

Table 9ca¹ Peak areas Aromatic Hydrocarbon GC data

Lower depth	Desc	2MN	1MN	BPh	2EN	1EN	2.6+2.7DMN	1.6DMN	1.5DMN	1.3.7TMN	1.3.8TMN	1.3.5TMN	1.4.6+2.3.6TMN	P
1826.7	1826.7 MDT	273072	159375	156732	125151	109685	436669	400111	79778	240148	387651	340928	312915	239094
1910.5	1910.5 MDT	0	0	0	0	0	0	0	0	63928	91014	132100	109460	284946
1940.5	1940.5 MDT	72863	32012	45126	0	0	104904	109513	0	101251	142611	184721	147531	275868

Lower depth	Desc	3MP	2MP	9MP	1MP	DBT	4MDBT	2+3MDBT	1MDBT	Sample number
1826.7	1826.7 MDT	145526	180972	126019	99093	168635	235974	113229	0	T91/0001-0
1910.5	1910.5 MDT	69002	98984	100151	57207	0	0	0	0	T91/0002-0
1940.5	1940.5 MDT	62526	116691	92059	49291	0	0	0	0	T91/0003-0

Table 9ca: Aromatic Hydrocarbon Ratios (peak area) for NOCS 6608/10-6

Well	Description	MNR	DMNR	BPhR	2/1MP	MPI1	MPI2	Rc	DBT/P	4/1MDBT	(3+2) /1MDBT	Sample
6608/10-6	1826.7 MDT	1.71	5.47	0.39	1.83	1.06	1.17	1.03	0.71	-	-	T91/0001
6608/10-6	1910.5 MDT	-	-	-	1.73	0.57	0.67	0.74	-	-	-	T91/0002
6608/10-6	1940.5 MDT	2.28	-	0.41	2.37	0.64	0.84	0.79	-	-	-	T91/0003

Table 9cb: Aromatic Hydrocarbon Ratios (peak area) for NOCS 6608/10-6

Well	Description	F1	F2	Sample
6608/10-6	1826.7 MDT	0.59	0.33	T91/0001
6608/10-6	1910.5 MDT	0.52	0.30	T91/0002
6608/10-6	1940.5 MDT	0.56	0.36	T91/0003

Table 10a: Tabulation of carbon isotope data on oils for NOCS 6608/10-6

<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>
6608/10-6	1826.7 MDT	-	-27.80	-28.40	-27.31	-27.87	-28.64	T91/0001
6608/10-6	1910.5 MDT	-	-27.90	-28.51	-27.26	-27.88	-28.57	T91/0002
6608/10-6	1940.5 MDT	-	-27.83	-28.47	-27.28	-27.94	-26.17	T91/0003

Table 10b: Tabulation of cv values from carbon isotope data for NOCS 6608/10-6

<u>Well</u>	<u>Descript.</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>cv value</u>	<u>Sample</u>
6608/10-6	1826.7 MDT	-28.40	-27.31	-0.43	T91/0001
6608/10-6	1910.5 MDT	-28.51	-27.26	-0.04	T91/0002
6608/10-6	1940.5 MDT	-28.47	-27.28	-0.18	T91/0003

Table 11a: Variation in Triterpane Distribution (peak height) SIR for NOCS 6608/10-6

Well	Descript.	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Rat.10	Rat.11	Rat.12	Rat.13	Rat.14	Sample
608/10-6	1826.7 MDT	1.14	0.53	0.14	0.47	0.32	0.08	0.09	0.19	0.08	0.07	0.91	0.33	0.11	61.54	T91/0001
608/10-6	1910.5 MDT	1.12	0.53	0.15	0.49	0.33	0.08	0.10	0.20	0.09	0.08	0.91	0.34	0.12	61.96	T91/0002
608/10-6	1940.5 MDT	1.10	0.52	0.14	0.48	0.32	0.08	0.09	0.20	0.09	0.08	0.91	0.33	0.11	61.74	T91/0003

