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GEOCHEMICAL SERVICE REPORT

Prepared for

STATOIL

GEOCHEMICAL EVALUATION OF STATOIL'S 7120/7-2

TROMS WELL

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COMPANY PROPRIETARY

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GEOCHEMICAL EVALUATION OF STATOIL'S 7120/7-2

TROMS WELL

SUMMARY

Although the Cretaceous exhibits a trend of increasing organic richness with depth, the section down to the base of the Cretaceous consists of immature, poor source rocks with a primary potential for gas.

The silty shales and mudstones which characterise the Jurassic down to 2170± metres are potentially very good source rocks for gas and condensate above 2120± metres and rich sources for light oil and gas below this depth. Minor hydrocarbon generation has occurred on-structure but their off-structure lateral equivalents are apparently mature as there are good shows of condensate within this interval and this condensate was apparently derived from relatively (not highly) mature source rocks. Weak shows of wet gas or condensate extend up to at least 1690± metres in the Cretaceous.

Below 2170± metres the interbedded shales are generally only poor source rocks (fair at 2255-2345± metres) but the minor coaly shale at 2510-2523± metres is a potentially rich source for oil and gas. The sandstones above 2285± metres are believed to contain good shows of a residual(?), young paraffinic crude oil.

It is believed that the condensate and the oils were derived from different source intervals.

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REGISTRY

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INTRODUCTION

This report presents a geochemical evaluation of the section penetrated in Statoil's 7120/7-2 well.

The objectives of the study were to:-

- a) investigate the hydrocarbon source potential of the section.
- b) characterise and test the correlation between the fluid produced from 2153.8 metres and the hydrocarbons in the sandstone cores from 2176-2230 metres and elsewhere in the section.

This project was authorised and supervised by Dr. H. Irwin, Statoil, Stavanger.

A. ANALYTICAL

A total of one hundred and forty five (145) canned samples, each composited over fifteen (15) metres, were received from 330-2523 metres in 7120/7-2. Subsequently, seventeen (17) sidewall cores, five conventional core samples and one fluid sample (2153.8 metres) were received. These samples were assigned the Geochem job number 791.

During the preparation steps, contamination was observed at (2135)2180-2255 metres.

Prior to the reception of the core material, Geochem were instructed to perform ninety light hydrocarbon and organic carbon analyses and seventy five Rockeval pyrolysis analyses. These samples were biased towards the section below 2000 metres where every sample was to be analysed. In total ninety six light hydrocarbon analyses, one hundred and eighty one organic carbon analyses, seventy two Rockeval pyrolysis analyses, thirty six kerogen analyses, twenty eight vitrinite reflectance determinations, twenty two C₁₅₊ extractions with chromatography, twenty two high resolution paraffin-naphthene analyses, twenty pyrolysis-GC analyses were run. For correlation purposes eighteen carbon isotope analyses, six mass fragmentogram analyses, one high resolution aromatic chromatogram, one chromatographic fractionation, one high resolution

paraffin-naphthene analysis, one detailed gasoline range analysis and one C₄-C₂₀ analysis were performed.

The data are presented in tables 1 through 10 and graphically in figures 1 through 12. A brief description of the techniques employed in this study is included in the back of the report.

B. GENERAL INFORMATION

Ten (10) copies of this report have been forwarded to Dr. H. Irwin at Statoil in Stavanger, together with the kerogen slides and the vitrinite blocks.

The remaining sample material will be returned to Statoil.

All of the results related to this study are proprietary to Statoil.

RESULTS AND INTERPRETATION

In the following discussion of the section between 330 metres and 2523± metres in 7120/7-2, each of the parameters relative to the geochemical evaluation of the sediments will be considered in turn and then combined to form the "Conclusions".

No well logs were available for this study but the prognosed tops of the Tertiary, Cretaceous and Jurassic were provided by Statoil.

A. ZONATION

The zonation employed in this report is a synthesis of the formation tops with the light hydrocarbon (C_1 - C_7) data. Six (6) zones are recognised.

Zone A 330 metres to 505± metres is Quaternary in age and is composed of light olive grey silty mudstones with interbeds of siltstone and of sand.

This zone is characterised by poor (315-1049 ppm) abundances of, generally, very dry gas. The C_5 - C_7 hydrocarbons are sparse at 7-76 ppm and are most abundant at the top of the zone where the gases are also somewhat wetter.

Zone B extends from 505± metres down to the top of the Cretaceous at 945± metres and is composed of Tertiary mudstones.

The C_1 - C_4 gases are more abundant than in Zone A and generally range from 2683 ppm up to 9323 ppm but reach 10728-13368 ppm at 700-745± metres. The gases are dry but do suggest a trend of increasing wetness with depth. C_5 - C_7 abundances are improved relative to Zone A but still tend to be relatively low at 83-381 (676 ppm). The sample from 850-865 metres is the "wettest" (24% C_{2+}) and also has the highest content of the C_5 - C_7 fraction.

Zone C¹ 945± metres to 1650± metres incorporates the top two-thirds of the Cretaceous and consists of mudstones and shaly mudstones.

The gradual improvement in gas wetness observed in Zone B

continues erratically throughout this zone and as a result, the section below approximately 1330± metres is marginally wet and a value of approximately 40% gas wetness applies at the base of the zone. There are however, no trends in either the C₁-C₄ or C₅-C₇ abundances. Thus the gases generally lie within the limits of (34)1620-7055 ppm with some intervals jumping to 10527-13465 ppm whilst the C₅-C₇ fraction normally lies within the limits of 72-418 ppm but tends to be enhanced above 1200± metres, peaking at 1000-1015 metres (1594 ppm). In a gross sense, hydrocarbon abundances tend to decrease with depth.

Zone C² 1650± metres down to 2010± metres, corresponds to the rest of the Cretaceous section and comprises mudstones and shales which are grossly medium dark grey in colour.

The sidewall core mudstones from 1720 metres and 1945 metres appear to be oil-stained.

Zone C² is of similar richness to Zone C¹ (i.e. (835)2727-7821 ppm C₁-C₄, 191-541 ppm C₅-C₇) but the gases are now wet, generally containing 51-65% of the C₂-C₄ fraction. Isobutane to normal butane ratios of 0.6-0.7 drop to 0.5 below 1970± metres.

Zone D 2010± metres down to 2170± metres is Jurassic in age and consists of dark brownish grey silty mudstones and silty shales.

The sidewall core shale from 2075 metres appeared to be oil-stained.

In contrast to the overlying sediments, this interval is rich. The C₁-C₄ gaseous hydrocarbons range from (13050)21852 ppm up to 54603 ppm, peaking at 2090-2150± metres. Their butane ratios are low at 0.2-0.3 and reflect the gas wetness trend. These gases are wet (approximately 54% C₂₊) at the top and bottom of the zone and show a progressive change to very wet values of 80-83% C₂₊ at 2060-2090± metres. C₅-C₇ abundances of approximately 3000 ppm at the top of Zone D increase with depth to reach 9790 ppm at 2075-2090 metres and then drop back to less than 3000 ppm below 2120± metres and to less than 1000 ppm at

the base of the interval. Hence the C_5-C_7 data correlate with the gas wetness and butane ratio results.

Zone E extends from 2170± metres down to TD. This interval is apparently a sequence of sandstones with interbedded medium dark grey shales. There are minor proportions of a greyish black coaly shale in the basal sample.

The sandstone cores from 2176 metres to 2230 metres exhibit a gold fluorescence which is strongest below 2220± metres. In contrast the sands in the ditch cuttings samples above 2300± metres yielded a milky cut and, at 2270-2300± metres, a pale creamy fluorescence.

Zone E is leaner and drier than Zone D. The C_1-C_4 gaseous hydrocarbons normally lie within the limits of (2126)3447-9312 ppm but some intervals (2285-2315± metres, 2375-2390± metres, 2465-2480± metres) are significantly richer at 15265-32297 ppm, jumping to 47297-106695 ppm below 2495± metres. Isobutane to normal butane ratios of 0.4-0.6 are higher than in Zone D. The gases pass from wet (49-68% C_{2+}) above 2285± metres to marginally wet (i.e. (29)36-51(63)% C_{2+}) below this depth. The C_5-C_7 hydrocarbon fraction generally ranges from 175 ppm to 673 ppm but is enhanced (954-5468 ppm) at 2240-2300± metres and above 2195± metres (2758 ppm). The richest samples (i.e. above 2195± metres, 2255-2285± metres) are also some of the wettest, but do not correlate with the higher gas abundances.

B. AMOUNT AND TYPE OF ORGANIC MATTER

The amount of organic matter within a sediment is measured by its organic carbon content. Average shales contain approximately one percent organic carbon, and this is the standard to which these samples will be compared.

Organic matter type influences not only source richness but also the character of the hydrocarbon product (oil, gas) and the response of the organic matter to thermal maturation. Richness and oiliness decrease in the order: amorphous-algal-herbaceous-woody. Wood has a primary (but not exclusive) potential for

gas whilst inertinitic (oxidised, mineral charcoal) material has only a limited hydrocarbon potential.

The dominant silty mudstones of Zone A contain 0.31-0.47(0.83)% organic carbon whilst the minor dark grey siltstone interbeds above 375± metres have better values of 0.72-1.36%.

In Zone B the mudstones are somewhat richer although still of below-average richness. Within the interval 530-820± metres the mudstones contain 0.80-1.00(1.16)% of organic matter which is dominantly woody in type but with significant proportions of amorphous, herbaceous and inertinitic debris. The amorphous kerogen is disseminated and not oil-prone. Above and below this interval the mudstones are leaner at 0.42-0.69(1.09)% organic carbon and their organic matter is grossly similar in type although apparently with higher proportions of amorphous material. However this amorphous material is atypical and it is probably more realistic to ignore this fraction.

The Zone C¹ mudstones and shales are lean (0.33-0.34%) above 1015± metres but then increase to (0.59)0.70-0.95(1.29)% organic carbon down to 1140± metres and to the range of (0.71)0.87-1.37% (commonly exceeding 1.0%) below this depth. The mudstones and shales have comparable organic carbon contents and their organic matter is similar in character, being dominantly woody with significant proportions of inertinitic and herbaceous debris.

In Zone C² the mudstones and shales contain (1.46)1.93-2.79(3.19)% and 1.27-1.94(2.39)% organic carbon respectively and hence are richer than in Zone C¹ and also differ in the fact that the mudstones have better values than the shales. This contrast is not however reflected in the nature of the organic matter which, in both the mudstones and the shales is dominantly woody in type, but with fairly significant proportions of inertinitic and herbaceous material. In fact, it is very similar to that in Zone C¹. The one exception is the basal shale from 1985-2000± metres in which, although wood is the major component, the amorphous fraction is very significant.

The trend of increasing richness observed between Zones C¹ and C² culminates very dramatically in Zone D. The shales and mudstones above 2045± metres may be caved from Zone C² and are leaner (3.03% and 3.14% respectively) than the underlying dark brownish grey silty mudstones and shales which are rich at (2.07)3.70-10.65% organic carbon, exceeding 8.0% between 2120± metres and

2145± metres. Not only are these sediments organically rich but their organic matter is of much better quality than that in the Cretaceous. Thus amorphous kerogen is now dominant and is accompanied by significant proportions of partially sapropelised algal debris whilst wood is relatively minor except in the richest silty mudstone (2140 metres) which is characterised by a mixed amorphous-woody-assemblage.

The medium dark grey shales within the Jurassic of Zone E have good values of 1.56-2.55(3.03)%, although they fail to exceed 2.0% organic carbon below 2345± metres. Wood is the major constituent of the organic matter in all of these shales (although it is less dominant than in the Tertiary and Cretaceous) but whereas the amorphous, inertinitic and herbaceous fractions are all significant in the richer shales, amorphous kerogen is relatively sparse in the leaner shales.

The minor coaly shale below 2510± metres is very rich at 32.2% organic carbon but its organic matter is very similar to that of the overlying medium dark grey shales, although with less inertinite and a higher proportion of wood.

Within the Cretaceous the organic matter is almost entirely reworked whilst reworking is also dominant in the Tertiary and in Zone E.

C. LEVEL OF THERMAL MATURATION

Thermal maturity has been evaluated with the spore colouration and vitrinite reflectance techniques.

The colouration method indicates that a thermal index of 2- is achieved at approximately 1950± metres but that an index of 2 is not reached within the analysed section. Organic matter with an index of less than 2- is immature. At a level of 2- minor hydrocarbon generation (marginal maturity) is initiated from amorphous, herbaceous±algal organic matter (but not from wood) whilst the top of the mature zone of significant hydrocarbon generation is picked at a thermal index of 2.

Hence in this section the sediments above 1950± metres are immature but minor hydrocarbon generation can be anticipated from the rich Jurassic shales of Zone D. In Zone E the dominant woody (and inertinitic) material is effectively immature and so only limited hydrocarbon generation has occurred.

It is fortunate that a good spore colour trend was derived for this well as the vitrinite reflectance data are not definitive. This is due to the prevalence of reworking throughout the section as a result of which most of the readings do not indicate the maturity of the host sediments and the vitrinite populations are poorly defined. The samples which appear to be the most reliable are those from above 1000± metres and from 1900-2200± metres. Using these a reflectivity of 0.39% Ro (by projection) applies at the surface whilst the value at total depth is approximately 0.48% Ro. A reflectivity of 0.45% Ro is achieved at 1600± metres. This should be equivalent to a thermal index of 2- and hence the correlation is not good. However, there must be considerable doubt about any interpretation derived from the reflectance data and hence the maturation profile obtained from the spore colouration method will be adopted in this study.

Pyrolysis Tmax data are affected by organic facies and by reworking. It would appear that a value of 430°C is achieved at very approximately 1200± metres whilst 440°C is reached at approximately total depth.

The C₁₅₊ paraffin-naphthene chromatograms provide qualitative support for the spore colouration maturation profile.

D. SOURCE RICHNESS

An assessment of present source richness based upon the light hydrocarbon abundances suggest that Zone A is a poor source whilst Zones B through C² are fair, with good source intervals in Zones B and C¹. In contrast, Zone D is rated as very good to rich. Organic carbon contents give a preliminary assessment of potential source richness. Zone A is rated as poor, Zones B and C¹ may be grossly described as fair but Zone C² is good to very good whilst Zone D is rich. The shale interbeds within Zone E are apparently potentially good to very good but the basal coaly shale is rich.

Upon extraction the mudstones and shales of Zones B through C² yielded 91-232(573) ppm C₁₅₊ hydrocarbons. Non-indigenous hydrocarbons introduced in drilling are evident in the paraffin-naphthene chromatograms and, allowing for this, it is likely that few samples exceed 100 ppm C₁₅₊ hydrocarbons and that Zones B through C² are poor source rocks. The silty mudstones and shales of the Jurassic Zone D are much richer at 1154-1718(2920) ppm C₁₅₊

hydrocarbons. Relatively minor contamination is present but these are, nevertheless, apparently very good to rich source rocks.

The potential richness of the mature equivalents of source rocks is evaluated by the abundance of pyrolysate (S2) material. The minor dark grey siltstones within Zone A (1.75 mg/g) are richer than the silty mudstones and mudstones of Zones A and B (0.41-0.88(1.09) mg/g) but are, nevertheless, rated as poor source rocks. A similar range of (0.11)0.38-1.08(1.37) mg/g pyrolysate applies to Zone C¹ which is also assigned a poor source rating. The shales and mudstones of Zone C² (Cretaceous) are richer at 0.61-1.44 and 1.75-3.04 mg/g respectively but the shales are still poor source rocks although the interbedded mudstones are potentially fair sources. Poor and fair values (1.48-2.62 mg/g) apply to the shales above 2045± metres in the Jurassic of Zone D but the underlying dark brownish grey silty shales are dramatically richer at 10.07-23.00 mg/g pyrolysate, being particularly rich below 2120± metres. The interval above 2120± metres is rated as very good and the underlying sediments as potentially rich source rocks. In Zone E the medium dark grey shales above 2255± metres and below 2345± metres are poor (1.12-2.12 mg/g) but those from 2255-2345± metres are fair with good interbeds, the better shales being those with woody-amorphous rather than woody organic matter. The minor coaly shale from 2510-2523± metres is rich with 79.17 mg/g pyrolysate.

Chromatograms of the pyrolysate fraction determine whether mature source rocks will yield oil, condensate or gas. Oil-prone source rocks are characterised by a well-developed series of normal alkene-alkane doublets which extend out to the heavy ends. If these doublets are restricted to the front ends then a potential for condensate is indicated whilst in gas-prone source rocks, the doublets are absent and the chromatograms consist of a methane peak and the peaks of a suite of aromatic compounds which are an artifact of the technique.

Zones B and C¹ are gas prone. In Zone C² the shales and mudstones above approximately 1850± metres are also gas prone, but below this depth they have a potential for gas and associated condensate. The Jurassic silty mudstones and shales of Zone D have much stronger doublets and a better potential for liquid hydrocarbons, but are not classically oil-prone. Thus above 2100± metres they will yield gas and condensate whilst below 2100± metres they have a mixed potential for light oil and gas. Within Zone E the doublets are much weaker and the liquid hydrocarbon potential of the medium dark grey shales

appears to decrease with depth, changing at approximately 2250± metres from gas with associated condensate to gas. However, the coaly shale from the base of the analysed section is significantly better and tends to resemble Zone D, although with a less marked front-end bias. This shale has a mixed potential for oil and gas.

In summary therefore:

- Zones A (Quaternary) through C¹ (Cretaceous), poor source rocks for gas.
- Zone C² (Cretaceous): shales poor source rocks, mudstones fair. At approximately 1850± metres both facies pass from gas prone to a potential for gas with associated condensate.
- Zone D (Jurassic): poor and fair source rocks above 2045± metres. Underlying silty shales very good and rich source rocks above and below 2120± metres. At approximately the same depth (2100± metres) their potential changes from gas and condensate to light oil and gas.
- Zone E (Jurassic): shales poor source rocks for gas with associated condensate above 2255± metres. Fair (with good interbeds) gas sources at 2255-2345± metres and poor sources below 2345± metres. Basal coaly shale potentially rich source rock for oil and gas.

E. MIGRATED HYDROCARBONS

The sidewall core mudstones from 1720 metres, 1945 metres and 2075 metres appeared to be oil-stained. Gold fluorescence was observed in the sandstone cores from 2176-2230 metres (strongest below 2220± metres). The sands above 2300± metres in the Zone E ditch cuttings samples, yielded a milky cut and, at 2270-2300± metres, a pale creamy fluorescence.

The composition of the light (C₁-C₇) hydrocarbons is indicative of shows through Zone D but particularly at (2045)2060-2090(2120)± metres. There also appear to be weak shows or traces at least up to 1690± metres in Zone C² and down to 2285± metres in Zone E, with scattered weak shows or traces below this depth. It is believed that the shows in Zone D are probably of condensate, but there is nothing to suggest that this is a young, relatively immature

condensate. Wet gas or condensate is also likely in Zone C² and below 2285± metres in Zone E, but between this depth and the top of Zone E some intervals suggest condensate and others (2180-2195± metres, 2255-2285± metres), oil.

The sample from 1805-1820 metres in Zone C² yielded 573 ppm C₁₅₊ hydrocarbons with the hydrocarbons constituting a relatively high 57.2% of the total extract. However its paraffin-naphthene chromatogram is not oil-like and is dominated by source-indigenous and contaminant hydrocarbons. The chromatograms obtained from Zone D are all dominated by immature source-indigenous hydrocarbons and there is nothing to definitively suggest the presence of crude oil.

Five (5) sandstone core samples were analysed from the interval 2176-2230 metres at the top of Zone E. That from 2176 metres is relatively lean (182 ppm C₁₅₊ hydrocarbons) but the hydrocarbons constitute over 57% of the total extract and the hydrocarbon to total extract ratio is anomalously high. The cores from 2179.8 metres and 2191.7 metres are richer (996-1141 ppm) and the hydrocarbons approximate 76% of the total extract. Finally the cores from 2223.8-2229.6 metres are very rich (10204-16134 ppm), with their hydrocarbons constituting 90% of the total extract. Non-indigenous hydrocarbons are clearly indicated. The paraffin-naphthene chromatograms obtained from these core samples are quite different from those of Zone D, having weaker isoprenoid peaks and stronger normal paraffins. The normal paraffins do not however, display a smooth distribution but tend to exhibit an odd carbon preference and show considerable inter-sample variation. Some contamination is evident in the background envelopes but it is believed, from the normal paraffins and their inter-sample variation, that these sandstones contain migrated hydrocarbons represented by a relatively immature, young crude oil. This oil is also present in the cuttings sample from 2255-2270± metres. The samples show some front end loss and this, together with the absence of diagnostic gas kicks suggests the possibility that we may be dealing with a residual oil rather than with a live show. There is however, nothing to suggest that the oil has been degraded and indeed, allowing for the contamination, it is relatively paraffinic.

Combining the light and heavy hydrocarbon data:

- there are shows of condensate in Zone D and particularly at (2045)2060-2090(2120)± metres with weak shows or traces of wet gas or condensate up to at least 1690± metres in Zone C².

- a residual (?) young paraffinic crude oil is present down to 2285± metres in Zone E. The shows at 2223-2230± metres are very strong.
- traces, probably of wet gas or condensate, are scattered throughout the rest of Zone E.

The fluid produced from 2153.8 metres was included in this study. Its C₄-C₂₀ and C₁₅₊ chromatograms indicate a light condensate which is almost entirely restricted to the gasoline and kerosene fractions. The C₁₀₊ hydrocarbons (both alkanes and aromatics) suggest a relatively mature condensate which, although not very mature, does not appear to be a young condensate. However when the gasoline-range hydrocarbons is examined it is obvious, firstly, that this fraction is dominated by the cyclic naphthenes and aromatics. This could be due to the loss of the butanes and pentanes during sampling. The second characteristic is that methylcyclohexane and toluene are significantly more abundant than normal heptane, which suggests immaturity. The most likely interpretation would appear to be that this condensate is neither a young condensate nor a highly mature condensate but instead, was derived from parent source rocks which are relatively mature.

Clearly, this condensate and the crude oils in the sandstone core samples are quite different products, but it is possible that the oils and the condensate might have a common source.

The five sandstone core samples from the top of Zone E have paraffin-naphthene to aromatic ratios of 2.1 to 3.4. Their C₁₅₊ paraffin-naphthene chromatograms do not correlate except insofar as they all show an erratic (rather than smooth) normal paraffin distribution. The isoparaffin fingerprints are quite different, but this could be due to the influence of the drilling-introduced contamination which is also evident.

Carbon isotope determinations were performed upon their paraffin-naphthene and aromatic fractions and upon the total extract. The aromatics and the total extracts have a reasonably narrow range of 0.5-0.6⁰/oo but the paraffin-naphthenes vary between -28.8⁰/oo and -30.7⁰/oo. This variation coupled with the lack of inter-fraction relationship suggests a lack of correlation but again, it is suspected that the data are severely affected by the contamination.

The mass fragmentograms are probably a more reliable correlation parameter in

this situation. If the sample with much the weakest show (2176 metres) is ignored, then there is a satisfactory (but not perfect) correlation on the phenanthrene, methylphenanthrene, dimethylphenanthrene, sterane, rearranged sterane and terpane mass fragmentograms. Interestingly, with the exception of the uppermost sample (2176 metres), the mass fragmentograms suggest a mature product.

When the condensate is examined it is evident that its paraffin-naphthene and aromatic fractions are respectively isotopically $0.7^0/00$ and $1.5^0/00$ heavier than the heaviest of the oils extracted from the cores. Such a difference is stretching the possibility of a correlation to its limits but, as the C_{15+} fraction of the condensate consists almost entirely of paraffin-naphthenes the smaller difference ($0.7^0/00$) is perhaps the more relevant. Only low abundances are present of the compounds sought in the mass fragmentogram analyses and the more pronounced front-end bias in the condensate chromatograms is probably largely due to its light (in gravity) character, although it is difficult to accept that this is the complete answer. Certainly, the heavier hopanes (m/e 191) and steranes (m/e 217) are severely depleted relative to the oils. Nevertheless, the phenanthrene and terpane fragmentograms are reasonably similar, but the author would interpret the sterane fragmentogram to indicate a lack of correlation.

It is concluded that the correlation is at best fragile and indeed, that it is more likely that the condensate and the oils are from different source intervals. Furthermore, it is tentatively suspected that the source for the condensate is more mature than that from which these oils were derived.

F. CONCLUSIONS

Six (6) zones are recognised between 330 metres and 2523 metres in 7120/7-2.

In the Quaternary of Zone A (330-505± metres) the dominant silty mudstones are generally lean at 0.31-0.47% organic carbon although the interbedded dark grey siltstones above 375± metres have significantly better values of 0.72-1.36% organic carbon. These sediments are however poor, immature and uninteresting source rocks.

The Tertiary corresponds to Zone B (505-945± metres). At 580-820± metres these mudstones contain 0.80-1.00(1.16)% organic carbon but, above and below

this interval, they are leaner at 0.42-0.69(1.09)%. Their organic matter is largely woody in type (with significant amorphous, herbaceous and inertinitic debris) and is dominantly reworked. The amorphous fraction is not an oil-prone variety. The Tertiary is immature but, even if mature, would only be a poor source for gas.

The Cretaceous is subdivided into Zones C¹ (945-1650± metres) and C² (1650-2010± metres) and exhibits a very gross trend of increasing richness with depth.

Thus in Zone C¹ the mudstones approximate 0.3% organic carbon above 1015± metres, commonly contain 0.70-0.95% organic carbon at 1015-1140± metres and then range from (0.71)0.87% to 1.37%, generally exceeding 1.0% organic carbon. Their organic matter does not reflect these changes, being woody throughout with significant proportions of inertinitic and herbaceous material. It is almost entirely reworked. As a result, these sediments are not only immature but also have only a poor potential for gas.

Zone C² is organically richer and the mudstones have better values than the shales. The shales contain 1.27-1.94(2.39)% organic carbon whilst the mudstones lie within the limits of (1.46)1.93-2.79(3.19)% organic carbon. In both lithologies the organic matter resembles that in Zone C¹ and again, is almost entirely reworked, although significant proportions of amorphous kerogen are present at the base of this interval, suggesting a transitional zone towards the Jurassic. The shales are poor source rocks but the mudstones, if mature, would have a fair potential. Above 1850± metres both the shales and the mudstones would yield gas whilst below this depth they have a potential for gas and condensate. Unfortunately however, they are immature down to 1950± metres and, due to the character of their organic matter, effectively immature below 1950± metres.

The Jurassic of Zone D (2010-2170± metres) represents the culmination of this trend of increasing richness. Above 2045± metres the shales and mudstones contain 3.03-3.14% organic carbon but below 2045± metres, Zone D is characterised by dark brownish grey silty mudstones and shales. These contain (2.07)3.70-10.65% organic carbon and exceed 8.0% at 2120-2145± metres. In contrast to the overlying sediments their organic matter is dominantly amorphous and even the significant algal fraction exhibits alteration towards the amorphous state. Wood is now relatively minor except in the richest mudstone

which has a mixed amorphous-woody assemblage. Minor hydrocarbon generation has occurred within these sediments. If mature, the shales and mudstones above 2045± metres would only be poor and fair source rocks but the underlying silty facies would be very good source rocks for gas and condensate passing, at 2120± metres, to rich source rocks for light oil and gas. Clearly, this is a potentially very prospective source unit and the shows within this interval (see below) suggest hydrocarbon generation within its off-structure lateral equivalents.

The underlying Jurassic (Zone E, 2170-2523± metres) is apparently a sequence of sandstones with interbedded medium dark grey shales. These shales contain 1.56-2.55(3.03)% organic carbon, but do not exceed 2.0% below 2345± metres. Wood is the major constituent of their organic matter and there are also significant proportions of inertinitic, herbaceous±amorphous material. Reworking is prevalent. Due to the character of the organic matter only limited hydrocarbon generation can be anticipated but if mature, they would only be poor source rocks for gas (with associated condensate) above 2255± metres and below 2345± metres and fair source rocks for gas (with good interbeds) at 2255-2345± metres. The basal sample contains minor proportions of a coaly shale which contains 32.2% of organic matter which is dominantly woody, although the herbaceous and inertinitic fractions are both significant. This shale is a marginally mature but potentially rich source rock for oil and gas.

Rich sediments are only present within Zone D and at the base (minor) of Zone E. Minor generation has been initiated from good quality organic matter below 1950± metres but the top of the mature zone is not reached in this well.

There are good shows of condensate within the Jurassic of Zone D and especially at (2045)2060-2090(2120)± metres. This condensate is presumably the same as that produced on test from 2153.8 metres (no reservoir facies in the samples) and is not a young condensate but was generated from relatively mature (but not highly mature) source rocks. Traces or weak shows of wet gas or condensate extend up to at least 1690± metres in the Cretaceous. The mature equivalents of the associated silty shales and mudstones represent a compatible source.

Shows of a quite different hydrocarbon product are present in the sands above 2285± metres in Zone E. These samples are difficult to interpret but it is believed that they contain a residual(?), young paraffinic crude which does not

correlate with the condensate discussed above. It is tentatively speculated that this oil could have been derived from the facies represented by the basal coaly shale of Zone E. Traces, probably of wet gas or condensate, are scattered throughout the rest of Zone E.

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
791-001	330-345m	A 70% Silty mudstone, blocky, soft, non-calc., minor caving, yellowish grey	5Y8/1	0.31
		B 25% Siltstone, blocky, v. hard, non - sl. calc., dark grey	N3	0.72
		C 5% Acid igneous, blocky, hard, dominantly caved, pale red Minor caved shale and sandstone Minor quartz sand	10R6/2	
791-003	360-375m	A 45% Quartz sand, unconsolidated, white	N9	
		B 40% Silty mudstone, as 791-001A, minor caving	5Y8/1	0.83
		C 10% Siltstone, as 791-001B, minor - sig. caving Minor caved shale, shell material and metamorphics	N3	1.36
791-005	390-405m	A 98% Silty mudstone, as 791-001A, abundant caving Minor siltstone, metamorphics and acid igneous	5Y6/1	0.38
791-007	420-435m	A 98% Silty mudstone, as 791-005A, abundant caving	5Y6/1	0.38,0.38
791-009	450-465m	A 98% Silty mudstone, as 791-005A, abundant caving	5Y6/1	0.39
791-011	480-495m	A 98% Silty mudstone, as 791-009A, abundant caving	5Y6/1	0.47
791-013	510-525m	A 98% Silty mudstone, as 791-009A, abundant caving	5Y6/1	0.50
791-015	540-555m	A 98% Silty mudstone, as 791-009A, sig. - abundant caving	5Y6/1	0.55
791-017	570-585m	A 50% Silty mudstone, as 791-009A, sig. - abundant caving	5Y6/1	0.53,0.53
		B 50% Siltstone, blocky - platy, soft, non calc., sig. caving, medium grey to medium olive grey	N5-5Y5/1	0.46
791-019	600-615m	A 98% Mudstone, blocky - platy, soft, non calc., sl. silty, sig. - abundant caving, medium olive grey	5Y5/1	0.74
791-021	630-645m	A 98% Mudstone, as 791-019A, sig. - abundant caving	5Y5/1	0.81
791-023	660-675m	A 98% Mudstone, as 791-019A, abundant caving	5Y5/1	1.00
791-025	700-715m	A 98% Mudstone, as 791-019A, abundant caving	5Y5/1	1.16
791-027	730-745m	A 98% Mudstone, as 791-019A, abundant caving	5Y5/1	0.89
791-029	760-775m	A 98% Mudstone, as 791-019A, abundant caving	5Y5/1	0.80,0.79

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
791-031	790-805m	A 98% Mudstone, blocky - platy, soft, non calc., sl. silty, abundant caving, medium olive grey	5Y5/1	0.86
791-146 SWC	815m	A 98% Mudstone, blocky, soft, non-calc., olive grey	5Y4/1	0.69
791-033	820-835m	A 98% Mudstone, as 791-031A, sig. caving	5Y5/1	0.61
791-035	850-865m	A 98% Mudstone, as 791-031A, sig. caving, light olive grey to light grey	5Y6/1-N7	0.67
791-037	880-895m	A 80% Mudstone, as 791-035A, sig. caving B 20% Silty mudstone, blocky, soft - mod. hard, non calc., sig. cavings, medium dark grey Minor other mudstone and LCM - metal turnings Strong smell, ?additive	5Y6/1-N7 N4	0.42 0.48
791-039	910-925m	A 80% Mudstone, as 791-035A, sig. caving B 20% Silty mudstone, as 791-037B, sig. cavings Minor other mudstone	5Y6/1-N7 N4	0.44,0.43 0.54
791-147 SWC	939m	A 98% Shaly mudstone, blocky - platy, soft, non-calc., dark grey	N3	0.64
791-041	940-955m	A 80% Shaly mudstone, platy, soft, non calc., sig. caving, medium grey B 20% Mudstone, blocky - platy, soft, non calc., sig. caving, greenish grey Minor other mudstone	N5 5GY6/1	1.09 0.25
791-043	970-985m	A 98% Mudstone, as 791-041B, sig. - abundant caving Minor other mudstone	5GY6/1	0.34
791-045	1000-1015m	A 65% Mudstone, as 791-041B, sig. - abundant caving B 30% Calcareous siltstone, blocky, soft, sig. caving, very light olive grey C 5% Shaly mudstone, as 791-041A, totally caved Minor other mudstone and LCM - metal turnings	5GY6/1 5Y7/1 N5	0.33 0.59,0.52
791-148 SWC	1023m	A 98% Shaly mudstone, as 791-0147A	N3	0.82
791-047	1030-1045m	A 98% Mudstone, as 791-041B, sig. caving Minor other mudstone and siltstone	5GY6/1	0.72
791-049	1060-1075m	A 98% Shaly mudstone, platy - subfissile, soft, non calc., sig. - abundant caving, medium dark greenish grey Minor limestone	5GY5/1	0.70
791-149 SWC	1089m	A 98% Shaly mudstone, as 791-147A	N3	0.59

