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GEOCHEMICAL INVESTIGATION OF A CRUDE OIL SAMPLE
FROM WELL 6407/9-5, NORWAY

by

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GEOCHEMICAL INVESTIGATION OF A CRUDE OIL SAMPLE FROM WELL
6407/9-5, NORWAY

1.0 INTRODUCTION

A geochemical investigation has been carried out on the following two crude oil sample:

- 6407/9-5, separator oil; Oil zone: 1622-1629 owc: 1635

The results are shown in Table 1 and in Figs. 1-6.)

2.0 RESULTS

2.1 Bacterial Degradation

The whole oil gaschromatogram of the sample from well 6407/9-5 is characterised by low concentrations of the C₈-C₁₃ normal alkanes. In addition, the gasoline fraction contains relatively little toluene and benzene. The low concentrations of the n-alkanes are possibly the results of a very light bacterial degradation; the low concentration of the, water soluble, aromatic compounds would then be the result of the, for bacterial activity, necessary waterflow through the system (water wash).

2.2 Environment of deposition/Type of organic matter

The both crude was expelled from a shaly source rocks (C₇-distribution, Fig. 3) that contained predominantly SOM (Sterane/triterpane distribution).

2.3 Maturity

The crude was generated from a mature source rock (complete sterane isomerisation, gaschromatograms Figs. 1-2, C₂₉ VRE of 0.9).

3.0 CONCLUSIONS

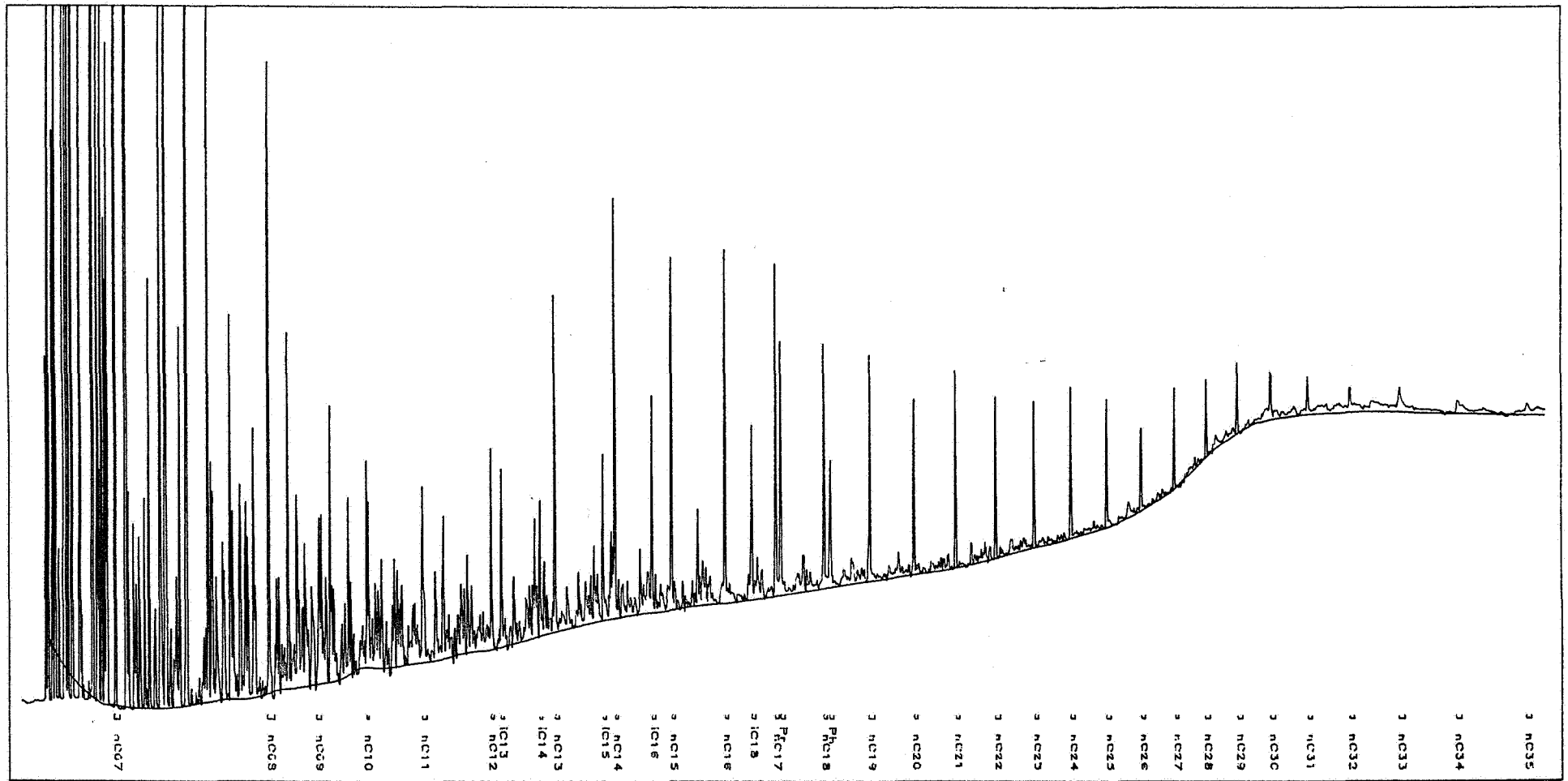
Sample 6407/9-5 shows some characteristics of a light bacterial degradation. The crude was generated from a mature, shaly source rock that contained predominantly SOM.

