
1A	PEX/HALS/HNGS	2215 - 1249	Good log quality.
1A	CMR/ECS/GR	1875 - 1660, 1550 - 1570	Good log quality.
1A	MDT/GR	1559.5 - 2175	Pressure points only. Water sampling not successful due to plugged probe.
1B	MDT/GR		Tool failure, 50 volt problem. Misrun.
1B	MDT/GR	1773.0	Took water sample.
1C	MDT/GR		Tool failure 50 volt problem. Misrun.
1C	MDT/GR	1746.0	Took HC sample.
1A	VSP/GR	2215 - 500	Good log quality.
1D	MDT/GR	1798, 1778	Stuck with dual packer after 2 pressure tests. Cut and thread fishing operation.
1A	FMI/DSI/GR	2215 - 500	Good log quality.
1E	MDT/GR (18 gal HC sample)	Misrun.	Tool failure 50 volt problem.
1E	MDT/GR	1747.0	Åre Fm. HC sample 18 gallon.
1F	MDT/GR	1747.4, 1686.9	Åre Fm. HC sample 18 gallon, Melke Fm. water sample 1 gallon
1A	CST/GR	2206 - 1402	Attempted 60 cores. Rec.: 55, misfire, 3, lost 1, empty 1

1.4.5.2 MWD Logging

Table 1.4

Run no.	Depth interval m MD	Collar diam.	Tool type	Comments
1	450-1254	8 1/4"	MPR	MPR LITE service with directional
2	1254-1742	6 3/4"	MPR	MPR LITE service with directional
3	1767-1920	6 3/4"	MPR	MPR LITE service with directional
4	1920-2215	6 3/4"	MPR	MPR LITE service with directional

1.4.6 Velocity Survey

A zero-offset VSP was run. Shot 66 levels with 15 m spacing, and 8 levels with 100 m spacing. The seismic source employed was 3x155 cu. in. Bolt Gun array, depth 4.0 m, air pressure 200 psi. The near field monitor hydrophone was kept at a depth of 8.0 m.

PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 10 of 68
0

1.4.7 *Sampling programme*

MDT sampling programme, refer to Table 4.5, and for oil and water sampling programme, refer to Table 4.6.

2 Exemptions and non-conformances

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

Table 2.1

Exemption from	Report no.	Title
B&B TB 10-15 "Casing Manual"	1-6608112	"BTC gjenger på 13 3/8" produksjonsforingsrør - ved mulig olje DST"
B&B KP10 - K110 "Requirements to drilling operations"	2-6608112	"Barriere mellom åpent hull og casing settes 520 m over casing sko"

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

3.1 RUH

During the operation a total of 135 RUH (Rapport om Uønsket Hendelse) were obtained.

3.1.1 Comments to RUH

Table 3.1

Kind of incident	No.	Comments
Personal injury	0	LTA
	3	Seriously with possibility of seriously injury
	2	Medical treatment
	4	First aid
Environmental injury	0	Spill to external environment

3.1.1 Experience listing

System / event	D-time hrs	Experience	Immediate solution	Solution recommended	Ref.
Rig move and positioning					
Deploying transponders	saved rig time	Optimized procedure for deploying transponders to avoid using rig time	Ref. 7.1.2.	This procedure may be implemented in future operations with DP vessels.	
36" section					
Drilling / boulders	15	Due to very hard boulders from 397 m MD in combination with high WOB, the hole built angle up to 2.5° at 420 m MD. The mill-tooth cutters on the HO were severe worn.	The well was respudded 15 m to the West. The second hole was drilled very patient and with max. 3-4 tons WOB before the entire BHA was drilled below seabed.	If boulders are experienced in top-holes, it is essential that the start of the hole is drilled patient and with very limited WOB to get a straight hole from the top. Consider to use insert teeth on the HO if excessive boulders are expected.	
Drilling / reaming		Made several attempts to reduce the angle build up by reaming the hole after each single , but this gave none or very little effect		If the hole build angle above 1.5° in the top part, consider to respud well immediately. The rate of success with dropping the well back to vertical after reaming is very low.	
12 1/4" section					
Drilling / BHA	high ROP (63 m/hr)	The section was drilled with motor BHA, mill-tooth bit and high flowrate (4500 lpm). The ROP was 50% higher compared to 6608/10-6 (drilled with pendulum BHA).	The section consisted of very soft formations, and down to 800-900 m MD it was experienced ROP of 300-400 m/hr without applying WOB. A significant reduction in ROP was observed when sliding with reduced flowrate (3500 lpm).	If high ROP is a target in this section in future wells, it should be drilled with a powerful motor and as high flowrate as possible.	
Drilling / wiper trip	saved appr. 6 hrs rig time	No wiper trip was performed prior to running the 9 5/8" casing, as no drag or tight hole was observed when pulling out of hole.	The hole was reamed down after each connection to verify proper hole cleaning due to very ROP	Wiper trip is not necessary if the section is drilled with high flowrate (4500 lpm), and no indications of poor hole cleaning are experienced when pulling out of hole.	
Cementing /	2-4 hrs	Observed no indication of dart	Displaced the rest with the mud pumps, and the	Reference is made to Halliburton report on	

System / event	D-time hrs	Experience	Immediate solution	Solution recommended	Ref.
Halliburton SSR cmt. head	drilling extra cmt.	shearing top plug even after displacing 1.5 of theoretical landing string volume. Tagged cmt. and top plug 20 m too high.	expected pressure was observed. Stopped displacing after theoretical volume minus landing string volume to avoid over displacing.	ESOP.	
8 1/2" section					
Drilling / extended LOT & MWD ECD	3 hrs	An extended LOT equal to 1.71 sg for the 1. cycle and 1.52 sg for the 2. cycle was performed. The MWD ECD showed values up to 1.50 sg after 70 m of drilling.	1.52 sg was set as the LOT and upper limit for the ECD while drilling. When MWD ECD showed values close to this, it was decided to pull into the casing shoe to circulate and try to reduce the ECD. This proved that the MWD tool was wrong calibrated.	After the hole is displaced to mud and has started to build filter cake, the LOT is much higher then 1.52 sg, probably around 1.65 sg. It is conservative to PO and circulate, even though the ECD values are that high.	
Drilling / bits	improved ROP	Aggressive PDC bit gave 50 % higher ROP compared to mill-tooth bit used in offset well	Reed Hycalog DS116AGNW achieved a ROP of 24 m/hr from 1450 m MD to 1740 m MD.	Use of PDC bits will improve ROP in these formations.	
Drilling / BHA	low ROP	Stabilizers and drill collars balled up in intervals, and resulted in problems transferring the applied WOB to the bit	The balled up stabilizers resulted in pump-off effects up to 14 Tons with 2000 lpm when drilling the clay intervals. Due to this, it was decided to reduce the flowrate to try to get any ROP.	Consider to drill the section with a pendulum assembly to minimize the effects of the reactive clays. High flowrate is essential to avoid bit balling.	
Drilling / bit balling	low ROP	Bit- and BHA balling was experienced in intervals in the Åre formation	Variance in drilling parameters gave no effect. Pumping of anti-balling pill gave low effect.	Sufficient HSI and high flowrate (+ 2000 lpm) is essential to avoid bit balling with PDC bits.	
Coring / bits	core jammed off	Aggressive core bits are unsuited in shaly or interbedded sands.	Changed to less aggressive bit.	They should only be used when geological certainty of uniform sand and thickness are reasonably high...	
Formation Evaluation					
MDT	35.9	Several problems on 50 V line (electrical supply to MDT tool)		When salty mud enters the connections between the MDT modules go directly to the backup tool.	
MDT	37	Dual packer stuck when performing a stress test in Åre Fm.	Fish logging tool.	Be aware of risk getting stuck when planning use of dual packer.	

PL 128
Well 6608/11-2

Date
2001-04-18

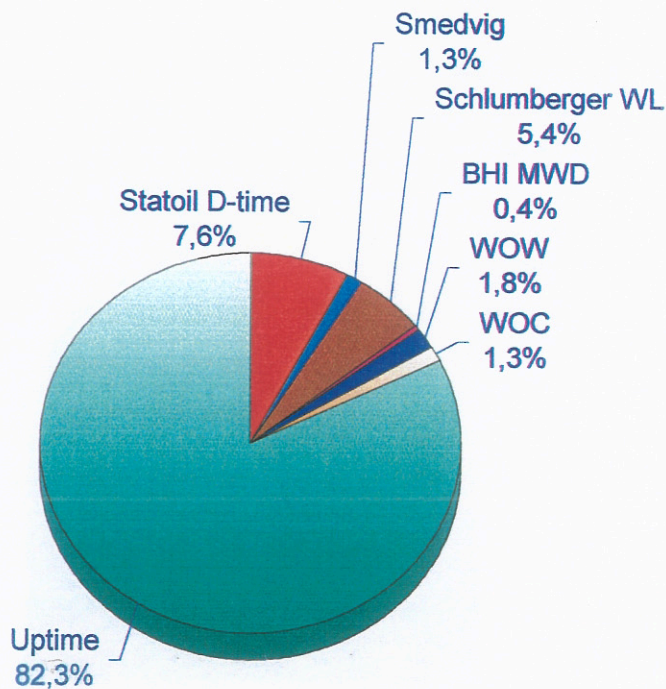
Rev. no. 15 of 68
0

3.1.2 Time distribution

Distribution of down time	Hrs	Cause of waiting time	hrs
Statoil operations ⁽¹⁾	51.5	WOW ⁽²⁾	12.5
Smedvig	8.5	WOC (30" in tension)	8.5
Schlumberger WL logging	37.0		
Baker Hughes MWD	2.5		
TOTAL D-TIME	99.5	TOTAL W-TIME	21.0

Activity parameters	Days	Hrs	%
Budget time ⁽³⁾	35.4		
Actual time	28.3		
Days ahead of Budget	6.9		
Total D+W-time		120.5	17.8
Op. factor / Efficiency = $\frac{\text{TotalTime}-\text{DownTime}-\text{WOW}}{\text{TotalTime}-\text{WOW}}$			85.0

- (1) includes respud of 36" hole (15 t), stuck with MDT tool (36.5 hrs)
- (2) operations halted due to two occurrences of DP status "Yellow" (strong winds (>40 knots))
- (3) budget time has been revised to include additional activities due to HC discovery (coring, additional wireline logging, extended TD of well)



4 Geology and formation data report

4.1 Geological setting

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 prospect is defined on a gently dipping fault block. The structure is enclosed by faults on three sides, but is open to the SW.

Block 6608/10 and 6608/11 are 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. Well 6608/11-2 is located in the NE part of the Dønna Terrace, NW of the Nordland Ridge (see Figure 1.1)

The Falk prospect is located at the height trending NE from the Norne Field via the Svale discovery.

Well 6608/11-2 penetrates rocks of Quaternary, Tertiary, Cretaceous, Jurassic and Triassic age. TD is in rocks of Triassic age (Grey beds Formation).

4.2 Stratigraphy

The stratigraphy division is based on the biostratigraphic report and on correlation with nearby wells. The stratigraphy in the entire well and the reservoir section are given in Figures 4.1 and 4.2 respectively.

4.2.1 Table of chronostratigraphy

Table 4.1

Stratigraphic Succession		mMD RKB		
		From	To	
Tertiary	Upper Pliocene (top not seen)	1260	1263	
	Upper Miocene	1275	1400	
	Middle Miocene	1418	1421	
	Lower Oligocene	1427	1457	
	Upper Eocene	1460	1478	
	Lower Eocene	1490	1550.5	
	Upper Paleocene	1559	1580	
----- Unconformity -----				
Cretaceous	Upper Hauterivian	1584	1595	
	Lower Valanginian	1599	1613	
	----- Unconformity -----			
Jurassic	Middle Callovian	1614	1616	
	----- Stratigraphic break -----			
	Lower Bathonian	1625	1643	
	Upper Bajocian	1646	1702	
	Lower Bajocian - Upper Aalenian	1707	1736	
	----- Stratigraphic break -----			
	Lower Pliensbachian - Sinemurian	1737	1742	
	Upper Sinemurian	1742.1	1808	
Triassic	Hettangian	1811	1997	
	Rhaetian	2005	2182	
	Upper Norian	2192	2213	
	TD		2215	

4.2.2 Table of lithostratigraphy

Table 4.2

Table of lithostratigraphy						
Period	Group / Formation	Prognosed		Observed		TWT
		m TVD	m MD	m TVD	m MSL	sec.
QUATERNARY	NORDLAND GP (Sea Floor)	388.0	387	387	351.0	0.478
TERTIARY	NORDLAND GP	671.0	672.0	672.0	636.0	0.756
	Naust Fm	671.0	672.0	672.0	636.0	0.756
	Kai Fm	1 237,0	1 333.5	1 333.5	1297.5	1.311
	HORDALAND	1 297.0	1 407.5	1 407.5	1371.5	1.370
	Brygge Fm	1 297.0	1 407.5	1 407.5	1371.5	1.370
	ROGALAND GP	1 456.0	1 525.5	1 525.5	1489.5	1.485
	Tare Fm	1 456.0	1 525.5	1 525.5	1489.5	1.485
CRETACEOUS	CR. KNOLL GP.	-	1 583.0	1 583.0	1547.0	1.535
	Lange Fm	-	1 583.0	1 583.0	1547.0	1.535
JURASSIC	VIKING GP	1 559.0	1 613.5	1 613.5	1577.5	1.558
	Melke Fm	1 559.0	1 613.5	1 613.5	1577.5	1.558
	FANGST GP	-	1 705.0	1 705.0	1669.0	1.632
	Not Fm	-	1 705.0	1 705.0	1669.0	1.632
	BÅT GP	1 703.0	1 736.0	1 736.0	1700.0	1.655
	Åre Fm	1703.0	1736.0	1736.0	1700.0	1.655
TRIASSIC	Grey beds Fm	-	2064.0	2064.0	2028.0	1.903
	TD	-	2215.0	2215.0	2179.0	

PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 19 of 68
0

4.3 Lithological description

4.3.1 General information

System, Series and Stage: Partly based on biostratigraphy and partly on log interpretation and correlation.

Lithology: The lithological description is based on the cuttings and cores descriptions, see Appendix I - III.

Depositional environment: Based on biostratigraphic and regional reports. The depths are in meters with drill floor as datum unless otherwise stated.

4.3.2 Geological Summary

NORDLAND GROUP **387.0 - 1407.5 m MD, 387.0 - 1407.5 m TVD**
(351.0 - 1371.5 m TVD MSL)

In the well the Nordland Group comprises the Quarternary, the Naust Formation and the Kai Formation.

Both the 36" and the 12 1/4" hole sections were drilled with returns to seabed. The 12 1/4" section (447.5 - 1254 m MD) was logged with MWD gamma ray and resistivity.

QUATERNARY **387.0 - 672.0 m MD, 387.0 - 672.0 m TVD**
(351.0 - 636.0 m TVD MSL)

The Quarternary sequence is 285 metres thick and comprises the top of the Nordland Group. This section was drilled with returns to seabed and is from the MWD log interpreted to consist of clays, in parts sandy clays. During drilling of the top hole boulders were encountered, and the angle of the hole built uncontrolled. It was decided to respud the well. Boulders were also encountered in the second top hole, but drilling of the 36" section was completed without severe problems.

Naust Formation **672.0 - 1333.5 m MD, 672.0 - 1333.5 m TVD**
(636.0 - 1297.5 m TVD MSL)

System: Tertiary
Series: Neogene
Stage: Upper Pliocene - Upper Miocene
Depositional environment: Marine, inner shelf

Down to 1254 m MD this formation was drilled with returns to seabed. The formation is from MWD log interpreted to consist of clays, which are sandy in parts.

No significant change in log response is observed below the 9 5/8" casing shoe. Log response and cuttings description from this interval reflects a lithology dominated by claystone with some sandy layers.

The claystone is medium green grey to green grey, soft to moderately firm and amorphous to subblocky. It is silty, with minor black speckles and generally calcareous. Traces of mica, pyrite and shell fragments occur throughout the formation

The sand consists of clear to translucent, loose quartz grains. The grains are fine to coarse, occasionally very coarse, subrounded to subangular, poorly sorted and loose. The sand grains are generally floating in the claystone.

Kai Formation**1333.5 - 1407.5 m MD, 1333.5 - 1407.5 m TVD
(1297.5 - 1371.5 m TVD MSL)**

System: Tertiary

Series: Neogene

Stage: Upper/Middle Miocene

Depositional environment: Marine, inner shelf

Top Kai Formation is picked at a sharp peak in gamma ray readings. This peak is also reflected in the other wireline logs. There is almost no change observed in the cuttings between the lower part of the Naust Formation and the Kai Formation. The Kai Formation consists of claystone with some sandy layers.

The claystone and the sandy layers is as described in the Naust Formation above. Traces of mica, pyrite and shell fragments occur throughout the formation.

HORDALAND GROUP**1407.5 - 1525.5 m MD, 1407.5 - 1525.5 m TVD
(1371.5 - 1489.5 m TVD MSL)**

The Hordaland Group consists of the Brygge Formation. Top Brygge Formation is defined by a trend shift towards lower gamma ray readings, and at a shift in a gradual decreasing resistivity trend.

Brygge Formation**1407.5 - 1525.5 m MD, 1407.5 - 1525.5 m TVD
(1371.5 - 1489.5 m TVD MSL)**

System: Tertiary

Series: Neogene - Paleogene

Stage: Upper/Middle Miocene - Lower Eocene

Depositional environment: Marine, mid to outer shelf to upper bathyal

The Brygge Formation consists of claystone with some sandy layers.

The claystone is olive black and brown black to brown grey. It is blocky, firm to soft, soluble, slightly silty, in parts glauconitic and micromicaceous. The claystone is occasionally carbonaceous and non to slightly calcareous.

The sand consists of clear to translucent quartz, predominantly fine, occasionally medium to coarse, poorly sorted and subangular to angular.

ROGALAND GROUP

**1525.5 - 1583.0 m MD, 1525.5 - 1583.0 m TVD
(1489.5 - 1547.0 m TVD MSL)**

The Rogaland Group consists of the Tare Formation. The top of the Tare Formation is picked just above two minor gamma ray peaks.

Tare Formation

**1525.5 - 1583.0 m MD, 1525.5 - 1583.0 m TVD
(1489.5 - 1547.0 m TVD MSL)**

System: Tertiary

Series: Paleogene

Stage: Lower Eocene - Upper Paleocene

Depositional environment: Marine, outer shelf to upper bathyal, shallowing to marine outer shelf.

The Tare Formation consists predominantly of claystone with limestone stringers and a few sandy layers. In the upper part of the formation the claystone is green grey to medium grey and medium green grey. The colours change to dark brown grey to dark olive grey with depth. Relatively low gamma ray readings, possibly associated with the green grey, brown grey to olive grey claystone, dominate in the Tare Formation. The claystone is firm, blocky and non calcareous. The micromicaceous content decreases with depth.

Traces of similar claystone are found in cuttings down to TD. These may be cavings from the Tare Formation. A distinct high gamma ray peak occur in the middle of the formation (1546 - 1555 m MD). In this interval the formation consist of olive grey claystone, which is firm, slightly micromicaceous, non calcarous with abundant glauconite.

The basal part of the Tare Formation is characterised by fluctuating gamma ray readings and higher resistivity readings than in the above lying claystones. Dark brown grey to dark olive grey non calcareous claystone dominate this lowermost part of the formation.

The limestone is off white to very light grey. It is subblocky, cryptocrystalline, silty to very fine sandy and occasionally argillaceous.

The sandstone consists of predominantly medium to coarse quartz grains. The grains are subangular to well rounded and loose.

PL 128
Well 6608/11-2Date
2001-04-18Rev. no. 22 of 68
0**CROMER KNOLL GROUP****1583.0 - 1613.5 m MD, 1583.0 - 1613.5 m TVD
(1547.0 - 1577.5 m TVD MSL)**

The Cromer Knoll Group consists of the Lange Formation in this well. The Cretaceous section is only 30.5 m thick. The top of the Lange Formation is represented by a slight increase in the resistivity readings and a change in log characteristic from a spiky section to smoother readings.

Lange Formation**1583.0 - 1613.5 m MD, 1583.0 - 1613.5 m TVD
(1547.0 - 1577.5 m TVD MSL)**

System: Cretaceous

Series: Lower Cretaceous

Stage: Upper Hauterivian - Lower Valanginian

Depositional environment: Marine, inner shelf

The gamma ray signature gives a weak bell shaped form of the formation with an increase in gamma ray readings towards the top of the Lange Formation. The formation consists of claystone with limestone stringers and a minor siltstone layers.

The claystone is dark brown grey to dark olive grey, becoming moderately red brown, firm, blocky to subblocky, non calcareous.

The limestone is off-white to very light grey. It is subblocky, cryptocrystalline, silty to very fine sandy and occasionally argillaceous. The siltstone is light grey to very light grey, argillaceous, grading to calystone. It is moderately calcareous.

VIKING GROUP**1613.5 - 1705.0 m MD, 1613.5 - 1705.0 m TVD
(1577.5 - 1669.0 m TVD MSL)**

The top of the Viking Group is seen as a marked gamma ray peak followed by a decreasing trend in the gamma ray readings. The resistivity readings have a shift in the decreasing trend compared to the overlying Lange Formation. The Viking Group consists of the Melke Formation in this well.

Melke Formation**1613.5 - 1705.0 m MD, 1613.5 - 1705.0 m TVD
(1577.5 - 1669.0 m TVD MSL)**

System: Jurassic

Series: Middle Jurassic

Stage: Middle Callovian - Upper Bajocian

Depositional environment: Marine, inner shelf to marginal marine

The Melke Formation consists predominantly of claystone and siltstone with thin layers of limestone holding trace amounts of sandstone and marl in the lower part. Trace amounts of glauconite and pyrite occur throughout the formation.

The claystone is dark brown grey to dark olive grey becoming dark olive brown and olive black with depth. It is soft to firm and subblocky to amorphous. In the lower part the claystone is soluble. The claystone is non calcareous becoming non to slightly calcareous and occasionally silty to very fine sandy in the lower part. It is moderate micromicaceous throughout the formation.

The limestone is predominantly off-white to very light grey, subblocky and silty to very fine sandy. It is cryptocrystalline and predominantly micritic.

FANGST GROUP**1705.0 - 1736.0 m MD, 1705.0 - 1736.0 m TVD
(1669.0 - 1700.0 m TVD MSL)**

The Fangst Group consists of the Not Formation in this well. The top of the Not Formation is defined by a trend shift in gamma ray and resistivity readings towards higher values.

Not Formation**1705.0 - 1736.0 m MD, 1705.0 - 1736.0 m TVD
(1669.0 - 1700.0 m TVD MSL)**

System: Jurassic

Series: Middle Jurassic

Stage: Lower Bajocian - Upper Aalenian

Depositional environment: Marginal marine to marine, inner shelf

The formation consists of claystone with thin stringers of limestone/marl and traces of siltstone and sand.

The claystone is olive black and minor grey red, blocky to amorphous, soft to firm, soluble, in parts silty to very silty and non to slightly calcareous.

The limestone/marl is medium grey, blocky to amorphous, soft and soluble. The siltstone is dark grey, blocky to amorphous, soft and soluble. Traces of clear to translucent loose quartz, which is very fine to fine and subangular, is present through the unit.

BÅT GROUP**1736.0 - 2064.0 m MD, 1736.0 m - 2064.0 m TVD
(1700.0 - 2028.0 m TVD MSL)**

The Båt Group consists of the Åre Formation in this well. The top of the Åre Formation is picked at a decrease in gamma ray and density readings, corresponding with an increase in resistivity values and a slight decrease in the transit time.

Åre Formation**1736.0 - 2064.0 m MD, 1736.0 m - 2064.0 m TVD
(1700.0 - 2028.0 m TVD MSL)**

System: Jurassic

Series: Lower Jurassic - Upper Triassic

Stage: Lower Pliensbachian - Rhaetian

Depositional environment: Marginal marine to fluviodeltaic

The upper Åre Formation consists of sandstone, and the lower Åre Formation consists of interbedded claystone, sandstone, coal and limestone.

The sandstone in the cored section is marine influenced with bayfill facies. It has dark yellow brown stain and consists predominantly of clear to translucent quartz, predominantly fine, in parts very fine, well sorted, subangular, loose, friable and with no cementation. The sand is uniform, has traces of mica and good visible porosity.

Below the homogenous sandstone the formation represents a more continental environment with fluvial channels and coal beds. The formation consists of interbedded sandstone, claystone, coal and siltstone with minor limestone stringers. Traces of pyrite and mica occur throughout the unit, but mostly in the upper part.

The claystone is brown grey, black, grey black, firm, blocky and very carbonaceous. It is also green grey, medium grey, firm to hard, blocky and slightly silty.

The sandstone consists of clear to translucent quartz, occasionally light brown quartz, predominantly medium to coarse, occasionally fine to very coarse, subblocky to subrounded and loose.

The siltstone is grading claystone, it is medium grey, soft and has poor visible porosity. The limestone is very light grey to yellow grey, moderate yellow brown, blocky, firm to hard and crystalline.

The coal is black to brown black, angular, firm, occasionally argillaceous, occasionally brittle and occasionally hard.

PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 25 of 68
0

Grey beds Formation

**2064.0 - 2215.0 m MD, 2064.0 - 2215.0 m TVD
(2028.0 - 2179.0 m TVD MSL)**

Interpretation of the Grey beds formation is based on log signature and change in formation. The lower part of the Åre Formation consists of interbedded claystone, sandstone, coal and limestone whilst the Grey beds consist of more blocky sandstone bodies interbedded with claystones and minor limestone beds. The top of the Grey beds is picked at the top of the first sandstone body below the interval with coal beds.

