

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 7216/11-1 S PO: 1

Hole section : 36"			WATER BASED SYSTEM																
Date	Depth [m]		Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings							Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]	
	MD	TVD					600	300	200	100	60	30	6						3
2000-07-25	507	507	BENTONITE MUD		1,30					0	0								
2000-07-26	671	671	BENTONITE MUD		1,30					0	0								
2000-07-27	671	671	BENTONITE MUD		1,30					0	0								
Hole section : 26"			WATER BASED SYSTEM																
Date	Depth [m]		Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings							Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]	
	MD	TVD					600	300	200	100	60	30	6						3
2000-07-28	1004	1004	BENTONITE MUD		1,30					0	0								
2000-07-29	10012	8181	BENTONITE MUD	100,0	1,30					0	0								
2000-07-30	1004	1004	BENTONITE MUD	100,0	1,30					0	0								
2000-07-31	1004	1004	BENTONITE MUD	120,0	1,30					0	0								
2000-08-01	1004	1004	BENTONITE MUD	100,0	1,30					0	0								
2000-08-02	1004	1004	BENTONITE MUD	100,0	1,03					0	0								
2000-08-03	1004	1004	BENTONITE MUD	120,0	1,03					0	0								
Hole section : 17 1/2"			WATER BASED SYSTEM																
Date	Depth [m]		Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings							Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]	
	MD	TVD					600	300	200	100	60	30	6						3
2000-08-04 23:59	1004	1004	GLYDRIL		1,30		75	60	49	38	0	0	12	10	50,0	15,0	22,5	5,0	8,0
2000-08-05 23:59	1094	1094	GLYDRIL		1,30		59	44	36	27	0	0	12	10	50,0	15,0	14,5	5,0	8,0
2000-08-06 23:59	1437	1435	GLYDRIL		1,30		55	41	35	27	0	0	11	10	50,0	14,0	13,5	5,0	7,5
2000-08-07 23:59	1437	1435	GLYDRIL		1,39		58	42	35	27	0	0	11	10	50,0	16,0	13,0	5,0	7,5
2000-08-08 23:59	1337	1336	GLYDRIL		1,39		58	42	36	26	0	0	11	10	50,0	16,0	13,0	5,0	7,5
2000-08-09 23:59	1395	1393	GLYDRIL		1,39		57	41	35	26	0	0	10	9	50,0	16,0		5,0	
2000-08-10	1390	1388	GLYDRIL		1,40		56	4025	3520	25	0	0	9	8		16,0	12,0	5,0	6,5
Hole section : 12 1/4"			WATER BASED SYSTEM																
Date	Depth [m]		Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings							Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]	
	MD	TVD					600	300	200	100	60	30	6						3
2000-08-11	1650	1647	GLYDRIL	53,0	1,40		58	44	36	26	0	0	11	9	50,0	14,0	15,0		8,0
2000-08-12	1841	1837	GLYDRIL	53,0	1,46		66	48	41	30	0	0	12	10	50,0	18,0	15,0	5,0	8,0

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 7216/11-1 S PO: 1

Hole section : 12 1/4"

WATER BASED SYSTEM

Date	Depth [m]		Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings							Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]	
	MD	TVD					600	300	200	100	60	30	6						3
2000-08-13	2195	2189	GLYDRIL	53,0	1,46		68	51	43	31	0	0	11	10	50,0	17,0	17,0	5,0	10,5
2000-08-14	2400	2389	GLYDRIL	53,0	1,46		69	51	41	31	0	0	11	10	50,0	18,0	16,5	5,0	10,0
2000-08-15	2618	2588	GLYDRIL	53,0	1,46		71	51	42	32	0	0	12	10	50,0	20,0	15,5	5,0	10,0
2000-08-16	2758	2699	GLYDRIL	53,0	1,46		78	56	46	36	0	0	12	10	50,0	22,0	17,0	5,0	10,0
2000-08-17	2758	2699	GLYDRIL	53,0	1,46		78	56	46	36	0	0	12	10	50,0	22,0	17,0	5,0	10,0
2000-08-18	2758	2699	GLYDRIL	53,0	1,46		78	56	46	36	0	0	12	10	50,0	22,0	17,0	5,0	10,0
2000-08-19	2758	2699	GLYDRIL	55,0	1,46		82	59	49	36	0	0	13	10	50,0	23,0	18,0	5,0	10,0
2000-08-20	2758	2699	GLYDRIL	55,0	1,46		80	60	49	35	0	0	12	10	50,0	20,0	20,0	5,0	10,0
2000-08-21	2758	2699	GLYDRIL	55,0	1,46		80	60	49	35	0	0	12	10	50,0	20,0	20,0	5,0	10,0
2000-08-22	2758	2699	GLYDRIL	56,0	1,46		82	62	50	35	0	0	12	10	50,0	20,0	21,0	5,0	10,0
2000-08-23	2793	2724	GLYDRIL	54,0	1,30		56	43	36	28	0	0	10	9	50,0	13,0	15,0	5,0	8,0

Hole section : 8 1/2"

WATER BASED SYSTEM

Date	Depth [m]		Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings							Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]	
	MD	TVD					600	300	200	100	60	30	6						3
2000-08-24	2941	2822	GLYDRIL	54,0	1,30		57	43	36	27	0	0	10	9	50,0	14,0	14,5	5,0	8,0
2000-08-25	2988	2852	GLYDRIL	54,0	1,30			36	27	21	0	0	10	9	50,0	14,0	14,5	5,0	8,0
2000-08-26	3011	2866	GLYDRIL	57,0	1,30		56	42	36	27	0	0	10	9	50,0	14,0	14,0	6,0	8,0
2000-08-27	3170	2964	GLYDRIL	55,0	1,31		65	50	43	34	0	0	12	10	50,0	15,0	17,5	6,0	10,0
2000-08-28	3273	3030	GLYDRIL	55,0	1,46		70	53	45	35	0	0	13	11	50,0	17,0	18,0	6,0	10,0
2000-08-29	3511	3186	GLYDRIL	55,0	1,52		80	61	51	38	0	0	13	11	50,0	19,0	21,0	6,0	12,0
2000-08-30	3604	3249	GLYDRIL	66,0	1,52		93	70	58	43	0	0	15	13	50,0	23,0	23,5	7,0	12,0
2000-08-31	3861	3439	GLYDRIL	58,0	1,52		81	57	48	35	0	0	12	10	50,0	24,0	16,5	6,0	11,0
2000-09-01	4041	3580	GLYDRIL	58,0	1,52		86	61	48	36	0	0	14	12	50,0	25,0	18,0	6,0	13,0
2000-09-02	4183	3690	GLYDRIL	61,0	1,52		86	62	51	38	0	0	13	11	50,0	24,0	19,0	6,0	13,0
2000-09-03	4230	3726	GLYDRIL	61,0	1,55		94	67	56	40	0	0	13	11	50,0	27,0	20,0	6,0	13,0
2000-09-04	4230	3726	GLYDRIL	63,0	1,55		94	67	56	40	0	0	13	11	50,0	27,0	20,0	6,0	13,0
2000-09-05	4230	3726	GLYDRIL	64,0	1,55		94	67	56	40	0	0	13	11	50,0	27,0	20,0	6,0	13,0
2000-09-06	4230	3726	GLYDRIL	60,0	1,55		92	66	55	40	0	0	13	11	50,0	26,0	20,0	6,0	13,0
2000-09-08	4230	3726	GLYDRIL	65,0	1,55		88	61	49	35	0	0	12	10	50,0	27,0	17,0	5,5	12,0
2000-09-09	4239	3733	GLYDRIL	65,0	1,55		82	57	49	26	0	0	12	10	50,0	25,0	16,0	5,0	12,0
2000-09-09 23:59	4239	3733	GLYDRIL	65,0	1,55		82	57	49	26	0	0	12	10	50,0	25,0	16,0	5,0	12,0
2000-09-10	4239	3733	GLYDRIL	65,0	1,46		80	57	46	33	0	0	10	8	50,0	23,0	17,0	5,0	10,0
2000-09-11	4239	3733	GLYDRIL	65,0	1,46		80	57	46	33	0	0	10	8	50,0	23,0	17,0	5,0	10,0

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS FOR WELL 7216/11-1 S PO: 1

Hole section : 8 1/2"			WATER BASED SYSTEM																
Date	Depth [m]		Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings							Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]	
	MD	TVD					600	300	200	100	60	30	6						3
2000-09-12	4239	3733	GLYDRIL	55,0	1,39		45	32	27	20	0	0	7	5	50,0	13,0	9,5	2,5	5,0

