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REPORT TITLE/ TITTEL

SOURCE ROCK ANALYSIS OF WELL 30/6-5

CLIENT/ OPPDRAGSGIVER

STATOIL

RESPONSIBLE SCIENTIST/ PROSJEKTANSVARLIG

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SUMMARY/ SAMMENDRAG

The analysed sequence of the well was divided into zones:-

Zone A, 2375-2455 m. The zone consists mostly of grey claystones and some carbonates. It is immature to moderate mature with a poor potential as source rocks.

Zone B-F, 2455-2653 m. These zones consist of much dark brown and dark grey fissile shales which become silty and sandy towards the base of zones E and F. This section is moderate mature and contains mostly type II kerogens with a good to rich potential as source rocks for oil and gas.

Zones G-J, 2653-3118 m. These zones consist of a mixture of lithologies. This section is moderate mature to mature, and carbonaceous claystones, and dark grey siltstones/claystones in this section have a good potential as source rocks for gas and paraffinic oil.

Zones K-L, 3118-3550 m. These two zones consist mostly of sandstones, and grey, green and red-brown claystones. The section is oil window mature and, except for some thin coals with a good potential as source rocks for gas, these two zones have only a poor to fair potential as source rocks for gas.

KEY WORDS/ STIKKORD

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 temperated water on 4, 2, 1 and 0.125 mm sieves 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 shwon in Table 1b.

Total Organic Carbon (TOC)

Picked cuttings of the various lithologies in each sample was 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 fillings 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.

Chromatographic Separation

The extractable organic matter (EOM) was separated into saturated fraction, aromatic fraction and non hydrocarbon fraction suing 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 Table III-VI.

Gas Chromatographic Analyses

The saturated and aromatic hydrocarbon fractions were each 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).

Vitrinite Reflectance

Samples, taken at various intervals, were sent for vitrinite reflectance measurements to Geoconsultants, Newcastle-upon-Tyne. The samples were mounted in Bakelite resin blocks; care being taken during the setting of the plastic to avoid temperatures in excess of 100^{o}C. The samples were then ground, initially on a diamond lap followed by two grades of corundum paper. All grinding and subsequent polishing stages in the preparation were carried out using isopropyl alcohol as lubricant, since water leads to the swelling and disintegration of the clay fraction of the samples.

Polishing of the samples was performed on Selvyt cloths using three grades of alumina, 5/20, 3/50 and Gamma, followed by careful cleaning of the surface.

Reflectance determinations were carried out on a Leitz M.P.V. microphotometer under oil immersion, R.I. 1.516 at a wavelength of 546 nm. The field measured was varied to suit the size of the organic particle, but was usually of the order of 2 micron diameter.

The surface of the polished block was searched by the operator for suitable areas of vitrinitic material in the sediment. The reflectance of the organic particle was determined relative to optical glass standards of known reflectance. Where possible, a minimum of twenty individual particles of vitrinite was measured, although in many cases this number could not be achieved.

The samples were also analysed in UV light, and the colour of the fluorescing material determined. Below, a scale comparing the vitrinite reflectance measurements and the fluorescence measurements are given.

VITRINITE REFLECTANCE	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10
R.AVER. 546 nm	1516									
% CARBON CONTENT DAF.	57	62	70	73	76	79	80.5	82.5	84	85.5
LIPTINITE FLUOR nm	725	750	790	820	840		860	890		940
EXC. 400 nm BAR. 530 nm colour	G	$G/_Y$	Y	$Y/_O$	L.O	M.O.		D.O.		$O/_R$ R
zone	1	2	3	4	5	6		7		8 9

NOTE LIPTINITE NM = NUMBERICAL MEASUREMENTS OF OVERALL SPORE COLOUR AND NOT PEAK FLUORESCENCE WAVELENGTH.

RELATIONSHIP BETWEEN LIPTINITE FLUORESCENCE COLOUR, VITRINITE REFLECTANCE AND CARBON CONTENT IS VARIABLE WITH DEPOSITIONAL ENVIRONMENT AND CATAGENIC HISTORY. THE ABOVE IS ONLY A GUIDE. LIPTINITE WILL OFTEN APPEAR TO PROCESS TO DEEP ORANGE COLOUR AND THEN FADE RATHER THAN DEVELOP O/R RED SHADE. TERMINATION OF FLUORESCENCE IS ALSO VARIABLE.

Processing of Samples and Evaluation of 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 mesh).
O-slide contains palynodebris remaining after flotation ($ZnBr_2$) to remove heavy minerals.
X-slides contain oxidized residues, (oxidizing may be required to remove sapropel which embeds palynomorphs, or where high coalification prevents 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 evaluation of kerogen has 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 required, 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 supporting evidence from colour tones of other types of kerogen (woody material, cuticles and sapropel). These colours are dependant upon the maturity, but are also influenced by the paleo-environment (lithology of the rock, oxidation and decay processes). The colours and the estimated colour index of an individual sample may therefore differ 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).

Ro	0.45	0.6	0.9	1.0	1.3
colour index	2-	2	2+	3-	3
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.

Pyrolysis-GC

Instrumentation: CDS Pyroprobe 120 interfaced to a Varian 3740 GC
Pyrolysis conditions: 600^{o}C in nitrogen for 5 sec.
GC conditions:
Column: 30m OV-1 glass capillary.
Carrier gas: Nitrogen with inlet pressure 3 psi; 0.7 ml/min.
Oven program: 38^{o}C/1 min.; to 260 at 4^{o}C/min.
Split: 1:20.
Kerogen concentrates for visual kerogen examination were used for pyrolysis gas chromatography.

RESULTS AND DISCUSSION

Light Hydrocarbon Analysis and Lithology

On the basis of light hydrocarbon abundances and lithological variations the sequence analysed (2375-3550 metres) was divided into 12 zones which are:-

A: 2375-2455 metres
B: 2455-2503 metres
C: 2503-2524 metres
D: 2524-2557 metres
E: 2557-2596 metres
F: 2596-2653 metres
G: 2653-2701 metres
H: 2701-2850 metres
I: 2850-2900 metres
J: 2958-3118 metres
K: 3118-3352 metres
L: 3352-3550 metres

Zone A; 2375-2455 m: This zone comprises mostly claystones (grey and green-grey and some red brown) with minor carbonates. Diagenetic methane is abundant and dominates the C_1-C_7 hydrocarbons. Both C_1-C_4 and C_5-C_7 abundances vary considerably but are generally good and poor respectively. C_1-C_4 abundance and wetness show a small increase between 2401 and 2410 metres, probably gas associated with thin limestones at this level. Gas wetness is low and the isobutane/n-butane ratio (iC_4-nC_4) is high, but towards the base of the zone large increase in abundance of C_1-C_4 and C_5+ gases, and in percentage wetness occurs. There is also a decrease in the iC_4/nC_4 ratio. This occurs in the limestones which are developed just above the organic carbon rich shales in zones B-H from which gas has probably migrated. The data indicates a zone in which organic matter is immature to moderate mature.

Zone B; 2461-2503 m: This interval is characterised by the development of brown-grey very fissile pyritic shales. The gas abundances in this

zone are good for C_1-C_4 and C_5-C_7. Wetness is higher than in zone A and the iC_4/nC_4 ratio is lower.

Zone C; 2503-2524 m: In this zone there is a decrease in C_1-C_4 and C_5-C_7 gas abundances associated with the occurrence of mostly organic carbon-poor grey and green-grey claystones. Wetness is still high, and iC/nC_4 ratio remains low.

Zone D; 2524-2557 m: C_1-C_4 and C_5-C_7 gas abundances are greater than in Zone C. This is associated with the occurrence of more organic carbon-rich brown-grey shales and silty shales. C_1-C_4 and C_5-C_7 gas abundances are good.

Zone E; 2557-2596 m: C_1-C_4 and C_5-C_7 gas abundances show a sharp decrease in this zone, which is characterized by silty, in part sandy, brown-grey shales. The lower values (although abundances are still classified as good) are probably due to the higher porosities of these sandy shales. Wetness shows a slight decrease in comparison with the zone above. The iC_4/nC_4 ratios remain constant.

Zone F; 2596-2653 m: C_1-C_4 gas abundances are good and are similar to the levels in zone E. C_5-C_7 gas abundances and wetness are higher possibly indicating migrated hydrocarbons from the TOC-rich shales into the largely grey and grey-green claystones in this zone. The iC_4/nC_4 ratios remain constant.

Zone G; 2653-2701 m: This zone consists of a mixed lithology of grey; grey-green claystones and silty and sandy dark grey shales; grey-green siltstones and thin sandstones. There are considerable variations in the C_1-C_4 and C_5-C_7 gas abundances, related presumably to the variation in lithologies, with the highest gas abundances associated with dark grey siltstones and shales. C_1-C_4 and C_5-C_7 gas abundances are however generally good throughout the zone.

Zone H; 2701-2850 m: As in zone G consists of mixed lithologies of sandstones, siltstones, and grey and grey-green claystones with minor dark grey to black, silty shales. from 2701 to 2800 metres shows good

C_1-C_4 and C_5-C_7 gas abundances, high percentage wetness with values remaining relatively stable. Gas abundances are extremely variable below 2800 metres and is due mainly to the variability in the quality of the samples. Below 2800 metres a number of samples consist almost entirely of cement and/or mud additives.

Zone I; 2850-2900 m: Gas abundances vary considerably however there is a marked increase in C_1-C_4 gas abundances for some samples in this zone associated with a reduction in wetness and reduction in C_5-C_7 gas abundances. The coal and carbonaceous claystones which are present in this zone are the most probable main source for the gas.

Zone J; 2900-3118 m: The top 58 metres of this zone was not analysed. The remainder of this zone consists of sandstones and some grey and brown-grey siltstones and silty claystones. C_1-C_4 and C_5-C_7 gas abundances are good; percentage wetness values are higher than in zone I. The iC_4/nC_4 values remain constant. The high wetness and C_5-C_7 abundances in a sandstone-rich section suggest the presence of migrated hydrocarbons.

Zone K; 3118-3352 m: This zone consists predominantly of sand and sandstone and some carbonaceous (waxy) grey, brown-grey, silty claystones, with occasional coal stringers. C_1-C_4 gas abundances are good, C_5-C_7 gas abundances are fair to good. Towards the base of the zone wetness decreases due probably a relative increase in methane produced from the coal stringers.

Zone L; 3352-3550 m: This zone consists of a mixture of lithologies but mainly sandstones and grey-green and red-brown claystones. C_1-C_4 gas abundances are good decreasing to fair towards the bottom of the hole. The C_5-C_7 gas abundances are generally poor to fair and wetness is again low as in zone K. Methane is predominant.

TOTAL ORGANIC CARBON (TOC)

Where shales/claystones constitute greater than 10% of a sample, they were analysed. Occasionally shales/claystones of different colours were picked and analysed separately. Similarly siltstones where prominent were picked and analysed separately. Limestones and shaly or silty sandstone were also picked and analysed where they comprised greater than 10% of a sample. Clean sands and sandstones were not analysed. Only a few red-brown and green claystones were measured, since they are generally poor in organic carbon.

Zone A: Consists mostly of grey, green-grey and red-brown claystones with TOC values varying from 0.2 to 0.65% (poor to fair). Limestones from the base of this zone have low TOC values (0,24 and 0,25%; poor).

Zone B: The brown-grey fissile shales in this zone have rich TOC values between 4,84% and 7,84%.

Zone C: Brown-grey fissile shales as above with TOC values between 7.47% and 10.2% (rich). Also includes grey and green claystones with TOC values less than 1%.

Zone D: Consists mostly of dark grey silty shales with TOC values varying from 5,74% to 8,05% (rich). TOC values apparently decrease going down through the section.

Zone E: Consists mostly of dark grey silty and in part, sandy shales with TOC values varying from 3,66% to 6,23% (rich).

Zone F: Consists of a mixture of dark grey silty and sandy shales and grey claystones. The dark grey silty shales have TOC values varying from 2,8% to 7,52% (rich). The claystones have TOC values of less than 0,7% TOC (fair).

Zone G: Similar to zone F, the dark grey silty shales which grade to sandy siltstones in part, have TOC values varying from 3,6% to 6,5% TOC (rich). The mostly grey to light grey claystones contain less

than 1% TOC (fair). Fine silty sandstones at the base of this zone contain 0,39 and 0,52% TOC (fair).

Zone H: Consists of a mixture of lithologies mostly siltstones, claystones and fine, calcareous sandstones which are silty in part. The dark grey silty shales and siltstones are a minor component (perhaps caved) below 2734 metres. TOC values vary between 2,26 and 6,96% (rich) in the part of this zone between 2701 and 2734 metres. The claystones are mostly grey and greenish with some red-brown and have TOC values generally less than 1%. The sandstones which grade into siltstones and clayey siltstones have TOC values between 0,58 and 1,83% TOC (i.e. fair to good), the highest values occurring in the clayey siltstones towards the bottom of the zone.

Zone I: Consists mostly of carbonaceous, brownish grey claystones, which have a waxy texture in part, with coal stringers, some coal and sand towards the bottom of the zone. The TOC values vary considerably dependent on the amount of coal present i.e. from 0,7% to 22,7%.

Zone J: Consists mostly of sandstones at the top of the zone. Grey silty claystone and clayey siltstone have TOC contents varying from 1,19% to 3,66% (good to rich).

Zone K: Consists of similar lithologies to the zone above, but more sandstones. The silty claystones with some coal stringers have TOC values from 1,07% to 2,92% (mostly good).

Zone L: Consists of sandstones and grey, grey-green and red-brown claystones. The grey claystones from 3352 to 3406 metres have TOC values from 0,86% to 1,24% (fair to good). Below this level the claystones are mostly red-brown and green which are generally very low in TOC.

Extraction and Chromatographic Separation

Twenty-one samples were extracted and the extractable organic matter (EOM) was fractionated into saturated and aromatic hydrocarbons and non-hydrocarbons. The saturated and aromatic hydrocarbons were

analysed by gas chromatography.

Saturated Hydrocarbons

Zone A: No samples were taken for extraction.

Zone B: Five samples were analysed; K 8222 (2458-2461 m), K 8225 (2467-2470 m), K 8229 (2479-2482 m), K 8233 (2491-2494 m) and K 8236 (2500-2503 m). They all have rich abundances of extractable hydrocarbons, and of total hydrocarbons normalized to TOC. The samples all show similar saturated to aromatic hydrocarbon ratios (roughly 1:1) with hydrocarbons comprising 38,4% to 51,5% of the total EOM. The gas chromatograms show an even predominance of n-alkanes between nC_{24} and nC_{28} (CPI values between 0,7 and 0,9). The normal alkanes ranging from nC_{11} to nC_{33} display unimodal front end biased distributions (C_{12}-C_{18} dominant) with a maximum at nC_{13} or nC_{15}. All the samples have a small hump, roughly between nC_{25} and nC_{33}. In this region there are a number of resolved components, (besides the n-alkanes) which are probably steranes and triterpanes. The normal alkane distribution and the prominent cyclic alkanes suggests that the EOM comes from moderate mature kerogens derived from lower plant sources. The even n-alkane predominance suggests that deposition may have occurred in a highly reducing environment. Normally in such environments pristane/phytane ratios are low when immature. These samples are probably moderate mature.

Zone C, D, E and F: Six samples were analysed from these zones; K 8239 (2509-2512 m), K 8243 (2521-2524 m), K 8246 (2530-2533 m), K 8251 (2545-2548 m), K 8257 (2563-2566 m) and K 8270 (2602-2605 m). Apart from the sample 2521-2524 m, they all have rich abundances of extractable hydrocarbons and of total hydrocarbons normalised to TOC. The sample from 2521-2524 metres has a good abundance of extractable hydrocarbons and a poor abundance of total hydrocarbons normalised to TOC. Except for one sample, they all have saturated to aromatic hydrocarbon ratios of approximately 1:1, similar to the samples from zone B. The anomalous sample (2530-2533 m) shows a high content of saturates over aromatics. The gas chromatograms of the saturated hydrocarbons from these samples closely resemble those from zone B.

There is a slight increase in pristane/phytane ratios and decrease in pristance/nC_{17} ratio with increasing depth, and CPI values approach unity. The data indicate moderate mature to mature sediments containing amorphous kerogens derived from lower plant sources.

Zone G: Four samples were analysed from this zone K 8288 (2656-2659 m), K 8291 (2665-2668 m), K 8297 (2683-2686 m) and K 8302 (2698-2701 m). They have fair to rich abundances of extractable hydrocarbons and fair to good abundances of total hydrocarbons normalised to TOC. Saturated to aromatic hydrocarbon ratios are slightly lower than in the zones above. The saturated hydrocarbon gc traces display relatively smooth bimodal n-alkane distributions ranging from nC_{12} to nC_{35} (CPI 1-1,2). The bimodal distributions centre around nC_{15}-nC_{19} (maximum generally nC_{17}), and nC_{25}-nC_{29} (maximum nC_{27}). The n-alkanes from nC_{15}-nC_{19} are dominant. High molecular weight material (besides n-alkanes) above nC_{25} is again prominent. Pristane/phytane and pristane/nC_{17} ratios show a slight increase in values compared with samples in zones A-F. The data discussed suggest hydrocarbons derived from a mixed input of amorphous and terrestrial material which is moderate mature to mature.

Zone H: One sample was analysed from this zone; K 8315 (2737-2740 m). This sample shows very similar characteristics to the samples from zone G. One exception is that the cyclic alkanes between nC_{25} and nC_{35}, which are prominent in samples from higher zones, are lacking in this sample.

Zone I: Two samples were analysed from this zone K 8415 (2857-2860 m) and K 8425 (2887-2890 m). The samples have a rich abundance of extractable hydrocarbons and K 8425 has a rich abundance of total hydrocarbons normalised to TOC. Sample K 8415 has a poor abundance of total HC/TOC. The distribution of saturated hydrocarbons in the lower sample is very similar to the samples in zones G and H. Sample K 8415 has a smooth bimodal n-alkane distribution with high molecular weight n-alkanes between nC_{20} and nC_{30} predominating with a maximum at nC_{25}. The maximum short chain length n-alkanes is nC_{14}. Sample K 8415 has the characteristics of a mature carbonaceous shale or coal. Sample K 8425 resembles those from zone G and H.

Zone J: Two samples were analysed from this zone. K 8439 (3021-3024 m) and K 8433 (2982-2988 m). They have rich abundances of extractable hydrocarbons and of total hydrocarbons (normalised to TOC). The saturated to aromatic hydrocarbon ratios are of the same magnitude as those from higher zones. The smooth unimodal n-alkane distributions ranging from nC_{11} to nC_{34} are front end-biased (nC_{12}-nC_{18} dominant). Pristane/nC_{17} ratios are less than one. The data suggests mature hydrocarbons derived from amorphous material.

Zone K: One sample was analysed from this zone K 8458 (3127-3130 m). It has a good abundance of EOM and a rich abundance of total hydrocarbons (normalised to TOC). The percentage of total hydrocarbons in the EOM is 62,8% the highest recorded in the samples analysed. The n-alkane distribution is unimodal with a maximum around nC_{14}-nC_{21}. There is some higher molecular weight cyclic material and a slight odd n-alkane preference (CPI=1,2). Pristane/phytane ratio is somewhat higher than in the samples from zone J, but pristane/nC_{17} is less than 1. The data suggest a sample which is mature (oil window) and the hydrocarbons derived from predominantly terrestrial material.

Zone L: No samples were analysed from this zone.

Aromatic Hydrocarbons

The aromatic hydrocarbon distributions permit a division of the samples as follows:

Zone A: No samples were analysed.

Zones B-F: Eleven samples from these zones show many similarities as do the saturated hydrocarbon traces of these samples. The aromatic hydrocarbon traces are generally dominated by the alkyl naphthalenes particularly the methyl naphthalenes (A in gc traces) and dimethyl naphthalenes (B in gc traces). Also prominent are aromatic steranes (C in gc traces). The aromatic steranes are often found in abundance in hydrocarbon fractions from marine type II kerogens. Samples at levels 2521-2524 m and 2530-2533 m show a slight variation from the general trend, in that the methyl phenanthrenes (D in gc traces) are more prominent.

Zones G and H: Five samples from these two zones display differences to zones B-F. There is a prominent peak, marked on the chromatograms. X (perhaps pyrene?) in all the samples, and aromatic steranes are less prominent. Generally the zones show aromatic hydrocarbons more characteristic of coals.

Zone I: Two samples in this zone. K 8415 (2857-2860 m) contains relatively (relative to other compounds in the gc traces) much more methyl and dimethyl napthalenes than samples from zones G and H. In the other sample K 8425 (2887-2840 m) the prominent peak X is considerably diminished and the methyl phenanthrenes are less prominent.

Zones J and K: Three samples in these zones can be distinguished from zone I since they display prominent methyl phenanthrenes and also phenanthrene (peak E in gc traces).

Vitrinite Reflectance

K 8182, 2090-2105 m: Shale, Ro=0,45(2)

The sample contains traces only of organic material, a few specks of inertinite and a couple of vitrinite particles. There are occasional bitumen wisps. UV light shows a yellow fluorescence from spores and a low exinite content.

K 8189, 2195-2210 m: Shale, Ro=0,32(2) and 0,54(7)

The sample consists of bitumen wisps and blebs with a low content of inertinite and reworked particles. There is a trace only of poor vitrinite particles. UV light shows yellow and yellow-orange fluorescence from spores and a low exinite content.

K 8196, 2300-2315 m: Shale, Ro=0,56(3) and 0,77(2)

The sample consists of bitumen wisps and blebs with a low content of inertinite and reworked particles. There is a trace of vitrinite particles and a couple of coal particles. UV light shows yellow and yellow-orange fluorescence from spores and a low exinite content.

K 8209, 2418-2422 m: Shale, Ro=0,53(8)

The sample has a low to moderate organic content and consists of gnarled particles of inertinite and reworked material. There is a trace only of vitrinite wispy particles plus particles and some bitumen stained cuttings. UV light shows yellow and yellow-orange fluorescence from spores and a low exinite content.

K 8223, 2461-2464 m: Shale, Ro=0,49(11)

The sample has an overall strong bitumen staining with plentiful wisps. Some of the cuttings are saturated by bitumens. It has a low content of reworked and inertinite particles with a trace of true vitrinite particles. UV light shows a yellow and yellow-orange fluorescence from spores and a low exinite content.

K 8227, 2473- 2476 m: Shale, Ro=0,36(12)

The sample shows an overall moderate bitumen staining and plentiful wisps. It has a low content of inertinite and reworked particles with a trace of vitrinite particles. UV light shows yellow and yellow-orange fluorescence from spores and a moderate exinite content.

K 8236, 2500-2503 m: Shale, Ro=0,43(3)

The sample has a low organic content with a strong bitumen staining and plentiful wisps. It consists almost wholly of inertinite and reworked particles. Only a couple of vitrinite particles were located. UV light shows yellow fluorescence from spores and a moderate exinite content.

K 8239, 2509-2512 m: Mixed shale lithologies, Ro=0,44(6)

The sample shows strong bitumen staining with plentiful wisps in some pyritic cuttings and has a very low content of phytoclasts. There are inertinite and reworked particles with a trace of vitrinite particles. UV light shows yellow fluorescence from spores and a moderate to rich exinite content.

K 8246, 2530-2533 m: Shale, Ro=0,39(20)

The sample has an overall strong bitumen staining with plentiful wisps. There is a low content of inertinite and reworked particles with subordinate vitrinite particles. UV light shows yellow and yellow-orange fluorescence from spores and a moderate exinite content.

K 8259, 2569-2572 m: Shale, Ro=0,47(21)

The sample shows strong bitumen staining and plentiful wisps. It has a moderate content of inertinite and reworked particles with subordinate vitrinite particles and wispy particles. UV light shows a yellow-orange and light orange fluorescence from spores and a moderate to rich exinite content.

K 8279, 2629-2632 m: Shale and Carbonate, Ro=0,52(21)

The sample has variable strong bitumen staining. It has a moderate content of inertinite and reworked particles with an equal proportion of vitrinite particles and wispy particles. There are a few coal fragments. UV light shows light orange fluorescence from spores and a low exinite content.

K 8287, 2653-2656 m: Shale and Siltstone, Ro=0,52(20)

The sample has strong overall bitumen staining and plentiful wisps. It has a moderate content of vitrinite particles and wisps with subordinate inertinite and reworked material. UV light shows light orange fluorescence from spores and a low to moderate exinite content.

K 8292, 2669-2671 m: Shale and Siltstone, Ro=0,49(21)

The sample shows a variable heavy bitumen staining. It has a moderate organic content, in which inertinite and reworked particles are dominant, and vitrinite wisps and particles are subordinate. UV light shows light orange fluorescence from spores and a low to moderate exinite content.

K 8301, 2695-2698 m: Shale and Siltstone, Ro=0,50(22)

The sample shows strong bitumen staining and plentiful wisps. It is moderate to rich in inertinite and reworked particles with about an equal proportion of vitrinite particles. UV light shows yellow and yellow-orange fluorescence from spores and a moderate exinite content.

K 8312, 2729-2731 m: Shale and Siltstone, Ro=0,50(20)

The sample is heavily bitumen stained and has plentiful bitumen wisps. It has a low content of vitrinite wisps and wispy particles with subordinate inertinite. UV light shows yellow to mid-orange fluorescence from spores and a moderate exinite content.

K 8321, 2755-2758 m: Shale, Siltstone and Carbonate, Ro=0,47(22)

The sample shows strong bitumen staining and abundant bitumen wisps. It is moderate to rich in bitumen wisps and particles with subordinate inertinite and reworked particles. UV light shows yellow-orange fluorescence from spores and only a trace of exinite.

K 8326, 2770-2773 m: Shale, Ro=0,45(21)

The sample shows strong bitumen staining and plentiful bitumen wisps. It has a low content of inertinite and reworked particles with subordinate vitrinite wispy particles and particles. UV light shows yellow fluorescence from spores and a moderate to rich exinite content.

K 8333, 2791-2794 m: Shale, Siltstone and Carbonate, Ro=0,49(14)

The sample has variable moderate bitumen staining and a moderate abundance of bitumen wisps. Otherwise, it has a low organic content. There are vitrinite wisps and particles with subordinate inertinite and reworked particles. UV light shows light orange fluorescence from spores and a low to moderate exinite content.

K 8337, 2803-2806 m: Shale, Ro=0,71(1)

The sample contains only a trace of organic material. There are small particles of gnarled inertinite and reworked material and one vitrinite wisp. UV light shows light orange fluorescence from spores and a low exinite content.

K 8415, 2863-2866 m: Coal, Carbargillite and Shale, Ro=0,62(21)

The sample is rich in organic material with an overall bitumen staining. It has plentiful vitrinite and inertinite particles and wisps. UV light shows mid-orange fluorescence from spores and a low to moderate exinite content.

K 8419, 2869-2872 m: Shale, Carbargillite and Coal Traces, Ro=0,72(22)

The sample is moderate to rich in organic material with light bitumen staining and plentiful wisps. It has good vitrinite wisps and stringers with loose coal fragments. Inertinite is subordinate. UV light shows light to mid orange fluorescence from spores and a low to moderate exinite content.

K 8425, 2887-2890 m: Shale, Ro=0,77(21)

The sample has a moderate organic content. Inertinite particles are dominant. It has some good vitrinite wisps, stringers and some particles of rather variable Ro. It has an overall light bitumen staining. UV light shows mid orange fluorescence from spores and a moderate to rich exinite content.

K 8431, 2973-2976 m: Siltstone and Shale, Ro=0,56(18) and 0,92(3)

The sample has a low organic content. Inertinite and reworked particles are dominant with some subordinate vitrinite wisps and particles. There are a few loose coal fragments and bitumen wisps. UV light shows light orange fluorescence from spores and a moderate exinite content.

K 8441, 3030-3036 m: Sandstone, Siltstone and Shale, Ro=0,42(4)

The sample has plentiful bitumen wisps and a very low content of small inertinite and reworked particles with only a handful of vitrinite specks. UV light shows light orange fluorescence from spores and a moderate exinite content.

K 8445, 3054-3060 m: Sandy Siltstone, Ro=0,59(16)

The sample has bitumen staining and has some bitumen wisps. It has a low content of inertinite and reworked particles with a trace of vitrinite particles. UV light shows light orange fluorescence from spores and a low to moderate exinite content.

K 8462, 3148-3154 m: Siltstone, Ro=0,39(3) and 0,65(17)

The sample has a moderate organic content. It is bitumen stained and has plentiful bitumen wisps. It has vitrinite particles plus wisps with about an equal proportion of inertinite and reworked particles. UV light shows light to mid orange fluorescence from spores and a moderate exinite content.

K 8468, 3184-3190 m: Shale and Siltstone, Ro=0,64(21)

The sample is bitumen stained and contains some bitumen wisps. It has a moderate organic content. There are vitrinite wisps and particles with subordinate inertinite. UV light shows mid-orange fluorescence from spores and a low to moderate exinite content.

K 8489, 3304-3310 m: Sandstone, Shale and Coal, Ro=0,65(21)

The sample is bitumen stained and contains some bitumen wisps. There are plentiful coal fragments - wholly vitrinite which are rather brecciated. UV light shows light to mid-orange fluorescence from spores and hydrocarbons and a moderate to rich exinite content.

K 8505, 3400-3406 m: Mixed Shale Lithologies, Ro=0,76(22)

Organic matter is restricted to grey shale cuttings. It has a low content of inertinite particles with a few vitrinite wisps and particles. There are some bitumen wisps and staining and some loose coal particles. UV light shows mid orange fluorescence from spores and a moderate exinite content.

K 8521, 3496-3502 m: Mixed Shale Lithologies, Ro=0,69(20) and 1,06(1)

The sample has a low organic content, restricted to loose coal cuttings, plus vitrinite and inertinite particles in a couple of grey shale cuttings. UV light shows mid orange fluorescence from spores which are abundant in some cuttings and a low to moderate exinite content.

Analysis in Transmitted Light

Sedimentary Organic Matter/Visual Kerogen Analysis

A batch of 45 samples from 2418-3214 m, all picked lithologies from ditch cutting samples, were investigated to get an evaluation of the maturity and type of sedimentary organic matter present in the analysed sequence of this well.

From a palynological point of view all the samples have rich residues and most of them are composed mainly of terrestrial plant remains, a major part of which are cuticles, pollen, and spores. There is also a considerable amount of woody material, inertinite and fusinite as well as vitrinite and semifusinite. The proportions vary, dependent upon the environment.

True amorphous material dominated in about 10 residues from the intervals 2656-71 m, 2737-67 m, 2791-2976 m and 3102-08 m. However, a distinction between true amorphous and sapropelised terrestrial material is difficult since they occur together in dense aggregates. We have partly used chemical oxidation of the residues as an aid in solving this problem.

A lot of the material which was examined, appears to have potential for gas and oil, but is perhaps more oil prone especially in the four intervals mentioned above.

The observed colours of the coniferous pollen grains (bisaccates) correspond to a colour index increasing from 1+/2- to 2+/3- or 3- through the investigated interval. In samples deviating from this general trend the colour was probably controlled by the lithology.

The material is apparently mature from 2719 m.

To subdivide the investigated interval we have used the composition of sedimentary organic matter, structure, state of preservation, as well as the level of maturity.

Interval 2418-2606 m: immature to moderate mature
Interval 2605-2686 m: moderate mature
Interval 2686-2722 m: moderate mature to mature
Interval 2722-2740 m: mature
Interval 2740-2767 m: mature
Interval 2770-2827 m: mature
Interval 2857-2994 m: mature
Interval 2994-3108 m: mature
Interval 3108-3190 m: ?mature

2418-2605 m

The residues contain fine to coarse fragments and are dominated by terrestrial matter, mostly cuticles. Admixtures of woody material indeterminate herbaceous, pollen and spores, are also present.

The material is sapropelised and occurs as aggregates of variable density. True amorphous material was estimated to be subordinate.

Colour index: 1+ or 1+/2- to 2-

An increase in coalification between 2500-3 and 2509-12 marks the transition from immature to moderate mature deposits and probably represents a boundary between units of different geologic ages.

2605-2686 m

Terrestrial matter is dominant and most of it seems of woody nature with subordinate, fairly tough cuticles. The residues are well dispersed and of generally better preservation than in the level above.

The amount of amorphous material appears to be greater in the lower part of the interval and indicates more marine conditions.

Colour index: 2 or 2/2+. The colours are fairly uniform but probably somewhat high (oxidized material).

2686-2722 m

Terrestrial matter dominates, consisting either of equal portions of woody and cuticular matter or is dominantly woody. Variable sapropelisation, with fairly well-preserved palynomorphs. True sapropel seems subordinate.

Colour index: 2 or 2/2+

2722-2740 m

Amorphous and terrestrial material appear to be equally abundant. Some admixing of lithologies were indicated by the cysts observed (Cretaceous and Late Jurassic). The terrestrial material seems to be mostly woody material.

Colour index: 2

2740-2767 m

The residues contain well dispersed particles, mostly from terrestrial sources and includes fair amounts of cuticles and woody matter. The

palynomorphs are poorly or fairly well preserved. Amorphous material is recorded as generally more important than at level 2686-2722 m.

Colour index: 2/2+

2770-2827 m

Aggregates of strongly sapropelised material. About half of it was estimated to consist of cuticles in the upper part of the interval, and true amorphous material was more abundant below (40-50% of the residues). The palynomorphs were variably well-preserved.

Colour index: 2/2+ and 2+, 2+/3-

2857-2994 m

The residues in the upper part of the interval (2857-90 m) are well dispersed, while those of the lower part (especially 2970-94 m) consist of strongly sapropelised material in aggregates. True amorphous and terrestrial remains were evaluated to be equally abundant. The palynomorphs are well or fairly well preserved and in 2899-994 Nannoceratopsis gracilis are common to abundant.

Colour index: 2+

2994-3108 m

The residues consist mostly of aggregates of sapropelised cuticular and woody matter. True sapropel is never dominant. Pyrite framboids are abundant. N.gracilis was observed through the interval.

Colour index: 2+ to 2+/3-

3108-3190 m

The residues contain well dispersed fragments, occasional large, tough cuticular fragments and inertinite, fusinite, vitrinite and semi-fusinite. Some of the material observed was evaluated as true

amorphous. The residues were much smaller than in the sediments higher in this section.

Colour index: 2+/3-
3190-3214 m

The residues are very small and woody and degraded woody material appears to be dominant.

Colour index: 3- and 2+/3-

The lowest value, observed in 3208-14 m, has been evaluated on the basis of a lithology that was probably caved material. This is suggested from the residue resembling (K 8458, 3124-30 m). If caving could be excluded, we suggest a colour index of 3- representing oxidised material, with 2+/3- perhaps being the maturation index for this interval.

ROCK-EVAL PYROLYSIS

A total of 47 samples from the analysed sequence in this well were taken for Rock-Eval analysis. The results are discussed below.

Zone A: One sample were analysed from this zone. The sample picked was a grey claystone and showed a high oxygen index and a low hydrogen index, T_{max} was low but the production index was high. The data suggest an immature type III kerogen with migrated hydrocarbons giving the high production index. Claystones of this sort should have only a poor potential for gas.

Zones B-F: Twenty-two samples were analysed from these zones. The dark grey and brown-grey shales all have high hydrogen indices and low typeoxygen indices. T_{max} values between 420 and 430 indicate immature to moderate maturity and production indices are all low. The hydrogen indices vary somewhat from 409 to 697 which suggests mostly type II kerogens with some type III associated with the lower values. Oxygen indices show a slight decrease with increasing depth of burial for the shales. One dark grey shale K 8286 (2650-2653 m) shows a relatively low hydrogen index perhaps indicating a mixture; mostly of type III with some type II kerogen. The grey claystone analysed from this section K 8273 (2611-2614 m) shows similar characteristics to the grey claystone from zone A. The data suggest immature to moderate mature predominantly type II kerogens, with a good to rich potential for oil and gas.

Zones G and H: Eleven dark grey silty shales and siltstone samples from these two zones were analysed. They show lower hydrogen indices than similar lithologies in zones B-F. T_{max} and production index values are similar to the silty shales towards the base of zone F. The data indicate moderate mature, mixed type II and III material, with a good to rich potential for oil and gas.

Zone I: Four samples were analysed from this zone. Production index values indicate that generation of hydrocarbons has begun, and T_{max} values suggest moderate mature to mature kerogens. Hydrogen index values are low to moderate (i.e. 170-350) suggesting a mixture; mostly

of type III and some type II kerogen. The data indicate mature kerogens with a good to rich potential for gas and paraffinic oils.

Zones J, K and L: Eight samples were analysed from these zones. Two samples from zone J (K 8439, 3018-3024 m and K 8443, 3042-3048 m) have moderate hydrogen indices, and are probably mature type II kerogens, the rest have lower hydrogen indices and are predominantly mature type III kerogens. Production indices and T_{max} values are higher in these zones than in zone I. The data suggests mature, predominantly type III kerogens with some horizons i.e. approximately 3000-3050 m with some type II, generally good source for gas and perhaps some oil, in zones J and K. The grey claystones in zone L contain mature type III kerogen (based on only one analysis).

Pyrolysis - Gas Chromatography

Fifteen samples of kerogen concentrates prepared for visual kerogen analysis were also analysed by pyrolysis-gas chromatography. The instrumental conditions are discussed in the experimental section. The results are discussed below.

The numbered peaks in the pyrograms are n-alkane/alkene doublets of that carbon number. The n-alkanes have the shorter retention time. Tol=toluene; Xyl=m(+p)-xylene, and Pr=pristenes.

Zone A. No samples were analysed from this zone.

Zones B-E. Seven samples were analysed from this section. In the top two samples and the lowest sample; the n-alkane/alkene homologies are the major resolved components below nC_{17}. In the others from this section the pyrograms are more complex, and include a number of other resolved components below nC_{17}. Further, alkenes tend to be relatively more prominent than the n-alkanes in the latter samples. The range of n-alkanes is roughly from nC_7 to nC_{30}. Sample K 8239 (2509-2512 m) exhibits less of the n-alkane/alkene homology above nC_{17}. The three samples below this K 8243, K 82 46, K 8251 all show a prominent unresolved hump between nC_{17}-nC_{26} and also a more prominent n-alkane/alkene homology in this region. The increased abundances of

n-alkanes/alkenes of high molecular weight in these three samples suggests an increased input from higher plant waxes. Generally they show type II kerogen fingerprints.

Zone F. No samples were analysed from this zone.

Zone G. Three samples were analysed from this zone. In the first sample K 8291 (2665-2668 m), the n-alkane/alkene homology is less prominent than in those from zones B-F. A number of resolved components around nC_{13} and nC_{14} are most prominent. The other samples K 8297, K 8302, resemble the samples from zones B-F in which the n-alkane/alkene homologies are again more prominent.

Zone H. Two samples were analysed from this zone. K 8415 (2857-2860 m) exhibits a prominent n-alkane/alkene homology from nC_{14} to nC_{25} probably derived in part from a terrestrial input. As in the first sample from zone G there is mass of resolved and unresolved components between nC_{11} and nC_{17}. The pyrogram of K 8425 (2887-2890 m) exhibits a less complex pyrogram in which the n-alkane/alkene homology is again the dominant feature. Wide poorly resolved, tailing peaks can be distinguished between nC_{11} and nC_{14}. Both samples may be regarded as type III kerogens with perhaps a minor amount of lipid-rich material i.e. type II/I kerogen.

Zone I. No samples were analysed from this zone.

Zone J. Two samples were analysed from this zone. K 8439 and K 8443 (3018-3024 m, 3042-3048 m). The n-alkane/alkene homologies dominate the pyrograms. Rock-Eval pyrolysis and the nature of the pyrograms indicates that these two samples are probably type II kerogens.

Zone K. One sample was analysed from this zone K 8458 (3124-3130 m). The n-alkane/alkene homologies are prominent, and also between nC_{11} and nC_{15} are several wide, poorly resolved, tailing peaks which are probably polar compounds. This sample is largely of type III which perhaps a minor lipid component (i.e. from which the n-alkane/alkene homology is derived).

