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Title GEOCHEMICAL EVALUATION AND HYDROCARBON CHARACTERISATION STUDY OF WELL 6406/3-3

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Abstract

Interbedded shales within the Nesna Formation are rich with a hydrocarbon potential for gas/condensate. Most of the shales within the above and the Engelvær Formations are poor source rocks for minor gas generation. The evaluation of the above formations are difficult to perform due to severe burning effects caused by the turbo drilling.
Fair to good source rocks for gas/condensate are detected within the Tomma (unit II), Leka and Aldra Formations.
Strong shows of a suspected medium gravity oil is found within the early mature Nesna Formation. Weaker, but similar shows are detected within the Engelvær Formation, while minor shows of a somewhat more waxy and different character are seen within the Tomma (unit II) and Leka Formations. Strong shows within the Tomma (unit I) sandstones are similar to the Nesna hydrocarbons and are therefore believed to belong to the same "oil family". These hydrocarbons are further believed to have been sourced "off structure" from similar source facies but at a slightly higher level of maturity.
A possibly old hydrocarbon-oil contact is speculated within the interval 3957.18-3964.88 metres (drillers depth) of the Tomma Formation.

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GEOCHEMICAL EVALUATION AND HYDROCARBON CHARACTERISATION STUDY OF WELL 6406/3-3

EXECUTIVE SUMMARY

The strata from 1610 - 4407.8 m RKB have been evaluated. Within the Nesna Formation the interbedded rich shales are at the early oil generation level of maturity. These shales have potential for gas/condensate.
The rest of the Nesna shales and the Engelvær shales are poor source rocks for minor gas generation. Both Nesna and Engelvær shales show various degrees of burnt effect due to turbo drilling. The effect is generally severe.

Drifted coals occasionally found within the Tomma I unit show potential for gas/condensate while scattered shales within the Tomma II unit and the Leka and Aldra Formations are fair to good source rocks for gas/condensate and gas, respectively.

Strong shows of a medium gravity crude was found in the Nesna Formation while minor shows of similar crudes were detected in the Engelvær Formation. Minor shows of a somewhat waxy and different character of hydrocarbons were shown in the Tomma II unit and within the Leka shales.
Strong shows within the Tomma I unit are similar to the Nesna hydrocarbons and they are likely to belong to the same "oil family" but sourced off structure at a slightly higher level of maturity.

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1. INTRODUCTION

The present report makes a maturity evaluation from 1610 - 4407.8 mRKB and a source rock and migrated hydrocarbon evalutation in the section 3801 - 4263 mRKB in the Statoil Haltenbanken Well 6406/3-3 (β).

The analytical program format for the study was designed to solve the following questions:

1) What is the hydrocarbon potential of the source rocks encountered in this well with respect to richness, proneness for oil and/or gas and maturity level?

2) Are there any shows of migrant hydrocarbons in the Jurassic reservoir sequences and what are the likely source rocks?

1.1 General information

Analytical program for source rock evaluation

1) Sample preparation and description
2) TOC and Rock-eval analyses
3) Vitrinite reflectance analyses
4) Kerogen preparations
5) Kerogen description and TAI
6) Extraction, quantification and separation into saturates, aromatics, asphaltenes and NSO's
7) Gas chromatography of saturate fractions
8) Gas chromatography of aromatic fractions and MPI
9) Quantified pyrolysis gas chromatography
10) Isotopic composition (13C/12C) of extracts, saturates, aromatics, NSO's, asphaltenes and kerogen.

11) GC/MS analyses of saturate fraction biomarkers ($^m/z$ 177, 191, 205, 217, 218, 231 and 259)

Analytical program for migrant hydrocarbon evaluation

1) Sample preparation and description
2) Extraction, quantification and separation into saturates, aromatics, asphaltenes and NSO's
3) Gas chromatography of saturate fractions
4) Gas chromatography of aromatic fractions and MPI
5) Isotopic composition (13C/12C) of extracts, saturates, aromatics, NSO's and asphaltenes
6) GC/MS analysis of saturate fractions biomarkers ($^m/z$ 177, 191, 205, 217, 218, 231 and 259)

Preliminary formation tops:

KBE 29 m

					Zone
Sula	Group		331 m	RKB	A
Sklinna	-"-		1390	-"-	B
Skomvær	-"-		2256	-"-	C
Flatøy	-"-		2368	-"-	D
Finnvær	-"-		3188	-"-	E
Grip	-"-				F
		Nesna Formation	3800	-"-	
		Engelvær -"-	3843	-"-	
Halten	-"-				G
		Tomma Formation Unit I	3939	-"-	
		Tomma -"- Unit II	4038	-"-	
		Tomma -"- Unit III	4066	-"-	
		Leka -"-	4131	-"-	
		Aldra -"-	4201.5	-"-	
		Hitra	4404	-"-	
TD			4416	-"-	

Core intervals:

Core no. 1 : 3938 - 3956 m

Core no. 2 : 3956 - 3974 m

SWC interval:

3974 - 4413.8 mRKB

Turbodrilling interval:

3198 - 3936 mRKB

CSG shoes:

30"	442 mRKB
20"	1065 -"-
13 3/8"	2301 -"-
9 5/8"	3918 -"-
7"	4415 -"-

Field logs were available for this study. Discrepances between drillers and loggers depth with respect to the core analyses have not been adjusted for. The project was carried out in accordance with Statoil's standard analytical requirement for work within organic geochemistry.

2. RESULTS AND DISCUSSION

2.1 Zonation

The zonation in this well is based on the preliminary formation tops given, and there is a question whether or not the Hitra Formation (at 4404 mRKB) was encountered.

2.2 Amount and type of organic matter.

The organic carbon content of a sediment is a measure for the amount of organic matter. The source richness is influenced by both the type of organic matter, the character of the hydrocarbon product in the form of oil or gas and also the organic matter response to thermal maturation. The source rock richness has in this project been rated by the following scheme.

	S_2 (mg HC/g rock)	TOC (%)	C_{15+} HC (SATS+ARO) (ppm)
Poor Source	<2	<0.5	< 100
Fair -"-	2-3	0.5-1.0	100-200
Good -"-	3-5	1.0-3.0	200-500
Very good Source	5-10	3.0-5.0	500-1000
Rich Source	>10	>5	>1000

The Zone F grey coloured claystones (3800-3843 mRKB) show a low content of organic carbon (ave. 0.9%) with a pyrolysable organic matter amount of approx 0.3 mg HC/g rock. These claystones are, thus, poor also confirmed by extract data, and their organic matter is chemically classified from rock-eval analyses as kerogen type IV. Two minor dark grey to black mudstone samples at 3804 and 3834 mRKB, respectively, contain 7.1-7.8% TOC and the amount of pyrolysable organic matter is 9.2 - 15.3 mg HC/g rock. These mudstones are believed to represent the best source rocks of the Upper Jurassic Nesna Formation in this well. These samples are classified as very good to rich source rocks for gas/condensate from a kerogen of type III, and extract data confirms this. One should, however, bear in mind that the possibility of getting a false impression of this sequences is present, due to the fact that turbine drilling is fatal to organic material in the sediments. The claystones of this sequence is elsewhere described as burnt to various extent due to this type of drilling.

The lower part of Zone F (3843-3939 mRKB) contains poor grey claystones with a TOC content of approx 0,8%, yielding only about 0.3 mg HC/g rock by rock-eval pyrolysis. Extract data classify the claystones as fair and the source rock. Kerogen is chemically classified as type IV with a rest potential for only traces of gas. Richer samples (TOC 1.6 - 2.2%) are described as mud additives.
The turbine drilling effect is also seen in this interval and may in part account for the diverse classification of the source rocks found.

The upper part of Zone G (3939-4038 mRKB) was analysed by means of a coal sample from 3964.62 m (core depth). A TOC value of 68.9% and a pyrolysable amount of 208.3 mg HC/g rock classify the sample as a source for gas /condensate. At this depth there is a discrepancy

of 4-5 m between the driller and the loggers depths, of which the latter in the deepest. This interval belongs to the Tomma Formation unit I.
The Tomma Formation unit II (4038-4066 m RKB) of grey to dark grey claystones with an average TOC content of 2.5% (range 1.6 - 3.3% TOC). The pyrolysis yields were in the range 1.5 - 3.5 mg HC/g rock and these claystones are, thus, at the best good source rocks with a potential for generation of gas/condensate. This is in keeping with extract data which classify the claystones as good source rocks.
The Leka Formation (4131 - 4201.5 m RKB) contains also grey to dark grey claystones with very similar hydrocarbon potential as the above sequence. An average of 3% TOC and about 3.6 mg HC/g rock of pyrolysate classify the source rock kerogen as type III/IV with a potential for gas, and the source rock itself is classified as fair to good.

The Aldra Formation (4201.5 - 4404 m RKB) claystones analysed are similar to the source rock samples from the above sequences within the Zone G.

Short summary

Zone F/ Nesna Fm.: Poor source rocks for minor gas generation. Occasionally very good to rich source rocks for gas/condensate.
Engelvær Fm.: Poor source rocks for minor gas generation

The turbodrilling effect is severe.

Zone G/ Tomma Fm. unit I: Drifted coals occasionally found with source potential for gas/condensate.
Tomma Fm. unit II: Fair to good source rocks for gas/condensate.
Leka Fm.: Fair to good source rocks for gas.

Aldra Fm.: Interbeds. of fair to good source rocks for gas/condensate.

2.3 Thermal maturation

Thermal maturity in this well was evaluated by means of vitrinite reflectance analyses, and thermal maturation index (TAI) and also sporinite fluorescence techniques. Pyrolysis Tmax data available were of no use within the 3800 - 3939 mRKB interval due to the burnt sediments caused by turbo drilling. Below this interval the Tmax values were used.

Parameters used for evalutation of maturity of the sediments.

Kerogen type II

	%Ro	SCI (RRI)	SF[1)]	Tmax (^{0}C)[2)]
Immature	<0.5	1.0-3.5	3,4	<425
Early mature	0.5-0.7	3.5-4.5	5,6	425-435
Oil mature	0.7-1.0	4.5-7.0	7	435-460
Oil/Condensate	1.0-1.3	7.0-9.0	8,9	>460
Wet gas	1.3-2.0	>9.0	-	
Dry gas	>2.0			

1) SF

SF	3	Yellow
	4	Yellow orange
	5	Light orange
	6	Mid-orange
	7	Dark orange
	8	Orange-red
	9	-"-

2) After Espitalié *et al.*, 1986.

MATURATION, WELL 6406/3-3

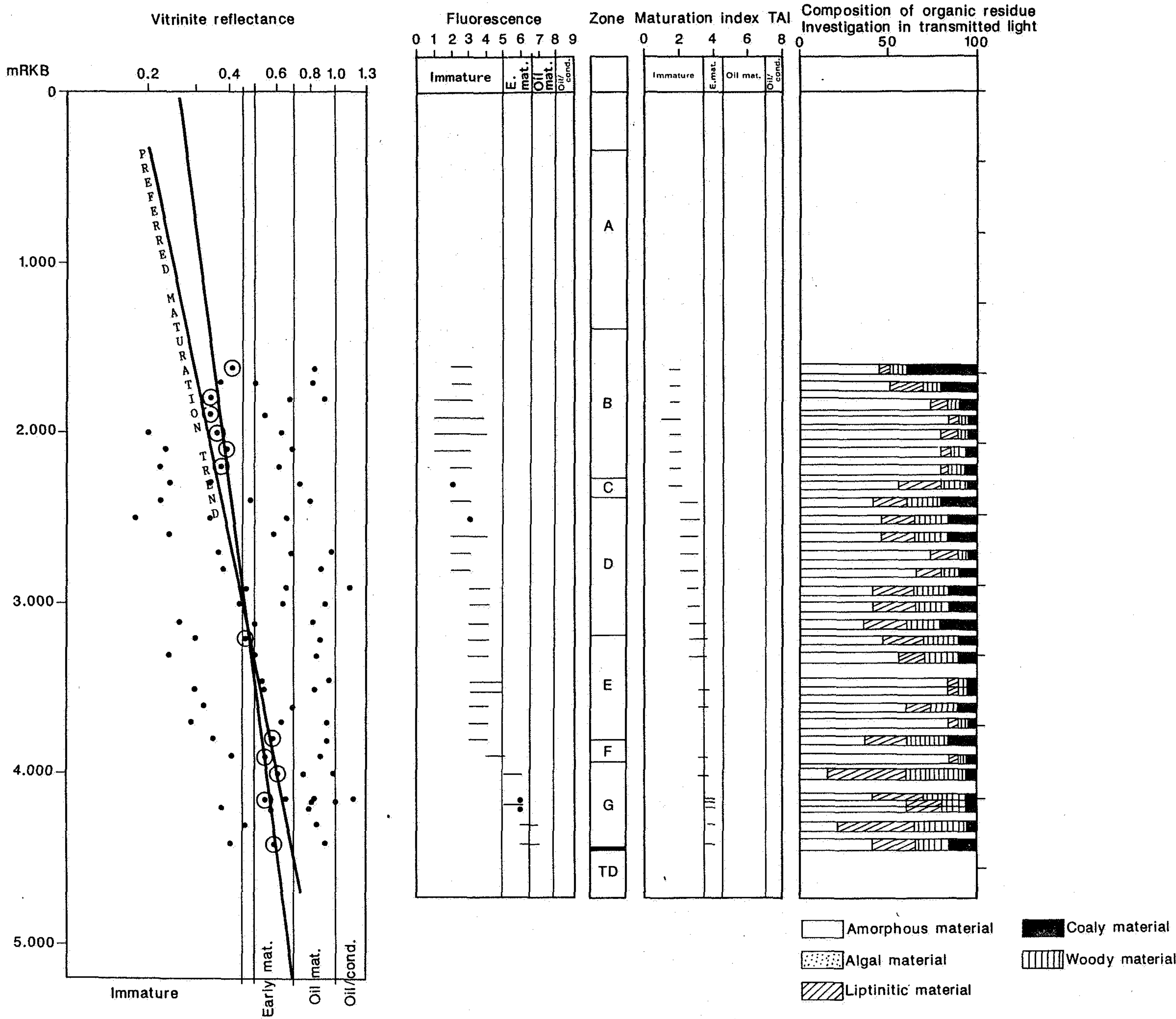


Figure 1

The present maturity data suggest immature sediments down to approx. 3.300 - 3.400 mRKB based upon vitrinite reflectance analyses. Some support to this finding is given by the sporinite flourscence data while the TAI passes into the early mature zone 2-300 m shallower. Based upon the best vitrinite reflectance line through the most reliable data points, the oil mature stage (0.7 - 1.0% R_o) is not encountered in this well in contrast to suggestions both from the sporinite fluorescence and the TAI.

If the best vitrinite reflectance data and approx 0.2% R_o at the sea floor are used, the intercept with the boundary immature to early mature stages remains the same while the oil mature zone may be entered at 4.400 ± mRKB. This is to some extent supported by the sporinite fluorescence data while the TAI apparently passes into the oil mature zone at somewhat deeper strata.

Tmax values are 440 - 442 ^{0}C below 4044 mRKB, indicating the sediments to be within the early part of the oil window for a kerogen of type III.

Short summary

Zone F/ Nesna and Engelvær Fm are within the early mature zone for oil while the oil window is not reached before at least the TD (4416 mRKB) has been passed.

2.4 Show detection

Dark grey to black mudstones at 3804-3807 mRKB in Zone F belong to the Nesna Formation (3800-3843 mRKB) and yielded 15 661 ppm EOM of which 5790 ppm (36.97%) was C_{15+} hydrocarbons. The hydrocarbons are largely indigenous but the saturate fraction chromatogram indicates the possibility of some contamination. Leaner shales at 3807-3828 mRKB with less than 100 ppm of extracted C_{15+} hydrocarbons show indigenous species with some contamination from the mud system suspected.
At 3831-3834 mRKB black to dark grey shales yielded 3744 ppm of indigenous C_{15+} hydrocarbons. The saturate fraction chromatogram may infer the presence of a medium light crude oil and somewhat different to the oil at 3804-3807 mRKB.

Extracts from the lower part of Zone F (Engelvær Fm: 3843-3939 mRKB) show at 3858 $\pm$ metres less than 120 ppm of extractable C_{15+} hydrocarbons from a suspected medium light in situ produced oil. The saturate fraction chromatogram shows also some drilling introduced contamination.
At 3912 $\pm$ and 3933 $\pm$ mRKB the extracts consists largely of introduced contamination from the drilling.

Samples from the upper part of Zone G belongs to the Tomma Fm. unit I (3939-4038 mRKB) which is normally an important reservoir sequence in the Haltenbanken area. Extracts from 4372 to 80 ppm of rock were found to contain C_{15+} hydrocarbons in yields from 2879 to 8 ppm. A drop in the C_{15+} hydrocarbon amount was observed at about 3957 $\pm$ metres, above which a mature medium light crude oil with a slightly waxy appearance was found. Below 3957 $\pm$ metres the leaner core samples yielded extracts containing significantly more of the heavier wax hydrocarbons relatively to the samples above as judged from the saturate fraction chromatograms.

SHOW DETECTION, WELL 6406/3-3

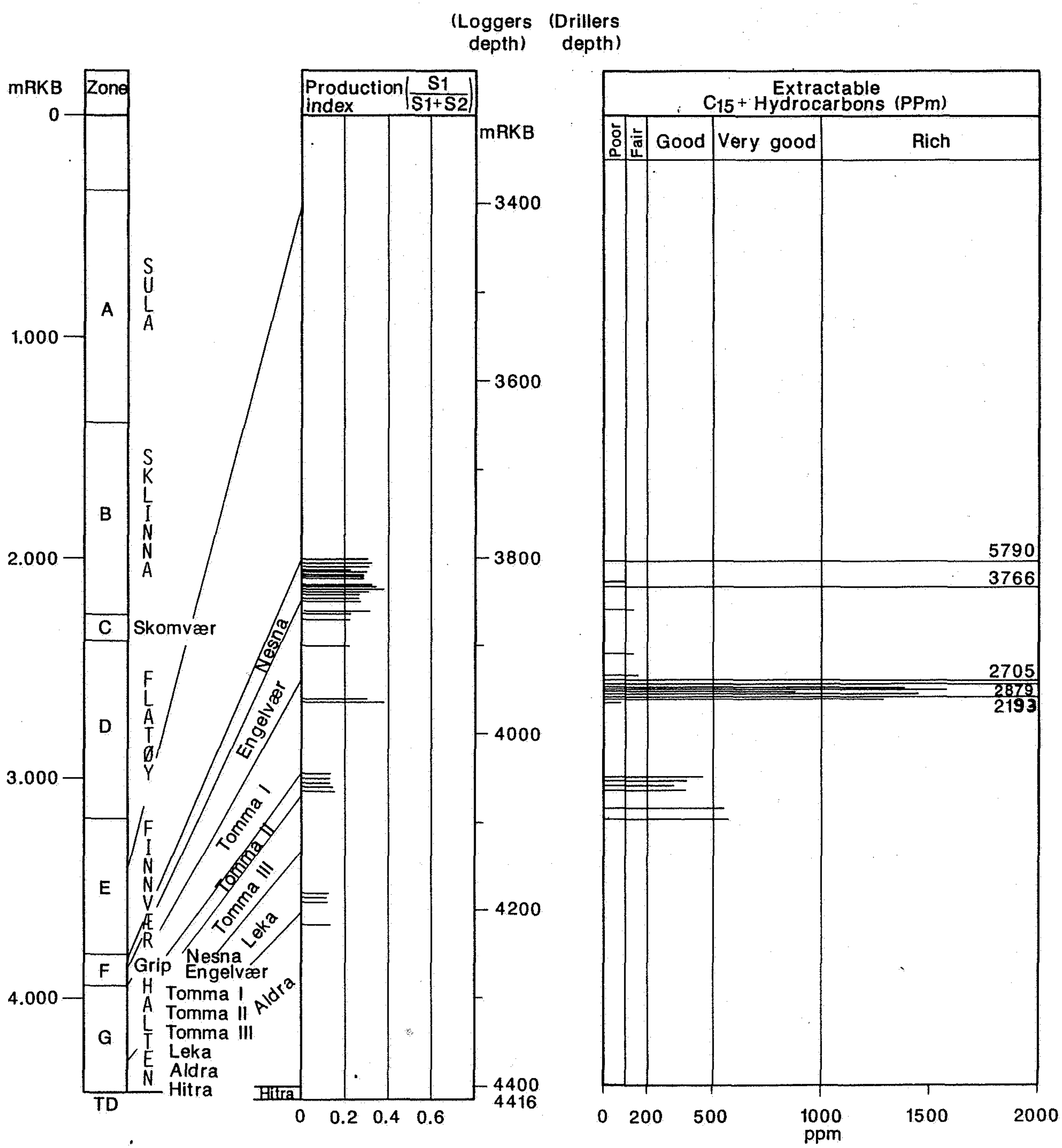


Figure 2

The grey to dark grey claystones from the Tomma Fm. unit II (4038-4069 mRKB) belongs to Zone G. The extracts yielded less than 55 ppm of hydrocarbons from an EOM of 2882-1735 ppm. The C_{15+} saturate fraction chromatograms at 4053 ±, 4059 ± and 4062 ± metres indicate the presence of a medium light to light crude possibly *in situ* generated. A significant portion of the C_{15+} saturate fraction is drilling induced contamination. The sample at 4050 ± metres is believed to be more representative of the indigenous hydrocarbons since less contamination appears in the chromatogram.

Grey to dark grey claystones from the Leka Formation (4131-4201.5 mRKB) yielded about the same amounts of EOM in ppm as the Tomma Formation unit II above. About 550 ppm of C_{15+} hydrocarbons were found and the sample at 4182 ± metres shows a chromatogram very similar to above. The extract at 4191 ± metres shows a rather more waxy appearance even when somewhat more aromatic/naphthenic "humps" on the chromatographic base line are considered. Less drilling introduced contaminants compared to hydrocarbons of indigenous nature are seen.

Short summary

Zone F/ Nesna shales: shows of medium light crude oils
Engelvær shales: shows of a medium light crude.

Zone G/ Tomma I sands: shows of mature medium light crude oil, slightly waxy.
Tomma II claystone: shows of a medium light to light crude oil.
Leka claystones: shows as above.

2.5 Show characterisation and correlation

From the C_{15+} saturate fraction chromatograms the Nesna Fm. shales extracts at 3804-3807 and 3831-3834 mRKB show a mid gravity oil sourced from a dominantly marine source deposited under suboxic sedimentary conditions.
At 3858 mRKB within the Engelvær Fm. shales traces of a similar show as above is also found.
The Tomma I extracts from the interval 3938-3956 mRKB are slightly more waxy mid gravity oils but otherwise of a similar nature to the above Nesna and Engelvær shows with respect to source rocks. A not to high level of maturity is indicated.
Shows in the Tomma II and Leka shales are difficult to evaluate properly due to possibly drilling introduced contamination.

Aromatic fraction chromatograms support similar source rocks for the Tomma I extract hydrocarbons from the interval 3938-3957 mRKB.

Biomarker analyses of the Nesna Fm. extracts at 3807 and 3828 mRKB indicate a maturity level within the early part of the oil window, in keeping with the vitrinite reflectance results above. The biomarkers indicate, furthermore, a dominance of terrigenous organic matter within these shales.
At 3804+07 and 3831+34 mRKB the biomarker analyses indicate hydrocarbons sourced from dominantly marine organic matter from a peak mature siliciclastic source rock sequence.
The Engelvær Fm. extract sample at 3858 mRKB is similar to the more terrigenous organic matter sourced hydrocarbons above, while the samples at 3912 and 3933 mRKB, respectively, are more similar to the more marine extracts.

The Tomma I extracts from the sequence 3938.8-3957.18 mRKB are very similar with respect to the biomarker assemblage. A marine siliciclastic source rock sequence similar to the above Nesna Fm. marine shales but at a higher level of maturity is a possible candidate as a source rock for the Tomma I extract hydrocarbons.

Tomma II shale extracts at 4050-4062 mRKB are similar with respect to the biomarker contents. The extracts are less mature than the above Tomma I extracts, but still within the oil window. The hydrocarbons were sourced from siliciclastic source rocks with a mixture of marine and terrigenous organic matter.

The Leka shale extracts at 4182 and 4191 mRKB are very similar to the above Tomma II shale extracts.

The isotopic compositions of the Nesna Fm. shale extract saturates and aromatics indicate similar types of source rocks as for the Tomma I shows, and marine to slightly marine /terrigenous source rocks are invoked for these samples. The Engelvær Fm. extracts show a somewhat different isotopic signature, and are believed to be more terrigenously related. Tomma II and Leka shales extracts are apparently more mature than the samples above and sourced from a mixed marine/terrigenous organic matter within the source rocks.
Taken a certain kerogen facies variation within the Nesna Fm. source rocks into account, it is fairly evident that the extracts from these shales were generated from the host shales. The close relationship between the Tomma I extracts and the Nesna Fm. shale extracts is a fairly strong evidence for the hypothesis that the above source rocks "off structure" are the main source for the Tomma I hydrocarbons.

Short summary

Zone F/ Nesna shales: shows of medium light crude oils <u>in situ</u> generated from the most promising source rocks.

Engelvær shales: in part similar to the above.

Zone G/ Tomma I sands: shows of slightly waxy mid gravity oils with a source like the best Nesna Fm. shales "off sturcture."

Tomma II claystones: shows of suspected crudes from mixed marine/terrestrial sources. Possibly <u>in situ</u> generated.

Leka shales: shows of possibly <u>in situ</u> generated crudes. Similar to the Tomma II hydrocarbons above.

3 CONCLUSIONS

Zone F/ the Grip Group (3800 - 3939 mRKB) with the Nesna Formation (3800 - 3843 mRKB), and the Engelvær Formation (3843 - 3939 mRKB), respectively, contains mainly claystones with a substantial amount of cavings, and the claystones are burnt to various degrees as a result of severe turbo drilling effect. The Nesna Formation contains generally poor source rocks for gas and only occasionally very good to rich source rocks for gas/condensate. The Engelvær Formation contains only poor source rocks for minor gas generation. The Zone F is within the early maturity stage for oil and shows of in situ generated medium light crude oil are found.

Zone G/ the Halten Group (3939 - 4416 mRKB, TD) includes the Tomma, Leka and Aldra Formations.
The Tomma I unit (3939 - 4038 mRKB) is a sandstone interval with no source rock potential apart from occasionally found coals with potential for gas/condensate. Very good to rich shows of medium light to light crudes with a slightly waxy appearance within this unit are likely to have been generated from the most promising type of Nesna shales at a higher level of maturity "off sturcture". Grey to dark grey claystones within the Tomma II unit (4038 - 4069 mRKB) are at the best fair to good source rocks for gas/condensate. The maturity level is early oil mature, and fair to good shows of possibly in situ generated medium light to light crudes are shown. The source rocks are supposed to contain a mixture of marine and terrestrial organic matter.
The Leka (4131 - 4201.5 mRKB) and the Aldra (4201.5 - 4404 mRKB) Formations contain also

grey to dark grey claystones with a hydrocarbon potential similar to the Tomma II claystones. Shows of medium light to light crude oil sourced from marine/terrestrial organic matter possibly in situ where the level of maturity is within the early stage for oil.

Descriptions of cuttings and SWC's used for maturity evaluations.

WELL no.: 6406/3-3

LITHOLOGIC DESCRIPTION: Cuttings

Sample no.	Depth mRKB	TOC	Lithology — Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1898	1610		60% Sltst: m gry, calcareous, mod hard
			20% Lst: lt beige to m gry, calcareous
			20 Quartz: clear to m gry, clr
			Tr: Glauconite
S 1899	1700		70% Sltst: m gry, calcareous, mod hard
			10% Lst a/a
			20% Quartz: a/a
			Tr: Pyrite
S 1900	1790		40% Sltst: drk brn gry, mod hard, calcareous
			20%Lst: lt beige to m gry, mod hard, calcareous
			20% Quartz: clear to milky white
			20% Quartz: white, lt gry to clr, calcareous
			Tr: Coal
S 1910	1900		95% Sltst: brn. gry to drk brn. gry, mod hard, calcareous
			5% Quartz: clear, lt gry to drk gry
S 1902	2000		10% Sltst: brn gry to drk brn gry, mod hard, calcareous
			80% Sltst: lt beige to lt brn gry. mod hard, calcareous
			10% Clyst: lt gry to lt grn gry mod hard
			Tr: Quartz
S 1903	2100		70% Clyst: lt gn gry to drk grn gry, mod hard
			30% Sltst: brn gry .... a/a
			Tr: Quartz
S 1904	2200		60% Clyst: lt gry to lt grn/gry, mod hard
			10% Sltst: a/a
			30% Sltst: lt gry, mod hard
			Tr: Dolomite, quartz

WELL no.: 6406/3-3

LITHOLOGIC DESCRIPTION: Cuttings

Sample no.	Depth mRKB	TOC	Lithology Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1905	2300		10% Clyst: lt gry to grn gry, mod hard
			15% Clyst: drk brn red, mod hard
			40% Sltst: drk ol gry, mod hard
			35% Sltst: lt gry to lt brn gry, mod hard
			Tr: Pyrite, coal
S 1906	2400		85% Sltst: drk gry, mod hard
			10% Clyst: lt gry to gry, mod hard
			5% Clyst: lt gn to grn, mod hard
			Tr: pyrite, dolomite, quartz, lst
S 1907	2500		100% Sltst: drk gry, mod hard
			Tr: Clyst: lt grn gry, pyrite, mudst.
S 1933	2600		97% Sst: drk brn gry, well sorted, coarse, calcareous
			3% Sltst: drk gry, mod hard
S 1934	2700		90% Sst: a/a
			10% Sltst: a/a
			Tr: dolomite, Clyst: grn
S 1935	2800		50% Sst: lt gry to m gry, well sorted, coarse calcareous
			35% Sltst: drk gry, mod hard
			15% Clyst: grn gry to gry, mod hard
			Tr: Pyrite, dolomite
S 1936	2900		30% Sst: lt gry to m gry, well sorted, coarse, calcareous
			70% Sltst: drk gry, mod hard
			Tr: Lst, dolomite

LITHOLOGIC DESCRIPTION: Cuttings

Sample no.	Depth mRKB	TOC	Lithology — Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1937	3000		100% Sh: m gry to drk gry, mod hard
			Tr: Sst, pyrite, grn clst
S 1938	3110		90% Sh: a/a
			10% Sltst: m brn gry, mod hard
			Tr: Sst, pyrite, dol, lst
S 1939	3201		60% Sh. a/a
			40% Sltst: a/a
			Tr: quartz, pyrite, clyst: grn, dol, painting
S 1940	3300		95% Sltst: m gry to drk gry, mod hard
			5% Clyst: lt gry to lt grn gry, mod hard
			Tr: Dol, quartz, lst
S 1941	3450		25% Sh; drk gry, mod hard
			70% Slty mudst: drk gry, mod hard
			5% Sltst: lt gry to drk gry, mod hard
			Tr: Quartz
S 1942	3501		70% Slty mudst: a/a
			30% Sh: a/a
			Tr: Sst, pyrite
S 1943	3603		55% Slty mudst: a/a
			40% Sh: a/a
			5% Sltst: m gry, mod hard
			Tr: Pyrite
S 1944	3702		80% Silty mudst: a/a
			10% Sh: a/a
			10% Sltst: a/a
			Tr: Dol, Sst

LITHOLOGIC DESCRIPTION: Cuttings

Sample no.	Depth mRKB	TOC	Lithology Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
1945	3801	0.88	90% Sh: drk gry, mod hard
			5% Sltst: m gry, mod hard
			5% Sltst: brn red, mod hard
			Tr: Dol, pyrite
1946	3903	Sh: 0.98 Turbo: 0.97	85% Slty mudst: very drk gry to clr, mod hard
			15% Sltst: drk gry, mod hard
			Tr: Sltst: red brn, dol.
1947	4002		50% Sltst: m drk gry to clr, mod hard
			50% Sst: clear to white, well sorted, coarse
			Tr: Sltst: drk brn red, dol, coal, pyrite

WELL no.: 6406/3-3

LITHOLOGIC DESCRIPTION: SWC

Sample no.	Depth mRKB	TOC	Lithology Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1948	4151.7		Clyst: lt to drk gry, lt brn gry modhard
S 1949	4174.8		" lt gry to clr "
S 1950	4201.4		" clr to brn clr "
S 1951	4300.8		" a/a
S 1952	4407.8		" a/a

Description of cuttings and cores used for source rocks and hydrocarbon evaluations

LITHOLOGIC DESCRIPTION:

Sample no.	Depth mRKB	TOC	Lithology Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1954	3804	0.89	40% Claystone, grey, mod hard
			5% Claystone, reddish brown, mod hard
			25% Siltstone, light grey occ. brownish grey, mod
			hard, fine occ. calcareous
			10% Sandstone, quarts, fine, well sorted
		(B) 7.14	20% Turbo drilled mud stone, dark grey to black firm.
			Tr: Dolomite, siderite, carbonate, limestone.
S 1955	3807	0.81	50% Claystone, grey as above
			5% Claystone, reddish brown as above
			25% Siltstone as above
			10% Sandstone as above
			10% Turbo drilled mudstone as above
			Tr: Dolomite, siderite, carbonate, limestone
S 1956	3813	0.94	80% Claystone, grey occ. greenish, mod hard
			5% Claystone, reddish brown
			10% Siltstone as above
			5% Sandstone as above
			Tr: Pyrite, Dolomite, carbonate, limestone
S 1957	3816	0.83	80% Claystone, grey
			5% Claystone, reddish brown
			10% Siltstone as above
			5% Turbo drillied mudstone as above
			Tr: Pyrite, Dolomite, quartz, carbonate, limestone,
			siderite.

WELL no.: 6406/3-3 Cuttings

LITHOLOGIC DESCRIPTION:

Sample no.	Depth mRKB	TOC	Lithology - Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1958	3819	0.89	80% Claystone, grey
			5% Claystone, reddish brown
			10% Siltstone as above
			5% Turbo drilled mudstone
			Tr: Pyrite, Dolomite, quartz, carbonate, limestone
S 1959	3822	0.96	70% Claystone, grey
			5% Claystone, reddish brown
			10% Siltstone, as above
			15% Turbo drilled mudstone
			Tr: Pyrite, Dolomite, quartz, carbonate, limstone
S1960	3828	0.95	65% Claystone, grey
			5% Claystone, reddish brown
			10% Siltstone, as above
			20% Turbo drilled mudstone
			Tr:Pyrite, Dolomite, carbonate, limestone, glauconite
S 1961	3831	0.80	70% Claystone, grey
			5% Claystone, reddish brown
			10% Siltstone as above
			15% Turbo drilled mudstone
			Tr: Pyrite, Dolomite, Carbonate, Limestone

LITHOLOGIC DESCRIPTION: Cuttings

Sample no.	Depth mRKB	TOC	Lithology Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1962	3834	0.75	65% Claystone, grey
			5% Claystone, reddish brown
			5% Siltstone, as above
		(B) 7.75	25% Turbo drilled mudstone
			Tr: Pyrite, Dolomite, carbonate, limestone
S 1963	3837	0.82	65% Claystone, grey
			5% Claystone, reddish brown
			5% Siltstone, as above
			25% Turbo drilled mudstone
			Tr: Pyrite, Dolomite, carbonate, limestone, glauconite
S 1964	3840	0.88	60% Claystone grey
			5% Claystone, reddish brown
			5% Siltstone, as above
			30% Turbo drilled mudstone
			Tr: Pyrite, Dolomite, carbonate, limestone
S 1965	3846	0.80	60% Claystone, grey
			5% Claystone, reddish brown
			30% Turbo drilled mudstone
			Tr: Pyrite, Dolomite, carbonate, limestone, glauconite.

LITHOLOGIC DESCRIPTION: Cuttings

Sample no.	Depth mRKB	TOC	Lithology — Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1966	3849	0.80	60% Claystone, grey
			5% Claystone, reddish brown
			5% Siltstone, as above
			30% Mud additive
			Tr: Pyrite, Dolomite, carbonate, limestone, quartz
S 1967	3858	0.70	50% Claystone, grey
			5% Claystone, reddish brown
			5% Siltstone, as above
			40% Mud additive
			Tr: Pyrite, Dolomite, carbonate, limestone
S 1968	3861	0.91	40% Claystone, grey
			5% Claystone, reddish brown
			5% Siltstone, as above
		B 1.63	50% Mud additive
			Tr: Pyrite, Dolomite, carbonate, limestone
S 1969	3873	0.80	40% Claystone, grey
			5% Claystone, reddish brown
			5% Siltstone, as above
			50% Mud additive
			Tr: Pyrite, Dolomite, carbonate, limestone
S 1970	3879		30% Claystone, grey
			5% Claystone, reddish brown
			5% Siltstone, as above
			60% Mud additive
			Tr: Pyrite, Dolomite, carbonate, limestone

LITHOLOGIC DESCRIPTION: Cuttings

Sample no.	Depth mRKB	TOC	Lithology — Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1971	3882		30% Claystone, grey
			5% Claystone, reddish brown
			15% Siltstone, as above
			50% Mud additive
			Tr: Pyrite, Dolomite, Carbonate, Limestone
S 1972	3894		25% Claystone, grey
			5% Claystone, reddish brown
			20% Siltstone, as above
			50% Mud additive
			Tr: Pyrite, Dolomite, Carbonate, Limestone, Glauconite
S 1973	3912		10% Claystone, grey occ. brownish grey, mod hard,
			occ. silty, occ. calcareous.
		1.60	90% Mud additive
			Tr: Reddish brown Claystone, Carbonate, Limestone
S 1974	3921		10% Claystone as above
			90% Turbo drilled mudstone
			Tr: Reddish brown Claystone, Carbonate, Limestone
S 1975	3924		10% Claystone, as above
			90% Turbo drilled mudstone
			Tr: Reddish brown Claystone, Carbonate, Limestone.

LITHOLOGIC DESCRIPTION: Cuttings

Sample no.	Depth mRKB	TOC	Lithology — Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1976	3930		10% Claystone, as above
			90% Turbo drilled mudstone
			Tr: Reddish brown, claystone carbonate, limestone
S 1977	3933		10% Claystone, as above
		(B)2.22	90% Turbo drilled mudstone
			Tr: Reddish brown claystone, carbonate, limestone
S 1978	4035		30% Claystone, grey to dark grey, ferm, mod hard
			micro-micaceous, silty.
			50% Sandstone, quarts, clear to light grey, medium
			coarse, well sorted, cemented.
			20% Caolinite, with some quarts grain
			Tr: Carbonate, limestone, claystone, pyrite.
S 1979	4041		30% Claystone as above
			50% Sandstone as above
			20% Caolinite as above
			Tr: Carbonate, limestone, claystone.
S 1980	4044	3.32	30% Claystone as above
			50% Sandstone as above
			20% Caolinite as above
			Tr: Carbonate, limestone, claystone

LITHOLOGIC DESCRIPTION:

Sample no.	Depth mRKB	TOC	Lithology — Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1981	4050	2.84	45% Claystone as above
			35% Sandstone, quarts, clear to light grey, medium
			coarse, well sorted, cemented, occ. micro-
			micaceous
			5% Limestone
			5% Coalinite
			Tr: Claystone
S 1982	4053	3.07	45% Claystone as above
			35% Sandstone, as above
			5% Limestone
			5% Caolinite
			Tr: Claystone
S 1983	4059	1.58	75% Claystone, as above
			25% Sandstone, quarts, clear to light, grey, medium
			coarse, well sorted, cemented, occ. micro-
			micaceous, occ. calcareous.
			Tr: Limestone, caolinite, claystone, pyrite.
S 1984	4062	1.79	75% Claystone, as above
			25% Sandstone as above
			Tr: Limestone, caolinite, claystone, pyrite.

LITHOLOGIC DESCRIPTION: Cuttings

Sample no.	Depth mRKB	TOC	Lithology — Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1985	4065		55% Claystone as above
			40% Sandstone as above
			5% Limestone
			Tr: Caolinite, Dolonite, Siltstone
S 1986	4095		85% Sandstone, quarts, clear to light grey, medium
			coarse, well sorted, cemented, occ. micro-
			micaceous
			10% Claystone as above
			5% Caolinite
			Tr: Siltstone
S 1987	4182	3.08	85% Claystone as above
			15% Sandstone as above
			Tr: Siltstone
S 1988	4185	2.75	75% Claystone as above
			20% Sandstone as above
			5% Siltstone, med. grey, micaceous, mod. hard-hard
S 1989	4191	3.14	75% Claystone as above
			20% Sandstone as above
			5% Siltstone as above
S 1990	4215	2.90	70% Claystone as above
			30% Sandstone as above
			Tr: Siltstone, Caolinite, Pyrite

LITHOLOGIC DESCRIPTION:

Sample no.	Depth mRKB	TOC	Lithology Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1991	4248		75% Sandstone as above
			25% Claystone as above
			Tr: Siltstone, Caolinite, Pyrite, Mica
S 1992	4260		80% Sandstone as above
			20% Claystone as above
			Tr: Siltstone, Caolinite, Pyrite, Mica
S 1993	4263		70% Sandstone as above
		2.47	30% Claystone as above
			Tr: Siltstone, Caolinite, Coal fragments,
			coal laminated with clay/siltstone.

LITHOLOGIC DESCRIPTION:

Sample no.	Depth m	TOC	Lithology — Rock name, mod. lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, accessories, fossils, porosity, contamination
S 1908	3938.71-.80		Sst: Clear to lt gry, lt brn, coarse
S 1909	3981.00-.10		Sst: a/a
S 1910	3947.30-.40		Sst: Clear to lt gry to gry, lt brn, coarse
S 1911	3948.00-.10		Sst: Clear to lt gry, lt brn, coarse
S 1912	3949.00-.10		Sst: a/a (Tr: coal)
S 1913	395 .00-.10		Sst: a/a (no coal)
S 1914	3951.00-.10		Sst: a/a
S 1915	3952.00-.10		Sst: a/a
S 1916	3956.29-.35		Sst: Clear to lt gry, to m drk gry, lt brn, course (laminated)
S 1917	3957.08-.18		Sst: Clear to lt gry, lt brn, coarse
S 1918	3962.04		Sst and Coal
S 1919	3964.62		a/a
S 1020	3964.82-.88		Sst: Clear to lt gry, mdrk gry, lt brn, coarse (laminated)
S 1921	3966.58-.65		Sst: Clear to lt gry to lt brn, coarse
S 1922	3971.70-.80		Sst: a/a

Analytical tables

Table 1: ROCK EVAL RESULTS, Well 6406/3-3

	Snr. (Statoil)	Depth (m.)	Sample type	S1 mgHC/g rock	S2 mgHC/g rock	Tmax (°C)	TOC (%)	HI mgHC/gTOC	PP mgHC/g rock	PI
NESNA Fm.	S1945	3801	Ctgs.	0.13	0.28	438	0.88	31.82	0.41	0.32
	S1954	3804	" A	0.16	0.33	429	0.89	37.08	0.49	0.33
			B	4.28	15.34	439	7.14	214.85	19.62	0.22
	S1955	3807	"	0.13	0.29	432	0.81	35.80	0.42	0.31
	S1956	3813	"	0.07	0.24	440	0.94	25.53	0.31	0.23
	S1957	3816	"	0.09	0.21	441	0.83	25.30	0.30	0.30
	S1958	3819	"	0.11	0.28	439	0.89	31.46	0.39	0.28
	S1959	3822	"	0.13	0.34	433	0.96	35.42	0.47	0.28
	S1960	3828	"	0.16	0.34	439	0.95	35.79	0.50	0.32
	S1961	3831	"	0.14	0.27	435	0.80	33.75	0.41	0.34
	S1962	3834	" A	0.13	0.21	428	0.75	28.00	0.34	0.38
			B	4.07	9.18	433	7.75	118.45	13.25	0.31
	S1963	3837	"	0.12	0.30	432	0.82	36.59	0.42	0.29
	S1964	3840	"	0.14	0.40	438	0.88	45.45	0.54	0.26
ENGELVÆR Fm.	S1965	3846	"	0.09	0.25	430	0.80	31.25	0.34	0.26
	S1966	3849	"	0.09	0.24	441	0.80	30.00	0.33	0.27
	S1967	3858	"	0.10	0.21	441	0.70	30.00	0.31	0.32
	S1968	3861	" A	0.10	0.35	434	0.91	38.46	0.45	0.22
			B	0.27	0.14	ND	1.63	8.59	0.41	0.66
	S1969	3873	"	0.07	0.25	434	0.80	31.25	0.32	0.22
	S1946	3903	A	0.08	0.28	436	0.98	28.57	0.36	0.22
			B	0.12	0.07	500(?)	0.97	7.22	0.19	0.63
	S1973	3912	" B	0.20	0.20	ND	1.60	12.50	0.40	0.50
	S1977	3933	" B	0.25	0.16	ND	2.22	7.21	0.41	0.61
TOMMA Fm. T_I	S1918	3962,04	Core	1.42	3.30	445	4,50	73,33	4,72	0,30
	S1919	3964,62	" A	2.11	3.60	452	4,19	85,92	5,71	0,37
			Coal	20.29	208.28	438	68,88	302,38	228,57	0,09
T_{II}	S1980	4044	Ctgs	0.51	3.53	440	3,32	106,33	4,04	0,13
	S1981	4050	"	0.41	2.86	442	2,84	100,70	3,27	0,13
	S1982	4053	"	0.47	3.06	442	3,07	99,67	3,53	0,13
	S1983	4059	"	0.25	1.46	440	1,58	92,41	1,71	0,15
	S1984	4062	"	0.27	1.73	442	1,79	96,65	2,00	0,14
LEKA Fm.	S1987	4182	"	0.49	3.75	440	3,08	121,75	4,24	0,12
	S1988	4185	"	0.47	3.65	440	2,75	132,73	4,12	0,11
	S1989	4191	"	0.45	3.40	440	3,14	108,28	3,85	0,12
ALDRA Fm.	S1990	4215	"	0.43	2.88	440	2,90	99,31	3,31	0,13
	S1993	4263	"	0.41	2.63	446	2,47	106,48	3,04	0,13

Table 2a: EXTRACTION (ppm) AND CHROMATOGRAPHIC DATA, WELL 6406/3-3

	Snr. (Statoil)	Depth (m)	Sample type	EOM	SAT	ARO	Total HC	Total Non HC	ASPH	Pr/n-C_{17}	Ph/n-C_{18}	Pr/Ph
NESNA Fm.	S1954 + S1955B	3804-07	Ctgs B	15661	2766	3024	5790	9871	4153	0.86	0.85	0.90
	S1955	3807	"	711	43	51	94	617	147	0.71	0.65	2.34
	S1960	3828		471	39	54	93	379	124	0.85	0.61	2.63
	S1961 +S1962B	3831-34	B	10840	1595	2171	3766	7075	2805	0.72	0.71	1.17
ENGELVÆR Fm.	S1967	3858	"	426	75	44	119	307	83	0.91	0.83	1.24
	S1973	3912	" B	733	56	75	131	602	219	0.82	0.70	1.24
	S1977	3933	" B	725	76	88	164	561	150	1.03	0.72	1.50
TOMMA Fm.	S1908	3938.8	Core	4372	1939	766	2705	1667	366	0.80	0.81	1.16
	S1909	3941.1	"	3789	2056	823	2879	910	160	0.82	0.81	1.13
	S1910	3947.4	"	2033	968	413	1381	652	144	0.81	0.91	1.02
	S1911	3948.1	"	2222	1119	465	1584	638	85	0.81	0.91	1.03
	S1912	3949.1	"	1327	598	260	858	469	90	0.83	0.93	1.10
T_I	S1913	3950.1	"	2059	1020	440	1460	598	102	0.83	0.91	1.04
	S1914	3951.1	"	3090	1498	695	2193	896	180	0.84	0.92	1.07
	S1915	3952.1	"	3098	1456	507	1963	1135	133	0.86	0.89	1.07
	S1916	3956.35	"	1990	927	414	1341	649	118	0.84	0.91	1.05
	S1917	3957.18	"	761	306	134	440	321	50	0.83	0.91	1.12
	S1920	3964.88	"	136	5	4	9	127	100	0.70	0.58	0.91
	S1921	3966.65	"	232	58	24	82	149	72	0.84	0.85	1.16
	S1922	3971.80	"	80	5	3	8	73	61	0.77	0.73	0.62
	S1981	4050	Ctgs	2882	181	276	457	2424	1490	1.34	0.40	3.51
	S1982	4053	"	2671	156	241	397	2274	1312	1.41	0.45	3.08
T_{II}	S1983	4059	"	1735	160	160	320	1416	834	0.75	0.29	2.51
	S1984	4062	"	2147	195	195	389	1758	914	0.81	0.37	2.39
LEKA Fm.	S1987	4182	"	2662	194	343	537	2126	1305	1.23	0.30	4.04
	S1989	4191	"	2798	215	353	568	2229	1446	1.20	0.29	3.72

Table 2b: EXTRACTION DATA IN % OF EOM , WELL 6406/3-3

	S nr.	Depth	Sample		SAT	ARO	Total HC	Total Non HC	ASPH
	S 1954 + 1955B	3804	Ctgs	B	17.66	19.31	36.97	63.03	26.52
NESNA Fm.	S 1955	3807	"		6.01	7.21	13.22	86.79	20.73
	S 1960	3828	"		8.18	11.45	19.63	80.37	26.39
	S 1961 + 1962B	3831	"	B	14.71	20.03	34.74	65.27	25.88
	S 1967	3858	"		17.58	10.25	27.83	72.17	19.44
ENGELVÆR Fm.	S 1973	3912	"	B	7.69	10.26	17.95	82.05	29.90
	S 1977	3933	"	B	10.52	12.14	22.66	77.33	20.66
TOMMA Fm.	S 1908	3938.8	Core		44.36	17.51	61.87	38.13	8.37
	S 1909	3941.1	"		54.25	21.73	75.98	24.02	4.22
	S 1910	3947.4	"		47.60	20.34	67.94	32.05	7.10
	S 1911	3948.1	"		50.35	20.91	71.26	28.73	3.82
T_I	S 1912	3949.1	"		45.04	19.63	64.67	35.33	6.82
	S 1913	3950.1	"		49.55	21.39	70.94	29.06	4.96
	S 1914	3951.1	"		48.49	22.50	70.99	29.00	5.83
	S 1915	3952.1	"		46.99	16.37	63.36	36.64	4.28
	S 1916	3956.35	"		46.60	20.81	67.41	32.59	5.91
	S 1917	3957.18	"		40.22	17.62	57.84	42.17	6.60
	S 1920	3964.88	"		3.82	3.06	6.88	93.12	74.00
	S 1921	3966.65	"		25.18	10.56	35.74	64.26	30.95
	S 1922	3971.80	"		5.79	3.31	9.10	90.90	76.00
	S 1981	4050	Ctgs		6.28	9.59	15.87	84.12	51.71
	S 1982	4053	"		5.85	9.01	14.86	85.14	49.12
T_{II}	S 1983	4059	"		9.20	9.20	18.40	81.61	48.07
	S 1984	4062	"		9.06	9.06	18.12	81.87	42.59
	S 1987	4182	"		7.28	12.88	20.16	79.84	49.03
LEKA Fm.	S 1989	4191	"		7.69	12.63	20.32	79.68	51.67

Table 3: MPI - INDEX FROM CORE EXTRACTS, WELL 6406/3-3

Snr. (Statoil)	MPI 1	MPI 2
S 1908	0.9	0.9
S 1909	0.8	0.8
S 1910	0.9	1.0
S 1911	0.8	0.8
S 1912	0.9	0.9
S 1913	0.8	0.8
S 1914	0.8	0.8
S 1915	0.9	0.7
S 1916	* 2.3	0.9
S 1917	0.8	0.8

* Uncertain value

Table 4: SOURCE ROCK EVALUATION FROM BIOMARKERS, WELL 6406/3-3

IKU	STATOIL S nr.	Depth (m.)		m/z 191 Hopanes C_{29}/C_{30} ($\alpha\beta$)	m/z 191 Hopanes C_{32}/C_{33} ($\alpha\beta$/22S)	m/z 218 ($\beta\beta$) Steranes $C_{27}:C_{28}:C_{29}$
C-6608	S-1908	3938.8	(Driller)	0.48	2.2	43.5:32.6:23.9
C-6009	S-1909	3941.1	-"-	0.44	2.7	42.2:29.4:28.4
C-6010	S-1910	3947.4	-"-	0.45	-	38.6:34.8:26.7
C-6011	S-1911	3948.1	-"-	0.42	1.8	43.3:30.5:26.3
C-6012	S-1912	3949.1	-"-	0.38	1.8	43.2:31.3:25.5
C-6013	S-1913	3950.1	-"-	0.39	2.5	36.7:34.5:28.8
C-6014	S-1914	3951.1	-"-	0.38	2.4	40.1:31.1:28.8
C-6015	S-1915	3952.1	-"-	0.36	2.9	45.8:26.7:27.5
C-6016	S-1916	3956.35	-"-	0.39	3.6	39.1:34.1:26.8
C-6017	S-1917	3957.18	-"-	0.41	2.0	44.6:29.4:26.0
C-6018	S-1920	3964.88	-"-	-	-	-
C-6019	S-1921	3966.65	-"-	-	-	-
C-6020	S-1922	3971.80	-"-	-	-	-
C-6021	S-1955	3807	(Logger)	1.2	4.7	30.1:34.0:36.0
C-6022	S-1960	3828	-"-	1.1	3.0	24.2:38.6:37.1
C-6013	S-1967	3858	-"-	1.1	3.6	37.1:31.7:31.3
C-6024	S-1981	4050	-"-	0.70	3.5	36.4:23.0:40.5
C-6025	S-1982	4053	-"-	0.59	4.3	40.4:23.8:35.7
C-6026	S-1983	4059	-"-	0.67	4.0	38.1:24.2:37.7
C-6027	S-1984	4062	-"-	0.66	3.7	40.1:26.1:33.8
C-6028	S-1987	4182	-"-	0.63	4.0	38.5:25.4:36.0
C-6029	S-1989	4191	-"-	0.61	3.9	38.0:18.8:43.1
C-6030	S-1954B	3804+07	-"-	0.32	2.1	39.8:29.5:30.7
C-6031	S-1961B	3831+34	-"-	0.31	2.8	42.9:31.9:25.2
C-6032	S-1973B	3912	-"-	0.67	2.5	40.1:30.2:29.7
C-6033	S-1977B	3933	-"-	0.68	2.7	43.6:29.9:26.5

For other biomarker results, see Appendix A

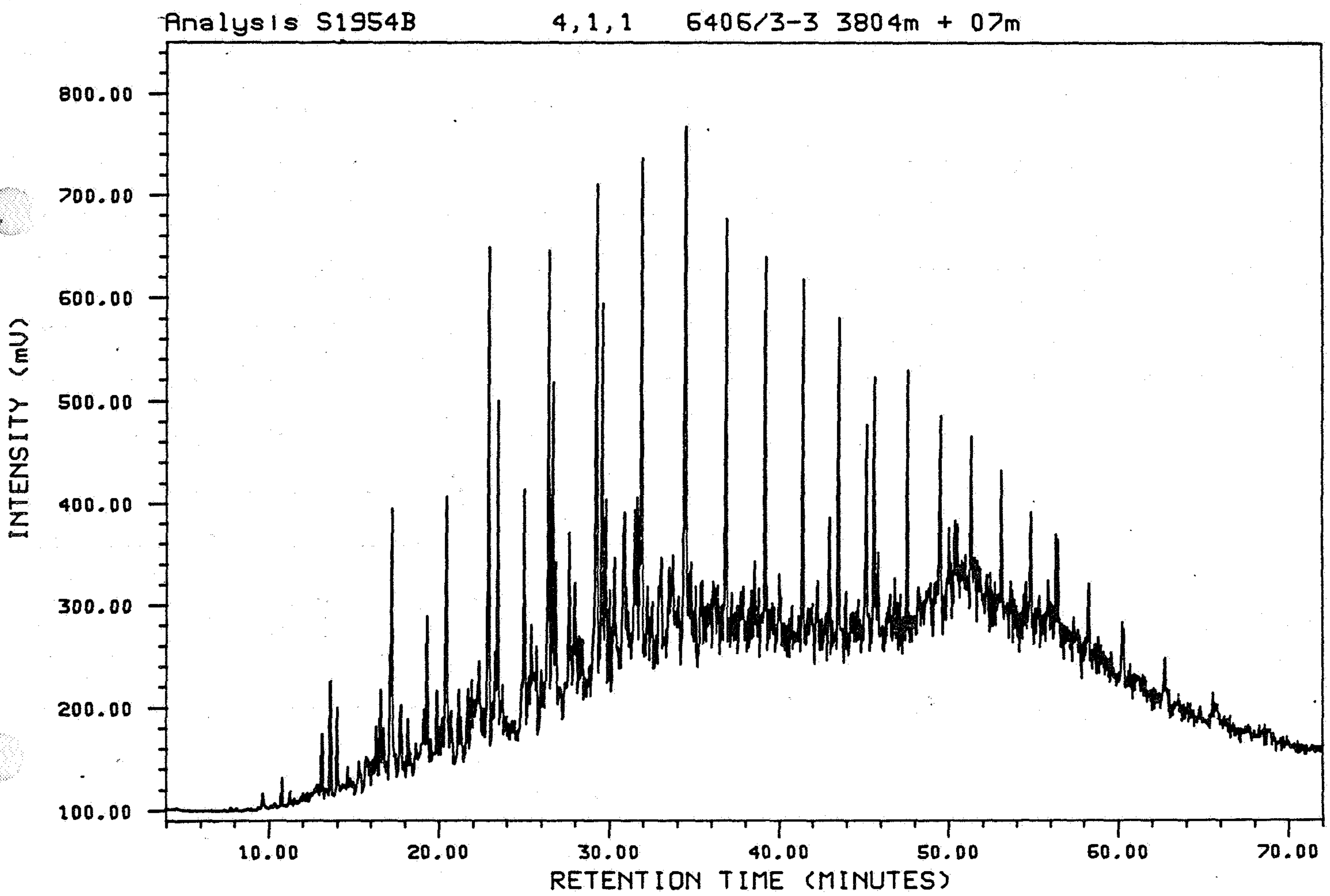
Table 5: $\delta^{13}C$ VALUES OF KEROGENS AND EXTRACT FRACTIONS FROM WELL 6406/3-3

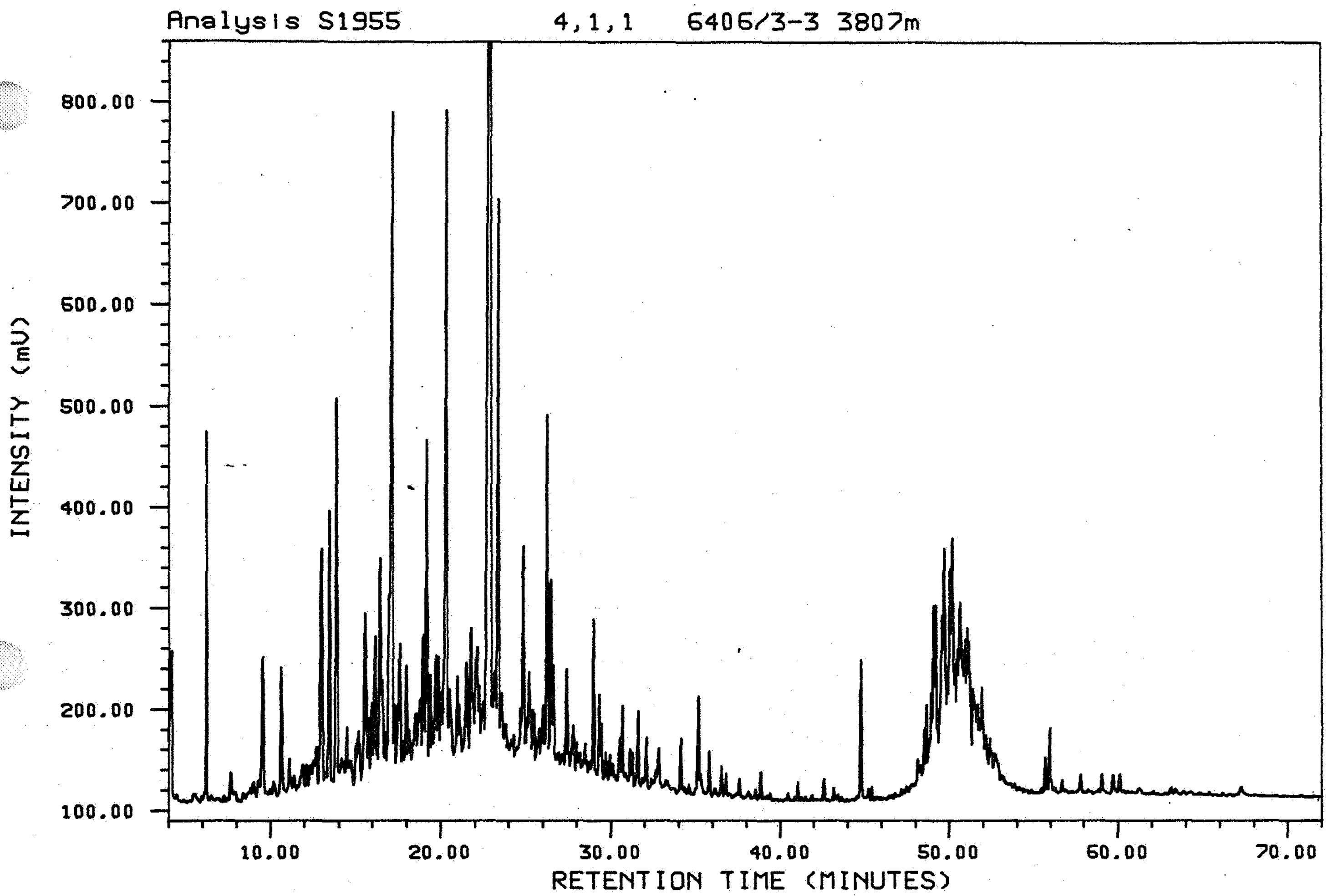
Statoil Snr.	IFE nr.	$\delta^{13}C_{PDB}$				
		SAT	ARO	NSO	ASPH	KEROGEN
S 1908	6049	-30.0	-28.8	-28.8	-29.2	
S 1909	6050	-30.0	-28.8	-28.6	-29.2	
S 1910	6051	-30.3	-28.9	-28.7	-28.7	
S 1911	6052	-30.3	-29.0	-28.8	-28.4	
S 1912	6053	-30.3	-29.0	-28.5	-27.9	
S 1913	6054	-30.3	-29.1	-29.0	-28.8	
S 1914	6055	-30.3	-29.1	-29.0	-29.0	
S 1915	6056	-30.3	-29.3	-28.8	-29.0	
S 1916	6057	-30.3	-29.1	-28.8	-28.6	
S 1917	6058	-30.3	-29.1	-28.8	-28.4	
S 1920	6059	-27.9	-24.9	-26.1	-25.7	
S 1921	6060	-30.1	-28.8	-28.3	-27.3	
S 1922	6061	-28.3	-26.6	-27.6	-26.8	
S 1955	6062	-29.5	-28.5	-28.1	-26.9	-23.9
S 1960	6063	-29.7	-28.3	-27.8	-26.5	-26.1
S 1967	6064	-29.7	-27.3	-27.8	-27.4	-25.1
S 1981	6065	-26.2	-24.8	-24.7	-24.8	-23.2
S 1982	6066	-26.3	-24.8	-24.5	-24.8	-23.6
S 1983	6067	-27.4	-25.2	-26.0	-25.0	-23.7
S 1984	6068	-27.4	-25.2	-26.1	-25.5	-23.9
S 1987	6069	-26.1	-24.4	-25.2	-25.1	-23.5
S 1989	6070	-26.1	-24.1	-24.9	-24.9	-23.6
S 1954 B	6071	-30.9	-30.2	-29.9	-29.9	-29.4
S 1961 B	6072	-29.4	-27.9	-27.3	-26.8	-26.8
S 1973 B	6073	-29.3	-26.1	-26.8	-26.8	-23.9
S 1977 B	6074	-29.6	*	-26.7	*	-23.3

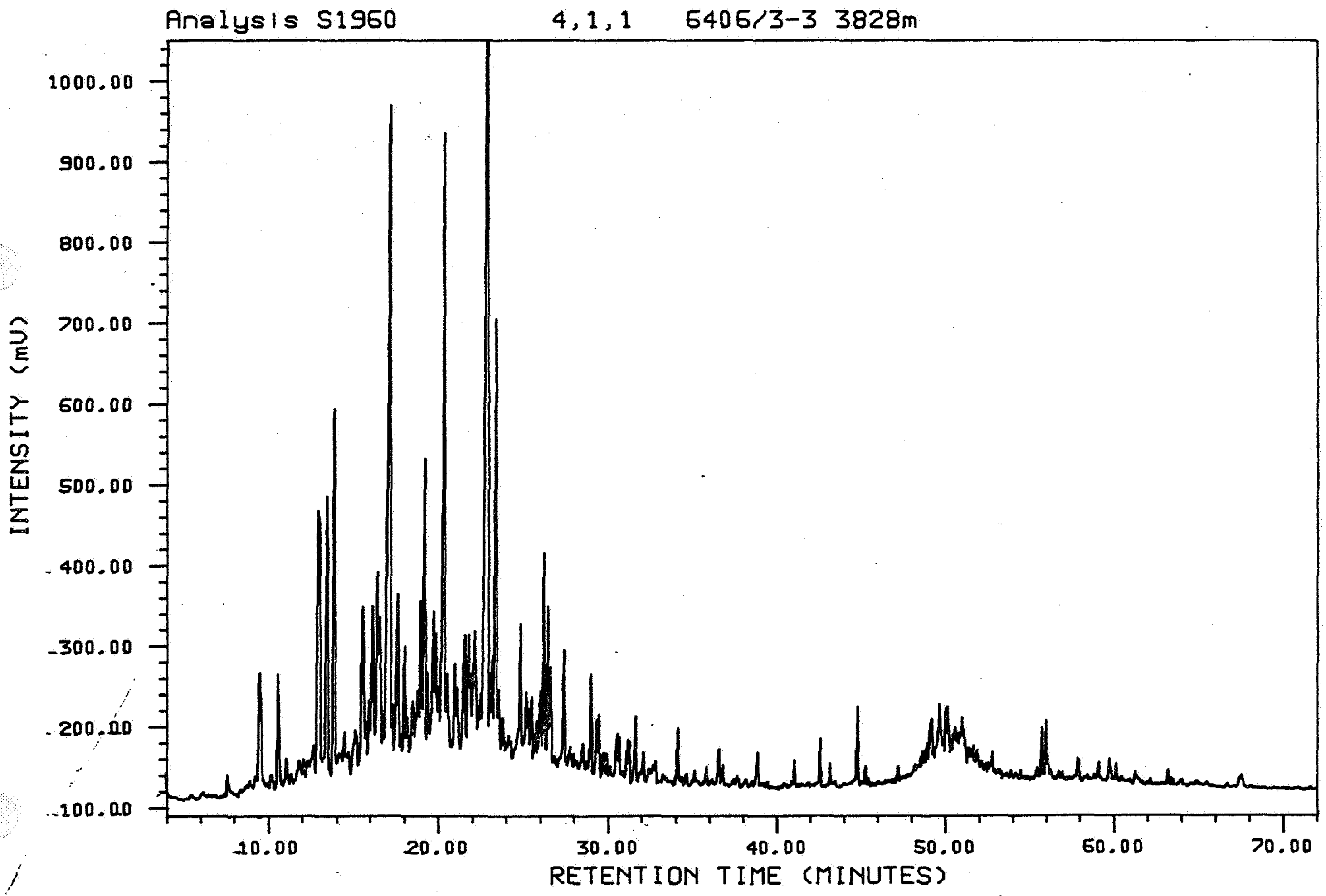
* Too small sample

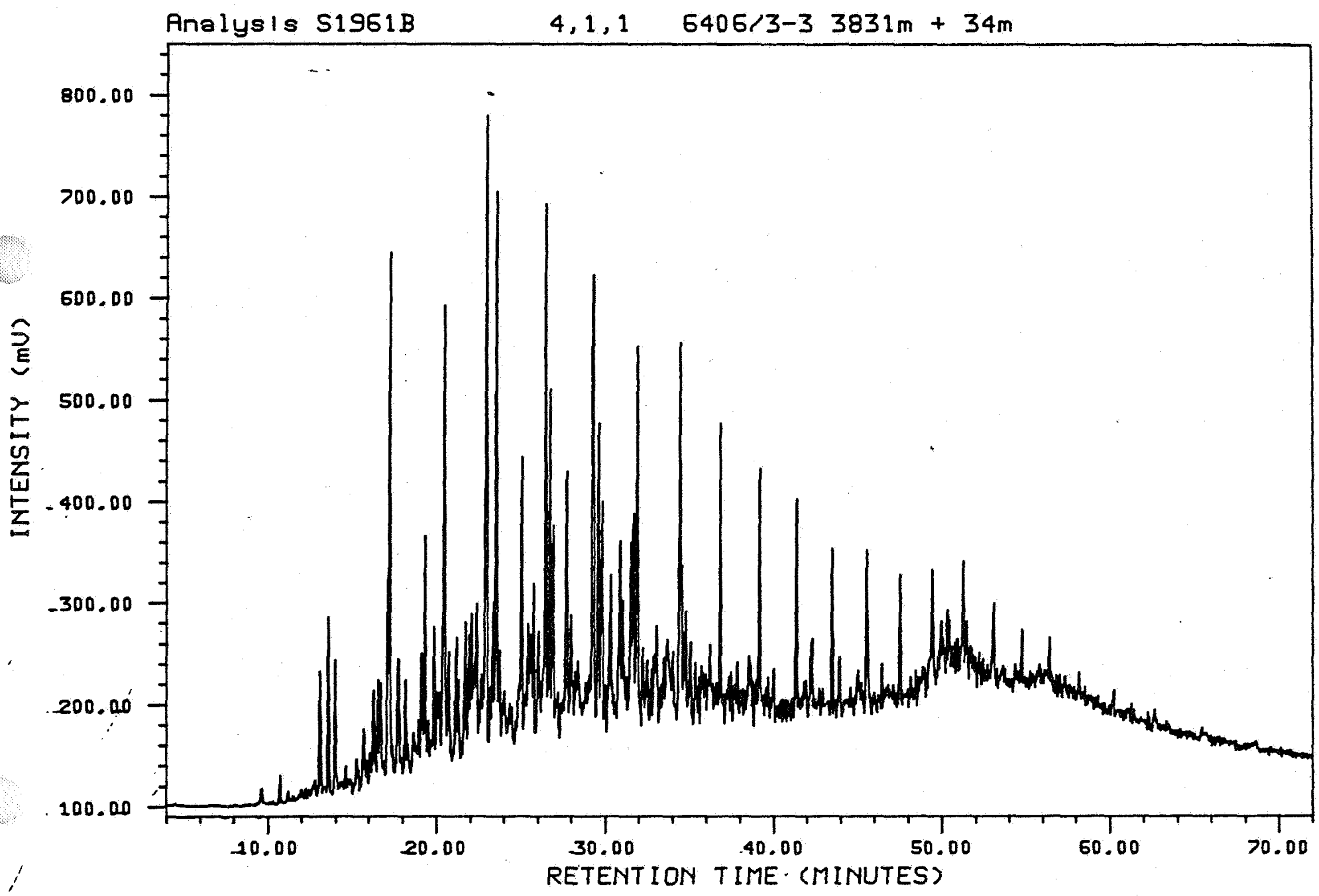
Figure 3

C_{15+} Saturate fraction hydro-
carbon chromatograms

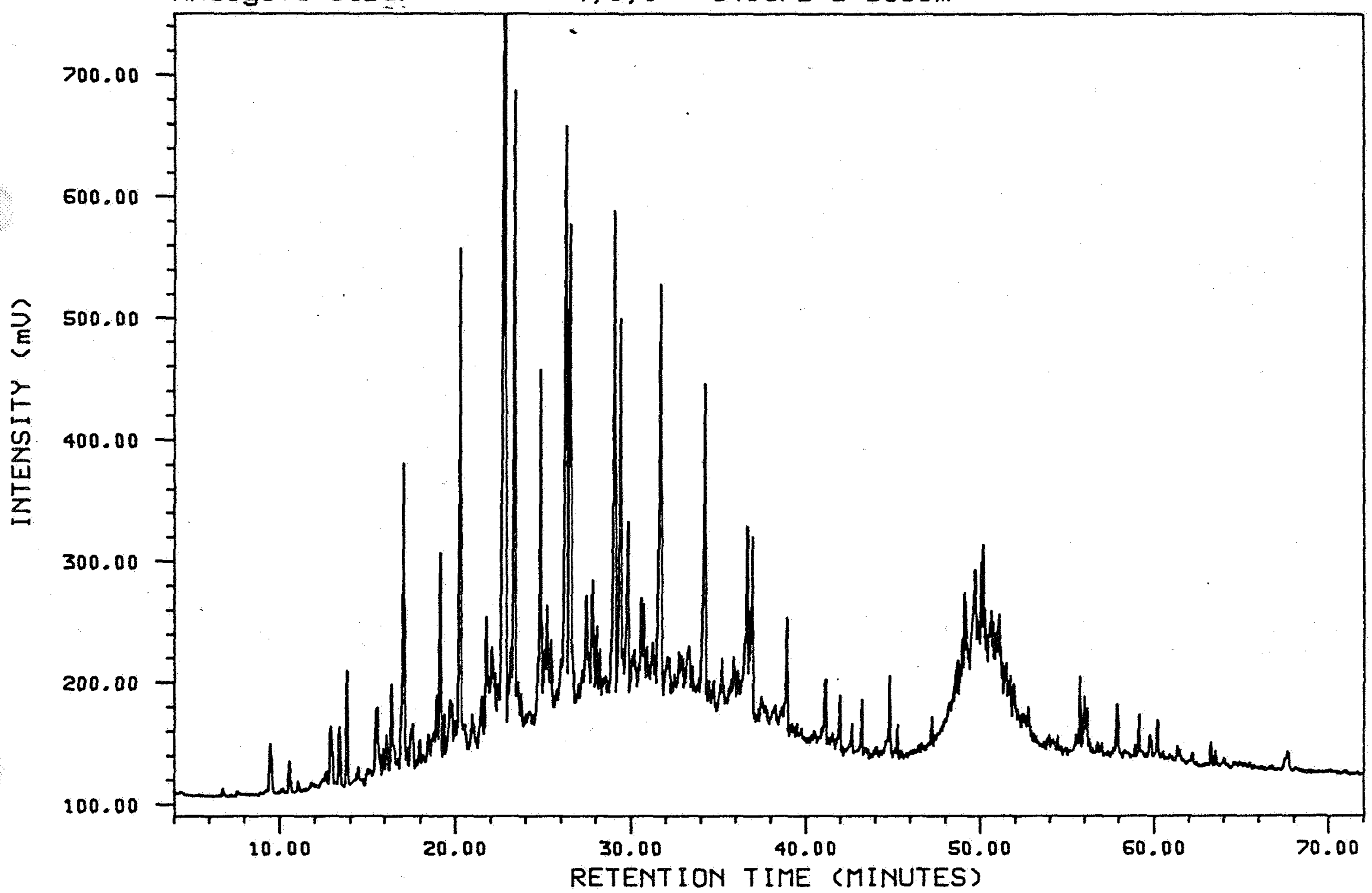

Analysis S1954B 4,1,1 6406/3-3 3804m + 07m
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
INTENSITY (mV)
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

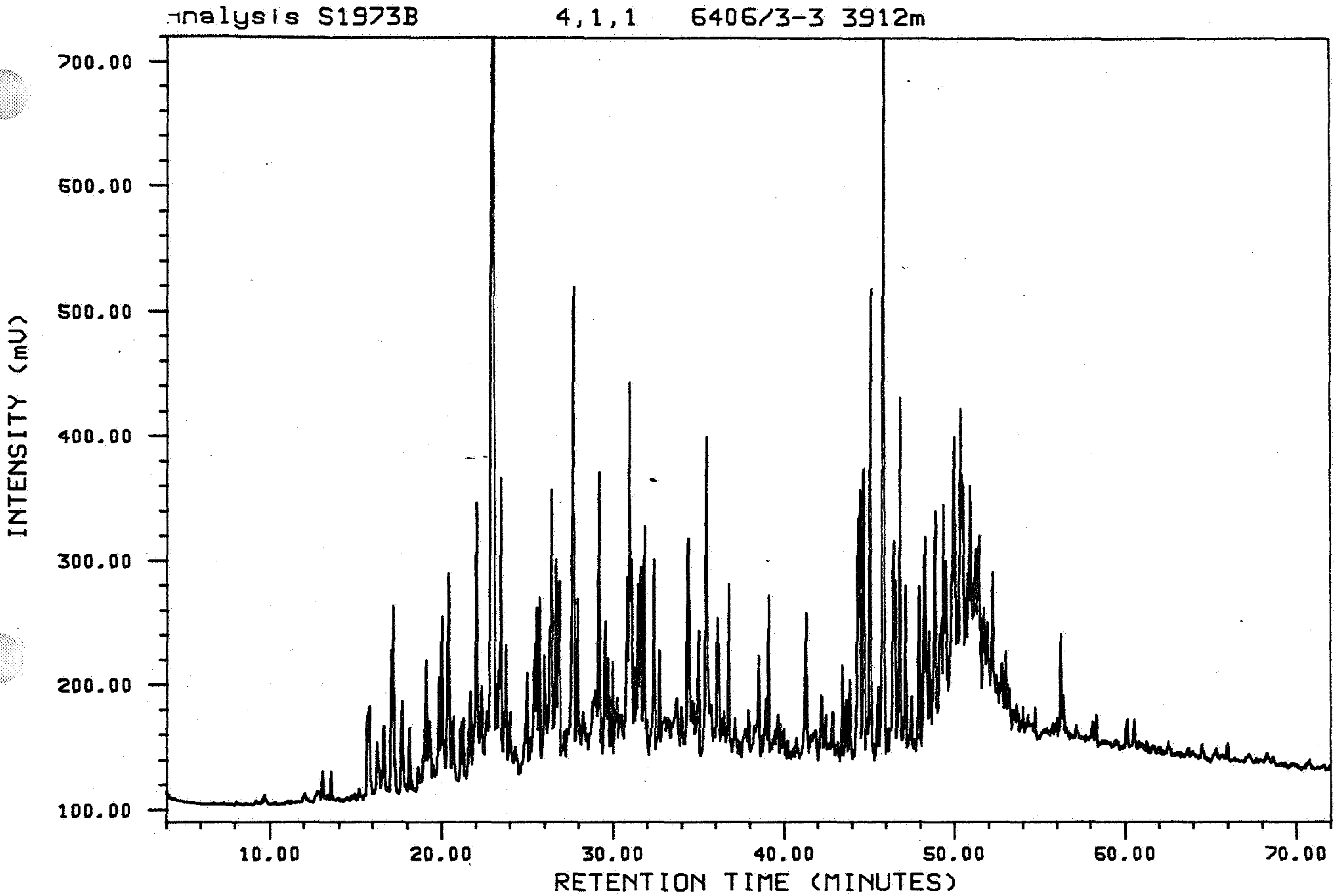

Analysis S1955 4,1,1 6406/3-3 3807m
INTENSITY (mV)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

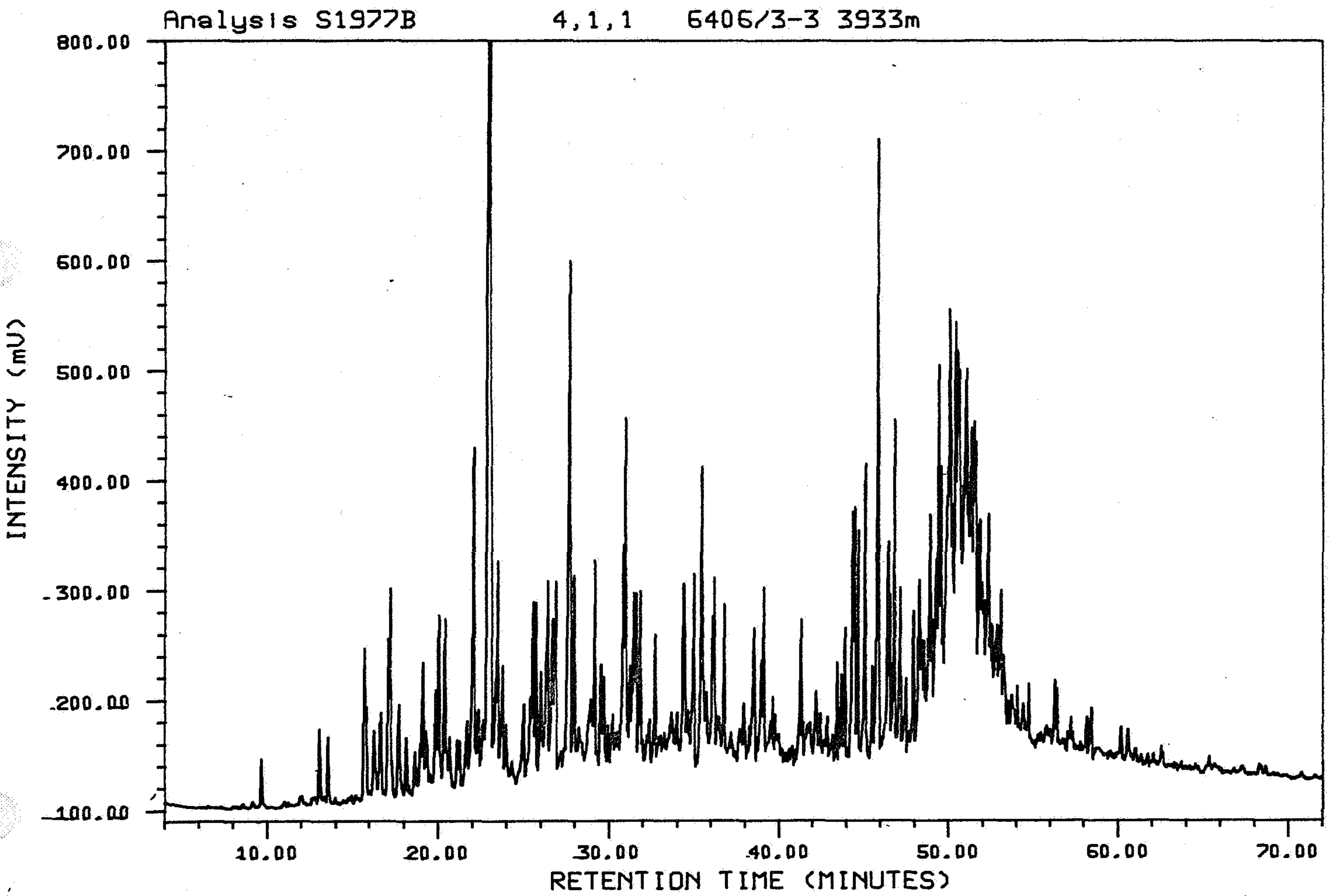

Analysis S1960 4,1,1 6406/3-3 3828m
INTENSITY (mV)
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

