

IKU



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SOURCE ROCK ANALYSIS OF WELL 6507/12-1			
CLIENT/ OPPDRAGSGIVER			
SAGA			
RESPONSIBLE SCIENTIST/ PROSJEKTANSVARLIG			
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SUMMARY/ SAMMENDRAG

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SUMMARY

The whole analysed sequence of the well down to approximately 2800 m is immature increasing to moderate mature in the interval from 2800 - 3100 m. It should be noted that interpretation based mainly on screening analyses and a few follow-up analyses is only tentative. The analysed sequence was divided into zones:-

Zone A, 1040 - 1500 m: Was not analysed for source rock potential.

Zone B, 1500 - 1680 m: This was found to have a good potential as a source rock for oil and gas.

Zone C, 1680 - 2010 m: The claystones are found to have a fair potential as a source rock for gas.

Zone D, 2010 - 2310 m: This sequence can be divided into various sub-zones including some dark grey/black claystones found in relatively high proportions in the intervals from 2030 - 2055 m, and 2130 - 2175 m which have a rich potential as a source rock for oil and gas.

Interpretation based on the few analyses performed below 2300 m is difficult. The coal/coaly claystones interval below 2300 m has a rich potential as a source rock for gas.

EXPERIMENTAL AND DESCRIPTION OF INTERPRETATION LEVELS

Headspace gas analyses

One ml. of the headspace gas from each of the cans was analysed gas chromatographically for light hydrocarbons. The results are shown in Table 1a. The canned samples were washed with tempered water on 4, 2, 1 and 0.125 mm sives to remove drilling mud and thereafter dried at 35°C.

Occluded gas

An aliquot of the 1-2 mm fraction of each sample before drying was crushed in water using an airtight ball mill, and one ml. of the headspace analysed chromatographically. The results are shown in Table 1b.

Total Organic Carbon (TOC).

Picked cuttings of the various lithologies in each sample were crushed in a centrifugal mill. Aliquots of the samples were then weighed into Leco crucibles and treated with hot 2N HCl to remove carbonate and washed twice with distilled water to remove traces of HCl. The crucibles were then placed in a vacuum oven at 50°C and evacuated to 20 mm Hg for 12 hrs. The samples were then analysed on a Leco E C 12 carbon analyser, to determine the total organic carbon (TOC).

Extractable Organic Matter (EOM)

From the TOC results samples were selected for extraction. Of the selected samples, approximately 100 gm of each was extracted in a flow through system (Radke et al., 1978, Anal. Chem. 49, 663-665) for 10 min. using dichloromethane (DCM) as solvent. The DCM used as solvent was distilled in an all glass apparatus to remove contaminants.

Activated copper filings were used to remove any free sulphur from the samples.

After extraction, the solvent was removed on a Buchi Rotavapor and transferred to a 50 ml flask. The rest of the solvent was then removed and the amount of extractable organic matter (EOM) determined.

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Chromatographic Separation.

The extractable organic matter (EOM) was separated into saturated fraction, aromatic fraction and non hydrocarbon fraction using a MPLC system with hexane as eluant (Radke et al., Anal. Chem, 1980). The various fractions were evaporated on a Buchi Rotavapor and transferred to glassvials and dried in a stream of nitrogen. The various results are given in Tables III - VII.

Gas chromatographic analyses.

The saturated fraction was diluted with n-hexane and analysed on a HP 5730 A gas chromatograph, fitted with a 25 m OV101 glass capillary column and an automatic injection system. Hydrogen (0.7 ml/min.) was used as carrier gas and the injection was performed in the split mode (1:20).

Processing of Samples and Evaluation Visual Kerogen

Crushed rock samples were treated with hydrochloric and hydrofluoric acids to remove the minerals. A series of microscopic slides contain strew mounts of the residue:

T-slide represents the total acid insoluble residue.

N-slide represents a screened residue (15 μ meshes).

O-slide contains palynodebris remaining after flotation ($ZnBr_2$) to remove disturbing heavy minerals.

X-slides contain oxidized residues, (oxidizing may be required due to sapropel which embeds palynomorphs, or to high coalification preventing the identification of the various groups).

T and/or O slides are necessary to evaluate kerogen composition/palynofacies which is closely related to sample lithology.

Screened or oxidized residues are normally required to concentrate the larger fragments, and to study palynomorphs (pollen, spores and dinoflagellates) and cuticles for paleodating and colour evaluation.

So far visual evaluations of kerogen have been undertaken from residues mounted in glycerine jelly, and studied by Leitz Dialux in normal light

(halogene) using x10 and x63 objectives. By x63 magnification it is possible to distinguish single particles of diameters about 2 and, if wanted, to make a more refined classification of the screened residues (particles >15µ).

The colour evaluation is based on colour tones of spores and pollen (preferably) with support from other types of kerogen (woody material, cuticles and sapropel). These colours are dependant upon the maturity, but also are under influence of the paleo-environment (lithology of the rock, oxidation and decay processes). The colours and the estimated colour index of an individual sample may therefore deviate from those of the neighbouring samples. The techniques in visual kerogen studies are adopted from (Staplin 1969 and Burgess 1974).

In interpretation of the maturity from the estimated colour indices we follow a general scheme that is calibrated against vitrinite reflectance values (R_o).

R_o	0.45	0.6	0.9	1.0	1.3
colour	2-	2	2+	3-	3
3+					
index					
Maturity intervals	Moderate mature	Mature (oil window)			Condensate window

Rock-Eval Pyrolyses

100 mg crushed sample was put into a platinum crucible whose bottom and cover are made of sintered steel and analysed on a Rock-Eval pyrolyser.

RESULTS AND DISCUSSION

Based on the light hydrocarbon results the analysed sequence of the well is divided into eight zones:

- A: 1040 - 1500 m
- B: 1500 - 1680 m
- C: 1680 - 2010 m
- D: 2010 - 2310 m
- E: 2310 - 2490 m
- F: 2490 - 3015 m
- G: 3015 - 3285 m
- H: 3285 - 3717 m

Zone A; 1040 - 1500 m: The abundance of $C_1 - C_4$ hydrocarbons is good while the amount of C_5+ hydrocarbons is mostly too low to be detected. Of the $C_1 - C_4$ hydrocarbons, methane is the most abundant, and the wetness of the gas is very low. This would indicate a mainly biogenic organic origin for this gas.

Zone B; 1500 - 1680 m: The abundance of $C_1 - C_4$ hydrocarbons falls sharply in this zone which consists mostly of claystones. The C_5+ hydrocarbons are, however, present in measurable concentrations in this zone and the wetness of the gas is markedly higher than in zone A.

Zone C; 1680 - 2010 m: This zone which consists of claystones and tuffs has a markedly higher abundance of $C_1 - C_4$ hydrocarbons than zone B, while the wetness is much lower. The abundance of C_5+ hydrocarbons is also lower indicating mainly biogenic gas in this zone.

Zone D; 2010 - 2310 m: The abundance of $C_1 - C_4$ hydrocarbons is very erratic in this zone while the abundance of C_5+ hydrocarbons is constant at approximately 900 $\mu\text{l}/\text{kg}$ of rock. The wetness of the gas is markedly higher than in the zone above while the iC_4/nC_4 is much lower than in zone C. This would indicate a larger input of petrogenic gas than in zone C.

Zone E; 2310 - 2490 m: The abundance of $C_1 - C_4$ hydrocarbons drops compared to the zone above while the C_5+ hydrocarbon contents are very

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erratic. This zone consists of a large proportion of sand and the very low abundance of hydrocarbons indicate this zone does not contain migrated hydrocarbons.

Zone F; 2490 - 3015 m: The abundance of $C_1 - C_4$ hydrocarbons is good over this zone while the C_5+ hydrocarbon abundances are fair to poor in the 2800 - 2900 m interval. The wetness of the gas is erratic throughout the zone while the iC_4/nC_4 ratio is high throughout the zone, indicating immaturity.

Zone G; 3015 - 3288 m: The abundance of $C_1 - C_4$ hydrocarbons is markedly lower in this zone than in the zone above while the abundance of C_5+ hydrocarbons is similar to zone F. The wetness of the gas is very erratic throughout the zone while the iC_4/nC_4 ratio decreases noticeably compared to zone F. This could indicate a higher maturity in this zone.

Zone H; 3285 - 3717 m: The abundance of $C_1 - C_4$ hydrocarbons is only slightly lower than in zone G, but it is distinguishable from zone G because of a large decrease in the abundance of C_5+ hydrocarbons and the wetness of the gas. The abundance of C_4 hydrocarbons is very low so that the iC_4/nC_4 ratio was not calculated.

Total Organic Carbon (TOC)

Zone A: No samples from this zone were analysed for organic carbon. This part of the zone consists mostly of sands and gravels with some claystone at the base of this zone.

Zone B: The lithology of this zone is similar to the lowermost part of the zone above. The abundance of organic carbon varies from 1 - 4.6% with values above 2% restricted to that part of the zone above 1560 m.

Zone C: The main lithology of this zone is found to be of light grey, greenish-grey and green claystones with some medium grey claystone or tuff in some samples. The main claystone lithologies are found to have a low abundance of organic carbon, decreasing with increasing depth. The lowermost samples are found to be mainly grey claystone with organic carbon values of approximately 1%.

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Zone D: The upper part of this zone is found to have a lithology similar to the lower part of zone C, with similar organic carbon values. From approximately 2030 m a dark grey-black claystone is encountered. This is found to have a rich abundance of organic carbon, approximately 10%. This dark claystone is found in relatively large proportions down to approximately 2110 m.

Based on this information some of this could of course be cavings. Information from Saga Petroleum give the "Hot shale" interval as 2030 - 2055 m and this can, on the basis of total organic carbon be separated out as a separate zone D₂.

From 2130 m down to 2175 m again a dark grey, black claystone is encountered. This claystone is, however, carbonaceous, and also has a very high organic carbon value, which could on this basis be separated out as another zone. The lower part of this zone, 2200-2310 m is found to consist mainly of claystone, with a good abundance of organic carbon. This is separated out as a zone of special interest by Saga Petroleum. On the basis of this extra information together with the organic carbon values zone D can be divided into the following subzones:

- Zone D₁: 2010 - 2030 m
- Zone D₂: 2030 - 2055 m
- Zone D₃: 2055 - 2130 m
- Zone D₄: 2130 - 2175 m
- Zone D₅: 2175 - 2250 m
- Zone D₆: 2250 - 2310 m

Zone E: This zone consists mainly of sandstones and organic carbon values were not measured.

Zone F: This zone consists mainly of dark grey to dark brown claystones with coal laminae. Saga Petroleum requested organic carbon on a few samples from this zone. These are found to have large variations in the results, probably due to various amounts of coaly stringers in the claystone cuttings. The claystone in the lowermost part of the zone was analysed and the organic carbon values are found to vary from 1-5%.

Zone G: Again a zone with a mixture of sandstones and claystones. The clay-

stones change from mostly grey to brown and this change is seen in the organic carbon values as a large drop from approximately 2% down to 0.1%.

Zone H: Mainly reddish brown claystones with very poor abundance of organic carbon.

Extraction and Chromatographic Analyses.

Saga Petroleum requested three samples, all from zone D, for extraction. The two samples with black claystone, 2025 and 2040 m both have a rich abundance of extractable hydrocarbons, which is, however, very low when it is normalized to organic carbon. This is probably due to the low maturity of these samples. The gas chromatograms of the saturated hydrocarbon fraction of the two samples show some similarities but also some differences. The two chromatograms both show a typical bimodal distribution with a maximum for phytane and nC_{29} . The first suggests strong reducing environment of deposition while the latter shows an input from terrestrial material. The amount of geochemical fossils (steranes and triterpanes) is large in both samples. Due to the very low maturity of the samples the proportion of geochemical fossils is high, but will diminish considerably with increasing maturity.

