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FINAL REPORT

REPORT TITLE/ TITTEL

HYDROCARBON CHARACTERISATION OF WELL 31/6-6, THE TROLL FIELD.
OPEN CONTRACT T-4533, JOB NO. 5.

CLIENT/ OPPDRAGSGIVER

Statoil

RESPONSIBLE SCIENTIST/ PROSJEKTANSVARLIG

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SUMMARY/ SAMMENDRAG

Six sandstone core samples and one fluid sample were analysed in order to characterise the hydrocarbons present. The fluid sample is a high API gravity condensate that shows evidence of some biodegradation. The core extracts show a different hydrocarbon distribution to that of the fluid and contain a higher percentage of high molecular weight compounds. Based on the available geochemical data, it is believed that the core extracts and the fluid sample may be derived from two different sources and that the fluid has been generated at a higher maturity. The source rock for the core extracts is believed to have had a high terrestrial input. Based on the concentrations of the core extracts, it is unlikely that the cored interval will be an excellent reservoir. The highest concentrations of extractable organic matter are present around 1567.73m.

KEY WORDS/ STIKKORD

Well 31/6-6	Hydrocarbon Characterisation
Troll Field	GC-MS

CONTENTS

CONTENTS continued.

FIGURES

1. INTRODUCTION

Six sandstone cores and one fluid sample from well 31/6-6 in the Troll field were analysed to characterise the hydrocarbons. The location of the well is shown on the Location map, while the depth intervals in the well are given below:

IKU code	Sample type	Sample depth (m)
B-8250	Sst. core	1558.45-1558.50
B-8251	Sst. core	1560.82-1560.84
B-8252	Sst. core	1567.67-1567.73
B-8253	Sst. core	1570.80-1570.83
B-8254	Sst. core	1591.39-1591.42
B-8255	Sst. core	1638.65-1638.66
B-8249	Fluid, DST 1	1559.50-1564

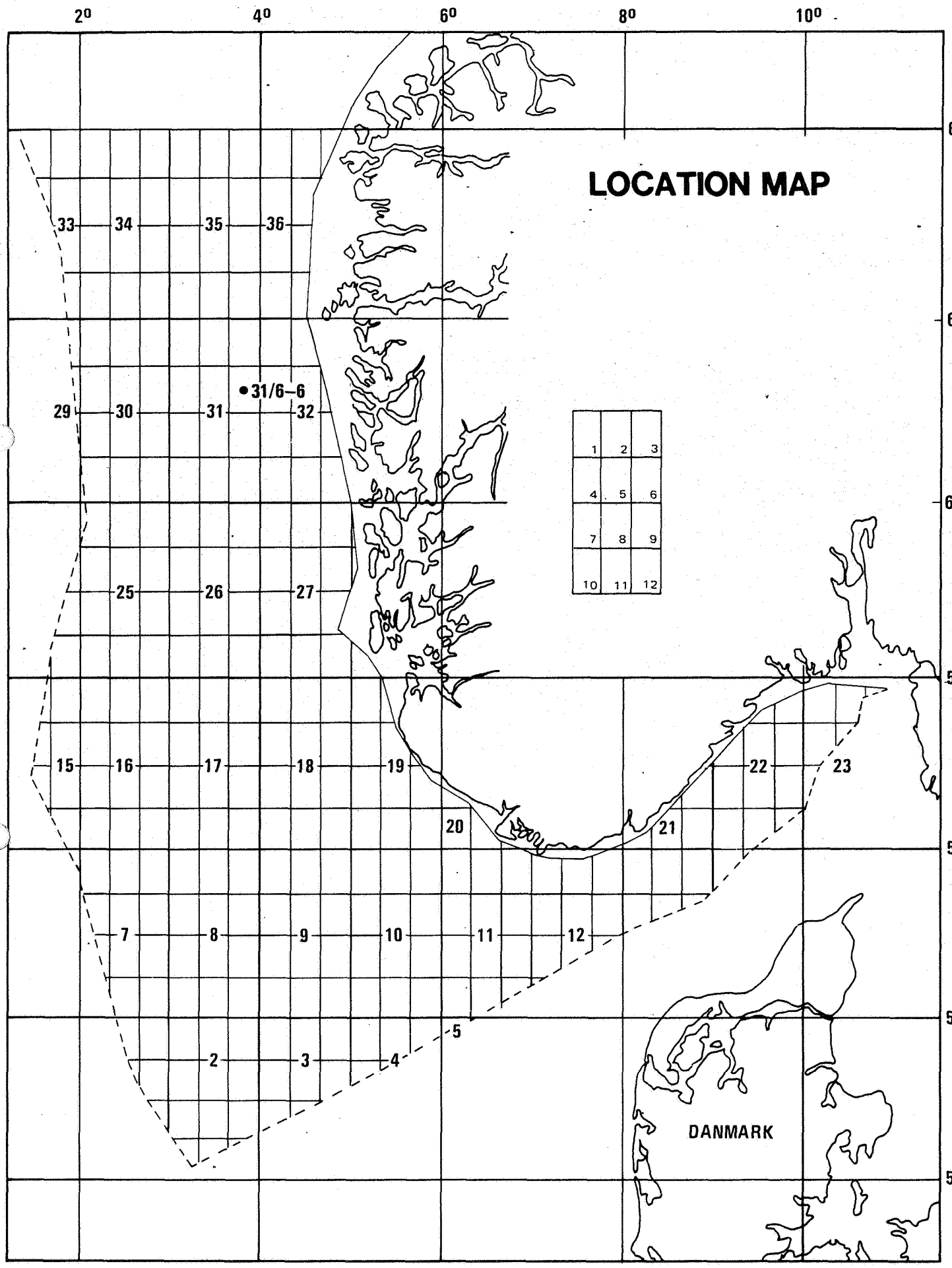
The following analyses were performed on the samples:

- API gravity on fluid sample.
- C_2-C_8 hydrocarbon GC on fluid sample.
- Evaporation of light components (<210^{o}C) of fluid sample.
- Extraction of organic matter from cores.
- Chromatographic separation into saturated and aromatic hydrocarbons and nonhydrocarbons (NSO's and asphaltenes).
- Urea-adduction of saturated hydrocarbons.
- Gas chromatography of saturated, branched/cyclic and aromatic hydrocarbons.
- GC-MS of saturated and aromatic biomarkers.
- $^{13}C/^{12}C$ isotope ratios of saturated and aromatic hydrocarbons.

A draft report has been approved by Statoil, and ten copies of the final report have been sent out.

The analysed samples were assigned the IKU project number 05.1756 and were performed according to the Statoil/IKU Open Contract T-4533 Job no. 5.

After these analyses had started it was agreed that no internal standard should be used in future when isotope analyses are included. This agreement will be followed for later studies.


LOCATION MAP
2°
4°
6°
8°
10°
62°
61°
60°
59°
58°
57°
56°
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35
36
29
30
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31/6-6
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2. EXPERIMENTAL

2.1 Extractable Organic Matter

Powdered rock was extracted by a flowblending for 3 minutes using dichloromethane (DCM) and methanol (1%) as solvent. The DCM used was of organic geochemical grade and blank analyses showed the occurrence of negligible amounts of contaminating hydrocarbons. Activated copper fillings were used to remove any free sulphur from the samples. After extraction the solvent was removed on a Buchi Rotavapor and the amount of extractable organic matter (EOM) was determined. Asphaltene precipitation was performed according to the procedure given by Statoil.

2.2 Chromatographic separation

The extractable organic matter (EOM) was separated into saturated fraction, aromatic fraction and non hydrocarbon fraction using a MPLC system with hexane as eluant (Radke et al., Anal. Chem., 1980). The various fractions were evaporated on a Buchi Rotavapor and transferred to glass vials and dried in stream of nitrogen.

The same separation procedure was applied to the fractions of oil/condensate samples boiling above 210^{o}C.

2.3 Urea adduction

Urea-adduction was performed on the saturated hydrocarbon fraction. The sample containing 5 mg of n-alkanes was dissolved in 2 ml of n-hexane and 1 ml of acetone was added. A saturated solution of urea in methanol (1 ml) was then added dropwise. The solvent was removed (N_2) and the adduction step repeated twice. The white crystals were rinsed (3x5ml hexane) and the combined extract filtered (cotton wool plug covered with Al_2O_3), to afford a non-adduct. GC analyses were performed on the samples after the urea adduction, using the same conditions as for the other GC analyses.

2.4 Gas chromatographic analysis

Whole oil samples were analysed on a HP5730A GC, applying a temperature program from -50^{o}C (2 min.) to 280^{o}C at 4^{o}C/min. The GC was fitted with

a 15m DB-1 fused silica column. Hydrogen (2.5ml/min.) was used as carrier gas, and 0.02µl was injected in split mode (split ratio 1:10).

The C_2-C_8 hydrocarbon fraction was determined on a Carlo Erba Fractovap GC. The column used was a 30m fused silica capillary column coated with SE-54. The temperature program applied was 50°C (2min.) to 180°C at 4°C/min.

The saturated, the branched/cyclic and the aromatic hydrocarbon fractions were each diluted with n-hexane and analysed on a HP 5730A. The GC is equipped with a 15m DB-1 fused silica column and hydrogen (ca. 2.5 ml/min.) is used as carrier gas. Injections are performed in split mode (split ratio 1:10). The temperature program applied is 80°C (2 min.) to 280°C at 4°C/min.

The data processing for all the GC analyses was performed on a VG Multichrom lab data system.

2.5 Gas chromatography - mass spectrometry (GC-MS)

GC-MS analyses were performed on a VG Micromass 70-70H GC-MS-DS system. The Varian Series 3700 GC was fitted with a fused silica OV-1 capillary column (30m x 0.3mm i.d.). Helium (0.7kg/cm^2) was used as carrier gas and the injections were performed in split mode (1.5µl, split ratio 1:15). The GC oven was programmed from 70°C to 280°C at 4°C/min. after an initial isothermal period of 2 minutes.

The saturated hydrocarbons were analysed in multiple ion mode (MID) at a scan cycle time of approximately 2 secs. Full data collection was applied for the aromatic hydrocarbons at a scan time of 1 sec/decade. The mass spectrometer operated at 70eV electron energy and an ion source temperature of 200°C. Data acquisition was done by VG data systems.

Peak identification was performed applying knowledge of elution patterns in certain mass chromatograms. Calculation of peak ratios was done from peak height in the appropriate mass chromatograms.

2.6 $\delta^{13}C$ isotope analysis

The $\delta^{13}C$ isotope analysis was performed by mass spectrometry at Institute for Energy Technology (IFE) in Oslo according to their method. Their reference value for the standard NBS-22 is -29.8.

3. RESULTS AND DISCUSSION

3.1 API gravity

The API gravity of this fluid sample was determined at 51.4°API (Table 1) and is typical of a light condensate.

3.2 Gas chromatography of C_2-C_8 hydrocarbons

The gas chromatogram of C_2-C_8 hydrocarbons is shown in Figure 1, while the relative amounts of individual compounds are given in Table 2. The main hydrocarbons in the C_2-C_8 range are the cyclic compounds of which methylcyclohexane is the predominant compound. Only low amounts of n-alkanes and aromatic hydrocarbons are present relative to the branched and cyclic compounds. Due to the high abundances of a few components, difficulties were encountered when the sample was analysed. The $mCyC_6$ peak in the chromatogram is off scale and the calculated amount is thus too low.

The results suggest that the fluid sample is a light crude oil that has undergone biodegradation of at least the low molecular weight n-alkanes. The low abundance of aromatic hydrocarbons may indicate an early mature oil, but it could also imply that the condensate is generated by fractionation of a heavier oil.

3.3 Gross composition

The gravimetric data showing the gross composition of the samples are given in Tables 3, 4 and 5a, b, c and d.

The relatively high amount of light hydrocarbons (Table 3) suggests that the fluid sample is a condensate. Nearly 75% of the fluid is represented by low molecular weight compounds. Asphaltenes amount to approximately 0.6% of the fraction of fluid boiling above 210°C (Table 4) and less than 0.2% of the total condensate.

Asphaltene compounds account for less than 5% of the core extracts. The variation between the individual core samples may be caused by genuine differences in the core extracts, but it is more likely to be due to the generally low sample weights. Differences in the extracted organic

matter (EOM) content shown in tables 4 and 5 are due to differences in the amount of material extracted for asphaltene and EOM quantification. The work-up procedure is the same for both extractions although the asphaltenes are not filtered and weighed the second time (Table 5).

The cores have a good - rich content of extractable organic matter (EOM) with a good-rich content of hydrocarbons. The core at 1567.73m has the highest concentrations of EOM and hydrocarbons (Tables 5a,b,c and d).

If the classification used by Hunt (1979) is applied to these samples (figure 2), only the two cores at 1558.50m and 1638.66m fall in the zone classified as reservoir rocks. These two cores have very low TOC values and are the top and basal samples of this cored section. The richest samples occur in the middle of the section and are classified as nonreservoir rocks based on the relative amount of hydrocarbons, but the lie close to the borderline with the reservoir rock zone. These samples could also have good reservoir characteristics.

The SAT/ARO ratios vary between 2.8 and 6.1 and indicate mature hydrocarbons.

3.4 Gas chromatographic analysis of saturated hydrocarbons

Gas chromatograms of the total saturated hydrocarbons are shown in Figure 3, while the tabulated data are given in Table 6.

The fluid sample is characterised by low molecular weight compounds, with a high abundance of isoprenoids and other branched hydrocarbons. This is in good agreement with the previously discussed results and suggests a light crude oil which that has undergone biodegradation.

All of the core samples are seen to contain a very similar distribution of n-alkanes and show a weak bimodal pattern. No sign of heavy biodegradation was detected, but at least one sample seems to have undergone some degree of biodegradation (1560.84m). Relative to the added internal standard (S in Figure 3) the abundance of saturated hydrocarbons is low and it is difficult to tell if the bimodality is real. It is possible that the group of n-alkanes from C_{22}-C_{35} is due to contamination.

Input from two different sources or the presence of contaminants may also be the reason for the variations in the Pr/C_{17} ratio. The high Pr/C_{17} ratio in sample B-8251 (1560.84m) and in the oil could indicate that hydrocarbons generated from one source rock have undergone some biodegradation. Input of hydrocarbons from another type of source rock or a more mature stage of the same source rock may have generated hydrocarbons that to a certain extent, mask the effect of biodegradation seen in the GC chromatograms.

The high pristane/phytane ratios indicate that the source or sources for these hydrocarbons have had a high input of terrestrial organic matter.

3.5 Gas chromatographic analysis of branched/cyclic hydrocarbons

Gas chromatograms of branched/cyclic hydrocarbons are shown in Figure 4.

Very similar distributions of isoprenoids are seen in all six core samples. The fluid sample has a somewhat different distribution in that the C_{16}- and C_{18}-isoprenoids are more abundant than pristane and phytane. The ratio between pristane and phytane is, however, only slightly higher than in the core extracts, and the differences are not believed to be due to variations in source organic matter. No distinct pattern of cyclic compounds was seen in the high molecular weight range, suggesting that the hydrocarbons are mature.

3.6 Gas chromatographic analysis of aromatic hydrocarbons

Gas chromatograms of aromatic hydrocarbons are given in Figure 5.

All the samples gave generally poor chromatograms for the aromatic hydrocarbons. A determination of certain aromatic maturity ratios was done, but these data should be considered with great care (Table 7).

The fluid sample was seen to contain very low molecular weight aromatics with no naphthalene or higher homologs. The cores seem to contain a more or less even distribution of naphthalene and phenanthrene homologs with some input of other unidentified compounds.

The methyl phenanthrenes indicate that the maturity of the aromatic hydrocarbons in most of the samples is fairly low. A somewhat higher maturity is indicated for the top sample.

3.7 GC-MS analysis of saturated terpanes and steranes

Mass chromatograms representing terpanes (m/z 191) and steranes (m/z 217 and 218) are shown in Figure 6, while molecular ratios calculated from the chromatograms are given in Tables 8 and 9.

The two uppermost cores show a very similar distribution of terpanes and all the maturity ratios suggest fairly mature hydrocarbons. A certain amount of 28,30-bisnorhopane (Z/E = 0.12-0.16) is seen in both of these samples and the Tm/Ts ratio varies from 0.56 to 0.64. In the other cores the Tm/Ts ratio is higher, and in three out of the four the content of bisnorhopane is increased. The sample at 1567.73m (B-8252) is different from all the others in that it contains a third trisnorhopane (u) peak in addition to the Ts and Tm (A and B in Figure 5). This peak has been identified as 25,28,30-trisnorhopane by Volkman and coworkers (1983) and has also been seen in previous samples from the Troll field (Hall et al., 1984). The sample at 1591.42m (B-8254) is different in that the relative abundance of tricyclic terpanes is higher, in addition to a lower maturity as seen from especially the sterane ratios. These variations may reflect the variation seen in the saturated GC's, and possibly indicate that two sources have generated the hydrocarbons, one being responsible for the low molecular weight group and the other for the more high molecular weight compounds.

The fluid sample is dominated by one peak in the m/z 191 chromatogram. This peak coelutes with Ts and has earlier been identified as squalene and is believed to be a contaminant. The rest of the terpane chromatogram shows a relatively low abundance of 28,30-bisnorhopane but a high content of tricyclic terpanes.

The maturity of the hydrocarbons is lower in the core samples than in the fluid.

3.8 GC-MS analysis of aromatic hydrocarbons

Mass chromatograms of aromatic hydrocarbons are presented in Figure 7.

A very similar distribution of the aromatic hydrocarbons is seen in all six core samples, and to a certain degree in the fluid. The distribution of methylnaphthalenes (m/z 142) and methylphenanthrenes (m/z 192) suggests that the fluid may be slightly more mature than the core extracts. Very low amounts of aromatic steranes make it difficult to determine any aromatic sterane maturity ratios.

3.9 $\delta^{13}C$ isotope results

The $\delta^{13}C$ isotope results for the six cores and the fluid are presented in Table 10.

The variations in the isotope values for both the saturated and aromatic hydrocarbon fractions are relatively big. This spread may at least partly be due to the high amount of internal standard relative to saturated hydrocarbons. Another explanation would be the possible input from two different sources to varying degree in the cores. However, no systematic trend can be seen either in the saturated or aromatic fractions. The fluid sample has $\delta^{13}C$ values equal to or very close to the mean values for the cores. If the top and bottom samples with the lowest TOC-values are excluded the mean value for the saturated hydrocarbons is reduced to -28.8. The condensate with a value of -28.5 has probably had a lower value before biodegradation took place. This suggests that the $\delta^{13}C$ value of these hydrocarbons has originally been lower, and thus indicates a terrestrial source.

4. CONCLUSION

The fluid sample was seen to be a light condensate that has undergone some biodegradation. Based on all the analyses the hydrocarbons in the cores are believed to originate from two different sources, the individual variation probably being caused by different amounts of input from the sources. The fluid sample is slightly more mature than the core hydrocarbons, and could have been generated at a higher maturity in the same source rocks.

The condensate is highly mature, while the high molecular weight saturates and aromatics in the core extracts indicate early maturity. A source rock with a high input of terrestrial material such as type III or mixed II/III kerogen is believed to be the main source of the hydrocarbons.

Biodegradation will tend to preferentially affect the lower molecular weight hydrocarbons (Tissot and Welte, 1978). The condensate would therefore be affected to a greater degree than the core extracts.

The cored section was generally found to have an intermediate extractability, with the best extractability in the sample at 1567.67-1567.73m. According to Hunts classification the interval cannot be assigned as a good reservoir.

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Table 1: Density and API gravity of fluid sample

IKU code	Depth (m)	Density	API gravity
B-8249	1559.5-1564	0.7734	51.4

Table 2: Distribution and amounts of C_2-C_8 hydrocarbons.

B-8249

	µg	% of total
C_2	-	-
C_3	0.93	0.40
MC_3	3.45	1.49
nC_4	0.90	0.39
MC_4	5.17	2.23
nC_5	1.76	0.76
CyC_5+2,3DMC_4	18.51	7.98
$2MC_5$		
$3MC_5$	6.39	2.75
nC_6	2.57	1.11
$MCyC_5$	27.11	11.68
benzene	1.27	0.55
CyC_6	35.18	15.16
$2MC_6$	0.96	0.41
2,3DMC_5	5.61	2.42
$3MC_6$	4.38	1.89
$DMCyC_5$ (1,3, 1,2)	13.45	5.80
2,2,4 TMC_5	10.22	4.40
nC_7	0.52	0.22
$MCyC_6$	69.51	29.96
		(Saturated peak on GC)
2.4 DMC_6	5.03	2.17
toluene	4.56	1.97
$2MC_7$	2.67	1.15
$3MC_7$	3.21	1.39
$DMCyC_6$ (1,2)	12.85	5.54
nC_8	7.83	3.37
M/P-xylene	7.66	3.30
O-xylene		

IKU

Abbreviations

C_2	ethane
C_3	propane
MC_3 (iC_4)	methylpropane
nC_4	butane
MC_4 (iC_5)	methylbutane
nC_5	pentane
CyC_5+2,3DMC_4+2MC_5	cyclopentane+2,3dimethylbutane+2methylpentane
$3MC_5$	3-methylpentane
nC_6	hexane
$MCyC_5$	methylcyclopentane
CyC_6	cyclohexane
$2MC_6$	2-methylhexane
2,$3DMC_5$	2,3-dimethylpentane
$3MC_6$	3-methylhexane
$DMCyC_5$	1cis3dimethylcyclopentane+2tr2dimethylcyclopentane
nC_7	heptane
$MCyC_6$	methylcyclohexane
$2MC_7$	2-methylheptane
$3MC_7$	3-methylheptane
$DMCyC_6$	dimethylcyclohexane
nC_8	octane

Table 3: Amounts of light components in fluid sample

IKU code	Crude oil (mg)	>210°C (mg)	Light comp. (mg)	(%)
B-8249	858.8	232.9	625.9	72.9

Table 4: Amounts of asphaltenes.

IKU code	Depth (m)	EOM (mg)*	Asphaltenes	
			(mg)	(%)
B-8250	1558.45-1558.50	5.5	0.2	3.6
B-8251	1560.82-1560.84	29.9	1.1	3.7
B-8252	1567.67-1567.73	20.3	0.3	1.5
B-8253	1570.80-1570.83	22.6	0.2	0.9
B-8254	1591.39-1591.42	81.1	3.8	4.7
B-8255	1638.65-1638.66	10.9	0.5	4.6
B-8249 (oil)	1559.50-1564	232.9**	1.4	0.6

* To obtain enough extract for analysis, it was necessary to extract two separate samples from each core interval. The asphaltenes were, however, only separated from the first extraction, and therefore, the EOM values in Table 4 are different to those in Table 5. The EOM contents in table 4 and table 5 are not comparable and asphaltene contents have been calculated relative to the EOM values shown in table 4.

** Fraction boiling above 210^{o}C.

T A B L E : 5a

CONCENTRATION OF EOM AND CHROMATOGRAPHIC FRACTIONS

IKU-No	DEPTH (m)	Rock Extr. (g)	EOM (mg)	Sat. (mg)	Aro. (mg)	HC (mg)	Non HC (mg)	TOC (%)
B 8250	1558.50	81.3	120.9	29.6	6.6	36.2	84.7	0.06
B 8251	1560.84	96.9	133.4	21.6	7.8	29.4	104.0	0.11
B 8252	1567.73	52.5	170.1	46.6	10.6	57.2	112.9	1.07
B 8253	1570.83	63.5	64.6	21.6	7.4	29.0	35.6	0.49
B 8254	1591.42	72.9	84.7	22.6	7.2	29.8	54.9	0.51
B 8255	1638.66	52.7	47.4	24.1	4.0	28.1	19.3	0.08
B 8249	oil	858.8 * (mg)	232.9**	52.8	13.1	65.9	167.0	--

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* Crude oil (mg).

** Boiling above 210^{o}C.

T A B L E : 5b

WEIGHT OF EOM AND CHROMATOGRAPHIC FRACTIONS

(Weight ppm OF rock)

IKU-No	DEPTH (m)	EOM	Sat.	Aro.	HC	Non HC
B 8250	1558.50	1487	364	81	446	1041
B 8251	1560.84	1376	223	80	303	1073
B 8252	1567.73	3239	888	202	1090	2149
B 8253	1570.83	1017	340	117	457	560
B 8254	1591.42	1162	310	99	408	754
B 8255	1638.66	899	458	75	533	366
B 8249	oil					

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T A B L E : 5c

CONCENTRATION OF EOM AND CHROMATOGRAPHIC FRACTIONS

(mg/g TOC)

IKU-No	DEPTH (m)	EOM	Sat.	Aro.	HC	Non HC
B 8250	1558.50	2477.6	607.4	135.3	742.7	1734.9
B 8251	1560.84	1251.0	202.6	73.1	275.7	975.3
B 8252	1567.73	302.7	83.0	18.9	101.9	200.9
B 8253	1570.83	207.5	69.4	23.9	93.3	114.2
B 8254	1591.42	227.9	60.7	19.4	80.1	147.8
B 8255	1638.66	1123.9	571.9	93.9	665.8	458.1
B 8249	oil					

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T A B L E : 5d

COMPOSITION IN % OF MATERIAL EXTRACTED FROM THE ROCK

IKU-No	DEPTH (m)	Sat EOM	Aro EOM	HC EOM	SAT Aro	Non HC EOM	HC Non HC
B 8250	1558.50	24.5	5.5	30.0	449.1	70.0	42.8
B 8251	1560.84	16.2	5.8	22.0	276.9	78.0	28.3
B 8252	1567.73	27.4	6.2	33.7	439.0	66.3	50.7
B 8253	1570.83	33.4	11.5	45.0	290.3	55.0	81.7
B 8254	1591.42	26.6	8.5	35.1	313.3	64.9	54.2
B 8255	1638.66	50.9	8.4	59.2	609.1	40.8	145.3
B 8249	oil	22.7	5.6	28.3	403.1	71.7	39.5

DATE : 20 - 12 - 84.

T A B L E 6

TABULATION OF DATA FROM THE GASCHROMATOGRAMS

IKU No.	DEPTH (m)	PRISTANE / n-C17	PRISTANE / PHYTANE	CPI-1	CPI-2
B 8250	1558.50	0.9	2.1	1.1	1.1
B 8251	1560.84	1.4	2.3	1.2	1.1
B 8252	1567.73	0.7	2.3	1.1	1.1
B 8253	1570.83	0.7	2.2	1.0	1.1
B 8254	1591.42	0.6	2.0	1.1	1.1
B 8255	1638.66	0.8	2.6	1.0	1.1
B 8249	oil	2.0	3.0		

DATE : 21 - 12 - 84.

$$CPI\ 1 = \frac{2C_{27}}{C_{26}+C_{28}}$$

$$CPI\ 2 = \frac{1}{2}\left(\frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{24}+C_{26}+C_{28}+C_{30}} + \frac{C_{25}+C_{27}+C_{29}+C_{31}}{C_{26}+C_{28}+C_{30}+C_{32}}\right)$$

Table 7. Ratios calculated from aromatic hydrocarbon gas chromatograms.

Sample no.	Depth (m)	MN	MPI 1
B-8250	1558.50	2.5	0.78
B-8251	1560.84	-	0.58
B-8252	1567.73	1.3	0.44
B-8253	1570.83	-	0.55
B-8254	1591.42	1.7	0.51
B-8255	1638.66	1.3	0.80
B-8249	1559.5-1564	-	-

Table 8.

Molecular ratios calculated from terpane and sterane mass chromatograms. Maturity ratios.

IKU No.	DEPTH (m)	1) αβ/αβ + βα	2) %22S	3) %ββ	4) %20S
B8250	1558.50	0.89	60.6	73.6	49.4
B8251	1560.84	0.88	57.8	69.1	42.6
B8252	1567.73	0.84	50.0	73.5	40.0
B8253	1570.83	0.90	62.0	73.6	44.7
B8254	1591.42	0.86	50.0	63.7	28.3
B8255	1638.66	0.88	56.0	71.7	40.8
B8249	oil	0.92	61.5	75.8	57.1

1) E/E+F in m/z 191.
2) % distribution between first and second elution isomers of doublet J (m/z 191)
3) 2(r+s)/(q+t+2(r+s)) in m/z 217.
4) q/q+t in m/z 217.

Table 9.

Molecular ratios calculated from terpane and sterane mass chromatograms. Source characteristic and maturity ratios.

IKU No.	DEPTH (m)	1) Q/E	2) Tm/Ts	3) X/E	4) a/a+j	5) Z/E
B8250	1558.50	0.11	0.56	0.17	0.60	0.16
B8251	1560.84	0.13	0.64	0.13	0.62	0.12
B8252	1567.73	0.06	0.95	0.07	0.53	0.55
B8253	1570.83	0.08	1.00	0.07	0.52	0.09
B8254	1591.42	0.20	0.79	0.05	0.63	0.18
B8255	1638.66	0.09	0.91	0.07	0.38	0.29
B8249	oil	0.48	-	0.05	0.88	0.06

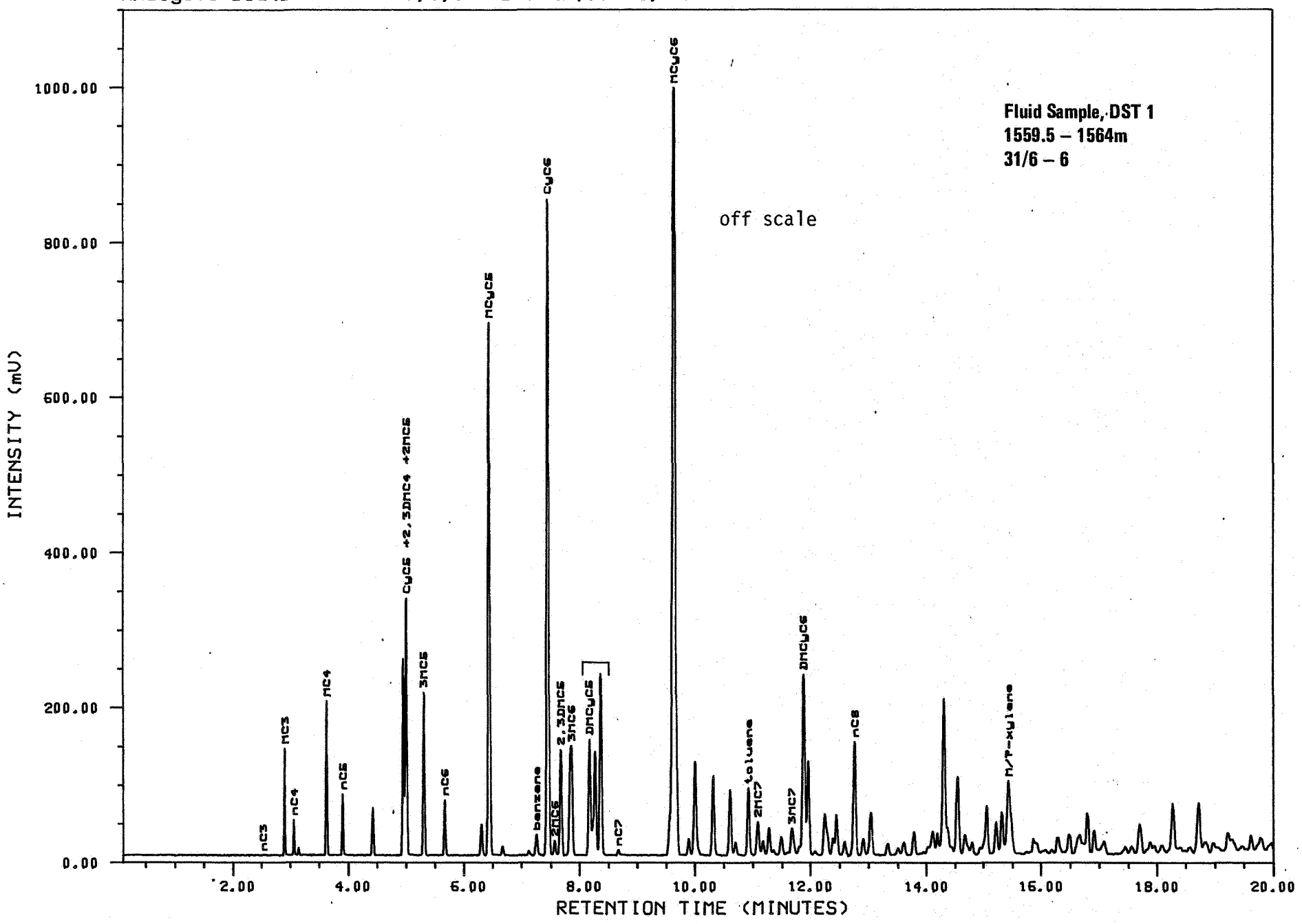
1) Relative abundance of tricyclic terpanes(Q/E in m/z 191).
2) B/A in m/z 191.
3) Relative abundance of unknown(X/E in m/z 191).
4) Relative abundance of C27 rearranged steranes(a/a+j).
5) Relative abundance of bisnorhopane(Z/E in m/z 191).

Table 10: $\delta^{13}C$ isotope data

IKU code	Depth (m)	SAT	ARO
B-8250	1558.45-.50	-27.7	-27.3
B-8251	1560.82-.84	-28.4	-27.5
B-8252	1567.67-.73	-29.2	-26.6
B-8253	1570.80-.83	-28.2	-26.2
B-8254	1591.39-.42	-29.3	-
B-8255	1638.65-.66	-27.9	-26.6
B-8249 (oil)	1559.5-1564	-28.5	-26.6
Mean values cores		-28.5	-26.8
Max. variation cores		1.6	1.3

Figure 1

Gas chromatograms of C_2-C_8 hydrocarbons


Analysis B8249 5,1,1 B-8249,0.3ul,31/6-6
Fluid Sample, DST 1
1559.5 – 1564m
31/6 – 6
off scale
INTENSITY (mU)
RETENTION TIME (MINUTES)
1000.00
800.00
600.00
400.00
200.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
18.00
20.00
nC3
nC3
nC4
nC4
nC5
CyC5 +2,3DMC4 +2MC5
3MC5
nC6
nCyC5
benzene
CyC6
2MC6
2,3DMC5
3MC6
DMCyC6
nC7
nCyC6
toluene
2MC7
3MC7
DMCyC6
nC8
m/p-xylene

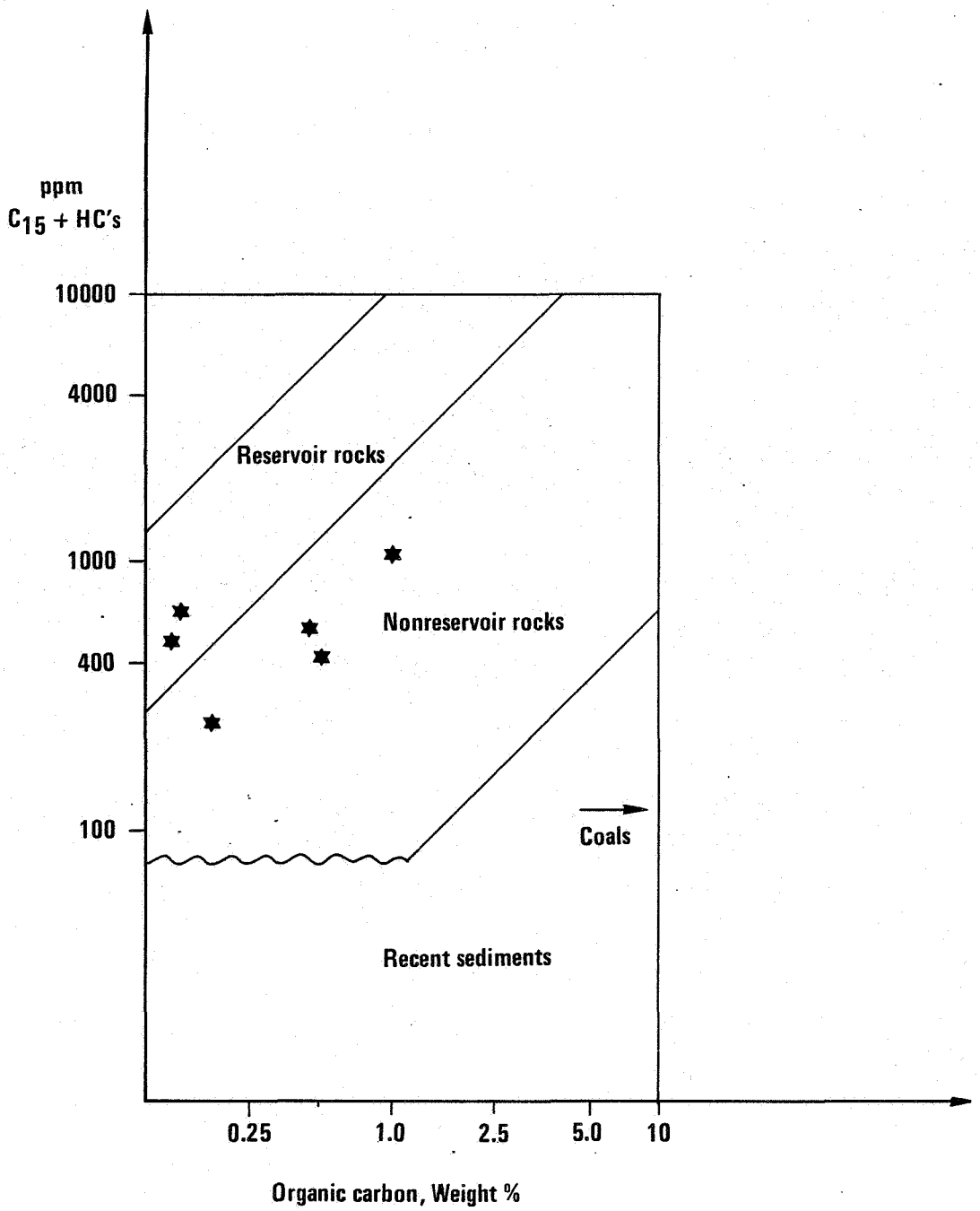


Figure 2. Quantity of organic carbon and extractable C_{15} + hydrocarbons in sediments (after Hunt 1979)

Figure 3

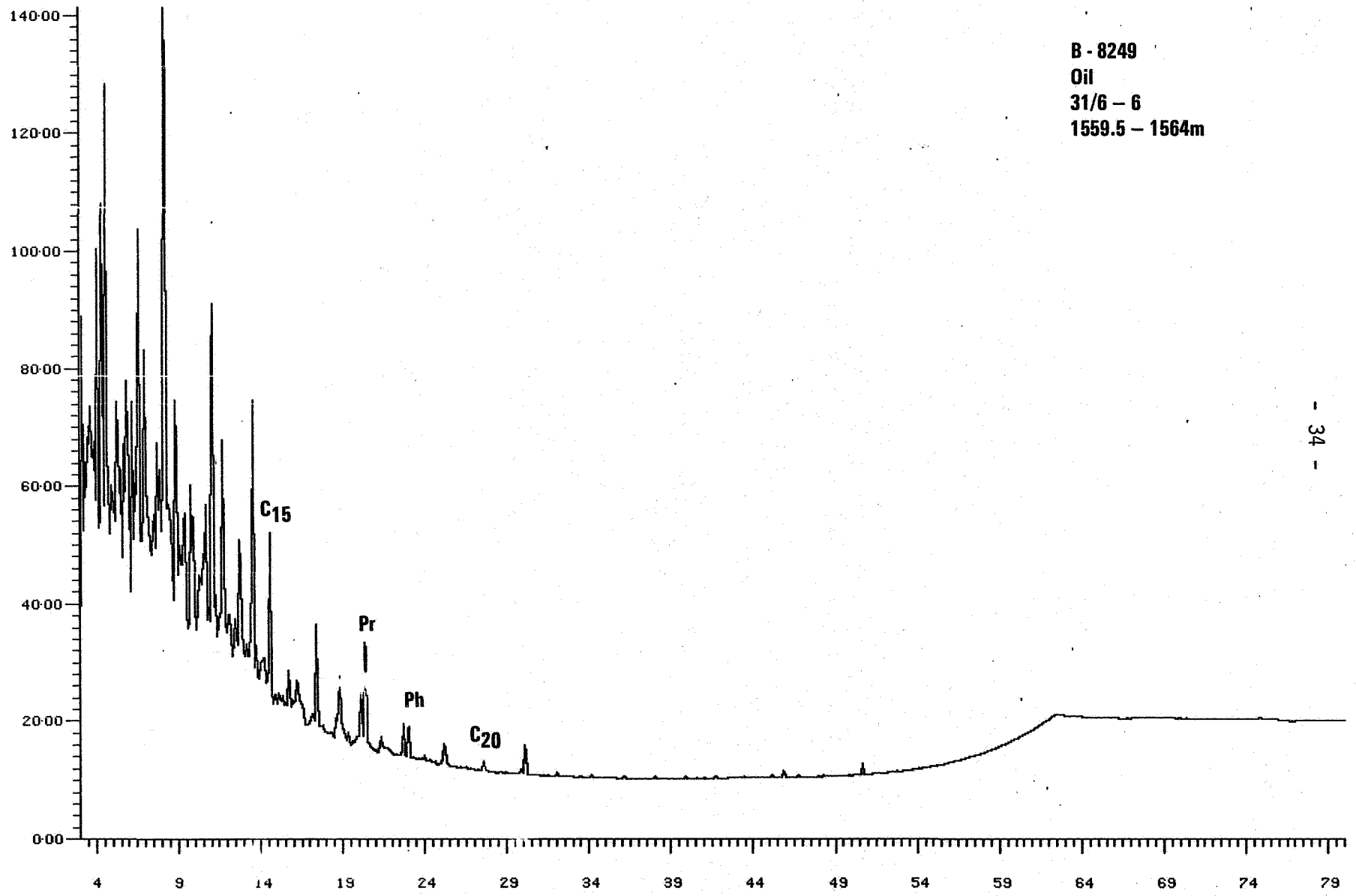
Gas chromatograms of saturated hydrocarbons

Pr - pristane
Ph - phytane
S - squalane (internal standard)

Created at 10:19 on 04/Dec/84

DATA PLOT-CHANNEL 3 Box 1 of 1
Data Scale Plot

Analysis :756B8249S Sample £: 1 Injection £: 1
Sample Name :B-8249,31/6-6,GH Maximum signal (%) :14.141

