

GEOCHEMICAL REPORT

NORSK HYDRO A/S

6407/7-1

As Compiled by:-

EXPLORATION LOGGING NORGE A/S

SOURCE ROCK STUDIES UNIT 175

POLAR PIONEER, SEMI-SUBMERSIBLE

- 8 APR. 1986
REGISTRERT
OLJEDIREKTORATET



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EXPLORATION LOGGING NORGE A/S

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WELL AND RIG DATA

Company : Norsk Hydro A/S
Well Name : 6407/7-1
Well Type : Exploration
Location : Haltenbanken, Offshore Norway
Position : Latitude 64° 16' 30.6" N
Longitude 07° 12' 20.5" E
RKB - MSL : 23m
RKS - SB : 353m
Spud Date : 19 October 1985
Completion Date : 17 February 1986
Total Depth : 3950m
Rig : Polar Pioneer
Exlog Unit : 175
Geochemists : Simon Reed Hugh Mac Ewan



INTRODUCTION

6407/7-1 was an exploratory well drilled in the Haltenbanken offshore region of Norway. The well reached a total depth of 3950m. Geochemical evaluation was performed on sample material down to 3750m by Exploration Logging Norge A/S. Source rock Studies Unit 175. Analysis was performed using the well known Rock Eval Pyrolysis technique in the form of the Oil Shows Analyser.

SAMPLE INTERVALS

Eight hundred and ninety four samples were analysed for the interval 1180 to 3750m. Samples were taken at 10m intervals from 1180m to 1650m, 5m intervals to 2650m and at 2m and 3m intervals to 3750m. Of the total number of samples, two hundred and seventy three were core chips and sixty nine were sidewall core chips.

SAMPLE PREPARATION

Samples were received as unwashed material. Each sample was taken and thoroughly washed in cold water through coarse (#8 mesh) and fine (#170 mesh) screens. Material retained in the fine screen was used for analysis. At this stage, any large quantities of contaminants such as LCM were removed. The washed material was then examined under a binocular microscope, and any



further contaminants or cavings removed. The sample was then air dried at room temperature to prevent any loss of low temperature volatile hydrocarbons and bagged in readiness for analysis.

The cuttings were analysed un-crushed, to trap and retain the gaseous hydrocarbons (S0). Core and sidewall core chips were crushed before analysis.

Every effort was made to analyse the argillaceous component of the bulk cuttings samples. However, through the more arenaceous sections, with low quantities of clay, shale or siltstone, the sample was analysed as a whole.



POLLUTION AND SAMPLE CONTROL

The effects of pollution if unrecognised can result in misleading geochemical information. The major contaminants encountered at the wellsite are oil in the mud, pipe dope and organic mud additives. Samples received from 6407/7-1 contained XP 20 and Resinex, lignite based additives, diesel, paint flakes and metal swarf.

XP 20 and Resinex were only added after the 9 5/8" casing was set at 2700m. Every care was taken to remove these additives from the sample and as such little, if any, effects can be noted on the geochemical data.

The presence of migrated oil or bitumen in the rock can give a major response in the vicinity of 300 degrees centigrade on the pyrogram (S1) while solid bitumen and the 'heavy end' fraction of petroleum has been found to produce a measurable response in the region 300-500 degrees centigrade, i.e. in the same region where kerogen conversion to hydrocarbons occurs. Thus, large quantities of bitumen or migrated petroleum in rocks can affect the size and maximum temperature of the (S2) peak and cause non-source rocks to be falsely identified as source rocks as reported by Clementz (1979)*.

The problems encountered as a result of hydrocarbon pollution can be overcome by solvent extraction. The sample is extracted using 50:50 solution of trichloroethane and acetone.



Solvent extraction was performed on 11 cuttings and 22 core samples. The majority of the potential reservoir zone between 2700 and 3100m had volatile hydrocarbon values (S1) above 1mgHC/g rock. However, to avoid loss of formation hydrocarbon data it was decided not to solvent extract. The majority of these samples were sandstone composites and as such had very low quantities of kerogen.

*Clementz, D 1979 'Effects of oil and bitumen saturation on source rock pyrolysis', A.A.P.G. Bull, vol 62 (12).



CONTAMINATION NOTE

The affects of contamination are usually recognised as follows:

1. Excessively large S2 and TOC values.
2. Anomalous Tmax values.

All Tmax values below 400 and above 500 degrees centigrade are considered, at the present time, to be of little interpretative value and are entered in the data printout as 0. The reasons for Tmax values above and below this range are several fold.

1. Where samples with lean S2 values are encountered, anomalous Tmax values can result. For the purpose of the data set in this report, all values of Tmax derived from S2 figures below 0.20mgHC/g rock have been edited to zero.

2. Mud additives contamination can also result in depressed or elevated Tmax values.

3. Turbo drilling and coring practices are also responsible for elevated maturity values.

4. S2 and TOC values are likely to increase where lignite or organic polymer based mud additives are used. However this was not observed in 6407/7-1.



DESCRIPTION OF ANALYTICAL EQUIPMENT

The instrument used to evaluate the well samples was an Oil Shows Analyser.

GENERAL PRINCIPLES

PYROLYSIS AND TOTAL ORGANIC CARBON USING THE O.S.A.

Small samples (100mg) of rock are analysed by programmed pyrolysis in an inert atmosphere. The hydrocarbons and evolved gases are detected by gas chromatographic techniques using a flame ionisation detector. The output from this sensor provides the peak data for the S0, S1 and S2 indices. In addition, the temperature, T_{max} , for maximum generation of cracked hydrocarbons is measured by a probe monitoring oven temperature.

On completion of the pyrolysis cycle the sample is transferred to a second oven. The sample is then heated in air and any carbonaceous material remaining is converted to carbon dioxide, this is detected by a thermal conductivity detector, the output of which is the S4 peak. The Oil Shows Analyser thus derives the Total Organic Carbon content from the sum of the pyrolysed carbon and the residual carbon.

O.S.A. ANALYTICAL CYCLE

Helium carrier gas

Gas purge at 90 degrees centigrade for 2 minutes.



300 degrees centigrade initial isotherm for 2 minutes

30 degrees centigrade/minute temperature gradient

600 degrees centigrade final oven temperature

TOC oven temperature 600 degrees centigrade for 5 minutes

The equipment was calibrated using a standard furnished by Exploration Logging Overseas Incorporated. A quality control sample was run routinely every 10 unknown samples.



PRESENTATION OF RESULTS

The processed data is expressed in terms of :-

S0 - Low temperature gas yield (mgHC/g rock)

S1 - Low temperature oil yield (mgHC/g rock)

S2 - High temperature, kerogen hydrocarbon yield (mgHC/g rock)

Tmax - Temperature at which maximum emission of hydrocarbons occurs

TOC - Total organic carbon (weight percent of whole rock) comprised
of S4 (residual organic carbon) plus 82% of the quantity
S0+S1+S2.

P.I. - Production Index ($S0+S1/S0+S1+S2$)

H.I. - Hydrogen Index ($S2/TOC$)

P.C. - Pyrolyzable Carbon



INTERPRETATION OF O.S.A. DERIVED PARAMETERS

ORGANIC RICHNESS-TOTAL ORGANIC CARBON (TOC)

The TOC value represents the total organic content of a rock and is a simple measure of organic richness. It is also used in subsequent calculations to deduce the oil prone nature of each sample. As a very general guideline, samples with less than 0.5% TOC are regarded as being organically too lean to yield sufficient petroleum to form commercial deposits of hydrocarbons and are considered non sources. Samples with 0.5% to 1% TOC are considered marginal in source quantity and those with greater than 1% have good possibilities.

The following guidelines are suggested to interpret TOC data, disregarding high values due to coal.

TOC values (%wt)	Source Rock Potential
0.0 - 0.5	poor - fair
0.5 - 2.0	fair - good
2.0 +	good - excellent

SOURCE POTENTIAL (S2)

S2 corresponds to the hydrocarbons evolved from the sample as a result of the thermal cracking of kerogen due to increasing temperature. S2 therefore corresponds to the potential the



sample has for generating hydrocarbons.

The following guidelines are suggested to interpret S2 values:-

S2 values (mgHC/g rock)	Source Rock Potential
0.0 - 2.5	poor - fair
2.5 - 5.0	fair
5.0 - 10.0	good
10.0 +	excellent

MATURITY-TMAX

Tmax is the analytical temperature at which the maximum emission of cracked hydrocarbons (S2) occurs. It gives an estimation of the maturity of the sample.

The expected onset of oil generation, the "oil window" can be related to Tmax. This is currently described as occurring approximately between 440 and 470 degrees centigrade. It is important to consider the overall trend of Tmax data as opposed to data points in isolation. Consideration must also be given to values obtained from organically lean samples. The more well defined the S2 peak maximum the more reliable is the Tmax.

For S2 values of less than 1 mgHC/g rock, Tmax does not appear to be a reliable indicator of maturity if the S2 peak is poorly defined. Tmax is also dependent upon the shape of the S2 peak.



Distinct sharp peaks are essential for reliable Tmax values.

Generally, the guidelines for interpreting maturity from Tmax are:-

Tmax Values (deg C)	Maturity level
Less than 440	immature
440 - 470	oil window
470 - 500	gas window
500 +	post mature or barren

Two parameters are used together to identify the kerogen type and its oil or gas nature.

1. Hydrogen Index (HI)
2. Pyrolyzable Carbon (PC)

1. HYDROGEN INDEX

The Hydrogen Index (S2/TOC) reflects the hydrogen content of the kerogen. The Hydrogen Index is plotted against Tmax and used to classify kerogen type, and thus the expected hydrocarbon type generated from a mature source.



The following guidelines are suggested in interpreting S₂/TOC data :-

S ₂ /TOC or Hydrogen Index	Expected hydrocarbon type generated from mature source
0 - 200	gas
200 - 300	gas and oil
300 +	oil

2. PYROLYZABLE CARBON INDEX

Pyrolyzable Carbon is defined as:-

$$P.C. = K (S_1 + S_2) \text{ where } K=0.083$$

Theoretically, it represents the maximum quantity of hydrocarbons capable of being generated from a sample given sufficient maturity. The Pyrolyzable Carbon Index correlates this value with the TOC to estimate kerogen type.

$$P.C.I = P.C./TOC$$

P.C.I. values of 75 or above are indicative of type I kerogen, 40 to 50 type II and less than 15, type III.

These values tend to vary as hydrocarbons are generated from the source. Where contamination or an accumulation of free hydrocarbons is expected resulting in high S₁ values, PC cannot



be compared directly to TOC. In this case a better value for PC

is :-

P.C. = $K S^2$ where $K = 0.083$



LOW TEMPERATURE VOLATILE HYDROCARBONS (S0) (S1)

S0 represents the quantity of gas liberated from the sample. S1 represents the hydrocarbons that are liberated from the sample at relatively low temperature (300 degC). These are present in the sample as a result of in situ generation from organic material, or as a result of migration into the sampled rock from another source area.

TOTAL PRODUCTION INDEX (S0+S1/S0+S1+S2)

The Production Index, also known as the Transformation Ratio, looks at the fraction of hydrocarbons (S0+S1+S2) that exist as free hydrocarbons. Any local anomaly in P.I values may indicate the presence of accumulated or migrated hydrocarbons or contamination. Total Production Index values will increase with maturity as hydrocarbons are generated.



ORGANIC MATTER TYPE

It is important to determine the type of organic matter in a sample, for two reasons. Firstly, different types of organic matter have different hydrocarbon generating potentials due to the variation in chemical structure of the organic matter. Secondly, as different types of organic matter are deposited in a characteristic environment, some information can be obtained as to the conditions of deposition.

Three types of organic matter are described:-

Type I - Pure type I kerogens are rare, they usually consist of structured algal material. Their favoured depositional environments are closed basins, lagoons and lakes. They are strongly oil prone.

Type II - Usually consists of sapropelic organic matter. This is derived from algal or other planktonic remnants and some land plant material such as pollen. A marine transgression over a broad shelf is a typical environment of deposition. Type II kerogens are oil and gas prone.

Type III - Usually consists of humic, coaly material derived from continental higher plants. A delta, well supplied with terrestrial organic matter is a favourable environment for type III organic matter. Type III organic matter is usually gas prone.

However, coals are oil source rocks in many of the Tertiary basins of S.E. Asia where coastal plain peats developed in an everwet tropical climate. In such environments waterflow and reworking can concentrate liptinitic kerogen in preference to vitrinitic kerogen as documented by Teichmuller and Durand (1983*). These liptinite rich deposits are the precursors of hydrogen rich, oxygen poor coals with good source potential for oil generation.

*Teichmuller, M. and Durand, B., 1983. Fluorescence microscopical rank studies on liptinites and vitrinites in peat and coals, and comparison with results of Rock Eval pyrolysis: Int. Jour. Coal Geol., v.22, pt. 1, p. 164-178.



DISCUSSION AND INTERPRETATION OF RESULTS

Inspection of the Geochemical data generated for 6407/7-1 indicates that the well, for the purpose of discussion can be divided into four sections. This is based upon lithological variations and is reflected in changes in Total Organic Carbon (TOC) and pyrolyzable kerogen content.

The upper sequence extends from 1180m to 1980m and corresponds to the Tertiary claystones and siltstones with minor associated sands. Large fluctuations in organic content was noted, the siltstone tending to have a greater organic content than the clays and claystones.

The second sequence extends from 1980m to 2697m, corresponding to the Cretaceous interval. Claystones again predominated with minor beds of siltstone, limestone and sandstone. A general increase in the arenaceous content of the section was noted with a corresponding decrease in organic content towards the base of the section. TOC and S2 values were all fairly constant with generally low source potential.

The Cretaceous/Upper Jurassic boundary was identified by a transition from the grey deltaic or nearshore claystones of the Cretaceous to a more fibrous red/brown siltstone. This had excellent source potential with a high organic content. Below this zone the section was extensively cored with great variations



in geochemical data obtained. Free hydrocarbon values are high with thinly developed coals also present. This zone extends down to approximately 3090m.

From 3090m to TD the section is dominated by loose sands and red oxidised claystones of the Triassic. Very little organic material was present and as such little meaningful geochemical data was obtained from this section of the hole.

The well was drilled to a TD of 3950m but geochemical analysis was only performed down to 3750m due to the apparent lack of organic material in the lower section of the hole.

Total Organic Carbon and Source Potential

Interval 1180m - 1980m

The total organic carbon values varied from 0.19% to a high of 3.35% at 1210m. An average organic carbon content of 1.5% was indicated for the section, with higher values generally obtained from the siltstones.

Sidewall core data for this interval (see Appendix A) appears to closely match the cuttings data although TOC and S2 values are slightly higher. The increase in organic content of the sidewall cores can most likely be attributed to increased lithological selectivity.



As such the section between 1189m and 1295m can be described as having a good organic content. With an increase in siltstone between 1420m and 1430m and 1610m and 1650m slightly elevated organic carbon values can be noted. The group of sediments, between 1805m and 1875m, is highlighted by a jump in organic content from 0.75% to an average of 1.7%. Sidewall core data mirrors this trend suggesting fair to good organic content for this group of sediments. Below this interval organic content decreases until the top of the Cretaceous.

The S2 values for this interval closely reflects the variable organic content but in general suggests a poor source potential.

The average S2 value was 1.5mgHC/g rock down to around 1680m and from 1875m around 1.0mgHC/g rock. This suggests that the interval had a poor to fair source potential.

Increases above the average were noted between 1189m and 1295m and between 1805m and 1875m. These averaged 3.5mgHC/g rock within the former with a high of 7.09mgHC/g rock at 1209.9m from a sidewall core sample. This would suggest fair to good source potential. The interval 1805m to 1875m averaged 3.0mgHC/g rock with the sidewall core at 1824.82 having a value of 4.99mgHC/g rock.

The highest S2 values in the section were recorded from claystone sidewall core samples at 1400.03m and 1419.92m of 8.50

and 8.54mgHC/g rock respectively. Although these are anomalous in comparison with the cuttings samples and the general section source potential, well defined pyrograms were obtained with no suspicion of mud additive contamination. As such good source potential is suggested for this thin horizon.

Maturity

Tmax data plotted on the geochemical evaluation log (Attachments) displays a clear trend for this section with values generally rising from 424deg C to around 435deg C. This suggests that the section is generally immature with lithology maturity at the lower limit of the oil window.

The sidewall core data is less conclusive with a greater scatter of data points. In part this was due to the evolution of a second high temperature S2 peak which was also noted on cuttings samples down to 1500m.

Such peaks have been attributed to the presence of oxidised, carbonaceous debris and this may in fact be the case in a percentage of the samples. However it is noted that clays and siltstones in the upper hole section contained a significant amount of glauconite. Several of these secondary S2 peaks appeared to coincide with increases in glauconite percentage in the sample. Sidewall core data had significantly higher secondary peaks than the cuttings, which may be a cause of greater concentration due to reduced downhole washing effects

and/or greater lithological selectivity.

As such if this secondary peak is larger than the primary kerogen peak, a higher Tmax will be produced. Several samples have been edited with a Tmax entry of zero if Tmax was obviously derived from this second S2 peak.

Kerogen Type, Hydrogen Indices

Consideration of hydrogen indices and the cross plots presented in appendix B, for the interval covering 1180m to 2695m suggests only a small variation in kerogen type.

A good cluster of points is noted around the 100 to 200 hydrogen index and suggests the presence of gas prone organic matter consisting predominantly of type III kerogen.

The cross plot of sidewall core samples shows a greater scatter with values tending to be in the 170 to 300 range suggesting a greater input of type II/III oil and gas prone kerogen. The interval between 1400 and 1420m indicates, from sidewall core data, a type II kerogen which is probably associated with the appearance of a thin siltstone interbed at this depth.