The third sample requested for extraction was from 2280 - 95 m. The sample is found to have a good abundance of extractable hydrocarbons. The gas chromatogram of the saturated hydrocarbon fraction shows a bimodal n-alkane distribution with maxima at nC_{18} and nC_{27} indicating an input from both marine and terrestrial kerogen. The CPI value is far lower for this sample than in the two samples higher up in the well. A change like this over approximately 200 m is not entirely due to a change in maturity but in part to a change in the kerogen composition.

Examination in Reflected Light

All the examination in reflected light was done by Saga Petroleum personnel, and a table of vitrinite reflectance was supplied to IKU. No information was given with the table.

Examination in Transmitted Light

Saga Petroleum requested eight samples analysed in transmitted light.

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Judged by the very small organic residues they have all been derived from lithologies poor in acid insoluble organic matter.

The uppermost samples, at 1875-90 m, is clearly immature. Five samples cover the interval 1935 - 2045 m. All these residues had been derived from lithologies also containing some limestone or carbonate cement. We therefore suspect that the colour indices 2- or 2-/2 are too high as maturation parameters, and evaluate the interval as immature to moderate mature.

The lowest samples, 2250 m and 2280 m, represent an Early Jurassic interval which has been evaluated as moderate mature or immature to moderate mature. The pollen grains observed were more or less of the same colour tones or even lighter than those from the layers above.

Sample 1875 - 90 m (K 6655)

The residue also included inorganic aggregates which disturbed observation and classification of the amorphous material present. Terrestrial material, mostly of cuticular origin dominates. Pyrite framboids and fungi were observed. Colour index: 1+.

Sample 1935 - 50 m (K 6659)

The residue consists mainly of amorphous material observed as aggregates and embedding cysts, fungal hyphae and large amounts of pyrite. Colour index: 2-.

Sample 1980 - 95 m (K 6662)

The residue is dominated by terrestrial material mostly of a woody nature. The amorphous material tends to form aggregates embedding the other particles including well preserved cysts. Colour index: 2-.

Sample 2010 - 25 m (K 6664)

The residue consists of a dominant part of amorphous material recorded as aggregates and embedding cysts, woody material, indeterminate small herbaceous particles, reworked woody/coaly material and pollen. Colour index: 2-.

Samples 2030 m and 2045 m

The residues consist of a major terrestrial element which is strongly sapro-
pelized, especially in the sample from 2030 m. The presence of amorphous

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aggregates embedding other particles suggest material derived from a carbonate lithology. Colour index: 2- or 2-/2.

Samples 2250 - 65 m (K 6680) and 2280 - 95 m (K 6682)

The residues apparently consist of equal amounts of amorphous and terrestrial material. The terrestrial remains which seem sapropelized, include cuticles and pollen grains as well as woody material. The sparse residues also contain reworked woody/coaly material. Colour index: 2- or 1+/2-.

Rock-Eval Pyrolyses

A total of eighty-three samples were analysed on a Rock-Eval pyrolyser. Most of the samples are from the depth interval 1500 - 2000 m with a few samples from the interval 2500 - 3100 m. None of the samples from below 3100 m were pyrolysed. The T_{\max} values indicate that most of the samples to be immature increasing to moderate mature at approximately 3000 m. The S_2 peak is, however, rather broad and it is difficult to get an accurate reading of the T_{\max} .

The whole analysed part of zone A together with the upper part of zone B has a moderate hydrogen index and high oxygen index indicating samples of kerogen type III, possibly of kerogen type II and III, of low maturity. The very low production index, indicate that the samples, contain a low proportion of free hydrocarbons. The petroleum index is poor to fair for all the samples.

From approximately 1635 m the picture changes completely and the samples are found to have a far lower hydrogen index and a very high oxygen index. The latter is probably caused by decomposition of carbonate and thereby producing CO_2 . The very low hydrogen index does, however, show that all the samples contain kerogen type III. The petroleum index for all of these samples is poor. The production index is high for some of the samples indicating that a large proportion of the hydrocarbons found during the pyrolyses experiments are present as free hydrocarbons. These results are found for all the light grey or green-grey claystones down to approximately 2310 m. The sequence 2030 - 2300 m contains varying amounts of dark grey or black claystone. These samples all have a high hydrogen index and a low oxygen index indicating kerogen type II. All the samples have a high petroleum index while the production index is very low indica-

ting that the samples contain very small amounts of free hydrocarbons. The T_{\max} is far lower for this lithology than for other lithologies at the same level. This could be due to a combination of the differences in kerogen compositions found in the samples, and that for kerogen type III where the S_2 peak is normally broad and the T_{\max} values will therefore be less accurate and generally too high.

Conclusion

A conclusion based mainly on screening analyses and a few follow-up analyses will be very uncertain. In our evaluation the richness of the source rock is mainly based on the total organic carbon analyses while the typing of the kerogen is based on the Rock-Eval data. The maturity is based on the T_{\max} values from the Rock-Eval pyrolyses and the supplied vitrinite reflectance data.

The whole analysed sequence down to approximately 2800 m is immature increasing to moderate mature in the interval 2800 - 3100 m. The sequence below 3100 m was not analysed.

Zone A: 1040 - 1500 m, was not analysed for source rock potential, only light hydrocarbons.

Zone B: 1500 - 1680 m: The zone is found to have a good potential as a source rock for gas and oil. The richness decreases with increasing depth.

Zone C: 1680 - 2010 m: The abundance of organic carbon in this zone is markedly lower than in zone B and the claystone in the zone is found to have a fair potential as a source rock for gas.

Zone D: 2010 - 2310 m: This section should be divided into various zones. The light grey claystones found throughout the whole of zone D have a fair potential as a source rock for gas while the dark grey/black claystone found in relatively high proportions especially in the intervals 2030 - 2055 m and 2130 - 2175 m have a rich potential as source rocks for oil and gas. The claystone sequence from 2200 - 2310 m has a good potential as a source rock for gas.

Very few analyses were performed on the samples below 3300 m and interpretation is therefore difficult. The coal/coaly claystone interval below 2300 m has a rich potential as a source rock for gas.

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I
K6614	1030	26411	-	-	-	-	-	26412	-	-	-	I
K6615	1060	17802	-	-	-	-	-	17803	-	-	-	I
K6616	1090	34097	-	-	-	-	-	34097	-	-	-	I
K6617	1120	20726	-	-	-	-	-	20727	-	-	-	I
K6618	1150	17185	-	-	-	-	-	17185	-	-	-	I
K6619	1180	6471	-	9	-	-	-	6480	9	.13	-	I
K6620	1210	7654	-	12	-	-	-	7666	12	.16	-	I
K6621	1240	9868	-	24	-	-	-	9892	25	.25	-	I
K6622	1270	8245	-	32	-	-	-	8277	32	.38	-	I
K6623	1300	4302	-	22	-	-	-	4324	23	.52	-	I
K6624	1330	9875	-	31	-	-	-	9906	31	.32	-	I
K6625	1360	24008	-	106	58	-	-	24172	164	.68	-	I
K6626	1390	64245	-	168	105	-	-	64518	273	.42	-	I
K6627	1420	53576	-	315	192	-	165	54082	506	.94	-	I
K6628	1450	200001	-	1072	382	-	257	201455	1454	.72	-	I
K6629	1480	203766	-	1129	61	400	180	205357	1591	.77	.15	I
K6630	1500	1182	-	-	-	-	-	1183	-	.04	-	I
K6631	1515	997	-	45	28	-	-	1071	73	6.86	-	I
K6632	1530	O P E N		L I D								I
K6633	1545	O P E N		L I D								I
K6634	1560	O P E N		L I D								I
K6635	1575	O P E N		L I D								I
K6636	1590	16	-	-	-	-	-	17	-	-	-	I
K6637	1605	217	-	-	-	-	-	217	-	-	-	I
K6638	1620	138	-	-	-	-	-	138	-	-	-	I

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IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I
K6639	1635	55	-	-	-	-	-	55	-	-	-	I
K6640	1650	O P E N L I D										I
K6641	1665	271	1734	77	71	31	70	2184	1913	87.60	2.30	I
K6642	1680	18439	-	34	29	-	20	18501	62	.34	-	I
K6643	1695	95	-	-	-	-	-	95	-	-	-	I
K6644	1710	37728	-	61	33	7	37	37829	101	.27	4.86	I
K6645	1725	17630	-	23	18	-	-	17671	42	.23	-	I
K6646	1740	61278	-	25	11	-	-	61314	37	.06	-	I
K6647	1735	81117	-	29	16	-	-	81163	46	.06	-	I
K6648	1770	51143	-	25	-	-	-	51168	25	.05	-	I
K6649	1785	27964	38	32	13	-	-	28048	84	.30	-	I
K6650	1800	39521	-	21	-	-	-	39542	21	.05	-	I
K6651	1815	39277	71	35	-	-	38	39383	106	.27	-	I
K6652	1830	10676	3	5	-	-	8	10684	8	.07	-	I
K6653	1845	12537	12	7	5	-	16	12561	24	.19	-	I
K6654	1860	4634	15	5	4	-	8	4657	23	.50	-	I
K6655	1875	23603	6	-	-	-	3	23609	6	.02	-	I
K6656	1890	2124	3	2	-	-	2	2129	5	.24	-	I
K6657	1905	3635	12	-	-	-	-	3647	13	.34	-	I
K6658	1920	8224	10	13	5	-	9	8253	28	.34	-	I
K6659	1935	8423	24	15	-	-	5	8463	39	.47	-	I
K6660	1950	6526	33	16	-	-	-	6575	49	.74	-	I
K6661	1965	15244	39	16	-	-	10	15299	55	.36	-	I
K6662	1980	9189	24	12	-	-	7	9226	37	.40	-	I
K6663	1995	6342	22	12	4	-	11	6380	39	.60	-	I

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CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I		
K6664	2010	5201	11	10	2	-	18	5224	23	.44	-	I		
K6665	2025	56557	726	208	48	39	74	57578	1020	1.77	1.23	I		
K6666	2040	78655	877	205	59	40	81	79836	1181	1.48	1.48	I		
K6667	2055	32248	802	251	104	64	170	33470	1222	3.65	1.62	I		
K6668	2070	38871	636	174	52	36	74	39769	899	2.26	1.43	I		
K6669	2085	8272	222	80	29	20	61	8623	351	4.07	1.45	I		
K6670	2100	15290	249	81	25	18	43	15663	373	2.38	1.43	I		
K6671	2115	11428	256	79	24	17	60	11805	376	3.19	1.38	I		
K6672	2130	62715	2269	433	85	53	101	65555	2840	4.33	1.62	I		
K6673	2145	9159	376	182	52	37	146	9807	648	6.60	1.40	I		
K6674	2160	2141	118	39	11	8	23	2317	176	7.58	1.40	I		
K6675	2175	1735	103	36	9	6	18	1889	154	8.16	1.49	I		
K6676	2190	4211	413	103	31	29	77	4786	576	12.03	1.09	I		
K6677	2205	1200	158	73	32	23	97	1486	286	19.23	1.37	I		
K6678	2220	29272	1624	541	268	154	319	31860	2588	8.12	1.74	I		
K6679	2235	11375	1471	489	315	173	317	13824	2449	17.71	1.82	I		
K6680	2250	5109	370	158	104	54	107	5794	685	11.83	1.91	I		
K6681	2265	18891	1008	491	415	212	385	21017	2126	10.12	1.96	I		
K6682	2280	40111	1472	788	512	230	493	43114	3002	6.96	2.22	I		
K6683	2295	O P E N		L I D										I
K6684	2310	O P E N		L I D										I
K6685	2325	O P E N		L I D										I
K6686	2340	356	38	27	16	-	-	437	81	18.55	-	I		
K6687	2365	1535	121	105	65	-	54	1828	293	16.00	-	I		
K6688	2370	5751	271	137	55	-	-	6213	463	7.45	-	I		