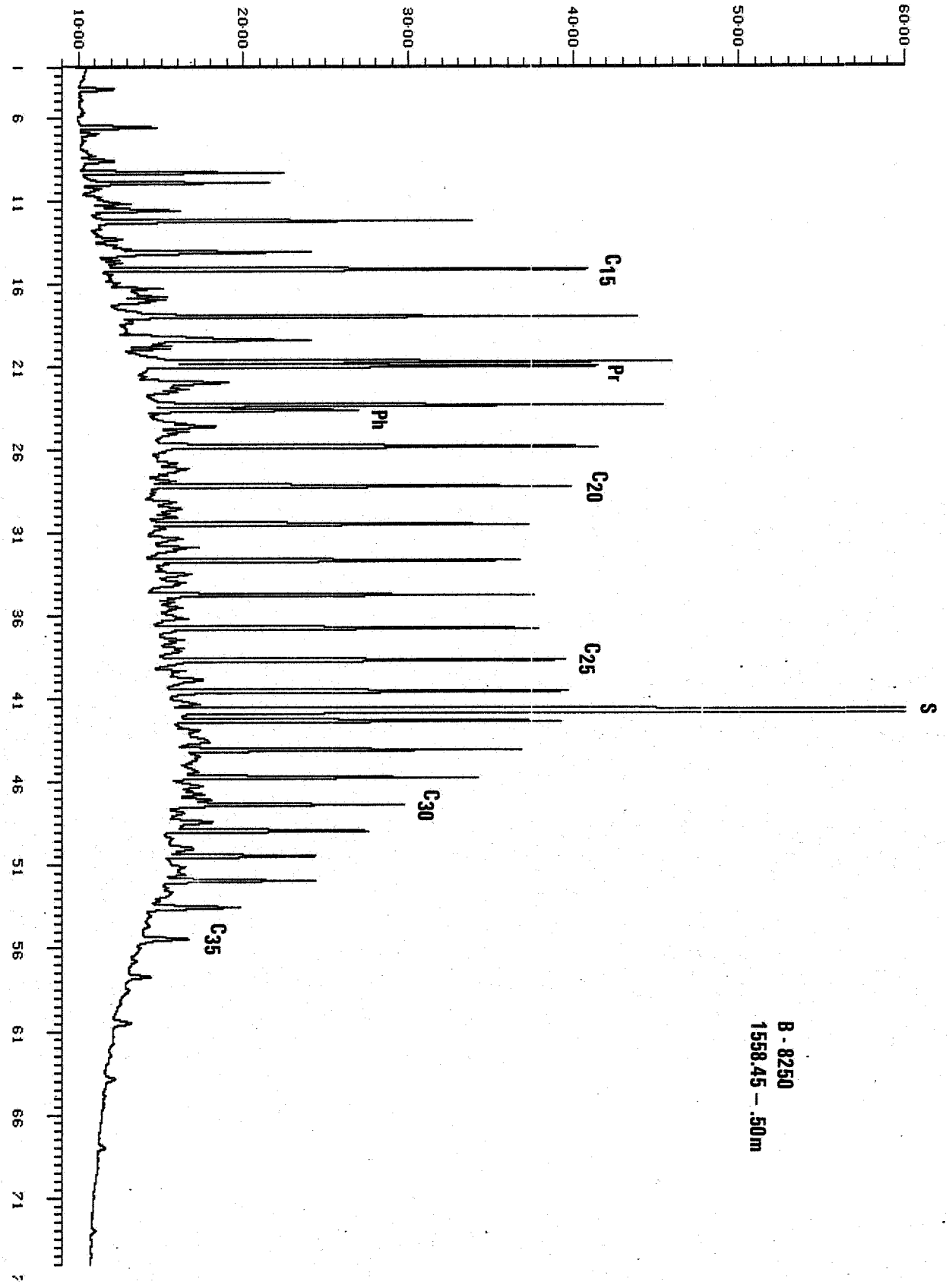


B - 8249
Oil
31/6 – 6
1559.5 – 1564m

reated at 15:18 on 12/Dec/84

DATA PLOT-CHANNEL 3
Full Scale Plot Box 1 of 1

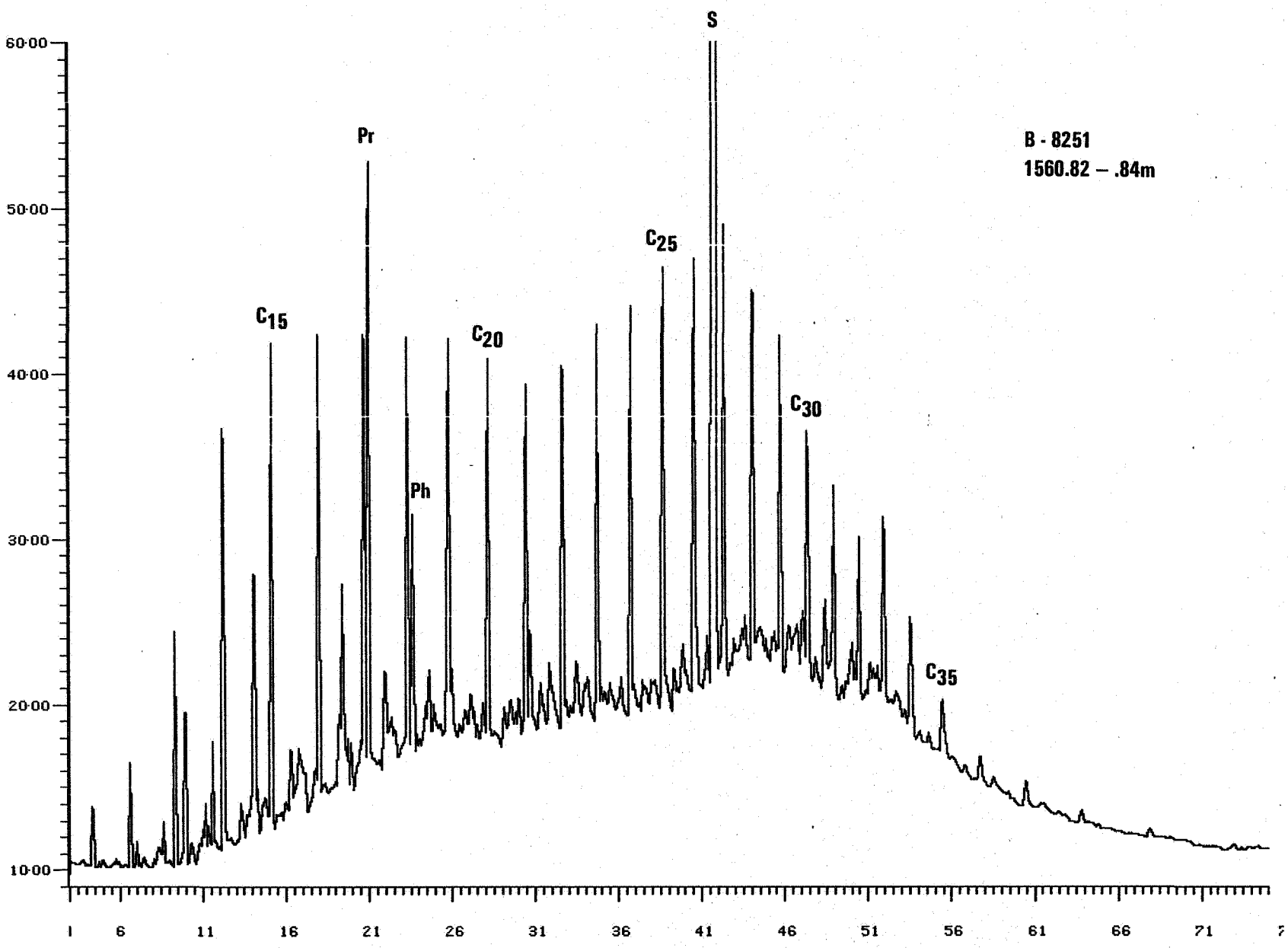
Analysis :756B8250S Sample £: 1 Injection £: 1
Sample Name :B-8250,SAT,31/6-6,GH Maximum signal (%) :100.000



reated at 15:23 on 12/Dec/84

DATA PLOT-CHANNEL 3 Box 1 of 1
Full Scale Plot

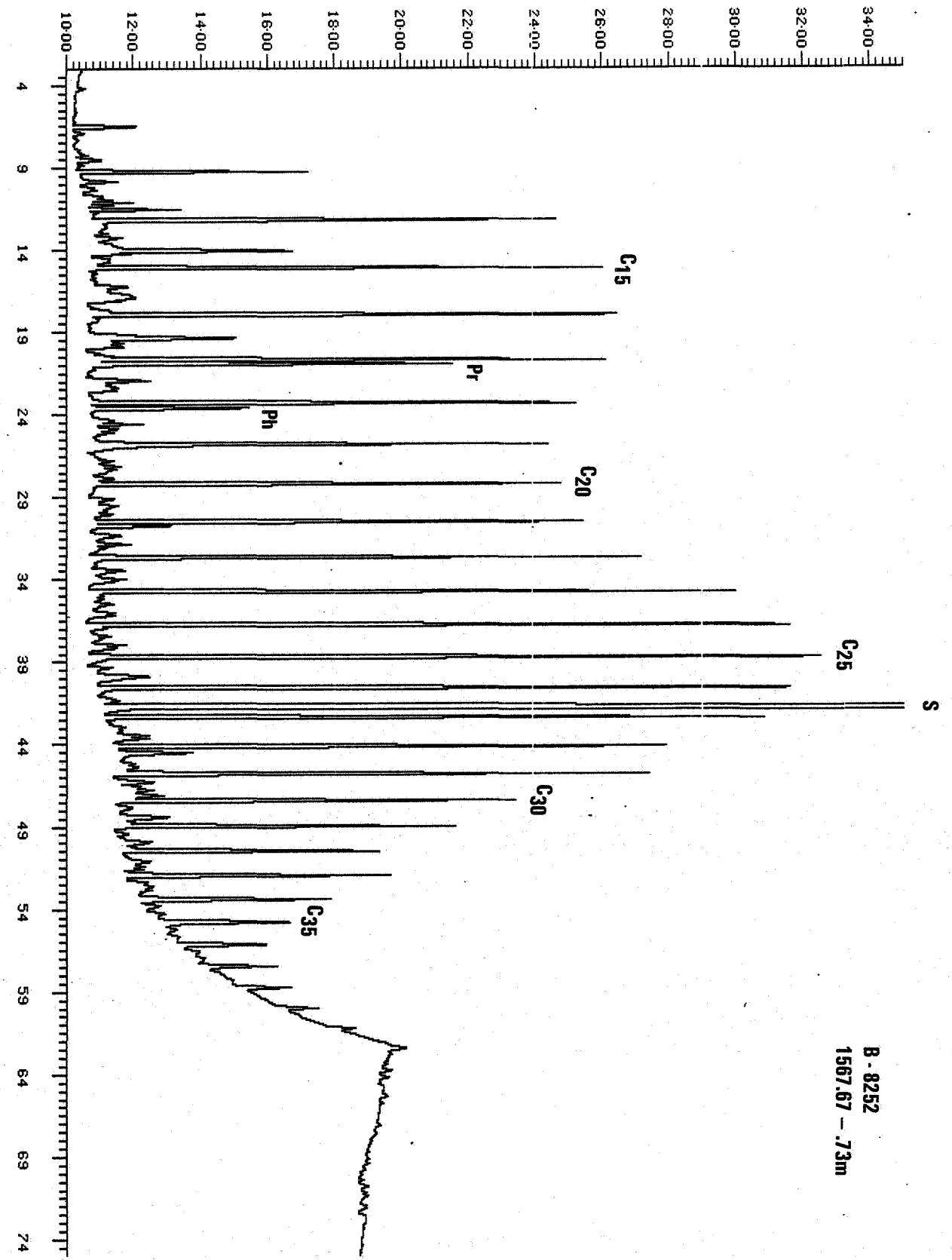
Analysis :756B8251S Sample £: 1 Injection £: 1
Sample Name :B-8251,SAT,31/6-6,GH Maximum signal (%) :100.000



reated at 15:42 on 12/Dec/84

DATA PLOT-CHANNEL 3
Full Scale Plot Box 1 of 1

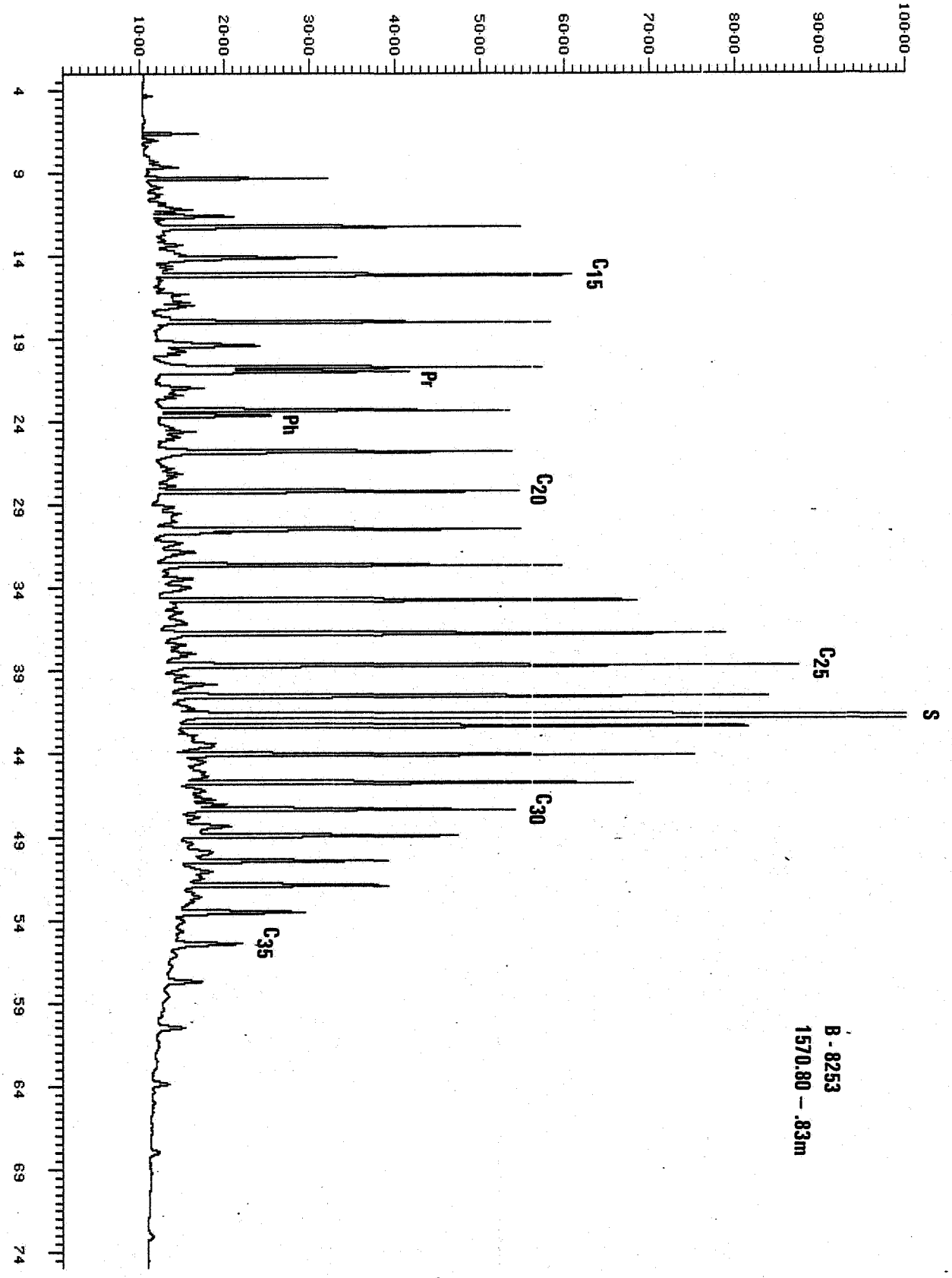
Analysis :756B8252S Sample £: 1 Injection £: 1
Sample Name :B-8252,SAT,31/6-6,GH Maximum signal (%) :9.144



reated at 15:46 on 12/Dec/84

DATA PLOT-CHANNEL 3
Full Scale Plot Box 1 of 1

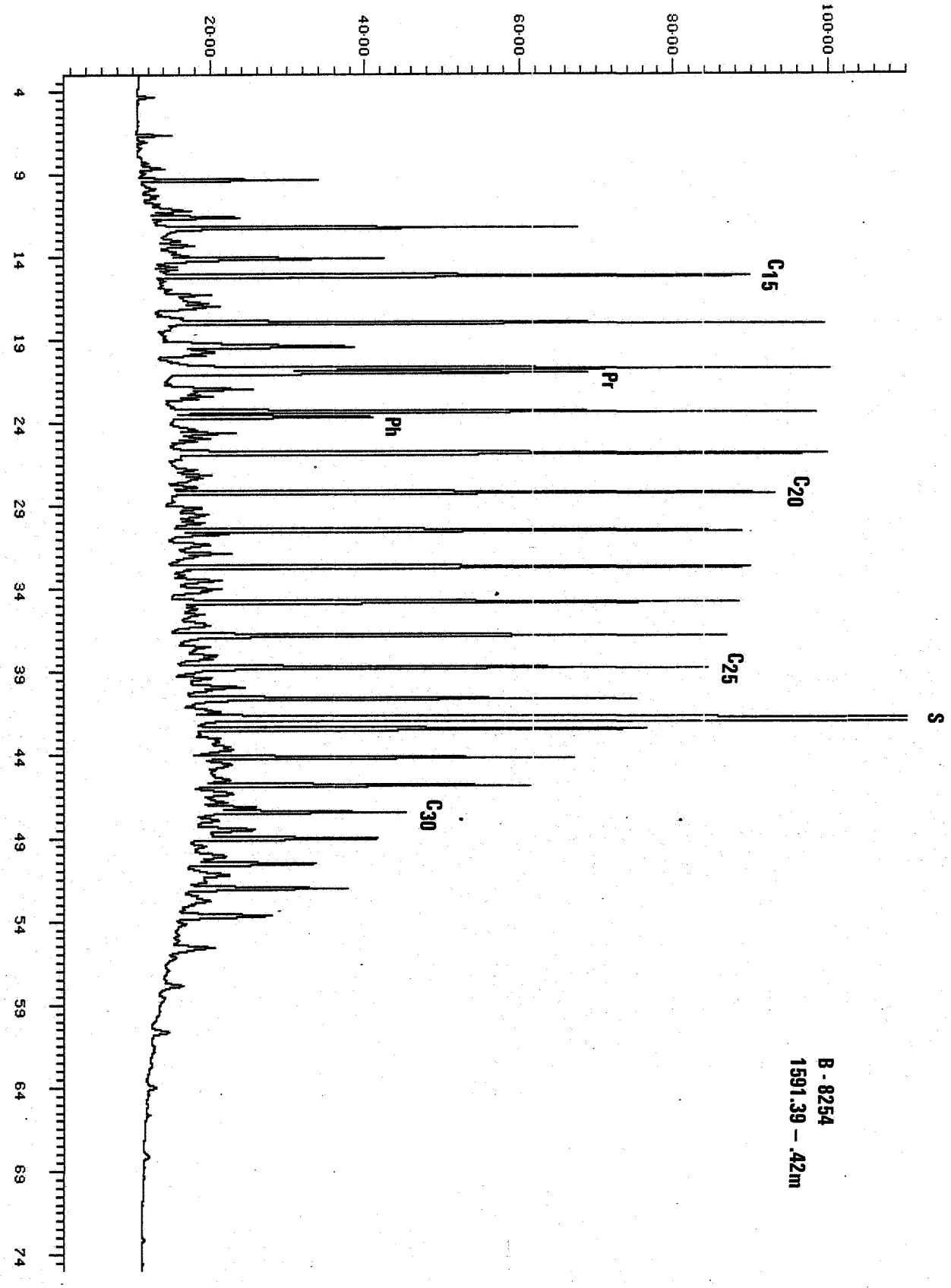
Analysis :756B8253S Sample f: 1 Injection f: 1
Sample Name :B-8253,SAT,31/6-6,GH Maximum signal (%) :25.496



reated at 15:50 on 12/Dec/84

DATA PLOT-CHANNEL 3
Full Scale Plot Box 1 of 1

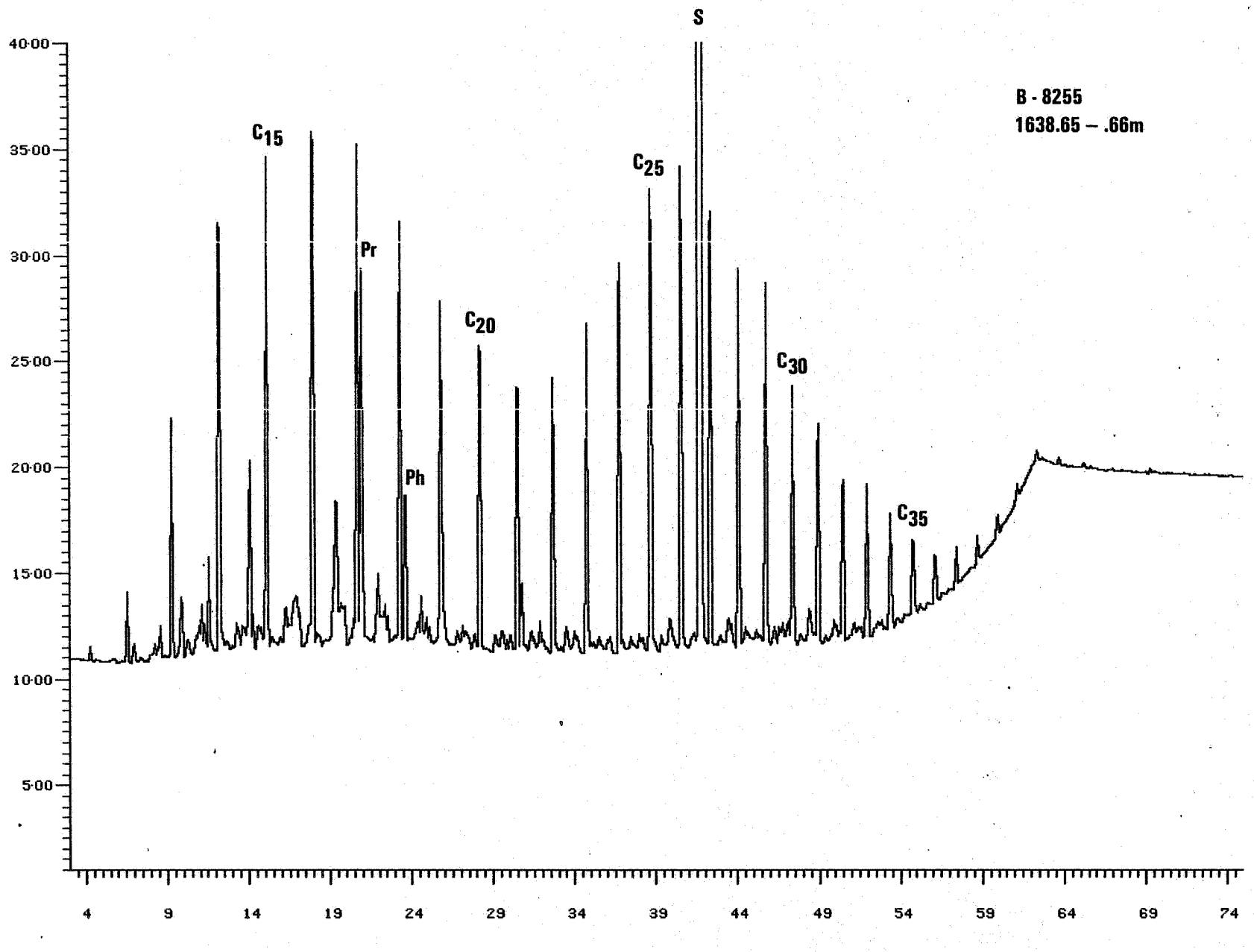
Analysis :756B8254S Sample £: 1 Injection £: 1
Sample Name :B-8254,SAT,31/6-6,GH Maximum signal (%) :22.018



reated at 15:54 on 12/Dec/84

DATA PLOT-CHANNEL 3 Box 1 of 1
Full Scale Plot

Analysis :756B8255S Sample f: 1 Injection f: 1
Sample Name :B-8255,SAT,31/6-6,GH Maximum signal (%) :21.385

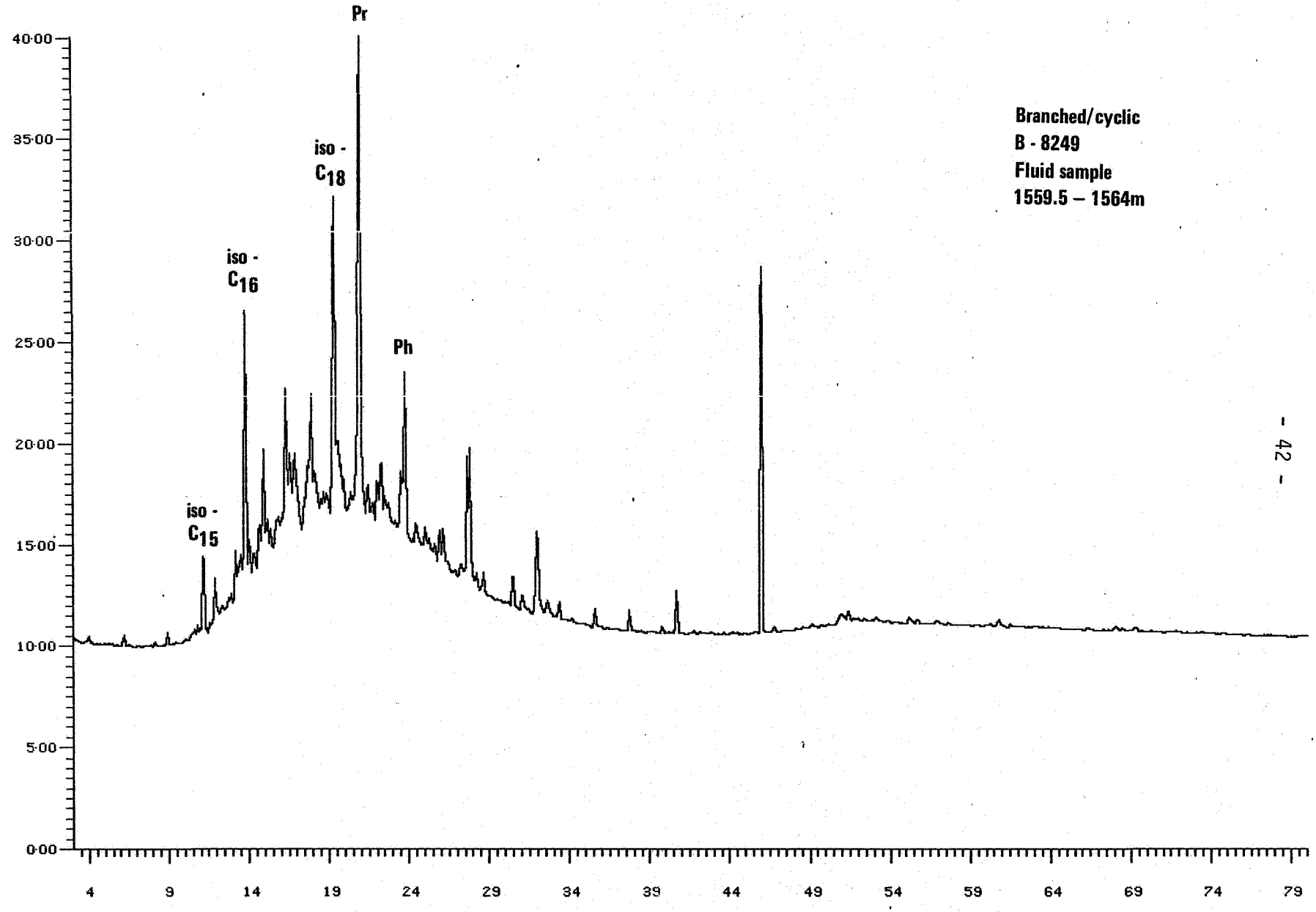


B - 8255
1638.65 – .66m

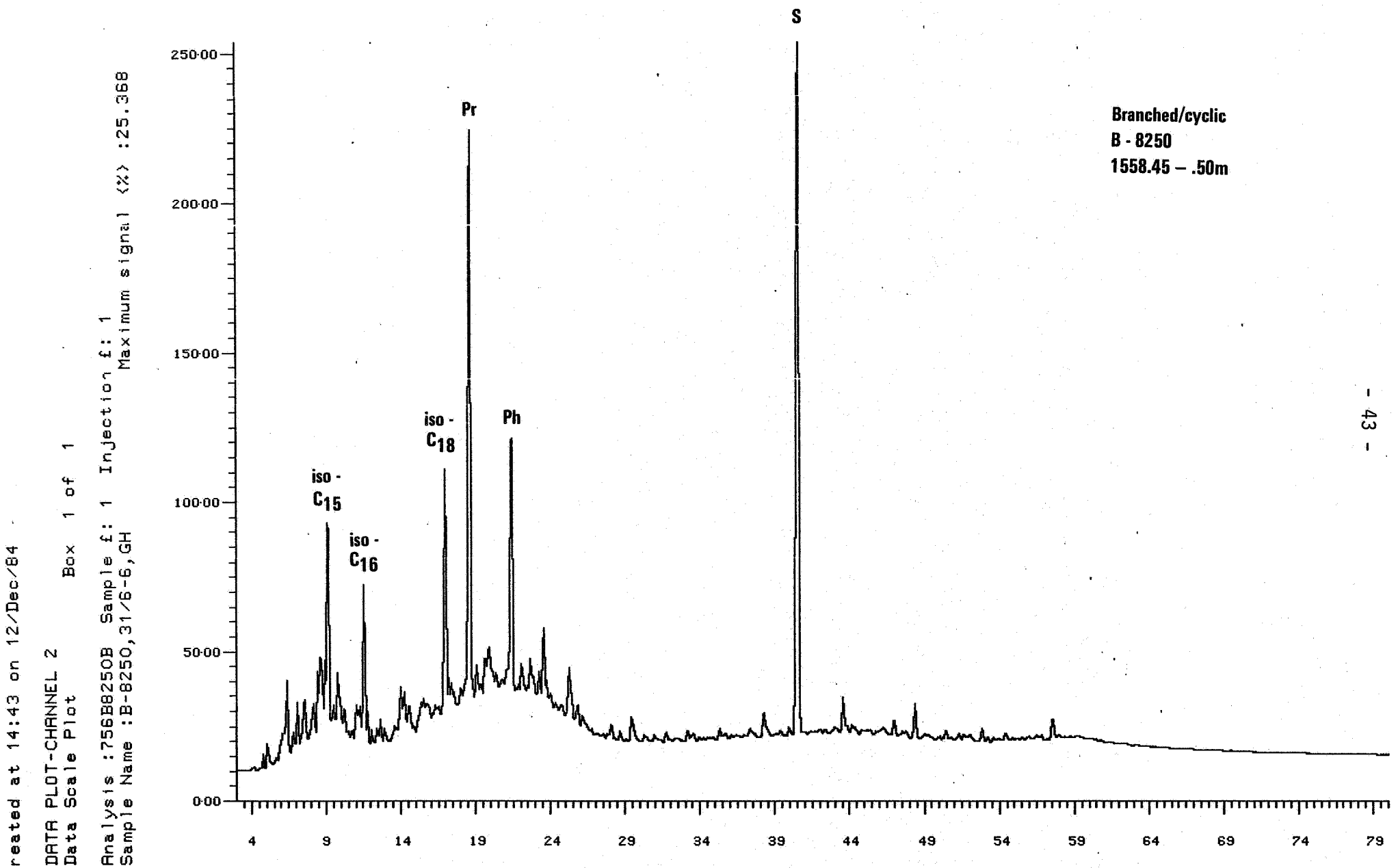
Figure 4

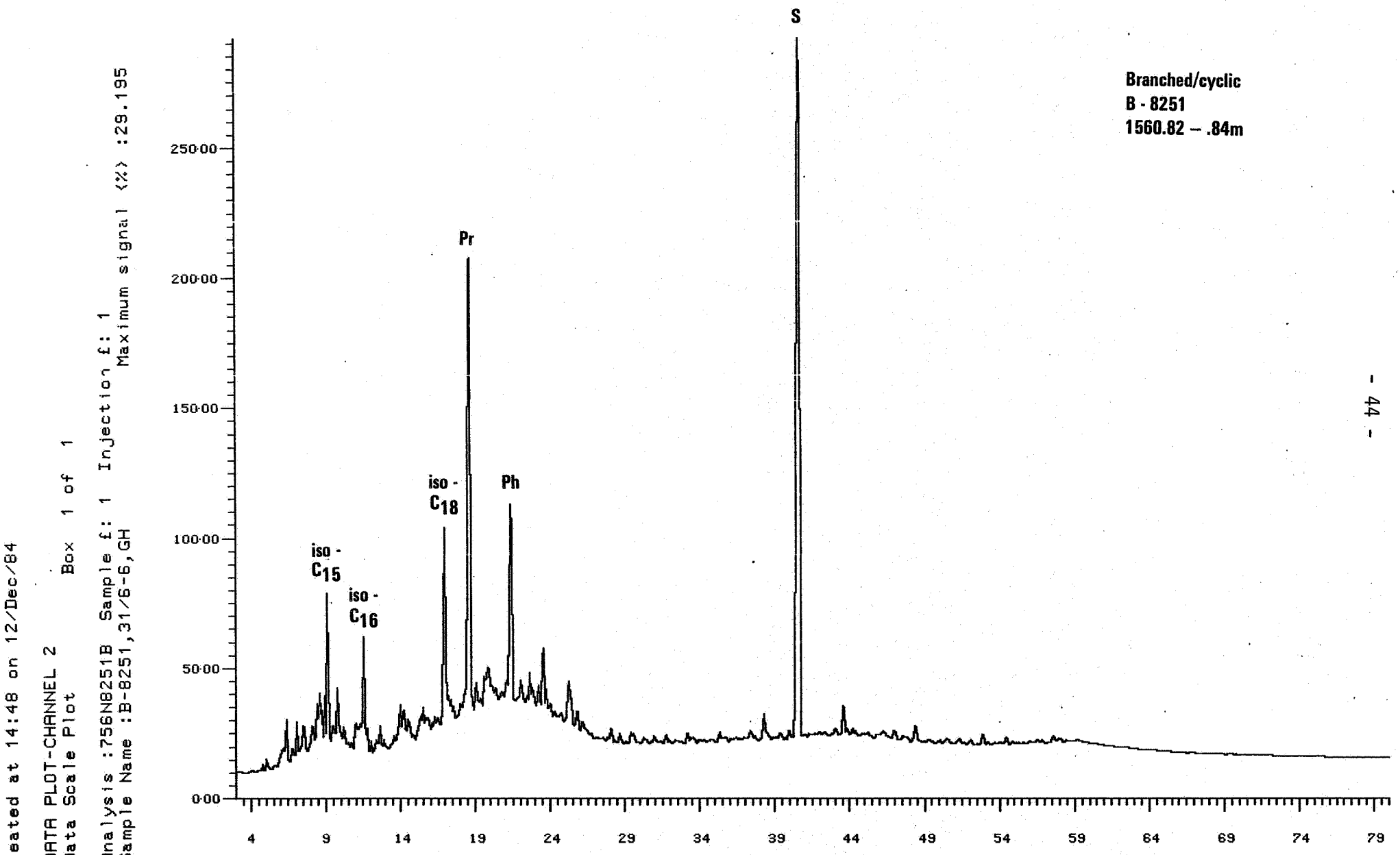
Gas chromatograms of branched/cyclic hydrocarbons

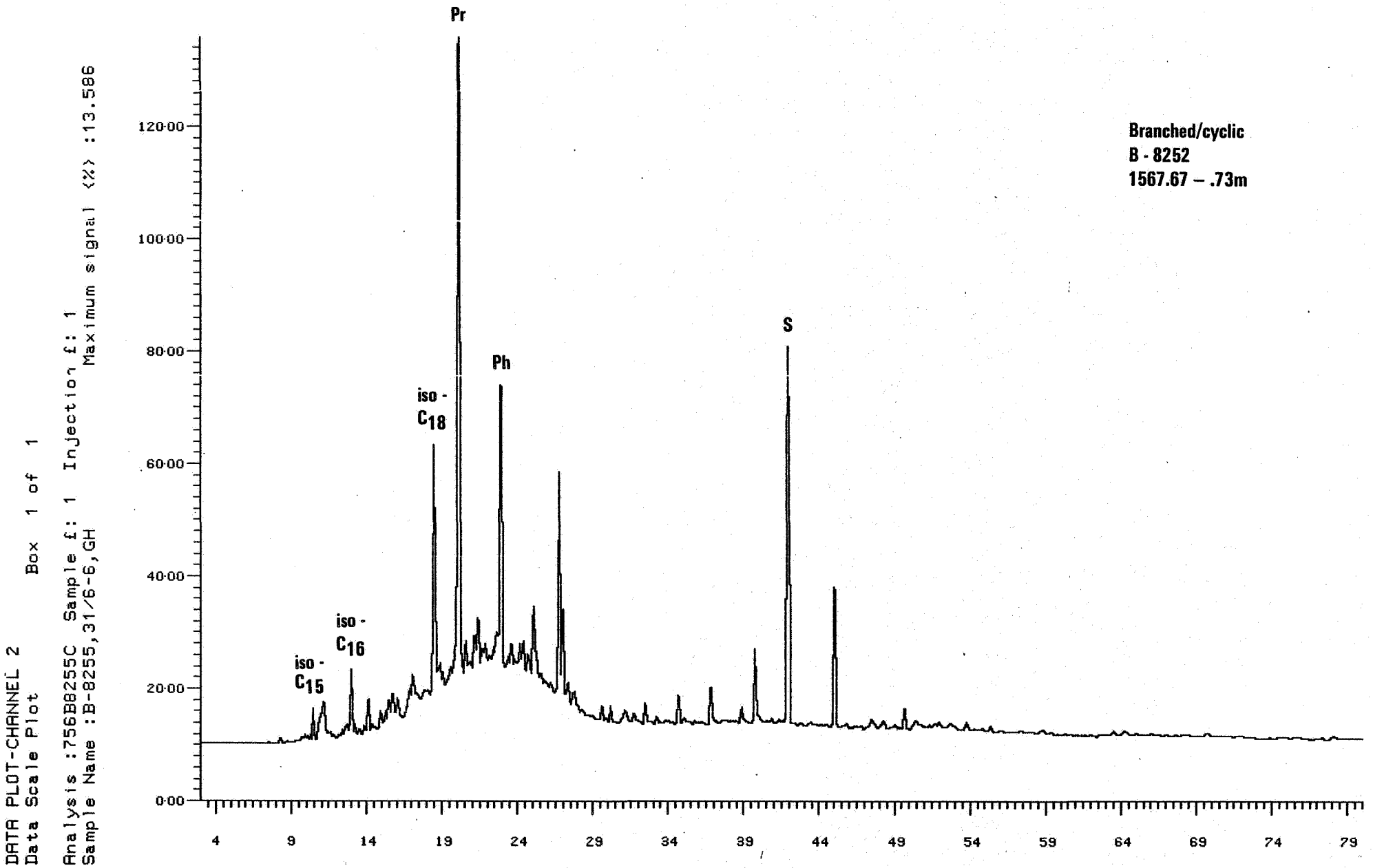
reated at 17:22 on 11/Dec/84
DATA PLOT-CHANNEL 2 Box 1 of 1
Data Scale Plot
Analysis :756B8249B Sample £: 1 Injection £: 1
Sample Name :B-8249,B/C,TV Maximum signal (%) :4.004



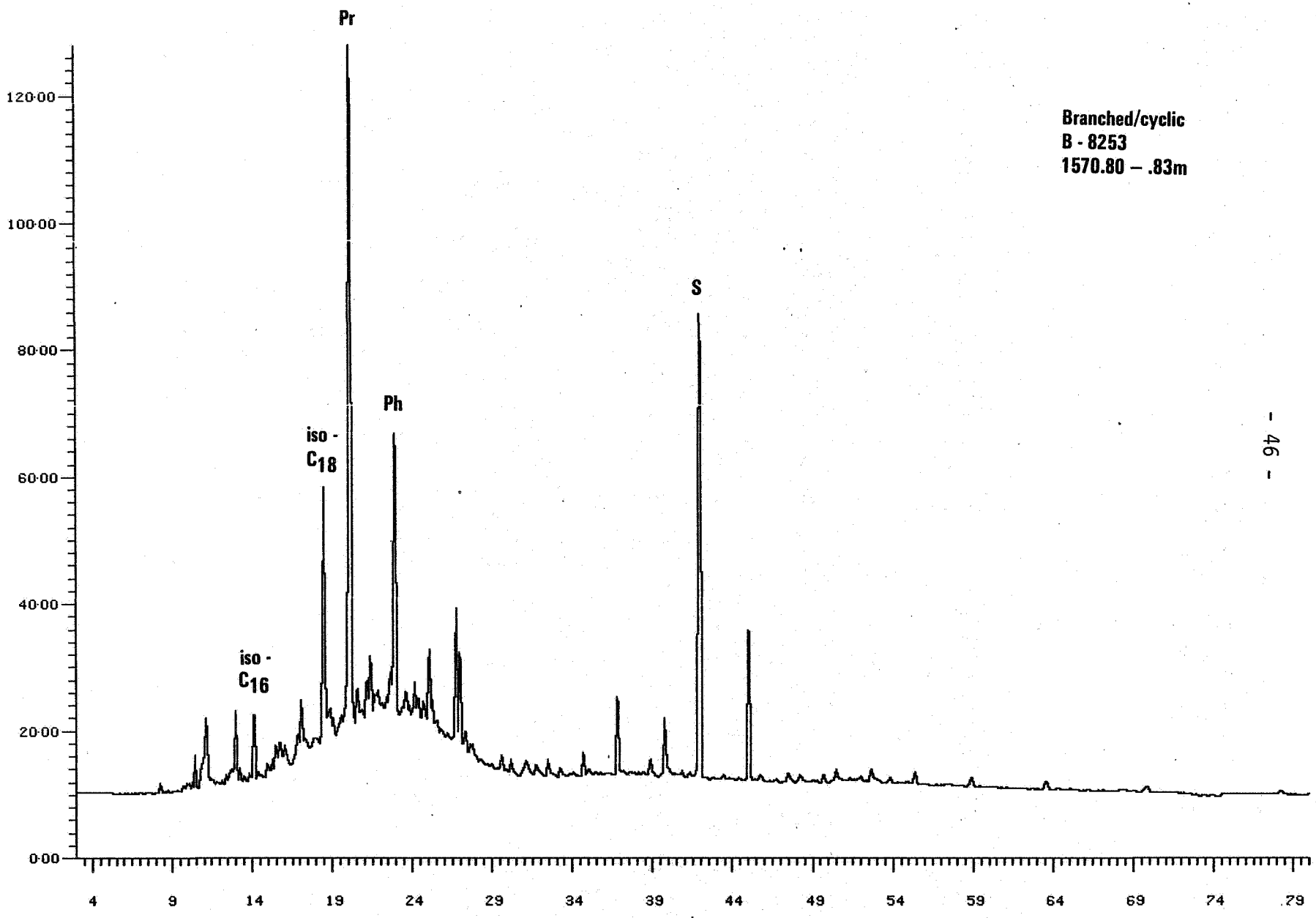
Branched/cyclic
B - 8249
Fluid sample
1559.5 – 1564m


reated at 14:43 on 12/Dec/84
DATA PLOT-CHANNEL 2
Data Scale Plot
Box 1 of 1
Analysis :756B8250B Sample £: 1 Injection £: 1
Sample Name :B-8250,31/6-6,GH
Maximum signal (%) :25.368
250·00
200·00
150·00
100·00
50·00
0·00
4
9
14
19
24
29
34
39
44
49
54
59
64
69
74
79
iso - C15
iso - C16
iso - C18
Pr
Ph
S
Branched/cyclic
B - 8250
1558.45 – .50m

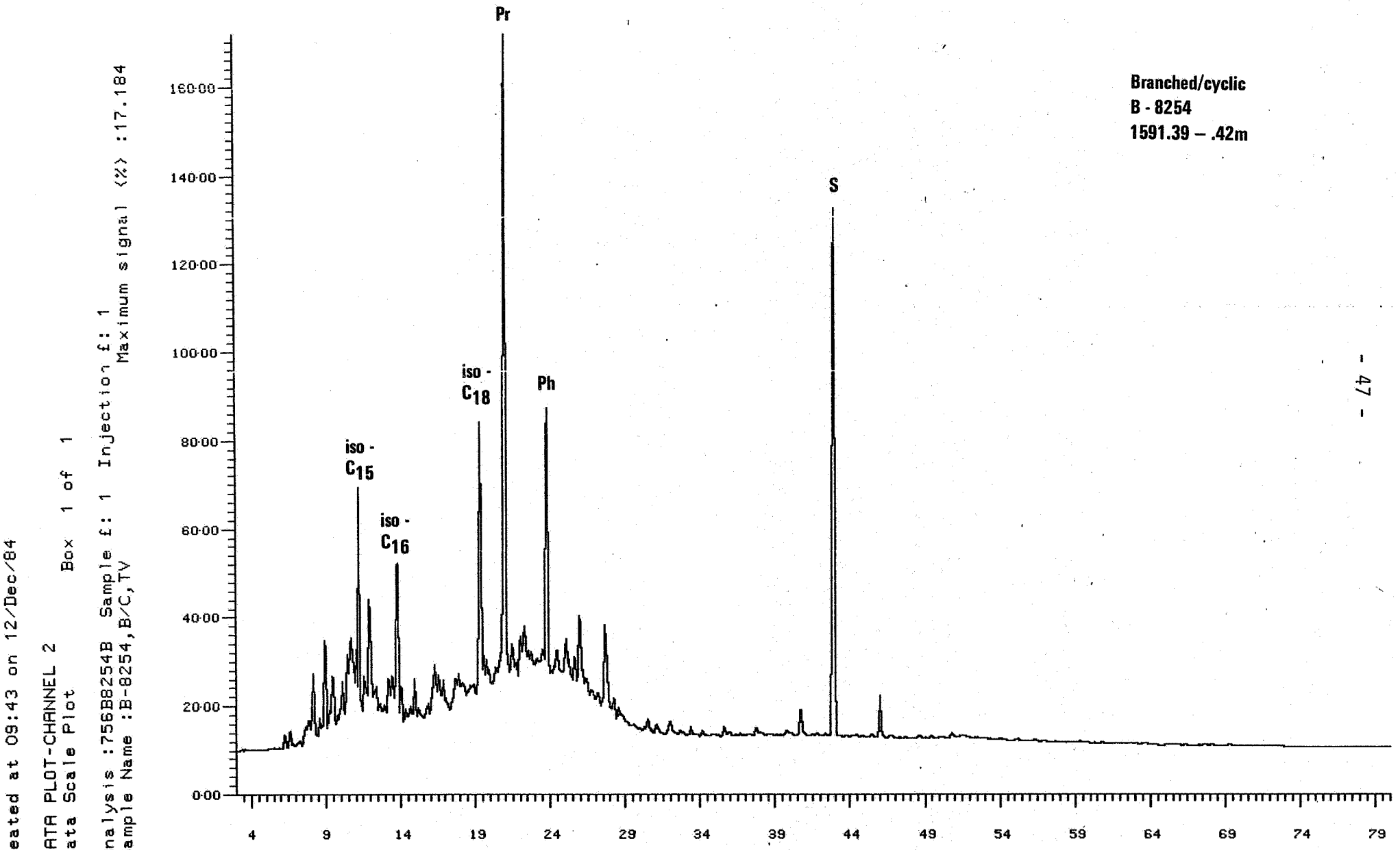

reated at 14:48 on 12/Dec/84
DATA PLOT-CHANNEL 2
Data Scale Plot
Box 1 of 1
Analysis :756N8251B Sample £: 1 Injection £: 1
Sample Name :B-8251,31/6-6,GH
Maximum signal (%) :29.195
Branched/cyclic
B - 8251
1560.82 – .84m
S
Pr
iso - C18
Ph
iso - C15
iso - C16
250·00
200·00
150·00
100·00
50·00
0·00
4
9
14
19
24
29
34
39
44
49
54
59
64
69
74
79


DATA PLOT-CHANNEL 2
Data Scale Plot
Box 1 of 1
Analysis :756B8255C Sample f: 1 Injection f: 1
Sample Name :B-8255,31/6-6,GH
Maximum signal (%) :13.586
120·00
100·00
80·00
60·00
40·00
20·00
0·00
4
9
14
19
24
29
34
39
44
49
54
59
64
69
74
79
Pr
iso - C18
Ph
S
iso - C16
iso - C15
Branched/cyclic
B - 8252
1567.67 – .73m

reated at 12:30 on 19/Dec/84
DATA PLOT-CHANNEL 2 Box 1 of 1
Data Scale Plot
Analysis :756B8253C Sample £: 1 Injection £: 1
Sample Name :B-8253,31/6-6,GH Maximum signal (%) :12.791



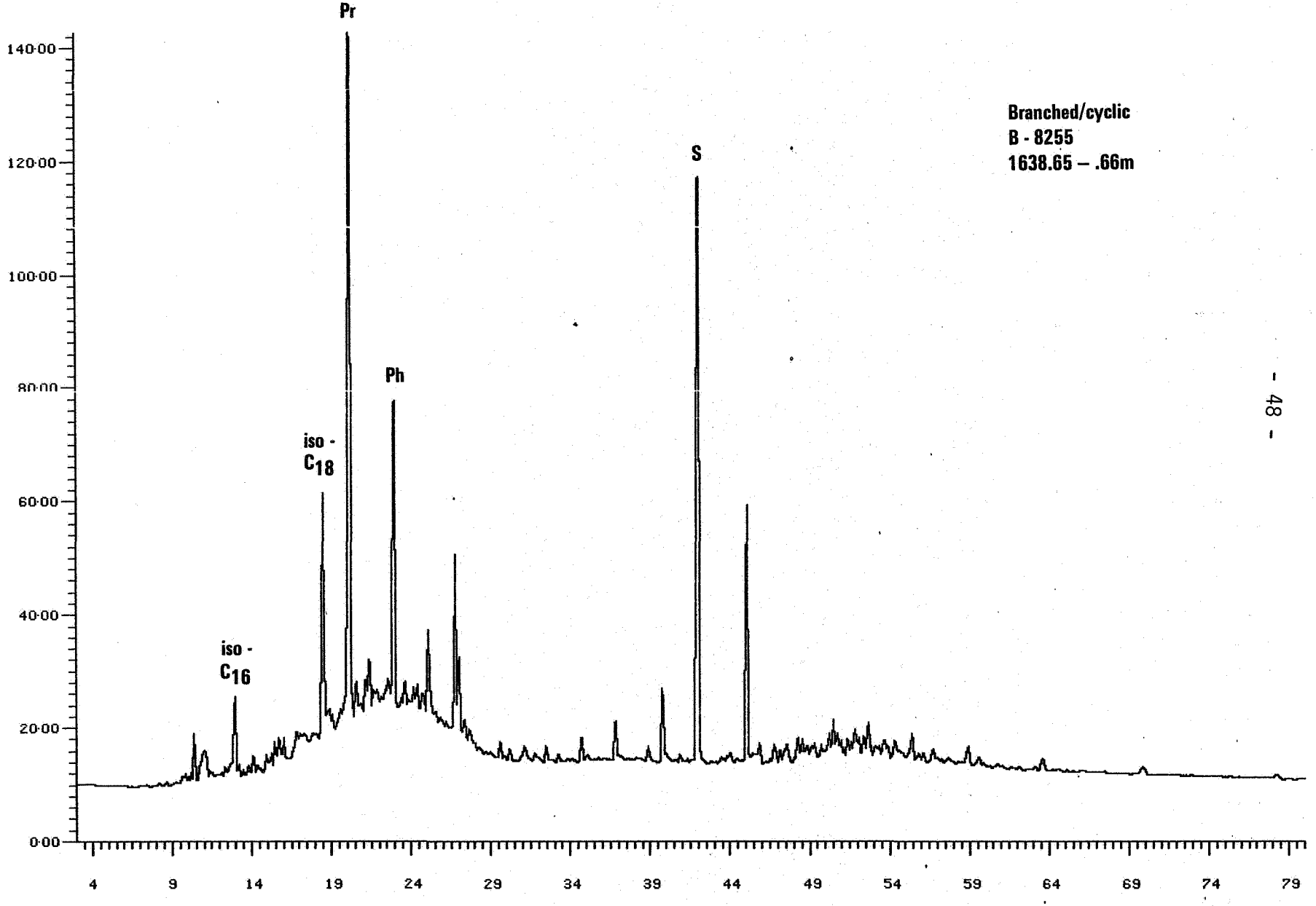
Branched/cyclic
B - 8253
1570.80 – .83m


reated at 09:43 on 12/Dec/84
DATA PLOT-CHANNEL 2 Box 1 of 1
Data Scale Plot
Analysis :756B8254B Sample £: 1 Injection £: 1
Sample Name :B-8254,B/C,TV
Maximum signal (%) :17.184
160·00
140·00
120·00
100·00
80·00
60·00
40·00
20·00
0·00
4
9
14
19
24
29
34
39
44
49
54
59
64
69
74
79
iso - C15
iso - C16
iso - C18
Pr
Ph
S
Branched/cyclic
B - 8254
1591.39 – .42m

reated at 10:47 on 19/Dec/84

DATA PLOT-CHANNEL 2 Box 1 of 1
Data Scale Plot

Analysis :756B8252C Sample £: 1 Injection £: 1
Sample Name :B-8252,31/6-6,GH Maximum signal (%) :14.262