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TABLE 1
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GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
791-051	1090-1105m	A 70% Mudstone, blocky, soft, non-calc., sig. cavings, medium grey	N5	0.95
		B 30% Shale, platy, soft to mod. hard, non calc., abundant caving, medium grey	N5	0.70
791-150 SWC	1126m	A 98% Shale, fissile, soft, non-calc., olive grey	5Y4/1	0.82,0.79
791-053	1120-1135m	A 75% Mudstone, as 791-051A, sig. cavings	N5	0.93
		B 25% Shale, as 791-051B, abundant cavings	N5	1.29
791-055	1150-1165m	A 55% Mudstone, blocky, soft, non-calc., abundant cavings, medium grey	N5	0.97
		B 45% Shale, platy, mod. hard, non-calc., sig. to abundant cavings, meidium grey	N5	1.03,1.05
791-057	1180-1195m	A 65% Mudstone, as 791-055A, sig. cavings	N5	0.99
		B 35% Shale, as 791-055B, minor cavings	N5	1.08
791-059	1210-1225m	A 50% Mudstone, as 791-055A, sig. cavings	N5	1.01
		B 50% Shale, as 791-055B, minor cavings	N5	1.09
791-061	1240-1255m	A 60% Mudstone, blocky, soft, non-calc., sig. cavings, medium grey	N5	1.02
		B 40% Shale, platy, mod. hard, non-calc., sig. cavings, medium dark grey to dark grey	N4-5	1.06,1.07
791-151 SWC	1247.5m	A 98% Shaly mudstone, blocky, soft, non- calc., olive grey	5Y4/1	0.98
791-063	1270-1285m	A 65% Mudstone, as 791-061A, sig. cavings	N5	0.87
		B 35% Shale, as 791-061B, sig. cavings	N4-5	0.92
791-065	1300-1315m	A 50% Mudstone, as 791-061A, sig. cavings	N5	0.71
		B 50% Shale, as 791-061B, sig. to abundant cavings	N4-5	0.75
791-067	1330-1345m	A 70% Shale, platy to thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey to medium grey	N4-5	0.75
		B 30% Mudstone, blocky, soft, non-calc., sig. cavings, medium grey	N5	1.11,1.12
791-069	1360-1375m	A 60% Mudstone, as 791-067B, sig. to abundant cavings	N5	1.12
		B 40% Shale, as 791-067A, sig. to abundant cavings	N4-5	0.95
791-152 SWC	1370m	A 98% Shale, fissile, soft, non-calc., olive black	5Y2/1	1.04
791-071	1390-1405m	A 70% Shale, as 791-067A, sig. cavings	N4-5	1.07
		B 30% Mudstone, as 791-067B, minor cavings	N5	0.92
791-153 SWC	1423m	A 98% Shaly mudstone, platy, soft, non- calc., darkish olive grey	5Y3/1	1.26
791-073	1420-1435m	A 50% Mudstone, blocky, soft, non-calc., sig. cavings, medium grey	N5	1.16

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Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
791-073	1420-1435m	B 50% Shale, platy, mod. hard, non-calc., sig. cavings, medium grey to medium dark grey	N5-4	0.99,1.01
791-075	1450-1465m	A 65% Mudstone, blocky, soft, non-calc., sig. cavings, medium grey B 35% Shale, as 791-073B, minor to sig. cavings	N5 N5-4	1.00 1.13
791-077	1480-1495m	A 90% Silty mudstone, blocky, soft, non-calc., sig. cavings, medium grey B 10% Siltstone, blocky, mod. hard, non-calc., brownish grey Minor caved shale and mudstone	N5 5YR4/1	1.18 0.40
791-154 SWC	1490m	A 98% Shaly mudstone, platy, soft, non-calc., olive black	5Y2/1	1.10
791-079	1510-1525m	A 60% LCM - cement B 25% Silty mudstone, as 791-077A, minor to sig. cavings C 15% Shale, platy, mod. hard, non-calc., sig. to abundant cavings, medium dark grey to medium grey	N5 N4-5	1.17 1.22,1.23
791-155 SWC	1525m	A 98% Shaly mudstone, as 791-154A	5Y2/1	1.37
791-081	1540-1555m	A 55% Shale, as 791-079C, sig. cavings B 35% Mudstone, blocky, soft, non-calc., sig. cavings, medium grey C 10% LCM - cement	N4-5 N5	1.29 1.22
791-083	1570-1585m	A 75% Shale, as 791-079C, sig. cavings B 15% Mudstone, as 791-081B, sig. cavings C 10% LCM - cement and metal turnings	N4-5 N5	1.15 1.15
791-156 SWC	1587m	A 98% Shaly mudstone, as 791-154A	5Y2/1	1.15,1.16
791-085	1600-1615m	A 98% Shale, platy to thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey Minor mudstone LCM - paint, metal and cement	N4	1.18
791-087	1630-1645m	A 98% Shale, as 791-085A, abundant cavings Minor mudstone	N4	1.25,1.25
791-157 SWC	1660m	A 98% Mudstone, blocky, soft, mod. hard, non-calc., dark grey	N3	1.46
791-089	1660-1675m	A 98% Shale, as 791-085A, abundant cavings Minor mudstone LCM - metal turnings	N4	1.28
791-091	1690-1705m	A 98% Shale, platy, mod. hard, non-calc., sig. cavings, medium dark grey Minor mudstone LCM - metal turnings	N4	1.27

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GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
791-158 SWC	1720m	A 98% Silty mudstone, blocky, mod. hard, non-calc., sl. oil stain, dark olive grey	5Y3/1	2.79
791-093	1720-1735m	A 85% Shale, platy, mod. hard, non-calc., sig. to abundant cavings, medium dark grey	N4	1.70
		B 15% Mudstone, blocky, soft, non-calc., minor cavings, medium grey LCM - metal turnings	N5	2.39
791-095	1750-1760m	A 80% Shale, as 791-093A, sig. cavings	N4	1.37
		B 20% Mudstone, as 791-093B, sig. cavings LCM - metal	N5	1.58, 1.53
791-097	1775-1790m	A 70% Shale, thinly fissile, mod. hard, non-calc., sig. to abundant cavings, medium dark grey	N4	1.59
		B 30% Mudstone, blocky, mod. hard, non-calc., sig. cavings, medium grey	N5	2.20
791-099	1805-1820m	A 70% Shale, as 791-097A, sig. to abundant cavings	N4	1.76
		B 30% Mudstone, as 791-097B, sig. cavings Minor siltstone Minor LCM - metal turnings	N5	2.65
791-100	1820-1835m	A 70% Shale, as 791-097A, sig. cavings	N4	1.71
		B 25% Mudstone, as 791-097B, sig. cavings	N5	2.48, 2.47
		C 5% LCM - cement and metal		
791-101	1835-1850m	A 70% Shale, thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.65
		B 25% Mudstone, blocky, mod. hard, sl. silty, non-calc., minor cavings, medium grey to medium brownish grey	N5-5YR5/1	2.20
		C 5% LCM - metal and cement		
791-102	1850-1865m	A 65% Shale, as 791-101A, sig. cavings	N4	1.89
		B 35% Mudstone, as 791-101B, minor cavings Minor LCM	N5-5YR5/1	2.42
791-103	1865-1880m	A 65% Shale, as 791-101A, sig. to abundant cavings	N4	1.55
		B 35% Mudstone, as 791-101B, sig. cavings Minor LCM	N5-5YR5/1	1.99, 1.99
791-104	1880-1895m	A 70% Shale, as 791-101A, sig. to abundant cavings	N4	1.53
		B 30% Mudstone, as 791-101B, sig. cavings Minor LCM	N5-5YR5/1	2.23
791-105	1895-1910m	A 70% Shale, thinly fissile to platy, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.32
		B 30% Mudstone, blocky, mod. hard, sl. silty, non-calc., medium grey to medium brownish grey Minor LCM	N5-5YR5/1	2.20

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Lost Circulation Material, moderately, occasionally, slightly, very

**TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS**

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
791-106	1910-1925m	A 70% Shale, thinly fissile to platy, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.43
		B 30% Mudstone, blocky, mod. hard, sl. silty, non-calc., minor to sig. cavings, medium grey to medium brownish grey Minor LCM	N5-5YR5/1	2.34, 2.35
791-107	1925-1940m	A 50% Shale, as 791-106A, sig. cavings	N4	1.45, 1.45
		B 50% Mudstone, as 791-105B, minor to sig. cavings	N5-5YR5/1	2.31
791-159 SWC	1945m	A 98% Mudstone, blocky, very soft, non-calc., oil stained, dark grey	N3	3.19
791-108	1940-1955m	A 60% Shale, as 791-106A, sig. cavings	N4	1.42
		B 40% Mudstone, as 791-106B, minor to sig. cavings LCM - cement and metal	N5-5YR5/1	2.39
791-109	1955-1970m	A 60% Shale, as 791-106A, sig. cavings	N4	1.67
		B 40% Mudstone, as 791-106B, minor to sig. cavings Minor LCM	N5-5YR5/1	2.37
791-110	1970-1985m	A 60% Shale, thinly fissile to platy, mod. hard, non-calc., sig. cavings, medium dark grey	N4	1.93, 1.94
		B 40% Mudstone, blocky, mod. hard, sl. silty, non-calc., medium grey to medium brownish grey LCM - cement	N5-5YR5/1	2.24
791-111	1985-2000m	A 75% Shale, as 791-110A, sig. cavings	N4	1.73
		B 25% Mudstone, as 791-110B, minor cavings Minor LCM	N5-5YR5/1	2.67
791-112	2000-2015m	A 70% Shale, as 791-110A, sig. cavings	N4	2.39
		B 30% Mudstone, as 791-110B, minor cavings Minor siltstone Minor LCM	N5-5YR5/1	1.93
791-113	2015-2030m	A 70% Shale, thinly fissile to platy, mod. hard, non-calc., sig. cavings, medium dark grey	N4	2.01
		B 30% Mudstone, blocky, sl. silty, mod. hard, non-calc., minor cavings, medium grey to medium brownish grey Minor siltstone	N5-5YR5/1	1.92, 1.93
791-114	2030-2045m	A 60% Shale, as 791-113A, sig. cavings	N4	3.03
		B 40% Mudstone, as 791-113B, minor cavings	N5-5YR5/1	3.14
791-115	2045-2060m	A 90% Silty mudstone, platy to blocky, mod. hard, non-calc., minor cavings, medium dark grey to brownish grey	N4-5YR4/1	3.86
		B 10% Shale, as 791-113A, abundant cavings	N4	2.46

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Lost Circulation Material, moderately, occasionally, slightly, very

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GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
791-116	2060-2075m	A 95% Silty mudstone, platy to blocky, mod. hard, non-calc., sig. cavings, medium dark grey to brownish grey B 5% Shale, thinly fissile to platy, mod. hard, non-calc., dominant cavings, medium dark grey	N4-5YR4/1 N4	4.34, 4.35
791-160 SWC	2075m	A 98% Shale, platy, soft, non-calc., oil stained, brownish black	5YR2/1	6.47
791-117	2075-2090m	A 95% Silty mudstone, as 791-116A, sig. cavings B 5% Shale, as 791-116B, caved	N4-5YR4/1 N4	3.70
791-118	2090-2105m	A 95% Silty mudstone, as 791-116A, sig. cavings B 5% Shale, as 791-116B, caved	N4-5YR4/1 N4	5.51
791-119	2105-2120m	A 98% Silty mudstone, as 791-116A, sig. cavings Minor caved shale	N4-5YR4/1	5.34
791-120	2120-2135m	A 98% Silty shale, blocky to subfissile, mod. hard, non-calc., sl. micaceous, sig. cavings, dark brownish grey to brownish black Minor caved shale	5YR3/1- 5YR2/1	8.44
791-161 SWC	2140m	A 98% Silty mudstone, blocky, soft, non-calc., oil stained, dark olive grey	5Y3/1	10.60, 10.70
791-121	2135-2150m	A 98% Silty shale, as 791-120A, sig. to abundant cavings Minor sand Minor caved shale and mudstone	5YR3/1- 5YR2/1	8.45
791-162 SWC	2148.5m	A 98% Silty mudstone, blocky, soft, non-calc., oil stained, dark olive grey	5YR3/1	2.07
791-122	2150-2165m	A 98% Silty shale, as 791-120A, sig. to abundant cavings Minor sand Minor caved shale and mudstone	5YR3/1- 5YR2/1	9.70, 9.73
791-123	2165-2180m	A 50% Silty shale, as 791-120A, sig. cavings B 50% Shale, platy to thinly fissile, mod. hard, non-calc., sig. to abundant? cavings, medium dark grey	5YR3/1- 5YR2/1 N4	5.40 1.72
791-163 CORE	2176.0- 2176.10m	A 98% Sandstone, fine-medium grained, mod. hard - friable, non-calc., sl. gold fluorescence, very light grey	N8	
791-164 CORE	2179.84- 2179.90m	A 98% Sandstone, fine grained, hard, non-calc., bioturbated?, contains wisps of ?organic material, sl. gold fluorescence, light grey	N7	
791-124	2180-2195m	A 40% Shale, as 791-123B, sig. cavings	N4	2.55

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791-124	2180-2195m	B 40% Sandstone, blocky, unconsolidated in part, fine grained, subangular, non-calc. matrix, pale milky cut, very pale yellowish brown	10YR7/2	
		C 10% Silty shale, blocky to subfissile, mod. hard, non-calc., sl. micaceous, sig. cavings, dark brownish grey to brownish black	5YR3/1- 5YR2/1	3.36
		D 10% LCM - cement and metal		
791-165 CORE	2191.65- 2191.72m	A 98% Sandstone, fine grained, hard, non-calc., bioturbated, contains wisps of organic material, sl. gold fluorescence, light grey	N7	
791-125	2195-2210m	A 98% Shale, platy to thinly fissile, mod. hard, non-calc., sig. cavings, medium dark grey Minor caved mudstone and siltstone	N4	1.75
791-166 CORE	2223.78- 2223.87m	A 98% Sandstone, fine grained, hard, non-calc., bioturbated, contains wisps of organic material, distinct gold fluorescence, very light olive grey	5Y7/1	
791-167 CORE	2229.58- 2229.66m	A 98% Sandstone, fine grained, hard, non-calc., bioturbated and burrowed, contains wisps of organic material, distinct gold fluorescence, dusky dark yellowish brown	10YR3/2	
791-126	2225-2240m	A 98% Shale, as 791-125A, sig. cavings Minor silty shale and sandstone	N4	1.98, 1.96
791-127	2240-2255m	A 70% Shale, platy to subfissile, mod. hard, non-calc., sig. to abundant cavings, medium dark grey	N4	1.95
		B 30% Sand, unconsolidated, fine grained, subangular, well sorted, clear, very pale yellowish brown LCM - paint, metal and cement	10YR7/2	
791-128	2255-2270m	A 70% Sandstone, mostly unconsolidated, fine grained, subangular, well sorted, non-calc. matrix, pale milky cut, very pale yellowish brown	10YR7/2	
		B 30% Shale, as 791-127A, sig. cavings	N4	2.19
791-129	2270-2285m	A 85% Sandstone, as 791-128A, pale creamy F., milky cut	10YR7/2	
		B 15% Shale, as 791-127A, sig. to abundant cavings	N4	1.88
791-130	2285-2300m	A 95% Sandstone, as 791-128A, pale creamy F., milky cut	10YR7/2	
		B 5% Shale, as 791-127A, abundant cavings	N4	2.21
791-131	2300-2315m	A 85% Sandstone, as 791-128A	10YR7/2	

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791-131	2300-2315m	B 15% Shale, platy to thinly fissile, brittle, non-calc., sig. cavings, medium dark grey to dark grey	N4-3	2.53
791-132	2315-2330m	A 85% Sandstone, mostly unconsolidated, fine grained, subangular, well sorted, non-calc. matrix, pale milky cut, very pale yellowish brown	10YR7/2	
		B 15% Shale, as 791-131B, sig. to abundant cavings	N4-3	3.02, 3.03
791-133	2330-2345m	A 90% Sandstone, blocky, unconsolidated in part, fine grained, subangular, well sorted, non-calc. matrix, pinkish grey	5YR8/1	
		B 10% Shale, as 791-131B, abundant cavings	N4-3	2.32
791-134	2345-2360m	A 90% Sandstone, as 791-133A	5YR8/1	
		B 10% Shale, as 791-131B, abundant cavings	N4-3	1.87
791-135	2360-2375m	A 90% Sandstone, as 791-133A	5YR8/1	
		B 10% Shale, as 791-131B, abundant cavings	N4-3	1.95
791-136	2375-2390m	A 70% Sandstone, blocky, v. fine grained, subangular, well sorted, non-calc. matrix, pinkish grey	5YR8/1	
		B 30% Shale, subfissile to platy, mod. hard, non-calc., sig. to abundant cavings, dark grey Minor coal	N3	1.98
791-137	2390-2405m	A 80% Sandstone, as 791-136A	5YR8/1	
		B 20% Shale, as 791-136B, abundant cavings	N3	1.81
791-138	2405-2420m	A 85% Shale, platy to thinly fissile, mod. hard, non-calc., abundant cavings, medium dark grey	N4	1.77, 1.75
		B 15% Sandstone, as 791-136A, sig. cavings	5YR8/1	
791-139	2420-2435m	A 90% Shale, as 791-138A, abundant cavings	N4	1.56
		B 10% Sandstone, as 791-136A, sig. cavings	5YR8/1	
791-140	2435-2450m	A 90% Shale, as 791-138A, abundant to dominant cavings	N4	1.91
		B 10% Sandstone, as 791-136A, sig. cavings	5YR8/1	
791-141	2450-2465m	A 60% Shale, blocky, mod. hard, non-calc., sig. to abundant cavings, medium dark grey	N4	1.58
		B 40% Sandstone, blocky, fine grained, sub-angular, well sorted, non-calc. matrix, pinkish grey	5YR8/1	
791-142	2465-2480m	A 55% Sandstone, as 791-141B	5YR8/1	
		B 45% Shale, as 791-141A, sig. cavings	N4	1.93
791-143	2480-2495m	A 55% Sandstone, as 791-141B	5YR8/1	
		B 45% Shale, as 791-141A, sig. cavings	N4	1.60
791-144	2495-2510m	A 70% Sandstone, mostly unconsolidated, fine grained, subangular, well sorted, clear, white to pinkish grey	N9-5YR8/1	

Abbreviations = arenaceous, argillaceous, calcareous, Cut, dolomitic, Fluorescence, foraminifera, fossiliferous
Lost Circulation Material, moderately, occasionally, slightly, very

TABLE 1
ORGANIC CARBON RESULTS AND GROSS LITHOLOGIC DESCRIPTIONS

GEOCHEM SAMPLE NUMBER	DEPTH	GROSS LITHOLOGIC DESCRIPTION	G S A Colour Code	TOTAL ORGANIC CARBON (Wt. % of Rock)
791-144	2495-2510m	B 30% Shale, blocky to subfissile, mod. hard, non-calc., dominant cavings, medium dark grey	N4	1.76,1.76
791-145	2510-2523m	A 90% Sandstone, blocky, v. fine grained, subangular, well sorted, non-calc. matrix, pinkish grey B 10% Coaly shale, platy to subfissile, soft to mod. hard, non-calc., greyish black	5YR8/1 N2	 32.20

TABLE 2A
CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS IN AIR SPACE GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-001	330-345	141	32	3	6	15	197	56	28.4	30	0.40
791-003	360-375	785	32	2	5	10	834	48	5.8	23	0.46
791-005	390-405	422	3	0	0	0	426	3	0.8	19	0.41
791-007	420-435	980	1	1	0	0	982	2	0.2	19	1.71
791-009	450-465	733	1	1	0	2	737	4	0.6	2	0.00
791-011	480-495	940	16	3	1	2	962	22	2.3	6	0.53
791-013	510-525	306	12	4	4	3	330	24	7.2	38	1.28
791-015	540-555	4064	21	5	1	2	4093	29	0.7	24	0.63
791-017	570-585	2608	17	2	1	1	2627	20	0.7	57	1.03
791-019	600-615	6323	71	255	87	146	6882	559	8.1	175	0.60
791-021	630-645	6075	114	215	55	80	6540	464	7.1	125	0.69
791-023	660-675	5316	436	382	71	115	6319	1003	15.9	132	0.61
791-025	700-715	8995	727	268	50	57	10097	1102	10.9	89	0.88
791-027	730-745	11001	609	226	56	57	11948	947	7.9	111	0.98
791-029	760-775	2216	104	45	12	12	2389	173	7.3	20	0.98
791-031	790-805	2543	214	70	18	18	2863	321	11.2	25	0.98
791-033	820-835	4987	299	211	54	67	5618	631	11.2	87	0.80
791-035	850-865	6798	849	684	136	261	8728	1931	22.1	361	0.52
791-037	880-895	4374	312	182	30	79	4977	603	12.1	187	0.38
791-039	910-925	5035	434	293	45	70	5878	843	14.3	41	0.65
791-041	940-955	26	3	4	1	0	36	9	25.7	7	2.65
791-043	970-985	1407	132	98	21	29	1686	279	16.5	22	0.71
791-045	1000-1015	8321	799	599	145	335	10199	1878	18.4	840	0.43
791-047	1030-1045	4281	780	572	111	192	5936	1654	27.9	132	0.58
791-049	1060-1075	4770	582	305	105	137	5899	1129	19.1	106	0.76
791-051	1090-1105	4826	479	407	156	179	6046	1220	20.2	165	0.87
791-053	1120-1135	10451	981	762	286	339	12819	2368	18.5	452	0.84
791-055	1150-1165	8	2	1	0	0	11	4	31.0	0	0.48
791-057	1180-1195	8159	695	489	163	188	9694	1535	15.8	358	0.86
791-059	1210-1225	3772	386	263	79	90	4589	817	17.8	134	0.87

TABLE 2A
CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS IN AIR SPACE GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-061	1240-1255	4326	488	292	72	74	5252	926	17.6	62	0.97
791-063	1270-1285	2405	249	133	32	34	2852	447	15.7	28	0.96
791-065	1300-1315	4854	323	208	56	60	5501	646	11.7	65	0.93
791-067	1330-1345	3329	497	232	46	41	4146	816	19.7	20	1.12
791-069	1360-1375	3397	676	273	55	51	4453	1056	23.7	42	1.08
791-071	1390-1405	216	26	22	8	10	283	67	23.8	45	0.77
791-073	1420-1435	4060	712	401	92	91	5356	1295	24.2	111	1.01
791-075	1450-1465	7594	1572	777	151	142	10235	2641	25.8	73	1.06
791-077	1480-1495	8167	2763	1032	176	182	12320	4153	33.7	26	0.97
791-079	1510-1525	1929	556	743	207	209	3644	1715	47.1	185	0.99
791-081	1540-1555	773	204	133	27	18	1155	382	33.1	20	1.51
791-083	1570-1585	2510	213	155	43	27	2948	438	14.9	22	1.58
791-085	1600-1615	78	5	4	1	1	88	10	11.8	1	1.32
791-087	1630-1645	3502	490	323	64	66	4446	944	21.2	60	0.97
791-089	1660-1675	1299	249	268	60	60	1936	638	32.9	24	1.01
791-091	1690-1705	9	2	1	0	0	12	3	24.9	0	0.00
791-093	1720-1735	1336	597	385	71	49	2438	1102	45.2	36	1.45
791-095	1750-1760	8	3	3	1	1	16	9	52.8	3	0.73
791-097	1775-1790	2144	592	523	106	100	3465	1321	38.1	115	1.06
791-099	1805-1820	686	234	225	52	39	1235	550	44.5	34	1.31
791-100	1820-1835	1062	290	345	76	64	1837	775	42.2	62	1.17
791-101	1835-1850	1165	281	436	94	101	2077	913	43.9	104	0.93
791-102	1850-1865	1085	386	367	72	57	1966	881	44.8	46	1.27
791-103	1865-1880	876	275	298	60	47	1557	681	43.7	39	1.27
791-104	1880-1895	981	296	345	68	62	1753	771	44.0	53	1.10
791-105	1895-1910	1127	336	422	85	82	2052	925	45.1	98	1.04
791-106	1910-1925	1707	462	649	110	118	3046	1339	44.0	109	0.93
791-107	1925-1940	1823	645	893	153	168	3681	1859	50.5	109	0.91
791-108	1940-1955	2686	693	944	162	165	4650	1964	42.2	151	0.98
791-109	1955-1970	1527	479	497	67	70	2641	1113	42.2	43	0.95

TABLE 2A
CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS IN AIR SPACE GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-110	1970-1985	908	370	377	54	56	1764	856	48.5	32	0.96
791-111	1985-2000	1970	727	687	71	105	3560	1591	44.7	48	0.68
791-112	2000-2015	2021	778	661	75	103	3639	1617	44.5	59	0.72
791-113	2015-2030	9525	2513	3283	317	1052	16690	7165	42.9	1128	0.30
791-114	2030-2045	2938	1445	1679	238	821	7122	4183	58.7	604	0.29
791-115	2045-2060	2185	1161	1352	270	996	5965	3780	63.4	617	0.27
791-116	2060-2075	2816	1585	1299	525	1940	8165	5349	65.5	1629	0.27
791-117	2075-2090	3488	1992	2495	773	2616	11364	7876	69.3	2392	0.30
791-118	2090-2105	3080	1751	2091	473	1943	9338	6258	67.0	1148	0.24
791-119	2105-2120	3371	1031	2017	441	1679	8538	5167	60.5	906	0.26
791-120	2120-2135	19	6	8	1	3	37	18	49.5	2	0.24
791-121	2135-2150	1829	952	906	105	342	4135	2306	55.8	158	0.31
791-122	2150-2165	2213	1077	994	105	290	4679	2466	52.7	160	0.36
791-123	2165-2180	3138	1510	1294	114	249	6306	3168	50.2	171	0.46
791-124	2180-2195	36	15	22	3	9	85	49	57.2	20	0.33
791-125	2195-2210	1925	452	370	40	75	2861	936	32.7	103	0.53
791-126	2225-2240	2799	1007	1167	153	292	5419	2620	48.3	369	0.52
791-127	2240-2255	2194	548	379	47	81	3250	1056	32.5	181	0.59
791-128	2255-2270	1885	706	704	159	302	3756	1870	49.8	825	0.53
791-129	2270-2285	1190	339	190	33	64	1816	626	34.5	244	0.53
791-130	2285-2300	3414	1534	496	61	94	5600	2186	39.0	214	0.65
791-131	2300-2315	5784	2448	848	98	166	9343	3559	38.1	207	0.59
791-132	2315-2330	3741	1622	715	107	170	6355	2614	41.1	215	0.63
791-133	2330-2345	2572	572	286	41	69	3540	969	27.4	86	0.60
791-134	2345-2360	3183	680	340	53	81	4338	1154	26.6	84	0.66
791-135	2360-2375	1699	614	269	37	51	2669	970	36.4	43	0.71
791-136	2375-2390	8105	3597	1575	115	165	13558	5453	40.2	73	0.70
791-137	2390-2405	61	8	4	1	1	75	14	18.7	2	0.59
791-138	2405-2420	1367	329	216	20	37	1970	603	30.6	47	0.55
791-139	2420-2435	2019	378	294	31	64	2787	768	27.5	71	0.49

TABLE 2A
CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS IN AIR SPACE GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-140	2435-2450	2382	426	248	24	43	3123	741	23.7	51	0.56
791-141	2450-2465	742	176	158	18	28	1122	380	33.9	18	0.65
791-142	2465-2480	2295	945	481	38	57	3816	1521	39.8	27	0.67
791-143	2480-2495	2789	1074	662	61	90	4676	1887	40.3	53	0.67
791-144	2495-2510	10088	4220	2832	179	226	17545	7457	42.5	65	0.79
791-145	2510-2523	55387	20054	7597	455	738	84231	28844	34.2	268	0.62

TABLE 2B
CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS IN CUTTING GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-001	330-345	83	14	2	5	15	119	36	30.2	46	0.33
791-003	360-375	61	9	1	1	8	80	19	24.2	39	0.17
791-005	390-405	16	4	0	0	0	20	5	22.9	7	0.77
791-007	420-435	55	4	3	0	5	67	12	18.5	1	0.00
791-009	450-465	65	4	4	0	4	77	12	16.1	19	0.10
791-011	480-495	39	4	4	1	4	52	12	23.7	2	0.20
791-013	510-525	472	8	6	4	6	497	25	4.9	96	0.69
791-015	540-555	3679	20	9	1	2	3711	32	0.9	75	0.41
791-017	570-585	1958	13	6	0	3	1981	23	1.1	173	0.00
791-019	600-615	1475	23	53	20	60	1633	157	9.6	206	0.33
791-021	630-645	742	18	30	11	26	827	85	10.3	150	0.41
791-023	660-675	623	47	68	16	51	805	182	22.6	197	0.32
791-025	700-715	452	65	62	18	34	631	179	28.4	102	0.53
791-027	730-745	1316	49	31	8	16	1420	105	7.4	113	0.53
791-029	760-775	249	16	14	5	10	294	45	15.4	82	0.49
791-031	790-805	579	42	37	14	32	703	125	17.7	89	0.46
791-033	820-835	200	27	20	5	15	266	66	24.9	53	0.34
791-035	850-865	272	66	113	33	110	595	323	54.3	315	0.30
791-037	880-895	180	31	20	11	18	260	80	30.9	68	0.60
791-039	910-925	176	28	22	4	13	242	67	27.6	41	0.33
791-041	940-955	146	37	18	0	11	212	66	31.3	37	0.00
791-043	970-985	367	42	29	7	16	461	93	20.3	50	0.41
791-045	1000-1015	514	80	56	16	51	718	203	28.4	754	0.31
791-047	1030-1045	509	98	109	31	85	833	324	38.9	155	0.37
791-049	1060-1075	230	51	53	19	55	409	178	43.6	180	0.34
791-051	1090-1105	429	88	170	115	206	1009	580	57.5	546	0.56
791-053	1120-1135	272	64	103	67	141	646	375	58.0	365	0.47
791-055	1150-1165	96	36	55	49	101	338	241	71.5	408	0.49
791-057	1180-1195	417	90	121	66	139	833	416	49.9	892	0.48
791-059	1210-1225	873	102	117	42	86	1220	347	28.5	283	0.49

TABLE 2B
CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS IN CUTTING GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-061	1240-1255	326	74	139	56	105	699	374	53.4	100	0.53
791-063	1270-1285	315	47	51	15	32	459	144	31.5	56	0.48
791-065	1300-1315	225	36	53	21	43	377	153	40.5	71	0.49
791-067	1330-1345	513	158	213	74	121	1080	567	52.5	90	0.61
791-069	1360-1375	1093	254	309	91	170	1917	824	43.0	187	0.54
791-071	1390-1405	140	48	94	39	87	408	268	65.7	229	0.44
791-073	1420-1435	432	169	296	90	166	1153	721	62.6	259	0.54
791-075	1450-1465	379	119	146	20	73	737	358	48.5	80	0.27
791-077	1480-1495	275	81	187	52	120	715	440	61.6	192	0.44
791-079	1510-1525	185	25	29	7	13	259	74	28.6	147	0.51
791-081	1540-1555	732	276	270	17	60	1355	623	46.0	191	0.28
791-083	1570-1585	222	75	144	39	93	571	349	61.2	132	0.42
791-085	1600-1615	889	189	274	67	113	1532	644	42.0	285	0.60
791-087	1630-1645	404	182	292	69	153	1099	695	63.2	257	0.45
791-089	1660-1675	223	100	263	66	138	790	567	71.8	168	0.48
791-091	1690-1705	195	81	301	82	163	823	628	76.3	237	0.50
791-093	1720-1735	2155	1191	1445	222	370	5383	3228	60.0	368	0.60
791-095	1750-1760	294	161	393	93	192	1132	838	74.0	261	0.48
791-097	1775-1790	437	321	645	135	271	1809	1372	75.8	426	0.50
791-099	1805-1820	646	386	750	126	254	2162	1516	70.1	320	0.50
791-100	1820-1835	312	250	720	152	322	1756	1444	82.3	460	0.47
791-101	1835-1850	115	84	314	71	169	753	638	84.7	267	0.42
791-102	1850-1865	480	420	887	169	305	2262	1782	78.8	388	0.56
791-103	1865-1880	313	250	584	97	201	1445	1132	78.3	211	0.48
791-104	1880-1895	239	238	605	120	220	1422	1183	83.2	300	0.55
791-105	1895-1910	204	197	614	125	243	1382	1179	85.3	194	0.52
791-106	1910-1925	168	204	826	159	303	1660	1492	89.9	134	0.53
791-107	1925-1940	109	163	641	118	234	1265	1156	91.4	181	0.51
791-108	1940-1955	197	187	647	119	241	1391	1194	85.8	325	0.49
791-109	1955-1970	408	359	1126	197	377	2468	2060	83.4	260	0.52

TABLE 2B
CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS IN CUTTING GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-110	1970-1985	455	324	877	138	322	2116	1661	78.5	325	0.43
791-111	1985-2000	527	548	1654	207	530	3466	2938	84.8	267	0.39
791-112	2000-2015	1582	532	1089	173	389	3764	2182	58.0	287	0.44
791-113	2015-2030	624	484	2088	364	1601	5161	4538	87.9	1875	0.23
791-114	2030-2045	7503	2431	5830	658	3137	19560	12057	61.6	2694	0.21
791-115	2045-2060	6312	3626	8630	1338	6446	26352	20040	76.0	4511	0.21
791-116	2060-2075	3095	2398	7881	1152	6928	21453	18358	85.6	6122	0.17
791-117	2075-2090	2236	2232	7983	1231	7680	21362	19125	89.5	7398	0.16
791-118	2090-2105	11771	6809	10587	2016	10211	41394	29623	71.6	5800	0.20
791-119	2105-2120	11202	8090	11471	3263	12039	46066	34863	75.7	7602	0.27
791-120	2120-2135	17228	10758	12411	1969	6224	48590	31362	64.5	2508	0.32
791-121	2135-2150	16144	11193	12322	1873	6410	47942	31798	66.3	2775	0.29
791-122	2150-2165	9940	3772	4679	506	1968	20865	10925	52.4	1332	0.26
791-123	2165-2180	2584	1328	1974	193	666	6744	4161	61.7	607	0.29
791-124	2180-2195	652	279	537	157	416	2041	1390	68.1	2738	0.38
791-125	2195-2210	862	623	1351	224	538	3598	2736	76.0	531	0.42
791-126	2225-2240	454	288	596	106	218	1662	1207	72.7	273	0.49
791-127	2240-2255	827	503	861	147	291	2629	1802	68.6	773	0.51
791-128	2255-2270	709	420	864	340	819	3152	2443	77.5	4643	0.41
791-129	2270-2285	1150	798	947	326	724	3945	2796	70.9	4418	0.45
791-130	2285-2300	6309	2033	947	98	279	9666	3357	34.7	936	0.35
791-131	2300-2315	7762	2854	1601	182	433	12832	5070	39.5	466	0.42
791-132	2315-2330	1346	306	214	37	80	1983	637	32.1	186	0.46
791-133	2330-2345	973	544	633	103	246	2499	1526	61.0	188	0.42
791-134	2345-2360	2463	447	472	64	187	3633	1170	32.2	219	0.34
791-135	2360-2375	1577	521	491	61	163	2814	1237	44.0	224	0.38
791-136	2375-2390	10507	4929	2666	220	418	18739	8232	43.9	207	0.53
791-137	2390-2405	1214	772	975	110	301	3372	2158	64.0	330	0.37
791-138	2405-2420	1052	753	1187	154	253	3399	2347	69.0	195	0.61
791-139	2420-2435	820	436	698	98	231	2282	1462	64.1	368	0.42

