Well	Type	Top depth m RKB MD	Base depth m RKB MD	Name	Top depth m RKB TVD	Base depth m RKB TVD	RE	E/D	Iatro	C5-20 HC	SatHC	SatMS	DiaMS	AroMS	Isotope, gas	Gas volume	OrgID
35/11-13	GASB	2550.00	2550.00		2549.71	2549.71										1	2228199
35/11-13	GASB	2560.00	2560.00		2559.70	2559.70										1	2228200
35/11-13	GASB	2570.00	2570.00		2569.70	2569.70										1	2228201
35/11-13	GASB	2580.00	2580.00		2579.70	2579.70										1	2228202
35/11-13	GASB	2590.00	2590.00		2589.70	2589.70										1	2228203
35/11-13	GASB	2600.00	2600.00		2599.70	2599.70										1	2228204
35/11-13	GASB	2610.00	2610.00		2609.70	2609.70										1	2228205
35/11-13	GASB	2620.00	2620.00		2619.70	2619.70										1	2228206
35/11-13	GASB	2630.00	2630.00		2629.70	2629.70										1	2228207
35/11-13	GASB	2640.00	2640.00		2639.70	2639.70										1	2228208
35/11-13	GASB	2650.00	2650.00		2649.70	2649.70										1	2228209
35/11-13	GASB	2660.00	2660.00		2659.70	2659.70										1	2228210
35/11-13	GASB	2670.00	2670.00		2669.70	2669.70										1	2228211
35/11-13	GASB	2680.00	2680.00		2679.69	2679.69										1	2228212
35/11-13	GASB	2690.00	2690.00		2689.69	2689.69										1	2228213
35/11-13	GASB	2700.00	2700.00		2699.69	2699.69										1	2228214
35/11-13	GASB	2720.00	2720.00		2719.69	2719.69										1	2228215
35/11-13	GASB	2730.00	2730.00		2729.69	2729.69										1	2228216
35/11-13	GASB	2550.00	2750.00	01.01.2005	2549.71	2749.69											2228198
35/11-13	GASB	2750.00	2750.00		2749.69	2749.69										1	2228217
35/11-13	DCG	2920.00	2940.00		2919.67	2939.67										1	2228144
35/11-13	GASB	2946.00	2946.00	23.04.05	2945.67	2945.67										1	2228219
35/11-13	GASB	2950.00	2950.00	23.04.05	2949.67	2949.67										1	2228220
35/11-13	DCG	2940.00	2960.00		2939.67	2959.67										1	2228147
35/11-13	GASB	2967.00	2967.00	24.04.05	2966.67	2966.67										1	2228221
35/11-13	DCG	2960.00	2980.00		2959.67	2979.66										1	2228150
35/11-13	GASB	2989.00	2989.00	24.04.05	2988.66	2988.66										1	2228222
35/11-13	DCG	2980.00	3000.00		2979.66	2999.66										1	2228153
35/11-13	GASB	3010.00	3010.00	24.04.05	3009.66	3009.66										1	2228223
35/11-13	DCG	3000.00	3020.00		2999.66	3019.65										1	2228156
35/11-13	GASB	3020.00	3020.00	24.04.05	3019.65	3019.65									1	1	2228224
35/11-13	GASB	3030.00	3030.00	24.04.05	3029.65	3029.65										1	2228225
35/11-13	DCG	3020.00	3040.00		3019.65	3039.64										1	2228159
35/11-13	GASB	3040.00	3040.00	24.04.05	3039.64	3039.64										1	2228226
35/11-13	GASB	3050.00	3050.00	24.04.05	3049.64	3049.64									1	1	2228227
35/11-13	DCG	3040.00	3060.00		3039.64	3059.64										1	2228162
35/11-13	GASB	3060.00	3060.00	24.04.05	3059.64	3059.64										1	2228228
35/11-13	GASB	3070.00	3070.00	25.04.05	3069.63	3069.63										1	2228229
35/11-13	DCG	3060.00	3080.00		3059.64	3079.63										1	2228165
35/11-13	GASB	3080.00	3080.00	25.04.05	3079.63	3079.63										1	2228230
35/11-13	GASB	3090.00	3090.00	25.04.05	3089.62	3089.62									1	1	2228231
