

**FINAL WELL REPORT
WELL 34/11-3 AND 34/11-3T2
PL193**

Document No.: 97011760.
Rev. No.: 0 Date : 22.10.1997

FMT PRESSURE RESULTS

Test No.	Depth mMD RKB	Depth mTVD RKB	Hydrostatic pressure before bar	Hydrostatic pressure after bar	Formation pressure bar	Mob. md/cp	Comment
FMT run 3A							
1	4031.1	4027.4	79130,00	79063,00			Tight
2	4036.1	4032.4	79484,00	79425,00	772.34	39.3	Good perm
6	4035.9	4032.2	79554,00	79486,00	772.51	2.6	Fair perm.
FMT run 4B							
1	4044.6	4040.87	787.3	785.3	770.6	69.9	Good perm. sample

Table 3.3.1: FMT results, run 3A and 4B

MDT PRESSURE RESULTS

Test No.	Depth mMD RKB	Depth mTVD RKB	Hyd. press. before bar	Hyd. press. after bar	Formation pressure bar	Mob. md/cp	Comment
MDT RUN 4A							
1	4041.1	4037.4	788.37	786.03	772.68	0,1	Supercharge
2	4044.57	4040.87	786.24	785.04	771.1	188,4	Good
3	4046.42	4042.72	785.12	783.79	771.16	57,8	Good
4	4051.08	4047.38	784.52	785.55	772.52	0,7	Supercharge
6	4057.58	4053.87	785.52	785.26	771.61	26,0	Good
7	4064.08	4060.36	786.34	785.06	748.48	0,1	Tight
8	4074.08	4070.33	789.73	788.58	772.23	731,0	Good
9	4090.09	4086.34	791.75	790.42	772.87	138,0	Good
10	4094.08	4090.33	791.08	790.52	772.99	369,3	Good
11	4097.08	4093.34	791.92	790.92	773.1	251,6	Good
12	4099.21	4095.47	791.33	790.4	773.17	155,0	Good
14	4104.64	4100.91	790.34	791.92	773.38	22,1	Good
15	4110.08	4106.36	793.8	792.1	773.55	74,4	Good
17	4124.11	4120.36	798.63	796.91	774.12	979,3	Good
20	4144.56	4140.78	804.17	802.15	774.94	119,1	Good
21	4148.72	4144.94	802.53	801.23	775.06	505,4	Good
25	4151.02	4147.25	802.76	800.7	775.17	34,4	Good

**FINAL WELL REPORT
WELL 34/11-3 AND 34/11-3T2
PL193**



Document No.: 97011760.
Rev. No.: 0 Date : 22.10.1997

MDT RUN 4B							
24	4044.49	4040.79	789.97	796.78	770.94	80	Good, sample
1	4124.1	4120.35	808.32	807.6	774.03	760	Good
22	4130.59	4126.83	802.45	801.36	774.43	762.6	Good
21	4144.66	4140.88	805.86	805.56			Good, sample
20	4148.72	4144.94	807.26	808.14	775.02	166.3	Good,
2	4154.09	4150.32	815.13	813.65	775.21	251.9	
3	4160.11	4156.34	814.65	813.57	655.31		Tight
4	4161.09	4157.32	814.61	813.77	577.71		Tight
5	4164.95	4161.18	814.35	813.64	775.77	13.6	Fair
6	4169.9	4166.12	815.33	813.8	779.18	0.2	Supercharge
7	4179.09	4175.3	815.86	814.92	601.86		Tight
18	4179.26	4175.47	811.86	809.52	776.47	10.7	Leaking?
19	4179.26	4175.47	808.74	809.1	776.35	6.9	Fair
16	4182.29	4178.5	811.77	811.62	631.86		Tight
15	4182.39	4178.6	812.5	811.86	800.19	0.17	Superch
8	4182.48	4178.69	815.91	815.25	623.15		Tight
14	4183	4179.21	814.76	813.18	626.4		Tight
9	4187		819.36	817.45	773.52	0,1	Supercharge
10	4187.1		817.07	816.71	657.81		Tight
11	4190.2		816.45	816.15	623.89		Tight

Table 3.3.2: MDT results, run 4A and 4B

MDT/FMT sampling results

Zone	Depth mMDRT	Depth mMDRT	Chambers	Remarks	Opening pressure
FMT run 4B					
Tarbert	4044.6	4040.9	20 l preflush	19.3 ft ³ gas, approx. 7 l filtrate, approx. 0.5 l condensate. CO ₂ =1.5 %, H ₂ S=0 ppm Filtrate: PH=7,7 @ 27 C Chloride: <1000 mg/l SCN: 85 mg/l	248 bar
			1 gallon chamber	Sample chamber was empty. Tool failure or probe plugged.	110 bar

**FINAL WELL REPORT
WELL 34/11-3 AND 34/11-3T2
PL193**



Document No.: 97011760.
Rev. No.: 0 Date : 22.10.1997

MDT run 4B					
Etive	4144.7	4140.9	1 gallon chamber 3 x 450 cc multisamples	Chamber leaked (damaged trottle valve). Backpressure on piston led to small volume of fluid back in chamber when at surface. Content: mixture of mud, filtrate, some solids and hydrocarbons. Sample bottle No.: 650 and 649 were sealed off and sent to PVT lab.(Bottle No. 677 not filled)	Back- pressure on piston
MDT run 4B					
Tabert	4044.5	4040.8	1 gallon chamber 3 x 450 cc multisamples	Chamber leaked (damaged trottle valve). Backpressure on piston led to small volume of fluid back in chamber when at surface. Content: mixture of mud, filtrate, some solids and hydrocarbons. Sample bottle No.: 644 and 643 were sealed off and sent to PVT lab. No positive indication of filling up bottle No. 643 and 645	Back- pressure on piston

Table 3.3.3: MDT/FMT sampling result

Anchor/M-I Drilling Fluids											
DRILLING FLUIDS VOLUME DISTRIBUTION SUMMARY											
WELL: 34/11-3 and 34/11-3s						AREA: NORTH SEA			RIG: DEEPSEA TRYM		
Hole size	Hole From-to	Hole Length	Volume built	Volume received	Volume dumped	Volume lost to formation	Volume lost on surface equipment	Volume left behind csg and left in hole	Volume cuttings drilled	Volume transferred to next section	Mud type used for interval
inch	m	m	m ³	m ³	m ³	m ³	m ³	m ³	m ³	m ³	
36	233-293	60	180	130	0	0	82	0	39,4	228	Bentonite/Sw
26	293-1115	822	435	0	0	0	663	0	281,6	0	Bentonite/Sw
17 1/2	1115-3477	2362	1932	0	207	26	994	164	366,5	541	ANCO 2000
12 1/4	3477-3985	398	233	0	388	166	86	134	61,8	0	ANCO 2000
8 1/2	3985-4482-4230	718	1692	300	795	273	557	17	26,3	350	ANCO THERM
P&A		0	586	61	537	188	126	146	0,0	0	ANCO THERM
TOTALS											
Volume Received:			491 m ³			Total mud left/lost downhole:			1114 m ³		
Mud built:			5058 m ³			Total mud to sea:			4435 m ³		
Mud dumped:			1927 m ³			Total cuttings volume drilled:			775,54 m ³		
Mud lost to formation:			653 m ³			COMMENTS: 36" SECTION: Returns to seabed. Received 130 m ³ Anco 2000 mud from previous well. 26" SECTION: Returns to seabed. 17 1/2" SECTION: 541 m ³ Anco 2000 mud transferred to 12 1/4" section. 12 1/4" SECTION: Dumped all Anco 2000 mud after drilling out cement and casing shoe. 8 1/2" SECTION: Displaced to new Ancotherm mud.					
Mud lost over solids control equipment:			2508 m ³								
Mud left between csg/csg plus left in hole:			461 m ³								
Final volume:			0 m ³								

Water base drilling fluid properties, daily record

Well : 34/11-3 and 34/11-3T2

Operator: STATOIL

Anchor / M-I Drilling Fluids

Rig: Deepsea Trym

FSR no.	Date 1996	Depth m	M.W. eg	F. oC	F.Vls s/qt	VG-meter readings @ 50 C								P.V. cP	Y.P. Pa	Gel 10s Pa	Gel 10 m Pa	pH	API ml	HTHP ml	Pf ml	Mf ml	Cl- x 1000 kg/m3	TH mg/l	Ca++ mg/l	Mg+ mg/l	KCl kg/m3	K+ kg/m3	Solids vol%	Sand vol%	MBT kg/m3	HGS kg/m3	LGS kg/m3	Anco 208 %
						600 rpm	300 rpm	200 rpm	100 rpm	60 rpm	30 rpm	8 rpm	3 rpm																					
17 1/2 Section: Anco 2000 Water base																																		
9	07-08	1118	1,40	-	85	79	55	48	34	25	18	9	7	24	15,5	4	4,5	7,8	3,8	0	0,5	71	720	600	72	150	79	18,5	0	0	377	55	0	
10	08-08	1580	1,40	25	76	74	48	39	29	23	17	10	8	26	11,0	4,5	7	8,3	3	0	0,7	76	740	640	120	144	76	17	0,9	14	358	70	0	
11	09-08	1660	1,40	29	73	66	48	40	30	25	19	11	9	18	15,0	4,5	7	8,2	3,1	0	0,6	75	880	760	72	140	73	17	1,5	14	358	72	0	
12	10-08	2027	1,40	31	74	67	50	42	32	27	21	12	10	17	16,5	5	9	8	3,2	0	0,6	73	840	720	72	134	70	17,5	0,75	30	336	104	0	
13	11-08	2045	1,40	22	66	65	47	39	30	25	19	11	9	18	14,5	5	7,5	7,9	3,7	0	0,6	71	840	720	72	130	68	17,5	0,7	30	335	109	0	
14	12-08	2145	1,50	36	66	72	52	43	32	26	20	11	8	20	16,0	4,5	9	8	3,2	0	0,5	71	860	800	36	129	68	18,5	0,8	45	553	95	5	
15	13-08	2344	1,53	42	69	77	55	45	33	26	20	12	9	22	16,5	4,5	9	8	3,3	0	0,5	74	800	680	72	134	70	22	0,5	54	510	128	4,8	
16	14-08	2498	1,52	47	67	70	50	40	30	24	18	10	8	20	15,0	4	10	8	3,4	0	0,5	74	840	720	136	71	22	0,3	55	537	111	5		
17	15-08	2740	1,53	50	71	78	53	46	32	25	17	10	8	25	14,0	4	7	8	3,5	0	0,5	76	740	620	138	72	21,5	0,2	49	532	96	4,8		
18	16-08	2985	1,53	48	71	51	42	31	25	19	11	8	8	20	15,5	4,5	8	7,9	3,7	0	0,5	78	680	560	141	74	22	0,3	49	538	102	4,9		
19	17-08	3160	1,53	51	81	58	49	36	29	21	11	8	23	17,5	4,5	8	7,7	3,2	0	0,4	84	760	640	160	84	22,5	0,3	51	521	116	5,1			
20	18-08	3373	1,53	56	78	55	46	34	27	20	10	8	23	16,0	4	8	8	3,2	0	0,5	88	520	400	151	79	23	0,2	45	499	139	4,8			
21	19-08	3474	1,53	43	87	66	55	41	34	26	14	11	21	22,5	5,5	9	7,8	3,1	0	0,5	88	640	520	153	80	23	0,2	42	474	151	4,8			
22	20-08	3477	1,55	N/A	88	67	54	40	33	24	13	10	21	23,0	5,5	9	7,8	3,2	0	0,5	88	640	520	157	82	24,5	0,2	44	464	199	5			
23	21-08	3477	1,55	N/A	87	66	54	41	33	24	14	11	21	22,5	5,5	9	7,8	3,1	0	0,5	87	620	480	154	81	24,5	0,2	44	463	202	5			
24	22-08	3477	1,55	N/A	88	67	55	42	34	25	15	12	21	23,0	5,5	9	7,8	3,1	0	0,5	87	620	480	154	81	24,5	0,2	44	463	202	5			
25	23-08	3477	1,55	N/A	87	66	54	41	33	24	14	11	21	22,5	5,5	9	7,8	3,1	0	0,5	87	620	480	154	81	24,5	0,2	44	463	202	5			
26	24-08	3477	1,55	40	84	61	51	38	32	24	12	9	23	19,0	5	9,5	8,2	3,6	0	0,5	85	630	490	153	80	24,5	0,2	43	463	206	5			
27	25-08	3477	1,55	N/A	90	62	51	37	29	22	11	9	28	17,0	5	9,5	7,8	3,1	0	0,6	85	630	420	150	79	23,2	0,5	50	517	136	4,8			
28	26-08	3477	1,55	N/A	90	62	51	37	29	22	11	9	28	17,0	5	9,5	7,8	3,1	0	0,6	85	630	420	150	79	23,2	0,5	50	517	136	4,8			
29	27-08	3477	1,55	N/A	89	61	50	37	29	22	11	9	28	16,5	5	9,5	7,8	3,1	0	0,6	85	630	420	150	79	23,2	0,5	50	517	136	4,8			
30	28-08	3477	1,55	N/A	87	63	50	37	30	22	11	9	24	19,5	5	9,5	7,6	3	0	0,7	85	660	400	155	81	23,2	0,5	50	517	136	4,8			
31	29-08	3477	1,55	N/A	87	63	50	37	30	22	11	9	24	19,5	5	9,5	7,6	3	0	0,7	85	660	400	155	81	23,2	0,5	50	517	136	4,8			
32	30-08	3477	1,80	N/A	99	65	50	35	29	22	11	8	34	15,5	5	9,5	9	3,4	0	0,6	85	620	400	155	81	25,4	0,5	50	662	126	4,4			

