

TOTAL CONSUMPTION OF MUD ADDITIVES ON WELL 30/12-1

Section Size	Product/Additive	Total Amount Planned	Total Amount Used	Unit	Difference		Difference in cost	
					Amount	%	%	[kNOK]
36"	ANCOBAR		55000.0	kg				
	BENTONITE		10000.0	kg				
	LIME		200.0	kg				
	SODA ASH		250.0	kg				
17 1/2"	ANCOBAR		19000.0	kg				
	BENTONITE		27000.0	kg				
	LIME		280.0	kg				
	SODA ASH		375.0	kg				
12 1/4"	ANCO 208		42157.0	l				
	ANCOBAR		625000.0	kg				
	CELPOL LV		6450.0	kg				
	CELPOL REG		3850.0	kg				
	CITRIC ACID		1600.0	kg				
	KCL BRINE		710000.0	l				
	KCL POWDER		29500.0	kg				
	LAMPAC LV		5100.0	kg				
	SHALETROL		200.0	kg				
	SODA ASH		1125.0	kg				
	SODIUM BICARBONATE		2650.0	kg				
XC-POLYMER		2275.0	kg					
8 1/2"	ANCO 208		10169.0	l				
	ANCO RESIN		2025.0	kg				
	ANCOBAR		101000.0	kg				
	CELPOL LV		2850.0	kg				
	CELPOL REG		725.0	kg				
	KCL BRINE		150000.0	l				
	KCL POWDER		6500.0	kg				
	PAC; PREMPAC EX		425.0	kg				
	SHALETROL		400.0	kg				
	SODIUM BICARBONATE		300.0	kg				
	XC-POLYMER		1000.0	kg				

Norsk Hydro

DAILY MUD PROPERTIES : RHEOLOGY PARAMETERS FOR WELL 30/12-1

Hole section: 36"

WATER BASED SYSTEM

Date	Depth		Mud Type	Funnel	Dens	Mudtmp	Fann Readings						Rheo	PV	YP	Gel0	Gel10		
	[m]			Visc		Out							Test						
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
06-jan-1994 23:59	220	220	SPUD MUD	150.0	1.05	0.0									0.0	0.0	0.0	0.0	0.0

Hole section: 17 1/2"

WATER BASED SYSTEM

Date	Depth		Mud Type	Funnel	Dens	Mudtmp	Fann Readings						Rheo	PV	YP	Gel0	Gel10		
	[m]			Visc		Out							Test						
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
07-jan-1994 23:59	708	708	SPUD MUD	150.0	1.05	0.0									0.0	0.0	0.0	0.0	0.0
08-jan-1994 23:59	1130	1130	SPUD MUD	150.0	1.20	0.0									0.0	0.0	0.0	0.0	0.0
09-jan-1994 23:59	1130	1130	SPUD MUD	150.0	1.20	0.0									0.0	0.0	0.0	0.0	0.0
10-jan-1994 23:59	1130	1130	SPUD MUD	150.0	1.20	0.0									0.0	0.0	0.0	0.0	0.0
11-jan-1994 23:59	1130	1130	SPUD MUD	150.0	1.20	0.0									0.0	0.0	0.0	0.0	0.0
12-jan-1994 23:59	1130	1130	SPUD MUD	150.0	1.20	0.0									0.0	0.0	0.0	0.0	0.0
13-jan-1994 23:59	1130	1130	SPUD MUD	150.0	1.20	0.0									0.0	0.0	0.0	0.0	0.0

Hole section: 12 1/4"

WATER BASED SYSTEM

Date	Depth		Mud Type	Funnel	Dens	Mudtmp	Fann Readings						Rheo	PV	YP	Gel0	Gel10		
	[m]			Visc		Out							Test						
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
14-jan-1994 23:59	1320	1320	ANCO 2000	82.0	1.28	0.0	93	64	51	34			6	4	50.0	29.0	17.5	2.0	2.5
15-jan-1994 23:59	1571	1571	ANCO 2000	73.0	1.43	0.0	96	66	51	31			6	3	50.0	30.0	18.0	1.5	2.5
16-jan-1994 23:59	2151	2151	ANCO 2000	72.0	1.40	0.0	112	78	62	44			10	8	50.0	34.0	22.0	5.0	12.0
17-jan-1994 23:59	2317	2317	ANCO 2000	72.0	1.40	0.0	105	73	59	42			9	7	50.0	32.0	20.5	4.0	12.0
18-jan-1994 23:59	2317	2317	ANCO 2000	72.0	1.40	0.0	105	73	59	42			9	7	50.0	32.0	20.5	4.0	12.0
19-jan-1994 23:59	1172	1172	ANCO 2000	77.0	1.40	0.0	110	77	60	42			10	7	50.0	33.0	22.0	3.8	10.5
20-jan-1994 23:59	1502	1502	ANCO 2000	71.0	1.45	0.0	99	68	54	38			9	7	50.0	31.0	18.5	4.0	15.5

See also the report 'DAILY MUD PROPERTIES : OTHER PARAMETERS'

Norsk Hydro

DAILY MUD PROPERTIES : RHEOLOGY PARAMETERS FOR WELL 30/12-1

Hole section: 12 1/4"

WATER BASED SYSTEM

Date	Depth		Mud Type	Funnel	Dens	Mudtmp	Fann Readings								Rheo	PV	YP	Gel10	Gel110
	[m]			Visc		Out									Test				
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
21-jan-1994 20:00	1769	1769	ANCO 2000	71.0	1.45	0.0	98	65	48	33			9	7	50.0	33.0	16.0	4.0	12.0
22-jan-1994 22:00	1895	1895	ANCO 2000	68.0	1.45	0.0	83	56	43	30			7	5	50.0	27.0	14.5	3.5	13.0
23-jan-1994 21:00	1895	1895	ANCO 2000	68.0	1.45	0.0	83	56	43	30			7	5	50.0	27.0	14.5	3.5	13.0
24-jan-1994 23:30	1980	1980	ANCO 2000	83.0	1.45	0.0	98	66	50	34			8	6	50.0	32.0	17.0	3.5	16.0
25-jan-1994 23:30	2275	2275	ANCO 2000	63.0	1.45	0.0	88	58	44	32			8	6	50.0	30.0	14.0	3.5	15.0
26-jan-1994 23:30	2430	2430	ANCO 2000	63.0	1.45	0.0	80	54	44	30			9	7	50.0	26.0	14.0	4.0	16.0
27-jan-1994 22:30	2500	2500	ANCO 2000	70.0	1.45	0.0	88	56	44	29			9	7	50.0	32.0	12.0	4.0	16.0
28-jan-1994 22:00	2500	2500	ANCO 2000	70.0	1.45	0.0	88	56	44	29			9	7	50.0	32.0	12.0	4.0	16.0
29-jan-1994 22:00	2500	2500	ANCO 2000	74.0	1.45	0.0	84	57	42	28			9	8	50.0	27.0	15.0	3.0	10.0
30-jan-1994 22:00	2500	2500	ANCO 2000	93.0	1.45	0.0	83	56	43	30			8	7	50.0	27.0	14.5	3.5	14.0
31-jan-1994 22:00	2500	2500	ANCO 2000	83.0	1.45	0.0	83	55	42	29			8	7	50.0	28.0	13.5	3.6	13.0
01-feb-1994 20:00	2500	2500	ANCO 2000	84.0	1.45	0.0	83	55	42	29			8	7	50.0	28.0	13.5	3.5	14.0
02-feb-1994 21:30	2500	2500	ANCO 2000	82.0	1.45	0.0	81	53	40	28			7	6	50.0	28.0	12.5	3.6	12.5
03-feb-1994 23:00	2500	2500	ANCO 2000	79.0	1.45	0.0	80	53	39	28			8	6	50.0	27.0	13.0	3.6	12.5
04-feb-1994 23:30	2558	2558	ANCO 2000	55.0	1.45	0.0	66	45	35	23			7	6	50.0	21.0	12.0	3.0	10.0
05-feb-1994 23:30	2648	2648	ANCO 2000	56.0	1.45	0.0	68	46	36	24			8	7	50.0	22.0	12.0	3.5	11.0
06-feb-1994 23:30	2711	2711	ANCO 2000	54.0	1.45	0.0	70	48	37	23			7	6	50.0	22.0	13.0	3.0	11.0
07-feb-1994 23:45	2711	2711	ANCO 2000	59.0	1.45	0.0	71	48	37	24			7	5	50.0	23.0	12.5	3.0	11.0
08-feb-1994 23:45	2791	2791	ANCO 2000	54.0	1.45	0.0	72	48	37	25			7	6	50.0	24.0	12.0	3.0	11.5
09-feb-1994 23:45	2842	2842	ANCO 2000	61.0	1.45	0.0	72	48	38	24			7	6	50.0	24.0	12.0	3.0	11.5
10-feb-1994 23:59	2842	2842	ANCO 2000	63.0	1.45	0.0	73	49	38	24			7	6	50.0	24.0	12.5	3.0	12.5
11-feb-1994 23:45	2842	2842	ANCO 2000	62.0	1.45	0.0	72	48	38	24			7	6	50.0	24.0	12.0	3.0	11.5
12-feb-1994 23:00	2842	2842	ANCO 2000	61.0	1.45	0.0	72	48	38	24			7	6	50.0	24.0	12.0	3.0	11.5
13-feb-1994 23:00	2842	2842	ANCO 2000	61.0	1.45	0.0	72	48	38	24			7	6	50.0	24.0	12.0	3.0	11.5
14-feb-1994 23:00	2842	2842	ANCO 2000	61.0	1.45	0.0	72	48	38	24			7	6	50.0	24.0	12.0	3.0	11.5
15-feb-1994 23:00	2842	2842	ANCO 2000	61.0	1.45	0.0	72	48	38	24			7	6	50.0	24.0	12.0	3.0	11.5
16-feb-1994 23:00	2842	2842	ANCO 2000	61.0	1.45	0.0	72	48	38	24			7	6	50.0	24.0	12.0	3.0	11.5

