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Summary/Conclusion/Recommendation

~~REGISTRERT~~
Excellent quality source rocks are deposited in the Draupne Fm. The source rocks can be divided into three different organic facies.

The organic matter in the Draupne formation is of a marine type.

The depositional environment is reducing throughout the Draupne Fm.

Migrated hydrocarbons are found in the Tarbert Fm.

Keywords

Source Rocks,
Migrated Hydrocarbons

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1. INTRODUCTION.

Well 30/9-10 is located in the Oseberg Omega South area. The well was spudded 31.07.90 and reached T.D at 3649m in Statfjord Formation sandstones. A map indicating the well location is given in Figure 1.1, and a well summary with formation tops is given in Figure 1.2.

This report comprises the results from petroleum geochemical analysis of 101 SWCs and CCs. All SWCs from top Draupne Fm. to T.D. have been analysed, and in addition to this, cores in the Draupne Fm. and three sandstone samples from Tarbert Fm. (below the OWC) have also been examined. The analysis of the oils from this well is reported in "Geochemical characterization of oils from well 30/9-10" by N. Telnaes. (R-046190).

A list of the samples investigated is given in Table 1.1.

All analytical work, interpretation of data and compilation of this report was undertaken by Norsk Hydro Research Center, Bergen Norway.

2. SOURCE ROCK EVALUATION.

Source rock horizons have been identified using Rock Eval pyrolysis and total organic carbon (TOC) measurements. The composition of the organic matter have been characterized by pyrolysis gas chromatography, gas chromatography of saturated hydrocarbons and biomarker analysis.

2.1 Source rock screening data.

The results of Rock Eval / TOC analysis are listed in Table 2.1, and are plotted versus depth in Figure 2.1. A crossplot between Hydrogen Index and $T_{m,x}$ is given in Figure 2.2.

The SWC samples from 2703m to 2717m in the Cretaceous section of well 30/9-10 have generally less than 1% TOC and very low S_2 values. This section has no source rock potential.

The samples from the Draupne Fm. (2719-2782.1m) can be divided into three different organic facies, based on the results from RE/TOC.

	Average S ₂	Average HI
Organic facies I	33 kg/tonne	480 mgHC/gTOC
Organic facies II	58 kg/tonne	670 mgHC/gTOC
Organic facies III	9 kg/tonne	250 mgHC/gTOC

Organic facies I, (2719m - 2774.9m):

This section of the Draupne Fm. have an average S₂ of 33 kg/tonne and show organic richness ranging from 1.7 to 36 %TOC. This indicates an excellent source rock. Hydrogen Indices for this section range from 414 to 558 mg HC/g TOC suggesting that the organic matter in this part of the Draupne Fm. consists mainly of type II kerogen with a very good potential for generation of liquid hydrocarbons. One of the samples (2731.9m) show a considerable enrichment in organic matter (S₂ = 155 kg/tonne), the reason for this might be a decrease in sedimentation rate or possibly sea level fluctuations. The middle part of the sequence 2752m - 2762m seem to have organic rich sediments interbedded with sediments of non-source quality.

Organic facies II, (2775.5m - 2779.2m):

This section of the Draupne Fm. have an average S_2 value of 58 kg/tonne indicating an even better source rock quality than the above section. An average Hydrogen Index of 670 mgHC/gTOC suggests that the organic matter consists mainly of Type I/II kerogen with an excellent potential for liquid hydrocarbons. Organic facies of this quality is rarely seen in the 30/6 or 30/9 areas.

Organic facies III, (2780.0m - 2782.0m):

The samples from 2780-2782m have S_2 values around 9 kg/tonne and TOCs ranging from 3.65 to 5%, suggesting a good/fair source rock. The Hydrogen Indices range from 200 to 350 indicating a type II/III kerogen with a potential for oil/condensate generation.

The Middle and Lower Jurassic series have a varied source potential, occasional samples show S_2 values in the range 2 to 6.5 kg/tonne and Hydrogen Indices from 112 to 268 mg HC/g TOC, indicating a type III/II kerogen with a potential mainly for gas/condensate generation. Two samples have a potential mainly for liquid hydrocarbon generation, the sample at 3036 m in the Ness Fm. has S_2 of 51.5 kg/tonne and a Hydrogen Index of 278, and the sample at 3290 m in the Drake Fm. has S_2 of 10.6 kg/tonne and a Hydrogen Index of 330, both indicating predominance of type II kerogen. The remaining samples in the Middle and Lower Jurassic have no source potential.

2.2 Pyrolysis gas chromatography.

Programmed pyrolysis gas chromatography have been performed on selected extracted samples with source rock potential ($S_2 > 5\text{kg/tonne}$). The selected samples are all from the Draupne Fm. The pyrolysis gas chromatograms are given in Appendix I.

All pyrograms from the Draupne Fm. show a well developed homologous series of n-alkanes/alkenes extending up to $C_{25}-C_{30}$. Aromatic compounds are not abundant. This indicates that the kerogen is of liptinitic character, with corresponding excellent potential for generation of liquid hydrocarbons. The distribution of n-alkanes/alkenes is typical of immature marine source rocks deposited in a reducing environment.

2.3 Gas chromatography of saturated hydrocarbons.

The gas chromatograms of the saturated hydrocarbons are given in Appendix II. Molecular ratios are given in Table 2.2.

Molecular data from gas chromatography and mass chromatography might suggest a different or more detailed organic facies classification of the Draupne Fm, than the source rock screening data. The suggested main intervals based upon molecular data are:

Molecular facies I: 2719m - 2750.3m

Molecular facies II: 2755.2m - 2779.2m

Molecular facies III: 2781.1m - 2782.0m

All the gas chromatograms of the saturated hydrocarbons from molecular facies I of the Draupne Fm. (2719m - 2750.9m) display a near unimodal distribution of n-alkanes, with a maximum at n-C₁₇. The Carbon Preference Indices (CPIs) are all around 1 indicating a marine depositional environment. The Pristane/Phytane ratio may reflect the oxygen level at the time of deposition. The analysed samples have Pristane/Phytane ratios from 0.95 to 1.59 all indicating a reducing environment. The Pristane/n-C₁₇ ratio ranges from 1.0 to 1.6.

Two of the samples at 2749.7m and 2750.3m differs from the other in containing increased amounts of acyclic isoprenoids (I-C₁₆, I-C₁₈, Pristane, Phytane), these samples also have the lowest Pristane/Phytane ratios suggesting that they might be deposited in a more anoxic environment.

The samples from 2755.2m to 2779.2m, with the exception of the samples at 2775.5m and 2776.6m, show a n-alkane distribution with a marked preference for low to moderate weight ($n\text{-C}_{15-20}$) n-alkanes. The Pristane/ $n\text{-C}_{17}$ ratio is considerable lower for the samples in this section than in the section described above. The two samples at 2775.5m and 2776.6m are distinguished from the rest in this interval by having a higher abundance of higher molecular weight n-alkanes ($n\text{-C}_{20-30}$), and also show a bimodal n-alkane distribution with a slight odd/even carbon number predominance. These samples also show considerable amounts of polycyclic biomarkers in the $n\text{-C}_{26-34}$ region. They therefore seem to be of a different organic facies than the ones described above, and seem to have been deposited under more reducing environmental conditions.

The samples from molecular facies III coincides with organic facies III of the Draupne Fm. they all show a bimodal distribution of n-alkanes, with a marked odd/even carbon number predominance. This might indicate a higher contribution of terrestrial organic matter in these samples. The high Pristane/Phytane ratio (2-3) indicates a somewhat more oxic environment at the time of deposition.

2.4 Biological markers, saturated hydrocarbons.

The mass chromatograms of the terpanes (m/z 191) and the steranes (m/z 217) are given in Appendix III. Selected biomarker ratios are listed in Table 2.3.

The distribution of terpanes (m/z 191) in the samples at 2719m - 2750.9m is consistent throughout the examined interval, and is typical of the Draupne formation in the area. The mass chromatograms indicate immature/marginal mature marine organic matter, deposited in a reducing environment. The samples at 2749.7m and 2750.3m show a slight relative increase in norhopane.

28,30-bisnorhopane is absent in the uppermost samples of the Draupne Fm. The 28,30-bisnorhopane concentration increases with depth. In samples from 2747.1m to 2749.2m, 28,30-bisnorhopane forms the dominant peak in the mass chromatograms. In a sample from 2750.9m, 28,30-bisnorhopane is absent. The same variations occur in other wells (30/6-5, 30/6-8) in the Oseberg area. Some minor variations is also seen in the relative amount of tricyclic terpanes.

The mass chromatograms of the Steranes (m/z 217) for samples at 2719m - 2750.9m show a high abundance of C₂₇ steranes. Together with the presence of C₃₀ steranes, this indicates a predominance of marine organic matter. The %20S sterane isomerization varies from 23 to 42 indicating low/ marginal maturity in the upper Draupne Fm. This is supported by the % $\alpha\beta$ ranging from 23 to 32.

The samples from 2755.2m - 2779.2m show an increased amount of extended hopanes in the m/z 191 mass chromatograms. C_{3,5} hopanes are more abundant than C_{3,4} hopanes, this indicates a highly anoxic depositional environment. Hopane is the dominant peak in all mass chromatograms, and 28,30 bisnorhopane is present in all samples except the sample at 2775.5m. Presence of gammacerane in the sample at 2776.5m suggests an increase in salinity.

The sterane mass chromatograms of these samples show increased amounts of C_{2,9} steranes. From 2763.3m to 2779.2m C_{2,9}-20R is the dominant peak. Increase in C_{2,9} steranes relative to C_{2,7} steranes is commonly explained as an effect of increased terrestrial input. However in these samples with high Hydrogen Indices and the abundance of C_{3,0} steranes it is more likely that the increase in C_{2,9} steranes reflect a change in the type of marine input, i.e. an increase in cyanobacterial input. In the sample at 2779.2m pregnanes are abundant.

The m/z 191 mass chromatograms of the samples in the section 2781.1m - 2782.0m shows distributions typical of Upper Jurassic source rocks. Hopane is the dominant peak and 28,30 bisnorhopane is present in all the samples.

In the m/z 217 mass chromatograms of these samples, the C_{2,9} steranes are dominant. This together with lower Hydrogen Indices suggests that these samples have a higher input of terrestrial organic matter than the ones described earlier.

3. MIGRATED HYDROCARBONS.

Determination and characterization of migrated hydrocarbons are based upon several parameters from pyrolysis, extraction and biomarker data.

3.1 Rock Eval pyrolysis.

Pyrolysis data are listed in Table 2.1 and S_1 and Production Indices are plotted versus depth in Figure 2.1.

High S_1 values together with high Production Indices (>0.5) are indications of migrated hydrocarbons. Based on the source rock screening data, only two samples show the presence of migrated hydrocarbons. These are the two sandstone samples from Statfjord Fm. at 3628.5m and 3638.0m.

3.2 Extraction and group type separation data.

The extraction yields and other extraction data are given in Tables 4.1 and 4.2.

Three Tarbert Fm. sandstone samples from below the OWC have been studied, The sample at 2846m show a fair amount of migrated hydrocarbons (2200 ppm), and the samples at 2852.5m and 2856.5m show considerable amounts of migrated hydrocarbons with extraction values around 10000 ppm.

3.3 Gas chromatography and biological markers, saturated hydrocarbons.

The gas chromatograms are given in Appendix II, and molecular ratios are listed in Table 2.2.

The mass chromatograms of the terpanes (m/z 191) and the steranes (m/z 217) are given in Appendix III. Biomarker ratios are listed in Table 2.3.

The two Tarbert Fm sandstone extracts from 2852.5m and 2856.5m are very similar to the oils in the area. Both gas chromatography and mass spectrometry indicates migrated hydrocarbons sourced from a marine organic matter deposited in a reducing environment. The presence of 25-norhopane in these extracts indicate that the first pulse of hydrocarbons have been affected by intense biodegradation, and that a fresh unaltered oil has migrated in at a later stage.

The Tarbert Fm. sandstone extract from 2846m is of a different character. The gas chromatogram show a condensate like profile with low abundance of n-alkanes in the C₂₀ to C₃₅ range. The relative high content of C₂₉ steranes compared to C₂₇ steranes in the m/z 217 mass chromatogram indicates a different and possibly more terrestrial source for this sample. This is supported by the high content of moretanes in the m/z 191 mass chromatogram.

5. SUMMARY.

Excellent quality source rocks are deposited in the Draupne Fm. The source rocks can be divided into three different organic facies.

Organic facies I: 2719m - 2775.1m.

This section show average S_2 value of 33 kg/tonne and average HI of 480 mgHC/gTOC. This indicates an excellent source rock with a very good potential for generation of liquid hydrocarbons.

Organic facies II: 2775.5m - 2779.2m

This section show average S_2 value of 58 kg/tonne and average HI of 670 mgHC/gTOC. This indicates an excellent source rock with an even better hydrocarbon generation potential than the section described above.

Organic facies III: 2780m-2782m.

This section show average S_2 value of 9 kg/tonne and average HI of 250 mgHC/gTOC. This suggests an good/fair source rock with a potential for generation of liquid hydrocarbons.

The organic matter of the Draupne Fm. is of a marine type. In the samples from organic facies II there seem to be an increased input of cyanobacteria, leading to the very high Hydrogen Indices. The samples from organic facies III have a higher input of terrestrial derived organic matter, but is still of a marine type.

The chromatographic data shows that the depositional environment is reducing throughout the Draupne Fm. Anoxic in the top of the section, very anoxic in the middle and with somewhat more oxygen in the system in the lowest part of the section.

Two types of migrated hydrocarbons are found in the Tarbert Fm. sandstones. At 2852.5m and 2856.5m the extracts are very similar to the oils in the area. The extract from the sample at 2846m seem to be sourced from a different and more terrestrial matter.

Table 1.1 List of samples analysed.

DEPTH, m Rock-Eval TOC PyGC Extr. GCMSD-Sat

1	2703.00	*	*			
2	2705.00	*	*			
	2706.00	*	*			
4	2708.00	*	*			
5	2709.00	*	*			
6	2710.00	*	*			
7	2711.00	*	*			
8	2712.00	*	*			
9	2714.00	*	*			
10	2715.00	*	*			
11	2717.00	*	*			
12	2719.00	*	*	*	*	*
13	2722.00	*	*	*	*	*
14	2723.00	*	*	*	*	*
15	2725.00	*	*	*	*	*
16	2726.15	*	*	*	*	*
17	2726.70	*	*	*	*	*
18	2727.20	*	*	*	*	*
19	2727.70	*	*	*	*	*
20	2728.20	*	*	*	*	*
21	2728.75	*	*	*	*	*
22	2730.20	*	*	*	*	*
	2730.55	*	*	*	*	*
24	2731.10	*	*	*	*	*
25	2731.30	*	*	*	*	*
26	2731.90	*	*	*	*	*
27	2737.00	*	*	*	*	*
28	2740.50	*	*	*	*	*
29	2742.50	*	*	*	*	*
30	2745.00	*	*	*	*	*
31	2747.00	*	*	*	*	*
32	2747.10	*	*	*	*	*
33	2747.60	*	*	*	*	*
34	2748.10	*	*	*	*	*
35	2748.75	*	*	*	*	*
36	2749.20	*	*	*	*	*
37	2749.70	*	*	*	*	*
38	2750.30	*	*	*	*	*
39	2750.90	*	*	*	*	*
40	2752.00	*	*	*	*	*
41	2753.00	*	*	*	*	*
42	2754.00	*	*	*	*	*
	2755.20	*	*	*	*	*
44	2759.20	*	*	*	*	*
45	2763.30	*	*	*	*	*
46	2767.55	*	*	*	*	*
47	2769.90	*	*	*	*	*
48	2771.90	*	*	*	*	*
49	2773.40	*	*	*	*	*
50	2775.50	*	*	*	*	*
51	2776.60	*	*	*	*	*
52	2777.45	*	*	*	*	*
53	2779.20	*	*	*	*	*
54	2781.10	*	*	*	*	*
55	2781.80	*	*	*	*	*
56	2781.98	*	*	*	*	*

DEPTH, m Rock-Eval TOC PyGC Extr. GCMSD-Sat

57	2782.00	*	*	*	*	*
58	2792.50					
	2796.60					
60	2797.20					
61	2803.20					
62	2804.70					
63	2846.00				*	*
64	2852.50				*	*
65	2856.50				*	*
66	2899.00	*	*			
67	2908.00	*	*			
68	2914.50	*	*			
69	2932.00	*	*			
70	2947.00	*	*			
71	2953.00	*	*			
72	2984.00	*	*			
73	3011.00	*	*			
74	3028.00	*	*			
75	3036.00	*	*			
76	3050.00	*	*			
77	3066.00	*	*			
78	3085.00	*	*			
	3091.00	*	*			
80	3095.00	*	*			
81	3109.00	*	*			
82	3112.00	*	*			
83	3115.50	*	*			
84	3130.00	*	*			
85	3131.00	*	*			
86	3145.00	*	*			
87	3162.00	*	*			
88	3180.00	*	*			
89	3201.00	*	*			
90	3226.00	*	*			
91	3248.00	*	*			
92	3251.00	*	*			
93	3290.00	*	*			
94	3315.00	*	*			
95	3357.00	*	*			
96	3472.00	*	*			
97	3563.00	*	*			
98	3591.00	*	*			
99	3613.00	*	*			
100	3628.50	*	*			
101	3638.00	*	*			

Table 2.1 Source rock screening data.

Table 2.1 SOURCE ROCK SCREENING DATA WELL 30/9-10



Depth (m)	Group/Fm	%	Lithology	Sample	S1 Kg/t	S2 Kg/t	S3 Kg/t	TOC %	HI	OI	PI	Tmax Deg.c	Company
2703.00		0	CLYST	SWC	0.0	0.1	0.0	0.7	13	0	0.10	441	F-BERGEN
2705.00		0	CLYST	SWC	0.0	0.1	0.0	0.7	16	0	0.21	437	F-BERGEN
2706.00		0	CLYST	SWC	0.0	0.1	0.0	0.7	10	0	0.13	440	F-BERGEN
2708.00		0	CLYST	SWC	0.0	0.1	0.0	0.7	17	0	0.25	436	F-BERGEN
2709.00		0	CLYST	SWC	0.1	0.3	0.0	1.2	23	0	0.18	440	F-BERGEN
2710.00		0	CLYST	SWC	0.0	0.2	0.0	0.9	18	0	0.20	445	F-BERGEN
2711.00		0	CLYST, BRN,G	SWC	0.1	0.2	0.0	0.9	21	0	0.27	438	F-BERGEN
2712.00		0	CLYST	SWC	0.1	0.5	0.0	1.2	44	0	0.10	437	F-BERGEN
2714.00		0	CLYST	SWC	0.1	0.2	0.0	0.7	23	0	0.43	435	F-BERGEN
2715.00		0	CLYST	SWC	0.1	0.2	0.0	0.8	21	0	0.23	442	F-BERGEN
2717.00		0	SLST/?MARL	SWC	0.0	0.0	0.0	0.2	15	0	0.50	441	F-BERGEN
2719.00		0	CLYST	SWC	1.8	31.5	0.0	6.0	524	0	0.05	378	F-BERGEN
2722.00		0	CLYST, SLTY	SWC	1.1	22.1	0.0	4.4	502	0	0.05	431	F-BERGEN
2723.00		0	CLYST, SLTY	SWC	1.6	16.4	0.0	3.6	456	0	0.09	428	F-BERGEN
2725.00		100	CLYST	COCH	3.1	24.8	0.0	5.0	496	0	0.11	427	F-BERGEN
2726.15		100	CLYST	COCH	1.7	27.5	0.0	5.2	529	0	0.06	430	F-BERGEN
2726.70		100	CLYST	COCH	1.7	18.3	0.0	4.2	436	0	0.09	429	F-BERGEN
2727.20		100	CLYST	COCH	1.8	17.0	0.0	4.1	414	0	0.10	429	F-BERGEN

Table 2.1 SOURCE ROCK SCREENING DATA WELL 30/9-10 (cont'd)



Depth (m)	Group/Fm	% Lithology	Sample	S1 Kg/t	S2 Kg/t	S3 Kg/t	TOC %	HI	OI	PI	Tmax Deg.c	Company
2727.70		100 CLYST	COCH	2.2	22.3	0.0	5.0	445	0	0.09	428	F-BERGEN
2728.20		100 CLYST	COCH	2.0	20.1	0.0	4.6	438	0	0.09	428	F-BERGEN
2728.75		100 CLYST	COCH	2.6	24.9	0.0	5.2	478	0	0.10	429	F-BERGEN
2730.20		100 CLYST	COCH	1.6	20.9	0.0	4.3	486	0	0.07	428	F-BERGEN
2730.55		100 CLYST	COCH	2.1	26.6	0.0	5.1	521	0	0.07	430	F-BERGEN
2731.10		100 CLYST	COCH	1.8	24.2	0.0	4.8	504	0	0.07	430	F-BERGEN
2731.30		100 CLYST	COCH	1.8	26.7	0.0	5.1	523	0	0.06	429	F-BERGEN
2731.90		100 CLYST	COCH	20.7	158.9	0.0	33.1	480	0	0.12	417	F-BERGEN
2731.90		100 CLYST	COCH	27.6	154.5	0.0	36.0	429	0	0.15	417	F-BERGEN
2737.00		0 CLYST, SLTY	SWC	2.6	35.7	0.0	6.4	558	0	0.07	428	F-BERGEN
2740.50		0 CLYST, SLTY	SWC	2.9	35.3	0.0	7.1	498	0	0.08	425	F-BERGEN
2742.50		0 CLYST, SLTY	SWC	3.4	40.8	0.0	7.7	530	0	0.08	426	F-BERGEN
2745.00		0 CLYST, SLTY	SWC	4.2	44.1	0.0	8.4	525	0	0.09	425	F-BERGEN
2747.10		100 CLYST	COCH	4.5	34.0	0.0	7.1	478	0	0.12	424	F-BERGEN
2747.60		100 CLYST	COCH	3.0	45.5	0.0	8.2	555	0	0.06	430	F-BERGEN
2748.10		100 CLYST	COCH	4.3	27.7	0.0	6.1	454	0	0.13	424	F-BERGEN
2748.75		100 CLYST	COCH	2.8	36.3	0.0	6.6	549	0	0.07	426	F-BERGEN
2749.20		100 CLYST	COCH	3.1	36.5	0.0	7.3	500	0	0.08	429	F-BERGEN
2749.70		100 CLYST	COCH	7.3	35.3	0.0	8.0	441	0	0.17	423	F-BERGEN

Table 2.1 SOURCE ROCK SCREENING DATA WELL 30/9-10 (cont'd)



Depth (m)	Group/Fm	% Lithology	Sample	S1 Kg/t	S2 Kg/t	S3 Kg/t	TOC %	HI	OI	PI	Tmax Deg. c	Company
2750.30		100 CLYST	COCH	5.2	27.8	0.0	7.8	356	0	0.16	417	F-BERGEN
2750.90		100 CLYST	COCH	4.5	33.4	0.0	6.3	531	0	0.12	422	F-BERGEN
2752.00		100 CLYST	COCH	0.3	1.6	0.0	1.8	91	0	0.17	424	F-BERGEN
2753.00		100 CLYST	COCH	6.3	61.1	0.0	11.3	541	0	0.09	424	F-BERGEN
2754.00		100 CLYST	COCH	0.5	1.8	0.0	1.7	108	0	0.20	423	F-BERGEN
2755.20	DRAUPNE	100 CLYST	COCH	2.0	29.0	0.0	6.5	447	0	0.06	427	F-BERGEN
2757.20	DRAUPNE	100 CLYST	COCH	1.4	9.8	0.0	3.6	273	0	0.13	421	F-BERGEN
2759.20	DRAUPNE	100 CLYST	COCH	3.0	25.3	0.0	7.5	337	0	0.11	424	F-BERGEN
2761.20	DRAUPNE	100 CLYST	COCH	0.6	1.1	0.0	1.0	111	0	0.33	426	F-BERGEN
2763.30	DRAUPNE	100 CLYST	COCH	4.0	42.3	0.0	8.2	516	0	0.09	423	F-BERGEN
2765.40	DRAUPNE	100 CLYST	COCH	4.2	34.7	0.0	7.6	457	0	0.11	423	F-BERGEN
2767.55	DRAUPNE	100 CLYST	COCH	4.1	47.3	0.0	9.4	503	0	0.08	426	F-BERGEN
2769.90	DRAUPNE	100 CLYST	COCH	4.3	68.8	0.0	12.1	569	0	0.06	427	F-BERGEN
2771.90	DRAUPNE	100 CLYST	COCH	2.9	28.6	0.0	6.1	468	0	0.09	425	F-BERGEN
2773.30	DRAUPNE	100 CLYST	COCH	3.2	29.3	0.0	6.3	465	0	0.10	425	F-BERGEN
2773.40	DRAUPNE	100 CLYST	COCH	0.8	9.0	0.0	2.9	310	0	0.08	424	F-BERGEN
2774.90	DRAUPNE	100 CLYST	COCH	1.4	18.5	0.0	4.1	451	0	0.07	427	F-BERGEN
2775.10	DRAUPNE	100 CLYST	COCH	2.8	34.6	0.0	6.2	558	0	0.07	427	F-BERGEN
2775.50	DRAUPNE	100 CLYST	COCH	2.8	56.7	0.0	8.2	692	0	0.05	426	F-BERGEN

Table 2.1 SOURCE ROCK SCREENING DATA WELL 30/9-10 (cont'd)



Depth (m)	Group/Fm	%	Lithology	Sample	S1 Kg/t	S2 Kg/t	S3 Kg/t	TOC %	HI	OI	PI	Tmax Deg.c	Company
2776.60	DRAUPNE	100	CLYST	COCH	3.0	48.7	0.0	6.7	726	0	0.06	425	F-BERGEN
2777.45	DRAUPNE	100	CLYST	COCH	6.7	93.0	0.0	14.1	659	0	0.07	427	F-BERGEN
2778.70	DRAUPNE	100	CLYST	COCH	2.5	33.4	0.0	5.3	630	0	0.07	429	F-BERGEN
2779.20	DRAUPNE	100	CLYST	COCH	3.1	60.4	0.0	9.3	650	0	0.05	427	F-BERGEN
2780.00	DRAUPNE	100	CLYST	COCH	8.6	9.6	0.0	2.7	357	0	0.47	424	F-BERGEN
2781.10		0		COCH	1.0	9.4	0.0	3.7	255	0	0.10	430	F-BERGEN
2781.80		0	SLST	COCH	1.5	10.4	0.0	5.1	204	0	0.13	428	F-BERGEN
2781.98		0		COCH	1.1	8.4	0.0	4.0	211	0	0.12	426	F-BERGEN
2782.00		0	SLST	COCH	1.2	9.0	0.0	4.1	220	0	0.12	427	F-BERGEN
2899.00		0	CLYST, SLTY	SWC	0.1	4.6	0.0	1.7	268	0	0.03	442	F-BERGEN
2908.00		0	SLST	SWC	0.1	1.1	0.0	0.9	124	0	0.07	443	F-BERGEN
2914.50		0	SLST	SWC	0.0	0.6	0.0	0.4	147	0	0.02	487	F-BERGEN
2932.00		0	SST, SLTY	SWC	0.0	0.3	0.0	0.1	260	0	0.00	513	F-BERGEN
2947.00		0	CLYST, SLTY	SWC	0.0	0.7	0.0	0.2	370	0	0.00	441	F-BERGEN
2953.00		0	CLYST, SLTY	SWC	0.3	6.5	0.0	3.1	211	0	0.05	441	F-BERGEN
2984.00		0	SLST	SWC	0.3	1.0	0.0	0.6	173	0	0.22	438	F-BERGEN
3011.00		0	SLST	SWC	0.2	1.4	0.0	0.6	240	0	0.14	442	F-BERGEN
3028.00		0	SST	SWC	0.0	1.0	0.0	0.2	515	0	0.01	571	F-BERGEN
3036.00		0	CLYST	SWC	2.4	51.5	0.0	18.5	278	0	0.04	433	F-BERGEN

Table 2.1 SOURCE ROCK SCREENING DATA WELL 30/9-10 (cont'd)

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HYDRO

Depth (m)	Group/Fm	%	Lithology	Sample	S1 Kg/t	S2 Kg/t	S3 Kg/t	TOC %	HI	OI	PI	Tmax Deg.c	Company
3050.00		0	SST	SWC	0.0	0.1	0.0	0.1	80	0	0.20	591	F-BERGEN
3066.00		0	SLST, SDY	SWC	0.0	0.5	0.0	0.2	230	0	0.06	447	F-BERGEN
3085.00		0	SLST, SDY	SWC	0.0	0.5	0.0	0.2	255	0	0.06	464	F-BERGEN
3091.50		0	CLYST, SLTY	SWC	0.1	1.8	0.0	1.2	152	0	0.04	444	F-BERGEN
3095.00		0	CLYST, SLTY	SWC	0.1	0.8	0.0	0.4	205	0	0.08	472	F-BERGEN
3109.00		0	CLYST, SLTY	SWC	0.5	3.8	0.0	3.4	112	0	0.12	434	F-BERGEN
3112.00		0	CLYST, SLTY	SWC	0.2	1.3	0.0	0.9	141	0	0.11	502	F-BERGEN
3115.50		0	SLST	SWC	0.2	0.5	0.0	0.6	82	0	0.26	440	F-BERGEN
3130.00		0	CLYST, SLTY	SWC	0.4	3.4	0.0	2.3	147	0	0.11	441	F-BERGEN
3131.00		0	CLYST, SLTY	SWC	0.4	3.6	0.0	2.3	155	0	0.10	441	F-BERGEN
3145.00		0	CLYST, SLTY	SWC	0.0	0.0	0.0	1.3	0	0		0	F-BERGEN
3162.00		0	CLYST, SLTY	SWC	0.2	1.7	0.0	1.4	119	0	0.13	441	F-BERGEN
3180.00		0	CLYST, SLTY	SWC	0.5	2.4	0.0	1.6	147	0	0.18	443	F-BERGEN
3201.00		0	CLYST, SLTY	SWC	0.3	2.0	0.0	1.6	123	0	0.12	442	F-BERGEN
3226.00		0	CLYST, SLTY	SWC	0.2	1.2	0.0	1.0	121	0	0.14	442	F-BERGEN
3248.00		0	CLYST, SLTY	SWC	0.3	2.9	0.0	1.2	242	0	0.09	445	F-BERGEN
3251.00		0		SWC	0.4	1.3	0.0	0.8	165	0	0.23	474	F-BERGEN
3290.00		0	CLYST, SLTY	SWC	2.7	10.6	0.0	3.2	330	0	0.20	440	F-BERGEN
3315.00		0	CLYST, SLTY	SWC	0.3	1.6	0.0	0.9	182	0	0.15	446	F-BERGEN

Table 2.1 SOURCE ROCK SCREENING DATA WELL 30/9-10 (cont'd)

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Depth (m)	Group/Fm	%	Lithology	Sample	S1 Kg/t	S2 Kg/t	S3 Kg/t	TOC %	HI	OI	PI	Tmax Deg.c	Company
3357.00		0	CLYST, SLTY	SWC	0.4	2.5	0.0	1.3	195	0	0.13	467	F-BERGEN
3472.50		0	CLYST	SWC	0.5	2.9	0.0	1.1	267	0	0.16	447	F-BERGEN
3563.00		0	CLYST, SLTY	SWC	0.2	1.1	0.0	0.5	218	0	0.17	588	F-BERGEN
3591.00		0	CLYST, SLTY	SWC	0.6	1.3	0.0	0.7	186	0	0.30	589	F-BERGEN
3613.50		0	CLYST, SLTY	SWC	0.3	1.5	0.0	0.7	214	0	0.15	591	F-BERGEN
3628.50		0	SST	SWC	0.6	0.4	0.0	0.6	73	0	0.59	425	F-BERGEN
3638.00		0	SST/CLYST	SWC	0.5	0.2	0.0	0.4	45	0	0.73	390	F-BERGEN

Table 2.2 Molecular ratios.

Table 2.2 SATURATED FRAC., MOLECULAR RATIOS WELL 30/9-10



Depth	Group/Fm	Pr/n-C17	Pr/Ph	CPI-I	CPI-II	n-C15+/Total	n-C20/n-C25
2719.00		1.62	1.29	1.14	0.99		
2722.00		1.58	1.38	1.01	0.92		
2723.00		1.20	1.12	0.94	0.78		
2725.00		1.37	1.29	1.06	0.86		
2726.15		1.30	1.25	1.03	0.85		
2726.70		1.25	1.13	0.97	0.81		
2727.20		1.22	1.27	1.03	0.84		
2728.20		1.28	1.18	1.02	0.80		
2728.75		1.38	1.20	0.92	0.67		
2730.20		1.30	1.16	1.04	0.82		
2730.55		1.33	1.18	1.04	0.86		
2731.10		1.45	1.41	0.99	0.68		
2731.30		1.31	1.25	0.98	0.75		
2731.90		1.12	1.26	0.84	0.73		
2737.00		1.31	1.23	0.96	0.84		
2740.50		1.42	1.17	0.89	0.73		
2745.00		1.47	1.27	0.91	0.72		
2747.10		1.08	1.24	1.04	1.01		

Table 2.2 SATURATED FRAC., MOLECULAR RATIOS WELL 30/9-10 (cont'd)



Depth	Group/Fm	Pr/n-C17	Pr/Ph	CPI-I	CPI-II	n-C15+/Total	n-C20/n-C25
2747.60		1.02	1.43	0.71	0.80		
2748.10		1.08	1.20	1.29	0.97		
2748.75		1.06	1.30	0.96	0.79		
2749.20		1.13	1.51	1.02	0.87		
2749.70		1.67	0.97	1.12	0.95		
2750.30		1.25	0.95	1.14	0.90		
2750.90		1.26	1.38	1.05	0.93		
2755.20	DRAUPNE	0.66	1.24	0.94	0.95		
2763.30	DRAUPNE	0.54	1.34	0.99	0.92		
2767.55	DRAUPNE	0.71	1.51	0.95	0.94		
2775.50	DRAUPNE	1.68	1.15	1.13	1.21		
2776.60	DRAUPNE	1.38	1.16	1.03	0.71		
2779.20	DRAUPNE	0.66	2.10	1.02	1.02		
2781.10		1.78	2.01	1.14	1.03		
2781.80		2.05	2.90	1.54	1.39		
2781.98		2.26	3.19	1.47	1.40		
2782.00		1.78	3.16	1.56	1.44		
2846.00		0.72	1.80	0.86	1.03		
2852.50		0.99	2.33	1.03	1.03		

Table 2.2 SATURATED FRAC., MOLECULAR RATIOS WELL 30/9-10 (cont'd)

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Depth	Group/Fm	Pr/n-C17	Pr/Ph	CPI-I	CPI-II	n-C15+/Total	n-C20/n-C25
2856.50		0.98	2.44	0.97	0.98		

Table 2.3 Biomarker ratios.

DEPTH	Ts/Tm	NH/NH+H	BNH/BNH+NH	%20S	%abb	C2720R/C2920R
2719.00	0.68	0.37	0.07	28	29	2.86
2722.00	0.61	0.34	0.07	26	24	1.30
2723.00	0.74	0.36	0.07	23	23	1.75
2725.00	0.68	0.39	0.08	31	26	2.26
2726.15	0.67	0.40	0.09	30	26	2.69
2726.70	0.63	0.33	0.16	27	23	1.73
2727.20	0.72	0.39	0.36	26	26	2.44
2728.20	0.56	0.40	0.31	29	26	2.49
2728.75	0.64	0.38	0.19	26	25	2.02
2730.20	0.68	0.35	0.24	24	23	2.14
2730.55	0.63	0.40	0.24	30	23	2.33
2731.10	0.59	0.36	0.46	31	26	2.09
2731.30	0.63	0.40	0.42	33	27	2.37
2731.90	0.61	0.37	0.52	31	24	2.02
2737.00	0.55	0.42	0.41	32	25	2.36
2740.50	0.49	0.36	0.48	33	26	2.15
2742.50	0.48	0.41	0.53	36	28	2.47
2745.00	0.57	0.43	0.50	42	32	2.60
2747.10	0.53	0.40	0.76	37	31	2.73
2747.60	0.55	0.40	0.77			2.43
2748.10	0.58	0.42	0.65	36	25	3.17
2748.75	0.52	0.41	0.25	33	27	2.28
2749.20	0.51	0.40	0.70	39	28	2.18
2749.70	0.54	0.43	0.49	34	28	2.52
2750.30	0.53	0.48	0.24	37	30	2.72
2750.90	0.55	0.39	0.07	34	26	1.87
2755.20	0.50	0.36	0.40	30	25	1.51
2763.30	0.48	0.27	0.21	28	23	0.88
2767.55	0.55	0.34	0.31	30	23	0.92
2775.50	0.55	0.28	0.02	29	22	0.78
2776.60	0.59	0.30	0.43	31	21	0.94
2779.20	0.95	0.28	0.41	33	33	0.79
2781.10	0.11	0.35	0.45	32	23	0.68
2781.80	0.14	0.34	0.48	48	23	0.62
2781.98	0.20	0.33	0.49	34	25	0.50
2782.00	0.33	0.32	0.29	32	25	0.33



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Table 3.1 Extraction data I.

Table 3.1 SOURCE ROCK EXTRACTION DATA I WELL 30/9-10

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Depth(m)	Group/Fm	EOM(mg)	EOM(%)	Hydrocarbons			Non Hydrocarbons		
				SAT(%)	ARO(%)	TOTAL(%)	NSO(%)	ASPH(%)	TOTAL(%)
2719.00		58.00	0.60	25	22	47	41	11	52
2722.00		34.80	0.43	20	23	43	35	22	57
2723.00		50.80	0.48	31	27	58	34	9	43
2725.00		61.20	0.66	29	28	57	34	9	43
2726.15		56.20	0.52	26	30	56	34	10	44
2726.70		54.30	0.58	27	27	54	34	12	46
2727.20		57.00	0.49	28	26	54	35	11	46
2727.70		72.30	0.61	24	29	53	37	10	47
2728.20		51.70	0.54	23	27	50	36	14	50
2728.75		53.90	0.63	27	30	57	36	6	42
2730.20		54.60	0.52	24	29	53	35	12	47
2730.55		42.40	0.54	27	28	55	37	8	45
2731.10		53.90	0.50	23	29	52	35	13	48
2731.30		53.10	0.53	23	24	47	35	18	53
2731.90		49.20	0.85	24	27	51	34	15	49
2737.00		50.20	0.55	23	26	49	36	15	51
2740.50		66.00	0.85	23	28	51	38	10	48
2742.50		58.90	0.91	20	27	47	36	18	54

Table 3.1 SOURCE ROCK EXTRACTION DATA I WELL 30/9-10 (cont'd)

Depth(m)	Group/Fm	EOM(mg)	EOM(%)	Hydrocarbons			Non Hydrocarbons		
				SAT(%)	ARO(%)	TOTAL(%)	NSO(%)	ASPH(%)	TOTAL(%)
2745.00		72.50	0.92	21	33	54	37	9	46
2747.10		97.50	1.05	29	33	62	34	3	37
2747.60		47.70	0.69	17	26	43	28	29	57
2748.10		83.00	0.85	30	34	64	30	5	35
2748.75		62.10	0.66	21	31	52	36	12	48
2749.20		48.40	0.77	24	28	52	36	11	47
2749.70		124.00	1.46	32	32	64	34	3	37
2750.30		100.20	1.09	30	38	68	26	6	32
2750.90		100.50	1.03	27	37	64	32	3	35
2781.10		50.00	0.34	16	30	46	27	26	53
2781.80		67.90	0.50	10	36	46	20	33	53
2781.98		63.60	0.47	12	23	35	21	43	64
2782.00		84.30	0.50	10	21	31	24	44	68
2846.00		45.00	0.22	32	11	43	17	40	57
2852.50		164.30	0.98	34	23	57	50	38	88
2856.50		235.70	1.09	45	22	67	11	22	33

Table 3.2 Extraction data II.

Table 3.2 SOURCE ROCK EXTRACTION DATA II WELL 30/9-10

Depth(m)	Group/Fm	TOC (%)	EOM(%) / TOC(%)	SAT(%) / TOC(%)	SAT(%) / ARO(%)	HC/non HC
2719.00		6.00	0.10	4.17	1.14	0.90
2722.00		4.40	0.10	4.55	0.87	0.75
2723.00		3.60	0.13	8.61	1.15	1.35
2725.00		5.00	0.13	5.80	1.04	1.33
2726.15		5.20	0.10	5.00	0.87	1.27
2726.70		4.20	0.14	6.43	1.00	1.17
2727.20		4.10	0.12	6.83	1.08	1.17
2727.70		5.00	0.12	4.80	0.83	1.13
2728.20		4.60	0.12	5.00	0.85	1.00
2728.75		5.20	0.12	5.19	0.90	1.36
2730.20		4.30	0.12	5.58	0.83	1.13
2730.55		5.10	0.11	5.29	0.96	1.22
2731.10		4.80	0.10	4.79	0.79	1.08
2731.30		5.10	0.10	4.51	0.96	0.89
2731.90		33.10	0.03	0.73	0.89	1.04
2737.00		6.40	0.09	3.59	0.88	0.96
2740.50		7.10	0.12	3.24	0.82	1.06
2742.50		7.70	0.12	2.60	0.74	0.87

Table 3.2 SOURCE ROCK EXTRACTION DATA II WELL 30/9-10 (cont'd)

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Depth(m)	Group/Fm	TOC (%)	EOM(%) / TOC(%)	SAT(%) / TOC(%)	SAT(%) / ARO(%)	HC/non HC
2745.00		8.40	0.11	2.50	0.64	1.17
2747.10		7.10	0.15	4.08	0.88	1.68
2747.60		8.20	0.08	2.07	0.65	0.75
2748.10		6.10	0.14	4.92	0.88	1.83
2748.75		6.60	0.10	3.18	0.68	1.08
2749.20		7.30	0.11	3.29	0.86	1.11
2749.70		8.00	0.18	4.00	1.00	1.73
2750.30		7.80	0.14	3.85	0.79	2.13
2750.90		6.30	0.16	4.29	0.73	1.83
2781.10		3.70	0.09	4.32	0.53	0.87
2781.80		5.10	0.10	1.96	0.28	0.87
2781.98		4.00	0.12	3.00	0.52	0.55
2782.00		4.10	0.12	2.44	0.48	0.46
2846.00					2.91	0.75
2852.50					1.48	0.65
2856.50					2.05	2.03

Figure 1.1 Well location map.

Figure 1.2 Well summary outlining
formation tops.

WELL SUMMARY 30/9-10

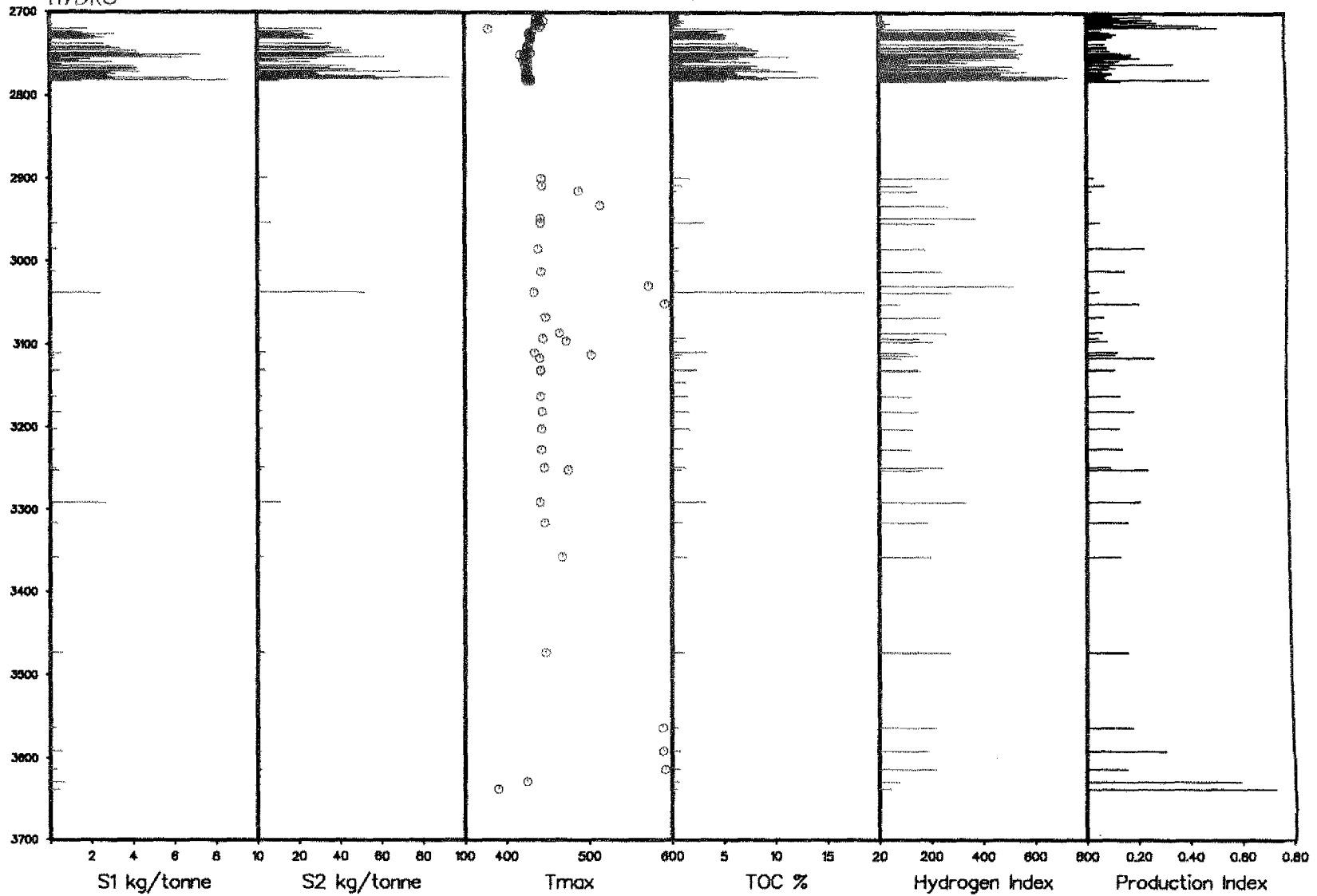
m RKB

	SYSTEM	GROUP	FORMATION
1000	TERTIARY	HORDALAND	
1200			
1400			
1600			
1800			
2000			2057
			2128 BALDER
			2200 SELE
			LISTA
			2365
2372		2372	2372 MAUREEN
2400	CRETACEOUS	SHETLAND	
2600			
2717		2689	2717
		2717 CROMER KNOLL	
		2782.1 VIKING	2782.1 DRAUPNE
2800			2868.7 TARBERT
		BRENT	NESS
3000			3096
			ETIVE/RANNOC-OSEBERG
			3129
3200	JURASSIC	DUNLIN	DRAKE
3400			3404
			3424 CLOOK
			3502 BURTON
			AMUNDSEN
3600		T.D. 3649m	3622
			STAFFORD

Figure 2.1 Screening data versus depth.



WELL: 30/9-10





WELL: 30/9-10 - DRAUPNE FM.

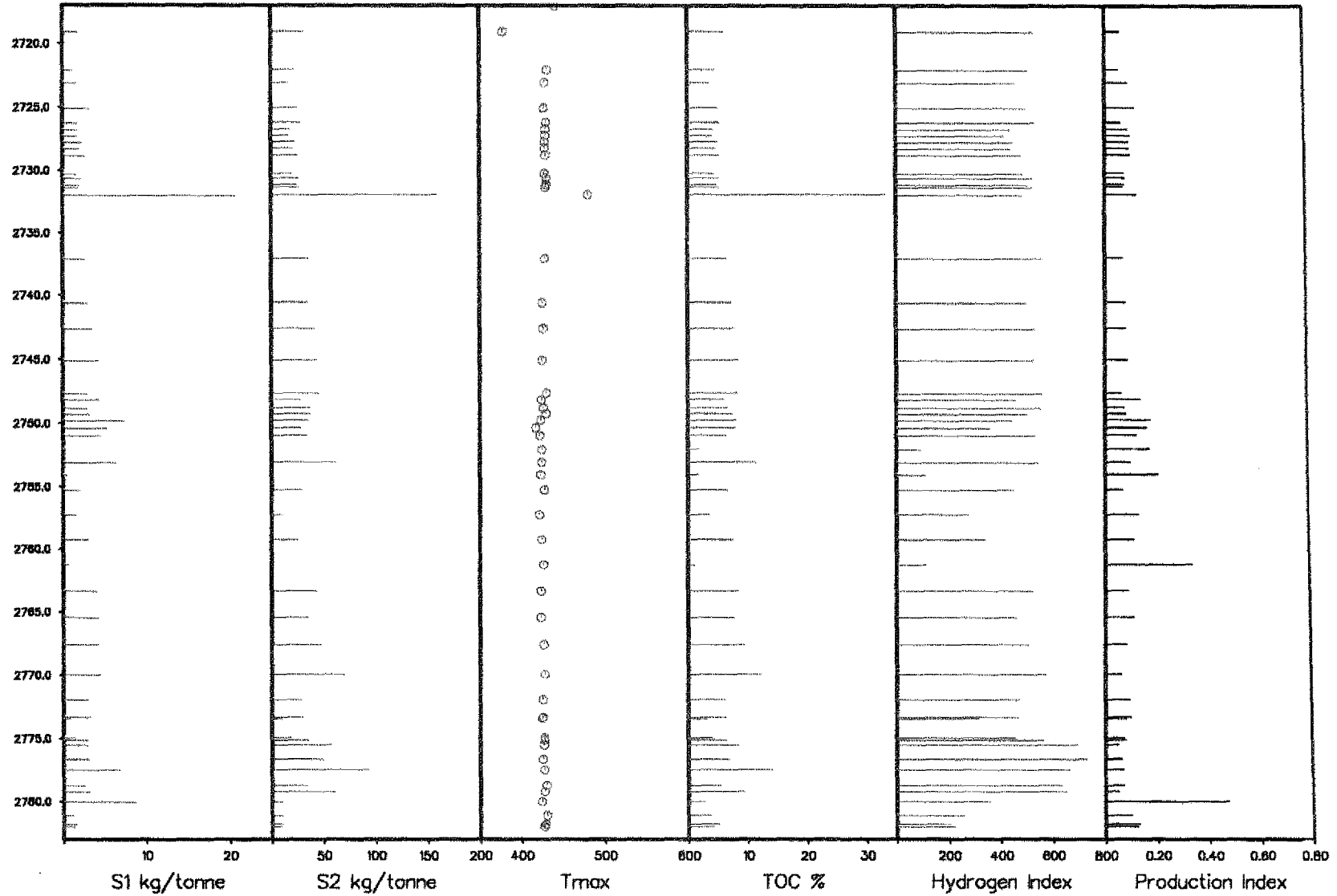


Figure 2.2 Hydrogen Index versus T_{\max} .

WELL: 30/9-10

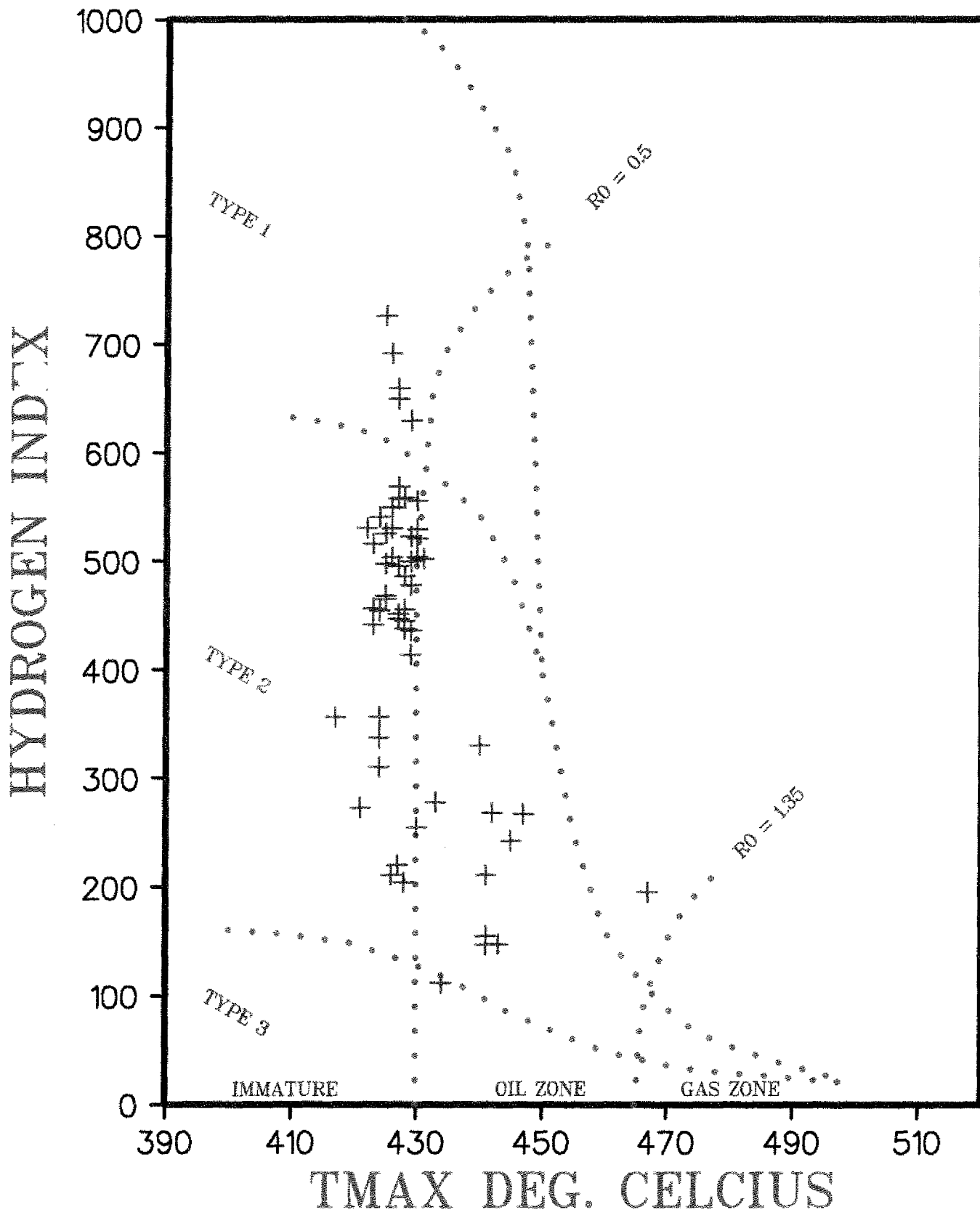
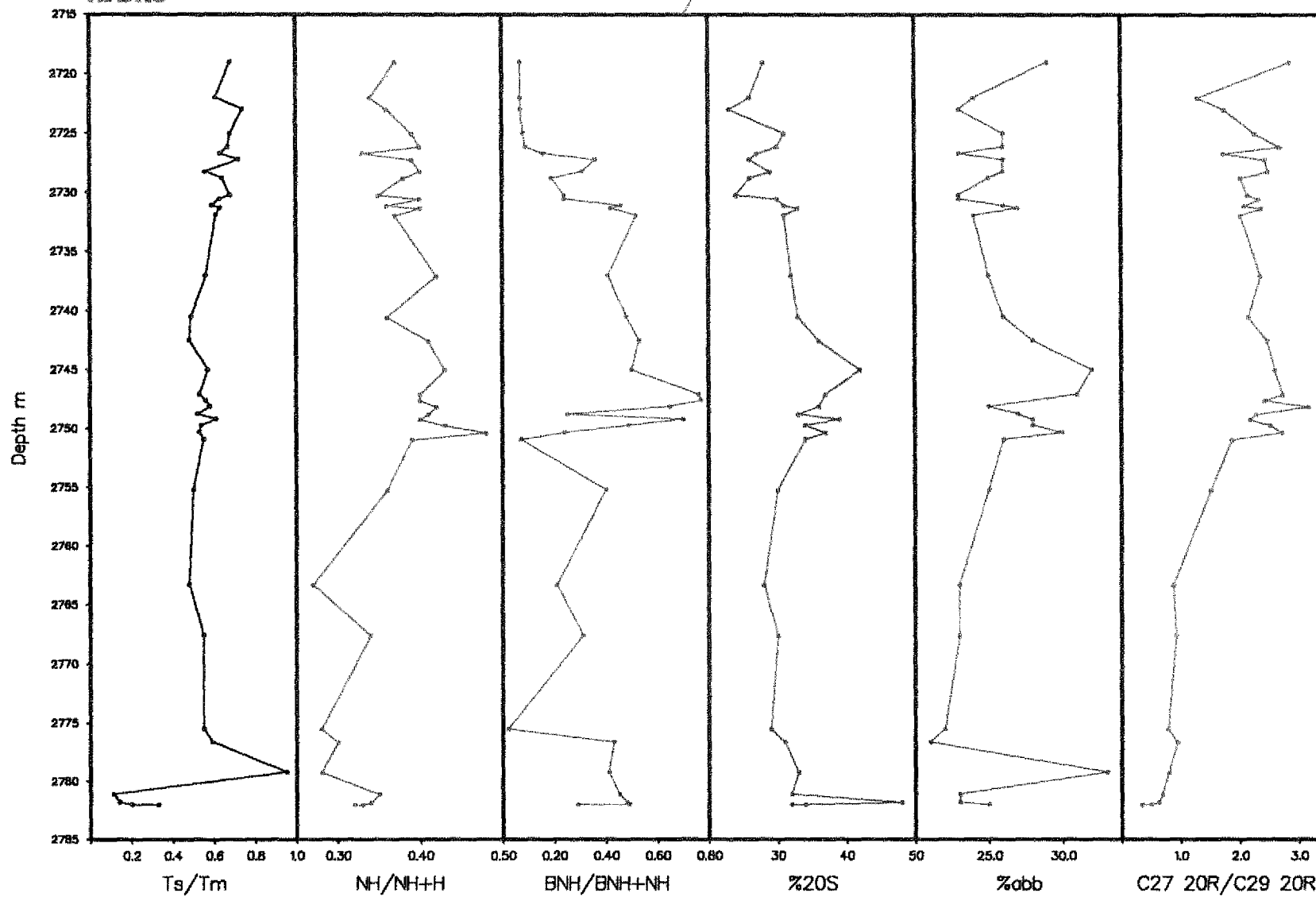


Figure 2.3

Biomarker ratios
versus depth.



Well: 30/9-10



APPENDIX I

Pyrolysis Gas Chromatograms.

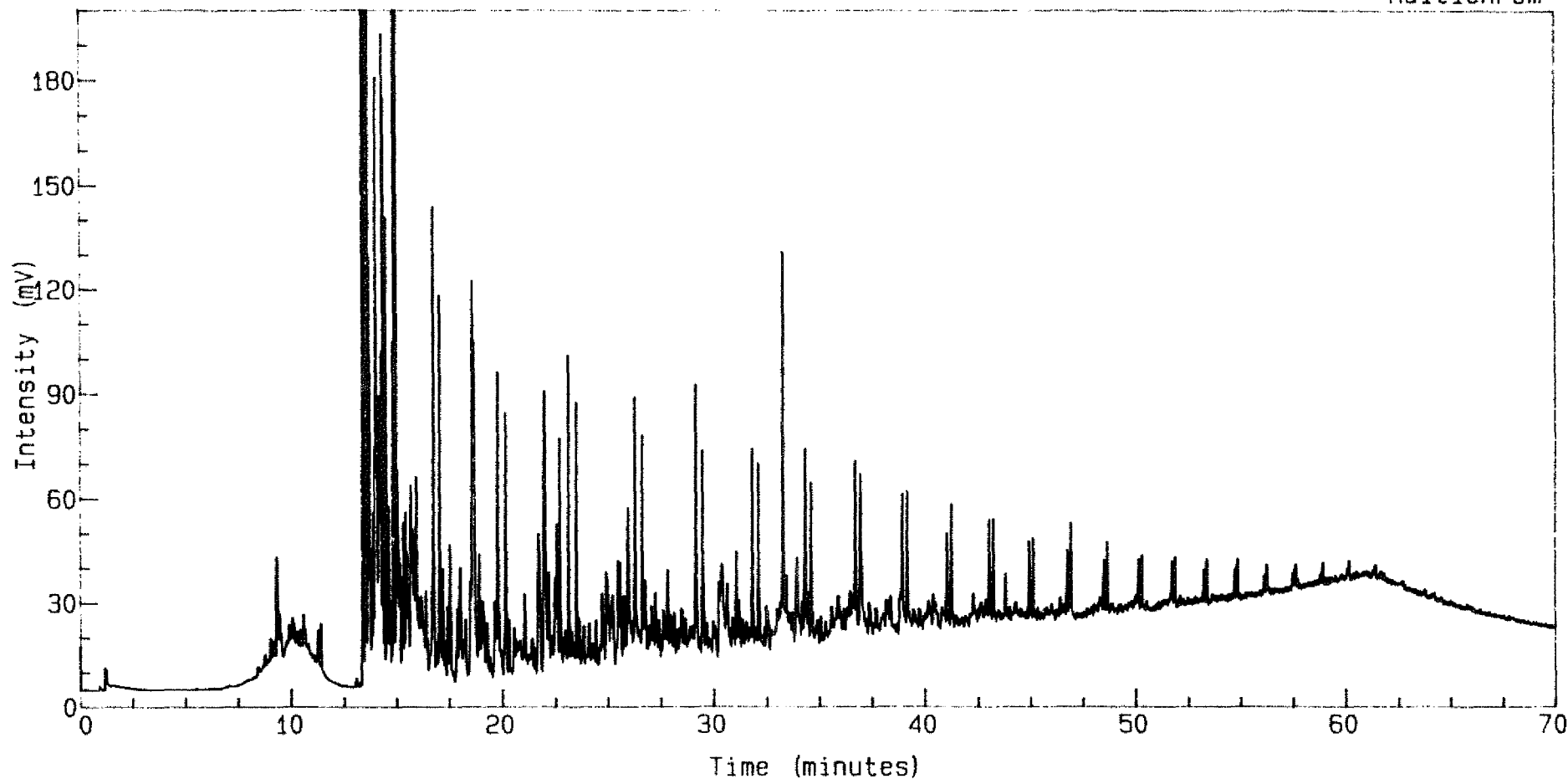
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 6 W300910P, 2, 1.

30/9-10 2719 SWC Amount : 7.300

PROGRAMMED PYROLYSIS FID

Multichrom



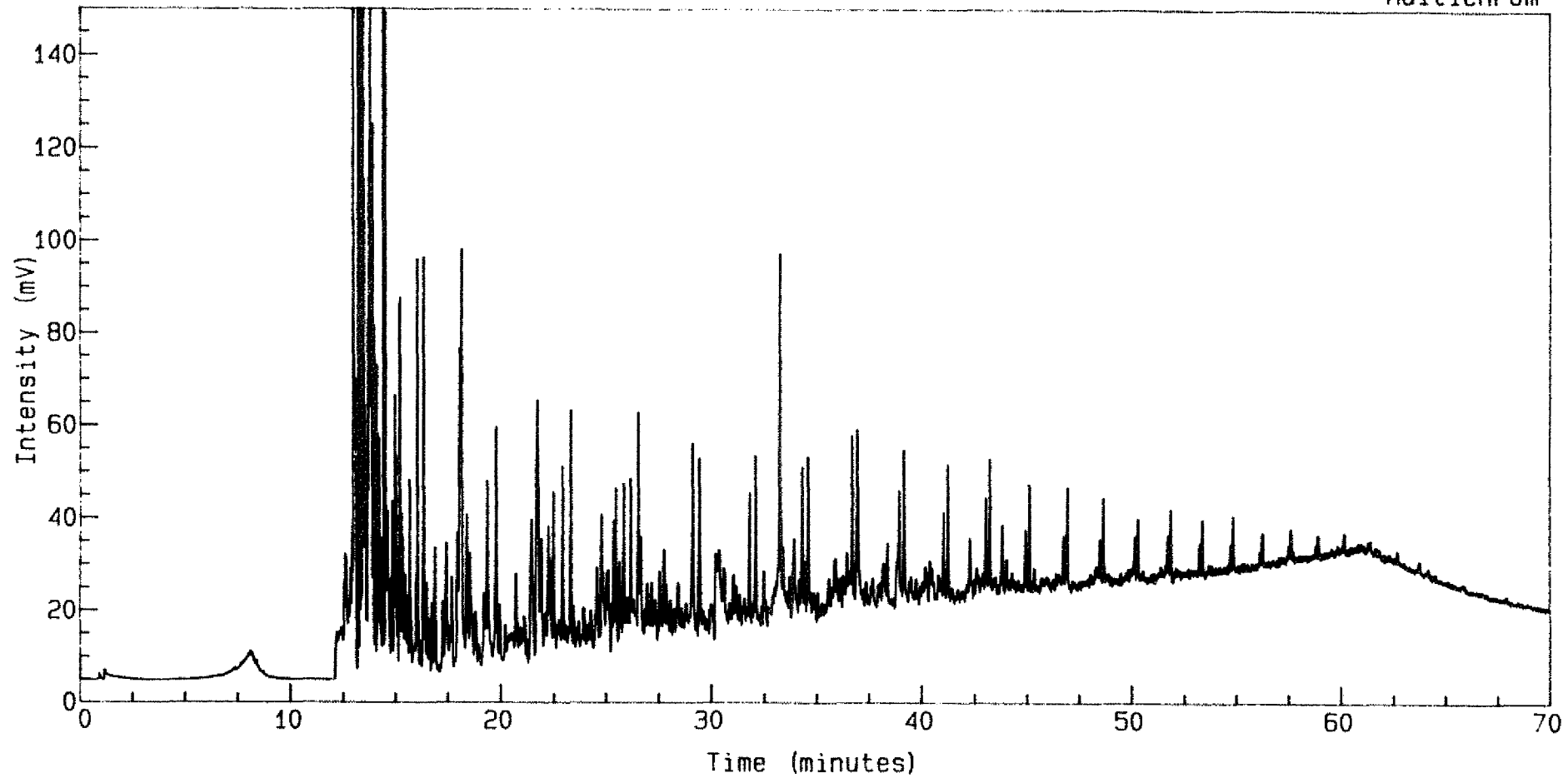
Instrument : V 3700
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 17-OCT-1990 at 23:39
Reported on 30-NOV-1990 at 15:46

Method : PYRO
Calibration : PYRO
Run Sequence : PYR02

NUHSC HYDRU RESEARCH CENTRE

Analysis Name : [PETRO] 6 W300910P, 3, 1.
30/9-10 2722 M SWC Amount : 15.800
PROGRAMMED PYROLYSIS FID

Multichrom



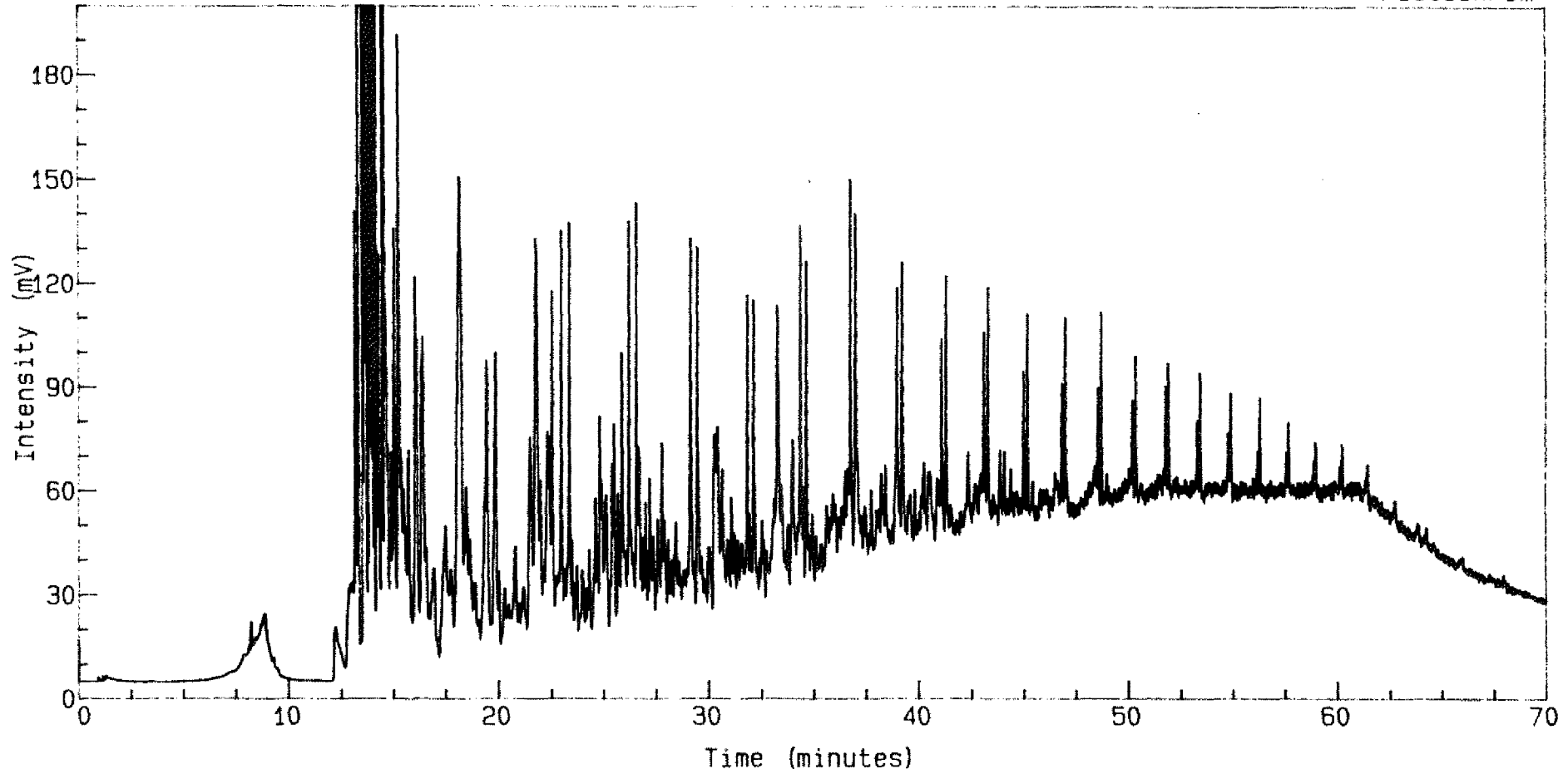
Instrument : V 3700
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 18-OCT-1990 at 01:11
Reported on 30-NOV-1990 at 15:47

Method : PYRO
Calibration : PYRO
Run Sequence : PYRO2

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 6 W300910P, 4, 1.
30/9-10 2723 M SWC Amount : 31.000
PROGRAMMED PYROLYSIS FID

Multichrom



Instrument : V 3700
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 18-OCT-1990 at 02:43
Reported on 30-NOV-1990 at 15:45

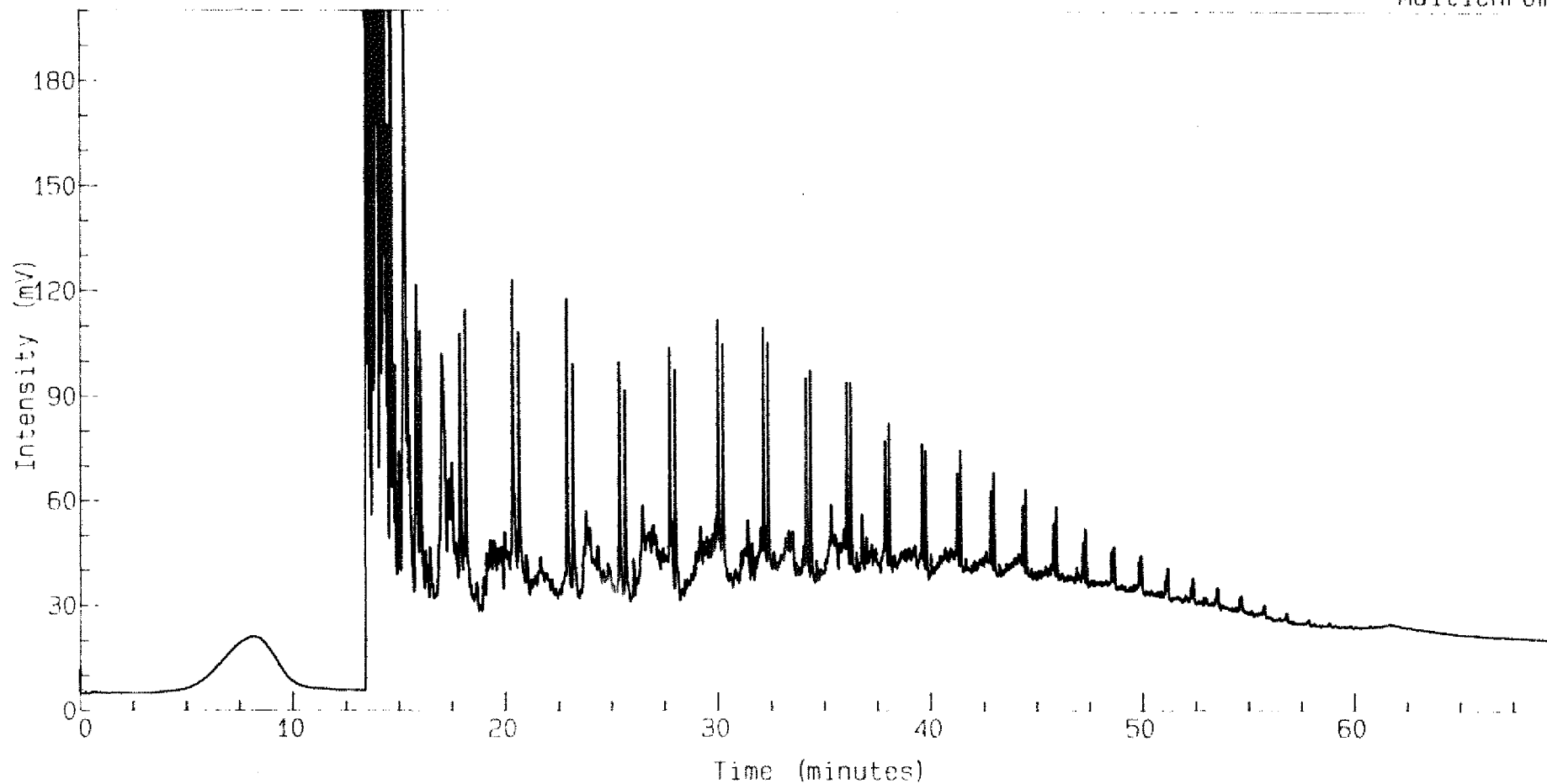
Method : PYRO
Calibration : PYRO
Run Sequence : PYR02

NOHSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 W300910P, 3, 1.