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 7216/11-1 S PO: 1

Hole section : 36"				WATER BASED SYSTEM																						
Date	Depth [m]		Mud Type	Dens [sg]	Filtrate		Filtcake		HPHT Press/Temp [bar/DegC]	pH	Alcalinity			Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid Oil Sand			CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	
	MD	TVD			API [ml]	HPHT [ml]	API [mm]	HPHT [mm]			Pm [ml]	Pf [ml]	Mf [ml]							[%]	[%]	[%]				
2000-07-25	507	507	BENTONITE MUD	1,30					/																	
2000-07-26	671	671	BENTONITE MUD	1,30					/																	
2000-07-27	671	671	BENTONITE MUD	1,30					/																	
Hole section : 26"				WATER BASED SYSTEM																						
Date	Depth [m]		Mud Type	Dens [sg]	Filtrate		Filtcake		HPHT Press/Temp [bar/DegC]	pH	Alcalinity			Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid Oil Sand			CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	
	MD	TVD			API [ml]	HPHT [ml]	API [mm]	HPHT [mm]			Pm [ml]	Pf [ml]	Mf [ml]							[%]	[%]	[%]				
2000-07-28	1004	1004	BENTONITE MUD	1,30					/																	
2000-07-29	10012	8181	BENTONITE MUD	1,30					/																	
2000-07-30	1004	1004	BENTONITE MUD	1,30					/																	
2000-07-31	1004	1004	BENTONITE MUD	1,30					/																	
2000-08-01	1004	1004	BENTONITE MUD	1,30					/																	
2000-08-02	1004	1004	BENTONITE MUD	1,03					/																	
2000-08-03	1004	1004	BENTONITE MUD	1,03					/																	
Hole section : 17 1/2"				WATER BASED SYSTEM																						
Date	Depth [m]		Mud Type	Dens [sg]	Filtrate		Filtcake		HPHT Press/Temp [bar/DegC]	pH	Alcalinity			Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid Oil Sand			CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	
	MD	TVD			API [ml]	HPHT [ml]	API [mm]	HPHT [mm]			Pm [ml]	Pf [ml]	Mf [ml]							[%]	[%]	[%]				
2000-08-04 23:59	1004	1004	GLYDRIL	1,30	3,5		1		/	8,5	0,1	0,7	162		78000	600		800	13,5						47	
2000-08-05 23:59	1094	1094	GLYDRIL	1,30	2,9				/	9,0	0,1	1,1	154		72000	520		600	14,0	0,1		15			87	
2000-08-06 23:59	1437	1435	GLYDRIL	1,30	2,9		1		/	8,6	0,1	1,2	146		72000	600		720	14,5	0,4		20			115	
2000-08-07 23:59	1437	1435	GLYDRIL	1,39	2,9		1		/	9,1	0,1	1,2	140		72000	600		720	17,0	0,2		20			103	
2000-08-08 23:59	1337	1336	GLYDRIL	1,39	2,9		1		/	9,2	0,1	1,2	138		72000	600		720	17,0	0,2		20			103	
2000-08-09 23:59	1395	1393	GLYDRIL	1,39			1		/	10,0			164		83000	680		720				15				
2000-08-10	1390	1388	GLYDRIL	1,40	3,1		1		/	10,8	1,5	0,3	2,0	164	83000	680		1000	18,0	0,0	0,2	15			114	
Hole section : 12 1/4"				WATER BASED SYSTEM																						
Date	Depth [m]		Mud Type	Dens [sg]	Filtrate		Filtcake		HPHT Press/Temp [bar/DegC]	pH	Alcalinity			Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid Oil Sand			CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	
	MD	TVD			API [ml]	HPHT [ml]	API [mm]	HPHT [mm]			Pm [ml]	Pf [ml]	Mf [ml]							[%]	[%]	[%]				
2000-08-11	1650	1647	GLYDRIL	1,40	3,0		1		/		1,8	0,2	2,0	144		74000	800		860	18,0	0,0	0,4	16			136
2000-08-12	1841	1837	GLYDRIL	1,46	2,8		1		/	10,0		0,1	1,5	140		73000	750		800	20,0	0,0	0,2	18			150
2000-08-13	2195	2189	GLYDRIL	1,46	3,0		1		/	9,3	1,0	0,1	0,5	145		80000	800		840	20,0	0,0	0,2	24			134

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 7216/11-1 S PO: 1

Hole section : 12 1/4"			WATER BASED SYSTEM																					
Date	Depth [m]		Dens [sg]	Filtrate		Filtcake		HPHT Press/Temp [bar/DegC]	pH	Alcalinity			Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid Oil Sand			CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
	MD	TVD		API [ml]	HPHT [ml]	API [mm]	HPHT [mm]			Pm [ml]	Pf [ml]	Mf [ml]							[%]	[%]	[%]			
2000-08-14	2400	2389	GLYDRIL	1,46	3,0		1	/		0,8	0,1	0,4	150	83000	920			980	20,5	0,0	0,4	31	153	
2000-08-15	2618	2588	GLYDRIL	1,46	3,0		1	/	8,8		0,1	0,4	154	83000	930			980	20,5	0,0	0,4	28	153	
2000-08-16	2758	2699	GLYDRIL	1,46	2,8		1	/	8,4		0,0	0,3	154	83000	760			800	20,5	0,0	0,2	31	153	
2000-08-17	2758	2699	GLYDRIL	1,46	2,8		1	/	8,4		0,0	0,3	154	83000	760			800	20,5	0,0	0,2	31	153	
2000-08-18	2758	2699	GLYDRIL	1,46	2,8		1	/	8,4		0,0	0,3	154	83000	760			800	20,5	0,0	0,2	31	153	
2000-08-19	2758	2699	GLYDRIL	1,46	2,8		1	/	8,5		0,0	0,3	152	83000	760			800	20,5	0,0	0,2	31	153	
2000-08-20	2758	2699	GLYDRIL	1,46	2,7		1	/	8,5		0,0	0,3	150	82500	760			800	20,5	0,0	0,2	31	154	
2000-08-21	2758	2699	GLYDRIL	1,46	2,7		1	/	8,5		0,0	0,3	150	82500	760			800	20,5	0,0	0,2	31	154	
2000-08-22	2758	2699	GLYDRIL	1,46	2,8		1	/	8,5		0,0	0,3	150	82000	760			800	20,5	0,0	0,2	31	155	
2000-08-23	2793	2724	GLYDRIL	1,30	2,5		1	/	8,0	0,3	0,1	0,3	160	80000	760			800	15,0	0,0	0,2	25	121	

