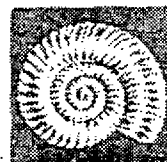


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REPORT TITLE/ TITTEL SOURCE ROCK ANALYSIS OF WELL 34/7-3. PART I. SCREENING ANALYSES.			
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RESPONSIBLE SCIENTIST/ PROSJEKTANSVARLIG S. Betts			
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SUMMARY/ SAMMENDRAG .

See next page.

KEY WORDS/ STIKKORD

34/7-3

Source rock analyses

SUMMARY

Nordland Group (323-1140m), Hordaland Group (1140-1673m), Rogaland Group (1673-1820m) (only analysed from 1000m as requested).

Fair to rich abundances of C_1-C_4 hydrocarbons. Upper Hordaland (1140-1320m) Group shows good source potential but is probably immature. Overall poor source potential. Geochemical zones A, B, C and D.

Shetland Group, 1820-2358m: Rich abundances of C_1-C_4 hydrocarbons below 1940m (richest zone 2093m to 2221m). Mature migrated hydrocarbons. Source potential of Shetland Group poor to fair. Zones E, F and G.

Cromer Knoll Group, 2358-2364m: Not analysed.

Dunlin Group, 2364-2414m: Fair source potential. Rich abundances of C_1-C_4 hydrocarbons. Mature migrated hydrocarbons. Zone H.

Statfjord Formation, 2414-2779m?: (Top Hegre not supplied by Saga). Zone I. Poor source potential. Fair (rich in isolated samples) C_1-C_4 abundances.

Zone J, 2779-T.D.3416m: (Hegre Group?, Lower Statfjord Formation + Hegre Group?).

Poor source potential. Low abundance C_1-C_4 (probably indigenous).

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INTRODUCTION

Cuttings samples between 1000m and T.D. (3416m) in well 34/7-3 have been analysed.

A total of 125 samples were supplied by Saga and as agreed (as for 34/7-1 and 34/7-2) alternate samples were analysed.

This report is an interpretation of the screening analyses requested ie. lithological description, total organic carbon and headspace and occluded gas analyses.

Formation tops were supplied to IKU by Saga as follows:

	<u>Depth (m)</u>
Nordland Group.	328m
Utsira Formation	990m
Miocene unconformity (Hordaland Group)	1140m
(Rogaland Group) Balder Formation	1673m
Shetland Group	1820m
Cromer Knoll Group	2358m
Dunlin Group	2364m
Statfjord Formation	2414m
Hegre Group	? (under drilling at time of enquiry).

As can be seen, the Upper and Middle Jurassic is absent in this well. On the basis of the screening analyses the well has been divided into 10 geochemical zones as follows:

- A: 990-1140m
- B: 1140-1320m
- C: 1320-1680m
- D: 1680-1820m
- E: 1820-1940m
- F: 1940-2275m
- G: 2275-2347m
- H: 2347-2401m

I: 2401-2779m

J: 2779-T.D. 3416m

(Last sample analysed 3409m.)

The relationship of these zones to the stratigraphy in this well is given in Table a.

It can be seen that with a few exceptions the geochemical zone boundaries correspond closely with the given stratigraphic boundaries. Some of the apparent discrepancy is caused by the sampling interval. The intersample distance being 10m and in this report 20m because every second sample has been analysed.

In this report the results of the analyses are discussed by geological formation with reference to the relevant geochemical zones. IKU were not given a top Hegre Group depth and we have tentatively suggested a boundary around 2779m. This is based purely on gas analyses and lithology and total organic carbon content and therefore may well be erroneous. This does not affect the validity of our interpretation of the geochemical data.

Table a. 34/7-3 (formation tops as supplied by Saga).

<u>Era</u>	<u>Groups</u>	<u>Formations</u>	<u>Formation tops</u>	<u>Geochemical zones</u>
				Zone A 990-1140m
				Zone B 1140-1320m
Tertiary	Nordland Group	Utsira Formation	- 323m	Zone C 1320-1680m
	(Hordaland Group)	(Miocene unconformity)	1140m	
	(Rogaland Group)	Balder Formation	1673	Zone D 1680-1820m
				Zone E 1820-1940m
U. Cretaceous	Shetland Group		-1820m	Zone F 1940-2275m
				Zone G 2275-2347m
L. Cretaceous	Cromer Knoll Group		-2358m	
				Zone H 2347-2401m
L. Jurassic	Dunlin Group		-2364m	
		Statfjord Formation	2414m	Zone I 2401-2779m
Triassic	Hegre Group		?2779m?*	Zone J 2779m-T.D.

* suggested, not supplied by Saga

EXPERIMENTAL METHODS AND DESCRIPTION OF INTERPRETATION LEVELS

Gas analyses

A septum was attached to the can; a sample of the headspace gas was taken and analysed for C_1 , C_2 , C_3 , $i-C_4$, nC_4 and C_5+ (conditions: see below).

The can was opened, headspace volume, water volume and sample weight were measured. The canned samples were washed with tempered water on 4, 2 and 0.125 mm sieves to remove drilling mud and thereafter dried at 35°C.

For occluded gas analysis an aliquot of the 2-4 mm fraction of each sample before drying was crushed in water using an airtight ball mill. The evolved gas was analysed as described for headspace gas.

GC conditions:

C_1-C_5+ analysis

This analysis was performed on Carlo Erba Fractovap 2150 and 2350 gas chromatographs equipped with 2m x 1/8" stainless steel columns filled with Porapack Q on Chromosorb using nitrogen as carrier gas. The oven temperature was 150°C. After elution of n-butane the column was back-flushed and C_5+ was recorded. A standard gas containing methane, ethane, propane, n-butane, n-pentane and n-hexane was used for quantitation.

Lithological descriptions

Lithological examinations are normally carried out using a binocular microscope (maximum 50x magnification). Colour descriptions are in accordance with "Rock Colour Chart" published in 1979 by the Geology Society of America, Boulder, Colorado. The clients have a choice of three different levels of description from a simple identification of the lithologies to a full examination of the sample. Handpicking of the cuttings for organic geochemical analyses is based on these descriptions.

Total Organic Carbon

Bulk samples were crushed in a mortar. Aliquots of the samples were then weighed into Leco crucibles and treated three times with hot 10% HCl to remove carbonate, and washed 4 times with distilled water to remove traces of HCl. The crucibles were then placed on a hot plate and dried for 24 hours. The total organic carbon (TOC) content of the dried samples was determined using a Leco CR12 carbon analyser.

RESULTS

Results of the gas analyses

The tabulated results of headspace and occluded gas analyses can be found at the back of the report tables 1a, 1b and 1c. Table 1c is a combined headspace and occluded gas table and is mainly used in interpretation with some reference to the other tables where appropriate.

Nordland Group (328-1140m, Hordaland Group (1140-1673m, Rogaland Group (1673-1820m)

These groups correspond to geochemical zones A, B, C and D.

There is a variable abundance of gas in the these samples. A zone of rich abundance of methane is found from 1000m-1400m below this from 1400-1660m there is a poor to fair abundance of C₁-C₄ hydrocarbons. This zone of poor gas abundance corresponds to the Hordaland Group below the Miocene unconformity. In the Balder Formation gas abundances are rich. In all of the Nordland Group samples methane is predominant however there is a noticeable increase in wetness in the lower Hordaland Group and Balder formation (wetness ranging from 4-6%). The abundances of butane and isobutane were too low to allow calculation of an iC₄/nC₄ ratio. The one value that has been calculated is relatively high and indicates immature gas, probably largely biogenic.

Shetland Group (1820-2358m)

This corresponds to geochemical zones e, f and g.

The low light hydrocarbon abundances for the top 2 samples analysed probably reflects caving from the overlying Balder formation. There is a very sharp and large increase in wetness from 1940m with an accompanying increase in total gas abundance. The wetness varies from 29%-86%. There is a zone of very high light hydrocarbon abundance from 2093m-2221m. This is also the zone of highest wetness. IC₄/nC₄ ratios indicate that the hydrocarbons present are mature. The gas data from the Shetland Group samples indicates the presence of mature migrated hydrocarbons. Presumably they are migrated as the lithology over this interval does not indicate a rich hydrocarbon potential and it would also be expected to be of relatively low maturity because of the shallow depth.

The lower part of the Shetland Group samples 2221-2347m show lower total abundances of C_1-C_4 hydrocarbons, although the wetness remains high (some samples show very poor abundances eg. B-8303, 2329m).

Cromer Knoll Group (2358-2364m)

No samples from this Group have been analysed.