Table 1 - Geochemical data of crude oil

Sample	Norway 6407/9-5 OMC 3720 separator oil
API	41.4
specific gravity	0.8182
% w. boil <120°C	17.8
% sulphur	0.2
ppm V as metals	1
ppm Ni as metals	1
pristane/phytane	2.1
pristane/nC17	1.0
phytane/nC18	0.5
C ₇ -distribution	
C ₇ -alkane	
nC7	50
monobranched	39
polybranched	11
C ₇ -alk/naphthene	
nC7	22
naphthenes	56
branched alkanes	22
C ₇ -alk/naphth/arom	
nC7	42
naphthenes	54
aromatics	4
C ₁₅ -distribution	
1-ring	47
2-ring	37
3-ring	16
C ₃₀ -distribution	
3-ring	21
4-ring	53
5-ring	26
C ₂₉ VR/E	0.9
% asphaltenes	0.1
% saturates *	55
% aromatics	12
% heterocompounds	4
% rest	31
δ ¹³ C ‰ (whole oil)	-28.6
" (saturates)	-29.1
" (aromatics)	-28.2

*) Determined by column-chromatography

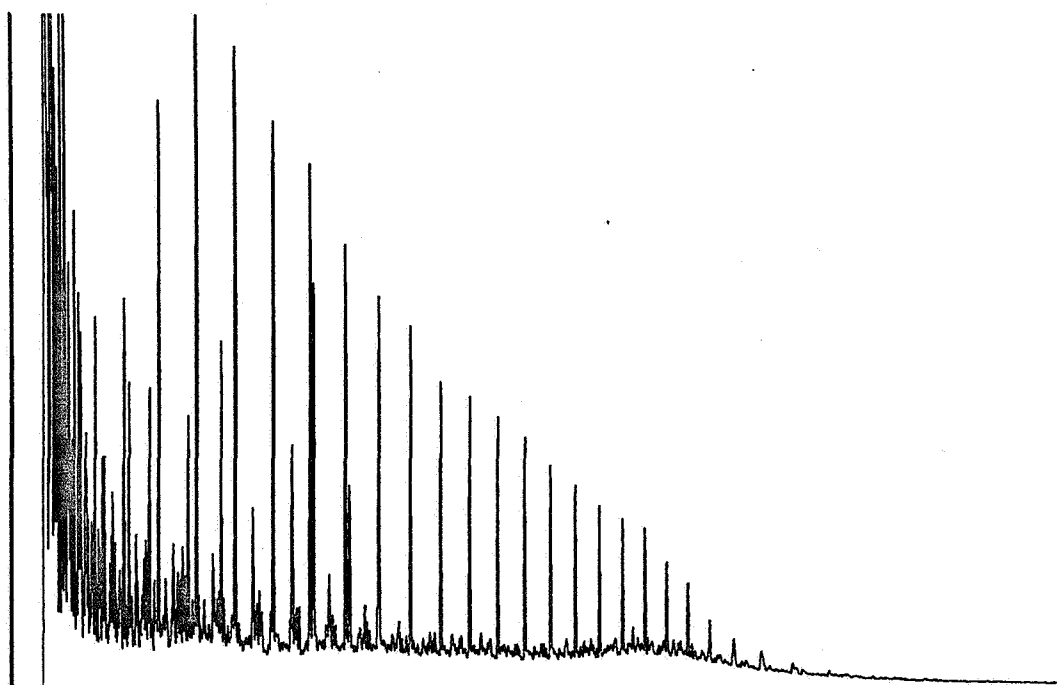
GAS CHROMATOGRAM OF THE WHOLE CRUDE



OMC 3720 NORWAY 6407/9-5

Figure 1.