2726.15 m Amount : 1.000

Multichrom

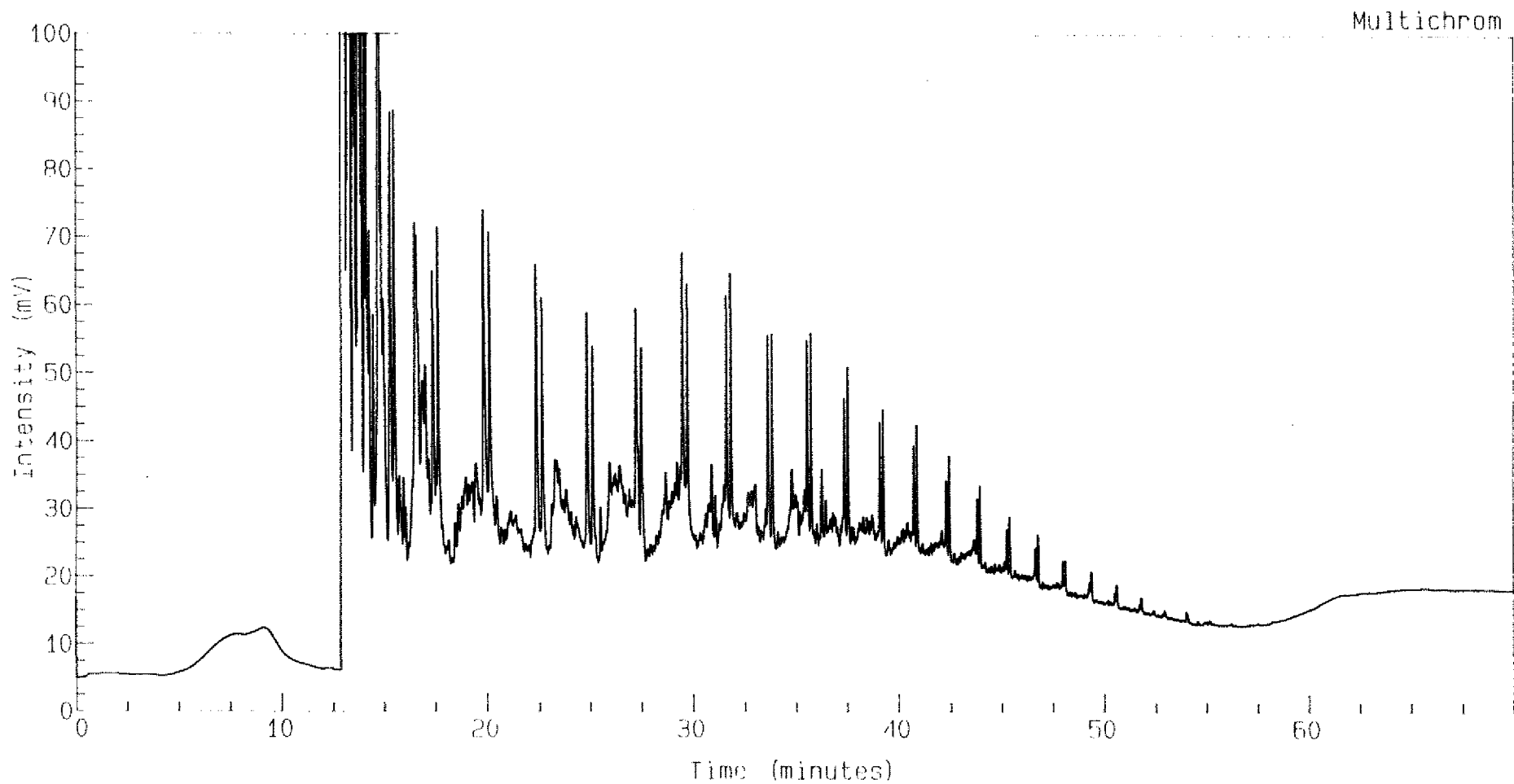


Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 28-NOV-1990 at 15:30
Reported on 30-NOV-1990 at 12:22

Method : PYRO
Calibration :
Run Sequence : PYRO

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 W300910P, 4, 1.
2727.7 m Amount : 1.000



Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 29-NOV-1990 at 08:15
Reported on 30-NOV-1990 at 09:10

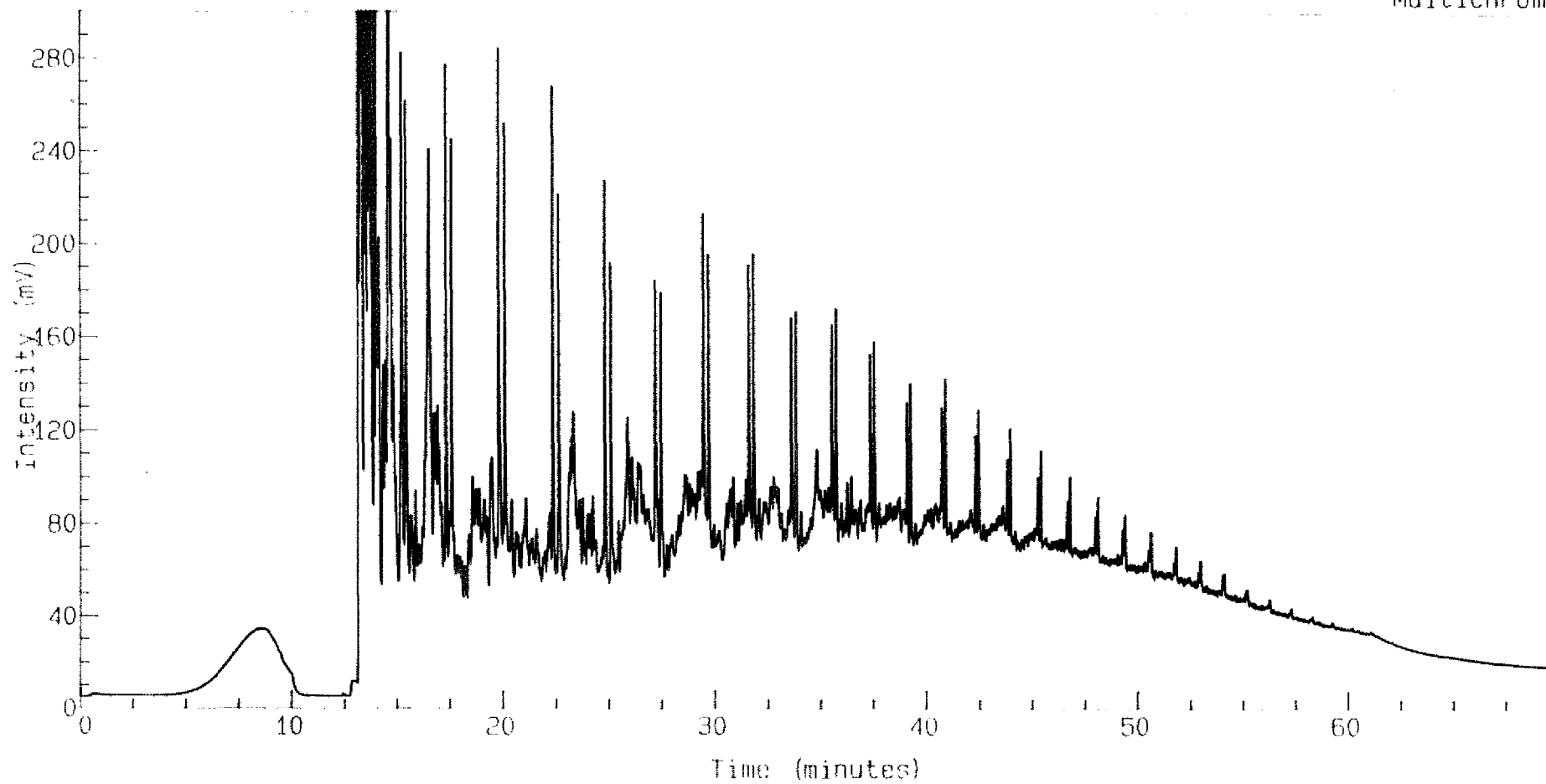
Method : PYRO
Calibration :
Run Sequence : PYRO

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 W300910P, 5, 1.

2730.2 m Amount : 1.000

Multichrom



Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 29-NOV-1990 at 09:54
Reported on 30-NOV-1990 at 13:10

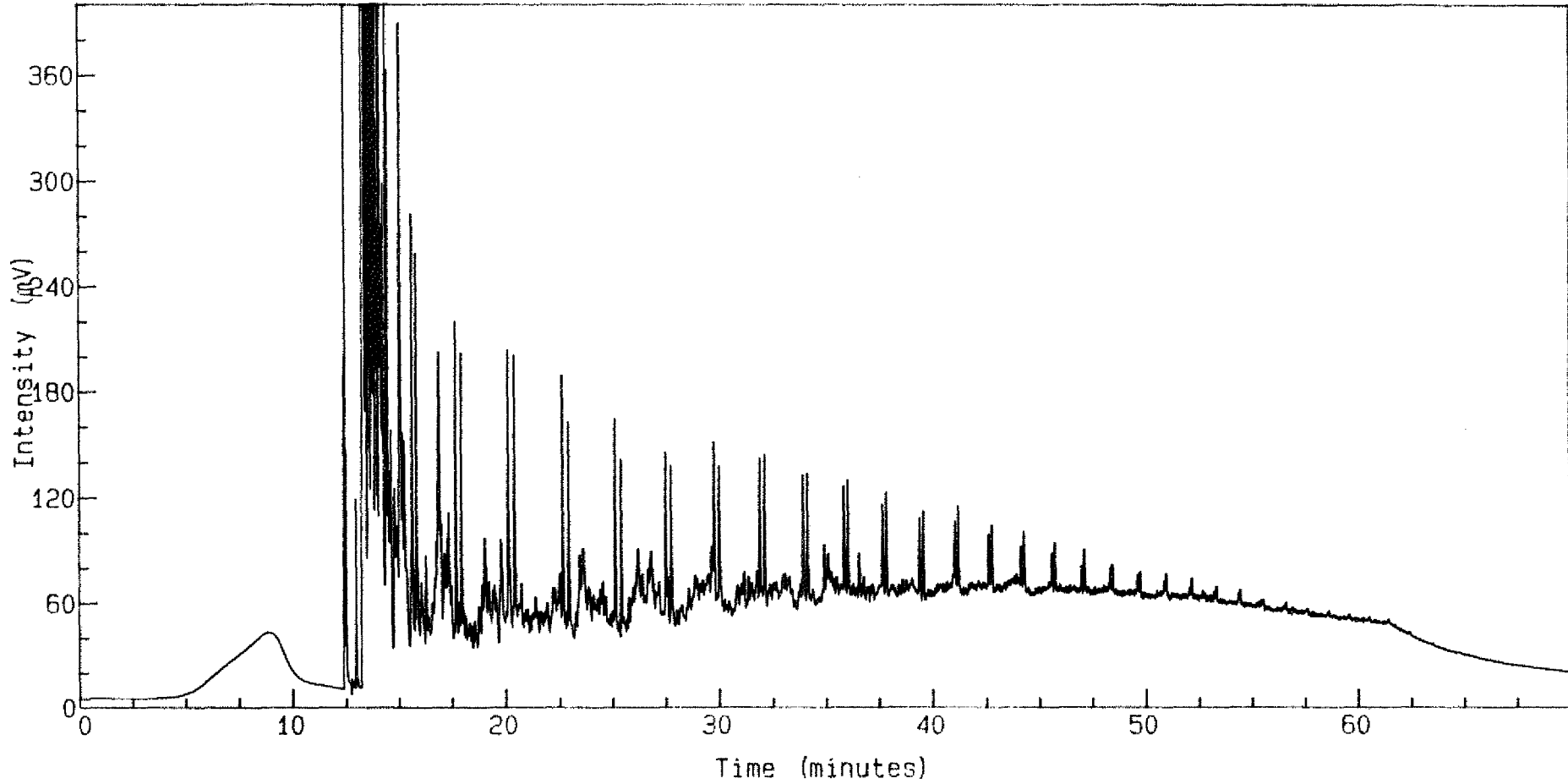
Method : PYRO
Calibration :
Run Sequence : PYRO

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 A300910P, 1, 1.

2731.9M Amount : 1.000

Multichrom



Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 6-DEC-1990 at 15:22
Reported on 7-DEC-1990 at 10:33

Method : PYRO
Calibration :
Run Sequence : PYRO

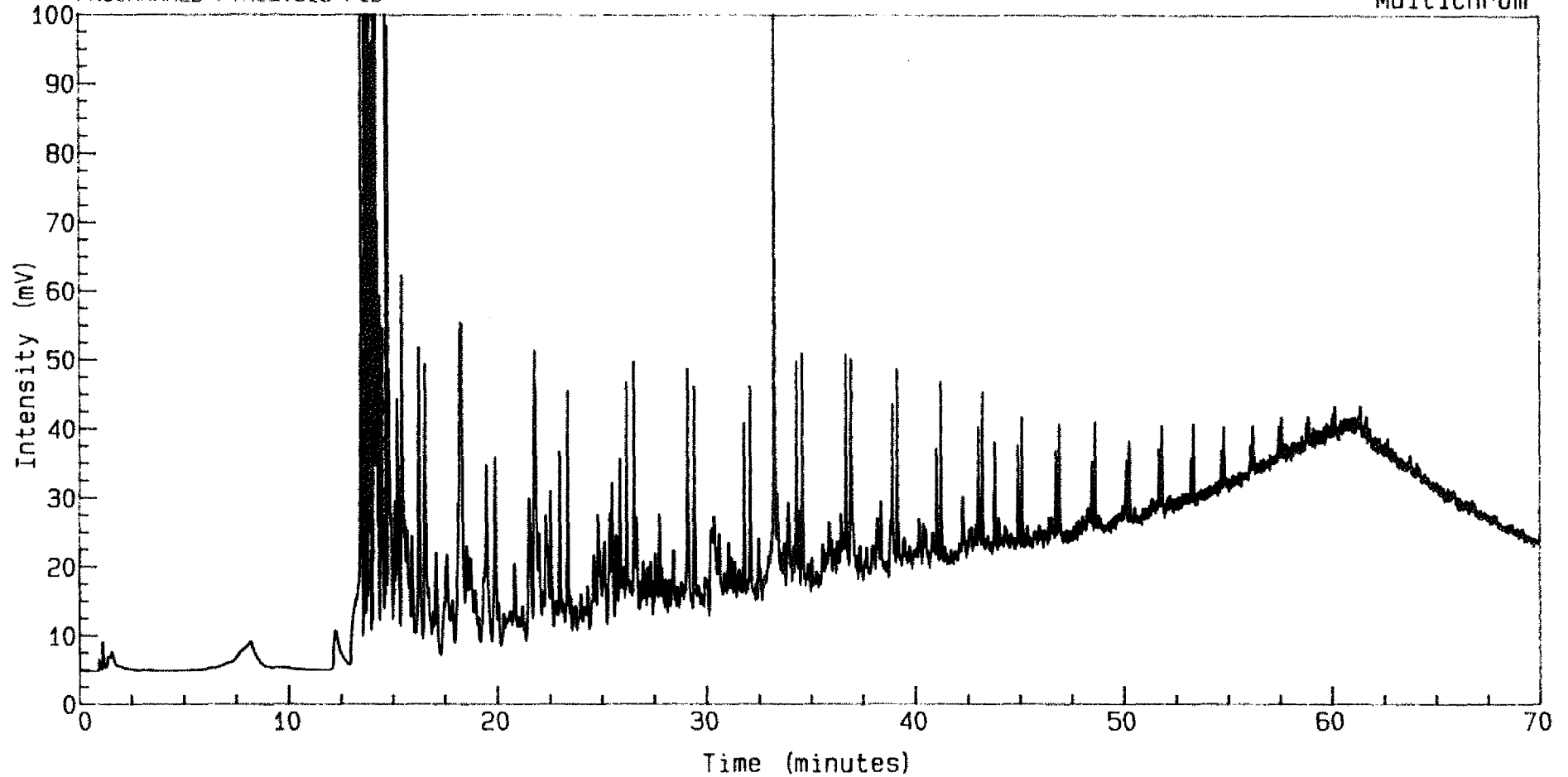
NUHSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 6 W300910P, 5, 1.

30/9-10 2737 M SWC Amount : 8.100

PROGRAMMED PYROLYSIS FID

Multichrom



Instrument : V 3700
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 18-OCT-1990 at 04:14
Reported on 30-NOV-1990 at 15:00

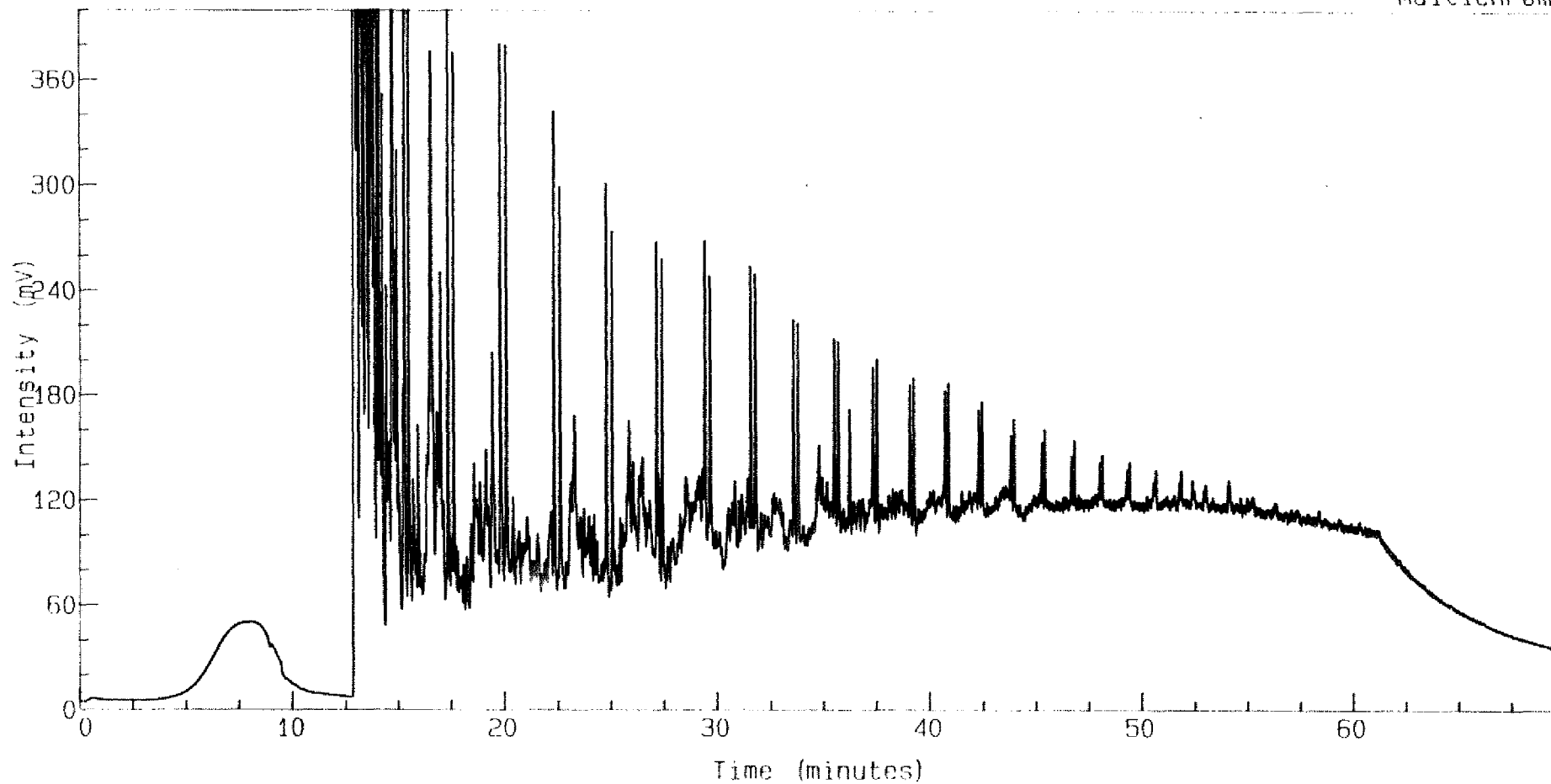
Method : PYRO
Calibration : PYRO
Run Sequence : PYRO2

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 W300910P, 6, 1.

2740.5 m . Amount : 1.000

Multichrom



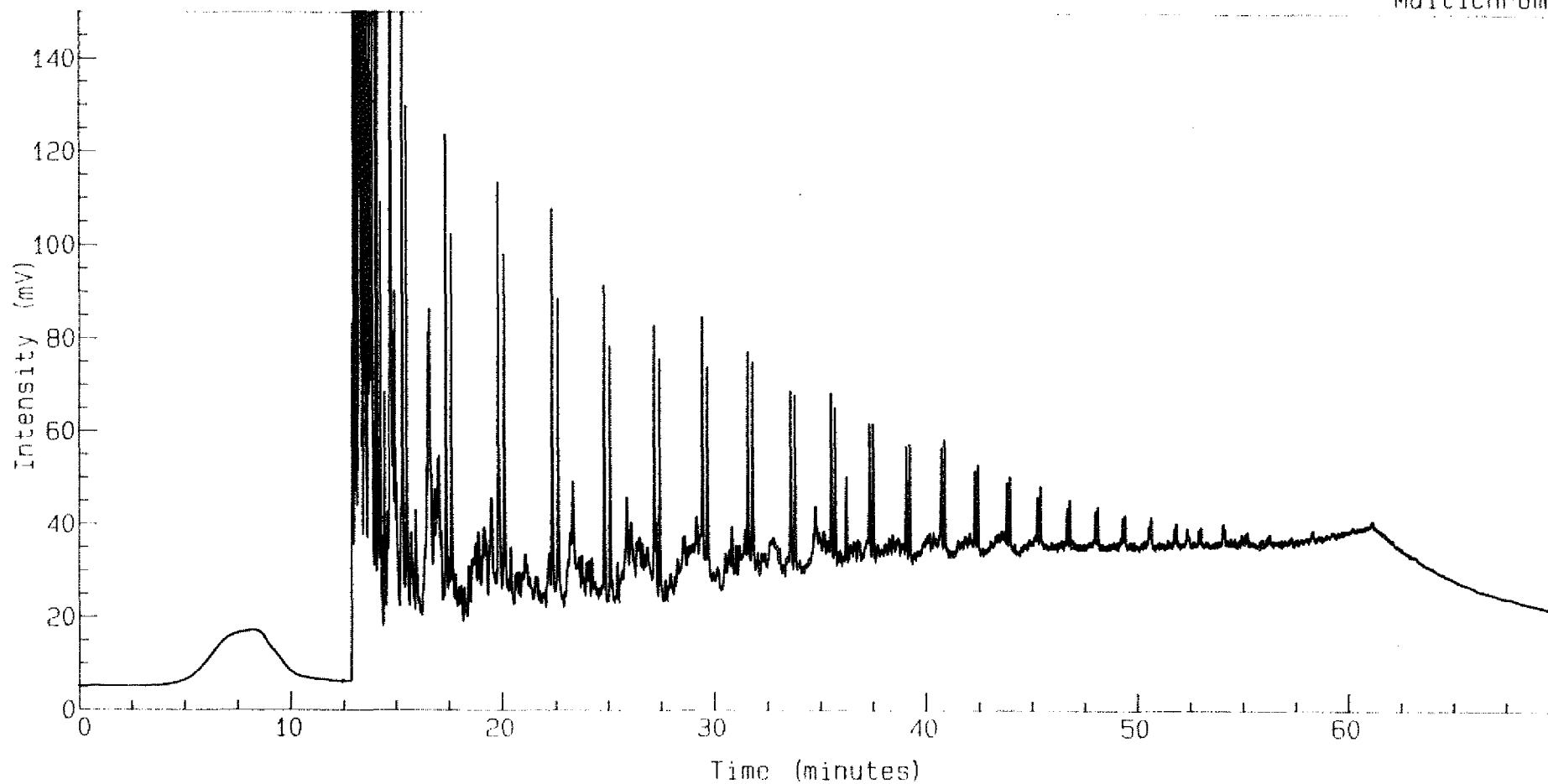
Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 29-NOV-1990 at 12:00
Reported on 30-NOV-1990 at 12:16

Method : PYRO
Calibration :
Run Sequence : PYRO

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 W300910P, 7, 1.
2742.5 m Amount : 1.000

Multichrom



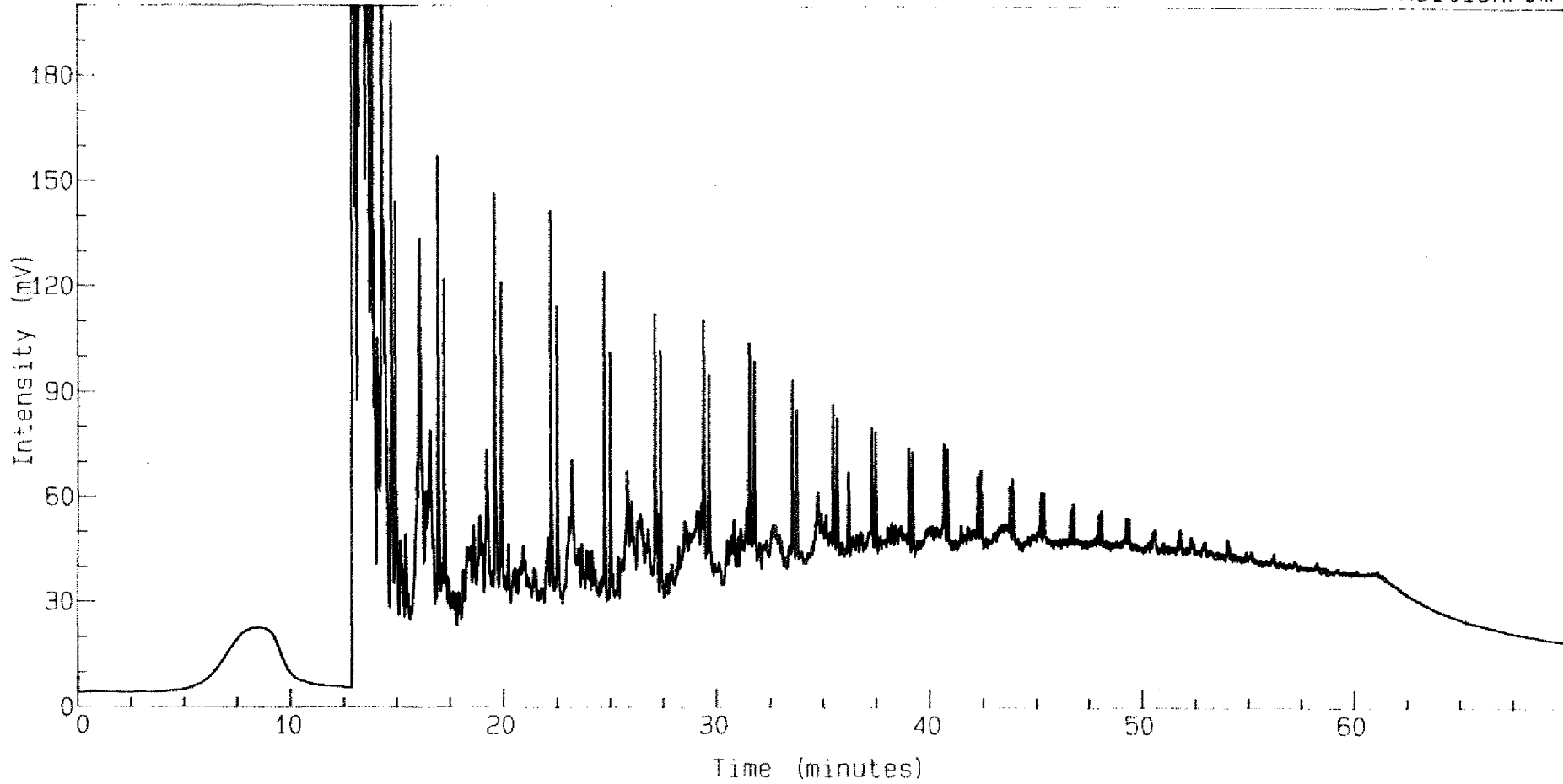
Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 29-NOV-1990 at 13:55
Reported on 30-NOV-1990 at 09:39

Method : PYRO
Calibration :
Run Sequence : PYRO

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 W300910P, 8, 1.
2745 m Amount : 1.000

Multichrom



Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 29-NOV-1990 at 15:22
Reported on 30-NOV-1990 at 12:23

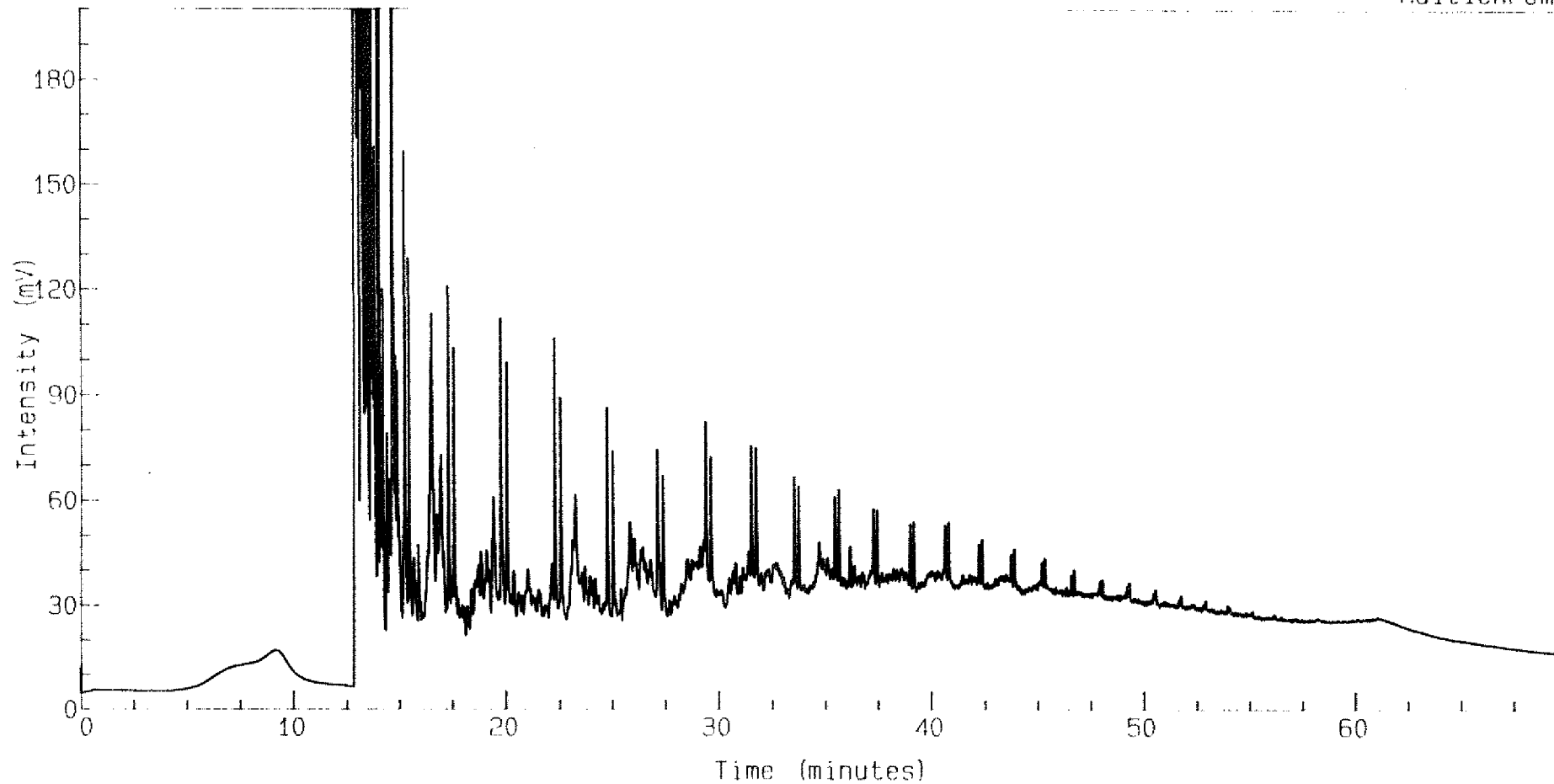
Method : PYRO
Calibration :
Run Sequence : PYRO

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 W300910P, 9, 1.

2747.1 m Amount : 1.000

Multichrom



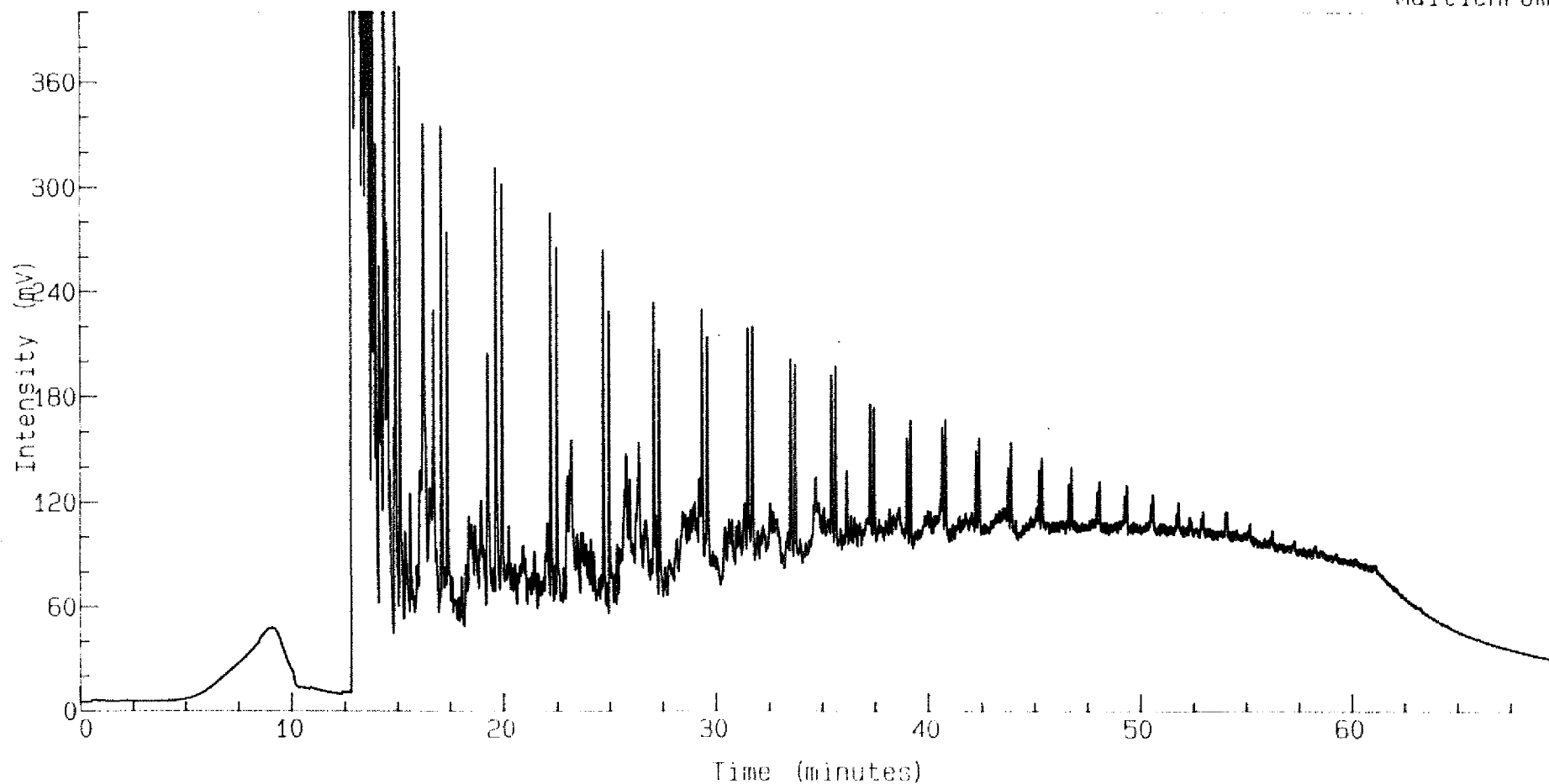
Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 30-NOV-1990 at 08:05
Reported on 30-NOV-1990 at 12:19

Method : PYRO
Calibration :
Run Sequence : PYRO

NOVICK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 W300910P, 10, 1.
2748.75 m Amount : 1.000

Multichrom



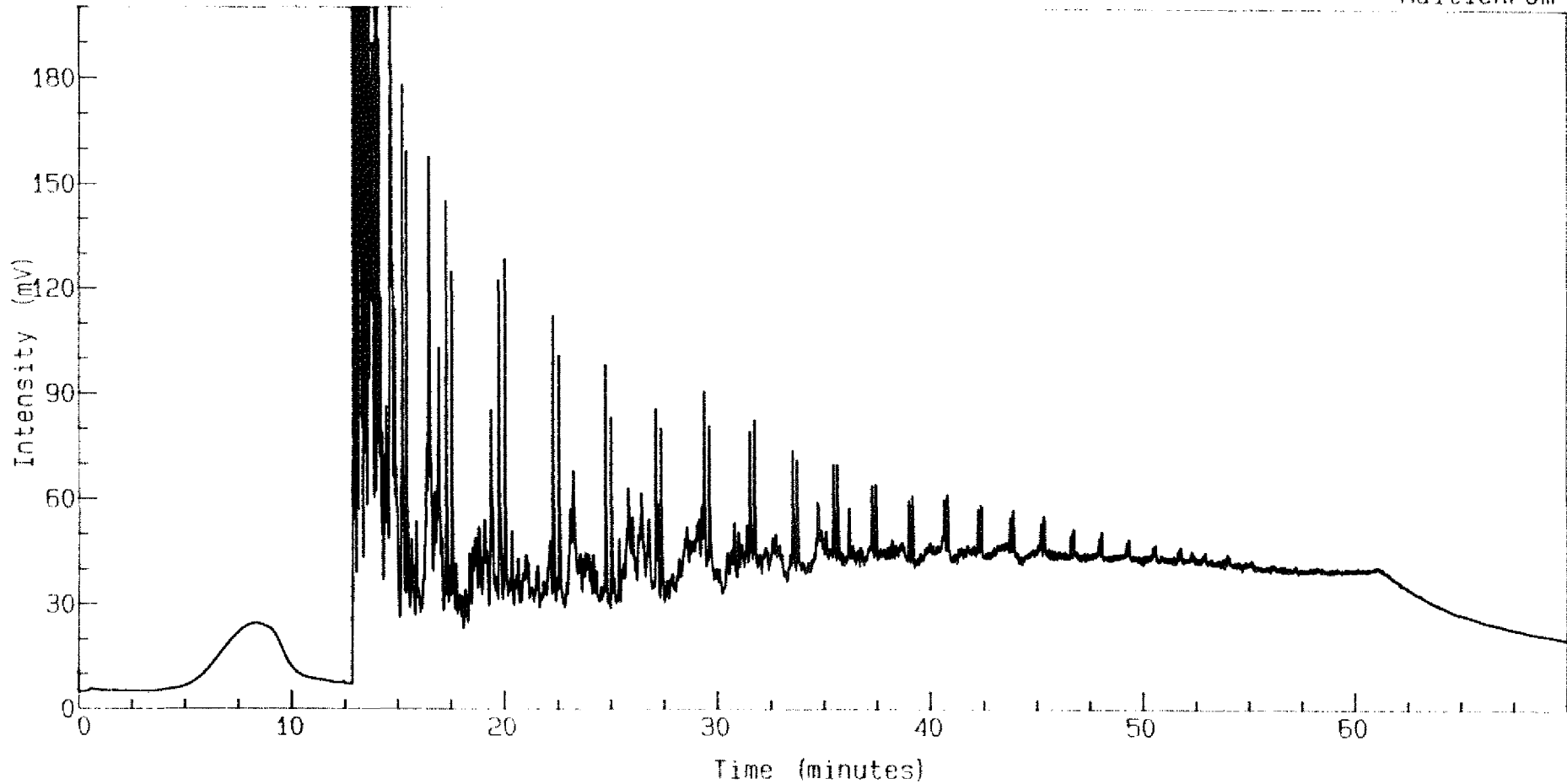
Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 30-NOV-1990 at 09:36
Reported on 30-NOV-1990 at 12:07

Method : PYRO
Calibration :
Run Sequence : PYRO

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 W300910P, 11, 1.
2750.9 m Amount : 1.000

Multichrom



Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 30-NOV-1990 at 11:46
Reported on 30-NOV-1990 at 15:43

Method : PYRO
Calibration :
Run Sequence : PYRO

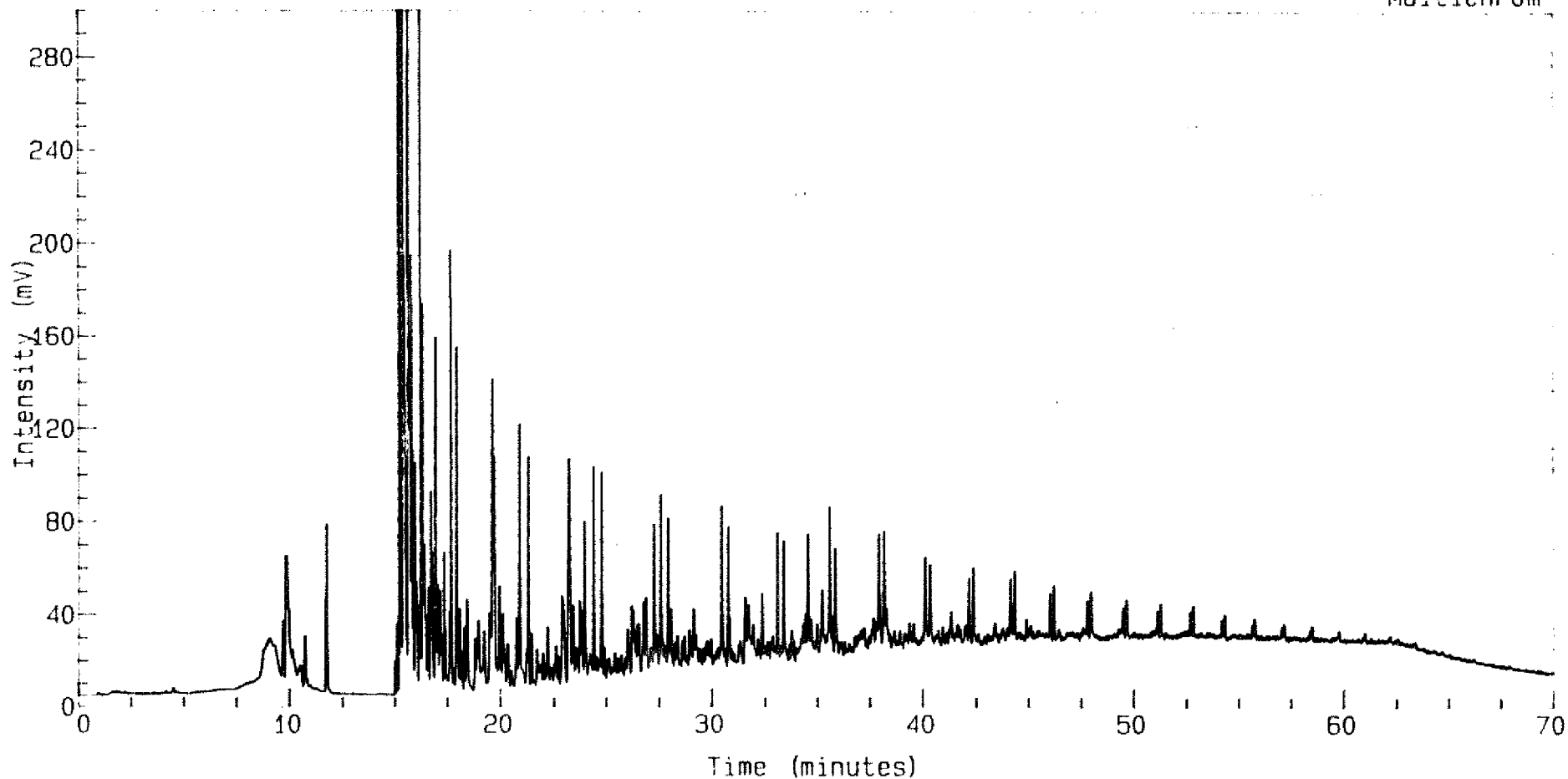
NUHSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 6 C300910P, 6, 1.

30/9-10 2755.2 m Amount : 8.600

PROGRAMMED PYROLYSIS FID

Multichrom



Instrument : V 3700
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 16-JAN-1991 at 21:36
Reported on 28-JAN-1991 at 09:56

Method : PYRO
Calibration : PYRO
Run Sequence : PYRO

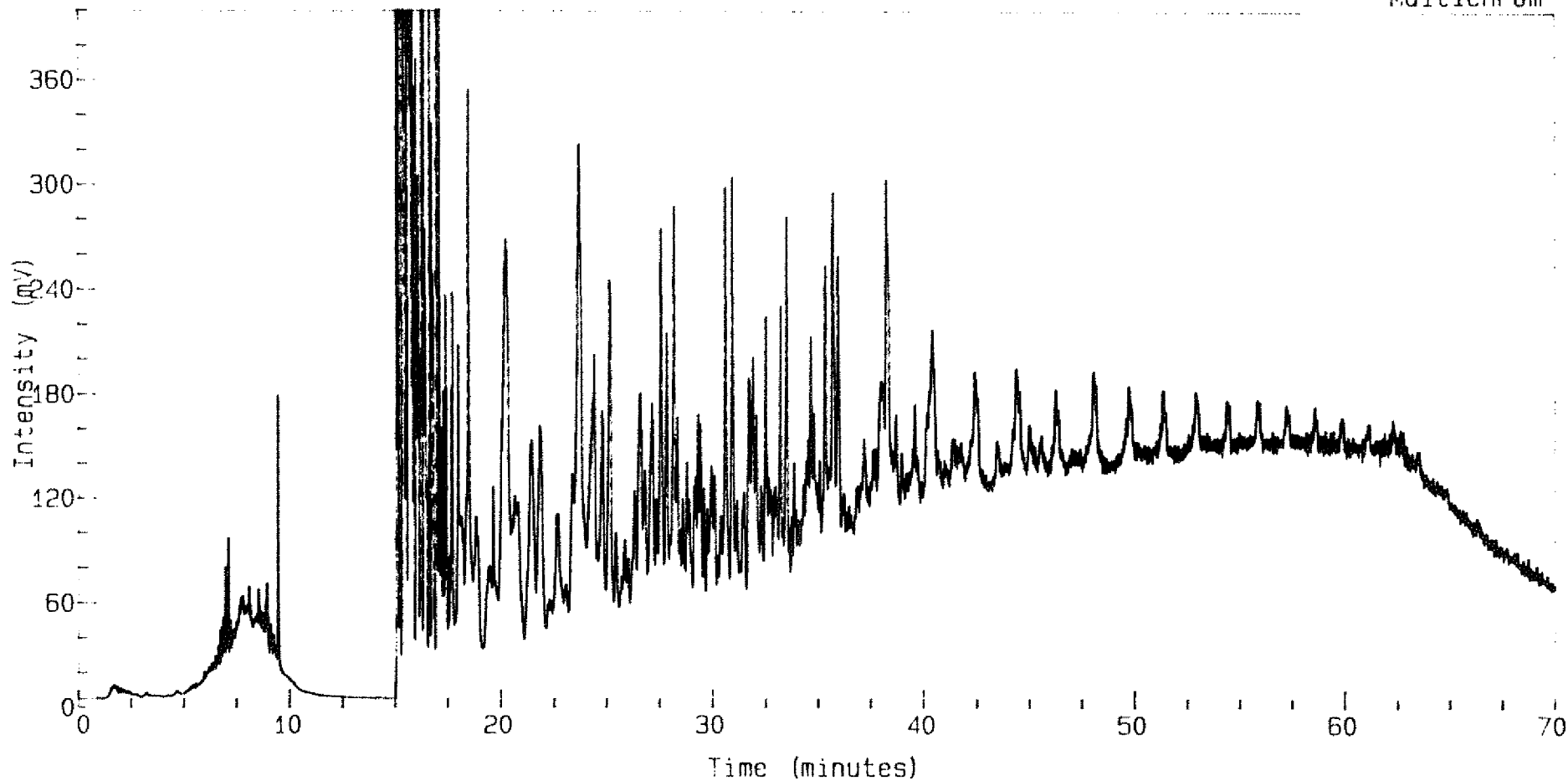
NURSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 6 D300910P, 2, 1.

2763.3 m Amount : 9.800

PROGRAMMED PYROLYSIS FID

Multichrom



Instrument : V 3700

Channel Title : PYROLYSIS FID

Line ID :

Acquired on 29-JAN-1991 at 16:41

Reported on 30-JAN-1991 at 09:50

Method : PYRO

Calibration : PYRO

Run Sequence : PYRO

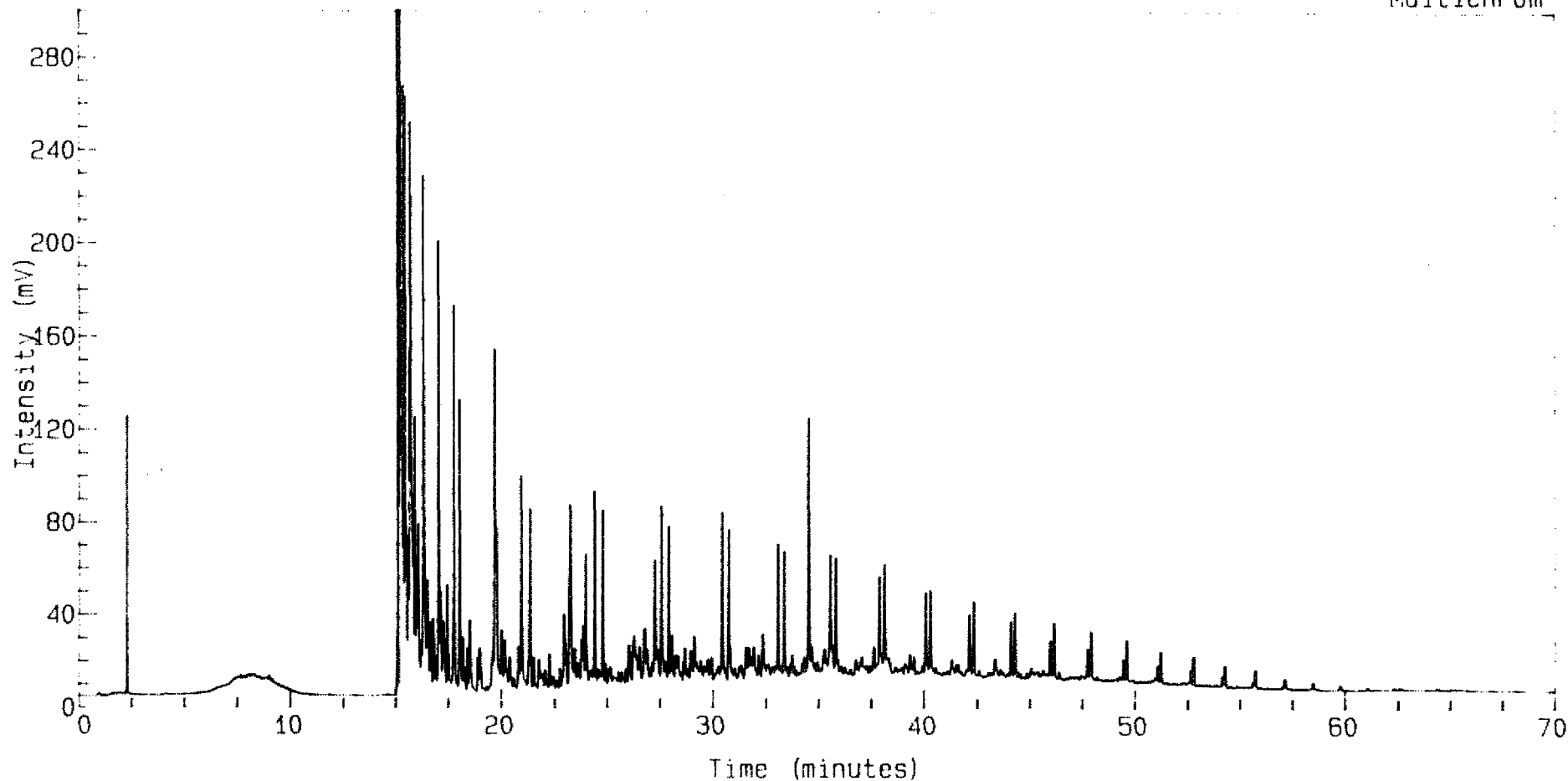
NUHSK HYDRU RESEARCH CENTRE

Analysis Name : [PETRO] 6 C300910P, 8, 1.

30/9-10 2767.55 m Amount : 4.10G

PROGRAMMED PYROLYSIS FID

Multichrom



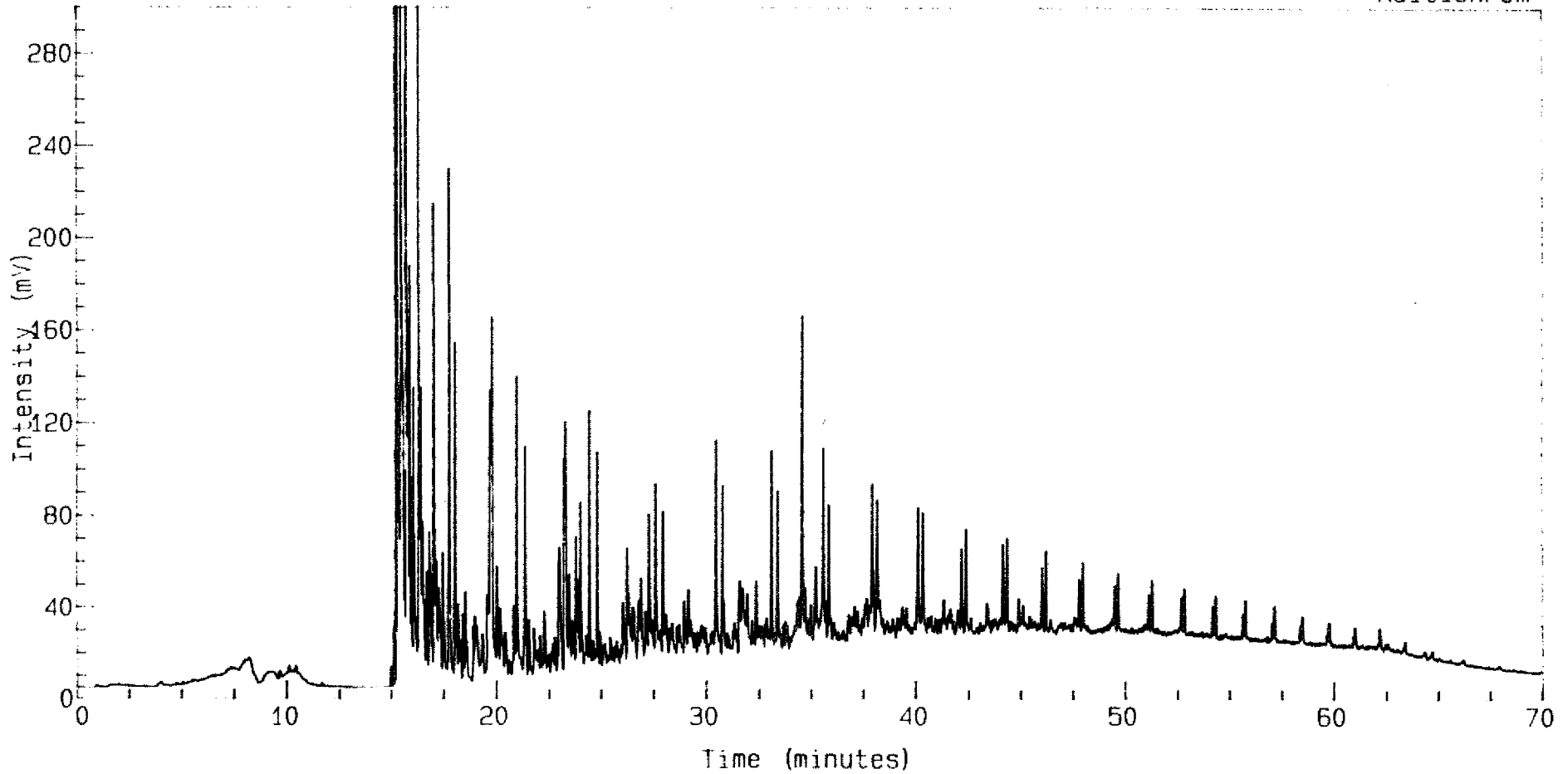
Instrument : V 3700
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 18-JAN-1991 at 13:39
Reported on 28-JAN-1991 at 09:59

Method : PYRO
Calibration : PYRO
Run Sequence : PYRO

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 6 C300910P, 9, 1.
30/9-10 2775.5 m Amount : 7.400
PROGRAMMED PYROLYSIS FID

Multichrom



Instrument : V 3700
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 18-JAN-1991 at 15:14
Reported on 28-JAN-1991 at 09:57

Method : PYRO
Calibration : PYRO
Run Sequence : PYRO

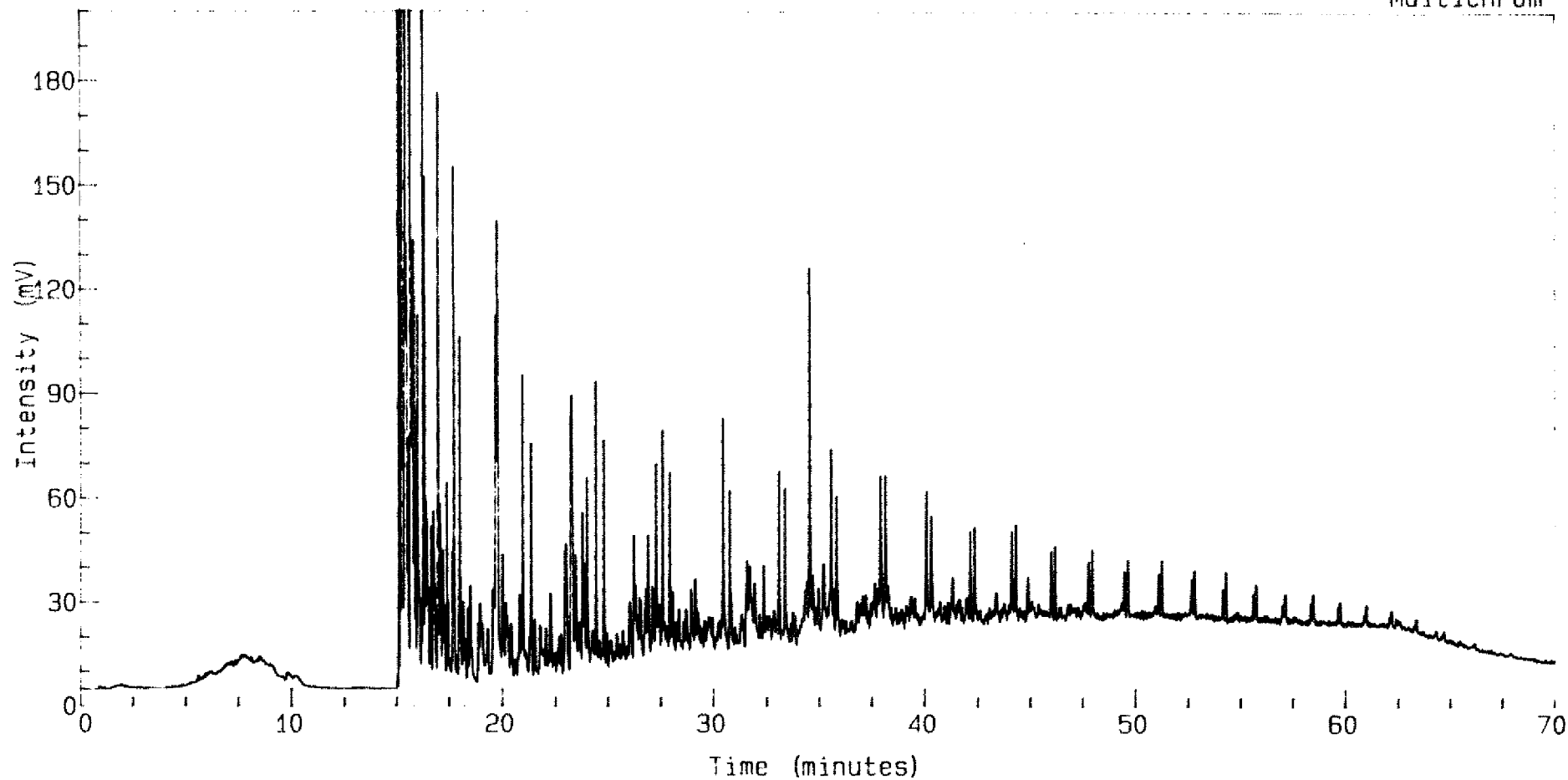
NOHSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 6 C300910P, 10, 1.

30/9-10 2776.6 m Amount : 4.900

PROGRAMMED PYROLYSIS FID

Multichrom



Instrument : V 3700
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 18-JAN-1991 at 16:49
Reported on 28-JAN-1991 at 09:54

Method : PYRO
Calibration : PYRO
Run Sequence : PYRO

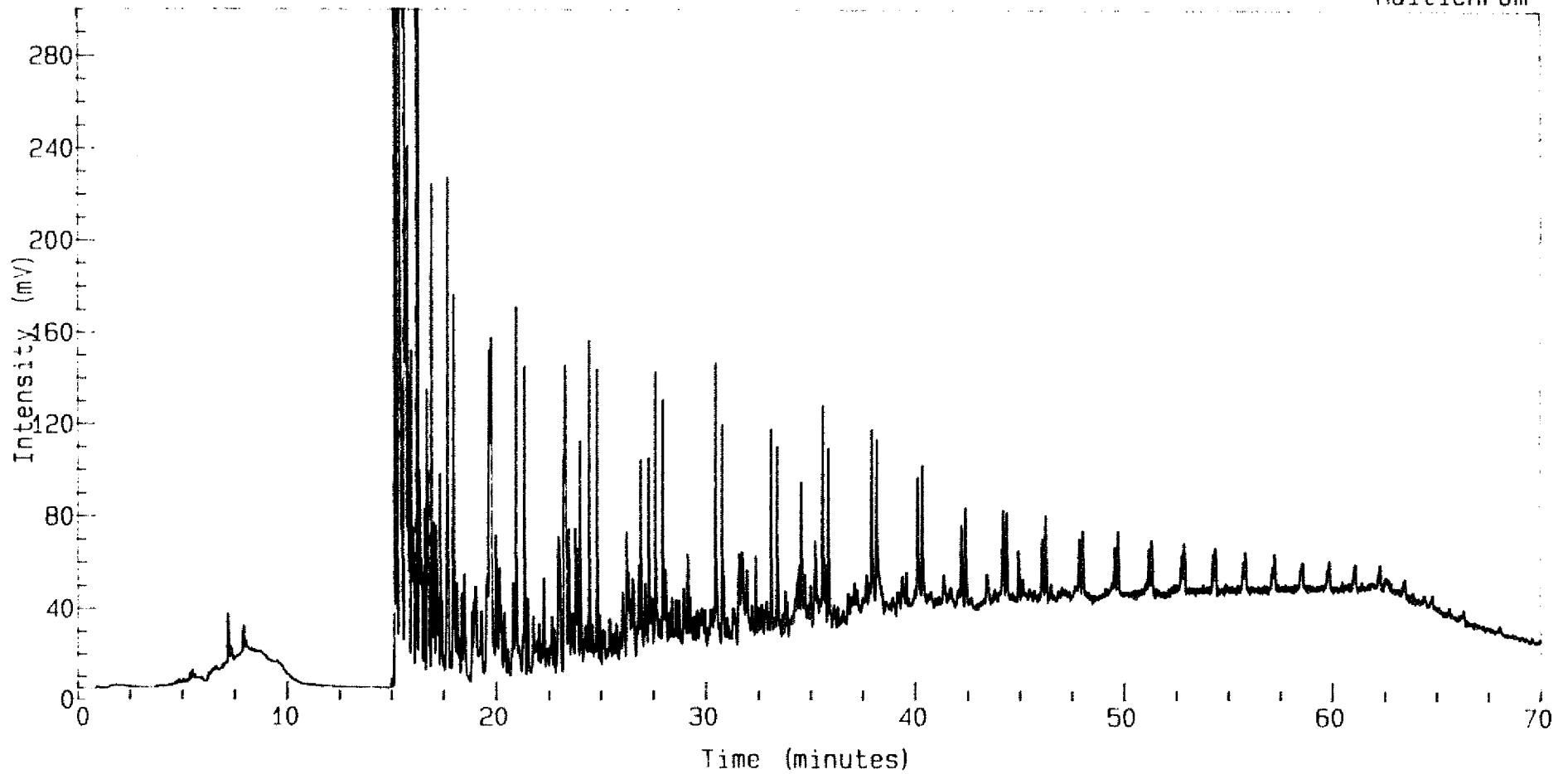
NURSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 6 C300910P, 11, 1.

30/9-10 2779.2 m Amount : 6.100

PROGRAMMED PYROLYSIS FID

Multichrom



Instrument : V 3700
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 18-JAN-1991 at 18:24
Reported on 28-JAN-1991 at 09:55

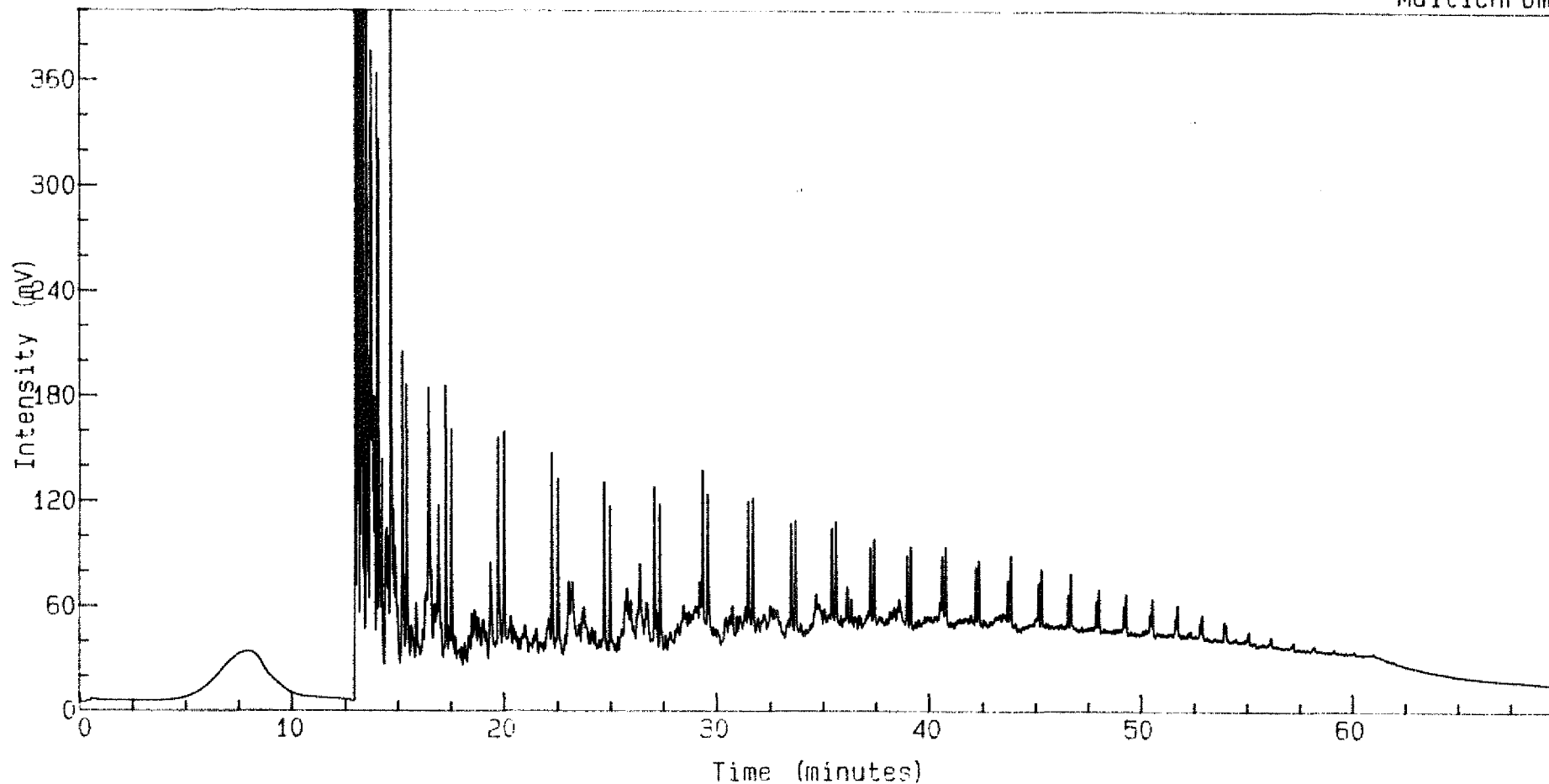
Method : PYRO
Calibration : PYRO
Run Sequence : PYRO

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 A300910P, 2, 1.