Discussion

A characteristic of all the pyrograms is the homology of doublets (n-alkanes/alkenes). Characteristic also of all the pyrograms except the bottom four is the presence of isoprenoid alkenes e.g. the pristenes. The pyrograms of all samples tend to exhibit products mainly in the carbon number range below nC_{20}. Normal and branched alkanes and alkenes are the dominant products in the samples from zones B-E and indicate a lipid rich kerogen (mostly type II).. In two samples from zones G-J e.g. K 8291 and K 8415 the n-alkane/alkene homologies are less prominent than other resolved components between nC_{12}-nC_{15}. In addition samples from zones G-K exhibit wide tailing peaks (e.g. Z in K 8458) in the lower carbon number range, which probably include oxygenated compounds such as alkyl phenols. The prominence of such compounds suggests a source from higher plant sources. The occurrence of low molecular weight aromatic compounds such as toluene, p/m-xylene may perhaps be of higher plant origin. However, they are abundant in type II kerogens (as defined by Rock-Eval) such as those from zones B-F, and can be produced equally well from the sporepollenin of spores and pollen.

In summary:- Samples from zones B-F have pyrograms which indicate that they consist mostly of type II with perhaps some type I in the horizon between 2455 m and 2509 m. Below this level in zones B-E the samples are of type II kerogens. In zones G-J the samples vary markedly, with much terrestrial material, and some horizons which consist of a mixture of terrestrial woody and lipid rich kerogen (e.g. 2698-2701 m and 3018-3024 m and 3042-3048 m).

The origin of the type II material in the lower zones G-J is from visual kerogen analysis mostly cuticular material. Spores and pollen are also abundant in zones B-E, and true amorphous material is generally subordinate in both B-E and G-J. Thus it would appear that the pyrograms in zones B-E represent mostly herbaceous material, with some amorphous material presumably derived from bacterial lipids. In zones G-K the pyrograms represent a mixture of herbaceous and woody material.

Conclusions

The maturity of analysed sequence from the well 30/6-5 is mainly based on vitrinite reflectance, spore fluorescence, spore colouration, and T_{max} values from Rock-Eval pyrolysis. The richness of the samples is based on TOC and Rock-Eval pyrolysis with additional evidence being supplied from the abundance of light hydrocarbons, and $C_{15}+$ extractable hydrocarbons. Source rock quality is based mainly on pyrolysis, both Rock-Eval and pyrolysis gas chromatography, and on visual kerogen examination.

Zone A, 2375-2455 metres. Consists mostly of grey, green-grey and red-brown claystones with some carbonates. Mostly diagenetic methane was present in the light hydrocarbons. Only a few TOC values were obtained, all below 1%. Rock-Eval of one grey claystone indicated an immature type III kerogen. Visual kerogen examination indicates mostly terrestrial material. This zone is immature and has a poor potential as source rocks for gas or oil.

Zones B-F, 2455-2653 metres. These zones include much (80-90%) dark brown, brown-grey fissile shales which becomes progressively more silty and sandy in zones D through F. They are rich in TOC (5-10%). From visual kerogen analysis the kerogens are rich in sapropelised cuticles and other herbaceous material with subordinate amorphous material. More woody material is found between 2605-2653 m. Rock-Eval and pyrolysis- gas chromatography indicate predominantly type II kerogens, from 2455 to 2605 m and mixed type II/III below this level. The saturated hydrocarbon gas chromatograms suggest that hydrocarbons are predominantly derived from amorphous kerogens since the n-alkanes exhibit front end-biased distribution with maxima at nC_{13}-nC_{15}. Visual kerogen analysis and vitrinite reflectance data indicate that the zones are moderate mature. Visual kerogen analysis also suggests that the change from immature to moderate mature occurs at about 2500 metres. Rock-Eval and pyrolysis gas chromatography indicate source rocks which have a good to rich potential for oil and gas.

Zone G, 2653-2701 metres. This zone includes silty and sandy dark grey shales which are rich in TOC (3,6-6,5% TOC). Lower TOC values

generally occur in the most silty and sandy horizons. As in the lower part of zone F, visual kerogen analysis and Rock-Eval indicate that this zone consists of a mixture of woody type III and herbaceous type II material. The saturated and aromatic hydrocarbon traces mark a change in this zone, with a larger terrestrial input than in the sequence above. Vitrinite reflectance, spore colouration and fluorescence indicate a moderate mature zone. The data suggest that this zone has a good potential as source rocks for gas and paraffinic oil.

Zone H, 2701-2850 metres. The dominant lithologies are grey, green and red-brown claystones, dark grey, brownish grey silty claystones grading to siltstones, with some sandstones and some coal. TOC values vary in the dark grey claystones and siltstones in the top 30 metres of the zone from 4-6%, below this brownish-grey siltstones and silty sandstones have TOC values varying roughly from 1 to 2%. Visual kerogen indicates that the top 30 metres contain a mixed kerogen type II/III as in zone G. The brown-grey siltstones below this contain predominantly type III kerogen. Saturated hydrocarbon traces indicate a large terrestrial input. The samples from the bottom 50 metres of the zone are poor quality and the nature of the main lithology is obscured by cement. Some bands of coal are present. Spore colouration and fluorescence indicates a mature zone. The data indicates a zone with a good potential as source rocks for gas.

Zone I, 2850-2900 metres. The main lithologies in this zone include brownish and grey to light grey waxy claystones with coal stringers, some coal and sandstones. The claystones have TOC values between 1-5%. Visual kerogen analysis indicates that the organic matter consists of a mixture of true amorphous and terrestrial material. Rock-Eval and pyrolysis gas chromatography point to predominantly type III kerogens with some type II. Saturated and aromatic hydrocarbon traces indicate a large terrestrial input, the sample from 2857-2860 m is a carbonaceous claystone/carbargillite. Visual kerogen and vitrinite reflectance indicate mature oil window. Both vitrinite reflectance and Rock-Eval T_{max} values are high in comparison with the zone directly below indicating that the values are anomalous in this zone. This zone is therefore mature (oil window?) and the brownish-grey waxy

claystones have a good potential as source rocks for gas and heavy oil.

Zones J and K, 2958-3352 metres. The main lithologies in this section are sandstones and brownish-grey to light grey silty claystones. Below 3328 metres claystones are mostly TOC-poor grey, green and red-brown claystones. The brownish-grey, grey silty claystones have TOC values varying from 1-3% approximately. Visual kerogen analysis indicates that from 2958 to 3190 metres; sapropelised cuticular and woody material and some true sapropel is present. Rock-Eval analysis indicates that for most samples the kerogens are type III. In some samples however, e.g. 3018-3024 m and 3042-3048 m visual kerogen and Rock-Eval analysis indicate that some type II kerogen is present. Pyrograms of the same samples exhibit prominent n-alkane/alkene homologies, also suggests the presence of some type I or II kerogen. Below 3190 metres Rock-Eval data indicates mostly type III kerogen. Vitrinite reflectance data indicates mature to mature (oil window), and all the data suggest that the brownish grey claystones have a fair to good potential as source rocks for gas and some heavy oil.

Zone L, 3352-3550 metres. This zone consists of sandstones with grey, green and red-brown claystones and occasional bands of coal. The claystones have TOC values around 1% which is high for these lithologies, presumably small coal fragments adhering to the claystones has raised the TOC values. The zone is mature oil window based on vitrinite reflectance data. The data indicate a zone with a poor to fair potential as source rocks for gas (mostly from coal bands).

IKU

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
K8200	2375	1979	140	293	44	70	41	2526	547	21.65	.63
K8201	2390	3537	264	779	149	227	98	4956	1419	28.63	.66
K8203	2404	8650	844	2230	298	508	133	12530	3880	30.97	.59
K8204	2407	11041	1163	3252	503	874	359	16833	5792	34.41	.58
K8205	2410	4298	479	974	111	218	84	6080	1782	29.31	.51
K8207	2416	1175	303	568	74	157	64	2277	1102	48.40	.47
K8209	2422	1248	46	132	29	55	31	1510	262	17.35	.53
K8211	2428	882	92	293	60	137	194	1464	582	39.75	.44
K8213	2434	1962	235	836	145	369	208	3547	1585	44.69	.39
K8215	2440	1058	161	530	81	216	106	2046	988	48.29	.38
K8217	2446	2377	374	1450	243	703	585	5147	2770	53.82	.35
K8218	2449	2355	1029	2408	468	1111	1049	7371	5016	68.05	.42
K8219	2452	86	24	81	17	44	39	252	166	65.87	.39
K8220	2455	5023	802	2024	287	845	1089	8981	3958	44.07	.34
K8221	2458	3478	971	1505	170	430	281	6554	3076	46.93	.40
K8222	2461	38035	5660	12501	1455	4458	3901	62109	24074	38.76	.33
K8223	2464	317	77	107	10	28	18	539	222	41.19	.36
K8224	2467	11809	1956	6380	1023	2928	2502	24096	12287	50.99	.35
K8225	2470	9529	3312	7638	973	3052	2198	24504	14975	61.11	.32
K8227	2476	8410	1237	3132	342	929	523	14050	5640	40.14	.37
K8229	2482	6885	2642	6283	770	2701	2050	19281	12396	64.29	.29
K8230	2485	12057	4361	11681	1795	5826	5217	35720	23663	66.25	.31
K8231	2488	21810	4180	10192	1006	3385	2126	40573	18763	46.25	.30
K8232	2491	22150	5362	19763	2969	11212	11550	61456	39306	63.96	.26
K8233	2494	17180	4457	11212	1295	4799	3459	38943	21763	64.12	.27

TABLE I b.

IKU

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
K8200	2375			6		7	65	13	13		.00
K8201	2390		4	3		1		8	8		.00
K8203	2404										
K8204	2407	O P E N		L I D .							
K8205	2410	85	38	177	39	141	21	480	395	82.29	.28
K8207	2416					3	4	3	3		.00
K8209	2422	55	15	27	13	42	27	152	97	63.82	.31
K8211	2428	89	23	62	26	106	81	306	217	70.92	.25
K8213	2434	133	40	123	40	209	157	545	412	75.60	.19
K8215	2440	125	45	205	58	304	239	737	612	83.04	.19
K8217	2446	121	66	432	70	413	93	1102	981	89.02	.17
K8218	2449	83	36	229	77	371	647	796	713	89.57	.21
K8219	2452					6	123	6	6		.00
K8220	2455	144	103	491	124	596	1410	1458	1314	90.12	.21
K8221	2458						47				
K8222	2461	1617	2730	11440	2539	9467	12012	27793	26176	94.18	.27
K8223	2464			23	4	20	47	47	47		.20
K8224	2467	1293	2239	11959	3078	11925	16129	30494	29201	95.76	.26
K8225	2470	1241	2698	16916	3780	17428	21756	42063	40822	97.05	.22
K8227	2476	1533	3139	16984	3308	13864	13222	38828	37295	96.05	.24
K8229	2482	770	1896	13752	3305	15374	20495	35097	34327	97.81	.21
K8230	2485	1299	2639	17360	4605	19983	26368	45886	44587	97.17	.23
K8231	2488	1477	4023	22842	4261	19414	25001	52017	50540	97.16	.22
K8232	2491	992	2225	14683	4068	18796	28472	40764	39772	97.57	.22
K8233	2494	686	1821	14228	3376	16158	23088	36269	35583	98.11	.21

IKU

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
K8200	2375	1979	140	299	44	77	106	2539	560	22.06	.57
K8201	2390	3537	268	782	149	228	98	4964	1427	28.75	.65
K8203	2404	8650	844	2230	298	508	133	12530	3880	30.97	.59
K8204	2407	11041	1163	3252	503	874	359	16833	5792	34.41	.58
K8205	2410	4383	517	1151	150	359	105	6560	2177	33.19	.42
K8207	2416	1175	303	568	74	160	68	2280	1105	48.46	.46
K8209	2422	1303	61	159	42	97	58	1662	359	21.60	.43
K8211	2428	971	115	355	86	243	275	1770	799	45.14	.35
K8213	2434	2095	275	959	185	578	365	4092	1997	48.80	.32
K8215	2440	1183	206	735	139	520	345	2783	1600	57.49	.27
K8217	2446	2498	440	1882	313	1116	678	6249	3751	60.03	.28
K8218	2449	2438	1065	2637	545	1482	1696	8167	5729	70.15	.37
K8219	2452	86	24	81	17	50	162	258	172	66.67	.34
K8220	2455	5167	905	2515	411	1441	2499	10439	5272	50.50	.29
K8221	2458	3478	971	1505	170	430	328	6554	3076	46.93	.40
K8222	2461	39652	8390	23941	3994	13925	15913	89902	50250	55.89	.29
K8223	2464	317	77	130	14	48	65	586	269	45.90	.29
K8224	2467	13102	4195	18339	4101	14853	18631	54590	41488	76.00	.28
K8225	2470	10770	6010	24554	4753	20480	23954	66567	55797	83.82	.23
K8227	2476	9943	4376	20116	3650	14793	13745	52878	42935	81.20	.25
K8229	2482	7655	4538	20035	4075	18075	22545	54378	46723	85.92	.23
K8230	2485	13356	7000	29041	6400	25809	31585	81606	68250	83.63	.25
K8231	2488	23287	8203	33034	5267	22799	27127	92590	69303	74.85	.23
K8232	2491	23142	7587	34446	7037	30008	40022	102220	79078	77.36	.23
K8233	2494	12866	6278	25440	4671	20957	26547	70212	57346	81.68	.22

IKU

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
K8235	2500	1064	2449	17718	4099	19804	25458	45134	44070	97.64	.21
K8236	2503	16517	5744	15284	2060	7263	5747	46868	30351	64.76	.28
K8237	2506	706	2488	24945	5391	25978	32670	59508	58802	98.81	.21
K8238	2509	3454	1216	4556	670	2644	2176	12540	9086	72.46	.25
K8239	2512	102	264	2667	643	3110	4602	6786	6684	98.50	.21
K8240	2515	3980	1463	5131	736	2954	2870	14264	10284	72.10	.25
K8241	2518	544	1397	9925	2175	10949	16868	24990	24446	97.82	.20
K8242	2521	7094	2331	5113	535	1961	1439	17034	9940	58.35	.27
K8243	2524	100	225	1324	238	1187	3251	3074	2974	96.75	.20
K8244	2527	20158	3784	10099	931	3417	2138	38389	18231	47.49	.27
K8245	2530	3321	7406	35749	6240	30917	29011	83633	80312	96.03	.20
K8246	2533	16941	21286	41535	3911	15888	10315	99561	82620	82.98	.25
K8247	2536	1674	5872	35103	7137	35152	35644	84938	83264	98.03	.20
K8248	2539	13621	6567	21610	2745	12587	13813	57130	43509	76.16	.22
K8249	2542	25339	11703	28731	3429	14917	12952	84119	58780	69.88	.23
K8250	2545	69119	24557	57267	6738	28853	29060	186534	117415	62.95	.23
K8251	2548	74336	38528	91510	9938	44337	37222	258649	184313	71.26	.22
K8252	2551	15721	7686	20871	2211	9458	7926	55947	40226	71.90	.23
K8253	2554	55134	23748	49242	5173	20409	14076	153706	98572	64.13	.25
K8254	2557	14226	6651	20857	2489	9501	7291	53724	39498	73.52	.26
K8255	2560	7465	3214	7256	738	2760	1594	21433	13968	65.17	.27
K8257	2566	4777	2231	4555	447	1671	1005	13681	8904	65.08	.27
K8259	2572	5576	2706	5750	578	2405	1659	17015	11439	67.23	.24
K8261	2578	7408	3871	8570	913	3906	3064	24668	17260	69.97	.23
K8263	2584	6010	3636	8203	866	3835	3241	23950	16540	73.35	.23

IKU

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
K8235	2500	1064	2449	17718	4099	19804	25458	45134	44070	97.64	.21
K8236	2503	1044	2471	16302	3795	16931	18390	40543	39499	97.42	.22
K8237	2506	706	2488	24945	5391	25978	32670	59508	58802	98.81	.21
K8238	2509	503	1227	11746	3267	15511	19966	32254	31751	98.44	.21
K8239	2512	102	264	2667	643	3110	4602	6786	6684	98.50	.21
K8240	2515	1078	2467	21518	5277	24556	26162	54896	53818	98.04	.21
K8241	2518	544	1397	9925	2175	10949	16868	24990	24446	97.82	.20
K8242	2521	813	2451	1528	3220	15716	18217	23728	22915	96.57	.20
K8243	2524	100	225	1324	238	1187	3251	3074	2974	96.75	.20
K8244	2527	3096	7635	35912	6814	32437	27459	85894	82798	96.40	.21
K8245	2530	3321	7406	35749	6240	30917	29011	83633	80312	96.03	.20
K8246	2533	3319	2920	17812	3342	16349	31474	43742	40423	92.41	.20
K8247	2536	1674	5872	35103	7137	35152	35644	84938	83264	98.03	.20
K8248	2539	808	3167	30613	7995	38668	40740	81251	80443	99.01	.21
K8249	2542	1534	3873	28648	4918	23151	9147	62124	60590	97.53	.21
K8250	2545	909	3168	23771	5790	28822	38062	62460	61551	98.54	.20
K8251	2548	870	3126	25809	4437	22503	9732	56745	55875	98.47	.20
K8252	2551	1084	4317	33901	8153	40505	39808	87960	86876	98.77	.20
K8253	2554	2699	3931	23001	4643	23111	9628	57385	54686	95.30	.20
K8254	2557	951	3727	30894	7001	34247	32970	76820	75869	98.76	.20
K8255	2560	1387	3489	23058	3776	18174	6943	49884	48497	97.22	.21
K8257	2566	874	2786	17291	2871	14153	6557	37975	37101	97.70	.20
K8259	2572	247	652	4105	696	3409	1448	9109	8862	97.29	.20
K8261	2578	39	87	550	88	425	177	1189	1150	96.72	.21
K8263	2584	6	9	69	19	90	49	213	207	97.18	.21

IKU

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
K8235	2500	2128	4898	35436	8198	39608	50916	90268	88140	97.64	.21
K8236	2503	17561	8215	31586	5855	24194	24137	87411	69850	79.91	.24
K8237	2506	1412	4976	49890	10782	51956	65340	119016	117604	98.81	.21
K8238	2509	3957	2443	16302	3937	18155	22142	44794	40837	91.17	.22
K8239	2512	204	528	5334	1286	6220	9204	13572	13368	98.50	.21
K8240	2515	5058	3930	26649	6013	27510	29032	69160	64102	92.69	.22
K8241	2518	1088	2794	19850	4350	21898	33736	49980	48892	97.82	.20
K8242	2521	7907	4782	6641	3755	17677	19656	40762	32855	80.60	.21
K8243	2524	200	450	2648	476	2374	6502	6148	5948	96.75	.20
K8244	2527	23254	11419	46011	7745	35854	29597	124283	101029	81.29	.22
K8245	2530	6642	14812	71498	12480	61834	58022	167266	160624	96.03	.20
K8246	2533	20260	24206	59347	7253	32237	41789	143303	123043	85.86	.22
K8247	2536	3348	11744	70206	14274	70304	71288	169876	166528	98.03	.20
K8248	2539	14429	9734	52223	10740	51255	54553	138381	123952	89.57	.21
K8249	2542	26873	15576	57379	8347	38068	22099	146243	119370	81.62	.22
K8250	2545	70028	27725	81038	12528	57675	67122	248994	178966	71.88	.22
K8251	2548	75206	41654	117319	14375	66840	46954	315394	240188	76.15	.22
K8252	2551	16805	12003	54772	10364	49963	47734	143907	127102	88.32	.21
K8253	2554	57833	27679	72243	9816	43520	23704	211091	153258	72.60	.23
K8254	2557	15177	10378	51751	9490	43748	40261	130544	115367	88.37	.22
K8255	2560	8852	6703	30314	4514	20934	8537	71317	62465	87.59	.22
K8257	2566	5651	5017	21846	3318	15824	7562	51656	46005	89.06	.21
K8259	2572	5823	3358	9855	1274	5814	3107	26124	20301	77.71	.22
K8261	2578	7447	3458	9120	1001	4331	8241	33857	18410	71.20	.23
K8263	2584	4016	3245	8452	885	3405	4240	23763	16747	73.57	.23

IKU

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
K8265	2590	7718	4883	12126	1353	5912	5233	31992	24274	75.88	.23
K8267	2596	3570	1914	4898	561	1963	1215	12906	9336	72.34	.29
K8269	2602	12791	6150	17641	2538	10199	9724	49319	36528	74.06	.25
K8270	2605	30129	13500	50608	7615	33429	42895	135281	105152	77.73	.23
K8271	2608	8154	2553	7388	1241	5906	10291	25242	17088	67.70	.21
K8273	2614	1360	833	2365	324	1423	1612	6305	4945	78.43	.23
K8275	2620	4012	2105	6035	800	3265	2726	16217	12205	75.26	.25
K8277	2626	3958	1842	3532	365	1316	779	11013	7055	64.06	.28
K8279	2632	4096	2597	5624	574	2124	1343	15015	10919	72.72	.27
K8281	2638	4660	2712	5573	533	1973	1024	15451	10791	69.84	.27
K8283	2644	6824	4046	8636	860	2936	1660	23302	16478	70.71	.29
K8285	2650	8512	4451	7841	702	2442	1434	23948	15436	64.46	.29
K8286	2653	11738	6278	12464	1034	3359	1547	34873	23135	66.34	.31
K8287	2656	97	54	115	11	37	23	314	217	69.11	.30
K8288	2659	16375	9414	21353	2035	6931	5345	56108	39733	70.82	.29
K8289	2662	7091	3298	5862	558	1564	693	18373	11282	61.41	.36
K8291	2668	98	56	103	10	28	15	295	197	66.78	.36
K8292	2671	19087	9957	19544	1932	4966	2360	55486	36399	65.60	.39
K8293	2674	753	326	986	138	483	381	2686	1933	71.97	.29
K8294	2677	1368	590	1214	132	413	308	3717	2349	63.20	.32
K8295	2680	2694	1289	2152	218	612	324	6965	4271	61.32	.36
K8296	2683	12946	6794	12671	1243	3666	2256	37320	24374	65.31	.34
K8297	2686	67995	3717	7737	839	2382	1386	82670	14675	17.75	.35
K8298	2692	17336	6305	11757	1155	3146	1532	34699	22363	64.45	.37
K8299	2695	4915	2191	5110	1143	3601	1917	18476	16525	67.50	.38

IKU

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
K8265	2590	19	61	522	99	517	247	1218	1199	98.44	.19
K8267	2596	712	2166	16486	3196	17037	10267	39597	38885	98.20	.19
K8269	2602	502	773	8408	2186	10987	8314	22856	22354	97.80	.20
K8270	2605	O P E N		L I D .							
K8271	2608	228	284	4417	1087	7383	17327	13399	13171	98.30	.15
K8273	2614	266	447	5101	1303	7664	9902	14781	14515	98.20	.17
K8275	2620	417	667	5793	1330	7549	9395	15756	15339	97.35	.18
K8277	2626	680	913	8866	1564	8764	7026	20787	20107	96.73	.18
K8279	2632	487	1036	9846	1664	9372	8965	22405	21918	97.83	.18
K8281	2638	674	1790	11748	1645	9645	7626	25502	24828	97.36	.17
K8283	2644	651	2183	15599	2251	12439	8843	33123	32472	98.03	.18
K8285	2650	1004	3194	19346	2546	13732	8994	39822	38818	97.48	.19
K8286	2653	1768	2792	12499	1839	8597	6718	27495	25727	93.57	.21
K8287	2656	1380	4005	23215	3092	15243	10211	46935	45555	97.06	.20
K8288	2659	O P E N		L I D .							
K8289	2662	11344	28051	125938	18093	64977	46329	248403	237059	95.43	.28
K8291	2668	13949	35988	153051	21705	75723	59143	300416	286467	95.36	.29
K8292	2671	O P E N		L I D .							
K8293	2674	1695	3544	33939	7666	37334	55490	84178	82483	97.99	.21
K8294	2677	O P E N		L I D .							
K8295	2680	4888	19372	102725	16686	66341	82767	210012	205124	97.67	.25
K8296	2683			43	127	202		372	372		.63
K8297	2686	500	1408	6603	1086	4726	3797	14323	13823	96.51	.23
K8299	2692	1602	4961	21247	3662	13658	4674	45130	43528	96.45	.27
K8301	2698	1193	3906	19978	3846	14470	5558	43393	42200	97.25	.27

IKU

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
K8265	2590	7737	4944	12648	1452	6429	5480	33210	25473	76.70	.23
K8267	2596	4282	4080	21384	3757	19000	11482	52503	48221	91.84	.20
K8269	2602	13293	6923	26049	4724	21186	18038	72175	58882	81.58	.22
K8270	2605	30129	13500	50608	7615	33429	42895	135281	105152	77.73	.23
K8271	2608	8382	2837	11805	2328	13289	27618	38641	30259	78.31	.18
K8273	2614	1626	1280	7466	1627	9087	11514	21086	19460	92.29	.18
K8275	2620	4429	2772	11828	2130	10814	12121	31973	27544	86.15	.20
K8277	2626	4638	2755	12398	1929	10080	7805	31800	27162	85.42	.19
K8279	2632	4583	3633	15470	2238	11496	10308	37420	32837	87.75	.19
K8281	2638	5334	4502	17321	2178	11618	8650	40953	35619	86.98	.19
K8283	2644	7475	6229	24235	3111	15375	10503	56425	48950	86.75	.20
K8285	2650	9516	7645	27187	3248	16174	10428	63770	54254	85.08	.20
K8286	2653	13506	9070	24963	2873	11956	8265	62368	48862	78.34	.24
K8287	2656	1477	4059	23330	3103	15280	10234	47249	45772	96.87	.20
K8288	2659	16375	9414	21353	2035	6931	5345	56108	39733	70.82	.29
K8289	2662	18435	31349	131800	18651	66541	47022	266776	248341	93.09	.28
K8291	2668	14047	36044	153154	21715	75751	59158	300711	286664	95.33	.29
K8292	2671	19087	9957	19544	1932	4966	2360	55486	36399	65.60	.39
K8293	2674	2448	3870	34925	7804	37817	55871	86864	84416	97.18	.21
K8294	2677	1368	590	1214	132	413	308	3717	2349	63.20	.32
K8295	2680	7582	20661	104877	16904	66953	83091	216977	209395	96.51	.25
K8296	2683	12946	6794	12714	1370	3868	2256	37692	24746	65.65	.35
K8297	2686	68495	5125	14340	1925	7108	5183	96993	28498	29.38	.27
K8299	2692	13938	11266	33004	4817	16804	6206	79829	65891	82.54	.29
K8301	2698	10112	8697	29588	4989	17451	7475	70837	60725	85.72	.29

IKU

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
K8302	2701	5067	2843	6394	717	1804	835	16825	11758	69.88	.40
K8304	2707	3424	1930	5477	737	1715	836	13283	9859	74.22	.43
K8305	2710	5400	3995	13479	2040	5877	4969	30791	25391	82.46	.35
K8307	2716	5440	4732	16170	2539	7447	6077	36328	30888	85.03	.34
K8309	2722	4618	3523	10127	1394	3855	2635	23517	18899	80.36	.36
K8311	2728	4432	2845	9202	1545	4314	3377	22338	17906	80.16	.36
K8312	2731	7516	5370	14016	1671	5049	3351	33622	26106	77.65	.33
K8313	2734	12327	7957	19748	2643	7891	5845	50566	38239	75.62	.33
K8315	2740	5116	5981	20052	2950	9925	10064	44024	38908	88.38	.30
K8317	2746	4993	3955	12532	1758	5870	5346	29108	24115	82.85	.30
K8318	2749	2898	2928	9070	1179	3634	2585	19709	16811	85.30	.32
K8321	2758	2938	2538	8710	1561	4539	4312	20286	17348	85.52	.34
K8323	2764	2548	2341	9253	1686	5194	5606	21022	18474	87.88	.32
K8324	2767	84	33	77	11	32	23	237	153	64.56	.34
K8325	2770	5	6	28	6	16	19	61	56	91.80	.38
K8326	2773	1404	834	2050	326	895	655	5509	4105	74.51	.36
K8327	2776	2738	2305	5854	953	2619	2103	14469	11731	81.08	.36
K8329	2782	5663	5564	13126	1929	5680	6254	31962	26299	82.28	.34
K8331	2788	6890	6894	14405	1935	5654	4095	35778	28888	80.74	.34
K8333	2794	4595	6182	13628	1658	5059	4481	31122	26527	85.24	.33
K8335	2800	4536	6030	15290	2327	6993	6212	35176	30640	87.10	.33
K8336	2803	2097	928	2887	644	1879	1684	8435	6338	75.14	.34
K8337	2806	496	229	664	123	358	307	1870	1374	73.48	.34
K8338	2809	1255	351	2333	625	2372	3144	6936	5681	81.91	.26
K8339	2812	590	799	3253	800	2709	2934	8151	7561	92.76	.30

IKU

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
K8302	2701	1538	2246	10452	1816	7864	7158	23916	22378	93.57	.23
K8304	2707	885	1018	5611	1114	5150	6174	13778	12893	93.58	.22
K8305	2710	304	939	8146	2310	10391	6428	22090	21786	98.62	.22
K8307	2716	327	959	8520	2764	11943	7944	24513	24186	98.67	.23
K8309	2722	348	1063	8767	2666	11276	7871	24121	23772	98.56	.24
K8311	2728	400	984	8262	2670	11269	8541	23585	23185	98.30	.24
K8312	2731	872	651	4171	1008	4959	8430	11661	10789	92.52	.20
K8313	2734	383	1309	10452	2997	13372	10129	28513	28130	98.66	.22
K8315	2740	277	1116	9106	2627	11125	7536	24251	23974	98.86	.24
K8317	2746	347	1067	9626	2848	12616	8416	26504	26157	98.69	.23
K8318	2749	848	691	4460	1160	5248	8374	12407	11559	93.17	.22
K8321	2758	358	973	8264	2931	12109	9330	24635	24277	98.55	.24
K8323	2764	284	678	6500	2745	11489	9225	21696	21412	98.69	.24
K8324	2767	742	358	4299	497	2618	870	8514	7772	91.29	.19
K8325	2770	199	515	4214	1740	7631	8119	14299	14100	98.61	.23
K8326	2773	29	16	119	38	172	401	374	345	92.25	.22
K8327	2776	327	850	6131	2214	9860	7859	19382	19055	98.31	.22
K8329	2782	250	851	6561	2425	9749	7961	19836	19586	98.74	.25
K8331	2788	230	1174	8224	2734	10460	7448	22822	22592	98.99	.26
K8333	2794	386	1061	7824	2881	11730	10564	23881	23496	98.38	.25
K8335	2800	356	1382	9254	3196	13067	9285	27255	26899	98.69	.24
K8336	2803	858	288	1702	813	3823	11065	7484	6626	88.54	.21
K8337	2806	24	88	607	182	666	1024	1567	1543	98.47	.27
K8338	2809	22	9	110	39	202	338	382	360	94.24	.19
K8339	2812	56	43	833	598	16	74	1546	1490	96.38	7.37

IKU

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
K8302	2701	6605	5089	16846	2533	9668	7993	40741	34136	83.79	.26
K8304	2707	4309	2948	11088	1851	6865	7010	27061	22752	84.08	.27
K8305	2710	5704	4934	21625	4350	16268	11397	52881	47177	89.21	.27
K8307	2716	5767	5691	24690	5303	19390	14021	60841	55074	90.52	.27
K8309	2722	4966	4586	18894	4060	15131	10506	47637	42671	89.58	.27
K8311	2728	4832	3829	17464	4215	15583	11918	45923	41091	89.48	.27
K8312	2731	8388	6021	18187	2679	10008	11781	45283	36895	81.48	.27
K8313	2734	12710	9266	30200	5640	21263	15974	79079	66369	83.93	.27
K8315	2740	5393	7097	29158	5577	21050	17600	68275	62882	92.10	.26
K8317	2746	5340	5022	22158	4606	18486	13762	55612	50272	90.40	.25
K8318	2749	3746	3619	13530	2339	8882	10959	32116	28370	88.34	.26
K8321	2758	3296	3511	16974	4492	16648	13642	44921	41625	92.66	.27
K8323	2764	2832	3019	15753	4431	16683	14831	42718	39886	93.37	.27
K8324	2767	826	391	4375	508	2650	893	8751	7925	90.56	.19
K8325	2770	204	521	4242	1746	7647	8138	14360	14156	98.58	.23
K8326	2773	1433	850	2169	364	1067	1056	5883	4450	75.64	.34
K8327	2776	3065	3155	11985	3167	12479	9962	33851	30786	90.95	.25
K8329	2782	5913	6415	19687	4354	15429	14215	51798	45885	88.58	.28
K8331	2788	7120	8068	22629	4669	16114	11543	58600	51480	87.85	.29
K8333	2794	4981	7243	21452	4539	16789	15044	55003	50023	90.95	.27
K8335	2800	4892	7412	24544	5523	20060	15497	62431	57539	92.16	.28
K8336	2803	2955	1216	4589	1457	5702	12749	15919	12964	81.44	.26
K8337	2806	520	317	1271	305	1024	1331	3437	2917	84.87	.30
K8338	2809	1277	360	2443	664	2574	3482	7318	6041	82.55	.26
K8339	2812	646	842	4086	1398	2725	3008	9697	9051	93.34	.51

IKU

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
K8340	2815	1803	894	5720	1599	6136	19507	16152	14349	88.84	.26
K8341	2818	780	767	2958	629	2305	3702	7439	6659	89.51	.27
K8343	2824	3	1	1	1	1	2	7	4	57.14	1.00
K8344	2827	1326	1029	3429	643	2342	2846	8769	7443	84.88	.27
K8345	2830	119	158	688	183	541	306	1689	1570	92.95	.34
K8478	2842	4733	2779	6213	947	3194	8755	17866	13133	73.51	.30
K8410	2845	O P E N		L I D .							
K8411	2848	94	72	319	100	304	421	889	795	89.43	.33
K8412	2851	O P E N		L I D .							
K8413	2854	4476	3358	5302	683	1823	1198	15642	11166	71.38	.37
K8414	2857	4664	1948	1418	96	304	288	8430	3766	44.67	.32
K8415	2860	2201	866	471	29	58	22	3625	1424	39.28	.50
K8416	2863	66551	21993	8836	550	1298	676	99228	32677	32.93	.42
K8417	2866	34084	8364	4545	385	890	834	48268	14184	29.39	.43
K8418	2869	8057	2389	1131	87	214	158	11878	3821	32.17	.41
K8419	2872	6980	2073	1089	74	201	138	10417	3437	32.99	.37
K8421	2878	5500	1581	957	75	190	212	8303	2803	33.76	.39
K8423	2884	3681	860	518	42	128	348	5229	1548	29.60	.33
K8425	2890	2046	674	440	29	91	135	3280	1234	37.62	.32
K8426	2893	6676	1384	1456	100	356	299	9972	3296	33.05	.28
K8427	2896	348	148	98	7	24	314	625	277	44.32	.29
K8428	2899	968	540	486	35	129	147	2158	1190	55.14	.27
K8453	2902	19410	5354	2172	133	338	244	27407	7997	29.18	.39
K8429	2964	869	363	402	43	140	176	1817	948	52.17	.31

IKU

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
K8340	2815			27	12	53	90	92	92		.23
K8341	2818	6	3	6	25	1066	127	1106	1100	99.46	.02
K8343	2824	5	3	48	29	131	474	216	211	97.69	.22
K8344	2827			6		14	46	20	20		.00
K8345	2830	132	42	110	35	96	75	415	283	68.19	.36
K8478	2842	103	49	577	221	1175	2883	2125	2022	95.15	.19
K8410	2845	173	55	203	151	830	3218	1412	1239	87.75	.18
K8411	2848	130	32	489	321	1491	3846	2463	2333	94.72	.22
K8412	2851	59	46	555	143	850	1725	1653	1594	96.43	.17
K8413	2854	16	43	220	67	277	803	623	607	97.43	.24
K8414	2857	829	5552	10708	1098	5932	11944	24119	23290	96.56	.19
K8415	2860	77899	50144	33109	3196	9956	4055	174304	96405	55.31	.32
K8416	2863	71350	54776	49865	3082	9932	5208	189005	117655	62.25	.31
K8417	2866	39125	26293	20262	1271	6092	4663	93043	53918	57.95	.21
K8418	2869	47850	31347	21723	1444	6129	4671	108493	60643	55.90	.24
K8419	2872	147	199	230	16	74	75	666	519	77.93	.22
K8421	2878	3024	6527	17641	765	3335	4321	31291	28267	90.34	.23
K8423	2884	293	309	304	19	93	74	1018	725	71.22	.20
K8425	2890	3354	6907	7816	777	3394	2968	22248	18894	84.92	.23
K8426	2893	5737	8503	10126	958	4188	3978	29512	23775	80.56	.23
K8427	2896	1211	4017	6033	697	2842	2359	14800	13589	91.82	.25
K8428	2899	569	550	489	37	153	176	1798	1229	68.35	.24
K8453	2902	2088	1459	1049	82	362	1018	5040	2952	58.57	.23
K8429	2964	1??	459	2115	343	1689	2840	5078	4806	94.64	.20

IKU

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
K8340	2815	1803	894	5747	1611	6189	19597	16244	14441	88.90	.26
K8341	2818	786	770	2964	654	3371	3829	8545	7759	90.80	.19
K8343	2824	8	4	49	30	132	476	223	215	96.41	.23
K8344	2827	1326	1029	3435	643	2356	2892	8789	7463	84.91	.27
K8345	2830	251	200	798	218	637	381	2104	1853	88.07	.34
K8478	2842	4836	2828	6790	1168	4369	11638	19991	15155	75.81	.27
K8410	2845	173	55	203	151	830	3218	1412	1239	87.75	.18
K8411	2848	224	104	808	421	1795	4267	3352	3128	93.32	.23
K8412	2851	59	46	555	143	850	1725	1653	1594	96.43	.17
K8413	2854	4492	3401	5522	750	2100	2001	16265	11773	72.38	.36
K8414	2857	5493	7500	12126	1194	6236	12232	32549	27056	83.12	.19
K8415	2860	80100	51010	33580	3225	10014	4077	177929	97829	54.98	.32
K8416	2863	137901	76769	58701	3632	11230	5884	288233	150332	52.16	.32
K8417	2866	73209	34657	24807	1656	6982	5497	141311	68102	48.19	.24
K8418	2869	55907	33736	22854	1531	6343	4829	120371	64464	53.55	.24
K8419	2872	7127	2272	1319	90	275	213	11083	3956	35.69	.33
K8421	2878	8524	8107	18599	839	3524	4533	39594	31070	78.47	.24
K8423	2884	3974	1169	822	61	221	422	6247	2273	36.39	.28
K8425	2890	5400	7581	8256	806	3485	3103	25528	20128	78.85	.23
K8426	2893	12413	9887	11582	1058	4544	4277	39484	27071	68.56	.23
K8427	2896	1559	4165	6131	704	2866	2673	15425	13866	89.89	.25
K8428	2899	1537	1090	975	72	282	323	3956	2419	61.15	.26
K8453	2902	21498	6813	3221	215	700	1262	32447	10949	33.74	.31
K8429	2964	1141	1022	2517	386	1829	3016	6895	5754	83.45	.21

