

REPORT: DATA REPORT Geochemical Analysis of Three Oils from NOCS 6506/12-10A	
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INTRODUCTION

1.1 General Comments

Three oil samples from well NOCS 6506/12-10A were received for analysis, these being as follows:

Test 1A, clean up (S 8939)

Test 1A, bottom hole (S 8945)

FMT 3B (S 8941)

A data report was requested (Statoil contact Ann Elin Gilje, Order no. ANS 020807). In addition, three gas samples were later requested analysed for carbon isotopes, $\delta^{13}\text{C}$ on C1-C5 and CO₂, δD on C1, and $\delta^{18}\text{O}$ on CO₂, this being performed by IFE. These samples are as follows:

Test 3B, #1, 5699.4 m

Test 3C, 5279.4 m

Test 1, clean up 28/10/95

1.2 Analytical Program

The analytical program was determined by Statoil, the final numbers of analyses being shown in the accompanying table.

Spl	C.Iso GC	W.Oil GC	Topp / Deasp	Iatro	MPLC	S/A GC*	S/A MS**	Bulk C Iso.
Oil, Test 1A S 8939		X	X	X	X	X	X	X
Oil, Test 1A S 8941		X	X	X	X	X	X	X
Oil, FMT 3B S 8945		X	X	X	X	X	X	X
Gas, Test 3B	X							
Gas, Test 3C	X							
Gas, Test 1	X							
Total 6	3	3	3	3	3	3	3	3

* GC of saturated and aromatic hydrocarbons with internal standard

** GC-MS of saturated hydrocarbons with internal standard

Table 1A: Light Hydrocarbons from Whole Oil GC for 6506/12-10 oils

Well	Description	iC4	nC4	iC5	nC5	2,2DMC4	2,3DMC4	2MC5	3MC5	nC6	MCyC5	Benz	Sample
6506/12-10A	FMT-3B	-	-	-	-	0.13	0.55	-	-	4.03	3.01	1.89	N14/0006
6506/12-10A	Test 1A	-	-	-	-	0.13	0.54	-	-	5.40	3.17	1.98	N14/0004
6506/12-10A	Test1A, BHS	-	-	-	-	0.05	0.27	-	-	3.90	2.61	1.49	N14/0005

Table 1B: Light Hydrocarbons from Whole Oil GC for 6506/12-10 oils

Well	Description	CyC6	2MC6	3MC6	1,3ci- DMCyC5	1,3tr- DMCyC5	1,2tr- DMCyC5	nC7	MCyC6	Tol	nC8	p/m-Xyl	Sample
6506/12-10A	FMT-3B	5.17	2.25	1.50	0.63	0.62	1.26	4.29	8.47	6.01	3.97	4.30	N14/0006
6506/12-10A	Test 1A	4.97	2.40	1.65	0.62	0.59	1.10	4.80	7.86	5.86	4.28	4.21	N14/0004
6506/12-10A	Test1A,BHS	4.65	2.48	1.78	0.64	0.63	1.18	5.73	10.06	7.54	6.67	6.75	N14/0005

Table 2A: Results of TIC-FID analysis: Absolute yields in mg/g rock for 6506/12-10 oils

<u>Well</u>	<u>Description</u>	<u>EOM weighed</u>	<u>Sat HC</u>	<u>Aro HC</u>	<u>Resins</u>	<u>Asp</u>	<u>Tot HC</u>	<u>Tot Pol</u>	<u>EOM calcul.</u>	<u>Sample</u>
6506/12-10A	FMT-3B	77.20	31.66	3.03	2.00	10.10	34.69	12.10	46.79	N14/0006
6506/12-10A	Test 1A	88.20	45.04	8.83	2.07	9.50	53.87	11.57	65.44	N14/0004
6506/12-10A	Test1A,BHS	76.00	38.23	6.49	1.53	9.20	44.73	10.73	55.46	N14/0005

Table 2B: Results of TLC-FID analysis: Rel. percentages of sep. fractions for 6506/12-10 oils

<u>Well</u>	<u>Description</u>	<u>Sat HC</u>	<u>Aro HC</u>	<u>Resins</u>	<u>Asp</u>	<u>Tot HC</u>	<u>Tot Pol</u>	<u>Sample</u>
6506/12-10A	FMT-3B	75.02	7.17	4.73	13.08	82.19	17.81	N14/0006
6506/12-10A	Test 1A	71.85	14.08	3.30	10.77	85.93	14.07	N14/0004
6506/12-10A	Test1A,BHS	72.64	12.34	2.91	12.11	84.98	15.02	N14/0005