See also the report 'DAILY MUD PROPERTIES : OTHER PARAMETERS'

Norsk Hydro

DAILY MUD PROPERTIES : RHEOLOGY PARAMETERS FOR WELL 30/12-1

Hole section: 12 1/4"

WATER BASED SYSTEM

Date	Depth		Mud Type	Funnel	Dens	Mudtmp	Fann Readings							Rheo	PV	YP	Gel10	Gel10	
	[m]			Visc		Out								Test					
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
17-feb-1994 23:59	2842	2842	ANCO 2000	64.0	1.21	0.0	56	37	27	17			5	3	50.0	19.0	9.0	2.0	4.0
18-feb-1994 11:30	2901	2900	ANCO 2000	63.0	1.21	0.0	58	38	30	20			5	3	50.0	20.0	9.0	2.5	4.0
19-feb-1994 23:00	2961	2960	ANCO 2000	66.0	1.23	0.0	62	42	35	23			8	5	50.0	20.0	11.0	2.5	8.0
20-feb-1994 23:59	2996	2995	ANCO 2000	58.0	1.20	0.0	60	42	34	24			6	4	50.0	18.0	12.0	2.0	5.0
21-feb-1994 23:59	3192	3191	ANCO 2000	53.0	1.20	0.0	58	41	33	23			8	5	50.0	17.0	12.0	2.5	5.0
22-feb-1994 23:59	3315	3314	ANCO 2000	56.0	1.20	0.0	72	53	44	33			11	8	50.0	19.0	17.0	4.5	9.0
23-feb-1994 23:59	3438	3437	ANCO 2000	54.0	1.20	0.0	71	51	42	30			9	7	50.0	20.0	15.5	4.0	9.0
24-feb-1994 23:59	3585	3584	ANCO 2000	47.0	1.21	0.0	53	38	30	22			7	5	50.0	15.0	11.5	4.0	8.5
25-feb-1994 23:59	3585	3584	ANCO 2000	53.0	1.21	0.0	53	38	30	22			7	5	50.0	15.0	11.5	4.0	8.5
26-feb-1994 23:59	3641	3640	ANCO 2000	56.0	1.23	0.0	60	42	35	25			8	6	50.0	18.0	12.0	3.0	10.0
27-feb-1994 23:59	3641	3640	ANCO 2000	70.0	1.23	0.0	60	42	35	25			8	6	50.0	18.0	12.0	3.0	10.0
28-feb-1994 23:59	3641	3640	ANCO 2000	68.0	1.23	0.0	60	42	35	25			8	6	50.0	18.0	12.0	3.0	10.0
01-mar-1994 23:59	2695	2695	ANCO 2000	68.0	1.24	0.0	59	41	34	25			8	6	50.0	18.0	11.5	3.0	10.0
02-mar-1994 23:59	2695	2695	ANCO 2000	62.0	1.45	0.0	59	39	30	20			5	4	50.0	20.0	9.5	4.0	18.0
03-mar-1994 23:59	1006	1006	ANCO 2000	56.0	1.45	0.0	52	35	29	19			5	4	50.0	17.0	9.0	2.0	15.0
04-mar-1994 23:59	185	186	ANCO 2000	53.0	1.42	0.0	47	30	22	14			4	2	50.0	17.0	6.5	1.5	9.0
05-mar-1994 23:59	185	186	ANCO 2000	53.0	1.42	0.0	47	30	22	14			4	2	50.0	17.0	6.5	1.5	9.0

See also the report 'DAILY MUD PROPERTIES : OTHER PARAMETERS'

Norsk Hydro

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 30/12-1

Hole section: 36"

WATER BASED SYSTEM

Date	Depth		Mud Type	Dens	Filtrate		Filt.cake		HPHT	pH	Alcalinity			Inhib	K+	CL-	Ca++	Mg++	Tot	Percentage			CEC	ASG	LGS
	[m]	MD			TVD	[API]	[HPHT]	[API]			[HPHT]	Press/Temp	Pm							Pf	Mf	Chem			
06-jan-1994 23:59	220	220	SPUD MUD	1.05	0.0	0.0	0	0	0/0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0

Hole section: 17 1/2"

WATER BASED SYSTEM

Date	Depth		Mud Type	Dens	Filtrate		Filt.cake		HPHT	pH	Alcalinity			Inhib	K+	CL-	Ca++	Mg++	Tot	Percentage			CEC	ASG	LGS
	[m]	MD			TVD	[API]	[HPHT]	[API]			[HPHT]	Press/Temp	Pm							Pf	Mf	Chem			
07-jan-1994 23:59	708	708	SPUD MUD	1.05	0.0	0.0	0	0	0/0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0
08-jan-1994 23:59	1130	1130	SPUD MUD	1.20	0.0	0.0	0	0	0/0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0
09-jan-1994 23:59	1130	1130	SPUD MUD	1.20	0.0	0.0	0	0	0/0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0
10-jan-1994 23:59	1130	1130	SPUD MUD	1.20	0.0	0.0	0	0	0/0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0
11-jan-1994 23:59	1130	1130	SPUD MUD	1.20	0.0	0.0	0	0	0/0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0
12-jan-1994 23:59	1130	1130	SPUD MUD	1.20	0.0	0.0	0	0	0/0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0
13-jan-1994 23:59	1130	1130	SPUD MUD	1.20	0.0	0.0	0	0	0/0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0

Hole section: 12 1/4"