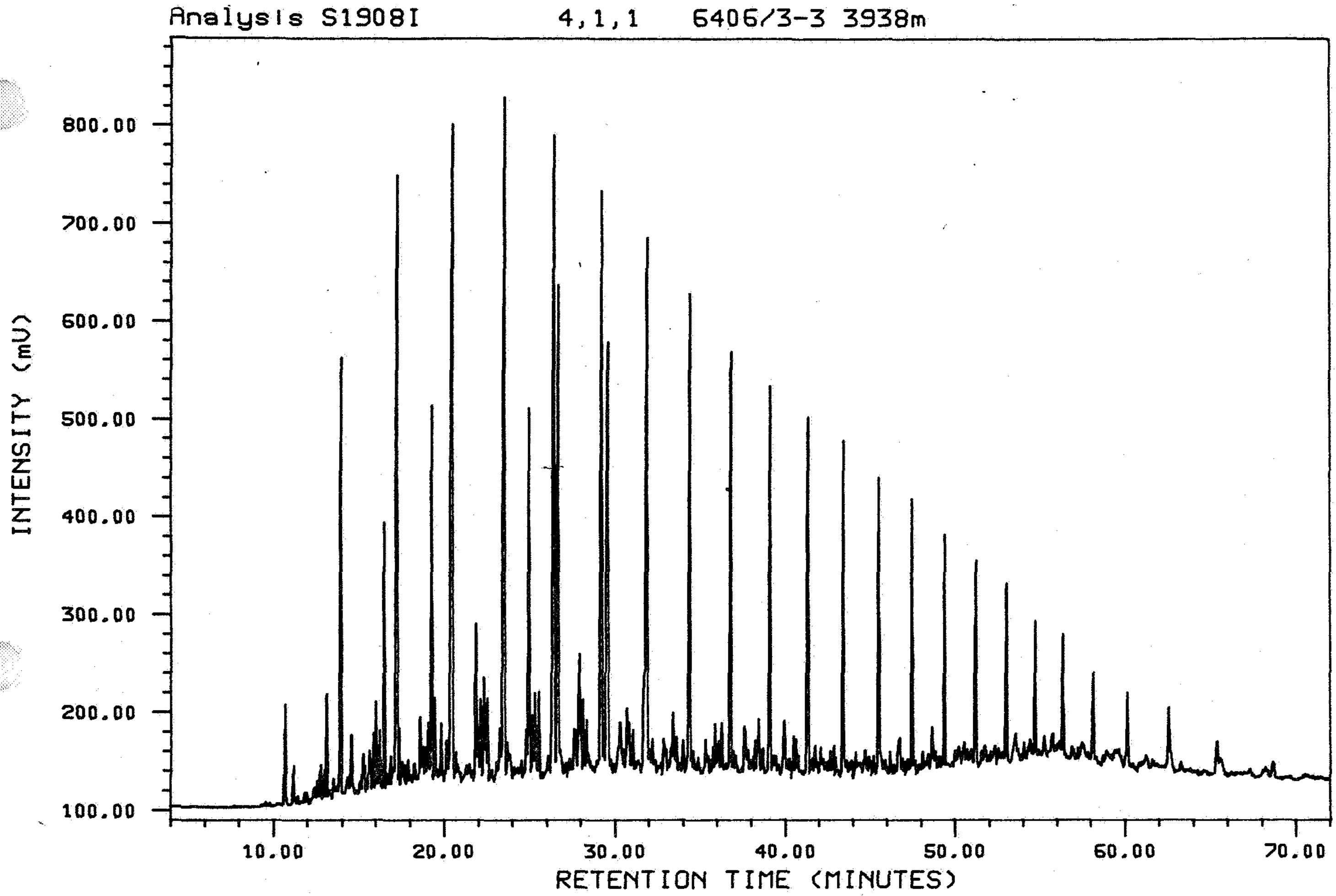

Analysis S1961B 4,1,1 6406/3-3 3831m + 34m
INTENSITY (mV)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

Analysis S1967 4,1,1 6406/3-3 3858m

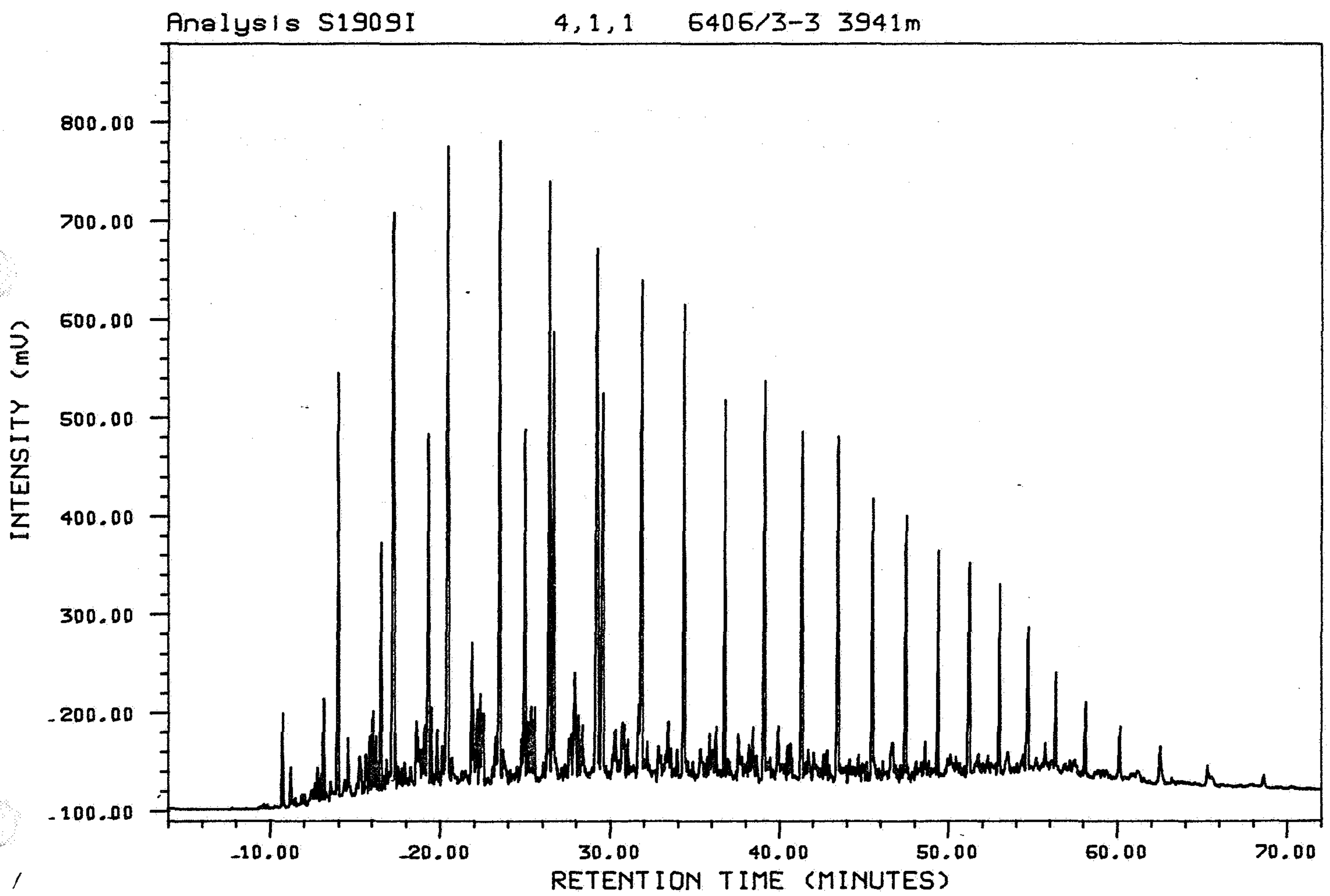



Analysis S1973B 4,1,1 6406/3-3 3912m
INTENSITY (mU)
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

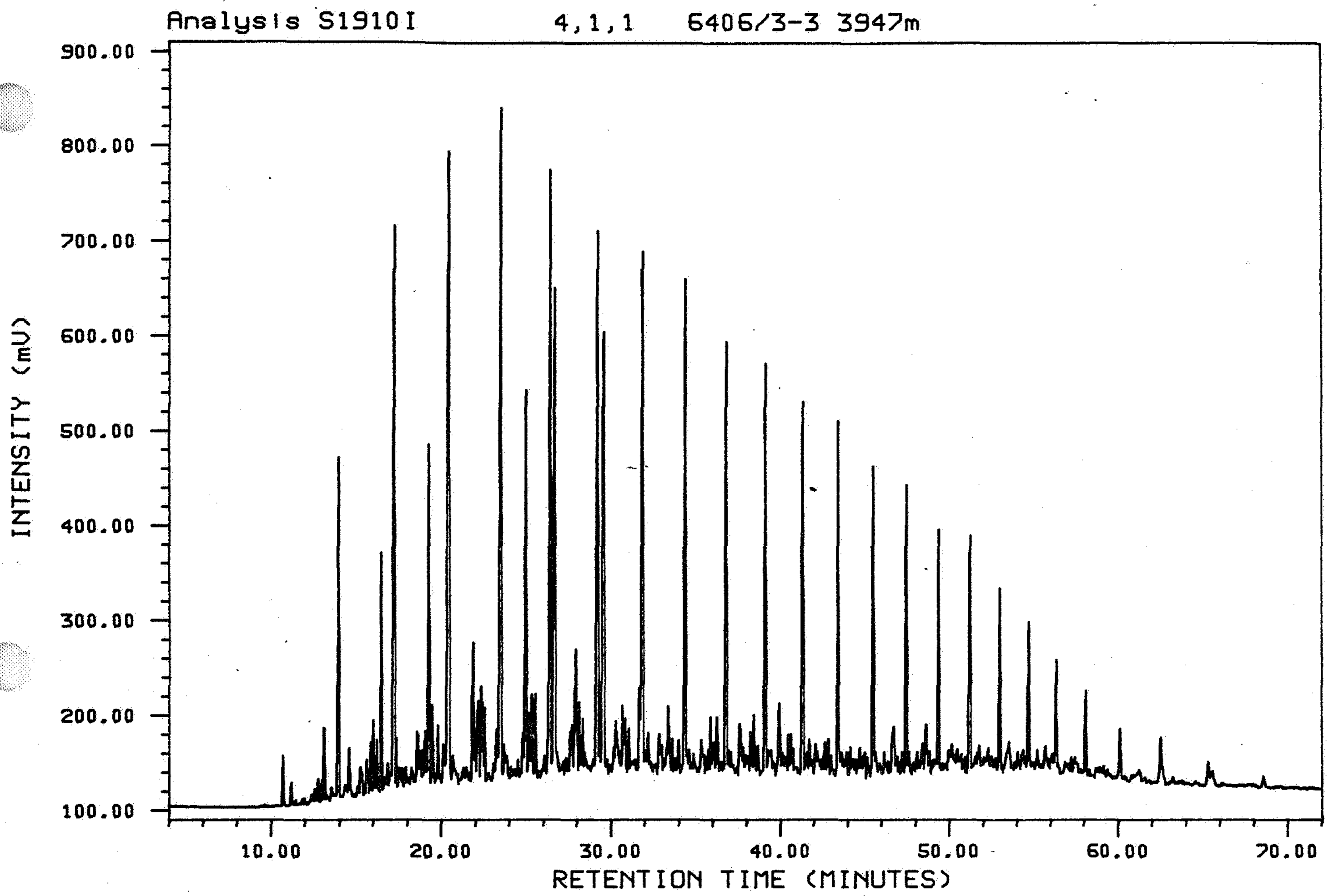

Analysis S1977B 4,1,1 6406/3-3 3933m
INTENSITY (mU)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

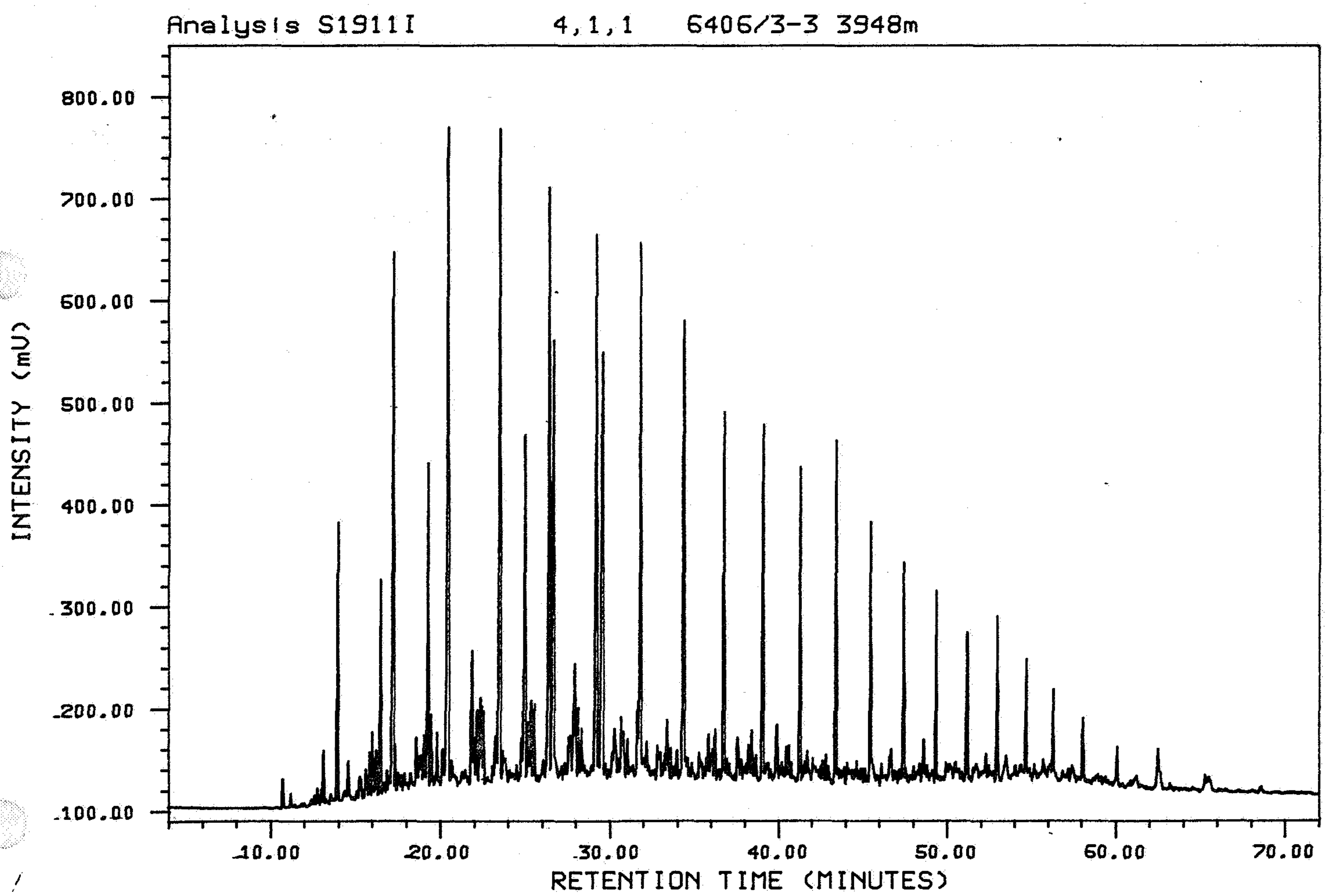


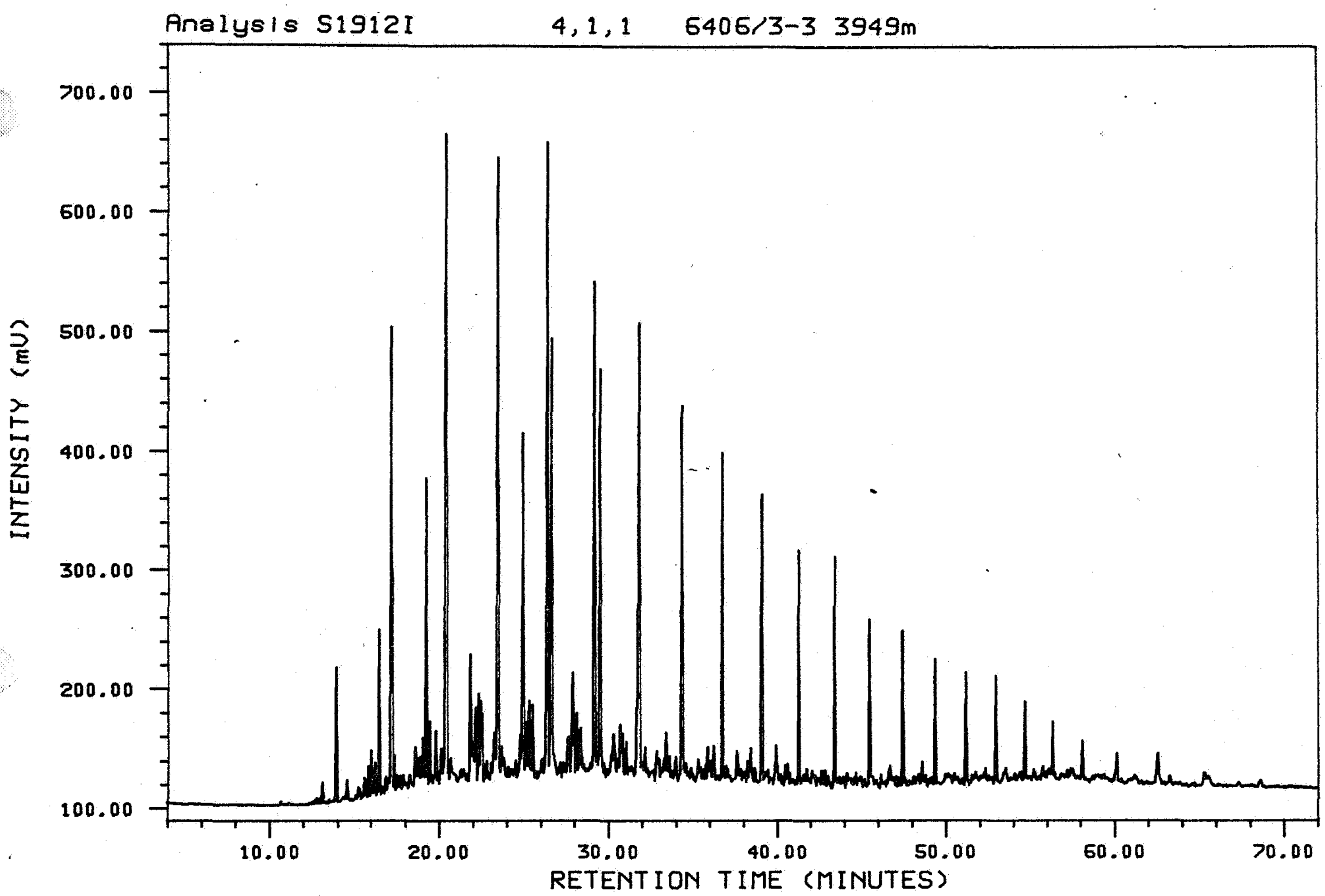
Analysis S1908I 4,1,1 6406/3-3 3938m
INTENSITY (mV)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

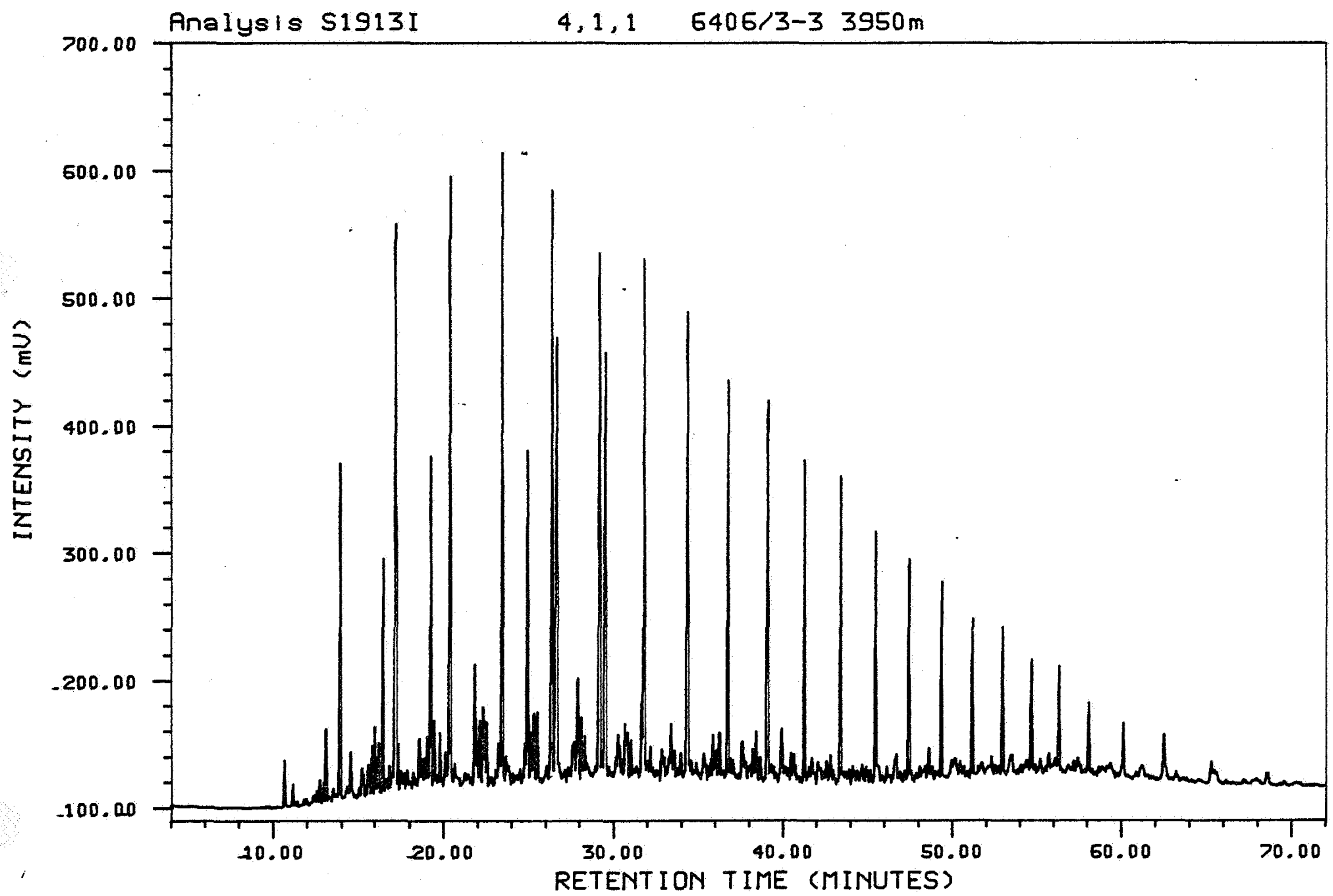


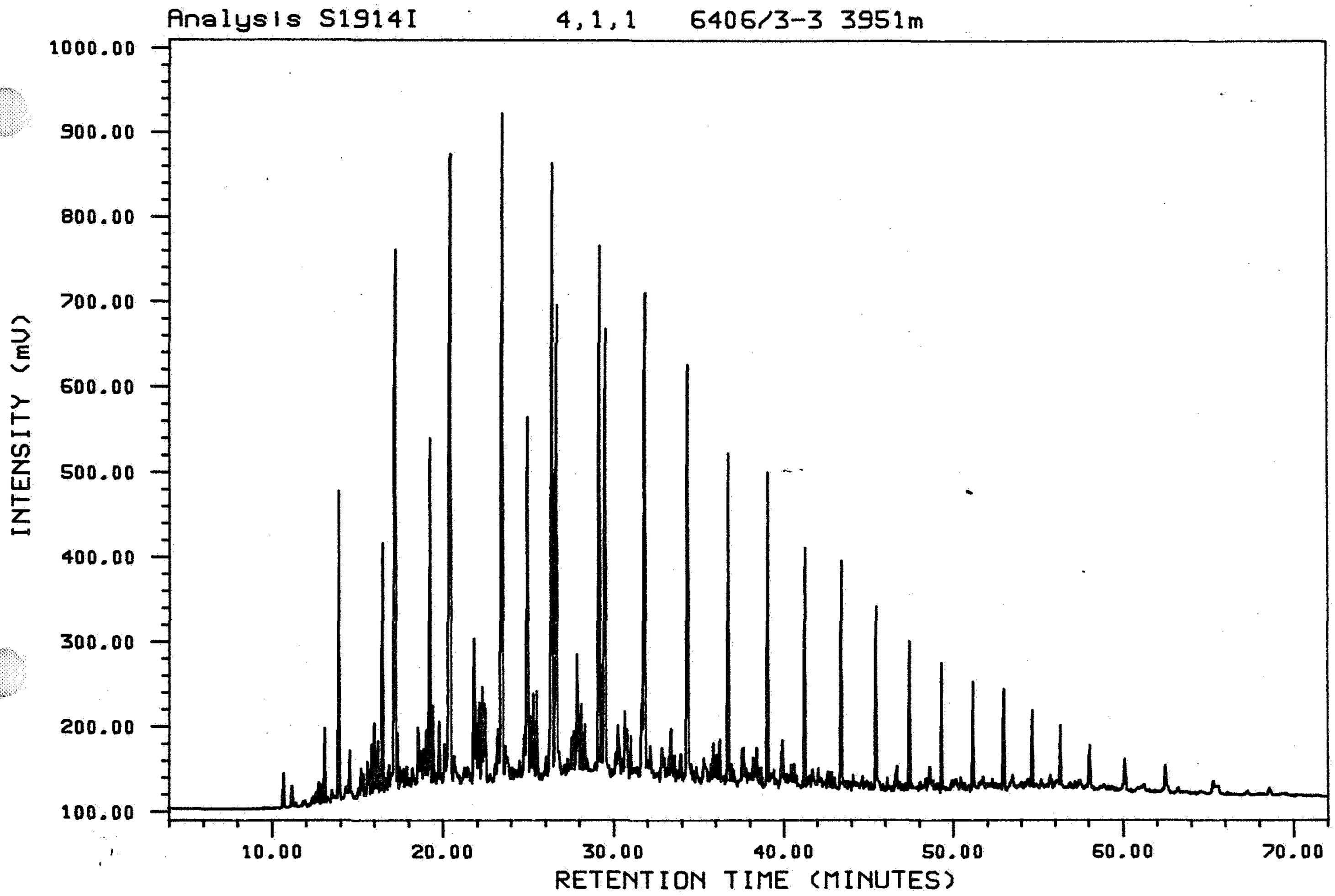
Analysis S1909I 4,1,1 6406/3-3 3941m
INTENSITY (mV)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)


Analysis S1910I 4,1,1 6406/3-3 3947m
INTENSITY (mV)
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

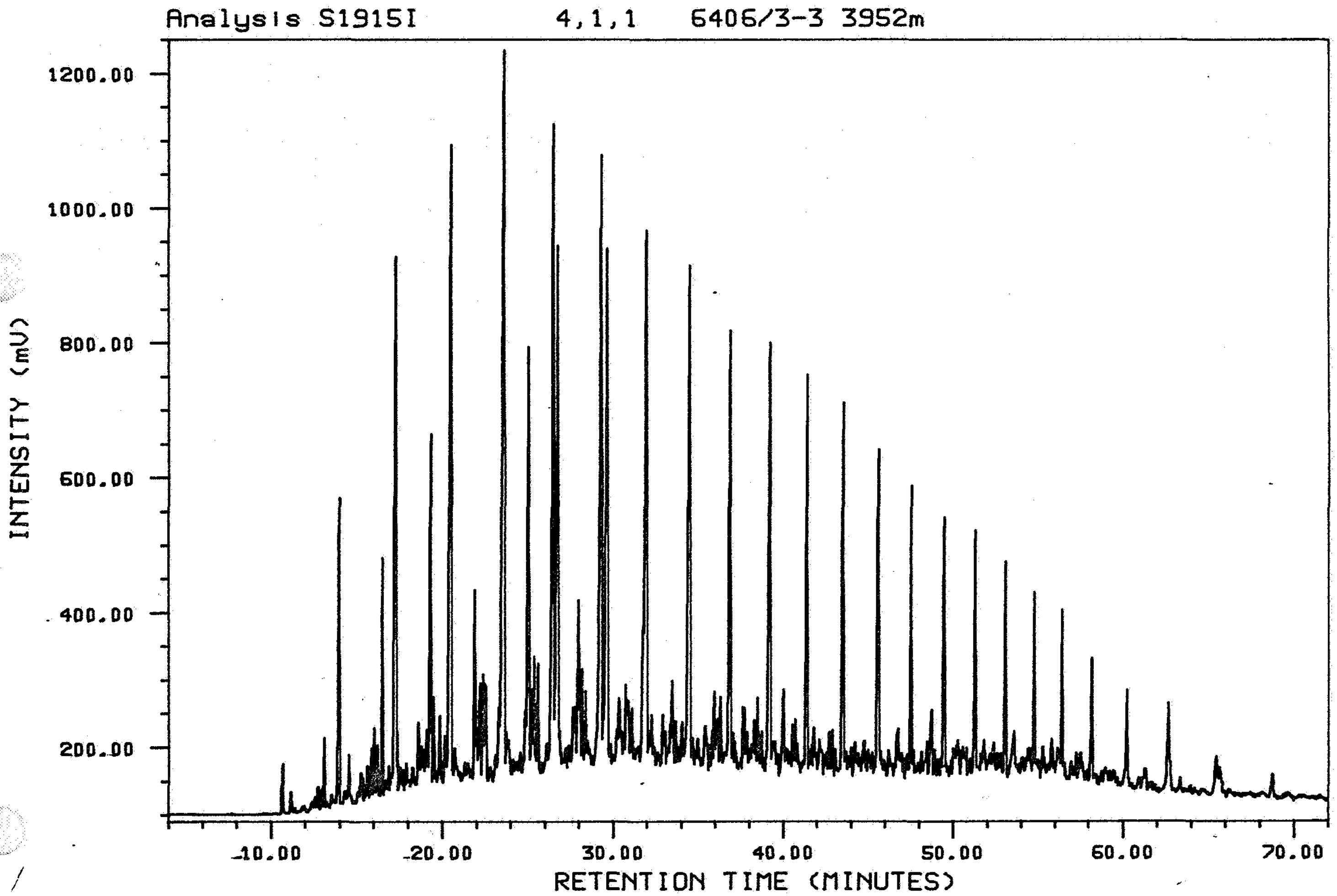

Analysis S1911I 4,1,1 6406/3-3 3948m
INTENSITY (mV)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)


Analysis S1912I 4,1,1 6406/3-3 3949m
INTENSITY (mV)
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

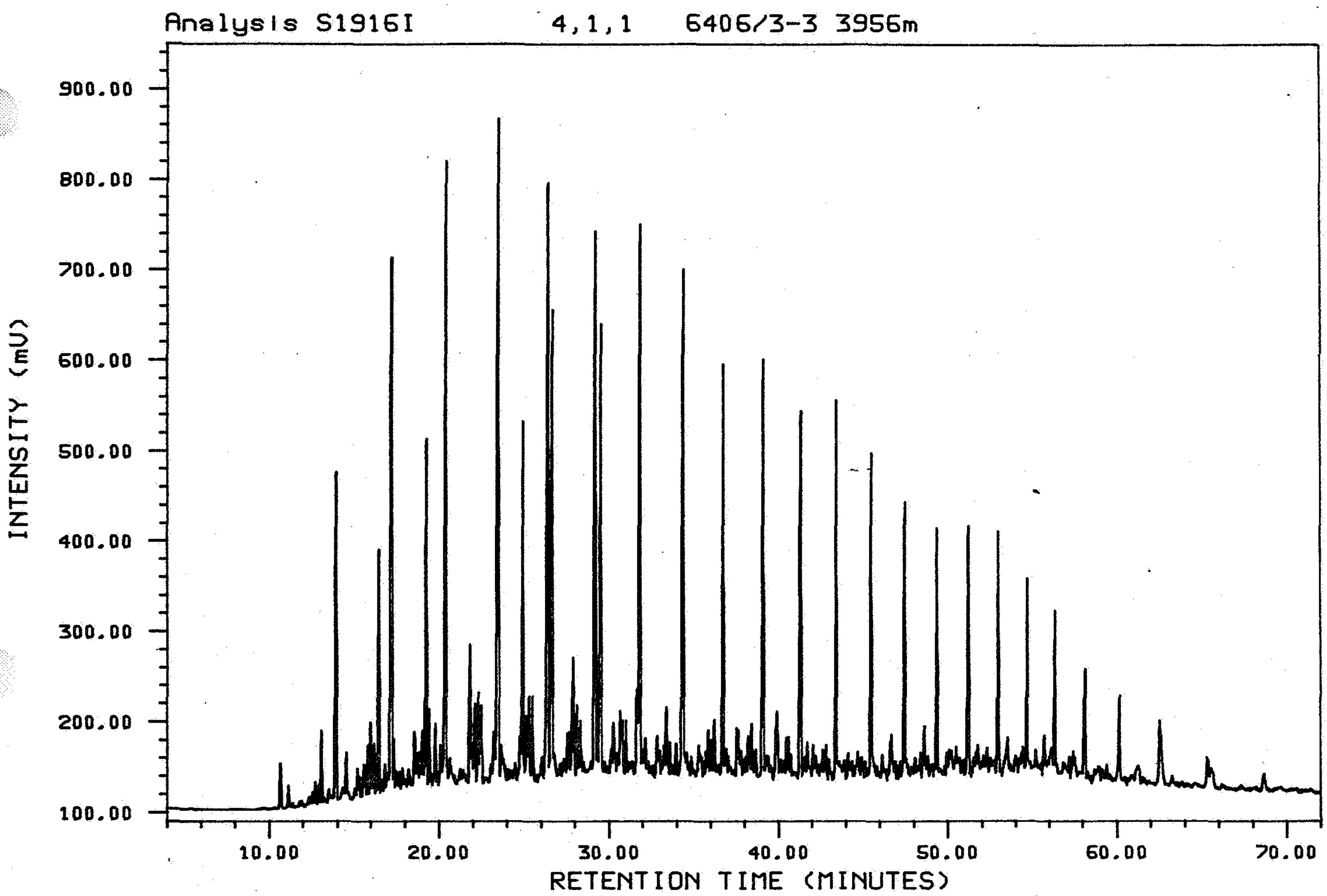

Analysis S1913I 4,1,1 6406/3-3 3950m
INTENSITY (mV)
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

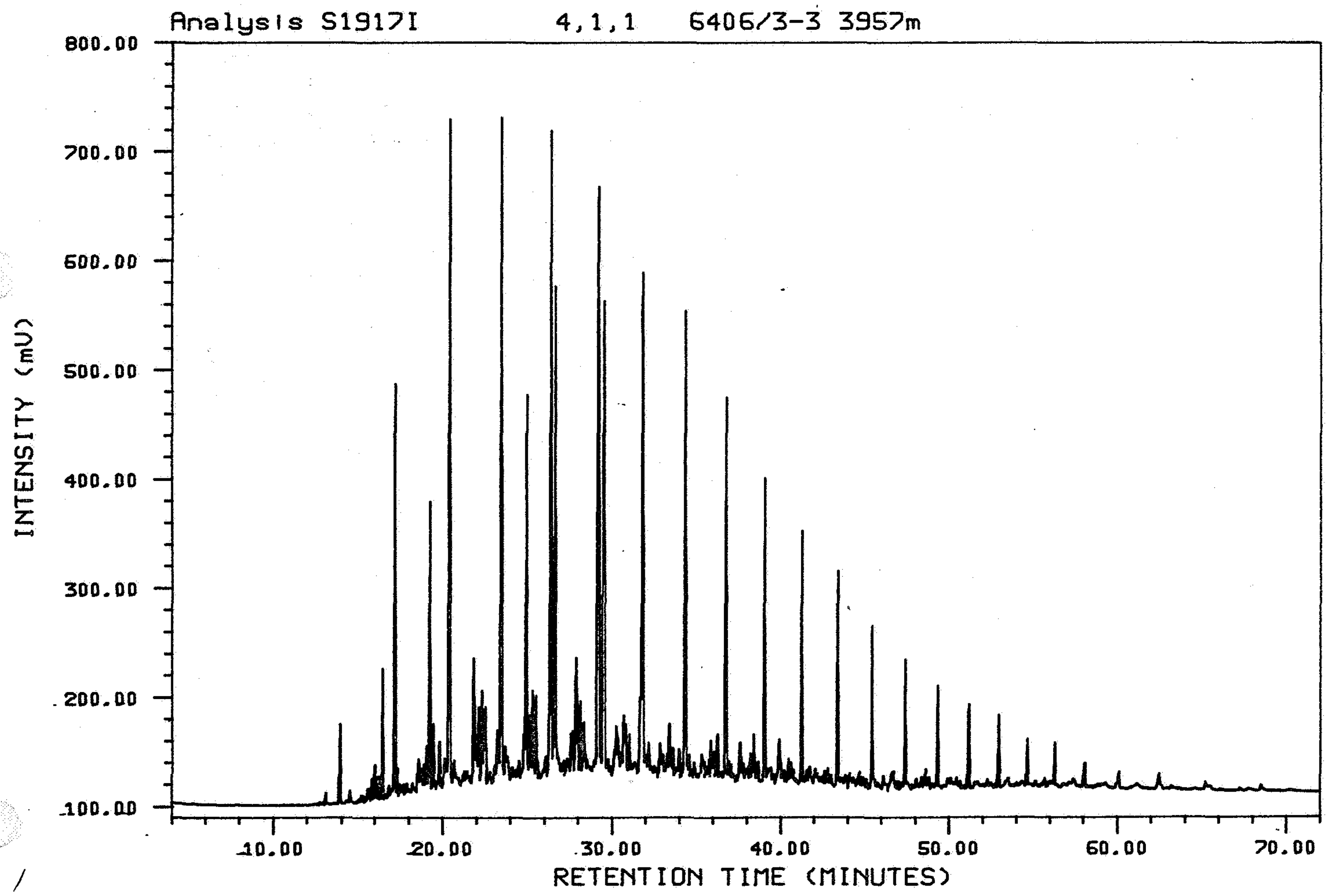


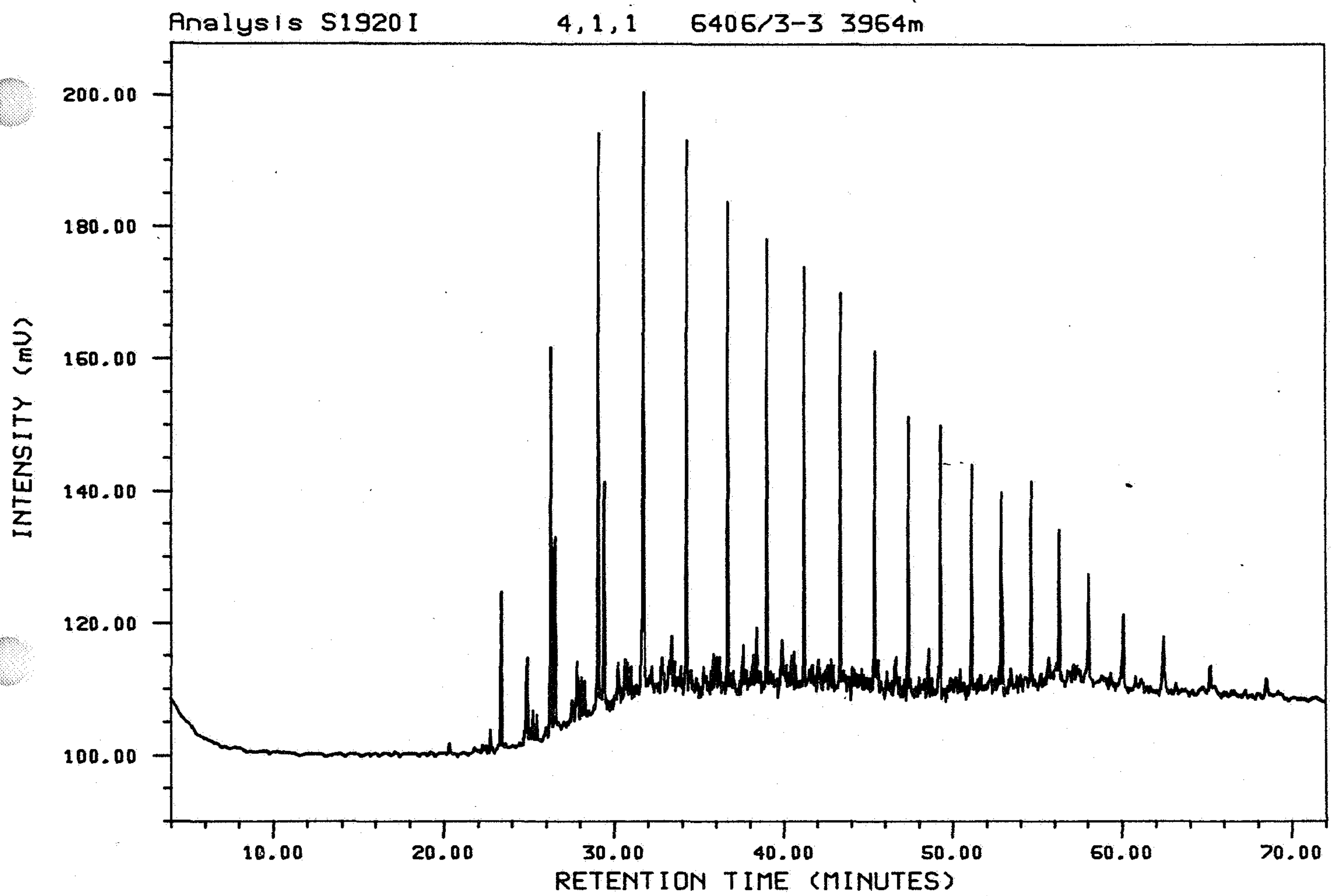
Analysis S1914I 4,1,1 6406/3-3 3951m
INTENSITY (mV)
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)



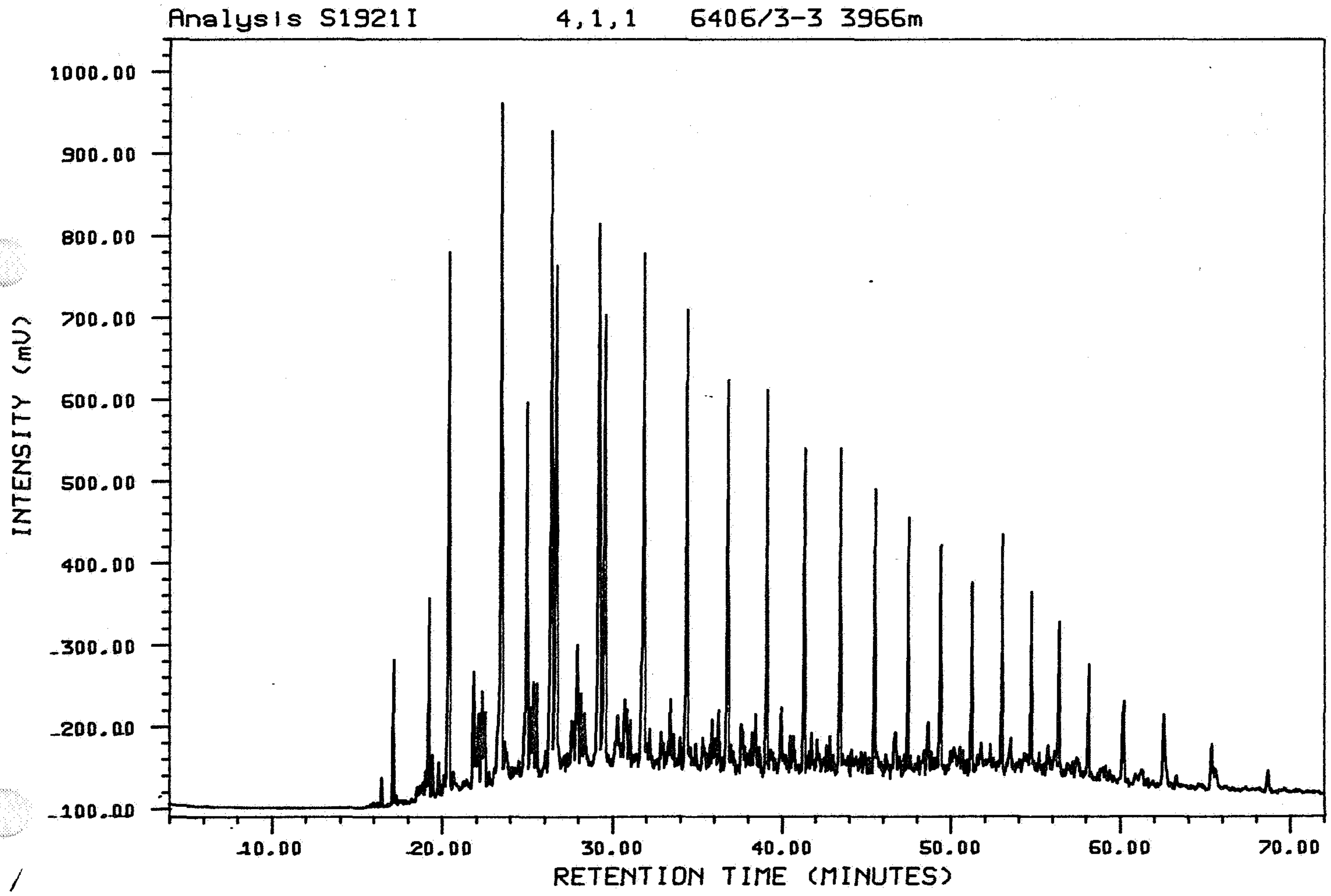
Analysis S1915I 4,1,1 6406/3-3 3952m
INTENSITY (mV)
1200.00
1000.00
800.00
600.00
400.00
200.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)


Analysis S1916I 4,1,1 6406/3-3 3956m
INTENSITY (mU)
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

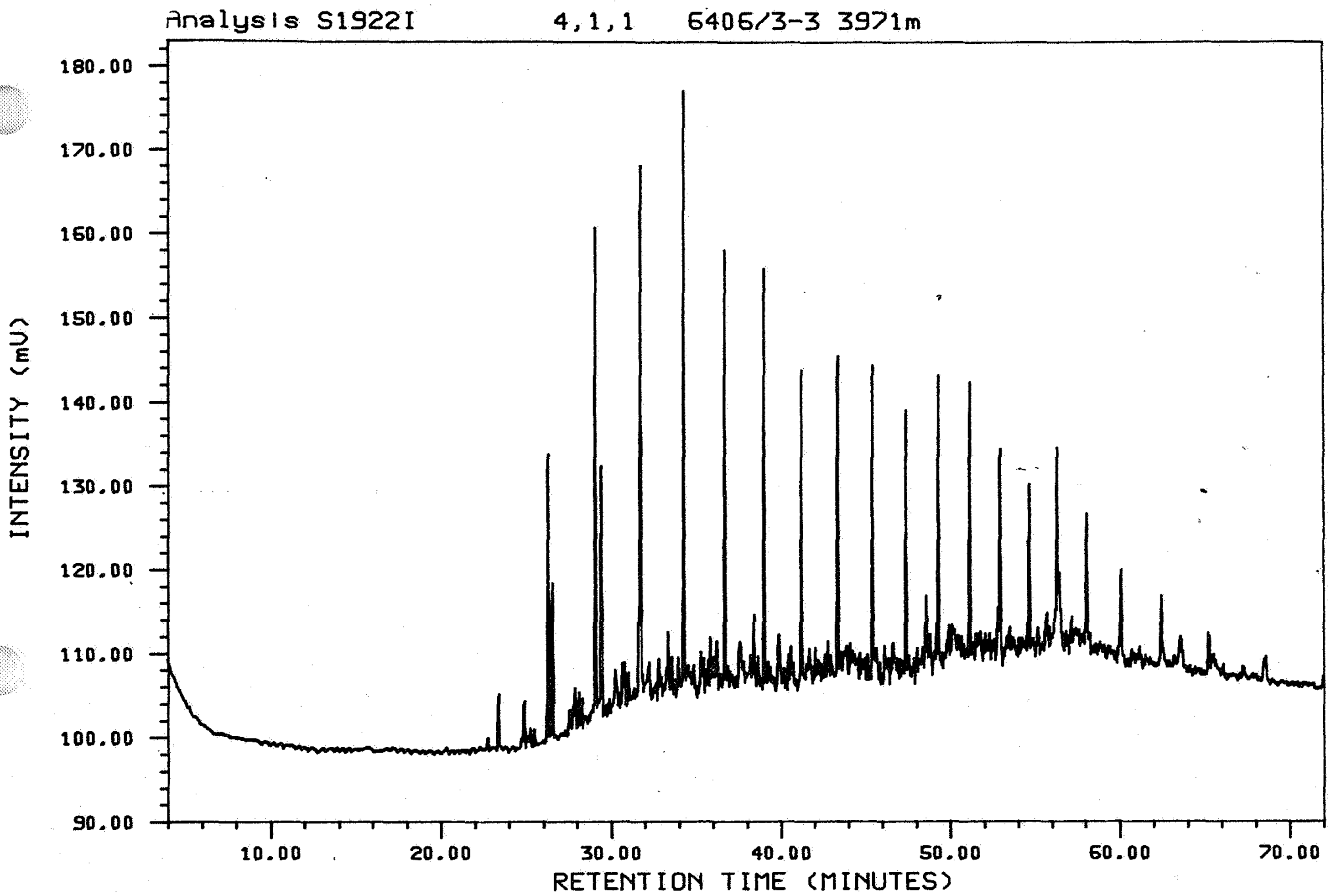

Analysis S1917I 4,1,1 6406/3-3 3957m
INTENSITY (mU)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

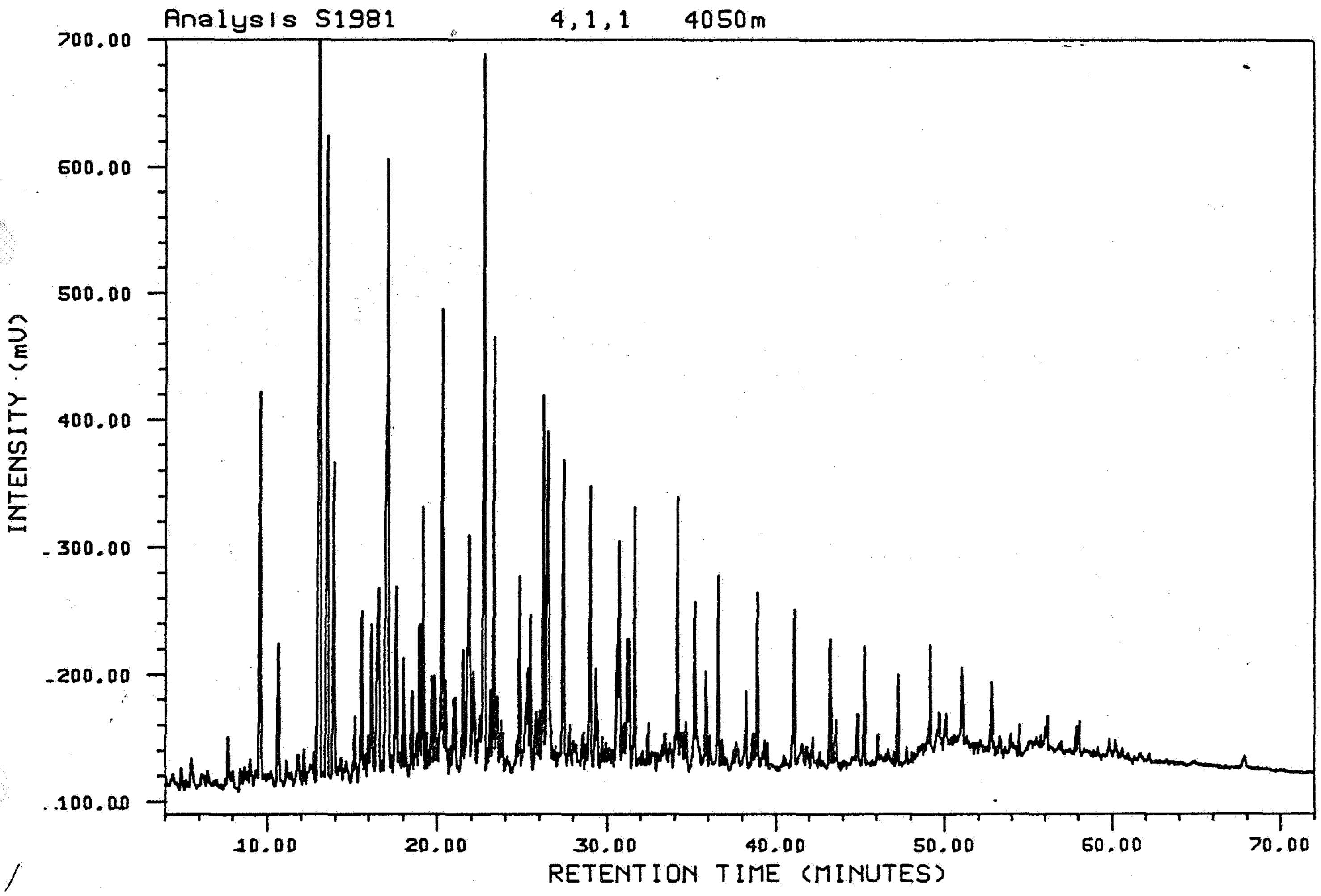


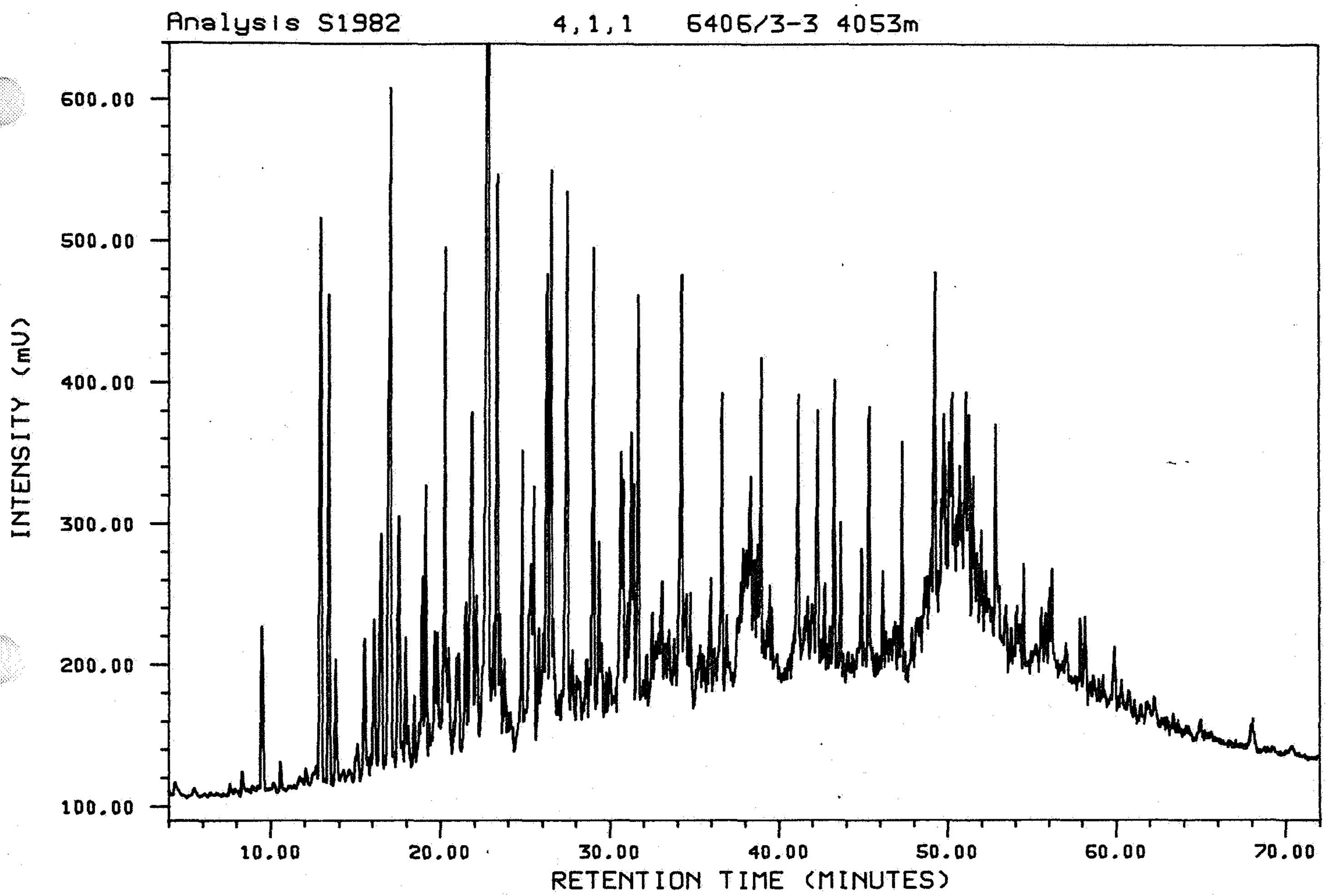
Analysis S1920I 4,1,1 6406/3-3 3964m
INTENSITY (mV)
200.00
180.00
160.00
140.00
120.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

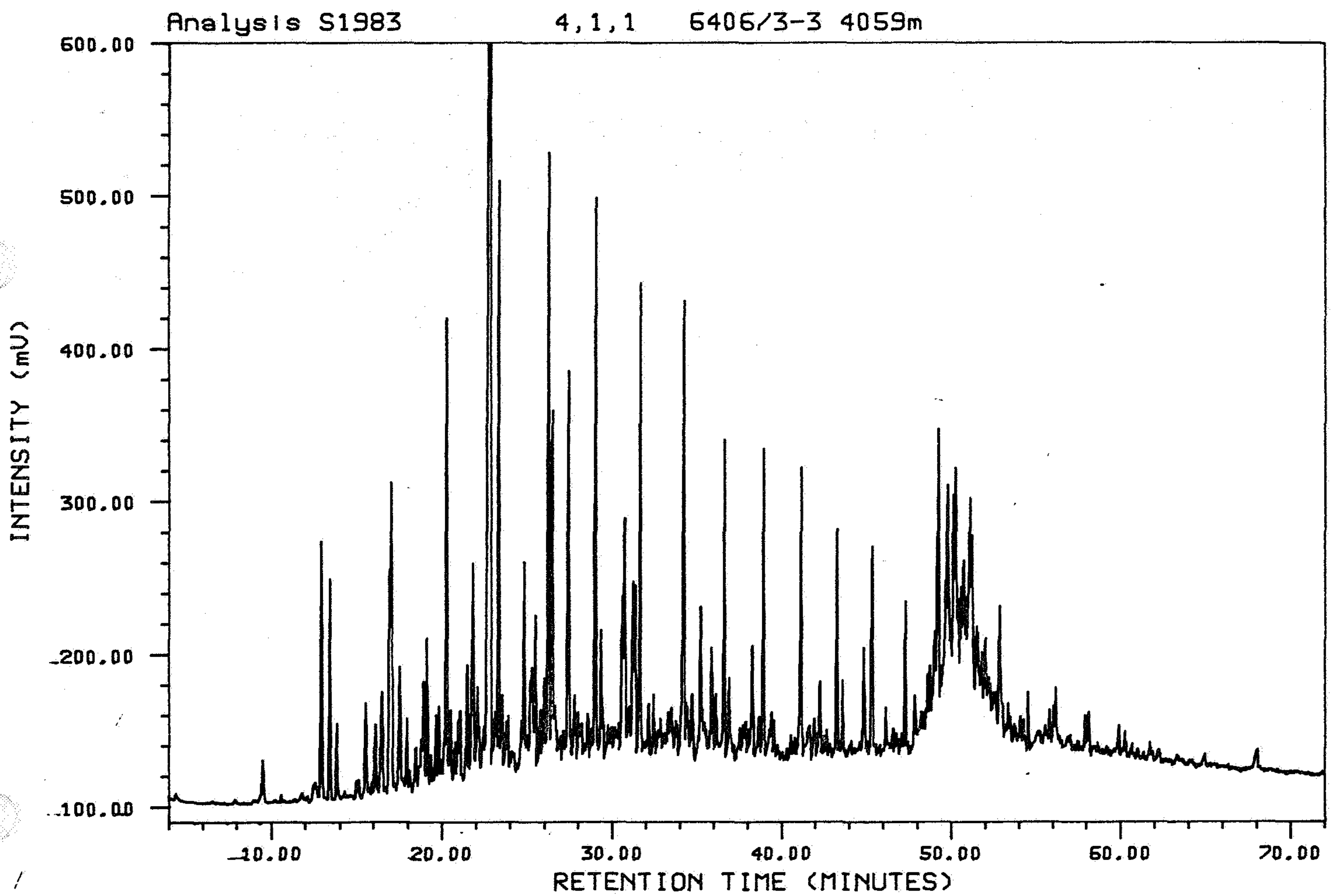


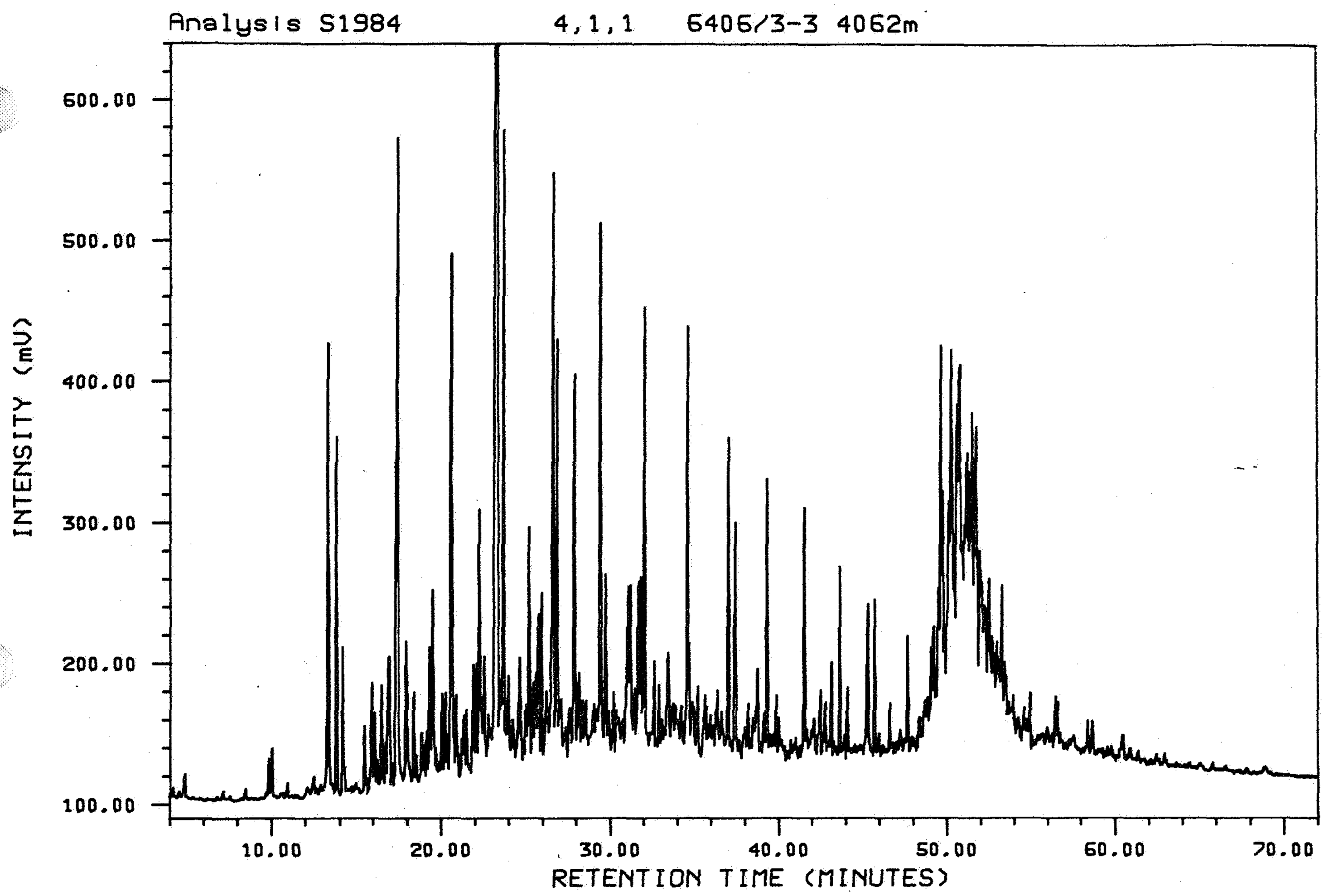
Analysis S1921I 4,1,1 6406/3-3 3966m
INTENSITY (mV)
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)


Analysis S1922I 4,1,1 6406/3-3 3971m
INTENSITY (mV)
180.00
170.00
160.00
150.00
140.00
130.00
120.00
110.00
100.00
90.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

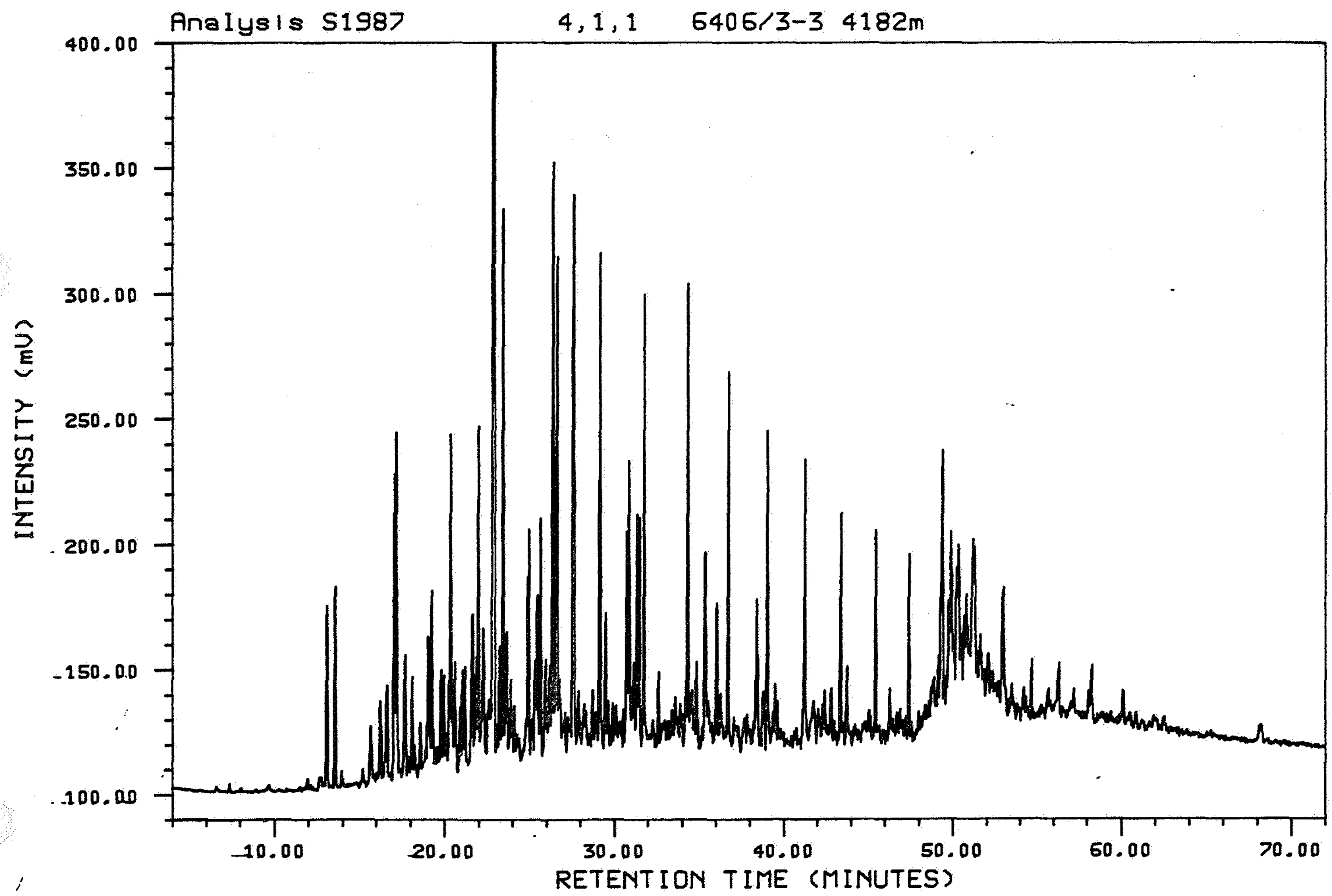

Analysis S1981 4,1,1 4050m
700.00
600.00
500.00
400.00
300.00
200.00
100.00
INTENSITY (mU)
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)


Analysis S1982 4,1,1 6406/3-3 4053m
INTENSITY (mV)
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)


Analysis S1983 4,1,1 6406/3-3 4059m
INTENSITY (mV)
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)



Analysis S1984 4,1,1 6406/3-3 4062m
INTENSITY (mV)
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)



Analysis S1987 4,1,1 6406/3-3 4182m
INTENSITY (mV)
400.00
350.00
300.00
250.00
200.00
150.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

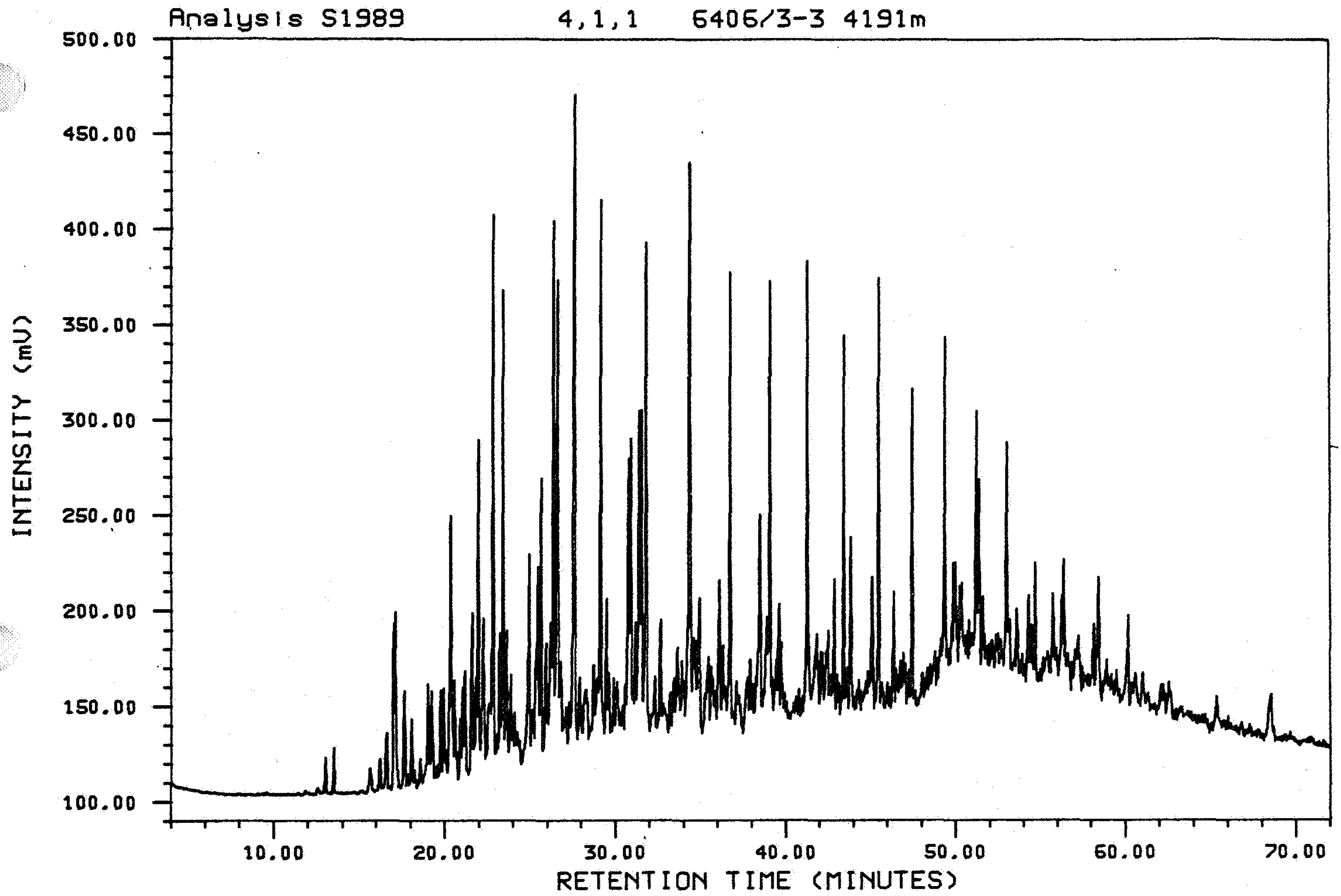
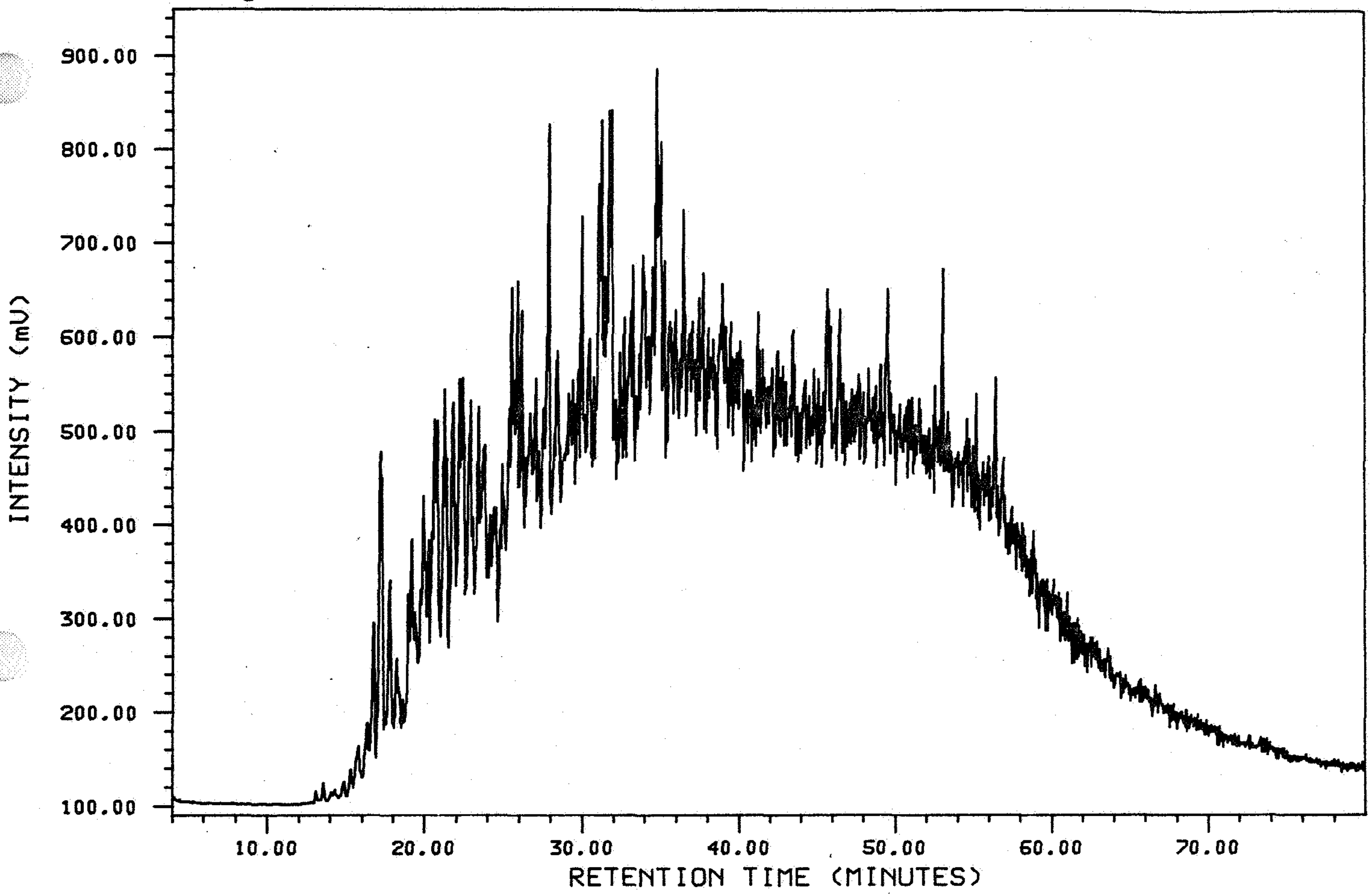

Analysis S1989 4,1,1 6406/3-3 4191m
INTENSITY (mV)
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

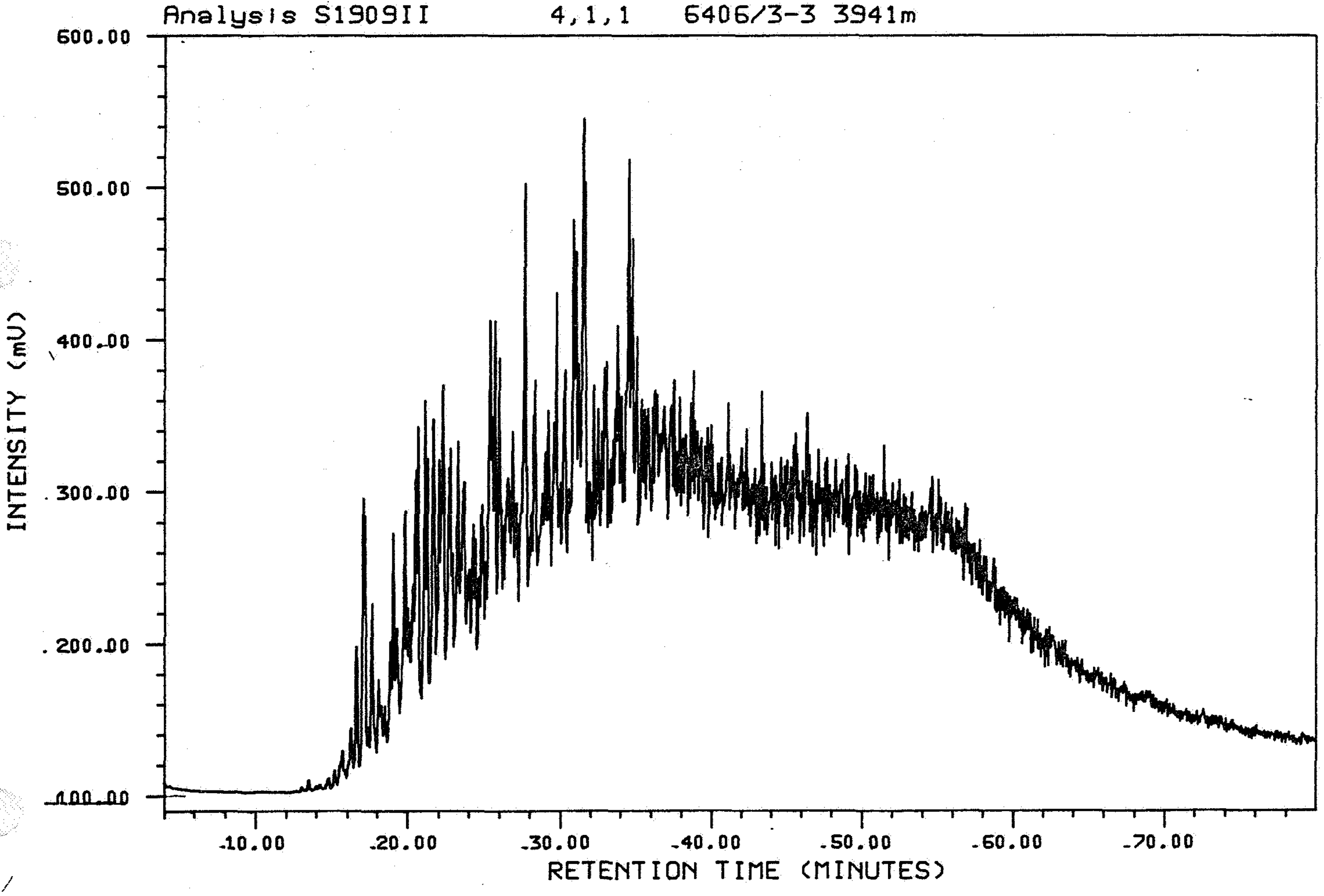
Figure 4

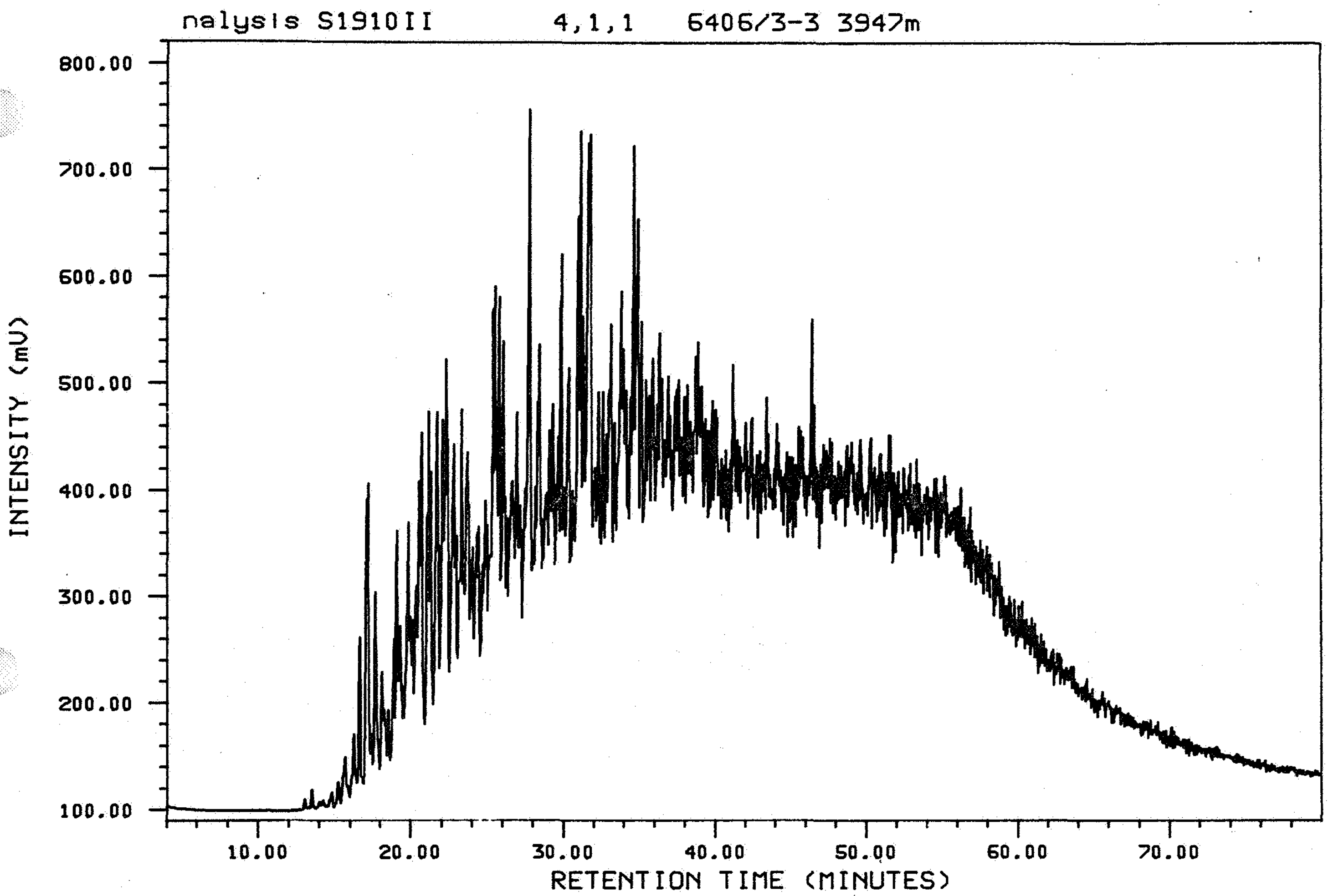
C_{15+} Aromatic fraction hydrocarbon chromatograms