Table 3a: Weight of Oil and Chromatographic Fraction for 6506/12-10 oils

Well	Description	Whole oil (g)	Light (mg)	Topped (mg)	Sat (mg)	Aro (mg)	Asph (mg)	NSO (mg)	HC (mg)	Non-HC (%)	Sample
6506/12-10A	FMT-3B	82.6	5.4	77.2	62.1	4.5	10.1	0.6	66.5	10.7	N14/0006
6506/12-10A	Test 1A	119.3	31.1	88.2	61.4	9.6	9.5	7.6	71.1	17.1	N14/0004
6506/12-10A	Test1A,BHS	95.8	19.8	76.0	56.9	8.3	9.2	1.5	65.3	10.7	N14/0005

Table 3b: Composition of the oil fraction (%) for 6506/12-10 oils

Well	Description	Sat	Aro	Asph	NSO	HC	Non-HC	Sat	HC	Sample
		T.Oil	T.Oil	T.Oil	T.Oil	T.Oil	T.Oil	T.Oil	Aro	
6506/12-10A	FMT-3B	80.38	5.77	13.08	0.77	86.15	13.85	1393.33	621.91	N14/0006
6506/12-10A	Test 1A	69.66	10.94	10.77	8.64	80.59	19.41	636.84	415.30	N14/0004
6506/12-10A	Test1A,BHS	74.93	10.94	12.11	2.03	85.87	14.13	685.19	607.69	N14/0005

Table 4A: Saturated Hydrocarbon Ratios for 6506/12-10 oils

Well	Description	Pristane	Pristane	Pristane/nC17	Phytane	CPI1	nC17	Sample
		nC17	Phytane	Phytane/nC18	nC18		nC17+nC27	
6506/12-10A	FMT-3B	0.37	1.38	1.34	0.28	1.08	0.82	N14/0006
6506/12-10A	Test 1A	0.64	1.51	1.41	0.46	1.08	0.71	N14/0004
6506/12-10A	Test1A, BHS	0.66	1.50	1.43	0.46	1.08	0.69	N14/0005

Table 4b: Quantitative Analysis of Saturated Fraction, 6506/12-10A

sample	nC15 mg/g sat	nC16 mg/g sat	iC18 mg/g sat	nC17 mg/g sat	Pr mg/g sat	nC18 mg/g sat	Ph mg/g sat	nC19 mg/g sat	nC20 mg/g sat	nC21 mg/g sat	nC22 mg/g sat	nC23 mg/g sat	nC24 mg/g sat	nC25 mg/g sat	nC26 mg/g sat	nC27 mg/g sat	nC28 mg/g sat	nC29 mg/g sat	nC30 mg/g sat	nC31 mg/g sat	nC32 mg/g sat	nC33 mg/g sat	nC34 mg/g sat
FMT 3B	15,78	14,85	7,25	11,84	5,23	11,56	4,59	8,80	6,49	5,18	4,24	3,73	3,44	2,92	2,64	1,90	1,39	0,99	0,67	0,53	0,33	0,72	0,73
TEST 1A	19,47	18,14	6,25	16,86	10,91	15,48	7,33	16,11	13,45	11,95	11,28	9,99	9,15	8,50	6,43	5,30	3,60	2,47	2,09	1,10	0,64	1,47	1,67
TEST 1A,BHS	19,31	17,60	6,13	15,86	10,46	14,41	6,88	15,48	12,86	10,95	10,04	9,16	8,34	7,57	6,16	5,64	4,40	3,94	3,12	2,62	1,84	2,31	2,28

Table 5Aa: Aromatic Hydrocarbon Ratios for 6506/12-10 oils

Well	Description	MNR	DMNR	BPhR	2/1MP	MPI1	MPI2	Rc	DBT/P	4/1MDBT	(3+2) /1MDBT	Sample
6506/12-10A	FMT-3B	1.04	3.38	0.20	1.30	0.91	1.01	0.95	0.28	32.00	5.31	N14/0006
6506/12-10A	Test 1A	1.38	3.80	0.39	1.54	1.00	1.20	1.00	0.26	57.27	9.40	N14/0004
6506/12-10A	Test1A,BHS	1.30	4.06	0.40	1.39	0.99	1.13	1.00	0.31	61.94	9.89	N14/0005

