MUD SUMMARY
Well 3/6-1

Day no.	TMD (m)	Hole size (in)	Mud type	MW (g/cm³)	Viscosity (S/L)	PV (mPa*s)	YP (Pa)	Gels 10s/10m (Pa)	API WL (mL)	HTHP WL (mL)	HTHP Temp (°C)	pH	Cl- (mg/L)	Sand (%)	TS (%)	LGS (kg/m³)	MBT (kg/m³)	Tot. Hard (mg/L)	Oil (%)	Tot. Vol (m³)
4	180	36	Spud Mud	1,05	165	0	0	0 / 0	0	0	0	0	0	0	0	0	0	0	0	195
5	180	36	Spud Mud	1,05	165	0	0	0 / 0	0	0	0	0	0	0	0	0	0	0	0	60
6	180	9,785	SW/Bentonite	1,05	47	4	7	4 / 7	0	0	0	8,5	0	0	0	0	0	0	0	265
7	728	9,785	SW/Bentonite	1,13	44	4	23	17 / 22	0	0	0	8,4	0	1	0	0	0	0	0	341
8	1040	17,50	SW/Bentonite	1,20	41	5	17	13 / 17	0	0	0	8,0	0	0,5	0	0	0	0	0	410
9	973	17,50	SW/Bentonite	1,20	38	4	17	13 / 17	0	0	0	8,1	0	0,4	0	0	0	0	0	408
10	1047	17,50	SW/Bentonite	1,20	40	5	14	11 / 15	0	0	0	8,1	0	0,3	0	0	0	0	0	403
11	1047	17,50	SW/Bentonite	1,20	44	6	14	12 / 16	0	0	0	8,0	0	0,4	0	0	0	0	0	113
12	1047	12,25	SW/Bentonite	1,20	44	6	14	12 / 16	0	0	0	8,0	0	0,4	0	0	0	0	0	113
13	1085	12,25	KCl/PAC/Glycol	1,30	49	19	10	1 / 2	2,8	0	0	10,0	48000	0	12	6	0	680	0	350
14	1640	12,25	KCl/PAC/Glycol	1,35	51	26	10	1 / 3	3,0	12,0	0	8,3	44000	0,5	11	3	42	400	0	322
15	1961	12,25	KCl/PAC/Glycol	1,40	54	27	10	2 / 4	2,6	11,6	0	7,9	54000	0,5	13	111	63	480	0	363
16	2008	12,25	KCl/PAC/Glycol	1,40	59	27	9	2 / 4	2,2	11,2	0	7,9	61000	0,6	17	106	56	480	0	347
17	2140	12,25	KCl/PAC/Glycol	1,40	51	25	10	2 / 4	2,8	12,0	0	8,2	61000	0,6	18	133	56	520	0	318
18	2167	12,25	KCl/PAC/Glycol	1,40	56	25	10	2 / 4	2,2	11,0	0	8,0	63000	0,5	18	155	70	800	0	305
19	2167	12,25	KCl/PAC/Glycol	1,40	63	26	10	2 / 4	2,6	12,0	100	8,0	62000	0,5	18	155	70	680	0	303
20	2167	12,25	KCl/PAC/Glycol	1,34	49	21	8	2 / 3	1,8	8,4	100	8,0	59000	0,3	16	129	62	440	0	355
21	2167	12,25	KCl/PAC/Glycol	1,35	48	21	9	2 / 3	1,8	8,4	100	7,9	59000	0,3	16	113	62	440	0	353
22	2167	12,25	KCl/PAC/Glycol	1,35	50	21	10	2 / 3	2,4	0	0	8,6	52000	0,4	16	117	62	0	0	253
23	860		KCl/PAC/Glycol	1,35	50	21	10	2 / 3	2,8	0	0	9,1	57000	0,4	16	117	62	0	0	206
24			KCl/PAC/Glycol	1,35	50	21	10	2 / 3	2,8	0	0	9,1	57000	0,4	16	117	62	0	0	206
25			KCl/PAC/Glycol	1,35	50	21	10	2 / 3	2,8	0	0	9,1	57000	0,4	16	117	62	0	0	

Hilde 3/6-1 well

Geochemical characterisation of hydrocarbons extracted from core and water samples

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INTRODUCTION

Upon request of Norsk Agip, two core samples (taken at 2008 m and 2008.17 m) and three RFT water samples (one coming from 1622 m – Oligocene - and two coming from 2009 and 2075 m - Paleocene) from Hilde-3 well, were submitted to geochemical investigations.