35/11-13	DCG	3080.00	3100.00		3079.63	3099.62										1	2228168
35/11-13	GASB	3100.00	3100.00	25.04.05	3099.62	3099.62									1	1	2228232
35/11-13	COCH	3101.70	3101.70	01.08.05	3101.32	3101.32	1	1	1		1	1	1	1			2232352
35/11-13	COCH	3106.90	3106.90	01.08.05	3106.52	3106.52	1	1	1		1	1	1	1			2232349
35/11-13	FLUI	3107.00	3107.00	1.09B	3106.62	3106.62		1	1	1	1	1	1	1			2272528
35/11-13	COCH	3109.90	3109.90	01.08.05	3109.52	3109.52	1	1	1		1	1	1	1			2232348
35/11-13	COCH	3111.90	3111.90	01.08.05	3111.52	3111.52	1	1	1		1	1	1	1			2232353
35/11-13	COCH	3119.90	3119.90	01.08.05	3119.51	3119.51	1	1	1		1	1	1	1			2232350
35/11-13	DCG	3100.00	3120.00		3099.62	3119.61											2228171
35/11-13	GASB	3120.00	3120.00	27.04.05	3119.61	3119.61										1	2228233
35/11-13	COCH	3125.90	3125.90	01.08.05	3125.51	3125.51	1	1	1		1	1	1	1			2232347
35/11-13	COCH	3128.90	3128.90	01.08.05	3128.51	3128.51	1	1	1		1	1	1	1			2232351
35/11-13	COCH	3133.90	3133.90	01.08.05	3133.51	3133.51	1	1	1		1	1	1	1			2232345
35/11-13	COCH	3134.30	3134.30	01.08.05	3133.91	3133.91	1	1	1		1	1	1	1			2232346
35/11-13	GASB	3150.00	3150.00		3149.60	3149.60										1	2228234
35/11-13	GASB	3157.50	3157.50	1.13 6840-MA 55781	3157.10	3157.10											2232141
35/11-13	FLUI	3157.50	3157.50	1,13 55781	3157.10	3157.10									2		2241281
35/11-13	DCG	3140.00	3160.00		3139.60	3159.60										1	2228174
35/11-13	GASB	3160.00	3160.00		3159.60	3159.60										1	2228235
35/11-13	GASB	3170.00	3170.00		3169.60	3169.60										1	2228236
35/11-13	DCG	3160.00	3180.00		3159.60	3179.59										1	2228177
35/11-13	GASB	3180.00	3180.00	23.04.05	3179.59	3179.59										1	2228237
35/11-13	GASB	3190.00	3190.00		3189.59	3189.59										1	2228238
35/11-13	DCG	3180.00	3200.00		3179.59	3199.59										1	2228180
35/11-13	GASB	3200.00	3200.00		3199.59	3199.59										1	2228239
35/11-13	GASB	3210.00	3210.00	29.04.05	3209.59	3209.59										1	2228240
35/11-13	DCG	3200.00	3220.00		3199.59	3219.58										1	2228183
35/11-13	GASB	3220.00	3220.00	29.04.05	3219.58	3219.58										1	2228241
35/11-13	GASB	2946.00	3230.00		2945.67	3229.58											2228218
35/11-13	GASB	3230.00	3230.00	29.04.05	3229.58	3229.58										1	2228242
35/11-13	DCG	3220.00	3240.00		3219.58	3239.58										1	2228186
35/11-13	GASB	3240.00	3240.00	29.04.05	3239.58	3239.58										1	2228243
35/11-13	GASB	3250.00	3250.00	29.04.05	3249.58	3249.58										1	2228245
35/11-13	DCG	3240.00	3260.00		3239.58	3259.58										1	2228189
35/11-13	GASB	3260.00	3260.00	29.04.05	3259.58	3259.58										1	2228246
35/11-13	GASB	3272.00	3272.00	29.04.05	3271.58	3271.58										1	2228247
35/11-13	DCG	3260.00	3280.00		3259.58	3279.58										1	2228192
35/11-13	GASB	3280.00	3280.00	29.04.05	3279.58	3279.58										1	2228248
35/11-13	DCG	3280.00	3292.00		3279.58	3291.58										1	2228195
35/11-13	GASB	3292.00	3292.00	29.04.05	3291.58	3291.58										1	2228249
						SUM:	9	10	10	1	10	10	10	10	6	67	

