

REGIONAL PETROLEUM GEOCHEMICAL STUDY
MID-NORWAY

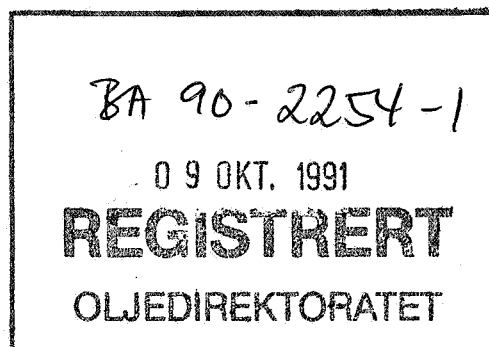
NOCS WELL 6609/10-1

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LIST OF CONTENTS

Page

SUMMARY	
INTRODUCTION	1
LITHOLOGY AND TOTAL ORGANIC CARBON CONTENT	4
ROCK-EVAL ANALYSIS	9
THERMAL EXTRACTION - GAS CHROMATOGRAPHY	14
PYROLYSIS - GAS CHROMATOGRAPHY	17
EXTRACTION DATA	21
VITRINITE REFLECTANCE	26
VISUAL KEROGEN COMPOSITION	29
ISOTOPE ANALYSIS OF C ₁₅ + FRACTIONS	33
GAS CHROMATOGRAPHY - MASS SPECTROMETRY	34
CONCLUSIONS	42

LIST OF FIGURES

1. Location Map
2. Total Organic Carbon Data versus Depth
3. Production Index versus Depth
4. Tmax versus Depth
5. Tmax versus Hydrogen Index Plot
6. Typical Thermal Extraction Gas Chromatograms (a-c)
7. Typical Pyrograms (a-f)
8. Pyrolysis Gas Chromatography Composition
9. Typical Saturates Chromatograms (a-e)
10. Typical Aromatic Chromatogram
11. Vitrinite Reflectance versus Depth
12. Kerogen Composition and Potential
Hydrocarbon Products
13. Isotope Plots
14. Galimov Plot
15. Typical Fragmentograms (a-d)

INTERPRETATION LIMITS

ANALYSIS PROCEDURES

ABBREVIATIONS

APPENDIX 1: LIST OF TABLES

1. Lithology Description
2. Rock-Eval Table
3. Pyrolysis Gas Chromatography Data
4. Extraction Tables (a-e)
5. Saturated Hydrocarbon Ratios
6. Aromatic Hydrocarbon Ratios
7. Thermal Maturity Data
8. Visual Kerogen Data
9. Isotope Analysis of C₁₅+ Fractions
10. Gas Chromatography - Mass Spectrometry (a-i)

APPENDIX 2: REFLECTANCE HISTOGRAMS

**APPENDIX 3: THERMAL EXTRACTION AND
PYROLYSIS GAS CHROMATOGRAMS**

APPENDIX 4: CHROMATOGRAMS

APPENDIX 5: GAS CHROMATOGRAPHY - MASS SPECTROMETRY

SUMMARY

Well NOCS 6609/10-1 is located in the Trænabanken area, offshore Mid-Norway. The well was drilled to a total depth of 2166 m in 1983, reaching the Triassic Red Beds, and was plugged/abandoned as a dry hole.

The potential source rocks of the well are the coals and carbargillites of the Lower Jurassic/Triassic Åre Fm., which are gas-prone, and the Upper Triassic Grey Beds, which contain particularly rich alginitic (? lacustrine) kerogen assemblages. The latter have good to rich potential for oil and gas.

The entire well section is however immature, no significant generation of hydrocarbons having taken place. The free hydrocarbons present have geochemical characteristics which fit well with their host rocks, i.e. showing immaturity and strong terrestrial influences, and are early in-situ generated. No migrated hydrocarbons have been detected in this well, apart from traces of fairly immature light oil generated from a marine-dominated source which occur at the top of the Tilje Fm.

The top of the oil window lies in the range between TD and approximately 2400 m.

INTRODUCTION

The well NOCS 6609/10-1 is from the Trænabanken area, offshore Mid-Norway (Figure 1). The well is classified as a dry and abandoned well. A total of 156 samples was supplied by Texas Eastern Norwegian Inc. while 13 core-chip samples were collected at the Norwegian Petroleum Directorate in Stavanger. The samples between 500 m and 2166 m were washed where necessary and described. The analysed interval is from 1400 m to 2166 m. The material was distributed in intervals ranging from 3 m to 10 m.

A total of 160 samples was examined and of these, 112 samples were selected for screening analysis, i.e. TOC and Rock-Eval analyses. Based on these data the following number of samples were selected for further analysis:

Thermal extraction - pyrolysis - gas chromatography	36 samples
Extraction, MPLC fractionation, saturated and aromatic hydrocarbon gas chromatography	9 samples
Gas chromatography - mass spectrometry of saturate and aromatic fractions	3 samples
Carbon isotope analysis of the C ₁₅ ⁺ fractions	3 samples
Vitrinite reflectance microscopy	20 samples
Visual kerogen analysis	12 samples

Tables 1 - 10 list in detail the samples analysed and the results for each analytical technique. These tables can be found along with all gas chromatographic traces and vitrinite reflectance histograms in the appendix at the back of

the report. Following this data are logs, including summary and composite logs of this data, as well as a brief description of the analytical techniques employed and the interpretation levels used in the results and discussion.

General well data and stratigraphy for the well are as follows:

Position : 66°14'42.6"N, 9°14'59.3"E.
Elevation : 26 m RKB
Water depth : 263.5 m
Status : Plugged and abandoned dry well
Casings : 413 m, 654 m, 1247 m

All depths are from RKB if not otherwise stated.

The following ages were supplied by Texas Eastern Norwegian Inc.:

<u>Tertiary</u>	1509 m
<u>Cretaceous</u>	1509 - 1605 m
<u>Jurassic</u>	1605 - 2052 m
<u>Upper Triassic/Trias</u>	2052 - 2166 m
TD	2166 m

Based on their data and in house observations the following subdivision of the well was made:

<u>Tertiary</u>	
Nordland Group	? - 1312 m
Hordaland Group	1312 - 1405 m
Rogaland Group	1405 - 1509 m
Tare Formation	1405 - 1469 m
Tang Formation	1469 - 1509 m

<u>Cretaceous</u>	
Shetland Group	1509 - 1605 m

Jurassic

Viking/Fangst Group

1605 - 1642 m

Båt Group

1642 - 2052 m

Tilje Formation

1642 - 1785 m

Åre Formation

1785 - 2052 m

Triassic

Grey Beds

2052 - 2124 m

Red Beds

2124 - 2166 m

TD

2166 m

LITHOLOGY AND TOTAL ORGANIC CARBON CONTENT

Discussion and interpretation are performed on a stratigraphic basis. A total of 160 samples was lithologically described and 112 samples were analysed for organic carbon content, see Tables 1, 2 and Figure 2.

Quaternary and Tertiary

Nordland Group (- 1312 m)

Nine samples were described, but no analyses were performed. The samples consist mainly of white to medium grey sandstones, which are micaceous and coarse grained. There are also minor amounts of yellow-grey siltstone in some samples.

Hordaland Group (1312 - 1405 m)

One sample was described and analysed. The sample from 1400 m consists of yellow-grey to light olive-grey shale, with a good TOC content of 1.4 %.

Rogaland Group (1405 - 1509 m)

One sample was described. The sample consists of light brown-grey shale and also lesser amounts of yellow-grey to light olive-grey shale as in the Hordaland Gp.. No analyses were performed.

Cretaceous

Shetland Group (1509 - 1605 m)

Seven samples were described and four analyses performed. The samples consist mainly of shales, which are light grey to medium grey and light brown-grey or light olive-grey to yellow-grey and glauconitic. The shales have fair TOC contents from 0.4 % to 0.5 % (4 analyses). In some samples there are minor amounts of white to medium grey sandstone and dark grey dolomitic limestone which were not analysed.

Jurassic/Upper Triassic

Viking/Fangst Groups (1605 - 1642 m)

These apparently contain similar lithologies to those in the Cretaceous sequence. Six samples were described and five samples analysed. Shales are light brown-grey to medium grey and light grey to yellow-grey and glauconitic. There are also minor amounts of sandstone, as in the Cretaceous, and light olive-grey siltstone. The light grey to yellow-grey glauconitic shales have fair TOC contents (0.5 - 0.6 %, 2 analyses). The light brown-grey to medium grey shales have fair to good TOC contents (0.9 % to 1.4 %, 3 analyses).

Båt Group (1642 - 2052 m)

Tilje Formation (1642 - 1785 m)

Forty-eight samples were described and thirty samples were analysed. The uppermost sample overlaps with the base of the Viking/Fangst Gps. and the yellow-grey to light olive-grey

shale is more representative of the latter sequence. The top part of the Tilje Fm. was cored (1644 m to 1655.5 m) and this core consists mainly of pale yellow-brown or white sandstone, with siltstone near the top of the core at 1645 m. The TOC content of the siltstone is 1.2 % (good). Three sandstone core chips from 1644 m, 1648 m, 1649 m, 1651 m and 1654 m have moderate to good TOC contents (for sandstones) of 0.3 % to 0.58 %, while a siltstone core-chip sample has a poor TOC of 0.17 %. An oil show was recorded in these sandstones according to the mud log supplied by Texas Eastern Norwegian.

Below the cored section and down to 1728 m samples consist of a mixture of shales, siltstones and sandstones and some coals. Between 1656 m and 1728 m shales and siltstones, which are generally the dominant lithologies, have TOC contents ranging from 0.1 % to 1.5 % (11 analyses). The wide range in values may be partly due to the variation in abundance of coaly inclusions in the samples.

Between 1728 m and 1785 m sandstones predominate, although coals are abundant in the lowermost sample from 1782 - 1785 m. The sandstones have TOC contents ranging from 0.2 % to 0.5 % (6 analyses). Two light grey to brown-grey silty shales were also analysed in this interval. Both have good TOC contents (1.5 % at 1743 m, 1.3 % at 1749 m).

Åre Formation (1785 - 2052 m)

Apart from the section from 1785 - 1791 m, yellow-grey, dusky brown to dusky yellow-brown to brown-black shales and coals dominate the samples down to 1848 m. Below 1848 m sandstones are also a prominent component of the samples.

Samples from 1791 m to 1818 m consist wholly of shales and coals. The core from 1798 - 1808 m consists of brown-grey

silty and dusky yellow-brown to brown-black shale. The brown-grey silty shale or siltstone core-chip samples have good to rich TOC contents of 1.5 % to 3.3 %. The darker, more carbonaceous shale core-chip from 1807 m has a higher TOC content of 5 %. Coals and carbargillites are very abundant in the interval down to 1848 m. Below 1848 m carbargillites and coals are still abundant along with white to light grey sandstones. The sandstones change from white and light grey to white and orange-grey below 1998 m and the latter are calcareous and/or dolomitic. The TOC content of the sandstones rarely exceeds 0.2 % (8 analyses). The carbargillites throughout the Åre Fm. have TOC contents ranging from 13 % to 47 % (23 analyses). TOC content of coals in the Åre Fm. varies from 51 % to 66 % (14 analyses).

Triassic

Grey Beds (2052 - 2124 m)

Apart from the top few samples (down to 2070 m) which may consist partly of caved Åre Fm. sandstones and shales, the samples in this interval are composed mainly of medium to dark grey shales, which have rich TOC contents ranging from 2.7 % to 6 % (11 analyses).

Red Beds (2124 - 2166 m, TD)

Shales similar to those in Grey Beds are gradually replaced with increasing depth by green-grey and grey-red marls. Below 2151 m marls totally dominate the samples. TOC content of the medium to dark grey (and brown-grey) shales in the interval from 2124 m to 2154 m is similar to that in the

Grey Beds interval (i.e. rich), ranging from 2.9 % to 5.3 % (5 analyses). The marls have poor TOC contents ranging from 0.2 % to 0.3 % (3 analyses).

ROCK-EVAL ANALYSIS

A total of 112 samples was analysed by Rock-Eval. The analytical results are discussed below on the basis of kerogen type and richness, generation and migration and maturity. The data is listed in Table 2 and shown in Figures 3, 4 and 5.

Kerogen Type and Richness

(Hydrogen Index, Oxygen Index and Petroleum Potential)

Quaternary and Tertiary

Nordland Group (- 1312 m)

No analyses were performed here.

Hordaland Group (1312 - 1405 m)

One sample of yellow-grey to light olive-grey and light grey shale was analysed. The petroleum potential is poor (0.6 mg HC/g rock) and the kerogen is type IV (hydrogen index is 39 mg HC/g TOC), hence the shale has a very poor potential and only for gas.

Rogaland Group (1405 - 1509 m)

No analyses were performed here.

Cretaceous

Shetland Group (1509 - 1605 m)

Four light grey to yellow-grey, light olive-grey or light brown-grey shales were analysed. Petroleum potentials are very low (≤ 0.2 mg HC/g rock) and kerogen is type IV (hydrogen index < 30 mg HC/g TOC), indicating that the shales have virtually no source rock potential.

Jurassic/Upper Triassic

Viking/Fangst Groups (1605 - 1642 m)

Similar shales to those in the Cretaceous sequence were analysed. Six samples, including one which overlaps the top of the Tilje Fm., have poor petroleum potentials (≤ 0.6 mg HC/g rock) and type IV kerogen (hydrogen index ≤ 45 mg HC/g TOC). They have virtually no source rock potential.

Båt Group (1642 - 2052 m)

Tilje Formation (1642 - 1785 m)

The siltstone core-chip sample at 1645 m has a poor petroleum potential of 1.3 mg HC/g rock and kerogen type III (hydrogen index 105 mg HC/g TOC). This siltstone has a poor gas potential. The sandstone core-chips have lower petroleum potentials (mostly having 0.3 - 0.5 mg HC/g rock) and have only slight potential as source rocks for gas. The organic material may consist of trace amounts of migrated bitumen.

The light brown-grey to medium grey shales and light olive-

grey siltstones below 1654 m to the base of the formation (mainly in the interval 1654 - 1720 m) have poor petroleum potentials mainly less than 1 (0.1 to 1.4 mg HC/g rock) and type IV kerogen (hydrogen index values from 19 to 71 mg HC/g TOC). These shales have a poor dry gas potential. The sandstones, mainly in the interval below 1720 m, have very low organic carbon contents and apparently contain no migrated hydrocarbons or indigenous organic matter. They have no source potential.

Coals from 1695 m, 1701 m, 1779 m and 1785 m were analysed. Petroleum potentials are rich (54 - 80 mg HC/g rock), but are quite low for coals and the kerogen type is III, with low hydrogen index values from 92 - 110 mg HC/g TOC. These coals have a rich gas potential.

Åre Formation (1785 - 2052 m)

Shales and siltstones from the top of the interval in the cored section (1798 - 1808 m) have poor - fair petroleum potentials (1.5 to 4.1 mg HC/g rock) and poor type III kerogen (hydrogen index range 27 - 250 mg HC/g TOC). They have poor potential as source rocks for gas.

The carbargillites and coals present throughout the formation have petroleum potentials which do not exceed 100 mg HC/g rock (mostly less than 80). Hydrogen index values rarely exceed 200 mg HC/g TOC, so that these shales and coals mainly have source rock potential for gas. The highest hydrogen index values were recorded in the sections from 1830 m to 1893 m and 1896 - 1995 m, and vary mainly from 150 to 220 mg HC/g TOC. These sections have a rich gas - condensate potential.

The sandstones in the formation contain very little organic

matter and have no source potential or any sign of migrated bitumen.

Triassic

Grey Beds (2052 - 2124 m)

The dominant medium to dark grey shales in this interval show a marked improvement in petroleum potential and kerogen type below 2076 m. Above 2076 m petroleum potentials are fair (2.3 - 3.7 mg HC/g rock). The shales above 2076 m have a poor gas potential. Below 2076 m and down to 2124 m shales have petroleum potentials from 6 to 23 mg HC/g rock (most values between 6 - 15) and hydrogen indices from 164 to 458 mg HC/g TOC (most values between 200 - 300). Clearly, these shales have a good to rich potential as source rocks for oil and gas.

Red Beds (2124 - 2166 m, TD)

Shales similar in potential to those in the Grey Beds are present in the upper part of this interval. They may be caved from the Grey Bed section. The dominant green-grey and grey-red marls have no source rock potential (petroleum potentials ≤ 0.1 mg HC/g rock).

Generation and Migration

(Production Index, $S_1/(S_1+S_2)$)

The production index versus depth crossplot is shown in Figure 3. Production index values rarely exceed 0.1 and in shales/coal rarely exceed 0.05 and S_1 /TOC values are low.

Both features suggest that no hydrocarbon generation has occurred.

High production index values occur in shales in the Cretaceous which may be due to very slight traces of migrated hydrocarbons. High values are also found in sandstones at the top of the Tilje Fm., which are most probably due to traces of residual migrated hydrocarbons (an oil show was recorded in core-chip sandstones). Otherwise production indices and S_1 values in sandstones are low and they probably do not contain any migrated hydrocarbons.

Maturity (Tmax)

The Tmax versus depth crossplot is shown in Figure 3. Tmax of the type III kerogens in carbargillites and coals of the Tilje/Åre Fms. range from 420 to 434°C (mainly from 420 - 430°C), which suggests that this sequence is immature. The higher Tmax of the type II/III kerogens in the Triassic Grey Beds, i.e. from 433 - 438°C, is probably not due to a large increase in maturity, but to a change in organic matter composition, from vitrinite/inertinite rich in the Lower Jurassic/Upper Triassic coal section to liptinite-rich (algal remains?) in the Triassic shales. The whole analysed section is considered to be immature.

THERMAL EXTRACTION - GAS CHROMATOGRAPHY

Thirty-three samples from the Jurassic and Triassic were analysed. Exemplary thermal extract chromatograms are shown in Figures 6a-c.

Jurassic/Upper Triassic

Båt Group (1645 - 2052 m)

Tilje Formation (1645 - 1785 m)

The siltstone core sample and two sandstone core samples from the top of the formation were analysed. The uppermost sandstone sample has minor gas plus fair amounts of a range n-alkanes between nC_{12-22} which lie on a prominent unresolved hump, these possibly representing biodegraded immature hydrocarbons generated in a quite strongly anoxic source rock (Figure 6a). In the underlying sandstone there is also a prominent n-alkane envelope from nC_{12} to nC_{19} , with a maximum at nC_{14} . Pristane and phytane are again prominent components with a pristane/ nC_{17} ratio greater than 2 and a pristane/phytane ratio close to 1. These hydrocarbons are also probably derived from a relatively immature source rock with organic matter deposited in an anoxic environment. The siltstone core-chip sample is practically devoid of free hydrocarbons apart from minor gas.

Two coal samples were analysed. In both, low amounts of $C_5 - C_7$ hydrocarbons are the dominant components, although there are also n-alkanes from nC_{10} to nC_{15} . Clearly, some low molecular weight hydrocarbons have been generated from the organic matter in these coals. The C_{15+} hydrocarbons observed in the solvent extracts are not seen in the thermal

extract since they are present in very low amounts relative to the lower molecular weight n-alkanes.

Åre Formation (1785 - 2052 m)

Twenty-four samples were analysed from this interval. The thermal extract chromatograms of the core-chip siltstones have both minor in-situ generated, mainly gaseous hydrocarbons and narrow populations of n-alkanes nC_{11-17} which probably represent traces of diesel contamination. The thermal extracts of the coals and carbargillites are all fairly similar. $C_5 - C_{20}$ hydrocarbons dominate, although the C_{15+} hydrocarbons are generally very minor components of the thermal extracts (e.g. Figure 6b). In some cases there is a large unresolved hump of C_{25+} material with a few resolved components which are probably mainly triterpenoid biomarkers (Figure 6c). Prominent peaks close to nC_{10} and nC_{15} are probably cyclic or aromatic components. Aromatic hydrocarbons commonly seen in coals and shales with type III kerogen, e.g. alkyl naphthalenes, are not very abundant in the samples from this formation. It may be that the organic matter is too immature for generation of these aromatics and early generation mainly of $C_5 - C_{15}$ saturated hydrocarbons has occurred from the liptinites in these samples.

Triassic

Grey Beds (2052 - 2124 m)

Four samples were analysed. The thermal extracts of these medium to dark grey shales are dominated by $C_5 - C_7$ hydrocarbons, with a minor contribution from $nC_{10} - nC_{15}$ hydrocarbons. There is also a pronounced unresolved hump, which may be due to a mud additive contaminant. The presence of

low molecular weight hydrocarbons of these oil-prone liptinite-rich shales indicates that only minor hydrocarbon generation has occurred.

Red Beds (2124 - 2166 m, TD)

The two analysed medium to dark grey shales have similar thermal extracts to the shales in the Grey Beds sequence.

PYROLYSIS - GAS CHROMATOGRAPHY

Thirty-five samples from the Jurassic and Triassic were analysed. The data from the pyrograms (S_2 chromatograms) are listed in Table 3 and plotted in a pyrolysis products triangle, Figure 8. Exemplary pyrograms are shown in Figures 7a-f.

Jurassic/Upper Triassic

Båt Group (1642 - 2052 m)

Tilje Formation (1642 - 1785 m)

The siltstone and sandstones from near the top of the formation in the cored section have mainly $C_1 - C_7$ hydrocarbon pyrolysis products in the 1645 m and 1654 m samples. The n-alkanes from $nC_{10} - nC_{20}$ in the sandstone may be derived from migrated bitumen in the sample. The sandstone from 1644 m has a pyrogram showing a typical trace for type III kerogen, possibly reflecting also the presence of minor contaminants.

The pyrograms of the two analysed coal samples from 1701 m and 1785 m are dominated by $C_1 - C_7$ hydrocarbon products (Figure 7a). Polar compounds indicated by broad peaks between nC_7 and nC_{15} are present along with the alkene/alkane doublets up to C_{30} . The presence of the latter is probably due to cuticular material in the coal. The lack of alkyl naphthalenes, also observed in the thermal extracts, suggests that the kerogen is lacking in vitrinite/sporinite components and that the coals are probably composed mainly of inertinites yielding mostly gases together with a small liptinite-rich component, i.e. cuticular material, yielding

paraffinic hydrocarbons. The absence of C_{15+} paraffinic hydrocarbons in the thermal extracts is due to the low maturity of the organic matter, which has generated very little C_{15+} hydrocarbons.

Åre Formation (1785 - 2052 m)

The four core-chip samples pyrolysed from the upper levels of this interval have pyrograms rich in aromatics and unidentified components, being basically type III traces, possibly also with additives (Figure 7b).

The variation in pyrolysis products of coals and carbargillites in this formation can be related to variations in hydrogen indices. Those samples with the lowest hydrogen indices have most methane, polar products and generally least of the alkene/alkane doublets. The samples with the highest hydrogen indices have less methane and polar products and more alkene/alkane doublets (e.g. compare Figure 7c with 7d). The unresolved hump is also larger in many of the samples with high hydrogen index values.

Prist-1-ene is abundant in all samples, which suggests that the samples are of very low maturity.

As with the Tilje Fm. coals, it is likely that the samples have a small to medium liptinite component and a large inert component relative to volatile-rich organic components. The carbargillites and coals have mainly gas potential, although some have a fair potential for condensate and even paraffinic oil in part. However, at the present low maturity, little hydrocarbon generation has occurred.

Below 2019 m there appears to be a marked change in pyrolysis products. Polar products and prist-1-ene decrease in abundance relative to the alkene/alkane doublets (e.g.

Figure 7e). This is taken to be due to increase in liptinite over woody terrestrial plant remains. It suggests that the shales below 2019 m have a relatively greater potential for generating paraffinic oil. This is also apparent in the Triassic Grey Beds underlying the Åre Fm.

Triassic

Grey Beds (2052 - 2124 m)

The pyrograms of the four medium grey to dark grey shales from this formation are similar to the pyrogram of the shale from 2022 m in the Åre Fm.. The alkene/alkane doublets are even more pronounced than in the latter (e.g. compare Figure 7e with Figure 7f of the sample from 2118 m). The virtual disappearance of prist-1-ene and very low amounts of xylene relative to the alkene-alkane doublets is taken to be due to an increase in liptinite, particularly alginite, in the sample. The amounts of this maceral in the sample need not be very great since this maceral will yield mainly alkene/alkanes. However, these will completely mask the pyrolysis products from inertinites and poor vitrinites.

These shales have a good potential as source rocks for paraffinic oil.

Red Beds (2124 - 2166 m, TD)

The pyrograms of the two analysed shales from this sequence are the same as similar shales from the Grey Beds sequence and indicate a similar organic matter type.

The triangular plot of the relative amounts of $C_1 - C_5$, $C_6 - C_{14}$ and C_{15+} pyrolysis products (Figure 8) shows that the

samples analysed do not have any appreciable spread, the fields for the various formations overlapping a good deal. The sandstones and siltstones have as expected the lowest amounts of C_{15+} pyrolysis products, while the potential source rocks of the Triassic have relative amounts of C_{15+} products equivalent to the Åre Fm. coals.

EXTRACTION DATA

Nine samples were extracted. Only samples from the Lower Jurassic/Triassic Båt Gp. and Triassic sequences were analysed. The extraction data are listed in Tables 4a-e, 5 and 6. Exemplary saturate and aromatic chromatograms are shown in Figures 9a-e and 10 respectively.

Jurassic/Upper Triassic

Båt Group (1642 - 2052 m)

Tilje Formation (1642 - 1785 m)

Coals from 1692 - 1701 m were combined into one sample and then extracted. The amount of EOM is low for a coal (4857 ppm EOM) and this may be due to the type of organic matter in the coal which probably contains abundant reworked material, inertinite and oxidised vitrinite (see optical analyses). The percentage of total hydrocarbons is 32 %, which is quite high and may be due to a small, but hydrocarbon-rich liptinite component, or possibly to the presence of contaminants from the drilling mud.

Åre Formation (1785 - 2052 m)

Six samples were analysed; brown-grey siltstone core chips from 1801 m and 1804 m constitute one sample, there are four samples of dusky brown to dusky yellow-brown carbargillites from 1830 - 1851 m, 1851 - 1890 m, 1890 - 1929 m and 1983 - 1995 m and one sample of coal combined from sample intervals from 1953 m to 1980 m. The siltstone sample has only a fair content of EOM (569 ppm) and extractable hydrocarbons

(126 ppm). The low percentage of extractable hydrocarbons (22 %) and low saturate/aromatic ratio (0.6) indicate that the sample is of low maturity and EOM is probably derived mainly from terrestrial plant remains.

The four shale/carbargillites all have very high TOC contents (> 20 %). These samples plus the coal have similar EOM contents (3395 - 5333 ppm), which are quite low for samples which are so rich in TOC. This suggests the organic matter is rich in inert organic material with low EOM contents. There is a high content of extractable hydrocarbons (from 37 - 59 %) in the carbargillites, except for the uppermost sample (only 23 %). The variable hydrocarbon content may be due to a variable content of a hydrocarbon-rich liptinite component.

Triassic

Grey Beds (2052 - 2124 m)

One composite sample of medium to dark grey shale from 2106 m to 2121 m, was extracted. Another from 2121 - 2136 m overlaps with the underlying Red Beds. Both samples are considered to be representative of the Grey Beds sequence. The amount of EOM in both is poor - fair (353 and 637 ppm), but the percentage of total hydrocarbons is very high (90% and 71 %). The kerogen is believed to contain abundant liptinite (probably alginite) based on Rock-Eval results and pyrolysis - gas chromatograms and does contain very high amounts of liptinite according to visual kerogen analysis (see later discussion of these results). The low EOM content, of which most consists of hydrocarbons, is also probably due to the nature of the liptinite content of kerogen in these shales.

Saturated Hydrocarbons

Jurassic/Upper Triassic

Båt Group (1642 - 2052 m)

Tilje Formation (1642 - 1785 m)

The saturated hydrocarbon gas chromatogram of the coals from the 1692 - 1701 m interval is dominated by high molecular weight compounds between nC_{25} and nC_{35} . These are most probably triterpanes. Normal alkanes and isoprenoids are present as minor components. The dominant n-alkanes are nC_{23} to nC_{33} , with a pronounced odd n-alkane preference (Figure 9a). The abundant triterpanes and waxy n-alkanes are considered to be derived from terrestrial plant debris.

Åre Formation (1785 - 2052 m)

The brown-grey siltstone from 1801 - 1804 m shows a bimodal n-alkane envelope ranging from nC_{14} - nC_{40} , with maxima at nC_{15} and nC_{29} . There is a pronounced odd n-alkane preference from nC_{22} to nC_{34} , and the pristane/phytane ratio is 3.3 (Figure 9b). Apart from the abundant low molecular weight hydrocarbons (i.e. nC_{14} - nC_{18}), the distribution is typical for immature organic matter derived from terrestrial plant material. The abundant nC_{14} - nC_{18} hydrocarbons may indicate either the early generation of low molecular weight hydrocarbons, i.e. C_1 - C_{15} hydrocarbons, or the presence of migrated or contaminant hydrocarbons. Unlike the Tilje Fm. coal and the other Åre Fm. samples, triterpanes are a minor component of the saturated hydrocarbons. This is presumably due to the lower bacterial productivity or poorer preservation of bacterial remains during deposition of the siltstone

compared to the coals and carbargillites.

The coals and carbargillites in the Åre Fm. have a similar isoprenoid distribution to the siltstone. There are slight differences in the n-alkane distribution. The bimodal n-alkane envelope is shorter, only from nC_{13} - nC_{35} , and the relative abundance of the low molecular weight components, i.e. nC_{14} - nC_{18} , varies. The maximum high molecular weight n-alkane also changes from nC_{29} to nC_{25} with increasing depth. Although the composition of this organic matter does show some variation with age (e.g. compare Figure 9c with 9d), the hydrocarbons are derived mainly from terrestrial plant remains.

Triassic

Grey Beds (2052 - 2124 m)

The gas chromatograms of the two analysed shales are similar. The bimodal n-alkane envelope is also similar to the Åre Fm. carbargillites with maxima at nC_{15} and nC_{27} . There is a pronounced odd n-alkane preference from nC_{18} to nC_{35} (Figure 9c). Clearly, there is a large terrestrial plant input to the kerogen of these shales which have been observed to contain abundant liptinite. The origin of these n-alkanes is probably from cuticular plant matter. The pristane/phytane ratio is lower in these Triassic shales, i.e. 2.3 compared to > 3 for the Åre Fm. shales. This is probably due to a difference in input and/or depositional environment. The Lower pristane/ nC_{17} ratios of the Grey Beds' shales suggest a reduction in terrestrial plant input and/or a change in depositional environment.

Aromatic Hydrocarbons

Jurassic/Upper Triassic (1605 - 2052 m)
plus Triassic (2052 - 2166 m, TD)

Most peaks in the aromatic hydrocarbon traces of all samples are unidentified (e.g. Figure 10). In most cases the dominant peaks probably represent aromatised biomarker compounds. The distributions are typical for immature organic matter. There are variations in the distribution which are probably due to differences in organic input. Where alkyl naphthalenes and phenanthrenes have been positively identified, then the ratios (e.g. DMN and MPI 1) also suggest that organic matter is immature.

Apart from the siltstone from the Åre Fm., sulphur aromatics are virtually absent, which is to be expected in mainly terrestrial plant-dominated, non-marine deposits.

VITRINITE REFLECTANCE

Eighteen ditch cuttings samples and two core chip samples were analysed for vitrinite reflectance, over the depth range 1400 m to 2151 m in the 6609/10-1 well. Vitrinite reflectance data was plotted against depth and the resultant trend is shown in Figure 11. Table 7 lists the thermal maturity data for the well.

The drilled section cuts Eocene/Oligocene through Lower Jurassic, Jurassic to Triassic age sediments. Vitrinite reflectance analysis was performed on coals, where appropriate and on shale/claystone lithologies.

The section begins with an Eocene/Oligocene calcareous mudstone (1400 m), which contains abundant calcareous fossil and glauconitic material. The sample is dominated by a mixed assemblage of fair quality, low reflecting vitrinite and inertinite, together with significant bituminite and minor lignosulphonate contamination. The underlying Cretaceous sample (1533 m) has a lean organic content dominated by inertinite with only minor, poor quality measurable indigenous vitrinite.

Lower Jurassic samples span the interval from 1593 m to 1807 m. Three samples (1593 m, 1632 m and 1656 m) are characterised by a low to moderate organic content, with significant poor to fair quality, low reflecting vitrinite. There is a marked increase in pyrite in the latter sample. A coal (Lower Jurassic) at 1698 m is partially oxidised, but dominated by (fair) good quality vitrinite. The coals are mainly trimacerite; termed duroclarites with vitrinite in excess of inertinite and liptinite. Vitrinite is structured and within the coals telinitic cell wall and collinitic cell infillings are clearly discernible.

The shale beneath, at 1798 m, contains a high percentage of coaly clasts and has a high organic content, rich in vitrinite, with significant inertinite. Bitumen staining is moderately intense at this depth. An organic rich shale at 1807 m is almost exclusively dominated by inertinite and oxidised particles and has only limited measurable vitrinite.

From 1827 m the section passes into Lower Jurassic-Triassic age sediments; comprising coals and intercalated calcareous shales. The coals have a high content of fine, framboidal pyrite and appear pitted. This may be attributed to bacterial degradation. Some coals contain the maceral sclerotinite. Coals to 1956 m appear slightly oxidised, however, the major proportion of the vitrinite is of good quality and yields reliable results.

Bitumen staining is light to moderate throughout the well, except for an organic rich shale lithology at 2001 m, which exhibits a strong staining and is dominated by vitrinite, with significant inertinite and minor liptinite. The shale some 72 m below this only exhibits a light to moderate staining and phytoclasts are dominated by inertinite, with minor to significant poor to fair quality vitrinite. Inertinite remains dominant in the shales at 2118 m, but at 2151 m vitrinite is predominant, though apparently bitumen impregnated and present with minor caved material.

Vitrinite reflectance shows only a marginal increase over the 751 m of analysed section. Confident values increase from Ro 0.38 % (15 readings) at 1400 m through Ro 0.44 % (50 readings) at 1785 m to Ro 0.50 % (6 readings) at 2151 m.

Observations in fluorescence light show the liptinitic macerals to be significant from 1410 m increasing from moderate to moderate to high at 1926 m and high from 1956 m to the base of the section, excepting an extremely

liptinitic rich sample at 2118 m.

The liptinitic content continually fluctuates between mixed assemblages and spore or algal dominated assemblages. Throughout, the sporomorph content is at least minor, and generally significant. From 1698 m significant quantities of cuticle, amorphous, algal and spore material are accompanied by minor liptodetrinite in the coal. One coal (1752 m) contains very well preserved *Botryococcus braunii* colonies. The former liptinitic assemblage persists to the approximate depth 1827 m. From 1857 m algal material is clearly dominant and *Tasmanites* algae was observed. Algal cysts dominate through to the base of the section, together with abundant amorphous material at 2001 m. The most striking sudden increase in liptinite content occurs at 2118 m depth (Triassic, Grey Beds?) in an organic rich shale which has an extremely high concentration of algal cysts. Vitrinite exhibited a weak, brown fluorescence at 1866 m. Background fluorescence is generally weak throughout. Fluorescence intensity is, moreover, moderate except for an apparent increase to moderate to high over the interval 1827 m to 2073 m.

