

July 1987

RKER.87.209

GEOCHEMICAL INVESTIGATION OF A CRUDE OIL SAMPLE
FROM WELL 11/30-2 (BEATRICE), UNITED KINGDOM

by

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Sponsor: Shell Expro London

Code: 774.106.10

Investigation: 812204214

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GEOCHEMICAL INVESTIGATION OF A CRUDE OIL SAMPLE FROM WELL
11/30-2 (BEATRICE), UNITED KINGDOM

1.0 INTRODUCTION

A geochemical investigation has been carried out on a crude oil sample from Beatrice (11/30-2), United Kingdom.

The results are shown in Table 1 and in Figures 1-6.

2.0 RESULTS AND CONCLUSIONS

The gaschromatograms (Figs. 1-2) and the C_7 -distribution (Fig. 3) indicate that the crude has not been bacterially degraded.

The crude was generated from a mature source rock (gaschromatograms, Figs. 1-2; API gravity; grosscomposition; C_{29} VRE; complete sterane isomerisation features, Fig. 6).

The crude was derived from a shaly source rock (C_7 -alkane/naphthene distribution, Fig. 3; high amounts of rearranged steranes, Figs. 6), that contained partly bacterially reworked algal SOM (sterane/triterpane distributions, Fig. 6). The waxy character of the crude and the low isoprenoid/n-alkane ratios confirm the presence of algal matter.

A comparison is shown in the Table below of the 11/30-2 crude with an earlier described crude from the same well (OMC 2473) and with algal/lacustrine source rocks from the Middle Jurassic (11/30-2).

Above data indicate that both 11/30-2 crude oil samples are almost identical.

The 11/30-2 crudes do not correlate with the 11/30-2 Middle Jurassic lacustrine source rocks (strong differences in carbon isotope values).