Dunlin Group (2364-2414m)

—The Dunlin Group samples show very rich abundances (comparable to the middle Shetland Group) of C_1-C_4 hydrocarbons. The wetness is higher than in the Shetland Group samples 86-92%. IC_4/nC_4 ratios indicate that the hydrocarbons are mature. The whole Dunlin Group as present in 34/7-3 (we have not received information on how much, if any, of it is missing in this well) shows a rich abundance of mature hydrocarbons. The maturity of the Dunlin Group samples is not yet known in this well. The described dominant lithology is a marl claystone of fair to good TOC content. If this is mature it may have contributed to the analysed hydrocarbons but it is likely that at least some of these hydrocarbons are migrated.

Statfjord Formation (2414m- (not given to IKU by Saga, but possibly around 2779m?))

Corresponds with geochemical zone i. The C_1-C_4 hydrocarbon abundances are very variable being mainly fair to good but with occasionally very rich values of the same order as those in the overlying Dunlin Group eg. samples B-8935, 2473m, B-8945, 2563m, B-8949, 2608m, B-8953, 2644m.

Zone J (Hegre Group?, Lower Statfjord and Hegre Group?) 2779m-T.D.

Below 2779m the abundance of C_1-C_4 hydrocarbons is poor and the wetness very low as the gas is predominantly methane. There is a zone from 3085m to 3211m where, although the total abundance is poor, the wetness is high. This may represent small amounts of indigenous hydrocarbons generated from mature kerogens or alternately small amounts of migrated hydrocarbons. Further analyses would be needed to establish which is the case.

Results of lithology and total organic carbon analyses

Nordland Group 328-1140m), Hordaland Group (1140-1673m), Rogaland Group (1673-1820)

Four lithological and TOC zones have been distinguished. Zone A 990-1140m covers the the Utsira Formation above the Miocene unconformity and is composed of light olive grey silty claystone with a fair TOC content (average 0.58%). Zone B 1140-1320m is within the Hordaland Group below the Miocene unconformity. This zone is characterised by a light olive grey calcareous claystone with average TOC contents 1.25% ie. a zone of good potential. Zone C 1320-1680m corresponds the lowest part of the Hordaland Group and consists predominantly of an olive grey - dark green grey claystone with poor TOC content (average TOC content 0.46%). Group D 1680-1820m corresponds to the Balder Formation and is characterised by a green grey - medium grey claystone with poor TOC content (lower than in the overlying Utsira Formation) average TOC content 0.32%.

In summary only zone B below the Miocene unconformity shows any source potential based on total organic carbon and although there is no data on maturity is is assumed to be immature. The rest of the samples show poor source potential.

Shetland Group (1820-2358m)

This group has been subdivided into three geochemical zones based on TOC and lithology: Zone E 1820m to 1940m. This zone is characterised by the appearance of a TOC poor, marl, light grey (av. TOC 0.33%). It corresponds to the upper part of the Shetland Group. Zone F, 1940-2275m. This zone is dominated by a medium grey claystone with a fair TOC content (av. TOC content = 0.80%). Zone G 2275-2347m corresponds to the lower part of the Shetland Group and consists mainly of medium grey calcareous claystone. The TOC content is lower than in the zone above (av. TOC = 0.54%). All of the zones in the Shetland Group show poor to fair hydrocarbon potential.

No samples were analysed from the Cromer Knoll Group (2358-2364m).

Dunlin Group (2364-2414m)

The Dunlin Group is not very thick in this well and relatively few samples have been analysed. The samples are dominated by a grey marl accompanied by variable amounts of sand or sandstone. The marl shows a fair TOC content (0.97%). It is not known which part of the Dunlin Group is
143/m/an1/10

present in 34/7-3. From these analyses the Dunlin Group in 34/7-3 shows only fair hydrocarbon potential.

* Statfjord Formation (2414-2779m(?) Top Hegre not supplied to IKU)

The interval 2414m to 2779m however corresponds to IKU zone H. From 2414m to 2626m it consists mainly of varicoloured claystones with poor TOC contents. Below 2626m to 2779m sand and sandstone with minor claystone and coal from the dominant lithology. The coal may be an additive or may be in situ (Statfjord coal unit equivalent). Further analyses would be required to reveal its origin. The Statfjord Formation as analysed here shows poor hydrocarbon potential.

IKU zone J (2779-3409m, T.D. 3416m)

This zone may correspond to the Hegre Group or the sand (2779-2896m) may correspond to the lower Statfjord Formation and the sand, limestone and marl (2896m-T.D.) lithology to the Hegre Group. It is not possible to tell without further information. The entire zone shows poor TOC values (where measured) and is assessed as having poor hydrocarbon potential.

CONCLUSIONS

Nordland Group

This Group has been subdivided into 4 geochemical zones, A, B, C and D. Zones A, B and C Utsira Formation show variable abundances of C_1-C_4 hydrocarbons. Zone D corresponding to the Balder Formation show a rich abundance and increased wetness. Zone D may contain some migrated hydrocarbons. Those in the zones above are probably indigenous.

The Nordland Group has poor hydrocarbon potential except for the lower part of the Utsira Formation (Zone B 1140-1320m) which shows a fair to good potential.

Shetland Group (1820-2358m)

This has been subdivided into 3 geochemical zones based on differences in lithology and TOC. All zones show poor to fair hydrocarbon potential. Rich abundance of hydrocarbons present below 1940m. The high wetness and low iC_4/nC_4 ratio indicates mature hydrocarbons. Probably migrated hydrocarbons in view of the overall poor potential of the Shetland Group and its probable immaturity in this well. The zone of highest free hydrocarbon content is 2093-2221m.

Cromer Knoll Group (2358-2364m)

Not analysed.

Dunlin Group (2364-2414m)

This corresponds to IKU zone H. The samples analysed indicate fair hydrocarbon potential. The zone is rich in C_1-C_4 hydrocarbons. The wetness and low iC_4/nC_4 ratio indicates that the hydrocarbons are from a mature source. The maturity of the Dunlin Group in this well is not known but is probably fairly low so the hydrocarbons present are probably migrated.

Statfjord Formation (2414m to ?2779m? Top Hegre Group not supplied by Saga)

This corresponds to IKU zone I. The whole zone shows poor source potential. C_1-C_4 hydrocarbon abundances are variable. Fair to rich. The rich values however are only in isolated samples.

Zone J (Hegre Group?) 2779m-T.D.

This zone may correspond to the lower Statfjord sand(2779-2896m) and

Hegre Group sand/marl/limestone (2896m-T.D.) IKU was not supplied with stratigraphic data for this interval. This zone is characterised by poor source potential and a low total abundance of C₁-C₄ hydrocarbons. The wetness (C₂-C₄ hydrocarbons) is fairly high indicating that the hydrocarbons are mature. Probably indigenous.

The conclusion presented here is based on gas analyses and total organic carbon analyses. A good TOC content will not necessarily mean a good hydrocarbon source. Further analysis to establish kerogen type and maturity will be necessary to assess the source potential of various horizons in 34/7-3 and the nature of the migrated hydrocarbons.



Project no.: 05.1726.00
 Well ident.: 34/7-3
 DATE : 15 - 12 - 84.

TABLE I a.

CONCENTRATION (ul Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS IN HEADSPACE

IKU no.	DEPTH m	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 nC4
I B 7987	1000	9604						9604		0.00	*****
I B 7989	1020	13143						13143		0.00	*****
I B 7991	1040	18698	10					18708	10	0.05	*****
I B 7993	1060	19447	9					19457	9	0.05	*****
I B 7994	1070	43811	19					43830	19	0.04	*****
I B 8121	1100	185668	71					185739	71	0.04	*****
I B 8123	1120	48160	25					48185	25	0.05	*****
I B 8125	1140	73368	42					73409	42	0.06	*****
I B 8127	1160	82118	49					82167	49	0.06	*****
I B 8129	1180	34318	29	9				34355	38	0.11	*****
I B 8131	1200	15291	14					15305	14	0.09	*****
I B 8133	1220	15240	16					15255	16	0.10	*****
I B 8135	1240	12325	12					12337	12	0.10	*****
I B 8137	1260	12065	11					12077	11	0.09	*****
I B 8139	1280	6471	7					6478	7	0.11	*****
I B 8141	1300	2967	4					2971	4	0.13	*****
I B 8143	1320	8098	11					8109	11	0.13	*****
I B 8145	1340	3763	4					3768	4	0.11	*****
I B 8147	1360	5903	10					5913	10	0.17	*****
I B 8149	1380	5019	18					5037	18	0.35	*****
I B 8151	1400	1039	7					1046	7	0.70	*****
I B 8153	1420	135	2					136	2	1.18	*****
I B 8155	1440	238	3	0				242	3	1.42	*****
I B 8157	1460	1461	16					1477	16	1.10	*****



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TABLE I a.