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CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 --- nC4	I
K6689	2385	1694	80	60	25	-	-	1858	164	8.84	-	I
K6690	2400	2484	175	138	48	-	45	2846	361	12.69	-	I
K6691	2415	2053	507	399	144	-	-	3103	1050	33.85	-	I
K6692	2430	O P E N		L I D								I
K6693	2445	O P E N		L I D								I
K6694	2460	9246	313	186	67	35	54	9848	602	6.11	1.91	I
K6695	2475	5001	277	255	102	59	140	5694	693	12.18	1.72	I
K6696	2490	9856	895	287	79	49	144	11166	1310	11.73	1.61	I
K6697	2505	30500	1358	551	170	106	304	32684	2185	6.68	1.60	I
K6698	2520	18137	418	328	110	68	337	19062	924	4.85	1.63	I
K6699	2535	6762	280	113	22	44	76	7220	458	6.34	.49	I
K6700	2550	176990	2513	1155	369	227	564	181254	4263	2.35	1.63	I
K6701	2565	70093	793	459	158	91	151	71593	1501	2.10	1.73	I
K6702	2580	60203	789	515	158	79	79	61744	1541	2.50	2.00	I
K6703	2595	141259	2372	1739	574	363	622	146306	5048	3.45	1.58	I
K6704	2610	149955	2025	1240	318	133	133	153671	3717	2.42	2.39	I
K6705	2625	14282	279	167	50	15	13	14793	511	3.46	3.21	I
K6706	2640	57855	1310	847	287	103	118	60402	2547	4.22	2.79	I
K6707	2655	71873	2237	815	259	110	129	75295	3421	4.54	2.35	I
K6708	2670	25776	857	380	130	68	135	27212	1436	5.28	1.90	I
K6709	2685	714	154	116	47	30	121	1062	348	32.77	1.56	I
K6710	2700	27544	1375	742	278	126	138	30065	2521	8.38	2.21	I
K6711	2715	3904	79	37	13	6	7	4039	135	3.33	2.16	I
K6712	2730	71713	1603	668	186	75	62	74245	2532	3.41	2.49	I
K6713	2745	74722	1377	535	146	63	62	76842	2120	2.76	2.31	I

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 --- nC4	I
K6714	2760	407	1476	449	124	50	59	2506	2099	83.77	2.50	I
K6715	2775	30426	1319	441	133	55	78	32375	1949	6.02	2.40	I
K6716	2790	59883	1276	416	107	36	43	61718	1835	2.97	3.01	I
K6717	2805	64058	1579	470	21	108	21	66236	2178	3.29	.20	I
K6718	2820	26142	561	170	36	9	7	26919	776	2.88	3.81	I
K6719	2835	12948	357	117	6	35	8	13462	515	3.82	.18	I
K6720	2850	7203	261	75	20	6	7	7565	362	4.79	3.33	I
K6721	2865	13014	751	291	96	31	135	14183	1169	8.24	3.13	I
K6722	2880	34151	655	241	90	27	140	35164	1013	2.88	3.40	I
K6723	2895	8846	492	195	81	26	137	9641	795	8.24	3.10	I
K6724	2910	34109	846	374	168	51	160	35548	1439	4.05	3.33	I
K6725	2925	11608	240	103	46	14	49	12011	403	3.36	3.27	I
K6726	2940	8048	431	175	83	33	203	8770	722	8.23	2.54	I
K6727	2955	O P E N		L I D								I
K6728	2970	4320	266	129	66	32	321	4814	493	10.25	2.09	I
K6729	2985	2964	152	91	51	24	203	3282	318	9.70	2.12	I
K6730	3000	1721	94	47	25	13	52	1899	178	9.38	1.94	I
K6731	3015	886	73	38	15	9	73	1021	135	13.22	1.77	I
K6732	3030	185	15	10	6	3	31	219	34	15.48	1.89	I
K6733	3045	1204	122	65	27	14	115	1432	229	15.96	1.92	I
K6734	3060	O P E N		L I D								I
K6735	3075	366	31	15	4	3	85	419	54	12.81	1.70	I
K6736	3090	366	26	13	4	2	36	412	46	11.13	1.87	I
K6737	3105	43	5	3	1	-	41	53	10	19.21	2.70	I
K6738	3120	364	37	20	6	3	92	430	66	15.39	2.00	I

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 nC4	I
K6739	3135	329	28	13	4	-	139	375	46	12.16	-	I
K6740	3150	355	30	13	4	-	103	404	48	11.94	-	I
K6741	3165	582	52	26	7	-	277	671	89	13.21	-	I
K6742	3180	408	33	18	4	-	155	465	57	12.19	-	I
K6743	3195	406	47	25	7	-	203	487	81	16.66	-	I
K6744	3210	413	81	34	9	-	4630	541	128	23.63	-	I
K6745	3225	353	64	41	13	-	295	474	121	25.61	-	I
K6746	3240	482	53	27	8	4	117	573	92	15.98	2.01	I
K6747	3255	203	31	20	6	-	78	262	59	22.37	-	I
K6748	3270	478	54	39	14	7	238	593	114	19.29	2.05	I
K6749	3285	1371	136	80	13	31	327	1631	260	15.95	.41	I
K6750	3300	715	70	42	13	4	351	845	129	15.30	3.05	I
K6751	3315	371	58	51	11	36	73	527	156	29.62	.32	I
K6752	3330	532	82	58	14	36	66	721	190	26.28	.40	I
K6753	3345	99	26	20	5	13	32	162	63	38.91	.37	I
K6754	3360	252	31	20	7	11	51	320	68	21.33	.63	I
K6755	3375	239	31	14	5	7	26	295	56	19.02	.67	I
K6756	3390	150	14	11	-	-	41	223	73	32.57	-	I
K6757	3405	112	13	11	-	-	31	146	34	23.00	-	I
K6758	3420	698	69	48	-	-	87	847	149	17.60	-	I
K6759	3435	99	21	18	-	-	33	149	50	33.74	-	I
K6760	3450	211	27	23	8	-	38	272	61	22.39	-	I
K6761	3465	189	20	15	-	-	-	225	36	15.82	-	I
K6762	3480	225	24	20	-	-	35	270	45	16.61	-	I
K6763	3495	102	17	10	2	-	10	131	29	22.03	-	I

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 --- nC4
K6764	3510	197	35	21	6	-	21	263	67	25.26	-
K6765	3525	110	36	17	-	-	-	178	68	38.06	-
K6766	3540	92	13	8	-	-	-	121	28	23.50	-
K6767	3555	37	-	-	-	-	-	52	15	29.22	-
K6768	3570	82	17	13	-	-	-	130	48	37.01	-
K6769	3585	167	21	18	-	-	72	221	54	24.27	-
K6770	3600	51	8	7	-	-	-	76	25	33.43	-
K6771	3615	22	6	5	-	-	40	39	18	44.90	-
K6772	3630	23	4	4	-	-	27	36	13	35.69	-
K6773	3645	31	-	-	-	-	41	49	18	36.47	-
K6774	3650	25	-	-	-	-	41	41	16	38.81	-
K6775	3675	24	4	3	-	-	35	38	14	36.07	-
K6776	3690	26	7	5	-	-	38	45	20	43.24	-
K6777	3705	118	21	21	-	-	81	175	57	32.73	-

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I
K6614	1030	302	-	-	-	-	-	303	-	-	-	I
K6615	1060	1672	-	-	-	-	-	1673	-	-	-	I
K6616	1090	1272	-	-	-	-	-	1272	-	-	-	I
K6617	1120	1242	-	43	33	-	-	1320	77	5.84	-	I
K6618	1150	1199	105	198	89	-	1684	1591	392	24.66	-	I
K6619	1180	1341	-	-	-	-	-	1342	-	-	-	I
K6620	1210	1316	-	-	-	-	-	1317	-	-	-	I
K6621	1240	1382	-	-	-	-	-	1383	-	-	-	I
K6622	1270	1445	-	17	-	-	25	1462	17	1.14	-	I
K6623	1300	1901	-	-	-	-	-	1901	-	-	-	I
K6624	1330	1001	-	-	-	-	-	1001	-	-	-	I
K6625	1360	1111	-	-	-	-	-	1111	-	-	-	I
K6626	1390	1456	-	-	-	-	-	1457	-	-	-	I
K6627	1420	856	-	19	-	-	53	875	19	2.19	-	I
K6628	1450	408	-	20	-	-	115	428	20	4.68	-	I
K6629	1480	421	16	49	35	13	135	534	113	21.21	2.80	I
K6630	1500	294	16	16	19	10	121	353	60	16.94	1.92	I
K6631	1515	389	19	22	14	-	109	445	56	12.49	-	I
K6632	1530	428	-	43	-	-	98	471	43	9.14	-	I
K6633	1545	438	66	45	18	-	58	567	129	22.79	-	I
K6634	1560	423	40	29	9	-	68	501	78	15.61	-	I
K6635	1575	245	51	43	51	-	156	390	145	37.28	-	I
K6636	1590	351	42	30	-	-	51	423	73	17.15	-	I
K6637	1605	286	41	26	9	-	74	362	76	21.10	-	I
K6638	1620	335	54	36	18	-	70	443	109	24.49	-	I

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4	I
K6664	2010	-	-	-	-	-	-	-	-	-	-	I
K6665	2025	185	114	146	91	92	265	627	443	70.55	1.00	I
K6666	2040	698	463	487	377	304	668	2328	1630	70.03	1.24	I
K6667	2055	117	63	120	138	113	400	552	435	78.77	1.22	I
K6668	2070	633	767	1082	798	643	1263	3922	3289	83.86	1.24	I
K6669	2085	127	67	93	94	88	467	469	342	72.91	1.07	I
K6670	2100	339	252	416	339	327	925	1674	1335	79.75	1.04	I
K6671	2115	366	132	237	221	204	747	1160	794	68.44	1.08	I
K6672	2130	1220	1153	1134	525	396	611	4429	3209	72.46	1.33	I
K6673	2145	465	44	93	103	104	417	809	344	42.51	.99	I
K6674	2160	-	-	-	-	-	-	-	-	-	-	I
K6675	2175	199	114	175	136	129	465	752	554	73.62	1.05	I
K6676	2190	296	204	290	186	167	259	1144	847	74.09	1.11	I
K6677	2205	490	91	110	100	95	629	886	396	44.71	1.05	I
K6678	2220	499	-	-	-	-	419	500	-	-	-	I
K6679	2235	1624	-	-	-	-	392	1627	-	-	-	I
K6680	2250	118	-	-	39	-	191	158	40	25.23	-	I
K6681	2265	228	-	-	-	-	81	230	-	-	-	I
K6682	2280	405	-	-	-	-	-	408	-	-	-	I
K6683	2295	272	-	33	40	-	175	345	74	21.35	-	I
K6684	2310	472	52	67	62	-	141	653	181	27.72	-	I
K6685	2325	427	-	56	42	-	96	525	98	18.72	-	I
K6686	2340	1195	-	-	-	-	311	1197	-	-	-	I
K6687	2365	N O T E N O U G H M A T E R I A L										I
K6688	2370	320	-	-	-	-	-	322	-	-	-	I