System: Triassic

Series: Lower Triassic

Stage: Rhaetian - Upper Norian

Depositional environment: Marginal marine to fluviodeltaic

The sandstone is clear to translucent quartz, occasionally yellow brown, fine to medium, occasionally medium to coarse, moderate sorted, rounded to subrounded, loose and with trace of pyrite. Occasionally the sandstone is very fine to fine, subrounded and well sorted.

The claystone is brown grey, medium grey, soft, amorphous, occasionally sticky, occasionally silty and non calcareous. In the lower part the claystone is becoming pale brown, medium grey, soft, blocky, slightly silty and occasionally calcareous. A few thin layers with green grey, firm and well sorted siltstones are seen in the lower part.

The limestone is white to very light grey, occasionally dark grey, blocky, firm to crumbly and crystalline.

TD

**2215.0 m MD, 2215 m TVD
(-2179.0 m TVD MSL)**

4.4 Hydrocarbon indications

No shows occurred in the sediments above 1709 m MD. At 1709 m MD, in the Not Formation, moderate yellow direct fluorescence and weak slow streaming white yellow cut fluorescence was observed in siltstones. Further down in the Not Formation no shows were observed.

When drilling into the Åre Formation good hydrocarbon shows were observed. The shows in the sandstone in the Åre Formation are an even, strong, dusky yellow brown, waxy oil staining. The direct fluorescence is even, bright, pale yellow to yellow orange. The cut fluorescence is yellow white, slow streaming. The sandstone has a moderate to strong hydrocarbon odour and the oil was bleeding from the cores. Below 1762 m MD no shows occur in the sediments.

Gas values were low during drilling down to top reservoir. Background gas was below 1 %. A gas peak of 1 % was observed at 1690 m MD in the Melke Formation. When drilling into the top of the reservoir in Åre Formation a gas peak of 5.1 % was observed when circulating bottoms up for samples at coring point. When entering the Lower Jurassic Åre Formation at 1736 m MD the resistivity increased from 2 to over 130 ohmm. The resistivity reading and gas values are relatively high down to 1765 m MD. Below this depth gas values are generally below 1 %, except from a few gas peaks. Major gas peaks are listed in Table 4.3. For complete gas peak list and details, see Geoservices Final Well Report.

Table 4.3

Depth m MD	Gas %	BG %	C ₁ ppm	C ₂ ppm	C ₃ ppm	iC ₄ ppm	nC ₄ ppm	iC ₅ ppm	nC ₅ ppm	Type
1587	0.37	0.10	3272	14	3	30	3	9	0	FG
1653	0.71	0.15	6628	31	3	4	0	2	0	FG
1667	0.98	0.50	8695	39	1	1	0	1	0	FG
1690	1.00	0.50	9440	41	4	4	0	1	0	FG
1701	0.79	0.40	7079	38	3	2	0	1	0	FG
1742	5.10	0.40	47096	476	15	3	11	tr	tr	FG
1753	8.70	0.90	81274	968	85	5	38	0	0	FG
1757	1.30	0.90	13065	139	12	3	6	tr	tr	TG
1760	3.70	0.10	33947	343	13	2	7	tr	tr	FG
1785	0.60	-	5630	25	1	0	0	0	0	FG
1795	1.50	-	14800	97	3	0	0	0	0	FG
1814	1.20	-	11500	87	3	1	1	0	0	FG
1883	1.00	0.50	10000	75	2	1	0	0	0	FG
1900	1.40	0.00	13500	134	3	1	1	0	0	FG
1965	0.80	-	7900	91	5	1	0.1	0	0	FG
1979	0.53	0.53	5200	645	53	0	0	0	0	FG
2039	2.40	0.40	21400	336	10	1	0	0	0	FG
2101	0.50	0.40	4185	116	8	1	0	0	0	FG

4.5 Geophysical result

Refer to Figure 4.3.

In the Nordland Group the Naust Formation was only 1 m deeper than prognosed whilst the Kai Formation was 96.5 m deeper. In the Hordaland Group, top Brygge Formation was observed 110.5 m deeper than prognosed. The Tare Formation in the Rogaland Group was encountered 69.5 m deeper than prognosed. A thin Cretaceous sequence was encountered in the well (30.5 m). This Cretaceous sequence which was not prognosed, is so thin that it is below the seismic resolution. In the Jurassic section the Melke Formation was encountered 54.5 m deeper than prognosed, whilst Åre Formation was encountered 33 m deeper. The Åre Formation constitutes the hydrocarbon bearing reservoir section in this well. TD was planned to be at 1950 m MD in the Åre Formation. Final TD is in Triassic Grey beds at 2215 m MD. Top Grey beds is picked at 2064 m MD.

4.6 Formation pressure

Figures 4.4a, 4.4b and 4.5 show the pore pressure gradient, leak-off test values, overburden gradient and relevant drilling and log data from well 6608/11-2. The pore pressure evaluation is mainly based on the sonic log using the Skagen method (Eaton equals matrix stress), but drilling parameters also indicate a similar pressure profile. In the reservoir section pressure data from the MDT log is used.

The overpressured formations in this area represent the lower part of Tertiary and Cretaceous sections. Most of these formations are poorly developed or not present in the well, and therefore just a minor section with low overpressure was present.

A normal pore pressure gradient of 1.03 sg is estimated down to approximately 1370 m MD where an increase starts. At 1490 m MD the pressure gradient is calculated to 1.1 sg which is the maximum pore pressure gradient for the well. From this depth a decline starts and at 1650 m MD the pore pressure has reached a normal pressure gradient of 1.03 sg. A normal pressure gradient is maintained down to TD of the well. An exemption from the normal pressure gradient is the oil filled sand of Åre formation where a pressure gradient of 1.036 sg is measured. The higher pressure in the oil zone is due to the density difference between oil and water.

A dirty sandstone in the Tare formation was penetrated at 1560 m MD. Logs indicated a gas filled sand, but MDT pressure points showed a tight sand. From the seismic data no closure can be interpreted and subsequently 'normal' formation pressure is estimated in the sand.

4.6.1 Reservoir pressure summary

The top of the Melke sandstone were penetrated at approximately 1640 m MD and consists of three coarsening up sandstone/siltstone sections. The Melke sandstone was poorly developed and water filled, with a pore pressure gradient of 1.03 sg measured by MDT. The reservoir was of too poor quality to get a well defined water gradient.

The top of the Åre sandstone was penetrated at 1736 m MD and consisted of a 26 meter oil filled sandstone section. The oil is biodegraded and the oil gradient was calculated to 0.886 sg by MDT pressure points. Since good points could only be achieved in a 10 meter section the gradient must be regarded with some uncertainties. In connection with PVT analysis an oil density of 0.891 sg at reservoir conditions was measured.

The oil filled sandstone is divided from water filled sandstone below by a small section of shale/silty sandstone. There is a drop in the formation pressure when entering the water filled sand below. This indicates a possible deeper oil/water contact for the oil filled sand than seen on the logs.

All sandstones penetrated below the oil filled Åre sand are water saturated. The pore pressure gradient in the top of these water filled sands is 1.028 sg with a water gradient of 1.00 sg.

Figure 4.6 shows the measured formation pressure in the Jurassic sandstones. The plot is presented in meter MD

Water analysis shows different properties for the water in Melke and Åre Formations.

The following analysis is performed on the samples:

Table 4.4

Vality Checks and analysis of MDT Samples	Petrotech
6608/11-2 Reservoir Fluid Study	Core lab - Aberdeen
TBT-Distillation and Hydrocarbon analysis of crude oil from well 6608/11-2. Åre formation	West Lab Services - February 2001
Well 6608/11-2, Falk Åre and Melke formation - Characterisation of Formation water.FINAL WELL REPORT	Statoil
Crude Oil Assay	Statoil
<i>Ongoing analysis</i>	
Rheological investigation of Falk oil.	Norsk hydro
Rheology of Falk crude oil emulsion.	Norsk hydro
Rheology of mixtures of Falk, Svale and Norne crude oils.	Norsk hydro



PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 29 of 68
0

Table 4.5 MDT run 1A, 1B, 1C, 1E and 1F

Test no	Depth m MD	Depth m TVDRT	Hydrost. pressure before - BAR	Hydrost. pressure after - BAR	Formation pressure BAR	Mobility mD/cp	Temp Deg C.	Comments
Run 1A								
1	1559.5	1559.2					27.8	Tight
2	1561	1560.7					29.4	Tight
3	1687	1686.7	212.4	212.4	170.7	31	36.6	Good, water sample
4	1688	1687.7	212.5	212.5	170.8	6	38	Poor
5	1690	1689.7	212.7		171.0	7	40.8	Poor
6	1737.5	1737.2	218.8	218.6	177.7	4	42.3	Tight
7	1743	1742.7	219.3	219.2	178.3		43.3	Superch
8	1748	1747.7	219.9	219.9	177.6	400	44.4	Very Good
9	1750	1749.7	220.1				44.9	Lost Seal
10	1750	1749.7	220.1	220.1	177.8	207	45.2	Good
11	1753	1752.7	220.5	220.5	178.1	235	45.6	Good
12	1755	1754.7	220.8	220.7	178.3	561	46	Very Good
13	1757	1756.7	221.0	221.0	178.5	46	46.2	Very Good
14	1807.5	1807.2	227.4	227.3	182.2	1123	47	Very Good, water sample attempt
15	1819	1818.7	228.7	228.7	183.3	1804	48.5	Very Good
16	1823	1822.7	229.2	229.2	183.7	2953	49	Very Good
17	1855.5	1855.2	233.3	233.3	186.8	6255	49.7	Very Good
18	1889.5	1889.2	237.5	237.5	190.2	412	50.6	Very Good
19	1940	1939.7	243.9	243.7	196.2	172	51.9	Very Good
20	1976	1975.7	248.2	248.2	198.6	1887	53.5	Very Good
21	2005.5	2005.2	252.0	251.9	201.6	32	54.8	Very Good
22	2069	2068.7	259.9	259.8	207.8	1038	56.9	Very Good
23	2120	2119.7	266.1	266.1	212.9	19	59.1	Very Good
24	2175	2174.7	273.0	273.0	218.4		61.4	Very Good
Run 1B								
1	1773	1772.7	223.02	223.03	178.8	12	53.5	Very Good, water sample.
Run 1C								
1	1746	1745.7			178.9	96	51.2	HC samples
Run 1E								
1	1747	1746.7					54	HC sample, 18 gal
Run 1F								
1	1747.4	1747.1			177.3	44	54.1	HC sample, 18 gal
2	1686.9	1686.6			170.4	23	53.4	Water sample 1 Gallon

Table 4.6 Samples collected

Depth m MD RKB	Sample Size	Shut-in pressure (bar)	Opening pressure (bar)	Pump Vol. Litres	Avg. Pump Draw down (bar)	Mobility (mD/cp)	Comments
1773 m Water sample	2.75 gal			71,9	0,5	748,7	Transferred to 1 l plastic bottles
	1 gal	283,0	180,0	83,6	1,8	748,7	
1746 m HC sample	2.75 gal	282,0	280,0	31,0	8,0	96,2	Filled cylinders with gas for geochemical tests
	2.75 gal	284,0		52,0	8,0	96,2	
	1,0 gal	82,0	1,0	60,3	8,0	96,2	
	250 cc	272,0		62,0	8,0	96,2	Drained offshore for analysis
	250 cc	272,0		63,8	8,0	96,2	
	250 cc	278,0		64,9	8,0	96,2	
1747,0 m HC sample	18 gal			14,5	11,0	43,9	Transferred offshore to Jerry cans approx. 62 l
1747.4m HC sample	18 gal			18,1	15,0	53,1	Transferred offshore to Jerry cans approx. 63 l
1686,9 m Melke water sample	1 gal	265,0	150,0	38,0	20,0	37,4	Transferred to PVT bottles

The water sample in the Åre Formation was of good quality with only little contamination (3%) from mud filtrate. For the Melke Formation water sample a lot of contamination (30%) from mud filtrate was observed.

Quality of the oil samples was good.

4.7 Formation strength

An extended LOT was performed below the 13 3/8" casing at 1249 m MD. In the Jurassic reservoir a stress test was attempted using Schlumberger dual packer. The result from the dual packer test is regarded as questionable.

Extended LOT:

The test was performed in two cycles with pumping of 500 litres fluid into the formation after formation breakdown. After the pump was stopped, the pressure decline was monitored.

In the first cycle the formation broke down at equivalent 1.71 sg mud weight, which represents a normal LOT.

Immediately after the first cycle was completed, the pumps were started again and the fracture was reopened with a pressure representing 1.52 sg equivalent mud weight. The lower opening pressure in the second test is because the fracture was not healed completely between the two tests.

From the LOT, a minimum horizontal stress of 1.42 sg. is interpreted.

Stress test with MDT tool:

In this test the Schlumberger MDT tool with dual packer was used to isolate a 1 meter zone. The procedure was then to use the hydraulic pump to generate a fracture and monitor the downhole pressure.

The first test was in a shale at 1798 m MD. The test indicates a minimum horizontal stress of 1.34 sg equivalent mud weight. This value is regarded to be too low and may be caused by a leak between the packer and the formation.

The second test was in a shale at 1778 m MD. In this test, the formation was exposed to a pressure of 500 bar without fracturing. This pressure represent a equivalent mud weight of 2.86 sg.

4.8 Formation temperature

Based on extrapolated log temperatures, an average temperature gradient of 4.2 °C/100 meter is calculated from seabed down to TD of the well. The extrapolated temperature in the oil filled Åre sandstone is quite accurate since several log temperature measurements were obtained. The calculated temperature at TD of the well is more uncertain since only a temperature measurement from the first log was collected.

In the oil filled Åre sandstone, extensive sampling was performed. Technical problems with the MDT tool resulted in a lot of time spent in connection with the sampling. This resulted in that the time elapsed from the circulation stopped until the last temperature measurement was 7.6 days. Due to this fact, the last temperature measurement is nearly the formation temperature and only a small correction was required. The only true measurement near TD is from the first run only 13 hour after the last mud circulation. A large correction is required to estimate the formation temperature and the calculated temperature is uncertain.

Measured and extrapolated temperatures from wireline logs are listed in Table 4.7

Table 4.7

Log combination	Depth of measurement m MD RT	Recorded max temperature °C	Time since last circulation hrs	Extrapolated temperature
PEX/HALS	2195	58,58,57	13.00	78.9
CMR/ECS	1862	49,49,48	19.08	54.5°C @ 1717 m MD
MDT-pressure	2150	61,61,61	39.33	
MDT water sample	1748	54,54,54	63.33	
MDT PVT oil	1717	51,51,51	83.50	
MDT 18 Gallon	1715,4	54,54,54,	169,92	
MDT oil+water	1715,4	54,54,54	182.50	

PL 128

RKB - Sea: 36 m

Water Depth: 351 m MSL

Stratigraphy 6608/11-2



Made by: TAWJ

Date: 04.04.01

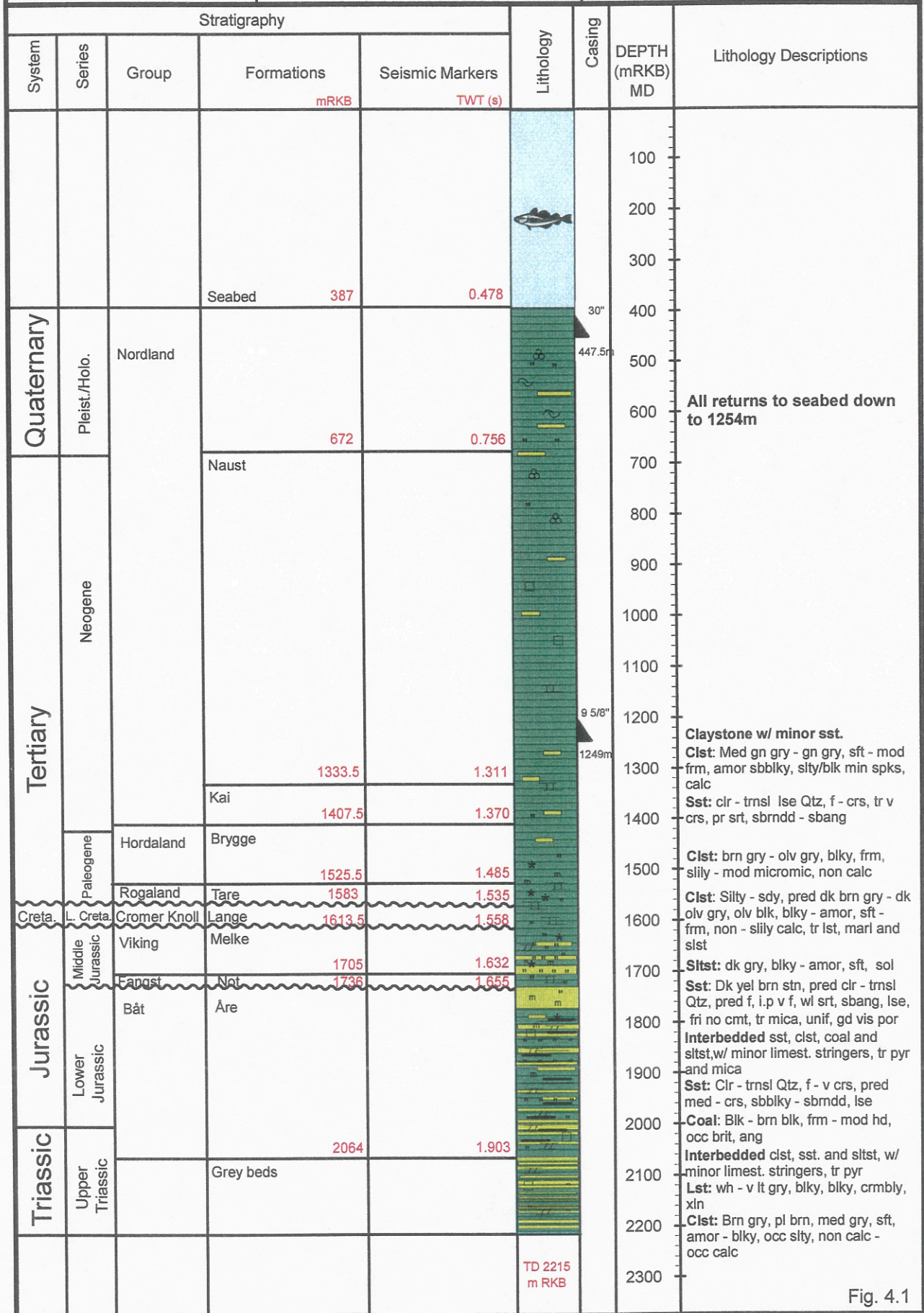


Fig. 4.1

PL 128

RKB - Sea: 36 m

Water Depth: 351 m MSL

Reservoir section
WELL 6608/11-2



Made by: TAWJ

Date: 04.04.01

Stratigraphy					Lithology	Cores	Shows	DEPTH (mRKB) MD	Lithology Descriptions
System	Series	Group	Formations mRKB	Seismic Markers TWT(s)					
Jurassic	Middle Jurassic	Fangst	Not					1730	<p>Clst: olv blk, min gry rd, blkly - amor, sft - frm, sol, i. p. slty - v slty, non - slily calc</p> <p>Marl: med gry, blkly - amor, sft, sol</p> <p>Trace Sltst: dk gry, blkly - amor, sft sol</p> <p>Rare trace Sst: clr - trnsl Qtz, v f - f, sbang</p>
	Lower Jurassic	Båt	Åre	1736	1.655			1740	<p>Sst: olv gry - dsky yel brn stain, pred clr - trnsl Qtz, v f - f, v wl srt, sbang, pred lse, cln, no cmt, tr mica, unif, gd vis por</p> <p>Shows: Bleeding oil from core. Moderate HC odour. Even, dark brown to dsky yellow brown, waxy oil stain. Even, bright, yellow direct fluoescence. Slow streaming, yellow white cut fluoescence</p>
						#1		1750	<p>Sst: olv gry - dsky yel brn stain, pred clr - trnsl Qtz, v f - f, mod wl srt, sbang - ang, pred lse, cln, no cmt, tr mica, unif, gd vis por</p>
						#2		1760	<p>Sst: dk yel brn stain, pred clr - trnsl Qtz, pred f, wl srt, sbang, lse, fri, no cmt, tr mica, unif, gd vis por</p>
						#3			<p>Sst: dk yel brn stain, pred clr - trnsl Qtz, v f, mod - wl srt, sbang, occ arg mtx, lse, fri, slty lam, tr micromic, mod vis por</p>
						#4			<p>Clst: med dk gry, plty - blkly, frm, slty, slily micromic, non calc</p> <p>Sltst: med dk gry, plty - blkly, frm, slty, slily micromic, non calc</p>
								1770	<p>Clst: gr gry, frm, blkly, glauc</p> <p>Sst: wh, clr - trnsl Qtz, occ lt brn, med - v crs, sbblkly, lse,</p> <p>Trace: pyr, mica</p>
								1780	<p>Sltst: grdg clst, med gry, sft, pr vis por</p> <p>Coal: blk, blkly - ang, frm - hd, i.p. brittle</p>