TABLE 2B
CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS IN CUTTING GAS

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-140	2435-2450	2218	1389	1905	251	426	6189	3971	64.2	336	0.59
791-141	2450-2465	860	665	1156	107	290	3076	2217	72.1	157	0.37
791-142	2465-2480	10142	4172	4219	426	797	19757	9614	48.7	357	0.53
791-143	2480-2495	1279	579	651	67	170	2746	1467	53.4	189	0.40
791-144	2495-2510	18705	7793	2815	154	284	29752	11047	37.1	146	0.54
791-145	2510-2523	12131	6254	3468	207	403	22464	10333	46.0	100	0.51

TABLE 2 C
TOTAL CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS (2A + 2B)

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-001	330-345	224	46	5	11	30	315	92	29.1	76	0.37
791-003	360-375	846	41	3	6	18	914	68	7.4	62	0.33
791-005	390-405	438	6	0	0	1	446	8	1.8	26	0.62
791-007	420-435	1034	5	4	0	6	1049	15	1.4	20	0.06
791-009	450-465	797	6	5	0	6	814	17	2.0	22	0.07
791-011	480-495	980	20	6	2	6	1014	34	3.4	7	0.32
791-013	510-525	778	20	11	8	9	826	48	5.9	133	0.91
791-015	540-555	7743	41	14	2	4	7804	61	0.8	99	0.53
791-017	570-585	4566	30	8	1	4	4608	42	0.9	230	0.16
791-019	600-615	7798	94	308	107	207	8514	716	8.4	381	0.52
791-021	630-645	6817	132	245	66	107	7367	550	7.5	275	0.62
791-023	660-675	5939	482	449	87	166	7124	1185	16.6	329	0.52
791-025	700-715	9448	792	330	67	90	10728	1281	11.9	191	0.75
791-027	730-745	12316	658	257	65	73	13368	1052	7.9	224	0.88
791-029	760-775	2464	120	60	17	22	2683	219	8.1	102	0.76
791-031	790-805	3121	256	107	32	50	3567	445	12.5	114	0.65
791-033	820-835	5186	326	231	59	82	5884	698	11.9	141	0.72
791-035	850-865	7070	916	798	169	371	9323	2254	24.2	676	0.46
791-037	880-895	4554	343	202	41	98	5237	683	13.0	256	0.42
791-039	910-925	5211	462	315	50	83	6121	910	14.9	83	0.60
791-041	940-955	172	41	22	1	12	248	76	30.5	44	0.11
791-043	970-985	1775	174	127	27	45	2147	373	17.3	72	0.61
791-045	1000-1015	8835	879	656	161	386	10916	2081	19.1	1594	0.42
791-047	1030-1045	4791	877	681	142	277	6769	1978	29.2	286	0.51
791-049	1060-1075	5000	633	358	124	193	6308	1307	20.7	286	0.64
791-051	1090-1105	5255	567	577	271	385	7055	1800	25.5	711	0.70
791-053	1120-1135	10723	1045	865	352	480	13465	2743	20.4	817	0.73
791-055	1150-1165	104	38	56	49	102	349	245	70.2	409	0.49
791-057	1180-1195	8576	785	610	229	327	10527	1951	18.5	1250	0.70
791-059	1210-1225	4645	488	380	121	176	5809	1164	20.0	418	0.69

TABLE 2 C
TOTAL CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS (2A + 2B)

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-061	1240-1255	4652	563	431	127	179	5951	1300	21.8	161	0.71
791-063	1270-1285	2720	296	183	47	65	3311	592	17.9	84	0.73
791-065	1300-1315	5079	358	262	76	103	5878	799	13.6	135	0.75
791-067	1330-1345	3843	656	445	120	163	5226	1383	26.5	110	0.74
791-069	1360-1375	4490	930	582	147	222	6370	1880	29.5	228	0.66
791-071	1390-1405	355	74	116	47	98	691	335	48.5	274	0.48
791-073	1420-1435	4492	881	696	182	258	6508	2017	31.0	370	0.71
791-075	1450-1465	7973	1691	924	170	215	10972	2999	27.3	153	0.79
791-077	1480-1495	8442	2844	1219	229	302	13035	4593	35.2	218	0.76
791-079	1510-1525	2114	581	772	214	222	3903	1789	45.8	332	0.97
791-081	1540-1555	1504	480	403	44	78	2509	1005	40.1	211	0.57
791-083	1570-1585	2732	288	298	81	120	3520	788	22.4	153	0.68
791-085	1600-1615	966	194	278	68	114	1620	654	40.4	286	0.60
791-087	1630-1645	3906	671	615	133	219	5545	1639	29.6	317	0.61
791-089	1660-1675	1522	348	532	127	198	2727	1205	44.2	191	0.64
791-091	1690-1705	204	83	302	82	163	835	631	75.5	237	0.50
791-093	1720-1735	3491	1788	1830	293	419	7821	4330	55.4	404	0.70
791-095	1750-1760	302	163	396	94	193	1148	846	73.7	264	0.48
791-097	1775-1790	2581	913	1168	241	371	5275	2694	51.1	541	0.65
791-099	1805-1820	1332	621	974	178	293	3398	2066	60.8	355	0.61
791-100	1820-1835	1373	540	1066	227	386	3592	2219	61.8	522	0.59
791-101	1835-1850	1280	365	750	165	271	2830	1551	54.8	371	0.61
791-102	1850-1865	1565	806	1254	241	362	4228	2663	63.0	434	0.67
791-103	1865-1880	1190	525	882	157	248	3002	1812	60.4	250	0.63
791-104	1880-1895	1220	535	950	188	282	3174	1954	61.6	353	0.67
791-105	1895-1910	1331	533	1036	210	325	3434	2104	61.3	292	0.65
791-106	1910-1925	1875	666	1475	269	420	4705	2830	60.1	242	0.64
791-107	1925-1940	1932	808	1534	271	402	4947	3015	60.9	290	0.67
791-108	1940-1955	2883	880	1591	281	406	6041	3158	52.3	476	0.69
791-109	1955-1970	1936	839	1624	264	447	5109	3173	62.1	304	0.59

TABLE 2 C
TOTAL CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS (2A + 2B)

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-110	1970-1985	1362	694	1254	192	377	3880	2518	64.9	357	0.51
791-111	1985-2000	2497	1275	2341	278	635	7026	4529	64.5	315	0.44
791-112	2000-2015	3604	1310	1750	247	492	7403	3799	51.3	346	0.50
791-113	2015-2030	10148	2997	5371	681	2654	21852	11703	53.6	3004	0.26
791-114	2030-2045	10442	3876	7509	896	3959	26682	16240	60.9	3297	0.23
791-115	2045-2060	8497	4787	9982	1608	7442	32317	23820	73.7	5128	0.22
791-116	2060-2075	5911	3983	9180	1676	8868	29618	23707	80.0	7751	0.19
791-117	2075-2090	5724	4224	10478	2004	10295	32726	27002	82.5	9790	0.19
791-118	2090-2105	14851	8560	12678	2489	12154	50732	35881	70.7	6948	0.20
791-119	2105-2120	14573	9121	13488	3704	13718	54603	40030	73.3	8508	0.27
791-120	2120-2135	17247	10765	12419	1969	6227	48627	31380	64.5	2509	0.32
791-121	2135-2150	17973	12145	13229	1978	6753	52077	34104	65.5	2933	0.29
791-122	2150-2165	12153	4849	5673	610	2258	25543	13390	52.4	1492	0.27
791-123	2165-2180	5722	2838	3268	307	915	13050	7328	56.2	778	0.34
791-124	2180-2195	688	294	559	160	425	2126	1438	67.6	2758	0.38
791-125	2195-2210	2787	1074	1720	264	613	6459	3672	56.8	634	0.43
791-126	2225-2240	3253	1295	1763	260	510	7081	3827	54.1	642	0.51
791-127	2240-2255	3021	1051	1240	195	372	5879	2858	48.6	954	0.52
791-128	2255-2270	2595	1126	1567	499	1121	6908	4313	62.4	5468	0.44
791-129	2270-2285	2340	1137	1137	360	788	5761	3421	59.4	4662	0.46
791-130	2285-2300	9722	3567	1443	159	373	15265	5543	36.3	1150	0.43
791-131	2300-2315	13546	5302	2449	280	598	22175	8628	38.9	673	0.47
791-132	2315-2330	5087	1927	929	144	251	8337	3251	39.0	401	0.57
791-133	2330-2345	3545	1116	919	144	315	6039	2494	41.3	274	0.46
791-134	2345-2360	5646	1127	813	117	268	7971	2325	29.2	303	0.44
791-135	2360-2375	3276	1135	760	98	214	5483	2207	40.3	266	0.46
791-136	2375-2390	18612	8526	4241	336	583	32297	13686	42.4	280	0.58
791-137	2390-2405	1275	780	979	111	302	3447	2172	63.0	332	0.37
791-138	2405-2420	2419	1082	1403	175	290	5369	2951	55.0	242	0.60
791-139	2420-2435	2839	814	992	129	295	5069	2230	44.0	439	0.44

TABLE 2C
TOTAL CONCENTRATION (VOL. PPM OF ROCK) OF C₁ - C₇ HYDROCARBONS (2A + 2B)

GEOCHEM SAMPLE NUMBER	DEPTH	C ₁ Methane	C ₂ Ethane	C ₃ Propane	iC ₄ Isobutane	nC ₄ Butane	TOTAL C ₁ - C ₄	TOTAL C ₂ - C ₄	% GAS WETNESS	TOTAL C ₅ - C ₇	$\frac{iC_4}{nC_4}$
791-140	2435-2450	4600	1815	2153	275	469	9312	4712	50.6	387	0.58
791-141	2450-2465	1601	840	1314	125	318	4198	2597	61.9	175	0.39
791-142	2465-2480	12438	5117	4699	464	854	23573	11135	47.2	384	0.54
791-143	2480-2495	4068	1653	1313	128	260	7422	3353	45.2	242	0.49
791-144	2495-2510	28793	12013	5647	334	510	47297	18504	39.1	211	0.65
791-145	2510-2523	67519	26308	11065	663	1142	106695	39177	36.7	368	0.58

TABLE 3

DETAILED GASOLINE (C4-C7) ANALYSIS

GEOCHEM SAMPLE NUMBER	168
DEPTH	2153.8m DST1
isobutane	0.00
n-butane	0.00
isopentane	0.84
n-pentane	1.69
2,2-dimethylB	0.11
cyclopentane(CP)	0.68
2,3-dimethylB	0.07
2-methylP	2.73
3-methylP	1.85
n-hexane	6.27
methylCP(MCP)	3.60
2,2-dimethylP	0.17
2,4-dimethylP	0.07
2,2,3-trimethylB	0.04
benzene	4.61
cyclohexane(CH)	7.40
3,3-dimethylP	0.00
1,1-dimethylCP	0.00
2-methylH	5.48
2,3-dimethylP	0.37
3-methylH	3.99
1,c,3-dimethylCP	1.32
1,t,3-dimethylCP	1.22
1,t,2-dimethylCP	2.31
3-ethylP	0.00
n-heptane	12.59
methylCH(MCH)	22.21
1,c,2-dimethylCP	0.06
toluene	20.30
ABUNDANCE	
nC7/C7nap x100	46.42
MCP/Bz	0.78
MH/DMCP	1.93
nC6/MCP	1.74
%n-PARAFFINS	20.56
%iso-PARAFFINS	15.72
% NAPHTHENES	38.80
% AROMATICS	24.92

TABLE 4
KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION				THERMAL MATURATION INDEX	
		TYPES 40%; 10-40%; 10%	REMARKS	REWORKED (%)	PARTICLE SIZE		PRESERV- ATION
791-015A	540-555m	W;H-I-Al-Am**;-	**disseminated, poor quality	45	F-M	F-G	1+
791-025A	700-715m	W;Am**-H-I;Al	dominant H at 2- disseminated, not typically oil prone	60	F-C	F-G	1+ to 2-(?)
791-035A	850-865m	Am**-W;I;H-Al	**poor quality, disseminated	40	F-M	P-F	1+(?)
791-041A	940-955m	W-Am**;I-H;Al	**as 035A	20	F-M	P-F	1+
791-148A SWC	1023m	W;I;H-Am-Al	H dominantly marginally mature	85	M	F-G	1+
791-047A	1030-1045m	W;I-H;Am-Al	H at 2- through 2	75	<u>M</u> -C	G	1+
791-053A	1120-1135m	W;I-Am**-H;Al	**as 035A H at 2- through 2+	70	F-M	F-G	1+ to 2-
791-057B	1180-1195m	W;I-H-Am**;Al	**as 035A	70	F-M	F-G	1+
791-061B	1240-1255m	W;I-H;Al-Am	significant H at 2-	75	M	F-G	1+
791-067B	1330-1345m	W;I-H;Am-Al	significant H at 2- through 2	75	M	F-G	1+ to 2-
791-152A SWC	1370m	W;I;H-Am-Al	H very variable at 2- through 2 to 2+	85	M	G	1+ to 2-
791-071A	1390-1405m	W;I-H;Am-Al	H at 2- through 2 to 2+	85	<u>M</u> -C	G	1+
791-073B	1420-1435m	W;I-H;Al-Am		75	<u>M</u> -C	G	1+ to 2-
791-077A	1480-1495m	W;I-H;Al-Am		80	<u>M</u> -C	G	1+/1+ to 2-
791-155A SWC	1525m	W;I-H;Al-Am	H dominantly marginally mature, also at 2	90	M	G	1+ to 2-(?)
791-081A	1540-1555m	W;I-H;Am-Al	H at 2- through 2 to 2+	85	<u>M</u> -C	G	1+ to 2-
791-085A	1600-1615m	W;I-H;Am-Al	H at 2- through 2	85	M	G	1+ to 2-
791-089A	1660-1675m	W;I-H;Am-Al	H at 2- to 2 and 2	85	M	G	1+ to 2-

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

postscript = coarse, cuticle, cysts, degraded, fine, other,, structured, spore-pollen, thick-walled, unstructured

TABLE 4
KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION				THERMAL MATURATION INDEX	
		TYPES 40%; 10-40%; 10%	REMARKS	REWORKED (%)	PARTICLE SIZE		PRESERV- ATION
791-158A SWC	1720m	W; I-H; Am-A1	H dominantly marginally mature	75	M	G	1+ to 2-(?)
791-093A	1720-1735m	W; I-H; Am-A1	H at 2- to 2 and 2	80	M-C	G	1+ to 2-
791-093B	1720-1735m	W; I-H; Am-A1	H at 2- through 2	80	M	G	1+ to 2-
791-099B	1805-1820m	W; I-H; Am-A1	H at 2- through 2	80	M-C	G	1+ to 2-
791-102A	1850-1865m	W; I-H-Am**, A1	**not typically oil prone H at 2- through 2	75	F-C	F-G	1+ to 2-
791-107B	1925-1940m	W; H-I; Am-A1	H dominantly reworked approaching 2-	70	F-M	F	1+ to 2-/2-
791-111A	1985-2000m	W; Am**-I; H-A1	**frequently incompletely developed material H at 2- to 2 and 2	60	F-M/C	F-G	2-
791-115A	2045-2060m	Am**, A1*, H-W-I	**frequently incompletely developed *includes material passing to Am	5	F-C	G	2-
791-117A	2075-2090m	Am**, A1*, W-H-I	** * as 115A	5	F-VC	G	2-
791-120A	2120-2135m	Am**, A1*, W-H-I	**degraded, frequently incom- pletely developed *includes material passing to Am	5	F-C	G	2-
791-161A SWC	2140m	Am**-W; I-A1*; H	** * as 120A	30	F-C	G	2- to 2
791-122A	2150-2165m	Am; A1*; W-I-H	*as 120A dominant H at 2- to 2	10	F-C	G	2-

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

postscript = coarse, cuticle, cysts, degraded, fine, other., structured, spore-pollen, thick-walled, unstructured

TABLE 4
KEROGEN TYPE AND MATURATION

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC MATTER DESCRIPTION				THERMAL MATURATION INDEX	
		TYPES 40%; 10-40%; 10%	REMARKS	REWORKED (%)	PARTICLE SIZE		PRESERV- ATION
791-125A	2195-2210m	W; Am**-I-H; Al	**includes incompletely developed material dominant H at 2, minor material at 2-	60	F-C	G	2- to 2
791-128B	2255-2270m	W; I-Am**-H; Al	**as 125A H at 2	60	M	G	2- to 2
791-132B	2315-2330m	W-Am**; H-I; Al	**frequently incompletely developed	40	F-C	G	2- to 2
791-136B	2375-2390m	W; I-H-Am; Al	H at 2	75	M-C	G	2- to 2
791-140A	2435-2450m	W; I-H; Am-Al	H at 2	70	M-C	G	2- to 2
791-145B	2510-2523m	W; H-I; Am-Al	H at 2	50	F-C	G	2- to 2

Algal, Amorphous, Herbaceous, Inertinite, Resin, Wood

postscript = coarse, cuticle, cysts, degraded, fine, other., structured, spore-pollen, thick-walled, unstructured

TABLE 5
VITRINITE REFLECTANCE DATA

GEOCHEM SAMPLE NUMBER	DEPTH	SAMPLE TYPE	AVERAGE REFLECTIVITY Ro (%), (NUMBER OF PARTICLES)				REMARKS
			1	2	3	4	
791-015A	540-555m	WR	0.39 (1)	0.57 (2)	0.80 (15)	1.07 (2)	
791-025A	700-715m	KC	0.43 (35)	0.94 (2)	0.59 (1)	-	
791-035A	850-865m	WR	0.42 (11)	0.89 (26)	0.57 (5)	-	
791-041A	940-955m	WR	0.45 (1)	0.94 (9)	0.58 (1)	1.27 (4)	
791-148A SWC	1023m	WR	0.49 (2)	0.97 (20)	0.76 (5)	1.18 (2)	
791-047A	1030-1045m	WR	0.52 (2)	1.13 (17)	-	-	
791-053A	1120-1135m	WR	0.54 (2)	1.21 (15)	0.76 (3)	-	
791-061B	1240-1255m	WR	0.37 (1)	1.13 (12)	0.88 (7)	-	
791-067B	1330-1345m	KC	0.52 (11)	0.94 (36)	0.68 (4)	1.23 (1)	
791-152A SWC	1370m	WR	0.61 (2)	1.12 (23)	-	-	
791-071A	1390-1405m	WR	0.45 (1)	1.74 (1)	1.28 (18)	-	
791-077A	1480-1495m	KC	0.52 (27)	1.09 (13)	-	-	
791-155A SWC	1525m	KC	0.39 (2)	0.69 (4)	0.53 (18)	1.08 (14)	
791-085A	1600-1615m	KC	0.57 (5)	1.19 (31)	0.84 (5)	1.62 (1)	
791-158A SWC	1720m	KC	0.47 (35)	0.57 (4)	-	-	
791-093A	1720-1735m	KC	0.50 (31)	0.96 (7)	0.76 (4)	1.17 (8)	
791-099B	1805-1820m	WR	1.05 (4)	1.92 (2)	1.41 (19)	-	
791-107B	1925-1940m	KC	0.50 (20)	1.10 (13)	0.76 (6)	-	
791-159A SWC	1945m	WR	0.55 (1)	1.12 (8)	0.71 (9)	1.41 (2)	
791-111A	1985-2000m	WR	0.69 (4)	1.67 (1)	1.23 (15)	-	
791-115A	2045-2060m	KC	0.48 (43)	0.67 (4)	-	-	
791-161A SWC	2140m	KC	0.47 (20)	0.87 (1)	0.62 (25)	1.11 (5)	
791-122A	2150-2165m	KC	0.56 (22)	0.94 (5)	0.82 (5)	1.11 (8)	
791-125A	2195-2210m	WR	0.78 (6)	1.15 (16)	-	-	
791-132B	2315-2330m	KC	0.57 (21)	-	-	-	
791-136B	2375-2390m	KC	0.58 (28)	1.23 (32)	0.81 (2)	-	
791-140A	2435-2450m	KC	0.39 (2)	1.17 (35)	0.58 (14)	-	
791-145B	2510-2523m	KC	0.38 (1)	0.61 (59)	-	-	

TABLE 6A
CONCENTRATION (PPM) OF EXTRACTED C₁₅+ MATERIAL IN ROCK

GEOCHEM SAMPLE NUMBER	DEPTH	TOTAL EXTRACT	HYDROCARBONS			NON HYDROCARBONS			
			Paraffin Naphthenes	Aromatics	TOTAL	Precipd. Asphaltenes	Eluted NSO's	Non-eluted NSO's	Sulphur
791-025	700-715	404	50	41	91	196	59	55	3
791-035	850-865	383	90	56	146	131	52	42	13
791-053	1120-1135	408	86	62	149	140	66	39	14
791-061	1240-1255	362	98	53	150	150	53	9	0
791-077	1480-1495	497	118	73	190	185	77	45	0
791-093	1720-1735	430	112	60	172	189	39	15	15
791-099	1805-1820	1002	409	164	573	251	140	30	8
791-107	1925-1940	447	117	72	189	188	51	9	9
791-159	1945	1250	97	135	232	915	65	11	27
791-115A	2045-2060	2997	393	761	1154	1366	393	83	0
791-117A	2075-2090	3972	706	1012	1718	1655	586	13	0
791-120A	2120-2135	7099	962	1958	2920	3568	471	141	0
791-161	2140	4946	581	939	1521	2838	174	43	370
791-163	2176.0-.10	317	131	51	182	87	21	19	8
791-164	2179.84-.90	1502	859	282	1141	90	86	83	101
791-165	2191.65-.72	1304	681	315	996	143	77	70	18
791-166	2223.78-.87	11215	7892	2312	10204	361	378	272	0
791-167	2229.58-.66	17941	11937	4197	16134	458	827	521	0
791-128	2255-2270	1966	918	428	1347	310	165	140	5
791-132	2315-2330	939	105	148	253	593	73	13	8
791-136	2375-2390	300	40	64	105	142	42	9	2
791-145	2510-2523	513	53	124	177	309	13	4	10

TABLE 6B
COMPOSITION (NORMALISED %) OF C₁₅₊ MATERIAL EXTRACTED FROM ROCK

GEOCHEM SAMPLE NUMBER	DEPTH	HYDROCARBONS		NON HYDROCARBONS			
		Paraffin – Naphthenes	Aromatics	Preciptd. Asphaltenes	Eluted NSO's	Non eluted NSO's	Sulphur
791-025	700-715	12.44	10.05	48.38	14.65	13.63	0.85
791-035	850-865	23.52	14.52	34.15	13.50	11.04	3.27
791-053	1120-1135	21.14	15.28	34.41	16.20	9.57	3.40
791-061	1240-1255	26.94	14.53	41.47	14.53	2.52	0.00
791-077	1480-1495	23.70	14.60	37.15	15.45	9.10	0.00
791-093	1720-1735	26.03	13.92	43.94	9.15	3.48	3.48
791-099	1805-1820	40.83	16.33	25.02	14.00	2.98	0.84
791-107	1925-1940	26.25	16.14	42.16	11.48	2.05	1.93
791-159	1945	7.74	10.84	73.19	5.21	0.84	2.18
791-115A	2045-2060	13.11	25.40	45.59	13.11	2.79	0.00
791-117A	2075-2090	17.77	25.48	41.66	14.76	0.33	0.00
791-120A	2120-2135	13.55	27.58	50.27	6.63	1.98	0.00
791-161	2140	11.76	18.99	57.39	3.52	0.87	7.48
791-163	2176.0-.10	41.29	16.01	27.34	6.75	6.10	2.51
791-164	2179.84-.90	57.18	18.81	6.00	5.73	5.53	6.75
791-165	2191.65-.72	52.22	24.15	10.96	5.89	5.40	1.38
791-166	2223.78-.87	70.37	20.62	3.22	3.37	2.43	0.00
791-167	2229.58-.66	66.54	23.39	2.55	4.61	2.90	0.00
791-128	2255-2270	46.71	21.79	15.79	8.37	7.11	0.23
791-132	2315-2330	11.21	15.74	63.11	7.72	1.38	0.84
791-136	2375-2390	13.50	21.46	47.48	13.98	2.93	0.65
791-145	2510-2523	10.40	24.14	60.18	2.56	0.79	1.94
791-168	CONDENSATE	93.57	2.50	1.79	1.61	0.54	0.00

TABLE 7
SIGNIFICANT RATIOS (%) OF C₁₅+ FRACTIONS AND ORGANIC CARBON

GEOCHEM SAMPLE NUMBER	DEPTH	ORGANIC CARBON (wt. %)	HYDROCARBONS	HYDROCARBONS	TOTAL EXTRACT	P-NAPHTHENES
			TOTAL EXTRACT	ORG. CARBON	ORG. CARBON	AROMATICS
791-025	700-715	1.12	22.49	0.81	3.61	1.24
791-035	850-865	0.68	38.04	2.14	5.63	1.62
791-053	1120-1135	0.99	36.42	1.50	4.12	1.38
791-061	1240-1255	0.99	41.47	1.52	3.66	1.85
791-077	1480-1495	0.83	38.30	2.29	5.99	1.62
791-093	1720-1735	1.40	39.95	1.23	3.07	1.87
791-099	1805-1820	1.34	57.16	4.27	7.48	2.50
791-107	1925-1940	1.55	42.39	1.22	2.88	1.63
791-159	1945	2.52	18.58	0.92	4.96	0.71
791-115A	2045-2060	3.76	38.52	3.07	7.97	0.52
791-117A	2075-2090	3.73	43.25	4.61	10.65	0.70
791-120A	2120-2135	8.82	41.13	3.31	8.05	0.49
791-161	2140	8.01	30.75	1.90	6.17	0.62
791-163	2176.0-.10	0.07	57.30	25.98	45.35	2.58
791-164	2179.84-.90	0.13	75.99	87.78	115.52	3.04
791-165	2191.65-.72	0.59	76.37	16.88	22.11	2.16
791-166	2223.78-.87	0.15	90.98	680.26	747.68	3.41
791-167	2229.58-.66	0.12	89.93	1344.50	1495.08	2.84
791-128	2255-2270	0.76	68.50	17.72	25.87	2.14
791-132	2315-2330	1.09	26.96	2.32	8.62	0.71
791-136	2375-2390	1.30	34.96	0.81	2.30	0.63
791-145	2510-2523	1.95	34.54	0.91	2.63	0.43

TABLE 8

ROCKEVAL PYROLYSIS DATA

<u>GEOCHEM</u> <u>SAMPLE</u> <u>NUMBER</u>	<u>DEPTH</u>	<u>S1</u> (mg/g)	<u>S2</u> (mg/g)	<u>S3</u> (mg/g)	<u>HYDROGEN</u> <u>INDEX</u>	<u>PRODUCTION</u> <u>INDEX</u>	<u>TMAX</u> (°C)
791-001B	330-345m	0.16	1.75	0.42	243.05	0.08	430
791-005A	390-405m	0.12	0.88	0.36	231.58	0.12	430
791-009A	450-465m	0.08	0.50	0.25	128.20	0.14	442
791-015A	540-555m	0.19	1.09	0.42	198.18	0.15	426
791-019A	600-615m	0.13	0.75	0.34	101.35	0.15	422
791-021A	630-645m <i>Top</i>	0.11	0.75	0.75	92.59	0.13	429
791-025A	700-715m	0.08	0.76	0.97	65.52	0.09	431
791-029A	760-775m	0.06	0.41	0.54	51.52	0.13	425
791-031A	790-805m	0.09	0.65	0.56	75.58	0.12	431
791-035A	850-865m	0.06	0.58	0.66	86.57	0.09	353
791-041A	940-955m	0.07	0.44	0.82	40.36	0.14	424
791-047A	1030-1045m	0.06	0.41	0.52	56.94	0.13	423
791-049A	1060-1075m	0.03	0.28	0.83	40.00	0.10	435
791-051A	1090-1105m <i>P</i>	0.05	0.57	1.01	60.00	0.80	425
791-053A	1120-1135m <i>W</i>	0.08	1.37	0.72	147.31	0.05	349
791-055A	1150-1165m	0.04	0.80	0.63	82.47	0.05	429
791-057B	1180-1195m	0.05	0.88	0.58	81.48	0.05	430
791-059A	1225-1240m	0.08	1.08	0.63	106.93	0.07	438
791-061B	1240-1255m	0.09	1.08	0.45	101.89	0.08	432
791-063B	1270-1285m	0.04	0.59	0.54	64.13	0.06	428
791-065A	1300-1315m	0.09	0.47	0.43	66.20	0.16	432
791-065B	1300-1315m	0.02	0.11	0.53	14.67	0.15	437
791-067B	1330-1345m	0.06	0.69	0.53	62.16	0.08	431
791-069A	1360-1375m	0.07	0.70	0.48	62.50	0.09	429
791-071A	1390-1405m	0.03	0.44	0.53	41.12	0.06	430
791-073B	1420-1435m	0.04	0.38	0.64	38.00	0.09	431
791-075A	1450-1465m	0.08	0.77	0.65	77.00	0.09	430
791-077A	1480-1495m	0.04	0.65	0.39	55.08	0.06	432
791-081A	1540-1555m	0.04	0.53	0.65	41.08	0.07	434
791-083A	1570-1585m	0.03	0.47	0.64	40.87	0.06	433
791-085A	1600-1615m	0.04	0.55	0.86	46.61	0.07	434
791-087A	1630-1645m	0.04	0.49	0.89	39.20	0.07	434
791-089A	1660-1675m	0.06	1.14	0.46	89.06	0.05	418
791-093A	1720-1735m	0.08	0.90	0.50	52.94	0.08	436
791-093B	1720-1735m	0.16	2.23	0.62	93.30	0.07	435
791-095A	1750-	0.07	0.82	0.76	59.85	0.08	443
791-097A	1775-1790m	0.06	0.80	0.76	50.31	0.07	434
791-099B	1805-1820m	0.23	3.04	1.33	114.72	0.07	433
791-101A	1835-1850m	0.08	0.83	0.92	50.30	0.09	435
791-102A	1850-1865m	0.10	1.34	0.78	70.90	0.07	437
791-104B	1880-1895m	0.15	2.41	1.09	108.07	0.06	435
791-105A	1895-1910m	0.06	0.61	0.89	46.21	0.09	434
791-107B	1925-1940m	0.14	2.26	1.22	97.83	0.06	436
791-109B	1955-1970m	0.14	2.28	1.15	96.20	0.06	436
791-110A	1970-1985m	0.10	1.44	0.72	74.61	0.06	437
791-111A	1985-2000m <i>Stettin</i>	0.10	1.14	0.66	65.89	0.08	439
791-112B	2000-2015m <i>Stettin</i>	0.12	1.75	0.98	90.67	0.06	436
791-113A	2015-2030m	0.11	1.48	0.67	73.63	0.07	438
791-114A	2030-2045m <i>Stettin</i>	0.19	2.62	0.75	86.47	0.07	439
791-115A	2045-2060m <i>Stettin</i>	0.59	10.07	0.49	260.88	0.05	434

TABLE 8

ROCKEVAL PYROLYSIS DATA

<u>GEOCHEM</u> <u>SAMPLE</u> <u>NUMBER</u>	<u>DEPTH</u>	<u>S1</u> (mg/g)	<u>S2</u> (mg/g)	<u>S3</u> (mg/g)	<u>HYDROGEN</u> <u>INDEX</u>	<u>PRODUCTION</u> <u>INDEX</u>	<u>TMAX</u> (°C)
791-116A	2060-2075m	0.74	12.24	0.36	282.03	0.06	435
791-117A	2075-2090m	0.73	10.97	0.39	296.49	0.06	435
791-118A	2090-2105m	1.17	15.74	0.32	285.66	0.07	434
791-119A	2105-2120m	1.20	13.70	0.29	256.55	0.08	433
791-120A	2120-2135m	1.95	20.48	0.28	242.65	0.09	432
791-121A	2135-2150m <i>2.11</i>	2.11	21.28	0.24	251.83	0.09	433
791-122A	2150-2165m <i>2.44</i>	2.44	23.00	0.27	237.11	0.09	432
791-123B	2165-2180m <i>0.22</i>	0.22	1.28	0.69	74.42	0.15	437
791-124A	2180-2195m	0.20	2.12	0.94	83.14	0.09	435
791-125A	2195-2210m	0.12	1.12	0.64	64.00	0.10	437
791-126A	2225-2240m	0.14	1.72	0.55	86.87	0.07	433
791-127A	2240-2255m	0.13	1.57	0.74	80.51	0.08	436
791-128B	2255-2270m <i>0.37</i>	0.37	2.09	0.48	95.43	0.15	436
791-131B	2300-2315m <i>0.21</i>	0.21	2.60	0.43	102.77	0.07	433
791-132B	2315-2330m	0.25	4.13	0.42	136.75	0.06	438
791-134B	2345-2360m	0.12	1.32	0.29	70.59	0.08	438
791-136B	2375-2390m	0.12	1.34	0.32	67.68	0.08	438
791-138A	2405-2420m <i>0.10</i>	0.10	1.38	0.42	77.97	0.07	435
791-140A	2435-2450m	0.14	1.41	0.42	73.82	0.09	436
791-142B	2465-2480m <i>0.15</i>	0.15	1.62	0.37	83.94	0.08	439
791-144B	2495-2510m	0.13	1.15	0.44	65.34	0.10	438
791-145B	2510-2523m <i>2.97</i>	2.97	79.17	0.52	245.87	0.04	440