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I
K6689	2385	-	-	-	-	-	-	-	-	-	-	I
K6690	2400	104	-	-	-	-	-	105	-	-	-	I
K6691	2415	2457	-	-	-	-	-	2460	-	-	-	I
K6692	2430	N O T E N O U G H M A T E R I A L										I
K6693	2445	463	-	-	-	-	-	464	-	-	-	I
K6694	2460	462	48	108	54	48	-	720	258	35.89	1.13	I
K6695	2475	429	-	-	-	-	-	431	-	-	-	I
K6696	2490	2228	2118	1922	696	447	642	7411	5183	69.93	1.56	I
K6697	2505	536	734	812	287	197	285	2567	2031	79.11	1.46	I
K6698	2520	669	178	400	177	169	543	1593	924	58.01	1.05	I
K6699	2535	1525	1127	1191	491	367	758	4701	3176	67.56	1.34	I
K6700	2550	8860	3662	2983	1253	874	1126	17632	8772	49.75	1.43	I
K6701	2565	11331	2602	2480	1014	777	1083	18203	6872	37.75	1.31	I
K6702	2580	50659	6600	5373	2098	1350	1510	66080	15421	23.34	1.55	I
K6703	2595	2796	770	780	314	197	228	4856	2060	42.42	1.60	I
K6704	2610	42483	8704	8253	3205	1565	1371	64211	21727	33.84	2.05	I
K6705	2625	87046	11615	8404	3005	1255	1014	111325	24279	21.81	2.39	I
K6706	2640	57336	11148	8722	3181	1303	1095	81689	24353	29.81	2.44	I
K6707	2655	27395	5475	4039	1358	707	734	38974	11579	29.71	1.92	I
K6708	2670	8309	2833	3200	1214	801	930	16358	8049	49.20	1.52	I
K6709	2685	850	1121	2244	979	793	1241	5986	5136	85.81	1.23	I
K6710	2700	2844	1642	2658	1091	940	1342	9175	6331	69.00	1.16	I
K6711	2715	41449	8925	6909	2461	1624	1571	61367	19919	32.46	1.52	I
K6712	2730	131575	21531	11581	3790	1552	995	170029	38454	22.62	2.44	I
K6713	2745	91160	16247	9561	3166	1457	1130	121592	30432	25.03	2.17	I

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I
K6714	2760	19132	6292	4881	1831	921	1656	33057	13925	42.12	1.99	I
K6715	2775	2605	1742	1898	763	433	861	7442	4837	65.00	1.76	I
K6716	2790	31084	7307	4226	1297	558	719	44471	13388	30.10	2.32	I
K6717	2805	70182	7541	2607	617	183	189	81129	10948	13.49	3.37	I
K6718	2820	4620	590	240	62	-	-	5533	913	16.50	-	I
K6719	2835	2430	6233	3721	1073	249	801	13706	11276	82.27	4.32	I
K6720	2850	624	278	247	87	35	-	1270	646	50.87	2.51	I
K6721	2865	1647	1306	1488	571	286	623	5298	3651	68.92	2.00	I
K6722	2880	689	139	84	27	-	-	959	270	28.13	-	I
K6723	2895	1250	775	960	385	240	951	3609	2359	65.37	1.60	I
K6724	2910	24723	6252	4815	2238	899	1688	38927	14204	36.49	2.49	I
K6725	2925	9911	3089	2785	1459	718	1685	17962	8051	44.82	2.03	I
K6726	2940	615	451	566	273	185	867	2090	1474	70.55	1.48	I
K6727	2955	510	1031	1629	881	526	1786	4576	4067	88.86	1.68	I
K6728	2970	283	307	590	351	257	1451	1788	1505	84.16	1.37	I
K6729	2985	342	228	431	244	203	1943	1447	1106	76.37	1.20	I
K6730	3000	769	597	1036	823	637	3291	3861	3092	80.09	1.29	I
K6731	3015	165	103	186	115	105	1195	675	510	75.50	1.09	I
K6732	3030	79	31	67	40	36	-	253	174	68.82	1.09	I
K6733	3045	64	37	90	51	42	606	283	220	77.51	1.23	I
K6734	3060	133	39	124	82	82	958	461	328	71.18	1.00	I
K6735	3075	213	38	48	21	25	1758	345	132	38.29	.82	I
K6736	3090	165	49	96	49	44	983	404	239	59.09	1.11	I
K6737	3105	-	-	-	-	-	-	-	-	-	-	I
K6738	3120	165	52	113	59	43	935	432	267	61.84	1.36	I

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K6739	3135	164	35	42	-	-	221	288	124	42.99	-
K6740	3150	111	43	78	38	36	434	306	194	63.62	1.05
K6741	3165	151	28	26	-	-	332	250	99	39.51	-
K6742	3180	135	28	46	-	-	287	253	118	46.75	-
K6743	3195	266	45	51	-	-	-	405	139	34.31	-
K6744	3210	152	30	62	36	32	254	312	160	51.16	1.12
K6745	3225	161	41	76	40	33	184	351	190	54.21	1.19
K6746	3240	52	46	-	-	-	305	167	115	68.59	-
K6747	3255	165	36	85	46	42	395	375	210	55.92	1.10
K6748	3270	189	49	137	95	76	618	546	357	65.34	1.25
K6749	3285	257	145	363	206	160	701	1131	874	77.30	1.28
K6750	3300	176	62	183	104	83	428	607	431	71.07	1.26
K6751	3315	55	-	-	-	-	-	140	85	60.61	-
K6752	3330	77	29	87	46	32	-	271	194	71.66	1.47
K6753	3345	57	-	-	-	-	-	58	-	-	-
K6754	3360	80	-	-	-	-	-	80	-	-	-
K6755	3375	101	-	-	-	-	-	102	-	-	-
K6756	3390	124	-	-	-	-	-	125	-	-	-
K6757	3405	57	-	-	-	-	-	73	16	22.33	-
K6758	3420	52	-	-	-	-	-	52	-	-	-
K6759	3435	65	-	-	-	-	-	65	-	-	-
K6760	3450	67	-	22	-	-	-	89	22	24.65	-
K6761	3465	70	-	-	-	-	-	70	-	-	-
K6762	3480	82	-	39	-	-	-	121	39	32.56	-
K6763	3495	78	-	-	-	-	-	78	-	-	-

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I
K6764	3510	70	-	-	-	-	-	70	-	-	-	I
K6765	3525	67	-	26	-	-	-	94	27	28.50	1.00	I
K6766	3540	76	-	-	-	-	-	77	-	-	-	I
K6767	3555	76	-	-	-	-	-	76	-	-	-	I
K6768	3570	56	-	-	-	-	-	56	-	-	-	I
K6769	3585	91	24	21	20	20	27	177	86	48.74	1.00	I
K6770	3600	73	-	-	-	-	-	73	-	-	-	I
K6771	3615	90	-	-	-	-	-	91	-	-	-	I
K6772	3630	90	-	-	-	-	-	91	-	-	-	I
K6773	3645	97	-	-	-	-	-	98	-	-	-	I
K6774	3650	107	-	-	-	-	-	108	-	-	-	I
K6775	3675	79	-	-	-	-	-	79	-	-	-	I
K6776	3690	119	-	-	-	-	-	120	-	-	-	I
K6777	3705	47	-	-	-	-	-	48	-	-	-	I

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I
K6614	1030	26713	-	-	-	-	-	26715	-	-	-	I
K6615	1060	19475	-	-	-	-	-	19476	-	-	-	I
K6616	1090	35369	-	-	-	-	-	35369	-	-	-	I
K6617	1120	21969	-	44	33	-	-	22046	78	.35	-	I
K6618	1150	18383	105	198	89	-	1684	18776	393	2.09	-	I
K6619	1180	7813	-	9	-	-	-	7822	9	.11	-	I
K6620	1210	8970	-	12	-	-	-	8983	12	.14	-	I
K6621	1240	11250	-	24	-	-	-	11275	25	.22	-	I
K6622	1270	9690	-	48	-	-	25	9738	48	.50	-	I
K6623	1300	6203	-	22	-	-	-	6226	23	.37	-	I
K6624	1330	10876	-	31	-	-	-	10908	31	.29	-	I
K6625	1360	25119	-	107	58	-	-	25283	165	.65	-	I
K6626	1390	65701	-	168	105	-	-	65975	274	.42	-	I
K6627	1420	54431	-	333	192	-	217	54957	526	.96	-	I
K6628	1450	200409	-	1092	382	-	372	201883	1474	.73	-	I
K6629	1480	204187	17	1178	97	413	315	205891	1704	.83	.23	I
K6630	1500	1476	16	16	19	10	121	1536	60	3.93	1.91	I
K6631	1515	1386	19	67	43	-	110	1515	129	8.51	-	I
K6632	1530	427	-	42	-	-	98	469	42	8.97	-	I
K6633	1545	437	66	44	18	-	58	564	128	22.63	-	I
K6634	1560	422	40	29	9	-	68	500	78	15.53	-	I
K6635	1575	244	51	43	51	-	156	389	145	37.23	-	I
K6636	1590	366	43	30	-	-	51	440	74	16.75	-	I
K6637	1605	502	41	27	9	-	74	579	77	13.27	-	I
K6638	1620	473	54	36	18	-	71	582	109	18.79	-	I

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I
K6639	1635	55	-	-	-	-	-	55	-	-	-	I
K6640	1650	18	-	-	-	-	-	18	-	-	-	I
K6641	1665	355	1761	88	78	36	104	2318	1963	84.69	2.17	I
K6642	1680	18486	-	34	29	-	20	18548	62	.34	-	I
K6643	1695	143	10	-	-	-	8	154	11	7.15	-	I
K6644	1710	37751	-	61	33	7	42	37852	101	.27	4.84	I
K6645	1725	17690	9	23	18	-	-	17741	51	.29	-	I
K6646	1740	61323	-	25	12	-	-	61360	37	.06	-	I
K6647	1735	81148	-	29	16	-	-	81193	46	.06	-	I
K6648	1770	51189	-	25	-	-	-	51215	26	.05	-	I
K6649	1785	27989	39	32	13	-	-	28073	84	.30	-	I
K6650	1800	39547	-	21	-	-	-	39569	21	.05	-	I
K6651	1815	39277	71	35	-	-	39	39384	107	.27	-	I
K6652	1830	10676	3	5	-	-	8	10685	9	.08	-	I
K6653	1845	12538	12	7	5	-	16	12562	24	.19	-	I
K6654	1860	4710	15	5	4	-	8	4734	24	.50	-	I
K6655	1875	23603	6	-	-	-	3	23610	6	.03	-	I
K6656	1890	2203	3	2	-	-	2	2208	6	.26	-	I
K6657	1905	3635	13	-	-	-	-	3648	13	.36	-	I
K6658	1920	8297	11	13	5	-	10	8325	29	.35	-	I
K6659	1935	8510	24	15	-	-	6	8550	40	.47	-	I
K6660	1950	11573	59	31	-	-	-	11663	90	.77	-	I
K6661	1965	15361	39	17	-	-	11	15417	56	.36	-	I
K6662	1980	9289	25	12	-	-	8	9326	37	.40	-	I
K6663	1995	6342	22	12	4	-	11	6382	39	.62	-	I