IKU

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
K8431	2976	1064	771	1705	239	764	777	4543	3479	76.58	.31
K8433	2988	1314	968	2769	450	1580	2297	7081	5767	81.44	.28
K8434	2994	437	280	877	154	548	916	2296	1859	80.97	.28
K8436	3006	1060	678	1650	273	973	1363	4634	3574	77.13	.28
K8437	3012	2734	1878	4827	816	2841	3234	13096	10362	79.12	.29
K8438	3018	704	703	2182	403	1473	1810	5465	4761	87.12	.27
K8439	3024	695	467	1379	280	980	1296	3801	3106	81.72	.29
K8441	3036	679	1399	4536	690	2326	2087	9630	8951	92.95	.30
K8443	3048	230	487	2165	393	1317	1347	4592	4362	94.99	.30
K8445	3060	447	892	4331	800	2625	2547	9095	8648	95.09	.30
K8447	3072	985	310	606	110	387	885	2398	1413	58.92	.28
K8449	3084	1102	640	1096	157	537	759	3532	2430	68.80	.29
K8451	3096	930	2	2591	491	1448	1625	5462	4532	82.97	.34
K8454	3108	714	429	928	129	440	566	2640	1926	72.95	.29
K8456	3118	887	616	1143	140	469	511	3255	2368	72.75	.30
K8458	3130	767	563	1184	135	471	571	3120	2353	75.42	.29
K8460	3142	616	407	1015	140	505	970	2683	2067	77.04	.28
K8462	3154	627	395	487	62	211	551	1783	1156	64.81	.30
K8464	3166	168	98	248	51	149	215	714	546	76.47	.34
K8466	3178	487	289	410	130	270	788	1586	1099	69.29	.48
K8468	3190	214	129	255	36	106	117	740	526	71.08	.34
K8469	3196	214	122	338	65	174	175	913	699	76.56	.37
K8471	3208	58	36	100	18	47	48	259	201	77.61	.38
K8472	3214	453	259	769	134	428	1062	2043	1590	77.83	.31
K8474	3226	2565	389	397	21	80	88	3452	887	25.70	.26

IKU

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
K8431	2976	223	555	3336	864	4119	6273	9097	8874	97.55	.21
K8433	2988	202	503	2436	736	3591	6679	7468	7266	97.30	.20
K8434	2994	1134	1349	8670	1200	5819	18422	18172	17038	93.76	.21
K8436	3006	242	305	2301	668	3297	8344	6813	6571	96.45	.20
K8437	3012	215	277	1556	540	2676	8565	5264	5049	95.92	.20
K8438	3018	577	739	2872	957	4906	14640	10051	9474	94.26	.20
K8439	3024	354	421	3027	1301	5703	18993	10806	10452	96.72	.23
K8441	3036	416	792	7040	2543	10946	18136	21737	21321	98.09	.23
K8443	3048	357	336	3840	1659	7348	23248	13540	13183	97.36	.23
K8445	3060	340	246	3085	1357	6404	24042	11432	11092	97.03	.21
K8447	3072	445	634	1112	276	1536	10335	4003	3558	88.88	.18
K8449	3084	O P E N		L I D .							
K8451	3096	483	571	3470	1034	4171	19246	9729	9246	95.04	.25
K8454	3108	553	344	1536	390	2018	10700	4841	4288	88.58	.19
K8456	3118	850	751	1616	272	1464	4120	4953	4103	82.84	.19
K8458	3130	239	272	1242	234	1262	2364	3249	3010	92.64	.19
K8460	3142	264	217	1058	260	1447	4303	3246	2982	91.87	.18
K8462	3154	466	1143	2504	353	1825	4758	6291	5825	92.59	.19
K8464	3166	297	327	1328	325	1614	5926	3891	3594	92.37	.20
K8466	3178	426	1203	2690	526	2415	4858	7260	6834	94.13	.22
K8468	3190	228	364	1465	338	1536	2986	3931	3703	94.20	.22
K8469	3196	154	124	777	224	1042	2483	2321	2167	93.36	.21
K8471	3208	148	87	553	171	821	2031	1780	1632	91.69	.21
K8472	3214	138	78	587	191	870	3320	1864	1726	92.60	.22
K8474	3226	5558	5073	4396	360	1641	1591	17028	11470	67.36	.22

IKU

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
K8431	2976	1287	1326	5041	1103	4883	7050	13640	12353	90.56	.23
K8433	2988	1516	1471	5205	1186	5171	8976	14549	13033	89.58	.23
K8434	2994	1571	1628	9547	1354	6368	19339	20468	18897	92.32	.21
K8436	3006	1302	983	3951	941	4270	9707	11447	10145	88.63	.22
K8437	3012	2949	2155	6383	1356	5517	11799	18360	15411	83.94	.25
K8438	3018	1281	1442	5054	1360	6379	16450	15516	14235	91.74	.21
K8439	3024	1049	888	4406	1581	6683	20289	14607	13558	92.82	.24
K8441	3036	1095	2191	11576	3233	13272	20223	31367	30272	96.51	.24
K8443	3048	587	823	6005	2052	8665	24595	18132	17545	96.76	.24
K8445	3060	787	1138	7416	2157	9029	26589	20527	19740	96.17	.24
K8447	3072	1430	944	1718	386	1923	11220	6401	4971	77.66	.20
K8449	3084	1102	640	1096	157	537	759	3532	2430	68.80	.29
K8451	3096	1413	573	6061	1525	5619	20871	15191	13778	90.70	.27
K8454	3108	1267	773	2464	519	2458	11266	7481	6214	83.06	.21
K8456	3118	1737	1367	2759	412	1933	4631	8208	6471	78.84	.21
K8458	3130	1006	835	2426	369	1733	2935	6369	5363	84.20	.21
K8460	3142	880	624	2073	400	1952	5273	5929	5049	85.16	.20
K8462	3154	1094	1539	2992	415	2036	5308	8075	6982	86.45	.20
K8464	3166	465	425	1576	376	1763	6141	4605	4140	89.90	.21
K8466	3178	913	1492	3100	656	2685	5646	8846	7933	89.68	.24
K8468	3190	442	493	1720	374	1642	3103	4671	4229	90.54	.23
K8469	3196	368	246	1115	289	1216	2658	3234	2866	88.62	.24
K8471	3208	206	123	653	189	868	2079	2039	1833	89.90	.22
K8472	3214	591	337	1356	325	1298	3382	3907	3316	84.87	.25
K8474	3226	8123	5442	4793	381	1721	1679	20480	12357	60.34	.22

IKU

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
K8476	3238	2360	265	262	24	54	56	2965	605	20.40	.44
K8479	3250	5432	488	390	29	64	83	6403	971	15.16	.45
K8481	3262	3279	567	533	31	84	148	4494	1215	27.04	.37
K8483	3274	3249	365	286	20	50		3970	721	18.16	.40
K8485	3286	236	135	69		18	76	458	222	48.47	.00
K8487	3298	462	97	137	18	62	9	776	314	40.46	.29
K8489	3310	1217	397	215	13	24	31	1866	649	34.78	.54
K8491	3322	796	122	104		24		1046	250	23.90	.00
K8493	3334	4953	613	600	66	220	818	6452	1499	23.23	.30
K8495	3346	7399	400	359		139	557	8297	898	10.82	.00
K8496	3352	3490	337	544	54	189	333	4614	1124	24.36	.29
K8497	3358	322	45	55		28	84	450	128	28.44	.00
K8498	3364	689	93	105	15	50	169	952	263	27.63	.30
K8499	3370	1878	241	323	44	150	295	2636	758	28.76	.29
K8501	3382	582	120	156	20	72	211	950	368	38.74	.28
K8502	3388	3329	386	332	35	117	335	4199	870	20.72	.30
K8503	3394	2673	253	207		66	584	3199	526	16.44	.00
K8505	3406	1587	248	268		105	229	2208	621	28.13	.00
K8507	3418	1076	233	266		109	906	1684	608	36.10	.00
K8508	3424	1332	254	376	54	165	295	2181	849	38.93	.33
K8509	3430	15777	146				58	15923	146	.92	
K8510	3436	4218	1255	929	137	646	2711	7185	2967	41.29	.21
K8511	3442	982	398	439	132	673	2018	2624	1642	62.58	.20
K8512	3448	2525	160	132		43	117	2860	335	11.71	.00
K8513	3454	2467	147	103			58	2717	250	9.20	

IKU

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
K8476	3238	1932	2250	2354	296	1291	1857	8123	6191	76.22	.23
K8479	3250	O P E N		L I D .							
K8481	3262	4147	4648	4973	520	2169	2181	16457	12310	74.80	.24
K8483	3274	794	1176	2469	430	2176	6868	7045	6251	88.73	.20
K8485	3286	794	1176	2469	430	2176	6868	7045	6251	88.73	.20
K8487	3298	679	4870	1597	471	2576	9949	10193	9515	93.34	.18
K8489	3310	2063	5657	520	1916		4543	10156	8093	79.69	
K8491	3322	923	1499	127			3787	2549	1626	63.79	
K8493	3334	2824	3504	3693	512	2309	4870	12842	10018	78.01	.22
K8495	3346	33020	11226	7068	613	2973	5066	54900	21880	39.85	.21
K8496	3352	359	778	1816	351	1657	2877	4961	4602	92.76	.21
K8497	3358	O P E N		L I D .							
K8498	3364	O P E N		L I D .							
K8499	3370	4685	2955	2411	334	1653	3644	12038	7353	61.08	.20
K8501	3382	O P E N		L I D .							
K8502	3388	1	50	70		43		164	163	99.39	.00
K8503	3394	2065	2109	881	859	911		6825	4760	69.74	.94
K8505	3406	401	480	774	182	867	443	2704	2303	85.17	.21
K8507	3418	189	681	1245	384	1825	5118	4324	4135	95.63	.21
K8508	3424	O P E N		L I D .							
K8509	3430	193817	22863	3655	66	279	710	220680	26863	12.17	.24
K8510	3436	4218	1255	929	137	646	2711	7185	2967	41.29	.21
K8511	3442	982	398	439	132	673	2018	2624	1642	62.58	.20
K8512	3448	11376	2017	1004	182	806	2125	15385	4009	26.06	.23
K8513	3454	5604	677	503	142	648	2181	7574	1970	26.01	.22

IKU

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
K8476	3238	4292	2515	2616	320	1345	1913	11088	6796	61.29	.24
K8479	3250	5432	488	390	29	64	83	6403	971	15.16	.45
K8481	3262	7426	5215	5506	551	2253	2329	20951	13525	64.56	.24
K8483	3274	4043	1541	2755	450	2226	6868	11015	6972	63.30	.20
K8485	3286	1030	1311	2538	430	2194	6944	7503	6473	86.27	.20
K8487	3298	1141	4967	1734	489	2638	9958	10969	9828	89.60	.19
K8489	3310	3280	6054	735	1929	24	4574	12022	8742	72.72	0.38
K8491	3322	1719	1621	231		24	3787	3595	1876	52.18	.00
K8493	3334	7777	4117	4293	578	2529	5688	19294	11517	59.69	.23
K8495	3346	40419	11626	7427	613	3112	5623	63197	22778	36.04	.20
K8496	3352	3849	1115	2360	405	1846	3210	9575	5726	59.80	.22
K8497	3358	322	45	55		28	84	450	128	28.44	.00
K8498	3364	689	93	105	15	50	169	952	263	27.63	.30
K8499	3370	6563	3196	2734	378	1803	3939	14674	8111	55.27	.21
K8501	3382	582	120	156	20	72	211	950	368	38.74	.28
K8502	3388	3330	436	402	35	160	335	4363	1033	23.68	.22
K8503	3394	4738	2362	1088	859	977	584	10024	5286	52.73	.88
K8505	3406	1988	728	1042	182	972	672	4912	2924	59.53	.19
K8507	3418	1265	914	1511	384	1934	6024	6008	4743	78.94	.20
K8508	3424	1332	254	376	54	165	295	2181	849	38.93	.33
K8509	3430	209594	23009	3655	66	279	768	236603	27009	11.42	.24
K8510	3436	8436	2510	1858	274	1292	5422	14370	5934	41.29	.21
K8511	3442	1964	796	878	264	1346	4036	5248	3284	62.58	.20
K8512	3448	13901	2177	1136	182	849	2242	18245	4344	23.81	.21
K8513	3454	8071	824	606	142	648	2239	10291	2220	21.57	.22

IKU

TABLE I a.

CONCENTRATION (ul Gas / ks 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
K8515	3466	487	48	36			22	571	84	14.71	
K8517	3478	2394	262	149		32	246	2837	443	15.62	.00
K8519	3490	402	82	63		17	26	564	162	28.72	.00
K8520	3496	1897	270	270	28	91	90	2556	659	25.78	.31
K8521	3502	5421	378	256	22	60	113	6137	716	11.67	.37
K8523	3514	4435	532	305		48	62	5320	885	16.64	.00
K8524	3520	4574	521	317	19	53	75	5484	910	16.59	.36
K8525	3526	537	68	47			30	652	115	17.64	
K8527	3538	1279	216	161		41	51	1697	418	24.63	.00
K8529	3550	7213	420	219			134	7852	639	8.14	

IKU

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
K8515	3466	8542	4078	2742	211	1273	2188	16846	8304	49.29	.17
K8517	3478	41	27	31	5	24	63	128	87	67.97	.21
K8519	3490	518	435	541	119	611	2010	2224	1706	76.71	.19
K8520	3496			13		20	795	33	33		.00
K8521	3502	11093	7494	6687	765	3565	7271	29604	18511	62.53	.21
K8523	3514	O P E N		L I D .							
K8524	3520	O P E N		L I D .							
K8525	3526	O P E N		L I D .							
K8527	3538	O P E N		L I D .							
K8529	3550	O P E N		L I D .							

IKU

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
K8515	3466	9029	4126	2778	211	1273	2210	17417	8388	48.16	.17
K8517	3478	2435	289	180	5	56	309	2965	530	17.88	.09
K8519	3490	920	517	604	119	628	2036	2788	1868	67.00	.19
K8520	3496	1897	270	283	28	111	885	2589	692	26.73	.25
K8521	3502	16514	7872	6943	787	3625	7384	35741	19227	53.80	.22
K8523	3514	4435	532	305		48	62	5320	885	16.64	.00
K8524	3520	4574	521	317	19	53	75	5484	910	16.59	.36
K8525	3526	537	68	47			30	652	115	17.64	
K8527	3538	1279	216	161		41	51	1697	418	24.63	.00
K8529	3550	7213	420	219			134	7852	639	8.14	

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8176	2000-2015		77	Claystone, partly silty and with lamina of sandy Siltstone, with diatom/radiolarian zones, grey to light grey and some green, brown-grey, partly pyritic
			15	Claystone, red-brown
			5	Silt/Claystone, partly very finely laminated, ?tuffaceous, pyritic
			3	Limestone, white to light grey; Siderite, yellow-brown
			sm.am.	?Silica cemented ?Siltstone, hard, dark grey, tight; Sand
K 8177	2015-2030		40	Claystone, as above, some red-brown, some bluish, green seems most coarse-grained
			3	Silt/Sandstone, brittle/hard, tight, dark grey to grey, pyritic (dark), as lamina, ?silica cement
			sm.am.	Siderite, partly sucrosic; yellow-white Limestone
			60	Silt/Claystone, light grey, largely finely laminated, ?tuffaceous, some pyritic
K 8178	2030-2045		25	Claystone, red-brown
			60	Claystone, grey to light and green
			15	Silt/Claystone, as above
			7	dark Sand/Silt-stone, as above, observed as lamina in Silt/Claystone, as above
			sm.am.	Limestone

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8179	2045-2060		80	Claystone, greenish/green to grey/light grey, grey-brown, occasionally pyritic
			15	Claystone, as above
			5	Silt/Claystone, as above
			sm.am.	Limestone, white, yellow; Silt/Sandstone, as above
K 8180	2060-2075		83	Claystone, greenish/green to light grey/grey, some grey brown, occasionally some calcareous
			15	Claystone, red-brown, occasionally some calcareous
			2	Limestone, white to yellowish
			sm.am.	secondary Calcite, clear; observed Sand, rounded
			sm.am.	Sand/Silt-stone, as above and Clay/Silt-stone
K 8181	2075-2090		80	Claystone, as above
			20	Claystone, red-brown, as above
			sm.am.	Limestone, white; Siderite, brown (yellow) to grey
K 8182	2090-2105		80	Claystone, as above
			20	Claystone, red-brown
			sm.am.	dark Silt/Sand-stone, as above
K 8183	2105-2120		80	Claystone, as above, occasionally pyritic
			15	Claystone, red-brown
			5	Limestone and Siderite

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8184	2120-2135		85	Claystone, as above
			15	Claystone, red-brown
K 8185	2135-2150		95	Claystone, as above
			5	Claystone, red-brown
K 8186	2150-2165		95	Claystone, as above, observed dark grey
			5	Claystone, red-brown
			sm.am.	Siderite and Limestone; observed Sand, coarse, rounded
K 8187	2165-2180		100	Claystone, grey/light grey to greenish/green, partly brownish, some red-brown
			sm.am.	Silt/Sandstone, glauconitic, light grey, calcareous
			sm.am.	Limestone, hard, grey-brown, yellow-brown, Calcite-dominated
K 8188	2180-2195		92	Claystone, grey, light grey to green, some brownish, observed bluish and dark, occasionally some calcareous
			8	Claystone, red-brown
			sm.am.	Limestone, white to brown; Siderite, yellow

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8189	2195-2210		88	Claystone, grey, light greenish to green, some brownish and dark grey, occasionally calcareous
			7	Claystone, red-brown
			5	Limestone, white, some Calcite (secondary)
			sm.am.	dark hard/brittle Silt/Sandstone, as above; laminated Silt/Claystone, as above
K 8190	2210-2225		85	Claystone, as above
			7	Claystone, red-brown
			5	Limestone, white, some yellowish
			2	Siderite, yellow-brown
K 8191	2225-2240		80	Claystone, as above
			10	Claystone, red-brown
			10	Limestone
			sm.am.	Siderite, sucrosic; Pyrite
K 8192	2240-2255		80	Claystone, grey, greenish, some brownish and red-brown, partly calcareous
			20	Limestone, white
K 8193	2255-2270		88	Claystone, grey, some greenish/green and red-brown, scattered grey-brown, partly calcareous
			12	Limestone, white (slightly yellowish)
			obs.	?Siderite

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8194	2270-2285		90	Claystone, grey, greenish/green and some red-brown, partly calcareous
			10	Limestone, as above, some yellow-white, partly with clear spherules
			sm.am.	Sand, fine
K 8195	2285-2300		92	Claystone, as above, but more red-brown (10%)
			8	Limestone, as above
K 8196	2300-2315		85	Claystone, grey, greenish/green, scattered red-brown, partly some calcareous
			15	Limestone, white
K 8197	2315-2330		88	Claystone, grey, greenish, some red-brown, some grading to dark grey (observed fissile), partly some calcareous
			12	Limestone, white
K 8198	2330-2345		85	Claystone, grey, sm.am. green/greenish and red-brown, non-calcareous to calcareous
			15	Limestone, white
K 8199	2345-2360		92	Claystone, as above
			8	Limestone, white

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8200	2360-2375	0,44	100	Claystone, silty, grey, green-grey (light) (15%), red-brown (5%)
			sm.am.	Siderite, yellow-brown, Limestone, white
K 8201	2375-2390	0,54	70	Claystone, grey
		0,38	15	Claystone, grey-green
			5	Claystone, red-brown
			10	Siderite, light yellow-brown
			sm.am.	Limestone, white
K 8203	2400-2404	0,58	75	Claystone, grey
			15	Claystone, grey-green
			10	Siderite
K 8204	2404-2407	0,20	97	Claystone, grey, some grading to green some red-brown
			3	?Siderite, yellowish, grey-brown
K 8205	2407 2410	0,52	88	Claystone, grey
			10	Claystone, grey-green
			3	Claystone, red-brown
			7	Siderite
			sm.am.	Limestone, white
K 8207	2413-2416	0,45	90	Claystone, grey, some greenish/green
			10	Limestone, white, Siderite
K 8209	2418-2422	0,65	88	Claystone, grey, light grey to green
			12	Claystone, red-brown
K 8211	2425-2428	0,42	100	Claystone, grey, grey-green, and red-brown (15%)
			sm.am.	Siderite and white Limestone

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8213	2431-2434	0,43	100	Claystone, grey, (grey) green and red-brown (15%)
K 8215	2437-2440	0,51	85	Claystone, grey
		0,26	15	Claystone, green to light grey
			sm.am.	Claystone, red-brown
K 8217	2443-2446	0,28	100	Claystone, grey, light grey to green, some red-brown
			sm.am.	Limestone, white; Calcite; Siderite
K 8218	2446-2449	0,44	85	Claystone, as above
			15	Limestone, white, as above
			sm.am.	?Siderite, Pyrite
K 8219	2449-2452	0,64	75	Claystone, grey, some greenish/green and red-brown
		0,24	25	Limestone, white, chalky
K 8220	2452-2455	0,35	50	Claystone, as above
			50	Limestone, as above
K 8221	2455-2458	0,25	50	Limestone
		7,62	15	Shale, brown-grey, fissile
		0,77	35	Claystone, as above
K8222	2458-2461	6,20	70	Shale, very fissile, as above
			15	Limestone (caved)
			15	Claystone (caved)
K 8223	2461-2464	6,99	68	Shale, brownish dark grey, very fissile, pyritic
		0,38	25	Claystone, as above, (?caved)
			7	Limestone (?caved)

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8224	2464-2467	6,25	70	Shale, very fissile, as above
			20	Claystone, as above (caved)
			10	Limestone, as above (caved)
K 8225	2467-2470	7,19	80	Shale, as above
			15	Claystone, grey to green, as above, (?caved)
			5	Limestone, as above (?caved)
K 8227	2473-2476	5,48	90	Shale, brownish, dark grey, very fissile, pyritic
			10	Claystone (?caved)
			sm.am.	Limestone, as above
K 8229	2479-2482	6,22	90	Shale, as above
			8	Claystone, as above
			2	Limestone, as above
K 8230	2482-2485	5,70	80	Shale, very fissile, as above
			15	Claystone, as above (caved)
			5	Limestone, as above (caved)
K 8231	2485-2488	4,84	95	Shale, as above
			5	Claystone; Limestone
K 8232	2488-2491	6,91 0,81	80	Shale, very fissile, as above
			15	Claystone, as above (caved)
			5	Limestone, as above
			sm.am.	Coal, black shiny
K 8233	2491-2494	5,11	85	Shale, silty, as above, dark grey fissile, some micromicaceous, pyritic
			12	Claystone, as above
			3	Limestone, as above

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8235	2497-2500	6,18	85	Shale, as above
			15	Claystone, grey to green
K 8236	2500-2503	7,84	85	Shale, as above, very fissile
			13	Claystone, as above
			2	Limestone, as above
K 8237	2503-2506	7,47	90	Shale, as above
		0,65	8	Claystone, as above
			2	Limestone
K 8238	2506-2509	8,34	60	Shale, as above
		0,49	35	Claystone, as above, (?caved)
			5	Limestone (?caved)
			sm.am.	Cement
K 8239	2509-2512	10,2	93	Shale, as above
			5	Claystone, as above
			2	Limestone, as above
K 8240	2512-2515	8,95	85	Shale, as above
		0,61	15	Claystone, grey, some green and red-brown
			sm.am.	Limestone; Pyrite
K 8241	2515-2518	0,75	65	Claystone, grey, some green and red-brown
		6,64	35	Shale, dark grey, subfissile/fissile
K 8242	2518-2521	8,35	50	Shale, as above
		0,75	50	Claystone, as above, partly some calcareous
			sm.am.	Limestone, white; Pyrite
			obs.	?Siderite, yellow-brown

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8243	2521-	0,57	50	Claystone, as above
	2524	8,98	50	Shale, silty, dark grey, subfissile/ fissile, pyritic
			sm.am.	Limestone, white
K 8244	2524-	8,19	25	Shale, as above
	2527	0,80	75	Claystone, as above, partly some calcareous, some greenish and red-brown
			3	Limestone, white
			obs.	Glauconite
K 8245	2527-	8,05	60	Shale, as above
	2530	0,72	40	Claystone, as above
K 8246	2530-	7,28	90	Shale, as above
	2533		10	Claystone; Limestone (?caved)
K 8247	2533-	7,48	92	Shale, silty, dark grey, some micromicaceous, subfissile/fissile
	2536		8	Claystone
			sm.am.	Limestone, white; Siderite
K 8248	2536-	7,00	95	Shale, silty, subfissile, pyritic, as above
	2539		5	Claystone; Limestone; ?Siderite; Pyrite
K 8249	2539-	6,51	92	Shale, silty, dark grey, fissile, some micromicaceous
	2542		8	Claystone, as above
K 8250	2542-	5,77	90	Shale, as above
	2545		10	Claystone; some Limestone; Pyrite

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8251	2545-2548	6,24	95	Shale, as above
			5	Claystone, as above
K 8252	2548-2551	6,97	85	Shale, as above
			15	Claystone, as above
			sm.am.	Pyrite (rel.abundant); Limestone; observed Coal
K 8253	2551-2554	7,97	100	Shale, silty, as above, pyritic
			sm.am.	Claystone; Sand; Limestone; Pyrite
K 8254	2554-2557	5,74	95	Shale, as above
			5	Claystone
K 8255	2557-2560	5,04	100	Shale, silty, very slightly sandy, as above
K 8257	2563-2566	6,23	90	Shale, grading to very silty and some sandy, micromicaceous, subfissile/ fissile, dark grey, pyritic
			10	Claystone, grey to light grey and greenish (?caved)
K 8259	2569-2572	4,14	92	Shale, as above, with sand lenses/ lamina
			8	Claystone, as above
K 8261	2575-2578	5,26	95	Shale, as above
			5	Claystone, as above
			sm.am.	Sand, subangular; Pyrite
K 8263	2581-2584	5,84	95	Shale, as above
			5	Claystone, as above
			sm.am.	Sand, fine to medium

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8265	2587-2590	3,66	98	Shale, as above
			2	Sand
			sm.am.	Claystone; Pyrite
K 8267	2593-2596	3,98	85	Shale, as above
			15	Claystone, as above
K 8269	2599-2602	4,01	80	Shale, very silty and sandy, as above, with Sand-lenses
			15	Claystone, as above
			5	Sand/Sandstone, fine-medium, some glauconitic
			sm.am.	Limestone, white
K 8270	2602-2605	6,62	85	Shale, as above
			15	Claystone, as above
			sm.am.	Limestone; ?Siderite; Coal (?additive); Pyrite; Sandstone
K 8271	2605-2608	7,52	85	Shale, as above
			15	Claystone
			sm.am.	Pyrite; Limestone, white; Sandstone Coal
K 8273	2611-2614	5,23 0,62	40	Shale, as above, dark grey
			60	Claystone, grey, light grey to grey-green, some red-brown
			sm.am.	Siderite, light yellow-brown
K 8275	2617-2620	5,11	30	Shale, as above
			70	Claystone, as above
			sm.am.	Limestone, white

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8277	2623-2626	5,26	55	Shale, as above
		0,54	45	Claystone, as above
			sm.am.	Sand
K 8279	2629-2632	4,83	75	Shale, as above, some grading to sandy Siltstone, Sand/Silt-intercalations, micromicaceous
		0,58	25	Claystone, as above
			sm.am.	Sandstone/Sand
K 8281	2635-2638	4,96	75	Shale, as above
			25	Claystone, as above
K 8283	2641-2644	3,27	75	Shale to Siltstone, as above, sandy
			25	Claystone, as above
K 8285	2647-2650	2,82	85	Shale to Siltstone, as above
		0,59	15	Claystone, as above
K 8286	2650-2653	4,55	85	Shale to Siltstone, as above
			15	Claystone, grey, some light grey, greenish and red-brown, as above
			sm.am.	Sand, fine
K 8287	2653-2656	4,68	90	Shale to Siltstone, as above
			10	Claystone, as above
			sm.am.	Sand
K 8288	2656-2659	6,50	75	Shale to Siltstone, as above
		0,62	25	Claystone, grey, greenish/green and red-brown
			sm.am.	Pyrite; Limestone

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8289	2659-	5,34	80	Shale/Siltstone, as above
	2662	0,76	20	Claystone, as above
K 8291	2665-	5,02	90	silty Shale to sandy Siltstone
	2668		10	Claystone
K 8292	2668-	4,60	80	sandy Siltstone grading to Shale, as above, micaceous
	2671		20	Claystone, as above
			sm.am.	Pyrite; Limestone
K 8293	2671-	5,87	25	Shale/Siltstone, as above, dark grey
	2674	0,85	75	Claystone, grey, light grey to grey-green, some red-brown
K 8294	2674-	0,64	75	Claystone, grey to light grey, green and red-brown, partly calcareous, some grey-brown
	2677	4,63	25	Siltstone/Shale, as above
K 8295	2677-	3,66	30	sandy Siltstone to Shale, dark grey, micaceous, intercalations of Sand/Siltstone
	2680	0,83	70	Claystone, as above
			sm.am.	Limestone; Siderite
K 8297	2683-	4,94	50	sandy Siltstone partly grading to Sahle, occasionally coaly, dark grey
	2686	0,72	50	Claystone, as above
K 8299	2689-	3,96	70	Siltstone, sandy, some grading to silty Shale, dark grey, micaceous
	2692		30	Claystone, as above
			sm.am.	Limestone, white

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8301	2695-2698	4,22	77	Siltstone/some Shale as above
			20	Claystone, as above
			3	Sand/Sandstone, partly carbonate cemented, subangular, glauconitic
			sm.am.	Limestone, yellow-white, white
K 8302	2698-2701	5,20	65	Siltstone/some Shale, as above
		0,60	15	Claystone, as above
		0,39	20	Sandstone, fine, glauconitic, brownish light grey, to light grey/white (slightly brownish) Limestone
K 8304	2704-2707	6,96	45	Siltstone/some Shale, as above
		0,45	40	Claystone, as above
		0,52	15	Sandstone to Siltstone/Limestone, brownish light grey to white
K 8305	2707-2710	4,49	35	Siltstone/some Shale, as above, dark grey
		0,91	50	Claystone, grey, some greenish and red-brown
			15	Sandstone, very calcareous, very fine to fine, white, some yellow (sideritic/dolomitic), some glauconitic
K 8307	2713-2716	2,26	25	Siltstone/some Shale as above
		0,97	50	Claystone, as above
			25	Sandstone, as above, light grey to white, silty partly and micaceous
			sm.am.	Limestone, white

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8309	2719-	3,85	20	Siltstone/Shale, as above, dark grey
	2722	0,93	40	Claystone, as above
			40	Sandstone, white to light grey, brownish, as above
			sm.am.	Siderite/Dolomite; Pyrite
K 8311	2725-		15	Siltstone/Shale, as above
	2728	0,73	55	Claystone, grey, some greenish and red-brown
			40	Sandstone, as above, some grading to Sandstone/Limestone
			sm.am.	Calcite, light fibrous
K 8312	2728-	5,71	15	Siltstone/Shale, as above
	2731		50	Sand/Sandstone, as above
		0,65	35	Claystone, grey, sm.am. greenish
K 8313	2731-		40	Sandstone, silty, as above, white to light grey, very fine to medium
	2734			
		0,55	50	Claystone, as above
			10	Shale to Siltstone, dark grey
K 8315	2737-		70	Sandstone/Siltstone, light grey, loose, micaceous
	2740			
			25	Claystone, as above
			5	Shale/Siltstone, dark grey
K 8317	2743-	1,70	80	sandy Siltstone to Sandstone, light grey, micaceous, slightly brownish
	2746			
		0,66	20	Claystone, grey, some greenish

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8318	2746-2749		80	sandy Siltstone/Sandstone
			10	Claystone, grey, sm.am. greenish and red-brown
			5	silty Shale
K 8321	2755-2758	1,06	43	sandy Siltstone, slightly brownish light grey, micaceous, occasionally calcareous
		0,48	50	Claystone, grey, greenish and some red-brown
			7	silty shale, dark grey
K 8323	2761-2764	0,98	42	Siltstone, grading to Sandstone, light grey to brownish
		0,86	50	Claystone, as above
			8	silty Shale, dark grey
			sm.am.	Pyrite
K 8324	2764-2767	0,54	88	Claystone, grey, light grey-green and red-brown
		6,42	10	silty Shale, dark grey/black
			2	Limestone, white
K 8325	2767-2770		20	Siltstone to Sandstone, brownish light grey, partly carbonate cemented
		0,95	70	Claystone, grey, light grey to grey-green, some red-brown
		4,73	10	silty Shale, dark grey to black
K 8326	2770-2773	0,58	40	Siltstone to Sandstone, as above
		0,54	50	Claystone, grey, greenish/green and red-brown
		6,64	10	silty Shale, dark grey to black

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8327	2773-2776		40	Sandstone to sandy Siltstone, light brown-grey, some micaceous, very slightly to very calcareous, occasionally glauconitic
		0,56	50	Claystone, as above
			10	silty Shale, dark grey to black
			sm.am.	Limestone, grey-brown, ?sideritic
K 8329	2779-2782	1,32	80	Silt/Sandstone, as above
			15	Claystone, as above
			5	Shale, as above
K 8331	2785-2788	1,38	75	Sandstone to sandy Siltstone, light brown-grey, as above
		0,47	20	Claystone, as above
			5	Shale
K 8333	2791-2794	1,41	70	Silt/Sandstone, as above
		0,43	30	Claystone, as above
			sm.am.	Shale
K 8335	2797-2800		65	Silt/Sandstone, as above
		0,36	30	Claystone, as above
			5	Shale
K 8336	2800-2803	0,54	46	Claystone, as above
			46	Siltstone/Sandstone, as above, to very calcareous Limestone
			8	silty Shale, as above
K 8337	2803-2806	0,59	100	Claystone, grey to light grey and some light green, some red-brown, partly some calcareous

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8338	2806-2809		100	Cement
K 8339	2809-2812		87	Cement, white
			8	silty Shale, dark grey
			5	Sand/Siltstone, as above
K 8340	2812-2815		100	Cement and Coal (additives)
K 8341	2815-2818		93	Coal (additive) and Cement
			7	Sand/Siltstone
K 8343	2821-2824		70	Cement
		1,83	30	Siltstone, clayey and sandy, grey to brown-grey
K 8344	2824-2827	1,63	30	Clay/Siltstone, brown-grey
			70	Cement, light grey/white
K 8345	2827-2830		65	Cement
		1,65	30	clayey Siltstone, some micaceous, grey (brownish)
			5	Silt/Sandstone, light grey
K 8347	2833-2836		50	Cement and mud cake, white (greyish), some Coal (additive)
		0,99	40	clayey Siltstone, as above, grey and brown-grey to light grey
			10	Sandstone, white
K 8348	2839-2842		50	Sand, medium, some coarse/very coase, angular to subrounded
			50	Cement

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8410	2842-2845	1,79	32	Sand, as above
			8	Claystone, grey to light grey and greenish
			60	Cement, some Coal
K 8411	2845-2848		70	Sand, medium-coarse
			30	Cement
			sm.am.	Claystone, light greenish grey, brown-grey, Silt/Claystone; white Limestone
K 8412	2848-2851	1,52	30	Claystone, (brownish) grey, grading to very silty, partly some micaceous, coaly
			30	Sand, as above
			40	Cement, some steel
K 8413	2851-2854	1,46	95	Cement and additives
			5	Claystone, partly very silty, micaceous, brown-grey, some light (brownish) grey waxy, some fissile, partly waxy
K 8414	2854-2857	1,35	80	Claystone, brownish light grey/grey, waxy, Coal-strings/lamina
			20	Cement, light grey (yellowish), some Coal and steel
K 8415	2857-2860	0,71	30	Claystone, brownish light grey, waxy
		22,7	60	Claystone, brown-grey to dark grey/black, partly waxy, with coalified plants and Coal-stringers
			10	Coal

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8416	2860-2863	1,57	80	Claystone, brownish light grey/grey (beige) and some dark grey, coaly, waxy
			15	Coal and carbonaceous Claystone, dark grey to black
			5	Sand/Sandstone
K 8417	2863-2866	3,71	45	Claystone, brown-grey to dark brown-grey, as above, waxy
		0,51	40	Claystone, light grey (slightly brownish) as above or beige
			10	Sand
			5	Coal
K 8418	2866-2869	1,12	80	Claystone, brownish light grey (beige)/grey, waxy, Coal-strings
			10	Coal
			10	Sand
K 8419	2869-2872	2,16	95	Claystone, light grey (beige) to brown-grey (dark), occasionally Coal-stringers, waxy
			5	Coal
K 8421	2875-2878	2,21	65	Claystone, as above
			25	Cement, white to light grey
			10	Sand
K 8423	2881-2884	2,59	50	Cement, white
			50	Claystone, as above
			sm.am.	Coal

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8425	2887-2890	3,63	60	Claystone, as above
			40	Sand, medium to coarse, angular, white
			sm.am.	Siltstone, micaceous, brown-grey
K 8426	2890-2893	2,15	20	Claystone, as above
			72	Sand, as above
			8	Coal
K 8427	2893-2896	4,50	60	Sand, medium, some coarse
			40	Claystone, as above
			sm.am.	Coal
K 8428	2896-2899		10	Claystone, as above
			90	Sand, as above
K 8453	2899-2902	3,34	75	Claystone, light grey/beige to grey-brown
			15	Sand
			10	Interlaminated Coal/Claystone, black and brown
K 8429	2958-2964		100	Sand, medium to very coarse, white, angular, pyritic
K 8431	2970-2976	1,73	85	silty Claystone to Siltstone, partly micaceous, (brownish) grey/light grey, laminated
			15	Sand
			sm.m.	Coal (?additive)
K 8433	2982-2988	1,39	100	Silt/Clay-stone, slightly brownish grey, as above
			sm.am.	Sandstone, slightly glauconitic

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8434	2988-2994	1,35	75	Silt/Clay-stone, as above
			25	Sand and some Sandstone, medium, some fine and coarse, white
K 8436	3000-3006	1,57	55	Clay/Silt-stone, as above, grey, laminated, with sandy Mica-lamina
			45	Sand/Sandstone
			sm.am.	Limestone, white
K 8437	3006-3012	1,63	50	Silt/Clay-stone, (brownish) grey
			50	Sandstone, fine to medium, calcareous, white to light grey, interlaminated with Silt/Clay-stone, Mica-lamina
			sm.am.	Limestone, brownish white
K 8438	3012-3018	1,20	50	Silt/Claystone, brownish grey
			50	Sandstone, white, some calcareous, as above
			sm.am.	Limestone
K 8439	3018-3024	2,26	80	Silt/Clay-stone, as above, micaceous
			20	Sandstone, as above
K 8441	3030-3036	2,56	75	Silt/Clay-stone, as above
			25	Sandstone, as above, interlaminated with Silt/Claystone
K 8443	3042-3048	2,45	50	Clay/Siltstone, as above, partly sandy
			50	Sandstone, as above
			sm.am.	Limestone, sandy

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8445	3054-3060	1,86	80	Clay/Silt-stone, as above
			20	Sandstone, as above, partly micaceous
			sm.am.	Limestone
K 8447	3066-3072	1,19	60	Sand and some Sandstone, angular, medium to coarse, white
			40	Clay/Siltstone, partly micaceous, brownish grey/light grey
K 8449	3078-3084	1,52	75	Claystone, grey (brownish), silty and micaceous
			25	Sandstone, medium, calcite-cemented, white
K 8451	3090-3096	1,91	85	Sandstone, as above
			15	Claystone, as above
K 8454	3102-3108	3,66	20	Siltstone (very micaceous) to Claystone, brown-grey, partly very micaceous
			80	Sandstone, fine to medium, calcite-cemented, laminated
K 8456	3112-3118	2,40	85	Sandstone, as above, with silty micaceous brown-grey lamina
			15	Siltstone to Claystone, as above
K 8458	3124-3130	2,83	75	Sandstone, fine-very fine, white, lamina of Silt/Claystone
			25	Silt/Claystone, brown-grey, as above
			sm.am.	Siderite/Dolomite, dark brown-grey, hard