Low Temperature Volatile Hydrocarbons

There are no significant quantities of low temperature volatile hydrocarbons (S0, S1) within the interval 1180m to 1980m. S1 values are generally below 0.20mgHC/g rock with only trace quantities of gaseous hydrocarbon (S0) recorded. Slightly higher values were noted between 1185m and 1295m and 1805m and 1875m, but correspond to a higher organic content. The Transformation Ratio, (or Total Production Index) however, remains very low suggesting no significant accumulations. This is supported by the sidewall core data which although has higher low temperature volatile hydrocarbons, still maintains a low transformation ratio by nature of the greater organic material present for analysis.

Interval 1980m - 2697m

Total Organic Carbon and Source Potential

For the interval 1980m to 2697m, organic carbon content and source potential was generally low with very consistent values obtained. Organic carbon content reached a maximum of 1.31% at 2325m decreasing to 0.45% at 2662m.

The section consisted of interbedded claystones, siltstones and sandstones with a thin limestone bed between 2360m and 2410m. Again the results tend to mirror the lithological variations,



with the siltstones yielding the highest organic carbon values. A marked decrease in organic content is noted at 1980m with values dropping to 0.77% and 1.50mgHC/g rock.

The highest S2 values were noted between 2040m and 2135m with generally above 2.5mgHC/g rock. This would, however, suggest only poor to fair source potential. Sidewall core data closely follows the cuttings data, as seen on the geochemical log, again with slightly higher organic carbon and kerogen values.

Several of the sidewall cores and cuttings samples down to 2185m demonstrated a secondary S2 peak. This was generally smaller than the first kerogen derived peak and as such had little influence upon Tmax or S2 values. The exact cause of this is unknown although, as previously mentioned, glauconite and pyrite was present in above trace amounts. Further geochemical work is necessary to make any certain conclusions.

Maturity

Tmax values derived from reliable S2 values (above 0.20mgHC/g rock), and ignoring those obtained from secondary S2 peaks indicated a general increase in maturity to marginally mature lithology at the lower limit of the oil window. An increase in maturity is seen at 1980m. Values range from around 430 deg C to around 443 deg C at 2320m.

Erratic values in this section are largely produced by the sands



due to the low S2 readings.

Kerogen Type, Hydrogen Indices

Hydrogen indices remain low, generally between 100 and 150. Between 2000m and 2280m values are slightly higher around 200 with a maximum of 261 at 2115m. This suggests a type III marginal type II gas prone material. Sidewall core data is slightly higher but follows the same trend. Type III kerogen is more strongly suggested towards the base of the section.

Low Temperature Volatile Hydrocarbons

S0 gas content and S1 low temperature volatile hydrocarbon values continue to remain very low throughout this section with little migratory or syngenetic accumulations indicated. Elevated values occurred at various depths after 2285m, probably due to diesel pills added to the mud system. A slight subsequent increase in the total production index with no indications of shows from the mud log data or sidewall cores would support the view that slight contamination was evident. The S1 values were, however, not large enough to effect the S2 and Tmax values and therefore solvent extraction was unnecessary.



Interval 2697m - 3090m

Total Organic Carbon and Source Potential

This zone was extensively cored and consisted of sandstones and siltstones with interbeds of shale grading to carbonaceous lamellae and thinly developed coals.

The cored section contained significant amounts of formational free hydrocarbons, with changes in the sampled lithology producing large variation and scatter of geochemical data. However it is apparent that the section has several zones of good to excellent potential and evidence of hydrocarbon accumulation.

The boundary between the Cretaceous and the Jurassic was detected by a large increase in organic carbon and S₂ values. The upper claystone had excellent source potential. Both cuttings and sidewall core data indicated values around 5% organic carbon and 17 to 28mgHC/g rock S₂, kerogen, content. This is clearly seen in the log plot and extends from around 2697m to 2712m.

From 2784m to around 2830m the core chips analysed were predominantly of siltstones, with minor shales and finely disseminated coals. Data for the coal samples, analysed separately, is in appendix A. Organic carbon values reached a maximum of 3.65% at 2831.8m and source potential of 24.61mgHC/g rock. This was from a shale and siltstone composite. In general



values averaged 2.0% and 6mgHC/g rock from the more argillaceous core chips. This suggests good organic content and fair source potential.

From 2840m to 2988m the section is dominated by sands and sandstones with minor siltstones and shale. This represents the main potential reservoir zone. As such organic content is generally low with S2 and total organic carbon content around 1.8mgHC/g rock and 1.5% respectively. The siltstones within the section are organically rich, particularly between 2921m and 2922.8m, with good to excellent source potential. Good source potential is noted throughout the remainder of the zone.

From 2988m to 3092m the cored section is highly interbedded with interlamination of shales, coals and siltstones within the sands and sandstones. Consequently organic content is higher with the majority of the coal samples yielding total organic carbon values above 10% and S2 values up to a high of 205mgHC/g rock at 3071.57m. As discussed by J.L. Pittion and J. Gouadain*, on the Haltenbanken 'Coal Unit' and Upper Jurassic marine shales, although maturity is generally low for these coals the indications of the strongly type II kerogen might suggest high exinite content. This is known to improve the petroleum potential of coal.

Of the remaining siltstones and clays notably high values occurred from sediments at 2989m, 3017.2m and 3033.4m. This would suggest that the section in general has thinly developed



argillaceous interbeds grading to carbonaceous material which appears to have good source potential.

* Maturity Studies of the Jurassic "Coal Unit" in three wells from the Haltenbanken area. J.L. Pittion and J Gouadain. Petroleum Geochemistry in Exploration of the Norwegian shelf. Norwegian Petroleum Society.

Maturity

A sharp drop in maturity was evident at the top of the Upper Jurassic but this resumes back to the established trend around 2760m. From reliable values a figure of around 440 degC is suggested at the base of the section. Scatter of data is evident mainly due to values obtained from the organically lean sandstones. The coals all indicated immaturity with the shales and siltstones indicating marginal maturity at the lower limit of the oil window.

Kerogen Type, Hydrogen Indices

The hydrogen indices vary considerably throughout this section. The Grip formation from 2697m to 2711m is strongly type II prone indicating a mixed terrestrial/marine source, with possibilities for oil and gas generation. Values decrease to around 100 down to 2784m. From 2784m to 2830m this zone of generally good source potential has hydrogen indices of around 300 to 500. This is



observed on the cross plots in appendix B and suggests type II kerogen.

Through the potential reservoir zone between 2830m and 2988m organic content is reduced and as such a larger scatter of data is noted. However reliable values suggest that the kerogen is type III marginal type II. The good source zone between 2920m and 2922.8m indicates type II marginal type I kerogen.

This type III/type II kerogen appears to continue to the base of this section although the coals in general have hydrogen indices above 350.

Low Temperature Volatile Hydrocarbons

S0 gas content and S1 low temperature volatile hydrocarbon values are very significant within this section.

The total production indices and S0 and S1 values all increase from around 2697m down to 2780m, an S1 of 4.55mgHC/g rock was recorded from 2750m. Production indices generally exceed 0.70mgHC/g and indicate an epigenetic origin for the hydrocarbons. A sharp drop in these indices was noted below this depth although source potential was generally good between 2784m and 2830m. It is a possibility that hydrocarbons have been produced from this lower zone and migrated into the upper arenaceous sediments.



Within the potential reservoir zone S0 and S1 values are generally very high with a maximum of 21.04mgHC/g rock S1 obtained from a sandstone sample at 2929.75m. Values between 2891m and 2988m are generally above 7mgHC/g rock for S1 and 0.20mgHC/g rock for S0 (although this latter gaseous value is prone to the effects of sample treatment and sediment porosity). As the production indices are again very high and the values are derived from sandstones it indicates an epigenetic origin for the hydrocarbons.

Between 2988m and 3090m the interbedded sands are generally low in S0 and S1 content. Only two values at 3019.3m and 3022m have production index values above 0.80mgHC/g. The coals have very high S0 and S1 values with a maximum of 36.31mgHC/g rock S1 recorded at 3027.83m. However the sandstones are probably a closer reflection of the low temperature volatile hydrocarbon content within this payzone.

Certain samples were solvent extracted to determine if the large quantities of free hydrocarbons (above 1.0mgHC/g rock S1) had affected the size of the S2, kerogen, peak.

The data is included in appendix A, but generally suggests that no significant increase in S2 values was caused by the presence of 'heavy end' hydrocarbons mobilized in the S2 rather than S1 cycle.



Interval 3090m - 3750m

Total Organic Carbon and Source Potential

Below 3090m organic content was significantly reduced with a large increase in loose sands and red oxidised claystones.

Only 8 samples had values above 2.0mgHC/g rock S2 and 1.0% total organic carbon. This is poor in terms of source potential. From around 3240m the section to TD has no source potential with little or no organic material present. Disseminated coal was observed between 3182m and 3190m and this gave maximum values of 4.9% organic carbon and 11.26mgHC/g S2.

Maturity

With such low S2 values Tmax is very unreliable and consequently all values derived from S2 values below 0.20mgHC/g rock have been edited to zero. The maturity trend established in the upper hole sections is therefore difficult to continue, although Tmax values derived from S2 figures above 1.0mgHC/g rock indicate values lying between 435 degC and 445 degC. The coal at 3190m gives a value of 436 degC which is just at the lower limit of the oil window.



Kerogen Type, Hydrogen Indices

With very low organic carbon content hydrogen indices are unreliable and as such values of total organic carbon below 0.25% have been edited to zero in the data prints and the log plots.

The coal sample and several claystones gave hydrogen indices around 200 with the remainder of the section between 50 to 100. This suggests type III gas prone kerogen although very poor source potential is indicated in this section. No meaningful HI/Tmax cross plots could be produced.

Low Temperature Volatile Hydrocarbons

Low temperature volatile hydrocarbons reduced significantly in this section. S1 values are consistently below 0.30mgHC/g rock with virtually no S0 gaseous hydrocarbons recorded. The increase in the production index values is a product of the very low S2 values. Evidence from the Anadrill resistivity logs and mud log data, would support the view that no epigenetic or syngenetic hydrocarbons are present in this section.



Summary and Conclusions for Well 6407/7-1

1. Total Organic Carbon

Total organic carbon content varied considerably and reflected the changes in sedimentary facies.

Above 2697m three zones produced values identified as having good organic content. Between 1189m to 1295m, 1620m to 1650m and 1805m to 1844.94m. Shale and siltstone samples from 2697m to 2711m had excellent organic carbon content with values in excess of 4%. Below this depth the cored interval to 3093m produced values, from thinly interbedded shales and siltstones within the sand bodies, generally above 2%. Coals were thinly developed but yielded organic carbon values up to 44%.

Below 3093m only occasional coal or claystone samples yielded an organic carbon content above 0.5%.

2. Source Potential

Only two sidewall core samples between 1400m and 1420m produced S2 values indicative of good source potential in the interval above 2697m. Between 2697m and 2711m source potential is excellent. Within the cored interval below this zone a 48m section between 2784m and 2832m has good source potential from the interbedded shales and siltstones. Through the potential

reservoir zone down to 2988m argillaceous content is low with little possibilities for extensively developed source horizons, although several thin shale interlaminations do indicate good source potential. Below 2988m coal siltstone and shale interlaminations yield values indicative of fair to good source potential.

3. Kerogen Type

Type III kerogen is suggested generally for the section to 2697m. Between 2697m and 2711m and 2784m and 2832m type II material is indicated. Below 2832m to 3093m a mixed type III/II material is present indicating a gas to gas/oil prone material.

4. Maturity

A very good Tmax maturity trend is developed down to 2832m. A sharp break and then resumption of the trend is noted at the top of the Jurassic sediments. Through the potential payzone erratic values are evident but then the same trend continues from 2988m to around 3100m. Below this maturity values are unreliable.

5. Low Temperature Volatile Hydrocarbons

The interval from 2697m to 3093m contained significant quantities of migrated hydrocarbons. Above and below this depth low values suggest syngenetically derived hydrocarbons.

SUMMARY TABLE

Interval (metres)	Total Organic Carbon	Source Potential	Kerogen Type	Maturity	Free Hydrocarbons
1180 - 1980	Fair - Good	Poor - Fair	Type III	Immature	No significant amount
1980 - 2697	Fair	Poor	Type III	Lower Limit of "oil window"	Low
2697 - 2711	Excellent	Excellent	Type II	Marginal "oil window"	Moderate Syngenetic
2711 - 3093	Good in thin Shales	Fair in thin Shales	Type II/III	Marginal "oil window"	High in sand Payzone
3093 - 3750	Poor	None	-	-	No significant amount



Crushed vs Uncrushed Sample Analysis

Cuttings material from this well was analysed uncrushed in order to obtain a more reliable S₀, gas content, measurement. As a comparison twenty two sample analyses, from the interval 2015m to 2165m, were repeated using crushed material. The results from this are presented at the end of Appendix A.

Briefly, the data compares as follows :

1. TOC percentages agreed closely, values being well within the limits of machine reproducibility.
2. S₂ yeild was notably higher from uncrushed material.
3. T_{max} temperatures were several degrees higher from uncrushed sample.
4. S₁, low temperature volatile hydrocarbon yeild was generally higher from crushed material while S₀, gas yields were all zero. Uncrushed samples within this interval produced only minimal S₀ values.

It should be emphasised that samples from this interval were all lean and variations in values do not alter interpretive conclusions in any way.



As mentioned previously, the use of uncrushed material can be expected to produce more reliable S0 data. Additionally, two factors, relating to the accessibility of the kerogen need to be considered.

Uncrushed lithology may be expected to be slower at releasing kerogen due to entrapment within the structural matrix which is broken down by crushing.

Conversely, crushed material offers a large surface area which may serve to delay kerogen degradation due to the mineral matrix retention effects (Surface Adsorption).

Clearly, the interrelation between these effects will be dependant upon lithological type.

APPENDICES





APPENDIX A

TABULATION OF GEOCHEMICAL DATA



LITHOLOGICAL KEY

.....	Sand/Sandstone
.....	Silt/Siltstone
	Claystone
LLLLLLLLLL	Limestone
ZZZZZZZZZZ	Dolomite
=====	Shale
*****	Coal/Lignite
oooooooo	Conglomerate

Each lithology symbol represents 10% of sample composition.



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

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: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
	1180.00	1.33	2.27	171	430	.04	.20	.10
	1190.00	2.88	4.69	163	428	0.00	.22	.04
	1200.00	2.73	4.32	158	434	0.00	.25	.05
	1210.00	3.35	3.39	101	426	.02	.22	.07
	1220.00	2.64	2.76	105	425	.01	.15	.05
	1230.00	1.79	2.09	117	431	.01	.10	.05
	1240.00	2.22	2.27	102	425	0.00	.25	.10
	1250.00	2.63	2.92	111	431	.01	.19	.06
	1260.00	1.78	1.89	106	428	.01	.12	.06
	1270.00	1.62	3.31	204	421	.01	.16	.05
	1280.00	1.55	1.81	117	429	0.00	.16	.08
	1290.00	1.50	1.30	87	425	0.00	.15	.10
	1300.00	3.03	1.97	65	419	0.00	.19	.09
	, 1310.00	.96	1.43	149	417	0.00	.12	.08
	, 1320.00	1.12	1.27	113	425	.01	.09	.07
	,, 1330.00	1.12	1.20	107	428	0.00	.07	.06
	,, 1340.00	1.06	1.12	106	423	0.00	.07	.06
	, 1350.00	.93	.61	66	421	0.00	.08	.12
	1360.00	1.08	1.39	129	453	.01	.13	.09
	,, 1370.00	1.04	1.57	151	425	.04	.21	.14
	, 1380.00	.93	1.28	138	428	.03	.16	.13
	1390.00	1.10	1.30	118	427	.02	.18	.13
	,, 1400.00	1.00	1.20	120	431	.02	.15	.12
	,, 1410.00	1.10	1.65	150	425	0.00	.13	.07
	,, , , : 1420.00	1.55	1.62	105	422	0.00	.11	.06
	,, , , 1430.00	1.40	1.38	99	422	0.00	.11	.07
	,, , , , 1440.00	1.11	2.31	208	425	.04	.23	.10
	,, , , , 1450.00	1.09	2.01	184	431	.04	.05	.04
	,, , , , : 1460.00	.96	1.47	153	424	.07	.16	.14
	,, , , 1470.00	.89	1.06	119	423	.05	.13	.15
	,, , 1480.00	.91	1.35	148	423	.04	.14	.12
	,, , 1490.00	.87	1.62	186	456	.04	.12	.09
	,, , 1500.00	.84	1.39	165	429	.03	.12	.10
	,, , 1510.00	.71	1.23	173	434	.04	.11	.11
	,, , 1520.00	.69	1.16	168	430	.03	.11	.11
	,, , 1530.00	.59	.87	147	425	.01	.05	.06
	, , 1540.00	.79	1.44	182	424	.02	.15	.11
	, , 1550.00	.73	1.33	182	425	.04	.17	.14
	, , 1560.00	.89	1.27	143	422	0.00	.06	.05
	,, , 1570.00	.90	1.26	140	421	0.00	.04	.03
	,, , 1580.00	1.19	1.57	132	426	0.00	.10	.06
	, , 1590.00	1.03	1.57	152	428	.01	.06	.04
	, , 1600.00	1.18	1.58	134	429	0.00	.03	.02
	, , 1610.00	1.46	1.77	121	429	.01	.06	.04
	,, , 1620.00	1.66	2.22	134	427	0.00	.06	.03
	,, , 1630.00	1.88	2.34	124	428	0.00	.07	.03
	,, , 1640.00	2.04	2.78	136	429	0.00	.06	.02
	,, , 1650.00	1.86	2.61	140	432	.01	.06	.03
	,, , 1655.00	1.37	1.46	107	426	0.00	.05	.03
	,, , 1660.00	1.27	1.75	138	425	.01	.05	.03



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FOR : NORSK HYDRO
WELL : 6407/7-1

