

FMT PRESSURE MEASUREMENTS 6204/10-2R

No	Depth, m MD RT	Depth, m TVD RT	Hydrost. pressure before kPa	Formation pressure kPa	Hydrost. pressure after kPa	Temp. °C	Mobility mD/cP	Remarks
1	1868,5	1867,1	24573	19738.4	24576	55,5	68,7	Good permeability, some small fluctuations on pressure gauge
2	1871,0	1869,6	24607	19747.7	24610	55,9	28,3	Good permeability
3	1884,0	1882,5	24782	19869.8	24778	56,2	16,7	Good permeability
4	1891,4	1889,9	24870		24873	56,7		Tight
5	1891,2	1889,7	24869		24871	57,0		Poor perm. supercharge
6	1891,0	1889,5	24865		24867	57,2		Tight
7	1894,0	1892,5	24908		24913	57,3		Tight
8	1893,8	1892,3	24903		24906	57,4		Tight
9	1905,9	1904,3	25066		25070	57,6		Tight
10	1889,6	1888,1	24842		24847	57,8		No seal
11	1915,5	1913,8	25193	20568		58,1	101,0	Pretest. Very good permeability
11	1915,5	1913,8		20543.7	25180	58,2		Segregated sample

Sample information:

10 litre preflush chamber:

Gas volume: 8200 litre

Filtrate volume: 0.1 litre

Opening pressure : 83 bar

Gas chromatography data: C1: 916667 C2: 28422 C3: 4662 iC4: 797 nC4: 927
iC5: 222 nC5: 170

4 litre PVT chamber:

Opening pressure : 138 bar

The 4 litre chamber was sent to laboratory for transfer and analysis.

For results, see report: "Transfer and Analysis of FMT sample, report no: STAT562, January 1998

Table 3.3.1

Administration Data					
Well Name	6204/10-2R	Location	Norway	Date & Time	21-Nov-97 12:00
Operator	STATOIL	Contractor/Rtg	Odffjell Drilling	Interval	8 1/2 In
Operator Rep.	Lars Frøybu	Contractor Rep.	Stein Skar	Dowell Eng.	L. T. Haukås / S. Seglem
Analysis Type	WBM	Fluid System	KCL -POLYMER	Spud Date	04-Nov-1997

DRILLING FLUIDS PROPERTIES RECORD - From 04-Nov-1997 to 21-Nov-1997

Property Name	Units	1	2	3	4	5	6	7	8	9	10	11	12	13
Date		04-Nov-97	05-Nov-97	05-Nov-97	05-Nov-97	06-Nov-97	06-Nov-97	06-Nov-97	08-Nov-97	08-Nov-97	09-Nov-97	09-Nov-97	10-Nov-97	10-Nov-97
Time		23:59	04:00	19:45	23:00	06:15	17:03	23:00	06:07	17:14	06:00	23:59	10:01	23:59
Sample loc.		FlowLine	Active S	FlowLine	FlowLine	FlowLine	Active S	FlowLine	Active S	Active S	FlowLine	FlowLine	Active S	FlowLine
MD	m	1134.	1148.	1196.	1290.	1469.	1620.	1685.	1830.	1872.	1876.	1875.	1950.	1957.
TVD	m	1134.		1196.	1289.9									
Hole Angle	deg			0.9				4.6		5.	5.9	5.9		6.2
Flow. Temp.	degC	19		22.7	24.2	25.4	26.1	26.6	36.	35.	26.1	27.6	25.	25.
Density		1.3	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32
Funnel Visc.	s	52	56	54	58	63	59	51	60	59	54	53	60	52
600 rpm		52	67	57	64	70	65	64	68	58	62	60	64	60
300 rpm		35	42	34	40	47	45	41	48	41	42	41	46	42
200 rpm						38	36	33	39	33	34	34.5	38	35
100 rpm						27	25	23	29	25	25	24.5	28	25
60 rpm						25	23	18			19.5	20		20
30 rpm						18	16	13			14.5	15		15
6 rpm		6	7.5	5	7	10	7	7	9	8	7.5	7.5	9	8
3 rpm		4.5	5.5	3.5	6	7.5	5	5	7	7	6	6	7	6
Plastic Visc.	cP	17.	25.	23.	24.	23.	20.	23.	20.	17.	20.	19.	18.	18.
Yield Point	Pa	8.6	8.1	5.3	7.7	11.5	12.	8.6	13.4	11.5	10.5	10.5	13.4	11.5
10 sec. Gel	Pa	2.4	3.3	1.9	2.9	3.8	3.5	2.6	4	4	2.9	2.9	4.	3.4
10 min. Gel	Pa	2.9	7.7	2.9	4.3	6.7	6	4.8	6	6	4.8	4.8	7.	5.7
API Filtrate	mL	1.8		2.1	2.2	2.2	2	2.4	2.3	2.2	2.7	2.4	3.	2.4
API Cake	1/32nd"	1.		1	1	1	1	1	1	1	1	1	1	1
Pm	mL	0.35	0.75	0.85	0.6	0.6	0.4	0.35	0.	0.25	0.5	0.45	0.	0.3
PI	mL	0.05	0.1	0.1	0.02	0.02	0.03	0.01	0.1	0.1	0.02	0.03	0.	0.01
MI	mL	0.5	0.8	0.75	0.62	0.6	0.65	0.8	0.7	0.65	0.7	0.75	0.6	0.7
pH		8.9	10.1	9.4	8.9	8.8	8.5	8.7	8.5	8.5	8.8	8.6	8.2	8.6
Total Hard.	mg/L	521.	440.9	561.1	320.6	288.6	320.6	681.3	921.8	921.8	921.8	881.7	1002.	921.8
Ca2+	mg/L	480.9	400.8	541.1	320.6	280.5	280.5	661.3	881.7	881.7	901.8	841.6	921.8	881.7
Mg2+	mg/L	24.3	24.3	12.2	0.	4.9	24.3	12.2	24.3	24.3	12.2	24.3	48.6	24.3
Cl-	g/L	64.	69.	63	68.5	60	61	65.5	61	60	63	62.5	60	64
KCl	kg/m3	134.	131.	132	130	125	125	122	131	134	123	121	122	121
Sand %	%	0.2	0.2	0.3	0.3	0.3	0.2	0.4	0.1	0.1	0.2	0.2	0.1	0.2
Water %	%					88	87.5	87	87.	87.	87.5	87.5	87.	87.
Brine %	%	91.4	90.3.	90.3	90.3	90.2	89.7	89.4	89.2.	89.2	89.8	89.8	89.2	89.3
Corr.Solids %	%					9.8	10.3	10.6	10.8	10.8	10.2	10.2	10.8	10.7
LGS %	%	1.1	1.6	1.6	1.6	1.7	2.7	3.5	3.7	3.7	2.6	2.6	3.7	3.5
HGS %	%	7.6	8.1	8.1	8.1	8.1	7.6	7.1	7.1	7.1	7.6	7.6	7.1	7.1
ASG Solids						3.93	3.79	3.68	3.66	3.66	3.8	3.79	3.65	3.67
BrineDensity		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
MBT	kg/m3	5.	5.	5.	7.	11.	25.	34.	35.	34.	32.	30.	36.	36.