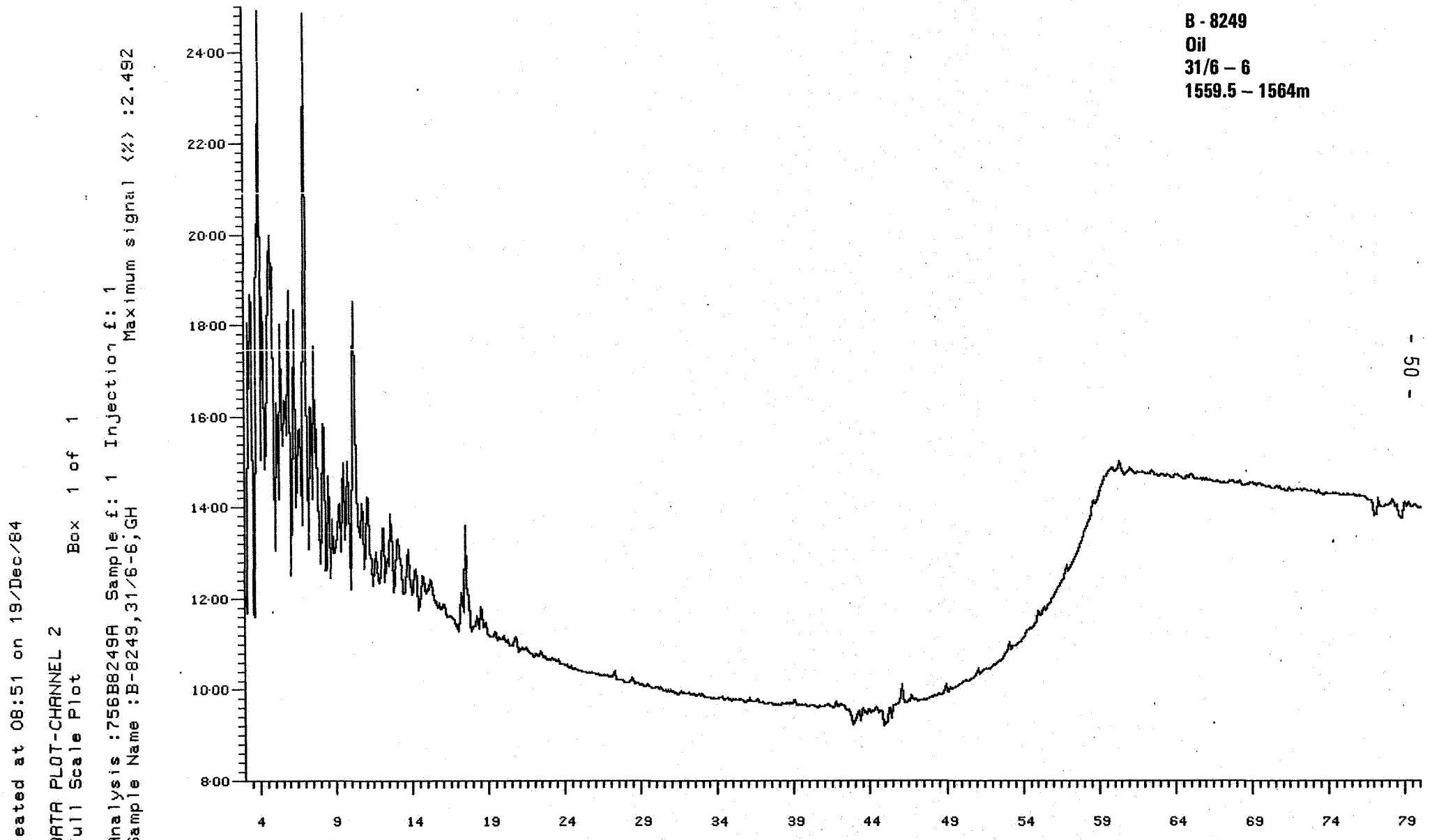


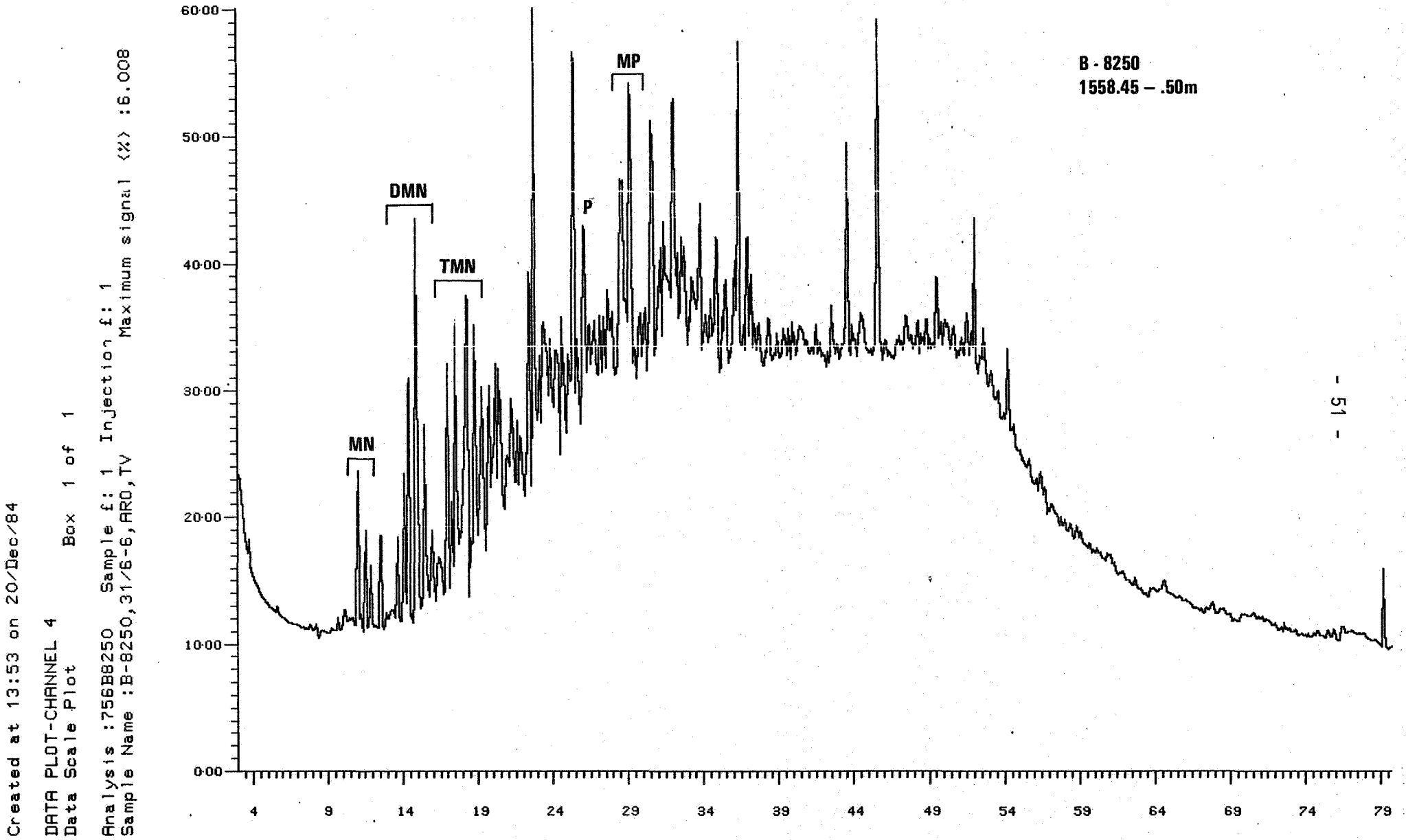
Branched/cyclic
B - 8255
1638.65 – .66m

Figure 5

Gas chromatograms of aromatic hydrocarbons

N,MN,DMN,TMN	-	alkylated naphthalenes
P,MP,DMP	-	alkylated phenanthrenes

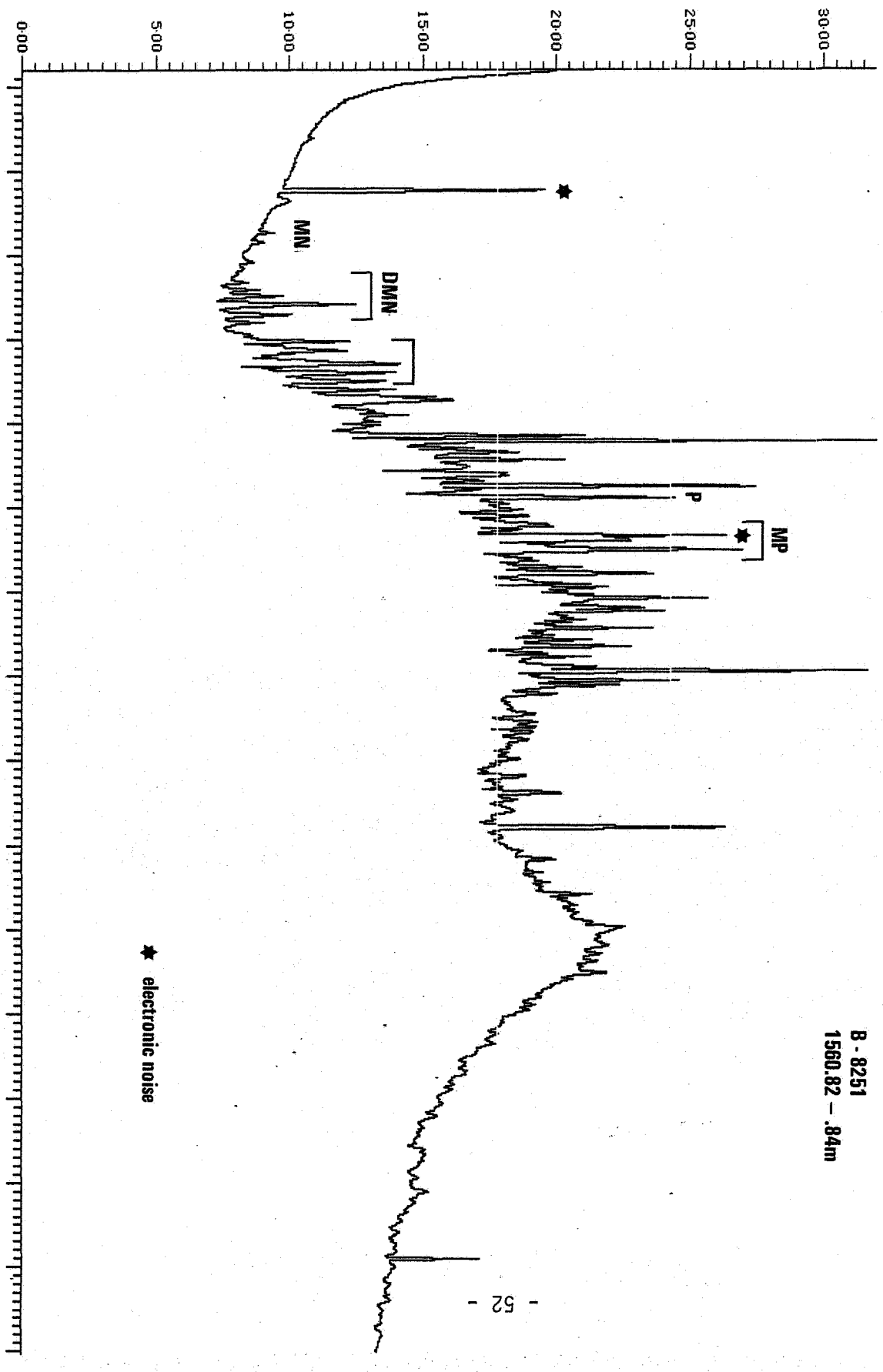

B - 8249
Oil
31/6 – 6
1559.5 – 1564m
reated at 08:51 on 19/Dec/84
DATA PLOT-CHANNEL 2
Full Scale Plot
Box 1 of 1
Analysis :756B8249A Sample £: 1 Injection £: 1
Sample Name :B-8249,31/6-6;GH
Maximum signal (%) :2.492
24·00
22·00
20·00
18·00
16·00
14·00
12·00
10·00
8·00
4
9
14
19
24
29
34
39
44
49
54
59
64
69
74
79


Created at 13:53 on 20/Dec/84
DATA PLOT-CHANNEL 4
Data Scale Plot
Box 1 of 1
Analysis :756B8250 Sample £: 1 Injection £: 1
Sample Name :B-8250,31/6-6,ARO,TV
Maximum signal (%) :6.008
B - 8250
1558.45 – .50m
MN
DMN
TMN
P
MP
60·00
50·00
40·00
30·00
20·00
10·00
0·00
4
9
14
19
24
29
34
39
44
49
54
59
64
69
74
79

Created at 16:11 on 20/Dec/84

DATA PLOT-CHANNEL 4
Data Scale Plot Box 1 of 1

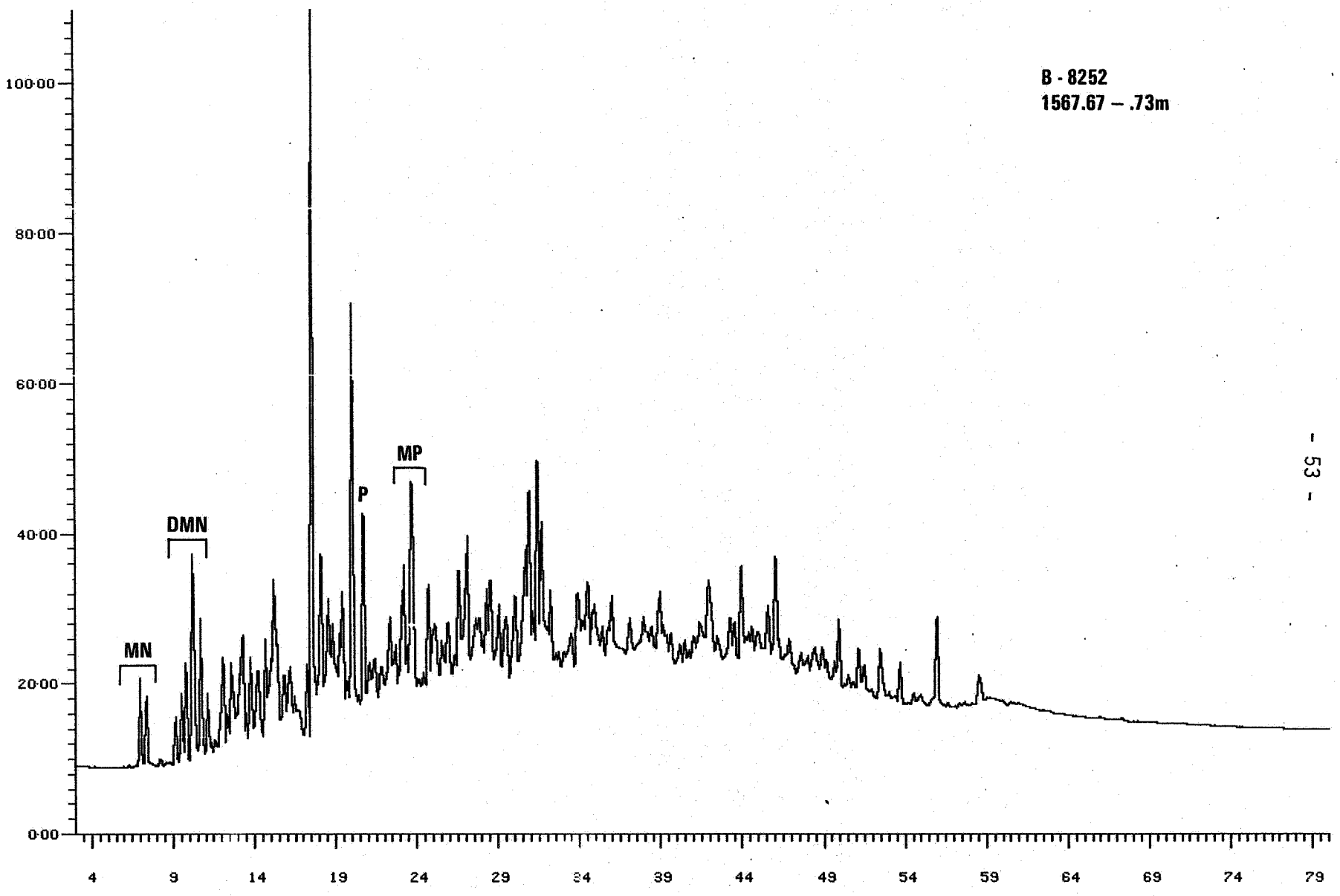
Analysis :756B8251 Sample £: 1 Injection £: 1
Sample Name :B-825 ,31/6-6,ARO,TV Maximum signal (%) :3.194



reated at 15:53 on 06/Dec/84

DATA PLOT-CHANNEL 2 Box 1 of 1
Data Scale Plot

Analysis :756B8252 Sample £: 1 Injection £: 1
Sample Name :B8252,ARO,31/6-6,GH Maximum signal (%) :10.975

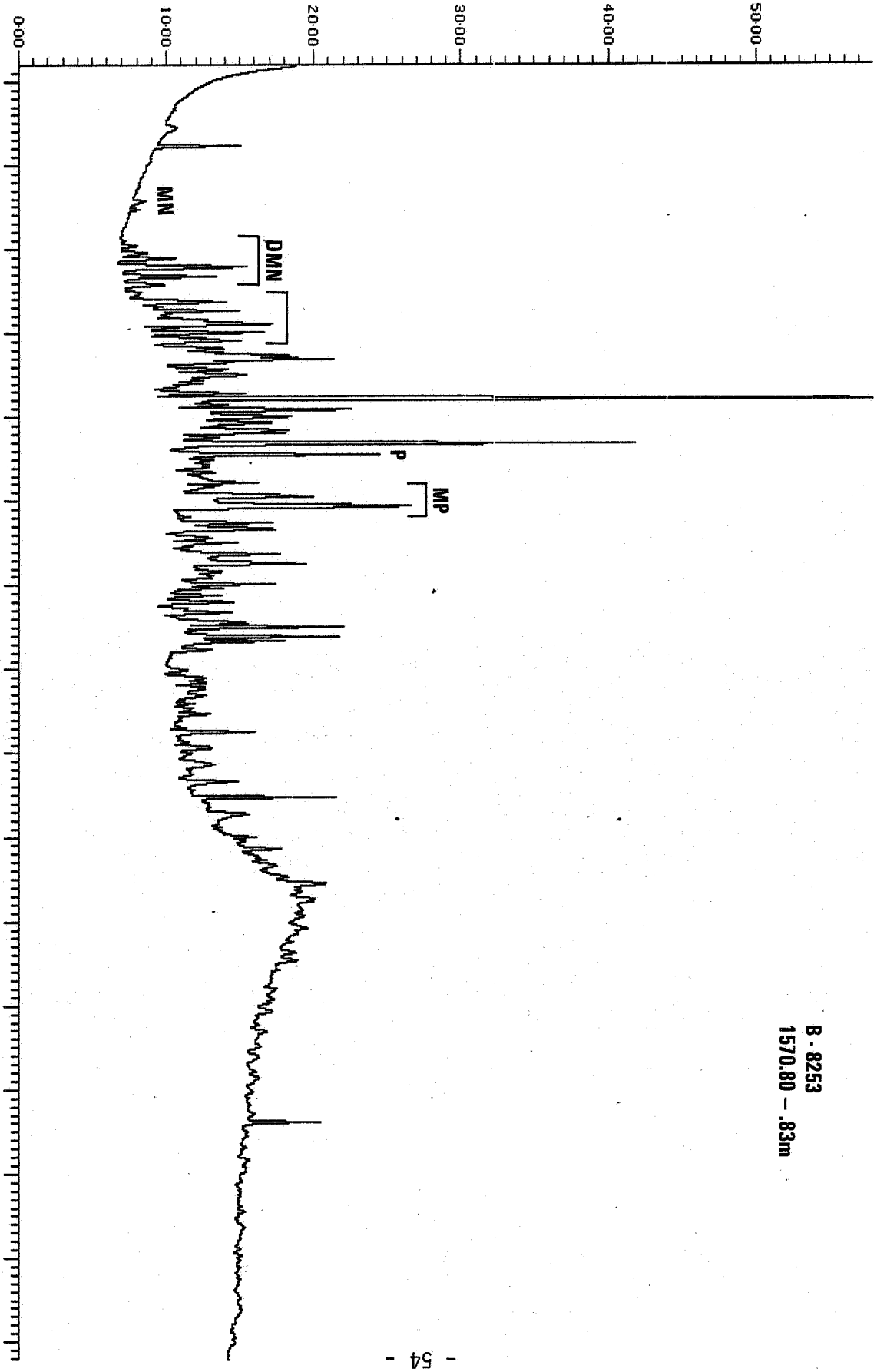


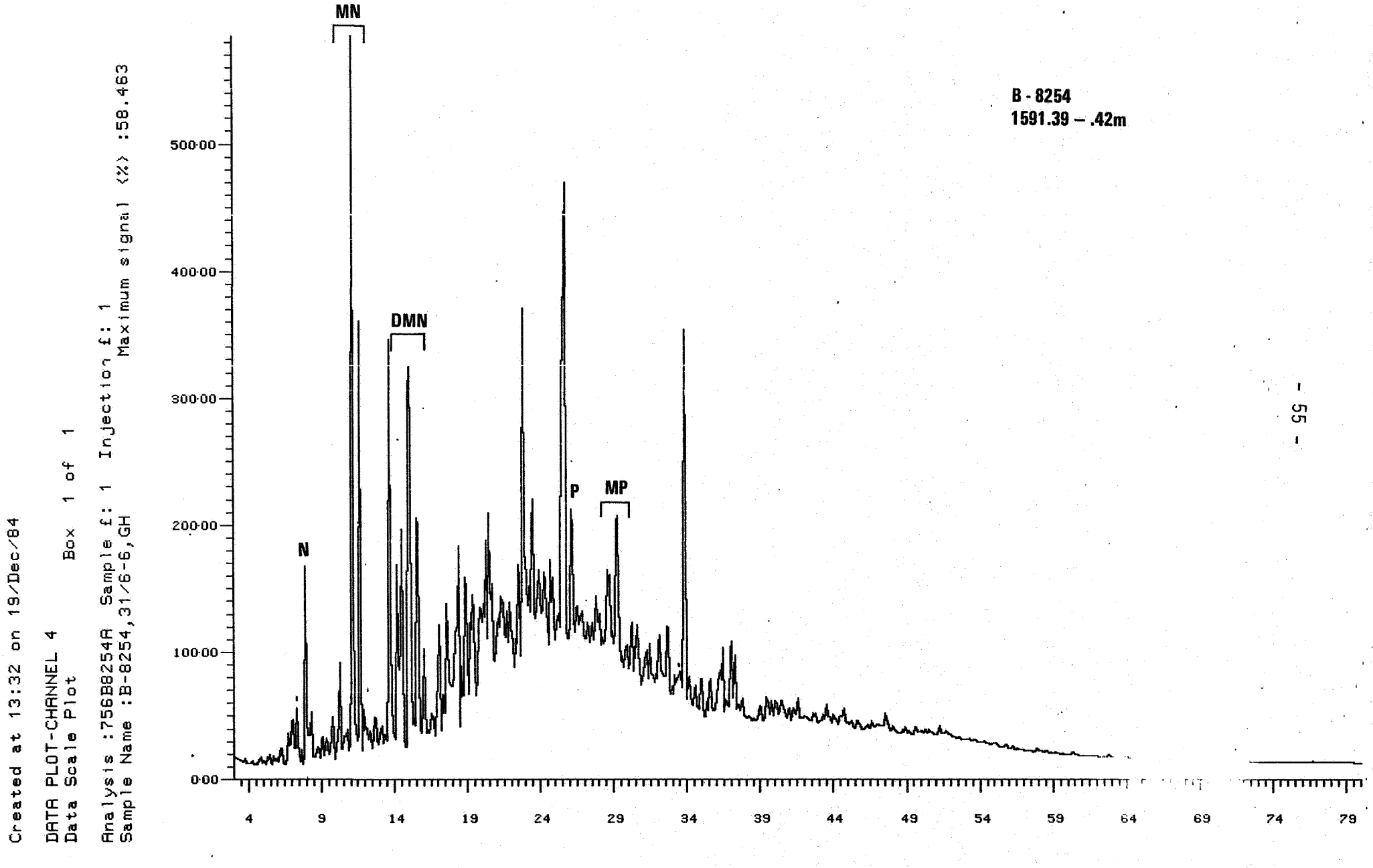
B - 8252
1567.67 – .73m

reated at 08:55 on 19/Dec/84

DATA PLOT-CHANNEL 4
Data Scale Plot Box 1 of 1

Analysis :756B8253A Sample f: 1 Injection f: 1
Sample Name :B-8253,31/6-6,GH Maximum signal (%) :5.786




Created at 13:32 on 19/Dec/84
DATA PLOT-CHANNEL 4
Data Scale Plot
Box 1 of 1
Analysis :756B8254A Sample £: 1 Injection £: 1
Sample Name :B-8254,31/6-6,GH
Maximum signal (%) :58.463
B - 8254
1591.39 – .42m
MN
DMN
N
P
MP
500·00
400·00
300·00
200·00
100·00
0·00
4
9
14
19
24
29
34
39
44
49
54
59
64
69
74
79

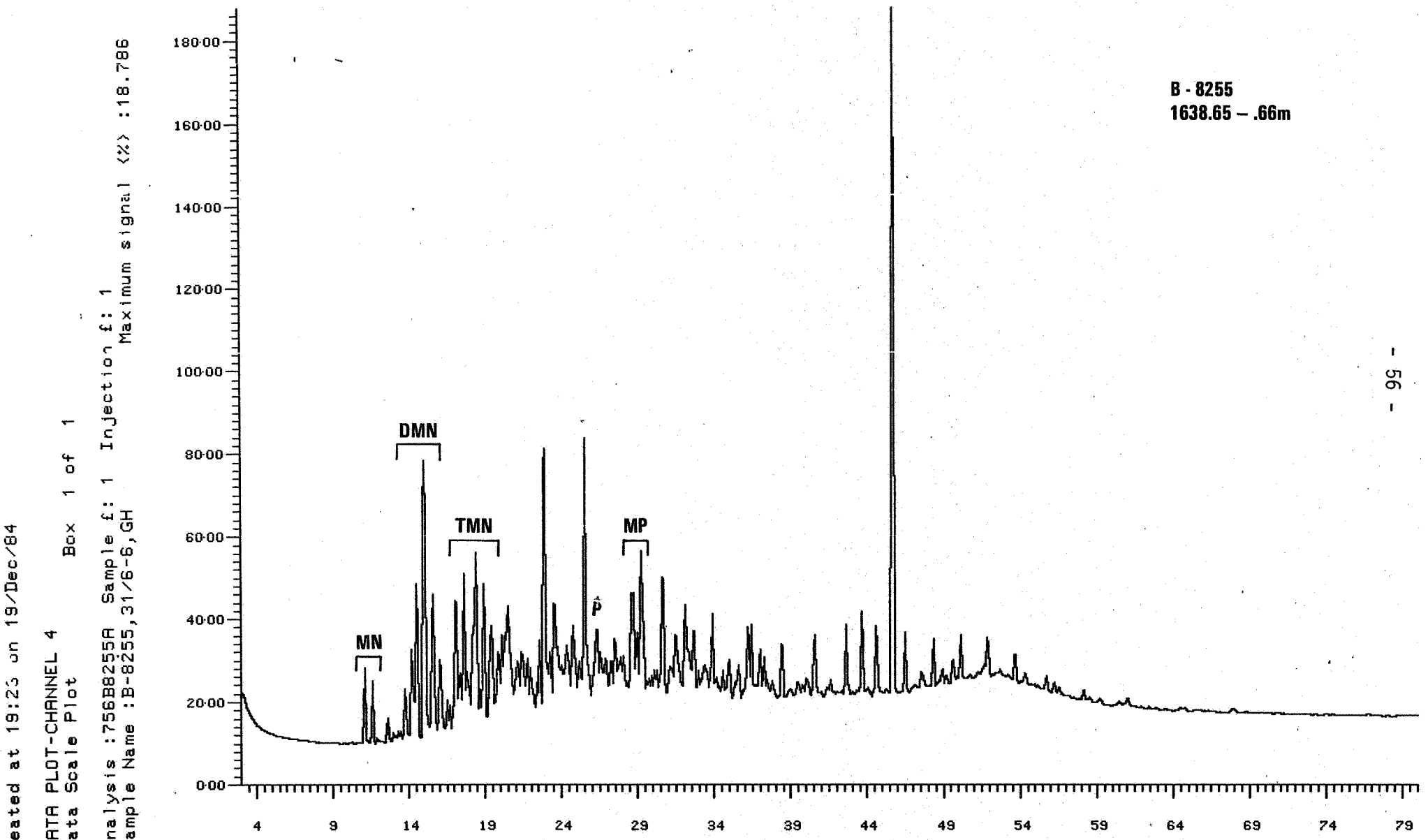
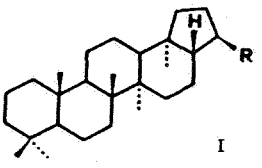

reated at 19:25 on 19/Dec/84
DATA PLOT-CHANNEL 4 Box 1 of 1
Data Scale Plot
Analysis :756B8255A Sample £: 1 Injection £: 1
Sample Name :B-8255,31/6-6,GH Maximum signal (%) :18.786
B - 8255
1638.65 – .66m
MN
DMN
TMN
P̂
MP
180·00
160·00
140·00
120·00
100·00
80·00
60·00
40·00
20·00
0·00
4
9
14
19
24
29
34
39
44
49
54
59
64
69
74
79

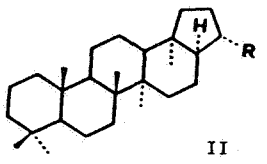
Figure 6a.

Mass chromatograms representing terpanes (m/z 191)

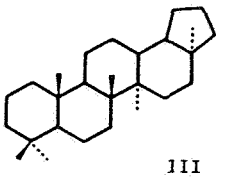
A	T_s, 18α(H)-trisnorneohopane	$C_{27}H_{46}$	(III)
B	T_m, 17α(H)-trisnorhopane	$C_{27}H_{46}$	(I,R=H)
C	17α(H)-norhopane	$C_{29}H_{50}$	(I,R=C_2H_5)
D	17β(H)-normoretane	$C_{29}H_{50}$	(II,R=C_2H_5)
E	17α(H)-hopane	$C_{30}H_{52}$	(I,R=C_3H_7)
F	17β(H)-moretane	$C_{30}H_{52}$	(II,R=C_3H_7)
G	17α(H)-homohopane (22S)	$C_{31}H_{54}$	(I,R=C_4H_9)
H	17α(H)-homohopane (22R) + unknown triterpane (gammacerane?)	$C_{31}H_{54}$	(I,R=C_4H_9)
I	17β(H)-homomoretane	$C_{31}H_{54}$	(II,R=C_4H_9)
J	17α(H)-bishomohopane (22S,22R)	$C_{32}H_{56}$	(I,R=C_5H_{11})
K	17α(H)-trishomohopane (22S,22R)	$C_{33}H_{58}$	(I,R=C_6H_{13})
L	17α(H)-tetrakishomohopane (22S,22R)	$C_{34}H_{60}$	(I,R,=C_7H_{15})
M	17α(H)-pentakishomohopane (22S,22R)	$C_{35}H_{62}$	(I,R=C_8H_{17})
Z	bisnorhopane	$C_{28}H_{48}$	
X	unknown triterpane	$C_{30}H_{52}$	
P	tricyclic terpane	$C_{23}H_{42}$	(IV,R=C_4H_9)
Q	tricyclic terpane	$C_{24}H_{44}$	(IV,R=C_5H_{11})
R	tricyclic terpane (17R,17S)	$C_{25}H_{46}$	(IV,R=C_6H_{13})
S	tetracyclic terpane	$C_{24}H_{42}$	(V)
T	tricyclic terpane (17R,17S)	$C_{26}H_{48}$	(IV,R=C_7H_{15})



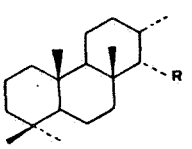
I

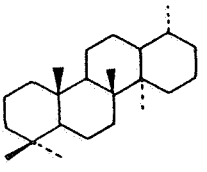


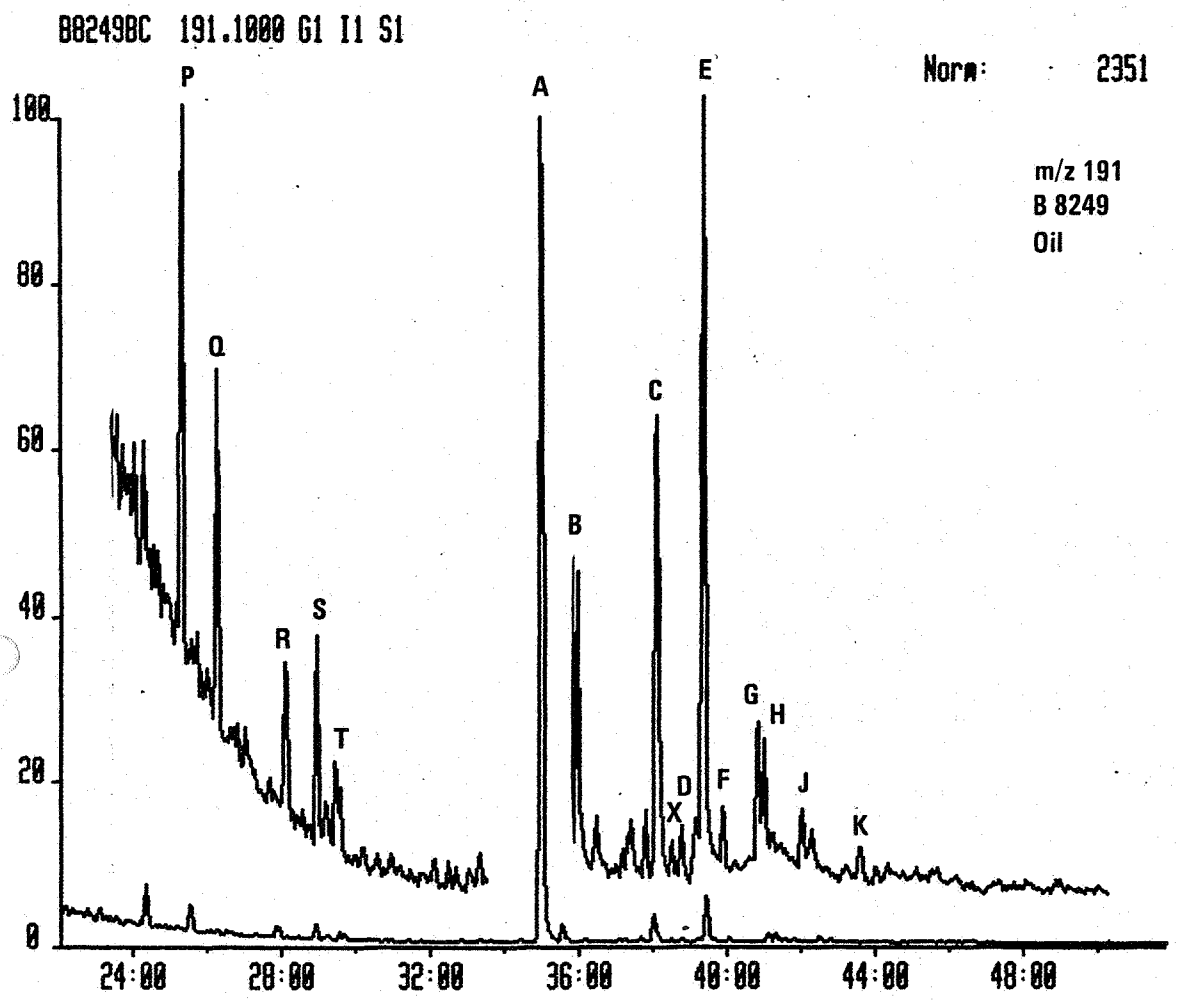
II



III



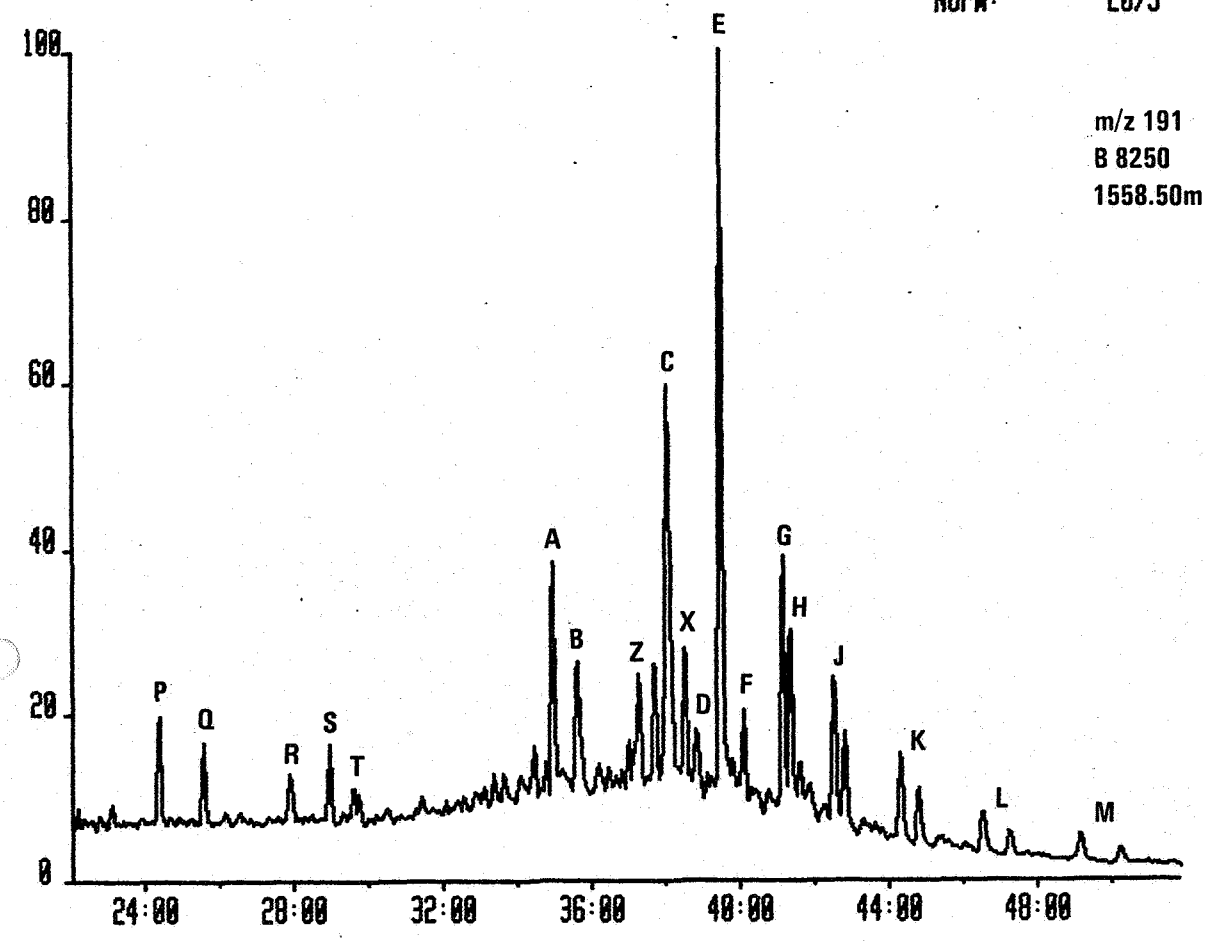



B82498C 191.1000 G1 I1 S1
Norm: 2351
m/z 191
B 8249
Oil
P
Q
R
S
T
A
B
C
D
X
E
F
G
H
J
K
100
80
60
40
20
0
24:00
28:00
32:00
36:00
40:00
44:00
48:00

IKU

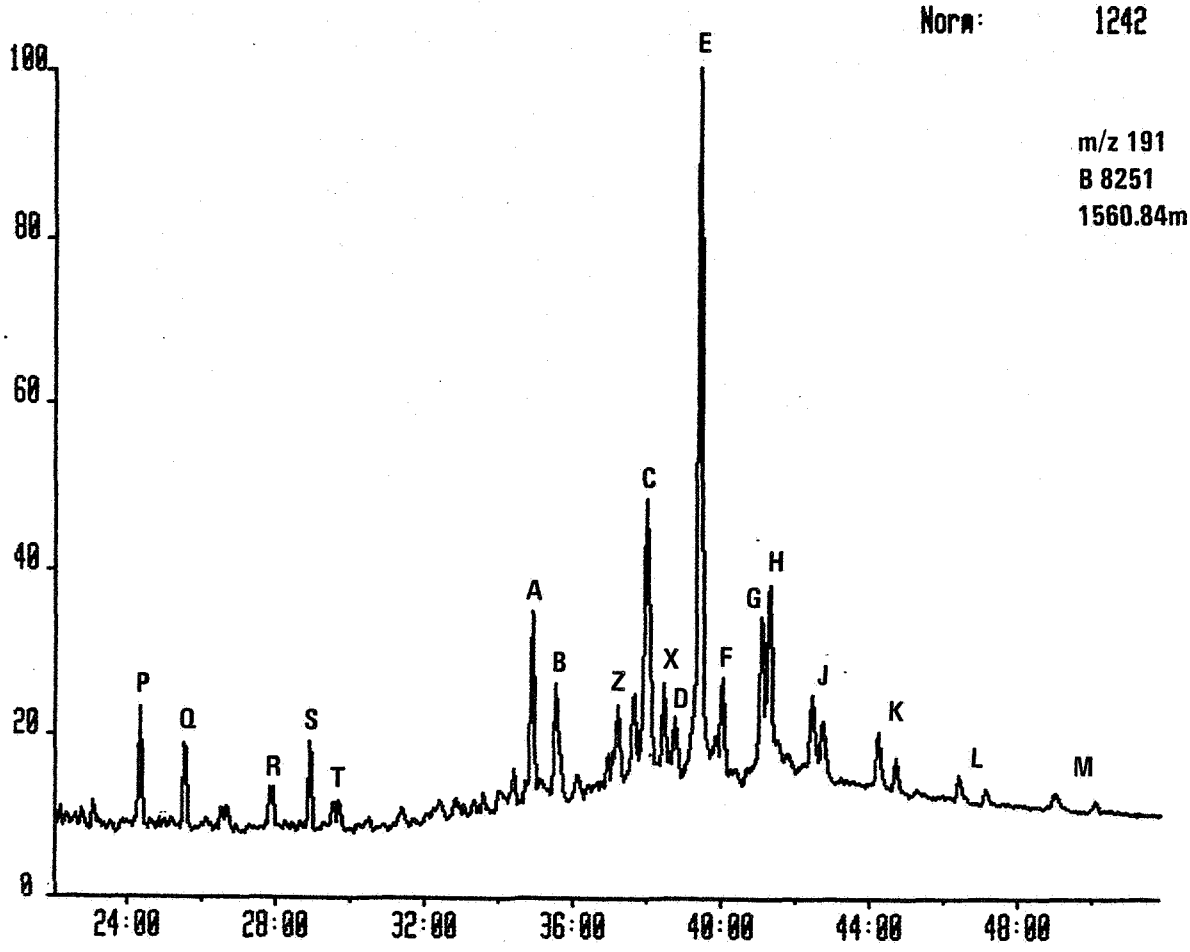
B8250SAT 191.1000 G1 I1 S1

Norm: 2079

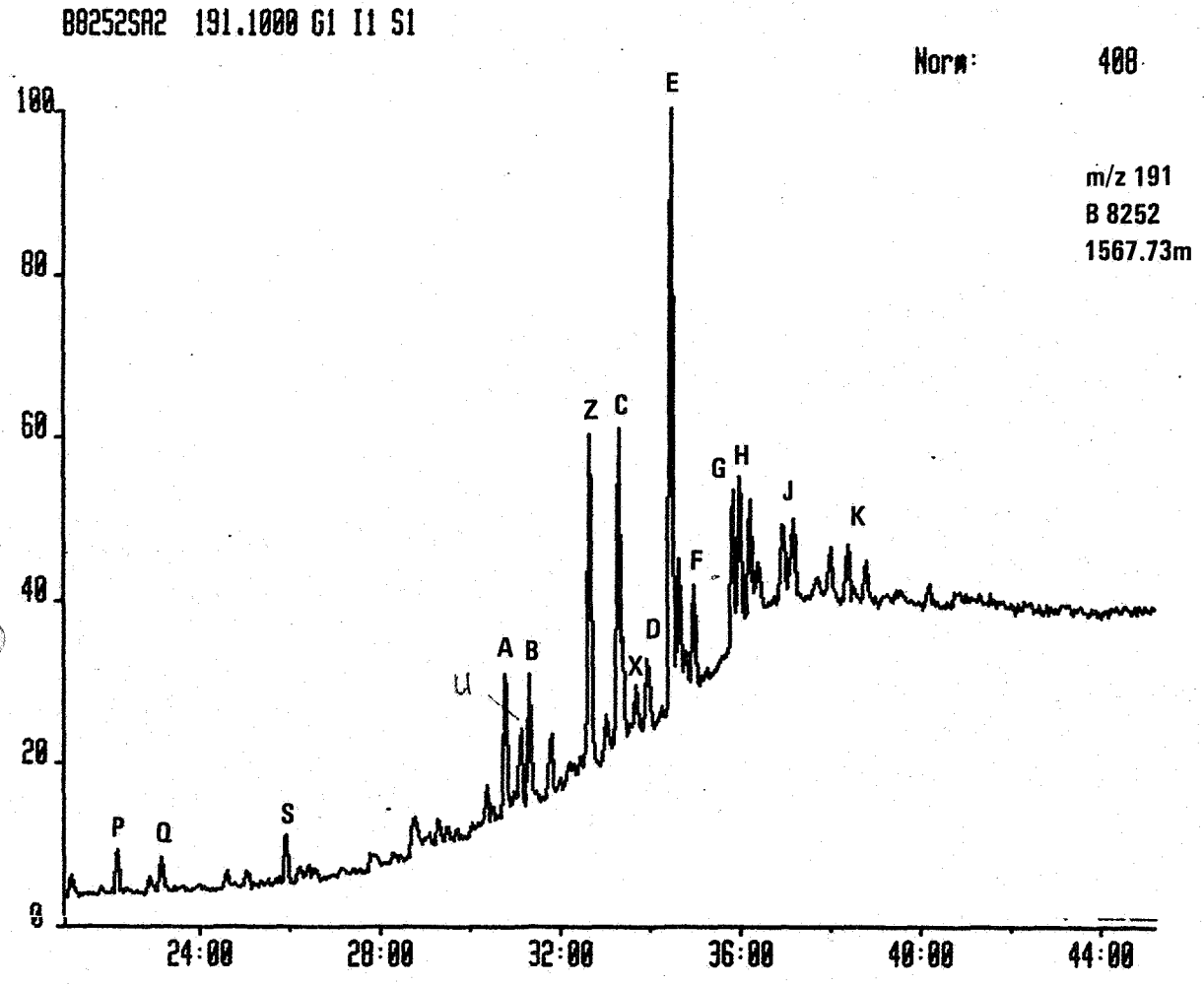


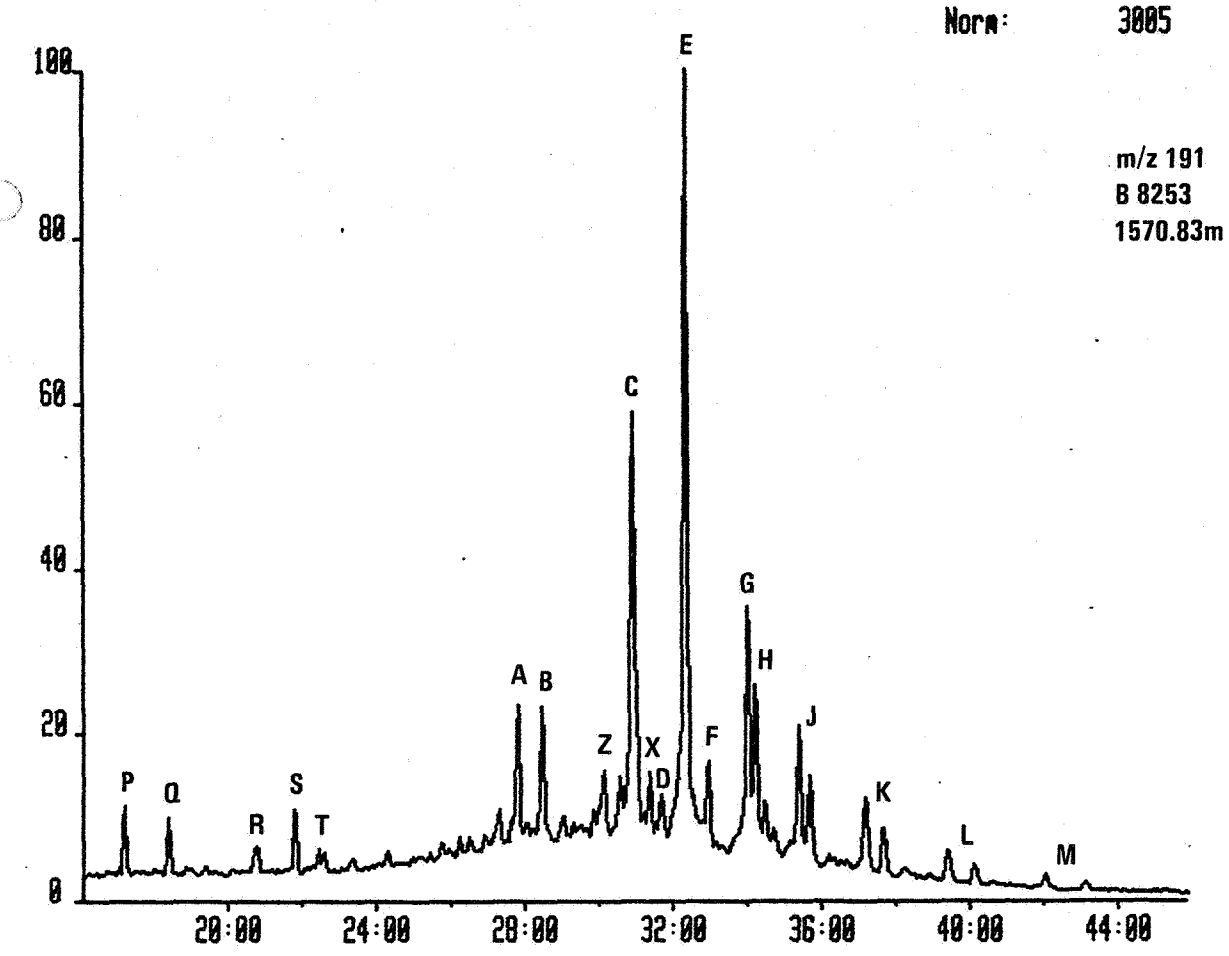
B8251SAT 191.1000 G1 I1 S1

Norm: 1242

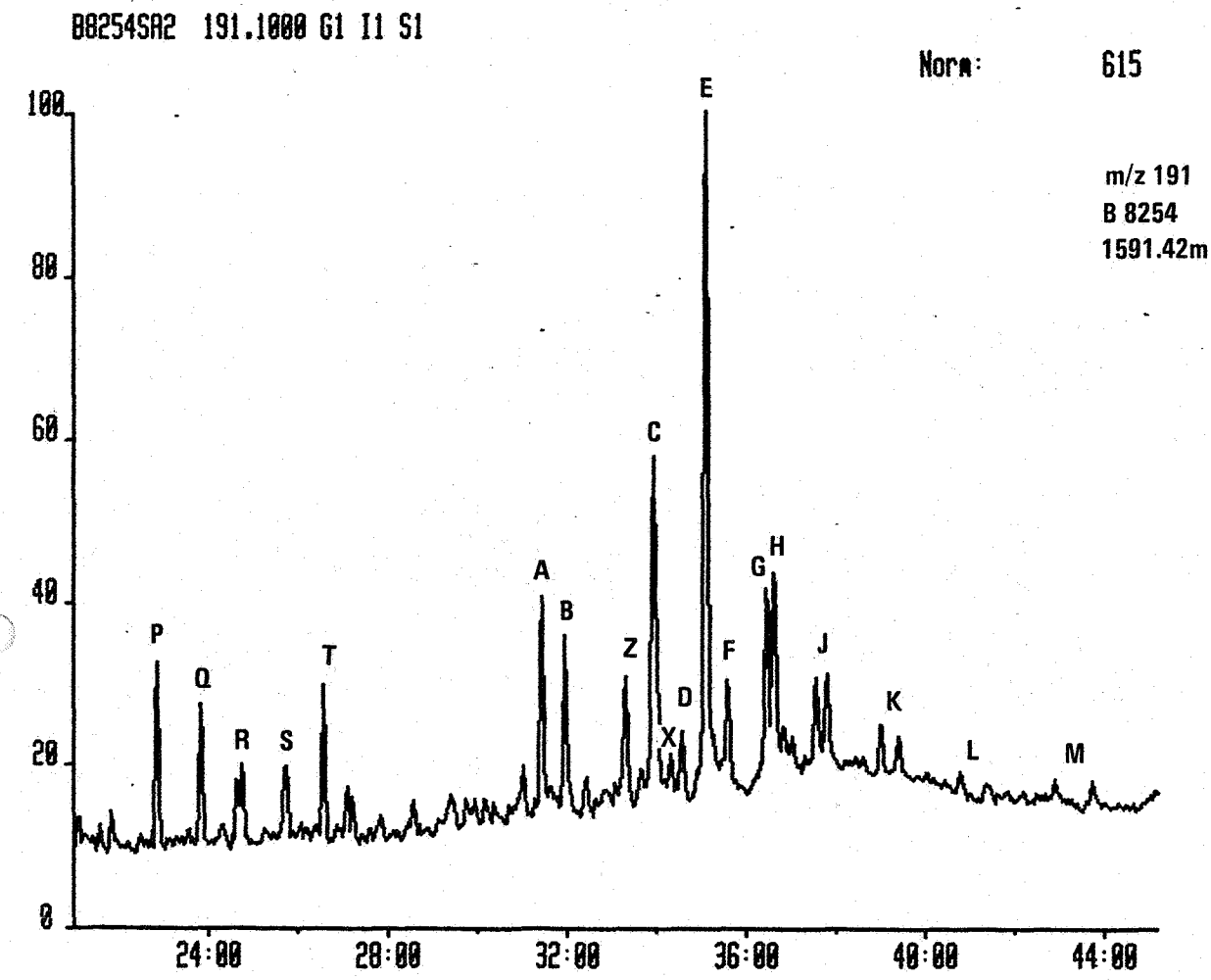


IKU


B8252SR2 191.1000 G1 I1 S1
Norm: 400
m/z 191
B 8252
1567.73m
100
80
60
40
20
0
24:00
28:00
32:00
36:00
40:00
44:00
P
Q
S
U
A
B
Z
C
D
X
E
F
G
H
J
K