Table 5Ab: Aromatic Hydrocarbon Ratios for 6506/12-10 oils

<u>Well</u>	<u>Description</u>	<u>F1</u>	<u>F2</u>	<u>Sample</u>
6506/12-10A	FMT-3B	0.53	0.29	N14/0006
6506/12-10A	Test 1A	0.55	0.33	N14/0004
6506/12-10A	Test1A,BHS	0.55	0.31	N14/0005

Table 5b: Quantitative Analysis of Aromatic Fraction, 6506/12-10A																	
sample	2 MN mg/g aro	1 MN mg/g aro	BPh mg/g aro	2 EN mg/g aro	1 EN mg/g aro	2,6+2,7 DMN mg/g aro	1,6 DMN mg/g aro	1,5 DMN mg/g aro	1,3,7 TMN mg/g aro	1,3,6 TMN mg/g aro	1,3,5 TMN mg/g aro	1,4,6+2,3,6 TMN mg/g aro	P mg/g aro	3 MP mg/g aro	2 MP mg/g aro	9 MP mg/g aro	1 MP mg/g aro
FMT 3B	0,11	0,10	0,50	0,57		2,62	2,46	0,57	3,83	3,80	2,92	3,22	7,35	4,31	5,61	5,50	3,60
TEST 1A	3,56	2,34	2,93	2,43	0,33	10,57	6,71	1,26	4,37	4,89	3,97	4,11	5,54	3,11	5,46	4,08	2,65
TEST 1A,BHS	1,14	0,87	2,14	1,09		6,73	4,98	0,90	3,74	4,46	3,15	3,80	5,59	3,76	5,04	5,13	3,24

Table 6a: Variation in Triterpane Distribution (peak height) SIR for 6506/12-10 oils

Well	Descript.	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Rat.10	Rat.11	Rat.12	Rat.13	Rat.14	Sample
6506/12-10A	FMT-3B	0.28	0.22	0.28	0.62	0.38	0.81	-	-	-	1.19	1.00	0.42	0.06	64.04	N14/0006
6506/12-10A	Test 1A	0.19	0.16	0.28	0.61	0.38	1.44	-	-	-	2.42	0.91	0.43	0.19	-	N14/0004
6506/12-10A	Test1A,BHS	0.16	0.14	0.33	0.48	0.32	2.50	-	-	-	4.49	0.85	0.37	0.26	-	N14/0005

List of Triterpane Distribution Ratios

Ratio 1: $27Tm / 27Ts$

Ratio 2: $27Tm / 27Tm+27Ts$

Ratio 3: $27Tm / 27Tm+30a\beta+30\beta a$

Ratio 4: $29a\beta / 30a\beta$

Ratio 5: $29a\beta / 29a\beta+30a\beta$

Ratio 6: $30d / 30a\beta$

Ratio 7: $28a\beta / 30a\beta$

Ratio 8: $28a\beta / 29a\beta$

Ratio 9: $28a\beta / 28a\beta+30a\beta$

Ratio 10: $24/3 / 30a\beta$

Ratio 11: $30a\beta / 30a\beta+30\beta a$

Ratio 12: $29a\beta+29\beta a / 29a\beta+29\beta a+30a\beta+30\beta a$

Ratio 13: $29\beta a+30\beta a / 29a\beta+30a\beta$

Ratio 14: $32a\beta S / 32a\beta S+32a\beta R$ (%)

Table 6b: Variation in Sterane Distribution (peak height) SIR for 6506/12-10 oils

<u>Well</u>	<u>Descript.</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Ratio5</u>	<u>Ratio6</u>	<u>Ratio7</u>	<u>Ratio8</u>	<u>Ratio9</u>	<u>Ratio10</u>	<u>Sample</u>
6506/12-10A	FMT-3B	0.73	55.23	80.00	1.30	0.78	0.68	0.55	0.67	1.23	4.47	N14/0006
6506/12-10A	Test 1A	0.83	52.73	79.02	1.31	0.78	0.68	0.53	0.65	1.12	3.98	N14/0004
6506/12-10A	Test1A,BHS	0.80	54.74	79.65	1.38	0.78	0.70	0.56	0.66	1.21	4.32	N14/0005