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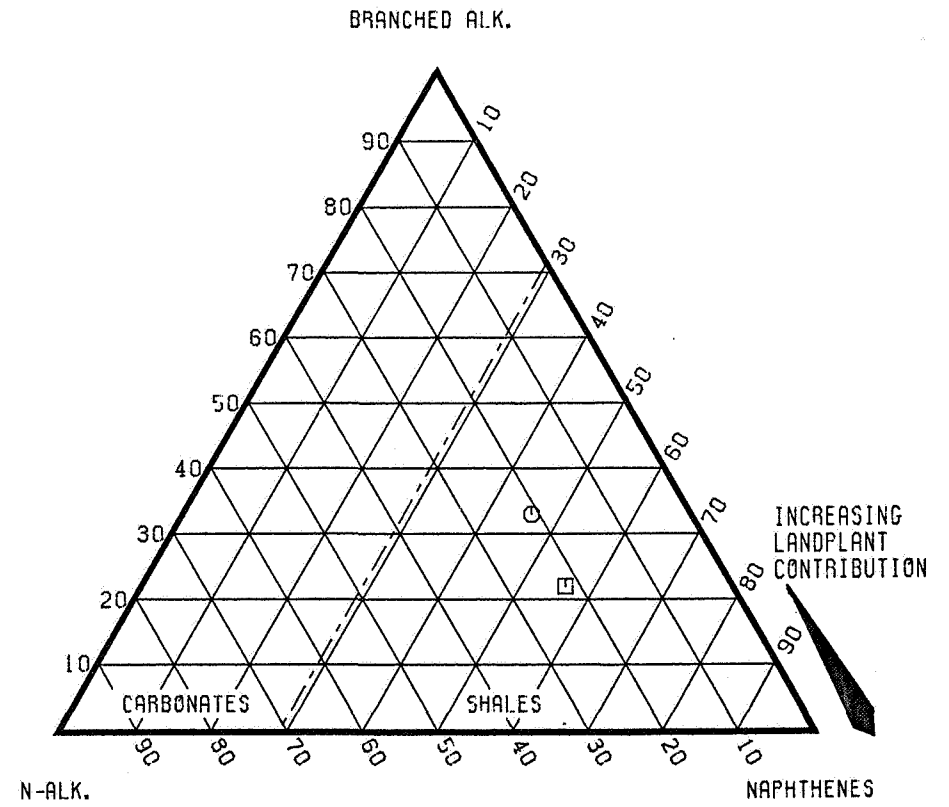
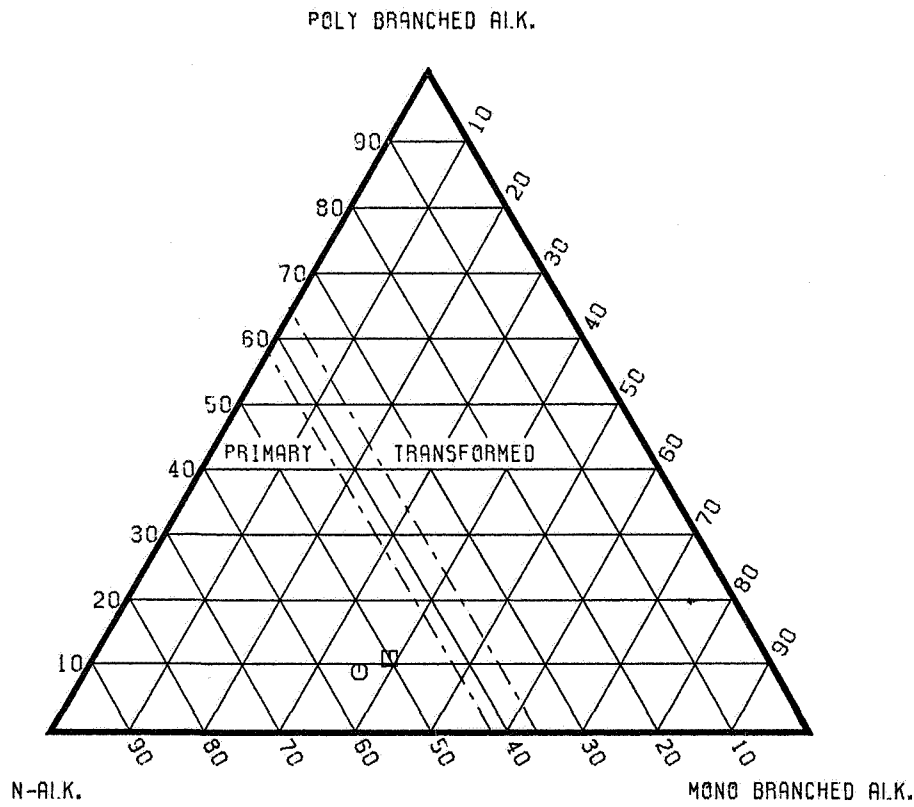
GAS CHROMATOGRAM OF SATURATED HYDROCARBONS