List of Triterpane Distribution Ratios

Ratio 1: $27T_m / 27T_s$

Ratio 2: $27T_m / 27T_m + 27T_s$

Ratio 3: $27T_m / 27T_m + 30a\beta + 30\beta_a$

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 11b: Variation in Sterane Distribution (peak height) SIR for NOCS 6608/10-6

Well	Descript.	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Ratio10	Sample
6608/10-6	1826.7 MDT	0.70	49.22	78.88	1.02	0.79	0.38	0.26	0.65	0.97	3.68	T91/0001
6608/10-6	1910.5 MDT	0.70	49.20	78.77	0.96	0.79	0.35	0.25	0.65	0.97	3.65	T91/0002
6608/10-6	1940.5 MDT	0.70	49.26	79.71	0.98	0.80	0.39	0.27	0.66	0.97	3.87	T91/0003

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

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

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 11c: Raw triterpane data (peak height) m/z 191 SIR for NOCS 6608/10-6

Well	Descript.	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aß	25nor30aß	Sample
		29aß	29Ts	30d	29ßa	300	30aß	30ßa	30G	31aßS	
		31aßR	32aßS	32aßR	33aßS	33aßR	34aßS	34aßR	35aßS	35aßR	
6608/10-6	1826.7 MDT	19717.2 107296.1 41560.3	17067.5 32250.1 40089.5	6420.3 17973.1 25050.2	20815.8 15748.6 24044.3	4938.9 0.0 15803.9	34257.0 229360.5 14626.8	39220.5 21802.0 9311.6	20387.8 0.0 10629.5	15727.4 65333.0 6420.6	T91/0001
6608/10-6	1910.5 MDT	17105.0 94337.7 35736.1	15280.1 28167.4 35391.4	5946.9 16150.5 21731.6	17835.5 14121.1 21726.2	3972.5 0.0 13763.4	33253.7 193684.0 12876.9	37342.8 19469.6 8536.9	19145.3 0.0 8049.7	17231.6 54338.8 5648.9	T91/0002
6608/10-6	1940.5 MDT	16574.6 91584.1 34577.8	14411.1 27140.5 34522.4	5524.1 15575.8 21396.8	17316.7 13647.2 20775.2	4116.1 0.0 13320.3	32147.1 192113.8 12212.3	35366.1 18888.2 8019.5	18112.6 0.0 7990.5	15264.3 53466.5 5354.5	T91/0003

Table 11d: Raw sterane data (peak height) m/z 217 SIR for NOCS 6608/10-6

Well	Descript.	21a	22a	27dBS	27dBR	27daR	27daS	28dBS	28dBR	28daR*	Sample
		29dBS*	28daS*	27aaR	29dBR	29daR	28aaS	29daS*	28BR		
		28aaR	29aaS	29BR	29BS	29aaR					
608/10-6	1826.7 MDT	34521.3	13804.9	38665.6	30264.3	10649.5	11556.9	18591.0	12548.1	16446.1	T91/0001
		32646.7	30705.0	16459.0	28462.8	11083.3	10946.3	16849.1	28695.6		
		6995.3	13728.2	28357.2	23742.8	14163.7					
608/10-6	1910.5 MDT	30045.4	11776.9	33166.8	25746.8	9397.9	9528.6	16941.7	11766.8	15407.0	T91/0002
		28855.9	22053.0	14515.3	25813.8	10209.5	10736.4	16195.7	21175.9		
		7088.1	13282.6	27022.3	23066.1	13711.9					
608/10-6	1940.5 MDT	30394.8	11506.5	30418.9	23361.8	7997.1	8438.9	15172.7	10281.9	12808.8	T91/0003
		25946.4	22462.3	13014.5	23006.1	8541.3	8842.0	13887.1	20642.6		
		5434.9	11053.9	23974.5	20099.9	11384.3					

