

APPENDIX VII

Data report.
Isotope analysis for well 34/8-7.
(Geolab Nor)

EXPERIMENTAL**Isotope Ratio Mass Spectrometry**

The isotope analysis were performed on a dual inlet VG SIRA 10 instrument. The combustion of the samples were done by a Carlo Erba EA 1108 element analyser directly connected to the inlet system of the mass spectrometer.

The combustion temperature was 1020°C and the carries gas used was Helium. After the combustion H₂O and CO₂ were trapped in different cool traps. The CO₂ gas was then heated up before it was admitted to the mass spectrometer. The whole operation was controlled by a IBM PC50 computer system.

δ-values

The isotope ratios are given as δ-values in ‰ versus the PDB-standard:

$$\delta^{13}\text{C} = (R \text{ sample} - R \text{ standard} / R \text{ standard}) * 1000$$

$$R = {}^{13}\text{C} / {}^{12}\text{C}$$

The PDB standard (a marine chalk of the Pee Dee-formation, USA) was created by Craig 1957. All results of ¹³C / ¹²C - analysis of organic matter today are calculated (Craig correction) against this international standard.

Reproducebility

The presision of the combustion system and the mass spectrometer is controlled by determinations of an international calibrated standard, NBS22 oil and a house standard of carbon.

Double analysis on samples are also done.

Table 1A: Tabulation of carbon isotope data for EOM/EOM - fractions for well 34/8-7

Depth unit of measure: m

<u>Depth</u>	<u>EOM</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>NSO</u>	<u>Asphaltenes</u>	<u>Kerogen</u>	<u>Sample</u>
4476.25	-	-26.89	-25.42	-25.53	-25.04	-	0001-0
4597.50	-	-25.81	-25.10	-25.80	-25.92	-	0002-0

↑
 Still acc. to 4597.50 m

Table 1B: Tabulation of cv values from carbon isotope data for well 34/8-7

Depth unit of measure: m

<u>Depth</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>cv value</u>	<u>Sample</u>
4476.25	-26.89	-25.42	-0.05	0001-0
4597.50	-25.81	-25.10	-2.07	0002-0



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Summary/Conclusion/Recommendation

Keywords
Petroleum geochemistry, Gas correlations.

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Department	Petroleum Geochemistry		
Section	Geosection	BA-93-1127-1	
Authors	Elin Rein <i>Elin Rein</i>	13 11 1993	
Controlled	Eigill Nysæther <i>Eigill Nysæther</i>	3/5-93	
Accepted	Tove G. Bockelie <i>Tove G. Bockelie</i>		
Approved	Tor Tjelland <i>Tor Tjelland</i>		

Postal address: N-5020 Bergen	Office address: Sandslivelen 90 5049 Sandstø	Phone: National: (05) 99 50 00 Internat: +47 5 99 50 00	Telefax: National: 05 99 66 00 Internat: +47 5 99 66 00	Telex: 40632 hydro n
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1. INTRODUCTION.

This study focuses on characterisation of the gas from well 34/8-7R (DST #2) and a correlation of the gases encountered in the Visund area. A location map is given in Figure 1.1. A list of the samples evaluated is given in Table 1.1.

Volume composition data and stable isotope measurements on the different gas components were used as input data to statistical analysis.

All gas analyses were performed by "Institutt for Energiteknikk" (IFE), Kjeller Norway, The interpretation of data and the compilation of this report was done at Norsk Hydro research centre in Bergen, Norway.

2. RESULTS AND DISCUSSION.

One gas sample from well 34/8-7R was analysed for volume and isotopic composition by "Institutt for Energiteknikk" (IFE), Kjeller, Norway. Results from previously drilled wells in the Visund area were compiled from earlier licence reports.

Well	Test	Depth
34/8-1	2	2854.1-2857.1
34/8-1	3	2767.9-2806.9
34/8-3	1	2935.0
34/8-3	2	2905.0-2921.0
34/8-3	3	2868.0-2880.00
34/8-4S	1	3219.0-3241.0
34/8-4S	3	3001.0-3018.0
34/8-4S	4	2903.0-2917.0
34/8-4A	1	3324.0-3342
34/8-4A	2	3214.0-3228.0
34/8-4A	3	3161.0-3185.0
34/8-4A	4	3056.0-3108.0
34/8-4A	5	2988.5-3019.5
34/78-7R	2	4617.7-4731.0

Table 1.1 List of samples.