Hole section : 8 1/2"			WATER BASED SYSTEM																					
Date	Depth [m]		Dens [sg]	Filtrate		Filtcake		HPHT Press/Temp [bar/DegC]	pH	Alcalinity			Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid Oil Sand			CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]
	MD	TVD		API [ml]	HPHT [ml]	API [mm]	HPHT [mm]			Pm [ml]	Pf [ml]	Mf [ml]							[%]	[%]	[%]			
2000-08-24	2941	2822	GLYDRIL	1,30	2,5		1	/	8,2	0,3	0,1	0,3	154	80000	760			800	16,0		0,2	25		
2000-08-25	2988	2852	GLYDRIL	1,30	2,8		1	/	8,2	0,3	0,0	0,5	154	80000	800			840	16,0		0,2	25	176	
2000-08-26	3011	2866	GLYDRIL	1,30	3,0	0,0	1	/		0,4	0,1	0,3	154	80000				840	16,0		0,3	25	160	
2000-08-27	3170	2964	GLYDRIL	1,31	2,4		1	/	8,3	0,3	0,1	0,4	155	80000				840	17,0		0,3	25	214	
2000-08-28	3273	3030	GLYDRIL	1,46	3,0		1	/	8,3	0,3	0,1	0,3	141	78000	760			800	20,0		0,4	28	139	
2000-08-29	3511	3186	GLYDRIL	1,52	2,8		1	/	8,3	0,3	0,1	0,3	165	93000	800			840	23,0		0,4	33	171	
2000-08-30	3604	3249	GLYDRIL	1,52	2,6		1	/	8,3	0,3	0,1	0,3	145	90000	800			840	23,0		0,4	33	178	
2000-08-31	3861	3439	GLYDRIL	1,52	3,0		1	/	8,2	0,3	0,0	0,3	161	87000	720			800	23,0		0,2	33	185	
2000-09-01	4041	3580	GLYDRIL	1,52	3,2		1	/	8,2	0,2	0,0	0,3	155	87000	360			440	23,0		0,2	40	185	
2000-09-02	4183	3690	GLYDRIL	1,52	3,0		1	/	8,2	0,2	0,0	0,3	155	87000	360			440	23,0		0,2	42	185	
2000-09-03	4230	3726	GLYDRIL	1,55	2,8		1	/	8,2	0,1	0,0	0,3	155	91000	320			400	23,0		0,1	40	177	
2000-09-04	4230	3726	GLYDRIL	1,55	2,8		1	/	8,2	0,1	0,0	0,3	155	91000	320			400	23,0		0,1	40	161	
2000-09-05	4230	3726	GLYDRIL	1,55	2,8		1	/	8,2	0,1	0,0	0,3	155	91000	320			400	23,0		0,1	40	161	
2000-09-06	4230	3726	GLYDRIL	1,55	3,0		1	/	8,2	0,1	0,0	0,3	154	90000	320			400	23,0		0,1	40	163	
2000-09-08	4230	3726	GLYDRIL	1,55	2,6		1	/	8,1	0,0	0,0	0,4	155	93000	320			400	23,6		0,1	42	156	
2000-09-09	4239	3733	GLYDRIL	1,55	2,6		1	/	8,3	0,0	0,0	0,4	155	93000	320			400	23,6		0,1	42	156	
2000-09-09 23:59	4239	3733	GLYDRIL	1,55	2,6		1	/	9,5	0,8	0,2	1,2	155	93000	320			400	23,6		0,1	42	156	
2000-09-10	4239	3733	GLYDRIL	1,46	3,0		1	/	9,5	0,8	0,2	1,2	155	93000	320			400	21,0		0,1	42	160	
2000-09-11	4239	3733	GLYDRIL	1,46	3,0		1	/	9,5	0,8	0,2	1,2	155	93000	320			400	21,0		0,1	42	160	

DAILY MUD PROPERTIES : OTHER PARAMETERS FOR WELL 7216/11-1 S PO: 1

Hole section : 8 1/2"			WATER BASED SYSTEM																						
Date	Depth		Mud Type	Dens [sg]	Filtrate		Filtcake		HPHT Press/Temp	pH	Alcalinity			Inhib Chem	K+	CL-	Ca++	Mg++	Tot hard	Percentage			CEC	ASG	LGS
	MD	TVD			API	HPHT	API	HPHT			Pm	Pf	Mf							[%]	[%]	[%]			
2000-09-12	4239	3733	GLYDRIL	1,39	5,0		1	/	11,7	0,2	2,2	127	69000	320	360	17,4				32		132			

TOTAL CONSUMPTION OF MUD ADDITIVES ON WELL 7216/11-1 S PO: 1

Section	Product/ Additive	Unit	Total Amount Used
36"	BENTONITE	kg	22000,00
	CELPOL ESL	kg	750,00
	CMC EHV	kg	350,00
	M-I BAR	kg	85000,00
	SODA ASH	kg	625,00
26"	BENTONITE	kg	52,00
	CELPOL ESL	kg	1800,00
	CMC EHV	kg	1675,00
	M-I BAR	kg	205,00
	SODA ASH	kg	525,00
17 1/2"	CELPOL ESL	kg	11050,00
	M-I BAR	kg	398,00
12 1/4"	CELPOL ESL	kg	4825,00
	M-I BAR	kg	162,00
8 1/2"	CELPOL ESL	kg	7450,00
	M-I BAR	kg	205,00
	SODA ASH	kg	550,00
0.0	CITRIC ACID	kg	1125,00
	DUOTEC NS	kg	200,00
	M-I BAR	kg	20,00



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OLJEDIREKTORATET
 Avd. Kontor Harstad
21 MAI 2001
 Sak./Dok.nr.: / -

Title							
Petroleum geochemical study of well 7216/11-1S							
Keywords							
petroleum geochemistry, maturity, hydrocarbons, biodegradation, correlation							
Document category				Document ID		Amendment no.	
Report				NH-00015611			
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7216/11-1				221		Well 7216/11-1	
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		Jan H. Augustson Arne S. Steen, Anne- Karin Syversen, Marian Våge		UTF N- Norge FSB		30.04.01	<i>[Signature]</i>
Controlled		Name		Org. unit		Date	Signe
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Verified		Name		Org. unit		Date	Signe
		Arnd Wilhelms		FSB		07.05.01	<i>[Signature]</i>
Approved		Name		Org. unit		Date	Signe
		Ole Haugerud		UTF N- Norge		09.05.01	<i>[Signature]</i>
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		Statoil		1			
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		NPD		1			
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1-1 Analytical procedures

The analytical and preparative methods employed in this study comprise geochemical characterization of sediment extracts. The analytical program involves:

- Rock Eval pyrolysis
- Asphaltene precipitation, preparative group type separation by MPLC, group type distribution by TLC-FID (Iatroscan)
- Gas chromatography (GC-FID) of saturated C15+ hydrocarbons, gas chromatography- mass spectrometry (GC-MSD) of the saturated (SAT) and aromatic (ARO) C15+ hydrocarbon fractions
- Mass spectrometry of stable carbon isotopes in SAT- and ARO- fractions.
- Gas chromatography (GC-FID) of C5-20 hydrocarbons of depressurized fluids.

All chromatographic data are based on quantitative measurements. The RE- source rock analysis, the C5- C20 gas chromatography, the C15+ gas chromatography (GC- FID) and the mass spectrometry analysis (GC- MSD) were carried out by Norsk Hydro Research Centre in Bergen. Both vitrinite reflectance and the isotope analysis of headspace gas in canned cuttings was carried out by APT/IFE at Kjeller. The coordination of the analysis and the reporting were jointly carried out by Norsk Hydro Research Center in Bergen and Norsk Hydro Exploration Office in Harstad.

HYLAB RESULTS SUMMARY: Summary of results in the database

NORSK HYDRO

18-Jan-2001 11:46

Cty	Well	Licence	Type	St.Depth	En.Depth	Rock-Eval	RE/EXT	Extr	MPLC	Iatr	Sat HC	Pyro-lyse	Isot	Sat-biom	Vitr	C5-20hc	Aro-hc	Sample
NOR	PSU/REF-NSO1		OIL								3			3		2	3	979902600
NOR	7216/11-1 S	PL 221	DC	1090.00	1100.00										1			760742
NOR	7216/11-1 S	PL 221	DC	1190.00	1200.00										1			760747
NOR	7216/11-1 S	PL 221	DC	1290.00	1300.00										1			760748
NOR	7216/11-1 S	PL 221	DC	1390.00	1400.00										1			760737
NOR	7216/11-1 S	PL 221	DC	1490.00	1500.00										1			760732
NOR	7216/11-1 S	PL 221	DC	1590.00	1600.00										1			760741
NOR	7216/11-1 S	PL 221	DC	1690.00	1700.00										1			760730
NOR	7216/11-1 S	PL 221	DC	1790.00	1800.00										1			760751
NOR	7216/11-1 S	PL 221	DC	1890.00	1900.00										1			760750
NOR	7216/11-1 S	PL 221	MUD	2000.00	2000.00			1		1	1			1			1	757756
NOR	7216/11-1 S	PL 221	DC	1990.00	2000.00										1			758080
NOR	7216/11-1 S	PL 221	DC	2060.00	2070.00	1												2091527
NOR	7216/11-1 S	PL 221	DC	2090.00	2100.00										1			760752
NOR	7216/11-1 S	PL 221	DC	2100.00	2110.00	1												2091528
NOR	7216/11-1 S	PL 221	DC	2180.00	2190.00	1												2091529
NOR	7216/11-1 S	PL 221	DC	2190.00	2200.00										1			753081
NOR	7216/11-1 S	PL 221	DC	2200.00	2225.00								1					757697
NOR	7216/11-1 S	PL 221	DC	2250.00	2275.00								1					757699
NOR	7216/11-1 S	PL 221	DC	2270.00	2275.00	1												2091530
NOR	7216/11-1 S	PL 221	DC	2295.00	2300.00										1			760745
NOR	7216/11-1 S	PL 221	DC	2300.00	2325.00								1					757701