NORWAY 6407/9-5

Figure 2.

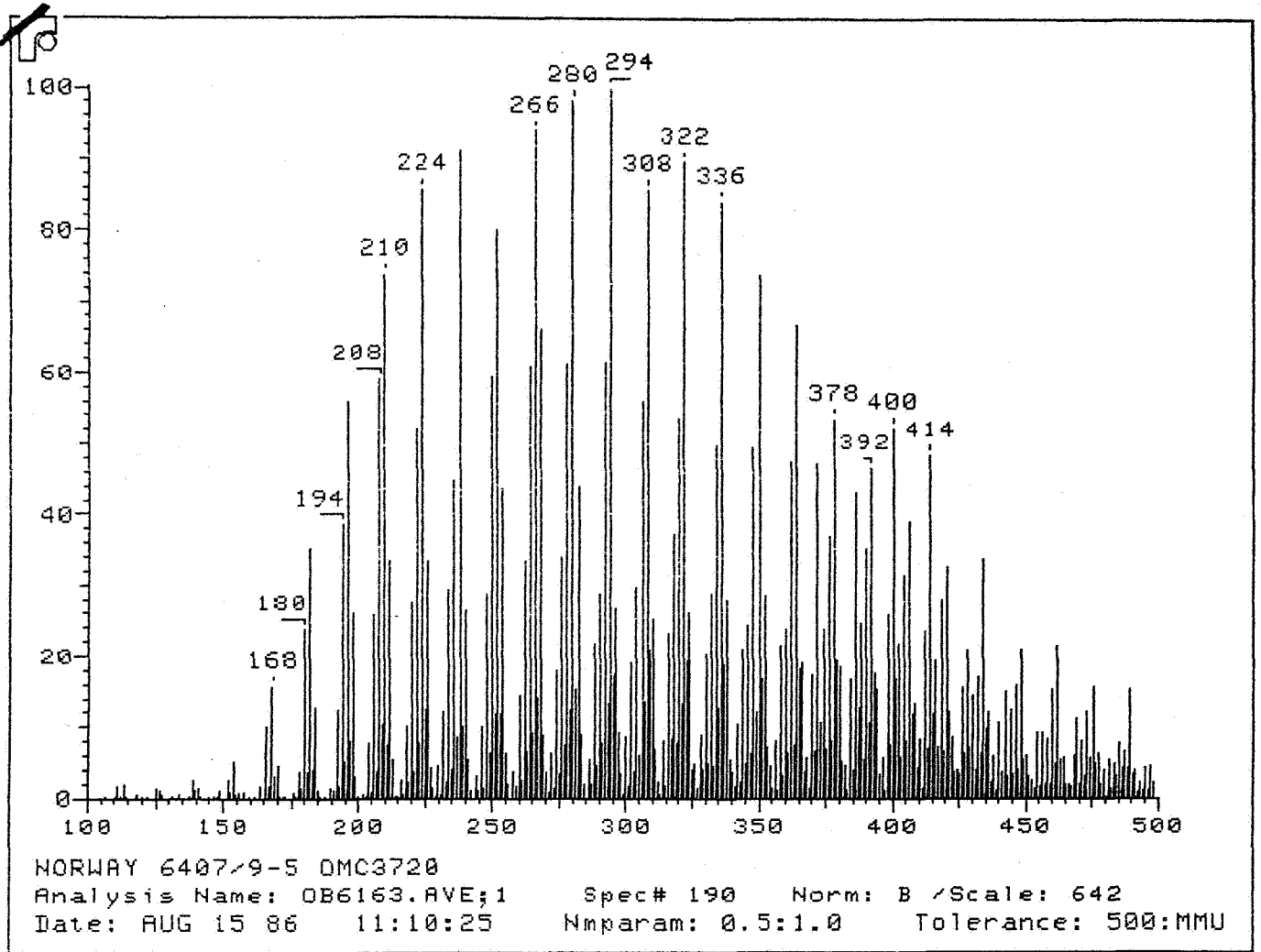
C7-ALKANE DISTRIBUTION

C7-ALKANE/NAPHTHENE DISTRIBUTION



LEGEND