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K6664	2010	5202	11	10	3	-	18	5225	24	.46	4.35
K6665	2025	56742	840	354	139	130	338	58205	1463	2.51	1.07
K6666	2040	79353	1340	692	436	344	749	82164	2812	3.42	1.27
K6667	2055	32365	865	371	242	177	570	34021	1656	4.87	1.37
K6668	2070	39504	1403	1256	850	679	1336	43691	4188	9.59	1.25
K6669	2085	8399	288	173	124	108	528	9092	693	7.62	1.14
K6670	2100	15629	501	497	364	345	968	17337	1708	9.85	1.06
K6671	2115	11794	389	316	245	221	807	12965	1170	9.03	1.11
K6672	2130	63936	3422	1567	611	449	713	69984	6049	8.64	1.36
K6673	2145	9624	420	275	155	141	563	10616	991	9.34	1.10
K6674	2160	2141	119	39	11	8	24	2318	176	7.61	1.39
K6675	2175	1933	217	210	145	135	483	2641	708	26.81	1.07
K6676	2190	4507	617	393	217	196	336	5930	1423	24.00	1.11
K6677	2205	1690	249	183	132	118	726	2372	682	28.75	1.12
K6678	2220	29770	1625	541	269	155	738	32360	2589	8.00	1.74
K6679	2235	12999	1472	490	316	173	709	15451	2451	15.87	1.82
K6680	2250	5228	370	158	143	54	298	5953	725	12.18	2.63
K6681	2265	19119	1009	491	416	212	466	21247	2128	10.02	1.96
K6682	2280	40516	1473	789	513	231	494	43522	3005	6.91	2.22
K6683	2295	271	-	33	40	-	175	344	73	21.26	-
K6684	2310	472	51	67	62	-	141	652	181	27.71	-
K6685	2325	426	-	56	42	-	96	525	98	18.70	-
K6686	2340	1551	38	28	17	-	311	1634	82	5.05	-
K6687	2365	O P E N L I D .									
K6688	2370	6071	271	137	55	-	-	6535	464	7.11	-

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I
K6689	2385	1695	80	60	26	-	-	1861	166	8.92	-	I
K6690	2400	2589	176	138	48	-	46	2951	362	12.27	-	I
K6691	2415	4509	508	400	145	-	-	5563	1054	18.95	-	I
K6692	2430	O P E N L I D .										I
K6693	2445	462	-	-	-	-	-	463	-	-	-	I
K6694	2460	9708	361	295	122	83	54	10568	861	8.14	1.46	I
K6695	2475	5430	277	256	102	59	141	6125	695	11.34	1.72	I
K6696	2490	12084	3013	2209	775	496	786	18577	6493	34.95	1.56	I
K6697	2505	31036	2093	1363	457	303	589	35252	4216	11.96	1.51	I
K6698	2520	18806	596	729	287	237	880	20655	1849	8.95	1.21	I
K6699	2535	8287	1407	1304	513	410	834	11921	3634	30.48	1.25	I
K6700	2550	185850	6175	4138	1622	1101	1691	198886	13036	6.55	1.47	I
K6701	2565	81423	3395	2939	1171	868	1235	89796	8373	9.32	1.35	I
K6702	2580	110862	7389	5888	2256	1429	1589	127824	16962	13.27	1.58	I
K6703	2595	144055	3142	2518	888	559	850	151163	7108	4.70	1.59	I
K6704	2610	192438	10729	9493	3523	1698	1504	217882	25444	11.68	2.07	I
K6705	2625	101328	11894	8572	3054	1270	1027	126118	24791	19.66	2.40	I
K6706	2640	115190	12458	9569	3468	1406	1213	142091	26900	18.93	2.47	I
K6707	2655	99268	7712	4854	1617	817	864	114269	15000	13.13	1.98	I
K6708	2670	34085	3691	3580	1344	870	1064	43570	9484	21.77	1.55	I
K6709	2685	1564	1275	2360	1026	823	1362	7048	5485	77.81	1.25	I
K6710	2700	30388	3017	3401	1369	1066	1480	39240	8852	22.56	1.28	I
K6711	2715	45353	9004	6946	2474	1630	1579	65406	20053	30.66	1.52	I
K6712	2730	203288	23134	12249	3976	1627	1057	244274	40986	16.78	2.44	I
K6713	2745	165882	17624	10096	3312	1520	1192	198434	32552	16.40	2.18	I

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I
K6714	2760	19539	7769	5331	1955	971	1715	35563	16024	45.06	2.01	I
K6715	2775	33030	3061	2340	896	489	939	39816	6786	17.04	1.83	I
K6716	2790	90967	8583	4642	1404	594	761	106190	15223	14.34	2.37	I
K6717	2805	134240	9119	3077	638	291	209	147365	13125	8.91	2.19	I
K6718	2820	30763	1151	410	97	31	58	32452	1689	5.21	3.13	I
K6719	2835	15378	6590	3838	1080	284	809	27168	11791	43.40	3.81	I
K6720	2850	7827	540	322	107	41	56	8836	1009	11.41	2.63	I
K6721	2865	14661	2057	1779	667	316	758	19481	4820	24.74	2.11	I
K6722	2880	34840	794	325	118	47	187	36123	1283	3.55	2.52	I
K6723	2895	10096	1267	1155	466	266	1088	13250	3154	23.80	1.75	I
K6724	2910	58832	7098	5189	2407	950	1848	74475	15643	21.00	2.53	I
K6725	2925	21519	3329	2888	1505	732	1733	29973	8455	28.21	2.06	I
K6726	2940	8664	882	740	357	217	1070	10860	2196	20.22	1.64	I
K6727	2955	510	1031	1629	881	526	1786	4576	4066	88.86	1.68	I
K6728	2970	4604	573	719	418	289	1772	6602	1998	30.27	1.45	I
K6729	2985	3306	380	522	295	227	2146	4730	1424	30.11	1.30	I
K6730	3000	2490	690	1083	847	649	3343	5761	3270	56.77	1.30	I
K6731	3015	1051	176	224	130	114	1268	1696	645	38.01	1.14	I
K6732	3030	264	46	77	46	40	79	472	208	44.09	1.15	I
K6733	3045	1267	159	155	79	56	721	1716	448	26.13	1.41	I
K6734	3060	132	39	124	82	82	958	460	327	71.19	1.00	I
K6735	3075	579	70	63	25	28	1842	765	186	24.32	.90	I
K6736	3090	531	75	110	53	46	1019	815	284	34.87	1.15	I
K6737	3105	82	29	22	21	-	249	174	92	53.04	-	I
K6738	3120	529	89	133	65	46	1027	862	333	38.65	1.40	I

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4	I
K6764	3510	267	36	21	6	-	21	334	67	20.08	-	I
K6765	3525	177	37	44	-	-	-	272	95	34.76	-	I
K6766	3540	169	13	8	-	-	-	198	29	14.60	-	I
K6767	3555	113	-	-	-	-	-	129	-	-	-	I
K6768	3570	137	17	13	-	-	-	186	48	26.05	-	I
K6769	3585	258	45	39	28	28	99	398	140	35.15	1.00	I
K6770	3600	123	8	7	-	-	-	149	26	17.34	-	I
K6771	3615	112	6	5	-	-	40	130	18	13.99	-	I
K6772	3630	113	4	4	-	-	27	127	13	10.57	-	I
K6773	3645	129	-	-	-	-	41	147	-	-	-	I
K6774	3650	133	-	-	-	-	41	149	-	-	-	I
K6775	3675	103	4	4	-	-	35	118	14	12.10	-	I
K6776	3690	145	7	5	-	-	38	165	20	12.11	-	I
K6777	3705	165	21	21	-	-	81	223	58	25.92	-	I



TABLE NO.:

WELL NO.: 6507/12-1

Sample	Depth	TOC	Lithology
K 6614	1030		100% Sand/Gravel, containing different types of metamorphic rock fragments together with sand dominated by quartz, but also containing feldspar, amphibole, mica and shell fragments
K 6615	1060		100% Sand/Gravel, as above
K 6616	1090		100% Sand/Gravel, as above, also containing coal fragments
K 6617	1120		100% Sand/Gravel, as above
K 6618	1150		100% Sand/Gravel, as above
K 6619	1180		100% Sand/Gravel, as above
K 6620	1210		100% Sand/Gravel, in roughly equal amounts, as above
K 6621	1240		100% Sand/Gravel, as above
K 6622	1270		100% Sand/Gravel, as above
K 6623	1300		100% Sand/Gravel, as above Gravel size < 12 mm
K 6624	1330		100% Sand/Gravel, as above
K 6625	1360		100% Sand/Gravel, as above
K 6626	1390		100% Sand/Gravel, as above
014/I/1/mk			

Sample	Depth	TOC	Lithology
K 6627	1420		80% Sand/Gravel, as above Glauconite observed 15% Claystone, light brownish and greenish grey Occasionally somewhat silty
K 6628	1450		80% Siltstone/Silty claystone, brownish grey, micaceous 20% Sand/Gravel, as above
K 6629	1480		100% Claystone, brownish grey. Sample contains 5% cement
K 6630	1500-15	4.61	90% Claystone, brown to brownish grey, silty 10% Gravel/sand, probably caved 30% of total sample consists of cement.
K 6631	1515-30	2.40	100% Claystone, brownish grey, brown Cement makes up 10-20% of total sample
K 6632	1530-45	2.67	100% Claystone, as above
K 6633	1545-60	2.46	100% Claystone, silty, brownish grey Volcanic material present?
K 6634	1560-75	1.81	100% Claystone, light brownish grey, silty, micaceous, glauconitic
K 6635	1575-90	1.53	100% Claystone, as above
K 6636	1590-1605	1.77	100% Claystone, light brownish grey, silty
014/I/2/mk			



Sample	Depth	TOC	Lithology
K 6637	1605-20	1.66	100% Claystone, light brownish grey
K 6638	1620-35	1.43	100% Claystone, light brownish grey
K 6639	1635-50	1.09	100% Claystone, light brownish grey, calcareous
K 6640	1650-65	1.43	100% Claystone, light brownish grey, mottled
K 6641	1665-80	1.31	100% Claystone, light brownish grey, light grey, light greenish grey
K 6642	1680-1695	1.13	90% Claystone, light brownish grey, grey 10% Claystone, dark brownish grey, non-calcareous
K 6643	1695-1710	1.31	90% Claystone, light grey, greenish grey, fissile, mottled 10% Claystone, dark brownish grey, non-calcareous
K 6644	1710-25	1.27	80% Claystone, light grey, greenish grey, fissile, mottled 20% Claystone, medium grey, fissile
K 6645	1725-1740	1.16	80% Claystone, light grey, greenish grey, fissile, mottled 20% Claystone, medium grey, fissile
K 6646	1740-55	0.57	80% Claystone, light grey, greenish grey, fissile, mottled 20% Claystone, medium grey, fissile
014/I/3/mk			



TABLE NO.:

WELL NO.: 6507/12-1

Sample	Depth	TOC	Lithology
K 6647	1755-70	0.54	60% Claystone, green, greenish grey, mottled, partly tuffaceous 40% Tuff, brownish white, laminated
K 6648	1770-85	0.63	85% Claystone, green, greenish grey, mottled, fossiliferous, tuffaceous 15% Tuff, as above
K 6649	1785-1800	0.93	85% Claystone, as above 15% Tuff, as above
K 6650	1800-15	0.43	70% Claystone, green, greenish grey 20% Claystone, brownish red 10% Tuff, as above
K 6651	1815-30	1.05	80% Claystone, green, greenish grey, brownish red 20% Tuff, as above
K 6652	1830-45	0.39	70% Claystone, green, greenish grey 30% Tuff, as above
K 6653	1845-60	0.32	60% Claystone, green, greenish grey, brownish red 40% Tuff, as above
K 6654	1860-75	0.29	60% Claystone, green, greenish grey, brownish red 40% Tuff, as above
K 6655	1875-90	0.34	80% Claystone, grey, greenish grey, purplish grey, brownish red 20% Tuff, as above
014/I/4/mk			