Table 1-2

HYLAB RESULTS SUMMARY: Summary of results in the database

NORSK HYDRO

18-Jan-2001 11:46

Cty	Well	Licence	Type	St.Depth	En.Depth	Rock-Eval	RE/EXT	Extr	MPLC	Iatr	Sat HC	Pyrolyse	Isot	Sat-biom	Vitr	C5-20hc	Aro-hc	Sample
NOR	7216/11-1 S	PL 221	DC	2345.00	2350.00										1			758082
NOR	7216/11-1 S	PL 221	DC	2350.00	2375.00								1					757703
NOR	7216/11-1 S	PL 221	DC	2395.00	2400.00										1			760734
NOR	7216/11-1 S	PL 221	DC	2400.00	2425.00								1					757705
NOR	7216/11-1 S	PL 221	DC	2445.00	2450.00										1			758083
NOR	7216/11-1 S	PL 221	DC	2455.00	2460.00	1												2091531
NOR	7216/11-1 S	PL 221	DC	2460.00	2465.00	1												2091532
NOR	7216/11-1 S	PL 221	DC	2465.00	2470.00	1												2091533
NOR	7216/11-1 S	PL 221	DC	2450.00	2475.00								1					757707
NOR	7216/11-1 S	PL 221	DC	2480.00	2485.00	1												2091534
NOR	7216/11-1 S	PL 221	DC	2485.00	2490.00	1												2091535
NOR	7216/11-1 S	PL 221	DC	2490.00	2495.00	1												2091536
NOR	7216/11-1 S	PL 221	DC	2495.00	2500.00										1			760746
NOR	7216/11-1 S	PL 221	DC	2500.00	2525.00								1					757709
NOR	7216/11-1 S	PL 221	DC	2520.00	2525.00	1												2091537
NOR	7216/11-1 S	PL 221	DC	2550.00	2575.00								1					757711
NOR	7216/11-1 S	PL 221	DC	2595.00	2600.00										1			758034
NOR	7216/11-1 S	PL 221	DC	2635.00	2640.00	1												2091538
NOR	7216/11-1 S	PL 221	DC	2650.00	2675.00								1					757715
NOR	7216/11-1 S	PL 221	DC	2695.00	2700.00										1			760740
NOR	7216/11-1 S	PL 221	DC	2720.00	2725.00	1												2091539
NOR	7216/11-1 S	PL 221	MUD	2758.00	2758.00			1		1	1			1			1	757755

Table 1-2 (continued)



The analytical methods are based on the guidelines in the Norwegian Industry Guide to Organic Geochemical Analyses (NIGOGA, 1993). Deviations from this guide are:

- 1) Extract and asphaltene workup by centrifugation.
- 2) Internal standard mixture added to the fluid, for quality control and quantitative reports.
- 3) GC analysis of SAT and ARO fractions by 5 % phenyl methyl-silicone stationary phase.
- 4) GC-MSD detection of the aromatic hydrocarbons (but not FID).
- 5) Reporting of a restricted number of compounds relative to the NIGOGA guide, due to known coelutions or disputable identities.

The data quality control is carried out according to defined laboratory procedures, available on request.

Samples which are annotated "nso..." or "s..." represent the NOCS reference oil, which is from the Oseberg Field, well 30/9-B18. Results reflects the analytical repeatability. Unless otherwise stated all depths quoted in the report refer to the measured depths below KB (mD RKB).



2 Source rocks

Appendix A is shown the RockEval pyrograms and **Table 2-1** contains a summary of the results.

The 29 ditch cuttings samples were selected on the basis of wireline log responses and lithological descriptions in order to map potential source rock intervals. However, the S1, S2 and Tmax- values from the analysis reveal severe interference by polyethyleneglycol contained in the mud. The values are not indicative of an existing source rock potential and the results should be disregarded.

The Rock Eval results from the 12 core chips, however, do not show the same degree of contamination as the ditch cuttings. In particular do the claystone samples at 2990.50 m, 4230.44 m and 4230.50 m not seem to be influenced by polyethylene glycol and reflect mostly the autochthonous organic matter.



Depth (mD)	Sample Type	Lithology	Tmax (°C)	TOC (%)	S1 kg/t	S2 kg/t	S3 kg/t	HI mghc/gTOC	PI
2070	DC	CLYST	335	0.62	0.28	2.10	8.59	339	0.12
2110	DC	CLYST	349	1.67	2.16	7.03	12.52	421	0.24
2190	DC	CLYST	350	1.20	3.53	4.43	10.43	369	0.44
2275	DC	CLYST	356	1.74	3.71	8.59	9.16	494	0.30
2460	DC	CLYST	360	1.96	4.81	8.54	7.84	436	0.36
2465	DC	CLYST	356	1.98	4.11	8.65	8.28	437	0.32
2470	DC	CLYST	352	2.75	4.49	9.40	5.55	342	0.32
2485	DC	CLYST	357	2.25	4.53	10.41	9.88	463	0.30
2490	DC	CLYST	352	2.49	6.06	11.80	9.88	474	0.34
2495	DC	CLYST	359	2.11	3.99	10.51	13.85	498	0.28
2525	DC	CLYST	355	1.87	3.86	9.05	15.37	484	0.30
2640	DC	CLYST	349	2.43	5.22	12.13	18.89	499	0.30
2725	DC	CLYST	352	2.09	6.31	9.67	16.45	463	0.39
2782	DC	CLYST	362	1.84	3.14	8.77	17.66	477	0.26
2890	DC	CLYST	331	2.34	6.28	11.12	26.53	475	0.36
2925	DC	CLYST	356	1.58	3.21	7.48	19.81	473	0.30
2988	COCH	SST	328	1.11	2.66	7.38	4.07	665	0.26
2990	COCH	SST	317	0.11	0.43	0.37	1.67	336	0.54
2990.50	COCH	CLYST	428	0.71	0.26	2.00	13.99	282	0.12
2991.10	COCH	SST	322	0.10	0.16	0.40	1.63	400	0.29
2991.25	COCH	SST	317	0.17	0.89	0.48	1.81	282	0.65
2991.36	COCH	SST	331	0.07	0.20	0.33	1.10	471	0.38

Table 2-1 Summary of Rock Eval pyrolysis well 7216/11-1



Depth (mD)	Sample Type	Lithology	Tmax (°C)	TOC (%)	S1 kg/t	S2 kg/t	S3 kg/t	HI mghc/gTOC	PI
2991.43	COCH	SST	332	0.10	0.44	0.34	1.14	340	0.56
2991.45	COCH	SST	319	0.50	4.41	0.64	1.79	128	0.87
2991.50	COCH	SST	335	0.18	1.03	0.56	1.35	311	0.65
2991.93	COCH	SST	328	0.09	0.16	0.39	1.65	433	0.29
3035	DC	CLYST	341	1.67	5.17	7.64	26.15	457	0.40
3110	DC	CLYST	300	1.09	4.93	3.16	26.69	290	0.61
3120	DC	CLYST	361	1.27	5.78	4.01	37.21	316	0.59
3125	DC	CLYST	358	1.42	5.95	4.43	39.16	312	0.57
3130	DC	CLYST	358	1.44	5.05	5.57	35.75	387	0.48
3200	DC	CLYST	349	1.55	4.56	5.21	34.83	336	0.47
3277	DC	CLYST	304	1.87	7.97	5.43	25.69	290	0.59
3375	DC	CLYST	360	1.62	4.91	5.21	24.01	322	0.49
3460	DC	CLYST	368	2.95	10.08	6.76	38.18	229	0.60
3555	DC	CLYST	365	1.92	8.45	6.10	20.57	318	0.58
3865	DC	CLYST	370	2.21	8.92	6.11	29.84	276	0.59
4037	DC	CLYST	374	2.62	9.57	7.00	29.97	267	0.58
4047	DC	CLYST	369	2.49	10.16	6.21	47.98	249	0.62
4230.44	COCH	CLYST	439	1.89	0.27	2.25	35.43	119	0.11
4234.50	COCH	CLYST	442	2.03	0.45	3.86	22.54	190	0.10