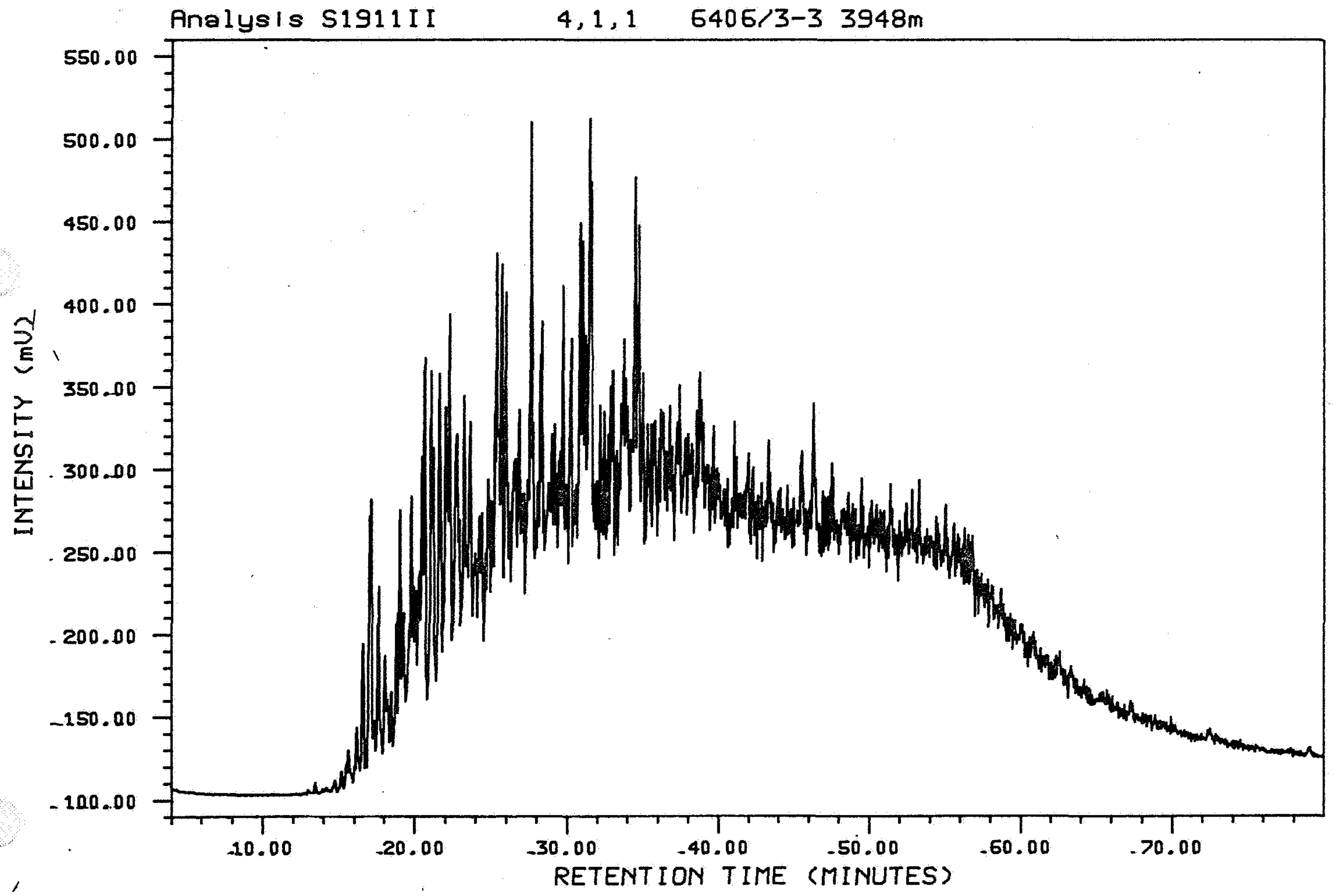
Analysis S1908II 4,1,1 6406/3-3 3938m



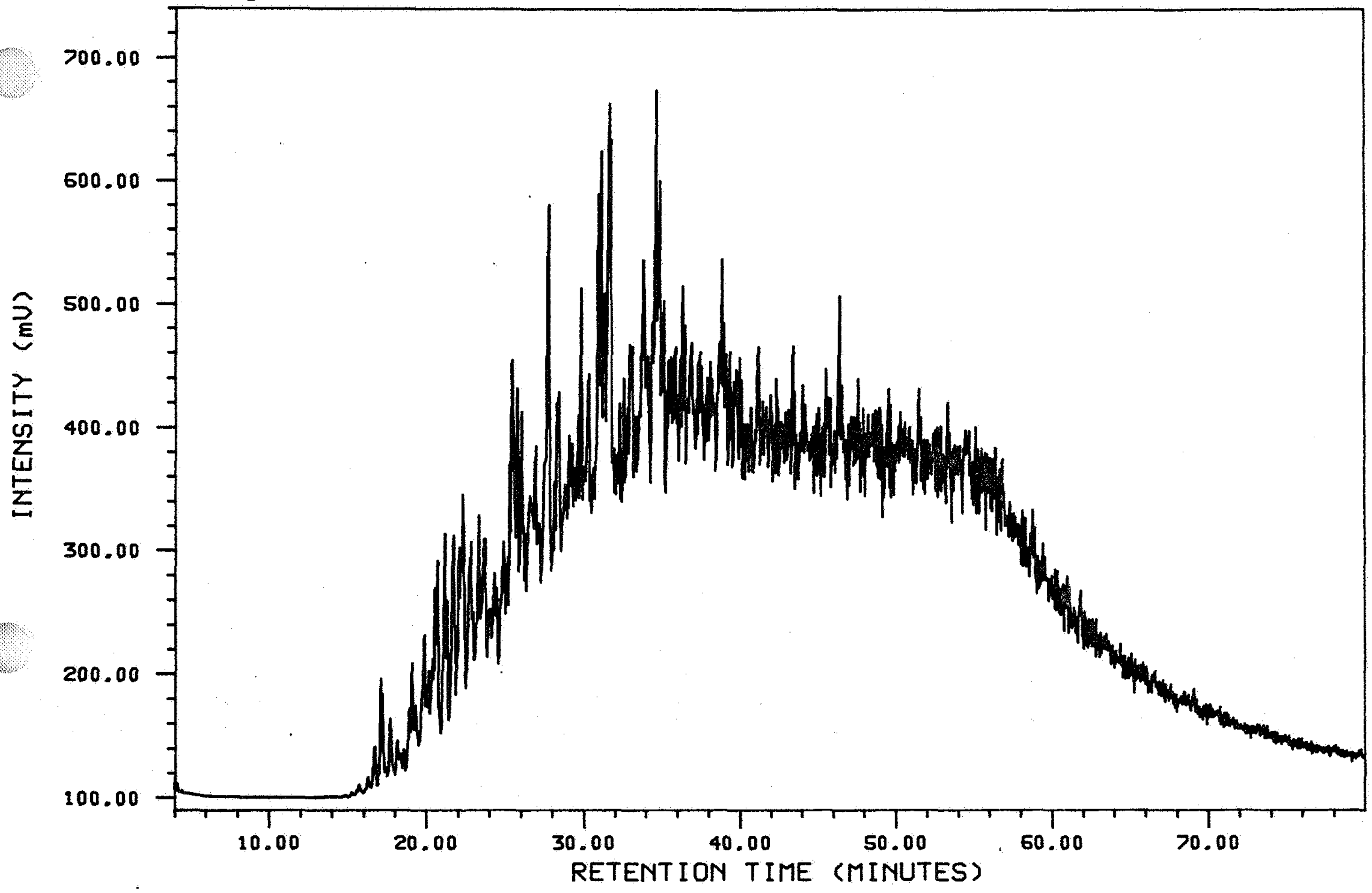
Analysis S1909II 4,1,1 6406/3-3 3941m



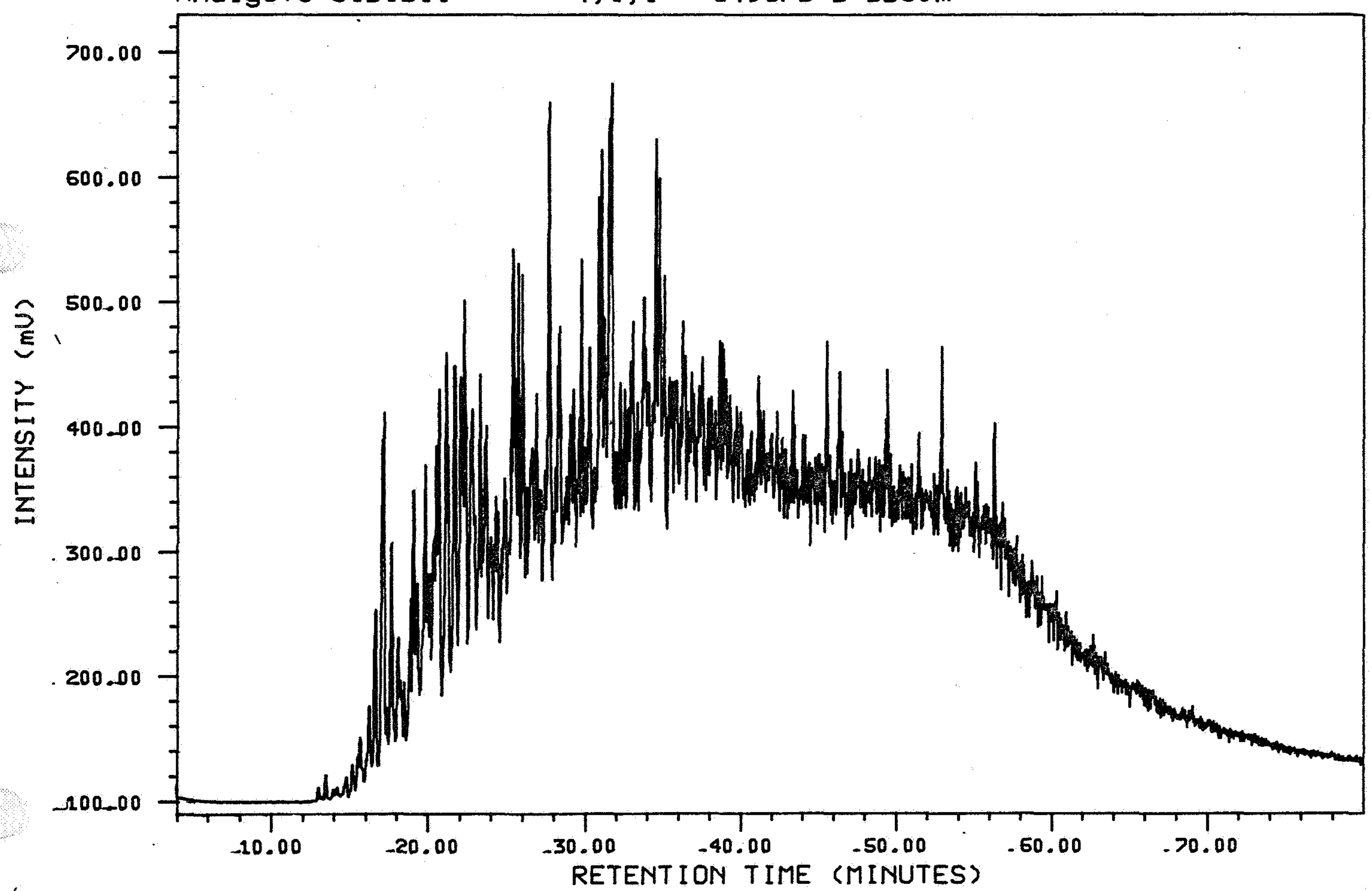

nalysis S1910II 4,1,1 6406/3-3 3947m
INTENSITY (mV)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

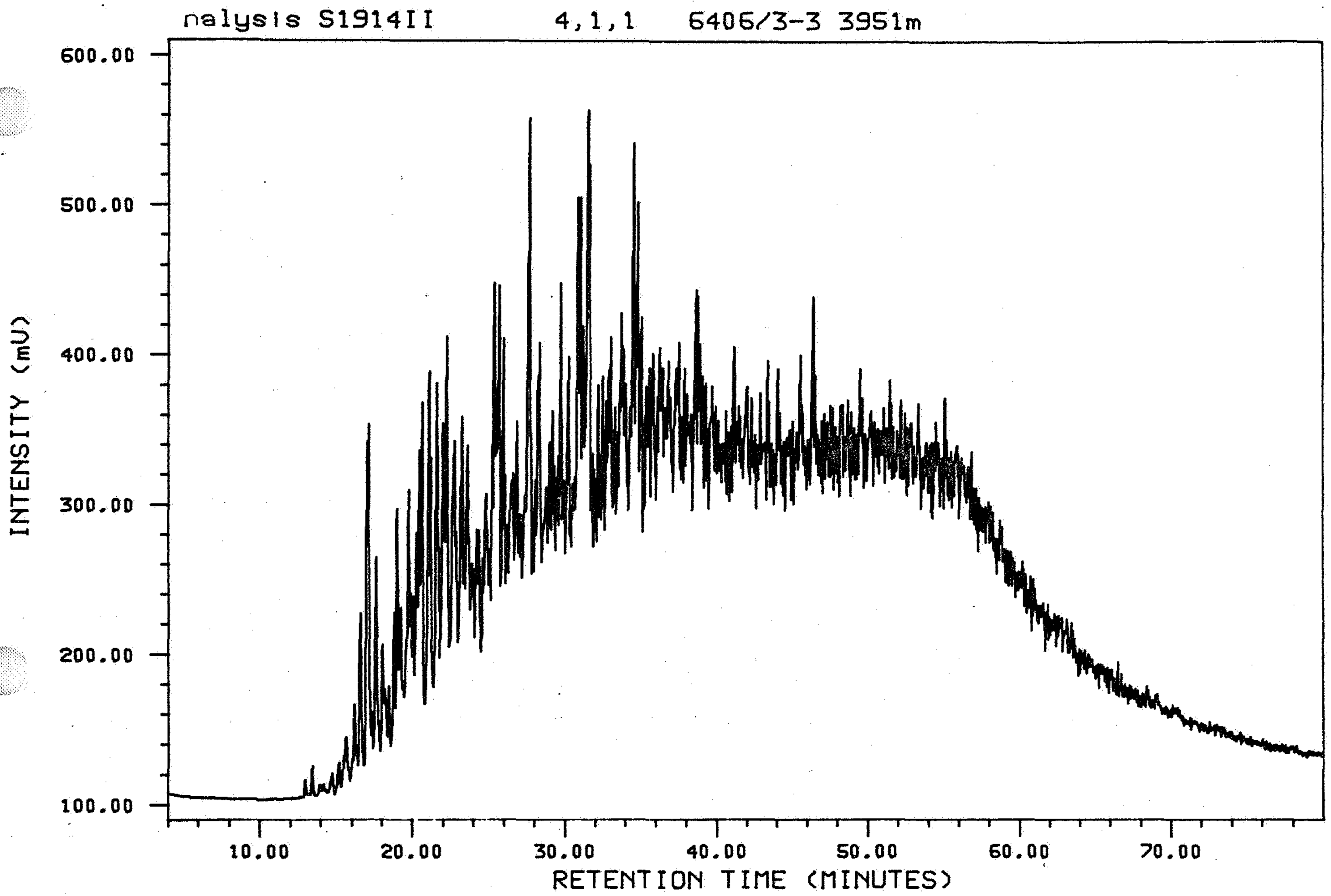

Analysis S1911II 4,1,1 6406/3-3 3948m
INTENSITY (mV)
550.00
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

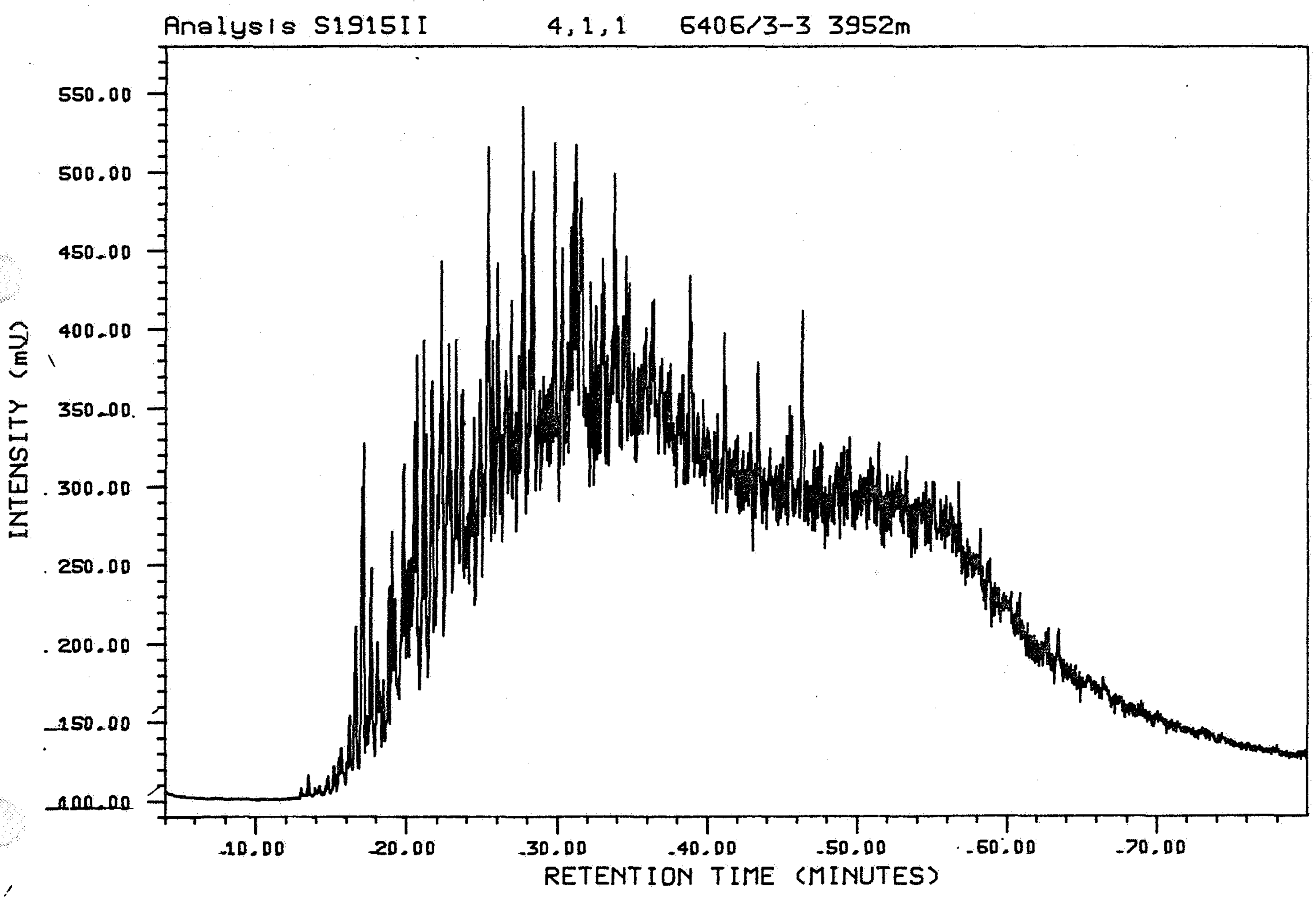
nalysis S1912II 4,1,1 6406/3-3 3949m

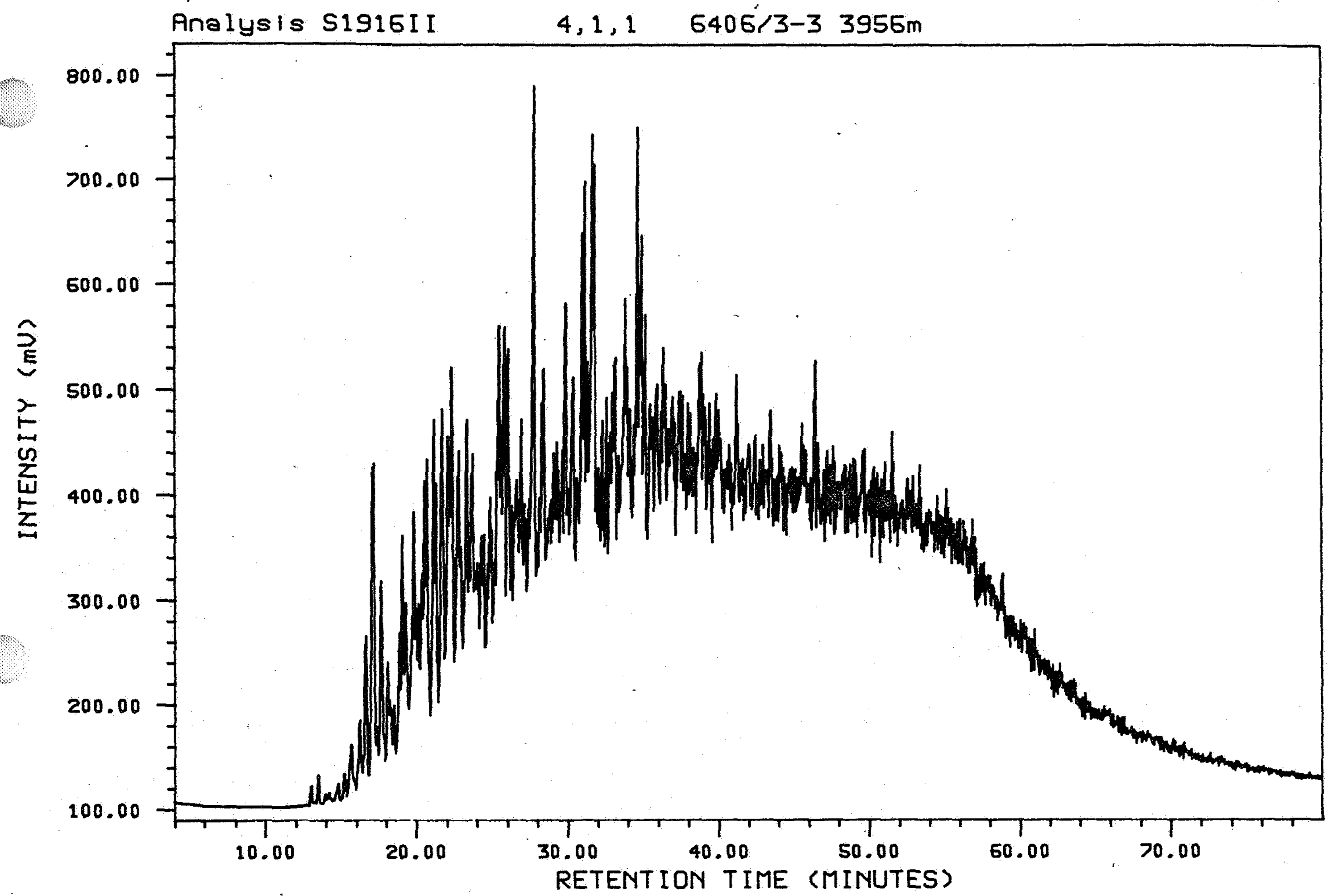


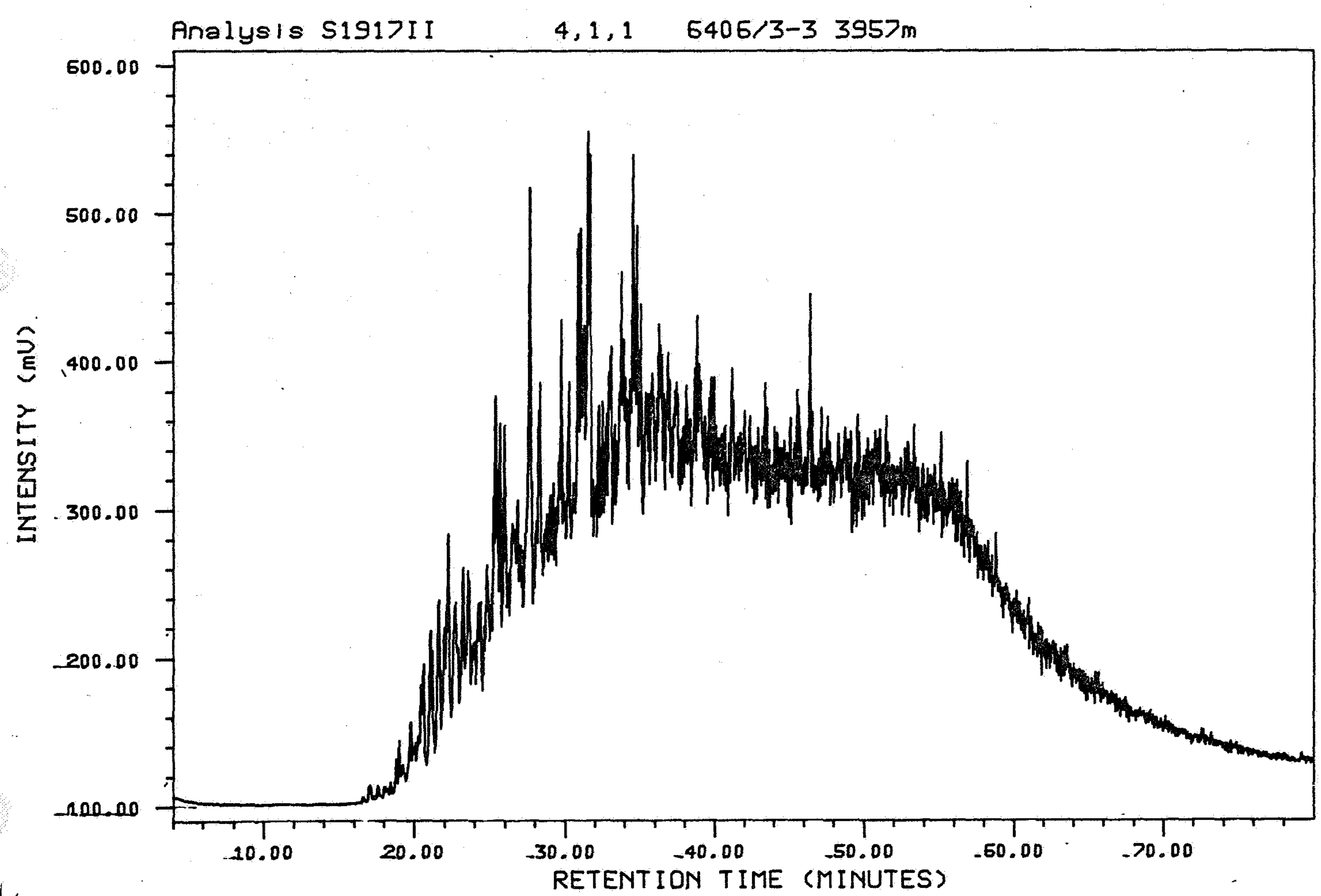
Analysis S1913II 4,1,1 6406/3-3 3950m




nalysis S1914II 4,1,1 6406/3-3 3951m
600.00
500.00
400.00
300.00
200.00
100.00
INTENSITY (mU)
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)


Analysis S1915II 4,1,1 6406/3-3 3952m
550.00
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
INTENSITY (mU)
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)


Analysis S1916II 4,1,1 6406/3-3 3956m
INTENSITY (mV)
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)


Analysis S1917II 4,1,1 6406/3-3 3957m
INTENSITY (mV)
600.00
500.00
400.00
300.00
200.00
100.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
RETENTION TIME (MINUTES)

REFERENCE

Espitalié, J., G. Deroo and F. Marquis (1986): Rock-eval and its applications. Revue de l'institute français du petrole, Vol. 40, no. 6, 1985/1986

Appendix A

(Analyses performed by IKU)

REPORT

REPORT TITLE: DATA REPORT

GEOCHEMICAL ANALYSIS OF SAMPLES FROM 6406/3-3.

REPORT NO.: 22.1848.00/01/87

AUTHORS:

L.Leith, K.Lind, M.Smelror, S.Stene

IKU

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REPORT

REG. NO.:	ACCESSIBILITY:
87.066	Confidential

REPORT TITLE:

DATA REPORT

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DATE:	NO. OF PAGES:	NO. OF APPENDICES:	PROJECT MANAGER:	SIGN.:
27 April -87	221	-	Leslie Leith	hin Schou

CLIENT:

Statoil, Geolab, Att.: Trygve Meyer. Statoil Open Contract T.4533, job no. 28.

SUMMARY:

This report presents geochemical data for a number of samples from well 6406/3-3. The analyses used include: Vitrinite reflectance, thermal alteration index (TAI) and gas chromatography-mass spectrometry (GC-MS) of saturate biomarkers. In addition, thirteen samples were treated to isolate the kerogen.

KEY WORDS:

6406/3-3	Vitrinite reflectance
Maturation	Thermal alteration index
Biomarkers	Kerogen description

CONTENTS

1. INTRODUCTION

A number of samples from well 6406/3-3 were sent to IKU for organic geochemical analysis. The samples were analysed under IKU project number 22.1848, in accordance with Statoil Open Contract no. T.4533, no. 28. The project was authorised by Trygve Meyer of Statoil, Geolab in Stavanger.

The analyses included: vitrinite reflectance, kerogen description and thermal alteration index (TAI), and combined gas chromatography-mass spectrometry (GC-MS) of the saturate biomarkers (ions m/z 163, 177, 191, 205, 217, 218, 231 and 259). In addition, thirteen samples were provided for kerogen isolation only. The isolated kerogens were dispatched under separate cover.

The following analyses were carried out on the following samples:

<u>Analysis: Vitrinite reflectance, kerogen description and TAI:</u>
<u>Total = 30 samples</u>

IKU no.	Statoil no.	IKU no.	Statoil no.	IKU no.	Statoil no.
C-5811	S1898	C-5821	S1933	C-5831	S1943
C-5812	S1899	C-5822	S1934	C-5832	S1944
C-5813	S1900	C-5823	S1935	C-5833	S1945
C-5814	S1901	C-5824	S1936	C-5834	S1946
C-5815	S1902	C-5825	S1937	C-5835	S1947
C-5816	S1903	C-5826	S1938	C-5806	S1948
C-5817	S1904	C-5827	S1939	C-5807	S1949
C-5818	S1905	C-5828	S1940	C-5808	S1950
C-5819	S1906	C-5829	S1941	C-5809	S1951
C-5820	S1907	C-5830	S1942	C-5810	S1952

IKU SINTEF-GRUPPEN

Analysis: GC-MS, saturate biomarkers: Total = 26 samples

IKU no.	Statoil no.	IKU no.	Statoil no.	IKU no.	Statoil no.
C-6008	S1908	C-6017	S1917	C-6026	S1983*
C-6009	S1909	C-6018	S1920	C-6027	S1984*
C-6010	S1910	C-6019	S1921	C-6028	S1987*
C-6011	S1911	C-6020	S1922	C-6029	S1989*
C-6012	S1912	C-6021	S1955*	C-6030	S1954B*
C-6013	S1913	C-6022	S1960*	C-6031	S1961B*
C-6014	S1914	C-6023	S1967*	C-6032	S1973B*
C-6015	S1915	C-6024	S1981*	C-6033	S1977B*
C-6016	S1916	C-6025	S1982*	C-6033	S1977B*

(* Samples for which kerogen isolates were prepared).

The GC-MS analyses were carried out on extracts provided by Statoil.

On approval of a draft data report, five copies of the final report will be sent to Statoil, Geolab. An additional ten copies of the report will be stored at IKU.

2. VITRINITE REFLECTANCE DATA

a) Vitrinite reflectance data table.
b) Regression plot for vitrinite reflectance data.
c) Description of samples in reflected light.
d) Vitrinite reflectance histograms.

Well Identification:6406/3-3
Reference number:T-4533 #28
(1/3)

a. VITRINITE REFLECTANCE DATA

IKU NO	LOCATION	DEPTH (M)	VITRINITE REFLECTANCE	DATA REL.	STANDARD DEVIATION	FLUORESCENCE
C 5811	----	1610	0.41 (1)	PR	0.00	2-3?
			0.86 (1)	R	0.00	
C 5812	----	1700	0.37 (4)	P	0.06	2-3?
			0.50 (2)	R	0.02	
			0.81 (2)	R	0.22	
C 5813	----	1790	0.34 (18)	G	0.09	1-3
			0.67 (3)	R	0.02	
			0.89 (3)	R	0.11	
C 5814	----	1900	0.34 (29)	G	0.07	1-4
			0.54 (1)	R	0.00	
C 5815	----	2000	0.36 (16)	G	0.06	1-4
			0.20 (2)	S	0.01	
			0.62 (3)	R	0.06	
C 5816	----	2100	0.39 (7)	F	0.05	1-3
			0.23 (1)	S	0.00	
			0.69 (3)	R	0.05	
C 5817	----	2200	0.37 (14)	G	0.07	2-3
			0.22 (4)	S	0.01	
			0.61 (2)	R	0.04	
C 5818	----	2300	0.34 (2)	P	0.01	2
			0.24 (1)	S	0.00	
			0.72 (2)	R	0.23	
C 5819	----	2400	0.48 (4)	PR	0.05	2-3
			0.22 (1)	S	0.00	
			0.80 (6)	R	0.13	
C 5820	----	2500	0.34 (5)	P	0.02	3?
			0.18 (1)	S	0.00	
			0.65 (6)	R	0.06	
C 5821	----	2600	0.59 (15)	PR?	0.10	2-4
			0.24 (1)	S	0.00	

DATA REL.=Data reliability: G=Good, F=Fair, P=Poor,
R=Reworked, B=Bitumen stained, C=Caved.
N.D.P.=No determination possible.

IKU SINTEF-GRUPPEN

Well Identification:6406/3-3
Reference number:T-4533 #28
(2/3)

a. VITRINITE REFLECTANCE DATA

IKU NO	LOCATION	DEPTH (M)	VITRINITE REFLECTANCE	DATA REL.	STANDARD DEVIATION	FLUORE-SCENCE
C 5822	----	2700	0.36 (6)	P	0.07	2-3
			0.69 (8)	R	0.10	
			0.97 (2)	R	0.10	
C 5823	----	2800	0.38 (4)	P	0.08	2-3
			0.87 (4)	R	0.22	
C 5824	----	2900	0.46 (6)	P	0.06	3-4
			0.66 (4)	R	0.08	
			1.13 (2)	R	0.01	
C 5825	----	3000	0.44 (3)	P	0.05	3-4
			0.63 (9)	R	0.06	
			0.91 (2)	R	0.11	
C 5826	----	3110	0.50 (11)	P	0.09	3-4
			0.26 (3)	S	0.02	
			0.82 (6)	R	0.06	
C 5827	----	3201	0.46 (14)	F	0.05	3-4
			0.30 (4)	S	0.02	
			0.86 (2)	R	0.06	
C 5828	----	3300	0.50 (8)	P	0.09	3-4
			0.24 (3)	S	0.03	
			0.84 (3)	R	0.03	
C 5829	----	3450	0.53 (13)	PR?	0.15	3-5
			0.94 (1)	R	0.00	
C 5830	----	3501	0.30 (4)	S	0.07	3-5
			0.54 (1)	P	0.00	
			0.83 (2)	R	0.04	
C 5831	----	3603	0.32 (5)	S	0.08	3-4?
			0.69 (5)	R	0.10	
C 5832	----	3702	0.63 (6)	PR?	0.03	3-4
			0.29 (3)	S	0.03	
			0.93 (11)	R	0.12	
C 5833	----	3801	0.58 (10)	F	0.07	3-4
			0.35 (2)	S	0.04	
			0.93 (8)	R	0.07	

DATA REL.=Data reliability: G=Good, F=Fair, P=Poor,
R=Reworked, B=Bitumen stained, C=Caved.
N.D.P.=No determination possible.

Well Identification:6406/3-3
Reference number:T-4533 #28
(3/3)

a. VITRINITE REFLECTANCE DATA

IKU NO	LOCATION	DEPTH (M)	VITRINITE REFLECTANCE	DATA REL.	STANDARD DEVIATION	FLUORE-SCENCE
C 5834	----	3903	0.55 (8)	F	0.07	4-5
			0.41 (1)	S	0.00	
			0.88 (3)	R	0.11	
C 5835	----	4002	0.62 (12)	F	0.06	5-6
			0.76 (3)	R	0.02	
			0.99 (5)	R	0.08	
C 5806	----	4151.7	0.65 (3)	P	0.07	6?
			0.82 (2)	R	0.08	
			1.18 (3)	R	0.12	
C 5807	----	4174.8	0.55 (14)	G	0.05	5-6
			0.81 (5)	R	0.05	
			1.00 (1)	R	0.00	
C 5808	----	4201.4	0.58 (8)	F	0.08	6?
			0.38 (5)	S	0.06	
			0.80 (5)	R	0.05	
C 5809	----	4300.8	0.46 (7)	PS	0.04	6-7?
			0.85 (13)	R	0.13	
C 5810	----	4407.8	0.59 (16)	G	0.07	6-7?
			0.41 (2)	S	0.04	
			0.92 (1)	R	0.00	

DATA REL.=Data reliability: G=Good, F=Fair, P=Poor,
R=Reworked, B=Bitumen stained, C=Caved.
N.D.P.=No determination possible.

Figure b. VITRINITE REFLECTANCE DATA REGRESSION

(FOR ALL PRINCIPAL POPULATIONS)

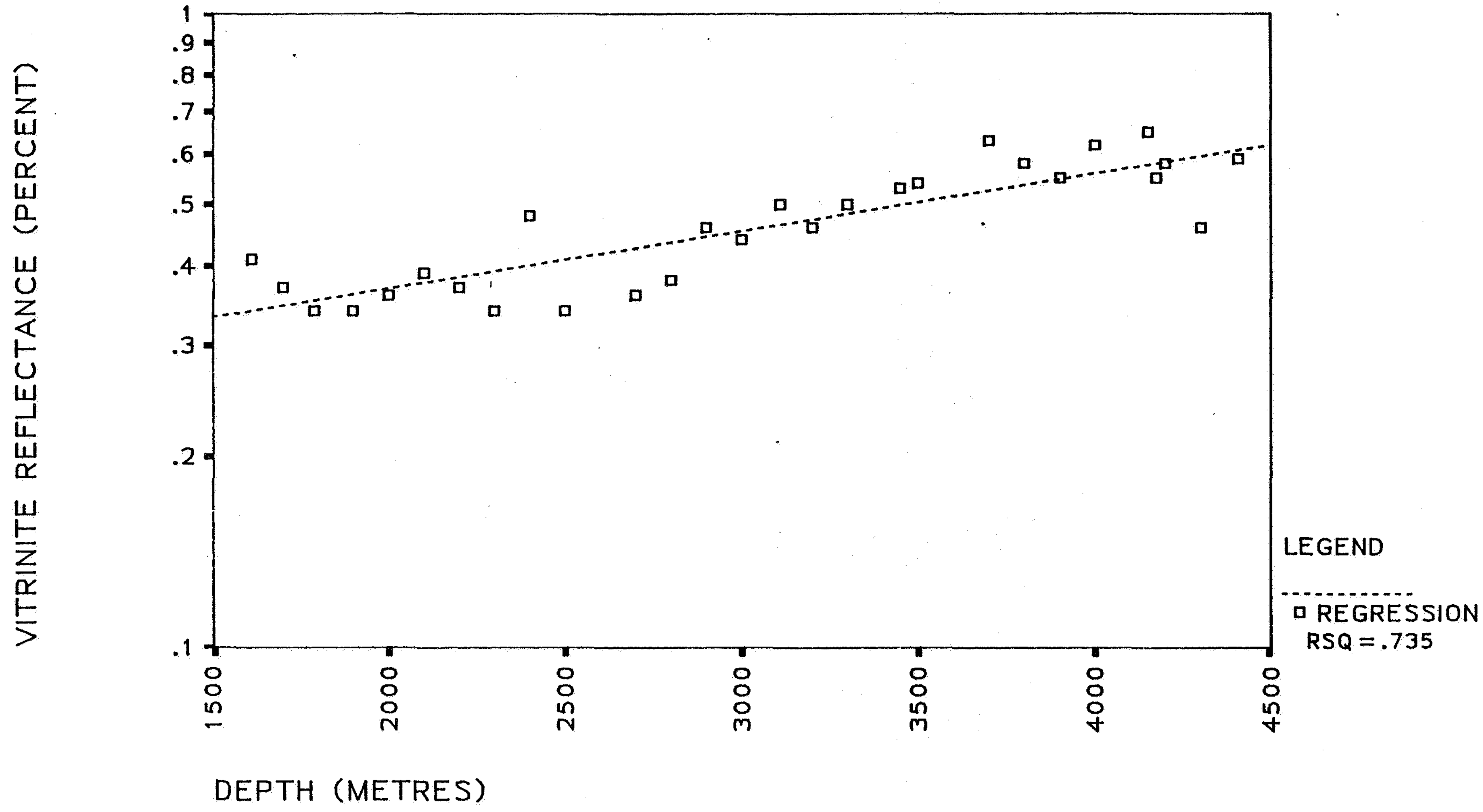
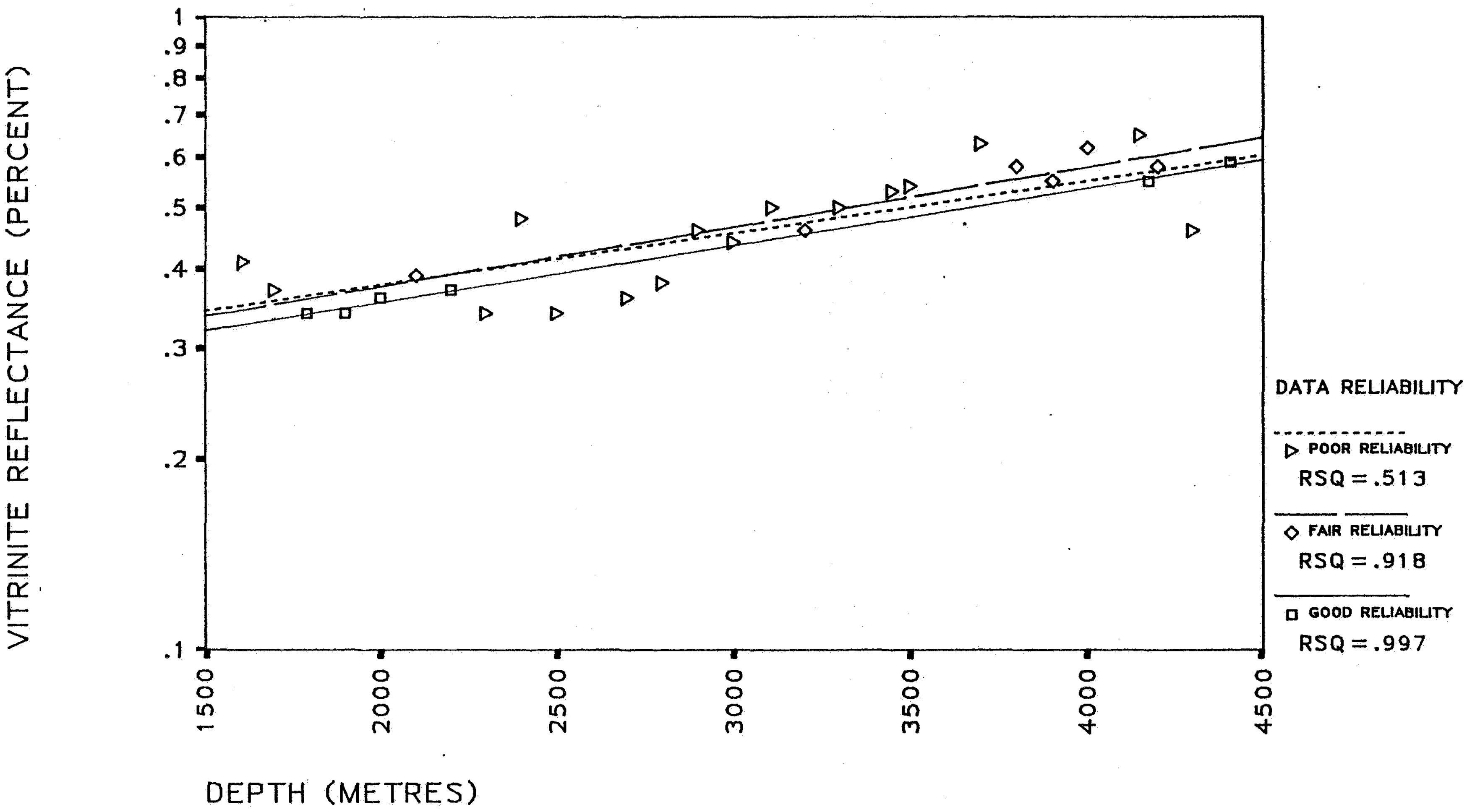


Figure b. VITRINITE REFLECTANCE DATA REGRESSION

(FOR INDIVIDUAL POPULATION RELIABILITY GROUPS)



c. Description of samples in reflected light

C-5811: 1610m
Vitrinite Reflectance: 0.41%(1);0.86%(1).
Sporinite Fluorescence: 2-3?

This sample is comprised of a clean quartz sand containing virtually no organic matter, except for a few reworked vitrinite particles and occasional brown liptinite wisps. Chips of a poorly reflecting material were also seen in the sample which bear some resemblance to solid bitumen. These may represent drilling fluid additives. In ultra-violet light, only traces of small green-yellow to yellow amorphous particles are seen in the more argillaceous chips.

C-5812: 1700m
Vitrinite Reflectance: 0.37%(4);0.50%(2);0.81%(2).
Sporinite Fluorescence: 2-3?

The sample consists mostly of quartz sandstone grains and less common claystone chips. Sponge spicules, possible diatom fragments and particles tentatively identified as being derived from the siliceous sponge 'geodia', were also observed. The dark, bitumen-like material is also quite common in this sample. Organic matter is quite scarce, consisting of small reworked vitrinite particles and brown bitumen wisps. Some rock chips are quite rich in the latter. The sample is similar in appearance to the previous one in ultra-violet light.

C-5813: 1790m
Vitrinite Reflectance: 0.34%(18);0.67%(3);0.89%(3).
Sporinite Fluorescence: 1-3.

The sample is similar to the previous sample in appearance, the organic matter tending to be restricted to the more argillaceous particles. In ultra-violet light, yellow-orange to light orange cutinite and fragmentary green to yellow sporinite are present. The claystone chips show an orange matrix fluorescence.

C-5814: 1900m
Vitrinite Reflectance: 0.34%(29);0.54%(1).
Sporinite Fluorescence: 1-4.

The sample consists of a siltstone/claystone lithology, the claystone chips being quite rich in particulate organic matter. This organic matter consists mostly of brown liptinite wisps and staining. Indigenous vitrinite particles of reasonable surface quality are quite common. In ultra-violet light, two types of chip can be recognised: one is similar to that described from the previous sample and the other has a more dully-fluorescing matrix. Liptinite particles are fragmentary and scattered, consisting most commonly of green to yellow-orange sporinite/cutinite particles.

C-5815: 2000m
Vitrinite Reflectance: 0.36%(16);0.20%(2);0.62%(3).
Sporinite Fluorescence: 1-4.

This sample is similar in appearance to sample C-5814. The sample has a poor content of liptinite in ultra-violet light, which is similar in nature to that in the previously described sample, although tending to have more of a greenish fluorescence.

C-5816: 2100m
Vitrinite Reflectance: 0.39%(7);0.23%(1);0.69%(3).
Sporinite Fluorescence: 1-3.

This sample is dominated by a vari-coloured claystone lithology which is very poor in organic matter. The organic matter consists mainly of a few particles of reworked vitrinite, occasional liptinite wisps and small indigenous vitrinite particles. The sample is similar in appearance to the two previous samples, in ultra-violet light, the liptinite fragments vary from green to yellow.

C-5817: 2200m
Vitrinite Reflectance: 0.37%(14);0.22%(4);0.61%(2).
Sporinite Fluorescence: 2-3.

The sample is comprised of a calcareous, organic-poor claystone, and the organic matter content, in both white and ultra-violet light, is similar to the preceding samples. This sample differs from these other samples, however, in having an appreciable content of indigenous vitrinite particles of reasonable quality.

C-5818: 2300m
Vitrinite Reflectance: 0.34%(2);0.24%(1);0.72%(2).
Sporinite Fluorescence: 2.

This sample consists of a vari-coloured claystone lithology and a silicified sandstone lithology. Sponge spicules and 'geodia?' fragments were also observed in this sample. This sample has a very poor organic matter content, comprised mostly of small reworked vitrinite particles. In ultraviolet light, the sample contains traces of small green-yellow sporinite or cutinite fragments. Some chips show a strong green matrix fluorescence.

C-5819: 2400m
Vitrinite Reflectance: 0.48%(4);0.22%(1);0.80%(6).
Sporinite Fluorescence: 2-3.

The sample consists of an organic-poor claystone containing only a few particles of reworked vitrinite and brown liptinite wisps. In ultraviolet light, the sample is similar in appearance to the preceding one.

C-5820: 2500m
Vitrinite Reflectance: 0.34%(5);0.18%(1);0.65%(6).
Sporinite Fluorescence: 3?

Claystone and sandstone chips are present in this sample, some chips consisting almost entirely of siliceous organism fragments. Organic matter is scarce, consisting mainly of small reworked vitrinite particles and brown liptinite wisps. In ultra-violet light, an orange matrix fluorescence is visible in some chips. No fluorescent liptinite was observed.

C-5821: 2600m
Vitrinite Reflectance: 0.59%(15);0.24%(1).
Sporinite Fluorescence: 2-4.

This sample is comprised of a claystone lithology with a fair richness of organic matter. This matter consists mainly of reworked vitrinite particles and small brown liptinite wisps. The vitrinite reflectance data are not considered to be reliable due to reworking. In ultra-violet light, the rock chips have a marked green matrix fluorescence. Liptinite is quite scarce, consisting of a few green-yellow to yellow-orange sporinite or cutinite fragments.

C-5822: 2700m
Vitrinite Reflectance: 0.36%(6);0.69%(8);0.97%(2).
Sporinite Fluorescence: 2-3.

The sample consists of a claystone lithology which is similar in appearance to the previous sample in both white and ultra-violet light.

C-5823: 2800m
Vitrinite Reflectance: 0.38%(4); 0.87%(4).
Sporinite Fluorescence: 2-3.

This claystone sample is similar to the previous two samples in white light. In ultra-violet light, liptinite fragments are even more scarce than in the previous two samples and are of uncertain origin.

C-5824: 2900m
Vitrinite Reflectance: 0.46%(6); 0.66%(4); 1.13%(2).
Sporinite Fluorescence: 3-4.

The sample consists of both claystone and sandstone chips, the organic matter being largely restricted to the claystone chips. The organic matter consists mostly of reworked vitrinite particles and brown liptinite wisps, although a few poor, probably indigenous, vitrinite particles were also seen. A marked green matrix fluorescence is evident in ultra-violet light. Unidentified yellow to yellow-orange liptinite fragments occur occasionally.

C-5825: 3000m
Vitrinite Reflectance: 0.44%(3);0.63%(9);0.91%(2).
Sporinite Fluorescence: 3-4.

A largely organic-lean claystone lithology accounts for most of this sample. The organic matter present consists mainly of small particles of reworked vitrinite and occasional brown liptinite wisps. Indigenous vitrinite particles are scarce and are of poor quality. The sample has a poor to fair liptinite content in ultra-violet light, consisting of dull yellow to yellow-orange sporinite and unidentified green-yellow to yellow-orange liptinite particles. Most of the rock chips show green or ochre matrix fluorescence.

C-5826: 3110m
Vitrinite Reflectance: 0.50%(11);0.26%(3);0.82%(6).
Sporinite Fluorescence: 3-4.

The sample consists of a claystone lithology with a poor to fair organic matter content comprised mostly of reworked vitrinite particles. In ultra-violet light, the sample is similar to the previous sample.

C-5827: 3201m
Vitrinite Reflectance: 0.46%(14);0.30%(4);0.86%(2).
Sporinite Fluorescence: 3-4.

The claystone lithology in this sample has a generally fair organic matter content, although reworked vitrinite particles account for most of this. There is a moderate content of brown liptinite wisps and indigenous vitrinite particles are also moderately common. These particles are mostly small and of variable surface quality. In ultra-violet light, fluorescent liptinitic material is quite scarce and consists of dull yellow to yellow-orange sporinite particles for the most part.

C-5828: 3300m
Vitrinite Reflectance: 0.50%(8);0.24%(3);0.84%(3).
Sporinite Fluorescence: 3-4.

This claystone sample is similar in appearance to the previous one, although containing fewer indigenous vitrinite particles. In ultra-violet light, the liptinite content is similar to that in the previous sample although the liptinitic material tends to be more yellow-orange in colour in this sample.

C-5829: 3450m
Vitrinite Reflectance: 0.53%(13);0.94%(1).
Sporinite Fluorescence: 3-5.

This sample consists of a mixed claystone/siltstone lithology. Some chips contain no organic matter, while other chips are quite rich in organic matter. This organic matter consists mostly of reworked vitrinite particles and brown liptinite wisps. Indigenous vitrinite particles are present, but are small and generally have poor surface quality. Liptinitic material is scarce in ultra-violet light and is restricted to the claystone chips. The liptinitic material present consists of yellow to yellow-orange sporinite and other darker, unidentified particles.

C-5830: 3501m
Vitrinite Reflectance: 0.30%(4);0.54%(1);0.83%(2).
Sporinite Fluorescence: 3-5.

This sample is similar in appearance to the previous sample in both white and ultra-violet light. The lowest vitrinite reflectance population is considered to be affected by bitumen staining.

C-5831: 3603m
Vitrinite Reflectance: 0.32%(5);0.69%(5).
Sporinite Fluorescence: 3-4?

This claystone sample is similar to the previous sample. In ultra-violet light, the liptinite content is very poor, being restricted to a few yellow to yellow-orange sporinite fragments and amorphous clumps.

C-5832: 3702m
Vitrinite Reflectance: 0.63%(6);0.29%(3);0.93%(11).
Sporinite Fluorescence: 3-4.

The main claystone lithology in this sample has a poor to fair organic matter content consisting mostly of reworked vitrinite particles. Of minor occurrence are brown liptinite wisps and stained vitrinite particles, which may be of indigenous origin. In ultra-violet light, the liptinitic material is restricted to a few chips and consists mostly of yellow to yellow-orange sporinite and other fragments.

C-5833: 3801m
Vitrinite Reflectance: 0.58%(10);0.35%(2);0.93%(8).
Sporinite Fluorescence: 3-4.

This sample contains a mixed sandstone/claystone lithology, although the organic matter content in the sample is fairly similar to that described for the previous sample.

C-5834: 3903m
Vitrinite Reflectance: 0.55%(8);0.41%(1);0.88%(3).
Sporinite Fluorescence: 4-5.

The claystone in this sample has a similar organic matter content to that described from the previous two samples. In ultra-violet light, the liptinitic material is largely restricted to a few chips and consists mainly of unidentified, light orange liptinite fragments and small, yellow-orange sporinite particles, although these latter particles are uncommon.

C-5835: 4002m
Vitrinite Reflectance: 0.62%(12);0.76%(3);0.99%(5).
Sporinite Fluorescence: 5-6.

The sample contains chips of silty claystone, siltstone and sandstone. The siltstone is quite organic-rich although this material consists mostly of reworked vitrinite, semifusinite and liptinite wisps. Inertinite is common in some chips. Indigenous vitrinite particles are present in some chips, but are of variable quality. Some coaly particles were observed, although these tended to have an oxidised appearance. In ultra-violet light, liptinitic material is fairly common, consisting of light to medium orange sporinite and assorted liptinite fragments, which form a significant part of the groundmass in some chips.

C-5806: 4151.7m
Vitrinite Reflectance: 0.65%(3);0.82%(2);1.18%(3).
Sporinite Fluorescence: 6?

The sample is dominated by a largely organic-poor sandstone lithology. The organic matter present in the samples consists almost wholly of reworked vitrinite and semifusinite. In ultra-violet light, there is a marked mineral fluorescence in the sandstone chips which appears to represent the cement material. A few medium orange particles were observed, although these may not be of liptinitic origin.

C-5807: 4174.8m
Vitrinite Reflectance: 0.55%(14);0.81%(5);1.00%(1).
Sporinite Fluorescence: 5-6.

This sample consists of both siltstone and sandstone chips. The sandstone chips are similar to those described from the previous sample. The siltstone chips are slightly more organic-rich and do contain some possibly indigenous vitrinite particles. In ultra-violet light, the liptinite content is still poor, but some possible light to medium orange sporinite fragments were observed.

C-5808: 4201.4m
Vitrinite Reflectance: 0.58%(8);0.38%(5);0.80%(5).
Sporinite Fluorescence: 6?

This sample is similar in nature to the previous one. The organic matter present tends to occur as inter-granular infill. The sandstone often shows an unusual texture. The vitrinite particles present in the sample tend to be small and are difficult to measure accurately.

C-5809: 4300.8m
Vitrinite Reflectance: 0.46%(7);0.85%(13).
Sporinite Fluorescence: 6-7?

This sample is similar to the previous two samples and the data are considered to be unreliable. In ultra-violet light, the liptinite particles tend to be a dark medium to dark orange colour.

C-5810: 4407.8m
Vitrinite Reflectance: 0.59%(16);0.41%(2);0.92%(1).
Sporinite Fluorescence: 6-7?

The sandstone lithology in this sample is similar to that described from the preceding samples. A more organic-rich siltstone lithology is also present, which contains a reasonable amount of quite good indigenous vitrinite particles. In ultra-violet light, the sample has a very poor liptinite content which is similar to that for the previously- described samples.

d. Vitrinite reflectance histograms

Key:	A	=	Grey-black-brown claystone. Upper case letters indicate values included in the main population. Lower case letters represent values in other populations.
	PP	=	Statistical data populations Y = Main population, not neccessarily representative of sample maturity. N = Other populations.
	LOW+ HIGH	=	Population limits.
	VAL.	=	Number of measurements in that population.

Lithology cross-reference table

A = Clst. gy
B = Clst. dk gy
C = Clst. gn
D = Clst. bn
E = Clst. rd
F = Clst. calc.
G = Clst. carb.
H = Shale
I = Sandstone
J = Limestone
K = Coal
L = Lignite
M = Carbargillite
N = Siltstone
O = Bit
P = X

```
IKU# C-5811  1610.0M 6406/3-3
    |
14- |
    |
12- |
    |
10- |
    |
 8- |
    |
 6- |
    |
 4- |
    |
 2- |
    |        i        ·d
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
```

PP	LOW	HIGH	LIT	#VAL	MEAN	STDV
N	0.41	0.42	ALL	1	0.41	0.00
N	0.86	0.87	ALL	1	0.86	0.00
			OVERALL	2	0.63	0.32

ORDERED VALUES FOLLOW:

0.41i 0.86d

```
IKU# C-5812  1700.0M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|
   |
 2-|      A A
   |      A Aaa  a   . a
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
Y 0.31 0.44 ALL    4 0.37 0.06
N 0.49 0.53 ALL    2 0.50 0.02
N 0.65 0.97 ALL    2 0.81 0.22
          OVERALL  8 0.51 0.21

ORDERED VALUES FOLLOW:

 0.31A 0.32A 0.40A 0.43A 0.49a 0.52a 0.65a 0.96a
```

```
IKU# C-5813  1790.0M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |      D
 4-|      DD
   |      DD      d
 2-|    DDDDD     d
   |   DDDKKDDD  d  dd  d
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
Y 0.18 0.53 ALL   18 0.34 0.09
N 0.65 0.69 ALL    3 0.67 0.02
N 0.80 1.03 ALL    3 0.89 0.11
          OVERALL 24 0.45 0.22

ORDERED VALUES FOLLOW:

 0.18D 0.22D 0.24D 0.26D 0.27D 0.32D 0.32K 0.34D 0.34D 0.34D 0.36D
 0.36D 0.37K 0.38D 0.42D 0.44D 0.47D 0.52D 0.65d 0.67d 0.68d 0.80d
 0.86d 1.02d
```

```
IKU# C-5814  1900.0M 6406/3-3
    |
14-|
    |
12-|
    |
10-|
    |
 8-|       D
    |     D D
 6-|     D D
    |     DDDD
 4-|     DDDD
    |     DDDD
 2-|    DDDDDD
    |    DDDDDDn
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
Y 0.22 0.47 ALL   29 0.34 0.07
N 0.54 0.55 ALL    1 0.54 0.00
          OVERALL 30 0.34 0.07

ORDERED VALUES FOLLOW:

 0.22D 0.24D 0.26D 0.26D 0.26D 0.27D 0.28D 0.28D 0.28D 0.30D 0.30D
 0.32D 0.34D 0.34D 0.35D 0.35D 0.36D 0.36D 0.36D 0.36D 0.36D 0.36D
 0.40D 0.41D 0.41D 0.41D 0.42D 0.46D 0.46D 0.54n
```

```
IKU# C-5815  2000.0M 6406/3-3
    |
14- |
    |
12- |
    |
10- |
    |
 8- |
    |
 6- |
    |      D
 4- |      DDD
    |      DDD
 2- |    dDDDD  d
    |    dADADA d d
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW  HIGH LIT #VAL MEAN STDV
Y 0.27 0.46 ALL   16 0.36 0.06
N 0.20 0.22 ALL    2 0.20 0.01
N 0.58 0.70 ALL    3 0.62 0.06
          OVERALL 21 0.38 0.12

ORDERED VALUES FOLLOW:

 0.20d 0.21d 0.27D 0.28A 0.30D 0.31D 0.31D 0.32D 0.34D 0.35D 0.35D
 0.35D 0.39A 0.41D 0.42D 0.43D 0.43D 0.45A 0.58d 0.59d 0.69d
```

```
IKU# C-5816  2100.0M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |        D
 4-|        D
   |        D
 2-|      D A    d
   |    d A A    dd
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
```

PP	LOW	HIGH	LIT	#VAL	MEAN	STDV
Y	0.30	0.45	ALL	7	0.39	0.05
N	0.23	0.24	ALL	1	0.23	0.00
N	0.65	0.75	ALL	3	0.69	0.05
			OVERALL	11	0.46	0.16

ORDERED VALUES FOLLOW:

0.23d 0.30D 0.34A 0.40A 0.42A 0.43D 0.43D 0.44D 0.65d 0.67d 0.74d

```
IKU# C-5817  2200.0M 6406/3-3
    |
14-|
    |
12-|
    |
10-|
    |
 8-|
    |
 6-|
    |
 4-|     b  B
    |     b BBB
 2-|     bBBBDB
    |     aDBDKB kd
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
```

PP	LOW	HIGH	LIT	#VAL	MEAN	STDV
Y	0.25	0.50	ALL	14	0.37	0.07
N	0.21	0.24	ALL	4	0.22	0.01
N	0.58	0.65	ALL	2	0.61	0.04
			OVERALL	20	0.36	0.12

ORDERED VALUES FOLLOW:

0.21a 0.21b 0.22b 0.23b 0.25B 0.26D 0.31B 0.32B 0.33B 0.35B 0.37D
0.37B 0.39B 0.41K 0.41D 0.42B 0.45B 0.49B 0.58k 0.64d

```
IKU# C-5818  2300.0M 6406/3-3
    |
 14-|
    |
 12-|
    |
 10-|
    |
  8-|
    |
  6-|
    |
  4-|
    |
  2-|
    |    d DD   i     n
  0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
```

PP	LOW	HIGH	LIT	#VAL	MEAN	STDV
Y	0.33	0.36	ALL	2	0.34	0.01
N	0.24	0.25	ALL	1	0.24	0.00
N	0.56	0.89	ALL	2	0.72	0.23
			OVERALL	5	0.47	0.26

ORDERED VALUES FOLLOW:

0.24d 0.33D 0.35D 0.56i 0.88n

```
IKU# C-5819  2400.0M 6406/3-3
    I
14-I
    I
12-I
    I
10-I
    I
 8-I
    I
 6-I
    I
 4-I
    I
 2-I         D
    I    d   DDD a dddd d
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
Y 0.42 0.55 ALL    4 0.48 0.05
N 0.22 0.23 ALL    1 0.22 0.00
N 0.62 0.98 ALL    6 0.80 0.13
          OVERALL 11 0.63 0.23

ORDERED VALUES FOLLOW:

 0.22d 0.42D 0.47D 0.49D 0.54D 0.62a 0.70d 0.78d 0.84d 0.87d 0.97d
```

```
IKU# C-5820  2500.0M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|
   |      D
 2-|      AA   a  a
   |   a  AA   aaaa  a  n
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
Y 0.30 0.36 ALL    5 0.34 0.02
N 0.18 0.19 ALL    1 0.18 0.00
N 0.59 0.75 ALL    6 0.65 0.06
          OVERALL 14 0.54 0.24

ORDERED VALUES FOLLOW:

 0.18a 0.30A 0.34D 0.34A 0.35A 0.35A 0.59a 0.59a 0.60a 0.66a 0.70a
 0.74a 0.85a 1.00n
```

```
IKU# C-5821  2600.0M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|           A
   |           AA
 2-|          AAA A
   |    a   AAAAAAAA
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
N 0.24 0.25 ALL    1 0.24 0.00
Y 0.41 0.80 ALL   15 0.59 0.10
          OVERALL 16 0.57 0.13

ORDERED VALUES FOLLOW:

 0.24a 0.41A 0.46A 0.50A 0.52A 0.56A 0.56A 0.56A 0.58A 0.60A 0.61A
 0.64A 0.68A 0.70A 0.71A 0.79A
```

```
IKU# C-5822  2700.0M 6406/3-3
    I
14- I
    I
12- I
    I
10- I
    I
 8- I
    I
 6- I
    I
 4- I
    I
 2- I        A   a   a
    I      AAAAA aaaaaa a a
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
Y 0.26 0.46 ALL    6 0.36 0.07
N 0.56 0.84 ALL    8 0.69 0.10
N 0.90 1.05 ALL    2 0.97 0.10
          OVERALL 16 0.60 0.23

ORDERED VALUES FOLLOW:

 0.26A 0.32A 0.35A 0.37A 0.42A 0.45A 0.56a 0.58a 0.62a 0.69a 0.72a
 0.75a 0.77a 0.83a 0.90a 1.04a
```

```
IKU# C-5823  2800.OM 6406/3-3
      |
 14-  |
      |
 12-  |
      |
 10-  |
      |
  8-  |
      |
  6-  |
      |
  4-  |
      |
  2-  |        A
      |        A AA  a   a  a  a
  0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
```

PP	LOW	HIGH	LIT	#VAL	MEAN	STDV
Y	0.31	0.48	ALL	4	0.38	0.08
N	0.60	1.13	ALL	4	0.87	0.22
			OVERALL	8	0.62	0.30

ORDERED VALUES FOLLOW:

0.31A 0.32A 0.42A 0.47A 0.60a 0.80a 0.95a 1.12a

```
IKU# C-5824  2900.0M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|
   |        D
 2-|        K   i         a
   |        KDDDad i      a
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
```

PP	LOW	HIGH	LIT	#VAL	MEAN	STDV
Y	0.40	0.56	ALL	6	0.46	0.06
N	0.60	0.79	ALL	4	0.66	0.08
N	1.13	1.15	ALL	2	1.13	0.01
			OVERALL	12	0.64	0.26

ORDERED VALUES FOLLOW:

0.40D 0.41K 0.42K 0.45D 0.53D 0.55D 0.60i 0.60a 0.66d 0.78i 1.13a
1.14a

```
IKU# C-5825  3000.0M 6406/3-3
    |
14- |
    |
12- |
    |
10- |
    |
 8- |
    |
 6- |
    |
 4- |
    |           dn
 2- |           da d
    |     d DDD aadk a· d
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
```

PP	LOW	HIGH	LIT	#VAL	MEAN	STDV
Y	0.39	0.49	ALL	3	0.44	0.05
N	0.55	0.74	ALL	9	0.63	0.06
N	0.83	0.99	ALL	2	0.91	0.11
			OVERALL	15	0.60	0.17

ORDERED VALUES FOLLOW:

0.29d 0.39D 0.44D 0.48D 0.55d 0.57a 0.58d 0.60n 0.61a 0.63a 0.67d
0.72d 0.73k 0.83a 0.98d

```
IKU# C-5826  3110.OM 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |          A
 4-|          A
   |       D  A    a
 2-|     a A  A A  aa
   |    aa A  AAA  aa a
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
```

PP	LOW	HIGH	LIT	#VAL	MEAN	STDV
Y	0.36	0.63	ALL	11	0.50	0.09
N	0.24	0.29	ALL	3	0.26	0.02
N	0.78	0.93	ALL	6	0.82	0.06
			OVERALL	20	0.56	0.21

ORDERED VALUES FOLLOW:

```
 0.24a 0.26a 0.28a 0.36A 0.36D 0.38A 0.50A 0.50A 0.54A 0.54A 0.54A
 0.58A 0.60A 0.62A 0.78a 0.78a 0.78a 0.80a 0.84a 0.92a
```

```
IKU# C-5827  3201.OM 6404/3-3
    |
14- |
    |
12- |
    |
10- |
    |
 8- |
    |
 6- |
    |          A
 4- |        AAA
    |      a AAA
 2- |      a AAA
    |     aaAAAA     a a
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW  HIGH LIT #VAL MEAN STDV
Y 0.35 0.55 ALL   14 0.46 0.05
N 0.27 0.33 ALL    4 0.30 0.02
N 0.82 0.91 ALL    2 0.86 0.06
          OVERALL 20 0.47 0.16

ORDERED VALUES FOLLOW:

 0.27a 0.30a 0.30a 0.32a 0.35A 0.40A 0.41A 0.42A 0.44A 0.46A 0.46A
 0.48A 0.48A 0.50A 0.50A 0.52A 0.52A 0.54A 0.82a 0.90a
```

```
IKU# C-5828  3300.0M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|
   |        A
 2-|    a   A A A    a
   |    aa  AAA A   aa
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
Y 0.40 0.63 ALL    8 0.50 0.09
N 0.22 0.29 ALL    3 0.24 0.03
N 0.80 0.87 ALL    3 0.84 0.03
          OVERALL 14 0.51 0.21

ORDERED VALUES FOLLOW:

 0.22a 0.23a 0.28a 0.40A 0.40A 0.43A 0.46A 0.52A 0.54A 0.60A 0.62A
 0.80a 0.85a 0.86a
```

```
IKU# C-5829  3450.0M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|
   |             D
 2-|      DD D  DD
   |      AA D IAAA   a
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
Y 0.30 0.71 ALL   13 0.53 0.15
N 0.94 0.95 ALL    1 0.94 0.00
          OVERALL 14 0.56 0.18

ORDERED VALUES FOLLOW:

 0.30A 0.33D 0.35D 0.37A 0.47D 0.48D 0.59I 0.61A 0.64D 0.65D 0.68A
 0.68D 0.70A 0.94a
```

```
IKU# C-5830  3501.OM 6406/3-3
     |
 14-|
     |
 12-|
     |
 10-|
     |
  8-|
     |
  6-|
     |
  4-|
     |
  2-|      b
     |    d ba  d      ea
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
```

PP	LOW	HIGH	LIT	#VAL	MEAN	STDV
N	0.20	0.38	ALL	4	0.30	0.07
N	0.54	0.55	ALL	1	0.54	0.00
N	0.80	0.87	ALL	2	0.83	0.04
			OVERALL	7	0.48	0.26

ORDERED VALUES FOLLOW:

0.20d 0.30b 0.32b 0.37a 0.54d 0.80e 0.86a

```
IKU# C-5831  3603.0M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|
   |
 2-|      d        d
   |    dad d  ad aa
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
N 0.22 0.45 ALL     5 0.32 0.08
N 0.56 0.79 ALL     5 0.69 0.10
          OVERALL  10 0.50 0.21

ORDERED VALUES FOLLOW:

 0.22d 0.26a 0.32d 0.34d 0.44d 0.56a 0.62d 0.73a 0.76d 0.78a
```

```
IKU# C-5832  3702.OM 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|            A
   |            A     a
 2-|      a     AA  aaa   a
   |     aa     AA aaaa  aa
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
```

PP	LOW	HIGH	LIT	#VAL	MEAN	STDV
Y	0.60	0.68	ALL	6	0.63	0.03
N	0.26	0.33	ALL	3	0.29	0.03
N	0.78	1.13	ALL	11	0.93	0.12
			OVERALL	20	0.74	0.25

ORDERED VALUES FOLLOW:

0.26a 0.30a 0.32a 0.60A 0.60A 0.62A 0.63A 0.65A 0.67A 0.78a 0.81a
0.84a 0.88a 0.88a 0.91a 0.91a 0.92a 1.06a 1.12a 1.12a

```
IKU# C-5833  3801.OM 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|
   |            B
 2-|         A AAK    aaa
   |      aa ABAAA  aaaaa
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW  HIGH LIT #VAL MEAN STDV
Y 0.48 0.69 ALL   10 0.58 0.07
N 0.32 0.39 ALL    2 0.35 0.04
N 0.83 1.03 ALL    8 0.93 0.07
          OVERALL 20 0.69 0.22

ORDERED VALUES FOLLOW:

 0.32a 0.38a 0.48A 0.49A 0.50B 0.56A 0.58A 0.60A 0.61A 0.61B 0.65K
 0.68A 0.83a 0.86a 0.90a 0.90a 0.95a 0.96a 1.00a 1.02a
```

```
IKU# C-5834  3903.OM 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|
   |          D
 2-|          DD    d
   |        aDDDDD  d   a
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
Y 0.45 0.70 ALL    8 0.55 0.07
N 0.41 0.42 ALL    1 0.41 0.00
N 0.80 1.02 ALL    3 0.88 0.11
          OVERALL 12 0.62 0.18

ORDERED VALUES FOLLOW:

 0.41a 0.45D 0.51D 0.51D 0.54D 0.55D 0.55D 0.61D 0.69D 0.80d 0.83d
 1.01a
```

```
IKU# C-5835  4002.OM 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|            D
   |           DDD d
 2-|           DDD d  d  d
   |         D DDDDd  kd d
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW  HIGH LIT #VAL MEAN STDV
Y 0.48 0.71 ALL    12 0.62 0.06
N 0.75 0.79 ALL     3 0.76 0.02
N 0.91 1.09 ALL     5 0.99 0.08
          OVERALL 20 0.73 0.17

ORDERED VALUES FOLLOW:

 0.48D 0.57D 0.57D 0.59D 0.62D 0.63D 0.63D 0.64D 0.65D 0.68D 0.69D
 0.70D 0.75d 0.76d 0.78d 0.91k 0.91d 0.97d 1.06d 1.08d
```

```
IKU# C-5806  4151.7M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|
   |
 2-|
   |          I IIi i   i i  i
 0--+----+----+----+----+----+----+----+----+----+----+---
  0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
Y 0.57 0.72 ALL    3 0.65 0.07
N 0.77 0.89 ALL    2 0.82 0.08
N 1.06 1.31 ALL    3 1.18 0.12
          OVERALL  8 0.90 0.26

ORDERED VALUES FOLLOW:

 0.57I 0.68I 0.71I 0.77i 0.88i 1.06i 1.19i 1.30i
```

```
IKU# C-5807  4174.8M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|           N
   |           N
 6-|           N
   |           N
 4-|           N
   |         N N
 2-|         N NN   n
   |         NNNN nnnn· n
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50
```

PP	LOW	HIGH	LIT	#VAL	MEAN	STDV
Y	0.46	0.61	ALL	14	0.55	0.05
N	0.74	0.89	ALL	5	0.81	0.05
N	1.00	1.01	ALL	1	1.00	0.00
			OVERALL	20	0.64	0.15

ORDERED VALUES FOLLOW:

0.46N 0.46N 0.47N 0.51N 0.56N 0.56N 0.56N 0.56N 0.58N 0.58N 0.59N
0.59N 0.60N 0.60N 0.74n 0.78n 0.80n 0.84n 0.88n 1.00n

```
IKU# C-5808  4201.4M 6406/3-3
   |
14-|
   |
12-|
   |
10-|
   |
 8-|
   |
 6-|
   |
 4-|
   |        i      i
 2-|      i i II I i i
   |      d iDDDID d d
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW  HIGH LIT #VAL MEAN STDV
Y 0.47 0.69 ALL     8 0.58 0.08
N 0.31 0.44 ALL     5 0.38 0.06
N 0.76 0.87 ALL     5 0.80 0.05
          OVERALL 18 0.58 0.17

ORDERED VALUES FOLLOW:

 0.31d 0.33i 0.41i 0.42i 0.43i 0.47D 0.51I 0.53D 0.56D 0.58I 0.61I
 0.68D 0.68I 0.76d 0.76i 0.76i 0.85i 0.86d
```

```
IKU# C-5809  4300.8M 6406/3-3
    |
14-|
    |
12-|
    |
10-|
    |
 8-|
    |
 6-|
    |
 4-|         i
    |         i       i
 2-|         d       ii
    |       aaai aadiiaidia
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
N 0.39 0.52 ALL     7 0.46 0.04
N 0.61 1.06 ALL    13 0.85 0.13
          OVERALL 20 0.72 0.22

ORDERED VALUES FOLLOW:

 0.39a 0.43a 0.45i 0.48a 0.49d 0.49i 0.51i 0.61a 0.65a 0.74d 0.79i
 0.80i 0.87a 0.87i 0.89i 0.91i 0.92i 0.98d 1.00i 1.05a
```

```
IKU# C-5810  4407.8M 6406/3-3
    |
14- |
    |
12- |
    |
10- |
    |
 8- |
    |
 6- |
    |          N
 4- |          N  N
    |          NNNN
 2- |          NNNN
    |        nnANANA     nn
 0--+----+----+----+----+----+----+----+----+----+----+---
   0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50

PP LOW HIGH LIT #VAL MEAN STDV
Y 0.46 0.70 ALL   16 0.59 0.07
N 0.38 0.44 ALL    2 0.41 0.04
N 0.92 0.99 ALL    1 0.92 0.00
          OVERALL 20 0.60 0.15

ORDERED VALUES FOLLOW:

 0.38n 0.43n 0.46A 0.50N 0.52N 0.54N 0.54N 0.54N 0.55A 0.58N 0.58N
 0.61N 0.62N 0.64N 0.66N 0.67N 0.68A 0.69N 0.92n 0.99n
```

3. KEROGEN DESCRIPTIONS AND THERMAL ALTERATION INDICES (TAI)

IKU SINTEF-GRUPPEN

Visual Kerogen Analysis

Table no.:
Well no.: 6406/3-3

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
C-5811	1610	Am:45% Lm:5% W:10% C:40%	F-M-L	Fair	1.5 - 2	Dominated by degraded fine - particulate amorphous matter, together with degraded black coaly fragments.
C-5812	1700	Am:50% Lm:15-20% W:10-15% C:20%	F-M-L	Fair-Good	1.5 - 2	Dominated by fine - particulate degraded amorphous matter. The liptinitic fraction contains a significant proportion of cuticle fragments. Both terrestrial and marine palynomorphs are present.

Abbreviations

Am Amorphous
Al Algal material
Lm Liptinitic material
W Woody material
C Coaly fragments
F Fine
M Medium
L Large

165/v/anl/1

IKU SINTEF-GRUPPEN

Visual Kerogen Analysis

Table no.:
Well no.: 6406/3-3

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
C-5813	1790	Am:75% Lm:5-10% W:5-10% C:10%	F-M-L	Fair-Good	1.5 - 2	Dominated by fine - particulate amorphous matter and medium sized granular aggregates. Liptinitic fraction contains mostly marine palynomorphs.
C-5814	1900	Am:85% Lm:5% W:5% C:5%	F-M-L	Poor	1 - 2 ?	Totally dominated by fine - particulate amorphous matter and degraded, medium to large granular aggregates.
C-5815	2000	Am:80% Lm:5-10% W:5-10% C:5%	F-M-L	Fair-Good	1.5 - 2	Similar to sample C-5814, but has a higher fraction of liptinitic and structured brown woody material. Liptinitic fraction dominated by marine palynomorphs.

Abbreviations

Am	**Amorphous**	**Al**	**Algal material**	**W**	**Woody material**	**F**	**Fine**
		Lm	**Liptinitic material**	**C**	**Coaly fragments**	**M**	**Medium**
						L	**Large**

165/v/anl/2

Visual Kerogen Analysis

Table no.:
Well no.: 6406/3-3

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
C-5816	2100	Am:80% Lm:5-10% W:5-10% C:5%	F-M-L	Fair-Good	1.5 - 2	As sample C-5815 above.
C-5817	2200	Am:80% Lm:<5% W:5-10% C:5%	F-M-L	Fair	1.5 - 2	Similar to sample C-5815, but with less liptinitic material.
C-5818	2300	Am:55% Lm:20-25% W:15-20% C:5%	F-M-L	Good	1.5 - 2	Dominated by degraded amorphous organic matter, but also containing a relatively high proportion of liptinitic material (mainly marine and terrestrial palynomorphs) together with structured woody phytoclasts.

Abbreviations

Am	**Amorphous**	**Al**	**Algal material**	**W**	**Woody material**	**F**	**Fine**
		Lm	**Liptinitic material**	**C**	**Coaly fragments**	**M**	**Medium**
						L	**Large**

165/v/anl/3

IKU SINTEF-GRUPPEN

Visual Kerogen Analysis

Table no.:
Well no.: 6406/3-3

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
C-5819	2400	Am:35-40% Lm:15-20% W:20% C:20%	F-M	Fair	2 - 3 ?	The organic residue has a relatively high content of brown woody phytoclasts and black coaly fragments.
C-5820	2500	Am:40-45% Lm:15-20% W:20% C:15%	F-M-L	Fair-Good	2 - 3 ?	Mainly as sample C-5819.
C-5821	2600	Am:40-45% Lm:15-20% W:20% C:15%	F-M-L	Fair-Good	2-3	As sample C-5820 above, but also containing abundant caved (?Lower Tertiary) material.

Abbreviations

Am	**Amorphous**	**Al**	**Algal material**	**W**	**Woody material**	**F**	**Fine**
		Lm	**Liptinitic material**	**C**	**Coaly fragments**	**M**	**Medium**
						L	**Large**

IKU SINTEF-GRUPPEN

Visual Kerogen Analysis

Table no.:
Well no.: 6406/3-3

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
C-5822	2700	Am:70-75% Lm:10-15% W:5% C:5%	F-M-L	Fair	2-3	Organic residue dominated by fine - particulate amorphous matter and granular aggregates of possible algal origin. The liptinitic fraction is dominated by marine palynomorphs.
C-5823	2800	Am:65% Lm:10-15% W:10% C:10-15%	F-M-L	Fair	2 - 3 ?	Mainly as sample C-5822 above, but with a slightly higher proportion of brown woody material and black coaly fragments.

Abbreviations

Am	**Amorphous**	**Al**	**Algal material**	**W**	**Woody material**	**F**	**Fine**
		Lm	**Liptinitic material**	**C**	**Coaly fragments**	**M**	**Medium**
						L	**Large**

IKU SINTEF-GRUPPEN

Visual Kerogen Analysis

Table no.:
Well no.: 6406/3-3

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
C-5824	2900	Am:40% Lm:20-25% W:15-20% C:15%	F-M-L	Fair	2.5 - 3	Contains of liptinitic and woody material. Account for a significant proportion of the organic residue.
C-5825	3000	Am:40% Lm:20-25% W:15-20% C:15%	F-M-L	Fair	2.5 - 3	As sample C-5824 above.
C-5826	3110	Am:35% Lm:25% W:15-20% C:20-25%	F-M-L	Poor-Fair	2.5 - 3.5?	Similar to sample C-5825, but with a higher proportion of black coaly fragments.

Abbreviations

Am	Amorphous	Al	Algal material	W	Woody material	F	Fine
		Lm	Liptinitic material	C	Coaly fragments	M	Medium
						L	Large

165/v/anl/6

IKU SINTEF-GRUPPEN

Visual Kerogen Analysis

Table no.:
Well no.: 6406/3-3

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
C-5827	3201	Am:45% Lm:25% W:15-20% C:10-15%	F-M-L	Fair-Good	2.5 - 3.5?	Similar to sample C-5825. Also contains some caved (Lower? Tertiary) material.
C-5828	3300	Am:50-55% Lm:15-20% W:20% C:10%	F-M-L	Fair	2.5 - 3.5	Dominated by degraded amorphous matter, but also containing significant amounts of liptinitic and woody material.
C-5829	3450	Am:>85% Lm:<5% W:<5% C:<5%	F-M	Fair	?	Organic residue totally dominated by degraded fine - particulate amorphous matter and medium sized granular aggregates. A few marine miospores are recorded.

Abbreviations

Am	Amorphous	Al	Algal material	W	Woody material	F	Fine
		Lm	Liptinitic material	C	Coaly fragments	M	Medium
						L	Large

165/v/anl/6.1

IKU SINTEF-GRUPPEN

Visual Kerogen Analysis

Table no.:
Well no.: 6406/3-3

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
C-5830	3501	Am:>85% Lm:<5% W:<5% C:<5%	F-M-L	Fair	3 - 3.5?	As sample C-5829, but also containing abundant large, dark granular, flakey material.
C-5831	3602	Am:60% Lm:15% W:15-20% C:5-10%	F-M-L	Fair	3 - 3.5	Dominated by amorphous matter, but contains a significant proportion of dark woody material. Evidence of caved Lower? Tertiary material.
C-5832	3702	Am:>85% Lm:<5% W:<5% C:<5%	F-M-L		N.D.P.	As sample C-5830.