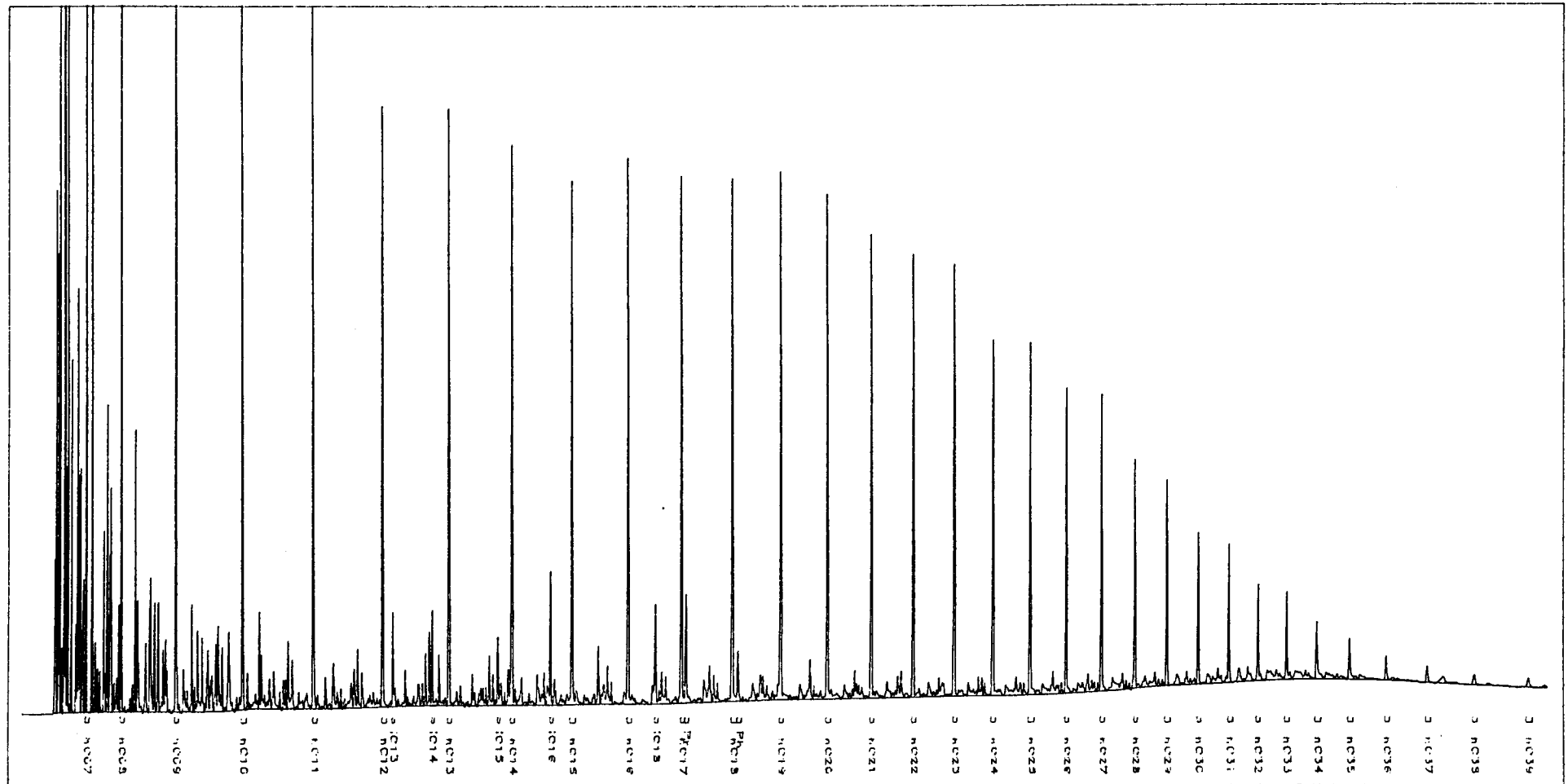
TABLE 1 - GEOCHEMICAL DATA OF EXTRACTS

	U.K.
Sample:	11/30-2
	OMC 4226
API	38.0
specific gravity	0.8346
% boil. <120°C	6.3
% sulphur	0
ppm V as metals	0
ppm Ni as metals	0
pristane/phytane	1.9
pristane/nC17	0.2
phytane/nC18	0.1
C ₇ -distribution	
C ₇ -alkane	
nC7	69
monobranched	24
polybranched	7
C ₇ -alk/naphthenes	40
nC7	41
naphthenes	18
branched alkanes	
C ₇ -alk/naphthenes	55
nC7	39
naphthenes	7
aromatics	
C ₁₅ distribution	
1-ring	60
2-ring	34
3-ring	6
C ₃₀ distribution	
3-ring	30
4-ring	40
5-ring	31
C ₂₉ VR/E	1.07
% weight loss on topping	20
% saturates*	71
% aromatics	25
% heterocompounds	4
	0.7
% asphaltenes	
δ ¹³ C ^o /oo (whole oil)	-31.5
" (saturates)	-31.9
" (aromatics)	-30.2

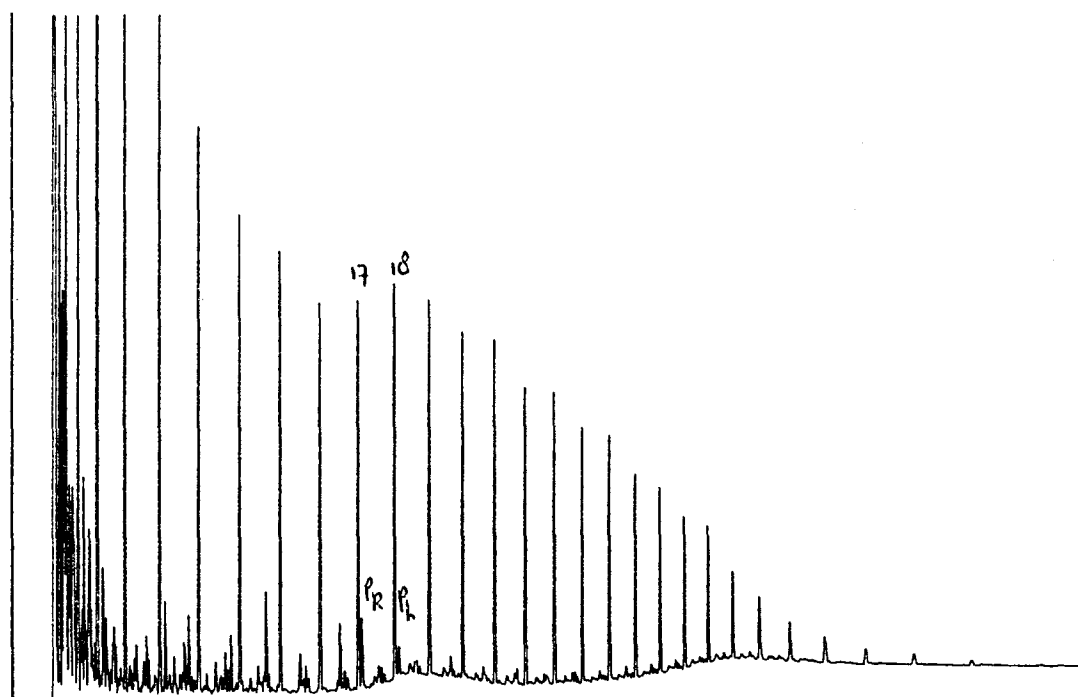
*) Determined by thin-layer chromatography