Table 1.2. Detailed analytical program.

Molecular and isotopic composition Gas bags and canned cuttings from well 35/11-13

Applied Petroleum Technology AS
P. O. Box 123
2027 Kjeller
Norway

Address:	**Applied Petroleum Technology AS** **P.O.Box 123** **2027 Kjeller**
Telephone:	**+47 63 80 60 00**
Telefax:	**+47 63 80 11 38**

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Client Norsk Hydro ASA	**Service Order** 5321159
Client Reference Arne Steen	**Number of pages** 6
Distribution Norsk Hydro ASA (Digital) IFE (2) APT (Digital)	

Authors
Ingrid Anne Munz
Sylviane Siegle
Pål Tore Mørkved

	Name	Date	Signature
Reviewed by	Bjørg Andresen	2006-01-10	
Approved by	Tore Haaland	2006-01-10	

CONTENTS

Table 1. Number of analyses performed

Analysis	Cuttings	Gas	Total
Headspace	18		18
Gas composition		49	49
Stable isotopes of gas		4	4

Table 2. Gas Composition (volume-%)

Well	Lower Depth (m)	APT ID	C1%	C2%	C3%	iC4%	nC4%	iC5%	nC5%	CO2%	Sum C1-C5	Wetness	iC4/nC4	ppm
35/11-13	2550	27346	50.6	0.69	0.15	0.04	0.04	0.00	0.07	48.4	51.6	1.8	1.0	821
35/11-13	2560	27347	34.3	0.49	0.11	0.02	0.03	0.00	0.06	65.0	35.0	1.8	0.71	796
35/11-13	2570	27348	40.7	0.55	0.14	0.04	0.03	0.00	0.08	58.4	41.6	1.8	1.7	684
35/11-13	2580	27349	47.7	0.63	0.19	0.04	0.04	0.00	0.04	51.4	48.6	1.8	1.0	1004
35/11-13	2590	27350												
35/11-13	2600	27351	43.9	0.63	0.23	0.07	0.04	0.00	0.06	55.1	44.9	2.2	1.5	989
35/11-13	2610	27352	56.8	0.92	0.32	0.06	0.06	0.00	0.06	41.8	58.2	2.3	0.98	1302
35/11-13	2620	27353	49.6	1.2	0.32	0.06	0.06	0.02	0.06	48.7	51.3	3.1	1.00	1130
35/11-13	2630	27354	64.3	1.4	0.35	0.06	0.07	0.02	0.05	33.8	66.2	2.9	0.92	1261
35/11-13	2640	27355	57.8	1.5	0.41	0.08	0.08	0.03	0.08	39.9	60.1	3.5	0.96	1023
35/11-13	2650	27356	48.7	1.3	0.35	0.07	0.07	0.05	0.04	49.5	50.5	3.5	1.1	1087
35/11-13	2660	27357	48.0	1.4	0.41	0.08	0.08	0.03	0.06	49.9	50.1	4.0	1.0	905
35/11-13	2670	27358	52.6	1.4	0.40	0.07	0.06	0.00	0.06	45.4	54.6	3.5	1.1	984
35/11-13	2680	27359	67.9	1.9	0.47	0.07	0.05	0.00	0.05	29.6	70.4	3.6	1.4	1364
35/11-13	2690	27360	54.7	1.6	0.45	0.08	0.05	0.00	0.05	43.0	57.0	3.8	1.6	1043
35/11-13	2700	27361	80.3	2.1	0.53	0.08	0.04	0.00	0.03	16.9	83.1	3.3	1.8	2512
35/11-13	2720	27362	42.4	0.97	0.29	0.06	0.04	0.00	0.06	56.2	43.8	3.1	1.6	942
35/11-13	2730	27363	0.64	0.02	0.36	0.00	0.47	0.00	0.17	98.3	1.7	57.0	0.00	463
35/11-13	2750	27364	20.4	0.77	0.23	0.05	0.04	0.01	0.04	78.5	21.5	5.1	1.5	579
35/11-13	2946	27365	69.7	7.1	6.9	0.49	2.5	0.33	0.40	12.7	87.3	19.5	0.20	2332
35/11-13	2950	27366	57.4	5.8	5.5	0.36	1.8	0.24	0.34	28.5	71.5	19.1	0.20	1230
35/11-13	2967	27367	82.7	5.8	4.8	0.26	1.3	0.15	0.17	4.8	95.2	12.8	0.20	8344
35/11-13	2989	27368	81.1	6.5	6.2	0.39	1.8	0.26	0.30	3.5	96.5	15.5	0.21	8638
35/11-13	3010	27369	84.7	5.7	4.2	0.24	0.92	0.14	0.18	4.0	96.0	11.5	0.25	7095
35/11-13	3020	27370	85.6	5.6	4.2	0.23	0.85	0.12	0.15	3.3	96.7	11.2	0.27	8141
35/11-13	3030	27371	78.8	5.6	4.9	0.31	1.3	0.22	0.30	8.5	91.5	13.3	0.24	3494
35/11-13	3040	27372	75.3	5.9	4.9	0.44	1.3	0.20	0.27	11.7	88.3	14.2	0.35	4138
35/11-13	3050	27373	82.8	5.5	3.5	0.33	0.87	0.14	0.18	6.6	93.4	11.0	0.38	5212
35/11-13	3060	27374	64.0	5.1	3.9	0.30	1.3	0.26	0.37	24.8	75.2	14.2	0.24	1957
35/11-13	3070	27375	76.4	4.9	3.0	0.22	0.84	0.15	0.21	14.3	85.7	10.5	0.27	3207
35/11-13	3080	27376	77.9	5.2	2.2	0.16	0.56	0.10	0.13	13.7	86.3	9.5	0.28	4144
35/11-13	3090	27377	83.3	6.2	2.5	0.17	0.53	0.09	0.11	7.1	92.9	10.1	0.32	6676
35/11-13	3100	27378	86.0	6.8	4.5	0.39	1.1	0.18	0.21	0.78	99.2	13.0	0.36	57574
35/11-13	3120	27379	78.9	8.0	3.7	0.31	0.94	0.17	0.22	7.8	92.2	14.1	0.33	7028
35/11-13	3150	27380	72.8	2.1	0.87	0.11	0.46	0.18	0.32	23.2	76.8	4.7	0.24	1729
35/11-13	3160	27381	80.2	3.5	1.6	0.00	0.42	0.13	0.20	13.8	86.2	6.5	0.00	2944
35/11-13	3170	27382	75.0	1.7	0.65	0.06	0.24	0.10	0.20	22.1	77.9	3.4	0.26	1968
35/11-13	3180	27383	79.0	1.7	0.83	0.08	0.26	0.11	0.20	17.9	82.1	3.5	0.29	1650
35/11-13	3190	27384	79.6	2.2	0.89	0.06	0.22	0.07	0.15	16.8	83.2	4.1	0.27	2002
35/11-13	3200	27385	70.5	1.9	0.76	0.06	0.17	0.07	0.10	26.4	73.6	4.0	0.33	1318
35/11-13	3210	27386	62.8	3.0	1.9	0.13	0.45	0.12	0.18	31.4	68.6	8.1	0.29	1042
35/11-13	3220	27387	55.2	2.9	2.0	0.15	0.49	0.12	0.21	38.9	61.1	9.1	0.30	794
35/11-13	3230	27388	4.7	0.37	0.40	0.04	0.14	0.03	0.06	94.3	5.7	17.0	0.32	480
35/11-13	3240	27389	35.5	1.5	1.2	0.08	0.21	0.03	0.04	61.5	38.5	7.8	0.37	695
35/11-13	3250	27390	27.6	1.2	1.4	0.08	0.28	0.04	0.05	69.4	30.6	9.6	0.30	678
35/11-13	3260	27391	42.6	1.8	2.1	0.11	0.42	0.05	0.08	52.8	47.2	9.4	0.25	891
35/11-13	3272	27392	14.6	0.62	1.0	0.07	0.28	0.04	0.07	83.3	16.7	12.1	0.25	589
35/11-13	3280	27393	35.3	1.4	2.4	0.13	0.51	0.03	0.09	60.1	39.9	11.3	0.26	664
35/11-13	3292	27394	8.5	0.52	1.4	0.11	0.47	0.08	0.19	88.7	11.3	22.9	0.24	454