DRILLING FLUIDS SERVICES

MudCADE*

Administration Data				
Well Name	6204/10-2	Location	Norway	Date & Time
Operator	Statoll	Contractor/Rig	ODS	Interval
Operator Rep.	K. Meland	Contractor Rep.	H. Mosnes	Dowell Eng.
Analysis Type	WBM	Fluid System	KCL POLYMER	Spud Date
				07-Feb-97 23:59
				8 1/2 in
				D. Mackenzie, P. Absudal
				19-Jan-1997

DRILLING FLUIDS PROPERTIES RECORD - From Feb-01-1997 23:59 to May-16-1997 13:30

Property Name	Units	1	2	3	4	5	6	7
Date		02-Feb-97	03-Feb-97	04-Feb-97	05-Feb-97	06-Feb-97	06-Feb-97	07-Feb-97
Time		18:00	18:00	18:00	18:00	20:28	20:30	20:30
Sample Loc.		Pit 1#	Pit 1#	Pit 1#	Pit 1#	Pit 1#	Pit 1#	Active S
MD	m	1137.	1137.	1137.	1137.	1137.	1137.	1137.
TYD	m	1137.	1137.	1137.	1137.	1137.	1137.	1137.
Hole Angle	deg	0.						
Flow Temp.	degC	0						
Density		1.3	1.3	1.3	1.3	1.3	1.3	1.3
Gradient	bar/m	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Funnel Visc.	s	55	60	60	60		84	60
600 rpm		84	84	84	84		84	84
300 rpm		59	59	59	59		59	59
6 rpm		6	5	5	5		5	5
3 rpm		4	4	4	4		4	4
Plastic Visc.	cP	0.	0.	0.	0.		0.	0.
Yield Point	Pa	18.3	18.3	18.3	18.3		18.3	18.3
10 sec. Gel	Pa	2.5	2.	2.	2.		2.	2.
10 min. Gel	Pa	3.	2.	2.	2.		2.	2.
30 min. Gel	Pa							
n-annulus		0.584	0.584	0.584	0.584		0.584	0.584
K-annulus	Pa*s^n	0.8	0.8	0.8	0.8		0.8	0.8
API Filtrate	mL	4.	4.	4.	4.		4.	4.
API Cake	mm	1	1	1	1		1	1
HTHP Filtrate	mL							
HTHP Cake	mm							
HTHP Temp.	degC							
Pm	mL							
Pf	mL							
Mf	mL							
pH		9.	9.	9.	9.		9.	9.
Total Hard.	mg/L	200.4	2003.9	200.4	200.4		480.9	240.5
Ca2+	mg/L	200.4	200.4	200.4	200.4		400.8	200.4
Mg2+	mg/L	0.	1093.7	0.	0.		48.6	24.3
K+	kg/m3	70.	0.1	0.1	0.1		0.1	0.1
Cl-	g/L	81.	84.	84.	84.		84.	84.
KCl	kg/m3	151	158	158	158		158	158
Excess Lime	g/L	0.	0.	0.	0.		0.	0.
Sand %	%	0.	0.	0.	0.		0.	0.
Oil %	%	0.	0.	0.	0.		0.	0.
Brine %	%	91.5	91.1	91.1	91.1		91.1	88.

