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SUMMARY

The gas components C_1-C_4 and CO_2 have been separated from a natural gas of well 9/2-1, and the $\delta^{13}C$ values of these components have been measured. The isotopic composition of hydrogen from CH_4 has also been measured.

DISTRIBUTION

Statoil (10)
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KEYWORDS

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1. INTRODUCTION

One gas sample from well 9/2-1 DST 3 was received May 1987.

On the sample C_1-C_4 and CO_2 are quantified, and the $\delta^{13}C$ value is measured on methane, ethane, propane, the butanes and CO_2 and the δD value is also measured on methane.

2. ANALYTICAL PROCEDURE

The natural gas has been quantified and separated into the different gas components by a Carlo-Erba 4200 instrument. This gas chromatograph is equipped with a special injection loop in order to concentrate the samples, in the case of low concentration of the gas components. The hydrocarbon gas components were oxidized in separate CuO-ovens in order to prevent cross contamination. The combustion products CO_2 and H_2O were frozen into collection vessels and separated.

The water was reduced with zinc metal in a sealed tube to prepare hydrogen for isotopic analysis. The isotopic measurements were performed on a Finnigan Mat 251 and a Finnigan Mat delta mass spectrometer. Our $\delta^{13}C$ value on NBS 22 is -29.77 $\pm$ .06 o/oo PDB.

3. RESULTS

The composition of the sample is given in Table 1. The results have been normalized to 100%. The stable isotope results are given in Table 2.

Our uncertainty on the $\delta^{13}C$ value is estimated to be $\pm$ 0.3 o/oo and includes all the different analysis step. The uncertainty on the δD value is likewise estimated to be $\pm$ 5 o/oo.

Table 1 Volume composition of a natural gas sample from well 9/2-1

Sample	IFE no.	C_1 %	C_2 %	C_3 %	i-C_4 %	n-C_4 %	CO_2 %	ΣC_1-C_4	$\frac{\Sigma C_2\text{-}C_4}{\Sigma C_1\text{-}C_4}$	$\frac{\text{i-}C_4}{\text{n-}C_4}$
DST 3 3177-3210 m	6400	73.4	9.4	10.2	1.2	2.6	3.1	96.9	0.24	0.47

Table 2 Isotopic composition of a natural gas sample from well 9/2-1

Sample	IFE no.	C_1 $\delta^{13}C$ PDB	C_1 δD SMOW	C_2 $\delta^{13}C$ PDB	C_3 $\delta^{13}C$ PDB	i-C_4 $\delta^{13}C$ PDB	n-C_4 $\delta^{13}C$ PDB	CO_2 $\delta^{13}C$ PDB	CO_2 $\delta^{18}O$ PDB
DST 3 3177-3210 m	6400	-56.1	-240	-32.5	-29.5	-31.3	-31.0	-15.4	-12.5