TABLE 9
COMPOSITION (NORMALISED %) OF C₁₅₊ PARAFFIN – NAPHTHENE HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-025	-035	-052	-061	-077	-093
DEPTH	700- 715m	850- 865m	1105- 1120m	1240- 1255m	1480- 1495m	1720- 1735m
SAMPLE TYPE						
nC ₁₅	1.27	6.28	6.35	7.03	4.22	3.49
nC ₁₆	6.23	15.40	13.71	11.87	13.08	6.83
nC ₁₇	7.37	11.51	12.55	13.19	17.58	10.09
nC ₁₈	9.28	17.19	13.28	9.12	16.17	9.94
nC ₁₉	6.10	5.98	7.22	6.26	8.86	8.42
nC ₂₀	6.61	5.83	6.64	6.15	9.28	8.35
nC ₂₁	7.75	4.93	5.92	6.37	7.31	7.13
nC ₂₂	7.88	5.23	5.48	6.81	5.34	7.44
nC ₂₃	14.49	6.43	6.93	7.14	5.34	8.50
nC ₂₄	11.18	6.28	6.64	6.70	3.80	6.83
nC ₂₅	12.71	5.98	5.63	6.92	3.94	6.90
nC ₂₆	3.56	2.99	2.89	3.19	1.97	4.78
nC ₂₇	1.91	2.84	2.02	3.08	1.13	4.70
nC ₂₈	1.40	1.20	2.02	3.08	0.56	3.41
nC ₂₉	1.14	0.60	1.01	1.43	0.42	1.52
nC ₃₀	0.38	0.30	0.72	0.77	0.28	0.68
nC ₃₁	0.25	0.30	0.29	0.33	0.14	0.30
nC ₃₂	0.13	0.30	0.29	0.22	0.14	0.30
nC ₃₃	0.13	0.15	0.14	0.11	0.14	0.15
nC ₃₄	0.13	0.15	0.14	0.11	0.14	0.15
nC ₃₅	0.13	0.15	0.14	0.11	0.14	0.08
PARAFFIN	17.20	10.83	10.59	12.93	22.64	37.84
ISOPRENOID	3.65	2.14	2.77	2.33	5.99	5.23
NAPHTHENE	79.15	87.04	86.64	84.74	71.37	56.93
CPI INDEX A	1.40	1.14	1.08	1.11	1.19	1.10
CPI INDEX B	1.95	1.47	1.12	1.24	1.38	1.16
PRISTANE/PHYTANE	1.11	2.14	2.12	2.57	2.36	1.98
PRISTANE/nC ₁₇	1.52	1.17	1.41	0.98	1.06	0.91

TABLE 9
COMPOSITION (NORMALISED %) OF C₁₅₊ PARAFFIN – NAPHTHENE HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-099	-107	-159	-115A	-117A	120A
DEPTH	1805– 1820m	1925– 1940m	1945m	2045– 2060m	2075– 2090m	2120– 2135m
SAMPLE TYPE	SWC					
nC ₁₅	1.90	3.73	4.57	10.87	9.75	8.33
nC ₁₆	3.23	4.56	6.47	10.60	9.87	10.73
nC ₁₇	4.37	6.05	11.29	9.24	9.87	9.02
nC ₁₈	5.57	6.65	9.39	8.56	7.00	7.53
nC ₁₉	6.65	7.47	9.90	8.29	7.50	7.88
nC ₂₀	7.85	8.36	8.88	6.66	7.25	6.96
nC ₂₁	8.04	8.36	8.50	6.66	6.12	6.51
nC ₂₂	7.53	7.99	7.87	5.57	5.62	5.71
nC ₂₃	7.72	10.01	8.25	6.52	6.75	5.25
nC ₂₄	8.35	8.81	5.96	5.03	5.50	4.91
nC ₂₅	7.53	7.77	6.47	6.11	5.37	4.79
nC ₂₆	7.85	6.80	3.93	4.48	4.37	3.88
nC ₂₇	6.71	6.42	3.68	4.48	4.75	4.57
nC ₂₈	5.57	3.36	1.40	2.72	3.75	3.31
nC ₂₉	5.25	2.39	1.52	2.31	3.50	3.65
nC ₃₀	2.72	0.67	0.63	0.82	1.25	1.83
nC ₃₁	1.90	0.22	0.63	0.41	0.75	2.74
nC ₃₂	0.82	0.15	0.25	0.27	0.37	1.03
nC ₃₃	0.25	0.07	0.13	0.14	0.25	0.68
nC ₃₄	0.13	0.07	0.13	0.14	0.25	0.34
nC ₃₅	0.06	0.07	0.13	0.14	0.12	0.34
PARAFFIN	45.34	42.09	42.69	38.49	38.72	41.15
ISOPRENOID	3.19	4.24	9.21	9.68	9.24	8.88
NAPHTHENE	51.48	53.66	48.10	51.83	52.03	49.98
CPI INDEX A	0.99	1.11	1.21	1.21	1.10	1.08
CPI INDEX B	1.07	1.19	1.51	1.31	1.22	1.35
PRISTANE/PHYTANE	2.26	2.46	4.31	2.70	2.35	2.44
PRISTANE/nC ₁₇	1.12	1.19	1.55	1.99	1.70	1.70

TABLE 9
COMPOSITION (NORMALISED %) OF C₁₅₊ PARAFFIN – NAPHTHENE HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-161	-163	-164	-165	-166	-167
DEPTH	2140m	2176- 2176.10m	2179.84- 2179.90m	2191.65- 2191.72m	2223.78- 2223.87m	2229.58- 2229.66m
SAMPLE TYPE	SWC	CORE	CORE	CORE	CORE	CORE
nC ₁₅	8.60	1.45	4.64	4.82	5.51	5.52
nC ₁₆	8.60	4.16	5.49	6.30	5.78	5.70
nC ₁₇	8.39	5.80	6.19	7.97	7.77	5.52
nC ₁₈	7.56	7.38	6.62	7.13	6.51	5.94
nC ₁₉	7.77	7.82	7.39	7.90	6.91	6.67
nC ₂₀	6.84	7.57	6.76	6.88	7.91	7.64
nC ₂₁	7.05	7.94	7.60	6.88	7.11	7.10
nC ₂₂	6.74	8.13	7.74	8.55	8.64	7.52
nC ₂₃	6.53	8.39	6.76	6.94	6.84	8.19
nC ₂₄	5.18	7.69	9.36	7.33	6.31	8.00
nC ₂₅	5.91	7.50	6.19	6.56	7.11	6.00
nC ₂₆	5.18	6.68	5.42	5.14	5.78	5.64
nC ₂₇	5.08	5.93	5.35	5.40	5.38	5.46
nC ₂₈	3.21	4.60	4.22	4.11	4.39	4.61
nC ₂₉	3.21	3.66	4.01	3.47	3.39	3.88
nC ₃₀	1.66	2.21	2.53	2.06	2.26	2.61
nC ₃₁	1.04	1.39	1.62	1.16	1.20	1.76
nC ₃₂	0.73	0.63	0.84	0.58	0.60	0.97
nC ₃₃	0.31	0.57	0.70	0.45	0.33	0.67
nC ₃₄	0.21	0.38	0.42	0.26	0.20	0.42
nC ₃₅	0.21	0.13	0.14	0.13	0.07	0.18
PARAFFIN	43.72	51.76	55.51	50.40	41.78	54.73
ISOPRENOID	8.20	3.85	3.16	4.24	3.33	2.82
NAPHTHENE	48.07	44.39	41.33	45.35	54.89	42.45
CPI INDEX A	1.12	1.04	0.93	0.97	0.99	0.98
CPI INDEX B	1.21	1.09	1.06	1.14	1.11	1.03
PRISTANE/PHYTANE	2.93	1.95	1.89	2.64	1.86	1.74
PRISTANE/nC ₁₇	1.67	0.85	0.60	0.77	0.67	0.59

TABLE 9
COMPOSITION (NORMALISED %) OF C₁₅₊ PARAFFIN – NAPHTHENE HYDROCARBONS

GEOCHEM SAMPLE NUMBER	-128	-132	-136	-145	-168
DEPTH	2255- 2270m	2315- 2330m	2375- 2390m	2510- 2523m	CONDEN- SATE
SAMPLE TYPE					
nC ₁₅	4.93	4.48	2.38	3.53	12.07
nC ₁₆	5.80	5.24	5.54	9.06	12.69
nC ₁₇	7.08	6.17	8.62	8.71	13.52
nC ₁₈	6.56	6.93	9.31	9.71	11.56
nC ₁₉	7.20	6.81	8.62	9.50	13.11
nC ₂₀	7.25	6.69	10.46	9.35	9.60
nC ₂₁	7.54	6.23	9.31	7.63	8.57
nC ₂₂	7.89	6.75	10.46	7.19	5.78
nC ₂₃	7.20	8.03	10.31	7.48	5.06
nC ₂₄	6.38	6.69	8.23	7.05	3.20
nC ₂₅	6.56	8.09	7.54	6.76	2.48
nC ₂₆	5.22	6.05	4.92	4.96	1.24
nC ₂₇	4.82	6.23	2.46	4.53	0.52
nC ₂₈	3.48	4.71	0.62	2.81	0.21
nC ₂₉	3.66	5.06	0.38	0.94	0.10
nC ₃₀	2.32	1.98	0.38	0.29	0.10
nC ₃₁	2.38	2.10	0.15	0.14	0.10
nC ₃₂	1.33	0.76	0.08	0.14	0.10
nC ₃₃	1.33	0.58	0.08	0.07	0.00
nC ₃₄	0.75	0.23	0.08	0.07	0.00
nC ₃₅	0.29	0.17	0.08	0.07	0.00
PARAFFIN	56.44	64.54	45.12	59.61	56.50
ISOPRENOID	3.37	2.97	4.44	7.25	9.50
NAPHTHENE	40.19	32.49	50.43	33.15	33.99
CPI INDEX A	1.06	1.14	1.05	1.06	1.22
CPI INDEX B	1.20	1.35	1.25	1.16	1.31
PRISTANE/PHYTANE	1.94	3.94	2.88	4.12	2.33
PRISTANE/nC ₁₇	0.56	0.59	0.85	1.12	0.87

TABLE 10

CARBON ISOTOPES ($^{\circ}/_{\infty}$ PDB)

GEOCHEM SAMPLE NUMBER	DEPTH	PARAFFIN- NAPHTHENES	AROMATICS	TOTAL EXTRACTS
791-163	2176.0-2176.10m	-29.26	-28.30	-28.46
791-164	2179.84-2179.90m	-30.72	-27.84	-28.61
791-165	2191.65-2191.72m	-28.79	-28.23	-28.20
791-166	2223.78-2223.87m	-28.97	-27.78	-28.68
791-167	2229.58-2229.66m	-29.39	-28.25	-28.81
791-168	CONDENSATE	-28.06	-26.24	-28.11

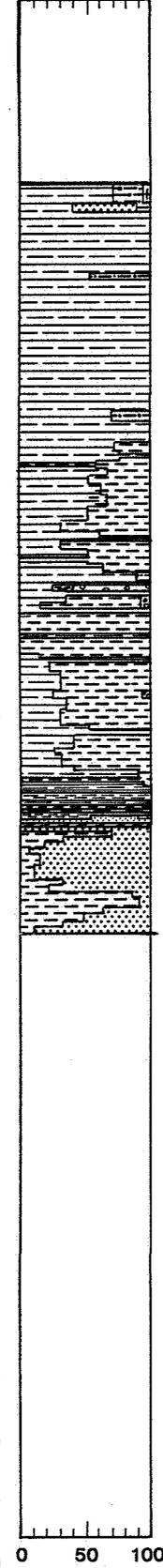
FIGURE 1

C₁-C₇ HYDROCARBONS

WELL 7120/7-2

LITHO % LOG

0 50 100



ZONE

10²

POOR

FAIR

GOOD

10³

10⁴

10⁵

A

B

1000

C¹

C²

2000

D

E

3000

10²

10³

10⁴

10⁵

0

50

100

1

5

10²

10³

10⁴

10⁵

0

50

100

1

5

10²

10³

10⁴

10⁵

ABUNDANCE

C₁ - C₄ HYDROCARBONS

WETNESS

iC₄/nC₄

C₅ - C₇₊ HYDROCARBONS

ABUNDANCE

- Carbonate
- Shale/Mudstone
- Siltstone
- Evaporite

- Sandstone/Sand
- Coal
- Igneous
- L.C.M.

iC₄ - ISOBUTANE

nC₄ - NORMAL BUTANE

ABUNDANCE - VOLUME PPM OF ROCK

WETNESS - % C₂-C₄ IN C₁-C₄

FIGURE 2

RICHNESS

WELL 7120/7-2

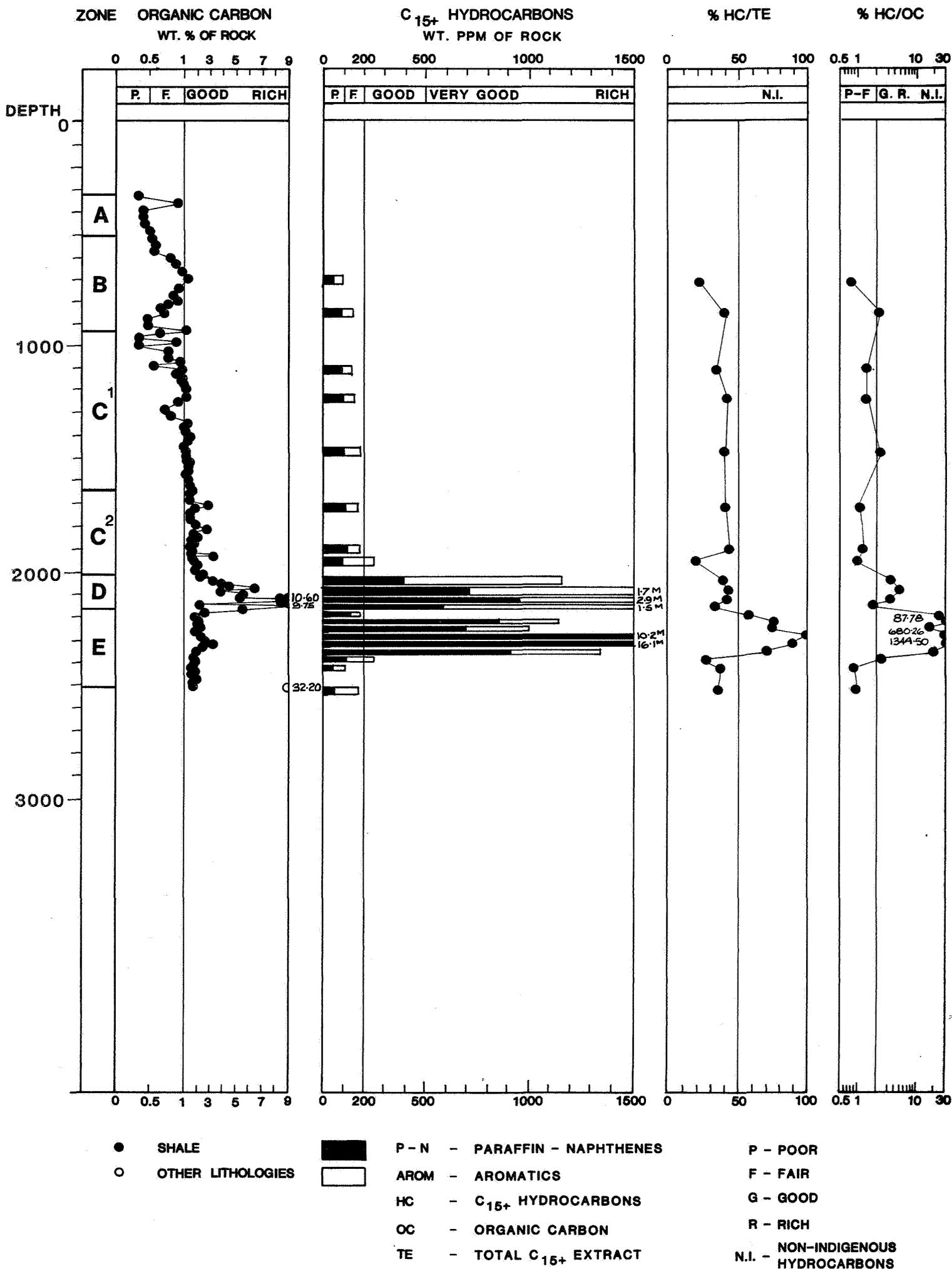
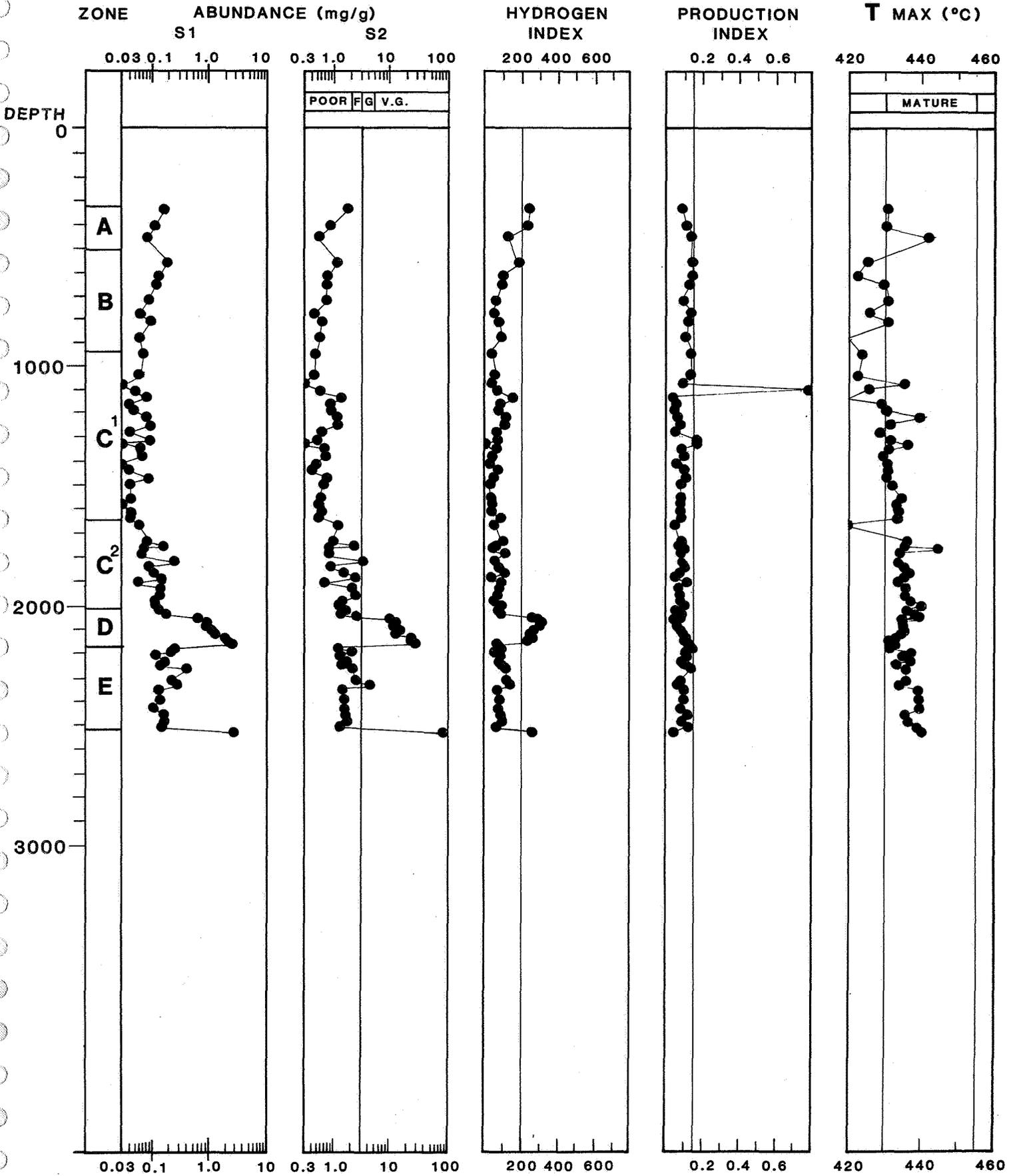
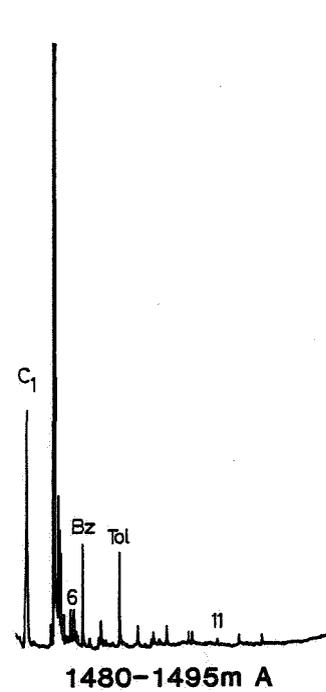
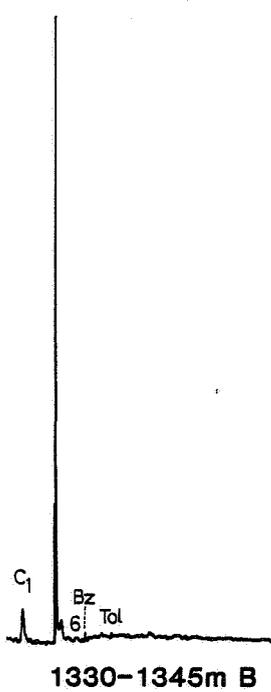
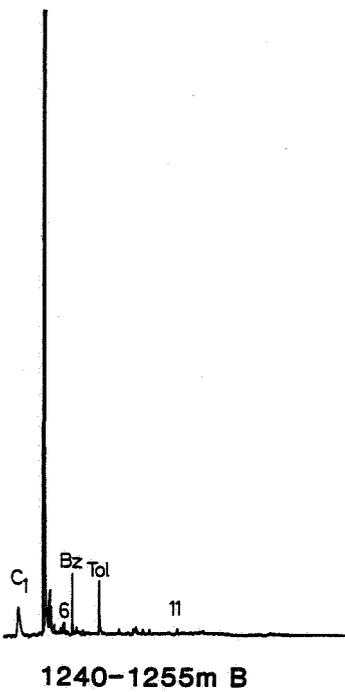
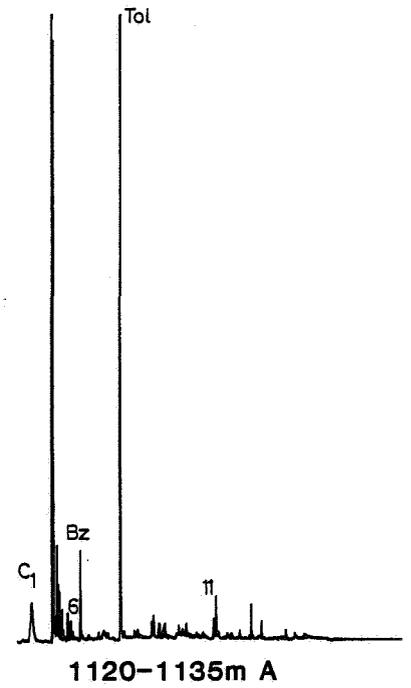
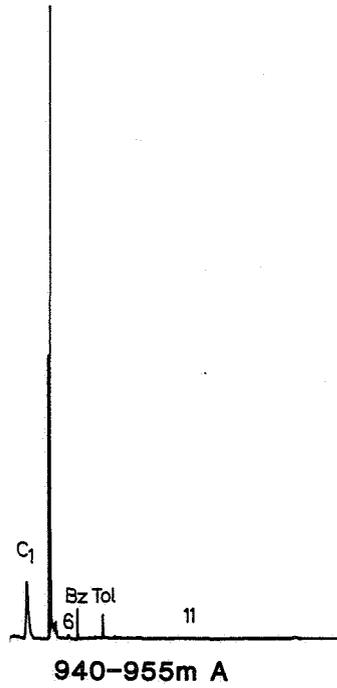
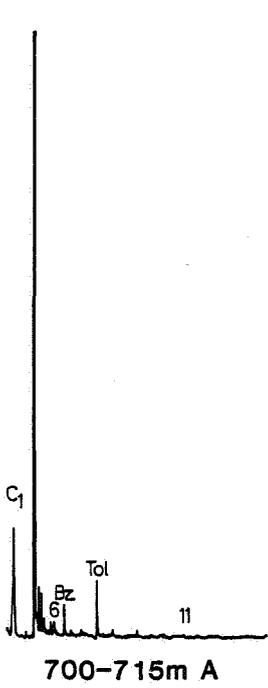
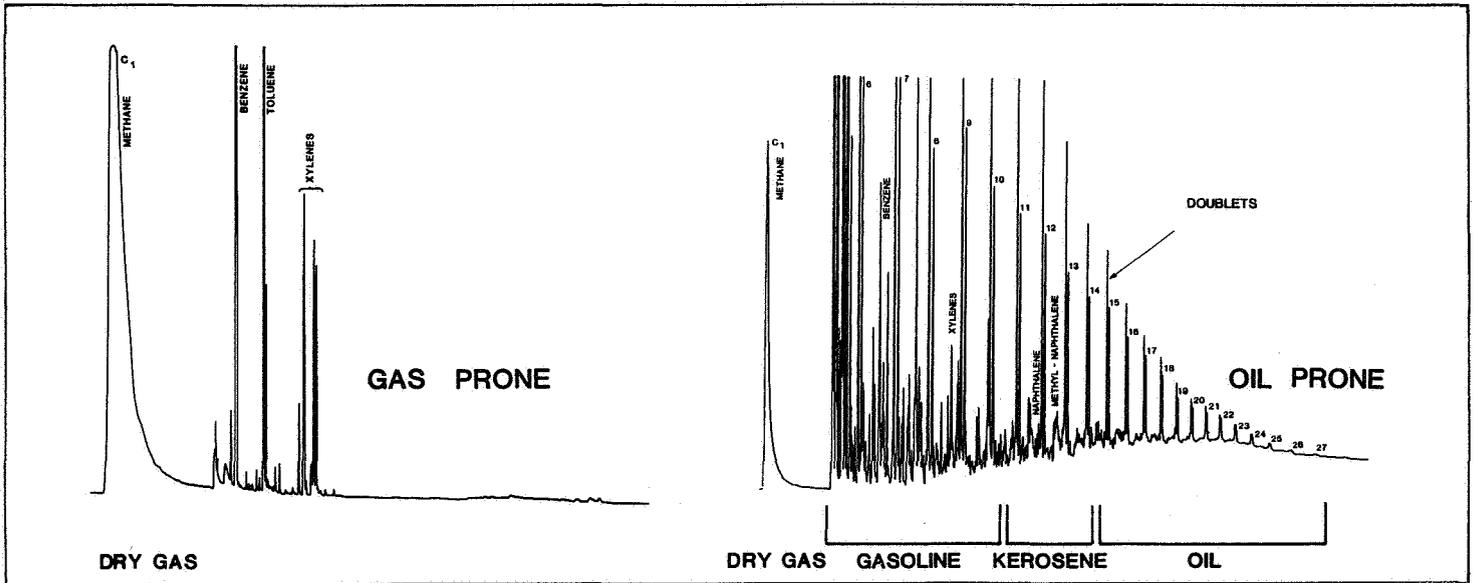


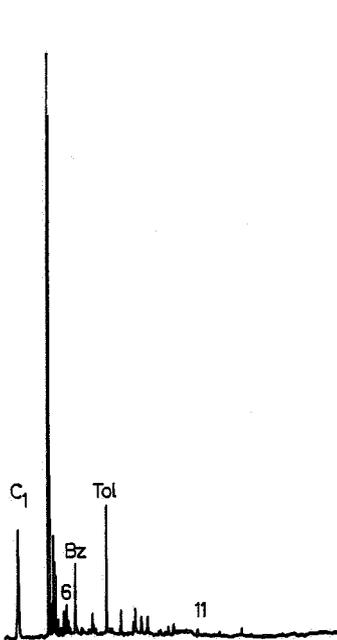
FIGURE 3

ROCKEVAL DATA

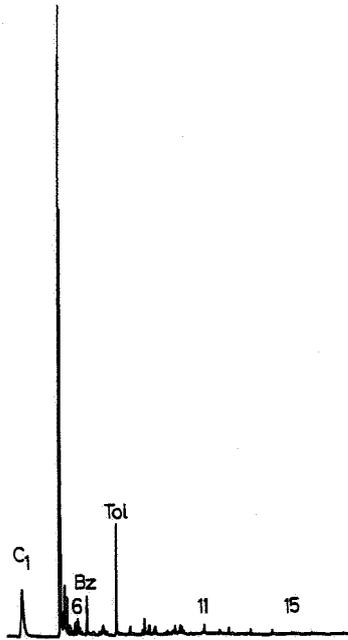
WELL 7120/7-2



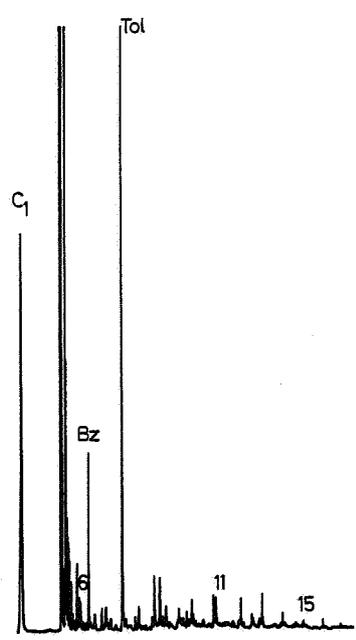




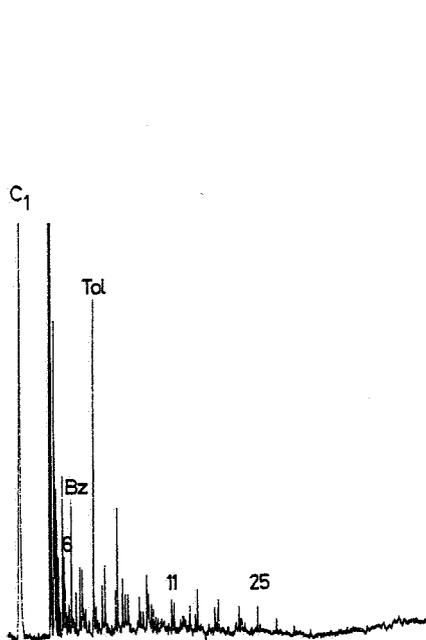
1600-1615m A



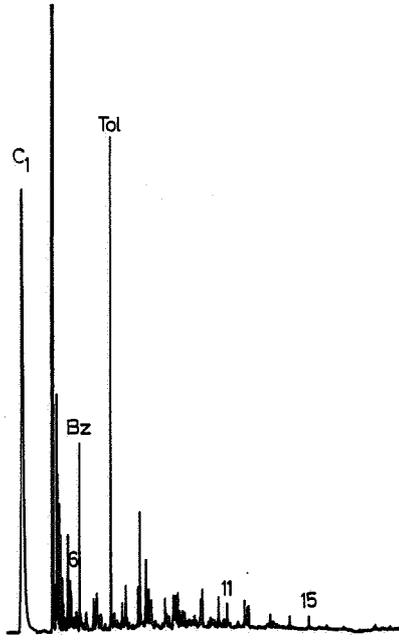
1720-1735m A



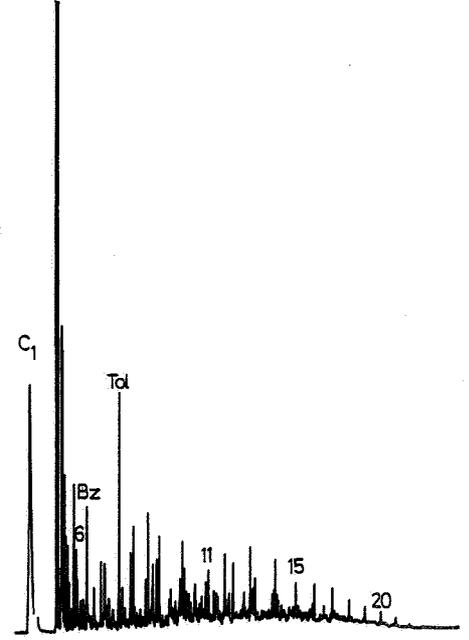
1805-1820m B



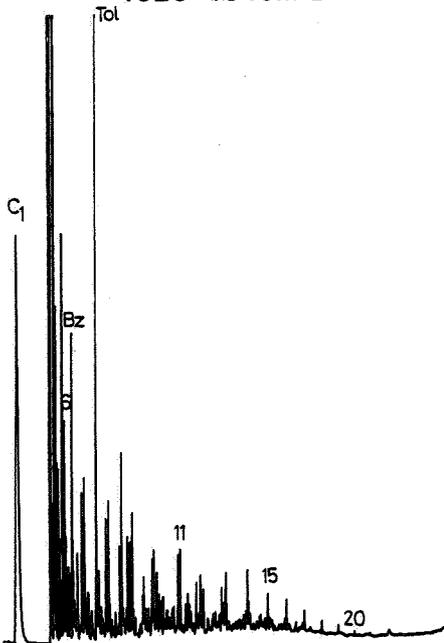
1925-1940m B



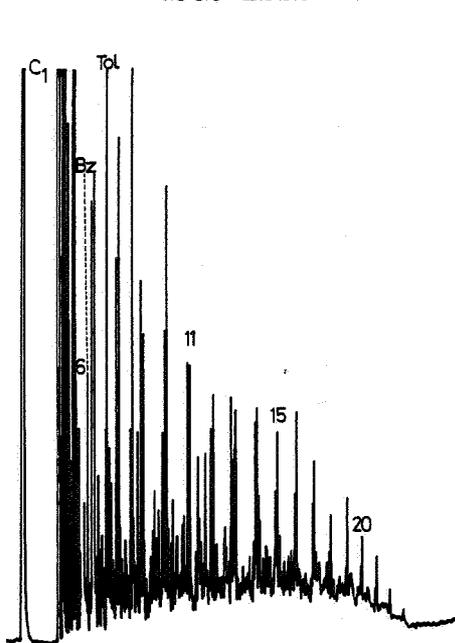
1985-2000m A



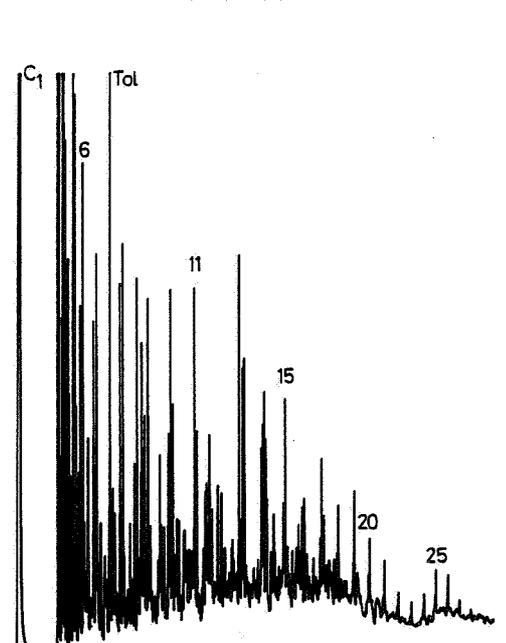
2045-2060m A



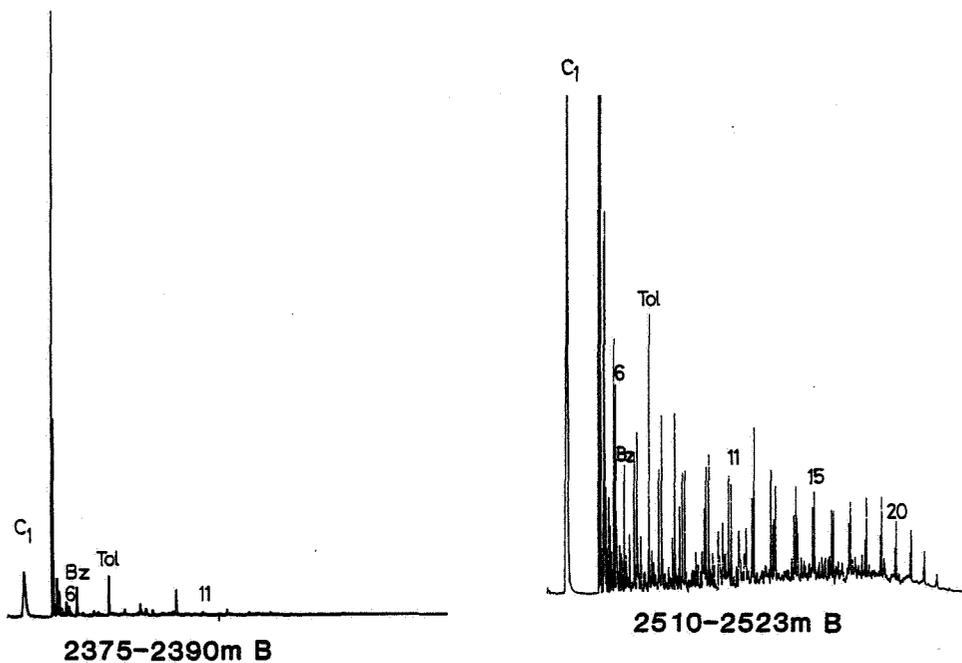
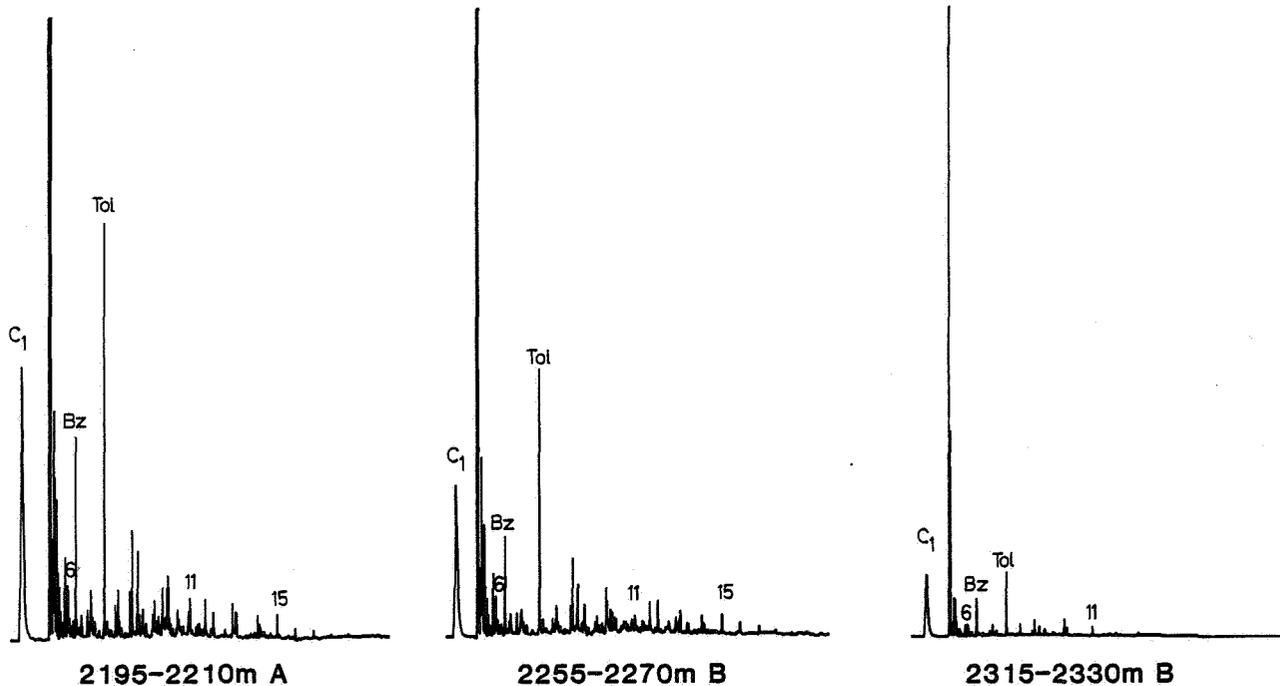
2075-2090m A