WATER BASED SYSTEM

Date	Depth		Mud Type	Dens	Filtrate		Filt.cake		HPHT	pH	Alcalinity			Inhib	K+	CL-	Ca++	Mg++	Tot	Percentage			CEC	ASG	LGS
	[m]	MD			TVD	[API]	[HPHT]	[API]			[HPHT]	Press/Temp	Pm							Pf	Mf	Chem			
14-jan-1994 23:59	1320	1320	ANCO 2000	1.28	2.8	10.0	1	2	500/110	8.2	0.0	0.1	0.4	91	47593	51000	200	0	320	12.0	0.0	0.3	28	0.0	57
15-jan-1994 23:59	1571	1571	ANCO 2000	1.43	3.5	15.0	1	2	500/110	8.2	0.4	0.1	0.2	93	0	48000	240	180	420	16.0	0.0	0.5	35	0.0	33
16-jan-1994 23:59	2151	2151	ANCO 2000	1.40	3.8	12.0	1	2	0/0	8.2	0.0	0.0	0.2	98	51254	53000	480	0	800	17.0	0.0	0.5	51	0.0	0
17-jan-1994 23:59	2317	2317	ANCO 2000	1.40	3.5	11.0	1	2	0/110	8.2	0.0	0.0	0.2	104	54392	52000	440	0	720	17.5	0.0	0.5	51	0.0	0
18-jan-1994 23:59	2317	2317	ANCO 2000	1.40	3.5	11.0	1	2	0/110	8.2	0.0	0.0	0.2	104	54392	52000	440	0	720	17.5	0.0	0.5	51	0.0	0
19-jan-1994 23:59	1172	1172	ANCO 2000	1.40	4.8	13.0	1	2	0/110	10.8	0.0	0.2	0.8	107	55961	54000	600	0	640	17.5	0.0	0.5	57	0.0	0
20-jan-1994 23:59	1502	1502	ANCO 2000	1.45	4.2	14.6	1	2	0/110	8.8	0.0	0.1	0.3	105	54915	56000	600	0	660	19.0	0.0	0.5	53	0.0	0
21-jan-1994 20:00	1769	1769	ANCO 2000	1.45	4.4	14.6	1	2	0/110	8.8	0.0	0.1	0.3	96	50208	58000	600	0	760	19.0	0.0	0.6	53	0.0	0
22-jan-1994 22:00	1895	1895	ANCO 2000	1.45	4.3	15.0	1	2	0/110	8.4	0.0	0.1	0.3	99	51777	54000	620	0	760	19.0	0.0	0.5	57	0.0	0
23-jan-1994 21:00	1895	1895	ANCO 2000	1.45	4.3	15.0	1	2	0/110	8.4	0.0	0.1	0.3	99	51777	54000	620	0	760	19.0	0.0	0.5	57	0.0	0
24-jan-1994 23:30	1980	1980	ANCO 2000	1.45	3.3	14.8	1	2	0/110	6.0	0.0	0.1	0.2	94	49162	54000	580	0	680	19.0	0.0	0.5	68	0.0	0
25-jan-1994 23:30	2275	2275	ANCO 2000	1.45	3.6	13.2	1	2	500/110	8.2	0.0	0.0	0.0	100	0	55000	260	0	320	19.0	0.0	0.5	65	0.0	0
26-jan-1994 23:30	2430	2430	ANCO 2000	1.45	3.6	13.2	1	2	35/110	8.2	0.0	0.1	0.2	106	0	55000	320	0	420	19.0	0.0	0.5	68	0.0	145
27-jan-1994 22:30	2500	2500	ANCO 2000	1.45	3.4	13.0	1	2	35/110	8.0	0.0	0.0	0.2	106	0	55000	200	0	380	19.0	0.0	0.5	68	0.0	145
28-jan-1994 22:00	2500	2500	ANCO 2000	1.45	3.4	13.0	1	2	500/110	8.0	0.0	0.0	0.2	106	0	55000	200	0	380	19.0	0.0	0.5	0	0.0	0
29-jan-1994 22:00	2500	2500	ANCO 2000	1.45	3.8	14.0	1	2	500/110	8.0	0.0	0.0	0.2	102	102	54000	200	0	380	19.0	0.0	0.5	65	0.0	0
30-jan-1994 22:00	2500	2500	ANCO 2000	1.45	3.3	12.8	1	2	500/110	8.0	0.0	0.0	0.2	98	0	56000	200	0	360	19.0	0.0	0.5	0	0.0	0
31-jan-1994 22:00	2500	2500	ANCO 2000	1.45	3.3	12.8	1	2	500/110	8.2	0.0	0.0	0.2	98	0	56000	200	0	360	19.0	0.0	0.5	62	0.0	0
01-feb-1994 20:00	2500	2500	ANCO 2000	1.45	3.3	12.8	1	2	500/110	8.2	0.0	0.0	0.2	96	0	55000	200	0	360	19.0	0.0	0.5	62	0.0	0
02-feb-1994 21:30	2500	2500	ANCO 2000	1.45	3.4	13.0	1	2	0/110	8.2	0.0	0.0	0.2	96	50208	55000	200	0	360	19.0	0.0	0.5	62	0.0	0
03-feb-1994 23:00	2500	2500	ANCO 2000	1.45	3.4	13.0	1	2	0/110	8.6	0.0	0.0	0.2	96	50208	52000	800	0	360	19.0	0.0	0.5	62	0.0	0
04-feb-1994 23:30	2558	2558	ANCO 2000	1.45	3.2	13.0	1	2	0/110	9.5	0.0	0.2	0.6	101	52823	53000	620	0	680	19.0	0.0	0.5	62	0.0	0
05-feb-1994 23:30	2648	2648	ANCO 2000	1.45	3.2	12.6	1	2	0/110	9.0	0.0	0.1	0.4	103	53869	54000	520	0	600	19.0	0.0	0.5	60	0.0	0

See also the report 'DAILY MUD PROPERTIES : RHEOLOGY PARAMETERS'

Norsk Hydro

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 30/12-1

Hole section: 12 1/4"