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8460	3136-3142	1,55	70	Sandstone, as above
			30	Clay/Siltstone, brownish grey to dark, micaceous
			sm.am.	Limestone, yellow-white, Ooliths
K 8462	3148-3154	1,07	50	silty Claystone to Clay/Siltstone, grey to brownish grey and dark, some micaceous
			42	Sandstone, partly some calcareous
			8	Limestone, ?sideritic, light yellow-brown
			sm.am.	Coal; Ooliths
K 8464	3160-3166	1,35	55	Sand/Sandstone, very fine to medium
			45	Silt/Clay-stone, as above
			sm.am.	Siderite/Dolomite
K 8466	3172-3178	1,25	60	silty Claystone, grey to brown-grey and dark, scattered Mica flakes
			40	Sandstone, as above
K 8468	3184-3190	1,93	40	silty Claystone, as above
			60	Sandstone, very fine to fine, some calcareous, white
K 8469	3190-3196	1,23	25	silty Claystone to micaceous Clay/Siltstone
			75	Sandstone, laminated with Silt/Clay-stone
K 8471	3202-3208	0,18	80	Sandstone, as above, partly micaceous
			20	silty Claystone to Clay/Siltstone, brownish grey/dark grey

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8472	3208-3214		75	Sandstone, as above, some Sand, with very micaceous lamina, very fine to medium
		2,18	25	Claystone to Clay/Siltstone, brownish grey/dark grey, partly micaceous, laminated
K 8474	3220-3226		100	Sand, medium to coarse, white, slightly micaceous
		2,92	sm.am.	Claystone, silty as above
K 8476	3232-3238		85	Sand/Sandstone, medium to coarse, very coarse, white
		1,11	15	Claystone to Siltstone, brownish grey/light grey, occasionally some Coal-stringers and some waxy, partly some micaceous
			sm.am.	Coal, black shiny
K 8479	3244-3250		87	Sand/Sandstone, as above
		1,35	10	Claystone, grading to Silt/Clay-stone, as above, partly waxy
			3	Coal, black, shiny
K 8481	3256-3262		100	Sand, medium to coarse, some very coarse, white
K 8483	3268-3274	1,39	15	Claystone grading to Silt/Claystone, as above, (brownish) grey and some light grey, partly waxy, occasionally Coal-stringers
			83	Sandstone, as above
			2	Coal

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8485	3280-		95	Sandstone, as above
	3286		5	Claystone, grading to Clay/Silt-stone, as above
			sm.am.	Coal
K 8487	3292-		90	Sand, medium to coarse, observed very coarse
	3298	2,56	10	Claystone, grading to Silt/Clay-stone, as above
			sm.am.	Coal
K 8489	3304-		90	Sand
	3310		5	Claystone, silty, brown-grey, waxy, occasionally silty and micaceous
			5	Coal
K 8491	3316-		85	Sand, as above
	3322		15	Claystone, red-brown and grey, some greenish
			sm.am.	Coal
K 8493	3328-		75	Sand, medium to coarse
	3334	1,12	15	Claystone, grey, sm.am. greenish
		0,24	10	Claystone, red-brown
K 8495	3340-		65	Sand, as above
	3346	1,69	30	Claystone, grey, greenish
			5	Claystone, red-brown
			obs.	Ooliths
			sm.am.	Coal
K 8496	3346-		60	Sand/Sandstone, as above,
	3352	0,98	25	Claystone, grey to green

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LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II

WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8497	3352-		80	Sand/Sandstone
	3358	0,86	20	Claystone, grey to green, red-brown (10%)
			sm.am.	Coal; white matter?; Ooliths, slightly greenish grey, slightly calcareous
K 8498	3358-		85	Sand, as above
	3364		8	Claystone, grey to green
			8	Claystone, red-brown
K 8499	3364-		25	Sandstone/Sand, white, medium to coarse
	3370	1,16	75	Claystone, grey, red-brown, light grey to green
K 8501	3376-		75	Sand/Sandstone, white, as above
	3382	0,95	18	Claystone, grey
			6	Claystone, red-brown
			sm.am.	Coal; observed Limestone/Sandstone
K 8502	3382-		70	Sand/Sandstone, as above
	3388	1,44	15	Claystone, grey, very silty, some micaceous
			10	Claystone, red-brown
			3	Claystone, green
K 8503	3388-		65	Sand/Sandstone, as above, some calcareous Sandstone
	3394	1,24	20	Claystone, grey
			15	Claystone, red-brown
			sm.am.	Coal; Limestone, light grey and white

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8505	3400-		30	Sand/Sandstone, fine-coarse
	3406	1,05	35	Claystone, very silty, grey, some greenish
			20	Claystone, red-brown, silty
			15	Cement
			2	Limestone, white to red-brown
			sm.am.	Coal
K 8507	3412-		30	Sand/Sandstone, as above, some calcareous and micaceous
	3428		10	Claystone, grey, silty
			50	Claystone, silty, red-brown
			sm.am.	Limestone, as above
			10	Cement
K 8508	3418-		55	Claystone, red-brown, brown, very silty
	3424		10	Claystone, grey to green
			35	Sand/Sandstone
			sm.am.	Limestone, white-pink
K 8509	3424-		85	Sand/Sandstone, medium-coarse
	3430		10	Claystone, red-brown
			sm.am.	Claystone, grey, greenish
			5	Coal, black concoidal
			sm.am.	Limestone
K 8511	3436-		50	Claystone, red-brown, silty
	3442		10	Claystone, silty, grey
			40	Sand/Sandstone, as above, some calcareous
			sm.am.	Limestone, white

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8513	3448-3454		70	Claystone, silty, red-brown
			23	Sand/Sandstone, as above
			5	Claystone, silty, grey to light grey-green
			2	Limestone, white
K 8515	3460-3466		70	Sand/Sandstone, medium to coarse
			22	Claystone, red-brown
			5	Claystone, grey to green
			3	Limestone, white
K 8517	3472-3478		80	Sand/Sandstone
			17	Claystone, red-brown
			3	Claystone, grey
			sm.am.	Limestone; Coal
K 8519	3484-3490		30	Sand/Sandstone, partly calcareous cement
			60	Claystone, red-brown
			10	Claystone, grey to green
			sm.am.	Limestone, white
K 8520	3490-3496		20	Sand/Sandstone
			70	Claystone, red-brown
			10	Claystone, green to grey
			sm.am.	white matter; grey-white Limestone
K 8521	3496-3502		60	Claystone, red-brown, some brown
			10	Claystone, grey to green, some brownish
			30	Sand/Sandstone
			sm.am.	Limestone, white; Coal

IKU

LITHOLOGY AND TOTAL ORGANIC CARBON MEASUREMENTS

TABLE NO.: II
WELL NO.: 30/6-5

Sample	Depth	TOC	%	Lithology
K 8523	3508-3514		65	Claystone, silty, red-brown
			25	Sand/Sandstone
			10	Claystone, silty, grey to light grey and green
			5	Limestone; Coal
K 8524	3514-3520		35	Sand/Sandstone, white
			50	Claystone, red-brown
			5	Claystone, light grey (brownish)
			10	Claystone, green/greenish
			3	Coal
K 8525	3520-3526		60	Claystone, red-brown
			30	Sand/Sandstone, some calcareous Cement
			10	Claystone, grey to green and brown-grey
			3	Coal and Limestone
K 8527	3532-3538		50	Sand/Sandstone, medium to coarse, white
			35	Claystone, red-brown
			10	Claystone, grey to green and brownish
			5	white matter, calcareous
K 8529	3544-3550		65	Claystone, red-brown
			10	Claystone, grey to green and light grey
			20	white matter?
			5	Coal

IKU

T A B L E : IV

CONCENTRATION OF EOM AND CHROMATOGRAPHIC FRACTIONS

(Weight ppm of rock)

IKU-No	DEPTH (m)	EOM	Sat.	Aro.	HC	Non HC
K-8222	2461	3099	837	756	1593	1506
K-8225	2470	4227	1145	1032	2177	2050
K-8229	2482	5308	1296	1226	2522	2786
K-8233	2494	5338	864	1360	2224	3114
K-8236	2503	5786	886	1337	2224	3563
K-8239	2512	6519	1311	1509	2820	3699
K-8243	2524	2407	170	142	311	2096
K-8246	2533	4821	1446	564	2010	2811
K-8251	2548	4559	1118	973	2091	2468
K-8257	2566	4272	1100	983	2083	2189
K-8270	2605	3396	717	711	1428	1968
K-8288	2659	1585	386	466	852	733
K-8291	2668	1619	264	329	593	1026
K-8297	2686	1044	225	288	513	531
K-8302	2701	862	192	238	429	433
K-8315	2740	990	188	168	356	634
K-8415	2860	2768	334	372	706	2062
K-8425	2890	1623	457	283	741	882
K-8439	3024	2789	370	270	641	2149
K-8443	3048	1120	293	257	550	571
K-8458	3130	384	146	95	241	143

IKU

T A B L E : V

CONCENTRATION OF EOM AND CHROMATOGRAPHIC FRACTIONS

(mg/g TOC)

IKU-No	DEPTH (m)	EOM	Sat.	Aro.	HC	Non HC
K-8222	2461	68.6	18.5	16.7	35.2	33.3
K-8225	2470	64.3	17.4	15.7	33.1	31.2
K-8229	2482	61.0	14.9	14.1	29.0	32.0
K-8233	2494	65.1	10.5	16.6	27.1	38.0
K-8236	2503	71.4	10.9	16.5	27.5	44.0
K-8239	2512	78.5	15.8	18.2	34.0	44.6
K-8243	2524	58.7	4.1	3.5	7.6	51.1
K-8246	2533	69.9	21.0	8.2	29.1	40.7
K-8251	2548	68.0	16.7	14.5	31.2	36.8
K-8257	2566	70.0	18.0	16.1	34.2	35.9
K-8270	2605	79.0	16.7	16.5	33.2	45.8
K-8288	2659	27.8	6.8	8.2	14.9	12.9
K-8291	2668	40.5	6.6	8.2	14.8	25.7
K-8297	2686	41.7	9.0	11.5	20.5	21.2
K-8302	2701	41.1	9.1	11.3	20.4	20.6
K-8315	2740	58.2	11.1	9.9	21.0	37.3
K-8415	2860	21.1	2.5	2.8	5.4	15.7
K-8425	2890	77.3	21.8	13.5	35.3	42.0
K-8439	3024	185.9	24.7	18.0	42.7	143.2
K-8443	3048	93.4	24.4	21.4	45.8	47.6
K-8458	3130	48.0	18.3	11.9	30.2	17.9

IKU

T A B L E : VI

COMPOSITION IN % OF THE MATERIAL EXTRACTED FROM THE ROCK

IKU-No	DEPTH (m)	Sat --- EOM	Aro --- EOM	HC --- EOM	Sat --- Aro	Non HC ------ EOM	HC ------ Non HC
K-8222	2461	27.0	24.4	51.4	110.8	48.6	105.8
K-8225	2470	27.1	24.4	51.5	111.0	48.5	106.2
K-8229	2482	24.4	23.1	47.5	105.7	52.5	90.5
K-8233	2494	16.2	25.5	41.7	63.5	58.3	71.4
K-8236	2503	15.3	23.1	38.4	66.3	61.6	62.4
K-8239	2512	20.1	23.1	43.3	86.9	56.7	76.3
K-8243	2524	7.0	5.9	12.9	119.7	87.1	14.9
K-8246	2533	30.0	11.7	41.7	256.2	58.3	71.5
K-8251	2548	24.5	21.4	45.9	114.8	54.1	84.7
K-8257	2566	25.7	23.0	48.8	111.8	51.2	95.2
K-8270	2605	21.1	20.9	42.0	100.8	58.0	72.6
K-8288	2659	24.3	29.4	53.7	82.7	46.3	116.2
K-8291	2668	16.3	20.3	36.6	80.2	63.4	57.8
K-8297	2686	21.5	27.6	49.1	77.9	50.9	96.6
K-8302	2701	22.2	27.5	49.8	80.7	50.2	99.1
K-8315	2740	19.0	17.0	36.0	111.8	64.0	56.3
K-8415	2860	12.1	13.4	25.5	89.8	74.5	34.2
K-8425	2890	28.2	17.5	45.6	161.3	54.4	83.9
K-8439	3024	13.3	9.7	23.0	137.0	77.0	29.8
K-8443	3048	26.2	22.9	49.1	114.3	50.9	96.3
K-8458	3130	38.0	24.8	62.8	153.3	37.2	168.9

TABLE VII

TABULATION OF DATAS FROM THE GASCHROMATOGRAMS

IKU No.	DEPTH (m)	PRISTANE / n-C17	PRISTANE / PHYTANE	CPI
K8222	2461	1.5	1.8	.9
K8225	2470	1.4	1.8	.7
K8229	2482	1.3	1.6	.7
K8233	2492	1.1	1.5	.8
K8236	2503	1.1	1.5	.7
K8239	2512	1.1	1.5	.7
K8243	2524	1.3	1.6	.8
K8246	2533	1.4	1.9	.9
K8251	2548	1.3	1.8	.9
K8257	2566	1.3	2.0	.8
K8270	2605	1.4	2.0	1.0
K8288	2659	1.7	2.5	1.1
K8291	2668	1.7	2.6	1.2
K8297	2686	1.6	2.4	1.0
K8302	2701	1.7	2.7	1.0
K8315	2740	1.1	2.7	1.0
K8415	2860	1.4	6.3	1.3
K8425	2890	.7	2.4	1.1
K8439	3024	.7	1.9	1.0
K8443	3048	.7	2.0	1.0
K8458	3130	.5	3.1	1.2

IKU

VITRINITE REFLECTANCE MEASUREMENTS

TABLE NO.: VIII

WELL NO. 30/6-5

Sample	Depth	Vitrinite reflectance	Fluorescence in UV light	Exinite content
K8182	2105	0,45(2)	Yellow	Low
K8189	2210	0,32(2) 0,54(7)	Yellow+Yellow/Orange	Low
K8196	2300-2315	0,56(3) 0,77(2)	Yellow+Yellow/Orange	Low
K8209	2418-2422	0,53(8)	Yellow+Yellow/Orange	Low
K8223	2461-2464	0,49(11)	Yellow+Light Orange	Moderate-rich
K8227	2473-2476	0,36(12)	Yellow+Yellow/Orange	Moderate
K8236	2503	0,43(3)	Yellow	Moderate
K8239	2512	0,44(6)	Yellow	Moderate-rich
K8246	2533	0,39(20)	Yellow+Yellow/Orange	Moderate
K8259	2572	0,47(21)	Yellow/Orange-Light	Moderate-rich
K8279	2632	0,52(21)	Light Orange	Low
K8287	2656	0,52(20)	Light Orange	Low-moderate
K8292	2671	0,49(21)	Light Orange	Low-moderate
K8301	2698	0,50(22)	Yellow+Yellow/Orange	Moderate
K8312	2731	0,50(20)	Yellow-Mid Orange	Moderate
K8321	2758	0,47(22)	Yellow/Orange	Trace
K8326	2773	0,45(21)	Yellow	Moderate-rich
K8333	2794	0,49(14)	Light Orange	Low-moderate
K8337	2806	0,71(1)	Light Orange	Low
K8415	2866	0,62(21)	Mid Orange	Low-moderate
K8419	2872	0,72(22)	Light+Mid Orange	Low-moderate
K8425	2890	0,77(21)	Mid Orange	Moderate-rich
K8431	2976	0,56(18) 0,92(3)	Light Orange	Moderate
K8441	3036	0,42(4)	Light Orange	Moderate
K8445	3060	0,59(16)	Light Orange	Low-moderate
K8462	3154	0,39(3) 0,65(17)	Light+Mid Orange	Moderate
K8468	3190	0,64(21)	Mid Orange	Low-moderate
K8489	3310	0,65(21)	Light-Mid Orange	Moderate-rich
K8505	3406	0,76(22)	Mid Orange	Moderate
K8521	3502	0,69(20) 1,06(1)	Mid Orange	Low-moderate

IKU

VISUAL KEROGEN ANALYSIS

TABLE NO.: IX

WELL NO.: 30/6-5

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 8209	2418	He,W,WR!,P,S,Cut/Cy,Am	F-M	good	2-/2	Loose am aggregates and mixed aggr. Pyrite, some fungi, woody material, inertinite. Some reworked Cretaceous cysts.
K 8222	2458-61	Cut,W,WR!,He,P,S/Am	F-M-L	variable	1+ 1+/2-	Aggregates with spongeous structure, denser than above. Difficult to distinguish true amorphous from sapropelised. Tasmanitides.
K 8225	2467-70	Cut,W,WR!,He,P,S/Am,Cy	F-M-L	variable	1+ 1+/2-	As K 8222 but more pyrite. More semifusinite.

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	R!	reworked	L	large

IKU

VISUAL KEROGEN ANALYSIS

TABLE NO.: IX

WELL NO.: 30/6-5

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 82227	2473-76	Cut,W,WR!,He,P,S/Am?Cy	F-M-L	variable	1+ 1+/2-	Aggregates very dense but light coloured cuticles may be seen along edges of particles.
K 8229	2479-82	Cut,W,WR!,He,P/Am	F-M-L	variable	1+ 1+/2-	As K 8227 above.
K 8233	2491-94	Cut,W,WR!,He,P,S/Am	F-M-L	poor-variable	1+ 1+/2-	As K 8227 and 8229. Dense aggregates of sapropelised mostly cuticular nature. Pyrite. Semifusinite and fusinite/inertinite, vitr. Fungi.
K 8236	2500-3	W,WR!,Cut,He,P/Am	F-M-L	poor-variable	1+ 1+/2-	As above but looser aggr.

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	R!	reworked	L	large

IKU

VISUAL KEROGEN ANALYSIS

TABLE NO.: IX

WELL NO.: 30/6-5

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 8239	2509-12	Cut,W,He,WR!,P/Am,Cy	F-M-L	poor-variable	2-/2	Increase in coalification from general colour. Semifusinite, less strongly sapropelised. Tasmanitides.
K 8242	2518-21	W,He,Cut,WR!,P/Am,Cy	F-M-L	poor-variable	2-/2	As above.
K 8243	2521-24	Cut,W,He,WR!,P/Am,Cy	F-M-L	poor-variable	2-	Very dense aggregates, pyrite.
K 8246	2530-33	Cut,W,He,WR!,P/Am,Cy	F-M-L	poor-variable	2-/2	Fusinite and semifusinite. Very light coloured after ox.
K 8248	2536-39	Cut, He,W,WR!,P/Am,Cy	F-M-L	poor	2-/2	As above, Tasmanitides abundant.

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	R!	reworked	L	large

032/G/jlh/3

IKU

VISUAL KEROGEN ANALYSIS

TABLE NO.: IX

WELL NO.: 30/6-5

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 8251	2545-48	Cut,He,W,WR!,P/Am,Cy	F-M-L	poor	1+ 1+/2-	Very rich in pyrite. Light coloured pollen and cuticles, dense aggr. More vitrinite than above.
K 8257	2563-66	Cut,W,He,WR!,P/Am,Cy	F-M-L	poor	1+ 1+/2-	Aggr. dense and rich in pyrite. Strong sapropelisation.
K 8263	2581-84	Cut,W,He,WR!,P/Am,Cy	F-M-L	fair-poor	2-/2	Less strong aggregates more disperse. Nannoceratopsis sp. Fusinite/semifusinite/vitrinite.
K 8270	2602-5	Cut,W,He,WR!,P/Am,Cy	F-M-L	fair-poor	2	Semifusinite, vitrinite and inertinite. Aggr. hinder ident. of relative amounts. Callialasp.

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	R!	reworked	L	large

IKU

VISUAL KEROGEN ANALYSIS

TABLE NO.: IX
WELL NO.: 30/6-5

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 8279	2629-32	W,WR!,Cut,He,P,S/Am	F-M-L	fair	2	Inertinite, fusinite and vitr. increased. Disperse residue fairly tough cuticles.
K 8283	2641-44	W,WR!,Cut,He,P,S/Am	F-M	fair	2	As above.
K 8288	2656-59	W,He,WR!,Cut,P,S/Am,Cy	F-M	fair to good	2/2+	Well dispersed residue with vitr. and inert. Increase in colour partly due to ox.
K 8292	2668-71	W,WR!,He,Cut,P,S/Am,Cy	F-M	fair to good	2	As above.
K 8297	2683-6	W,WR!,He,P,S/Am,Cy	F-M	fair	2	As above, well dispersed. Tasmanitides.
K 8302	2698-701	Cut,W,WR!,He,P,S/Am,Cy	F-M-L	fair	2	Aggregates, pyrite, Pareodinia.

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	R!	reworked	L	large

032/G/jlh/5

IKU

VISUAL KEROGEN ANALYSIS

TABLE NO.: IX

WELL NO.: 30/6-5

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 8305	2707-10	W,WR!,He,Cut,P,S/Am,Cy	F-M	fair	2	Fungi. Well dispersed fusinite, semifusinite, vitrinite, inertinite.
K 8309	2719-22	Cut,WR!,W,He,P,S/Am	F-M-L	fair	2 2/2+	Aggregates with abundant pyrite framboids. Rich in fusinite and inertinite. Sapropelized cuticles.
K 8315	2737-40	Am/He,W,Cut	F-M	good	2	Cretaceous cysts observed together with Gonyaulacysta spp.

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	R!	reworked	L	large

032/G/jlh/6

IKU

VISUAL KEROGEN ANALYSIS

TABLE NO.: IX
WELL NO.: 30/6-5

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 8321	2755-58	Cut,W,WR!,He,P,S/Am,Cy	F-M-L	poor to fair	2-/2 2	Well dispersed mainly terrestrial material with some very coarse cuticular and woody (inertinite) fragments.
K 8324	2764-67	Am,Cy/Cut,W,WR!,P,S	F-M	poor		More true amorphous but rich in inertinite and fusinite, small vitrinite particles.
K 8326	2770-73	Cut,He,W,WR!,P,S/Am	F-M-L	poor to fair		Aggregates as in the interval 2473-2602. Very strong sapropelisation. Tentative estimates. Tasmanitides.
K 8329	2779-82	Cut,W,He,P,WR!/Am,Cy	F-M-L	poor to fair	2+/3-	As K 8326. Increase in colour Nannoceratopsis gracilis.

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	RI	reworked	L	large

032/G/jlh/7

IKU

VISUAL KEROGEN ANALYSIS

TABLE NO.: IX
WELL NO.: 30/6-5

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 8333	2791-94	Am,Cy/Cut,He,W,WR!,P,S	F-M-L	good to fair	2+/3-	Apparently more true amorphous material but dense aggregates. N.gracilis and cysts of Late to Middle Jurassic nature.
K 8344	2824-27	Am,Cy/Cut,W,He,WR!,P,S	F-M-L	poor	2+	Strongly sapropelised cuticles, cuticles are difficult to distinguish from true amorphous material. Fusinite and inertinite. Callialasporites.
K 8415	2857-60	W,WR!,Cut,He,S,P/Am	F-M-L	fair to good	2/2+	Tough cuticular fragments, inertinite, fusinite and vitrinite.

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	RI	reworked	L	large

IKU

VISUAL KEROGEN ANALYSIS

TABLE NO.: IX

WELL NO.: 30/6-5

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 8425	2887-90	Am?/Cut,W,WR!,He,S,P	F-M-L	fair to good	2+	True amorphous material seems dominant. Finely disintegrated material.
K 8453	2899-902	Am,Cy/W,He,WR!,Cut,S,P	F-M	fair to good	2+	Aggregates, inertinite and fusinite/semifusinite as above. Nannoceratopsis gracilis, Corollina meyeriana.
K 8431	2970-76	Am,Cy/Cut,W,WR!,He,P,S	F-M	fair to poor	2+	Strongly sapropelised material. Abundant Chasmatosporites and Nannoceratopsis.
K 8434	2988-94	Cut,W,H,WR!,P,S/Am	F-M-L	fair to good	2+	As above.

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	R!	reworked	L	large

032/G/jlh/9

IKU

VISUAL KEROGEN ANALYSIS

TABLE NO.: IX

WELL NO.: 30/6-5

Sample	Depth	Composition of residue	Particle size	Preservation-palynomorphs	Thermal maturation index	Remarks
K 8458	3124-30	Cut,W,He,WR!,P,S/Am,Cy	F-M-L	fair to good	2+/3-	Disperse material with occasional coarse fragments. Botryococcus.
K 8462	3148-54	Cut,W,WR!,He,P,S/Am,Cy	F-M-L	fair	2+/3-	As above. Rich in woody material all categories.
K 8468	3184-90	Cut,W,He,WR!,P,S/Am	F-M-L	good to fair	2+/3-	Well dispersed material with large cuticular fragments.
K 8469	3190-96	He,W,WR!,P,S/Am	F-M	fair to poor	3-	Much poorer residue.
K 8472	3208-14	He,W,WR!,P,S/Am	F-M-L	fair to good	2+/3-	

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	R!	reworked	L	large

032/G/jlh/11

IKU

TABLE X

ROCK EVAL PYROLYSES

IKU No.	DEPTH (m)	S1	S2	S3	TOC (%)	HYDR. INDEX	OXYGEN INDEX	OIL OF GAS CONTENT S1+S2	PROD. INDEX S1/(S1+S2)	TEMP. max (C)
K8219	2452 Clst gy	.15	.42	.80	.64	66	125	.57	.26	424
K8221	2458 Shale bn-gy	2.38	46.19	1.30	7.62	606	17	48.57	.05	426
K8222	2461 Shale bn-gy	1.51	33.86	.80	6.20	546	13	35.37	.04	424
K8223	2464 Shale bn-gy	2.24	43.89	1.08	6.99	628	15	46.13	.05	423
K8225	2470 Shale bn-gy	2.57	37.17	1.58	7.19	517	22	39.74	.06	427
K8229	2482 Shale bn-gy	3.42	30.62	1.82	6.22	492	29	34.04	.10	429
K8231	2488 Shale bn-gy	1.60	28.33	.50	4.84	585	10	29.93	.05	423
K8233	2494 Shale dk gy	1.95	32.53	.75	5.11	637	15	34.48	.06	422
K8236	2503 Shale dk gy	2.91	40.43	1.04	7.84	516	13	43.34	.07	425
K8237	2506 Shale dk gy	3.21	45.08	.85	7.47	603	11	48.29	.07	424
K8239	2512 Shale dk gy	5.84	71.08	.49	10.20	697	5	76.92	.08	423
K8242	2521 Shale dk gy	3.57	44.64	.32	8.35	535	4	48.21	.07	421
K8243	2524 Shale dk gy	3.89	52.09	.35	8.98	580	4	55.98	.07	422
K8246	2533 Shale dk gy	3.09	37.38	.43	7.28	513	6	40.47	.08	422
K8249	2542 Shale dk gy	2.76	34.17	.40	6.51	525	6	36.93	.07	423
K8251	2548 Shale dk gy	1.89	29.99	1.09	6.24	481	17	31.88	.06	422
K8257	2566 Shale dk gy	2.90	33.56	.50	6.23	539	8	36.46	.08	423
K8261	2578 Shale dk gy	2.18	26.41	.40	5.26	502	8	28.59	.08	422
K8273	2614 Shale dk gy	2.08	25.21	.57	5.23	482	11	27.29	.08	425
K8273	2614 Clst gy	.02	.27	.35	.62	44	56	.29	.07	425
K8279	2632 Shale dk gy	1.57	19.74	.33	4.83	409	7	21.31	.07	426
K8279	2632 Clst gy	.03	.20	.52	.58	34	90	.23	.13	428
K8284	2653 Shale dk gy	1.15	10.99	.50	4.55	242	11	12.14	.09	429
K8288	2659 Shale dk gy	1.80	19.18	.33	6.50	295	5	20.98	.09	425
K8297	2671 Shale dk gy	1.14	10.62	.35	4.60	231	8	11.76	.10	426

IKU

TABLE X

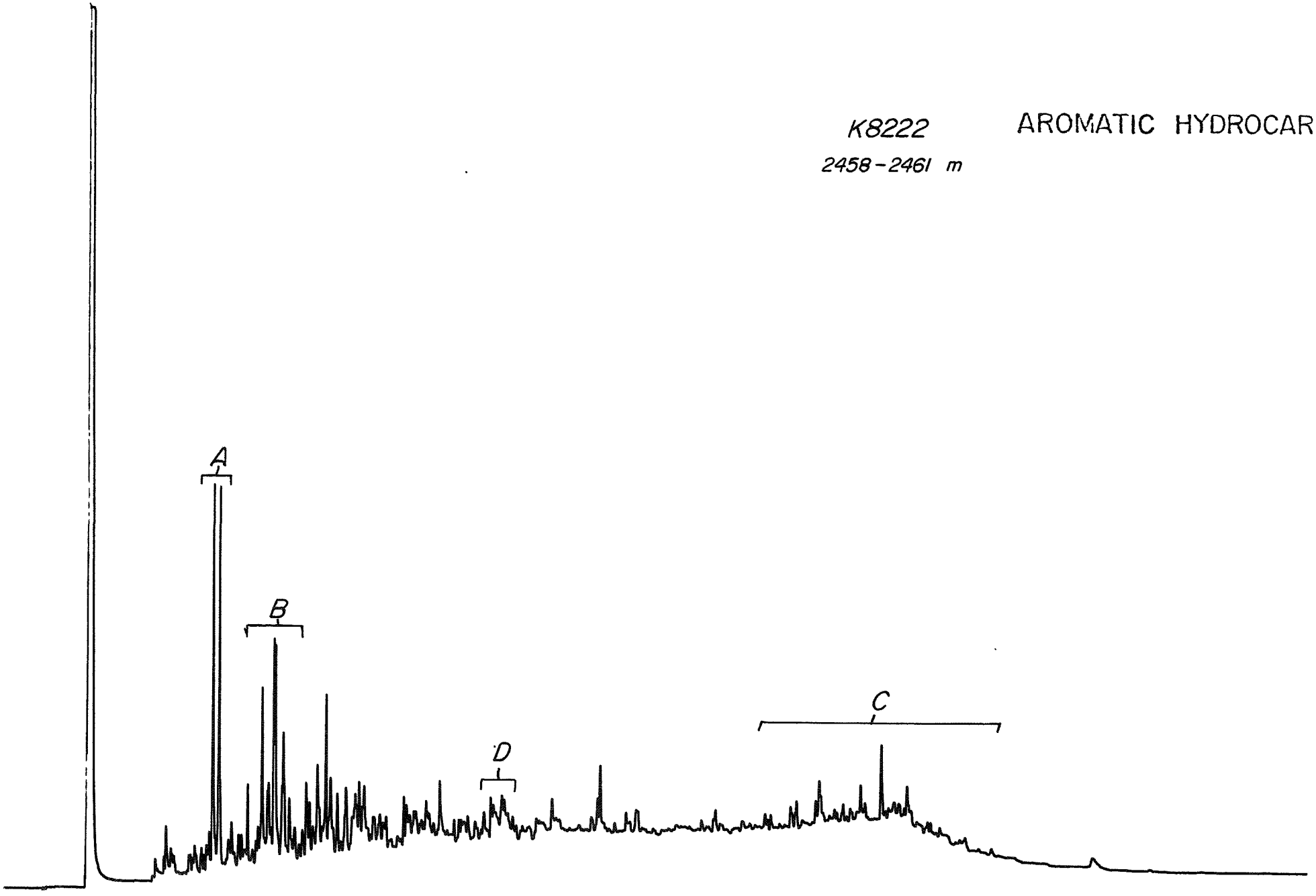
ROCK EVAL PYROLYSES

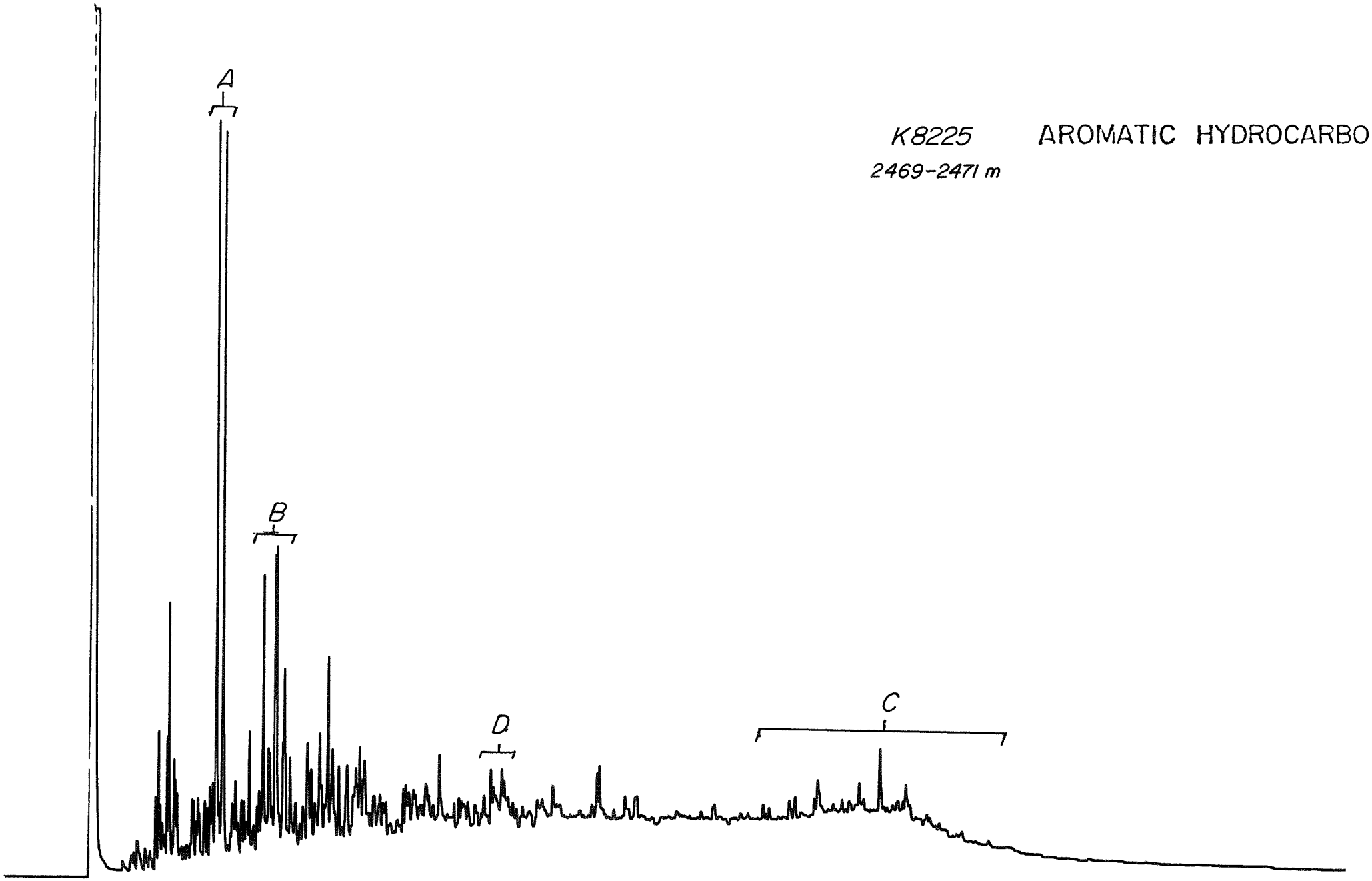
IKU No.	DEPTH (m)	S1	S2	S3	TOC (%)	HYDR. INDEX	OXYGEN INDEX	OIL OF GAS CONTENT S1+S2	PROD. INDEX S1/(S1+S2)	TEMP. max (C)
K8297	2686	1.60	18.72	.29	4.94	379	6	20.32	.08	428
	Shale dk gy									
K8302	2701	1.80	21.26	.44	5.20	409	8	23.06	.08	428
	Sltst dk gy									
K8304	2707	2.51	27.03	.43	6.96	388	6	29.54	.08	427
	Sltst dk gy									
K8305	2710	2.18	22.44	.37	4.49	500	8	24.62	.09	428
	Sltst dk gy									
K8305	2710	.33	2.11	.51	.91	232	56	2.44	.14	429
	Clst dk gy									
K8321	2758	.52	3.47	.57	1.06	327	54	3.99	.13	434
	Sltst sd									
K8329	2782	.40	8.48	.11	1.32	642	8	8.88	.05	438
	Sltst									
K8337	2806	.34	.64	.79	.59	108	134	.98	.35	414
	Clst gy									
K8344	2827	.45	3.15	.69	1.63	193	42	3.60	.12	434
	Clst bn-gy									
K8415	2860	8.74	78.45	.99	22.70	346	4	87.19	.10	437
	Clst bn-gy									
K8419	2872	.31	3.65	.12	2.16	169	6	3.96	.08	441
	Clst gy , bn-gy									
K8425	2890	.63	7.30	.34	3.63	201	9	7.93	.08	438
	Clst bn-gy									
K8453	2902	.57	5.86	.26	3.34	175	8	6.43	.09	439
	Clst gy , gy-bn									
K8434	2994	.28	2.02	.26	1.35	150	19	2.30	.12	434
	Sltst bn-gy									
K8439	3024	1.12	8.32	.17	2.26	368	8	9.44	.12	433
	Sltst bn-gy									
K8443	3048	1.23	8.84	.35	2.45	361	14	10.07	.12	435
	Clst bn-gy									
K8449	3084	.35	2.07	.57	1.52	136	38	2.42	.14	441
	Clst gy-bn									
K8454	3108	.82	8.66	.30	3.66	237	8	9.48	.09	442
	Sltst bn-gy									
K8458	3130	.59	6.35	.25	2.83	224	9	6.94	.09	441
	Sltst bn-gy									
K8462	3154	.21	1.60	.18	1.07	150	17	1.81	.12	441
	Clst bn-gy									
K8472	3214	.49	3.81	.33	2.18	175	15	4.30	.11	441
	Clst bn-gy									
K8503	3394	.41	1.76	.35	1.24	142	28	2.17	.19	438
	Clst gy									