Fig. 4.2

PL 128

Well prognosis
& results



RKB - Sea: 36 m

Water Depth: 351 m MSL

WELL 6608/11-2

Made by: TAWJ

Date: 03.04.01

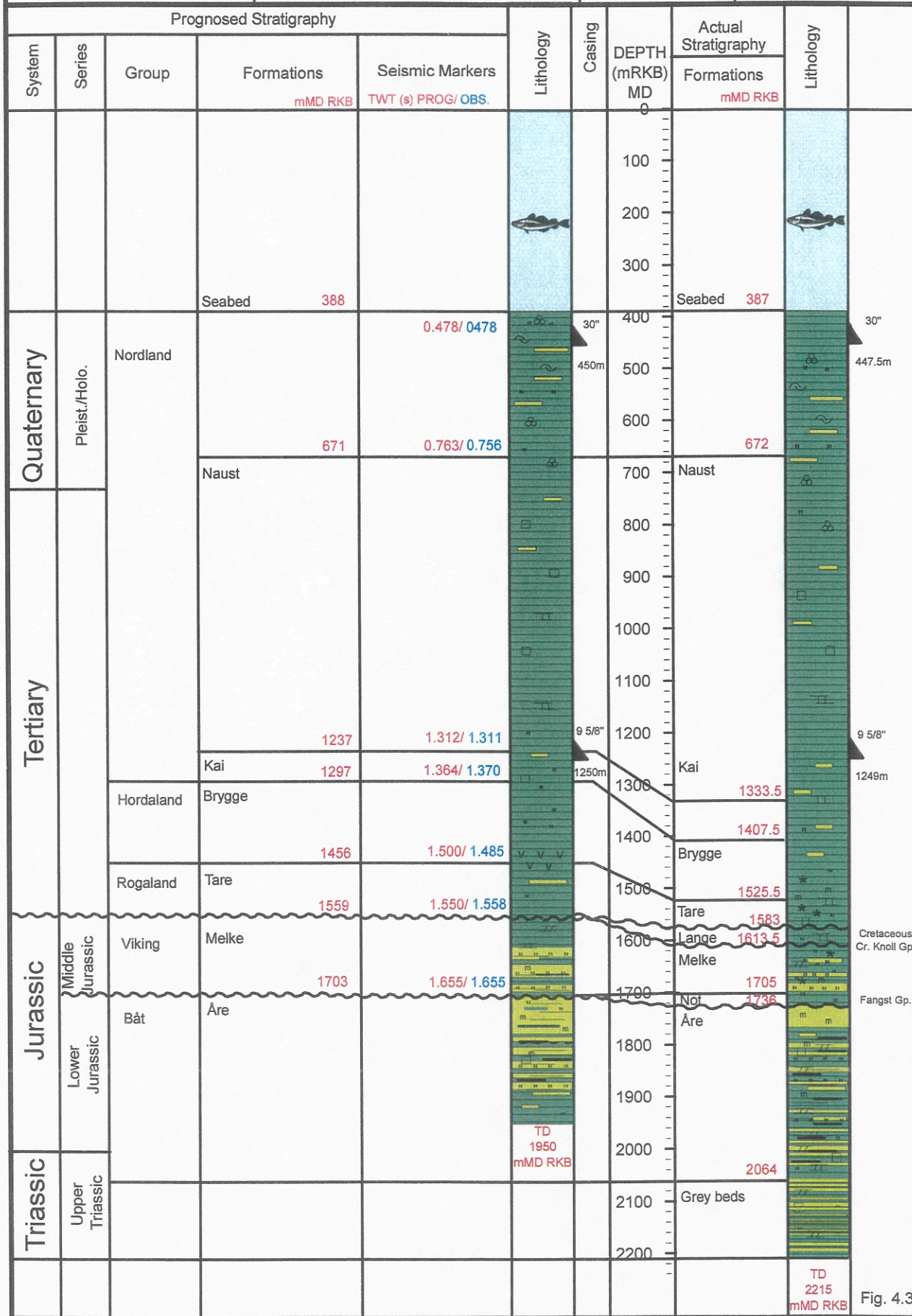


Fig. 4.3

Licence: PL128

RKB - Sea: 36 m

Water Depth: 351 mMSL

COMPOSITE PLOT PL 128 WELL 6608/11-2



Made by: TM

Date: 27.03.01

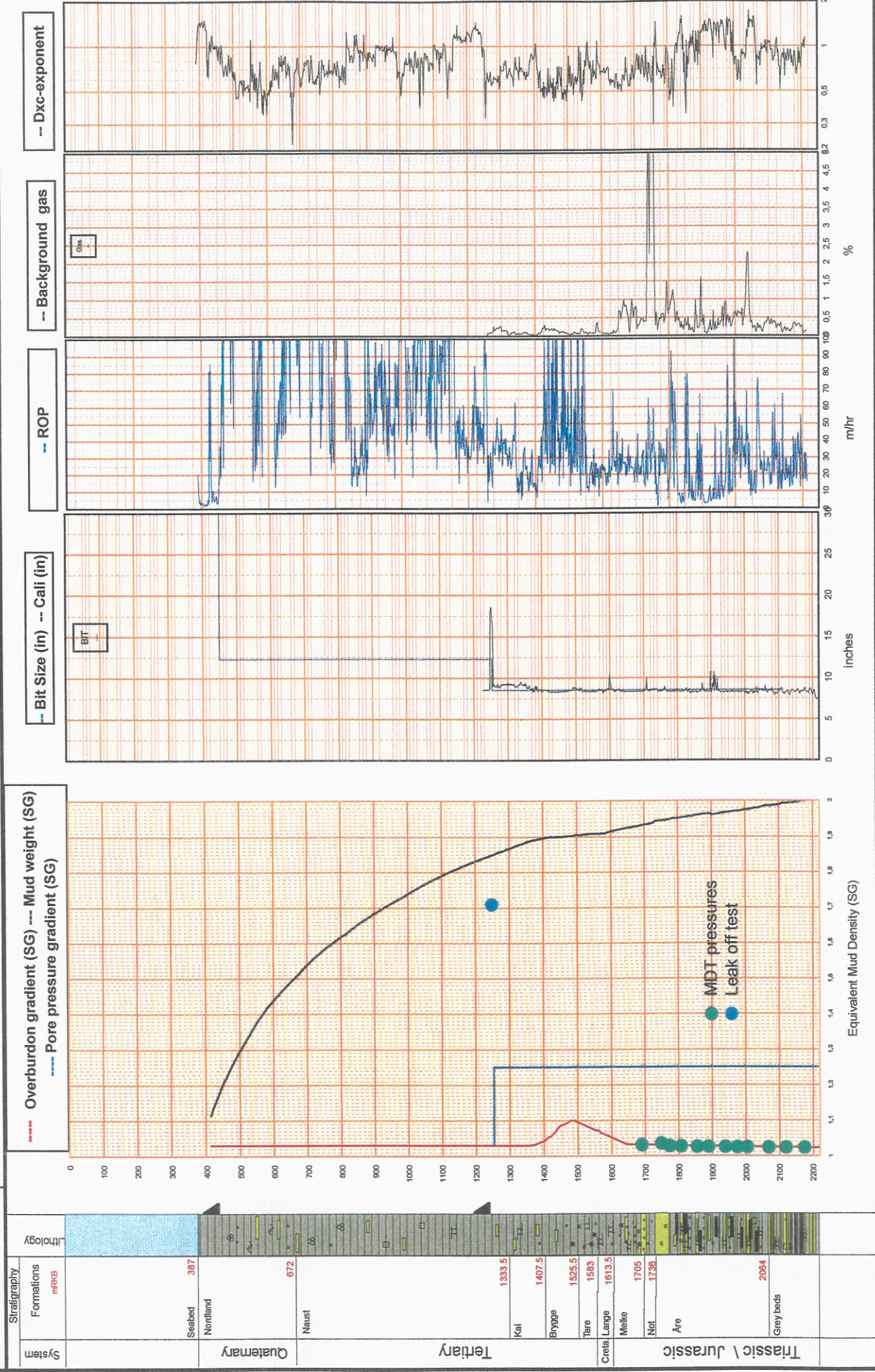


Fig. 4.4a

Licence: PL128
 RKB - Sea: 36 m
 Water Depth: 351 mMSL

COMPOSITE PLOT
PL 128 WELL 6608/11-2



Made by: TM Date: 27.03.01

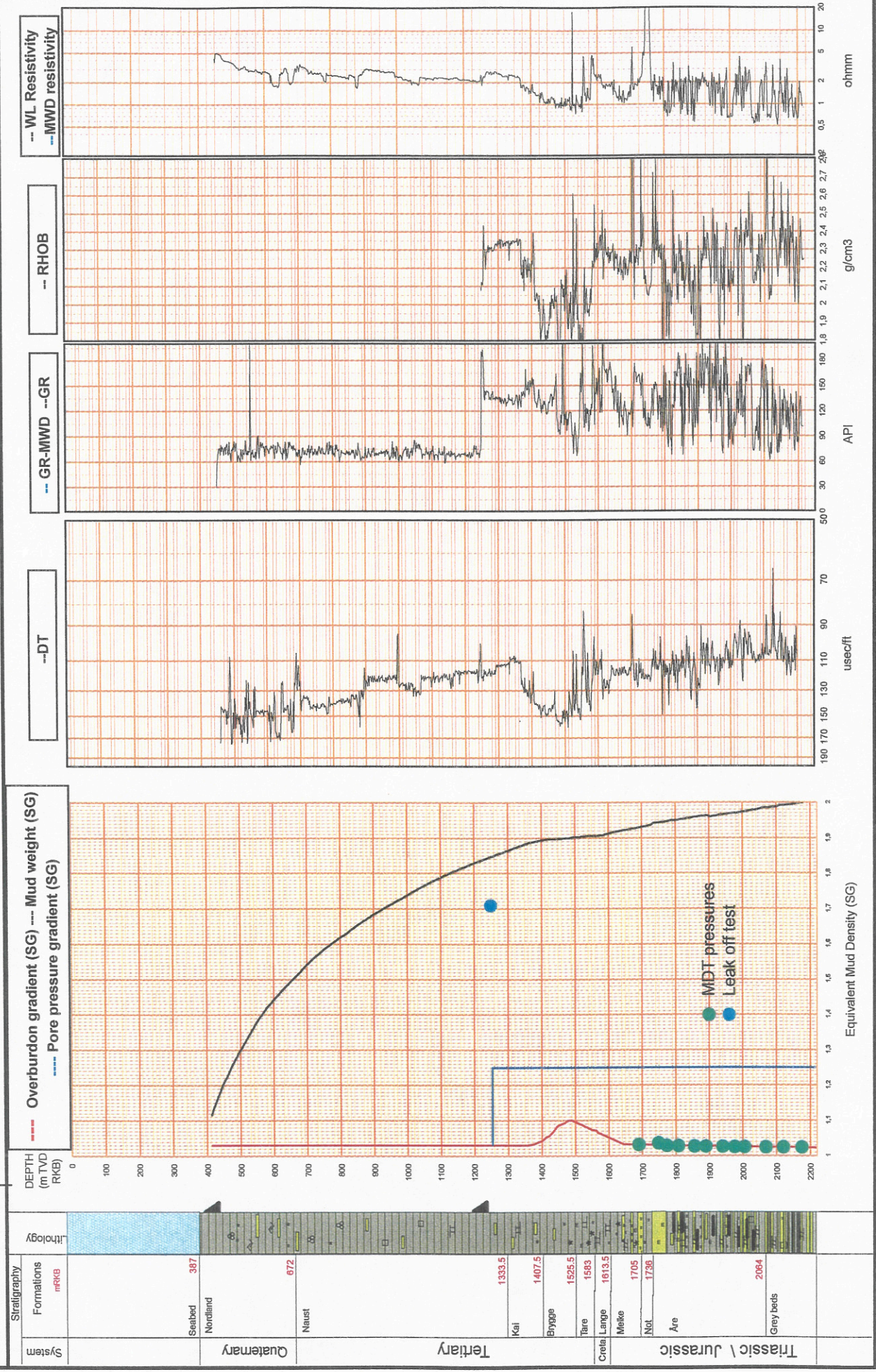


Fig. 4.4b

6608/11-2 Formation pressures

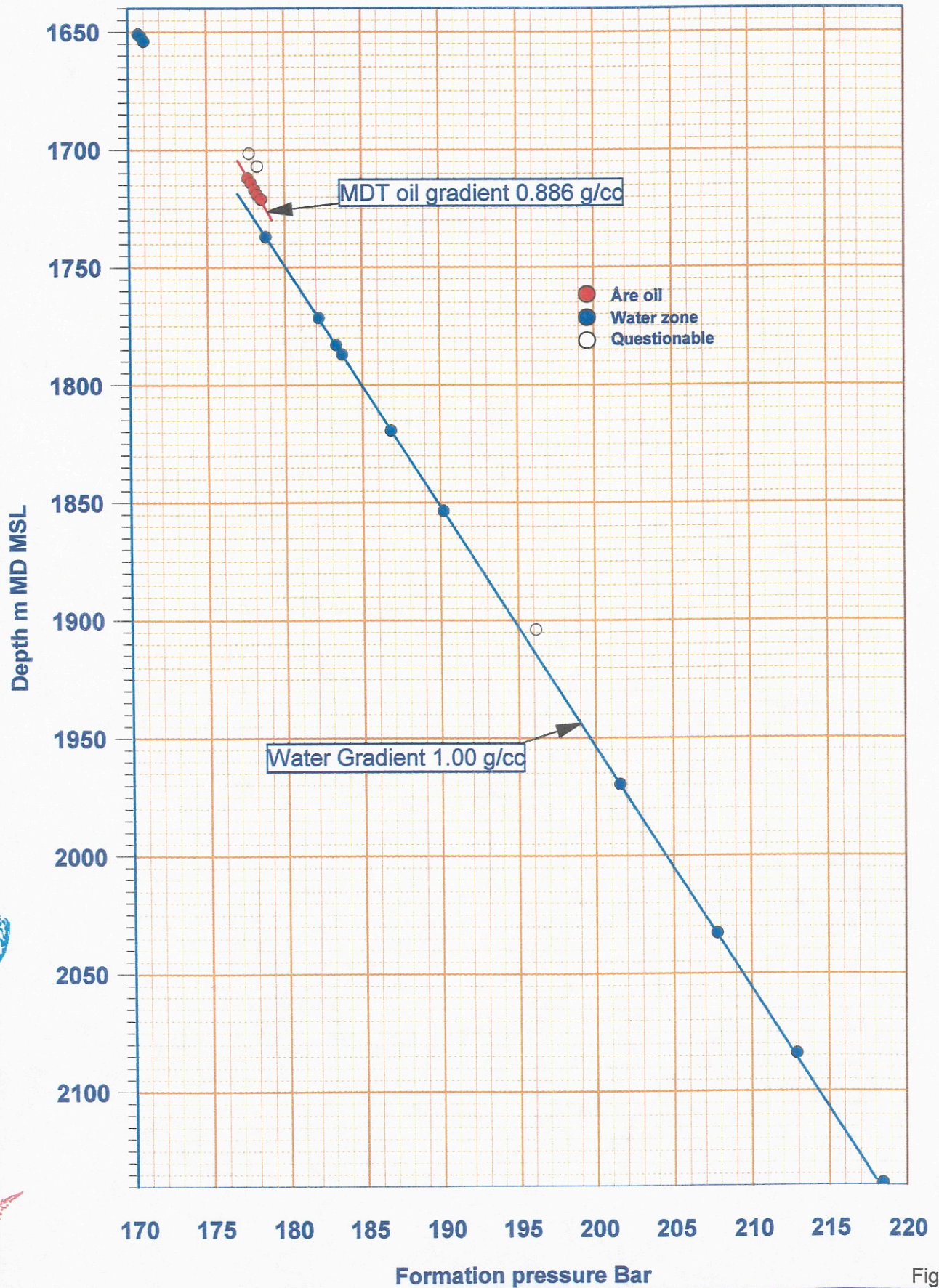


Fig. 4.5

PL 128, WELL: 6608/11-2

RKB - Sea: 36 m

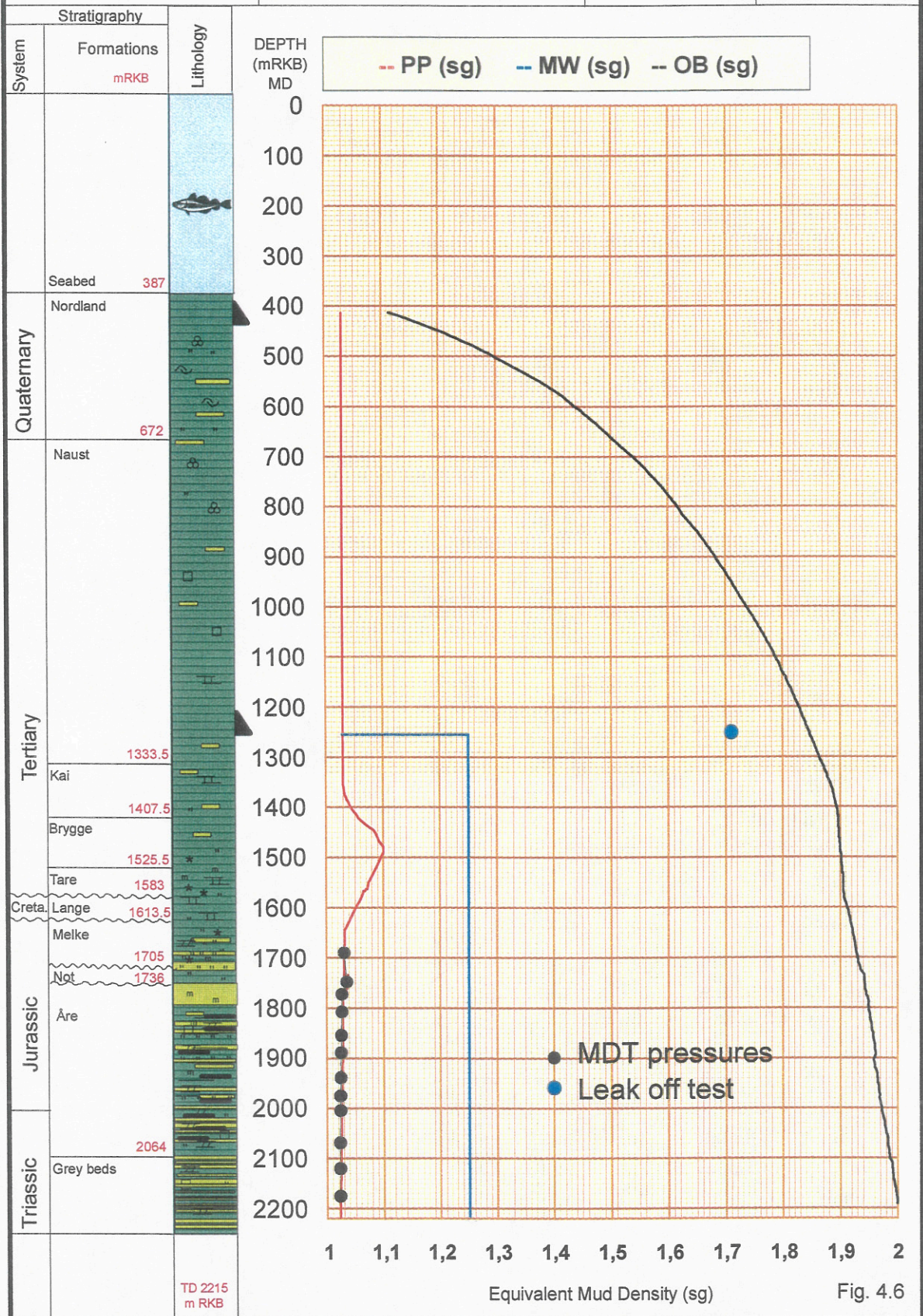
Water Depth: 351 m MSL

Formation Pressure WELL 6608/11-2



Made by: TM

Date: 27.03.01



PL 128, WELL: 6608/11-2

RKB - Sea: 36 m

Water Depth: 351 m MSL

Temperature Profile WELL 6608/11-2



Made by: TM

Date: 27.03.01

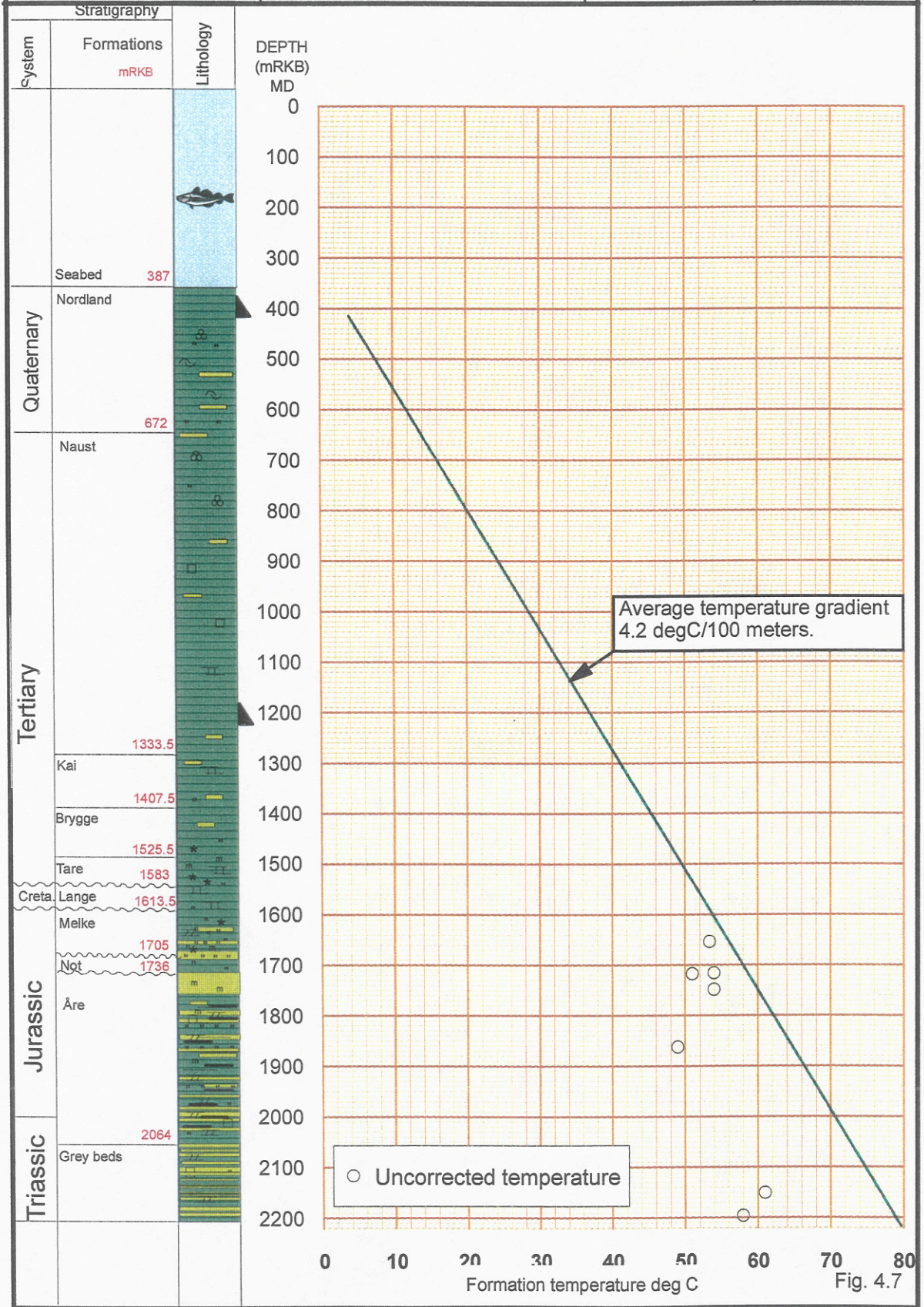


Fig. 4.7

5 Drilling operations report

5.1 Rig move and positioning

5.1.1 Summary

West Navion sailed the 72 nm from 6710/10-1 (Hedda) with a reduced speed of 6.4 nm/hr because kill- and choke lines were hanging in the moon pool. By not fully terminating and hanging off the kill- and choke lines, the overall operation time was reduced with approximately 6-8 hours in both ends of the transfer. It was therefore agreed upon by the Hedda and the 6608/11-2 well projects that 1/3 of the sailing time should be charged to the Hedda well project.

The 5 transponders were run in a basket from the rig crane to seabed and placed by the ROV, without using rig time.

5.1.2 Experiences / recommendations

- On the previous wells on West Navion, the final spud position has been decided by logging the exact position of the transponder mounted on the ROV with the ship's own HPR system and the independent Racal system. Due to uncertainties of the signals (which increases with depth) the ROV transponder position had stable and measured for at least for 30 min. To avoid delaying the operations when placing the transponders prior to spud, the following procedure was used to place the transponders and decide the final spud position :
 1. On location, jump ROV and meanwhile run the transponders in a basket from the rig crane.
 2. Start by placing one transponder on estimated spud location with the ROV.
 3. Place the other transponders, starting with the transponders on the port side (to avoid interference between drilling string and ROV umbilical) in the planned array position. Meanwhile the spud position is decided exactly with both the HPR system on the ship and the independent Racal system.
 4. When the exact position is decided, replace the transponder on spud location with a cement lump with a marker buoy.

Recommendation: By deciding the final position with one of the transponders meanwhile the ROV is used to place out the other transponders in the array, no time is used to decide the final position prior to spud. In addition to this, the transponders used in the array are more exact than the transponder mounted on the ROV.

5.2 36" hole section

5.2.1 Summary

After drilling hard boulders from 387 to 420 m MD with very low progress in the first tophole, the angle had built uncontrolled to above 2.5° and it was decided to respud the well.

The ship was moved 15 m to the West and a new tophole was drilled to planned TD at 447.5 m MD with the same BHA.

In both the topholes hard boulders were dominant throughout the entire section, and the average ROP was as low as 3.5 m/hr.

The tophole was drilled with a BHA consisting of a 17 1/2" mill tooth bit, a two-stage 26" x 36" IPE mill-tooth hole opener and an Anderdrift inclination tool. The hole was drilled with sea water in combination with high viscosity pills every 10-15 m.

The hole was displaced to 1.35 sg at TD prior to pull out of hole, and no wiper trip was performed.

No hole problems were experienced while running in hole with the 30" conductor, and the casing was cemented with 2 m stick-up.

Even though the visibility was poor with the ROV on the seabed, it was possible to confirm the returns from the cementing with the ROV.

5.2.2 Experiences / recommendations

Drilling

- The entire section in both the holes was dominated with hard boulders that caused very low progress compared to the offset wells in the area. Especially a very hard boulder bed around 397 m MD in both holes caused very low progress and very high, erratic torque readings. In the first hole the applied WOB was increased up to 8 tons to get any progress before the entire BHA was below seabed, and this might have resulted in the uncontrolled angle built-up. In the second attempt the hard boulders were drilled very patient with a maximum of 4 tons WOB.

Recommendation: It is essential in topholes with shallow boulders to be patient and accept progress as low as 1-2 m/hr and apply max. 4 tons in the beginning to avoid the bit to "kick off" on the boulders. It is essential to get a vertical start of the hole to get the rest of the hole within 1.5°.

- In the first hole when the angle started to build from 1.5° at 393 m MD and up to above 2.5°, and much time was spent trying to reduce the angle by reaming several times on each stand. Little or no effect of the reaming was observed.

Recommendation: If boulders cause an uncontrolled build up in the start of a tophole, the well should be respudded immediately instead of using many hours on reaming the hole. The rate of success dropping the well back to vertical after reaming is very low.

Casing

- No drag was observed and therefore no wiper trip was performed prior to run the 30" conductor. When the 30" conductor was ran to 440 m MD it was pulled out of hole again due yellow DP status. still no problems were experienced when the conductor was run in hole again 5 hours later.
Recommendation: If no drag is observed when pulling the BHA out of hole, consider to run in hole directly with the 30" conductor and do not perform any wiper trip.
- Due to heave and poor communication between the driller and the ROV operator regarding the depth, the 30" conductor was ran 2 m to deep and both the bulls-eye brackets broke off. This made it impossible to get a proper angle reading after the conductor was landed.
Recommendation: Ensure proper communication prior to landing the 30" conductor to avoid incidents of this kind.
- Due to excessive reaming and high flowrates the excess of the lead slurry was increased from 150% to 250% to ensure a proper cement fundament around the conductor.
Recommendation: If it is believed that the hole is overgage, both the excess of the lead and tail slurry should have been increased. The setting time of the 1.56 sg lead slurry is 12-15 hours (100 Bc).

5.3 12 1/4" hole section

5.3.1 Summary

A 12 1/4" motor assembly was used to drill directly out of the 30" conductor and to TD of the section at 1254 m MD. The section was drilled with seawater and hi-vis pills every 15 m.

Prior to pull out of hole, the hole was displaced to 1.30 sg KCl. No indications of tight hole were experienced, and the 9 5/8" casing string was run directly without any problems.

The 18 3/4" wellhead housing was crossed over to 9 5/8" casing 11 m below top of housing (ref. 7.11.10).

Simultaneous to drilling the section and running the 9 5/8" casing, the BOP and riser was run in the Auxillary rig.

5.3.2 Experiences / recommendations

Drilling

- No problems were experienced when drilling directly out of the 30" conductor shoe with the 12 1/4" motor assembly, nor when running through the shoe with 9 5/8" casing. Normal practice has been to make an extra roundtrip with a 26" x 17 1/2" holeopener to drill out the 30" conductor shoe.
Recommendation : Based on the experience from this well, this practice can be recommended in wells with similar casing design to save an extra bit trip. To get a "smooth" transition zone, the shoe and the rathole was drilled with a controlled rate in minor intervals, reaming often and circulating clean prior to drilling ahead.
- The soft formations down to appr. 800-900 m MD were very easily drilled/flushed with up to 300-400 m/hr without being able to apply any WOB. Also in the last part of the section the ROP was very high, but a significant difference in penetration rate was observed between sliding with 3500 lpm and rotary drilling with 4500 lpm. No drag was experienced, but the hole was reamed down after every connection due to the very high penetrations rates. Average rate of penetration over the entire section was 63 m/hr.
Recommendation : The section ROP is 50% higher compared to the similar offset well 6608/10-6, and the use of motor in addition to high flowrates (4500 lpm) proved to be beneficial to improve the ROP in these soft, shallow formations. The two last wells has proved that the section can be drilled with a mill-tooth which gives a high ROP, and the Security XLC1 (1-1-7) bit performed very well.
- As no drag was observed while pulling out of hole, no wiper trip was performed prior to running the 9 5/8" casing.
Recommendation : Avoid spending rig time on wiper trips if no indications of tight hole are observed while pulling out of the hole with the drilling assembly.