CONCENTRATION (u1 Gas / kg dry_g Rock) OF C1 ~ C5+ HYDROCARBONS IN HEADSPACE

IKU no.	DEPTH m	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 nC4
I B 8159	1480	896	8	1				905	9	1.00	*****
I B 8161	1500	428	5	1				433	5	1.18	*****
I B 8163	1520	12						12		0.00	*****
I B 8165	1540	1529	20	3				1552	23	1.45	*****
I B 8167	1560	3509	39	4				3552	43	1.21	*****
I B 8169	1580	1967	27	4	1			1999	32	1.58	*****
I B 8171	1600	2527	35	3	1			2566	39	1.54	*****
I B 8173	1620	1170	22	2				1194	23	1.95	*****
I B 8175	1640	4198	116	12	5		23	4332	134	3.10	*****
I B 8177	1660	1661	49	7	3		28	1720	59	3.45	*****
I B 8179	1680	6255	167	45	28	11	590	6507	252	3.87	2.47
I B 8181	1700	1525	54	6			22	1585	59	3.75	*****
I B 8183	1720	8771	186	23			31	8980	209	2.33	*****
I B 8185	1740	2346	74	15				2435	89	3.65	*****
I B 8187	1760	2706	97	29	3			2835	129	4.56	*****
I B 8189	1780	7792	250	67				8109	317	3.91	*****
I B 8191	1800	5541	187	68				5796	255	4.40	*****
I B 8193	1820	5862	261	125				6247	385	6.17	*****
I B 8195	1840	125	5	3				132	7	5.59	*****
I B 8197	1860	1559	61	39	2			1661	103	6.17	*****
I B 8199	1880	2539	101	66		23		2729	190	6.96	0.00
I B 8204	1900	2036	79	47	5	15	23	2182	146	6.69	0.35
I B 8206	1920	5306	243	154		58	117	5761	455	7.90	0.00
I B 8208	1940	1774	142	212	53	148	313	2329	555	23.82	0.36



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TABLE I a.

CONCENTRATION (ul Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS IN HEADSPACE

IKU no.	DEPTH m	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
I B 8210	1951	6118	1486	3249	807	2564	6742	14224	8106	56.99	0.31
I B 8212	1969	5543	665	845	159	525	1224	7738	2195	28.37	0.30
I B 8265	1987	3671	644	1181	265	801	1110	6563	2892	44.06	0.33
I B 8267	2008	3834	618	1049	206	631	713	6338	2505	39.52	0.33
I B 8269	2026	1971	280	703	209	704	1367	3867	1896	49.03	0.30
I B 8271	2044	9515	1169	2192	484	1722	2944	15082	5567	36.91	0.28
I B 8273	2062	2043	440	1275	349	1182	2020	5289	3246	61.37	0.30
I B 8275	2080	4042	816	2021	518	1743	2600	9139	5097	55.78	0.30
I B 8277	2093	10096	5119	16897	3996	11986	12064	48093	37997	79.01	0.33
I B 8279	2116	4542	2393	7964	1961	5202	4845	22063	17521	79.41	0.38
I B 8281	2131	4831	2613	7633	1762	4844	5384	21683	16852	77.72	0.36
I B 8283	2152	4332	2182	6065	1374	3727	4545	17679	13348	75.50	0.37
I B 8285	2170	19388	16631	50151	10760	28625	31854	125555	106167	84.56	0.38
I B 8287	2188	30563	23718	71059	15494	44039	54150	184874	154311	83.47	0.35
I B 8289	2206	12599	9300	24875	5023	14605	15286	66402	53803	81.03	0.34
I B 8291	2221	11040	8069	20937	4075	11641	12066	55762	44722	80.20	0.35
I B 8293	2239	37	16	40	7	20	31	121	84	69.09	0.37
I B 8295	2257	3185	1420	2942	412	1434	1820	9393	6208	66.09	0.29
I B 8297	2275	2248	1060	2168	325	945	807	6745	4497	66.67	0.34
I B 8299	2293	692	242	567	95	312	361	1908	1216	63.75	0.30
I B 8301	2311	1391	594	1251	186	592	491	4013	2623	65.35	0.31
I B 8929	2338	10140	14481	31174	4067	12894	9941	72755	62615	86.06	0.32
I B 8305	2347	3667	2126	3560	453	1586	1732	11393	7725	67.81	0.29
I B 8307	2365	19913	49547	94665	10241	31517	23393	205881	185969	90.33	0.32



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TABLE I a.

CONCENTRATION (ul Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS IN HEADSPACE

I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	IKU	DEPTH	C1	C2	C3	iC4	nC4	C5+	SUM	SUM	WET-	iC4	I
I	no.	m							C1-C4	C2-C4	NESS	-----	I
I											(%)	nC4	I
I													I
I	B 8931	2401	35697	50659	111693	15326	48424	42089	261799	226102	86.36	0.32	I
I	B 8933	2428	630	441	813	143	495	787	2523	1892	75.02	0.29	I
I	B 8935	2473	2822	1420	2013	469	1655	4192	8379	5557	66.32	0.28	I
I	B 8937	2491	1920	759	566	50	195	309	3490	1570	44.98	0.26	I
I	B 8939	2509	194	249	795	151	528	1313	1916	1723	89.88	0.29	I
I	B 8941	2527	125	73	197	34	160	438	588	464	78.81	0.21	I
I	B 8943	2545	1655	138	96	13	80	402	1982	327	16.49	0.16	I
I	B 8945	2563	8445	10288	28088	4795	15980	19365	67596	59151	87.51	0.30	I
I	B 8947	2590	613	49	38		34	489	735	121	16.52	0.00	I
I	B 8949	2608	6072	3106	6639	1072	3724	5061	20613	14541	70.54	0.29	I
I	B 8951	2626	241	64	179	67	253	880	803	562	70.03	0.26	I
I	B 8953	2644	1986	512	299	18	56	25	2871	885	30.82	0.32	I
I	B 8955	2662	557	117	89	8	40	171	811	254	31.30	0.21	I
I	B 8957	2680	276	43	35		15	84	369	93	25.19	0.00	I
I	B 8959	2696	312	24	17		8	90	362	50	13.76	0.00	I
I	B 8961	2717	582	55	36		14	184	687	105	15.27	0.00	I
I	B 8962	2725	247	49	48		16	100	360	113	31.38	0.00	I
I	B 9019	2743	352	45	49		18		464	112	24.16	0.00	I
I	B 9021	2761	320	31	36	2	10		399	80	20.00	0.23	I
I	B 9023	2779	65						65		0.00	*****	I
I	B 9025	2797	110	4					114	4	3.72	*****	I
I	B 9027	2815	83	3					86	3	3.56	*****	I
I	B 9029	2833	36	2					38	2	4.83	*****	I
I	B 9031	2851	36						36		0.00	*****	I



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TABLE I a.

CONCENTRATION (ul Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS IN HEADSPACE

IKU no.	DEPTH m	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 nC4
I B 9033	2869	130						130		0.00	*****
I B 9035	2887	103	8	3				114	10	9.05	*****
I B 9037	2905	38						38		0.00	*****
I B 9039	2923	156	5					160	5	3.02	*****
I B 9041	2941	65						65		0.00	*****
I B 9043	2959	105						105		0.00	*****
I B 9045	2977	138						138		0.00	*****
I B 9047	2995	63						63		0.00	*****
I B 9049	3013	77						77		0.00	*****
I B 9051	3031	31						31		0.00	*****
I B 9053	3049	26						26		0.00	*****
I B 9055	3067	60						60		0.00	*****
I B 9057	3085	32						32		0.00	*****
I B 9059	3103	30						30		0.00	*****
I B 9061	3121	33						33		0.00	*****
I B 9063	3139	17						17		0.00	*****
I B 9065	3157	26	2					28	2	6.29	*****
I B 9067	3175	42						42		0.00	*****
I B 9069	3193	27	4	3				34	7	21.03	*****
I B 9071	3211	64						64		0.00	*****
I B 9073	3229	35						35		0.00	*****
I B 9075	3247	48						48		0.00	*****
I B 9077	3265	76						76		0.00	*****
I B 9079	3292	32						32		0.00	*****



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TABLE I a.

CONCENTRATION (ul Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS IN HEADSPACE

I	IKU	DEPTH	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 nC4	I
I	B 9081	3328	27						27		0.00	*****	I
I	B 9083	3364	87						87		0.00	*****	I
I	B 9085	3382	42						42		0.00	*****	I
I	B 9087	3409	32						32		0.00	*****	I



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TABLE I b.