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: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
	1665.00	1.12	1.33	119	427	.01	.05	.04
	1670.00	.79	.62	78	424	0.00	.02	.03
	1675.00	.73	.64	88	422	0.00	.20	.24
	1680.00	.45	.61	136	434	0.00	.02	.03
	1685.00	.52	.56	108	435	.02	.10	.18
	1690.00	.47	1.35	287	447	.03	.07	.07
	1695.00	.46	.96	209	433	.04	.07	.10
	1700.00	.25	.26	104	425	0.00	.03	.10
	1705.00	.25	.27	108	435	0.00	.02	.07
	1710.00	.28	.46	164	428	0.00	.07	.13
	1715.00	0.00	.36	0	0	0.00	.04	.10
	1720.00	.33	.57	173	435	.01	.05	.10
	1725.00	.45	.82	182	442	.01	.04	.06
	1730.00	.87	1.84	211	431	0.00	.13	.07
	1735.00	1.06	1.36	128	437	.04	.09	.09
	1740.00	1.27	2.92	230	432	.05	.24	.09
	1745.00	1.10	1.81	165	432	.03	.17	.10
	1750.00	.94	1.51	161	428	.02	.14	.10
	1755.00	1.01	2.00	198	433	0.00	.12	.06
	1760.00	.97	1.23	127	434	.01	.11	.09
	1765.00	.92	1.40	152	436	.01	.14	.10
	1770.00	.82	1.06	129	437	.02	.08	.09
	1775.00	.95	1.28	135	433	.01	.09	.07
	1780.00	1.07	1.52	142	435	.01	.15	.10
	1785.00	.97	1.22	126	431	0.00	.08	.06
	1790.00	1.11	1.72	155	431	0.00	.17	.09
	1795.00	1.12	1.70	152	430	.03	.11	.08
	1800.00	1.14	1.66	146	432	.01	.09	.06
	1805.00	1.49	2.23	150	428	0.00	.08	.03
	1810.00	1.52	2.61	172	427	0.00	.09	.03
	1815.00	1.46	2.26	155	429	0.00	.09	.04
	1820.00	1.87	3.82	204	430	0.00	.10	.03
	1825.00	2.03	3.88	191	432	.02	.11	.03
	1830.00	1.72	3.06	178	430	.01	.10	.03
	1835.00	2.05	3.29	160	430	0.00	.08	.02
	1840.00	1.64	2.65	162	433	.01	.08	.03
	1845.00	2.00	3.67	183	429	.02	.12	.04
	1850.00	1.78	2.83	159	428	0.00	.10	.03
	1855.00	1.72	3.30	192	425	.01	.17	.05
	1860.00	1.49	3.00	201	427	0.00	.14	.04
	1865.00	1.35	3.00	222	427	.03	.18	.07
	1870.00	1.27	2.56	202	427	.02	.14	.06
	1875.00	1.39	2.99	215	424	.01	.17	.06
	1880.00	1.05	1.43	136	431	0.00	.09	.06
	1885.00	.59	1.00	169	429	.01	.05	.06
	1890.00	.44	.97	220	426	.03	.06	.08
	1895.00	.36	.83	231	421	.04	.07	.12
	1900.00	.44	.65	148	436	.02	.04	.08
	1905.00	.60	.86	143	431	0.00	.05	.05
	1910.00	.53	1.00	189	431	.02	.06	.07



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FOR : NORSK HYDRO
WELL : 6407/7-1

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: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
	1915.00	.63	1.11	176	426	.02	.07	.08
	1920.00	.57	1.32	232	458	.09	.33	.24
	1925.00	.63	.65	103	436	.04	.16	.24
	1930.00	.79	.68	86	431	.02	.12	.17
	1935.00	.68	1.21	178	441	.01	.07	.06
	1940.00	.79	1.11	141	0	0.00	.03	.03
	1945.00	.89	.89	100	476	.03	.05	.08
	1950.00	.98	.79	81	439	0.00	.05	.06
	1955.00	1.18	1.30	110	433	.02	.06	.06
,	1960.00	1.35	1.17	87	434	.02	.10	.09
,	1965.00	1.18	.77	65	432	.02	.06	.09
,	1970.00	1.43	1.69	118	441	.05	.18	.12
,,	1975.00	1.21	1.85	153	439	.09	.19	.13
,	1980.00	1.10	1.04	95	435	.02	.21	.18
,	1985.00	.74	.99	134	0	.01	.07	.07
	1990.00	.94	1.60	170	439	.05	.08	.08
:	1995.00	.77	1.52	197	439	.02	.07	.06
:	2000.00	.76	1.39	183	439	.02	.12	.09
:	2005.00	.76	1.17	154	437	.06	.11	.13
:	2010.00	.99	1.35	136	440	.04	.13	.11
:	2015.00	.78	1.23	158	434	.05	.18	.16
:	2020.00	.92	1.60	174	434	.03	.23	.14
	2025.00	1.00	1.69	169	432	.02	.28	.15
	2030.00	1.06	2.17	205	436	.04	.31	.14
	2035.00	1.07	1.67	156	434	.03	.27	.15
	2040.00	1.14	2.51	220	435	.18	.53	.22
	2045.00	1.10	2.77	252	435	.08	.44	.16
	2050.00	1.17	2.42	207	435	.03	.36	.14
,	2055.00	1.15	2.26	197	439	.04	.30	.13
,	2060.00	1.14	2.33	204	433	.03	.31	.13
,	2065.00	1.02	1.98	194	432	.02	.22	.11
,	2070.00	1.07	2.06	193	437	.03	.26	.12
,	2075.00	1.00	1.96	196	437	.05	.31	.16
,	2080.00	1.04	1.81	174	438	.04	.22	.13
,	2085.00	1.07	2.49	233	435	.02	.31	.12
,	2090.00	1.05	1.99	190	437	.02	.23	.11
,	2095.00	.97	2.02	208	434	.02	.21	.10
	2100.00	.96	1.30	135	430	.03	.29	.20
	2105.00	1.02	1.81	177	436	.08	.24	.15
	2110.00	.97	1.90	196	437	.06	.24	.14
	2115.00	1.09	2.85	261	430	.05	.37	.13
,	2125.00	.95	2.03	214	437	.04	.20	.11
	2130.00	1.03	2.03	197	437	.04	.20	.11
	2135.00	.84	1.06	126	436	0.00	.13	.11
	2140.00	.91	1.59	175	436	.02	.17	.11
:	2145.00	.96	1.65	172	435	.08	.20	.15
	2150.00	.94	1.76	187	439	.09	.14	.12
	2155.00	.97	2.07	213	440	.07	.13	.09
::	2160.00	.92	1.82	198	437	.08	.16	.12
	2165.00	1.01	1.74	172	435	.12	.12	.12



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FOR : NORSK HYDRO
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Printed at : 15:12
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
	2170.00	1.04	1.91	184	440	.08	.12	.09
	2175.00	.97	2.04	210	432	.07	.27	.14
	2180.00	.99	2.27	229	440	.06	.13	.08
	2185.00	.92	1.63	177	441	0.00	.32	.16
	2190.00	.86	1.38	160	436	0.00	.26	.16
	2195.00	1.00	1.45	145	438	.03	.19	.13
:	2200.00	.82	.98	120	434	.06	.19	.20
:	2205.00	.88	1.45	165	439	.04	.22	.15
:	2210.00	.82	.90	110	437	.04	.28	.26
	2215.00	.90	.97	108	440	.03	.15	.16
:::	2220.00	.72	.75	104	435	.05	.21	.26
::	2225.00	.68	.72	106	434	.05	.18	.24
:::	2230.00	.76	1.00	132	441	.03	.12	.13
:	2235.00	.77	.76	99	435	.05	.16	.22
:	2240.00	.89	1.38	155	439	.05	.21	.16
::	2245.00	.86	1.08	126	441	.06	.19	.19
	2250.00	.92	1.05	114	439	.03	.18	.17
	2255.00	.91	1.40	154	438	.04	.17	.13
	2260.00	1.02	1.71	168	441	.05	.17	.11
	2260.00	1.02	1.71	168	441	.05	.17	.11
:::	2265.00	1.15	1.42	123	443	.06	.16	.13
	2270.00	1.18	2.05	174	438	.04	.15	.08
::	2275.00	1.09	1.78	163	438	.03	.13	.08
	2280.00	1.04	1.38	133	434	.02	.14	.10
:	2285.00	1.21	.98	81	434	0.00	.38	.28
	2290.00	1.02	.94	92	440	.04	.16	.18
:	2295.00	.97	.74	76	438	.01	.11	.14
:	2300.00	.90	.86	96	435	.06	.33	.31
	2305.00	.94	.86	91	438	.04	.20	.22
:	2310.00	.99	.81	82	437	.03	.21	.23
	2315.00	1.00	1.06	106	439	.02	.30	.23
	2320.00	1.08	.76	70	437	.02	.16	.19
	2325.00	1.31	1.71	131	442	0.00	.75	.30
	2330.00	1.11	1.36	123	444	.01	.43	.24
	2335.00	1.04	1.13	109	437	0.00	.28	.20
:::	2340.00	.95	.70	74	437	.01	.18	.21
::	2345.00	.84	.72	86	437	0.00	.20	.22
	2350.00	.89	.98	110	447	0.00	.64	.40
	2355.00	.94	.87	93	440	.01	.28	.25
	2360.00	.91	1.04	114	442	.02	.42	.30
:	2365.00	.93	1.16	125	442	.02	.31	.22
	2370.00	.96	1.29	134	443	0.00	.26	.17
	2375.00	.92	1.05	114	444	.01	.30	.23
	2380.00	.90	1.03	114	440	.01	.39	.28
	2385.00	.85	.93	109	438	.01	.23	.21
:	2390.00	.92	1.27	138	439	0.00	.47	.27
:	2395.00	.85	.91	107	441	.01	.24	.22
:	2400.00	.87	1.06	122	449	0.00	.40	.27
:	2405.00	.95	1.31	138	440	.01	.29	.19
	2410.00	.89	.84	94	438	.02	.23	.23



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FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 15:44
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS			
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g	
Cuttings Samples									
::	2415.00	.93	.86	92	438	0.00	.28	.25	
::	2420.00	1.07	1.04	97	441	0.00	.38	.27	
:	2425.00	.98	.82	84	434	0.00	.22	.21	
:	2430.00	1.01	.92	91	439	.01	.28	.24	
:	2435.00	.93	.98	105	440	0.00	.26	.21	
	2440.00	.97	.85	88	445	0.00	.32	.27	
	2445.00	.94	.94	100	439	0.00	.29	.24	
	2450.00	1.04	1.18	113	439	0.00	.36	.23	
::	2455.00	.89	.71	80	439	0.00	.24	.25	
::	2460.00	.87	.64	74	435	.01	.16	.21	
::	2465.00	.84	.52	62	436	0.00	.17	.25	
:::	2470.00	.90	.87	97	441	0.00	.23	.21	
	2475.00	.69	.65	94	460	0.00	.17	.21	
::	2485.00	.80	.58	73	437	.01	.17	.24	
:	2490.00	.74	.51	69	437	.01	.13	.22	
	2495.00	.85	.91	107	441	.01	.24	.22	
LZ	2500.00	.74	.24	32	434	0.00	.08	.25	
	2505.00	.74	1.09	147	424	0.00	.32	.23	
	2510.00	.78	.88	113	437	.01	.09	.10	
:	2515.00	.93	.99	106	441	.01	.14	.13	
Z	:::	2520.00	1.01	1.05	104	439	.01	.24	.19
Z	:::	2525.00	.96	.75	78	436	0.00	.33	.31
	:::	2530.00	.83	.43	52	456	0.00	.07	.14
	:::	2535.00	.90	.63	70	436	0.00	.18	.22
	:::	2540.00	.87	.36	41	440	0.00	.05	.12
	:::	2545.00	.80	.38	48	436	0.00	.05	.12
	:::	2550.00	.56	.65	116	434	0.00	.16	.20
	:::	2555.00	.58	.58	100	435	0.00	.17	.23
	:::	2560.00	.75	.78	104	434	0.00	.23	.23
	:::	2565.00	.60	1.53	255	0	0.00	.26	.15
Z	:::	2570.00	.52	.35	67	430	0.00	.05	.13
Z	:::	2575.00	.74	.34	46	434	0.00	.04	.11
Z	:::	2580.00	.76	.68	89	429	0.00	.11	.14
Z	:::	2585.00	.73	.45	62	435	.01	.11	.21
Z	:::	2590.00	.80	.71	89	434	0.00	.18	.20
Z	:::	2595.00	.97	.53	55	438	0.00	.10	.16
Z	:::	2600.00	.82	.77	94	439	0.00	.15	.16
Z	:::	2605.00	.72	.76	106	438	.01	.17	.19
Z	:::	2610.00	.98	.74	76	438	.01	.20	.22
Z	:::	2615.00	1.09	1.21	111	439	0.00	.25	.17
ZZ	:::	2620.00	1.09	.64	59	439	0.00	.09	.12
ZZ	:	2625.00	.90	.67	74	437	0.00	.14	.17
Z	:::	2630.00	1.20	1.56	130	435	0.00	.27	.15
LZ	:::	2640.00	.85	.70	82	434	.01	.09	.13
Z	:::	2645.00	.74	.57	77	439	0.00	.14	.20



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 15:55
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
Z	::: 2650.00	.73	.52	71	437	0.00	.11	.17
Z	::: 2652.00	.82	.58	71	435	.01	.10	.16
Z	::: 2655.00	.65	.48	74	442	0.00	.11	.19
Z	:: 2657.00	.58	.40	69	437	.01	.10	.22
Z	:: 2660.00	.50	.38	76	446	0.00	.10	.21
Z	:: 2662.00	.45	.32	71	458	0.00	.08	.20
Z	:: 2665.00	.52	.51	98	0	0.00	.08	.14
Z	::: 2667.00	.73	.56	77	436	0.00	.10	.15
Z	:: 2670.00	.52	.32	62	442	0.00	.12	.27
Z	: 2672.00	.58	.32	55	442	0.00	.13	.29
	: 2675.00	.59	.23	39	442	0.00	.11	.32
Z	:: 2677.00	.67	.36	54	438	0.00	.17	.32
Z	:: 2680.00	.69	.33	48	441	0.00	.14	.30
Z	::: 2682.00	.61	.45	74	436	0.00	.26	.37
	: 2685.00	.77	.56	73	433	0.00	.36	.39
	:: 2687.00	.78	.55	71	430	0.00	.31	.36
	::: 2690.00	.86	.52	60	434	0.00	.25	.32
Z	::: 2692.00	.89	.70	79	432	0.00	.28	.29
Z	::: 2695.00	1.23	.62	50	441	0.00	.27	.30
LL	: 2697.00	5.23	25.89	495	428	.11	1.93	.07
LL	: 2700.00	5.83	28.89	496	430	.10	2.04	.07
L	:: 2702.00	4.40	16.73	380	432	.07	1.72	.10
	:: 2705.00	5.33	19.17	360	432	.04	2.31	.11
	::: 2707.00	5.75	24.09	419	433	.12	2.37	.09
	:: 2710.00	4.77	18.26	383	435	.08	2.12	.11
	::: 2712.00	1.77	4.05	229	434	0.00	.77	.16



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 15:58
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Core Samples								
.....	2713.25	.49	.43	88	426	.07	.20	.39
.....	2714.20	1.24	.87	70	431	.16	.50	.43
.....	2715.05	.48	.44	92	432	.04	.36	.48
.....	2716.23	1.21	1.06	88	436	.02	.40	.28
.....	2716.97	1.67	1.65	99	439	.02	.34	.18
.....	2718.04	1.13	1.93	171	434	.04	.24	.13
====, , , ,	2719.10	2.32	1.62	70	436	.03	.50	.25
====, , , ,	2720.05	2.88	2.03	70	435	.03	.76	.28
====, , , ,	2721.10	4.38	3.31	76	440	.11	.97	.25
.....	2722.03	3.28	2.61	80	437	.10	.65	.22
.....	2723.12	.86	.38	44	435	.01	.28	.43
====, , , ,	2724.10	.62	.45	73	439	.04	.27	.41
====, , , ,	2725.07	1.16	2.04	176	439	.07	1.37	.41
====, , , ,	2726.05	1.81	.81	45	438	.02	.33	.30



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 16:17
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS			
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g	
Cuttings Samples									
L	,,,:	2730.00	1.21	.88	73	439	0.00	.57	.39
	.....:	2732.00	.40	.12	30	439	0.00	.12	.50
	.....:	2735.00	1.68	.62	37	437	0.00	.76	.55
	.....:	2737.00	1.38	1.16	84	439	0.00	.43	.27
L	:	2740.00	1.07	.87	81	436	.04	.36	.31
		2742.00	1.70	1.44	85	428	.04	.94	.40
		2747.00	1.62	.95	59	430	.04	.66	.42
		2750.00	3.30	4.79	145	418	.10	4.55	.49
		2752.00	2.76	3.48	126	424	.06	1.32	.28
		2755.00	2.68	2.18	81	433	.03	1.29	.38
	=.....:	2757.00	12.11	62.32	515	424	.04	10.92	.15
	=.....:	2760.00	9.58	35.73	373	420	.02	6.20	.15