Table 2-1 Summary of Rock Eval pyrolysis well 7216/11-1

Depth (mD)	Samples taken at	EOM (ppm)	EOM fractions				C15+ FID sat chromatograms	Pr/nC17	Pn/nC18	Pr/Ph
			NSO	NS1	NS2	NS3				
2988.00	Sst- matrix	4300	2.7	0.0	80.8	16.5	Very weak n- alkanes	1.00	0.25	1
2990.00	Sst- matrix	1800	2.8	0.0	84.4	12.8	Weak n- alk., just detectable	0.50	0.25	2.00
2991.10	Sst- matrix	1000	8.0	1.4	74.4	16.2	n-alkanes present, max at C20	0.82	0.54	1.29
2991.25	Fractures	2300	46.8	15.9	30.0	7.3	n- alkanes hardly present	1.67	0.14	1.67
2991.36	Sst- matrix	1200	7.2	0.8	82.1	9.9	n-alkanes present, max at C20	0.50	0.43	1.00
2991.43	Fractures	1600	22.6	5.5	71.7	0.2	n- alkanes hardly present	0.71	1.75	0.71
2991.45	Fractures	3100	53.6	20.9	19.0	6.6	n- alkanes hardly present	2.50	2.20	0.45
2991.50	Fractures	2700	50.2	17.1	26.0	6.7	n- alkanes hardly present	2.20	0.90	0.42
2991.93	Sst- matrix	1000	1.5	0.0	88.1	10.5	Weak n- alk., just detectable	1.00	1.00	1
NSO1	30/9-B18		59.7	29.6	9.7	1.0	Hardly altered n-alkanes	0.57	0.49	1.39
NSO2	30/9-B18		59.7	29.6	9.7	1.0	Hardly altered n-alkanes	0.56	0.49	1.39
NSO3	30/9-B18		59.7	29.6	9.7	1.0	Hardly altered n-alkanes	0.56	0.49	1.40
2000	MUD	20000	0.0	0.8	94.6	4.6	n- alkanes hardly present	ND	ND	ND
2758	MUD	22000	1.5	0.0	91.5	7.0	n- alkanes hardly present	ND	ND	ND
3200	MUD	20000	0.0	0.0	89.3	10.7	n- alkanes hardly present	ND	ND	ND
4230	MUD	26000	1.5	0.0	92.1	6.4	n- alkanes hardly present	ND	ND	ND

Table 4-1 EOM group type separation data (Iatroscan)

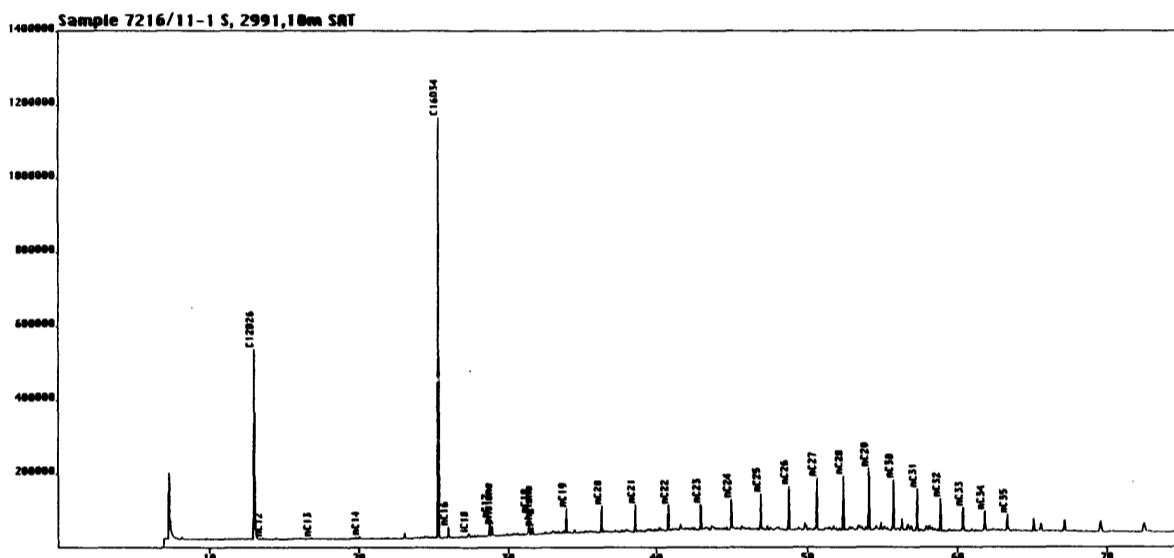


Figure 4-3a: FID- GC of C15+ saturate extract from core sample at 2991.10m

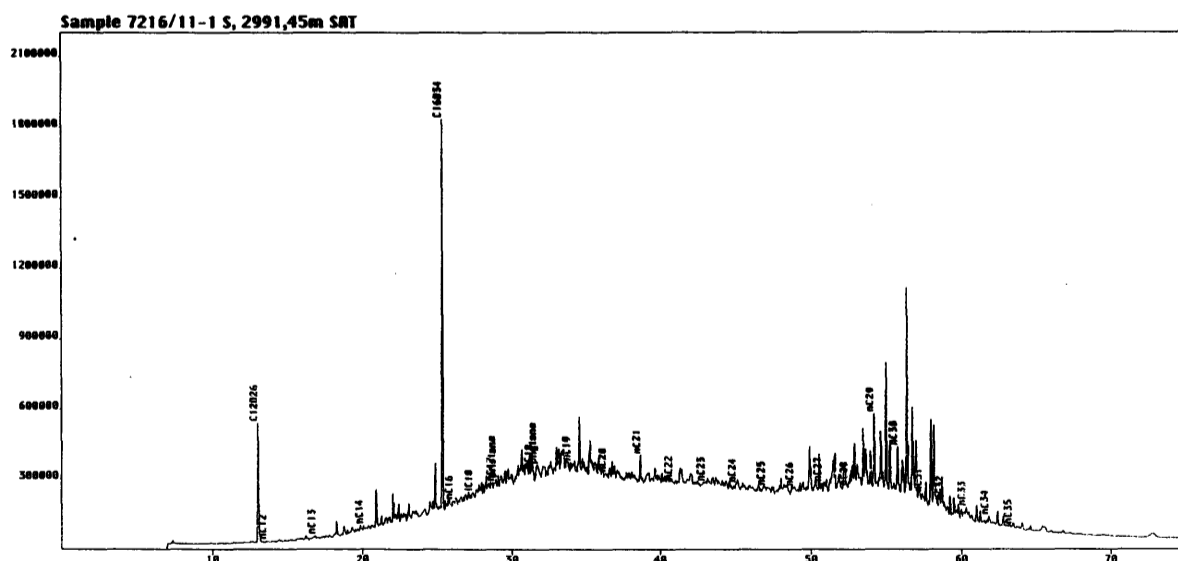


Figure 4-3b: FID- GC of C15+ saturate extract from core sample at 2991.45m



Report Title:

**Vitrinite Reflectance Analyses – NOCS Well
7216/11-1S.**

Client: Norsk Hydro ASA

Report Number: APT00-015

**Clients Reference: Arne Steen
Bestilling 5073976, 5071844 &
NHT-B33-5077 291-00**

Classification: Confidential

**Distribution:
Norsk Hydro (3)
APT (2)**

Date: 5th December 2000

1 Introduction

This report gives the result of routine vitrinite reflectance analyses of 40 samples from well 7216/11-1S offshore Norway.

2 Material

The material was provided from the client as 35 cuttings samples (DC) and 5 core chips (COCH). Information on stratigraphy in well 7216/11-1S was not provided from the client.

3 Analytical techniques

3.1 Preparation

The cuttings samples were then treated with hydrochloric and hydrofluoric acid prior to further preparation. The aim was to avoid soft and expanding mineral phases in order to ensure good polishing quality. The sample material resulting from the acid treatment was embedded in an epoxy resin to make briquettes, ground flat and polished using 0.25 micron diamond paste and magnesium oxide as the two final steps.

3.2 Analysis

The analytical equipment being used was a Zeiss MPM 03 photometer microscope equipped with an Epiplan-Neofluar 40/0.90 oil objective. The sensitive measuring spot was kept constant for all measurements at about 2.5 micron in diameter. The measurements were made through a green band pass filter (546 nm) and in oil immersion (refractive index 1.515 at 18°C). The readings were made without a polarizer and using a stationary stage. This procedure is called measurement of random reflectance (%Rm). The photometer is calibrated daily against a standard of known reflectance (%Rm= 0.588) and routinely (daily) checked against two other standards of significant different reflectances (%Rm=0.879 and 1.696). A deviation from these values of less than ± 0.01 and ± 0.02 respectively is considered as acceptable. The calibration is routinely

checked during the course of measurements at least every hour, and a deviation of less than ± 0.005 is considered as acceptable.