CONCENTRATION (ul Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS IN OCLUDED

IKU no.	DEPTH m	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 nC4
I B 7987	1000	712	13					724	13	1.73	*****
I B 7989	1020	1053	26					1079	26	2.39	*****
I B 7991	1040	711	21					732	21	2.89	*****
I B 7993	1060	1063	44					1107	44	4.00	*****
I B 7994	1070	970	46	9				1025	55	5.35	*****
I B 8121	1100	1972						1972		0.00	*****
I B 8123	1120	618	12					630	12	1.93	*****
I B 8125	1140	476	6					482	6	1.24	*****
I B 8127	1160	921	12	6				940	18	1.93	*****
I B 8129	1180	381	4					385	4	1.09	*****
I B 8131	1200	353	9					362	9	2.40	*****
I B 8133	1220	146	4					151	4	2.74	*****
I B 8135	1240	1686	10	2				1698	11	0.68	*****
I B 8137	1260	246	7					253	7	2.73	*****
I B 8139	1280	281	8	12				301	20	6.79	*****
I B 8141	1300	416	6					422	6	1.48	*****
I B 8143	1320	228	8					236	8	3.33	*****
I B 8145	1340	110						110		0.00	*****
I B 8147	1360	214						214		0.00	*****
I B 8149	1380	156						156		0.00	*****
I B 8151	1400	95						95		0.00	*****
I B 8153	1420	90						90		0.00	*****
I B 8155	1440	68						68		0.00	*****
I B 8157	1460	60						60		0.00	*****



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TABLE I b.

CONCENTRATION (ul Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS IN OCLUDED

IKU	DEPTH	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 nC4
I B 8159	1480	84	4					88	4	4.49	*****
I B 8161	1500	75						75		0.00	*****
I B 8163	1520									*****	*****
I B 8165	1540	188	6					194	6	3.17	*****
I B 8167	1560	381	14					395	14	3.53	*****
I B 8169	1580	39						39		0.00	*****
I B 8171	1600	170	8					178	8	4.41	*****
I B 8173	1620	170	12				59	183	12	6.71	*****
I B 8175	1640	353	46	21	15		376	434	81	18.77	*****
I B 8177	1660	105	11				279	116	11	9.67	*****
I B 8179	1680	529	17				412	546	17	3.15	*****
I B 8181	1700	245	16				222	260	16	6.01	*****
I B 8183	1720	300	15				117	314	15	4.65	*****
I B 8185	1740	105	4					109	4	3.82	*****
I B 8187	1760	91	4					94	4	3.93	*****
I B 8189	1780	120	9	10				140	19	13.73	*****
I B 8191	1800	119	8	14				141	22	15.87	*****
I B 8193	1820	153	12	33				198	45	22.78	*****
I B 8195	1840	120	6	14				139	20	14.19	*****
I B 8197	1860	73						73		0.00	*****
I B 8199	1880									*****	*****
I B 8204	1900	149	9	20			172	178	29	16.32	*****
I B 8206	1920	165	16	43		39	535	263	98	37.30	0.00
I B 8208	1940	103	9	43		72	1241	227	124	54.72	0.00



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TABLE I b.

CONCENTRATION (ul Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS IN OCLUDED

I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	IKU	DEPTH	C1	C2	C3	iC4	nC4	C5+	SUM	SUM	WET-	iC4	I
I	no.	m							C1-C4	C2-C4	NESS	-----	I
I											(%)	nC4	I
I													I
I	B 8210	1951	202	18	158	88	387	12422	853	652	76.38	0.23	I
I	B 8212	1969	95	22	139	52	249	3079	557	462	82.89	0.21	I
I	B 8265	1987	116	24	192	82	397	4317	811	695	85.74	0.21	I
I	B 8267	2008	90	24	198	76	412	3229	801	710	88.71	0.18	I
I	B 8269	2026	109	13	104	54	275	4851	555	446	80.37	0.20	I
I	B 8271	2044	168	29	216	95	482	8145	990	822	83.03	0.20	I
I	B 8273	2062	113	17	197	107	557	7640	991	878	88.60	0.19	I
I	B 8275	2080	150	26	236	113	599	8787	1124	974	86.68	0.19	I
I	B 8277	2093	54		62	41	163	1542	320	266	83.14	0.25	I
I	B 8279	2116	70		17			459	87	17	19.78	*****	I
I	B 8281	2131	37					188	37		0.00	*****	I
I	B 8283	2152	147	161	1844	815	3084	22252	6051	5903	97.57	0.26	I
I	B 8285	2170	239	431	5326	2241	8074	48617	16310	16072	98.54	0.28	I
I	B 8287	2188	391	300	4178	1853	7205	36964	13927	13536	97.19	0.26	I
I	B 8289	2206	310	173	2098	886	3784	21256	7251	6941	95.73	0.23	I
I	B 8291	2221	357	312	3249	1218	5243	27035	10379	10022	96.56	0.23	I
I	B 8293	2239	76	5	19			191	100	24	24.12	*****	I
I	B 8295	2257	171	110	1078	260	1311	3944	2930	2760	94.17	0.20	I
I	B 8297	2275	93	111	1026	225	1137	2474	2593	2500	96.43	0.20	I
I	B 8299	2293	74	10	88	20	123	863	314	240	76.36	0.16	I
I	B 8301	2311	127	29	71	6	35	206	269	142	52.77	0.18	I
I	B 8303	2329	110	14	95			124	1317	233	67.85	0.00	I
I	B 8929	2338	283	968	9399	2931	12268	57822	25849	25566	98.91	0.24	I
I	B 8305	2347	77	39	276	54	305	3061	751	673	89.70	0.18	I



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TABLE I b.

CONCENTRATION (ul Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS IN OCLUDED

IKU	DEPTH m	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET- NESS (%)	iC4 nC4
I B 8307	2365	385	3360	27348	7085	27696	73909	65874	65489	99.42	0.26
I B 8931	2401	349	453	4963	1607	7099	62957	14470	14122	97.59	0.23
I B 8933	2428	200	49	317	112	550	11252	1229	1028	83.71	0.20
I B 8935	2473	814	2045	7241	797	4272	23206	15169	14355	94.64	0.19
I B 8937	2491	477	1551	2309	178	939	3922	5455	4978	91.26	0.19
I B 8939	2509	246	24	92	27	118	5357	507	261	51.43	0.23
I B 8941	2527	265	593	827	58	304	1789	2048	1783	87.06	0.19
I B 8943	2545	277	39	80				397	119	30.09	*****
I B 8945	2563	106	11	94	43	196	3949	451	345	76.43	0.22
I B 8947	2590	182	13					195	13	6.49	*****
I B 8949	2608	187	26	87		76	1511	376	189	50.19	0.00
I B 8951	2626	149	33	49		46	1162	277	128	46.32	0.00
I B 8953	2644	9237	24580	45314	3464	15310	15350	97905	88668	90.56	0.23
I B 8955	2662						839			*****	*****
I B 8957	2680	112	85	215	12	77	388	501	389	77.66	0.15
I B 8959	2696	110	10	17				137	27	19.61	*****
I B 8961	2717	109	17	116	7	97	365	307	197	64.30	0.12
I B 8962	2725	103	28	136		52	234	319	216	67.68	0.00
I B 9019	2743	344	24					368	24	6.41	*****
I B 9021	2761	105		18		11		135	30	22.16	0.00
I B 9023	2779	70						70		0.00	*****
I B 9025	2797	219						219		0.00	*****
I B 9027	2815	195						195		0.00	*****
I B 9029	2833	109						109		0.00	*****



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TABLE I b.

CONCENTRATION (uL Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS IN OCLUDED

I	IKU	DEPTH	C1	C2	C3	iC4	nC4	C5+	SUM	SUM	WET-	iC4	I
I	no.	m							C1-C4	C2-C4	NESS	-----	I
I											(%)	nC4	I
I	B 9079	3292	116	8	27				151	35	23.31	*****	I
I	B 9081	3328	78						78		0.00	*****	I
I	B 9083	3364	158						158		0.00	*****	I
I	B 9085	3382	127	8					135	8	5.87	*****	I
I	B 9087	3409	169	13	8				190	21	10.90	*****	I



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TABLE I c.