EXPERIMENTAL

The core samples were analysed by Rock-Eval Pyrolysis before and after solvent washing in order to check the presence of liquid hydrocarbons and establish if they are indigenous (generated in situ) or migrated (generated from a deeper source). Subsequently, the core samples were extracted by means of an organic solvent and the hydrocarbons obtained in this way were fractionated by High Performance Liquid Chromatography (HPLC) into saturates, aromatics and polar compounds. Saturates and aromatics were analysed by means of GC-MS and Carbon isotopic composition in order to assess their genetic origin.

The water samples were treated to separate and concentrate both the phenols and the hydrocarbons traces; phenols
and hydrocarbons were then analysed by different GC-MS methods. One water sample was also chemically and isotopically characterised to get information about its origin (formation water or "mud contamination").

RESULTS AND DISCUSSION

Water samples.

Due to the presence of important amounts of inorganic "mud-like" material dispersed in the water samples, only one sample, 1622 m, was successfully characterised. Based on both the chemical and isotopic data (see table 1 and fig.1), the water sample was defined as representative of formation water; nevertheless, some contamination with fresh water associated to the drilling mud cannot be ruled out.

Table 1 (isotopic characteristics of the waters)

Sample	Test	Depth (m)	$\delta^{18}O$	δD
3/6-1	RFT	1622	-2.12	-25.32
3/6-1	RFT	2009	N.D.	N.D.
3/6-1	RFT	2075	N.D.	N.D.

Phenols analysis was performed on all the water samples. The sample coming from 1622 m contain only 37.59 ppb of phenols

The samples taken at 2009 and 2075 m contain respectively 309.22 and 221.88 ppb of phenols

Hydrocarbons.

Table 2 and 3 show the most relevant isotopic and molecular parameters used to describe the hydrocarbon samples both in terms of their origin and maturity.

Table 2 (isotopic characteristics of the hydrocarbons)

Depth (m)	Type	Sat	Aro	Res	Asph
2008	Core extract	-28,15	-27,44	-27,97	-27,88
2008,17	Core extract	-28,08	-27,68	-28,06	-27,89

Table 3 (Selected GC-MS parameters)

Sample_ID	NOR_6724_H20	NOR_6725_H20	NOR_6726_H20	NOR_6742_COR	NOR_6743_COR
Well	3/6-1	3/6-1	3/6-1	3/6-1	3/6-1
Depth (m)	1622	2009	2075	2008	2008,17
Type	HC ext from water	HC ext from water	HC ext from water	HC ext from core	HC ext from core
Country	Norway	Norway	Norway	Norway	Norway
DEPOSITIONAL ENVIRONMENT PARAMETERS					
PrPh	-	-	-	1,95	1,88
Tri	0,04	0,07	0,10	0,09	
Tet	0,05	0,07	0,10	0,13	
Trit	0,85	0,97	1,08	0,64	
TsTm	0,74	0,81	0,85	0,82	
C29Hop/C30Hop	0,64	0,68	0,68	0,70	
C30Lin	0,00	0,00	0,00	0,00	
C29TS/C30Hop	0,25	0,26	0,27	0,19	
C30*/C30Hop	0,07	0,06	0,06	n.d.	
C29Ts/C30*	3,80	4,34	4,12	n.d.	
Gam/C30	0,00	0,00	0,00	0,00	
Dia	0,46	0,52	+	0,64	
C30Sterane	n.d.	n.d.	n.d.	yes	
ORGANIC MATTER PARAMETERS					
C27/C29 Sterane	0,74	0,93	n.d	0,93	
%27	30	34	n.d	35	
%28	30	28	n.d	28	
%29	41	37	n.d	37	
MATURITY PARAMETERS					
PrC17	-	-	-	0,65	1,34
PhC18	-	-	-	0,39	
S/S+R Terpanes	0,57	0,54	0,57	0,49	
S/S+R Steranes	0,46	0,48	0,49	0,29	
TsTm	0,74	0,81	0,85	0,82	
BB/aa	0,61	0,61	0,00	0,56	
T/TM	nd/tq	nd/tq	nd/tq	0,09	Only mono-aro
MPI	nd/tq	nd/tq	nd/tq	0,54	0,25
AGE PARAMETERS					
Oleanane/30Hop	0,10	0,11	0,09	0,03	
OTHER PARAMETERS					
31/30	0,47	0,52	0,56	0,62	

Legend: nd/tq = not determined because analyzed as whole oil
        nd = not determined