For each sample at least 20 points were measured if possible, and quality ratings are given to various important aspects which may affect the measurements. These aspects are abundance of vitrinite, uncertainties in the identification of indigenous vitrinite, type of vitrinite, particle size, particle surface quality and abundance of pyrite.

3.3 Presentation of results

The raw data from the measurements are presented in appendix for each sample both as tabulated data and histograms. A true vitrinite population is selected among the readings based on observations made during the measurements, and arithmetic mean values and standard deviation are calculated for this population and other populations. A quality rating is given to the true population. The results are listed in table 1. Figure 1 shows a vitrinite reflectance versus depth plot for well 7216/11-1S, both in linear and logarithmic scale.

Table 1. Vitrinite reflectance data table well 7216/11-1S

Analysis type:		Vitrinite reflectance				Comments: Both pop 1 and pop 2 seems to be good vitrinite populations. There are indications that pop 1 may be representative vitrinite and pop 2 may be a reworked vitrinite population.									
Well:		7216/11-1S				At 2495mRKB sclerotinite(inertinite)=0.50%Ro is found, indicating that the associated vitrinite population (pop 1) of 0.27%Ro may be representative.									
Number of samples:		12 + 28				At 3297mRKB the vitrinite population of 0.67%Ro (pop 2) have a tendency of oxidiced rims.									
Time period for analysis:		oct, now 2000				Pop 3 is probably not vitrinite.									
Analysis performed by:		K. Aasgaard, IFE				A plot of pop 1, 2 and 3 will be found in chart 1 in this file.									
Analysis ordered by:		Hydro Harstad via APT													
IFE sample code	Depth (m)	Sample type	Lithology	Sample quality	Sample prep.	Pop 1 (%Rm)	Stand. dev.	Number of readings	Pop 2 (%Rm)	Stand. dev.	Number of readings	Pop 3 (%Rm)	Stand. dev.	Number of readings	Total numb. of readings
20001741	2000	DC	clyst	M/G	HF	0.24	0.03	22							22
20001742	2200	DC	clyst	M/G	HF	0.27	0.05	22							22
20001743	2350	DC	clyst	M	HF	0.22	0.03	23							23
20001744	2450	DC	clyst	M	HF	0.26	0.04	21	0.50	0.08	3				24
20001745	2600	DC	clyst	M	HF	0.26	0.03	20	0.45	0.05	8	0.66	0.05	7	40
20001746	2800	DC	clyst	G	HF	0.34	0.04	23	0.58	0.06	6	0.81	0.07	2	31
20001679	2991	COCH	clyst	M/G	HF	0.40	0.04	9	0.64	0.06	13	0.82	0.03	5	38
20001747	3100	DC	clyst	M/G	HF	0.40	0.02	7	0.57	0.04	10	0.77	0.08	20	45
20001748	3500	DC	clyst/sst	M/G	HF	0.46	0.06	17	0.65	0.05	11	0.86	0.08	11	38
20001749	3900	DC	clyst/sst	M/G	HF	0.50	0.04	22	0.65	0.04	7	0.94	0.07	8	44
20001750	4200	DC	clyst/sst	M/Gst	HF	0.57	0.07	12	0.87	0.05	12	1.10	0.07	26	50
20001680	4230	COCH	clyst	M/Gst	HF	0.66	0.05	11	0.90	0.05	12	1.11	0.07	20	51
20002168	1090	DC	clyst	G	HF	0.24	0.03	22							22
20002169	1190	DC	clyst	M	HF	0.24	0.04	22							22
20002170	1290	DC	clyst	M	HF	0.25	0.02	22							22
20002171	1390	DC	clyst	M/G	HF	0.27	0.03	21							21
20002172	1490	DC	clyst	G	HF	0.27	0.03	24							24
20002173	1590	DC	clyst	M	HF	0.27	0.03	20	0.39	0.02	5				25
20002174	1690	DC	clyst	M	HF	0.26	0.03	22							22
20002175	1790	DC	clyst	M/G	HF	0.28	0.03	23							23
20002176	1890	DC	clyst	M/G	HF	0.28	0.03	22							22
20002177	2090	DC	clyst	M	HF	0.31	0.04	27							27
20002178	2295	DC	clyst	M	HF	0.33	0.06	26							26
20002179	2395	DC	clyst	M	HF	0.25	0.03	23	0.47	0.05	2				25

Table 1. Vitrinite reflectance data table well 7216/11-1S, continued

Analysis type:		Vitrinite reflectance													
Well:		7216/11-1S													
Number of samples:		12 + 28													
Time period for analysis:		oct, now 2000													
Analysis performed by:		K. Aasgaard, IFE													
Analysis ordered by:		Hydro Harstad via APT													
IFE sample code	Depth (m)	Sample type	Lithology	Sample quality	Sample prep.	Pop 1 (%Rm)	Stand. dev.	Number of readings	Pop 2 (%Rm)	Stand. dev.	Number of readings	Pop 3 (%Rm)	Stand. dev.	Number of readings	Total numb. of readings
20002180	2495	DC	clyst	M	HF	0.27	0.04	22	0.50	0.04	10				32
20002181	2695	DC	clyst	M	HF	0.31	0.04	24	0.50	0.06	3				27
20002182	2797	DC	clyst	M	HF	0.35	0.05	21	0.56	0.07	8				29
20002183	2897	DC	clyst	M	HF	0.33	0.04	23	0.51	0.04	8	0.71	0.01	2	33
20002184	2990.5	COCH	clyst	M	HF	0.33	0.02	5	0.49	0.06	19	0.67	0.03	11	35
20002185	3197	DC	clyst	M	HF	0.39	0.04	17	0.53	0.04	18	0.67	0.02	2	37
20002186	3297	DC	clyst	M	HF	0.48	0.06	17	0.67	0.05	12	0.86	0.05	11	40
20002187	3397	DC	clyst	M	HF	0.52	0.04	20	0.67	0.05	8				28
20002188	3597	DC	clyst	M	HF	0.5	0.06	9	0.78	0.08	20	1.01	0.05	4	33
20002189	3697	DC	clyst	M	HF	0.52	0.04	4	0.71	0.07	22	0.93	0.07	11	37
20002190	3797	DC	clyst	M	HF	0.56	0.07	20	0.83	0.07	20				40
20002191	3997	DC	clyst	M	HF	0.55	0.05	15	0.77	0.08	22	1.05	0.03	5	42
20002192	4097	DC	clyst	M	HF	0.66	0.05	16	0.82	0.03	8	1.04	0.07	16	40
20002193	4147	DC	clyst	Mst	HF	0.65	0.05	11	0.88	0.06	13	1.08	0.07	8	32
20002194	4230.44	COCH	clyst	Pst	HF	0.64	0.04	12	0.95	0.09	23				35
20002195	4234.5	COCH	clyst	Mst	HF	0.74	0.08	23	1.02	0.10	12				35

Legend to vitrinite reflectance data table

Lithology code		Sample quality		Sample preparation	
Sandstone	sst	G	good	HF	sample treated with hydrofluoric acid prior to analysis
Siltstone	slst	M	moderate		
Claystone	clyst	P	poor	bulk	sample treated as bulk rock
Shale	sh	st	hydrocarbon staining		
Limestone	lst				
Coal	coal				
Sample description and measurement evaluation (- o +)				Options	
000000		1	Abundance of vitrinite	-	o
123456		2	Identification of vitrinite	-	o +
		3	Type of vitrinite	-	o +
		4	Vitrinite fragment size	-	o
		5	Vitrinite surface quality	-	o
		6	Abundance of pyrite	o	+
Options legend:		-	may give too low vitrinite reflectance sample value		
		o	reliable vitrinite reflectance sample value		
		+	may give too high vitrinite reflectance sample value		



Report Title:

**Petroleum Geochemistry Data Report – 27
Canned Cuttings samples from NOCS Well
7216/11-1S.**

Client: Norsk Hydro ASA

Report Number: APT00-023

**Clients Reference: A Steen
Bestilling NHT-B33-5077 291-00**

Classification: Confidential

**Distribution:
Norsk Hydro (3)
APT (2)**

Date: 19th December 2000

3 Results

The normalised volume composition of the gas samples is shown in Table 1 and Figure 1. No H₂S is detected in the samples. A mixture of nitrogen/oxygen (air) is detected in all samples, however the amount is not quantified. Gas chromatograms from the flame ionisation detection (FID) are shown in Appendix A.