-
- A motor BHA was used in the 12 1/4" section to be able to line up the wellpath due to very small target tolerances in the 8 1/2" section. Because the well was respudded 15 m off the well target, the well angle was steered up to a maximum of 3.5° at 800 m MD and dropped back to vertical without any problems. The MK1XL motor was set with an AKO of 0.8°, which theoretically should give a dogleg of 3°/30 m. Due to the very soft formations, the motor gave only 1.7°/30m. In rotary mode the BHA was holding.

Recommendation : Consider to use a motor BHA in this section to achieve a higher penetration rate in addition to be able to adjust the wellpath if necessary.

Casing and cementing

- The dart was not released when 1.5 x landing string volume was displaced with the cement unit. The expected pressure was observed after displaced the landing string volume with the mud pumps, and the displacement of the cement had to stopped on theoretical volume minus pumped with the cement unit. Top cement and the wiper plug was tagged 20 m too high. Reference is made to separate Halliburton report on "ESOP - 6608/11-2 - Experience transfer - ".
- Because the BOP and riser was run in the Auxillary rig, it was landed with 30 Tons on the wellhead directly after the running tool was released. No indications of any movement of the BOP or conductor was observed after the BOP was landed, even though the cement around the 9 5/8" casing had not set up.

5.4 8 1/2" hole section

5.4.1 Summary

The 9 5/8" casing shoe and 3 m of new formation was drilled with seawater and a extended LOT equal to 1.71 sg was performed. The hole was then displaced to 1.26 sg KCl mud prior to drilling ahead to core point at 1742 m MD.

A total of 4 cores were cut in the reservoir.

After the coring was completed, the section was drilled to a final TD at 2215 m MD. The section was then logged with a total of 14 wireline runs.

5.4.2 Experiences / recommendations

Extended LOT

- Prior to displacing the well to 1.26 sg KCl mud an extended LOT with seawater in the hole was performed. This is a "two-cycled" LOT, and the purpose was to get a better understanding of the formation stresses for future field development. The break down pressure was equal to 1.71 sg, meanwhile the second cycle was equal to 1.52 sg. This last value was reported as the LOT and was used as the upper limit for the ECD while drilling continued with mud in the hole. After 70 m of drilling, the MWD ECD was as high as 1.50 sg and it was pulled into the shoe and to try to circulate down the ECD. This proved that the MWD tool was mis-calibrated, but 2.5 hrs rig time was spent trying to reduce the ECD prior to drilling ahead.

Recommendation: The initial 1.71 sg is the "correct" LOT and should be reported as the LOT. 1.52 sg from the second cycle is the pressure needed to open the already initiated crack and is only a number between the initial opening pressure and the lowest horizontal pressure (est. to 1.42 sg).

When the well has been displaced to mud and started to build filter cake over time, the upper limit used for drilling should be min. 1.60 sg, most probably around 1.65 sg.

MWD ECD

- In the first run the MWD tool showed much too high values, both static and while drilling. This led to some confusion and time spent circulating the mud, as the tool showed values up to 1.50 sg after 70 meters and 1.52 sg was set as the upper limit. After coring, the readings were varying from 1.43 - 1.47 sg with 2000 lpm. The pipe used was 5 1/2" (tool jnt OD = 7.25").

Drilling bits

- Run #3 : The section down to core point at 1742 m MD was drilled with a Reed Hycalog DS116A2GNW (IADC S333, 19 mm cutters) with an average ROP of 24 m/hr. This is 50 %

higher compared to well 6608/10-6, where the same interval was drilled with a mill-tooth bit.

- Run #9 : The previous Hycalog bit was not rerunable due to chipped cutters, and a Hughes BD536 PDC bit (IADC M323, 19 mm cutters) drilled from 1767 m MD to 1920 m MD with an average ROP of 17 m/hr. The bit was pulled due to very low progress towards the end, and came out green with two of the water ways balled up. Also parts of the stabilizers and bit drill collars were balled up.

Bit Balling

- Three zones in the Åre formation, identified as reactive clays with high GR readings from the logs, caused bit balling and low progress :
1825 - 1850 m MD
1900 - 1970 m MD
2030 - 2060 m MD

The intervals are characterised by very low ROP (3-5 m/hr) and low, uniform torque even when high WOB was applied. A significant increase in ROP was observed when drilling into sand- and siltstringers and the bit was "cleaned" up.

BHA

- In the intervals above, also balling of stabilizers and drill collars made it difficult to get any applied weight transferred to the bit. "Pump-off" effects up to 14 tons were experienced with 2000 lpm. this was also confirmed by increased ECD readings.

Recommendation : This effect was not experienced when drilling this interval with a pendulum assembly in the offset well 6608/10-6. It should be considered to use a pendulum assembly if applicable in future wells to minimize these effects and easier get the WOB directly on the bit.

Drilling Parameters

- Several variations in the drilling parameters were tried to get the bits drilling in the intervals mentioned above, without any effects. One of these was to reduce the flowrate from 2000 lpm to 1500 lpm to minimize the "pump-off" effect. This resulted in a HSI reduction from 7.5 to 3 with the installed nozzles (TFA = 0.451) and is not sufficient to drill reactive clays with PDC bits.

Recommendation : If these reactive clay intervals shall be drilled with PDC bits, sufficient HSI (6-8) combined with high flowrate (+ 2000 lpm) is essential to avoid the bit to ball up. The reduced flowrate is probably the reason why bit#9 was balled up.

Hole stability

- On the first trip out of hole prior to logging, several tight spots from 1510 - 1740 m MD had to be worked and reamed prior to pull out of hole. No more indications of tight hole were observed on the next bit runs or meanwhile wireline logging. No wiper trip was performed prior to the wireline logging. The caliper log show mostly in gage hole throughout the entire section, except for some washouts below the casing shoe and over some of the clay intervals.

Recommendation : A mud weight of 1.26 sg proved to be sufficient and no hole instability problems were observed after the first trip out of hole.

Coring

- Reference is made to section 5.3.
Based on the experiences from the 6608/10-6 well with very uniform sand, the aggressive ARC422 bit was used in the two first core runs to achieve a high ROP. But the sand was not as uniform as indicated, and both cores jammed off in shaly sands.
Recommendation: Aggressive bits are unsuited if shaly or interbedded sands are drilled, as it will increase the possibility of jamming off. They should only be used when the geological certainty of sand thickness is reasonably high.

5.5 Permanently plug and abandonment

5.5.1 Summary

Reference is made to *section 6.11.8 - "P&A well schematic"* and *section 6.11.9 - "P&A cementing program"*.

The reservoir was permanently plugged and abandoned with a 4-stage cement plug from TD at 2215 m MD to 1145 m MD, 100 m into the 9 5/8" casing.

The cement plug was tested to 140 Bar and a EZSV plug was set at 630 m MD. The mechanical plug was then tested to 200 bar prior to pulling BOP and riser.

A surface cement plug was set from 630 m MD to 430 m MD prior to cutting the wellhead 8 m below the seabed meanwhile retrieving the transponders.

5.5.2 Experiences / recommendations

Wear bushing

- two attempts were necessary to be able to retrieve the wear bushing. The first misrun was done without any ABB personnel on the rig, and the tool was not run according to ABB procedure. The misrun did not result in any D-time, as retrieving the BOP and riser was done simultaneously in the main rig.

Recommendation: If it is decided that rig crew is able to operate the ABB tools, it is essential that the ABB dedicated procedure on each tool is read and understood prior to operating.

PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 50 of 68
0

5.5.3 *Permanent P&A well shematic*

PERMANENT P&A WELL SCHEMATIC

Well: 6608/11-2
 Field: Exploration
 Rig: West Navlon

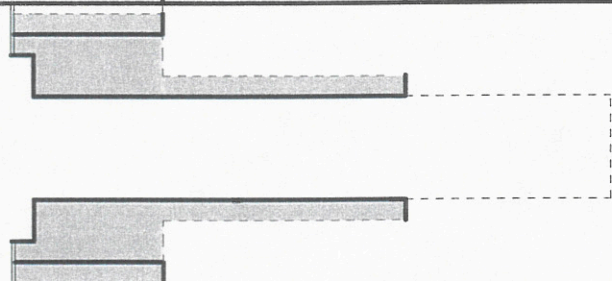
HOLE		CASING				LOT FIT	TOC		CSG. SHOE		RKB		PLANNED P&A	
SIZE	TVD MD	SIZE	TYPE / RAD. MARKERS	CENTRALIZERS	TEST PRESS [BAR]		TVD	MD	TVD	MD		MD	ITEMS	
SB	387						surface	surface			sea water	395	20" x 30" CUT	
36"	448 448	30"	309.7 lb/ft, X-52, ST2 2 x 1.5" WT 2 x 1" WT		-	-	447.5	447.5			1,26 sg mud	430	Surface plug	
12 1/4"	1254 1254	20" x 9 5/8"	53.5 lb/ft, P-110, AMS 20" WH is crossed over to 9 5/8" casing	1 centr/jnt on 5 last jnts	200	LOT 1.71 SG						630	EZSV plug	
8 1/2"	2215 2215				140		1249	1249				1145	Top four-stage omt plug	

Comments:

WELL SCHEMATIC

Well: 6608/11-2
 Field: Exploration
 Rig: West Navion

HOLE		CASING				LOT FIT	TOC		CSG. SHOE		WL LOGS	LWD LOGS	SURV CSG/OH	
SIZE	TVD MD	TYPE / RAD. MARKERS	CENTRALIZERS	TEST PRESS [BAR]	TVD		MD	TVD	MD					
36"	448 448	309.7 lb/ft, X-52, ST2 2 x 1.5" WT 3 x 1" WT		-				447.5	447.5				Anderdrift (Totco)	
12 1/4"	1254 1254	53.5 lb/ft, P-110, AMS <i>20" WH is crossed over to 9 5/8" casing</i>	1 centrl/ jnt. on 5 last jnts	270	LOT 1.71 SG			1249	1249		MPR-lite (GR/Res)		MWD	
8 1/2"	2215 2215											Ref. is made to Engineering report	MPR-lite (Pres, GR, Res.)	MWD



Comments

PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 53 of 68
0

5.6 Figures and tables

5.6.1 *Time/depth curve*

Time - Depth Plot

West Navion
6608/11-2 (Falk)

Budget time (days)
Optimum time (days)
Actual time (days)

Updated date/time:

Date: 11.01.01
Time: 10:36

Start date/time:

Date: 27.10.00
Time: 07:30

Finish date/time:

Date: 24.11.00
Time: 14:30

Total budget time:

35,4 days

Time used:

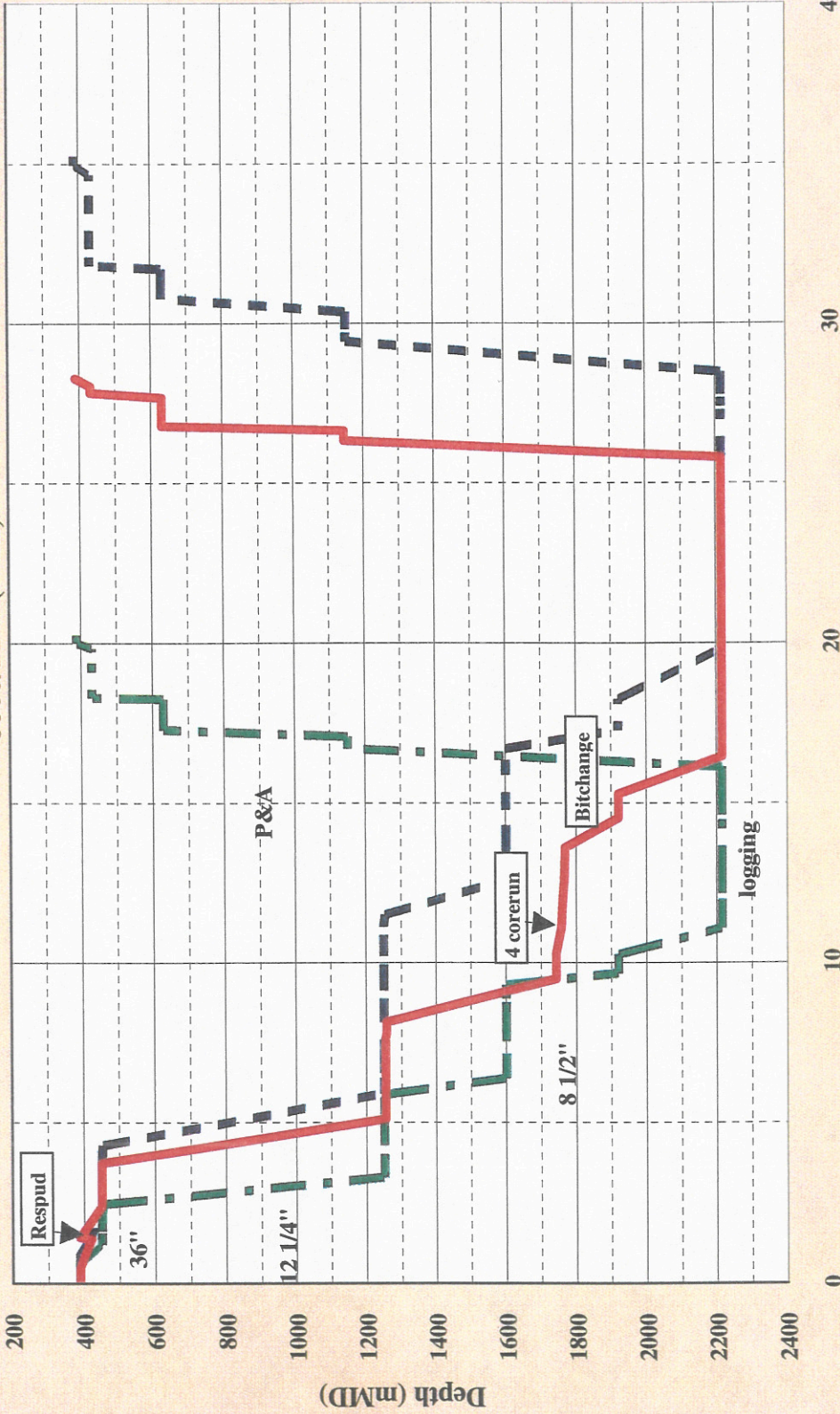
28,3 days

Time ahead of budget:

7,3 days

Comments:

Budget curve incl. discovery case. Optimum curve is not updated for discovery case



Time (days)

PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 55 of 68
0

5.6.2 Timeplanner

TIMEPLANNER including wet well scope
West Navion
6608/11-2 (Falk)

Updated
Thu 11.01.01 10:40
PH 27.10.00 07:30 Start date
PH 24.11.00 14:50 Finish date

Time ahead of budget
6.9 days

Down time/Waiting time
West Navion
6608/11-2 (Falk)

Acc. build-time (days)	Acc. opt. (hrs)	Acc. opt. (days)	Blup/ Opt. (mMMD)	Plan. (hrs)	Actual (hrs)	Actual (days)	Acc. actual (days)	Actual Depth (mMMD)	Sh (M/A)	Activity description	Company	Down time (hrs)	Accum. down time (hrs)	Waiting time (hrs)	Accum. waiting time (hrs)	Comments (reason for slow/waiting time)
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	388	F	Start operation		0.0	0.0	0.0	0.0	36" hole section (387 - 447.5 mMMD)
11.6	0.5	8.0	0.3	388	12.0	7.5	0.3	388	F	Transit from Hielda well to 6608/11-2 (82 Nm, red, speed 7 1/2 rpm, ref. comments)		0.0	0.0	0.0	0.0	1/3 of sailing time changed Hielda well (sailing with K&C; loughing in unexpected reduces total op. time)
27.0	2.0	15.0	1.2	450	6.0	4.0	0.5	388	F	R/D K&C lines, place transmitters w/ guide wire white MU BHA		0.5	0.5	0.0	0.0	Booster pump tripped (S, 0.5)
27.0	2.0	15.0	1.2	450	15.0	21.5	1.4	430	F	Drill 36" hole to 420 m, too high angle, POOH.		0.5	0.5	0.0	0.0	Moved ship 15 m to W (270 deg) and repositioned.
27.0	2.0	15.0	1.2	450	0.0	1.0	1.4	398	F	Drill new 36" hole to 445 m		15.0	15.0	0.0	0.0	Repositioned well due to too high angle (1.5)
27.0	2.0	15.0	1.2	450	36.0	23.5	2.4	450	F	Circulate hole clean and displace to 1.35 SG mud		0.0	0.0	0.0	0.0	
27.0	2.0	15.0	1.2	450	1.0	0.5	2.4	450	F	POOH to seabed.	ABB	0.0	0.0	0.0	0.0	
27.0	2.0	15.0	1.2	450	2.0	1.0	2.5	450	F	ARR w/cm, string / 30" VH and 30" conductor, POOH due to Yellow status	ABB	0.0	0.0	0.0	0.0	
27.0	2.0	15.0	1.2	450	12.0	1.5	2.5	450	F	ARR w/cm, string in end pump and displace cement. WOC / keep in tension	Halliburton	0.0	0.0	0.0	0.0	
27.0	2.0	15.0	1.2	450	12.0	18.5	3.5	450	F	ARR w/cm, string in end pump and displace cement. WOC / keep in tension	ABB	1.0	16.5	13.5	13.5	WOW, Yellow status, due to strong wind >20 m/s (S), WOC (8.5)
27.0	2.0	15.0	1.2	450	2.0	4.5	3.5	450	F	Release RT and landing string, POOH	BHI/MI	0.5	17.0	7.5	7.5	Run cylinders (S, 0.5), inst. new roughneck arm (S, 0.5) Acc. for comp. system for air (S, 0.5), POOH after chng. contribute due to Yellow status, >20 m/s (7.5)
27.0	2.0	15.0	1.2	450	10.0	6.5	3.8	450	F	Release RT and landing string, POOH	BHI/MI	0.5	17.0	7.5	7.5	Down time: 18.0% . Total Down time: 18.9% . Waiting time: 23.3% . Total Waiting time: 23.3%
27.0	2.0	15.0	1.2	450	4.1	3.8			F	Section time ahead of/budget (C) budget:0.6 days		17.0	0.0	21.0	21.0	12 1/4" hole section (450 - 1250 mMMD)
31.0	5.0	20.0	3.3	1250	33.0	33.0	5.1	1254	F	Drill 12 1/4" hole to 450 m. WOW due to yellow cond. Cont to drill to 1250 m (27 envhr)	BHI	0.0	17.0	0.0	17.0	
31.0	5.0	20.0	3.3	1250	2.0	1.5	5.2	1254	F	Circulate hole clean and displace to 1.30 SG mud	MI	0.0	17.0	0.0	17.0	
31.0	5.0	20.0	3.3	1250	0.0	0.0	5.2	1254	F	Wipertrip to 30" shoe		0.0	17.0	0.0	17.0	
31.0	5.0	20.0	3.3	1250	6.0	5.0	5.4	1254	F	POOH	Weatherford / ABB	0.5	17.5	0.0	17.5	Calib. pulse counter on HV pusher (S, 0.5)
31.0	5.0	20.0	3.3	1250	20.0	23.5	6.4	1254	F	Run 18 3/4" x 9 5/8" casing to 1250 m	Halliburton	0.0	17.5	0.0	17.5	
31.0	5.0	20.0	3.3	1250	4.0	3.5	6.5	1254	F	Pump and displace cement.	ABB	0.0	17.5	0.0	17.5	
31.0	5.0	20.0	3.3	1250	6.0	5.5	6.5	1254	F	Release RT and wash WH area.		0.0	17.5	0.0	17.5	
31.0	5.0	20.0	3.3	1250	10.0	3.5	6.7	1254	F	Cont. run BOP and insert land BOP	BHI	0.0	17.5	0.0	17.5	
31.0	5.0	20.0	3.3	1250	8.0	15.5	7.3	1254	F	Rig down BOP handling equip., prepare for running 8 1/2" BHA	BHI	0.0	17.5	0.0	17.5	
31.0	5.0	20.0	3.3	1250	12.0	7.0	7.6	1254	F	RRH w/ 8 1/2" BHA - test BOP, without connector and casing.	BHI	0.0	17.5	0.0	17.5	
31.0	5.0	20.0	3.3	1250	5.0	4.5	4.5	1257	F	Drill shoe track and 3 m of new formation with seawater	BHI	0.0	17.5	0.0	17.5	
31.0	5.0	20.0	3.3	1250	3.0	2.0	7.9	1257	F	Perform extended LOT	Stanol Bergmark	0.5	17.5	0.0	17.5	Down time: 0.5% . Total Down time: 9.2% . Waiting time: 0.0% . Total Waiting time: 11.1%
31.0	5.0	20.0	3.3	1250	4.5	4.1			F	Section time ahead of/budget (C) budget:3.6 days		0.5	0.0	21.0	21.0	8 1/2" hole section (1250 - 2215 mMMD)
31.0	5.0	20.0	3.3	1250	2.0	6.0	8.1	1257	F	Displace hole from seawater to new 1.25 SG Ghodrill mud	MI	2.5	17.5	0.0	17.5	Wrong readings from ECD sub, POOH to shoe to check (2.5)
31.0	5.0	20.0	3.3	1250	15.0	32.5	9.5	1742	F	Cont. drill 8 1/2" hole to top reservoir. Are 5m at appr. 1600 m	BHI	0.0	20.0	0.0	20.0	
31.0	5.0	20.0	3.3	1250	2.0	2.5	9.6	1742	F	Evaluate MWD readings circulate BU	BHI casing	2.0	22.0	0.0	22.0	Hose on travelling sys (S, 1), Hose on iron rough neck (S, 1)
31.0	5.0	20.0	3.3	1250	15.0	16.0	10.3	1742	F	POOH and rack back #12" BHA (> start discovery case)		0.0	22.0	0.0	22.0	
31.0	5.0	20.0	3.3	1250	24.0	19.5	11.8	1757	F	Core #1 (PS0; 13 m)		0.0	22.0	0.0	22.0	
31.0	5.0	20.0	3.3	1250	20.0	17.0	12.5	1765	F	Core run #3		0.0	22.0	0.0	22.0	
31.0	5.0	20.0	3.3	1250	20.0	18.0	13.3	1767	F	Core run #4		0.0	22.0	0.0	22.0	
31.0	5.0	20.0	3.3	1250	12.0	7.5	13.6	1767	F	MU 8 1/2" BHA and RH (1-> end discovery case)	BHI	0.0	22.0	0.0	22.0	Top leak in LLA (S, 0.5)
31.0	5.0	20.0	3.3	1250	11.0	22.5	14.5	1920	F	Cont. drill 8 1/2" hole to 1920 m.		0.0	22.0	0.0	22.0	
31.0	5.0	20.0	3.3	1250	18.0	18.0	15.3	1920	F	Circulate well clean and POOH to change bit. RH, (extended scope)		0.0	22.0	0.0	22.0	
31.0	5.0	20.0	3.3	1250	29.0	28.0	16.4	2215	F	Cont. drilling 8 1/2" hole to TD at 2215 m. (extended scope)		0.0	22.0	0.0	22.0	
31.0	5.0	20.0	3.3	1250	7.0	2.5	16.5	2215	F	Circulate hole clean and consider wipertrip to 9 5/8" shoe		0.0	22.0	0.0	22.0	
31.0	5.0	20.0	3.3	1250	4.5	9.0	16.9	2215	F	POOH	Schlumberger	0.5	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	1.5	2.0	17.0	2215	F	Prep. for WL logging on drillfloor (discovery case)		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	7.0	5.5	17.2	2215	F	WL logrun #1 - PEX/HAALS		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	12.0	13.0	17.8	2215	F	WL logrun #2 - CMR/RC/SGR		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	12.0	18.5	18.5	2215	F	WL logrun #3 - NDT/GR, only pres. points, water sample unsuccessful		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	42.0	18.5	18.5	2215	F	WL logrun #4 - NDT/GR Recurr, water sample, misrun		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	14.0	14.0	19.1	2215	F	WL logrun #5 - NDT/GR Recurr, water sample, misrun		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	7.0	9.0	19.5	2215	F	WL logrun #6 - NDT/GR Recurr2, water sample OK		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	16.0	11.5	20.0	2215	F	WL logrun #7 - NDT/GR HC sample, misrun		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	7.0	8.5	20.3	2215	F	WL logrun #8 - NDT/GR Recurr, HC sample OK		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	9.0	13.0	20.9	2215	F	WL logrun #9 - NDT/GR dual packer perm/Access test, tool stuck		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	15.0	12.0	21.4	2215	F	WL logrun #10 - FM/US/GR		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	30.0	36.5	22.9	2215	F	Fishing for stuck logging tool. Repair link lift arm (S, 1). Repair elevator (S, 0.5), leak on LLA (S, 0.5)		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	9.0	9.0	23.3	2215	F	WL logrun #11 - NDT/GR HC sample, power failure		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	22.0	12.0	24.1	2215	F	WL logrun #12 - NDT/GR Recurr1, HC sample		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	22.0	22.5	25.0	2215	F	WL logrun #13 - NDT/GR HC sample		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	7.0	7.0	25.3	2215	F	WL logrun #14 - CST/GR		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	2.0	0.5	25.3	2215	F	Rig down logging equip. on drillfloor		0.0	22.5	0.0	22.5	
31.0	5.0	20.0	3.3	1250	18.4	17.4			F	Section time ahead of/budget (C) budget:1.4 days, Tot. time ahead of/budget (C) budget:2.2 days		80.5	0.0	21.0	21.0	Down time: 19.3% . Total Down time: 16.1% . Waiting time: 0.0% . Total Waiting time: 3.5%
31.0	5.0	20.0	3.3	1250	25.3					Possible DST (not incl. in budget)		98.0				

Thu 21.11.00 15:00

TIMEPLANNER including wet well scope
West Navion
6608/11-2 (Falk)