TABLE NO.:

WELL NO.: 6507/12-1

Sample	Depth	TOC	Lithology
K 6656	1890-1905	0.16	75% Claystone, light grey, light greenish grey, grey, green, brownish red 25% Tuff, as above
K 6657	1905-20	0.26	70% Claystone, light grey, light greenish grey, grey, green 30% Tuff, as above
K 6658	1920-35	0.27	70% Claystone, light grey, light greenish grey, grey, green 20% Tuff, as above
K 6659	1935-50	0.36	85% Claystone, greenish grey, grey, reddish brown 5% Claystone, purple 10% Tuff, as above
K 6660	1950-65	0.28	85% Claystone, greenish grey, grey 5% Claystone, purple 10% Tuff, as above
K 6661	1965-80	0.94	100% Claystone, grey, laminated, mica-ceous, reddish brown
K 6662	1980-1995	0.92	90% Claystone, grey, laminated, mica-ceous, reddish brown 10% Limestone, grey to brownish white
K 6663	1995-2010	0.84	90% Claystone, grey, laminated, fissile, reddish brown 10% Claystone, brownish grey, fissile
K 6664	2010-25	0.68	100% Claystone, grey, laminated, fissile, reddish brown, brownish grey, fissile
014/I/5/mk			



TABLE NO.:

WELL NO.: 6507/12-1

Sample	Depth	TOC	Lithology
K 6665	2025-40	0.99	100% Claystone, grey, laminated, fissile, reddish brown, black, dark grey
	2030	1.0	50% Claystone, grey
			20% Claystone, reddish brown
			20% Claystone, brown, grey, fissile
		13.35	10% Claystone, black, dark grey
2035	0.74	50% Claystone, grey	
		15% Claystone, reddish brown	
	11.08	35% Claystone, black, dark grey, fissile	
2040	0.79	55% Claystone, grey	
		10% Claystone, reddish brown	
	11.23	35% Claystone, black, dark grey, fissile	
K 6666	2040-55	0.73	100% Claystone, grey, reddish brown
	2045	0.76	60% Claystone, grey
			10% Claystone, reddish brown
	8.23	30% Claystone, dark grey	
2050	0.75	60% Claystone, grey	
		10% Claystone, reddish brown	
	11.34	20% Claystone, black, dark grey	
		5% Sandstone, subangular to sub-rounded	
		5% Limestone, with pyrite	

014/I/6/mk



Sample	Depth	TOC	Lithology
	2055	0.96	65% Claystone, greenish grey, mottled, often silty or sandy
		8.41	20% Claystone, black, dark grey, fissile
			5% Sand/Sandstone, white with pyrite
			5% Limestone, white with pyrite
K 6667	2055-70	0.77	100% Claystone, partly sandy or silty, greenish grey, mottled, black, dark grey
K 6668	2070-2085		30% Sand, as above
		0.75	5% Claystone, greenish grey
		9.35	65% Claystone, dark grey, black
K 6669	2085-2100		60% Sand, as above
		0.61	10% Claystone, greenish grey
		9.16	30% Claystone, dark grey, black
K 6670	2100-2115		50% Sand, as above
		10.11	40% Claystone, dark grey, black, carbonaceous
		0.79	10% Claystone, light grey
K 6671	2115-30		75% Sand, as above
		0.62	25% Claystone, light grey, dark grey, black, carbonaceous
K 6672	2130-45		50% Sand, as above
		0.49	25% Claystone, light grey
		10.18	25% Claystone, dark grey, black, carbonaceous



Sample	Depth	TOC	Lithology
K 6673	2145-60	8.97 0.49	10% Sand, as above 50% Claystone, dark grey, black, carbonaceous 40% Claystone, light grey
K 6674	2160-75	12.47 0.87	50% Sand, as above 10% Silt 40% Claystone, grey Sm.am. Claystone, reddish brown
K 6675	2175-90	11.87 0.59	75% Sand, as above 5% Claystone, black, carbonaceous 20% Claystone, light grey
K 6676	2190-2205	12.15 4.91	70% Sand, as above 10% Claystone, black, carbonaceous 20% Claystone, light grey
K 6677	2205-2220		90% Sand, as above 5% Claystone, black, carbonaceous 5% Claystone, light grey
K 6678	2220-2235		90% Sand, as above 5% Claystone, black, carbonaceous 5% Claystone, light grey
K 6679	2235-2250		95% Sand, as above 5% Claystone, light grey, light greenish grey, light brownish grey
K 6680	2250-65	0.64	95% Claystone, light grey, light greenish grey, light brownish grey 5% Claystone, reddish brown
014/I/8/mk			

Sample	Depth	TOC	Lithology
K 6681	2265-80	0.44	65% Claystone, light grey, light greenish grey, light brownish grey, green 5% Claystone, reddish brown 5% Claystone, dark grey, black, carbonaceous 25% Sand, as above
K 6682	2280-95	1.02	80% Claystone, light grey, light greenish grey, light brownish grey, green 5% Claystone, reddish brown 5% Claystone, dark grey, black 10% Sand, as above
K 6683	2295-2310	0.43	85% Claystone, light grey, light greenish grey, light brownish grey, green 5% Claystone, reddish brown
		6.57	10% Claystone, dark grey, black
K 6684	2310-25	1.67	95% Sand, with coal fragments 5% Claystone, light grey, dark grey etc.
K 6685	2325-40	1.47	95% Sand, as above 5% Claystone, light grey, dark grey etc.
K 6686	2340-55		95% Sand, as above 5% Claystone, as above
K 6687	2355-70		95% Sand, as above 5% Claystone, as above
K 6688	2370-85		95% Sand, as above 5% Claystone, as above
014/I/9/mk			



TABLE NO.:

WELL NO.: 6507/12-1

Sample	Depth	TOC	Lithology
K 6689	2385-2400		95% Sand, as above 5% Claystone, as above
K 6690	2400-15		90% Sand, as above 5% Claystone, light grey, light greenish grey, light brownish grey 5% Limestone
K 6691	2415-30		40% Coal, black, shiny 60% Sand, stained brown
K 6692	2340-45		95% Sand, stained brown 5% Pyrite
K 6693	2445-60		95% Sand, stained brown 2% Silt 3% Claystone, light grey
K 6694	2460-75		100% Sand, stained brown
K 6695	2475-90		50% Sand, stained brown 50% Silt, grey, calcite cemented, hard
K 6696	2490-2505		70% Silt, as above 5% Claystone, dark grey, with coal laminae 30% Coal, as above
K 6697	2505		60% Sand, clear to white, angular to subangular, fine to medium grained 35% Claystone, often silty, black, dark grey, dark brownish grey 5% Coal, as above
014/I/10/mk			



Sample	Depth	TOC	Lithology
K 6698	2520-35		50% Sand/Sandstone, fine to medium 45% Claystone, as above 5% Coal, black
K 6699	2535-35		60% Sand/Sandstone, fine to medium 40% Claystone, medium grey to black, (darker colour with increasing organic content), coal laminae
K 6700	2550-65	55.5	90% Sand, as above 5% Claystone, with coal laminae 5% Coal, as above
	2553	13.9	95% Sand/Sandstone, white, sub-rounded, loose 5% Claystone, dark grey, dark brownish grey
	2556	23.8	90% Sand/Sandstone 5% Claystone, dark grey/dark brownish grey 5% Coal, as above
	2559	50.0	90% Sand/Sandstone 5% Claystone, dark grey, dark brownish grey 5% Coal, as above
K 6701	2565-80		80% Claystone, black, dark grey, dark brownish grey, carbonaceous and with coal laminae 15% Sand, as above 5% Coal, as above
014/I/11/mk			



TABLE NO.:

WELL NO.: 6507/12-1

Sample	Depth	TOC	Lithology
K 6702	2580-95		90% Claystone, dark grey, dark brownish grey, black, with up to 50% coal as laminae, often somewhat silty 8% Coal, as above 2% Sand, as above
K 6703	2595-2610		85% Claystone, dark brownish grey, carbonaceous, as above. 15% Coal, as above
K 6704	2610-25		80% Claystone, dark grey to dark brown with coal laminae 20% Coal, as above
K 6705	2625-40		50% Claystone, dark grey, dark brown with coal laminae 45% Coal, black 5% Sand, milky white, fine to medium, subangular to subrounded, often stained brown
K 6706	2640-55		80% Claystone, medium grey, dark, grey, brown, fissile, carbonaceous, with coal laminae 15% Coal, as above 5% Sand, fine to medium, as above
K 6707	2655-70		60% Claystone, as above 30% Coal, as above 10% Sand, milky white, subangular, often stained brown, mainly quartz grains
014/I/12/mk			



Sample	Depth	TOC	Lithology
K 6708	2670-85		80% Sand/Sandstone, subangular, clear to milky white, calcite cemented 15% Claystone, dark brown, dark grey, black-brown, grey, with coal laminae 5% Coal, as above
K 6709	2685-2700		85% Claystone, brown, dark brown, dark grey and grey, carbonaceous, sometimes with coal laminae 10% Sand/Sandstone 5% Coal, as above
K 6710	2700-15		90% Claystone, as above 5% Coal, as above 5% Sand, as above
K 6711	2715-30		85% Claystone, with coal laminae, as above 10% Coal, as above 5% Sand, as above
K 6712	2713-45		85% Coal, as above 10% Claystone, with coal laminae 5% Sand, as above
K 6713	2745-60		90% Claystone, dark grey, brown, brownish grey, carbonaceous 5% Coal, as above 5% Sand, as above
014/I/13/mk			



Sample	Depth	TOC	Lithology
K 6714	2745	18.5	65% Coal, as above
			45% Claystone, dark grey, dark brownish grey
	2757	3.58	90% Claystone, dark grey, dark brown, grey with coal laminae
			7% Coal, as above 3% Sand/Sandstone
	2760-75	6.65	80% Claystone, with coal laminae and plant remains
			10% Sand/Sandstone
			5% Coal, as above
	2766	6.65	85% Claystone, dark grey, dark brown, grey, with coal laminae
			10% Sand/Sandstone
			5% Coal, as above
K 6715	2775-90	6.65	85% Claystone, as above
			10% Sand/Sandstone
			5% Coal, as above
K 6716	2790-2805	6.65	90% Claystone, dark brownish grey, light to medium, brownish grey, black with coal laminae. The colour of the rock only depends on the organic content
			5% Sand/Sandstone, white, mainly quartz, calcite cemented
			5% Coal, as above



