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SUMMARY

The gas components C_1-C_4 and CO_2 have been separated from gas sample A and C, and the $\delta^{13}C$ values of these components have been measured. The isotopic composition of hydrogen from CH_4 has also been measured when possible.

DISTRIBUTION

Statoil (10)
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KEYWORDS

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1. INTRODUCTION

Three gas samples, sample A, B and C were received late April 1986. The B sample was empty at the arrival in the laboratory.

On sample A and C 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. The δD value is measured on methane on sample A.

2. ANALYTICAL PROCEDURE

The natural gases have 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 mass spectrometer. Our $\delta^{13}C$ value on NBS-22 is -29.77 $\pm$ .06 o/oo PDB.

3. RESULTS

The volume composition of the samples are 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 two gas samples, sample A and C

Sample	IFE no.	C_1 %	C_2 %	C_3 %	i-C_4 %	n-C_4 %	CO_2 %	ΣC_1-C_4	$\frac{\Sigma C_2\text{-}C_4}{\Sigma C_1\text{-}C_4}$	$\frac{i\text{-}C_4}{n\text{-}C_4}$
A	4980	71.8	11.9	7.7	1.3	2.7	4.7	95.4	0.24	0.48
C	4982	84.5	7.7	4.5	0.9	1.1	1.3	99.7	0.14	0.82

Table 2 Isotopic composition of two gas samples, sample A and C

Sample	IFE no.	C_1		C_2	C_3	i-C_4	n-C_4	CO_2	
		$\delta^{13}C$ PDB	δD SMOW	$\delta^{13}C$ PDB	$\delta^{13}C$ PDB	$\delta^{13}C$ PDB	$\delta^{13}C$ PDB	$\delta^{13}C$ PDB	$\delta^{18}O$ PDB
A	4980	-48.7	-210	-32.5	-29.1	-29.4	-30.3	-13.1	- 7.6
C	4982	-48.0		-29.8	-28.6	-27.8	-29.0	-18.9	-12.1