Spore fluorescence data correlates well with reflectance values, showing an increase from green-yellow (SCI 3) at 1400 m to yellow to yellow-orange (SCI 4) by 1656 m to light orange (SCI 5) by at least 2001 m.

A thermal maturity profile for this well, based on the above analyses, is proposed. The well appears to be immature, passing into marginal maturity by approximately 1830 m and remains so throughout the analysed section. Full maturity (Ro 0.6 %) may be realised by the projected, approximate depth of 2440 m.

VISUAL KEROGEN COMPOSITION

Kerogen type is discussed according to the stratigraphic units of the well. Thermal maturity estimates based on spore colour index and spore fluorescence are presented in general terms for the well as a whole. Figure 12 shows a triangular plot of the gross kerogen composition of the examined samples, while Table 8 lists their detailed kerogen composition.

Twelve samples from this well were examined optically. Samples were examined from 1645 m (Båt Gp., Tilje Fm.) to 2124 m (Triassic: ? Grey Beds).

Kerogen Typing

Jurassic

Båt Group (? - ?2075 m)

Tilje Formation (1642 - 1785 m)

Three samples were examined from this interval, a light brownish grey/brownish grey siltstone core chip from 1645 m and two coal samples from 1695 m and 1785 m.

The siltstone contains abundant (30 %) liptinite, mainly as spore/pollen and algae, with subordinate reworked material and cutinite. Vitrinite is dominant (65 %) mainly as little degraded thick ("coaly") clasts of amorphinite, together with telinite. Inertinite and semi-fusinite are present in only minor amounts.

The coal samples have kerogen compositions which are similar to one another, containing only minor (5 %) liptinite as algal shreds and subordinate cuticle and sporomorphs. Vitrinite is strongly dominant (75, 80 %), being present as now degraded telinite/collinite and amorphinite, which is only slightly bituminous. The lowermost sample shows signs of the onset of degradation of the amorphous vitrinite. The inertinite content of these coals is significant at 15, 20 %.

The kerogen assemblage of the siltstone is of mixed terrestrial/marine origin with a bias towards the former and suggests that it has potential as a source rock mainly for gas. The coals would appear to be gas-prone.

Åre Formation (1785 - ? 2052 m)

Six samples were examined from this interval, consisting of a brownish grey siltstone from core at 1801 m, four dusky brown/dusky yellow-brown shales from 1836 m, 1866 m, 1992 m and 2001 m, and a dusky yellow-brown/black coal from 1959 m.

The siltstone contains abundant (30 %) liptinite, which is dominated by algal cyst material, with minor spore/pollen and cuticle. Vitrinite is dominant at 55 %, mainly in the form of woody clasts, i.e. mainly telinite with collinite and semi-degraded amorphinite. Inertinite as coarse clasts of fusinite is significant at 15 %.

The dusky brown shales have generally similar kerogen compositions to the siltstone, the liptinite content varying from 15 - 35 %. The type of liptinite is also similar, being mainly as algal material, but also including some caved sporomorphs and oxidised material. The type of vitrinite is, however, different, this being mainly as degraded and semi-degraded amorphous variably bitumen-stained matter. The Åre

Fm. shales of this well, which could be more appropriately termed carbargillites, appear to be more coaly than their equivalents elsewhere in Mid-Norway and also distinguish themselves by their apparent complete lack of marine dinoflagellate clasts, suggesting a near-source (?terrestrial/deltaic) environment of deposition.

The coal sample examined contains only minor (5 %) liptinite, predominantly as algae with subordinate sporomorphs and cuticle. Vitrinite is strongly dominant at 85 %, mainly in the form of mixed degraded and non-degraded woody clasts with only traces of bitumen.

The kerogen assemblages encountered in the Åre Fm. interval as interpreted above show that the shales/carbargillites have potential mainly for the generation of gas. The coal sample, similar to those of the overlying Tilje Fm., is apparently exclusively gas-prone.

Grey Beds (2052 - 2124 m)

Three samples were examined from this interval, a dusky brown to medium/dark grey shale from 2058 m and two medium/dark grey shales from 2109 m and 2124 m.

The uppermost sample contains 15 % liptinite of a similar type to that found in the Åre Fm. shales, and this sample may be therefore caved from the latter. Poor quality degraded amorphous vitrinite is dominant (70 %).

The two lower samples contain exceptionally rich kerogen assemblages, having between 60 % and 75 % liptinite. Here, liptinite is strongly dominated by algal cysts, and good quality fluffy, amorphous degraded algal matter, though sporomorphs are also abundant in the uppermost sample. Reworked oxidised material and cutinite are also present.

The coarse-grained, well-preserved nature of these assemblages suggests a near-source (?lacustrine) environment of deposition. Marine phytoclasts, such as dinoflagellates, appear to be completely absent.

If the two lower samples are considered to be most typical of the Grey Beds interval, then these shales can be considered excellent potential source rocks for oil, at least as far as their kerogen compositions are concerned.

Thermal Maturity

Estimates of thermal maturity from spore colour indices suggest the Båt Gp.: Tilje Fm. lithologies to be just about moderately mature. The Åre Fm. and the underlying Grey Beds are also moderately mature, possibly bordering on being mature within the Grey Beds. The linear regression line for the SCI data suggests the top of the oil window (SCI 6.0) to occur at approximately 2130 m for type II kerogen, i.e. in the Triassic Red Beds interval.

ISOTOPE ANALYSIS OF C₁₅+ FRACTIONS

Three samples were analysed from well NOCS 6609/10-1 for isotope composition. Two of these were from the Åre Fm. (a siltstone from 1803 m and a claystone from 1929 m) and one was a grey claystone from the Triassic Red Beds (from 2136 m). The sample from 1803 m was a core-chip sample, the two others are cuttings samples.

Figure 13 shows a plot of the $\delta^{13}\text{C}$ isotope values of the saturated versus aromatic hydrocarbons and Figure 14 shows the Galimov plots of the $\delta^{13}\text{C}$ isotopic values of the various fractions from the extracted material of the samples. All data is listed in Tables 9a and 9b in Appendix 1.

In Figure 13 and from Table 9a it can be seen that all the analysed hydrocarbons appears to be derived from terrestrially influenced source rocks. The isotope compositions of the three samples are very different. The hydrocarbons are believed to be generated in-situ. They appear to have a low maturity, as little enrichment of C^{13}C has occurred. These observations fit well with the GC-MS data which indicates that the samples are very immature and terrestrially influenced., i.e. the hydrocarbons present are generated in-situ from immature, terrestrial - provenance source rocks.

Sofer, Z. (1984) Stable carbon isotope composition of crude oils: Application to source depositional environments and petroleum alteration. Bull. Am. Ass. Pet. Geol. Vol. 68, No. 1, p 31-49.

GAS CHROMATOGRAPHY - MASS SPECTROMETRY

Three samples were analysed by GC-MS, two from the Jurassic Åre Fm., one siltstone sample from 1804 m and one shale sample from 1929 m, and one grey shale sample from 2136 m in the Triassic Red Beds. Figures 15a-d show typical fragmentograms. All data is presented in Tables 10a to 10i and all fragmentograms are presented in Appendix 5.

Saturated Hydrocarbons

Jurassic/Upper Triassic

Båt Group

Åre Formation

Terpanes

The M/Z 163 fragmentogram is useful in the identification of steranes and triterpanes and particularly in the identification of demethylated hopanes and 4-methyl steranes. There is some variation in the M/Z 163 fragmentograms of the two samples from the Åre Fm., but none of the samples show any steranes present, only pentacyclic terpenoids, Figure 15a. The siltstone from 1804 m shows the normal hopane series, but the largest components are a series of hopanes C₂₇ - C₃₂, clearly showing the immaturity of this sample. The same components are found in the shale sample from 1929 m, but with a far larger relative abundance of the Δ 13,18 C₃₀ hopene. The lack of steranes in these samples shows the dominant terrestrial input in these samples.

The M/Z 177 fragmentograms of the two samples from the Åre Fm. show almost identical patterns with a C₃₀ hopene dominating the fragmentograms. The 17 α (H) 21 β (H) and 17 β (H) 21 α (H) norhopanes are only minor components in these fragmentograms. The M/Z 191 fragmentograms of the two samples show similar patterns. There are no indications of tricyclic terpanes being present in any of the samples which are dominated by the hopenes found in the M/Z 163 fragmentograms. The largest peak is the C₂₉ hopane in both samples (Figure 15b). The main difference between the two samples is a slight decrease in the relative abundance of the Δ 13,18 C₃₀ hopene in the sample from 1804 m compared with the shale sample from 1929 m. One of the larger triterpanes is a C₂₇ component eluting between the 17 α (H) trisnorhopane and the bisnorhopane. The M/Z 205 fragmentograms show similar fragmentograms for the two samples. The fragmentograms are dominated by a large peak, believed to be a C₃₂ hopene. The other two peaks are the C₂₉ and C₃₀ hopenes, where the C₃₀ hopene has a slightly larger relative abundance in the sample from 1929 m compared to the sample from 1803 m.

The fragmentograms of the molecular ions show some strange patterns. The M/Z 370 fragmentograms for C₂₇ triterpanes show one large peak for a compound eluting between the 17 α (H) trisnorhopane and bisnorhopane, while the M/Z 384 fragmentograms show a doublet eluting before the C₂₇ triterpane components. One of these has a large M/Z 163 fragmentogram peak. The same two peaks are also recorded in the M/Z 398 fragmentograms. These fragmentograms also show the peak for the 17 α (H) 21 β (H) and the 17 β (H) 21 α (H) norhopanes. The largest peak is, however, a peak believed to be a C₃₀ hopene. The M/Z 412 fragmentograms show the 17 α (H) 21 β (H) hopane to be the largest peaks together with smaller components from the C₃₁ and C₃₂ hopenes. The M/Z 426 fragmentograms show two peaks, the 22R isomer of the homohopane doublet and a peak believed to be a C₃₂ hopene. There is a slight variation in the relative abundance of the two peaks

in these two samples.

Steranes

The M/Z 149 fragmentograms show strange patterns for the two samples. None of the usual steranes are recognized in these. The largest peak is identical to the C₂₇ triterpane peak, eluting between the 17 α (H) trisnorhopane and bisnorhopane peaks. The other peaks in these fragmentograms are the usual hopanes. The M/Z 189 fragmentograms show strange patterns which consist mainly of two large peaks, which are not identified. The other compounds are only minor peaks in these fragmentograms. The M/Z 259 fragmentograms also show a strange pattern with a few large peaks. None of these peaks are identified. There is some variation in the relative abundance of the different peaks for the two samples. The M/Z 217 fragmentograms also shows strange patterns for the two samples. Two peaks dominate the fragmentograms. One of these is the $\alpha\alpha\alpha$ 24 ethylcholestane, while the other is not positively identified. The remaining steranes show only minor peaks (Figure 15c) with an increase in the relative abundance in the sample from 1929 m compared to the sample from 1804 m. The fragmentograms of the molecular ions show mainly background noise, except for the M/Z 400 fragmentograms which clearly show the peaks for the C₂₉ components, clearly showing the large terrestrial input in these samples.

Triassic

Red Beds

Terpanes

The M/Z 163 fragmentogram of the sample from 2136 m shows a different pattern to those of the two Åre Fm. samples, mainly in an increase in the relative abundance of the hopanes compared to the hopenes. Again, there are no identifications of steranes in this fragmentogram. The M/Z 177 fragmentogram shows the same group of peaks to those of the Åre Fm. samples, but as for the M/Z 163 fragmentogram, an increase in the relative abundance of the hopanes compared to the hopene peak. Similar results are also found in the M/Z 191 fragmentograms. The fragmentograms of the molecular ions verify that discussed above.

Steranes

The M/Z 149 fragmentogram shows the same strange pattern as those of the Åre Fm. samples, but with a larger input of triterpanes. There are no positive identifications of steranes in this fragmentogram. The M/Z 189 and 259 fragmentograms also show strange patterns with no positive identifications. The M/Z 217 and 218 fragmentograms mainly show regular steranes with a predominance of the C₂₉ components. The pattern shows the immaturity of this predominantly terrestrial sample. The fragmentograms of the molecular ions verify that discussed above.

Aromatic Hydrocarbons

Jurassic/Upper Triassic

Båt Group

Åre Formation

Alkyl Benzenes

C₂- and C₄-benzenes were monitored using the M/Z 106 and 134 fragmentograms. The M/Z 106 fragmentograms show a narrow window of doublets, C₁₈ - C₂₂ in the sample from 1804 m, while the sample from 1929 m is dominated by a single peak with a low retention time. A few other peaks are also observed, but they are not identified. The typical doublets are not recorded for this sample. The M/Z 134 fragmentograms mainly show two peaks with retention times 26 - 29 minutes for the sample from 1804 m, while the sample from 1929 m only shows a few peaks with high retention times.

Alkyl Naphthalenes

The M/Z 142, 156 and 170 fragmentograms were used to monitor the C₁-, C₂- and C₃-naphthalenes. Both samples show large peaks in the C₂- and C₃-naphthalene range for the M/Z 156 and 170 fragmentograms, while the M/Z 142 fragmentograms show only minor components for the methyl naphthalenes. These components may have been lost in the work-up process of the samples. The C₂- and C₃-naphthalenes show typical patterns for immature samples.

Phenanthrene and Alkyl Phenanthrenes

Phenanthrene (and anthracene), C_1 -, C_2 - and C_3 -phenanthrene were monitored using the M/Z 178, 192, 206 and 220 fragmentograms. Both the Åre Fm. samples show only the single peak for phenanthrene in the M/Z 178 fragmentograms. There is no identification of anthracene being present in these samples. The M/Z 192 fragmentograms show the two doublets for methyl phenanthrenes together with a small peak representing a methyl anthracene eluting between the two doublets. There is a slight variation in the pattern for the two samples. Both samples show 9 methyl phenanthrene to be the largest peak. The sample from 1929 m shows a decrease in the relative abundance of the 2+3 methyl phenanthrenes and an increase in the relative abundance of the 1 methyl phenanthrene compared to the sample from 1804 m. The M/Z 206 and 220 fragmentograms show the typical patterns for C_2 - and C_3 -phenanthrenes in immature samples. There is only minor variation between the two samples.

Alkyl Dibenzothiophenes

C_1 - and C_2 -dibenzothiophenes were monitored using the M/Z 192 and 212 fragmentograms. The C_1 -dibenzothiophenes are dominated by 4-methyl dibenzothiophenes in the sample from 1804 m, showing a pattern typical for well-mature hydrocarbons. Compared with that recorded for other components, this would indicate that there may be some contamination in this sample. The sample from 1929 m shows a strange pattern with a number of peaks. It is difficult to identify the different peaks and further evaluation is therefore not undertaken. A similar strange variation is recorded in the M/Z 212 fragmentograms and further evaluation is therefore not undertaken for the substituted dibenzothiophenes.

Aromatic Steranes

The monoaromatic and triaromatic steranes were monitored using the M/Z 253 and 231 fragmentograms respectively. The M/Z 253 fragmentograms show a large abundance of the heavy components, clearly showing that the samples are immature. There are only minor variations between the two samples which are dominated by the C₂₉ components, Figure 15d. The M/Z 231 fragmentograms show a large abundance of peaks with low retention times. None of these are identified and there is no positive identification of triaromatic steranes.

Triassic

Red Beds

Alkyl Benzenes

The M/Z 106 fragmentogram shows the doublet from C₁₈ - C₂₆, but the fragmentogram is dominated by some single peaks which are not identified. The M/Z 134 fragmentogram is also strange, with a few single peaks which are not identified. The strange patterns are probably caused by the low maturity of this sample.

Alkyl Naphthalenes

As with the Åre Fm. samples, there is no confirmation of methyl naphthalenes being present in these samples and the abundance of C₂-naphthalenes is also low as seen by the M/Z 156 fragmentogram. The M/Z 170 fragmentogram shows a pattern typical of a low maturity sample.

Phenanthrene and Alkyl Phenanthrenes

The M/Z 178 fragmentogram shows only the phenanthrene peak. There is no confirmation of anthracene being present in this sample. The pattern for the C₁-phenanthrene is similar to those of the Åre Fm. samples. This is also found for the C₂- and C₃-phenanthrenes in the M/Z 206 and 220 fragmentograms respectively.

Alkyl Dibenzothiophenes

The M/Z 198 fragmentogram shows clearly the methyl dibenzothiophenes together with other unidentified peaks. 4-methyl dibenzothiophene is the largest peak, but the large relative abundance of 1-methyl dibenzothiophenes clearly shows the low maturity of this sample. This is also seen in the pattern of the C₂-dibenzothiophenes in the M/Z 218 fragmentogram.

Aromatic Steranes

The M/Z 253 fragmentogram generally shows a similar pattern to those of the Åre Fm. samples, while the M/Z 231 fragmentogram shows a small abundance of triaromatic steranes. This fragmentogram is still dominated by the components with low retention times.

CONCLUSIONS

The following conclusions have been made based on the various analyses undertaken on the samples from this well:

Source Rock Potential

Quaternary and Tertiary (- 1509 m)

Only one sample of shale in the dominantly shale interval from 1312 - 1509 m was analysed. Although this sample has a good TOC value it has only a very poor gas potential. In general, the Tertiary/Quaternary sequence has little or no source rock potential.

Cretaceous (1509 - 1605 m)

The sequence consists mainly of light coloured shales, with thin beds of white to medium grey sandstone and dark grey dolomitic limestones. The dominant shales have virtually no source rock potential (TOC < 0.5%, PP ≤ 0.2 mgs HC/g rock).

Jurassic/Upper Triassic (1605 - 2052 m)

Viking/Fangst Groups (1605 - 1642 m)

These consist mainly of light coloured shales which have virtually no source rock potential (TOC < 0.5 - 1.4 %, PP < 1 mg HC/g rock).

Båt Group (1642 - 2052 m)

Tilje Formation (1642 - 1785 m)

This formation can be divided into two main zones. The cored section at the top consists mainly of sandstones, the zone including this cored section and the sequence down to 1728 m consists of interbedded sandstones, shales and siltstones and minor coals. Only the cored sandstones appear to contain traces of migrated hydrocarbons. Most of the argillaceous lithologies have a poor potential as source rocks for gas. Although TOC values range from 0.1 % up to 2.5 %, the petroleum potentials are mostly less than 1 mgs HC/g rock and kerogen is poor type III or IV. The minor coals have poor kerogen type III and pyrograms suggest that they have mainly gas potential with a minor condensate - and possibly paraffinic oil potential.

Below 1728 m the sequence consists mainly of sandstones, which do not apparently contain any migrated hydrocarbons. Thin interbeds of shale in this sequence have poor gas potential and coals have mainly gas, but possibly minor liquid hydrocarbon potential.

The maturity of the sequence is too low for major hydrocarbon generation to have occurred.

Åre Formation (1785 - 2052 m)

The sequence consists of interbedded carbargillites, coals and sandstones. Overall, this sequence is very rich in organic carbon. The organic matter is mainly type III and therefore mainly gas prone, although pyrograms indicate that the carbargillites and coals do have some liquid hydrocarbon potential (indicated also by liptinite contents ranging 5 - 35 % in visual kerogen analysis), particularly for paraf-

finic hydrocarbons in the samples with the highest hydrogen indices (i.e. those > 100 mg HC/g TOC). The pyrolysis products suggest that the coals and carbargillite have a relatively high inertinite content. Optical analysis indicates that inertinite is abundant, but that degraded, oxidised vitrinite is dominant. Below 2019 m there appears to be a marked increase in potential for C₁₅+ paraffinic hydrocarbons. The maturity of the formation is low and no significant hydrocarbon generation has occurred. The small amounts present are shown by GC-MS and isotope analysis to be immature in-situ generated, having a strong terrestrial influence.

Triassic

Grey Beds (2052 - 2124 m, TD)

This sequence is composed mainly of medium to dark grey shales, with good, partly rich potential as source rocks for oil as well as gas. The kerogen type is III ranging up to II (hydrogen indices mainly from 200 - 300 mg HC/g TOC). Visual kerogen composition indicates that they are very rich in liptinite, particularly alginite, but also sporinite, amorphinite and cutinite. Pyrograms indicate that they will yield a paraffinic oil. The pyrogram pattern suggests an alginite-rich kerogen. Maturity of the section is however insufficient for major hydrocarbon generation to have occurred.

Red Beds (2124 - 2166 m, TD)

The medium to dark grey shales analysed from this interval have similar hydrocarbon potentials to the Grey Beds sequence and may be caved from that sequence. The dominant

in-situ lithology is green-grey and grey-red marl, which has no source rock potential.

Generation and Migration

Very little liquid hydrocarbon generation has occurred throughout the analysed section. Based on thermal extracts some C₇ - C₂₀ alkane generation has occurred in the organic-rich sections of the well, but insufficient for migration to have occurred.

Trace amounts of migrated hydrocarbons of a light oil type which is considered to be generated from a fairly immature, probably marine source rock are present in sandstones at the top of the Tilje Fm., otherwise no oil shows were observed.

Maturity

Based on the low vitrinite reflectance values, the analysed section is immature (vitrinite reflectance < 0.5 % Ro). This is confirmed by the low Tmax of coals and the high CPI observed in all extracted samples. The top of the oil window (Ro 0.6 %) is estimated to occur between TD and approximately 2400 m.

Figure 1: Location map

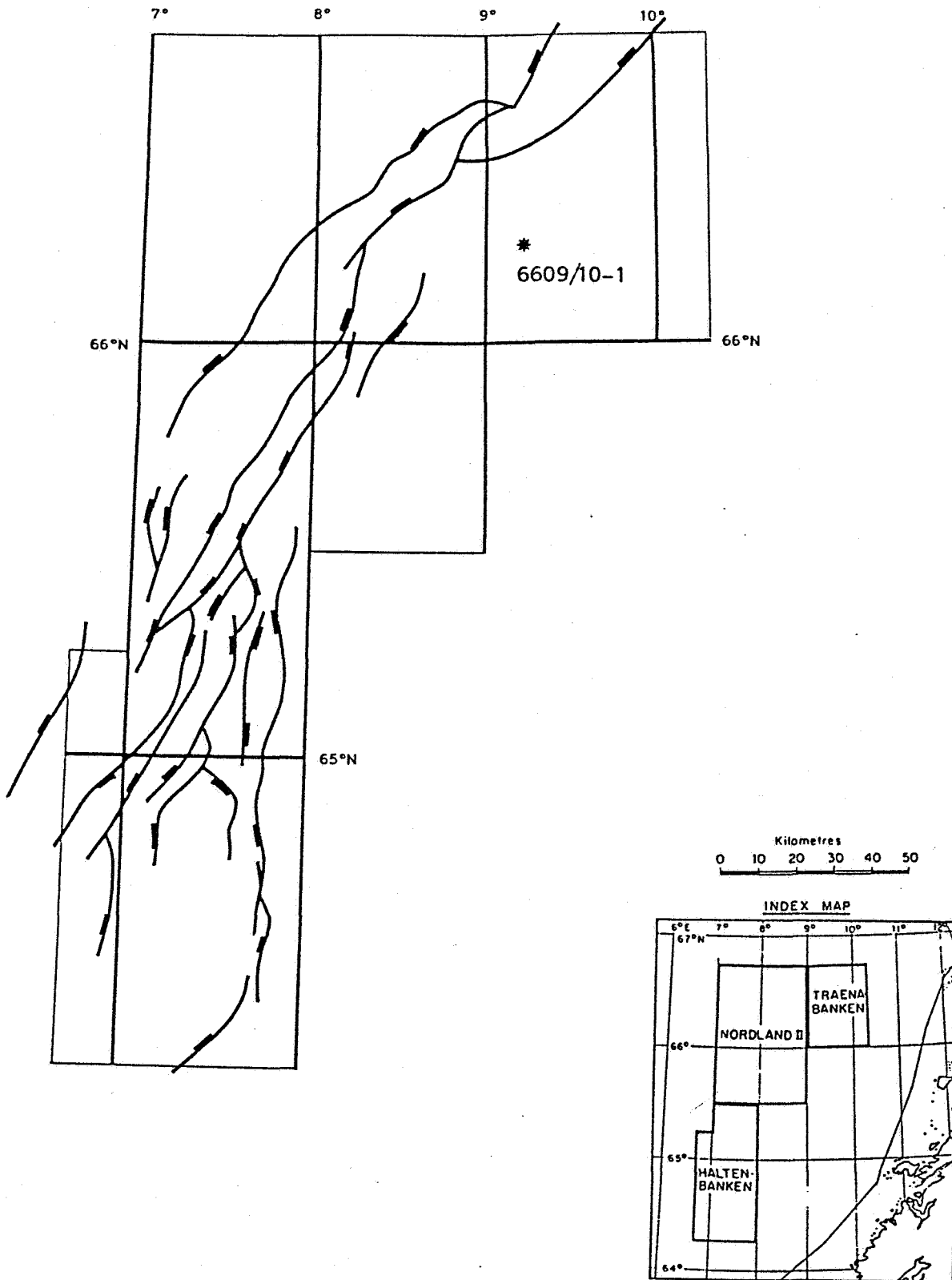


Figure: 2

Client: TENI

TOC Data for Well NOCS 6609/10-1

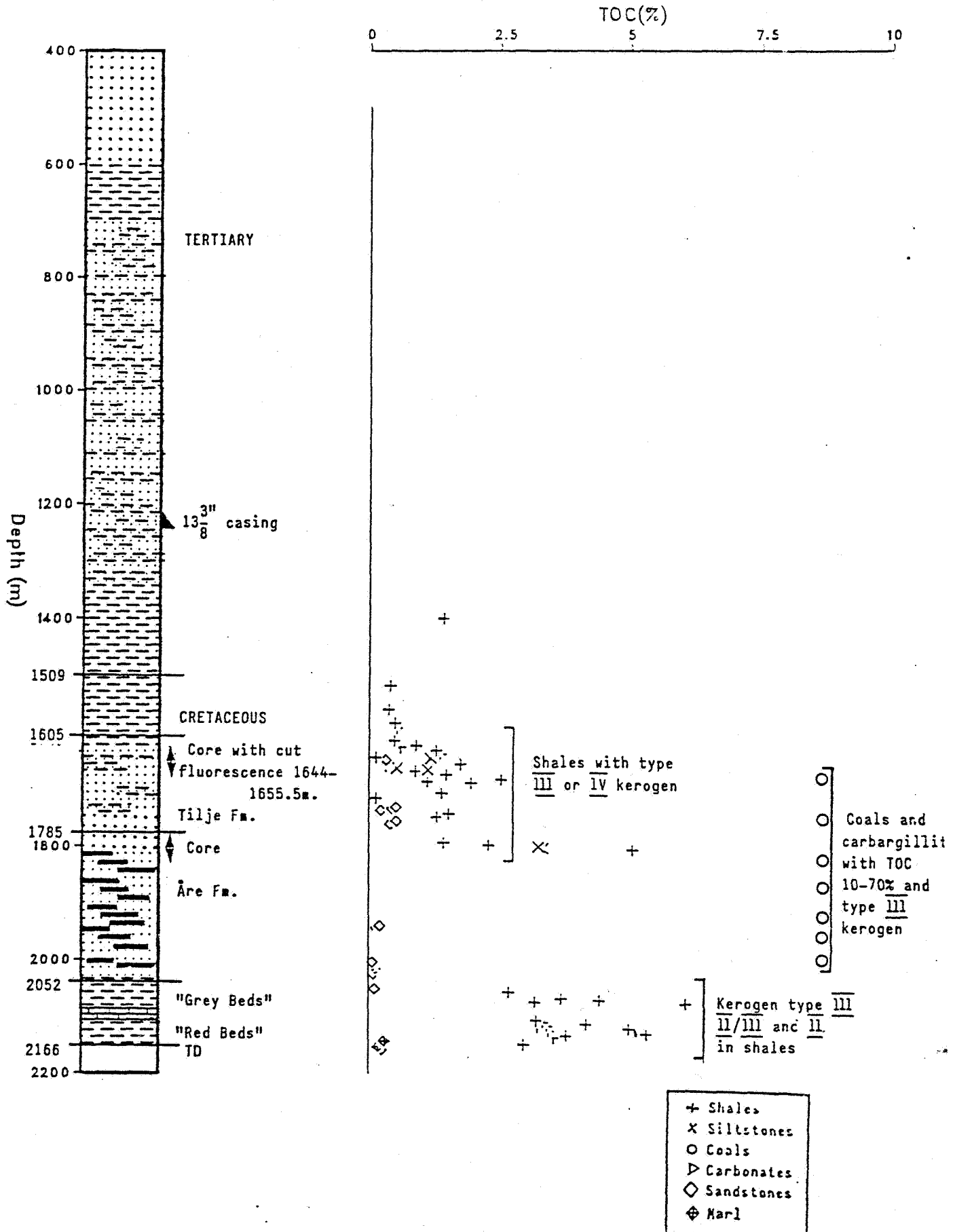


Figure: 3.

Client:

Production Index Data for Well NOCS 6609/10-1

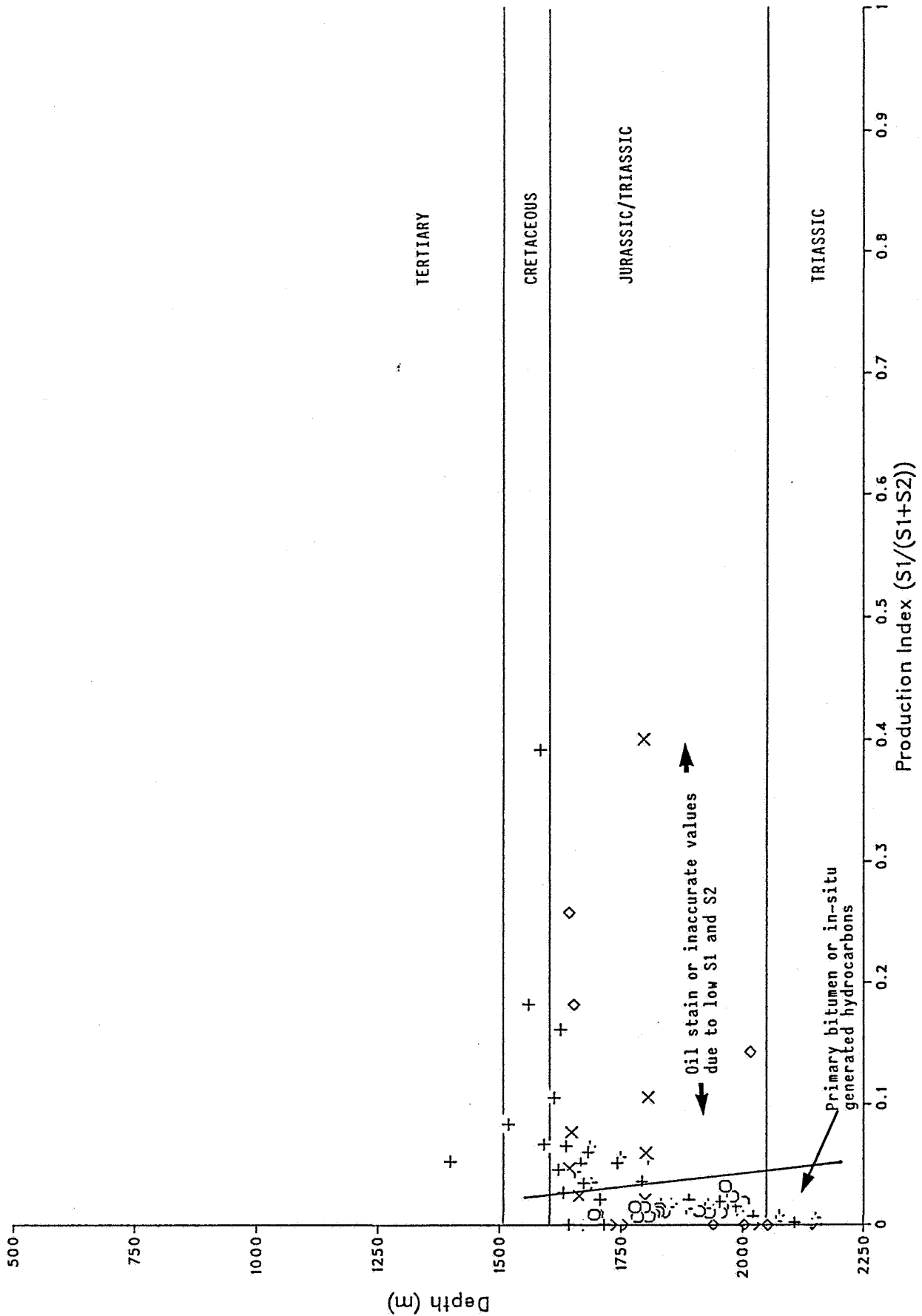


Figure 4

Client: TENI

Tmax Data for Well NOCS 6609/10-1

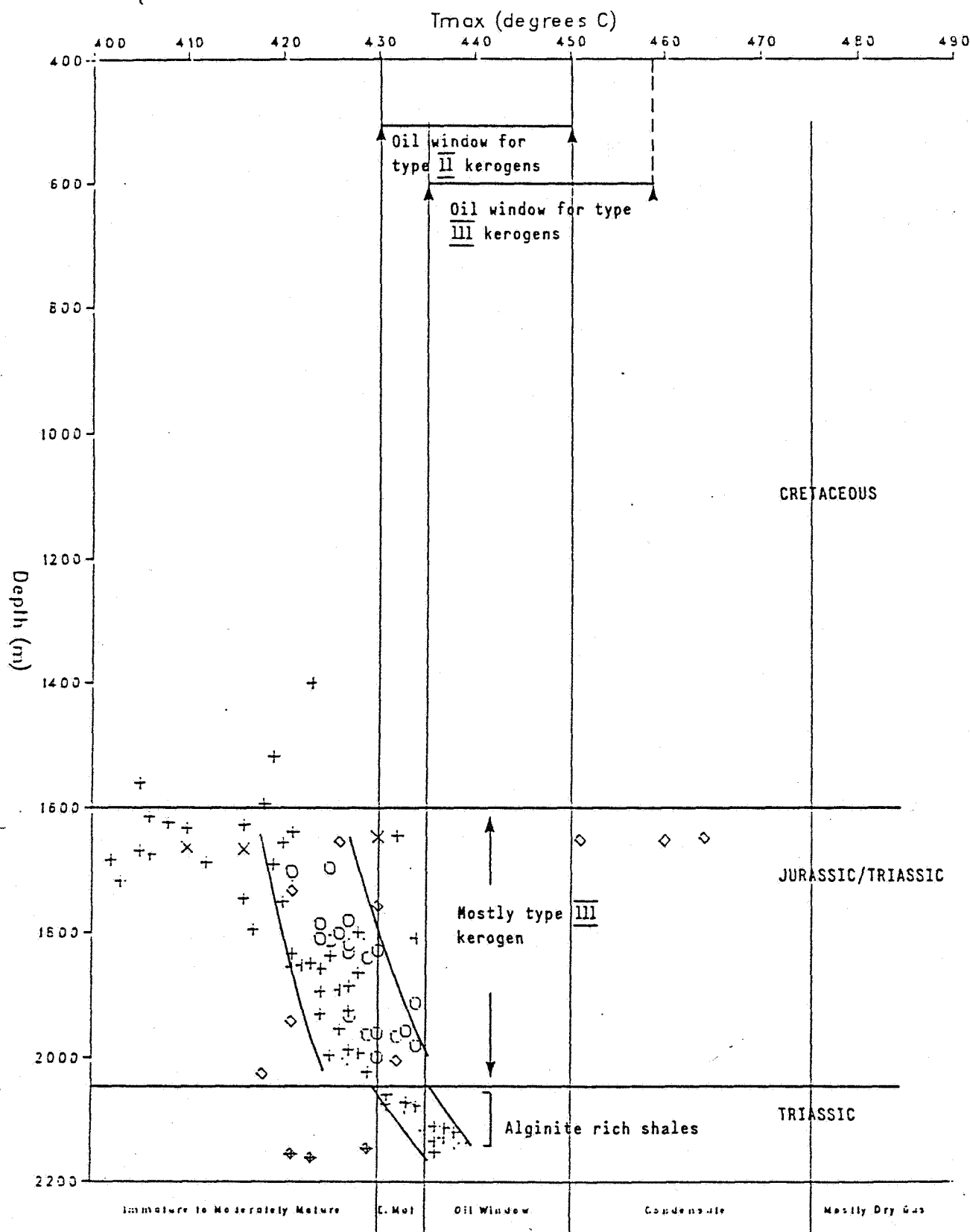
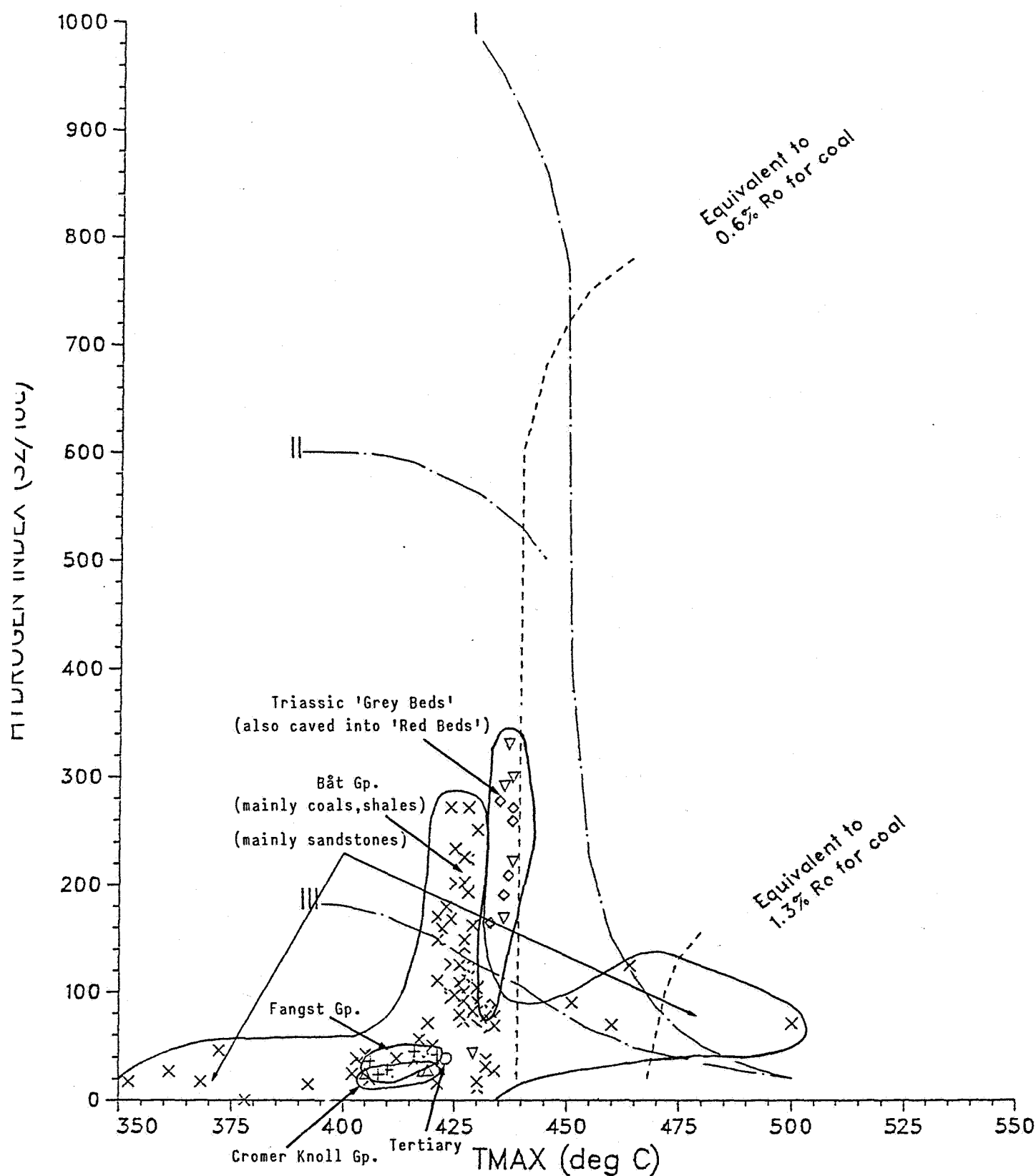


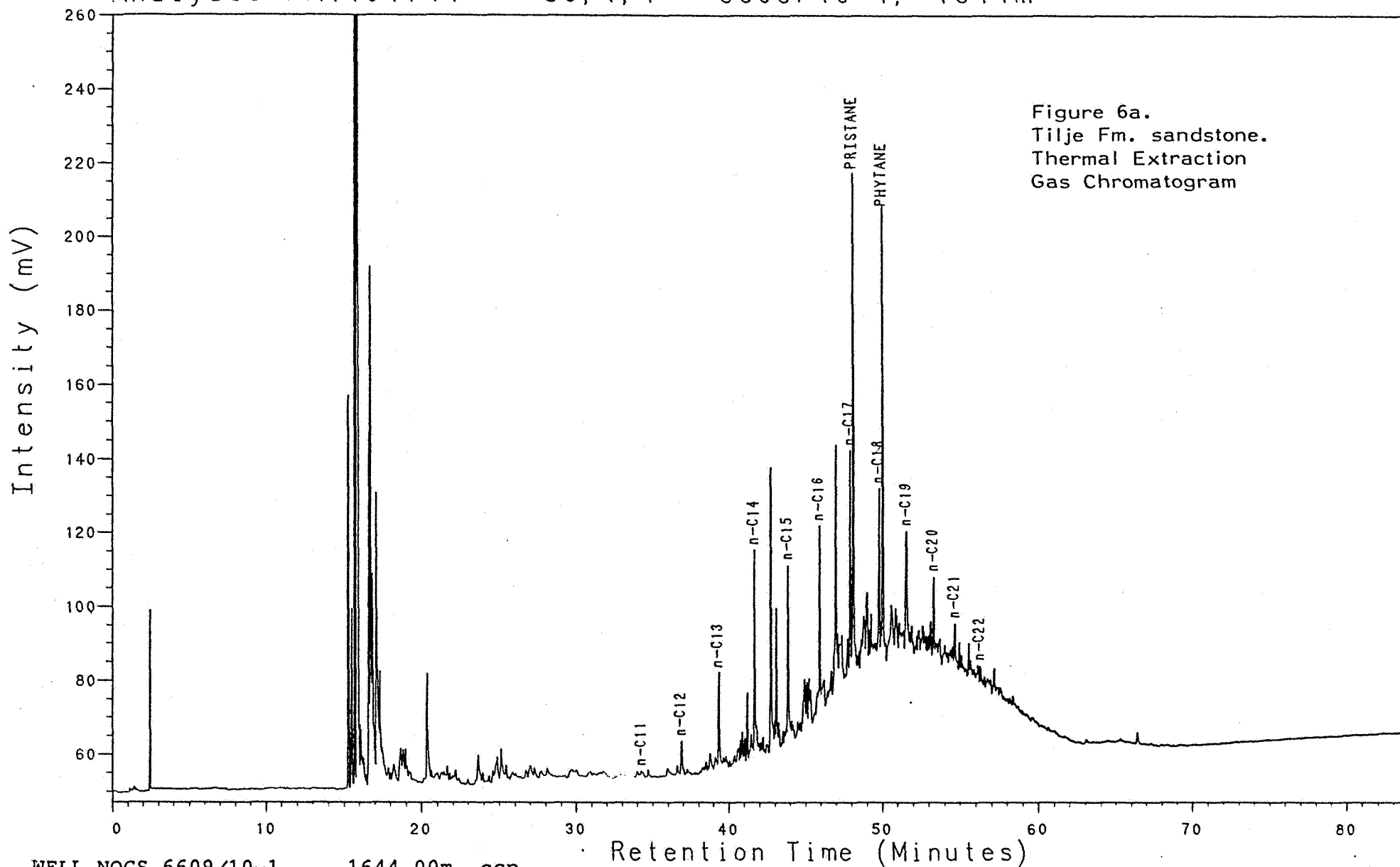
Figure 5 : Hydrogen Index v.s. Tmax values
Well NOCS 6609/10-1



Analysis PM1101741

30, 1, 1

6609/10-1, 1644m



WELL NOCS 6609/10-1 1644.00m ccp
THERMAL EXTRACTION GC (S1)
S/Sst: lt brn gy

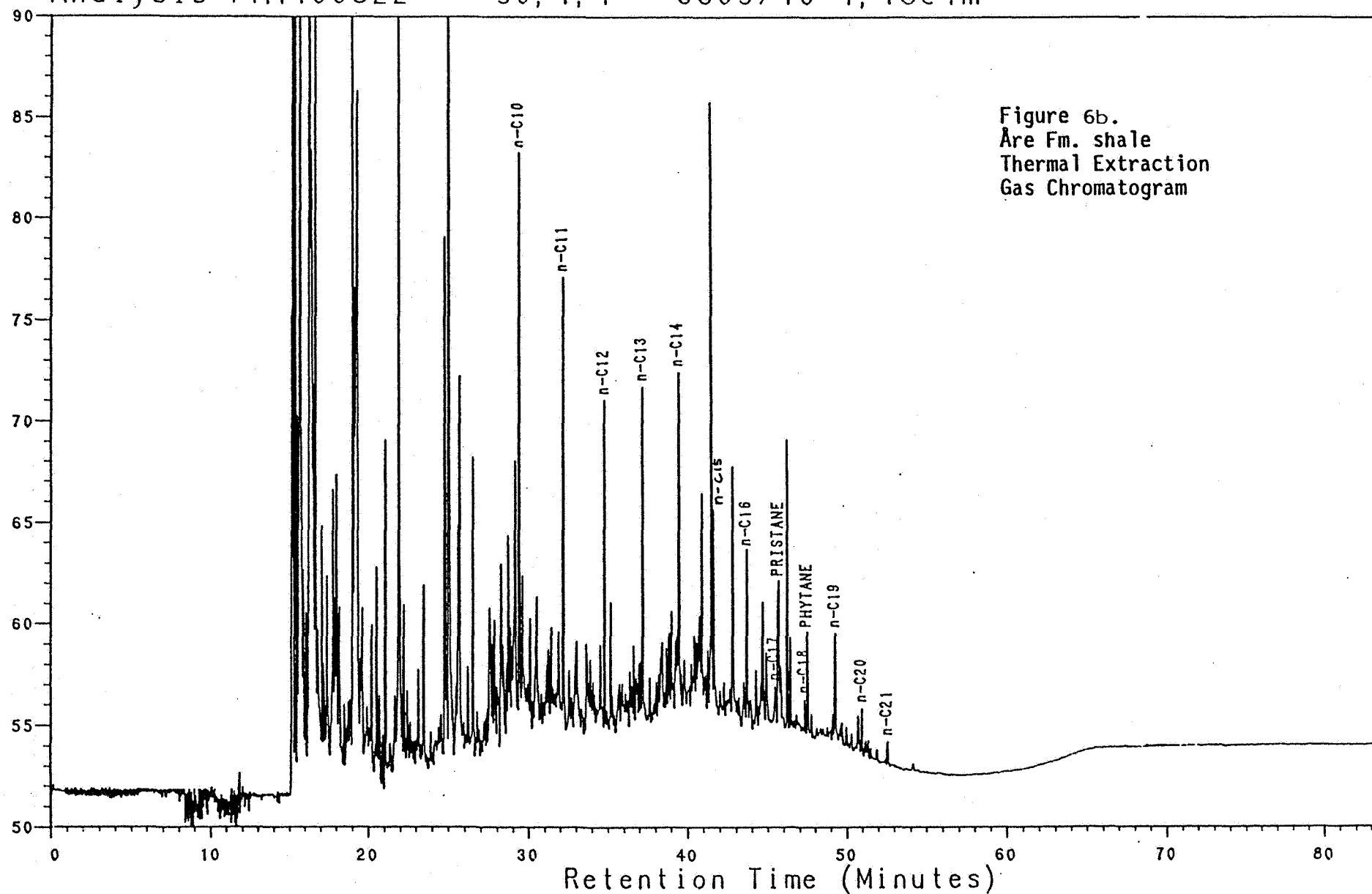
Analysis PM1100822

50, 1, 1

6609/10-1, 1851m

Intensity (mV)