well : 34/11-3 and 34/11-3T2

Operator: STATOIL

Anchor / M-I Drilling Fluids

Rig: Deepsea Trym

FSR no.	Date 1996	Depth m	M.W. sg	F. °C	F.Vis s/qt.	VG-meter readings @ 50 C										P.V. cP	Y.P. Pa	Gel 10s Pa	Gel 10 m Pa	pH	API ml	HTHP ml	Pf ml	Mf ml	Cl- x 1000 kg/m3	TH mg/l	Ca++ mg/l	Mg+ mg/l	KCl kg/m3	K+ kg/m3	Solids vol%	Sand vol%	MBT kg/m3	HGS kg/m3	LGS kg/m3	Anco 208 %
						600 rpm	300 rpm	200 rpm	100 rpm	60 rpm	30 rpm	6 rpm	3 rpm																							
12 1/4" Section Anco 2000 Water base																																				
33	31-08	3587	1,84	39	##	74	58	39	30	21	10	7	35	19,5	4	16	9,4	4,9		0,1	1,4	83	690	640		151	79	32,3	0,5	50	891	162	4,8			
34	01-09	3694	1,84	39	##	71	55	37	30	20	9	7	37	17,0	3,5	10	8,6	3,2		0	1	83	730	640		149	78	26,5	0,5	38	930	113	4,8			
35	02-09	3779	1,84	36	##	68	53	35	27	19	9	7	37	15,5	3,5	13	8,5	3,1		0	1,4	86	720	640		146	77	26,9	Tr	35	906	140	4,8			
36	03-09	3890	1,84	36	##	65	51	34	27	19	9	7	35	15,0	3,5	15	8,5	3,2		0	1,5	86	720	640		150	79	32,4	Tr	35	889	162	4,8			
37	04-09	3983	1,88	37	##	66	51	34	27	19	9	7	39	13,5	6,5	15,5	8,4	3,2		0	1,5	86	710	630		150	79	33,2	Tr	39	960	140	4,8			
38	05-09	3985	1,88	N/A	##	70	54	36	27	19	9	7	42	14,0	3,5	16	8,3	3,1		0	1,7	86	720	640		152	80	33,2	Tr	36	959	140	4,6			
39	06-09	3985	1,88	N/A	##	70	54	36	27	19	9	7	42	14,0	3,5	16	8,3	3,1		0	1,7	86	720	640		152	80	33,2	Tr	36	959	140	4,6			
40	07-09	3985	1,88	N/A	##	70	54	36	27	19	9	7	42	14,0	3,5	16	8,3	3,1		0	1,7	86	720	640		152	80	33,2	Tr	36	959	140	4,6			
41	08-09	3985	1,88	N/A	##	64	49	31	24	15	8	6	41	11,5	3	15	8,4	8		0	1,8	24	680	500		48	25	30	Tr	28	1064	83	1,5			
42	09-09	3985	1,88	N/A	##	64	49	31	24	15	8	6	41	11,5	3	15	8,4	8		0	1,8	24	680	500		48	25	30	Tr	28	1064	83	1,5			
43	10-09	3985	1,88	N/A	##	64	49	31	24	15	8	6	41	11,5	3	15	8,4	8		0	1,8	24	680	500		48	25	30	Tr	28	1064	83	1,5			
44	11-09	3985	1,88	N/A	##	67	53	35	27	19	8	6	35	16,0	3	12	9	7,5		0,05	2	25	680	500		48	25	30	Tr	28	1064	83	1,5			

Water base drilling fluid properties, daily record

Well : 34/11-3 and 34/11-3T2

Operator: STATOIL

Anchor / M-I Drilling Fluids

Rig: Deepsea Trym

FSR no.	Date 1996	Depth m	M.W. sg	F. Temp oC	F.Vls s/gl.	VG-meter readings @ 50 C										P.V. cP	Y.P. Pa	Gel 10s Pa	Gel 10 m Pa	pH	API ml	HTHP ml	PI ml	Mf ml	Cl- x 1000 kg/m3	TH mg/l	Ca++ mg/l	Mg+ mg/l	KCl kg/m3	K+ kg/m3	Solids		MBT kg/m3	HGS kg/m3	LGS kg/m3	Anco 208 %
						600 rpm	300 rpm	200 rpm	100 rpm	60 rpm	30 rpm	6 rpm	3 rpm	vol%	vol%																					
125	01-12	4482	2,01	16	102	##	66	51	31	25	17	6	5	43	11,5	3	13	8,6	2,6	11,8	0,1	1,3	3,4	620	520			33	0	38	1264	72				
126	02-12	3870	2,01	32	87	94	55	41	25	19	13	5	4	39	8,0	2	8	9	2,6	11,8	0,15	1,4	3,4	700	600			33	0	38	1264	72				
127	03-12	3821	2,01	22	90	##	62	47	30	25	17	8	7	38	12,0	3,5	13	9,1	2,8	12,2	0,15	1,4	3,4	700	600			33	0	38	1264	72				
128	04-12	3821	2,01		95	##	63	47	30	25	17	8	7	39	12,0	3,5	13	9	2,8	12,2	0,15	1,4	3,4	700	600			33	0	38	1264	72				
129	05-12	3821	2,01		95	##	63	47	30	25	17	8	7	39	12,0	3,5	13	9	2,8	12,2	0,15	1,4	3,4	700	600			33	0	38	1264	72				
130	06-12	3821	2,01		96	99	61	42	28	24	16	7	6	38	11,5	3	11	8,9	2,4	12,2	0,2	1,7	3,7	740	620			33	0	38	1264	72				
131	07-12	3821	2,01		96	99	61	42	28	24	16	7	6	38	11,5	3	11	8,9	2,4	12,2	0,2	1,7	3,7	740	620			33	0	38	1264	72				
132	08-12	3821	2,01		96	99	61	42	28	24	16	7	6	38	11,5	3	11	8,9	2,4	12,2	0,2	1,7	3,7	740	620			33	0	38	1264	72				
133	09-12	3821	2,01		96	99	61	42	28	24	16	7	6	38	11,5	3	11	8,9	2,4	12,2	0,2	1,7	3,7	740	620			33	0	38	1264	72				
134	10-12	3821	2,01		96	99	61	42	28	24	16	7	6	38	11,5	3	11	8,9	2,4	12,2	0,2	1,7	3,7	740	620			33	0	38	1264	72				
135	11-12	3821	2,01		96	99	61	42	28	24	16	7	6	38	11,5	3	11	8,9	2,4	12,2	0,2	1,7	3,7	740	620			33	0	38	1264	72				
136	12-12	3821	2,01		96	99	61	42	28	24	16	7	6	38	11,5	3	11	8,9	2,4	12,2	0,2	1,7	3,7	740	620			33	0	38	1264	72				
137	13-12	3821	2,01		96	99	61	42	28	24	16	7	6	38	11,5	3	11	8,9	2,4	12,2	0,2	1,7	3,7	740	620			33	0	38	1264	72				
138	14-12	3821	2,01		100	##	63	46	29	25	16	7	6	40	11,5	3,5	12	8,8	2,5	12,4	0,2	1,7	3,7	740	620			33	0	38	1264	72				
139	15-12	3821	2,01		100	##	72	58	46	37	30	25	24	33	19,5	12	35	8,9	3,5	13,8	0,35	3,8	3,2	820	660			33	0	36	1264	72				
8 1/2 Section: Ancotherm Water base (Start sidetrack T2)																																				
140	16-12	4030	2,01	27	100	83	53	42	29	25	19	11	10	30	11,5	4,5	19	9,2	3,5	14,8	0,4	4,8	2,8	680	540			33	0,25	34	1265	73				
141	17-12	4230	2,,1	27	83	80	48	38	24	19	16	8	6	32	8,0	3,5	10	9,2	2,7	12,2	0,3	5	2,6	620	500			33	0,25	34	1265	73				
142	18-12	4230	2,01		90	80	48	38	24	19	16	8	6	32	8,0	3,5	10	9,2	2,7	12,2	0,3	5	2,6	620	500			33	0,25	34	1265	73				
143	19-12	4230	2,01		90	80	48	38	24	19	16	8	6	32	8,0	3,5	10	9,2	2,7	12,2	0,3	5	2,6	620	500			33	0,25	34	1265	73				
144	20-12	4230	2,01		90	80	48	38	24	19	16	8	6	32	8,0	3,5	10	9,2	2,7	12,2	0,3	5	2,6	620	500			33	0,25	34	1265	73				
145	21-12	4230	2,01		90	80	48	38	24	19	16	8	6	32	8,0	3,5	10	9,2	2,7	12,2	0,3	5	2,6	620	500			33	0,25	34	1265	73				
146	22-12	4230	2,01		90	80	48	38	24	19	16	8	6	32	8,0	3,5	10	9,2	2,7	12,2	0,3	5	2,6	620	500			33	0,25	34	1265	73				
147	23-12	4230	2,01		120	##	67	53	37	32	26	17	16	37	15,0	9	23	9,6	3	14	0,6	5,5	2,6	640	520			33	0,25	34	1265	73				
148	24-12	4230	2,01		85	83	49	37	23	19	13	5	4	34	7,5	2,5	11	9,2	2,8	13	0,4	5,5	2,6	640	520			33	0,25	34	1265	73				
149	25-12	4230	2,01		95	83	49	37	23	19	13	5	4	34	7,5	2,5	11	9,2	2,8	13	0,4	5,5	2,6	640	520			33	0,25	34	1265	73				
150	26-12	4230	2,01		95	83	49	37	23	19	13	5	4	34	7,5	2,5	11	9,2	2,8	13	0,4	5,5	2,6	640	520			33	0,25	34	1265	73				

Water base drilling fluid properties, daily record

Well : 34/11-3 and 34/11-3T2

Operator: STATOIL

Anchor / M-I Drilling Fluids

Rig: Deepsea Trym

FSR no.	Date 1996	Depth m	M.W. sg	F. V.Vis s/qt	VG-meter readings @ 50 C								P.V. cP	Y.P. Pa	Gel 10s Pa	Gel 10m Pa	pH	API ml	HTHP ml	Pf ml	Mf ml	Cl- x 1000 kg/m3	TH mg/l	Ca++ mg/l	Mg+ mg/l	KCl kg/m3	K+ kg/m3	Solids vol%	Sand vol%	MBT kg/m3	HGS kg/m3	LGS kg/m3	Anco 208 %
*	*	m	sg	oC	rpm	rpm	rpm	rpm	rpm	rpm	rpm	rpm	rpm	cP	Pa	Pa	Pa	mi	mi	mi	mi	kg/m3	mg/l	mg/l	mg/l	kg/m3	kg/m3	vol%	vol%	kg/m3	kg/m3	kg/m3	%
151	27-12	3920	2,01	110	90	54	40	26	21	15	7	6	36	9,0	3,5	16	9,8	2,2	13,2	0,4	5,5	2,6	900	840			33	0,25	34	1265	73		
152	28-12	3920	2,01	105	88	53	39	24	20	14	6	5	35	9,0	3	15	10,2	2,8	14,2	0,5	6	2,6	920	900			33	0,25	32	1265	73		
153	29-12	3880	1,86	105	75	45	35	23	19	14	10	8	30	7,5	4	17	8,9	2,4		0,2	2,5	2,4	860	800			28	0,25	27	1081	58		
154	30-12	3880	1,87	98	77	46	36	24	20	14	10	8	31	7,5	4	16	9	2,4		0,2	2,5	2,4	860	800			28	0,25	27	1107	40		
155	31-12	3880	1,90	98	76	44	34	23	19	13	9	7	32	6,0	4	13	9	2,8		0,2	2,5	5	900	840			29	0,25	27	1143	41		
156	01-01	3880	1,92	98	74	47	37	26	20	16	10	9	27	10,0	4,5	17	8,7	3,3		0,2	2,8	16	820	740			30	0,25	28	1150	51		
157	02-01	1400	1,55	65	53	34	25	16	13	10	5	4	19	7,5	2	15	9,2		0,2	2,7	8	640	540			18	0,25	20	685	34			
158	03-01	1400	1,55	63	54	36	28	19	15	11	7	5	18	9,0	3	12	9,2		0,2	2,7	7,3	600	520			18	0,25	35	685	35			
159	04-01	1400	1,55	26	60	56	37	29	20	16	12	8	6	19	9,0	3	16	9,2		0,15	2,6	4,6	580	500			18	0,25	40	686	37		
160	05-01	1400	1,55	28	72	63	40	32	21	18	14	8	6	23	8,5	3,5	18	8,5		0,1	2,8	4,4	580	500			18	0,25	40	686	38		
161	06-01	1400	1,30	60	48	32	25	17	14	11	7	6	16	8,0	3	17	8,4		0,01	2,2	2,7					11	0,25	50	325	81			
162	07-01	1400	1,30	60	52	34	27	18	14	10	7	5	18	8,0	2,5	15	8,4				1,9					11	0,25	48	325	82			
163	08-01	800	1,50	60	63	41	33	23	18	14	10	8	22	9,5	4,5	15,5	9,5				3,6					17	0	51					

DUMPED DRILLING FLUID AFTER SETTING LAST CEMENT PLUG.