Sample	Depth	TOC	Lithology
K 6717	2805-20		<p>90% Claystone, light brownish grey, to dark brownish grey, often almost black, carbonaceous with coal laminae, light brown claystone often grades into siltstone with coal laminae</p> <p>5% Sand/Sandstone, white calcite cemented</p> <p>5% Coal, as above</p>
K 6718	2820-35		<p>70% Sandstone/Sand, clear to white Grains angular to subangular, well sorted, medium grained</p> <p>20% Claystone, as above</p> <p>10% Coal, as above</p>
K 6719	2835-50		<p>80% Sandstone/Sand, as above</p> <p>15% Claystone, carbonaceous, but with less coal laminae</p> <p>5% Coal, as above</p>
K 6720	2850-65		<p>45% Sand/Sandstone, more cemented than above. The grains mainly quartz, cement is formed to be calcite</p> <p>55% Claystone, as above</p> <p>5% Coal, as above</p>
K 6721	2865-80		<p>60% Claystone, brownish grey (light to dark) and grey</p> <p>35% Sand/Sandstone, sorting not as good as above, grain size fine to very coarse</p> <p>5% Coal, as above</p>
014/I/15/mk			



Sample	Depth	TOC	Lithology
K 6722	2880-95		90% Claystone, medium to dark grey, medium to dark brownish grey. Sandstones silty and sandy, with coal laminae, though less numerous than above 5% Coal, as above 5% Limestone, brownish white
K 6723	2895-2910		90% Claystone, as above 5% Coal, as above 5% Limestone 2% Sandstone, fine "Tar" cover on cuttings
K 6724	2910-2925		90% Claystone, fissile, carbonaceous as above 5% Limestone (Dolomite/Siderite) 5% Coal, as above
K 6725	2925-40		85% Claystone, as above 10% Coal, as above 5% Limestone (Dolomite/Siderite)
K 6726	2940-55		90% Claystone, colour as above, sometimes silty 9% Sandstone, poorly sorted white, grains mainly quartz, fine to coarse-grained
K 6727	2955-70	1.19	1% Coal, as above 80% Claystone, grey brown, less carbonaceous, with some coal laminae 20% Sand, white, coarse, poorly sorted
014/I/16/mk			



TABLE NO.:

WELL NO.: 6507/12-1

Sample	Depth	TOC	Lithology
K 6728	2970-85	1.06	60% Claystone, as above 40% Sand, as above
K 6729	2985-3000	1.52	50% Claystone, dark grey, often coal laminated, fissile 50% Sand, as above, although less coarse
K 6730	3000-15	4.73	90% Claystone, dark grey, fissile 10% Sandstone, medium grained, calcareous, fissile
K 6731	3015-30	2.66	50% Claystone, dark grey, coal laminae 50% Sandstone, white, calcareous and fissile
K 6732	3030-45	1.68	80% Sand/sandstone, white, medium grained, calcareous, fissile 20% Claystone, grey, fissile, with occasional coal laminae
K 6733	3045-60	1.10	50% Sand/sandstone, as above 50% Claystone, greenish grey, purple and olive green, brownish grey, grey, fissile
K 6734	3060-75	0.94	40% Sandstone, as above 60% Claystone, greenish grey, purple and olive green, brownish grey, grey, fissile
K 6735	3075-90	0.53	85% Claystone, green, purple and olive green, grey
		0.12	10% Claystone, brown 5% Sand, white, medium, grained, calcareous
014/I/17/mk			



TABLE NO.:

WELL NO.: 6507/12-1

Sample	Depth	TOC	Lithology
K 6736	3090-3105	0.43	90% Claystone, green, purple and olive green, grey 10% Claystone, brown, fissile
K 6737	3105-20	0.05 0.23	90% Claystone, purple and olive green 5% Claystone, green, fissile 5% Sand/sandstone, white
K 6738	3120-35	0.58	90% Claystone, light grey, greenish grey, purple, deep purple and olive green 10% Sand, as above
K 6739	3135-50	0.08 1.75	45% Claystone, reddish brown 50% Claystone, light grey, greenish grey, purple, deep purple and olive green, grey, dark grey, carbonaceous, fissile 5% Sand, as above
K 6740	3150-65	0.09	90% Claystone, reddish brown 10% Shale, grey, dark grey, carbonaceous, fissile
K 6741	3165-80	0.15 1.14	95% Claystone, reddish brown 5% Shale, as above
K 6742	3180-95	0.18	100% Claystone, silty, reddish brown
K 6743	3195-3210	0.13 0.52	85% Claystone, silty, reddish brown 5% Shale, dark grey, carbonaceous, often fissile 10% Claystone, green, grey, purple
014/I/18/mk			



TABLE NO.:

WELL NO.: 6507/12-1

Sample	Depth	TOC	Lithology
K 6744	3210-25	0.10 0.80	90% Claystone, reddish brown, silty 10% Shale, dark grey, carbonaceous, often fissile
K 6745	3225-40	0.10 0.82	90% Claystone, reddish brown 10% Shale, dark grey, carbonaceous, often fissile, and claystone, green, grey, purple, olive green
K 6746	3240-55	0.26 0.29	90% Claystone, silty, reddish brown 10% Shale, dark grey
K 6747	3255-70	0.12 0.56	90% Claystone, reddish brown 10% Shale, dark grey
K 6748	3270-85	0.05	80% Claystone, reddish brown 20% Sand
K 6749	3285-3300	0.15	95% Claystone, reddish brown 5% Shale, dark grey
K 6750	3300-15	0.12 0.40	85% Claystone, reddish brown 5% Shale, dark grey 10% Claystone, light grey, greenish grey
K 6751	3315-30	0.14 0.43	70% Claystone, reddish brown 20% Claystone, light grey, greenish grey 5% Sandstone 5% Claystone, dark grey, fissile
K 6752	3330-45	0.11	80% Claystone, reddish brown 5% Claystone, light grey, greenish grey 10% Sand/sandstone 5% Shale, dark grey
014/I/19/mk			



Sample	Depth	TOC	Lithology
K 6753	3345-60	0.12	65% Claystone, reddish brown 30% Sand/sandstone 5% Shale, dark grey
K 6754	3360-75	0.10	95% Claystone, reddish brown 2% Shale, dark grey 1% Claystone, light grey to greenish grey 2% Sand/sandstone
K 6755	3375-90	0.10	80% Claystone, reddish brown 15% Sandstone 3% Claystone, light grey, greenish grey 2% Shale, dark grey
K 6756	3390-3405	0.07	70% Claystone, reddish brown, silty 20% Sand/sandstone 5% Shale, dark grey 5% Claystone, light grey, greenish grey
K 6757	3405-20	0.07	55% Claystone, reddish brown, silty 35% Sand/sandstone 5% Shale, dark grey 5% Claystone, light grey
K 6758	3420-35	0.13	55% Claystone, silty, reddish brown 35% Sand/sandstone 5% Shale, dark grey 5% Claystone, light grey, greenish grey
K 6759	3435-50	0.13	50% Claystone, silty, reddish brown 45% Sand/sandstone 5% Claystone, grey to light grey
014/I/20/mk			



Sample	Depth	TOC	Lithology
K 6760	3450-65	0.11	50% Claystone, silty, reddish brown 45% Sand/sandstone 5% Claystone, light grey, greenish grey Tr Shale, dark grey
K 6761	3465-80	0.33	75% Claystone, red brown 20% Sand with traces of coal 5% Claystone, grey to light grey
K 6762	3480-95	0.11 0.12	60% Sandstone, brownish grey, light red brown 25% Claystone, red brown 10% Claystone, grey to light grey 5% Shale, dark grey
K 6763	3495-3510	0.13	50% Claystone, reddish brown 45% Sand, as above 5% Shale, dark grey
K 6764	3510-25	0.73	80% Claystone, silty, red brown, brownish grey 20% Sand, as above
K 6765	3525-40	0.17	90% Claystone, silty, red brown 10% Sand, as above
K 6766	3540-55	0.20	65% Claystone, silty, reddish brown 30% Sand, as above 5% Claystone, grey to light grey
K 6767	3555-70	0.19	40% Claystone, silty, reddish brown 60% Sandstone, reddish brown, grey
K 6768	3570-85	0.18	80% Claystone, as above 20% Sandstone, as above
014/I/21/mk			



Sample	Depth	TOC	Lithology
K 6769	3585-3600	0.23	85% Claystone, as above 15% Sandstone, as above
K 6770	3600-15	0.16	80% Claystone, as above 20% Sandstone, as above
K 6771	3615-30	0.11	65% Claystone, silty, red brown, brown, grey, greenish grey, purple 35% Sandstone, white, brownish red
K 6772	3630-45	0.30	55% Claystone, as above 45% Sandstone, as above
K 6773	3645-60	0.20	90% Sandstone, as above 10% Claystone, as above
K 6774	3660-75	0.11	50% Claystone, brown, light brownish grey, reddish brown 50% Sandstone, white, light grey, light brownish grey, medium grained
K 6775	3675-90	0.25	90% Sandstone, white to light grey, coarse grained 10% Claystone, brown, brownish grey
K 6776	3690-3705	0.11	80% Sandstone, white, light grey, medium grained 20% Claystone, brown, greenish grey, purple, dark grey
K 6777	3705-17	0.11	95% Claystone, brown, greenish grey, grey, purple, dark grey 5% Sandstone, as above
014/I/22/mk			

T A B L E : III

WEIGHT OF EOM AND CHROMATOGRAPHIC FRACTIONS

I	:	:	Rock	:	:	:	:	Non	:	I
I	IKU-No	DEPTH	Extr.	EOM	Sat.	Aro.	HC	HC	TGC	I
I	:	:	:	:	:	:	:	:	:	I
I	:	(m)	(g)	(mg)	(mg)	(mg)	(mg)	(mg)	(%)	I
I	:	:	:	:	:	:	:	:	:	I
I	:	:	:	:	:	:	:	:	:	I
I	K-6665	2025	12.4	24.9	6.1	7.8	13.9	11.0	12.5	I
I	:	:	:	:	:	:	:	:	:	I
I	K-6666	2040	6.1	9.6	4.0	4.1	8.0	1.6	10.0	I
I	:	:	:	:	:	:	:	:	:	I
I	K-6682	2280	8.8	6.3	2.4	1.2	3.6	2.7	1.2	I

. T A B L E : I V

CONCENTRATION OF EOM AND CHROMATOGRAPHIC FRACTIONS

(Weight ppm of rock)

I	:	:	:	:	:	:	:	:	:	:	I			
I	IKU-No	:	DEPTH	:	EOM	:	Sat.	:	Aro.	:	HC	:	Non	I
I	:	:	:	:	:	:	:	:	:	:	:	:	HC	I
I	:	:	(m)	:	:	:	:	:	:	:	:	:	:	I
I	K-6665	:	2025	:	2008	:	494	:	629	:	1123	:	885	I
I	K-6666	:	2040	:	1574	:	649	:	669	:	1318	:	256	I
I	K-6682	:	2280	:	716	:	273	:	136	:	409	:	307	I

T A B L E : V

CONCENTRATION OF EOM AND CHROMATOGRAPHIC FRACTIONS

(mg/g TOC)

I	I	I	I	I	I	I	I	I	I
I	IKU-No	DEPTH	EOM	Sat.	Aro.	HC	HC	HC	I
I		(m)							I
I	K-6665	2025	16.1	4.0	5.1	9.0	7.1		I
I	K-6666	2040	15.7	6.5	6.7	13.1	2.5		I
I	K-6682	2280	60.7	23.1	11.6	34.7	26.0		I

T A B L E : VI

COMPOSITION IN % OF THE MATERIAL EXTRACTED FROM THE ROCK

I	:	:	Sat	:	Aro	:	HC	:	Sat	:	Non HC	:	HC	I
I	IKU-No	:	DEPTH	:	---	:	---	:	---	:	---	:	---	I
I	:	:	EOM	:	EOM	:	EOM	:	Aro	:	EOM	:	Non HC	I
I	:	:	(m)	:	:	:	:	:	:	:	:	:	:	I
I	K-6665	:	2025	:	24.6	:	31.3	:	55.9	:	78.5	:	44.1	126.8
I	K-6666	:	2040	:	41.3	:	42.5	:	83.8	:	97.1	:	16.3	515.4
I	K-6682	:	2280	:	38.1	:	19.0	:	57.1	:	200.0	:	42.9	133.3