2120-2135m A



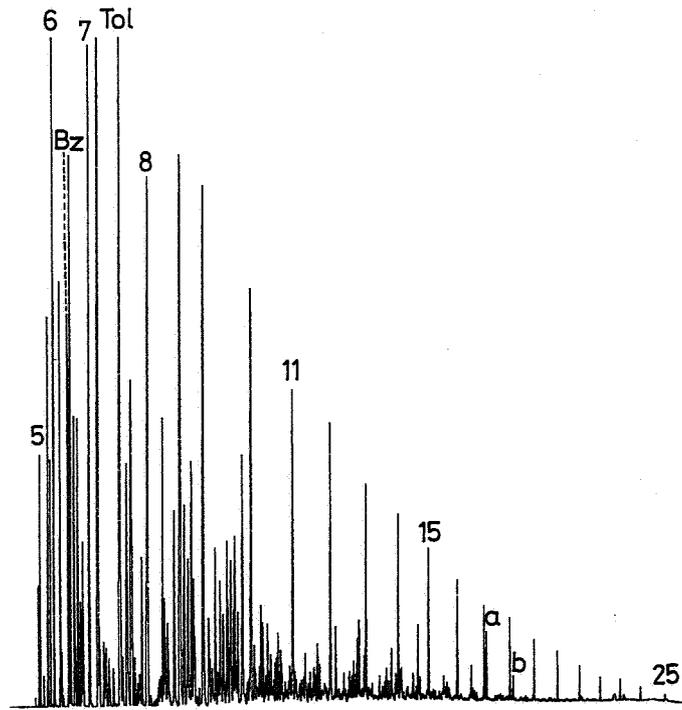
2150-2165m A



FIGURE

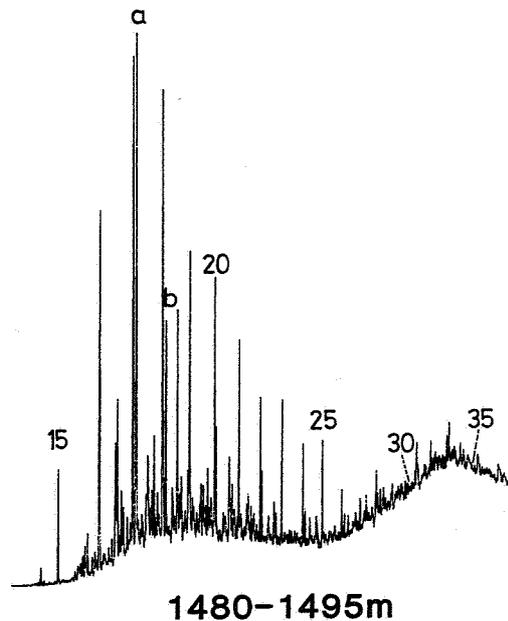
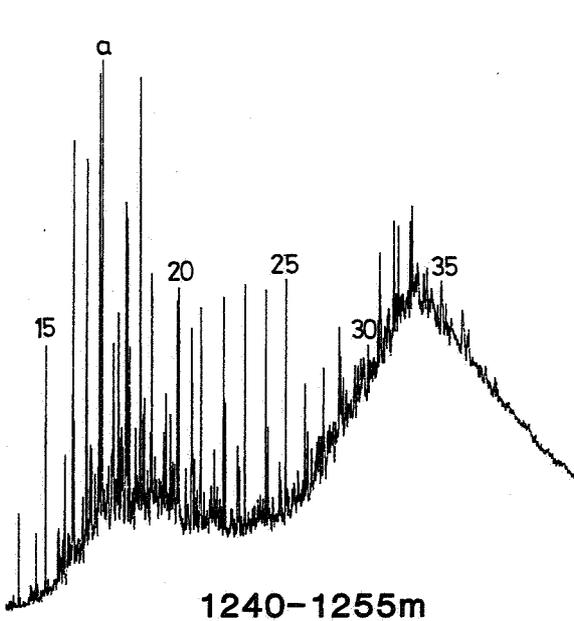
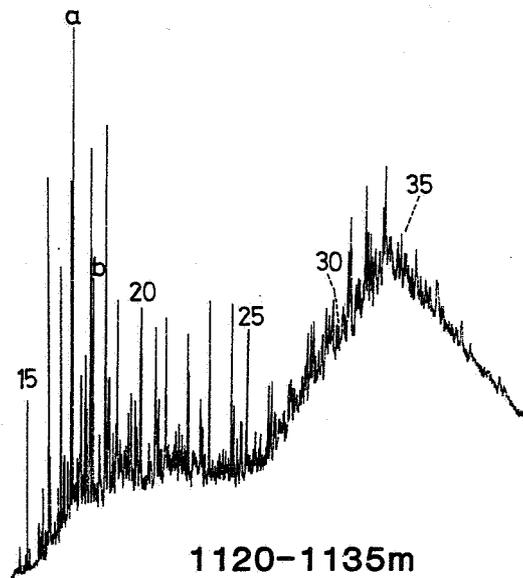
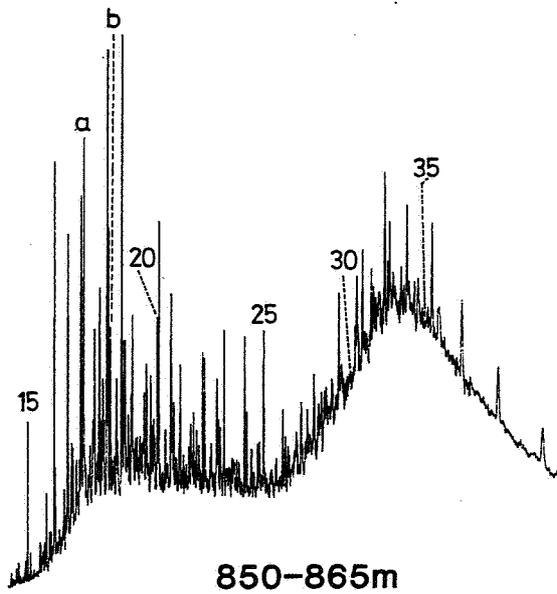
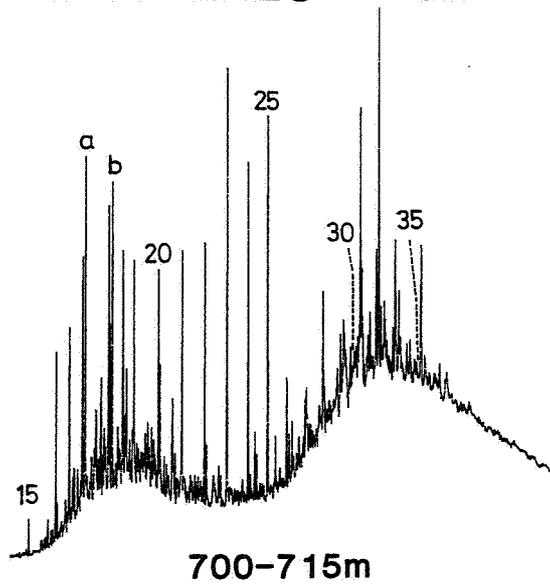
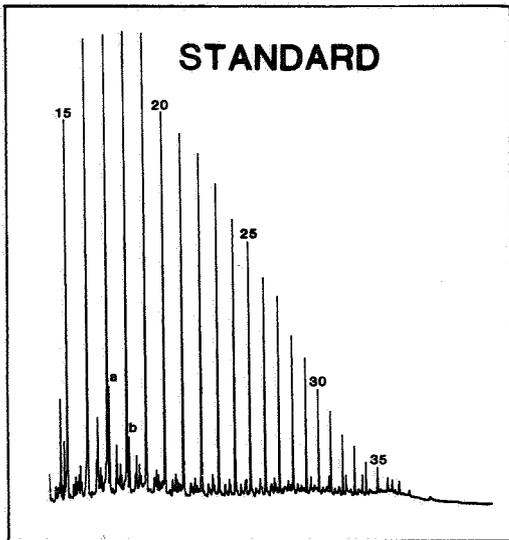
5

C₄-C₂₀ CHROMATOGRAMS WELL 7120/7-2



2153.8m DST 1
CONDENSATE

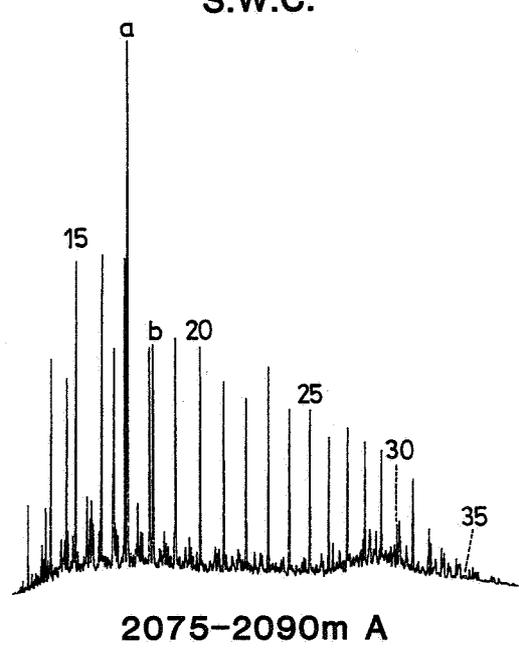
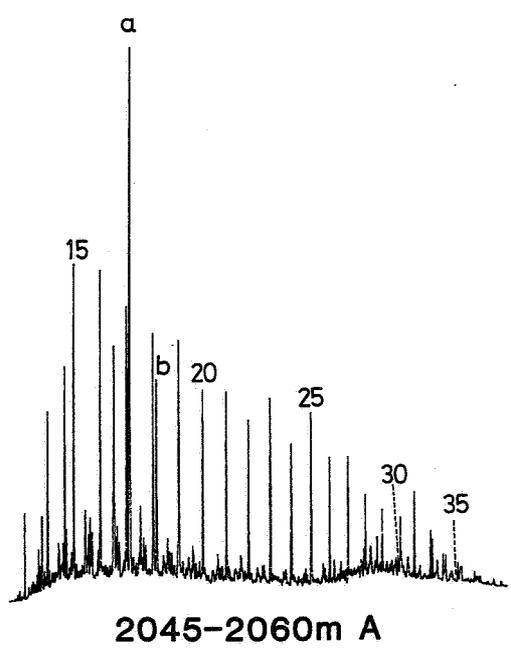
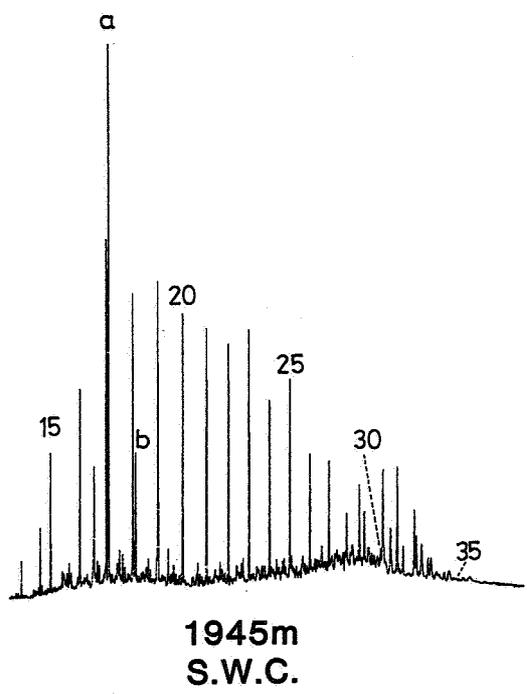
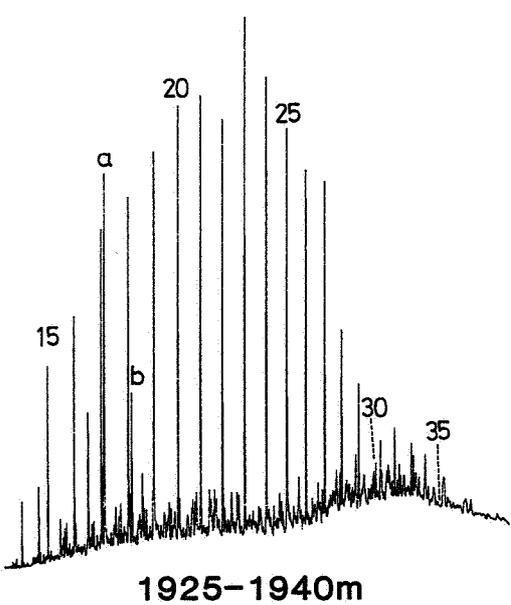
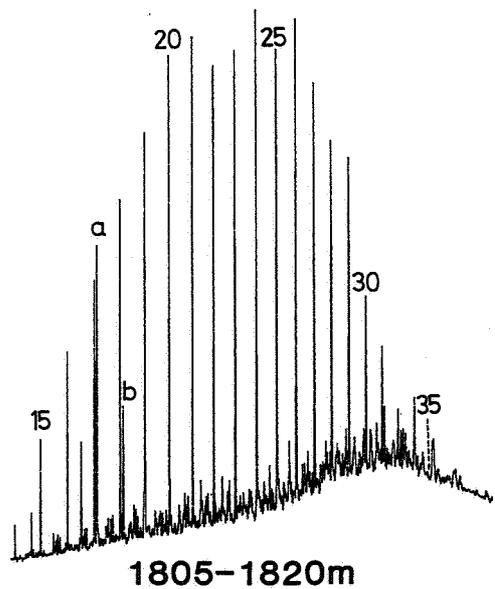
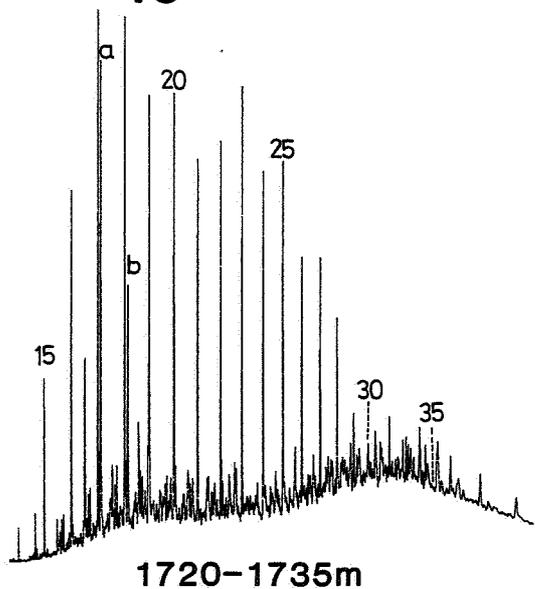
FIGURE 6a **C₁₅₊ PARAFFIN - NAPHTHENES** WELL 7120/7-2



a - PRISTANE
b - PHYTANE

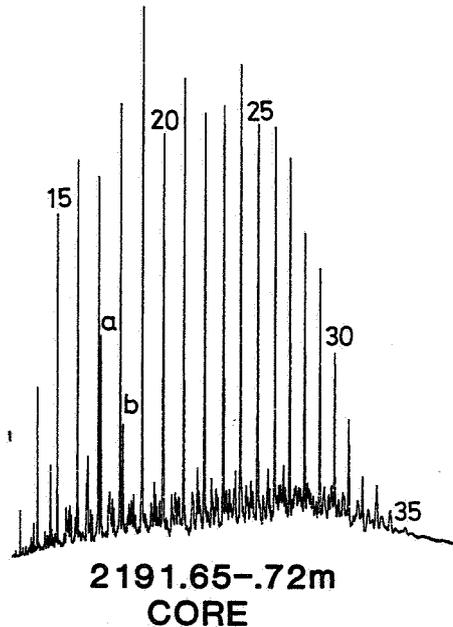
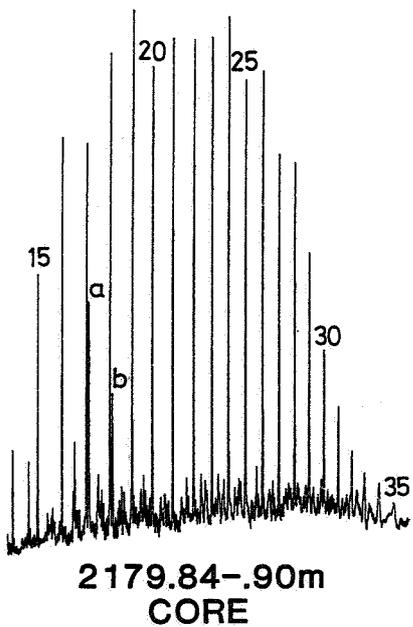
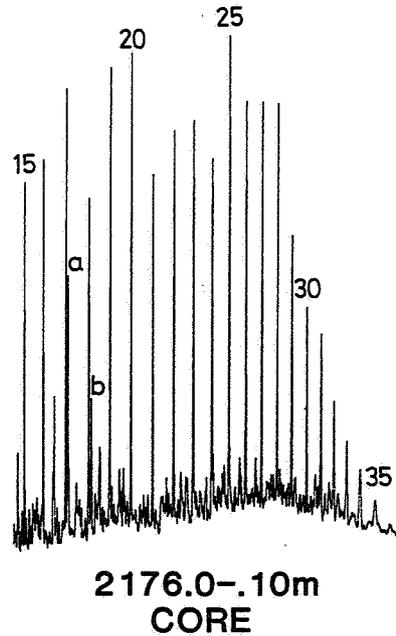
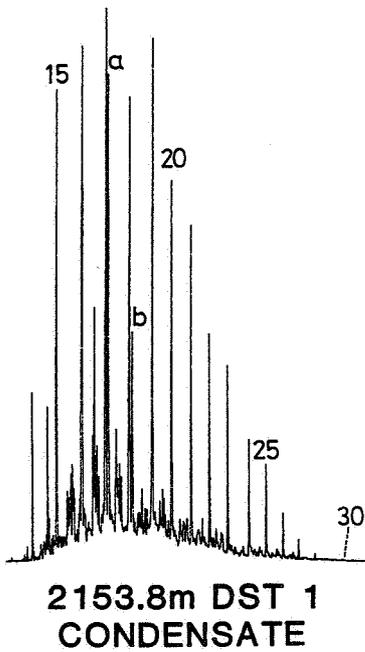
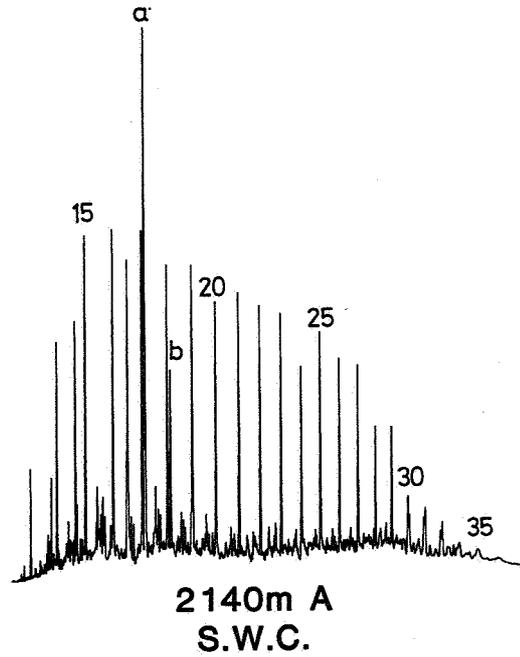
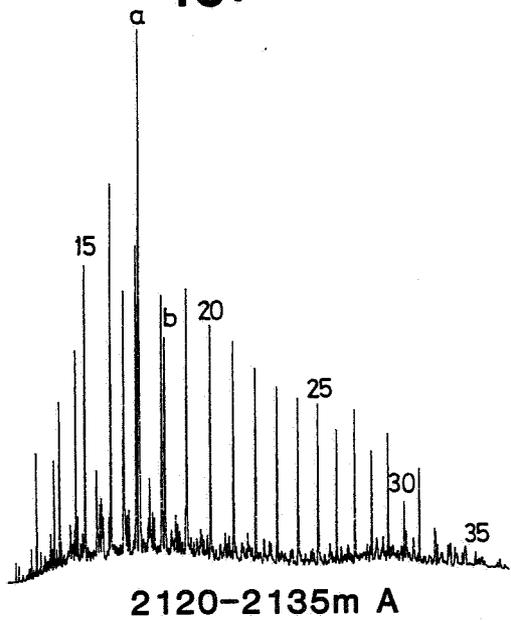
CARBON NUMBERS OF NORMAL PARAFFINS INDICATED (20 - nC₂₀)

FIGURE 6b **C₁₅₊ PARAFFIN-NAPHTHENES** WELL 7120/7-2



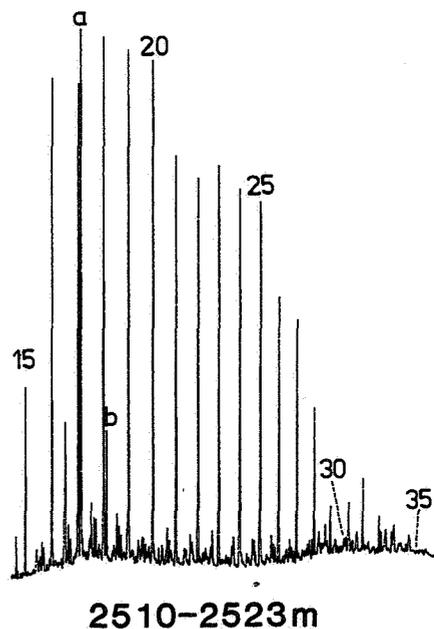
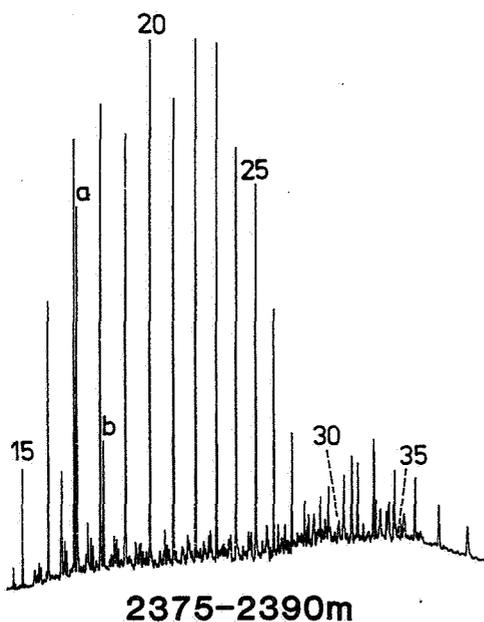
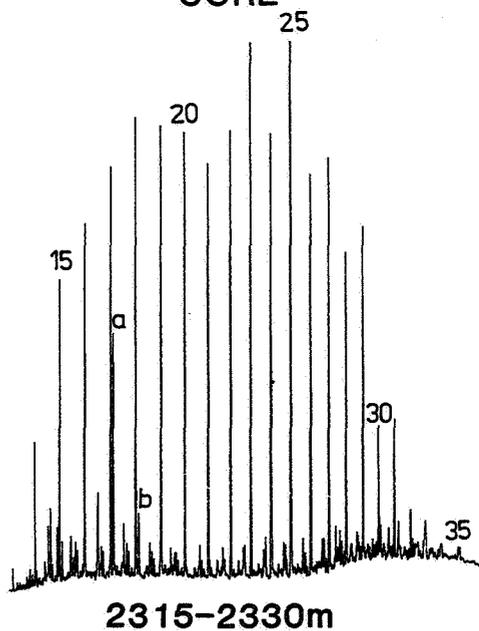
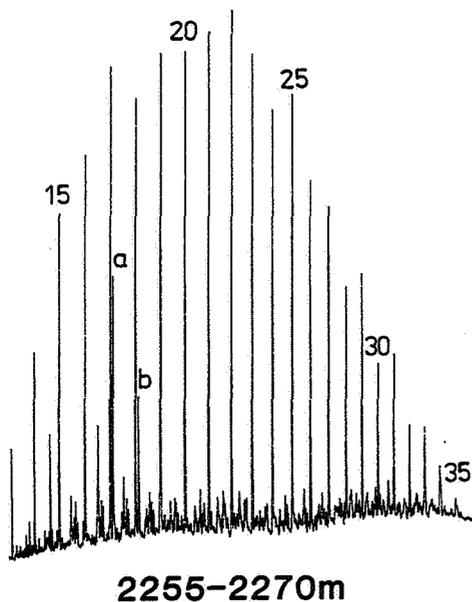
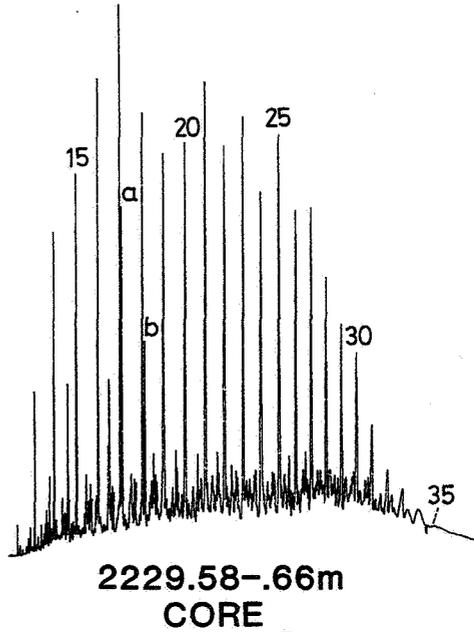
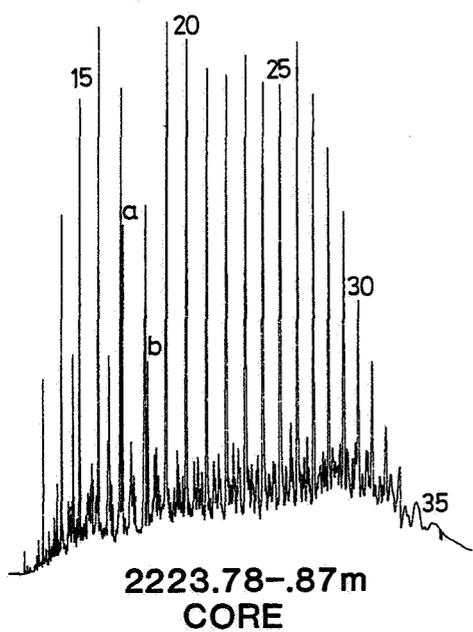
a - PRISTANE
b - PHYTANE

CARBON NUMBERS OF NORMAL PARAFFINS INDICATED (20 - nC₂₀)



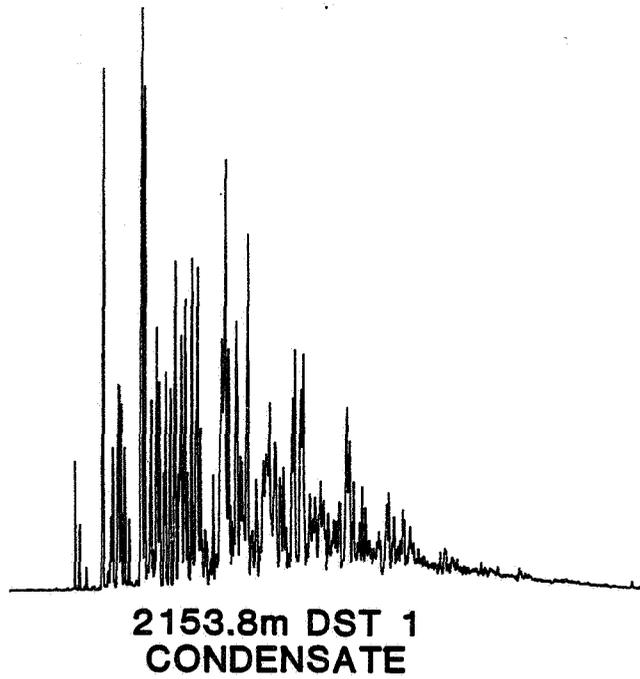
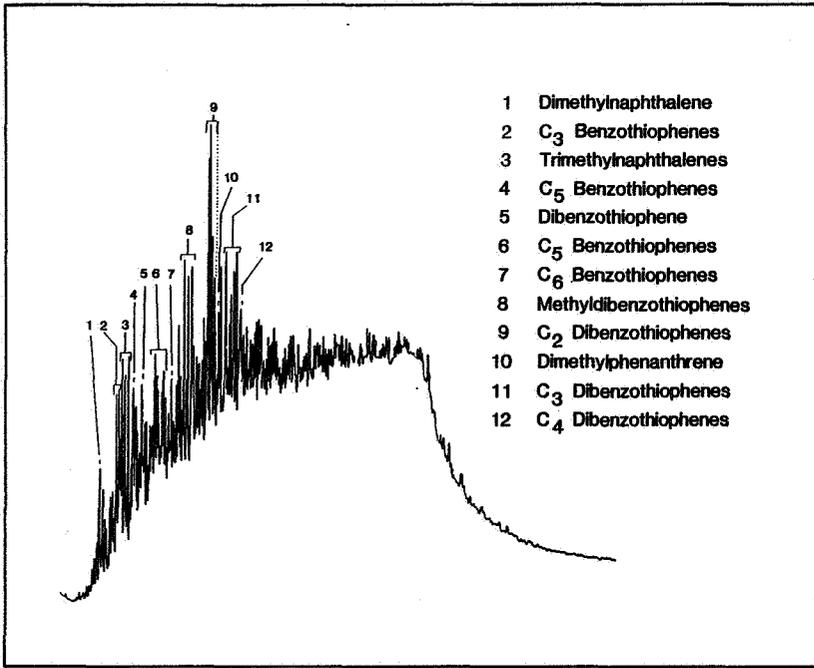
a - PRISTANE
b - PHYTANE