Title: Geochemical study of Well 6204/10-2 and 2R		
BA 98-1280-1		
Document no.:	Contract no./project no.:	Filing no.:

Classification:	Distribution: Partners, NPD, Statoil archives
-----------------	---

Distribution date: July 97	Rev. date:	Rev. no.:	Copy no.: 8
--------------------------------------	------------	-----------	-----------------------

Author(s)/Source(s): Geolab Nor IFE

Subjects: The confidence level of the geochemical interpretation is uncertain, due to several types of mud contamination, which should not be present in the mud. See summary page 1
--

Remarks:

Valid from:	Updated:
-------------	----------

Circulated by:	Authority to approve deviations:
----------------	----------------------------------

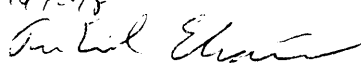
Techn. responsible:	Name:	Date/Signature:
Responsible:	Name:	Date/Signature:
Recommended:	Name:	Date/Signature:
Approved: LTEK-PE	Name: Per Emil Eliassen	Date/Signature: 147-98 

Table 1. Analytical programme

Sample depth	Sample type	←-----screening----->					
		Table 2 Headspace/ occluded gas	Table 2 Headspace $\delta^{13}C_1$	Table 3 Lithological descr.	Footnote1 Vitrinite reflectance	Table 5 TOC	Table 5 Rock Eval
400	cutt			x	x		
580	cutt			x	x		
610	cutt			x	x		
710	cutt			x	x		
750	cutt			x	x		
790	cutt			x	x		
860	cutt			x	x		
980	cutt			x	x		
1090	cutt			x	x		
1159	swc				x		
1203	swc				x		
1268	swc				x		
1283	swc					x	x
1304	swc				x	x	x
1310	cutt			x		x	x
1320	cutt			x		x	x
1355	swc				x	x	x
1405	swc					x	x
1435	swc				x	x	x
1494	swc				x		
1532	swc				x		
1607	swc				x		
1687	swc				x	x	x
1744	swc				x	x	x
1813	swc				x	x	x
1871	cutt			x			x
1872,29	ccp						x
1875	ccp						x
1884,41	ccp						x
1886,54	ccp				x	x	x
1897,36	ccp						x
1914	swc					x	x
1919	cutt			x			x
1928	swc				x	x	x
1935	swc					x	x
1949	swc					x	x
1951,7	ccp					x	x
1959,9	ccp				x	x	x
1967	swc					x	x
2020	swc				x	x	x
2043,2	swc					x	x
2060	swc					x	x
2065	swc				x	x	x
1855	mud						
1913,8	Oil film on mud from FMT						
	Total	0	0	13	26	22	28
¹ Vitrinite Reflectance tables can be found in the IFE report in Appendix 3							

Sample depth	Table 6 TE-GC	Table 6 Py-GC	Table 7 Kerogen description	Table 8 Bulk composition	Table 9 GC sats	Table 9 GC arom
400						
580						
610						
710						
750						
790						
860						
980						
1090						
1159						
1203						
1268						
1283						
1304						
1310						
1320						
1355						
1405						
1435						
1494						
1532						
1607						
1687						
1744						
1813						
1871						
1872,29						
1875						
1884,41						
1886,54						
1897,36						
1914						
1919						
1928						
1935						
1949						
1951,7						
1959,9						
1967						
2020						
2043,2						
2060						
2065						
1855						
1913,8						
	0	0	0	0	0	0

Sample depth	Table 10	Table 10	Table 10	Tables 11 & 12	Table 13	Table 14	Other
	Carbon isotopes of....			GCMS EOM	Light HCs	Gas composition	analyses EOM-GC
	kerogen	oil/EOM	fractions				
400							
580							
610							
710							
750							
790							
860							
980							
1090							
1159							
1203							
1268							
1283							
1304							
1310							
1320							
1355							
1405							
1435							
1494							
1532							
1607							
1687							
1744							
1813							
1871							
1872,29							
1875							
1884,41							
1886,54							
1897,36							
1914							
1919							
1928							
1935							
1949							
1951,7							
1959,9							
1967							
2020							
2043,2							
2060							
2065							
1855					1		1
1913,8					1	1	1
	0	0	0	2	1	0	2

Table 3: Lithology description for well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
410.00						0001
				60 S/Sst : w		0001-1L
				40 Sh/Clst: m lt gy to lt gy		0001-2L
580.00						0002
				70 Sh/Clst: m lt gy to lt gy		0002-2L
				30 S/Sst : w		0002-1L
610.00						0003
				60 Sh/Clst: m gy to brn gy		0003-2L
				25 S/Sst : w		0003-1L
				10 Ca : w		0003-3L
				5 Other : drk gn gy, glauc		0003-4L
710.00						0004
				50 S/Sst : w		0004-1L
				40 Sh/Clst: m gy to brn gy		0004-2L
				10 Other : drk gn gy, glauc		0004-3L
750.00						0005
				80 S/Sst : w		0005-1L
				15 Sh/Clst: m gy to brn gy		0005-2L
				5 Other : drk gn gy, glauc		0005-3L
790.00						0006
				65 Sh/Clst: m gy to brn gy		0006-2L
				20 S/Sst : w		0006-1L
				10 Other : drk gn gy, glauc		0006-3L
				5 Ca : w		0006-4L
860.00						0007
				60 Sh/Clst: brn gy to lt brn gy		0007-2L
				30 S/Sst : w		0007-1L
				10 Other : drk gn gy, glauc		0007-3L