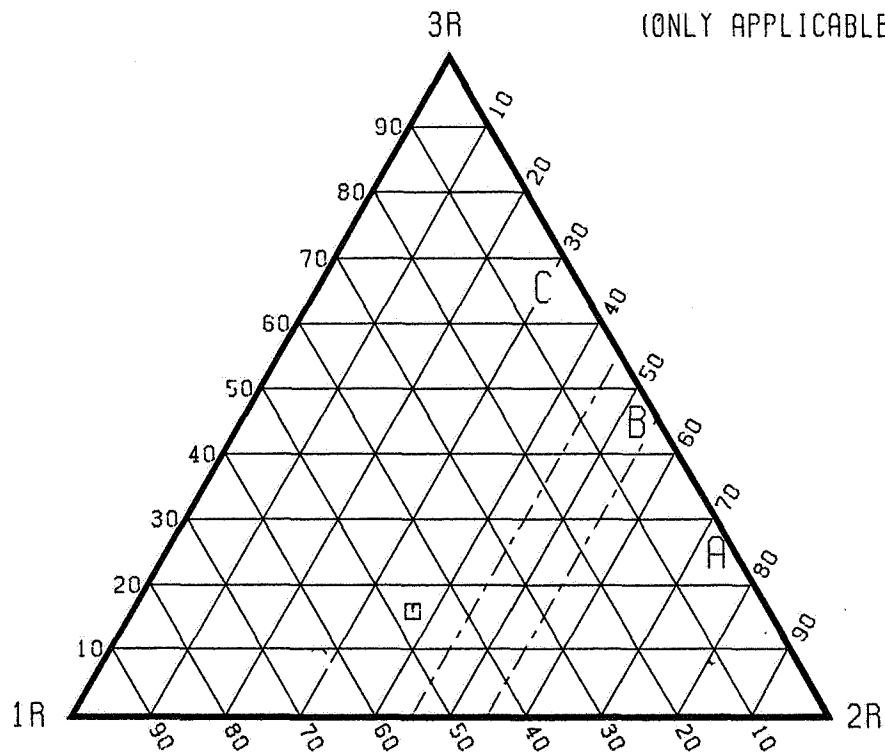
- ▣ - 6407/9-5, OMC 3720
- - 6507/11-3, OMC 3574



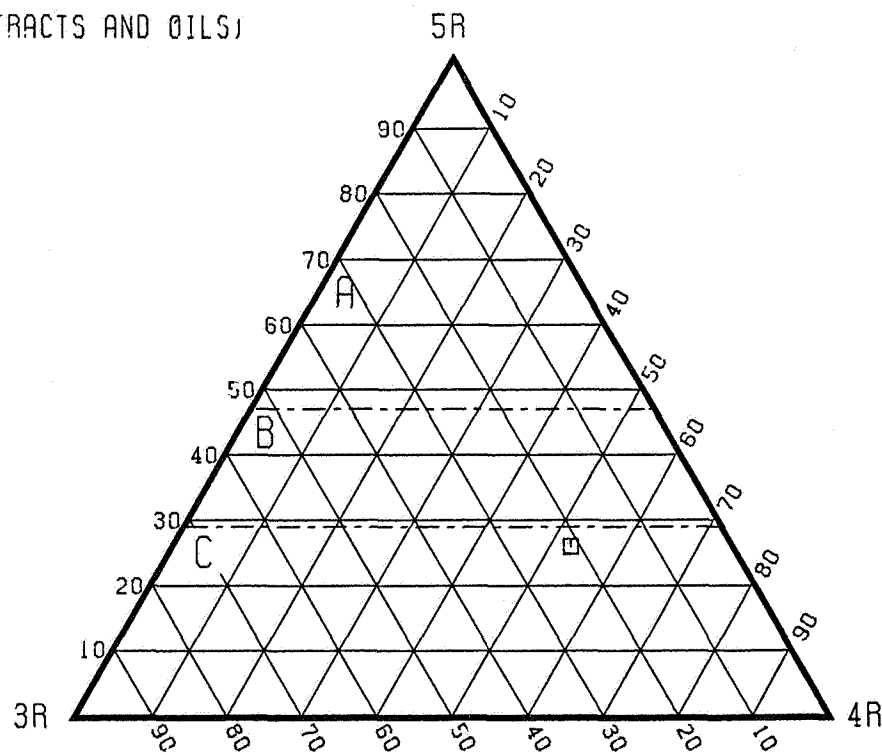
FIELD IONISATION MASS SPECTRUM.