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 16:21
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Core Samples								
.....	2760.07	.64	1.21	189	420	.13	3.75	.76
=====	2760.96	1.62	2.14	132	436	.05	.53	.21
====:.....	2761.84	1.80	2.01	112	435	.03	.99	.34
====,.,.,.	2762.95	1.42	1.85	130	423	.29	5.86	.77
*=====	2764.10	2.16	9.07	420	434	.14	3.31	.28
,.,.,.:	2765.04	3.15	3.99	127	436	.08	2.74	.41
==:.....	2766.09	1.22	1.83	150	436	.03	1.21	.40
,.,.,.:	2766.85	.73	1.10	151	437	.03	.74	.41
,.,.,.,.,.	2768.28	.92	.98	107	439	.02	.23	.20
,.,.,.:	2769.24	.88	1.43	163	438	.02	.42	.24
:.....	2770.07	.69	1.25	181	425	.06	4.41	.78
:.....	2770.75	.39	.83	213	418	.03	2.61	.76
,.,.,.,.,.	2772.00	1.14	1.48	130	440	.04	.34	.20
:.....	2773.00	.61	.97	159	432	.10	1.37	.60
:.....	2774.00	1.27	2.03	160	437	.05	1.71	.46
*:.....	2775.00	2.18	5.00	229	439	.17	2.39	.34
*:.....	2776.00	.86	.86	100	412	.58	7.17	.90
:.....	2777.00	0.00	.17	0	0	.03	.45	.74
:.....	2778.00	.58	.79	136	420	.17	5.18	.87
:.....	2779.00	0.00	.26	0	0	.01	.12	.33
:.....	2780.00	.75	1.15	153	422	.11	5.52	.83
,.,.,.,.,.	2781.00	.90	1.35	150	440	.02	.35	.22
:.....	2781.60	1.00	1.27	127	439	.01	.31	.20
,.,.,.,.,.	2783.00	1.30	1.34	103	438	.09	.18	.17
,.,.,.,.,.	2784.00	1.34	3.86	288	440	.12	.48	.13
,.,.,.,.,.	2785.00	1.90	6.83	359	440	.15	.57	.10
,.,.,.,.,.	2786.00	.89	2.01	226	438	.05	.29	.14
,.,.,.,.,.	2787.00	1.04	3.47	334	440	.04	.40	.11
,.,.,.,.,.	2788.00	.86	2.41	280	438	.04	.30	.12
*=====,	2789.00	2.37	9.47	400	437	.06	.75	.08
*.,.,.,.,.	2790.00	1.63	5.52	339	440	.05	.41	.08
,.,.,.,.,.	2791.00	1.10	3.36	305	439	.02	.27	.08
,.,.,.:	2792.00	1.31	4.34	331	440	.03	.27	.06
,.,.,.,.,.	2793.00	.63	1.57	249	440	.01	.16	.10
,.,.,.,.,.	2794.00	.56	1.52	271	439	.05	.17	.13
,.,.,.,.,.	2795.00	1.27	3.88	306	439	.06	.32	.09
====,.,.,.	2796.00	1.95	7.55	387	441	.07	.52	.07
====,.,.,.	2797.00	2.19	8.40	384	441	.14	.55	.08
*.,.,.,.,.	2798.00	1.94	7.48	386	439	.06	.50	.07
,.,.,.,.,.	2799.00	1.37	4.97	363	441	.04	.35	.07
ZZZZ; ; ; ooo	2800.00	.41	1.01	246	440	.02	.14	.14
:.....	2801.00	0.00	.60	0	468	.01	.08	.13
,.,.,.,.,.	2801.80	.52	1.56	300	439	.01	.22	.13
,.,.,.:	2804.00	.61	1.92	315	437	.10	.41	.21
,.,.,.,.,.	2805.10	.82	3.15	384	439	.08	.31	.11
,.,.,.,.,.	2806.08	0.00	.58	0	435	.01	.08	.13
=====	2807.20	1.65	8.01	485	440	.08	.50	.07
=====	2808.30	1.57	7.09	452	440	.04	.45	.06
:.....	2809.98	0.00	.88	0	438	.01	.09	.10
,.,.,.,.,.	2811.12	.96	3.82	398	439	.06	.31	.09



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 16:29
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Core Samples								
.....	2811.12	.96	3.82	398	439	.06	.31	.09
.....	2812.60	1.47	6.56	446	440	.05	.43	.07
.....	2813.70	.97	3.33	343	438	.03	.30	.09
.....	2814.60	.68	1.75	257	439	.03	.16	.10
.....	2815.82	.85	2.20	259	439	.04	.22	.11
.....	2816.31	.95	3.69	388	439	0.00	.29	.07
.....	2818.25	1.29	5.26	408	438	.02	.38	.07
.....	2820.00	.89	3.51	394	437	.01	.27	.07
.....	2821.80	1.30	6.07	467	438	.11	.41	.08
.....	2823.41	1.25	6.15	492	438	.07	.46	.08
.....	2824.28	2.16	13.13	608	438	.05	.77	.06
.....	2825.98	1.26	6.77	537	439	.11	.43	.07
.....	2826.35	.79	3.85	487	439	.08	.31	.09
.....	2828.03	.87	3.75	431	440	.04	.27	.08
.....	2829.04	.85	4.02	473	438	.07	.30	.08
====, , , ,	2830.03	2.53	16.02	633	436	.20	1.31	.09
====, , , ,	2831.80	3.65	24.61	674	430	.15	2.86	.11



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 16:33
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
.....	2832.00	1.59	4.01	252	438	.03	.91	.19
.....	2835.00	3.52	12.87	366	434	.03	1.74	.12
.....	2840.00	0.00	.08	0	0	0.00	.03	.27



EXPLORATION[®] LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 16:39
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Core Samples								
.....	2844.00	.76	.66	87	411	.07	6.61	.91
.....	2845.00	.87	1.07	123	416	.12	8.25	.89
.....	2846.00	.91	.69	76	411	.09	9.63	.93
.....	2847.00	.86	1.16	135	430	.10	6.10	.84
.....	2848.00	3.21	3.62	113	431	.13	11.21	.76
.....	2849.00	.71	.90	127	439	0.00	.82	.48
.....	2850.00	1.81	1.12	62	0	.27	18.87	.94
.....	2850.01	1.81	1.35	75	0	.27	19.84	.94
.....	2851.00	.66	.32	48	406	.15	7.58	.96
.....	2852.00	1.46	1.43	98	416	.20	11.30	.89
.....	2854.75	1.26	2.29	182	423	.05	9.06	.80



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 16:51
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
-L:.....	2857.00	1.22	1.46	120	436	0.00	1.71	.54
--:.....	2860.00	1.50	2.37	158	436	0.00	1.75	.42
--:.....	2862.00	1.19	1.51	127	435	.01	1.60	.52
:.....	2865.00	1.80	1.12	62	432	0.00	1.54	.58
*:.....	2870.00	1.27	1.82	143	433	0.00	2.49	.58



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 17:06
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Core Samples								
=:	2871.00	1.58	2.58	163	433	.77	8.30	.78
,,	2872.15	2.35	6.38	271	443	.03	1.05	.14
:	2873.00	1.06	1.04	98	427	.59	7.90	.89
,,	2873.70	1.73	3.43	198	435	.18	5.99	.64
:	2874.00	1.18	1.31	111	427	.57	8.78	.88
:	2875.00	1.28	2.02	158	435	.26	6.89	.78
:	2876.00	1.35	1.62	120	426	.41	11.42	.88
:	2877.00	1.30	1.42	109	426	.45	10.88	.89
,,	2878.00	1.42	3.26	230	441	.01	2.16	.40
,,	2879.00	1.31	2.89	221	443	.01	1.10	.28
,,	2880.00	1.92	3.90	203	441	.01	.81	.17
:	2881.00	1.71	1.43	84	426	.44	11.76	.90
,,	2882.00	1.75	3.67	210	441	0.00	.97	.21
,,	2883.00	1.16	2.42	209	439	0.00	.53	.18
,,	2884.00	.90	1.59	177	440	0.00	.80	.33
,,	2885.00	1.73	3.69	213	441	0.00	.66	.15
,,	2886.00	1.27	2.59	204	441	0.00	.39	.13
,,	2887.00	1.61	4.03	250	441	0.00	.74	.16
,,	2888.00	1.64	3.63	221	441	0.00	.88	.20
,,	2889.00	1.02	2.41	236	440	.01	1.40	.37
,,	2890.00	1.18	2.31	196	442	.01	.36	.14
:	2891.00	1.11	.88	79	425	.17	10.75	.93
:	2892.00	.50	.27	54	437	.07	4.89	.95
:	2892.40	.86	.61	71	415	.09	8.20	.93
:	2895.00	1.01	.61	60	0	.44	10.54	.95
:	2896.00	1.21	.73	60	0	.65	13.18	.95
:	2897.00	1.44	.84	58	0	.62	15.60	.95
:	2898.00	2.90	12.30	424	0	.53	17.05	.59
:	2899.00	.96	.81	84	0	.23	10.60	.93
:	2900.00	.96	.72	75	419	.31	9.59	.93
:	2901.00	.70	.41	59	0	.29	7.83	.95
:	2902.00	1.61	1.12	70	407	.64	17.29	.94
:	2903.00	1.29	.86	67	404	.48	13.95	.94
:	2904.00	1.48	3.85	260	436	.18	8.77	.70
:	2905.00	1.53	1.05	69	0	.57	16.67	.94
:	2906.00	1.39	1.14	82	0	.42	14.63	.93
:	2907.00	1.08	.85	79	0	.41	11.61	.93
,,	2907.10	2.24	8.38	374	443	.03	1.33	.14
,,	2908.00	.88	1.74	198	437	.01	2.21	.56
,,	2909.00	1.65	4.98	302	445	.01	.96	.16
,,	2909.01	2.06	4.92	239	444	.01	.77	.14
,,	2910.00	1.15	2.39	208	428	.05	6.66	.74
,,	2911.00	1.75	4.60	263	441	.01	.70	.13
:	2912.00	.76	1.61	212	400	.03	7.59	.83
:	2913.00	1.34	1.30	97	407	.15	14.28	.92
:	2914.00	1.10	1.12	102	0	.18	11.65	.91
:	2915.00	1.11	.82	74	0	.20	12.19	.94
:	2916.00	1.16	1.03	89	0	.28	12.51	.93
:	2917.00	1.07	1.04	97	401	.25	10.90	.91
:	2918.00	1.06	.84	79	0	.23	11.80	.93
:	2919.00	.96	.78	81	0	.28	10.30	.93



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 17:18
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Core Samples								
.....	2920.00	1.49	1.27	85	0	.39	15.50	.93
.....	2921.00	1.35	1.10	81	0	.28	13.50	.93
,,,,,,,,,	2922.00	3.23	16.53	512	455	.03	1.58	.09
,,,,,,,,,	2922.80	3.97	17.90	451	442	.03	1.68	.09
.....	2923.75	1.82	1.50	82	0	1.00	18.81	.93
.....	2925.25	.29	.55	190	0	.02	.67	.56
.....	2926.00	1.42	1.10	77	410	.59	15.09	.93
,,,,,,,,,	2926.75	1.50	3.01	201	439	.01	1.23	.29
.....	2929.00	2.62	5.00	191	437	.03	1.21	.20
.....	2929.75	2.13	1.86	87	407	.69	21.04	.92
.....	2930.50	1.90	2.06	108	421	.56	19.20	.91
.....	2931.25	.93	.86	92	417	.38	9.73	.92
.....	2932.00	1.83	6.13	335	439	.03	4.22	.41
.....	2933.50	1.25	1.78	142	430	.19	10.28	.85
.....	2934.20	.80	1.02	128	422	.10	6.58	.87
.....	2934.25	.80	1.02	128	422	.10	6.58	.87
.....	2935.00	1.49	1.53	103	419	.45	15.25	.91
,,,,,,,,,	2935.75	.66	1.20	182	428	.05	4.93	.81
,,,,,,,,,	2936.50	.54	.97	180	432	.04	3.93	.80
.....	2937.25	1.24	3.75	302	439	.01	.50	.12
.....	2938.00	1.57	4.32	275	439	.01	.60	.12
.....	2938.75	1.46	2.83	194	435	.01	5.28	.65
.....	2939.00	1.54	2.46	160	415	.22	14.79	.86
.....	2940.20	7.96	12.37	155	0	.20	15.82	.56
.....	2941.00	1.09	1.89	173	415	.18	9.47	.84
*****	2941.10	14.13	102.49	725	421	.44	29.17	.22
.....	2942.50	.75	.76	101	0	.04	7.97	.91
,,,,,,,,,	2943.25	1.37	2.88	210	432	.01	.70	.20
.....	2944.00	1.22	1.59	130	420	.11	9.03	.85
.....	2944.75	1.17	1.78	152	422	.14	9.27	.84
.....	2945.50	.99	1.29	130	424	.08	7.22	.85
.....	2946.25	1.22	1.58	130	417	.15	11.41	.88
.....	2947.00	3.21	9.16	285	428	.03	4.48	.33
.....	2949.25	.84	1.29	154	423	.02	8.08	.86
.....	2950.00	1.03	1.88	183	433	.08	3.41	.65
.....	2950.90	.88	1.85	210	425	.19	5.54	.76
.....	2951.00	1.30	1.89	145	402	.36	13.12	.88
.....	2952.00	1.05	1.99	190	422	.21	8.58	.82
.....	2952.01	1.08	2.17	201	422	.13	8.24	.79
.....	2953.00	1.06	2.05	193	431	.17	6.56	.77
.....	2954.00	.87	1.75	201	423	.20	8.59	.83
.....	2955.00	1.05	1.81	172	0	.18	10.38	.85
.....	2956.00	1.08	1.93	179	417	.21	10.90	.85
.....	2957.00	.74	1.57	212	418	.13	7.27	.82
.....	2958.00	.55	1.40	255	421	.10	5.22	.79
.....	2959.00	.97	1.80	186	421	.18	9.82	.85
.....	2960.00	1.06	1.84	174	422	.22	10.75	.86
.....	2961.00	.97	1.77	182	0	.12	9.89	.85
.....	2962.00	1.83	.31	17	0	.06	.11	.35
.....	2963.00	.75	1.47	196	0	.13	7.49	.84
.....	2964.00	.72	1.45	201	0	.12	7.16	.83
.....	2965.00	1.17	2.04	174	0	.16	12.01	.86



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 18:01
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Core Samples								
.....	2966.00	1.08	1.68	156	0	.15	11.23	.87
.....	2967.00	.84	1.84	219	0	.08	7.77	.81
.....	2968.00	.72	1.31	182	460	.11	7.26	.85
.....	2969.20	.66	1.59	241	423	.14	6.27	.80
.....	2970.00	.68	1.67	246	0	.10	5.87	.78
.....	2971.00	.97	1.95	201	421	.12	4.73	.71
.....	2972.00	0.00	.25	0	0	.04	.10	.36
.....	2973.00	.68	1.41	207	0	.21	6.65	.83
.....	2974.00	.85	1.76	207	421	.28	8.23	.83
.....	2975.00	.82	2.04	249	0	.32	7.62	.80
.....	2976.00	0.00	.52	0	0	.07	1.25	.72
.....	2977.00	4.63	.74	16	0	.07	1.05	.60
.....	2978.00	0.00	1.41	0	438	.01	.19	.12
.....	2979.00	.54	1.46	270	0	.08	5.02	.78
.....	2980.00	.73	1.56	214	0	.09	5.55	.78
.....	2981.00	.67	1.76	263	0	.20	6.23	.79
.....	2982.00	1.23	2.24	182	0	.29	12.37	.85
.....	2983.00	.98	1.80	184	0	.25	9.79	.85
.....	2984.00	1.75	4.14	237	434	.05	.91	.19
.....	2985.00	1.28	1.52	119	0	.14	8.50	.85
.....	2986.00	.86	1.47	171	0	.18	8.80	.86
.....	2987.00	.55	1.13	205	0	.09	5.45	.83
.....	2988.00	.71	1.32	186	0	.15	7.10	.85
*****	2988.40	24.09	204.72	850	416	.51	34.57	.15
.....	2989.00	5.84	10.06	172	432	.08	1.10	.10
.....	2990.00	1.04	1.27	122	0	.05	.19	.16
.....	2991.00	.97	1.94	200	0	.03	.33	.16
.....	2992.00	.31	1.00	323	0	.02	.11	.12
.....	2993.00	0.00	.26	0	0	0.00	.06	.19
.....	2994.00	0.00	.64	0	0	.04	.12	.20
.....	2994.50	0.00	.78	0	0	.04	.09	.14
.....	2995.00	.61	1.44	236	0	.03	.28	.18
.....	2995.50	.59	1.45	246	0	.10	4.48	.76
.....	2996.50	.77	1.70	221	0	.19	7.00	.81
.....	2997.50	1.21	2.87	237	0	.07	4.50	.61
.....	2998.00	2.90	12.30	424	0	.53	17.05	.59
.....	2998.50	.40	.86	215	0	.01	.16	.17
.....	2999.50	.77	1.60	208	434	.01	.85	.35
*****	3000.50	8.19	66.79	816	428	.10	7.49	.10
.....	3001.50	4.53	1.09	24	0	.02	.19	.16
.....	3002.50	1.64	.58	35	0	0.00	.08	.12
.....	3003.50	2.30	.72	31	0	.01	.11	.14
.....	3005.50	0.00	.58	0	0	.01	.08	.13
====	3006.50	0.00	.86	0	432	.02	.58	.41
.....	3007.50	1.24	.86	69	0	.01	.16	.17
====	3008.50	.41	.80	195	429	.03	.10	.14
*****	3009.50	1.87	3.96	212	442	.04	.52	.12
====	3010.50	.87	.73	84	428	.02	.16	.20
====	3011.50	.45	.92	204	439	.02	.14	.15
====	3012.50	.26	.74	285	0	0.00	.14	.16
.....	3013.50	.54	.16	30	0	0.00	.04	.20
.....	3014.60	0.00	.25	0	0	.01	.05	.19



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 18:06
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Core Samples								
.....	3015.34	0.00	.12	0	0	0.00	.03	.20
.....	3016.20	0.00	.05	0	421	0.00	.03	.38
.....	3017.20	2.64	8.48	321	427	0.00	.67	.07
.....	3018.12	0.00	.25	0	450	0.00	.05	.17
.....	3019.30	.52	.98	188	425	0.00	4.25	.81
*****	3020.50	0.00	.20	0	0	0.00	.07	.26
.....	3021.13	.57	1.12	196	0	0.00	.01	.01
.....	3022.00	.71	1.11	156	417	.02	6.32	.85
.....	3023.10	.49	1.13	231	0	.01	.01	.02
*.....	3024.00	7.91	22.74	287	421	.03	5.18	.19
.....	3025.00	.44	.46	105	449	0.00	.16	.26
.....	3026.10	.35	.75	214	417	0.00	1.86	.71
.....	3027.10	2.20	5.03	229	435	0.00	1.91	.28
*****	3027.83	44.90	169.45	377	427	.54	36.31	.18
*.....	3029.00	4.74	14.41	304	429	0.00	4.92	.25
,, , , , ooooo	3030.00	1.12	2.46	220	427	.05	5.81	.70
.....	3031.00	.33	.40	121	442	0.00	.32	.44
*****	3032.30	31.55	107.12	340	433	.03	23.65	.18
,, , , ,	3033.40	5.39	17.04	316	435	.02	1.06	.06
*****	3034.40	24.70	99.82	404	441	.11	5.84	.06
.....	3035.10	.30	.33	110	431	0.00	.15	.31
.....	3035.80	0.00	0.00	0	0	0.00	0.00	0.00
.....	3036.80	0.00	.23	0	439	0.00	.06	.21
.....	3037.60	1.78	1.56	88	456	0.00	.31	.17
,, , , ,	3038.40	0.00	0.00	0	0	0.00	0.00	0.00
***** , , , , ,	3039.40	33.64	52.27	155	437	0.00	6.03	.10
.....	3040.85	2.19	7.15	326	445	0.00	.25	.03