CONCENTRATION (u1 Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS SUMMARY

IKU no.	DEPTH m	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C1-C5+	WET-NESS (%)	iC4 nC4
I B 8210	1951	6320	1505	3408	895	2950	19164	15077	80	58.09	0.30
I B 8212	1969	5638	687	985	211	774	4303	8295	20	32.03	0.27
I B 8265	1987	3787	668	1373	347	1198	5426	7373	38	48.64	0.29
I B 8267	2008	3924	642	1247	282	1043	3942	7139	30	45.03	0.27
I B 8269	2026	2080	293	808	263	978	6218	4422	20	52.97	0.27
I B 8271	2044	9683	1198	2408	579	2204	11089	16072	60	39.75	0.26
I B 8273	2062	2156	456	1472	456	1739	9660	6280	40	65.66	0.26
I B 8275	2080	4191	842	2258	631	2341	11386	10263	60	59.16	0.27
I B 8277	2093	10150	5119	16959	4037	12149	13606	48414	380	79.04	0.33
I B 8279	2116	4612	2393	7981	1961	5202	5304	22150	170	79.18	0.38
I B 8281	2131	4868	2613	7633	1762	4844	5572	21720	160	77.59	0.36
I B 8283	2152	4479	2343	7909	2188	6811	26797	23730	190	81.13	0.32
I B 8285	2170	19627	17062	55477	13001	36699	80472	141865	1220	86.17	0.35
I B 8287	2188	30954	24018	75237	17347	51244	91114	198801	1670	84.43	0.34
I B 8289	2206	12909	9473	26973	5909	18389	36542	73653	600	82.47	0.32
I B 8291	2221	11397	8381	24186	5293	16884	39102	66141	540	82.77	0.31
I B 8293	2239	113	21	59	7	20	222	221	0	48.78	0.37
I B 8295	2257	3356	1530	4021	672	2745	5764	12323	80	72.77	0.24
I B 8297	2275	2341	1171	3194	550	2082	3281	9338	60	74.93	0.26
I B 8299	2293	766	252	655	115	435	1244	2222	10	65.53	0.26
I B 8301	2311	1518	623	1322	192	627	696	4282	20	64.56	0.31
I B 8303	2329	110	14	95		124	1317	343	0	67.85	0.00
I B 8929	2338	10422	15449	40572	6998	25162	67763	98603	880	89.43	0.28
I B 8305	2347	3745	2165	3836	507	1891	4792	12143	80	69.16	0.27



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TABLE I c.

CONCENTRATION (ul Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS SUMMATION

IKU NO.	DEPTH m	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4
I B 8307	2365	20298	52906	122013	17326	59213	97302	271755	251457	92.53	0.29
I B 8931	2401	36045	51112	116656	16932	55523	105046	276269	240224	86.95	0.30
I B 8933	2428	830	491	1130	255	1045	12039	3751	2921	77.86	0.24
I B 8935	2473	3636	3465	9254	1266	5927	27398	23548	19912	84.56	0.21
I B 8937	2491	2397	2310	2876	228	1134	4231	8945	6548	73.20	0.20
I B 8939	2509	440	273	887	178	645	6670	2423	1983	81.84	0.28
I B 8941	2527	390	666	1025	92	464	2227	2636	2246	85.22	0.20
I B 8943	2545	1932	177	176	13	80	402	2379	446	18.76	0.16
I B 8945	2563	8551	10299	28181	4839	16176	23314	68047	59496	87.43	0.30
I B 8947	2590	796	62	38		34	489	930	134	14.42	0.00
I B 8949	2608	6259	3132	6726	1072	3800	6572	20989	14730	70.18	0.28
I B 8951	2626	389	97	228	67	299	2042	1080	691	63.95	0.22
I B 8953	2644	11224	25092	45613	3482	15366	15375	100776	89553	88.86	0.23
I B 8955	2662	557	117	89	8	40	1010	811	254	31.30	0.21
I B 8957	2680	388	127	250	12	93	472	870	482	55.40	0.13
I B 8959	2696	423	34	34		8	90	499	77	15.37	0.00
I B 8961	2717	692	72	152	7	71	549	994	302	30.40	0.10
I B 8962	2725	350	77	184		68	334	679	329	48.44	0.00
I B 9019	2743	696	68	49		18		832	136	16.31	0.00
I B 9021	2761	424	31	54	2	22		534	110	20.54	0.11
I B 9023	2779	135						135		0.00	*****
I B 9025	2797	329	4					333	4	1.28	*****
I B 9027	2815	278	3					281	3	1.09	*****
I B 9029	2833	145	2					147	2	1.24	*****



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TABLE I c.

CONCENTRATION (u2 Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS SUMMATION

IKU no.	DEPTH m	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 nC4
I B 9031	2851	107					104	107		0.00	*****
I B 9033	2869	445						445		0.00	*****
I B 9035	2887	415	34	193		85		728	313	42.97	0.00
I B 9037	2905	185						185		0.00	*****
I B 9039	2923	332	5					337	5	1.44	*****
I B 9041	2941	207						207		0.00	*****
I B 9043	2959	362						362		0.00	*****
I B 9045	2977	277						277		0.00	*****
I B 9047	2995	200						200		0.00	*****
I B 9049	3013	216	4					220	4	1.84	*****
I B 9051	3031	108	5					113	5	4.56	*****
I B 9053	3049	437						437		0.00	*****
I B 9055	3067	291						291		0.00	*****
I B 9057	3085	164	12					176	12	7.04	*****
I B 9059	3103	119	13	13				145	26	17.67	*****
I B 9061	3121	95	5					100	5	5.23	*****
I B 9063	3139	97	10	11				118	21	17.69	*****
I B 9065	3157	117	2					119	2	1.46	*****
I B 9067	3175	127		15				143	15	10.67	*****
I B 9069	3193	120	4	3				128	7	5.61	*****
I B 9071	3211	215	16	38				269	55	20.28	*****
I B 9073	3229	116						116		0.00	*****
I B 9075	3247	146						146		0.00	*****
I B 9077	3265	285	13	31				329	44	13.39	*****



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TABLE I c.

CONCENTRATION (ml Gas / kg dry Rock) OF C1 - C5+ HYDROCARBONS SUMMATION

IKU	DEPTH	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 nC4
B 9079	3292	148	8	27				183	35	19.25	*****
B 9081	3328	104						104		0.00	*****
B 9083	3364	245						245		0.00	*****
B 9085	3382	169	8					177	8	4.49	*****
B 9087	3409	201	13	8				222	21	9.34	*****



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-7987	990-1000		100% <u>Sand</u> ; Rock fragments; Shell fragments
B-7989	1010-1020		100% <u>Sand</u> ; Rock fragments; Shell fragments
B-7991	1030-1040		100% <u>Sand</u> ; Rock fragments; Shell fragments Sm.am. Claystone (light olive grey)
B-7993	1050-1060		100% <u>Sand</u> ; Rock fragments; Shell fragments Sm.am. Claystone (light olive grey)
B-7994	1060-1070	0.81	50% <u>Sand</u> ; Rock fragments; Shell fragments *50% <u>Claystone</u> , varicoloured, silty, medium grey, greenish grey, dusky olive green,
B-8121	1090-1100	0.82	*100% <u>Claystone</u> , light olive grey, silty, sandy, containing abundant Glauconite grains Sm.am. Sand; Glauconite; Shell fragments
B-8123	1110-1120	0.90	*100% <u>Claystone</u> , light olive grey, silty, sandy, containing abundant Glauconite grains Sm.am. Sand; Glauconite; Shell fragments
B-8125	1130-1140	0.71	*100% <u>Claystone</u> , light olive grey, silty, slightly micromicaceous, partly glauconitic, calcareous - non calcareous Sm.am. Sand; Glauconite; Limestone
B-8127	1150-1160	1.45	*100% <u>Claystone</u> , light olive grey, as above Sm.am. Glauconite
B-8129	1170-1180	1.45	*100% <u>Claystone</u> , light olive grey, silty, slightly micromicaceous, slightly calcareous