List of Sterane Distribution Ratios

Ratio 1: $27d\beta S / 27d\beta S + 27aaR$

Ratio 2: $29aaS / 29aaS + 29aaR$ (%)

Ratio 3: $2 * (29\beta\beta R + 29\beta\beta S) / (29aaS + 29aaR + 2 * (29\beta\beta R + 29\beta\beta S))$ (%)

Ratio 4: $27d\beta S + 27d\beta R + 27daS + 27daR / 29d\beta S + 29d\beta R + 29daS + 29daR$

Ratio 5: $29\beta\beta R + 29\beta\beta S / 29\beta\beta R + 29\beta\beta S + 29aaS$

Ratio 6: $21a + 22a / 21a + 22a + 29aaS + 29\beta\beta R + 29\beta\beta S + 29aaR$

Ratio 7: $21a + 22a / 21a + 22a + 28daR + 28aaS + 29daR + 29aaS + 29\beta\beta R + 29\beta\beta S + 29aaR$

Ratio 8: $29\beta\beta R + 29\beta\beta S / 29aaS + 29\beta\beta R + 29\beta\beta S + 29aaR$

Ratio 9: $29aaS / 29aaR$

Ratio 10: $29\beta\beta R + 29\beta\beta S / 29aaR$

Table 6c: Variation in Triaromatic Sterane Distribution (peak height) for 6506/12-10 oils

Well	Descript.	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Sample
6506/12-10A	FMT-3B	1.00	1.00	1.00	1.00	1.00	N14/0006
6506/12-10A	Test 1A	1.00	1.00	1.00	1.00	1.00	N14/0004
6506/12-10A	Test1A,BHS	1.00	1.00	1.00	1.00	1.00	N14/0005

Ratio1: a1 / a1 + g1

Ratio2: b1 / b1 + g1

Ratio3: a1 + b1 / a1 + b1 + c1 + d1 + e1 + f1 + g1

Ratio4: a1 / a1 + e1 + f1 + g1

Ratio5: a1 / a1 + d1

Table 6d: Variation in Monoaromatic Sterane Distribution (peak height) for 6506/12-10 oils

<u>Well</u>	<u>Descript.</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Sample</u>
6506/12-10A	FMT-3B	0.51	0.57	0.43	0.42	N14/0006
6506/12-10A	Test 1A	0.88	0.81	0.83	0.72	N14/0004
6506/12-10A	Test1A,BHS	0.55	0.58	0.43	0.37	N14/0005

Ratio1: A1 / A1 + E1
 Ratio2: B1 / B1 + E1

Ratio3: A1 / A1 + E1 + G1
 Ratio4: A1+B1 / A1+B1+C1+D1+E1+F1+G1+H1+I1

Table 6e: Aromatisation of Steranes (peak height) for 6506/12-10 oils

Well	Descript.	Ratio1	Ratio2	Sample
6506/12-10A	FMT-3B	1.00	-	N14/0006
6506/12-10A	Test 1A	1.00	-	N14/0004
6506/12-10A	Test1A,BHS	1.00	-	N14/0005

$$\text{Ratio1: } \frac{C1+D1+E1+F1+G1+H1+I1}{C1+D1+E1+F1+G1+H1+I1 + c1+d1+e1+f1+g1}$$

$$\text{Ratio2: } g1 / g1 + I1$$

Table 6f: Raw triterpane data (peak height) m/z 191 SIR for 6506/12-10 oils

Well	Descript.	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aß	25nor30aß	Sample
		29aß	29Ts	30d	29Ba	300	30aß	30Ba	30G	31aßS	
		31aßR	32aßS	32aßR	33aßS	33aßR	34aßS	34aßR	35aßS	35aßR	
6506/12-10A	FMT-3B	5647.2	4752.5	1583.8	2821.9	1178.5	5458.2	1533.4	0.0	0.0	N14/0006
		2489.0	3464.0	3220.6	408.6	0.0	3992.0	0.0	0.0	1340.1	
		829.0	1029.7	578.2	797.6	402.0	395.4	225.5	324.5	189.2	
6506/12-10A	Test 1A	13072.7	12497.9	4374.0	5213.7	3405.1	11869.0	2239.8	0.0	0.0	N14/0004
		3174.3	6864.5	7427.6	1063.4	0.0	5170.9	540.4	0.0	0.0	
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
6506/12-10A	Test1A,BHS	10991.1	10376.7	3776.8	3722.9	2875.1	8432.2	1334.8	0.0	0.0	N14/0005
		1103.1	4549.0	5781.9	471.0	0.0	2313.4	418.6	0.0	0.0	
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Table 6g: Raw sterane data (peak height) m/z 217 SIR for 6506/12-10 oils