Title: Standard geochemical study of wells 34/11-3 and 34/11-3T2		
Document no.: LTEK-PE2297	Contract no./project no.:	Filing no.:

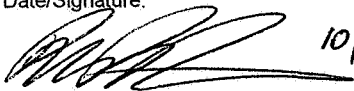
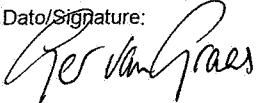

Classification: Free distribution within Statoil	Distribution: PL193+Partners; NPD; LTEK Archive
--	---

Distribution date: 07.07.97	Rev. date:	Rev. no.:	Copy no.:
---------------------------------------	------------	-----------	-----------

Author(s)/Source(s): Richard Patience, LTEK-PE Geolab Nor IFE

Subjects:	<p>BA 97-1270-1 30 JULI 1997 REGISTRERT OLJEDIREKTORATET</p>
Remarks: See Summary, page i	

Valid from:	Updated:
Responsible publisher: Richard Patience	Authority to approve deviations: LTEK-PE

Techn. responsible: LTEK-PE	Name: R. L. PATIENCE	Date/Signature:  10/7/97
Responsible:	Name:	Date/Signature:
Recommended: LTEK-PE	Name: G. VAN GRAAS	Date/Signature:  10/7/97
Approved: LTEK-PE	Name: R. HELLAND	Date/Signature:  14.7.97

1 Introduction

This report presents the results of a standard geochemical evaluation of wells 34/11-3 and 34/11-3T2 in the Northern Viking Graben, offshore mid-Norway (Figure 1). 34/11-3 was drilled down to 4482 mMD RKB in the Statfjord Formation in the Lower Jurassic and 34/11-3T2 was sidetracked from 4013 to 4234 mMD RKB (TD in the Drake Formation) due to very hard cement. The sidetrack was vertical and lay only a few metres from the main well. Logs, tests and sidewall core come from the sidetrack whilst cuttings analyses reported here and all core are from the main hole. There was a discrepancy in the depths in the sidetrack, such that all depths for samples and logs from the sidetrack have been shifted down by ca. 4m compared to the original measured depths.

Anco 2000 mud system was used down to 3988 mMD RKB followed by Ancotherm. Cuttings samples from the Draupne and Heather Formations were of generally poor quality.

The aims of this project were to identify and evaluate potential source rock intervals and characterise migrated petroleum in terms of the parent source rock facies and level of thermal maturity. Analyses were largely restricted to the Jurassic section. The analytical programme is described in detail in the Appendix. The analytical work was performed in accordance with the guidelines given in "The Norwegian Industry Guide to Organic Geochemical Analyses (1992)". The project was carried out at Geolab Nor (all analyses except where specified) with subcontract to IFE (gas analyses).

Table 1. Biomarker parameters from GCMS analysis

WELL	BOTTOM DEPTH mMD RKB
34/11-3	3966
34/11-3	3984
34/11-3T2	4044.5
34/11-3	4083.28
34/11-3T2	4144.7

WELL	BOTTOM DEPTH mMD RKB
34/11-3	3966
34/11-3	3984
34/11-3T2	4044.5
34/11-3	4083.28
34/11-3T2	4144.7

SAMPLE TYPE	LITHOLOGY	SAMPLE NO.	20S	BB	22S	TSTM	TTX	30D	30AB-HOP	C27BB	C28BB	C29BB	C30BB
Cuttings	Mudrock	O50/0042-1	0.40	0.57	0.62	2.63	10.01	0.64	0.89	35	34	31	0.11
Cuttings	Mudrock	O50/0045-1	0.55	0.62	0.68	2.70	19.33	1.26	0.92	36	32	32	0.12
MDT	Condensate	O87/0001-0	0.57	0.71		3.07		1.76	1.00	33	32	35	0.09
Core chip	Coal	O50/0037-0	0.42	0.67	0.49	2.33	4.56	3.41	1.00	14	27	60	0.00
MDT	Condensate	O87/0002-0	0.53	0.67		4.83		1.97	1.00	34	31	35	0.10

SAMPLE TYPE	LITHOLOGY	SAMPLE NO.	DIAST	C28AB	HOPST	TRICY	TETRACY	35H_34H	29H_30H	DEMET	OLEAN	GAMMA
Cuttings	Mudrock	O50/0042-1	2.74	0.00	3.01	0.39	0.16	0.67	0.39	0.00	0.00	0.03
Cuttings	Mudrock	O50/0045-1	3.80	0.00	1.99	0.84	0.26	0.67	0.29	0.00	0.00	0.05
MDT	Condensate	O87/0001-0	2.84	0.00	0.32	2.68	0.69		0.94	0.00	0.00	
Core chip	Coal	O50/0037-0	0.53	0.00	1.45	0.33	1.01	0.67	0.63	0.23	0.00	
MDT	Condensate	O87/0002-0	2.54	0.00	0.19	2.61	0.00		1.29	0.00	0.00	

Derivation of biomarker ratios reported in Table 1

<u>Ratio</u>	<u>Derivation</u>	<u>m/z</u>
Triterpanes		
22S	$32\alpha\beta S / (32\alpha\beta S + 32\alpha\beta R)$	191
TSTM	$27Ts / 27Tm$	191
TTX	$30d / 29\beta\alpha$	191
30D	$30d / 30\alpha\beta$	191
29H_30H	$29\alpha\beta / 30\alpha\beta$	191
30AB-HOP	$30\alpha\beta / (30\alpha\beta + 30\beta\alpha)$	191
C28AB	$28\alpha\beta / 30\alpha\beta$	191
TRICY	$(23/3) / 30\alpha\beta$	191
TETRACY	$(24/4) / 30\alpha\beta$	191
35H_34H	$(35\alpha\beta R + 35\alpha\beta S) / (34\alpha\beta R + 34\alpha\beta S)$	191
DEMET	$25nor30\alpha\beta / 30\alpha\beta$	191
OLEANAN	$30O / 30\alpha\beta$	191
GAMMA	$30G / 30\alpha\beta$	191
PPMH*	$ppm \ 27Ts + 27Tm + 29\alpha\beta + 29\beta\alpha + 30\alpha\beta + 30\beta\alpha + 31\alpha\beta S + 31\alpha\beta R + 32\alpha\beta S + 32\alpha\beta R + 33\alpha\beta S + 33\alpha\beta R + 34\alpha\beta S + 34\alpha\beta R + 35\alpha\beta S + 35\alpha\beta R$	191
Steranes		
20S	$29\alpha\alpha S / (29\alpha\alpha R + 29\alpha\alpha S)$	217
BB	$(29\beta\beta R + 29\beta\beta S) / (29\beta\beta R + 29\beta\beta S + 29\alpha\alpha R + 29\alpha\alpha S)$	217
C27BB	$100 * (27\beta\beta R + 27\beta\beta S) / (27\beta\beta R + 27\beta\beta S + 28\beta\beta R + 28\beta\beta S + 29\beta\beta R + 29\beta\beta S)$	218
C28BB	$100 * (28\beta\beta R + 28\beta\beta S) / (27\beta\beta R + 27\beta\beta S + 28\beta\beta R + 28\beta\beta S + 29\beta\beta R + 29\beta\beta S)$	218
C29BB	$100 * (29\beta\beta R + 29\beta\beta S) / (27\beta\beta R + 27\beta\beta S + 28\beta\beta R + 28\beta\beta S + 29\beta\beta R + 29\beta\beta S)$	218
C30BB	$(30\beta\beta R + 30\beta\beta S) / (27\beta\beta R + 27\beta\beta S + 28\beta\beta R + 28\beta\beta S + 29\beta\beta R + 29\beta\beta S)$	218
DIAST	$(27d\beta R + 27d\beta S) / (27\alpha\alpha R + 27\alpha\alpha S)$	217
PPMS*	$ppm \ 27\beta\beta R + 27\beta\beta S + 28\beta\beta R + 28\beta\beta S + 29\beta\beta R + 29\beta\beta S$	218
HOPST	$Intensities(27Ts + 27Tm + 29\alpha\beta + 29\beta\alpha + 30\alpha\beta + 30\beta\alpha + 31\alpha\beta S + 31\alpha\beta R + 32\alpha\beta S + 32\alpha\beta R + 33\alpha\beta S + 33\alpha\beta R + 34\alpha\beta S + 34\alpha\beta R + 35\alpha\beta S + 35\alpha\beta R) / Intensities(27\beta\beta R + 27\beta\beta S + 28\beta\beta R + 28\beta\beta S + 29\beta\beta R + 29\beta\beta S)$	

* ppm calculated from comparison with m/z 219 intensity for D2-cholestane

Biomarker codes used in derivation of ratios

<u>Compound name</u>	<u>Old code</u>	<u>NEW CODE</u>
Triterpanes		
C ₂₃ H ₄₂ tricyclic terpane	P	23/3
C ₂₄ H ₄₄ tricyclic terpane	Q	24/3
C ₂₅ H ₄₆ tricyclic terpane ¹	R	25/3
C ₂₄ H ₄₂ tetracyclic terpane	S	24/4
C ₂₆ H ₄₈ tricyclic terpane ²	T	26/3
18α(H)-22,29,30-trisnorneohopane	27A	27Ts
17α(H)-22,29,30-trisnorhopane	27B	27Tm
17α(H), 21β(H)-25,28,30-trisnorhopane		25nor28αβ
17α(H), 21β(H)-28,30-bisnorhopane	28A	28αβ
17α(H), 21β(H)-25-norhopane		25nor30αβ ³
17α(H), 21β(H)-30-norhopane	C29A	29αβ
18α(H)-30-norneohopane		29Ts
15α-methyl-17α(H)-27-norhopane (TtX)	X	30D
17β(H), 21α(H)-30-norhopane (normoretane)	C29B	29βα
18α(H)-oleanane		30O
17α(H), 21β(H)-hopane	C30A	30αβ
17β(H), 21α(H)-hopane (moretane)	C30B	30βα
Gammacerane		30G
17α(H), 21β(H), 22(S)-homohopane	C31S	31αβS
17α(H), 21β(H), 22(R)-homohopane	C31R	31αβR
17α(H), 21β(H), 22(S)-bishomohopane	C32S	32αβS
17α(H), 21β(H), 22(R)-bishomohopane	C32R	32αβR
17α(H), 21β(H), 22(S)-trishomohopane	C33S	33αβS
17α(H), 21β(H), 22(R)-trishomohopane	C33R	33αβR
17α(H), 21β(H), 22(S)-tetrakishomohopane	C34S	34αβS
17α(H), 21β(H), 22(R)-tetrakishomohopane	C34R	34αβR
17α(H), 21β(H), 22(S)-pentakishomohopane	C35S	35αβS
17α(H), 21β(H), 22(R)-pentakishomohopane	C35R	35αβR

1 may be broad peak or doublet 2 may be doublet 3 listed in Statoil spreadsheets as "nor30" for convenience
 Steranes