ND = not detectable

GAS CHROMATOGRAM OF THE WHOLE CRUDE



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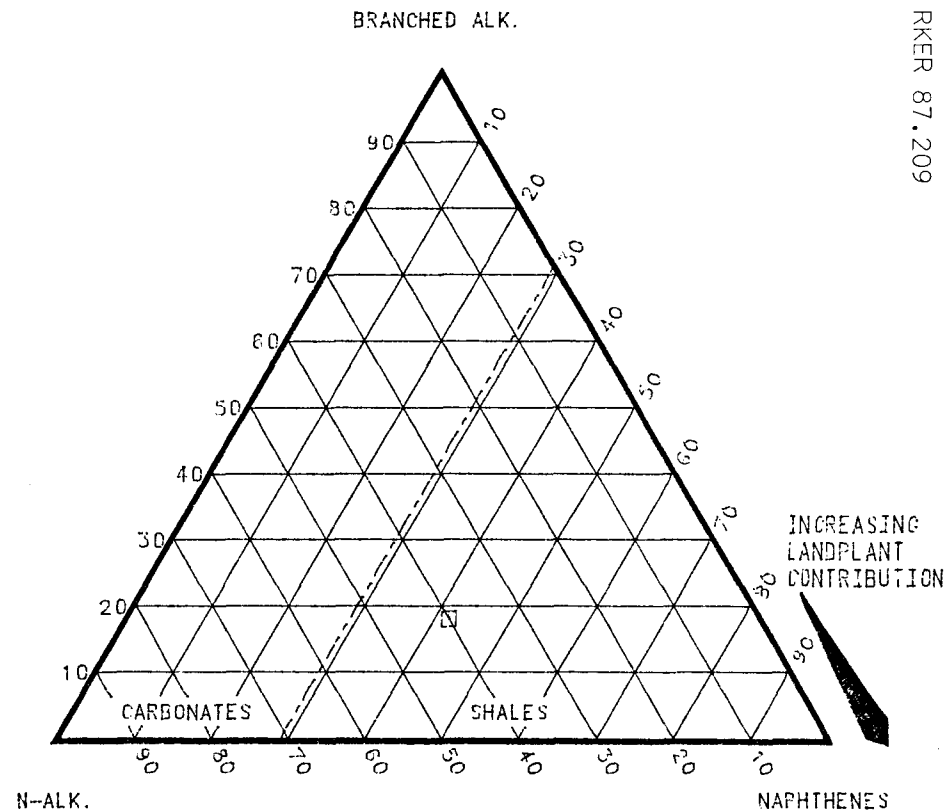
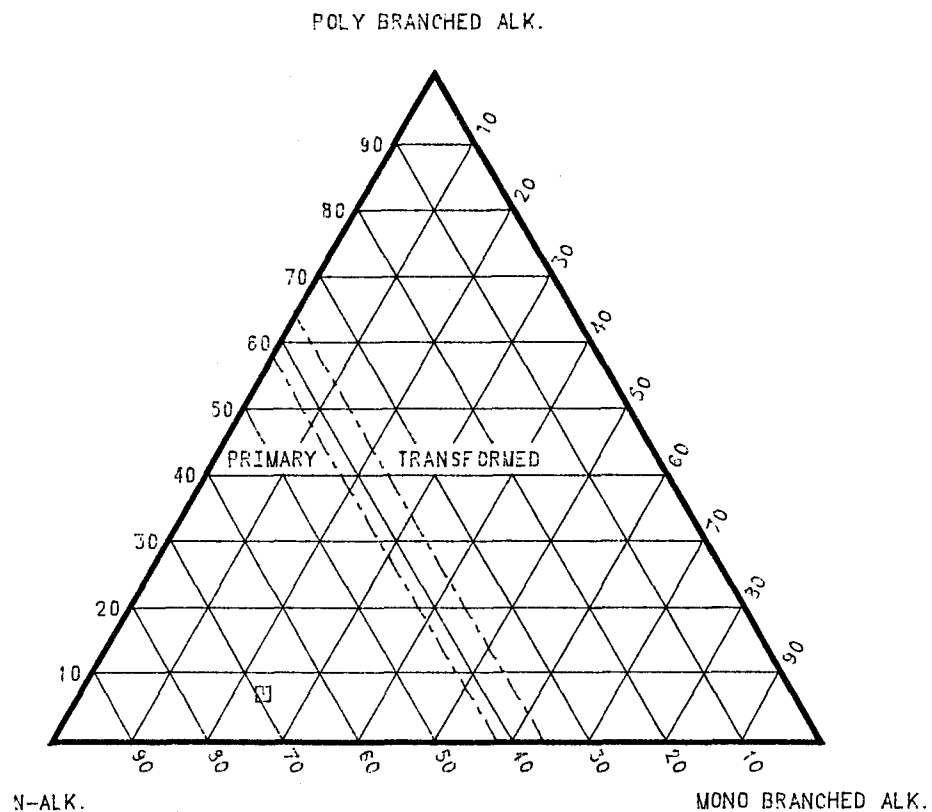