Well	Descript.	21a	22a	27dBS	27dBR	27daS	27daR	28dBS	28dBR	28daS*	Sample
		29dBS*	28daR*	27aaR	29dBR	29daS	28aaS	29daR*	28BS		
		28aaR	29aaS	29BR	29BS	29aaR					
6506/12-10A	FMT-3B	7114.8	1878.4	5314.6	4122.1	1049.9	976.6	2674.6	1449.6	1174.9	N14/0006
		4397.7	1701.0	1918.3	2441.2	742.7	308.1	1256.6	1821.5		
		255.3	775.1	1449.8	1356.6	628.4					
6506/12-10A	Test 1A	18522.3	4518.6	15771.3	10346.3	3147.0	3155.5	7743.9	4314.2	2760.9	N14/0004
		11922.9	4852.0	3336.2	7124.6	2376.5	1347.4	3368.6	4703.9		
		626.3	2025.5	3695.6	3536.6	1816.0					
6506/12-10A	Test1A,BHS	15410.4	3569.7	12793.9	8746.0	2582.5	2625.8	6202.7	3514.2	2072.5	N14/0005
		9697.1	3822.4	3112.1	5329.0	1861.7	727.2	2482.0	3929.6		
		415.8	1495.0	2762.9	2582.7	1236.2					

* 28daS coel with 27aaS, 29dBS coel with 27BR, 28daR coel with 27BS, 29daR coel with 28BR

Table 6h: Raw triaromatic sterane data (peak height) m/z 231 for 6506/12-10 oils

Well	Descript.	a1	b1	c1	d1	e1	f1	g1	Sample
6506/12-10A	FMT-3B	12819.5	13412.1	0.0	0.0	0.0	0.0	0.0	N14/0006
6506/12-10A	Test 1A	5516.5	4114.3	0.0	0.0	0.0	0.0	0.0	N14/0004
6506/12-10A	Test1A,BHS	13817.9	11329.3	0.0	0.0	0.0	0.0	0.0	N14/0005

Table 6i.: Raw monoaromatic sterane data (peak height) m/z 253 for 6506/12-10 oils

Well	Descript.	A1	B1	C1	D1	E1	F1	G1	H1	I1	Sample
6506/12-10A	FMT-3B	548.9	697.5	330.0	0.0	530.4	148.7	189.3	386.1	136.3	N14/0006
6506/12-10A	Test 1A	1590.7	891.3	149.1	0.0	208.4	98.5	112.6	239.8	140.5	N14/0004
6506/12-10A	Test1A,BHS	777.0	908.7	562.3	0.0	645.7	334.1	383.8	873.5	101.9	N14/0005

Table 6j: Raw sterane data (peak height) m/z 218 SIR for 6506/12-10 oils

Well	Descript.	27 β BR	27 β BS	28 β BR	28 β BS	29 β BR	29 β BS	30 β BR	30 β BS	Sample
6506/12-10A	FMT-3B	2536.8	2032.6	1700.3	2172.0	2241.0	2077.8	414.5	433.0	N14/0006
6506/12-10A	Test 1A	6625.3	5500.2	4638.0	5809.0	5474.2	5146.5	1573.4	1470.0	N14/0004
6506/12-10A	Test1A,BHS	5043.2	4199.3	3433.1	4639.7	4059.7	3723.6	1084.2	1057.9	N14/0005

Table 6k: Raw triterpane data (peak height) m/z 177 SIR for 6506/12-10 oils

<u>Well</u>	<u>Descript.</u>	<u>25nor28aß</u>	<u>25nor30aß</u>	<u>Sample</u>
6506/12-10A	FMT-3B	4047.8	0.0	N14/0006
6506/12-10A	Test 1A	8960.0	0.0	N14/0004
6506/12-10A	Test1A,BHS	6765.0	0.0	N14/0005