13 β (H), 17 α (H), 20(S)-cholestane (diasterane)	27a	27d β S
13 β (H), 17 α (H), 20(R)-cholestane (diasterane)	27b	27d β R
13 α (H), 17 β (H), 20(R)-cholestane (diasterane)	27c	27d α R
13 α (H), 17 β (H), 20(S)-cholestane (diasterane)	27d	27d α S
5 α (H), 14 α (H), 17 α (H), 20(S)-cholestane	27e	27 $\alpha\alpha$ S
5 α (H), 14 β (H), 17 β (H), 20(R)-cholestane	27f	27 $\beta\beta$ R
5 α (H), 14 β (H), 17 β (H), 20(S)-cholestane	27g	27 $\beta\beta$ S
5 α (H), 14 α (H), 17 α (H), 20(R)-cholestane	27h	27 $\alpha\alpha$ R
24-methyl-13 β (H), 17 α (H), 20(S)-cholestane (diasterane)	28a	28d β S
24-methyl-13 β (H), 17 α (H), 20(R)-cholestane (diasterane)	28b	28d β R
24-methyl-13 α (H), 17 β (H), 20(R)-cholestane (diasterane)	28c	28d α R
24-methyl-13 α (H), 17 β (H), 20(S)-cholestane (diasterane)	28d	28d α S
24-methyl-5 α (H), 14 α (H), 17 α (H), 20(S)-cholestane	28e	28 $\alpha\alpha$ S
24-methyl-5 α (H), 14 β (H), 17 β (H), 20(R)-cholestane	28f	28 $\beta\beta$ R
24-methyl-5 α (H), 14 β (H), 17 β (H), 20(S)-cholestane	28g	28 $\beta\beta$ S
24-methyl-5 α (H), 14 α (H), 17 α (H), 20(R)-cholestane	28h	28 $\alpha\alpha$ R
24-ethyl-13 β (H), 17 α (H), 20(S)-cholestane (diasterane)	29a	29d β S
24-ethyl-13 β (H), 17 α (H), 20(R)-cholestane (diasterane)	29b	29d β R
24-ethyl-13 α (H), 17 β (H), 20(R)-cholestane (diasterane)	29c	29d α R
24-ethyl-13 α (H), 17 β (H), 20(S)-cholestane (diasterane)	29d	29d α S
24-ethyl-5 α (H), 14 α (H), 17 α (H), 20(S)-cholestane	29e	29 $\alpha\alpha$ S
24-ethyl-5 α (H), 14 β (H), 17 β (H), 20(R)-cholestane	29f	29 $\beta\beta$ R
24-ethyl-5 α (H), 14 β (H), 17 β (H), 20(S)-cholestane	29g	29 $\beta\beta$ S
24-ethyl-5 α (H), 14 α (H), 17 α (H), 20(R)-cholestane	29h	29 $\alpha\alpha$ R
24-propyl-5 α (H), 14 α (H), 17 α (H), 20(S)-cholestane	30e	30 $\alpha\alpha$ S
24-propyl-5 α (H), 14 β (H), 17 β (H), 20(R)-cholestane	30f	30 $\beta\beta$ R
24-propyl-5 α (H), 14 β (H), 17 β (H), 20(S)-cholestane	30g	30 $\beta\beta$ S
24-propyl-5 α (H), 14 α (H), 17 α (H), 20(R)-cholestane	30h	30 $\alpha\alpha$ R
4-methyl-14 α (H), 17 α (H)-cholestanes		M28 $\alpha\alpha$
4,24-dimethyl-14 α (H), 17 α (H)-cholestanes		M29 $\alpha\alpha$
4-methyl-24-ethyl-14 α (H), 17 α (H)-cholestanes		M30 $\alpha\alpha$
4,23,24-trimethyl-14 α (H), 17 α (H)-cholestanes (dinosteranes)		M30D

DATA REPORT

GEOLAB NOR AS

PO Box 5740 Fossegrenda
N-7002 Trondheim
Norway

Tel: (47) 73 964000
Fax: (47) 73 968728
Tlx: 65706 geono n

Internet: firmapost@geolab-
nor.telemax no
X.400: S=firmapost, O=geolab-
nor, A=telemax, C=no

CLIENT:

Statoil

REF(S)

Richard Patience
G97-5 and G96-26

TITLE

Geochemical Analysis of NOCS 34/11-3

AUTHOR(S)

GEOLAB PROJECT NO.

62330

DATE

19.06.97

PROJECT LEADER

Kjell Arne Bakken,
Sr. Scientist

QA-REVIEWER

Monica Østbye Hansen,
Lab. Manager

REPORT NO./FILE

Comments

Samples from the well NOCS 34/11-3 were analysed by Geolab Nor by order and program made by Statoil (Richard Patience and Ann Elin Gilje). No analytical problems were encountered. No analytical comments. The samples were analysed according to "The Norwegian Industry Guide to Organic Geochemical Analyses", Third Edition 1993. No experimental procedures enclosed.

NOCS 34/11-3

(Oil Data)

Table 8a-e MPLC Data (New Format)

Table 8f-g Iatroscan

Table 9a Quantitative Data Saturated Fraction

Table 9b Saturated Fraction Ratios

Table 9c Aromatic Fraction Ratios

Table 10a-b Carbon Isotope Composition Fractions

Table 11a-i GC-MS Data Saturated Fraction

Table 12a-e GC-MS Data Aromatic Fraction

Table 13a-c Whole Oil GC

Chromatograms Saturated Fraction

Chromatograms Aromatic Fraction

Whole Oil Chromatograms

GC-MS Fragmentograms

NOCS 34/11-3

(Rock Data)

Table 3	Lithology Description
Table 5a-b	Rock-Eval Data
Table 6	Pyrolysis GC Data
Table 8a-e	MPLC Data (New Format)
Table 8f-g	Iatroscan
Table 9a	Quantitative Data Saturated Fraction
Table 9b	Saturated Fraction Ratios
Table 9c	Aromatic Fraction Ratios
Table 10a-b	Carbon Isotope Composition Fractions
Table 11a-i	GC-MS Data Saturated Fraction
Table 12a-e	GC-MS Data Aromatic Fraction

Thermal Extract Chromatograms

Chromatograms Saturated Fraction

Chromatograms Aromatic Fraction

GC-MS Fragmentograms

ANALYTICAL PROGRAM:		DATABASE CODE:		8330	O50
NOCS 34/11-3				275	O87
PROJECT: STATOIL NOCS 34/11-3					
Scientist: KAB			Technician: IB		
Client Contact: Richard Patience			Date: 19.06.97		

Sample Depth (metres) and Type c = Cuttings s = SWC p = Conv core/ plug m = Mud o = oil/gas	Fractions	HS & Occ Gas	Lithology Description	Leco TOC	RockEval	Therm Ext GC	Pyrolysis GC	Extraction	MPLC & Deasp	Nitroscan	Whole Oil GC	Sat GC Quant.	Aro GC	Sat GCMS Quant.	Aro GCMS	Bulk C Isotope	Gas Isotope Comp. IFE	Gas Volume Comp. IFE
	3	5	5	-	6	8a-e	8a-e	8f-g	13	9	9	11	12	10				

Table Nos:		3	5	5	-	6	8a-e	8a-e	8f-g	13	9	9	11	12	10			
2027.38p	O50/0025-0		x	x														
2028.58p	O50/0026-0		x															
2029.45p	O50/0027-0		x															
2030.65p	O50/0028-0		x															
2031.75p	O50/0029-0		x															
2032.44p	O50/0030-0		x															
2033.67p	O50/0031-0		x															
2034.31p	O50/0032-0		x															
2035.11p	O50/0033-0		x	x														
3960.00c	O50/0041-1	x	x	x														
3966.00c	O50/0042-1	x	x	x			x	x	x		x	x	x	x	x			
3972.00c	O50/0043-1	x	x	x														
3978.00c	O50/0044-1	x	x	x														
3984.00c	O50/0045-1	x	x	x			x	x	x		x	x	x	x	x			
3990.00c	O50/0046-1	x	x	x														
3996.00c	O50/0047-1	x	x	x														
4002.00c	O50/0048-1	x	x	x														
4008.00c	O50/0049-1	x	x	x														
4014.00c	O50/0050-1	x	x	x														
4024.10s	O50/0051-1	x	x	x														
4035.00c	O50/0052-0	x																
4083.28p	O50/0037-0		x	x	x	x	x	x	x		x	x	x	x	x			
4083.69p	O50/0038-0		x	x														
4093.10s	O50/0034-0			x	x													
4124.60s	O50/0035-0			x														
4125.60s	O50/0036-0			x														
4142.32p	O50/0001-0			x	x													
4145.67p	O50/0002-0			x														
4148.62p	O50/0003-0			x														
4151.52p	O50/0004-0			x	x													
4154.42p	O50/0005-0			x														
4154.62p	O50/0006-0			x														
4156.68p	O50/0007-0			x														
4158.71p	O50/0008-0			x	x													
4160.64p	O50/0009-0			x														
4161.68p	O50/0010-0			x														

ANALYTICAL PROGRAM:				DATABASE CODE:		8330	O50													
NOCS 34/11-3						275	O87													
PROJECT: STATOIL NOCS 34/11-3																				
Scientist: KAB				Technician:		IB														
Client Contact: Richard Patience				Date:		19.06.97														

Sample Depth (metres) and Type c = Cuttings s = SWC p = Conv core/ plug m = Mud o = oil/gas	Fractions	HS & Occ Gas	Lithology Description	Leco TOC	RockEval	Therm Ext GC	Pyrolysis GC	Extraction	MPLC & Deasp	Iatroscan	Whole Oil GC	Sat GC Quant.	Aro GC	Sat GCMS Quant.	Aro GCMS	Bulk C Isotope	Gas Isotope Comp. IFE	Gas Volume Comp. IFE

Table Nos:			3	5	5	-	6	8a-e	8a-e	8f-g	13	9	9	11	12	10		
4162.61p	O50/0011-0			x														
4163.68p	O50/0012-0			x	x													
4164.70p	O50/0013-0			x														
4165.80p	O50/0014-0			x														
4166.63p	O50/0015-0			x														
4168.50p	O50/0016-0			x														
4171.55p	O50/0017-0			x	x													
4176.66p	O50/0018-0			x														
4178.55p	O50/0019-0			x														
4180.48p	O50/0020-0			x	x													
4182.49p	O50/0021-0			x														
4190.10s	O50/0022-0			x														
4191.10s	O50/0024-0			x	x													
4192.10s	O50/0023-0			x														
4480.10p	O50/0053-1	x		x														
4480.30p	O50/0054-1	x		x														
4044.50o	O87/0001							x	x	x	x	x	x	x	x			
4144.70o	O87/0002							x	x	x	x	x	x	x	x			
4044.60o	IFE																x	x
4144.50o	IFE																x	x
Total		0	14	13	51	11	1	3	5	5	2	5	5	5	5	5	2	2

NOCS 34/11-3

(Oil Data)

Table 8a-e MPLC Data (New Format)

Table 8f-g Iatroscan

Table 9a Quantitative Data Saturated Fraction

Table 9b Saturated Fraction Ratios

Table 9c Aromatic Fraction Ratios

Table 10a-b Carbon Isotope Composition Fractions

Table 11a-i GC-MS Data Saturated Fraction

Table 12a-e GC-MS Data Aromatic Fraction

Table 13a-c Whole Oil GC

Chromatograms Saturated Fraction

Chromatograms Aromatic Fraction

Whole Oil Chromatograms

GC-MS Fragmentograms

Table 8a: MPLC Bulk Composition: Weight of Oil and Fraction for NOCS 34/11-3, Oils

Well	Description	Whole oil (mg)	Light (mg)	Topped (mg)	Sat (mg)	Aro (mg)	Asph (mg)	NSO (mg)	HC (mg)	Non-HC (mg)	Sample
N 34/11-3T2	4044.5m	133.0	37.4	95.6	83.9	11.0	0.1	0.7	94.8	0.8	087/0001
N 34/11-3T2	4144.7m	150.8	35.7	115.1	103.6	10.3	0.1	1.2	113.9	1.2	087/0002

Table 8b: MPLC Bulk Composition: Comparison of topped oil (%) for NOCS 34/11-3, Oils

<u>Well</u>	<u>Description</u>	<u>Sat</u>	<u>Aro</u>	<u>Asph</u>	<u>NSO</u>	<u>Total</u>	<u>HC</u>	<u>Non-HC</u>	<u>Recov. MPLC</u>	<u>Recov. Asph</u>	<u>Sample</u>
N 34/11-3T2	4044.5m	87.73	11.46	0.10	0.70	100.00	99.19	0.81	0.99	0.90	O87/0001
N 34/11-3T2	4144.7m	89.97	8.95	0.09	0.99	100.00	98.92	1.08	0.41	0.85	O87/0002

Table 8c: MPLC Bulk Composition: Ratios in topped oil for NOCS 34/11-3, Oils

Well	Description	Sat	HC	Asp	Sample
		Aro	Non-HC	NSO	
N 34/11-3T2	4044.5m	7.65	123.00	0.15	O87/0001
N 34/11-3T2	4144.7m	10.06	91.50	0.09	O87/0002

Table 8f: Iatroscan TLC Bulk Composition: Absolute yields in mg of topped oil for NOCS 34/11-3, Oils