Figure 6b.
Are Fm. shale
Thermal Extraction
Gas Chromatogram

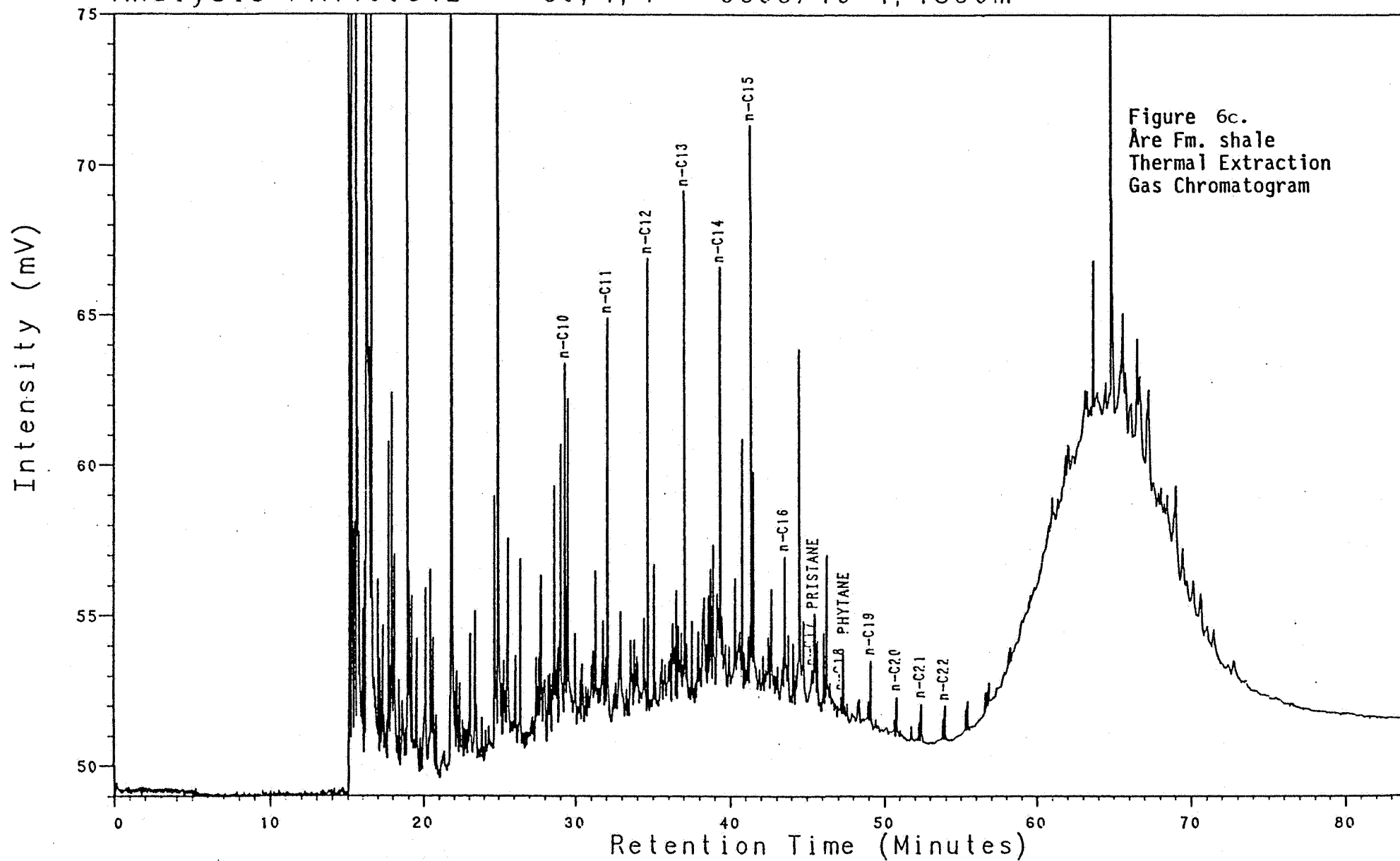


NOCS 6609/10-1 1851m
THERMAL EXTRACTION GC (S1)
CLST:dsk brn to dsk y brn

Analysis PM1100912

30, 1, 1

6609/10-1, 1890m

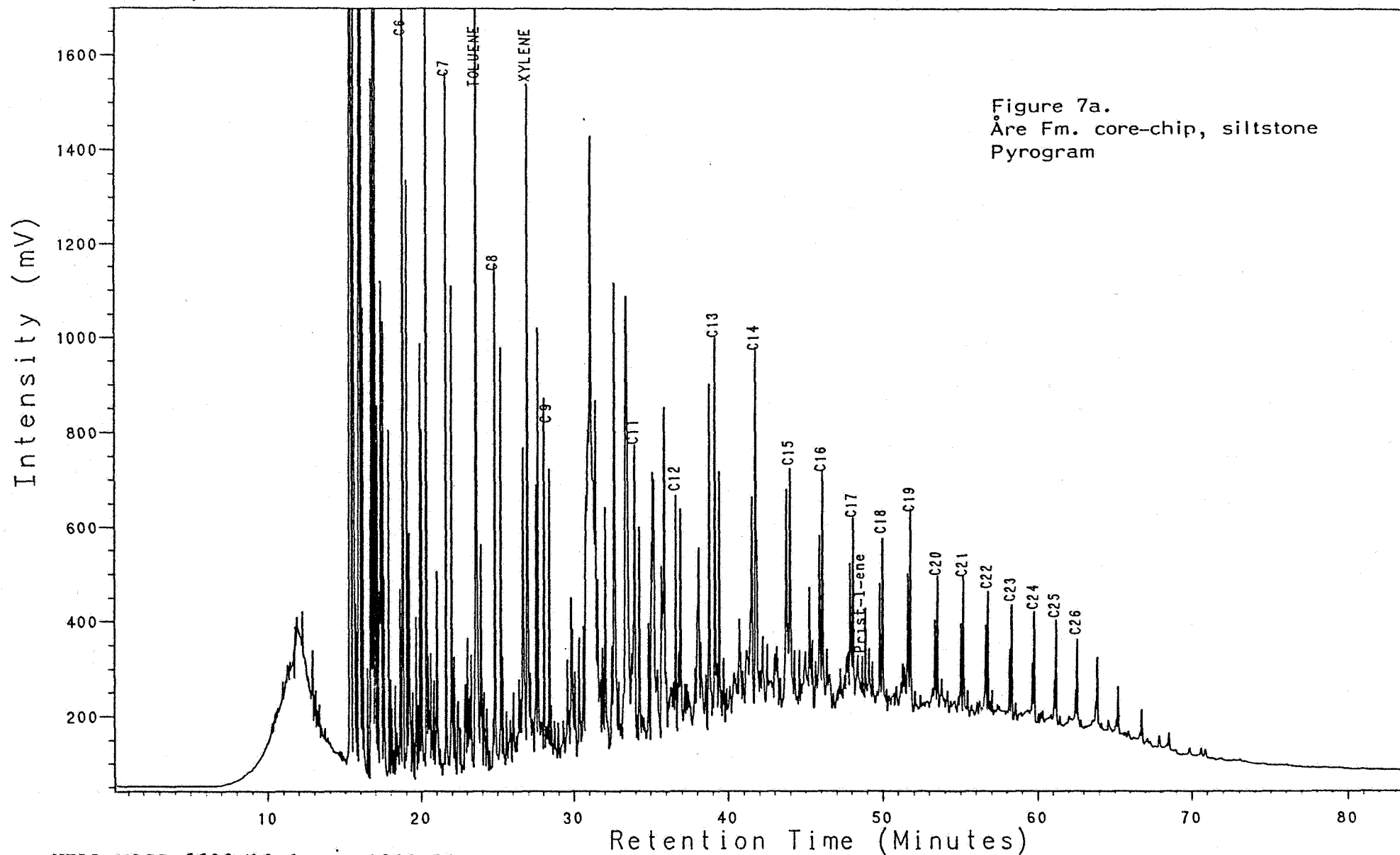


NOCS 6609/10-1 1890m
THERMAL EXTRACTION GC (S1)
CLST:dsk brn to dsk y brn

Analysis PM1101781

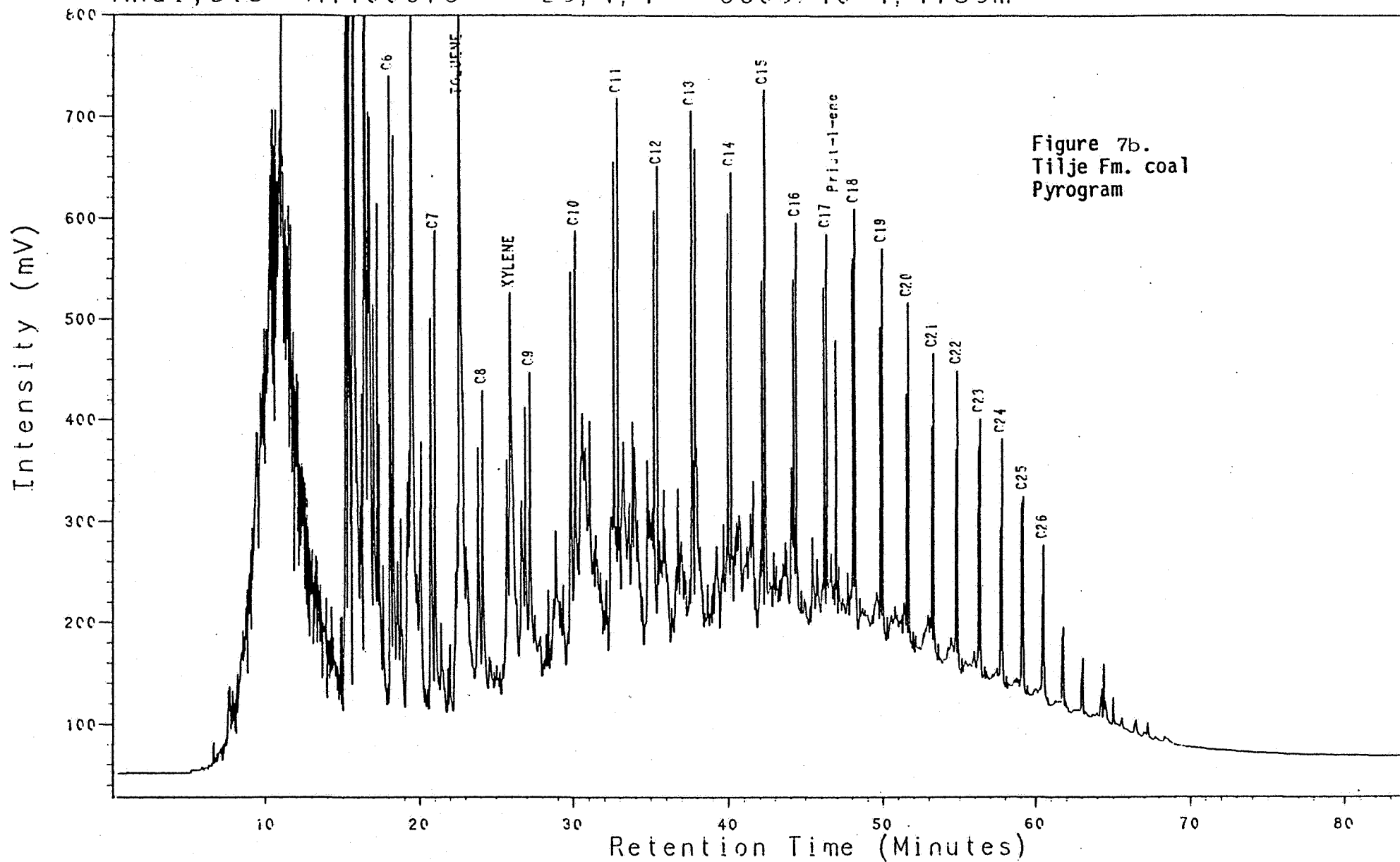
29, 1, 1

6609/10-1, 1803m



WELL NOCS 6609/10-1 1803.00m ccp
PYROLYSIS GC (S2)
Siltst: brn gy to lt brn gy

Analysis PM1100675 29, 1, 1 6609/10-1, 1785m

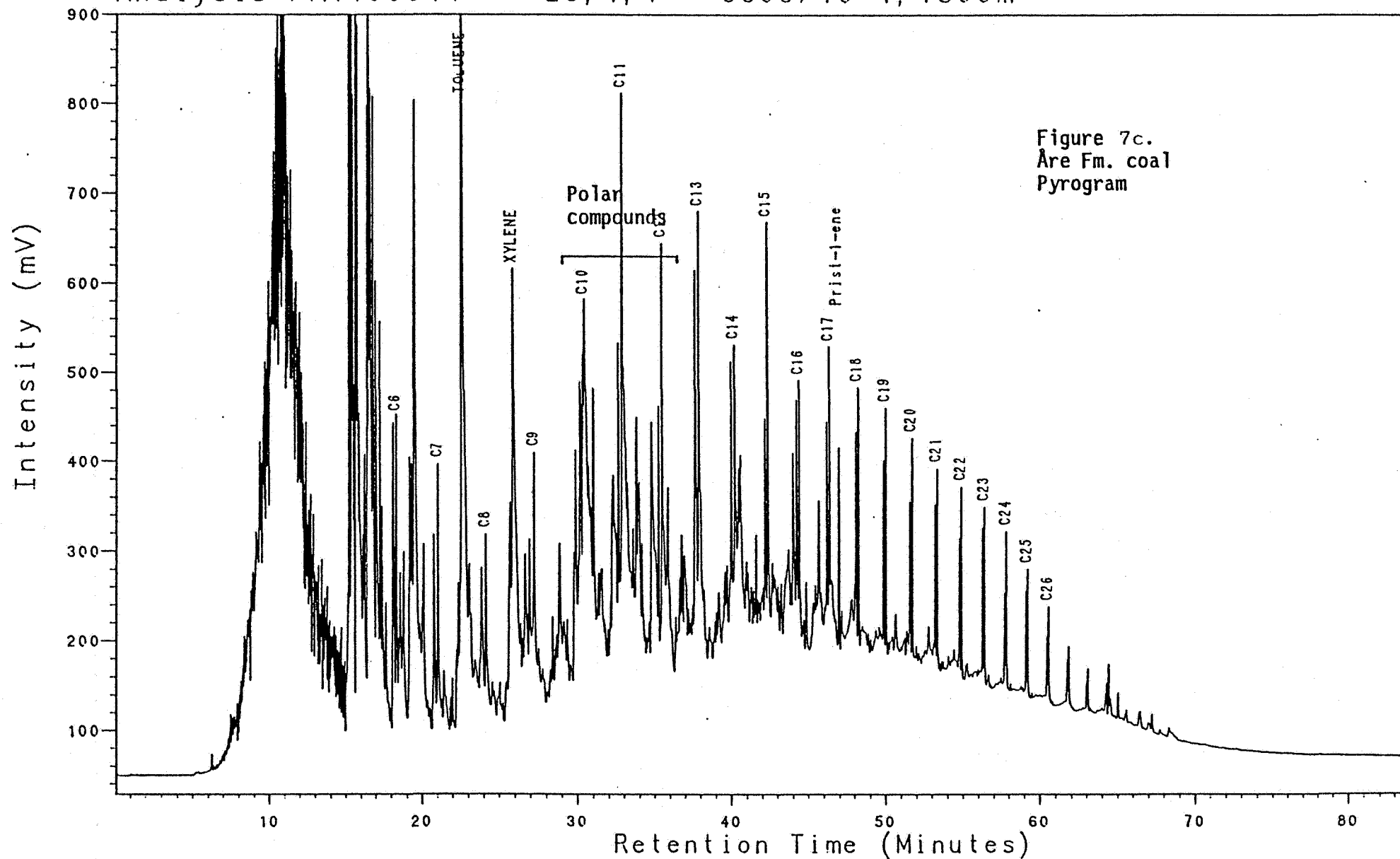


NOCS 6609/10-1 1785m
PYROLYSIS GC (S2)
COAL: blk

Analysis PM1100011

29, 1, 1

6609/10-1, 1800m

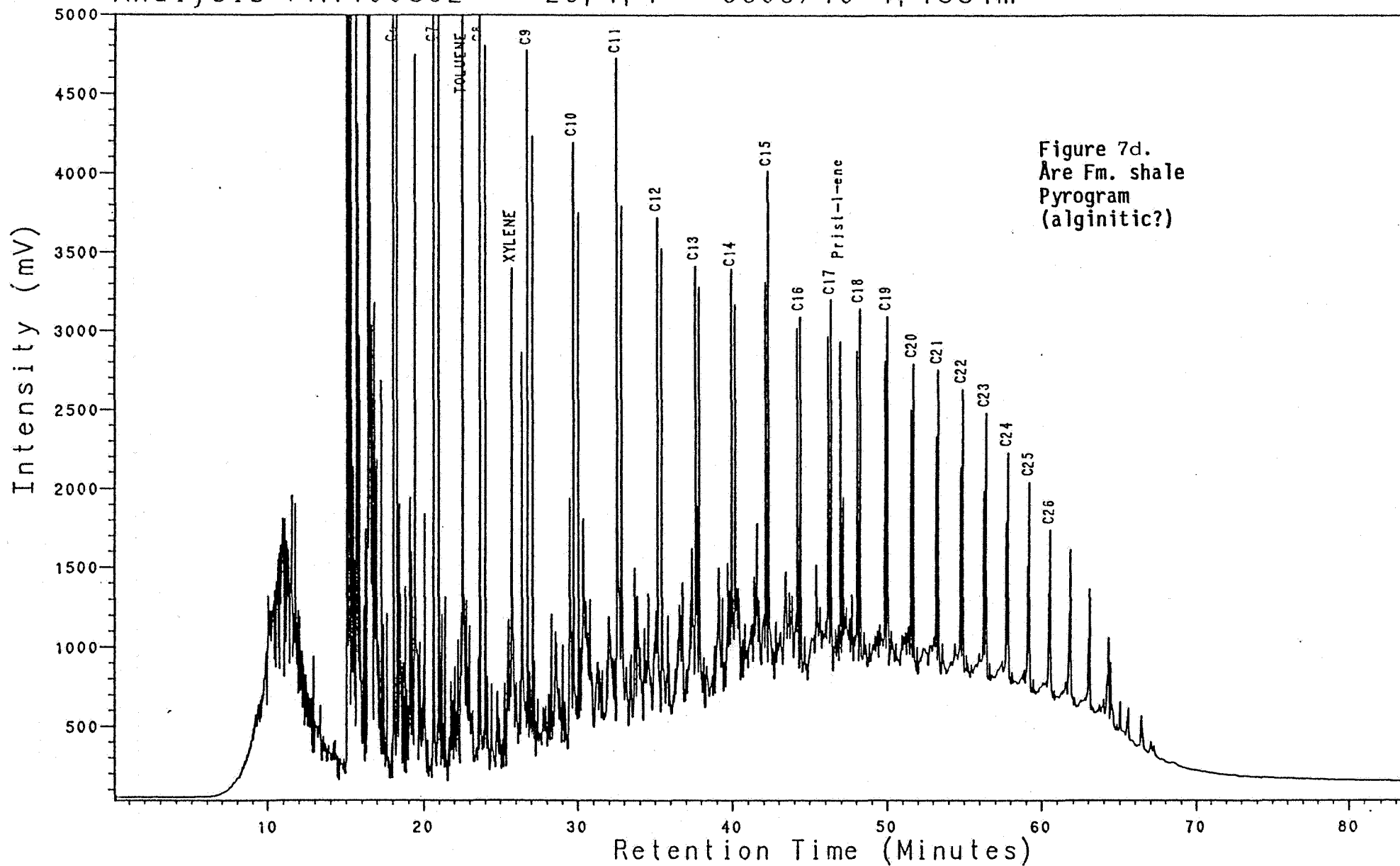


NOCS 6609/10-1 1800m
PYROLYSIS GC (S2)
COAL:blk

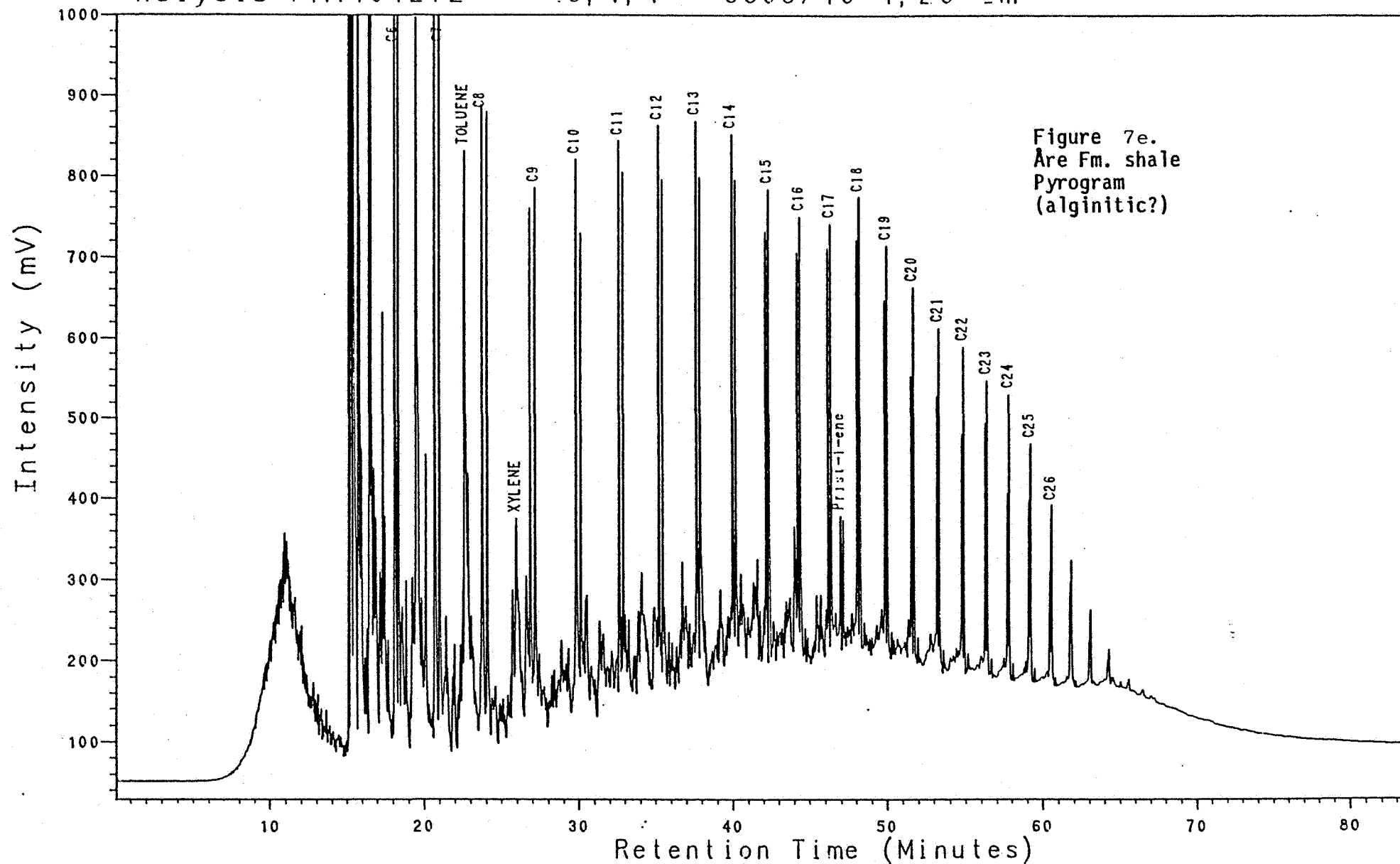
Analysis PM1100892

29, 1, 1

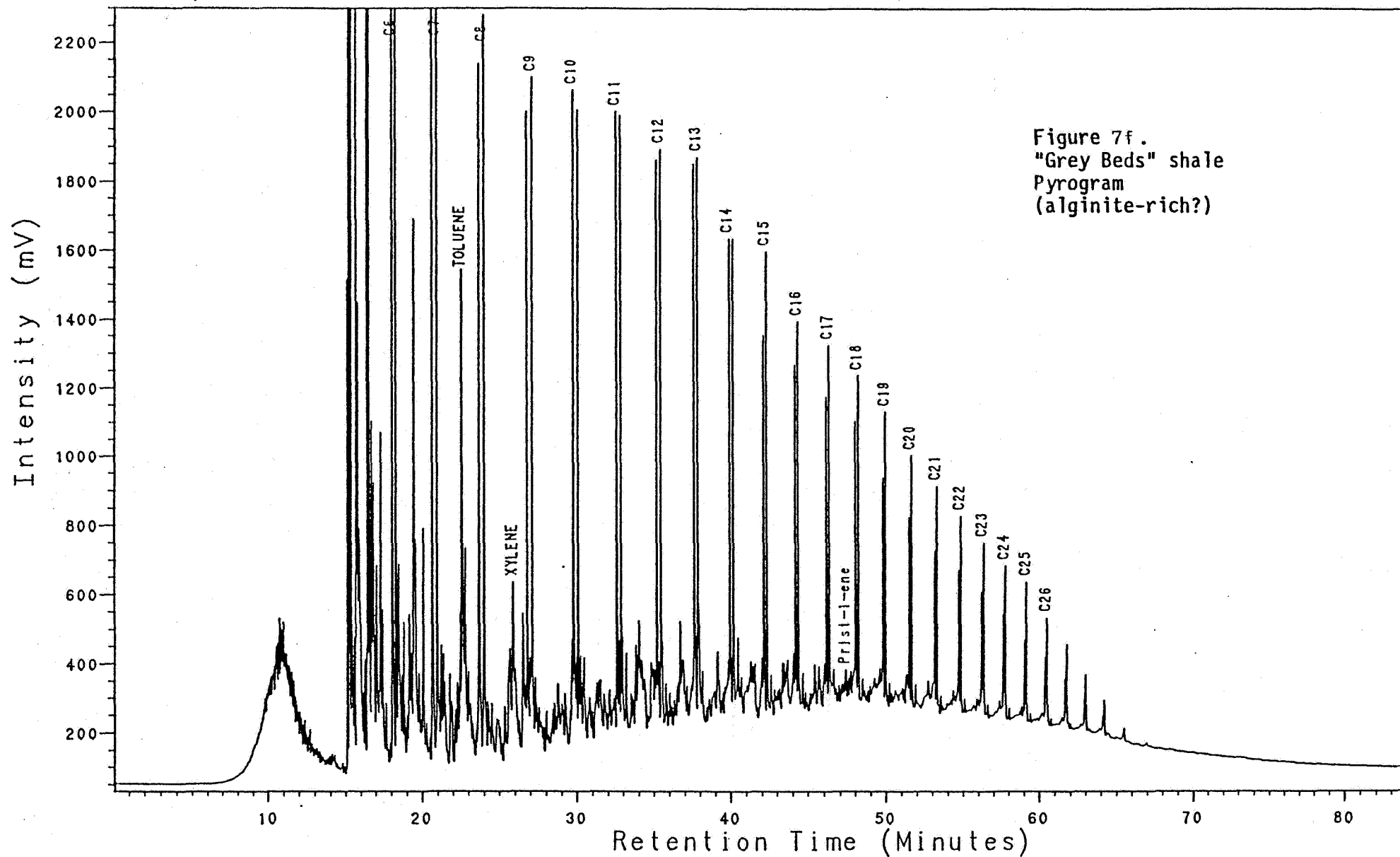
6609/10-1, 1884m



NOCS 6609/10-1 1884m
 PYROLYSIS GC (S2)
 CLST:dsk brn to dsk y brn



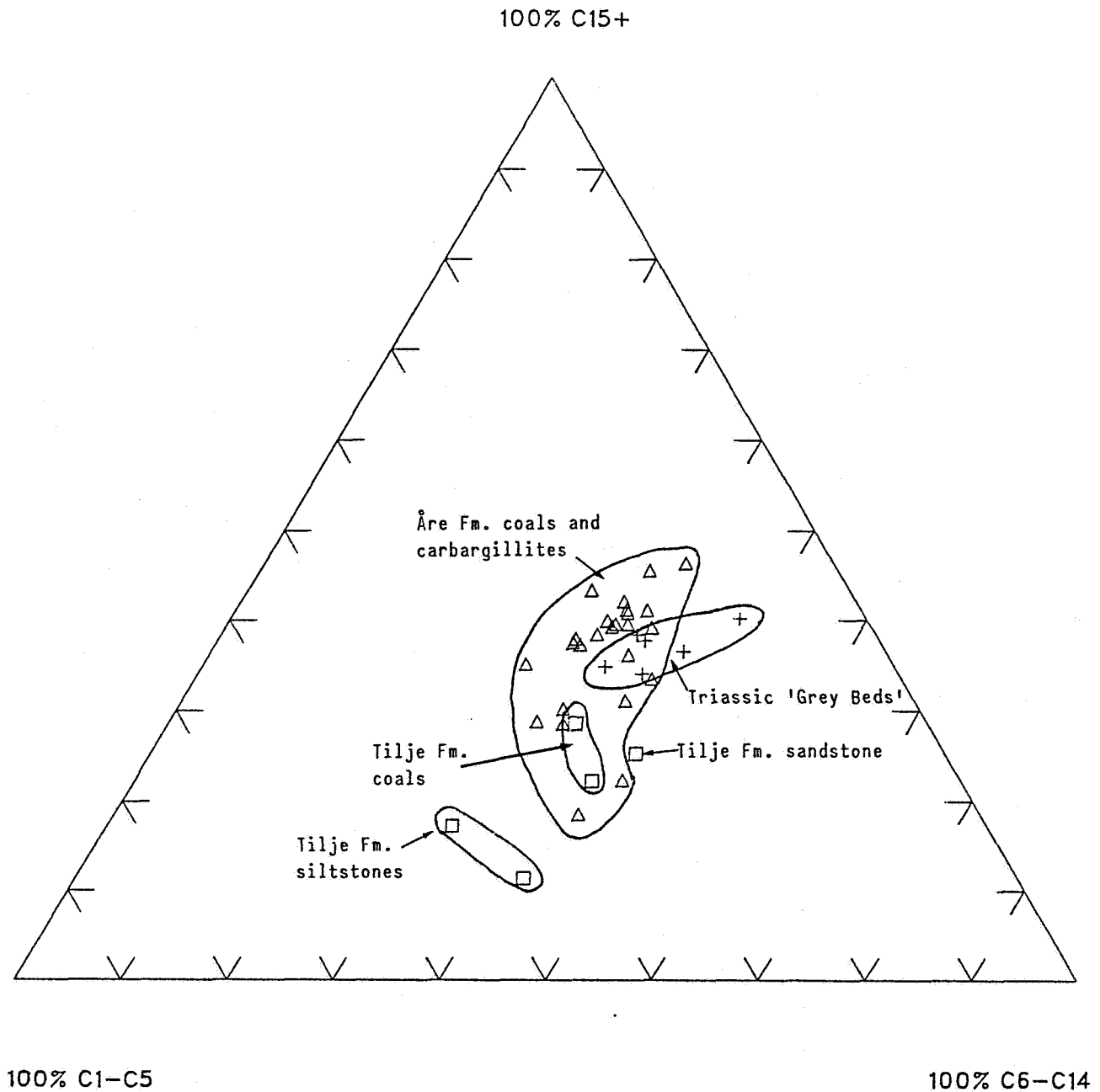
NOCS 6609/10-1 2022m
PYROLYSIS GC (S2)
CLST:dsk brn to dsk y brn



NOCS 6609/10-1 2118m
PYROLYSIS GC (S2)
CLST:m gy to drk gy

Figure 8 : Pyrolysis GC Composition

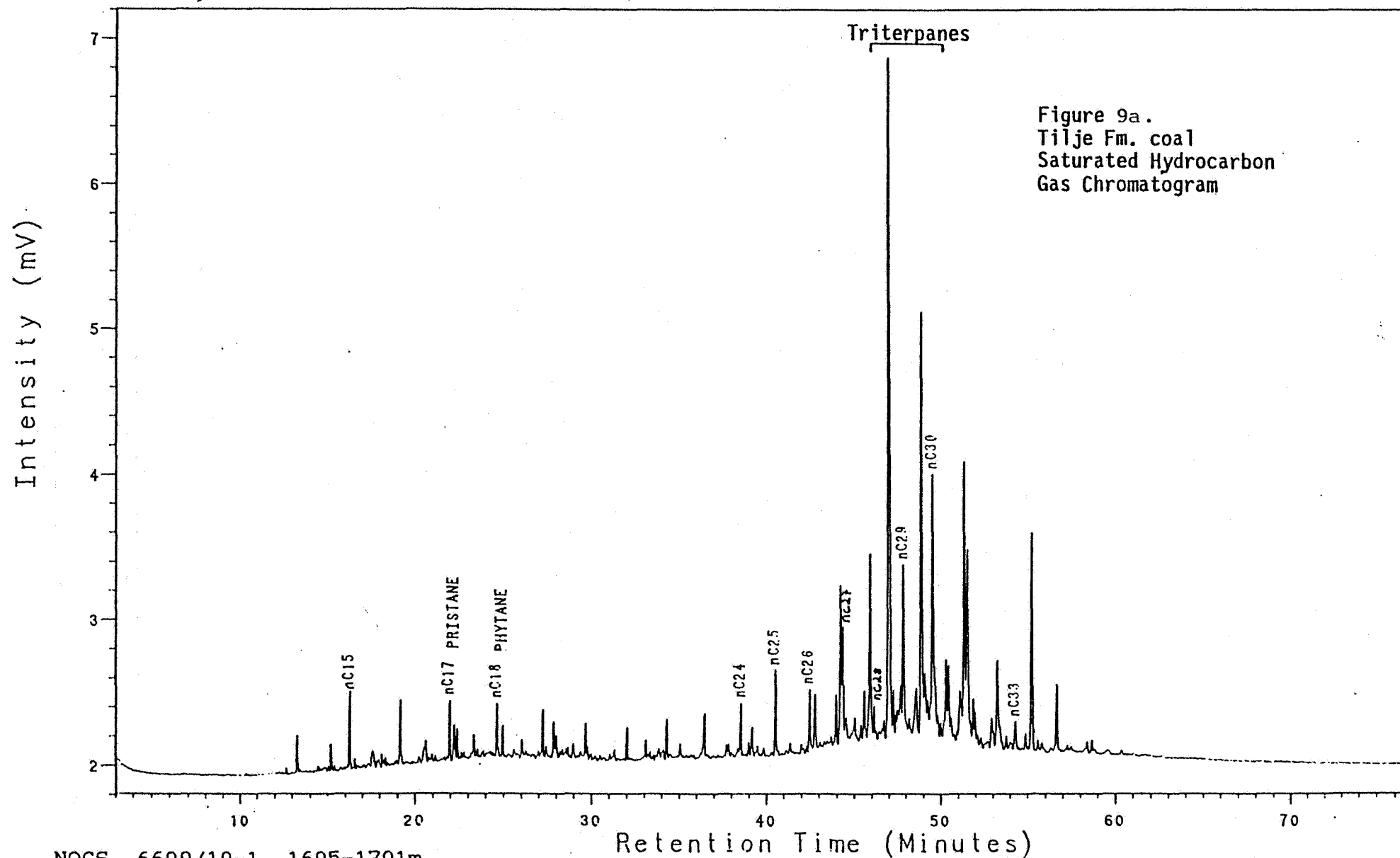
Well NOCS 6609/10-1



Analysis SA2071701

5, 1, 1

6609/10-1 1695-1701m

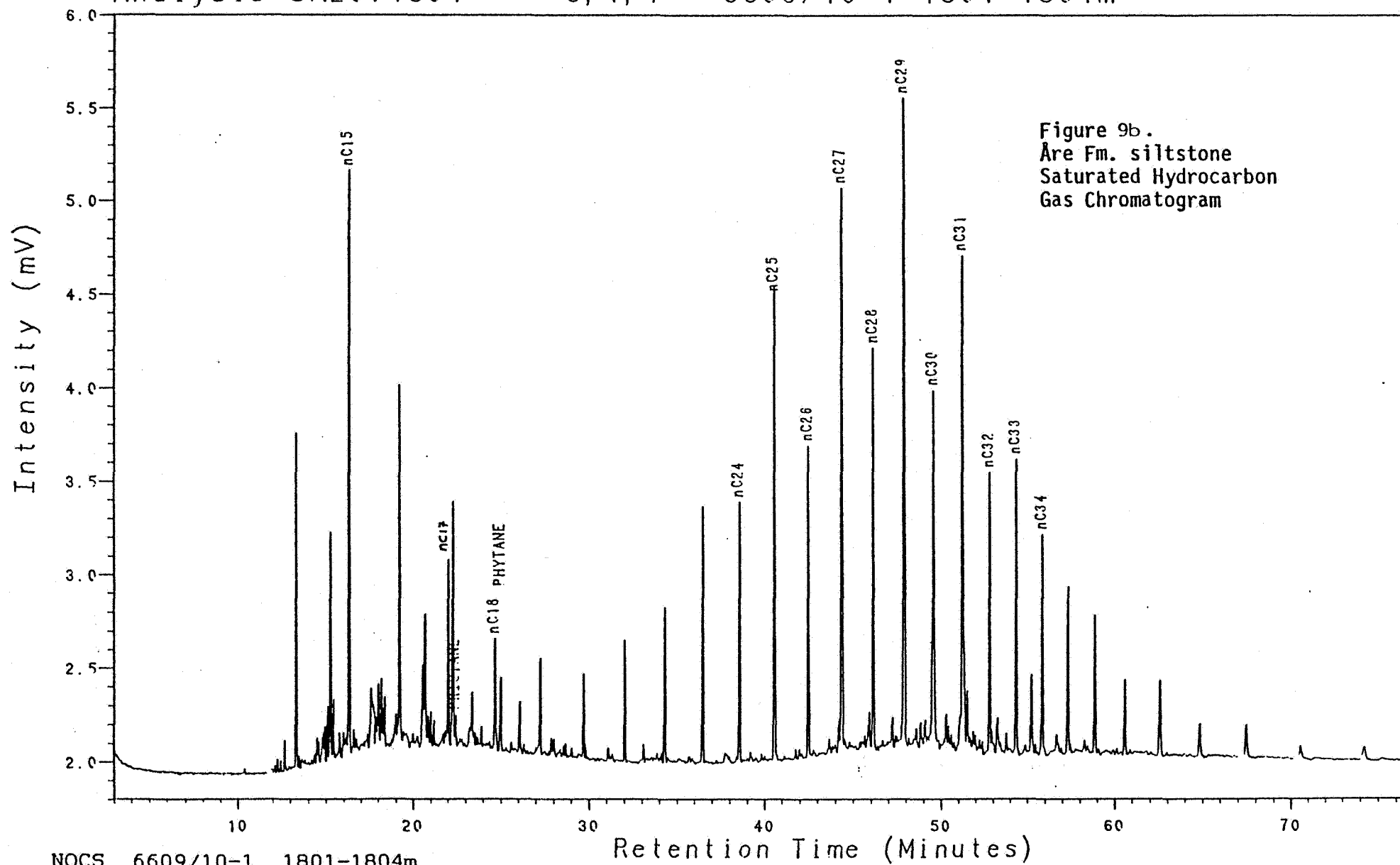


NOC5 6609/10-1 1695-1701m
SATURATED GC
COAL:blk

Analysis SA2071804

5, 1, 1

6609/10-1 1801-1804m

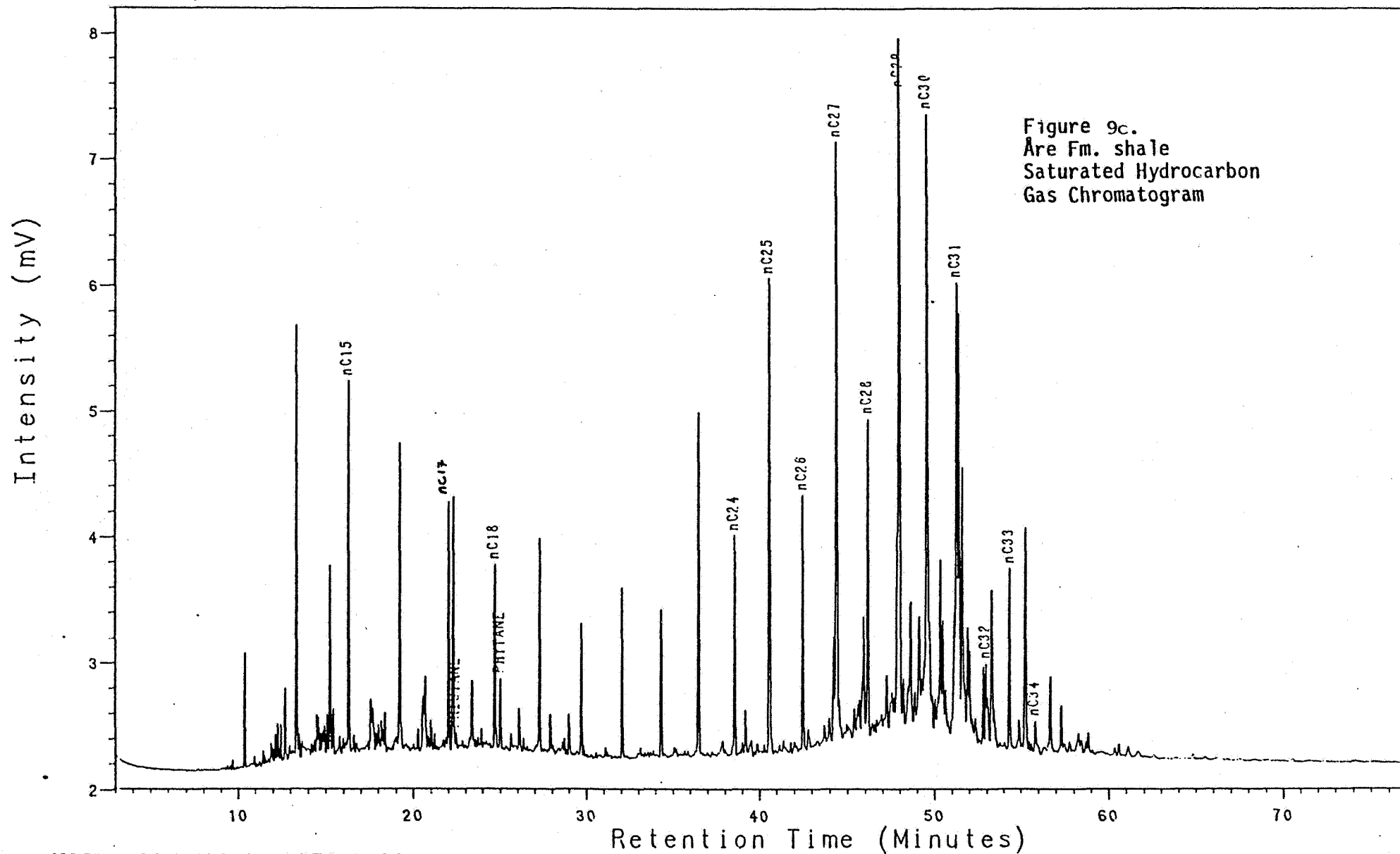


NOCS 6609/10-1 1801-1804m
SATURATED GC
SLTST:brn gy

Analysis SA2071890

5, 1, 1

6609/10-1 1854-1890m



NOCS 6609/10-1 1854-1890m

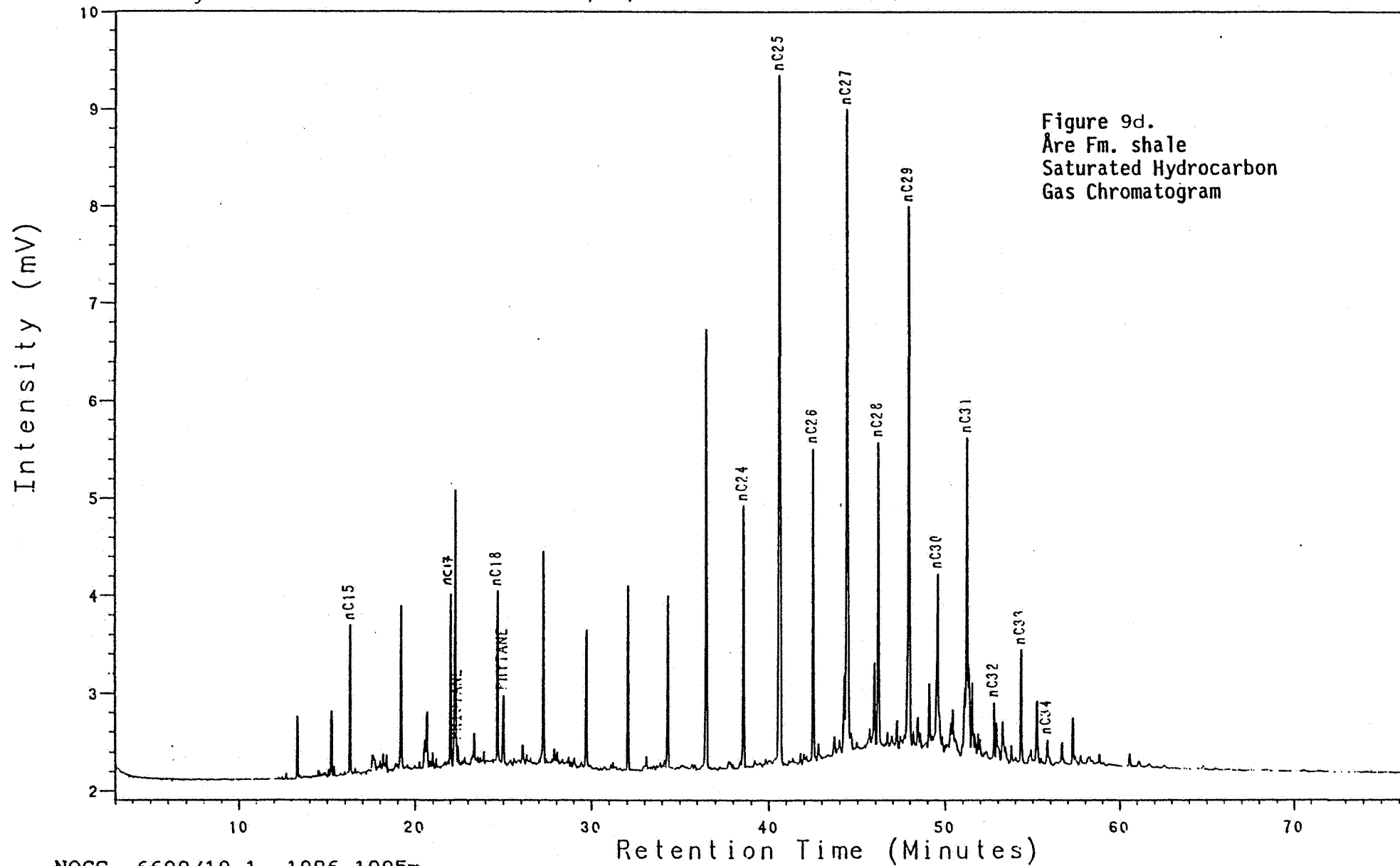
SATURATED GC

CLST:dsk brn to dsk y brn

Analysis SA2071995

5, 1, 1

6609/10-1 1986-1995m



NOCS 6609/10-1 1986-1995m

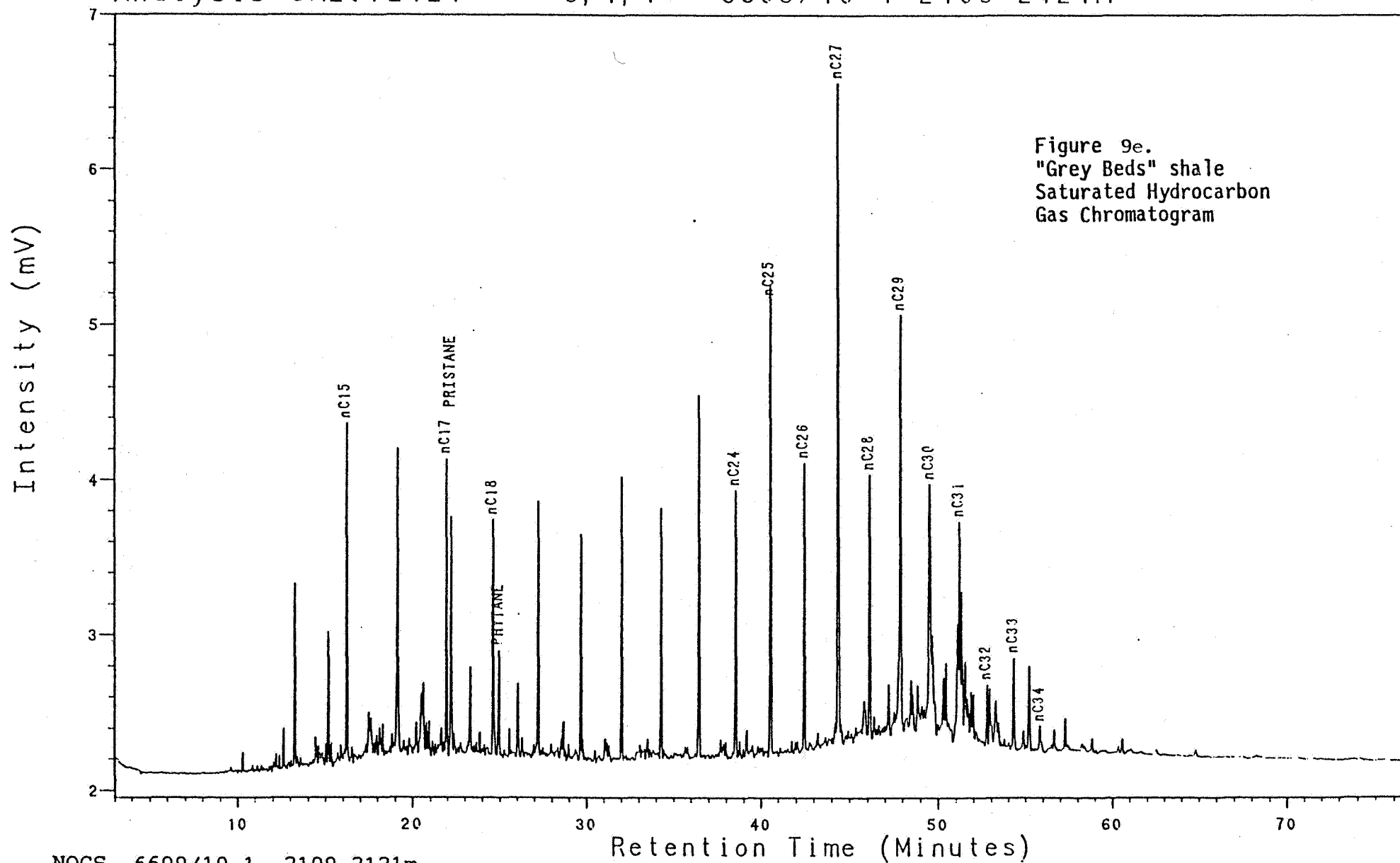
SATURATED GC

CLST:dsk brn to dsk y brn

Analysis SA2072121

5, 1, 1

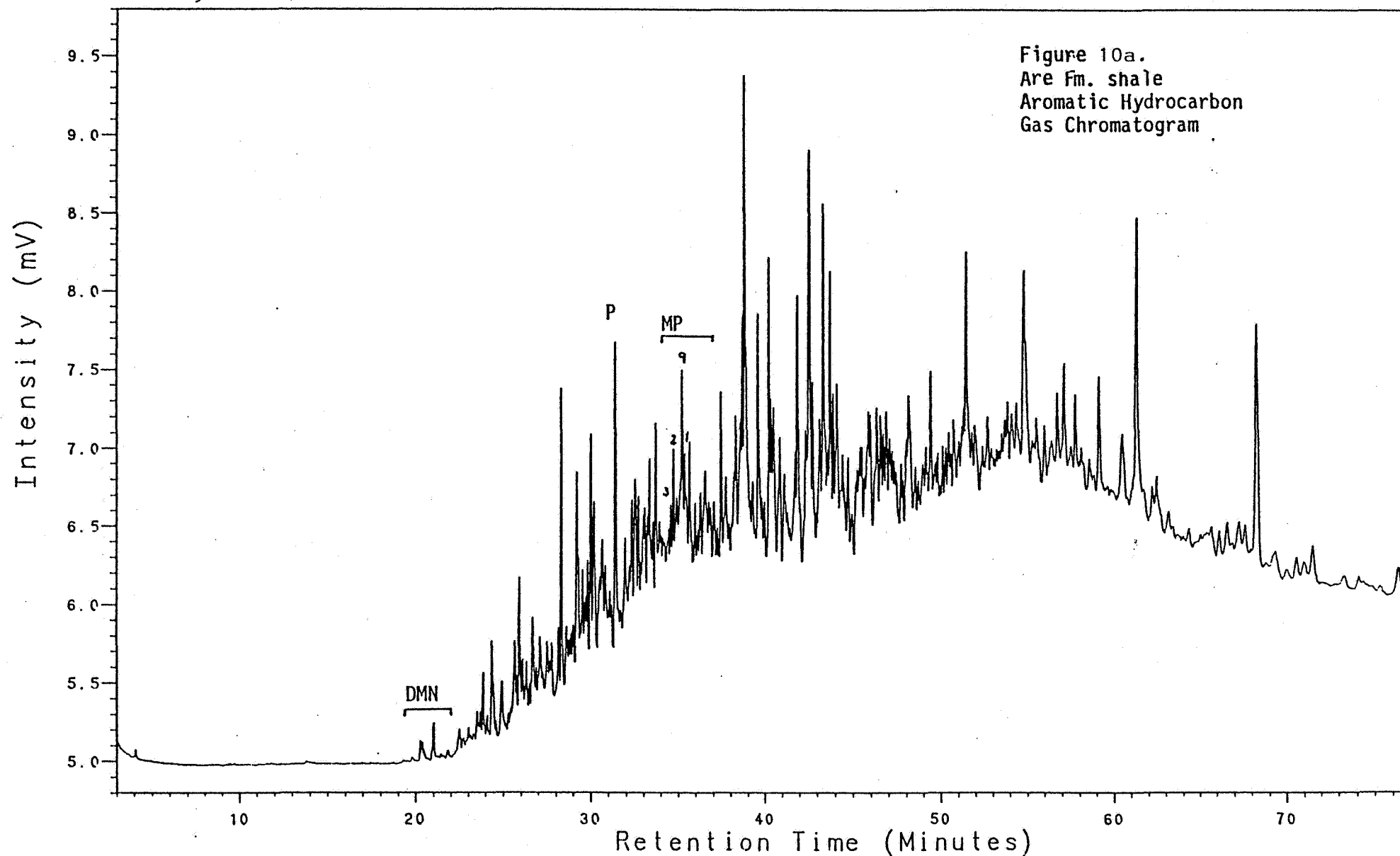
6609/10-1 2109-2121M



NOCS 6609/10-1 2109-2121m
SATURATED GC
CLST:m gy to drk gy

Analysis AR071929

8, 1, 1 6609/10-1 1893-1929m



NOCS 6609/10-1 1893-1929m
AROMATC GC (FID)
CLST: dsk brn to dsk y brn.