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 18:11
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
*****	3042.00	30.08	105.17	350	443	0.00	8.44	.07
**::::::::::	3045.00	26.18	62.46	239	442	.01	6.31	.09
**::::::::::	3047.00	61.09	73.38	120	446	0.00	9.21	.11



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 18:13
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Core Samples								
.....	3052.41	.30	.83	277	435	0.00	1.40	.63
.....	3053.42	0.00	.55	0	452	0.00	.87	.61
.....	3054.12	1.27	4.05	319	431	0.00	1.01	.20
.....	3055.04	0.00	.04	0	0	0.00	.05	.56
.....	3057.11	0.00	.06	0	0	0.00	0.00	0.00
.....	3058.08	.60	.48	80	443	0.00	.22	.31
.....	3058.98	1.00	1.73	173	442	0.00	.29	.14
.....	3060.20	1.93	4.68	242	428	.03	2.41	.34
.....	3063.59	1.59	4.76	299	421	.05	1.94	.29
*****	3064.37	8.55	28.44	333	423	.04	3.93	.12
.....	3065.84	1.57	3.79	241	430	.01	.56	.13
.....	3066.55	.98	1.84	188	428	.01	.49	.21
oooooooooooo	3067.66	0.00	.32	0	447	0.00	.14	.30
oooooooooooo	3068.65	0.00	.46	0	447	0.00	.07	.13
.....	3069.71	0.00	.34	0	462	0.00	.06	.15
.....	3070.57	.30	.75	250	437	0.00	.48	.39
*****	3071.57	43.62	205.02	470	432	.05	15.97	.07
.....	3072.50	1.67	3.52	211	433	.03	.37	.10
.....	3073.54	0.00	.21	0	440	0.00	.10	.32
.....	3074.45	0.00	.19	0	0	0.00	.05	.21
**	3075.45	10.85	51.75	477	435	.04	2.87	.05
.....	3076.46	.91	1.81	199	434	0.00	.34	.16
.....	3077.70	.48	.46	96	437	0.00	.16	.26
.....	3078.40	.84	1.79	213	433	0.00	.26	.13
.....	3079.64	0.00	.35	0	0	0.00	.04	.10
.....	3080.40	0.00	.34	0	0	0.00	.09	.21
.....	3081.50	.76	.99	130	461	.06	3.79	.80
.....	3082.50	0.00	.42	0	469	0.00	.14	.25
.....	3083.50	0.00	.42	0	465	0.00	.03	.07
.....	3090.60	0.00	.21	0	0	0.00	.05	.19
.....	3092.40	1.61	3.64	226	434	0.00	.56	.13
.....	3092.80	0.00	.16	0	0	0.00	.07	.30
.....	3093.70	0.00	.20	0	0	0.00	.05	.20
.....	3094.50	0.00	.16	0	0	0.00	.04	.20
.....	3095.60	0.00	.34	0	0	0.00	.08	.19
.....	3096.50	0.00	.29	0	0	0.00	.02	.06
.....	3098.10	0.00	.24	0	0	0.00	.04	.14
.....	3099.35	0.00	.24	0	0	0.00	.01	.04
.....oooo	3100.90	0.00	.21	0	0	0.00	.03	.13
.....oooo	3102.10	0.00	.16	0	0	0.00	0.00	0.00
.....oooo	3102.90	0.00	.29	0	0	0.00	.01	.03
.....oooo	3104.35	0.00	.41	0	0	0.00	.03	.07
.....oooo	3105.00	0.00	.45	0	0	0.00	.09	.17
.....	3106.20	0.00	.49	0	0	0.00	.02	.04
.....	3107.20	0.00	.30	0	0	0.00	.01	.03
.....	3108.20	0.00	.32	0	0	0.00	.04	.11
.....	3109.20	0.00	.22	0	0	0.00	.04	.15
.....	3110.10	0.00	.12	0	0	0.00	.08	.40
.....	3110.98	0.00	.32	0	0	0.00	.22	.41
.....	3111.50	0.00	.08	0	0	0.00	.07	.47



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 18:17
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Core Samples								
	3113.00	0.00	.17	0	0	0.00	.10	.37
	3114.13	0.00	.24	0	0	0.00	.29	.55
;;;;;;;;;;	3115.03	.77	.42	55	0	0.00	.19	.31
	3116.05	3.19	3.90	122	437	0.00	.56	.13
:::::::	3117.50	0.00	.29	0	0	0.00	.07	.19



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 18:23
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cutttings Samples								
.....	3120.00	0.00	.04	0	0	0.00	.09	.69
.....	3122.00	0.00	.03	0	0	0.00	.07	.70
.....	3125.00	0.00	.03	0	0	0.00	.07	.70
.....	3127.00	0.00	.12	0	0	0.00	.18	.60
.....	3130.00	.38	.38	100	438	0.00	.26	.41
.....	3132.00	0.00	.09	0	0	0.00	.26	.74
.....	3135.00	0.00	.08	0	0	0.00	.13	.62
.....	3137.00	0.00	.16	0	0	0.00	.26	.62
.....	3140.00	0.00	.06	0	0	0.00	.07	.54
.....	3142.00	0.00	.04	0	0	0.00	.18	.82
.....	3145.00	.25	.24	96	432	0.00	.32	.57
.....	3147.00	0.00	.02	0	0	0.00	.04	.67
.....	3150.00	0.00	.11	0	0	0.00	.18	.62
.....	3152.00	0.00	.09	0	0	0.00	.22	.71
.....	3155.00	0.00	.10	0	0	0.00	.30	.75
.....	3157.00	.89	1.63	183	435	0.00	.43	.21
.....	3160.00	0.00	.04	0	439	0.00	.07	.64
.....	3162.00	0.00	.10	0	0	0.00	.18	.64
.....	3165.00	0.00	.12	0	0	0.00	.32	.73
.....	3167.00	0.00	.03	0	0	0.00	.07	.70
.....	3170.00	0.00	.04	0	0	0.00	.03	.43
.....	3172.00	0.00	.02	0	0	0.00	.12	.86
.....	3175.00	.44	.34	77	445	0.00	.29	.46
.....	3177.00	0.00	.08	0	0	0.00	.07	.47
*	3180.00	.66	.44	67	446	0.00	.20	.31
.....	3182.00	1.59	1.27	80	444	0.00	.38	.23
.....	3185.00	3.00	5.00	167	441	0.00	.51	.09
.....	3187.00	.44	.36	82	449	0.00	.24	.40
*	3190.00	4.90	11.26	230	436	0.00	.94	.08
.....	3192.00	.83	.94	113	447	0.00	.46	.33
.....	3195.00	0.00	.11	0	0	0.00	.09	.45
.....	3197.00	.94	1.13	120	448	0.00	.33	.23
.....	3200.00	0.00	.05	0	0	0.00	.10	.67



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 17:36
: 12 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
.....	3202.00	.74	.87	118	445	0.00	.26	.23
.....	3205.00	0.00	.04	0	0	0.00	.09	.69
.....	3207.00	0.00	.20	0	0	0.00	.14	.41
.....	3210.00	1.90	1.96	103	440	0.00	.50	.20
.....	3212.00	1.00	.89	89	445	0.00	.23	.21
.....	3215.00	.82	.57	70	453	0.00	.62	.52
....	3217.00	.52	.62	119	448	0.00	.37	.37
....	3220.00	.79	.77	97	441	0.00	.22	.22
.....	3222.00	0.00	.10	0	0	0.00	.26	.72
,.....	3225.00	.53	.24	45	0	0.00	.29	.55
,.....	3227.00	0.00	.06	0	0	0.00	.09	.60
.....	3230.00	0.00	.07	0	0	0.00	.10	.59
.....	3232.00	0.00	.06	0	0	0.00	.06	.50
.....	3235.00	0.00	.06	0	0	0.00	.08	.57
.....	3237.00	1.26	2.92	232	0	0.00	3.37	.54
.....	3240.00	.29	.55	190	0	0.00	.54	.50
.....	3242.00	.28	.14	50	0	0.00	.07	.33
.....	3245.00	0.00	.06	0	0	0.00	.28	.82
,.....	3247.00	0.00	.05	0	0	0.00	.29	.85
.....	3250.00	0.00	.06	0	0	0.00	.35	.85
.....	3252.00	0.00	.06	0	0	0.00	.18	.75
.....	3255.00	.77	.39	51	426	0.00	.38	.49
.....	3257.00	.53	.30	57	432	0.00	.31	.51
.....	3260.00	0.00	.08	0	0	0.00	.26	.76
.....	3262.00	.35	.21	60	0	0.00	.34	.62
.....	3265.00	0.00	.15	0	0	0.00	.19	.56
.....	3267.00	0.00	.08	0	0	0.00	.15	.65
.....	3270.00	0.00	.03	0	0	0.00	.04	.57
.....	3272.00	0.00	.03	0	0	0.00	.06	.67
.....	3275.00	0.00	.08	0	0	0.00	.12	.60
.....	3277.00	0.00	.14	0	0	0.00	.21	.60
.....	3280.00	0.00	.33	0	442	0.00	.31	.48
:	3282.00	0.00	.13	0	0	0.00	.23	.64
:	3285.00	0.00	.08	0	0	0.00	.15	.65
....	3287.00	.50	.25	50	0	0.00	.30	.55
.....	3290.00	0.00	.16	0	0	0.00	.18	.53
.....	3292.00	0.00	.11	0	0	0.00	.18	.62
.....	3295.00	0.00	.06	0	0	0.00	.14	.70
.....	3297.00	0.00	.03	0	0	0.00	.06	.67
.....	3300.00	0.00	.02	0	0	0.00	.03	.60
.....	3302.00	0.00	.02	0	0	0.00	.10	.83
.....	3305.00	0.00	.02	0	0	0.00	.18	.90
.....	3307.00	0.00	.06	0	0	0.00	.16	.73
.....	3310.00	0.00	0.00	0	0	0.00	.03	1.00
.....	3312.00	0.00	0.00	0	0	0.00	.04	1.00
.....	3315.00	0.00	.01	0	0	0.00	.06	.86
.....	3317.00	0.00	.01	0	0	0.00	.08	.89
.....	3320.00	0.00	.07	0	0	0.00	.16	.70
.....	3322.00	0.00	.05	0	0	0.00	.08	.62
.....	3325.00	0.00	0.00	0	0	0.00	0.00	0.00



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 17:41
: 12 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
.....	3327.00	0.00	0.00	0	0	0.00	0.00	0.00
.....	3330.00	0.00	.01	0	0	0.00	.01	.50
.....	3332.00	0.00	.06	0	0	0.00	.02	.25
.....	3335.00	0.00	0.00	0	0	0.00	0.00	0.00
.....	3337.00	0.00	.04	0	0	0.00	.03	.43
.....	3340.00	0.00	0.00	0	0	0.00	.01	1.00
.....	3342.00	0.00	0.00	0	0	0.00	0.00	0.00
.....	3345.00	0.00	.04	0	0	0.00	.02	.33
.....	3347.00	0.00	.01	0	0	0.00	0.00	0.00
.....	3350.00	0.00	.02	0	0	0.00	.01	.33
.....	3352.00	0.00	0.00	0	0	0.00	.01	1.00
.....	3355.00	0.00	.03	0	0	0.00	.01	.25
.....	3357.00	0.00	0.00	0	0	0.00	0.00	0.00
.....	3360.00	0.00	0.00	0	0	0.00	0.00	0.00
.....	3362.00	0.00	.01	0	0	0.00	.02	.67
.....	3365.00	0.00	.02	0	0	0.00	.01	.33
.....	3367.00	0.00	.05	0	0	0.00	.04	.44
.....	3370.00	0.00	.05	0	0	0.00	.05	.50
.....	3372.00	0.00	.02	0	0	0.00	.01	.33
.....	3375.00	0.00	.02	0	0	0.00	.01	.33
.....	3377.00	0.00	0.00	0	0	0.00	0.00	0.00
.....	3380.00	0.00	.02	0	0	0.00	.01	.33
.....	3382.00	0.00	0.00	0	0	0.00	.01	1.00
.....	3385.00	0.00	0.00	0	0	0.00	0.00	0.00
.....	3387.00	0.00	.06	0	0	0.00	.05	.45
.....	3390.00	0.00	.05	0	0	0.00	.03	.38
.....	3392.00	0.00	.03	0	0	0.00	.03	.50
.....	3395.00	0.00	.02	0	0	0.00	.03	.60
.....	3397.00	0.00	.03	0	0	0.00	.03	.50
.....	3400.00	0.00	.03	0	0	0.00	.02	.40
.....	3402.00	0.00	.05	0	0	0.00	.03	.38
.....	3405.00	0.00	.05	0	0	0.00	.02	.29
.....	3407.00	0.00	.09	0	0	0.00	.03	.25
.....	3410.00	0.00	.10	0	0	0.00	.05	.33
.....	3412.00	0.00	.04	0	0	0.00	.02	.33
.....	3415.00	0.00	.04	0	0	0.00	.02	.33
.....	3417.00	0.00	.04	0	0	0.00	.03	.43
.....	3420.00	0.00	.04	0	0	0.00	.02	.33
.....	3422.00	0.00	.04	0	0	0.00	.02	.33
.....	3425.00	0.00	.03	0	0	0.00	.01	.25
.....	3427.00	0.00	.02	0	0	0.00	.01	.33
...	3430.00	0.00	0.00	0	0	0.00	0.00	0.00
...	3432.00	.31	.25	81	455	0.00	.05	.17
.....	3435.00	0.00	.03	0	0	0.00	.03	.50
.....	3437.00	0.00	.03	0	0	0.00	.01	.25
.....	3440.00	0.00	0.00	0	0	0.00	0.00	0.00
..	3442.00	0.00	.04	0	0	0.00	.02	.33
//	3445.00	0.00	.09	0	0	0.00	.06	.40
..	3447.00	0.00	.05	0	0	0.00	.02	.29
	3450.00	.47	.35	74	417	0.00	.43	.55



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 17:46
: 12 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
	3452.00	0.00	.01	0	0	0.00	.02	.67
	3455.00	.27	.62	230	427	0.00	.38	.38
	3457.00	0.00	0.00	0	0	0.00	0.00	0.00
	3460.00	0.00	.06	0	0	0.00	.02	.25
	3462.00	0.00	.04	0	0	0.00	.01	.20
	3465.00	0.00	0.00	0	0	0.00	.02	1.00
	3467.00	0.00	0.00	0	0	0.00	.01	1.00
	3470.00	0.00	0.00	0	0	0.00	.01	1.00
	3472.00	0.00	0.00	0	0	0.00	0.00	0.00
:	3475.00	0.00	.01	0	0	0.00	0.00	0.00
	3477.00	0.00	0.00	0	0	0.00	0.00	0.00
::: :::	3480.00	0.00	.02	0	0	0.00	0.00	0.00
::: :::	3482.00	0.00	.01	0	0	0.00	0.00	0.00
::: :::	3485.00	0.00	.01	0	0	0.00	0.00	0.00
:::	3487.00	0.00	.01	0	0	0.00	0.00	0.00
/ ::: :::	3490.00	0.00	.16	0	0	0.00	.04	.20
/ ::: :::	3492.00	0.00	.04	0	0	0.00	.02	.33
/ ::: :::	3495.00	0.00	.02	0	0	0.00	.01	.33
::: :::	3497.00	0.00	.04	0	0	0.00	.01	.20
::: :::	3500.00	0.00	.01	0	0	0.00	0.00	0.00
::: :::	3502.00	0.00	.02	0	0	0.00	0.00	0.00
::: :::	3505.00	0.00	.02	0	0	0.00	.03	.60
::: :::	3507.00	0.00	.02	0	0	0.00	.01	.33
::: :::	3510.00	0.00	.08	0	0	0.00	.08	.50
:::	3512.00	0.00	.01	0	0	0.00	0.00	0.00
:::	3515.00	0.00	.05	0	0	0.00	.05	.50
:	3517.00	0.00	.01	0	0	0.00	.03	.75
:	3520.00	0.00	.03	0	0	0.00	.03	.50
:	3522.00	0.00	.01	0	0	0.00	.01	.50
:::	3525.00	0.00	.02	0	0	0.00	0.00	0.00
::: ::: :::	3527.00	0.00	.03	0	0	0.00	.03	.50
::: ::: :::	3530.00	0.00	.02	0	0	0.00	.01	.33
::: :::	3532.00	0.00	.02	0	0	0.00	.02	.50
L ::: :::	3535.00	0.00	.02	0	0	0.00	.02	.50
L ::: :::	3537.00	0.00	.02	0	0	0.00	.02	.50
::: ::: :::	3540.00	0.00	.05	0	0	0.00	.07	.58
::: :::	3542.00	0.00	.04	0	0	0.00	.10	.71
:::	3545.00	.25	.19	76	0	0.00	.20	.51
::: :::	3547.00	0.00	.31	0	0	0.00	0.00	0.00
/ :	3550.00	0.00	.06	0	0	0.00	.06	.50
:::	3552.00	0.00	.03	0	0	0.00	.10	.77
:	3555.00	0.00	0.00	0	0	0.00	0.00	0.00
	3557.00	0.00	0.00	0	0	0.00	0.00	0.00
:::	3560.00	0.00	0.00	0	0	0.00	.02	1.00
	3562.00	0.00	.02	0	0	0.00	.03	.60
	3565.00	0.00	.06	0	0	0.00	.02	.25
	3567.00	0.00	.02	0	0	0.00	.02	.50
	3570.00	0.00	.02	0	0	0.00	.02	.50
	3572.00	0.00	.01	0	0	0.00	0.00	0.00
	3575.00	0.00	.03	0	0	0.00	.05	.63