2781.1M Amount : 1.000

Multichrom



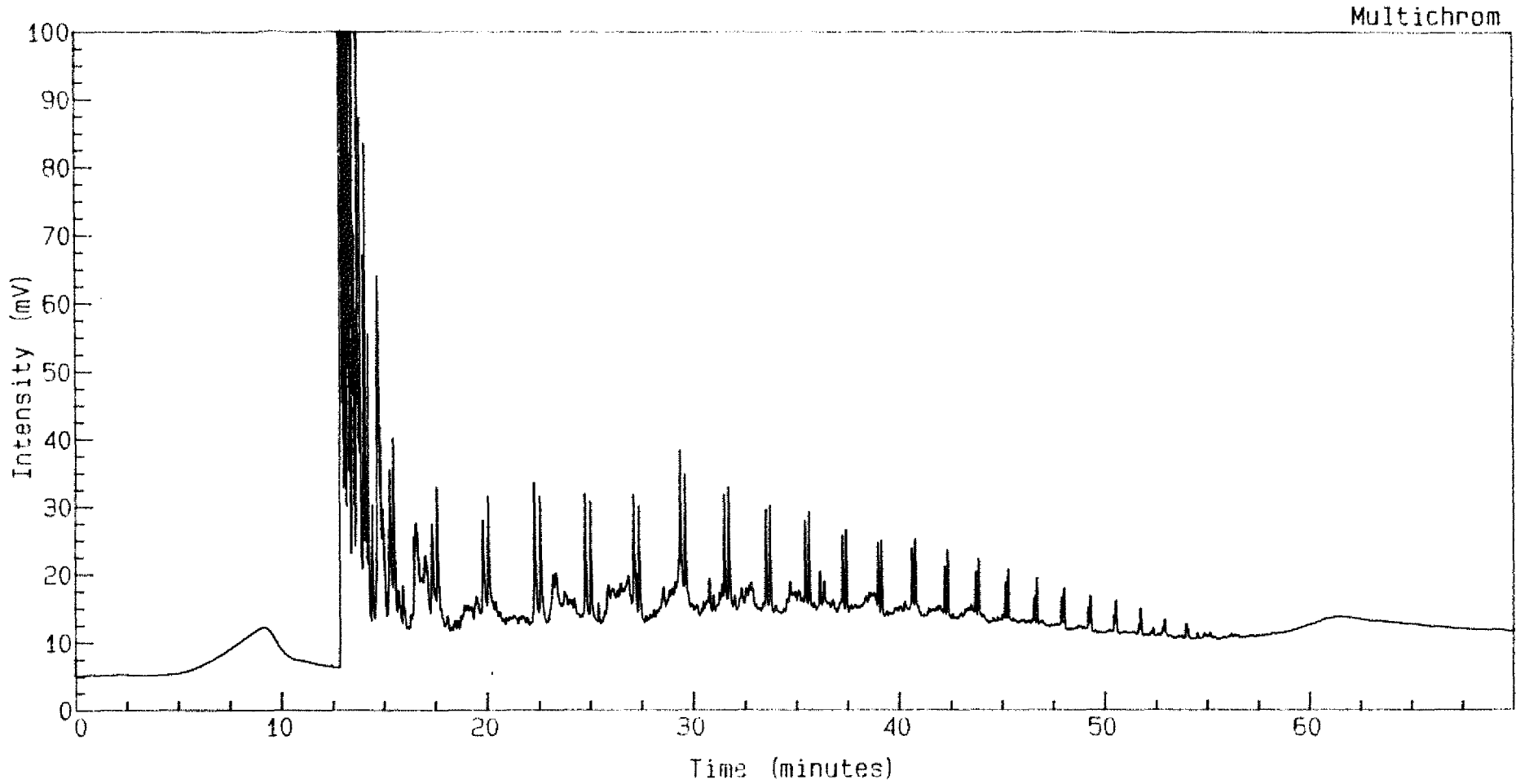
Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 7-DEC-1990 at 10:01
Reported on 7-DEC-1990 at 12:20

Method : PYRO
Calibration :
Run Sequence : PYRO

NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 A300910P, 3, 1.

2781.8M Amount : 1.000



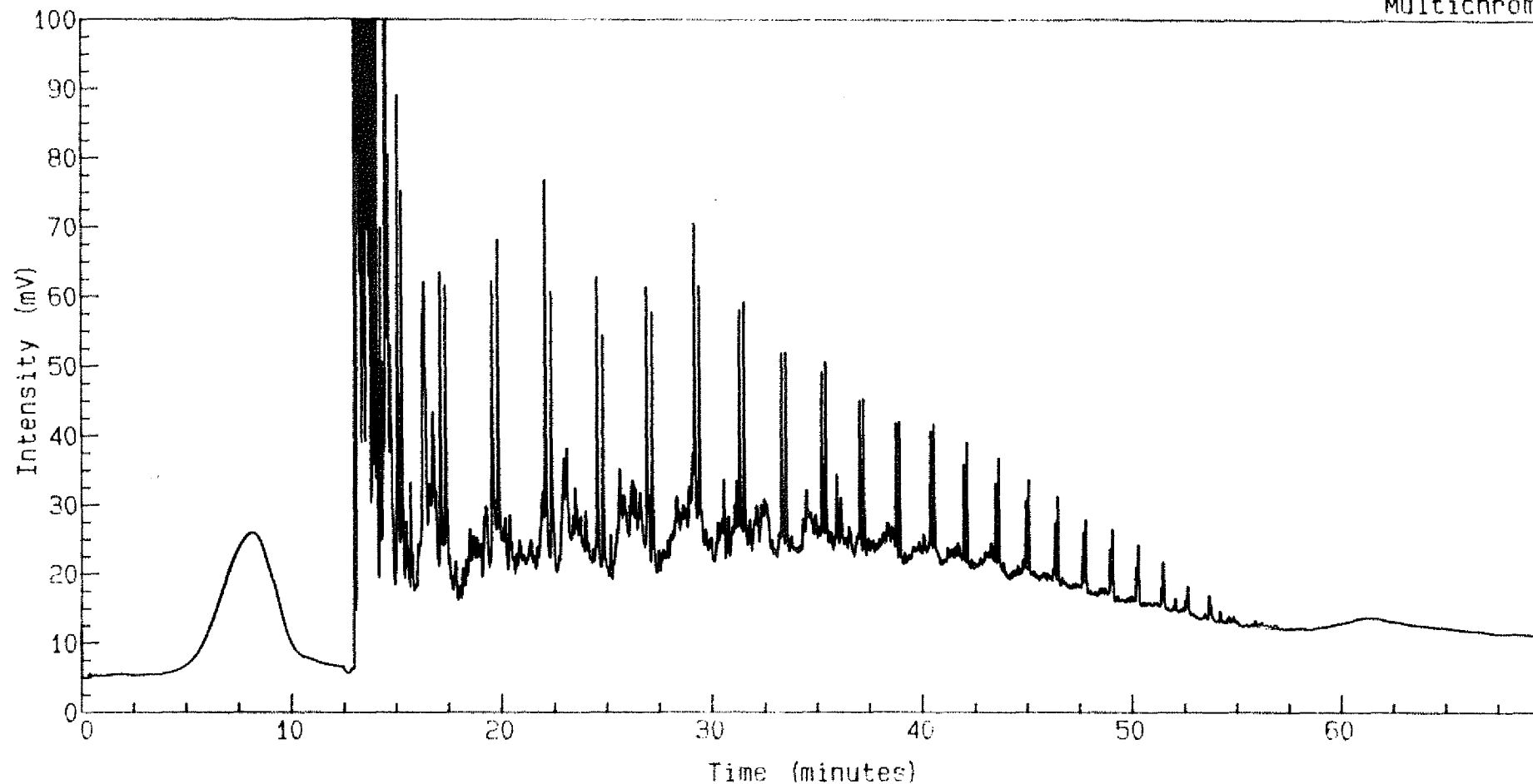
Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 7-DEC-1990 at 12:05
Reported on 7-DEC-1990 at 13:39

Method : PYRO
Calibration :
Run Sequence : PYRO

Analysis Name : [PETRO] 9 A300910P, 7, 1.

2781.98m Amount : 1.000

Multichrom



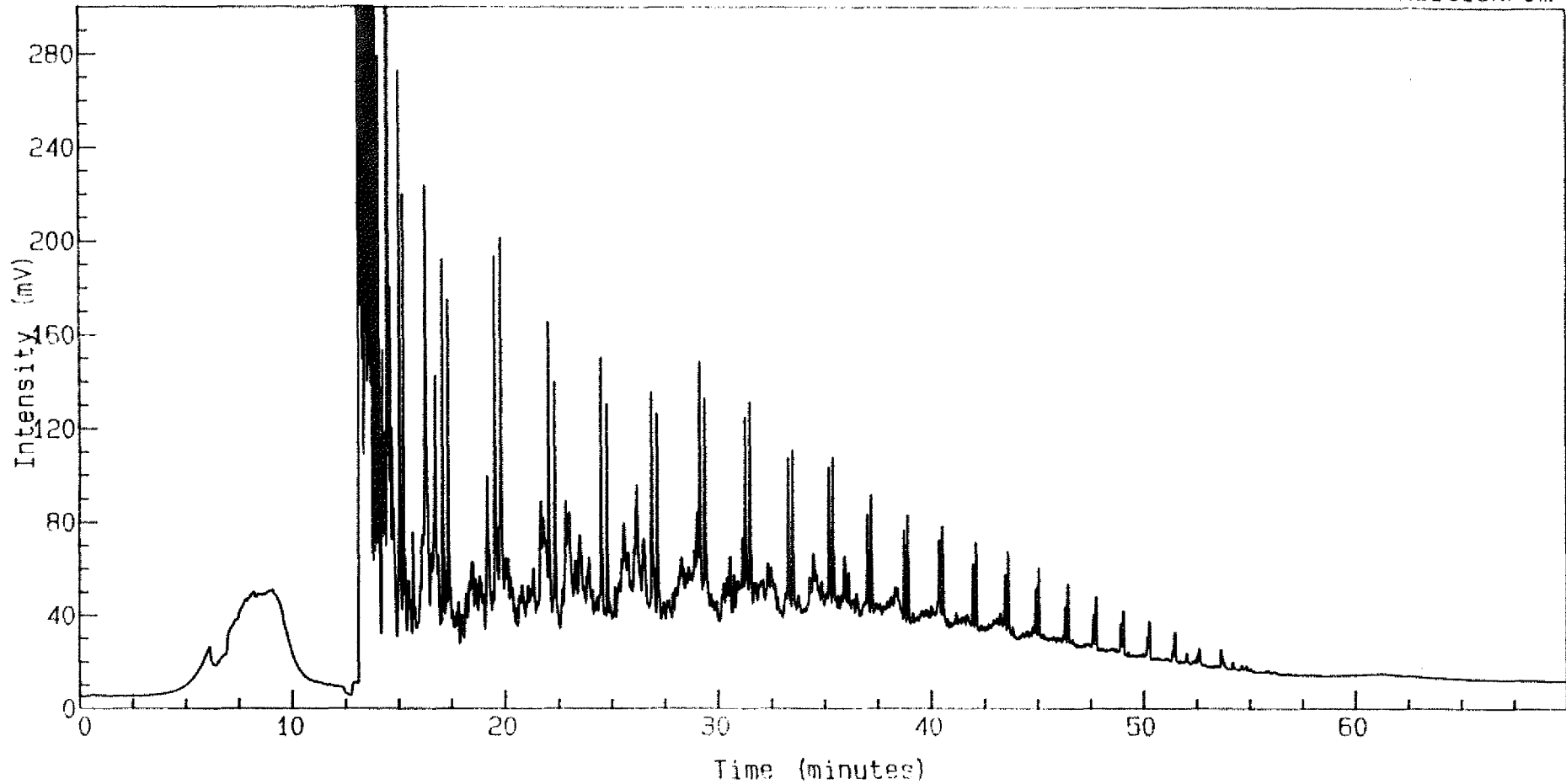
Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 11-DEC-1990 at 08:03
Reported on 14-DEC-1990 at 12:13

Method : PYRO
Calibration :
Run Sequence : PYRO

NORTH HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 9 A300910P, 5, 1.
2782.0M Amount : 1.000

Multichrom



Instrument : HP5890
Channel Title : PYROLYSIS FID
Lims ID :
Acquired on 10-DEC-1990 at 13:37
Reported on 10-DEC-1990 at 15:39

Method : PYRO
Calibration :
Run Sequence : PYRO

APPENDIX II

Gas Chromatograms of Saturated Hydrocarbons.

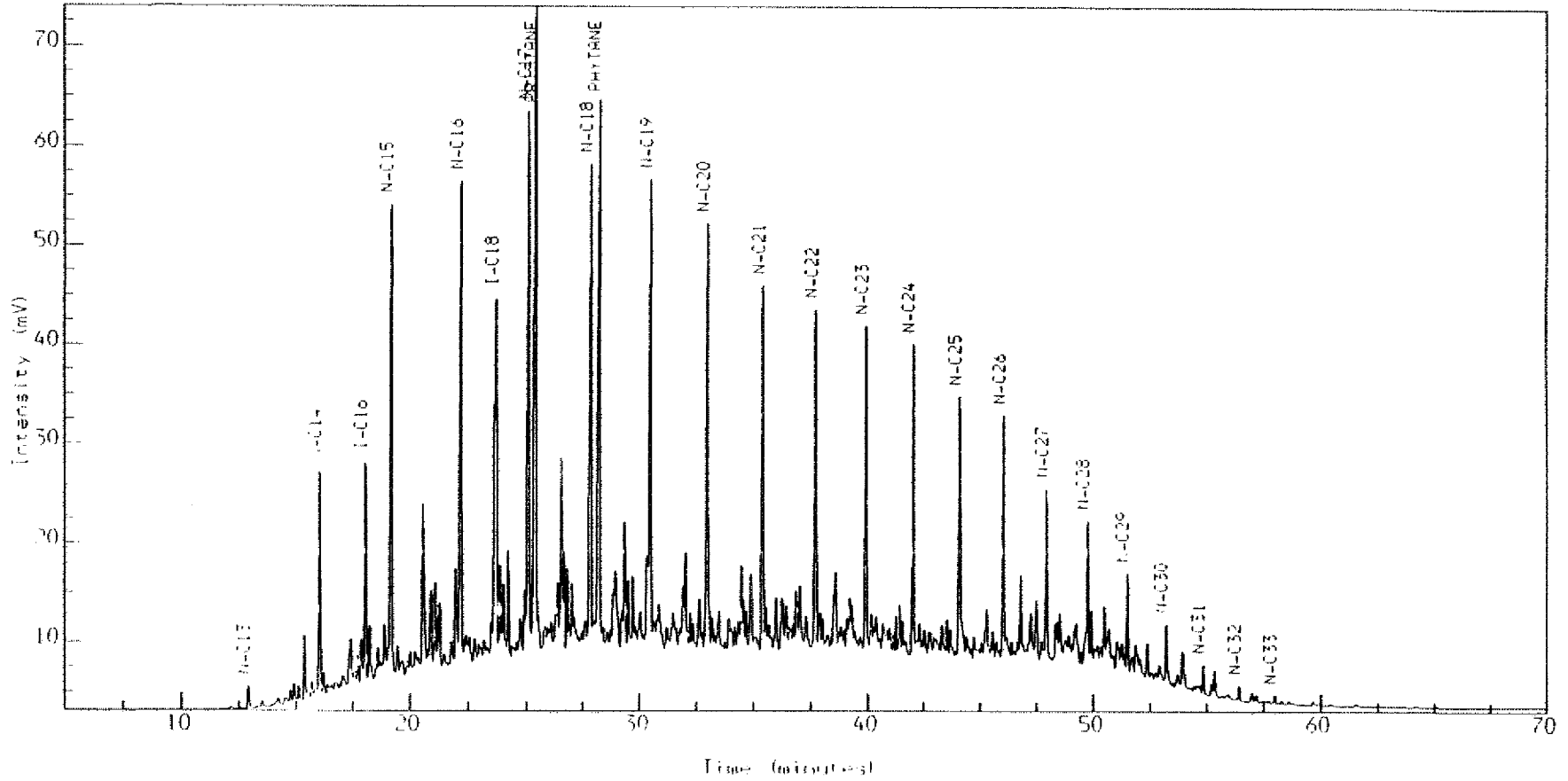
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W3009105.11.1.

30/9-10 2712.0 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Method : MSDS

Channel Title : N14

Calibration : MSDS

Lims ID :

Run Sequence : MSDS

Acquired on 25-OCT 1990 at 04:53

Reported on 25-NOV 1990 at 15:25

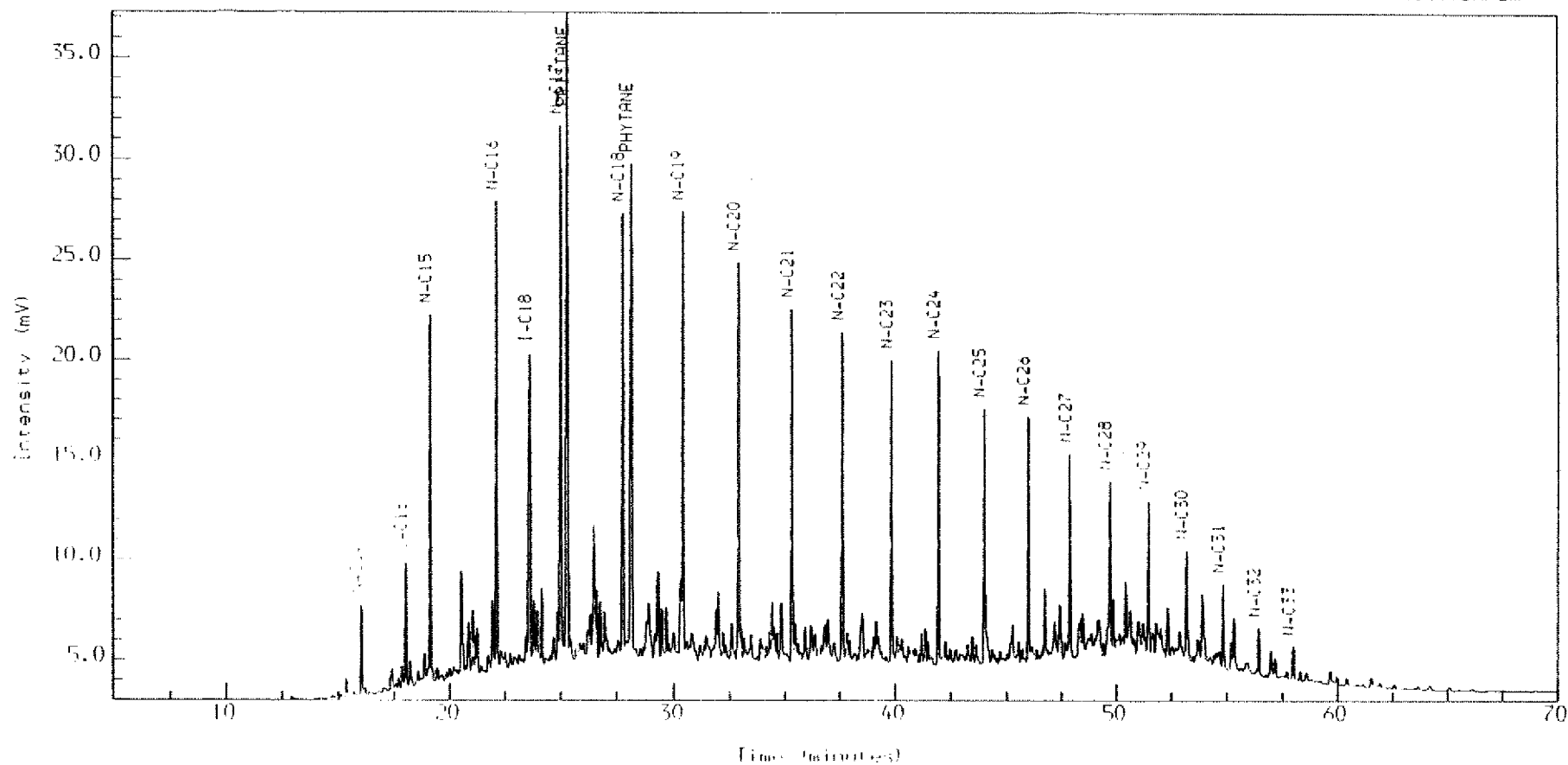
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W5009105.7.1.

30/9-10 2722.0 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Method : MSD'S

Channel Title : N/A

Calibration : MSD'S

Lims ID :

Run Sequence : MSD'S

Acquired on 24-01-1990 at 22:46

Reported on 25-NOV-1990 at 15:17

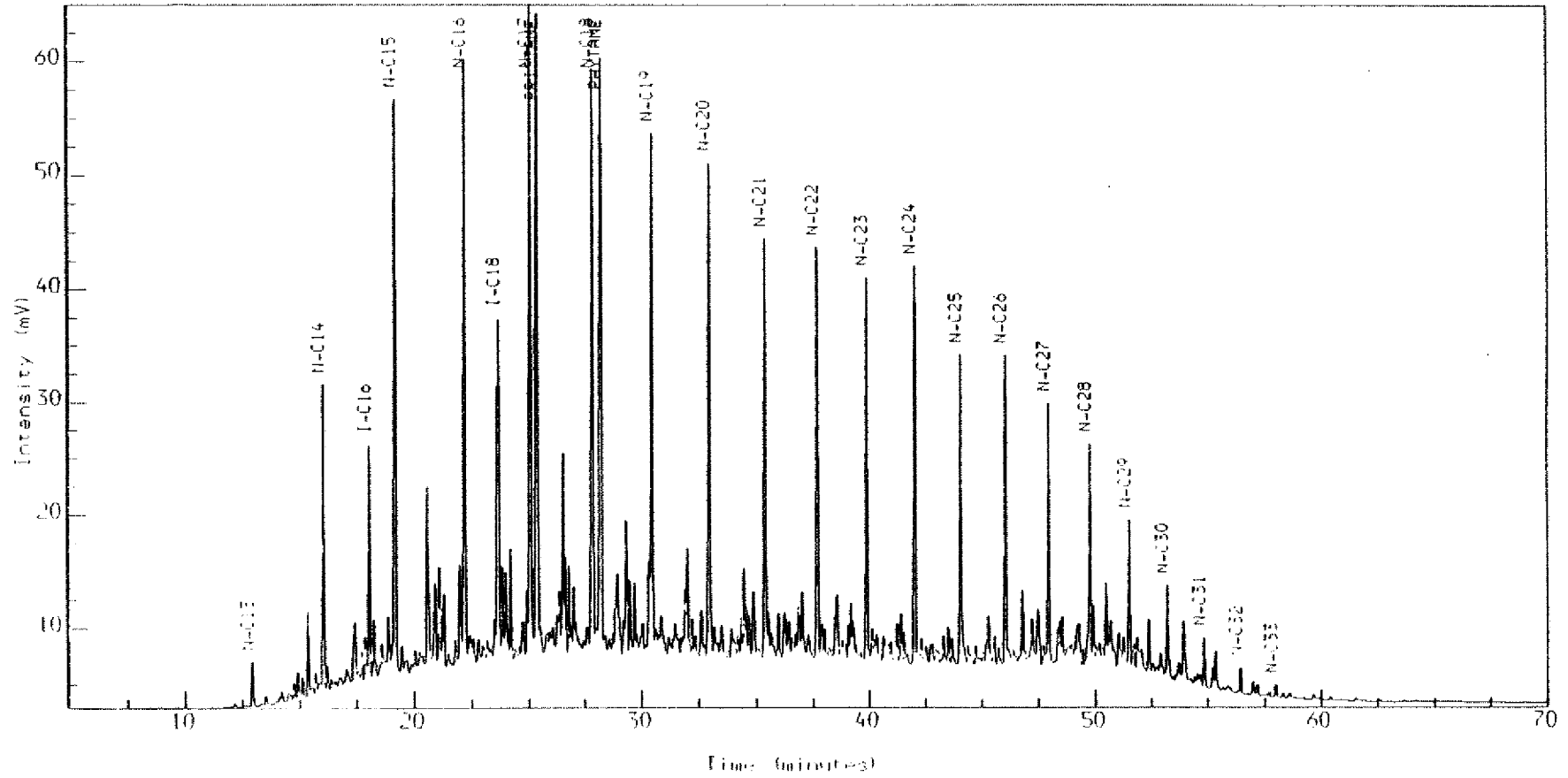
URS HYDRO RESEARCH CENTRE

Analysis Name : (PETRO) 7 W5009105.12.1.

30/9-10 2725.0 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP6890

Method : MSDS

Channel Title : M01

Calibration : MSDS

Lims ID :

Run Sequence : MSDS

Acquired on 25-OCT-1990 at 06:24

Reported on 25-NOV-1990 at 11:22

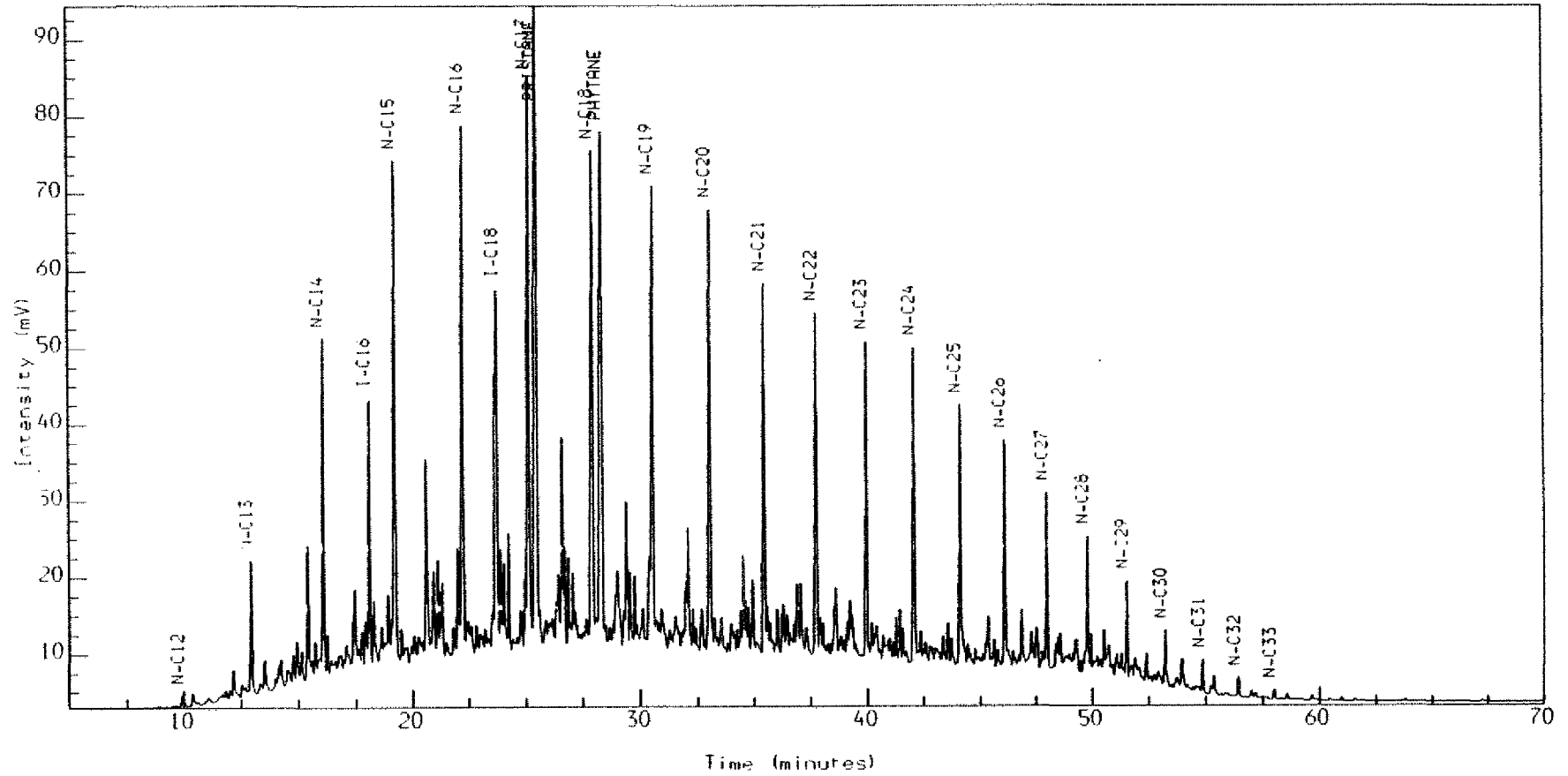
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W3009105.16.1.

30/9-10 2725.0 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSF

Lims ID :

Acquired on 25-OCT-1990 at 16:15

Reported on 25-NOV-1990 at 15:32

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

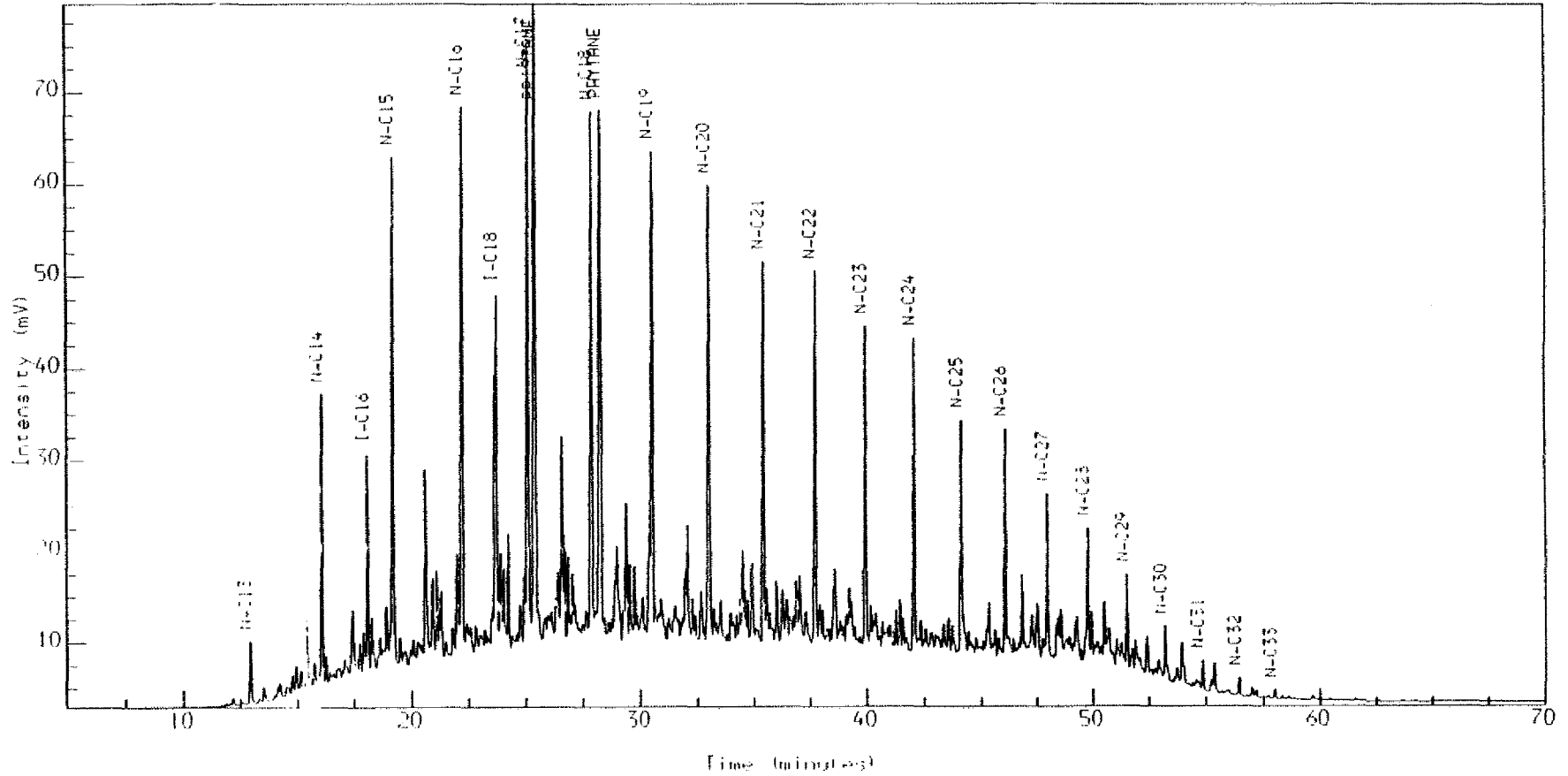
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W5009105.17.1.

30/9-10 2726.15 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP1190

Method : MSDS

Channel Title : M1

Calibration : MSDS

Lims ID :

Run Sequence : MSDS

Acquired on 25-01-1990 at 17:47

Reported on 25-NOV-1990 at 15:34

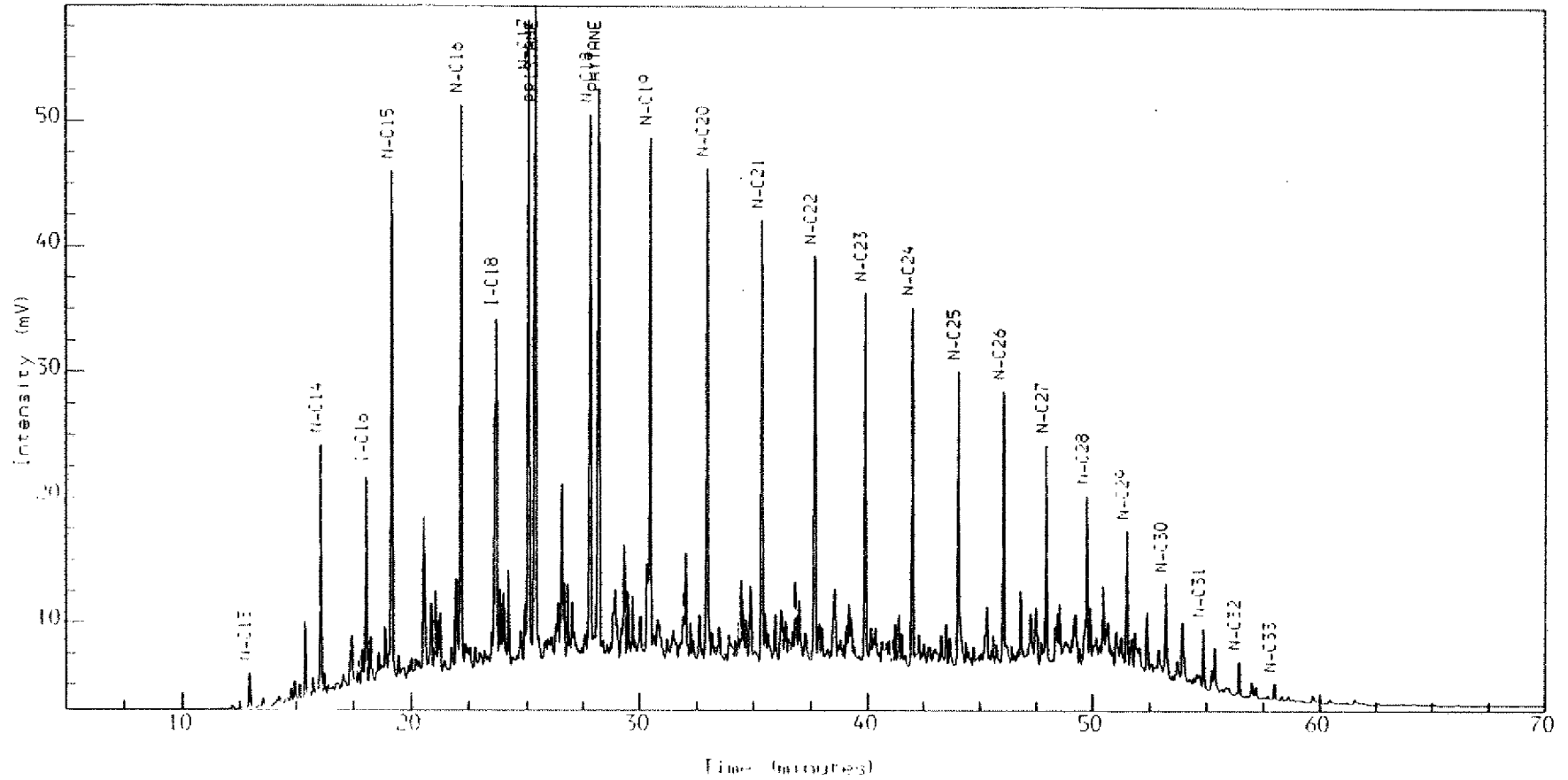
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W5009105.9.1.

30/9-10 2726.70 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Method : MSDS

Channel Title : M40

Calibration : MSDS

Line ID :

Run Sequence : MSDS

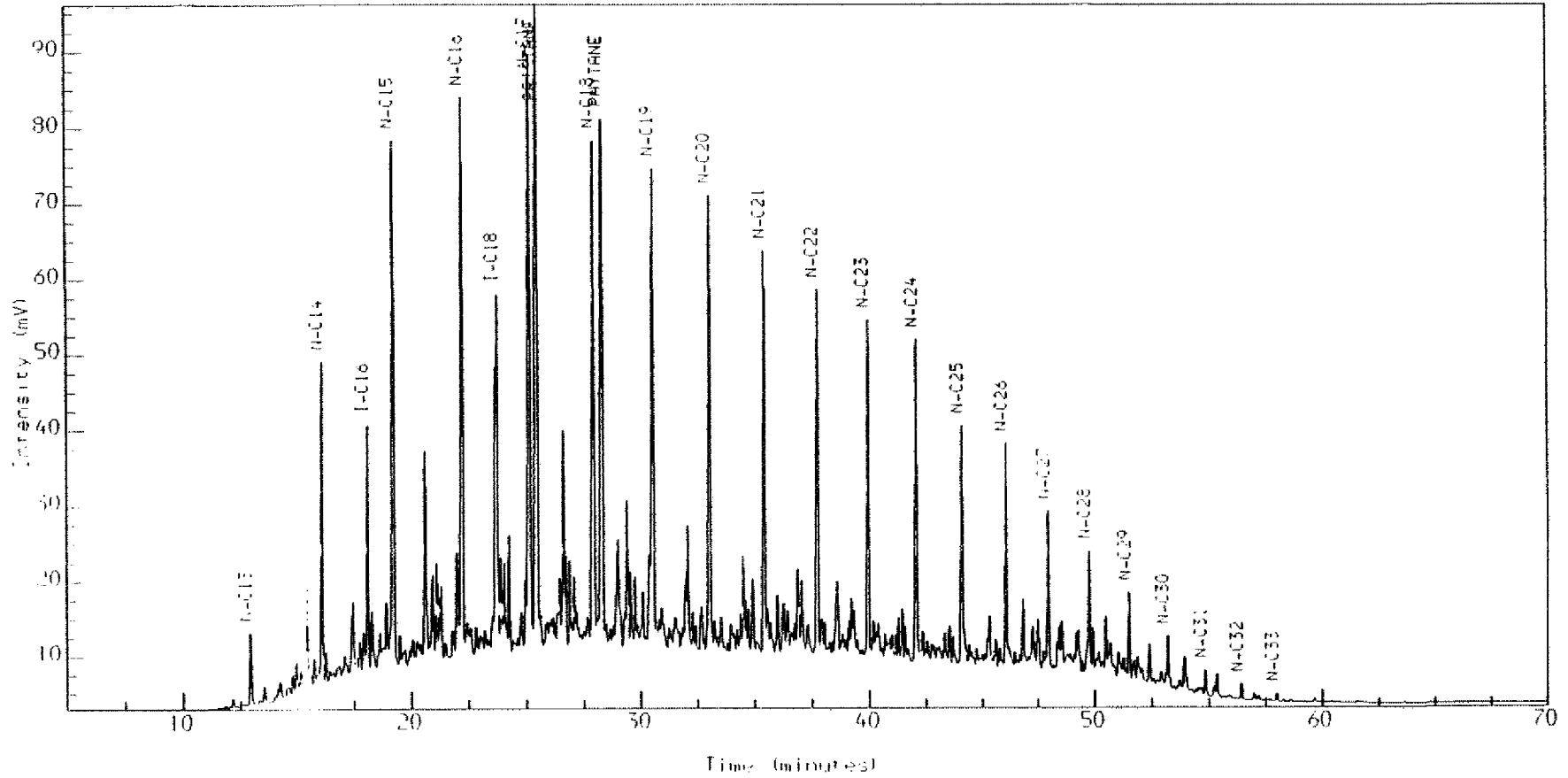
Acquired on 25-OCT 1990 at 01:50

Reported on 23-NOV 1990 at 15:23

NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W500^o10S.18.1.
30/9-10 2727.20 M
GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP 5970

Method : MSDS

Channel Title : N1

Calibration : MSDS

Limit ID :

Run Sequence : MSDS

Acquired on 25-NOV-1990 at 19:18

Reported on 25-NOV-1990 at 15:37

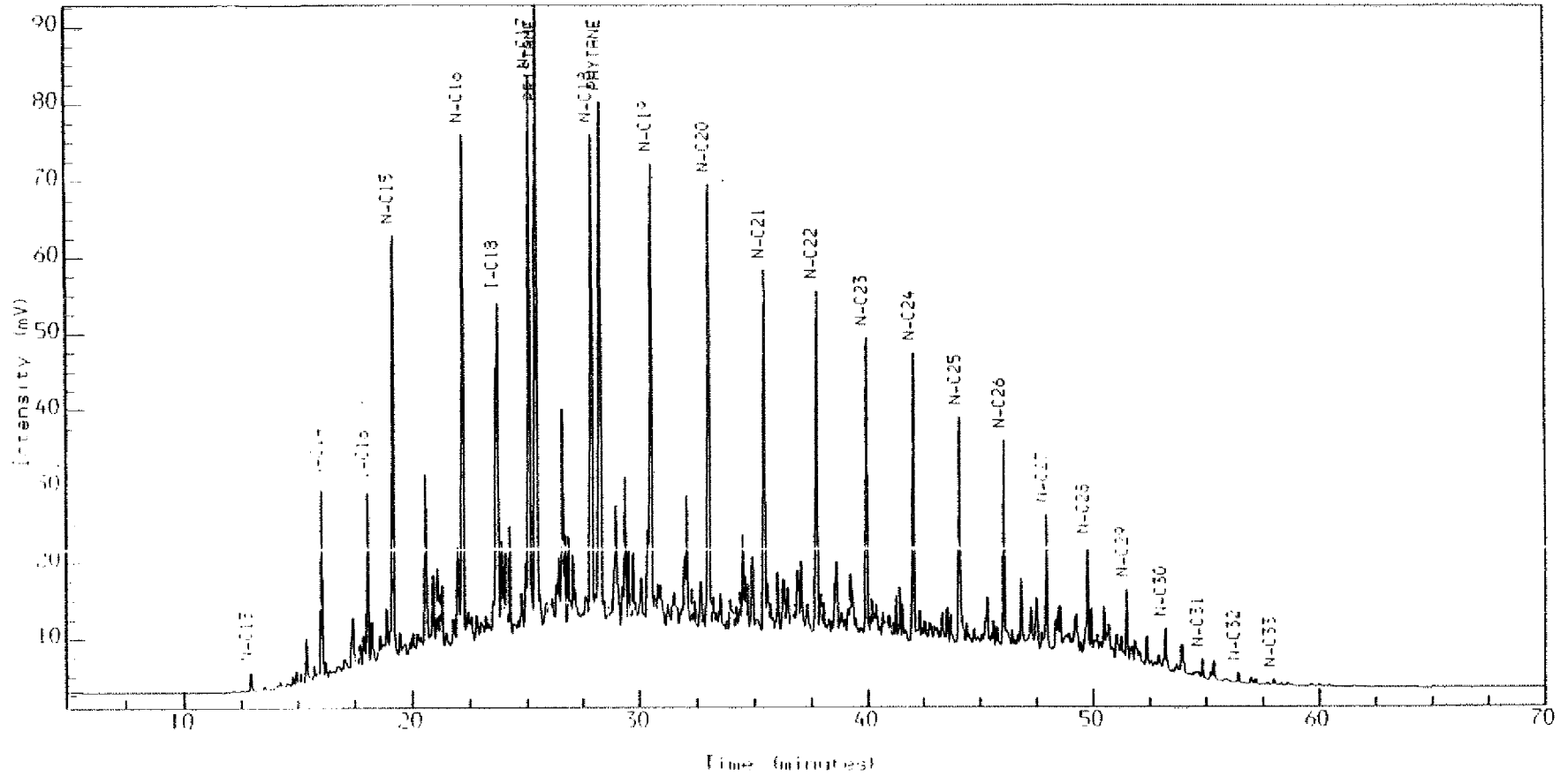
NUPSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W5009105.27.1.

30/9-10 2728.20 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Method : MSDS

Channel Title : NPD

Calibration : MSDS

Lims ID :

Run Sequence : MSDS

Acquired on 26-01-1990 at 18:09

Reported on 25-01-1990 at 15:48

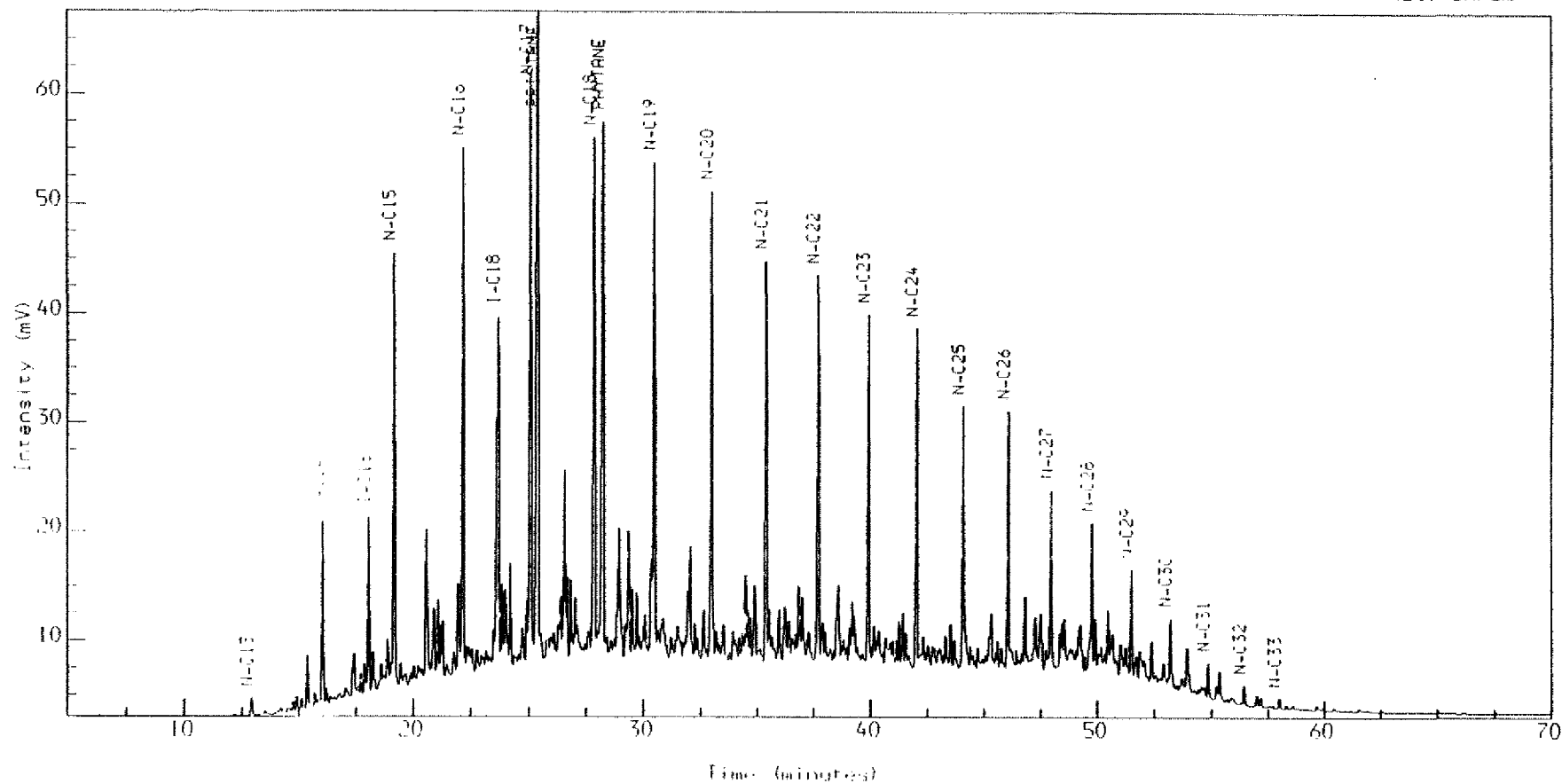
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W5009105.8.1.

30/9-10 2728.75 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Method : MSDS

Channel Title : M41

Calibration : MSDS

Lims ID :

Run Sequence : MSDS

Acquired on 25-NOV 1990 at 00:18

Reported on 25-NOV 1990 at 15:20

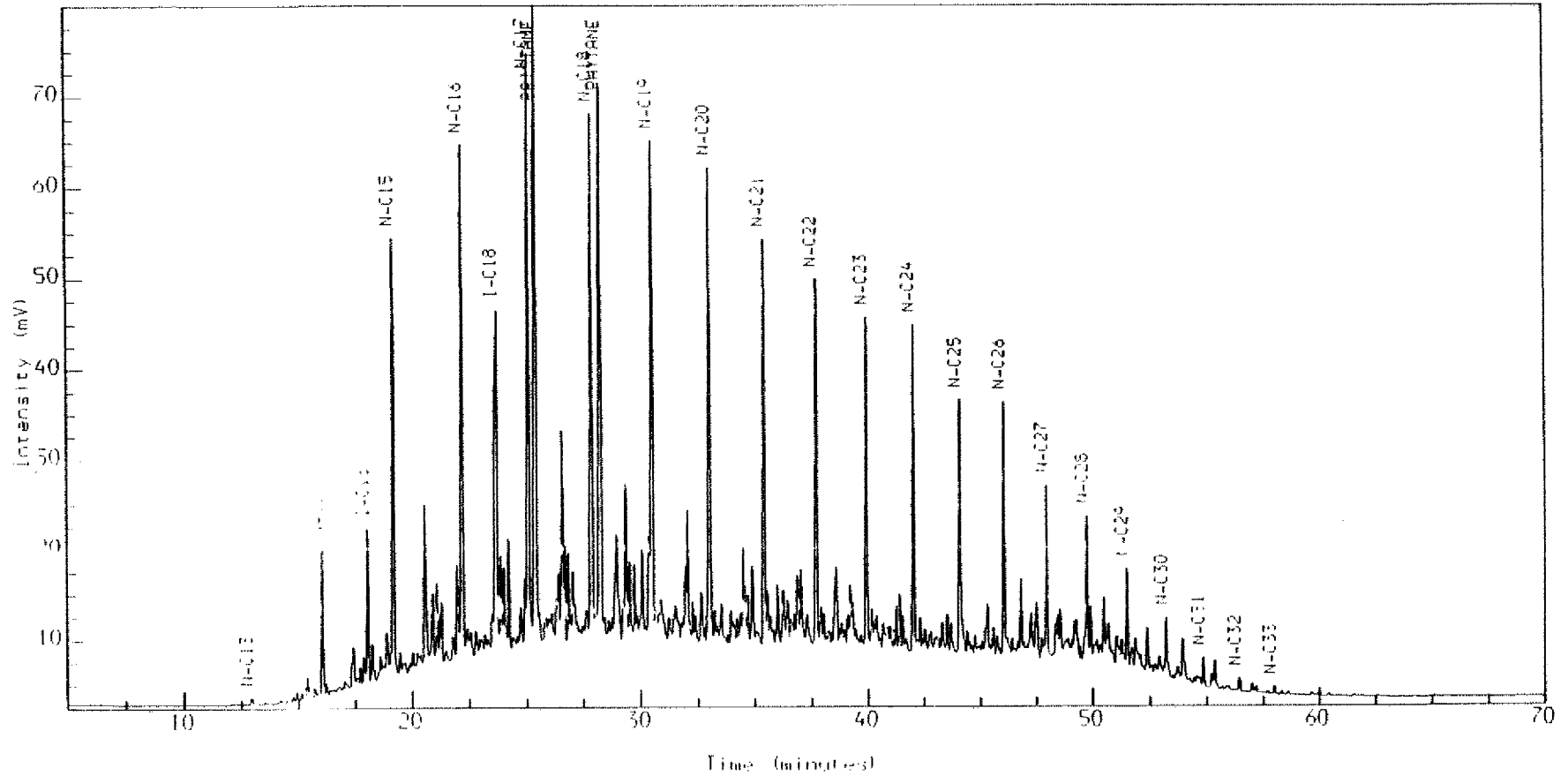
NORSE HYDRO RESEARCH CENTRE

Analysis Name : (PETRO) 7 W500P105.25.1.

30/9-10 2730.20 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP4890

Channel Title : M4

Lims ID :

Acquired on 26-10-1990 at 14:14

Reported on 25-11-1990 at 15:46

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

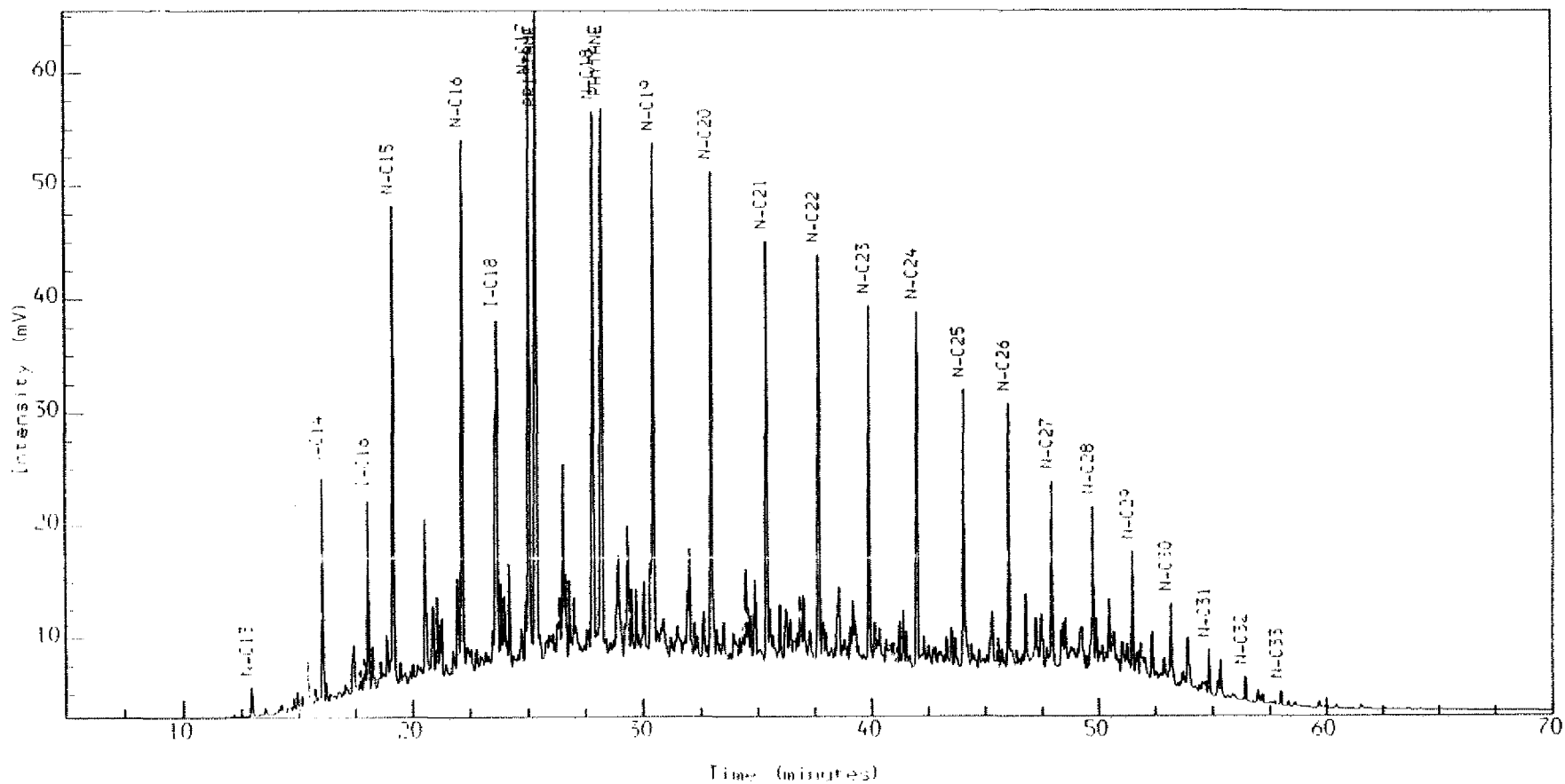
NORSE HYDRO RESEARCH CENTRE

Analysis Name : (PETRO) 7 W3009105.19.1.

30/9-10 2730.55 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP 5890

Channel Title : M#

Lims ID :

Acquired on 25-NOV 1990 at 20:50

Reported on 25-NOV 1990 at 15:39

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

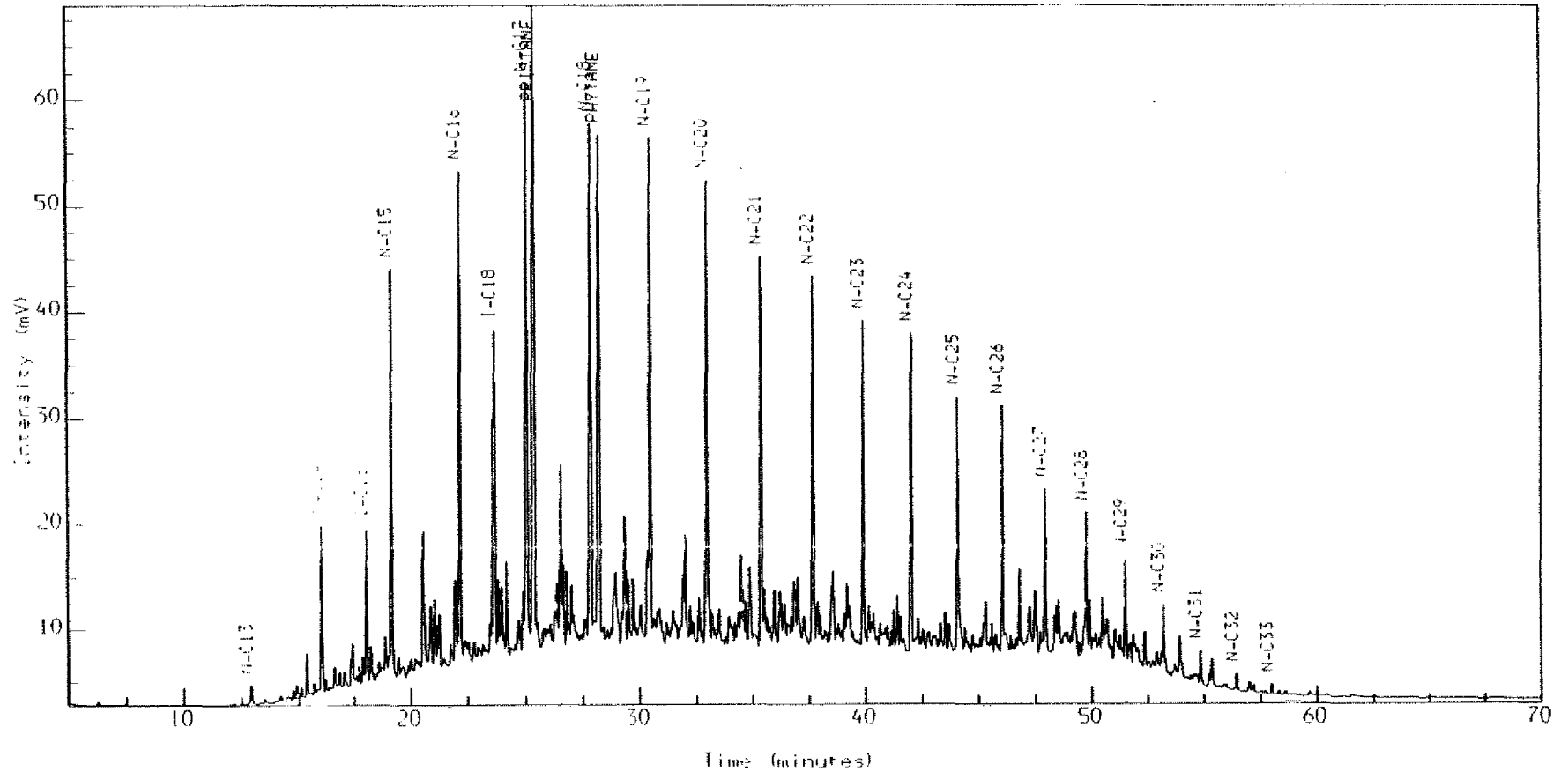
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W500P105.28.1.

5049-10 2731.10 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : M40

Lims ID :

Acquired on 26-OCT 1990 at 19:41

Reported on 25-NOV 1990 at 15:50

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

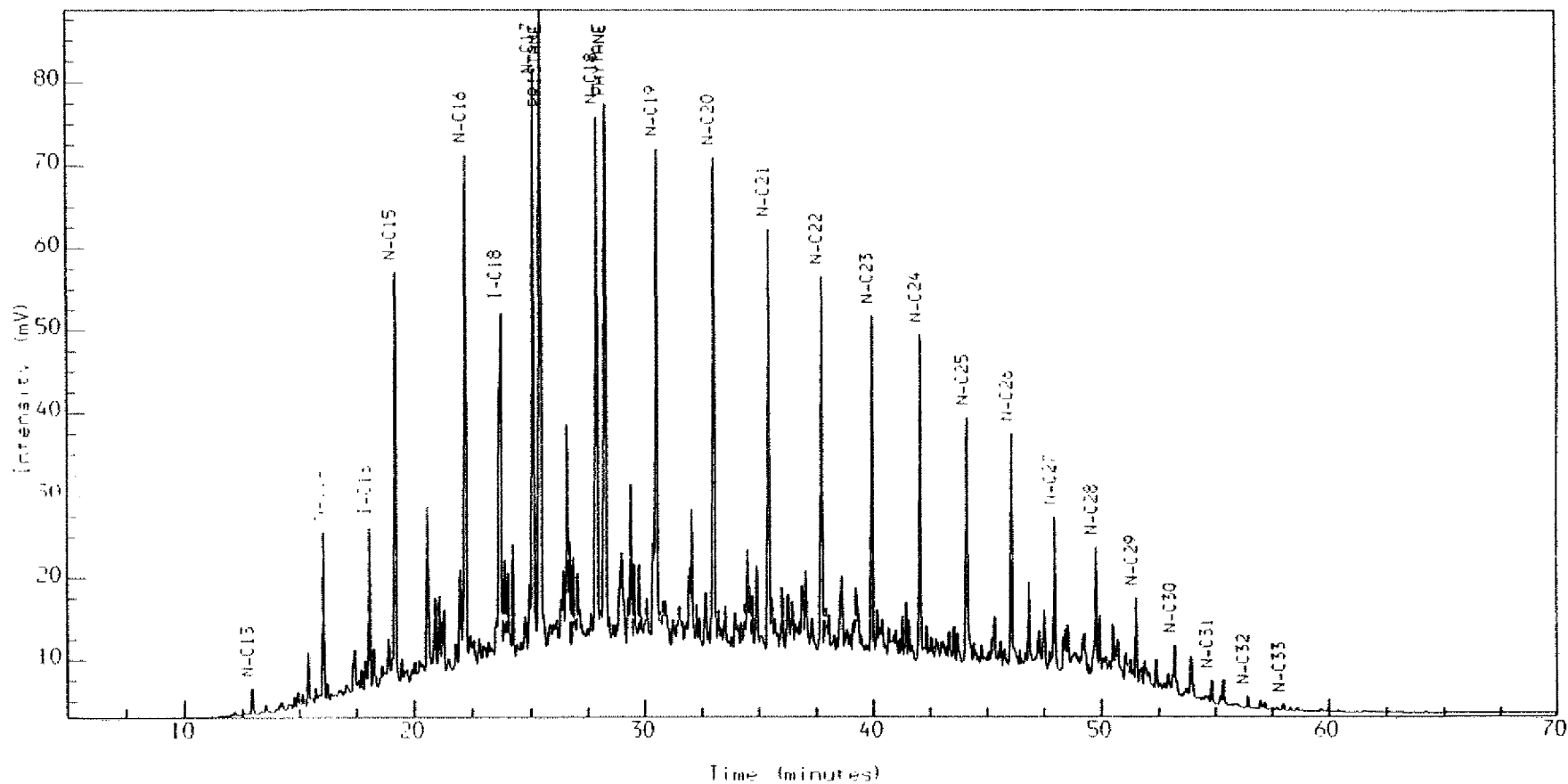
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W3009105.29.1.

30/9-10 2731.30 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : M10

Lims ID :

Acquired on 26-OCT 1990 at 21:12

Reported on 25-NOV 1990 at 15:53

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

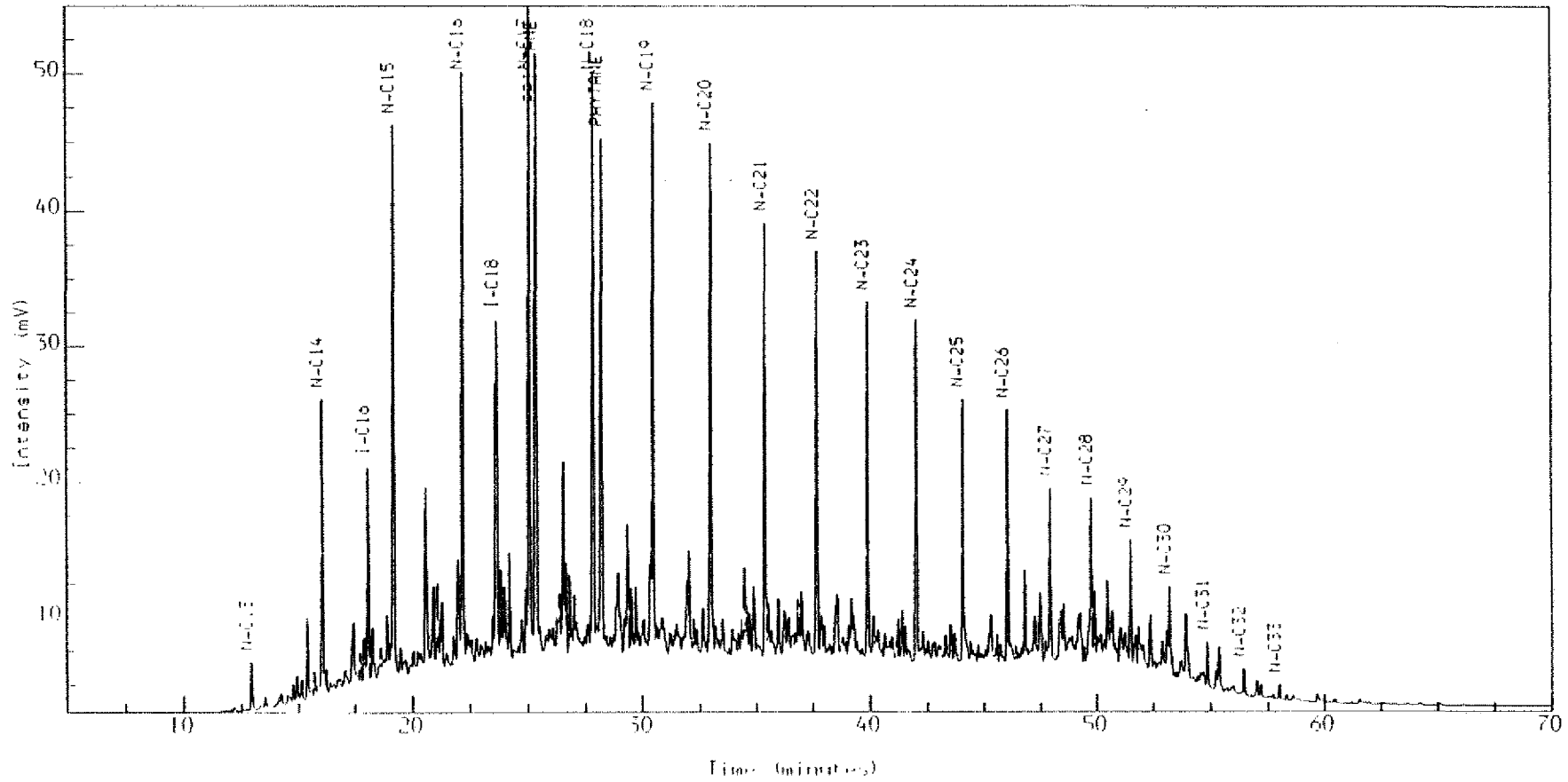
NURSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W3009105.20.1.

30/9-10 2751.90 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP6890

Channel Title : M.O.