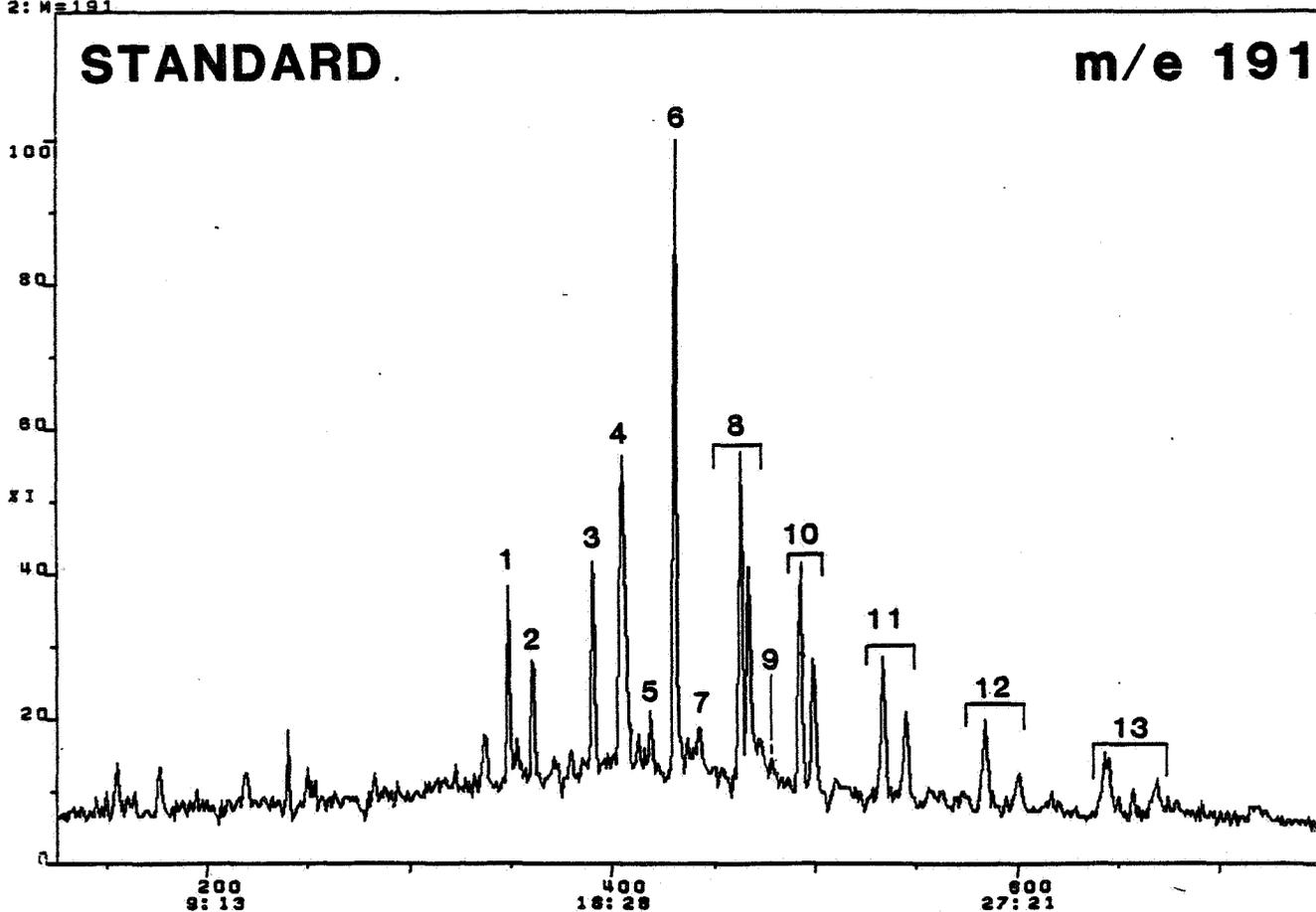
CARBON NUMBERS OF NORMAL PARAFFINS INDICATED (20 - nC₂₀)



a - PRISTANE
b - PHYTANE

CARBON NUMBERS OF NORMAL PARAFFINS INDICATED (20 - nC₂₀)

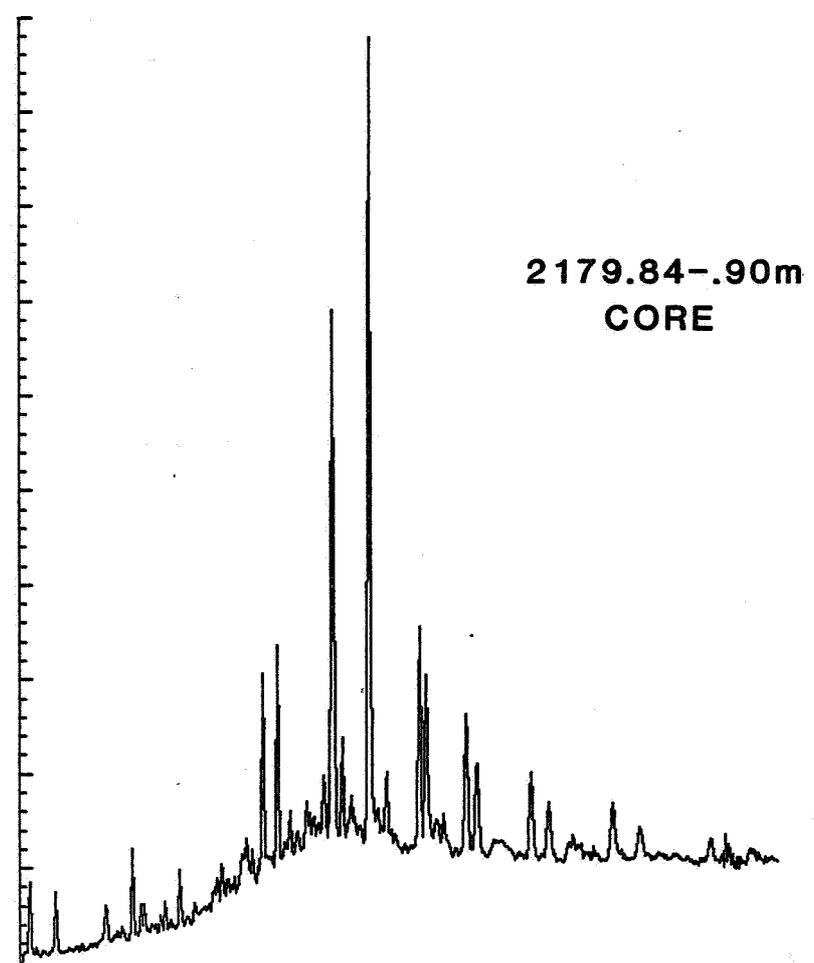
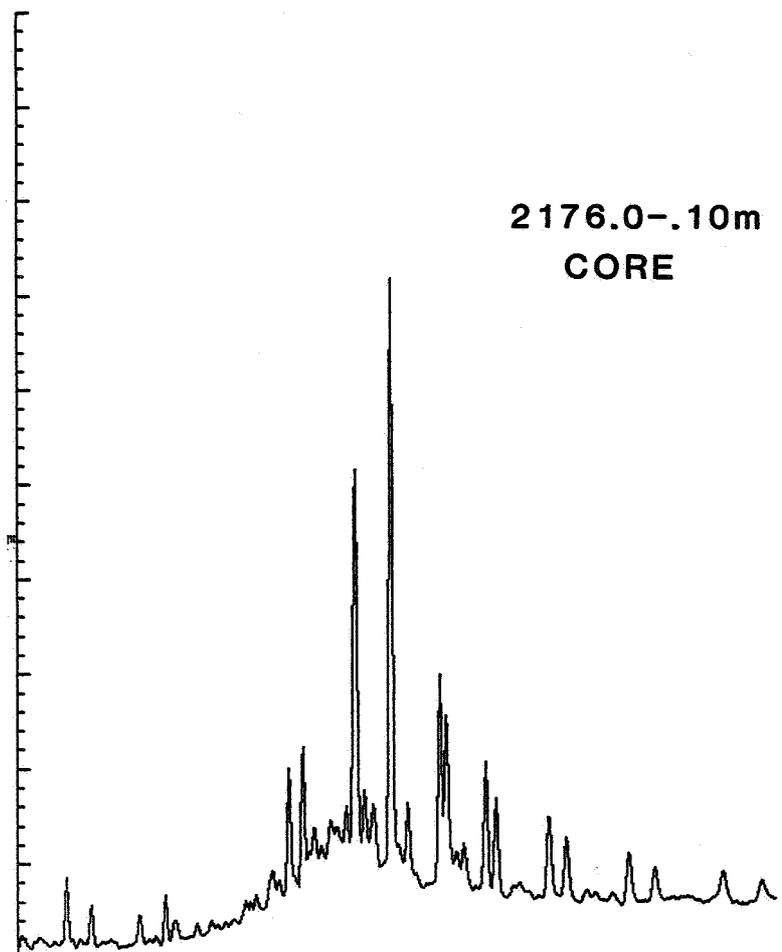




LIST OF IDENTIFIED TRITERPANES

- | | |
|----|---|
| 1 | 17 α H TRISNORHOPANE (C ₂₇) |
| 2 | 17 α H TRISNORHOPANE (C ₂₇) |
| 3 | BISNORHOPANE (C ₂₈) |
| 4 | 17 α H NORHOPANE (C ₂₉) |
| 5 | NORMORETANE (C ₂₉) |
| 6 | 17 α H HOPANE (C ₃₀) |
| 7 | 17 α H MORETANE (C ₃₀) |
| 8 | (22S) 17 α H HOMOHO PANES (C ₃₁) |
| | (22R) |
| 9 | GAMMACERANE |
| 10 | (22S) BISHOMOHO PANES (C ₃₂) |
| | (22R) |
| 11 | (22S) TRISHOMOHO PANES (C ₃₃) |
| | (22R) |
| 12 | (22S) TETRAHO PANES (C ₃₄) |
| | (22R) |
| 13 | (22S) HO PANES (C ₃₅) |
| | (22R) |

TRITERPANES m/e 191



TRITERPANES m/e 191

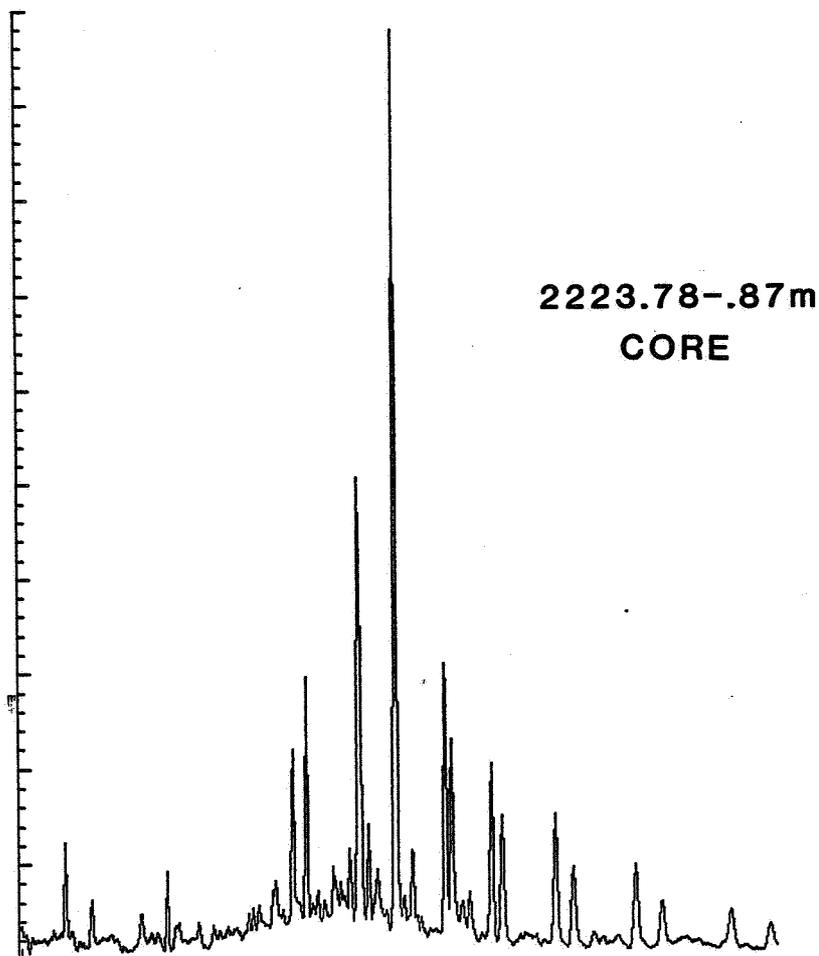
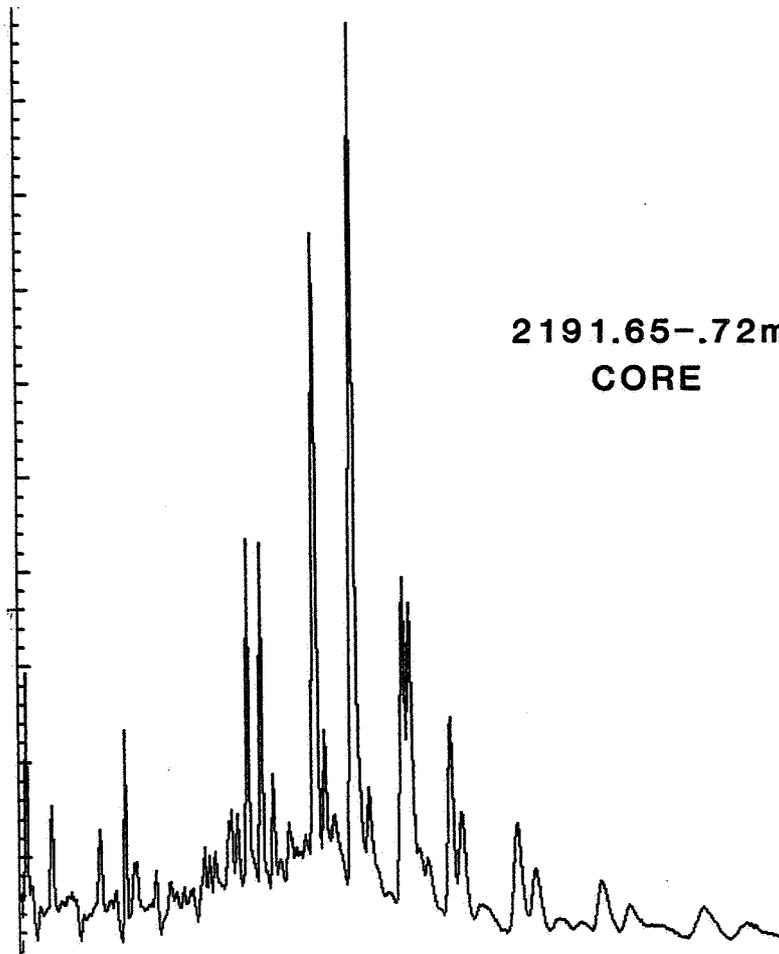
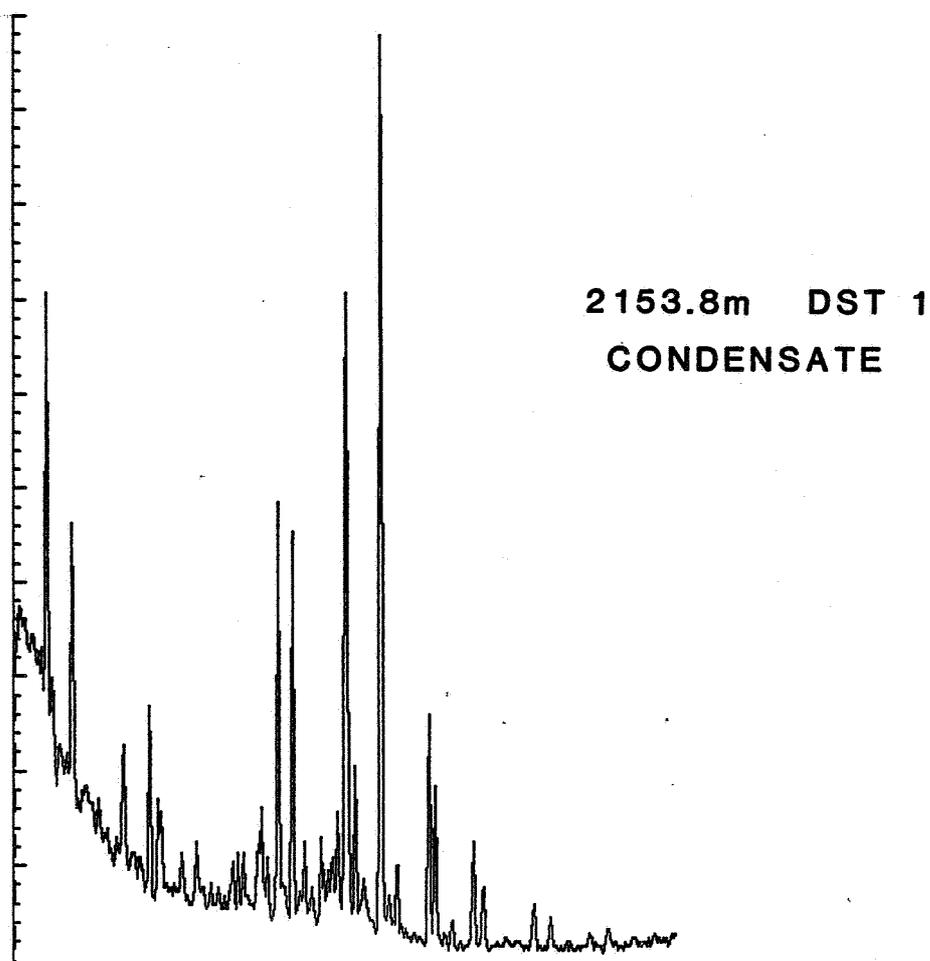
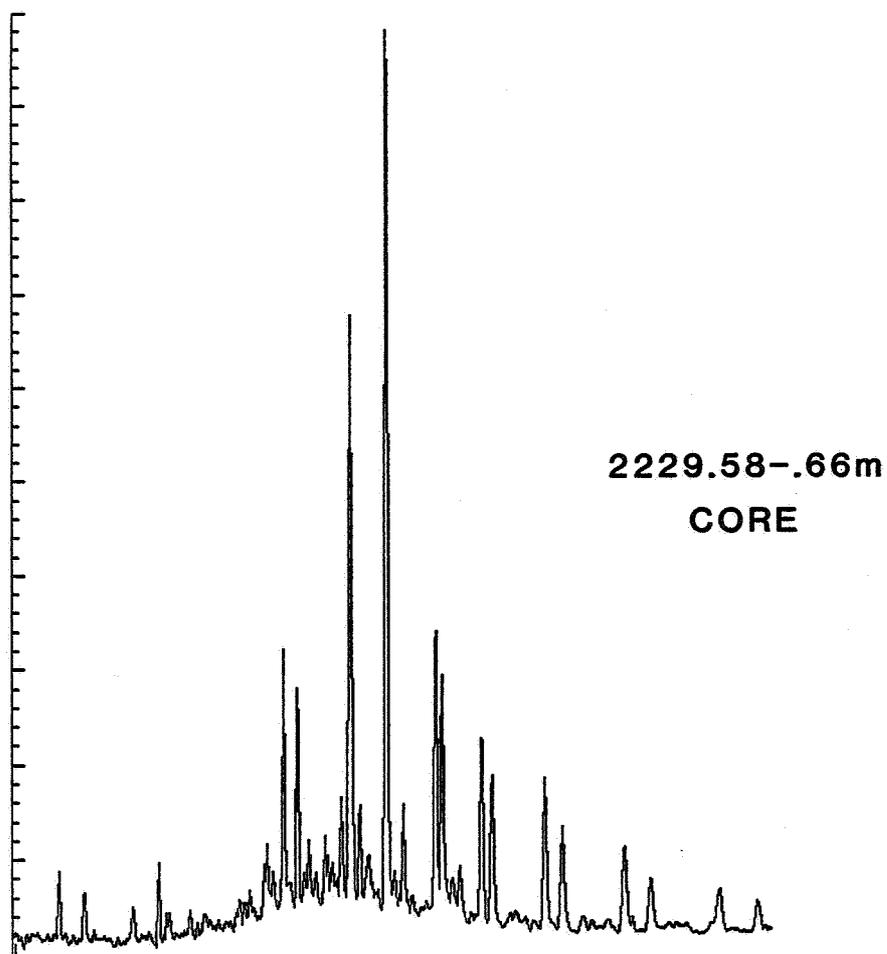


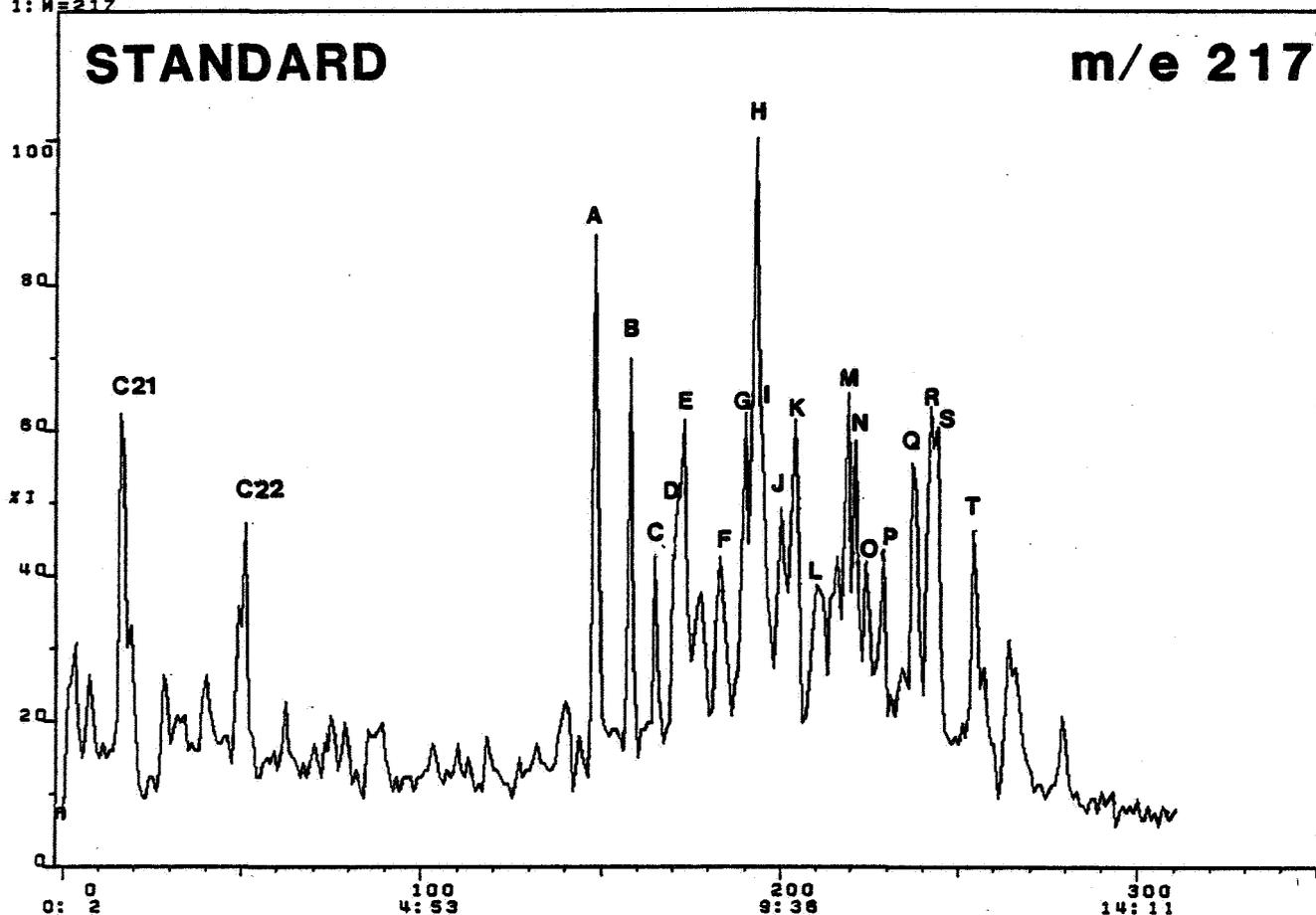
FIGURE 8C

MASSFRAGMENTOGRAMS

WELL 7120/7-2

TRITERPANES m/e 191





LIST OF IDENTIFIED STERANES

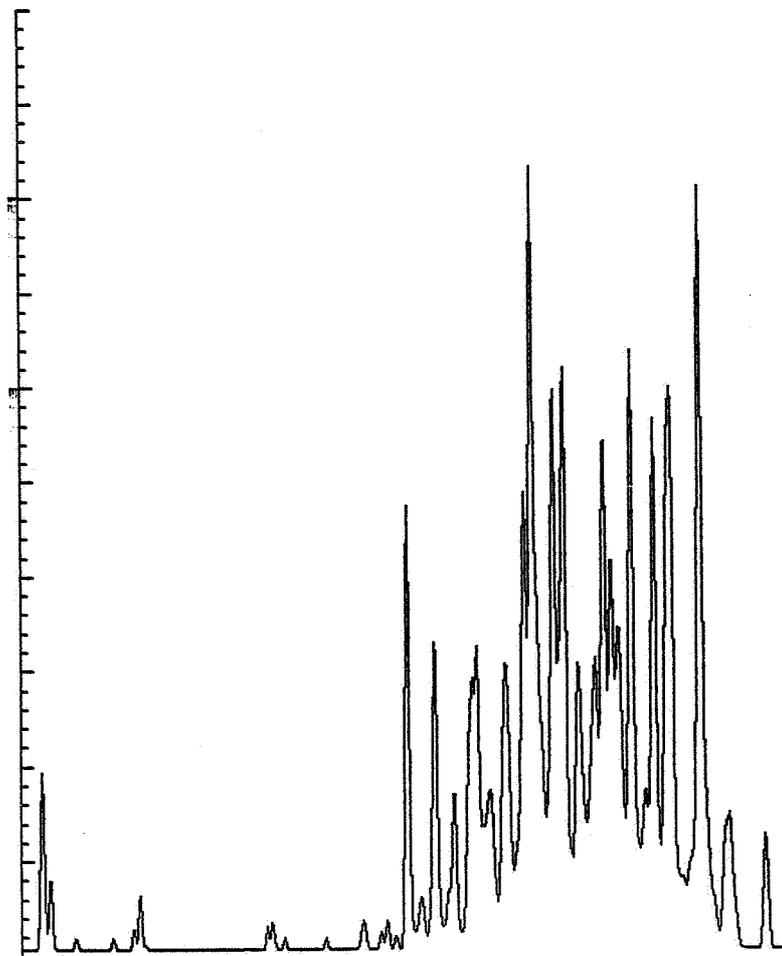
- A C₂₇ DIACHOLESTANE (20S)
- B C₂₇ DIACHOLESTANE (20R)
- C C₂₇ DIACHOLESTANE (20S)
- D C₂₇ DIACHOLESTANE (20R)
- E C₂₈ METHYL DIACHOLESTANE (20S)
- F C₂₈ METHYL DIACHOLESTANE (20R)
- G C₂₈ METHYL DIACHOLESTANE (20S)
- H C₂₉ ETHYL DIACHOLESTANE (20S)
- I C₂₇ CHOLESTANE (20S) & C₂₈ METHYL DIACHOLESTANE (20R)
- J C₂₇ CHOLESTANE (20R)
- K C₂₉ ETHYL DIACHOLESTANE (20R)
- L C₂₉ ETHYL DIACHOLESTANE (20S)
- M C₂₈ METHYL CHOLESTANE (20S)
- N C₂₉ ETHYL DIACHOLESTANE (20R)
- O C₂₈ METHYL CHOLESTANE (20S)
- P C₂₈ METHYL CHOLESTANE (20R)
- Q C₂₉ ETHYL CHOLESTANE (20S) [α α]
- R C₂₉ ETHYL CHOLESTANE (20R) [β β]
- S C₂₉ ETHYL CHOLESTANE (20S) [β β]
- T C₂₉ ETHYL CHOLESTANE (20R) [α α]

FIGURE 8d

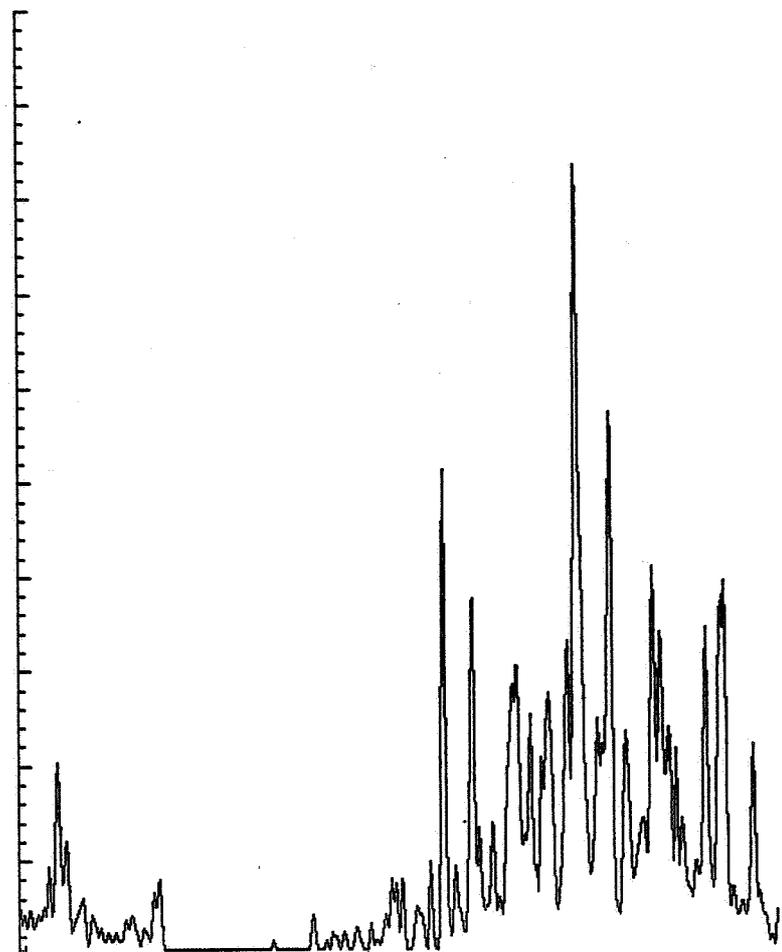
MASSFRAGMENTOGRAMS

WELL 7120/7-2

STERANES m/e 217



2176.0-.10m
CORE



2179.84-.90m
CORE

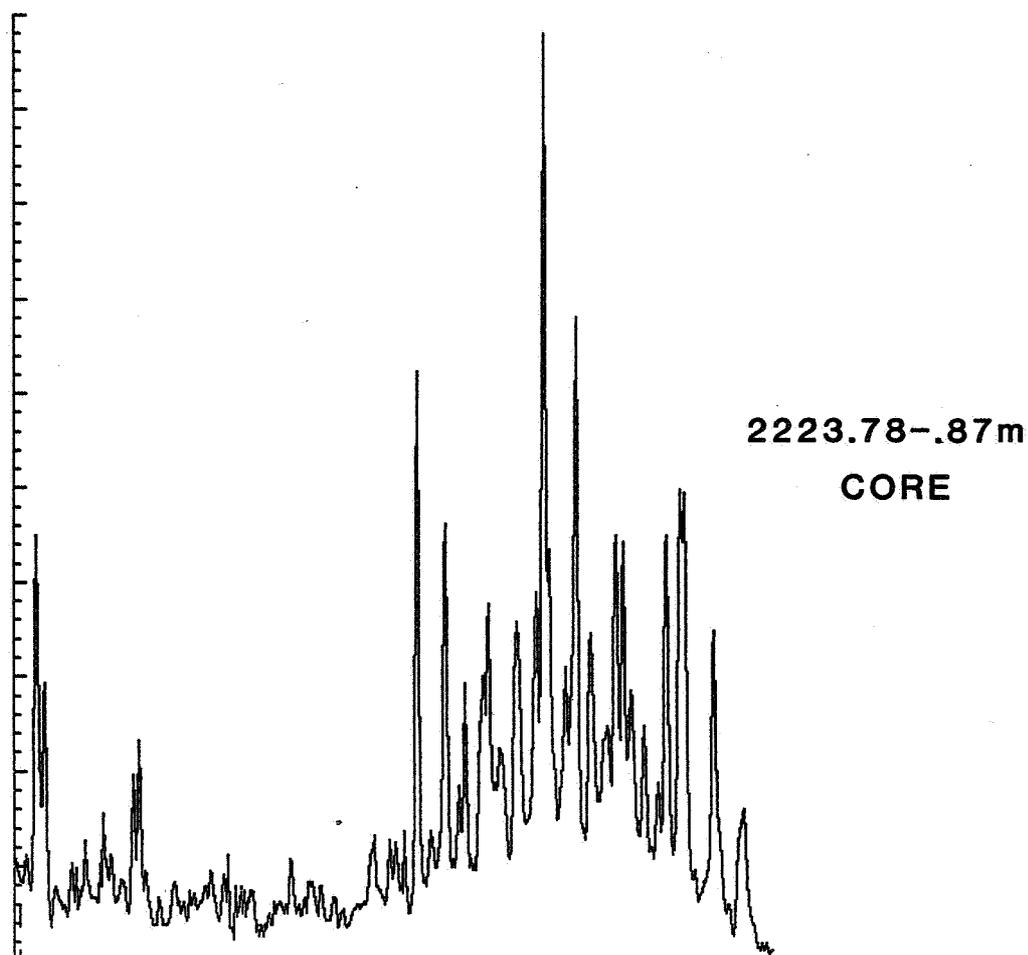
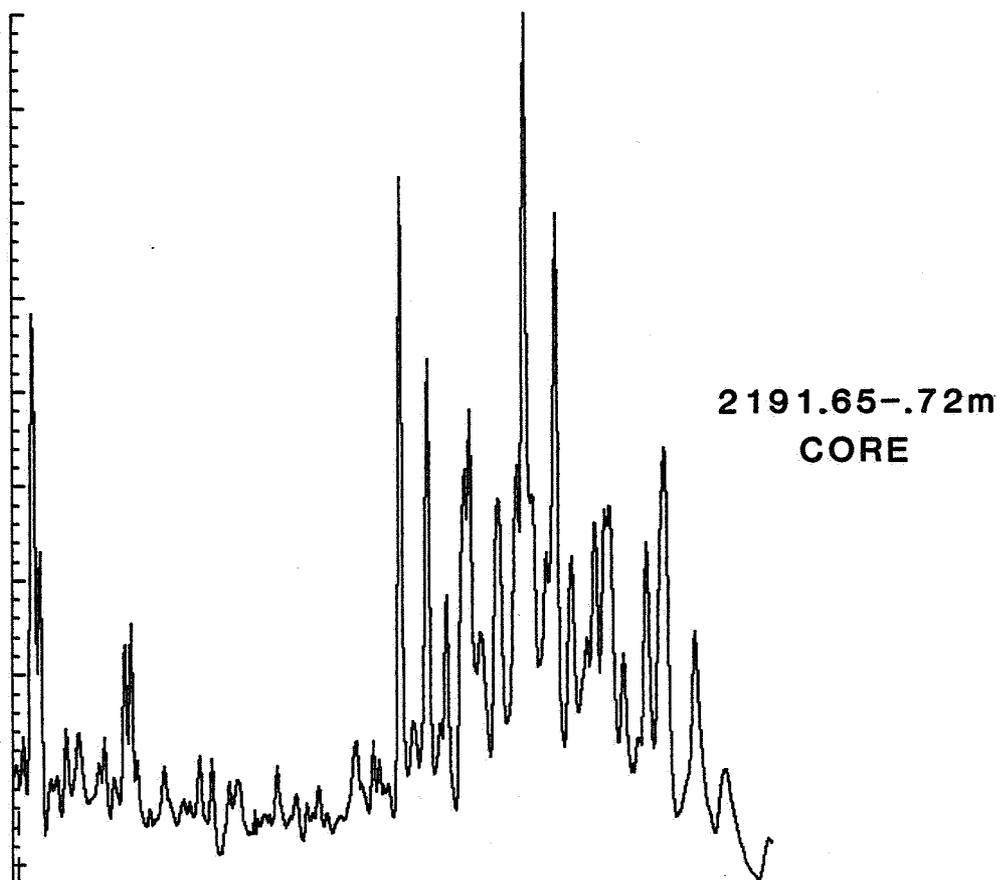
FIGURE