Well	Lower Depth (m)	APT ID	C1%	C2%	C3%	iC4%	nC4%	iC5%	nC5%	CO2%	Sum C1-C5	Wetness	iC4/nC4	ppm
35/11-13	2940	27395	42.7	12.7	21.4	2.8	12.2	3.0	3.5	1.7	98.3	53.4	0.23	35660
35/11-13	2960	27396	39.1	12.1	22.2	2.9	12.7	3.0	3.4	4.6	95.4	56.1	0.23	78258
35/11-13	2980	27397	17.0	8.4	15.3	1.8	7.8	1.9	2.0	45.8	54.2	66.1	0.23	307037
35/11-13	3000	27398	18.8	7.9	12.7	1.5	5.6	1.4	1.4	50.8	49.2	59.5	0.27	172423
35/11-13	3020	27399	22.1	9.6	14.2	1.6	5.3	1.1	1.2	44.9	55.1	58.1	0.30	262686
35/11-13	3040	27400	9.5	5.0	10.0	1.4	4.8	1.2	1.3	66.9	33.1	68.9	0.29	181414
35/11-13	3060	27401	11.6	5.4	7.9	1.1	3.8	1.1	1.0	68.2	31.8	61.2	0.28	179985
35/11-13	3080	27402	5.3	2.3	3.2	0.46	1.7	0.56	0.52	85.9	14.1	59.6	0.27	249039
35/11-13	3100	27403	4.9	2.2	2.9	0.53	1.6	0.63	0.73	86.4	13.6	59.5	0.32	152380
35/11-13	3120	27404	3.5	0.93	1.1	0.25	0.81	0.44	0.58	92.4	7.6	46.5	0.30	82383
35/11-13	3160	27405	16.3	6.6	6.6	0.87	2.9	1.1	1.1	64.6	35.4	51.1	0.29	19222
35/11-13	3180	27406	5.2	2.4	2.6	0.34	1.3	0.49	0.54	87.1	12.9	56.3	0.26	46324
35/11-13	3200	27407	14.6	6.4	4.9	0.53	1.7	0.68	0.62	70.5	29.5	48.0	0.31	64240
35/11-13	3220	27408	41.5	10.8	9.8	1.3	3.2	1.4	0.73	31.2	68.8	37.8	0.42	122953
35/11-13	3240	27409	58.7	11.6	13.8	1.8	4.1	1.5	0.82	7.7	92.3	34.8	0.45	105876
35/11-13	3260	27410	16.6	5.8	8.9	0.98	2.8	0.71	0.52	63.7	36.3	52.8	0.35	189426
35/11-13	3280	27411	4.9	2.6	10.9	2.5	10.0	3.5	4.4	61.1	38.9	84.2	0.25	80657
35/11-13	3292	27412	2.7	2.5	8.7	1.5	6.1	1.7	2.2	74.5	25.5	87.4	0.25	175110