Units ID :

Acquired on 25-NOV-1990 at 20:21

Reported on 25-NOV-1990 at 11:42

Method : MSD'S

Calibration : MSD'S

Run Sequence : MSD'S

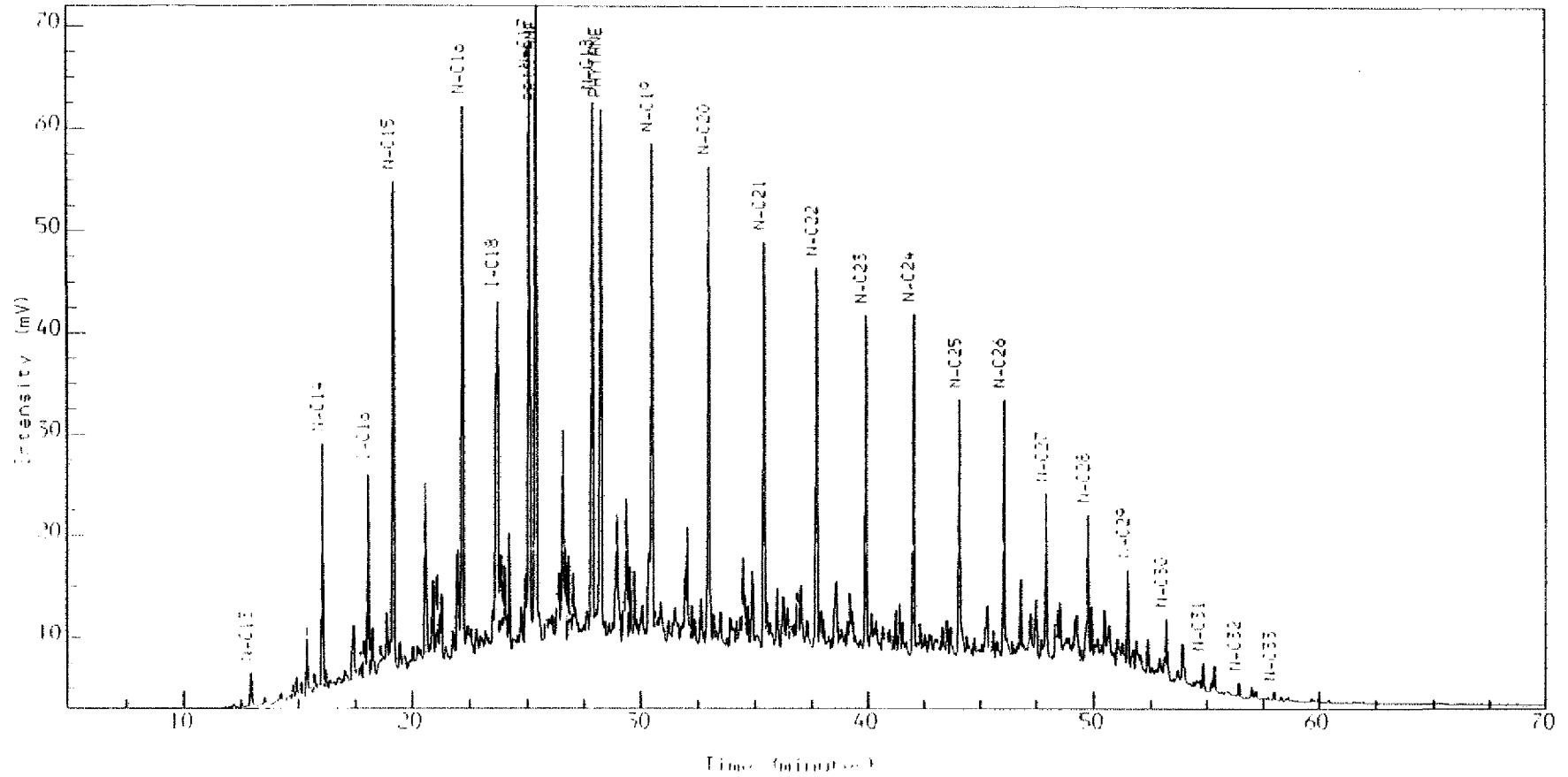
NORSE HYDRO RESEARCH CENTRE

Analysis Name : (PETRO) 7 W500P105.15.1.

5079-10 2737.0 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : N40

Units ID :

Acquired on 25-NOV-1990 at 07:56

Reported on 25-NOV-1990 at 15:28

Method : MSD'S

Calibration : MSD'S

Run Sequence : MSD'S

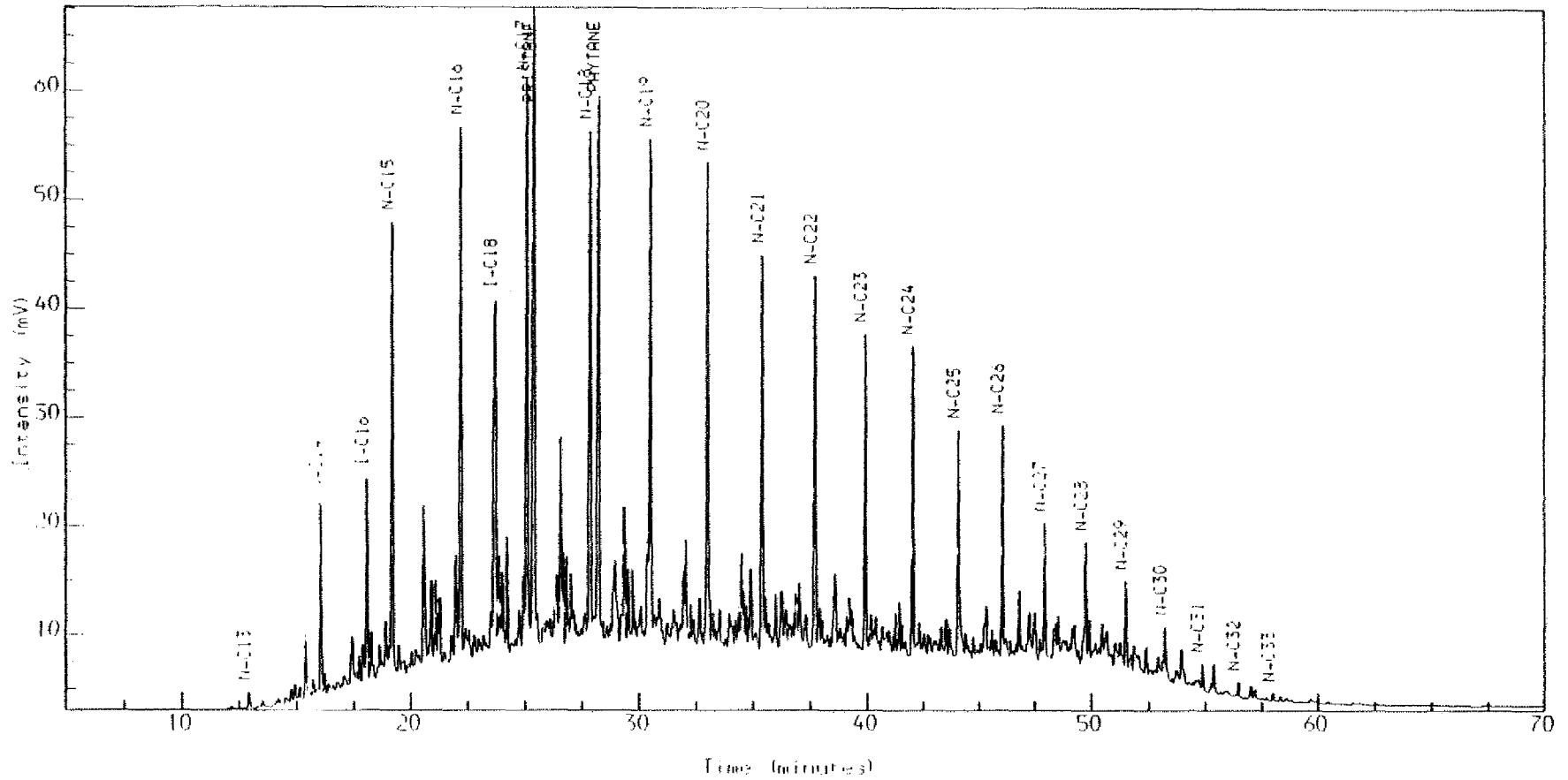
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W5009105.14.1.

30/9-10 2740.50 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP4890

Channel Title : M-1

Lims ID :

Acquired on 25-OCT 1990 at 09:27

Reported on 25-NOV 1990 at 15:30

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

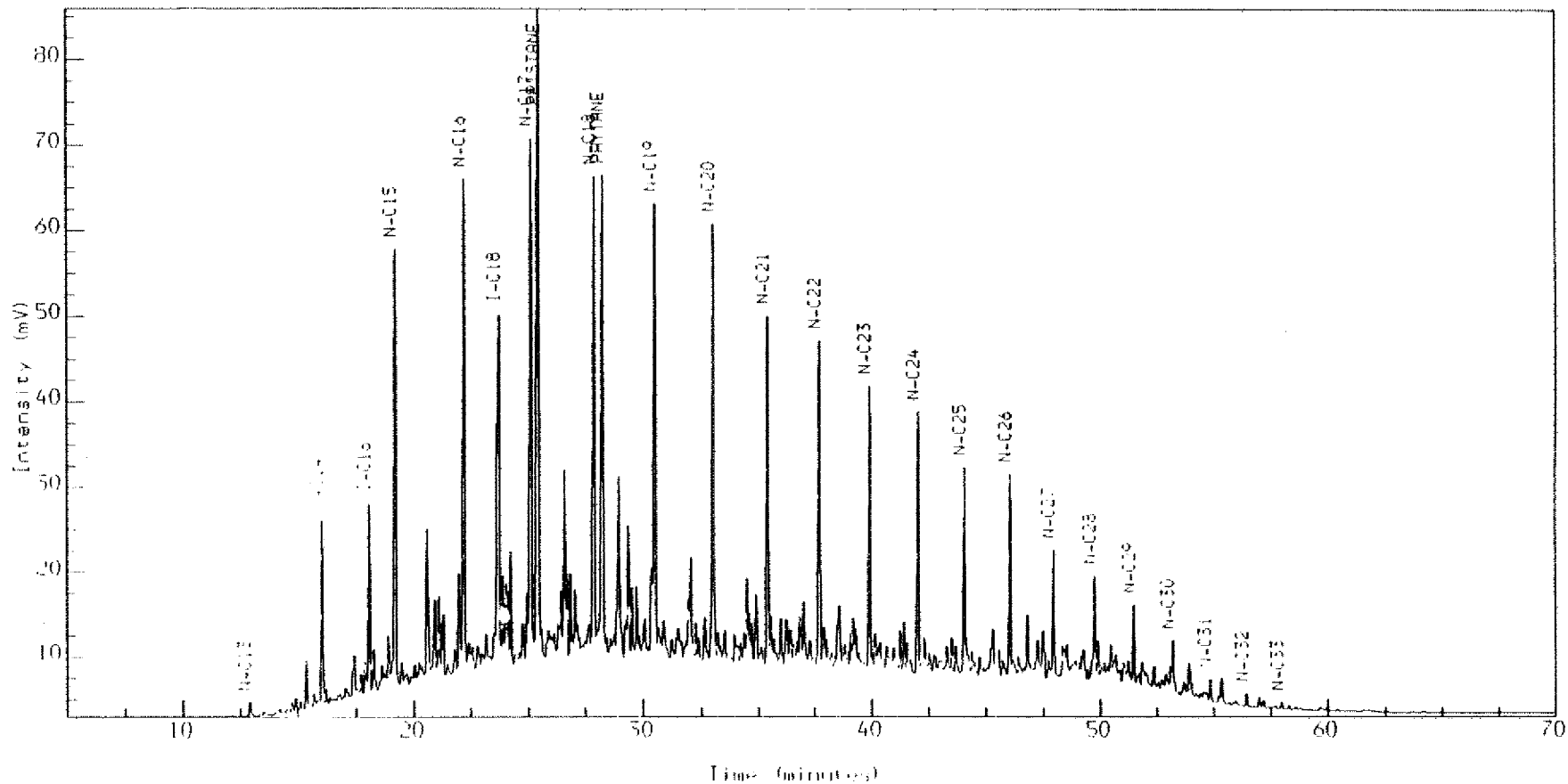
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W3009105.15.1.

30/9-10 2742.5 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP4890

Method : MSD5

Channel Title : M4

Calibration : MSD5

File ID :

Run Sequence : MSD5

Acquired on 25-OCT 1990 at 10:59

Reported on 25-NOV 1990 at 11:20

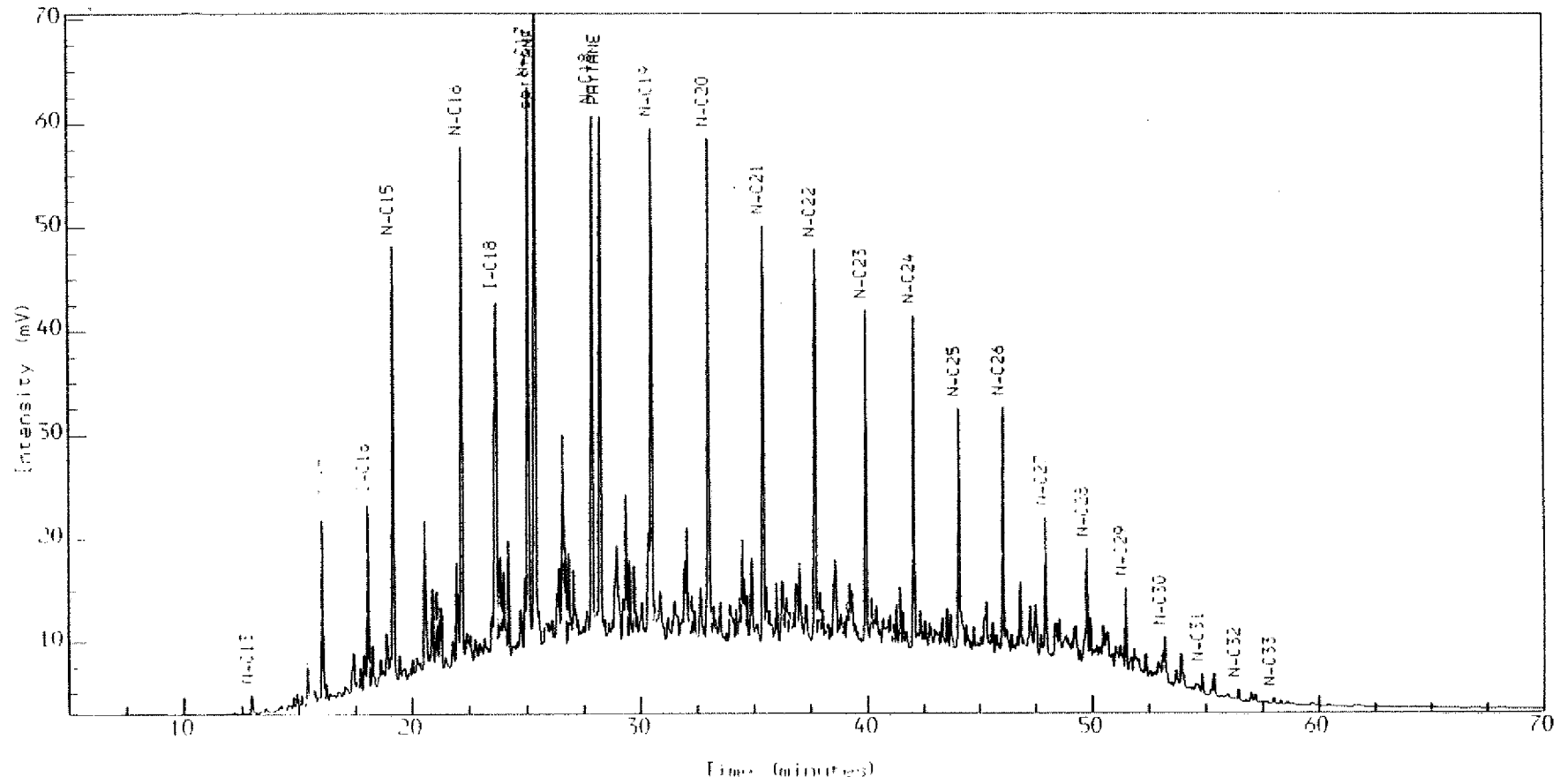
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W300*105.21.1.

30/9-10 2745.00 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP-590

Method : MSDS

Channel Title : M1

Calibration : MSDS

Lims ID :

Run Sequence : MSDS

Acquired on 25-01-1990 at 23:55

Reported on 25-01-1990 at 15:41

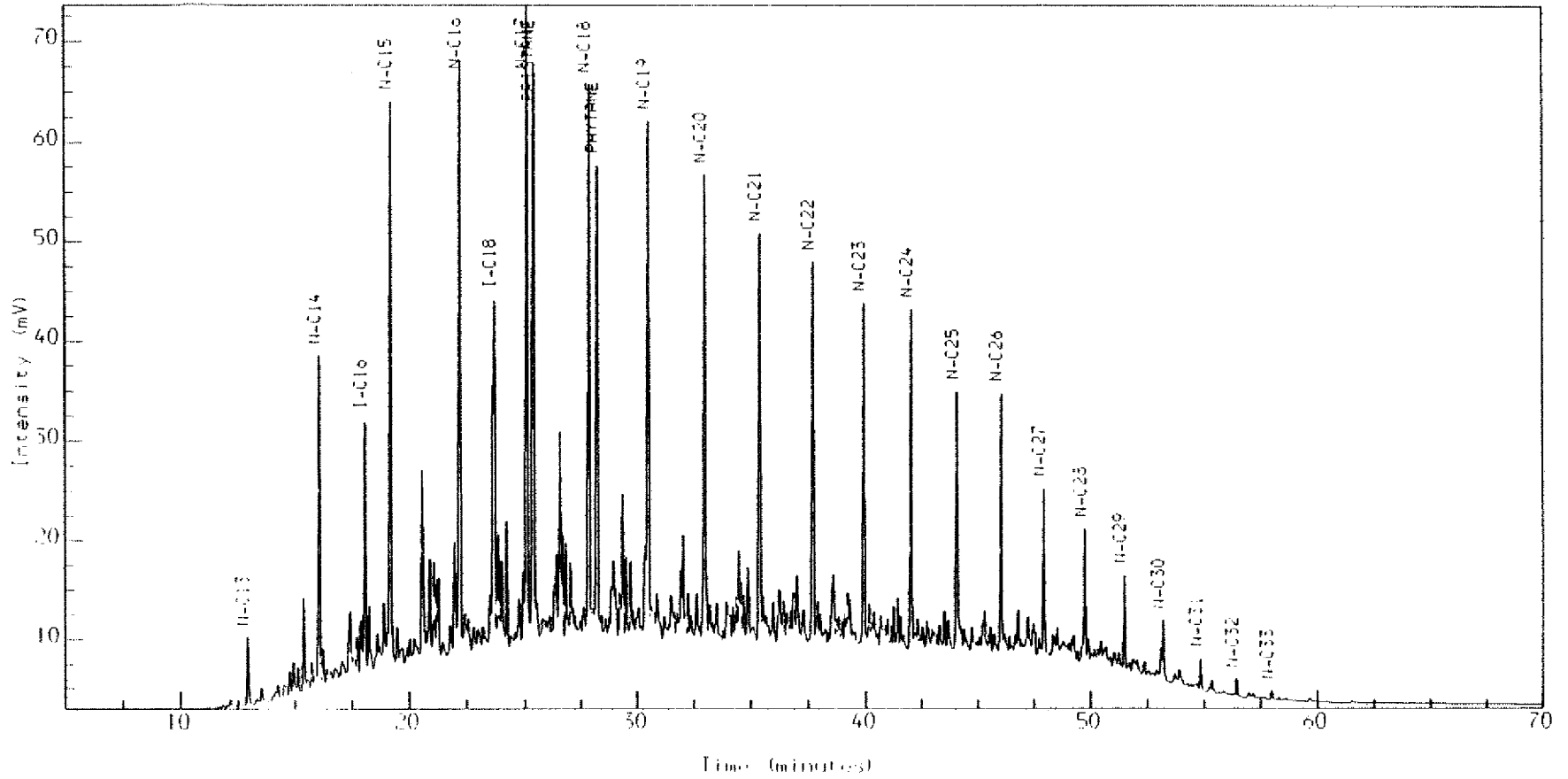
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W500P105.22.1.

30/9-10 2747.10 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP6890

Channel Title : Mult

Lims ID :

Acquired on 26-01-1990 at 01:25

Reported on 25-NOV-1990 at 11:46

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

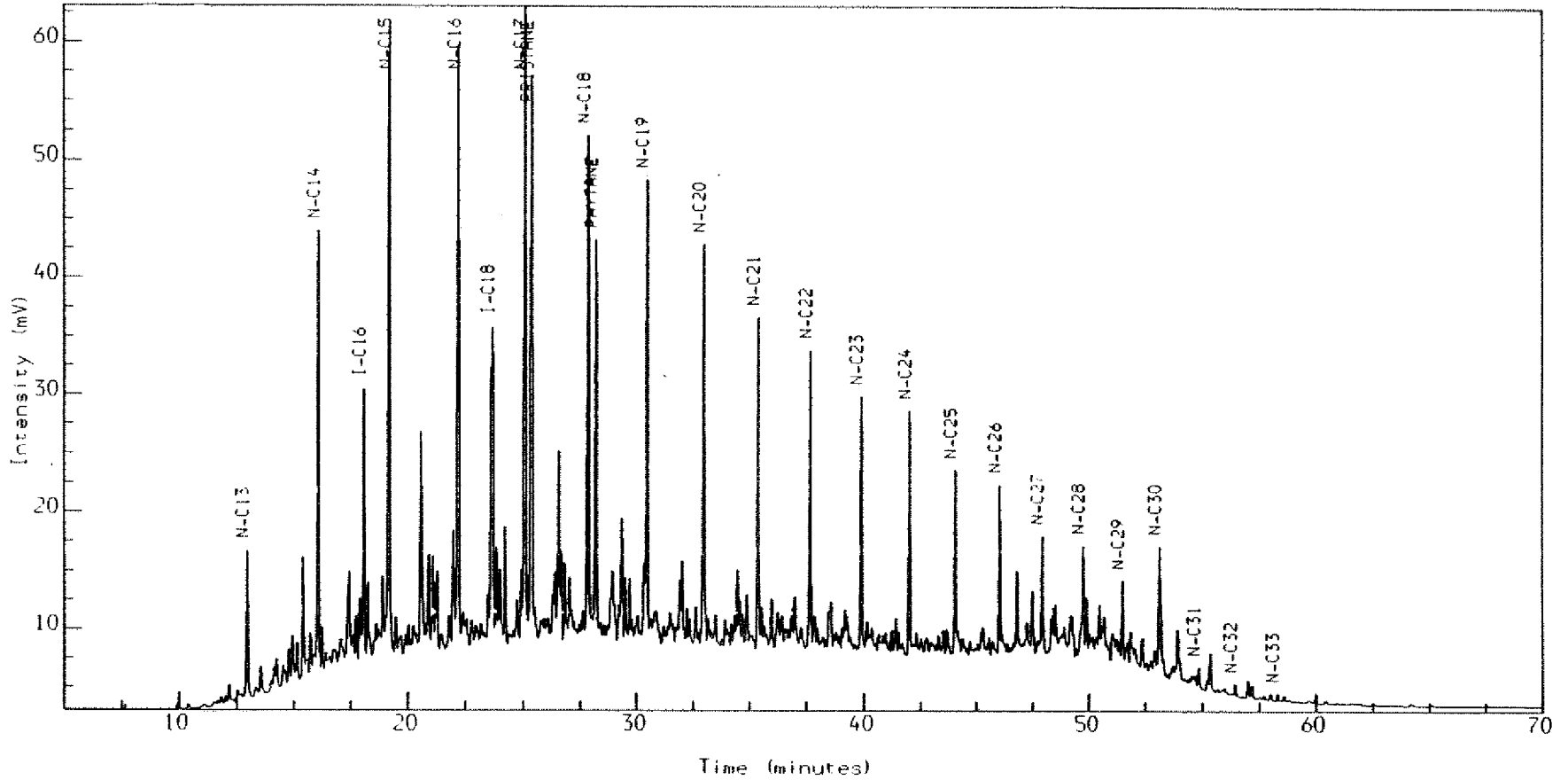
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W3009105.30.1.

30/9-10 2747.60 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSF

Lims ID :

Acquired on 26-OCT-1990 at 22:44

Reported on 26-NOV-1990 at 08:29

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

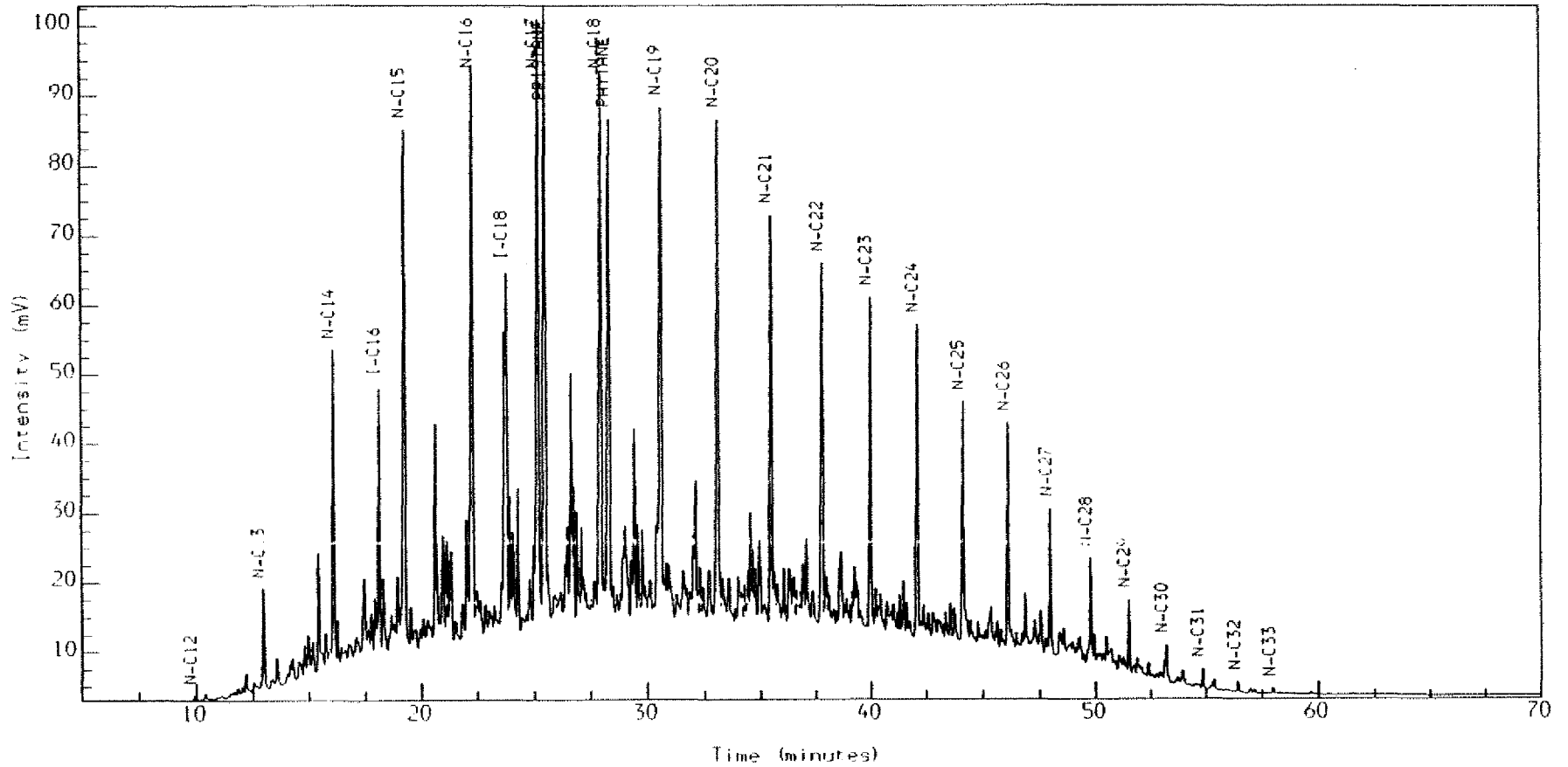
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W3009105.31.1.

30/9-10 2748.10 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5190

Channel Title : M-P

Lims ID :

Acquired on 27-OCT 1990 at 00:15

Reported on 25-NOV 1990 at 15:58

Method : MSDS

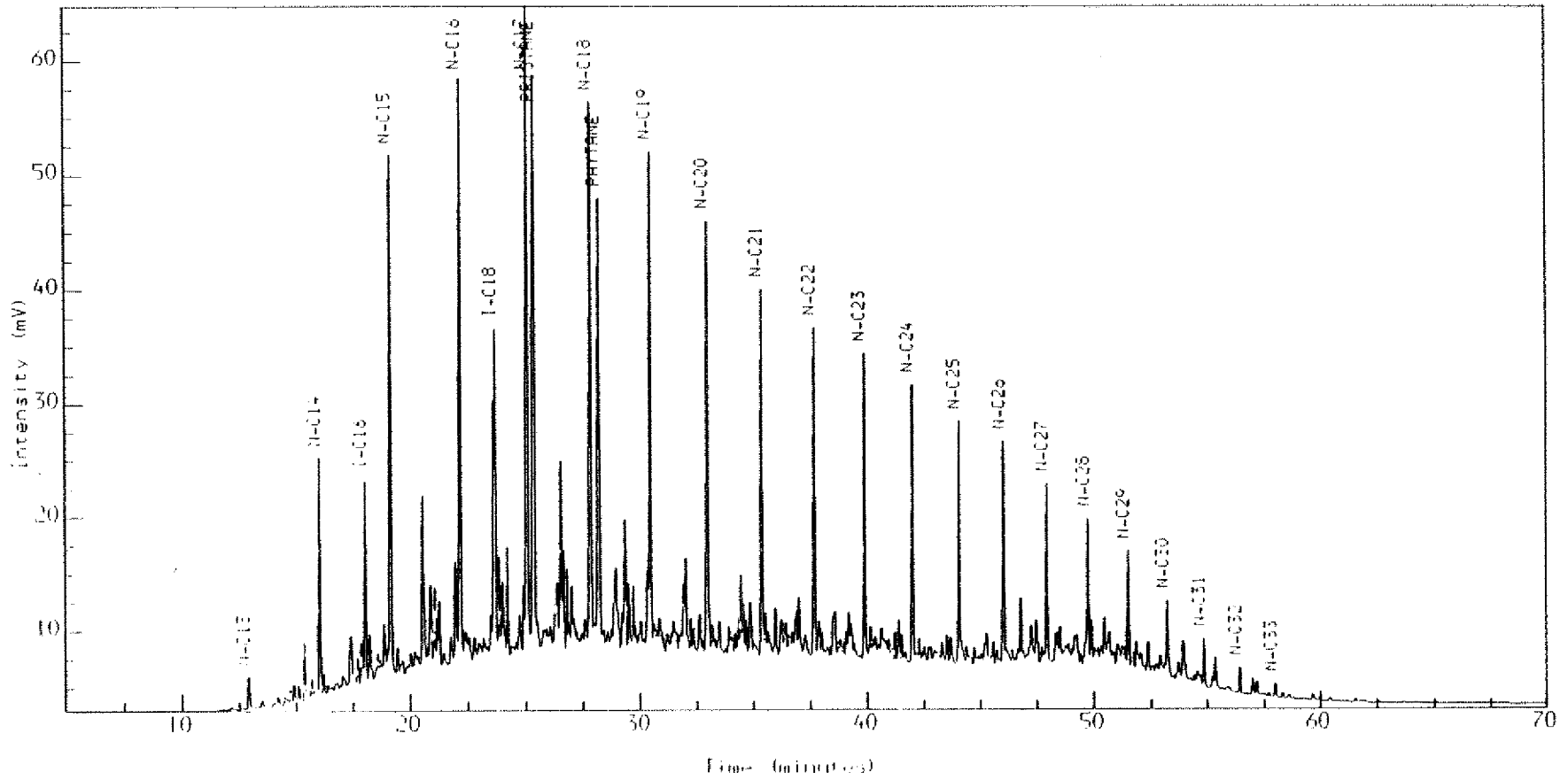
Calibration : MSDS

Run Sequence : MSDS

NORST HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W5009109.25.1.
 30/9-10 2748.75 M
 GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Method : MSD5

Channel Title : M10

Calibration : MSD5

Limit ID :

Run Sequence : MSD5

Acquired on 26-09-1990 at 11:11

Reported on 25-NOV-1990 at 11:49

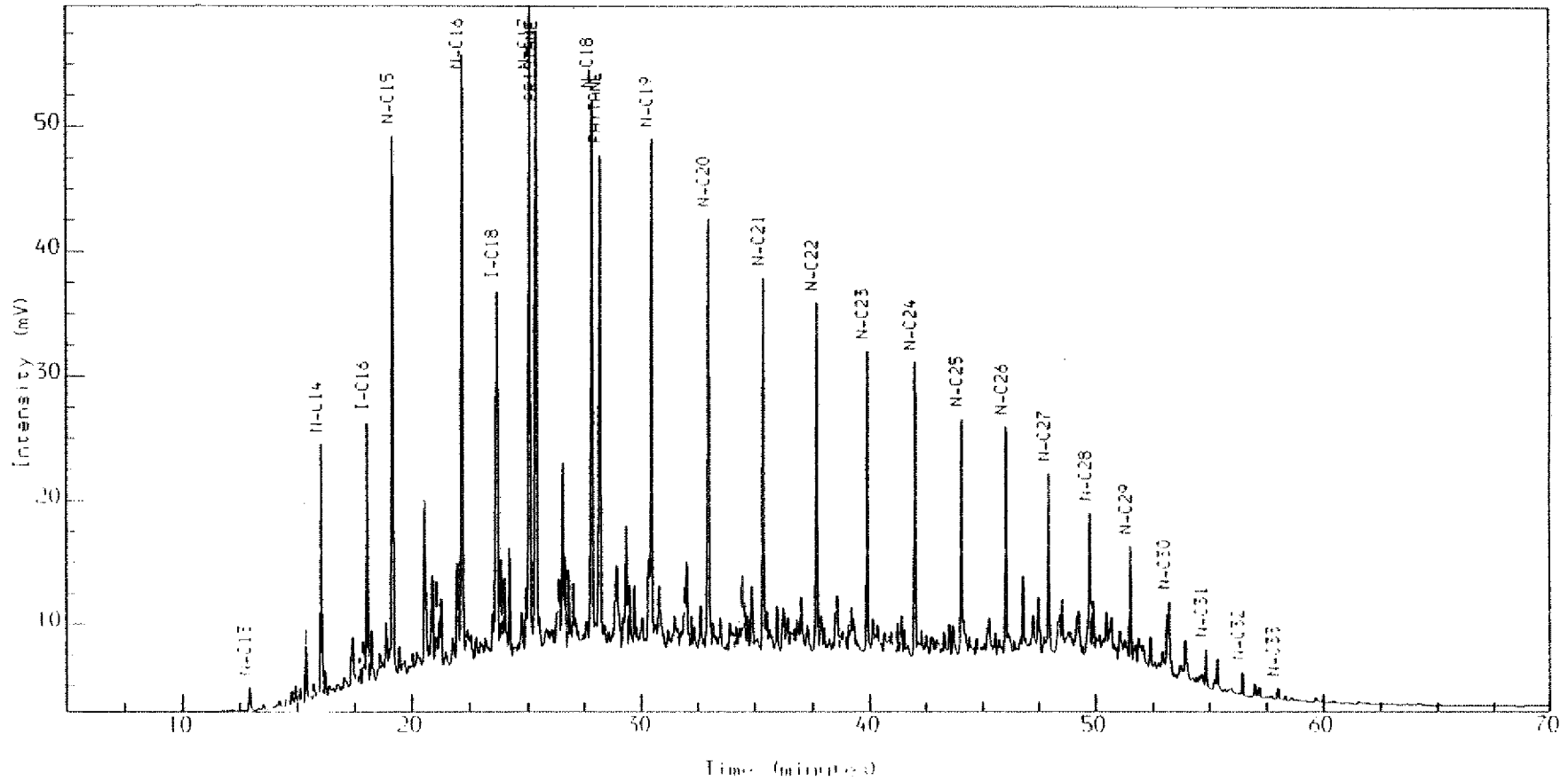
NORSE HYDRO RESEARCH CENTRE

Analysis Name : EPETRO17 W5009105.10.1.

30/9-10 2749.20 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP1040

Channel Title : M10

Limit ID : *

Acquired on 25-NOV-1990 at 03:21

Reported on 25-NOV-1990 at 11:17

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

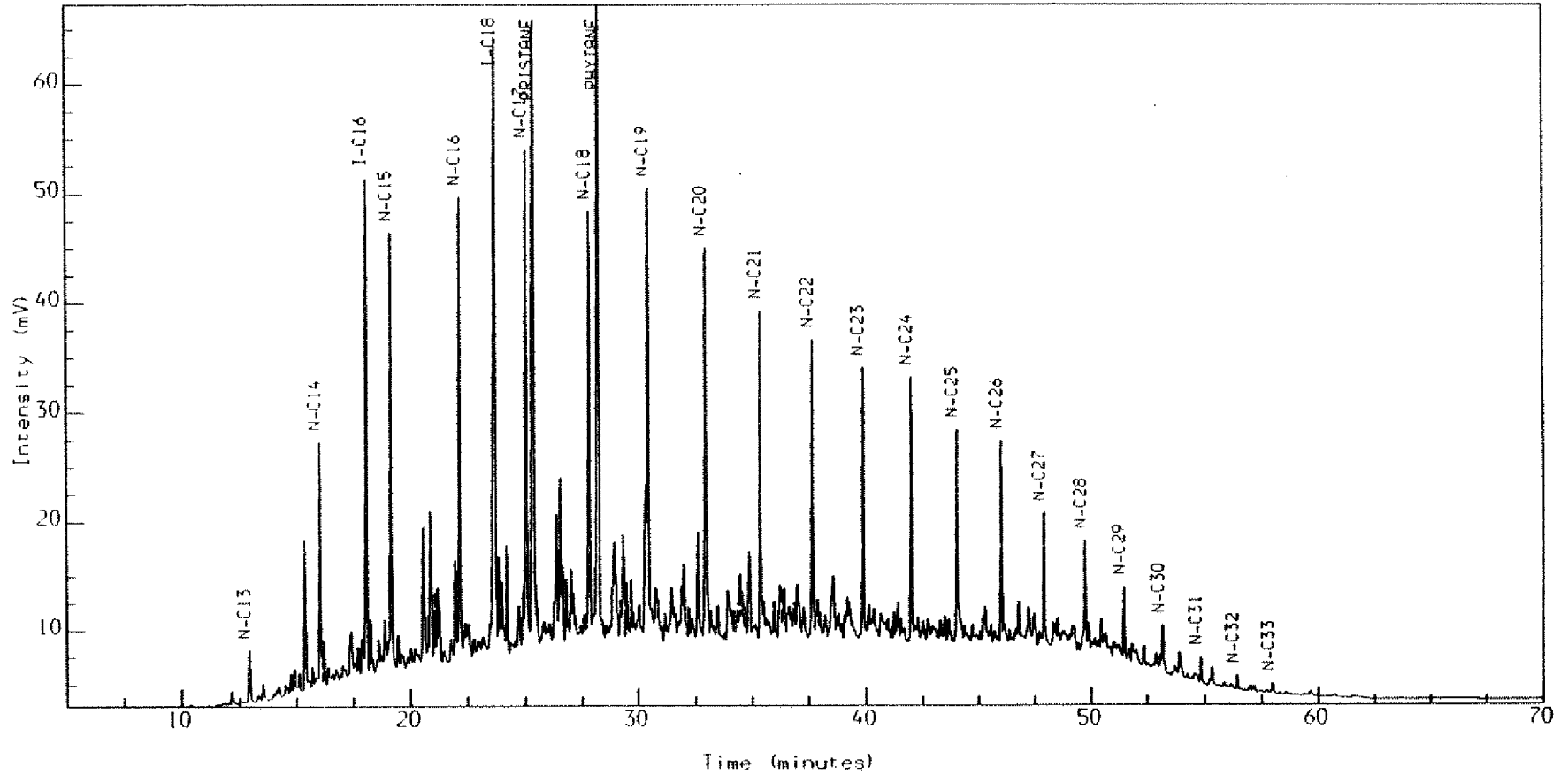
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W3009105.32.1.

30/9-10 2749.70 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSF

Lims ID :

Acquired on 27-OCT-1990 at 01:47

Reported on 28-NOV-1990 at 13:30

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

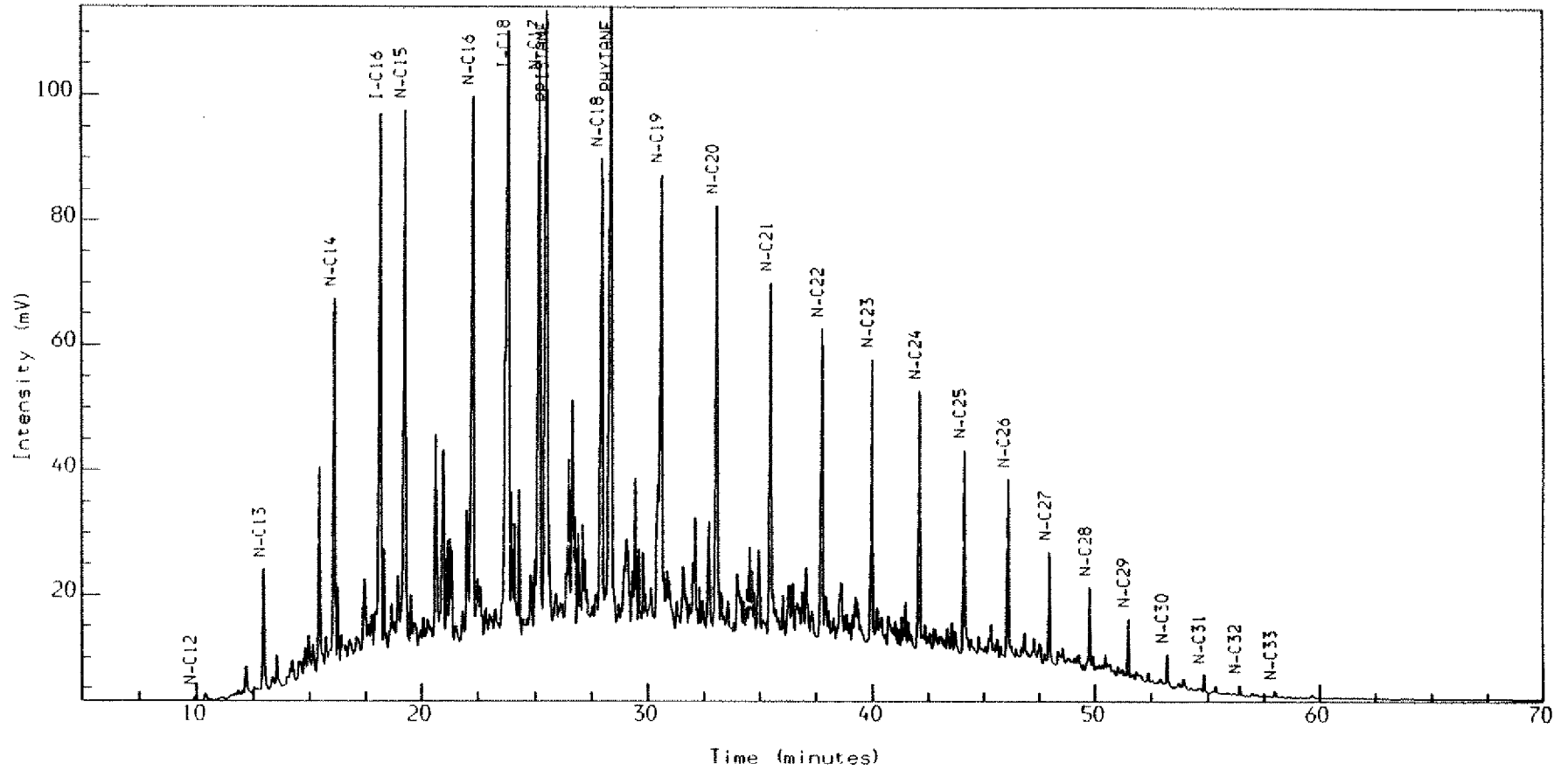
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W3009105.33.1.

30/9-10 2750.30 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MS0

Lims ID :

Acquired on 27-OCT-1990 at 03:19

Reported on 26-NOV-1990 at 08:31

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

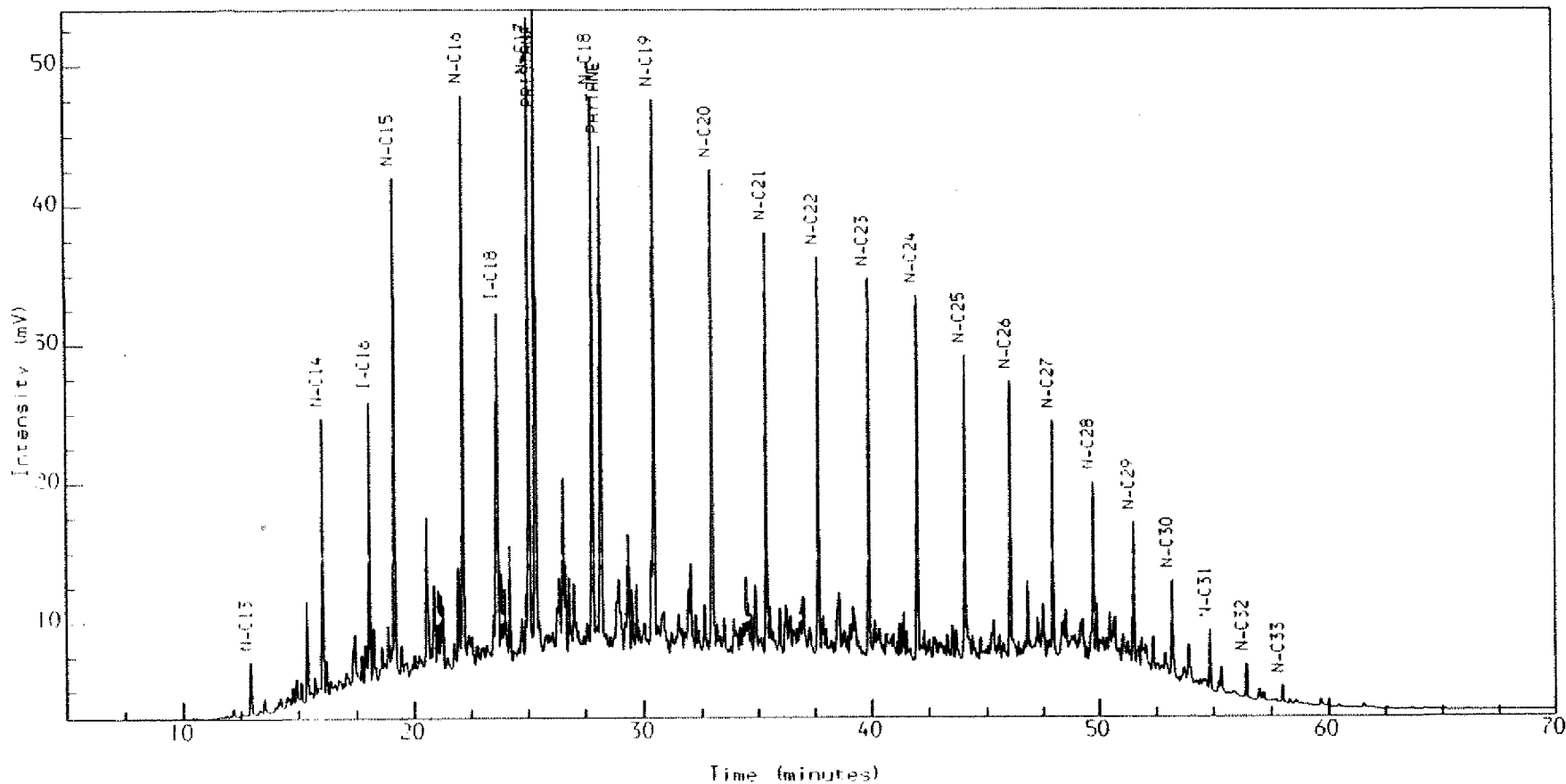
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 W3009105.24.1.

30/9-10 2750.90 M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSD

Lims ID :

Acquired on 26-OCT-1990 at 12:43

Reported on 23-NOV 1990 at 15:43

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

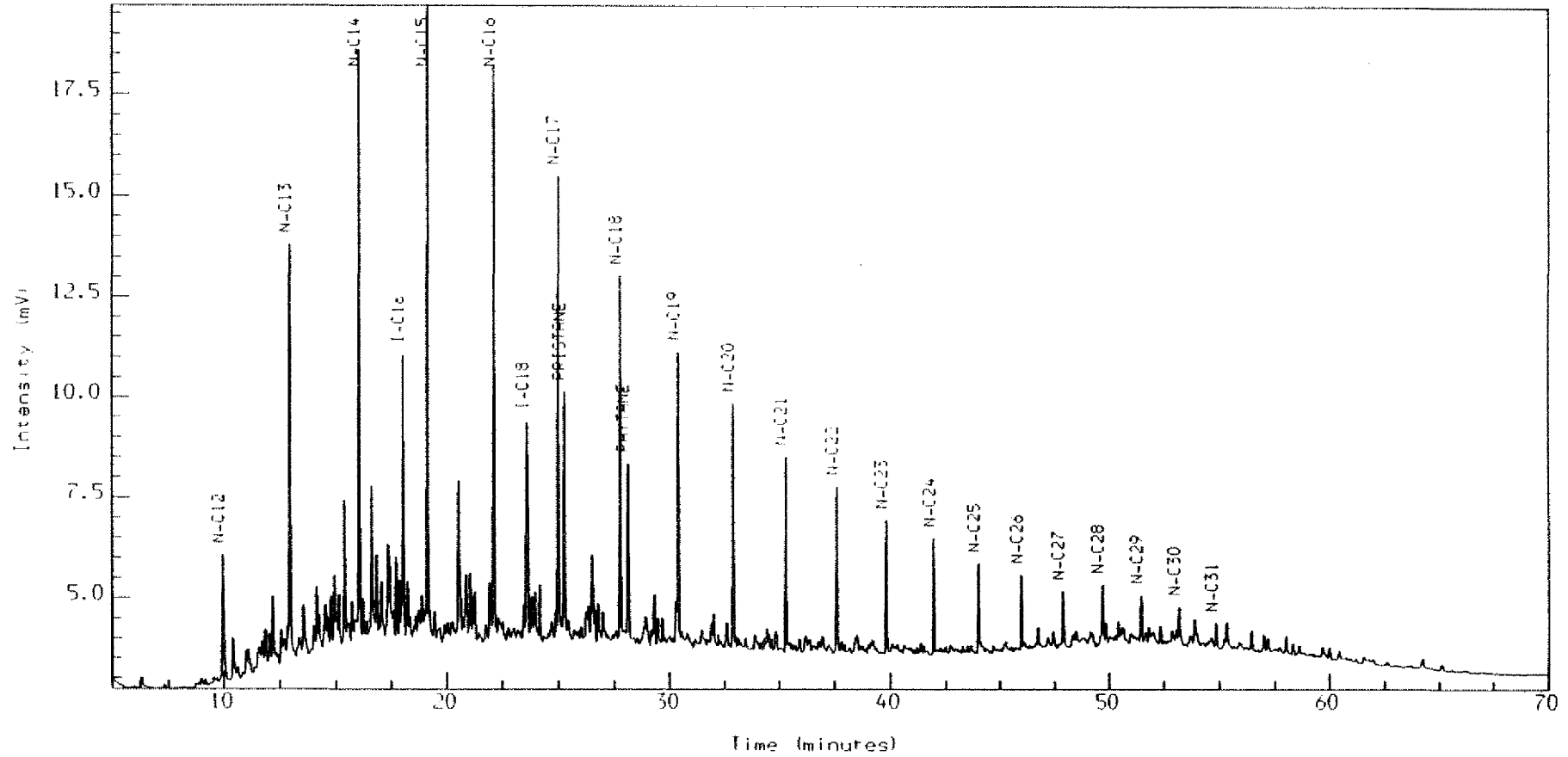
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 E3009105.4.1.

30/9-10 2755.2

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSD

Lims ID :

Acquired on 23-JAN-1991 at 19:19

Reported on 24-JAN-1991 at 10:17

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

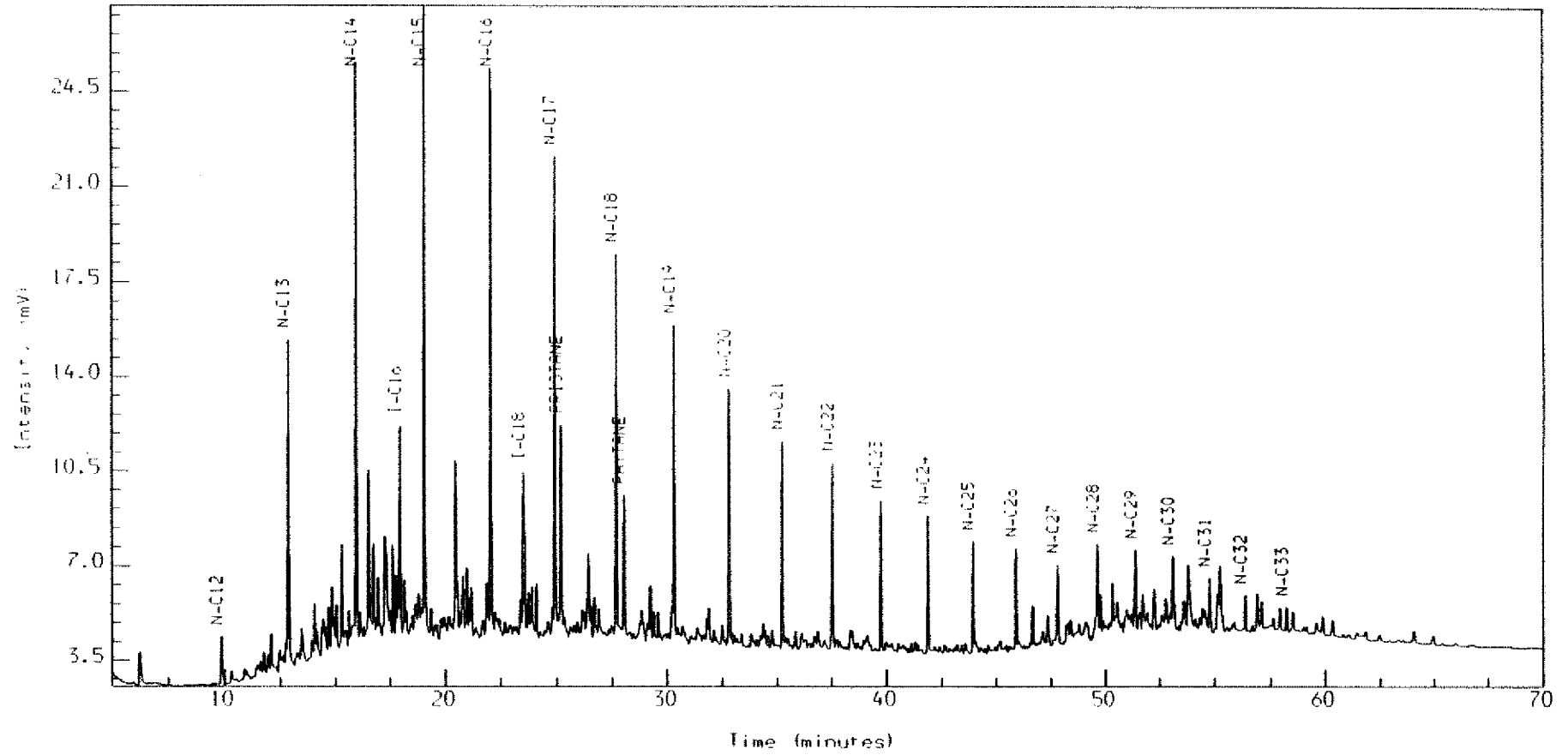
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 E3009105.5.1.

30/9-10 2763.3

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Method : MSDS

Channel Title : MSD

Calibration : MSDS

Lims ID :

Run Sequence : MSDS

Acquired on 24-JAN-1991 at 11:47

Reported on 24-JAN-1991 at 13:09

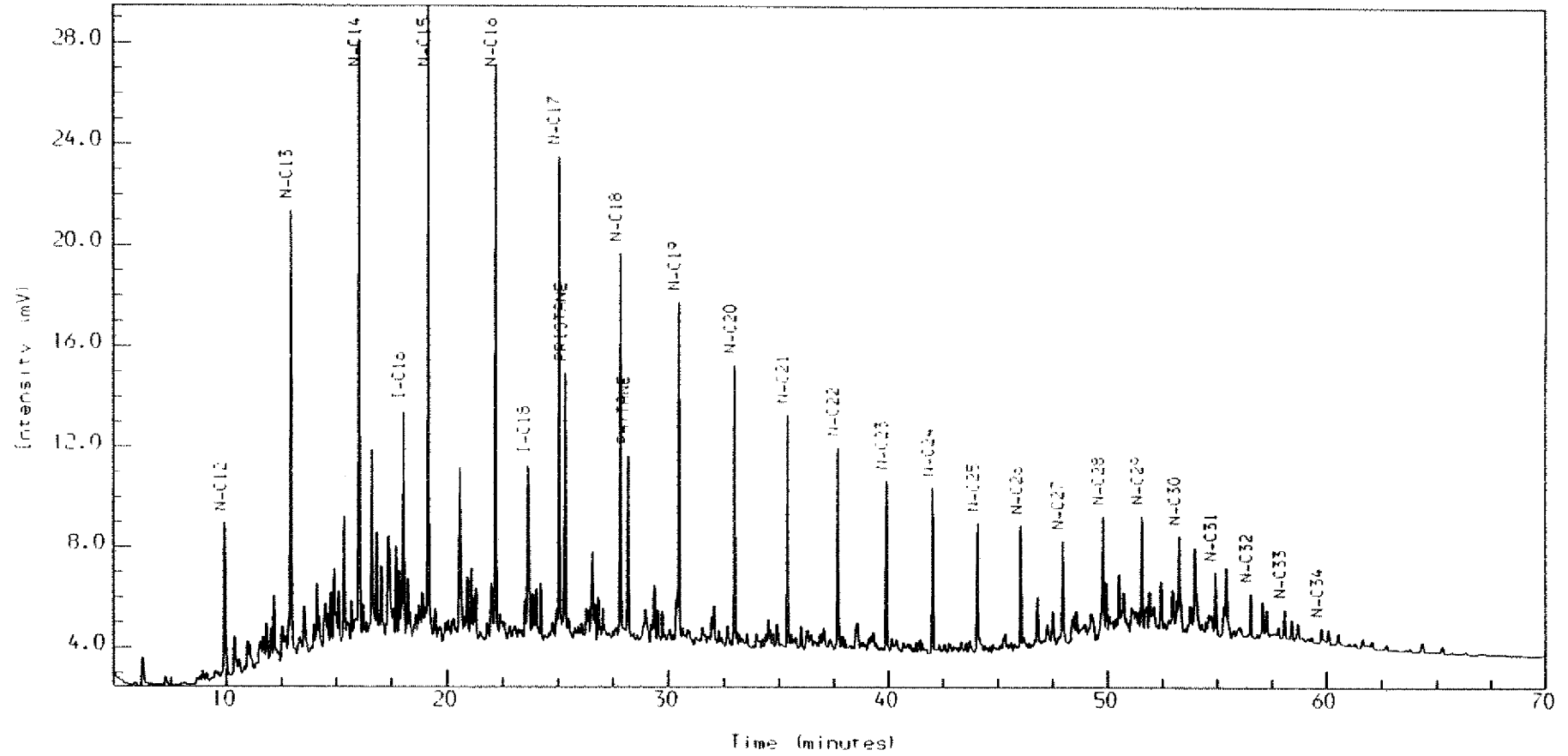
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 E3009105.6.1.

30/9-10 2767.55

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Method : MSDS

Channel Title : MSD

Calibration : MSDS

Lims ID :

Run Sequence : MSDS

Acquired on 24-JAN-1991 at 13:18

Reported on 24-JAN-1991 at 14:40

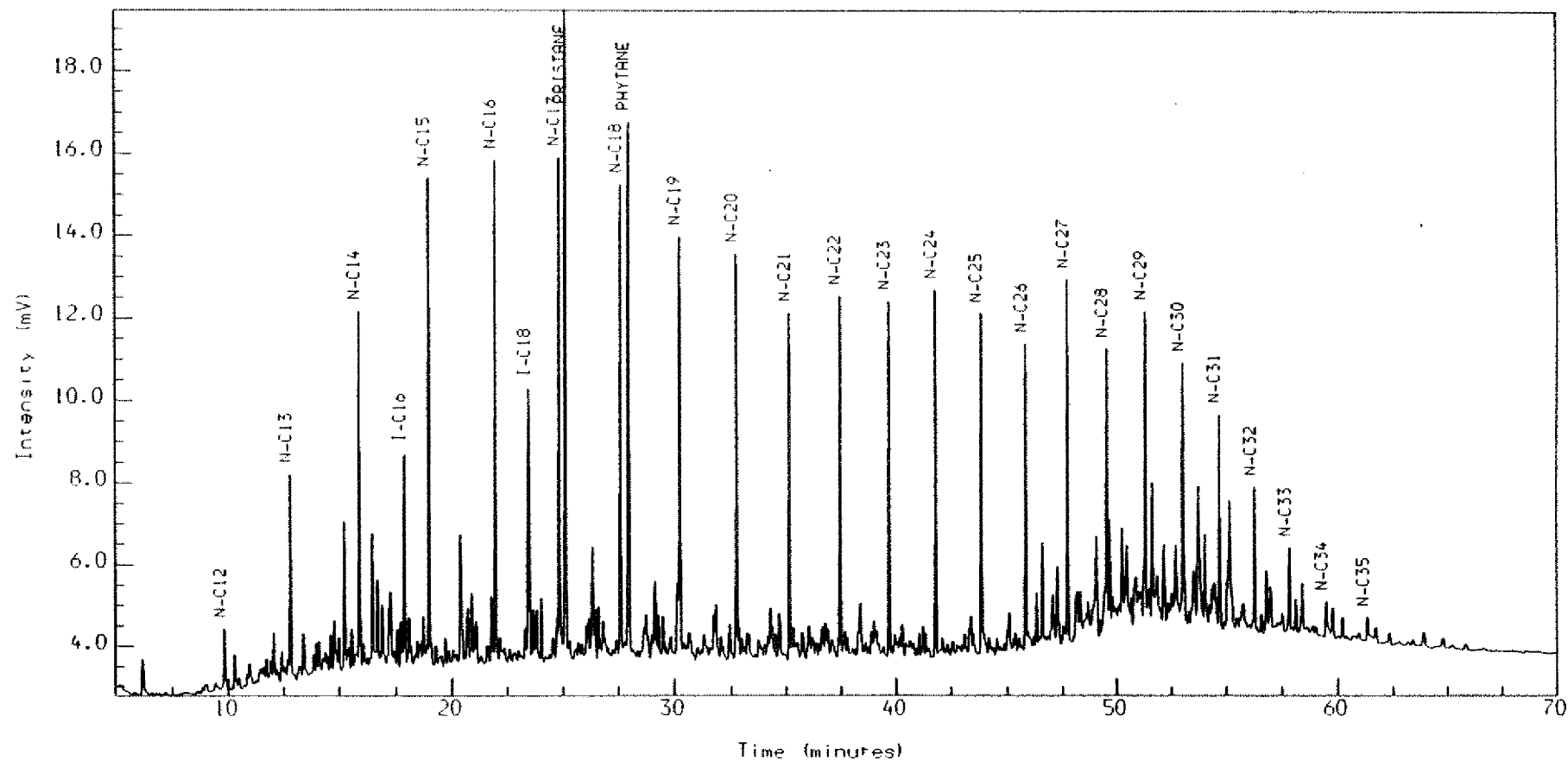
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 E5009105.7.1.

30/9-10 2775.5

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSD

Lims ID :

Acquired on 24-JAN-1991 at 17:45

Reported on 24-JAN-1991 at 19:07

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

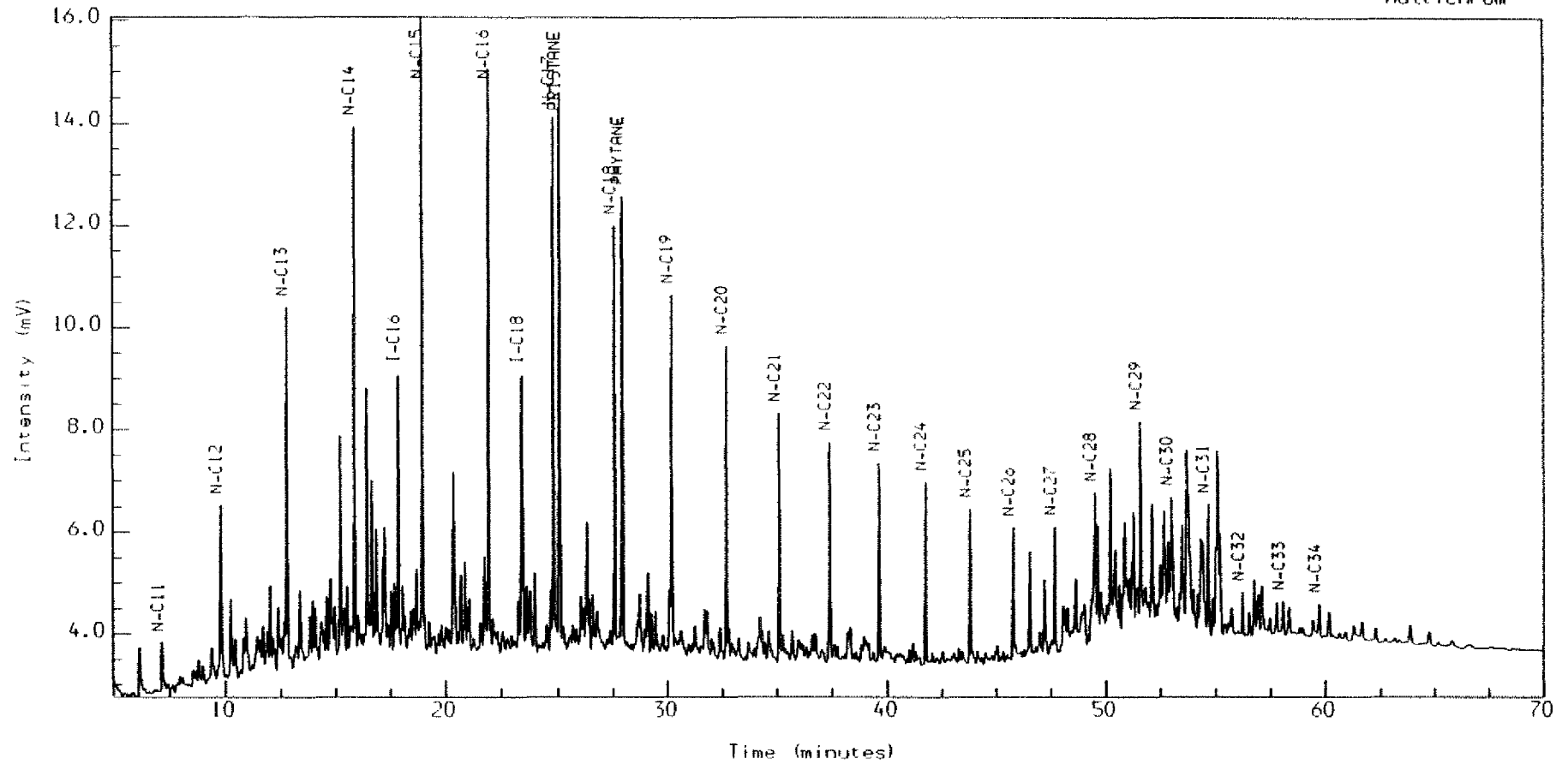
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 E3009105.8.1.

30/9-10 2776.6

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSD

Lims ID :

Acquired on 24-JAN-1991 at 19:16

Reported on 24-JAN-1991 at 20:38

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

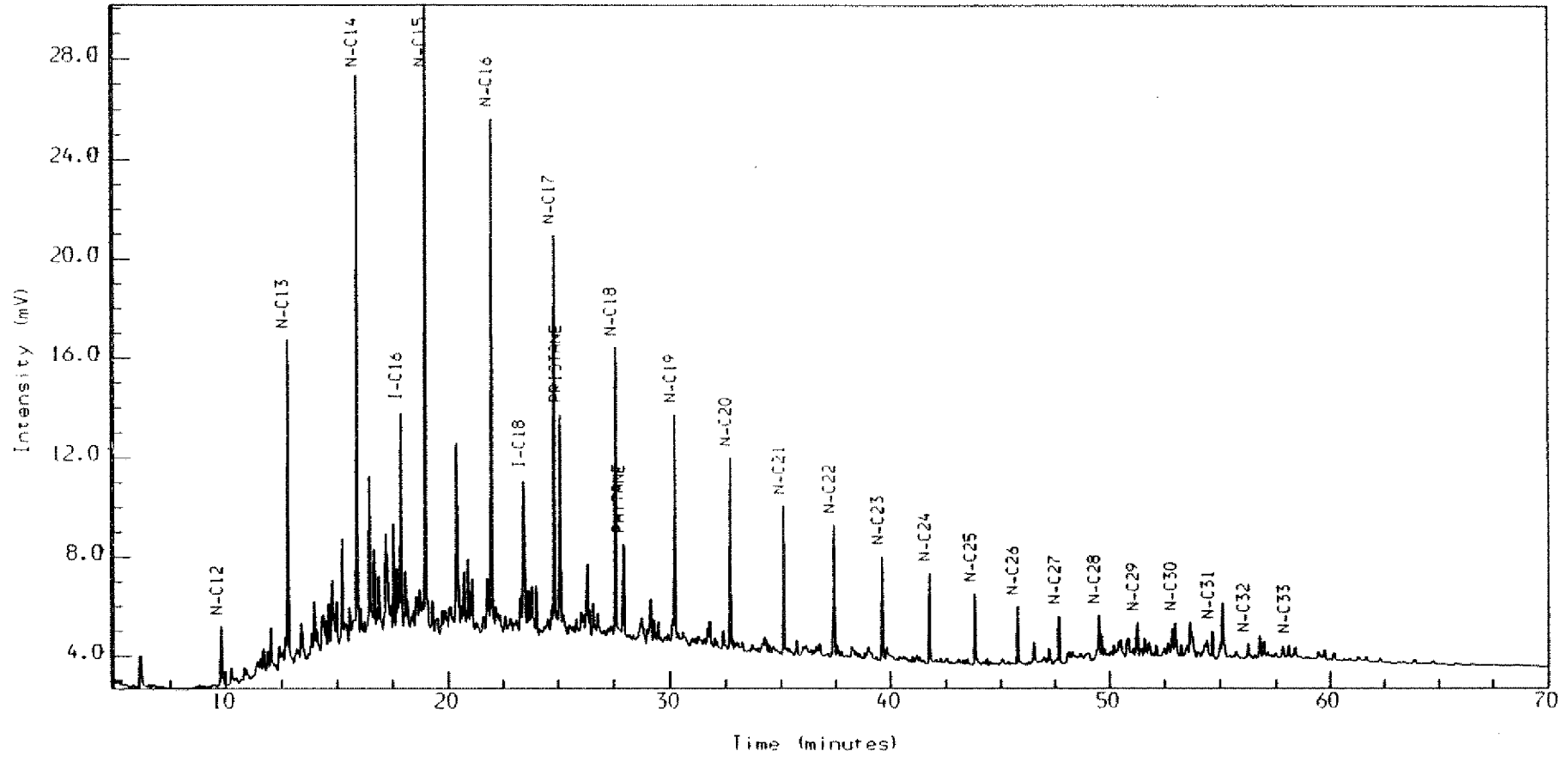
NORSE HYDRO RESEARCH CENTRE

Analysis Name : DETROIT 7 E500/103.F.I.