<u>Well</u>	<u>Description</u>	<u>Wh. oil</u>	<u>Topped</u>	<u>Sat HC</u>	<u>Aro HC</u>	<u>NSO</u>	<u>Asp</u>	<u>HC</u>	<u>Non-HC</u>	<u>Sample</u>
N 34/11-3T2	4044.5m	1.00	95.60	58.86	34.84	1.79	0.10	93.71	1.89	O87/0001
N 34/11-3T2	4144.7m	1.00	115.50	100.35	13.69	1.36	0.10	114.04	1.46	O87/0002

Table 8g: Iatroscan TLC Bulk Composition: Rel. percentages of sep. fractions for NOCS 34/11-3, Oils

Well	Description	Sat HC	Aro HC	NSO	Asp	Total	HC	Non-HC	Recov. Iatr.	Recov. Asp	Sample
N 34/11-3T2	4044.5m	61.57	36.45	1.88	0.10	100.00	98.02	1.98	0.65	0.90	O87/0001
N 34/11-3T2	4144.7m	86.88	11.85	1.18	0.09	100.00	98.74	1.26	0.79	0.85	O87/0002

Table 9A: Quantitative Analysis of Saturated Fraction for well NOCS 34/11-3, OILS

sample	nC15 mg/g sat	nC16 mg/g sat	iC18 mg/g sat	nC17 mg/g sat	Pr mg/g sat	nC18 mg/g sat	Ph mg/g sat	nC19 mg/g sat	nC20 mg/g sat	nC21 mg/g sat	nC22 mg/g sat	nC23 mg/g sat	nC24 mg/g sat	nC25 mg/g sat	nC26 mg/g sat	nC27 mg/g sat	nC28 mg/g sat	nC29 mg/g sat	nC30 mg/g sat	nC31 mg/g sat	nC32 mg/g sat	nC33 mg/g sat	nC34 mg/g sat
4044.50m oil	23.11	19.84	5.35	17.73	9.26	15.21	5.84	14.66	11.19	9.29	8.56	7.46	6.47	6.00	4.57	3.55	2.61	1.85	1.15	0.69	0.35	0.00	0.00
4144.70m oil	18.65	17.02	4.63	15.85	7.96	14.33	4.64	14.69	11.96	10.12	9.12	8.11	7.30	6.67	4.89	3.79	2.75	2.53	1.58	1.21	0.76	0.86	0.00

Table 9B: Saturated Hydrocarbon Ratios (peak area) for NOCS 34/11-3, Oils

<u>Well</u>	<u>Description</u>	<u>Pristane</u>	<u>Pristane</u>	<u>Pristane/nC17</u>	<u>Phytane</u>	<u>CPI1</u>	<u>nC17</u>	<u>Sample</u>
		<u>nC17</u>	<u>Phytane</u>	<u>Phytane/nC18</u>	<u>nC18</u>		<u>nC17+nC27</u>	
N 34/11-3T2	4044.5m	0.52	1.59	1.36	0.38	1.11	0.83	O87/0001
N 34/11-3T2	4144.7m	0.50	1.72	1.55	0.32	1.14	0.81	O87/0002

Table 9Ca: Aromatic Hydrocarbon Ratios (peak area) for NOCS 34/11-3, Oils

Well	Description	MNR	DMNR	BPhR	2/1MP	MPI1	MPI2	Rc	DBT/P	4/1MDBT	(3+2) /1MDBT	Sample
N 34/11-3T2	4044.5m	2.06	6.14	0.45	1.82	1.14	1.36	1.08	-	-	-	O87/0001
N 34/11-3T2	4144.7m	2.32	5.93	0.50	1.78	1.19	1.39	1.11	-	-	-	O87/0002

Table 9Cb: Aromatic Hydrocarbon Ratios (peak area) for NOCS 34/11-3, Oils

<u>Well</u>	<u>Description</u>	<u>F1</u>	<u>F2</u>	<u>Sample</u>
N 34/11-3T2	4044.5m	0.55	0.33	O87/0001
N 34/11-3T2	4144.7m	0.56	0.33	O87/0002

Table 10A: Tabulation of carbon isotope data on oils for NOCS 34/11-3, Oils

<u>Well</u>	<u>Descript.</u>	<u>Whole oil</u>	<u>Topped oil</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>NSO</u>	<u>Asphaltenes</u>	<u>Sample</u>
N 34/11-3T2	4044.5m	-	-28.94	-29.23	-26.92	-28.24	-27.40	O87/0001
N 34/11-3T2	4144.7m	-	-28.99	-29.23	-27.22	-27.84	-27.53	O87/0002

Table 10B: Tabulation of cv values from carbon isotope data for NOCS 34/11-3, Oils

<u>Well</u>	<u>Descript.</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>cv value</u>	<u>Sample</u>
N 34/11-3T2	4044.5m	-29.23	-26.92	2.54	O87/0001
N 34/11-3T2	4144.7m	-29.23	-27.22	1.87	O87/0002

Table 11a: Variation in Triterpane Distribution (peak height) SIR for NOCS 34/11-3, Oils

Well	Descript.	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Rat.10	Rat.11	Rat.12	Rat.13	Rat.14	Sample
N 34/11-3T2	4044.5m	0.33	0.25	0.49	0.94	0.48	1.76	-	-	-	2.44	1.00	0.48	-	-	O87/0001
N 34/11-3T2	4144.7m	0.21	0.17	0.35	1.29	0.56	1.97	-	-	-	2.67	1.00	0.56	-	-	O87/0002

List of Triterpane Distribution Ratios

Ratio 1: $27Tm / 27Ts$

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

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

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

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

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

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

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

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

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

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

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

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

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

Table 11b: Variation in Sterane Distribution (peak height) SIR for NOCS 34/11-3, Oils

<u>Well</u>	<u>Descript.</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Ratio5</u>	<u>Ratio6</u>	<u>Ratio7</u>	<u>Ratio8</u>	<u>Ratio9</u>	<u>Ratio10</u>	<u>Sample</u>
N 34/11-3T2	4044.5m	0.73	57.07	82.75	1.73	0.81	0.68	0.54	0.71	1.33	5.59	O87/0001
N 34/11-3T2	4144.7m	0.71	52.70	80.34	1.61	0.79	0.60	0.46	0.67	1.11	4.32	O87/0002

List of Sterane Distribution Ratios

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

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

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

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

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

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

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

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

Ratio 9: $29aaS / 29aaR$

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

Table 11c: Raw triterpane data (peak height) m/z 191 SIR for NOCS 34/11-3, Oils

Well	Descript.	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aß	25nor30aß	Sample
		29aß	29Ts	30d	29ßa	300	30aß	30ßa	30G	31aßS	
		31aßR	32aßS	32aßR	33aßS	33aßR	34aßS	34aßR	35aßS	35aßR	
N 34/11-3T2	4044.5m	8837.7 3091.7 0.0	8046.1 4103.3 0.0	3102.7 5787.8 0.0	2277.5 0.0 0.0	0.0 0.0 0.0	9586.8 3296.8 0.0	3124.1 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	O87/0001
N 34/11-3T2	4144.7m	4861.3 2400.5 0.0	4964.1 3063.4 0.0	2379.6 3666.5 0.0	0.0 0.0 0.0	0.0 0.0 0.0	4889.9 1861.8 0.0	1011.8 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	O87/0002

Table 11d: Raw sterane data (peak height) m/z 217 SIR for NOCS 34/11-3, Oils

Well	Descript.	21a	22a	27dBS	27dBR	27daR	27daS	28dBS	28dBR	28daR*	Sample
		29dBS*	28daS*	27aaR	29dBR	29daR	28aaS	29daS*	28BR		
		28aaR	29aaS	29BR	29BS	29aaR					
N 34/11-3T2	4044.5m	40962.7	7455.9	38981.8	27555.8	9709.4	11072.5	16980.4	10715.9	9229.1	087/0001
		19889.0	7039.4	14179.3	16812.0	6026.5	2699.3	7810.1	8552.0		
		1043.4	3847.2	8308.2	7860.3	2894.1					
N 34/11-3T2	4144.7m	29022.2	5232.5	30924.2	22353.5	7738.2	8974.1	13629.4	9625.7	8069.7	087/0002
		16300.2	6977.7	12903.1	14511.5	5385.8	3042.9	7276.5	8590.8		
		2337.6	3932.1	7876.1	7369.7	3528.5					

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

Table 11e: Raw sterane data (peak height) m/z 218 SIR for NOCS 34/11-3, Oils

Well	Descript.	27 β BR	27 β BS	28 β BR	28 β BS	29 β BR	29 β BS	30 β BR	30 β BS	Sample
N 34/11-3T2	4044.5m	10694.2	8732.2	8542.7	10149.2	10351.2	10322.2	2840.1	2651.7	087/0001
N 34/11-3T2	4144.7m	9673.9	8074.0	7375.2	9072.1	9039.9	9543.2	2873.8	2490.0	087/0002

Table 11f: Raw triterpane data (peak height) m/z 177 SIR for NOCS 34/11-3, Oils

<u>Well</u>	<u>Descript.</u>	<u>25nor28aß</u>	<u>25nor30aß</u>	<u>Sample</u>
N 34/11-3T2	4044.5m	0.0	0.0	O87/0001
N 34/11-3T2	4144.7m	0.0	0.0	O87/0002

Table 11g: Amount of triterpanes (ppb) m/z 191 SIR for NOCS 34/11-3, Oils

Well	Descript.	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aß	25nor30aß	Sample
		29aß	29Ts	30d	29ßa	300	30aß	30ßa	30G	31aßS	
		31aßR	32aßS	32aßR	33aßS	33aßR	34aßS	34aßR	35aßS	35aßR	
N 34/11-3T2	4044.5m	7860.6	7156.5	2759.7	2025.8	0.0	8526.9	2778.7	0.0	0.0	O87/0001
		2749.9	3649.7	5147.9	0.0	0.0	2932.3	0.0	0.0	0.0	
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
N 34/11-3T2	4144.7m	2709.4	2766.7	1326.2	0.0	0.0	2725.3	563.9	0.0	0.0	O87/0002
		1337.9	1707.4	2043.5	0.0	0.0	1037.6	0.0	0.0	0.0	
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Table 11h: Amount of steranes (ppb) m/z 217 SIR for NOCS 34/11-3, Oils

Well	Descript.	21a	22a	27dBS	27dBR	27daR	27daS	28dBS	28dBR	28daR*	Sample
		29dBS*	28daS*	27aaR	29dBR	29daR	28aaS	29daS*	28BBS		
		28aaR	29aaS	29BBR	29BBS	29aaR					
N 34/11-3T2	4044.5m	36434.0	6631.6	34672.1	24509.4	8636.0	9848.4	15103.2	9531.2	8208.7	087/0001
		17690.2	6261.1	12611.7	14953.4	5360.2	2400.9	6946.6	7606.5		
		928.1	3421.9	7389.7	6991.3	2574.1					
N 34/11-3T2	4144.7m	16175.3	2916.3	17235.4	12458.5	4312.8	5001.6	7596.2	5364.8	4497.6	087/0002
		9084.8	3889.0	7191.5	8087.8	3001.7	1695.9	4055.5	4788.0		
		1302.8	2191.5	4389.7	4107.4	1966.6					

* 28daR coel with 27aaS, 29dBS coel with 27BBR, 28daS coel with 27BBS, 29daS coel with 28BBS

Table 11i: Amount of standard and weight of sample for NOCS 34/11-3, Oils

<u>Well</u>	<u>Descript.</u>	<u>Standard</u>	<u>Amount</u>	<u>Weight</u>	<u>Sample</u>
N 34/11-3T2	4044.5m	20986.9	0.700	37.5	O87/0001
N 34/11-3T2	4144.7m	69390.2	0.700	18.1	O87/0002

Table 12a: Variation in Triaromatic Sterane Distribution (peak height) for NOCS 34/11-3, Oils

<u>Well</u>	<u>Descript.</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Ratio5</u>	<u>Sample</u>
N 34/11-3T2	4044.5m	1.00	1.00	1.00	1.00	1.00	O87/0001
N 34/11-3T2	4144.7m	1.00	1.00	1.00	1.00	1.00	O87/0002

Ratio1: $a1 / a1 + g1$

Ratio2: $b1 / b1 + g1$

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

Ratio4: $a1 / a1 + e1 + f1 + g1$

Ratio5: $a1 / a1 + d1$

Table 12b: Variation in Monoaromatic Sterane Distribution (peak height) for NOCS 34/11-3, Oils

<u>Well</u>	<u>Descript.</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Sample</u>
N 34/11-3T2	4044.5m	0.67	0.47	0.47	0.32	087/0001
N 34/11-3T2	4144.7m	0.74	0.54	0.53	0.39	087/0002

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

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

Table 12c: Aromatisation of Steranes (peak height) for NOCS 34/11-3, Oils

<u>Well</u>	<u>Descript.</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Sample</u>
N 34/11-3T2	4044.5m	1.00	-	087/0001
N 34/11-3T2	4144.7m	1.00	-	087/0002