Table 3: Lithology description for well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
980.00						0008
			60	Sh/Clst: brn gy to lt brn gy		0008-2L
			30	S/Sst : w		0008-1L
			10	Other : drk gn gy, glauc		0008-3L
1090.00						0009
			50	Sh/Clst: m drk gy to brn gy, ol gy to m y brn		0009-2L
			40	S/Sst : w		0009-1L
			10	Other : drk gn gy, glauc		0009-3L
1159.00	sws					0014
			100	Sh/Clst: ol gy to ol blk		0014-1L
1203.00	sws					0015
			100	Sh/Clst: ol gy to ol blk		0015-1L
1268.00	sws					0016
			100	Sh/Clst: ol blk		0016-1L
1283.00	sws					0017
		0.63	100	Sh/Clst: ol gy bulk		0017-1L 0017-0B
1304.00	sws					0018
		0.50	100	Sh/Clst: ol gy bulk		0018-1L 0018-0B
1310.00						0010
			75	Sh/Clst: m gy, ol gy		0010-1L
			15	Ca : w		0010-2L
			10	S/Sst		0010-3L
		0.65		bulk		0010-0B

Table 3: Lithology description for well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1320.00						0011
			75	Sh/Clst: m gy, ol gy		0011-1L
			15	Ca : w		0011-2L
			10	S/Sst		0011-3L
	0.63			bulk		0011-0B
1355.00	sws					0019
	0.53	100		Sh/Clst: ol gy to ol blk		0019-1L
				bulk		0019-0B
1405.00	sws					0020
	0.62	100		Sh/Clst: ol blk		0020-1L
				bulk		0020-0B
1435.00	sws					0021
	0.68	100		Sh/Clst: ol blk		0021-1L
				bulk		0021-0B
1494.00	sws					0022
		100		Sh/Clst: ol blk		0022-1L
1532.00	sws					0023
		100		Sh/Clst: ol blk to brn blk		0023-1L
1607.00	sws					0024
		100		Sh/Clst: ol blk		0024-1L
1687.00	sws					0025
	0.88	100		Sh/Clst: ol blk		0025-1L
				bulk		0025-0B

Table 3: Lithology description for well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1744.00	sws					0026
	0.76	100		Sh/Clst: m drk gy bulk		0026-1L 0026-0B
1813.00	sws					0027
	0.94	100		Sh/Clst: m drk gy bulk		0027-1L 0027-0B
1871.00						0012
		100		S/Sst : pl gn gy		0012-1L
1872.29	ccp					0037
		100		Sh/Clst: ol gy, drk gn gy		0037-1L
1875.00	ccp					0038
		100		S/Sst : ol gy, drk gn gy, argill, f		0038-1L
1884.41	ccp					0039
		100		S/Sst : lt gy		0039-1L
1886.54	ccp					0040
	0.63	100		Sh/Clst: lt ol gy bulk		0040-1L 0040-0B
1887.36	ccp					0041
		100		Sh/Clst: ol gy		0041-1L
1914.00	sws					0028
	0.69	100		Sh/Clst: m drk gy to drk gy bulk		0028-1L 0028-0B

Table 3: Lithology description for well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1916.00						0013
			70	S/Sst : argill		0013-1L
			20	Sh/Clst: ol gy		0013-2L
			10	Ca : w		0013-3L
1928.00	sws					0029
	1.70		100	Sh/Clst: ol blk bulk		0029-1L 0029-0B
1935.00	sws					0030
	1.15		100	Sh/Clst: ol blk bulk		0030-1L 0030-0B
1949.00	sws					0031
	0.92		100	Sh/Clst: drk gy to ol blk bulk		0031-1L 0031-0B
1951.70	ccp					0042
	1.57		100	Sh/Clst: ol blk bulk		0042-1L 0042-0B
1959.90	ccp					0043
	1.91		100	Sh/Clst: ol blk to brn blk bulk		0043-1L 0043-0B
1967.00	sws					0032
	0.80		100	Sh/Clst: ol blk bulk		0032-1L 0032-0B
2020.00	sws					0033
	0.88		100	Sh/Clst: m gy to ol blk bulk		0033-1L 0033-0B

Table 3: Lithology description for well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2043.00	sws					0034
	0.65	100		Sh/Clst: m gy to ol blk bulk		0034-1L 0034-0B
2060.00	sws					0035
	0.42	100		Sh/Clst: drk y brn bulk		0035-1L 0035-0B
2065.00	sws					0036
	0.59	100		Sh/Clst: brn blk bulk		0036-1L 0036-0B

Depth unit of measure: m

Depth	Typ	Form	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1283.00	sws		bulk	0.13	0.62	1.60	0.39	0.63	98	254	0.8	0.17	403	0017-0B
1304.00	sws		bulk	0.13	1.30	0.48	2.71	0.50	260	96	1.4	0.09	487	0018-0B
1310.00	cut		bulk	0.04	0.42	1.21	0.35	0.65	65	186	0.5	0.09	404	0010-0B
1320.00	cut		bulk	0.03	0.27	1.00	0.27	0.63	43	159	0.3	0.10	397	0011-0B
1355.00	sws		bulk	0.03	0.57	3.29	0.17	0.53	108	621	0.6	0.05	576	0019-0B
1405.00	sws		bulk	0.06	0.74	0.62	1.19	0.62	119	100	0.8	0.07	526	0020-0B
1435.00	sws		bulk	0.08	0.78	0.57	1.37	0.68	115	84	0.9	0.09	495	0021-0B
1687.00	sws		bulk	0.16	1.10	1.43	0.77	0.88	125	163	1.3	0.13	426	0025-0B
1744.00	sws		bulk	0.14	1.12	0.54	2.07	0.76	147	71	1.3	0.11	530	0026-0B
1813.00	sws		bulk	0.17	0.81	1.36	0.60	0.94	86	145	1.0	0.17	451	0027-0B
1871.00	cut		bulk	-	0.13	0.26	0.50	-	-	-	0.1	-	365	0012-0B
1872.29	ccp		bulk	0.06	0.31	0.32	0.97	-	-	-	0.4	0.16	427	0037-0B
1875.00	ccp		bulk	0.04	0.39	0.46	0.85	-	-	-	0.4	0.09	460	0038-0B
1884.41	ccp		bulk	0.07	0.33	0.39	0.85	-	-	-	0.4	0.17	377	0039-0B
1886.54	ccp		bulk	0.02	0.36	0.67	0.54	0.63	57	106	0.4	0.05	420	0040-0B
1887.36	ccp		bulk	0.10	0.27	0.32	0.84	-	-	-	0.4	0.27	359	0041-0B