30/9-10 2779.2

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSD

Limit ID :

Acquired on 24-JAN-1991 at 20:48

Reported on 24-JAN-1991 at 22:10

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

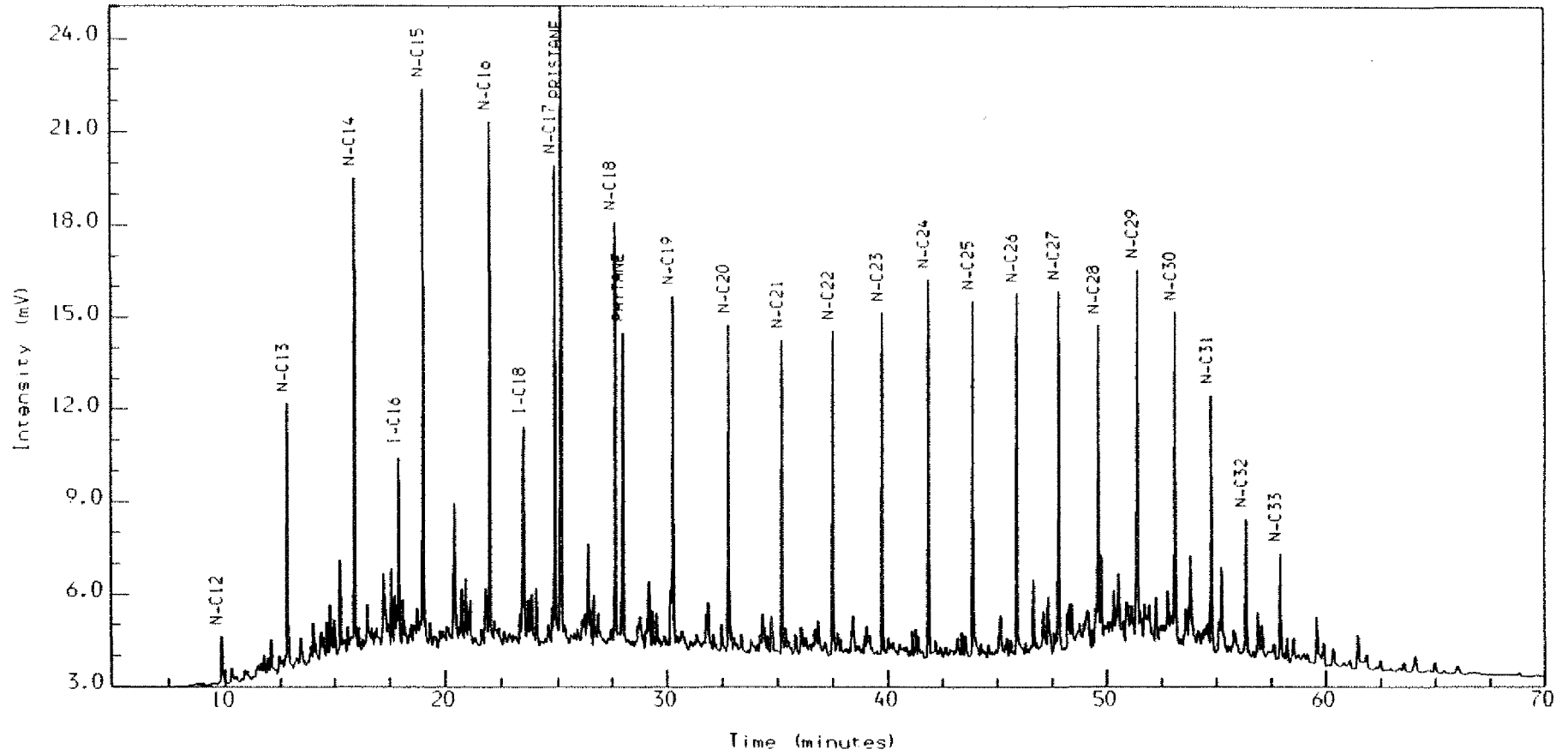
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 B3009105.1.1.

2781.IM

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSD

Lims ID :

Acquired on 12-DEC-1990 at 09:43

Reported on 12-DEC-1990 at 11:05

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

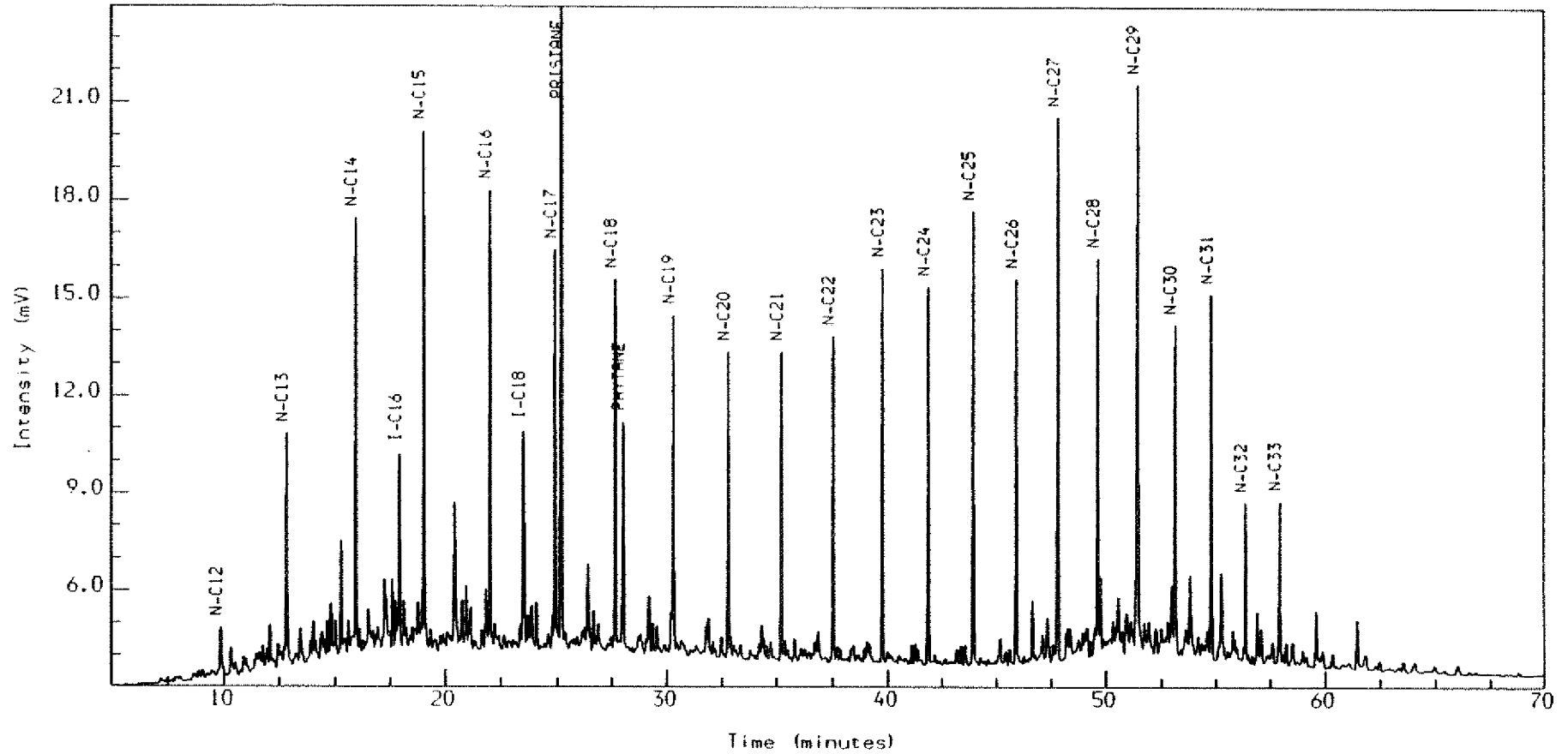
NORSA HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 B3009105.2.1.

2781.8M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSD

Lims ID :

Acquired on 12-DEC-1990 at 11:14

Reported on 12-DEC-1990 at 12:36

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

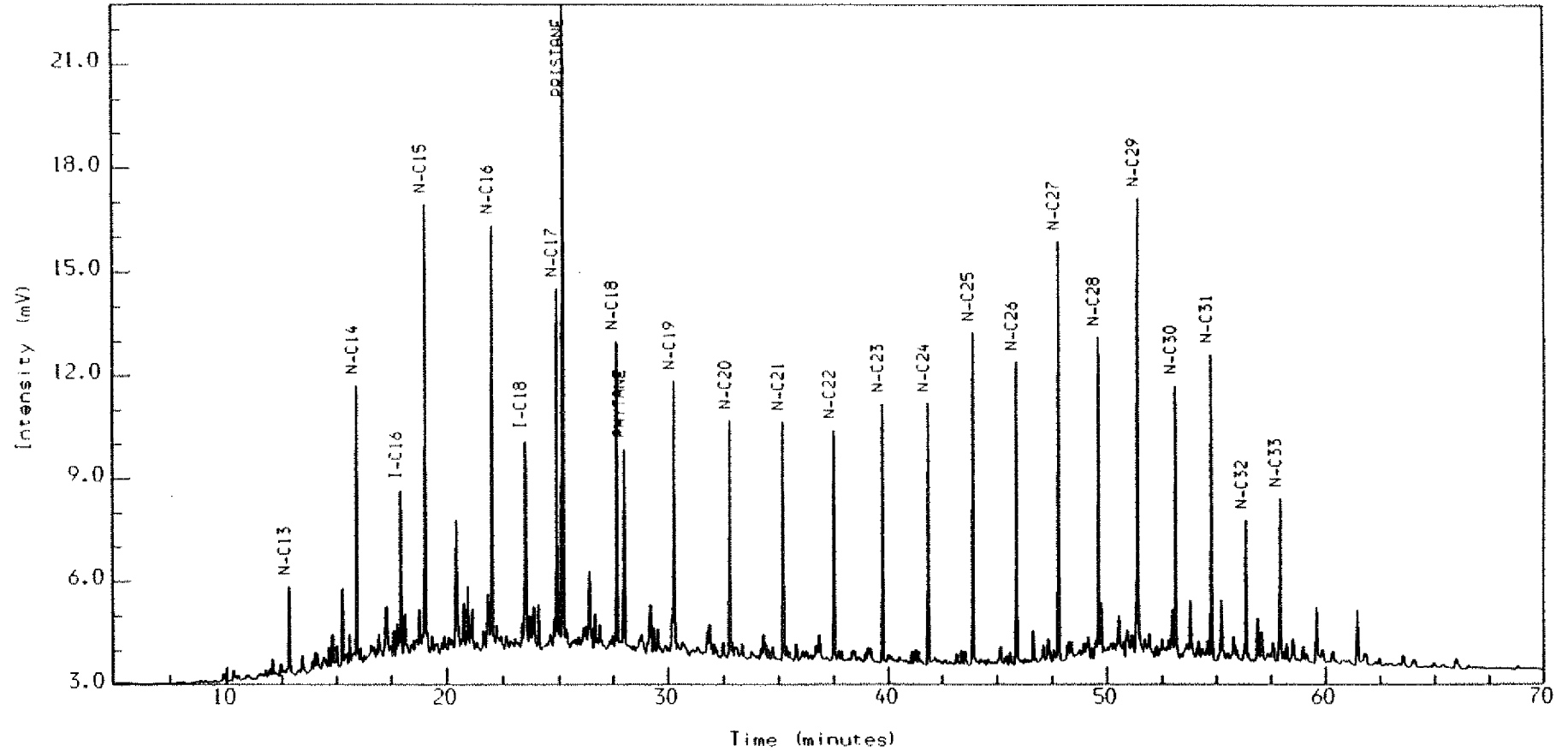
NORSE HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 B3009105.3.1.

2781.98M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSD

Lims ID :

Acquired on 12-DEC-1990 at 12:46

Reported on 12-DEC-1990 at 14:14

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

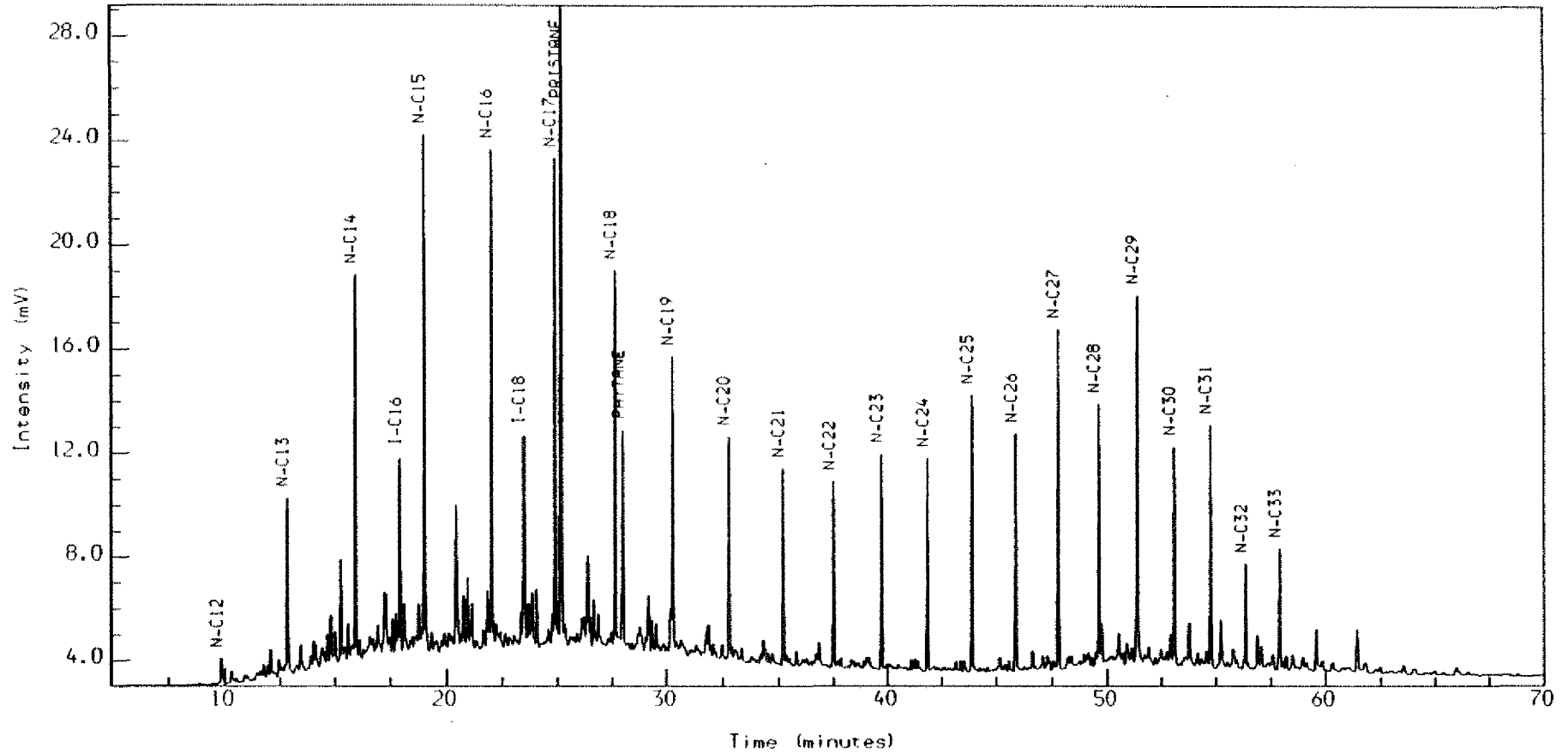
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 B300910S.4.1.

2782.0M

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Channel Title : MSD

Lims ID :

Acquired on 12-DEC-1990 at 14:17

Reported on 12-DEC-1990 at 15:39

Method : MSDS

Calibration : MSDS

Run Sequence : MSDS

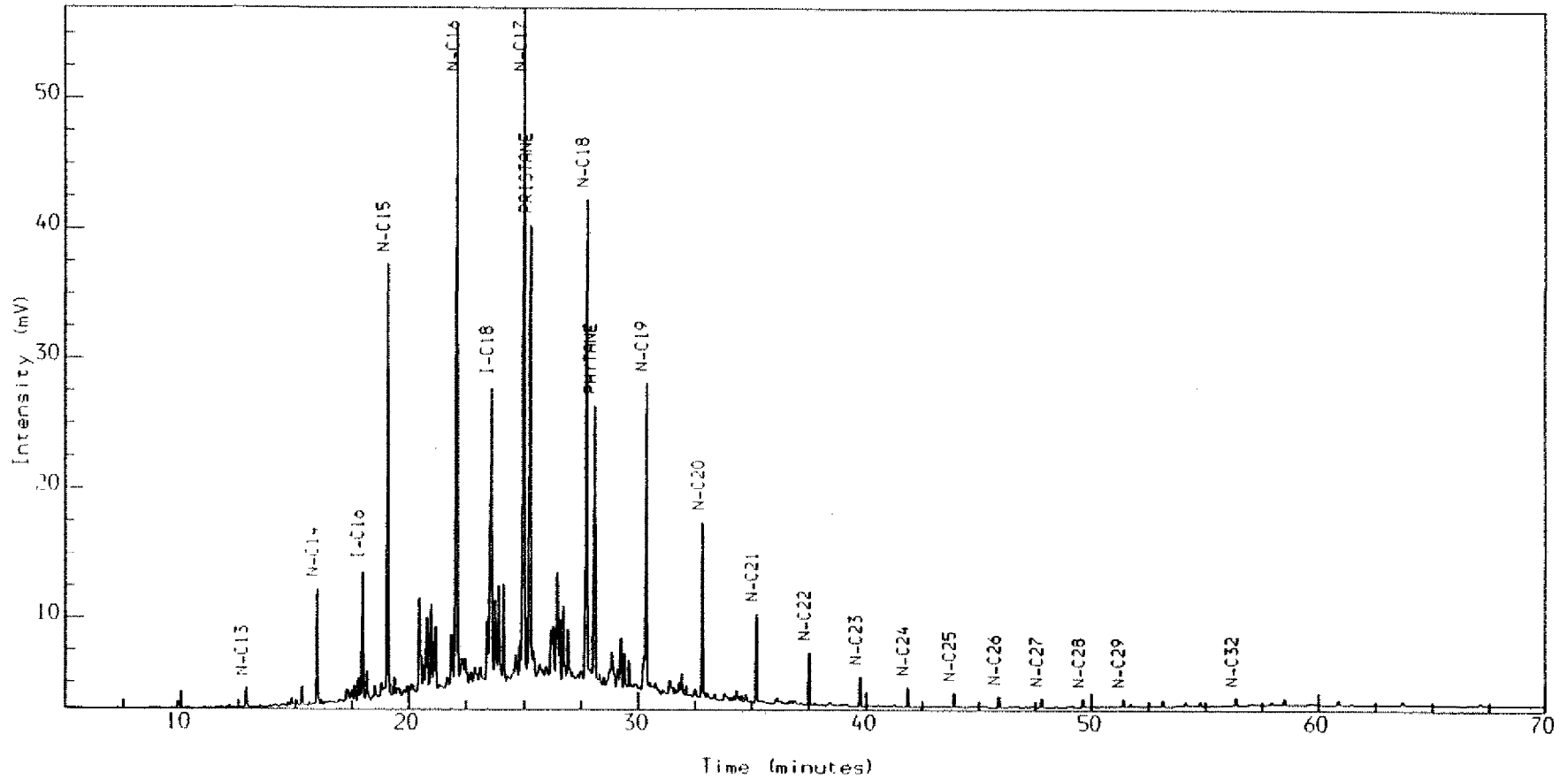
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 a300910s.4.1.

2846 m

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Method : MSDS

Channel Title : M90

Calibration : MSDS

Lims ID :

Run Sequence : MSDS

Acquired on 30-NOV-1990 at 14:53

Reported on 30-NOV-1990 at 16:14

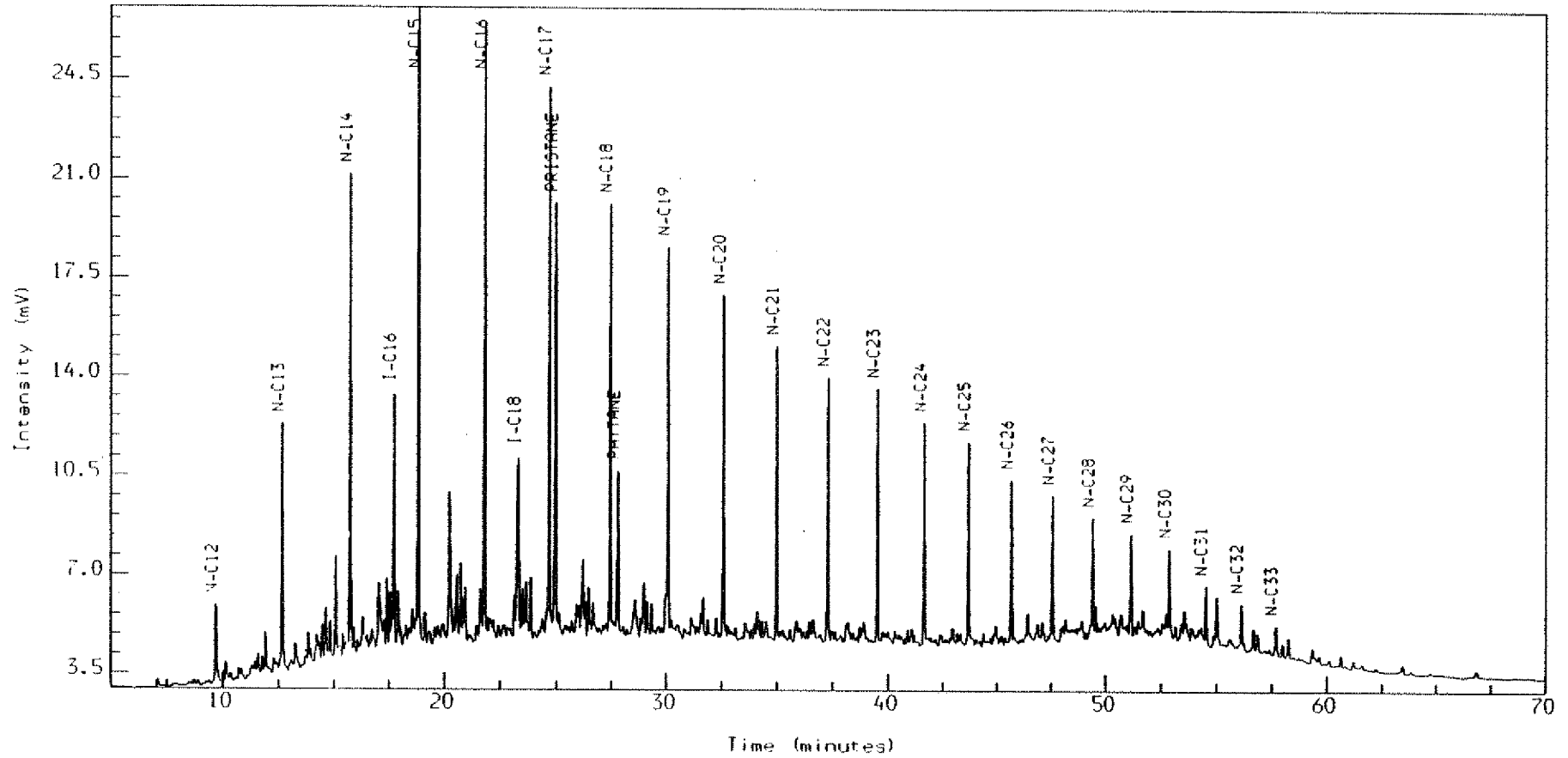
NORSK HYDRO RESEARCH CENTRE

Analysis Name : [PETRO] 7 a300910s.5.1.

2852.5 m

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP4890

Method : MSDS

Channel Title : M91

Calibration : MSDS

Lims ID :

Run Sequence : MSDS

Acquired on 30-NOV 1990 at 12:00

Reported on 30-NOV 1990 at 13:22

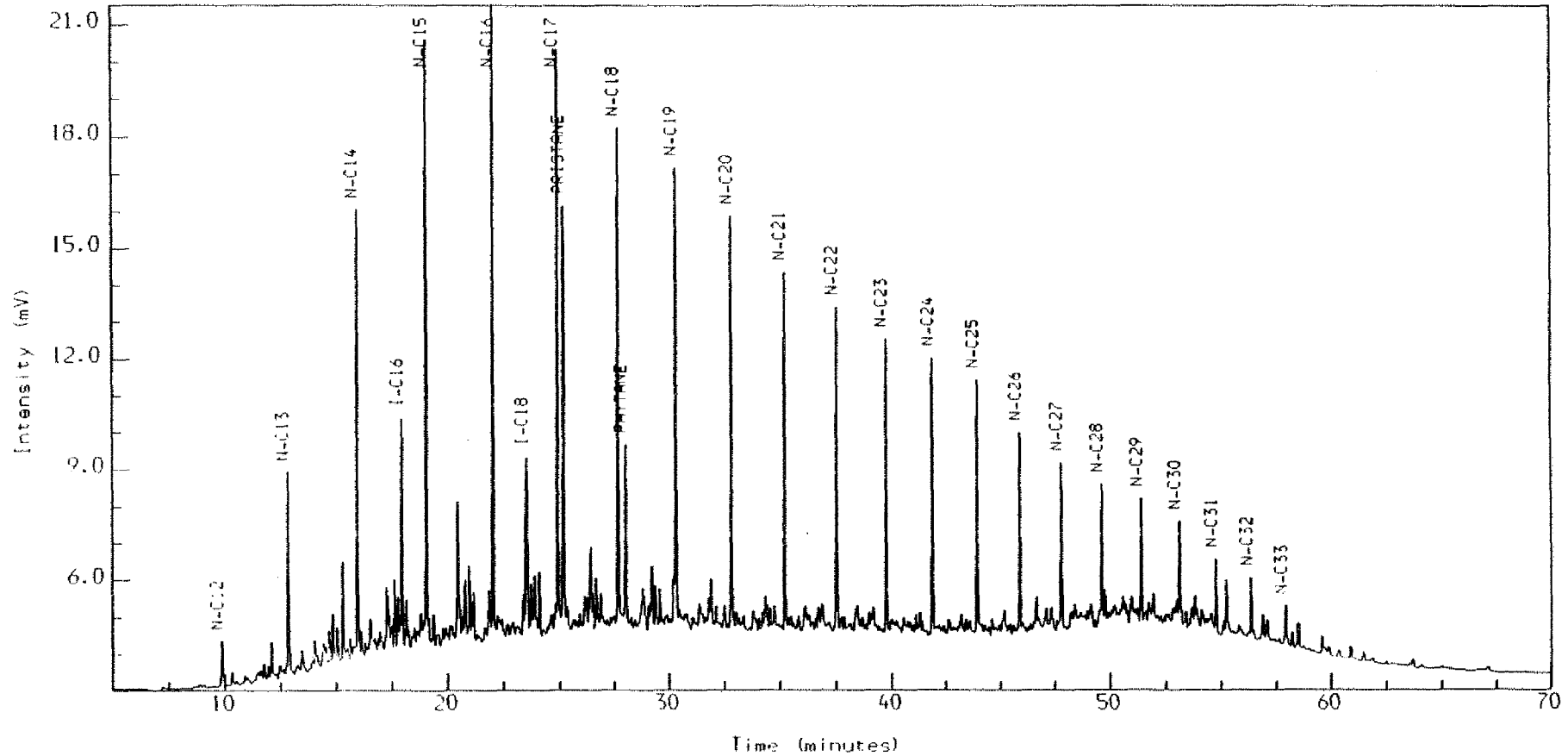
NORSK HYDRO RESEARCH CENTRE

Analysis Name : (PETRO) 7 a300910s.6.1.

2856.5 m

GC SATURATED HYDROCARBONS

Multichrom



Instrument : HP5890

Method : MSDS

Channel Title : MSD

Calibration : MSDS

Lims ID :

Run Sequence : MSDS

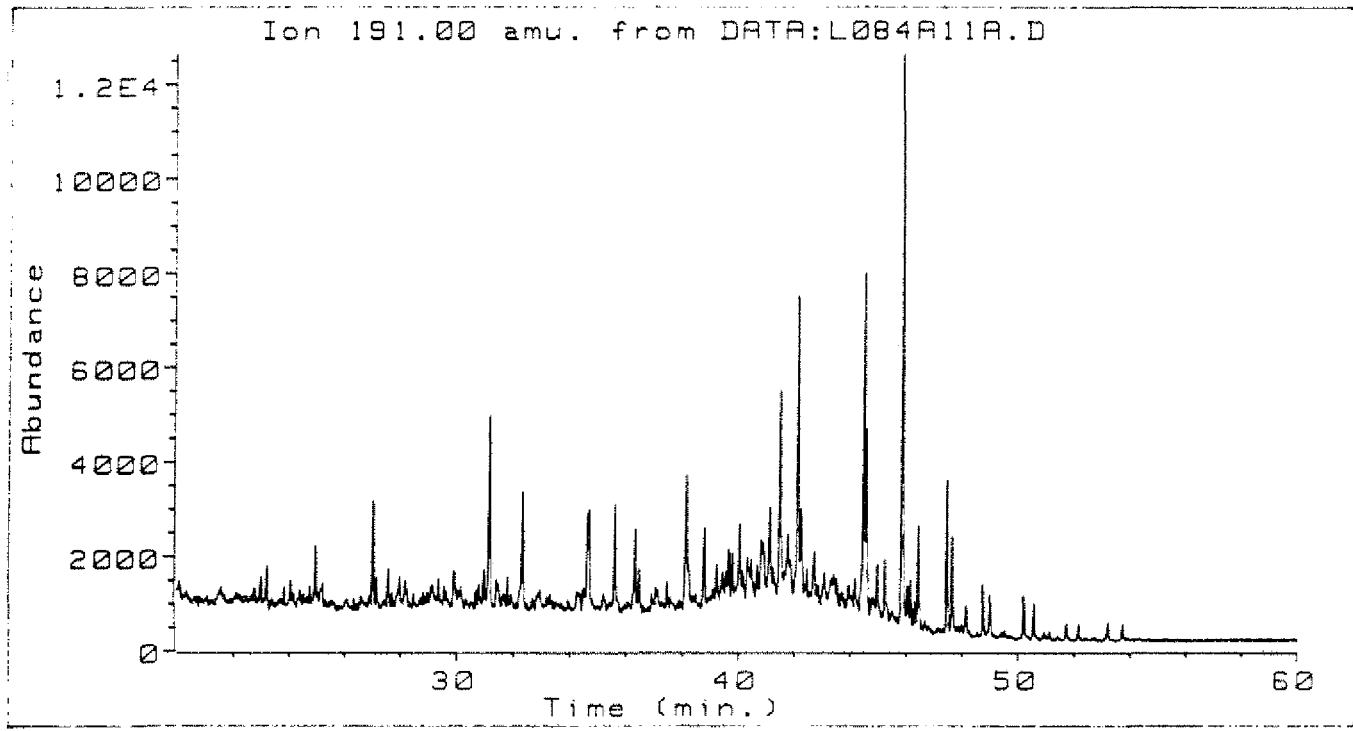
Acquired on 30-NOV-1990 at 17:56

Reported on 30-NOV-1990 at 19:17

APPENDIX III

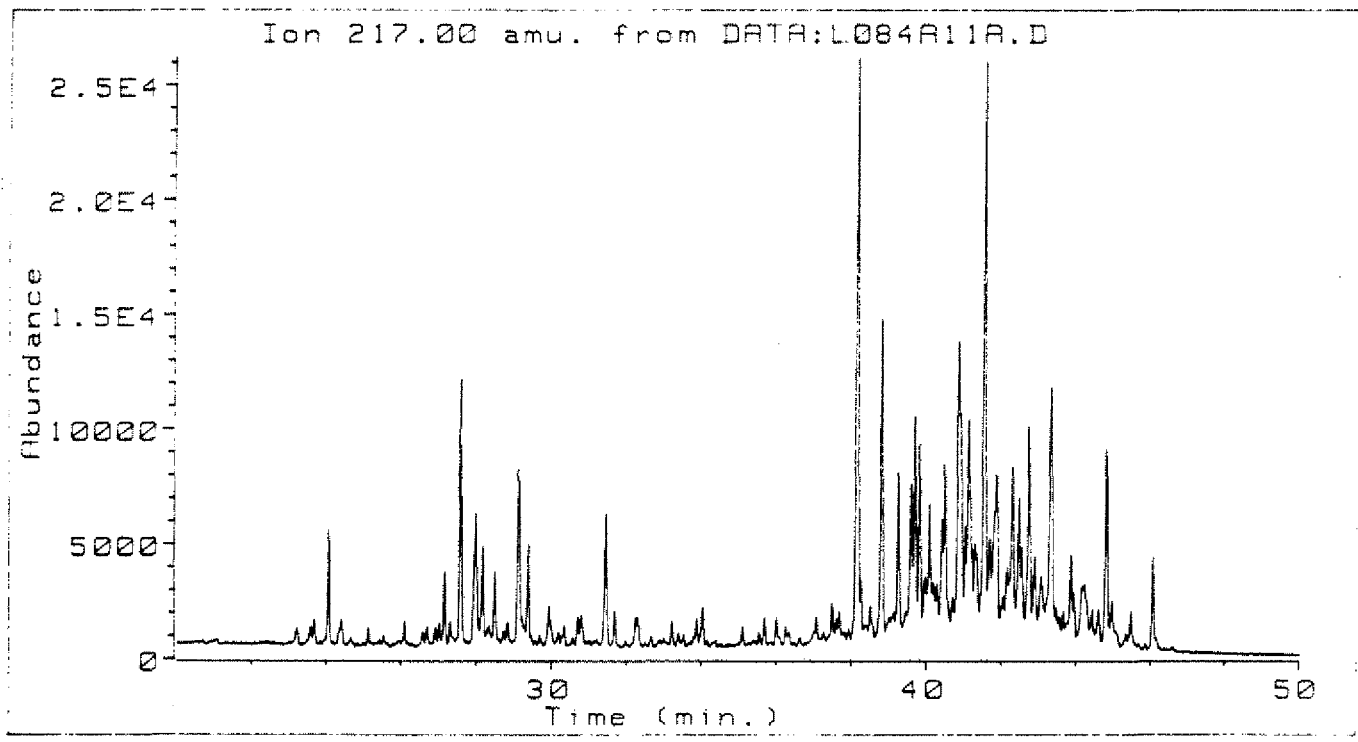
Fragmentograms of Terpanes, (Ion 191 m/z).

Fragmentograms of Steranes, (Ion 217 m/z).