K8222

2458 - 2461 m

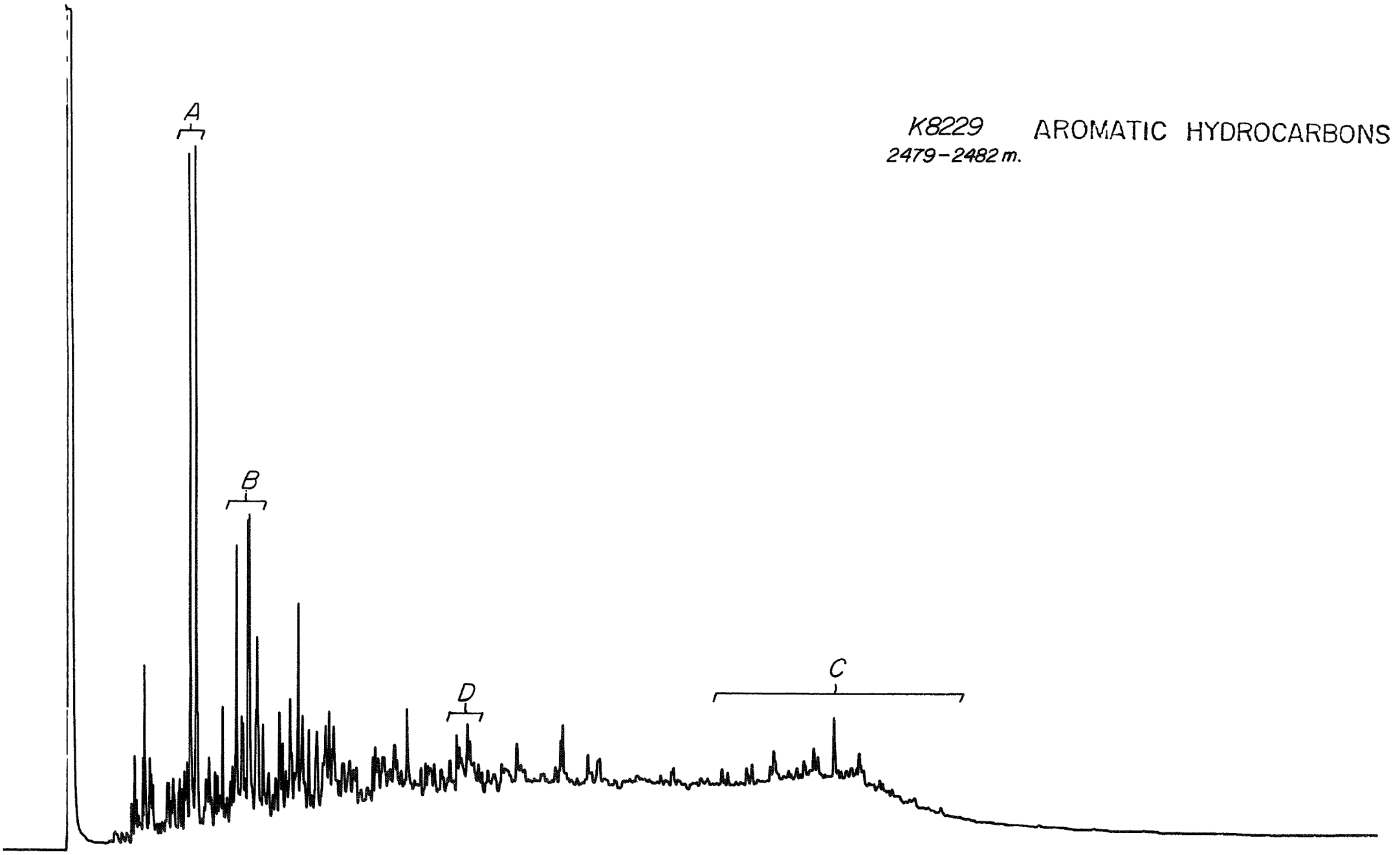
AROMATIC HYDROCARBONS





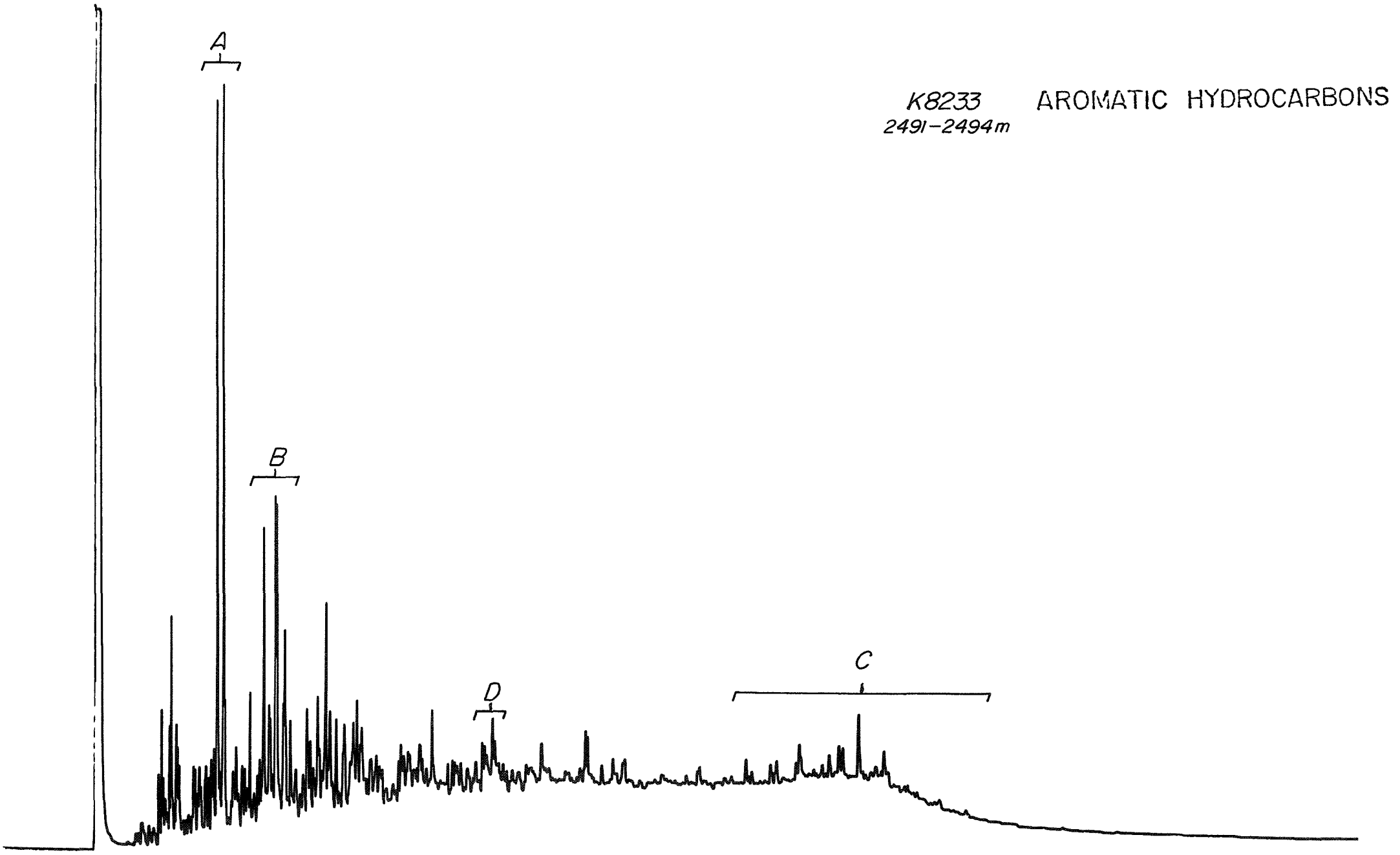
K8225 AROMATIC HYDROCARBONS

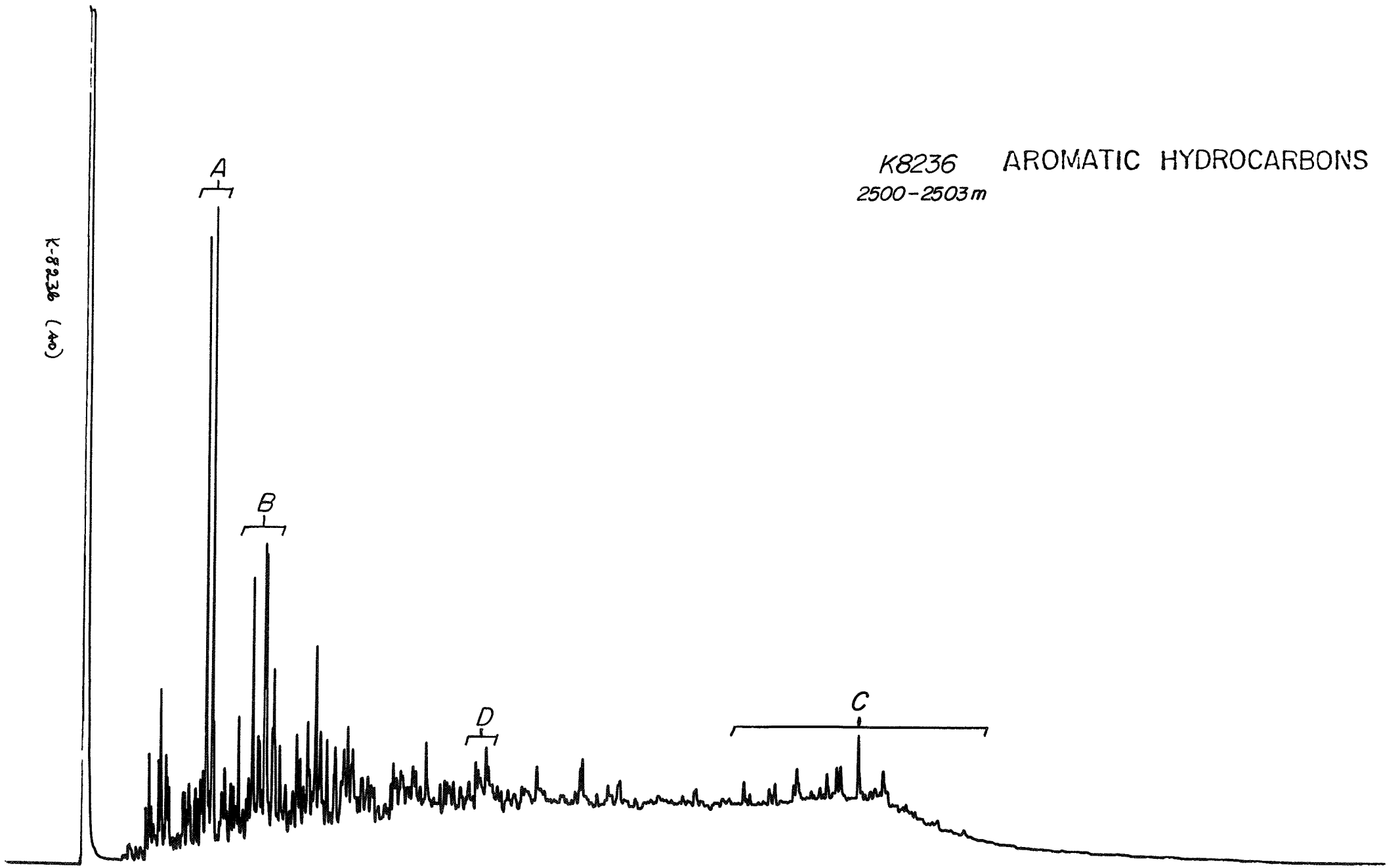
2469-2471 m



K8229 AROMATIC HYDROCARBONS

2479-2482 m.