Table 5A: Rock-Eval table for well NOCS 6204/10-2 AND -2R

Page: 2

Depth unit of measure: m

Depth	Typ	Form	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1914.00	sws		bulk	0.09	0.40	1.17	0.34	0.69	58	170	0.5	0.18	416	0028-0B
1916.00	cut		bulk	-	0.05	0.56	0.09	-	-	-	0.1	-	422	0013-0B
1928.00	sws		bulk	0.09	0.74	0.42	1.76	1.70	44	25	0.8	0.11	491	0029-0B
1935.00	sws		bulk	0.07	0.63	0.33	1.91	1.15	55	29	0.7	0.10	485	0030-0B
1949.00	sws		bulk	0.04	0.30	1.66	0.18	0.92	33	180	0.3	0.12	377	0031-0B
1951.70	ccp		bulk	0.16	0.64	0.96	0.67	1.57	41	61	0.8	0.20	420	0042-0B
1959.90	ccp		bulk	0.05	1.12	0.84	1.33	1.91	59	44	1.2	0.04	425	0043-0B
1967.00	sws		bulk	0.02	0.12	0.73	0.16	0.80	15	91	0.1	0.14	432	0032-0B
2020.00	sws		bulk	0.10	0.61	1.04	0.59	0.88	69	118	0.7	0.14	588	0033-0B
2043.00	sws		bulk	0.08	0.34	0.74	0.46	0.65	52	114	0.4	0.19	417	0034-0B
2060.00	sws		bulk	0.14	0.44	0.81	0.54	0.42	105	193	0.6	0.24	592	0035-0B
2065.00	sws		bulk	0.08	0.81	0.54	1.50	0.59	137	92	0.9	0.09	531	0036-0B

Table 5B: Rock-Eval table for well RE, STD

Depth unit of measure: m

Depth	Typ	Form	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1.00	std		bulk	0.51	18.64	1.80	10.36	-	-	-	19.1	0.03	418	0187-0B
2.00	std		bulk	0.49	18.42	1.85	9.96	-	-	-	18.9	0.03	417	0188-0B

Table 11a: Variation in Triterpane Distribution (peak height) SIR for Well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

Depth	Lithology	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Rat.10	Rat.11	Rat.12	Rat.13	Rat.14	Sample
1855.00	bulk	1.01	0.50	0.24	0.88	0.47	0.05	0.24	0.28	0.20	0.32	0.90	0.47	0.12	58.34	0045-0
1913.80	bulk	0.85	0.46	0.20	0.76	0.43	0.06	0.11	0.14	0.10	0.42	0.89	0.43	0.12	60.04	0044-0

List of Triterpane Distribution Ratios

Ratio 1: 27Tm / 27Ts

Ratio 2: 27Tm / 27Tm+27Ts

Ratio 3: 27Tm / 27Tm+30aβ+30βa

Ratio 4: 29aβ / 30aβ

Ratio 5: 29aβ / 29aβ+30aβ

Ratio 6: 30d / 30aβ

Ratio 7: 28aβ / 30aβ

Ratio 8: 28aβ / 29aβ

Ratio 9: 28aβ / 28aβ+30aβ

Ratio 10: 24/3 / 30aβ

Ratio 11: 30aβ / 30aβ+30βa

Ratio 12: 29aβ+29βa / 29aβ+29βa+30aβ+30βa

Ratio 13: 29βa+30βa / 29aβ+30aβ

Ratio 14: 32aβS / 32aβS+32aβR (%)

Table 11b: Variation in Sterane Distribution (peak height) SIR for Well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Ratio5</u>	<u>Ratio6</u>	<u>Ratio7</u>	<u>Ratio8</u>	<u>Ratio9</u>	<u>Ratio10</u>	<u>Sample</u>
1855.00	bulk	0.58	43.95	74.27	1.06	0.77	0.43	0.31	0.59	0.78	2.57	0045-0
1913.80	bulk	0.80	53.17	76.01	1.41	0.75	0.60	0.39	0.61	1.14	3.38	0044-0

List of Sterane Distribution Ratios

Ratio 1: $27d\beta S / 27d\beta S + 27aaR$

Ratio 2: $29aaS / 29aaS + 29aaR$ (%)

Ratio 3: $2 * (29\beta\beta R + 29\beta\beta S) / (29aaS + 29aaR + 2 * (29\beta\beta R + 29\beta\beta S))$ (%)

Ratio 4: $27d\beta S + 27d\beta R + 27daR + 27daS / 29d\beta S + 29d\beta R + 29daR + 29daS$

Ratio 5: $29\beta\beta R + 29\beta\beta S / 29\beta\beta R + 29\beta\beta S + 29aaS$

Ratio 6: $21a + 22a / 21a + 22a + 29aaS + 29\beta\beta R + 29\beta\beta S + 29aaR$