Abbreviations

Am	Amorphous	Al	Algal material	W	Woody material	F	Fine
		Lm	Liptinitic material	C	Coaly fragments	M	Medium
						L	Large

165/v/anl/7

IKU SINTEF-GRUPPEN

Visual Kerogen Analysis

Table no.:
Well no.: 6406/3-3

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
C-5833	3801	Am:30-35% Lm:25% W:30% C:10-15%	F-M-L	Fair		Organic residue has relatively high contents of liptinitic and woody material. The liptinitic fraction is dominated by marine palynomorphs.
C-5834	3903	Am:>85% Lm:<5% W:<5% C:<5%	F-M-L	Poor	3 - 3.5?	Organic residue totally dominated by degraded fine - particulate amorphous matter. and large to medium sized dark granular aggregates.
C-5835	4002	Am:10-15% Lm:40-45% W:35-40% C:5%	F-M-L	Fair-Good	3 - 3.5	Dominated by liptinitic (mostly cuticle sheets) and structured brown woody material.

Abbreviations

Am Amorphous
Al Algal material
Lm Liptinitic material
W Woody material
C Coaly fragments
F Fine
M Medium
L Large

165/v/anl/8

IKU SINTEF-GRUPPEN

Visual Kerogen Analysis

Table no.:
Well no.: 6406/3-3

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
C-5806	4151.70	Am:40% Lm:25-30% W:25% C:5-10%	F-M-L	Poor-Fair	3.5 - 4.0?	Organic residue with significant liptinitic (mostly cuticle sheets) and structured brown woody material fractions.
C-5807	4174.80	Am:50-60% Lm:20-30% W:10-15% C:5%	F-M-L	Poor-Fair	3.5 - 4.0?	Mainly as sample C-5806.
C-5808	4201.40	Am:50-60% Lm:25-30% W:10-15% C:5%	F-M-L	Fair-Poor	3.5 - 4.0?	As sample C-5806.

Abbreviations

Am	Amorphous	Al	Algal material	W	Woody material	F	Fine
		Lm	Liptinitic material	C	Coaly fragments	M	Medium
						L	Large

165/v/anl/9

IKU SINTEF-GRUPPEN

Visual Kerogen Analysis

Table no.:
Well no.: 6406/3-3

Sample	Depth (m)	Composition of residue	Particle size	Preservation palynomorphs	Thermal maturation index	Remarks
C-5809	4300.80	Am:15-20% Lm:40-45% W:30% C:5-10%	F-M-L	Fair-Poor	3.5 - 4.0?	Organic residue with a high proportion of liptinitic (mainly cuticle sheets) and woody material.
C-5810	4407.80	Am:35-40% Lm:25% W:15-20% C:10-15%	F-M-L	Poor-Fair	3.5 - 4.0?	Mainly as sample C-5809, but with somewhat higher proportions of amorphous organic matter and black coaly fragments.

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Abbreviations

Am	Amorphous	Al	Algal material	W	Woody material	F	Fine
		Lm	Liptinitic material	C	Coaly fragments	M	Medium
						L	Large

165/v/anl/10

4. GAS CHROMATOGRAPHY - MASS SPECTROMETRY DATA

a) Calculated ratios from 191 and 217 mass fragmentograms.
b) Peak height and peak areas tables.
c) Mass fragmentograms of terpanes (m/z 163, 177, 191 and 205).
d) Mass fragmentograms of steranes (m/z 217, 218, 231 and 259).

Table a1: Molecular ratios from sterane and terpane mass chromatograms. Maturity ratios.

IKU No.	Statoil No.	$\alpha\beta/\alpha\beta+\beta\alpha$ 1)	%22S 2)	%ββ% 3)	20S 4)
Extracts					
C-6008	S1908	-	61.9	61.0	60.0
C-6009	S1909	-	61.7	82.1	50.0
C-6010	S1910	-	57.0	81.0	37.5
C-6011	S1911	-	65.5	80.4	61.1
C-6012	S1912	0.93	61.9	76.9	42.9
C-6013	S1913	-	62.6	79.6	45.5
C-6014	S1914	-	61.6	81.3	51.4
C-6015	S1915	-	63.2	84.4	50.0
C-6016	S1916	-	63.1	81.2	52.6
C-6017	S1917	-	61.6	85.4	61.5
C-6018	S1920	-	-	-	-
C-6019	S1921	-	-	-	-
C-6020	S1922	-	-	-	-
Aliphatics					
C-6021	S1955	0.71	59.4	45.3	25.5
C-6022	S1960	0.73	58.2	56.2	34.7
C-6023	S1967	0.71	59.7	49.5	24.5
C-6024	S1981	0.87	59.2	69.0	38.7
C-6025	S1982	0.89	60.5	66.0	33.8
C-6026	S1983	0.89	59.8	69.3	41.9
C-6027	S1984	0.89	63.0	68.5	40.0
C-6028	S1987	0.88	60.7	67.4	38.6
C-6029	S1989	0.89	59.2	60.9	40.0
C-6030	S1954B	0.95	59.3	77.4	50.0
C-6031	S1961B	0.95	61.5	76.5	41.7
C-6032	S1973B	0.87	62.2	72.6	42.3
C-6033	S1977B	0.89	60.0	69.6	38.7

1) E/E+F in m/z 191.
2) Average % distribution between first and second eluting isomers of extended hopanes (G-M in m/z 191).
3) 2(r+s)/(q+t+2(r+s)) in m/z 217.
4) q/q+t in m/z 217.

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Table a2: Molecular ratios from sterane and terpane mass chromatograms. Maturity and source dependant ratios.

IKU No.	Statoil No.	Q/E 1)	Tm/Ts 2)	X/E 3)	Z/E 4)	a/a+j 5)
Extracts						
C-6008	S1908	0.32	0.52	0.11	-	0.90
C-6009	S1909	0.32	0.63	0.16	-	0.92
C-6010	S1910	0.35	0.67	-	-	0.92
C-6011	S1911	0.19	0.79	0.07	-	0.88
C-6012	S1912	0.20	0.65	0.07	-	0.90
C-6013	S1913	0.16	0.65	0.07	-	0.88
C-6014	S1914	0.19	0.72	0.07	-	0.87
C-6015	S1915	0.25	0.60	0.06	-	0.87
C-6016	S1916	0.17	0.76	0.09	-	0.88
C-6017	S1917	0.25	0.67	0.11	-	0.88
C-6018	S1920	-	-	-	-	-
C-6019	S1921	-	-	-	-	-
C-6020	S1922	-	-	-	-	-
Aliphatics						
C-6021	S1955	0.04	28.60	-	-	0.45
C-6022	S1960	0.05	19.80	-	-	0.44
C-6023	S1967	0.08	15.70	-	-	0.58
C-6024	S1981	0.02	9.00	0.11	-	0.78
C-6025	S1982	0.03	6.80	0.08	-	0.79
C-6026	S1983	0.05	5.90	0.13	-	0.85
C-6027	S1984	0.10	4.60	0.08	-	0.79
C-6028	S1987	0.04	5.70	0.09	-	0.85
C-6029	S1989	0.02	10.80	0.10	-	0.86
C-6030	S1954B	0.16	0.45	0.07	-	0.83
C-6031	S1961B	0.13	0.32	0.08	-	-
C-6032	S1973B	0.22	2.00	0.07	-	0.84
C-6033	S1977B	0.26	1.20	0.12	-	0.90

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 bisnorhopane (Z/E in m/z 191).
5) Relative abundance of C_{27} rearranged steranes (a/a+j in m/z 217).

168/i/anl/2

b. Peak height and peak area tables

Sample identity: C-6008, S1908

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	75.8	370.0		
b	41.4	229.3		
c	12.2	53.2		
f	22.6	239.8		
g	16.2	161.2		
h	64.9	427.8	31.8	185.5
i			25.7	201.4
j	10.3	66.6		
k	37.9	310.3		
n	24.5	150.7	22.4	110.7
o	22.0	135.4	20.7	113.6
p	4.3	17.3		
q	8.8	48.5		
r	17.2	98.7	17.7	88.3
s	16.5	102.2	13.9	106.5
t	7.2	52.6		
u	54.7	264.7		
c	27.3	219.7		

Sample identity: C-6008, S1908

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	65.8	280.5
B	39.4	165.0
C	86.9	655.8
X	10.4	33.7
E	179.8	924.4
G	64.5	355.4
H	36.8	207.8
J_1	35.1	191.4
J_2	19.1	74.9
K_1	16.1	80.1
K_2	6.8	25.6
P	61.8	300.1
Q	59.8	301.5
R	26.1	185.0
S	40.5	230.9
T	13.0	87.7

Sample identity: C-6009, S1909

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	90.4	467.6		
b	49.7	291.7		
c	13.6	71.4		
f	25.1	258.2		
g	12.9	108.1		
h	57.5	463.7	34.0	205.4
i			25.8	167.7
j	9.2	43.4		
k	36.2	275.0		
n	20.6	170.5	18.7	115.6
o	23.8	158.9	23.0	125.7
p	5.7	16.0		
q	8.1	39.2		
r	20.5	92.9	19.1	94.3
s	17.3	93.0	21.0	121.0
t	8.0	54.6		
u	60.6	295.7		
v	34.0	253.7		

Sample identity: C-6009, S1909

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	71.5	373.4
B	35.2	132.0
C	81.5	606.7
X	20.5	47.1
E	186.7	1023.2
G	73.9	411.2
H	49.0	240.2
J_1	39.2	226.5
J_2	24.7	117.1
K_1	14.7	79.4
K_2	7.8	20.9
P	72.9	310.6
Q	60.2	321.0
R	28.0	190.0
S	46.3	238.9
T	18.8	135.8

Sample identity: C-6010, S1910

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	36.0	168.6		
b	22.8	122.5		
c	7.3	19.0		
f	9.2	101.0		
g	7.1	54.5		
h	21.6	161.7	11.3	77.1
i			11.1	61.0
j	3.2	13.4		
k	12.8	97.2		
n	10.0	65.6	10.3	56.7
o	9.6	68.1	9.9	63.5
p	1.8	3.2		
q	4.0	18.9		
r	8.0	51.5	7.4	34.0
s	8.6	39.9	8.1	35.6
t	4.4	39.8		
u	32.3	144.0		
v	17.4	138.7		

Sample identity: C-6010, S1910

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	31.9	136.9
B	22.7	71.2
C	45.8	315.0
E	101.4	533.5
G	42.5	240.3
H	29.9	140.2
J_1	27.6	134.1
J_2	19.9	79.1
P	45.6	185.4
Q	38.0	161.4
R	16.5	115.1
S	21.6	123.2
T	8.2	48.8

Sample identity: C-6011, S1911

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	90.0	505.6		
b	52.4	285.4		
c	19.7	87.1		
f	24.0	272.0		
g	19.7	151.3		
h	75.7	557.5	39.2	229.8
i			39.7	232.0
j	12.8	65.5		
k	41.3	346.5		
n	29.8	220.2	28.7	141.8
o	36.6	210.4	26.9	145.1
p	7.9	22.5		
q	11.2	73.4		
r	26.3	139.4	22.2	126.1
s	23.4	107.5	25.7	131.6
t	11.4	77.1		
u	59.4	300.7		
v	34.5	220.7		

Sample identity: C-6011, S1911

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	86.0	372.3
B	66.4	245.8
C	133.0	1013.6
X	20.6	63.1
E	317.5	1582.3
G	121.6	646.2
H	66.0	410.6
J_1	55.3	332.2
J_2	37.3	182.2
K_1	30.4	176.2
K_2	22.0	77.6
P	73.3	348.0
Q	66.5	379.4
R	31.4	254.2
S	50.1	281.8
T	11.8	73.0

Sample identity: C-6012, S1912

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	78.2	381.3		
b	40.6	226.5		
c	11.9	53.6		
f	18.5	203.1		
g	10.8	101.4		
h	54.0	401.1	30.9	201.0
i			30.7	188.6
j	10.4	58.8		
k	30.2	299.0		
n	23.6	183.8	23.0	126.9
o	27.3	171.3	21.6	136.1
p	3.8	13.4		
q	9.8	63.6		
r	19.6	140.6	16.1	96.3
s	20.0	117.0	20.2	166.8
t	11.7	78.8		
u	42.3	231.1		
v	29.2	189.4		

Sample identity: C-6012, S1912

Peak heights and peak areas from m/z 191.

Peak identities	m/z 191 Peak heights	Peak areas
A	80.4	298.5
B	53.0	193.4
C	102.8	857.7
X	13.7	49.0
E	272.8	1372.3
G	102.5	581.0
H	59.7	296.2
J_1	52.7	334.1
J_2	31.3	169.7
K_1	29.4	149.7
K_2	13.5	59.2
P	52.3	252.9
Q	54.1	301.6
R	22.4	181.2
S	43.7	197.1
T	14.9	93.7

Sample identity: C-6013, S1913

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	84.5	405.1		
b	48.0	266.3		
c	16.0	64.5		
f	23.6	258.8		
g	18.2	164.3		
h	65.2	470.9	31.6	227.3
i			26.3	171.3
j	11.9	31.5		
k	39.7	277.9		
n	21.6	149.7	23.9	148.5
o	27.4	181.2	30.4	183.6
p	6.7	38.0		
q	12.4	80.1		
r	25.0	156.1	22.4	136.6
s	27.5	200.8	23.0	163.3
t	15.0	106.2		
u	59.2	280.6		
v	33.7	234.8		

Sample identity: C-6013, S1913

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	78.6	333.5
B	49.8	240.5
C	139.1	1100.0
X	17.7	38.7
E	356.8	1786.9
G	154.5	769.6
H	83.3	182.1
J_1	89.8	464.9
J_2	42.2	256.0
K_1	36.2	226.5
K_2	22.2	104.8
P	50.8	252.0
Q	59.4	280.8
R	27.2	167.6
S	47.7	249.0
T	15.3	91.4

Sample identity: C-6014, S1914

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	64.4	321.1		
b	38.8	224.2		
c	13.1	57.5		
f	23.0	217.8		
g	16.9	118.7		
h	54.7	363.9	28.2	183.6
i			30.9	159.4
j	9.8	36.4		
k	29.9	202.0		
n	20.2	146.7	21.5	140.2
o	25.1	152.5	24.4	155.5
p	6.3	27.4		
q	8.5	43.0		
r	16.9	101.1	22.2	117.7
s	20.2	104.6	20.3	114.7
t	7.4	56.9		
u	44.7	217.8		
v	34.5	202.0		

Sample identity: C-6014, S1914

Peak heights and peak areas from m/z 191.

Peak identities	m/z 191 Peak heights	Peak areas
A	65.3	267.6
B	51.6	207.0
C	110.0	889.0
X	13.1	45.4
E	287.3	1371.4
G	99.2	578.3
H	58.9	327.5
J_1	52.8	308.3
J_2	34.2	187.0
K_1	22.2	122.6
K_2	16.1	49.9
P	63.2	301.8
Q	57.8	283.8
R	25.3	171.0
S	35.3	215.8
T	9.8	82.6

Sample identity: C-6015, S1915

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	68.5	352.7		
b	43.9	215.7		
c	12.6	64.7		
f	19.5	203.0		
g	12.9	102.5		
h	46.2	311.5	27.0	168.9
i			23.4	143.0
j	10.3	34.5		
k	30.6	210.3		
n	17.7	138.7	16.5	94.2
o	24.0	143.6	18.7	104.8
p	3.9	14.5		
q	8.6	49.9		
r	19.6	108.6	17.1	89.7
s	18.4	100.0	19.1	92.8
t	7.0	53.5		
u	55.0	258.6		
v	30.9	222.6		

Sample identity: C-6015, S1915

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	70.6	300.4
B	39.5	179.0
C	83.7	729.4
X	10.4	28.5
E	234.8	1196.2
G	90.9	501.0
H	49.5	272.8
J_1	54.7	234.6
J_2	27.0	145.6
K_1	18.7	68.6
K_2	7.4	24.6
P	60.7	289.6
Q	68.4	346.1
R	24.1	185.3
S	42.7	259.8
T	7.5	38.2

Sample identity: C-6016, S1916

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	45.5	239.0		
b	24.9	136.6		
c	8.7	29.9		
f	13.0	122.6		
g	8.1	57.1		
h	34.2	240.2	17.0	114.4
i			17.5	117.8
j	6.6	30.0		
k	17.3	136.8		
n	11.9	105.1	15.1	84.8
o	17.3	123.8	15.0	87.1
p	4.3	26.9		
q	5.9	41.9		
r	12.5	74.0	12.3	71.8
s	9.8	48.9	11.3	91.3
t	5.5	45.2		
u	30.3	148.4		
v	18.9	106.6		

Sample identity: C-6016, S1916

Peak heights and peak areas from m/z 191.

Peak identities	m/z 191 Peak heights	Peak areas
A	47.8	209.8
B	35.6	129.2
C	69.0	471.3
X	13.3	48.4
E	175.1	911.5
G	66.7	336.9
H	34.7	192.8
J_1	41.0	173.7
J_2	21.4	101.0
K_1	11.5	62.1
K_2	6.8	15.3
P	32.0	150.9
Q	34.4	165.5
R	17.8	122.0
S	25.3	143.1
T	4.0	24.3

Sample identity: C-6017, S1917

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	75.4	390.0		
b	37.7	228.9		
c	11.6	46.9		
f	21.8	225.7		
g	16.0	123.0		
h	58.1	396.5	30.3	180.0
i			29.5	183.0
j	9.9	29.3		
k	30.7	234.3		
n	22.4	172.6	19.3	115.4
o	26.8	167.8	20.1	124.2
p	4.2	19.6		
q	9.7	53.2		
r	22.9	107.3	17.1	100.0
s	19.2	79.6	17.7	111.1
t	6.5	61.8		
u	55.9	265.2		
v	33.8	219.6		

Sample identity: C-6017, S1917

Peak heights and peak areas from m/z 191.

Peak identities	m/z 191 Peak heights	Peak areas
A	73.9	315.1
B	50.0	198.8
C	100.9	698.3
X	19.2	40.0
E	247.8	1263.9
G	84.1	476.3
H	59.0	295.1
J_1	43.2	287.5
J_2	27.4	144.5
K_1	22.0	129.3
K_2	10.7	36.3
P	58.7	265.1
Q	60.8	310.6
R	23.5	192.1
S	38.5	217.0
T	11.2	68.7

Sample identity: C-6021, S1955

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	61.1	270.7		
b	36.8	207.3		
c	17.1	69.8		
f	20.9	235.1		
g	44.2	328.3		
h	55.7	373.1	21.3	152.3
i			25.4	134.1
j	78.9	424.5		
k	39.7	308.4		
n	26.7	264.7	27.8	166.6
o	24.0	117.3	25.0	163.8
p	41.5	270.1		
q	43.0	312.1		
r	37.0	312.0	30.1	175.5
s	24.8	118.4	25.8	138.8
t	125.1	933.9		
u	155.0	756.0		
v	52.4	328.1		

Sample identity: C-6021, S1955

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	76.7	269.9
B	4066.6	20431.8
C	3724.2	21086.3
D	1403.5	7659.8
E	3095.2	18169.0
F	1340.5	7334.5
G	1506.8	7867.4
H	968.3	5188.9
I	448.6	2541.3
J_1	243.2	1184.6
J_2	144.1	757.4
P	253.6	1053.1
Q	113.7	772.7
R	52.8	419.2
S	438.2	2416.2
T	20.8	135.2

Sample identity: C-6022, S1960

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	83.7	398.7		
b	53.2	278.6		
c	15.8	59.3		
f	33.1	328.1		
g	75.2	583.0		
h	89.4	622.9	47.8	270.4
i			47.2	261.9
j	117.1	711.9		
k	62.7	580.6		
n	79.7	661.0	71.7	398.1
o	82.6	493.9	79.7	433.7
p	85.5	630.2		
q	97.0	599.6		
r	93.3	541.8	78.7	427.7
s	63.0	341.6	66.9	450.0
t	185.1	1295.8		
u	126.2	649.2		
v	63.4	388.4		

Sample identity: C-6022, S1960

Peak heights and peak areas from m/z 191.

Peak identities	Peak heights (m/z 191)	Peak areas (m/z 191)
A	109.4	486.2
B	2960.9	15424.5
C	2728.5	15841.0
D	984.3	5068.3
E	2548.6	13807.5
F	935.3	5165.4
G	1003.7	5925.2
H	680.8	3834.9
I	339.7	1788.9
J_1	198.2	1179.0
J_2	141.2	717.0
P	170.3	792.0
Q	110.4	629.6
R	53.7	401.8
S	408.7	2018.2
T	23.2	201.9

Sample identity: C-6023, S1967

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	45.9	260.7		
b	31.6	168.0		
c	12.1	40.2		
f	17.4	194.8		
g	25.9	202.0		
h	37.6	294.5	17.1	113.5
i			13.8	87.9
j	34.9	167.6		
k	24.6	215.9		
n	17.2	162.8	14.2	77.9
o	13.1	77.1	12.2	73.7
p	16.9	121.3		
q	16.8	110.5		
r	18.0	142.6	15.7	76.6
s	12.2	50.6	10.4	56.8
t	55.3	379.4		
u	210.6	1117.2		
v	58.2	388.5		

Sample identity: C-6023

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	74.8	264.5
B	1754.7	8739.6
C	1759.9	9709.6
D	631.6	3189.1
E	1572.9	8685.4
F	640.8	3290.8
G	733.7	3778.1
H	454.8	2636.8
I	189.2	1208.3
J_1	151.8	751.4
J_2	94.3	501.8
P	215.7	1012.8
Q	130.0	740.3
R	39.0	325.1
S	261.6	1233.0
T	15.0	89.0

Sample identity: C-6024, S1981

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	53.6	264.1		
b	35.5	152.8		
c	16.8	61.4		
f	37.0	339.9		
g	12.5	109.2		
h	143.9	1090.1	29.0	221.1
i			17.5	126.5
j	14.8	108.3		
k	71.0	529.1		
n	28.3	279.3	13.3	93.1
o	20.9	124.0	16.1	102.7
q	17.9	113.5		
r	29.0	188.6	28.4	139.8
s	27.0	130.0	23.3	128.0
t	33.1	252.6		
u	65.2	338.6		
v	47.3	327.5		

Sample identity: C-6024, S1981

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	71.6	212.3
B	955.5	5143.3
C	1429.1	8111.1
X	176.5	740.1
D	96.1	358.6
E	2043.1	11700.0
F	280.2	1358.2
G	1043.5	6066.1
H	748.1	3876.7
I	147.7	777.6
J_1	396.3	2499.4
J_2	249.5	1541.6
K_1	113.9	645.4
K_2	58.1	306.5
L_1	20.5	173.2
L_2	16.4	69.6
P	71.0	325.6
Q	35.2	143.8
R	14.0	82.6
S	449.7	2176.2

Sample identity: C-6025, S1982

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	58.6	292.5		
b	36.1	173.2		
c	16.5	61.6		
f	27.2	294.5		
g	15.1	144.5		
h	139.3	952.5	31.6	238.3
i			21.8	140.5
j	15.4	93.0		
k	59.8	451.4		
n	22.5	210.0	14.6	90.1
o	17.2	106.5	16.9	83.2
q	17.7	103.8		
r	29.5	183.3	25.7	138.6
s	20.8	97.9	21.5	146.8
t	35.4	243.0		
u	62.8	349.3		
v	42.6	393.1		

Sample identity: C-6025, S1982

Peak heights and peak areas from m/z 191.

Peak identities	m/z 191 Peak heights	Peak areas
A	109.6	410.6
B	840.0	4533.5
C	1180.9	6936.1
X	133.2	612.8
D	104.9	337.9
E	2004.0	10411.3
F	252.1	1270.2
G	912.8	5371.5
H	557.7	3434.0
I	107.7	620.9
J_1	354.1	2194.0
J_2	189.4	1260.3
K_1	82.6	526.6
K_2	44.0	236.7
P	95.1	361.0
Q	54.2	219.2
R	21.3	129.5
S	390.2	2055.4

Sample identity: C-6026, S1983

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	29.8	129.4		
b	16.9	82.4		
c	5.2	21.8		
f	13.0	153.1		
g	7.7	55.8		
h	49.1	322.9	15.0	108.6
i			10.2	44.8
j	4.9	23.0		
k	27.2	139.5		
n	8.5	70.4	7.0	49.0
o	10.6	60.5	9.0	57.3
p	2.2	7.3		
q	9.9	48.1		
r	14.7	72.9	14.1	60.6
s	11.3	40.4	10.8	68.3
t	15.1	111.8		
u	37.8	149.8		
v	26.5	250.3		

Sample identity: C-6026, S1983

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	53.0	198.5
B	402.5	2075.9
C	579.1	3346.1
X	98.1	346.7
D	49.9	156.8
E	861.3	4791.8
F	87.2	393.2
G	395.9	2212.6
H	258.7	1445.0
I	41.5	186.5
J_1	160.8	1012.9
J_2	107.9	627.3
K_1	39.9	237.7
K_2	23.8	122.4
P	67.3	314.3
Q	32.6	132.4
R	16.8	81.1
S	228.9	1072.5

Sample identity: C-6027, S1984

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	17.9	93.8		
b	12.1	62.7		
c	4.6	29.4		
f	5.9	83.9		
g	5.5	45.6		
h	23.3	163.4	10.5	62.1
i			8.6	56.4
j	5.3	30.3		
k	13.3	90.7		
n	7.0	47.4	6.5	28.1
o	5.4	30.0	5.9	31.7
p	2.0	17.7		
q	5.0	37.9		
r	8.7	54.3	8.5	45.3
s	7.6	64.3	7.6	39.9
t	8.3	57.5		
u	43.0	207.0		
v	24.0	144.7		

Sample identity: C-6027, S1984

Peak heights and peak areas from m/z 191.

Peak identities	m/z 191 Peak heights	Peak areas
A	42.2	168.7
B	235.9	1227.0
C	333.8	1881.2
X	35.6	123.5
D	27.3	95.3
E	506.9	2691.7
F	52.6	208.7
G	219.8	1134.1
H	129.9	699.5
I	9.4	79.1
J_1	79.2	459.9
J_2	44.1	241.9
K_1	21.2	99.2
K_2	8.2	28.0
P	110.6	467.6
Q	44.6	214.9
R	22.8	162.6
S	140.5	696.7
T	8.5	58.0

Sample identity: C-6028, S1987

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	31.4	153.1		
b	17.9	92.8		
c	10.6	33.9		
f	15.4	169.0		
g	12.8	81.4		
h	62.2	440.9	22.0	136.5
i			16.6	105.9
j	5.7	51.2		
k	34.4	235.5		
n	16.9	162.1	12.0	70.0
o	17.0	94.6	13.5	78.7
p	4.3	11.0		
q	12.4	117.0		
r	19.7	113.3	20.1	111.0
s	14.1	82.2	16.0	93.7
t	23.9	166.1		
u	39.0	197.7		
v	29.1	276.1		

Sample identity: C-6028, S1987

Peak heights and peak areas from m/z 191.

Peak identities	m/z 191 Peak heights	Peak areas
A	106.1	421.9
B	640.9	3824.6
C	976.3	6332.5
X	121.3	571.2
D	74.6	254.7
E	1544.8	8586.2
F	170.1	715.1
G	651.6	4032.9
H	453.6	2595.8
I	71.6	449.0
J_1	266.2	1665.8
J_2	154.9	907.8
K_1	66.8	399.0
K_2	36.0	185.8
P	104.8	459.2
Q	53.1	203.3
R	24.5	173.4
S	335.2	1711.3
T	17.4	94.8

Sample identity: C-6029, S1989

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	27.9	138.6		
b	17.5	97.2		
c	8.9	28.6		
f	17.1	171.0		
g	6.8	50.4		
h	63.3	438.1	17.2	132.7
i			12.5	67.1
j	7.1	41.5		
k	32.0	218.2		
n	15.4	102.0	7.6	41.7
o	10.2	58.7	7.1	39.8
q	14.8	82.6		
r	15.8	105.8	17.5	90.5
s	15.5	79.3	16.2	61.9
t	21.7	158.1		
u	34.1	166.9		
v	24.3	226.9		

Sample identity: C-6029, S1989

Peak heights and peak areas from m/z 191.

Peak identities	m/z 191 Peak heights	Peak areas
A	42.7	153.2
B	740.7	4078.8
C	1031.1	5982.3
X	137.9	610.4
D	60.3	195.5
E	1696.1	9019.4
F	182.8	808.1
G	772.8	4618.2
H	543.9	3060.8
I	101.9	628.6
J_1	301.9	1947.2
J_2	173.4	1021.7
K_1	77.9	421.5
K_2	47.5	256.9
P	45.7	199.6
Q	22.8	111.1
R	11.2	79.0
S	386.7	1806.6

Sample identity: C-6030, S1954B

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	272.8	1578.3		
b	167.0	901.3		
c	53.9	263.1		
f	70.9	813.9		
g	62.6	541.1		
h	176.3	1342.3	127.9	779.1
i			126.0	816.5
j	55.1	266.4		
k	114.5	1224.5		
n	89.5	678.2	91.2	523.2
o	97.2	673.1	96.5	610.4
p	22.5	131.1		
q	49.4	382.3		
r	88.6	529.1	88.9	527.5
s	93.2	576.7	106.7	790.1
t	51.4	538.2		
u	331.1	1510.1		
v	165.2	906.4		

Sample identity: C-6030, S1954B

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	637.8	3356.5
B	260.1	1302.4
C	680.6	7114.8
X	108.1	388.7
E	2149.5	12918.1
G	803.2	4875.3
H	559.4	3206.1
J_1	489.1	3030.7
J_2	313.7	1933.6
K_1	227.5	1657.3
K_2	166.8	961.2
L_1	106.9	845.0
L_2	57.5	344.8
M_1	76.8	617.8
M_2	41.2	237.1
P	289.3	1527.9
Q	351.0	1778.0
R	148.0	1236.4
S	210.3	1151.6
T	58.0	443.0

Sample identity: C-6031, S1961B

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	182.4	934.6		
b	108.3	551.6		
c	41.7	144.9		
f	39.7	432.9		
g	31.0	256.3		
h	102.5	740.0	47.2	355.2
i			47.0	354.3
j	11.2	53.0		
k	55.7	513.4		
n	31.5	254.1	33.5	207.8
o	34.6	210.8	36.4	230.2
p	6.3	28.5		
q	14.4	80.1		
r	34.2	216.8	28.2	169.3
s	29.3	147.8	27.1	210.9
t	19.1	158.9		
u	208.2	1064.0		
v	101.4	565.1		

Sample identity: C-6031, S1961B

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	469.9	2454.6
B	147.0	695.4
C	346.4	3306.3
X	89.0	419.9
E	1121.4	5939.0
G	410.9	2058.6
H	251.4	1320.2
J_1	215.4	1360.2
J_2	130.5	821.8
K_1	78.2	513.1
K_2	46.7	258.3
P	132.6	624.2
Q	149.6	734.7
R	57.0	420.4
S	163.5	787.9
T	25.7	187.3

Sample identity: C-6032, S1973B

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

Peak identities	m/z 217 Peak heights	m/z 217 Peak areas	m/z 218 Peak heights	m/z 218 Peak areas
a	57.3	313.4		
b	33.5	165.0		
c	11.8	45.6		
f	15.8	157.5		
g	12.7	107.8		
h	39.0	281.3	20.6	140.7
i			19.7	117.4
j	11.8	51.6		
k	22.3	200.1		
n	16.0	150.2	16.9	85.5
o	16.9	106.5	13.4	80.1
p	4.6	24.8		
q	7.6	45.7		
r	13.6	79.9	13.9	79.0
s	12.7	77.4	15.9	111.3
t	11.0	103.8		
u	55.2	282.5		
v	26.6	157.5		

Sample identity: C-6032, S1973B

Peak heights and peak areas from m/z 191.

Peak identities	m/z 191 Peak heights	Peak areas
A	86.9	400.4
B	183.0	889.0
C	298.5	2058.6
X	20.3	53.9
D	35.2	134.1
E	444.2	2480.6
F	56.5	219.5
G	188.7	982.9
H	112.2	588.8
J_1	82.7	432.2
J_2	40.6	195.1
K_1	33.5	257.1
K_2	19.9	106.0
P	154.7	710.8
Q	105.5	473.0
R	40.2	358.1
S	101.4	419.8
T	18.6	140.9

Sample identity: C-6033, S1977B

Peak heights and peak areas from m/z 217 and 218 mass chromatograms.

	m/z 217		m/z 218	
Peak identities	Peak heights	Peak areas	Peak heights	Peak areas
a	30.9	162.8		
b	18.7	89.2		
c	8.0	30.6		
f	8.5	64.5		
g	5.7	42.8		
h	22.6	163.3	10.5	76.2
i			10.9	59.2
j	3.7	24.4		
k	12.4	102.4		
n	6.2	32.0	8.3	41.8
o	7.2	45.1	6.4	44.0
p	2.2	9.3		
q	4.7	26.8		
r	7.4	31.5	6.2	32.9
s	7.6	38.4	6.8	45.3
t	8.3	52.6		
u	29.6	150.4		
v	16.9	100.0		

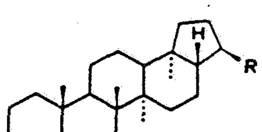
Sample identity: C-6033, S1977B

Peak heights and peak areas from m/z 191.

	m/z 191	
Peak identities	Peak heights	Peak areas
A	50.9	187.8
B	64.7	267.4
C	129.0	773.6
X	14.1	31.3
D	11.1	33.7
E	188.6	954.7
F	16.9	56.4
G	76.8	370.9
H	50.2	256.0
J_1	40.9	218.4
J_2	22.4	100.1
P	81.0	334.4
Q	51.1	243.9
R	21.0	171.8
S	39.0	176.1
T	10.0	73.7

c. <u>Mass fragmentograms of terpanes (m/z 163, 177, 191 and 205)</u>.

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})



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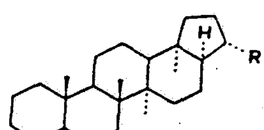

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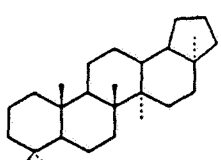

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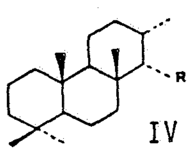

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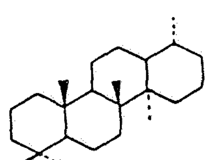
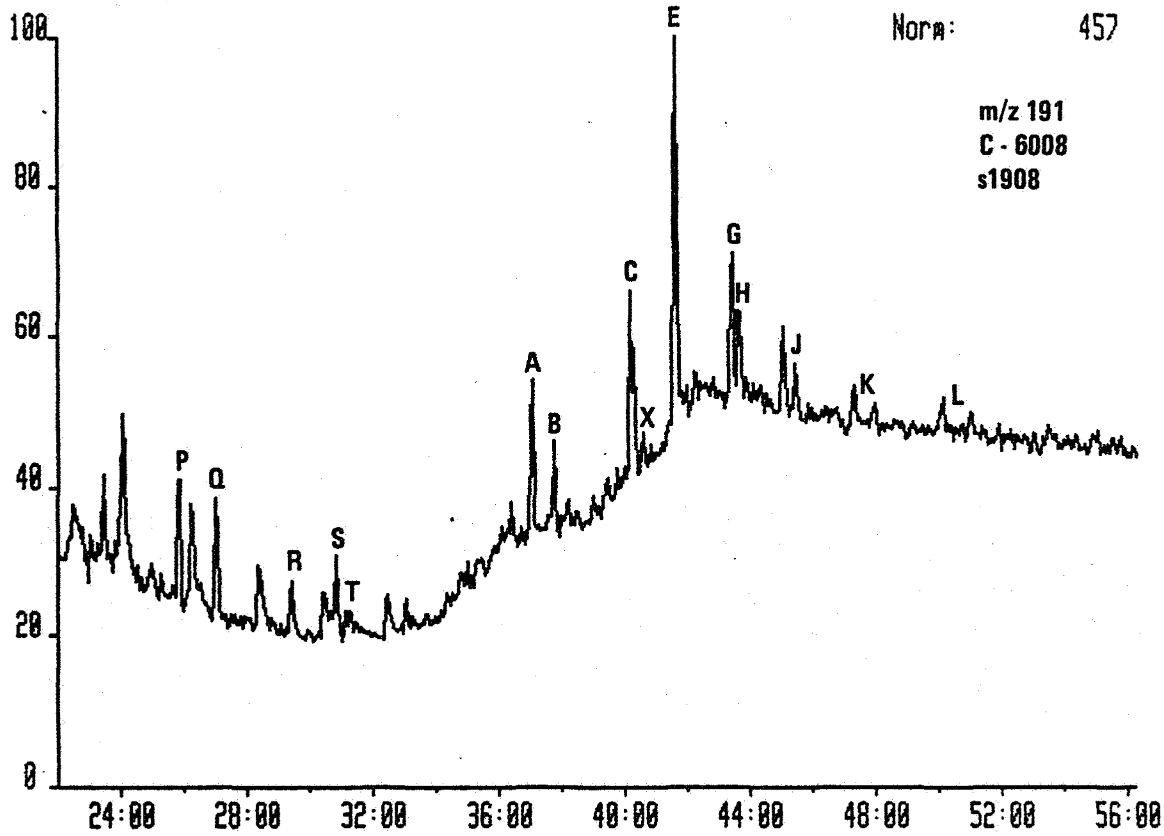


V

C6008 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



C6008 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
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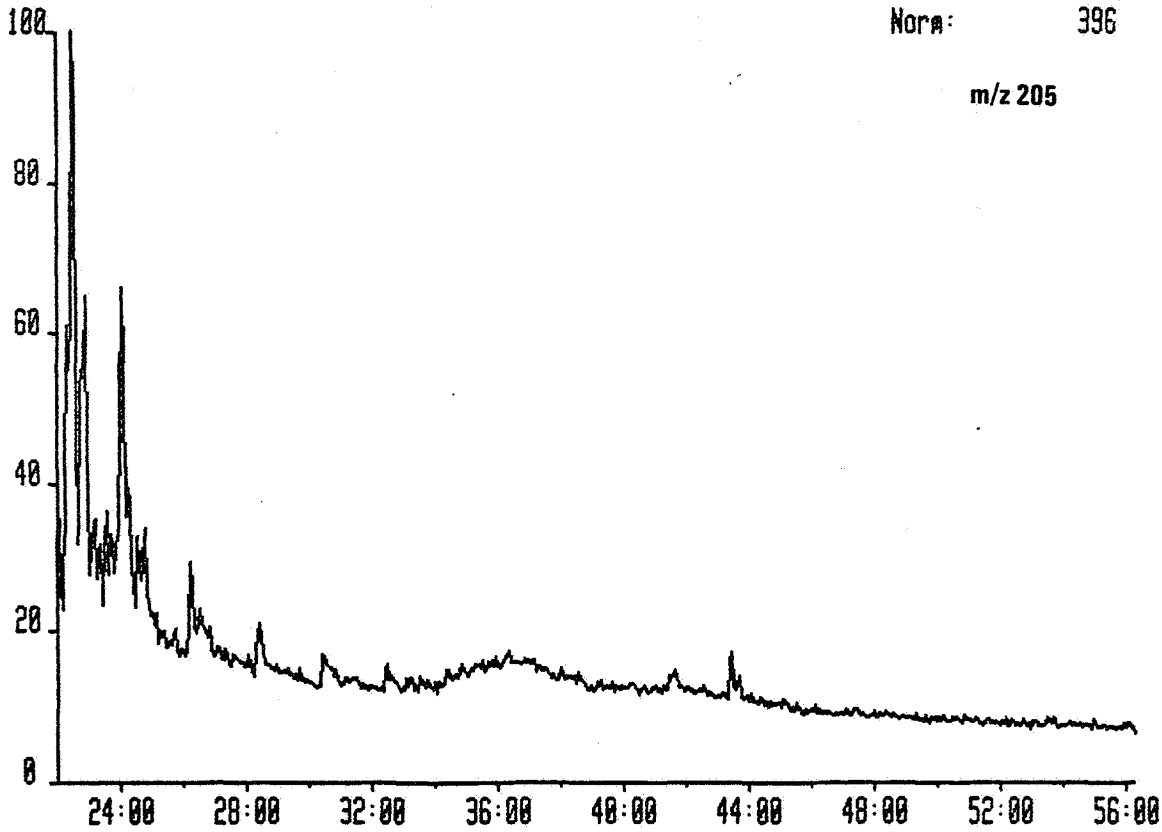

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Sample 1 Injection 1 Group 1 Mass 163.1000
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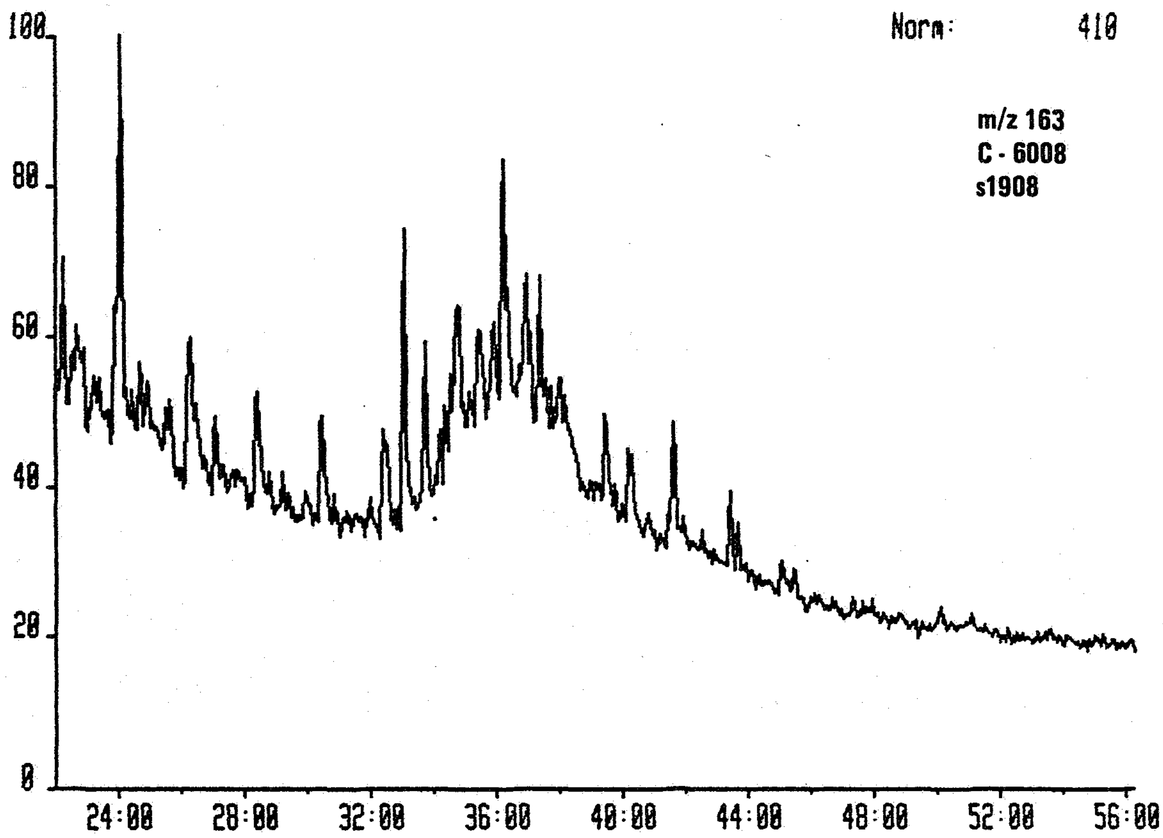

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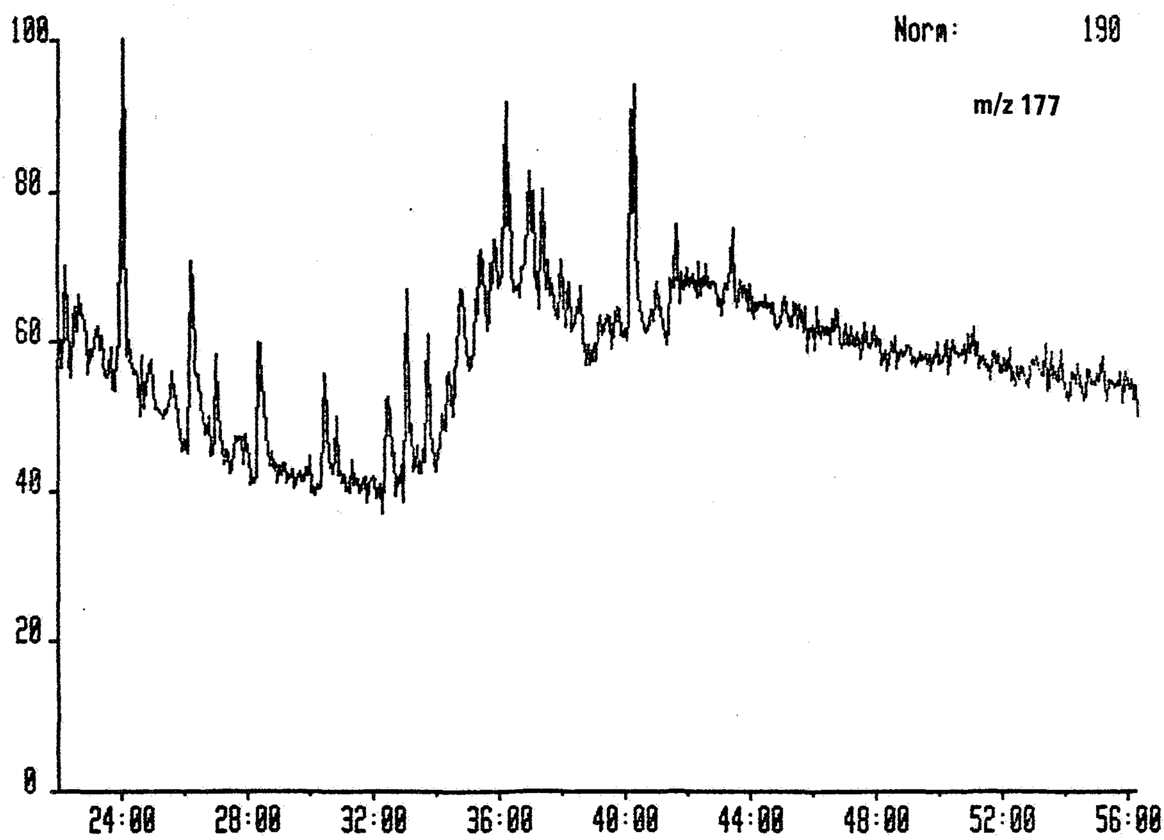
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



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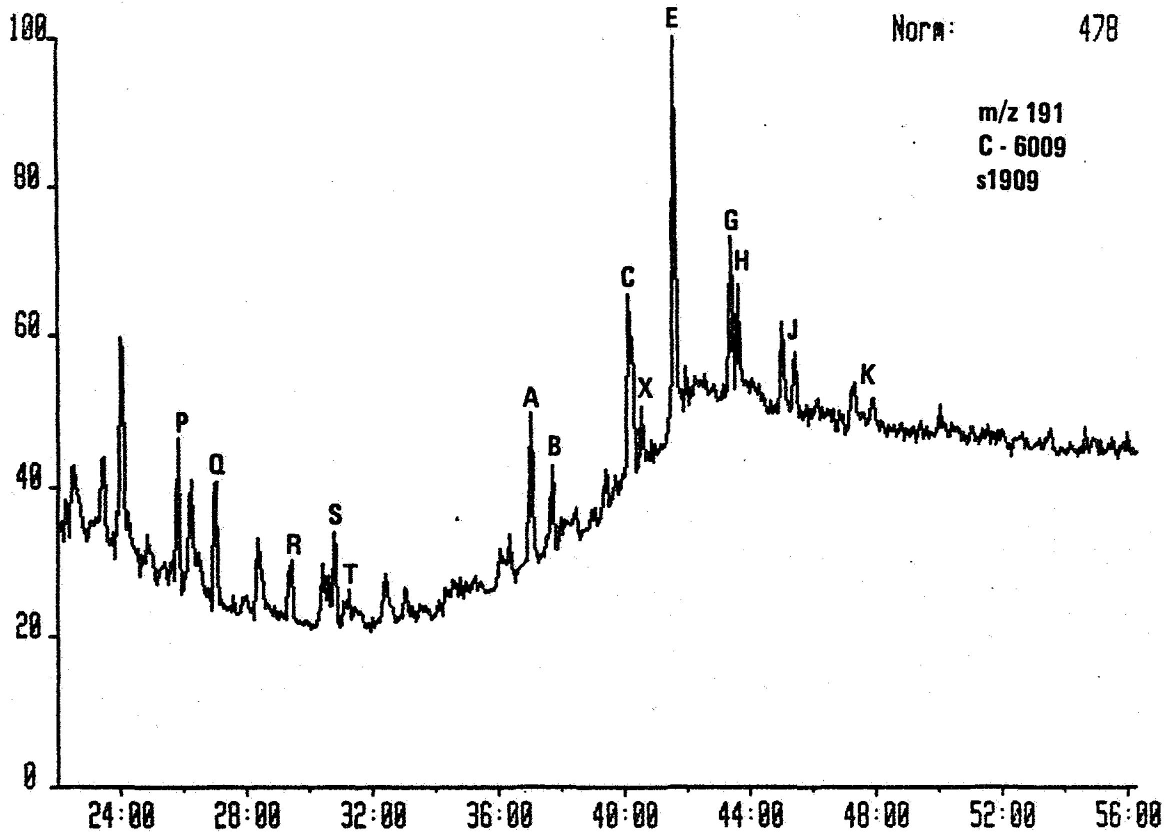
Text:



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Sample 1 Injection 1 Group 1 Mass 205.1000
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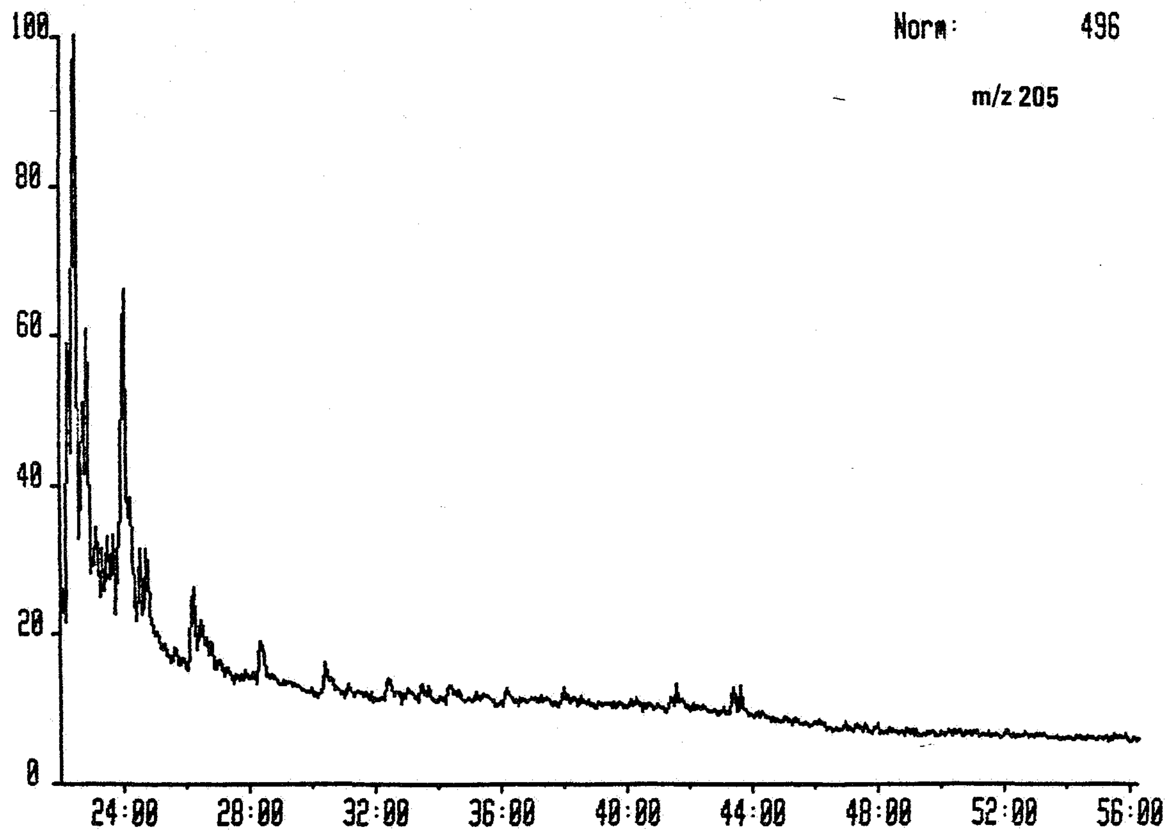

IKU SINTEF-GRUPPEN

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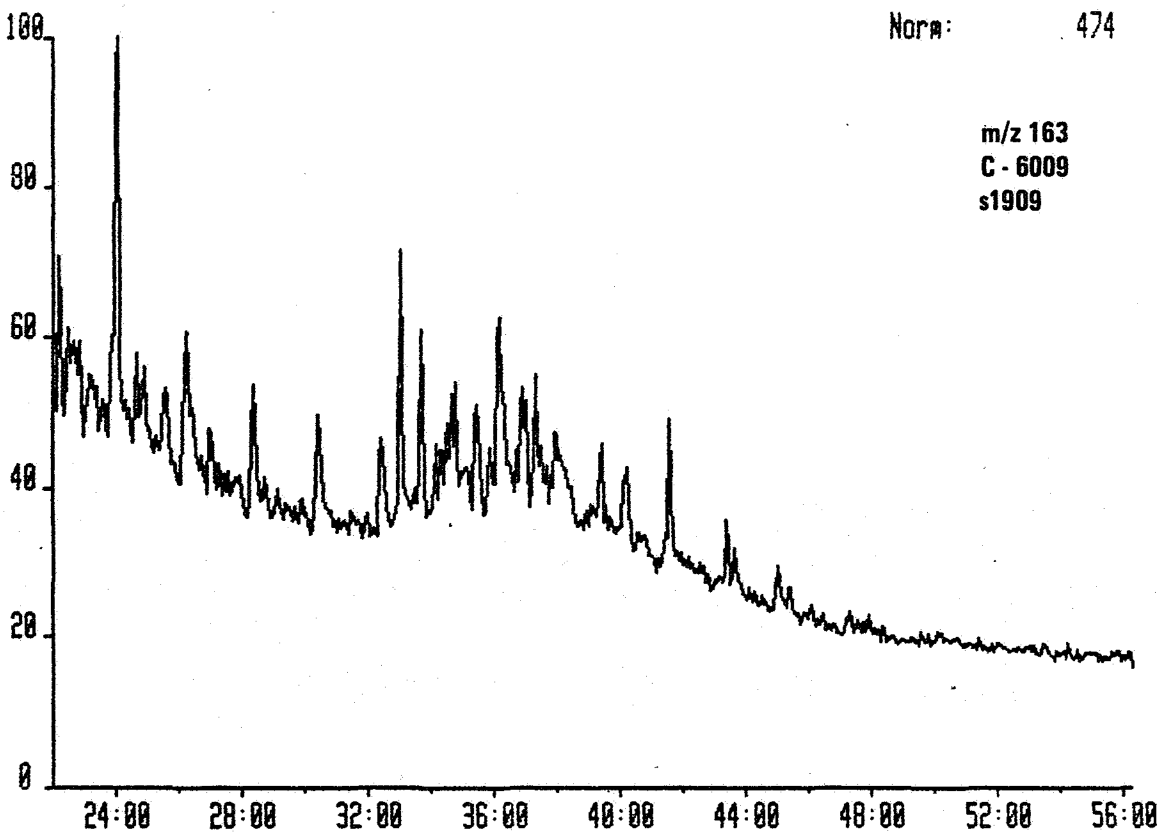
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



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Sample 1 Injection 1 Group 1 Mass 177.1000
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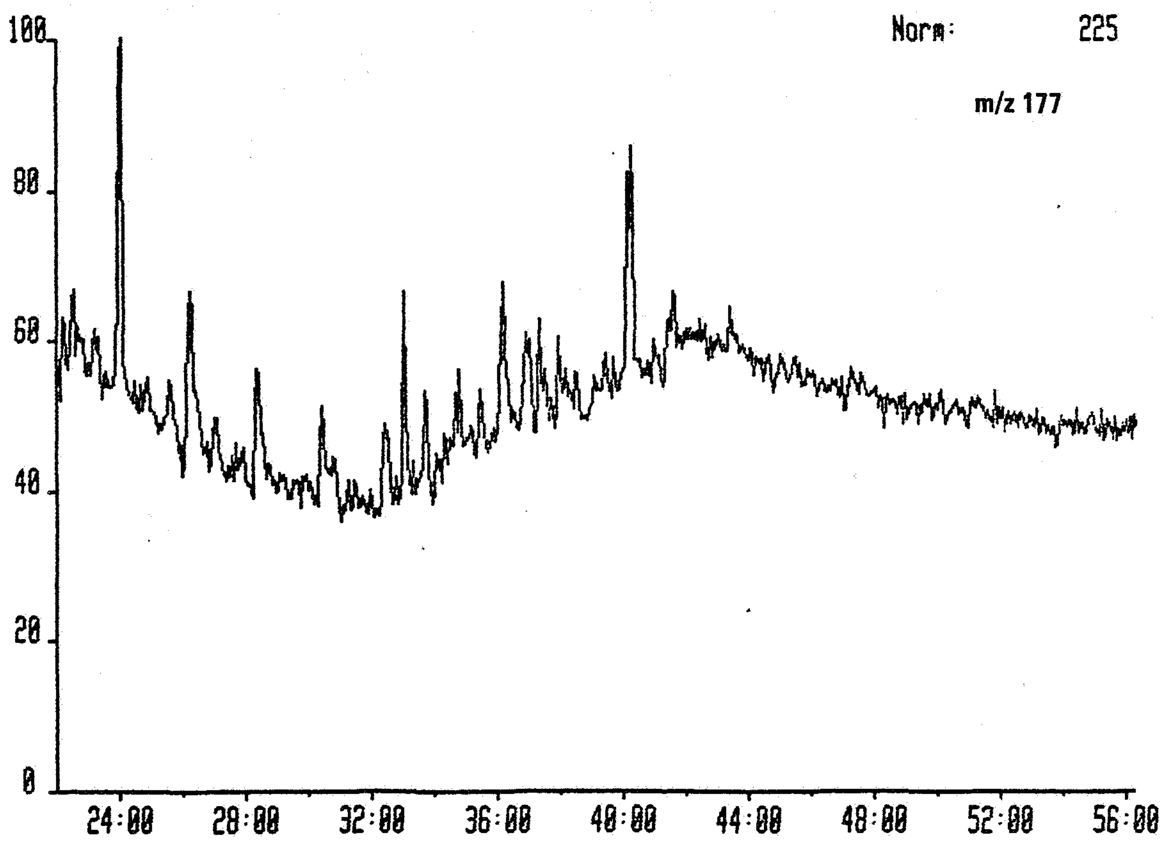

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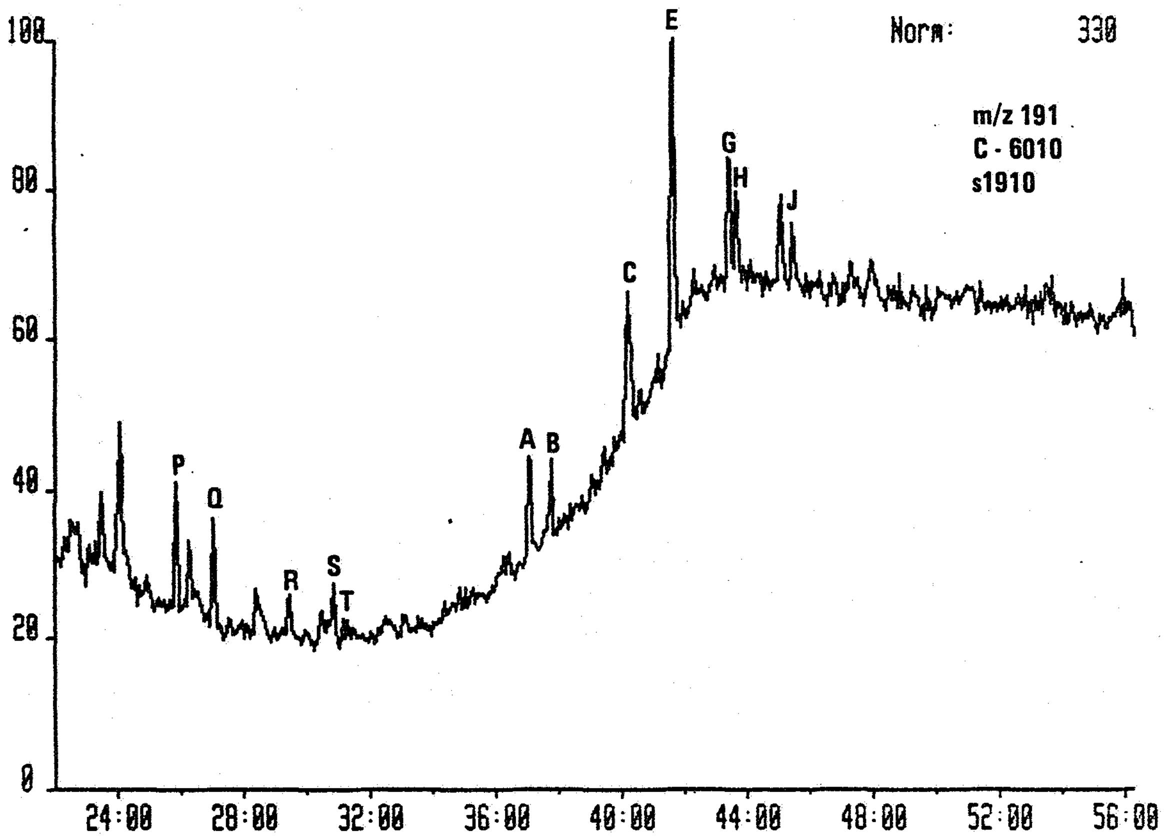

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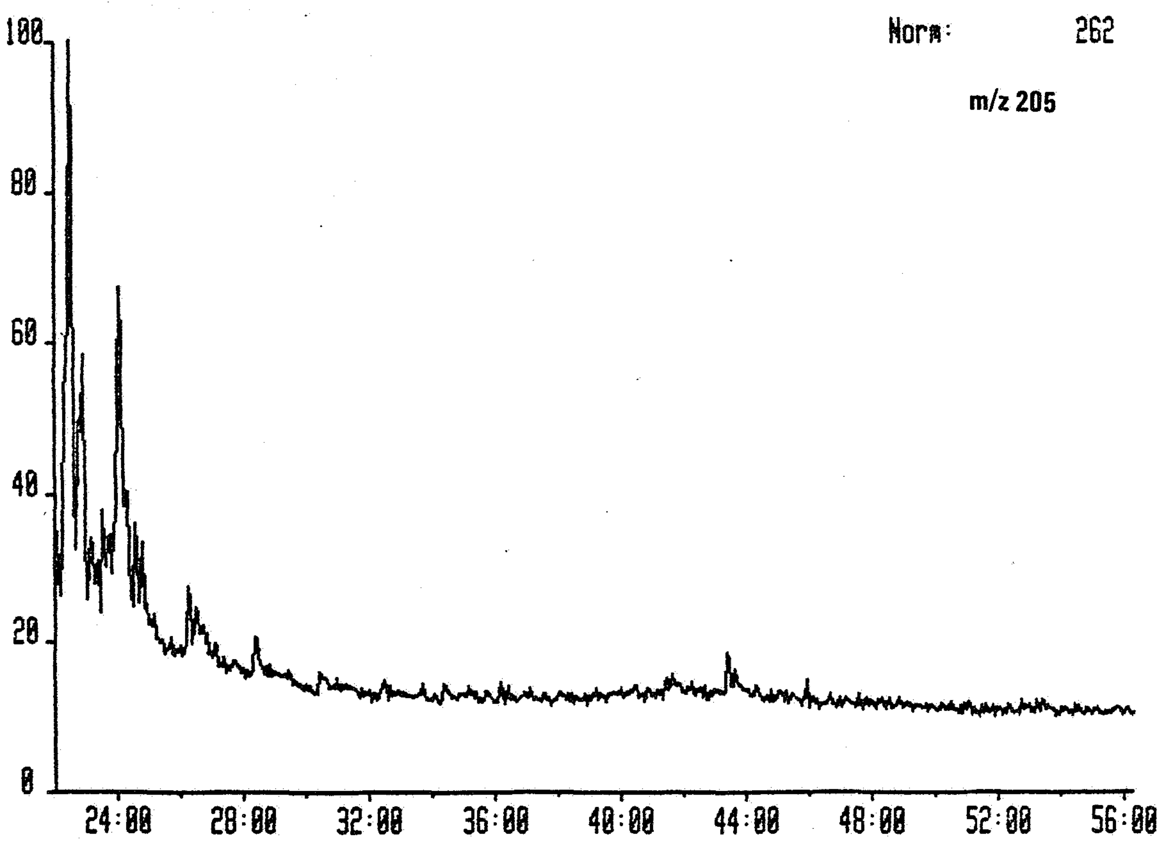

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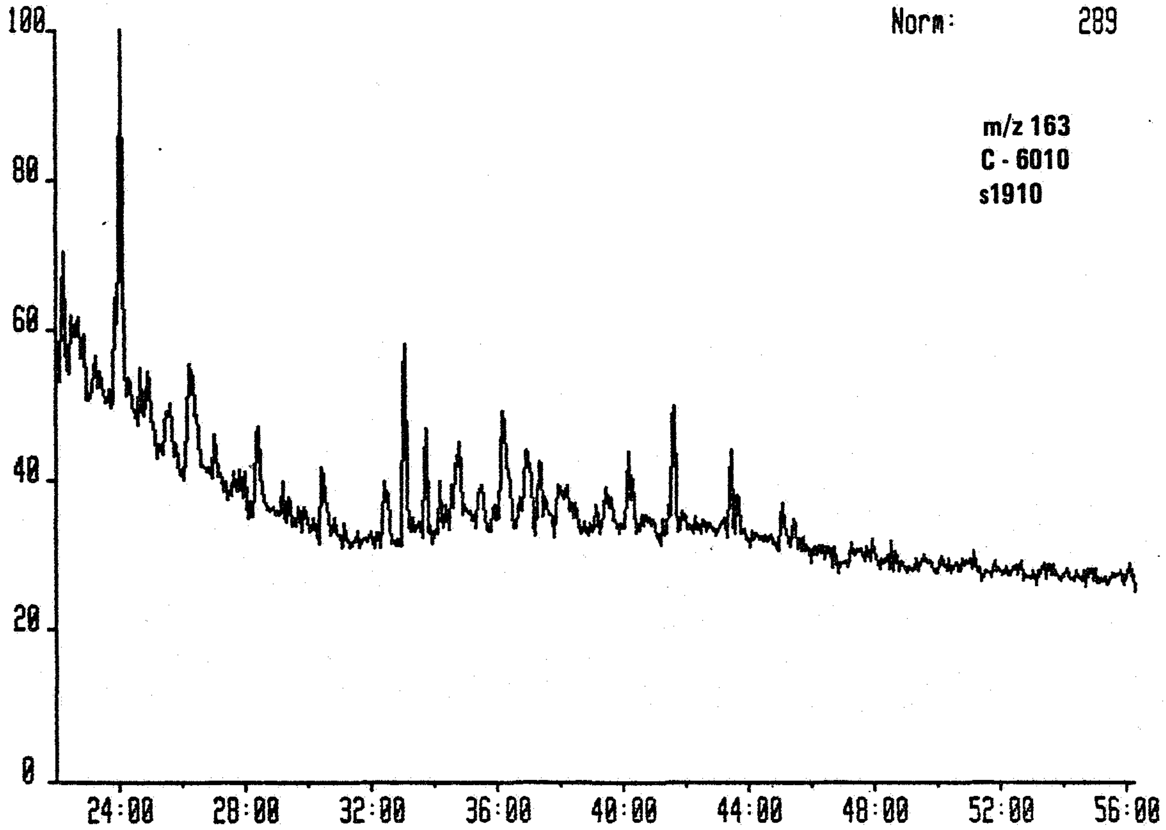

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Sample 1 Injection 1 Group 1 Mass 177.1000
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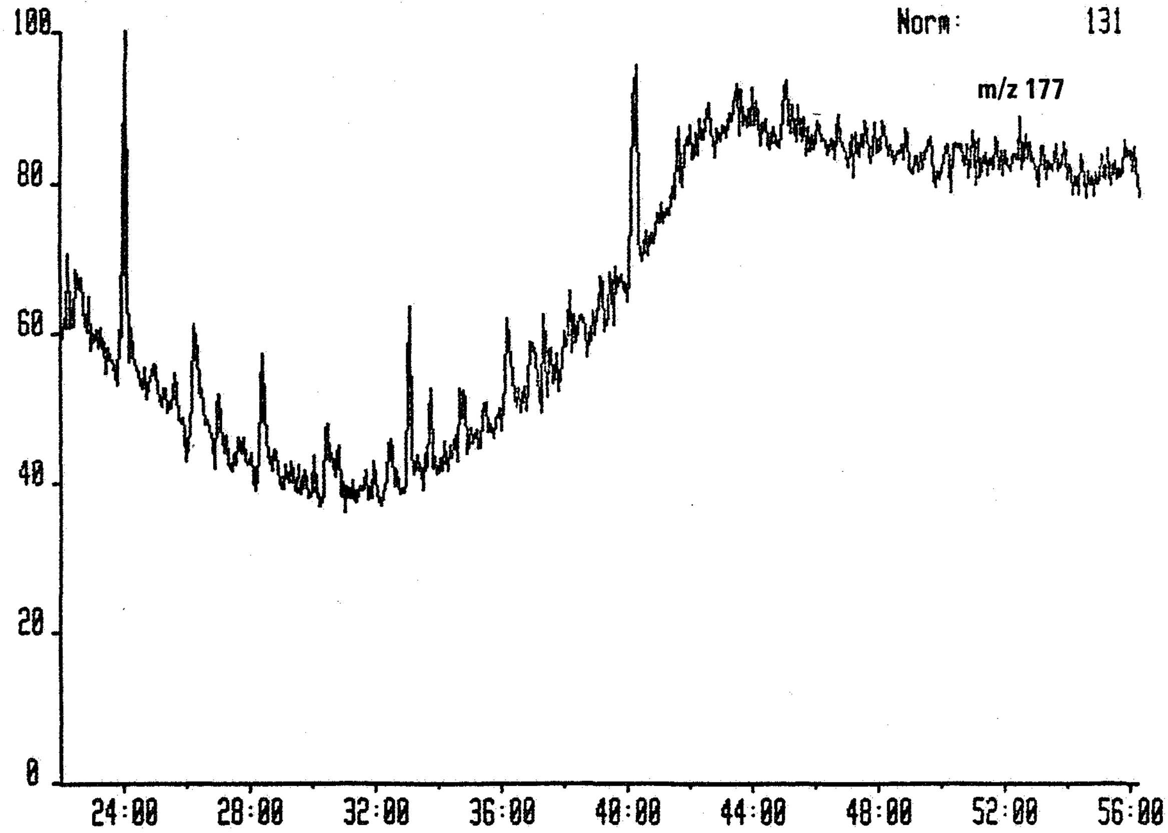

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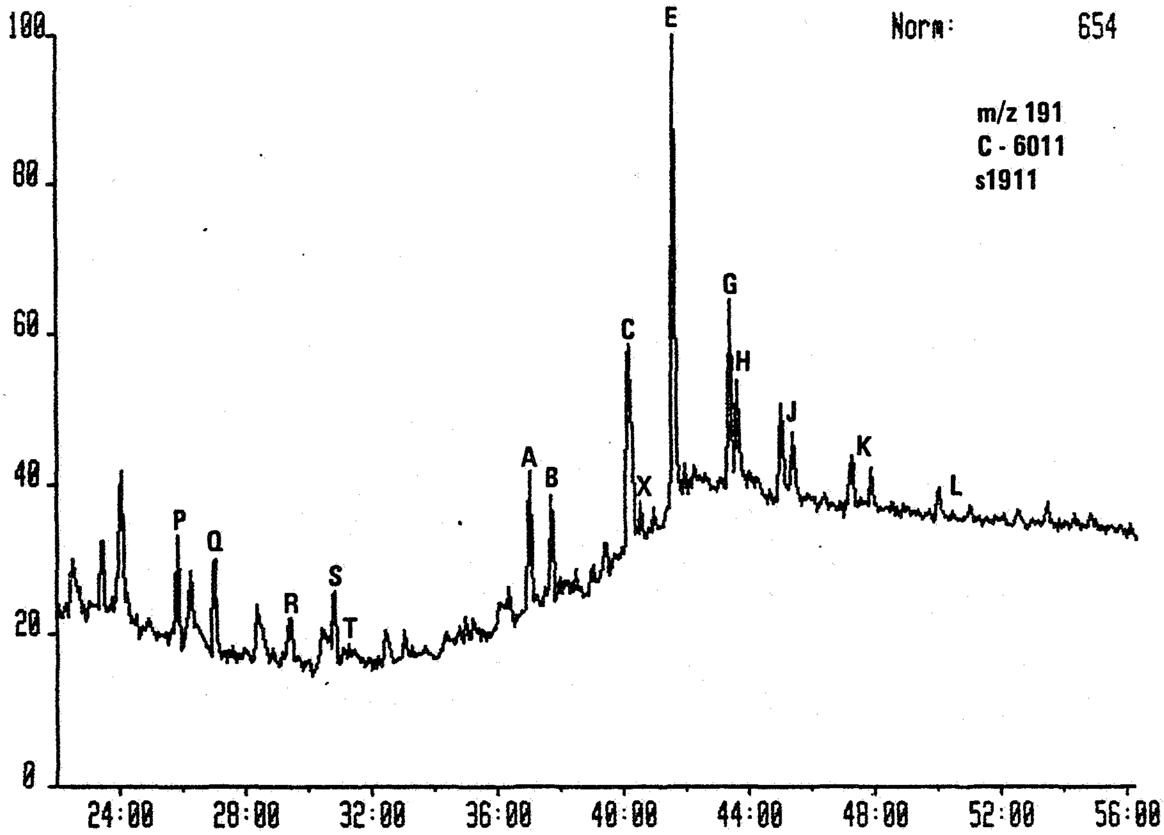
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



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Sample 1 Injection 1 Group 1 Mass 205.1000
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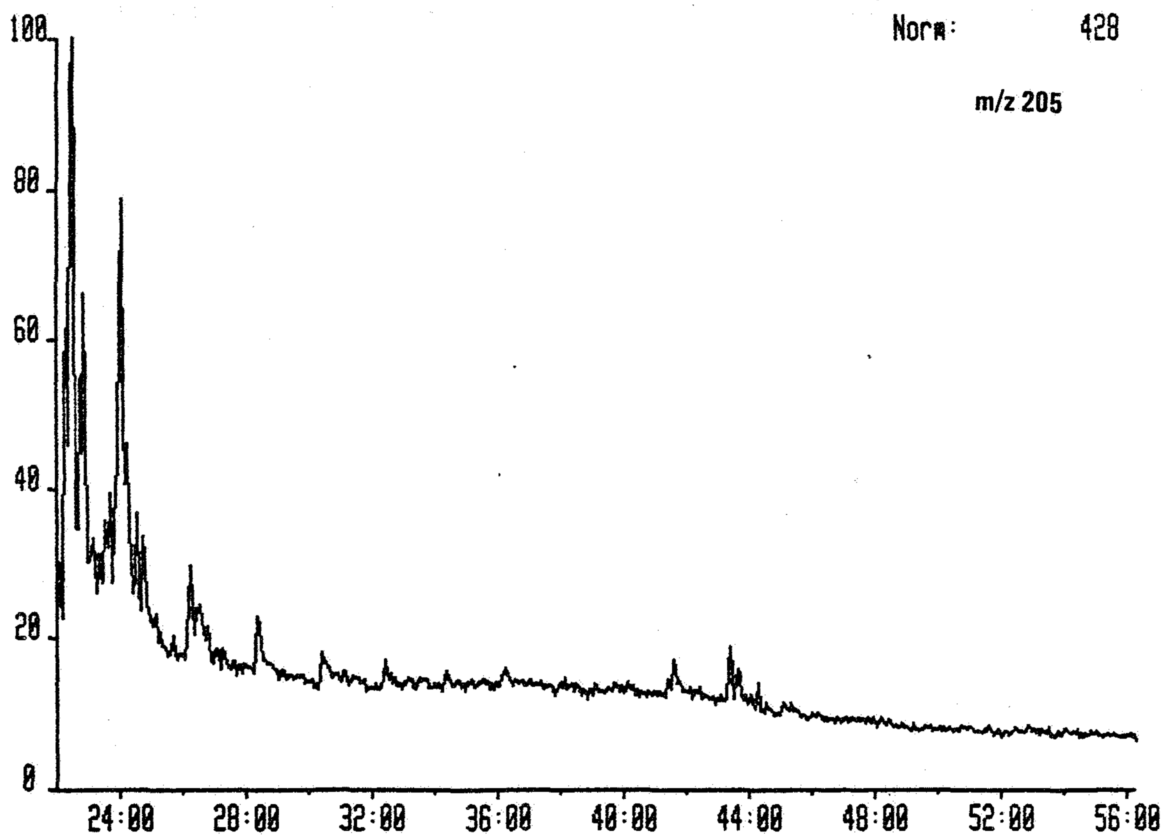

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Sample 1 Injection 1 Group 1 Mass 163.1000
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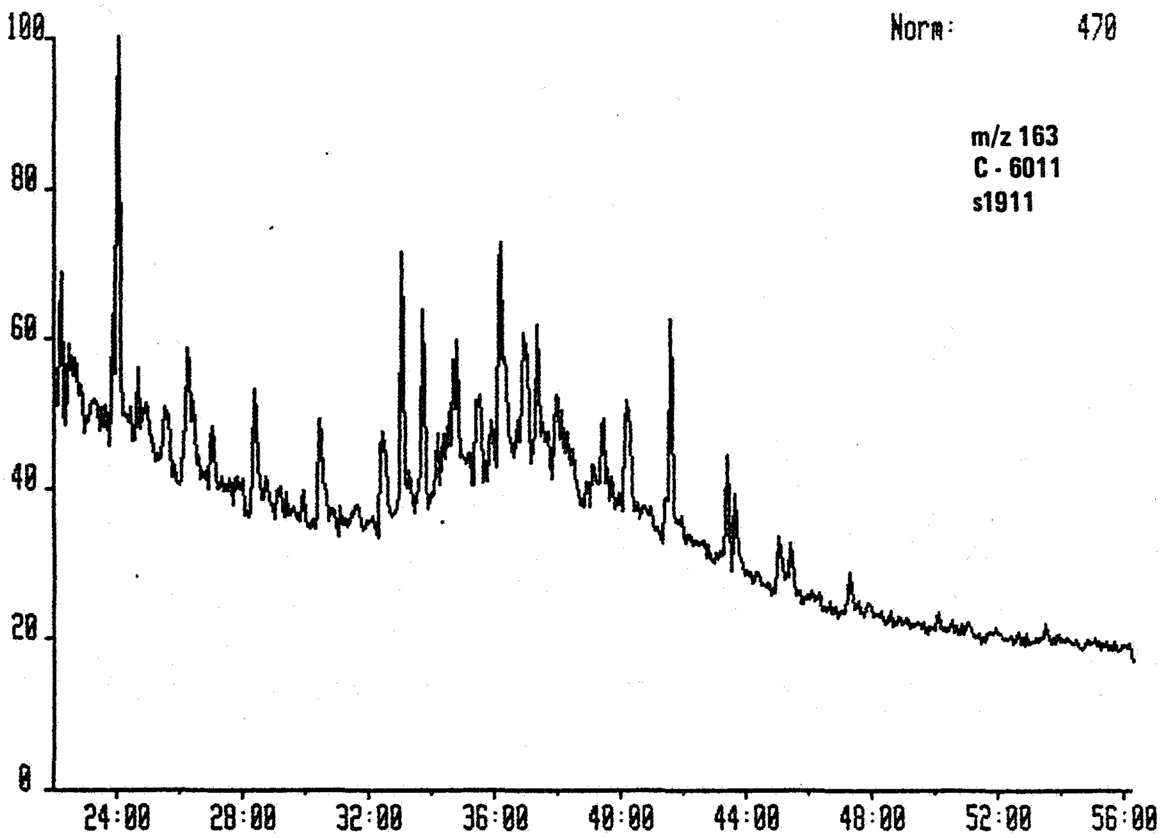
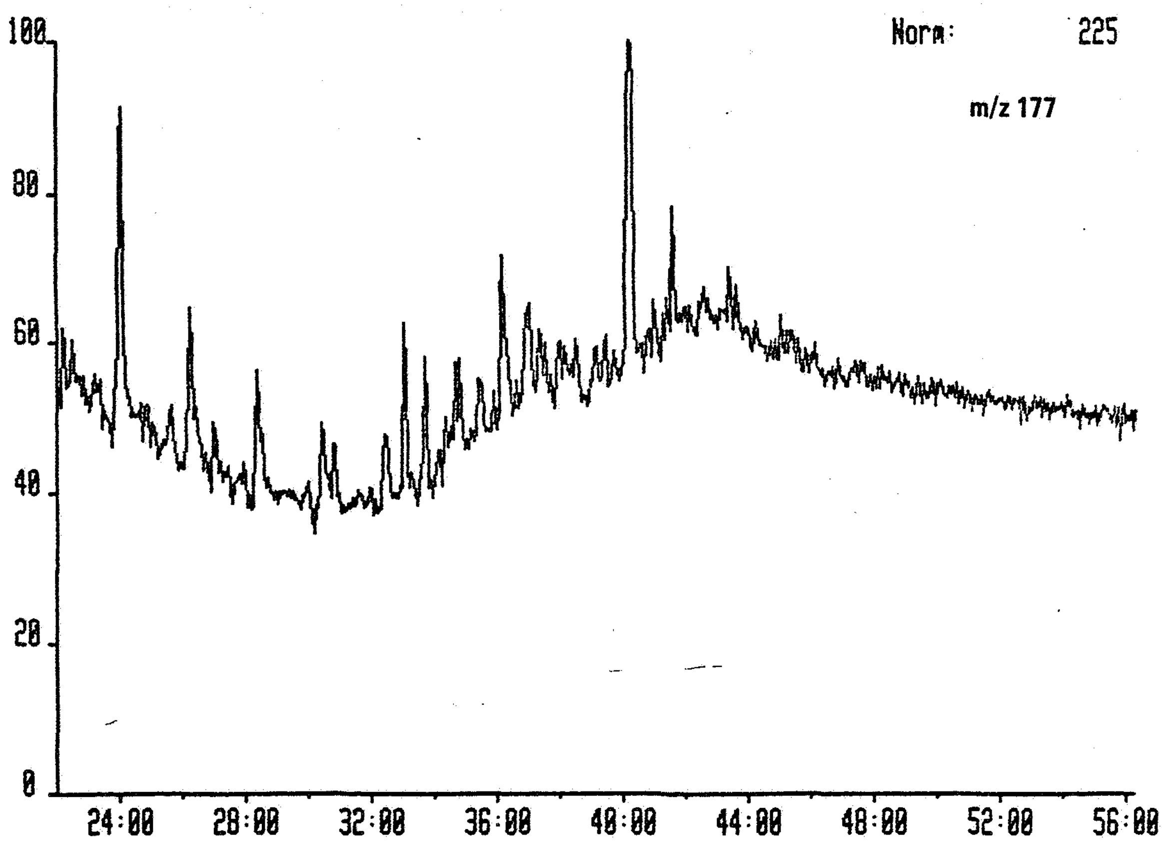
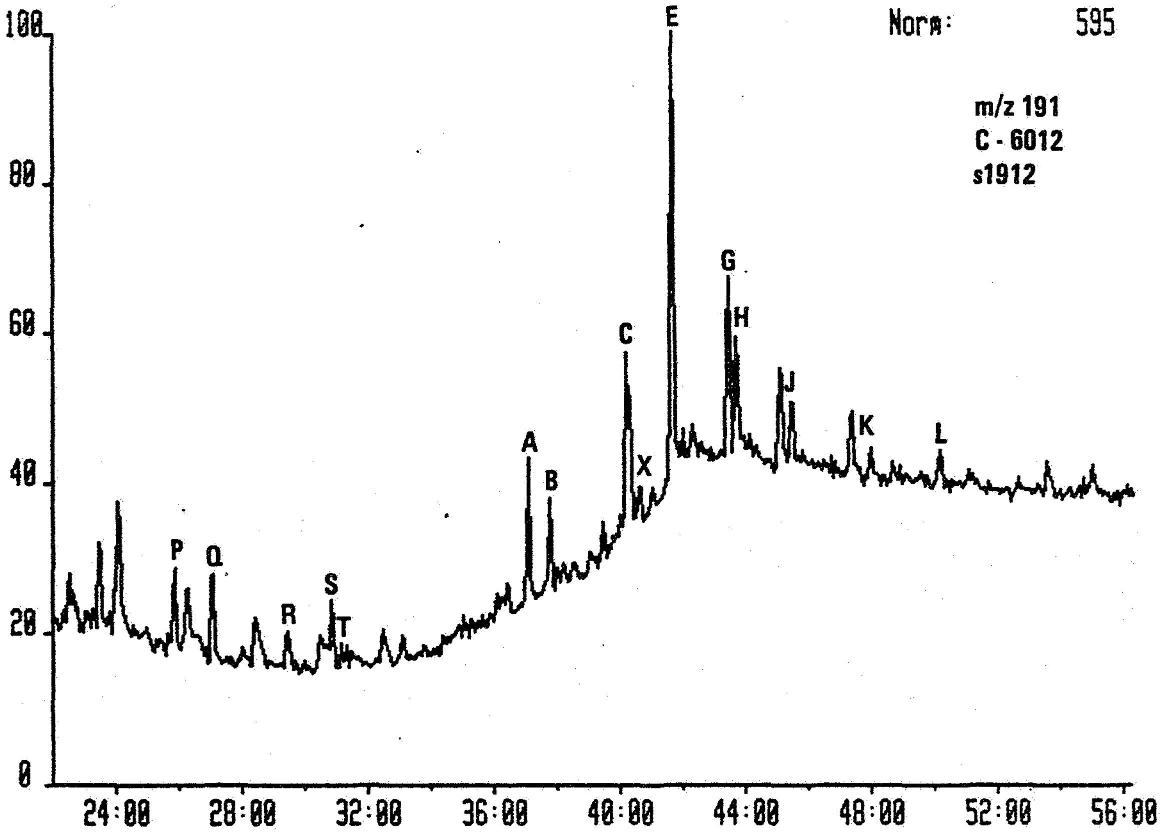