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

Table 11e: Raw sterane data (peak height) m/z 218 SIR for NOCS 6608/10-6

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
608/10-6	1826.7 MDT	37299.3	40938.7	26687.8	40314.5	47849.3	42241.1	11852.3	11698.2	T91/0001
608/10-6	1910.5 MDT	31306.4	29070.2	23969.6	28749.5	42375.9	37938.9	10465.2	10758.8	T91/0002
608/10-6	1940.5 MDT	29177.0	31754.0	23107.3	31234.3	39541.5	35872.6	9805.4	9762.6	T91/0003

Table 11f: Raw triterpane data (peak height) m/z 177 SIR for NOCS 6608/10-6

Well	Descript.	25nor28a β	25nor30a β	Sample
608/10-6	1826.7 MDT	15743.8	9005.6	T91/0001
608/10-6	1910.5 MDT	15235.4	11863.3	T91/0002
608/10-6	1940.5 MDT	13807.0	9554.1	T91/0003

Table 11g: Amount of triterpanes (ppb) m/z 191 SIR for NOCS 6608/10-6

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	
608/10-6	1826.7 MDT	125128.6	108313.6	40744.2	132100.9	31343.0	217400.9	248900.3	129384.8	99808.8	T91/0001
		680920.7	204664.7	114060.8	99943.5	0.0	1455563.6	138359.7	0.0	414614.9	
		263749.3	254415.5	158973.1	152589.2	100294.2	92824.2	59093.0	67456.7	40746.2	
608/10-6	1910.5 MDT	156603.2	139895.6	54445.9	163291.0	36370.1	304451.1	341887.9	175283.2	157761.7	T91/0002
		863699.1	257883.5	147864.1	129284.4	0.0	1773253.6	178252.1	0.0	497492.8	
		327177.7	324021.9	198961.5	198911.6	126009.2	117892.9	78159.0	73697.8	51717.5	
608/10-6	1940.5 MDT	124656.1	108384.6	41546.5	130237.6	30957.1	241775.4	265984.9	136222.9	114801.7	T91/0003
		688795.3	204120.8	117144.0	102639.3	0.0	1444869.6	142056.1	0.0	402116.6	
		260056.4	259639.8	160922.9	156248.6	100180.8	91847.6	60314.1	60095.5	40270.7	

Table 11h: Amount of steranes (ppb) m/z 217 SIR for NOCS 6608/10-6

Well	Descript.	21a	22a	27dBS	27dBR	27daR	27daS	28dBS	28dBR	28daR*	Sample
		29dBS*	28daS*	27aaR	29dBR	29daR	28aaS	29daS*	28BS		
		28aaR	29aaS	29BSR	29BS	29aaR					
6608/10-6	1826.7 MDT	219078.5	87608.5	245379.2	192062.7	67583.5	73342.2	117982.1	79632.4	104370.0	T91/0001
		207182.0	194859.3	104451.6	180630.4	70336.5	69467.5	106927.5	182107.8		
		44393.6	87121.5	179960.0	150676.2	89885.4					
6608/10-6	1910.5 MDT	275077.6	107822.0	303654.7	235722.5	86041.1	87237.9	155108.0	107729.7	141056.8	T91/0002
		264187.2	201903.9	132893.2	236335.9	93471.6	98296.2	148278.2	193874.1		
		64894.4	121607.4	247399.6	211179.2	125538.0					
6608/10-6	1940.5 MDT	228596.2	86539.5	228777.7	175702.1	60145.4	63467.8	114112.7	77329.5	96333.7	T91/0003
		195140.3	168936.9	97881.0	173027.0	64238.2	66499.7	104443.9	155250.7		
		40875.1	83135.6	180310.2	151169.7	85620.0					

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

Table 11i: Amount of standard and weight of sample for NOCS 6608/10-6

Well	Descript.	Standard	Amount	Weight	Sample
6608/10-6	1826.7 MDT	16969.6	1.400	13.0	T91/0001
6608/10-6	1910.5 MDT	11327.1	1.400	13.5	T91/0002
6608/10-6	1940.5 MDT	11707.4	1.400	15.9	T91/0003

Table 12a: Variation in Triaromatic Sterane Distribution (peak height) for NOCS 6608/10-6