Updated Thu 11.01.01 10:40
Start date 27.10.00 07:30
Finish date 24.11.00 14:30

Time ahead of budget: 6.0 days

D	START TIME	STOP TIME	Acc. Budg./ Opt. time (hrs)	Acc. Opt. time (hrs)	Budg./ Opt. time (days)	Acc. Opt. time (days)	Plan (hrs)	Actual (hrs)	Acc. Actual (days)	Acc. Actual (days)	SH (M/A)	Activity description	Company	Down time (hrs)	Accum. down time (hrs)	Waiting time (hrs)	Accum. waiting time (hrs)	Comments (reason for down/waiting time)
Tue	21.11.00	15:00	27.5	27.5	15.8	22.15	25.3		25.3			Permanent P&A		0.0	98.0	0.0	21.0	
Tue	21.11.00	15:00	2.6	27.6	1.9	15.9	2.0	2.5	25.4	23.15	F	RIH w/ 550 w of 3 1/2" DP		0.5	98.5	21.0	21.0	Repair link RH frame on DDM (S, 0.5h)
Tue	21.11.00	17:30	9.0	28.0	5.0	16.1	5.0	7.5	25.7	23.15	F	Cont. RIH in TD with 5 1/2" DP		0.5	99.0	21.0	21.0	Changed hyd hose on RH (S, 0.5h)
Wed	22.11.00	01:00	2.6	28.1	1.9	16.1	2.0	2.0	25.8	23.15	F	Circulate hole clean	Halliburton	0.5	99.5	21.0	21.0	Leak in cut bulk silo (S, 0.5h)
Wed	22.11.00	03:00	23.2	29.1	14.0	16.7	15.0	12.5	26.3	11.45	F	Place a 3-stage emt. plug in OH and a cmt plug in frams zone. 100 m into 9 5/8" casing			99.5	21.0	21.0	
Wed	22.11.00	15:30	9.0	29.5	4.0	16.9	7.0	4.0	26.5	11.45	F	POOH, pressure test cut plug.			99.5	21.0	21.0	
Wed	22.11.00	19:30	12.9	30.0	5.0	17.1	0.0	0.0	26.5	11.45	F	MU 8 1/2" bit and RH. Pressure test cut plug			99.5	21.0	21.0	
Wed	22.11.00	19:30	10.3	30.4	5.0	17.3	0.0	0.0	26.5	11.45	F	POOH; wash/clean packer setting area.			99.5	21.0	21.0	
Wed	22.11.00	19:30	2.6	30.5	1.0	17.3	0.0	0.0	26.6	11.45	F	RIH w/ 5 1/2" DP and WB RT			99.5	21.0	21.0	
Wed	22.11.00	19:30	5.2	30.7	2.0	17.4	4.0	2.0	26.6	11.45	F	Retrive WB, POOH			99.5	21.0	21.0	
Wed	22.11.00	21:30	1.3	30.8	3.0	17.5	2.0	1.5	26.6	11.45	F	RIH with a 9 5/8" mechanical packer and set same at appr. 630 m			99.5	21.0	21.0	
Wed	22.11.00	23:00	3.9	31.0	4.0	17.7	3.0	3.5	26.8	6.30	F	POOH and pressure test packer. Displace to SW while POOH.			99.5	21.0	21.0	
Thu	23.11.00	02:30	2.6	31.1	5.0	17.9	3.0	2.5	26.9	6.30	F	Prepare and unlatch BOP. Start pull BOP and riser in Main rig			99.5	21.0	21.0	
Thu	23.11.00	05:00	0.0	31.2	1.0	18.0	12.0	10.5	27.3	6.30	F	RIH w/ 5 1/2" DP and WB RT			99.5	21.0	21.0	
Thu	23.11.00	15:30	0.0	31.2	2.0	18.0	2.0	2.0	27.4	6.30	F	Retrive WB, POOH			99.5	21.0	21.0	
Thu	23.11.00	17:30	0.0	31.2	3.0	18.2	2.0	2.0	27.5	6.30	F	RIH w/ 3 1/2" DP and set surface emt. plug			99.5	21.0	21.0	
Fri	24.11.00	00:00	3.9	31.3	2.0	18.3	4.0	4.5	27.7	6.30	F	POOH			99.5	21.0	21.0	
Fri	24.11.00	03:00	2.6	31.4	1.0	18.3	2.0	3.5	27.8	4.30	F	Continue pull BOP and riser			99.5	21.0	21.0	
Fri	24.11.00	03:30	64.0	34.1	35.0	19.8	0.0	0.0	27.8	4.30	F	MU WH cut BHA and RH			99.5	21.0	21.0	
Fri	24.11.00	08:30	3.9	34.3	2.0	19.8	3.0	5.0	28.0	4.30	F	Cut WH and POOH with same			99.5	21.0	21.0	
Fri	24.11.00	14:30	7.7	34.6	4.0	20.0	6.0	6.0	28.3	3.88	F	RD link/shoke lines			99.5	21.0	21.0	
Fri	24.11.00	14:30	10.3	35.0	6.0	20.3	0.0	0.0	28.3	3.88	F	Section time ahead of/behind (c) budget 4.4 days. Tot. time ahead of/behind (c) budget 6.6 days			99.5	21.0	21.0	Down time: 2.1% . Total Down time: 14.7% . Waiting time: 0.0% . Total Waiting time: 3.1%.
Fri	24.11.00	14:30	7.5	35.0	4.4	20.3	3.1	3.0	28.3	3.88	F			1.5	99.5	0.0	21.0	

Permanent P&A

FINAL WELL REPORT

Doc. no. 01A05*206



PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 58 of 68
0

5.6.3 Bit record

DBR
B I T R E C O R D
Well: 6608/11-002

Run no.	Bit Size	Bit no.	BHA no.	Bit type	IADC code	Manufacturer	Serial no.	Nozzles (n/32")	no x n	no x n	no x n	no x n	Flow area in2
1	26"/36"	2	1	H02STAGE	135	IPE	DOT39252	3 x 14	3 x 11	x	x	x	729
2	17 1/2"	1RR7	1	MXT1	115	HUGHES CHRISTEN	H94DL	1 x 14	1 x 11	1	x	13	585
3	26"/36"	2RR	1	H02STAGE	135	IPE	DOT39252	3 x 14	3 x 11	x	x	x	729
4	17 1/2"	1RR8	1	MXT1	115	HUGHES CHRISTEN	H94DL	3 x 13	1 x 16	x	x	x	585
5	12 1/4"	2	2	XLC1	117M	SECURITY DBS	736971	2 x 16	1 x 18	1	x	14	792
6	8 1/2"	3	3	DS116A2GNN	S333	HYCALOG	22513	2 x 12	3 x 10	x	x	x	451
7	8 1/2"	4	4	ARC422	517	HUGHES CHRISTEN	1900143	x	x	x	x	x	600
8	8 1/2"	4	4	ARC422	517	HUGHES CHRISTEN	1900143	x	x	x	x	x	600
9	8 1/2"	4	4	ARC422	517	HUGHES CHRISTEN	1900143	x	x	x	x	x	600
10	8 1/2"	5	5	BD536	M323	HUGHES	1212474	4 x 14	x	x	x	x	601
		6	6	SD746	S323	DIAMOND PR. INT.	1963147	2 x 09	2 x 10	4	x	11	649

Run no.	Flow rate l/min	Pump pres bar	In mMD	Out mMD	Depth	Made m.	HR. Drlg.	ROP m/hr	Min ton	Max ton	Min Max	I O	DC	L	B	G	OC	RP	Remarks	
1	5400	153	387,0	417,0		30,0	9,3	3,2	2	8	50	140								
2	5500	154	387,0	420,0		33,0	9,3	3,5	2	8	50	140								
3	5500	160	387,0	447,0		60,0	18,6	3,2	2	5	80	120	7	8	WT	A	F	0	RG	TD
4	4500	225	450,5	450,5		63,5	18,6	3,4	2	5	80	120	3	2	WT	A	E	0	RG	TD
5	2300	205	1254,0	1254,0		803,5	12,8	62,8	1	11	160	315	5	3	WT	N	E	1	NO	TD
6	800	44	1742,0	1742,0		488,0	20,3	24,0	1	8	120	165	1	5	CT	T	X	I	NO	CP
7	800	46	1757,0	1757,0		15,0	8	18,8	1	6	76	110	0	1	WT	S	X	I	NO	PR
8	790	43	1760,0	1760,0		3,0	4	7,5	3	4	94	106	0	1	WT	S	X	I	NO	PR
9	2000	145	1765,0	1765,0		5,0	1,2	4,2	3	10	74	126	1	1	WT	A	X	I	NO	PR
10	1800	145	1920,0	1920,0		2,0	3	6,7	4	6	70	96	1	2	WT	A	X	I	NO	PR
			2215,0	2215,0		153,0	17,0	9,0	3	15	60	165	0	1	WT	T	X	I	BU	PR
			2215,0	2215,0		295,0	17,8	16,6	5	18	100	250	6	1	CT	N	X	X	RO	TD

---RPM---
---MOB---
---IADC Dull Grading---
---Depth---
---Flow rate l/min---
---Pump pres bar---
---In mMD---
---Out mMD---
---Made m.---
---HR. Drlg.---
---ROP m/hr---
---Min ton---
---Max ton---
---Min Max---
---I O---
---DC---
---L---
---B---
---G---
---OC---
---RP---
---Remarks---
BUILD ANGLE TO 2.5 DEG
26" CUTTERS: 2-3-WT-E-I-RG-TD
RESPUD
TOT. REVS. 203000
DRILLED 40 M CEMENT AND
RAT HOLE
CORE NO.1 - 94% REC.
CORE NO.2 - 100% REC.
CORE NO.3 - 73% REC.
CORE NO.4 - 83% REC.

FINAL WELL REPORT

Doc. no. 01A05*206



PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 60 of 68
0

5.6.4 Bottom hole assemblies (BHA)

BOTTOM HOLE ASSEMBLIES

Well: 6608/11-002

Date	BHA no	BHA component	O.D. (inch)	I.D. (inch)	Length (m)	Akk. length (m)
00/10/28	1	BIT, TRI CONE	17,500		,43	,43
		BIT SUB W/FLOAT	9,500	3,000	,86	1,29
		HOLE OPENER	36,000	3,000	3,34	4,63
		BIT SUB	9,500	3,000	,90	5,53
		ANDERDRIFT	9,625	2,813	2,69	8,22
		DRILL COLLAR	9,500	3,000	56,26	64,48
		X-OVER	9,500	3,000	,92	65,40
		DRILL COLLAR	8,000	2,813	56,17	121,57
		X-OVER	8,000	2,813	,92	122,49
		HW DRILL PIPE	5,500	3,500	56,72	179,21
00/10/31	2	BIT, TRI CONE	12,250		,35	,35
		AKO M1XL 0,8 DEG	9,500		10,29	10,64
		FLOAT SUB	9,500	4,000	,65	11,29
		STAB STRING	12,125	2,813	1,69	12,98
		MWD MPR	8,313		5,81	18,79
		MWD DIRECTIONAL	8,313		11,27	30,06
		STAB STRING	12,000	2,813	2,16	32,22
		DRILL COLLAR	8,000	2,813	56,22	88,44
		JAR	8,000	2,750	9,67	98,11
		DRILL COLLAR	8,000	2,813	18,74	116,85
		X-OVER	8,000	2,813	,92	117,77
		HW DRILL PIPE	5,500	3,500	85,07	202,84
00/11/04	3	BIT, TRI CONE	8,500		,30	,30
		SRIG NB STAB			,00	,30
		MWD, MPR			,00	,30
		MOD STAB	6,750	3,000	5,95	6,25
		MWD, DCP	6,625	3,000	11,26	17,51
		STAB STRING W/FLOAT	8,250	2,938	1,80	19,31
		DRILL COLLAR	6,500	2,813	66,27	85,58
		JAR	6,500	2,750	9,43	95,01
		DRILL COLLAR	6,500	2,813	19,04	114,05
		X-OVER	6,500	3,000	,94	114,99
		HW DRILL PIPE	7,250	3,500	85,04	200,03
		DRILL PIPE	5,500		,00	200,03
Remarks: MPR LITE SERVICE						
00/11/07	4	BIT, CORE	8,500	4,000	,42	,42
		STABILIZER	8,469	5,375	,79	1,21
		CORE BARREL	6,750	5,375	8,35	9,56
		STABILIZER	8,469	5,375	,79	10,35
		CORE BARREL	6,750	5,375	8,35	18,70
		STABILIZER	8,469	5,375	,79	19,49
		CORE BARREL	6,750	5,375	,92	20,41
		TOP SUB	6,750	3,156	,45	20,86
		DRILL COLLAR	6,500	2,813	9,47	30,33
		STAB STRING W/FLOAT	8,250	2,936	1,80	32,13
		DRILL COLLAR	6,500	2,936	47,34	79,47
		JAR	6,500	2,750	9,43	88,90
		DRILL COLLAR	6,500	2,936	19,04	107,94
		X-OVER	6,500	3,000	,94	108,88
HW DRILL PIPE	7,250	3,500	85,05	193,93		
00/11/10	5	BIT, PDC	8,500		,36	,36
		MWD, MPR	6,750	3,000	5,95	6,31
		MWD, DCP	6,625	3,000	11,26	17,57
		DRILL COLLAR	6,500	2,813	18,93	36,50
		STAB STRING	8,500	2,813	1,80	38,30
		DRILL COLLAR	6,500	2,813	47,34	85,64
		JAR	6,500	2,750	9,43	95,07
		DRILL COLLAR	6,500	2,813	19,04	114,11
		X-OVER	7,250	3,000	,94	115,05
		HW DRILL PIPE	5,500	3,000	85,04	200,09
00/11/22	6	MULE SHOE	3,500		9,00	9,00
		DRILL PIPE	3,500		320,26	329,26
		XO SUB	7,250	2,250	,91	330,17
		PUP JOINT	5,500		6,12	336,29

B O T T O M H O L E A S S E M B L I E S

Well: 6608/11-002

Date	BHA no	BHA component	O.D. (inch)	I.D. (inch)	Length (m)	Akk. length (m)
00/11/23	7	BRUSH	8,500		,59	,59
		BRIDGE PLUG	6,875		,93	1,52
		SETTING TOOL	6,125	3,000	1,31	2,83
		CIRC. SUB			,95	3,78
		XO SUB	7,250	3,000	,61	4,39
		DRILL PIPE	5,500		9,31	13,70
		HW DRILL PIPE	5,500	3,500	141,74	155,44
00/11/24	8	MULE SHOE	3,500	2,500	9,00	9,00
		DRILL PIPE	3,500	2,500	203,77	212,77
		XO SUB	7,250	2,250	,91	213,68

PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 63 of 68
0

5.6.5 Drilling fluids program

DRILLING FLUIDS PROGRAMME

Well: 6608/11-2
 Field: Exploration
 Rig: West Navion

HOLE SIZE	TVD MD	CASING		MUD TYPE	MW [SG]	LGS [KG/m ³]	10 sec. [Pa]	10 min. [Pa]	Fann 100 rpm	Fann 3 rpm	O / W ratio	PV [mPa]	API FL [ml]	HTHP FL [ml]	MBT [KG/m ³]	pH	Kcl [KG/m ³]	Glyc. [%]	ES	DFE [%]	Total Volume Old Volume New Volume Usage [m ³]	
		SIZE	TVD MD																			
36"	448 448	30"	447,5 447,5	seawater w/ bentonite	1.03 - 1.05 1.35 (displ.fl.)	>100 >60 (displ.fl.)				12 - 20						9 - 10						638 260 378 137
Comments:																						
12 1/4"	1254 1254	9 5/8"	1249 1249	seawater w/ bentonite	1.03 - 1.05 1.3 (displ.fl.)	>100 >60 (displ.fl.)				12 - 20						9 - 10						806 501 806 806
Comments:																						
8 1/2"	2215 2215			Glydriil WBM	1.25 - 1.26+		3-6.5	3.5 - 8.5		5 - 12		12-21	2 - 2.4		7 - 11	7.5 - 8.5	140 - 170	4.5 - 5				368 0 368 113
Comments:																						

FINAL WELL REPORT

Doc. no. 01A05*206



PL 128
Well 6608/11-2

Date
2001-04-18

Rev. no. 65 of 68
0

5.6.6 *Cement program*

CEMENT PROGRAMME

Well: 6608/11-2
Field: Exploration
Rig: West Navion

HOLE	CASING SHOE		TOC	VOLUME/ EXCESS	CEMENT SLURRY DESIGN										SPACER	DISPLACEMENT
	SIZE	TVD MD			Components	Lead [litr/100kg]	Tail [litr/100kg]	Density [SG]	Yield [litr/100kg]	Stat. / Circ. Temp [°C]	Thickening time [hrs to 30 Bc]	API Free Water [%]	API Fluid loss [cc/30min]	24 hrs C. S. [psi]		
36"	448	447.5	Surface	Lead: 29 m3 Tail: 15 m3 250%	Econolite LiqCaCl2 NF-6 Seawater	3.20 - 0.10 95.07	- 4.35 0.10 39.56	Lead: 1.56 Tail: 1.95	Lead: 129.42 Tail: 75.06	7 / 9	Lead: > 6 Tail: 3 - 4	n/a	n/a	Lead: +/- 200 Tail: +/- 600	Seawater	Seawater 1350 lpm
	1254	1249	Surface	Lead: 76 m3 Tail: 15 m3	HR-4L Halad-99LE+ Econolite NF-6 Seawater Fresh water	2.00 - 3.20 0.10 93.64 -	4.00 - - 0.10 - 39.87	Lead: 1.56 Tail: 1.92	Lead: 129.98 Tail: 75.06	42 32	Lead: 5:22 Tail: 3:06	Lead: n/a Tail: 0.5%	n/a	Lead: 200 Tail: 1400	Seawater	Seawater
P&A			#1A - #1C 1345 #1D: 1145	#1A-#1C: 30,9 m3 #1D: 8,2 m3	Gascon CFR-3L HR-5L Halad-99LE+ NF-6 DW	#1A - #1C 3.50 2.50 0.60 10.00 0.10 30.07	#1D - - - - 0.10 45.44	#1A - #1C: 1.90 #1D: 1.90	#1A - #1C: 77.83 #1D: 76.60	#1A - #1C: 77 / 63 #1D: 45 / 36	#1A - #1C: 03:47 #1D: 02:50	#1A - #1C: 0 #1D: n/a	#1A - #1C: 42 #1D: n/a	#1A - #1C: 2200 #1D: 2000	#1A - #1C: 6 m3 FW #1D: 6 m3 FW	#1A - #1C: Mud / 1800 lpm #1D: Mud / 1900 lpm

FINAL WELL REPORT

Doc. no. 01A05*206



PL 128
Well 6608/11-2

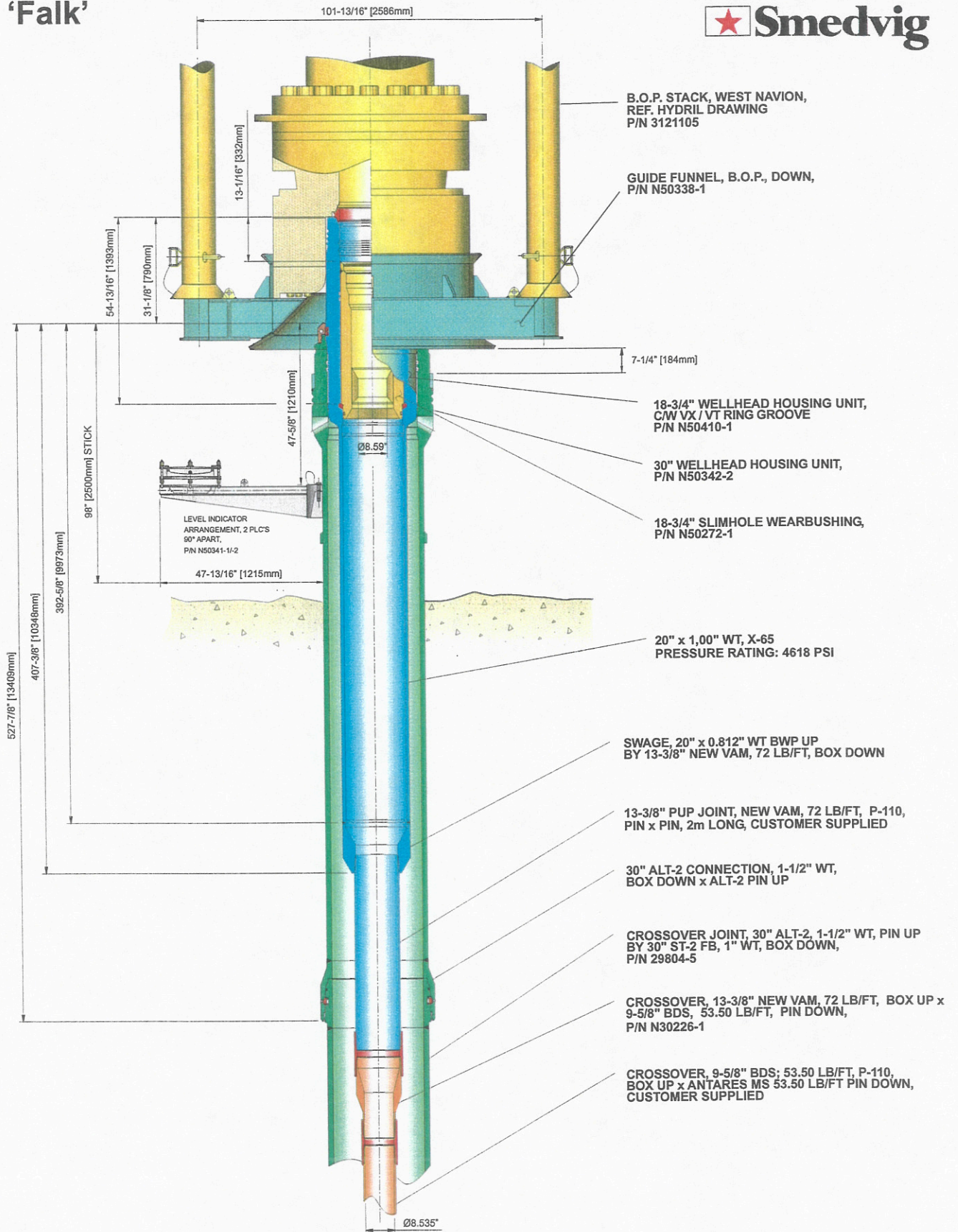
Date
2001-04-18

Rev. no. 67 of 68
0

5.6.7 Wellhead system

Well 6608/11-2
 'Falk'

West Navion



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



APPENDIX 1

Operational experience, operational listing

EXTRACT OF DAILY ACTIVITIES (0600 - 0600 hrs)

Page: 1

Well: 6608/11-002

Report
date

- 00/10/28 *** ON CONTRACT FOR PL128, FALK WELL, AT 0300 HRS ON OCTOBER 27TH.***
COMPLETED MOVE FROM 6710/10-1 TO 6608/11-2. POSITIONED SHIP AND
SPUDED WELL. DRILLED 36" HOLE TO 409 M. RIH WITH 30" COND TO 90 M.
- 00/10/29 DRILLED TO 420 M. RESPUDED WELL DUE TO AN INCL. OF 2-2,5 DEG.
DRILLED A NEW 36" HOLE TO 417 M.
- 00/10/30 DRILLED 36" HOLE TO 447.5 M. DISPLACED HOLE TO 1.35 SG MUD. POOH.
RIH WITH 30" COND. TO 440 M. PULLED OUT TO NOW. STABBED 30" COND.
AND LANDED SAME AT 447.5 M. STARTED CEMENT JOB.
- 00/10/31 MOC. RELEASED C.A.R.T. AND POOH. MADE UP 12 1/4" BHA AND RIH. DRILLED
OUT OF 30" COND. NOW.
- 00/11/01 A: NOW. DRILLED 12 1/4" HOLE FROM 458 M TO 1101 M.
M: NOW. RAN BOP AND RISER TO 220 M.
- 00/11/02 A: DRILLED 12 1/4" HOLE TO TD AT 1254 M. RAN 9 5/8" CSG. TO 666 M.
M: RAN BOP AND RISER TO 30 M ABOVE SEABED.
- 00/11/03 LANDED AND CEMENTED 9 5/8" CASING. LANDED BOP AND RIGGED DOWN RISER
RUNNING EQUIPMENT.
- 00/11/04 TESTED 9 5/8" CSG TO 270 BAR - OK. RIH WITH 8 1/2" BHA AND DRILLED
OUT OF 9 5/8" CSG. PERFORMED EXTENDED LOT TO 1.52 SG EHM.
- 00/11/05 DISPLACED HOLE TO 1,25 SG. MUD. DRILLED 8 1/2" HOLE TO 1517 M.
- 00/11/06 DRILLED 8 1/2" HOLE TO 1742 M. POOH TO CUT CORE NO.1
- 00/11/07 POOH WITH 8 1/2" BHA. RIH 60' CORE BARREL AND CUT CORE NO.1 FROM 1742
M TO 1757 M. POOH WITH CORE NO.1.
- 00/11/08 LAID OUT CORE NO.1. CUT CORE NO.2 FROM 1757 M TO 1760 M. POOH AND
LAID OUT CORE NO.2. RIH WITH CORE NO.3.
- 00/11/09 RIH AND CUT CORE NO.3 FROM 1760 M TO 1765 M. POOH AND LAID OUT CORE
NO.3. RIH AND CUT CORE NO.4 FROM 1765 M TO 1767 M.
- 00/11/10 POOH WITH CORE ASSY #4. MU AND RIH WITH 8 1/2" BHA. DRILLED 8 1/2"
HOLE FROM 1767 M TO 1846 M.
- 00/11/11 DRILLED 8 1/2" HOLE FROM 1846 M TO 1920 M. CIRCULATED WELL CLEAN AND
POOH TO CHANGE BIT. MU NEW BIT AND DUMPED MWD DATA.
- 00/11/12 RIH WITH 8 1/2" BHA. DRILLED 8 1/2" HOLE FROM 1920 M TO 2060 M.
- 00/11/13 DRILLED 8 1/2" HOLE FROM 2060 M TO TD AT 2215 M. CIRC WELL CLEAN AND
POOH WITH 8 1/2" BHA.
- 00/11/14 RU FOR WIRE LINE AND PERFORMED LOGGING RUN #1 (PEX/HALS/HNGS) AND #2
(CHR/ESC/HNGS). RIH WITH LOGGING STRING #3 (MDT/GR). COLLECTED 3
PRESSURE POINTS OF TOTAL 21.
- 00/11/15 COLLECTED 22 PRESSURE POINTS WITH MDT/GR. UNABLE TO OBTAIN FLUID
SAMPLE. POOH WITH LOGGING STRING #3. CHANGED PROBE AND RIH WITH
MDT/GR FOR FLUID SAMPLE. POWER FAILURE ON MDT, POOH.
- 00/11/16 RIH WITH MDT/GR ON WIRE LINE. COLLECTED WATER SAMPLE AND POOH. RIH
WITH MDT/GR FOR OIL SAMPLE, NEG. TOOL FAILURE POOH.
- 00/11/17 RIH WITH MDT/GR ON WIRE LINE. COLLECTED OIL SAMPLE AND POOH. MU
MDT/GR WITH DUAL PACKER (WIRE LINE RUN #9) AND TESTED TOOL STRING.
- 00/11/18 RIH WITH MDT/GR WITH DUAL PACKER (WIRE LINE RUN #9). LOGGING TOOLS
GOT STUCK AT 1778 M. UNABLE TO FREE TOOLS BY PULLING 90% OF WEAK
POINT. RIH WITH OVER SHOT ON 5 1/2" DP TO 760 M BY USING CUT AND
THREAD METHOD.