C6011 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



C6012   24-FEB-87   Sir:Voltage 7070H   Acnt:IKU   System:TRIT
Sample 1   Injection 1   Group 1   Mass 191.1000
Text:



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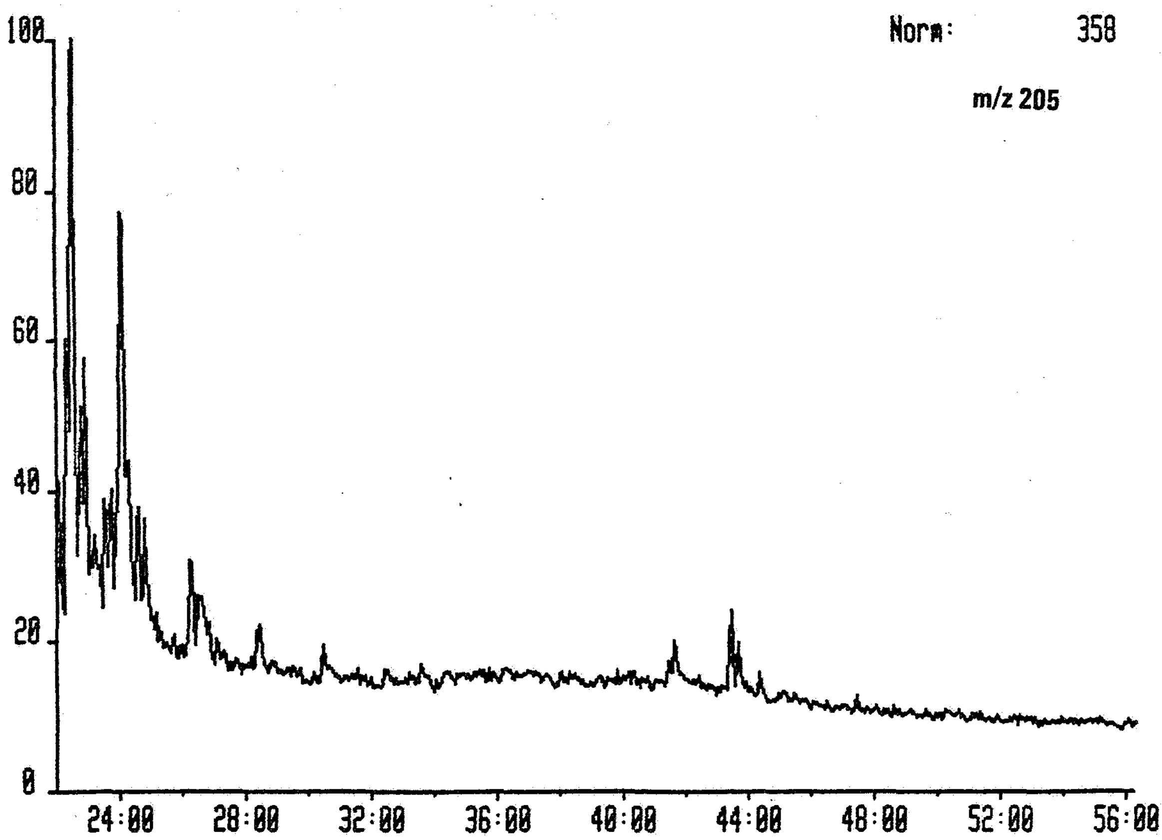
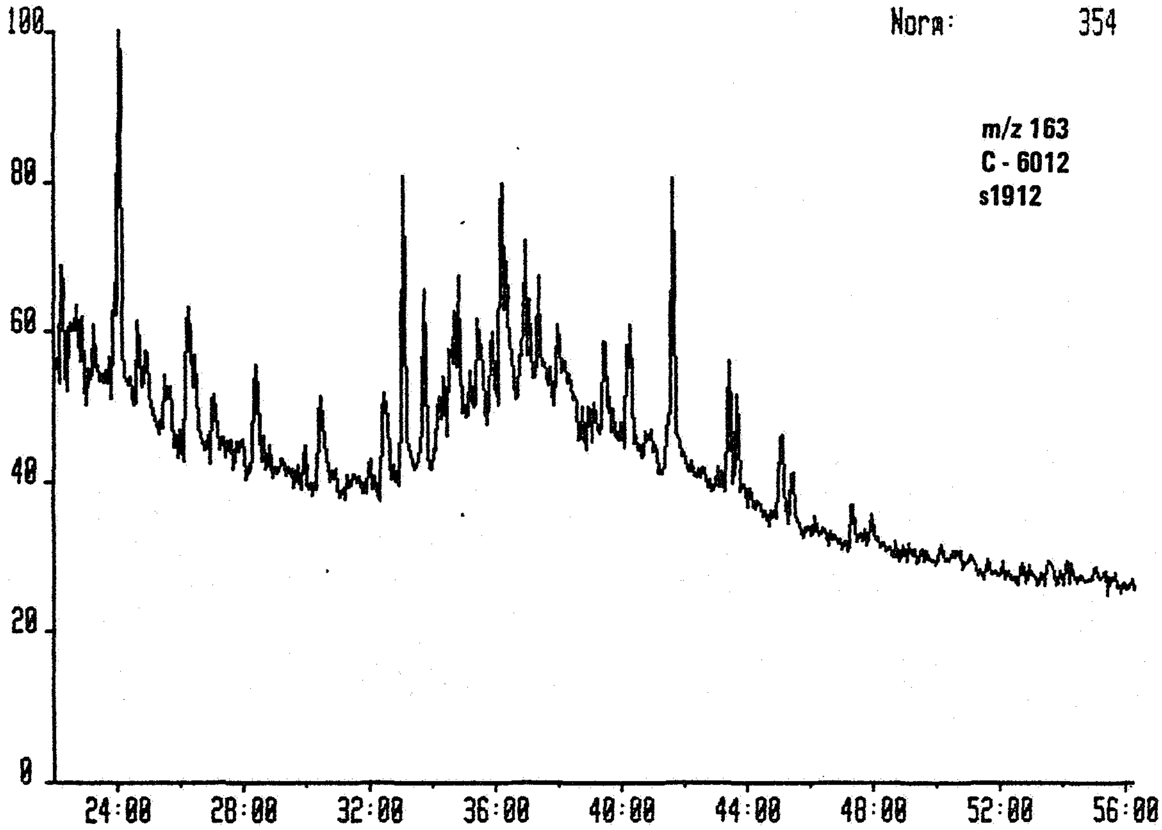
Sample 1   Injection 1   Group 1   Mass 205.1000
Text:

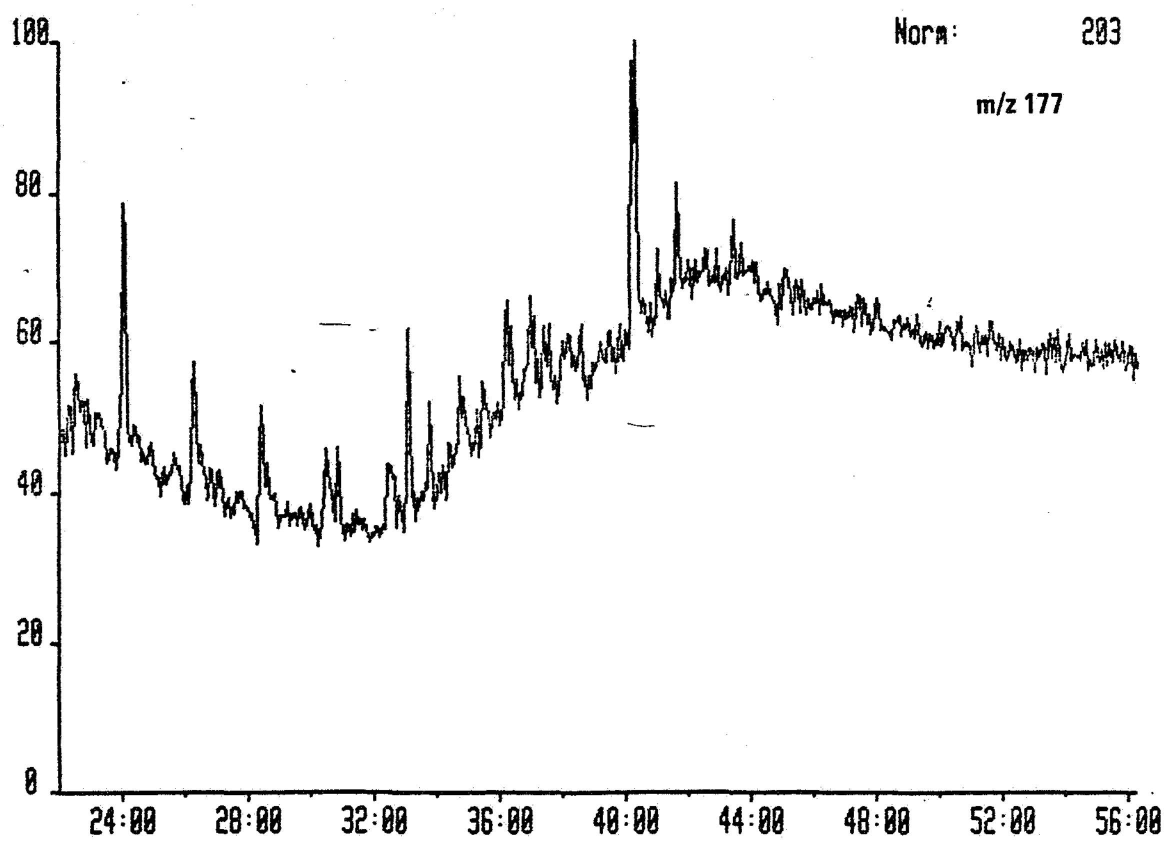


IKU SINTEF-GRUPPEN

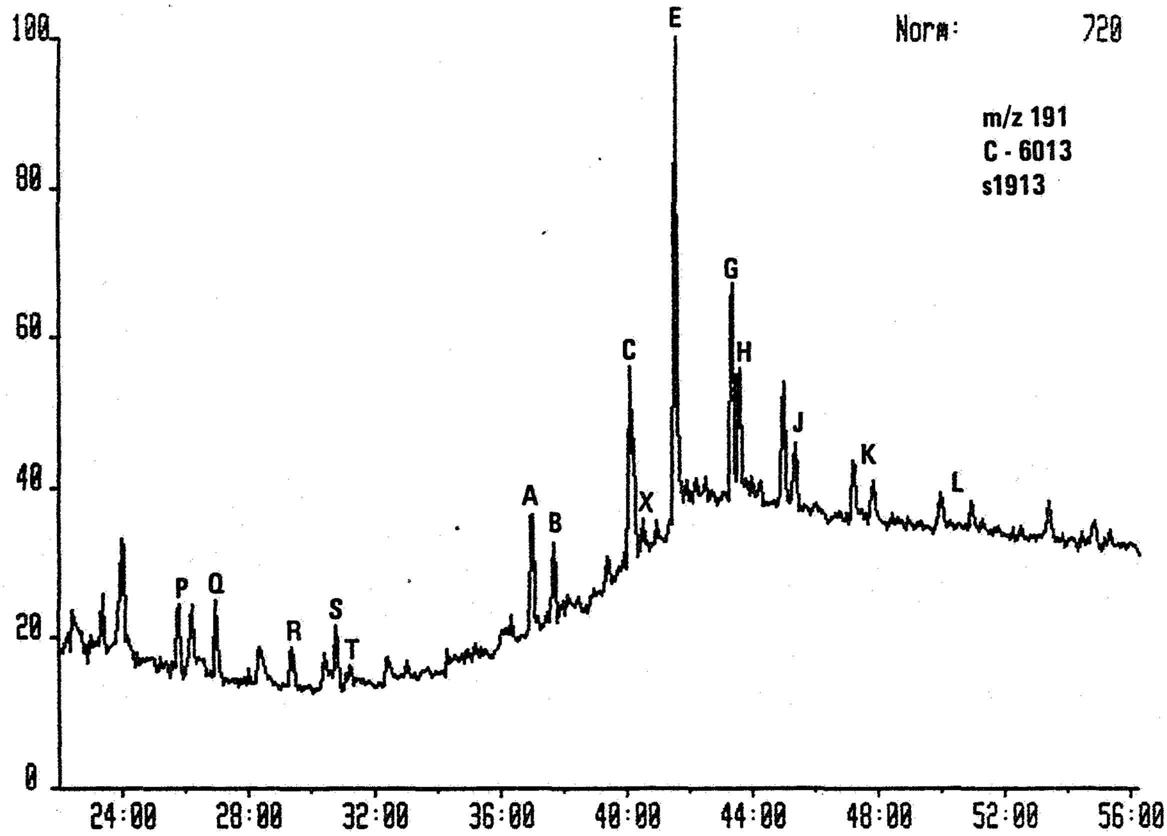
C6012 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



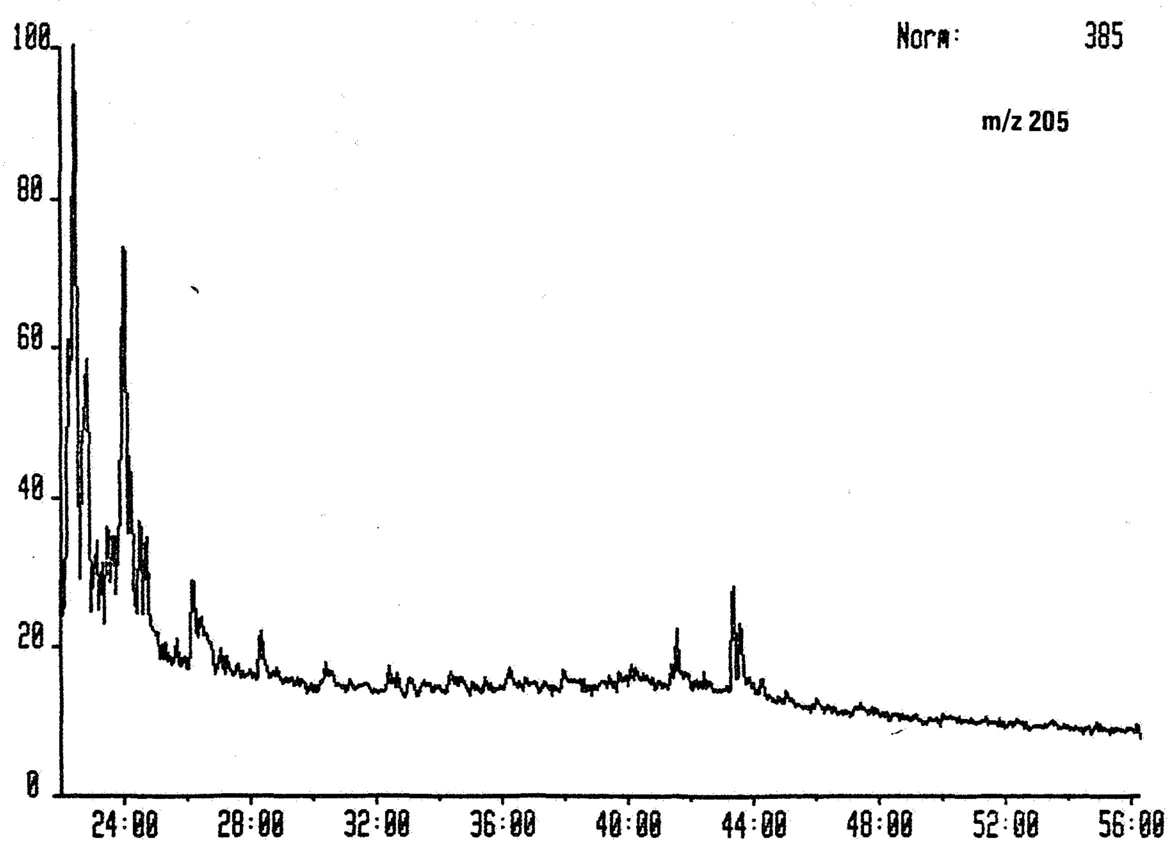
C6012 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



C6013 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:

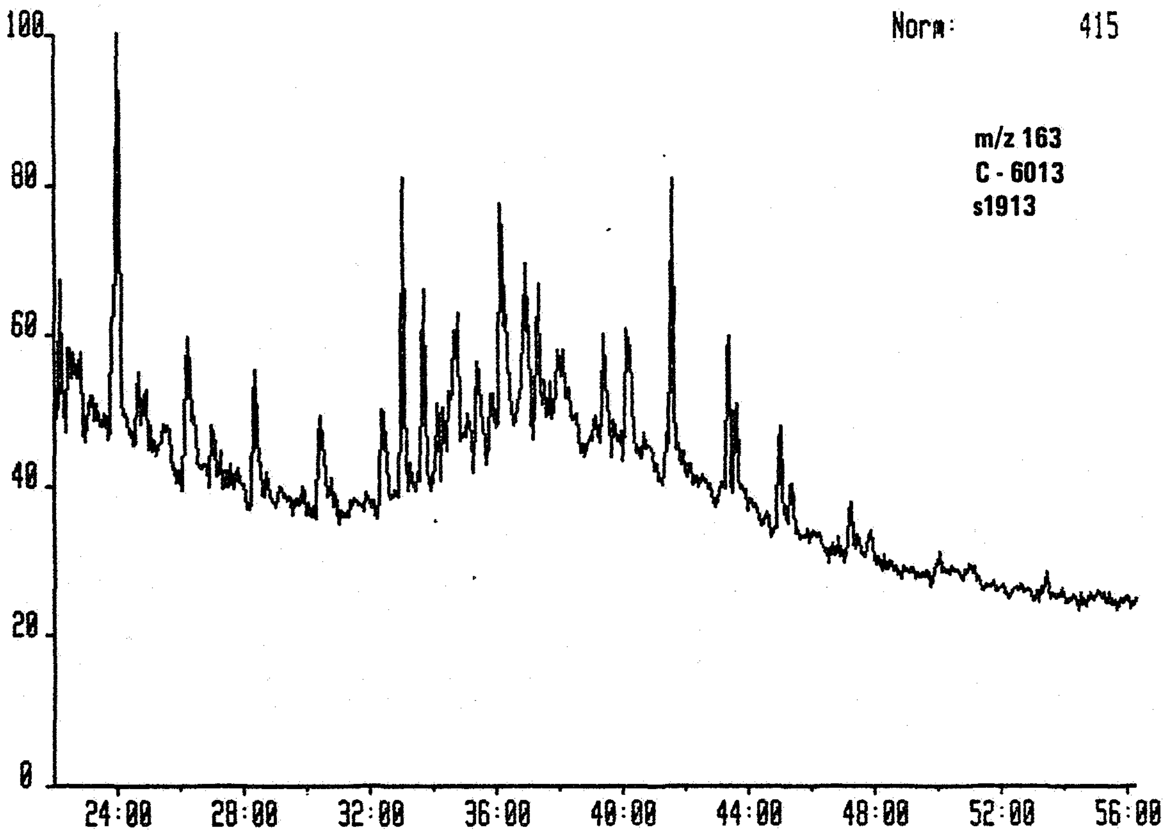


C6013 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:

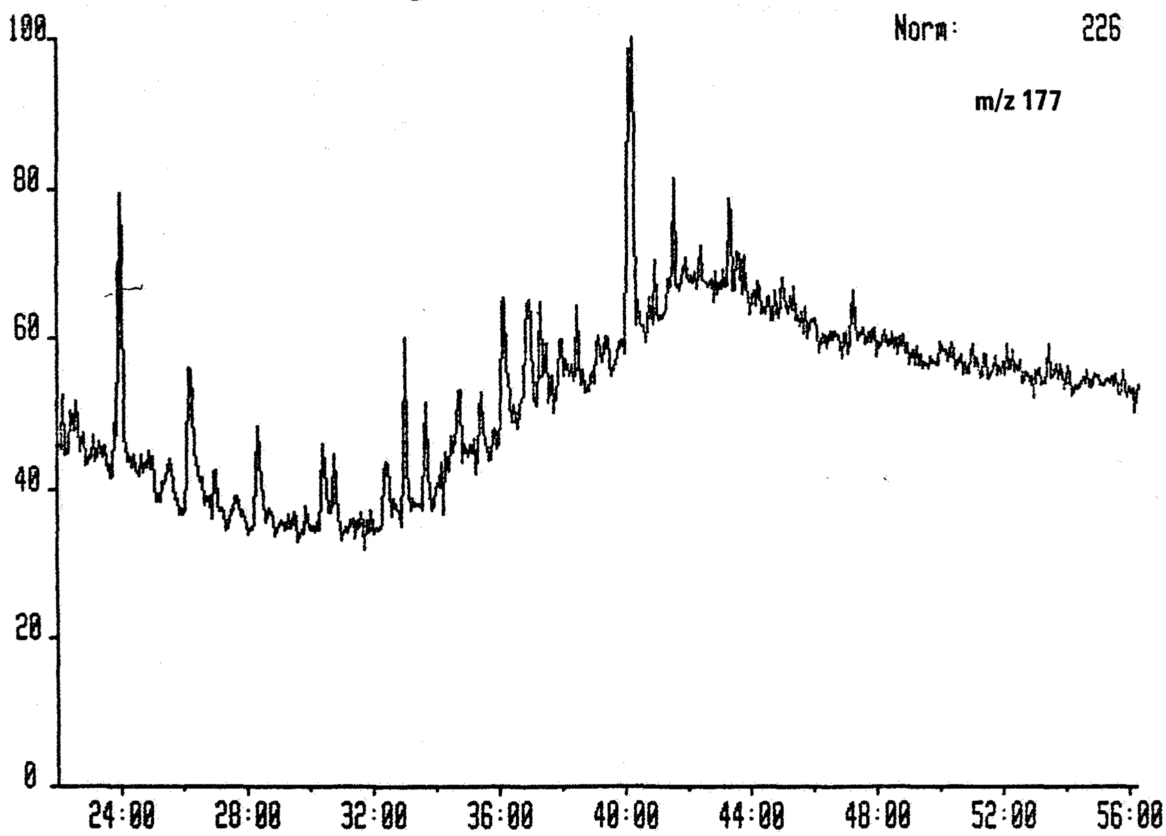


IKU SINTEF-GRUPPEN

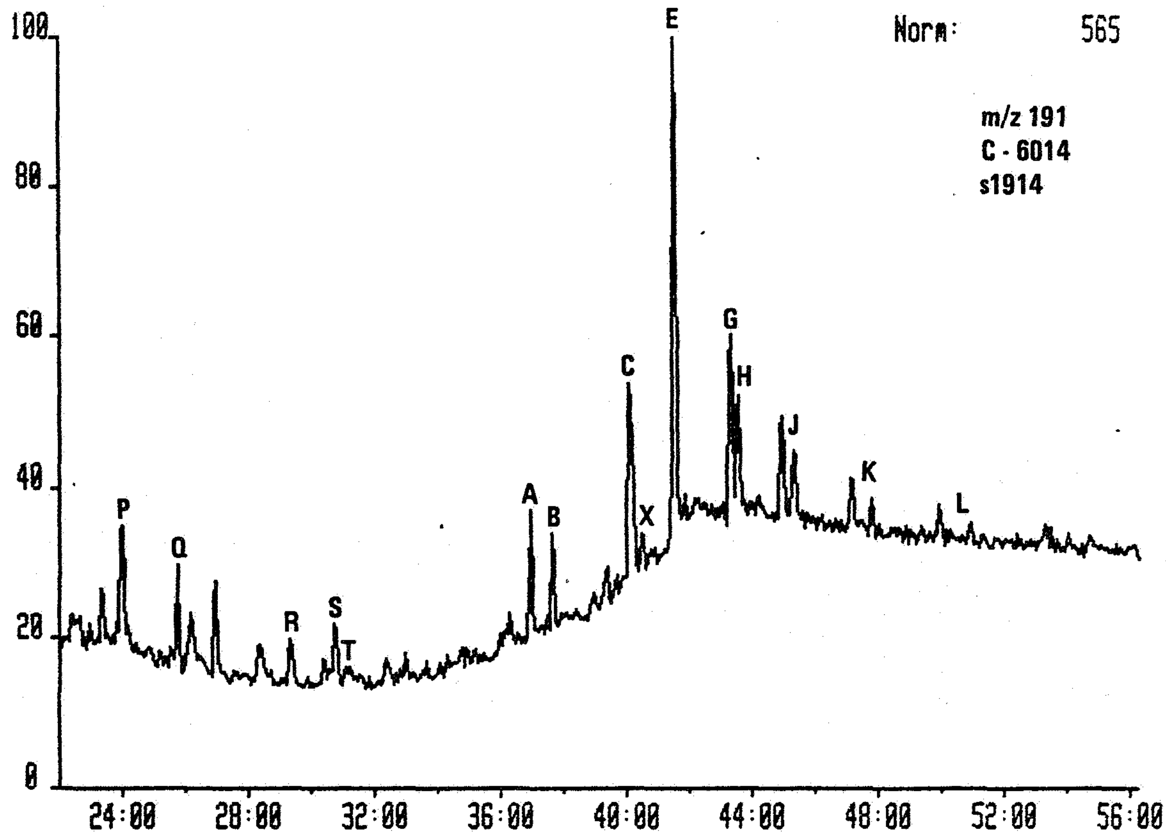
C6013 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



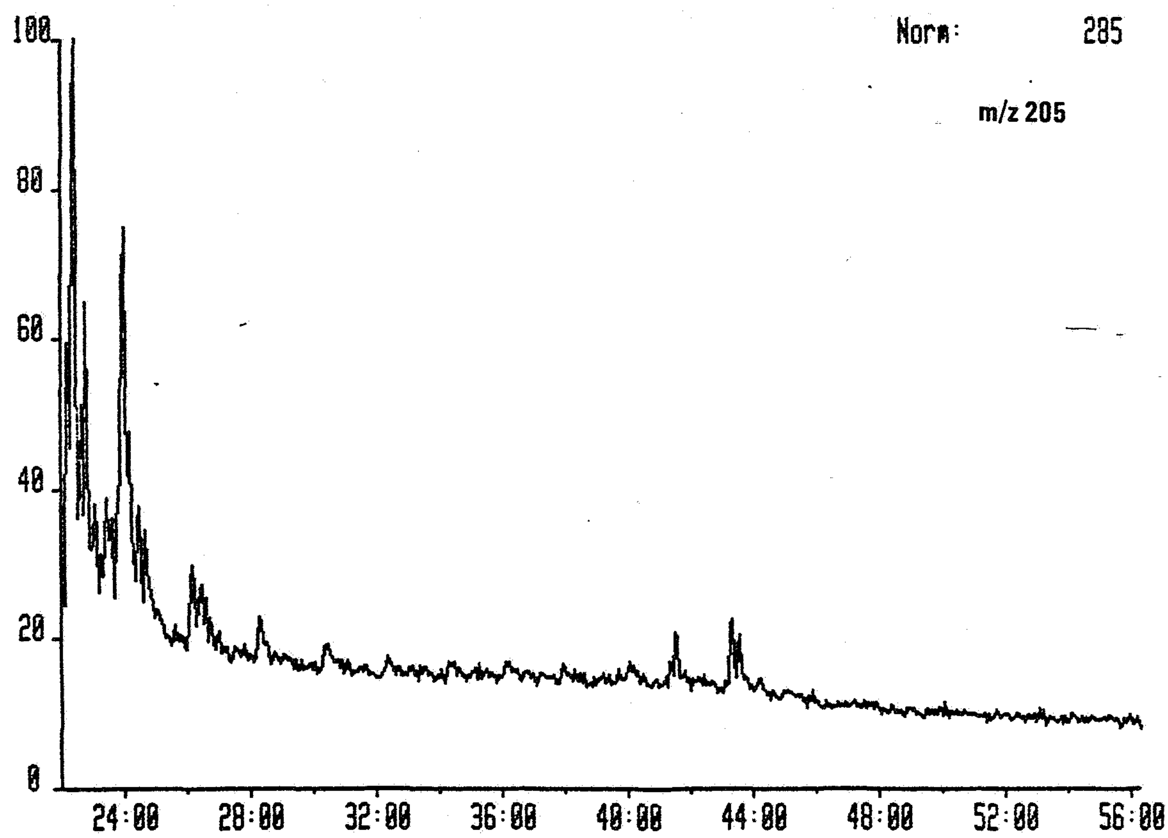
C6013 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



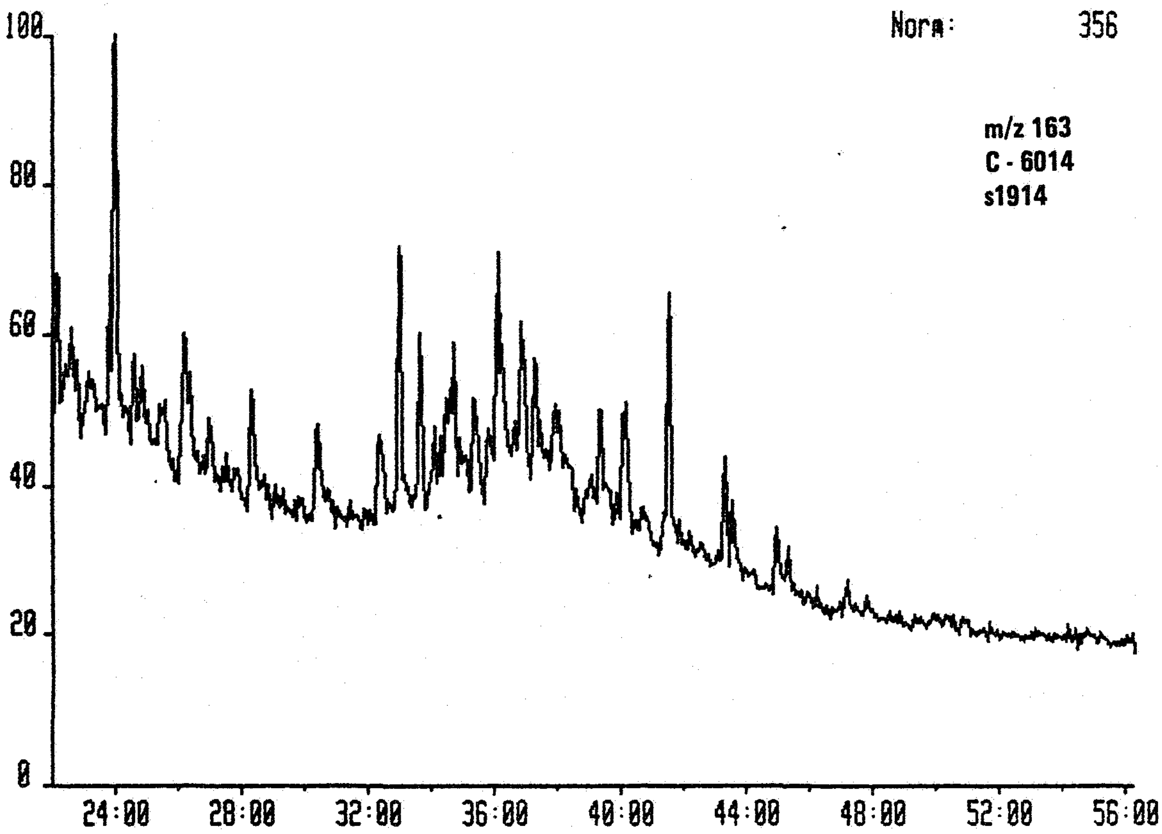
C6014 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



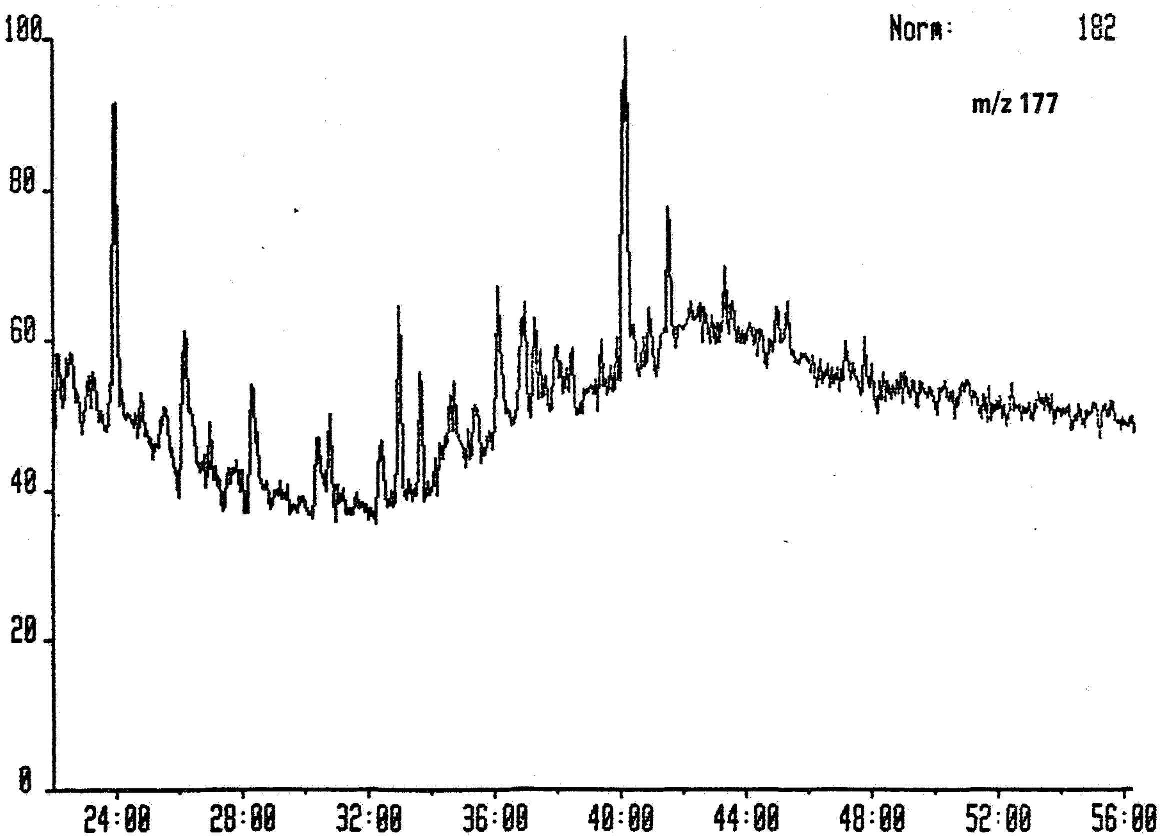
C6014 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



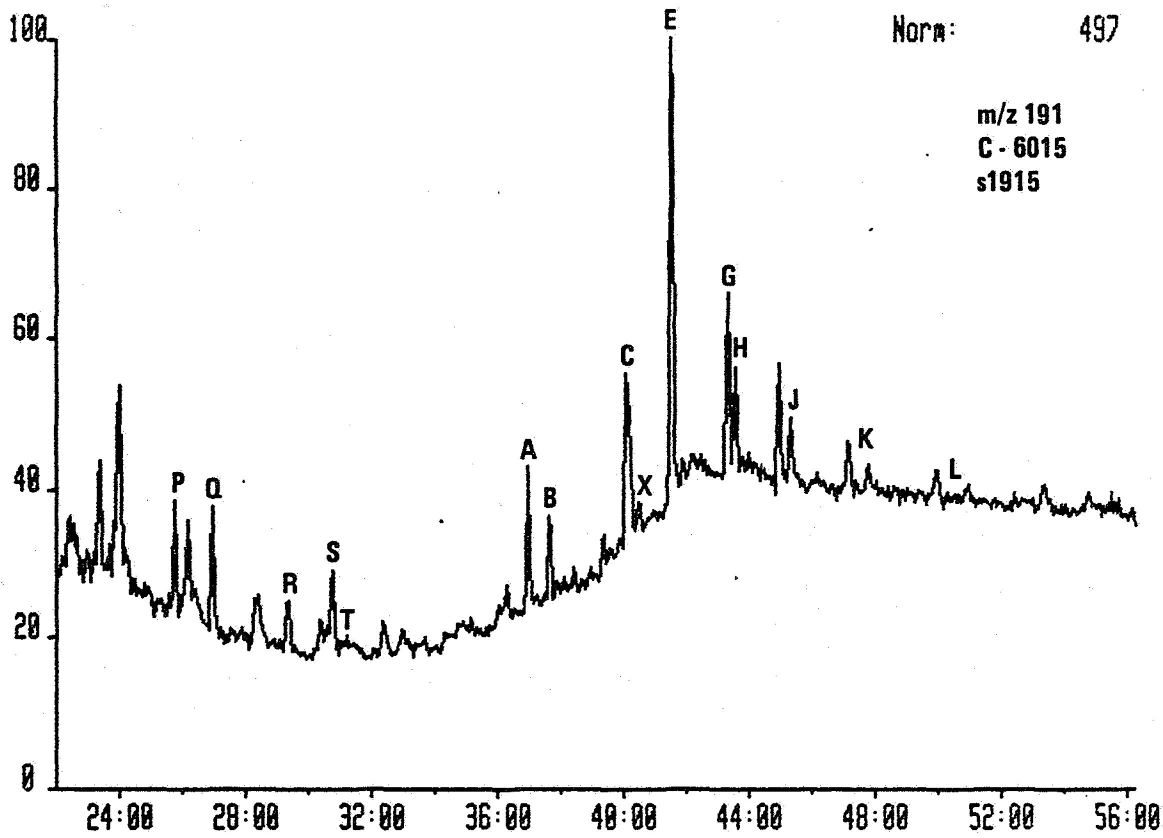
C6014 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



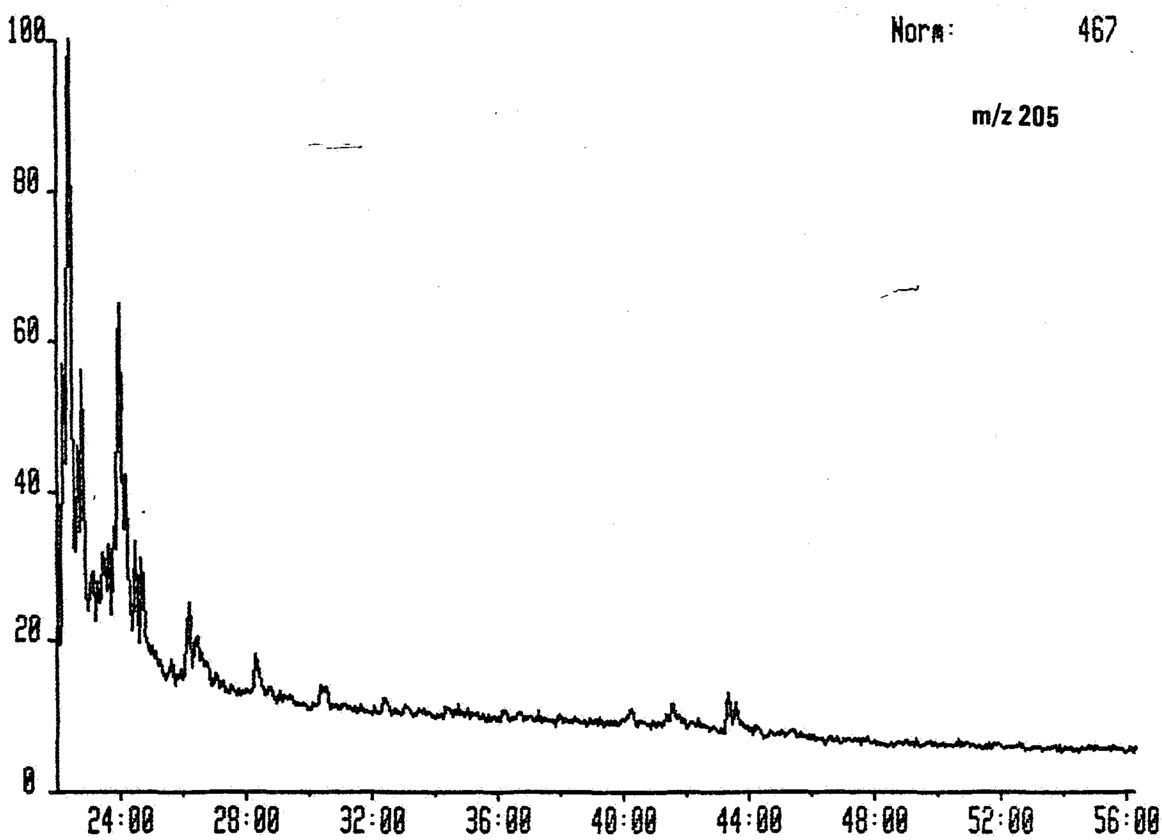
C6014 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



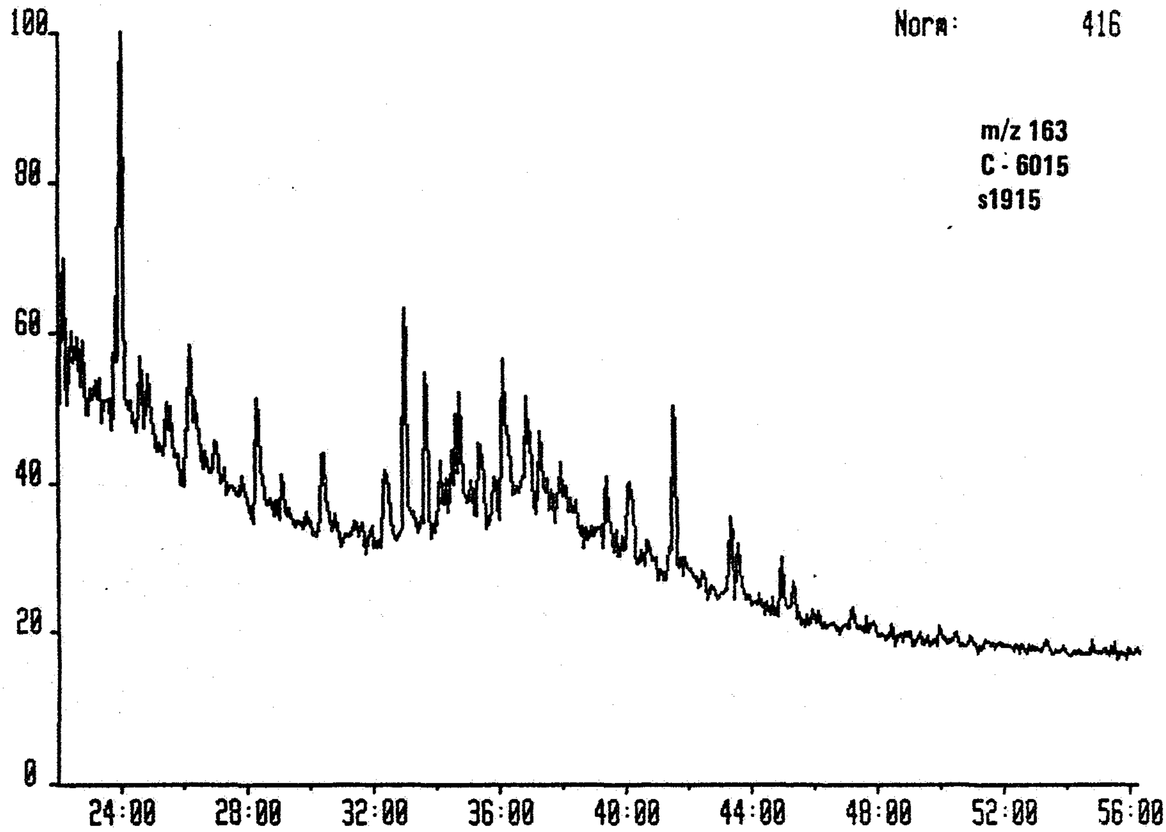
C6015 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



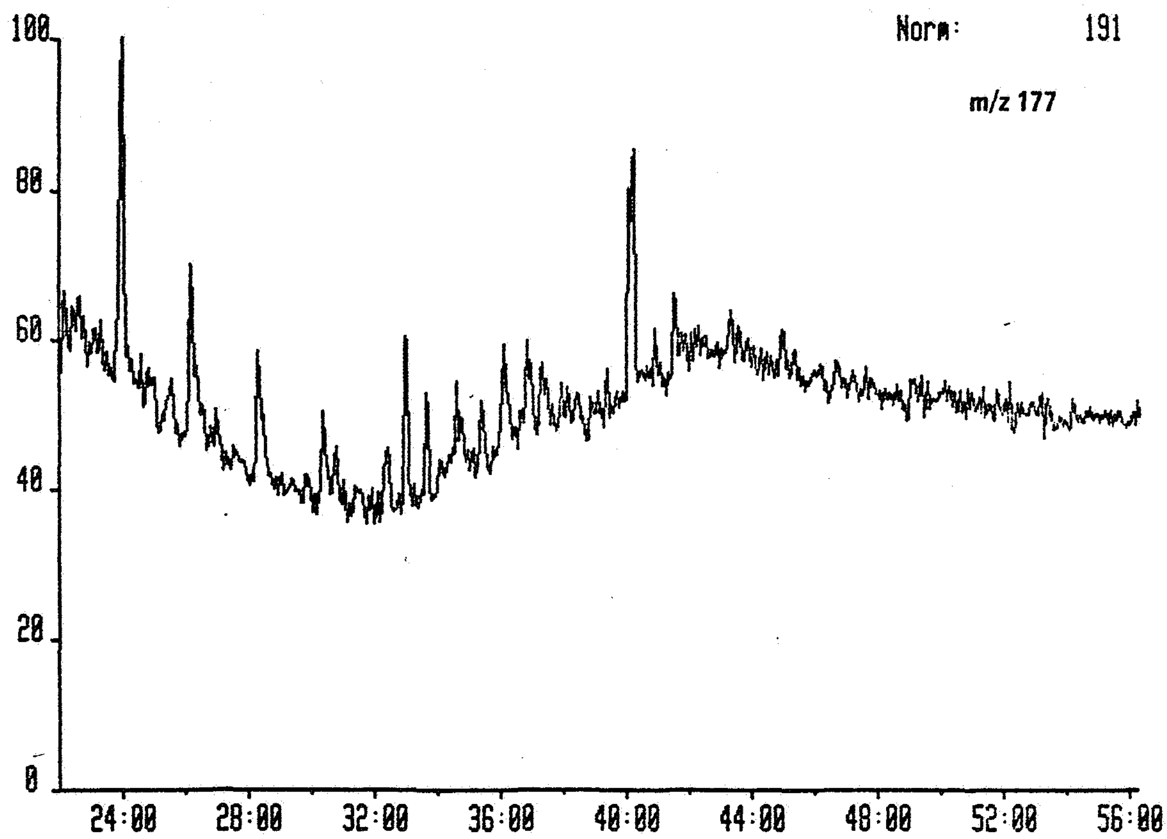
C6015 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



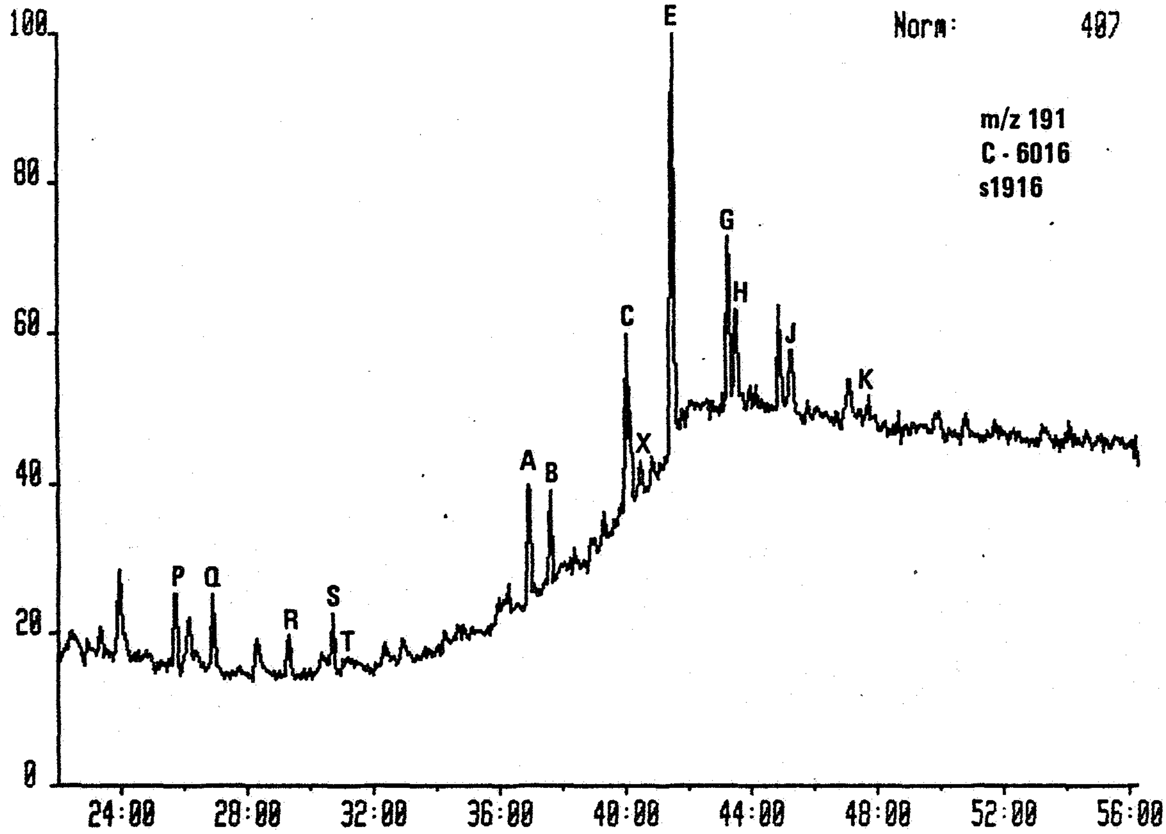
C6015 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



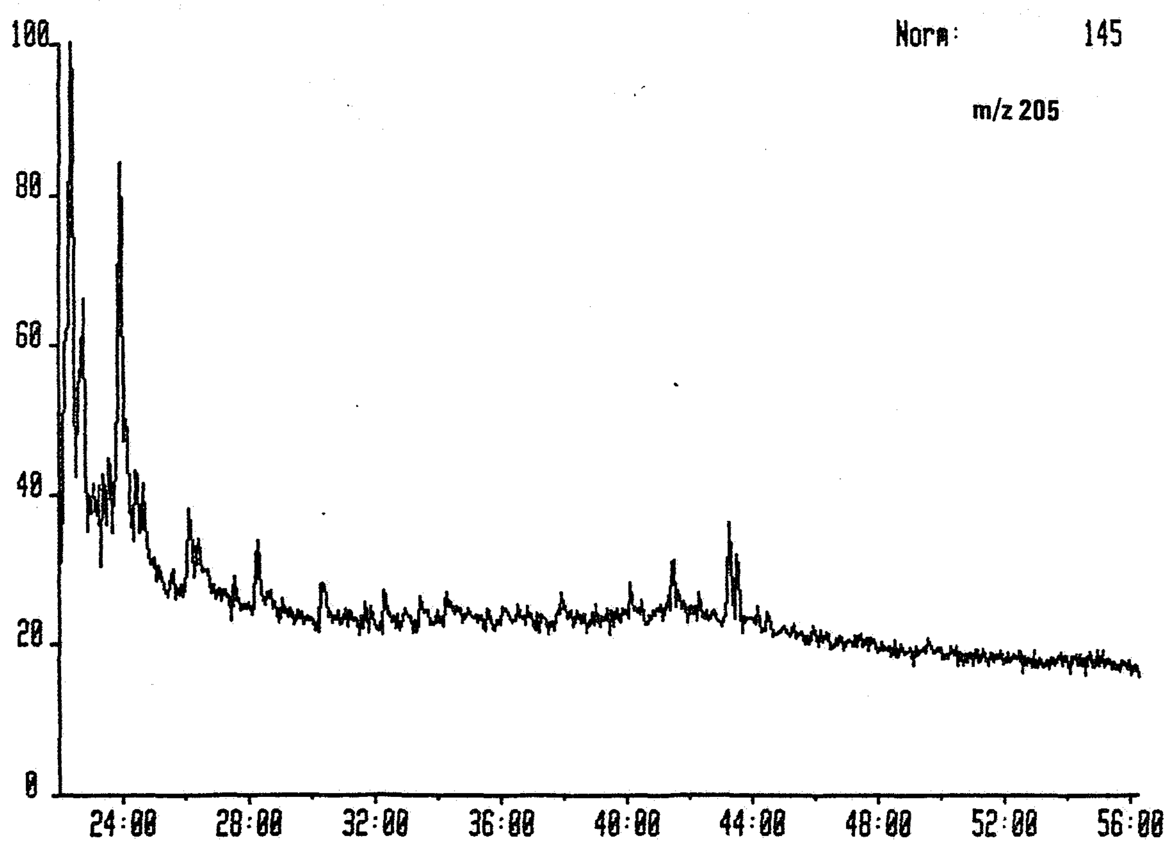
C6015 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



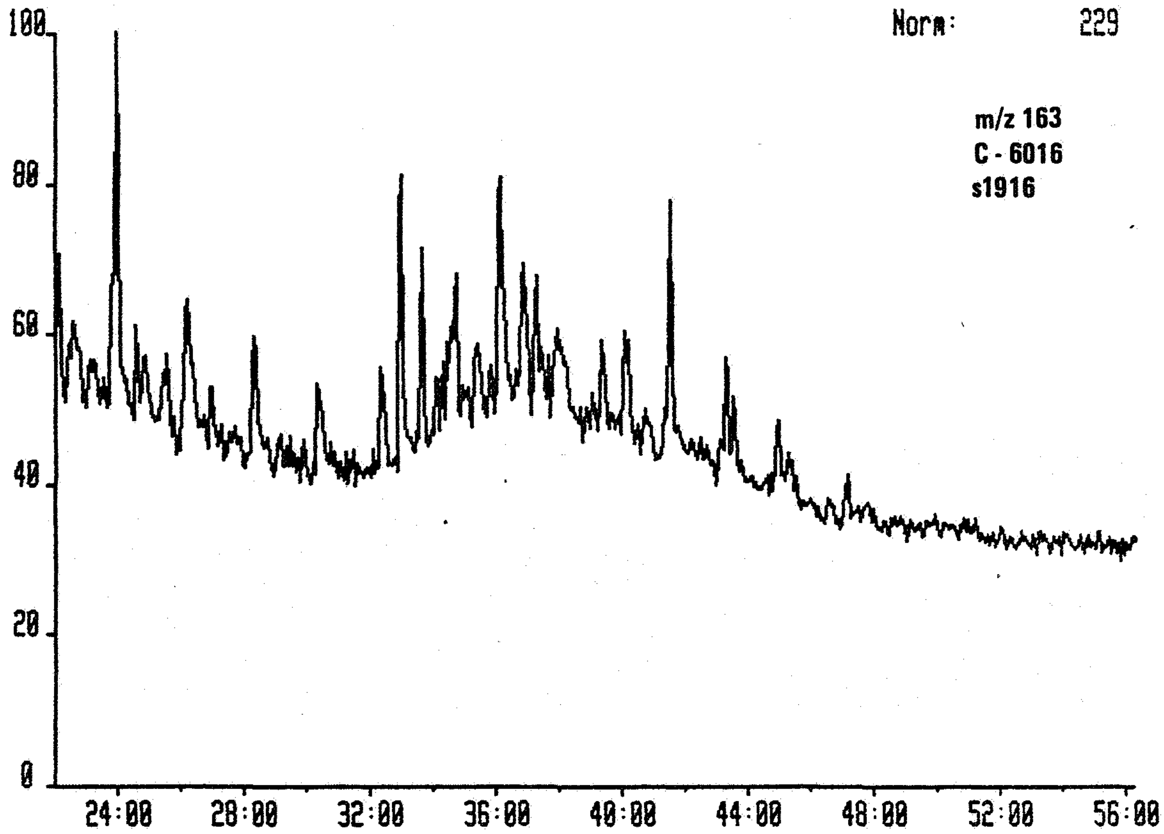
C6016 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



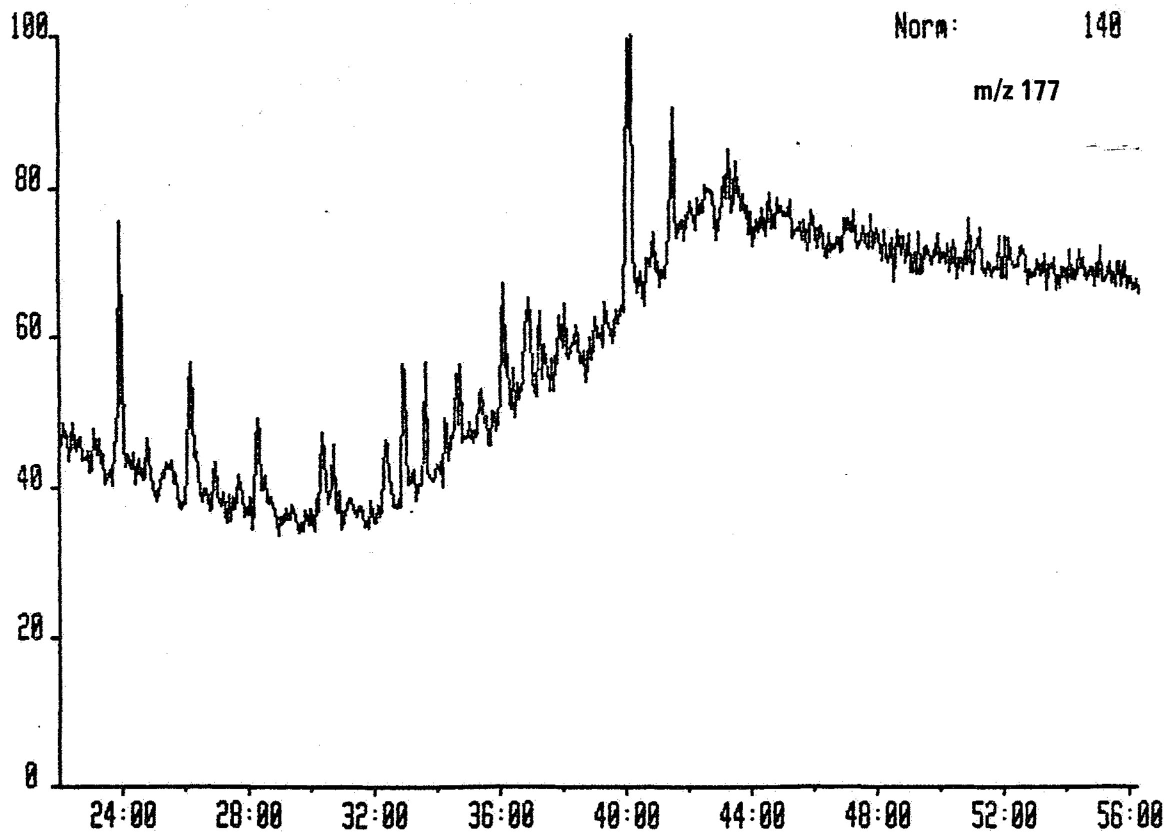
C6016 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



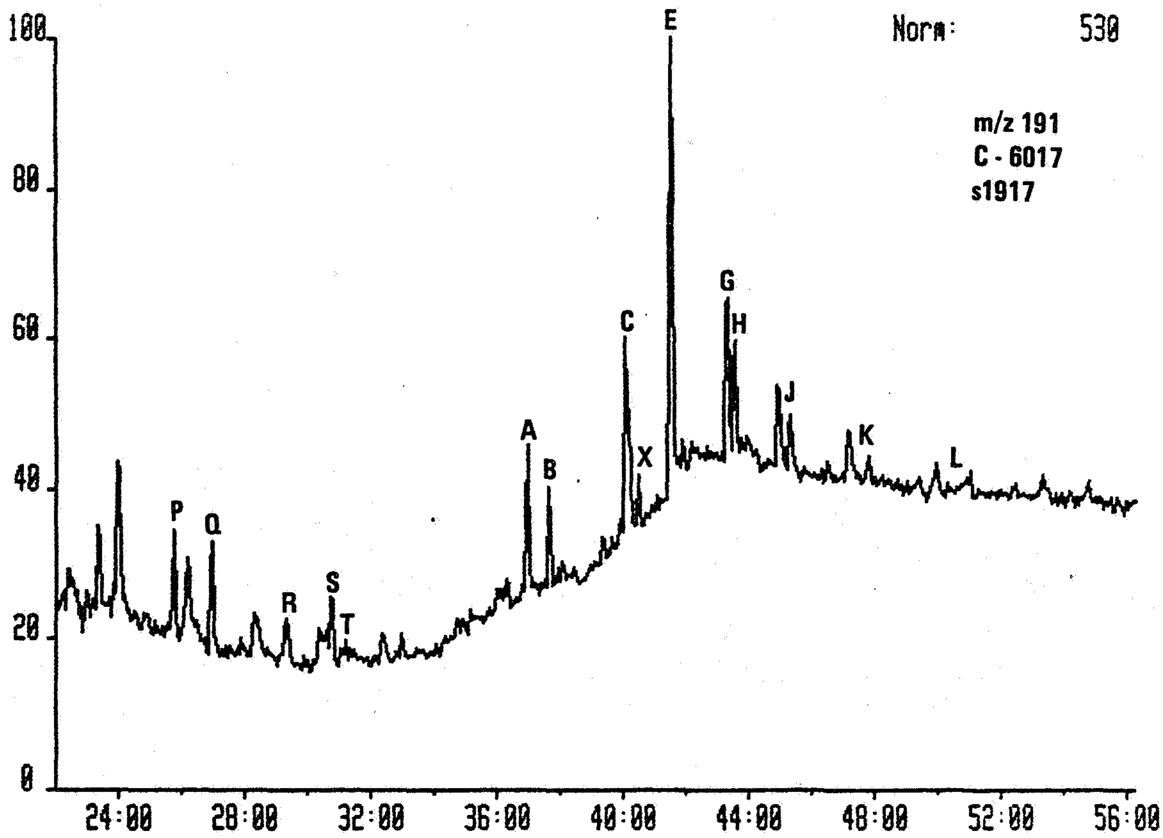
C6016 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



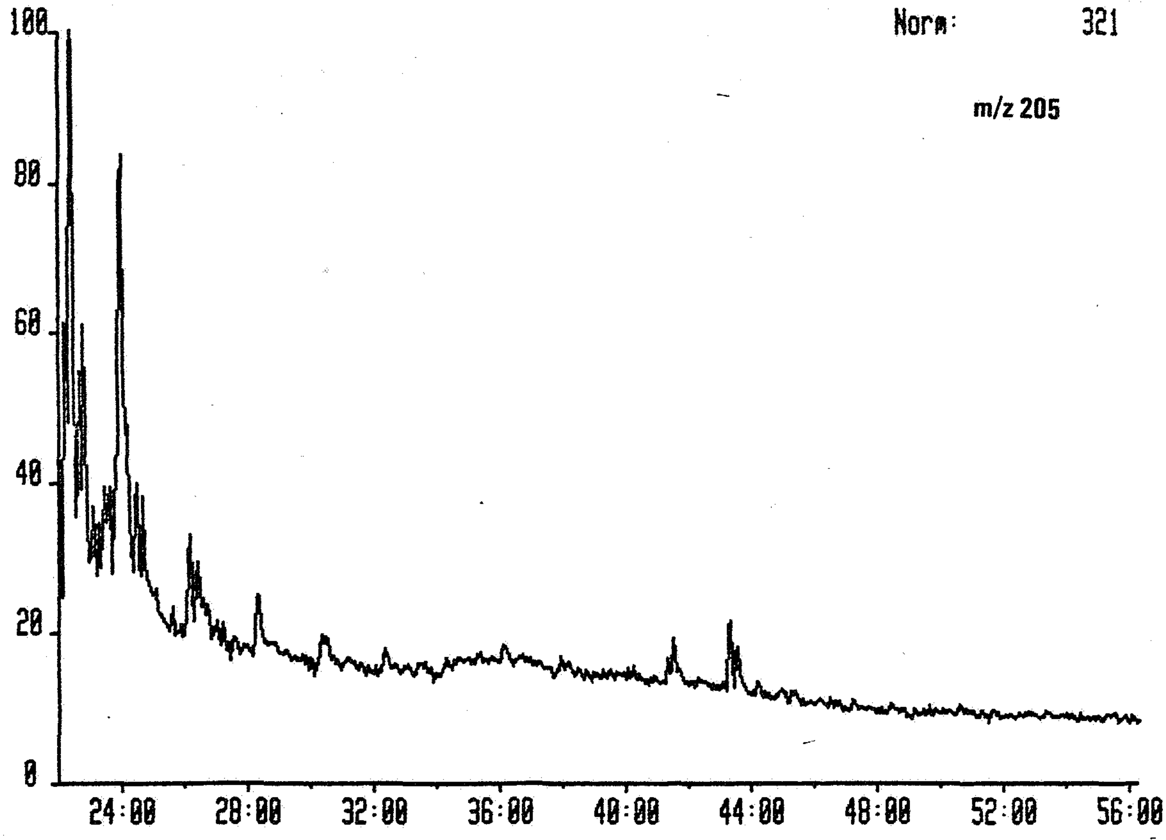
C6016 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



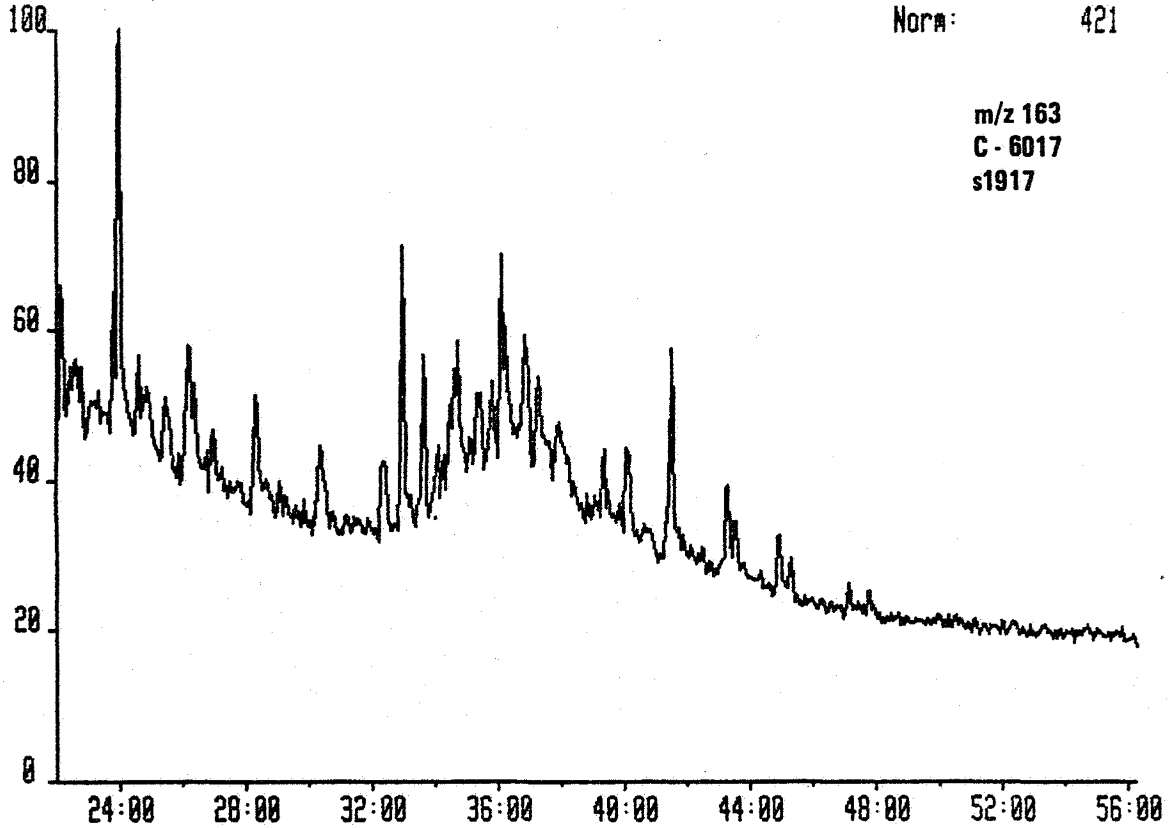
C6017 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



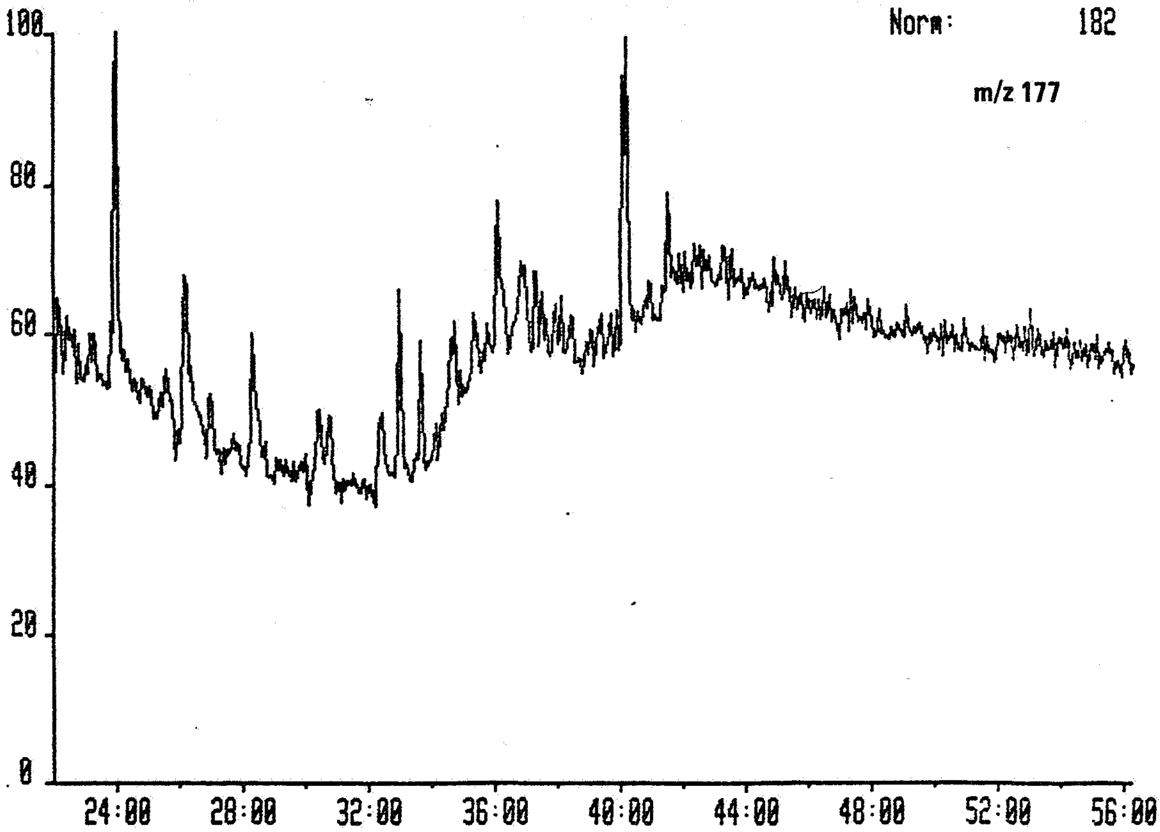
C6017 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



C6017 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



C6017 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



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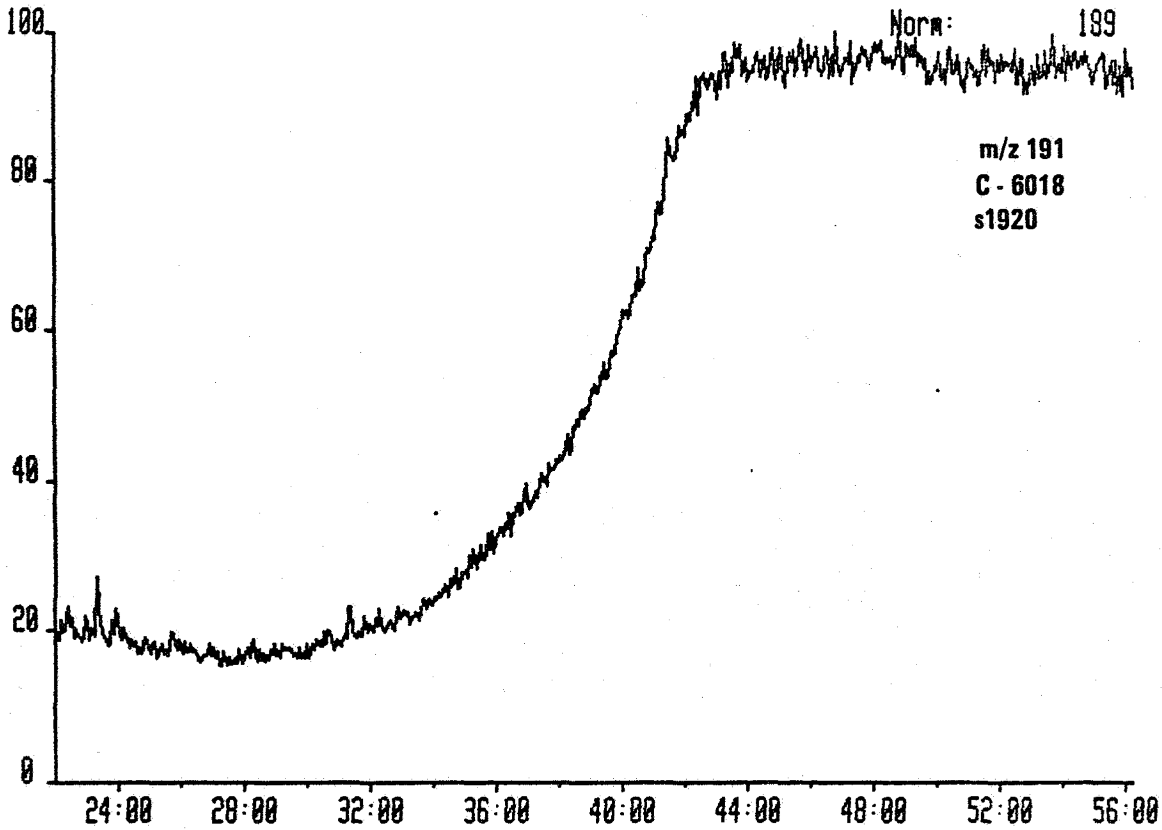
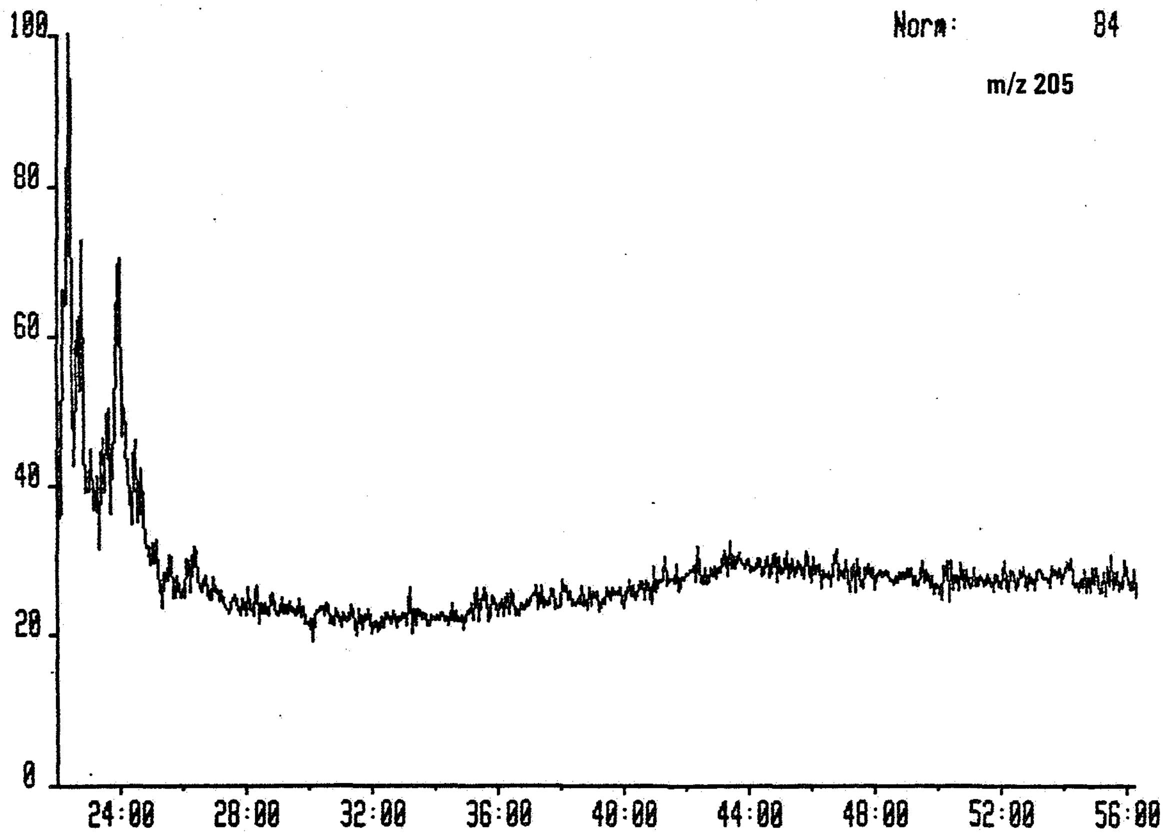
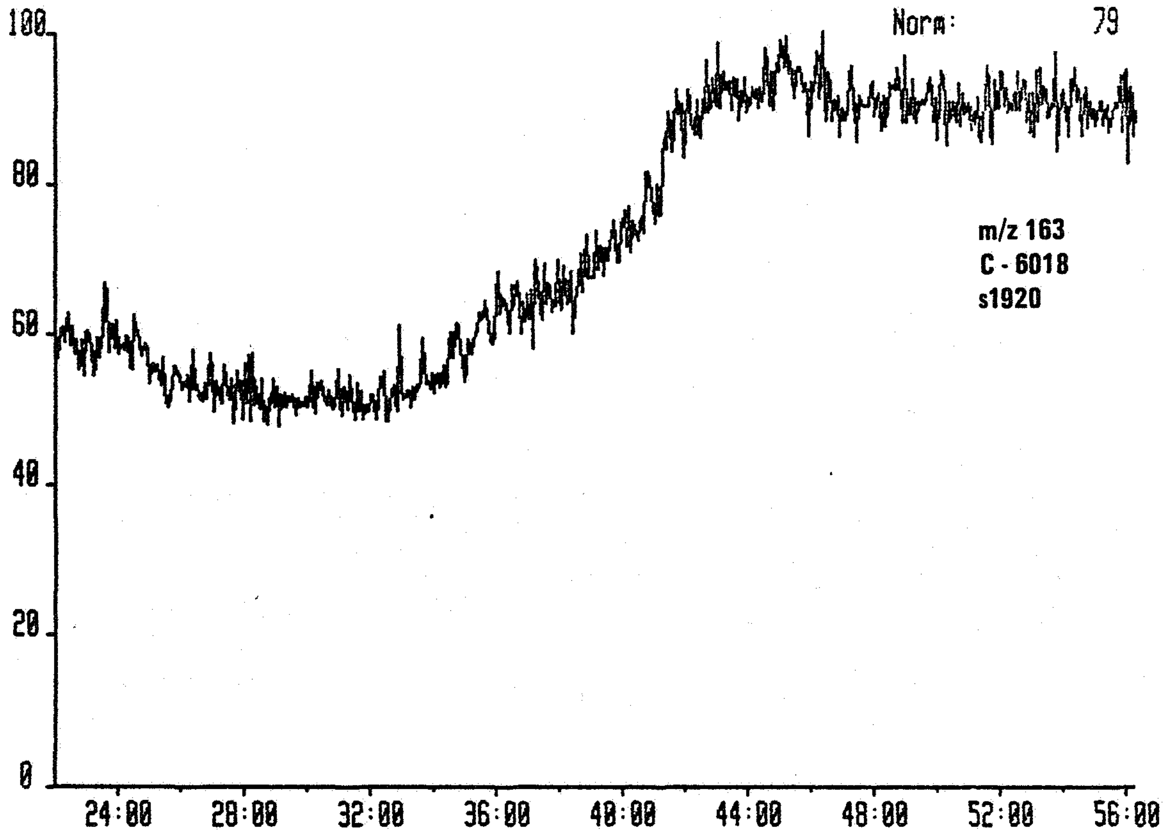
C6018 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



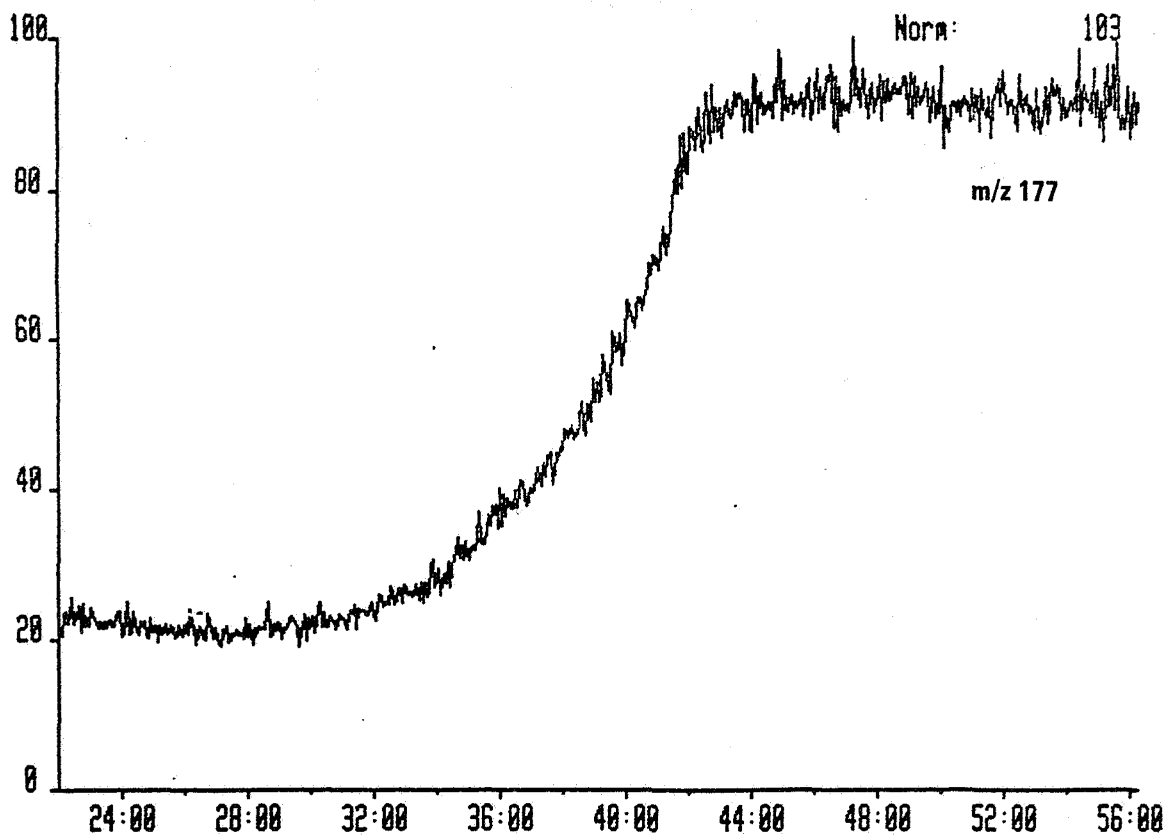
C6018 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