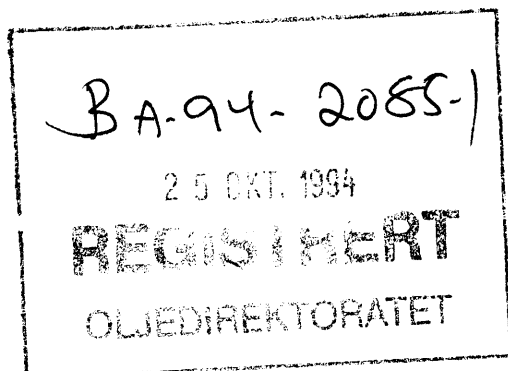
WATER BASED SYSTEM

Date	Depth		Mud Type	Dens [sg]	Filtrate		Filt.cake		HPHT Press/Temp [psi/DegC]	pH	Alcalinity			Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg]	Percentage			CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	
	[m]	MD			TVDD	API [sg]	HPHT [ml]	API [ml]			HPHT [mm]	Pm [ml]	Pf [ml]							Mf [ml]	Oil [%]	Solid [%]				Sand [%]
06-feb-1994	23:30	2711	2711	ANCO 2000	1.45	3.4	13.2	1	2	0/110	8.7	0.0	0.1	0.4	105	54915	54000	560	0	640	19.0	0.0	0.5	60	0.0	0
07-feb-1994	23:45	2711	2711	ANCO 2000	1.45	3.6	13.6	1	2	0/110	8.6	0.0	0.1	0.3	101	52823	51000	520	0	600	19.0	0.0	0.5	60	0.0	0
08-feb-1994	23:45	2791	2791	ANCO 2000	1.45	3.4	13.2	1	2	0/110	8.5	0.0	0.1	0.2	105	54915	56000	400	0	460	19.5	0.0	0.5	60	0.0	0
09-feb-1994	23:45	2842	2842	ANCO 2000	1.45	3.2	13.2	1	2	0/110	8.5	0.0	0.1	0.2	105	54915	56000	400	0	460	19.5	0.0	0.5	60	0.0	0
10-feb-1994	23:59	2842	2842	ANCO 2000	1.45	3.2	13.4	1	2	0/110	8.5	0.0	0.1	0.2	103	55000	54000	420	0	460	19.5	0.0	0.5	60	0.0	1/3
11-feb-1994	23:45	2842	2842	ANCO 2000	1.45	3.2	13.2	1	2	0/110	8.5	0.0	0.1	0.2	103	53869	54000	460	0	520	19.5	0.0	0.5	60	0.0	0
12-feb-1994	23:00	2842	2842	ANCO 2000	1.45	3.2	13.2	1	2	0/110	8.5	0.0	0.1	0.2	103	53869	54000	460	0	520	19.5	0.0	0.5	60	0.0	0
13-feb-1994	23:00	2842	2842	ANCO 2000	1.45	3.2	13.2	1	2	0/110	8.5	0.0	0.1	0.2	103	53869	54000	460	0	520	19.5	0.0	0.5	60	0.0	0
14-feb-1994	23:00	2842	2842	ANCO 2000	1.45	3.2	13.2	1	2	0/110	8.5	0.0	0.1	0.2	103	53869	54000	460	0	520	19.5	0.0	0.5	60	0.0	0
15-feb-1994	23:00	2842	2842	ANCO 2000	1.45	3.2	13.2	1	2	0/110	8.5	0.0	0.1	0.2	103	53869	54000	460	0	520	19.5	0.0	0.5	60	0.0	0
16-feb-1994	23:00	2842	2842	ANCO 2000	1.45	3.2	13.2	1	2	0/110	8.5	0.0	0.1	0.2	103	53869	54000	460	0	520	19.5	0.0	0.5	60	0.0	0

Hole section: 8 1/2"

WATER BASED SYSTEM

Date	Depth		Mud Type	Dens [sg]	Filtrate		Filt.cake		HPHT Press/Temp [psi/DegC]	pH	Alcalinity			Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg]	Percentage			CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	
	[m]	MD			TVDD	API [sg]	HPHT [ml]	API [ml]			HPHT [mm]	Pm [ml]	Pf [ml]							Mf [ml]	Oil [%]	Solid [%]				Sand [%]
17-feb-1994	23:59	2842	2842	ANCO 2000	1.21	3.1	10.0	1	2	0/110	8.5	0.0	0.0	0.3	91	47593	48000	480	0	530	9.0	0.0	0.5	23	0.0	18
18-feb-1994	11:30	2901	2900	ANCO 2000	1.21	3.0	10.4	1	2	0/110	8.3	0.0	0.0	0.2	96	50208	53000	360	0	400	9.5	0.0	0.5	25	0.0	0
19-feb-1994	23:00	2961	2960	ANCO 2000	1.23	3.0	10.4	1	2	0/110	8.3	0.0	0.0	0.2	93	48639	51000	260	0	310	9.6	0.0	0.5	24	0.0	0
20-feb-1994	23:59	2996	2995	ANCO 2000	1.20	3.1	10.4	1	2	0/110	8.0	0.0	0.0	0.2	80	41840	44000	230	0	280	10.0	0.0	0.8	24	0.0	66
21-feb-1994	23:59	3192	3191	ANCO 2000	1.20	3.8	11.4	1	2	0/110	8.0	0.0	0.0	0.2	80	41840	41000	130	0	150	10.0	0.0	0.5	31	0.0	72
22-feb-1994	23:59	3315	3314	ANCO 2000	1.20	3.2	14.0	1	2	0/110	8.0	0.0	0.0	0.2	93	48639	52000	130	0	165	10.0	0.0	0.5	31	0.0	47
23-feb-1994	23:59	3438	3437	ANCO 2000	1.20	3.2	14.0	1	2	0/110	8.0	0.0	0.0	0.2	91	47593	49000	110	0	140	10.5	0.0	0.5	43	0.0	54
24-feb-1994	23:59	3585	3584	ANCO 2000	1.21	3.2	12.4	1	2	34/110	8.0	0.0	0.0	0.2	93	48639	49000	100	0	130	11.0	0.0	0.5	43	0.0	38
25-feb-1994	23:59	3585	3584	ANCO 2000	1.21	3.2	12.4	1	2	34/110	8.0	0.0	0.0	0.2	93	48639	49000	100	0	130	11.0	0.0	0.5	43	0.0	64
26-feb-1994	23:59	3641	3640	ANCO 2000	1.23	3.5	14.0	1	2	34/110	8.0	0.0	0.0	0.2	95	49685	52000	100	0	130	13.0	0.0	0.5	45	0.0	112
27-feb-1994	23:59	3641	3640	ANCO 2000	1.23	3.5	14.0	1	2	0/110	8.0	0.0	0.0	0.2	95	49685	52000	100	0	130	13.0	0.0	0.5	45	0.0	112
28-feb-1994	23:59	3641	3640	ANCO 2000	1.23	3.5	14.0	1	2	34/110	8.0	0.0	0.0	0.2	95	49685	52000	100	0	130	13.0	0.0	0.5	45	0.0	112
01-mar-1994	23:59	2695	2695	ANCO 2000	1.24	0.0	0.0	0	0	0/0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	86
02-mar-1994	23:59	2695	2695	ANCO 2000	1.45	0.0	0.0	0	0	0/0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0
03-mar-1994	23:59	1006	1006	ANCO 2000	1.45	0.0	0.0	0	0	0/0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0
04-mar-1994	23:59	185	186	ANCO 2000	1.42	0.0	0.0	0	0	0/0	11.6	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0
05-mar-1994	23:59	185	186	ANCO 2000	1.42	0.0	0.0	0	0	0/0	11.6	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0.0	0



NORSK HYDRO
30/12-1

**Organic Geochemistry of the
Interval 1170m to 2964.3m**

Report No. 7477/Ic

Project No. Ic/21451

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AUGUST 1994



CHAPTER 2**Introduction**

This report presents the results of a geochemical evaluation of the interval 1170m to 2964.3m in the 30/12-1 well and sidetrack T2.

Samples from the interval 1170m-1340m were from the original hole, but all other samples were from sidetrack T2. The objectives of the study were to determine the maturity profile throughout the well, determine the source potential of the Formations and to characterise extractable hydrocarbons recovered from these sediments.

This study was undertaken in response to a request contained in the Norsk Hydro facsimile message of 10 January 1994, and carried out under authority of the Norsk Hydro Contract Number NHT-B44-02236-00. Sidewall core samples arrived at the Simon Petroleum Technology (SPT), North Wales Laboratory at the end of February for geochemical and biostratigraphic analysis.

Forty four cuttings samples arrived on 25 March, 12 core chips arrived on 13 April, and a core chip and sealed core arrived on 28 April 1994. The analytical programme followed the analytical guidelines set forth in the Norsk Hydro message of 10 January and updated by the communications of 18 February and 15 March 1994, although due to low sample quantity, it was not possible to perform medium pressure liquid chromatography, sulphur-aromatic gas chromatography (via FPD), to provide carbon isotope data for whole extracts or the asphaltene fractions of four samples, or to prepare kerogen composition slides for seven samples.

A concern that drilling mud contamination was affecting results of pyrolysis data was expressed by Norsk Hydro in a message on 11 April, and the programme was amended in accordance with SPT suggestions on 13 April 1994. Preliminary data reports were transmitted to Norsk Hydro by facsimile message as data became available.

