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REPORT TYPE	REPORT NO. IFE/KR/F-89/136			DATE 1989-10-17	
	REPORT TITLE REPORT ON STABLE ISOTOPES ($\delta^{13}\text{C}$, δD , $\delta^{18}\text{O}$) ON NATURAL GAS SAMPLES FROM WELL 6407/7-4, DST 1, DST 2A AND DST 2B			DATE OF LAST REV.	
	CLIENT Norsk Hydro A/S			NUMBER OF PAGES 5	
	CLIENT REF. U & P 3112			NUMBER OF ISSUES 20	
SUMMARY The gas components C_1 - C_5 and CO_2 have been separated from natural gas samples from well 6407/7-4, DST 1, DST 2A and DST 2B, and the $\delta^{13}\text{C}$ values of methane, ethane, propane, the butanes and CO_2 have been measured.				DISTRIBUTION Hydro (15) Andresen, B. Råheim, A. Thrønsen, T. File (2)	
KEYWORDS					
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1 INTRODUCTION

Three gas samples from well 6407/7-4, DST 1, DST 2A and DST 2B were received and analysed September/October 1989.

On the samples $C_1 - C_5$ 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 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.

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 sealed tubes to prepare hydrogen for isotopic analysis. The isotopic measurements were performed on a Finnigan Mat 251 and Finnigan Delta mass spectrometer. IFE's value on NBS 22 is $-29.77 \pm .06 \text{ ‰ PDB}$.

3 RESULTS

The volume composition of the gas samples is given in table 1. The results have been normalized to 100%. The stable isotope results are given in table 2.

The uncertainty on the $\delta^{13}C$ value is estimated to be $\pm 0.3 \text{ ‰ PDB}$ and includes all the different analytical steps. The uncertainty on the δD value is likewise estimated to be $\pm 5 \text{ ‰}$.

Table 1 Volume composition of gas samples from well 6407/7-4.

SAMPLE	IFE no.	C ₁ %	C ₂ %	C ₃ %	iC ₄ %	nC ₄ %	iC ₅ %	nC ₅ %	CO ₂ %	Σ C ₁ - C ₅	WET- NESS	iC ₄ / nC ₄
DST 1	8447	80.9	3.6	0.7	0.04	0.10	0.01	0.02	14.6	85.4	0.05	0.38
DST 2A	8448	77.2	11.3	5.9	0.77	1.97	0.20	0.24	2.4	97.6	0.21	0.39
DST 2B	8449	78.8	10.9	5.2	0.67	1.71	0.18	0.22	2.4	97.6	0.19	0.39

Table 2 Isotopic composition of gas samples from well 6407/7-4.

SAMPLE	IFE no.	C ₁ δ ¹³ C PDB	C ₁ δD SMOW	C ₂ δ ¹³ C PDB	C ₃ δ ¹³ C PDB	iC ₄ δ ¹³ C PDB	nC ₄ δ ¹³ C PDB	CO ₂ δ ¹³ C PDB	CO ₂ δ ¹⁸ O PDB
DST 1	8447	-39.3	-244	-29.0	-28.3	-26.9	-28.1	-7.8	-7.0
DST 2A	8448	-40.0	-243	-29.2	-27.2	-25.7	-27.1	-7.4	-8.6
DST 2B	8449	-40.5	-263	-29.2	-27.6	-26.8	-27.9	-13.5	-8.7