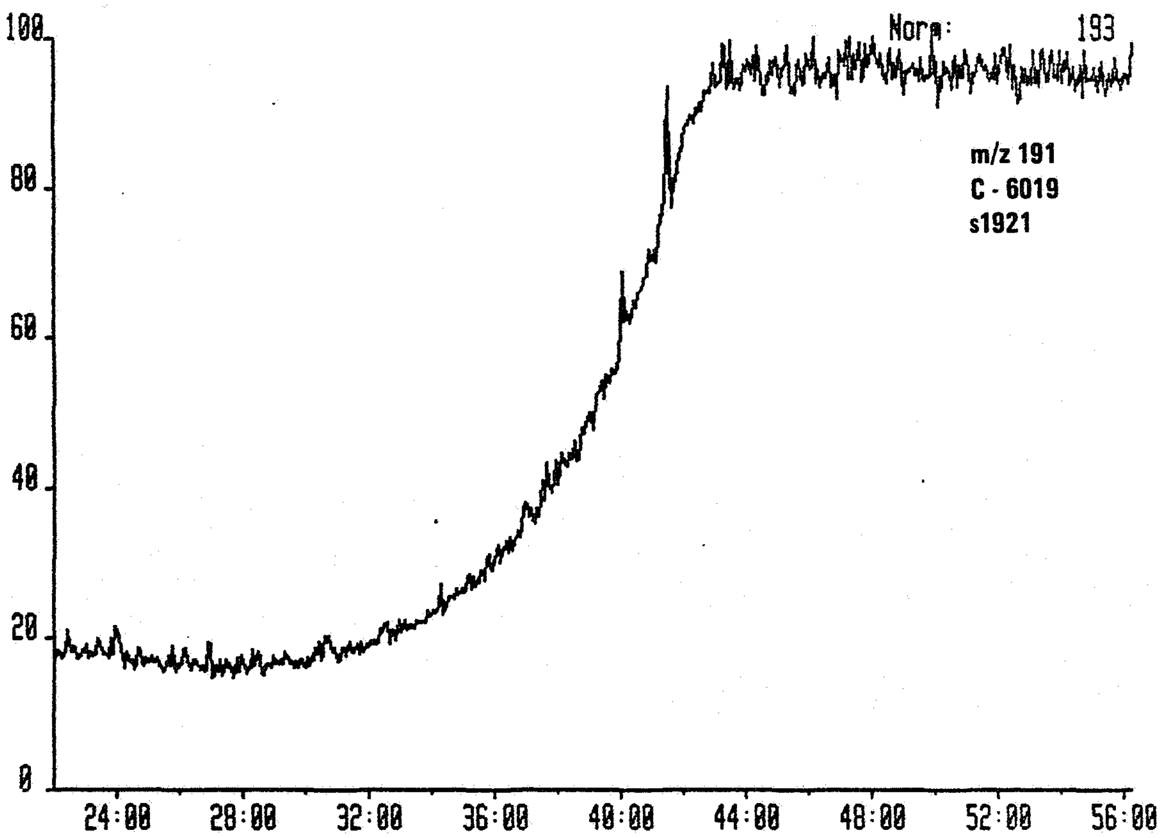
C6018 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



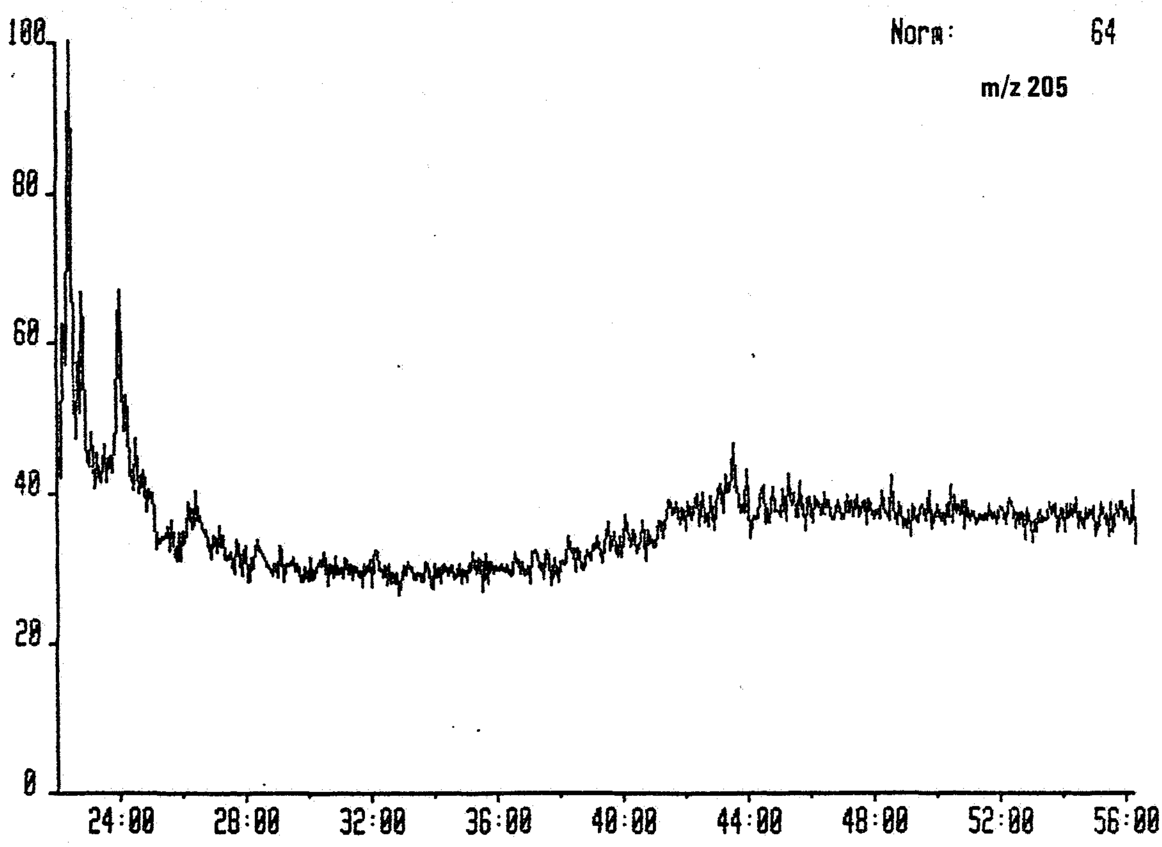
C6018 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



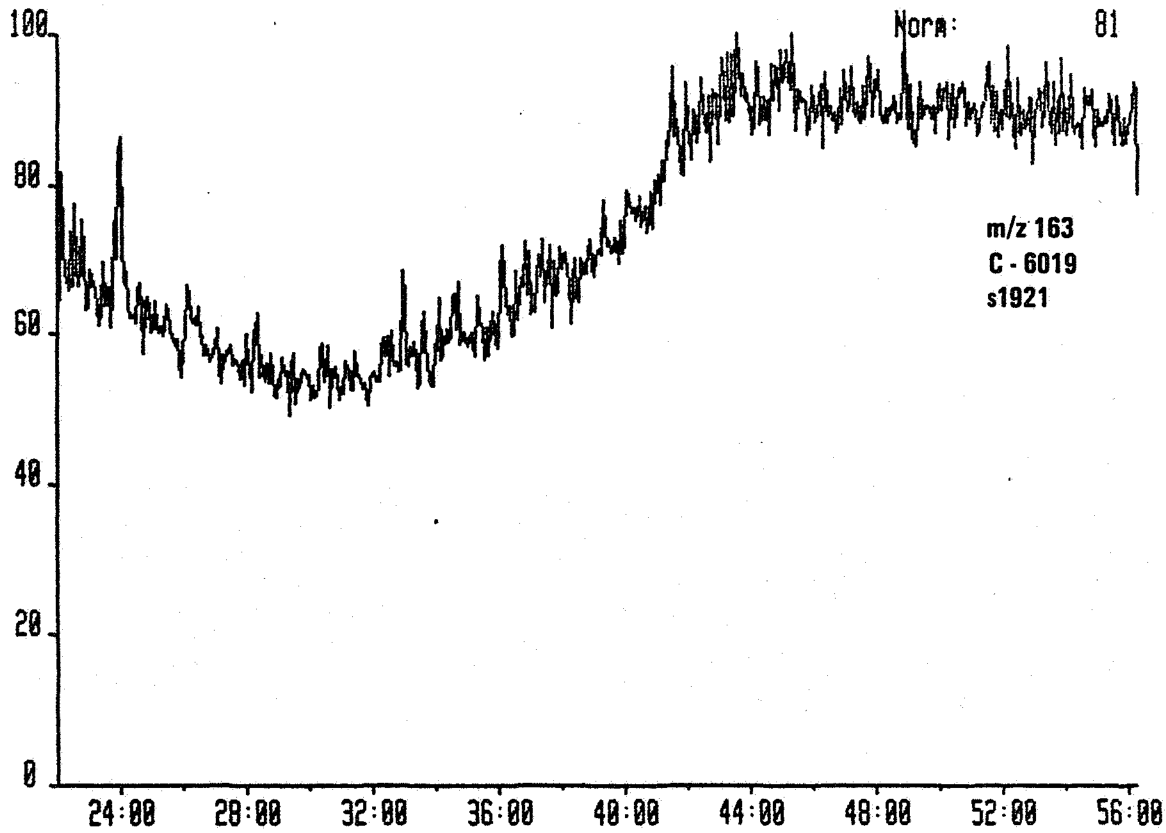
C6019 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



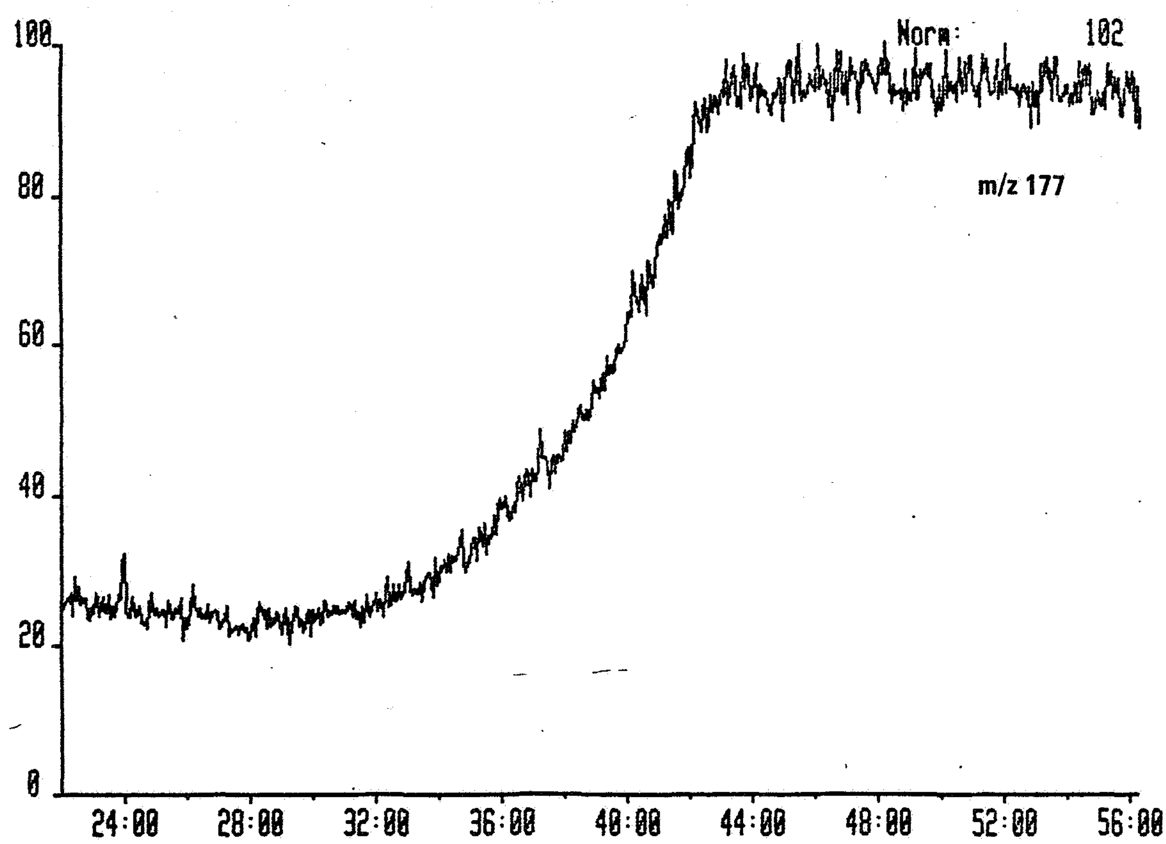
C6019 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



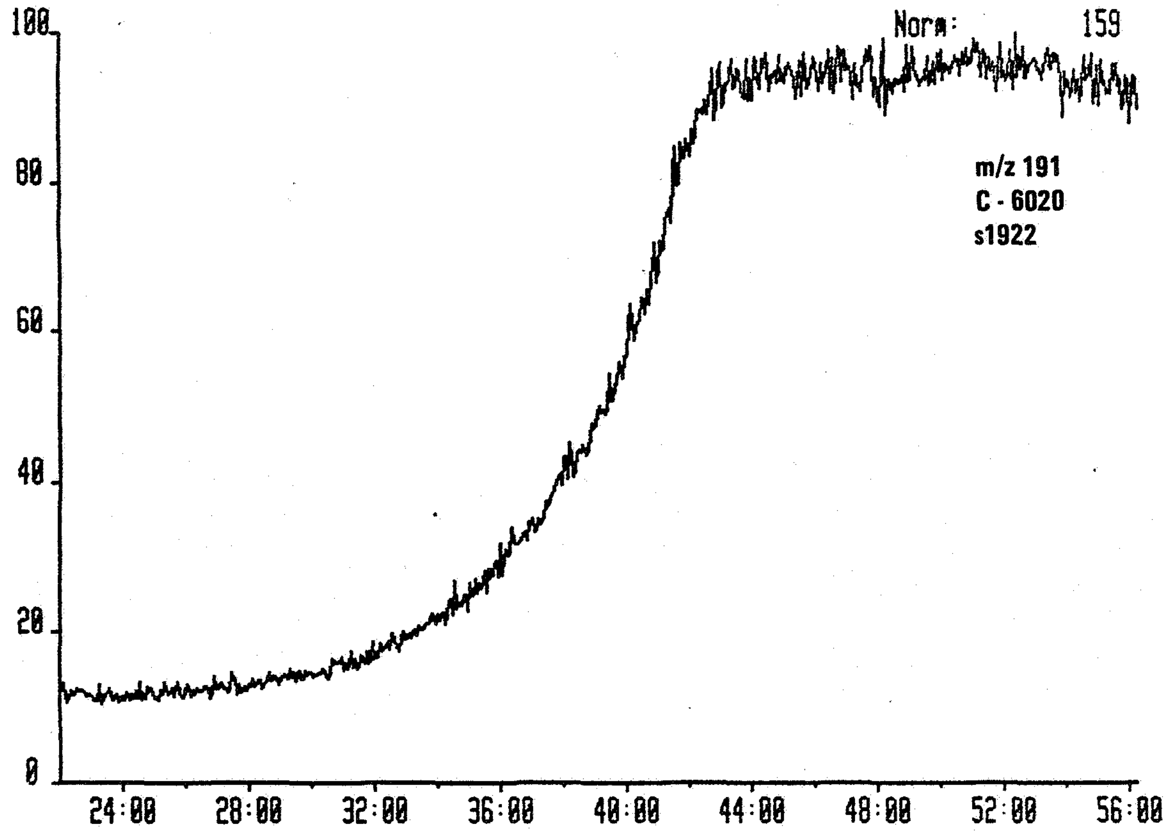
C6019 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



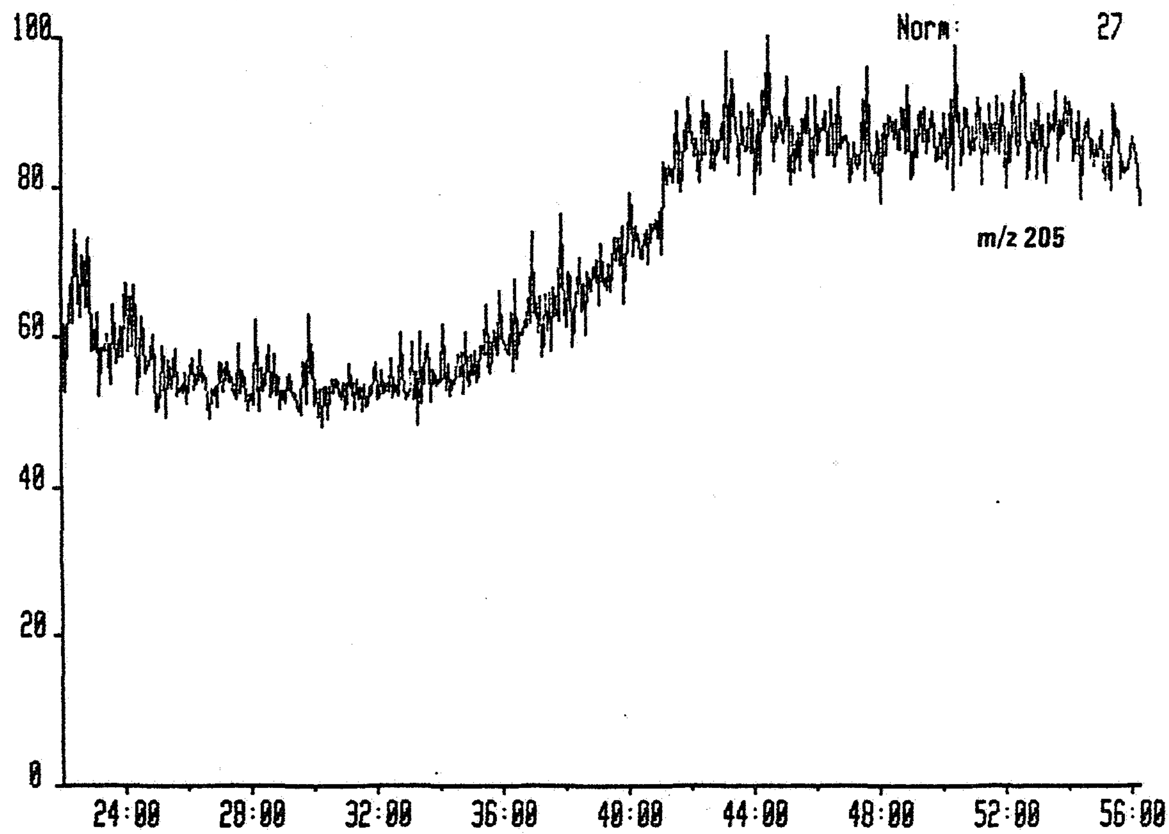
C6019 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



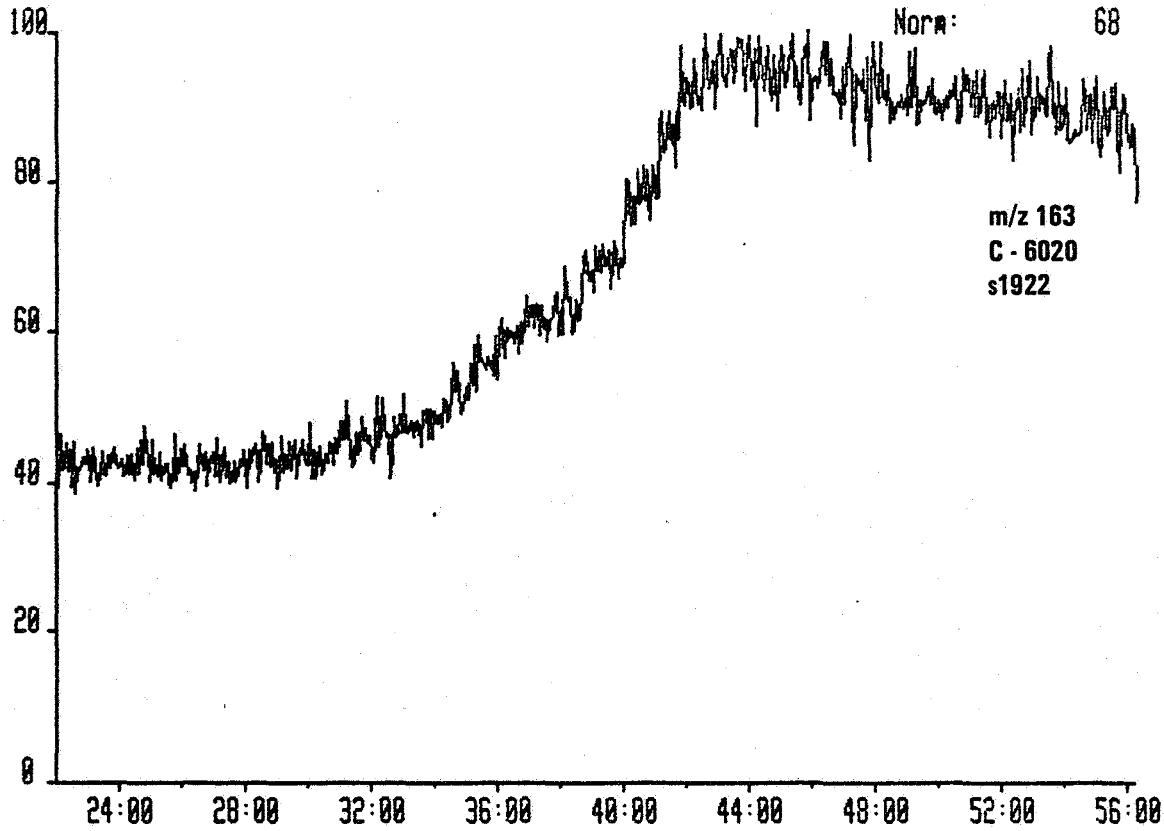
C6020 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



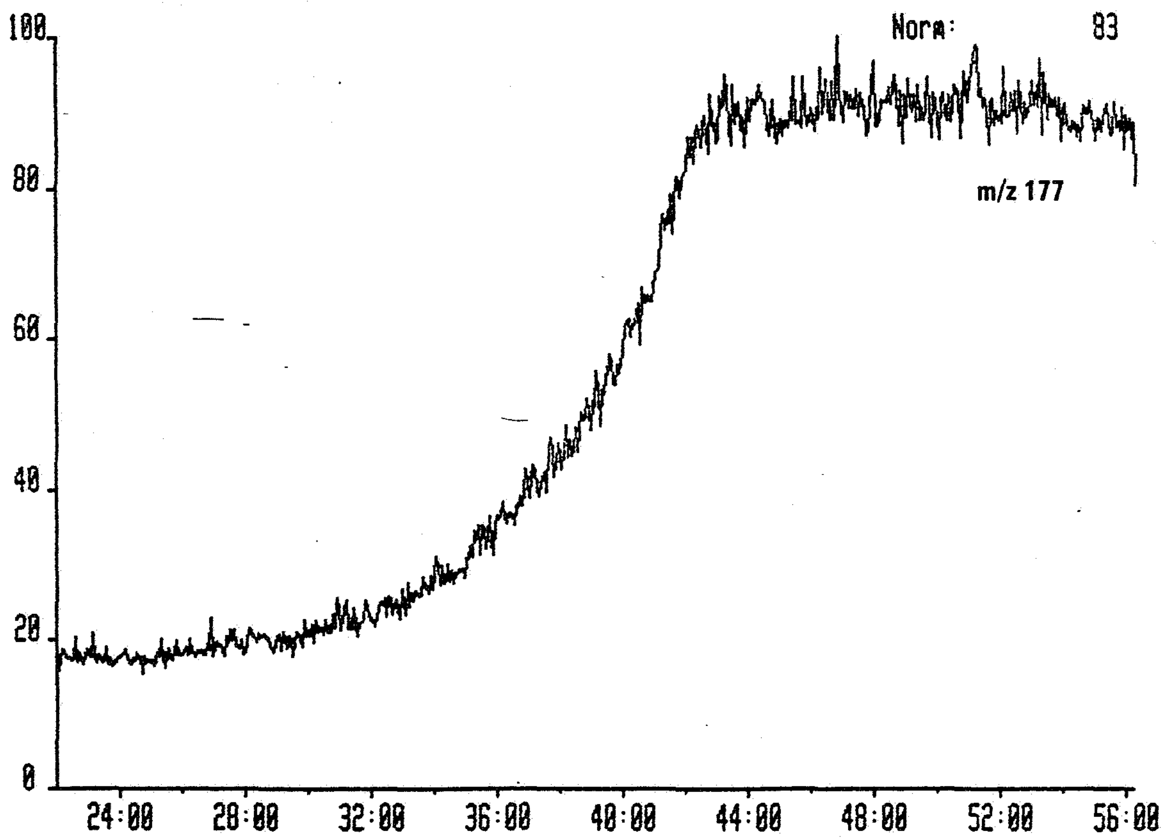
C6020 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



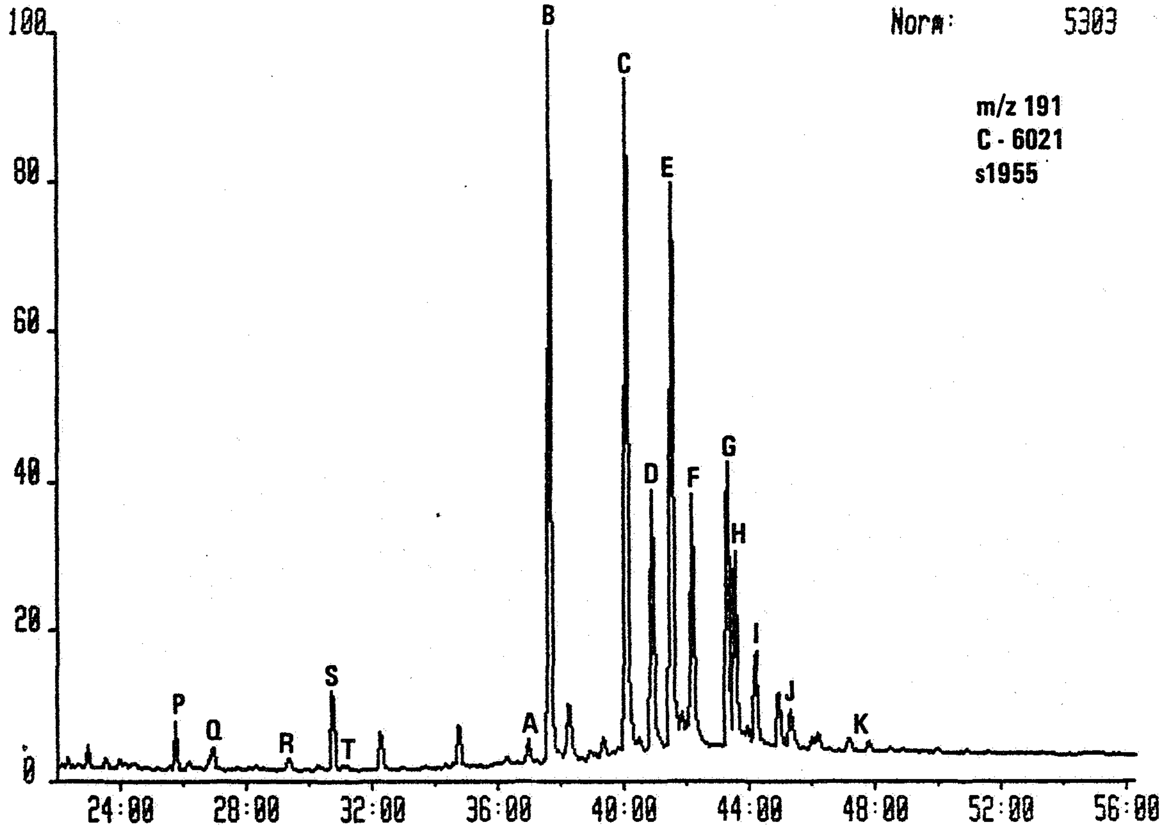
C6020 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



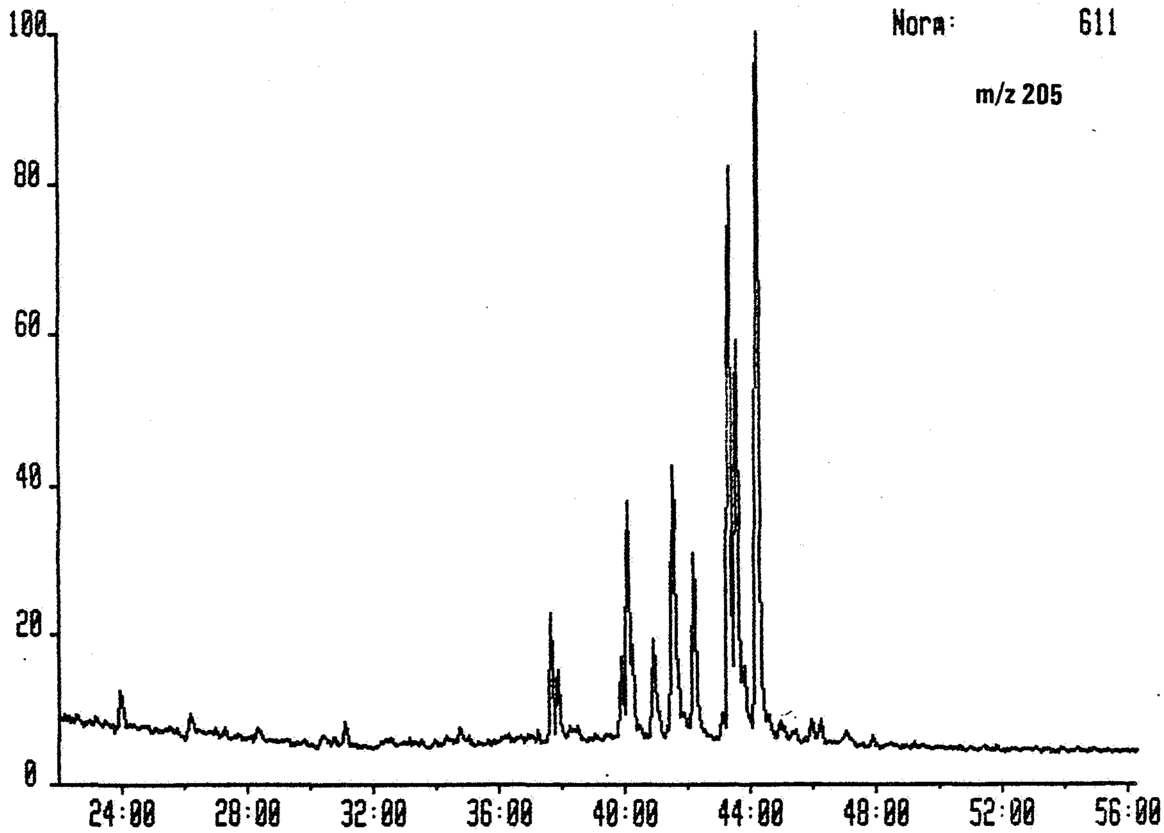
C6020 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



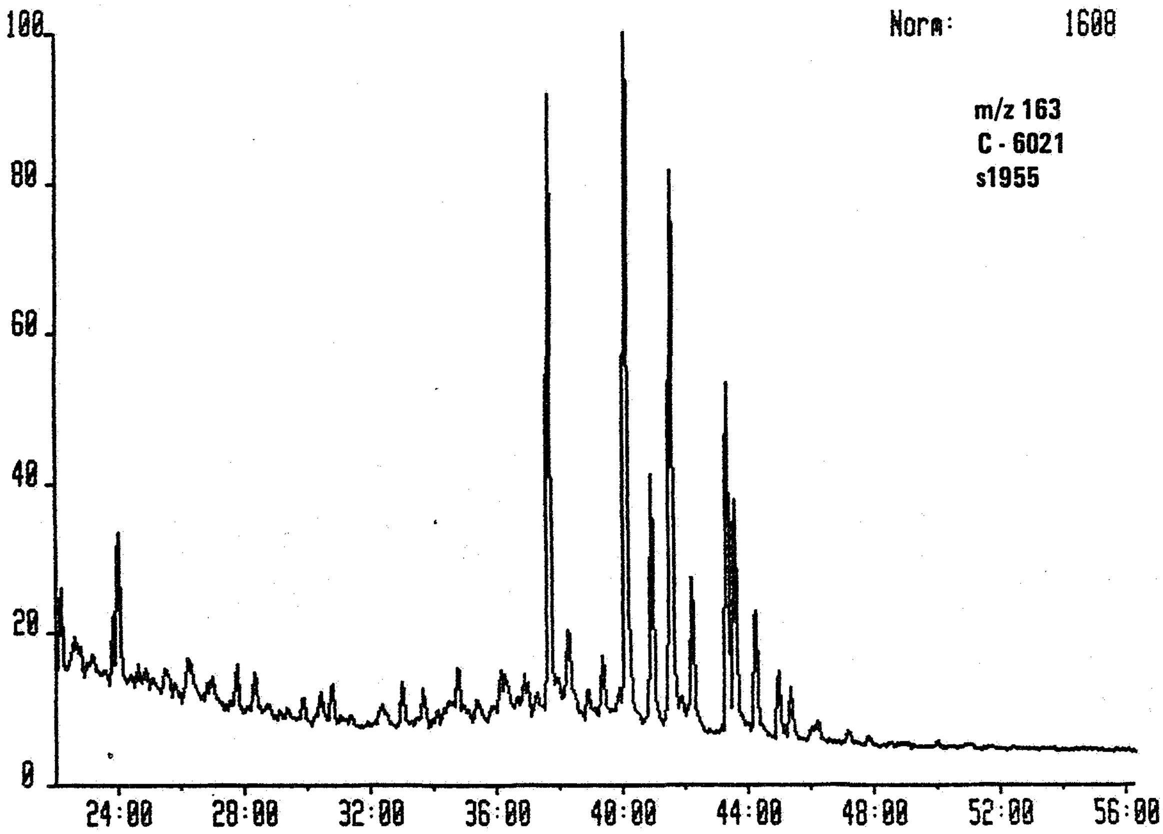
C6021 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



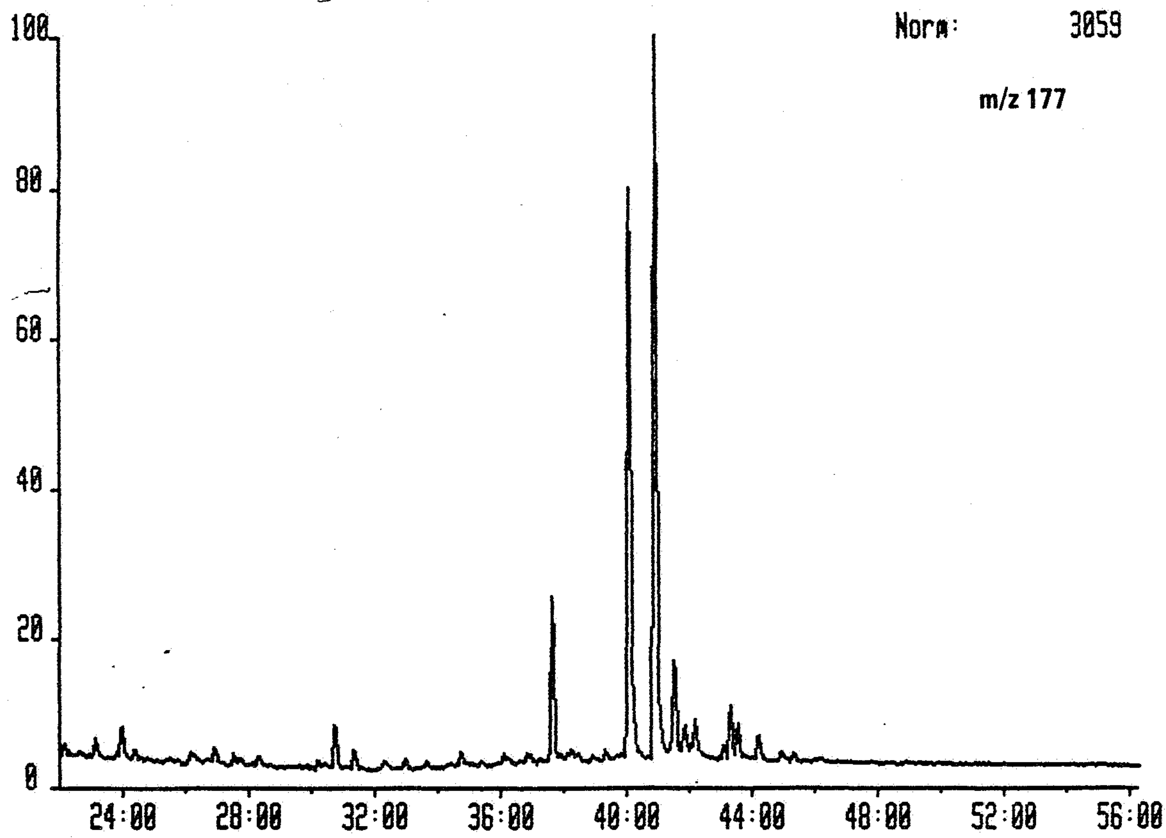
C6021 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



C6021 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



C6021 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



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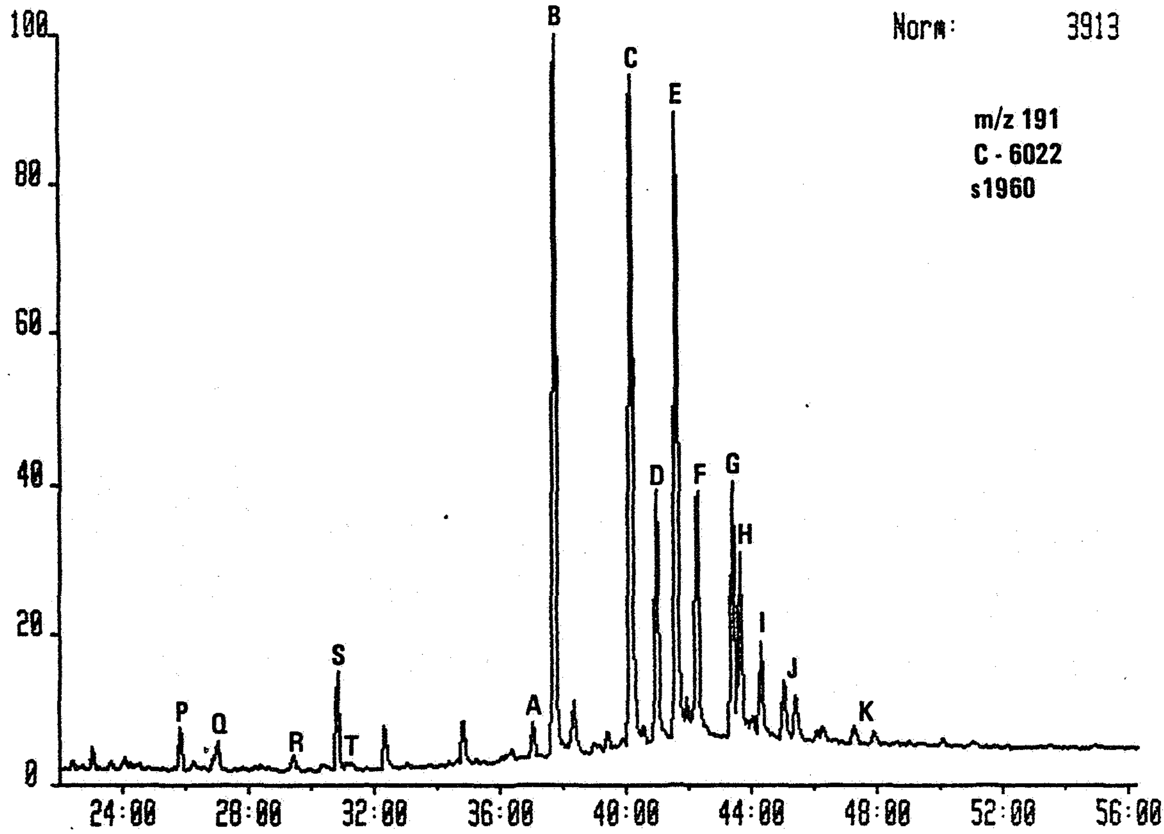
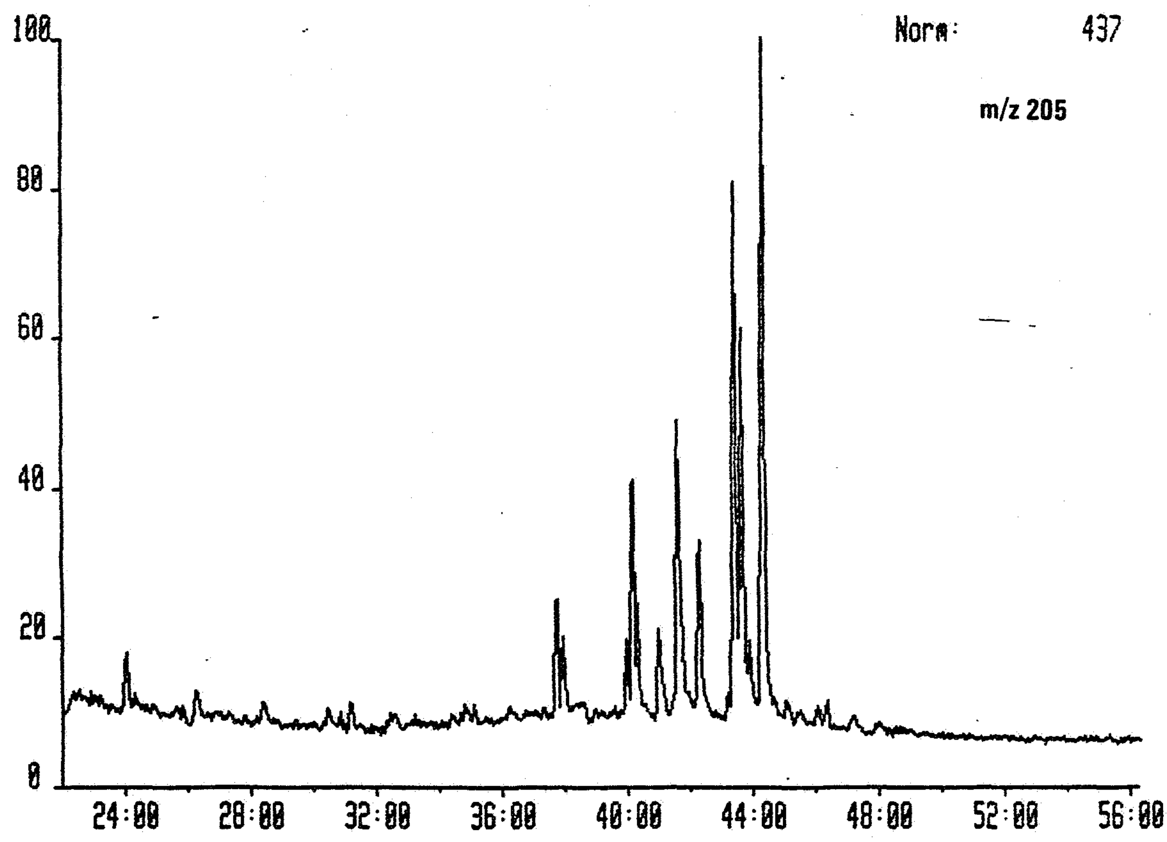
C6022 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:

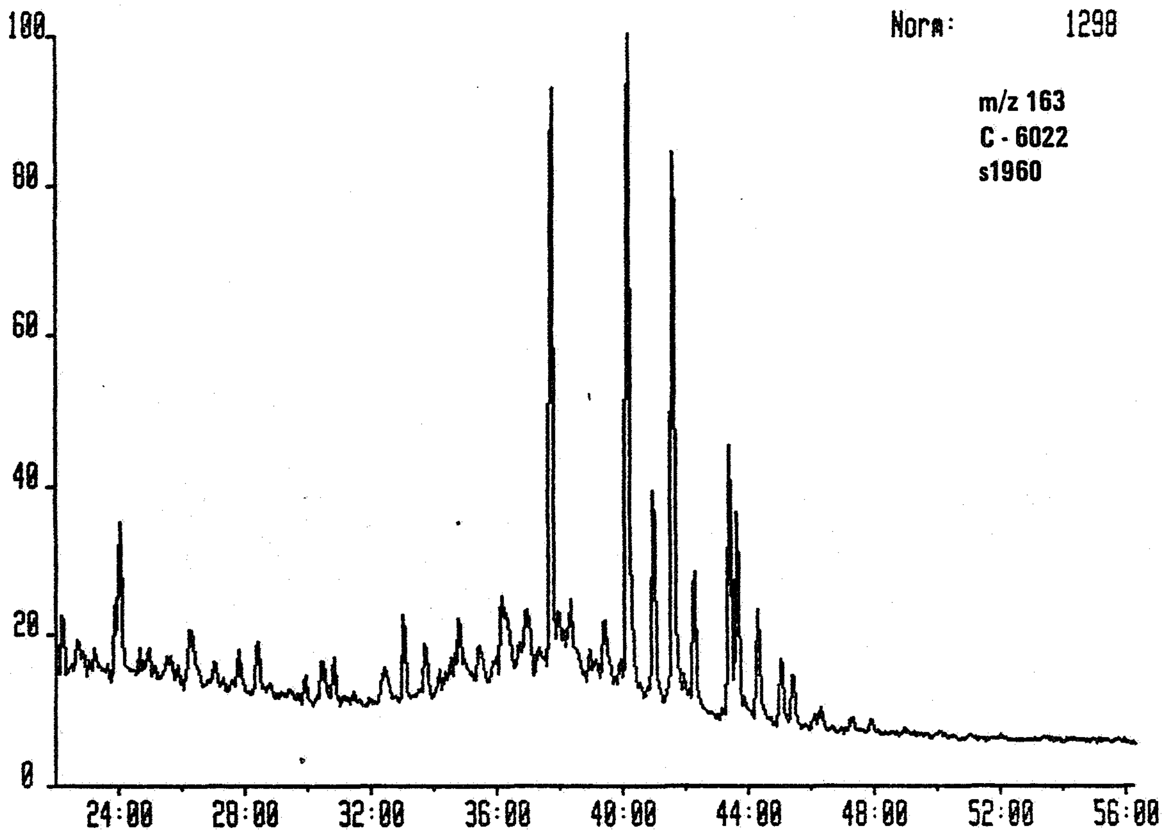


C6022 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:

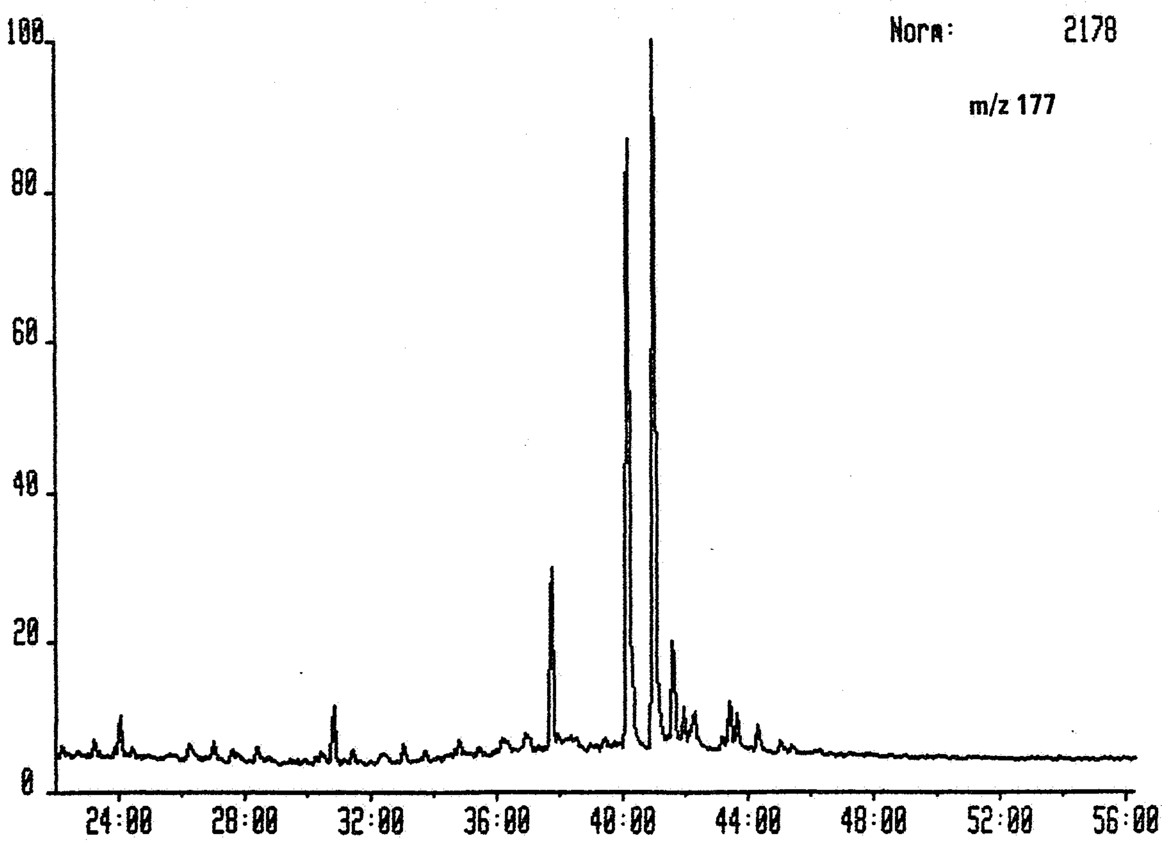


IKU SINTEF-GRUPPEN

C6022 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection:1 Group 1 Mass 163.1000
Text:

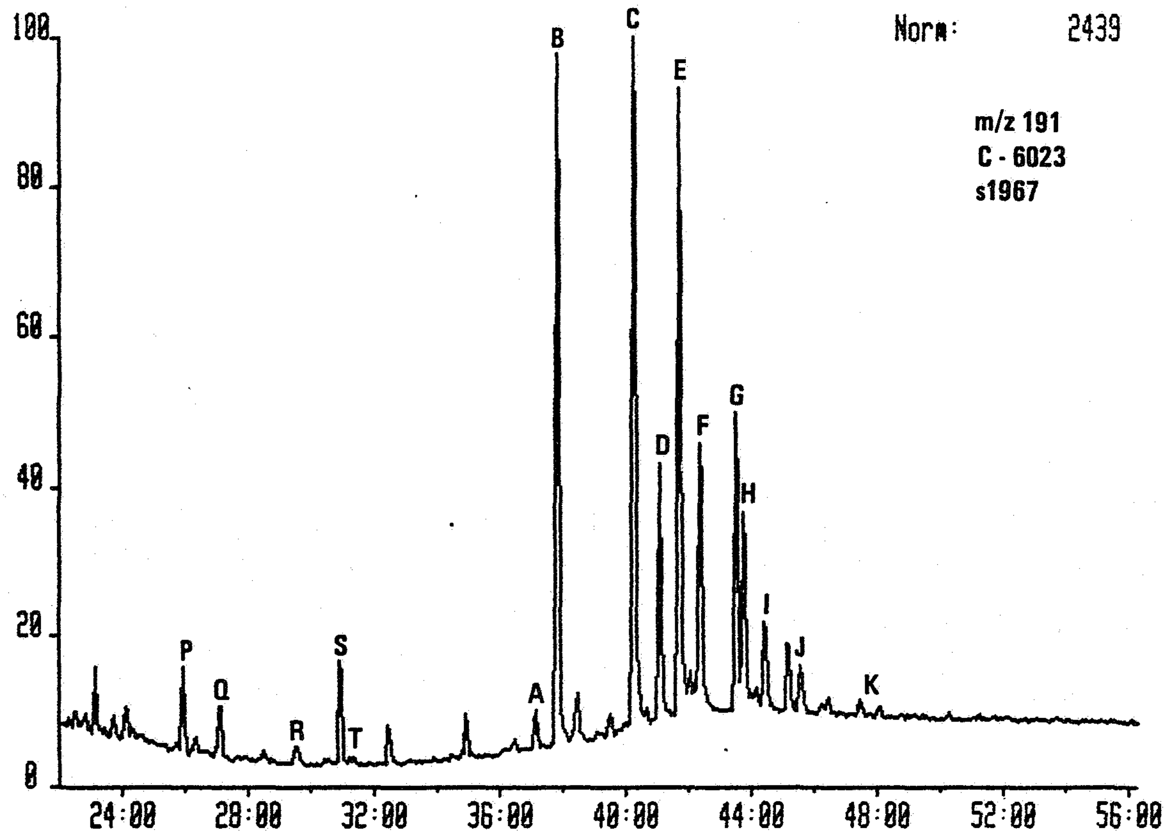


C6022 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:

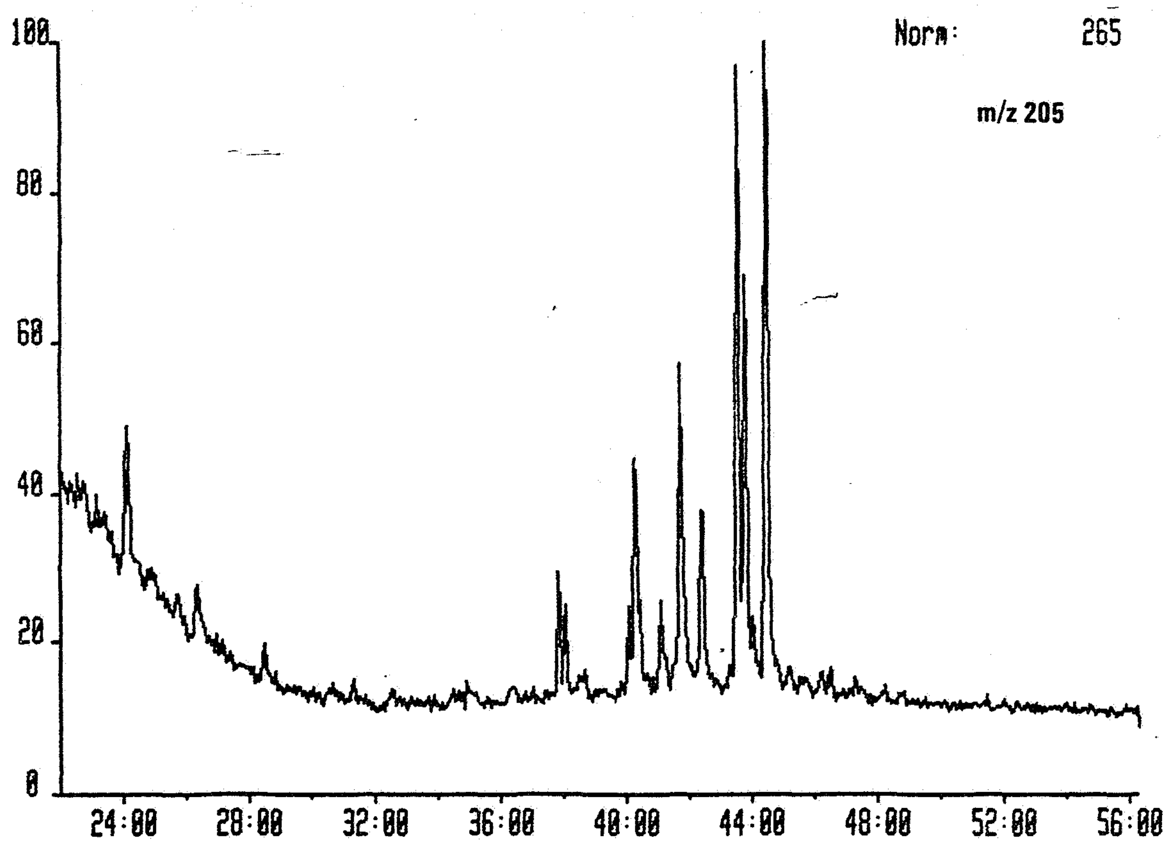


IKU SINTEF-GRUPPEN

C6023 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:

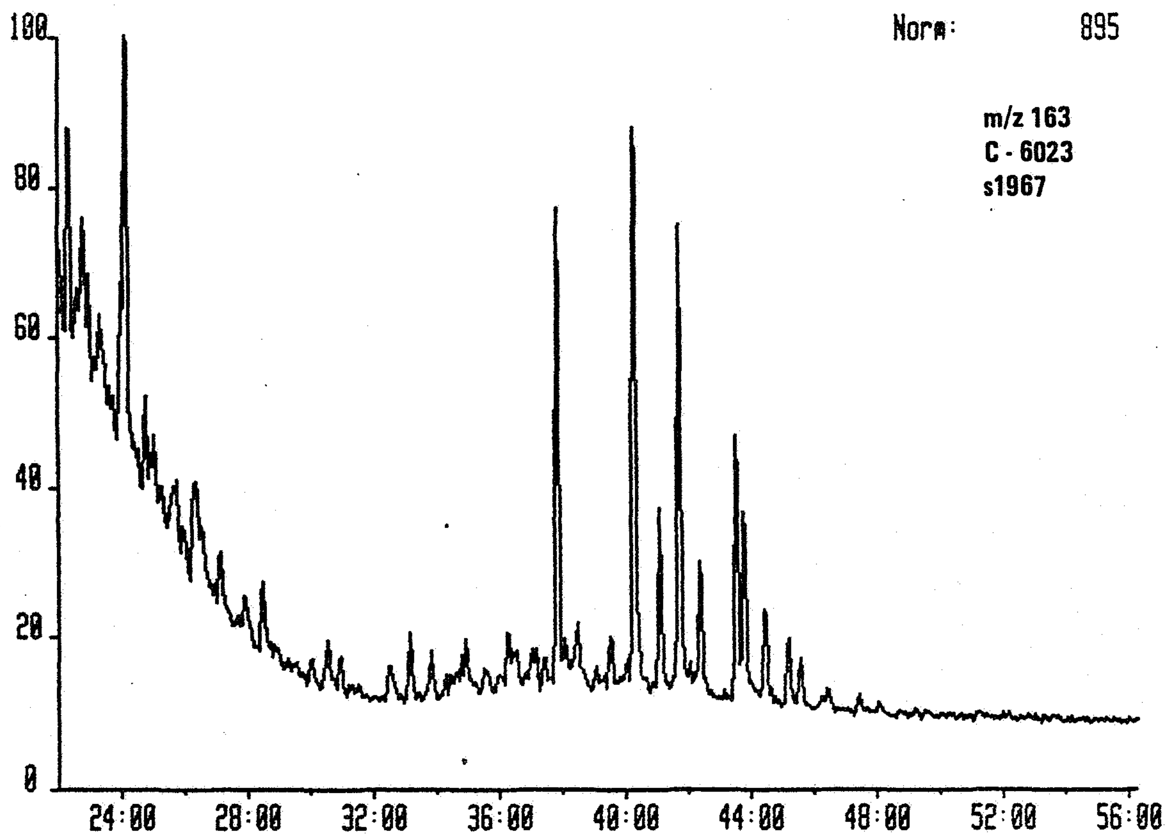


C6023 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:

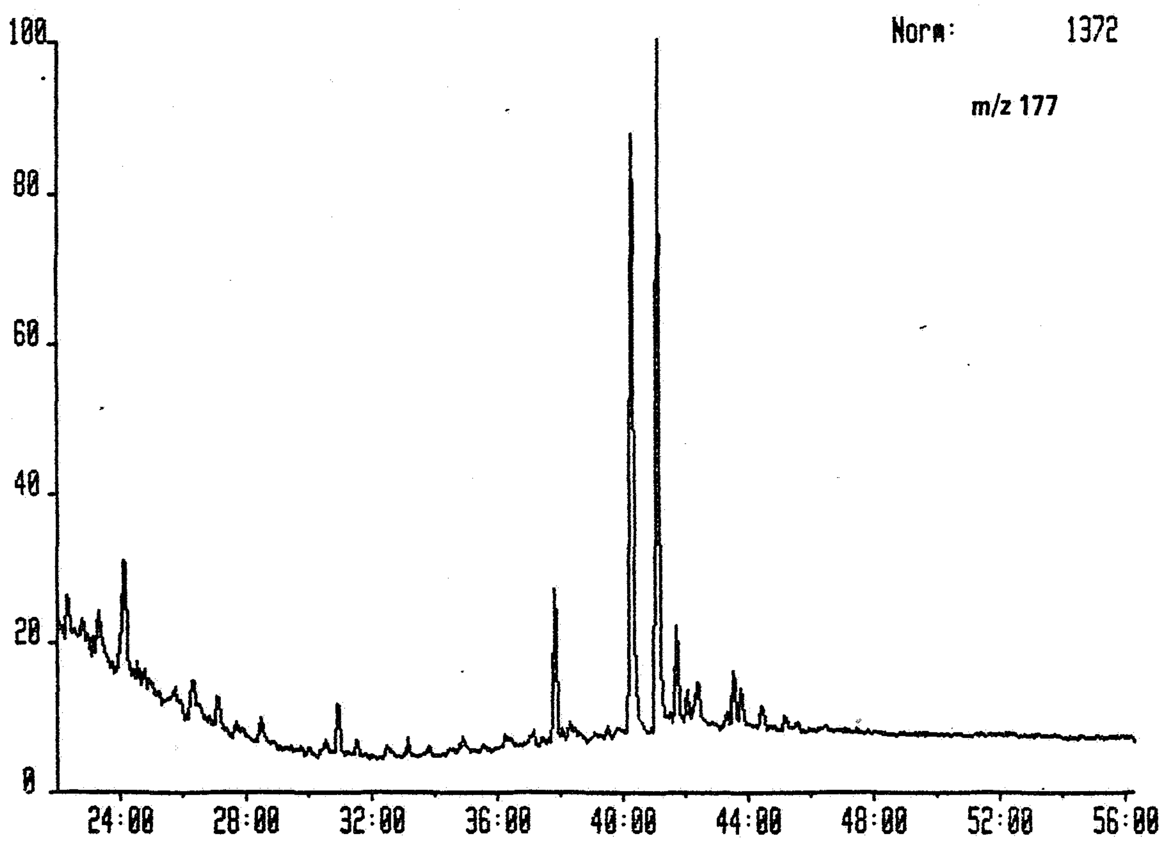


IKU SINTEF-GRUPPEN

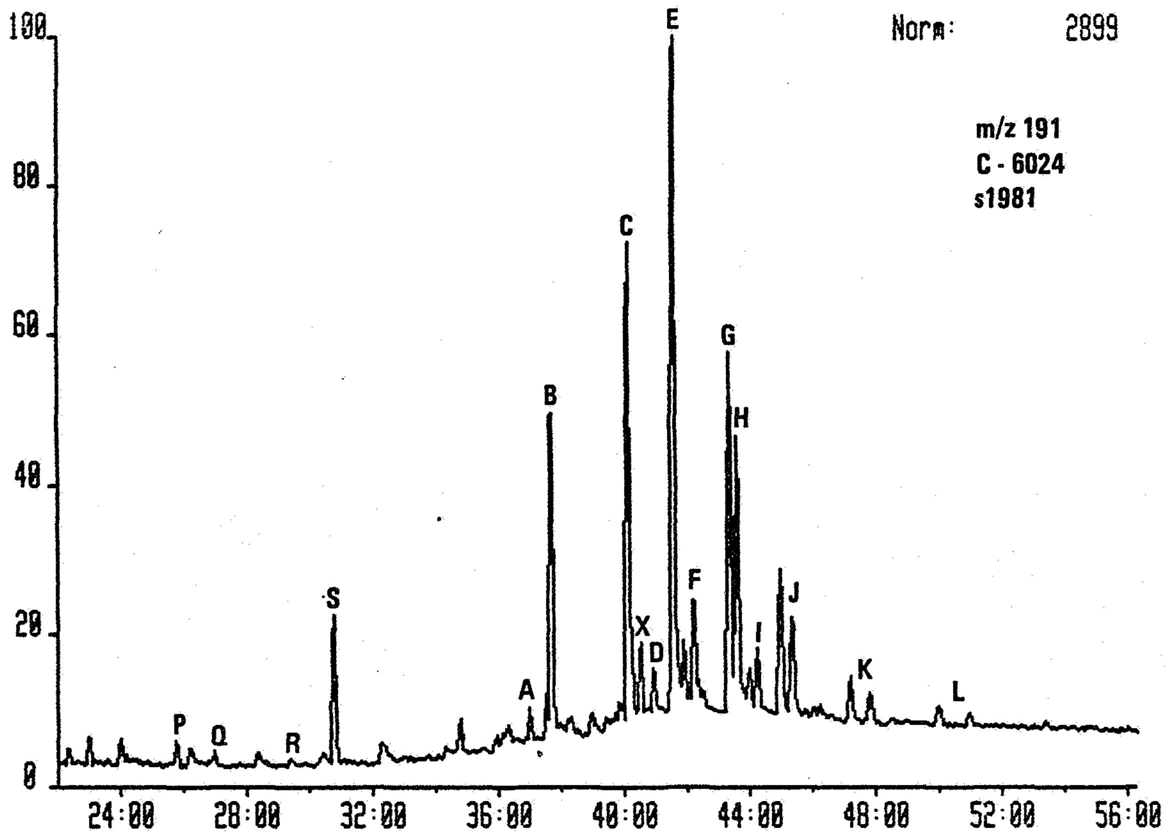
C6023 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



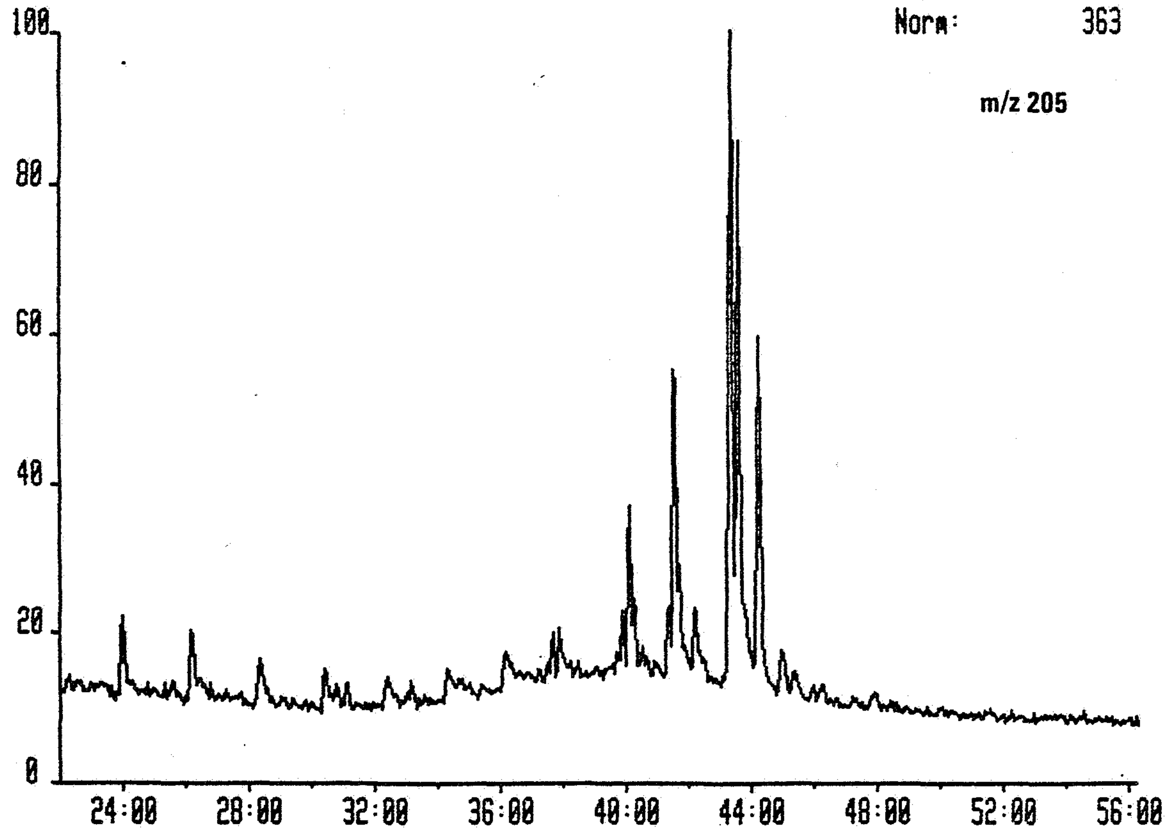
C6023 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



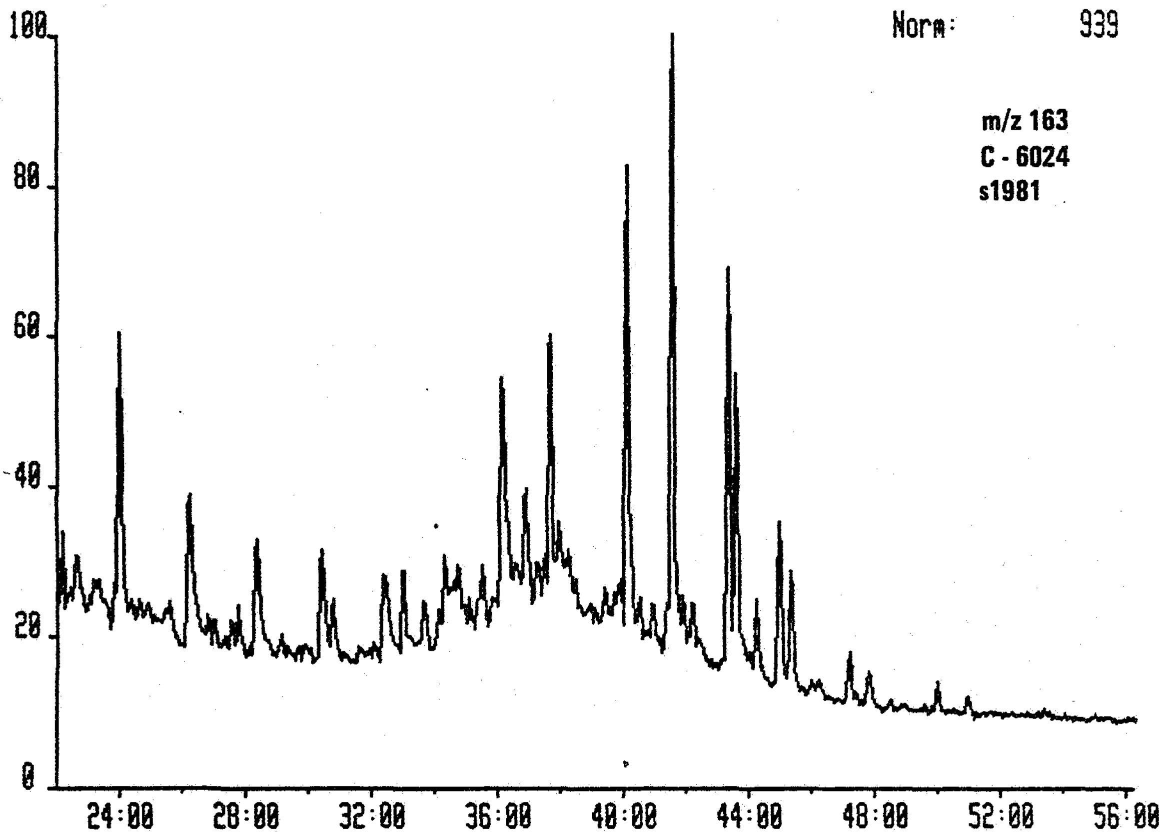
C6024 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



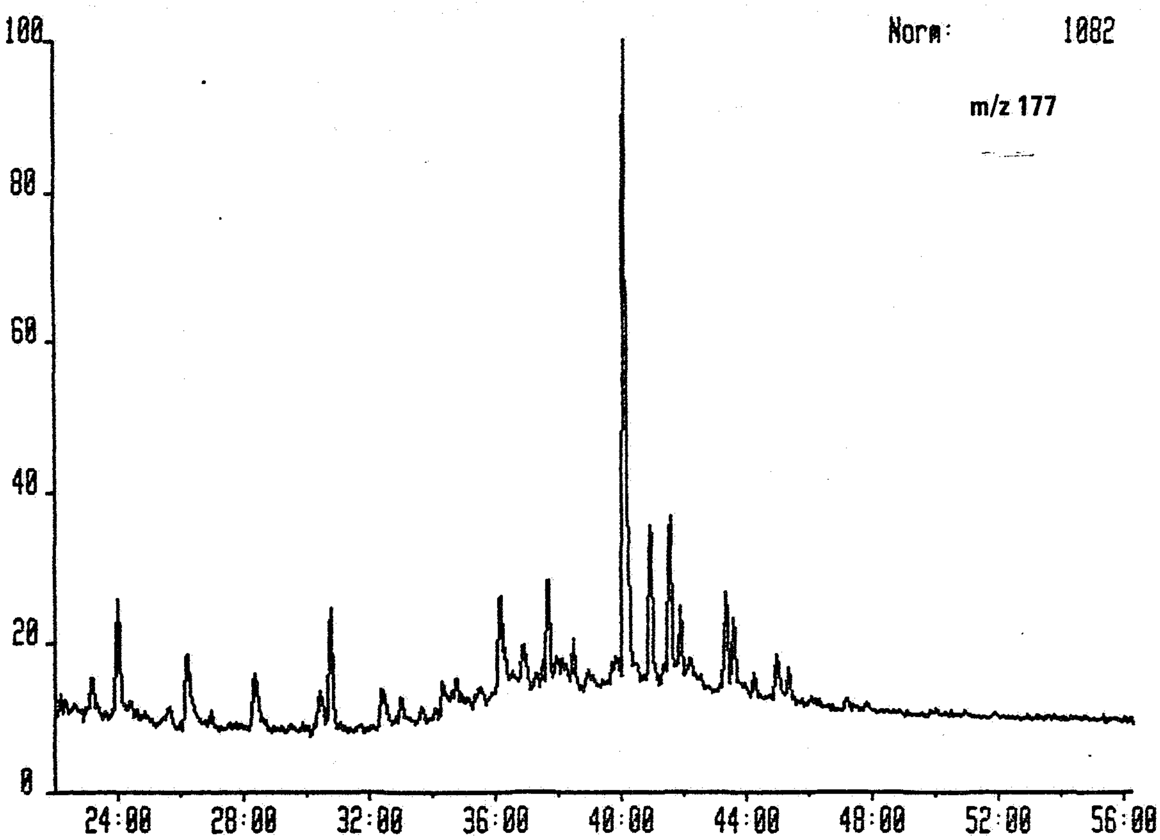
C6024 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



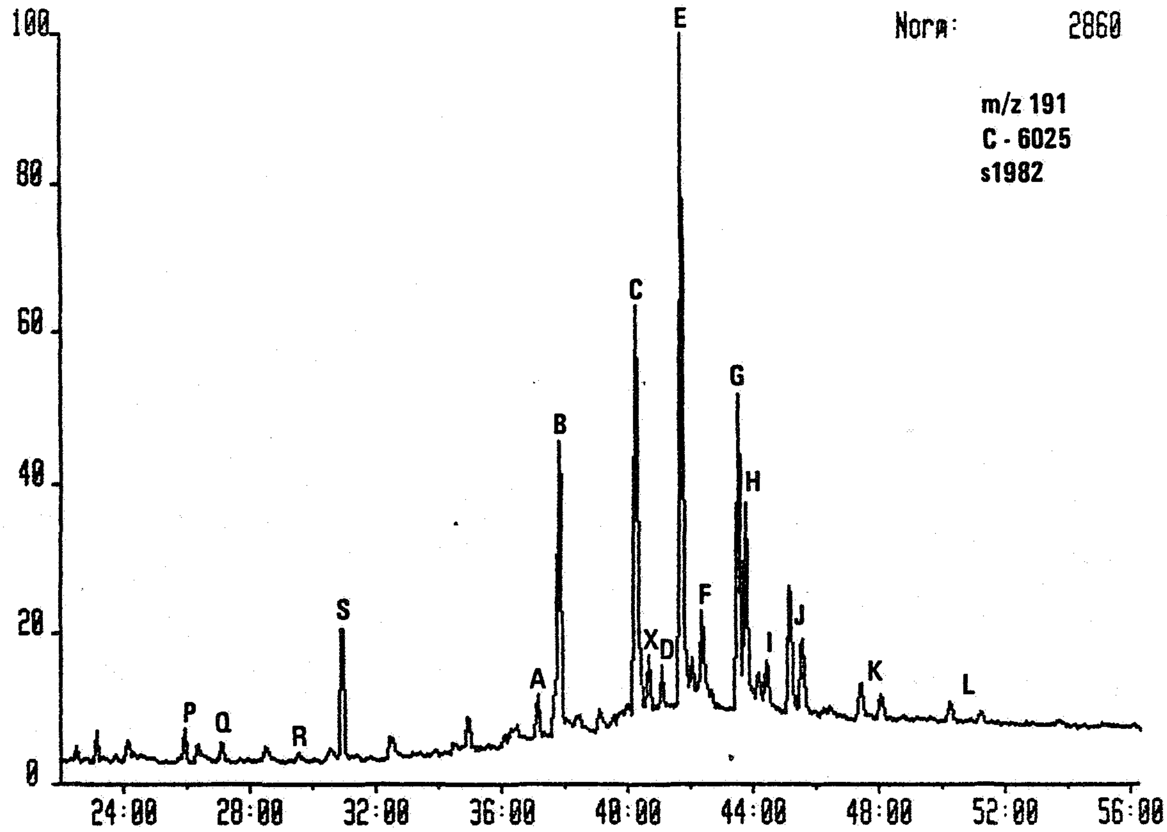
C6024 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



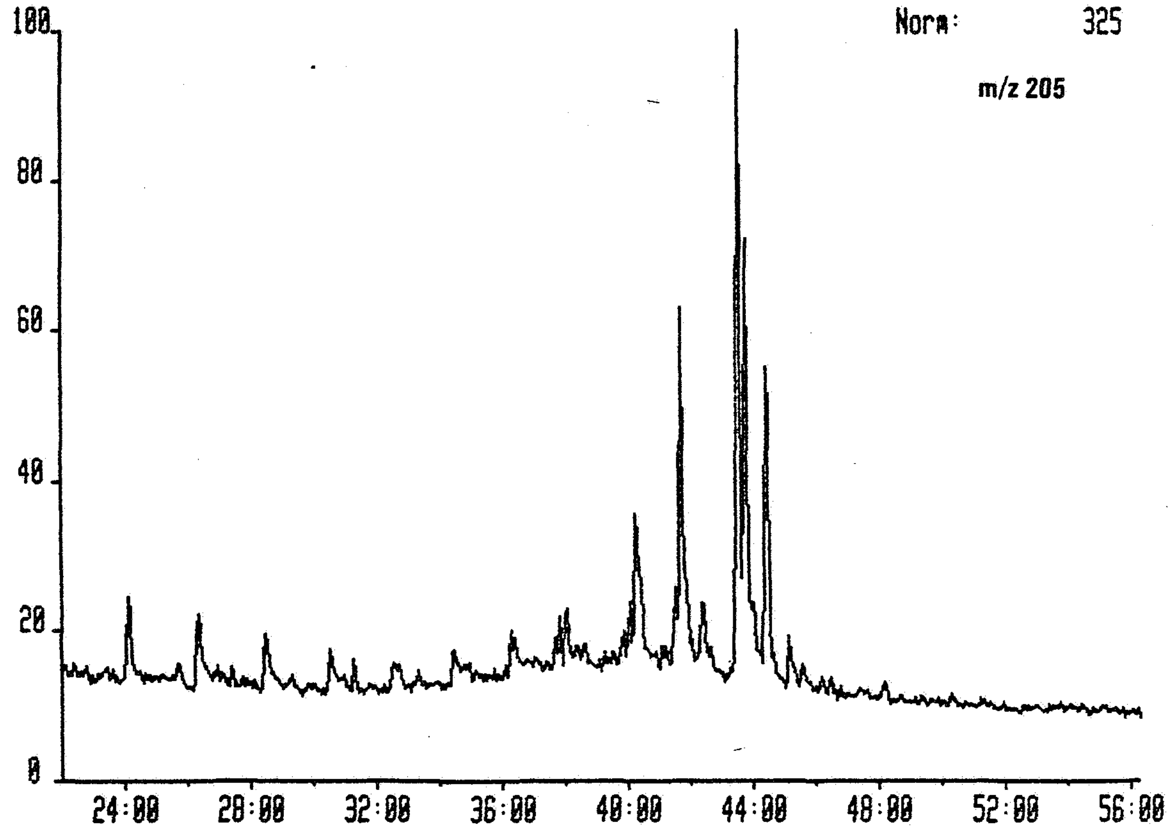
C6024 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



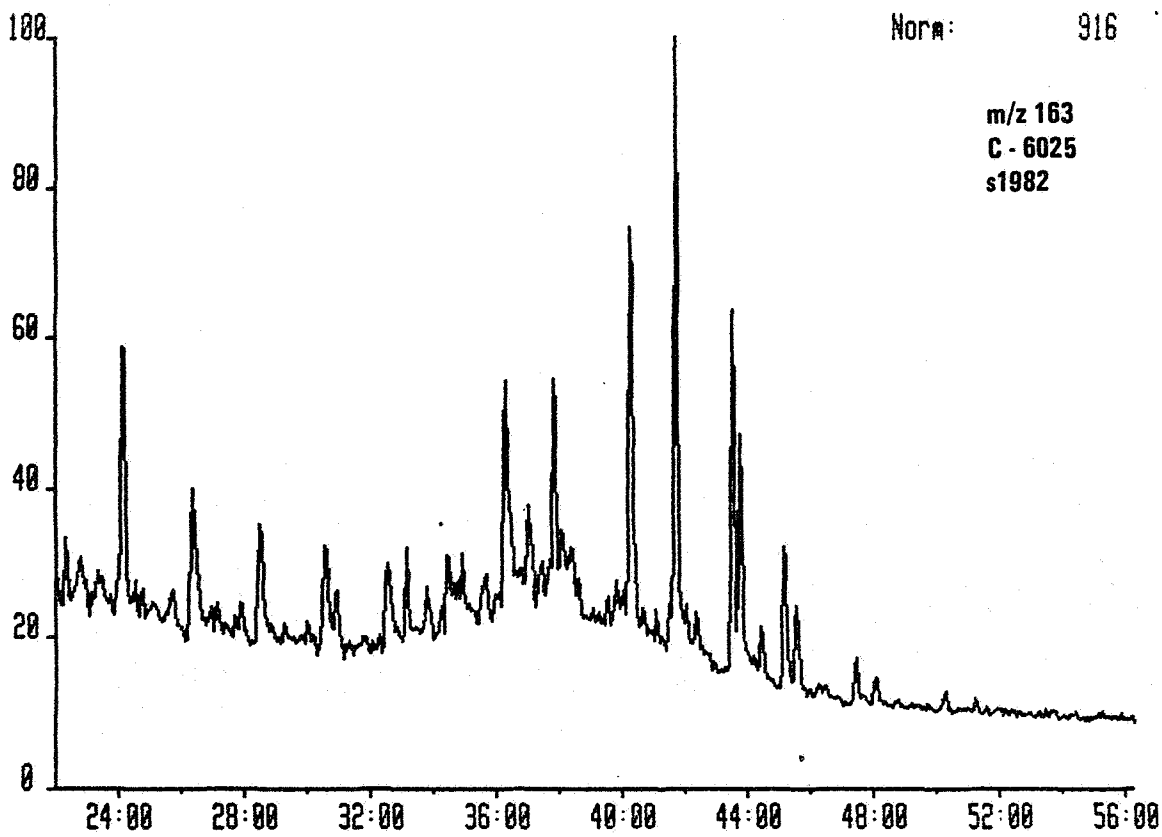
C6025 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