Norm: 3005
m/z 191
B 8253
1570.83m
100
80
60
40
20
0
20:00
24:00
28:00
32:00
36:00
40:00
44:00
P
Q
R
S
T
A
B
C
Z
X
D
E
F
G
H
J
K
L
M

IKU


B8254SA2 191.1000 G1 I1 S1
Norm: 615
m/z 191
B 8254
1591.42m
100
80
60
40
20
0
24:00
28:00
32:00
36:00
40:00
44:00
P
Q
R
S
T
A
B
Z
C
X
D
E
F
G
H
J
K
L
M

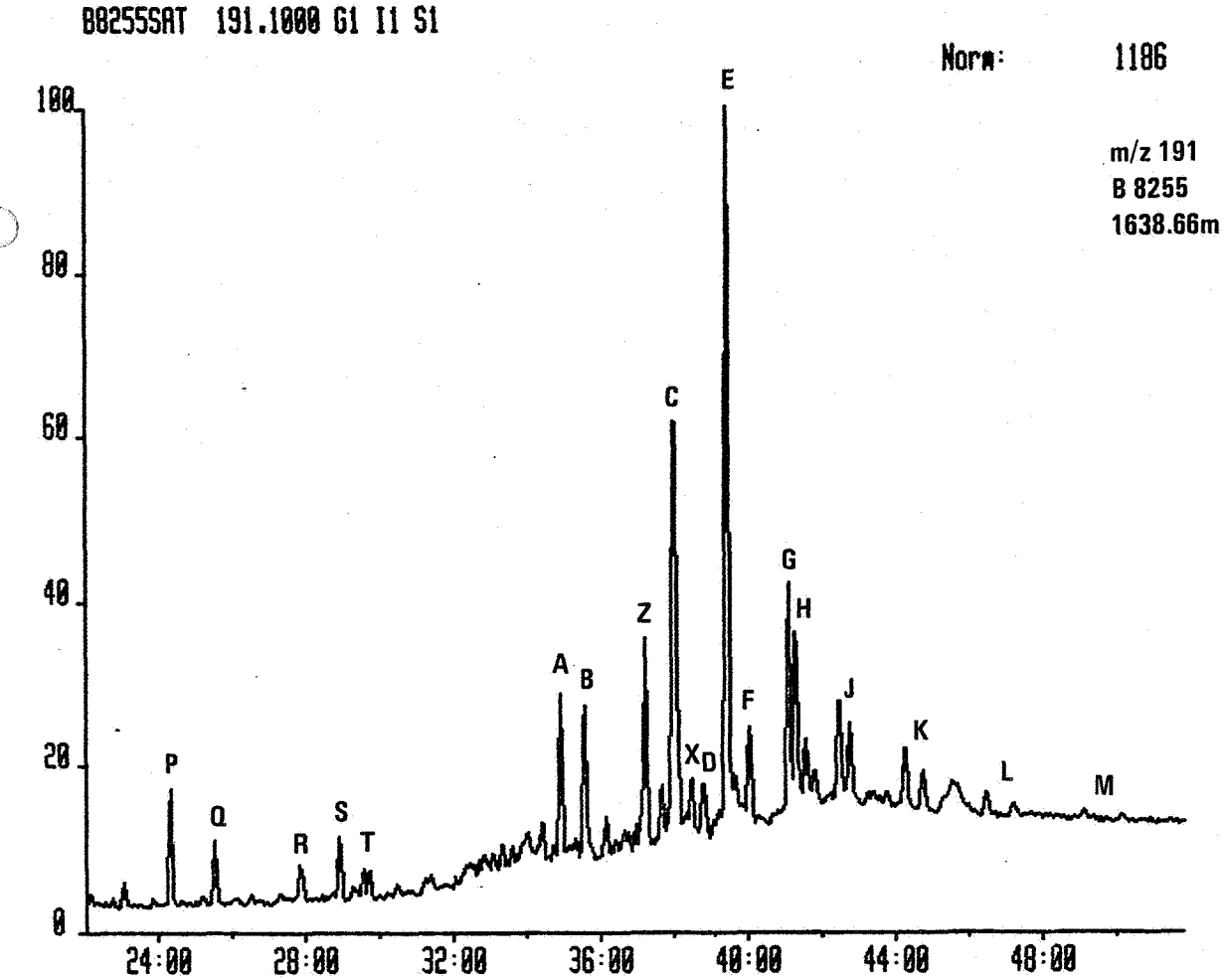
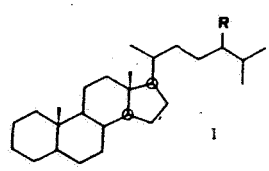

B8255SAT 191.1000 G1 I1 S1
Norm: 1186
m/z 191
B 8255
1638.66m
100
80
60
40
20
0
24:00
28:00
32:00
36:00
40:00
44:00
48:00
P
Q
R
S
T
A
B
Z
C
X
D
E
F
G
H
J
K
L
M

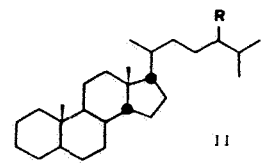
Figure 6b.

Mass chromatograms representing steranes (m/z 217 and 218)

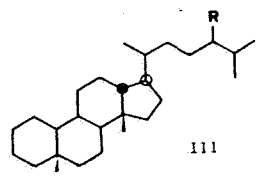
a	13β(H),17α(H)-diasterane (20S)	$C_{27}H_{48}$	(III,R=H)
b	13β(H),17α(H)-diasterane (20R)	$C_{27}H_{48}$	(III,R=H)
c	13α(H),17β(H)-diasterane (20S)	$C_{27}H_{48}$	(IV,R=H)
d	13α(H),17β(H)-diasterane (20R)	$C_{27}H_{48}$	(IV,R=H)
e	13β(H),17α(H)-diasterane (20S)	$C_{28}H_{50}$	(III,R=CH_3)
f	13β(H),17α(H)-diasterane (20R)	$C_{28}H_{50}$	(III,R=CH_3)
g	13α(H),17β(H)-diasterane (20S)	$C_{28}H_{50}$	(IV,R=CH_3)
	+ 14α(H),17α(H)-sterane (20S)	$C_{27}H_{48}$	(I,R=H)
h	13β(H),17α(H)-diasterane (20S)	$C_{29}H_{52}$	(III,R=C_2H_5)
	+ 14β(H),17β(H)-sterane (20R)	$C_{27}H_{48}$	(II,R=H)
i	14β(H),17β(H)-sterane (20S)	$C_{27}H_{48}$	(II,R=H)
	+ 13α(H),17β(H)-diasterane (20R)	$C_{28}H_{50}$	(IV,R=CH_3)
j	14α(H),17α(H)-sterane (20R)	$C_{27}H_{48}$	(I,R=H)
k	13β(H),17α(H)-diasterane (20R)	$C_{29}H_{52}$	(III,R=C_2H_5)
l	13α(H),17β(H)-diasterane (20S)	$C_{29}H_{52}$	(III,R=C_2H_5)
m	14α(H),17α(H)-sterane (20S)	$C_{28}H_{50}$	(I,R=CH_3)
n	13α(H),17β(H)-diasterane (20R)	$C_{29}H_{52}$	(III,R=C_2H_5)
	+ 14β (H),17β (H)-sterane (20R)	$C_{28}H_{50}$	(II,R=CH_3)
o	14β(H),17β(H)-sterane (20S)	$C_{28}H_{50}$	(II,R=CH_3)
p	14α(H),17α(H)-sterane (20R)	$C_{28}H_{50}$	(I,R=CH_3)
q	14α(H),17α(H)-sterane (20S)	$C_{29}H_{52}$	(I,R=C_2H_5)
r	14β(H),17β(H)-sterane (20R)	$C_{29}H_{52}$	(II,R=C_2H_5)
	+ unknown sterane		
s	14β(H),17β(H)-sterane (20S)	$C_{29}H_{52}$	(II,R=C_2H_5)
t	14β(H),17β(H)-sterane (20R)	$C_{29}H_{52}$	(I,R=C_2H_5)
u	5α(H)-sterane	$C_{21}H_{36}$	(V,R=C_2H_5)
v	5α(H)-sterane	$C_{22}H_{38}$	(IV,R=C_3H_7)



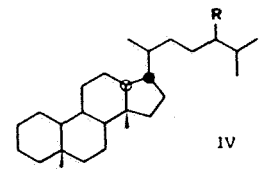
I



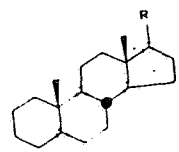
II

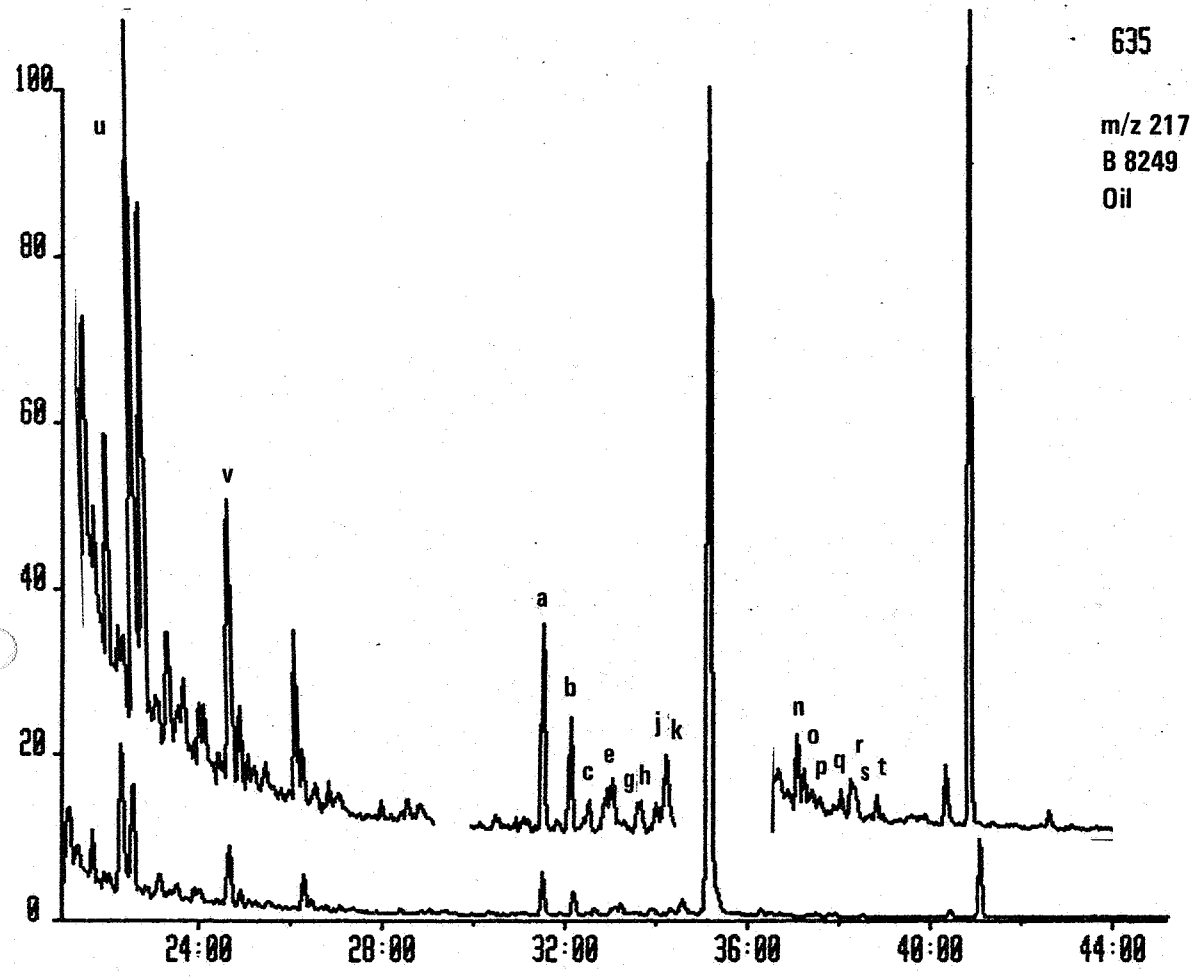


III



IV

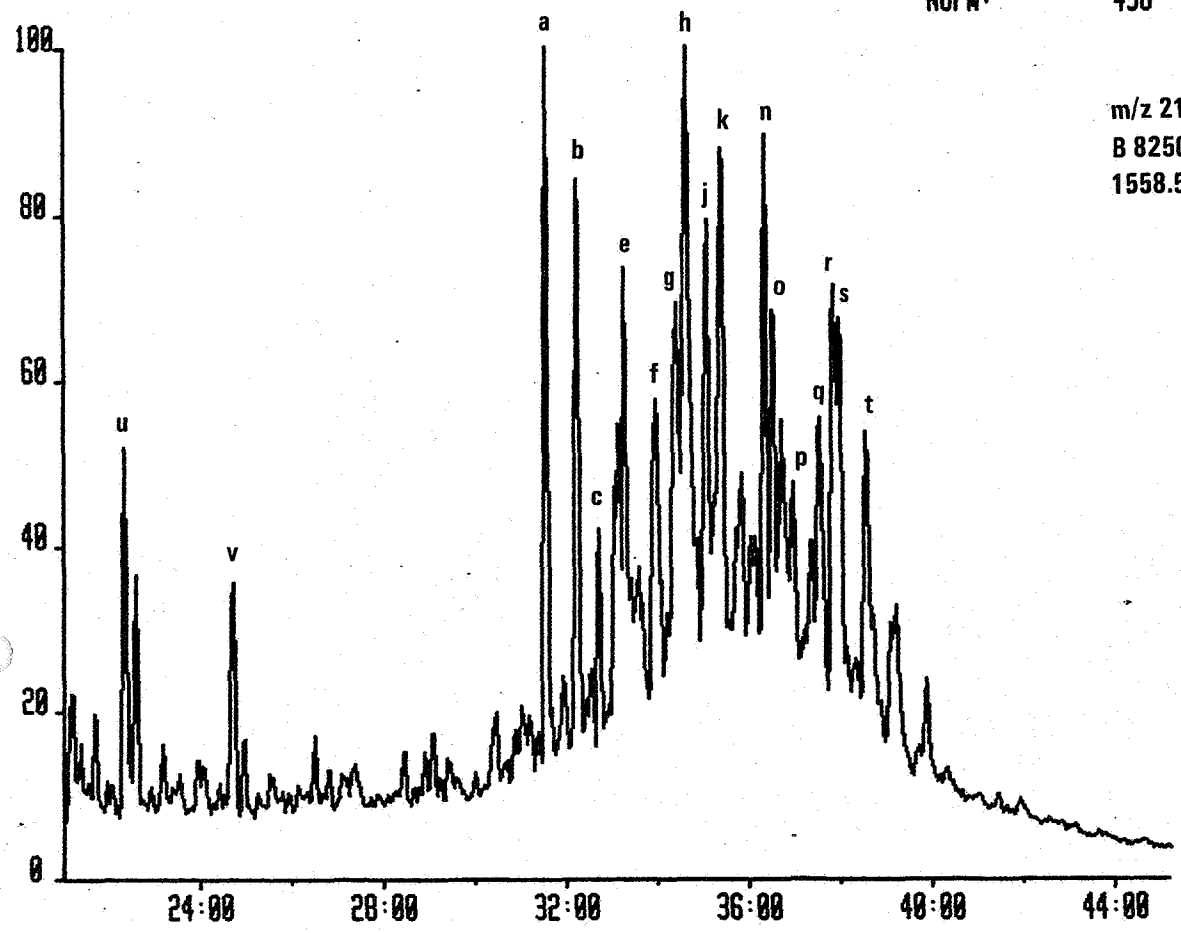



635
m/z 217
B 8249
Oil
100
80
60
40
20
0
u
v
a
b
c
e
g
h
j
k
n
o
p
q
r
s
t
24:00
28:00
32:00
36:00
40:00
44:00

IKU

B8250SAT 217.1000 G1 I1 S1

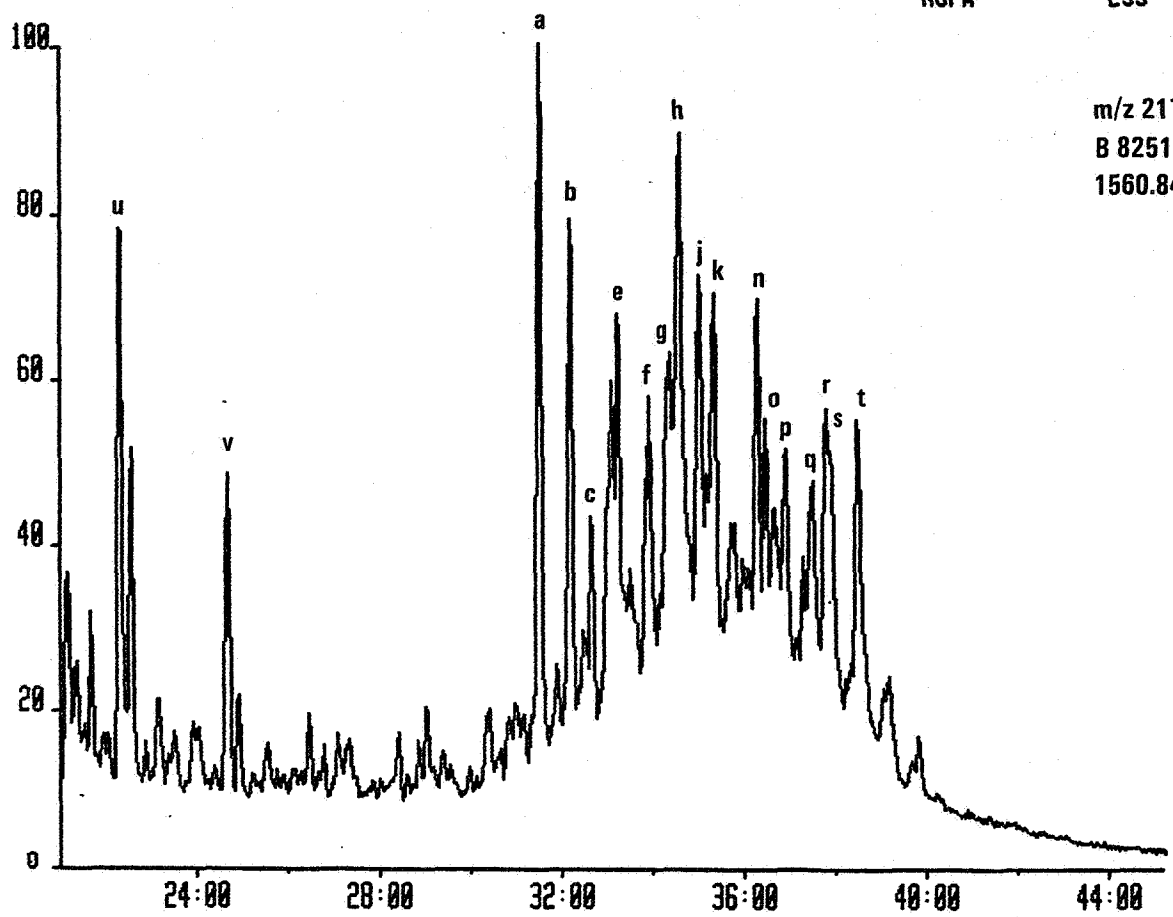
Norm: 438



m/z 217
B 8250
1558.50m

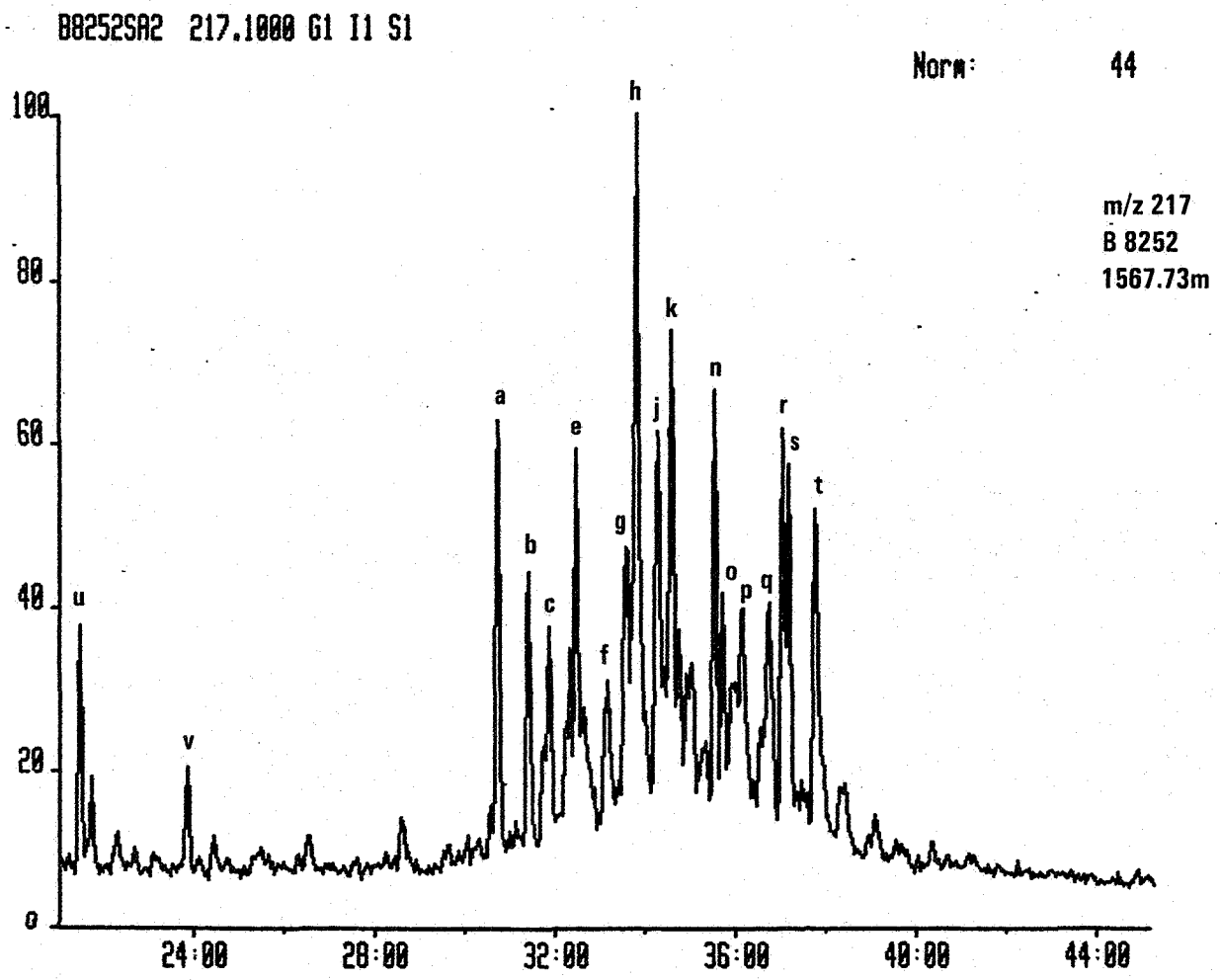
B8251SAT 217.1000 G1 I1 S1

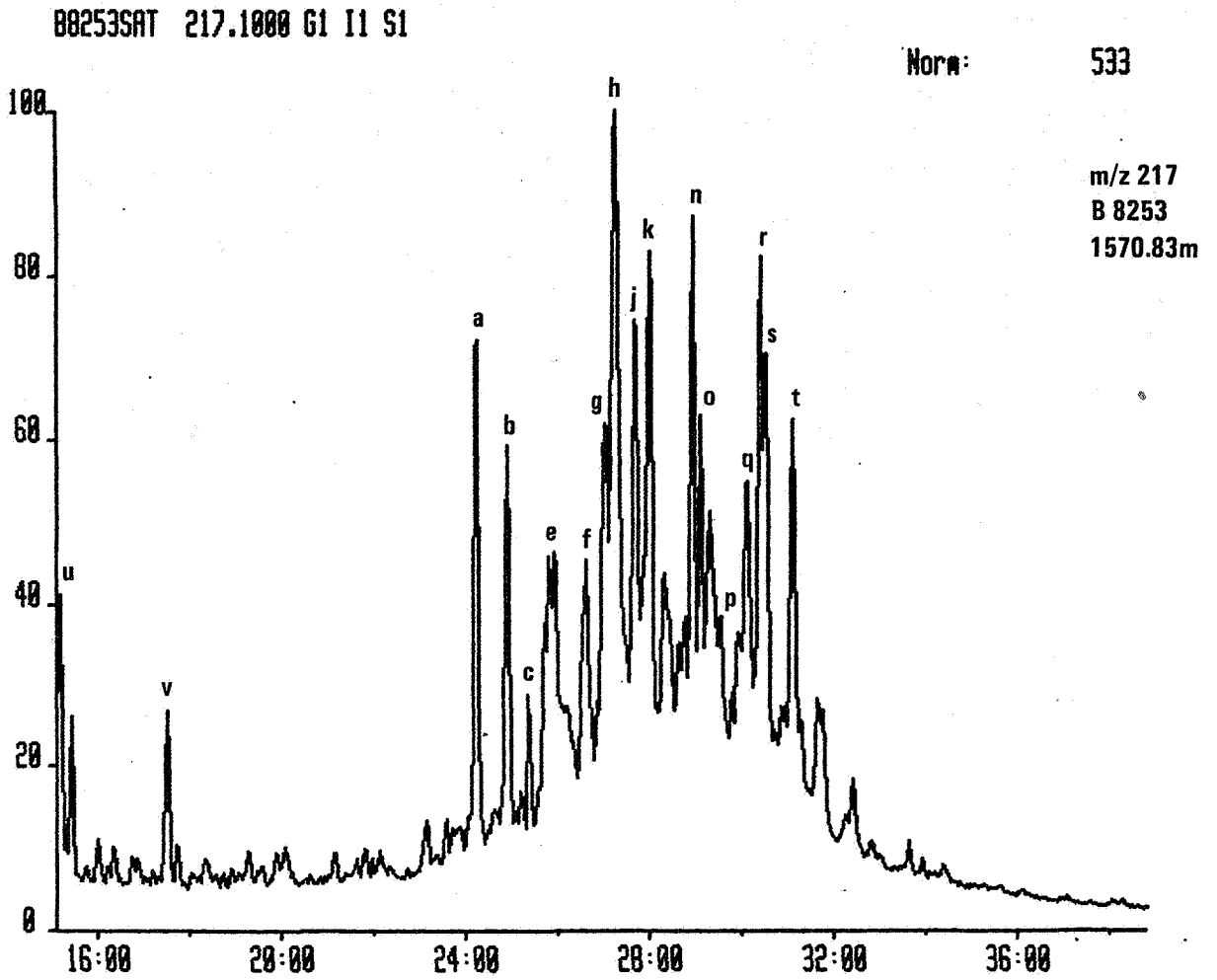
Norm: 253



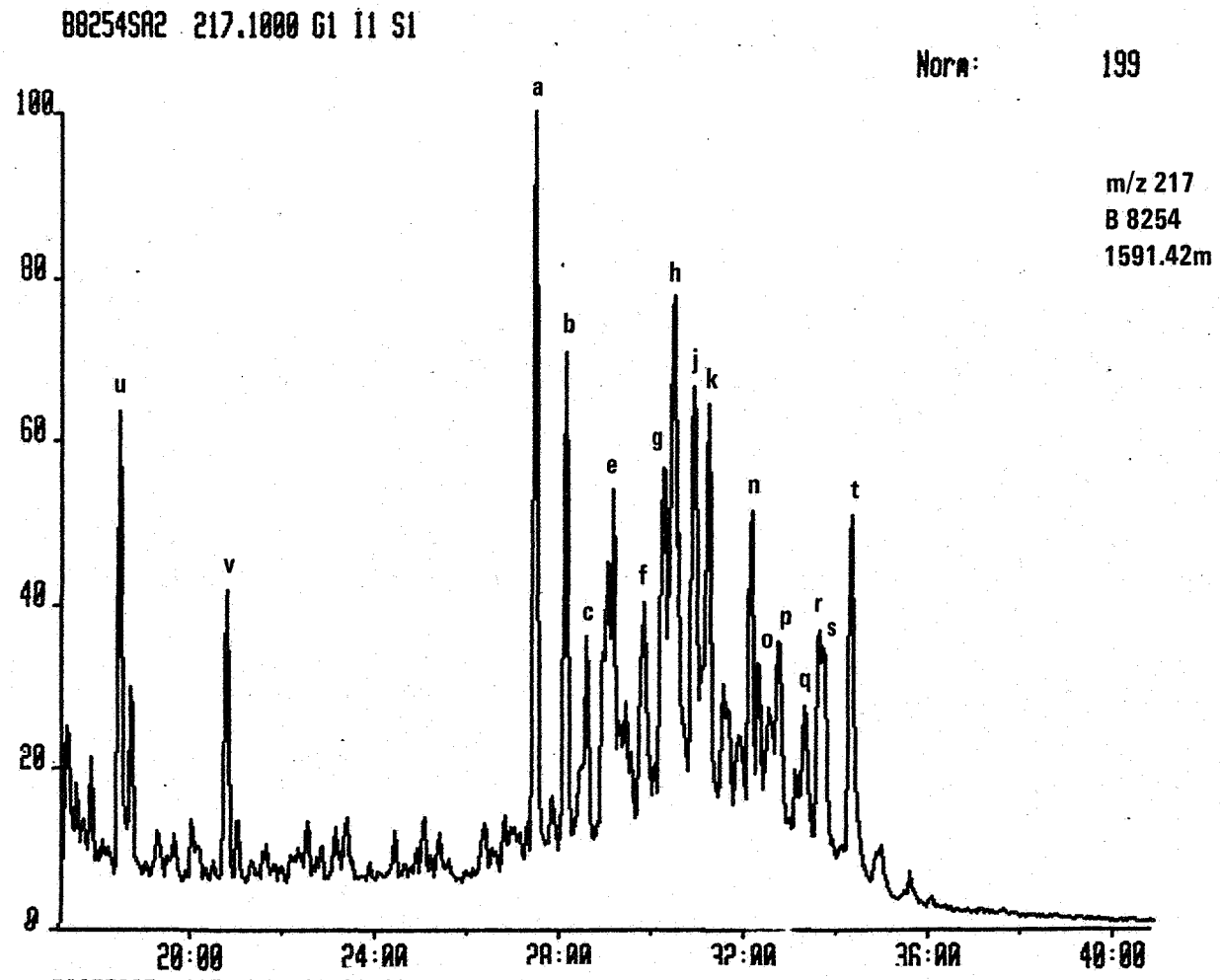
m/z 217
B 8251
1560.84m

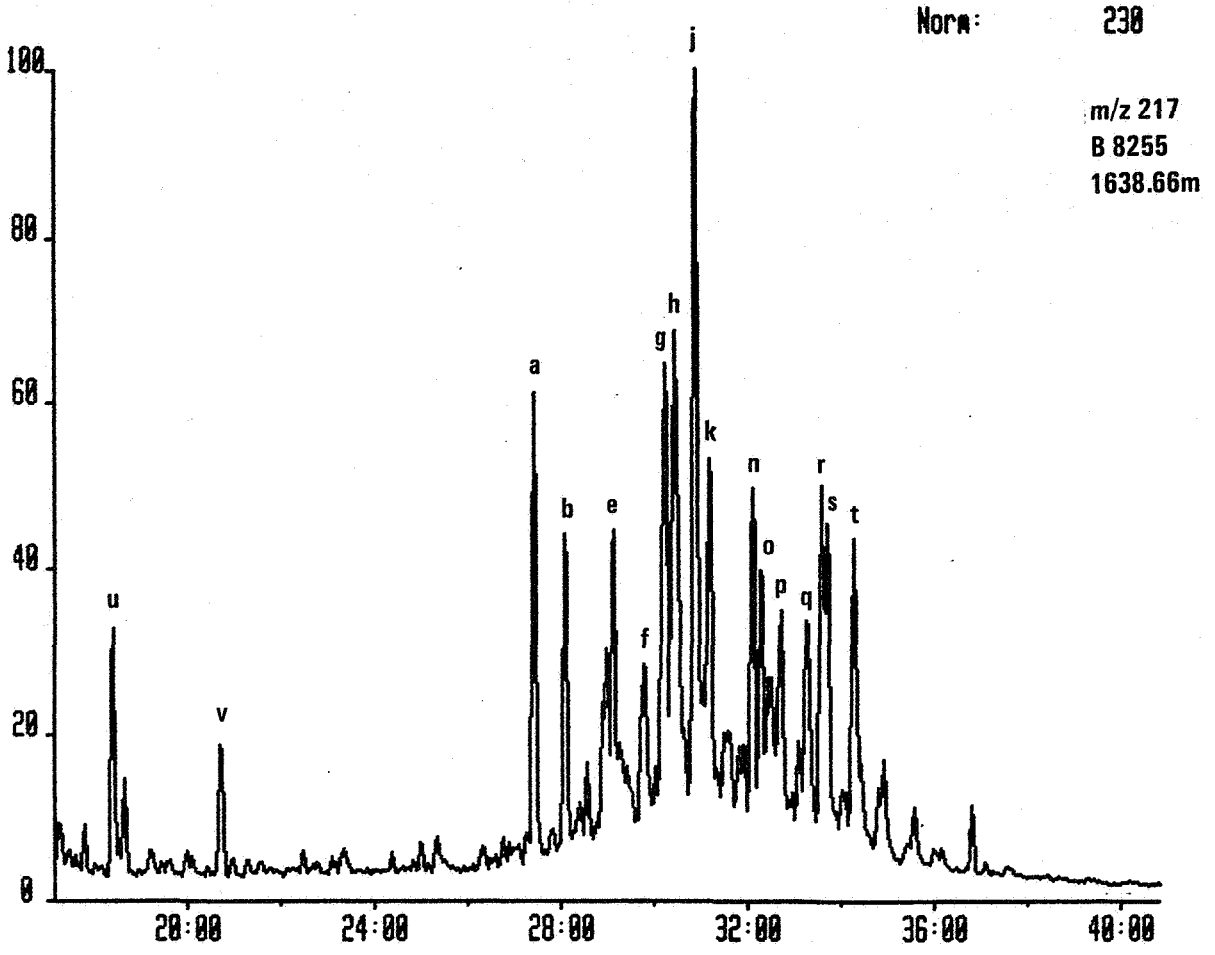
IKU

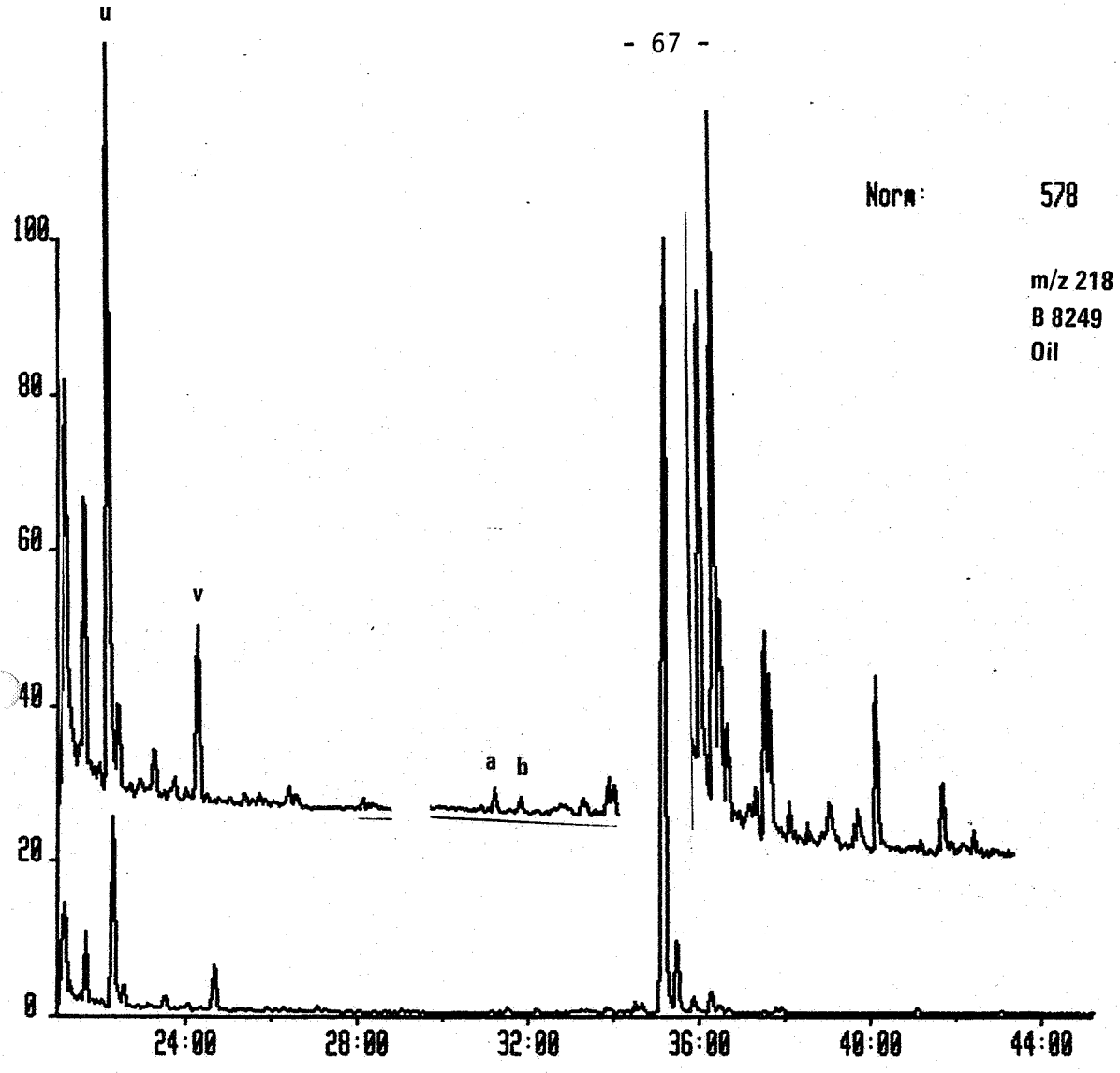

B8252SA2 217.1000 G1 I1 S1
Norm: 44
m/z 217
B 8252
1567.73m
100
80
60
40
20
0
24:00
28:00
32:00
36:00
40:00
44:00
u
v
a
b
c
e
f
g
h
j
k
n
o
p
q
r
s
t


B8253SAT 217.1000 G1 I1 S1
Norm: 533
m/z 217
B 8253
1570.83m
100
80
60
40
20
0
16:00
20:00
24:00
28:00
32:00
36:00
u
v
a
b
c
e
f
g
h
j
k
n
o
p
q
r
s
t

IKU


B8254SA2 217.1000 G1 I1 S1
Norm: 199
m/z 217
B 8254
1591.42m
100
80
60
40
20
0
20:00
24:00
28:00
32:00
36:00
40:00
a
b
c
e
f
g
h
j
k
n
o
p
q
r
s
t
u
v

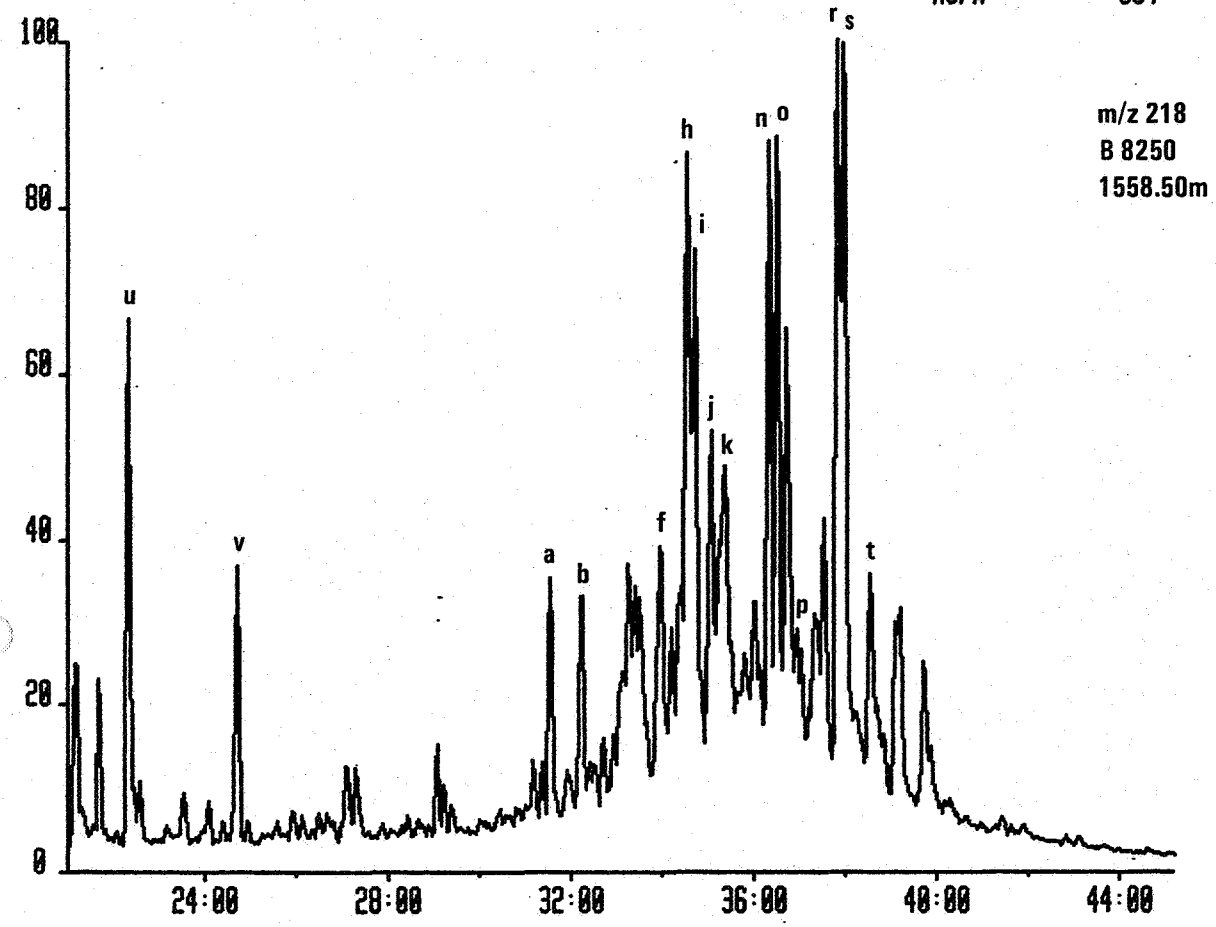

B8255SAT 217.1000 G1 I1 S1
Norm: 230
m/z 217
B 8255
1638.66m
100
80
60
40
20
0
20:00
24:00
28:00
32:00
36:00
40:00
a
b
e
f
g
h
j
k
n
o
p
q
r
s
t
u
v


u
v
a
b
Norm: 578
m/z 218
B 8249
Oil
100
80
60
40
20
0
24:00
28:00
32:00
36:00
40:00
44:00