GAS CHROMATOGRAM OF SATURATED HYDROCARBONS

FIG. 2, UNITED KINGDOM 011/30-02

C7-ALKANE DISTRIBUTION

C7-ALKANE/NAPHTHENE DISTRIBUTION



LEGEND

☐ - 11/30-2, OMC 4226

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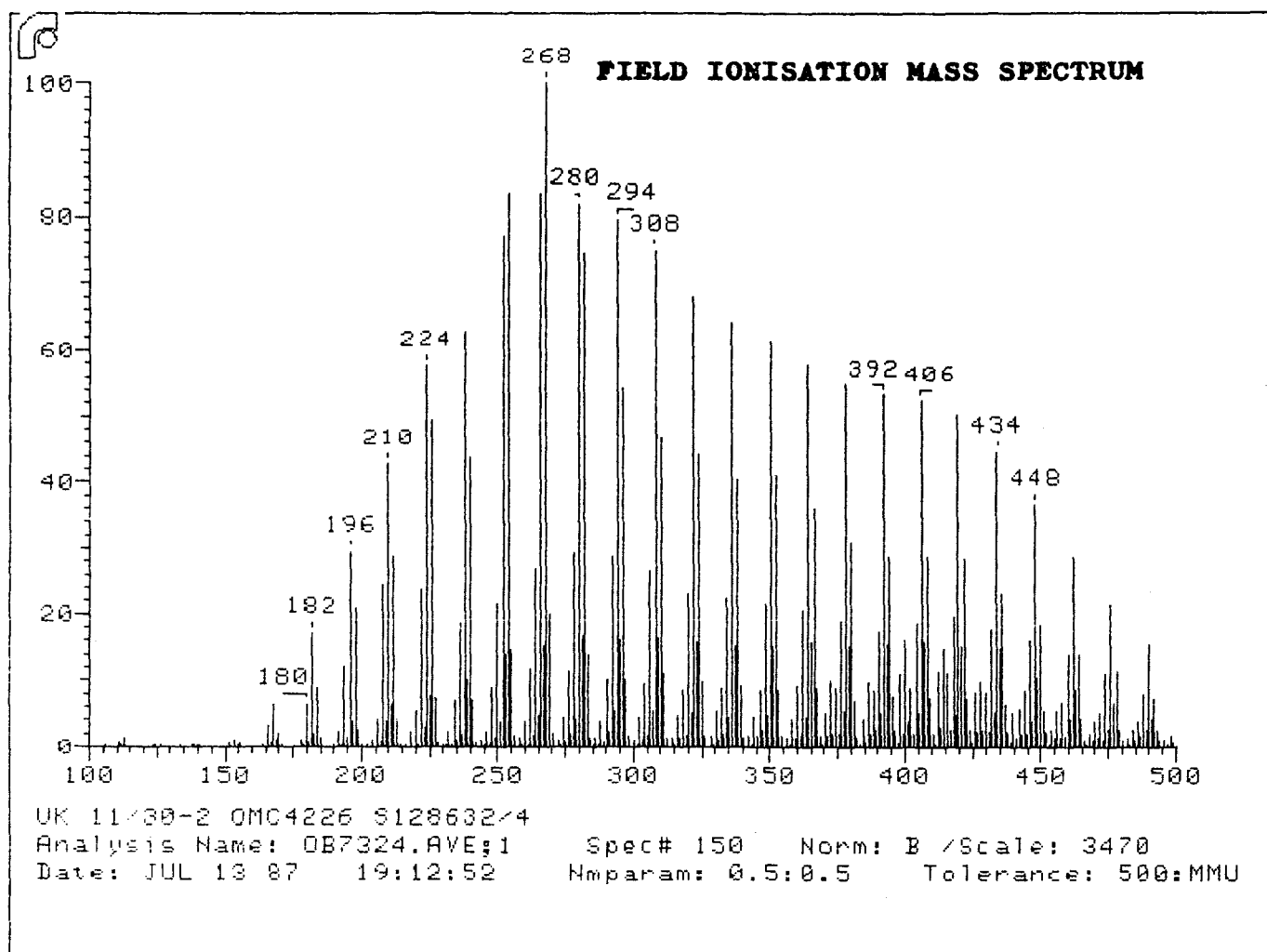
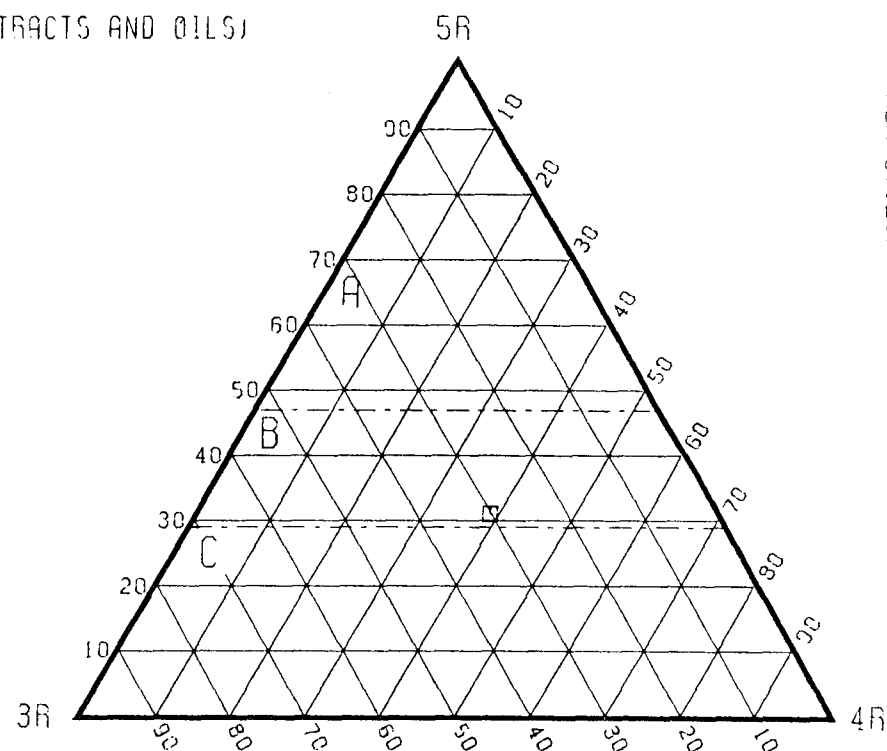
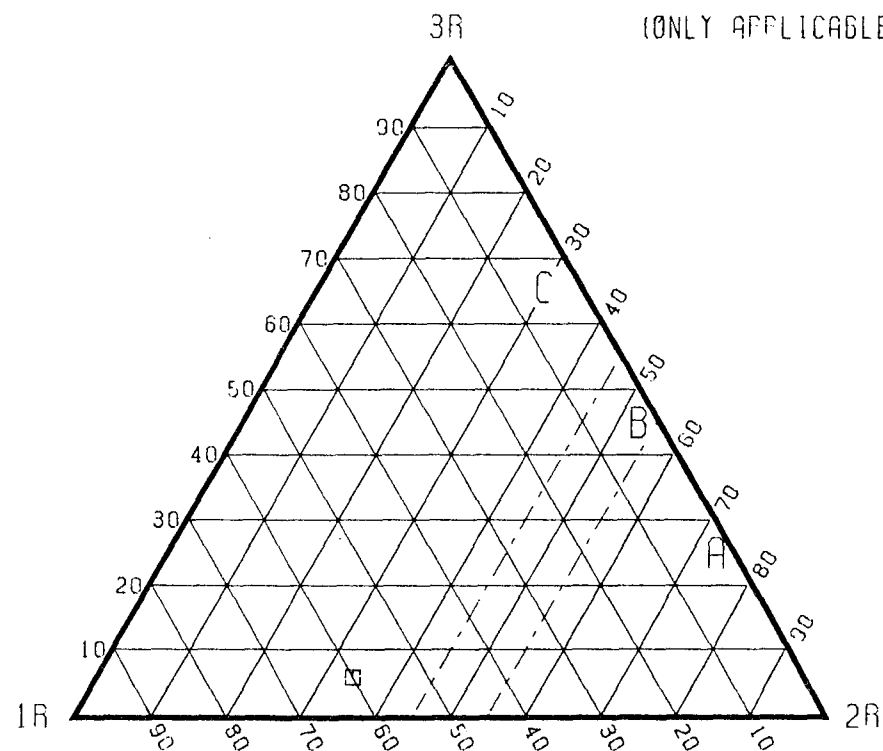