Ratio 7: $21a + 22a / 21a + 22a + 28daS + 28aaS + 29daR + 29aaS + 29\beta\beta R + 29\beta\beta S + 29aaR$

Ratio 8: $29\beta\beta R + 29\beta\beta S / 29aaS + 29\beta\beta R + 29\beta\beta S + 29aaR$

Ratio 9: $29aaS / 29aaR$

Ratio 10: $29\beta\beta R + 29\beta\beta S / 29aaR$

Table 11c: Raw triterpane data (peak height) m/z 191 SIR for Well NOCS 6204/10-2 AND -2R

Page: 1

Depth unit of measure: m

Depth	Lithology	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aß	25nor30aß	Sample
		29aß	29Ts	30d	29ßa	300	30aß	30ßa	30G	31aßS	
		31aßR	32aßS	32aßR	33aßS	33aßR	34aßS	34aßR	35aßS	35aßR	
1855.00	bulk	992.7	570.2	340.7	369.6	268.2	618.4	622.8	431.2	608.1	0045-0
		1544.6	414.3	87.7	190.4	128.4	1762.8	199.6	111.0	799.8	
		632.6	411.9	294.2	340.1	234.0	208.3	156.0	201.9	128.6	
1913.80	bulk	12196.1	7813.2	3538.9	5140.8	1892.0	6266.7	5343.8	2011.0	1958.6	0044-0
		14051.0	4728.5	1148.4	1586.9	1098.3	18440.2	2313.0	464.9	5764.9	
		3417.0	2904.5	1933.2	1528.6	869.5	821.1	507.7	578.4	374.6	

Depth unit of measure: m

Depth	Lithology	21a	22a	27dBS	27dBR	27daR	27daS	28dBS	28dBR	28daR*	Sample
		29dBS*	28daS*	27aaR	29dBR	29daR	28aaS	29daS*	28BS		
		28aaR	29aaS	29BBR	29BS	29aaR					
1855.00	bulk	600.7	267.5	478.1	333.5	173.6	276.3	339.7	193.7	250.8	0045-0
		507.0	385.3	341.5	255.3	162.3	163.0	265.4	303.6		
		133.2	204.1	385.8	284.7	260.4					
1913.80	bulk	11653.3	5817.3	20334.8	11445.9	3871.1	3823.7	8533.9	5101.1	6841.7	0044-0
		18198.8	11046.8	4943.1	4930.1	1465.1	1224.1	3425.1	3352.2		
		1275.1	2381.4	4081.8	3012.7	2097.6					

* 28daR coel with 27aaS, 29dBS coel with 27BBR, 28daS coel with 27BS, 29daS coel with 28BS

Table 11e: Raw sterane data (peak height) m/z 218 SIR for Well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

Depth	Lithology	27 β BBR	27 β BS	28 β BBR	28 β BS	29 β BBR	29 β BS	30 β BBR	30 β BS	Sample
1855.00	bulk	580.2	538.1	398.4	374.8	423.1	433.5	102.2	98.6	0045-0
1913.80	bulk	16618.2	13737.0	4808.3	4644.8	5685.7	4863.7	900.8	772.7	0044-0

Table 11f: Raw triterpane data (peak height) m/z 177 SIR for Well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

Depth	Lithology	25nor28aß	25nor30aß	Sample
1855.00	bulk	535.6	581.5	0045-0
1913.80	bulk	2324.1	2128.8	0044-0

Table 12a: Variation in Triaromatic Sterane Distribution (peak height) for Well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Ratio5</u>	<u>Sample</u>
1855.00	bulk	0.57	0.47	0.30	0.30	0.45	0045-0
1913.80	bulk	0.71	0.61	0.38	0.44	0.53	0044-0

Ratio1: $a1 / a1 + g1$

Ratio2: $b1 / b1 + g1$

Ratio3: $a1 + b1 / a1 + b1 + c1 + d1 + e1 + f1 + g1$

Ratio4: $a1 / a1 + e1 + f1 + g1$

Ratio5: $a1 / a1 + d1$

Table 12b: Variation in Monoaromatic Sterane Distribution (peak height) for Well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Sample</u>
1855.00	bulk	0.45	0.29	0.33	0.29	0045-0
1913.80	bulk	0.50	0.28	0.34	0.29	0044-0

Ratio1: A1 / A1 + E1
 Ratio2: B1 / B1 + E1

Ratio3: A1 / A1 + E1 + G1
 Ratio4: A1+B1 / A1+B1+C1+D1+E1+F1+G1+H1+I1

Table 12c: Aromatisation of Steranes (peak height) for Well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

Depth	Lithology	Ratio1	Ratio2	Sample
1855.00	bulk	0.26	0.90	0045-0
1913.80	bulk	0.79	0.81	0044-0

$$\text{Ratio1: } \frac{C1+D1+E1+F1+G1+H1+I1}{C1+D1+E1+F1+G1+H1+I1 + c1+d1+e1+f1+g1}$$

$$\text{Ratio2: } g1 / g1 + I1$$

Depth unit of measure: m

Depth	Lithology	a1	b1	c1	d1	e1	f1	g1	Sample
1855.00	bulk	197.8	128.2	75.3	241.7	160.0	145.4	146.8	0045-0
1913.80	bulk	473.4	298.3	227.8	426.1	254.8	159.8	193.4	0044-0

Table 12e: Raw monoaromatic sterane data (peak height) m/z 253 for Well NOCS 6204/10-2 AND -2R