IKU

B8250SAT 218.1000 G1 I1 S1

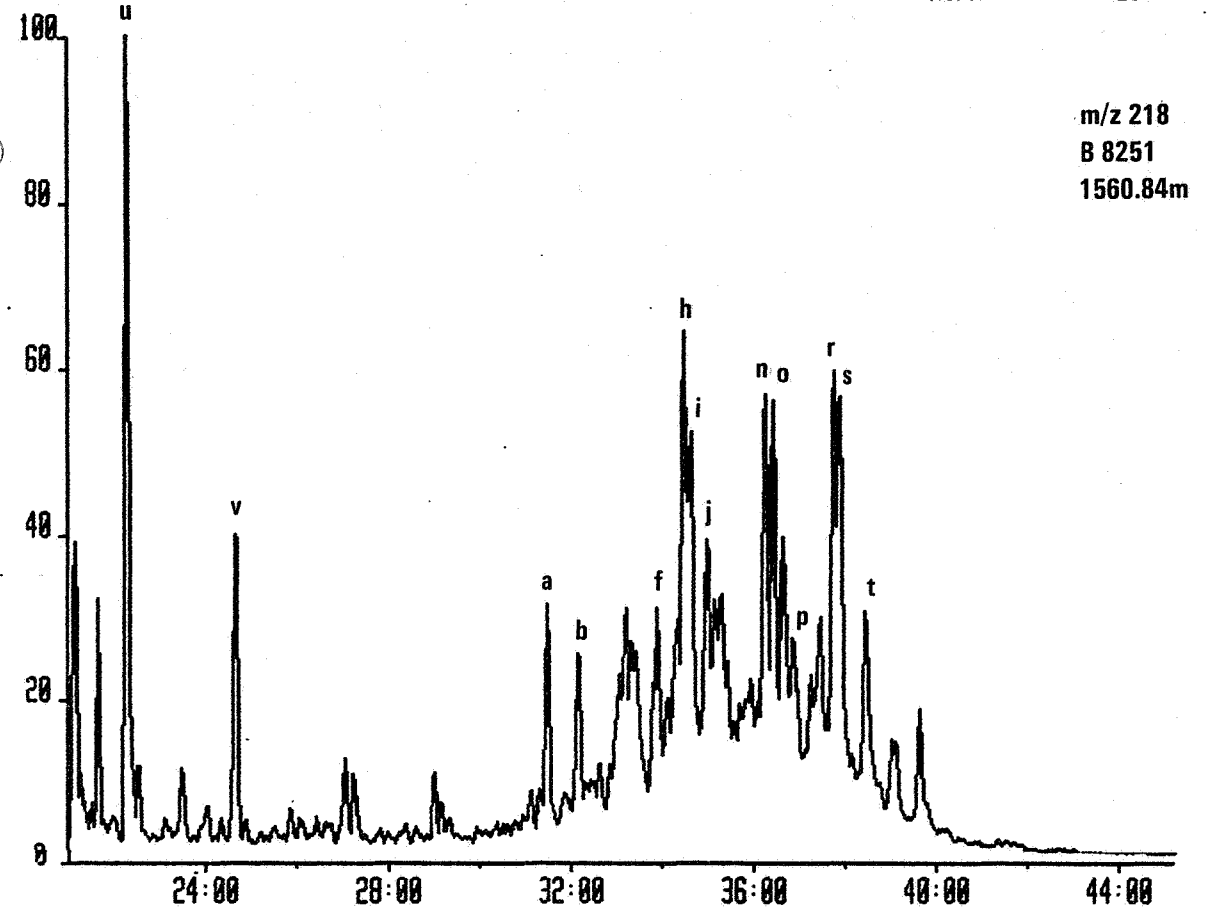
Norm: 364



m/z 218
B 8250
1558.50m

B8251SAT 218.1000 G1 I1 S1

Norm: 233

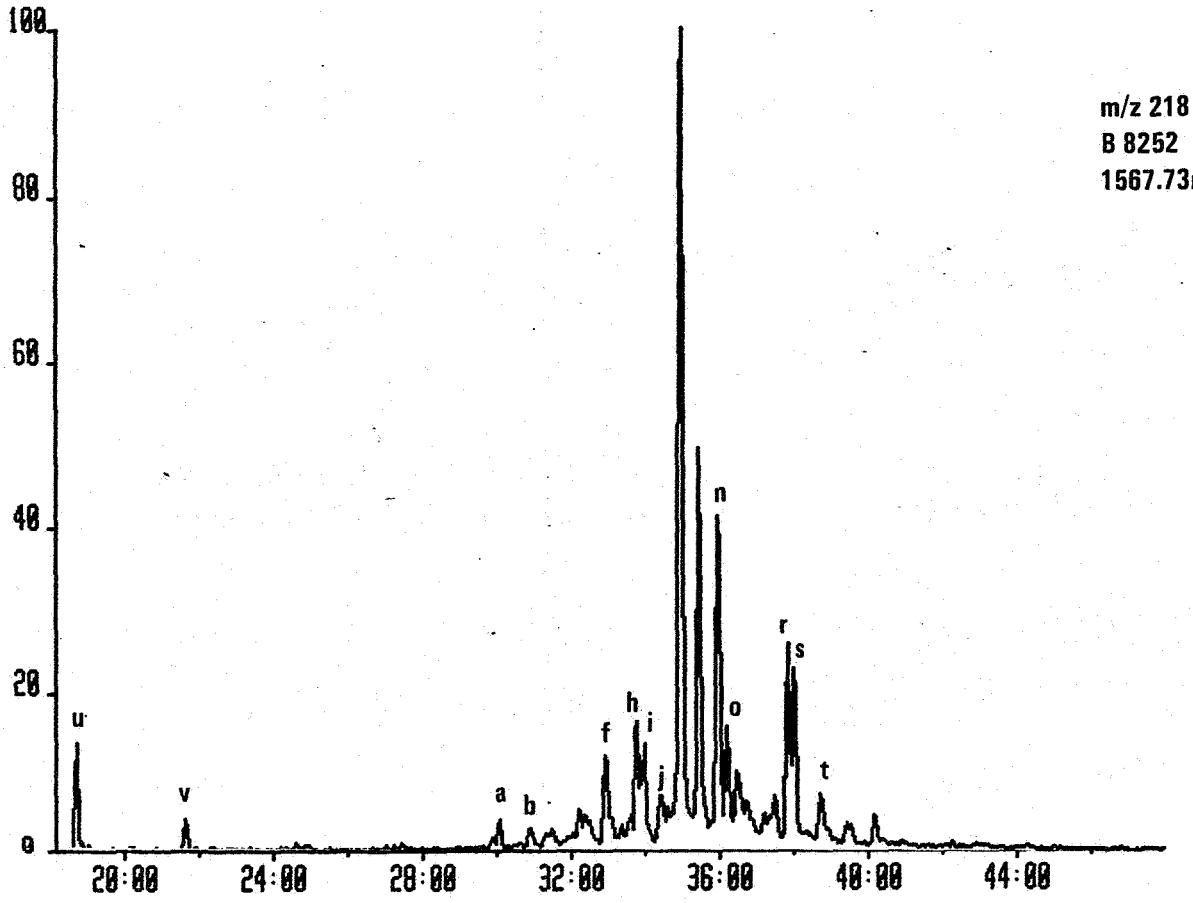


m/z 218
B 8251
1560.84m

IKU

B8252SA2 218.1000 G1 I1 S1

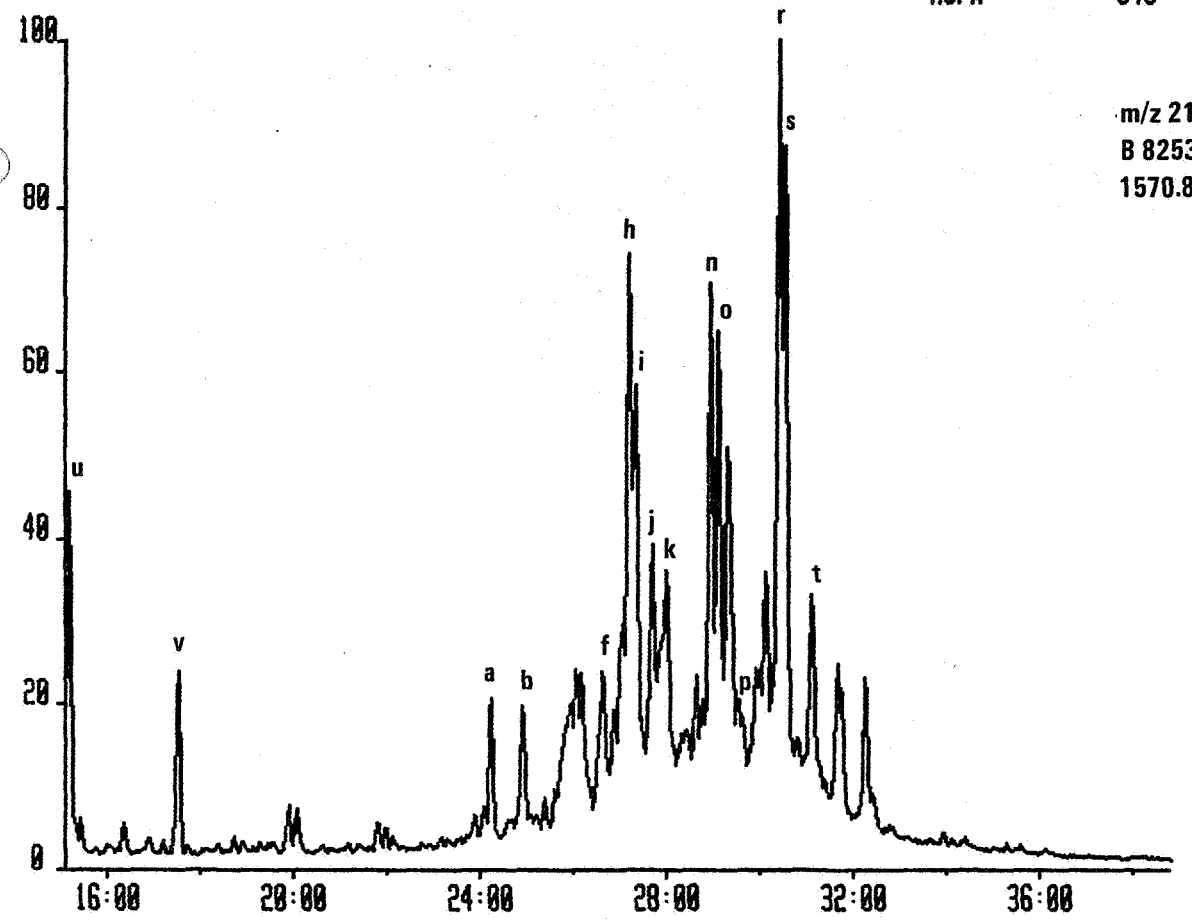
Norm: 129



m/z 218
B 8252
1567.73m

B8253SAT 218.1000 G1 I1 S1

Norm: 548

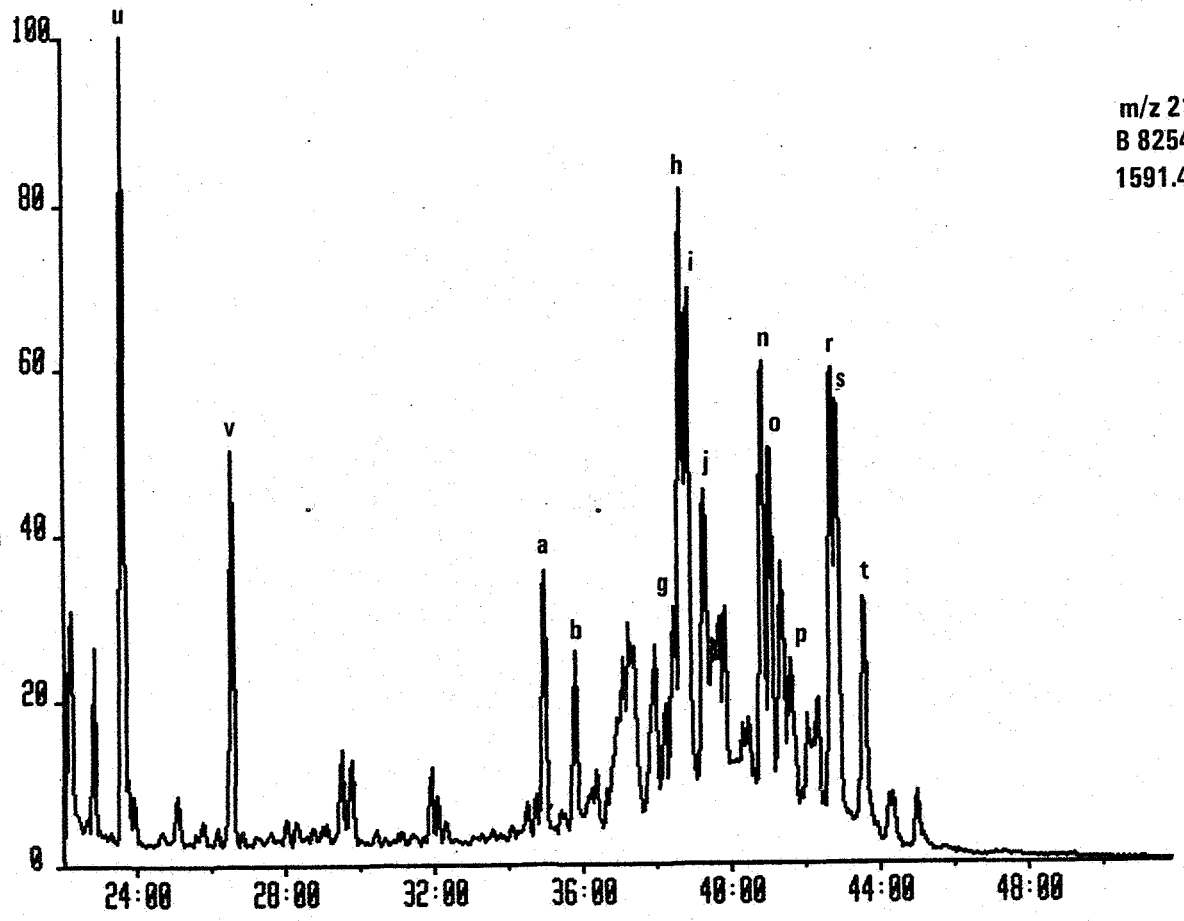


m/z 218
B 8253
1570.83m

IKU

B8254SA2 218.1000 G1 I1 S1

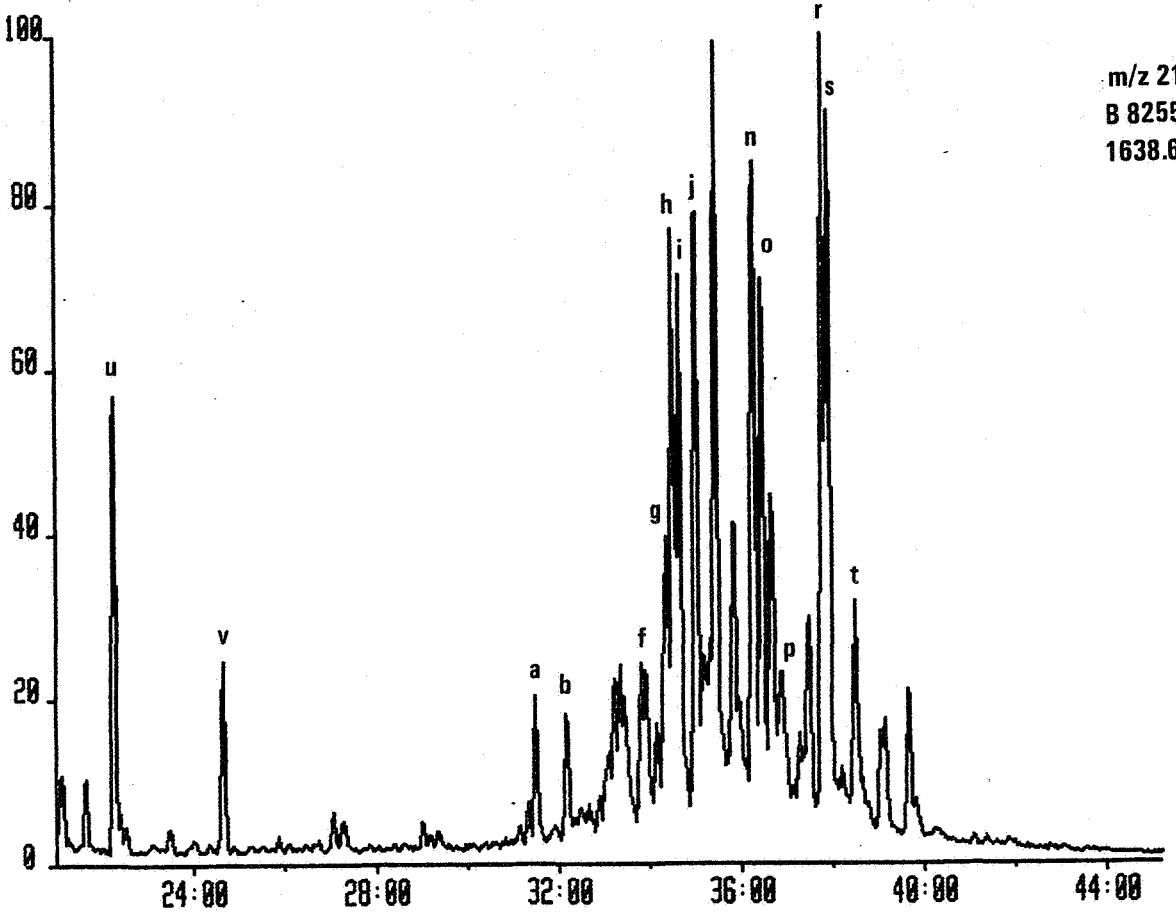
Norm: 136



m/z 218
B 8254
1591.42m

B8255SAT 218.1000 G1 I1 S1

Norm: 147

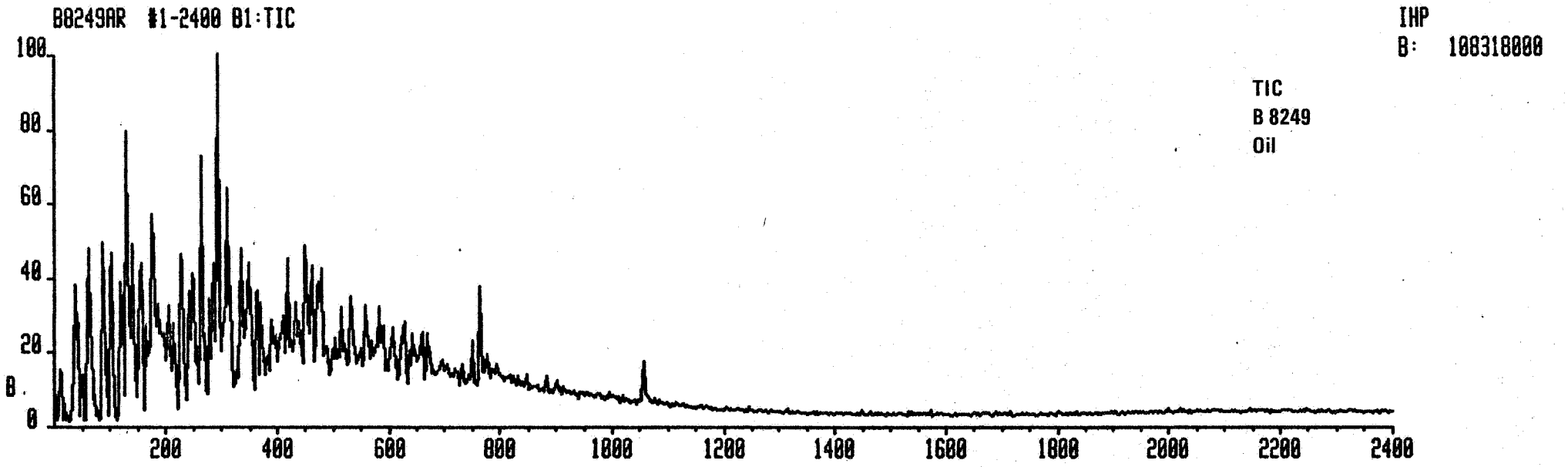


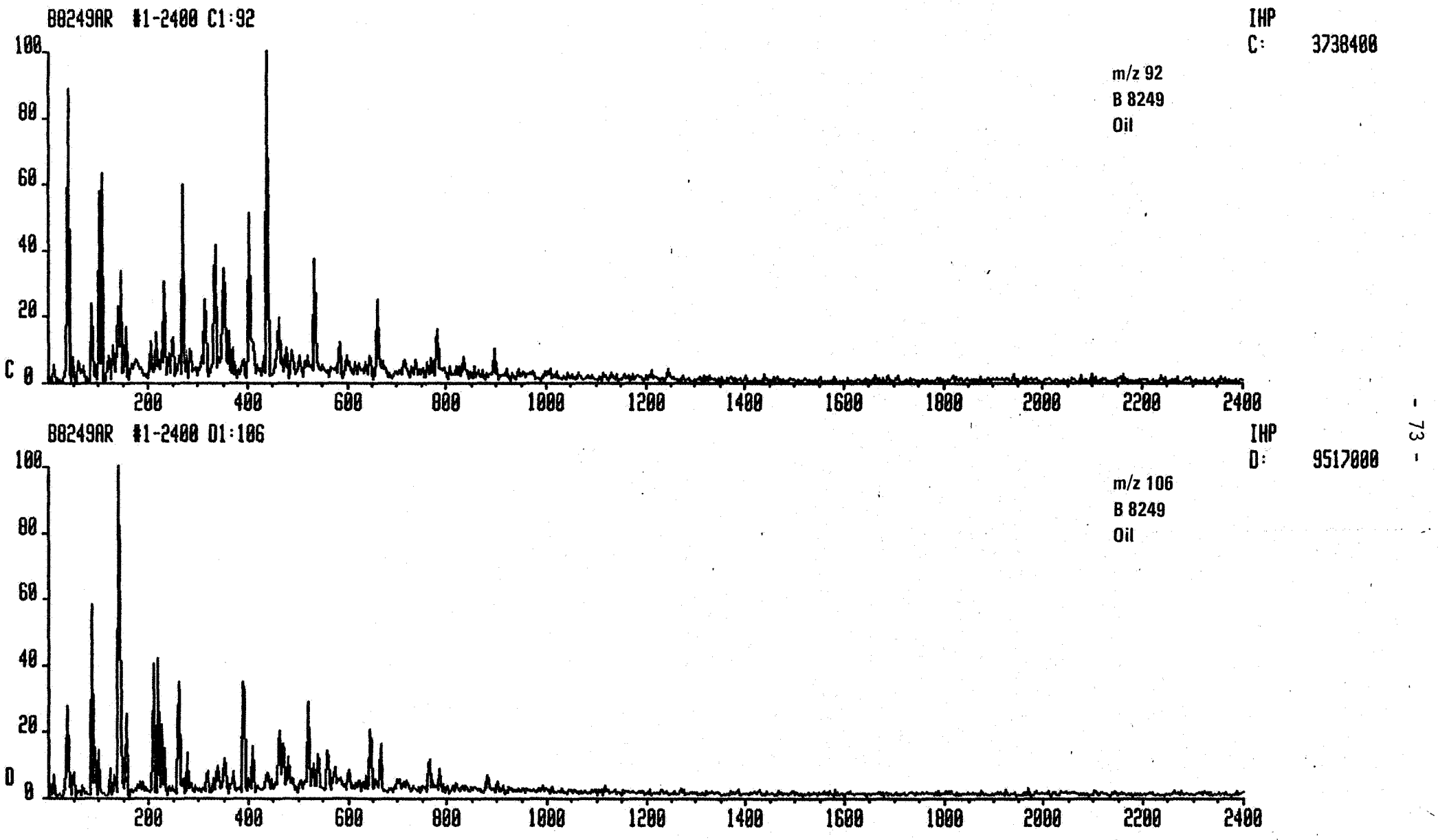
m/z 218
B 8255
1638.66m

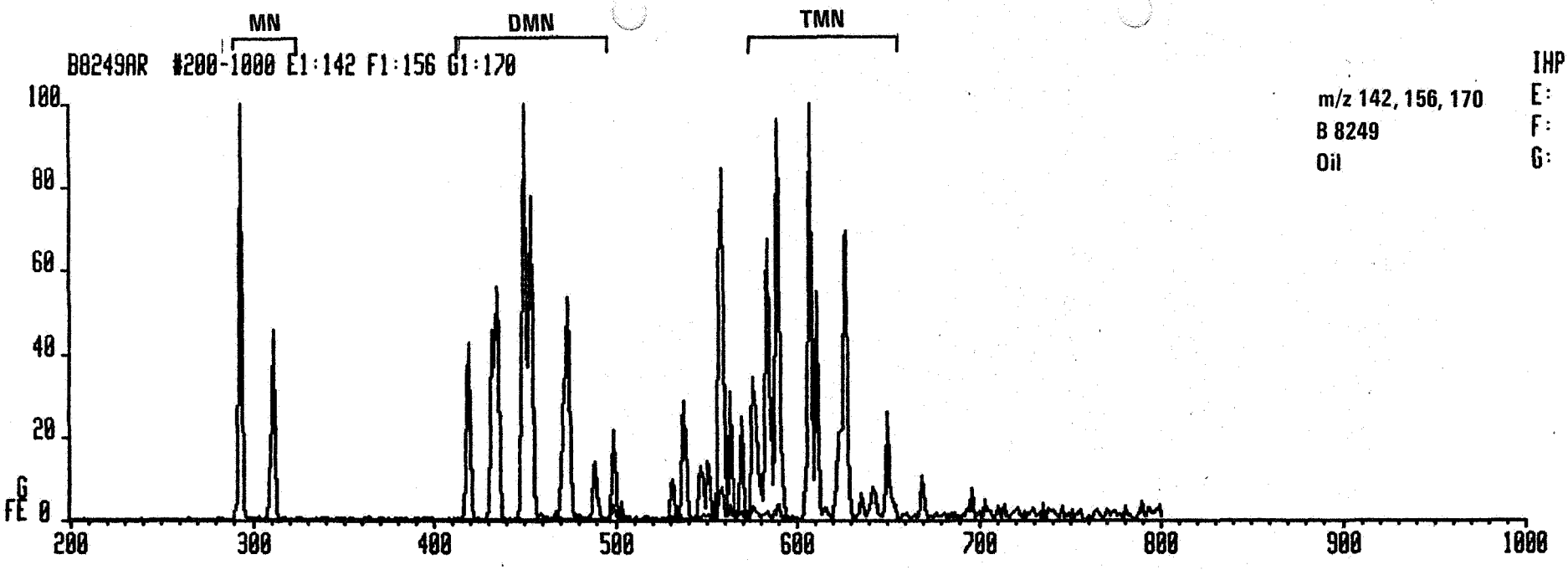
Figure 7

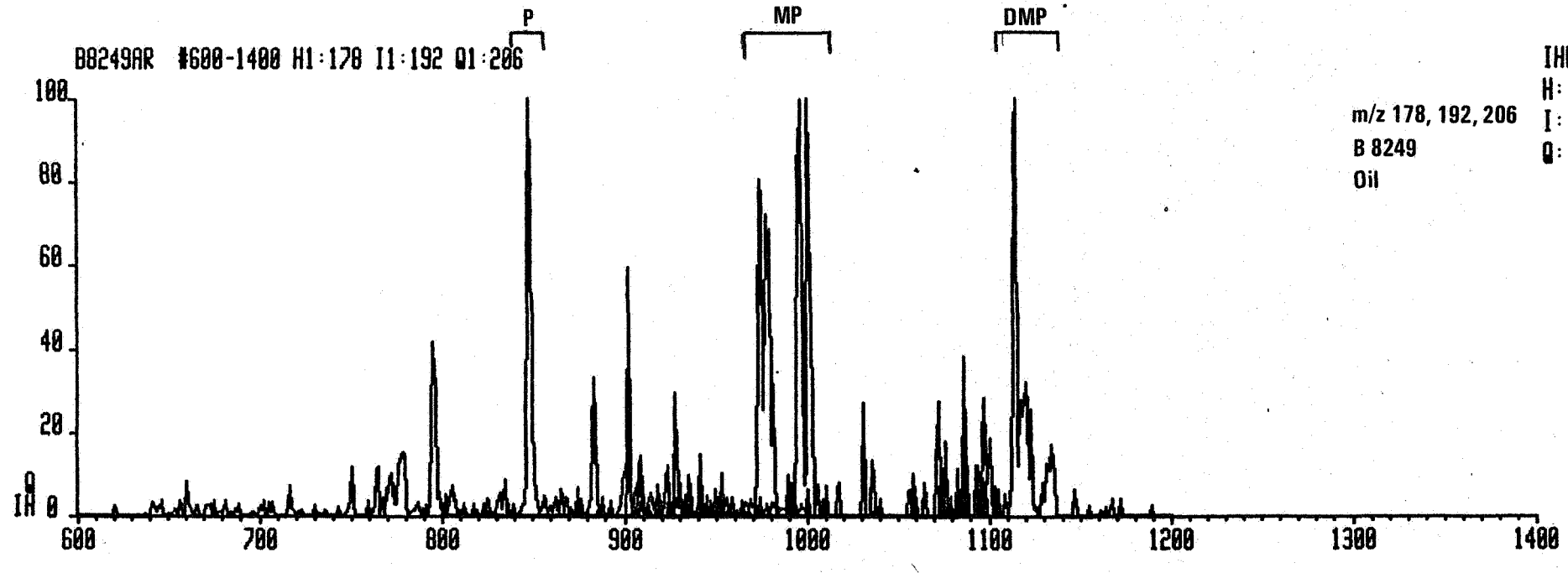
Mass chromatograms of aromatic hydrocarbons

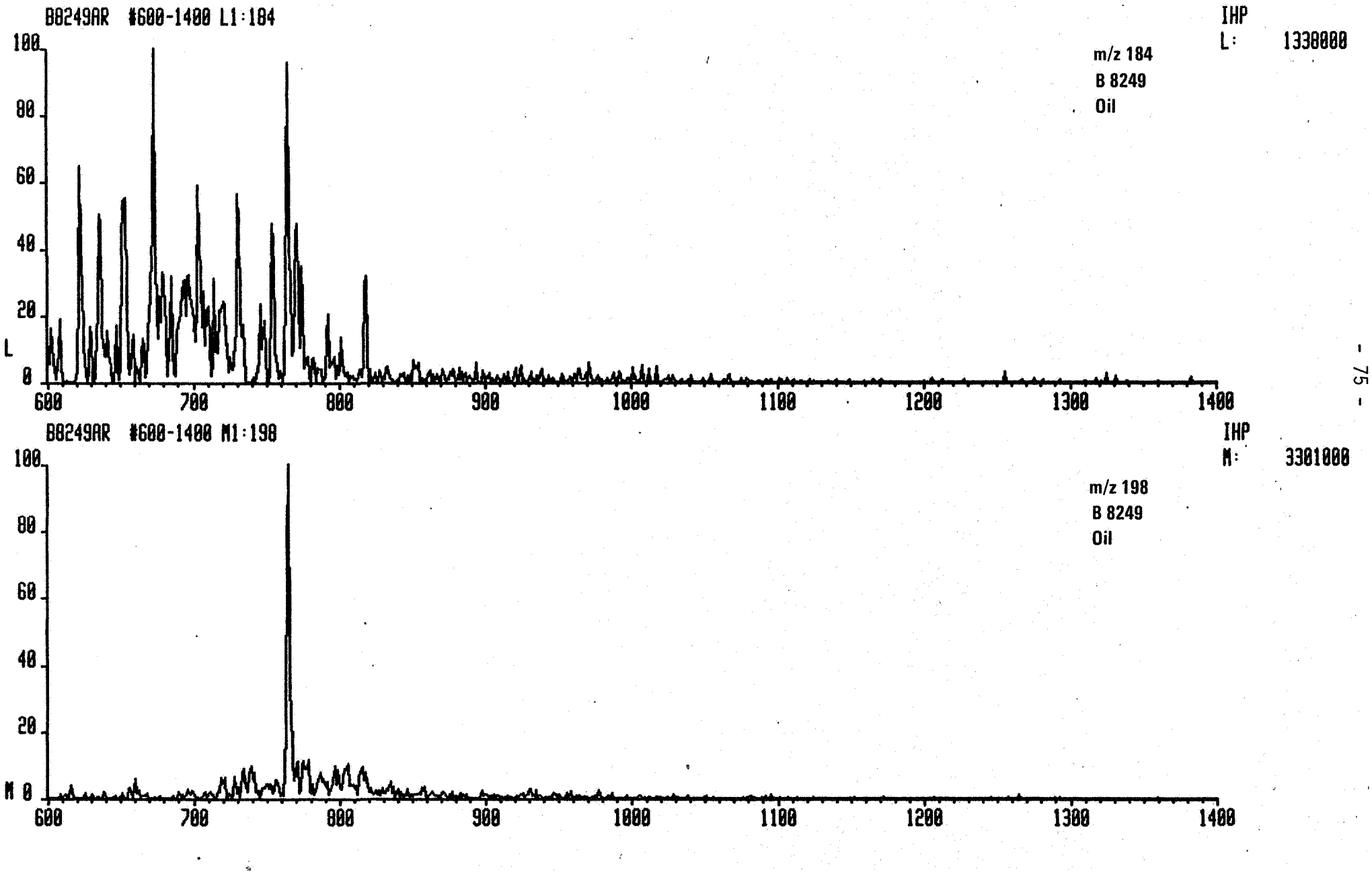
TIC	-	total ion chromatograms
m/z 92,106	-	alkyl benzenes
m/z 142,156,170	-	alkyl naphthalenes
m/z 178,192,206	-	alkyl phenanthrenes
m/z 184,198,212	-	alkyl dibenzothiophenes
m/z 231	-	triaromatic steranes
m/z 253	-	monoaromatic steranes


B8249AR #1-2400 B1:TIC
IHP
B: 108318000
TIC
B 8249
Oil
100
80
60
40
20
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400


B8249AR #1-2400 C1:92
IHP
C: 3738400
m/z 92
B 8249
Oil
100
80
60
40
20
C 0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
B8249AR #1-2400 D1:106
IHP
D: 9517000
m/z 106
B 8249
Oil
100
80
60
40
20
D 0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400


MN
DMN
TMN
B8249AR #200-1000 E1:142 F1:156 G1:170
m/z 142, 156, 170
B 8249
Oil
IHP
E: 33624000
F: 10427000
G: 3932700
100
80
60
40
20
0
200
300
400
500
600
700
800
900
1000


P
MP
DMP
B8249AR #600-1400 H1:178 I1:192 Q1:206
m/z 178, 192, 206
B 8249
Oil
IHP
H: 1232100
I: 230100
Q: 287200
100
80
60
40
20
0
600
700
800
900
1000
1100
1200
1300
1400


B8249AR #600-1400 L1:184
IHP
L: 1338000
m/z 184
B 8249
Oil
100
80
60
40
20
L 0
600
700
800
900
1000
1100
1200
1300
1400
B8249AR #600-1400 M1:198
IHP
M: 3301000
m/z 198
B 8249
Oil
100
80
60
40
20
M 0
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700
800
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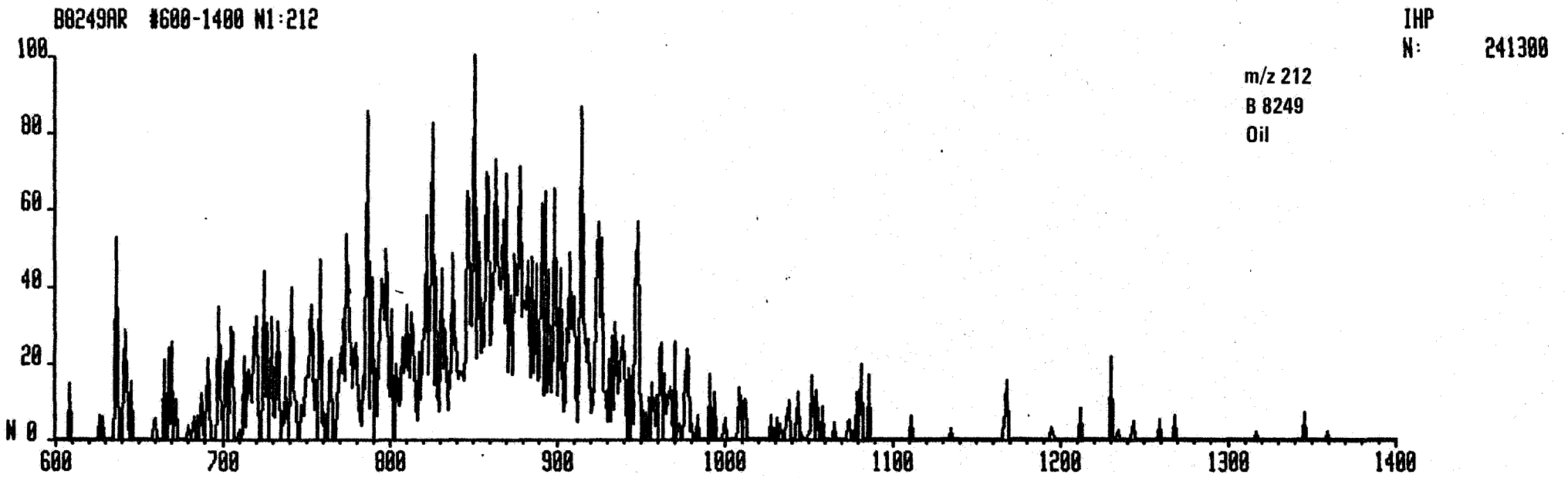
1300
1400


B8249AR #600-1400 N1:212
IHP
N: 241300
m/z 212
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Oil
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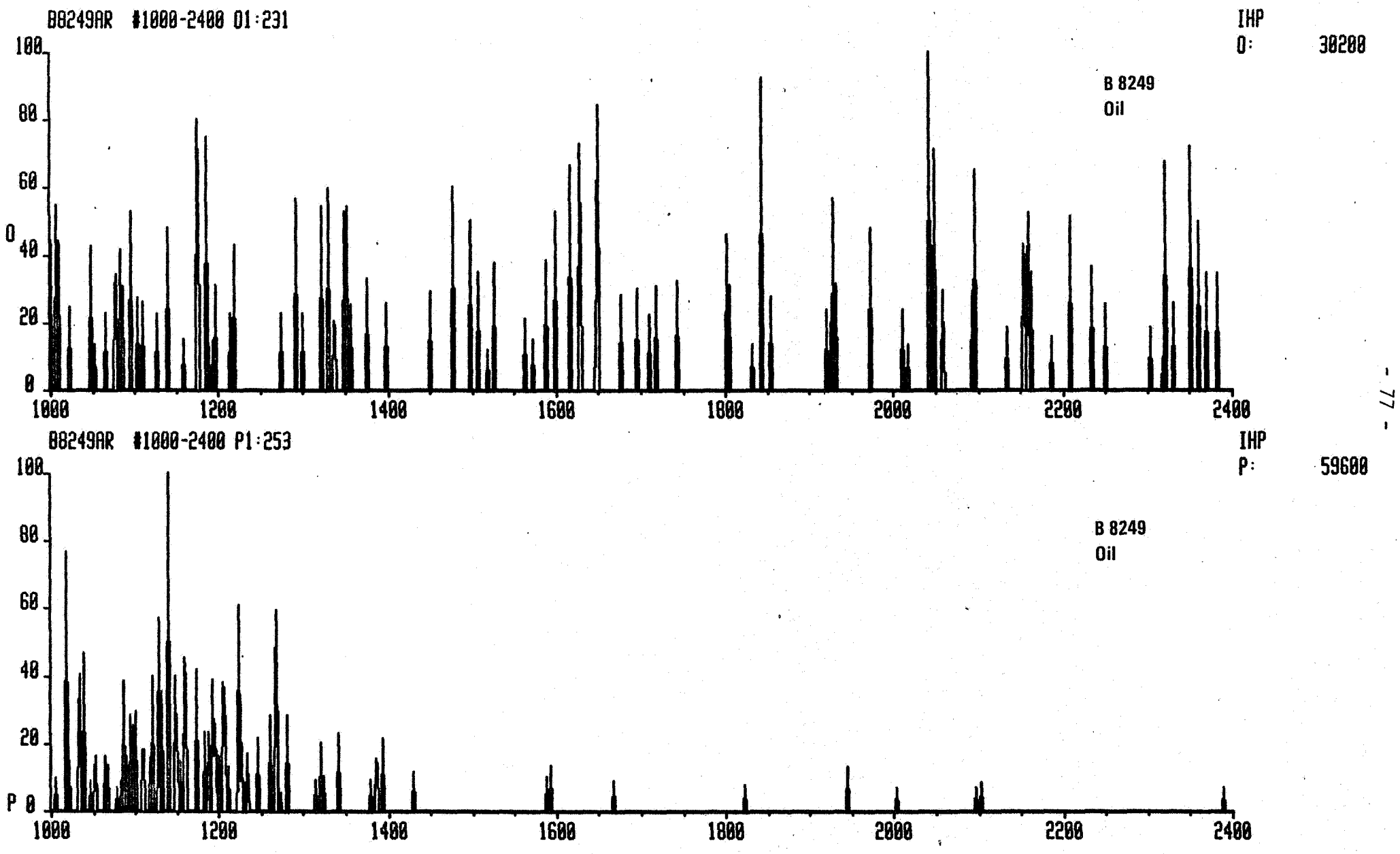
B8249AR #1000-2400 01:231
IHP
0: 30200
B 8249
Oil
100
80
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40
20
0
O
1000
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1400
1600
1800
2000
2200
2400
B8249AR #1000-2400 P1:253
IHP
P: 59600
B 8249
Oil
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P 0
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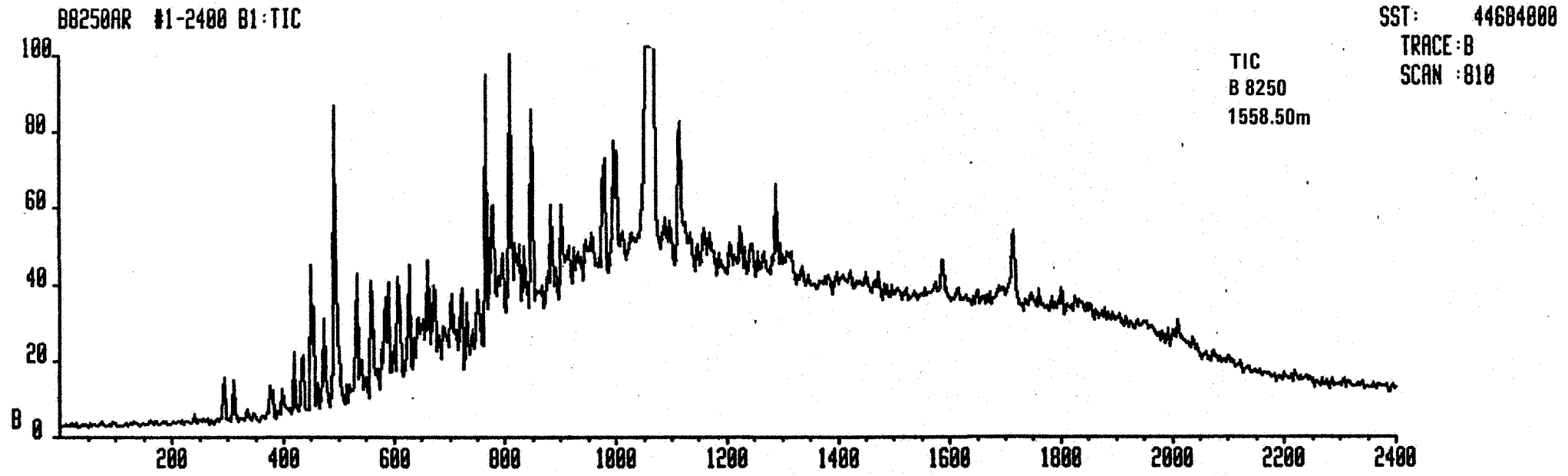
2200
2400


B8250AR #1-2400 B1:TIC
SST: 44684000
TRACE:B
SCAN :810
TIC
B 8250
1558.50m
100
80
60
40
20
B 0
200
400
600
800
1000
1200
1400
1600
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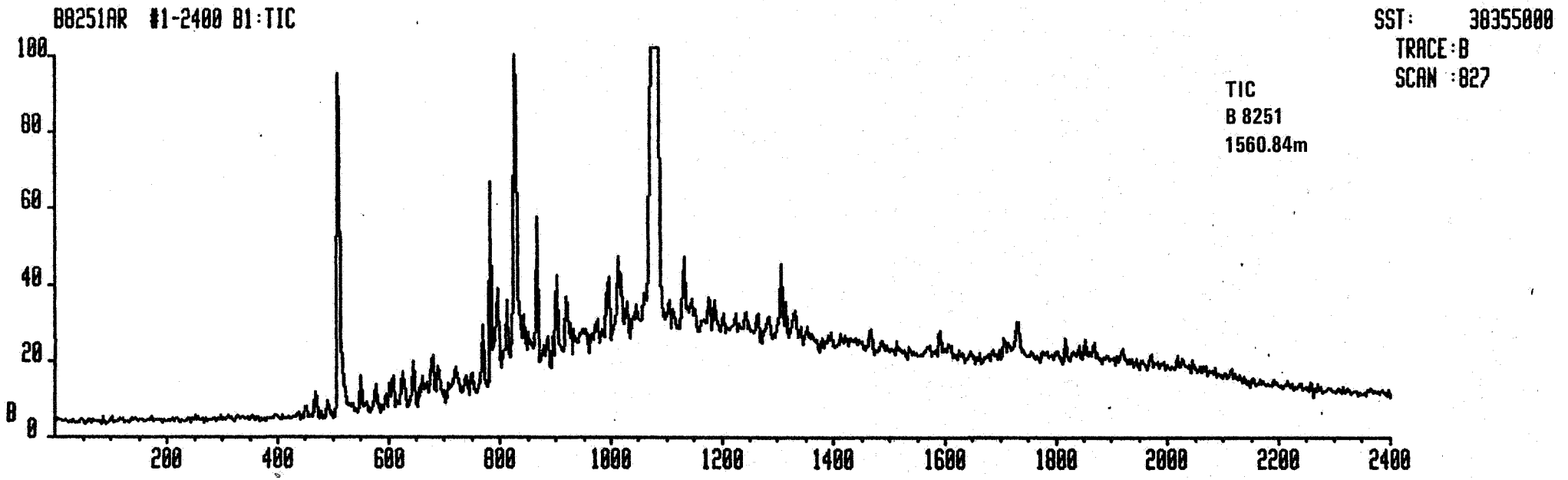
2200
2400


B8251AR #1-2400 B1:TIC
SST: 38355000
TRACE:B
SCAN :827
TIC
B 8251
1560.84m
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B 0
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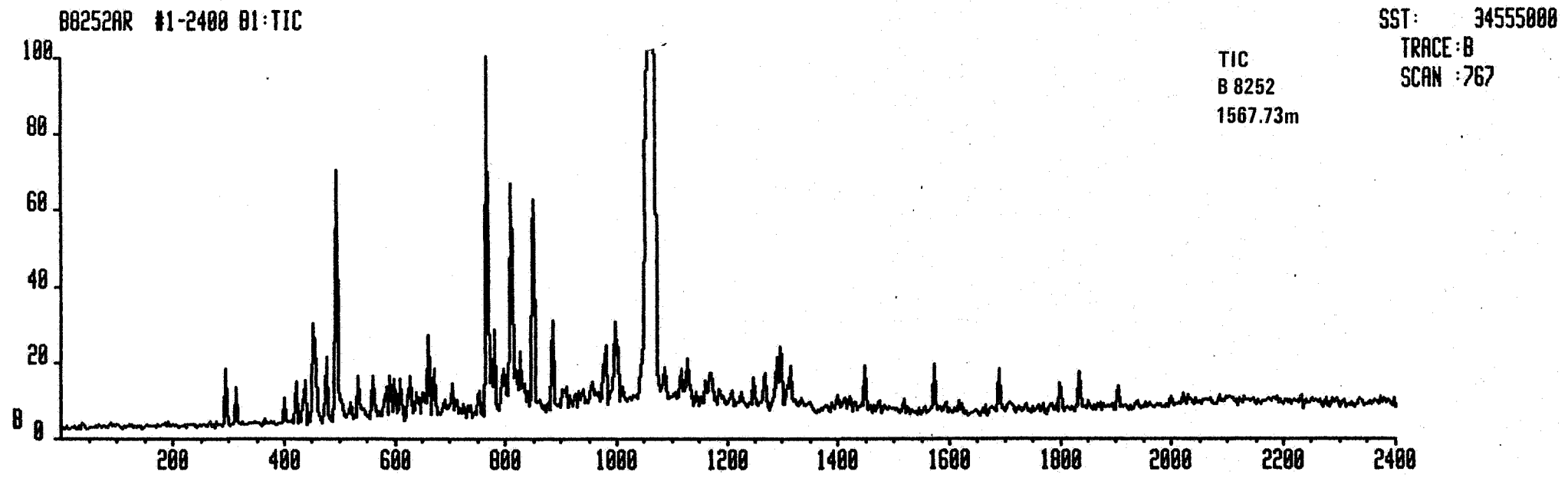
2200
2400


B8252AR #1-2400 B1:TIC
SST: 34555000
TRACE:B
SCAN :767
TIC
B 8252
1567.73m
100
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B 0
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1200
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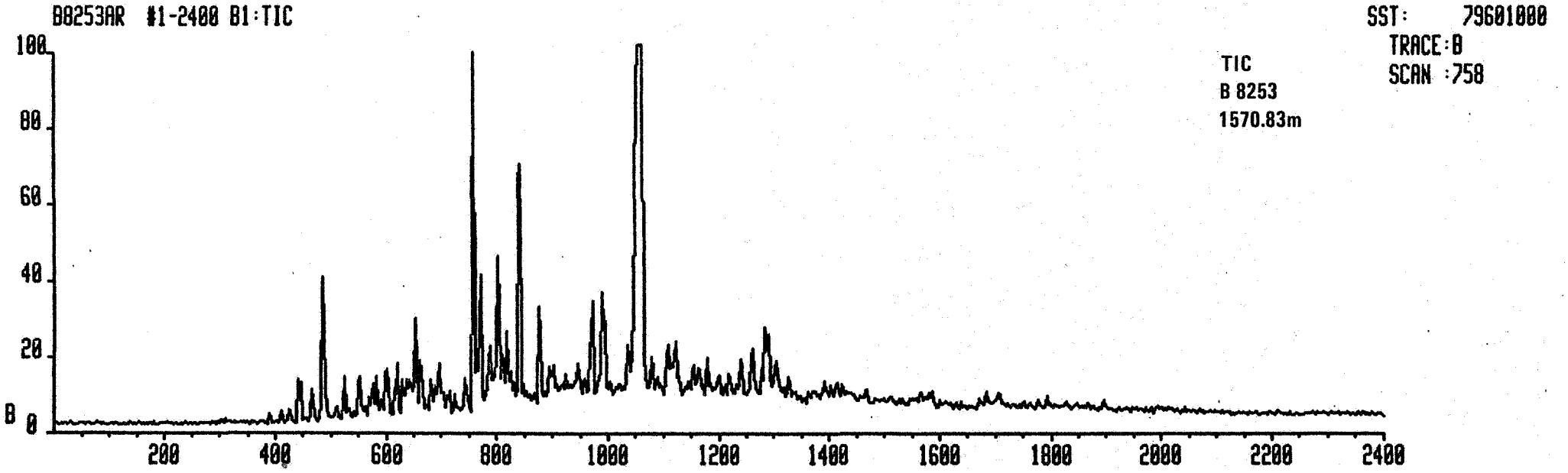
2200
2400