Table 61: Amount of triterpanes (ppb) m/z 191 SIR for 6506/12-10 oils

Well	Descript.	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aβ	25nor30aβ	Sample
		29aβ	29Ts	30d	29βa	300	30aβ	30βa	30G	31aβS	
		31aβR	32aβS	32aβR	33aβS	33aβR	34aβS	34aβR	35aβS	35aβR	
6506/12-10A	FMI-3B	8236.9	6931.9	2310.1	4116.0	1718.9	7961.2	2236.6	0.0	0.0	N14/0006
		3630.4	5052.6	4697.5	596.0	0.0	5822.7	0.0	0.0	1954.6	
		1209.2	1502.0	843.4	1163.4	586.3	576.7	329.0	473.3	276.0	
6506/12-10A	Test 1A	14712.4	14065.4	4922.6	5867.7	3832.1	13357.7	2520.7	0.0	0.0	N14/0004
		3572.4	7725.5	8359.3	1196.8	0.0	5819.4	608.2	0.0	0.0	
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
6506/12-10A	Test1A,BHS	11599.4	10951.0	3985.8	3928.9	3034.2	8898.9	1408.7	0.0	0.0	N14/0005
		1164.1	4800.7	6101.9	497.1	0.0	2441.4	441.7	0.0	0.0	
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Table 6m: Amount of steranes (ppb) m/z 217 SIR for 6506/12-10 oils

Well	Descript.	21a	22a	27dBS	27dBR	27daS	27daR	28dBS	28dBR	28daS*	Sample
		29dBS*	28daR*	27aaR	29dBR	29daS	28aaS	29daR*	28BS		
		28aaR	29aaS	29BSR	29BS	29aaR					
6506/12-10A	FMT-3B	10377.6	2739.8	7751.9	6012.5	1531.4	1424.4	3901.2	2114.4	1713.7	N14/0006
		6414.4	2481.1	2798.1	3560.7	1083.2	449.4	1832.9	2656.8		
		372.4	1130.5	2114.7	1978.7	916.6					
6506/12-10A	Test 1A	20845.5	5085.4	17749.5	11644.0	3541.7	3551.3	8715.1	4855.3	3107.2	N14/0004
		13418.3	5460.6	3754.7	8018.2	2674.6	1516.3	3791.2	5293.9		
		704.9	2279.5	4159.1	3980.2	2043.8					
6506/12-10A	Test1A,BHS	16263.3	3767.3	13502.0	9230.1	2725.4	2771.1	6546.0	3708.7	2187.2	N14/0005
		10233.8	4034.0	3284.4	5623.9	1964.8	767.4	2619.4	4147.1		
		438.8	1577.8	2915.8	2725.6	1304.7					

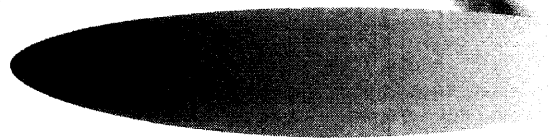
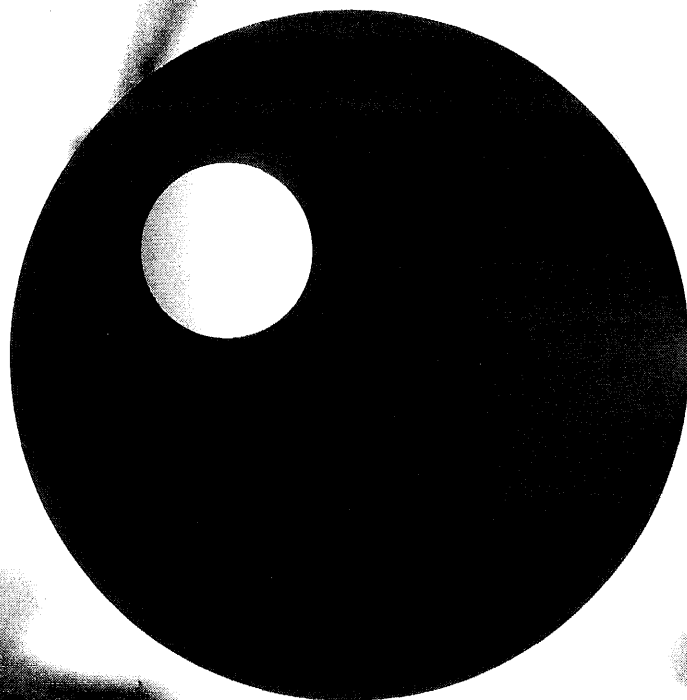
* 28daS coel with 27aaS, 29dBS coel with 27BSR, 28daR coel with 27BS, 29daR coel with 28BSR