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-8131	1190-1200	1.66	*100% <u>Claystone</u> , light olive grey, as above
B-8133	1210-1220	1.74	*100% <u>Claystone</u> , light olive grey, as above
B-8135	1230-1240	1.60	*100% <u>Claystone</u> , light olive grey, as above
B-8137	1250-1260	1.45	*100% <u>Claystone</u> , light olive grey, as above
B-8139	1270-1280	1.25	*100% <u>Claystone</u> , light olive grey, as above
B-8141	1290-1300	1.18 1.04	*50% <u>Claystone</u> , light olive grey, as above *50% <u>Claystone</u> , olive grey, silty, slightly micromicaceous, partly glauconitic
B-8143	1310-1320	1.39 0.59	*50% <u>Claystone</u> , light olive grey, as above *40% <u>Claystone</u> , olive grey - (dark) greenish grey, silty, slightly micromicaceous 10% Sand
B-8145	1330-1340	0.60	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, silty, slightly micromicaceous
B-8147	1350-1360	0.56	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8149	1370-1380	0.49	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8151	1390-1400	0.45	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8153	1410-1420	0.65	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-8155	1430-1440	0.54	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8157	1450-1460	0.51	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8159	1470-1480	0.53	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8161	1490-1500	0.53	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8163	1510-1520	0.41	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8165	1530-1540	0.46	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8167	1550-1560	0.50	*100% <u>Claystone</u> , olive grey
B-8169	1570-1580	0.41	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8171	1590-1600	0.39	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8173	1610-1620	0.34	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8175	1630-1640	0.63	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-8177	1650-1660	0.52	*100% <u>Claystone</u> , olive grey - (dark) greenish grey, as above
B-8179	1670-1680	0.26	*100% <u>Claystone</u> , olive grey - dark greenish grey Sm.am. ?Tuff
B-8181	1690-1700	0.43	*100 <u>Claystone</u> , (medium) light grey - greenish grey, silty, slightly micromicaceous
B-8183	1710-1720	0.35	*100% <u>Claystone</u> , (medium) light grey - greenish grey, as above
B-8185	1730-1740	0.33	*100% <u>Claystone</u> , (medium) light grey - greenish grey, as above
B-8187	1750-1760	0.37	*100% <u>Claystone</u> , (medium) light grey - greenish grey, as above
B-8189	1770-1780	0.42	*100% <u>Claystone</u> , medium grey - greenish grey, silty, slightly micromicaceous Sm.am. Limestone
B-8191	1790-1800	0.42	*100% <u>Claystone</u> , medium grey - greenish grey, as above Sm.am. Claystone (bluish grey)
B-8193	1810-1820	0.36	*100% <u>Claystone</u> , medium grey - greenish grey, as above
B-8195	1830-1840	0.44	*90% <u>Claystone</u> , medium grey - greenish grey, as above 10% <u>Marl</u> , light grey



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-8197	1850-1860	0.28	*50% <u>Marl</u> , light grey
		0.45	*50% <u>Claystone</u> , medium grey - greenish grey, as above
B-8199	1870-1880	0.45	*80% <u>Claystone</u> , medium grey - greenish grey, as above
		0.32	*20% <u>Marl</u> , light grey
B-8204	1890-1900	0.45	*60% <u>Claystone</u> , medium grey - greenish grey
		0.30	*40% <u>Marl</u> , light grey
B-8206	1910-1920	0.42	*80% <u>Marl</u> , light grey
		0.52	*20% <u>Claystone</u> , medium grey - greenish grey
B-8208	1930-1940	0.38	*80% <u>Claystone</u> , medium grey, slightly micromicaceous, calcareous, partly grading to Marl
			10% <u>Marl</u>
			10% <u>Claystone</u> , medium grey - greenish grey
B-8210	1942-51	0.53	*100% <u>Claystone</u> , medium grey, as above Sm.am. Limestone
B-8212	1960-69	0.59	*100% <u>Claystone</u> , medium grey, as above
B-8265	1878-87	0.63	*100% <u>Claystone</u> , medium grey, as above
B-8267	1799-2008	0.66	*100% <u>Claystone</u> , medium grey, slightly micromicaceous, partly calcareous-non calcareous



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-8269	2017-26	0.47 0.15	*80% <u>Claystone</u> , medium grey, as above 20% <u>Claystone</u> , greyish red-brownish red
B-8271	2035-2044	0.57	*100% <u>Claystone</u> , medium grey, slightly micromicaceous, occasionally calcareous Trace Siderite; Limestone; Casing cement
B-8273	2053-2062	0.60	*100% <u>Claystone</u> , medium grey Sm.am. Siderite; Limestone Trace Casing cement
B-8275	2071-2080	0.47	*100% <u>Claystone</u> , medium grey, slightly micromicaceous Sm.am. Siderite; Limestone Trace Casing cement
B-8277	2084-2093	0.62	*100% <u>Claystone</u> , medium grey, as above Trace Siderite; Limestone; Casing cement
B-8279	2104-2116	0.74	*100% <u>Claystone</u> , medium grey, silty, slightly micromicaceous Sm.am. Pyrite; Steel shavings
B-8281	2122-2131	0.78	*100% <u>Claystone</u> , medium grey, as above
B-8283	2140-2152	0.84	*100% <u>Claystone</u> , medium grey, as above
B-8285	2158-2172	0.76	*100% <u>Claystone</u> , medium grey, as above Sm.am. Siltstone; Dolomite



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-8287	2176-2188	0.80	*90% <u>Claystone</u> , medium grey, as above 10% <u>Dolomite</u> , brownish grey Sm.am. Siltstone
B-8289	2194-2206	0.85	*100% <u>Claystone</u> , medium grey, as above Sm.am. Dolomite; Drilling fluid deposits
B-8291	2212-2221	0.77	*100% <u>Claystone</u> , medium grey, as above Sm.am. Dolomite; Drilling fluid deposits
B-8293	2230-2239	0.90	*100% <u>Claystone</u> , medium grey, as above Sm.am. Sandstone/Siltstone; Drilling fluid deposits
B-8295	2248-2257	0.84	*100% <u>Claystone</u> , medium grey, as above Sm.am. Sandstone/Siltstone
B-8297	2266-2275	0.91	*100% <u>Claystone</u> , medium grey, as above Sm.am. Siltstone/Sandstone
B-8299	2284-2293	0.59	*100% <u>Claystone</u> , medium grey-medium dark grey, calcareous
B-8301	2302-2311	0.44	*100% <u>Claystone</u> , medium grey-medium dark grey, calcareous
B-8303	2320-2329	0.59	*100% <u>Claystone</u> , medium grey, disintegrates in 10% HCl
B-8305	2338-2347	0.75	*100% <u>Marl</u> , medium grey-medium dark grey
B-8307	2356-2365	1.02	*100% ? <u>Marl</u> , light brown-moderate brown Sm.am. Claystone/Marl, as above



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-8929	2374-83	1.20	60% <u>Sand</u> , light grey-clear, fine-very coarse *40% <u>Marl</u> , medium grey-medium dark grey, partly grading to Claystone Sm.am. Drilling fluid deposits; Steel shavings
B-8931	2392-2401	0.71	*40% <u>Marl/Claystone</u> , medium grey-medium dark grey 40% <u>Sand/Sandstone</u> , as above 20% Casing cement Sm.am. Drilling fluid deposits; Steel shavings
B-8933	2419-28	0.70	90% <u>Sand</u> , light grey-clear, occ. with rusty coating, medium-very coarse grained *10% <u>Claystone</u> , medium grey Sm.am. Steel shavings (abundant); Casing cement
B-8935	2464-73		100% <u>Sand</u> , fine-very coarse, as above Sm.am. Claystone (medium grey, moderate brown); Steel shavings
B-8937	2482-91	0.45	*80% <u>Claystone</u> , varicoloured, medium grey, olive grey, olive brown, moderate brown, reddish brown, silty, partly sandy 20% <u>Sand</u> , light grey, clear-brown, moderate-very coarse grained Sm.am. Coal
B-8939	2500-09	0.32	50% <u>Sand</u> , as above *50% <u>Claystone</u> , varicoloured, as above
B-8941	2518-27	0.30	*80% <u>Claystone</u> , varicoloured, as above 20% <u>Sand</u> , as above



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B8943	2536-45	0.38	*90% <u>Claystone</u> , varicoloured, moderate brown, reddish brown, olive brown, olive grey, medium grey 10% <u>Sand</u> Sm.am. Limestone; Paint
B-8945	2554-63	0.20	*80% <u>Claystone</u> , varicoloured, as above 10% <u>Sand/Sandstone</u> , white, clear, light grey, very fine-medium grained 10% Limestone, white
B-8947	2581-90	0.22	*90% <u>Claystone</u> , varicoloured, as above 10% <u>Sand/Sandstone</u> , as above Sm.am. Limestone
B-8949	2599-2608	0.23	*80% <u>Claystone</u> , varicoloured, as above 20% <u>Sand/Sandstone</u> , as above Sm.am. Limestone
B-8951	2617-26	0.22	*90% <u>Claystone</u> , varicoloured, as above 10% <u>Sand/Sandstone</u> , as above Sm.am. Limestone
B-8953	2635-44	0.40	80% <u>Sand/Sandstone</u> , as above *10% <u>Claystone</u> , varicoloured 10% Limestone, (white)
B-8955	2653-62	0.26	*50% <u>Claystone</u> , moderate brown, silty, sandy, partly calcareous 40% <u>Sand/Sandstone</u> , clear brown, fine-coarse 10% <u>Coal</u> , black Sm.am. Claystone (varicoloured)