B8253AR #1-2400 B1:TIC
SST: 79601000
TRACE:B
SCAN :758
TIC
B 8253
1570.83m
100
80
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40
20
B 0
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1000
1200
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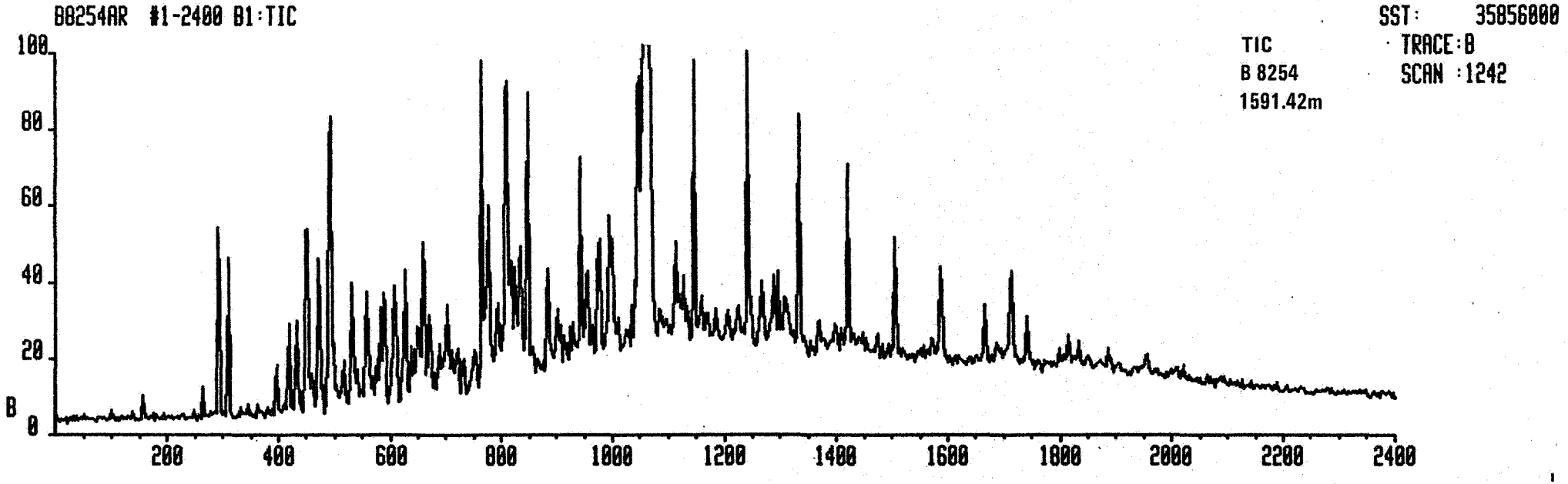
1600
1800
2000
2200
2400


B8254AR #1-2400 B1:TIC
SST: 35856000
TIC
B 8254
1591.42m
TRACE:B
SCAN :1242
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1600
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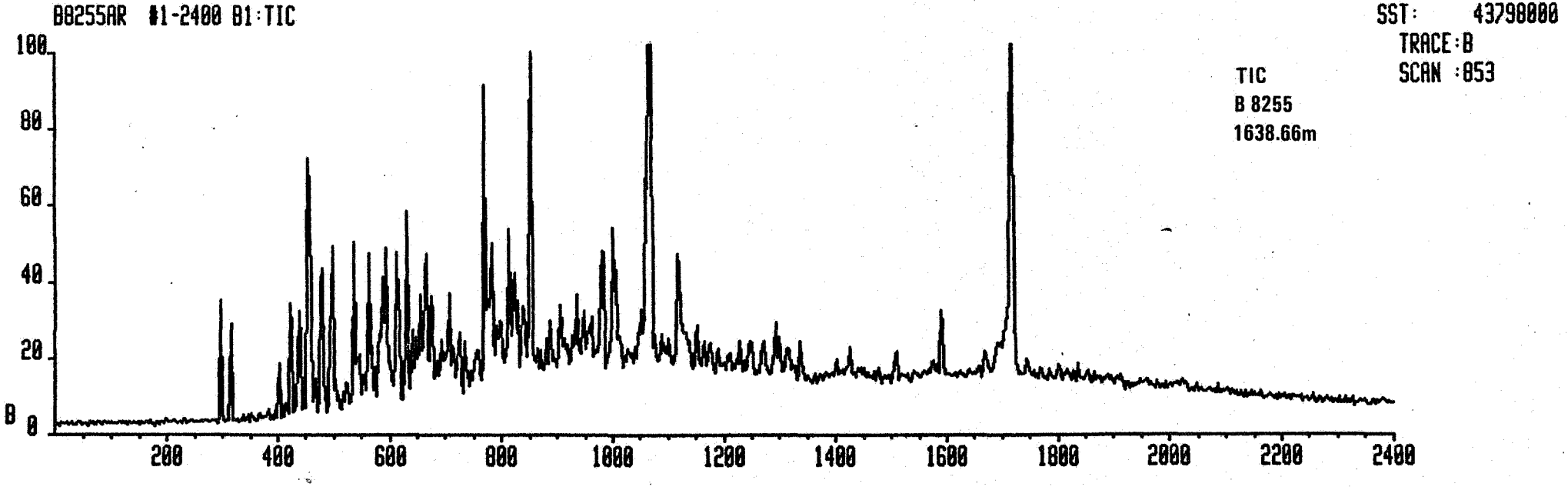
2200
2400


B8255AR #1-2400 B1:TIC
SST: 43798000
TRACE:B
SCAN :853
TIC
B 8255
1638.66m
100
80
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40
20
B 0
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1200
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1600
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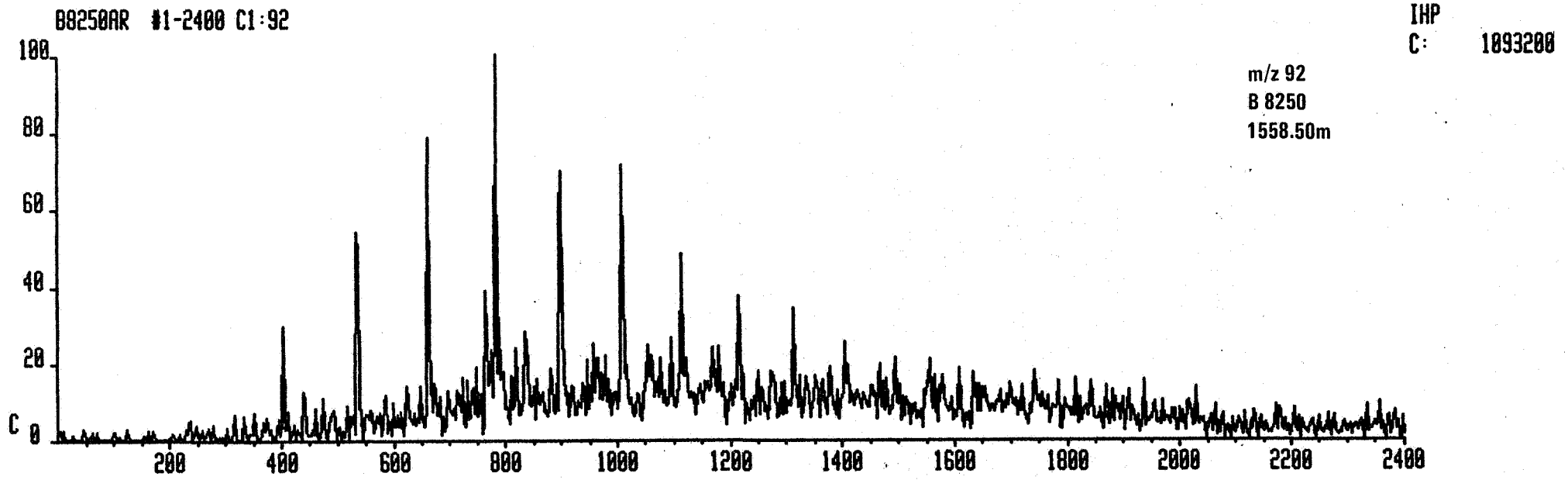
2200
2400


B8250AR #1-2400 C1:92
IHP
C: 1093200
m/z 92
B 8250
1558.50m
100
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40
20
C 0
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1200
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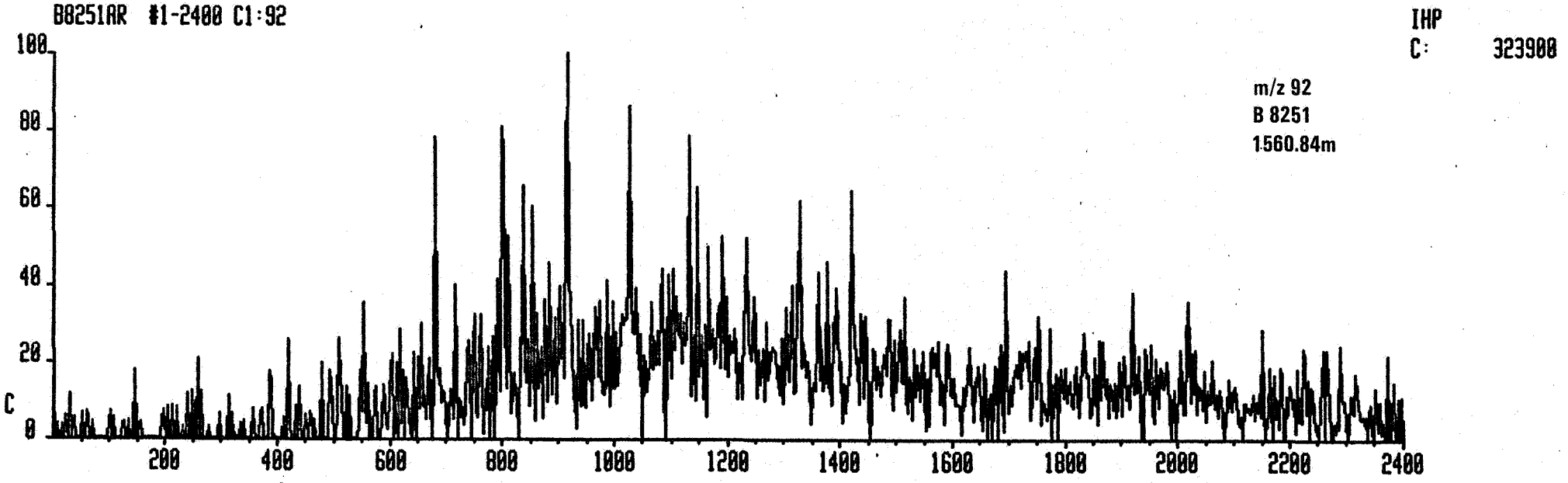
2200
2400


B8251AR #1-2400 C1:92
IHP
C: 323900
m/z 92
B 8251
1560.84m
100
80
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40
20
C 0
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1000
1200
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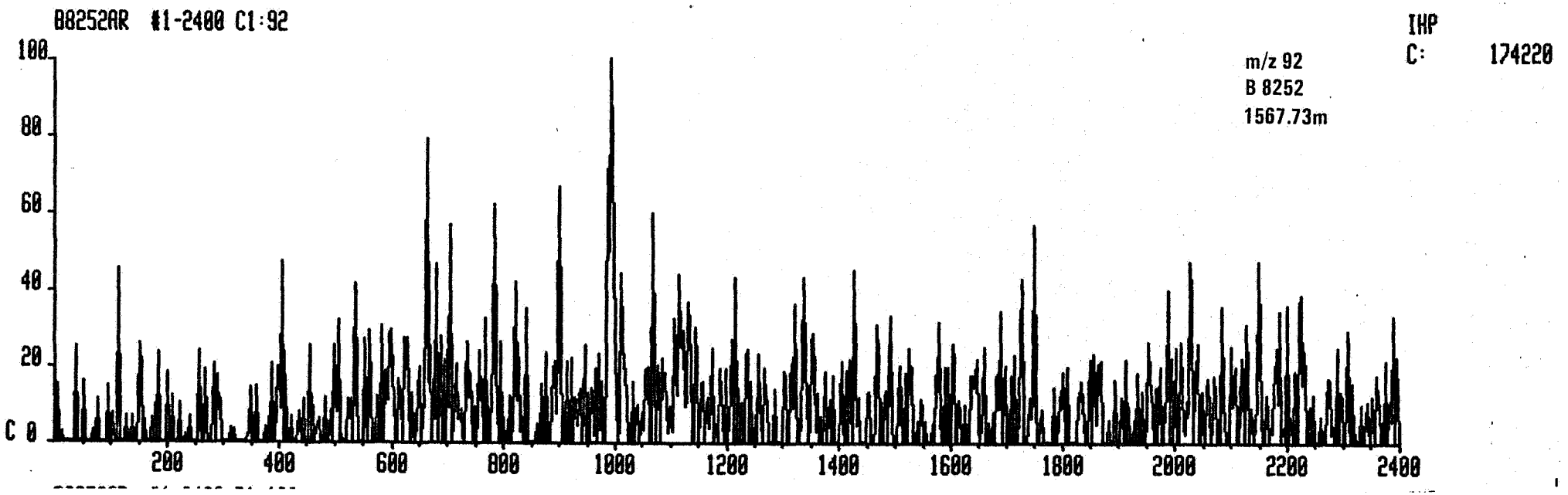
2200
2400


B8252AR #1-2400 C1:92
IHP
C: 174220
m/z 92
B 8252
1567.73m
100
80
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40
20
C 0
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400
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800
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1200
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1600
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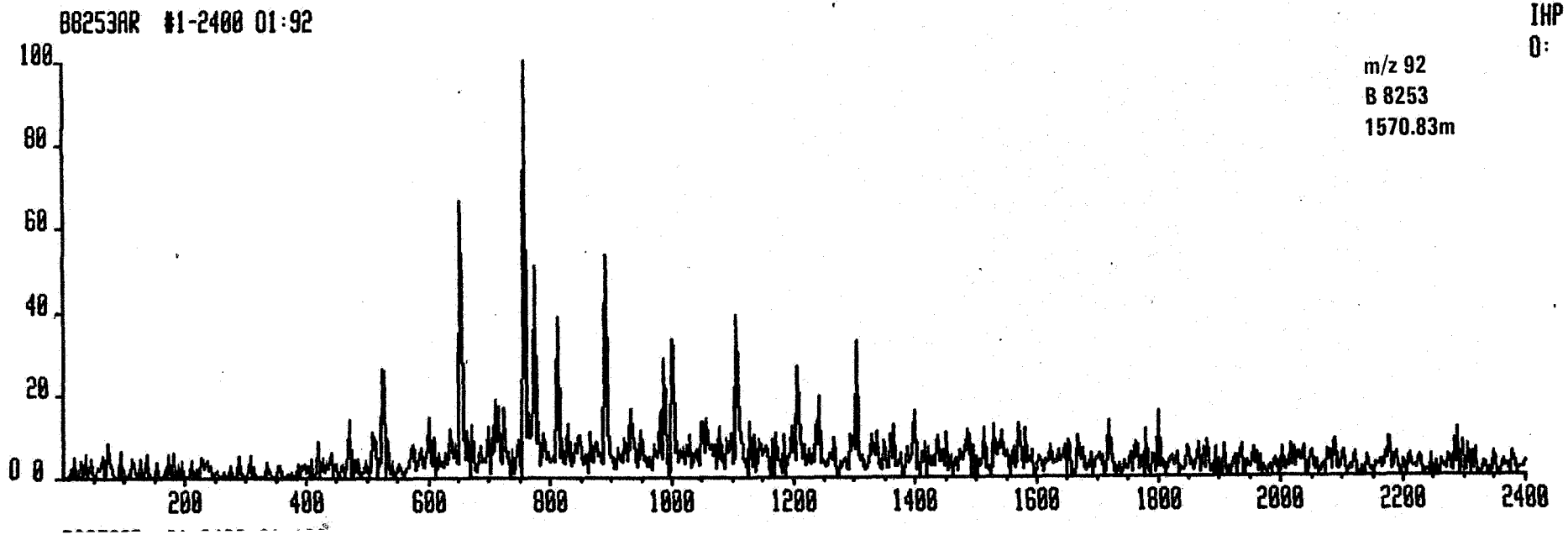
2200
2400


B8253AR #1-2400 O1:92
IHP
O: 816000
m/z 92
B 8253
1570.83m
100
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O 0
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1200
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1600
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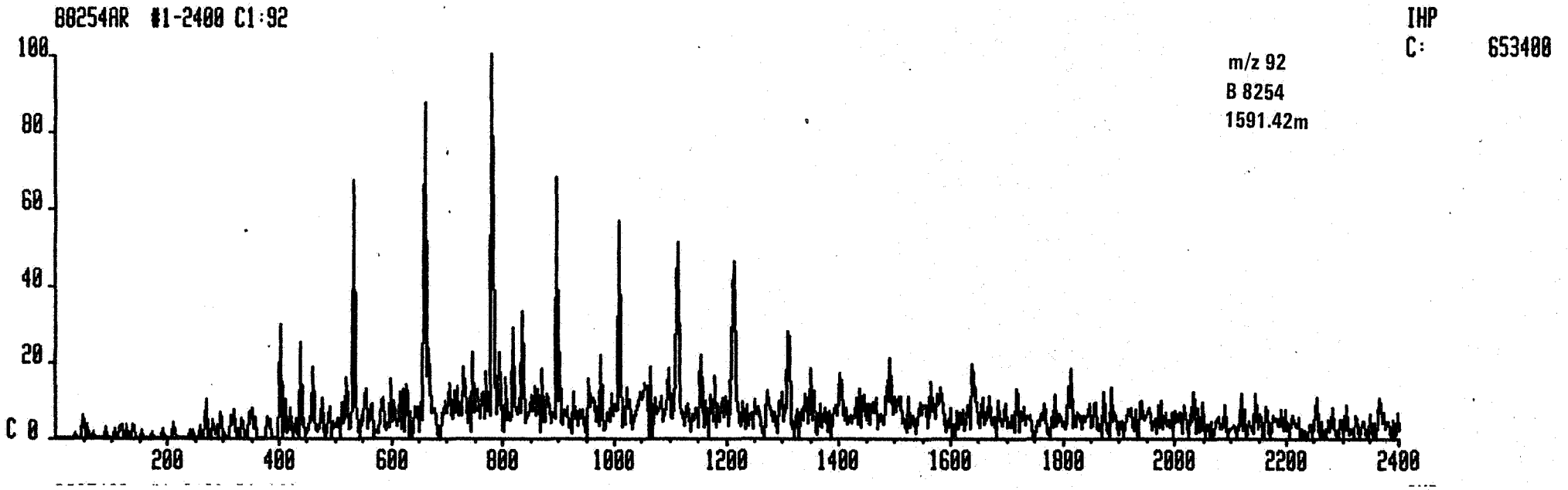
2200
2400


B8254AR #1-2400 C1:92
IHP
C: 653400
m/z 92
B 8254
1591.42m
100
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40
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C 0
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400
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1000
1200
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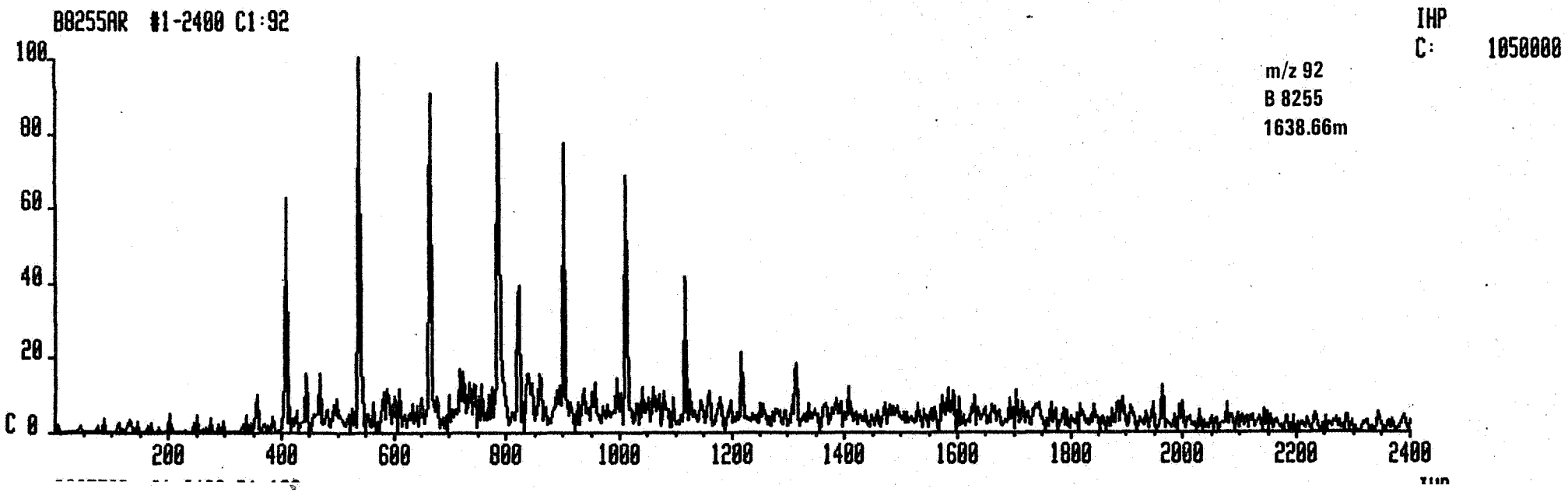
2200
2400


B8255AR #1-2400 C1:92
IHP
C: 1050000
m/z 92
B 8255
1638.66m
100
80
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C 0
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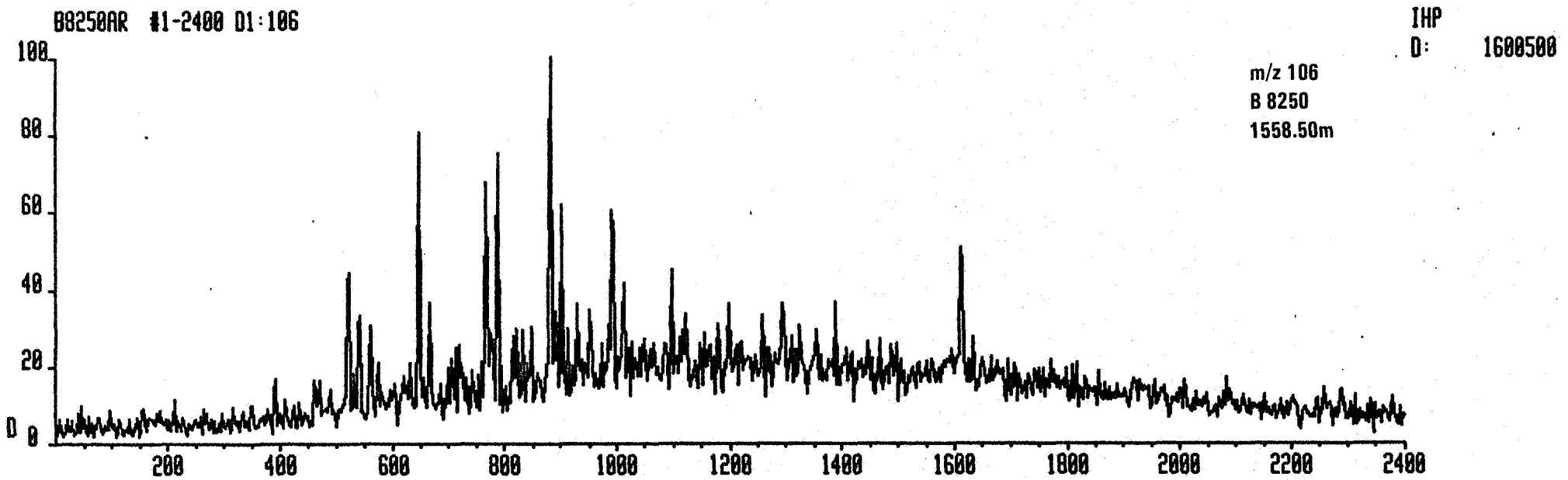
2200
2400


B8250AR #1-2400 D1:106
IHP
D: 1600500
m/z 106
B 8250
1558.50m
100
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D 0
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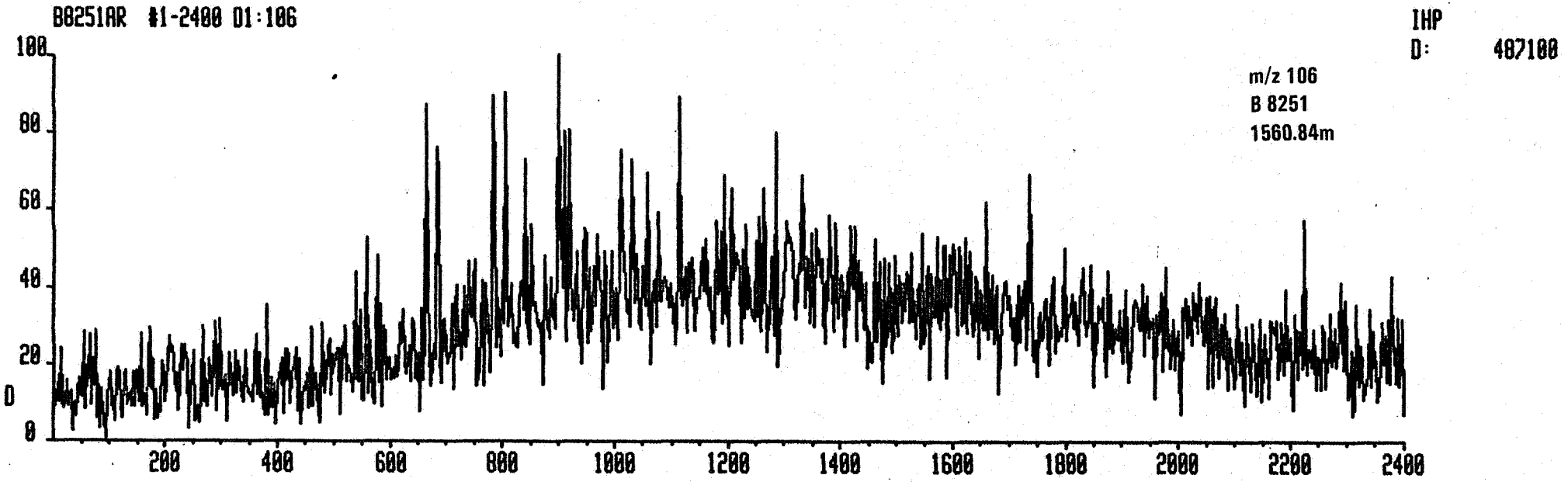
2200
2400


B8251AR #1-2400 D1:106
IHP
D: 487100
m/z 106
B 8251
1560.84m
100
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D
0
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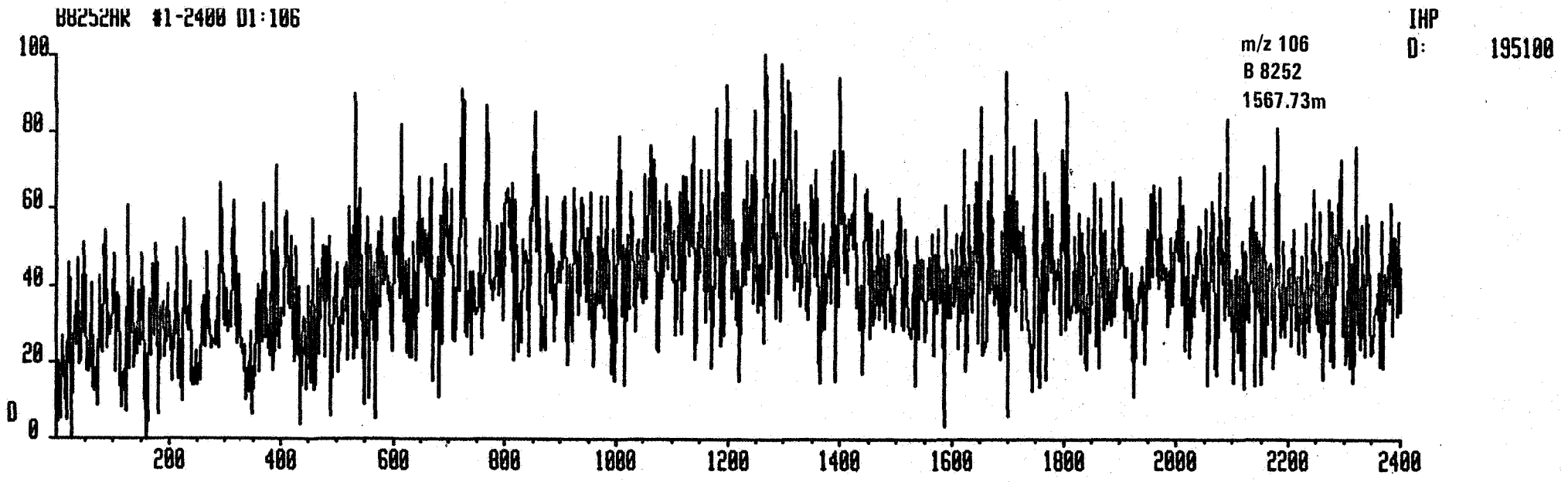
2200
2400


B8252HK #1-2400 D1:106
IHP
D: 195100
m/z 106
B 8252
1567.73m
100
80
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D 0
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400
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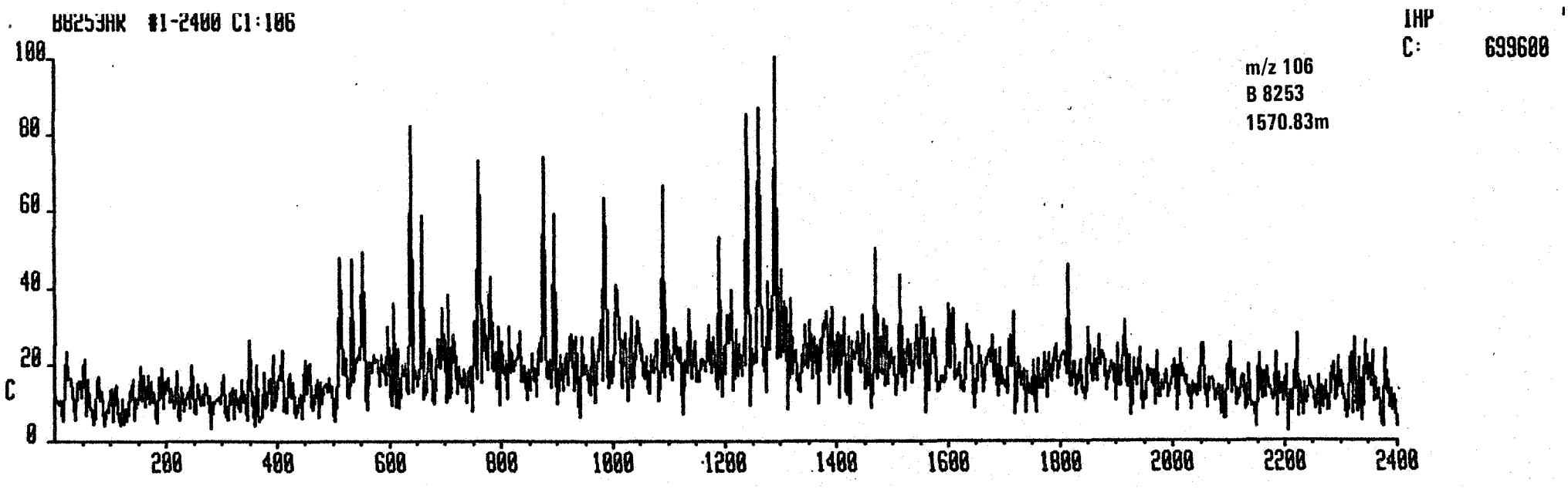
1000
1200
1400
1600
1800
2000
2200
2400


B8253HK #1-2400 C1:106
IHP
C: 699600
m/z 106
B 8253
1570.83m
100
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60
40
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C 0
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1000
1200
1400
1600
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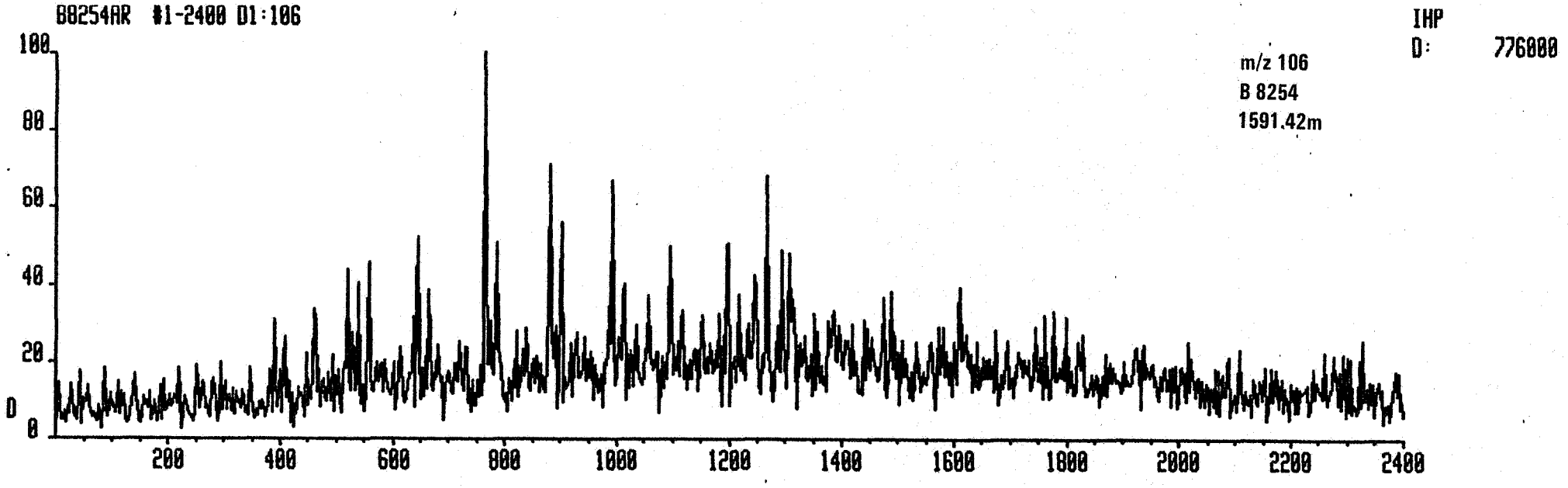
2000
2200
2400


B8254AR #1-2400 D1:106
IHP
D: 776000
m/z 106
B 8254
1591.42m
100
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D 0
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1000
1200
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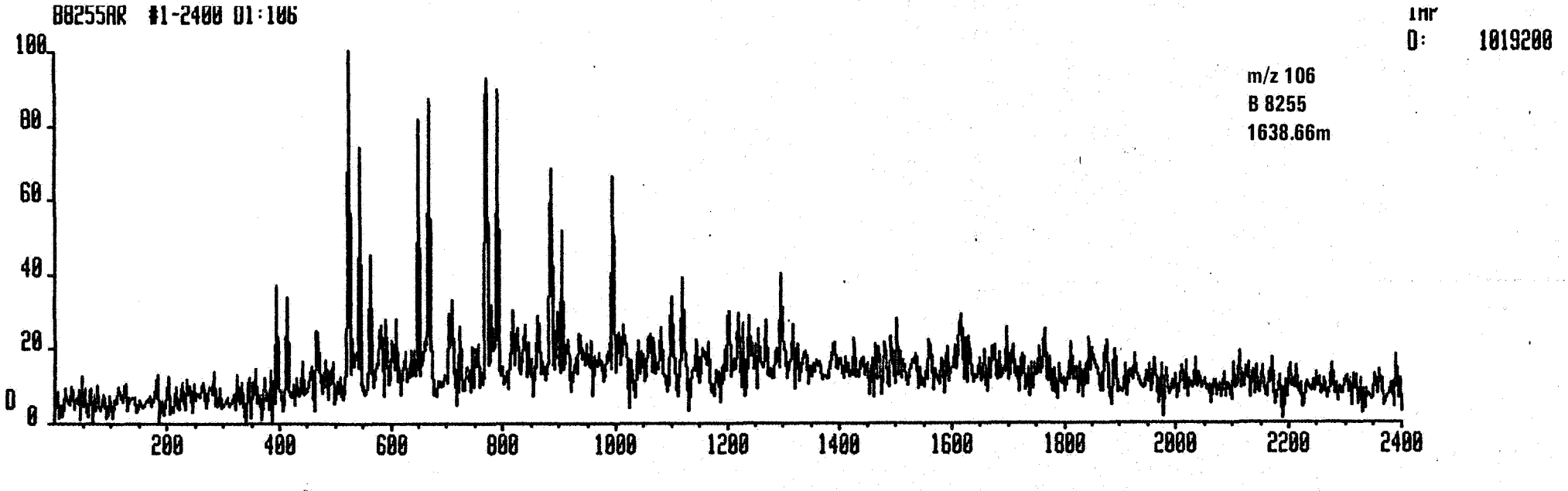
1600
1800
2000
2200
2400


B8255AR #1-2400 D1:106
IHP
D: 1019200
m/z 106
B 8255
1638.66m
100
80
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D 0
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1200
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1600
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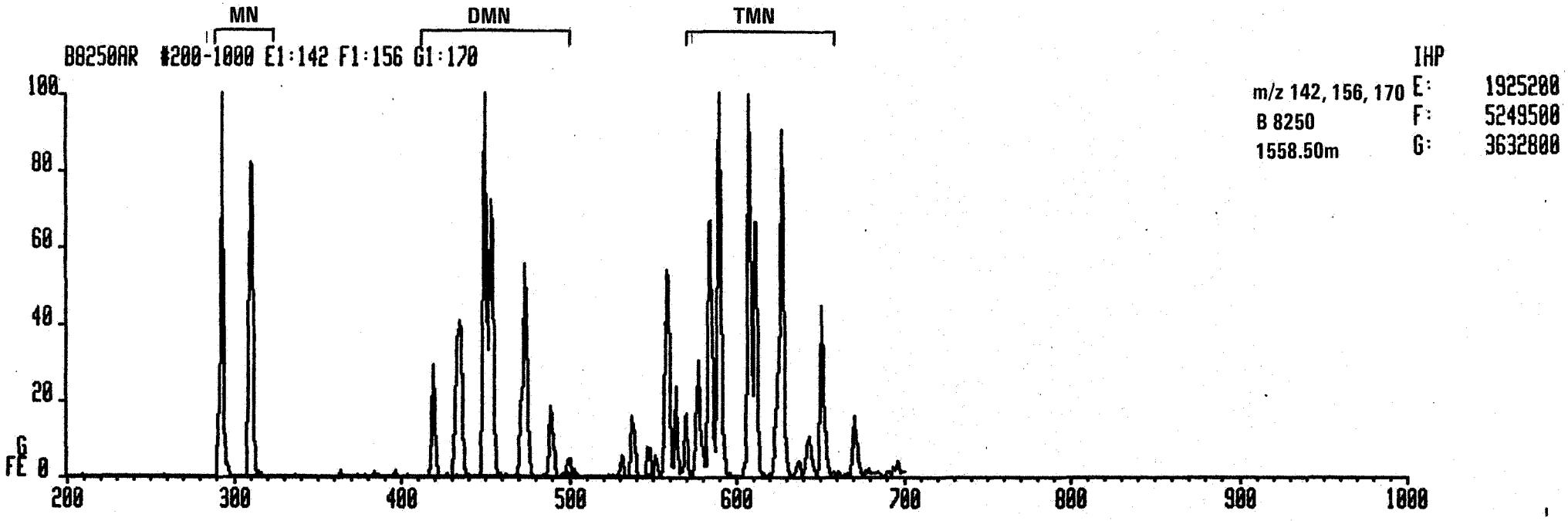
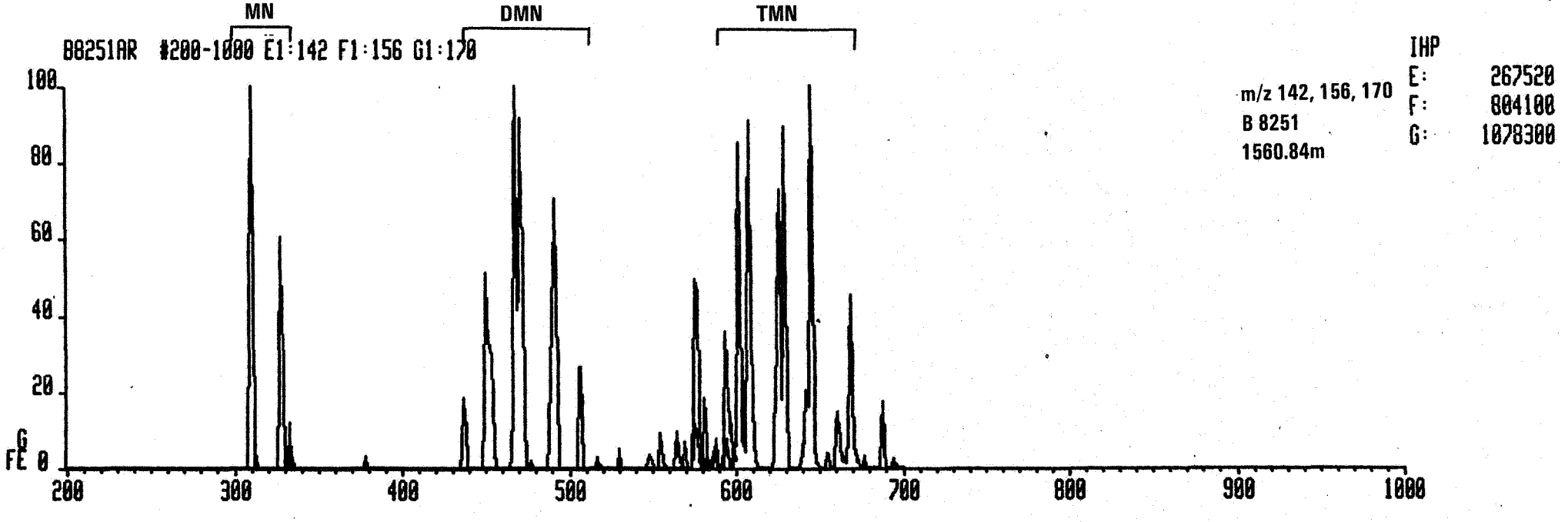
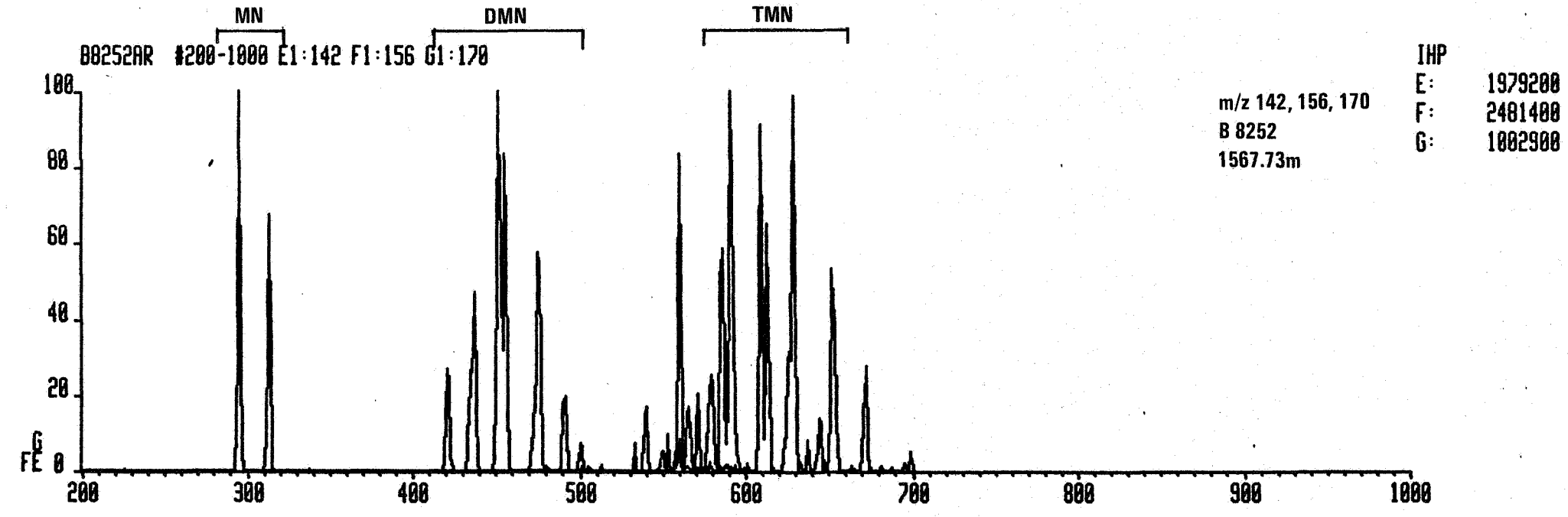
2200
2400


MN
DMN
TMN
B8250AR #200-1000 E1:142 F1:156 G1:170
100
80
60
40
20
0
G
FE
200
300
400
500
600
700
800
900
1000
m/z 142, 156, 170
B 8250
1558.50m
IHP
E: 1925200
F: 5249500
G: 3632800


MN
DMN
TMN
B8251AR #200-1000 E1:142 F1:156 G1:170
100
80
60
40
20
0
G
FE
200
300
400
500
600
700
800
900
1000
m/z 142, 156, 170
B 8251
1560.84m
IHP
E: 267520
F: 804100
G: 1078300


MN
DMN
TMN
B8252AR #200-1000 E1:142 F1:156 G1:170
100
80
60
40
20
G
FE 0
200
300
400
500
600
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m/z 142, 156, 170
B 8252
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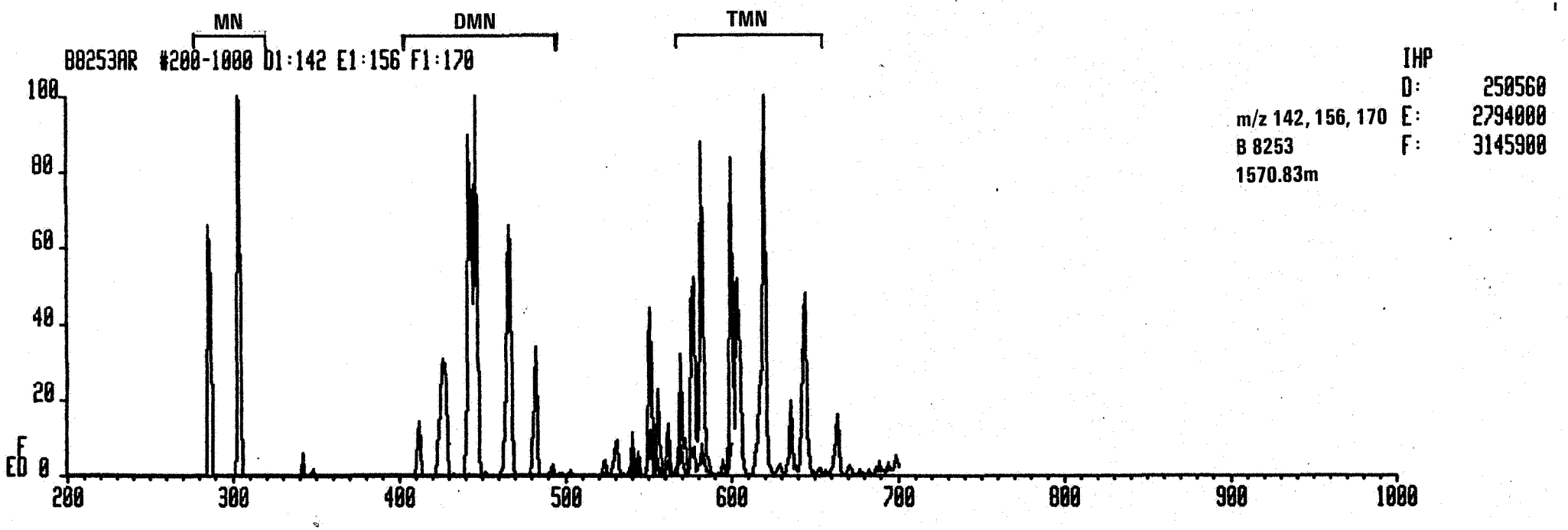
IHP
E: 1979200
F: 2481400
G: 1002900