<u>ell</u>	<u>Descript.</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Ratio5</u>	<u>Sample</u>
608/10-6	1826.7 MDT	0.58	0.60	0.34	0.31	0.43	T91/0001
608/10-6	1910.5 MDT	0.59	0.60	0.35	0.32	0.45	T91/0002
608/10-6	1940.5 MDT	0.57	0.58	0.34	0.31	0.43	T91/0003

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 12b: Variation in Monoaromatic Sterane Distribution (peak height) for NOCS 6608/10-6

<u>ell</u>	<u>Descript.</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Sample</u>
608/10-6	1826.7 MDT	0.44	0.33	0.30	0.25	T91/0001
608/10-6	1910.5 MDT	0.44	0.33	0.29	0.25	T91/0002
608/10-6	1940.5 MDT	0.43	0.33	0.28	0.24	T91/0003

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 12c: Aromatisation of Steranes (peak height) for NOCS 6608/10-6

Well	Descript.	Ratio1	Ratio2	Sample		
608/10-6	1826.7 MDT	0.46	0.83	T91/0001	Ratio1: $\frac{C1+D1+E1+F1+G1+H1+I1}{C1+D1+E1+F1+G1+H1+I1 + c1+d1+e1+f1+g1}$	Ratio2: $g1 / g1 + I1$
608/10-6	1910.5 MDT	0.45	0.85	T91/0002		
608/10-6	1940.5 MDT	0.45	0.86	T91/0003		

Table 12d: Raw triaromatic sterane data (peak height) m/z 231 for NOCS 6608/10-6

Well	Descript.	a1	b1	c1	d1	e1	f1	g1	Sample
608/10-6	1826.7 MDT	23412.2	25491.0	9555.3	31301.8	21318.8	13890.6	17304.1	T91/0001
608/10-6	1910.5 MDT	24288.6	25541.5	9624.1	29874.9	21420.0	14233.2	16692.9	T91/0002
608/10-6	1940.5 MDT	23778.5	24860.6	9443.8	31550.0	21095.9	14665.6	17861.6	T91/0003

Table 12e: Raw monoaromatic sterane data (peak height) m/z 253 for NOCS 6608/10-6

Well	Descript.	A1	B1	C1	D1	E1	F1	G1	H1	I1	Sample
608/10-6	1826.7 MDT	16359.4	10016.2	11797.7	8816.0	20644.6	5392.7	18088.1	11269.3	3430.7	T91/0001
608/10-6	1910.5 MDT	15311.6	9705.9	10948.0	8410.4	19777.4	4255.2	17144.3	10593.5	2921.1	T91/0002
608/10-6	1940.5 MDT	14475.7	9590.2	11531.4	8456.2	19367.2	5261.9	18067.6	10798.1	2891.1	T91/0003

Table 13A: Light Hydrocarbons from Whole Oil GC for NOCS 6608/10-6

Well	Description	2,2DMC4	2,3DMC4	nC6	MCyC5	Benz	Sample
6608/10-6	1826.7 MDT	0.17	0.44	2.49	3.30	0.11	T91/0001
6608/10-6	1910.5 MDT	0.40	0.30	0.54	1.82	0.08	T91/0002
6608/10-6	1940.5 MDT	0.26	0.37	0.88	2.83	0.06	T91/0003

Table 13B: Light Hydrocarbons from Whole Oil GC for NOCS 6608/10-6

Well	Description	CyC6	2MC6	3MC6	1,3ci- DMCyC5	1,3tr- DMCyC5	1,2tr- DMCyC5	nC7	MCyC6	Tol	nC8	p/m- Xylene	Sample
6608/10-6	1826.7 MDT	5.91	1.81	1.43	0.84	0.79	1.45	3.38	12.69	3.23	4.51	6.64	T91/0001
6608/10-6	1910.5 MDT	5.38	1.00	0.48	1.47	1.30	1.18	0.31	5.09	0.90	1.93	0.63	T91/0002
6608/10-6	1940.5 MDT	6.73	0.95	0.81	1.20	1.12	1.66	0.24	13.47	0.21	1.60	2.46	T91/0003