C₁₅-RINGDISTRIBUTION

(ONLY APPLICABLE FOR MATURE EXTRACTS AND OILS)



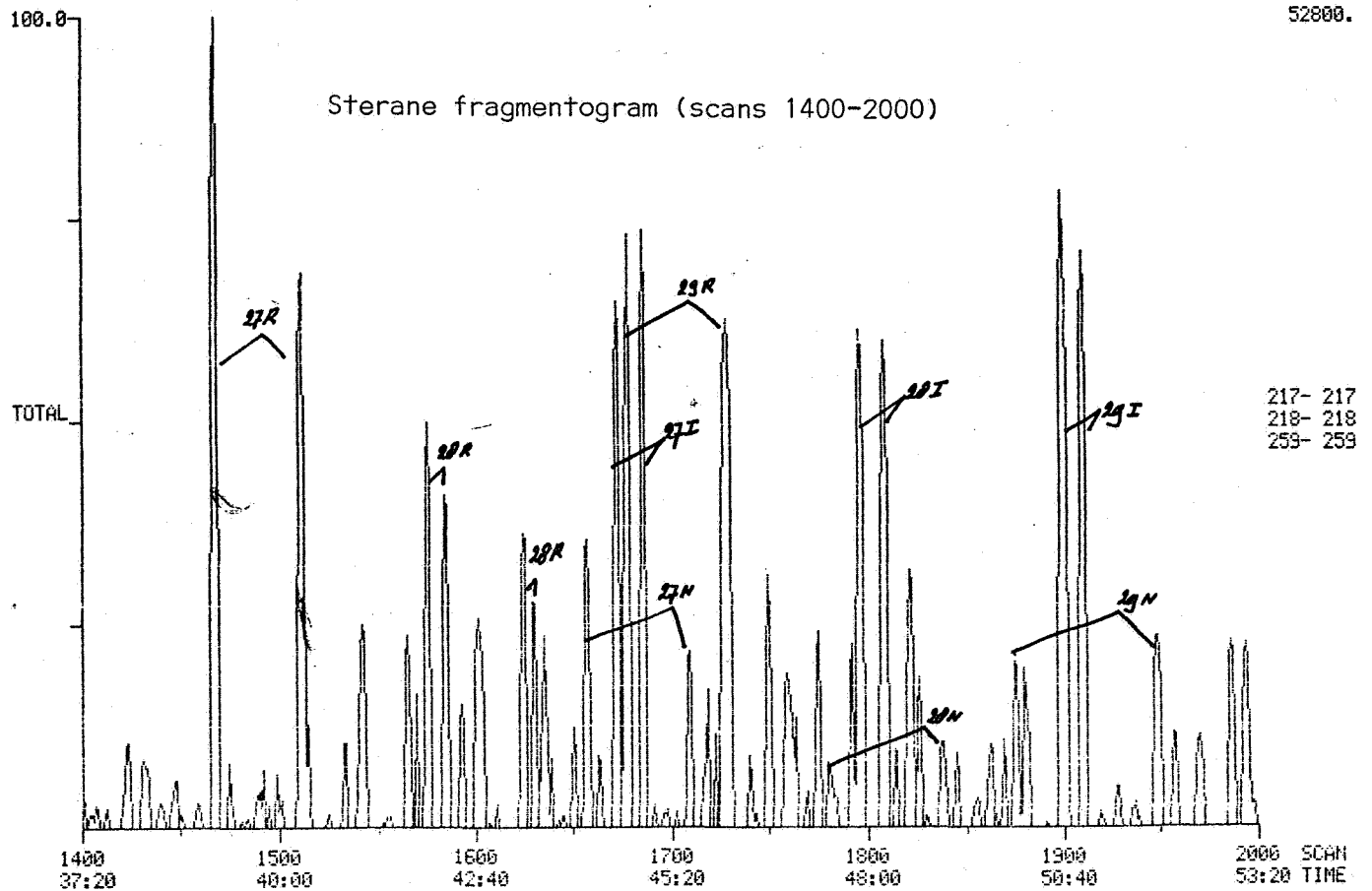
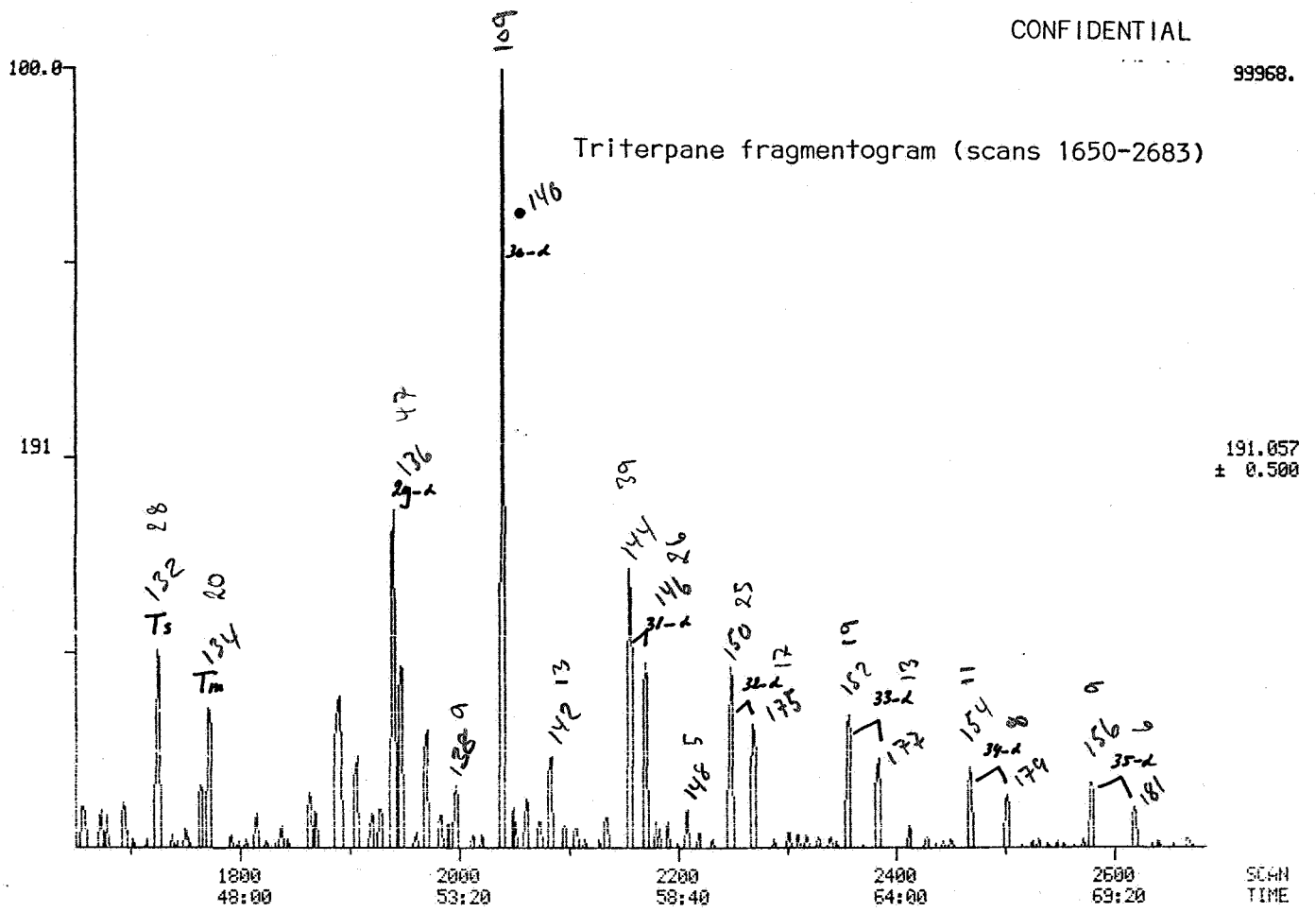
C₃₀-RINGDISTRIBUTION



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- C. STRUCTURELESS ORGANIC MATTER (SOM)

LEGEND
□ - 6407/9-5, OMC 3720

Figure 5.