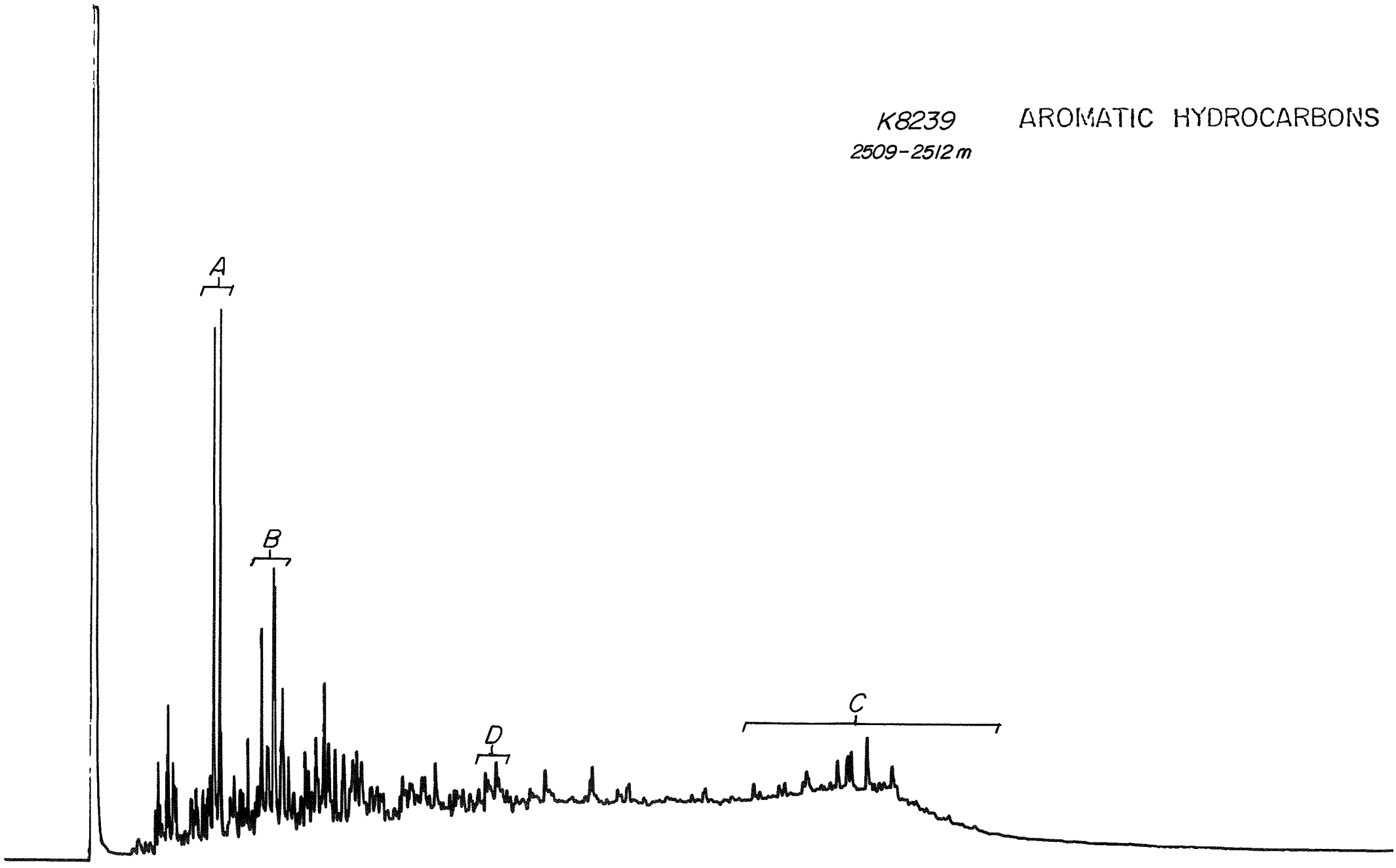

A
B
C
D
K8233
2491–2494m
AROMATIC HYDROCARBONS

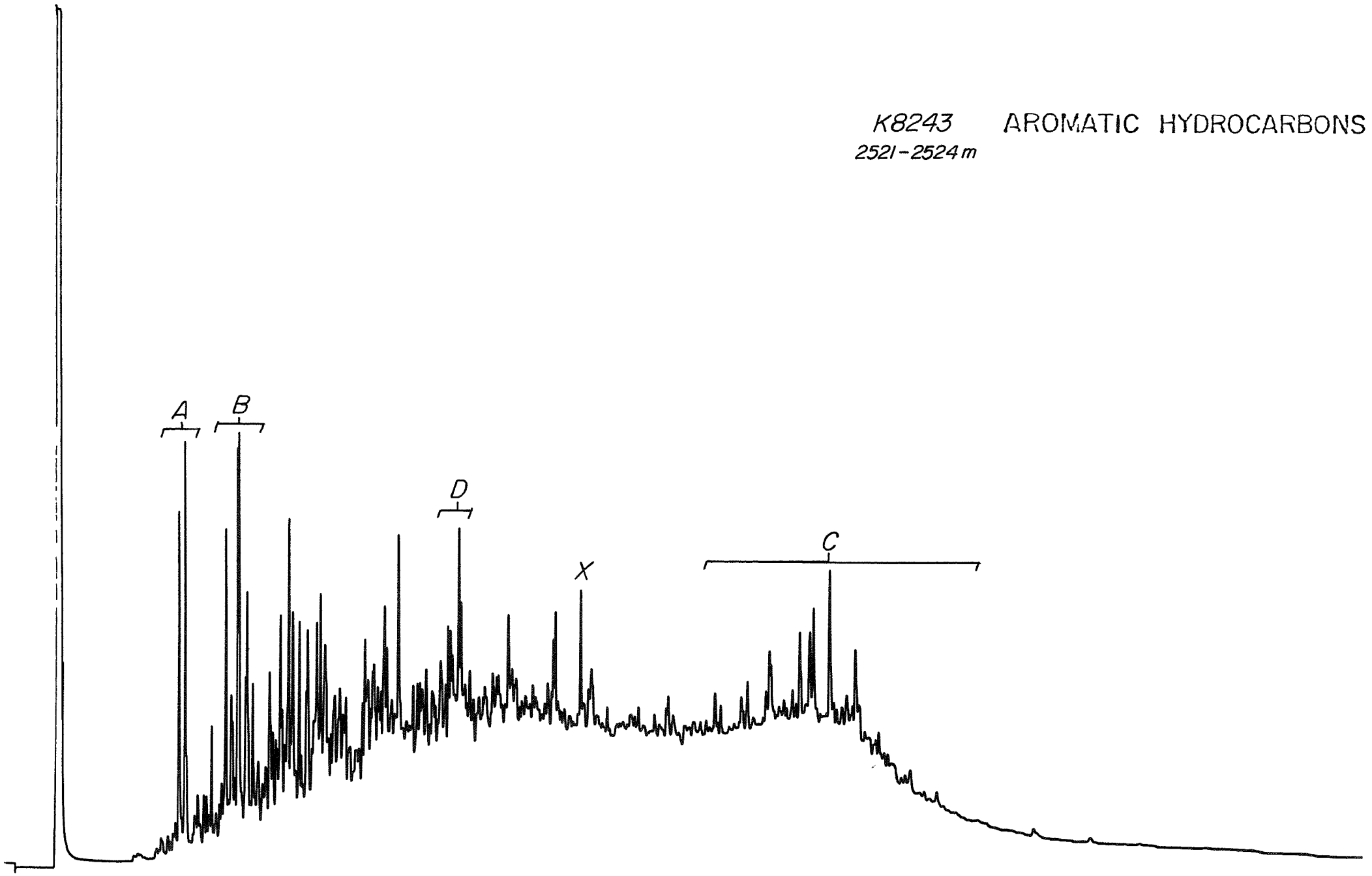

K8236 AROMATIC HYDROCARBONS
2500-2503m
K-8236 (AO)
A
B
D
C

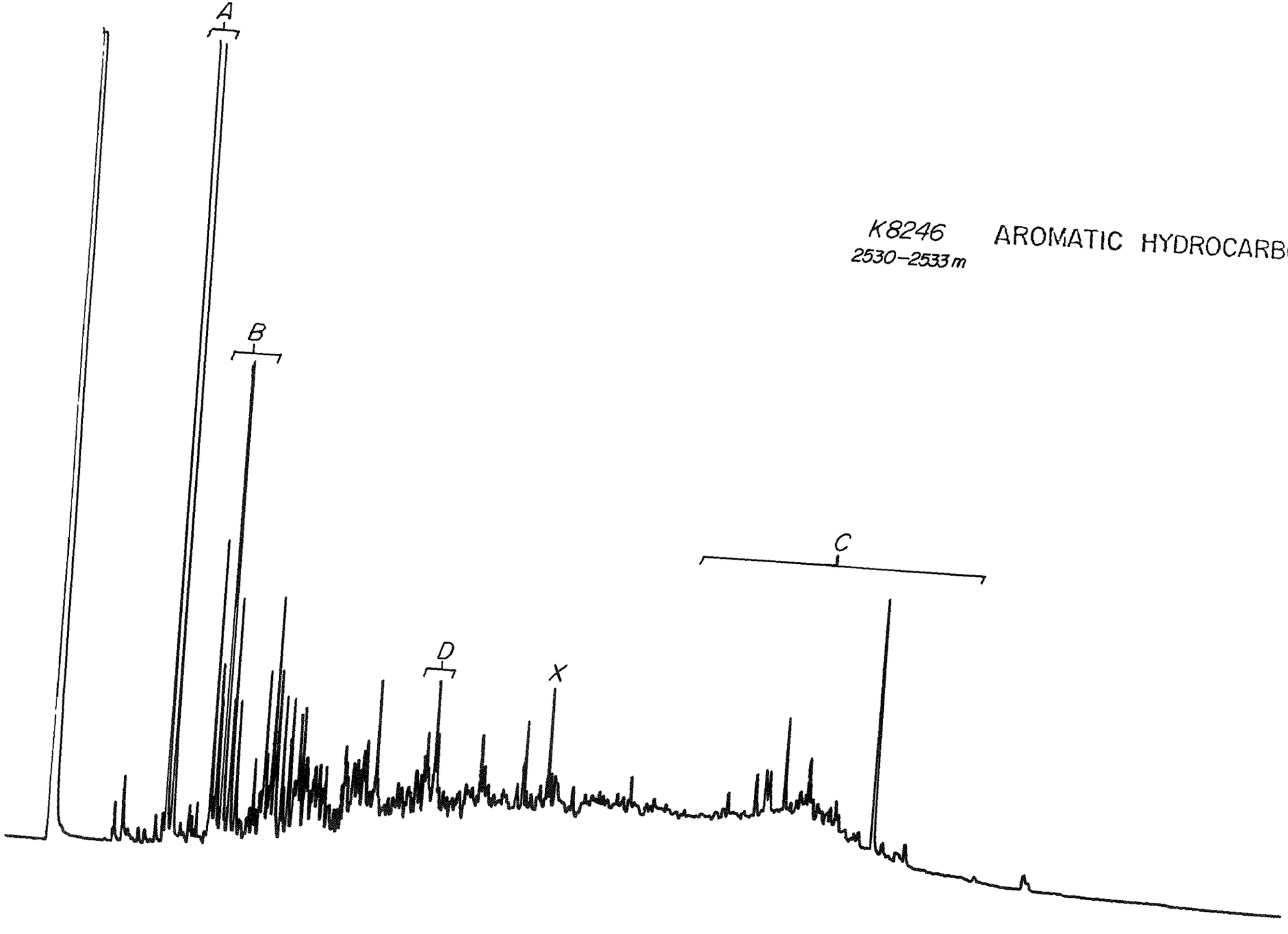
K8239

2509-2512 m

AROMATIC HYDROCARBONS

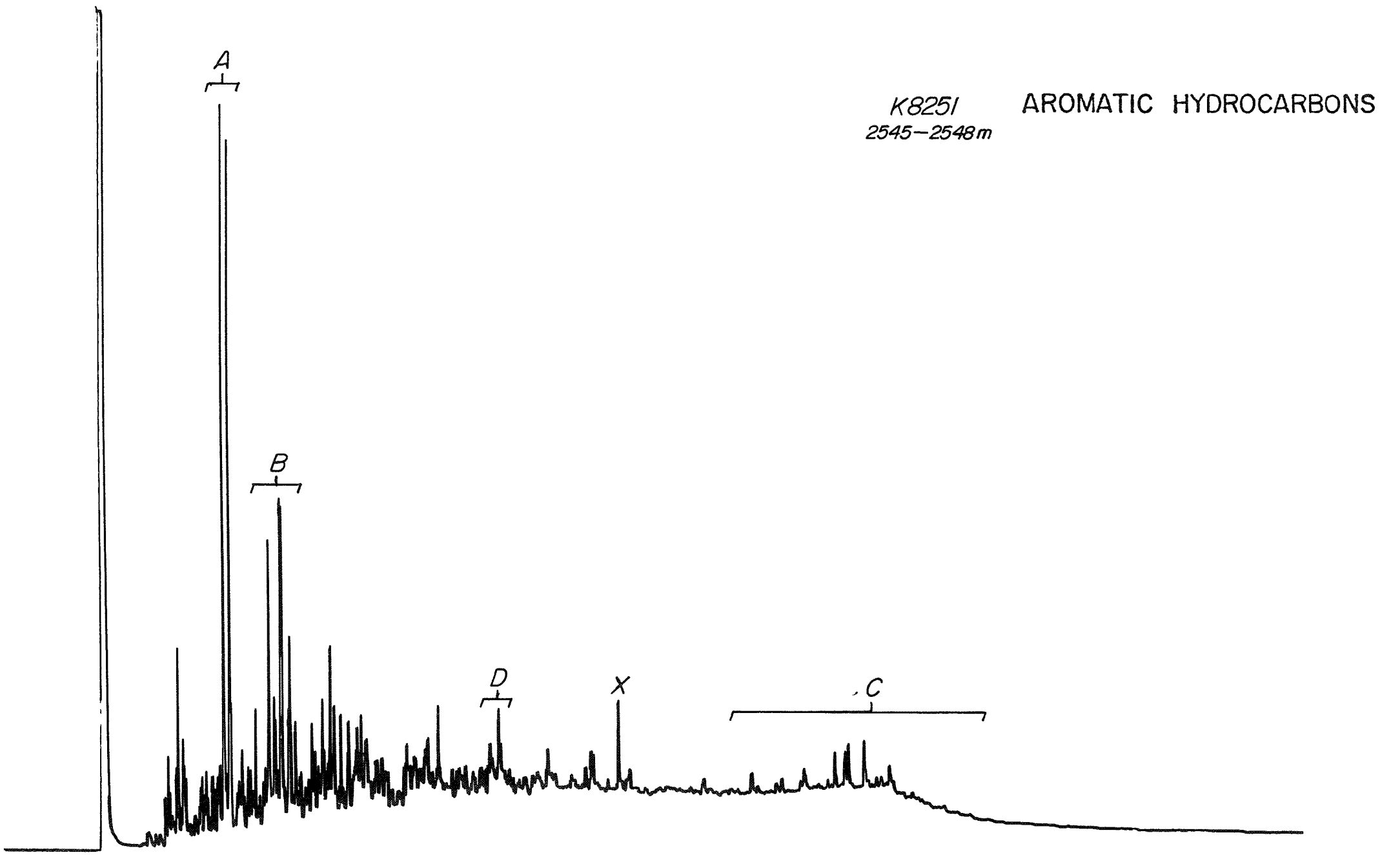


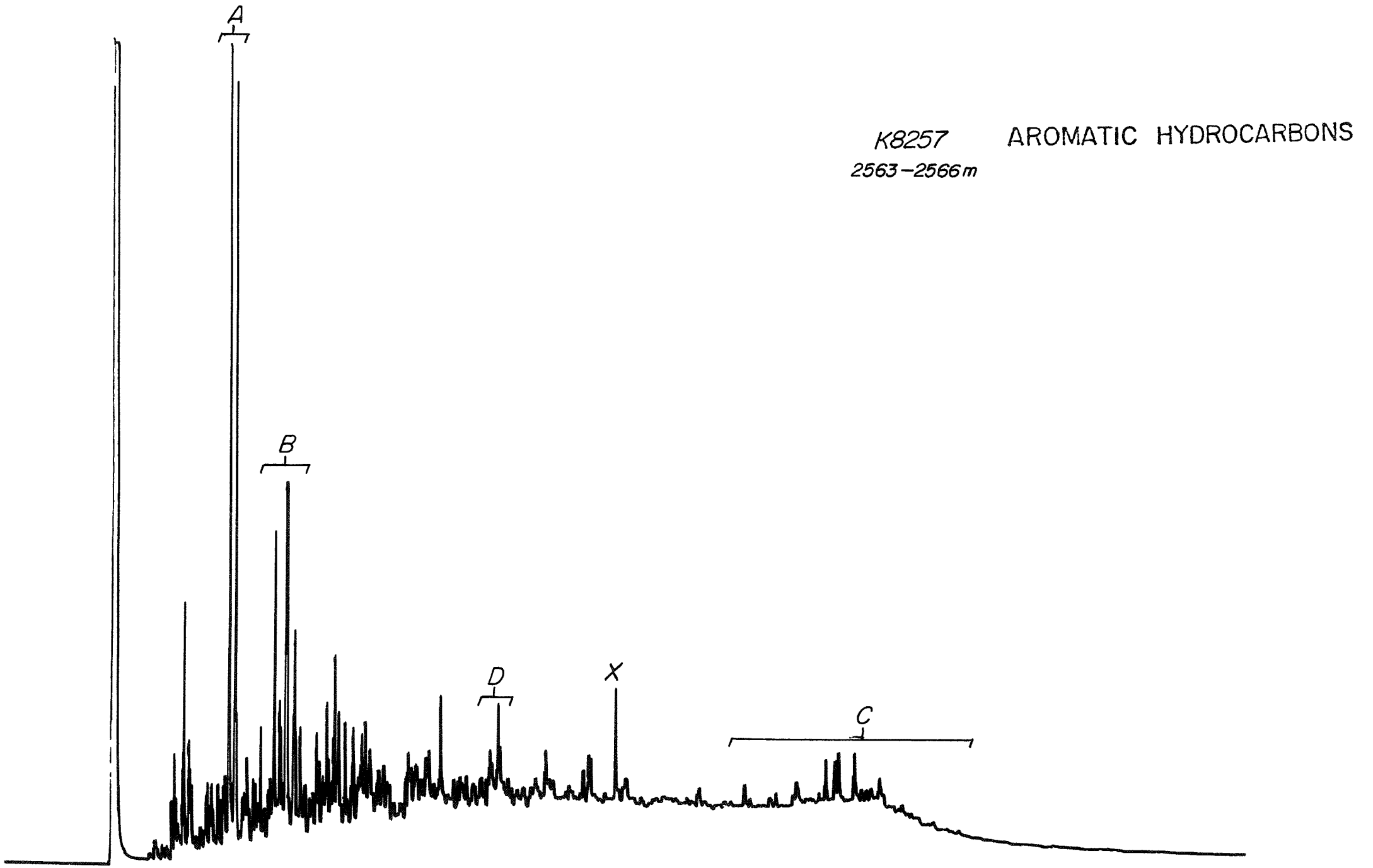

K8243
2521-2524 m
AROMATIC HYDROCARBONS
A
B
D
X
C



K8246
2530–2533 m

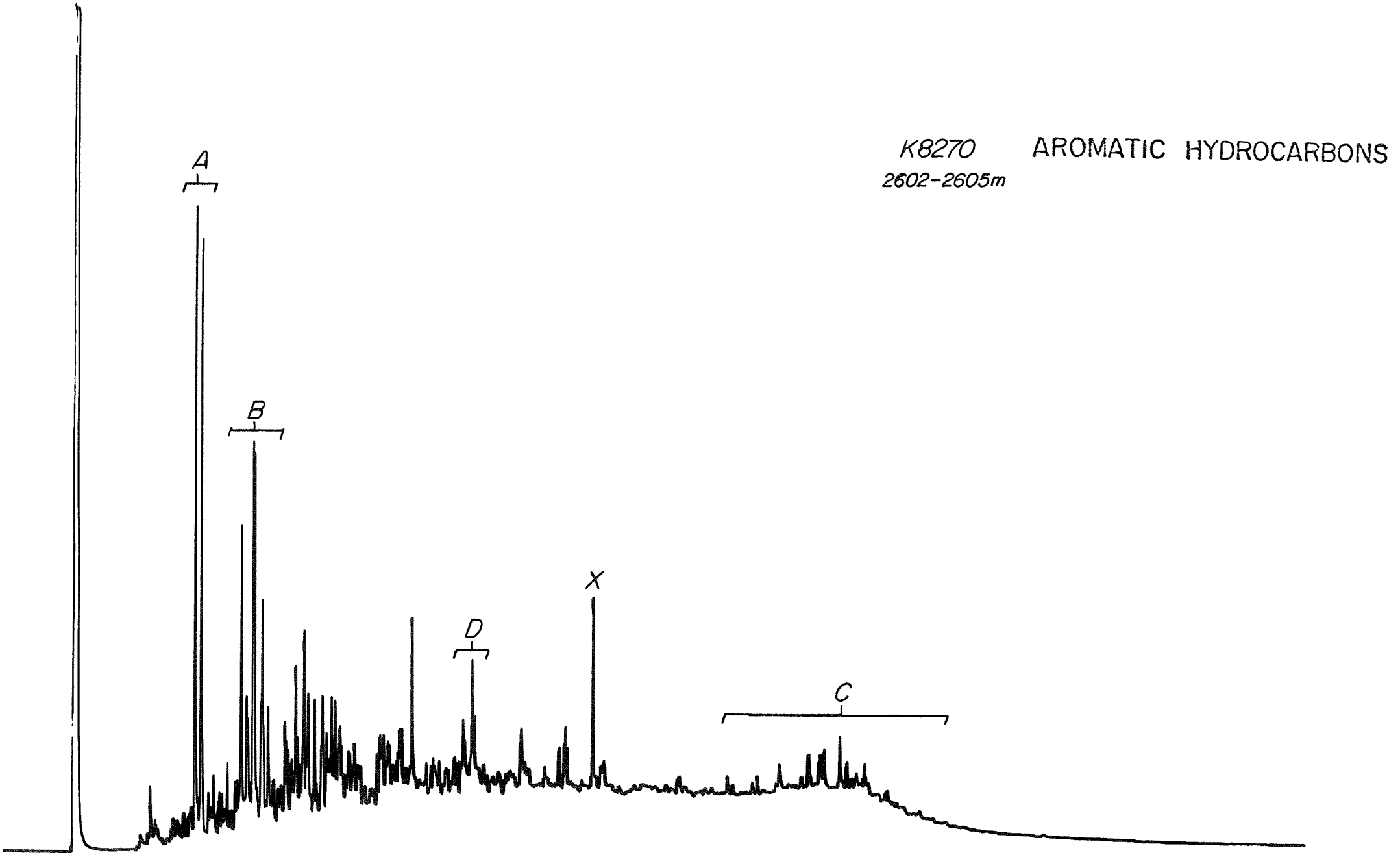
AROMATIC HYDROCARBONS

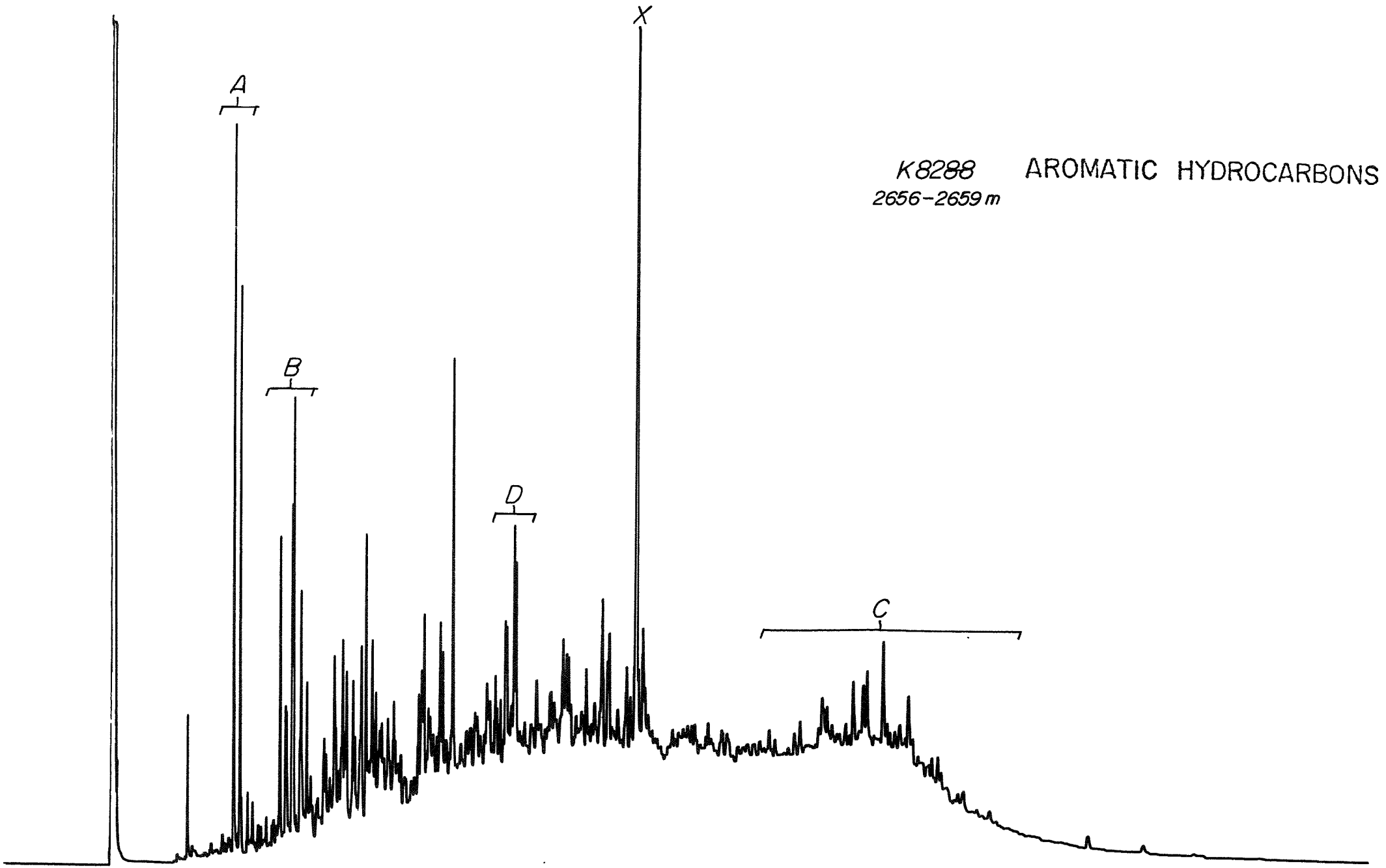

A
B
D
X
C
K8251
2545–2548m
AROMATIC HYDROCARBONS

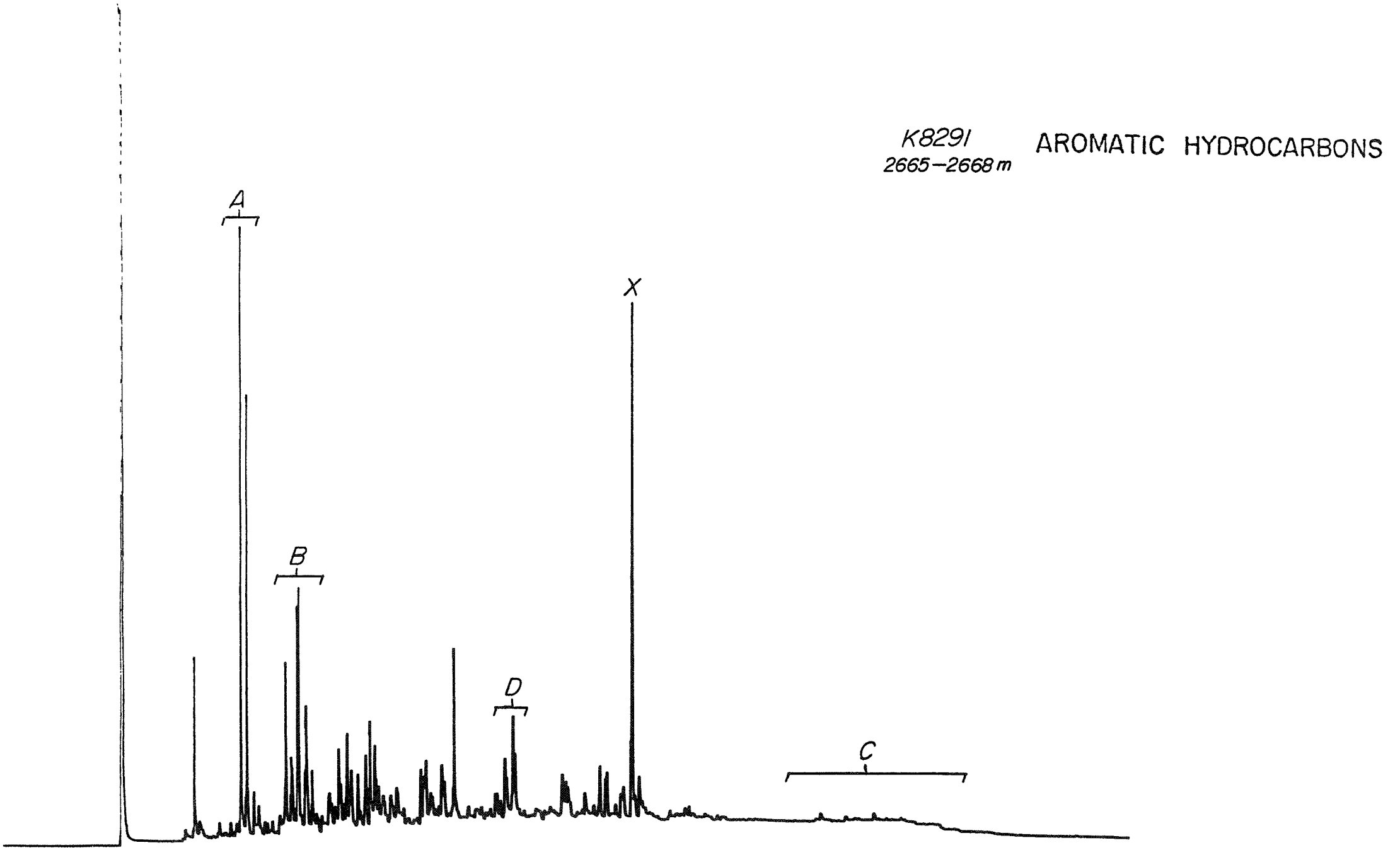


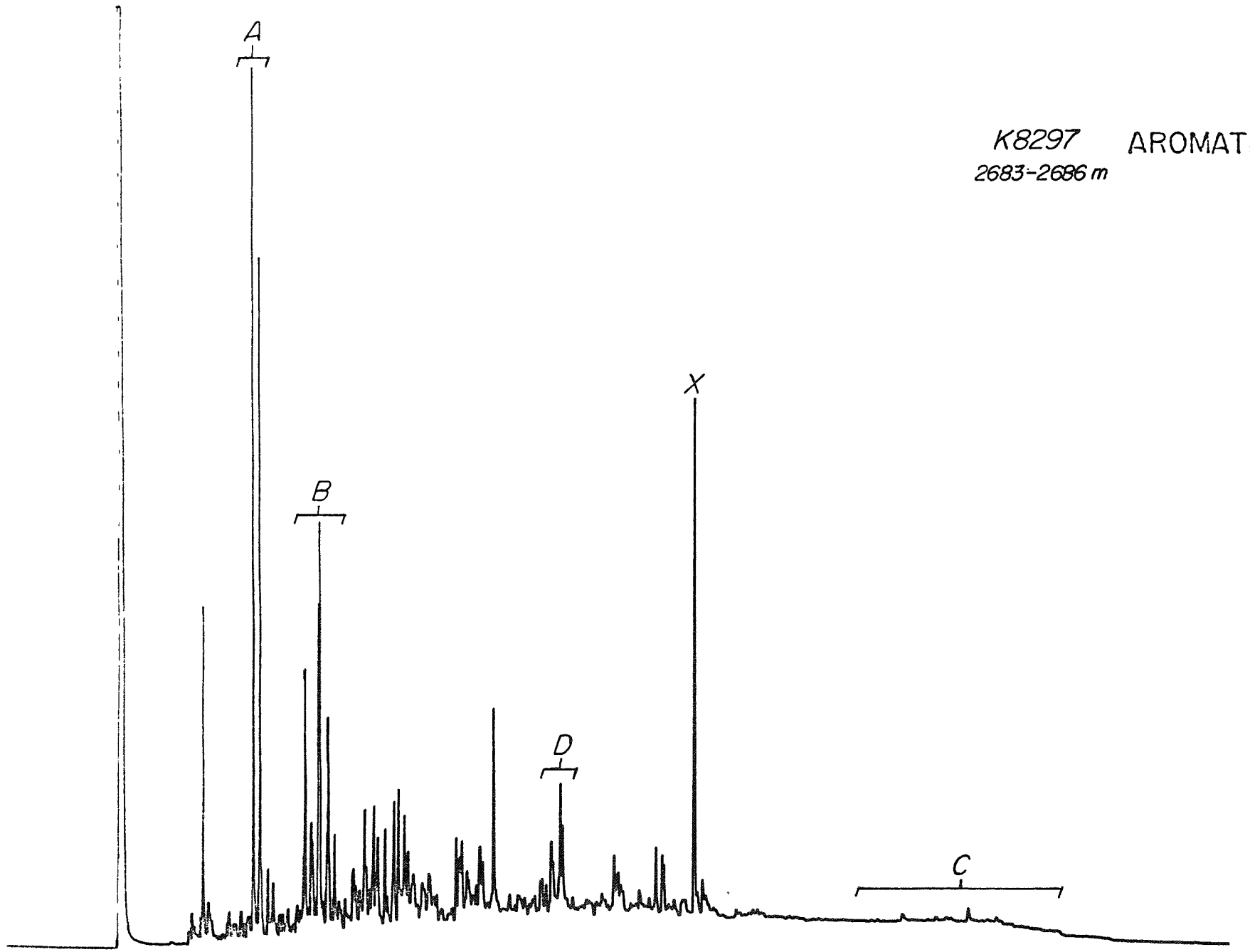
K8257 AROMATIC HYDROCARBONS

2563–2566 m


K8270
2602-2605m
AROMATIC HYDROCARBONS
A
B
D
X
C

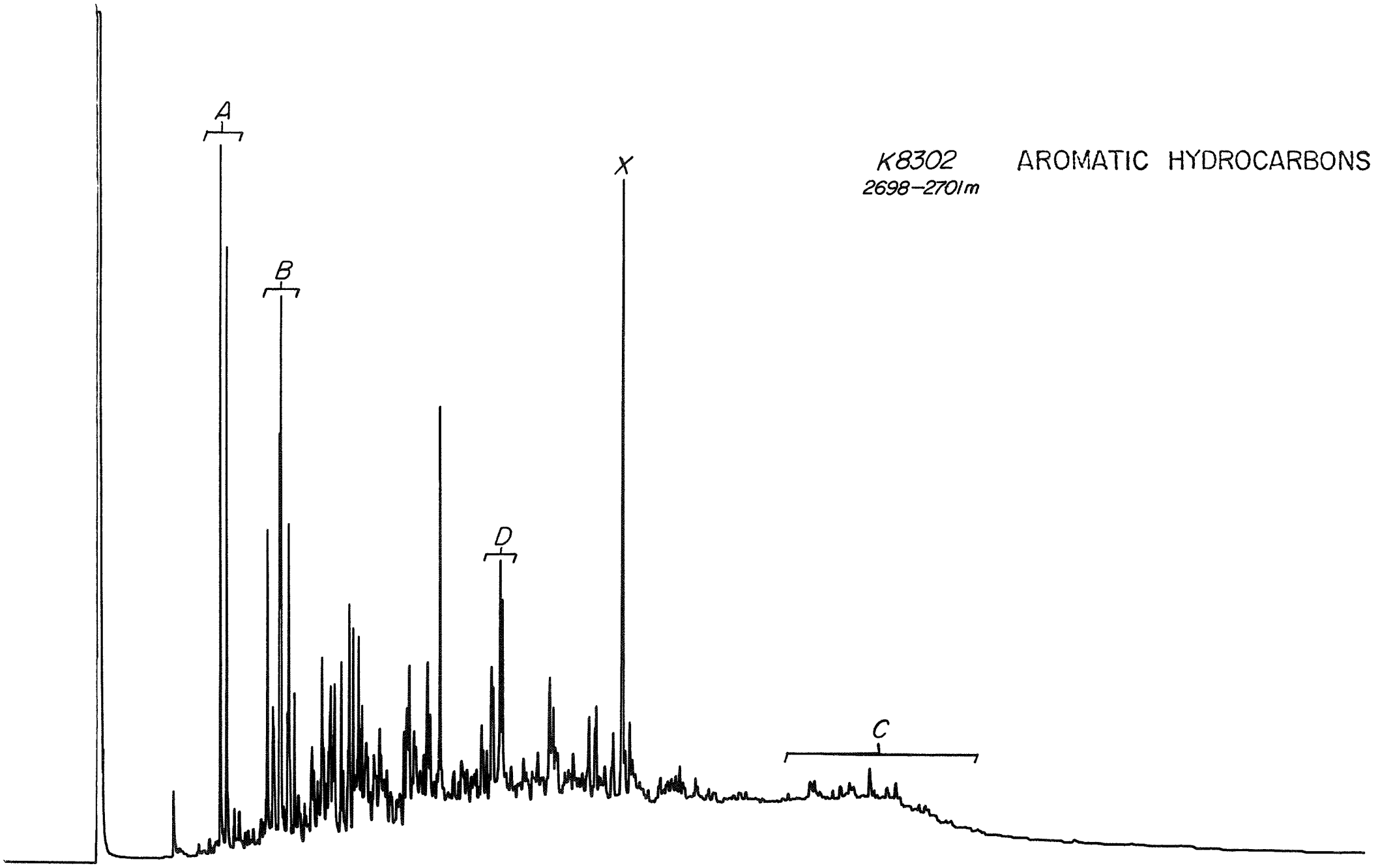

A
B
D
X
C
K8288
2656-2659 m
AROMATIC HYDROCARBONS

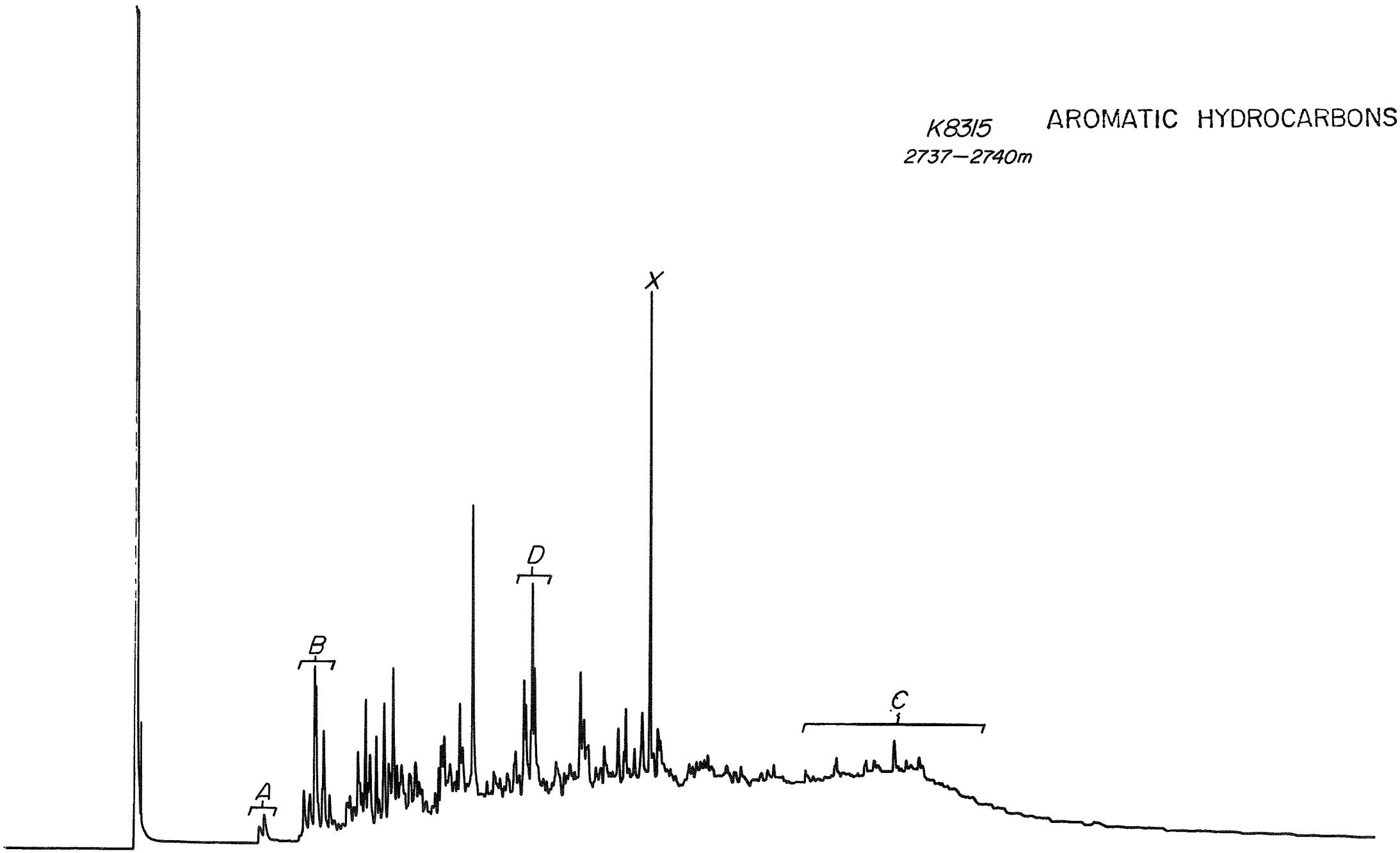

K8291
2665–2668 m
AROMATIC HYDROCARBONS
A
B
D
X
C

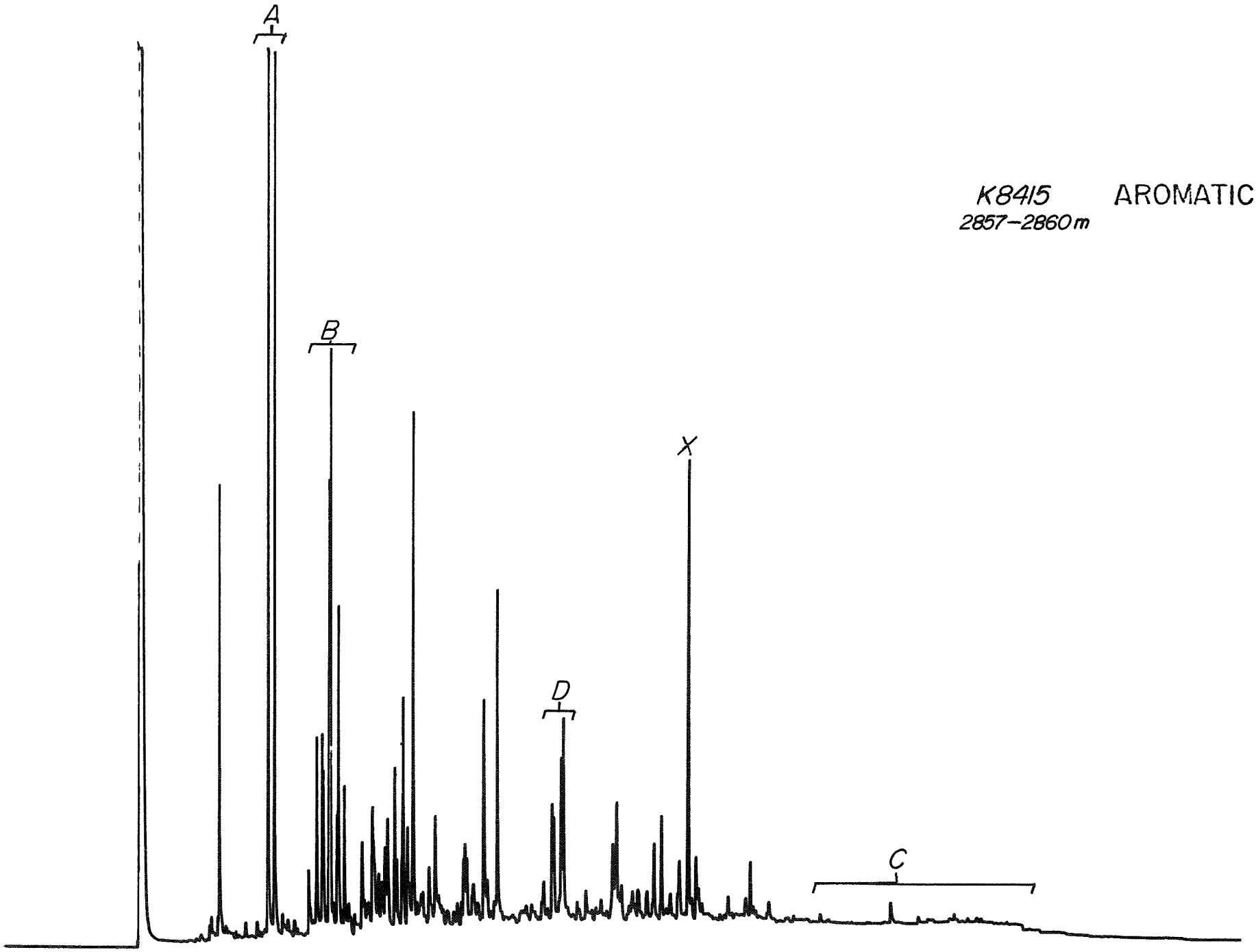


K8297 AROMATIC HYDROCARBONS

2683-2686 m


A
B
D
X
C
K8302
2698–2701m
AROMATIC HYDROCARBONS

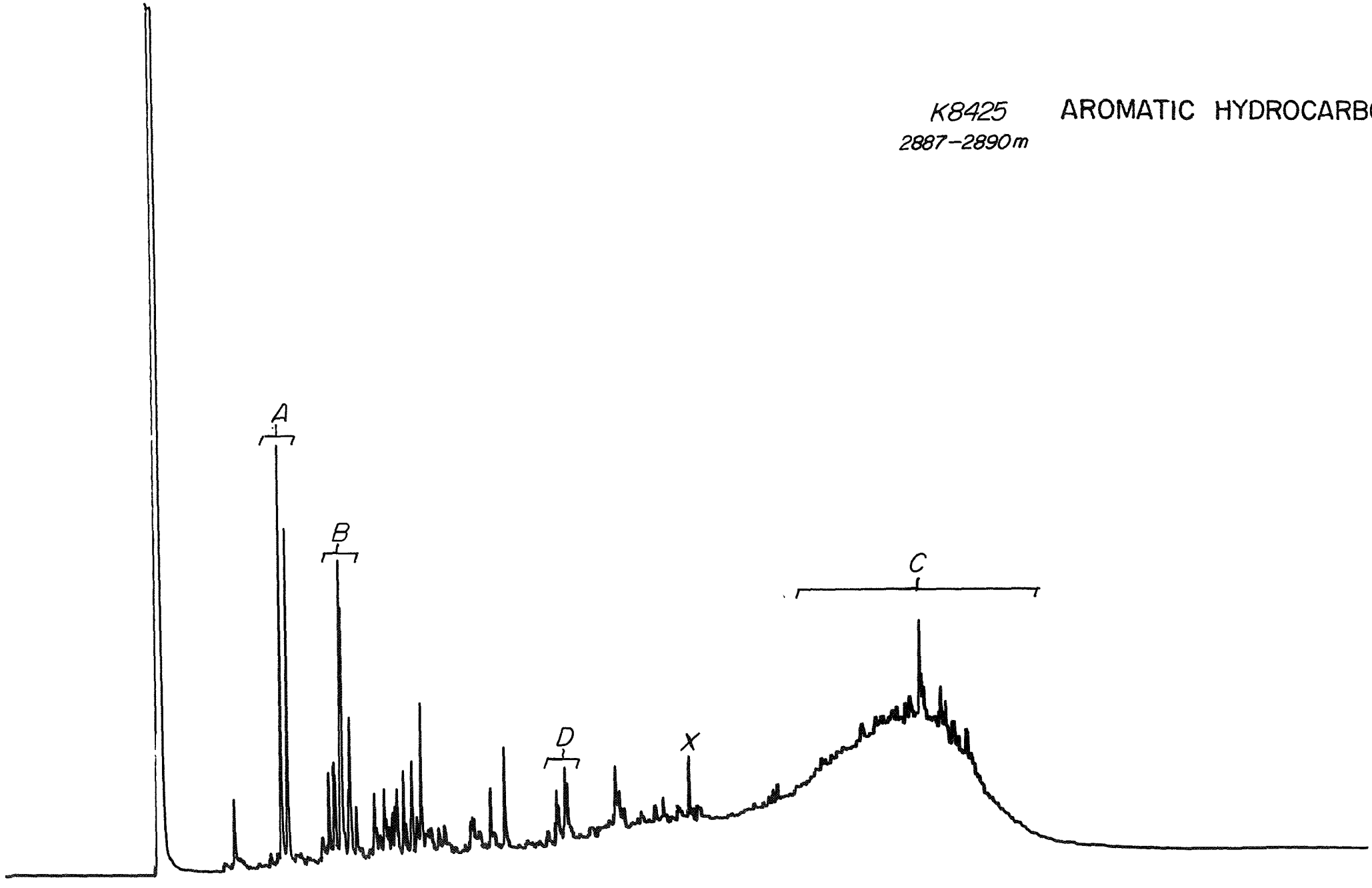

K8315
2737–2740m
AROMATIC HYDROCARBONS
A
B
D
X
C



K8415 AROMATIC HYDROCARBONS
2857–2860 m

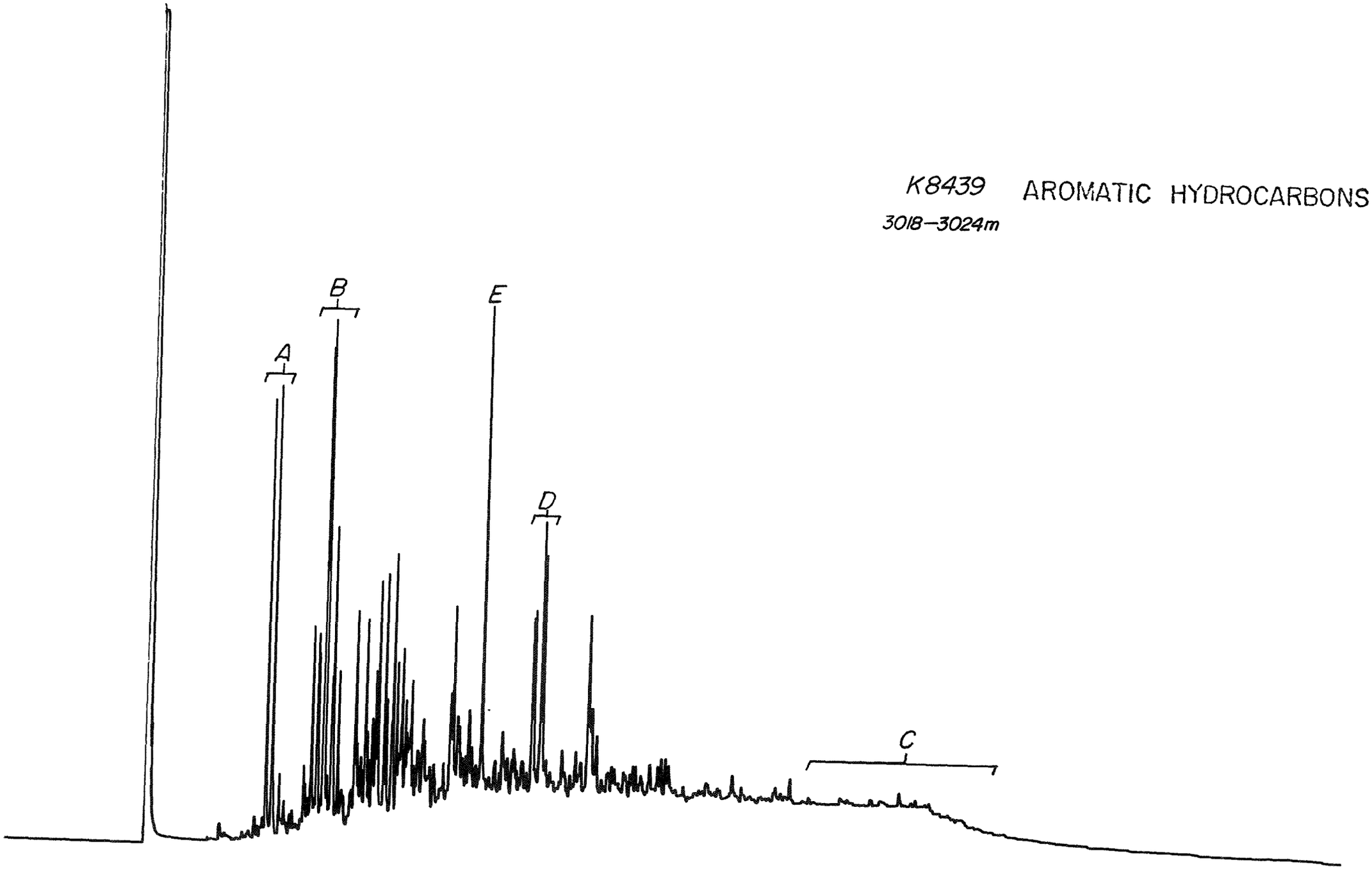
K8425
2887–2890m

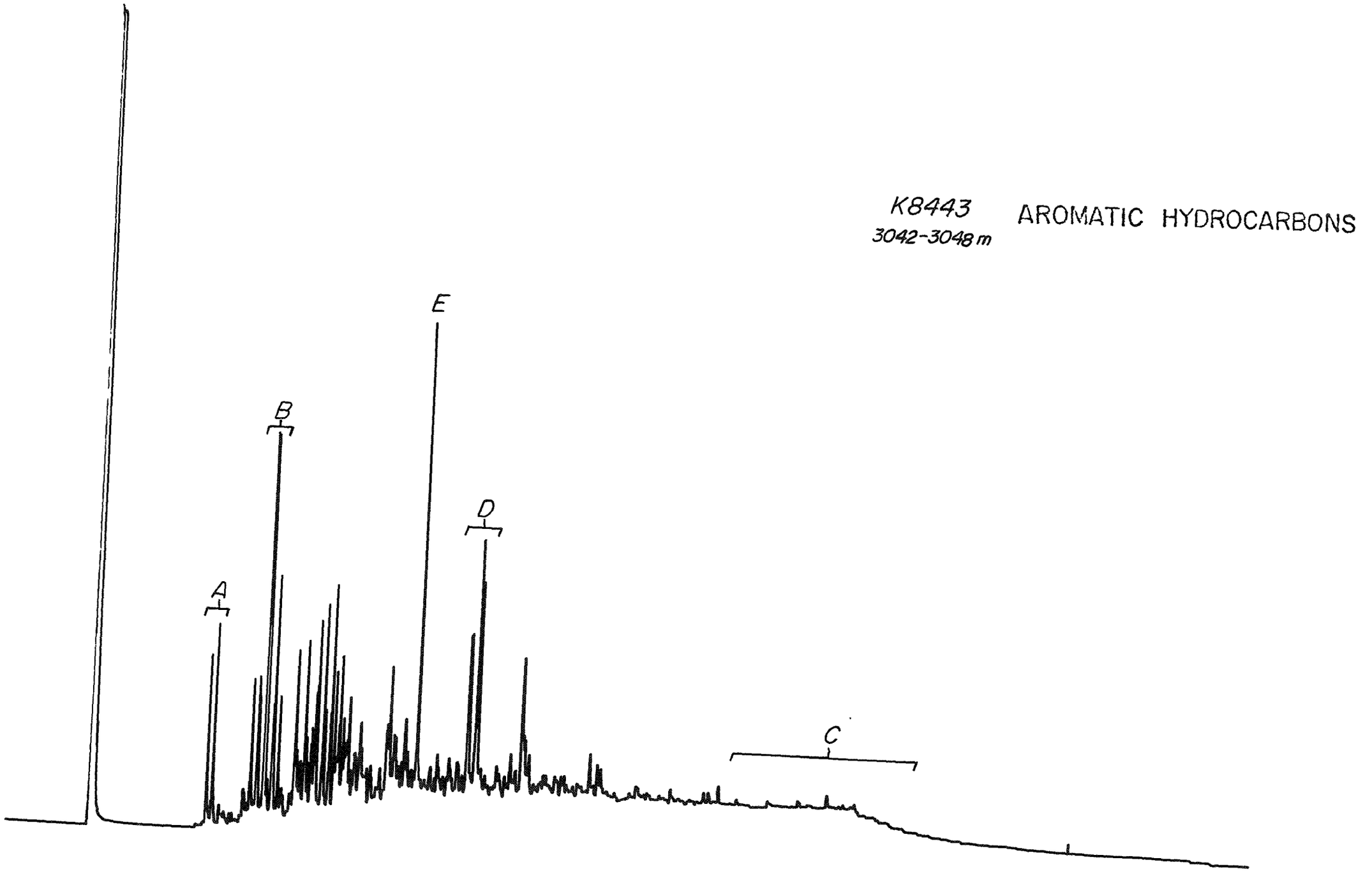
AROMATIC HYDROCARBONS

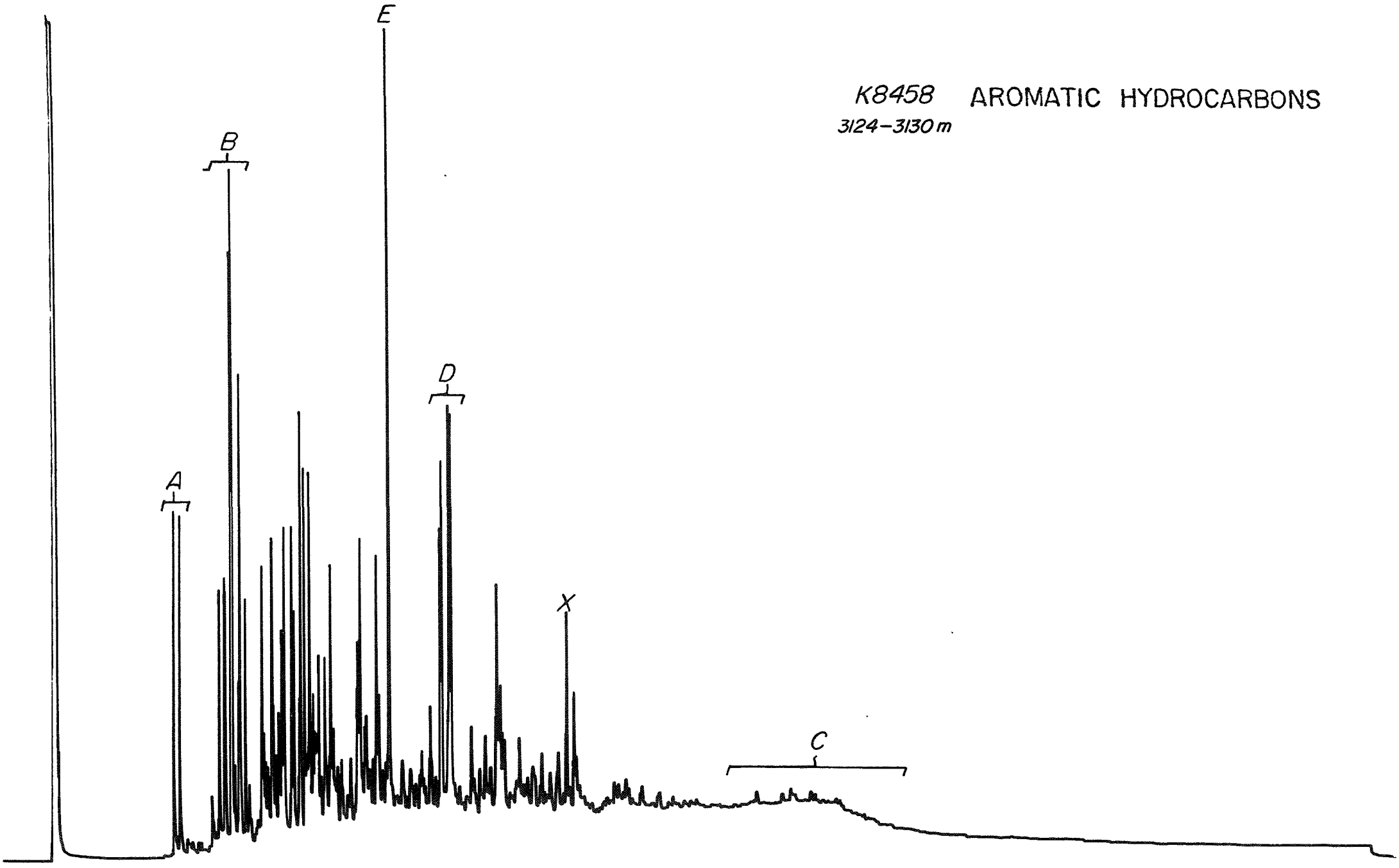


K8439 AROMATIC HYDROCARBONS

3018–3024m

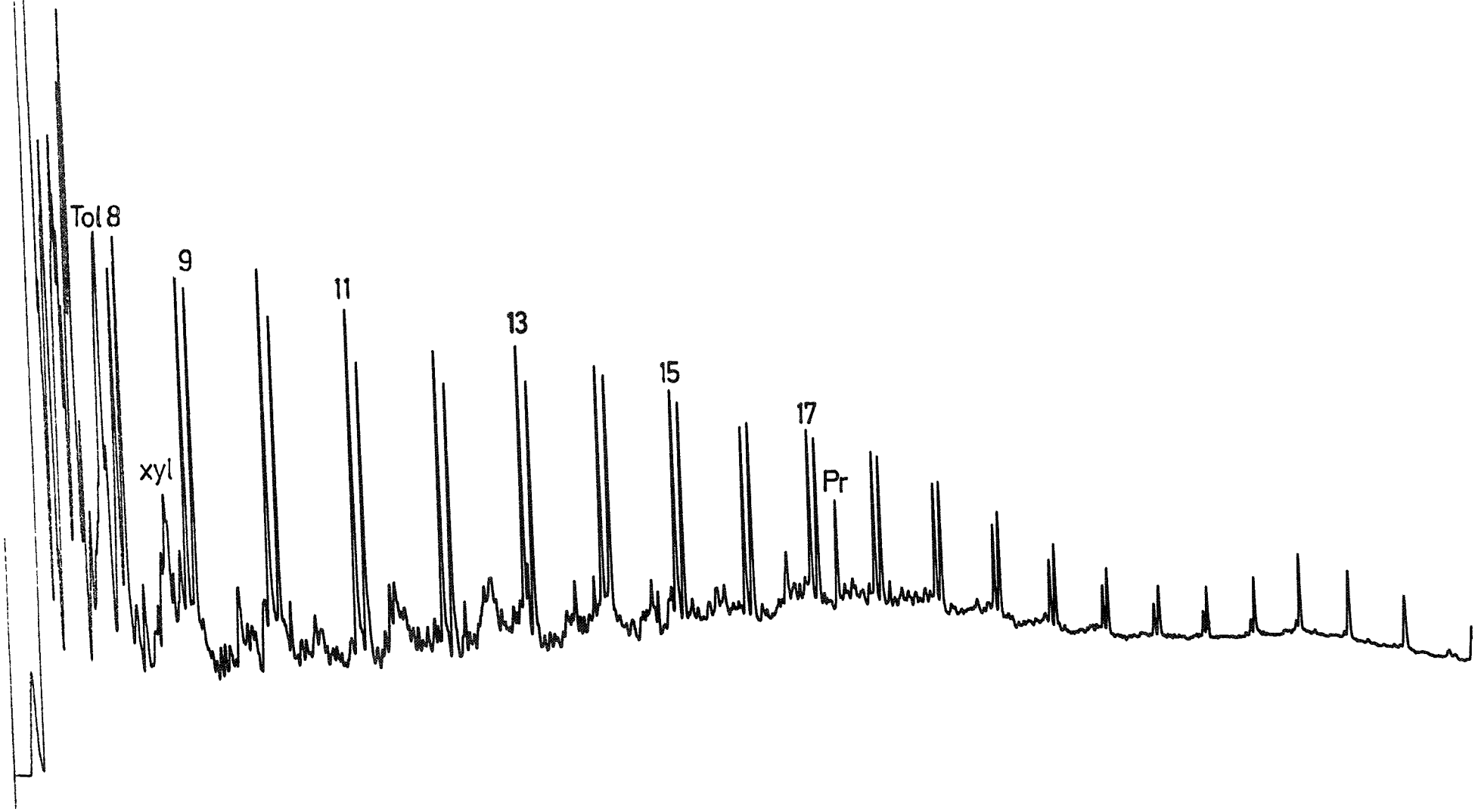



K8443
3042-3048 m
AROMATIC HYDROCARBONS
A
B
C
D
E


K8458 AROMATIC HYDROCARBONS
3124–3130 m
A
B
E
D
X
C

K8229
2479-2482 m.