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-8959	2671-80	0.23	80% <u>Sand/Sandstone</u> , as above *10% <u>Claystone</u> , moderate brown 10% <u>Coal</u> , black Sm.am. Limestone
B8957	2689-98	0.21	90% <u>Sand/Sandstone</u> , fine-coarse, clear-light grey *10% <u>Claystone</u> , moderate brown, partly calcareous
B-8961	2707-17	0.23	90% <u>Sand/Sandstone</u> , as above *10% <u>Claystone</u> , moderate brown Sm.am. Limestone
B-8962	2717-25	0.21	90% <u>Sand/Sandstone</u> , as above *10% <u>Claystone</u> , moderate brown Sm.am. Limestone, Steel shavings; Trace of casing cement
B-9019	2734-43		*100% <u>Sand</u> , light grey, clear, fine-coarse Sm.am. Claystone, (moderate brown); Limestone; Coal
B-9021	2752-61	0.33	90% <u>Sand/Sandstone</u> , light grey, clear, fine-coarse *10% <u>Claystone</u> , moderate brown Sm.am. Claystone (olive grey); Coal; Limestone; Steel shavings
B-9023	2770-79		90% <u>Casing cement</u> , white with minute black specks 10% <u>Sand</u> , light grey-light brown-clear, fine-coarse Sm.am. Claystone (moderate brown); Steel shavings



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-9025	2788-97	0.26	90% <u>Sand</u> , light grey-light brown-clear, fine-very coarse *10% <u>Claystone</u> , moderate brown, disintegrates in 10% HCl Sm.am. Casing cement
B-9027	2806-2815		100% <u>Sand/Sandstone</u> , light grey-light brown-clear, fine-coarse Sm.am. Claystone (moderate brown); Limestone/Marl; Steel shavings
B-9029	2824-33		100% <u>Sand/Sandstone</u> , as above Sm.am. Claystone (moderate); Marl (moderate-light brown); Steel shavings Trace: Casing cement
B-9031	2842-51		100% <u>Sand/Sandstone</u> , as above Sm.am. Claystone (moderate brown, medium grey); Casing cement; Steel shavings; Limestone/Marl (white-moderate brown)
B-9033	2860-69		100% <u>Sand/Sandstone</u> , as above Sm.am. Claystone (moderate brown, medium grey); Casing cement; Steel shavings; Limestone/Marl (white-moderate brown); Coal
B-9035	2878-87		100% <u>Sand/Sandstone</u> , light grey-brown-clear, fine-coarse Sm.am. Coal; Claystone (moderate brown); Limestone/Marl



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-9037	2896-2905	0.28	80% <u>Sand/Sandstone</u> , as above *10% <u>Marl</u> , moderate brown, partly grading into Claystone 10% Coal Sm.am. Limestone; Casing cement
B-9039	2914-23	0.19	80% <u>Sand/Sandstone</u> , as above *20% <u>Marl</u> , moderate brown Sm.am. Limestone; Steel shavings Trace: Casing cement
B-9041	2932-41		80% <u>Sand/Sandstone</u> , light grey-brown-clear, fine-very coarse 20% Coal Sm.am. Marl (moderate brown; Contaminants) (Steel, pipe dope, fibre)
B-9043	2950-59	0.25	40% <u>Sand/Sandstone</u> , light grey-brown-clear, fine-coarse *30% <u>Marl</u> , moderate brown 30% Contaminants (drilling fluid deposits; Steel; fibre) Sm.am. Coal; Limestone
B-9045	2968-77	0.25	80% <u>Sand</u> , light grey-brown-clear, very fine-medium *10% <u>Marl</u> , moderate brown 10% <u>Limestone</u> , white Sm.am. Coal; Contaminants (drilling fluid deposits; Steel)



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-9047	2986-95	0.24	30% <u>Sand</u> , as above *30% <u>Marl</u> , moderate brown, partly grading into Claystone 30% Contaminants (as above) 10% <u>Limestone</u> , white
B-9049	3004-13	0.22	50% <u>Sand</u> , as above *30% <u>Marl</u> , moderate brown, as above 20% <u>Limestone</u> , white, light grey
B-9051	3022-31	0.29	50% <u>Sand</u> , as above *30% <u>Marl</u> , moderate brown, as above 20% <u>Limestone</u> , white, light grey Sm.am. Steel
B-9053	3040-49	0.37	*80% <u>Claystone</u> , moderate brown, calcareous, grading into Marl 10% <u>Limestone</u> , white-pink 10% <u>Sand</u> , as above Sm.am. Steel
B-9055	3058-67	0.17	*60% <u>Claystone</u> , moderate brown, calcareous, grading into Marl 20% <u>Sand/Sandstone</u> 10% <u>Limestone</u> , as above 10% Contaminants (Steel, drilling fluid deposits)
B-9057	3076-3103	0.23	60% <u>Sand/Sandstone</u> , light grey-brown-clear, fine-coarse *30% <u>Claystone</u> , moderate brown, as above 10% <u>Limestone</u> , white-pink, partly argillaceous Sm.am. Steel



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-9059	3094-3103		90% <u>Sand/Sandstone</u> , as above 10% <u>Limestone</u> , as above Sm.am. Claystone (moderate brown); Steel
B-9061	3112-21	0.39	70% <u>Sand/Sandstone</u> , as above *20% <u>Marl</u> , moderate brown 10% <u>Limestone</u> , white, light brown, partly argillaceous grading into Marl Sm.am. Claystone (moderate brown); Steel
B-9063	3130-39	0.33	70% <u>Sand/Sandstone</u> , as above 20% <u>Limestone</u> , white-pink, chalky *10% <u>Marl</u> , moderate brown
B-9065	3148-57	0.28	80% <u>Sand/Sandstone</u> , as above 10% <u>Limestone</u> , as above *10% <u>Marl</u> , moderate brown
B-9067	3166-75		90% <u>Sand/Sandstone</u> , as above 10% <u>Limestone</u> , as above Sm.am. Marl; Claystone (moderate brown)
B-9067	3184-93	0.29	60% <u>Sand/Sandstone</u> , as above 30% <u>Limestone</u> , white-pink-light brown, partly argillaceous *10% <u>Claystone</u> , moderate brown, calcareous, partly grading into Marl Sm.am. Marl Trace: Claystone (greenish grey); Coal
B-9071	3202-11		90% <u>Sand</u> , light grey-light brown-clear, fine-coarse 10% <u>Limestone</u> , as above Sm.am Claystone (moderate brown)



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-9073	3220-29		100% <u>Sand</u> , as above Sm.am. Limestone; Claystone/Marl (moderate brown)
B-9075	3238-47		70% <u>Sand</u> , as above 30% <u>Limestone</u> , white, pink, light brown, partly argillaceous Sm.am. Claystone/Marl (moderate brown); Steel
B-9077	3256-65	0.23	70% <u>Sand</u> , as above 20% <u>Limestone</u> , as above *10% <u>Claystone</u> , moderate brown, occ. calcareous, grading to Marl Sm.am. Claystone (greenish grey)
B-9079	3274-83		80% <u>Sand/Sandstone</u> , as above 20% <u>Limestone</u> , as above Sm.am. Claystone/Marl (moderate brown); Steel
B-9081	3310-28	0.20	80% <u>Sand/Sandstone</u> , as above *10% <u>Claystone</u> , moderate brown, occ. calcareous grading to Marl 10% <u>Limestone</u> , as above Sm.am. Steel (abundant)
B-9083	3346-64	0.23	80% <u>Sand/Sandstone</u> , as above *10% <u>Claystone</u> , as above 10% <u>Limestone</u> , as above Sm.am. Claystone (greenish) grey; Steel
B-9085	3373-82		80% <u>Sand</u> , light grey-clear-(light brown), very fine-medium grained 20% <u>Limestone</u> , as above Sm.am. Claystone (moderate brown)



Lithology and Total Organic Carbon measurements

TABLE NO.: 2.
WELL NO.: 34/7-3

Sample	Depth (m)	TOC	Lithology
B-9087	3400-09	0.61	*40% <u>Claystone</u> , medium grey-greenish grey, micromicaceous. 40% <u>Limestone</u> , white, light grey 20% <u>Sand</u> , as above Sm.am. Claystone (moderate brown); Steel