Our contact at Norsk Hydro has been Tove Bockelie. SPT personnel involved in the study have been:

C Darlington	:	Project advice
R Harding	:	Microscopy, interpretation, report preparation
M Wadsworth	:	Supervision of chemical laboratory analyses

The numbers of analyses carried out are:

Sample preparation, including brief lithological description	:	38
Spore colour analyses	:	30
Vitrinite reflectance analyses	:	30
Detailed visual quantitative kerogen descriptions	:	5

Total organic carbon determinations (excluding duplicates)	:	14
Rock-Eval pyrolysis (excluding duplicates)	:	14
Pyrolysis-gas chromatography of extracted samples	:	12
Quantitative solvent extraction	:	12
Hydrocarbon fractionation via Iatroscan	:	12
Alkane gas chromatography	:	14
Aromatic gas chromatography	:	14
Alkane gas chromatography-mass spectrometry	:	12
Aromatic gas chromatography-mass spectrometry	:	12
Isotopic composition for saturate, aromatic, polar, asphaltene and kerogen fractions	:	12

WELL DATA

The following well data have been furnished by Norsk Hydro a.s.:

Well	:	30/12-1
Spudded	:	5 January 1994
TD date	:	26 February 1994
Location	:	Offshore Norway
Latitude	:	60°08'44.30"N (UTM: 6 667 796.2 mN)
Longitude	:	02°51'06.54"E (UTM: 491 770.6 mE)
Zone	:	ED50, UTM Zone 31, CM 3E°
Line	:	NH 911, ROW 409, COL 1161
Water depth	:	113m MSL (135m RKB)
TD (in Statfjord Formation)	:	3641m RKB (driller) 3643m RKB (logger)
Targets	:	Brent Group (primary) Statfjord, Cook Formations (secondary)
Casing points	:	219m (30"), 1120m (13 3/8"), 2802m (9 5/8")

Lithostratigraphic and chronostratigraphic data are taken from SPT Report No. 5014/Ic 'Biostratigraphy of well 30/12-1 including sidetrack 30'12-1, T2'.

GENERAL DATA			MATURITY DATA		KEROGEN COMPOSITION DATA							
SAMPLE DEPTH (Metres)	SAMPLE TYPE	ANALYSED LITHOLOGY	SPORE COLOUR INDEX	VITR. REFL. R oil av %	% (Visual, from microscopy)			% (Calculated)				
					INERTINITE	VITRINITE	SAPROPEL	INERT	VIT	ALG SAP	WXY SAP	
1170	Ctgs	LST, v lt gy+ 20% MDST, pal yel-brn, calc	3.0	.27(18) .46(2)R	Mnr	25	75					
1190	Ctgs	MDST, pal yel-brn, calc+ mnr LST, v lt gy	2.5	*	Prt	60	40					
1210	Ctgs	MDST, pal yel-brn, calc+ tr LST, v lt gy	3.0	.28(54)	Prt	40	60					
1230	Ctgs	MDST, pal yel-brn, calc+ tr LST, v lt gy	3.0	.29(55)	5	30	65					
1250	Ctgs	MDST, pal yel-brn, calc+ tr LST, v lt gy	3.0	.28(55)	Prt	40	60					
1280	Ctgs	MDST, lt brn-gy+ tr LST, v lt gy+ tr SST med-dk gy	3.0	.30(55)	5	40	55					
1310	Ctgs	MDST, ol-blk+ 20% MDST, brn-gy+ tr LST v lt gy	3.0	.29(55)	5	40	55					
1340	Ctgs	MDST, ol-blk+ 20% MDST, brn-gy+ tr LST lt gy+ tr LST, v lt gy	3.0	.30(55)	Mnr	60	40					
1356.0	Swc	MDST, gy-brn, calc	2.5	.27(49)	5	20	75					
1580.0	Swc	MDST, gy-brn+ mic	3.0	.28(45) .44(2)R	Mnr	50	50					
1816.0	Swc	SH, lt ol-gy, mic	3.0	.30(29) .46(1)R	20	15	65					
1917.0	Swc	MDST, lt ol-gy, mic	3.0	.33(46) .44(3)R	5	80	15					
2095.0	Swc	MDST, lt ol-gy, mic	3.5	.33(52)	5	60	35					
2120.0	Swc	MDST, lt ol-gy, mic	2.5	.35(55)	10	70	20					
2145.0	Swc	MDST, gy-red, mic	3.0	.35(1)	15	55	30					
2157.0	Swc	MDST, med-dk gy, mic	2.5-3.0?	.27(5) .55(2)R	15	15	70					
2180.0	Swc	MDST, gn-gy, calc	2.5		10	10	80					
2195.0	Swc	MDST, gn-gy	3.0	.41(10) .56(2)R	Prt	Prt	100					
2235.0	Swc	SND, v lt gy+ mnr MDST, ol-gy, mic+ tr glc	3.0	.34(4)	10	55	35					
2302.0	Swc	MDST, lt ol-gy, mic	3.5	.37(2) .69(8)R	70	15	15					

MATURITY AND KEROGEN COMPOSITION DATA

TABLE : 1A

GENERAL DATA			MATURITY DATA		KEROGEN COMPOSITION DATA							
SAMPLE DEPTH (Metres)	SAMPLE TYPE	ANALYSED LITHOLOGY	SPORE COLOUR INDEX	VITR. REFL. R oil av %	% (Visual, from microscopy)			% (Calculated)				
					INERTINITE	VITRINITE	SAPROPEL	INERT	VIT	ALG SAP	WXY SAP	
2420.1	Swc	MDST, brn-gy+ 10% SST, dk gy	4.0	.41(50)	10	75	15					
2505.1	Swc	MDST, med gy, calc	4.5 8.0 R	.45(9)	70	15	15					
2582.1	Swc	MDST, brn-gy	4.0 ? 7.5 ? R	.45(5)	65	20	15					
2754.0	Swc	MDST, gy-brn+ SND+ tr glc	4.0	.48(26) .64(7)R .90(3)R	5	5	90					
2790.0	Swc	MDST, ol-gy, calc	4.0	.41(47) .54(9)R	10	35	55					
2836.0	Swc	SST, lt ol-gy, calc + MDST, gy-brn, mic	4.0 ?	.36(7)L .72(2)R	10	20	70					
2865.0	Swc	SH, dk gy	3.5	.42(53) .62(2)R	10	20	70					
2870-872	Ctgs	MDST, ol-blk+ 10% MDST, brn-gy+ tr LST v lt gy	4.0	.43(35) .30(12)L .58(8)R	40	10	50					
2955.0	Core	SST, v lt gy	3.5	.38(2)	5	25	70					
2964.1-964.3	Core	SST, dk gy	*	.53(55)	10	90	Prt					

MATURITY AND KEROGEN COMPOSITION DATA

TABLE : 1B

COMPANY: Norsk Hydro

WELL: 30/12-1, T2

LOCATION: Offshore Norway

DEPTH (m)	A	AP	AW	AG	S	AL	M	F	W	O	C	NI
2836	-	65	10	-	5	10	-	-	5	5	-	-
2865	-	30	10	-	10	30	-	-	10	10	-	-
2870-2872	-	30	-	-	5	15	-	-	20	30	-	-
2955	-	60	20	-	5	5	-	-	5	5	-	-
2964.1-2964.3	-	-	-	-	-	-	-	-	90	10	-	-

Key:

A	Amorphous material in general
AP	Amorphous material mainly with degraded palynormorphs
AW	Amorphous material mainly with woody remains
AG	Grey matter
S	Sporomorphs (spores and pollen)
AL	Algae (single and multicelled)
M	Microplankton (dinocysts, acritarchs)
F	Fungi
W	Woody material (structured and dense particles)
O	Opaque material (also semi-opaque)
C	Cuticula (epidermal plant material)
NI	Material which cannot be included in the groups above, or material which cannot be identified