Figure 11: Vitrinite Reflectance versus Depth
Well NOCS 6609/10-1

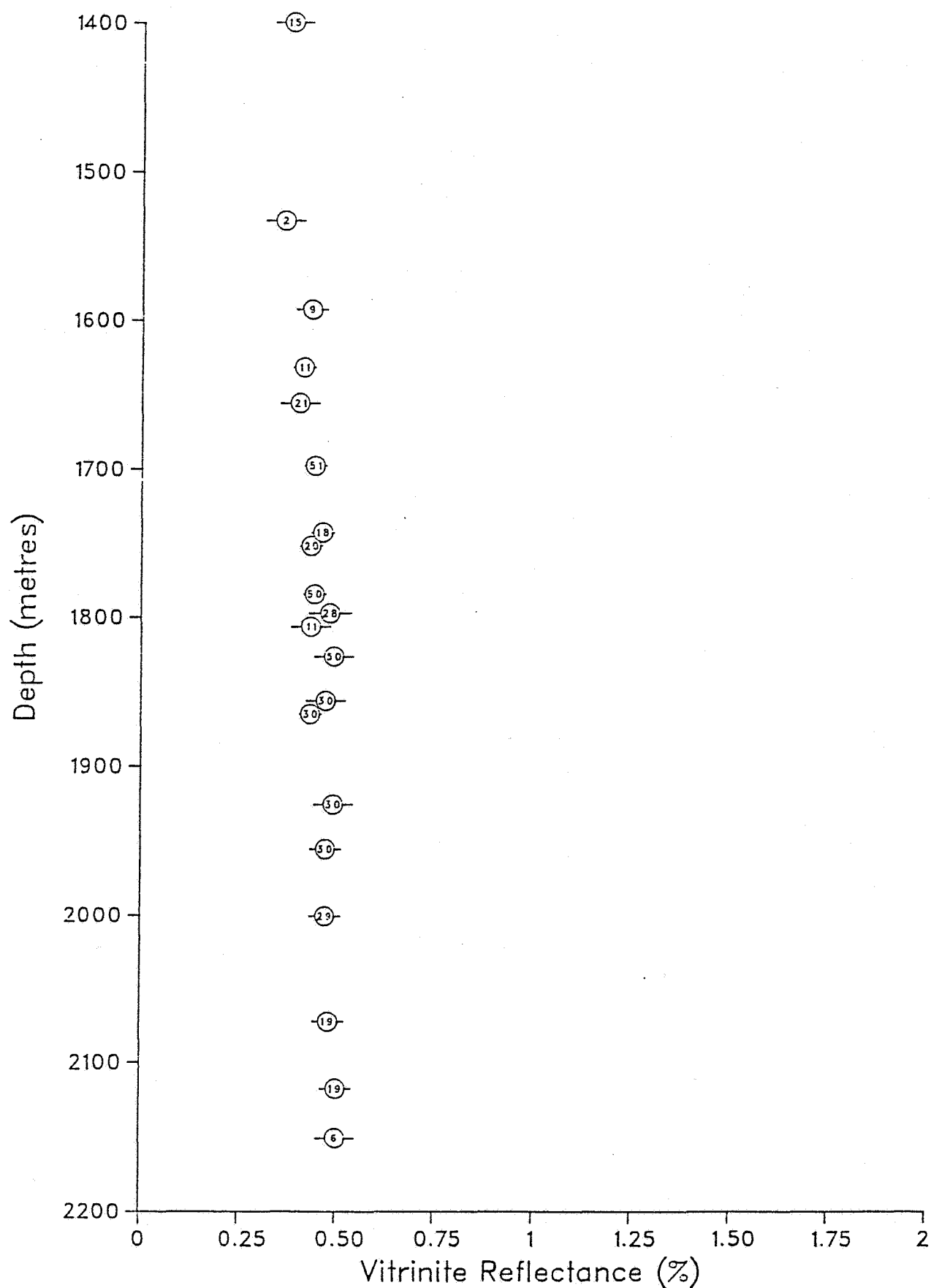


Figure 12: Kerogen Composition and Potential Hydrocarbon Products

Well NOCS 6609/10-1

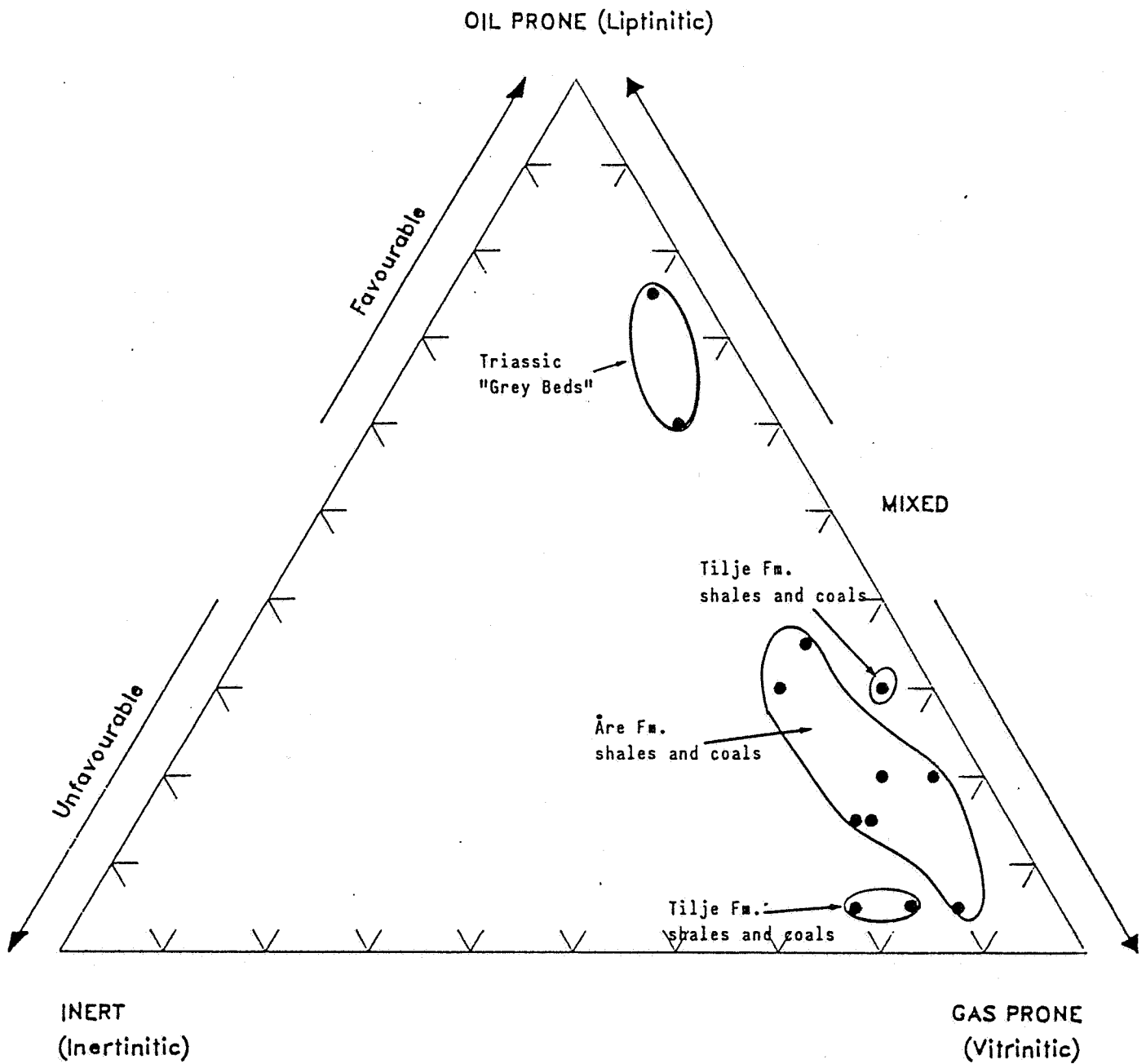


Figure 13: Aromatic v.s. saturate isotope values
Well NOCS 6609/10-1

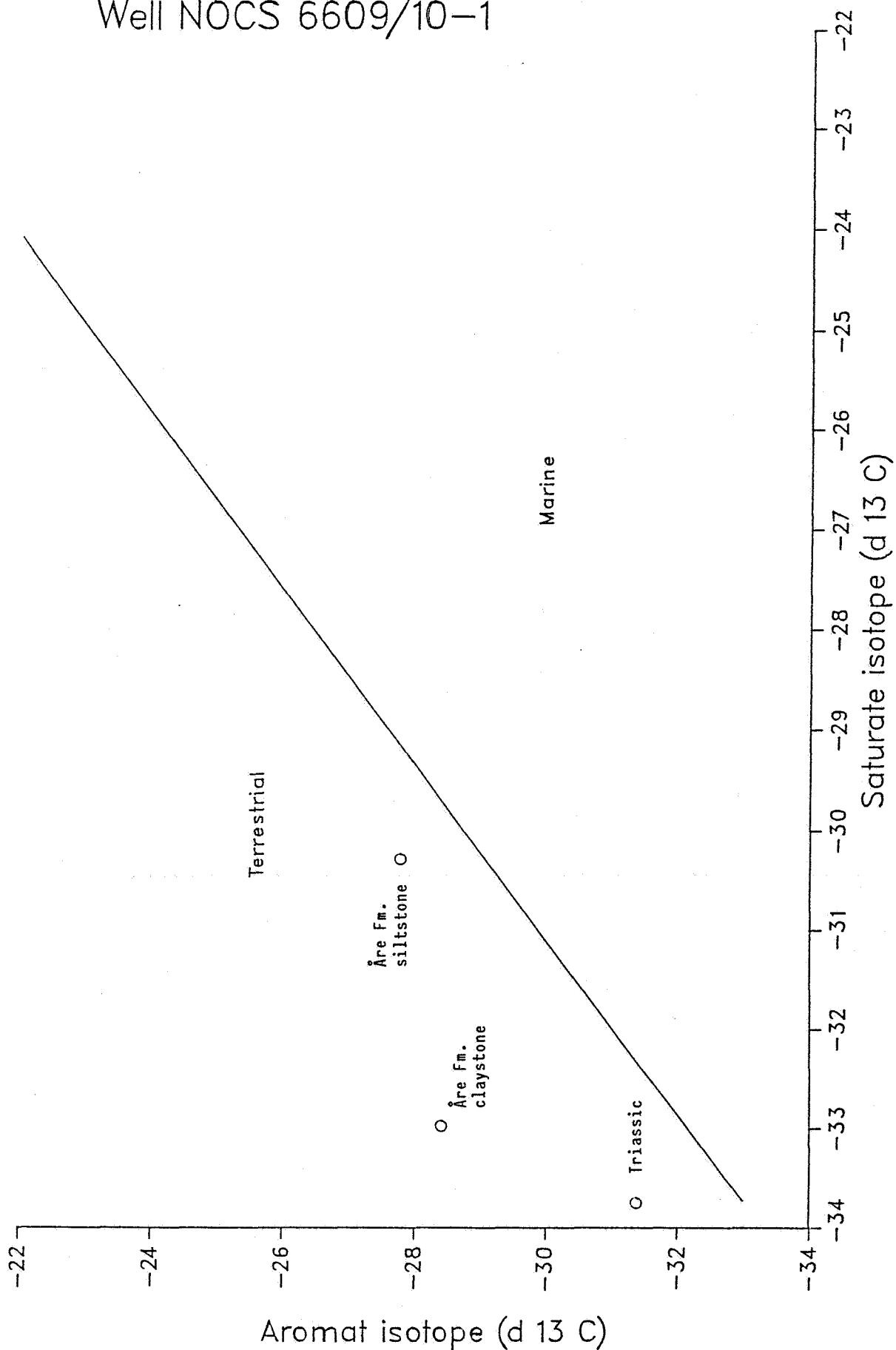
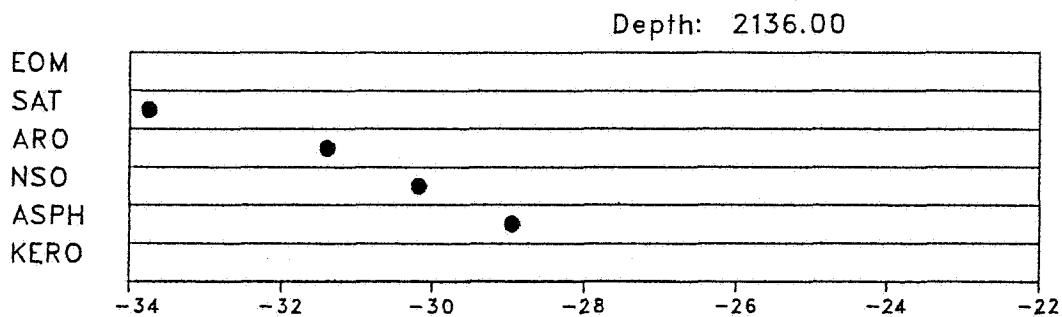
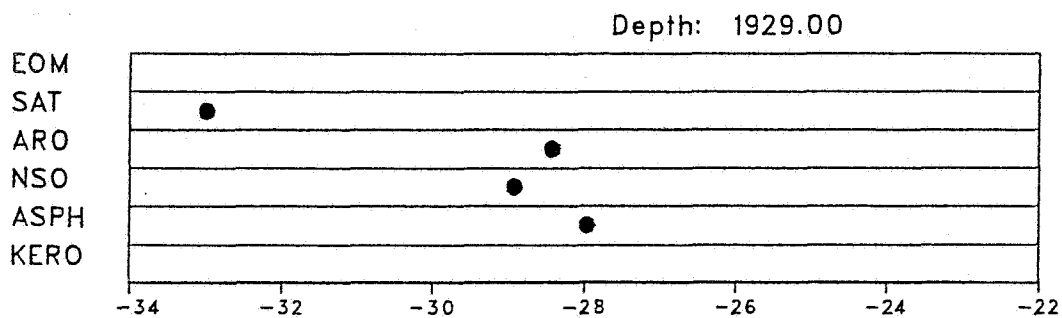
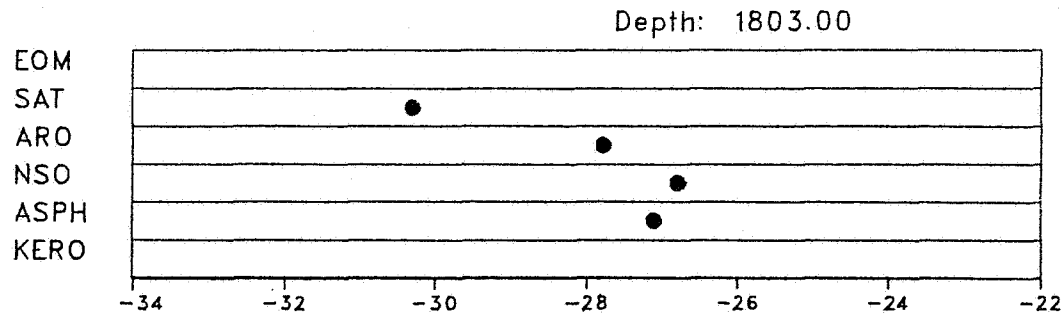


Figure 14: $^{13}\text{C}/^{12}\text{C}$ isotope ratios. Galimov plot.
Well NOCS 6609/10-1

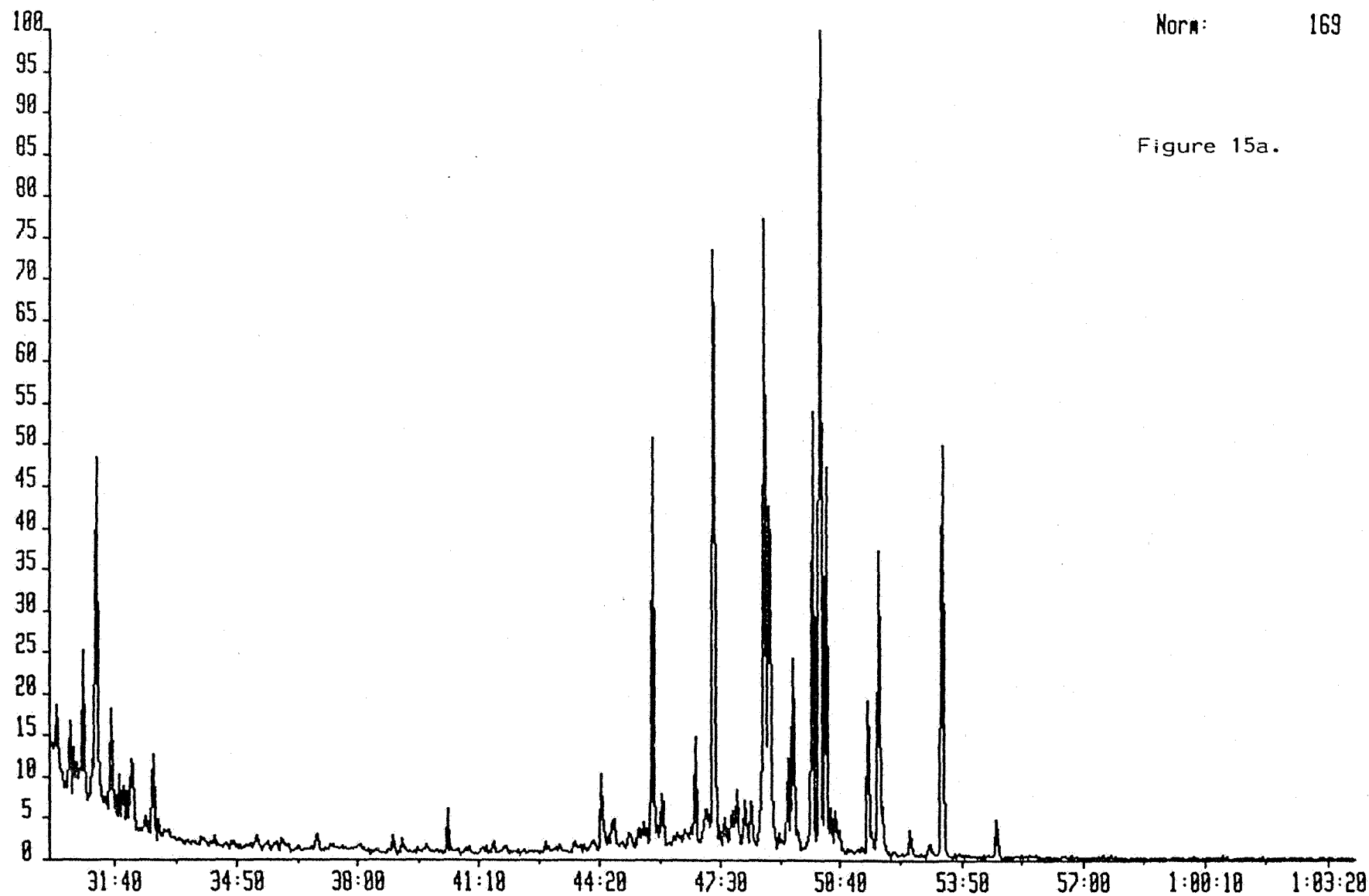


SEANGOLA 22-MAR-90 Sir:Magnetic TS250 Acnt:GEOLAB
Sample 1 Injection 1 Group 1 Mass 163.1485
Text:WELL 6609/10-1, 1809M, SATURATED FRACTION

System:SAT1

Norm: 169

Figure 15a.

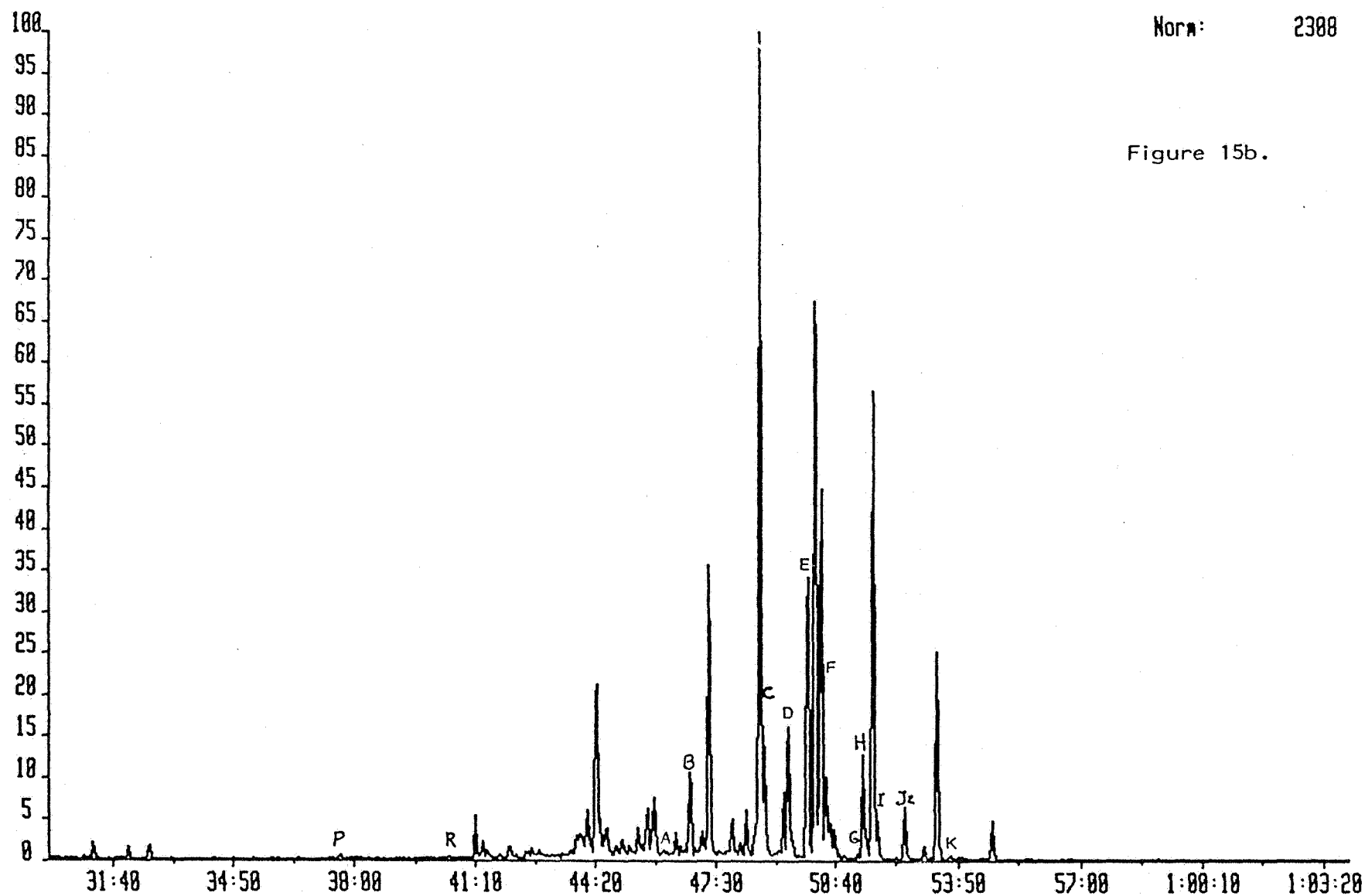


SEANGOLA 22-MAR-98 Sir:Magnetic TS250 Acnt:GEOLAB
Sample 2 Injection 1 Group 1 Mass 191.1800
Text:WELL 6609/10-1, 1929M, SATURATED FRACTION

System:SAT1

Norm: 2300

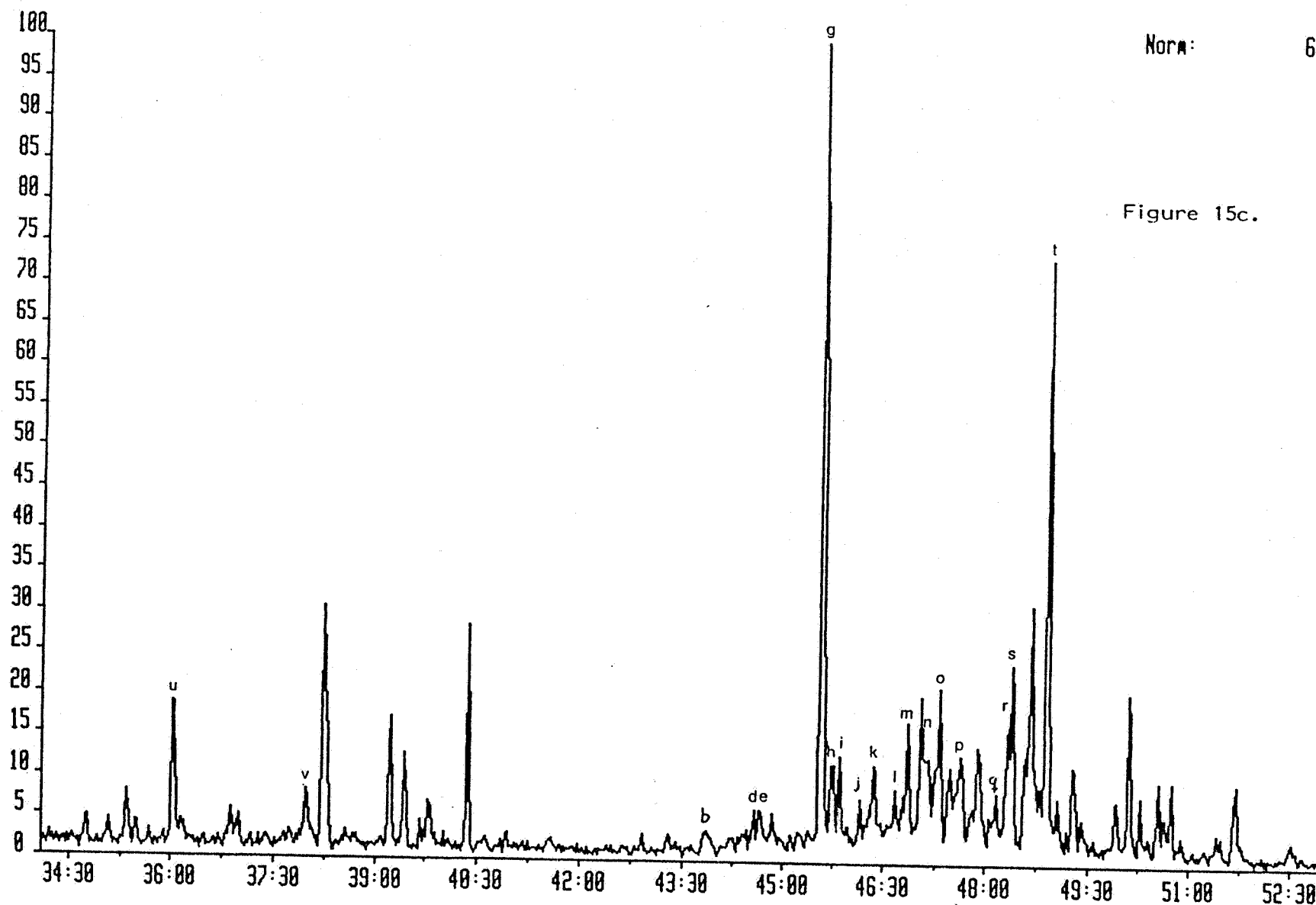
Figure 15b.



SEANGOLA 22-MAR-98 Sir:Magnetic TS250 Acnt:GEOLAB
Sample 1 Injection 1 Group 1 Mass 217.1956
Text:WELL 6609/10-1, 1803M, SATURATED FRACTION

System:SAT1

Norm: 66

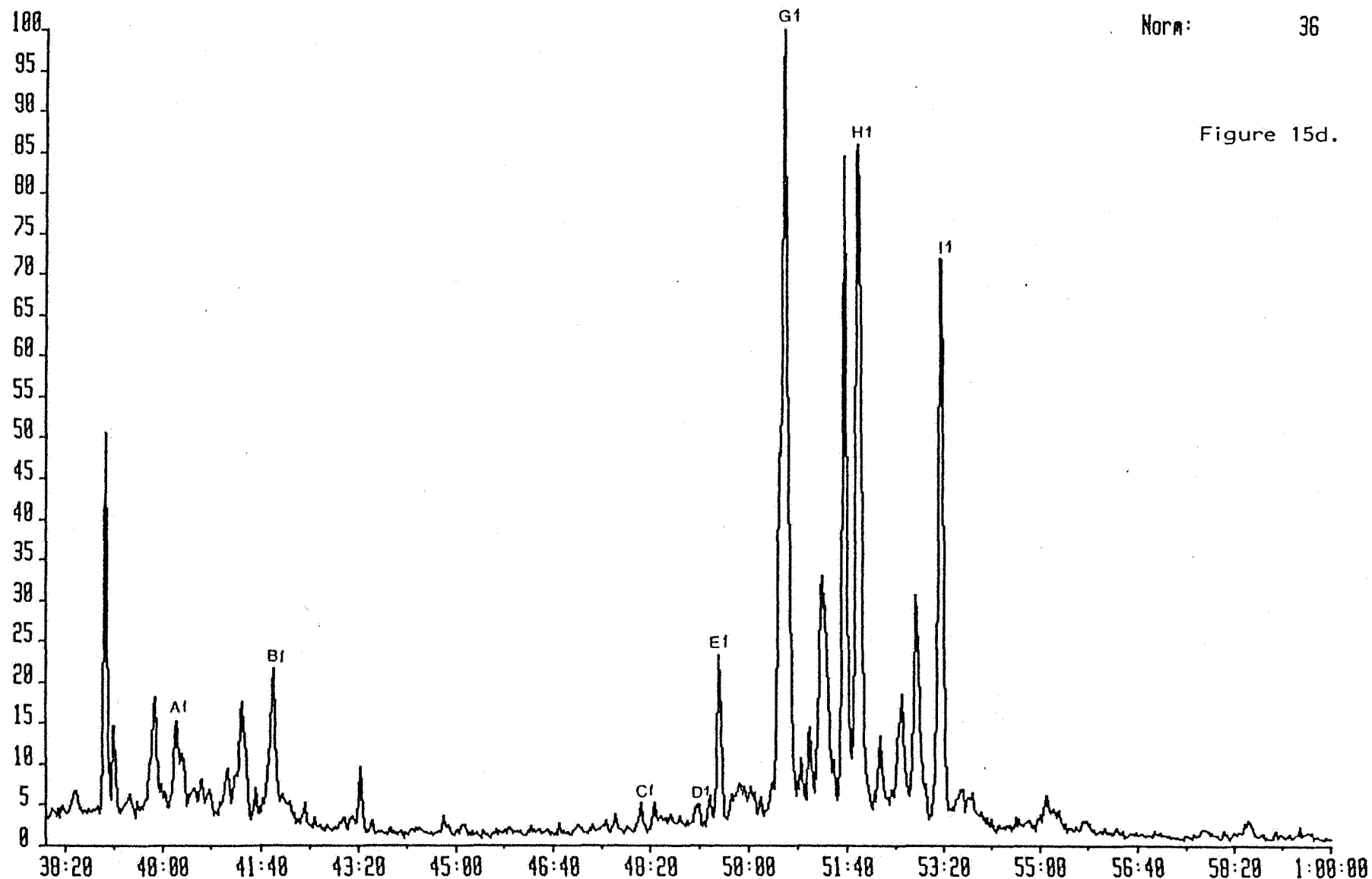


ADANGOLA 7-MAR-90 Sir:Magnetic TS250 Acnt:GEOLAB
Sample 10 Injection 1 Group 1 Mass 253.1956
Text:WELL 6609/10-1, 1929M, AROMATIC FRACTION

System:AR01

Norm: 36

Figure 15d.