Table 13C: Thompson's indices for NOCS 6608/10-6

Well	Description	A	B	X	W	C	I	F	H	U	R	S	Sample
6608/10-6	1826.7 MDT	0.04	0.96	1.47	0.19	0.32	1.05	0.27	11.76	1.79	1.87	14.65	T91/0001
6608/10-6	1910.5 MDT	0.15	2.90	0.33	0.15	0.08	0.37	0.06	1.88	2.96	0.31	1.35	T91/0002
6608/10-6	1940.5 MDT	0.07	0.88	1.54	0.09	0.06	0.44	0.02	0.90	2.38	0.25	3.38	T91/0003

THOMPSON'S INDICES

$$A = \frac{\text{Benzene}}{nC6}$$

$$B = \frac{\text{Toluene}}{nC7}$$

$$X = \frac{\text{p/m-xylene}}{nC8}$$

$$W = \frac{\text{Benzene} * 10}{\text{CyC6}}$$

$$C = \frac{nC6 + nC7}{\text{CyC6} + \text{MCyC6}}$$

$$I = \frac{2\text{MC6} + 3\text{MC6}}{1,3\text{ciDMCyC5} + 1,3\text{trDMCyC5} + 1,2\text{trDMCyC5}}$$

$$F = \frac{nC7}{\text{MCyC6}}$$

$$H = \frac{nC7 * 100}{\text{CyC6} + 2\text{MC6} + 2,3\text{DMC4} + 3\text{MC6} + 1,3\text{ciDMCyC5} + 1,3\text{trDMCyC5} + 1,2\text{trDMCyC5} + nC7 + \text{MCyC6}}$$

$$U = \frac{\text{CyC6}}{\text{MCyC5}}$$

$$R = \frac{nC7}{2\text{MC6}}$$

$$S = \frac{nC6}{2,2\text{DMC4}}$$

Table 14 a: Volume Composition of Gas Samples from well NOCS 6608/10-6

Well name	Depth UOM	Upper depth	Lower depth	Sample type	Desc	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	iC5 (%)	nC5 (%)	CO2 (%)	Sum C1-C5 (%)	Wetness	iC4/nC4	Sample number
NOCS 6608/10-6	m	1826.7	1826.7	gas	MDT	93.9	2.2	1.3	0.62	0.64	0.31	0.19	0.93	99.2	0.05	0.97	T91/0004-0
NOCS 6608/10-6	m	1910.5	1910.5	gas	MDT	98.3	0.68	0.11	0.04	0.05	0.02	0.01	0.76	99.2	0.01	0.8	T91/0005-0
NOCS 6608/10-6	m	1940.5	1940.5	gas	MDT	94.8	1.9	0.85	0.39	0.43	0.21	0.14	1.3	98.7	0.04	0.91	T91/0006-0

Table 14 b: Isotopic Composition of Gas Samples from well NOCS 6608/10-6

Well name	Depth UOM	Upper depth	Lower depth	Sample type	Desc	C1 d13C	C1 dD	C2 d13C	C3 d13C	iC4 d13C	nC4 d13C	CO2 d13C	CO2 d18O	Sample number
NOCS 6608/10-6	m	1826.7	1826.7	gas	MDT	-47.3	-203	-27.3	-25.2	-25.4	-26.1	*-7.8	0	T91/0004-0
NOCS 6608/10-6	m	1910.5	1910.5	gas	MDT	-46.1	-205	-27	-24.3	*-22.6	*-23	*-1.7	0	T91/0005-0
NOCS 6608/10-6	m	1940.5	1940.5	gas	MDT	-46.5	-209	-27.6	-26.1	-22.4	-26.2	-2	-10.6	T91/0006-0

* analysis performed on GC-IRMS instrument (for additional GC-IRMS data see the IFE report in appendix 4)

1 Introduction

Three gas samples from well 6608/10-6;

are analysed for gas and isotopic composition.