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

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

Table 12d: Raw triaromatic sterane data (peak height) m/z 231 for NOCS 34/11-3, Oils

Well	Descript.	a1	b1	c1	d1	e1	f1	g1	Sample
N 34/11-3T2	4044.5m	5293.0	2560.5	0.0	0.0	0.0	0.0	0.0	O87/0001
N 34/11-3T2	4144.7m	4470.6	1944.0	0.0	0.0	0.0	0.0	0.0	O87/0002

Table 12e: Raw monoaromatic sterane data (peak height) m/z 253 for NOCS 34/11-3, Oils

Well	Descript.	A1	B1	C1	D1	E1	F1	G1	H1	I1	Sample
N 34/11-3T2	4044.5m	1503.9	658.2	856.9	0.0	743.5	479.5	951.8	1311.2	187.9	087/0001
N 34/11-3T2	4144.7m	1769.4	724.4	663.9	0.0	621.0	518.8	923.8	1017.5	227.4	087/0002

Table 13A: Light Hydrocarbons from Whole Oil GC for NOCS 34/11-3, Oils

Well	Description	iC4	nC4	iC5	nC5	2,2DMC4	2,3DMC4	2MC5	3MC5	nC6	MCyC5	Benz	Sample
N 34/11-3T2	4044.5m	-	-	-	-	0.06	-	-	-	2.84	1.58	1.90	O87/0001
N 34/11-3T2	4144.7m	-	-	-	-	0.11	-	-	-	4.27	2.17	3.06	O87/0002

Table 13B: Light Hydrocarbons from Whole Oil GC for NOCS 34/11-3, Oils

Well	Description	CyC6	2MC6	3MC6	1,3ci- DMCyC5	1,3tr- DMCyC5	1,2tr- DMCyC5	nC7	MCyC6	Tol	nC8	p/m- Xylene	Sample
N 34/11-3T2	4044.5m	3.12	2.31	1.69	0.49	0.46	4.15	5.43	7.92	8.49	6.66	8.61	O87/0001
N 34/11-3T2	4144.7m	3.74	2.74	1.98	0.56	0.54	1.22	5.83	7.91	7.26	6.06	6.68	O87/0002

Table 13C: Thompson's indices for NOCS 34/11-3, Oils

Well	Description	A	B	X	W	C	I	F	H	U	R	S	Sample
N 34/11-3T2	4044.5m	0.67	1.56	1.29	6.09	0.75	0.78	0.69	21.24	1.97	2.35	47.33	O87/0001
N 34/11-3T2	4144.7m	0.72	1.25	1.10	8.18	0.87	2.03	0.74	23.78	1.72	2.13	38.82	O87/0002

THOMPSON'S INDICES

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

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

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

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

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

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

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

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

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

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

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

NOCS 34/11-3

(Rock Data)

Table 3	Lithology Description
Table 5a-b	Rock-Eval Data
Table 6	Pyrolysis GC Data
Table 8a-e	MPLC Data (New Format)
Table 8f-g	Iatroscan
Table 9a	Quantitative Data Saturated Fraction
Table 9b	Saturated Fraction Ratios
Table 9c	Aromatic Fraction Ratios
Table 10a-b	Carbon Isotope Composition Fractions
Table 11a-i	GC-MS Data Saturated Fraction
Table 12a-e	GC-MS Data Aromatic Fraction

Thermal Extract Chromatograms

Chromatograms Saturated Fraction

Chromatograms Aromatic Fraction

GC-MS Fragmentograms

Table 3 : Lithology description for well NOCS 34/11-3

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
3960.00				0041
	2.87	70 Sh/Clst: brn blk 30 Ca : w to lt gy, chk		0041-1L 0041-2L
3966.00				0042
	4.05	100 Sh/Clst: brn blk		0042-1L
3972.00				0043
	4.34	100 Sh/Clst: brn blk		0043-1L
3978.00				0044
	4.43	100 Sh/Clst: brn blk		0044-1L
3984.00				0045
	5.34	100 Sh/Clst: brn blk		0045-1L
3990.00				0046
	6.19	60 S/Sst : w, y to or, f, l 40 Sh/Clst: brn blk		0046-2L 0046-1L
3996.00				0047
	6.29	80 S/Sst : w, y to or, f, l 20 Sh/Clst: brn blk		0047-2L 0047-1L
4002.00				0048
	6.33	90 S/Sst : w, y to or, f, l 10 Sh/Clst: brn blk		0048-2L 0048-1L

Table 3 : Lithology description for well NOCS 34/11-3

Depth unit of measure: m

Depth	Type		Trb	Sample
Int Cvd	TOC%	% Lithology description		
4008.00				0049
	6.48	75 S/Sst : w, y to or, f, l 25 Sh/Clst: brn blk		0049-2L 0049-1L
4014.00				0050
	7.48	80 S/Sst : w, y to or, f, l 20 Sh/Clst: brn blk		0050-2L 0050-1L
4024.10	swc			0051
	2.66	100 Sh/Clst: ol blk		0051-1L
4035.00				0052
		60 S/Sst : w, y to or, f, l 40 Cont : Mica-ad, ns tr Sh/Clst: brn blk		0052-2L 0052-3L 0052-1L
4480.10	ccp			0053
		100 S/Sst : lt brn gy, slt, crs, ang		0053-1L
4480.30	ccp			0054
		100 S/Sst : lt brn gy, carb, slt, crs, ang		0054-1L

Table 5A: Rock-Eval table for well NOCS 34/11-3

Depth unit of measure: m

Depth	Typ	Form	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
2027.38	ccp		bulk	0.05	0.35	0.19	1.84	-	-	-	0.4	0.13	456	0025-0B
2028.58	ccp		bulk	0.08	0.43	0.21	2.05	-	-	-	0.5	0.16	417	0026-0B
2029.45	ccp		bulk	0.07	0.45	0.17	2.65	-	-	-	0.5	0.13	422	0027-0B
2030.65	ccp		bulk	0.21	0.68	0.18	3.78	-	-	-	0.9	0.24	408	0028-0B
2031.75	ccp		bulk	0.14	0.88	0.65	1.35	-	-	-	1.0	0.14	421	0029-0B
2032.44	ccp		bulk	0.16	1.25	0.37	3.38	-	-	-	1.4	0.11	426	0030-0B
2033.67	ccp		bulk	0.23	0.90	0.54	1.67	-	-	-	1.1	0.20	412	0031-0B
2034.31	ccp		bulk	0.86	0.47	0.27	1.74	-	-	-	1.3	0.65	348	0032-0B
2035.11	ccp		bulk	0.89	0.61	0.19	3.21	-	-	-	1.5	0.59	371	0033-0B
3960.00	cut		Sh/Clst: brn blk	5.40	7.64	2.31	3.31	2.87	266	80	13.0	0.41	402	0041-1L
3966.00	cut		Sh/Clst: brn blk	6.99	9.16	2.67	3.43	4.05	226	66	16.1	0.43	437	0042-1L
3972.00	cut		Sh/Clst: brn blk	7.06	9.24	2.81	3.29	4.34	213	65	16.3	0.43	441	0043-1L
3978.00	cut		Sh/Clst: brn blk	7.07	8.82	2.69	3.28	4.43	199	61	15.9	0.44	438	0044-1L
3984.00	cut		Sh/Clst: brn blk	8.79	8.46	2.51	3.37	5.34	158	47	17.2	0.51	436	0045-1L
3990.00	cut		Sh/Clst: brn blk	4.70	7.83	1.36	5.76	6.19	126	22	12.5	0.38	443	0046-1L
3996.00	cut		Sh/Clst: brn blk	4.67	8.12	1.35	6.01	6.29	129	21	12.8	0.37	445	0047-1L

Depth unit of measure: m

Depth	Typ	Form	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
4002.00	cut		Sh/Clst: brn blk	4.55	7.84	1.53	5.12	6.33	124	24	12.4	0.37	444	0048-1L
4008.00	cut		Sh/Clst: brn blk	3.46	7.60	1.30	5.85	6.48	117	20	11.1	0.31	449	0049-1L
4014.00	cut		Sh/Clst: brn blk	3.78	8.23	1.14	7.22	7.48	110	15	12.0	0.31	446	0050-1L
4024.10	swc		Sh/Clst: ol blk	0.80	1.65	0.97	1.70	2.66	62	36	2.5	0.33	451	0051-1L
4083.28	ccp		bulk	11.97	57.10	1.05	54.38	47.20	121	2	69.1	0.17	463	0037-0B
4083.69	ccp		bulk	3.70	31.49	0.70	44.99	19.15	164	4	35.2	0.11	464	0038-0B
4093.10	swc		bulk	4.88	0.83	0.19	4.37	-	-	-	5.7	0.85	396	0034-0B
4124.60	swc		bulk	3.60	0.73	0.31	2.35	-	-	-	4.3	0.83	393	0035-0B
4125.60	swc		bulk	11.03	28.68	0.44	65.18	-	-	-	39.7	0.28	452	0036-0B
4142.32	ccp		bulk	2.77	2.39	0.46	5.20	-	-	-	5.2	0.54	357	0001-0B
4145.67	ccp		bulk	1.20	0.42	0.24	1.75	-	-	-	1.6	0.74	428	0002-0B
4148.62	ccp		bulk	2.03	2.23	0.55	4.05	-	-	-	4.3	0.48	364	0003-0B
4151.52	ccp		bulk	2.67	0.45	0.39	1.15	-	-	-	3.1	0.86	369	0004-0B
4154.42	ccp		bulk	1.87	0.87	0.28	3.11	-	-	-	2.7	0.68	444	0005-0B
4154.62	ccp		bulk	2.97	2.19	1.42	1.54	-	-	-	5.2	0.58	338	0006-0B
4156.68	ccp		bulk	2.11	0.90	0.60	1.50	-	-	-	3.0	0.70	374	0007-0B

Table 5A: Rock-Eval table for well NOCS 34/11-3

Depth unit of measure: m

Depth	Typ	Form	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
4158.71	ccp		bulk	2.04	0.50	0.25	2.00	-	-	-	2.5	0.80	394	0008-0B
4160.64	ccp		bulk	1.89	0.57	0.45	1.27	-	-	-	2.5	0.77	351	0009-0B
4161.68	ccp		bulk	1.88	0.46	0.37	1.24	-	-	-	2.3	0.80	356	0010-0B
4162.61	ccp		bulk	2.18	1.08	0.46	2.35	-	-	-	3.3	0.67	351	0011-0B
4163.68	ccp		bulk	2.50	1.25	0.62	2.02	-	-	-	3.7	0.67	341	0012-0B
4164.70	ccp		bulk	1.86	0.68	0.39	1.74	-	-	-	2.5	0.73	380	0013-0B
4165.80	ccp		bulk	2.16	0.72	0.38	1.89	-	-	-	2.9	0.75	341	0014-0B
4166.63	ccp		bulk	3.31	2.77	0.69	4.01	-	-	-	6.1	0.54	344	0015-0B
4168.50	ccp		bulk	2.27	1.20	0.71	1.69	-	-	-	3.5	0.65	332	0016-0B
4171.55	ccp		bulk	3.19	0.47	0.25	1.88	-	-	-	3.7	0.87	352	0017-0B
4176.66	ccp		bulk	3.06	1.26	0.61	2.07	-	-	-	4.3	0.71	335	0018-0B
4178.55	ccp		bulk	3.77	0.80	0.25	3.20	-	-	-	4.6	0.82	371	0019-0B
4180.48	ccp		bulk	2.88	0.87	0.38	2.29	-	-	-	3.8	0.77	352	0020-0B
4182.49	ccp		bulk	3.38	1.15	0.47	2.45	-	-	-	4.5	0.75	342	0021-0B
4190.10	swc		bulk	0.81	0.31	0.31	1.00	-	-	-	1.1	0.72	384	0022-0B
4191.10	swc		bulk	0.66	0.23	0.36	0.64	-	-	-	0.9	0.74	378	0023-0B

Table 5A: Rock-Eval table for well NOCS 34/11-3

Depth unit of measure: m

Depth	Typ	Form	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
4192.10	swc		bulk	1.30	0.41	0.26	1.58	-	-	-	1.7	0.76	382	0024-0B
4480.10	ccp		S/Sst : lt brn gy	0.05	0.19	0.35	0.54	-	-	-	0.2	0.21	518	0053-1L
4480.30	ccp		S/Sst : lt brn gy	0.14	0.45	0.46	0.98	-	-	-	0.6	0.24	561	0054-1L

Table 5B: Rock-Eval table for well RE,STD

Depth unit of measure: m

Depth	Typ	Form	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1.00	std		bulk	0.47	17.94	1.90	9.44	-	-	-	18.4	0.03	423	0107-0B
2.00	std		bulk	0.47	17.64	2.04	8.65	-	-	-	18.1	0.03	418	0108-0B
3.00	std		bulk	0.46	19.32	2.10	9.20	-	-	-	19.8	0.02	420	0126-0B