TABLES

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
500.00		Nrd1		Miocene-Pliocene		0002
		100 S/Sst	:	w to m gy, mic, crs, l		0002-1L
		tr Cont	:	prp		0002-2L
600.00		Nrd1		Miocene-Pliocene		0003
		90 S/Sst	:	w to m gy, mic, crs, l		0003-1L
		10 Sltst	:	y gy, s		0003-3L
		tr Cont	:	cem, prp		0003-2L
700.00		Nrd1		Miocene-Pliocene		0004
		100 S/Sst	:	w to m gy, mic, crs, l		0004-1L
		tr Cont	:	cem, prp		0004-2L
		tr Sltst	:	y gy, s		0004-3L
810.00		Nrd1		Miocene-Pliocene		0005
		90 S/Sst	:	w to m gy, mic, crs, l		0005-1L
		10 Sltst	:	y gy, s		0005-3L
		tr Cont	:	cem, prp		0005-2L
900.00		Nrd1		Miocene-Pliocene		0006
		95 S/Sst	:	w to m gy, mic, crs, l		0006-1L
		5 Sltst	:	y gy, s		0006-3L
		tr Cont	:	cem, prp		0006-2L
1000.00		Nrd1		Miocene-Pliocene		0007
		95 S/Sst	:	w to m gy, mic, crs, l		0007-1L
		5 Sltst	:	y gy, s		0007-2L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1100.00		Nrd1		Miocene-Pliocene		0008
		95	S/Sst	: w to m gy, mic, crs, l		0008-1L
		5	Sltst	: y gy, s		0008-2L
1200.00		Nrd1		Miocene-Pliocene		0009
		100	S/Sst	: w to m gy, mic, crs, l		0009-1L
		tr	Sltst	: y gy, s		0009-2L
		tr	Cont	: ns		0009-3L
1300.00		Nrd1		Miocene-Pliocene		0010
		100	S/Sst	: w to m gy, mic, crs, l		0010-1L
		tr	Sltst	: y gy, s		0010-2L
		tr	Cont	: cem		0010-3L
1400.00		Hrd1	Bryg	Eocene-Oligocene		0011
	1.40	100	Sh/Clst:	y gy to lt ol gy, lt gy, slt		0011-2L
		tr	S/Sst	: w to m gy, mic, crs, l		0011-1L
1500.00		Rogl	Tang	Palaeocene		0012
		75	Sh/Clst:	lt brn gy		0012-3L
		25	Sh/Clst:	y gy to lt ol gy		0012-2L
		tr	S/Sst	: w to m gy, mic, crs, l		0012-1L
		tr	Ca	: drk gy, dol		0012-4L
1518.00				Cretaceous		0013
	0.39	75	Sh/Clst:	lt brn gy to lt gy		0013-3L
		20	Sh/Clst:	y gy to lt ol gy		0013-2L
		5	Ca	: drk gy, dol		0013-4L
		tr	S/Sst	: w to m gy, l		0013-1L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1533.00				Cretaceous		0014
		85	Sh/Clst:	lt brn gy to lt gy to m gy		0014-3L
		15	Sh/Clst:	y gy to lt ol gy		0014-2L
			tr S/Sst	: w to m gy, l		0014-1L
			tr Ca	: drk gy, dol		0014-4L
			tr Cont	: prp		0014-5L
1548.00				Cretaceous		0015
		80	Sh/Clst:	lt brn gy to lt gy to m gy		0015-3L
		20	Sh/Clst:	y gy to lt ol gy		0015-2L
			tr S/Sst	: w to m gy, l		0015-1L
			tr Ca	: drk gy, dol		0015-4L
			tr Cont	: prp		0015-5L
1560.00				Cretaceous		0016
	0.36	100	Sh/Clst:	lt gy to y gy to lt ol gy, glauc		0016-2L
			tr S/Sst	: w to m gy, l		0016-1L
			tr Sh/Clst:	lt brn gy to lt gy to m gy		0016-3L
			tr Ca	: drk gy, dol		0016-4L
			tr Cont	: tar-ad		0016-5L
1563.00				Cretaceous		0017
		90	Sh/Clst:	lt gy to y gy to lt ol gy, glauc		0017-2L
		10	S/Sst	: w to m gy, l		0017-1L
			tr Sh/Clst:	lt brn gy to m gy		0017-3L
			tr Ca	: drk gy, dol		0017-4L
1584.00				Cretaceous		0018
	0.48	100	Sh/Clst:	lt gy to y gy to lt ol gy, glauc		0018-2L
			tr S/Sst	: w to m gy, l		0018-1L
			tr Sh/Clst:	lt brn gy to m gy		0018-3L
			tr Ca	: drk gy, dol		0018-4L
			tr Cont	: tar-ad		0018-5L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1593.00				Cretaceous		0019
	0.51	50	Sh/Clst: lt gy to y gy to lt ol gy, glauc			0019-2L
		50	Sh/Clst: lt brn gy to m gy			0019-3L
		tr S/Sst	: w to m gy, l			0019-1L
		tr Ca	: drk gy, dol			0019-4L
		tr Cont	: prp			0019-5L
1614.00				Jurassic		0020
	0.47	80	Sh/Clst: lt gy to y gy to lt ol gy, glauc			0020-2L
		15	Sh/Clst: lt brn gy to m gy			0020-3L
		5	S/Sst : w to m gy, l			0020-1L
		tr Ca	: drk gy, dol			0020-4L
		tr Cont	: prp			0020-5L
1617.00				Jurassic		0021
		60	Sh/Clst: lt gy to y gy, glauc			0021-2L
		40	Sltst : lt ol gy			0021-5L
		tr S/Sst	: w to m gy, l			0021-1L
		tr Sh/Clst	: lt brn gy to m gy			0021-3L
		tr Ca	: drk gy, dol			0021-4L
1623.00				Jurassic		0022
	0.88	45	Sh/Clst: lt gy to y gy, glauc			0022-2L
		45	Sh/Clst: lt brn gy to m gy			0022-3L
		10	S/Sst : w to m gy, l			0022-1L
		tr Ca	: drk gy, dol			0022-4L
		tr Sltst	: lt ol gy			0022-5L
		tr Other	: pyr			0022-6L
		tr Cont	: fib			0022-7L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1626.00				Jurassic		0023
	0.58	45	Sh/Clst:	lt gy to y gy, glauc		0023-2L
		35	Sh/Clst:	lt brn gy to m gy		0023-3L
		15	S/Sst	: w to m gy, l		0023-1L
		5	Sltst	: lt ol gy		0023-5L
		tr	Ca	: drk gy, dol		0023-4L
		tr	Other	: pyr		0023-6L
		tr	Cont	: tar-ad		0023-7L
1632.00				Jurassic		0024
	1.27	75	Sh/Clst:	lt brn gy to m gy		0024-3L
		15	Sh/Clst:	lt gy to y gy, glauc		0024-2L
		10	S/Sst	: w to m gy, l		0024-1L
		tr	Sltst	: lt ol gy		0024-4L
		tr	Other	: pyr		0024-5L
1638.00				Jurassic		0025
	1.35	45	Sh/Clst:	lt gy to y gy, glauc		0025-2L
		45	Sh/Clst:	lt brn gy to m gy		0025-3L
		10	S/Sst	: w to m gy, l		0025-1L
		tr	Sltst	: lt ol gy		0025-4L
		tr	Other	: pyr		0025-5L
		tr	Cont	: prp		0025-6L
1644.00				Båt Tilj L.Jurassic		0026
	0.13	85	Sh/Clst:	lt gy to y gy, glauc		0026-2L
		15	S/Sst	: w to m gy, l		0026-1L
		tr	Sh/Clst:	lt brn gy to m gy		0026-3L
		tr	Sltst	: lt ol gy		0026-4L
		tr	Other	: pyr		0026-5L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1644.00	ccp					0174
	0.58	100	S/Sst	: lt brn gy, slt, f		0174-1L
1645.00	ccp		Båt	Tilj L.Jurassic		0157
	1.16	100	Slstst	: lt brn gy to brn gy		0157-1L
1648.00	ccp		Båt	Tilj L.Jurassic		0158
	0.33	100	S/Sst	: pl y brn, f, cem, l		0158-1L
1649.00	ccp					0175
	0.17	100	Slstst	: lt brn gy, s		0175-1L
1651.00	ccp		Båt	Tilj L.Jurassic		0159
	0.30	100	S/Sst	: pl y brn, f, cem, l		0159-1L
1654.00	ccp		Båt	Tilj L.Jurassic		0160
	0.13	50	S/Sst	: w, mic, f, cem, l, kln		0160-1L
		50	Cont	: dd		0160-2L
1654.00	ccp					0176
		100	S/Sst	: lt y brn to lt or, f		0176-1L
1656.00			Båt	Tilj L.Jurassic		0027
	1.72	75	Sh/Clst:	lt brn gy to m gy, slt		0027-3L
		20	Sh/Clst:	lt gy to y gy, glauc		0027-2L
		5	S/Sst	: w to m gy, l		0027-1L
		tr	Slstst	: lt ol gy		0027-4L
		tr	Other	: pyr		0027-5L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1659.00			Båt	Tilj L.Jurassic		0028
	0.32	40	Sh/Clst:	lt brn gy to m gy, slt		0028-3L
		40	Sltst	: lt ol gy		0028-4L
		10	S/Sst	: w to m gy, l		0028-1L
		10	Sh/Clst:	lt gy to y gy, glauc		0028-2L
		tr	Other	: pyr		0028-5L
1662.00			Båt	Tilj L.Jurassic		0029
	0.53	85	Sltst	: lt ol gy		0029-4L
		10	Sh/Clst:	lt brn gy to m gy, slt		0029-3L
		5	S/Sst	: w to m gy, l		0029-1L
		tr	Sh/Clst:	lt gy to y gy, glauc		0029-2L
		tr	Cont	: prp		0029-5L
1665.00			Båt	Tilj L.Jurassic		0030
	1.10	40	Sh/Clst:	lt gy to y gy, glauc		0030-2L
		40	Sltst	: lt ol gy		0030-4L
		10	S/Sst	: w to m gy, l		0030-1L
		10	Sh/Clst:	lt brn gy to m gy, slt		0030-3L
		tr	Cont	: prp		0030-5L
		tr	Other	: pyr		0030-6L
1668.00			Båt	Tilj L.Jurassic		0031
	0.87	30	Sh/Clst:	lt brn gy to m gy, slt		0031-3L
		30	Sltst	: lt ol gy		0031-4L
		20	S/Sst	: w to m gy, l		0031-1L
		20	Sh/Clst:	lt gy to y gy, glauc		0031-2L
		tr	Cont	: prp		0031-5L
		tr	Other	: pyr		0031-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1671.00			Båt	Tilj L.Jurassic		0032
			40	Sh/Clst: lt gy to y gy, glauc		0032-2L
			25	Sh/Clst: lt brn gy to m gy, slt		0032-3L
			20	S/Sst : w to m gy, l		0032-1L
			15	Sltst : lt ol gy		0032-4L
			tr	Cont : prp, tar-ad		0032-5L
			tr	Other : pyr		0032-6L
1674.00			Båt	Tilj L.Jurassic		0033
	1.45		50	Sh/Clst: lt gy to y gy, glauc		0033-2L
			40	Sh/Clst: lt brn gy to m gy, slt		0033-3L
			10	Sltst : lt ol gy		0033-4L
			tr	S/Sst : w to m gy, l		0033-1L
			tr	Cont : prp		0033-5L
			tr	Other : pyr		0033-6L
			tr	Coal : blk		0033-7L
1677.00			Båt	Tilj L.Jurassic		0034
			50	S/Sst : w to m gy, l		0034-1L
			25	Sh/Clst: lt gy to y gy, glauc		0034-2L
			20	Sltst : lt ol gy		0034-4L
			5	Other : pyr, glauc		0034-7L
			tr	Sh/Clst: lt brn gy to m gy, slt		0034-3L
			tr	Cont : prp		0034-5L
			tr	Coal : blk		0034-6L
1680.00			Båt	Tilj L.Jurassic		0035
			55	S/Sst : w to m gy, l		0035-1L
			30	Sh/Clst: lt gy to y gy, glauc		0035-2L
			5	Sltst : lt ol gy		0035-4L
			5	Coal : blk		0035-6L
			5	Other : pyr, glauc		0035-7L
			tr	Sh/Clst: lt brn gy to m gy, slt		0035-3L
			tr	Cont : prp, tar-ad		0035-5L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1683.00			Båt	Tilj L.Jurassic		0036
	2.50	80	Sh/Clst:	m gy, slt		0036-3L
		15	S/Sst	: w to m gy, l		0036-1L
		5	Coal	: blk		0036-6L
		tr	Sh/Clst:	lt gy to y gy, glauc		0036-2L
		tr	Sltst	: lt ol gy		0036-4L
		tr	Cont	: prp, tar-ad		0036-5L
		tr	Other	: pyr, glauc		0036-7L
1686.00			Båt	Tilj L.Jurassic		0037
		55	Sh/Clst:	lt gy to y gy, glauc		0037-2L
	1.11	20	Sh/Clst:	m gy, slt		0037-3L
		10	S/Sst	: w to m gy, l		0037-1L
		10	Sltst	: lt ol gy		0037-4L
		5	Coal	: blk		0037-6L
		tr	Cont	: prp		0037-5L
		tr	Other	: pyr, glauc		0037-7L
1689.00			Båt	Tilj L.Jurassic		0038
		35	Sh/Clst:	lt gy to y gy, glauc		0038-2L
	1.92	30	Sh/Clst:	m gy, slt		0038-3L
		15	S/Sst	: w to m gy, l		0038-1L
		10	Sltst	: lt ol gy		0038-4L
		5	Coal	: blk		0038-6L
		5	Other	: pyr, glauc		0038-7L
		tr	Cont	: prp, tar-ad		0038-5L
1692.00			Båt	Tilj L.Jurassic		0039
		50	Sh/Clst:	lt gy to y gy, glauc		0039-2L
		15	S/Sst	: w to m gy, l		0039-1L
		15	Sh/Clst:	m gy, slt		0039-3L
		10	Coal	: blk		0039-6L
		5	Sltst	: lt ol gy		0039-4L
		5	Other	: pyr, glauc		0039-7L
		tr	Cont	: prp, tar-ad		0039-5L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1695.00			Båt	Tilj L.Jurassic		0040
	71.30		40	S/Sst : w to m gy, l		0040-1L
			40	Coal : blk		0040-6L
			20	Sh/Clst: lt gy to y gy, glauc		0040-2L
			tr	Sh/Clst: m gy, slt		0040-3L
			tr	Sltst : lt ol gy		0040-4L
			tr	Cont : prp, ns		0040-5L
			tr	Other : pyr, glauc		0040-7L
1698.00			Båt	Tilj L.Jurassic		0041
			45	Coal : blk		0041-6L
			25	S/Sst : w to m gy, l		0041-1L
			20	Sh/Clst: y gy, glauc		0041-2L
			10	Sh/Clst: lt gy to m gy, slt		0041-3L
			tr	Sltst : lt ol gy		0041-4L
			tr	Cont : prp, ns		0041-5L
			tr	Other : pyr, glauc		0041-7L
1701.00			Båt	Tilj L.Jurassic		0042
	72.20		35	Coal : blk		0042-6L
			25	Sltst : lt ol gy		0042-4L
			15	S/Sst : w to m gy, l		0042-1L
			15	Sh/Clst: y gy, glauc		0042-2L
			10	Sh/Clst: lt gy to m gy, slt		0042-3L
			tr	Cont : prp, tar-ad		0042-5L
			tr	Other : pyr, glauc		0042-7L
1704.00			Båt	Tilj L.Jurassic		0043
			35	Sh/Clst: y gy, glauc		0043-2L
			20	Sltst : lt ol gy		0043-4L
			15	Sh/Clst: lt gy to brn gy, slt		0043-3L
			15	Coal : blk		0043-6L
			10	S/Sst : w to m gy, l		0043-1L
			5	Other : pyr, glauc		0043-7L
			tr	Cont : prp, tar-ad		0043-5L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1707.00			Båt	Tilj L.Jurassic		0044
	1.38	55	Sh/Clst:	y gy, glauc		0044-2L
		20	S/Sst	: w to m gy, l		0044-1L
		10	Sltst	: lt ol gy		0044-4L
		5	Sh/Clst:	lt gy to brn gy, slt		0044-3L
		5	Coal	: blk		0044-6L
		5	Other	: pyr, glauc		0044-7L
		tr	Cont	: prp, tar-ad		0044-5L
1713.00			Båt	Tilj L.Jurassic		0045
		35	Sh/Clst:	y gy, glauc		0045-2L
		25	S/Sst	: w to m gy, l		0045-1L
		20	Sh/Clst:	lt gy to brn gy, slt		0045-3L
		10	Other	: pyr, glauc		0045-7L
		5	Sltst	: lt ol gy		0045-4L
		5	Coal	: blk		0045-6L
		tr	Cont	: prp, tar-ad		0045-5L
1716.00			Båt	Tilj L.Jurassic		0046
	0.13	50	Sh/Clst:	lt gy to brn gy, slt		0046-3L
		20	Sh/Clst:	y gy, glauc		0046-2L
		15	S/Sst	: w to m gy, l		0046-1L
		5	Sltst	: lt ol gy		0046-4L
		5	Coal	: blk		0046-6L
		5	Other	: pyr, glauc		0046-7L
		tr	Cont	: prp, tar-ad		0046-5L
1722.00			Båt	Tilj L.Jurassic		0047
		40	Sltst	: lt ol gy		0047-4L
		20	Sh/Clst:	y gy, glauc		0047-2L
		20	Sh/Clst:	lt gy to brn gy, slt		0047-3L
		10	S/Sst	: w to m gy, l		0047-1L
		5	Coal	: blk		0047-6L
		5	Other	: pyr, glauc		0047-7L
		tr	Cont	: Mica-ad, prp, tar-ad		0047-5L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1725.00			Båt	Tilj L.Jurassic		0048
			40	Sh/Clst: y gy, glauc		0048-2L
			25	S/Sst : w to m gy, l		0048-1L
			15	Sh/Clst: lt gy to brn gy, slt		0048-3L
			10	Other : pyr, glauc		0048-7L
			5	Slstst : lt ol gy		0048-4L
			5	Coal : blk		0048-6L
			tr	Cont : Mica-ad, prp, tar-ad		0048-5L
1731.00			Båt	Tilj L.Jurassic		0049
	0.52		80	S/Sst : w to m gy, calc, cem, l		0049-1L
			10	Sh/Clst: y gy, glauc		0049-2L
			5	Slstst : lt ol gy		0049-4L
			5	Coal : blk		0049-6L
			tr	Sh/Clst: lt gy to brn gy, slt		0049-3L
			tr	Cont : prp		0049-5L
			tr	Other : pyr, glauc		0049-7L
1734.00			Båt	Tilj L.Jurassic		0050
	0.44		100	S/Sst : lt gy, calc, cem		0050-1L
			tr	Sh/Clst: y gy, glauc		0050-2L
			tr	Sh/Clst: lt gy to brn gy, slt		0050-3L
			tr	Cont : prp		0050-4L
			tr	Coal : blk		0050-5L
1737.00			Båt	Tilj L.Jurassic		0051
	0.23		95	S/Sst : lt gy, calc, cem		0051-1L
			5	Sh/Clst: y gy, glauc		0051-2L
			tr	Sh/Clst: lt gy to brn gy, slt		0051-3L
			tr	Cont : prp		0051-4L
			tr	Coal : blk		0051-5L
			tr	Other : pyr		0051-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1740.00			Båt	Tilj	L.Jurassic	0052
	0.29	85	S/Sst	: lt gy, calc, cem		0052-1L
		15	Sh/Clst:	lt gy to brn gy, slt		0052-3L
			tr Sh/Clst:	y gy, glauc		0052-2L
			tr Cont	: prp		0052-4L
			tr Coal	: blk		0052-5L
			tr Other	: pyr		0052-6L
1743.00			Båt	Tilj	L.Jurassic	0053
		80	S/Sst	: lt gy, calc, cem, l		0053-1L
	1.50	15	Sh/Clst:	lt gy to brn gy, slt		0053-3L
		5	Sh/Clst:	y gy, glauc		0053-2L
			tr Cont	: prp		0053-4L
			tr Coal	: blk		0053-5L
			tr Other	: pyr		0053-6L
1746.00			Båt	Tilj	L.Jurassic	0054
		75	S/Sst	: w to lt gy, l		0054-1L
		10	Sh/Clst:	y gy, glauc		0054-2L
		10	Sh/Clst:	lt gy to brn gy, slt		0054-3L
		5	Sltst	: lt ol gy		0054-7L
			tr Cont	: prp		0054-4L
			tr Coal	: blk		0054-5L
			tr Other	: pyr		0054-6L
1749.00			Båt	Tilj	L.Jurassic	0055
	1.28	50	Sh/Clst:	lt gy, slt		0055-3L
		45	S/Sst	: w to lt gy, l		0055-1L
		5	Coal	: blk		0055-5L
			tr Sh/Clst:	y gy, glauc		0055-2L
			tr Cont	: prp		0055-4L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1752.00			Båt	Tilj L.Jurassic		0056
			75	S/Sst : w to lt gy, calc, cem, 1		0056-1L
			10	Sh/Clst: y gy, glauc		0056-2L
			10	Coal : blk		0056-5L
			5	Sh/Clst: brn gy, slt		0056-3L
			tr	Cont : prp		0056-4L
1755.00			Båt	Tilj L.Jurassic		0057
	0.53		95	S/Sst : w to lt gy, calc, cem, 1		0057-1L
			5	Coal : blk		0057-5L
			tr	Sh/Clst: y gy, glauc		0057-2L
			tr	Sh/Clst: brn gy, slt		0057-3L
			tr	Cont : prp		0057-4L
1758.00			Båt	Tilj L.Jurassic		0058
			100	S/Sst : lt gy, calc, cem, 1		0058-1L
			tr	Sh/Clst: y gy, glauc		0058-2L
			tr	Sh/Clst: brn gy, slt		0058-3L
			tr	Cont : prp		0058-4L
			tr	Coal : blk		0058-5L
1761.00			Båt	Tilj L.Jurassic		0059
	0.41		100	S/Sst : lt gy, calc, cem, 1		0059-1L
			tr	Sh/Clst: y gy, glauc		0059-2L
			tr	Sh/Clst: brn gy, slt		0059-3L
			tr	Cont : prp		0059-4L
			tr	Coal : blk		0059-5L
1764.00			Båt	Tilj L.Jurassic		0060
			100	S/Sst : lt gy, calc, cem, 1		0060-1L
			tr	Sh/Clst: y gy, glauc		0060-2L
			tr	Sh/Clst: brn gy, slt		0060-3L
			tr	Cont : prp		0060-4L
			tr	Coal : blk		0060-5L
			tr	Other : pyr		0060-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1767.00		Båt	Tilj	L.Jurassic		0061
		100	S/Sst	: w to lt gy, l		0061-1L
		tr	Sh/Clst:	y gy, glauc		0061-2L
		tr	Sh/Clst:	brn gy, slt		0061-3L
		tr	Cont	: prp		0061-4L
		tr	Coal	: blk		0061-5L
		tr	Other	: pyr		0061-6L
1770.00		Båt	Tilj	L.Jurassic		0062
		100	S/Sst	: w to lt gy, l		0062-1L
		tr	Sh/Clst:	y gy, glauc		0062-2L
		tr	Sh/Clst:	brn gy, slt		0062-3L
		tr	Cont	: prp		0062-4L
		tr	Coal	: blk		0062-5L
		tr	Other	: pyr		0062-6L
1773.00		Båt	Tilj	L.Jurassic		0063
		100	S/Sst	: w to lt gy, l		0063-1L
		tr	Sh/Clst:	y gy, glauc		0063-2L
		tr	Sh/Clst:	brn gy, slt		0063-3L
		tr	Cont	: prp		0063-4L
		tr	Coal	: blk		0063-5L
		tr	Other	: pyr		0063-6L
1776.00		Båt	Tilj	L.Jurassic		0064
		100	S/Sst	: w to lt gy, l		0064-1L
		tr	Sh/Clst:	y gy, glauc		0064-2L
		tr	Sh/Clst:	brn gy, slt		0064-3L
		tr	Cont	: prp		0064-4L
		tr	Coal	: blk		0064-5L
		tr	Other	: pyr		0064-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1779.00			Båt	Tilj L.Jurassic		0065
	57.64		90	S/Sst : w to lt gy, l		0065-1L
			10	Coal : blk		0065-5L
			tr	Sh/Clst: y gy, glauc		0065-2L
			tr	Sh/Clst: brn gy, slt		0065-3L
			tr	Cont : prp		0065-4L
			tr	Other : pyr		0065-6L
1782.00			Båt	Tilj L.Jurassic		0066
			90	S/Sst : w to lt gy, l		0066-1L
			10	Coal : blk		0066-5L
			tr	Sh/Clst: y gy, glauc		0066-2L
			tr	Sh/Clst: brn gy, slt		0066-3L
			tr	Cont : prp		0066-4L
			tr	Other : pyr		0066-6L
1785.00			Båt	Tilj L.Jurassic		0067
	71.16		60	S/Sst : w to lt gy, l		0067-1L
			40	Coal : blk		0067-5L
			tr	Sh/Clst: y gy, glauc		0067-2L
			tr	Sh/Clst: brn gy, slt		0067-3L
			tr	Cont : prp		0067-4L
			tr	Other : pyr		0067-6L
1788.00			Båt	Åre L.Jurassic		0068
			95	S/Sst : w to lt gy, l		0068-1L
			5	Coal : blk		0068-5L
			tr	Sh/Clst: y gy, glauc		0068-2L
			tr	Sh/Clst: brn gy, slt		0068-3L
			tr	Cont : prp		0068-4L
			tr	Other : pyr		0068-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1791.00			Båt	Åre	L.Jurassic	0069
		95	S/Sst	: w to lt gy, l		0069-1L
		5	Coal	: blk		0069-5L
		tr	Sh/Clst:	y gy, glauc		0069-2L
		tr	Sh/Clst:	brn gy, slt		0069-3L
		tr	Cont	: prp		0069-4L
		tr	Other	: pyr		0069-6L
1794.00			Båt	Åre	L.Jurassic	0070
	1.41	40	Sh/Clst:	dsk brn to dsk y brn, carb		0070-7L
		25	Sh/Clst:	pl y brn, slt		0070-3L
		20	S/Sst	: w to lt gy, l		0070-1L
		15	Coal	: blk		0070-5L
		tr	Sh/Clst:	y gy, glauc		0070-2L
		tr	Cont	: prp		0070-4L
		tr	Other	: pyr		0070-6L
1798.00	ccp		Båt	Åre	L.Jurassic	0161
	2.26	100	Sh/Clst:	brn gy, slt, mic		0161-1L
1798.00	ccp					0177
	1.32	100	sltst	: brn gy, s, mic		0177-1L
1800.00			Båt	Åre	L.Jurassic	0001
		75	Sh/Clst:	y gy, glauc		0001-3L
	62.17	15	Coal	: blk		0001-1L
		10	S/Sst	: w to lt gy, l		0001-2L
		tr	Cont	: prp, fib		0001-4L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1801.00	ccp		Båt	Åre	L.Jurassic	0162
	3.23	100	Slstst	: brn gy, mic		0162-1L
1803.00	ccp					0178
	1.51	100	Slstst	: brn gy to lt brn gy, mic		0178-1L
1804.00	ccp		Båt	Åre	L.Jurassic	0163
	3.31	100	Slstst	: brn gy, mic		0163-1L
1807.00	ccp		Båt	Åre	L.Jurassic	0164
	5.03	100	Sh/Clst:	dsk y brn to brn blk, carb, mic		0164-1L
1807.40	ccp					0179
	2.04	100	Slstst	: lt gy to lt brn gy, cly		0179-1L
1809.00			Båt	Åre	L.Jurassic	0071
	61.85	35	Coal	: blk		0071-5L
		30	Sh/Clst:	y gy, glauc		0071-2L
		25	Sh/Clst:	m gy to pl y brn, slt		0071-3L
		10	Sh/Clst:	dsk brn to dsk y brn, carb		0071-7L
		tr	S/Sst	: w to lt gy, l		0071-1L
		tr	Cont	: prp		0071-4L
		tr	Other	: pyr		0071-6L
1812.00			Båt	Åre	L.Jurassic	0072
		65	Sh/Clst:	y gy to lt ol gy		0072-2L
	64.10	25	Coal	: blk		0072-5L
		10	Sh/Clst:	m gy to pl y brn, slt		0072-3L
		tr	S/Sst	: w to lt gy, l		0072-1L
		tr	Cont	: prp		0072-4L
		tr	Sh/Clst:	dsk brn to dsk y brn, carb		0072-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1818.00			Båt	Åre	L.Jurassic	0073
53.28		50	Coal	: blk		0073-5L
		20	Sh/Clst:	y gy to lt ol gy		0073-2L
		20	Sh/Clst:	m gy to pl y brn, slt		0073-3L
		10	S/Sst	: w to lt gy, l		0073-1L
		tr	Cont	: prp		0073-4L
		tr	Sh/Clst:	dsk brn to dsk y brn, carb		0073-6L
1821.00			Båt	Åre	L.Jurassic	0074
		60	S/Sst	: w to lt gy, l		0074-6L
		25	Sh/Clst:	y gy		0074-5L
		15	Coal	: blk		0074-1L
		tr	Cont	: Mica-ad, prp		0074-2L
		tr	Sh/Clst:	dsk y brn, carb		0074-3L
		tr	Sh/Clst:	m gy, slt		0074-4L
1824.00			Båt	Åre	L.Jurassic	0075
		75	S/Sst	: w to lt gy, l		0075-6L
		15	Coal	: blk		0075-1L
		10	Sh/Clst:	y gy		0075-5L
		tr	Cont	: Mica-ad, prp		0075-2L
		tr	Sh/Clst:	dsk y brn, carb		0075-3L
		tr	Sh/Clst:	m gy, slt		0075-4L
1827.00			Båt	Åre	L.Jurassic-Triassic	0076
51.40		85	Coal	: dsk y brn to blk		0076-1L
		15	Sh/Clst:	dsk brn to dsk y brn, carb		0076-2L
		tr	S/Sst	: w to lt gy, l		0076-3L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1830.00			Båt	Åre	L.Jurassic-Triassic	0077
	55.12	75	Coal	: dsk y brn to blk		0077-1L
		25	Sh/Clst:	dsk brn to dsk y brn, carb		0077-2L
			tr S/Sst	: w to lt gy, l		0077-3L
			tr Sh/Clst:	lt gy		0077-4L
1833.00			Båt	Åre	L.Jurassic-Triassic	0078
		50	Coal	: dsk y brn to blk		0078-1L
	43.13	50	Sh/Clst:	dsk brn to dsk y brn, carb		0078-2L
			tr S/Sst	: w to lt gy, l		0078-3L
			tr Sh/Clst:	lt gy		0078-4L
1836.00			Båt	Åre	L.Jurassic-Triassic	0079
		50	Coal	: dsk y brn to blk		0079-1L
	32.45	50	Sh/Clst:	dsk brn to dsk y brn, carb		0079-2L
			tr S/Sst	: w to lt gy, l		0079-3L
			tr Sh/Clst:	lt gy		0079-4L
1839.00			Båt	Åre	L.Jurassic-Triassic	0080
		75	Coal	: dsk y brn to blk		0080-1L
	65.93	25	Sh/Clst:	dsk brn to dsk y brn, carb		0080-2L
			tr S/Sst	: w to lt gy, l		0080-3L
			tr Sh/Clst:	lt gy		0080-4L
1848.00			Båt	Åre	L.Jurassic-Triassic	0081
		70	Coal	: dsk y brn to blk		0081-1L
	42.25	20	Sh/Clst:	dsk brn to dsk y brn, carb		0081-2L
		5	S/Sst	: w to lt gy, l		0081-3L
		5	Sh/Clst:	lt gy to y gy		0081-4L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1851.00		Båt	Åre	L.Jurassic-Triassic		0082
		35	S/Sst	: w to lt gy, l		0082-3L
		30	Coal	: dsk y brn to blk		0082-1L
42.01		30	Sh/Clst:	dsk brn to dsk y brn, carb		0082-2L
		5	Sh/Clst:	lt gy to y gy		0082-4L
1854.00		Båt	Åre	L.Jurassic-Triassic		0083
		50	S/Sst	: w to lt gy, l		0083-3L
		25	Coal	: dsk y brn to blk		0083-1L
29.47		25	Sh/Clst:	dsk brn to dsk y brn, carb		0083-2L
		tr	Sh/Clst:	lt gy to y gy		0083-4L
		tr	Cont	: Mica-ad		0083-5L
1857.00		Båt	Åre	L.Jurassic-Triassic		0084
		45	Coal	: dsk y brn to blk		0084-1L
17.52		45	Sh/Clst:	dsk brn to dsk y brn, carb		0084-2L
		10	S/Sst	: w to lt gy, l		0084-3L
		tr	Sh/Clst:	lt gy to y gy		0084-4L
		tr	Cont	: Mica-ad		0084-5L
1863.00		Båt	Åre	L.Jurassic-Triassic		0085
		55	S/Sst	: w to lt gy, l		0085-3L
		20	Coal	: dsk y brn to blk		0085-1L
22.13		20	Sh/Clst:	dsk brn to dsk y brn, carb		0085-2L
		5	Sh/Clst:	lt gy to y gy		0085-4L
		tr	Cont	: Mica-ad		0085-5L
1866.00		Båt	Åre	L.Jurassic-Triassic		0086
		55	S/Sst	: w to lt gy, l		0086-3L
		20	Coal	: dsk y brn to blk		0086-1L
22.77		20	Sh/Clst:	dsk brn to dsk y brn, carb		0086-2L
		5	Sh/Clst:	lt gy to y gy		0086-4L
		tr	Cont	: Mica-ad		0086-5L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1869.00			Båt	Åre	L.Jurassic-Triassic	0087
		60	S/Sst	: w to lt gy, l		0087-3L
		15	Coal	: dsk y brn to blk		0087-1L
19.39		15	Sh/Clst:	dsk brn to dsk y brn, carb		0087-2L
		10	Cont	: dd		0087-5L
		tr	Sh/Clst:	lt gy to y gy		0087-4L
1875.00			Båt	Åre	L.Jurassic-Triassic	0088
		80	S/Sst	: w to lt gy, l		0088-3L
		10	Coal	: dsk y brn to blk		0088-1L
		10	Sh/Clst:	dsk brn to dsk y brn, carb		0088-2L
		tr	Sh/Clst:	lt gy to y gy		0088-4L
		tr	Cont	: prp		0088-5L
1884.00			Båt	Åre	L.Jurassic-Triassic	0089
17.30		55	Sh/Clst:	dsk brn to dsk y brn, carb, mic		0089-2L
		30	Coal	: dsk y brn to blk		0089-1L
		15	S/Sst	: w to lt gy, l		0089-3L
		tr	Sh/Clst:	lt gy to y gy		0089-4L
		tr	Cont	: Mica-ad, prp, fib		0089-5L
1887.00			Båt	Åre	L.Jurassic-Triassic	0090
17.26		65	S/Sst	: w to lt gy, l		0090-3L
		25	Sh/Clst:	dsk brn to dsk y brn, carb, mic		0090-2L
		10	Coal	: dsk y brn to blk		0090-1L
		tr	Sh/Clst:	lt gy to y gy		0090-4L
		tr	Cont	: Mica-ad		0090-5L
1890.00			Båt	Åre	L.Jurassic-Triassic	0091
17.98		55	S/Sst	: w to lt gy, l		0091-3L
		25	Sh/Clst:	dsk brn to dsk y brn, carb, mic		0091-2L
		20	Coal	: dsk y brn to blk		0091-1L
		tr	Sh/Clst:	lt gy to y gy		0091-4L
		tr	Cont	: Mica-ad		0091-5L
		tr	Sh/Clst:	gy red to gy pi		0091-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1893.00			Båt	Åre	L.Jurassic-Triassic	0092
	30.07	55	S/Sst	: w to lt gy, l		0092-3L
		25	Sh/Clst	: dsk brn to dsk y brn, carb, mic		0092-2L
		20	Coal	: dsk y brn to blk		0092-1L
		tr	Sh/Clst	: lt gy to y gy		0092-4L
		tr	Cont	: Mica-ad		0092-5L
		tr	Sh/Clst	: gy red to gy pi		0092-6L
1905.00			Båt	Åre	L.Jurassic-Triassic	0093
		80	S/Sst	: w to lt gy, l		0093-3L
		10	Coal	: dsk y brn to blk		0093-1L
		10	Sh/Clst	: dsk brn to dsk y brn, carb, mic		0093-2L
		tr	Sh/Clst	: lt gy to y gy		0093-4L
		tr	Cont	: Mica-ad		0093-5L
		tr	Ca	: lt brn		0093-6L
1911.00			Båt	Åre	L.Jurassic-Triassic	0094
	53.38	75	S/Sst	: w to lt gy, l		0094-3L
		20	Coal	: dsk y brn to blk		0094-1L
		5	Sh/Clst	: dsk brn to dsk y brn, carb, mic		0094-2L
		tr	Sh/Clst	: lt gy to y gy		0094-4L
		tr	Cont	: Mica-ad		0094-5L
		tr	Ca	: lt brn to lt brn gy		0094-6L
1923.00			Båt	Åre	L.Jurassic-Triassic	0095
	37.51	45	S/Sst	: w to lt gy, l		0095-3L
		35	Coal	: dsk y brn to blk		0095-1L
		20	Sh/Clst	: dsk brn to dsk y brn, carb, mic		0095-2L
		tr	Sh/Clst	: lt gy to y gy		0095-4L
		tr	Ca	: lt brn to lt brn gy		0095-5L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
1926.00			Båt	Åre	L.Jurassic-Triassic	0096
			50	Coal	: dsk y brn to blk	0096-1L
			35	S/Sst	: w to lt gy, l	0096-3L
			15	Sh/Clst:	dsk brn to dsk y brn, carb, mic	0096-2L
			tr	Sh/Clst:	lt gy to y gy	0096-4L
			tr	Ca	: lt brn to lt brn gy	0096-5L
1929.00			Båt	Åre	L.Jurassic-Triassic	0097
			45	Coal	: dsk y brn to blk	0097-1L
47.43			35	Sh/Clst:	dsk brn to dsk y brn, carb, mic	0097-2L
			20	S/Sst	: w to lt gy, l	0097-3L
			tr	Sh/Clst:	lt gy to y gy	0097-4L
			tr	Ca	: lt brn to lt brn gy	0097-5L
1932.00			Båt	Åre	L.Jurassic-Triassic	0098
			70	Coal	: dsk y brn to blk	0098-1L
55.49			20	Sh/Clst:	dsk brn to dsk y brn, carb, mic	0098-2L
			10	S/Sst	: w to lt gy, l	0098-3L
			tr	Sh/Clst:	lt gy to y gy	0098-4L
			tr	Ca	: lt brn to lt brn gy	0098-5L
1935.00			Båt	Åre	L.Jurassic-Triassic	0099
			55	S/Sst	: w to lt gy, l	0099-3L
			35	Coal	: dsk y brn to blk	0099-1L
			10	Sh/Clst:	dsk brn to dsk y brn, carb, mic	0099-2L
			tr	Sh/Clst:	lt gy to y gy	0099-4L
			tr	Ca	: lt brn to lt brn gy	0099-5L
1938.00			Båt	Åre	L.Jurassic-Triassic	0100
			50	S/Sst	: w to lt gy, l	0100-3L
			35	Coal	: dsk y brn to blk	0100-1L
			10	Sh/Clst:	dsk brn to dsk y brn, carb, mic	0100-2L
			5	Ca	: lt brn to lt brn gy	0100-5L
			tr	Sh/Clst:	lt gy to y gy	0100-4L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1941.00			Båt	Åre	L.Jurassic-Triassic	0101
	0.22	50	S/Sst	: w to lt gy, l, kln		0101-3L
		40	Coal	: dsk y brn to blk		0101-1L
		10	Sh/Clst:	dsk brn to dsk y brn, carb, mic		0101-2L
		tr	Sh/Clst:	lt gy to y gy		0101-4L
		tr	Ca	: lt brn to lt brn gy		0101-5L
1944.00			Båt	Åre	L.Jurassic-Triassic	0102
	0.15	60	S/Sst	: w to lt gy, calc, cem, l, kln		0102-3L
		20	Coal	: dsk y brn to blk		0102-1L
		10	Sh/Clst:	dsk brn to dsk y brn, carb, mic		0102-2L
		10	Ca	: lt gy to lt or		0102-5L
		tr	Sh/Clst:	lt gy to y gy		0102-4L
1947.00			Båt	Åre	L.Jurassic-Triassic	0103
	0.16	65	S/Sst	: w to lt gy, calc, cem, l, kln		0103-3L
		20	Coal	: dsk y brn to blk		0103-1L
		10	Sh/Clst:	dsk brn to dsk y brn, carb, mic		0103-2L
		5	Ca	: lt gy to lt or		0103-5L
		tr	Sh/Clst:	lt gy to y gy		0103-4L
1950.00			Båt	Åre	L.Jurassic-Triassic	0104
		60	S/Sst	: w to lt gy, calc, l, kln		0104-3L
		30	Coal	: dsk y brn to blk		0104-1L
		10	Sh/Clst:	dsk brn to dsk y brn, carb, mic		0104-2L
		tr	Sh/Clst:	lt gy to y gy		0104-4L
		tr	Ca	: lt gy to lt or		0104-5L
1953.00			Båt	Åre	L.Jurassic-Triassic	0105
		75	Coal	: dsk y brn to blk		0105-1L
	27.40	20	Sh/Clst:	dsk brn to dsk y brn, carb, mic		0105-2L
		5	S/Sst	: w to lt gy, l		0105-3L
		tr	Sh/Clst:	lt gy to y gy		0105-4L
		tr	Ca	: lt gy to lt or		0105-5L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1956.00			Båt	Åre	L.Jurassic-Triassic	0106
	62.51	90	Coal	: dsk y brn to blk		0106-1L
		5	Sh/Clst:	dsk brn to dsk y brn, carb, mic		0106-2L
		5	S/Sst	: w to lt gy, l		0106-3L
		tr	Sh/Clst:	lt gy to y gy		0106-4L
		tr	Ca	: lt gy to lt or		0106-5L
1959.00			Båt	Åre	L.Jurassic-Triassic	0107
	55.33	75	Coal	: dsk y brn to blk		0107-1L
		20	S/Sst	: w to lt gy, l		0107-3L
		5	Sh/Clst:	dsk brn to dsk y brn, carb, mic		0107-2L
		tr	Sh/Clst:	lt gy to y gy		0107-4L
		tr	Ca	: lt gy to lt or		0107-5L
1962.00			Båt	Åre	L.Jurassic-Triassic	0108
		50	S/Sst	: w to lt gy, l		0108-3L
	56.67	45	Coal	: dsk y brn to blk		0108-1L
		5	Sh/Clst:	dsk brn to dsk y brn, carb, mic		0108-2L
		tr	Sh/Clst:	lt gy to y gy		0108-4L
		tr	Ca	: lt gy to lt or		0108-5L
1965.00			Båt	Åre	L.Jurassic-Triassic	0109
		75	S/Sst	: w to lt gy, l		0109-3L
	57.92	25	Coal	: dsk y brn to blk		0109-1L
		tr	Sh/Clst:	dsk brn to dsk y brn, carb		0109-2L
		tr	Sh/Clst:	lt gy to y gy		0109-4L
		tr	Ca	: lt gy to lt or		0109-5L
		tr	Cont	: Mica-ad		0109-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
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Int Cvd	TOC%	%	Lithology description			
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1968.00			Båt	Åre	L.Jurassic-Triassic	0110
		85	S/Sst	: w to lt gy, l		0110-3L
		15	Coal	: dsk y brn to blk		0110-1L
		tr	Sh/Clst:	dsk brn to dsk y brn, carb		0110-2L
		tr	Sh/Clst:	lt gy to y gy		0110-4L
		tr	Ca	: lt gy to lt or		0110-5L
		tr	Cont	: Mica-ad		0110-6L
1971.00			Båt	Åre	L.Jurassic-Triassic	0111
		90	S/Sst	: w to lt gy, l		0111-3L
		10	Coal	: dsk y brn to blk		0111-1L
		tr	Sh/Clst:	dsk brn to dsk y brn, carb		0111-2L
		tr	Sh/Clst:	lt gy to y gy		0111-4L
		tr	Ca	: lt gy to lt or		0111-5L
		tr	Cont	: Mica-ad		0111-6L
1974.00			Båt	Åre	L.Jurassic-Triassic	0112
		95	S/Sst	: w to lt gy, l		0112-3L
		5	Coal	: dsk y brn to blk		0112-1L
		tr	Sh/Clst:	dsk brn to dsk y brn, carb		0112-2L
		tr	Sh/Clst:	lt gy to y gy		0112-4L
		tr	Ca	: lt gy to lt or		0112-5L
		tr	Cont	: Mica-ad		0112-6L
1977.00			Båt	Åre	L.Jurassic-Triassic	0113
		95	S/Sst	: w to lt gy, l		0113-3L
		5	Coal	: dsk y brn to blk		0113-1L
		tr	Sh/Clst:	dsk brn to dsk y brn, carb		0113-2L
		tr	Sh/Clst:	lt gy to y gy		0113-4L
		tr	Ca	: lt gy to lt or		0113-5L
		tr	Cont	: Mica-ad		0113-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1980.00			Båt	Åre	L.Jurassic-Triassic	0114
	34.46	70	S/Sst	: w to lt gy, l		0114-3L
		20	Coal	: dsk y brn to blk		0114-1L
		10	Sh/Clst:	dsk brn to dsk y brn, carb		0114-2L
		tr	Sh/Clst:	lt gy to y gy		0114-4L
		tr	Ca	: lt gy to lt or		0114-5L
		tr	Cont	: Mica-ad		0114-6L
1983.00			Båt	Åre	L.Jurassic-Triassic	0115
		75	S/Sst	: w to lt gy, l		0115-3L
		15	Coal	: dsk y brn to blk		0115-1L
		10	Sh/Clst:	pl ol, slt		0115-7L
		tr	Sh/Clst:	dsk brn to dsk y brn, carb		0115-2L
		tr	Sh/Clst:	lt gy to y gy		0115-4L
		tr	Ca	: lt gy to lt or		0115-5L
		tr	Cont	: Mica-ad		0115-6L
1986.00			Båt	Åre	L.Jurassic-Triassic	0116
	42.74	40	Coal	: dsk y brn to blk		0116-1L
		40	Sh/Clst:	dsk brn to dsk y brn, carb		0116-2L
		20	S/Sst	: w to lt gy, l		0116-3L
		tr	Sh/Clst:	lt gy to y gy		0116-4L
		tr	Ca	: lt gy to lt or		0116-5L
		tr	Cont	: Mica-ad		0116-6L
1989.00			Båt	Åre	L.Jurassic-Triassic	0117
	25.64	50	Coal	: dsk y brn to blk		0117-1L
		50	Sh/Clst:	dsk brn to dsk y brn, carb		0117-2L
		tr	S/Sst	: w to lt gy, l		0117-3L
		tr	Sh/Clst:	lt gy to y gy		0117-4L
		tr	Ca	: lt gy to lt or		0117-5L
		tr	Cont	: Mica-ad		0117-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
1992.00			Båt	Åre	L.Jurassic-Triassic	0118
		45	Coal	: dsk y brn to blk		0118-1L
	20.75	45	Sh/Clst:	dsk brn to dsk y brn, carb		0118-2L
		10	S/Sst	: w to lt gy, l		0118-3L
		tr	Sh/Clst:	lt gy to y gy		0118-4L
		tr	Ca	: lt gy to lt or		0118-5L
1995.00			Båt	Åre	L.Jurassic-Triassic	0119
	19.98	40	Sh/Clst:	dsk brn to dsk y brn, carb		0119-2L
		35	Coal	: dsk y brn to blk		0119-1L
		25	S/Sst	: w to lt gy, l		0119-3L
		tr	Sh/Clst:	lt gy to y gy		0119-4L
		tr	Ca	: lt gy to lt or		0119-5L
1998.00			Båt	Åre	L.Jurassic-Triassic	0120
	61.34	90	Coal	: dsk y brn to blk		0120-1L
		10	Sh/Clst:	dsk brn to dsk y brn, carb		0120-2L
		tr	S/Sst	: w to lt gy, l		0120-3L
		tr	Sh/Clst:	lt gy to y gy		0120-4L
		tr	Ca	: lt gy to lt or		0120-5L
2001.00			Båt	Åre	L.Jurassic-Triassic	0121
	51.82	60	Coal	: dsk y brn to blk		0121-1L
	30.95	25	Sh/Clst:	dsk brn to dsk y brn, carb		0121-2L
		15	S/Sst	: w to or gy, calc, dol, cem, l		0121-3L
		tr	Sh/Clst:	lt gy to y gy		0121-4L
		tr	Ca	: lt gy to lt or		0121-5L
2004.00			Båt	Åre	L.Jurassic-Triassic	0122
	0.08	85	S/Sst	: w to or gy, calc, dol, cem, l		0122-3L
		10	Coal	: dsk y brn to blk		0122-1L
		5	Sh/Clst:	dsk brn to dsk y brn, carb		0122-2L
		tr	Sh/Clst:	lt gy to y gy		0122-4L
		tr	Ca	: lt gy to lt or		0122-5L
		tr	Cont	: prp		0122-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2010.00			Båt	Åre	L.Jurassic-Triassic	0123
	0.09		85	S/Sst : w to or gy, calc, dol, cem, 1		0123-3L
			10	Coal : dsk y brn to blk		0123-1L
			5	Sh/Clst: dsk brn to dsk y brn, carb		0123-2L
			tr	Sh/Clst: lt gy to y gy		0123-4L
			tr	Ca : lt gy to lt or		0123-5L
			tr	Cont : prp		0123-6L
2013.00			Båt	Åre	L.Jurassic-Triassic	0124
			90	S/Sst : w to or gy, calc, dol, cem, 1		0124-3L
			5	Coal : dsk y brn to blk		0124-1L
			5	Sh/Clst: dsk brn to dsk y brn, carb		0124-2L
			tr	Sh/Clst: lt gy to y gy		0124-4L
			tr	Ca : lt gy to lt or		0124-5L
			tr	Cont : prp		0124-6L
2016.00			Båt	Åre	L.Jurassic-Triassic	0125
	0.13		95	S/Sst : w to or gy, calc, dol, cem, 1		0125-3L
			5	Coal : dsk y brn to blk		0125-1L
			tr	Sh/Clst: dsk brn to dsk y brn, carb		0125-2L
			tr	Sh/Clst: lt gy to y gy		0125-4L
			tr	Ca : lt gy to lt or, dol		0125-5L
2019.00			Båt	Åre	L.Jurassic-Triassic	0126
			85	S/Sst : w to or gy, calc, dol, cem, 1		0126-3L
			5	Coal : dsk y brn to blk		0126-1L
			5	Sh/Clst: dsk brn to dsk y brn, carb		0126-2L
			5	Sh/Clst: lt gy		0126-4L
			tr	Ca : lt gy to lt or, dol		0126-5L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2022.00			Båt	Åre	L.Jurassic-Triassic	0127
	12.88		75	S/Sst : w to or gy, calc, dol, cem, 1		0127-3L
			20	Sh/Clst: dsk brn to dsk y brn, carb		0127-2L
			5	Coal : dsk y brn to blk		0127-1L
			tr	Sh/Clst: lt gy		0127-4L
			tr	Ca : lt gy to lt or, dol		0127-5L
			tr	Cont : tar-ad		0127-6L
2025.00			Båt	Åre	L.Jurassic-Triassic	0128
	0.10		85	S/Sst : w to or gy, calc, dol, cem, 1		0128-3L
			10	Sh/Clst: dsk brn to dsk y brn, carb		0128-2L
			5	Coal : dsk y brn to blk		0128-1L
			tr	Sh/Clst: lt gy		0128-4L
			tr	Ca : lt gy to lt or, dol		0128-5L
			tr	Cont : prp		0128-6L
			tr	Sh/Clst: lt ol gy, slt		0128-7L
2028.00			Båt	Åre	L.Jurassic-Triassic	0129
			75	S/Sst : w to or gy, calc, dol, cem, 1		0129-3L
			10	Coal : dsk y brn to blk		0129-1L
			10	Sh/Clst: dsk brn to dsk y brn, carb		0129-2L
			5	Ca : lt gy to lt or, dol		0129-5L
			tr	Sh/Clst: lt gy		0129-4L
			tr	Cont : prp		0129-6L
			tr	Other : pyr		0129-7L
2043.00			Båt	Åre	L.Jurassic-Triassic	0130
			85	S/Sst : w to or gy, calc, dol, cem, 1		0130-3L
			10	Sh/Clst: dsk brn to brn gy, carb, mic		0130-2L
			5	Coal : dsk y brn to blk		0130-1L
			tr	Sh/Clst: lt gy		0130-4L
			tr	Ca : lt gy to lt or, dol		0130-5L
			tr	Other : pyr		0130-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
2052.00			Båt	Åre	L.Jurassic-Triassic	0131
	0.12	85	S/Sst	: w to or gy, calc, dol, cem, l		0131-3L
		15	Sh/Clst	: dsk brn to brn gy, carb, mic		0131-2L
			tr Coal	: dsk y brn to blk		0131-1L
			tr Sh/Clst	: lt gy		0131-4L
			tr Ca	: lt gy to lt or, dol		0131-5L
			tr Cont	: prp		0131-6L
2055.00					Triassic-?Grey Beds	0132
		75	S/Sst	: w to or gy, calc, dol, cem, l		0132-3L
		15	Sh/Clst	: dsk brn to brn gy to drk gy, carb, mic		0132-2L
		5	Coal	: dsk y brn to blk		0132-1L
		5	Sltst	: lt ol gy		0132-7L
			tr Sh/Clst	: lt gy		0132-4L
			tr Ca	: lt gy to lt or, dol		0132-5L
			tr Cont	: prp		0132-6L
2058.00					Triassic-?Grey Beds	0133
		65	S/Sst	: w to or gy, calc, dol, cem, l		0133-3L
	2.65	35	Sh/Clst	: dsk brn to m gy to drk gy, mic		0133-2L
			tr Coal	: dsk y brn to blk		0133-1L
			tr Sh/Clst	: lt gy		0133-4L
			tr Ca	: lt gy to lt or, dol		0133-5L
			tr Cont	: prp		0133-6L
2070.00					Triassic-?Grey Beds	0134
	3.66	75	Sh/Clst	: dsk brn to m gy to drk gy, mic		0134-2L
		25	S/Sst	: w to or gy, calc, dol, cem, l		0134-3L
			tr Coal	: dsk y brn to blk		0134-1L
			tr Sh/Clst	: lt gy		0134-4L
			tr Ca	: lt gy to lt or, dol		0134-5L
			tr Cont	: prp		0134-6L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2073.00				Triassic-?Grey Beds		0135
	4.39	85	Sh/Clst:	dsk brn to m gy to drk gy, mic		0135-2L
		10	S/Sst	: w to or gy, calc, dol, cem, l		0135-3L
		5	Ca	: lt gy to lt or, dol		0135-4L
		tr	Coal	: dsk y brn to blk		0135-1L
		tr	Cont	: prp		0135-5L
2076.00				Triassic-?Grey Beds		0136
	3.18	80	Sh/Clst:	m gy to drk gy, mic		0136-2L
		10	S/Sst	: w to or gy, l		0136-3L
		10	Sltst	: pl brn, mic		0136-6L
		tr	Coal	: dsk y brn to blk		0136-1L
		tr	Ca	: lt gy to lt or, dol		0136-4L
		tr	Cont	: prp		0136-5L
2079.00				Triassic-?Grey Beds		0137
	6.03	85	Sh/Clst:	m gy to drk gy, mic		0137-2L
		10	S/Sst	: w to or gy, l		0137-3L
		5	Ca	: lt gy to lt or, dol		0137-4L
		tr	Coal	: dsk y brn to blk		0137-1L
		tr	Cont	: prp		0137-5L
2109.00				Triassic-?Grey Beds		0138
	3.20	90	Sh/Clst:	m gy to drk gy, mic		0138-2L
		10	S/Sst	: w, calc, cem, l		0138-3L
		tr	Coal	: dsk y brn to blk		0138-1L
		tr	Ca	: lt gy to lt or, dol		0138-4L
2112.00				Triassic-?Grey Beds		0139
	3.32	90	Sh/Clst:	m gy to drk gy, mic, fos		0139-2L
		10	S/Sst	: w, calc, cem, l		0139-3L
		tr	Coal	: dsk y brn to blk		0139-1L
		tr	Ca	: lt gy to lt or, dol		0139-4L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int Cvd	TOC%	%	Lithology description			
2115.00				Triassic-?Grey Beds		0140
	4.13	95	Sh/Clst:	m gy to drk gy, mic, fos		0140-2L
		5	S/Sst	: w, calc, cem, l		0140-3L
		tr	Coal	: dsk y brn to blk		0140-1L
		tr	Ca	: lt gy to lt or, dol		0140-4L
2118.00				Triassic-?Grey Beds		0141
	3.41	95	Sh/Clst:	m gy to drk gy, mic, fos		0141-2L
		5	S/Sst	: w, calc, cem, l		0141-3L
		tr	Coal	: dsk y brn to blk		0141-1L
2121.00				Triassic-?Grey Beds		0142
	3.23	95	Sh/Clst:	m gy to drk gy, mic, fos		0142-2L
		5	S/Sst	: w, calc, cem, l		0142-3L
		tr	Coal	: dsk y brn to blk		0142-1L
2124.00				Triassic-?Grey Beds		0143
	4.95	95	Sh/Clst:	m gy to drk gy, mic, fos		0143-2L
		5	S/Sst	: w, calc, cem, l		0143-3L
		tr	Coal	: dsk y brn to blk		0143-1L
2127.00				Triassic-?Red Beds		0144
	3.44	90	Sh/Clst:	m gy to drk gy, mic, fos		0144-2L
		10	Marl	: gn gy		0144-4L
		tr	Coal	: dsk y brn to blk		0144-1L
		tr	S/Sst	: w, calc, cem, l		0144-3L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2133.00				Triassic-?Red Beds		0145
	5.29	80	Sh/Clst:	m gy to drk gy, mic, fos		0145-2L
		20	Marl	: gn gy		0145-4L
		tr	Coal	: dsk y brn to blk		0145-1L
		tr	S/Sst	: w, calc, cem, l		0145-3L
2136.00				Triassic-?Red Beds		0146
	3.77	55	Sh/Clst:	m gy to drk gy, mic, fos		0146-2L
		45	Marl	: gn gy		0146-4L
		tr	Coal	: dsk y brn to blk		0146-1L
		tr	S/Sst	: w, calc, cem, l		0146-3L
2139.00				Triassic-?Red Beds		0147
		55	Marl	: gn gy, gy red		0147-4L
	3.53	45	Sh/Clst:	brn gy to m gy to drk gy, mic, fos		0147-2L
		tr	Coal	: dsk y brn to blk		0147-1L
		tr	S/Sst	: w, calc, cem, l		0147-3L
2142.00				Triassic-?Red Beds		0148
		75	Marl	: gn gy, gy red		0148-4L
		25	Sh/Clst:	brn gy to m gy to drk gy, mic, fos		0148-2L
		tr	Coal	: dsk y brn to blk		0148-1L
		tr	S/Sst	: w, calc, cem, l		0148-3L
2145.00				Triassic-?Red Beds		0149
	0.30	80	Marl	: gn gy, gy red		0149-4L
		20	Sh/Clst:	brn gy to m gy to drk gy, mic, fos		0149-2L
		tr	Coal	: dsk y brn to blk		0149-1L
		tr	S/Sst	: w, calc, cem, l		0149-3L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2148.00				Triassic-?Red Beds		0150
			70	Marl : gn gy, gy red		0150-4L
			30	Sh/Clst: brn gy to m gy to drk gy, mic, fos		0150-2L
			tr	Coal : dsk y brn to blk		0150-1L
			tr	S/Sst : w, calc, cem, l		0150-3L
2151.00				Triassic-?Red Beds		0151
			75	Marl : gn gy, gy red		0151-4L
	2.94		25	Sh/Clst: brn gy to m gy to drk gy, mic, fos		0151-2L
			tr	Coal : dsk y brn to blk		0151-1L
			tr	S/Sst : w, calc, cem, l		0151-3L
2154.00				Triassic-?Red Beds		0152
	0.19		90	Marl : gn gy, gy red		0152-4L
			10	Sh/Clst: brn gy, mic, fos		0152-2L
			tr	Coal : dsk y brn to blk		0152-1L
			tr	S/Sst : w, calc, cem, l		0152-3L
2157.00				Triassic-?Red Beds		0153
			85	Marl : gn gy, gy red		0153-4L
			15	Sh/Clst: brn gy, mic, fos		0153-2L
			tr	Coal : dsk y brn to blk		0153-1L
			tr	S/Sst : w, calc, cem, l		0153-3L
2160.00				Triassic-?Red Beds		0154
	0.25		95	Marl : gn gy, gy red		0154-4L
			5	Sh/Clst: brn gy, mic, fos		0154-2L
			tr	Coal : dsk y brn to blk		0154-1L
			tr	S/Sst : w, calc, cem, l		0154-3L