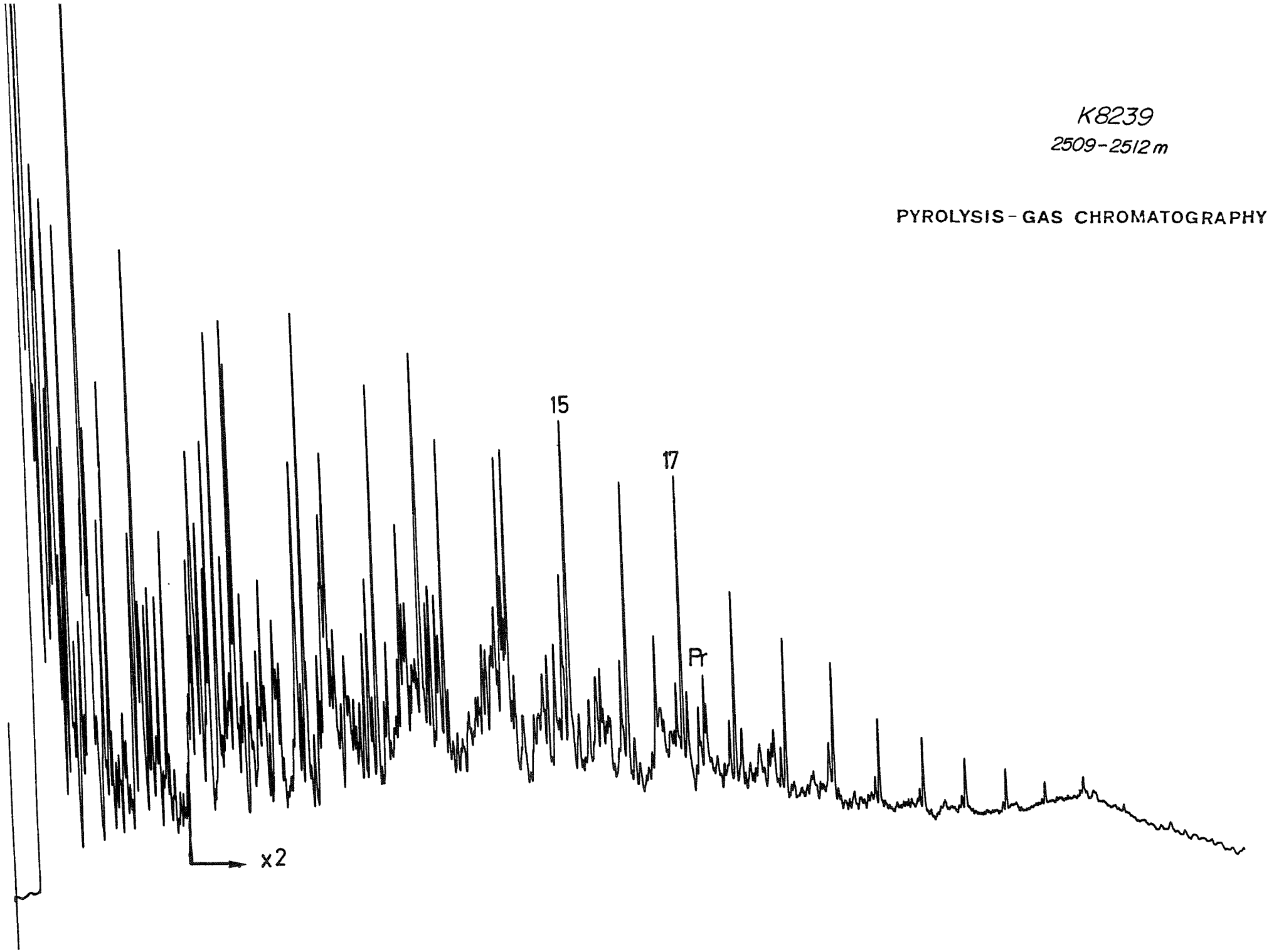
PYROLYSIS-GAS CHROMATOGRAPHY



K8239

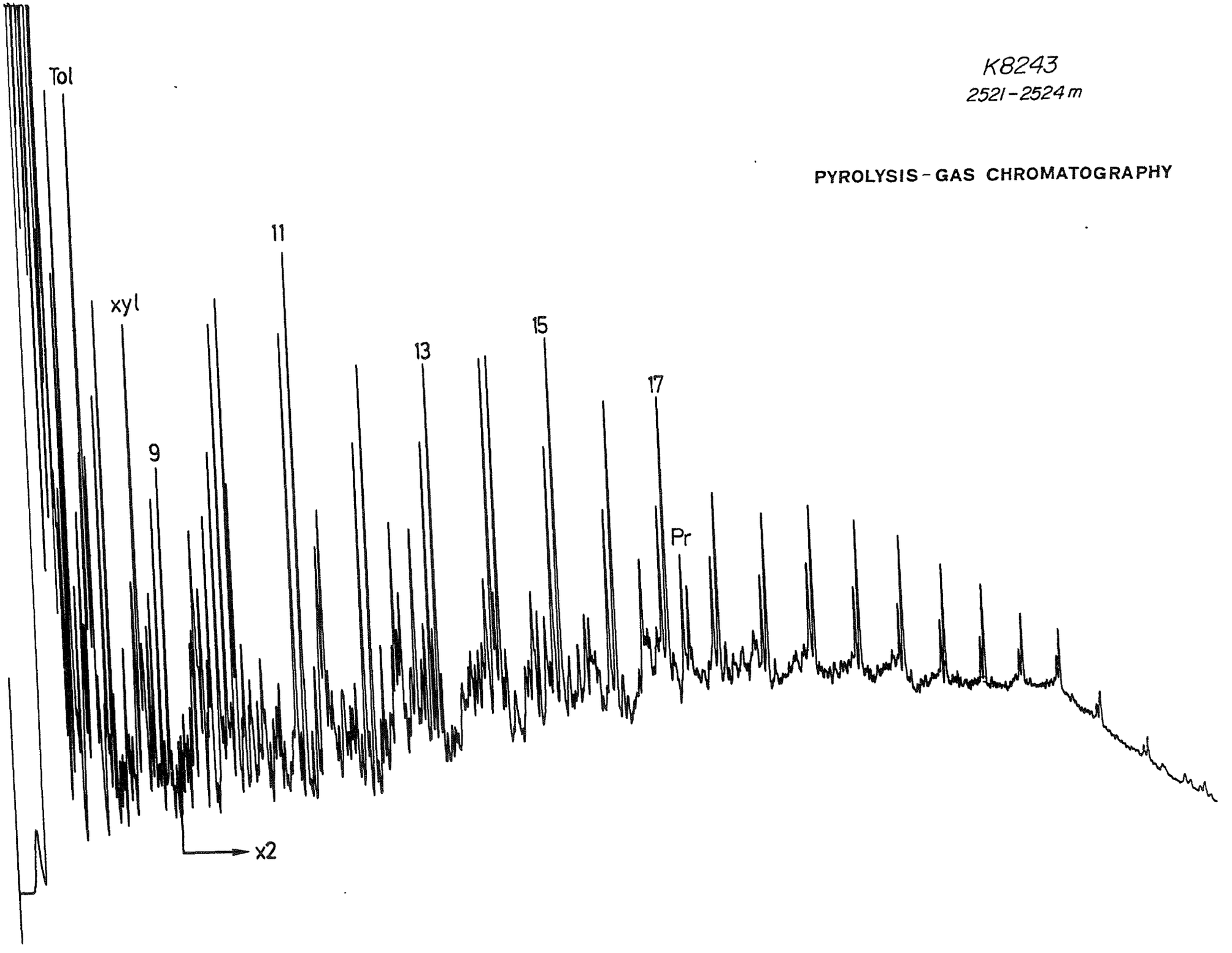
2509-2512 m

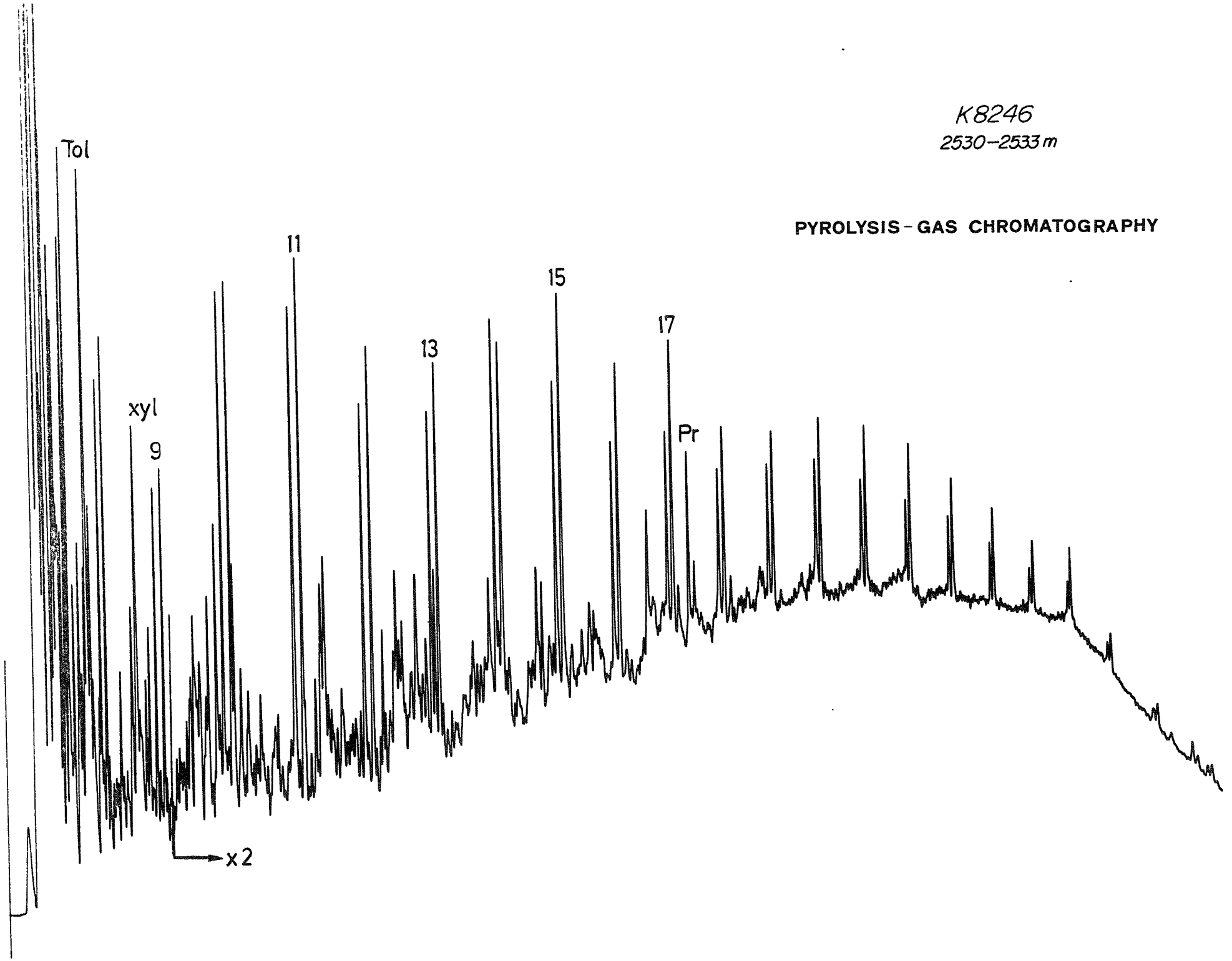
PYROLYSIS - GAS CHROMATOGRAPHY

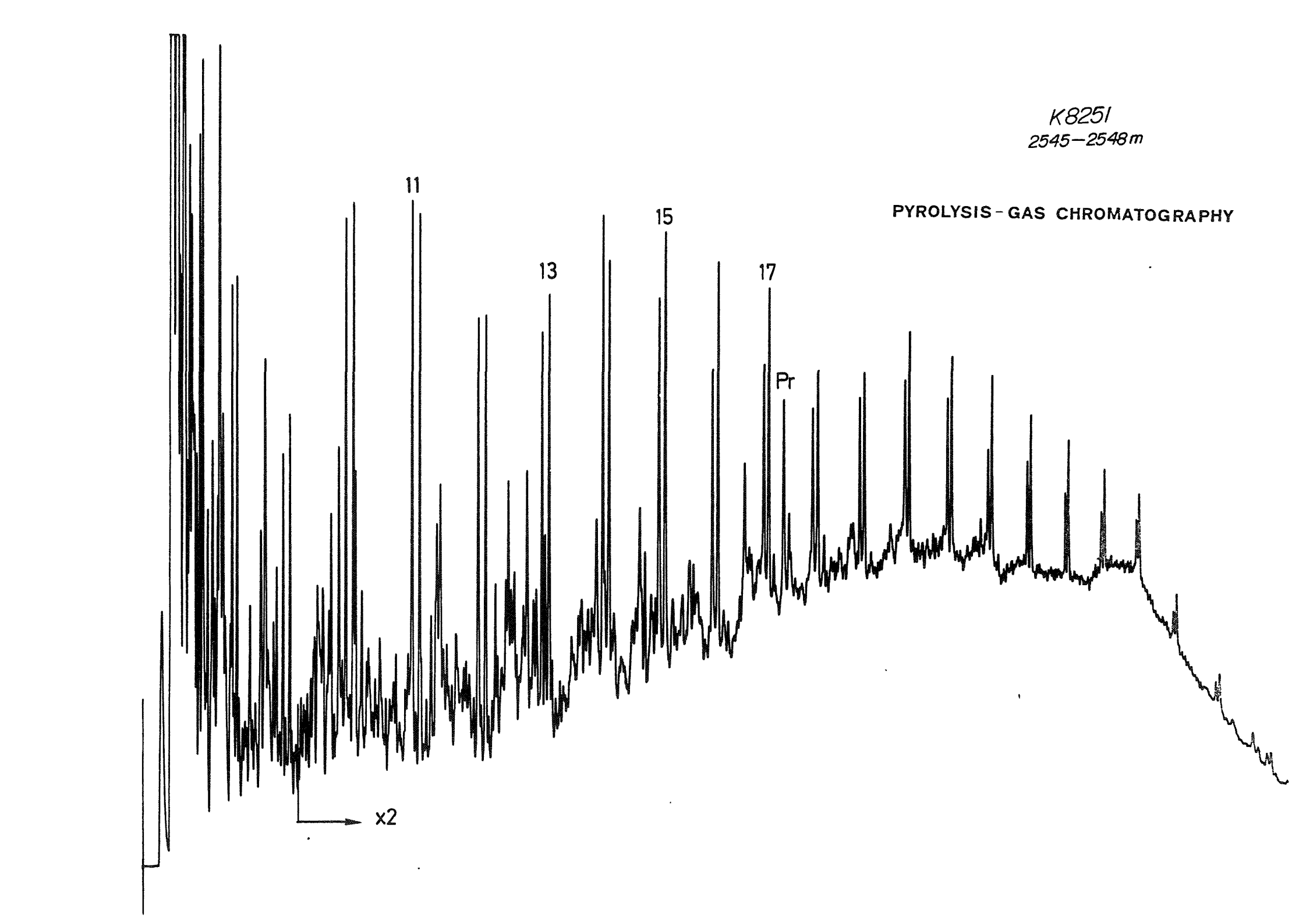


K8243
2521-2524 m

PYROLYSIS - GAS CHROMATOGRAPHY



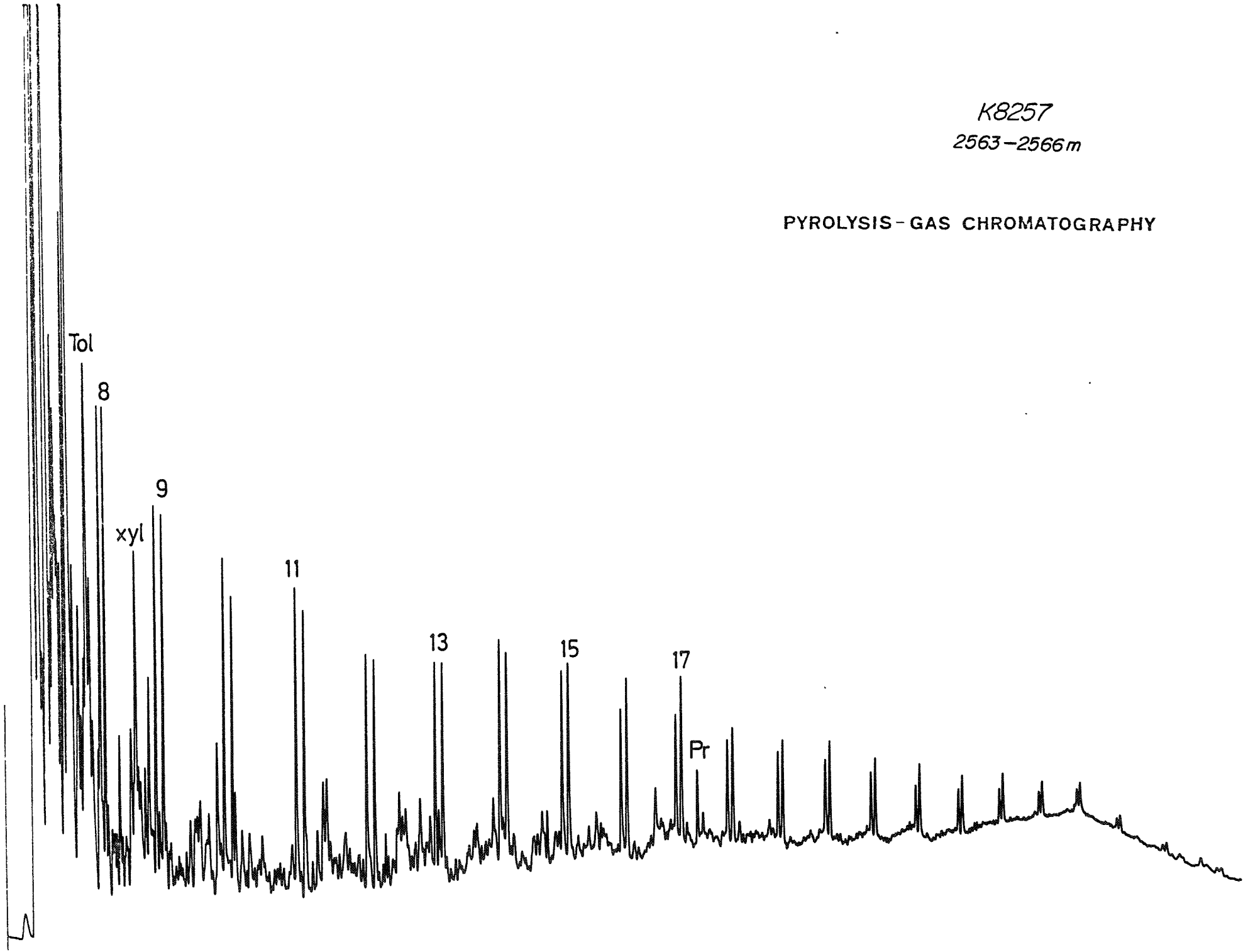

K8246
2530–2533 m
PYROLYSIS - GAS CHROMATOGRAPHY
Tol
xyl
9
11
13
15
17
Pr
x2

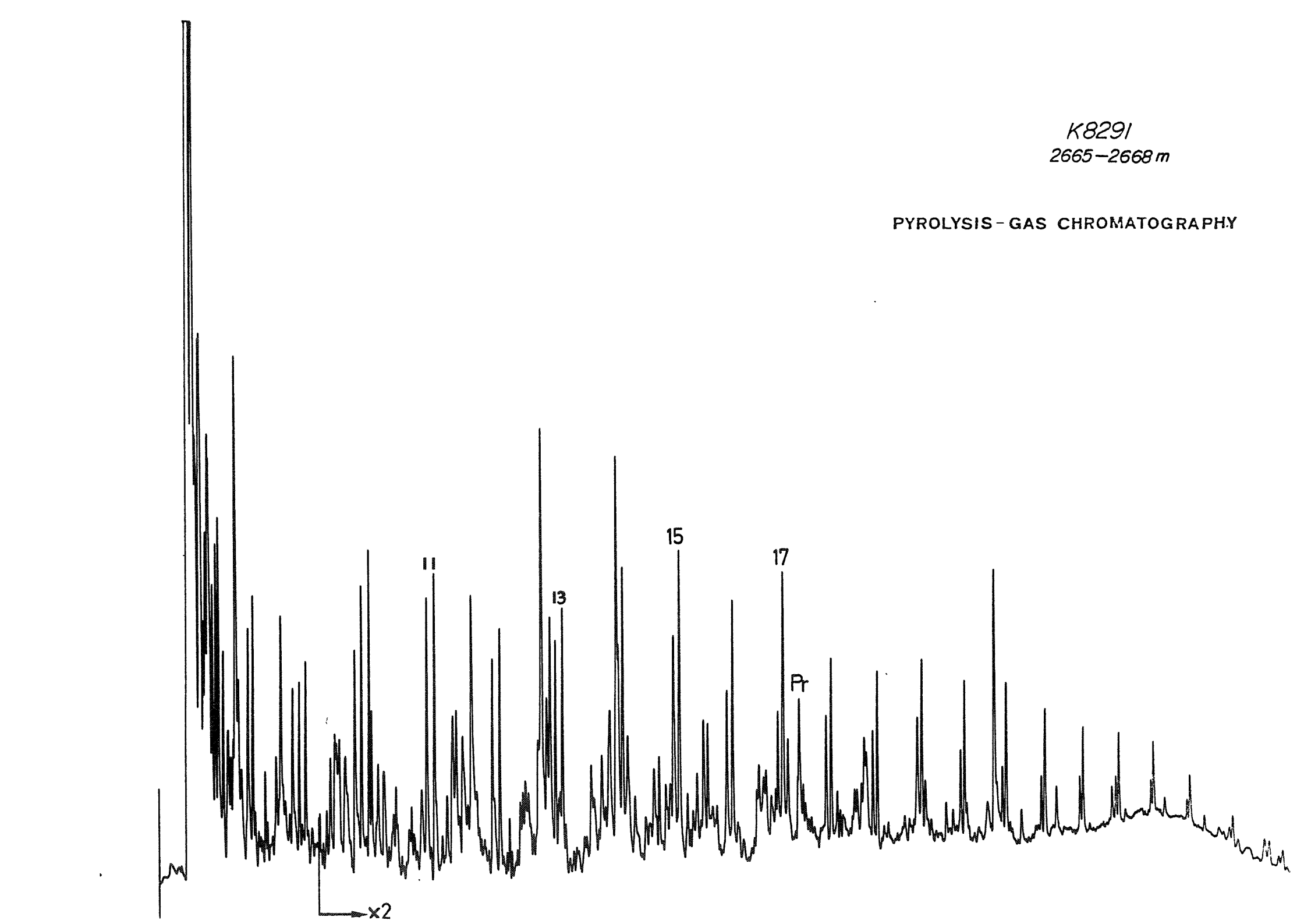

K8251
2545–2548m
PYROLYSIS - GAS CHROMATOGRAPHY
11
13
15
17
Pr
x2

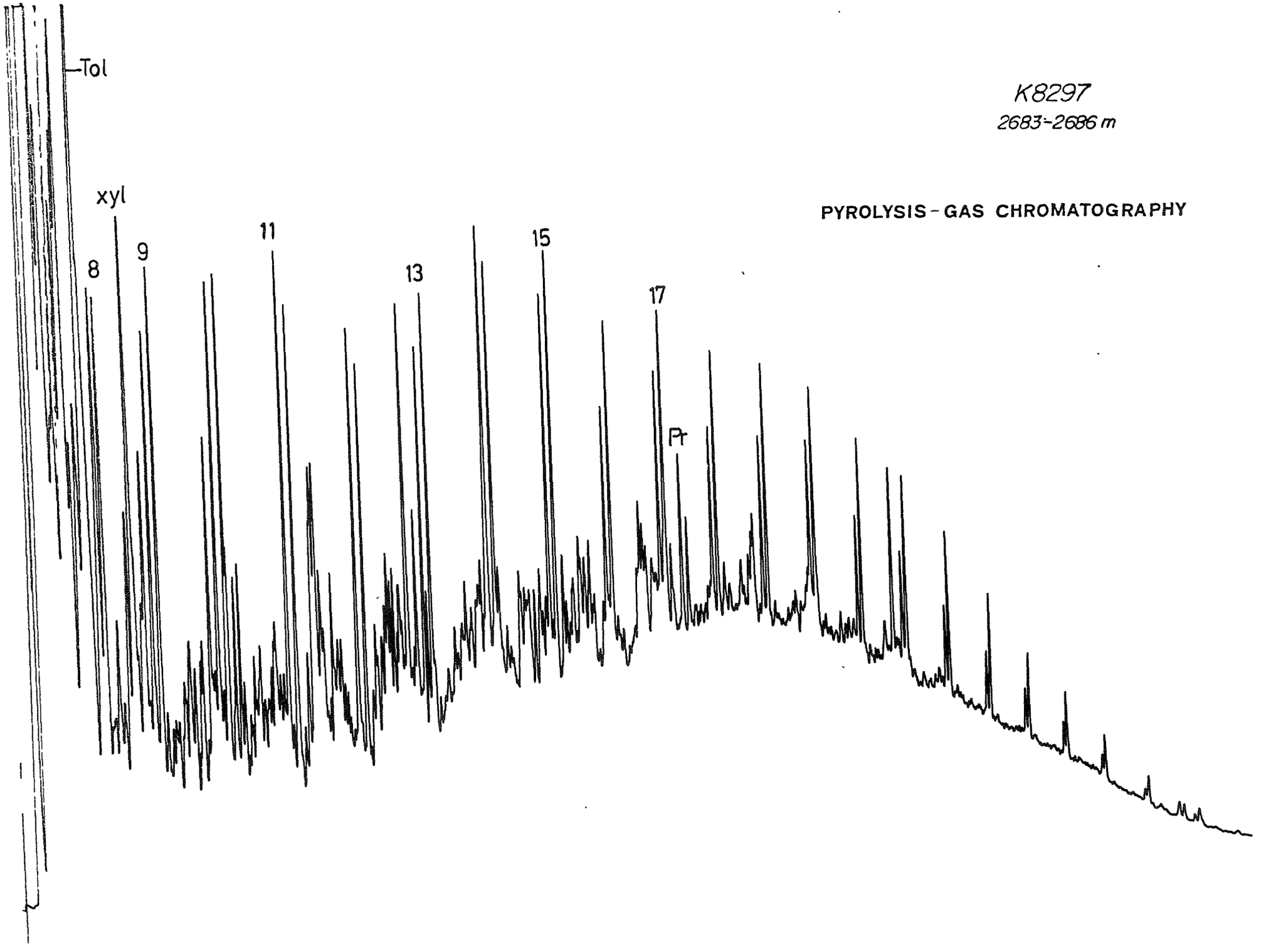
K8257

2563–2566m

PYROLYSIS-GAS CHROMATOGRAPHY

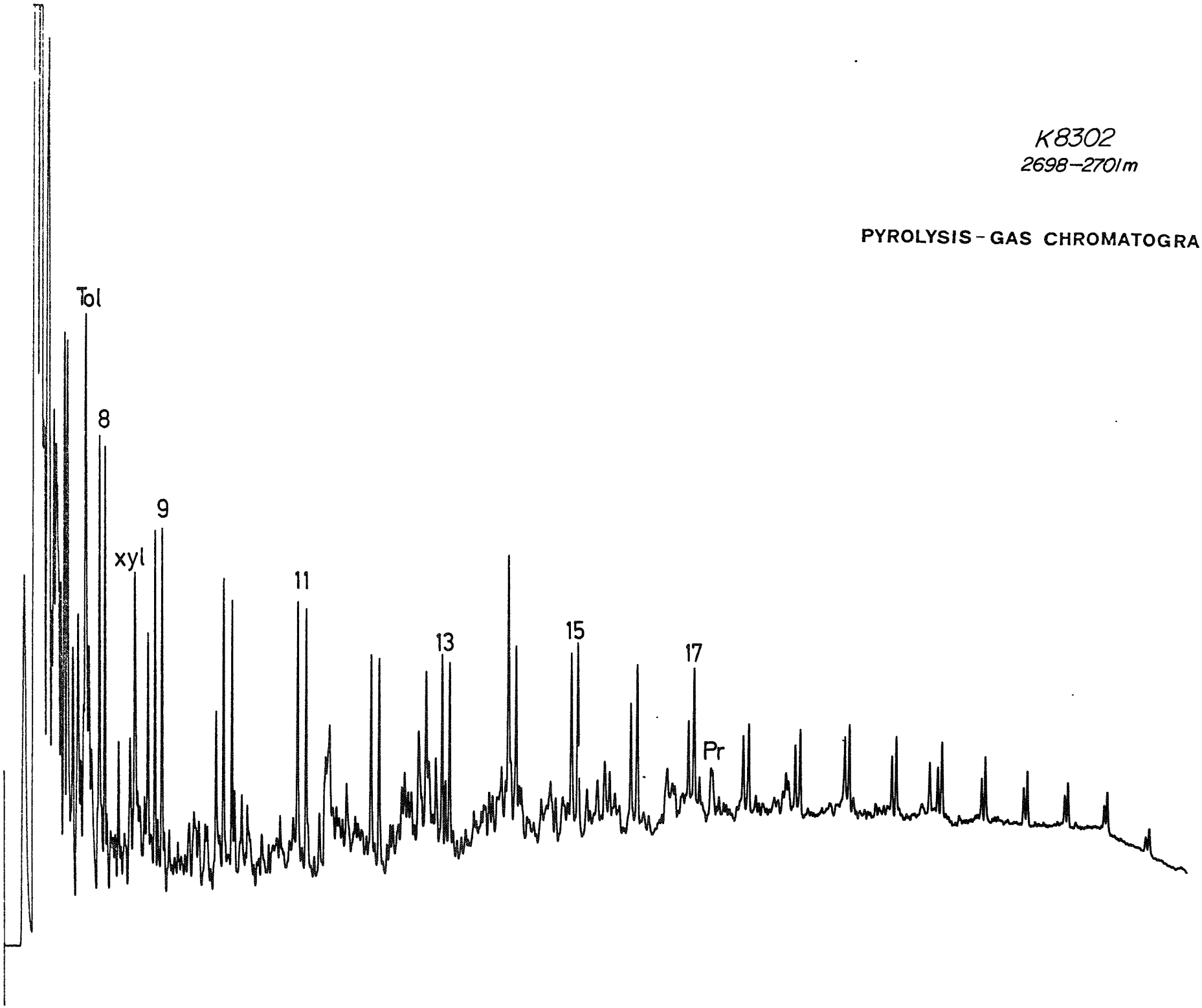


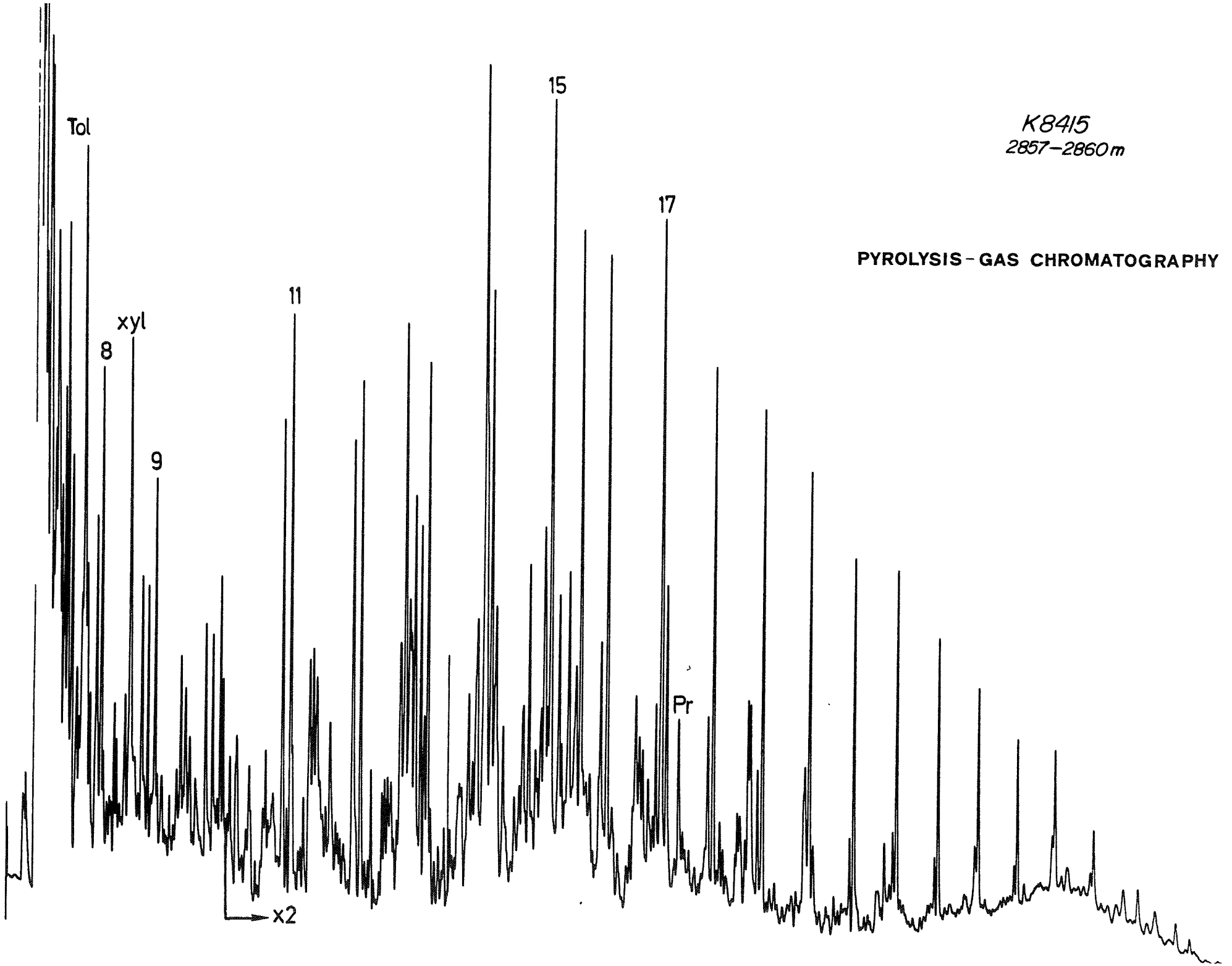

K8291
2665–2668 m
PYROLYSIS - GAS CHROMATOGRAPHY
11
13
15
17
Pr
x2


Tol
xyl
8
9
11
13
15
17
Pr
K8297
2683-2686 m
PYROLYSIS - GAS CHROMATOGRAPHY

K8302
2698–2701m

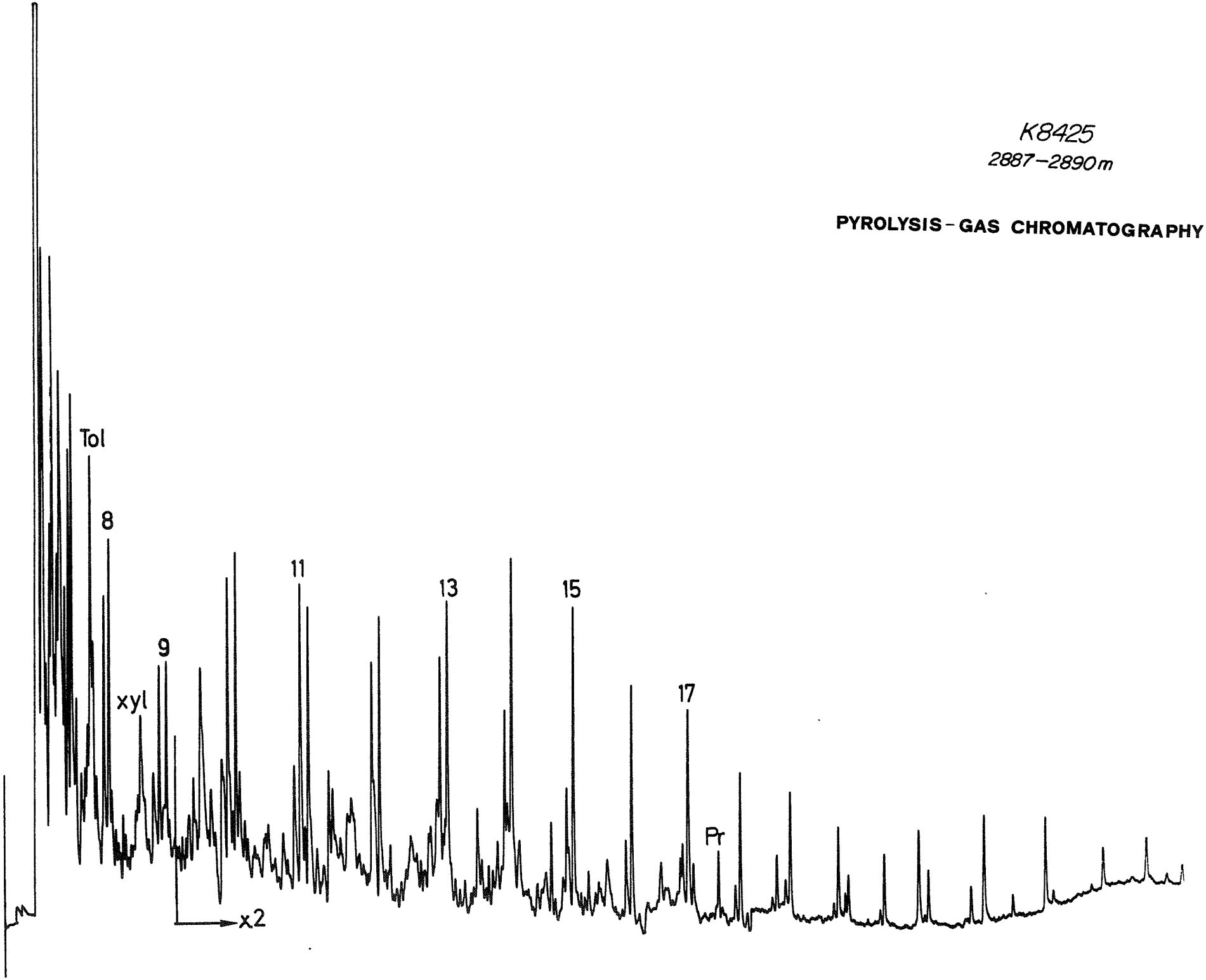
PYROLYSIS - GAS CHROMATOGRAPHY




Tol
xyl
8
9
11
15
17
Pr
x2
K8415
2857–2860m
PYROLYSIS - GAS CHROMATOGRAPHY

K8425
2887–2890m

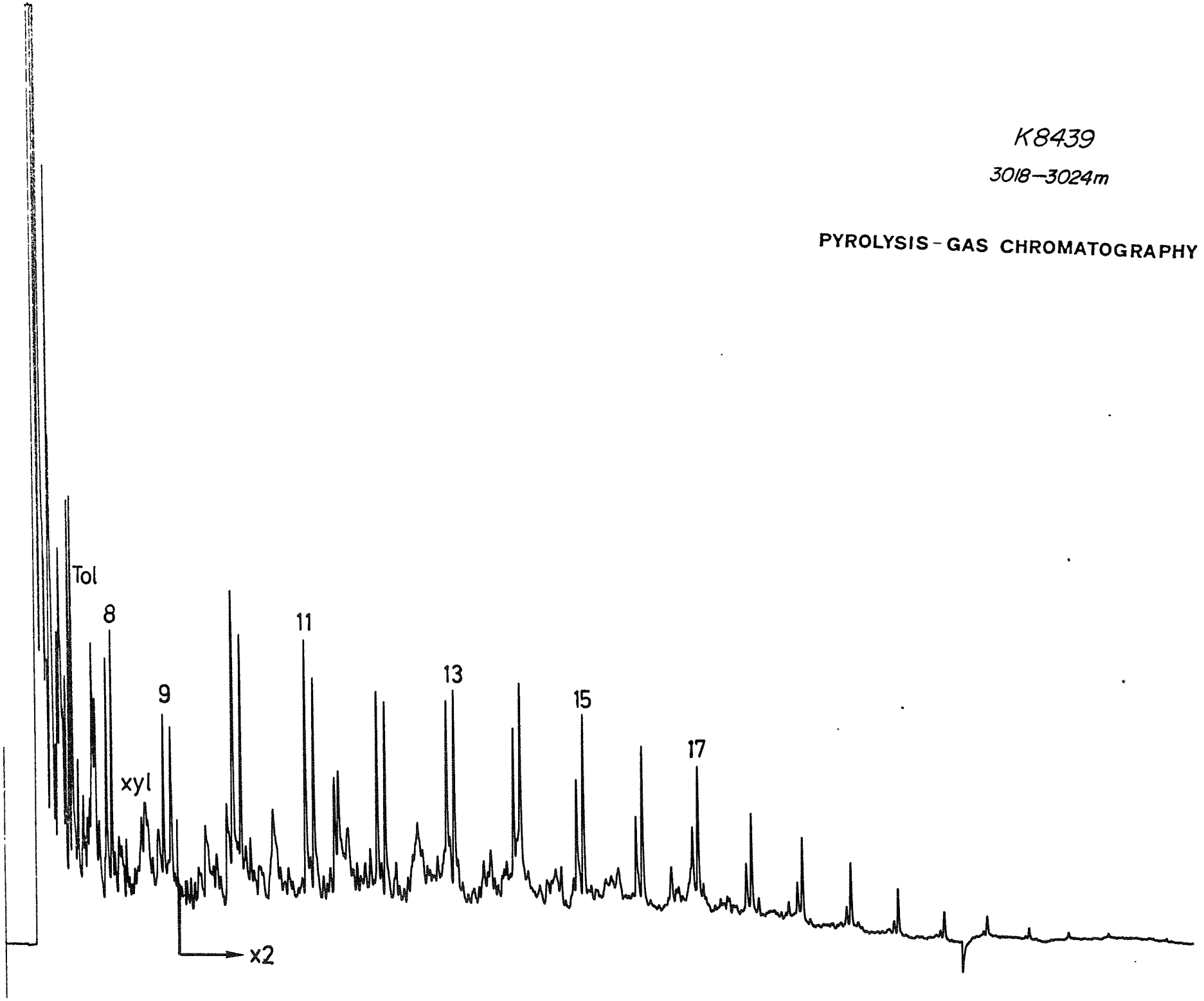
PYROLYSIS – GAS CHROMATOGRAPHY



K8439

3018–3024m

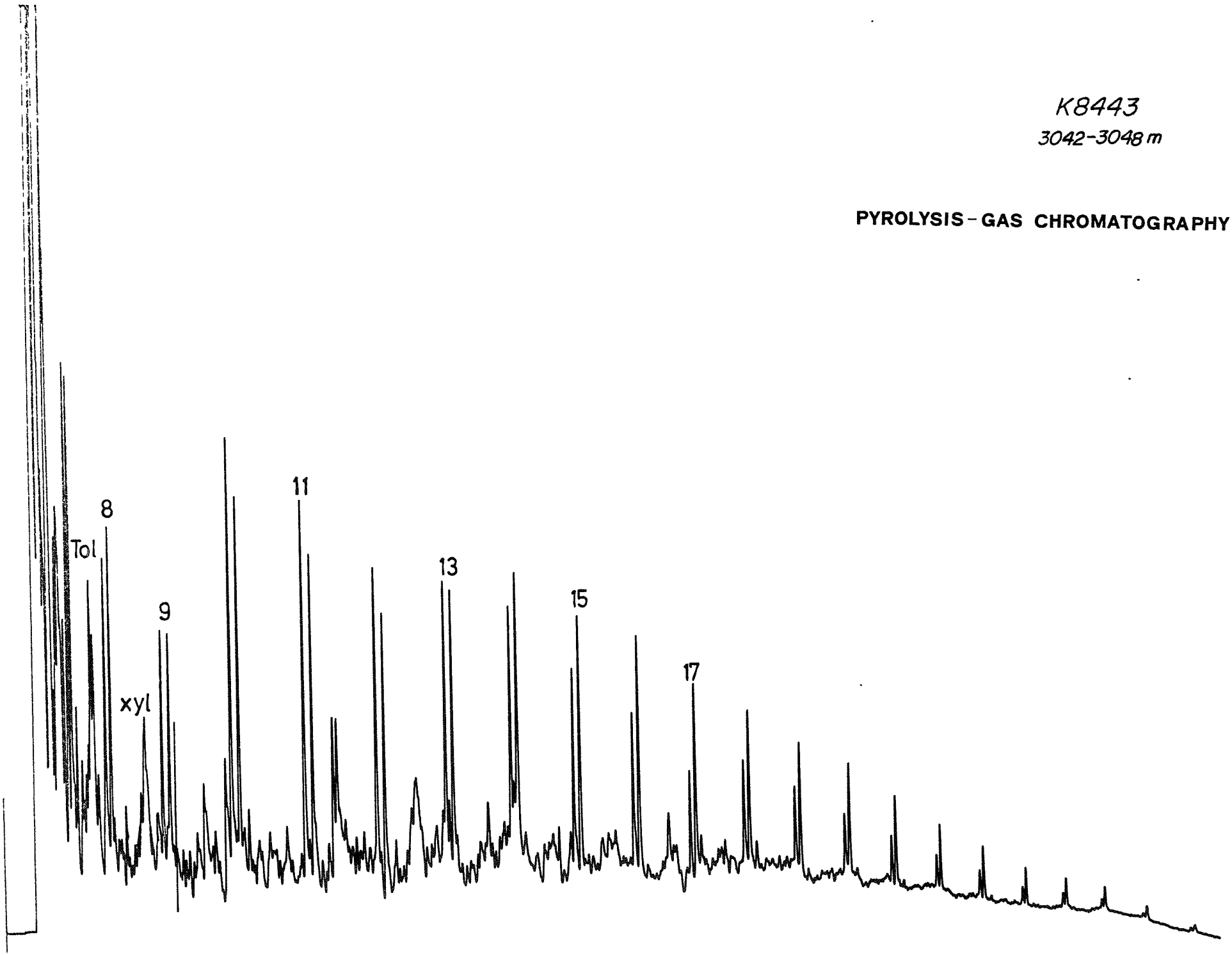
PYROLYSIS - GAS CHROMATOGRAPHY



K8443

3042-3048 m

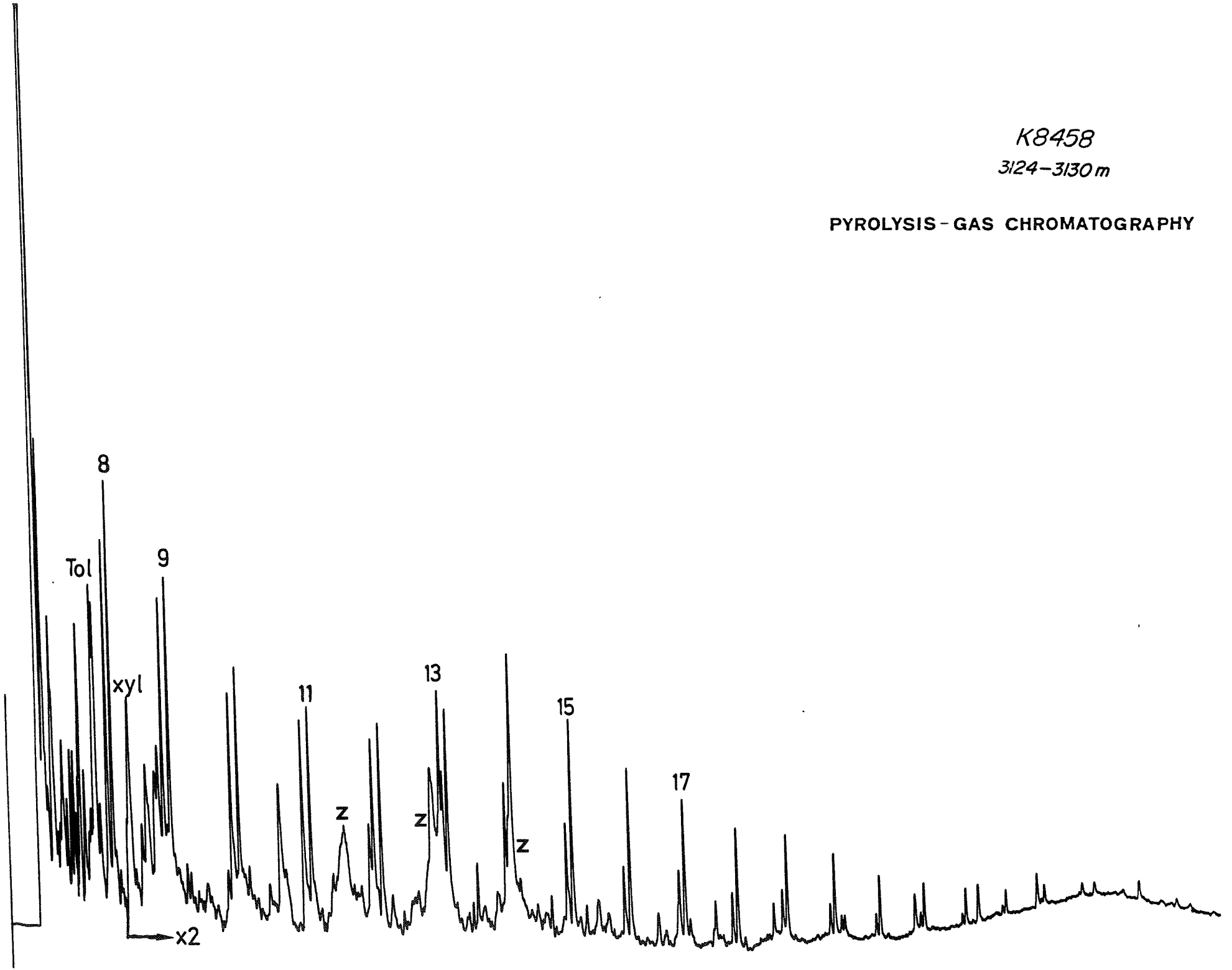
PYROLYSIS - GAS CHROMATOGRAPHY

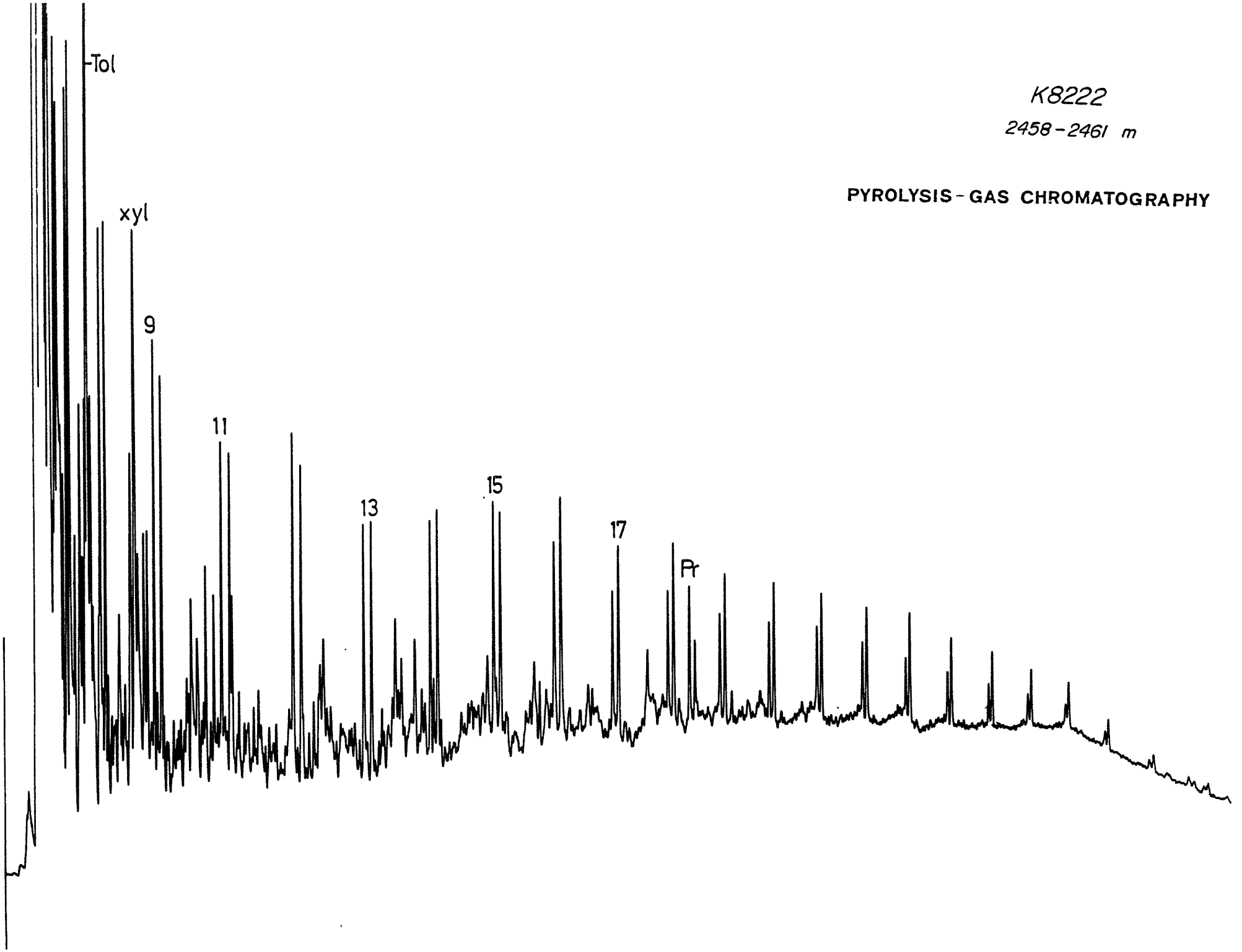


K8458

3124–3130 m

PYROLYSIS - GAS CHROMATOGRAPHY





K8222

2458 - 2461 m

PYROLYSIS - GAS CHROMATOGRAPHY

IKU

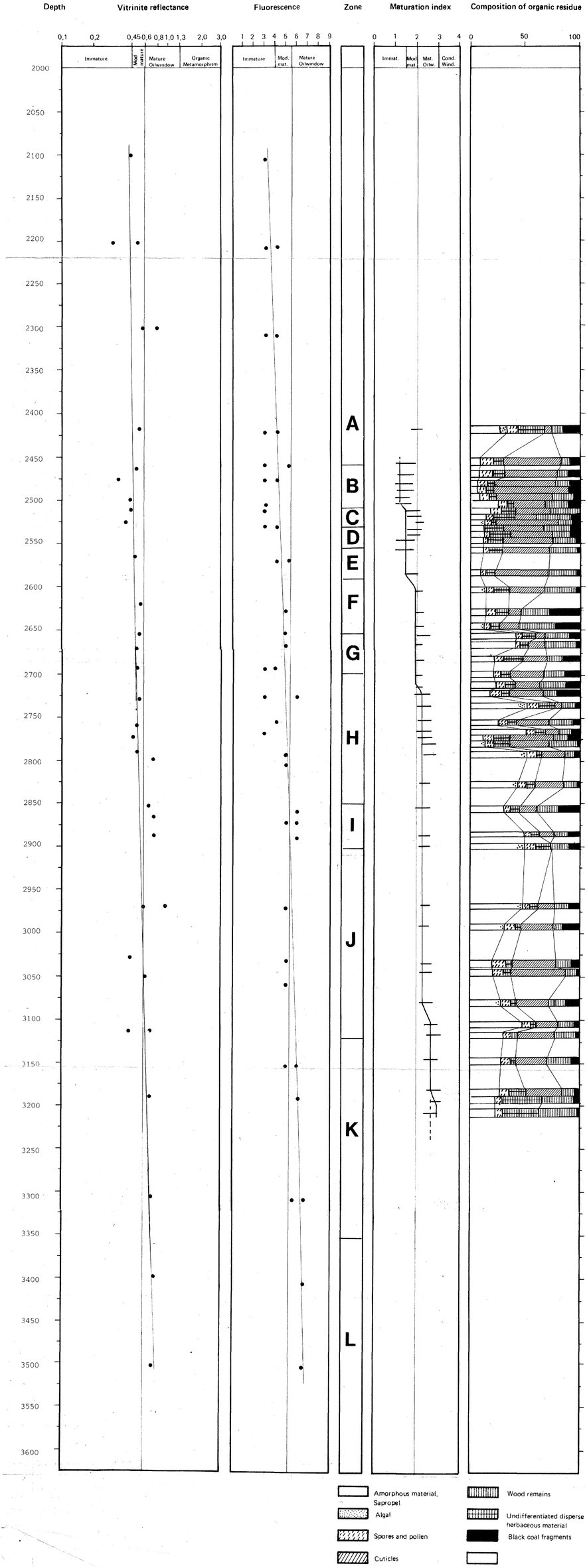
Organic Geochemistry Department

MATURATION

Well no: 30/6-5
Company: STATOIL

VISUAL KEROGEN

COLORATION AND COMPOSITION OF ORGANIC RESIDUE



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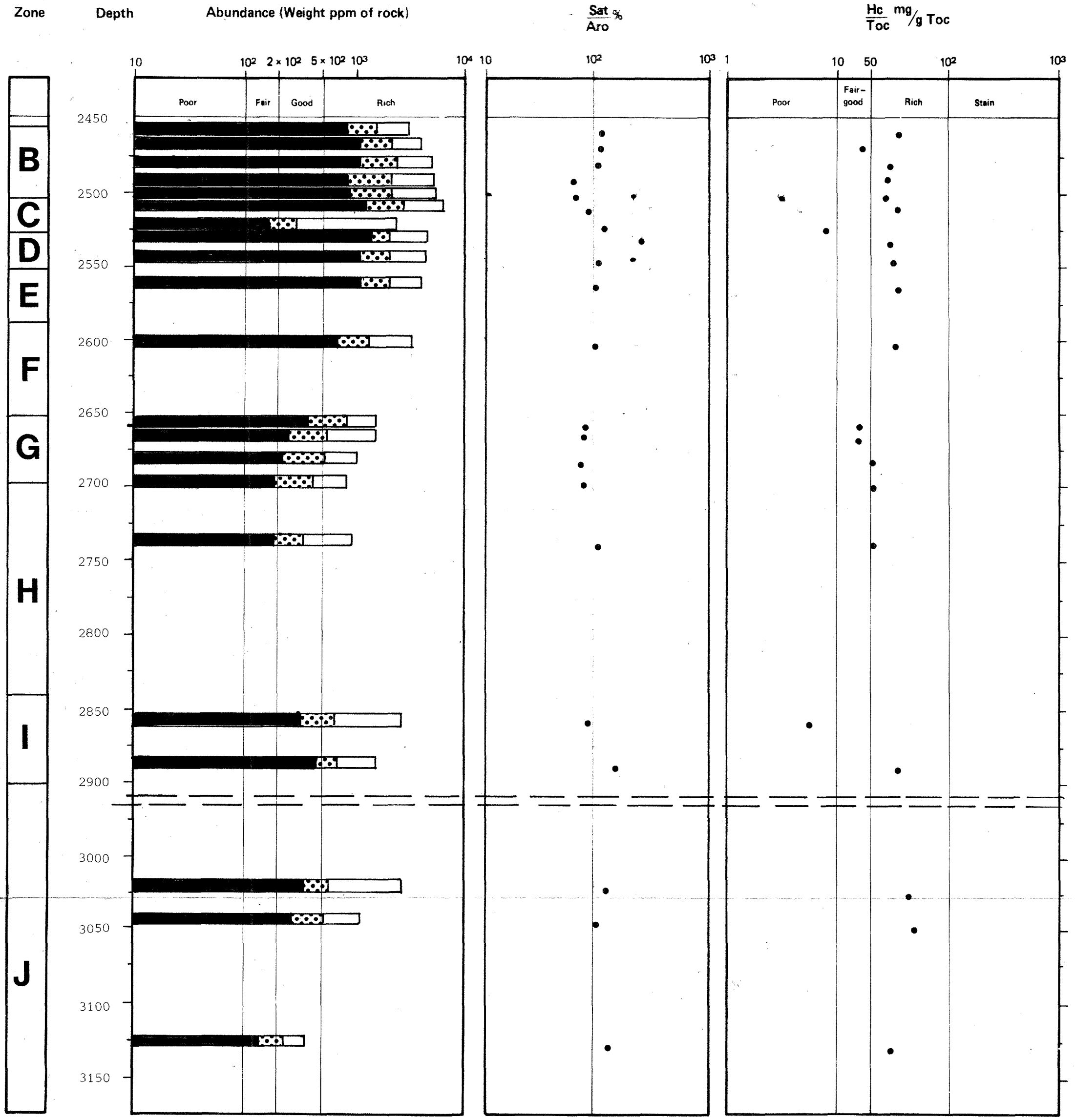
$C_{15}{}^{+}$HYDROCARBONS
Presentation of Analytical Data

Well no: 30/6-5
Company: STATOIL



Sat: Saturated Hydrocarbons
Aro: Aromatic Hydrocarbons
Asp: Asphaltenes

TOC: Total Organic Carbon
HC: Hydrocarbons
NSO: Nitrogen, Sulphur and Oxygen containing compounds

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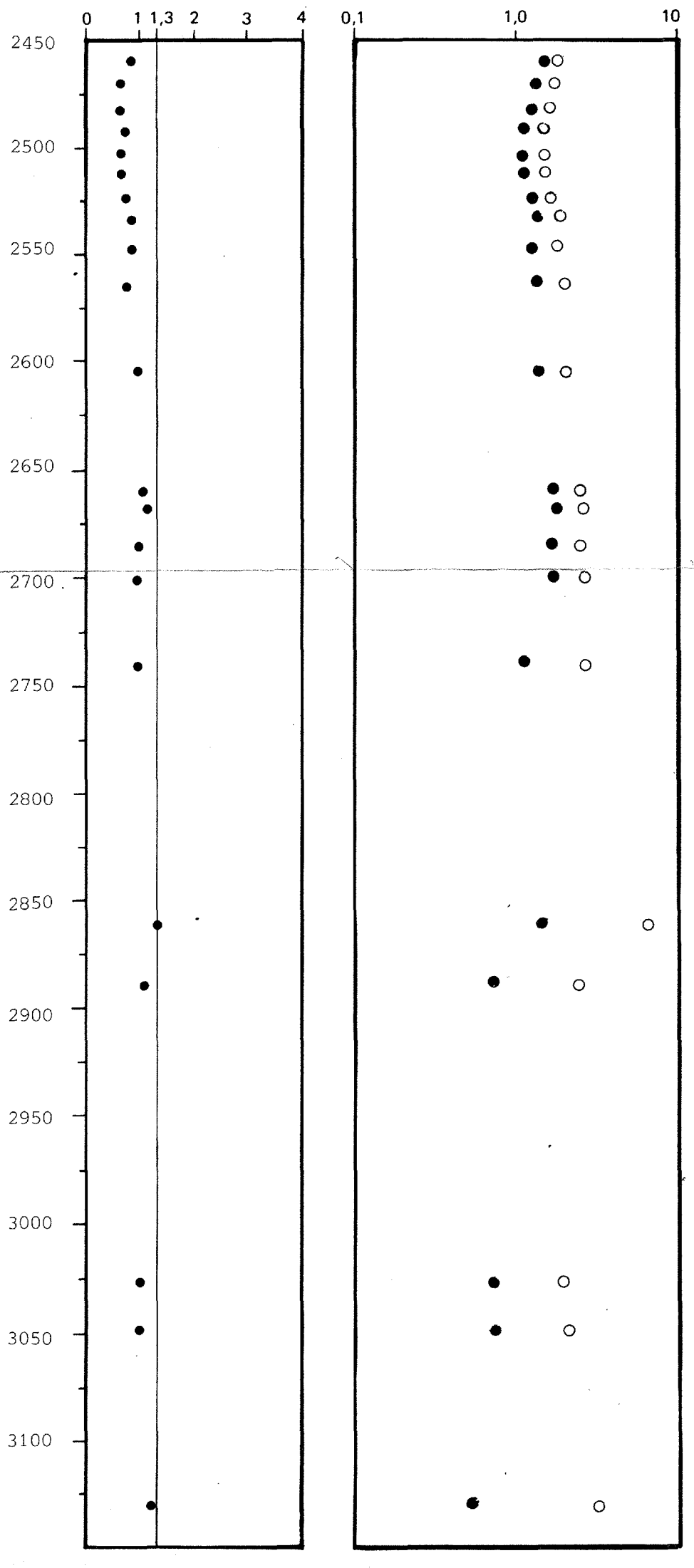
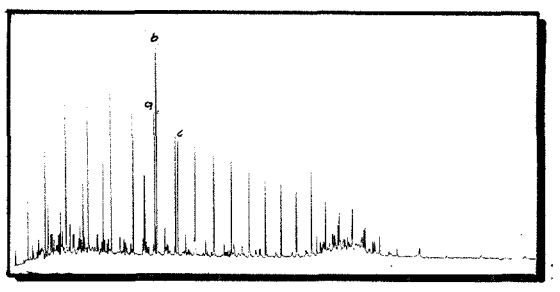
C_{15}^{+} SATURATED HYDROCARBONS
Presentation of Analytical Data

Well no: 30/6-5

Company: STATOIL

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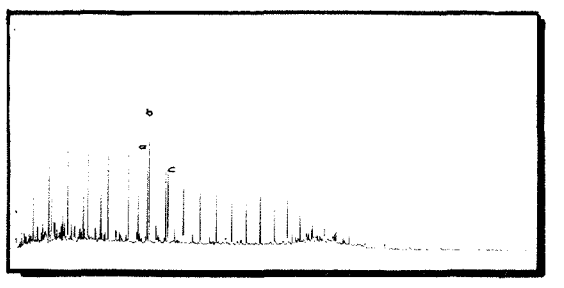
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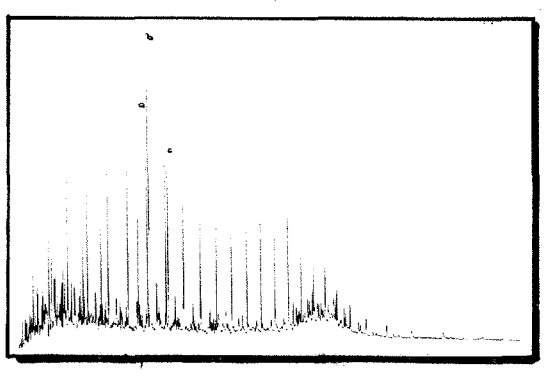
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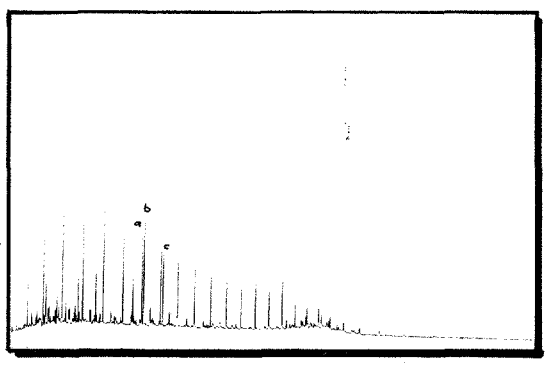
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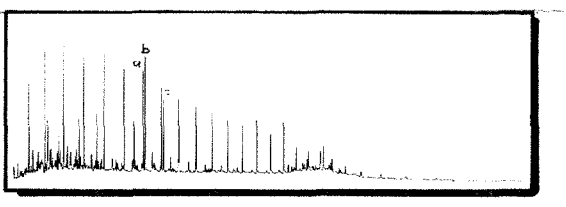
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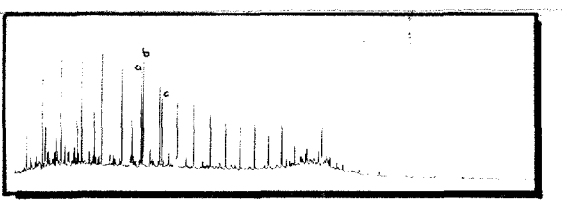
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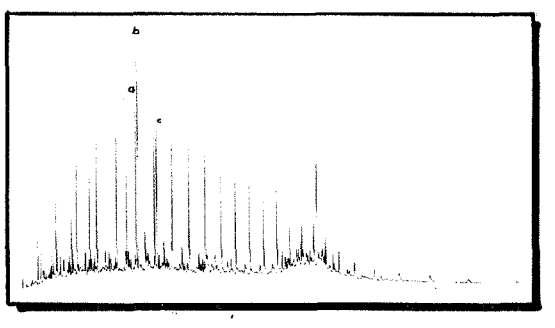