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 17:52
: 12 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
	3577.00	0.00	.03	0	0	0.00	.04	.57
::::	3580.00	0.00	.02	0	0	0.00	.03	.60
::::	3582.00	0.00	.04	0	0	0.00	.03	.43
:::	3585.00	0.00	0.00	0	0	0.00	0.00	0.00
::	3587.00	0.00	.04	0	0	0.00	.04	.50
::	3590.00	0.00	.04	0	0	0.00	.03	.43
::	3592.00	0.00	.01	0	0	0.00	.01	.50
:	3595.00	0.00	.03	0	0	0.00	0.00	0.00
:	3597.00	0.00	0.00	0	0	0.00	0.00	0.00
:::::	3600.00	0.00	.14	0	0	0.00	.07	.33
:::::	3602.00	0.00	.08	0	0	0.00	.01	.11
:::::	3605.00	0.00	.06	0	0	0.00	.01	.14
:::::	3607.00	0.00	.04	0	0	0.00	.04	.50
:::	3610.00	0.00	.07	0	0	0.00	.02	.22
:::	3612.00	0.00	.02	0	0	0.00	0.00	0.00
:::	3615.00	0.00	0.00	0	0	0.00	0.00	0.00
::	3617.00	0.00	.35	0	479	0.00	.07	.17
::	3620.00	0.00	.04	0	0	0.00	.03	.43
::	3622.00	0.00	.04	0	0	0.00	.03	.43
::	3625.00	.41	.28	68	433	0.00	.10	.26
:::	3627.00	0.00	.29	0	414	0.00	.07	.19
:::::	3630.00	0.00	.02	0	0	0.00	.05	.71
:::::	3632.00	0.00	.15	0	0	0.00	.11	.42
:::::	3635.00	0.00	.08	0	0	0.00	.04	.33
:::::	3637.00	0.00	.07	0	0	0.00	.02	.22
:::::	3640.00	0.00	.04	0	0	0.00	.17	.81
:::::	3642.00	0.00	.08	0	0	0.00	.07	.47
:::::	3645.00	0.00	.29	0	440	0.00	.08	.22
:::::	3647.00	0.00	.04	0	0	0.00	.02	.33
::	3650.00	.27	.08	30	0	0.00	.03	.27
::	3652.00	.37	.22	59	410	0.00	.23	.51
::	3655.00	0.00	.05	0	0	0.00	.03	.38
:::	3657.00	.25	.53	212	0	0.00	1.15	.68
::	3660.00	0.00	.12	0	0	0.00	.05	.29
::	3662.00	0.00	.43	0	0	0.00	.78	.64
:	3665.00	.33	.62	188	0	0.00	.52	.46
:	3667.00	0.00	.09	0	0	0.00	.06	.40
:	3670.00	0.00	.02	0	0	0.00	.01	.33
:	3672.00	0.00	.04	0	0	0.00	.03	.43
:	3675.00	0.00	.01	0	0	0.00	0.00	0.00
:::::	3677.00	.36	.02	6	0	0.00	0.00	0.00
:	3680.00	.44	.92	209	435	0.00	.13	.12
::	3682.00	0.00	.02	0	0	0.00	.01	.33
:::	3685.00	0.00	.01	0	0	0.00	.02	.67
:::	3687.00	0.00	.01	0	0	0.00	.01	.50
::	3690.00	0.00	.01	0	0	0.00	.01	.50
::	3692.00	0.00	0.00	0	0	0.00	0.00	0.00
::	3695.00	.34	.35	103	435	0.00	.08	.19
:	3697.00	0.00	.05	0	0	0.00	.04	.44
:	3700.00	0.00	0.00	0	0	0.00	.01	1.00



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 17:57
: 12 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
	: 3702.00	0.00	0.00	0	0	0.00	0.00	0.00
	: 3705.00	0.00	.03	0	0	0.00	.01	.25
	3707.00	0.00	.13	0	0	0.00	.02	.13
	3710.00	0.00	.19	0	0	0.00	.10	.34
	: 3712.00	0.00	.11	0	0	0.00	.06	.35
	: 3715.00	.37	.20	54	443	0.00	.04	.17
	: 3717.00	0.00	.10	0	0	0.00	.04	.29
	: 3720.00	0.00	.05	0	0	0.00	.02	.29
	3722.00	0.00	.02	0	0	0.00	.01	.33
	3725.00	0.00	0.00	0	0	0.00	0.00	0.00
	: 3727.00	0.00	.01	0	0	0.00	0.00	0.00
	: 3730.00	1.09	1.47	135	447	0.00	.12	.08
	: 3732.00	0.00	.12	0	0	0.00	.02	.14
	: 3735.00	0.00	0.00	0	0	0.00	0.00	0.00
	: 3737.00	0.00	.01	0	0	0.00	0.00	0.00
	::: 3740.00	0.00	.06	0	0	0.00	0.00	0.00
	::: 3742.00	0.00	.02	0	0	0.00	0.00	0.00
	: 3745.00	0.00	.02	0	0	0.00	0.00	0.00
	: 3747.00	0.00	.02	0	0	0.00	.02	.50
	: 3750.00	0.00	0.00	0	0	0.00	0.00	0.00



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 18:54
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Sidewall Core Samples								
	1189.91	2.46	3.55	144	418	.06	.67	.17
	1199.98	2.96	4.88	165	436	.08	.74	.14
	1209.94	3.44	7.09	206	411	.08	1.24	.16
	1244.91	1.59	2.86	180	0	.11	.40	.15
	1249.96	1.54	2.71	176	429	.03	.44	.15
	1295.06	1.57	3.94	251	440	.05	.64	.15
	1299.99	.98	1.68	171	0	.02	.34	.18
	1350.08	.98	2.69	274	430	.03	.39	.14
.....	1400.03	1.91	8.50	445	467	.05	.78	.09
	1419.92	1.41	8.54	606	481	.04	.47	.06
	1474.93	.82	2.81	343	455	.03	.25	.09
.....	1539.97	.78	3.78	485	0	.03	.45	.11
	1549.00	3.00	5.70	190	480	.50	.60	.16
	1549.95	.91	2.79	307	408	.03	.30	.11
	1584.90	1.56	3.38	217	436	.02	.42	.12
	1639.93	1.42	4.17	294	440	.02	.25	.06
	1674.90	.32	1.10	344	0	.02	.14	.13
	1739.88	1.56	1.98	127	418	.03	.31	.15
	1764.91	1.46	2.19	150	426	.02	.20	.09
	1805.15	2.46	3.66	149	416	.01	.39	.10
	1824.82	2.50	4.99	200	425	.09	.33	.08
	1839.82	2.59	4.05	156	415	.09	.64	.15
	1844.94	2.15	4.05	188	415	.09	.64	.15
	1898.08	.48	1.92	400	0	.10	.16	.12
	1900.00	.26	1.19	458	0	0.00	.05	.04
	1927.00	.66	1.29	195	0	.01	.18	.13
	1939.00	.80	1.25	156	0	.29	1.01	.51
	1946.00	0.00	1.56	0	0	.04	.23	.15
	1981.00	.63	1.05	167	0	.01	.15	.13
	1990.00	.88	2.03	231	436	.01	.23	.11
	2000.00	.93	2.45	263	428	.02	.75	.24
	2019.00	.78	1.69	217	427	.05	.35	.19
	2039.50	.78	2.59	332	431	.08	.33	.14
	2058.00	.91	2.43	267	433	.03	.21	.09
	2078.00	.56	1.08	193	423	0.00	.41	.28
	2085.50	.70	.97	139	429	.03	.24	.22
	2100.00	1.03	3.00	291	0	.03	.20	.07
	2121.00	1.05	3.04	290	430	.03	.35	.11
	2140.00	1.00	2.42	242	435	.02	.15	.07
	2155.00	1.01	2.54	251	435	.01	.12	.05
	2160.00	.86	1.51	176	0	.01	.10	.07
	2170.00	.72	1.42	197	0	0.00	.04	.03
	2190.00	.80	1.79	224	453	0.00	.05	.03
	2220.00	.74	1.41	191	0	.01	.07	.05
	2231.00	.82	1.19	145	0	.02	.14	.12
	2249.50	1.10	3.18	289	0	0.00	.10	.03
	2270.00	.87	2.12	244	0	0.00	.12	.05
	2276.50	2.01	2.33	116	0	.03	.13	.06
	2295.00	1.27	2.27	179	0	.02	.10	.05
	2314.00	.98	2.23	228	0	.02	.07	.04



EXPLORATION[®] LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 18:58
: 10 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Sidewall Core Samples								
	2336.50	1.18	2.66	225	0	0.00	.10	.04
.....	2370.00	.94	1.68	179	0	0.00	.10	.06
.....	2425.00	1.17	1.59	136	0	0.00	.05	.03
.....	2446.50	1.13	2.03	180	0	0.00	.08	.04
.....	2449.00	1.10	1.08	98	0	0.00	.03	.03
.....	2493.00	.68	.74	109	0	0.00	.03	.04
.....	2550.00	.92	1.24	135	0	0.00	.05	.04
.....	2590.00	.94	1.00	106	446	0.00	.03	.03
.....	2610.00	.84	1.59	189	0	0.00	.03	.02
.....	2630.00	1.10	1.10	100	439	0.00	.10	.08
.....	2649.00	.95	.76	80	441	0.00	.03	.04
.....	2670.00	.61	.88	144	0	0.00	.02	.02
.....	2693.00	.43	.91	212	0	0.00	.01	.01
.....	2699.00	4.44	16.34	368	427	.22	1.19	.08
.....	2700.00	6.02	25.61	425	427	.34	1.93	.08
.....	2702.00	3.94	14.93	379	423	.28	1.84	.12
.....	2703.00	4.59	16.28	355	425	.38	1.77	.12
.....	2704.00	4.67	17.15	367	424	.35	1.87	.11
.....	2711.00	5.17	17.03	329	424	.03	2.09	.11



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 10:18
: 11 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Solvent Extracted Core Samples								
.....	2932.00	.61	.73	120	438	.02	.11	.15
.....	2940.20	3.00	3.62	121	433	.02	.78	.18
.....	2947.00	2.70	7.69	285	430	.03	.93	.11



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 10:10
: 11 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Solvent Extracted Cuttings Samples								
Z	::: 2695.00	4.50	17.62	392	420	.01	.34	.02
LL	: 2697.00	4.50	17.62	392	420	.01	.34	.02
LL	: 2700.00	5.69	24.21	425	422	.11	.58	.03
L	:: 2702.00	3.83	13.72	358	422	.03	.14	.01
	:: 2705.00	3.67	16.76	457	424	.03	.21	.01
	::: 2707.00	3.31	14.23	430	430	0.00	.16	.01
	:: 2710.00	6.23	18.55	298	430	.14	.83	.05
	2750.00	0.00	1.65	0	436	.02	.49	.24
	2752.00	1.81	1.36	75	442	.03	.58	.31
	2755.00	1.32	1.14	86	440	.02	.37	.25
=:~:~:~:~:	2760.00	3.61	4.39	122	441	.06	1.10	.21
-L:~:~:~:~:	2857.00	.92	.78	85	434	0.00	.26	.25
--:~:~:~:~:	2860.00	1.74	1.01	58	433	0.00	.12	.11
--:~:~:~:~:	2862.00	2.04	1.11	54	433	0.00	.13	.10
*:~:~:~:~:	2870.00	1.20	1.33	111	432	0.00	.10	.07
Solvent Extracted Core Samples								
	2725.07	4.83	3.90	81	447	.10	1.65	.31
====,~:~:~:~:	2762.95	.59	.93	158	438	.01	.31	.26
====~:~:~:~:	2764.10	3.56	8.54	240	437	.10	2.12	.21
,~:~:~:~:~:~:~:	2765.04	2.41	2.43	101	440	.01	.92	.28
=~:~:~:~:~:~:~:	2766.09	.79	1.01	128	440	.01	.34	.26
:~:~:~:~:~:~:~:	2770.07	.28	.67	239	436	.02	.24	.28
:~:~:~:~:~:~:~:	2770.75	0.00	.27	0	440	0.00	.10	.27
:~:~:~:~:~:~:~:	2773.00	.39	.66	169	439	0.00	.37	.36
:~:~:~:~:~:~:~:	2774.00	1.05	1.69	161	438	.01	.48	.22
:~:~:~:~:~:~:~:	2775.00	1.97	4.51	229	440	.02	1.00	.18
:~:~:~:~:~:~:~:	2776.00	0.00	1.46	0	0	.07	.38	.24
:~:~:~:~:~:~:~:	2778.00	0.00	.38	0	0	.01	.16	.31
:~:~:~:~:~:~:~:	2780.00	0.00	.44	0	0	0.00	.12	.21
====,~:~:~:~:	2830.03	2.44	13.35	547	434	.23	2.19	.15
====,~:~:~:~:	2831.80	3.15	17.52	556	429	.29	2.28	.13
:~:~:~:~:~:~:~:	2844.00	.47	.33	70	436	0.00	.24	.42
:~:~:~:~:~:~:~:	2845.00	.10	.13	130	0	0.00	.13	.50
:~:~:~:~:~:~:~:	2846.00	.30	.18	60	0	0.00	.17	.49
:~:~:~:~:~:~:~:	2847.00	.35	.43	123	432	0.00	.24	.36
:~:~:~:~:~:~:~:	2848.00	.64	.51	80	433	0.00	.24	.32
:~:~:~:~:~:~:~:	2850.00	.15	.09	60	0	0.00	.11	.55
:~:~:~:~:~:~:~:	2852.00	.21	.26	124	434	0.00	.04	.13
:~:~:~:~:~:~:~:	2854.00	.31	.52	168	434	0.00	.26	.33
:~:~:~:~:~:~:~:	2854.70	.21	.37	176	438	0.00	.19	.34
:~:~:~:~:~:~:~:	2871.00	2.14	1.09	51	438	0.00	.16	.13
,~:~:~:~:~:~:~:	2872.15	2.14	5.80	271	441	0.00	.36	.06
:~:~:~:~:~:~:~:	2873.00	.12	.21	175	437	0.00	.16	.43
:~:~:~:~:~:~:~:	2873.70	.94	1.72	183	436	0.00	.22	.11
:~:~:~:~:~:~:~:	2874.00	.29	.36	124	432	0.00	.06	.14
:~:~:~:~:~:~:~:	2875.00	.63	.86	137	431	0.00	.11	.11
:~:~:~:~:~:~:~:	2876.00	.18	.16	89	0	0.00	.04	.20
:~:~:~:~:~:~:~:	2898.00	.11	1.21	1100	0	.22	1.22	.54
:~:~:~:~:~:~:~:	2907.00	2.36	8.84	375	437	.06	.47	.06
:~:~:~:~:~:~:~:	2907.10	2.24	8.84	395	437	0.00	.80	.08
,~:~:~:~:~:~:~:	2922.80	3.88	16.98	438	438	.08	.80	.05
:~:~:~:~:~:~:~:	2929.00	.27	.50	185	0	.03	.11	.22



EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR :
WELL : 6407/7-1

Printed at : 11:26
: 11 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
*****	2757.00	12.11	62.32	515	424	.04	10.92	.15
*****	2760.00	9.58	35.73	373	420	.02	6.20	.15
*****	3190.00	4.90	11.26	230	436	0.00	.94	.08
Core Samples								
*****	2941.00	14.13	102.00	722	421	.44	29.17	.22
*****	2988.40	24.09	140.30	582	417	.34	30.90	.18
*****	3000.50	8.19	66.79	816	428	.10	.85	.01
*****	3017.20	2.64	8.48	321	427	0.00	.67	.07
*****	3024.00	7.91	22.74	287	421	.03	5.18	.19
*****	3027.83	44.90	169.45	377	427	.54	36.31	.18
*****	3029.00	4.74	14.41	304	429	0.00	4.92	.25
*****	3032.30	31.55	107.12	340	433	.03	23.65	.18
*****	3033.40	5.39	17.04	316	435	.02	1.06	.06
*****	3034.40	24.70	99.82	404	441	.11	5.84	.06
*****	3039.40	33.64	52.27	155	437	0.00	6.03	.10
*****	3064.37	8.55	28.44	333	423	.04	3.93	.12
*****	3071.57	43.62	205.02	470	432	.05	15.97	.07
*****	3075.45	10.85	51.75	477	435	.04	2.87	.05

Coal Samples



EXPLORATION[®] LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 11:16
: 11 Mar 1986

LITHOLOGY	DEPTH m	SOURCE BED EVALUATION				FREE HYDROCARBS		
		TOC %wt	S2 mg/g	S2/TOC HI	TMAX degC	S0 mg/g	S1 mg/g	TPI mg/g
Cuttings Samples								
:	2015.00	.81	.56	69	425	0.00	.34	.38
:	2020.00	.95	.80	84	427	0.00	.46	.37
	2025.00	.96	.87	91	427	0.00	.46	.35
	2030.00	.95	.92	97	427	0.00	.45	.33
	2035.00	.98	.89	91	427	0.00	.61	.41
	2040.00	.93	.81	87	428	0.00	.45	.36
	2045.00	1.00	1.28	128	426	0.00	.74	.37
	2050.00	1.05	1.17	111	429	0.00	.48	.29
,	2060.00	1.06	1.34	126	430	0.00	.72	.35
,	2075.00	1.01	1.03	102	432	0.00	.53	.34
,	2085.00	1.04	1.17	113	428	0.00	.84	.42
,	2095.00	.99	1.03	104	431	0.00	.30	.23
	2100.00	.97	1.27	131	432	0.00	.52	.29
	2105.00	.99	1.16	117	431	0.00	.47	.29
	2110.00	1.00	1.23	123	433	0.00	.66	.35
	2115.00	1.03	1.23	119	432	0.00	.68	.36
,	2125.00	.95	1.65	174	434	0.00	.34	.17
	2130.00	1.00	1.09	109	433	0.00	.42	.28
	2135.00	.98	1.07	109	432	0.00	.49	.31
:	2145.00	.93	.95	102	432	0.00	.32	.25
	2155.00	.94	1.23	131	431	0.00	.39	.24
	2165.00	.95	.96	101	433	0.00	.36	.27