TABLE 2 Twelve component kerogen composition



GENERAL DATA			CHEMICAL ANALYSIS DATA											
SAMPLE DEPTH (Metres)	SAMPLE TYPE	ANALYSED LITHOLOGY	TOC % OF ROCK	PYROLYSIS					SOLVENT EXTRACTION/FRACTIONATION					
				Tmax °C	HI	OT	PI	POT.YLD. (ppm)	EXTR. (ppm)	HC (ppm)	EXTR. % OC	HC		ALK.
					%OC	%EX	%HC							
1170	Ctgs	LST, v lt gy+ 20% MDST, pal yel-brn, calc	-											
1190	Ctgs	MDST, pal yel-brn, calc + mnr LST, v lt gy	-											
1210	Ctgs	MDST, pal yel-brn, calc + tr LST, v lt gy	-											
1230	Ctgs	MDST, pal yel-brn, calc + tr LST, v lt gy	-											
1250	Ctgs	MDST, pal yel-brn, calc + tr LST, v lt gy	-											
1280	Ctgs	MDST, lt brn-gy+ tr LST, v lt gy+ tr SST, med-dk gy	-											
1310	Ctgs	MDST, ol-blk+ 20% MDST, brn-gy+ tr LST, v lt gy	-											
1340	Ctgs	MDST, ol-blk+ 20% MDST, brn-gy+ tr LST, lt gy+ tr LST, v lt gy	-											
1356.0	Swc	MDST, gy-brn, calc	-											
1580.0	Swc	MDST, gy-brn+ mic	-											
1816.0	Swc	SH, lt ol-gy, mic	-											
1917.0	Swc	MDST, lt ol-gy, mic	-											
2095.0	Swc	MDST, lt ol-gy, mic	-											
2120.0	Swc	MDST, lt ol-gy, mic	-											
2145.0	Swc	MDST, gy-red, mic	-											
2157.0	Swc	MDST, med-dk gy, mic	-											
2180.0	Swc	MDST, gn-gy, calc	-											
2195.0	Swc	MDST, gn-gy	-											
2235.0	Swc	SND, v lt gy+ mnr MDST, ol-gy, mic+ tr glc	-											
2302.0	Swc	MDST, lt ol-gy, mic	-											
2420.1	Swc	MDST, brn-gy+ 10% SST, dk gy	-											
2505.1	Swc	MDST, med gy, calc	-											
2582.1	Swc	MDST, brn-gy	-											
2754.0	Swc	MDST, gy-brn+ SND+ tr glc	-											
2790.0	Swc	MDST, ol-gy, calc	-											
2796.0	Swc	SH, dsk yel-brn, calc	8.27	431	522	12	.09	43200	9600	6260	11.6	76	65	58
	Swc	After extraction	8.76	433	433	18	.00	37960						

SUMMARY OF CHEMICAL ANALYSIS DATA

TABLE : 3A

GENERAL DATA			CHEMICAL ANALYSIS DATA											
SAMPLE DEPTH (Metres)	SAMPLE TYPE	ANALYSED LITHOLOGY	TOC % OF ROCK	PYROLYSIS					SOLVENT EXTRACTION/FRACTIONATION					
				Tmax °C	HI	OI	PI	POT.YLD. (ppm)	EXTR. (ppm)	HC (ppm)	EXTR. % OC	HC		ALK.
					%OC	%EX	%HC							
2812.0	Swc	SH, dsk yel-brn	6.29	433	435	21	.13	27340	8620	5190	13.7	82	60	53
	Swc	After extraction	7.14	434	441	20	.01	31510						
2820.0	Swc	MDST, gy-brn, calc	5.30	434	456	17	.12	24180	5865	4105	11.1	77	70	56
	Swc	After extraction	5.11	435	408	18	.01	20830						
2830.0	Swc	MDST, gy-brn, calc	4.77	434	413	21	.16	19700	9070	4945	19.0	104	55	58
	Swc	After extraction	4.49	435	308	27	.02	13850						
2836.0	Swc	SST, lt ol-gy, calc+ MDST, gy-brn, mic	.98	434	307	119	.19	3010	940	420	9.6	43	45	57
	Swc	After extraction	.60	399	133	238	.17	800						
2840-842	Ctgs	MDST, ol-blk+ 10% MDST, lt ol-gy+ tr LST, v lt gy+ tr SH, brn-gy, calc	8.52	434	438	42	.13	37350	11270	6280	13.2	74	56	55
2857-860	Ctgs	MDST, ol-blk+ 10% MDST, lt brn-gy+ tr LST, v lt gy	4.81	434	335	49	.13	16120	6090	3180	12.7	66	52	49
2865.0	Swc	SH, dk gy	5.55						3510	1705	6.3	31	49	44
	Swc	After extraction	5.27	437	231	17	.02	12150						
2870-872	Ctgs	MDST, ol-blk+ 10% MDST, brn-gy+ tr LST, v lt gy	5.34	435	160	34	.15	8560	2935	1070	5.5	20	37	20
2886.0	Swc	SH, med-dk gy	1.84						2275	1030	12.4	56	45	51
	Swc	After extraction	1.78	439	215	47	.07	3820						
-	Add	ANCO 208	.83	366	***	439	.12	10580						
2900.0	Mud		.21	445	143	286		300						
2955.0	Core	SST, v lt gy	.14						735	190	52.4	137	26	57
	Core	After extraction	.24	499	42	83	.17	100						
2964.1-964.3	Core	SST, dk gy	7.64	432	194	24	.10	14850	5540	2930	7.3	38	53	47
	Core	SST, dk gy	-											

SUMMARY OF CHEMICAL ANALYSIS DATA

TABLE : 3B

GENERAL DATA			CHEMICAL ANALYSIS DATA								
SAMPLE DEPTH (Metres)	SAMPLE TYPE	ANALYSED LITHOLOGY	TOC % OF ROCK	PYROLYSIS							
				S1 (ppm)	S2 (ppm)	S3 (ppm)	HI	OI	PI	Tmax °C	S2/S3
2796.0	Swc	SH, dsk yel-brn, calc	8.27	4120	43200	1020	522	12	.09	431	42.35
	Swc	After extraction	8.76	170	37960	1550	433	18	.00	433	24.49
2812.0	Swc	SH, dsk yel-brn	6.29	4160	27340	1330	435	21	.13	433	20.56
	Swc	After extraction	7.14	390	31510	1410	441	20	.01	434	22.35
2820.0	Swc	MDST, gy-brn, calc	5.30	3210	24180	880	456	17	.12	434	27.48
	Swc	After extraction	5.11	310	20830	920	408	18	.01	435	22.64
2830.0	Swc	MDST, gy-brn, calc	4.77	3860	19700	980	413	21	.16	434	20.10
	Swc	After extraction	4.49	330	13850	1190	308	27	.02	435	11.64
2836.0	Swc	SST, lt ol-gy, calc+ MDST, gy-brn, mic	.98	710	3010	1170	307	119	.19	434	2.57
	Swc	After extraction	.60	160	800	1430	133	238	.17	399	.56
2840-842	Ctgs	MDST, ol-blk+ 10% MDST, lt ol-gy+ tr LST, v lt gy+ tr SH, brn-gy, calc	8.52	5720	37350	3580	438	42	.13	434	10.43
2857-860	Ctgs	MDST, ol-blk+ 10% MDST, lt brn-gy+ tr LST, v lt gy	4.81	2450	16120	2350	335	49	.13	434	6.86
2865.0	Swc	SH, dk gy	5.55								
	Swc	After extraction	5.27	300	12150	890	231	17	.02	437	13.65
2870-872	Ctgs	MDST, ol-blk+ 10% MDST, brn-gy + tr LST, v lt gy	5.34	1540	8560	1800	160	34	.15	435	4.76
2886.0	Swc	SH, med-dk gy	1.84								
	Swc	After extraction	1.78	280	3820	840	215	47	.07	439	4.55
-	Add	ANCO 208	.83	1460	10580	3640	***	439	.12	366	2.91
2900.0	Mud		.21		300	600	143	286		445	.50
2955.0	Core	SST, v lt gy	.14								
2955.0	Core	No liths available									
	Core	After extraction	.24	20	100	200	42	83	.17	499	.50
2964.1-964.3	Core	SST, dk gy	7.64	1560	14850	1830	194	24	.10	432	8.11