Table 1 : Lithology description for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Type	Grp	Frm	Age	Trb	Sample
Int	Cvd	TOC%	%	Lithology description		
2163.00				Triassic-?Red Beds		0155
			90	Marl : gn gy, gy red		0155-4L
			10	Sh/Clst: brn gy, mic, fos		0155-2L
			tr	Coal : dsk y brn to blk		0155-1L
			tr	S/Sst : w, calc, cem, l		0155-3L
2166.00				Triassic-?Red Beds		0156
			95	Marl : gn gy, gy red		0156-4L
			5	Sh/Clst: brn gy, mic, fos		0156-2L
			tr	Coal : dsk y brn to blk		0156-1L
			tr	S/Sst : w, calc, cem, l		0156-3L

Table 2 : Rock-Eval table for well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1400.00	cut	Sh/Clst: y gy to lt ol gy, lt gy	0.03	0.54	0.92	0.59	1.40	39	66	0.6	0.05	423	0011-2L
1518.00	cut	Sh/Clst: lt brn gy to lt gy	0.01	0.11	0.53	0.21	0.39	28	136	0.1	0.08	419	0013-3L
1560.00	cut	Sh/Clst: lt gy to y gy to lt ol gy	0.02	0.09	0.55	0.16	0.36	25	153	0.1	0.18	405	0016-2L
1584.00	cut	Sh/Clst: lt gy to y gy to lt ol gy	0.09	0.14	0.36	0.39	0.48	29	75	0.2	0.39	330	0018-2L
1593.00	cut	Sh/Clst: lt brn gy to m gy	0.01	0.14	0.53	0.26	0.51	27	104	0.2	0.07	418	0019-3L
1614.00	cut	Sh/Clst: lt gy to y gy to lt ol gy	0.02	0.17	1.51	0.11	0.47	36	321	0.2	0.11	406	0020-2L
1623.00	cut	Sh/Clst: lt brn gy to m gy	0.01	0.21	0.97	0.22	0.88	24	110	0.2	0.05	408	0022-3L
1626.00	cut	Sh/Clst: lt gy to y gy	0.05	0.26	0.70	0.37	0.58	45	121	0.3	0.16	416	0023-2L
1632.00	cut	Sh/Clst: lt brn gy to m gy	0.01	0.36	0.86	0.42	1.27	28	68	0.4	0.03	410	0024-3L
1638.00	cut	Sh/Clst: lt brn gy to m gy	0.04	0.57	0.97	0.59	1.35	42	72	0.6	0.07	421	0025-3L
1644.00	cut	Sh/Clst: lt gy to y gy	-	0.04	0.28	0.14	0.13	31	215	-	-	432	0026-2L
1644.00	ccp	S/Sst : lt brn gy	0.17	0.49	0.87	0.56	0.58	84	150	0.7	0.26	427	0174-1L
1645.00	ccp	Sltst : lt brn gy to brn gy	0.06	1.22	1.12	1.09	1.16	105	97	1.3	0.05	430	0157-1L
1648.00	ccp	S/Sst : pl y brn	-	0.41	0.92	0.45	0.33	124	279	0.4	-	464	0158-1L
1649.00	ccp	Sltst : lt brn gy	0.01	0.12	0.44	0.27	0.17	71	259	0.1	0.08	500	0175-1L

Table 2 : Rock-Eval table for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1651.00	ccp	S/Sst : pl y brn	-	0.27	0.38	0.71	0.30	90	127	0.3	-	451	0159-1L
1654.00	ccp	S/Sst : w	0.02	0.09	0.14	0.64	0.13	69	108	0.1	0.18	460	0160-1L
1656.00	cut	Sh/Clst: lt brn gy to m gy	0.04	0.87	1.19	0.73	1.72	51	69	0.9	0.04	420	0027-3L
1659.00	cut	Sh/Clst: lt brn gy to m gy	-	0.07	0.66	0.11	0.32	22	206	0.1	-	339	0028-3L
1662.00	cut	Sltst : lt ol gy	-	0.14	0.73	0.19	0.53	26	138	0.1	-	410	0029-4L
1665.00	cut	Sltst : lt ol gy	0.01	0.40	1.13	0.35	1.10	36	103	0.4	0.02	416	0030-4L
1668.00	cut	Sh/Clst: lt brn gy to m gy	0.02	0.37	0.76	0.49	0.87	43	87	0.4	0.05	405	0031-3L
1674.00	cut	Sh/Clst: lt brn gy to m gy	0.01	0.28	1.79	0.16	1.45	19	123	0.3	0.03	406	0033-3L
1683.00	cut	Sh/Clst: m gy	0.04	0.62	2.45	0.25	2.50	25	98	0.7	0.06	402	0036-3L
1686.00	cut	Sh/Clst: m gy	0.03	0.43	0.85	0.51	1.11	39	77	0.5	0.07	412	0037-3L
1689.00	cut	Sh/Clst: m gy	0.05	1.37	1.13	1.21	1.92	71	59	1.4	0.04	419	0038-3L
1695.00	cut	Coal : blk	0.59	68.95	26.86	2.57	71.30	97	38	69.5	0.01	425	0040-6L
1701.00	cut	Coal : blk	0.72	79.63	29.81	2.67	72.20	110	41	80.3	0.01	421	0042-6L
1707.00	cut	Sh/Clst: y gy	0.01	0.45	1.22	0.37	1.38	33	88	0.5	0.02	421	0044-2L
1716.00	cut	Sh/Clst: lt gy to brn gy	-	0.05	1.04	0.05	0.13	38	800	0.1	-	403	0046-3L

Table 2 : Rock-Eval table for well NOCS 6609/10-1

Page: 3

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1731.00	cut	S/Sst : w to m gy	-	0.08	0.98	0.08	0.52	15	188	0.1	-	421	0049-1L
1734.00	cut	S/Sst : lt gy	-	0.07	0.73	0.10	0.44	16	166	0.1	-	421	0050-1L
1737.00	cut	S/Sst : lt gy	-	0.04	0.58	0.07	0.23	17	252	-	-	368	0051-1L
1740.00	cut	S/Sst : lt gy	-	0.05	0.50	0.10	0.29	17	172	0.1	-	352	0052-1L
1743.00	cut	Sh/Clst: lt gy to brn gy	0.03	0.55	1.28	0.43	1.50	37	85	0.6	0.05	416	0053-3L
1749.00	cut	Sh/Clst: lt gy	0.03	0.50	1.03	0.49	1.28	39	80	0.5	0.06	420	0055-3L
1755.00	cut	S/Sst : w to lt gy	-	0.09	2.48	0.04	0.53	17	468	0.1	-	430	0057-1L
1761.00	cut	S/Sst : lt gy	-	0.06	2.12	0.03	0.41	15	517	0.1	-	392	0059-1L
1779.00	cut	Coal : blk	0.84	52.81	17.32	3.05	57.64	92	30	53.7	0.02	427	0065-5L
1785.00	cut	Coal : blk	0.45	67.35	22.75	2.96	71.16	95	32	67.8	0.01	424	0067-5L
1794.00	cut	Sh/Clst: dsk brn to dsk y brn	0.03	0.79	1.12	0.71	1.41	56	79	0.8	0.04	417	0070-7L
1798.00	ccp	Sh/Clst: brn gy	0.07	1.85	0.83	2.23	2.26	82	37	1.9	0.04	428	0161-1L
1798.00	ccp	Sltst : brn gy	0.10	0.15	0.59	0.25	1.32	11	45	0.3	0.40	430	0177-1L
1800.00	cut	Coal : blk	0.74	48.70	22.96	2.12	62.17	78	37	49.4	0.01	426	0001-1L
1801.00	ccp	Sltst : brn gy	0.08	3.69	9.15	0.40	3.23	114	283	3.8	0.02	428	0162-1L

Table 2 : Rock-Eval table for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1803.00	ccp	Sltst : brn gy to lt brn gy	0.24	3.78	4.43	0.85	1.51	250	293	4.0	0.06	430	0178-1L
1804.00	ccp	Sltst : brn gy	0.06	4.01	10.80	0.37	3.31	121	326	4.1	0.01	428	0163-1L
1807.00	ccp	Sh/Clst: dsk y brn to brn blk	0.08	1.37	1.70	0.81	5.03	27	34	1.5	0.06	434	0164-1L
1807.40	ccp	Sltst : lt gy to lt brn gy	0.19	1.61	1.55	1.04	2.04	79	76	1.8	0.11	431	0179-1L
1809.00	cut	Coal : blk	0.43	60.65	18.91	3.21	61.85	98	31	61.1	0.01	424	0071-5L
1812.00	cut	Coal : blk	0.43	62.02	17.82	3.48	64.10	97	28	62.5	0.01	425	0072-5L
1818.00	cut	Coal : blk	0.35	38.77	17.36	2.23	53.28	73	33	39.1	0.01	427	0073-5L
1827.00	cut	Coal : dsk y brn to blk	0.60	53.20	16.00	3.33	51.40	104	31	53.8	0.01	430	0076-1L
1830.00	cut	Coal : dsk y brn to blk	0.80	55.40	19.00	2.92	55.12	101	34	56.2	0.01	427	0077-1L
1833.00	cut	Sh/Clst: dsk brn to dsk y brn	1.16	64.00	11.70	5.47	43.13	148	27	65.2	0.02	421	0078-2L
1836.00	cut	Sh/Clst: dsk brn to dsk y brn	1.18	75.55	11.89	6.35	32.45	233	37	76.7	0.02	425	0079-2L
1839.00	cut	Coal : dsk y brn to blk	0.58	54.11	22.50	2.40	65.93	82	34	54.7	0.01	429	0080-1L
1848.00	cut	Sh/Clst: dsk brn to dsk y brn	1.18	75.73	13.71	5.52	42.25	179	32	76.9	0.02	423	0081-2L
1851.00	cut	Sh/Clst: dsk brn to dsk y brn	0.95	66.69	14.78	4.51	42.01	159	35	67.6	0.01	422	0082-2L
1854.00	cut	Sh/Clst: dsk brn to dsk y brn	0.93	50.07	10.23	4.89	29.47	170	35	51.0	0.02	421	0083-2L

Table 2 : Rock-Eval table for well NOCS 6609/10-1

Page: 5

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1857.00	cut	Sh/Clst: dsk brn to dsk y brn	0.79	47.46	10.06	4.72	17.52	271	57	48.3	0.02	424	0084-2L
1863.00	cut	Sh/Clst: dsk brn to dsk y brn	0.72	42.57	7.86	5.42	22.13	192	36	43.3	0.02	428	0085-2L
1866.00	cut	Sh/Clst: dsk brn to dsk y brn	0.64	44.10	7.75	5.69	22.77	194	34	44.7	0.01	428	0086-2L
1869.00	cut	Sh/Clst: dsk brn to dsk y brn	0.82	52.50	6.25	8.40	19.39	271	32	53.3	0.02	428	0087-2L
1884.00	cut	Sh/Clst: dsk brn to dsk y brn	0.49	34.94	5.24	6.67	17.30	202	30	35.4	0.01	427	0089-2L
1887.00	cut	Sh/Clst: dsk brn to dsk y brn	0.54	38.91	8.68	4.48	17.26	225	50	39.5	0.01	427	0090-2L
1890.00	cut	Sh/Clst: dsk brn to dsk y brn	0.49	22.49	6.09	3.69	17.98	125	34	23.0	0.02	426	0091-2L
1893.00	cut	Sh/Clst: dsk brn to dsk y brn	0.99	50.43	11.08	4.55	30.07	168	37	51.4	0.02	424	0092-2L
1911.00	cut	Coal : dsk y brn to blk	0.43	36.73	19.56	1.88	53.38	69	37	37.2	0.01	434	0094-1L
1923.00	cut	Sh/Clst: dsk brn to dsk y brn	0.66	46.34	13.25	3.50	37.51	124	35	47.0	0.01	427	0095-2L
1929.00	cut	Sh/Clst: dsk brn to dsk y brn	1.05	59.61	13.81	4.32	47.43	126	29	60.7	0.02	424	0097-2L
1932.00	cut	Coal : dsk y brn to blk	0.54	53.24	20.67	2.58	55.49	96	37	53.8	0.01	427	0098-1L
1941.00	cut	S/Sst : w to lt gy	-	0.06	2.09	0.03	0.22	27	950	0.1	-	421	0101-3L
1944.00	cut	S/Sst : w to lt gy	-	0.04	0.44	0.09	0.15	27	293	-	-	361	0102-3L
1947.00	cut	S/Sst : w to lt gy	-	0.03	0.39	0.08	0.16	19	244	-	-	304	0103-3L