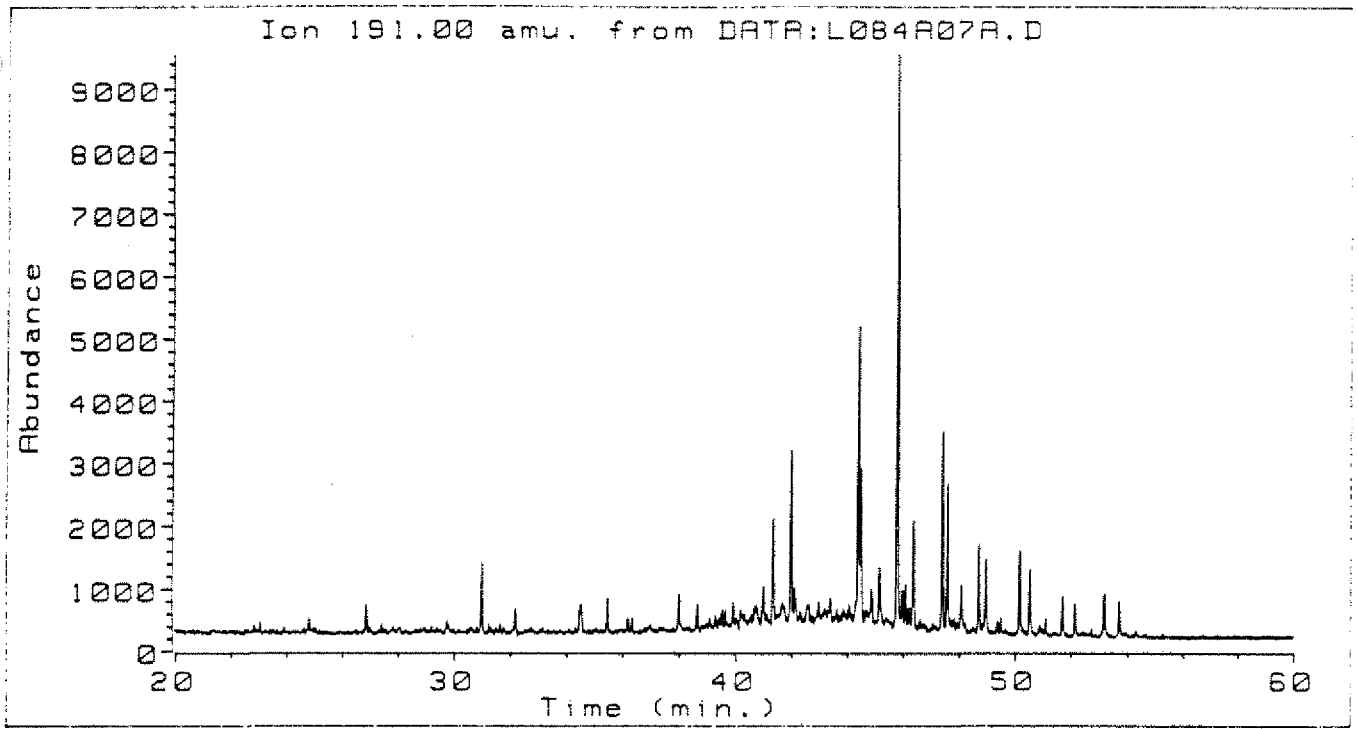
30/9-10

2719 M



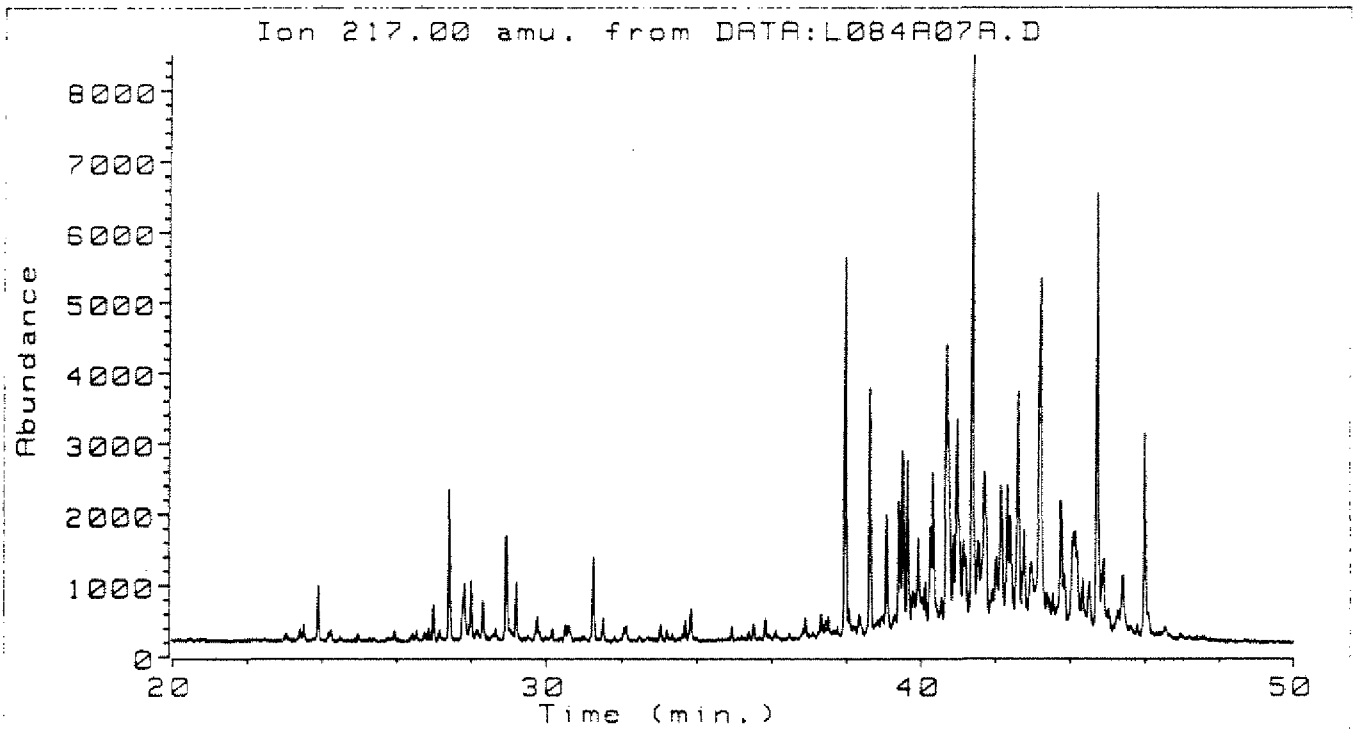
30/9-10

2719 M



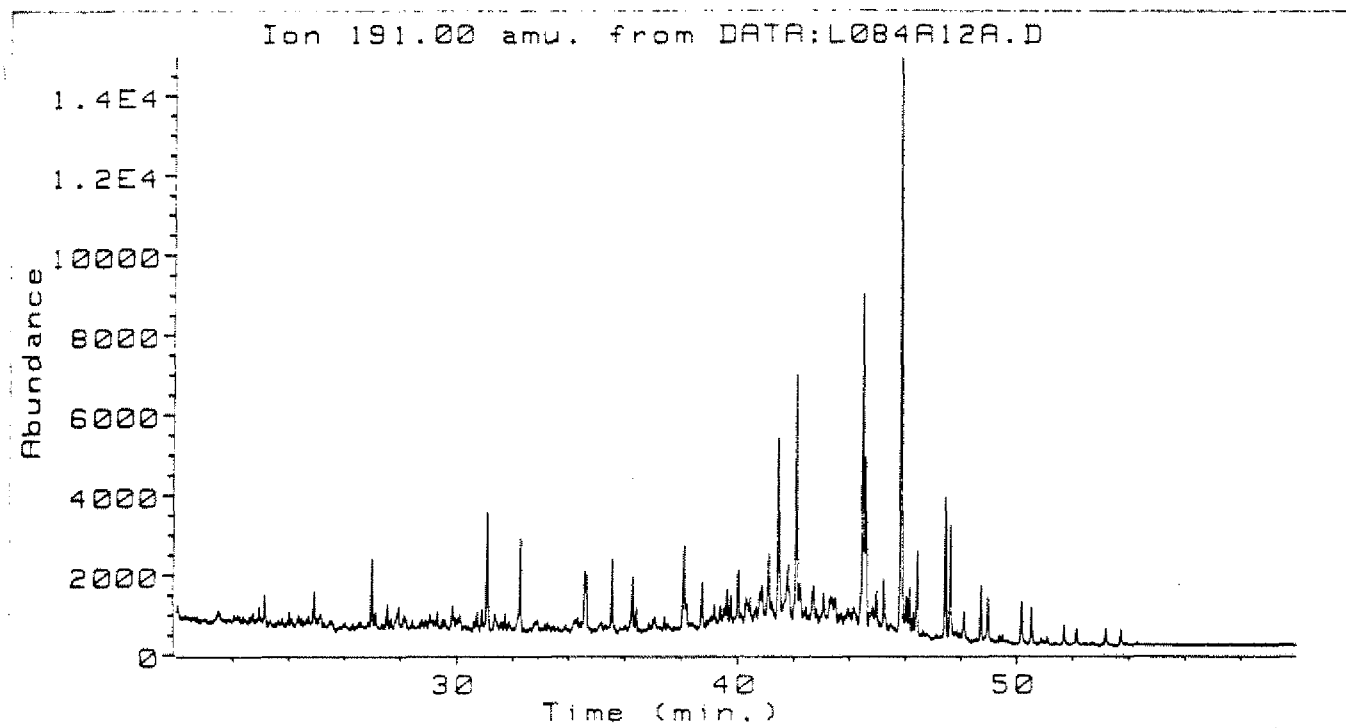
30/9-10

2722 M



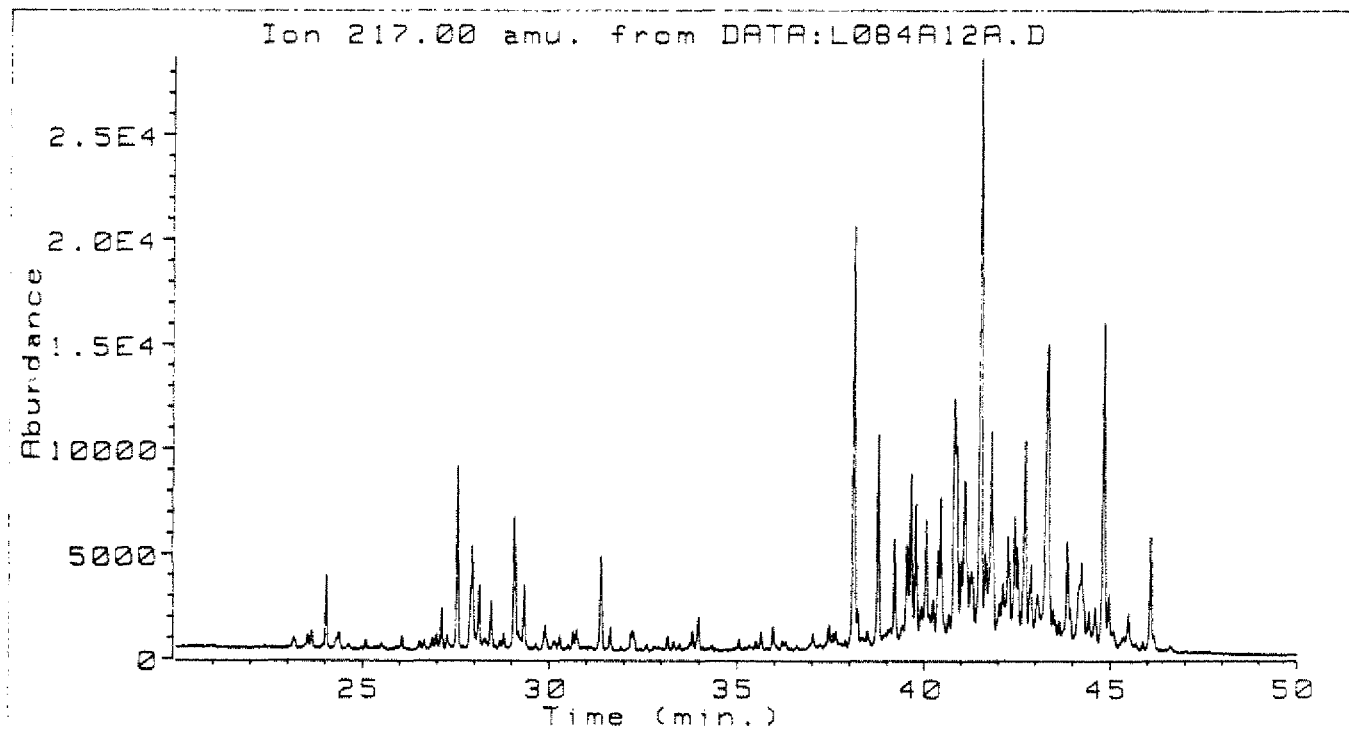
30/9-10

2722 M



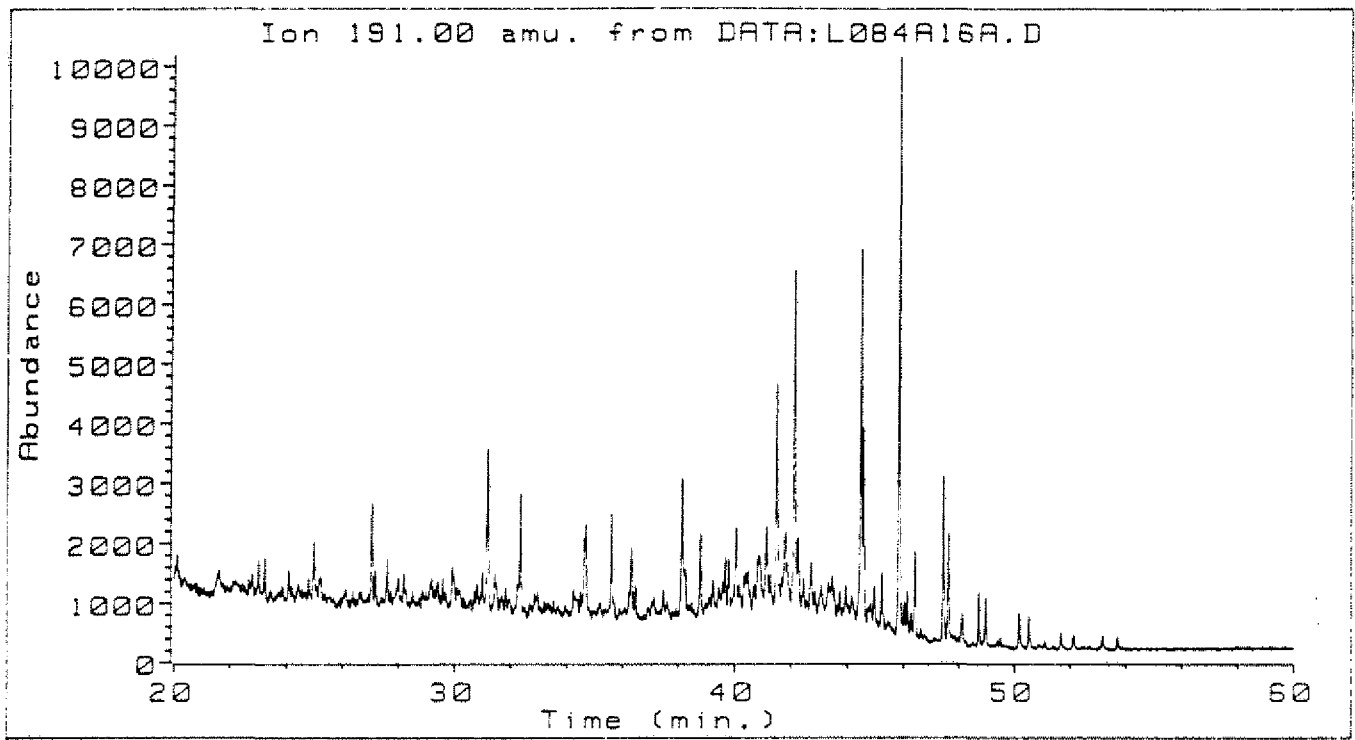
30/9-10

2723 M



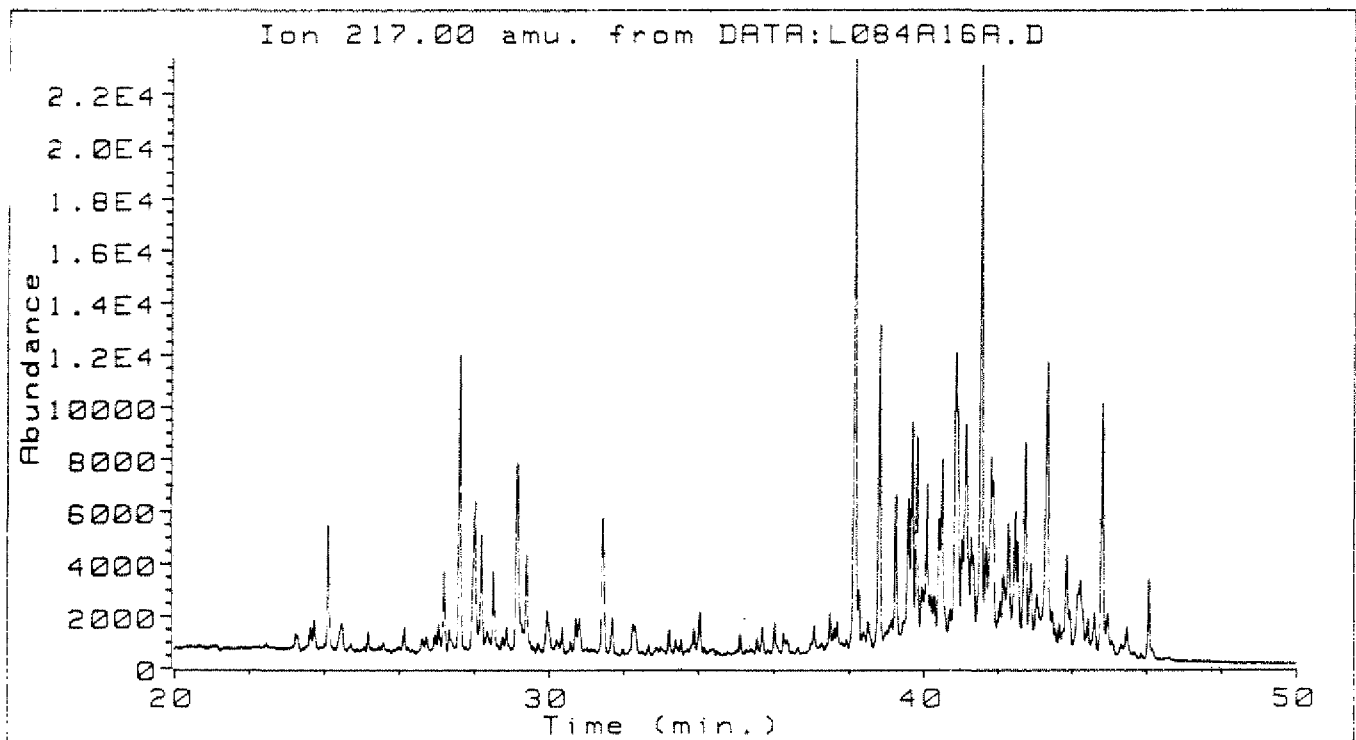
30/9-10

2723 M



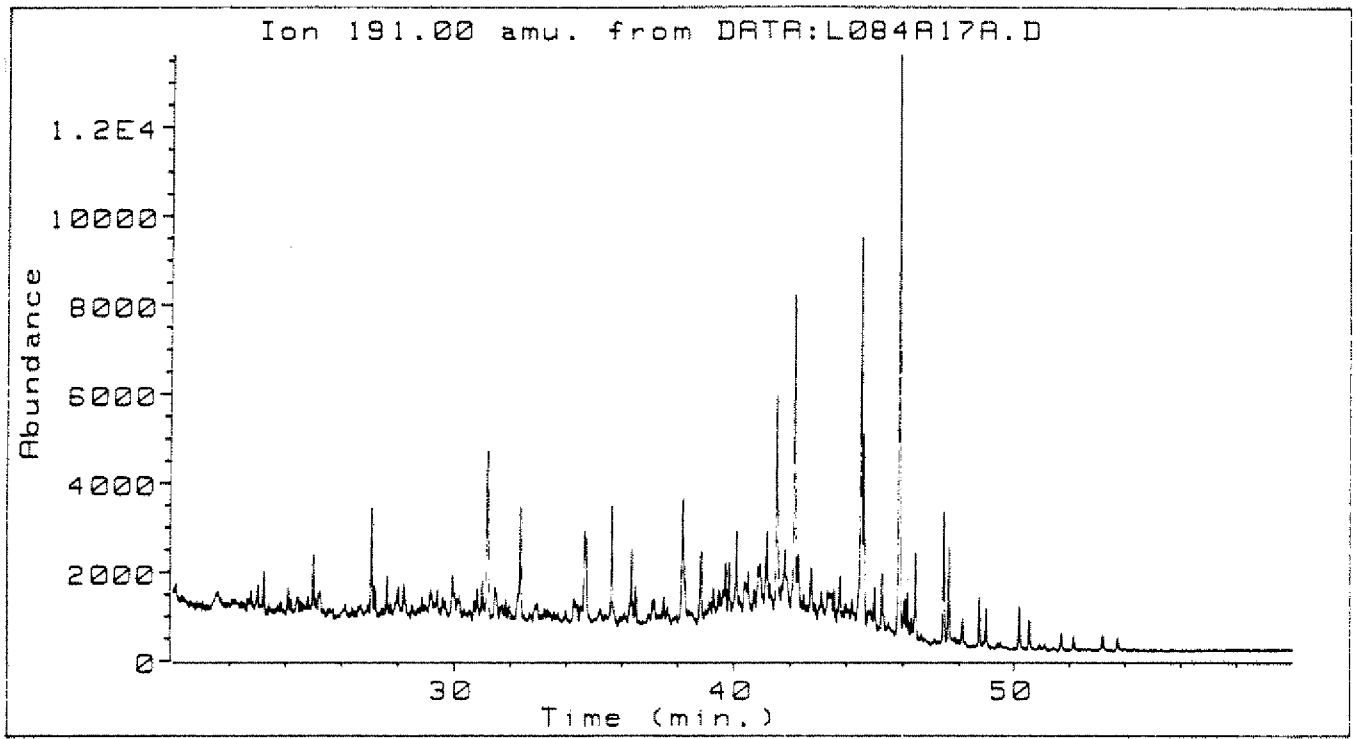
30/9-10

2725 M



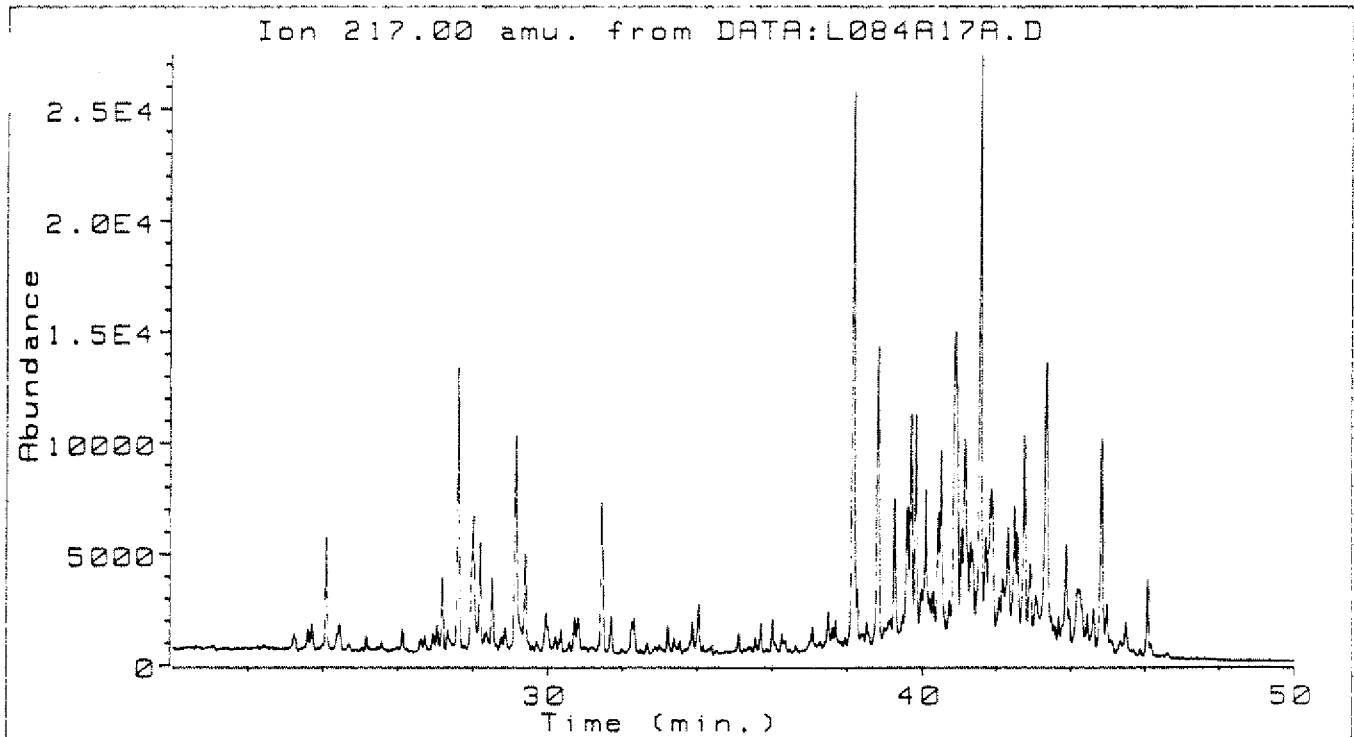
30/9-10

2725 M



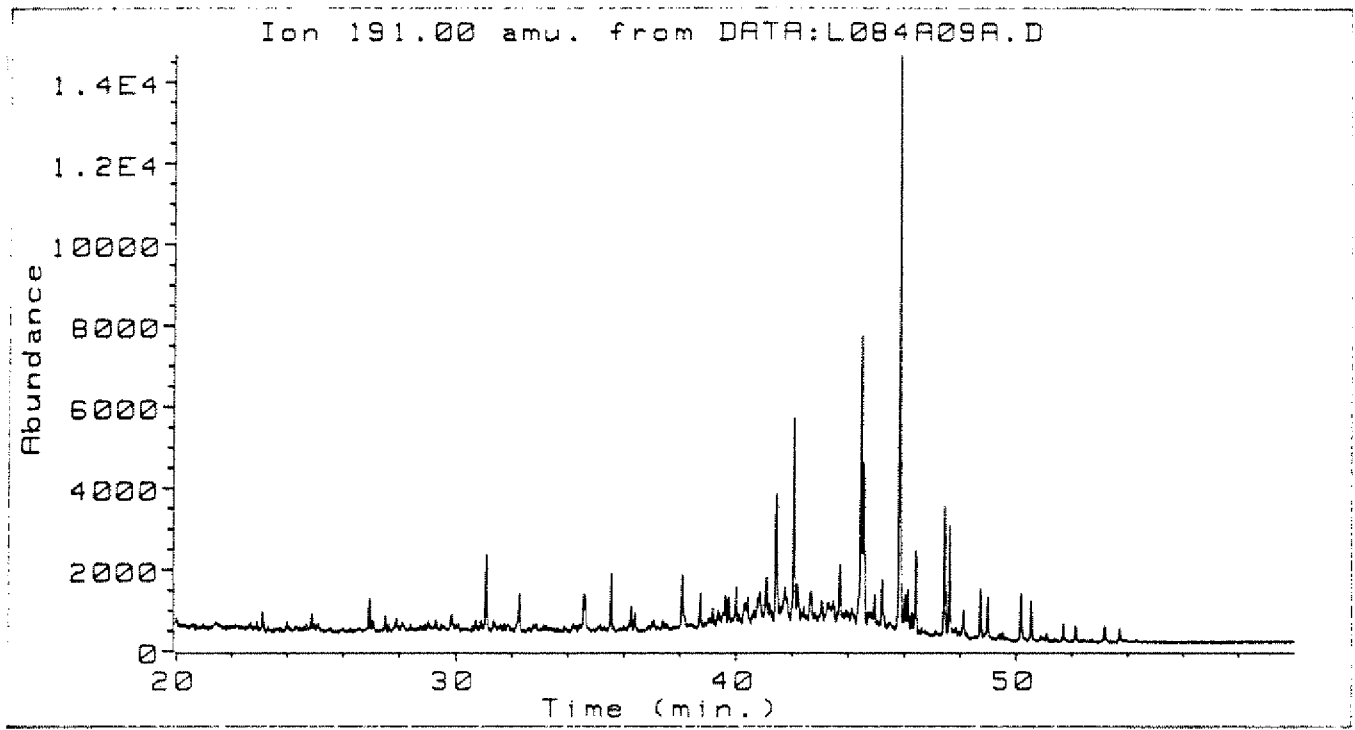
30/9-10

2726.15 M



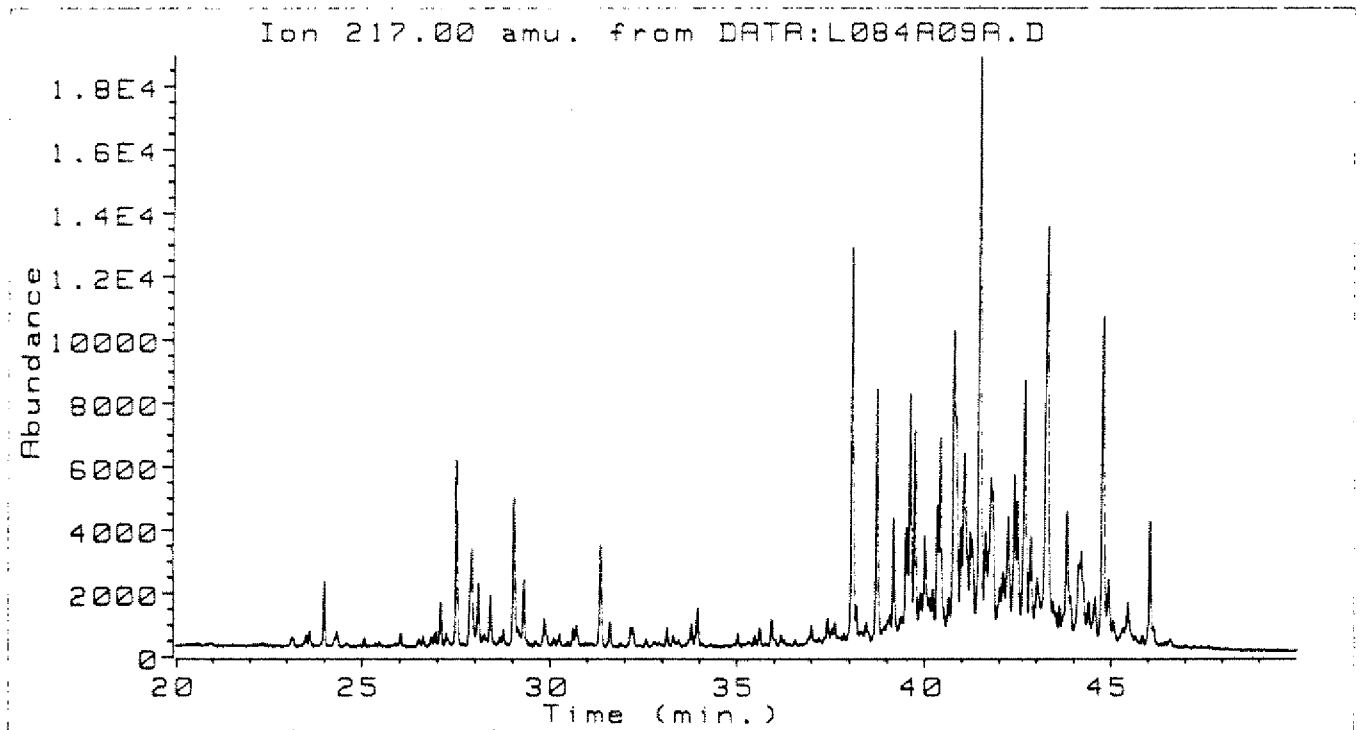
30/9-10

2726.15 M



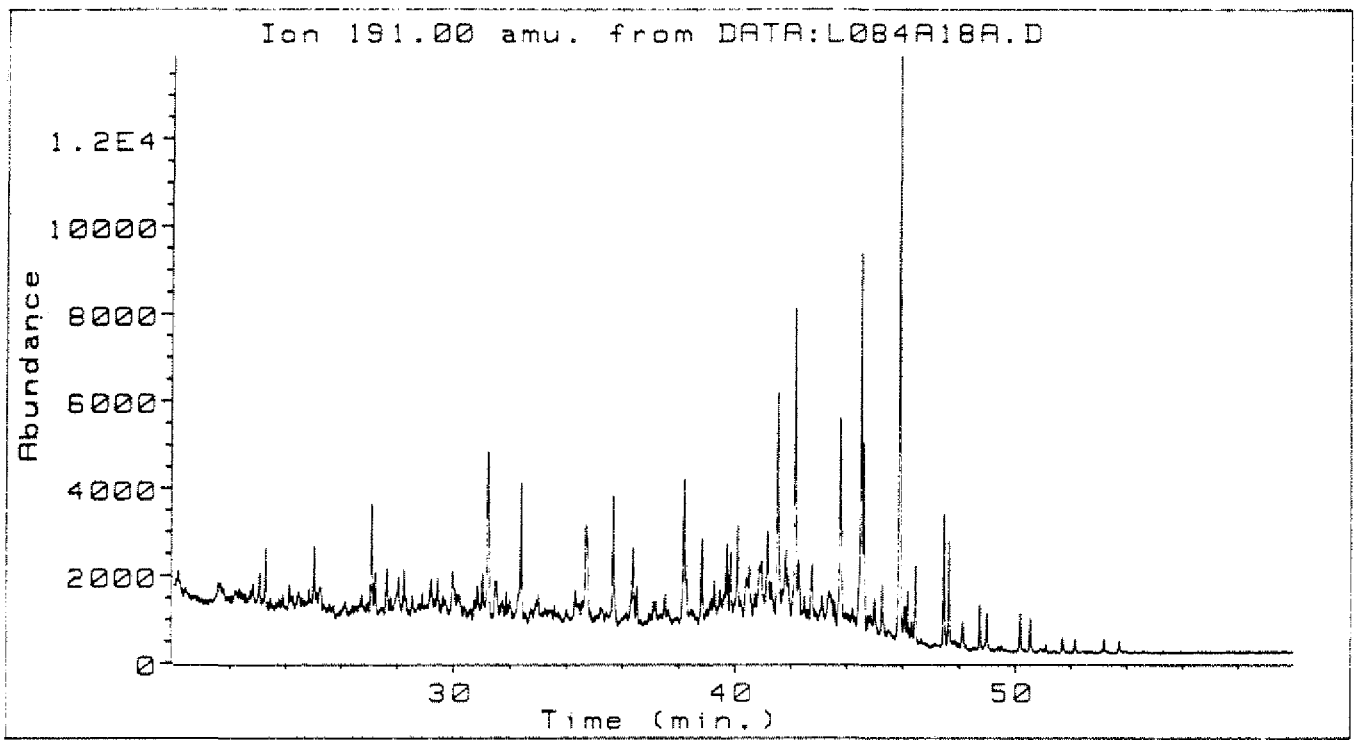
30/9-10

2726.7 M



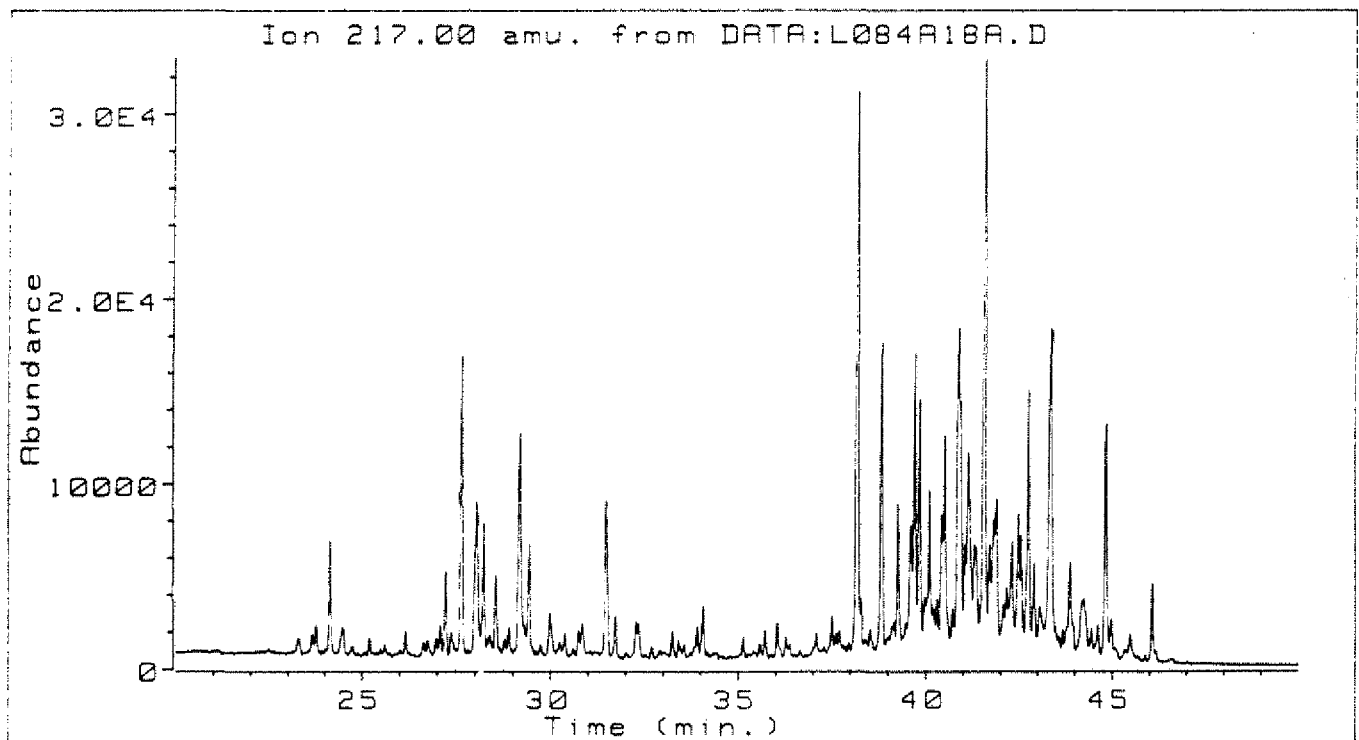
30/9-10

2726.7 M



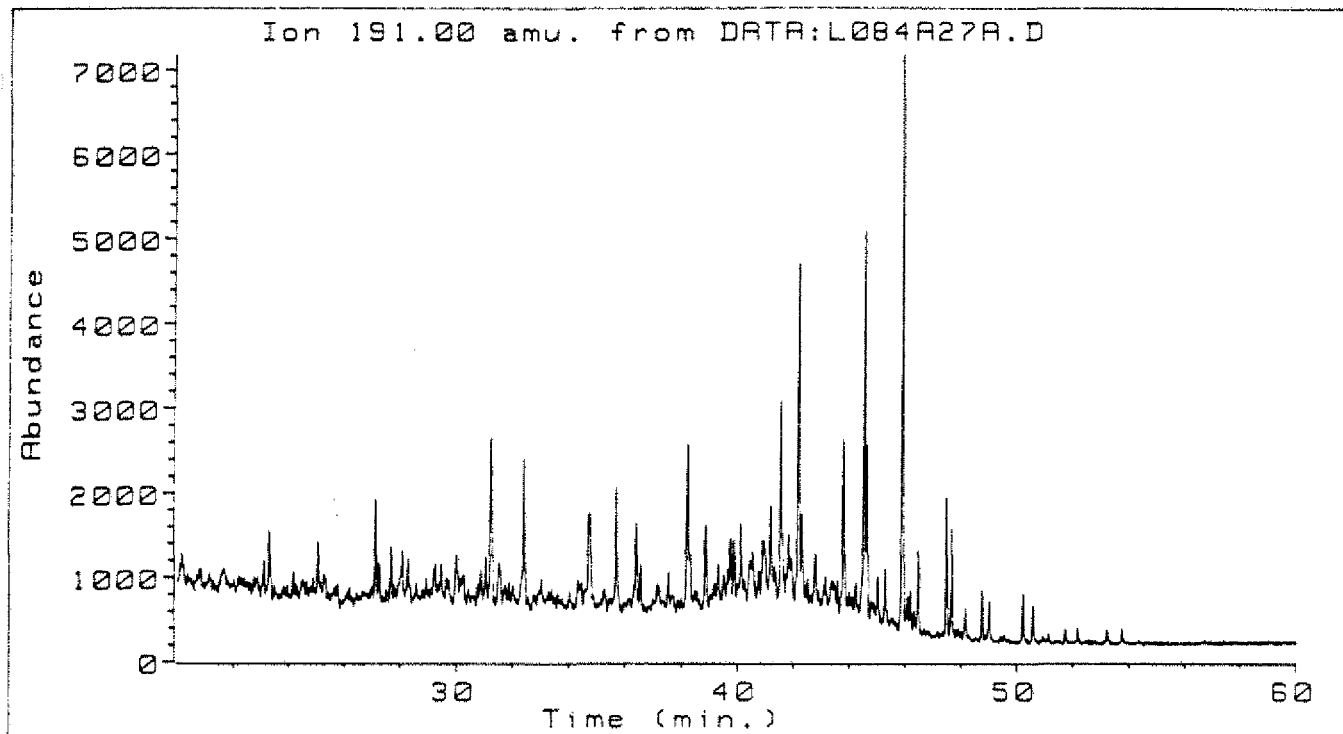
30/9-10

2727.2 M



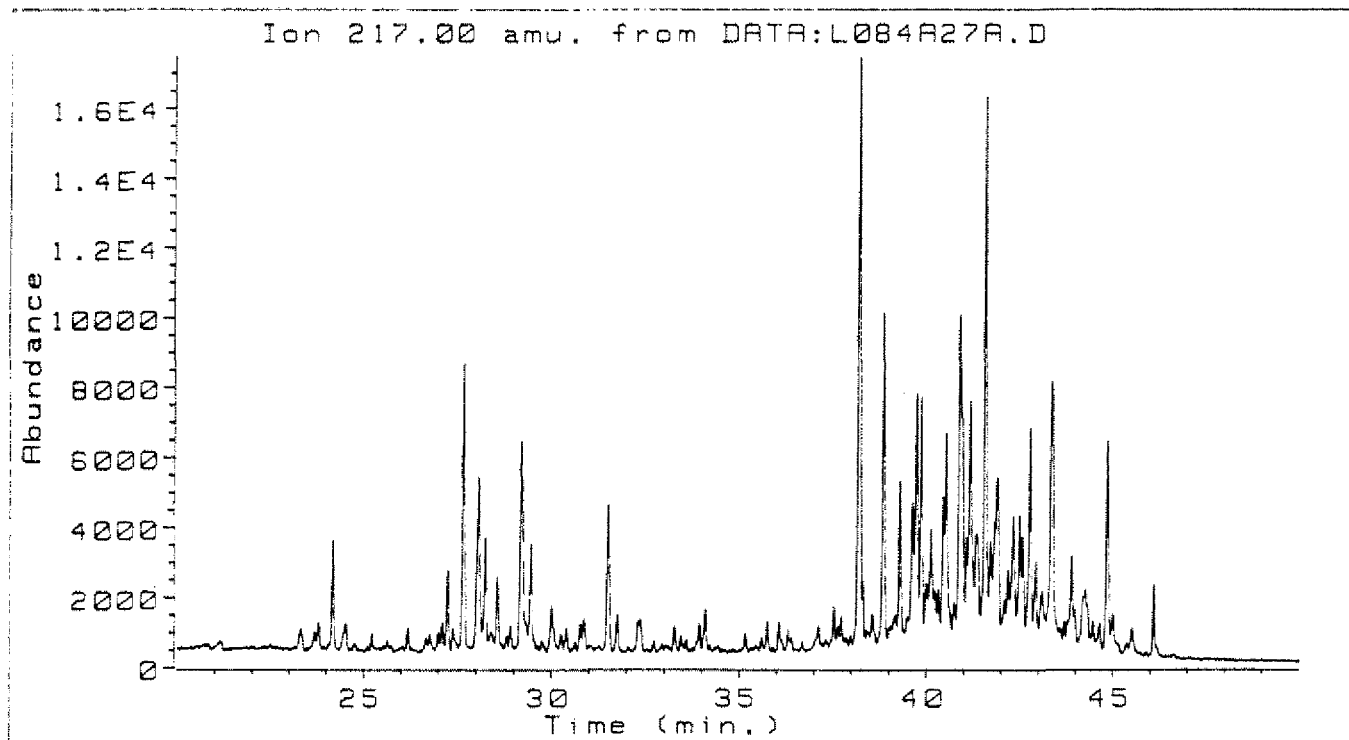
30/9-10

2727.2 M



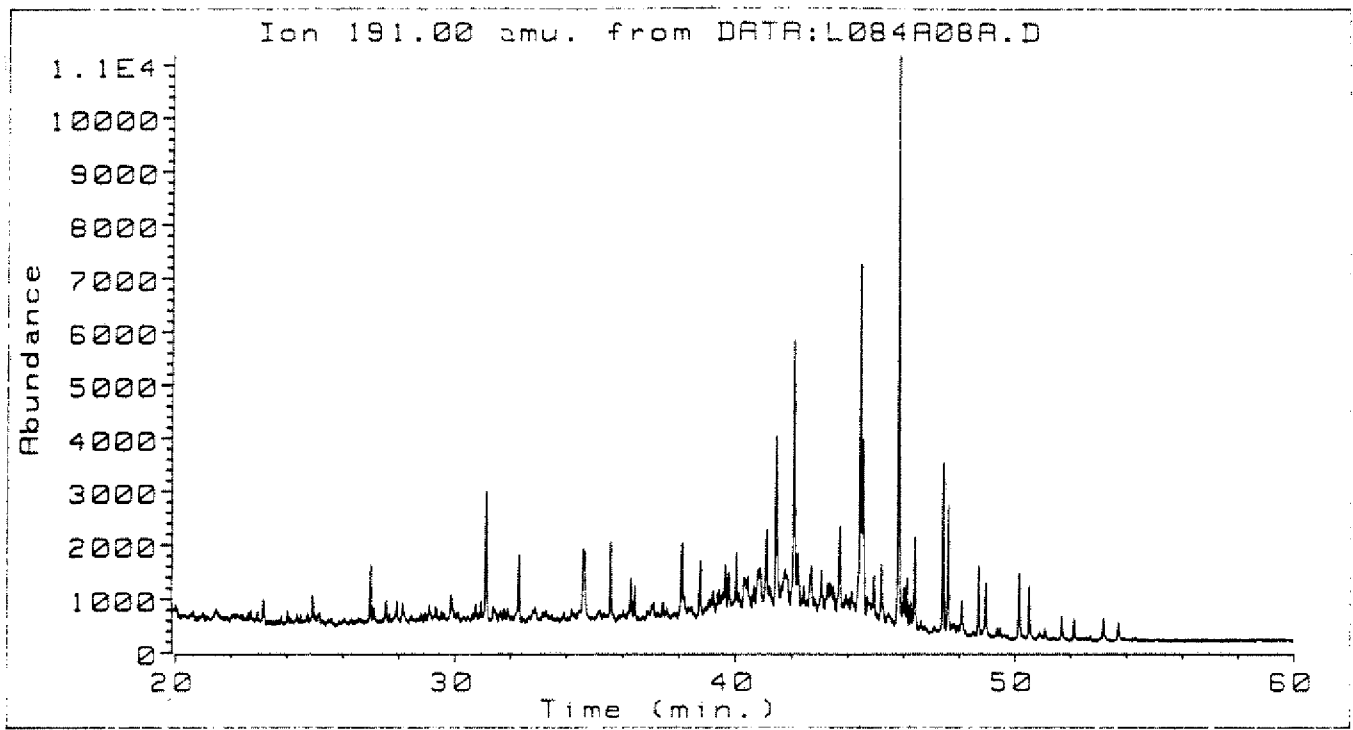
30/9-10

2728.2 M



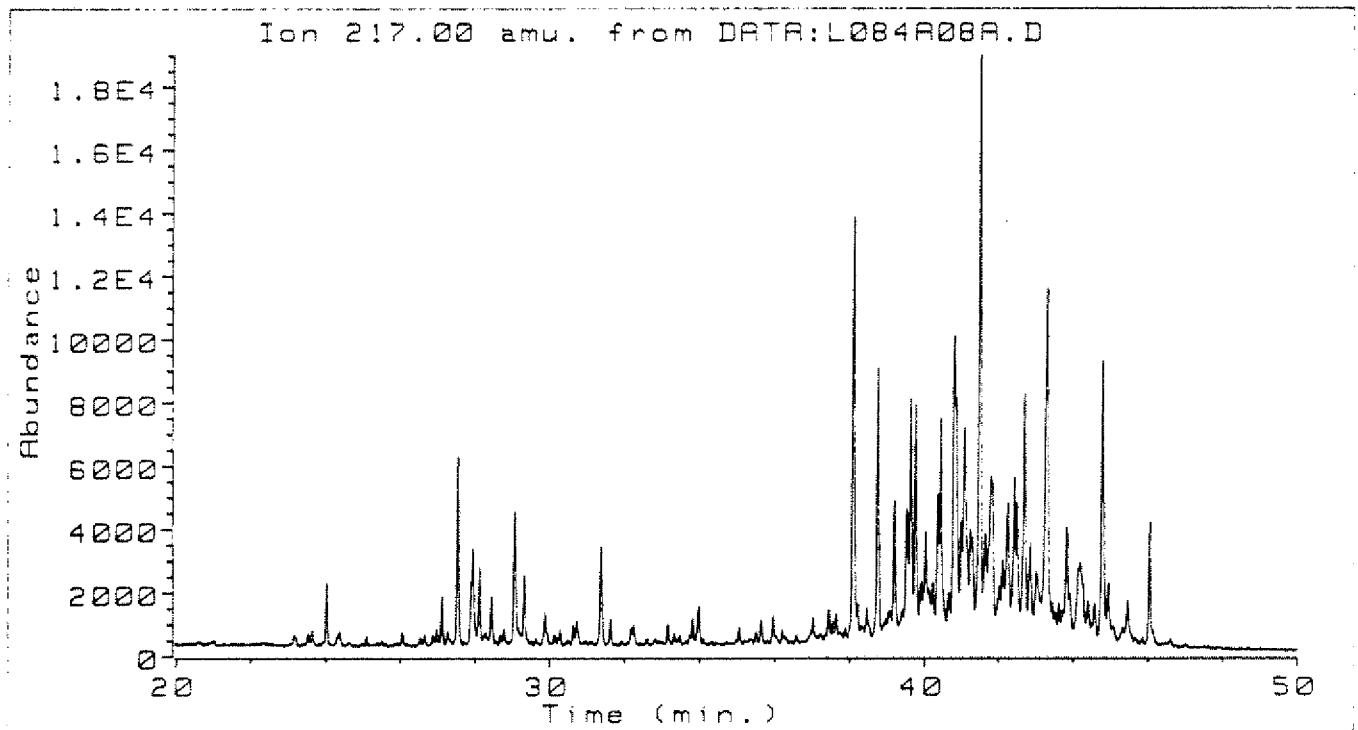
30/9-10

2728.2 M



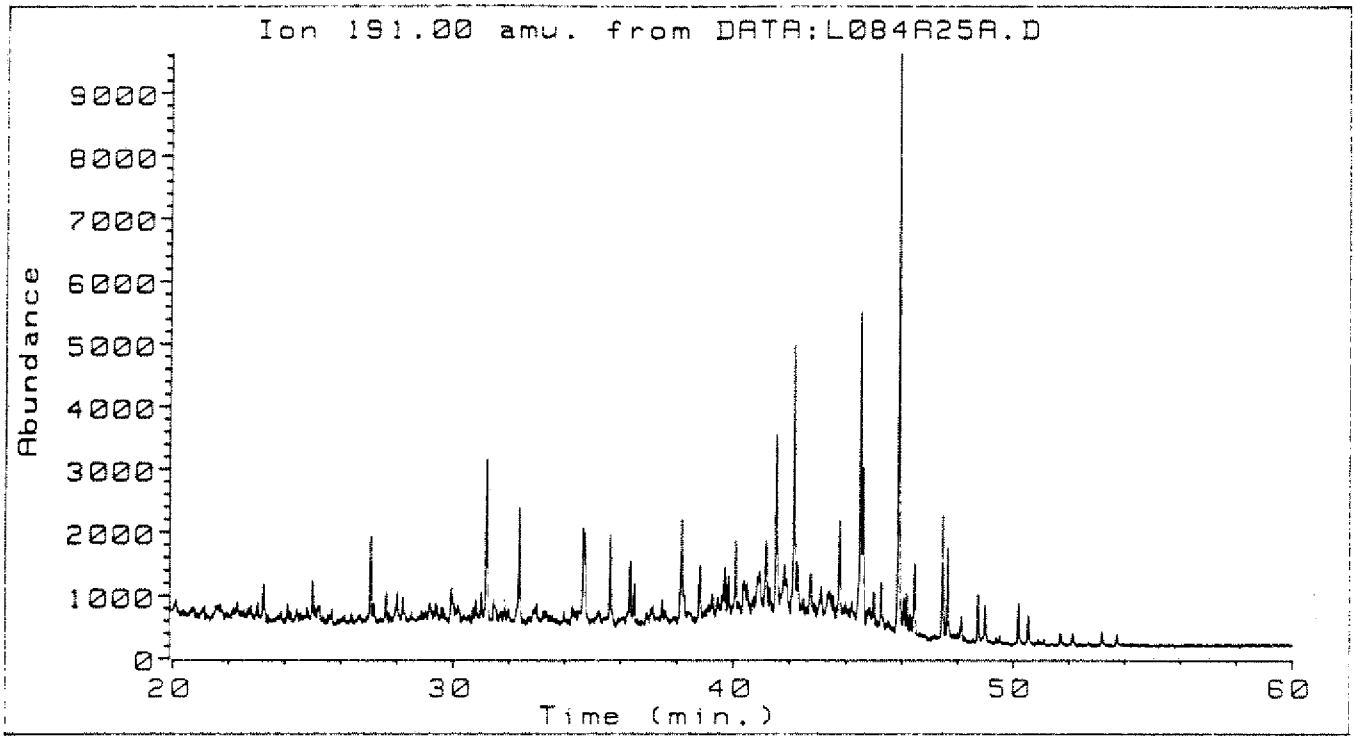
30/9-10

2728.75 M



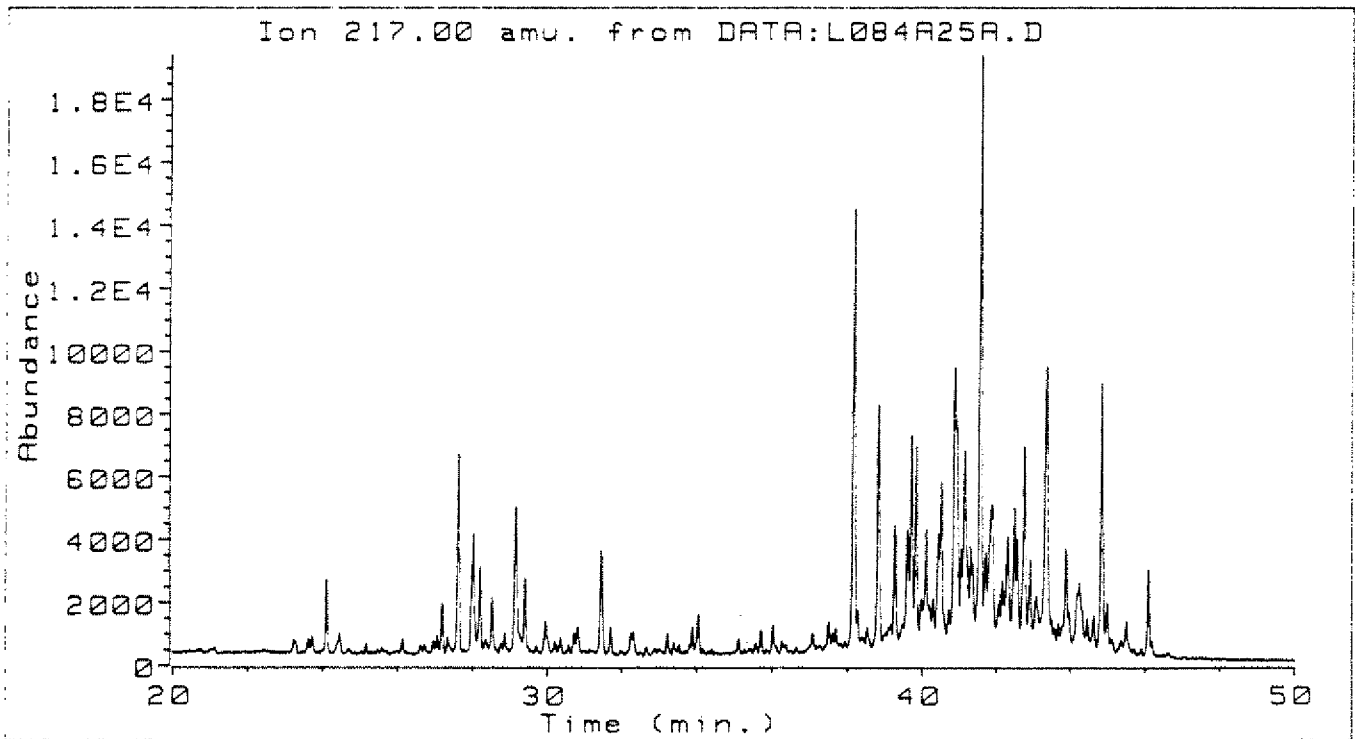
30/9-10

2728.75 M



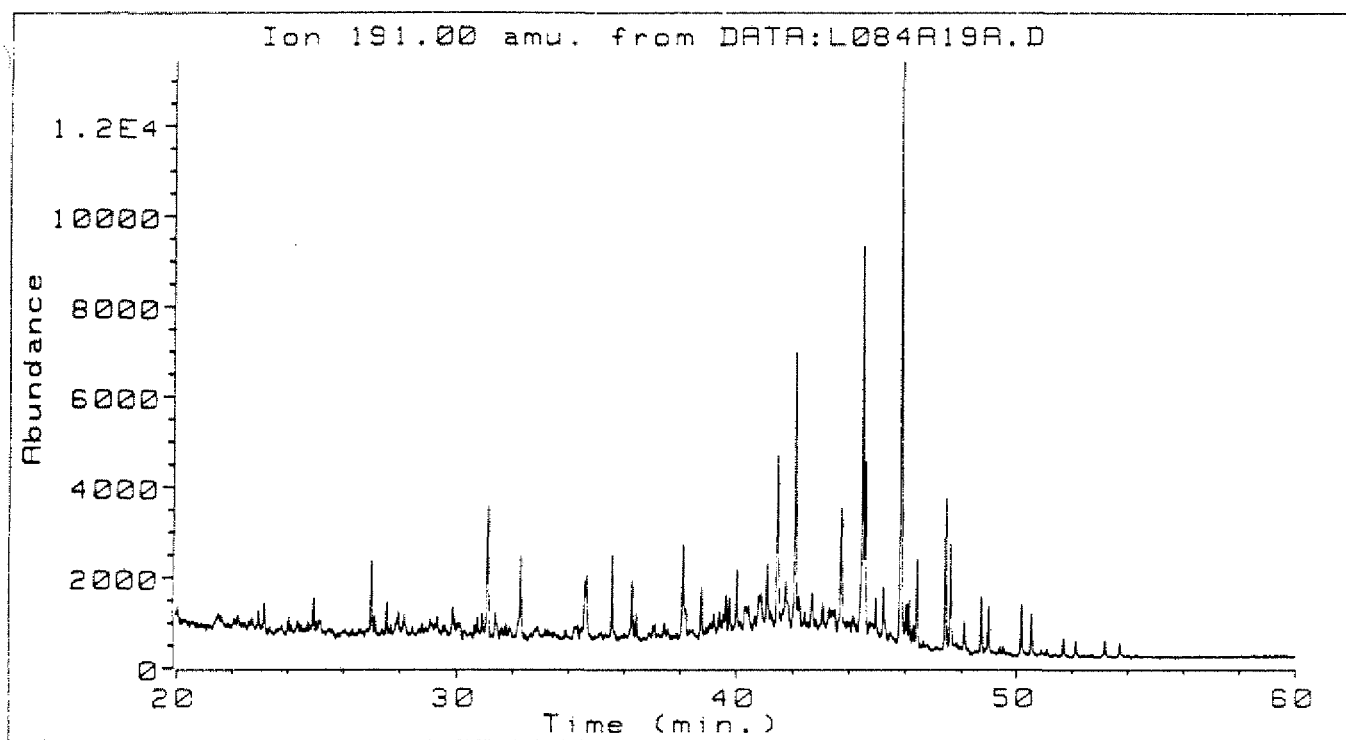
30/9-10

2730.2 M



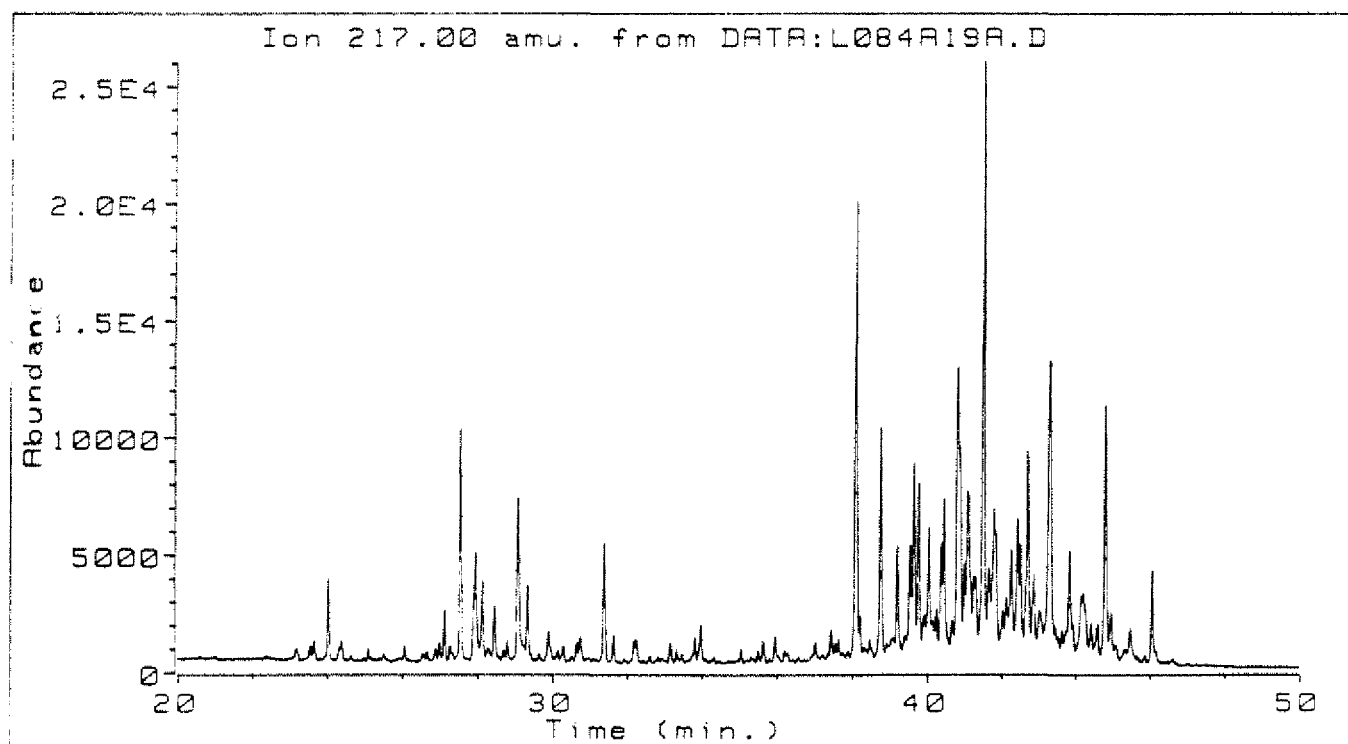
30/9-10

2730.2 M



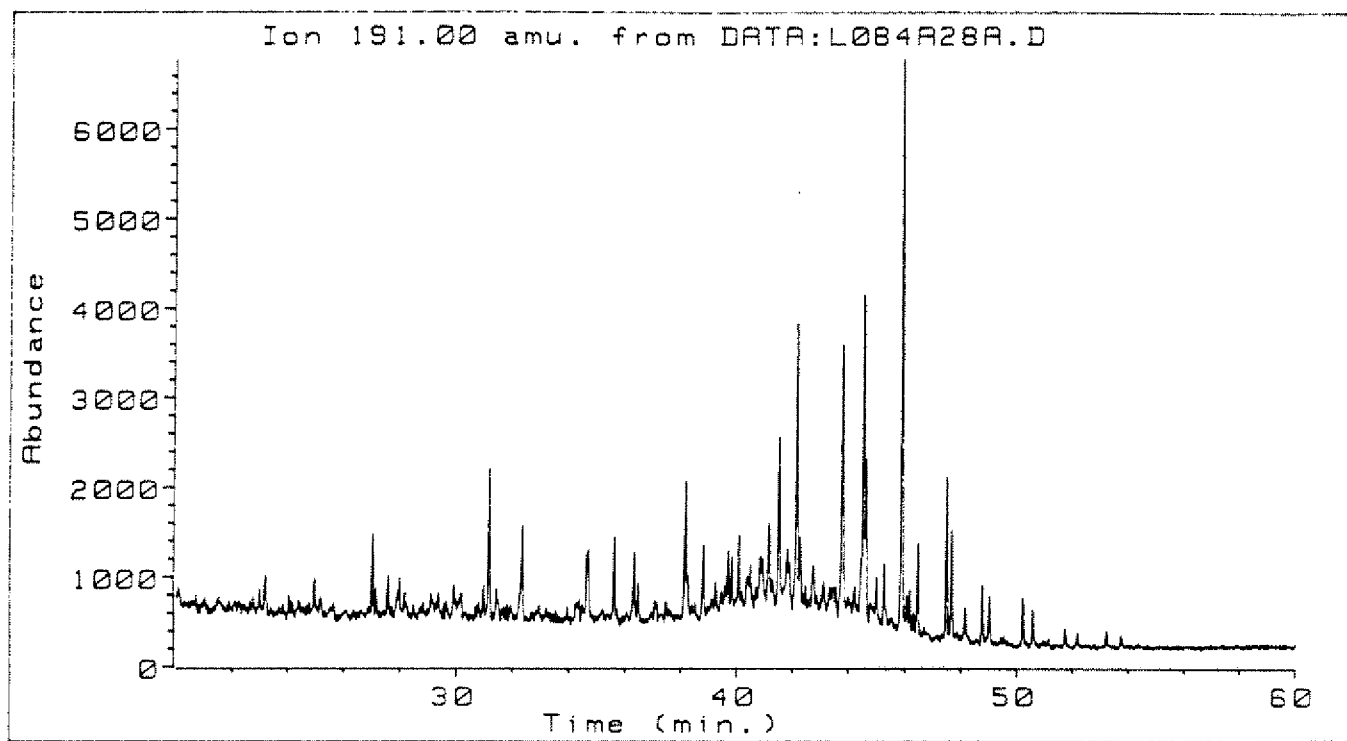
30/9-10

2730.55 M



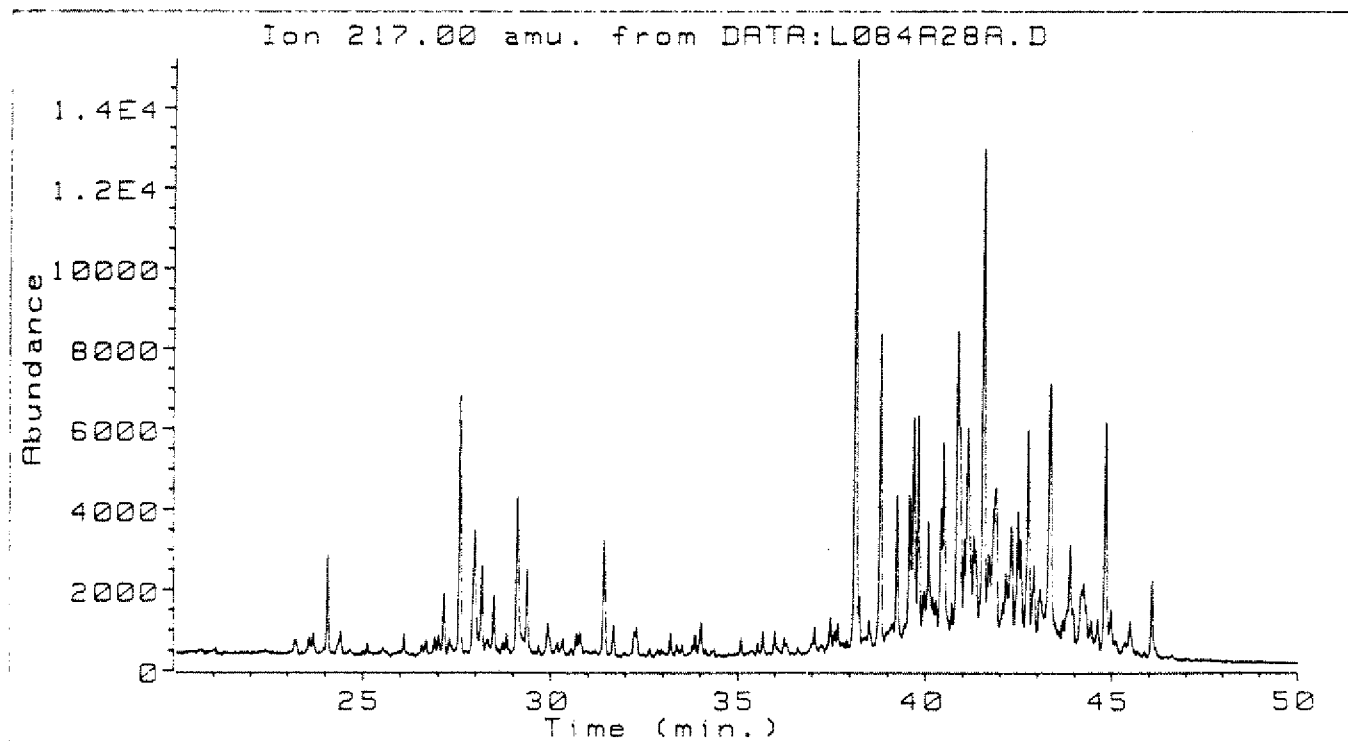
30/9-10

2730.55 M



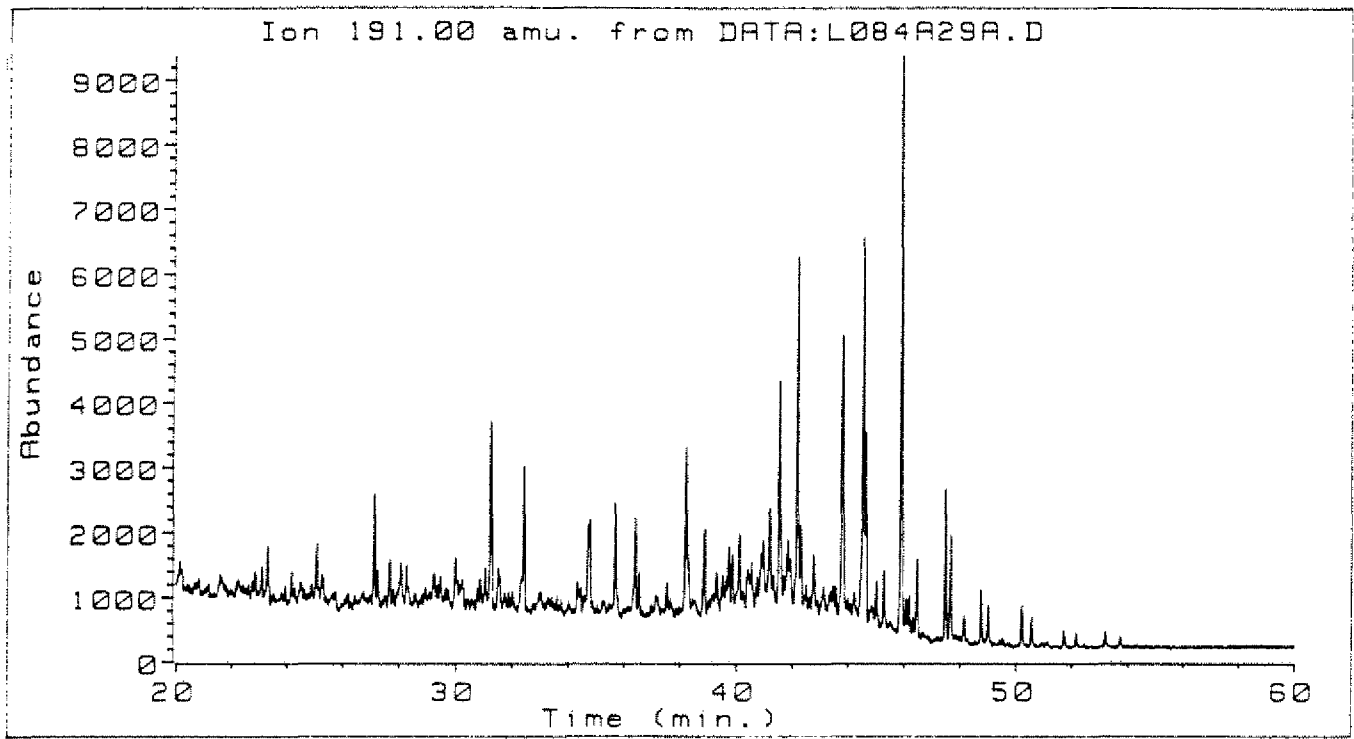
30/9-10

2731.1 M



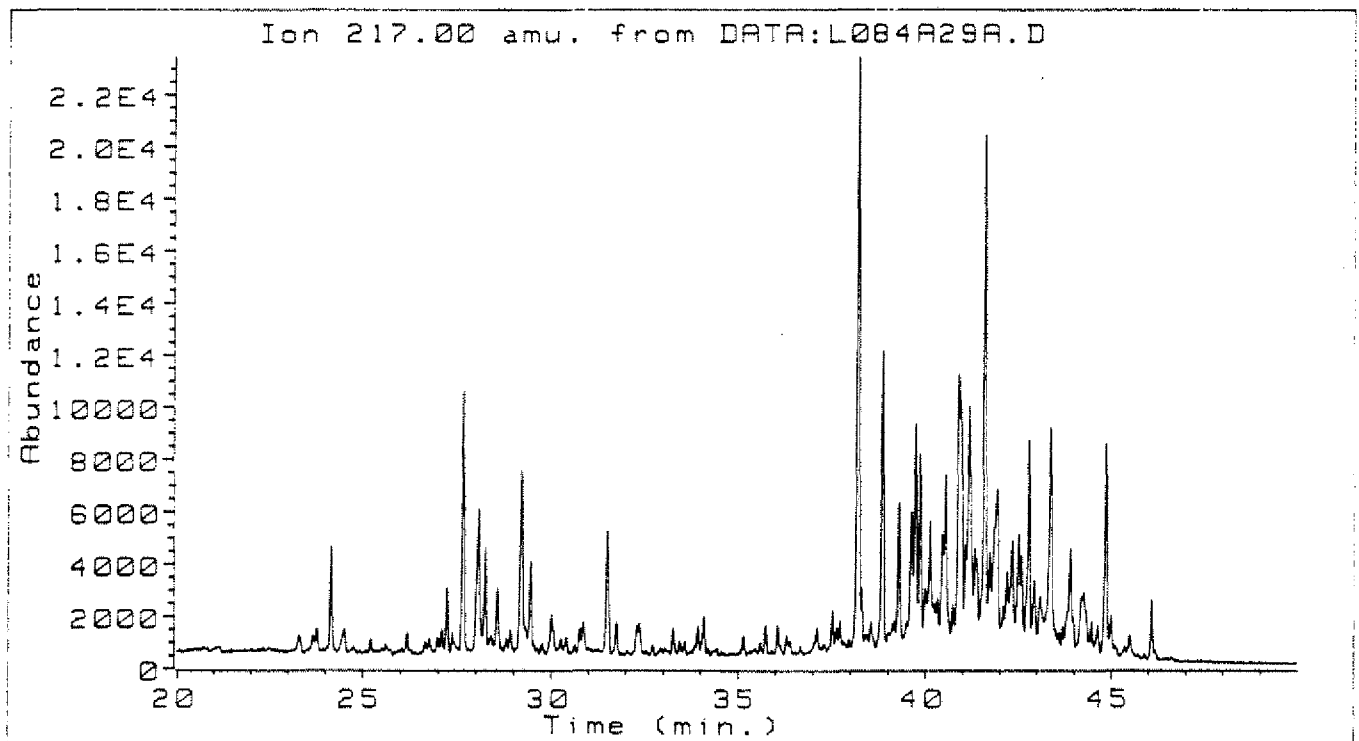
30/9-10

2731.1 M



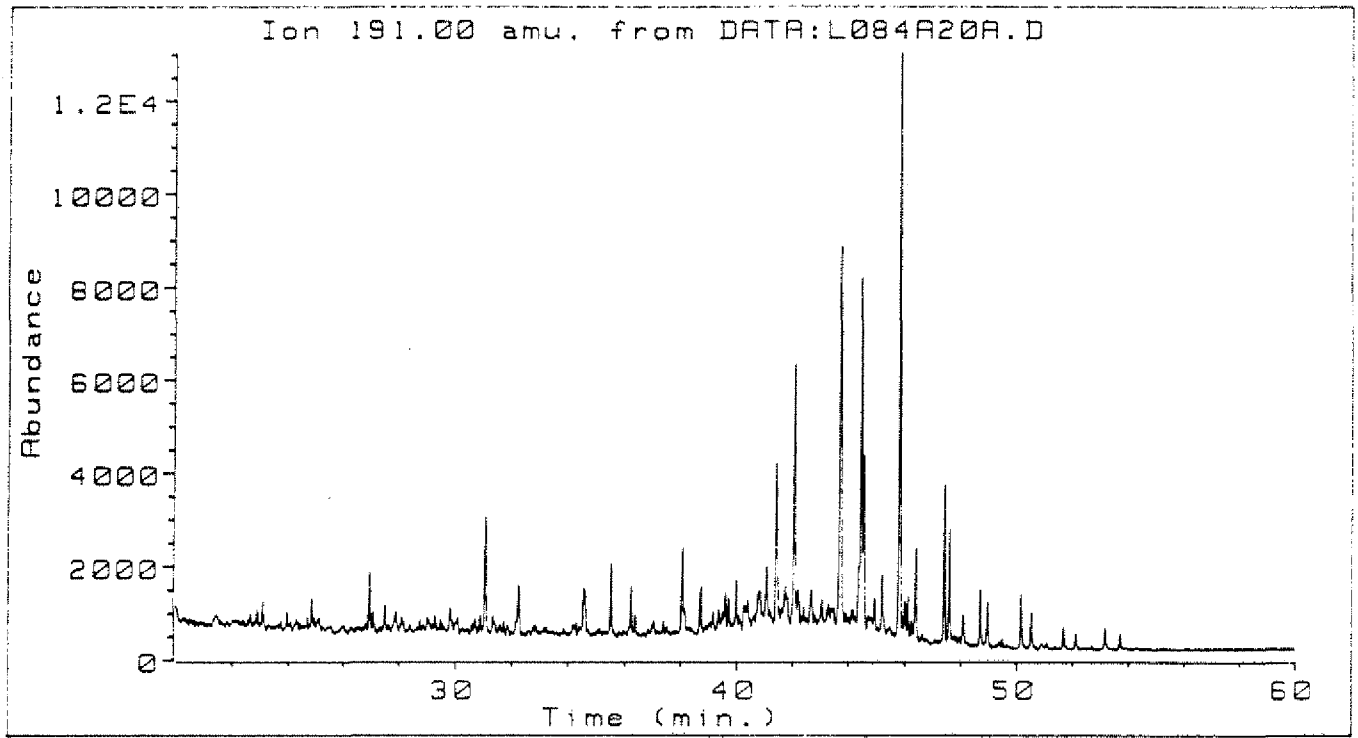
30/9-10

2731.3 M



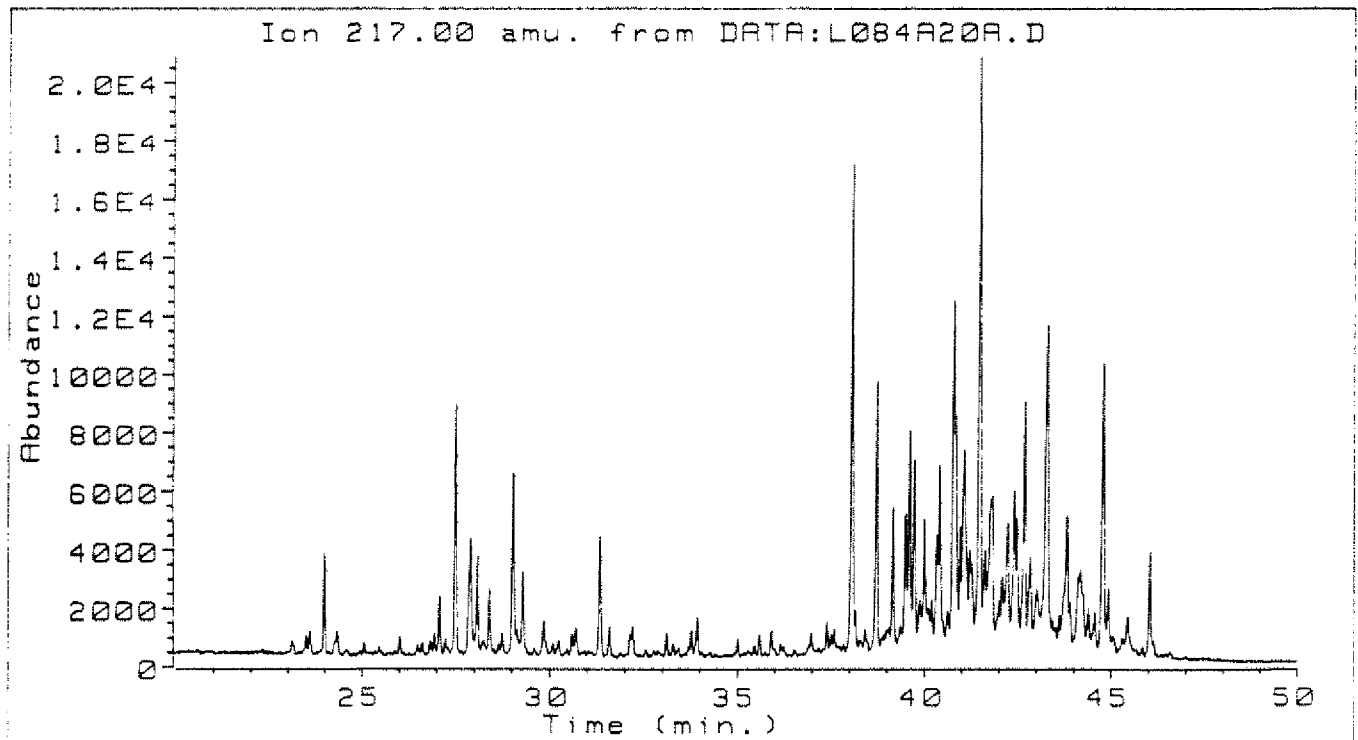
30/9-10

2731.3 M



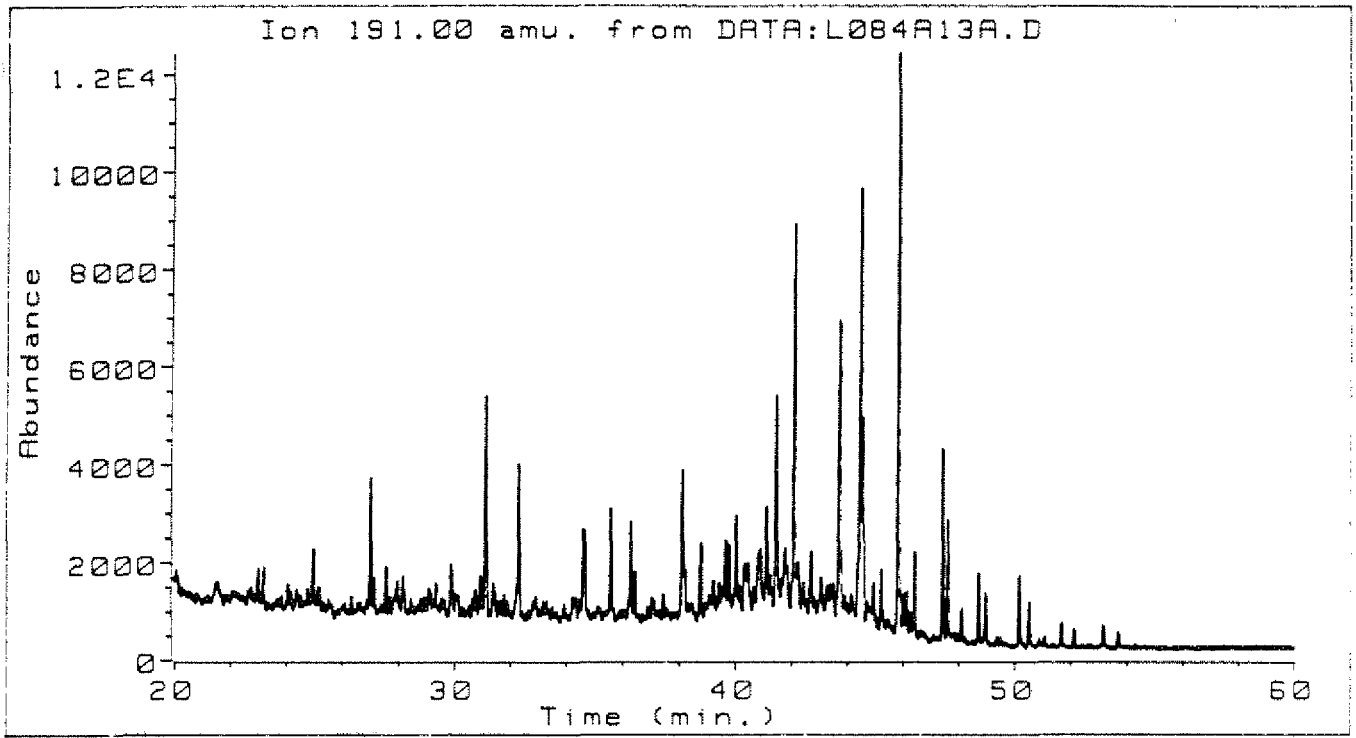
30/9-10

2731.9 M