ORGANIC CARBON AND ROCK-EVAL PYROLYSIS DATA

TABLE : 4

COMPANY: Norsk Hydro

WELL: 30/12-1, T2

LOCATION: Offshore Norway

DEPTH (m)	Sample Type	C1 (%)	C2-C5 (%)	C6-C14 (%)	C15+ (%)
2796	SWC	2.4	10.6	22.4	64.6
2812	SWC	2.3	11.8	26.1	59.8
2820	SWC	2.9	17.2	32.8	47.1
2830	SWC	2.3	14.8	29.4	53.4
2836	SWC	0.4	11.1	10.5	78.0
2840-2842	Ctgs	3.0	22.5	37.5	36.9
2857-2860	Ctgs	3.1	16.8	39.7	40.4
2865	SWC	3.4	14.5	26.1	56.0
2870-2872	Ctgs	7.0	13.5	16.1	63.3
2886	SWC	3.4	16.6	37.6	42.4
2955	Core	*	*	*	*
2964.1-2964.3	Core	3.1	15.5	33.0	48.4

TABLE 5 Pyrolysis-gas chromatography data



SAMPLE DATA						
SAMPLE DEPTH (Mtrs)	2796.0	2812.0	2820.0	2830.0	2836.0	2840-842
SAMPLE TYPE	Swc	Swc	Swc	Swc	Swc	Ctgs

COMPONENTS	QUANTIFIED NORMAL AND ISOPRENOID ALKANE ABUNDANCES (%)					
	2796.0	2812.0	2820.0	2830.0	2836.0	2840-842
n-C10						
n-C11						
n-C12						
n-C13	.03	.06	.02			.17
n-C14	.38	1.77	1.08	.49		1.26
n-C15	2.41	4.55	3.41	2.33		3.09
n-C16	3.97	5.38	4.89	4.11	.70	4.77
n-C17	5.97	6.40	5.84	6.27	3.03	5.92
n-C18	6.61	6.62	6.43	6.33	5.42	6.60
n-C19	6.75	6.81	7.36	7.25	6.72	7.74
n-C20	6.98	6.36	6.60	6.63	8.85	7.37
n-C21	6.50	6.10	6.20	6.19	8.48	5.60
n-C22	5.90	5.07	5.28	5.68	10.53	6.14
n-C23	5.32	4.65	4.93	5.40	9.69	5.38
n-C24	5.18	4.73	5.52	5.30	9.01	5.34
n-C25	4.50	4.06	5.42	4.90	6.93	4.39
n-C26	3.66	3.18	3.19	3.73	4.87	3.78
n-C27	2.69	2.36	2.39	2.93	3.24	2.60
n-C28	2.07	1.44	1.86	2.48	3.00	1.65
n-C29	1.93	1.91	2.22	2.60	2.53	1.68
n-C30	1.28	1.31	1.58	1.92	1.75	1.88
n-C31	1.13	1.17	1.24	1.93	1.73	1.54
n-C32	.71	.75	.79	1.41	1.24	.97
n-C33	1.14	.98	1.04	1.46	1.33	1.26
n-C34	1.02	1.07	1.00	1.42	1.33	1.39
n-C35	1.21	1.19	.96	1.52	1.19	1.31
n-C36	.67	.54	.50	1.03	.64	.76
i-C15 (Farnesane)	.34	.59	.28	.10		.21
i-C16	1.18	1.87	1.36	.70		.96
i-C18 (Norpristane)	4.13	4.26	3.93	2.81	.75	2.69
i-C19 (Pristane)	9.46	8.46	8.04	6.84	3.05	7.16
i-C20 (Phytane)	6.86	6.35	6.63	6.25	4.02	6.40

GENERAL DATA						
Total Abundance(%)	100	100	100	100	100	100
TOC (% of Rock)	8.27	6.29	5.30	4.77	.98	8.52
Extract (ppm)	9600	8620	5865	9070	940	11270
Hydrocarbons (ppm)	6260	5190	4105	4945	420	6280
Hydrocarbon(mg/gTOC)	76	82	77	104	43	74
Alks(% Hydrocarbons)	58	53	56	58	57	55
Rock-Eval HI	522	435	456	413	307	438
Rock-Eval PI	.09	.13	.12	.16	.19	.13

RATIOS						
CPI-1	1.09	1.14	1.21	1.10	1.04	1.01
CPI-2	1.08	1.16	1.22	1.11	1.05	1.02
CPI-3	.94	1.02	.95	.94	.82	.96
Bias	1.44	1.61	1.41	1.25	.96	1.45
i-C19 / n-C17	1.59	1.32	1.38	1.09	1.01	1.21
i-C20 / n-C18	1.04	.96	1.03	.99	.74	.97
i-C19 / i-C20	1.38	1.33	1.21	1.09	.76	1.12

LEGEND	
i - isoprenoid	n - normal
For definition of Ratios CPI-1,-2,-3 and Bias - see Appendix 2	

ALKANE GAS CHROMATOGRAPHY DATA

TABLE : 6A

SAMPLE DATA						
SAMPLE DEPTH (Mtrs)	2857-860	2865.0	2870-872	2886.0	2955.0	2964.1-964.3
SAMPLE TYPE	Ctgs	Swc	Ctgs	Swc	Core	Core

COMPONENTS	QUANTIFIED NORMAL AND ISOPRENOID ALKANE ABUNDANCES (%)					
	n-C10					
n-C11						
n-C12						
n-C13						
n-C14	.14	.17	.05	.01		.26
n-C15	1.10	1.78	.70	.90		1.34
n-C16	2.80	3.62	2.13	3.09		2.99
n-C17	4.44	5.53	4.01	5.37	.48	4.71
n-C18	5.24	6.06	4.43	5.67	2.51	5.26
n-C19	6.62	5.75	6.31	6.59	2.66	6.43
n-C20	6.17	5.56	5.53	6.13	4.40	6.10
n-C21	5.12	5.88	5.56	5.59	4.84	5.17
n-C22	5.63	5.65	6.70	6.08	8.19	5.60
n-C23	5.87	5.28	6.74	5.96	10.95	5.87
n-C24	5.69	4.47	6.50	5.86	10.84	5.60
n-C25	5.19	5.19	6.04	5.87	10.70	5.54
n-C26	4.44	3.95	5.12	4.89	7.75	4.80
n-C27	4.80	4.08	4.77	5.61	5.43	4.30
n-C28	3.08	2.86	3.54	4.52	4.60	3.01
n-C29	4.19	4.10	4.92	4.68	4.18	4.14
n-C30	2.98	2.67	3.17	2.71	1.92	2.78
n-C31	2.85	2.45	3.00	2.93	3.51	2.64
n-C32	1.56	1.08	1.41	1.41	.91	1.28
n-C33	2.07	1.73	2.16	2.22	2.50	2.16
n-C34	1.63	1.49	1.69	1.51	2.80	1.38
n-C35	1.81	1.21	1.46	1.44	2.33	1.31
n-C36	.88	.49	.63	.54	.82	.60
i-C15 (Farnesane)	.03	.15	.01	.03		.12
i-C16	.24	.75	.15	.33		.41
i-C18 (Norpristane)	2.49	2.74	1.47	1.83	.83	2.49
i-C19 (Pristane)	7.96	9.89	8.05	5.97	3.53	9.28
i-C20 (Phytane)	5.02	5.41	3.74	2.24	3.31	4.41

GENERAL DATA						
Total Abundance(%)	100	100	100	100	100	100
TOC (% of Rock)	4.81	5.55	5.34	1.84	.14	7.64
Extract (ppm)	6090	3510	2935	2275	735	5540
Hydrocarbons (ppm)	3180	1705	1070	1030	190	2930
Hydrocarbon(mg/gTOC)	66	31	20	56	137	38
Alks(% Hydrocarbons)	49	44	20	51	57	47
Rock-Eval HI	335		160			194
Rock-Eval PI	.13		.15			.10