Table 6 : Pyrolysis GC Data (S2 peak) as Percentage of Total Area for Well NOCS 34/11-3

Depth unit of measure: m

Depth	Typ	Lithology	C1	C2-C5	C6-C14	C15+	S2 from Rock-Eval	Sample
4083.28	ccp	bulk	24.09	21.11	28.75	26.05	-	0037-0B

Table 8 a: MPLC Bulk Composition: Weight of EOM and Fraction for well NOCS 34/11-3

Depth unit of measure: m

Depth	Typ	Lithology	Rock Extracted (g)	EOM (mg)	Sat (mg)	Aro (mg)	Asph (mg)	NSO (mg)	HC (mg)	Non-HC (mg)	TOC (e) (%)	Sample
3966.00	cut	Sh/Clst: br	9.9	177.4	31.7	19.7	5.7	120.4	51.4	126.0	3.98	0042-1L
3984.00	cut	Sh/Clst: br	9.3	166.8	51.1	24.9	6.3	84.5	76.1	90.7	5.12	0045-1L
4083.28	ccp	bulk	4.8	30.5	14.9	10.1	4.2	1.3	25.0	5.5	50.70	0037-0B

Table 8 b: MPLC Bulk Composition: Concentration of EOM and Fraction (wt ppm rock) for well NOCS 34/11-3

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
3966.00	cut	Sh/Clst: br	17991	3211	1998	575	12205	5210	12780	0042-1L
3984.00	cut	Sh/Clst: br	17916	5493	2677	672	9073	8170	9745	0045-1L
4083.28	ccp	bulk	6380	3123	2112	868	276	5236	1144	0037-0B

Table 8 c: MPLC Bulk Composition: Concentration of EOM and Fraction (mg/g TOC(e)) for well NOCS 34/11-3

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
3966.00	cut	Sh/Clst: br	452.06	80.70	50.23	14.45	306.68	130.93	321.13	0042-1L
3984.00	cut	Sh/Clst: br	349.93	107.29	52.30	13.13	177.21	159.59	190.34	0045-1L
4083.28	ccp	bulk	12.59	6.16	4.17	1.71	0.54	10.33	2.26	0037-0B

Table 8 d: MPLC Bulk Composition: Material extracted from the rock (%) for well NOCS 34/11-3

Depth unit of measure: m

Depth	Typ	Lithology	Sat	Aro	Asph	NSO	Total	HC	Non-HC	Recov. MPLC	Recov. Asph	Sample
3966.00	cut	Sh/Clst: br	17.85	11.11	3.20	67.84	100.00	28.96	71.04	0.37	2.48	0042-1L
3984.00	cut	Sh/Clst: br	30.66	14.95	3.75	50.64	100.00	45.61	54.39	0.86	0.99	0045-1L
4083.28	ccp	bulk	48.95	33.11	13.61	4.33	100.00	82.07	17.93	0.98	1.00	0037-0B

Table 8 e: MPLC Bulk Composition: Ratios for well NOCS 34/11-3

Depth unit of measure: m

Depth	Typ	Lithology	Sat	HC	Asp	Sample
			Aro	Non-HC	NSO	
3966.00	cut	Sh/Clst: br	1.61	0.41	0.05	0042-1L
3984.00	cut	Sh/Clst: br	2.05	0.84	0.07	0045-1L
4083.28	ccp	bulk	1.48	4.58	3.14	0037-0B

Table 8f: Iatroscan TLC Bulk Composition: Absolute yields in mg of EOM for well NOCS 34/11-3

Depth unit of measure: m

<u>Depth</u>	<u>Typ</u>	<u>Lithology</u>	<u>Rock ex</u>	<u>EOM</u>	<u>Sat HC</u>	<u>Aro HC</u>	<u>NSO</u>	<u>Asp</u>	<u>HC</u>	<u>Non-HC</u>	<u>Sample</u>
3966.00	cut	Sh/Clst	9.86	177.40	63.75	24.40	81.85	7.40	88.16	89.24	0042-1L
3984.00	cut	Sh/Clst	9.31	166.80	74.16	24.92	61.47	6.26	99.07	67.73	0045-1L
4083.28	ccp	bulk	4.78	30.50	17.98	6.48	1.89	4.15	24.46	6.04	0037-0B

Table 8g: Iatroscan TLC Bulk Composition: Rel. percentages of sep. fractions for well NOCS 34/11-3

Depth unit of measure: m

<u>Depth</u>	<u>Typ</u>	<u>Lithology</u>	<u>Sat HC</u>	<u>Aro HC</u>	<u>NSO</u>	<u>Asp</u>	<u>Total</u>	<u>HC</u>	<u>Non-HC</u>	<u>Recov. Iatr.</u>	<u>Recov. Asp</u>	<u>Sample</u>
3966.00	cut	Sh/Clst	35.94	13.76	46.14	4.17	100.00	49.69	50.31	0.43	0.98	0042-1L
3984.00	cut	Sh/Clst	44.46	14.94	36.85	3.75	100.00	59.40	40.60	0.50	0.99	0045-1L
4083.28	ccp	bulk	58.94	21.25	6.19	13.62	100.00	80.19	19.81	0.56	1.00	0037-0B

Table 9A: Quantitative Analysis of Saturated Fraction for well NOCS 34/11-3.

sample	nC15 mg/g sat	nC16 mg/g sat	iC18 mg/g sat	nC17 mg/g sat	Pr mg/g sat	nC18 mg/g sat	Ph mg/g sat	nC19 mg/g sat	nC20 mg/g sat	nC21 mg/g sat	nC22 mg/g sat	nC23 mg/g sat	nC24 mg/g sat	nC25 mg/g sat	nC26 mg/g sat	nC27 mg/g sat	nC28 mg/g sat	nC29 mg/g sat	nC30 mg/g sat	nC31 mg/g sat	nC32 mg/g sat	nC33 mg/g sat	nC34 mg/g sat
3966.00m	12.53	11.80	3.54	11.71	6.43	10.35	4.24	9.34	7.95	6.25	5.46	4.49	4.04	3.57	2.42	1.90	1.31	1.20	0.93	0.72	0.51	0.63	0.00
3984.00m	19.48	17.02	5.32	16.14	9.05	13.45	5.36	13.60	10.86	8.29	7.31	6.04	5.16	4.83	3.33	2.55	1.87	1.81	1.28	0.99	0.68	0.59	0.66
4083.28m	20.78	21.39	4.38	22.00	14.30	22.89	4.47	23.01	20.88	19.31	18.50	17.04	14.99	13.11	9.36	7.60	5.22	4.13	2.36	1.86	1.01	3.18	1.99

Table 9B: Saturated Hydrocarbon Ratios (peak area) for well NOCS 34/11-3

Depth unit of measure: m

Depth	Typ	Lithology	<u>Pristane</u>	<u>Pristane</u>	<u>Pristane/nC17</u>	<u>Phytane</u>	<u>nC17</u>	Sample	
			<u>nC17</u>	<u>Phytane</u>	<u>Phytane/nC18</u>	<u>nC18</u>	<u>CPI1</u>		<u>nC17+nC27</u>
3966.00	cut	Sh/Clst: brn blk	0.55	1.52	1.34	0.41	1.14	0.86	0042-1L
3984.00	cut	Sh/Clst: brn blk	0.56	1.69	1.41	0.40	1.15	0.86	0045-1L
4083.28	ccp	bulk	0.65	3.20	3.33	0.20	1.16	0.74	0037-0B

Depth unit of measure: m

Depth	Typ	Lithology	MNR	DMNR	BPhR	2/1MP	MPI1	MPI2	Rc	DBT/P	4/1MDBT	(3+2) /1MDBT	Sample
3966.00	cut	Sh/Clst: brn blk	1.05	2.11	0.14	0.95	0.70	0.82	0.82	-	-	-	0042-1L
3984.00	cut	Sh/Clst: brn blk	1.40	2.61	0.26	0.85	0.62	0.73	0.77	-	-	-	0045-1L
4083.28	ccp	bulk	2.07	-	0.54	1.65	0.98	1.20	0.99	0.20	54.26	18.54	0037-0B

Table 9Cb: Aromatic Hydrocarbon Ratios (peak area) for well NOCS 34/11-3

Depth unit of measure: m

<u>Depth</u>	<u>Typ</u>	<u>Lithology</u>	<u>F1</u>	<u>F2</u>	<u>Sample</u>
3966.00	cut	Sh/Clst: brn blk	0.42	0.25	0042-1L
3984.00	cut	Sh/Clst: brn blk	0.40	0.23	0045-1L
4083.28	ccp	bulk	0.55	0.34	0037-0B

Table 10A: Tabulation of carbon isotope data for EOM/EOM - fractions for well NOCS 34/11-3

Depth unit of measure: m

<u>Depth</u>	<u>Typ</u>	<u>Lithology</u>	<u>EOM</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>NSO</u>	<u>Asphaltenes</u>	<u>Kerogen</u>	<u>Sample</u>
3966.00	cut	Sh/Clst	-29.62	-30.48	-29.11	-29.12	-29.39	-	0042-1
3984.00	cut	Sh/Clst	-29.38	-29.97	-27.66	-29.06	-28.73	-	0045-1
4083.28	ccp	bulk	-25.21	-26.69	-24.54	-25.28	-24.91	-	0037-0

Table 10B: Tabulation of cv values from carbon isotope data for well NOCS 34/11-3

Depth unit of measure: m

<u>Depth</u>	<u>Typ</u>	<u>Lithology</u>	<u>Saturated</u>	<u>Aromatic</u>	<u>cv value</u>	<u>Interpretation</u>	<u>Sample</u>
3966.00	cut	Sh/Clst	-30.48	-29.11	0.84	Terrigenous	0042-1
3984.00	cut	Sh/Clst	-29.97	-27.66	2.77	Terrigenous	0045-1
4083.28	ccp	bulk	-26.69	-24.54	1.40	Terrigenous	0037-0

Depth unit of measure: m

Depth	Lithology	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Rat.10	Rat.11	Rat.12	Rat.13	Rat.14	Sample
3966.00	Sh/Clst	0.38	0.28	0.26	0.39	0.28	0.64	-	-	-	0.30	0.89	0.29	0.14	62.41	0042-1
3984.00	Sh/Clst	0.37	0.27	0.39	0.29	0.23	1.26	-	-	-	0.63	0.92	0.25	0.12	67.74	0045-1
4083.28	bulk	0.43	0.30	0.58	0.63	0.38	3.41	-	-	-	0.16	1.00	0.58	0.46	48.87	0037-0

List of Triterpane Distribution Ratios

Ratio 1: $27Tm / 27Ts$

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

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

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

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

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

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

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

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

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

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

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

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

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

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Ratio5</u>	<u>Ratio6</u>	<u>Ratio7</u>	<u>Ratio8</u>	<u>Ratio9</u>	<u>Ratio10</u>	<u>Sample</u>
3966.00	Sh/Clst	0.73	40.43	72.43	1.73	0.76	0.65	0.49	0.57	0.68	2.20	0042-1
3984.00	Sh/Clst	0.80	55.17	76.19	1.79	0.74	0.68	0.52	0.62	1.23	3.57	0045-1
4083.28	bulk	0.29	42.35	79.93	0.29	0.82	0.19	0.15	0.67	0.73	3.45	0037-0

List of Sterane Distribution Ratios

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

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

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

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

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

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

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

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

Ratio 9: $29aaS / 29aaR$

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

Depth unit of measure: m

Depth	Lithology	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aß	25nor30aß	Sample
		29aß	29Ts	30d	29ßa	300	30aß	30ßa	30G	31aßS	
		31aßR	32aßS	32aßR	33aßS	33aßR	34aßS	34aßR	35aßS	35aßR	
3966.00	Sh/Clst	12389.2 12216.9 7733.1	9642.7 14420.2 10403.4	4789.6 20364.5 6265.6	5063.4 2035.0 5121.9	3507.1 0.0 3735.9	32382.3 31674.4 3835.0	12323.7 3955.4 2718.6	0.0 0.0 2491.2	0.0 11326.8 1901.5	0042-1
3984.00	Sh/Clst	8579.5 3008.0 2578.0	6410.0 7455.8 4857.0	3314.6 12911.8 2312.9	2693.0 667.9 2382.9	2305.9 0.0 1622.0	19744.2 10253.9 1936.3	7313.9 952.4 1342.6	0.0 0.0 1231.3	0.0 4386.1 952.3	0045-1
4083.28	bulk	2351.3 4507.2 1509.8	1171.3 10576.8 1907.7	0.0 24559.5 1995.6	7298.4 5388.7 817.9	0.0 0.0 1034.7	23331.7 7205.2 534.2	10002.4 0.0 430.9	0.0 0.0 408.5	1672.8 2052.7 235.2	0037-0