FIG. 4.

C₁₅-RINGDISTRIBUTION

C₃₀-RINGDISTRIBUTION

(ONLY APPLICABLE FOR MATURE EXTRACTS AND OILS)



- A. ORGANIC MATTER WITH SUBSTANTIAL LANDPLANT RESIN CONTRIBUTION
- B. MIXED LANDPLANT RESIN/SOM OR MIXED ALGAL/SOM
- C. STRUCTURELESS ORGANIC MATTER (SOM)

LEGEND

□ - 11/30-2

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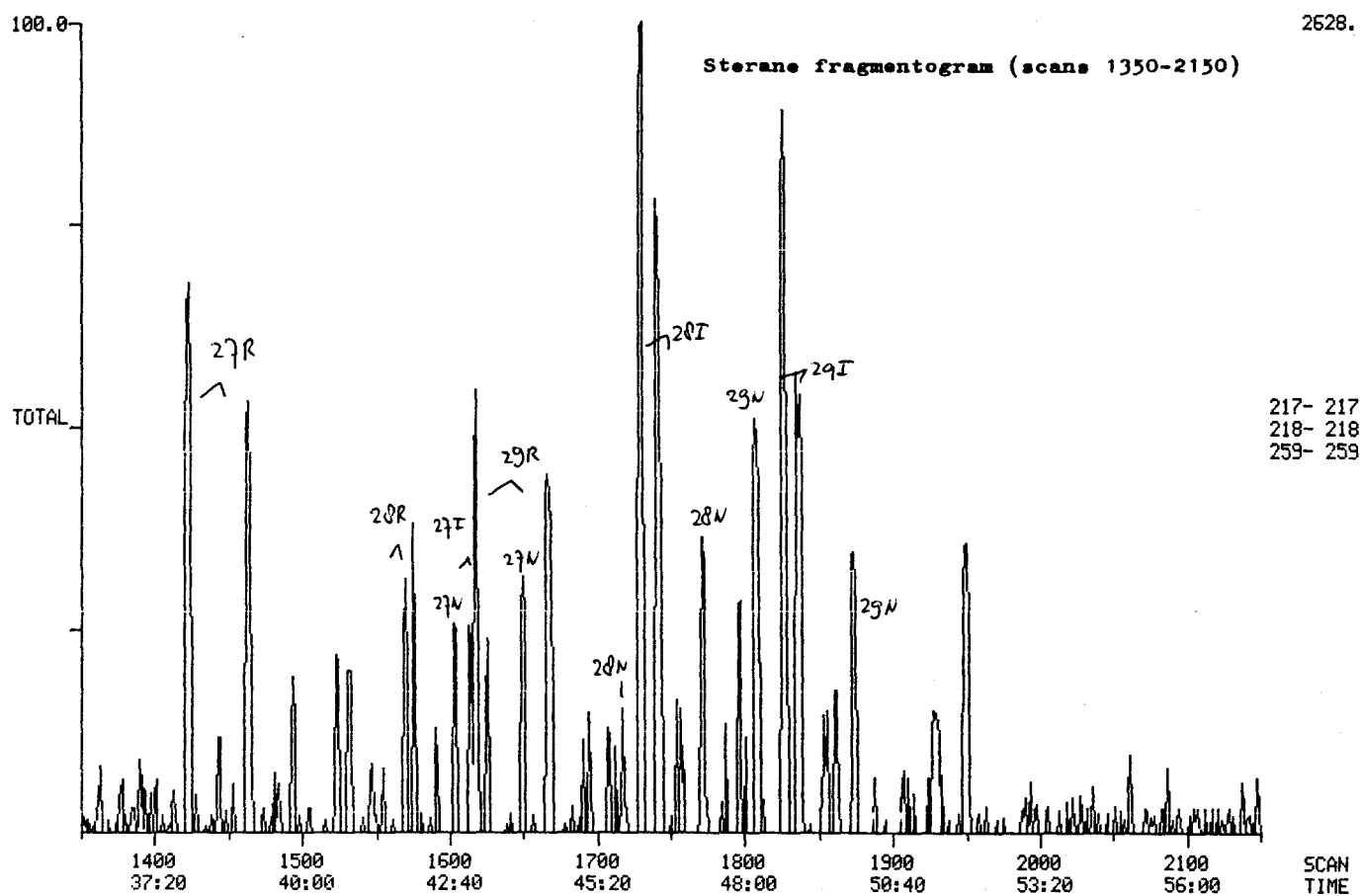
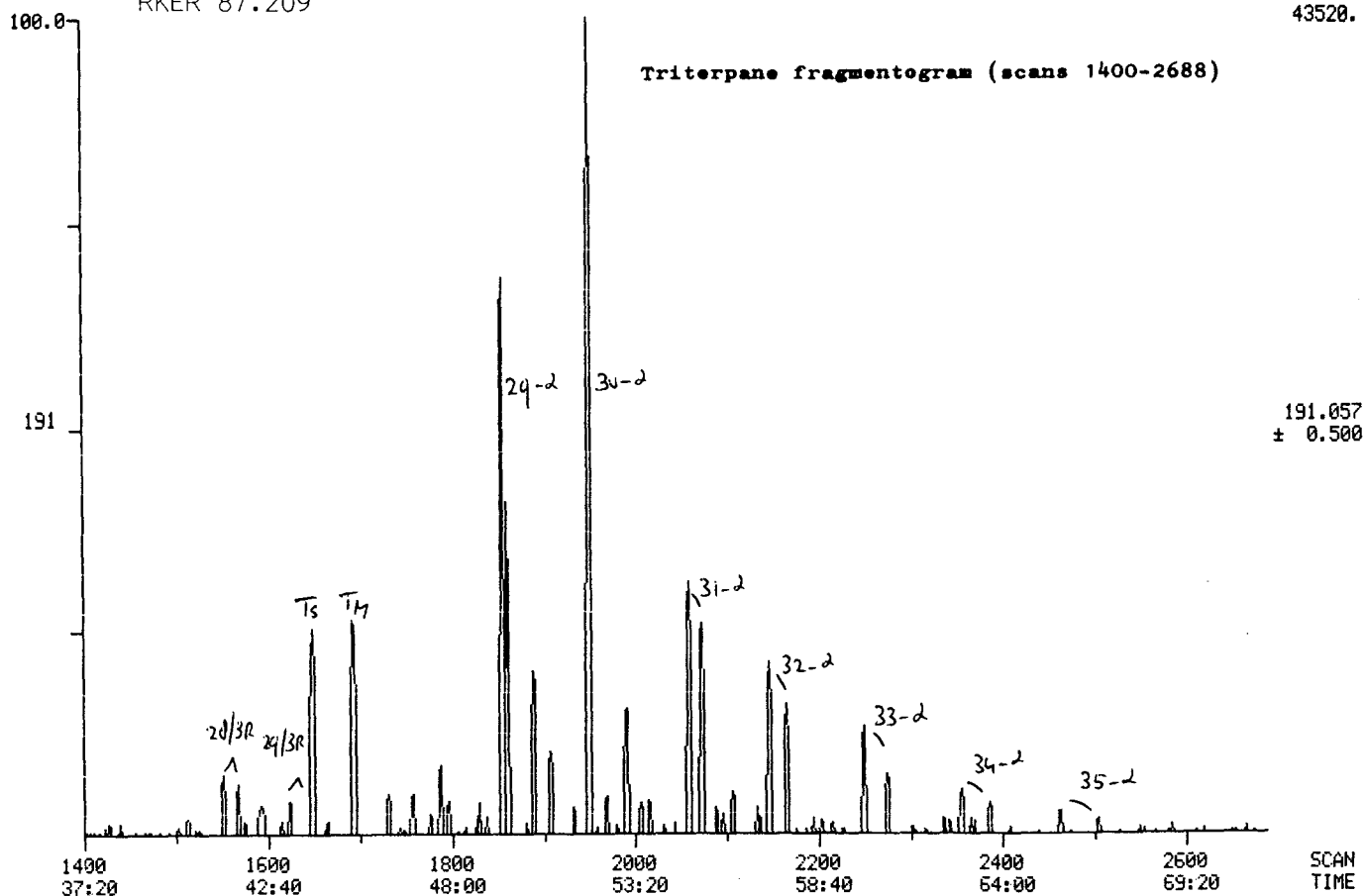