MN
DMN
TMN
B8253AR #200-1000 D1:142 E1:156 F1:170
100
80
60
40
20
F
ED 0
200
300
400
500
600
700
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900
1000
m/z 142, 156, 170
B 8253
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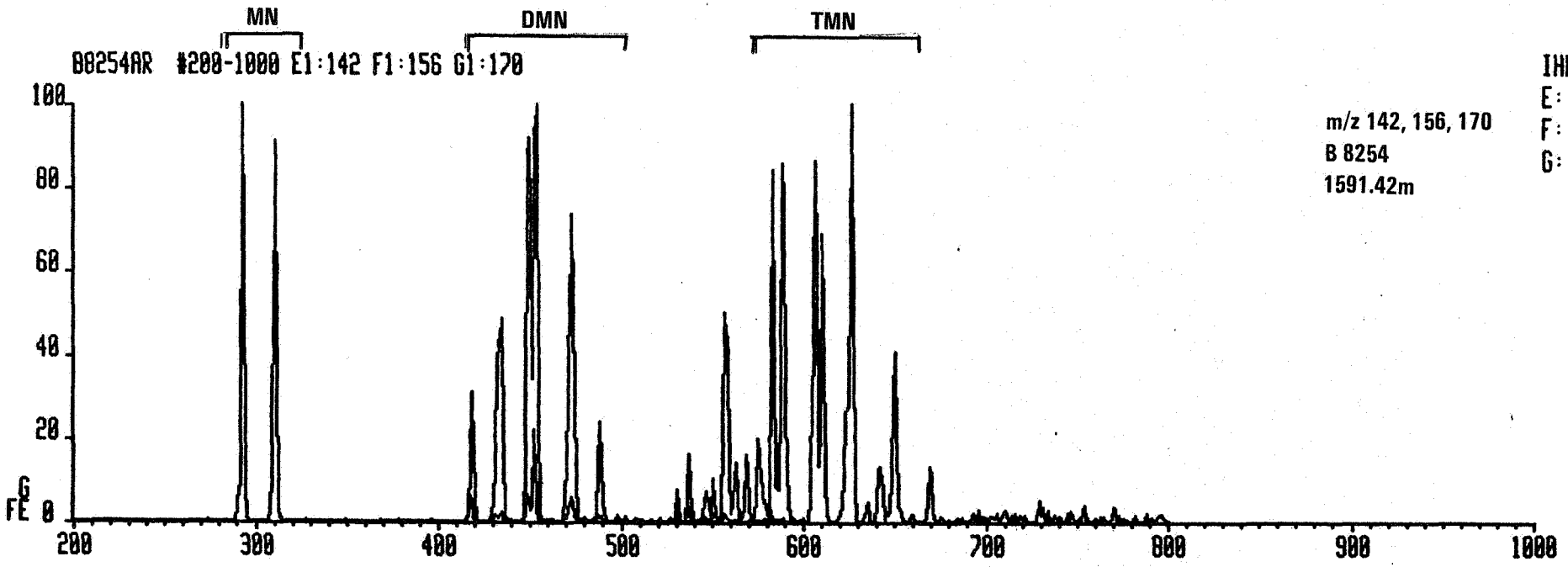
IHP
D: 250560
E: 2794000
F: 3145900


MN
DMN
TMN
88254AR #200-1000 E1:142 F1:156 G1:170
100
80
60
40
20
0
G
FE
200
300
400
500
600
700
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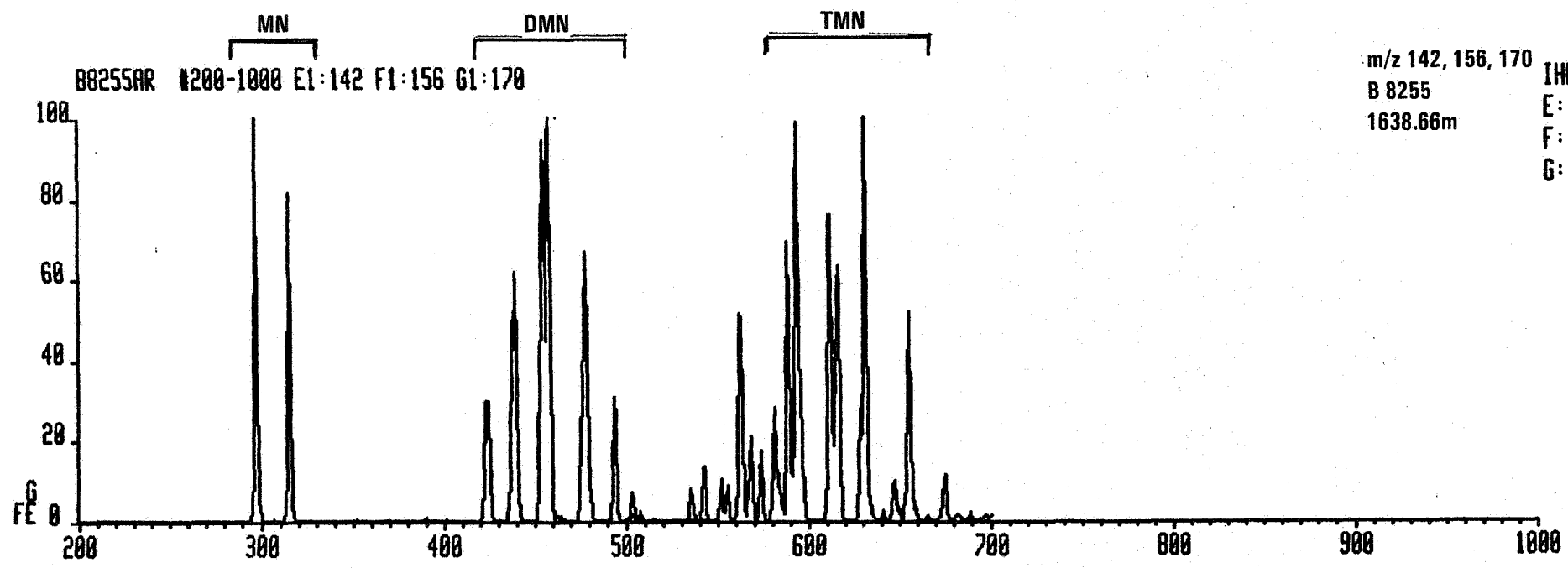
1000
m/z 142, 156, 170
B 8254
1591.42m
IHP
E: 6017900
F: 5101800
G: 3233400


MN
DMN
TMN
88255AR #200-1000 E1:142 F1:156 G1:170
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80
60
40
20
0
G
FE
200
300
400
500
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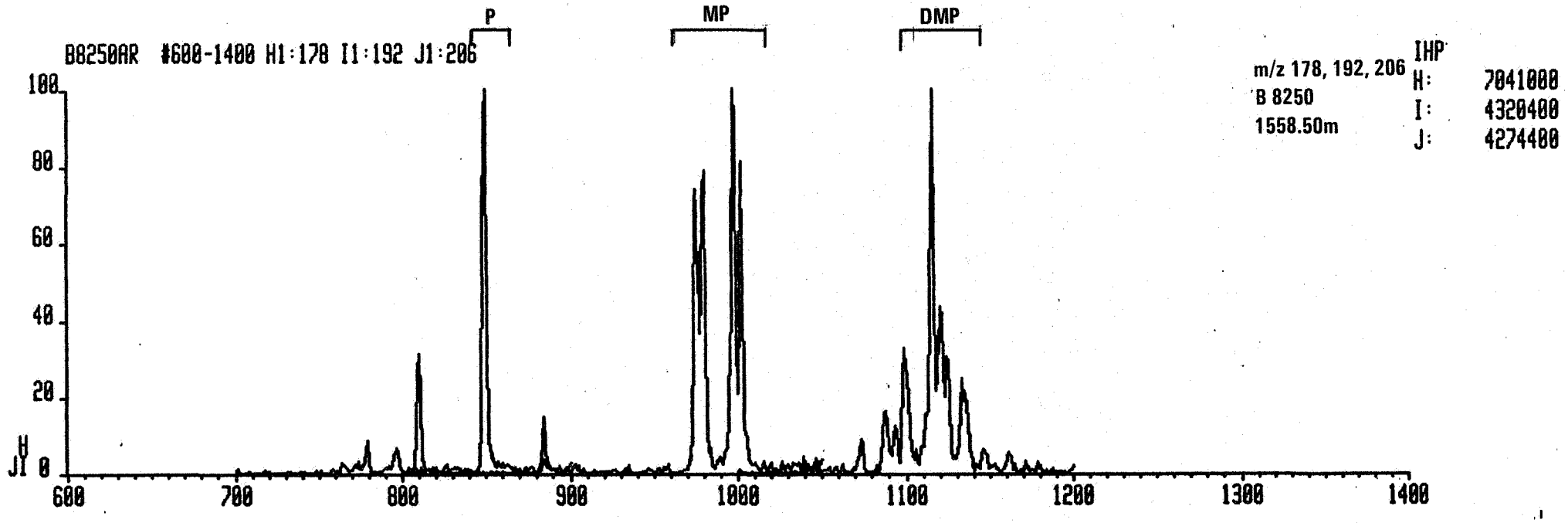
1000
m/z 142, 156, 170
B 8255
1638.66m
IHP
E: 5030300
F: 6935000
G: 5265000


P
MP
DMP
B8250AR #600-1400 H1:178 I1:192 J1:206
m/z 178, 192, 206
B 8250
1558.50m
IHP
H: 7041000
I: 4320400
J: 4274400
100
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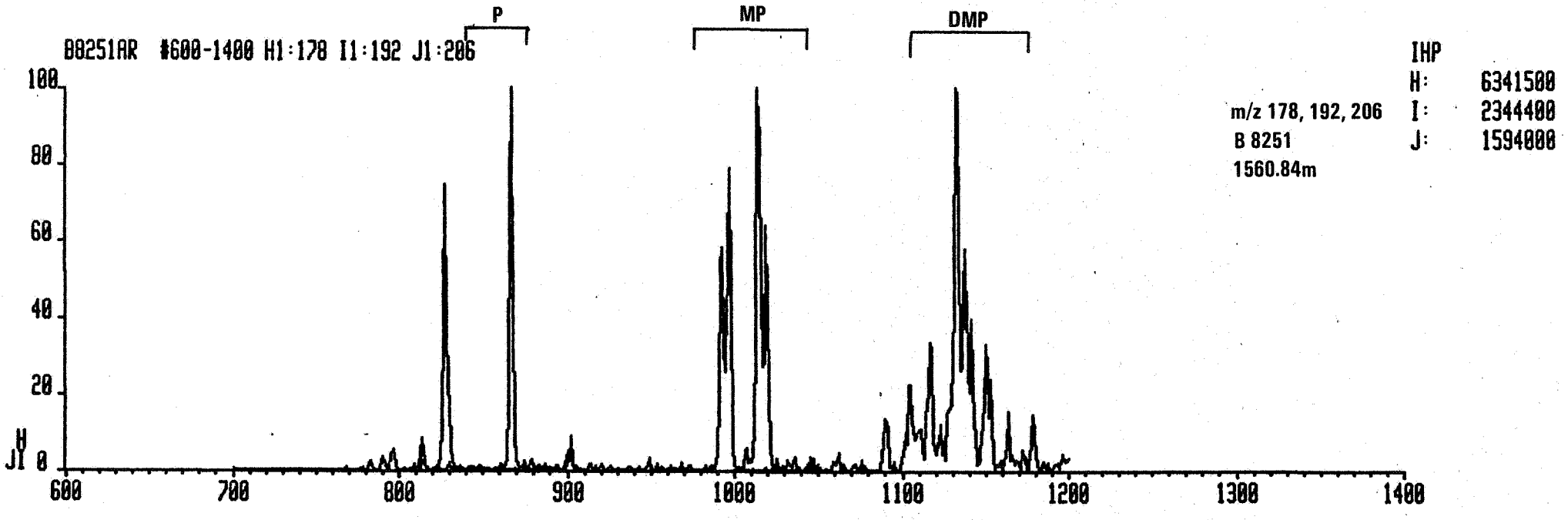
1300
1400


P
MP
DMP
B8251AR #600-1400 H1:178 I1:192 J1:206
m/z 178, 192, 206
B 8251
1560.84m
IHP
H: 6341500
I: 2344400
J: 1594000
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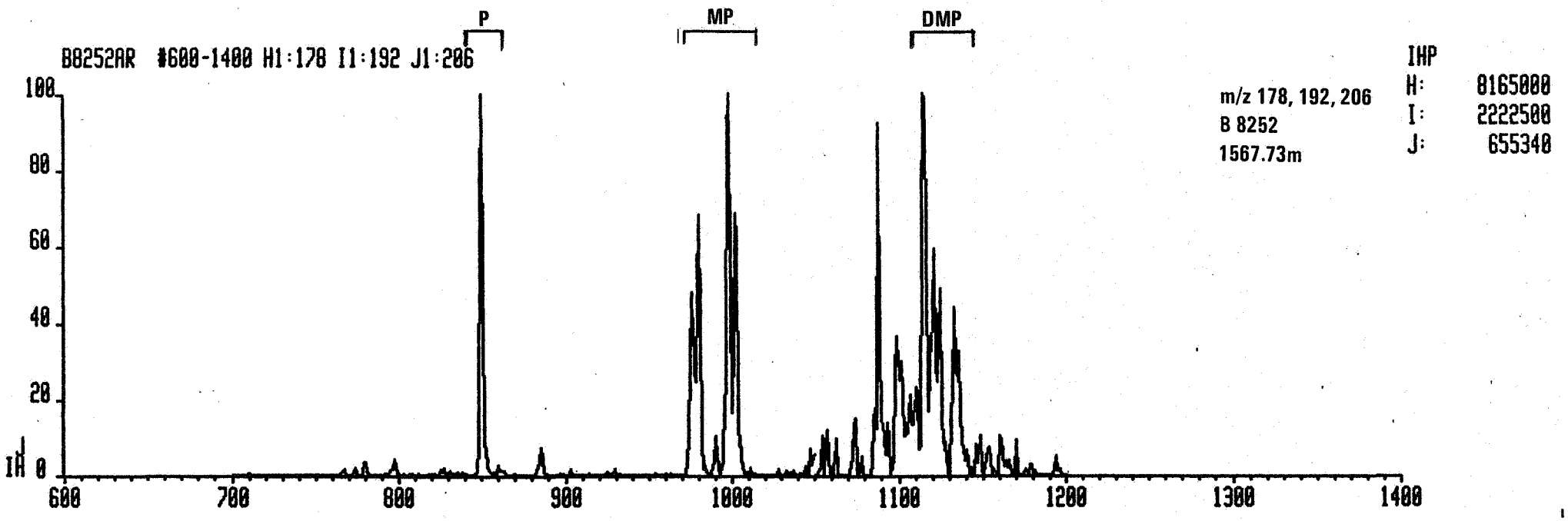
1400


P
MP
DMP
B8252AR #600-1400 H1:178 I1:192 J1:206
m/z 178, 192, 206
B 8252
1567.73m
IHP
H: 8165000
I: 2222500
J: 655340
IH
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800
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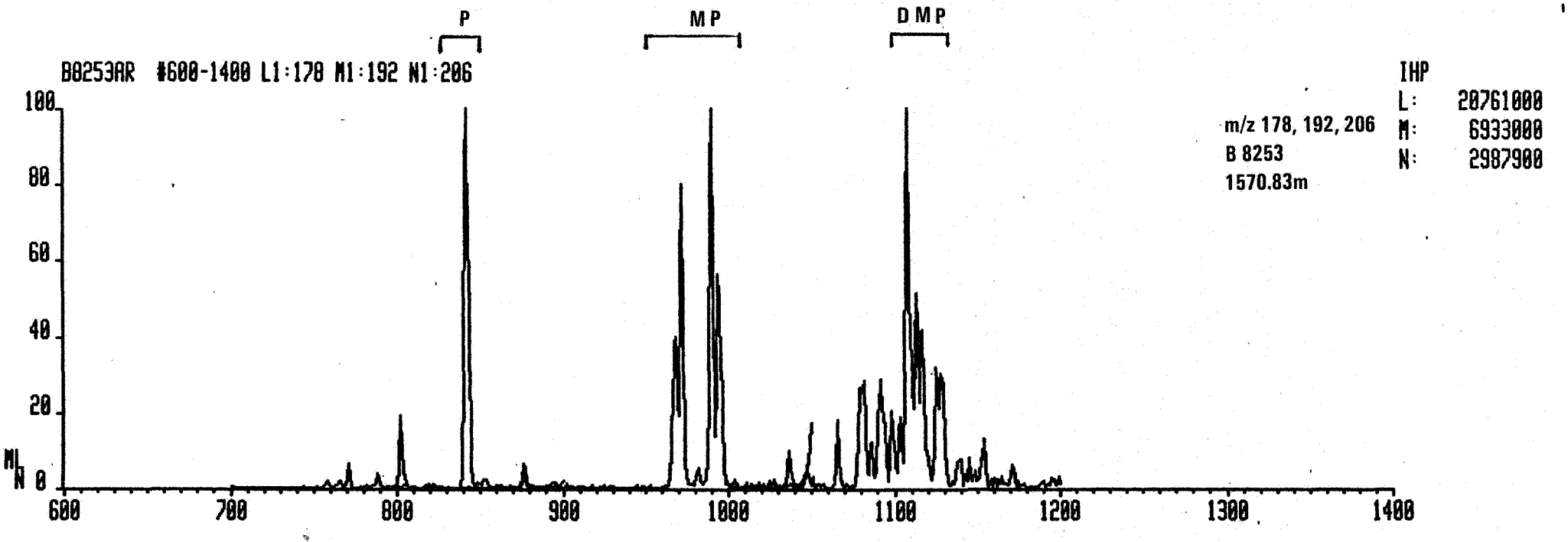
P
MP
DMP
B8253AR #600-1400 L1:178 M1:192 N1:206
m/z 178, 192, 206
B 8253
1570.83m
IHP
L: 20761000
M: 6933000
N: 2987900
ML
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100
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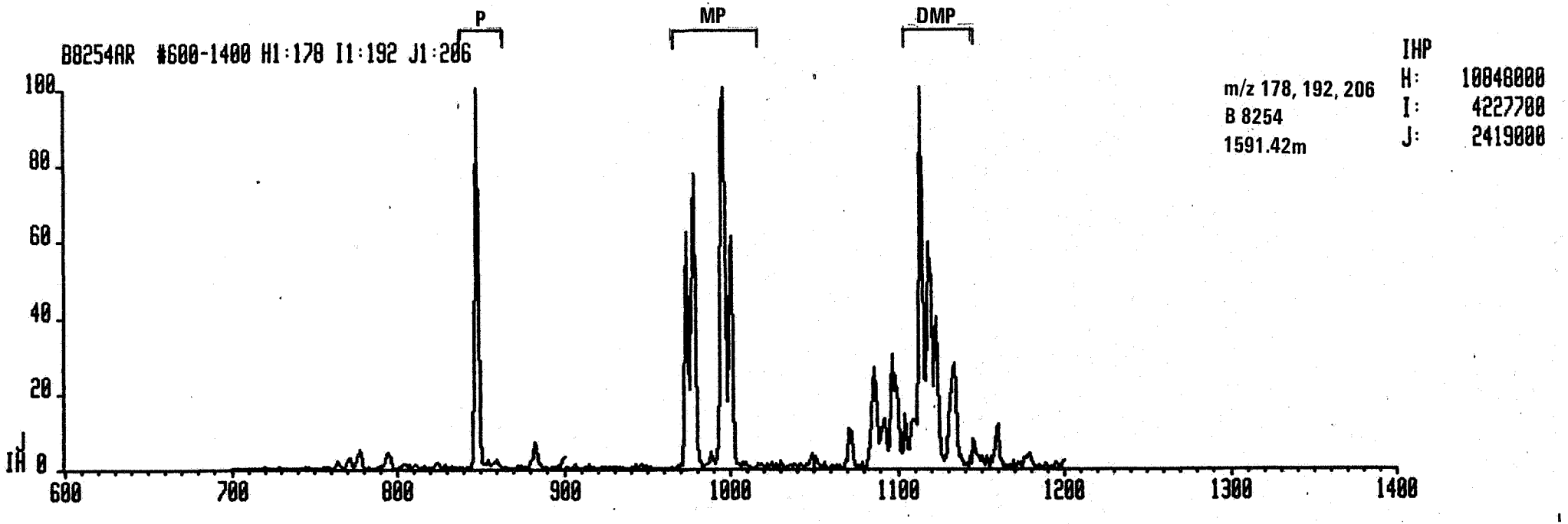
1300
1400


P
MP
DMP
B8254AR #600-1400 H1:178 I1:192 J1:206
m/z 178, 192, 206
B 8254
1591.42m
IHP
H: 10048000
I: 4227700
J: 2419000
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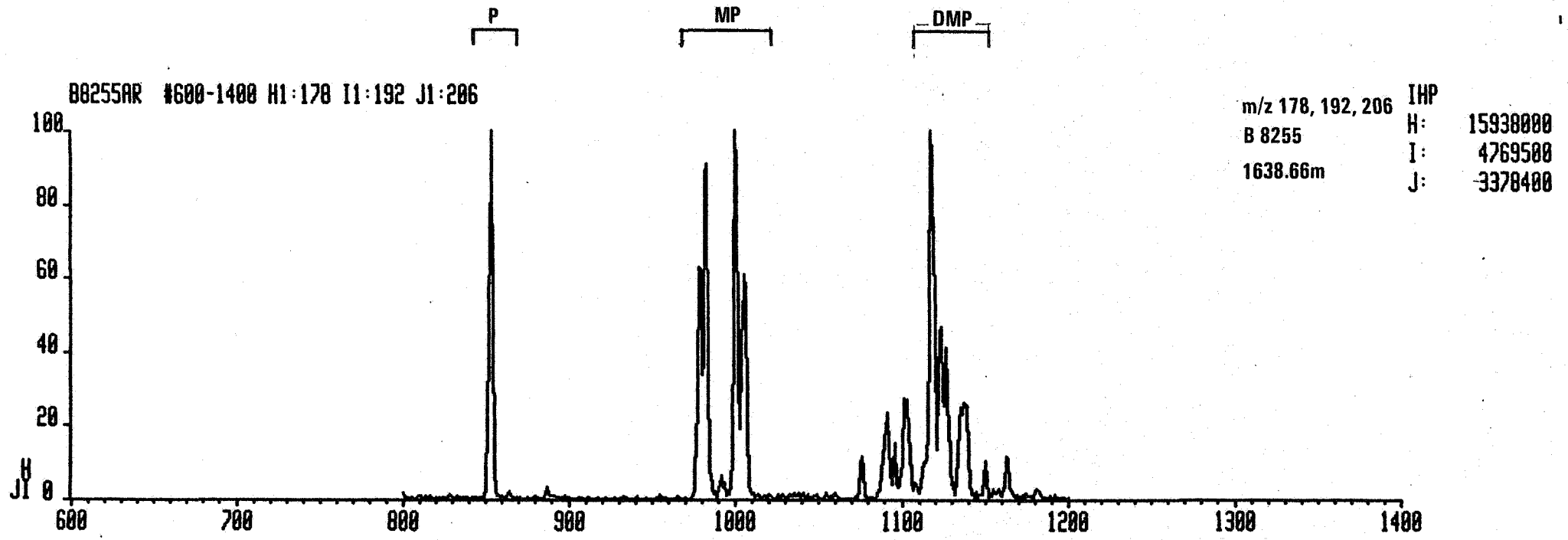
1400


P
MP
DMP
B8255AR #600-1400 H1:178 I1:192 J1:206
m/z 178, 192, 206
B 8255
1638.66m
IHP
H: 15938000
I: 4769500
J: 3378400
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IH 0
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800
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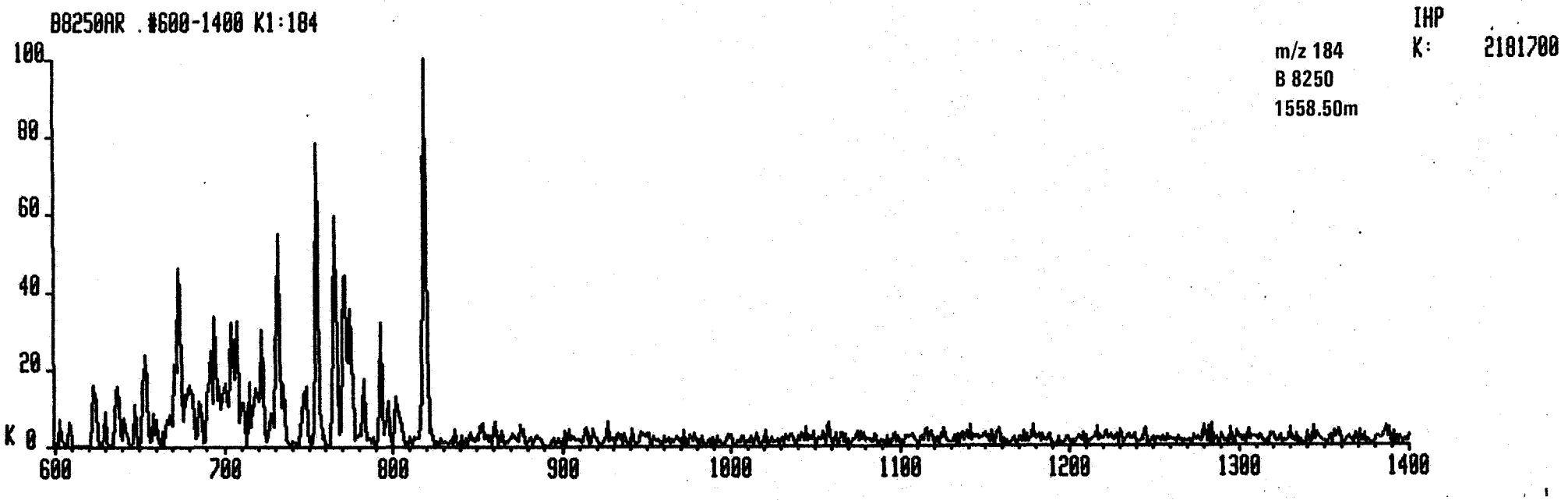
1300
1400