RATIOS						
CPI-1	1.24	1.31	1.23	1.26	1.24	1.25
CPI-2	1.23	1.32	1.22	1.24	1.26	1.21
CPI-3	1.28	1.20	1.10	1.19	.88	1.10
Bias	.84	1.00	.73	.83	.36	.86
i-C19 / n-C17	1.79	1.79	2.01	1.11	7.38	1.97
i-C20 / n-C18	.96	.89	.85	.40	1.32	.84
i-C19 / i-C20	1.59	1.83	2.15	2.66	1.07	2.10

LEGEND		
i - isoprenoid	n - normal	For definition of Ratios CPI-1,-2,-3 and Bias - see Appendix 2

ALKANE GAS CHROMATOGRAPHY DATA

TABLE : 6 B

COMPANY: NORSK HYDRO

WELL: 30/12-1,T2

LOCATION: OFFSHORE NORWAY

Depth(m)	2796	2812	2820	2830	2836	2840	2857	2865	2870	2886	2955	2964.1
23/3	1420290	820629	397668	300880	41212	130024	241720	144452	124504	66197	23408	72818
24/3	139712	67584	52992	25013	4025	11862	19977	8944	7084	3468	1176	5360
25/3	1161470	181056	104371	170500	23976	84384	144001	79472	78575	40110	14018	46243
24/4	1365500	599770	39580	285884	43792	32887	323312	234720	146544	109203	5829	74960
26/3						91409					15887	
27Ts	2258940	967424	768128	425280	44772	177856	346176	215296	142400	101820	18107	86032
27Tm	3449080	1749630	1100150	624889	91633	266464	1175420	1035610	489674	300582	35446	265488
28aB	276992	174369	357376	510398	78062	304160	597824					
29aB	9148670	3826300	2739450	1719550	183699	658208	2985850	2836610	1266490	694640	76416	616384
30d	889856	558976	421120		34400	72919	341184	306080	145280	108992	4704	79346
29Ba	1751550	636544	531712	318784	40103	91440	673472	611968	272440	174336	11521	128242
30aB	14012500	6101880	5430390	3177150	326215	1177810	4248510	3480290	1850100	1193770	90448	1013920
30Ba	3160700	1417850	1057790	196032	91050	225954	1228540	1113910	508366	328352	14441	267040
31aBS	6106490	2979190	2633980	1416360	156596	550493	2251770	2055190	952980	592768	47515	538681
31aBr	4547070	2173690	1924350	1016250	124853	389170	1605110	1449820	659911	416960	44226	389415
30G												
35aBS	3300540	2309370	1660490	830336	96851	361920	764521	552193	316224	140874	18160	175536
27aaR	6926220	2493750	2044150	1216060	132624	501856	970400	589312	457376	173153	17915	27184
28aaR	4331260	1261690	1034040	699456	72000	263744	350688	152516	107424	43779	6744	71860
29aaS	2178810	784896	694400	445312	47354	181728	390784	238144	175696	77952	8602	99952
29BBR	243170	1092990	897920	542080	54446	216928	422528	236832	186400	70872	14745	107280
29BBS	1236730	515712	469056 +	262464	31907	132032	207200	110816	104064	39800	9885	59328
29aaR	3590780	1156860	1010810	662784	66801	232352	422176	233914	202960	84760	11528	116512
27BBR	2668030	1123960	902528	514560	52992	255520	360640	213600	167776	67984	14078	100368
27BBS	6144	2304	4224	2192	5456		30112		7584		720	
28BBR	2418810	1043000	765056	506400	57012	229008	345312	158336	122448	45566	13789	72360
28BBS	1179390	600448	476160	254592	29587	112672	265664	117184	97472	33868	5962	53760
29BBR	2318590	1105340	918016	513216	56992	221296	417728	251280	210304	77488	15538	116623
29BBS	1697790	921984	655552	414208	47408	190368	345312	196720	168448	60752	14928	88630
27dBS	16941470	774880	562176	299568	33952	140825	302971	186592	133336	52944	4464	82118
27dBR	1264380	599536	425232	224512	25912	107168	223808	135880	98128	38964	3532	59452
28dBS	1313720	530592	400640	241632	28064	109952	190016	104288	71504	25644	3146	45880
28dBR	1695330	336000	252224	135449	16633	62832	232368	164222	131680	4185	2292	70177
29dBS	1535474	331560	243334	174682	17583	67516	138640	87264	65919	25090	2264	114641
29dBR	223168	76352	56896	36768	3404	14544	18062	9120	6106	3172	409	3546

Peaks 23/3-35aBS from m/e 191; peaks 27aaR-29BBS from m/e 217; peaks 27dBS to 29dBR from m/e 259.

ALKANE GC-MS BIOMARKER PEAK AREAS

TABLE 7

COMPANY: Norsk Hydro

WELL: 30/12-1, T2

LOCATION: Offshore Norway

General Data		Gas Chromatography-Mass Spectrometry Biomarker Ratios									
		Biomarker Ratio No.									
DEPTH (m)	Sample Type	1	2	3	4	5	6	7	8	9	10
2796	SWC	0.65	0.23	0.19	1.34	0.19	0.10	2.0	6.4	-	0.24
2812	SWC	0.55	0.23	0.17	1.37	0.17	0.10	2.9	9.2	-	0.38
2820	SWC	0.70	0.19	0.19	1.37	0.10	0.01	6.6	7.8	-	0.31
2830	SWC	0.68	0.06	0.19	1.39	0.21	0.09	16.1	-	-	0.26
2836	SWC	0.49	0.28	0.22	1.25	0.21	0.13	23.9	10.5	-	0.30
2840-2842	Ctgs	0.67	0.19	0.14	1.41	0.27	0.03	25.8	6.2	-	0.31
2857-2860	Ctgs	0.29	0.29	0.23	1.40	0.10	0.08	14.1	8.0	-	0.18
2865	SWC	0.21	0.32	0.22	1.42	0.07	0.07	-	8.8	-	0.16
2870-2872	Ctgs	0.29	0.27	0.22	1.44	0.11	0.08	-	7.9	-	0.17
2886	SWC	0.34	0.28	0.25	1.42	0.09	0.09	-	9.1	-	0.12
2955	Core	0.51	0.16	0.15	1.07	0.60	0.06	-	5.2	-	0.20
2964.1-2964.3	Core	0.32	0.26	0.21	1.38	0.12	0.07	-	7.8	-	0.17

Key to GC-MS Biomarker Ratios

1. C₂₇ [18 α (H) trisnorhopane/17 β (H) trisnorhopane] (Ts/Tm)
 2. C₃₀ [17 β (H), 21 α (H) moretane/17 α (H), 21 β (H) hopane]
 3. C₂₉ [17 β (H), 21 α (H) normoretane/17 α (H), 21 β (H) norhopane]
 4. [22S/22R] of C₃₁ 17 α (H), 21 β (H) homohopanes
 5. Tricyclic index - [(C₂₃+C₂₄+C₂₅+C₂₆ tricyclic terpanes)/C₃₀ 17 α (H), 21 β (H) hopane]
 6. Tetracyclic index - [C₂₄ tetracyclic terpene/C₃₀ 17 α (H), 21 β (H) hopane]
 7. Bisnorhopane index - % [C₂₈ 17 α (H)18 α (H)21 β (H) bisnorhopane/C₃₀ 17 α (H), 21 β (H) hopane]
 8. Diahopane index - % [C₃₀ diahopane (x)/C₃₀ 17 α (H), 21 β (H) hopane]
 9. Gammacerane index - % [Gammacerane/C₃₀ 17 α (H), 21 β (H) hopane]
 10. C₃₅ homohopane index - % [(22S of C₃₅ 17 α (H), 21 β (H) homohopane)/C₃₀ 17 α (H), 21 β (H) hopane]
- = ratio not calculated due to compound absence



TABLE 8.1 Alkane GC-MS biomarker ratios (terpanes, m/e 191)