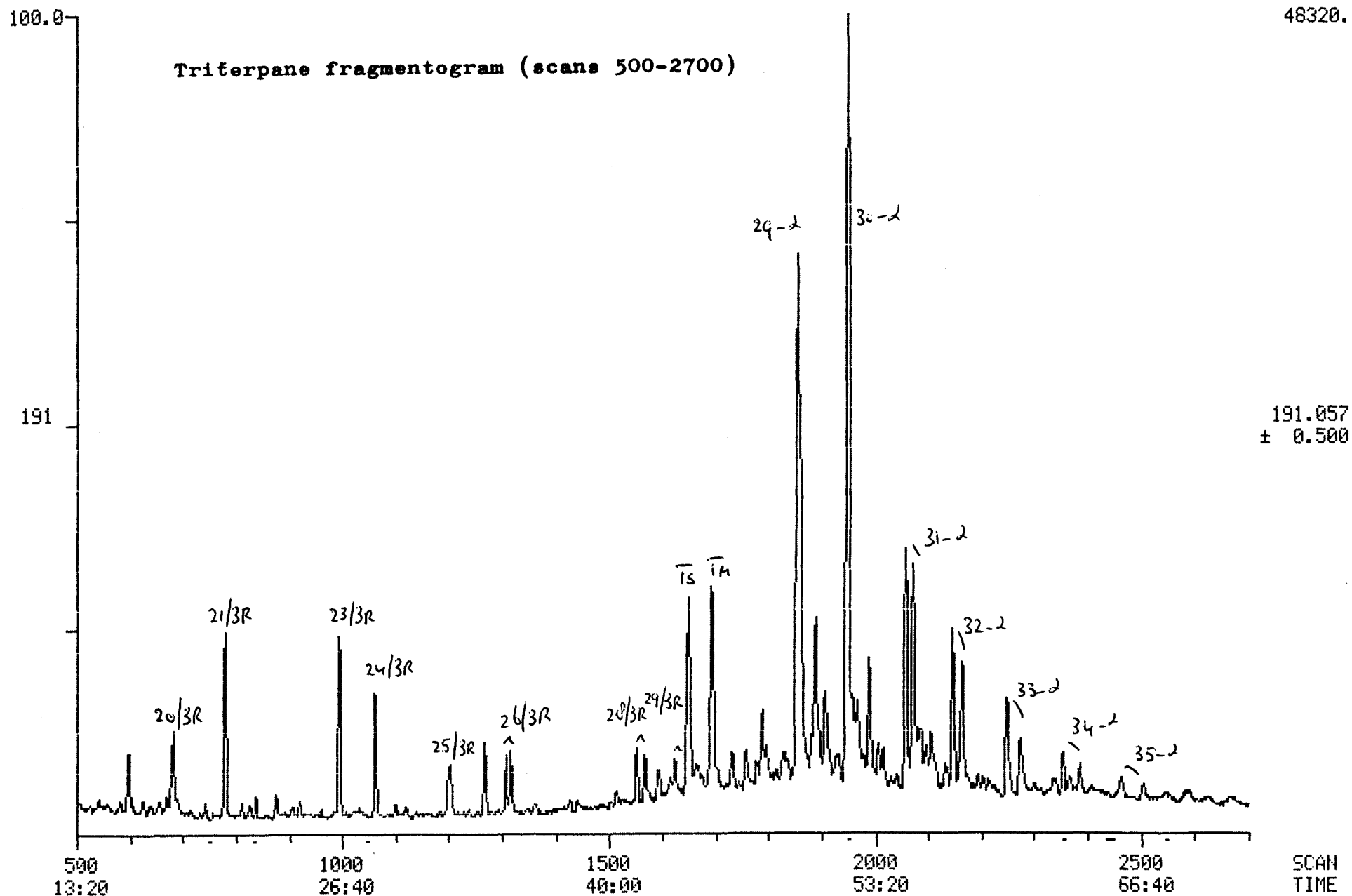


FIG. 6A. GC-MS analysis 11/30-2, crude oil.

FIG. 6B. GC-MS analysis 11/30-2, crude oil.



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