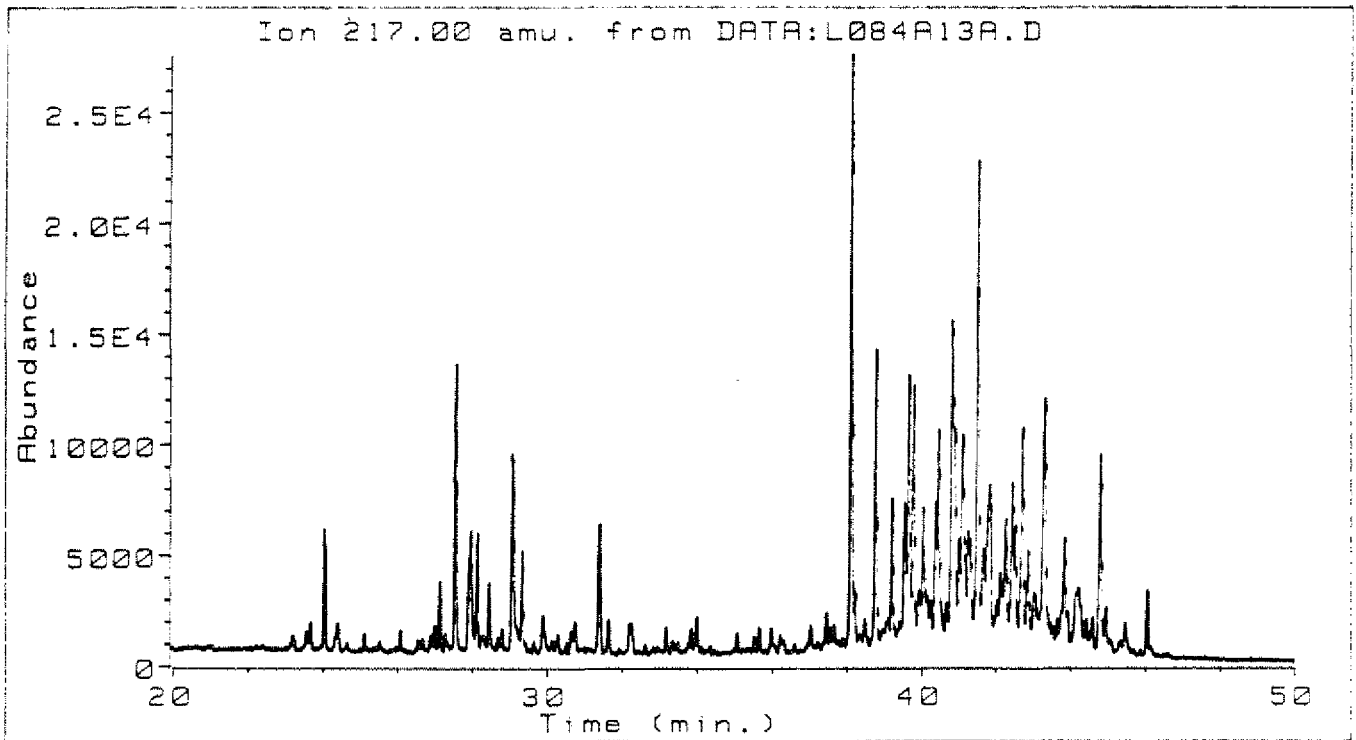
30/9-10

2731.9 M



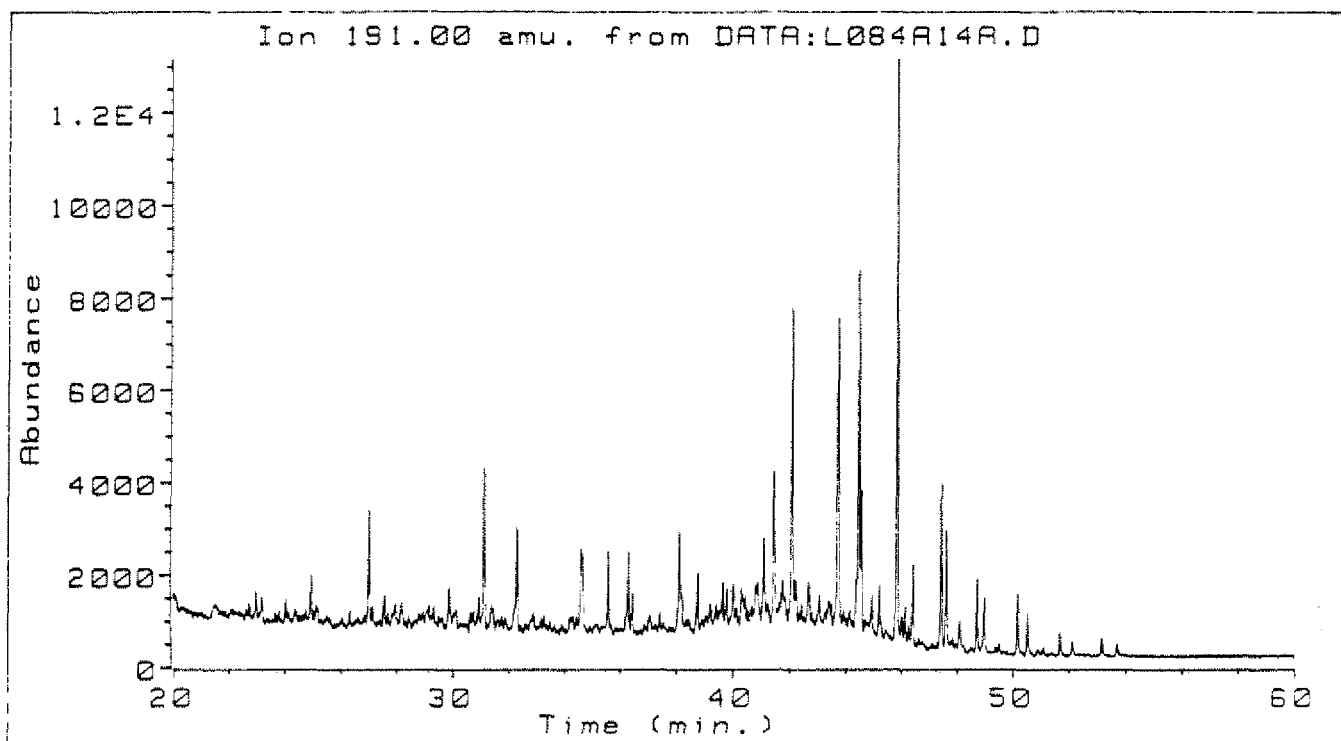
30/9-10

2737 M



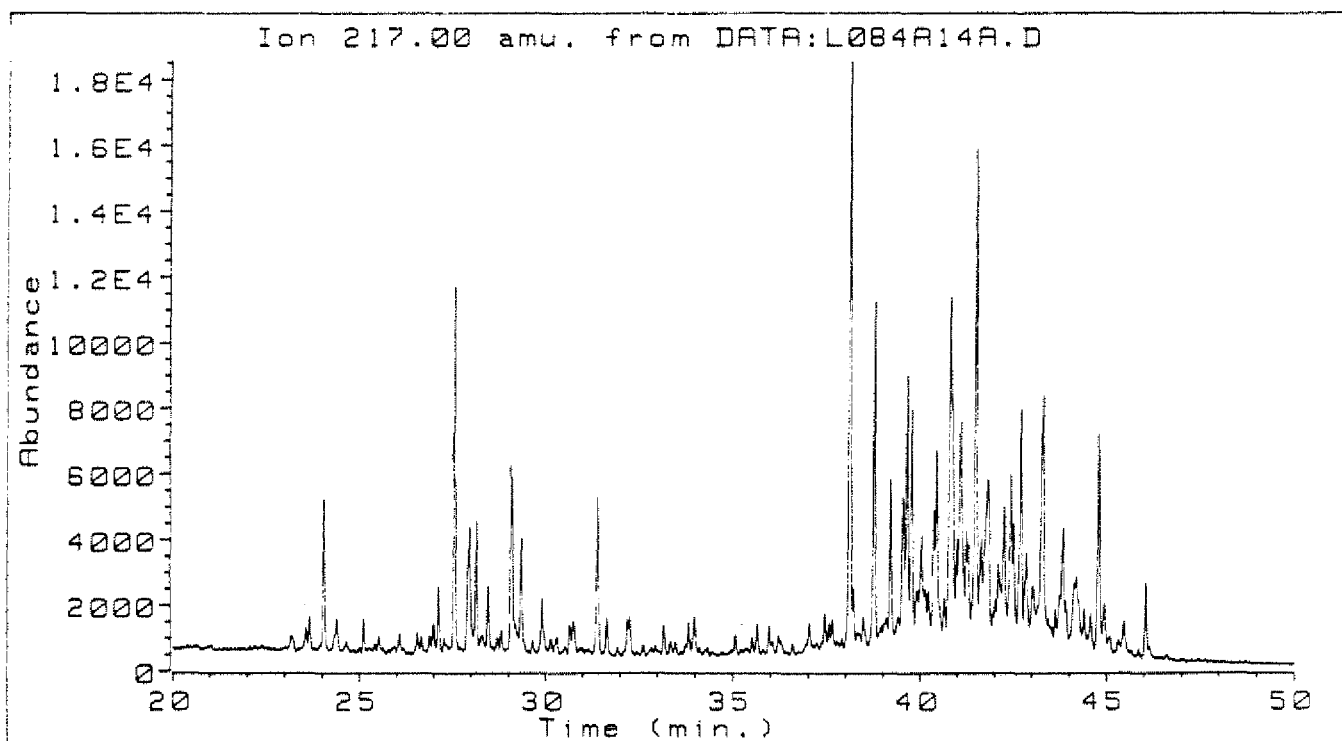
30/9-10

2737 M



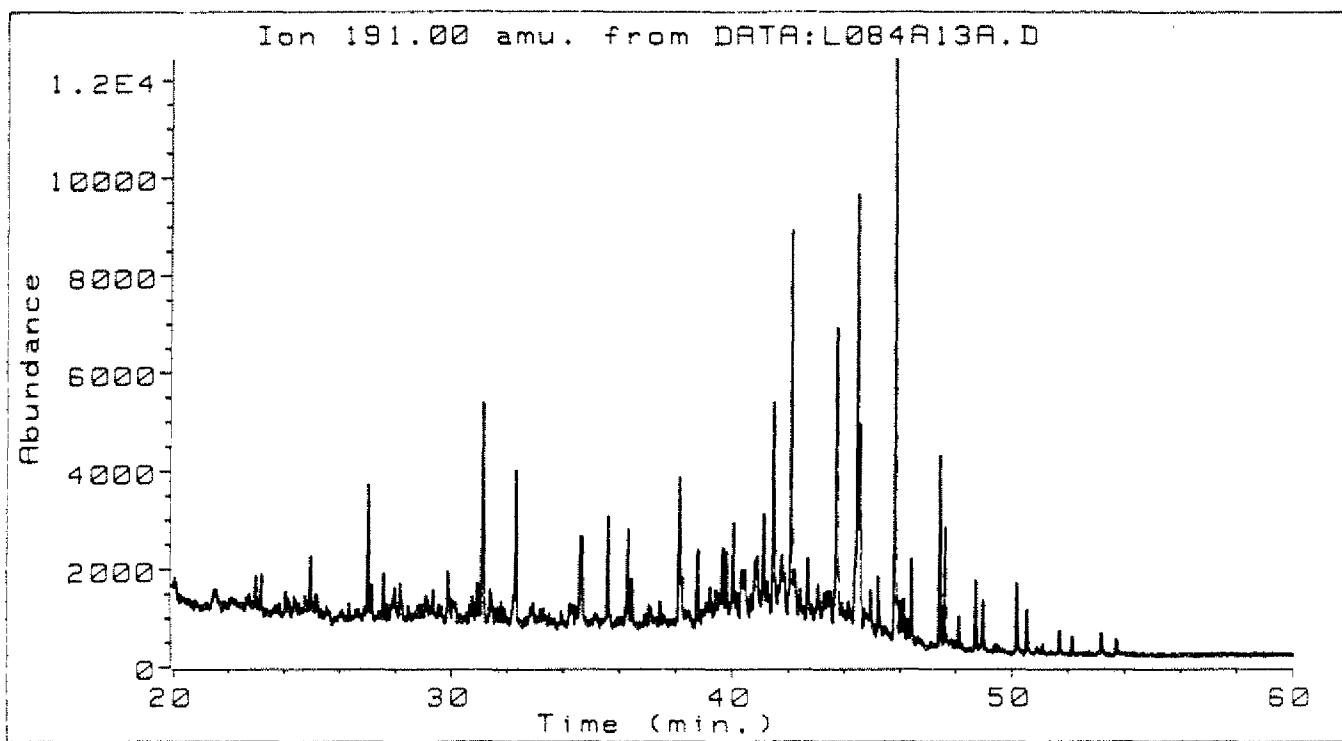
30/9-10

2740.5 M



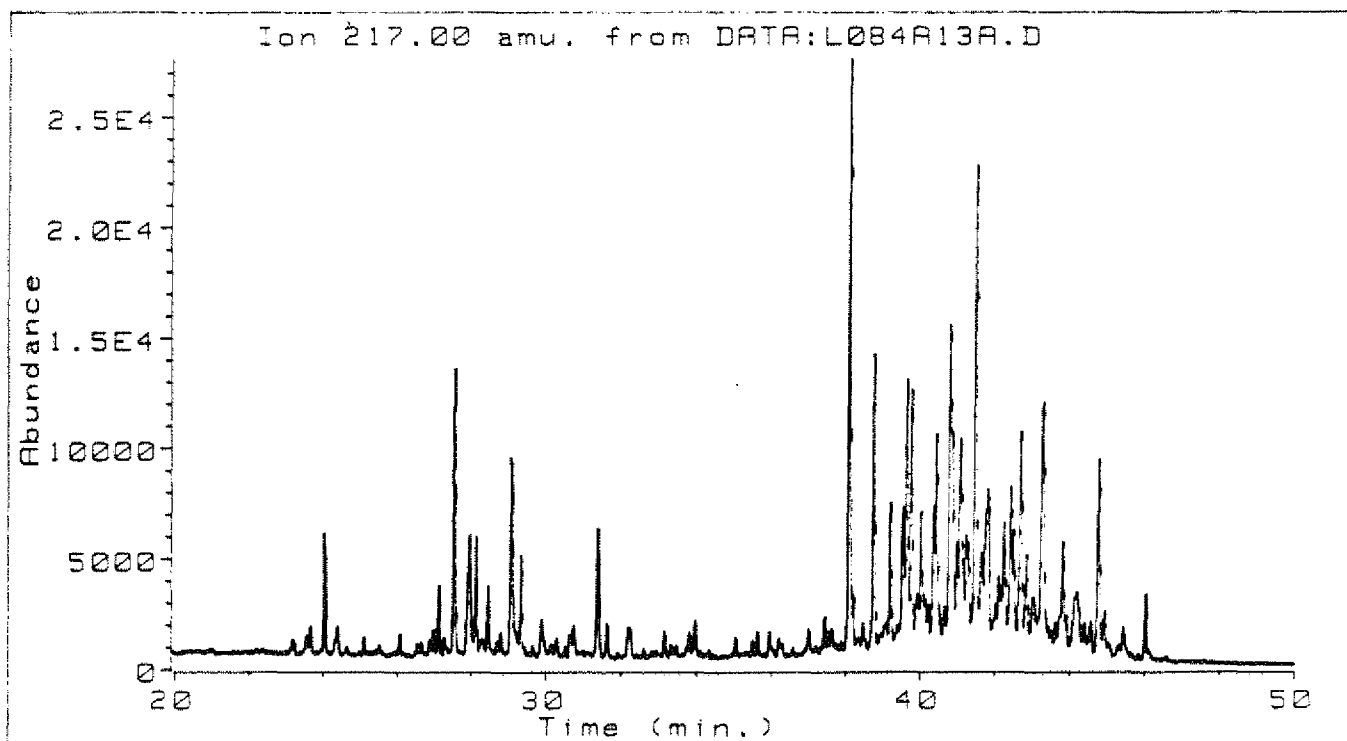
30/9-10

2740.5 M



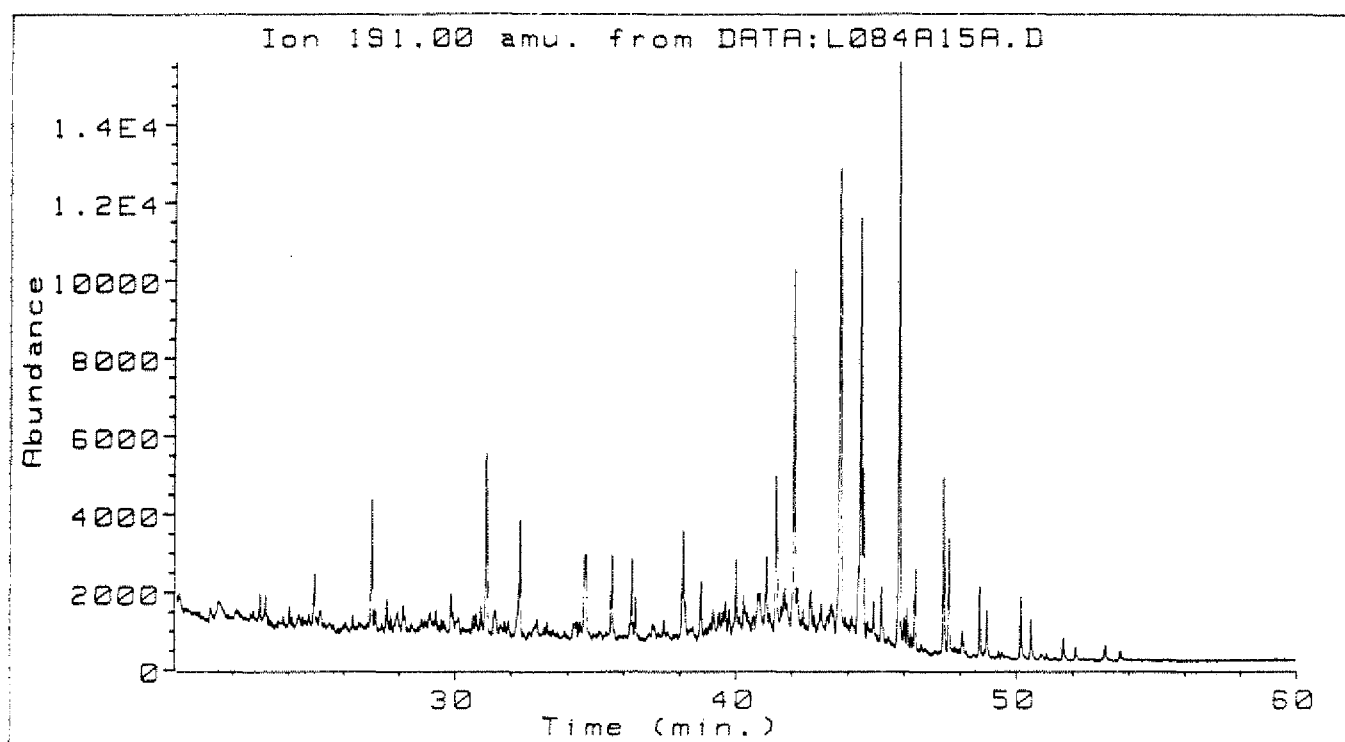
30/9-10

2737 M



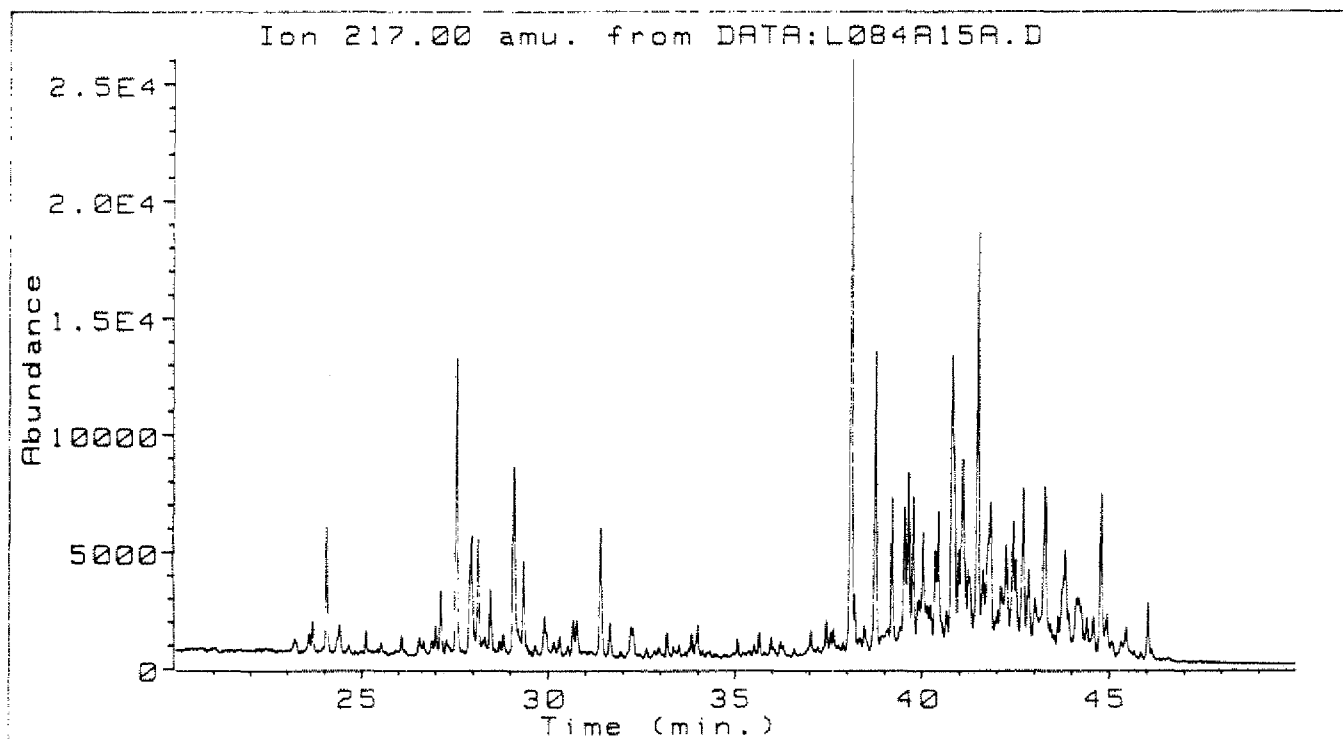
30/9-10

2737 M



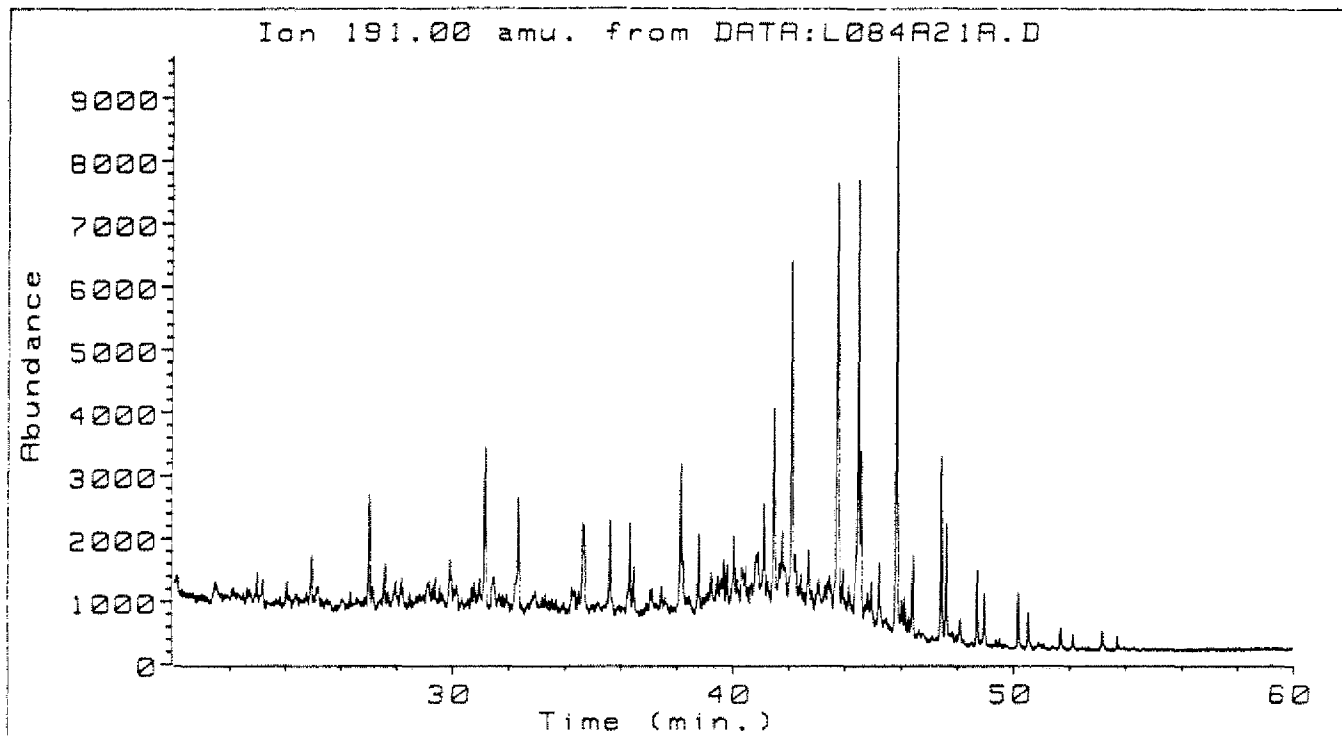
30/9-10

2742.5 M



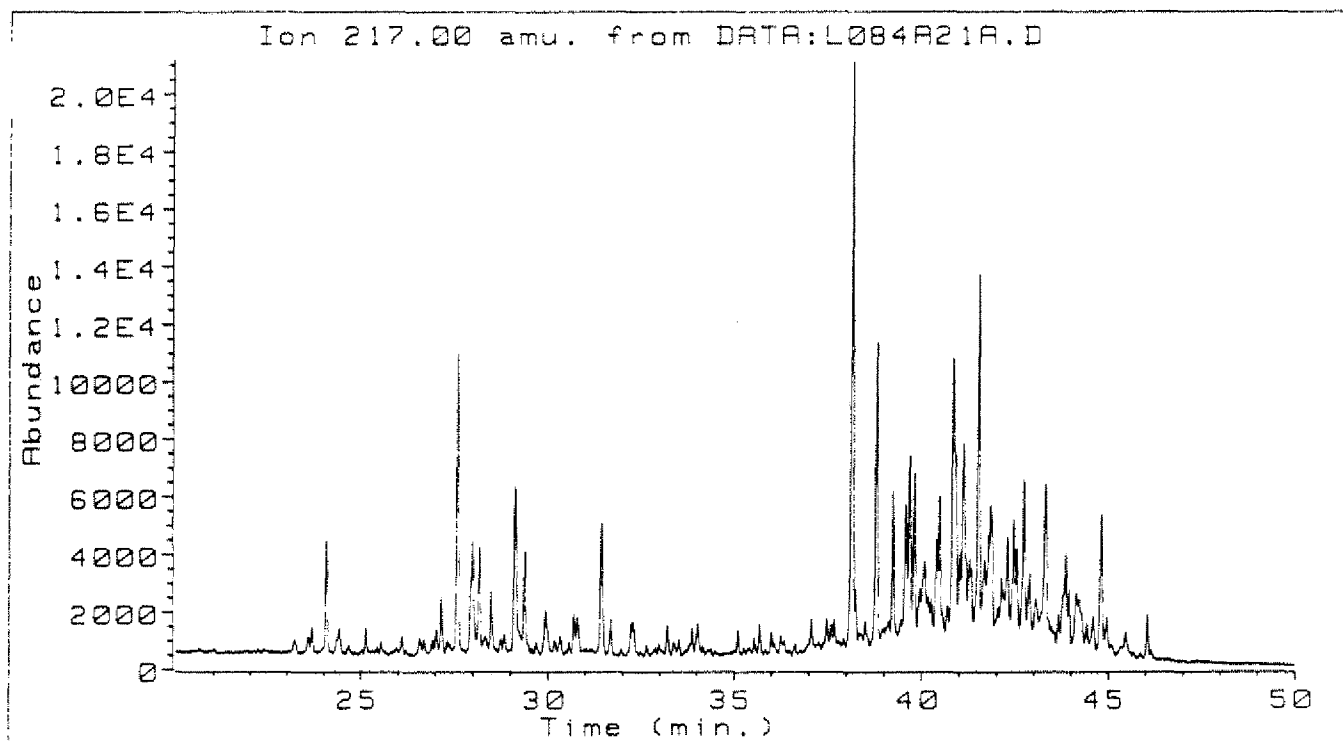
30/9-10

2742.5 M



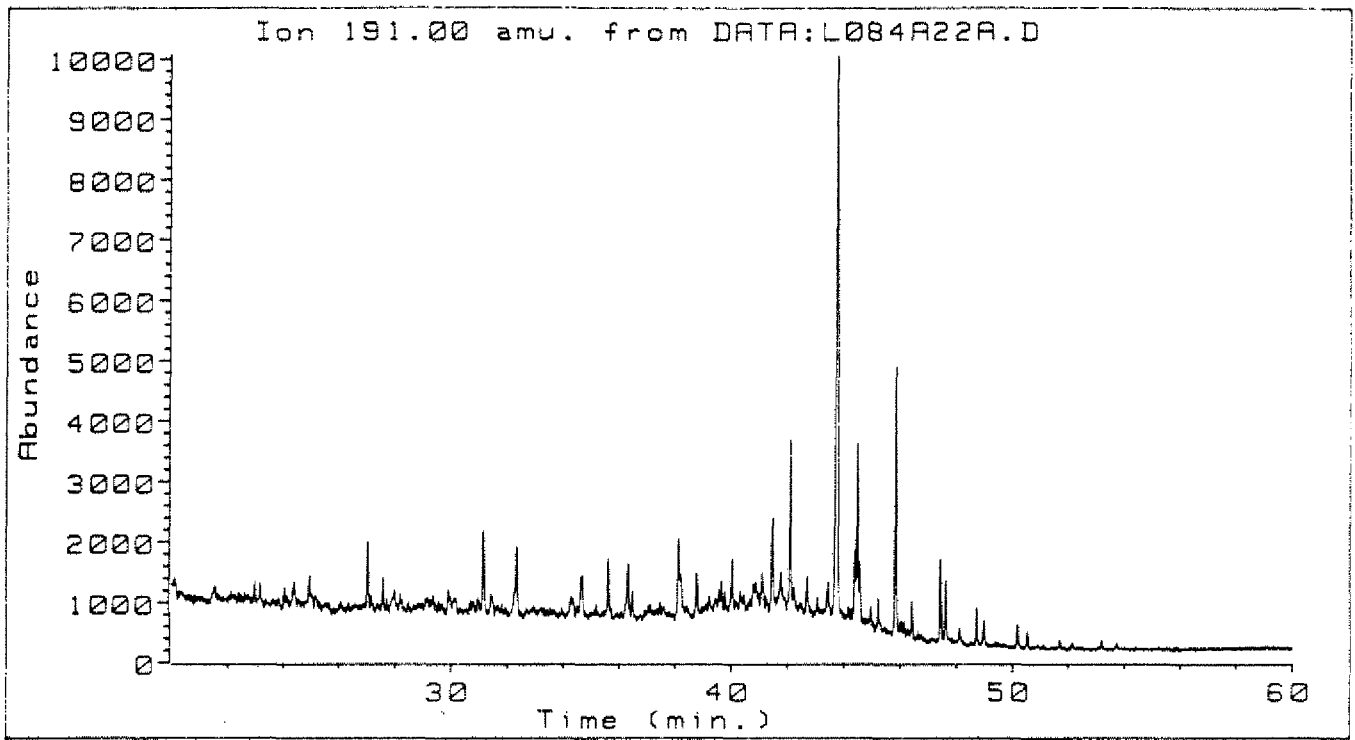
30/9-10

2745 M



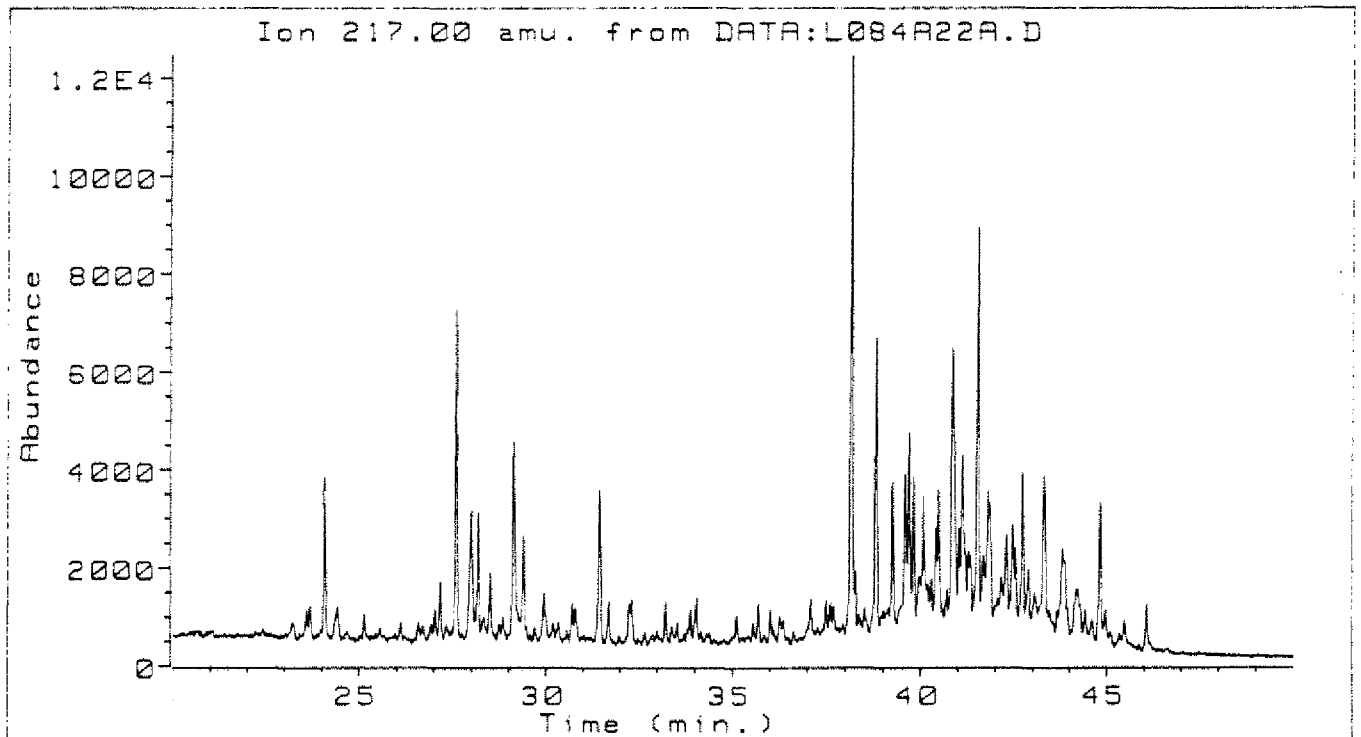
30/9-10

2745 M



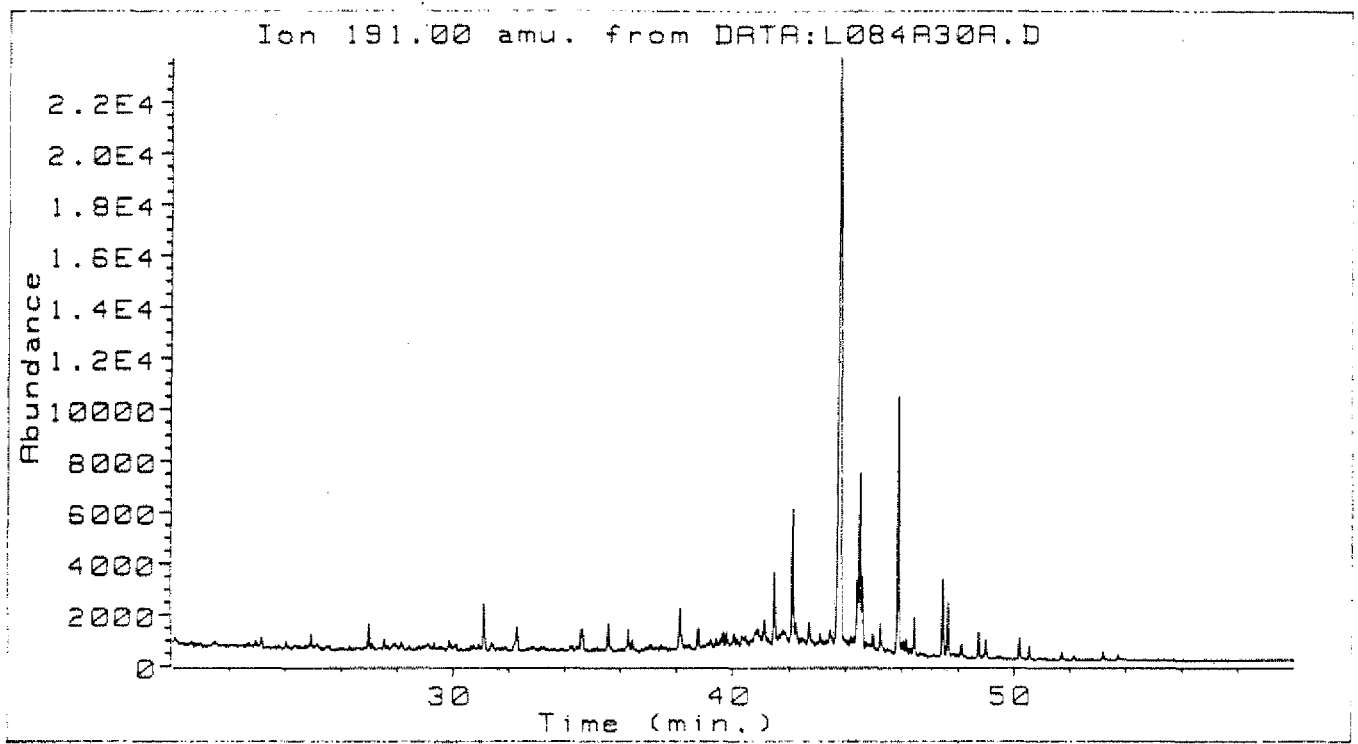
30/9-10

2747.1 M



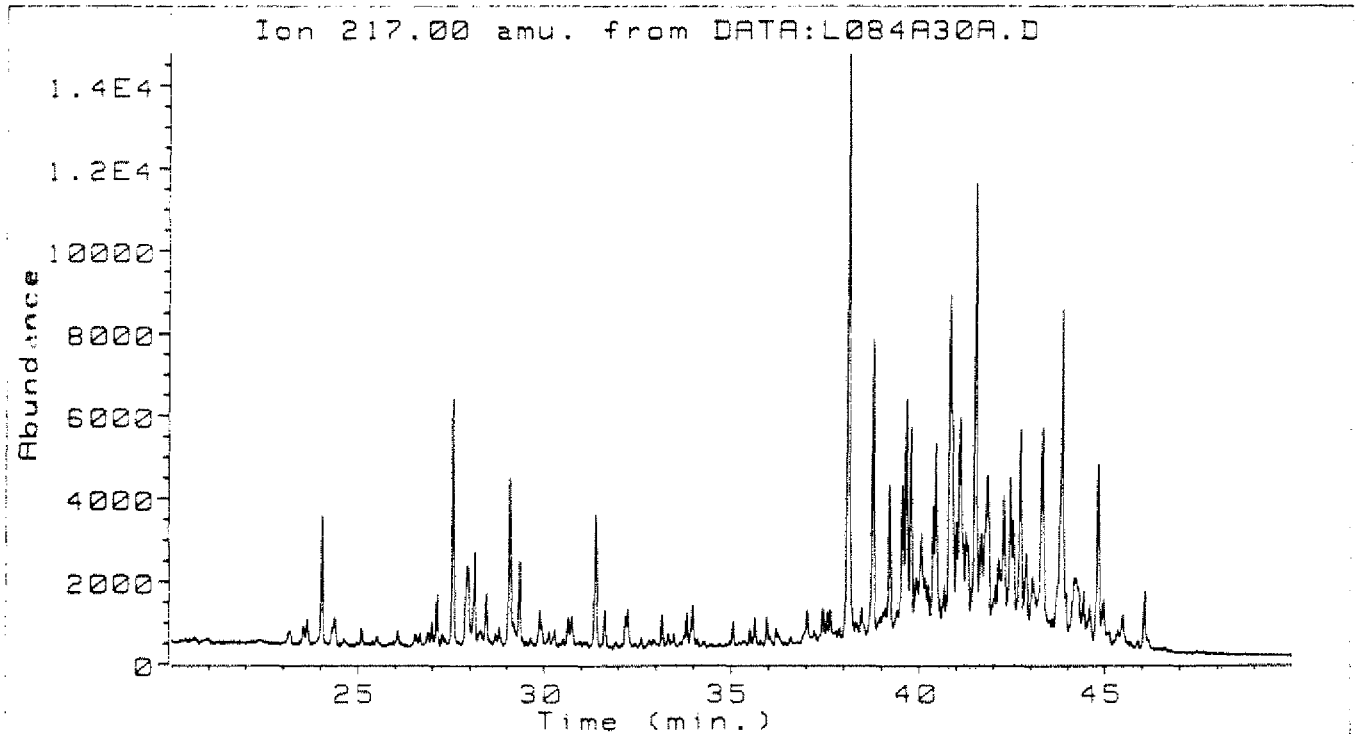
30/9-10

2747.1 M



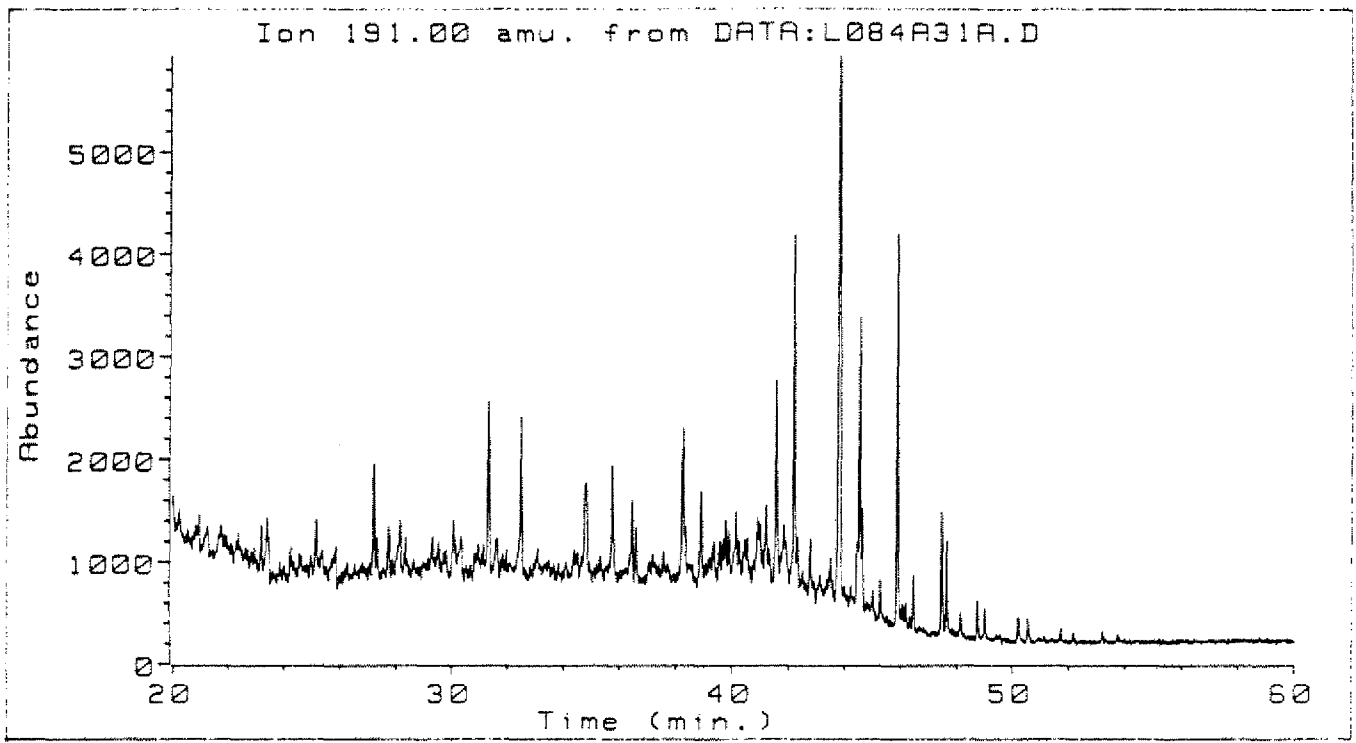
30/9-10

2747.6 M



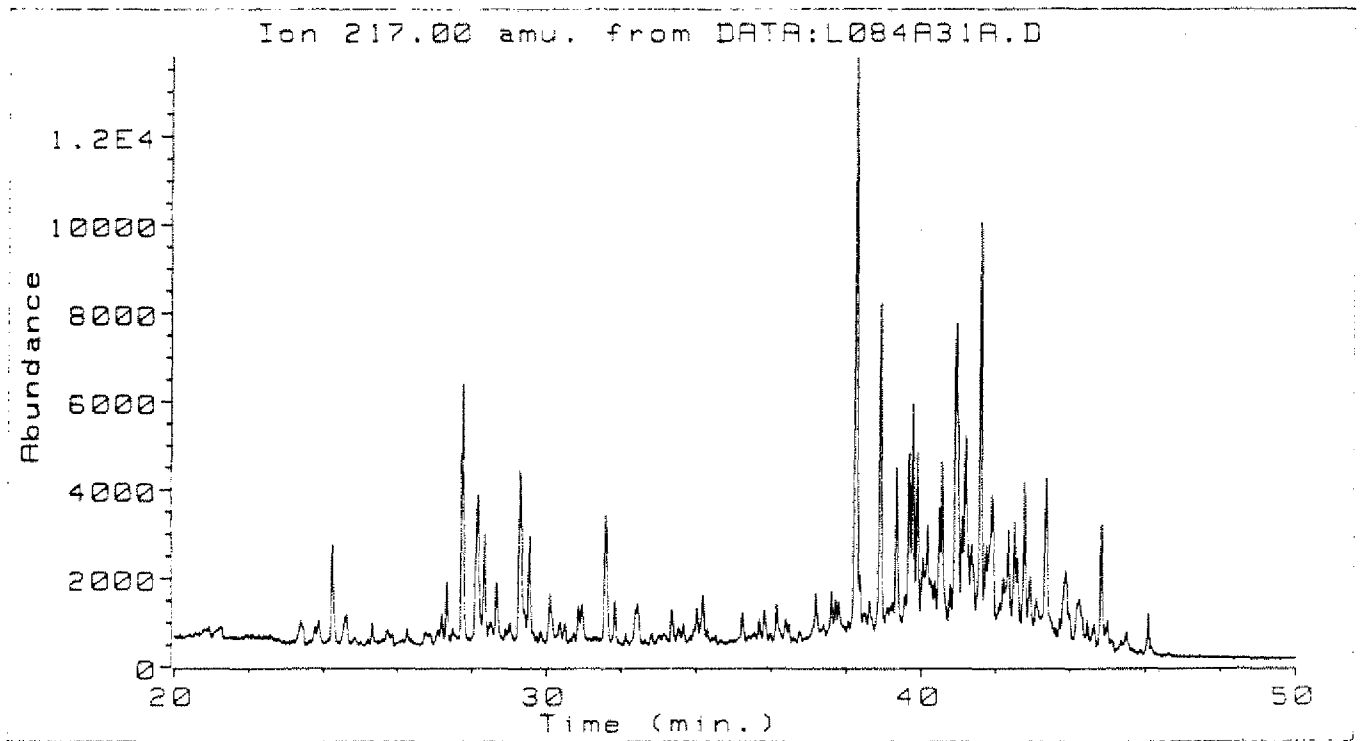
30/9-10

2747.6 M



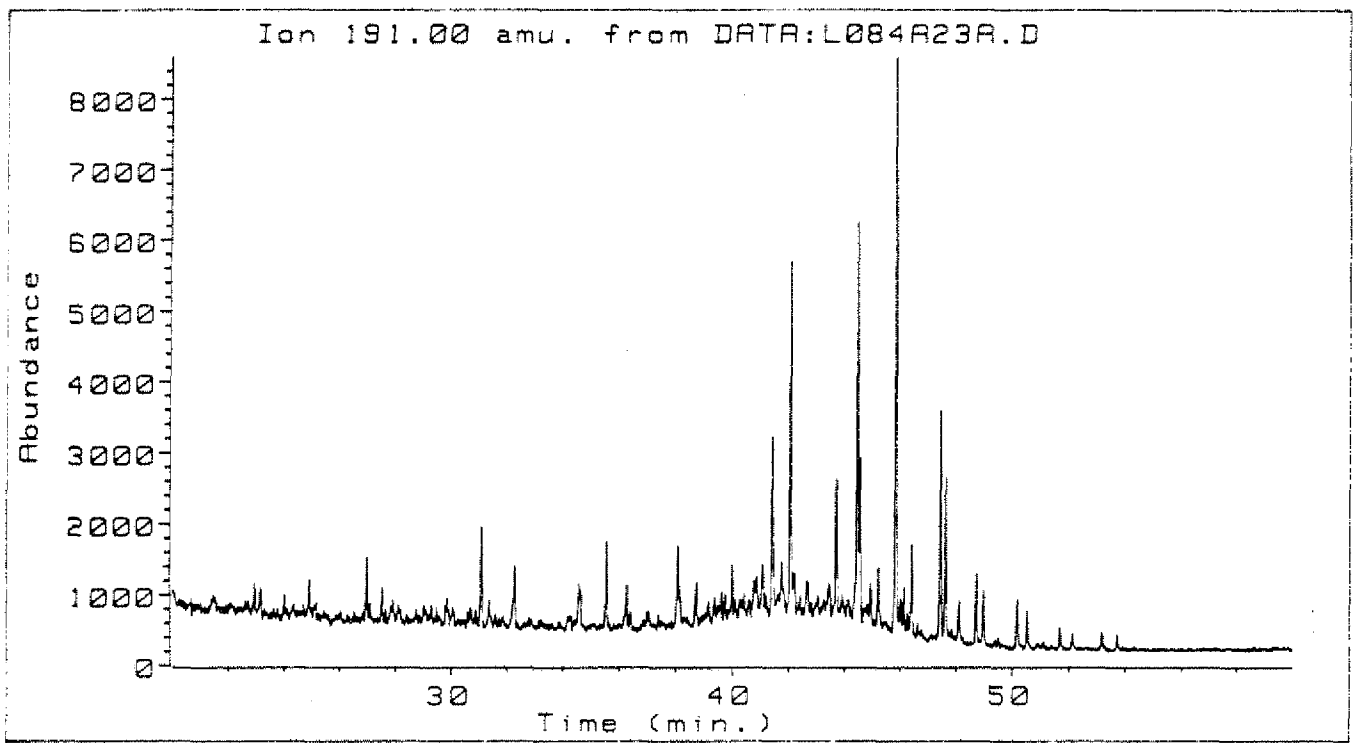
30/9-10

2748.1 M



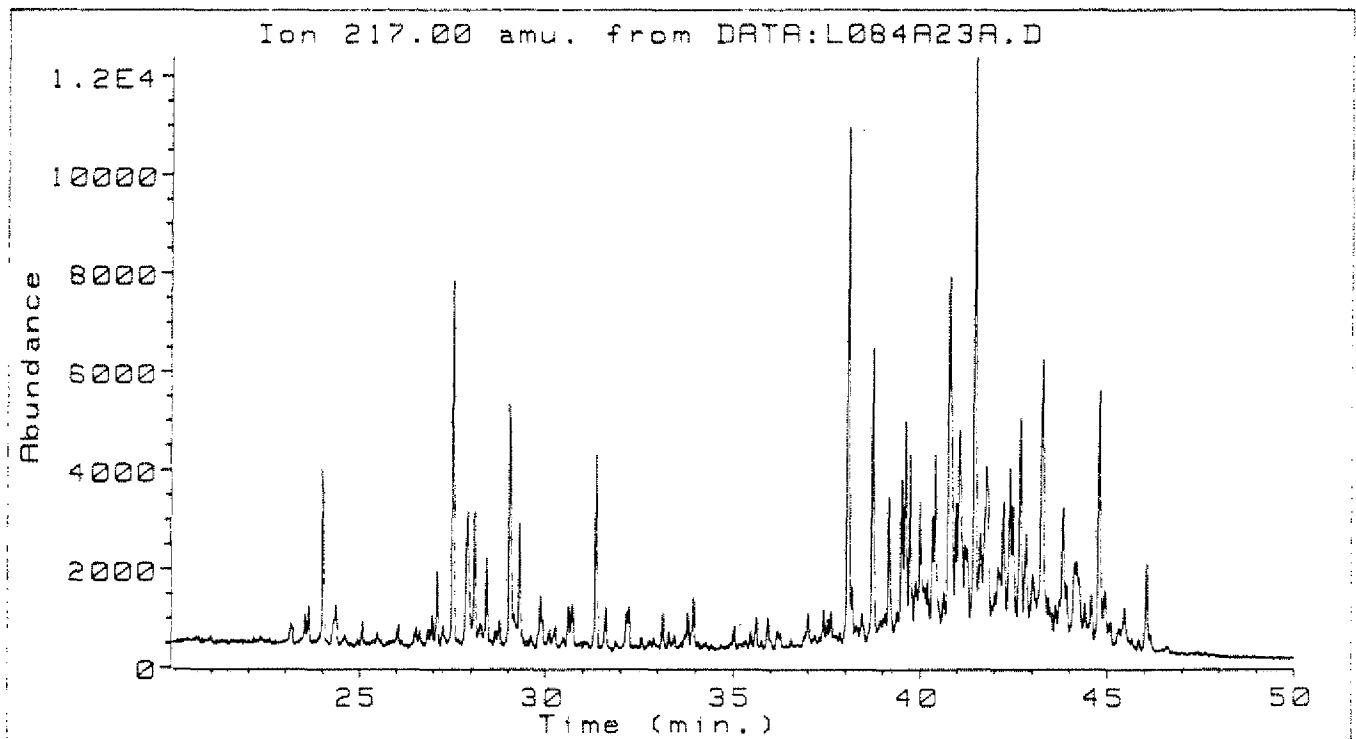
30/9-10

2748.1 M



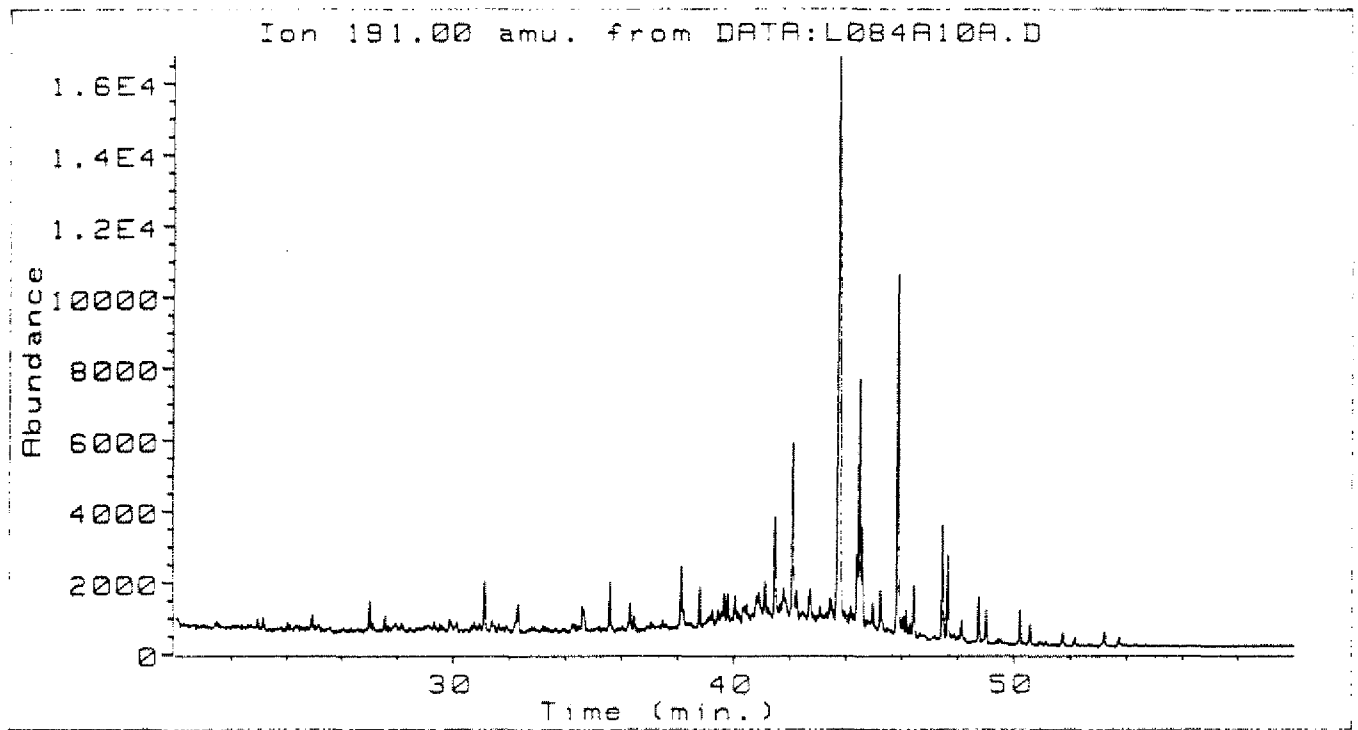
30/9-10

2748.75 M



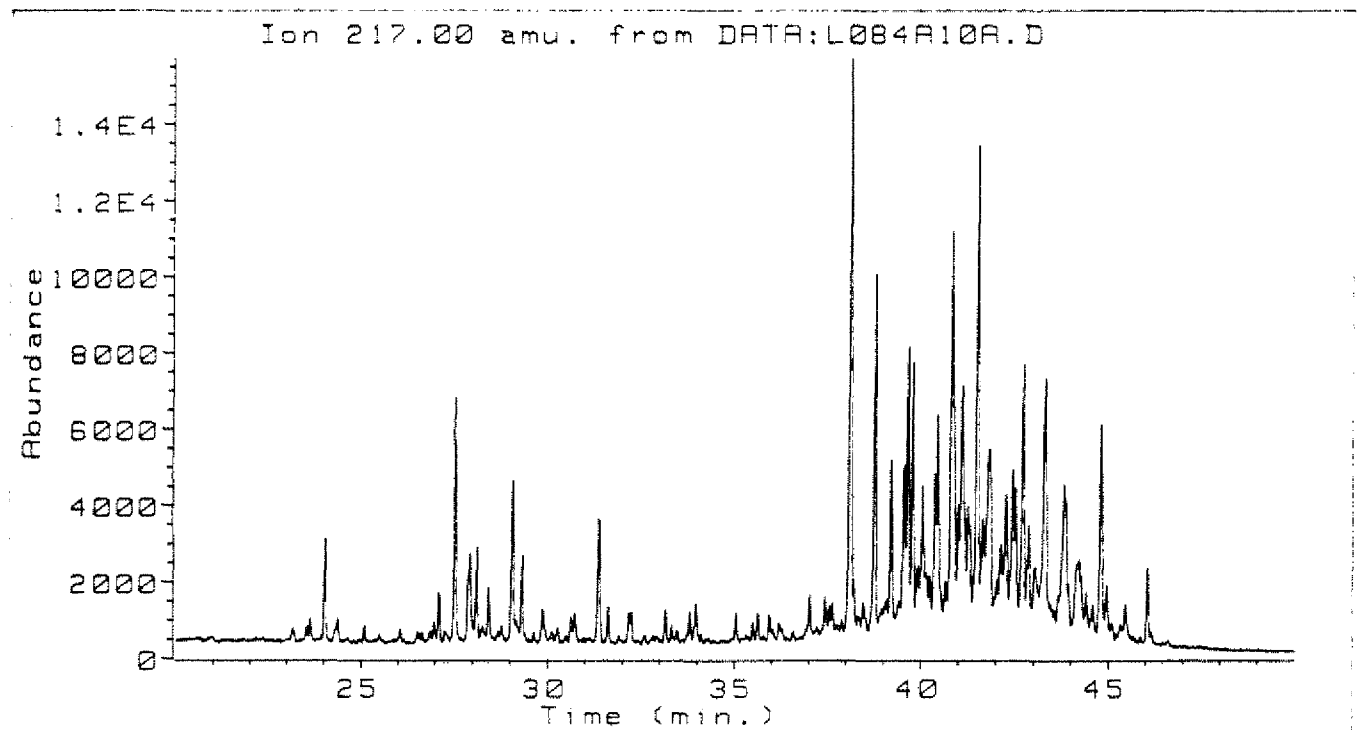
30/9-10

2748.75 M



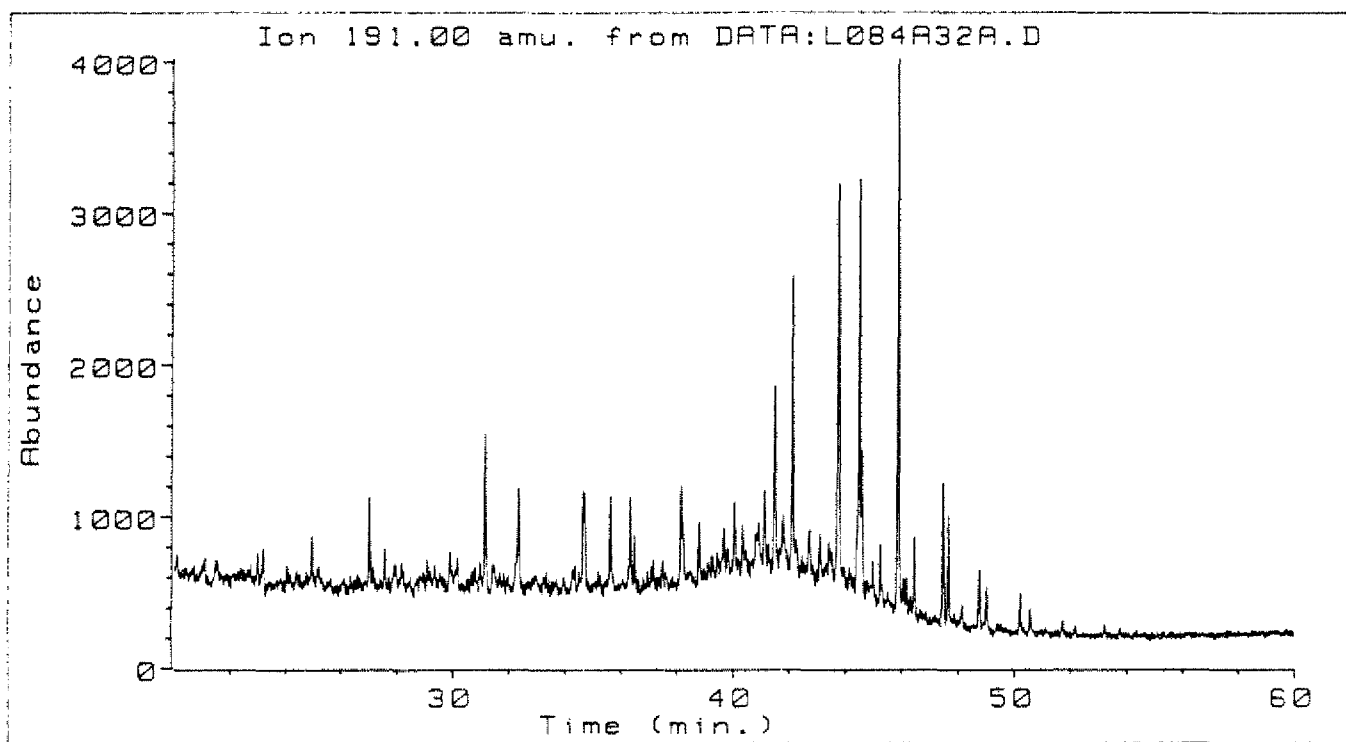
30/9-10

2749.2 M



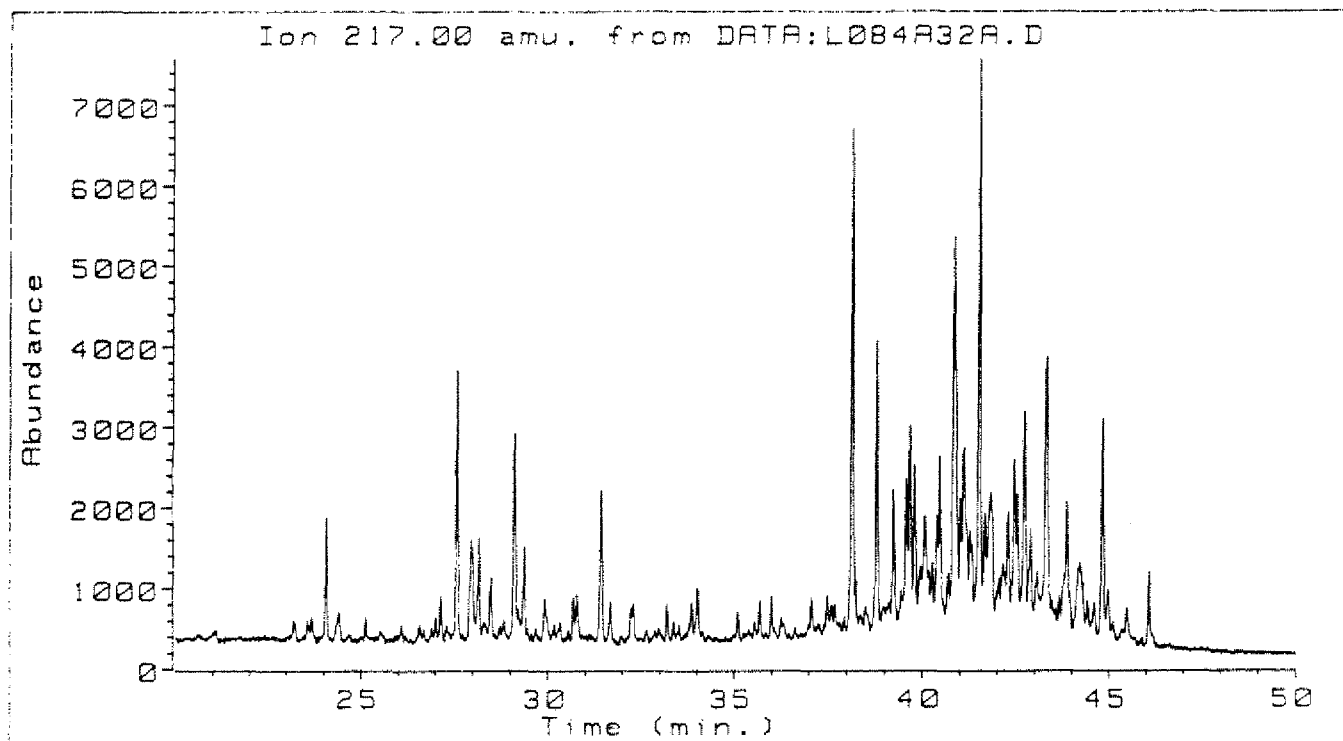
30/9-10

2749.2 M



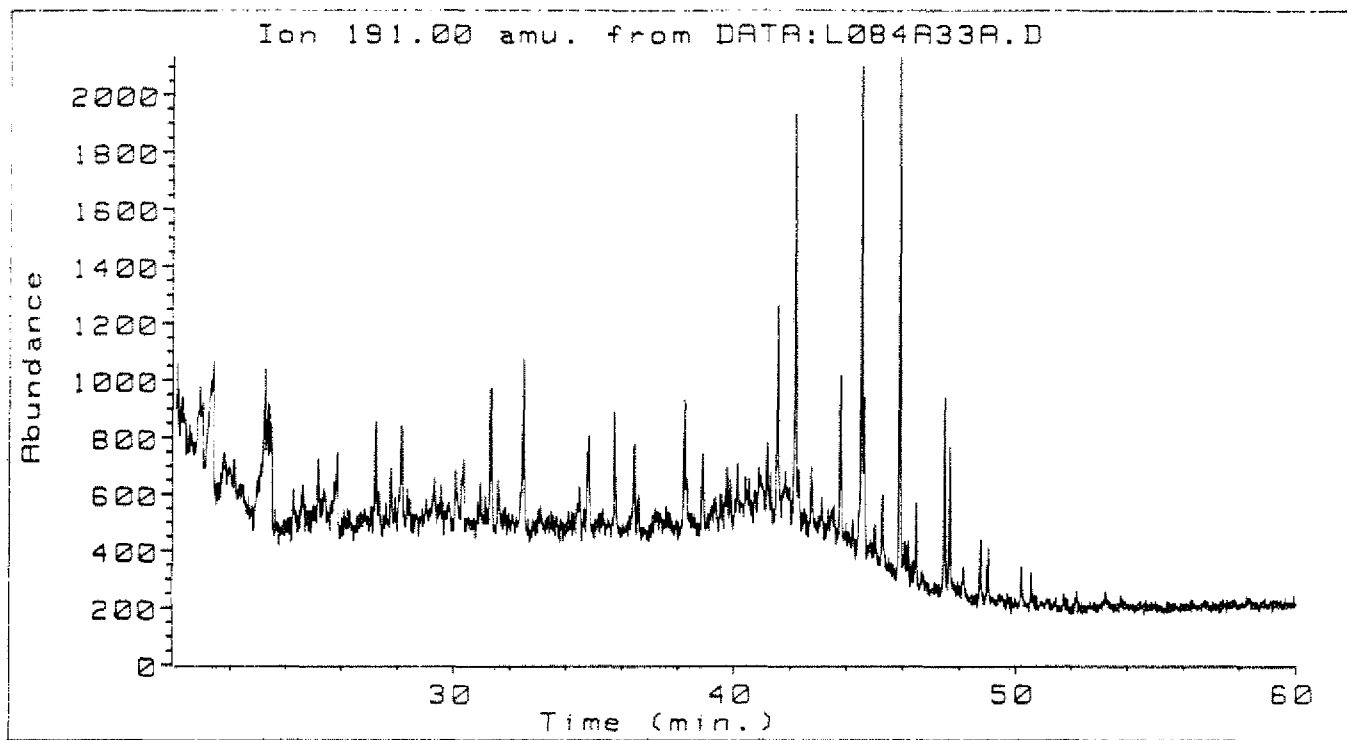
30/9-10

27497 M



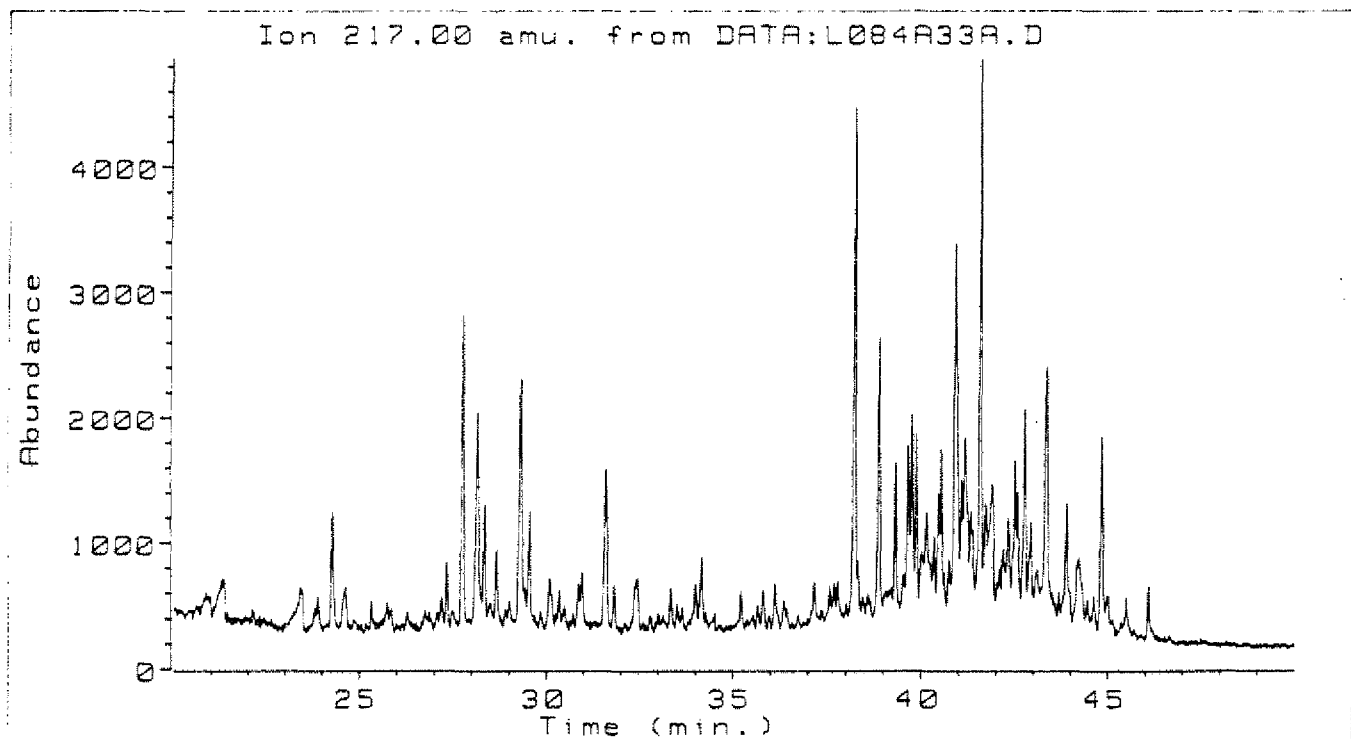
30/9-10

27497 M



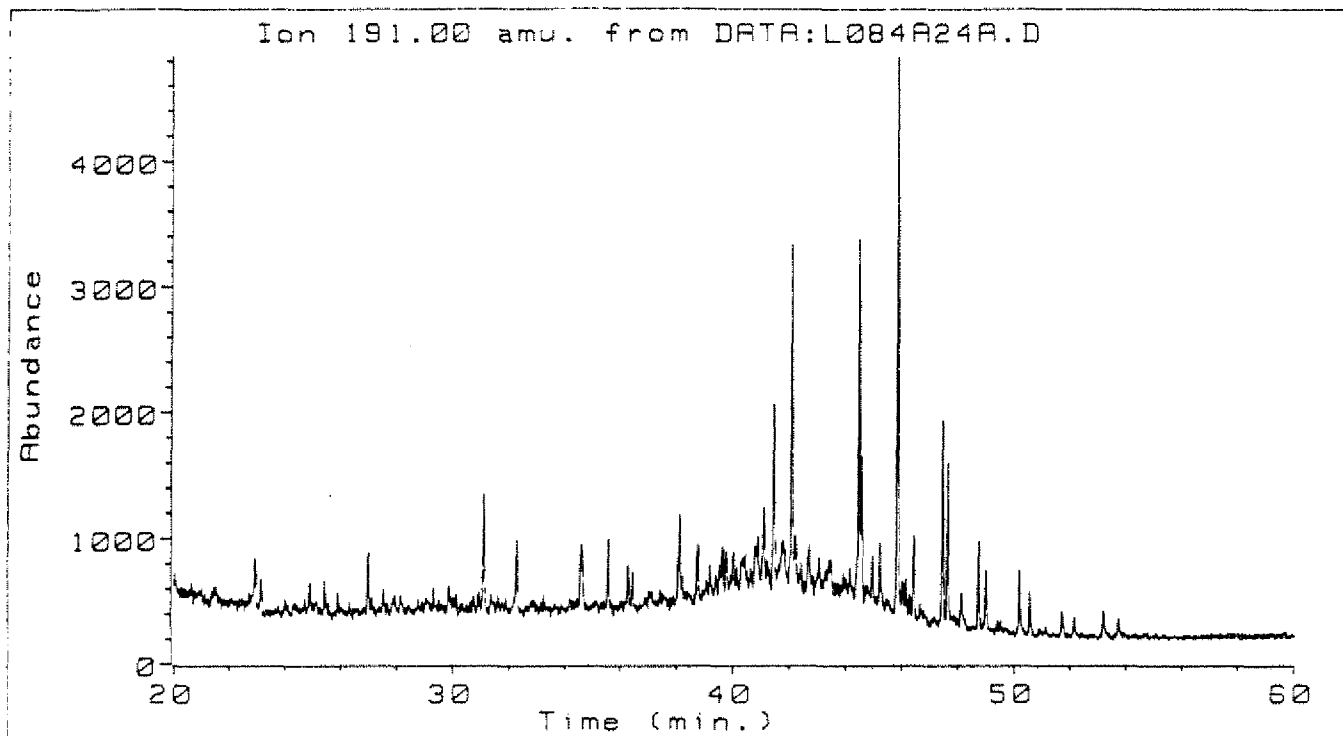
30/9-10

2750.3 M



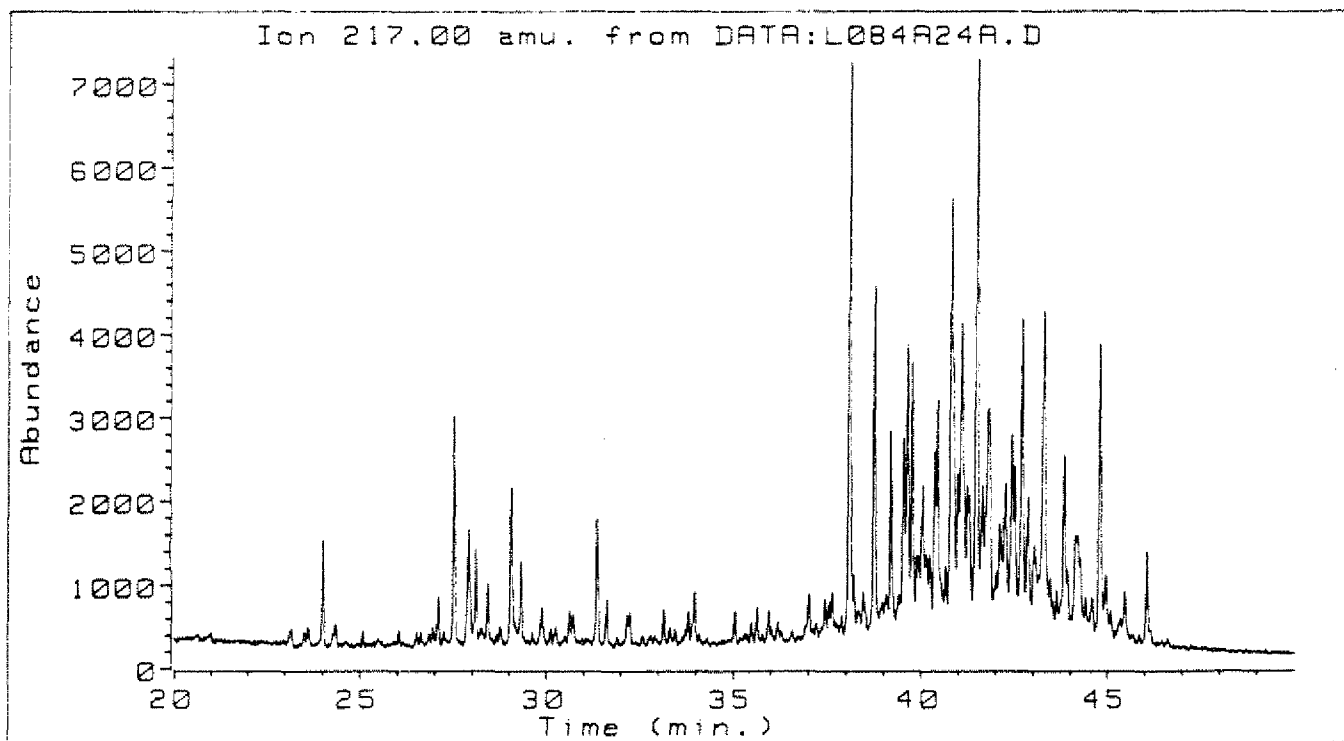
30/9-10

2750.3 M



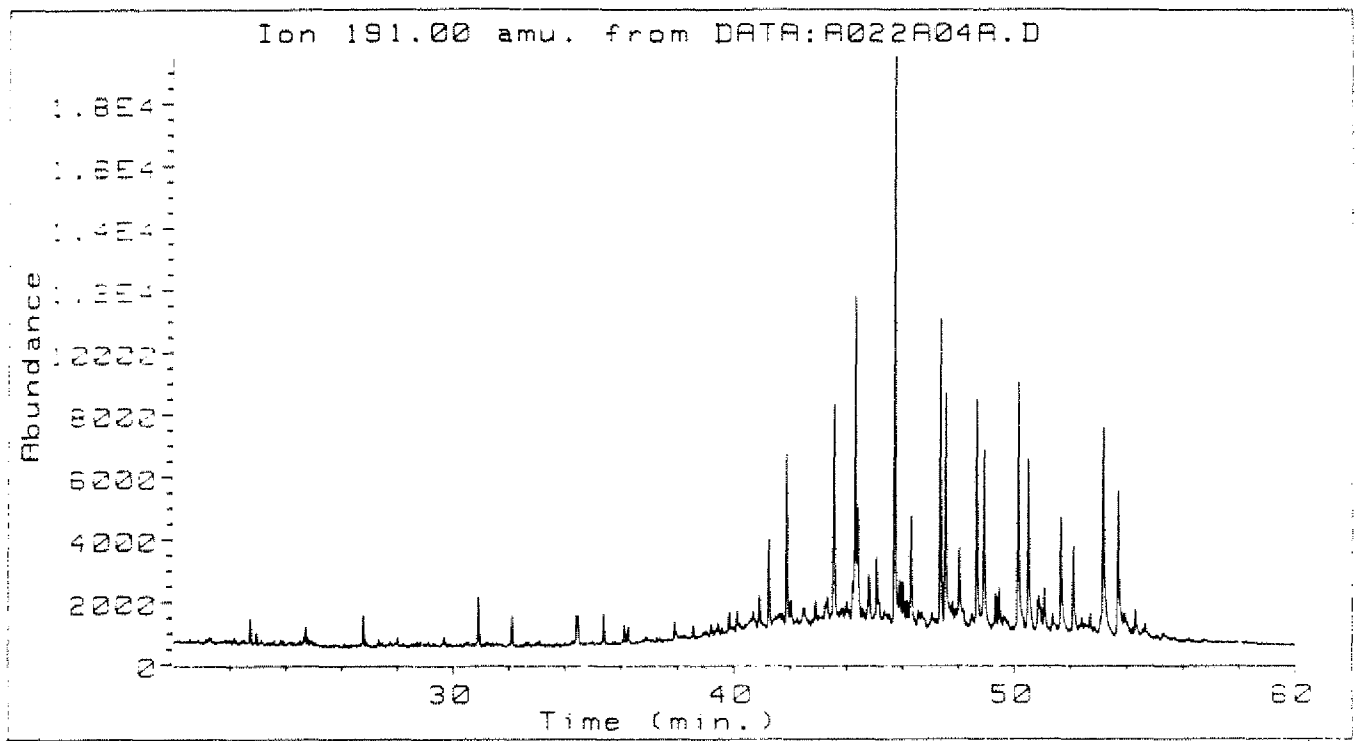
30/9-10

2750.9 M



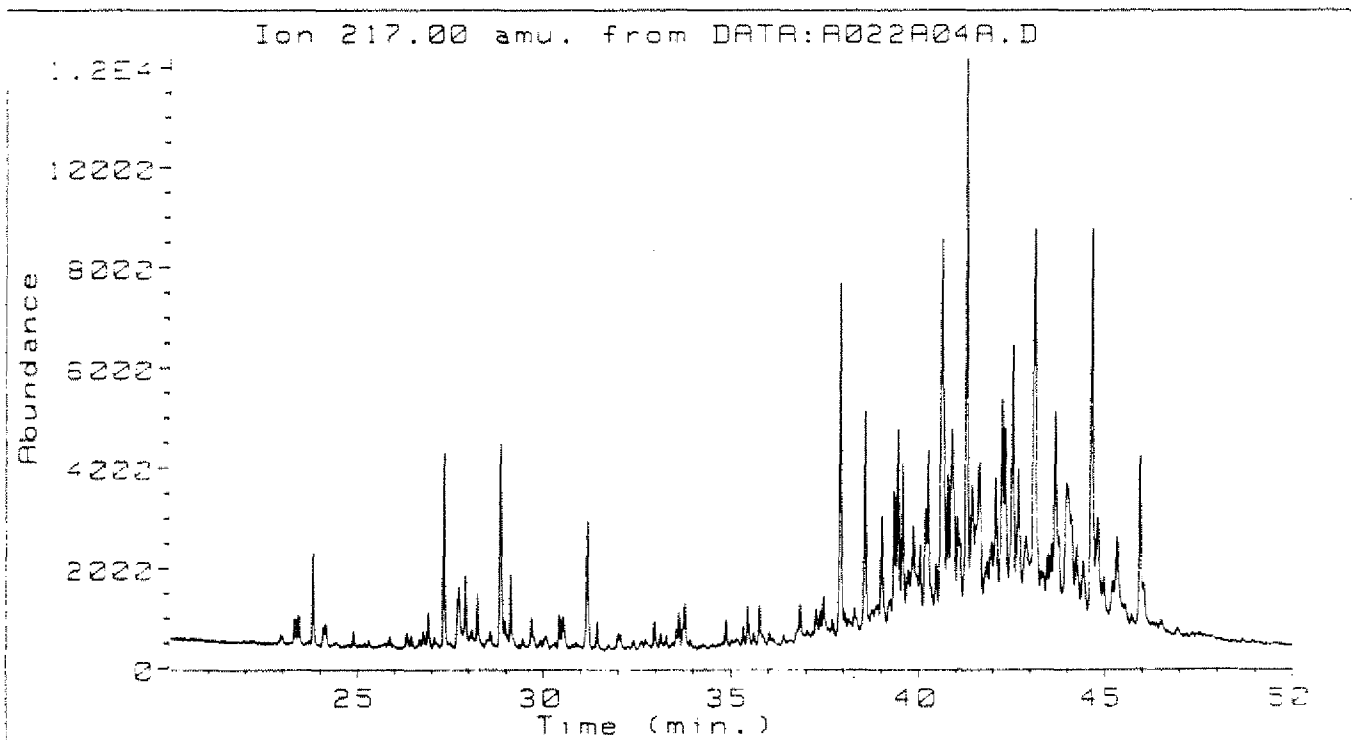
30/9-10

2750.9 M