Table 3. Gas Isotopes (δ13C (‰ PDB) && δD (‰ SMOW))

Well	Lower Depth (m)	APT ID	C1 δ13C	C2 δ13C	C3 δ13C	i-C4 δ13C	n-C4 δ13C	CO2 δ13C	C1 δD
35/11-13	3020	27370	-39.5	-29.8	-29.8				
35/11-13	3050	27373	-41.9						
35/11-13	3090	27377	-42.5	-30.9					
35/11-13	3100	27378	-38.9	-30.1	-28.2		-28.0		-185

Experimental Procedures

All procedures follow NIGOGA, 4th Edition. Below are brief descriptions of procedures/analytical conditions.

Deasphaltening
Extracts are evaporated almost to dryness before a small amount of dichloromethane (3 times the amount of EOM) is added. Pentane is added in access (40 times the volume of EOM and dichloromethane/oil). The solution is stored for at least 12 hours in a dark place before the solution is filtered or centrifuged and the weight of the asphaltenes measured.

GC analysis of gas components
Aliquots of the samples were transferred to exetainers. 0.1-1ml were sampled using a Gerstel MPS2 autosampler and injected into a Hewlett Packard 5890 Series II GC equipped with Porabond Q column, a flame ionisation detector (FID), a thermal conductivity detector (TCD) and a methylization unit. Hydrocarbons were measured by FID, CO_2 by metylization (to CH_4) and then FID and N_2 and O_2 by TCD.

Carbon isotope analysis of hydrocarbon compounds and CO2
The carbon isotopic composition of the hydrocarbon gas components was determined by a GC-C-IRMS system. Aliquots were sampled with a syringe and analysed on a Trace GC2000, equipped with a Poraplot Q column, connected to a Delta plus XP IRMS. The components were burnt to CO_2 and water in a 1000 °C furnace over Cu/Ni/Pt. The water was removed by Nafion membrane separation. Repeated analyses of standards indicate that the reproducibility of $\delta^{13}C$ values is better than 1 ‰ PDB (2 sigma).

Hydrogen isotope analysis of methane
The hydrogen isotopic composition of methane was determined by a GC-C-IRMS system. Aliquots were sampled with a GCPal and analysed on a Trace GC2000, equipped with a Poraplot Q column, connected to a Delta plus XP IRMS. The components were decomposed to H_2 and coke in a 1400 °C furnace. The international standard NGS-2 and an in-house standard (Std A) were used for testing accuracy and precision. The "true" value of NGS-2 is given to –172.5 ‰ V-SMOW (http://deuterium.nist.gov/standards.html). Repeated analyses of standards indicate that the reproducibility of δD values is better than 10 ‰ PDB (2 sigma).