Well	Test	Depth	%C1	%C2	%C3	%iC4	%C4	%iC5	%C5	%CO2	C1-C4	C1-C5	Wetness	iC4/nC4
34/8-1	2	2854.1-2857.1	88,4	5,8	2,9	0,5	1,0			1,4	98,4		0,10	0,47
34/8-1	3	2767.9-2806.9	89,4	5,3	2,7	0,4	1,0			1,3	98,7		0,09	0,42
34/8-3	1	2935.0	85,7	7,9	2,7	0,4	0,9			2,0	98,0		0,12	0,46
34/8-3	2	2905.0-2921.0	89,0	5,5	2,5	0,4	0,9			1,2	98,8		0,10	0,44
34/8-3	3	2868.0-2880.00	87,1	6,8	2,4	0,4	0,9			2,0	98,0		0,11	0,43
34/8-4S	1	3219.0-3241.0	78,1	9,7	6,6	0,9	2,0	0,43	0,53	1,6	97,4	98,4	0,21	0,46
34/8-4S	3	3001.0-3018.0	74,6	10,8	7,9	1,2	2,6	0,51	0,65	1,7	97,1	98,3	0,24	0,45
34/8-4S	4	2903.0-2917.0	83,2	7,2	4,6	0,7	1,6	0,40	0,53	1,8	97,3	98,2	0,15	0,44
34/8-4A	1	3324.0-3342	82,5	8,5	5,3	0,6	1,3	0,20	0,23	1,4	98,2	98,6	0,16	0,48
34/8-4A	2	3214.0-3228.0	77,6	9,4	7,5	0,9	2,5	0,45	0,57	1,2	97,3	98,8	0,21	0,36
34/8-4A	3	3161.0-3185.0	80,8	9,5	5,6	0,7	1,5	0,03	0,03	1,9	98,1	98,1	0,18	0,47
34/8-4A	4	3056.0-3108.0	81,5	9,1	5,5	0,7	1,5	0,03	0,04	1,7	98,2	98,3	0,17	0,46
34/8-4A	5	2988.5-3019.5	81,6	9,3	5,5	0,6	1,4	0,02	0,03	1,5	98,4	98,5	0,17	0,46
34/78-7R	2	4617.7-4731.0	81,3	7,0	2,7	0,6	0,9	0,32	0,32	6,9	92,5	93,1	0,13	0,60

Table 2.1 Volume composition of gases.

Brønn	Test	Depth	C1d13C	C1dD	C2d13C	C3d13C	iC4d13C	nC4d13C	CO2d13C	CO2d18O
34/8-1	2	2854.1-2857.1	-39,2	-170,0	-30,5	-29,0	-29,1	-29,2	-14,0	-12,7
34/8-1	3	2767.9-2806.9	-41,5	-160,0	-30,7	-29,4	-29,1	-29,2	-14,8	-13,9
34/8-3	1	2935.0	-39,4	-158,0	-30,3	-28,0	-22,9	-25,6	-9,4	-9,8
34/8-3	2	2905.0-2921.0	-39,5	-169,0	-30,1	-28,0	-25,9	-25,8	-14,9	-10,8
34/8-3	3	2868.0-2880.00	-39,5	-167,0	-30,2	-28,3	-24,6	-26,2	-8,2	-12,0
34/8-4S	1	3219.0-3241.0	-43,2	-177,0	-29,0	-24,3	-28,4	-27,8	-18,8	-4,7
34/8-4S	3	3001.0-3018.0	-43,4	-175,0	-30,7	-27,9	-28,4	-26,4	-16,6	-9,7
34/8-4S	4	2903.0-2917.0	-40,9	-164,0	-31,0	-28,5	-28,4	-29,4	-16,1	-10,3
34/8-4A	1	3324.0-3342	-43,3	-181,0	-30,8	-28,7	-25,6	-29,0	-15,6	-12,6
34/8-4A	2	3214.0-3228.0	-42,9	-183,0	-31,1	-29,1	-25,9	-28,4	-16,6	-14,7
34/8-4A	3	3161.0-3185.0	-42,7	-183,0	-31,1	-29,1	-25,8	-29,0	-15,1	-13,5
34/8-4A	4	3056.0-3108.0	-42,6	-180,0	-31,1	-29,0	-25,3	-28,9	-15,2	-6,5
34/8-4A	5	2988.5-3019.5	-42,6	-171,0	-31,0	-29,0	-25,8	-29,0	-15,1	-13,5
34/78-7R	2	4617.7-4731.0	-41,8	-173,0	-27,9	-25,8	-27,2	-25,8	0,3	-8,0

Table 2.2 Stable isotope composition.