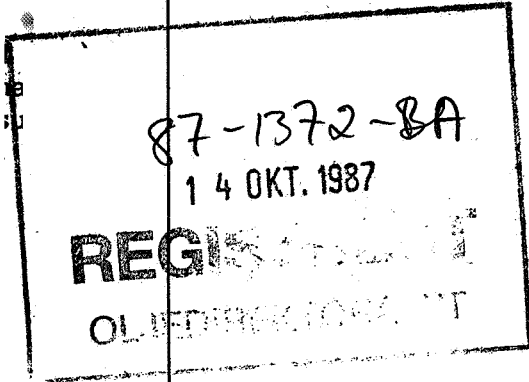


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REPORT TYPE	REPORT NO. IFE/KR/F-87/105			DATE 1987-09-10	
	REPORT TITLE  REPORT ON STABLE ISOTOPES ( $\delta^{13}\text{C}$ , $\delta\text{D}$ , $\delta^{18}\text{O}$ ) ON NATURAL GASES FROM WELL 6506/12-7			DATE OF LAST REV.	
				REV. NO.	
	CLIENT Statoil			NUMBER OF PAGES 5	
CLIENT REF. T 6269 no. 98			NUMBER OF ISSUES 16		
SUMMARY  The gas components $\text{C}_1\text{-C}_4$ and $\text{CO}_2$ have been separated from natural gases from well 6506/12-7, and the $\delta^{13}\text{C}$ values of these components have been measured. The isotopic composition of hydrogen from $\text{CH}_4$ has also been measured.				DISTRIBUTION  Statoil (10) Andresen, B. Brevik, E.M. Råheim, A. Thronsen, T.	
					
KEYWORDS					
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## 1. INTRODUCTION

Three gas samples from well 6506/12-7, DST 1; 4741-4748 m RKB, DST 2; 4702-4707 m RKB and DST 3; 4474-4514 m RKB, were received and analysed August/September 1987.

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

## 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 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 volume composition of the samples 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  $\delta D$  value is likewise estimated to be  $\pm 5$  o/oo.

**Table 1** Volume composition of gas samples from well 6506/12-7

Sample	IFE no.	C <sub>1</sub> %	C <sub>2</sub> %	C <sub>3</sub> %	i-C <sub>4</sub> %	n-C <sub>4</sub> %	CO <sub>2</sub> %	ΣC <sub>1-C<sub>4</sub></sub>	$\frac{\Sigma C_2-C_4}{\Sigma C_1-C_4}$	$\frac{i-C_4}{n-C_4}$
DST 1 4741-4748 m RKB	6729	78.4	9.8	4.7	0.68	1.3	5.1	94.9	0.17	0.53
DST 2 4702-4707 m RKB, A15289	6730	75.9	9.9	4.9	0.82	1.6	6.9	93.1	0.18	0.52
DST 3 4474-4514 m RKB	6731	80.2	8.7	4.5	0.76	1.6	4.3	95.7	0.16	0.49

**Table 2** Isotopic composition of gas samples from well 6506/12-7

Sample	IFE no.	C <sub>1</sub>		C <sub>2</sub>	C <sub>3</sub>	i-C <sub>4</sub>	n-C <sub>4</sub>	CO <sub>2</sub>	
		δ <sup>13</sup> C PDB	δD SMOW	δ <sup>13</sup> C PDB	δ <sup>13</sup> C PDB	δ <sup>13</sup> C PDB	δ <sup>13</sup> C PDB	δ <sup>13</sup> C PDB	δ <sup>18</sup> O PDB
DST 1 4741-4748 m RKB	6729	-45.9	-200	-32.7	-30.4	-29.8	-30.2	-9.0	-16.5
DST 2 4702-4707 m RKB, A15289	6730	-45.4	-198	-31.7	-29.2	-30.7	-29.5	-13.4	-18.15
DST 3 4474-4514 m RKB	6731	-45.2	-192	-31.0	-29.4	-27.5	-29.5	-11.4	-14.6