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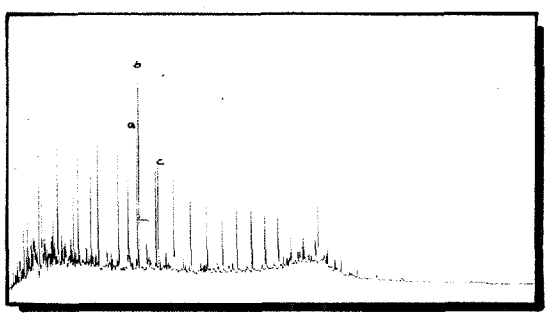
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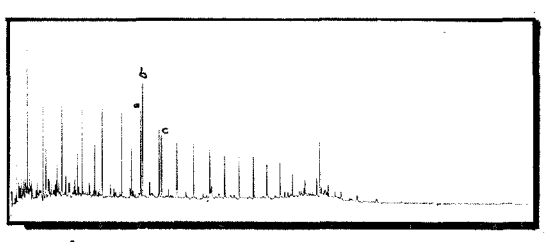
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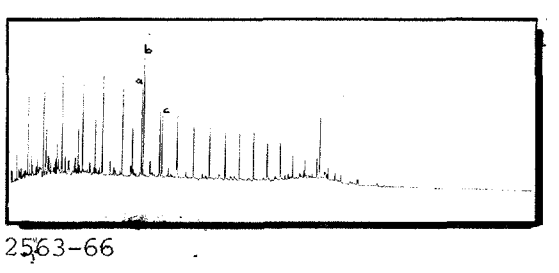
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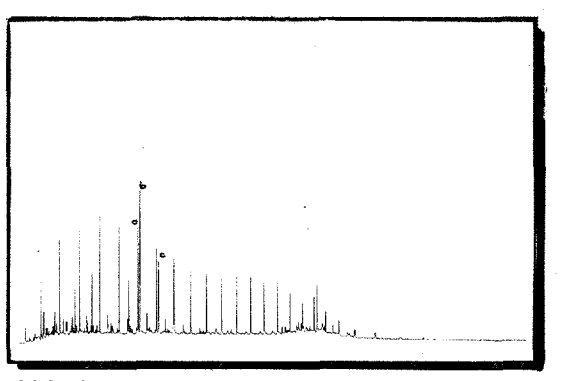
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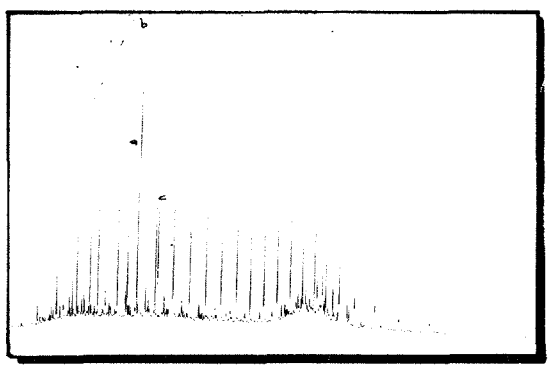
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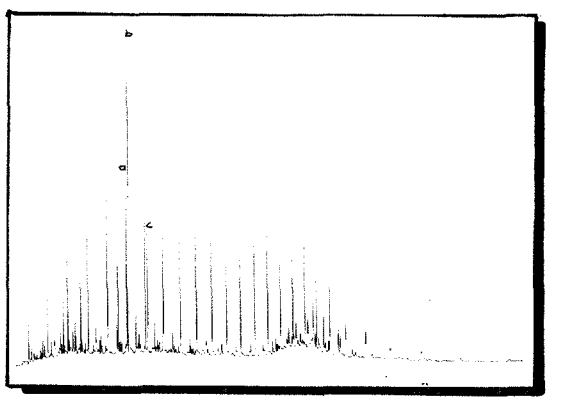
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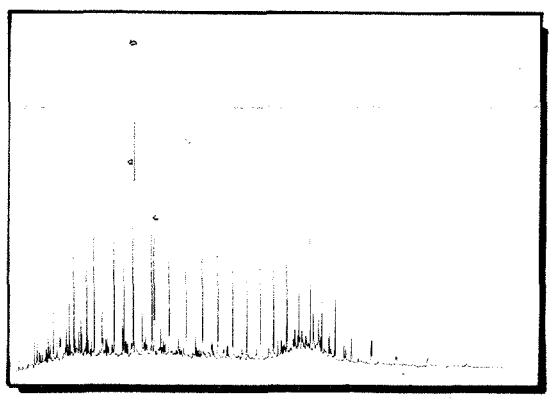
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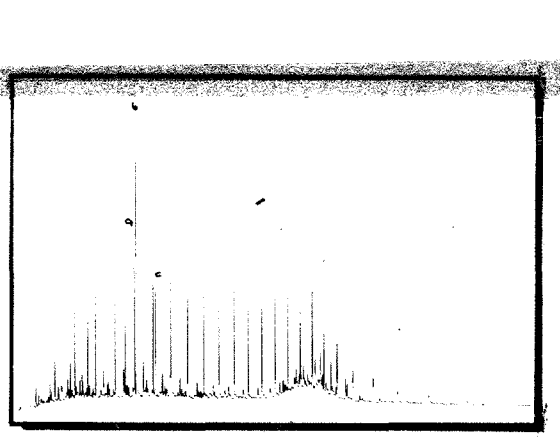
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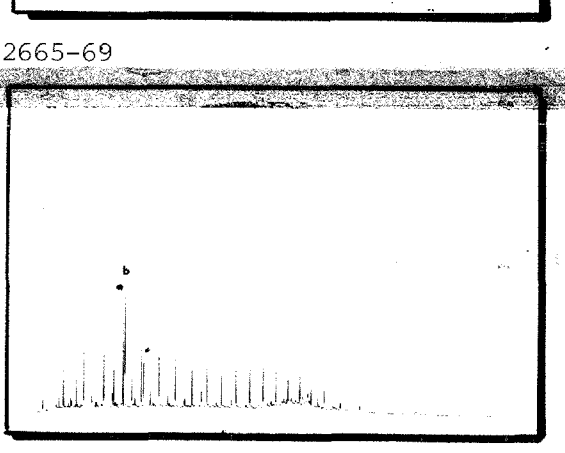
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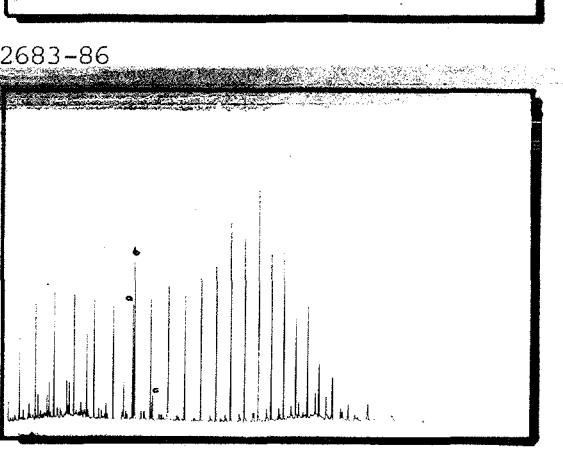
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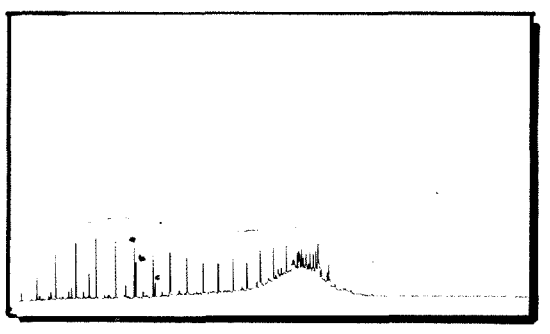
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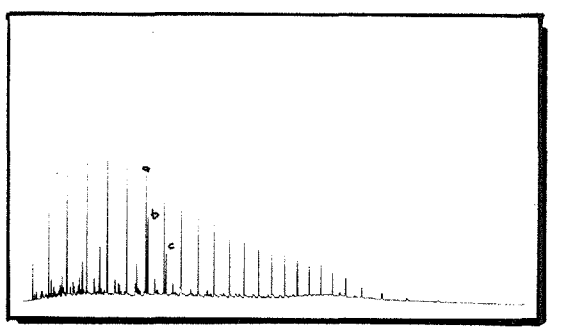
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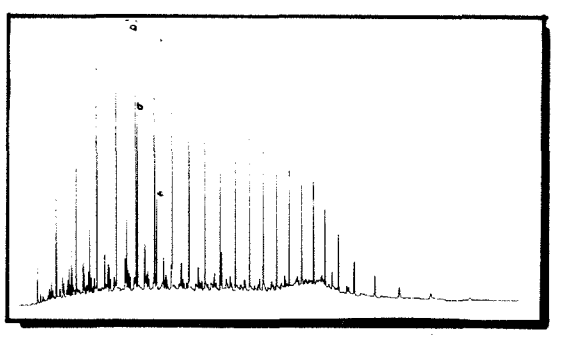
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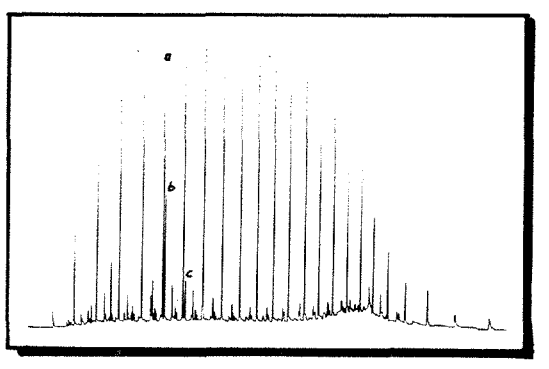
3124-30

A = nC_{17}
B = Pristane
C = Phytane

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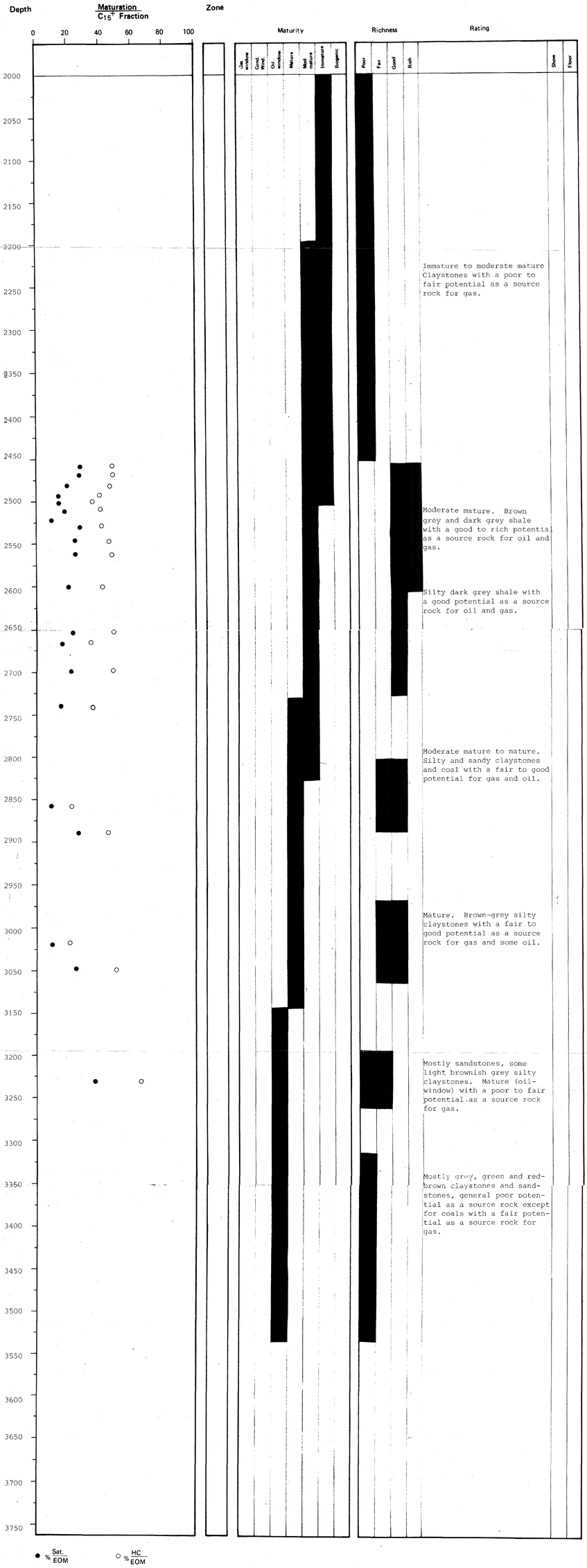
INTERPRETATION DIAGRAM

Well no: 30/6-5

Company: STATOIL

SUMMARY OF SOURCE POTENTIAL



● % Sat./EOM ○ % HC/EOM

Sat: Saturated Hydrocarbons
HC: Hydrocarbons
EMO: Exstactable Organic Matter

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$C_1 - C_7$ HYDROCARBONS
Presentation of Analytical Data

Well no: 30/6-5
Company: STATOIL

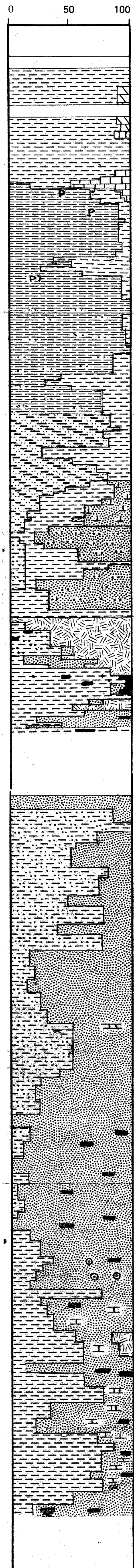
$C_1 - C_4$ HYDROCARBONS

$C_5 - C_7$ HYDROCARBONS

Lithologial % log. | Zone | Depth | Abundance (μ l gas/kg rock) | % Wetness | iC_4 nC_4 | Abundance (μ l gas/kg rock)

0 50 100 | | | 10 10^2 10^3 3 x 10^3 10^4 10^5 10^6 | 0 50 100 | 0 1 2 | 10 10^2 10^3 3 x 10^3 10^4 10^5

Poor | Fair | Good | | Poor | Fair | Good



2350
2400
2450
2500
2550
2600
2650
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2750
2800
2850
2900
2950
3000
3050
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3200
3250
3300
3350
3400
3450
3500
3550
3600

Claystone
Shale
Siltstone
Sandstone
Limestone
Siderite
Calcareous Siderite
Oolites
Coal
Thin coal-layers
Cement
P Pyrite
Carbonaceous claystone

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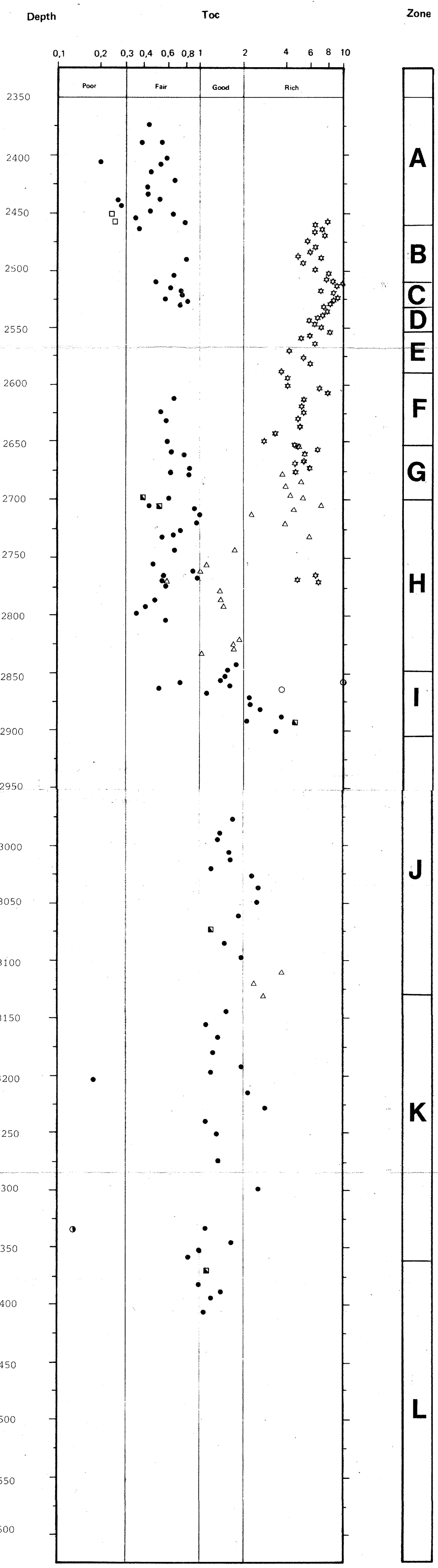
TOTAL ORGANIC CARBON (TOC)

Presentation of Analytical Data

Well no: 3016-5

Company: STATOIL



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ROCK-EVAL PYROLYSIS

Well no.: 30/6-5

Company: STATOIL