B8250AR .#600-1400 K1:184
IHP
K: 2181700
m/z 184
B 8250
1558.50m
100
80
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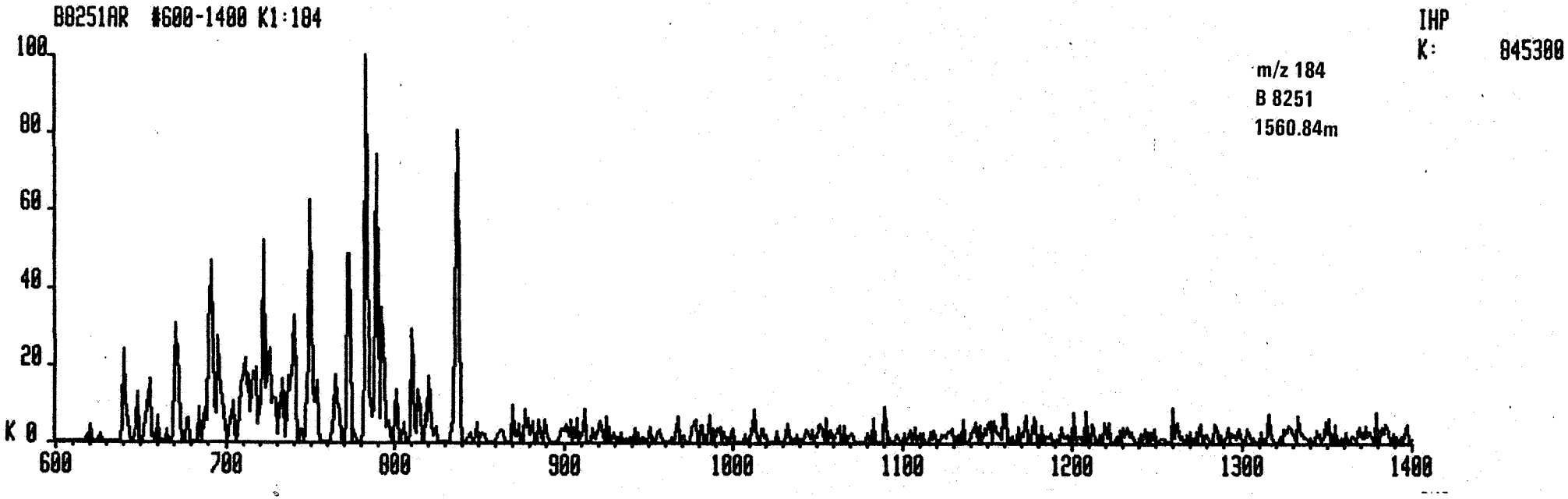
B8251AR #600-1400 K1:184
IHP
K: 845300
m/z 184
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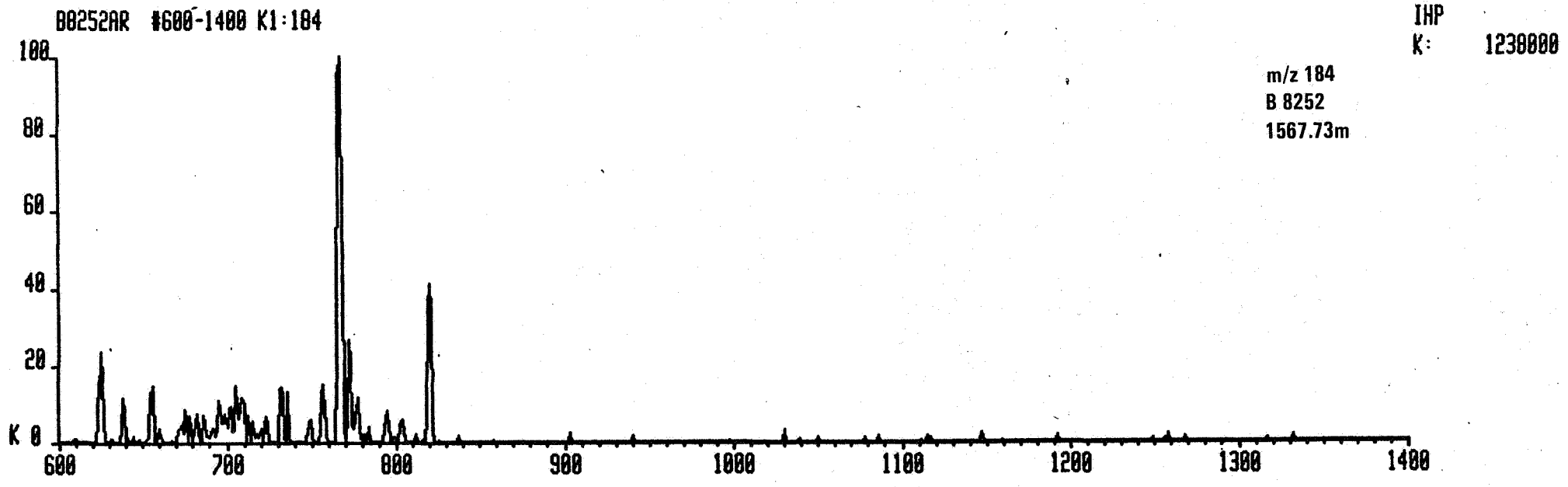
B0252AR #600-1400 K1:184
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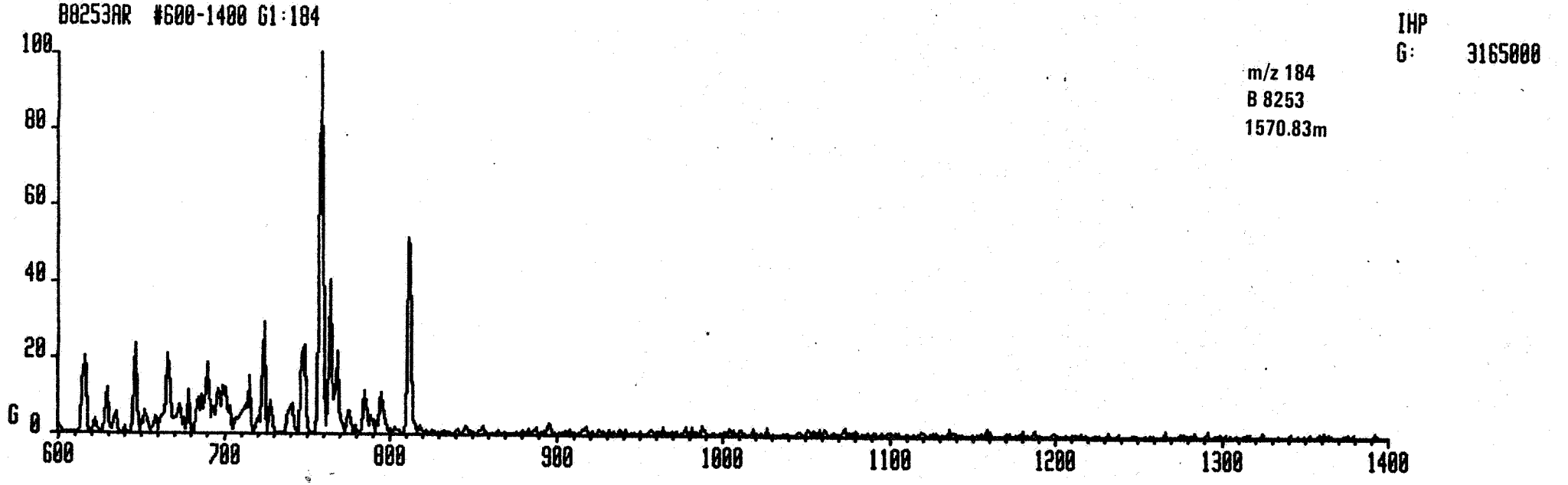
B0253AR #600-1400 G1:184
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G: 3165000
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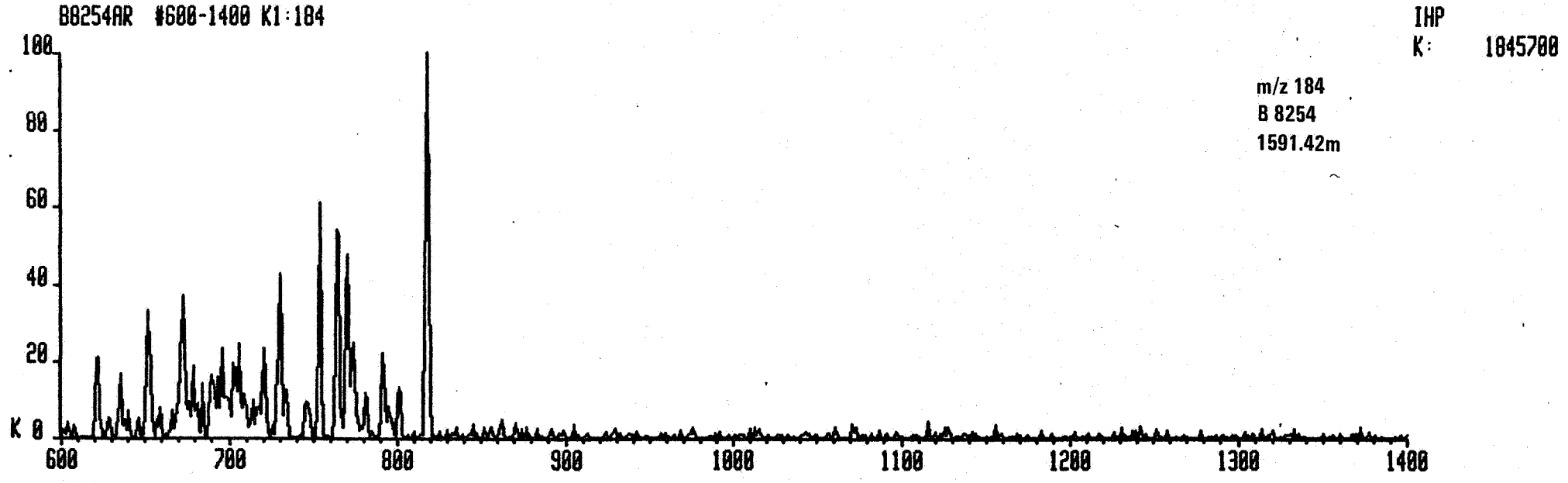
B8254AR #600-1400 K1:184
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K: 1845700
m/z 184
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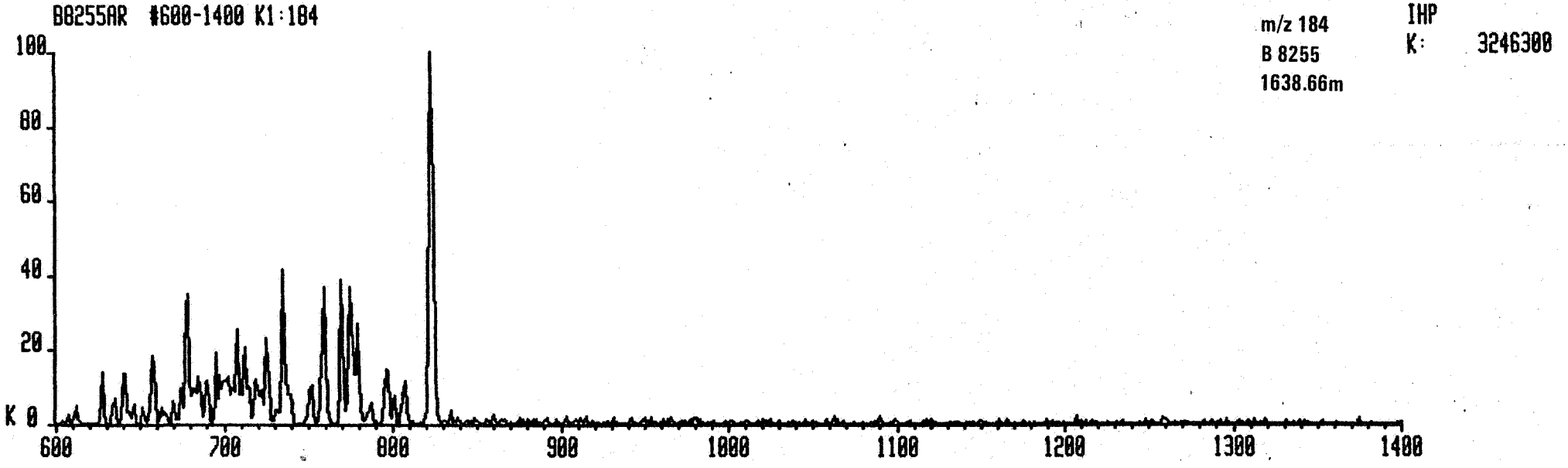
B8255AR #600-1400 K1:184
m/z 184
B 8255
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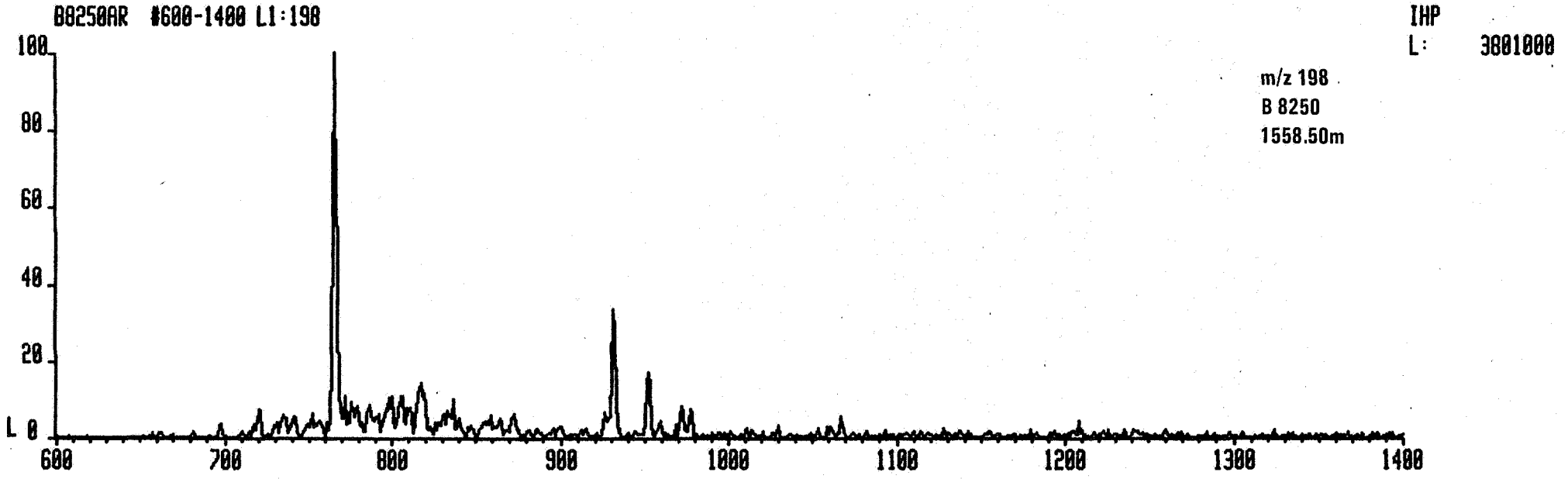
B8250AR #600-1400 L1:198
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B 8250
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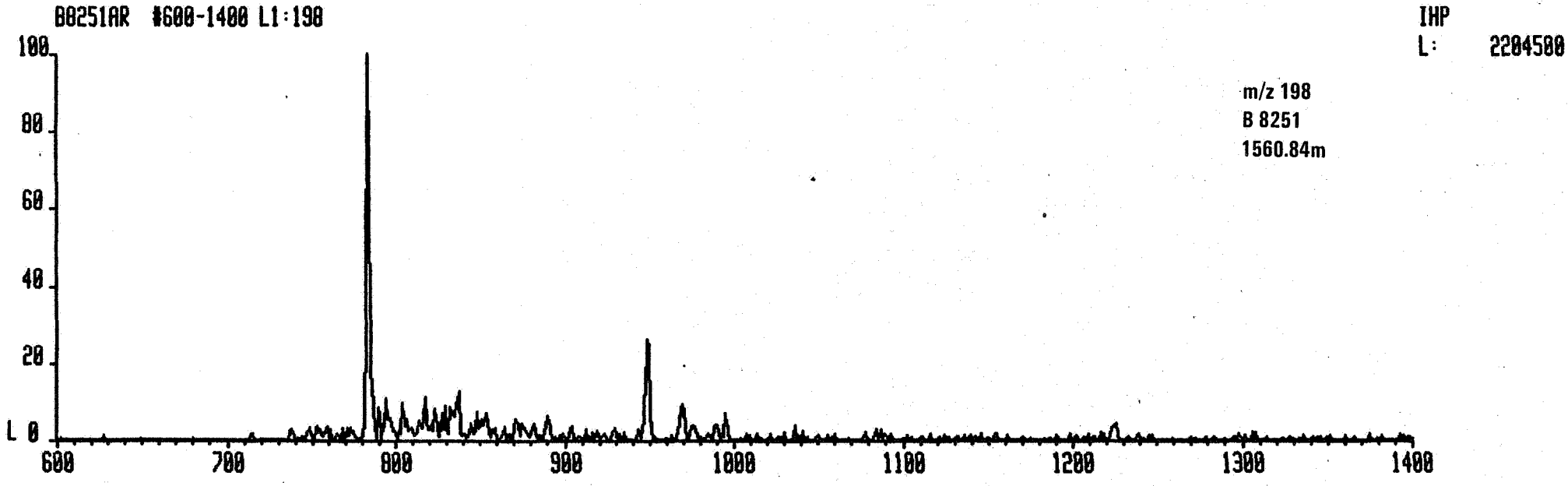
B8251AR #600-1400 L1:198
IHP
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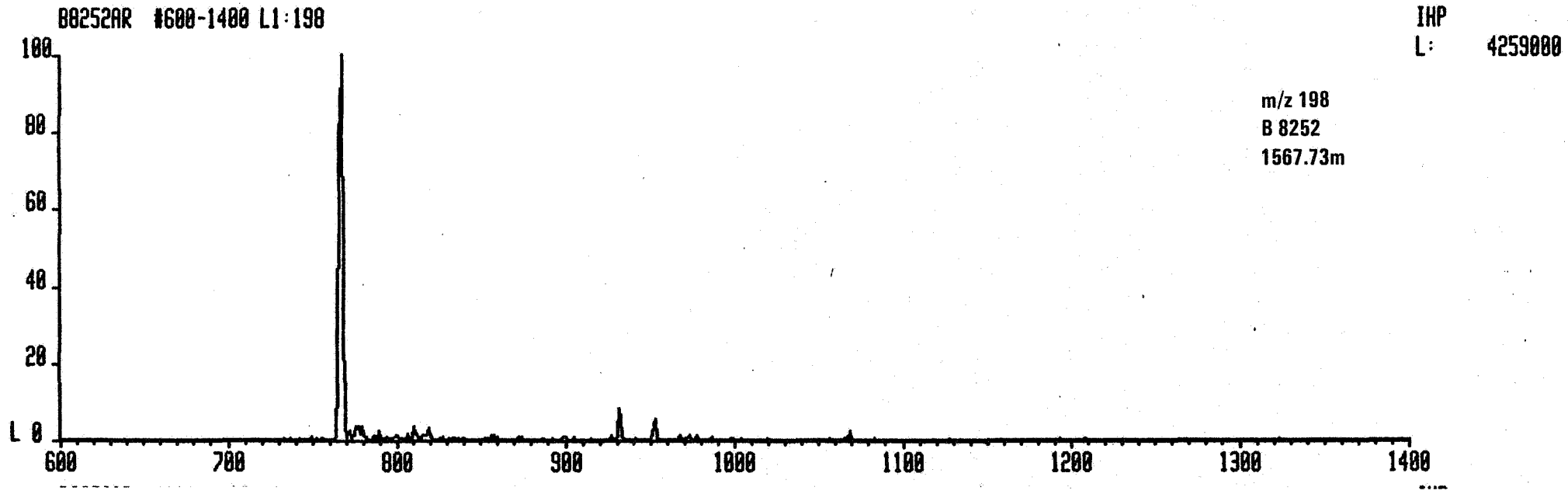
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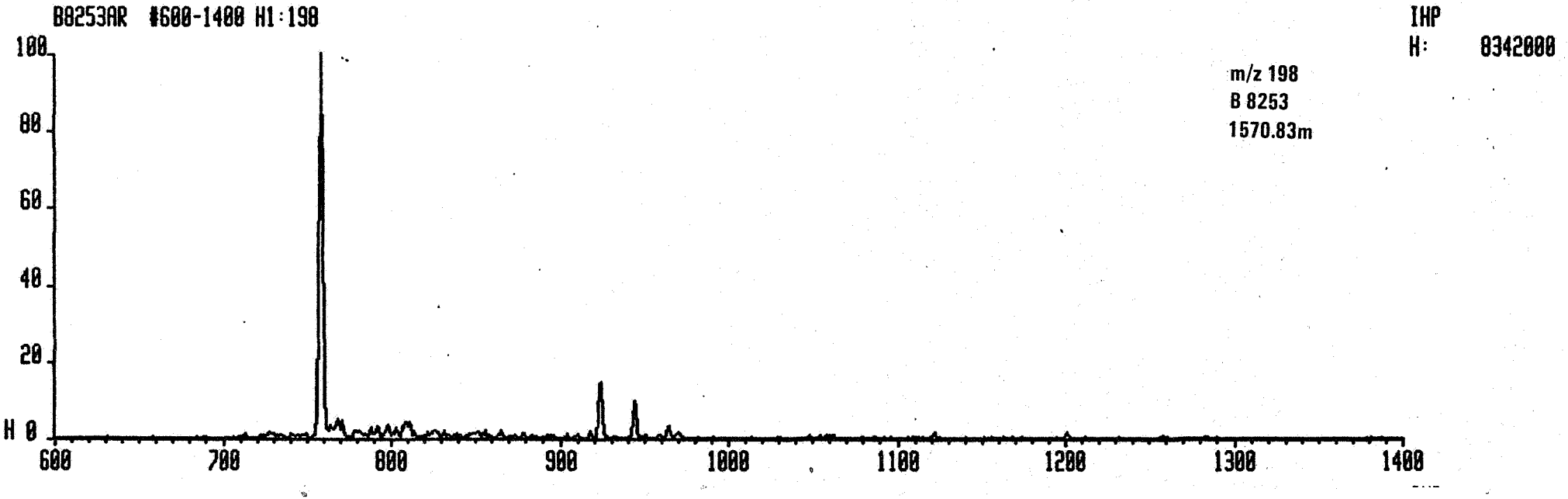
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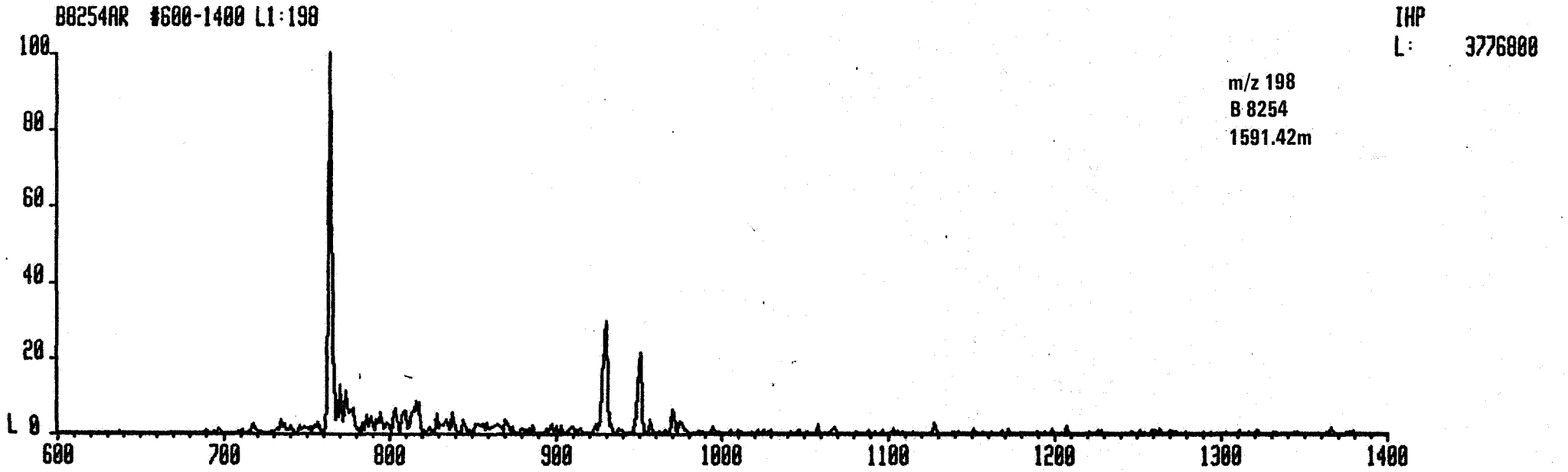
B8254AR #600-1400 L1:198
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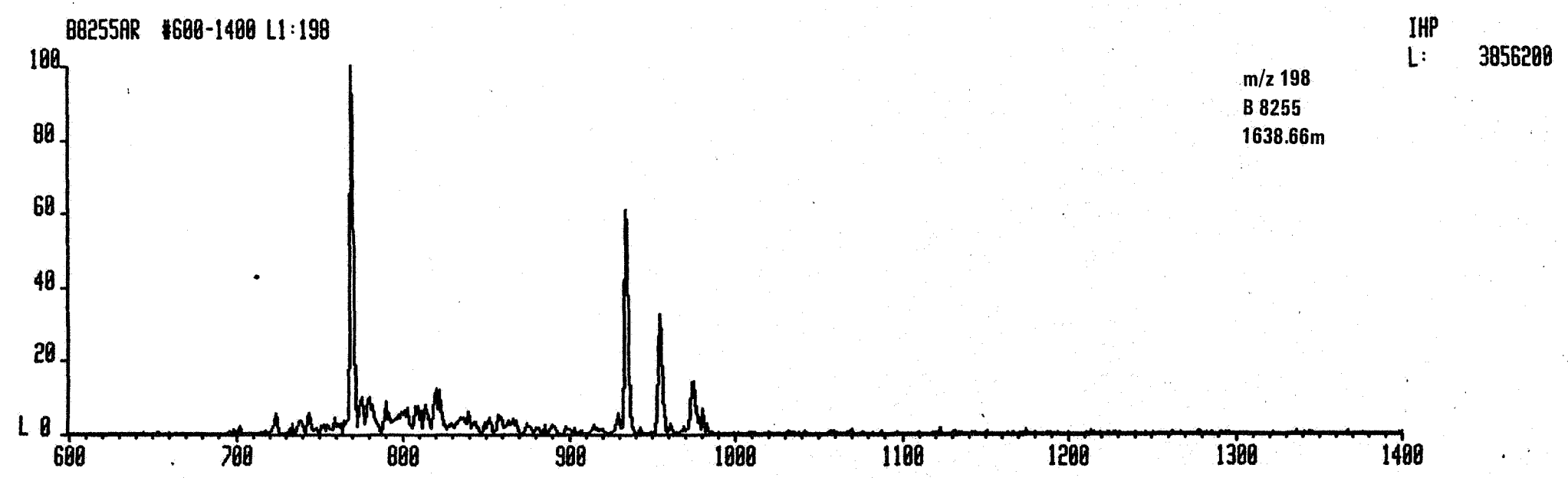
B8255AR #600-1400 L1:198
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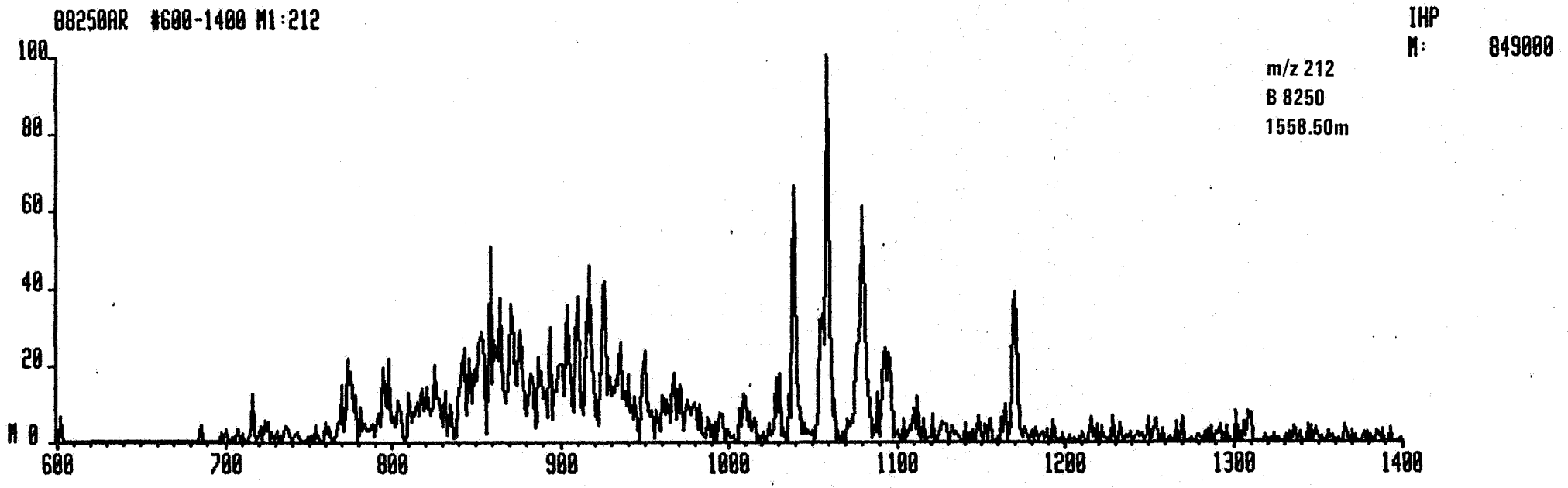
B8250AR #600-1400 M1:212
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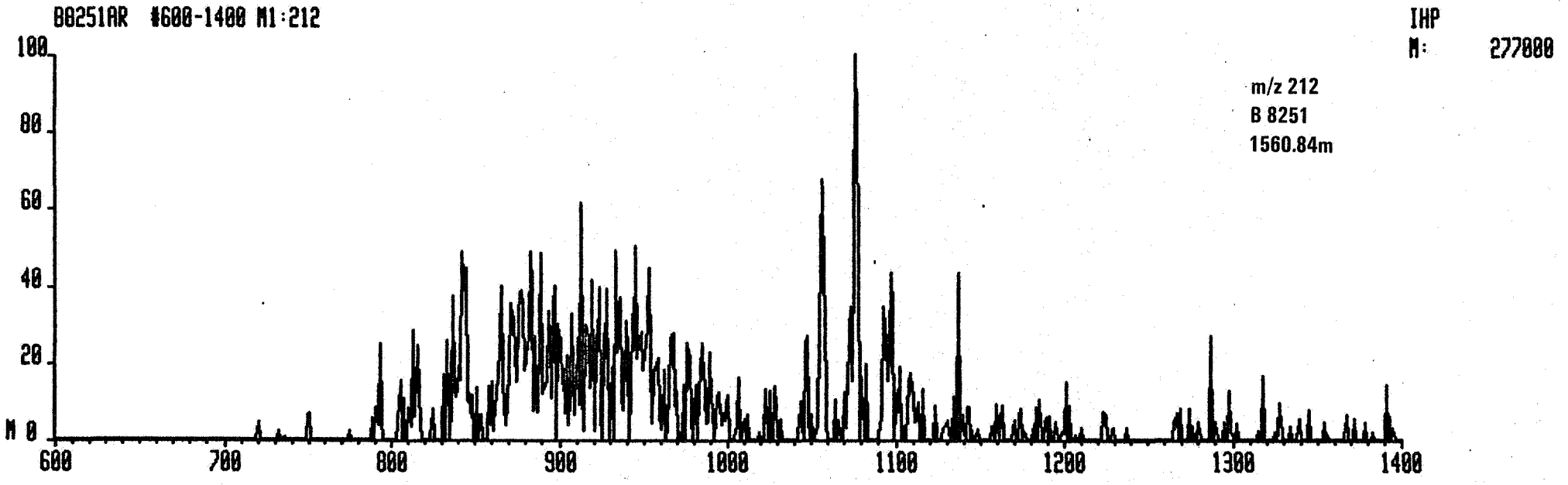
B8251AR #600-1400 M1:212
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M: 277000
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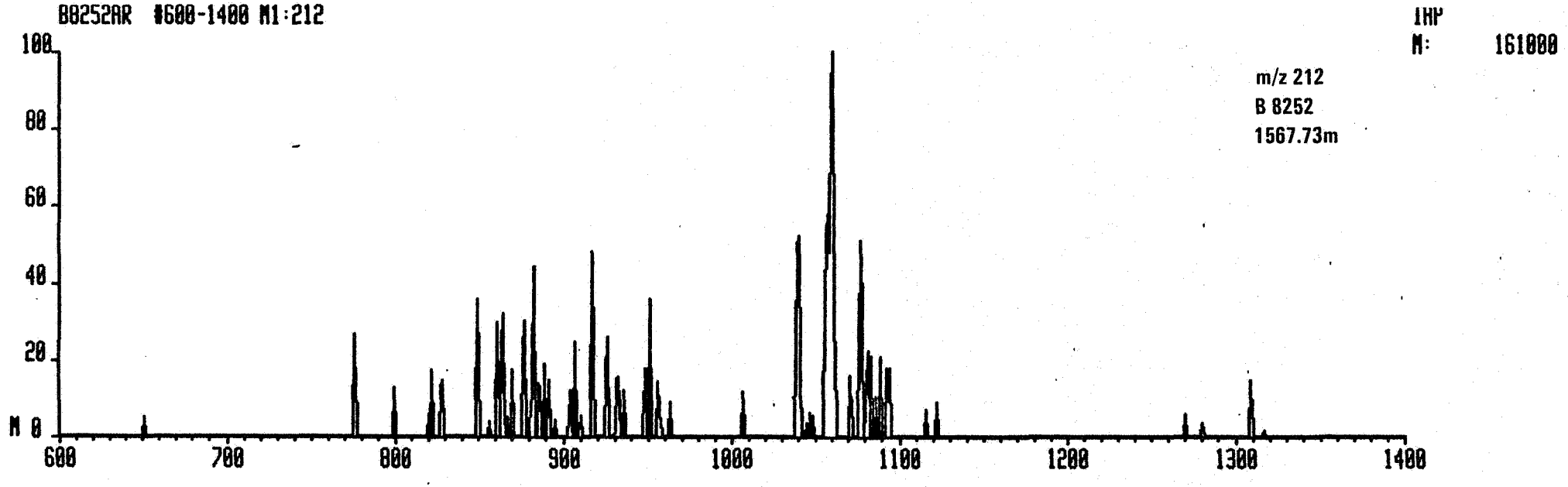
B8252AR #600-1400 M1:212
IHP
M: 161000
m/z 212
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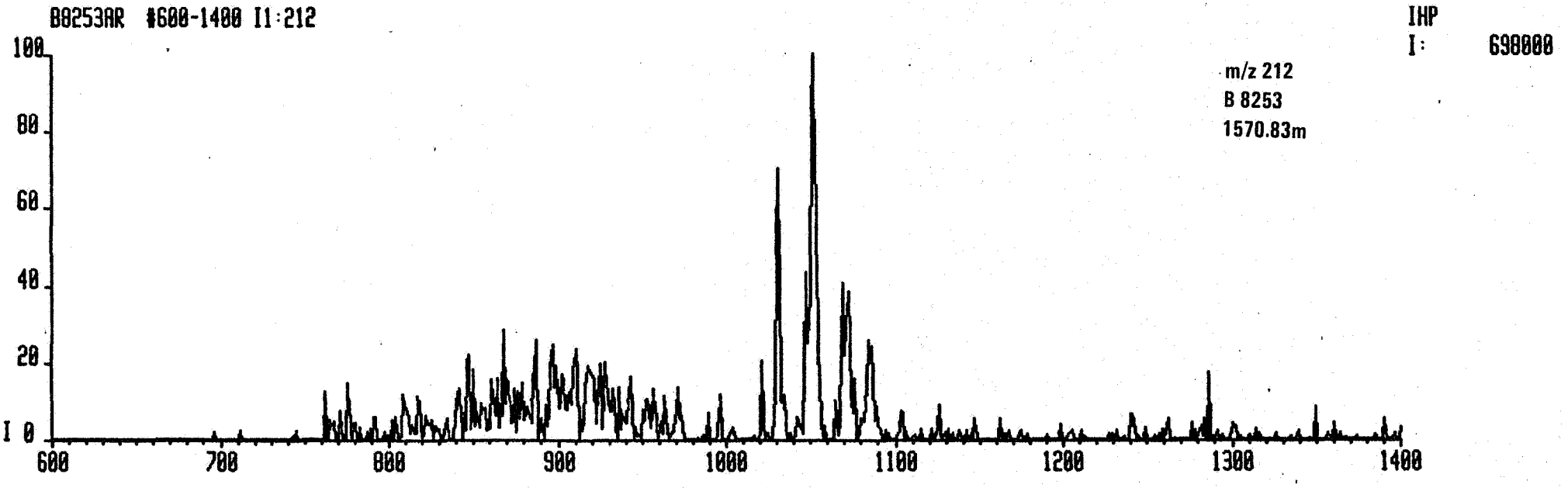
B8253AR #600-1400 I1:212
IHP
I: 698000
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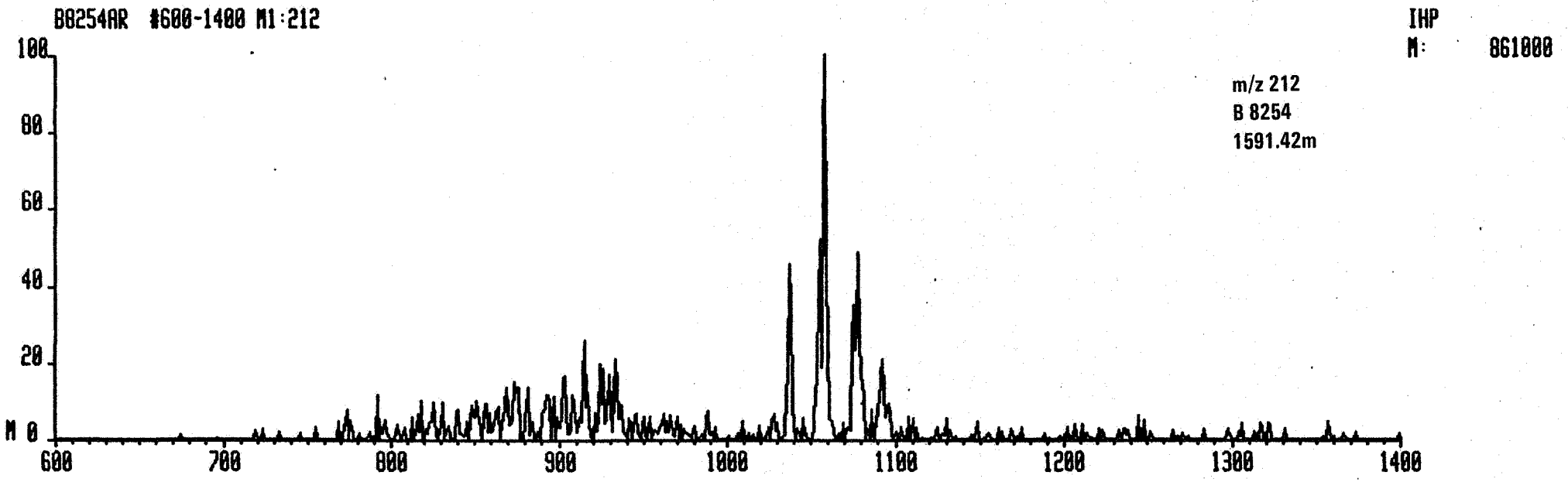
B8254AR #600-1400 M1:212
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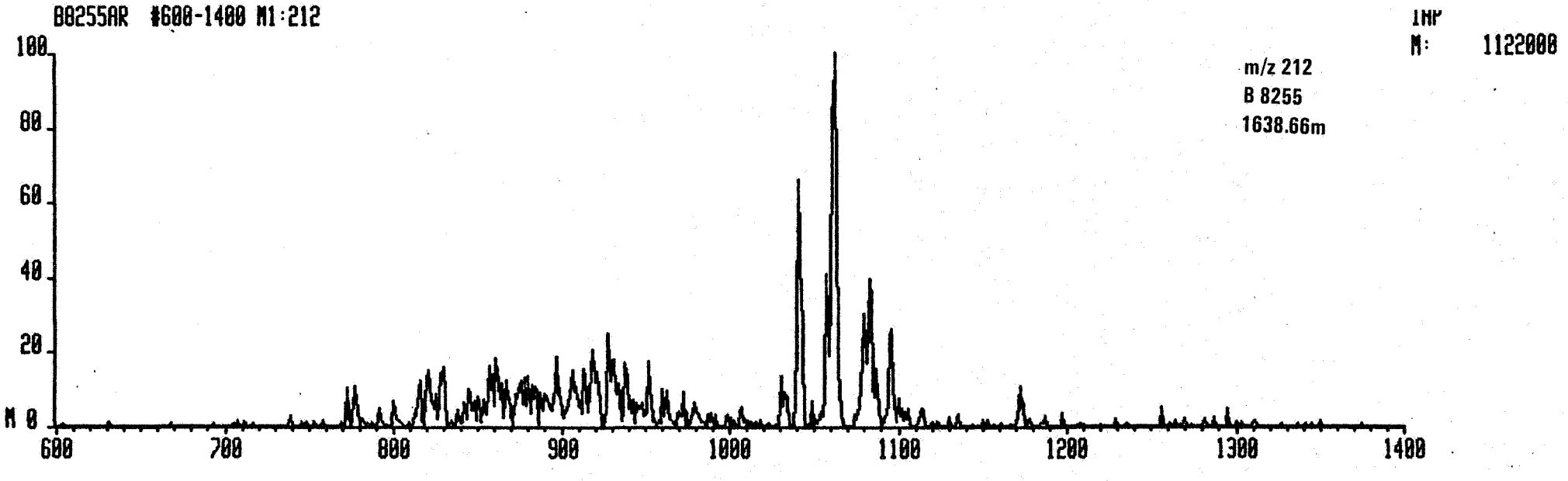
B8255AR #600-1400 M1:212
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M: 1122000
m/z 212
B 8255
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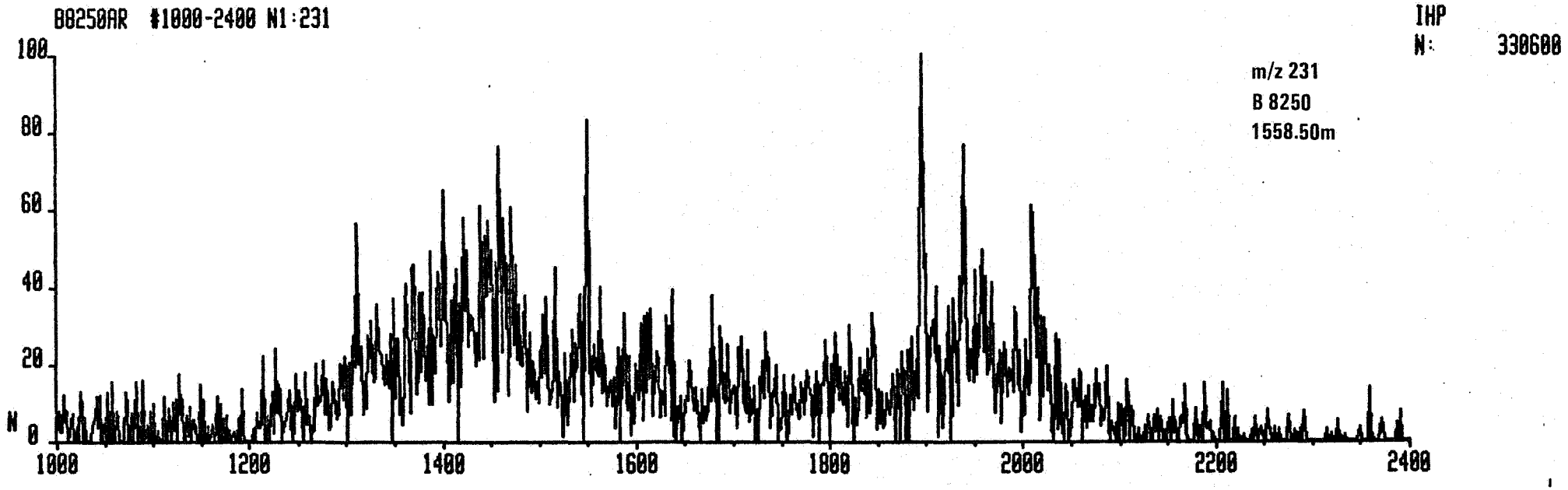
B8250AR #1000-2400 N1:231
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N: 330600
m/z 231
B 8250
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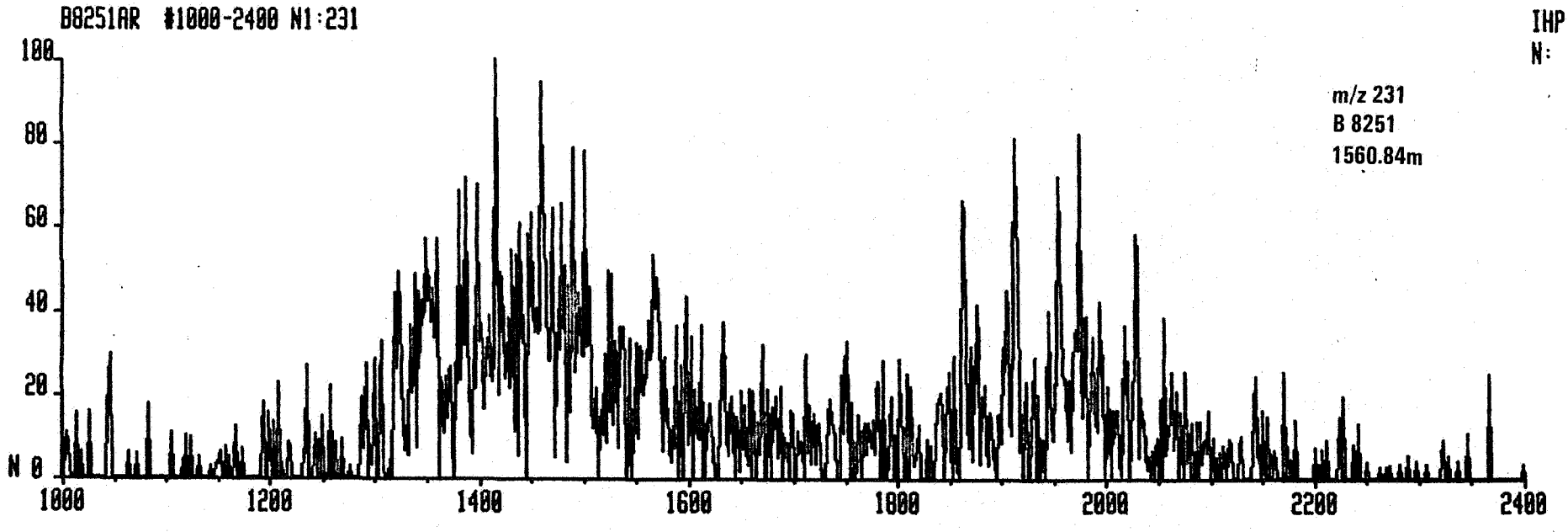
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N: 177100
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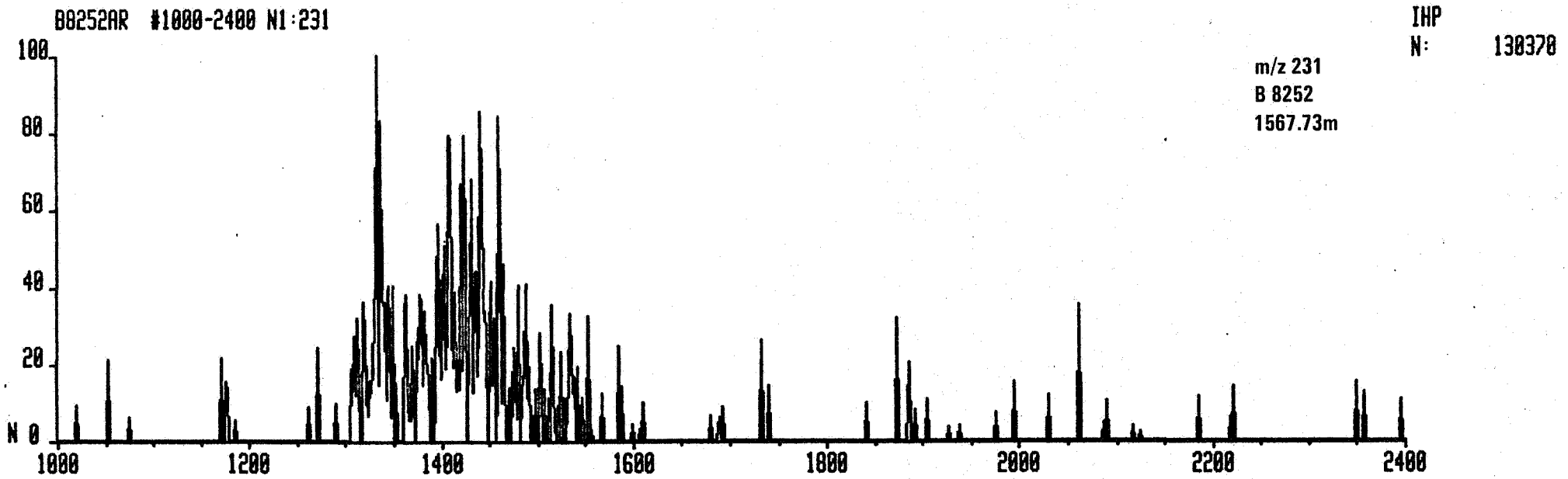
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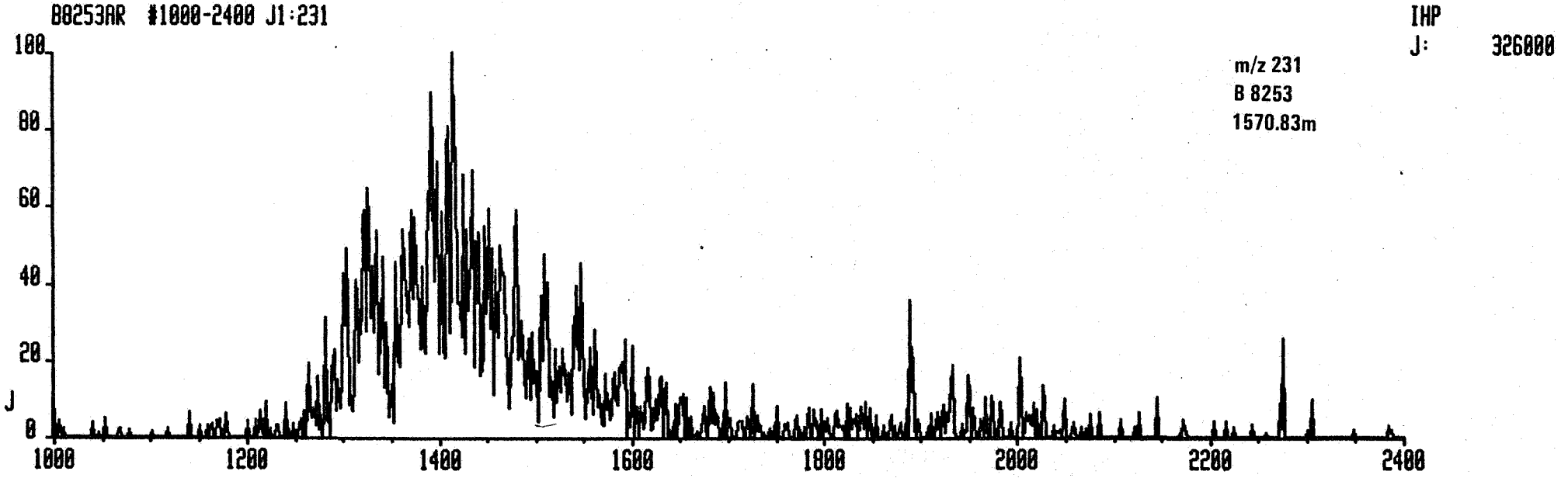
B8253AR #1000-2400 J1:231
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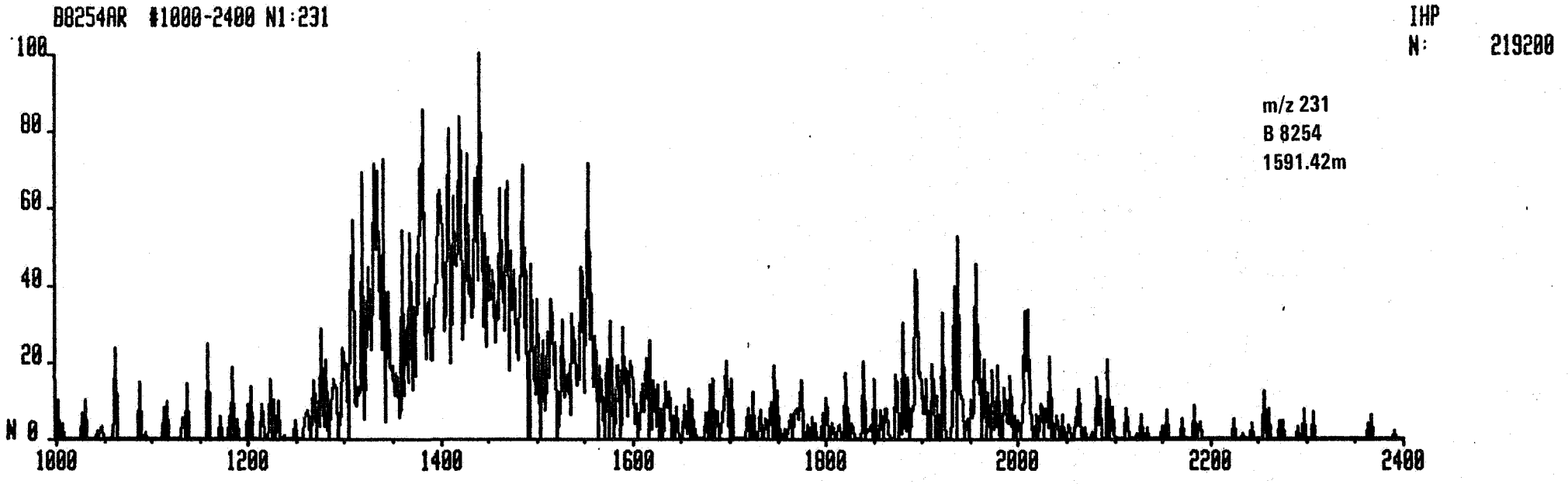
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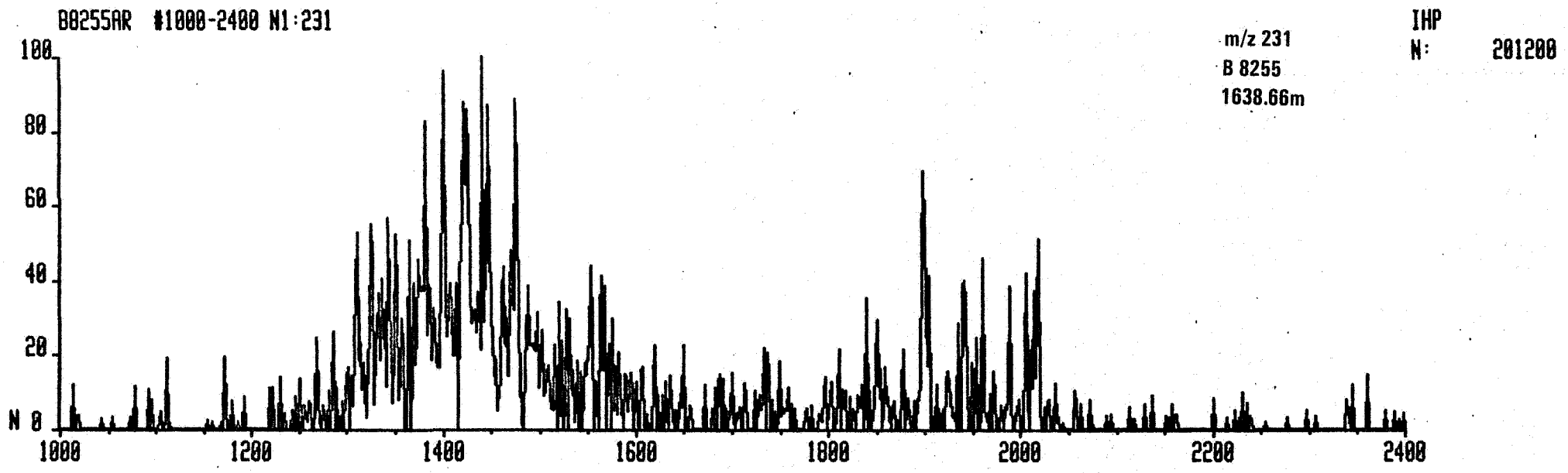
B8255AR #1000-2400 N1:231
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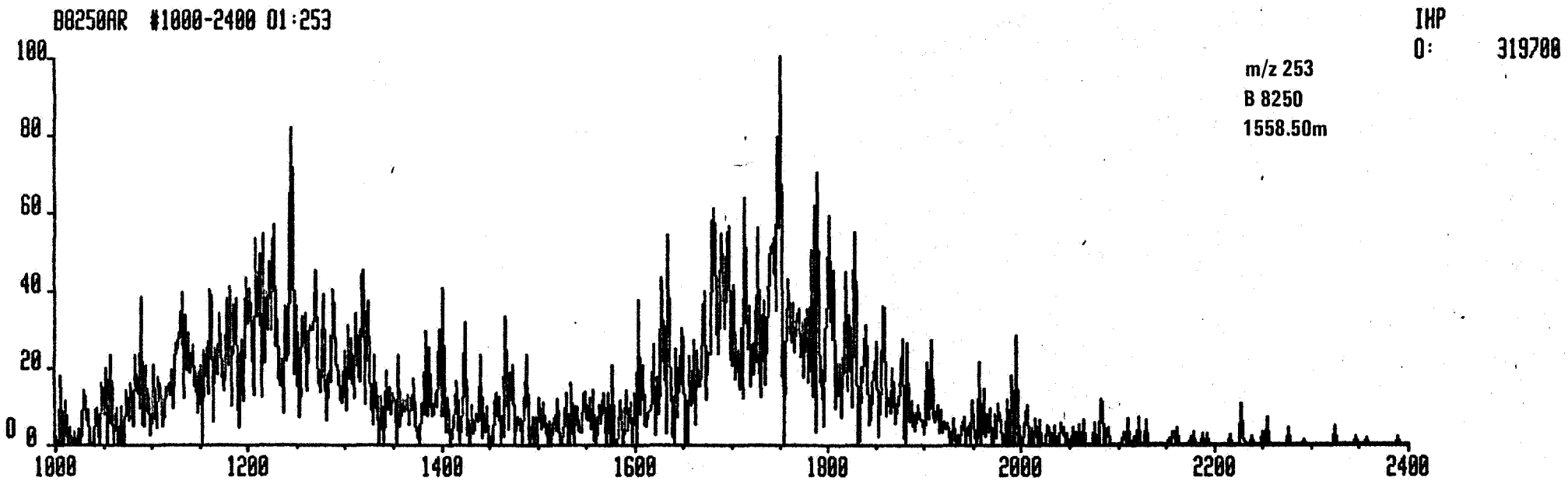
B8250AR #1000-2400 01:253
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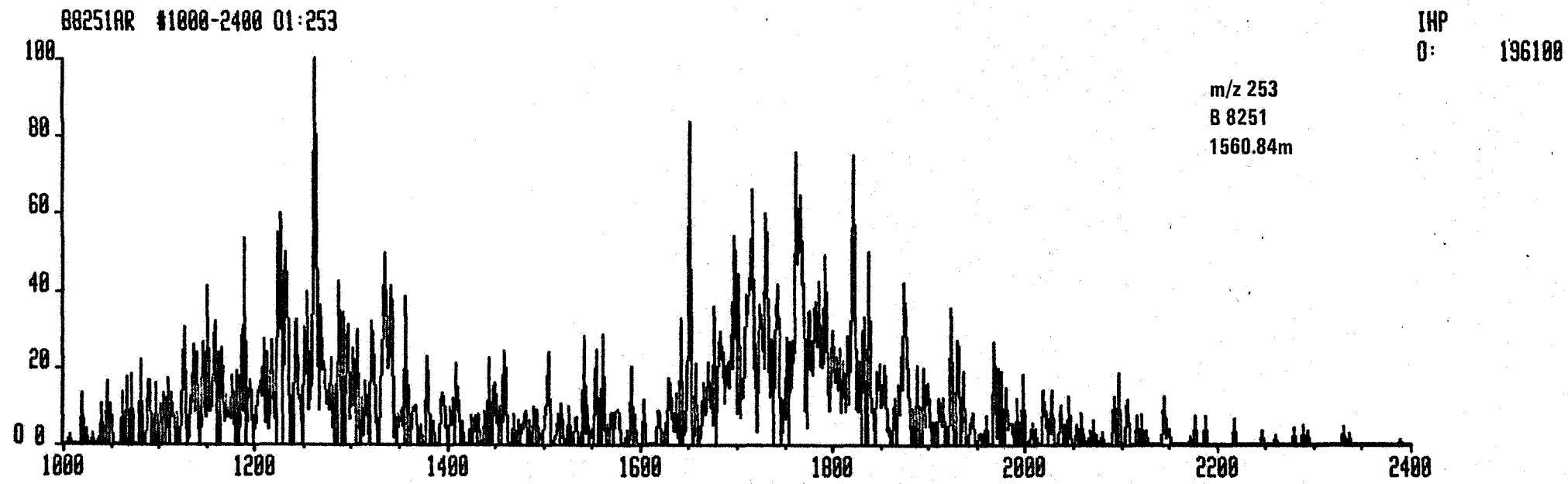
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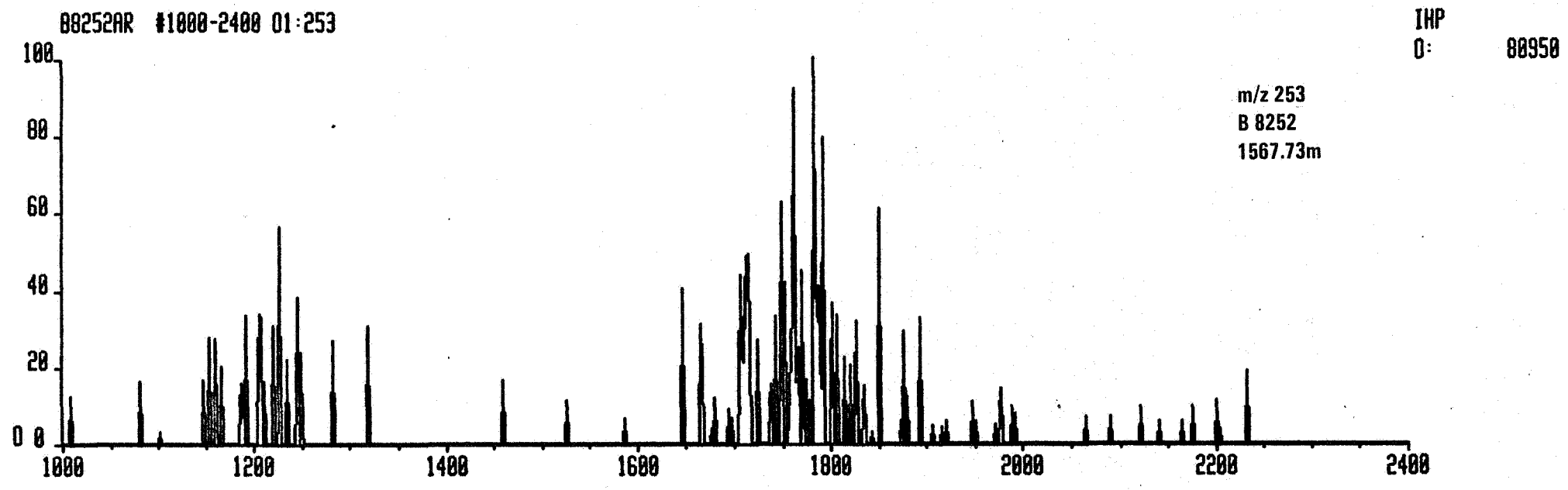
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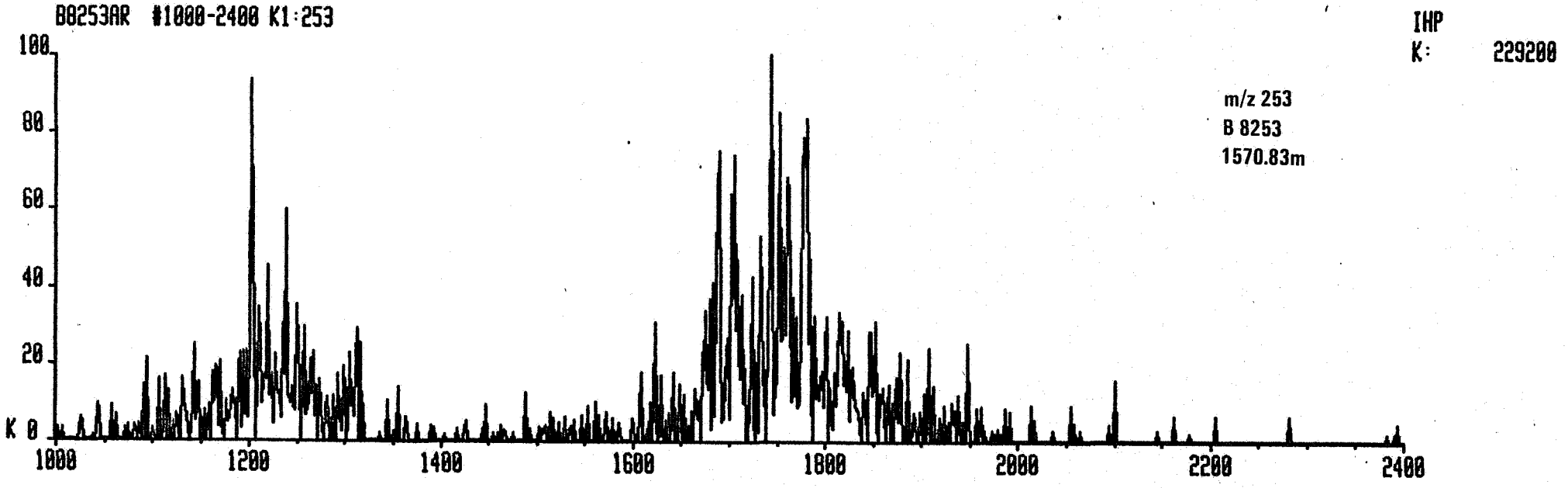
B8253AR #1000-2400 K1:253
IHP
K: 229200
m/z 253
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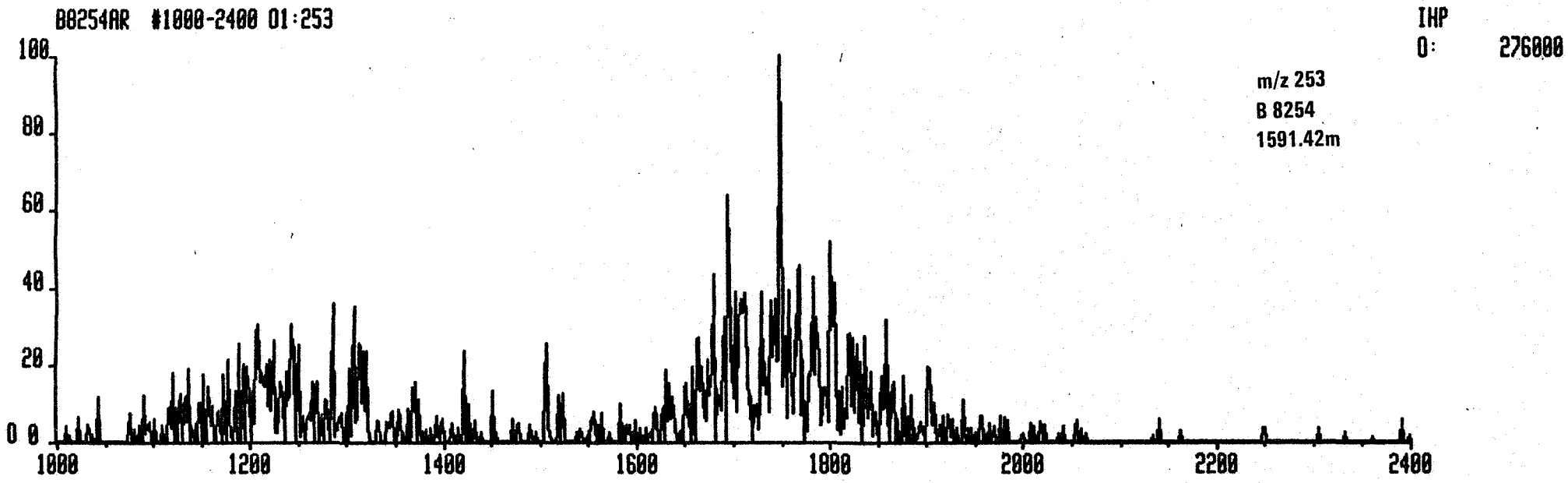
B8254AR #1000-2400 01:253
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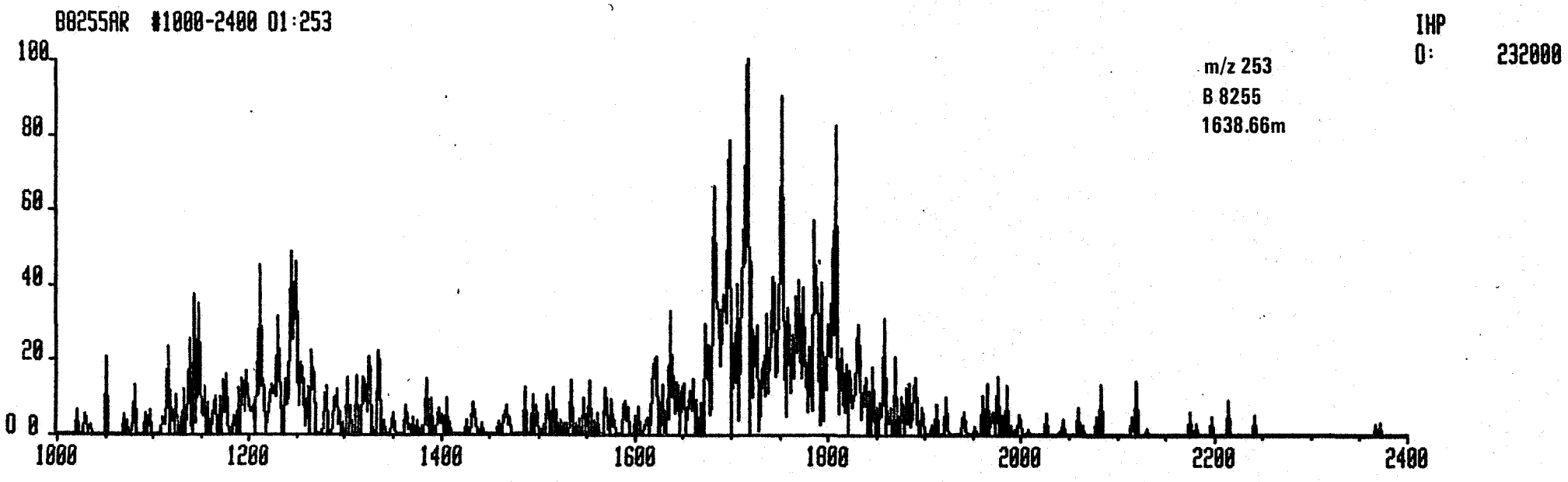
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