On the samples $C_1 - C_5$ and CO_2 are quantified. The $\delta^{13}C$ value is measured on methane, ethane, propane, the butanes and CO_2 . In addition the δD value is measured on methane.

2 Analytical procedures

Aliquots of 0.2 ml are sampled with a syringe for analysis on a Porabond Q column connected with flame ionisation (FID) and thermal conductivity (TCD) detectors. The detection limit for the hydrocarbon gas components is 0.001 $\mu\text{l/ml}$, for CO_2 0.05 $\mu\text{l/ml}$.

Due to low concentration of wet gas components the isotope values are determined in two different ways, standard procedure for test gases and with GC-C-IRMS. For the isotope analysis by standard procedure 5-10 ml of the gas is 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 CO_2 and H_2O 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.

The analytical procedures are tested with a laboratory gas standard mixture. Based on repeated analysis of the gas standard, the reproducibility in the $\delta^{13}C$ value is better than 0.5‰ PDB for all components. The reproducibility in the δD value is likewise better than 10‰.

For the GC-C-IRMS analysis aliquots are sampled with a syringe and analysed on a VG Isochrom connected on line to a VG Optima Mass spectrometer. A HP 5890 II with a Poraplot Q column is used for the separation and helium is used as a carrier gas. The injections are performed both in splitless and split mode, depending on the individual

methane concentrations. Determination of hydrogen or oxygen isotopic composition is not included in the analytical procedure.

The uncertainty in the reported results is $\pm 1 \text{ ‰}$ for methane, ethane and CO_2 and $\pm 0.5 \text{ ‰}$ for the other components based on repeated analysis of IFEs laboratory standard (test gas concentration) over a period of 3 years.

IFEs value on NBS 22 is $-29.77 \pm .06 \text{ ‰}$ PDB.

3 Results

The normalised volume composition of the gas samples is shown in Table 1. The stable isotope composition is shown in Table 2. The results from the standard procedure are shown in the first line of each sample while the GC-C-IRMS results are shown in the second line.

The molecular composition related to the carbon isotope variations in methane from the samples 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 variation in ethane related to the carbon isotope variations in methane in Figure 3 (Schoell, 1983).

Table 1 Volume composition of gas samples (normalised values) from well 6608/10-6

Sample	Depth m	IFE no GEO	C ₁ %	C ₂ %	C ₃ %	iC ₄ %	nC ₄ %	iC ₅ %	nC ₅ %	CO ₂ %	$\Sigma\text{C}_1\text{-C}_5$ %	Wet- ness	iC ₄ / nC ₄
MDT,	1910.5	20000740	98.3	0.68	0.11	0.04	0.05	0.02	0.01	0.76	99.2	0.01	0.94
MDT,	1826.7	20000741	93.9	2.2	1.3	0.62	0.64	0.31	0.19	0.93	99.1	0.05	0.97
MDT,	1940.5	20000742	94.8	1.9	0.85	0.39	0.43	0.21	0.14	1.3	98.7	0.04	0.91

Table 2 Isotopic composition of gas samples from well 6608/10-6

Well	Sample depth m	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
MDT,	1910.5	20000740	-46.1	-205	-27.0	-24.3	-	-	-	-
		*	-		-26.6	-22.3	-22.6	-23.0	-1.7	-
MDT,	1826.7	20000741	-47.3	-203	-27.3	-25.2	-25.4	-26.1	-	-
		*	-		-26.8	-24.4	-26.0	-25.4	-7.8	-
MDT,	1940.5	20000742	-46.5	-209	-27.6	-26.1	-22.4	-26.2	-2.0	-10.6
		*	-		-	-24.9	-25.3	-25.5	-2.8	-

* GC-C-IRMS

4 Literature

Schoell, M. (1983). Genetic characterisation of natural gases. *The American Association of Petroleum Geologists Bulletin*, 67,2225-2238.