EXTRACT OF DAILY ACTIVITIES (0600 - 0600 hrs)

Well: 6608/11-002

Report
date

-
- 00/11/19 RIH WITH OVER SHOT ON 5 1/2" DP BY CUT AND THREAD METHOD TO 1771 M. ENGAGED FISH AND PULLED FREE. BROKE WEAK POINT ON WIRE LINE AND POOH WITH SAME. POOH WITH FISH ON 5 1/2" DP. PU FMI/DSI (WIRE LINE RUN #10).
- 00/11/20 RIH AND CONDUCTED FMI/DSI LOGGING (WIRE LINE RUN #10). MU AND RIH WITH MDT/GR (WIRE LINE RUN #11). LOST POWER ON MDT TOOL, POOH. TROUBLE SHOT TOOL STRING AND RIH WITH MDT/GR (WIRE LINE RUN #12). COLLECTED 18 GAL SAMPLE AND POOH.
- 00/11/21 RIH TO 1747 M WITH MDT/GR ON WL, AND TOOK 18 GAL OIL SAMPLE. TOOK 1 GAL WATER SAMPLE AT 1687 M. POOH WITH MDT/GR.
- 00/11/22 LD MDT/GR. TOOK SIDE WALL CORES ON WIRELINE, RECOVERED 55 OF 60 CORES. RD WL EQUIPMENT. RIH WITH CMT STINGER TO 2215 M. CONDITIONED MUD. SET CMT PLUG NO 1 AT 2215- 1935 M.
- 00/11/23 PLUGGED OPEN HOLE/CSG FROM 1925 M TO 1145 M. POOH. ATTEMPTED TO PULL WEAR BUSHING - NEG. PRESS TESTED CMT PLUG. RIH, SET AND PRESS TESTED BRIDGE PLUG AT 630 M. DISPLACED RISER TO SW. PREP TO DISCONNECT BOP.
- 00/11/24 PREPARED AND DISCONNECTED BOP IN MAIN RIG. PREPARED BOP/RISER FOR TRANSIT. RETRIEVED WEAR BUSHING AND SET SURFACE CMT PLUG 630-430 M IN AUX RIG. RIH WITH WH CUTTER TO 75 M.
- 00/11/25 CUT AND RETRIEVED WELL HEAD. PREPARED FOR TRANSIT TO 6608/10-6R.

STATUS D TIME

Well : 6608/11-002

Print date: 01/01/10

Period: 000101 - 010110

Cummulative result: Start period: ,00 %
 Over period: 14,58 %
 End period: 14,58 %
 Differense: End - Start : 14,58 %

Date	Akt code	Description	D-time
00/10/28	DEOD	EQUIPMENT TIME OTHER, NEG	,50
			,50
00/10/29	DDOD	DRILLING OTHER TIME, NEG	15,00
			15,00
00/10/31	CAOD	OTHER CASING TIME, NEG	1,50
			1,50
00/11/02	CAOD	OTHER CASING TIME, NEG	,50
			,50
00/11/05	DEMD	MWD TOOL PROBLEMS OR FAILURE	1,00
	DTMD	TRIP DUE TO MWD/LWD FAILURE.	1,50
			2,50
00/11/07	DERD	REPAIR RIG EQUIPMENT	2,00
			2,00
00/11/13	DERD	REPAIR RIG EQUIPMENT	,50
			,50
00/11/15	EEDD	DOWNHOLE EQUIPMENT FAILURE	3,50
	EESD	SURFACE EQUIPMENT FAILURE	,50
	ELOD	OTHER LOGGING TIME, NEG.	9,00
			13,00
00/11/16	EEDD	DOWNHOLE EQUIPMENT FAILURE	6,00
	ELOD	OTHER LOGGING TIME, NEG.	9,00
			15,00
00/11/17	EEDD	DOWNHOLE EQUIPMENT FAILURE	1,00
			1,00
00/11/18	ELSD	WIRELINE LOGGING TOOL STUCK	2,50
	FISD	STRIP OVER LINE WITH DRILLPIPE	13,50
			16,00
00/11/19	DERD	REPAIR RIG EQUIPMENT	2,00
	FIOD	OTHER TIME FISHING	1,50
	FISD	STRIP OVER LINE WITH DRILLPIPE	14,00
	FTTD	TRIPPING WITH FISHING TOOLS	5,50
			23,00
00/11/20	EEDD	DOWNHOLE EQUIPMENT FAILURE	,50
	ELOD	OTHER LOGGING TIME, NEG.	6,50
			7,00

Date	Akt code	Description	D-time
00/11/22	RMDD	DRLG. EQUIPM. UPGRADING NOT PLANNED	1,50
			1,50
TOTAL			99,00

APPENDIX 2

Directional data, survey listing

Statoil,6608/11-2
6608/11 Exploration,6608/11
EXPLORATION - UTM Zone 31,Norway

Wellbore: 6608/11-2
Wellpath: 6608/11-2 Definitive
(TD@2215)
Date Printed: 18-Jan-2001

Units are in Metres unless otherwise specified
Coordinates are from Installation. MDs are from Rig. TVDs are from Rig.
Vertical Section is from 0,00N 0,00E on azimuth 85,02
Bottom hole location is 11,31 m from wellhead on azimuth 85,02deg
Wellpath calculation is by Minimum Curvature
Prepared by Statoil

Wellbore

Name	Created	Last Revised
6608/11-2	24-Nov-2000	6-Dec-2000

Well

Name	Government ID	Last Revised
6608/11-2		24-Nov-2000

Installation

Name	Easting	Northing	Coord System Name	North Alignment
6608/11 Exploration	470609,1560	7334160,6356	ED50-UTM-32N on EUROPEAN DATUM 1950 datum	Grid

Field

Name	Easting	Northing	Coord System Name	North Alignment
EXPLORATION - UTM Zone 31	500000,0000	6651566,7050	ED50-UTM-31N 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
Vertical Section is from 0,00N 0,00E on azimuth 85,02 degrees
Bottom hole distance is 11,31 Metres on azimuth 85,02 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Statoil

Statoil,6608/11-2
 6608/11 Exploration,6608/11
 EXPLORATION - UTM Zone 31,Norway

Wellbore: 6608/11-2
 Wellpath: 6608/11-2 Definitive
 (TD@2215)
 Date Printed: 18-Jan-2001

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]	End East[m]	Wellbore
36,000	387,00	387,00	0,00N	0,00E	450,50	450,50	0,06N	0,11E	6608/11-2
12 1/4	450,50	450,50	0,06N	0,11E	1254,00	1253,69	1,58N	14,22E	6608/11-2
8 1/2	1254,00	1253,69	1,58N	14,22E	2215,00	2214,65	0,98N	11,27E	6608/11-2

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	387,00	387,00	0,00N	0,00E	447,50	447,50	0,05N	0,10E	6608/11-2
9 5/8in Casing	387,00	387,00	0,00N	0,00E	1249,00	1248,69	1,56N	14,21E	6608/11-2

All data is in Metres unless otherwise stated
 Coordinates are from Installation MD's are from Rig and TVD's are from Rig
 Vertical Section is from 0,00N 0,00E on azimuth 85,02 degrees
 Bottom hole distance is 11,31 Metres on azimuth 85,02 degrees from Wellhead
 Calculation method uses Minimum Curvature method
 Prepared by Statoil

Wellpath Report

MD[m]	Inc[deg]	Dir[deg]	TVD[m]	North[m]	East[m]	Dogleg [deg/30m]	Vertical Section[m]
387,00	0,00	0,00	387,00	0,00N	0,00E	0,00	0,00
470,00	0,30	62,30	470,00	0,10N	0,19E	0,11	0,20
496,00	0,30	42,60	496,00	0,18N	0,30E	0,12	0,31
531,00	0,20	49,50	531,00	0,29N	0,41E	0,09	0,43
556,00	0,30	73,80	556,00	0,34N	0,50E	0,17	0,53
587,00	0,50	54,50	587,00	0,44N	0,69E	0,23	0,73
614,00	0,60	54,50	614,00	0,59N	0,90E	0,12	0,95
644,00	2,20	60,50	643,99	0,96N	1,53E	1,60	1,61
672,00	2,40	63,10	671,96	1,49N	2,52E	0,24	2,64
700,00	2,11	67,40	699,94	1,96N	3,52E	0,36	3,67
729,00	2,40	71,60	728,92	2,35N	4,59E	0,35	4,77
759,00	2,50	80,10	758,89	2,66N	5,83E	0,38	6,04
786,00	3,10	95,30	785,86	2,69N	7,13E	1,06	7,34
815,00	3,30	101,10	814,82	2,46N	8,73E	0,39	8,91
845,00	3,10	101,20	844,77	2,14N	10,38E	0,20	10,52
873,00	2,50	105,50	872,74	1,83N	11,71E	0,68	11,82
902,00	2,10	108,80	901,71	1,49N	12,82E	0,43	12,90
931,00	0,70	140,50	930,70	1,18N	13,44E	1,60	13,49
960,00	0,80	145,70	959,70	0,88N	13,66E	0,13	13,69
988,00	0,90	113,40	987,70	0,63N	13,98E	0,52	13,98
1017,00	0,30	74,70	1016,70	0,56N	14,26E	0,72	14,25
1046,00	0,20	3,30	1045,70	0,63N	14,33E	0,31	14,33
1075,00	0,30	341,80	1074,69	0,75N	14,31E	0,14	14,32
1104,00	0,40	352,60	1103,69	0,92N	14,28E	0,12	14,30
1134,00	0,20	357,40	1133,69	1,08N	14,26E	0,20	14,30
1162,00	0,20	359,40	1161,69	1,18N	14,26E	0,01	14,31
1191,00	0,30	354,40	1190,69	1,30N	14,25E	0,11	14,31
1221,00	0,30	344,00	1220,69	1,46N	14,22E	0,05	14,29
1230,00	0,20	353,80	1229,69	1,49N	14,21E	0,36	14,29
1259,00	0,20	16,60	1258,69	1,59N	14,22E	0,08	14,31
1287,00	0,10	11,90	1286,69	1,66N	14,24E	0,11	14,33
1316,00	0,20	295,10	1315,69	1,71N	14,20E	0,21	14,29
1345,00	0,30	317,20	1344,69	1,79N	14,10E	0,15	14,20
1374,00	0,30	328,40	1373,69	1,91N	14,01E	0,06	14,12
1403,00	0,30	311,60	1402,69	2,02N	13,91E	0,09	14,03
1431,00	0,30	316,70	1430,69	2,12N	13,81E	0,03	13,94
1460,00	0,30	308,10	1459,69	2,23N	13,70E	0,05	13,84
1489,00	0,30	319,50	1488,69	2,33N	13,59E	0,06	13,74
1518,00	0,30	272,30	1517,69	2,39N	13,46E	0,25	13,62
1547,00	0,30	305,50	1546,69	2,44N	13,32E	0,18	13,48
1576,00	0,30	332,90	1575,69	2,55N	13,23E	0,15	13,40
1605,00	0,20	2,80	1604,69	2,67N	13,20E	0,17	13,38
1634,00	0,20	337,00	1633,69	2,77N	13,18E	0,09	13,37
1663,00	0,20	324,20	1662,69	2,85N	13,13E	0,05	13,33
1692,00	0,10	272,70	1691,69	2,90N	13,07E	0,16	13,28
1721,00	0,20	314,90	1720,69	2,93N	13,01E	0,15	13,22
1749,00	0,20	257,30	1748,69	2,96N	12,93E	0,21	13,14
1776,00	0,20	252,30	1775,69	2,93N	12,84E	0,02	13,04
1807,00	0,20	242,30	1806,69	2,89N	12,74E	0,03	12,94
1836,00	0,10	16,90	1835,69	2,89N	12,70E	0,29	12,90
1865,00	0,20	293,30	1864,69	2,93N	12,66E	0,22	12,87
1894,00	0,10	3,02	1893,69	2,98N	12,62E	0,20	12,83
1909,00	0,10	21,80	1908,69	3,00N	12,62E	0,07	12,84
1923,00	0,10	46,90	1922,69	3,02N	12,64E	0,09	12,85
1952,00	0,20	3,50	1951,69	3,09N	12,66E	0,15	12,88
1981,00	0,50	23,40	1980,69	3,26N	12,71E	0,33	12,95
2066,00	0,30	117,20	2065,69	3,50N	13,06E	0,21	13,31

All data is in Metres unless otherwise stated
Coordinates are from Installation MD's are from Rig and TVD's are from Rig
Vertical Section is from 0,00N 0,00E on azimuth 85,02 degrees
Bottom hole distance is 11,31 Metres on azimuth 85,02 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Statoil

Statoil,6608/11-2
6608/11 Exploration,6608/11
EXPLORATION - UTM Zone 31,Norway

Wellbore: 6608/11-2
Wellpath: 6608/11-2 Definitive
(TD@2215)
Date Printed: 18-Jan-2001

Wellpath Report

MD[m]	Inc[deg]	Dir[deg]	TVD[m]	North[m]	East[m]	Dogleg [deg/30m]	Vertical Section[m]
2096,00	0,60	222,50	2095,68	3,35N	13,02E	0,74	13,26
2125,00	1,50	228,00	2124,68	2,98N	12,64E	0,94	12,85
2191,00	1,60	207,00	2190,66	1,58N	11,57E	0,26	11,67
2215,00	1,60	207,00	2214,65	0,98N	11,27E	0,00	11,31

All data is in Metres unless otherwise stated
Coordinates are from Installation MD's are from Rig and TVD's are from Rig
Vertical Section is from 0,00N 0,00E on azimuth 85,02 degrees
Bottom hole distance is 11,31 Metres on azimuth 85,02 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Statoil

APPENDIX 3

Contractors list

Contractors list

Service

Casing
Cementing
Coring
Directional drilling
Diving
Drilling contractor
Electric logging
Helicopter
Mud
Mud logging
MWD
Rig positioning
Site survey
Wellhead systems

Company

Weatherford
Halliburton
Baker Hughes INTEQ
Baker Hughes INTEQ
Oceaneering
Smedvig Offshore
Schlumberger Offshore Services NV
Helikopter Service A/S
Anchor/M-I Drilling Fluids
Geoservices
Baker Hughes INTEQ
Racal Norge AS
Fugro-Geoteam AS
ABB Vetco Gray

APPENDIX 4

Wellsite sample descriptions

WELLSITE SAMPLE DESCRIPTION

Page 01 of 23

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: O. Beyer, T.Svånå	Date: 4.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1260	30	Sd: clr - trnsl qtz, pred crs-v.crs, lse, wll srted, prtly from boulders? sbrnd - sbang, occ rnd	No Shows Abun cement contam.
	20	Rock frg: dk gry/blk mtld, v.hd, meta, (amphibolite)	
	50	Cly: med gn gry - gn gry, sft - mod frm, amor - sbbkly, slty/blk min spks, non calc,	
	Gd tr	Mica, Pyr	
1265	lost		
1270	lost		
1275	5	Sd: a.a.	a.a.
	5	Rock frg: a.a.	
	90	Cly: pred v.slty - vf sdy, a.a.	
	Tr	Mica a.a.	
1280	25	Sd: a.a.	a.a.
	5	Rock frg: a.a.	
	70	Cly: pred v.slty - vf sdy, abun blk min spks, a.a.	
	Tr	Mica a.a.	
	Sl tr	Foss frgs, microfoss	
1285	5	Sd: a.a.	a.a.
	95	Cly: a.a.	
	Tr	Rock frg: a.a., mica, foss frgs, pyr	
1290	20	Sd: fn -crs, tr vcrs, pred a.a.	a.a.
	80	Cly: a.a.	
	Tr	Mica, pyr, foss frgs	
1295	5	Sd: a.a.	a.a.
	95	Cly: a.a.	
	Sl tr	Mica, foss frgs	
1300 - 1315		Lost, busy checking gas system	a.a.
1320	15	Sd: a.a.	a.a.
	85	Cly: a.a.	
	Tr	Mica,pyr	
1325	10	Sd: fn -crs, tr vcrs, pred a.a.	a.a.
	90	Cly: a.a.	
	Tr	Mica,pyr, shell frgs	
1330	a.a.		

WELLSITE SAMPLE DESCRIPTION

Country: Norway		Area: Nordland II		Field: Falk Structure	
Well no: 6608/11-2					
R.T.: 36 meters		Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil			
Hole size: 8 1/2"		Geologist: O. Beyer, T.Svånå		Date: 4.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description			Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination			Shows, cavings, mud additives, etc.
1335	10	Sd: clr - trnsl qtz, fn crs, tr v.crs, pred lse, pr srtld, prtly from boulders? sbrnd - sbang, occ rnd, gen float grns in Cly			No Shows
	5	Rock frg: dk gry/blk mtld, v.hd, meta, (amphibolite)			
	85	Cly: med gn gry - gn gry, sft - mod frm, amor - sbbly, slty/blk min spks, calc.			
	Gd tr	Mica, Pyr, Shell frag.			
1340	80	Cly: a.a.			a.a.
	20	Sd: a.a.			
	Gd tr	Shell frag & meta rk frag.			
1345	90	Cly: a.a.			a.a.
	10	Sd: a.a.			
	Gd tr	Shell frag & meta rk frag.			
1350	80	Cly: a.a.			a.a.
	20	Sd: a.a.			
	Gd tr	Shell frag & meta rk frag.			
1355	80	Cly: a.a.			a.a.
	20	Sd: a.a.			
	Gd tr	Shell frag & meta rk frag.			
1360	80	Cly: a.a.			a.a.
	20	Sd: a.a.			
	Gd tr	Shell frag & meta rk frag.			
1365	80	Cly: a.a.			a.a.
	20	Sd: a.a.			
	Gd tr	Shell frag & meta rk frag.			
1370	80	Cly: a.a.			a.a.
	20	Sd: a.a.			
	Gd tr	Shell frag & meta rk frag.			
1375	80	Cly: a.a.			a.a.
	20	Sd: a.a.			
	Gd tr	Shell frag & meta rk frag.			
1380	80	Cly: a.a.			a.a.
	20	Sd: a.a.			
	Gd tr	Shell frag & meta rk frag.			
1385	80	Cly: a.a.			a.a.
	20	Sd: a.a.			
	Gd tr	Shell frag & meta rk frag.			
1390	80	Cly: a.a.			a.a.
	20	Sd: a.a.			
	Gd tr	Shell frag & meta rk frag.			

WELLSITE SAMPLE DESCRIPTION

Page 03 of 23

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: O. Beyer, T.Svånå	Date: 5.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1395	90 10	Cly: Sd:	med gn gry - gn gry, sft - mod frm, amor - sblky, slty/blk min spks, calc. clr - trnsl lse qtz, f-crs, tr v crs, pr srted, sbrnd - sbang, gen float grms in Cly	No shows
1400	90 10	Cly: Sd:	a.a. a.a.	a.a.
1403	100 Gd tr	Cly: Sd:	a.a. a.a.	a.a.
1406	100 Gd tr	Clst: Sd:	dk gn gry - m dk gry, blkly - amor, sft - frm, sol, i.p. v glauc, occ slty, tr pyr, non calc lse Qtz, pred f, occ m - crs, pr srted, sbang	a.a.
1409	100 Gd tr	Clst: Sd:	a.a. a.a.	a.a.
1412	100 Gd tr	Clst: Sd:	a.a. a.a.	a.a.
1415	100 Gd tr	Clst: Sd:	a.a. a.a.	a.a.
1418	100 Tr	Clst: Sd:	olv blk - brn blk, blkly, frm - sft, sol, sl slty, sl micromic, sl carb, non - sl calc also glauc clst a.a. a.a..	a.a.
1421	100 Tr	Clst: Sd:	a.a. a.a.	a.a.
1424	Not sampled due to fast drilling			
1427	100 Tr	Clst: Sd:	a.a. a.a.	a.a.
1430	100 Tr	Clst: Sd:	a.a. a.a.	a.a.
1433	100 Tr	Clst: Sd:	bcmg pred brn gry, else a.a. a.a.	a.a.
1436	100 Tr	Clst: Sd:	a.a. a.a.	a.a.
1439	Not sampled due to fast drilling			
1442	Not sampled due to fast drilling			
1445	100 Tr	Clst: Sd:	a.a. a.a.	a.a.

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: O. Beyer, T.Svånå	Date: 5.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1448	100	Clst:	olv blk - brn blk - brn gry, blk, frm - sft, sol, sl slty, i.p. glauc, i.p. micromic, occ carb, non - sl calc	No shows
	Tr	Sd:	lse Qtz, pred f, occ m - crs, pr srted, sbang	
1451	100	Clst:	a.a.	a.a.
	Tr	Sd:	a.a.	
1454	100	Not sampled due to fast drilling		
1457	100	Clst:	a.a.	a.a.
	Tr	Sd:	a.a.	
1460	100	Clst:	a.a.	a.a.
	Tr	Sd:	a.a.	
1463	Not sampled due to fast drilling			
1466	100	Clst:	a.a.	a.a.
	Tr	Sd:	a.a.	
1469	100	Clst:	a.a., also abd gn gry	a.a.
	Tr	Sd:	a.a., i.p. v crs qtz gr	
	Tr	Meta rk frag		
1472	100	Clst:	a.a., pred brn gry - gn gry	a.a.
	Tr	Sd:	a.a.	
	Tr	Meta rk frag		
1475	100	Clst:	a.a., pred brn gry - gn gry	The gn gry Clst is found as cavings in all samples down to TD
	Tr	Sd:	a.a., i.p. v crs qtz gr.	
	Tr	Meta rk frag		
1478	100	Clst:	a.a., pred gn gry	a.a.
	Tr	Sd:	a.a.	
1481	Not sampled due to fast drilling			
1484	100	Clst:	a.a., pred gn gry	a.a.
	Tr	Sd:	a.a.	
1487	Not sampled due to fast drilling			
1490	100	Clst:	a.a., pred gn gry	a.a.
	Tr	Sd:	a.a.	
1493	100	Clst:	a.a., pred gn gry	a.a.
	Tr	Sd:	a.a.	
	Tr	Ls:	v lt gry, blk, frm, fn xln	

WELLSITE SAMPLE DESCRIPTION

Page 05 of 23

Country: Norway		Area: Nordland II		Field: Falk Structure	
Well no: 6608/11-2					
R.T.: 36 meters		Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil			
Hole size: 8 1/2"		Geologist: O. Beyer, T.Svånå		Date: 5.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description			Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination			Shows, cavings, mud additives, etc.
1496		Not sampled due to fast drilling			
1499	100	Clst:	brn gry - gn gry, blk, frm, i.p. sl slty, pred glauc - v glauc, i.p. micromic, non calc		No shows
	Tr	Sd:	lse Qtz, f - crs, pr srted, sbang		
	Tr	Ls:	v lt gry, blk, frm, fn xln		
	Sl tr	Pyr nods,	glauc		
1502	100	Clst:	a.a.		a.a.
	Tr	Sd:	a.a.		
1505 / 1508 / 1511 lost due to riser boosting					
1514	95	Clst:	dom gn gry - med gry, blk, abun dissem micropyr, non calc		a.a.
	5	Ls:	off wh - v.lt gry, pred micr, a.a.		
	Tr	Pyr nods,	glauc		
1517	95	Clst:	also min med brn gry, else a.a.		a.a.
	5	Ls:	a.a.		
	Tr	Pyr nods,	glauc		
1520	95	Clst:	a.a.		a.a.
	5	Ls:	a.a.		
	Gd tr	Pyr nods,	glauc		
1523	a.a.				a.a.
1526	70	Clst:	lt - med gn gry shades, blk, frm, non calc, also min brn gry, frm, micromic		Spty, dull, yel Flu No Cut Flu (min Flu only)
	30	Ls:	bec dom off wh - v lt gry, sbblk, cryptoxln, slty - vf sdy, dk min spkld (low GR)		
	Gd tr	Pyr nods,	glauc		
	Tr	Qtz sd,	pred med-crs, sbang-wll rnd, lse		
1529	30	Clst:	a.a.		Min. Flu, a.a.
	70	Ls:	a.a.		
	Gd tr	Pyr nods,	glauc		
	Tr	Qtz sd,	a.a.		
1532	5	Sst/Sd:	pred med-crs qtz, sbang-wll rnd, lse		a.a.
	30	Clst:	a.a.		
	70	Ls:	a.a.		
	Gd tr	Pyr nods,	glauc		
	Tr	Qtz sd,	a.a.		
1535	50	Clst:	a.a.		a.a.
	50	Ls:	a.a.		
	Gd tr	Pyr nods,	glauc		
	Tr	Qtz sd,	a.a.		
1538	a.a.				a.a.

