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REPORT TYPE	REPORT NO.	IFE/KR/F-96/216	DATE
	REPORT TITLE	DATA REPORT ON STABLE ISOTOPES, GAS SAMPLES FROM WELL 34/7-25S (ref. IFE no. 2.5.0170.96)	DATE OF LAST REV.
	CLIENT	Robertson Laboratories/Saga Petroleum	REV. NO.
	CLIENT REF.	Purchase order no. 3551	NUMBER OF PAGES
			4
			NUMBER OF ISSUES
			9
SUMMARY			DISTRIBUTION
8 gas samples from well 34/7-25S are analysed for isotopic composition.			Robertson (3)
The work is done in accordance with the "The Norwegian Industry Guide to Organic Geochemical Analyses", Third Edition 1993.			Andresen, B.
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KEYWORDS			
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1 Introduction

Eight gas samples (2 tubes of each) from well 34/7-25S are analysed for isotopic composition. The gas composition is given by Robertson Laboratories.

The $\delta^{13}\text{C}$ value is measured on methane, ethane, propane and the butanes when possible. In addition the δD value is measured on methane when possible.

2 Analytical procedures

For the isotope analysis 10 ml is sampled with a syringe from each of the two tubes, the gas is mixed and then separated into the different gas components by a Carlo Erba 4200 gas chromatograph. The hydrocarbon gas components are oxidised in separate CuO-ovens in order to prevent cross contamination. The combustion products CO_2 and H_2O are frozen into collection vessels and separated.

The combustion water is reduced with zinc metal in sealed quartz tubes to prepare hydrogen for isotopic analysis. The isotopic measurements are performed on a Finnigan MAT 251 and a Finnigan Delta mass spectrometer.

IFEs value on NBS 22 is $-29.77 \pm .06\text{‰}$ PDB.

Based on repeated analysis of a laboratory standard gas mixture, the uncertainty in the $\delta^{13}\text{C}$ value is estimated to be $\pm 0.3\text{‰}$ PDB and includes all the different analytical steps. The uncertainty in the δD value is likewise estimated to be $\pm 5\text{‰}$.

3 Results

The gas composition of the gas samples is shown in Table 1 (determined by Robertson Laboratories) together with the sample codes, and the stable isotope composition is shown in Table 2.

A complete analysis of all components has not been possible due to low hydrocarbon concentration. Due to the low hydrocarbon concentration the uncertainty in the reported values may be higher than obtained by repeated analysis of the laboratory standard.

The carbon and hydrogen variations in methane from the gas samples from well 34/7-25S are plotted in Figure 1 (Schoell, 1983) and the carbon isotope variations in ethane related to the carbon isotope variations in methane are plotted in Figure 2 (Schoell, 1983).

Table 1 List of sample codes and gas composition of samples from well 34/7-25S

Sample	Upper Depth	Lower Depth	IFE no GEO	C ₁ $\mu\text{l/kg}$ rock	C ₂ $\mu\text{l/kg}$ rock	C ₃ $\mu\text{l/kg}$ rock	iC ₄ $\mu\text{l/kg}$ rock	nC ₄ $\mu\text{l/kg}$ rock	C ₅₊ $\mu\text{l/kg}$ rock
96023-4	1010.0	1010.0	961156	4367	6	0	0	0	12
96023-21	1350.0	1350.0	961157	745	3	0	0	0	23
96023-64	2250.0	2250.0	961158	1088	137	86	37	20	70
96023-76	2500.0	2500.0	961159	3746	691	350	40	63	49
96023-88	2750.0	2750.0	961160	2058	1068	862	107	223	144
96023-93	2800.0	2800.0	961161	1455	431	342	52	77	69
96023-110	3006.0	3006.0	961162	2695	669	303	24	48	25
96023-121	3105.0	3105.0	961163	1750	475	220	21	34	19

Table 2 Isotopic composition of gas samples from well 34/7-25S

IFE no GEO	C ₁ $\delta^{13}\text{C}$ ‰ PDB	C ₁ δD ‰ SMOW	C ₂ $\delta^{13}\text{C}$ ‰ PDB	C ₃ $\delta^{13}\text{C}$ ‰ PDB	C ₄ $\delta^{13}\text{C}$ ‰ PDB	CO ₂ $\delta^{13}\text{C}$ ‰ PDB	CO ₂ $\delta^{18}\text{O}$ ‰ PDB
961156	-60.8	-200				-23.7	-18.0
961157	-26.0					-27.2	-14.2
961158	-32.0					-26.9	-16.2
961159	-37.6	-223	-25.6	-26.0		-23.8	-9.3
961160	-34.6	-219	-29.0	-29.8	-31.6	-27.7	-10.7
961161	-33.6		-25.4	-27.3	-27.3	-22.7	-8.4
961162	-37.5	-243	-29.5	-29.0	-29.2	-24.9	-10.8
961163	-28.3					-23.4	-12.6

4 Literature

Schoell, M. (1983). Genetic characterisation of natural gases. *The American Association of Petroleum Geologists Bulletin*, **67**, 2225-2238.