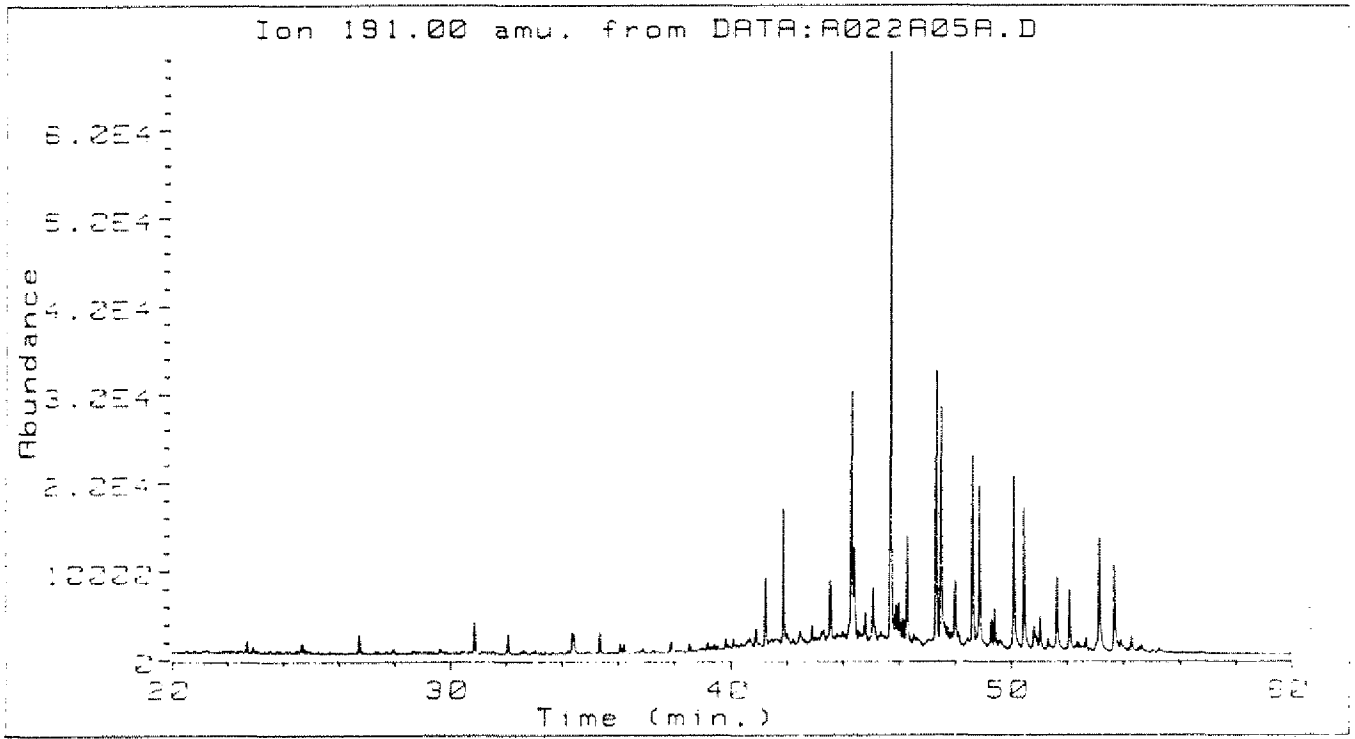
30/9-10

2755.2 m



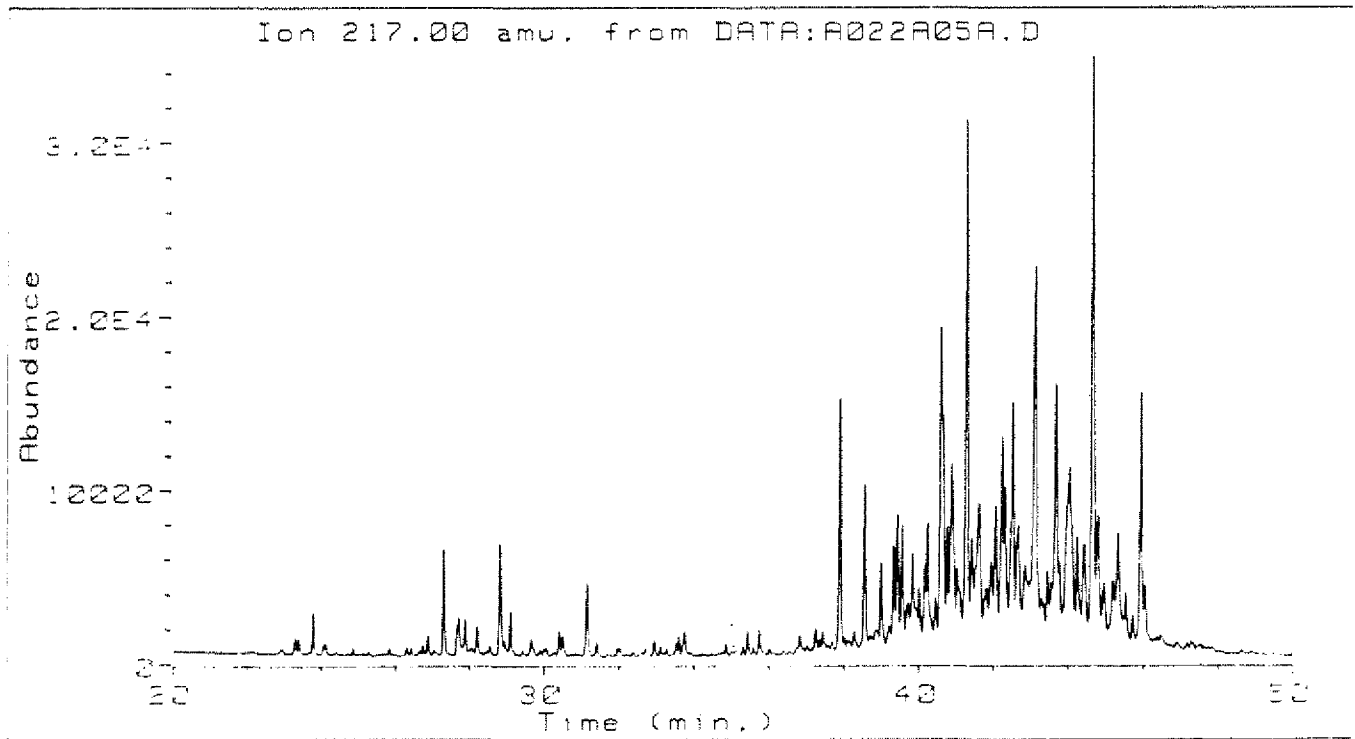
30/9-10

2755.2 m



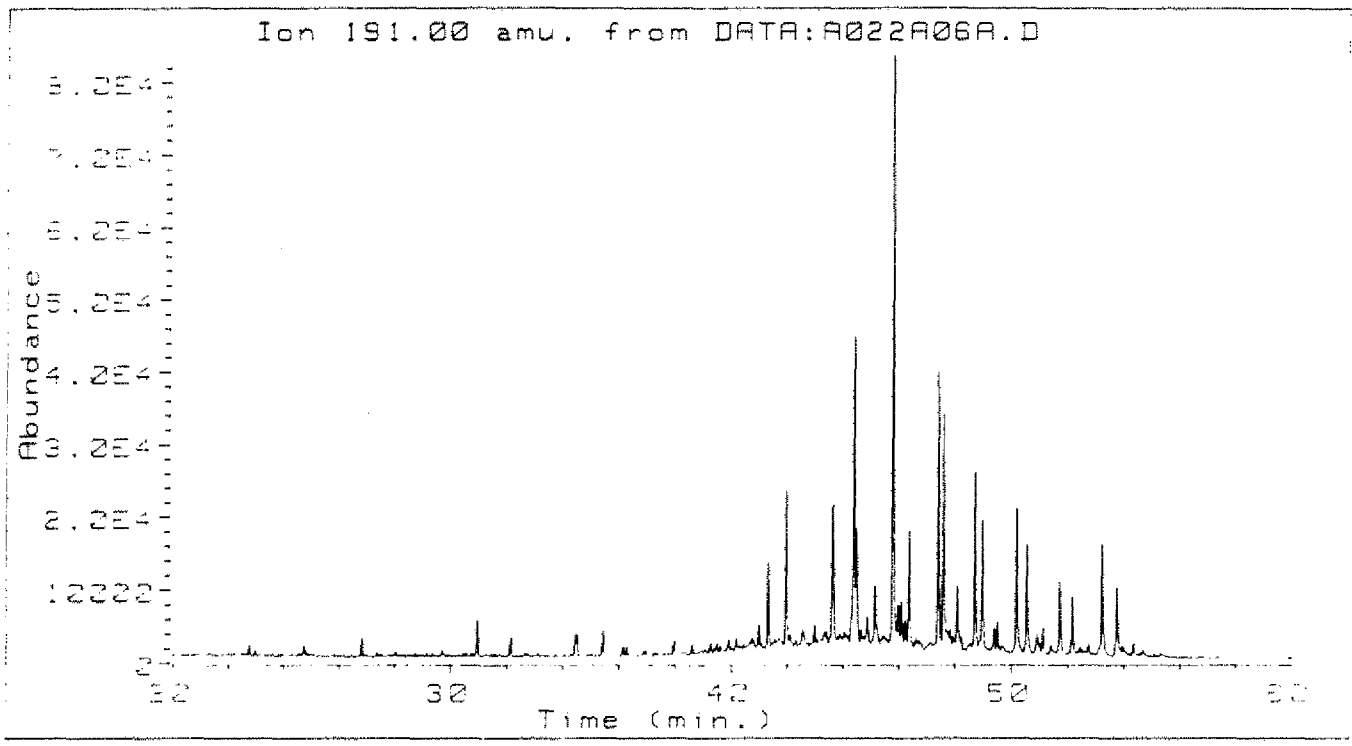
30/9-10

2763.3 m



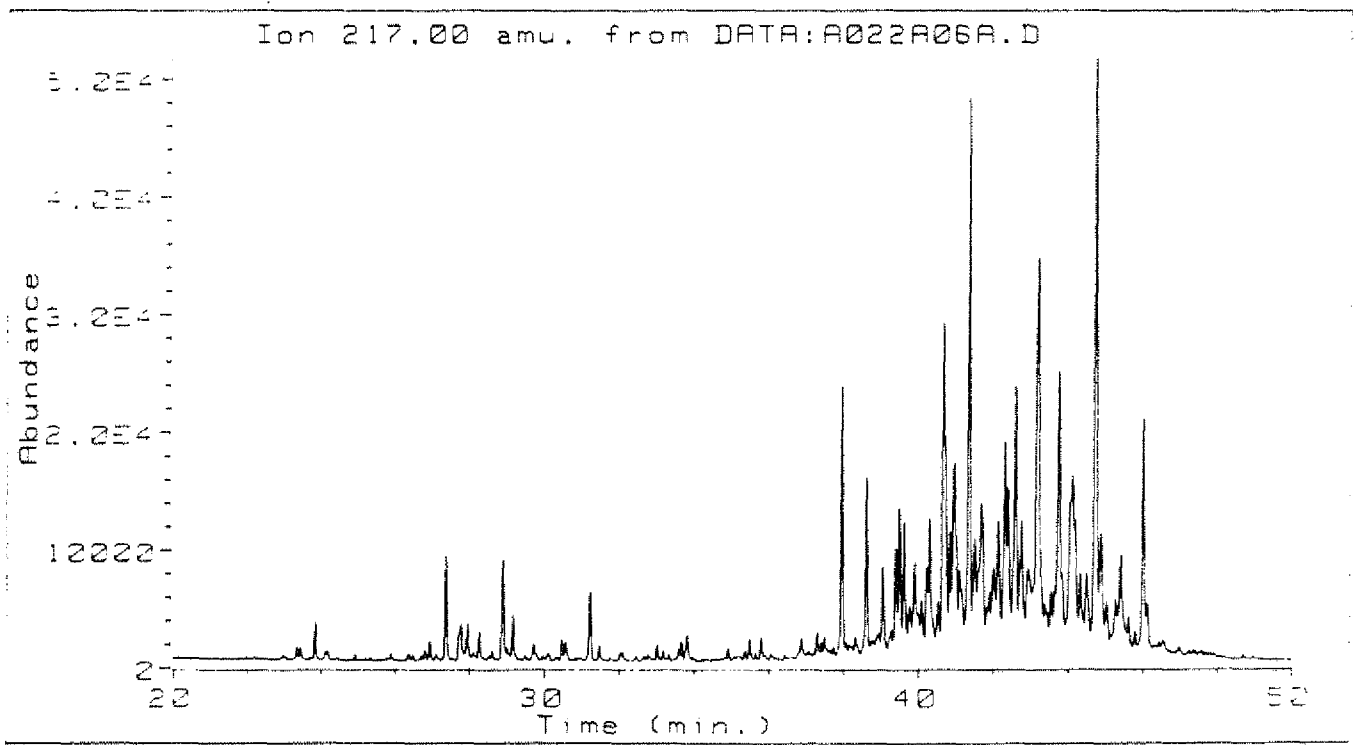
30/9-10

2763.3 m



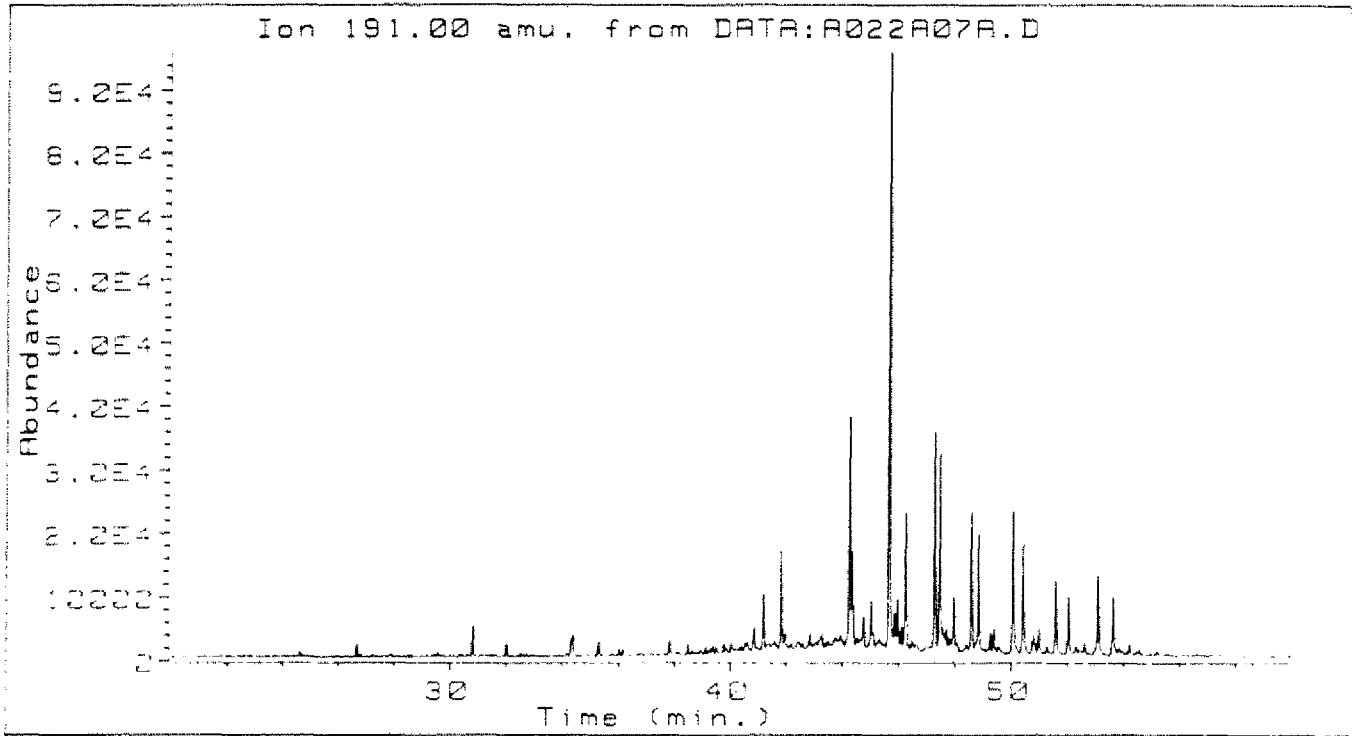
30/9-10

2767.55 m



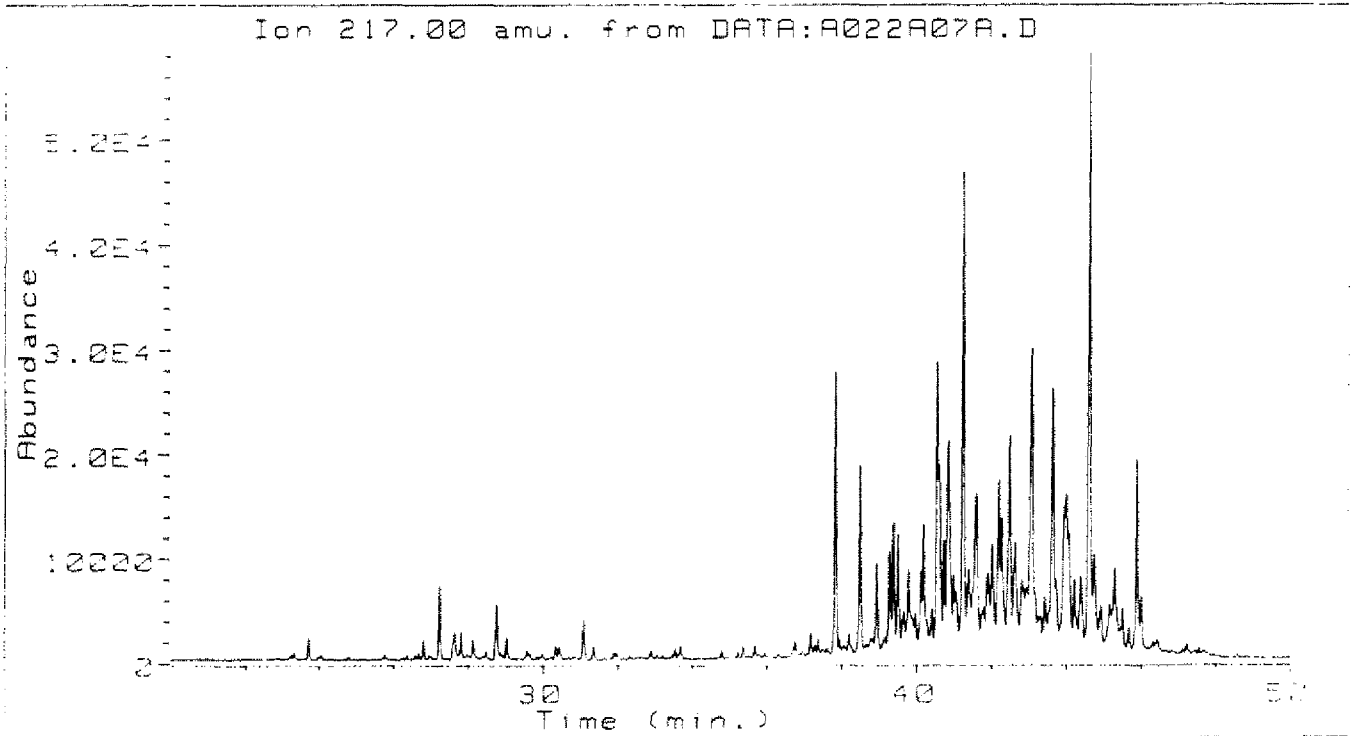
30/9-10

2767.55 m



30/9-10

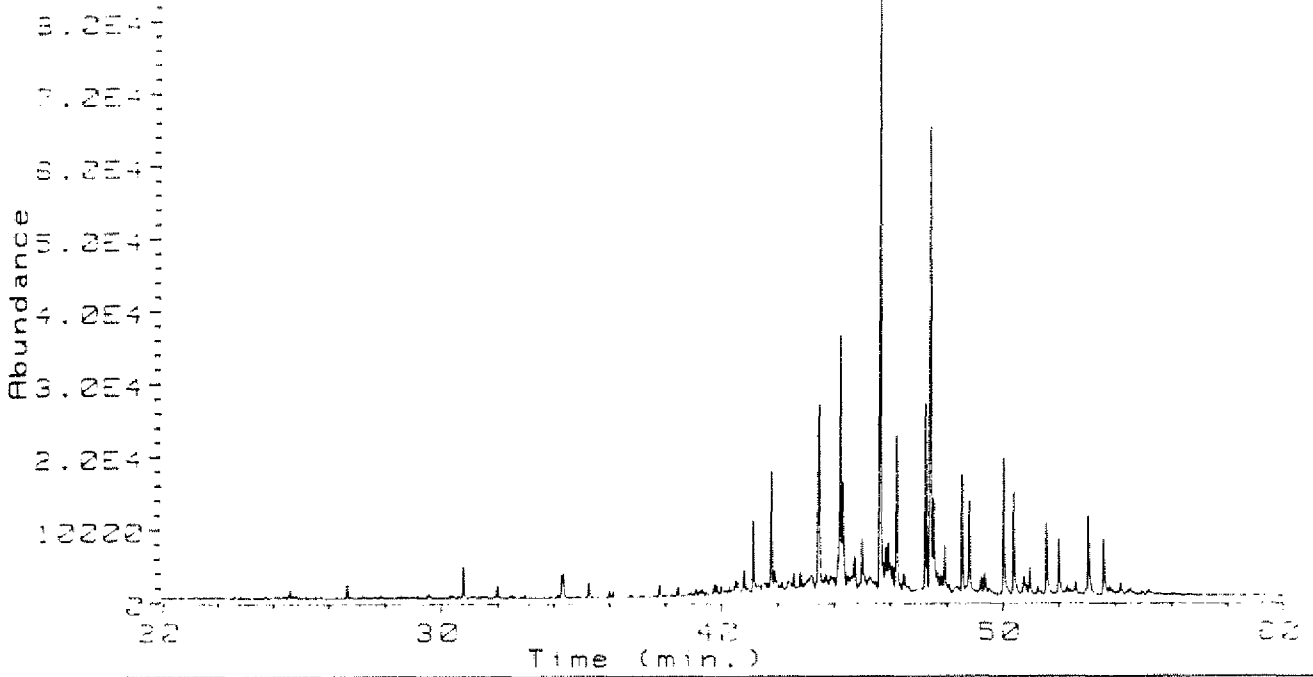
2775.5 m



30/9-10

2775.5 m

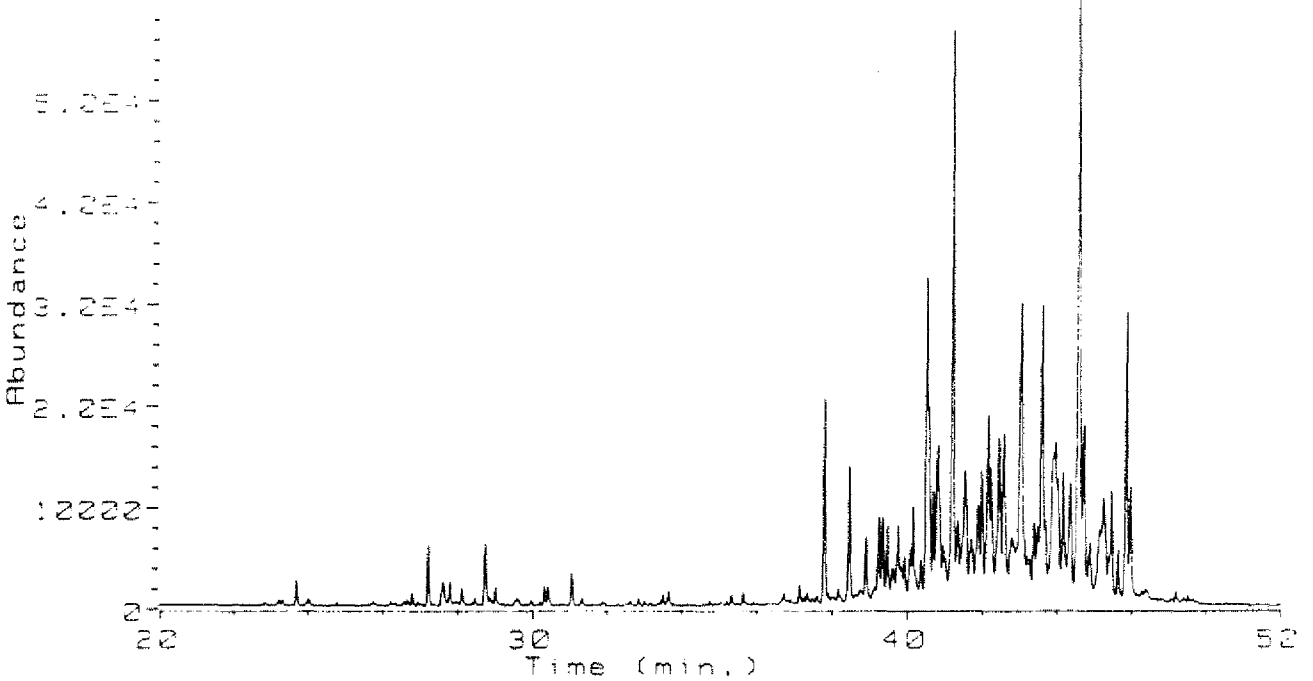
Ion 191.00 amu. from DATA:A022A08A.D



30/9-10

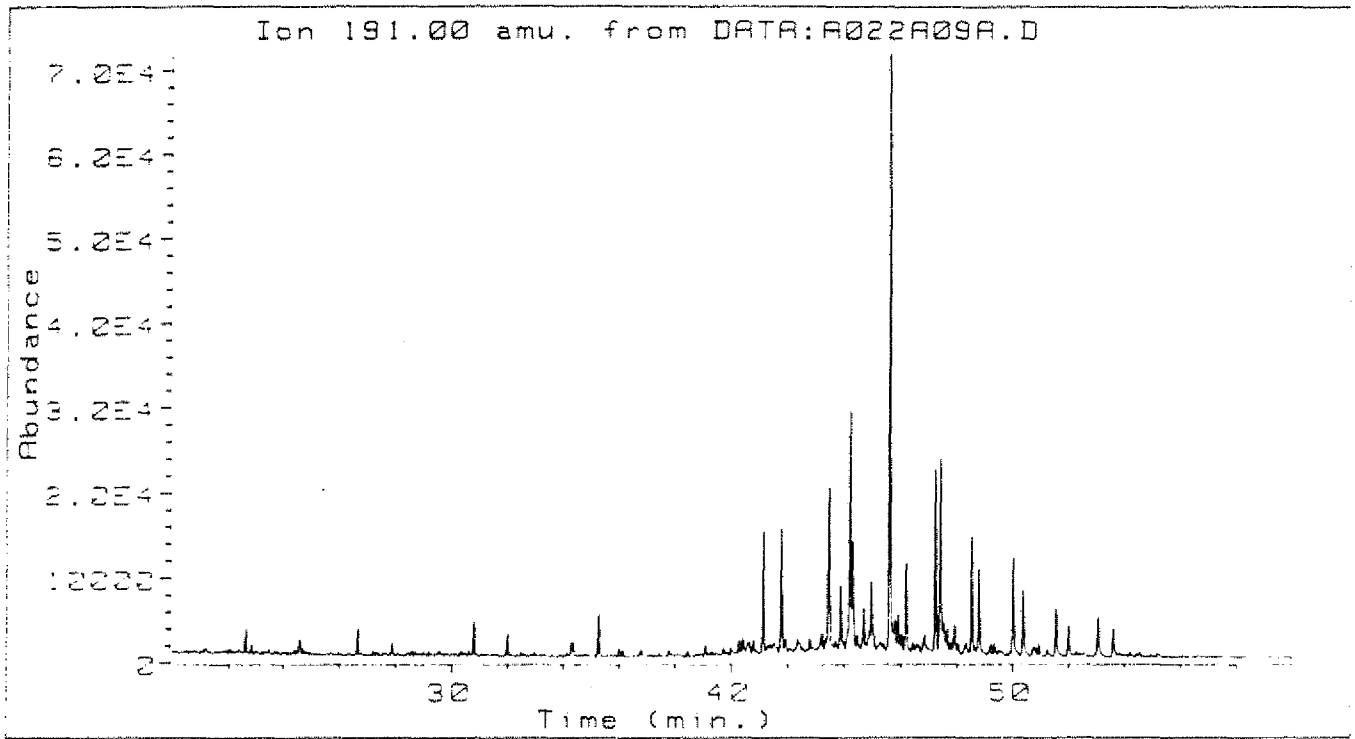
2776.6 m

Ion 217.00 amu. from DATA:A022A08A.D

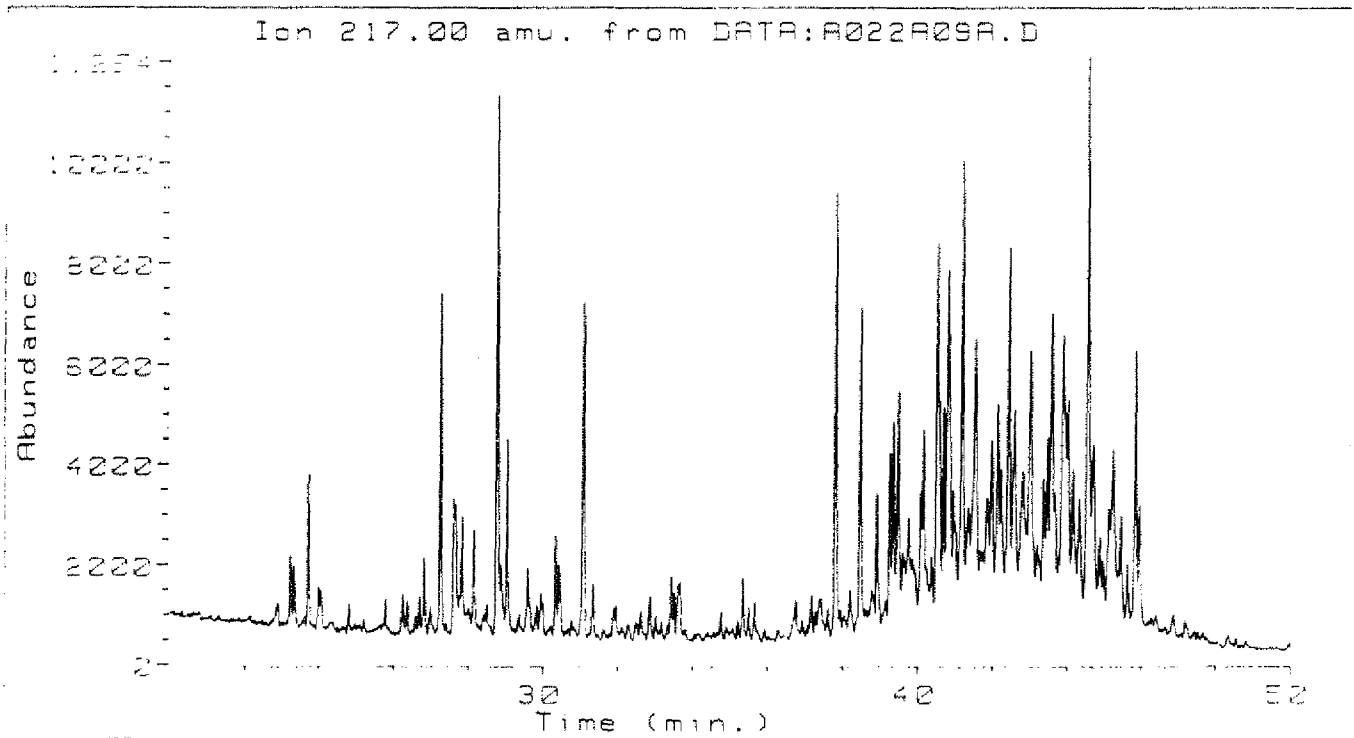


30/9-10

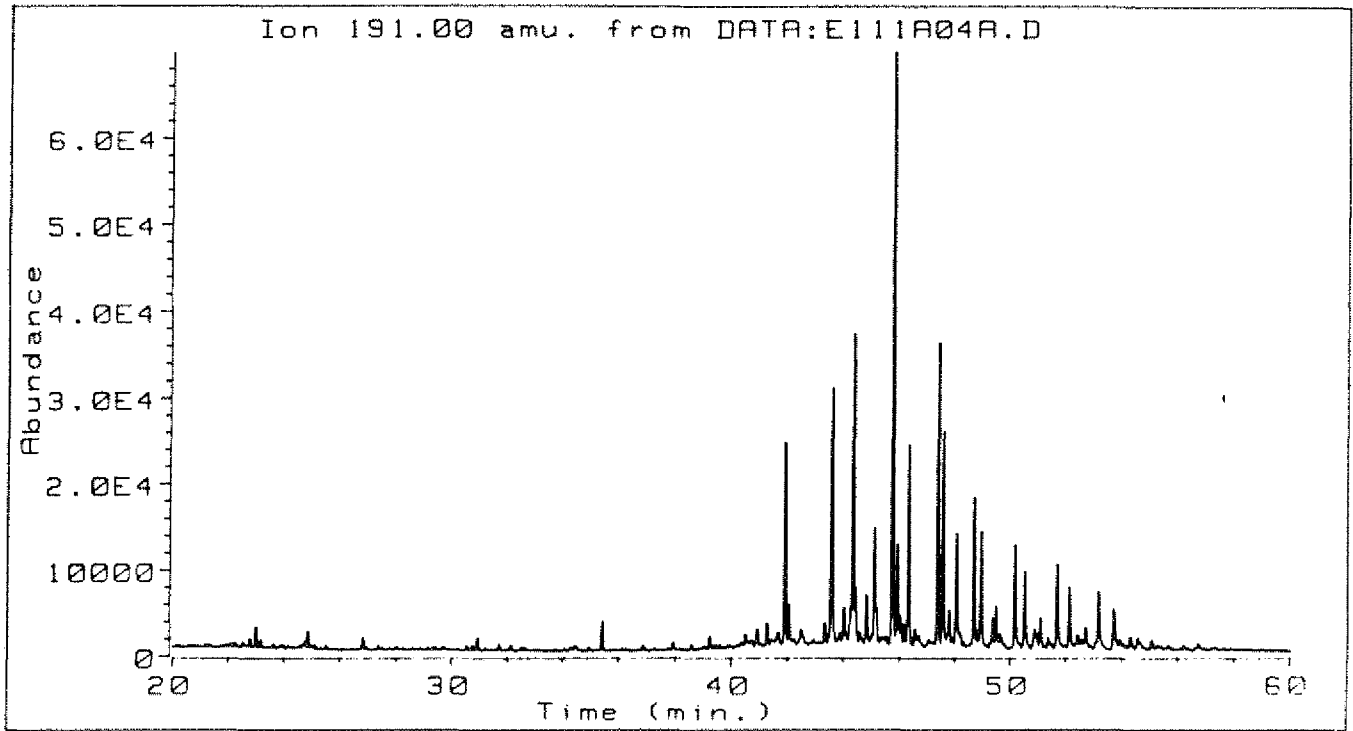
2776.6 m



30/9-10
2779.2 m

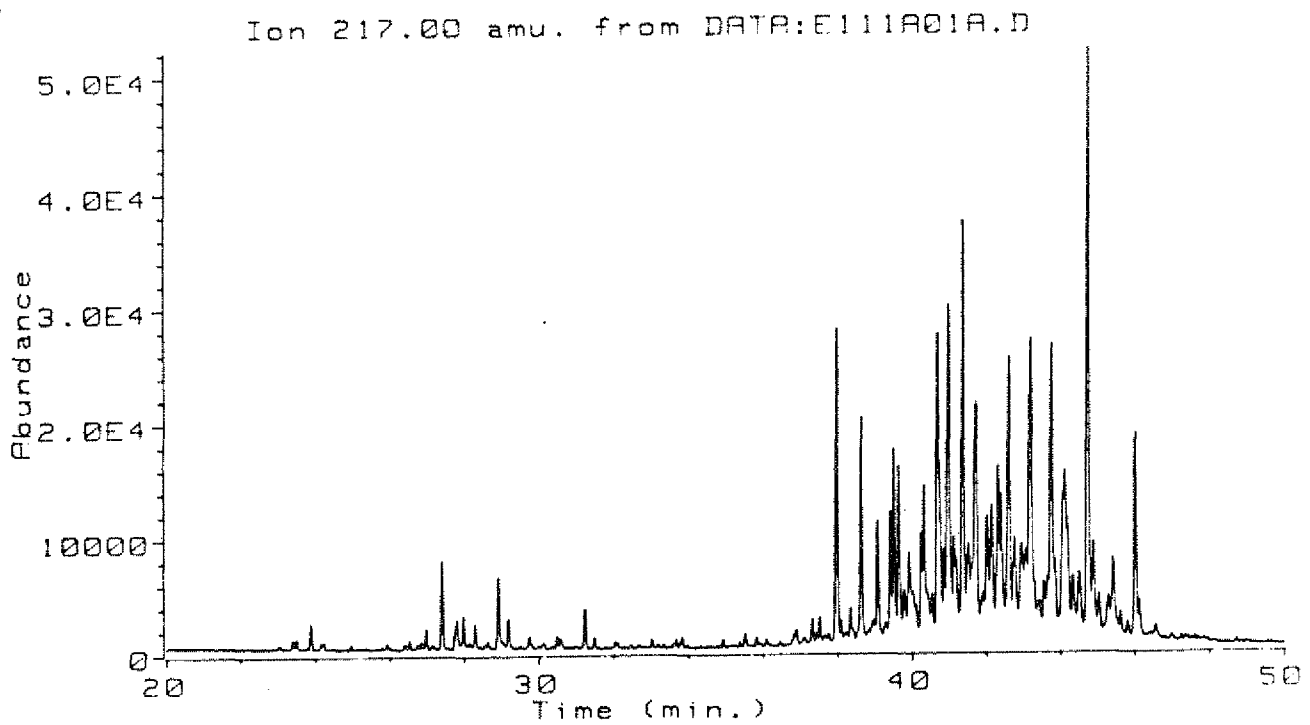


30/9-10
2779.2 m



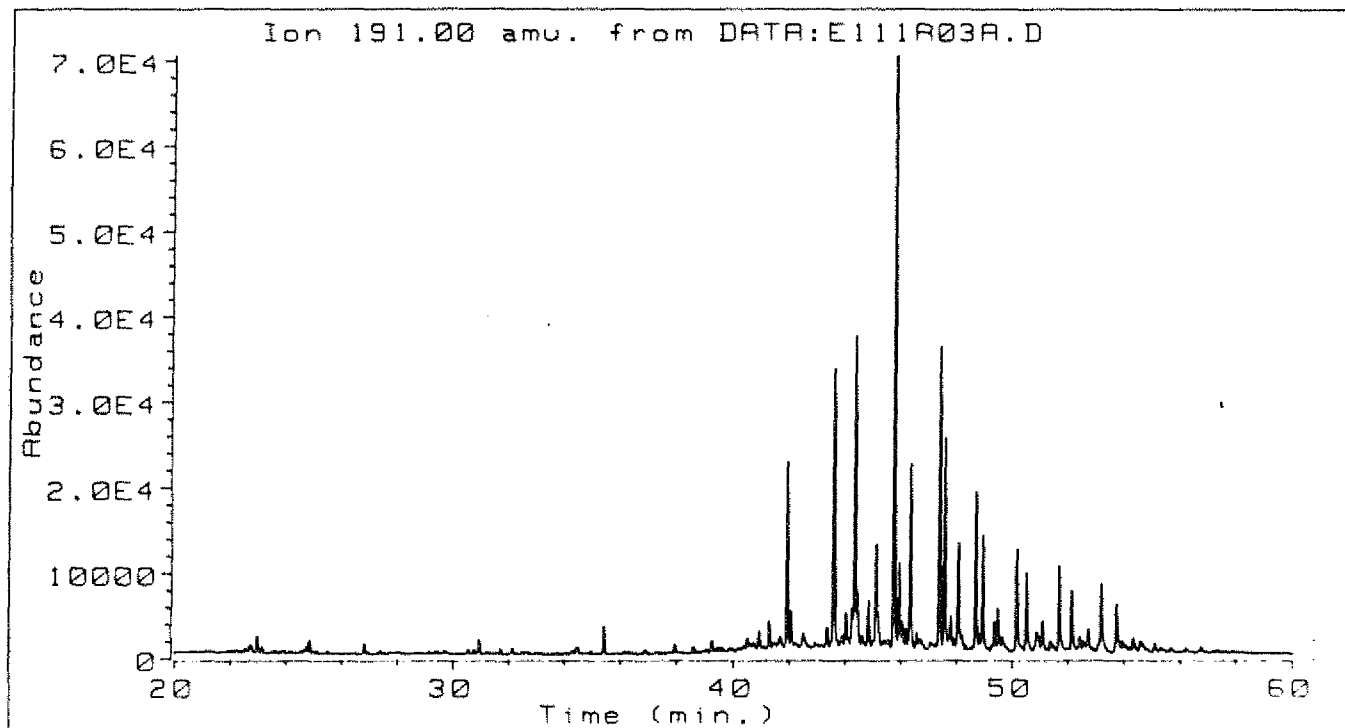
30/9-10

2781.1m



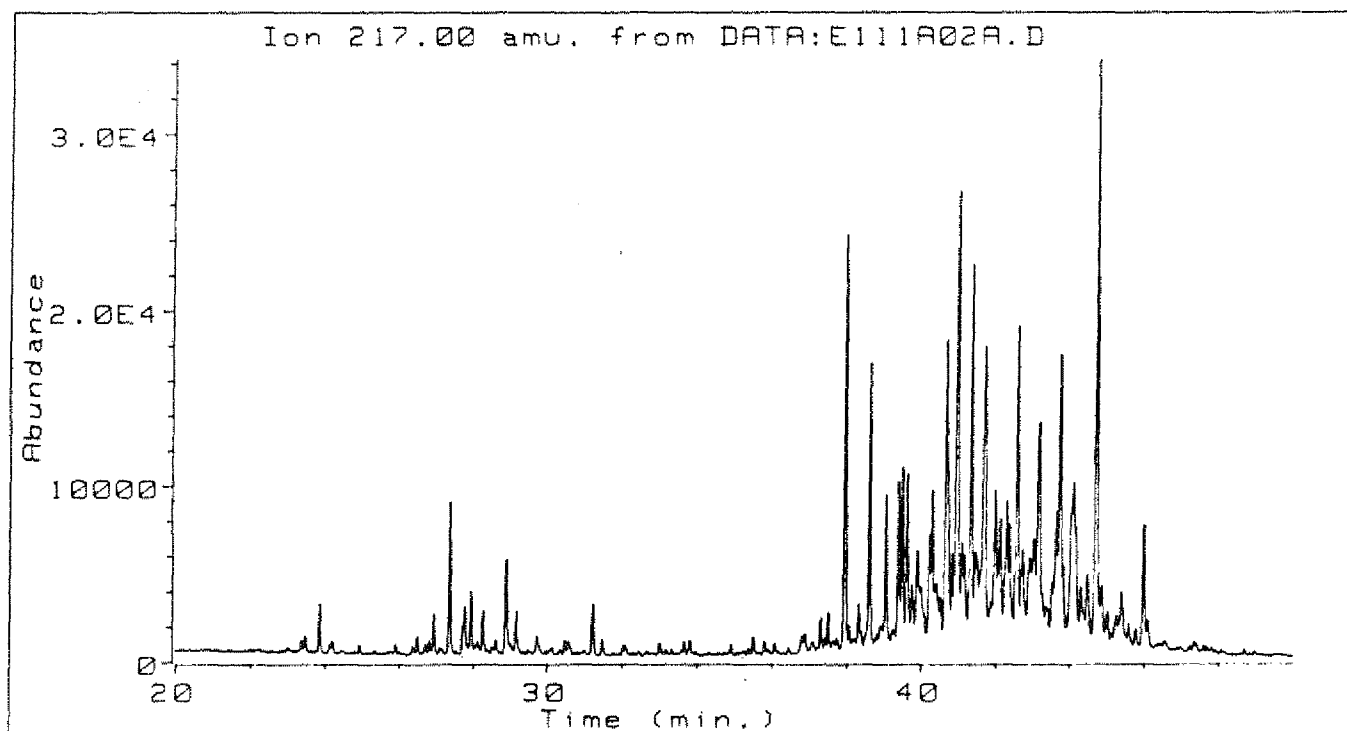
30/9-10

2781.1m



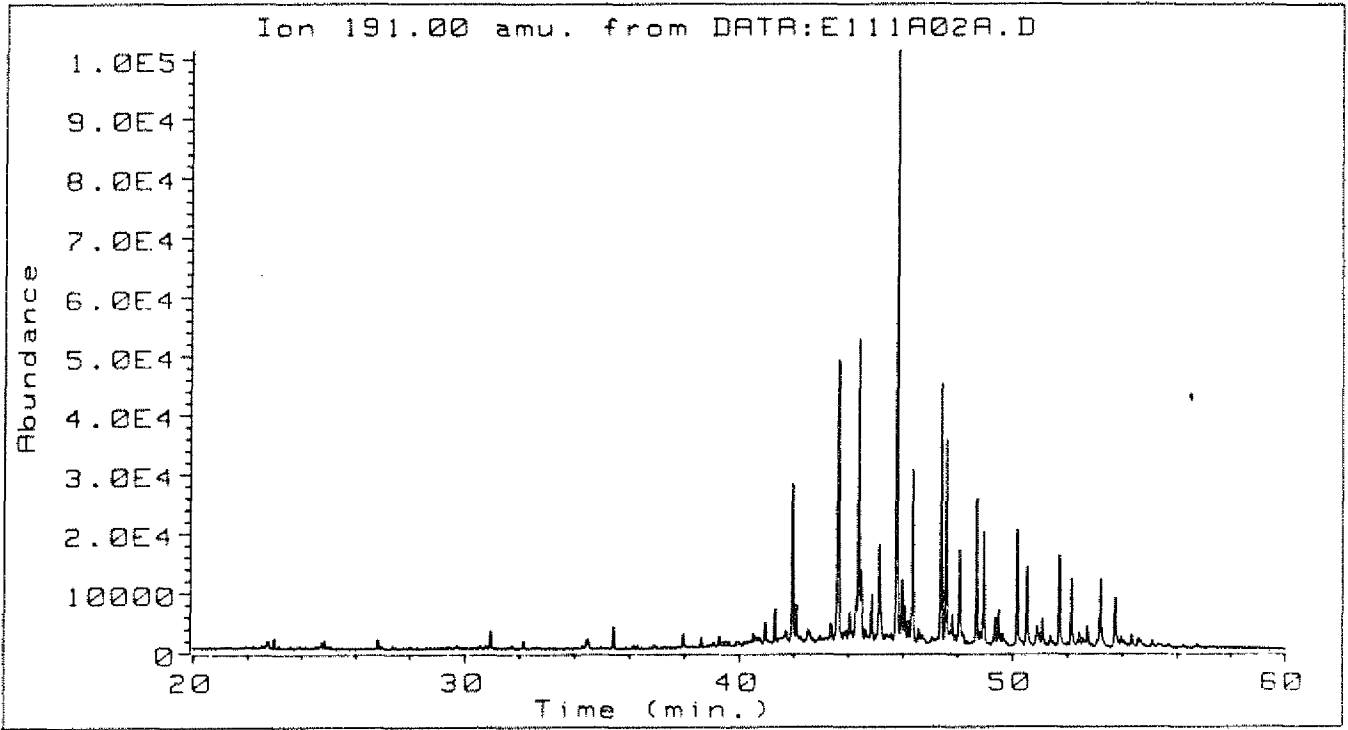
30/9-10

2781.8m



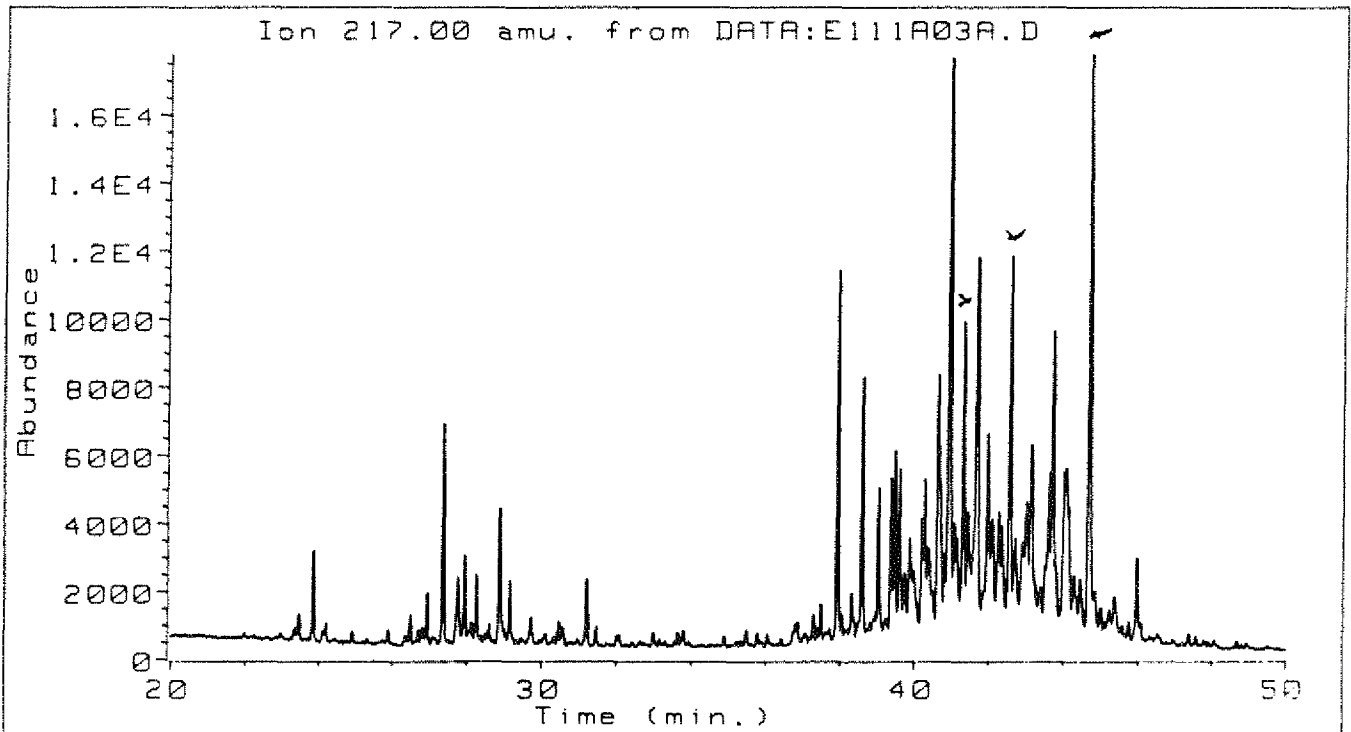
30/9-10

2781.8m



30/9-10

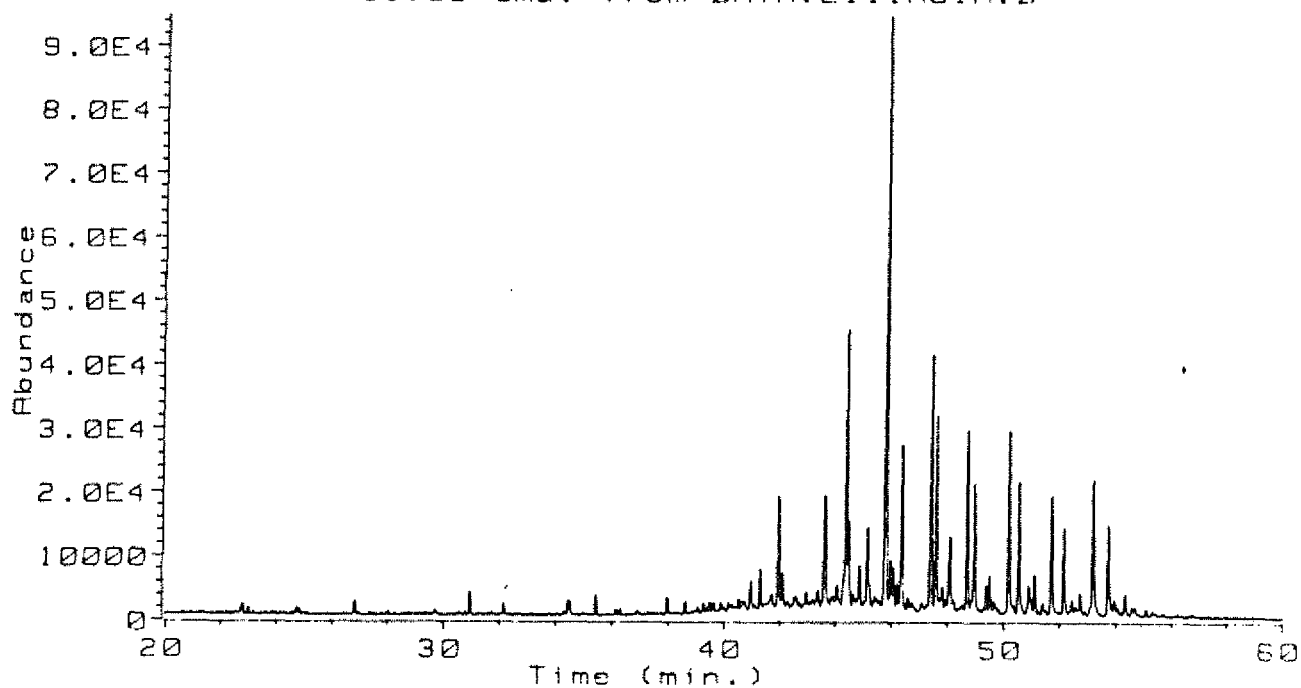
2781.98m



30/9-10

2781.98m

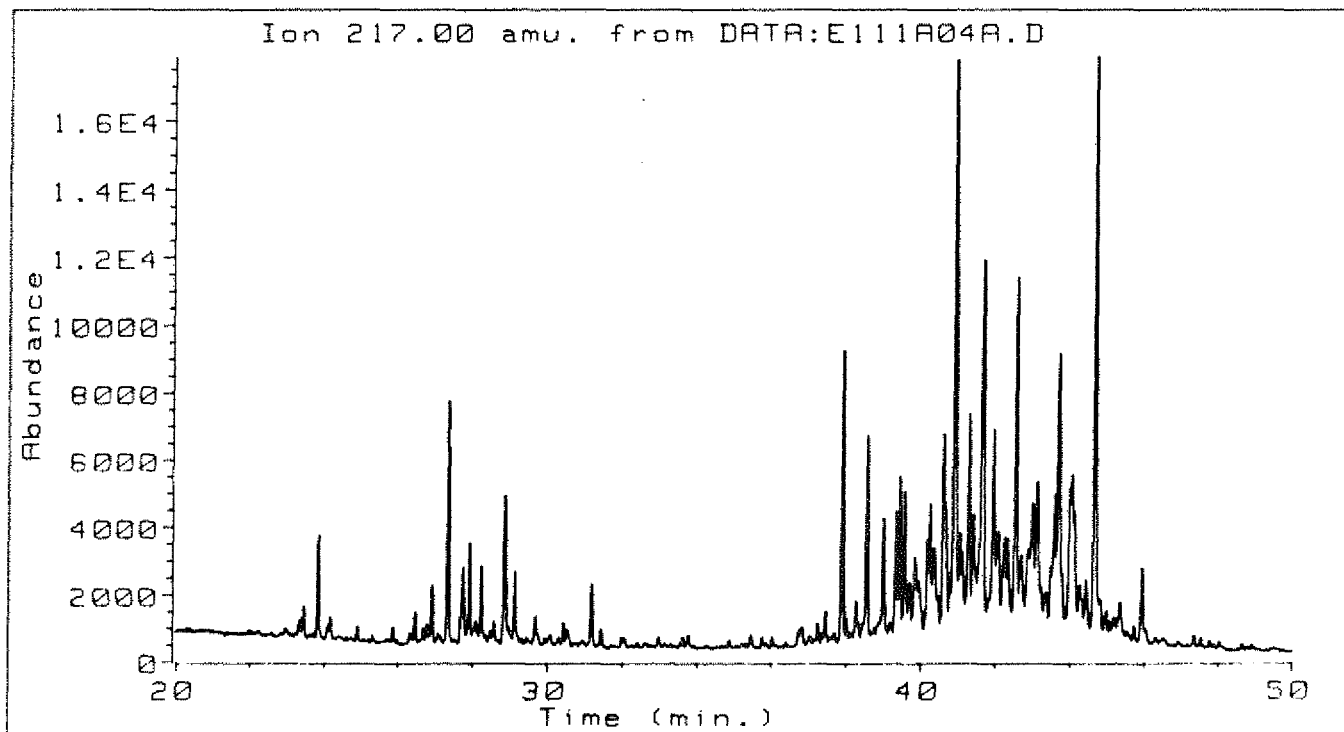
Ion 191.00 amu. from DATA:E111A01A.D



30/9-10

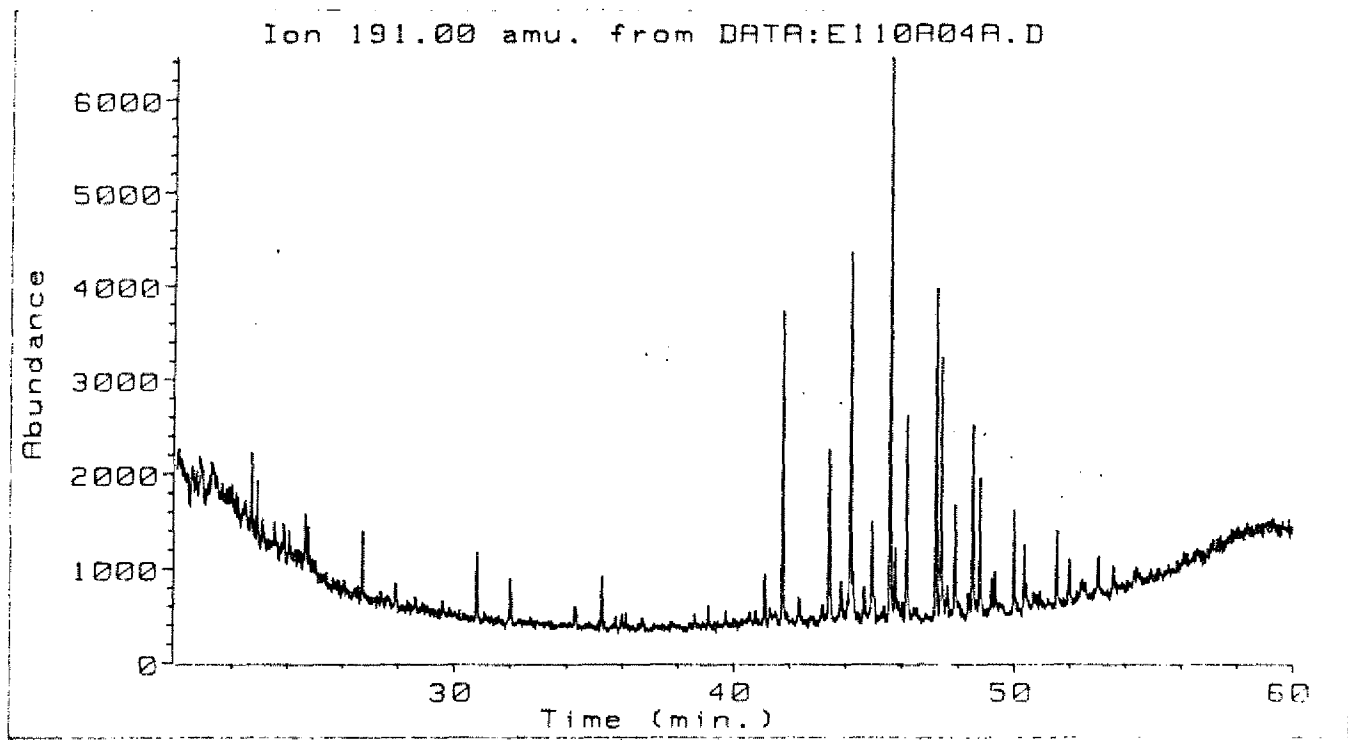
2782.0m

Ion 217.00 amu. from DATA:E111A04A.D



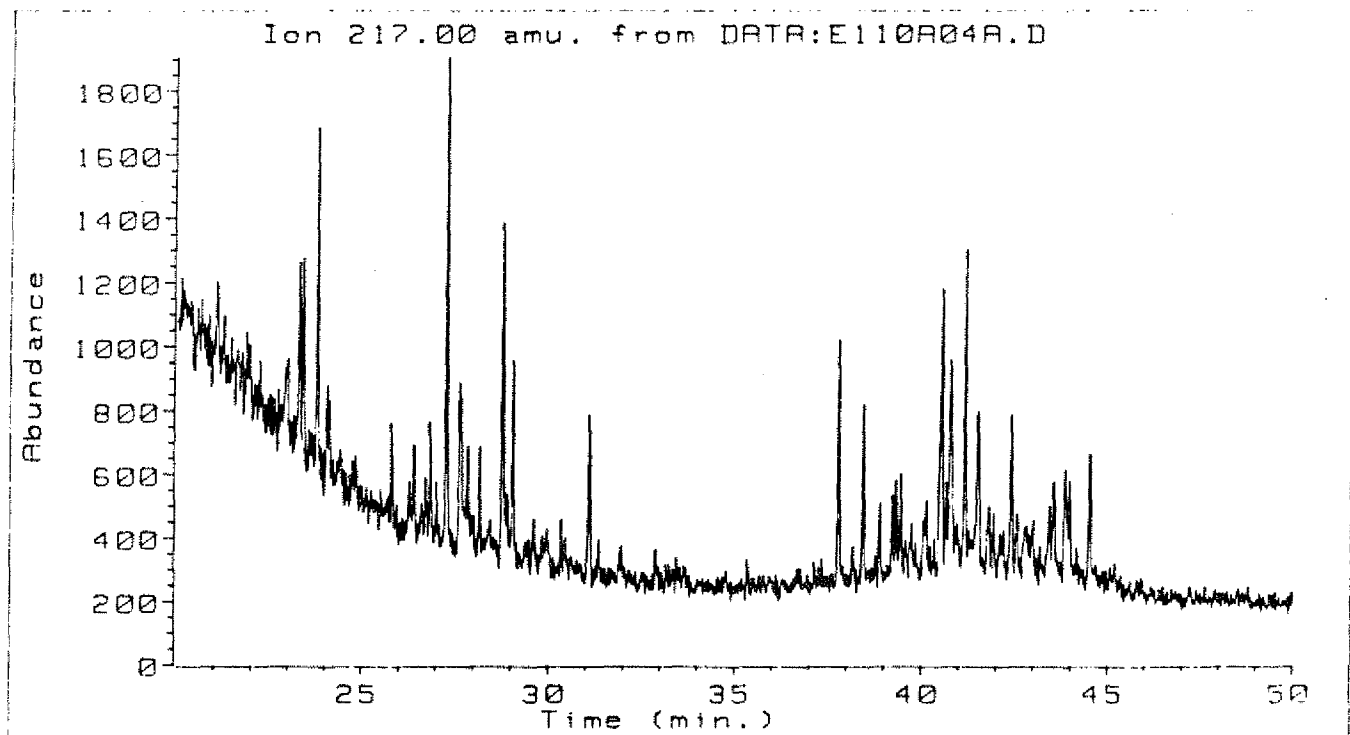
30/9-10

2782.0m



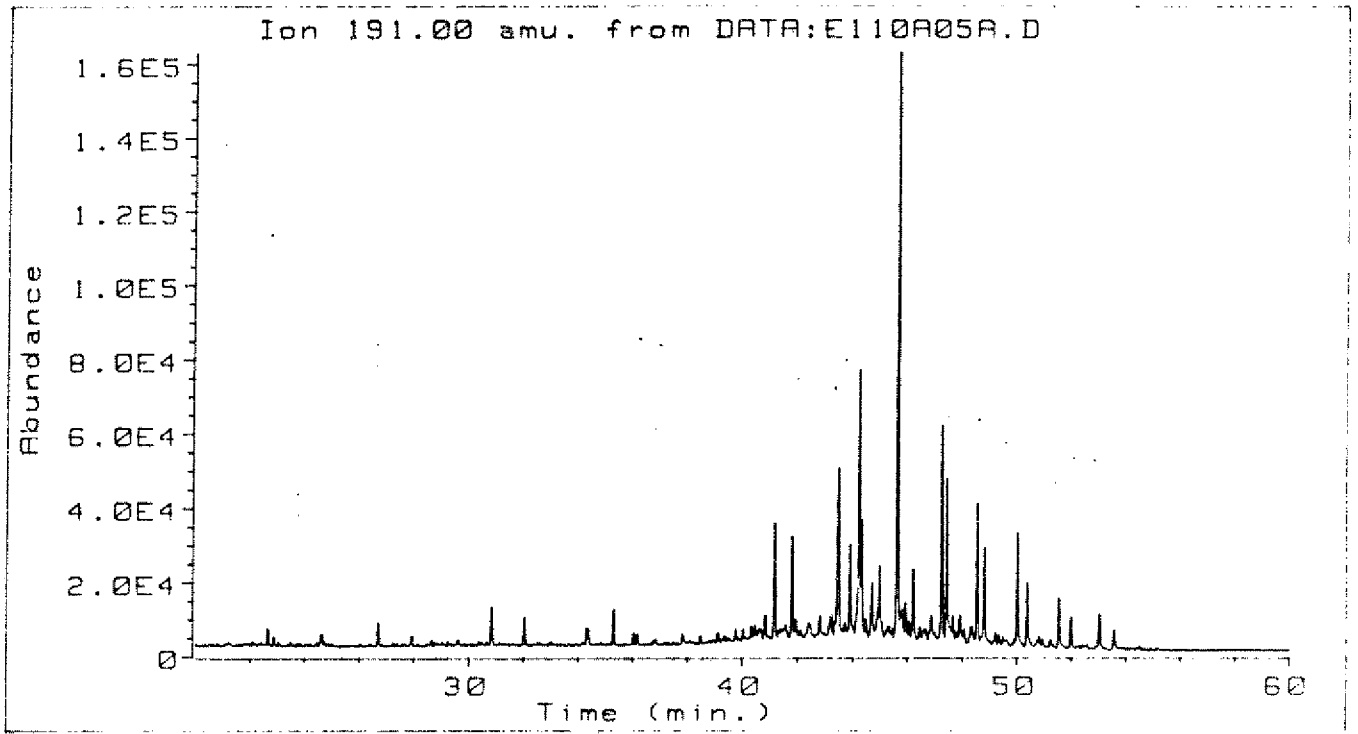
30/9-10

2846 m



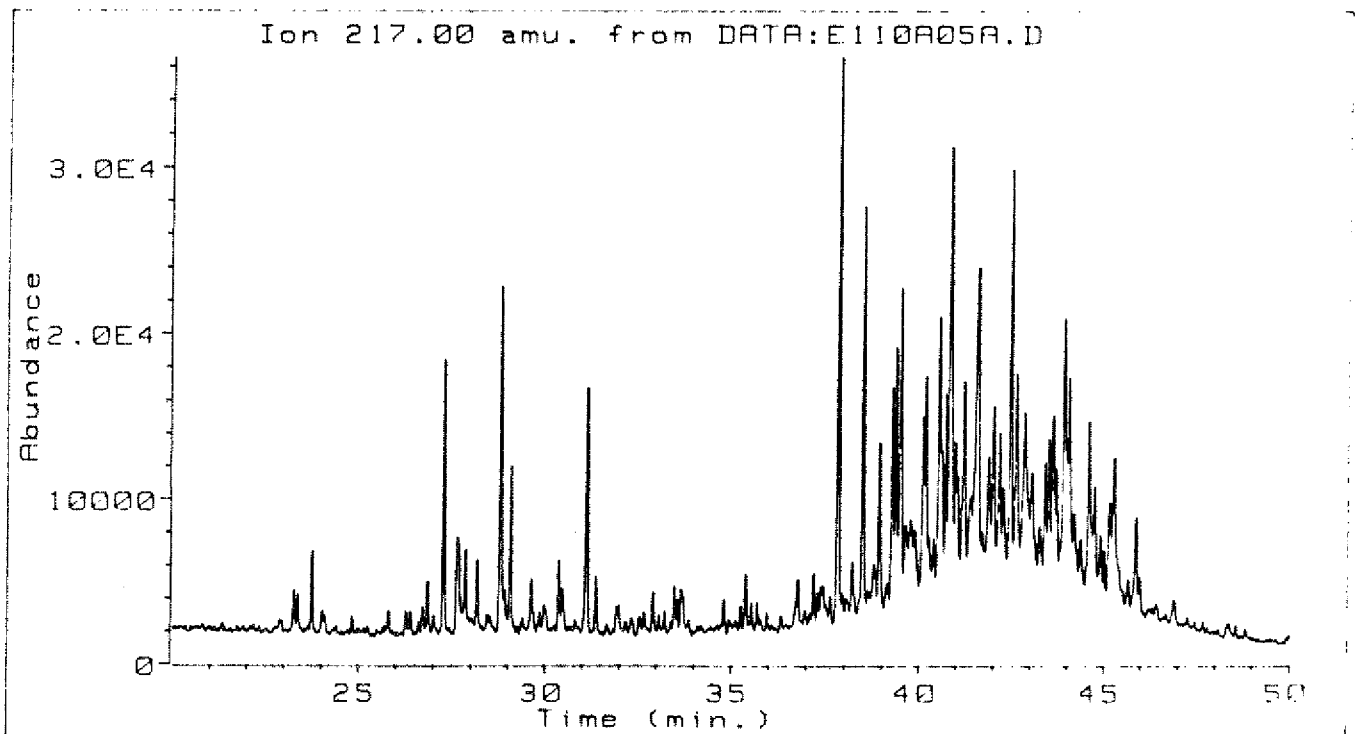
30/9-10

2846 m



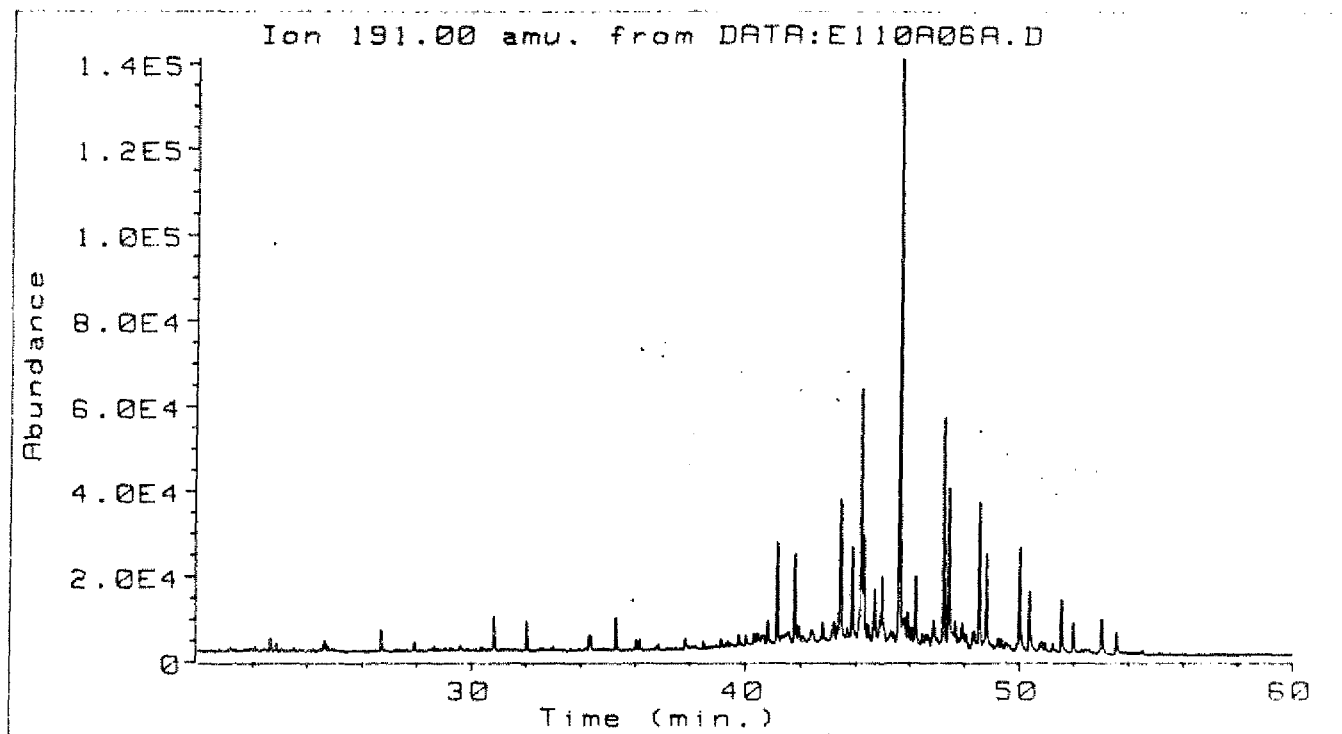
30/9-10

2852.5 m



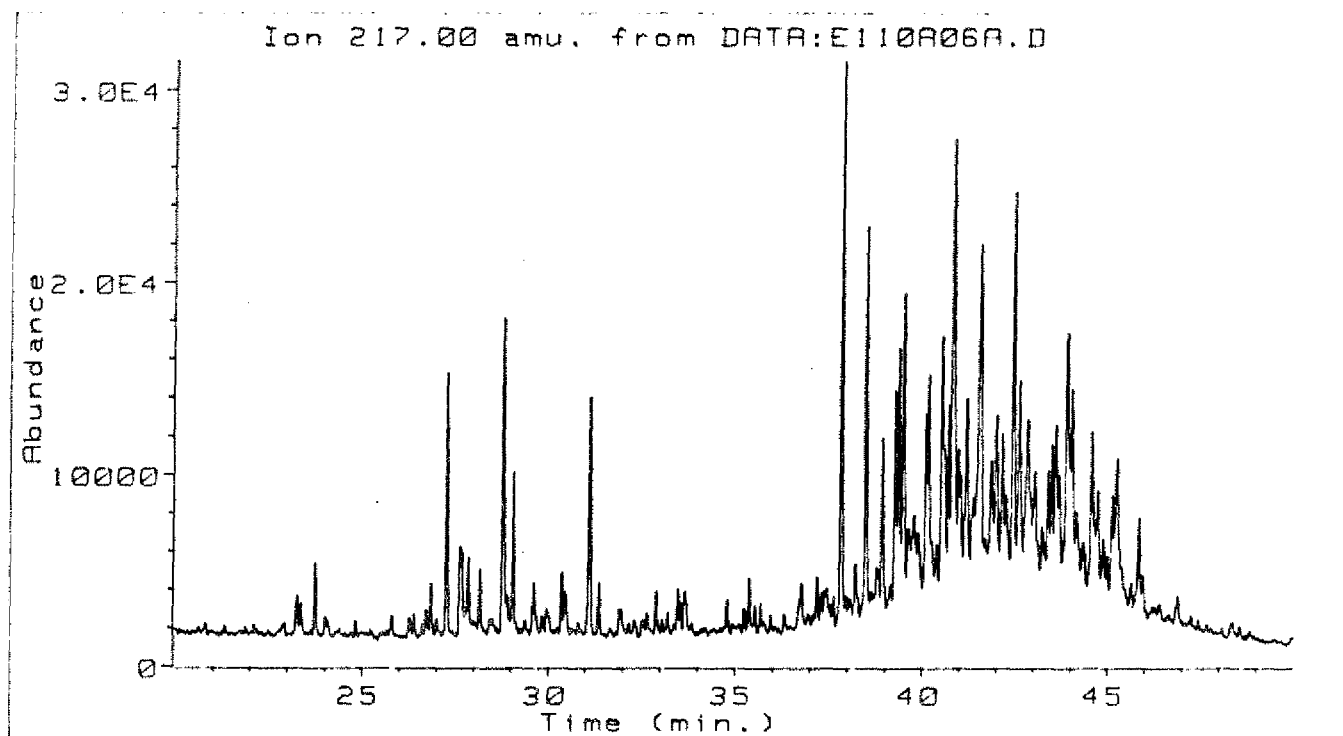
30/9-10

2852.5 m



30/9-10

2856.5 m



30/9-10

2856.5 m