8e

MASSFRAGMENTOGRAMS

WELL 7120/7-2

STERANES m/e 217



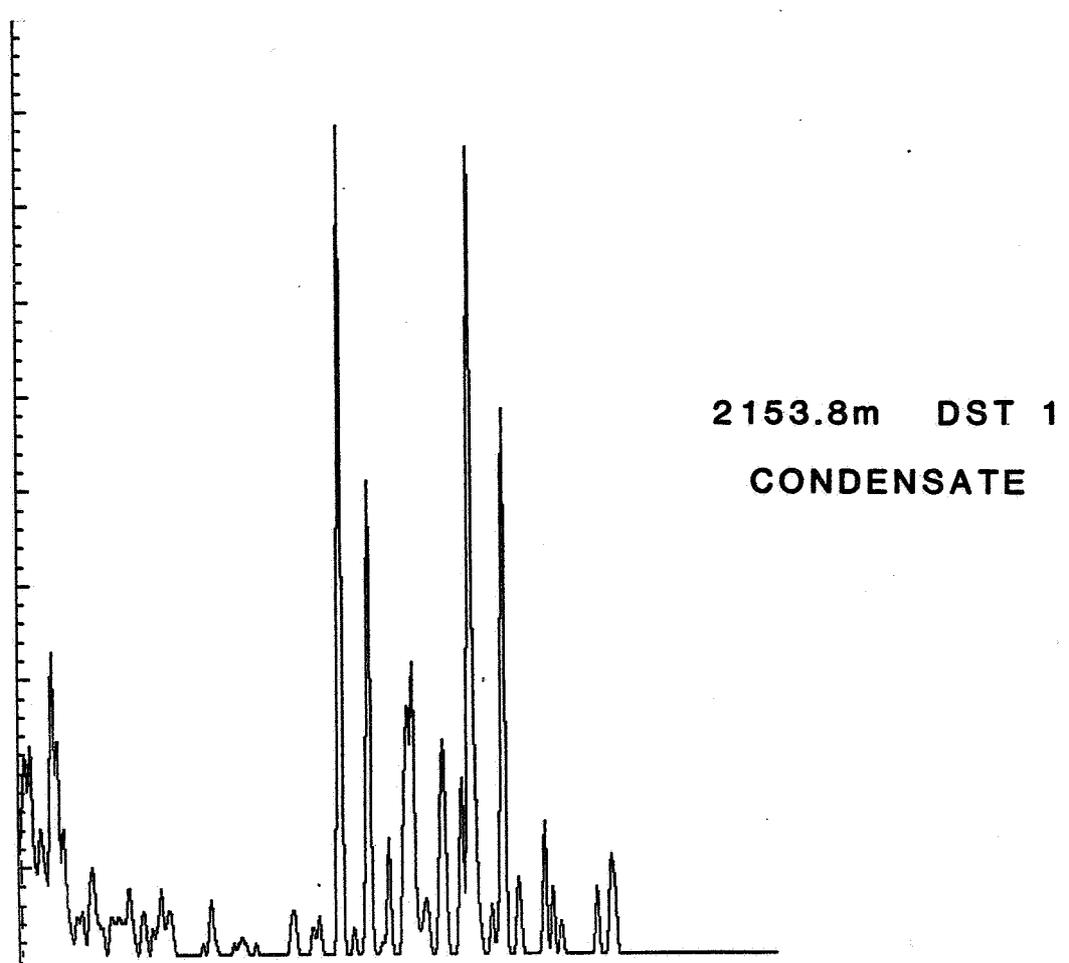
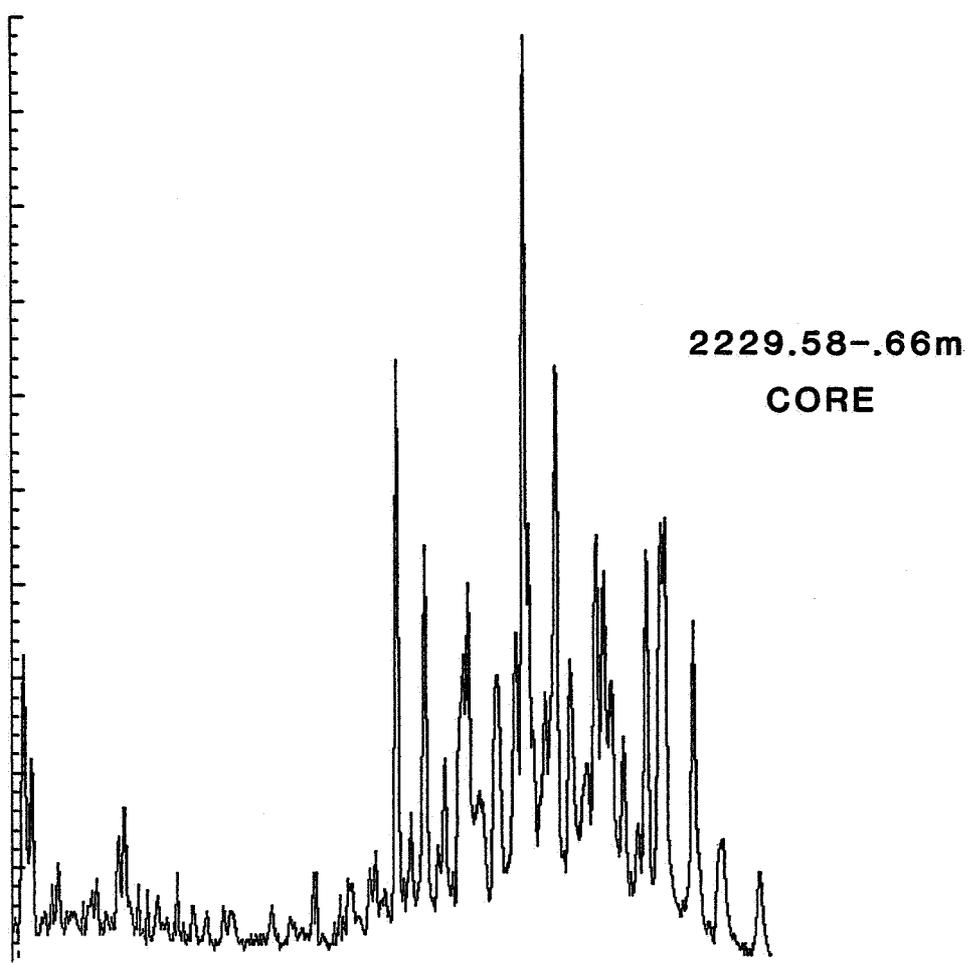


FIGURE 8g

MASSFRAGMENTOGRAMS
STERANES m/e 259

WELL 7120/7-2

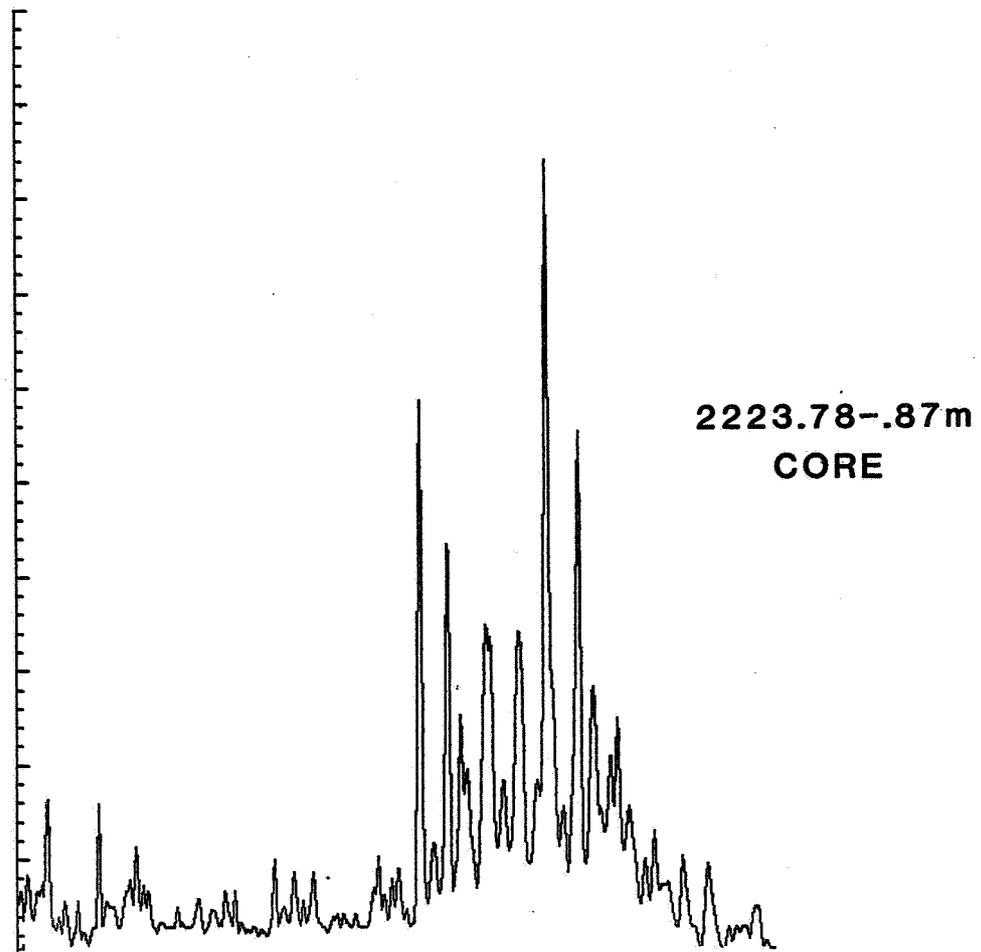
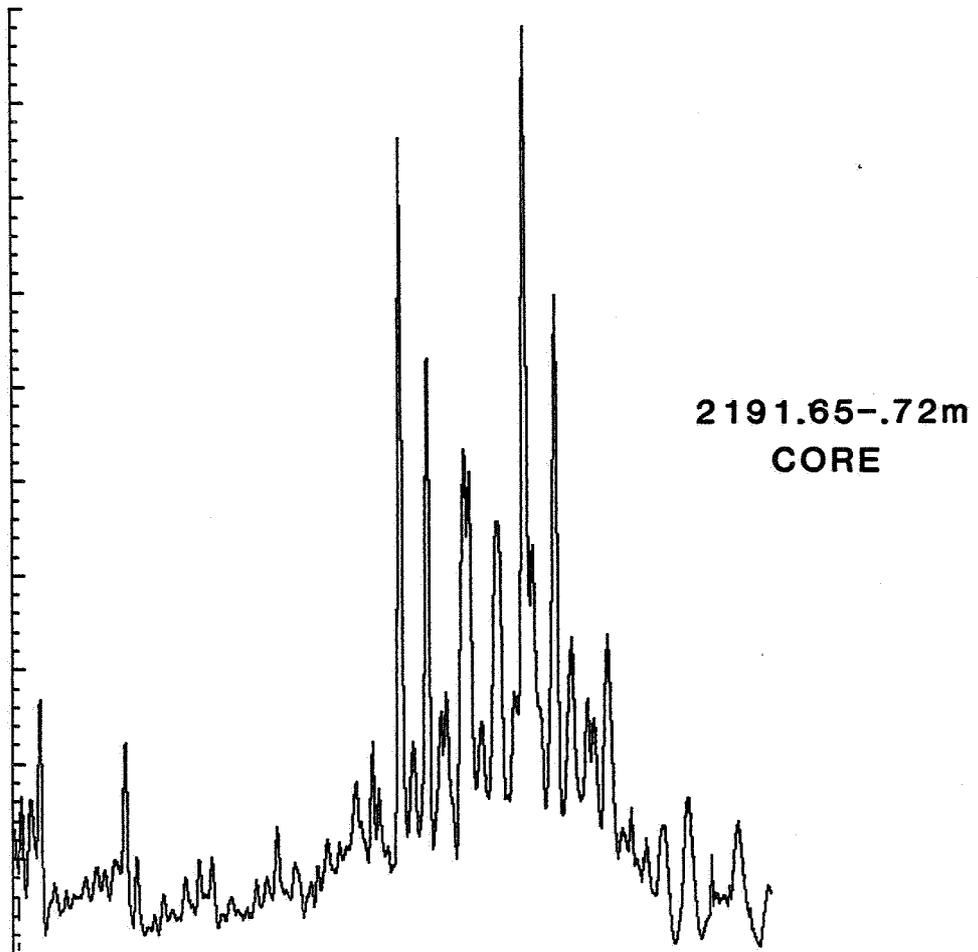
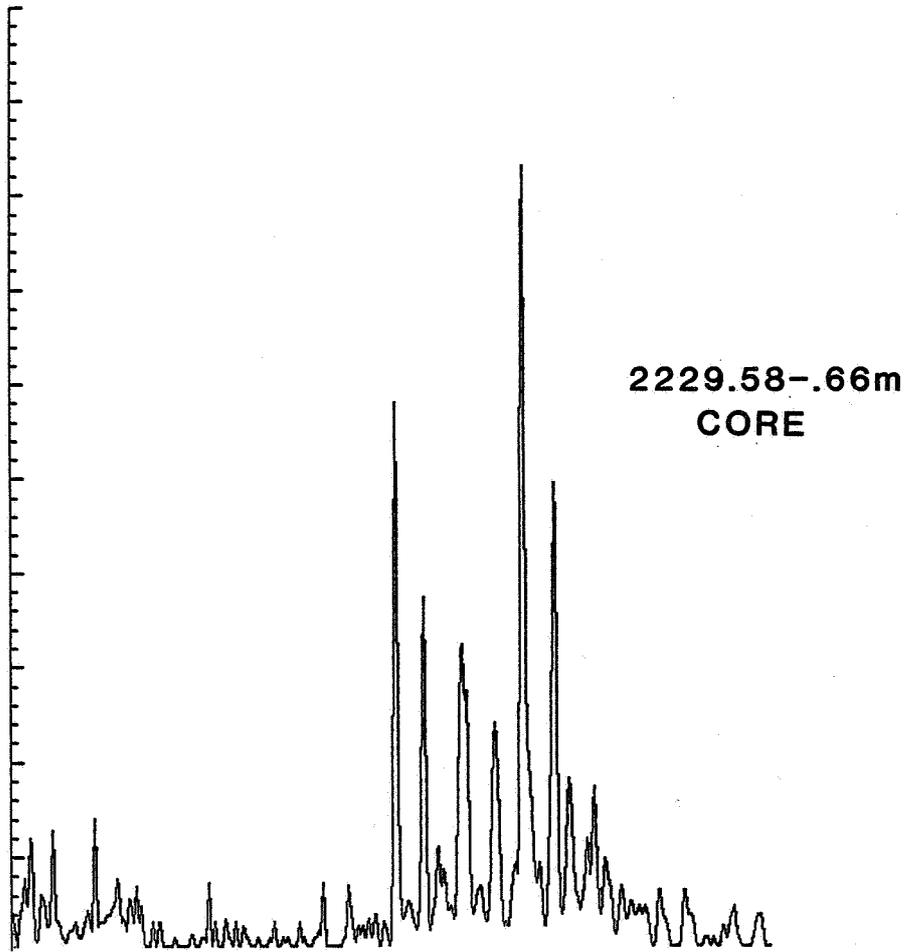
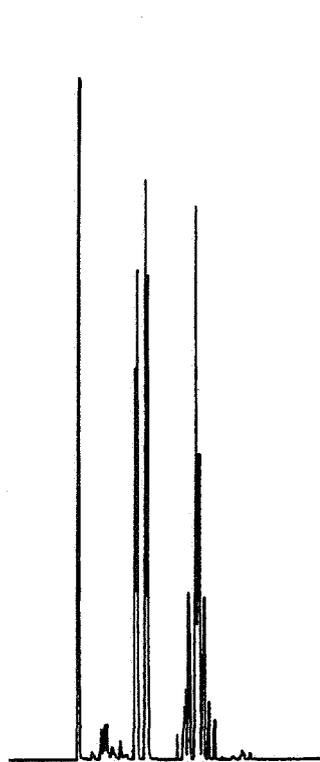


FIGURE 8h MASSFRAGMENTOGRAMS WELL 7120/7-2
STERANES m/e 259



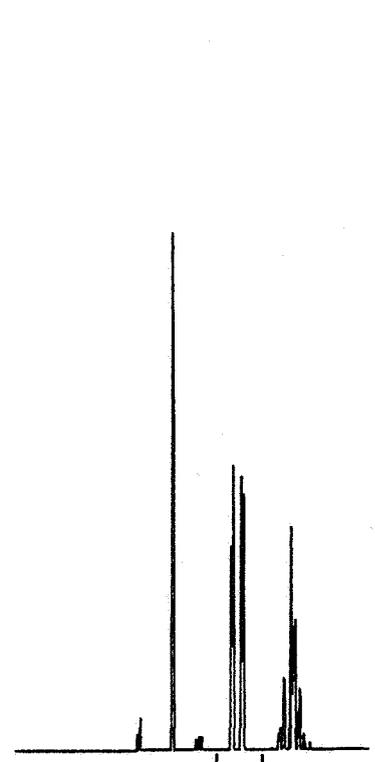
PHENANTHRENES



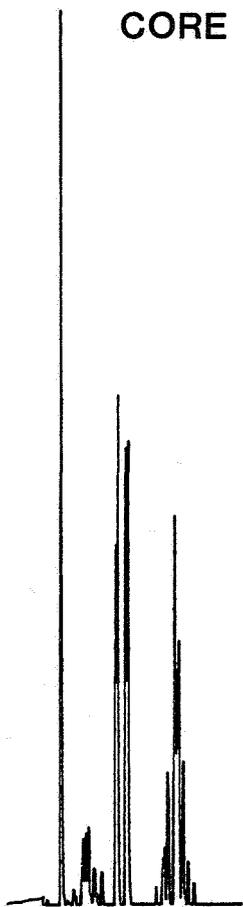
178 192 206
2176.0-.10m
CORE



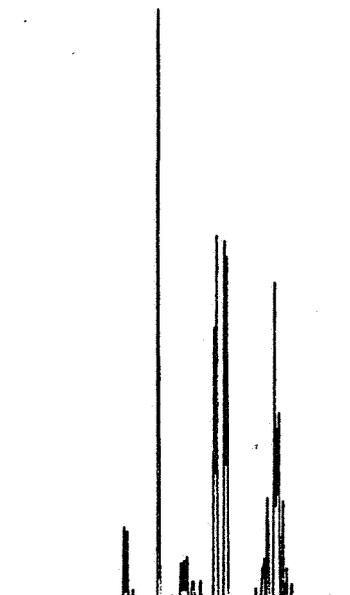
178 192 206
2179.84-.90m
CORE



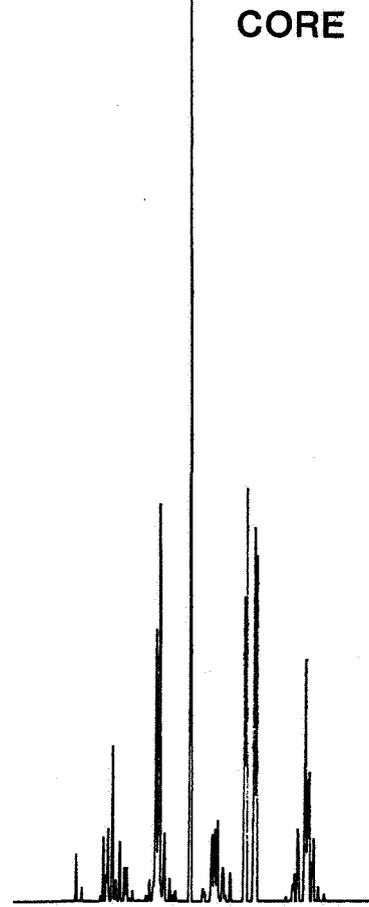
178 192 206
2191.65-.72m
CORE



178 192 206
2223.78-.87m
CORE



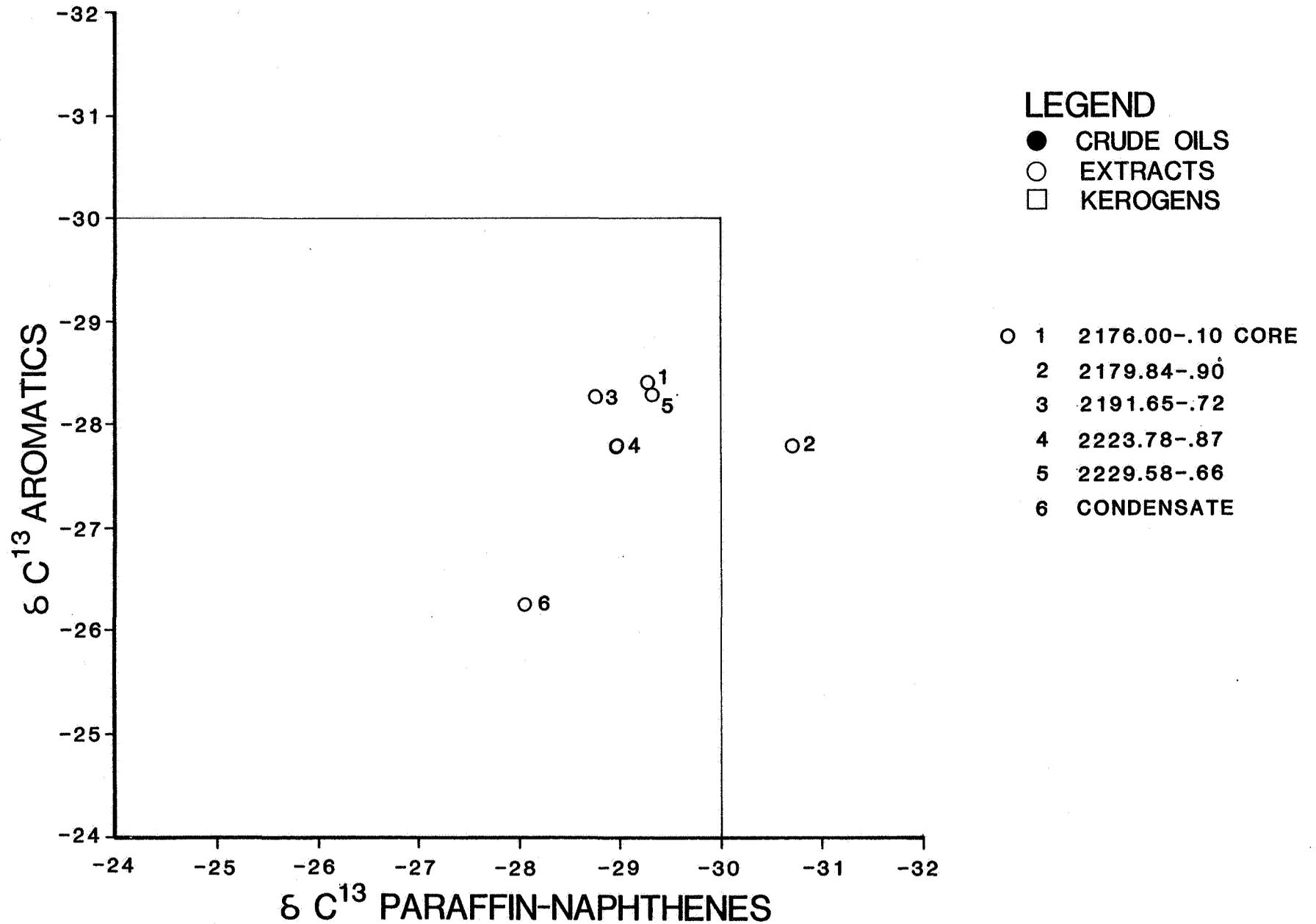
178 192 206
2229.58-.66m
CORE



178 192 206
2153.8m DST 1
CONDENSATE

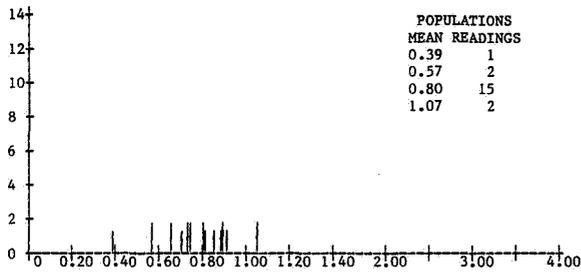
CARBON ISOTOPES

(‰, PDB)



SAMPLE 791-015A DEPTH 540 VITRINITE REFLECTANCE VALUES

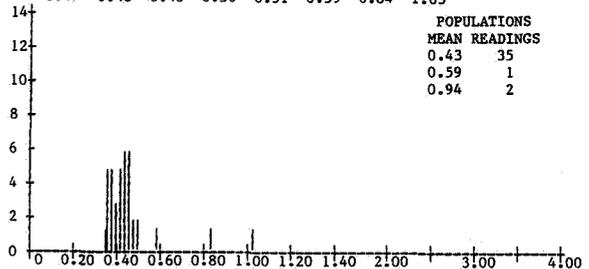
0.39	0.57	0.57	0.66	0.66	0.71	0.74	0.74	0.75	0.77
0.81	0.81	0.82	0.86	0.89	0.90	0.91	0.92	1.06	1.07



REMARKS LEAN. RENOKING.
POOR SAMPLE.

SAMPLE 791-025A DEPTH 700 VITRINITE REFLECTANCE VALUES

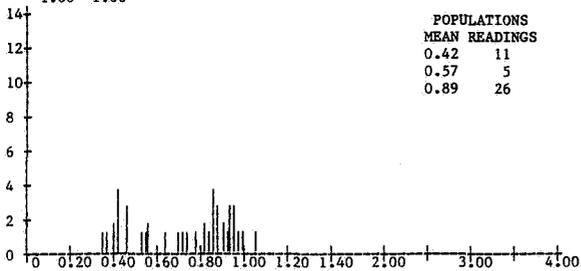
0.35	0.36	0.37	0.37	0.37	0.37	0.38	0.38	0.39	0.39
0.39	0.40	0.40	0.40	0.42	0.42	0.42	0.43	0.43	0.44
0.44	0.44	0.44	0.44	0.45	0.46	0.46	0.47	0.47	0.47
0.47	0.48	0.48	0.50	0.51	0.59	0.84	1.03		



REMARKS VITRINITE DOMINANT. SIGNIFICANT AMORPHOUS MATERIAL.

SAMPLE 791-035A DEPTH 850 VITRINITE REFLECTANCE VALUES

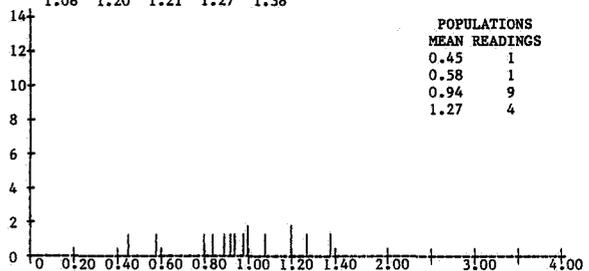
0.35	0.37	0.40	0.41	0.42	0.43	0.43	0.43	0.46	0.46
0.46	0.53	0.55	0.56	0.57	0.64	0.70	0.72	0.74	0.78
0.82	0.83	0.84	0.86	0.86	0.87	0.87	0.88	0.89	0.89
0.91	0.91	0.93	0.94	0.95	0.95	0.96	0.96	0.96	0.98
1.00	1.06								



REMARKS MIXTURE OF SMALL VITRINITE PARTICLES, FREQUENTLY RENOKED, PLUS BITUMEN STAINING.

SAMPLE 791-041A DEPTH 940 VITRINITE REFLECTANCE VALUES

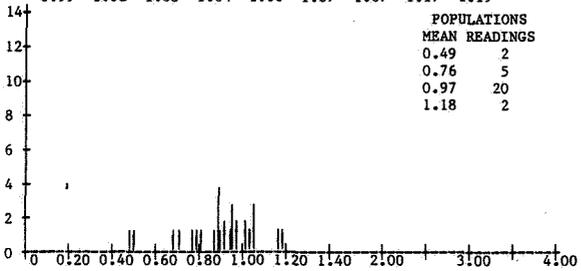
0.45	0.58	0.80	0.84	0.89	0.92	0.94	0.98	1.00	1.00
1.08	1.20	1.21	1.27	1.38					



REMARKS WIDESPREAD RENOKING.
FEW MEASUREMENTS POSSIBLE.
POOR SAMPLE.

SAMPLE 791-148A DEPTH 1023 VITRINITE REFLECTANCE VALUES

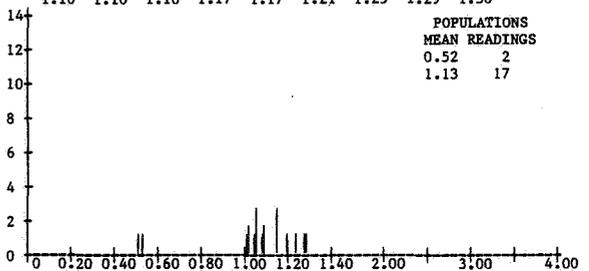
0.48	0.50	0.68	0.71	0.77	0.79	0.81	0.87	0.89	0.89
0.89	0.89	0.90	0.92	0.92	0.95	0.96	0.96	0.96	0.98
0.99	1.02	1.03	1.04	1.06	1.07	1.07	1.17	1.19	



REMARKS VERY DOMINANTLY SMALL PARTICLES OF RENOKED VITRINITE. SIGNIFICANT INERTINITE.
POOR SAMPLE.

SAMPLE 791-047A DEPTH 1030 VITRINITE REFLECTANCE VALUES

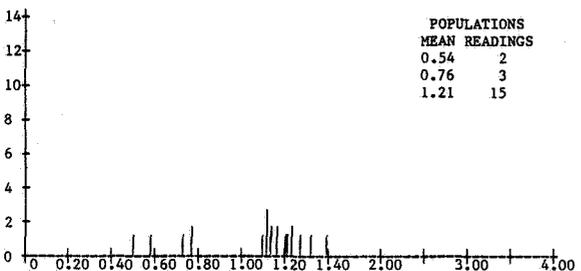
0.51	0.53	1.01	1.02	1.03	1.05	1.06	1.07	1.07	1.09
1.10	1.10	1.16	1.17	1.17	1.21	1.25	1.29	1.30	



REMARKS CHIEFLY PARTICLES OF RENOKED VITRINITE PLUS INERTINITE.
POOR SAMPLE.

SAMPLE 791-053A DEPTH 1120 VITRINITE REFLECTANCE VALUES

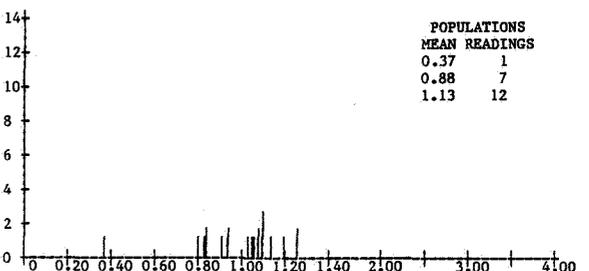
0.50	0.58	0.73	0.77	0.77	1.10	1.12	1.13	1.13	1.14
1.15	1.17	1.17	1.21	1.22	1.24	1.24	1.28	1.33	1.41



REMARKS VITRINITE PARTICLES CHIEFLY, LARGELY RENOKED
FREQUENT INERTINITE AND BITUMEN STAINING.

SAMPLE 791-061B DEPTH 1240 VITRINITE REFLECTANCE VALUES

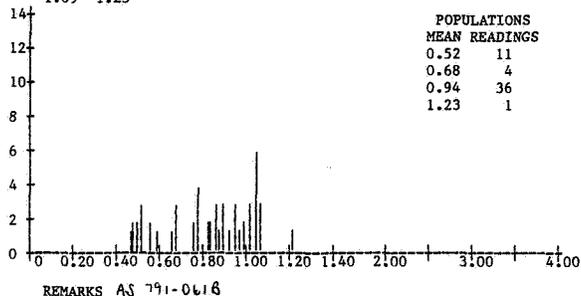
0.37	0.80	0.83	0.84	0.85	0.91	0.94	0.95	1.03	1.05
1.06	1.08	1.08	1.10	1.10	1.10	1.14	1.20	1.26	1.26



REMARKS VITRINITE PARTICLES OF VERY VARIABLE REFLECTANCE
PLUS INERTINITE.