Depth unit of measure: m

Depth	Lithology	A1	B1	C1	D1	E1	F1	G1	H1	I1	Sample
1855.00	bulk	76.0	38.1	32.0	18.8	92.2	17.5	60.8	38.4	16.4	0045-0
1913.80	bulk	1373.6	539.3	825.6	926.0	1393.6	286.0	1300.9	0.0	45.9	0044-0

<u>Well</u>	<u>Description</u>	<u>iC4</u>	<u>nC4</u>	<u>iC5</u>	<u>nC5</u>	<u>2,2DMC4</u>	<u>2,3DMC4</u>	<u>2MC5</u>	<u>3MC5</u>	<u>nC6</u>	<u>MCyC5</u>	<u>Benz</u>	<u>Sample</u>
1913.8	oljefilm	-	-	-	-	0.09	-	-	-	0.82	1.69	0.08	Q90/0044

Table 13B: Light Hydrocarbons from Whole Oil GC for 6204/10-2 AND 2R

Well	Description	CyC6	2MC6	3MC6	1,3ci- DMCyC5	1,3tr- DMCyC5	1,2tr- DMCyC5	nC7	MCyC6	Tol	nC8	p/m- Xylene	Sample
1913.8	oljefilm	3.37	1.37	0.88	0.57	0.57	1.44	2.92	11.54	3.90	4.70	9.00	Q90/0044

Table 13C: Thompson's indices for 6204/10-2 AND 2R

Well	Description	A	B	X	W	C	I	F	H	U	R	S	Sample
1913.8	oljefilm	0.10	1.34	1.91	0.24	0.25	0.87	0.25	12.89	1.99	2.13	9.11	Q90/0044

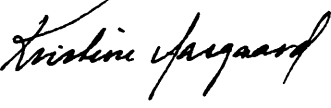
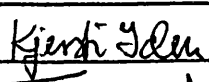
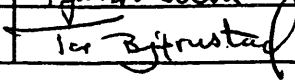
THOMPSON'S INDICES

$$A = \frac{\text{Benzene}}{nC6} \quad B = \frac{\text{Toluene}}{nC7} \quad X = \frac{\text{p/m-xylene}}{nC8} \quad W = \frac{\text{Benzene} * 10}{\text{CyC6}}$$

$$C = \frac{nC6 + nC7}{\text{CyC6} + \text{MCyC6}} \quad I = \frac{2\text{MC6} + 3\text{MC6}}{1,3\text{ciDMCyC5} + 1,3\text{trDMCyC5} + 1,2\text{trDMCyC5}} \quad F = \frac{nC7}{\text{MCyC6}}$$

$$H = \frac{nC7 * 100}{\text{CyC6} + 2\text{MC6} + 2,3\text{DMC4} + 3\text{MC6} + 1,3\text{ciDMCyC5} + 1,3\text{trDMCyC5} + 1,2\text{trDMCyC5} + nC7 + \text{MCyC6}}$$

$$U = \frac{\text{CyC6}}{\text{MCyC5}} \quad R = \frac{nC7}{2\text{MC6}} \quad S = \frac{nC6}{2,2\text{DMC4}}$$

ADDRESS KJELLER HALDEN Box 40, N-2007 Kjeller, Norway N-1751 Halden, Norway TELEPHONE +47 63 806000 +47 69 183100 TELEX 76 361 isotp n 76 335 energ n TELEFAX +47 63 815553		AVAILABILITY In Confidence	
REPORT TYPE	REPORT NO. IFE/KR/F-98/060		DATE 1998-04-01
	REPORT TITLE VITRINITE REFLECTANCE ANALYSIS WELL 6204/10-2 og -2R OFFSHORE NORWAY (ref. IFE no. 2.5.043.98)		DATE OF LAST REV.
	CLIENT Geolab Nor		REV. NO.
	CLIENT REF. Marianne Sandstad		NUMBER OF PAGES 14
SUMMARY			DISTRIBUTION Geolab Nor (9) Johansen, H. Aasgaard, K. File (3)
KEYWORDS			
	NAME	DATE	SIGNATURE
PREPARED BY	Kristine Aasgaard	1998-04-01	
REVIEWED BY	Kjersti Iden	1998-04-01	
APPROVED BY	Tor Bjørnstad	1998-04-01	

1 Introduction

This report gives the result of routine vitrinite reflectance analyses of 26 samples from well 6204/10-2 and 6204/10-2R offshore Norway.

2 Material

The material was provided from the client as 9 cuttings samples, 15 side wall cores and 2 core chips. Information on lithology in well 6204/10-2 and 6204/10-2R was provided from the client and is plotted in table 1.

3 Analytical techniques

3.1 Preparation

The cuttings samples and the side wall cores were treated with hydrochloric and hydrofluoric acid prior to further preparation. The aim was to avoid soft and expanding mineral phases in order to ensure good polishing quality. The sample material resulting from the acid treatment and the bulk core chips were embedded in an epoxy resin to make briquettes, ground flat and polished using 0.25 micron diamond paste and magnesium oxide as the two final steps.