Cuttings Samples crushed before analysis

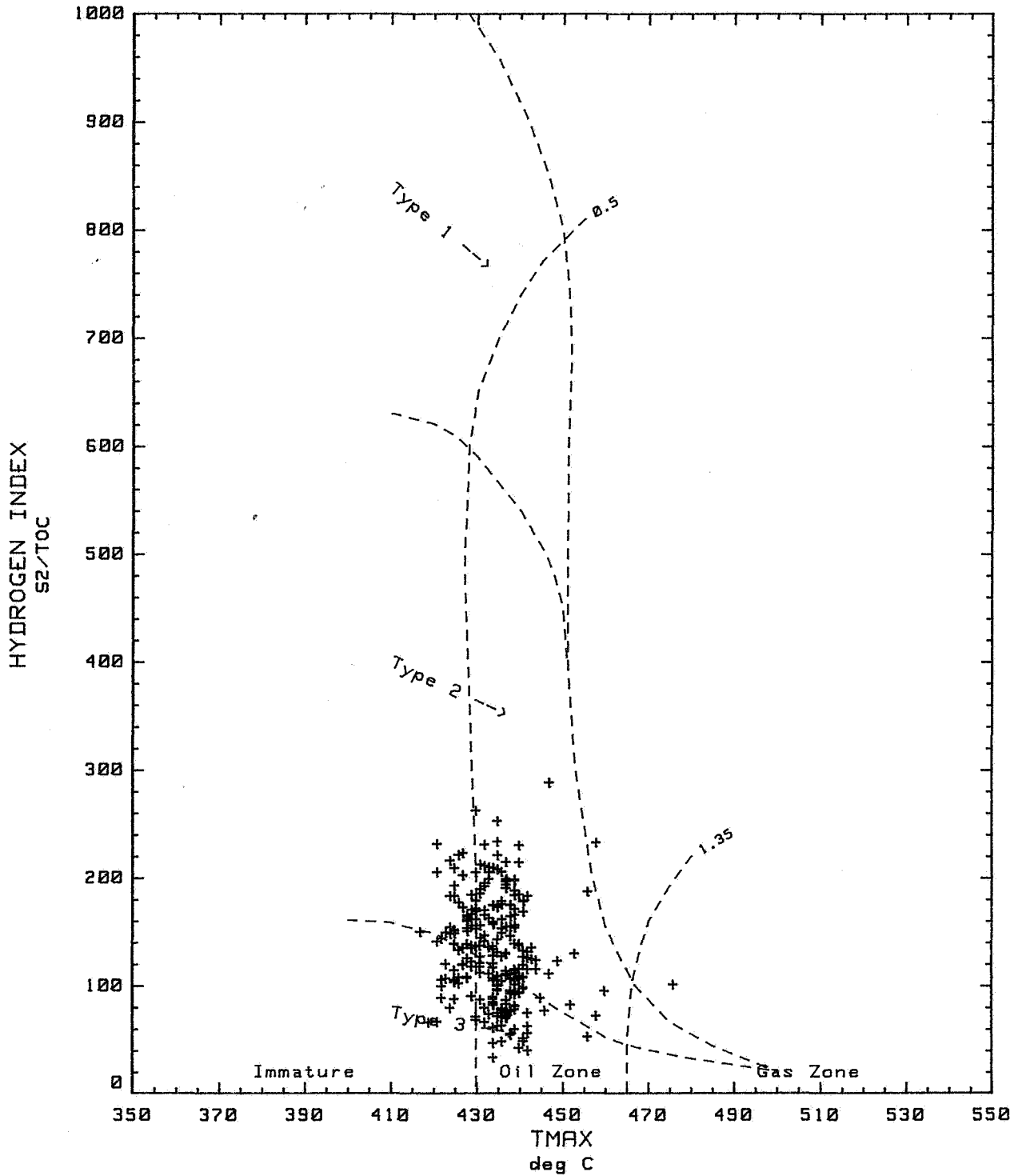


APPENDIX B

COMPUTER GENERATED HYDROGEN INDEX VS TMAX CROSS PLOTS



PYRO-ANALYSIS CROSS PLOT
HYDROGEN INDEX vs TMAX
6407/7-1
1180 to 2695 m Cuttings
1 Mar 1986