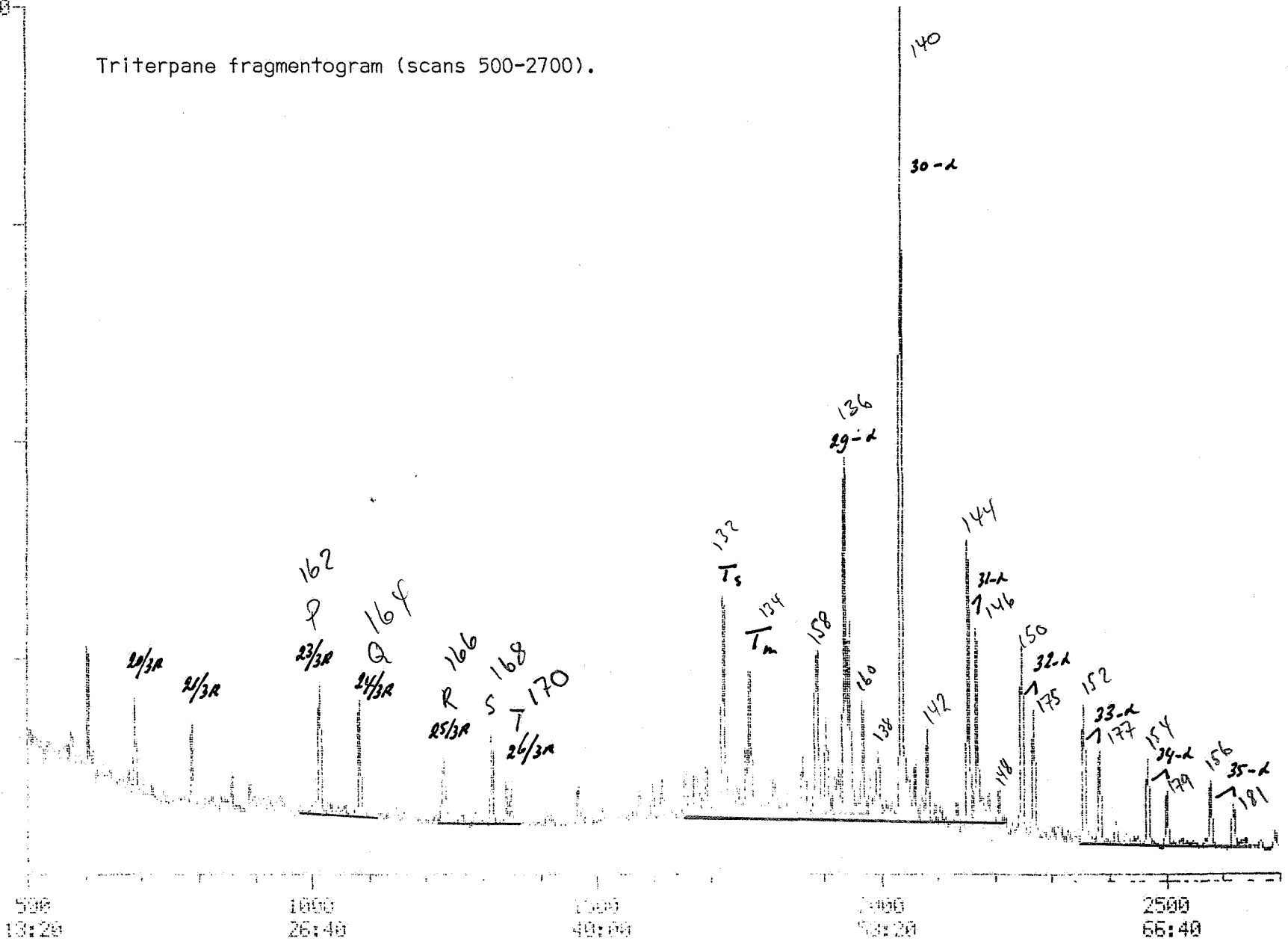
GC-MS analysis 6407/9-5, separator oil.

107776.

Triterpane fragmentogram (scans 500-2700).

100.0

GC-MS analysis 6407/9-5, separator oil.



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Figure 6B.

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