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: O. Beyer, T. Svånå	Date: 5.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1541	70 30	Clst: pred brn gry- olv gry, blk, frm, non calc, slily-mod micromic Ls: dom off wh - v lt gry, sblky, cryptoxln, slty - vf sdy, dom mic dk min spkld (low GR)	Spty, dull - mod yel Flu, No Cut Flu (min Flu only)
	Gd tr Sl tr	Pyr nods, glauc Qtz sd, pred med-crs, sbang - wll rnd, lse	
1544	80 20	Clst: a.a. Ls: a.a.	Flu a.a.
	Gd tr Sl tr	Pyr nods, glauc Qtz sd, a.a.	
1547	lost due to high ROP		
1550	80 20	Clst: a.a. Ls: a.a.	Flu a.a.
	Gd tr Sl tr	Pyr nods, glauc Qtz sd, a.a.	
1553	95 5	Clst: a.a. Ls: a.a.	Flu a.a.
	Tr Sl tr	Pyr nods, glauc Qtz sd, a.a.	
1556	100	Clst: bec pred dk brn gry - dk olv gry, frm, blk, less micromic, non calc.	No Fluor
	Gd tr Tr Sl tr	Ls: a.a. Pyr nods, glauc Qtz sd, a.a.	
1559	a.a.		a.a.
1562	a.a.		a.a.
1565	100	Clst: also bec pa gn gry, else pred a.a..	a.a.
	Gd tr Tr	Ls: a.a. Pyr nods, glauc	
1568	lost due to high ROP		
1571	80 20	Clst: a.a. Ls: a.a.	a.a.
	Tr	Pyr nods, glauc	
1574	lost due to high ROP		
1577	70 30	Clst: a.a. Ls: a.a.	a.a.
	Tr	Pyr nods, glauc	
1580	a.a.		a.a.

WELLSITE SAMPLE DESCRIPTION

Country: Norway		Area: Nordland II		Field: Falk Structure	
Well no: 6608/11-2					
R.T.: 36 meters		Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil			
Hole size: 8 1/2"		Geologist: O. Beyer, T.Svånå		Date: 5.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description			Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination			Shows, cavings, mud additives, etc.
1583	80 20 Gd tr Sl tr	Clst: bec pred dk brn gry - dk olv gry, frm, blkly, less micromic, non calc. Ls: dom off wh - v lt gry, sbblky, cryptoxln, slty - vf sdy, dom micr dk min spkld (low GR) Pyr nods, glauc Dol, Qtz.			Spty dll yel Flu No Cut Flu (min Flu only)
1586	70 30 Gd tr Sl tr	Clst: a.a. Ls: a.a. Pyr nods, glauc Dol, Qtz			a.a.
1589	a.a.				a.a.
1592	55 40 5 Gd tr Sl tr	Clst: a.a. Ls: a.a. Slst: lt gry - v.lt gry, arg, grdg Clst, mod calc, pred grdg Ls/Micr Pyr nods, glauc Dol, Qtz			a.a.
1595	a.a.				a.a.
1598	a.a.				a.a.
1601	a.a.	Clst bec also mod rd brn, frm, blkly- sbblky, non calc, else a.a.			a.a.
1604	80 20 Gd tr Sl tr	Clst: a.a. Ls: a.a. Pyr nods, glauc Dol, Qtz			a.a.
1607	90 10 Gd tr Sl tr	Clst: a.a. Ls: a.a. Pyr nods, glauc Dol, Qtz			a.a.
1610	5 95 Gd tr Sl tr	Clst: dom mod rd brn, a.a. Ls: a.a. Pyr nods, glauc Dol, Qtz			v rare spty, yel Flu no cut flu (min flu)
1613	a.a.				a.a.
1616	a.a.				a.a.
1619	a.a.				a.a.
1622	a.a.				a.a.
1625 / 1628		lost/boosting riser			

WELLSITE SAMPLE DESCRIPTION

Page 08 of 23

Country: Norway		Area: Nordland II		Field: Falk Structure	
Well no: 6608/11-2					
R.T.: 36 meters		Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil			
Hole size: 8 1/2"		Geologist: O. Beyer, T.Svånå		Date: 5.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description			Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination			Shows, cavings, mud additives, etc.
1631	95 5 Gd tr Sl tr	Clst: pred dk brn gry - dk olv gry, min mod rd brn, all frm, blk, i/p micromic Ls: dom off wh - v lt gry, sbbkly, cryptoxln, slty - vf sdy, dom micr Pyr nods, glauc Dol, Qtz.	Rare spty dll yel Flu No Cut Flu (min Flu only)		
1634	lost due to high ROP				
1637	95 5 Gd tr Sl tr	Clst: incr olv gry, micromic, loc slily earthy, v. abun micropyr, pyr foss Ls: a.a. Pyr nods, glauc Dol, Qtz	a.a.		
1640	a.a.				a.a.
1643	95 5 Tr Sl tr	Clst: dom dk brn gry- olv gry, a.a Ls: a.a. Pyr nods, glauc Dol, Qtz	a.a.		
1646	a.a.				a.a.
1649	100 Tr Sl tr	Clst: dom dk olv brn, sft-frm, sbbkly - blk, mod micromic, non calc Pyr nods, glauc Dol, Qtz	No shows		
1652 /1655	Lost, high ROP				
1658	95 5 Tr Sl tr	Clst: a.a Ls: a.a. Pyr nods, glauc Dol, Qtz	a.a.		
1661	a.a.				a.a.
1664	lost, high ROP				
1667	100 Gd tr Tr Sl tr	Clst: a.a. Ls: a.a. Pyr nods, glauc Dol, Qtz	a.a.		
1670	100 Tr Sl tr	Clst: dom dk olv brn, sft-frm, sbbkly - blk, mod micromic, non calc Pyr nods, glauc Dol, Qtz	No shows		
1673	95 5 Tr Sl tr	Clst: a.a Ls: a.a. Pyr nods, glauc Dol, Qtz	a.a.		

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: O. Beyer, T.Svånå	Date: 6.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1673	95 5 Tr Sl tr	Clst: dom dk olv brn, sft frm, sbbly - blk, mod micromic, non calc Ls: dom off wh - v lt gry, sbbly, cryptoxln, slty - vf sdy, dom mic Pyr nods, glauc Dol, Qtz	No shows Com gn gry Clyst prob caving from below 1469m
1676	lost, high ROP		
1679	100 Gd tr Gd tr Sl tr	Clst: a.a Ls: a.a. Pyr nods Dol, Qtz	a.a.
1682	a.a.		
1685 / 1688	lost due to high ROP		
1691	100 Gd tr Gd tr Sl tr	Clst: a.a Ls: a.a. Pyr nods Dol, Qtz	a.a.
1694 / 1697	lost due to high ROP		
1700	100 Rr tr	Clst: olv blk, minor gry rd, blk - amor, sft - frm, sol, i.p. slty - v slty, non - sl calc Sd: lse Qtz, vf - f, sbang	a.a.
1703	100 Rr tr	Clst: a.a. Sd: a.a.	a.a.
1706	90 10 Rr tr	Clst: a.a. Mrl: m gry, blk - amor, sft, sol Sd: a.a.	a.a.
1709	90 10 Tr Rr tr	Clst: a.a. Mrl: a.a. Slst: dk gry, blk - amor, sft, sol Sd: a.a.	In Slst: mod yel fluor, weak slow strmg wh-yel cut fluor
1712 / 1715	lost due to high ROP		
1718	90 10 Tr Rr tr	Clst: a.a. Mrl: a.a. Slst: a.a. Sd: a.a.	No shows
1721	lost due to high ROP		

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: O. Beyer, T.Svånå	Date: 6.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1724	100	Clst: olv blk, minor gry rd, blk-amor, sft - frm, sol, i.p. slty-v slty, non-sl calc	No shows
	Tr	Mrl: m gry, blk- amor, sft, sol	Com gn gry Clyst
	Tr	Slst: dk gry, blk- amor, sft, sol	prob caving from
	Tr	Sd: lse Qtz, vf - f, sbang	below 1469m
1727	lost due to high ROP		
1730	100	Clst: a.a.	a.a.
	Tr	Mrl: a.a.	
	Tr	Slst: a.a.	
	Tr	Sd: a.a.	
1733	100	Clst: a.a.	a.a.
	Tr	Mrl: a.a.	
	Tr	Slst: a.a.	
	Rr tr	Sd: a.a.	
1736	100	Clst: a.a.	In Slst: br yel
	Tr	Mrl: a.a.	flour, slow strmg
	Tr	Slst: a.a.	wh-yel cut flour
	Rr tr	Sd: a.a.	
1739	lost due to high ROP		
1742	100	Clst: a.a.	In Slst/Sst: br yel
	Tr	Mrl: a.a.	flour, slow strmg
	Tr	Slst: a.a.	wh-yel cut flour
	Rr tr	Sd: a.a.	

CUT CORE # 1 FROM 1742 - 1757 m (14,15 m, 94.3 % rec.)

CUT CORE # 2 FROM 1757 - 1760 m (3,15 m, 100 % rec.)

CUT CORE # 3 FROM 1760 - 1765 m (3,65 m, 73 % rec.)

CUT CORE # 4 FROM 1765 - 1767 m (1.65 m, 82 % rec.)

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 9.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1769	50	Slst: grad Clst, med gry, sft, poor vis por	No shows
	50	Clst: grn gry, frm, blk, v glauc	
	Tr	Sst: trnsl - clr, f - v crs, sbrnrd, lse	
	Tr	Pyr, Mic	
1772	80	Sst: dom crs, else a.a.	a.a.
	20	Clst: a.a.	
	Tr	Sst: a.a.	
	Tr	Pyr, Mic	
1775	90	Sst: a.a.	a.a.
	10	Clst: a.a.	
	Tr	Pyr, Mic	
1778	50	Sst: clr - trnsl, med - v crs, sbblky - sbrnrd, lse	a.a.
	30	Clst: occ gry grn, tr glauc nodl, else a.a.	
	10	Slst: a.a.	
	10	Clst/Coal: blk, brit, blk, v carb	
	Tr	Pyr, Mic	
1781	40	Sst: a.a.	a.a.
	40	Clst: a.a.	
	10	Slst: occ dk gry, else a.a.	
	10	Clst/Coal: a.a.	
	Tr	Pyr, Mic	
1784	50	Sst: wh, clr - trnsl, occ lt brn, crs - v crs, sbblky, lse	a.a.
	50	Clst: grn gry, frm, blk,	
	Tr	Slst: dk gry, med gry, else a.a.	
	Tr	Clst/Coal: a.a.	
1787	100	Clst/Coal: blk, gry blk, brit, frm, blk, v carb	a.a.
	Tr	Clst 1: a.a.	
	Tr	Slst: a.a.	
1790	40	Clst/Coal: a.a.	a.a.
	30	Clst: a.a., tr Mic	
	30	Sst: a.a.	
	Tr	Ls: v lt gry, blk, frm	
1793	Lost		
1796	Lost		
1799	40	Clst/Coal: a.a.	a.a.
	30	Clst: a.a.	
	30	Sst: clr - trnsl, f - med, occ crs, sbblky - sbrnrd, lse	
	Tr	Pyr, Mic	

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 10.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1802	40	Clst/Coal:blk, gry blk, brit, frm, blk, v carb	No shows
	40	Clst: grn gry, frm, occ hd, blk	
	10	Sst: clr - trnsl, f - med, occ crs, sbblk - sbrnnd, lse	
	10	Ls: v lt gry, mod yel brn, blk, frm	
	Tr	Pyr	
1808	70	Clst: a.a.	a.a.
	10	Clst/Coal:a.a.	
	10	Ls: a.a.	
	10	Sst: a.a.	
	Tr	Pyr	
1811	80	Clst/Coal:a.a.	a.a.
	20	Clst: grn gry, med gry, frm - hd, blk, slily slty	
	Tr	Pyr, Mic	
1814	Lost		
1817	Lost		
1820	60	Sst: clr - trnsl, occ yel brn, pred med, occ f - crs, lse, sbrnnd, fr vis por	a.a.
	20	Clst: a.a.	
	20	Clst/Coal:a.a.	
	Tr	Mic	
1823	70	Sst: med - crs, occ v crs, else a.a.	a.a.
	20	Clst: a.a.	
	10	Clst/Coal: a.a.	
	Tr	Mic	
1826	50	Clst/Coal:a.a.	a.a.
	40	Clst: a.a.	
	10	Sst: a.a.	
1829	60	Sst: a.a.	a.a.
	20	Clst: a.a.	
	10	Clst/coal:a.a.	
	10	Ls: v lt gry, mod yel brn, blk, frm, xln	
	Tr	Pyr, Mic	
1832	40	Sst: a.a.	a.a.
	30	Clst: a.a.	
	30	Clst/Coal: a.a.	
	Tr	Ls: a.a.	
	Tr	Pyr, Mic	

WELLSITE SAMPLE DESCRIPTION

Country: Norway		Area: Nordland II		Field: Falk Structure	
Well no: 6608/11-2					
R.T.: 36 meters		Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil			
Hole size: 8 1/2"		Geologist: T.Svånå, I. Winsvold, T.K. Hals		Date: 10.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description			Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination			Shows, cavings, mud additives, etc.

1835	60	Sst:	clr - trnsl, occ yel brn, med - crs, lse, sbrnnd	No shows
	40	Clst:	blk, gry blk, brit, frm, blk, v carb, occ grn gry, med gry, frm - hd, blk, slily slty	
	Tr		Pyr, Mic	
1838	90	Clst/Coal:	blk, gry blk, brit, frm, blk, v carb	a.a.
	10	Ls:	v lt gry, mod yel brn, blk, frm, xln	
	Tr	Sst:	a.a.	
1841	50	Clst/Coal:	a.a.	a.a.
	40	Sst:	grad Clst, med gry, sft, poor vis por	
	10	Sst:	a.a.	
	Tr		Mic	
1844	90	Sst:	a.a.	a.a.
	10	Clst/Coal:	aa	
	Tr	Clst:	grn-gry, blk, frm, non calc (pos. cvg frm 1470-1490) a.a	
1847	80	Clst:	brn-gry, sft-amor, v.slty, non calc	a.a.
	20	Sst:	.a	
	Tr		gd tr Clst/Coal a.a Pyr, gry grn clst a.a	
1850	80	Clst:	lt olv gry-brn blk, sft-amor, v. slty, non calc	a.a.
	10	Sst:	a.a.	
	10	Coal:	blk, blk-ang, frm-hd, i.p. brit	
1853	a.a			a.a.
1856	Lost			
1859	70	Clst:	a.a	a.a.
	20	Sst:	a.a.	
	10	Coal:	a.a.	
1862	90	Clst:	a.a, tr of gry rd clst	a.a.
	10	Sst:	a.a	
	Tr	Coal	a.a	
1865	100	Clst:	a.a pred. br gry	a.a.
	Gd tr	Sst:	a.a.	
	Tr	Coal :	a.a	
1868	100	Clst:	a.a	a.a.
	Tr	Sst, Coal	a.a	
1871	a.a			a.a.

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 10.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1874	90 10 Tr Tr	Clst: brn gry, sft-amor, non calc, occ lt gry slty clst Sst: clr - trnsl ls qts, occ yel brn, med - crs, sbrnidd Coal: blk, ang, frm, occ brit, occ hd Mica	No shows
1877	90 10 Tr	Clst: a.a., also tr of gry rd and grn gry clst Sst: a.a Coal: a.a	a.a
1880	90 10 Tr	Clst: a.a Coal: a.a Sst: a.a	a.a
1883	60 40 Tr	Clst: a.a also tr of grn gry and gry rd clst Coal: blk, ang, frm, occ brit Sst: a.a	a.a
1886	60 40 Tr	Clst: a.a tr of lt gry clst Coal: a.a Mic Sst: a.a	a.a
1889	90 10 Tr	Clst: a.a, tr grn gry frm clst Sst: a.a Coal: a.a	a.a
1892	80 10 10 Tr	Clst: a.a Sst: a.a Coal: a.a Pyr	gd tr of wh mud add.
1895	90 10 Tr	Clst: a.a, non to tr calc Sst: a.a Pyr, Mic	a.a
1898	70 20 10	Coal: a.a. Clst: a.a. Sst: a.a.	a.a.
1901	80 10 10	Clst: a.a. Coal: a.a Sst: a.a.	a.a
1904	90 10 Gd tr	Clst: a.a. Sst: a.a Coal: a.a.	a.a

WELLSITE SAMPLE DESCRIPTION

Page 15 of 23

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 10-11.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1907	60	Clst: brn gry, sft-amor, occ lt gry slty clst, non calc	No shows
	30	Sst: clr - trnsl ls qts, med - crs, sbrnrd	
	Tr	Coal: blk, ang, frm, occ brit, occ hd, i.p. v pyr	
1910	80	Clst: a.a.	a.a.
	20	Sst: a.a.	
	Tr	Coal: a.a.	
1913	90	Clst: a.a.	a.a.
	10	Sst: a.a.	
	Tr	Coal: a.a.	
	Tr	Ls: v lt gry - yel gry, ang, hd, xln	
	Tr	Pyr	
1916	50	Clst: a.a.	a.a.
	20	Coal: a.a.	
	30	Sst: a.a.	
	Tr	Ls: a.a.	
1919	50	Clst: a.a.	a.a.
	20	Sst: a.a.	
	10	Coal: a.a.	
	10	Ls: a.a.	
	Tr	Mic	
1922	90	Clst: brn gry, sft-amor, non calc, occ grysh gm, frm	a.a.
	10	Coal: a.a.	
	Tr	Sst: a.a.	
1925	70	Clst: a.a.	a.a.
	20	Coal: a.a.	
	10	Clst2: grysh gm, frm, blk, non calc	
	Tr	Mic, Qtz	
1928	60	Clst: a.a.	a.a.
	30	Coal: blk, ang, frm-hd, occ brit	
	10	Clst2: a.a.	
	Tr	Pyr, Qtz	
1931	90	Clst: a.a.	a.a.
	10	Coal: a.a.	
	Tr	Pyr, Qtz, Clst2	
1934	80	Clst: stcky, else a.a.	a.a.
	20	Coal: a.a.	
	Tr	Ls: v lt gry - lt brn gry, frm, blk, microxln, arg	
	Tr	Qtz, Clst2	

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 11.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1937	70	Clst: brn gry, sft, stcky, amor, non calc, occ grysh grn, frm	No shows
	30	Coal: blk, ang, frm-hd, occ brit	
	Tr	Ls: v lt gry - lt brn gry, frm, blk, microxln, arg	
	Tr	Sst: clr - trnsl Qtz, med - crs, sbrndd, mod srt, lse	
1940	60	Clst: a.a.	a.a.
	30	Coal: a.a.	
	10	Clst2: grysh grn, frm, blk, non calc	
	Tr	Sst: a.a.	
	Tr	Pyr	
1943	50	Sst: a.a.	a.a.
	30	Clst: a.a.	
	20	Coal: a.a.	
	Tr	Clst2: a.a.	
	Tr	Pyr	
1946	60	Clst: a.a.	a.a.
	20	Coal: a.a.	
	20	Sst: a.a.	
	Tr	Clst2: a.a.	
1949	70	Clst: a.a.	a.a.
	30	Coal: a.a.	
	Tr	Sst: a.a.	
1952	40	Sst: ang - sbang, else a.a.	a.a.
	40	Clst: a.a.	
	20	Coal: a.a.	
	Tr	Clst2: a.a.	
1955	40	Sst: a.a.	a.a.
	40	Clst: a.a.	
	20	Coal: a.a.	
	Tr	Ls: v lt gry - lt brn gry, frm, blk, microxln, arg	
	Tr	Pyr	
1958	50	Sst: a.a.	a.a.
	20	Clst: a.a.	
	20	Coal: a.a.	
	10	Ls: a.a.	
1961	60	Coal: blk - brn blk, ang, frm - hd, occ brit, occ arg	a.a.
	30	Clst: a.a.	
	10	Sst: a.a.	
1964	90	Coal: a.a.	a.a.
	10	Clst: a.a.	

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 12.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

1967	80	Coal: blk - brn blk, ang, frm - hd, occ brit, occ arg	No shows
	10	Clst: brn gry, sft, stcky, amor, non calc, occ grysh gm, frm	
	10	Sst: clr - trnsl Qtz, med - crs, ang - sbang, mod srt, lse	
	Rr tr	Clst2: grysh gm, frm, blk, non calc	
1970	80	Coal: a.a.	a.a.
	20	Clst: a.a.	
	Tr	Sst: a.a.	
	Tr	Pyr	
1973	40	Coal: a.a.	a.a.
	30	Clst: a.a.	
	30	Dol: v lt gry - wh, ang, occ amor, frm, microxln	
	Tr	Sst: a.a.	
	Tr	Pyr	
1976	80	Sst: clr - tns lqtz, f, rndd, wl srt, lse	a.a.
	10	Coal: a.a.	
	10	Dol: a.a.	
1979	a.a.		a.a.
1982	Lost		
1985	Lost		
1988	50	Clst: a.a.	a.a.
	50	Sst: clr - trnsl, med - crs, rndd - sbrndd, wl - mod srt, lse	
	Tr	Coal: a.a.	
	Tr	Dol: a.a.	
1991	100	Sst: clr - trnsl, med lt gry, med, occ crs, rndd, wl srt, lse	a.a.
	Tr	Coal: a.a.	
	Tr	Dol: a.a.	
	Tr	Clst: a.a.	
1994	40	Sst: a.a.	a.a.
	50	Coal: a.a.	
	10	Clst: a.a.	
	Tr	Dol: a.a.	
1997	50	Clst: a.a.	a.a.
	40	Coal: a.a.	
	10	Dol: a.a.	
	Tr	Sst: a.a.	
2000	70	Sst: a.a.	a.a.
	10	Coal: a.a.	
	10	Clst: brn gry, frm, blk, non calc	
	10:	Dol: a.a.	

WELLSITE SAMPLE DESCRIPTION

Page 18 of 23

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 12.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

2003	100	Sst: clr - trnsl, med lt gry, med, occ crs, rndd, wl srt, lse	No shows
	Tr	Coal: blk - brn blk, ang, frm - hd, occ brit, occ arg	
	Tr	Clst: brn gry, frm, blk, non calc	
	Tr	Dol: v lt gry - wh, ang, occ amor, frm, microxln	
2006	90	Sst: a.a.	a.a.
	10	Coal: a.a.	
	Tr	Clst: a.a.	
	Tr	Dol: a.a.	
2009	100	Sst: clr - trnsl, med, rndd, wl srt, lse	a.a.
	Tr	Dol: a.a.	
2012	a.a.		a.a.
2015	a.a.		a.a.
2018	100	Sst: a.a.	a.a.
	Rr tr	Dol: a.a.	
2021	100	Sst: a.a.	a.a.
	Tr	Dol: a.a.	
	Tr	Coal: a.a.	
2024	90	Sst: a.a.	a.a.
	10	Coal: a.a.	
	Tr	Dol: a.a.	
2027	60	Clst: grad slst, med lt gry - med gry, sft, amor, non calc	a.a.
	30	Sst: a.a.	
	10	Coal: a.a.	
	Tr	Dol: a.a.	
2030	30	Slst: lt gry - med lt gry, occ lt brn, sft, wl srt	a.a.
	30	Clst: a.a.	
	30	Coal: a.a.	
	10	Dol: a.a.	
2033	80	Coal: blk - brn blk, mod hd - frm, occ brit, ang	a.a.
	20	Slst: a.a.	
2036	90	Coal: a.a.	a.a.
	10	Clst: brn gry, sft amor, non calc	
2039	90	Coal: a.a.	a.a.
	10	Sst: a.a.	
	Tr	Clst: a.a.	