The stable isotope composition of the different gas samples is shown in Table 2 and figure 2. Duplicates have been run for some of the samples. The isotopic composition is not determined on all components in all samples, due to low hydrocarbon concentrations. The system is checked with the laboratory gas mixture with acceptable results. Gas chromatograms from the GC-C-IRMS analysis have been checked, but are at this time not enclosed due to software problems.

Table 1 Volume composition of canned cuttings gases (normalised values) from well 7216/11-1S.

Sample	Upper depth	IFE no	C1 %	C2 %	C3 %	iC4 %	nC4 %	iC5 %	nC5 %	CO2 %	Wetness	iC4/n C4	Total gas ppmv
APT 10247	2225	20002211	90,9	0,1	0,2	0,03	0,03	0,06	0,04	8,6	0,01	1,03	15120
APT 10248	2275	20002212	75,1	0,2	0,4	0,06	0,03	0,05	0,02	24,2	0,01	2,31	51107
APT 10249	2325	20002213	94,7	0,2	0,5	0,14	0,05	0,13	0,05	4,3	0,01	2,77	60724
APT 10250	2375	20002214	75,6	0,3	0,7	0,22	0,09	0,27	0,08	22,7	0,02	2,53	52634
APT 10251	2425	20002215	19,9	0,1	0,1	0,03	0,02	0,03	0,01	79,8	0,01	1,86	216316
APT 10252	2475	20002216	68,8	0,4	0,3	0,09	0,05	0,09	0,03	30,3	0,01	1,99	77743
APT 10253	2525	20002217	35,1	0,6	0,4	0,16	0,09	0,29	0,07	63,3	0,04	1,82	47373
APT 10254	2575	20002218	18,9	0,4	0,4	0,12	0,14	0,30	0,10	79,5	0,08	0,90	33729
APT 10255	2675	20002219	19,9	0,5	0,3	0,16	0,16	0,71	0,21	78,0	0,09	1,00	18272
APT 10256	2775	20002220	89,6	4,7	1,8	0,87	0,62	1,59	0,84	0,0	0,10	1,40	6480
APT 10257	2875	20002221	0,9	0,05	0,1	0,03	0,03	0,06	0,04	98,9	0,23	0,89	82400
APT 10258	2950	20002222	20,0	1,7	1,9	0,53	0,88	1,60	1,29	72,1	0,28	0,60	1340
APT 10259	3000	20002223	42,5	1,9	1,8	0,62	0,77	1,15	0,73	50,6	0,14	0,81	8802
APT 10260	3050	20002224	2,3	0,1	0,4	0,18	0,30	0,39	0,31	96,0	0,43	0,60	18448
APT 10261	3125	20002225	34,9	1,1	1,5	0,69	1,40	3,00	3,36	54,1	0,24	0,49	2877
APT 10262	3225	20002226	12,1	0,6	0,8	0,51	0,94	1,51	1,62	81,9	0,33	0,55	47249
APT 10263	3325	20002227	8,8	0,4	0,4	0,16	0,39	0,50	0,62	88,7	0,22	0,41	31434
APT 10264	3425	20002228	75,3	4,4	5,5	2,02	3,47	2,87	2,77	3,6	0,22	0,58	60074
APT 10265	3525	20002229	40,2	1,9	3,5	1,46	3,34	4,29	4,55	40,8	0,32	0,44	6526
APT 10266	3625	20002230	60,4	3,0	3,3	1,04	2,53	3,10	3,29	23,4	0,21	0,41	5437
APT 10267	3725	20002231	64,3	4,0	4,8	2,05	3,68	4,79	4,17	12,2	0,27	0,56	17125
APT 10268	3825	20002232	50,7	2,8	3,8	1,66	3,34	4,96	4,13	28,7	0,29	0,50	3284
APT 10269	3925	20002233	53,8	4,3	5,7	2,48	4,43	5,63	4,53	19,2	0,33	0,56	7288
APT 10270	4025	20002234	28,4	2,3	2,5	0,87	2,85	3,07	3,40	56,6	0,35	0,31	8674
APT 10271	4100	20002235	55,4	5,2	6,5	2,20	5,35	4,47	4,40	16,5	0,34	0,41	22506
APT 10272	4150	20002236	20,6	2,9	6,9	2,23	7,09	6,65	8,07	45,5	0,62	0,31	7573
APT 10273	4200	20002237	29,9	3,2	5,6	1,72	6,57	5,69	7,65	39,7	0,50	0,26	7518

Table 2 Isotopic composition of canned cuttings gases from, well 7216/11-1S

Sample	Upper depth	IFE no	C1 $\delta^{13}\text{C}$	C2 $\delta^{13}\text{C}$	C3 $\delta^{13}\text{C}$	iC4 $\delta^{13}\text{C}$	nC4 $\delta^{13}\text{C}$	iC5 $\delta^{13}\text{C}$	nC5 $\delta^{13}\text{C}$	CO2 $\delta^{13}\text{C}$
APT 10247	2225	20002211	-55,9	-35,1	-37,8		-27,1			-11,4
APT 10248	2275	20002212	-56,4	-39,2	-37,5	-26,2	-26,8			
			-57,2	-37,6	-36,7					-10,0
APT 10249	2325	20002213	-60,1	-38,0	-35,9	-24,6				-15,9
APT 10250	2375	20002214	-60,3	-38,4	-34,8	-22,0				-19,3
APT 10251	2425	20002215	-65,0	-39,2	-30,7	-27,2	-27,9			2,4
APT 10252	2475	20002216	-65,2	-38,9	-30,2	-32,8	-30,0			
			-65,4	-40,5	-29,3	-31,6	-26,5			-23,8
APT 10253	2525	20002217	-62,4	-39,2	-31,8	-32,3				-6,3
APT 10254	2575	20002218	-64,5	-41,0	-30,3	-34,7	-29,0			-21,2
APT 10255	2675	20002219	-62,7	-42,5	-31,0					-30,5
APT 10256	2775	20002220	-59,8	-44,2	-32,8	-32,3				-25,1
			-60,4	-43,5	-33,4	-33,7				-24,3
APT 10257	2875	20002221	-57,9	-36,6	-33,2	-31,0				-22,6
APT 10258	2950	20002222	-49,7							-28,2
APT 10259	3000	20002223	-48,8	-33,0	-32,0	-32,7	-30,2			
			-51,7	-31,7	-29,9					-23,3
APT 10260	3050	20002224	-49,9	-34,4	-31,0	-28,8	-29,4			-24,1
APT 10261	3125	20002225	-46,7	-33,1	-29,7					-15,7
APT 10262	3225	20002226	-41,3	-31,9	-32,5	-32,5				-22,7
						-32,3	-30,3	-29,8	-30,0	
APT 10263	3325	20002227	-39,5	-30,7	-30,5	-30,5	-30,6			-24,6
APT 10264	3425	20002228	-37,8	-29,7	-30,0	-31,3	-30,5			-25,0
APT 10265	3525	20002229	-40,2	-29,3	-30,8		-27,9			-18,9
APT 10266	3625	20002230	-39,8	-31,5						-25,5
			-39,1	-30,4	-30,6	-30,2	-30,4	-28,6	-28,7	-23,3
APT 10267	3725	20002231	-39,6	-30,8	-32,0		-30,9	-27,9	-28,3	-16,8
APT 10268	3825	20002232	-40,4	-33,4	-32,4		-32,2	-28,4	-28,1	-21,4
APT 10269	3925	20002233	-38,0							-20,3
			-38,9	-31,5	-31,3		-29,8	-27,8	-27,8	-22,0
APT 10270	4025	20002234	-37,1	-31,3	-30,2	-35,4	-29,6	-27,4	-28,2	-24,5
APT 10271	4100	20002235	-35,5	-29,6	-29,7	-29,7	-29,1	-27,1	-27,6	-22,8
APT 10272	4150	20002236	-37,8	-30,4	-30,8	-32,8	-30,7	-28,0	-29,4	-22,7
APT 10273	4200	20002237	-37,2	-30,8	-31,4	-32,7	-30,9	-28,3	-29,8	-23,4

Appendix D:

C5-C20 chromatography on core samples (GC- traces)

File path: C:\HPCHEM\1\DATA\7216_ISB\
 File name: 2990.D
 Misc info:
 Sample name: 7216/11-1S, 2990m
 Date acquired: 23 Oct 2000 21:49
 Method/Operator: C520D_B annex
 Response factor = 1.0 (y=ax)