TABLE VII

TABULATION OF DATAS FROM THE GASCHROMATOGRAMS

IKU No.	DEPTH (m)	PRISTANE n-C17	FRISTANE PHYTANE	CPI
K6665	2025	1.3	.9	1.1
K6666	2040	1.3	.9	1.1
K6682	2280	.4	.7	1.1



VISUAL KEROGEN ANALYSIS

WELL NO.: 6507/12-1

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 6655	1875-90	* Cut,He,WR!,P/am	F-M	fair to good	1+	Sparce residue, aggregates, pyrite, fungal spores. *Acid resistant minerals.
K 6659	1935-50	Am,Cy/He,WR!,P	F-M-L	fair to good	2- (ox)	Sparce residue, aggregates, pyrite, fungal hyphae.
K 6662	1980-95	W,He,Cut,WR!,P/Am,Cy	F-M	good	2- (ox)	Aggregates, dinoflagellate cysts.
K 6664	2010-25	Am,Cy/W,WR!,He,Cut,S,P	F-M	poor to good	2-	Aggregates of amorphous material.
	2030	He,WR!,W/Am,Cy	F-M-L	poor to good	2-/2	Aggregates with "fibrous" structure sapropelized terrestrial remains, mostly probably woody origin. The colour index may be too high as a maturation index.
	2045	He,W,P,Cut,WR!/Am,Cy	F-M-L	poor to good	2- (ox)	Aggregates, dinocysts, pyrite.

ABBREVIATIONS

Am amorphous
 He herbaceous
 Cut cuticles

Cy cysts, algae
 P pollen grains
 S spores

W woody material
 C coal
 R! reworked

F fine
 M medium
 L large



VISUAL KEROGEN ANALYSIS

WELL NO.: 6507/12-1

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 6680	2250	Am,Cy/W,Cut,He,P	F-M	poor to good	2-	Aggregates, Early Jurassic dinocysts, Bortyococcus, pyrite, resin. Sapropelized, rich residue.
K 6682	2280	Am,Cy/Cut,He,W,WR!,P	F-M	poor to good	1+/2-	Sapropelized terrestrial material (mostly cuticles), pyrite, Bortyococcus, Cerebro-pollenites. Rich residue.

ABBREVIATIONS

Am amorphous
 He herbaceous
 Cut cuticles

Cy cysts, algae
 P pollen grains
 S spores

W woody material
 C coal
 R! reworked

F fine
 M medium
 L large

Table VIII B. Tabulation of vitrinite reflectance data
(Supplied by Saga Petroleum)

Saga Sample No.	Depth	Sample type	Lithology	Vitrinite reflectance (R_o)(N)
3	800 - 930	Cuttings	Coal	0.27 (24)
4	970 - 990	Cuttings	Dk. minerals	-
5	990 - 1000	Cuttings	Coal	0.23 (7)
6	1020 - 1040	Cuttings	Claystone	-
7	1100 - 1150	Cuttings	Coal	0.23 (12)
8	1190 - 1280	Cuttings	Coal	0.32 (30)
9	1300	Cuttings	Coal	0.32 (26)
10	1330	Cuttings	Coal	0.26 (25)
11	1370	Cuttings	Coal	0.28 (23)
12	1500	Cuttings	Dk. minerals	-
13	1500	Cuttings	Claystone	-
14	2050	Cuttings	Claystone	0.33 (11)
15	2052	Cuttings	Claystone	0.20 (4)
16	2334	Cuttings	Claystone	0.37 (21)
17	2145	Cuttings	Claystone	0.37 (40)
18	2313	Cuttings	Claystone	0.36 (40)
19	2140	Cuttings	Claystone	0.32 (3)
20	2190	Cuttings	Coal	0.33 (40)
21	2600	Cuttings	Coal	0.33 (40)
22	2569	Cuttings	Coal	0.34 (40)
23	2499	Cuttings	Coal	0.35 (40)
24	2547	Cuttings	Coal	0.39 (40)
25	2404.35	Core	Siltstone	0.33 (29)
26	2520	Cuttings	Coal	0.37 (40)
27	2530	Core	Claystone	0.35 (40)
28	2592	Cuttings	Coal	0.36 (50)
29	2562	Cuttings	Coal	0.36 (40)
30	2502	Cuttings	Coal	0.37 (50)
31	2487	Cuttings	Coal	0.36 (40)
32	2415	Cuttings	Claystone	0.33 (3)
33	2415	Cuttings	Coal	0.29 (27)
34	2412	Cuttings	Claystone	-
35	2496	Cuttings	Coal	0.31 (50)
36	2814.50	Sidewall core	Coal	0.44 (50)

TABLE IX

ROCK EVAL PYROLYSES

I	I	I	I	I	I	I	I	I	I	I	I
I	IKU	DEPTH	S1	S2	S3	TOC	HYDR. INDEX	OXYGEN INDEX	OIL OF GAS CONTENT	PROD. INDEX S1	TEMP. max (C)
I	No.	(m)	(%)						S1+S2	S1+S2	
I	K6630	1500	.28	6.05	6.25	4.61	131	136	6.34	.04	426
I	K6631	1515	.23	2.78	3.09	2.40	116	129	3.01	.08	422
I	K6632	1530	.23	3.20	3.59	2.67	120	134	3.43	.07	422
I	K6633	1545	.21	2.83	4.13	2.46	115	168	3.04	.07	423
I	K6634	1560	.19	2.63	1.24	1.81	145	68	2.82	.07	416
I	K6635	1575	.19	1.71	2.61	1.53	112	171	1.90	.10	418
I	K6636	1590	.03	1.01	2.56	1.77	57	145	1.04	.03	414
I	K6637	1605	.20	1.96	2.40	1.66	118	144	2.16	.09	420
I	K6638	1620	.23	1.49	2.43	1.43	104	170	1.72	.13	422
I	K6639	1635	.09	.83	4.69	1.09	76	430	.92	.10	425
I	K6640	1650	.14	1.15	5.22	1.43	80	365	1.28	.11	424
I	K6641	1665	.12	.88	6.50	1.31	67	497	1.00	.12	425
I	K6642	1680	.13	.61	5.90	1.13	54	522	.74	.18	428
I	K6643	1695	.12	.63	9.52	1.31	48	727	.75	.16	427
I	K6644	1710	.08	.75	10.11	1.27	59	796	.83	.10	429
I	K6645	1725	.16	.51	10.63	1.16	44	917	.67	.24	428
I	K6646	1740	.08	.13	9.30	.57	24	1632	.22	.38	430
I	K6647	1755	.08	.15	9.33	.54	28	1728	.23	.35	433
I	K6648	1770	.07	.16	11.39	.63	26	1809	.23	.30	433
I	K6649	1785	.12	.39	11.65	.94	42	1240	.52	.24	430
I	K6650	1800	.16	.06	3.83	.43	13	892	.22	.73	429
I	K6651	1815	.14	.44	3.67	1.05	42	350	.58	.24	434
I	K6652	1830	.09	.06	4.38	.39	15	1124	.15	.60	434
I	K6653	1845	.08	.05	2.99	.32	16	934	.13	.60	435
I	K6654	1860	.08	.05	3.89	.29	17	1341	.13	.62	428

TABLE IX

ROCK EVAL. PYROLYSES

I	I	I	I	I	I	I	I	I	I	I	I	I	
I	IKU	DEPTH	S1	S2	S3	TOC	HYDR. INDEX	OXYGEN INDEX	OIL OF GAS CONTENT	PROD. INDEX	TEMP. max	I	
I	No.	(m)	(%)							S1+S2	S1+S2	(C)	I
I												I	
I	K6655	1875	.17	.00	2.68	.34		789	.17	1.00		I	
I	K6656	1890	.10	.00	3.78	.16		2364	.10	1.00		I	
I	K6657	1905	.10	.00	4.21	.26		1621	.10	1.00		I	
I	K6658	1920	.08	.03	4.19	.27	10	1553	.11	.74	438	I	
I	K6659	19835	.08	.00	4.21	.36		1169	.08	1.00		I	
I	K6660	1950	.12	.23	3.60	.28	81	1285	.34	.34	432	I	
I	K6661	1965	.12	.21	2.58	.94	22	274	.33	.37	428	I	
I	K6662	1980	.05	.11	2.39	.92	12	260	.16	.34	433	I	
I	K6663	1995	.04	.03	2.72	.84	3	323	.07	.62	438	I	
I	K6664	2010	.07	.00	3.37	.68		496	.07	1.00		I	
I	K6665	2025	.03	.05	2.88	.99	5	291	.07	.39	432	I	
I	Grey claystone.											I	
I	2030	:	.02	.06	.49	1.00	6	49	.09	.26	430	I	
I	Dark grey claystone.											I	
I	2030	:	.04	53.40	6.60	13.35	400	49	53.44	.00	414	I	
I	Grey claystone.											I	
I	2035	:	.03	.06	1.14	.74	8	154	.09	.31	435	I	
I	Black claystone.											I	
I	2035	:	.26	34.23	4.56	11.08	309	41	34.49	.01	415	I	
I	Grey claystone.											I	
I	2040	:	.02	.03	1.83	.79	4	232	.05	.35	434	I	
I	Black claystone											I	
I	2040	:	.20	40.71	3.59	11.12	366	32	40.92	.00	420	I	
I												I	
I	K6666	2040	.08	.11	3.23	.73	15	443	.19	.42	436	I	
I	Grey claystone.											I	
I	2045	:	.06	.10	2.09	.76	13	275	.16	.37	433	I	
I	Dark grey claystone.											I	
I	2045	:	.31	29.97	3.33	8.23	364	40	30.28	.01	411	I	
I	Green-grey claystone.											I	
I	2050	:	.05	.08	1.57	.75	11	209	.13	.37	434	I	
I	Dark grey claystone.											I	
I	2050	:	.33	29.22	2.82	11.34	258	25	29.56	.01	415	I	
I	Grey claystone.											I	
I	2055	:	.06	.10	1.23	.96	10	134	.15	.37	436	I	
I	Dark grey claystone.											I	
I	2055	:	.32	26.60	2.42	8.41	316	29	26.92	.01	412	I	
I												I	
I												I	
I												I	

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TOC
HL

TABLE IX

ROCK EVAL. PYROLYSES

IKU No.	DEPTH (m)	S1	S2	S3	TOC (%)	HYDR. INDEX	OXYGEN INDEX	OIL OF GAS CONTENT	PROD. INDEX	TEMP. max (C)
	2553	1.08	33.34	13.83	13.90	240	99	34.42	.03	432
	2556	1.81	64.12	10.28	23.80	269	43	65.93	.03	427
	2559	.92	206.68	39.98	50.00	413	80	207.60	.00	426
	2745	1.03	39.19	9.94	18.50	212	54	40.22	.03	428
	2757	.45	4.30	1.74	3.60	119	48	4.75	.09	437
	2766	.46	10.95	2.78	6.70	163	41	11.41	.04	428
Grey claystone, K6734 3060		.06	.50	1.50	.94	53	160	.56	.11	442
Grey claystone, K6735 3075		.11	.00	1.56	.53		294	.11	1.00	
Brown claystone, K6735 3075		.09	.25	1.23	.12	208	1025	.34	.26	438