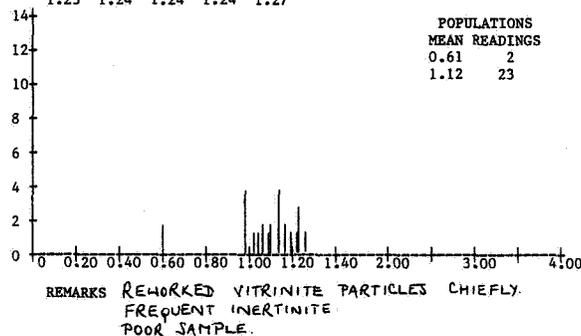
SAMPLE 791-067B DEPTH 1330 VITRINITE REFLECTANCE VALUES

0.47	0.48	0.48	0.50	0.51	0.52	0.52	0.53	0.56	0.56
0.59	0.66	0.68	0.68	0.68	0.76	0.77	0.78	0.78	0.78
0.79	0.83	0.83	0.84	0.85	0.87	0.87	0.87	0.88	0.90
0.91	0.91	0.93	0.96	0.96	0.97	0.98	1.00	1.01	1.03
1.03	1.03	1.06	1.06	1.07	1.07	1.07	1.07	1.08	1.08
1.09	1.23								



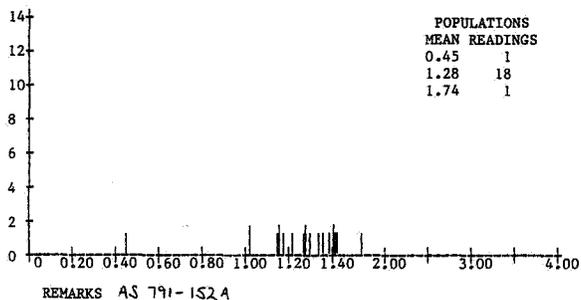
SAMPLE 791-152A DEPTH 1370 VITRINITE REFLECTANCE VALUES

0.60	0.61	0.98	0.98	0.98	0.98	1.02	1.04	1.06	1.07
1.09	1.10	1.10	1.14	1.14	1.15	1.15	1.17	1.17	1.20
1.23	1.24	1.24	1.24	1.27					



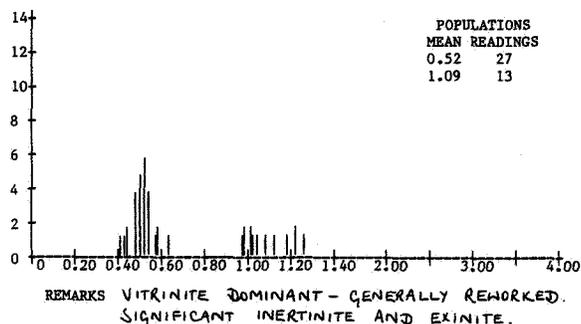
SAMPLE 791-071A DEPTH 1390 VITRINITE REFLECTANCE VALUES

0.45	1.02	1.03	1.15	1.16	1.17	1.18	1.22	1.27	1.28
1.29	1.30	1.34	1.36	1.39	1.42	1.42	1.44	1.46	1.74



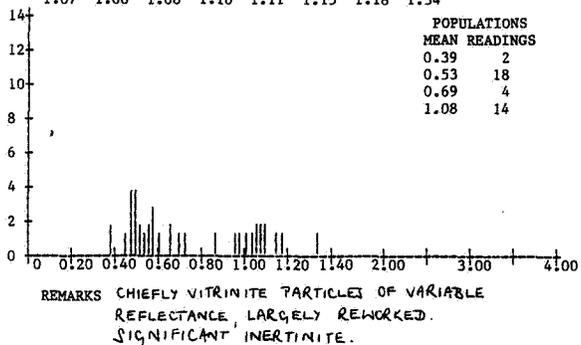
SAMPLE 791-077A DEPTH 1480 VITRINITE REFLECTANCE VALUES

0.41	0.43	0.44	0.45	0.48	0.49	0.49	0.49	0.50	0.50
0.50	0.51	0.51	0.52	0.52	0.52	0.52	0.52	0.53	0.54
0.54	0.54	0.54	0.57	0.58	0.59	0.63	0.97	0.98	0.99
1.01	1.01	1.02	1.04	1.08	1.12	1.18	1.22	1.23	1.26



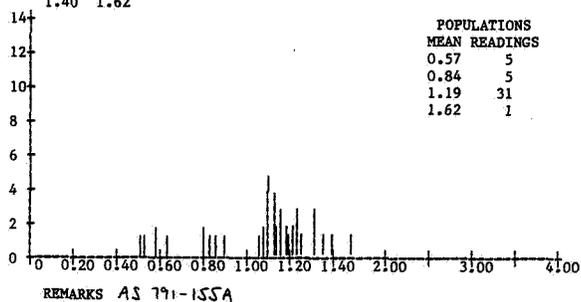
SAMPLE 791-155A DEPTH 1525 VITRINITE REFLECTANCE VALUES

0.38	0.39	0.45	0.48	0.48	0.49	0.49	0.50	0.51	0.51
0.51	0.52	0.53	0.54	0.56	0.56	0.58	0.58	0.58	0.61
0.66	0.67	0.70	0.73	0.87	0.96	0.98	1.01	1.04	1.06
1.07	1.08	1.08	1.10	1.11	1.15	1.18	1.34		



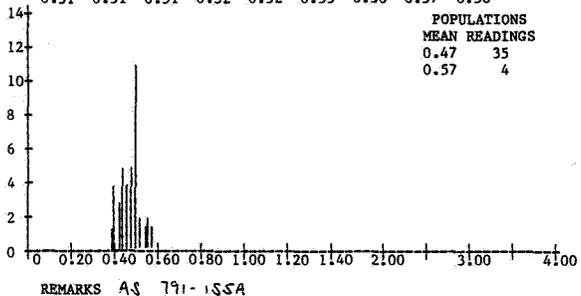
SAMPLE 791-085A DEPTH 1600 VITRINITE REFLECTANCE VALUES

0.51	0.53	0.58	0.59	0.63	0.80	0.81	0.83	0.86	0.90
1.06	1.08	1.09	1.10	1.10	1.10	1.10	1.11	1.13	1.13
1.13	1.13	1.14	1.15	1.16	1.16	1.17	1.19	1.19	1.20
1.22	1.23	1.24	1.24	1.24	1.26	1.32	1.32	1.33	1.36
1.40	1.62								



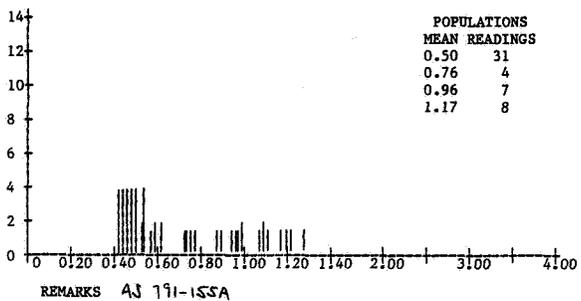
SAMPLE 791-158A DEPTH 1720 VITRINITE REFLECTANCE VALUES

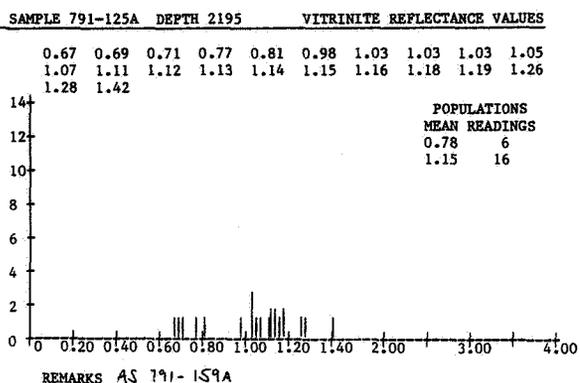
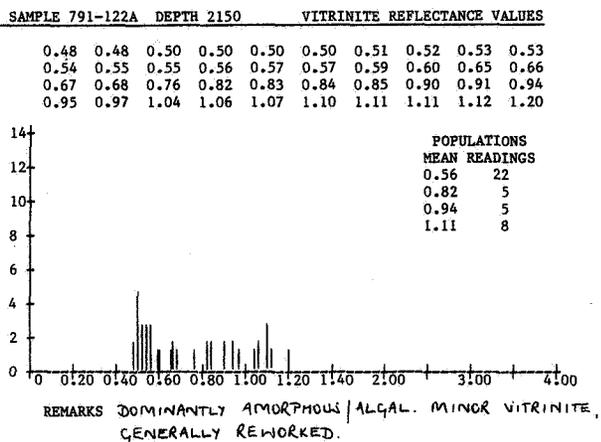
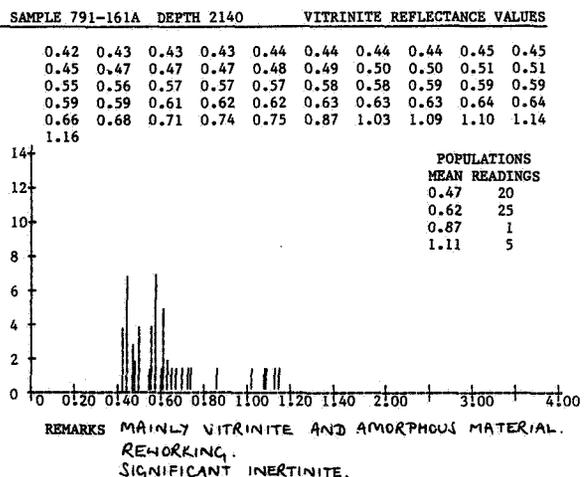
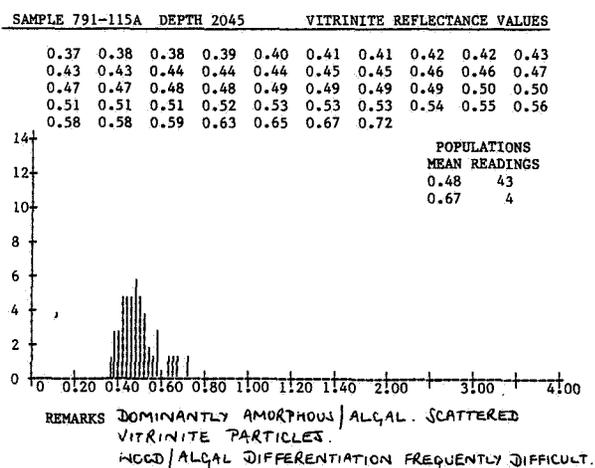
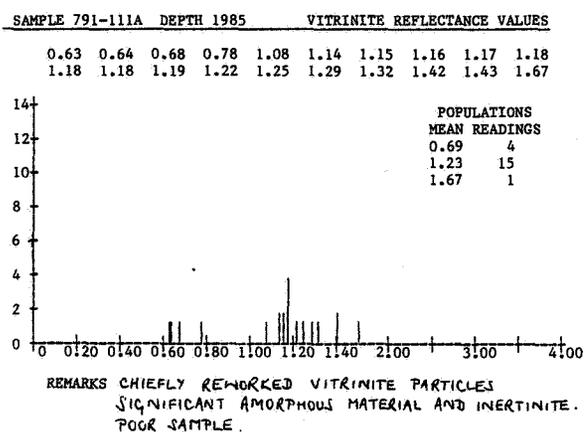
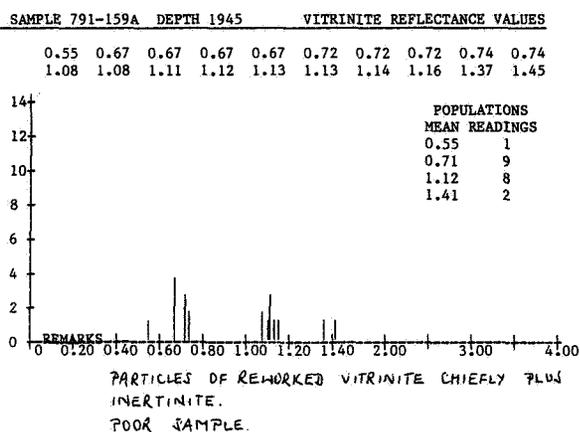
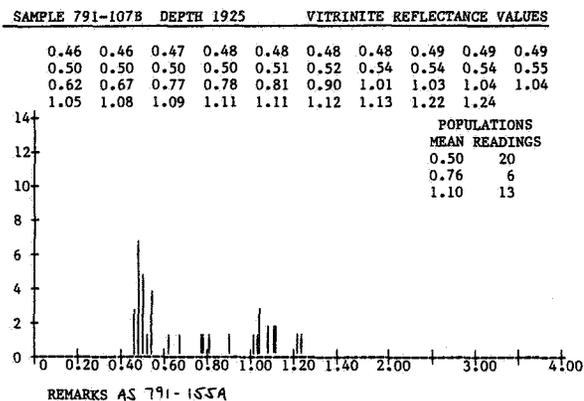
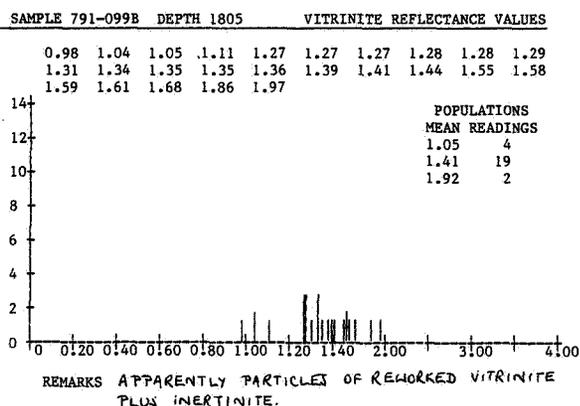
0.39	0.40	0.40	0.41	0.41	0.43	0.43	0.43	0.44	0.44
0.44	0.45	0.45	0.46	0.46	0.47	0.47	0.48	0.48	0.48
0.49	0.49	0.50	0.50	0.50	0.50	0.50	0.50	0.51	0.51
0.51	0.51	0.51	0.52	0.52	0.55	0.56	0.57	0.58	



SAMPLE 791-093A DEPTH 1720 VITRINITE REFLECTANCE VALUES

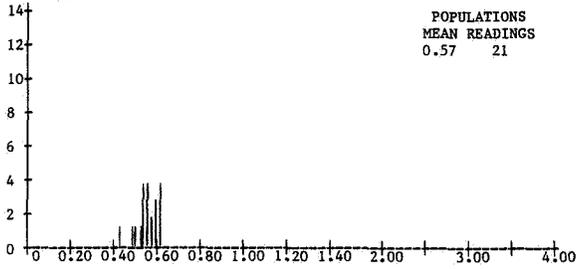
0.42	0.42	0.42	0.43	0.44	0.44	0.45	0.45	0.46	0.46
0.46	0.47	0.48	0.48	0.48	0.48	0.50	0.50	0.51	0.51
0.53	0.53	0.54	0.54	0.54	0.55	0.57	0.59	0.59	0.62
0.62	0.73	0.74	0.76	0.78	0.88	0.90	0.95	0.97	0.98
1.00	1.01	1.08	1.10	1.10	1.12	1.18	1.21	1.23	1.29





SAMPLE 791-132B DEPTH 2315 VITRINITE REFLECTANCE VALUES

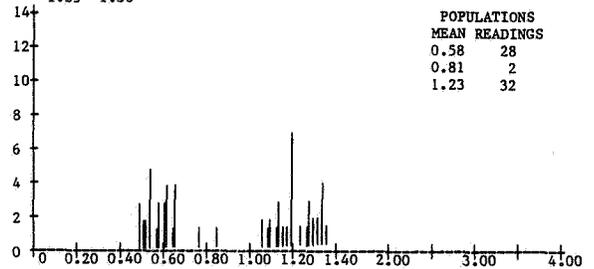
0.43	0.49	0.50	0.53	0.54	0.54	0.54	0.55	0.56	0.57
0.57	0.57	0.58	0.59	0.60	0.60	0.60	0.62	0.63	0.63
0.63									



REMARKS MIXTURE OF AMORPHOUS MATERIAL AND VITRINITE OF COALY APPEARANCE. SMALL SAMPLE.

SAMPLE 791-136B DEPTH 2375 VITRINITE REFLECTANCE VALUES

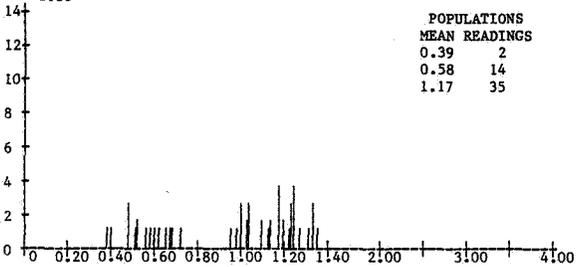
0.49	0.49	0.49	0.51	0.51	0.52	0.52	0.54	0.54	0.55
0.55	0.55	0.57	0.58	0.58	0.59	0.61	0.61	0.61	0.62
0.62	0.62	0.63	0.65	0.66	0.66	0.66	0.67	0.77	0.85
1.06	1.06	1.09	1.10	1.11	1.13	1.14	1.14	1.15	1.16
1.18	1.20	1.20	1.20	1.20	1.20	1.21	1.21	1.24	1.27
1.28	1.29	1.29	1.30	1.31	1.32	1.33	1.34	1.34	1.34
1.35	1.36								



REMARKS AS 791-111A

SAMPLE 791-140A DEPTH 2435 VITRINITE REFLECTANCE VALUES

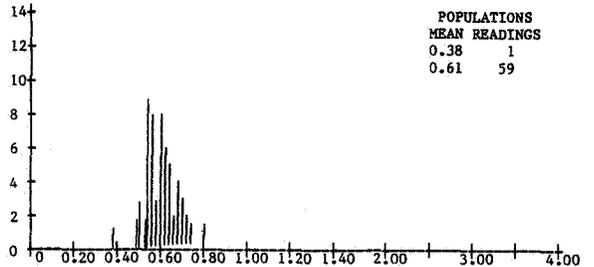
0.38	0.40	0.48	0.48	0.49	0.51	0.52	0.53	0.56	0.58
0.60	0.62	0.65	0.67	0.68	0.72	0.95	0.98	1.00	1.00
1.00	1.03	1.03	1.04	1.04	1.05	1.10	1.11	1.13	1.14
1.14	1.18	1.18	1.19	1.19	1.20	1.21	1.23	1.24	1.24
1.24	1.25	1.25	1.26	1.27	1.28	1.32	1.34	1.34	1.34
1.36									



REMARKS CHIEFLY VITRINITE PARTICLES (GENERALLY REMORDED) PLUS INERTINITE.

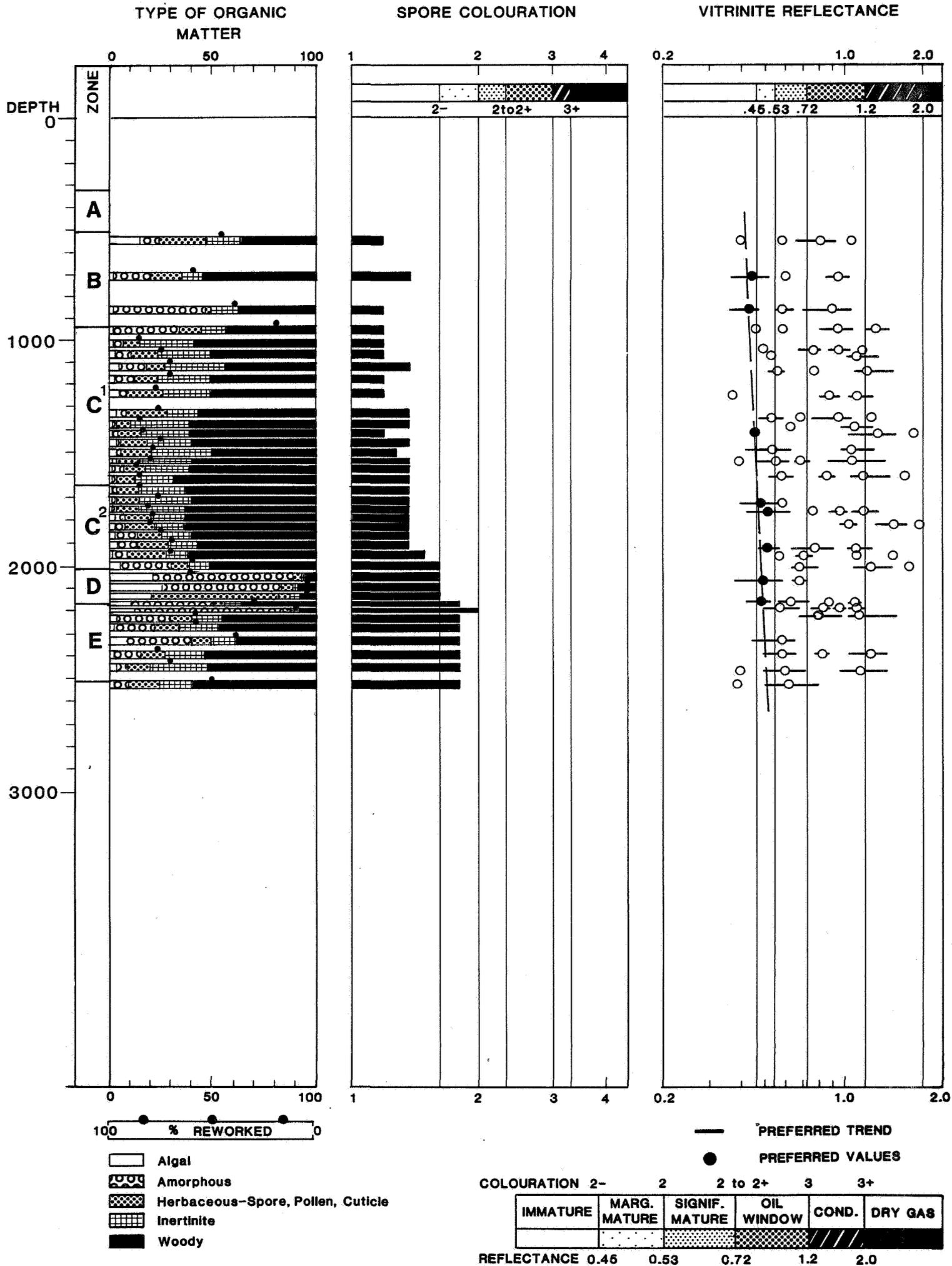
SAMPLE 791-145B DEPTH 2510 VITRINITE REFLECTANCE VALUES

0.38	0.49	0.49	0.50	0.50	0.50	0.53	0.53	0.54	0.54
0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.56	0.56	0.56
0.56	0.56	0.57	0.57	0.57	0.58	0.58	0.59	0.60	0.60
0.60	0.60	0.60	0.60	0.61	0.61	0.62	0.62	0.63	0.63
0.63	0.63	0.64	0.65	0.65	0.65	0.65	0.66	0.67	0.68
0.68	0.69	0.69	0.70	0.70	0.70	0.72	0.73	0.74	0.80



REMARKS

FIGURE 11 ORGANIC FACIES & MATURITY WELL 7120/7-2

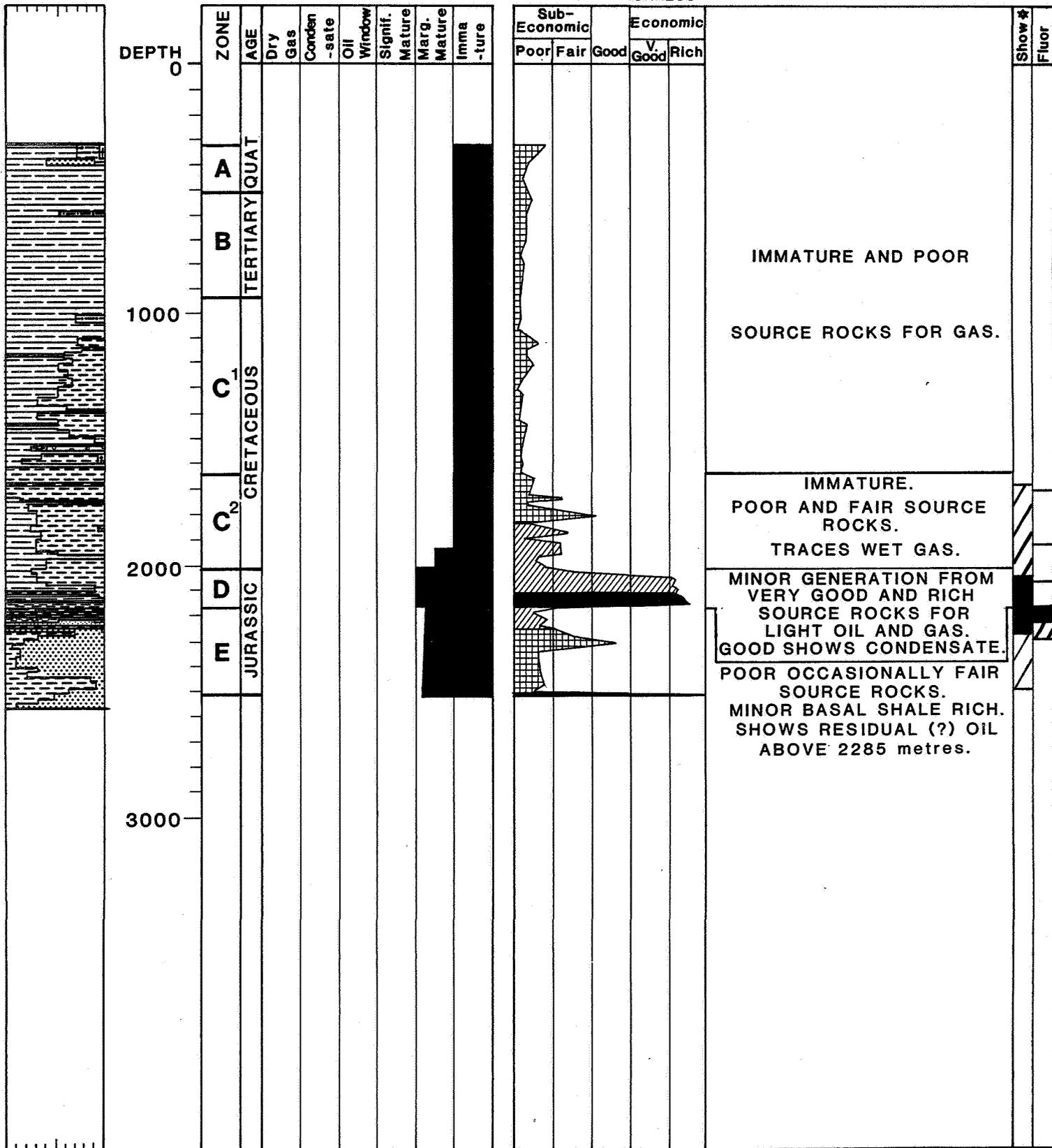


LITHO % LOG

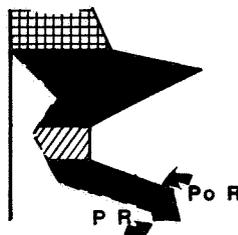
MATURITY

PRESENT AND POTENTIAL RICHNESS

COMMENTS



- [Symbol] Carbonate
- [Symbol] Sand
- [Symbol] Shale/Mudstone
- [Symbol] Coal
- [Symbol] Siltstone
- [Symbol] Igneous
- [Symbol] Evaporite
- [Symbol] L.C.M.



- [Symbol] GAS PRONE
- [Symbol] GAS AND CONDENSATE
- [Symbol] OIL PRONE
- [Symbol] Shows Recognised by Analysis
- Po R Potential Richness
- PR Present Richness

BRIEF DESCRIPTION OF THE ANALYSES PERFORMED BY GEOCHEM

"Screen Analyses" are described in sections A, C and D, "Sample Preparation" in section B, "Follow-up Analyses" in sections E through K and "Correlation Studies" in section L. The analyses can be run on either core or cuttings material with the proviso that samples must be canned for the C₁-C₇ analysis and should be canned (or at least wet) for the C₄-C₇ analysis. The other analyses can be run on both canned and bagged samples.

A) C₁-C₇ LIGHT HYDROCARBON ANALYSIS

The abundance and composition of the C₁-C₇ hydrocarbons in sediments reflects their source richness, maturity and the character of the hydrocarbons they can yield. Most importantly, it is extremely sensitive to the presence of migrated hydrocarbons and is an excellent method for their detection. As it provides the information on most of the critical parameters and is also economical, this analysis is excellent for screening samples to decide which of them merit further analysis.

During the time which elapses between the collection of the sample at the wellsite and its analysis in the laboratory, a fraction of the total gas passes from the rock to the air space at the top of the can. For this reason, both the air space and the cuttings are analysed.

The analysis involves the gas chromatographic separation of the individual C₁-C₄ gaseous hydrocarbons (methane, ethane, propane, isobutane and normal butane) and a partial resolution of the C₅-C₇ gasoline-range hydrocarbons (for their complete resolution see Section E). The ppm abundance of the five gases and of the total C₅-C₇ hydrocarbons are calculated from their electronically integrated peak areas (not from peak height) by comparison with a standard.

In the report, the following data are tabulated: the abundance and composition of the air space gas, of the cuttings gas and of the combined air space and cuttings gases. The combined results are also presented graphically.

B) SAMPLE WASHING AND HAND PICKING

All of the analyses described in subsequent sections are run on washed and hand picked samples.

Cuttings are washed to remove the drilling mud, care being taken not to remove soft clays and fine sand during the washing procedure. Using the C₁-C₇ hydrocarbon data profile of the well, or the organic carbon profile (if this analysis is used for screening), electric logs (if supplied) and the appearance of the cuttings under the binocular microscope, samples are selected to represent the lithological and geochemical zones penetrated by the well. These samples are then carefully hand picked and the lithology of the uncaved material is described. It is these samples which are submitted for further analysis.

Sample material remaining after analysis is retained for six months. Unless instructions are received to the contrary, Geochem Laboratories may then destroy the samples.

Our reports incorporate a gross lithological description of all the samples which have been analysed and litho percentage logs. As screen analyses are recommended at narrow intervals, a complete lithological profile is obtained.

C) ORGANIC CARBON ANALYSIS

The organic carbon content of a rock is a measure of its total organic richness. Combined with the visual kerogen, C₁-C₇, C₄-C₇, pyrolysis and C₁₅₊ analyses, the organic carbon content is used to evaluate the potential (not necessarily actual) hydrocarbon source richness of the sediment. This analysis is an integral part of a total evaluation and it can also be used as an economical screen analysis for dry samples (when the C₁-C₇ analysis cannot be used).

Hand picked samples are dried, crushed and then acidised to remove the inorganic calcium and magnesium carbonates. The actual analysis involves combustion in a Leco carbon analyser. Blanks, standards and duplicates are run routinely for purposes of quality control at no extra cost to the client.

The data are tabulated and presented diagrammatically in our reports in a manner which facilitates comparison with the gross lithology (see Section B) of the samples.

D) MINI-PYROLYSIS

An ideal screen analysis which provides a definitive measure of potential source richness upon those samples whose organic carbon contents suggest fair or good source potential. This is described in detail in section K.

E) DETAILED C₄-C₇ HYDROCARBON ANALYSIS

The abundance and composition of the C₄-C₇ gasoline-range hydrocarbons in sediments reflects their source quality, level of thermal maturation and organic facies. In addition, the data also reveal the presence of migrated hydrocarbons and can be used for crude oil-parent source rock correlation studies.

This powerful analysis, performed upon hand picked lithologies, is employed as a follow-up to confirm the potential of samples which have been selected using the initial screen analysis. It is used in conjunction with the organic carbon, visual kerogen and C₁₅₊ analyses.

The individual normal paraffins, isoparaffins, naphthenes and aromatics with between four and seven carbon atoms in the molecule (but also including toluene) are resolved by capillary gas chromatography and their peak areas electronically integrated.

Normalised compositions, selected ratios and the ppm abundance of the total gasoline-range fraction are tabulated in the report and also presented graphically.

F) KEROGEN TYPE AND MATURATION

Kerogen is the insoluble organic matter in rocks. Visual examination of the kerogen gives a direct measure of thermal maturity and of the composition of the organic matter (organic facies) and indicates the source quality of the sediment - which is confirmed using the organic carbon, light hydrocarbon, pyrolysis and C₁₅₊ analyses.

The type of hydrocarbon (oil or gas) generated by a source rock is a function of the types and level of thermal maturation of the organic matter which are present. Both of these parameters are measured directly by this method.

Kerogen is separated from the inorganic rock matrix by acid digestion and flotation methods which avoid oxidation of the organic matter. It is then mounted on a glass slide and examined at high and low magnifications with a Leitz microscope. Chemical methods measure the total kerogen population but, with this technique, individual particles can be selected for examination and spurious material identified. This is particularly valuable in reworked, contaminated and turbodrilled sediments.

The following data are generated: the types of organic matter present and their relative abundances, an estimate of the proportion of reworked material, preservation state, the thermal maturity of the non-reworked organic matter using the spore colouration technique.

Our maturation scale has been developed to digitise small but recognisable changes in organic matter colouration resulting from increasing maturity and to place particular emphasis upon the immature to mature transition. In the absence of a universal colouration scale, the most significant points on our scale have been calibrated against equivalent vitrinite reflectance values. The following maturation stages are recognised at the low end of the scale:-

- a) immature; thermal index less than 2- (0.45% Ro)
- b) marginally mature; indices between 2- and 2.
Minor hydrocarbon generation from amorphous and herbaceous (\pm algal) organic matter
- c) mature; indices between 2 (0.53% Ro) and 2 to 2+ (0.72% Ro),
significant generation from amorphous, algal and herbaceous organic matter but wood only marginally mature
- d) oil window; indices of 2 to 2+ (0.72% Ro) through to 3 (1.2% Ro). Peak hydrocarbon generation.

The condensate zone starts at a thermal index of 3 whilst indices of 3+ (2.0% Ro) and higher indicate the eometamorphic dry gas stage.

A total of fourteen types of organic matter are sought based upon the major categories of algal, amorphous, herbaceous (spore, pollen, cuticle), wood, inertinite and resin. This detail is essential for a proper understanding of hydrocarbon source potential as the different sub-groups within each category have different properties.

Upon completion of the study, the kerogen slides are sent to the client.

G) VITRINITE REFLECTANCE

Vitrinite reflectance is an alternative/confirmatory method for evaluating thermal maturation which is used in conjunction with the visual kerogen analysis. The reflectivity of vitrinite macerals increases in response to thermal alteration and is used to define maturation levels and, by projection, to predict maturity at depth or the thicknesses of section removed by erosion.

Measurements are made upon kerogen separations in conjunction with polished whole rock samples. In general, this analysis is performed upon the same samples as the visual kerogen analysis, thus facilitating a direct comparison of the two sets of results.

If possible, forty to fifty measurements are taken per sample - unless the sediments are organically lean, vitrinite is sparse or only a single uniform population is present. The data are plotted in a histogram which distinguishes the indigenous vitrinite from possible reworked or caved material. Averages are calculated for each population. Comments upon exinite fluorescence and upon the character of the phytoclasts are noted on the histograms. The reports contain the tabulated data, histograms and the reflectivities plotted against depth.

The vitrinite and visual kerogen techniques provide mutually complementary information upon maturity, organic matter type and diagenesis.