Appendix D : Mud samples

Appendix D1: Tables

Appendix D2: Gas Chromatograms

Appendix D1: Tables

Table 1 Analytical Program for Muds

Table nos	Sample Depth (m)	Sample Type	Sample Code	Lithology Description	Picking for screening	Prøvepreparering (Kjernematriale)	Prøvepreparering (Losningsmiddel-Ekstraksjon)	Leco TOC	RockEval	GHM Pyrolysis-GC	Picking for Extraction	Topping	Iatroscan	SOXTEC Extraction	MPLC & Deasphaltene	EOM GC	Whole Oil GC	Sat GC (non-Q)	Aro GC (Non Quantitative)	Sat GCMS (Q or non-Q)	Aro GCMS (Non-Q)	Isotope of EOM/fractions	API Gravity (Westlab)	Vitrinite Reflectance	Visual Kerogen	Gas composition and isotopes (IFE)	
1800	m	U03/0001-0																									
1980	m	U03/0002-0																									
Total														2	1	2		1									

Sample type key c = Cuttings s = SWC p = Conv core/ plug o=oil g= gas m=mud

Table 8a: MPLC Bulk Composition: Weight of EOM and Fraction for well NOCS 6608/10-6 MUDS

Depth unit of measure: m

Depth	Typ	Lithology	Rock Extracted (g)	EOM (mg)	Sat (mg)	Aro (mg)	Asph (mg)	NSO (mg)	HC (mg)	Non-HC (mg)	TOC(e) (%)	Sample
1980.00	mud	bulk	-	44.5	0.2	0.2	0.1	43.9	0.5	44.0	-	0002-0B

Table 8b: MPLC Bulk Composition: Concentration of EOM and Fraction (wt ppm rock) for well NOCS 6608/10-6 MUDS

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
1980.00	mud	bulk	-	-	-	-	-	-	-	0002-0B

Table 8c: MPLC Bulk Composition: Concentration of EOM and Fraction (mg/g TOC(e)) for well NOCS 6608/10-6 MUDS

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
1980.00	mud	bulk	-	-	-	-	-	-	-	0002-0B

Table 8d: MPLC Bulk Composition: Material extracted from the rock (%) for well NOCS 6608/10-6 MUDS

Depth unit of measure: m

Depth	Typ	Lithology	Sat	Aro	Asph	NSO	Total	HC	Non-HC	Recov. MPLC	Recov. Asph	Sample
1980.00	mud	bulk	0.53	0.53	0.22	98.72	100.00	1.06	98.94	1.18	0.84	0002-0B

Table 8e: MPLC Bulk Composition: Ratios for well NOCS 6608/10-6 MUDS

Depth unit of measure: m

Depth	Typ	Lithology	Sat	HC	Asp	Sample
			Aro	Non-HC	NSO	
1980.00	mud	bulk	1.00	0.01	0.00	0002-0B

Table 9a¹ Peak areas Saturated Hydrocarbon GC data

Depth (m)	Sample type	nC15	nC16	Norpristane	nC17	Pristane	nC18	Phytane	nC19	nC20	nC21	nC22	nC23	nC24	nC25	nC26	nC27	nC28
1980	mud	25716	59042	48417	83287	101085	95266	73602	81827	79976	54442	56387	46651	49610	46327	35897	30141	19503

Depth (m)	Sample type	nC29	nC30	nC31	nC32	nC33	nC34	Sample number
1980	mud	23718	28565	15890	23144	0	0	U03/0002-0

Table 9B: Saturated Hydrocarbon Ratios (peak area) for well NOCS 6608/10-6 MUDS

Depth unit of measure: m

Depth	Typ	Lithology	<u>Pristane</u> <u>nC17</u>	<u>Pristane</u> <u>Phytane</u>	<u>Pristane/nC17</u> <u>Phytane/nC18</u>	<u>Phytane</u> <u>nC18</u>	<u>CPI1</u>	<u>nC17</u> <u>nC17+nC27</u>	<u>Sample</u>
1980.00	mud	bulk	1.21	1.37	1.57	0.77	0.98	0.73	0002-0B