Table 2 : Rock-Eval table for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
1953.00	cut	Sh/Clst: dsk brn to dsk y brn	0.60	29.68	9.01	3.29	27.40	108	33	30.3	0.02	426	0105-2L
1956.00	cut	Coal : dsk y brn to blk	0.42	41.91	17.87	2.35	62.51	67	29	42.3	0.01	433	0106-1L
1959.00	cut	Coal : dsk y brn to blk	0.68	45.17	15.74	2.87	55.33	82	28	45.8	0.01	430	0107-1L
1962.00	cut	Coal : dsk y brn to blk	0.63	41.91	18.08	2.32	56.67	74	32	42.5	0.01	429	0108-1L
1965.00	cut	Coal : dsk y brn to blk	1.50	44.71	18.86	2.37	57.92	77	33	46.2	0.03	432	0109-1L
1980.00	cut	Coal : dsk y brn to blk	0.65	26.73	9.34	2.86	34.46	78	27	27.4	0.02	434	0114-1L
1986.00	cut	Sh/Clst: dsk brn to dsk y brn	0.75	48.92	11.11	4.40	42.74	114	26	49.7	0.02	427	0116-2L
1989.00	cut	Sh/Clst: dsk brn to dsk y brn	0.43	38.04	6.29	6.05	25.64	148	25	38.5	0.01	427	0117-2L
1992.00	cut	Sh/Clst: dsk brn to dsk y brn	0.58	46.32	7.30	6.35	20.75	223	35	46.9	0.01	428	0118-2L
1995.00	cut	Sh/Clst: dsk brn to dsk y brn	0.60	40.11	6.24	6.43	19.98	201	31	40.7	0.01	425	0119-2L
1998.00	cut	Coal : dsk y brn to blk	0.61	43.87	18.57	2.36	61.34	72	30	44.5	0.01	430	0120-1L
2001.00	cut	Coal : dsk y brn to blk	0.93	47.06	16.80	2.80	51.82	91	32	48.0	0.02	430	0121-1L
2001.00	cut	Sh/Clst: dsk brn to dsk y brn	0.94	43.76	7.84	5.58	30.95	141	25	44.7	0.02	427	0121-2L
2004.00	cut	S/Sst : w to or gy	-	0.03	1.08	0.03	0.08	38	1350	-	-	432	0122-3L
2010.00	cut	S/Sst : w to or gy	-	-	0.94	-	0.09	-	1044	-	-	378	0123-3L

Table 2 : Rock-Eval table for well NOCS 6609/10-1

Page: 7

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
2016.00	cut	S/Sst : w to or gy	0.01	0.06	1.22	0.05	0.13	46	938	0.1	0.14	372	0125-3L
2022.00	cut	Sh/Clst: dsk brn to dsk y brn	0.15	20.82	2.07	10.06	12.88	162	16	21.0	0.01	429	0127-2L
2025.00	cut	S/Sst : w to or gy	-	0.04	1.13	0.04	0.10	40	1130	-	-	418	0128-3L
2052.00	cut	S/Sst : w to or gy	-	0.07	1.30	0.05	0.12	58	1083	0.1	-	389	0131-3L
2058.00	cut	Sh/Clst: dsk brn to m gy to drk gy	-	2.27	0.97	2.34	2.65	86	37	2.3	-	431	0133-2L
2070.00	cut	Sh/Clst: dsk brn to m gy to drk gy	0.01	3.22	0.85	3.79	3.66	88	23	3.2	-	433	0134-2L
2073.00	cut	Sh/Clst: dsk brn to m gy to drk gy	0.01	3.68	1.09	3.38	4.39	84	25	3.7	-	431	0135-2L
2076.00	cut	Sh/Clst: m gy to drk gy	0.02	2.39	0.86	2.78	3.18	75	27	2.4	0.01	434	0136-2L
2079.00	cut	Sh/Clst: m gy to drk gy	0.08	9.91	1.20	8.26	6.03	164	20	10.0	0.01	433	0137-2L
2109.00	cut	Sh/Clst: m gy to drk gy	0.01	6.09	0.61	9.98	3.20	190	19	6.1	-	436	0138-2L
2112.00	cut	Sh/Clst: m gy to drk gy	0.01	6.91	0.61	11.33	3.32	208	18	6.9	-	437	0139-2L
2115.00	cut	Sh/Clst: m gy to drk gy	0.04	11.44	0.78	14.67	4.13	277	19	11.5	-	435	0140-2L
2118.00	cut	Sh/Clst: m gy to drk gy	0.05	8.82	0.68	12.97	3.41	259	20	8.9	0.01	438	0141-2L
2121.00	cut	Sh/Clst: m gy to drk gy	0.03	8.73	0.53	16.47	3.23	270	16	8.8	-	438	0142-2L
2124.00	cut	Sh/Clst: m gy to drk gy	0.05	22.67	0.75	30.23	4.95	458	15	22.7	-	438	0143-2L

Table 2 : Rock-Eval table for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Typ	Lithology	S1	S2	S3	S2/S3	TOC	HI	OI	PP	PI	Tmax	Sample
2127.00	cut	Sh/Clst: m gy to drk gy	0.05	11.34	0.57	19.89	3.44	330	17	11.4	-	437	0144-2L
2133.00	cut	Sh/Clst: m gy to drk gy	0.08	15.38	0.90	17.09	5.29	291	17	15.5	0.01	436	0145-2L
2136.00	cut	Sh/Clst: m gy to drk gy	0.06	11.26	0.67	16.81	3.77	299	18	11.3	0.01	438	0146-2L
2139.00	cut	Sh/Clst: brn gy to m gy to drk gy	0.03	7.80	0.63	12.38	3.53	221	18	7.8	-	438	0147-2L
2145.00	cut	Marl : gn gy, gy red	-	0.13	0.22	0.59	0.30	43	73	0.1	-	429	0149-4L
2151.00	cut	Sh/Clst: brn gy to m gy to drk gy	0.03	4.96	0.70	7.09	2.94	169	24	5.0	0.01	436	0151-2L
2154.00	cut	Marl : gn gy, gy red	-	0.05	0.17	0.29	0.19	26	89	0.1	-	421	0152-4L
2160.00	cut	Marl : gn gy, gy red	-	0.08	0.20	0.40	0.25	32	80	0.1	-	423	0154-4L

Table 3 : Pyrolysis GC Data (S2 peak) as Percentage of Total Area for Well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

Depth	Typ	Lithology	C1	C2-C5	C6-C14	C15+	S2 from Rock-Eval	Sample
1644.00	ccp	S/Sst : lt brn gy	6.37	22.55	45.75	25.33	0.49	0174-1L
1645.00	ccp	Sltst : lt brn gy to brn gy	22.71	27.54	32.54	17.22	1.22	0157-1L
1654.00	ccp	S/Sst : w	10.47	35.88	42.26	11.39	0.09	0160-1L
1701.00	cut	Coal : blk	15.73	18.80	43.17	22.30	79.63	0042-6L
1785.00	cut	Coal : blk	14.49	18.69	38.07	28.76	67.35	0067-5L
1800.00	cut	Coal : blk	16.78	17.39	37.20	28.63	48.70	0001-1L
1801.00	ccp	Sltst : brn gy	12.82	24.81	43.79	18.57	3.69	0162-1L
1803.00	ccp	Sltst : brn gy to lt brn gy	6.89	16.43	43.09	33.59	3.78	0178-1L
1804.00	ccp	Sltst : brn gy	8.22	18.81	41.80	31.17	4.01	0163-1L
1807.40	ccp	Sltst : lt gy to lt brn gy	10.23	21.42	45.96	22.39	1.61	0179-1L
1809.00	cut	Coal : blk	10.73	15.38	35.42	38.47	60.65	0071-5L
1827.00	cut	Coal : dsk y brn to blk	11.99	11.82	36.57	39.62	53.20	0076-1L
1833.00	cut	Sh/Clst: dsk brn to dsk y brn	9.68	10.87	40.24	39.22	64.00	0078-2L
1836.00	cut	Sh/Clst: dsk brn to dsk y brn	10.15	9.91	38.82	41.12	75.55	0079-2L

Table 3 : Pyrolysis GC Data (S2 peak) as Percentage of Total Area for Well NOCS 6609/10-1

Depth unit of measure: m

Depth	Typ	Lithology	C1	C2-C5	C6-C14	C15+	S2 from Rock-Eval	Sample
1851.00	cut	Sh/Clst: dsk brn to dsk y brn	10.89	11.72	37.78	39.61	66.69	0082-2L
1857.00	cut	Sh/Clst: dsk brn to dsk y brn	10.09	11.85	36.80	41.21	47.46	0084-2L
1866.00	cut	Sh/Clst: dsk brn to dsk y brn	5.04	8.70	39.84	46.42	44.10	0086-2L
1884.00	cut	Sh/Clst: dsk brn to dsk y brn	7.30	10.32	36.80	45.58	34.94	0089-2L
1890.00	cut	Sh/Clst: dsk brn to dsk y brn	9.12	15.10	32.45	43.34	22.49	0091-2L
1911.00	cut	Coal : dsk y brn to blk	16.07	20.47	34.62	28.85	36.73	0094-1L
1929.00	cut	Sh/Clst: dsk brn to dsk y brn	11.35	13.06	35.65	39.95	59.61	0097-2L
1953.00	cut	Sh/Clst: dsk brn to dsk y brn	14.71	19.72	30.34	35.23	29.68	0105-2L
1959.00	cut	Coal : dsk y brn to blk	14.20	14.06	34.41	37.32	45.17	0107-1L
1965.00	cut	Coal : dsk y brn to blk	17.33	16.00	36.39	30.28	44.71	0109-1L
1980.00	cut	Coal : dsk y brn to blk	11.88	16.47	33.65	37.99	26.73	0114-1L
1986.00	cut	Sh/Clst: dsk brn to dsk y brn	10.12	11.94	37.14	40.80	48.92	0116-2L
1992.00	cut	Sh/Clst: dsk brn to dsk y brn	9.94	11.88	36.10	42.08	46.32	0118-2L
1998.00	cut	Coal : dsk y brn to blk	15.70	13.14	33.61	37.56	43.87	0120-1L

Table 3 : Pyrolysis GC Data (S2 peak) as Percentage of Total Area for Well NOCS 6609/10-1

Page: 3

Depth unit of measure: m

Depth	Typ	Lithology	C1	C2-C5	C6-C14	C15+	S2 from Rock-Eval	Sample
2001.00	cut	Sh/Clst: dsk brn to dsk y brn	11.49	12.73	39.56	36.22	43.76	0121-2L
2022.00	cut	Sh/Clst: dsk brn to dsk y brn	6.86	17.47	36.37	39.30	20.82	0127-2L
2079.00	cut	Sh/Clst: m gy to drk gy	8.37	18.76	37.95	34.91	9.91	0137-2L
2112.00	cut	Sh/Clst: m gy to drk gy	6.38	17.69	41.82	34.12	6.91	0139-2L
2118.00	cut	Sh/Clst: m gy to drk gy	5.70	16.25	40.30	37.76	8.82	0141-2L
2124.00	cut	Sh/Clst: m gy to drk gy	4.99	13.82	44.57	36.61	22.67	0143-2L
2133.00	cut	Sh/Clst: m gy to drk gy	4.05	7.63	48.10	40.22	15.38	0145-2L
2139.00	cut	Sh/Clst: brn gy to m gy to drk gy	6.19	16.18	39.21	38.42	7.80	0147-2L

Table 4 a: Weight of EOM and Chromatographic Fraction for well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

Depth	Typ	Lithology	Rock Extracted (g)	EOM (mg)	Sat (mg)	Aro (mg)	Asph (mg)	NSO (mg)	HC (mg)	Non-HC (mg)	TOC(e) (%)	Sample
1701.00	com	Composite sample - see table 4 e	1.0	5.1	0.8	0.9	1.3	2.2	1.6	3.5	52.80	0165-0B
1804.00	com	Composite sample - see table 4 e	9.5	5.4	0.4	0.8	1.5	2.7	1.2	4.2	3.04	0166-0B
1851.00	com	Composite sample - see table 4 e	2.1	9.9	1.5	0.8	2.7	4.9	2.3	7.7	40.50	0167-0B
1890.00	com	Composite sample - see table 4 e	2.6	9.1	1.5	2.7	1.0	3.9	4.2	4.9	32.80	0168-0B
1929.00	com	Composite sample - see table 4 e	1.6	8.2	1.0	2.1	2.0	3.1	3.1	5.1	37.30	0169-0B
1980.00	com	Composite sample - see table 4 e	2.0	10.4	1.4	2.5	3.4	3.1	3.9	6.5	56.40	0170-0B
1995.00	com	Composite sample - see table 4 e	1.6	5.5	0.9	1.8	1.5	1.3	2.7	2.8	27.80	0171-0B
2121.00	com	Composite sample - see table 4 e	5.7	2.0	1.2	0.6	0.1	0.1	1.8	0.2	3.76	0172-0B
2136.00	com	Composite sample - see table 4 e	3.0	1.9	0.8	0.6	0.3	0.3	1.4	0.5	3.85	0173-0B

Table 4 b: Concentration of EOM and Chromatographic Fraction (wt ppm rock) for well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
1701.00	com	Composite sample - see table 4 e	4857	714	857	1238	2047	1571	3285	0165-0B
1804.00	com	Composite sample - see table 4 e	569	47	79	158	284	126	442	0166-0B
1851.00	com	Composite sample - see table 4 e	4691	710	355	1279	2345	1066	3625	0167-0B
1890.00	com	Composite sample - see table 4 e	3513	579	1042	386	1505	1621	1891	0168-0B
1929.00	com	Composite sample - see table 4 e	5030	644	1288	1226	1871	1932	3098	0169-0B
1980.00	com	Composite sample - see table 4 e	5333	692	1307	1743	1589	2000	3333	0170-0B
1995.00	com	Composite sample - see table 4 e	3395	555	1111	925	802	1666	1728	0171-0B
2121.00	com	Composite sample - see table 4 e	353	212	106	17	17	318	35	0172-0B
2136.00	com	Composite sample - see table 4 e	637	251	201	100	83	453	184	0173-0B

Table 4 c: Concentration of EOM and Chromatographic Fraction (mg/g TOC(e)) for well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

Depth	Typ	Lithology	EOM	Sat	Aro	Asph	NSO	HC	Non-HC	Sample
1701.00	com	Composite sample - see table 4 e	9.20	1.35	1.62	2.34	3.88	2.98	6.22	0165-0B
1804.00	com	Composite sample - see table 4 e	18.72	1.56	2.60	5.20	9.36	4.16	14.56	0166-0B
1851.00	com	Composite sample - see table 4 e	11.59	1.76	0.88	3.16	5.79	2.63	8.95	0167-0B
1890.00	com	Composite sample - see table 4 e	10.71	1.77	3.18	1.18	4.59	4.94	5.77	0168-0B
1929.00	com	Composite sample - see table 4 e	13.49	1.73	3.45	3.29	5.02	5.18	8.31	0169-0B
1980.00	com	Composite sample - see table 4 e	9.46	1.23	2.32	3.09	2.82	3.55	5.91	0170-0B
1995.00	com	Composite sample - see table 4 e	12.21	2.00	4.00	3.33	2.89	6.00	6.22	0171-0B
2121.00	com	Composite sample - see table 4 e	9.41	5.65	2.82	0.47	0.47	8.47	0.94	0172-0B
2136.00	com	Composite sample - see table 4 e	16.56	6.54	5.23	2.61	2.18	11.77	4.79	0173-0B

Table 4 d: Composition of material extracted from the rock (%) for well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

Depth	Typ	Lithology	Sat	Aro	Asph	NSO	HC	Non-HC	Sat	HC	Sample
			EOM	EOM	EOM	EOM	EOM	EOM	Aro	Non-HC	
1701.00	com	Composite sample - see table 4 e	14.71	17.65	25.49	42.16	32.35	67.65	83.33	47.83	0165-0B
1804.00	com	Composite sample - see table 4 e	8.33	13.89	27.78	50.00	22.22	77.78	60.00	28.57	0166-0B
1851.00	com	Composite sample - see table 4 e	15.15	7.58	27.27	50.00	22.73	77.27	200.00	29.41	0167-0B
1890.00	com	Composite sample - see table 4 e	16.48	29.67	10.99	42.86	46.15	53.85	55.56	85.71	0168-0B
1929.00	com	Composite sample - see table 4 e	12.80	25.61	24.39	37.20	38.41	61.59	50.00	62.38	0169-0B
1980.00	com	Composite sample - see table 4 e	12.98	24.52	32.69	29.81	37.50	62.50	52.94	60.00	0170-0B
1995.00	com	Composite sample - see table 4 e	16.36	32.73	27.27	23.64	49.09	50.91	50.00	96.43	0171-0B
2121.00	com	Composite sample - see table 4 e	60.00	30.00	5.00	5.00	90.00	10.00	200.00	900.00	0172-0B
2136.00	com	Composite sample - see table 4 e	39.47	31.58	15.79	13.16	71.05	28.95	125.00	245.45	0173-0B

Depth unit of measure: m

NOTE: Depths shown in tables 4 a to d correspond to the composite samples' lower depth.

Upper depth	Lower depth	Typ	Sample	Depth	Typ	Lithology	Sample
1695.00	1701.00	com	0165-0B is composed of:	1695.00	cut	Coal : blk	0040-6L
				1701.00	cut	Coal : blk	0042-6L
1801.00	1804.00	com	0166-0B is composed of:	1801.00	ccp	Sltst : brn gy, mic	0162-1L
				1804.00	ccp	Sltst : brn gy, mic	0163-1L
1833.00	1851.00	com	0167-0B is composed of:	1833.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0078-2L
				1836.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0079-2L
				1848.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0081-2L
				1851.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0082-2L
1854.00	1890.00	com	0168-0B is composed of:	1854.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0083-2L
				1857.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0084-2L
				1863.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0085-2L
				1866.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0086-2L
				1869.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0087-2L
				1884.00	cut	Sh/Clst: dsk brn to dsk y brn, carb, mic	0089-2L
				1887.00	cut	Sh/Clst: dsk brn to dsk y brn, carb, mic	0090-2L
				1890.00	cut	Sh/Clst: dsk brn to dsk y brn, carb, mic	0091-2L

Depth unit of measure: m

NOTE: Depths shown in tables 4 a to d correspond to the composite samples' lower depth.

Upper depth	Lower depth	Typ	Sample	Depth	Typ	Lithology	Sample
1893.00	1929.00	com	0169-0B is composed of:	1893.00	cut	Sh/Clst: dsk brn to dsk y brn, carb, mic	0092-2L
				1923.00	cut	Sh/Clst: dsk brn to dsk y brn, carb, mic	0095-2L
				1929.00	cut	Sh/Clst: dsk brn to dsk y brn, carb, mic	0097-2L
1956.00	1980.00	com	0170-0B is composed of:	1956.00	cut	Coal : dsk y brn to blk	0106-1L
				1959.00	cut	Coal : dsk y brn to blk	0107-1L
				1962.00	cut	Coal : dsk y brn to blk	0108-1L
				1965.00	cut	Coal : dsk y brn to blk	0109-1L
				1980.00	cut	Coal : dsk y brn to blk	0114-1L
1986.00	1995.00	com	0171-0B is composed of:	1986.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0116-2L
				1989.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0117-2L
				1992.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0118-2L
				1995.00	cut	Sh/Clst: dsk brn to dsk y brn, carb	0119-2L
2109.00	2121.00	com	0172-0B is composed of:	2109.00	cut	Sh/Clst: m gy to drk gy, mic	0138-2L
				2112.00	cut	Sh/Clst: m gy to drk gy, mic, fos	0139-2L
				2115.00	cut	Sh/Clst: m gy to drk gy, mic, fos	0140-2L
				2118.00	cut	Sh/Clst: m gy to drk gy, mic, fos	0141-2L
				2121.00	cut	Sh/Clst: m gy to drk gy, mic, fos	0142-2L

Depth unit of measure: m

NOTE: Depths shown in tables 4 a to d correspond to the composite samples' lower depth.

<u>Upper depth</u>	<u>Lower depth</u>	<u>Typ</u>	<u>Sample</u>	<u>Depth</u>	<u>Typ</u>	<u>Lithology</u>	<u>Sample</u>
2124.00	2136.00	com	0173-0B is composed of:	2124.00	cut	Sh/Clst: m gy to drk gy, mic, fos	0143-2L
				2127.00	cut	Sh/Clst: m gy to drk gy, mic, fos	0144-2L
				2133.00	cut	Sh/Clst: m gy to drk gy, mic, fos	0145-2L
				2136.00	cut	Sh/Clst: m gy to drk gy, mic, fos	0146-2L

Table 5 : Saturated Hydrocarbon Ratios for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Typ	Lithology	Pristane	Pristane	Pristane + Phytane	Phytane	CPI	Sample
			nC17	Phytane	nC17 + nC18	nC18		
1701.00	com	bulk	0.62	1.12	0.61	0.60	0.72	0165-0B
1804.00	com	bulk	1.32	3.27	1.08	0.68	1.63	0166-0B
1851.00	com	bulk	1.58	3.25	1.09	0.55	1.02	0167-0B
1890.00	com	bulk	1.02	3.46	0.75	0.39	1.63	0168-0B
1929.00	com	bulk	1.81	3.63	1.28	0.62	1.70	0169-0B
1980.00	com	bulk	1.28	3.24	0.98	0.55	1.77	0170-0B
1995.00	com	bulk	1.60	3.89	1.01	0.41	2.80	0171-0B
2121.00	com	bulk	0.81	2.27	0.65	0.45	1.84	0172-0B
2136.00	com	bulk	0.80	2.29	0.63	0.43	2.01	0173-0B

Table 6 : Aromatic Hydrocarbon Ratios for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Typ	Lithology	MNR	DMNR	BPhR	2/1MP	MPI1	MPI2	Rc	DBT/P	4/1MDBT	(3+2) /1MDBT	Sample
1701.00	com	bulk	-	-	-	-	-	-	-	-	-	-	0165-0B
1804.00	com	bulk	-	0.95	-	1.06	0.80	0.79	0.88	0.59	2.30	-	0166-0B
1851.00	com	bulk	-	-	-	-	-	-	-	-	-	-	0167-0B
1890.00	com	bulk	-	0.39	-	-	-	-	-	-	-	-	0168-0B
1929.00	com	bulk	-	-	-	1.03	0.69	0.78	0.81	-	-	-	0169-0B
1980.00	com	bulk	-	0.41	-	0.83	0.36	0.73	0.62	0.28	-	-	0170-0B
1995.00	com	bulk	-	-	-	0.99	0.33	0.66	0.60	-	-	-	0171-0B
2121.00	com	bulk	-	-	-	1.03	0.81	0.79	0.89	-	-	-	0172-0B
2136.00	com	bulk	-	-	-	0.80	0.64	0.48	0.78	-	-	-	0173-0B

Table 7 : Thermal Maturity Data for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Typ Lithology	Vitrinite Reflectance (%)	Number of Readings	Standard Deviation	Spore Fluorescence Colour	SCI	T _{max} (°C)	Sample
1400.00	cut bulk	0.38	15	0.05	3	-	-	0011-0B
1533.00	cut bulk	0.36	2	0.05	3	-	-	0014-0B
1593.00	cut bulk	0.43	9	0.04	4	-	-	0019-0B
1632.00	cut bulk	0.41	11	0.03	4	-	-	0024-0B
1645.00	ccp Sltst : lt brn gy to brn gy	-	-	-	-	5.0	430	0157-1L
1656.00	cut bulk	0.40	21	0.05	4	-	-	0027-0B
1695.00	cut Coal : blk	-	-	-	-	4.5	425	0040-6L
1698.00	cut bulk	0.44	51	0.03	4	-	-	0041-0B
1743.00	cut bulk	0.46	18	0.03	4	-	-	0053-0B
1752.00	cut bulk	0.43	20	0.03	4	-	-	0056-0B
1785.00	cut bulk	0.44	50	0.03	4.5	-	-	0067-0B
1785.00	cut Coal : blk	-	-	-	-	4.5	424	0067-5L
1798.00	ccp bulk	0.48	28	0.05	4.5	-	-	0161-0B
1801.00	ccp Sltst : brn gy	-	-	-	-	5.0	428	0162-1L

Table 7 : Thermal Maturity Data for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Typ Lithology	Vitrinite Reflectance (%)	Number of Readings	Standard Deviation	Spore Fluorescence Colour	SCI	T _{max} (°C)	Sample
1807.00	ccp bulk	0.43	11	0.05	5 (?)	-	-	0164-0B
1827.00	cut bulk	0.49	50	0.05	4.7	-	-	0076-0B
1836.00	cut Sh/Clst: dsk brn to dsk y brn	-	-	-	-	5.0-5.5	425	0079-2L
1857.00	cut bulk	0.47	30	0.05	5	-	-	0084-0B
1866.00	cut bulk	0.43	30	0.03	4	-	-	0086-0B
1866.00	cut Sh/Clst: dsk brn to dsk y brn	-	-	-	-	4.5-5.0	428	0086-2L
1926.00	cut bulk	0.49	30	0.05	4.6	-	-	0096-0B
1956.00	cut bulk	0.47	30	0.04	4.6	-	-	0106-0B
1959.00	cut Coal : dsk y brn to blk	-	-	-	-	5.0-5.5	430	0107-1L
1992.00	cut Sh/Clst: dsk brn to dsk y brn	-	-	-	-	5.5	428	0118-2L
2001.00	cut bulk	0.47	29	0.04	5	-	-	0121-0B
2001.00	cut Sh/Clst: dsk brn to dsk y brn	-	-	-	-	5.5-6.0	427	0121-2L
2058.00	cut Sh/Clst: dsk brn to m gy to drk gy	-	-	-	-	5.5-6.0	431	0133-2L
2073.00	cut bulk	0.48	19	0.04	5	-	-	0135-0B

Table 7 : Thermal Maturity Data for well NOCS 6609/10-1

Page: 3

Depth unit of measure: m

Depth	Typ	Lithology	Vitrinite Reflectance (%)	Number of Readings	Standard Deviation	Spore Fluorescence Colour	SCI	T _{max} (°C)	Sample
2109.00	cut	Sh/Clst: m gy to drk gy	-	-	-	-	5.5-6.0	436	0138-2L
2118.00	cut	bulk	0.50	19	0.04	5.2	-	-	0141-0B
2124.00	cut	Sh/Clst: m gy to drk gy	-	-	-	-	5.5	438	0143-2L
2151.00	cut	bulk	0.50	6	0.05	5	-	-	0151-0B

Table 8 : Visual Kerogen Composition Data for well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

Depth	Typ	Lithology	L	A	L	S	C		D		I	S	I	M	S		V	C	V	A	
			I	m	i	p	u	R	A	i	N	F	e	n	i	B	I	T	o	i	B
			P	r	D	P	i	s	g	o	R	s	F	D	r	e	R	e	l	D	r
			T	e	o	c	i	a	f	i	T	i	u	e	n	o	I	n	n	t	V
			%	L	t	l	l	n	e	l	%	n	s	t	n		%	n	n	t	V
																					Sample
1645.00	ccp	Sltst : lt brn gy to brn gy	30		*	**	*	**			5	*					65	*	**		0157-1L
1695.00	cut	Coal : blk	5			*	*	**			20	*	*				75	*	**		0040-6L
1785.00	cut	Coal : blk	5			*	*	**			20	*	*				75	*	**		0067-5L
1801.00	ccp	Sltst : brn gy	30			*	*	**			15	**	*				55	**	*	*	0162-1L
1836.00	cut	Sh/Clst: dsk brn to dsk y brn	35			*	*	**			10	*	*	**			55	*	**		0079-2L
1866.00	cut	Sh/Clst: dsk brn to dsk y brn	20		*	*		**			5		*	*			75	*	*		0086-2L
1959.00	cut	Coal : dsk y brn to blk	5			*	*	**			10		*	*			85	*	*	*	0107-1L
1992.00	cut	Sh/Clst: dsk brn to dsk y brn	15	*		*	*	**			15	*	*	*			70	*	**		0118-2L
2001.00	cut	Sh/Clst: dsk brn to dsk y brn	20			*	*	**			10	*	*	*			70	*	*	**	0121-2L
2058.00	cut	Sh/Clst: dsk brn to m gy to drk gy	15			*		**			15	*	**				70	*	**		0133-2L
2109.00	cut	Sh/Clst: m gy to drk gy	60	*	*	*	*	**			10	*	*				30	*	**		0138-2L
2124.00	cut	Sh/Clst: m gy to drk gy	75	*		*		**			5	*	*	*			20	*	**		0143-2L

Table 9a : Tabulation of carbon isotope data for EOM/EOM - fractions or Oils for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Typ	Lithology	EOM/Oil	Saturated	Aromatic	NSO	Asphaltenes	Kerogen	Sample
1803.00	ccp		-	-30.29	-27.78	-26.80	-27.11	-	0178-1L
1929.00	com	Composite sample	-	-32.98	-28.42	-28.92	-27.96	-	0169-0B
2136.00	com	Composite sample	-	-33.75	-31.39	-30.17	-28.95	-	0173-0B

Table 9b : Tabulation of cv values from carbon isotope data for well NOCS 6609/10-1

Depth unit of measure: m

Depth	Typ	Lithology	Saturated	Aromatic	cv value	Interpretation	Sample
1803.00	ccp		-30.29	-27.78	3.31	Terrigenous	0178-1L
1929.00	com	Composite sample	-32.98	-28.42	8.70	Terrigenous	0169-0B
2136.00	com	Composite sample	-33.75	-31.39	4.05	Terrigenous	0173-0B

Table 10A: Variation in Triterpane Distribution (peak height) for Well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

Depth	Lithology	B/A	B/B+A	B	C/E	C/C+E	X/E	Z/E	Z/C	Z/Z+E	Q/E	E/E+F	C+D	D+F/C+E	J1	Sample
				B+E+F									C+D+E+F		J1+J2%	
1803.00	Sltst	-	1.00	0.15	0.47	0.32	-	0.05	0.11	0.05	-	0.81	0.40	0.42	-	0178-1
1929.00	Sh/Clst	-	1.00	0.18	0.51	0.34	-	0.03	0.07	0.03	-	0.82	0.44	0.43	-	0169-0
2136.00	Sh/Clst	7.64	0.88	0.09	0.46	0.32	-	0.23	0.49	0.19	-	0.86	0.40	0.33	9.25	0173-0

Table 10B: Variation in Sterane Distribution (peak height) for Well NOCS 6609/10-1

Depth unit of measure: m

Depth	Lithology	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Ratio10	Sample
1803.00	Sltst	-	5.01	58.64	0.07	0.93	0.16	0.13	0.41	0.05	0.75	0178-1
1929.00	Sh/Clst	-	7.50	64.24	0.22	0.92	0.12	0.10	0.47	0.08	0.97	0169-0
2136.00	Sh/Clst	0.02	8.60	46.58	0.12	0.84	0.03	0.02	0.30	0.09	0.48	0173-0

Ratio1: $a / a + j$

Ratio2: $q / q + t * 100\%$

Ratio3: $2(r + s) / (q + t + 2(r + s)) * 100\%$

Ratio4: $a + b + c + d / h + k + l + n$

Ratio5: $r + s / r + s + q$

Ratio6: $u + v / u + v + q + r + s + t$

Ratio7: $u + v / u + v + i + m + n + q + r + s + t$

Ratio8: $r + s / q + r + s + t$

Ratio9: q / t

Ratio10: $r + s / t$

Table 10C: Raw GCMS triterpane data (peak height) for Well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

Depth	Lithology	p	q	r	s	t	a	b	z	c	Sample
		x	d	e	f	g	h	i	j1		
		j2	k1	k2	l1	l2	m1	m2			
1803.00	sltst	2.14	0.00	0.00	9.80	0.00	0.00	100.44	24.08	219.09	0178-1
		0.00	172.41	469.35	113.30	7.14	165.07	62.73	0.00		
		69.34	0.00	0.00	0.00	0.00	0.00	0.00			
1929.00	Sh/Clst	6.09	0.00	0.00	14.96	5.63	0.00	150.42	19.16	293.76	0169-0
		2.66	243.02	570.42	124.86	10.39	221.49	109.79	0.00		
		99.12	4.43	0.00	0.00	0.00	0.00	0.00			
2136.00	Sh/Clst	5.18	0.00	5.08	15.59	5.24	24.22	185.00	349.85	712.96	0173-0
		5.07	491.63	1534.34	257.81	66.07	402.44	147.12	14.64		
		143.58	0.00	0.00	0.00	0.00	0.00	0.00			

Table 10D: Raw GCMS sterane data (peak height) for Well NOCS 6609/10-1

Depth unit of measure: m

Depth	Lithology	u	v	a	b	c	d	e	f	g	Sample
		h	i	j	k	l	m	n	o		
		p	q	r	s	t					
1803.00	Sltst	7.30	2.32	0.00	0.93	0.00	0.00	0.00	0.00	35.09	0178-1
		4.34	3.26	3.09	1.40	3.76	1.16	5.18	4.25	5.97	
			1.49	10.55	10.55	28.28					
1929.00	Sh/Clst	6.99	5.87	0.00	4.61	1.00	0.00	0.00	0.96	55.47	0169-0
		10.11	6.69	8.26	0.77	2.31	2.93	2.76	13.07	5.92	
			3.61	25.71	17.50	44.50					
2136.00	Sh/Clst	7.40	1.27	1.77	1.67	0.00	2.21	0.00	0.00	25.15	0173-0
		72.98	12.19	9.66	70.77	6.89	1.68	7.42	26.66	38.38	
			19.63	49.75	49.75	208.57					

Table 10E: Variation in Monoaromatic Sterane Distribution for Well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Ratio3</u>	<u>Ratio4</u>	<u>Sample</u>
1803.00	Sltst	0.33	0.51	0.08	0.12	0178-1
1929.00	Sh/Clst	0.38	0.47	0.08	0.08	0169-0
2136.00	Sh/Clst	0.32	0.40	0.13	0.12	0173-0

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

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

Table 10F: Variation in Triaromatic Sterane Distribution for Well NOCS 6609/10-1

Depth unit of measure: m

Depth	Lithology	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Sample
1803.00	Sltst	1.00	-	1.00	1.00	1.00	0178-1
1929.00	Sh/Clst	0.94	0.74	0.75	0.83	0.86	0169-0
2136.00	Sh/Clst	0.57	0.58	0.30	0.28	0.38	0173-0

Ratio1: $a1 / a1 + g1$ Ratio2: $b1 / b1 + g1$ Ratio3: $a1 + b1 / a1 + b1 + c1 + d1 + e1 + f1 + g1$ Ratio4: $a1 / a1 + e1 + f1 + g1$ Ratio5: $a1 / a1 + d1$

Table 10G: Aromatisation of Steranes for Well NOCS 6609/10-1

Depth unit of measure: m

<u>Depth</u>	<u>Lithology</u>	<u>Ratio1</u>	<u>Ratio2</u>	<u>Sample</u>
1803.00	Sltst	1.00	-	0178-1
1929.00	Sh/Clst	0.97	0.02	0169-0
2136.00	Sh/Clst	0.96	0.03	0173-0

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

Ratio2: $g1 / g1 + I1$

Table 10H: Raw GCMS monoaromatic sterane data (peak height) for Well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

Depth	Lithology	a1	b1	c1	d1	e1	f1	g1	h1	i1	Sample
1803.00	Sltst	1.27	2.65	0.65	0.64	2.54	0.96	11.43	8.62	5.10	0178-1
1929.00	Sh/Clst	3.24	4.70	0.81	0.65	5.38	0.00	29.52	27.73	22.35	0169-0
2136.00	Sh/Clst	19.53	27.40	16.92	14.79	41.95	3.48	88.76	95.25	73.72	0173-0

Table 10I: Raw GCMS trioaromatic sterane data (peak height) for Well NOCS 6609/10-1

Page: 1

Depth unit of measure: m

Depth	Lithology	a1	b1	c1	d1	e1	f1	g1	Sample
1803.00	Sltst	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0178-1
1929.00	Sh/Clst	8.10	1.41	0.16	1.32	0.59	0.52	0.50	0169-0
2136.00	Sh/Clst	3.16	3.26	1.33	5.19	3.99	1.79	2.38	0173-0