C5-20 hydrocarbons GC/FID

Norsk Hydro E&P Research Centre, Bergen
 Petroleum Geochemistry Laboratories



Name	Area	Amount ug/mg	Rt	Name	Area	Amount ug/mg	Rt
iC8(ISTD)/224tm-C5	82638567	4.46	19.73	phC6(ISTD)	165120616	4.46	108.05
iC5	29019	0.00	6.08	Benzene	2658	0.00	14.75
nC5	91426	0.00	6.57	Toluene/233tm-C5	23690	0.00	30.88
22dm-C4	69759	0.00	7.50	iC9	4181	0.00	48.19
cyC5	7524	0.00	8.43	e-benzene	262	0.00	51.13
23dm-C4	232742	0.01	8.48	m-xylene	10076	0.00	53.41
2m-C5	33511	0.00	8.63	p-xylene	3515	0.00	53.74
3m-C5	14323	0.00	9.26	4m-C8	10440	0.00	56.38
nC6	16770	0.00	10.05	2m-C8	8103	0.00	56.75
3m-cyC5-ene	4776	0.00	10.32	3m-C8	8973	0.00	58.72
22dm-C5	2365	0.00	11.98	o-xylene	4783	0.00	59.59
m-cyC5	8677	0.00	12.29	nC9	11062	0.00	66.10
24dm-C5	560	0.00	12.57	iC10	9074	0.00	73.05
223tm-C4	3583	0.00	13.57	nC10	119858	0.00	83.06
33dm-C5	2958	0.00	15.42	iC11	5959	0.00	86.18
cyC6	4694	0.00	15.99	nC11	66155	0.00	94.53
2m-C6	3482	0.00	16.90	nC12	111674	0.00	103.86
23dm-C5	4067	0.00	17.06	iC13	25873	0.00	105.21
11dm-cyC5	442832	0.02	17.43	iC14	82864	0.00	110.32
3m-C6	64609	0.00	17.86	nC13	80732	0.00	111.94
1c.3dm-cyC5	13123	0.00	18.73	iC15	29270	0.00	117.81
1t.3dm-cyC5	13071	0.00	19.15	nC14	508508	0.01	119.26
3e-C5	549477	0.03	19.33	iC16	620305	0.02	123.68
1t.2dm-cyC5	51866	0.00	19.51	nC15	104555	0.00	125.97
nC7	1152	0.00	21.31	nC16	152053	0.00	132.29
1c.2dm-cyC5	2733	0.00	24.32	iC18	36601	0.00	135.48
m-cyC6	11683	0.00	24.48	nC17	612393	0.02	138.25
113tm-cyC5	2980	0.00	24.94	pristane	487073	0.01	138.86
e-cyC5	6922	0.00	26.49	nC18	122479	0.00	143.88
25dm-C6	3760	0.00	26.73	phytane	58015	0.00	144.63
223tm-C5/24dm-C6	3567	0.00	27.12	nC19	220423	0.01	149.25
1c.2t.4tm-cyC5	8042	0.00	28.18	nC20	245658	0.01	154.34
33dm-C6	9133	0.00	28.44				
1t.2c.3tm-cyC5	4024	0.00	29.58				
234tm-C5	6658	0.00	30.25				
23dm-C6	2878	0.00	32.55				
2m-C7	6409	0.00	33.86				
4m-C7	10807	0.00	34.12				
3m-C7	6363	0.00	35.51				
1c.3dm-cyC6	1568	0.00	35.59				
1t.4dm-cyC6	7280	0.00	36.01				
11dm-cyC6	3855	0.00	38.49				
1t.2dm-cyC6	10598	0.00	39.49				
nC8	17674	0.00	41.02				
e-cyC6	18719	0.00	46.97				

Parameters	Area	Amount ug/mg
(Thompson 1979/1983)		
Heptane value(1):	0.10	0.10
Isoheptane value(2)	0.84	0.84
Paraffinicity(3):	0.10	0.10
Aromaticity(4):	0.77	0.38

1: 100*nC7/C7paraffins, modified after Thompson 1983
 2: (2mC6+3mC6)/Dm-cycloC5
 3: nC7/m-cycloC6
 4: (m+p)xylenes/nC8

File path: C:\HPCHEM\1\DATA\7216_ISB\
 File name: 2990_1.D
 Misc info:
 Sample name: 7216/11-1S, 2991,10m
 Date acquired: 24 Oct 2000 1:11
 Method/Operator: C520D_B annek
 Response factor = 1.0 (y=ax)

C5-20 hydrocarbons GC/FID

Norsk Hydro E&P Research Centre, Bergen
 Petroleum Geochemistry Laboratories



Name	Area	Amount ug/mg	Rt	Name	Area	Amount ug/mg	Rt
iC8(ISTD)/224tm-C5	92183644	4.46	19.74	phC6(ISTD)	196665738	4.46	108.07
iC5	24205	0.00	6.08	Benzene	8952	0.00	14.69
nC5	87781	0.00	6.57	Toluene/233tm-C5	14685	0.00	30.96
22dm-C4	197624	0.01	7.48	iC9	4765	0.00	48.20
cyC5	7928	0.00	8.40	e-benzene	5136	0.00	51.16
23dm-C4	3943	0.00	8.45	m-xylene	3699	0.00	53.42
2m-C5	9046	0.00	8.62	p-xylene	4948	0.00	53.65
3m-C5	21580	0.00	9.24	4m-C8	2700	0.00	56.42
nC6	18859	0.00	10.04	2m-C8	2185	0.00	56.74
3m-cyC5-ene	6394	0.00	10.20	3m-C8	5410	0.00	58.67
22dm-C5	2066	0.00	11.98	o-xylene	15680	0.00	59.64
m-cyC5	5550	0.00	12.22	nC9	23735	0.00	66.08
24dm-C5	1504	0.00	12.77	iC10	6030	0.00	73.01
223tm-C4	3048	0.00	13.44	nC10	135083	0.00	83.07
33dm-C5	14735	0.00	15.44	iC11	16388	0.00	86.17
cyC6	4816	0.00	15.81	nC11	38169	0.00	94.52
2m-C6	12805	0.00	16.90	nC12	66799	0.00	103.87
23dm-C5	13209	0.00	17.09	iC13	26735	0.00	105.20
11dm-cyC5	97261	0.00	17.50	iC14	86977	0.00	110.32
3m-C6	58207	0.00	17.86	nC13	68050	0.00	111.95
1c.3dm-cyC5	1302	0.00	18.86	iC15	6949	0.00	117.84
1t.3dm-cyC5	25417	0.00	19.07	nC14	538906	0.01	119.26
3e-C5	73926	0.00	19.29	iC16	10812	0.00	123.71
1t.2dm-cyC5	65588	0.00	19.49	nC15	56236	0.00	125.99
nC7	10956	0.00	21.33	nC16	40071	0.00	132.30
1c.2dm-cyC5	5886	0.00	24.28	iC18	66225	0.00	135.37
m-cyC6	2951	0.00	24.40	nC17	333676	0.01	138.30
113tm-cyC5	13117	0.00	24.91	pristane	280837	0.01	138.81
e-cyC5	3541	0.00	26.45	nC18	63812	0.00	143.89
25dm-C6	5622	0.00	26.73	phytane	38189	0.00	144.66
223tm-C5/24dm-C6	7137	0.00	27.07	nC19	52314	0.00	149.24
1c.2t.4tm-cyC5	7846	0.00	28.09	nC20	100740	0.00	154.34
33dm-C6	4313	0.00	28.40				
1t.2c.3tm-cyC5	5861	0.00	29.61				
234tm-C5	18258	0.00	30.21				
23dm-C6	5815	0.00	32.49				
2m-C7	2854	0.00	33.81				
4m-C7	7136	0.00	34.16				
3m-C7	13470	0.00	35.47				
1c.3dm-cyC6	15682	0.00	35.59				
1t.4dm-cyC6	7179	0.00	35.96				
11dm-cyC6	4483	0.00	38.49				
1t.2dm-cyC6	2209	0.00	39.50				
nC8	23465	0.00	41.03				
e-cyC6	18132	0.00	46.91				

Parameters	Area	Amount ug/mg
(Thompson 1979/1983)		
Heptane value(1):	2.91	2.91
Isoheptane value(2)	0.72	0.72
Paraffinicity(3):	3.71	3.71
Aromaticity(4):	0.37	0.17

1: 100*nC7/C7paraffins, modified after Thompson 1983
 2: (2mC6+3mC6)/Dm-cycloC5
 3: nC7/m-cycloC6
 4: (m+p)xylene/nC8