WELLSITE SAMPLE DESCRIPTION

Page 19 of 23

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 12.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

2042	50	Clst: grad Slst, med lt gry, sft, stcky, amor, non calc	No shows
	50	Coal: blk - brn blk, mod hd - frm, occ brit, ang	
2045	50	Coal: a.a.	a.a.
	40	Clst: a.a.	
	10	Sst: clr - trnsl, med, occ crs, rndd, wl srt, lse	
2048	70	Clst: a.a.	a.a.
	30	Coal: a.a.	
2051	90	Clst: a.a.	a.a.
	10	Coal: a.a.	
2054	100	Clst: brn gry, sft, stcky (amor), occ lt gry slty, non calc, tr of grn gry clst (cave?)	a.a
	Gd tr	Coal a.a	
2057	100	Clst: a.a slty	a.a
	Gd tr	Sst: clr-trnsl, f-med, med srt, rnd, occ brn-yel, ls	
	Tr	Coal a,a	
2060	100	Clst a.a	a.a
	Gd tr	Sst: a.a	
	Tr	Coal: a.a	
2063	100	Clst: a.a	a.a
	Gd tr	Sst: a.a	
		Coal: a.a	
		Pyr	
2066	lost		
2069	100	Clst: a.a	a.a
	Gd tr	Sst: a.a	
		Coal a.a	
	Tr	Mic, Pyr	
2072	90	Clst: a.a	a.a
	10	Coal: a.a	
	Gd tr	Sst: a.a	
	Tr:	Py	
2075	80	Clst: a.a	a.a
	20	Sst: a.a poor srt, subrnd	
	Gd tr	Coal a.a	
	Tr	Pyr	
2078	80	Clst: a.a	a.a
	20	Sst: a.a f-crs	
	Tr	Coal (gd), Pyr, Mic	

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 12.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

2081	90 10 Tr	Clst: brn gry, sft, amor (stky), sl slty, non calc, also tr gm gry a.a Sst: lse clr Qtz, f-med occ crs, sbrnd Coal: blk, blk, frm, pyr	No shows Gn gry Clst in all samples from 1475 - 1500 m. is poss caving from this int. Gd tr wh mud add a.a
2084	90 10 Tr	Clst: a.a, gd tr of gm gry clst Sst: a.a Coal: a.a Mic	
2087	90 10 Tr	Clst: a.a Sst: clr-trans, occ brn-yel, v.f, rnd, gd sort Pyr, Coal a.a	a.a
2090	Lost due to fast drilling		
2093	90 10 Gd tr	Clst: a.a Sst: a.a Pyr, Coal a.a	a.a
2096	90 10 Gd tr	Clst: a.a Sst: bec pred m-crs, else a.a Pyr, r tr Coal a.a	a.a
2099	90 10 Gd tr	Clst: a.a Sst: pred m-crs, a.a Pyr, r tr Coal a.a	a.a
2102	90 10 Gd tr	Clst: a.a Sst: pred m-crs, a.a Pyr, r tr Coal a.a	a.a
2105	90 10 Gd tr	Clst: a.a Sst: pred m-crs, a.a Pyr, r tr Coal a.a	a.a
2108	90 10 Gd tr	Clst: a.a Sst: pred m-crs, a.a Pyr, r tr Coal a.a	a.a
2111	90 10 Gd tr	Clst: a.a Sst: pred m-crs, a.a Pyr, r tr Coal a.a	a.a
2114	90 10 Gd tr	Clst: a.a Sst: pred m-crs, a.a Pyr, rr tr Coal a.a	a.a
2117	90 10 Gd tr	Clst: a.a Sst: m -v crs, a.a Pyr, rr tr Coal a.a	a.a

WELLSITE SAMPLE DESCRIPTION

Page 21 of 23

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 12.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

2120	70	Sst: lse clr Qtz, m - crs, sbrnd, tr pyr	No shows
	30	Clst: brn gry, sft, amor, stky, sl slty, non calc, also tr grn gry a.a	Gn gry Clst in all
	Rr tr	Coal: blk, blk, frm, pyr	samples from 1475 -
			1500 m. is poss
			caving from this int
2123	70	Sst: a.a.	
	30	Clst: a.a.	
	Rr tr	Coal: a.a.	Gd tr wh mud add a.a
2126	70	Sst: a.a.	a.a
	30	Clst: a.a.	
	Rr tr	Coal: a.a.	
2129	70	Sst: a.a	a.a
	30	Clst: a.a	
	Tr	Mic, Coal a.a	
2132	50	Sst: a.a f-crs	a.a
	40	Clst: a.a	
	10	Ls: wh gry, blk, crmbly, blk, fxln/micr	
	Tr	Coal a.a, Mic	
2135	70	Clst: a.a	a.a
	20	Ls: a.a	
	10	Sst: a.a	
	Tr	Coal: a.a.	
2138	Lost		
2141	80	Clst: a.a	a.a
	10	Sst: f, else a.a.	
	10	Ls: a.a	
	Tr	Mic, Coal	
2144	a.a		
2147	90	Clst: a.a	a.a
	10	Sst: a.a v.f	
	Tr	Coal, Ls a.a	
2150	70	Clst: a.a occ wh slty, occ blk gry	a.a
	20	Ls: a.a	
	10	Sst: a.a	
	Tr	Pyr, Coal	
2153	60	Clst: a.a	a.a
	30	Ls: a.a	
	10	Sst: a.a	
	Tr	Coal: a.a	

WELLSITE SAMPLE DESCRIPTION			Page 22 of 23
Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 12.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks

2156	60	Clst: brn gry, sft, amor, stky, sl slty, non calc, tr grn gry a.a, also tr wh gry	No shows
	20	Sst: lse clr Qtz, v f-f, sbrnd, gd srt, occ brn-yel	
	20	Ls: wh gry, blk, crmbly, blk, fxln/micro	
	Tr	Coal: blk, blk, frm, pyr	
	Tr	Pyr	
2159	50	Clst: a.a	a.a
	30	Ls: a.a	
	20	Sst: a.a	
	Tr	Coal a.a, Pyr	
2162	80	Clst: a.a	a.a
	10	Sst: a.a	
	10	Ls: a.a	
	Tr	Coal, Pyr	
2165	70	Clst: a.a	a.a
	20	Ls: a.a	
	10	Sst: a.a	
	Tr	Coal, Pyr, Mic	
2168	a.a.		
2171	70	Clst: a.a	a.a
	20	Ls: a.a also dk gry, frm-crmbly	
	10	Sst: a.a	
	Rr tr	coal, Pyr	
2174	Lost		
2177	a.a		a.a
2180	80	Clst: a.a med gry, slty	a.a
	20	Ls: a.a also dk gry	
	Tr	Sst a.a, coal, Pyr	
2183	a.a		a.a
2186	70	Clst: a.a	a.a
	20	Ls: a.a	
	10	Sst: a.a	
	Tr:	Coal, Mic	
2189	Lost		
2192	80	Clst: a.a	a.a
	10	Ls: a.a	
	10	Clst: a.a	
	Tr	Coal, Mic	

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: Nordland II	Field: Falk Structure	
Well no: 6608/11-2			
R.T.: 36 meters	Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 ½"	Geologist: T.Svånå, I. Winsvold, T.K. Hals	Date: 12.11.2000	
Depth (m RT)	Lithology (%)	Lithological Description	Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

2195	40	Clst: med gry, sft, amor, stky, sl slty, non calc, tr grn gry a.a, also tr wh gry	No shows
	40	Ls: wh gry, blk, firm-crmby, blk, fxln/micro, also tr of blr gry	
	20	Sst: lse clr Qtz, v.f-f, sbrnd, gd srt	
	Tr	Coal: blk, blk, frm, pyr	
2198	60	Sst: a.a	a.a
	20	Ls: a.a	
	20	Clst: a.a	
	Tr	Coal: a.a	
2201	80	Sst: clr - trnsl Qtz, f - med, sbrndd, wl srt, lse	a.a.
	10	Ls: a.a.	
	10	Clst: grad Slst, else a.a.	
2204	50	Sst: clr - trnsl Qtz, f - med, occ crs, sbrndd, mod srt, lse	a.a.
	20	Ls: a.a.	
	20	Slst: grn gry, frm, wl srt	
	10	Clst: also pl brn, else a.a.	
2207	50	Clst: a.a.	a.a.
	20	Slst: a.a.	
	20	Ls: a.a.	
	10	Sst: a.a.	
2210	60	Clst: pl brn, med gry, sft, blk, slily slty, occ calc	a.a.
	40	Ls: a.a.	
	Tr	Sst: a.a.	
2213	50	Clst: a.a.	a.a.
	50	Ls: a.a.	
	Tr	Slst: a.a.	
2215	50	Clst: occ olv gry - olv blk, else a.a.	a.a.
	40	Ls: a.a.	
	10	Sst: a.a.	
	Tr	Coal: blk, frm, occ brit, ang	

TD of well at 2215 m MD

APPENDIX 5

Core descriptions

CONVENTIONAL CORE DESCRIPTION

Country: Norway	Area: Nordland II - PL 128	Field: Falk prospect
Well no: 6608/11-2	Formation: Åre Sandstone	
Core no: 1	Interval: 1742 - 1757.0 m	Cored: 15.0m Rec:14.15m (94.3%)
Core size: 4"	Geologists: O.Beyer / T. Svånå	Date: 07.11.00

Depth (mRT)	Lithology/Grain size cly slt vf f m c vc	APPEARANT DIP	Shows						Lithological Description <small>Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination</small>	Remarks Shows, etc	
			STAIN	FLUOR	CUT	POOR	FAIR	GOOD			
1742			•	•	•					<p>SST: Oliv gry-brn gry mtx/stn, pred clr-transl Qtz, pred vf, tr slt, wll srt, sbang, pred lse, slily arg mtx /no cmt, tr mica, unif, fr vis por</p>	Bleeding oil from core. Mod HC odour. Even, dk brn-dsky yel brn, wxy oil STN. Even, bri, yel dir FLUOR.
1743			•	•	•					<p>SST: Oliv gry-brn gry mtx/stn, pred clr-transl Qtz, pred vf, gdr slt, wll srt, sbang, pred lse, slily arg mtx /no cmt, tr mica, unif, fr vis por</p>	Slow strmg, yel wh CUT fluor (iso-propanol)
1744			•	•	•					<p>SST: Oliv gry-brn gry stn, pred clr-transl Qtz, pred vf, tr slt, wll srt, sbang, pred lse, no cmt, tr mica, unif, fr vis por</p>	Mod HC odour. Even, dk brn-dsky yel brn, wxy oil STN. Even, bri, yel dir FLUOR.
1745			•	•	•					<p>SST: Oliv gry-brn gry mtx/stn, pred clr-transl Qtz, pred vf, tr slt, wll srt, sbang, pred lse, v slily arg mtx /no cmt, tr mica, unif, fr-gd vis por</p>	Slow strmg, yel wh CUT fluor (iso-propanol)
1746			•	•	•					<p>SST: Oliv gry- dsky yel brn stn, pred clr-transl Qtz, vf-f, v wll srt, sbang, pred lse, cln, no cmt, tr mica, unif, gd vis por</p>	Shows a.a.
1747			•	•	•					<p>SST: Oliv gry- dsky yel brn stn, pred clr-transl Qtz, vf-f, v wll srt, sbang, pred lse, cln, no cmt, tr mica, unif, gd vis por</p>	Strng HC odour. Even, strng, dsky yel brn, wxy oil STN. Even, bri, pa yel dir FLUOR. Slow strmg, yel wh CUT fluor (iso-propanol)
1748			+	+	•					<p>SST: Oliv gry-dsky yel brn stn, pred clr-transl Qtz, pred vf-f, v wll srt, sbang-ang, pred lse, no cmt, tr mica, v unif, gd vis por</p>	Shows a.a.
1749			•	•	•					<p>SST: Oliv gry-dsky yel brn stn, pred clr-transl Qtz, pred vf-f, v wll srt, sbang-ang, pred lse, no cmt, tr mica, v unif, gd vis por</p>	Shows a.a.
1750			•	•	+					<p>SST: Oliv gry-dsky yel brn stn, pred clr-transl Qtz, pred vf, v wll srt, sbang-ang, pred lse, no cmt, tr mica, v unif, gd vis por</p>	Strng HC odour. Even, strng, dsky yel brn, wxy oil STN. Even, bri, pa yel dir FLUOR.
1751			•	•	+					<p>SST: Oliv gry-dsky yel brn stn, pred clr-transl Qtz, pred vf-f, v wll srt, sbang-ang, pred lse, no cmt, tr mica, v unif, gd vis por</p>	Slow strmg, yel wh CUT fluor (iso-propanol)

CONVENTIONAL CORE DESCRIPTION

Country: Norway		Area: Nordland II - PL 128		Field: Falk prospect	
Well no: 6608/11-2		Formation: Åre Sandstone			
Core no: 1		Interval: 1742 - 1757.0 m RKB		Cored: 15.0m Rec: 14.15m (94.3%)	
Core size: 4"		Geologists: O.Beyer / T. Svånå			Date: 07.11.2000

Depth (mRT)	Lithology/Grain size							APPARENT DIP	Shows						Lithological Description	Remarks
	cly	slt	vf	f	m	c	vc		STAIN	FLUOR	CUT	POOR	FAIR	GOOD		
1752									•	•	•			█	SST: Oliv gry-dsky yel brn stn, pred clr-transl Qtz, pred vf-f, mod wll srt, sbang-ang, pred lse, no cmt, tr mica, unif, gd vis por	Bleeding oil from core. Strng HC odour. Even, strng, dsky yel brn, wxy oil STN. Even, bri, pa yel dir FLUOR.
1753									+	+	+			█	SST: Oliv gry-dsky yel brn stn, pred clr-transl Qtz, pred vf, wll srt, sbang-ang, pred lse, no cmt, tr mica, v unif, gd vis por	Slow strmg, yel wh CUT fluor (iso-propanol)
1754									+	+	+			█	SST: Oliv gry-dsky yel brn stn, pred clr-transl Qtz, pred vf, mod wll srt, sbang-ang, pred lse, no cmt, tr mica, v unif, gd vis por	Shows a.a.
1755									•	•	•			█	SST: Oliv gry-dsky yel brn stn, pred clr-transl Qtz, pred vf-f, mod wll srt, sbang-ang, pred lse, no cmt, tr mica, v unif, gd vis por	Shows a.a.
1756									•	•	•			█	SST: Oliv gry-dsky yel brn stn, pred clr-transl Qtz, pred vf-f, mod wll srt, sbang-ang, pred lse, no cmt, tr mica, unif, gd vis por	Shows a.a.
1757																
1758																
1759																
1760																
1761																

Bottom of Core # 1:
1756.15 m RKB

cly slt vf f m c vc

CONVENTIONAL CORE DESCRIPTION

Country: Norway	Area: Nordland II - PL 128	Field: Falk prospect
Well no: 6608/11-2	Formation: Åre Sandstone	
Core no: 2	Interval: 1757 - 1760 m RKB	Cored: 3.0m Rec: 3.15m (100% +)
Core size: 4"	Geologists: T. Svånå / O.Beyer	Date: 08.11.2000

Depth (mRT)	Lithology/Grain size							APPARENT DIP	Shows						Lithological Description	Remarks	
	cly	slt	vf	f	m	c	vc		STAIN	FLUOR	CUT	POOR	FAIR	GOOD			
1757									•	•	•				█	SST: Dk yel brn stn, pred cl-transl Qtz, pred f, wll srt, sbang, lse, fri, no cmt, tr mica, unif, gd vis por	Bleeding oil from core, strng HC odour, even strng brn oil stn, even bri yel orng dir fluor, slow strng wh-yel cut fluor (in iso-propanol), pl straw vis cut, bri wh-yel res fluor, pl straw vis res.
1758									•	•	•				█	SST: a.a.	
1759									•	•	•				█	SST: a.a.	
1760									•	•	•				█	SST: a.a.	
1761																	

Bottom of Core # 2:
1760.15 m RKB

cly slt vf f m c vc

CONVENTIONAL CORE DESCRIPTION

Country: Norway	Area: Nordland II - PL 128	Field: Falk prospect
Well no: 6608/11-2	Formation: Åre Sandstone	
Core no: 3	Interval: 1760 - 1765 m RKB	Cored: 5.0m Rec: 3.65m (73%)
Core size: 4"	Geologists: T. Svånå / O.Beyer / T.K.Hals	Date: 08.11.2000

Depth (mRT)	Lithology/Grain size cly slt vf f m c vc	APPARENT DIP	Shows						Lithological Description	Remarks	
			STAIN	FLUOR	CUT	POOR	FAIR	GOOD			
1760	M		●	●	●					<p>SST: Dk yel brn stn, v f, mod - wl srt, sbang, occ arg mtx, lse, fri, slty lam, tr micromic, mod vis por.</p>	In upper sdy part of core: Tr bleeding oil, strng HC odour, brn oil stn, even bri yel orng dir fluor in sst, slow strmg wh-yel cut fluor (in iso-propanol), no - tr pl straw vis cut, bri wh-yel res fluor, no - tr pl straw vis res.
1761			●	●	●					<p>CLST w/ SST lam CLST: brn gry, plty - blk, frm, slty - sdy lam, sl micromic, non calc. SST: a.a.</p>	No shows in Clst, Sst and isolated Sst in lower part of core.
1762	M									<p>SLST: med dk gry, plty - blk, frm, arg - sdy, sl micromic, non calc.</p>	
1763										<p>CLST: med dk gry, plty - blk, frm, slty, sl micromic, non calc. SST: a.a.</p>	
1764	Bottom of Core # 3: 1763.65 m RKB									<p>V hd CLST nod: gry blk, blk, v hd sil cmt, abd dissem micropyr, sl micromic, non calc.</p> <p>Core jammed in hard nodule.</p>	
1765											

CONVENTIONAL CORE DESCRIPTION

Country: Norway	Area: Nordland II - PL 128	Field: Falk prospect
Well no: 6608/11-2	Formation: Åre Sandstone	
Core no: 4	Interval: 1765 - 1767 m RKB	Cored: 2.0m Rec: 1.65 m (82%)
Core size: 4"	Geologists: T. Svånå / I. Winsvold / T.K Hals	Date: 09.11.2000

Depth (mRT)	Lithology/Grain size cly slt vf f m c vc	APPARENT DIP	Shows						Lithological Description Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination	Remarks Shows, etc
			STAIN	FLUOR	CUT	POOR	FAIR	GOOD		
1765	M									<p>SST: lt brn gry-brn gry, v f, mod srt, sbang, lt gry arg mtx (kao?), lse-fri micromic, tr mafic min, pr vis por</p> <p>SLST: drk-olv gry, some vf sst, blk, frm, micromic, non calc.</p> <p>SLST: a.a grd arg sst.</p>
1766	#									
1767	Bottom of Core # 4 1766.65 m RKB									

cly slt vf f m c vc

APPENDIX 6

Sidewall core descriptions

SIDEWALL CORE DESCRIPTION				Page 01 of 03
Country: Norway		Area: Nordland II		Field: Falk
Well no: 6608/11-2		Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil		
Hole size: 8 1/2 "		Geologist J.M. Øsby		R.T.: 36 meters
Run no.: 1A		Reference log: PEX - HALS - HNGS		Date: 21.11.2000
Shot no.	Depth (m RT)	Rec. (mm)	Lithological Description	Remarks
			Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Shows, cavings, mud additives, etc.

60	1402	49	Clst: dk gn gry, frm, sbblky, micromic, calc	No shows
59	1435	38	Clst: brn blk, frm, sbblky, micromic, glauc, tr slty & sdy, non calc	a.a.
58	1460	34	Clst: a.a., abd glauc	a.a.
57	1494	56	Clst: gn gry, frm, slily micromic, non calc	a.a.
56	1537	40	Clst: brn gry - med bl gry, sft, sol, non calc	a.a.
55	1546,5	42	Clst: olv gry, frm, sbblky, non calc	a.a.
54	1550,5	32	Clst: a.a.	a.a.
53	1558,5	28	Clst: slily slty, calc, else a.a.	a.a.
52	1559	24	Clst: med bl gry, frm, non calc	a.a.
51	1560,5	Empty		
50	1570	23	Clst: pa bl gry, frm, slily micropyr, v calc	a.a.
49	1574	42	Clst: gn gry, frm, sbblky - flk, non calc	a.a.
48	1584	34	Clst: dk brn gry, frm, slty, non calc	a.a.
47	1599	46	Clst: gn gry, sft - frm, slily stky, v micropyr, mod calc	a.a.
46	1610	43	Clst: mod brn, sft, slily slty, non calc	a.a.
45	1614	53	Clst: olv gry, frm, sbblky, non calc	a.a.
44	1615	50	Clst: olv gry, frm, sbblky - flk, non calc	a.a.
43	1625	35	Clst: olv gry, sft - frm, non calc, loc abd micopyr	a.a.
42	1636	38	Clst: olv blk, else a.a.	a.a.
41	1644	Lost		
40	1652	35	Clst: a.a.	a.a.
39	1660	33	Clst: brn blk, sft - frm, slty, non calc	a.a.
38	1664	30	Clst: grd Slst, brn gry, sft - frm, slily micromic, non calc	a.a.
37	1668	26	Clst: brn gry, sft - frm, loc v slty, non calc	a.a.
36	1671	37	Clst: grd Slst, else a.a.	a.a.

SIDEWALL CORE DESCRIPTION

Page 02 of 03

Country: Norway		Area: Nordland II		Field: Falk	
Well no: 6608/11-2		Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil			
Hole size: 8 1/2 "		Geologist J.M. Øsby		R.T.: 36 meters	
Run no.: 1A		Reference log: PEX - HALS - HNGS		Date: 21.11.2000	
Shot no.	Depth (m RT)	Rec. (mm)	Lithological Description		Remarks
			Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Shows, cavings, mud additives, etc.

35	1683	30	Clst: olv gry, sft - frm, slily stky, slty, non calc		No shows
34	1687	32	Sdy Slst: olv gry, frm, v arg, slily micromic, non calc		a.a.
33	1688	Misfire			
32	1697	38	Clst: olv blk, frm, slily slty, non calc		a.a.
31	1702,5	38	Clst: olv blk, frm, occ slily slty, occ slily pyr, non - v slily calc		a.a.
30	1707	34	Slst: med lt gry, frm, arg, v mica, also as strk, micropyr, non calc		a.a.
29	1710	30	Clst: brn gry, sft, stky, non calc Ls: crm wh, frm, blk, microxln		a.a.
28	1715,5	32	Clst: brn gry, sft, v f mica lam, micromic, slty, non calc		a.a.
27	1723,5	21	Sst: dk gry, v arg, clr - wh qtz, v crs, ang - sbang, no gr support, v pyr - grd pyr cmt Clst: brn gry, a.a.		No shows strong odour
26	1731	49	Coal: blk, fibr, frm		No shows
25	1737	45	Clst: brn gry, w/ carb includes (foss?), frm, slty, micromic, non calc		a.a.
24	1776	28	Slst: brn gry, abd micromic lam, sft, non calc		a.a.
23	1794,5	49	Clst: grysh blk, frm, non calc		a.a.
22	1798	48	Clst: brn gry, frm, carb flk, non calc		a.a.
21	1815,5	49	Clst: brn blk, frm, slily calc		a.a.
20	1841	50	Clst: brn gry, frm, slily calc		a.a.
19	1878	27	Clst: carb, else a.a.		a.a.
18	1895	47	Clst: brn gry, frm, w/lt gry slty Clst incl, occ C frag, v slily calc		a.a.
17	1914	45	Clst: lt brn gry, frm, non calc		a.a.
16	1928	31	Clst: pa yel brn, v slty - grd Slst, frm, non calc		a.a.
15	1944,5	24	Clst: brn gry, frm, non calc		a.a.
14	1986	Misfire			
13	2005	18	Sst: clr - wh qtz, trnsp, v f - slt, occ f, sbang - sbrnd, mod srt, fri - lse, non calc		a.a.

SIDEWALL CORE DESCRIPTION

Page 03 of 03

Country: Norway		Area: Nordland II		Field: Falk	
Well no: 6608/11-2		Company: Statoil, Norsk Hydro, Agip Norge, Enterprise Oil			
Hole size: 8 1/2 "		Geologist J.M. Øsby		R.T.: 36 meters	
Run no.: 1A		Reference log: PEX - HALS - HNGS		Date: 21.11.2000	
Shot no.	Depth (m RT)	Rec. (mm)	Lithological Description		Remarks
			Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Shows, cavings, mud additives, etc.
12	2050,5	34	Clst: brn gry, frm, non calc		No shows
11	2059	25	Clst: pa brn gry, frm, non calc		a.a.
10	2069	20	Sst: wh - clr, trnsp qtz, slt - f, sbang - sbrnd, wl srt, fri - lse, non calc		a.a.
9	2093	42	Clst: olv blk, frm - mod hd, blk, non calc		a.a.
8	2105	20	Clst: brn gry, sft - frm, amor, non - v slily calc		a.a.
7	2116	20	Sst: clr - wh qtz, med - crs, sbang - sbrnd, wl srt, lse - fri, slt mtrx		a.a.
6	2127	39	Clst: olv blk, frm - mod hd, sbblk, blk, microcarb, micropyr, non calc		a.a.
5	2161	23	Clst: med gry, sft - frm, amor, v calc		a.a.
4	2179	56	Clst: brn gry, frm - mod hd, blk, non calc		a.a.
3	2182	49	Clst: brn gry, frm, amor, mod - v calc		a.a.
2	2205	Misfire			
1	2206	28	Clst: lt blsh gry, frm, micromic, v calc		a.a.

APPENDIX 7

List of additional available reports

List of additional available reports

- | | |
|--------------------|---|
| Corpro Lab AS | <ul style="list-style-type: none">- Core Photographs, Well 6608/11-2 (core 1 -4)- Reservoir Fluid Study, Well 6608/11-2 |
| Baker Hughes | <ul style="list-style-type: none">- End of Well Report, MWD- End of Well Report, Coring |
| Geoteam Fugro | <ul style="list-style-type: none">- Regional Survey Report - Area 6608/11-B with well location 6608/11-2(P) ST0097 |
| Geoservices | <ul style="list-style-type: none">- Final Well Report, Mudlogging |
| GeoStrat | <ul style="list-style-type: none">- Statoil 6608/11-2, Biostratigraphy of the interval 1260m - 2213m |
| Oilphase | <ul style="list-style-type: none">- Field Operation Report, Well 6608/11-2 |
| Petrotech | <ul style="list-style-type: none">- Validity Checks and Analysis of MDT Samples, Oil Well 6608/11-2 |
| Racal Survey Norge | <ul style="list-style-type: none">- Navigation and Positioning of drill ship "West Navion" at 6608/11-2 |
| Read Well Services | <ul style="list-style-type: none">- Zero Offset VSP |
| Schlumberger | <ul style="list-style-type: none">- Digital Well Data Reporting to NPD |
| Statoil | <ul style="list-style-type: none">- Geological Prognosis / Pressure Prognosis / Drilling Programme, PL 128- Mud gas isotope logging off well 6608/11-2.- Åre and Melke Formations. Characterisation of Formation Water. |
| West Lab | <ul style="list-style-type: none">- TPB-Distillation and Hydrocarbon Analysis of Crude Oil from Well 6608/11-2, Åre Formation. |

ENCLOSURES

Composite log
Formation evaluation log (Geoservices)
Pressure evaluation log (Geoservices)