3.2 Analysis

The analytical equipment being used was a Zeiss MPM 03 photometer microscope equipped with an Epiplan-Neofluar 40/0.90 oil objective. The sensitive measuring spot was kept constant for all measurements at about 2.5 micron in diameter. The measurements were made through a green band pass filter (546 nm) and in oil immersion (refractive index 1.515 at 18°C). The readings were made without a polarizer and using a stationary stage. This procedure is called measurement of random reflectance (%Rm). The photometer is calibrated daily against a standard of known reflectance (%Rm= 0.588) and routinely (daily) checked against two other standards of significant different

reflectances ($\%R_m=0.879$ and 1.696). A deviation from these values of less than ± 0.01 and ± 0.02 respectively is considered as acceptable. The calibration is routinely checked during the course of measurements at least every hour, and a deviation of less than ± 0.005 is considered as acceptable.

For each sample at least 20 points were measured if possible, and quality ratings are given to various important aspects which may affect the measurements. These aspects are abundance of vitrinite, uncertainties in the identification of indigenous vitrinite, type of vitrinite, particle size, particle surface quality and abundance of pyrite.

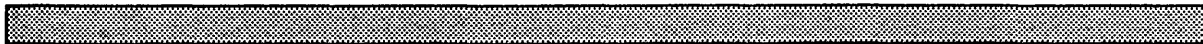
Table 1. Vitrinite reflectance data table

Analysis type:		Vitrinite reflectance								
Well:		6204/10-2 and -2R								
Number of samples:		26								
Time period for analysis:		mar-98								
Analysis performed by:		Kristine Aasgaard, Institutt for energiteknikk								
Analysis ordered by:		Geolab Nor								
Well	IFE sample code	Depth (m)	Sample type	Lithology	Vitr. refl. (%Rm)	Stand. dev.	Number of readings	Sample description	Sample quality	Sample prep.
6204/10-2	980214	410	DC	CLYST/SST	0.25	0.04	16	-oo-oo	M	HF
6204/10-2	980215	580	DC	CLYST/SST	0.27	0.03	23	ooooo+	G	HF
6204/10-2	980216	610	DC	CLYST/SST	0.26	0.05	22	ooo-o+	M	HF
6204/10-2	980217	710	DC	CLYST/SST	0.24	0.04	22	ooo-o+	M	HF
6204/10-2	980218	750	DC	CLYST/SST	0.23	0.03	20	ooo-o+	M	HF
6204/10-2	980219	790	DC	CLYST/SST	0.26	0.04	21	ooo-o+	M	HF
6204/10-2	980220	860	DC	CLYST/SST	0.24	0.03	21	ooo-o+	M	HF
6204/10-2	980221	980	DC	CLYST/SST	0.25	0.04	21	ooo-o+	M	HF
6204/10-2R	980222	1090	DC	CLYST/SST	0.25	0.03	21	ooo-++	M	HF
6204/10-2R	980223	1159	SWC	CLYST	0.28	0.04	20	ooo-++	P	HF
6204/10-2R	980224	1203	SWC	CLYST	0.30	0.04	20	ooo-++	M	HF
6204/10-2R	980225	1268	SWC	CLYST	0.29	0.03	21	ooo-++	M	HF
6204/10-2R	980226	1304	SWC	CLYST	0.31	0.04	8	-oo-++	P	HF
6204/10-2R	980227	1355	SWC	CLYST	0.31	0.04	21	ooo-o+	M	HF
6204/10-2R	980228	1435	SWC	CLYST	0.34	0.05	23	ooo-o+	M	HF
6204/10-2R	980229	1494	SWC	CLYST	0.35	0.04	22	ooo-o+	M	HF
6204/10-2R	980230	1532	SWC	CLYST	0.32	0.04	19	ooo-++	M	HF
6204/10-2R	980231	1607	SWC	CLYST	0.32	0.05	20	ooo-++	M	HF
6204/10-2R	980232	1687	SWC	CLYST	0.30	0.04	23	ooo-++	M	HF

Table 1. Vitrinite reflectance data table, continued

Well	IFE sample code	Depth (m)	Sample type	Lithology	Vitr. refl. (%Rm)	Stand. dev.	Number of readings	Sample description	Sample quality	Sample prep.
6204/10-2R	980233	1744	SWC	CLYST	0.35	0.05	21	ooo--+	M	HF
6204/10-2R	980234	1813	SWC	CLYST	0.33	0.05	12	-oo--+	M	HF
6204/10-2R	980235	1886.54	CORE	CLYST	0.35	0.05	6	-oo-o	P	bulk
6204/10-2R	980236	1928	SWC	CLYST	0.39	0.02	7	-oo-o	P	HF
6204/10-2R	980237	1959.9	CORE	CLYST	0.42	0.03	24	ooo-oo	M	bulk
6204/10-2R	980238	2020	SWC	CLYST	0.45	0.04	23	ooo--+	M	HF
6204/10-2R	980239	2065	SWC	CLYST	0.44	0.05	23	ooo--+	M	HF

Legend to vitrinite reflectance data table



SST	sandstone		
SLST	siltstone		
CLYST	claystone		
SH	shale		
LST	limestone		
COAL	coal		
HF	sample treated with hydrofluoric acid prior to epoxy resin embedding		
DCM	sample treated with dichloromethane prior to epoxy resin embedding		
bulk	untreated sample prior to epoxy resin embedding		
G	Good quality sample		
M	Moderate quality sample		
P	Poor quality sample		
st	Sample is stained		
ooooo	Sample description:	1	Abundance of vitrinite
123456		2	Identification of vitrinite
		3	Type of vitrinite
		4	Vitrinite fragment size
		5	Vitrinite surface quality
		6	Abundance of pyrite
-	may give too low vitrinite reflectance sample value		
o	reliable vitrinite reflectance sample value		
+	may give too high vitrinite reflectance sample value		