Table 7A: Tabulation of carbon isotope data on oils for 6506/12-10 oils

<u>Well</u>	<u>Descript.</u>	<u>Whole oil</u>	<u>Topped oil</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>NSO</u>	<u>Asphaltenes</u>	<u>Sample</u>
6506/12-10A	FMT-3B	-	-27.82	-27.22	-27.34	-26.86	-23.33	N14/0006
6506/12-10A	Test 1A	-	-29.77	-29.48	-27.34	-27.40	-25.72	N14/0004
6506/12-10A	Test1A, BHS	-	-29.72	-29.15	-27.11	-24.96	-25.29	N14/0005

Table 7B: Tabulation of cv values from carbon isotope data for 6506/12-10 oils

<u>Well</u>	<u>Descript.</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>cv value</u>	<u>Sample</u>
6506/12-10A	FMT-3B	-27.22	-27.34	-3.48	N14/0006
6506/12-10A	Test 1A	-29.48	-27.34	2.24	N14/0004
6506/12-10A	Test1A,BHS	-29.15	-27.11	1.92	N14/0005



IFE/KR/F-96/043

**Datareport on stable isotopes,
gas samples from well 6506/12-10A**

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1 Introduction

Three gas samples from well 6506/12-10A are analysed for gas and isotopic composition.

On the samples C₁ - C₅ and CO₂ are quantified. The δ¹³C value is measured on methane, ethane, propane, the butanes and CO₂. In addition the δD value is measured on methane.

2 Analytical procedures

Aliquots of 1.0 ml of the gas samples are sampled with a syringe for analysis on a Porapak Q column connected with flame ionisation (FID) and thermal conductivity (TCD) detectors. The detection limit for the hydrocarbon gas components is 0.01 µl/ml and for CO₂ 0.5 µl/ml.

For the isotope analysis 5 ml are sampled with a syringe 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 CO₂ and H₂O 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 $-29.77 \pm .06\%$ PDB.

The uncertainty in the δ¹³C value is estimated to be $\pm 0.3\%$ PDB and includes all the different analytical steps. The estimate is based on repeated analysis of a laboratory standard gas mixture. The uncertainty in the δD value is likewise estimated to be $\pm 10\%$.

3 Results

The volume composition of the gas samples is shown in Table 1 (normalised composition), and the stable isotope composition of the same gas samples is shown in Table 2. The

isotopic analysis of CO₂ in sample IFE no GEO 960162 is repeated with both values reported in Table 2.

The molecular composition related to carbon isotope variations in methane from the gas samples from well 6506/12-10A are plotted in Figure 1 (Schoell, 1983), the carbon and hydrogen variations in methane are plotted in Figure 2 (Schoell, 1983) and the carbon isotope variations in ethane related to the carbon isotope variations in methane in Figure 3 (Schoell, 1983).

Table 1 Volume composition (normalised values) of gas samples from well 6506/12-10A

Sample	IFE no GEO	C ₁ %	C ₂ %	C ₃ %	iC ₄ %	nC ₄ %	iC ₅ %	nC ₅ %	CO ₂ %	ΣC ₁ -C ₅ %	Wet- ness	iC ₄ / nC ₄ /
3B #1, 5699.4m	960161	77.1	9.1	4.2	0.67	1.30	0.39	0.37	6.9	93.1	0.17	0.52
3C, 5279.4m	960162	83.9	6.1	1.7	0.15	0.19	0.04	0.04	7.9	92.1	0.09	0.75
Test no 1 (clean up 28/10-95)	960163	76.6	10.5	4.8	0.60	1.00	0.21	0.21	6.0	94.0	0.18	0.60

Table 2 Isotopic composition of gas samples from well 6506/12-10A

Sample	IFE no GEO	C ₁ δ ¹³ C ‰ PDB	C ₁ δ D ‰ 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
3B #1, 5699.4m	960161	-44.8	-200	-31.5	-28.8	-28.7	-28.5	-14.5	-14.4
3C, 5279.4m	960162	-45.5	-196	-30.5	-28.2	-28.5	-28.9	-10.9	3.2
Test no 1 (clean up 28/10-95)	960163	-44.5	-215	-31.1	-28.5	-28.7	-28.8	-11.1	0.4
								-13.7	-16.4