34/7-3 WELL SUMMARY

UNIT	DEPTH	DEPTH	THICK.	REMARKS
	KB	SS	m	
Sea Bed	353	328	328	
Pliocene - Quaternary Nordland Gp.	353	328	637	
Miocene Utsira Fm.	990	965	150	
Eocene Oligocene Hordaland Gp.	1140	1115	532	
Paleocene Rogaland Gp.	1672	1647	167	Balder Fm.
U. Cretaceous Shetland Gp.	1831	1806	526.5	
L. Cretaceous Cromer Knoll Gp.	2357.5	2332.5	4.8	
L. Jurassic Dunlin Gp.	2362.3	2337.3	51.5	
Amundsen Fm.	2362.3	2337.3	51.5	
Calcareous Mbr.	2381	2356	32.8	
L. Jurassic Statfjord Fm.	2413.8	2388.8	99.2	
U. Triassic Hegre Group	2513	2488	852.5	
U. Lunde Fm.	2513	2488	852.5	Raude Sh. equiv.
M. Lunde Fm.	3365.5	3340.5	48.5	
Final TD	3414	3389		

Provisional log picks: 13/12/84

Well no : 34/7 - 3

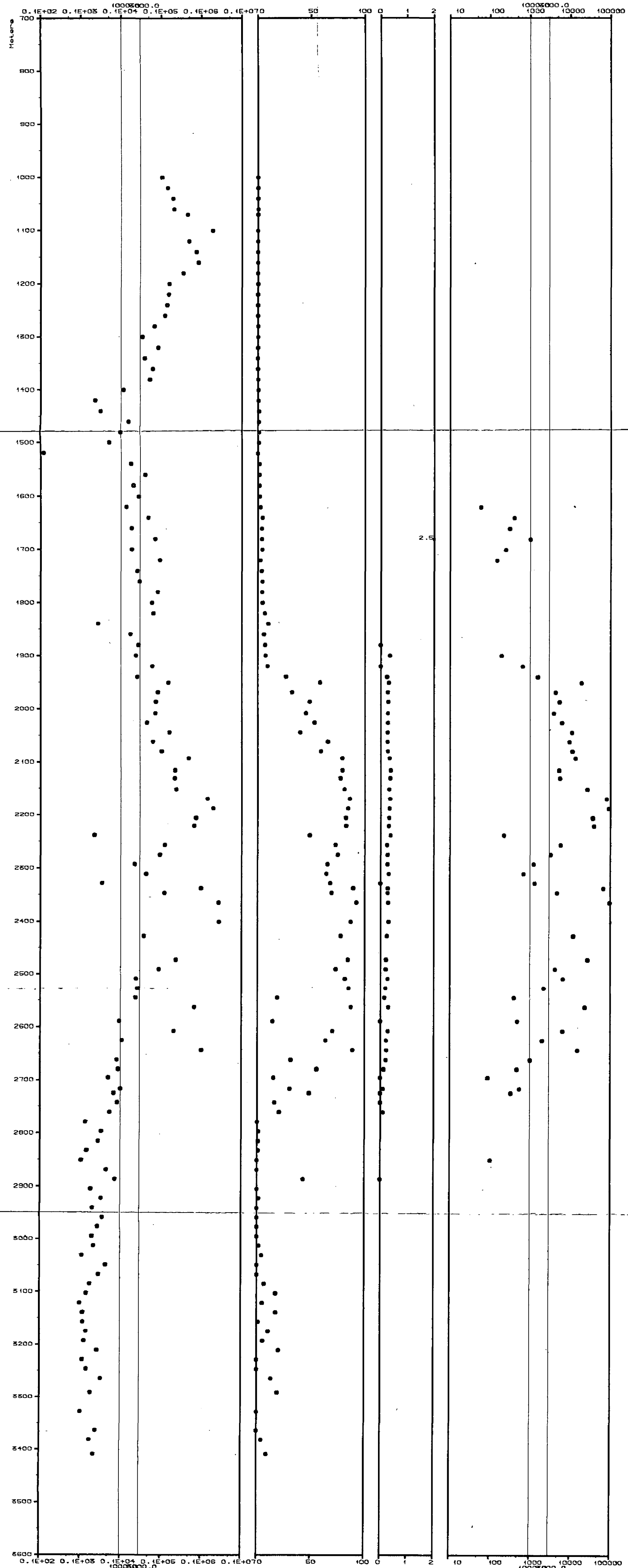
C1-C4 HYDROCARBONS

C5-C7 HYDROCARBONS

Abundance($\mu\text{L gas/kg rock}$)

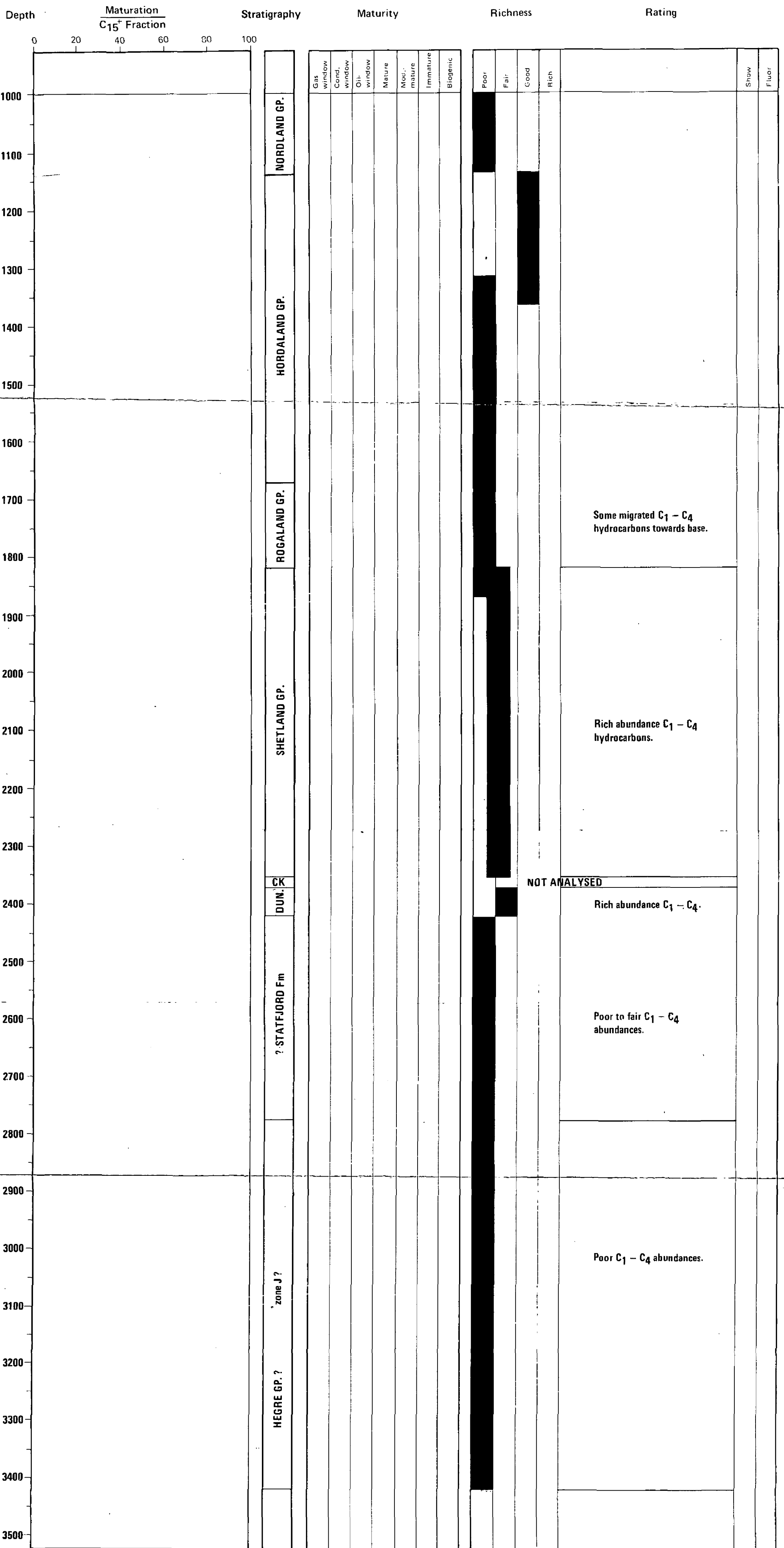
Wetness

LC4 nC4 Abundance($\mu\text{L gas/kg rock}$)





SUMMARY OF SOURCE POTENTIAL (Based on TOC only)



● % $\frac{\text{Sat.}}{\text{EOM}}$ ○ % $\frac{\text{HC}}{\text{EOM}}$
 Sat: Saturated Hydrocarbons.
 HC: Hydrocarbons.
 EOM: Extractable Organic Matter.