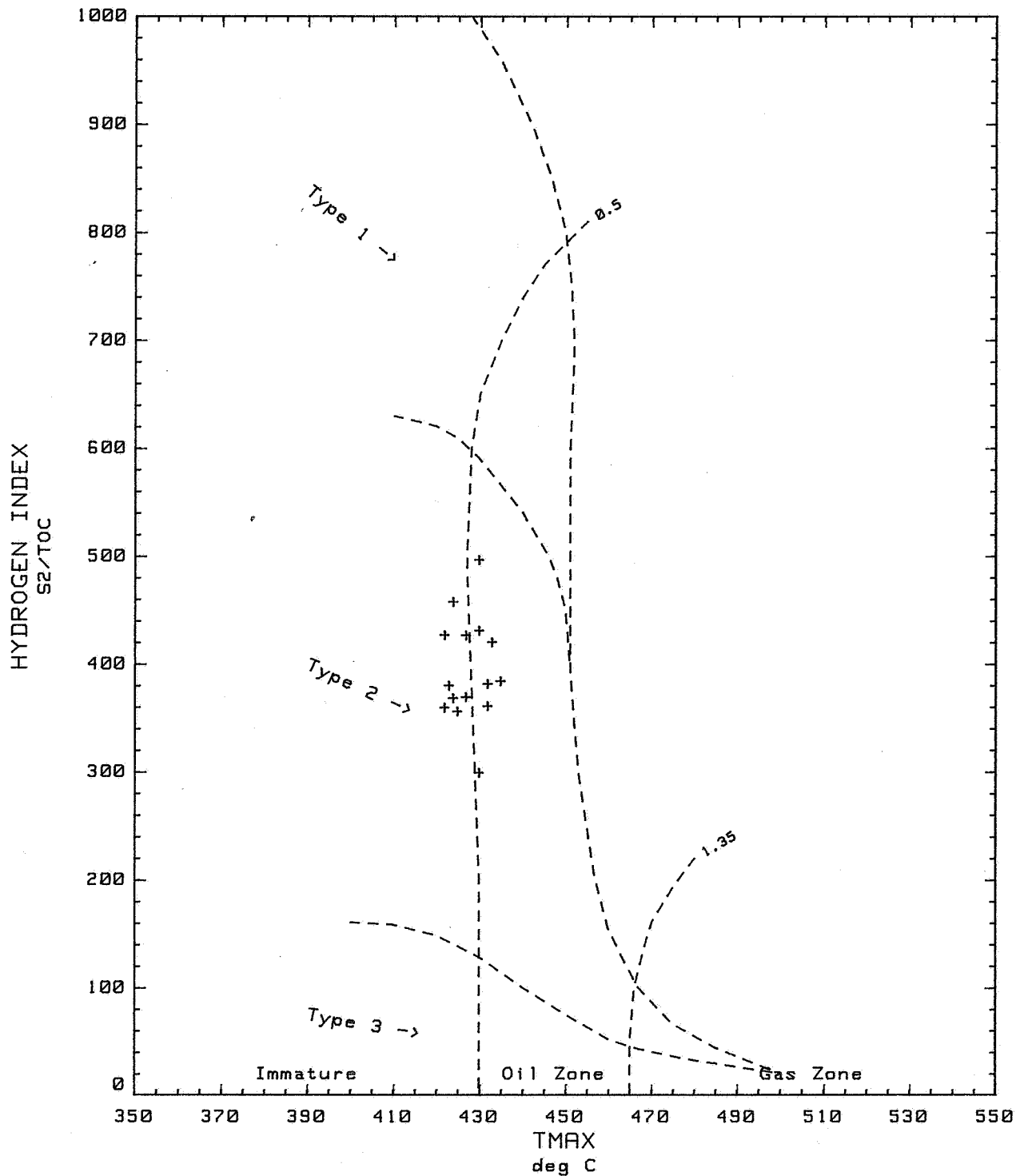


PYRO-ANALYSIS CROSS PLOT
HYDROGEN INDEX vs TMAX

6407/7-1

2697 to 2710 m Cuttings and Sidewall Cores

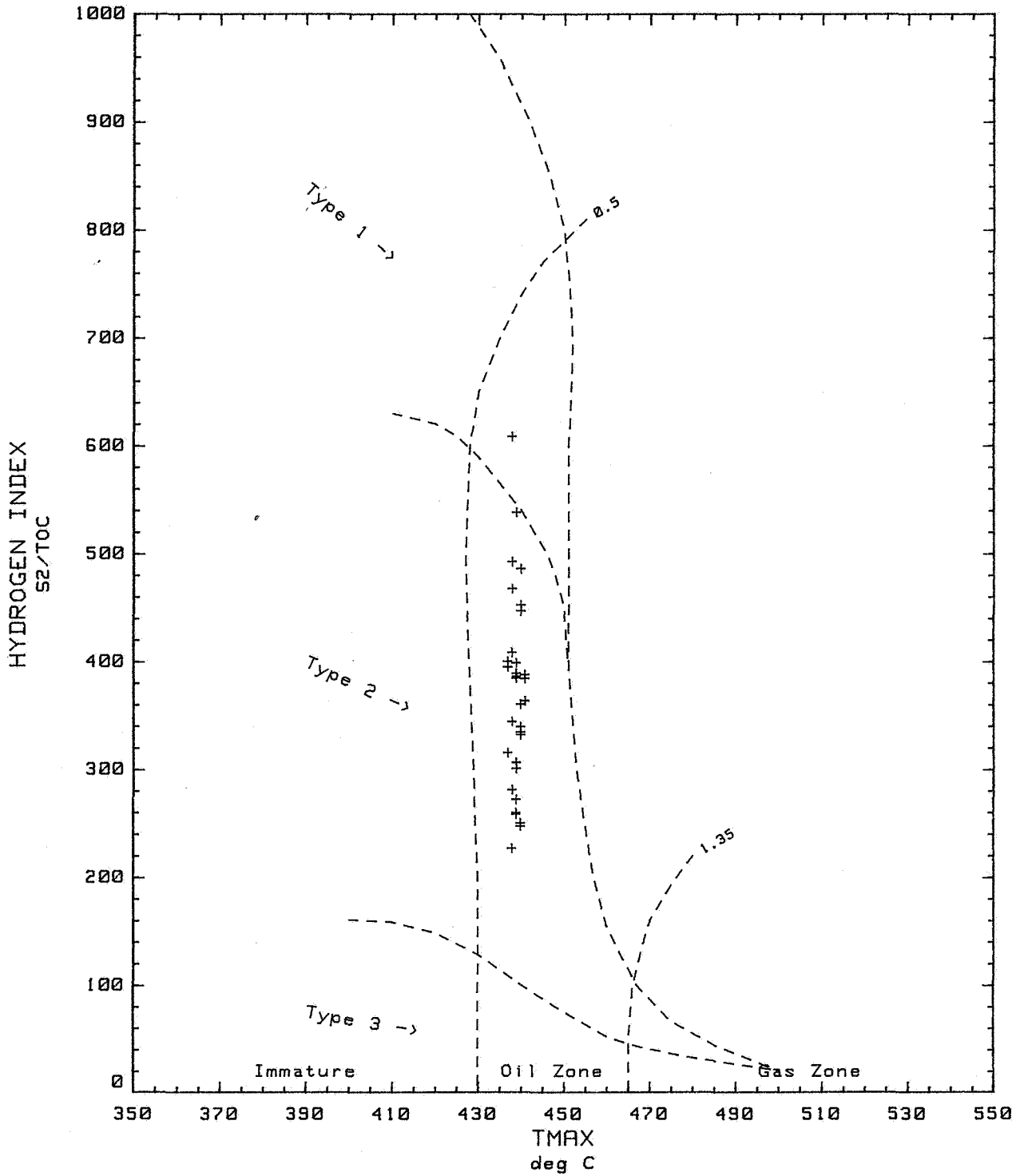
30 Jan 1986





PYRO-ANALYSIS CROSS PLOT
HYDROGEN INDEX vs TMAX

6407/7-1
2784 to 2826 m Cores
29 Jan 1986



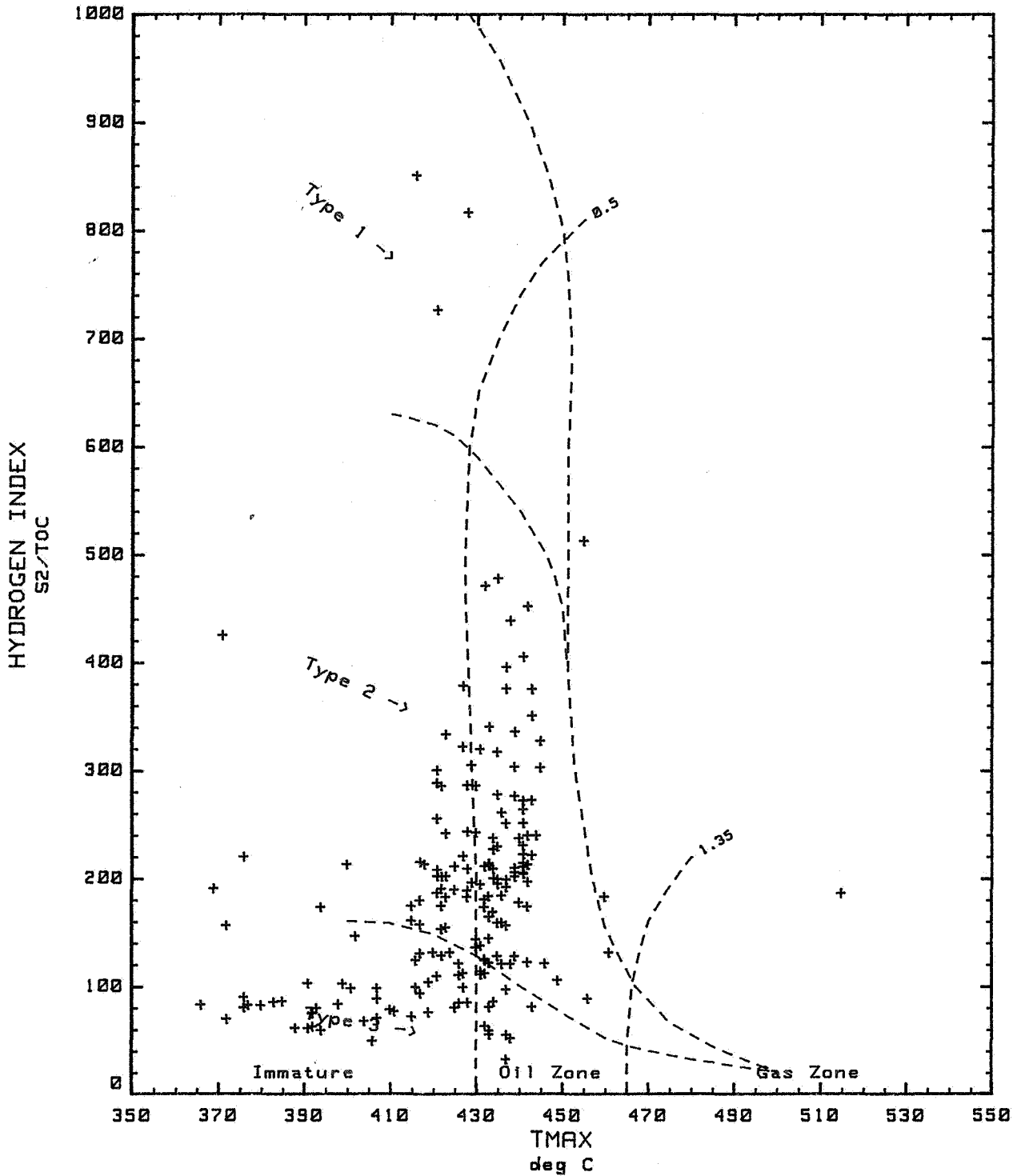


PYRO-ANALYSIS CROSS PLOT
HYDROGEN INDEX vs TMAX

6407/7-1

2844 to 3093 m Cuttings and Cores

1 Mar 1986



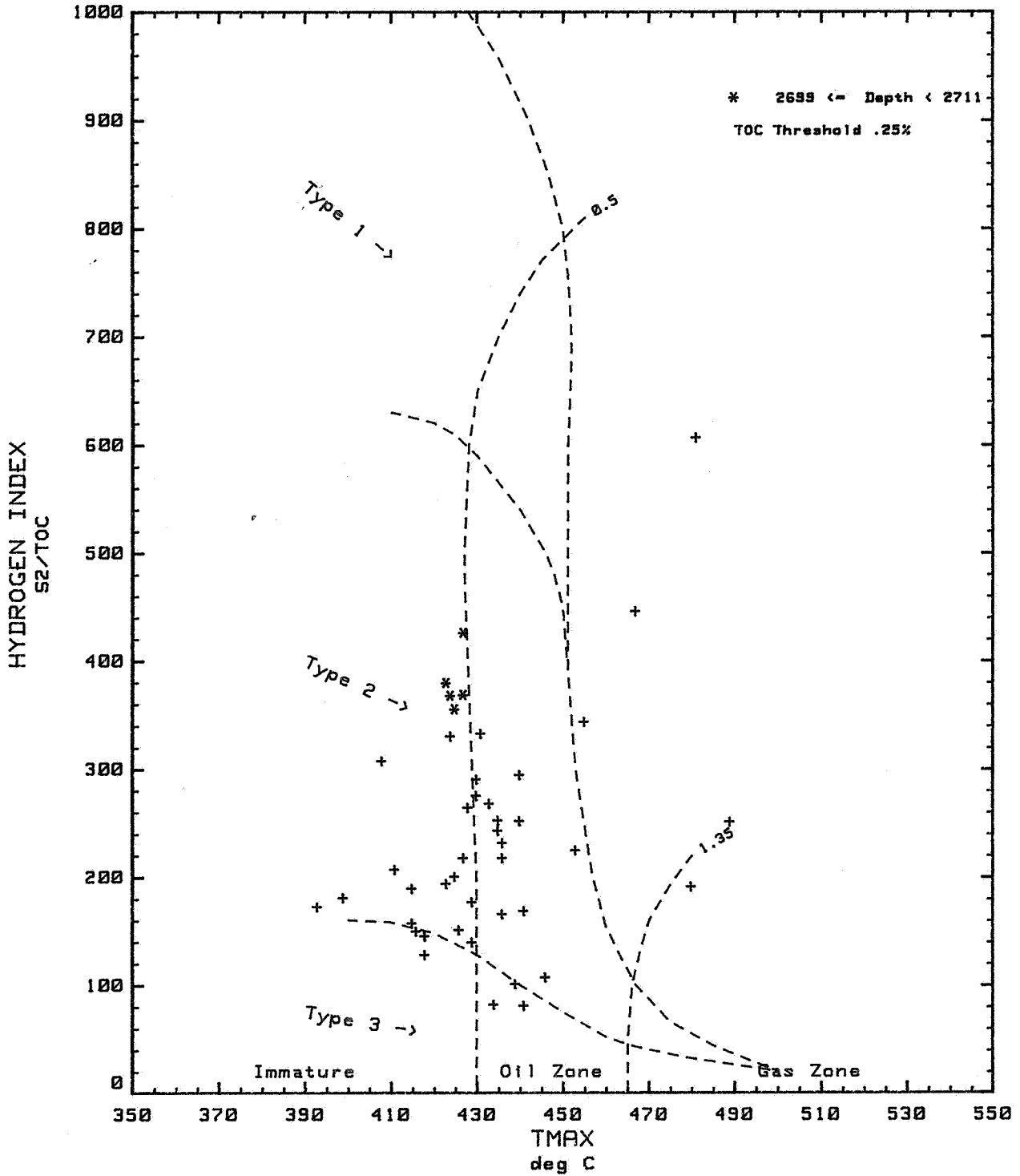


PYRO-ANALYSIS CROSS PLOT
HYDROGEN INDEX vs TMAX

6407/7-1

1180 to 2711 m Sidewall Cores

1 Mar 1986



/ 3

EXLOG GEOCHEMICAL REPORT #2

To: Helga Nes, Geochemist, Norsk Hydro, Oslo.

WELL 6407/7-1

Geochemical screening using the Oil Shows Analyzer has been performed on 51 cuttings samples at depth intervals of 10 metres between 1210 and 1650 metres and 5m intervals from 1655 to 1680 metres.

Initially pyrolysis data was only available for the hole section to 1430 metres. However these samples have been re-analyzed and a complete data set with T.O.C values is included. Since only 3 samples were analyzed before last weeks report I have included the entire data set in the plots, Xplots and data print-outs.

Discussion and interpretation of the data reveals the following:-

- 1) The section is comprised largely of claystone with minor siltstone interbeds. Total Organic Carbon (T.O.C) values range from a high of 3.35% at 1210 metres to a low of 0.45% at 1680 metres. An average value of 1.5% indicates fair organic content for the interval, although it appears to be decreasing towards the latter samples. From 1210 to 1250 metres values average 2.3% indicating good organic content within these clays. Slight increases in siltstone content do seem to produce slightly elevated T.O.C values, notably between 1420 and 1430 metres and 1610 and 1650 metres. Very little, if any, contamination of the samples by mud additives and drilling products was observed.
- 2) S₂, kerogen, results tend to mirror the T.O.C fluctuations thereby maintaining a reasonably constant Hydrogen Index. The section is generally poor in terms of source potential with a maximum value of 3.39 mgHC/g rock at 1210 metres, down to a low of 0.61 mgHC/g rock at 1680 metres. An average value of 1.5 mgHC/g rock is indicated for the section. Again higher values do appear to coincide with the appearance of siltstones. Values of around 2.0 mgHC/g rock occur between 1440 and 1450 metres and around 2.4 mgHC/g rock between 1620 and 1650 metres. The highest values of the interval again match the T.O.C occurring between 1210 and 1250 metres and averaging 2.5 mgHC/g rock.
From the pyrograms a double S₂, kerogen, peak was noted between 1270 and 1300 metres, 1480 and 1490 metres and at 1360 metres. This was of lower magnitude than the recorded peak values and usually gave a maximum temperature of emission between 550 and 590 degrees plus. T.O.C values appear largely unaffected and it is doubtful that it represents a mixed kerogen composition. Substantial trace quantities of glauconite do exist in these samples and it may be due to their breakdown at high temperatures. More detailed analysis would need to be done to facilitate identification.
- 3) Tmax values are fairly constant and indicate generally immature potential source material. An average value of 425 to 428 degrees centigrade is indicated. Exceptions occur at 1360 metres and 1490 metres of 453 and 456 degrees respectively. In these samples the effects of the second S₂ peak have falsified the values and this does not appear to reliably indicate mature organic source material.

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- 4) Free hydrocarbon values for gaseous and liquid hydrocarbons (S0 and S1) are very low with no migratory or syngenetic accumulations indicated. The Total Production Index (T.P.I) remains very low.
- 5) The Hydrogen Index (H.I) values range between 100 and just over 200 with an average of around 120. This with observation of the Xplot indicates Type III marginal Type II kerogen. This would suggest hydrogen deficient kerogen probably only capable of generating gaseous hydrocarbons if thermally mature and in sufficient quantities.

Note

If you have any comments or suggestions on data and plot layout/formats please let me know. I have included a lithology key which you might find useful for future reference. The weekly sample total plots could be done on the 1:2000 scale and the composite on a smaller scale say 1:10000.

Best regards, Simon Reed,
Exlog Geochemistry Unit 175,
Polar Pioneer,
25th November 1985.

Lithology Symbols



Sand



Sandstone



Calc. Sandstone



Conglomerate



Breccia



Siltstone



Shale



Clay



Claystone



Dolom. Limestone



Dolomite



Limestone



Calciutite



Calcarenite



Packstone



Grainstone



Boundstone



Marl



Marly Limestone



Sandy Limestone



Gypsum



Anhydrite



Salt



Chert



Tuff



Volcanics



Intrusives



Basement



Schist



Fossils



Microfossils



Coal



Unconformity



No Returns



No Lithology

2 DES. 1985

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16

EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

JR : NORSK HYDRO
WELL : 640777-1

Printed at : 22:00
: 24 Oct 1985
Format : 4

1180.0 m TO 1680.0 m

DEPTH m	SOURCE BED EVALUATION						FREE HYDROCARBS		
	TOC %wt	PC	S2 mg/g	TMAX degC	S2/TOC HI	S3/TOC OI	S0 mg/g	S1 mg/g	TPI mg/g
1180.00	1.33	.21	2.27	430	171	0	.04	.20	.10
1190.00	2.88	.41	4.69	428	163	0	0.00	.22	.04
1200.00	2.73	.38	4.32	434	158	0	0.00	.25	.05
0.00	1.06	.57	6.62	414	625	0	0.00	.19	.03
1210.00	3.35	.30	3.39	426	101	0	.02	.22	.07
1220.00	2.64	.24	2.76	425	105	0	.01	.15	.05
1230.00	1.79	.18	2.09	431	117	0	.01	.10	.05
1240.00	2.22	.21	2.27	425	102	0	0.00	.25	.10
1250.00	2.63	.26	2.92	431	111	0	.01	.19	.06
1260.00	1.78	.17	1.89	428	106	0	.01	.12	.06
1270.00	1.62	.29	3.31	421	204	0	.01	.16	.05
1280.00	1.55	.16	1.81	429	117	0	0.00	.16	.08
1290.00	1.50	.12	1.30	425	87	0	0.00	.15	.10
1300.00	3.03	.18	1.97	419	65	0	0.00	.19	.09
0.00	1.13	.52	6.07	412	537	0	0.00	.20	.03
1310.00	.96	.13	1.43	417	149	0	0.00	.12	.08
1320.00	1.12	.11	1.27	425	113	0	.01	.09	.07
1330.00	1.12	.11	1.20	428	107	0	0.00	.07	.06
1340.00	1.06	.10	1.12	423	106	0	0.00	.07	.06
1350.00	.93	.06	.61	421	66	0	0.00	.08	.12
1360.00	1.08	.13	1.39	453	129	0	.01	.13	.09
1370.00	1.04	.15	1.57	425	151	0	.04	.21	.14
1380.00	.93	.12	1.28	428	138	0	.03	.16	.13
1390.00	1.10	.12	1.30	427	118	0	.02	.18	.13
1400.00	1.00	.11	1.20	431	120	0	.02	.15	.12
0.00	1.00	.51	6.00	412	600	0	0.00	.16	.03
1410.00	1.10	.15	1.65	425	150	0	0.00	.13	.07
1420.00	1.55	.14	1.62	422	105	0	0.00	.11	.06
1430.00	1.40	.12	1.38	422	99	0	0.00	.11	.07
1440.00	1.11	.21	2.31	425	208	0	.04	.23	.10
1450.00	1.09	.17	2.01	431	184	0	.04	.05	.04
1460.00	.96	.14	1.47	424	153	0	.07	.16	.14
1470.00	.89	.10	1.06	423	119	0	.05	.13	.15
1480.00	.91	.13	1.35	423	148	0	.04	.14	.12
1490.00	.87	.15	1.62	456	186	0	.04	.12	.09
1500.00	.84	.13	1.39	429	165	0	.03	.12	.10
1510.00	.71	.11	1.23	434	173	0	.04	.11	.11
1520.00	.69	.11	1.16	430	168	0	.03	.11	.11
1530.00	.59	.08	.87	425	147	0	.01	.05	.06
0.00	1.08	.56	6.59	415	610	0	.03	.18	.03
1540.00	.79	.13	1.44	424	182	0	.02	.15	.11
1550.00	.73	.13	1.33	425	182	0	.04	.17	.14
1560.00	.89	.11	1.27	422	143	0	0.00	.06	.05
1570.00	.90	.11	1.26	421	140	0	0.00	.04	.03
1580.00	1.19	.14	1.57	426	132	0	0.00	.10	.06
1590.00	1.03	.14	1.57	428	152	0	.01	.06	.04
1600.00	1.18	.13	1.58	429	134	0	0.00	.03	.02
1610.00	1.46	.15	1.77	429	121	0	.01	.06	.04
1620.00	1.66	.19	2.22	427	134	0	0.00	.06	.03
1630.00	1.88	.20	2.34	428	124	0	0.00	.07	.03
1640.00	2.04	.24	2.78	429	136	0	0.00	.06	.02
1650.00	1.86	.22	2.61	432	140	0	.01	.06	.03
0.00	1.00	.47	5.45	414	545	0	0.00	.24	.04
1655.00	1.37	.13	1.46	426	107	0	0.00	.05	.03
1660.00	1.27	.15	1.75	425	138	0	.01	.05	.03
1665.00	1.12	.12	1.33	427	119	0	.01	.05	.04
1670.00	.79	.05	.62	424	78	0	0.00	.02	.03
1675.00	.73	.07	.64	422	88	0	0.00	.20	.24
1680.00	.45	.05	.61	434	136	0	0.00	.02	.03

2 DES. 1985

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EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

Printed at : 14:34
: 30 Oct 1985
Format : 4

1685.0 m TO 1915.0 m

DEPTH m	SOURCE BED EVALUATION						FREE HYDROCARBS		
	TOC %wt	PC	S2 mg/g	TMAX degC	S2/TOC HI	S3/TOC OI	S0 mg/g	S1 mg/g	TPI mg/g
1685.00	.52	.06	.56	435	108	0	.02	.10	.18
1690.00	.47	.12	1.35	447	287	0	.03	.07	.07
1695.00	.46	.09	.96	433	209	0	.04	.07	.10
1700.00	.25	.02	.26	425	104	0	0.00	.03	.10
1705.00	.25	.02	.27	435	108	0	0.00	.02	.07
1710.00	.28	.04	.46	428	164	0	0.00	.07	.13
1715.00	.19	.03	.36	473	189	0	0.00	.04	.10
1720.00	.33	.05	.57	435	173	0	.01	.05	.10
1725.00	.45	.07	.82	442	182	0	.01	.04	.06
1730.00	.87	.16	1.84	431	211	0	0.00	.13	.07
0.00	1.02	.53	6.21	414	609	0	.03	.17	.03
1735.00	1.06	.12	1.36	437	128	0	.04	.09	.09
1740.00	1.27	.27	2.92	432	230	0	.05	.24	.09
1745.00	1.10	.17	1.81	432	165	0	.03	.17	.10
1750.00	.94	.14	1.51	428	161	0	.02	.14	.10
1755.00	1.01	.18	2.00	433	198	0	0.00	.12	.06
1760.00	.97	.11	1.23	434	127	0	.01	.11	.09
1765.00	.92	.13	1.40	436	152	0	.01	.14	.10
1770.00	.82	.10	1.06	437	129	0	.02	.08	.09
1775.00	.95	.11	1.28	433	135	0	.01	.09	.07
1780.00	1.07	.14	1.52	435	142	0	.01	.15	.10
1785.00	.97	.11	1.22	431	126	0	0.00	.08	.06
1790.00	1.11	.16	1.72	431	155	0	0.00	.17	.09
0.00	.95	.52	6.02	413	634	0	0.00	.20	.03
1795.00	1.12	.15	1.70	430	152	0	.03	.11	.08
1800.00	1.14	.15	1.66	432	146	0	.01	.09	.06
1805.00	1.49	.19	2.23	428	150	0	0.00	.08	.03
1810.00	1.52	.22	2.61	427	172	0	0.00	.09	.03
1815.00	1.46	.20	2.26	429	155	0	0.00	.09	.04
1820.00	1.87	.33	3.82	430	204	0	0.00	.10	.03
1825.00	2.03	.33	3.88	432	191	0	.02	.11	.03
1830.00	1.72	.26	3.06	430	178	0	.01	.10	.03
1835.00	2.05	.28	3.29	430	160	0	0.00	.08	.02
1840.00	1.64	.23	2.65	433	162	0	.01	.08	.03
0.00	1.11	.59	6.86	414	618	0	0.00	.22	.03
1845.00	2.00	.32	3.67	429	183	0	.02	.12	.04
1850.00	1.78	.24	2.83	428	159	0	0.00	.10	.03
1855.00	1.72	.29	3.30	425	192	0	.01	.17	.05
1860.00	1.49	.26	3.00	427	201	0	0.00	.14	.04
1865.00	1.35	.27	3.00	427	222	0	.03	.18	.07
1870.00	1.27	.23	2.56	427	202	0	.02	.14	.06
1875.00	1.39	.26	2.99	424	215	0	.01	.17	.06
1880.00	1.05	.13	1.43	431	136	0	0.00	.09	.06
1885.00	.59	.09	1.00	429	169	0	.01	.05	.06
1890.00	.44	.09	.97	426	220	0	.03	.06	.08
0.00	1.04	.57	6.62	412	637	0	.02	.21	.03
1895.00	.36	.08	.83	421	231	0	.04	.07	.12
1900.00	.44	.06	.65	436	148	0	.02	.04	.08
1905.00	.60	.08	.86	431	143	0	0.00	.05	.05
1910.00	.53	.09	1.00	431	189	0	.02	.06	.07
1915.00	.63	.10	1.11	426	176	0	.02	.07	.08

10. DES. 1985

REGISTRERT
OLJEDIREKTORATET

EXPLORATION LOGGING GEOCHEMICAL DATA PRINT

FOR : NORSK HYDRO
WELL : 6407/7-1

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1180.0 m TO 1915.0 m

DEPTH m	SOURCE BED EVALUATION						FREE HYDROCARBS		
	TOC %wt	PC	S2 mg/g	TMAX degC	S2/TOC HI	S3/TOC OI	S0 mg/g	S1 mg/g	TPI mg/g
Sidewall Core Samples									
1189.91	2.46	.36	3.55	418	144	0	.06	.67	.17
1199.98	2.96	.47	4.88	436	165	0	.08	.74	.14
1209.94	3.44	.70	7.09	411	206	0	.08	1.24	.16
1244.91	1.59	.28	2.86	0	180	0	.11	.40	.15
1249.96	1.54	.26	2.71	429	176	0	.03	.44	.15
1295.06	1.57	.38	3.94	440	251	0	.05	.64	.15
1299.99	.98	.17	1.68	0	171	0	.02	.34	.18
1350.08	.98	.26	2.69	430	274	0	.03	.39	.14
1400.03	1.91	.77	8.50	467	445	0	.05	.78	.09
1419.92	1.41	.75	8.54	481	606	0	.04	.47	.06
1474.93	.82	.26	2.81	455	343	0	.03	.25	.09
1539.97	.78	.35	3.78	593	485	0	.03	.45	.11
1549.95	.91	.26	2.79	408	307	0	.03	.30	.11
1584.90	1.56	.32	3.38	436	217	0	.02	.42	.12
1639.93	1.42	.37	4.17	440	294	0	.02	.25	.06
1674.90	.32	.10	1.10	561	344	0	.02	.14	.13
1739.88	1.56	.19	1.98	418	127	0	.03	.31	.15
1764.91	1.46	.20	2.19	426	150	0	.02	.20	.09
1805.15	2.46	.34	3.66	416	149	0	.01	.39	.10
1824.82	2.50	.45	4.99	425	200	0	.09	.33	.08
1839.82	2.59	.40	4.05	415	156	0	.09	.64	.15
1844.94	2.15	.40	4.05	415	188	0	.09	.64	.15
1898.08	.48	.18	1.92	593	400	0	.10	.16	.12

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