Depth unit of measure: m

Depth	Lithology	21a	22a	27d β S	27d β R	27daR	27daS	28d β S	28d β R	28daR*	Sample
		29d β S*	28daS*	27aaR	29d β R	29daR	28aaS	29daS*	28 β β S		
		28aaR	29aaS	29 β β R	29 β β S	29aaR					
3966.00	Sh/Clst	32208.3	8511.2	39524.2	24578.2	11513.5	8860.8	17097.1	10762.3	8664.1	0042-1
		19422.1	6557.8	14761.0	14813.8	4765.7	3000.6	9767.3	6126.8		
		4325.6	3911.7	7305.6	5403.8	5764.6					
3984.00	Sh/Clst	23722.5	5600.7	30306.0	19450.9	8944.1	6838.4	14400.5	8914.8	5521.5	0045-1
		14958.4	5071.1	7565.1	11348.1	3699.4	1699.9	6696.9	3788.6		
		1058.3	2927.2	4881.0	3609.1	2378.4					
4083.28	bulk	4793.4	2109.2	3341.4	3432.0	1025.4	1760.6	4054.1	3395.0	4505.0	0037-0
		11224.3	2580.0	8248.2	12680.7	3340.6	1778.4	5797.0	5668.7		
		1016.6	4077.8	9645.2	9523.1	5550.4					

* 28daR coel with 27aaS, 29d β S coel with 27 β β R, 28daS coel with 27 β β S, 29daS coel with 28 β β R

Depth unit of measure: m

Depth	Lithology	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aß	25nor30aß	Sample
		29aß	29Ts	30d	29ßa	300	30aß	30ßa	30G	31aßS	
		31aßR	32aßS	32aßR	33aßS	33aßR	34aßS	34aßR	35aßS	35aßR	
3966.00	Sh/Clst	28177.0 27785.1 17587.6	21930.6 32796.0 23660.6	10893.0 46315.3 14250.0	11515.7 4628.2 11648.7	7976.4 0.0 8496.7	73647.5 72037.7 8722.0	28027.9 8995.9 6183.0	0.0 0.0 5665.8	0.0 25760.7 4324.7	0042-1
3984.00	Sh/Clst	17959.8 6296.7 5396.7	13418.3 15607.6 10167.4	6938.5 27028.8 4841.6	5637.5 1398.0 4988.2	4827.0 0.0 3395.5	41331.4 21464.9 4053.3	15310.6 1993.7 2810.6	0.0 0.0 2577.6	0.0 9181.6 1993.5	0045-1
4083.28	bulk	2674.2 5126.2 1717.1	1332.2 12029.5 2169.7	0.0 27932.5 2269.6	8300.7 6128.8 930.3	0.0 0.0 1176.8	26536.0 8194.8 607.5	11376.2 0.0 490.1	0.0 0.0 464.6	1902.5 2334.6 267.5	0037-0

Depth unit of measure: m

Depth	Lithology	21a	22a	27dBS	27dBR	27daR	27daS	28dBS	28dBR	28daR*	Sample
		29dBS*	28daS*	27aaR	29dBR	29daR	28aaS	29daS*	28BS		
		28aaR	29aaS	29BR	29BS	29aaR					
3966.00	Sh/Clst	73251.9	19357.2	89890.5	55898.6	26185.4	20152.4	38884.2	24476.9	19705.0	0042-1
		44172.0	14914.5	33571.2	33691.4	10838.6	6824.3	22214.0	13934.3		
		9837.8	8896.4	16615.2	12289.9	13110.5					
3984.00	Sh/Clst	49659.4	11724.2	63440.9	40717.4	18723.1	14315.1	30145.2	18661.7	11558.5	0045-1
		31313.2	10615.5	15836.4	23755.4	7744.1	3558.5	14018.9	7930.9		
		2215.3	6127.7	10217.6	7555.1	4978.8					
4083.28	bulk	5451.7	2398.9	3800.3	3903.4	1166.3	2002.4	4610.9	3861.2	5123.7	0037-0
		12765.9	2934.3	9381.0	14422.3	3799.4	2022.6	6593.1	6447.2		
		1156.2	4637.8	10969.8	10831.0	6312.6					

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

Depth unit of measure: m

Depth	Lithology	27BBR	27BBS	28BBR	28BBS	29BBR	29BBS	30BBR	30BBS	Sample
3966.00	Sh/Clst	9753.0	8137.5	8848.8	8381.1	8176.8	7568.0	2928.5	2772.8	0042-1
3984.00	Sh/Clst	6518.3	5450.9	5542.4	5337.0	5527.8	5214.7	2053.3	1991.1	0045-1
4083.28	bulk	3770.4	2271.3	5069.0	6614.1	13012.8	13226.7	100.4	107.4	0037-0

Table 11h: Raw triterpane data (peak height) m/z 177 SIR for Well NOCS 34/11-3

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>25nor28aß</u>	<u>25nor30aß</u>	<u>Sample</u>
3966.00	Sh/Clst	0.0	0.0	0042-1
3984.00	Sh/Clst	0.0	0.0	0045-1
4083.28	bulk	0.0	0.0	0037-0

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Standard</u>	<u>Amount</u>	<u>Weight</u>	<u>Sample</u>
3966.00	Sh/Clst	68396.6	0.700	4.5	0042-1
3984.00	Sh/Clst	16636.5	0.700	20.1	0045-1
4083.28	bulk	90510.5	0.700	6.8	0037-0

Table 12a: Variation in Triaromatic Sterane Distribution (peak height) for Well NOCS 34/11-3

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Ratio5</u>	<u>Sample</u>
3966.00	Sh/Clst	0.87	0.78	0.64	0.70	0.76	0042-1
3984.00	Sh/Clst	0.95	0.89	0.81	0.85	0.89	0045-1
4083.28	bulk	-	-	-	-	-	0037-0

Ratio1: $a1 / a1 + g1$

Ratio2: $b1 / b1 + g1$

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

Ratio4: $a1 / a1 + e1 + f1 + g1$

Ratio5: $a1 / a1 + d1$

Table 12b: Variation in Monoaromatic Sterane Distribution (peak height) for Well NOCS 34/11-3

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Sample</u>
3966.00	Sh/Clst	0.76	0.65	0.61	0.54	0042-1
3984.00	Sh/Clst	0.80	0.68	0.68	0.59	0045-1
4083.28	bulk	-	-	-	-	0037-0

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

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

Table 12c: Aromatisation of Steranes (peak height) for Well NOCS 34/11-3

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Sample</u>
3966.00	Sh/Clst	0.17	0.96	0042-1
3984.00	Sh/Clst	0.33	0.90	0045-1
4083.28	bulk	1.00	-	0037-0

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

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

Table 12d: Raw triaromatic sterane data (peak height) m/z 231 for Well NOCS 34/11-3

Depth unit of measure: m

Depth	Lithology	a1	b1	c1	d1	e1	f1	g1	Sample
3966.00	Sh/Clst	179473.8	95515.5	20070.0	55964.9	23966.4	27354.4	26180.7	0042-1
3984.00	Sh/Clst	221640.2	99770.7	10592.8	26161.0	13882.2	12959.4	12473.5	0045-1
4083.28	bulk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0037-0

Table 12e: Raw monoaromatic sterane data (peak height) m/z 253 for Well NOCS 34/11-3

Depth unit of measure: m

Depth	Lithology	A1	B1	C1	D1	E1	F1	G1	H1	I1	Sample
3966.00	Sh/Clst	22096.5	13172.6	4863.5	3954.9	7024.1	2396.3	7222.5	3918.1	977.5	0042-1
3984.00	Sh/Clst	34934.9	18980.1	5977.4	5494.8	8763.9	3567.5	7983.3	3938.7	1319.5	0045-1
4083.28	bulk	0.0	0.0	154.1	0.0	212.5	118.8	751.4	801.4	61.0	0037-0



Institutt for energiteknikk
Institute for Energy Technology

ADDRESS KJELLER Box 40, N-2007 Kjeller, Norway TELEPHONE +47 63 806000 TELEX 76 361 isotp n TELEFAX +47 63 815553		HALDEN N-1751 Halden, Norway TELEPHONE +47 69 183100 TELEFAX 76 335 energ n		AVAILABILITY In Confidence	
REPORT TYPE	REPORT NO. IFE/KR/F-97/071			DATE 1997-03-20	
	REPORT TITLE DATAREPORT ON STABLE ISOTOPES, GAS SAMPLES FROM WELL 34/11-3T2 (ref. IFE no. 2.5.048.97)			DATE OF LAST REV.	
	CLIENT Geolab Nor/Statoil			REV. NO.	
	CLIENT REF. G97-5			NUMBER OF PAGES 6	
SUMMARY Two gas samples from well 34/11-3T2 are analysed for gas and isotopic composition. The work is done in accordance with the "The Norwegian Industry Guide to Organic Geochemical Analyses", Third Edition 1993.			DISTRIBUTION Geolab Nor/Statoil (10) Andresen, B. Bjørnstad, T. Johansen, H. Siegélé, S. File (2)		
KEYWORDS					
	NAME		DATE		SIGNATURE
PREPARED BY	Bjørg Andresen Sylviane Sieglé		1997-03-20		<i>Bjørg Andresen Sylviane Sieglé</i>
REVIEWED BY	Harald Johansen		1997-03-20		<i>Harald Johansen</i>
APPROVED BY	Tor Bjørnstad		1997-03-20		<i>Tor Bjørnstad</i>

1 Introduction

Two gas samples from well 34/11-3T2; FMT run 4B, 4040.5 mRKB and MDT 649, 4140.4 m RKB are analysed for gas and isotopic composition.

On the samples C₁ - C₅ and CO₂ are quantified. The $\delta^{13}\text{C}$ value is measured on methane, ethane, propane, the butanes and CO₂. In addition the δD value is measured on methane.

2 Analytical procedures

Aliquots of 1.0 ml of the gas samples are sampled with a syringe for analysis on a Porapak Q column connected with flame ionisation (FID) and thermal conductivity (TCD) detectors. The detection limit for the hydrocarbon gas components is 0.01 $\mu\text{l/ml}$ and 0.2 $\mu\text{l/ml}$ for CO₂.

For the isotope analysis 5 - 10 ml is sampled with a syringe and then separated into the different gas components by a Carlo Erba 4200 gas chromatograph. The hydrocarbon gas components are oxidised in separate CuO-ovens in order to prevent cross contamination. The combustion products CO₂ and H₂O are frozen into collection vessels and separated.

The combustion water is reduced with zinc metal in sealed quartz tubes to prepare hydrogen for isotopic analysis. The isotopic measurements are performed on a Finnigan MAT 251 and a Finnigan Delta mass spectrometer.

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

The uncertainty in the $\delta^{13}\text{C}$ value is estimated to be $\pm 0.3\text{‰}$ PDB and includes all the different analytical steps. The estimate is based on repeated analysis of a laboratory standard gas mixture. The uncertainty in the δD value is likewise estimated to be $\pm 5\text{‰}$.

3 Results

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

Table 1 Volume composition (normalised values) of gas samples from well 34/11-3T2

Sample	IFE no GEO	C ₁ %	C ₂ %	C ₃ %	iC ₄ %	nC ₄ %	iC ₅ %	nC ₅ %	CO ₂ %	ΣC ₁ -C ₅ %	Wet- ness	iC ₄ / nC ₄ /
FMT run 4B, 4040.5m	970168	87.1	6.4	2.6	0.37	0.72	0.22	0.22	2.4	97.6	0.11	0.51
MDT 649, 4140.4m	970169	90.0	5.1	1.7	0.24	0.41	0.14	0.12	2.3	97.7	0.08	0.59

Table 2 Isotopic composition of gas samples from well 34/11-3T2

Sample	IFE no GEO	C ₁ δ ¹³ C ‰ PDB	C ₁ δ D ‰ SMOW	C ₂ δ ¹³ C ‰ PDB	C ₃ δ ¹³ C ‰ PDB	iC ₄ δ ¹³ C ‰ PDB	nC ₄ δ ¹³ C ‰ PDB	CO ₂ δ ¹³ C ‰ PDB	CO ₂ δ ¹⁸ O ‰ PDB
FMT run 4B, 4040.5m	970168	-42.4	-187	-30.1	-27.0	-28.7	-27.8	-3.2	-10.3
MDT 649, 4140.4m	970169	-42.8	-184	-29.8	-27.1	-29.0	-27.5	-2.8	-17.9

4 Literature

James, A.T. (1983). Correlation of natural gas by use of carbon isotopic distribution between hydrocarbon components. *The American Association of Petroleum Geologists Bulletin*, **67**, 1176-1191

Robert, P. (1985). Methods and means of paleothermal analysis. *Organic Methamorphism and Geothermal History*, Elf-Aquitaine and D. Reidel Publishing Company.

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