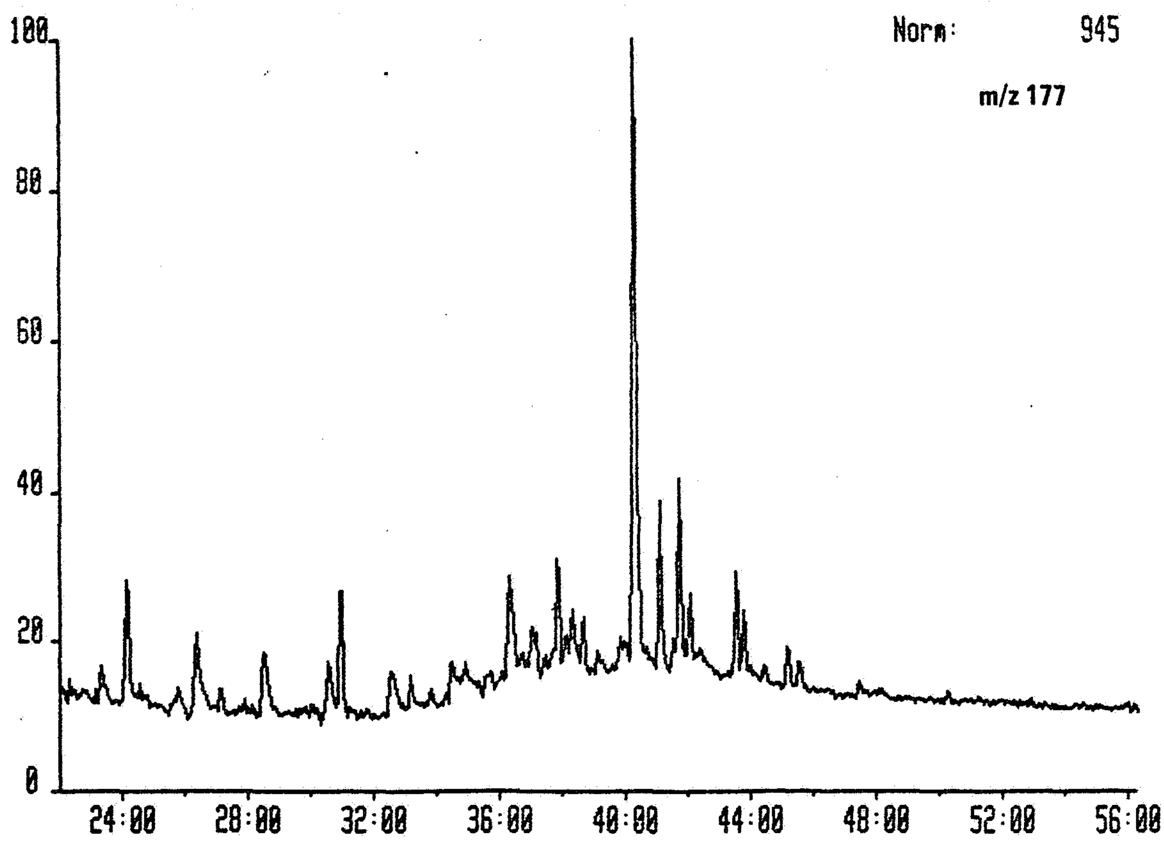
C6025 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



C6025 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:

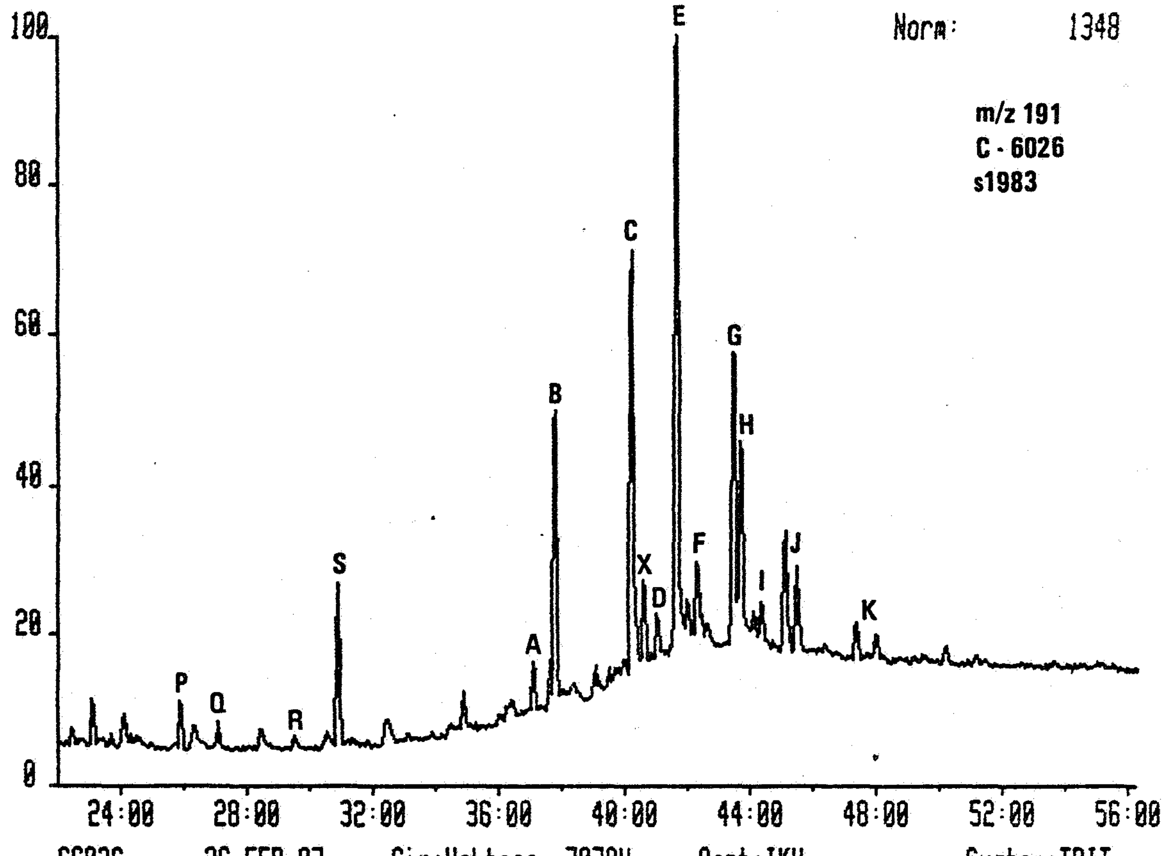


C6025 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:

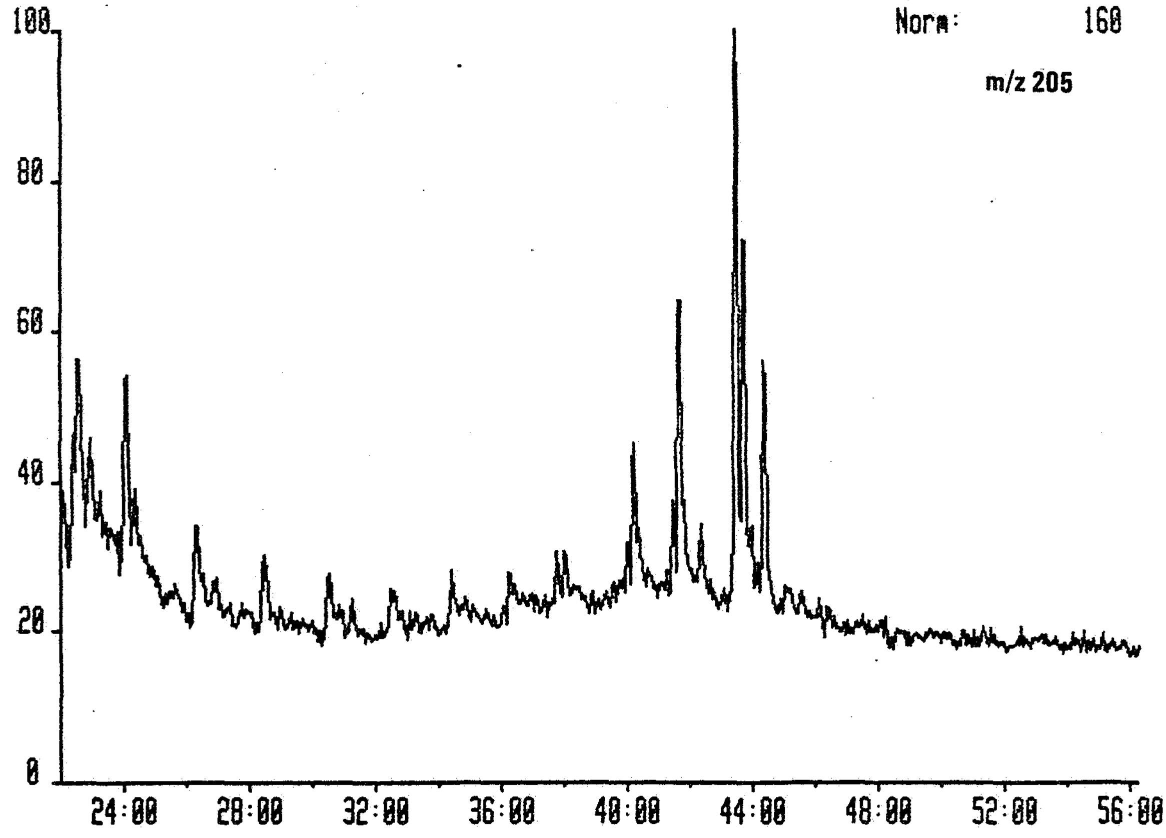


IKU SINTEF-GRUPPEN

C6026 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:

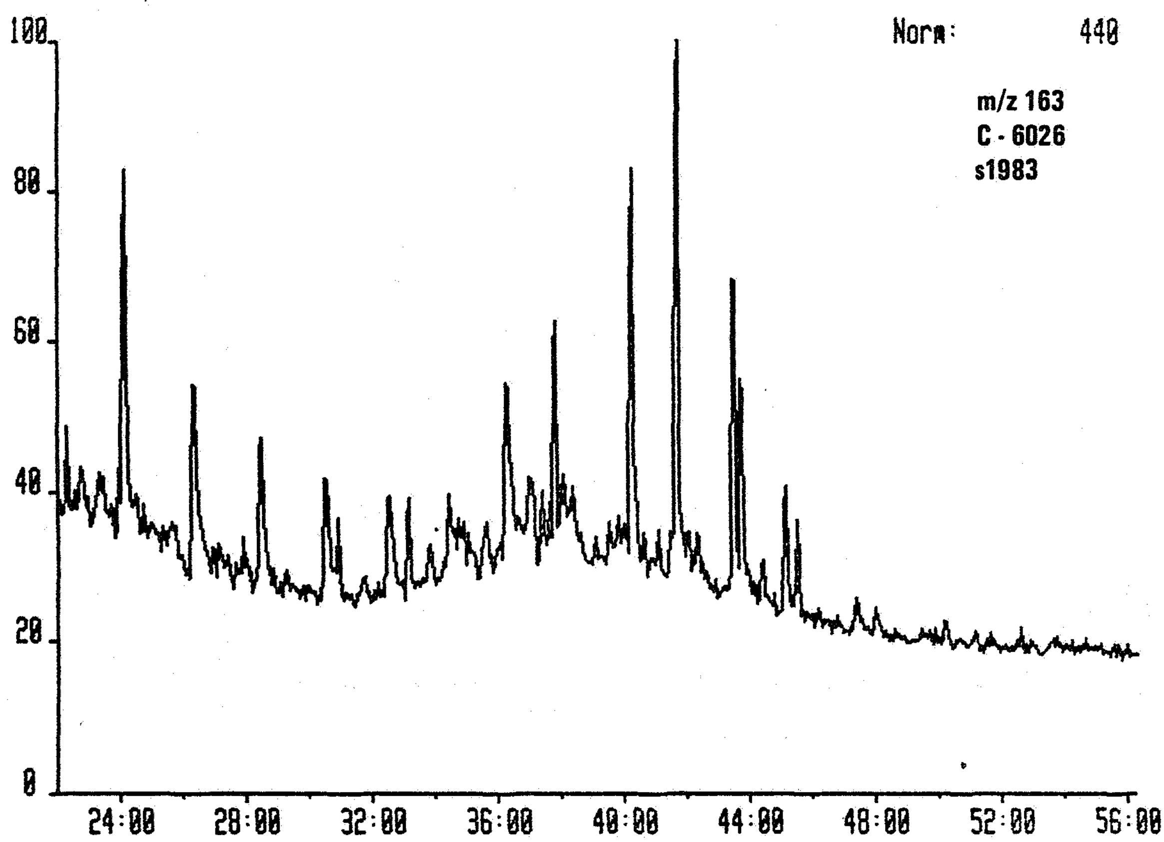


C6026 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:

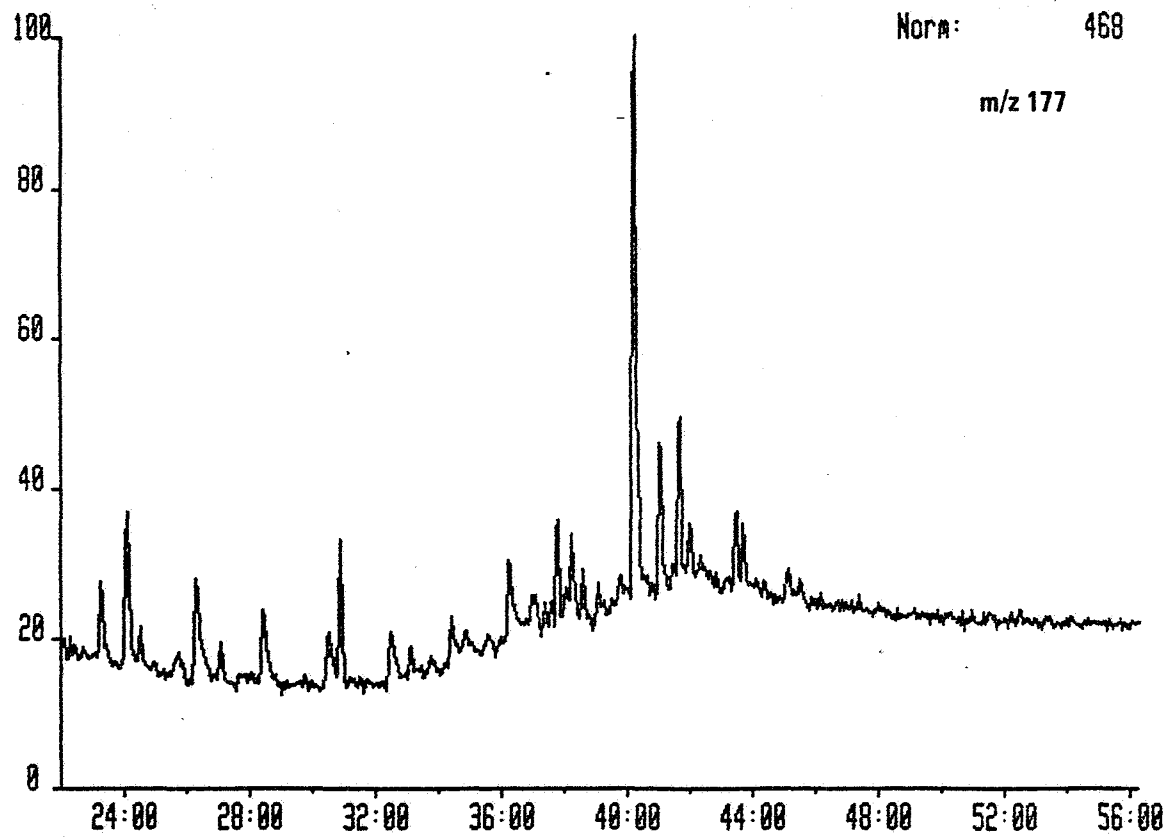


IKU SINTEF-GRUPPEN

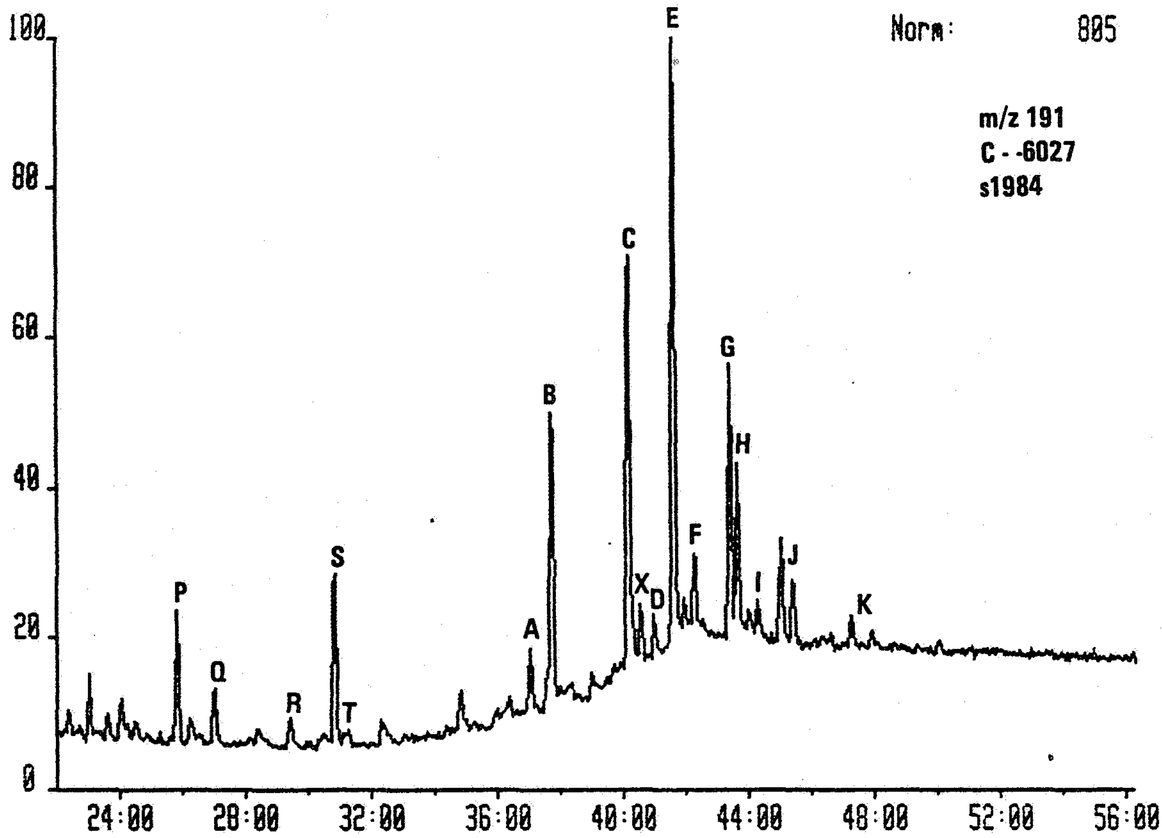
C6026 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



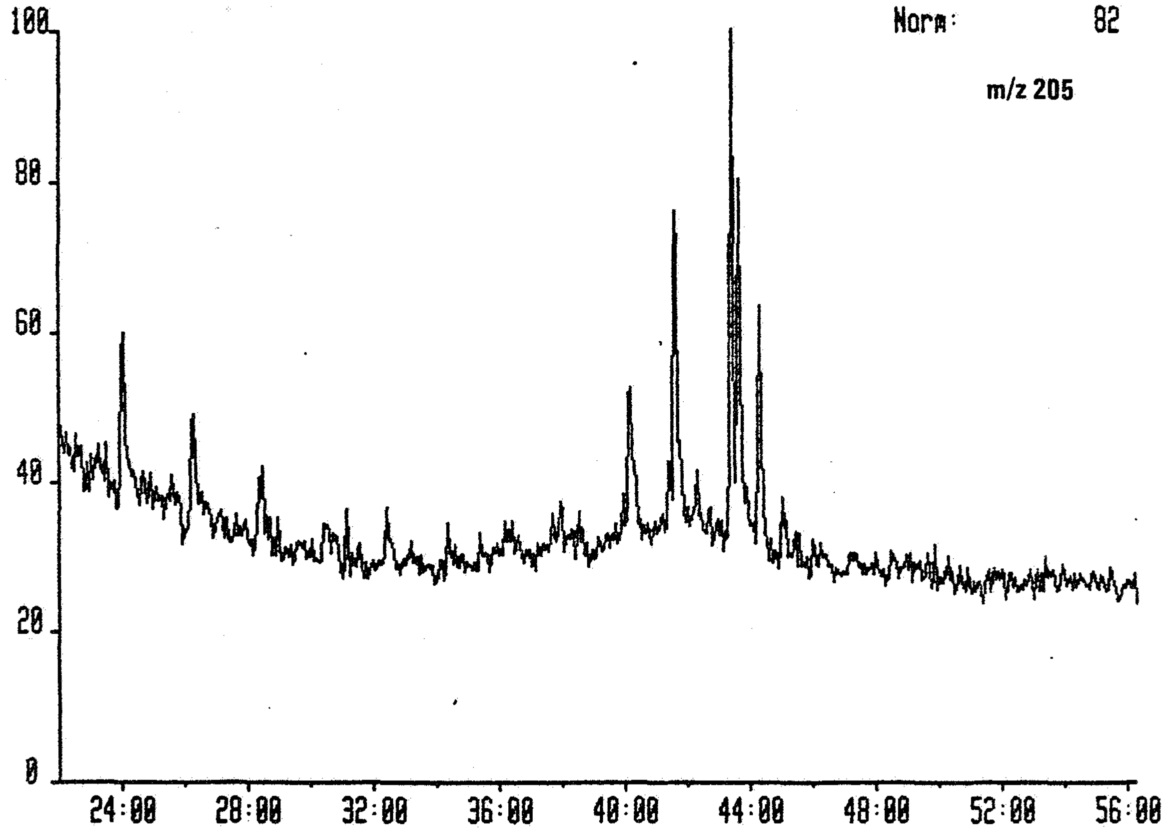
C6026 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



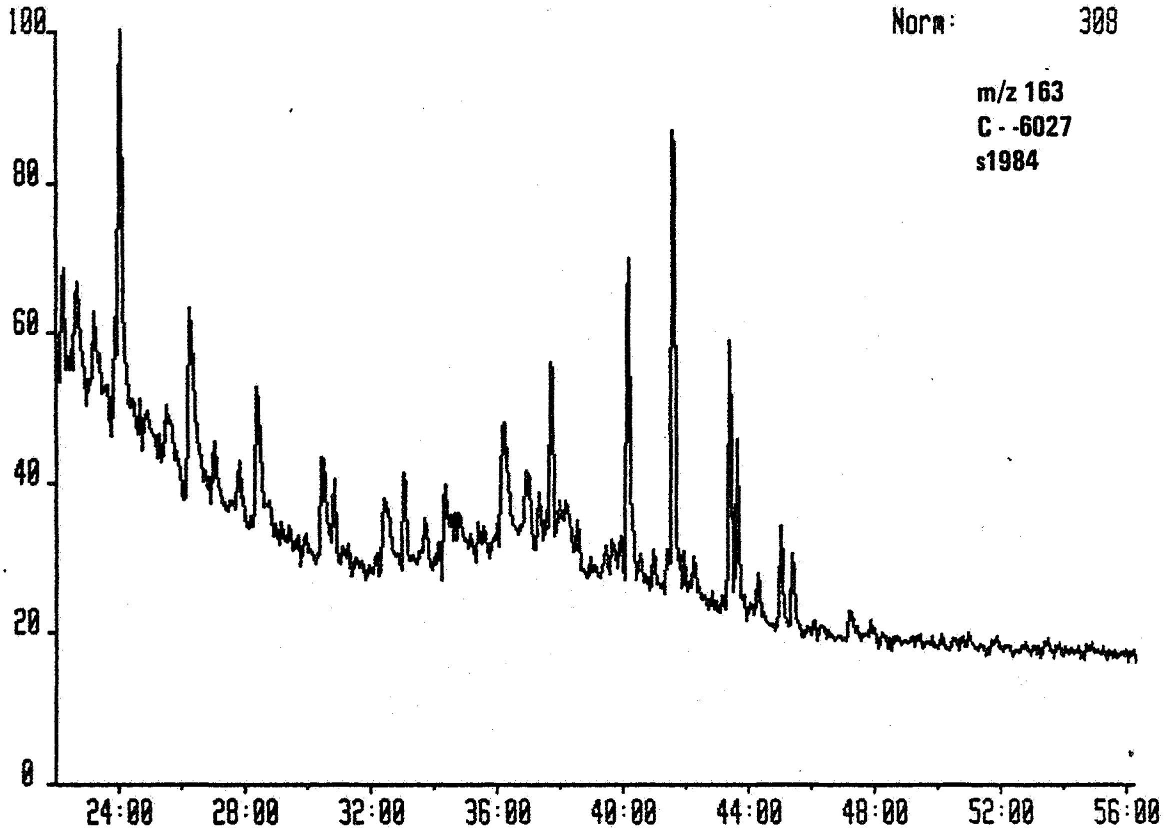
C6027 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



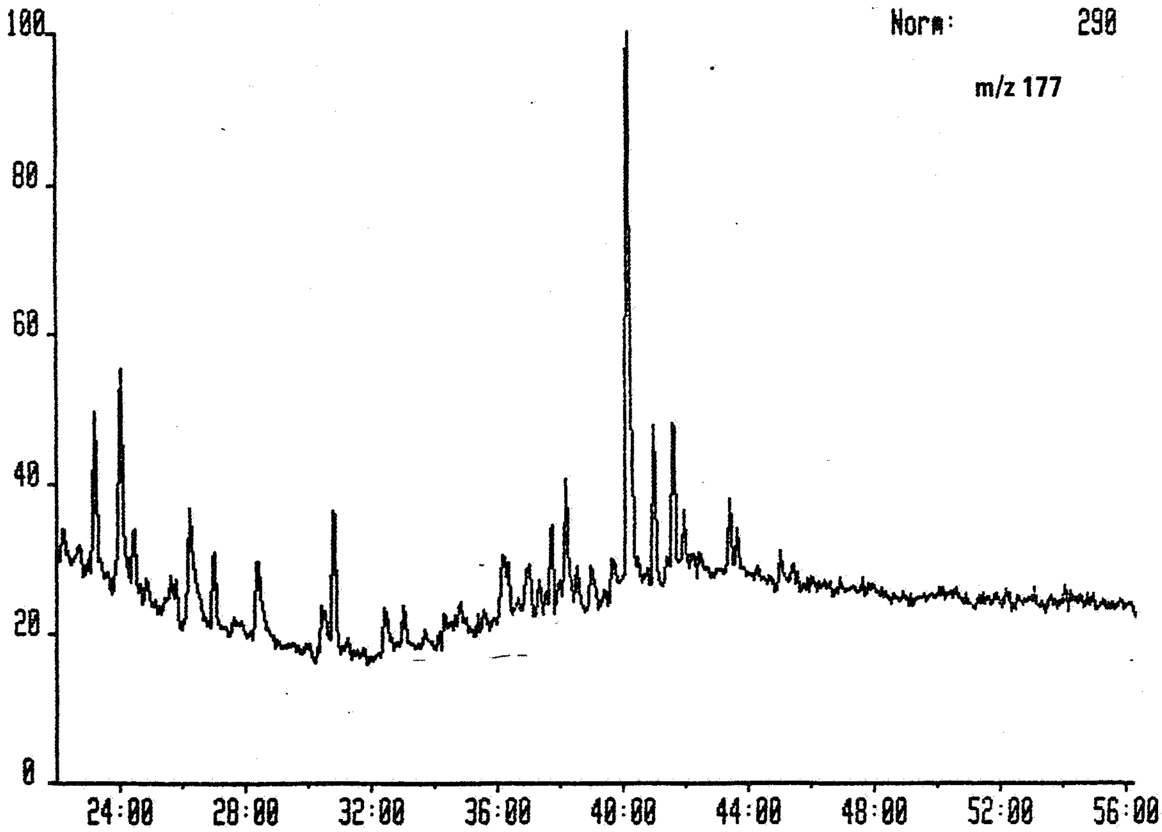
C6027 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



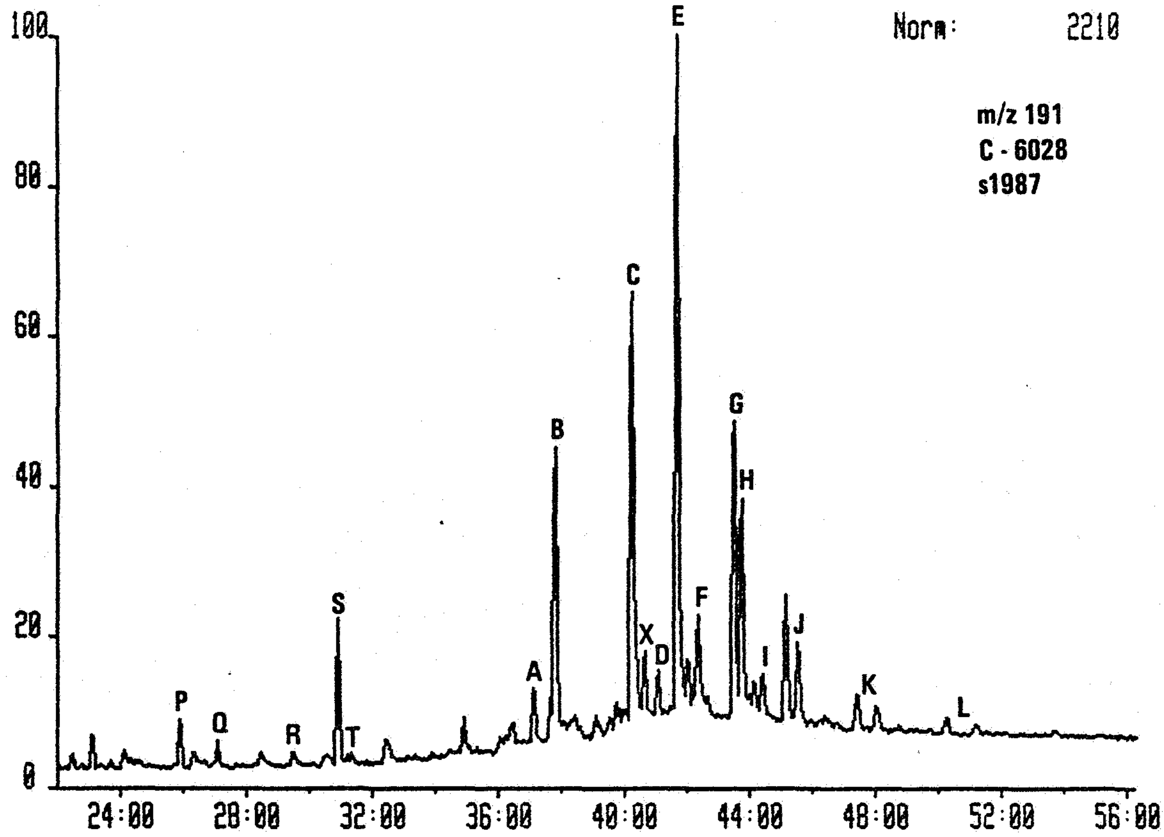
C6027 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



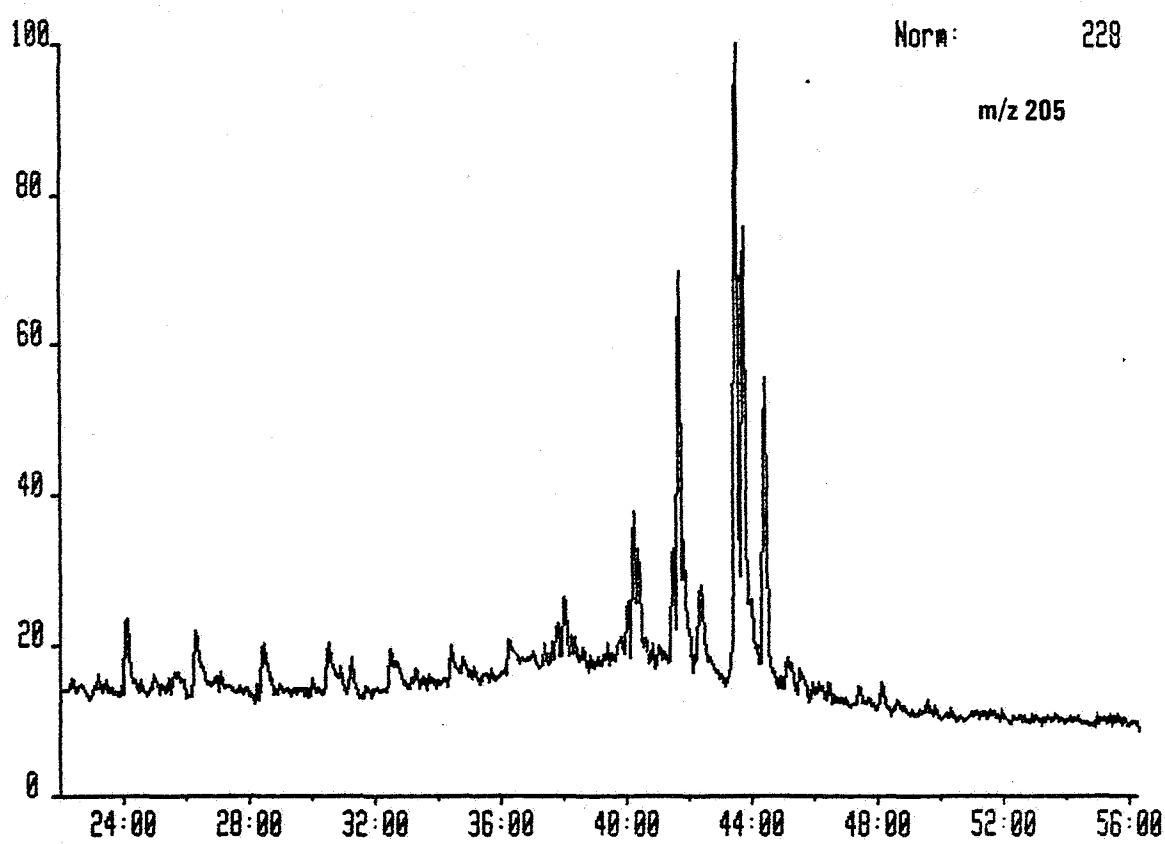
C6027 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



C6028 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:

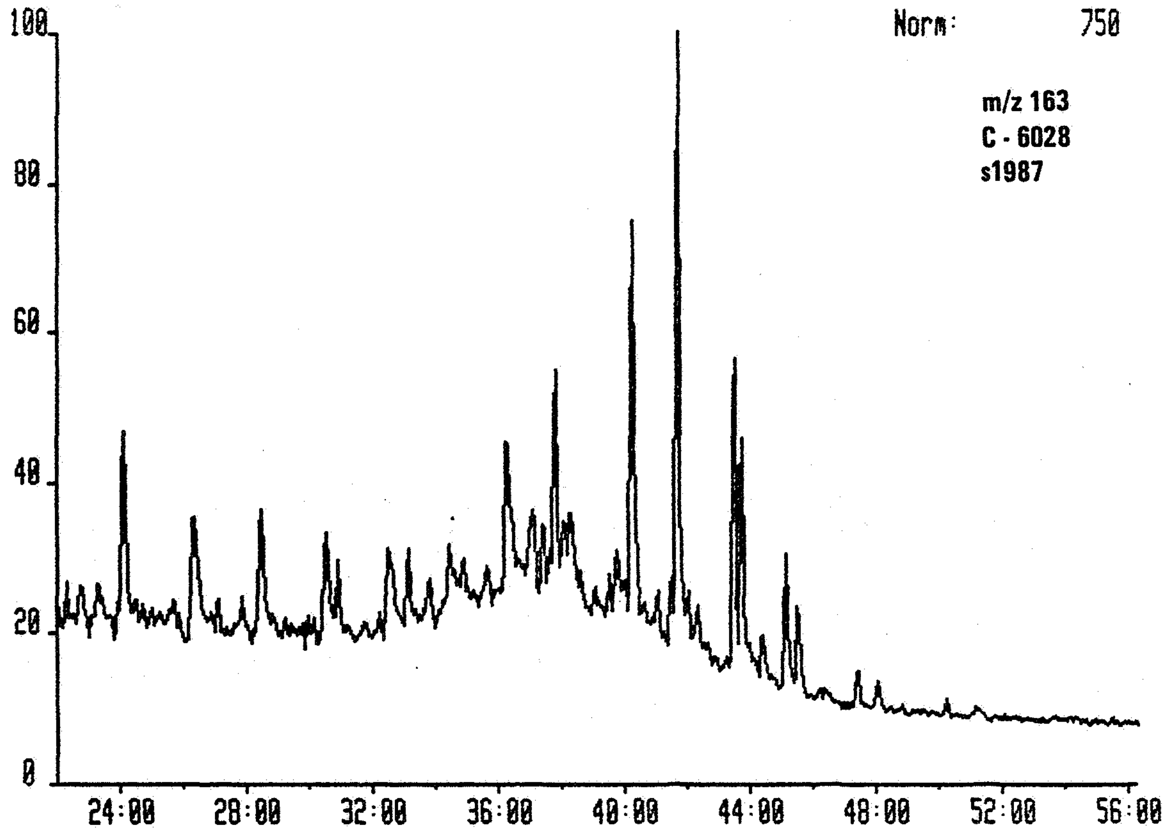


C6028 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:

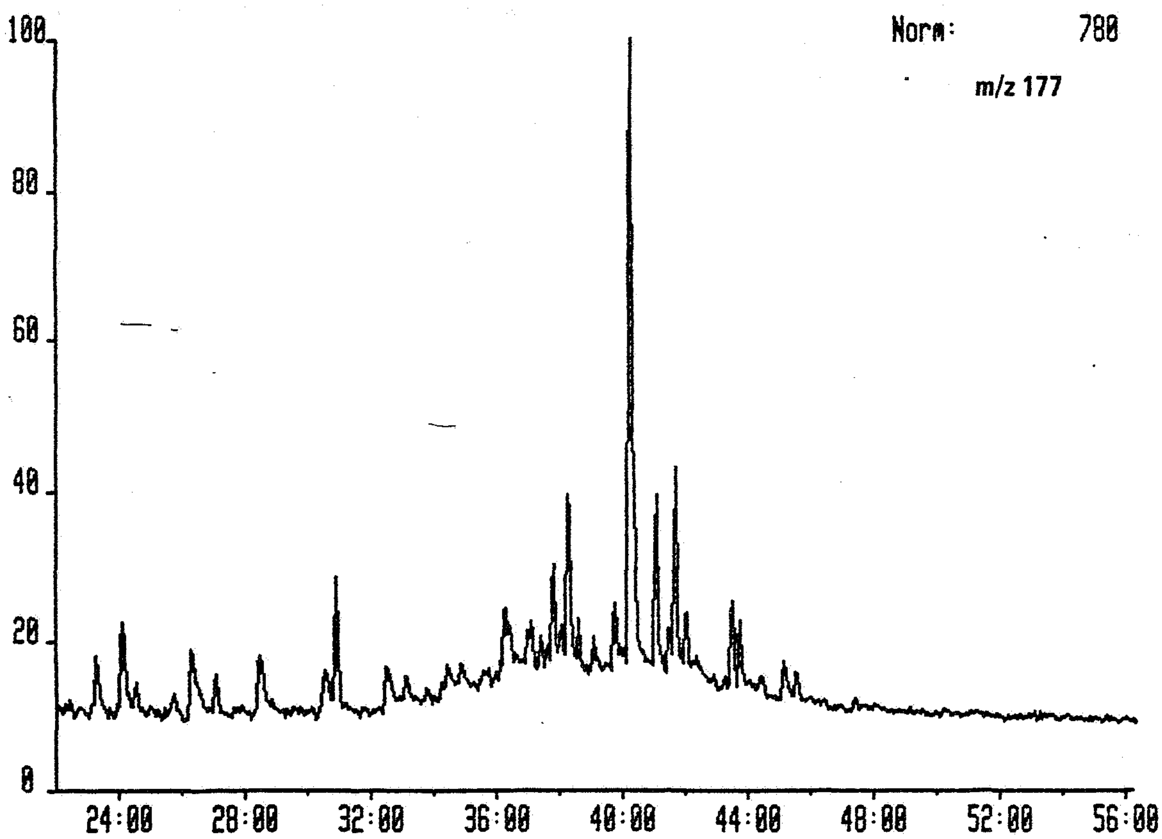


IKU
SINTEF-GRUPPEN

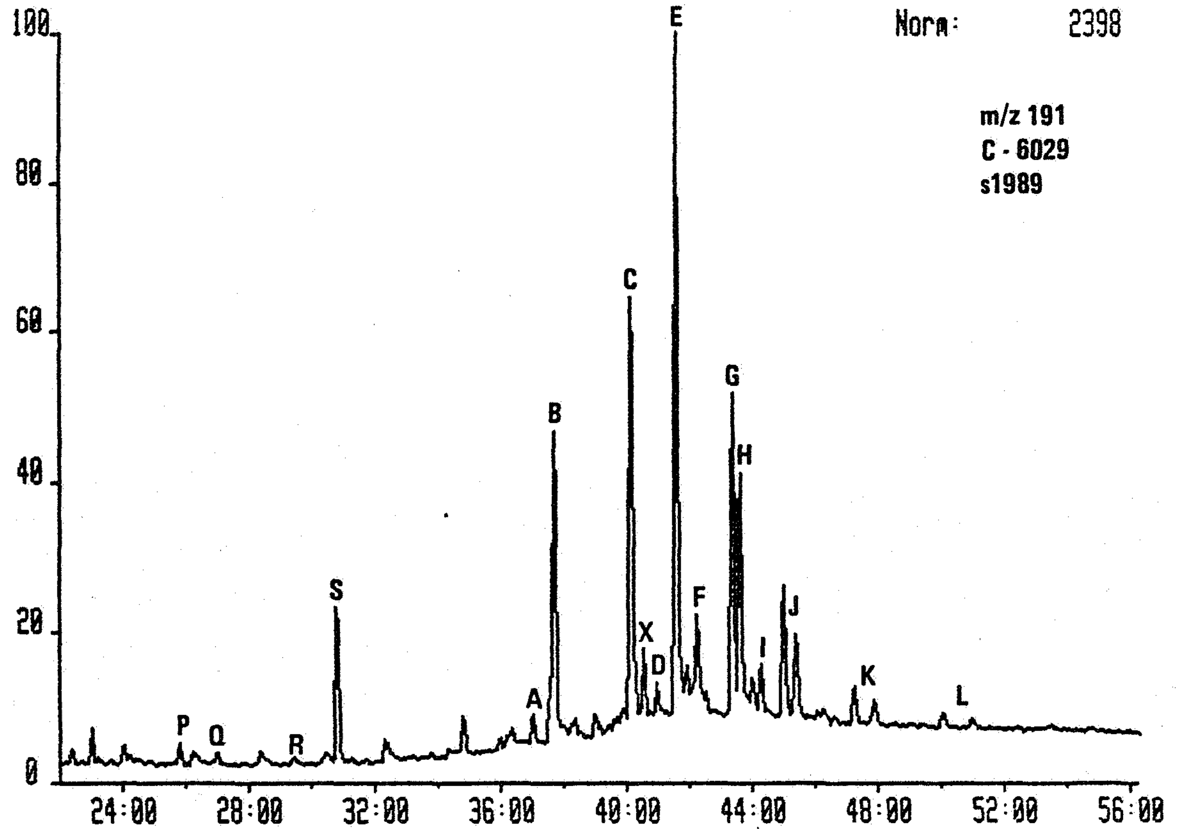
C6028 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



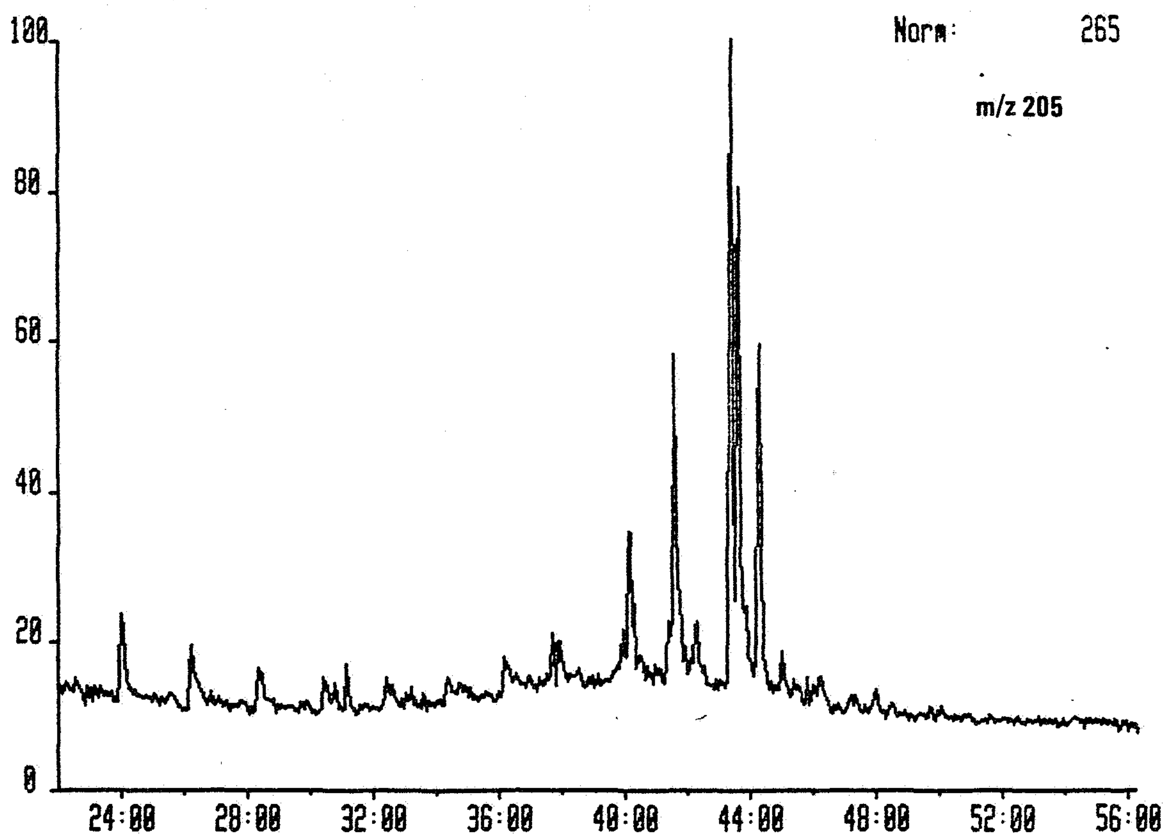
C6028 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



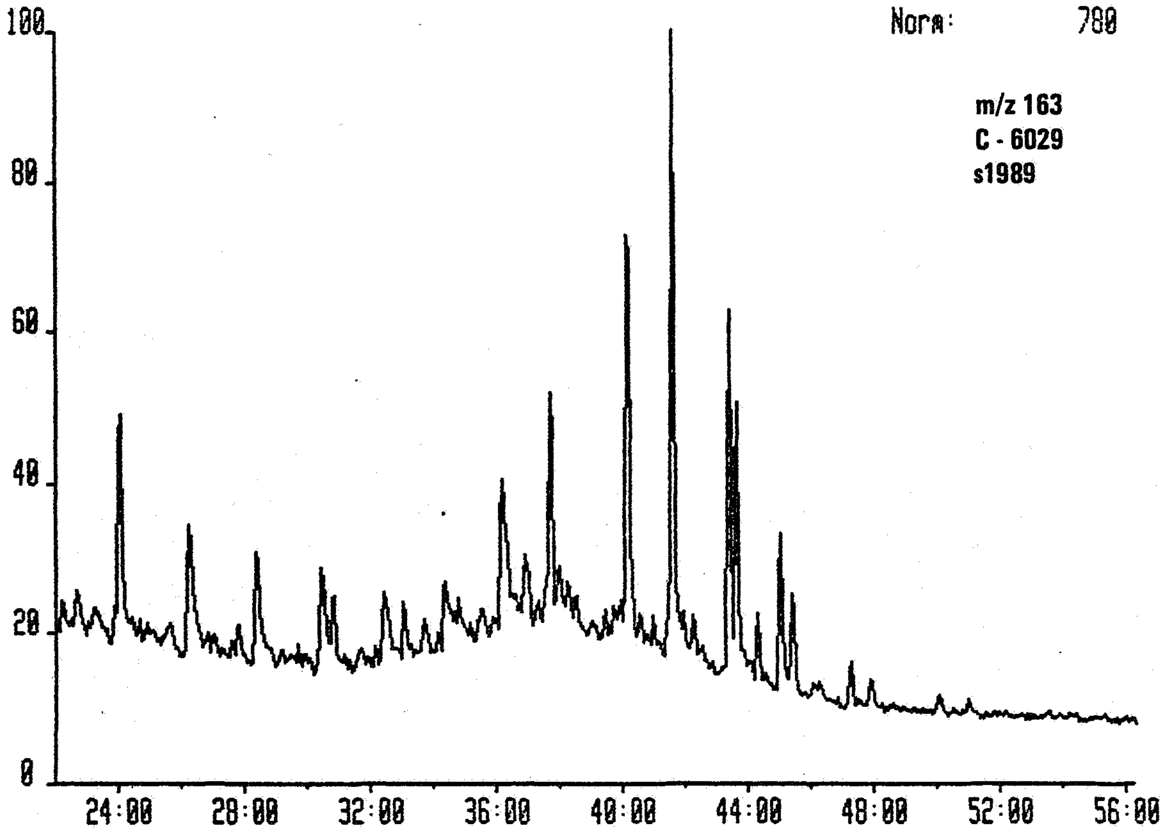
C6029 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



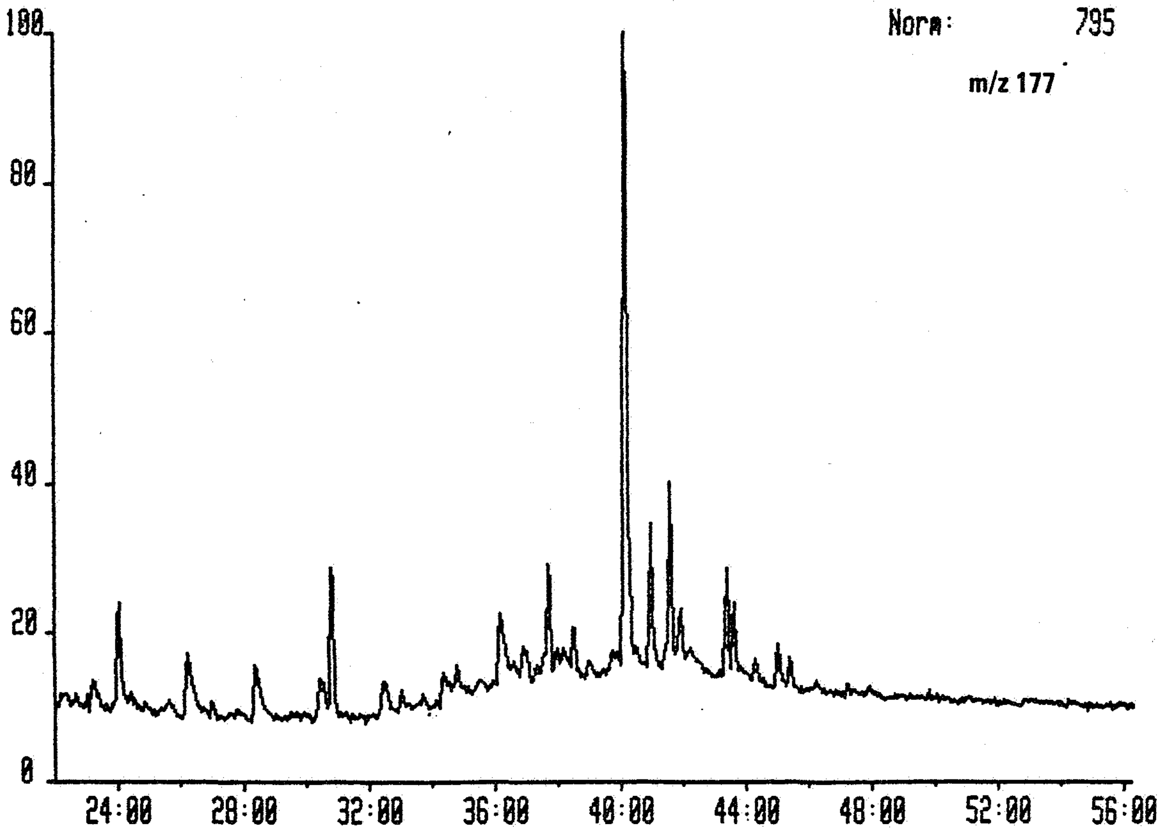
C6029 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



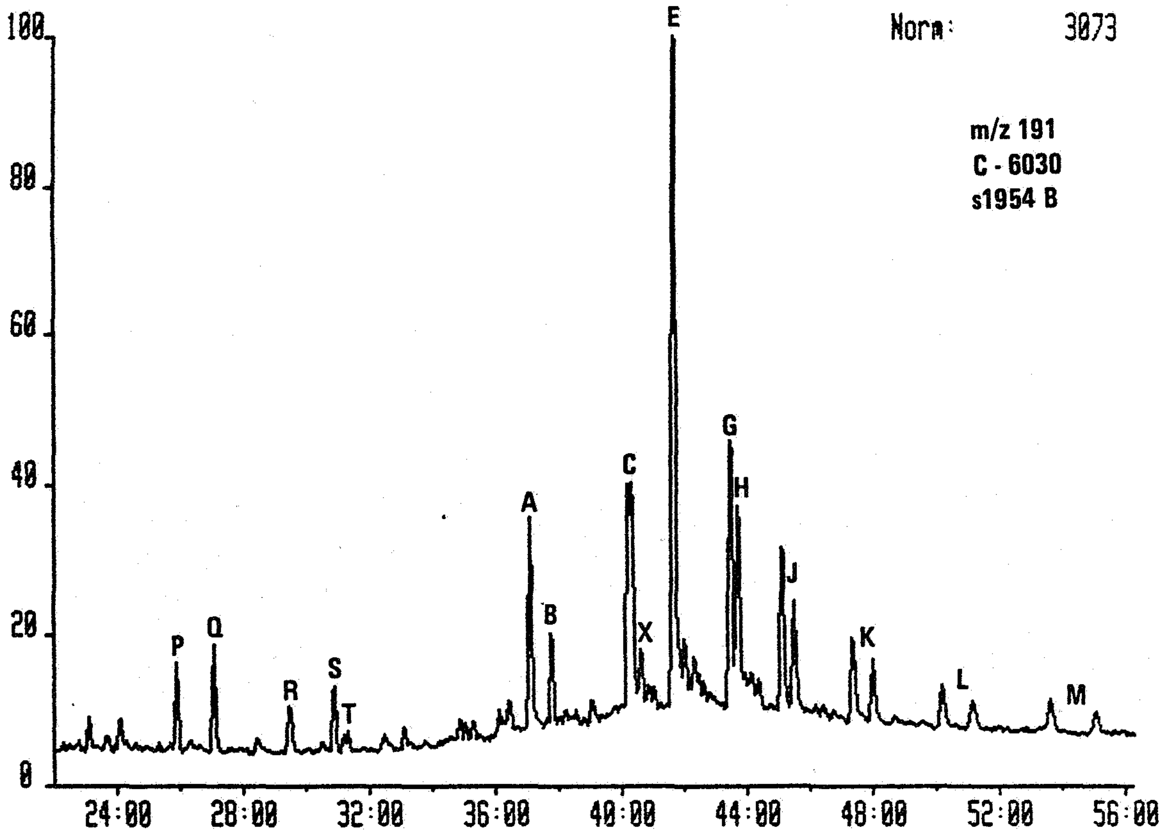
C6029 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



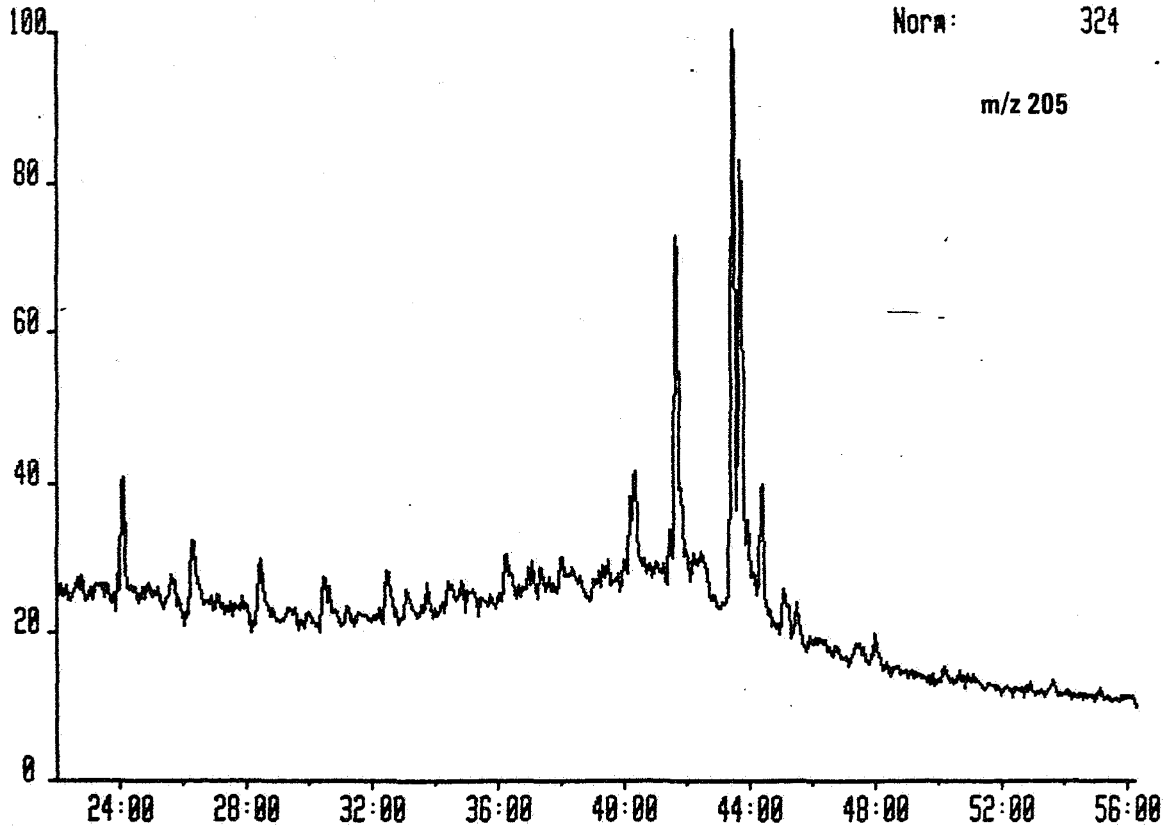
C6029 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



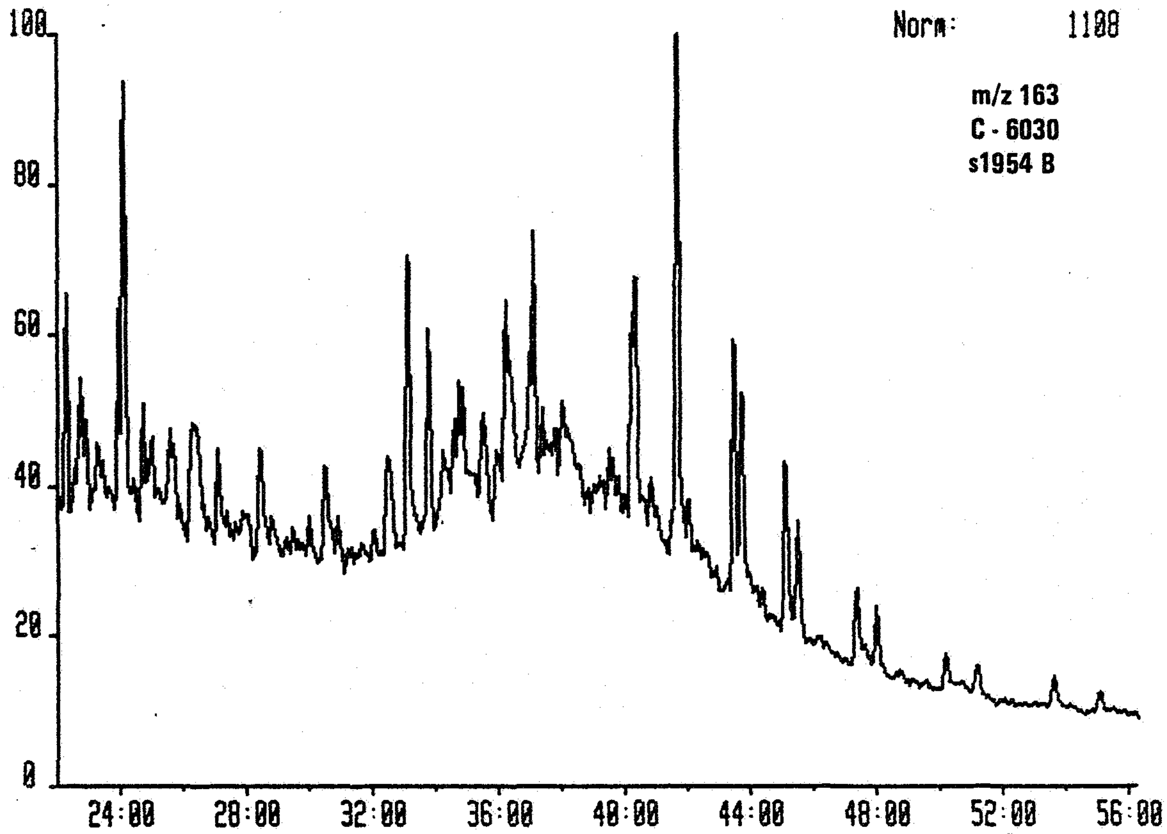
C6030 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



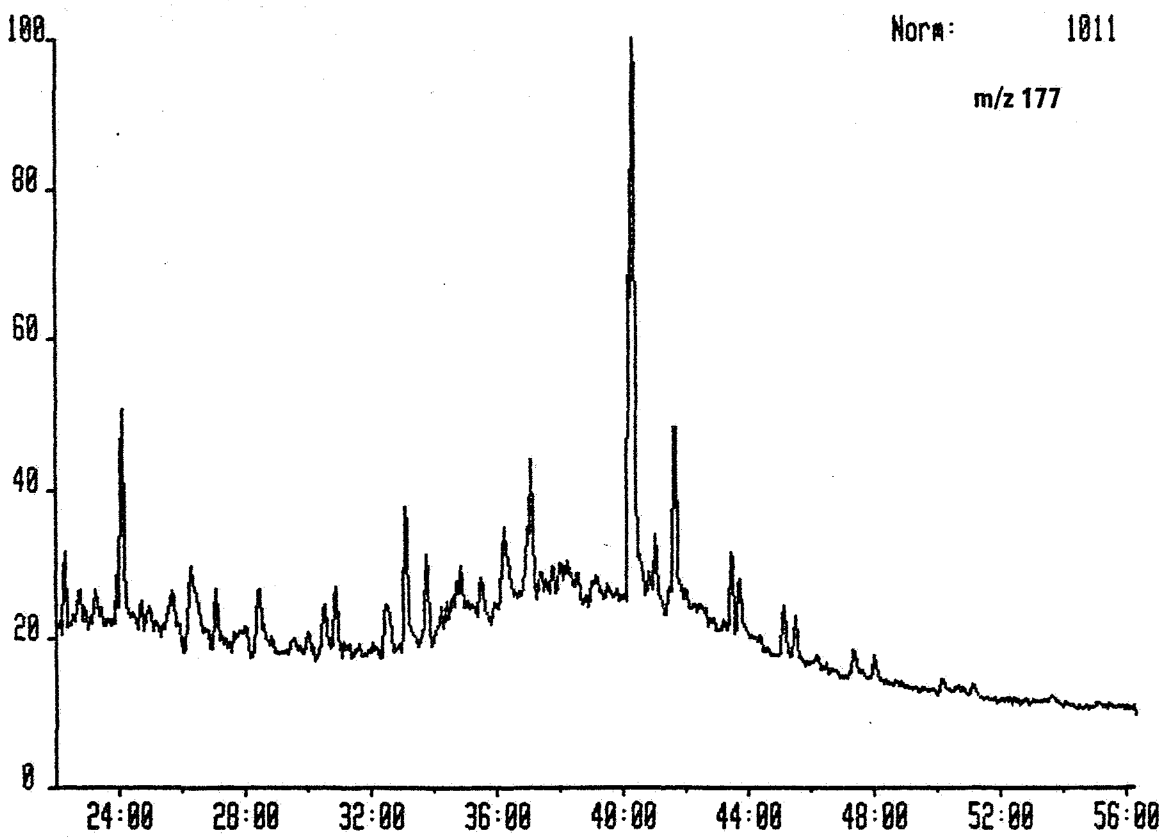
C6030 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



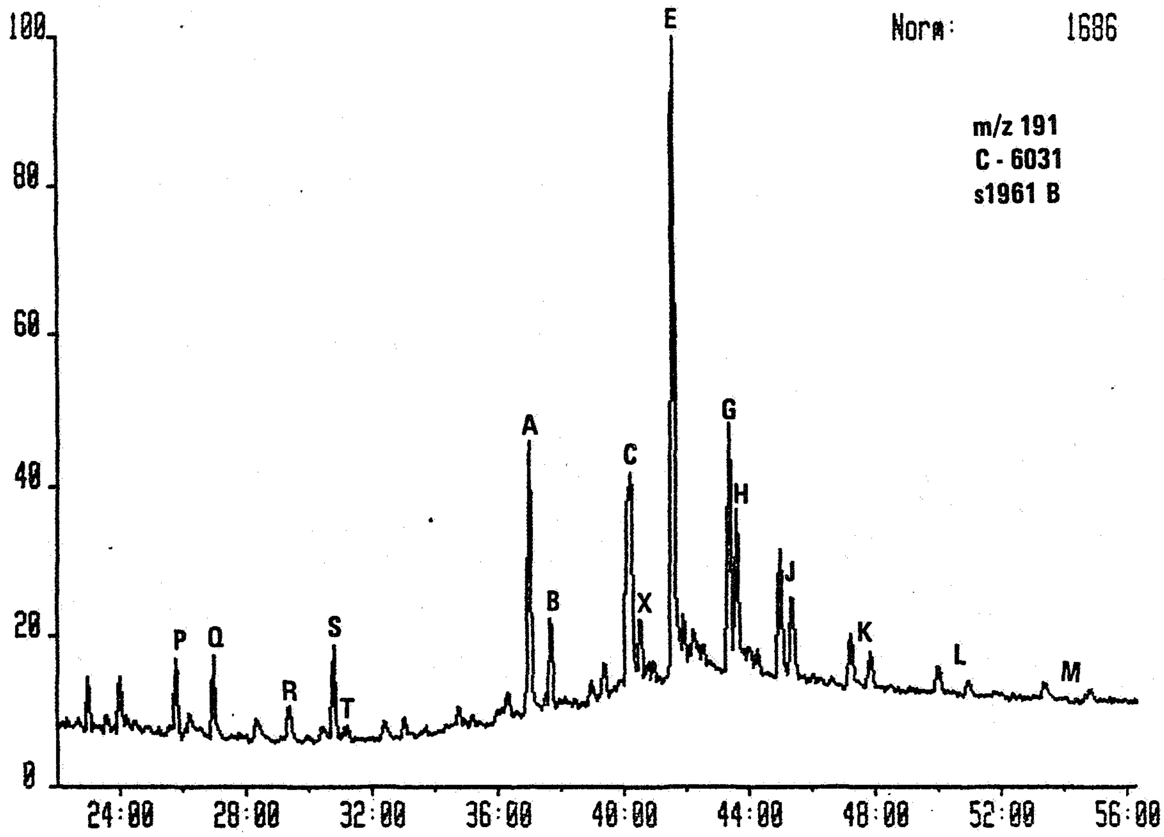
C6030 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



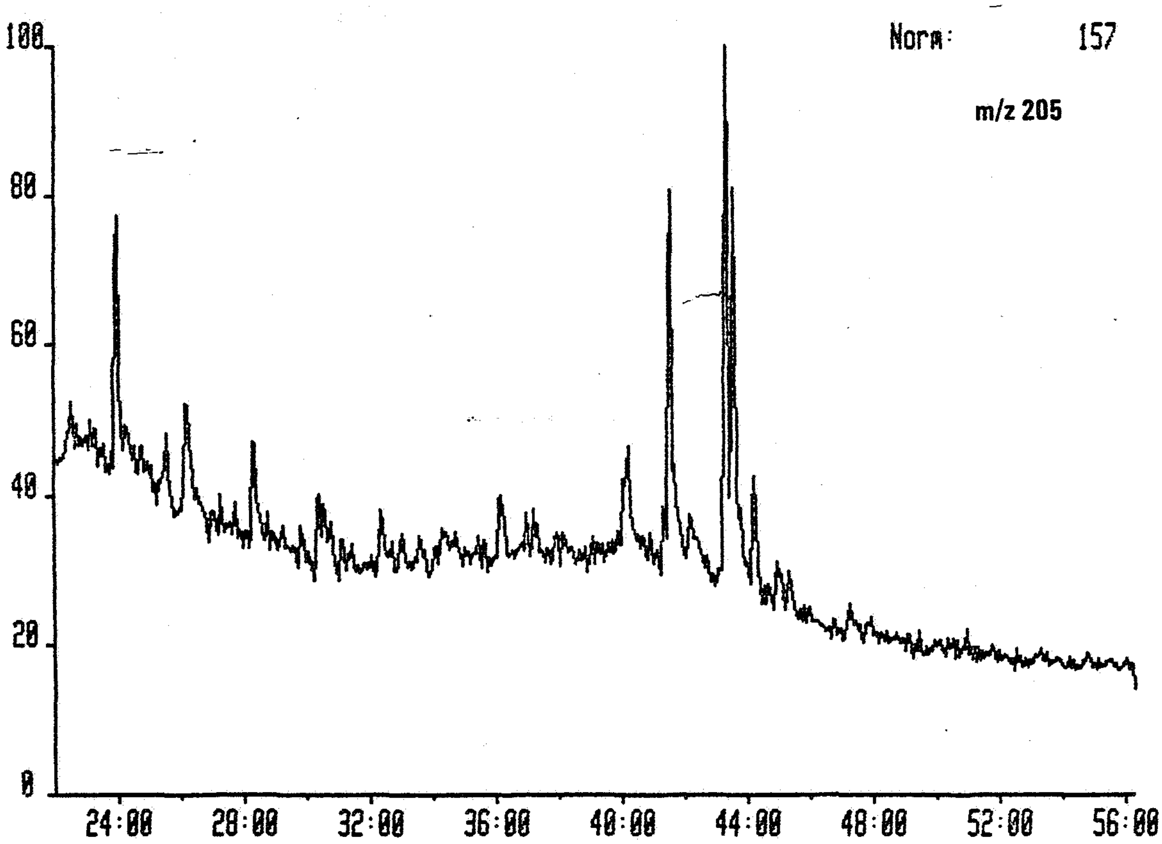
C6030 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



C6031 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:

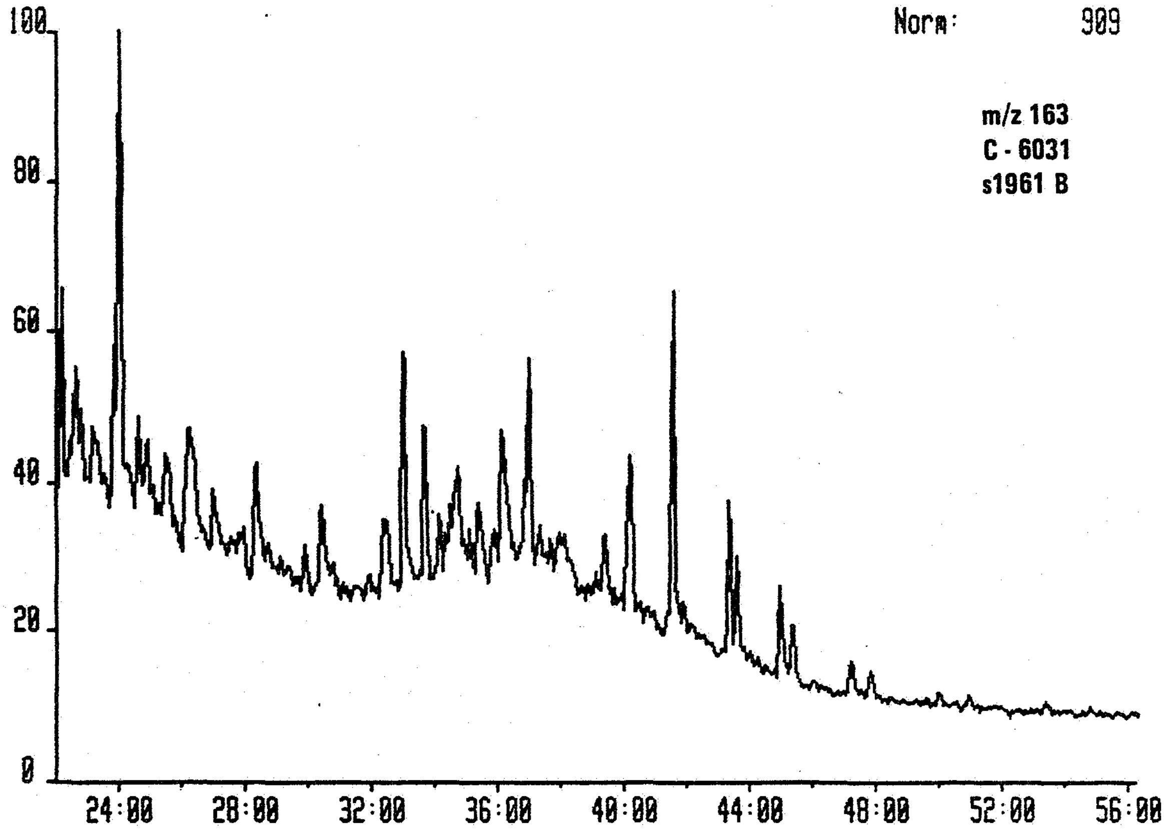


C6031 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:

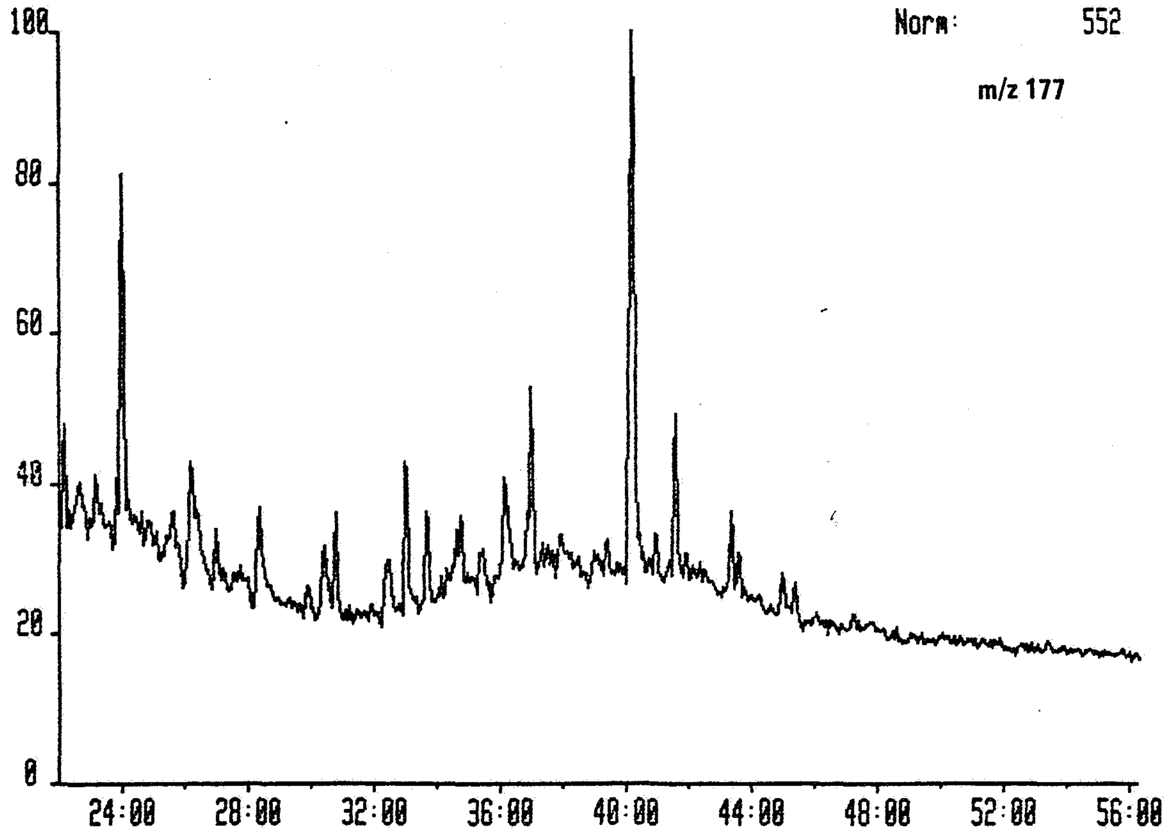


IKU
SINTEF-GRUPPEN

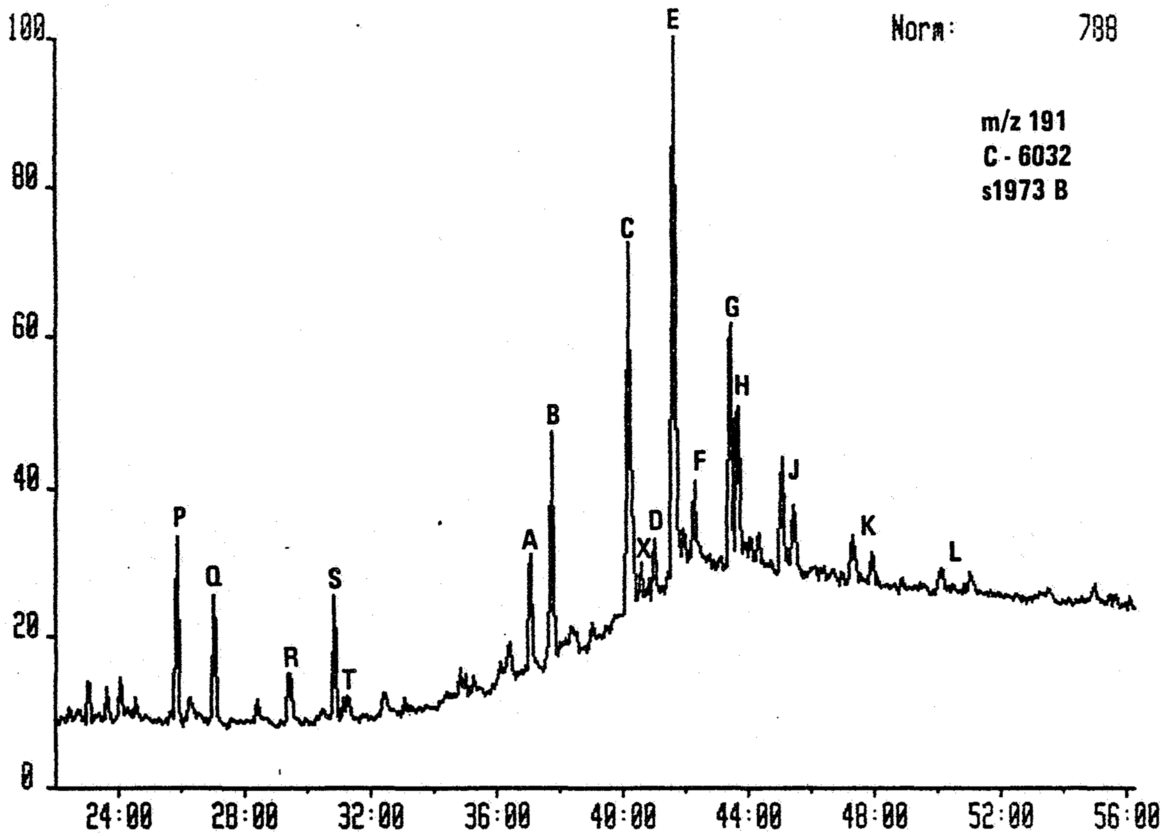
C6031 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



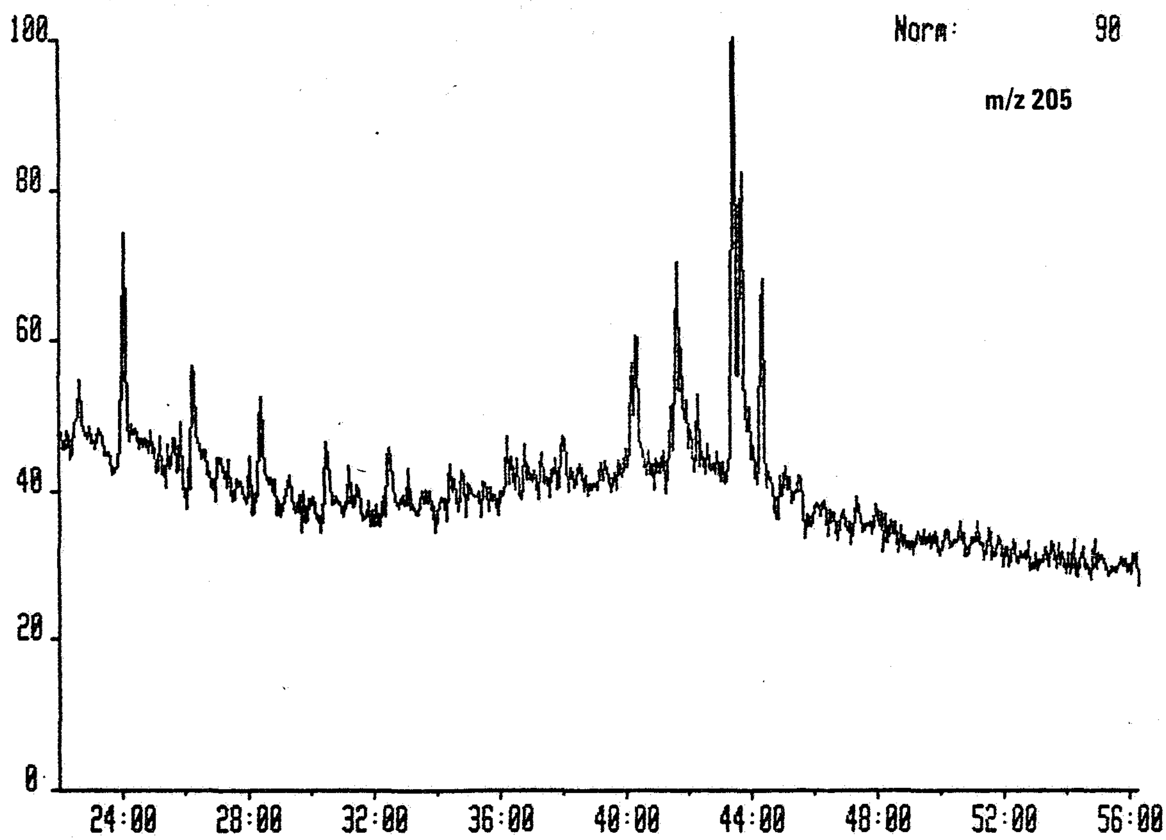
C6031 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



C6032 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:

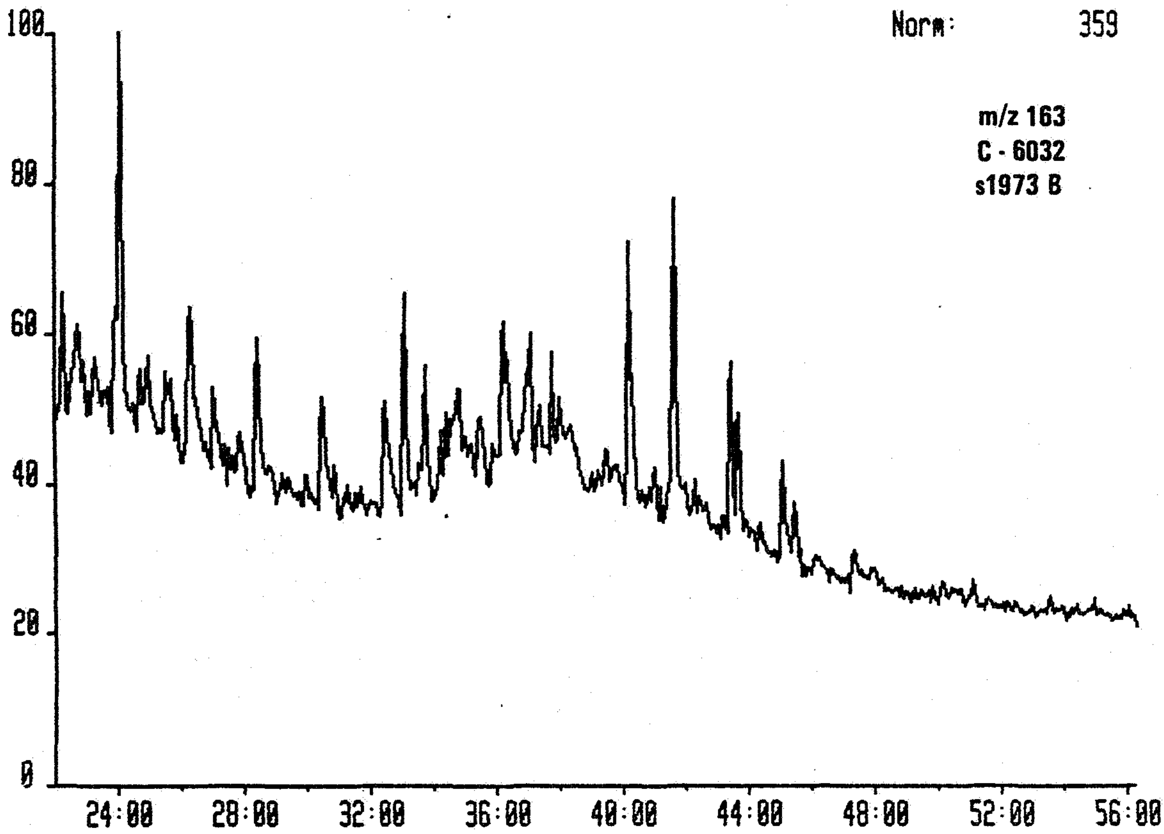


C6032 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:

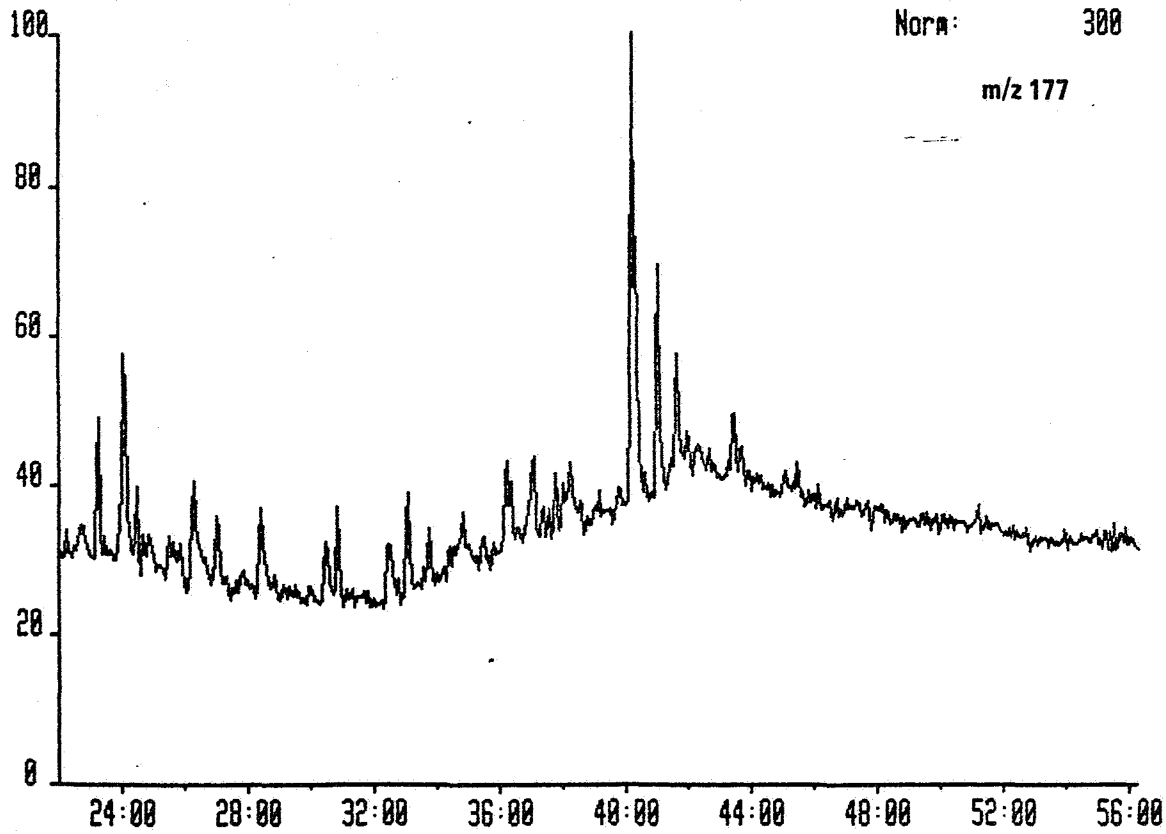


IKU SINTEF-GRUPPEN

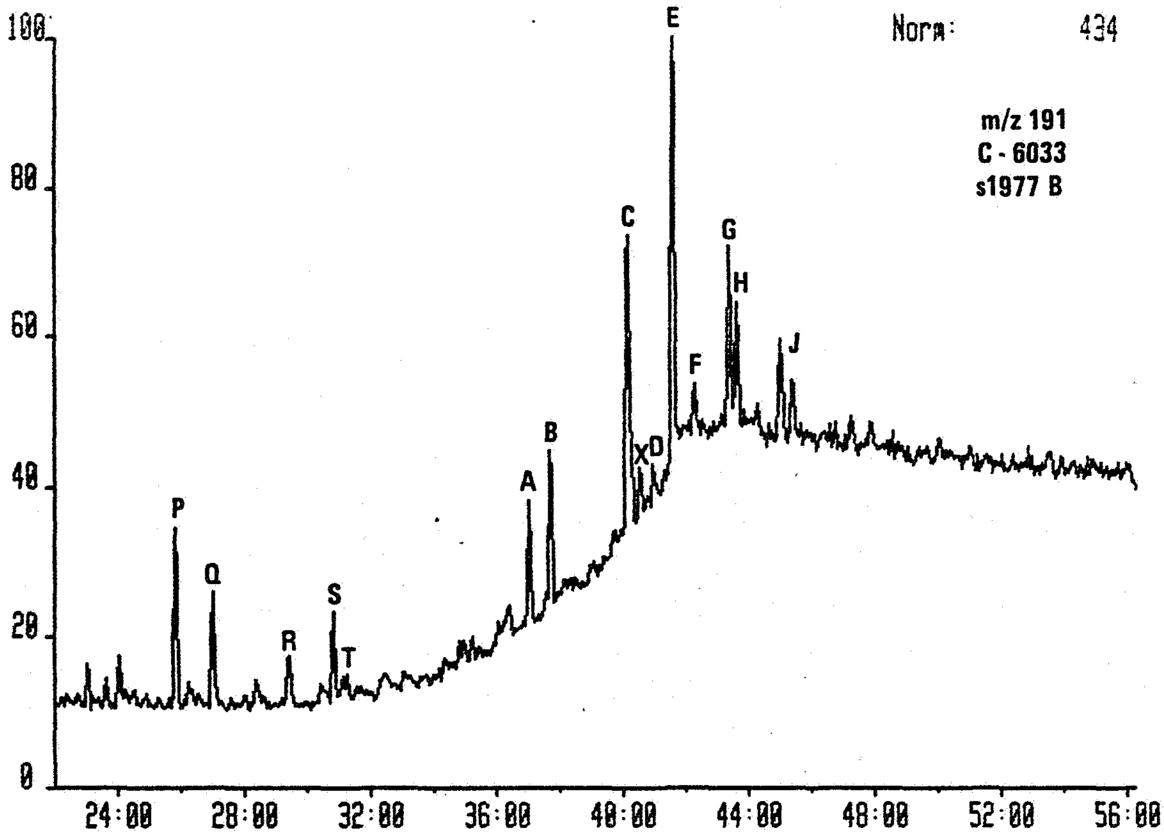
C6032 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:



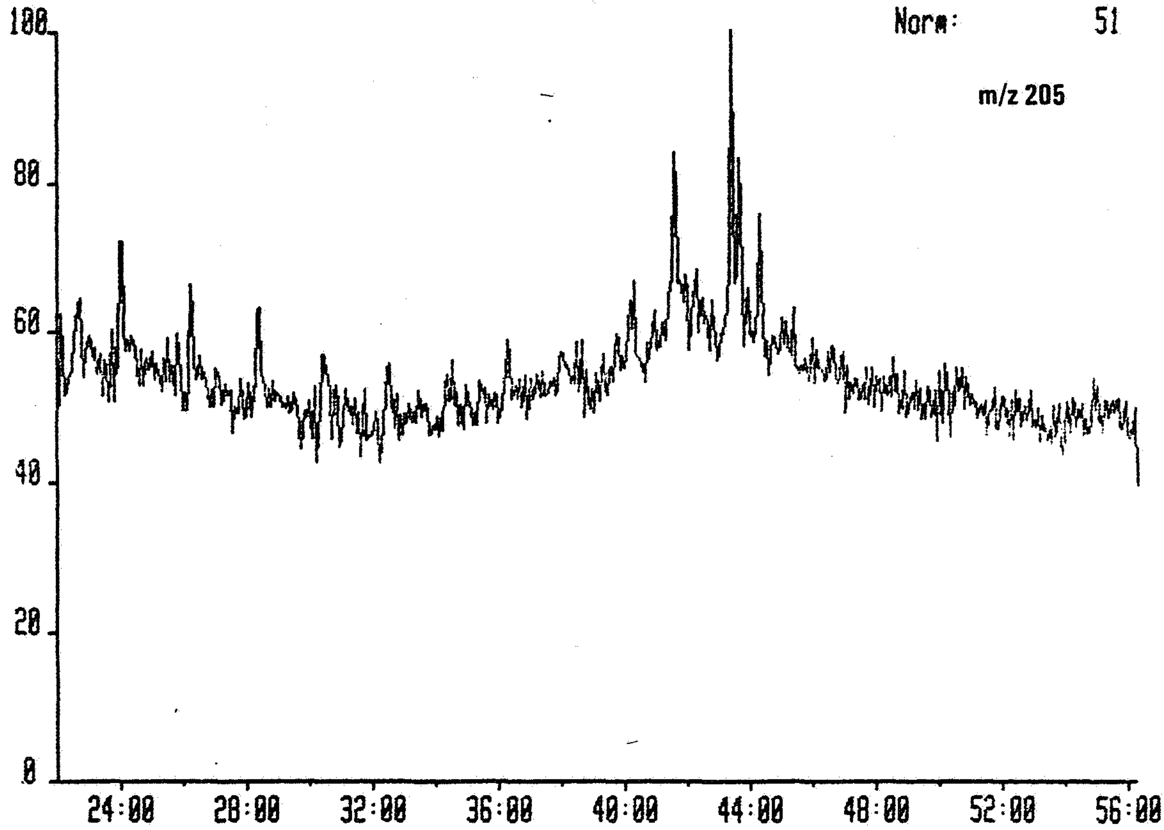
C6032 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:



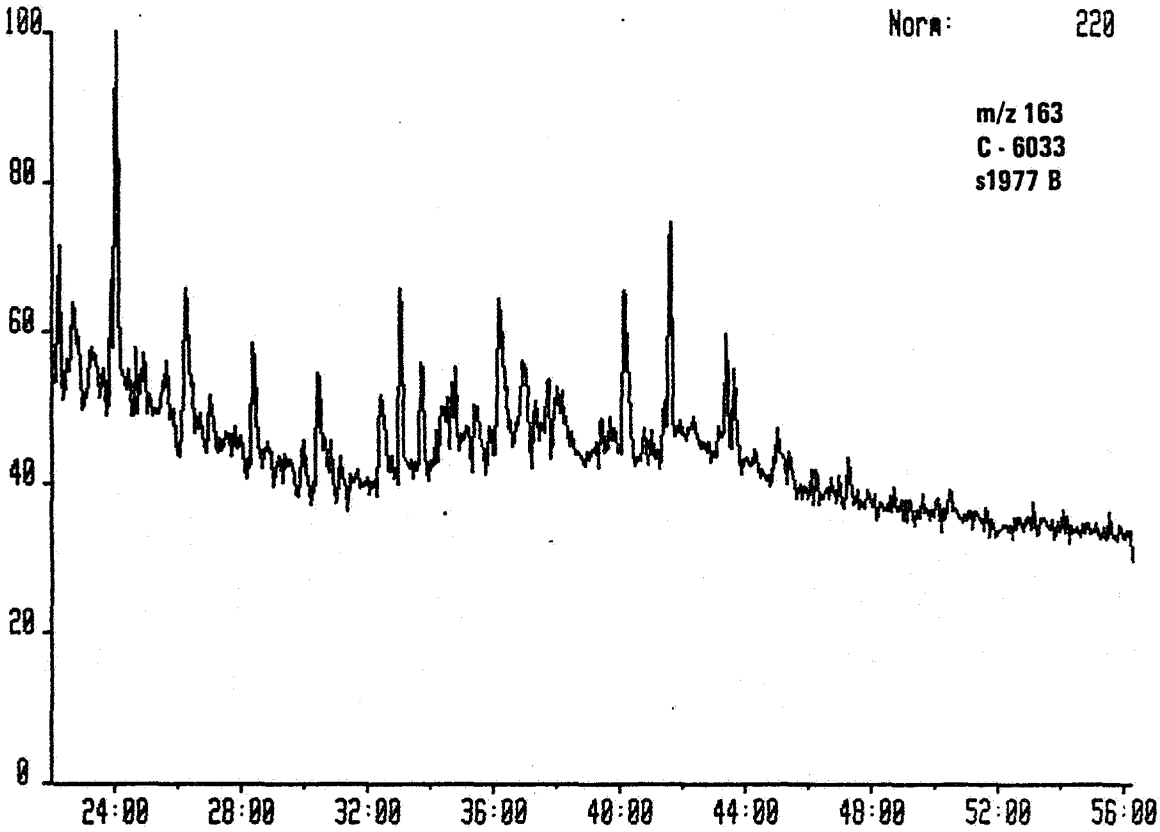
C6033 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:



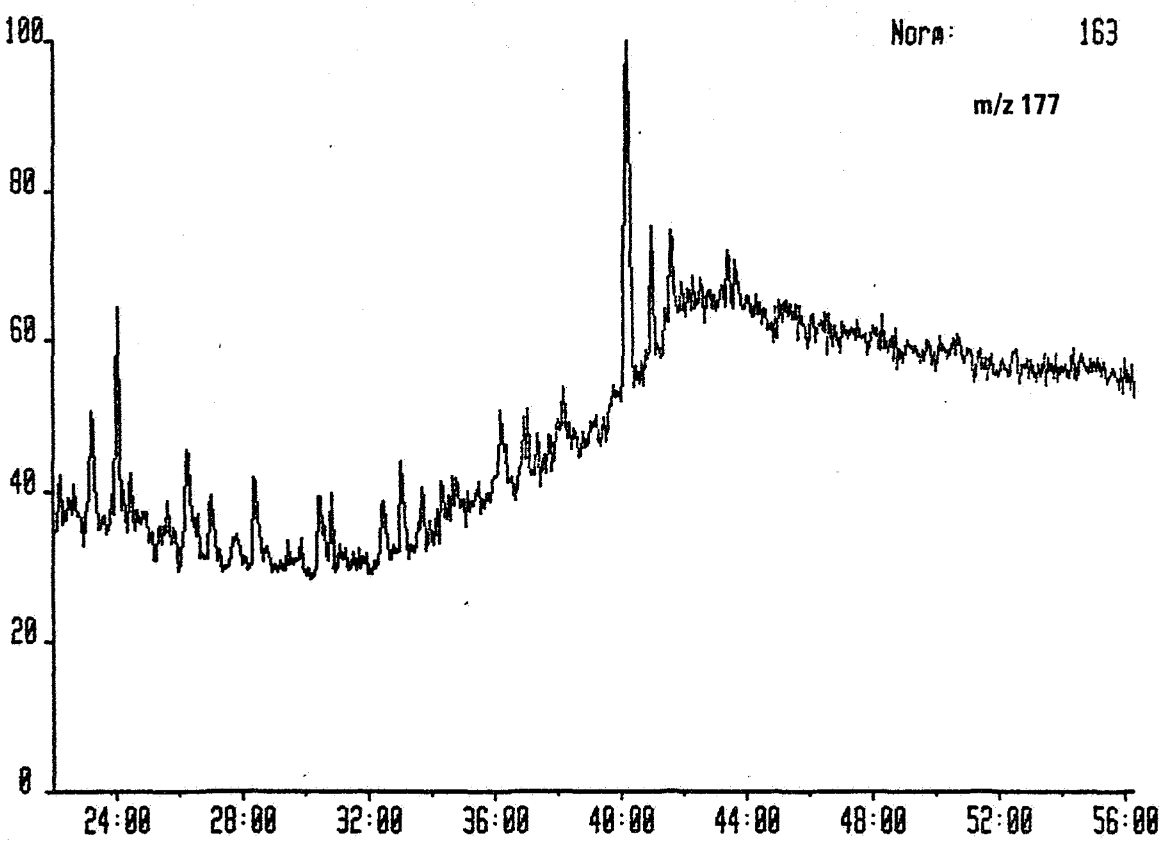
C6033 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:



C6033 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:

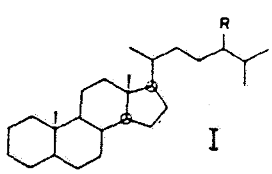


C6033 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:

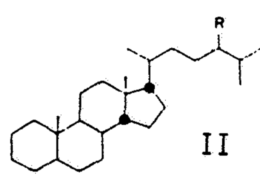


d. Mass fragmentograms of steranes (m/z 217, 218, 231 and 259).

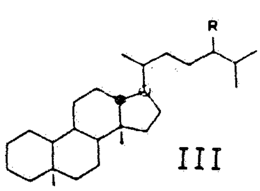
a	13β(H),17α(H)-diasterane (20S)	$C_{27}H_{48}$	(III,R=H)
b	13β(H),17α(H)-diasterane (20R)	$C_{27}H_{48}$	(III,R=H)
c	13α(H),17β(H)-diasterane (20S)	$C_{27}H_{48}$	(IV,R=H)
d	13α(H),17β(H)-diasterane (20R)	$C_{27}H_{48}$	(IV,R=H)
e	13β(H),17α(H)-diasterane (20S)	$C_{28}H_{50}$	(III,R=CH_3)
f	13β(H),17α(H)-diasterane (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	14α(H),17α(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)



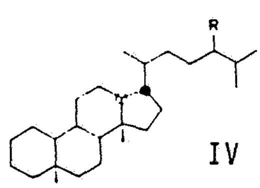
I



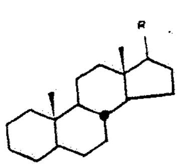
II



III

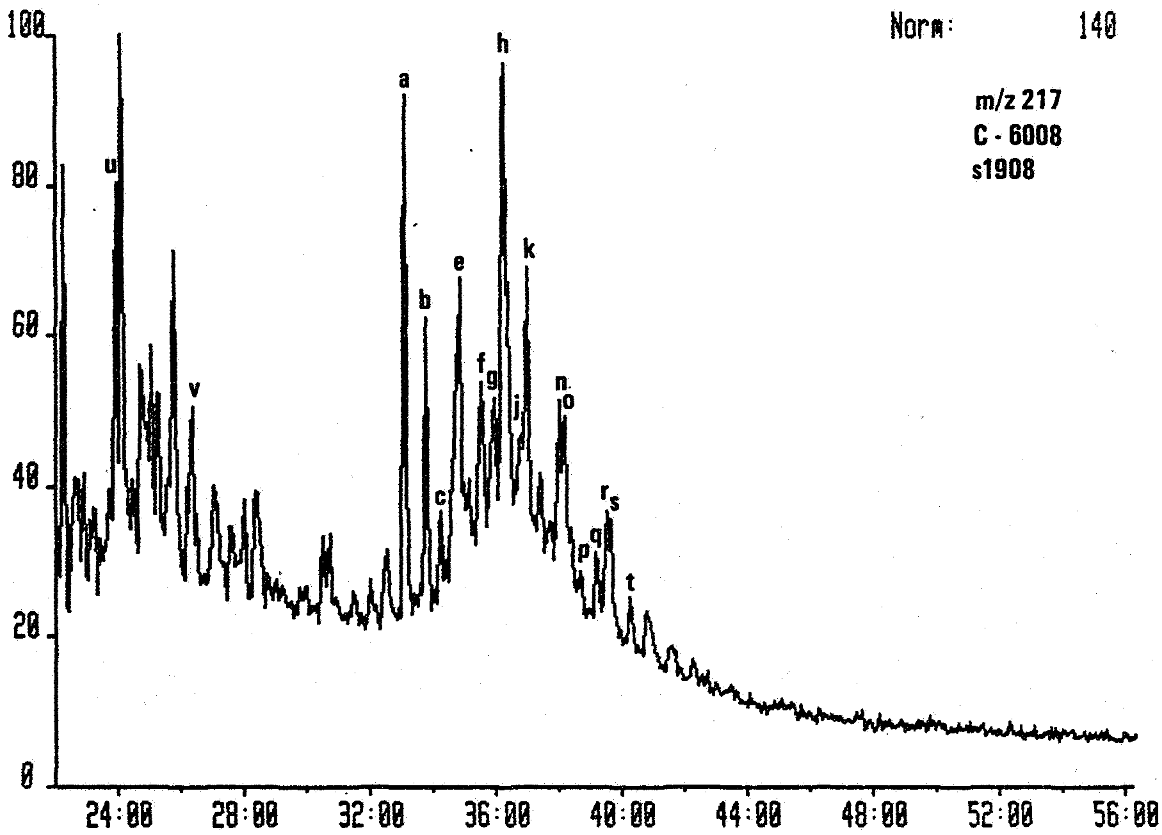


IV

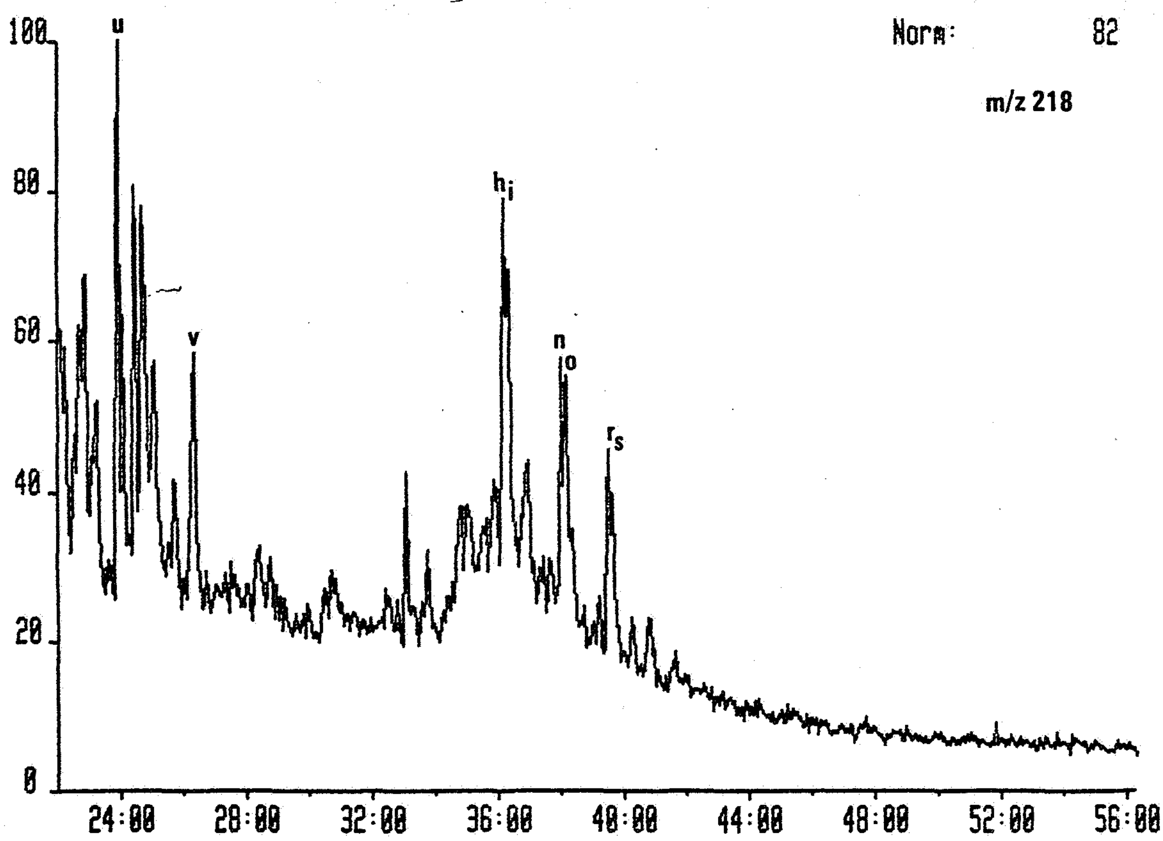


V

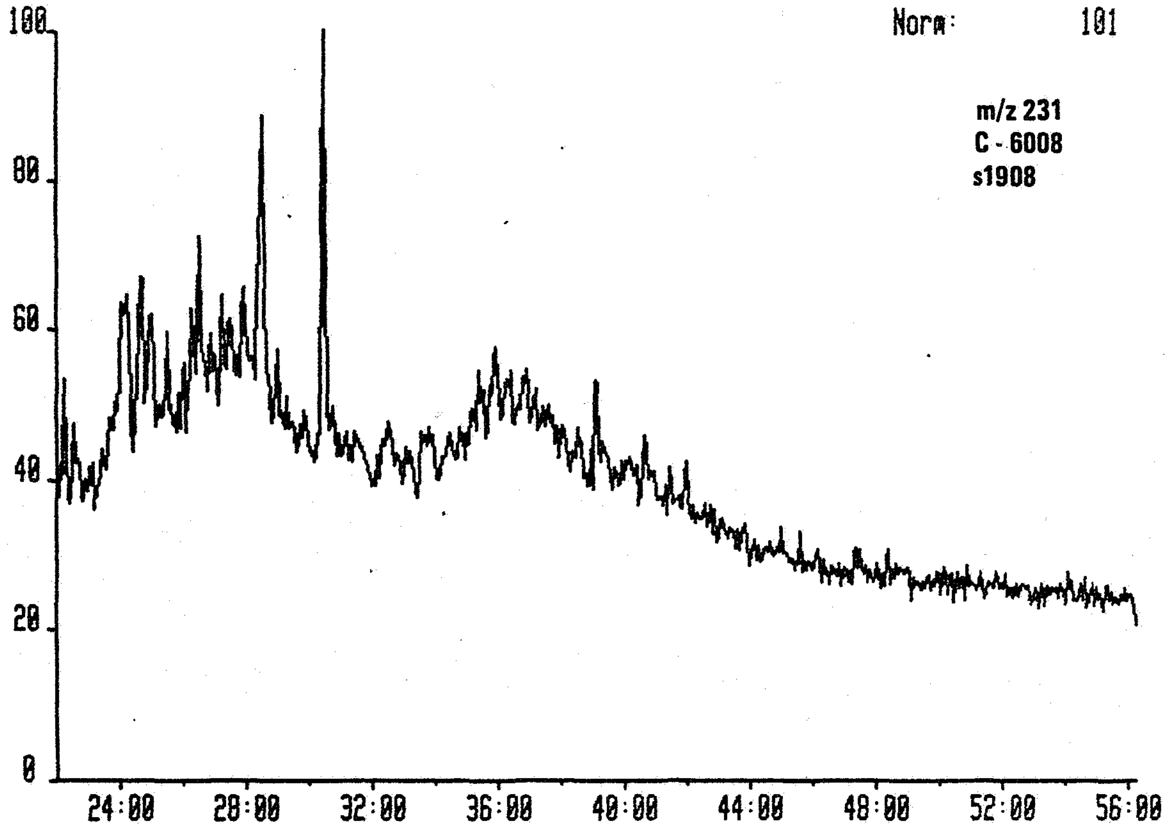
C6008 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



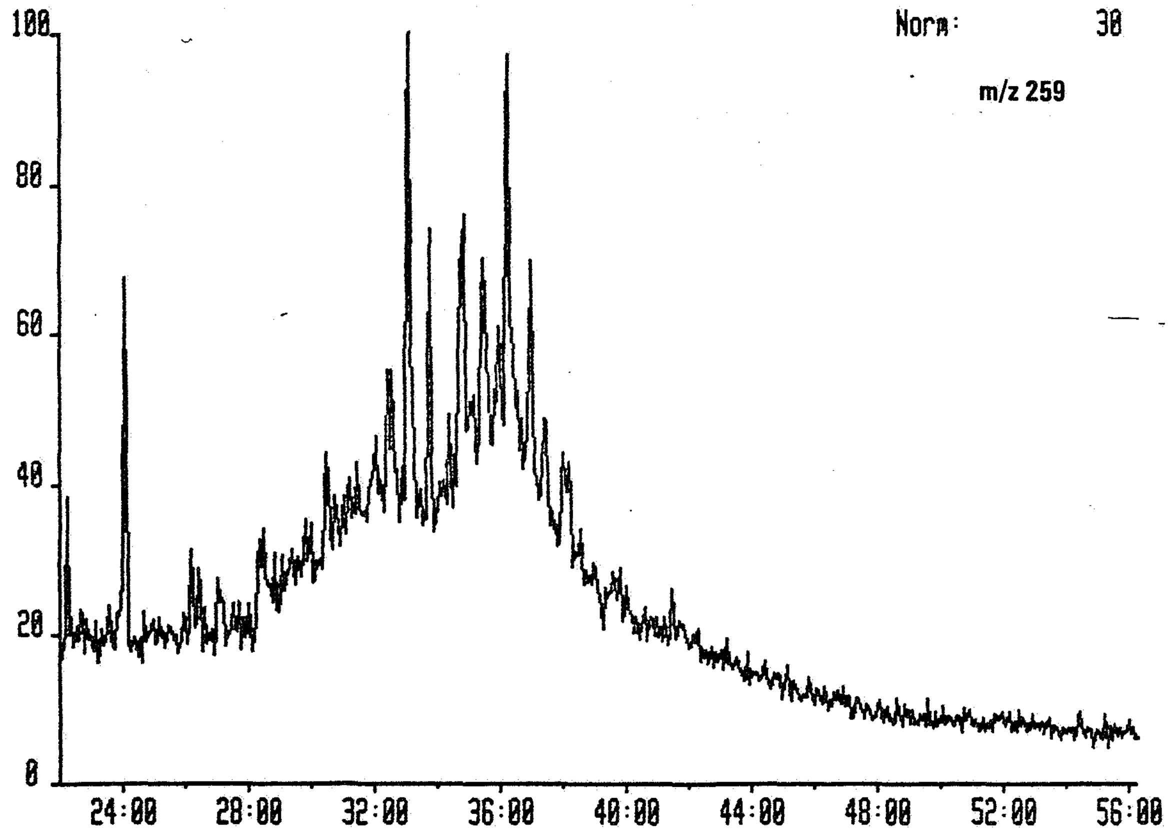
C6008 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



C6008 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:

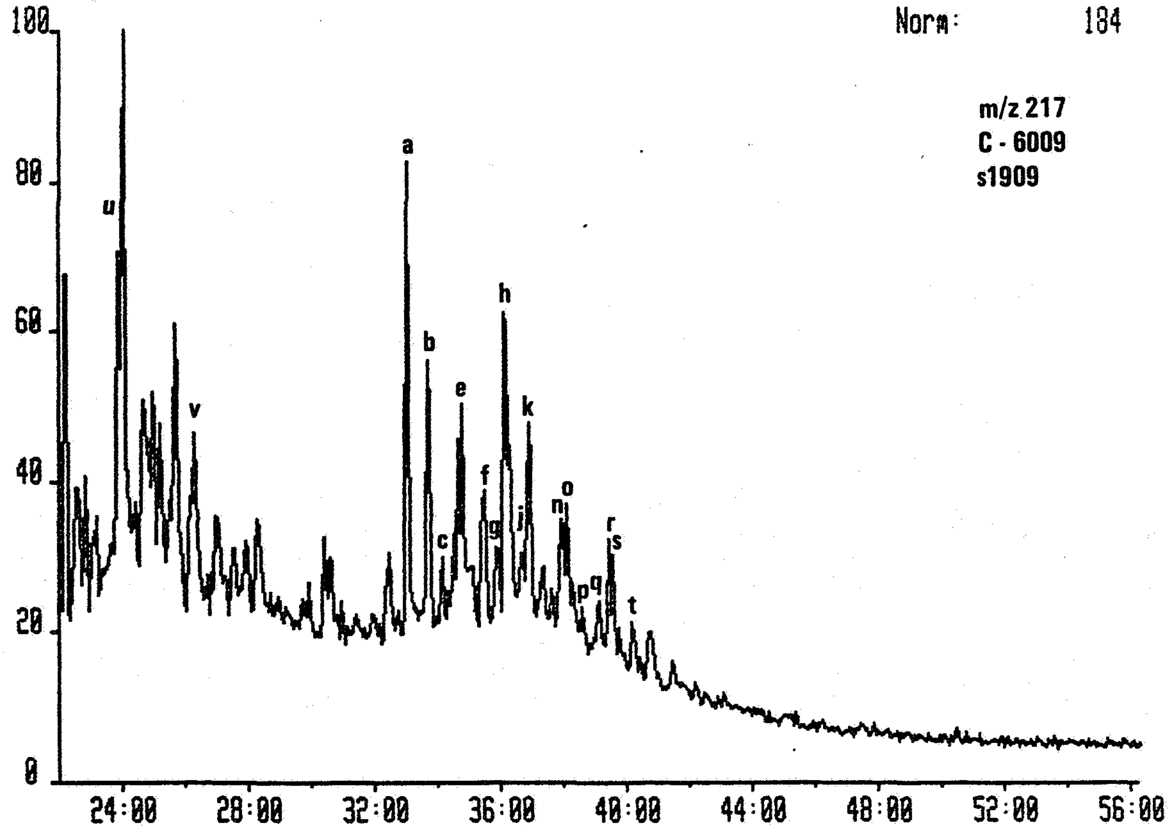


C6008 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:

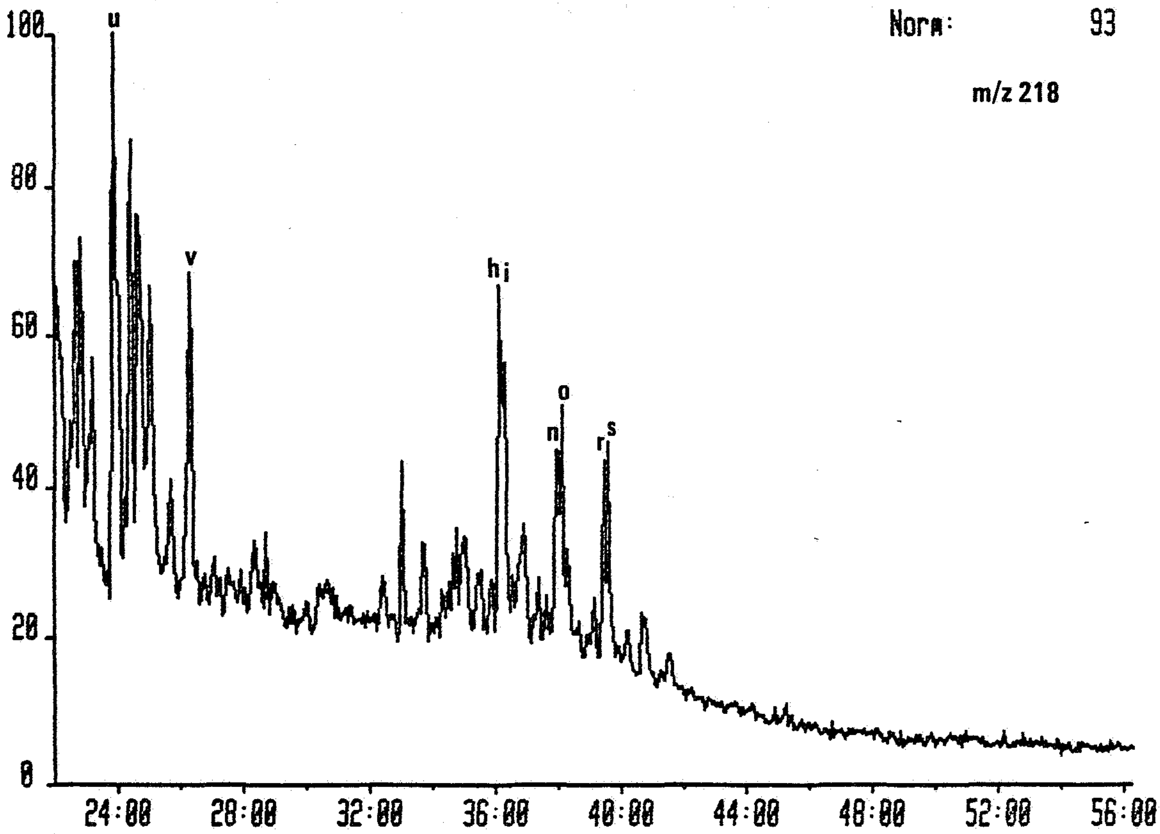


IKU SINTEF-GRUPPEN

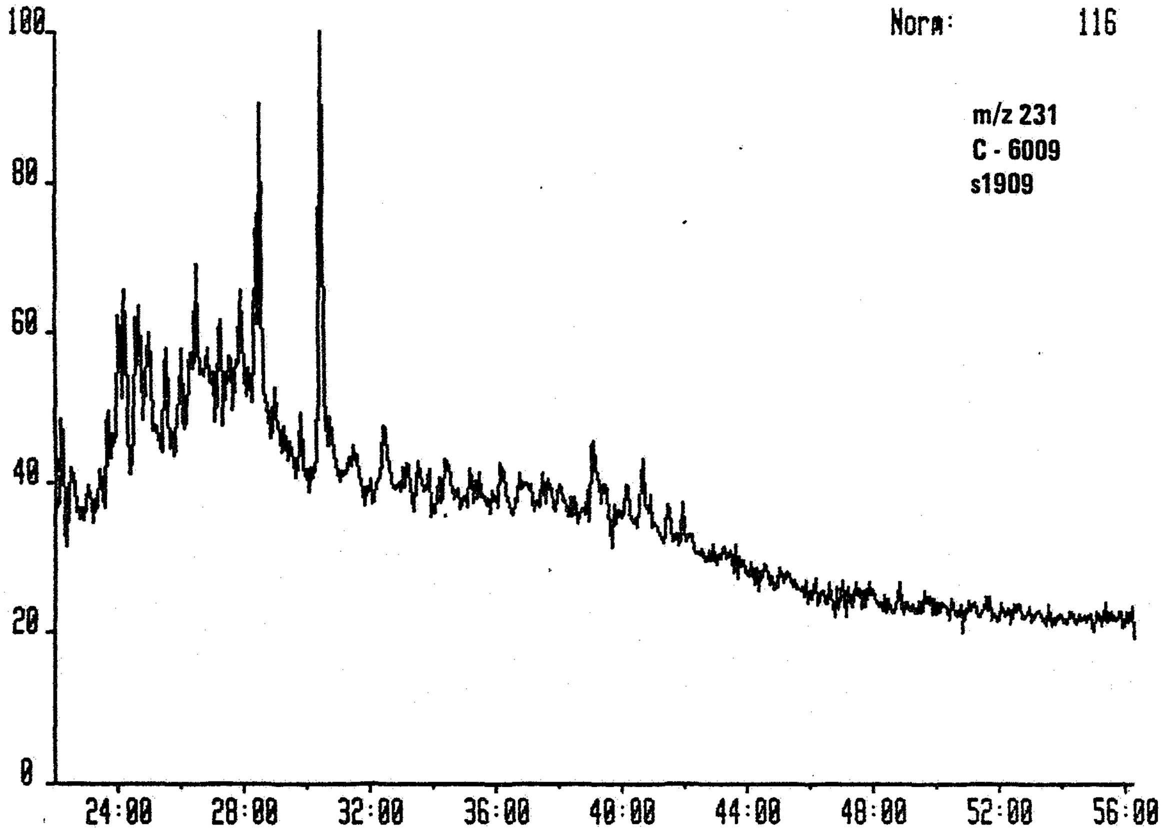
C6009 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



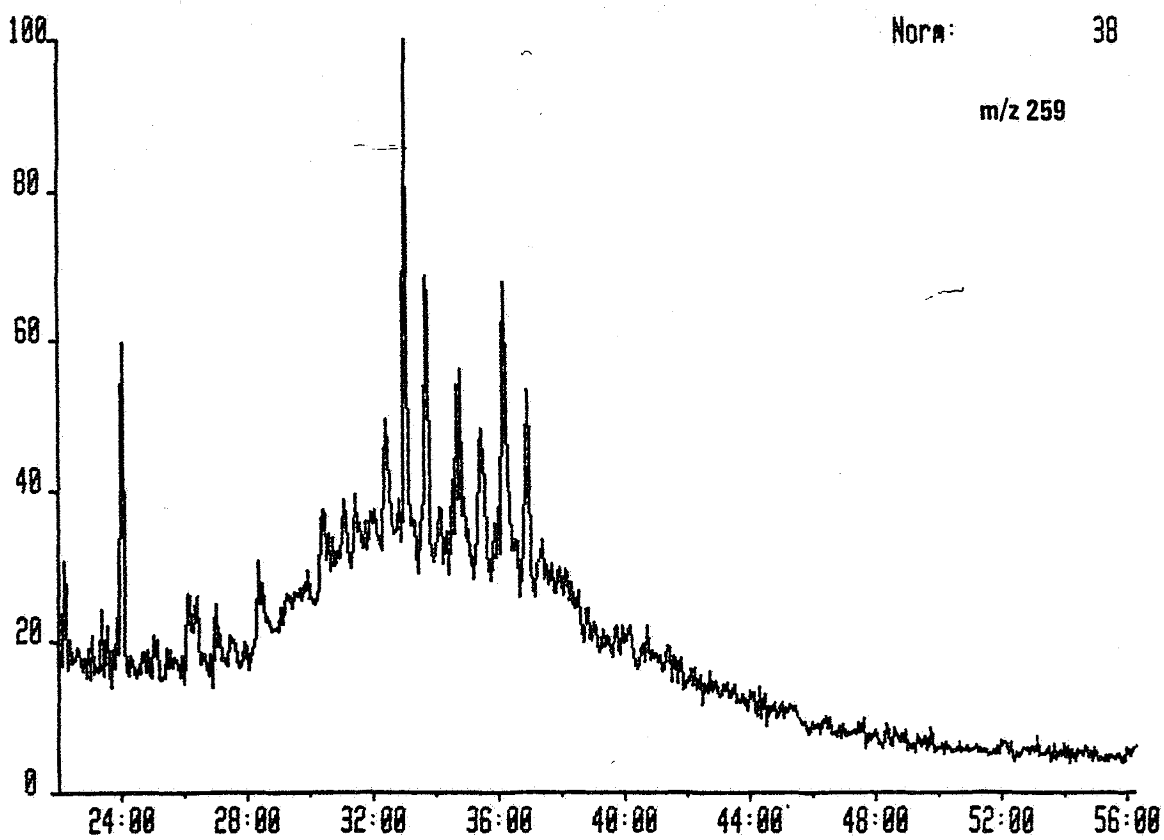
C6009 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



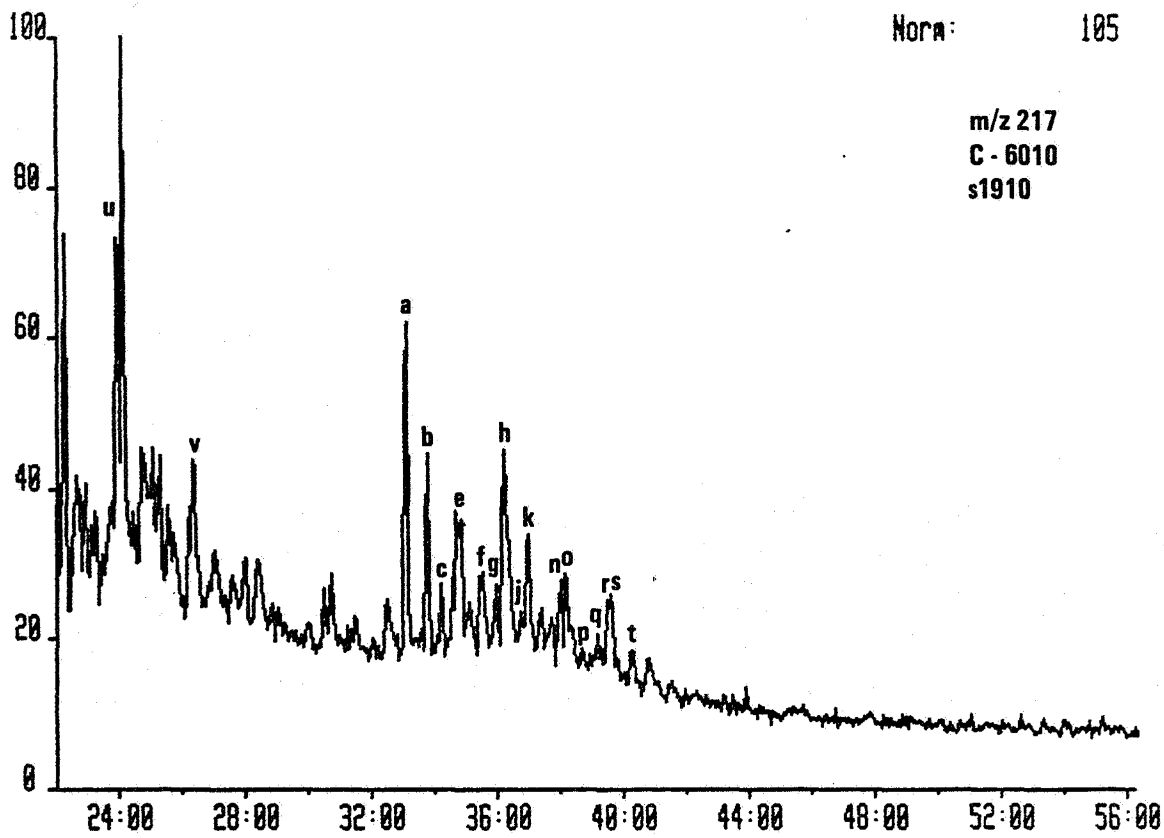
C6009 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



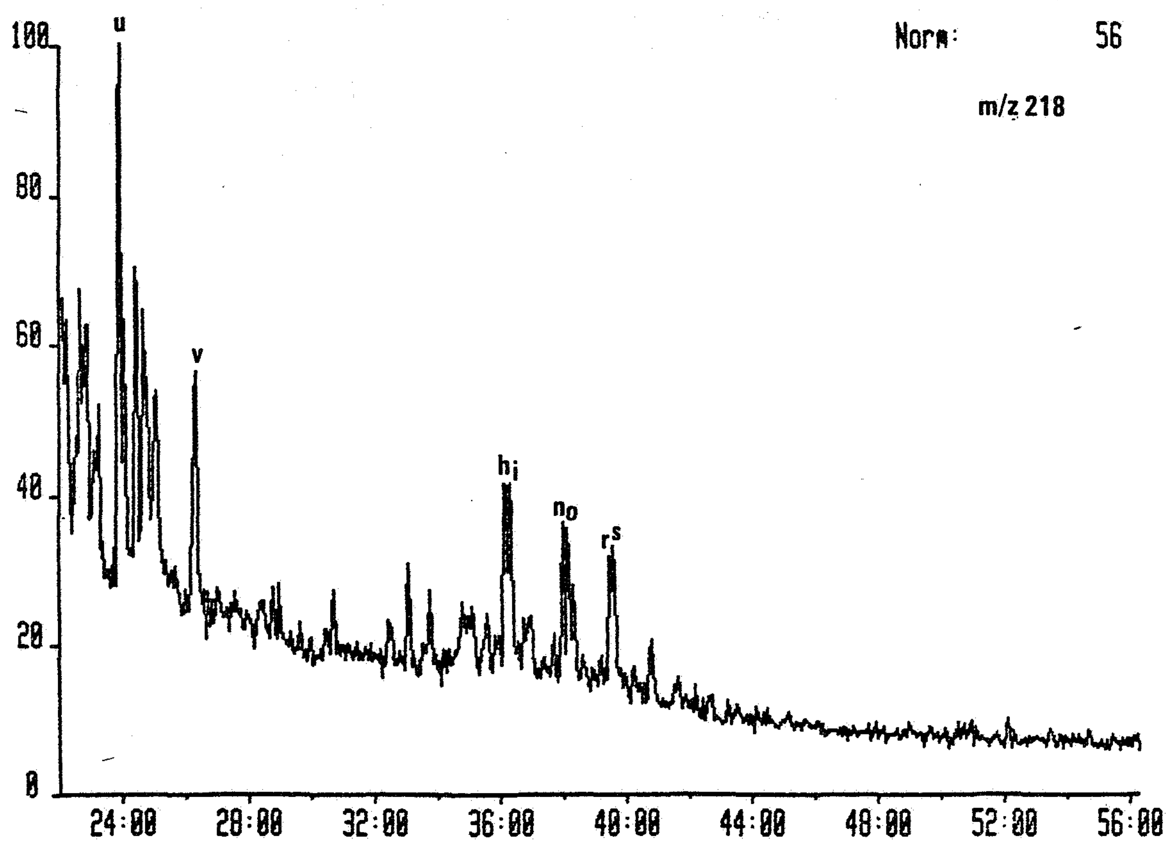
C6009 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



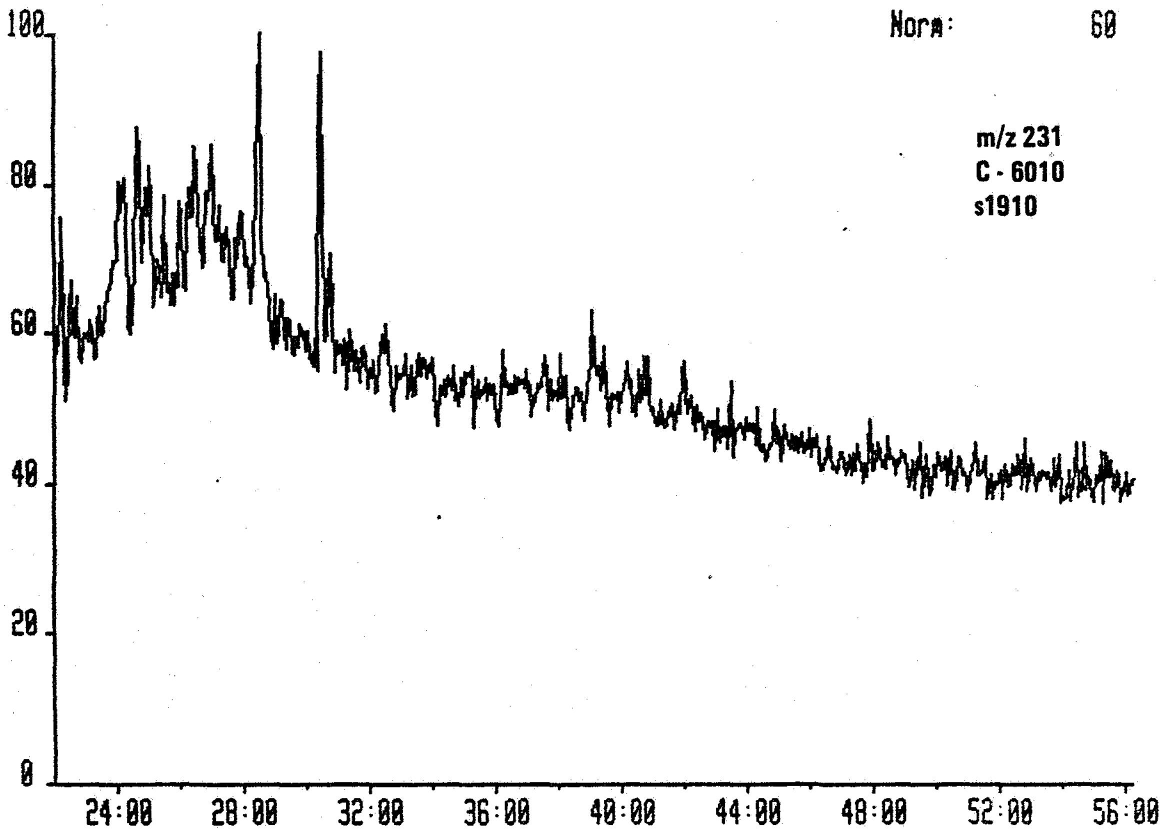
C6010 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



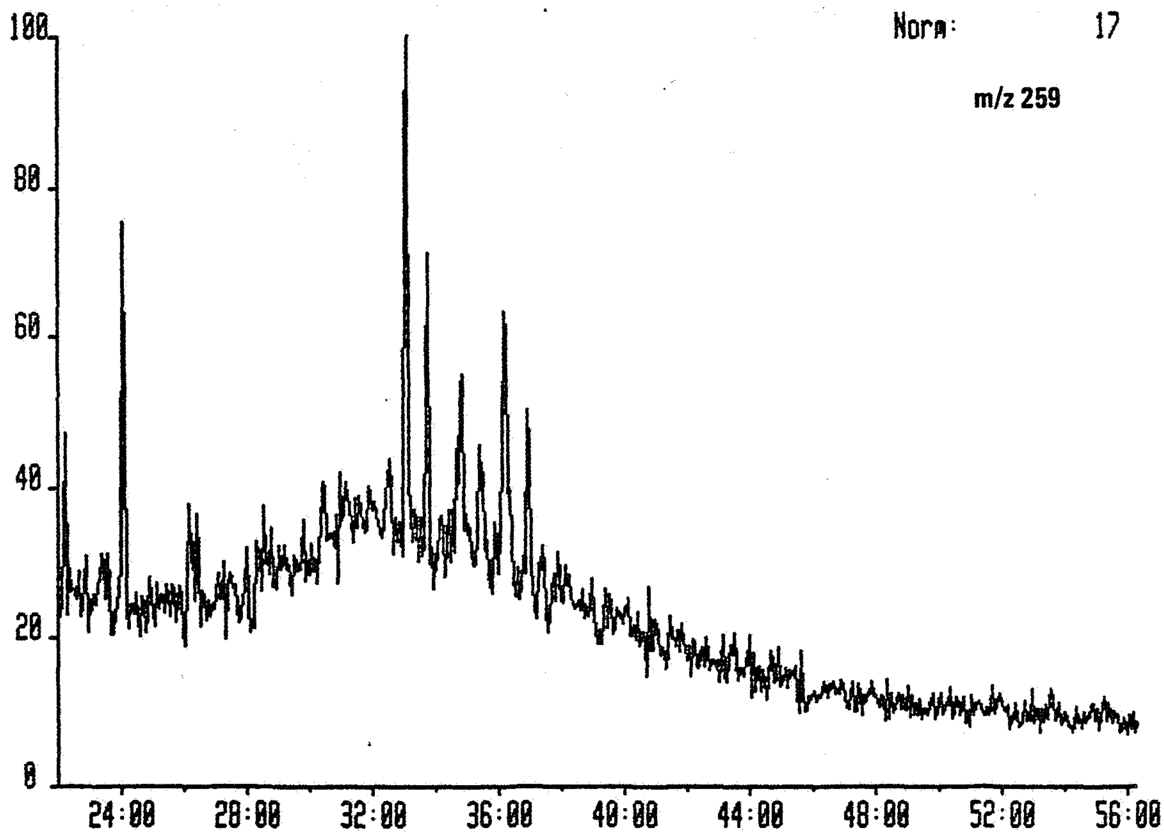
C6010 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



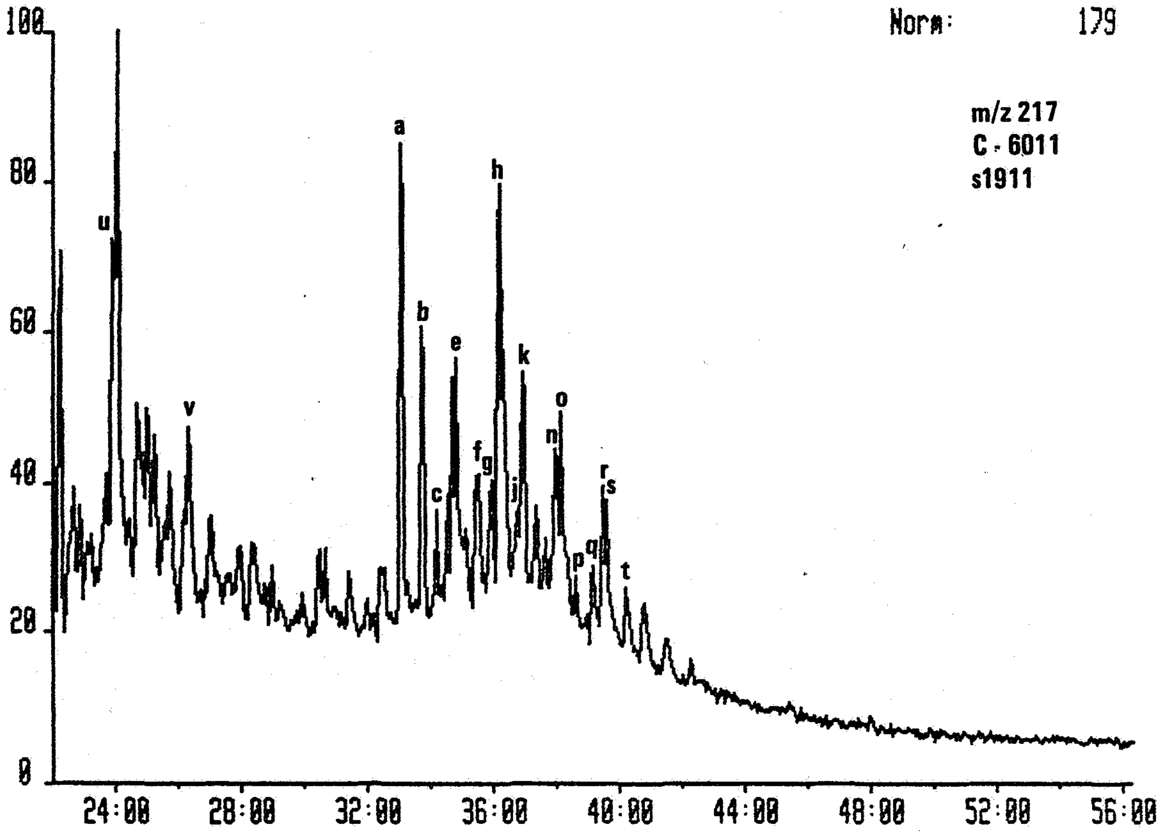
C6010 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



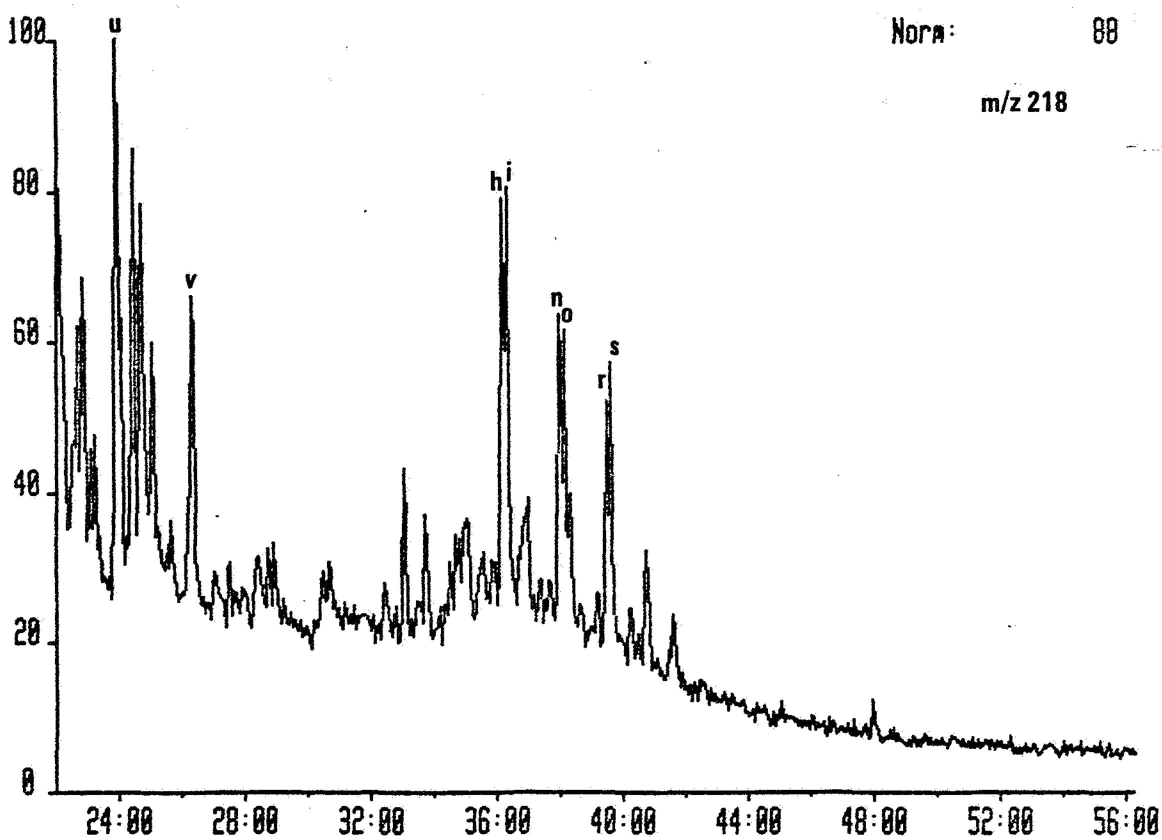
C6010 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



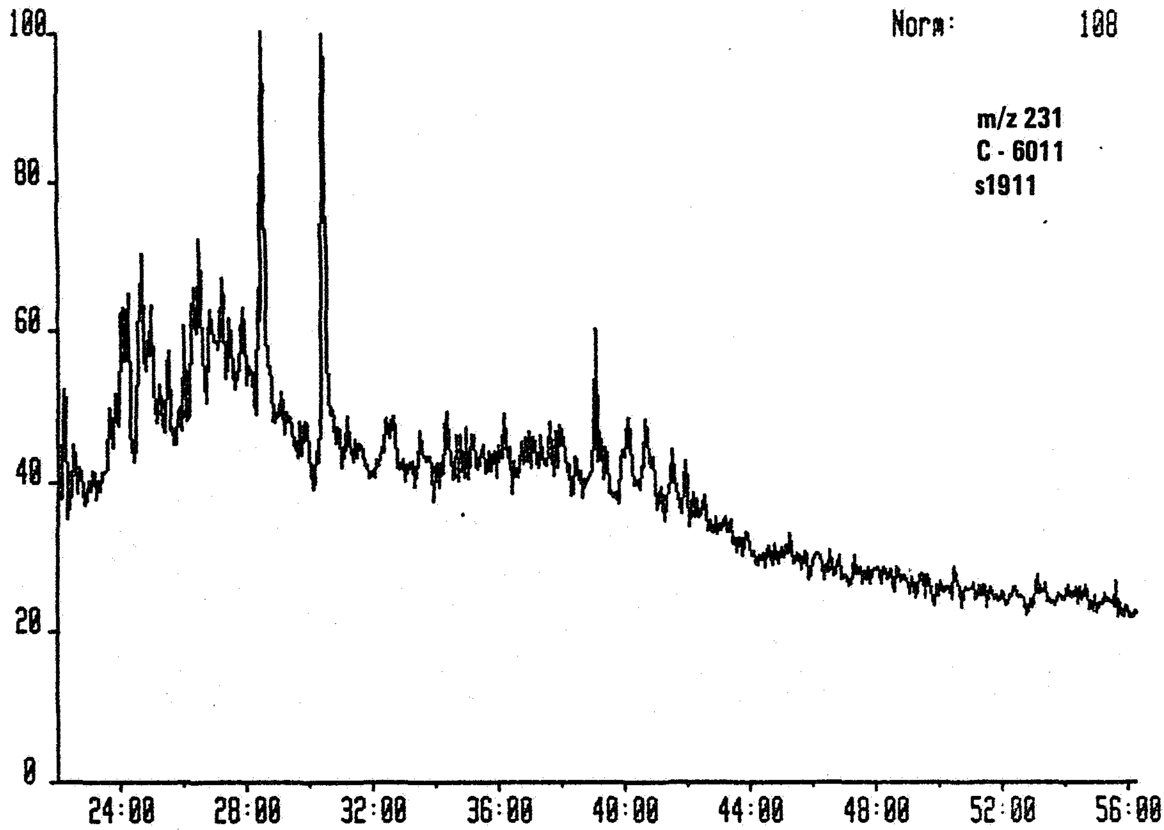
C6011 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



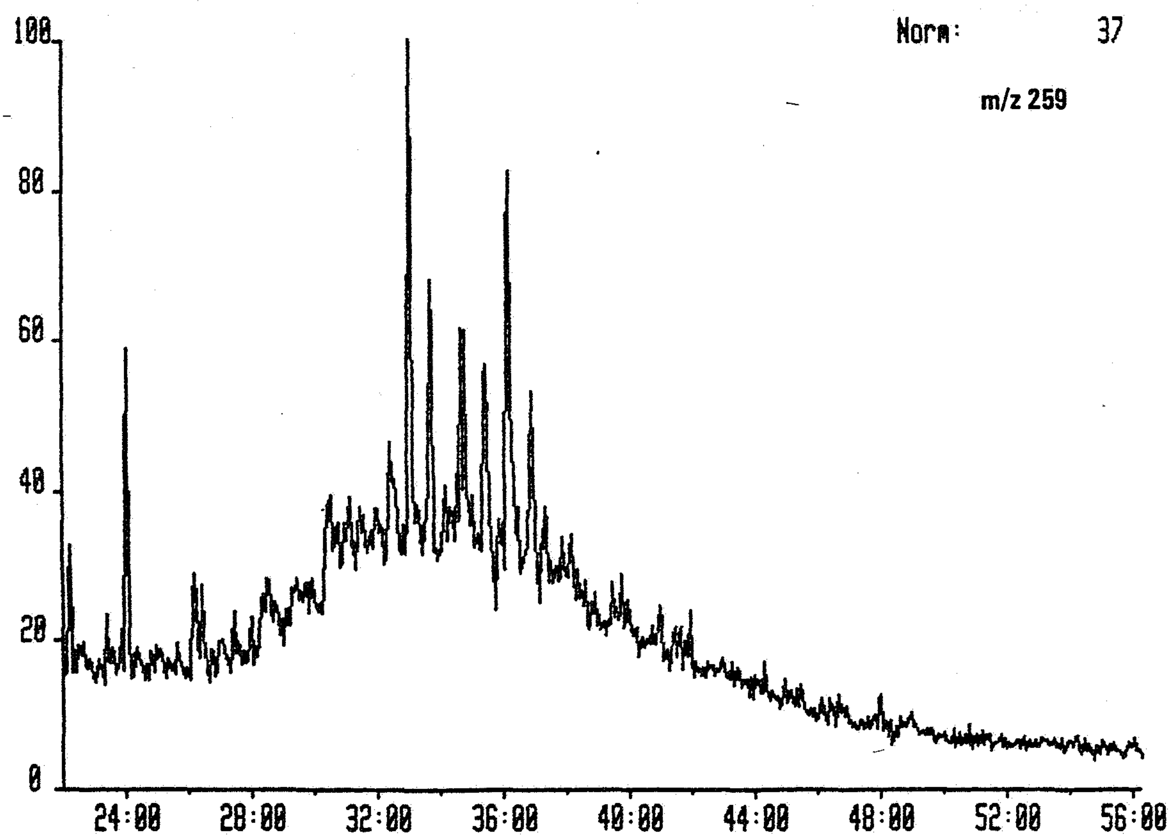
C6011 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



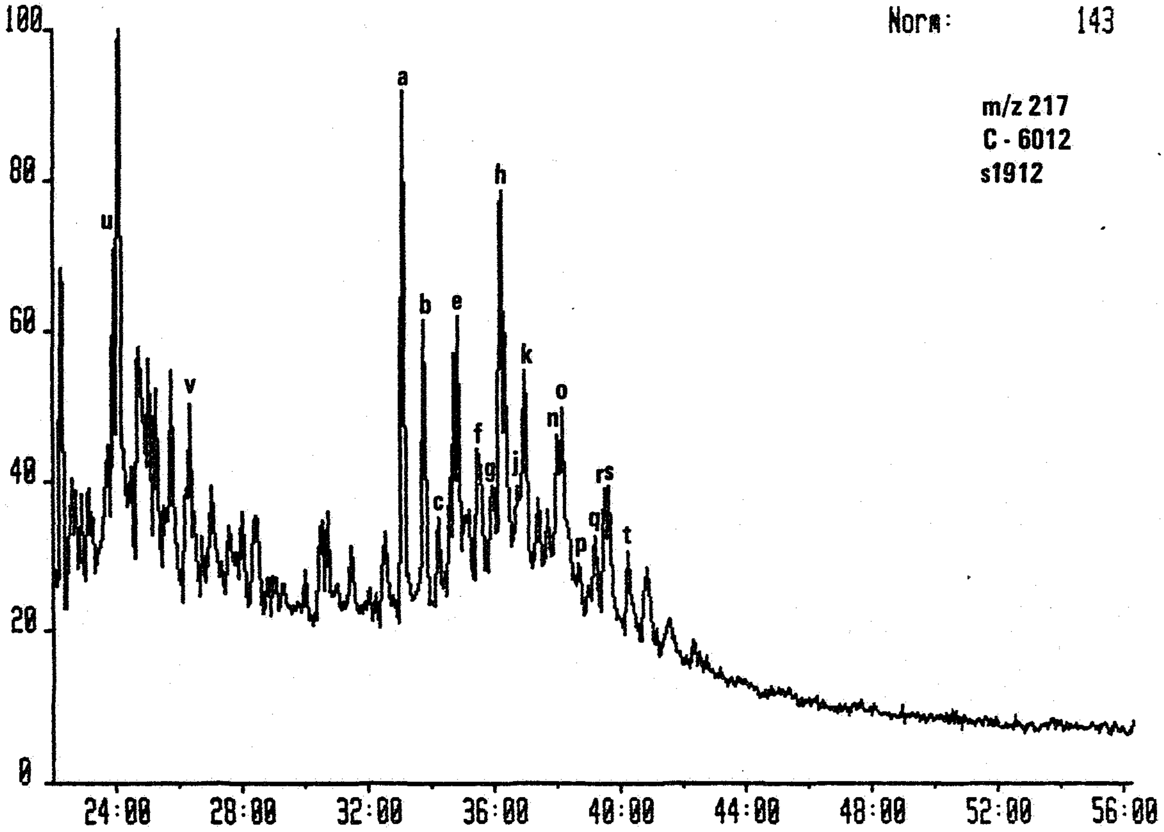
C6011 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



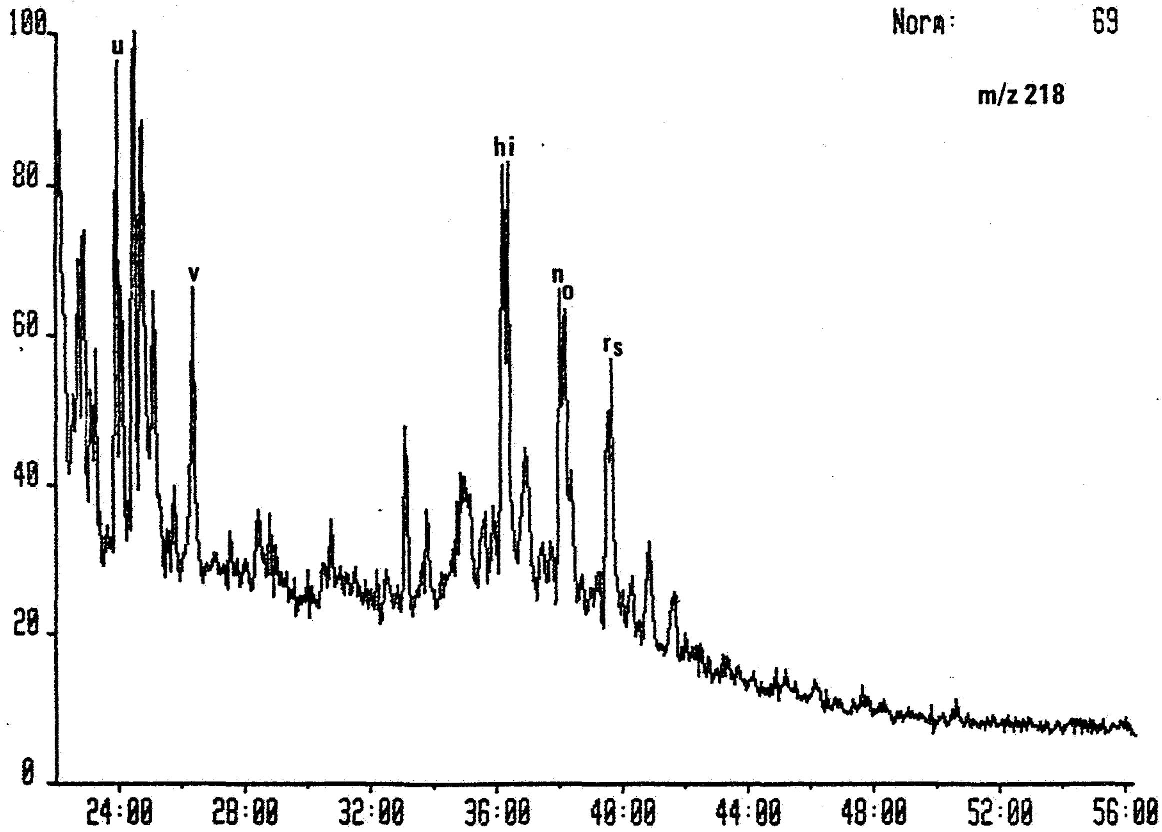
C6011 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



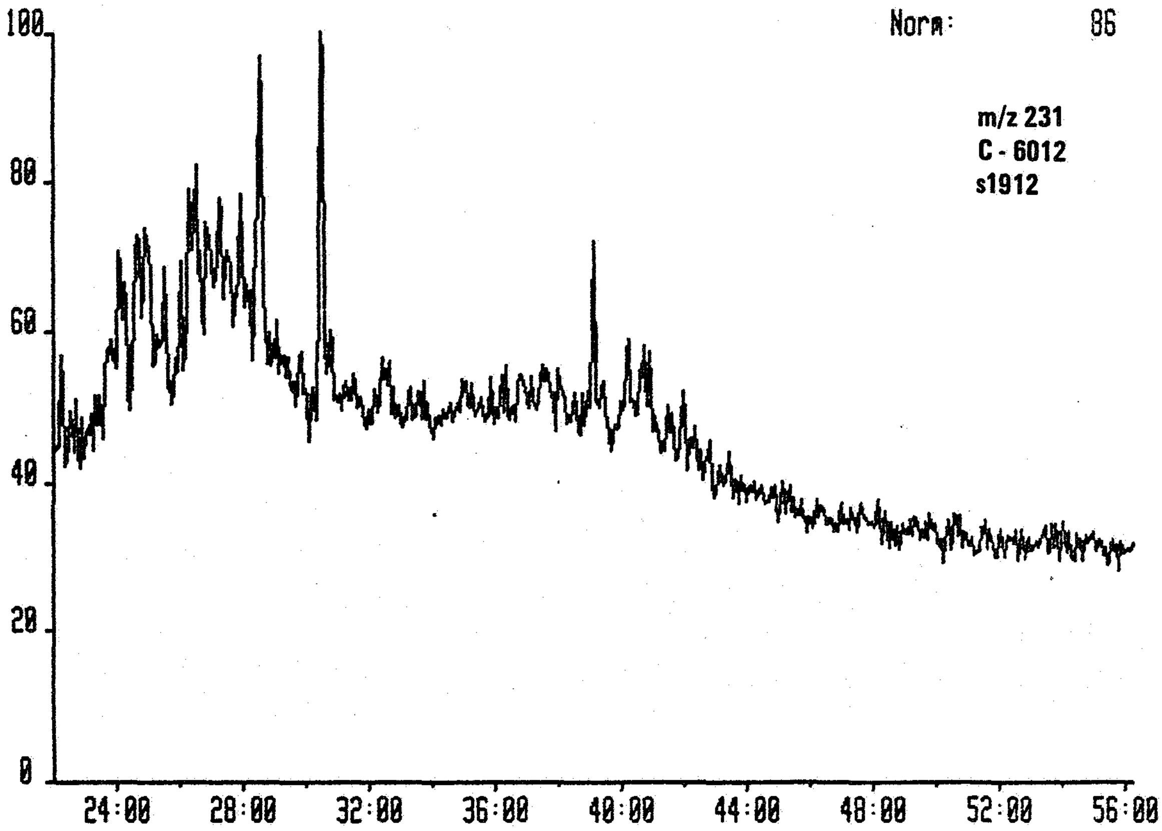
C6012 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



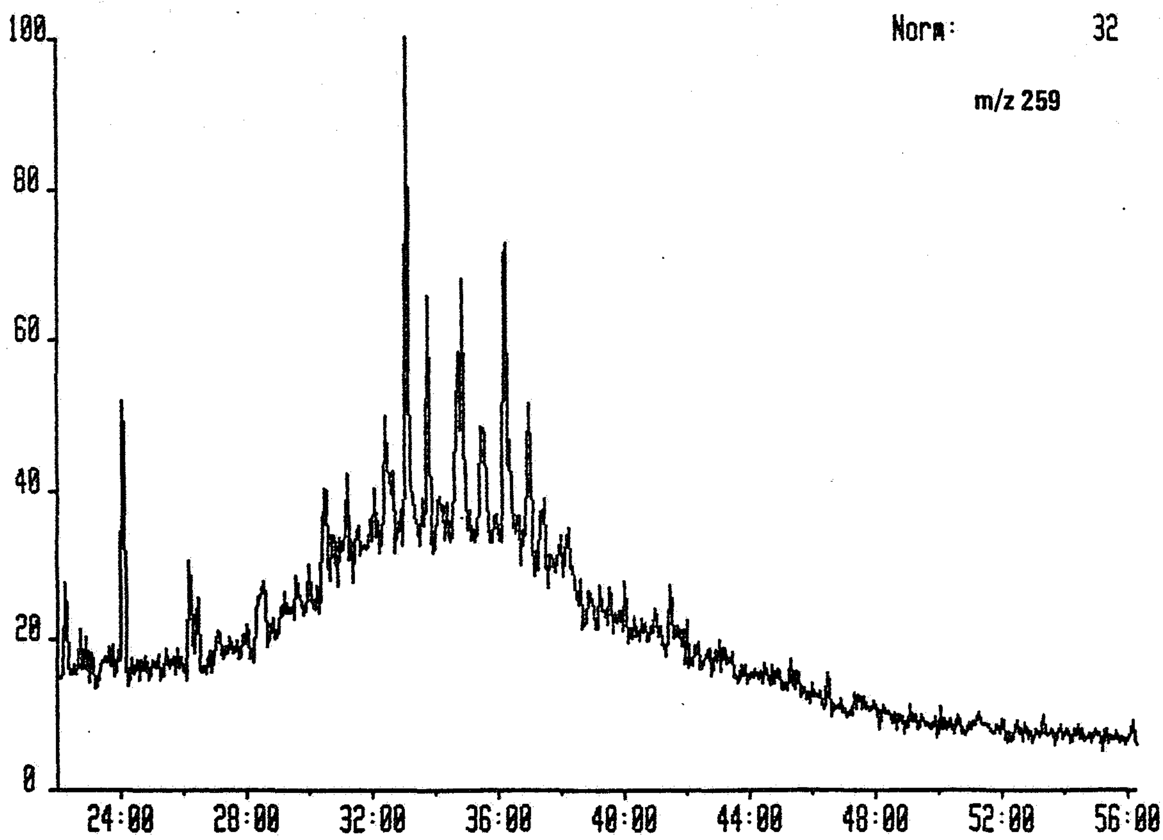
C6012 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



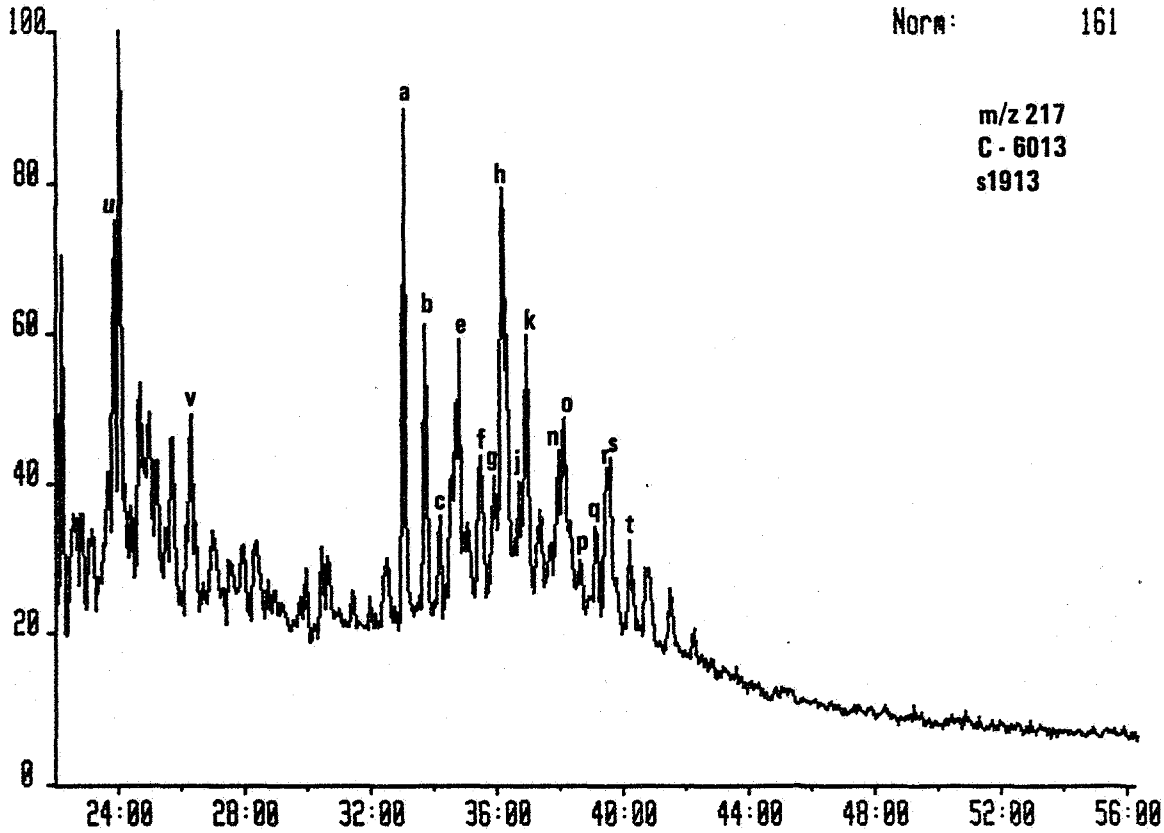
C6012 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



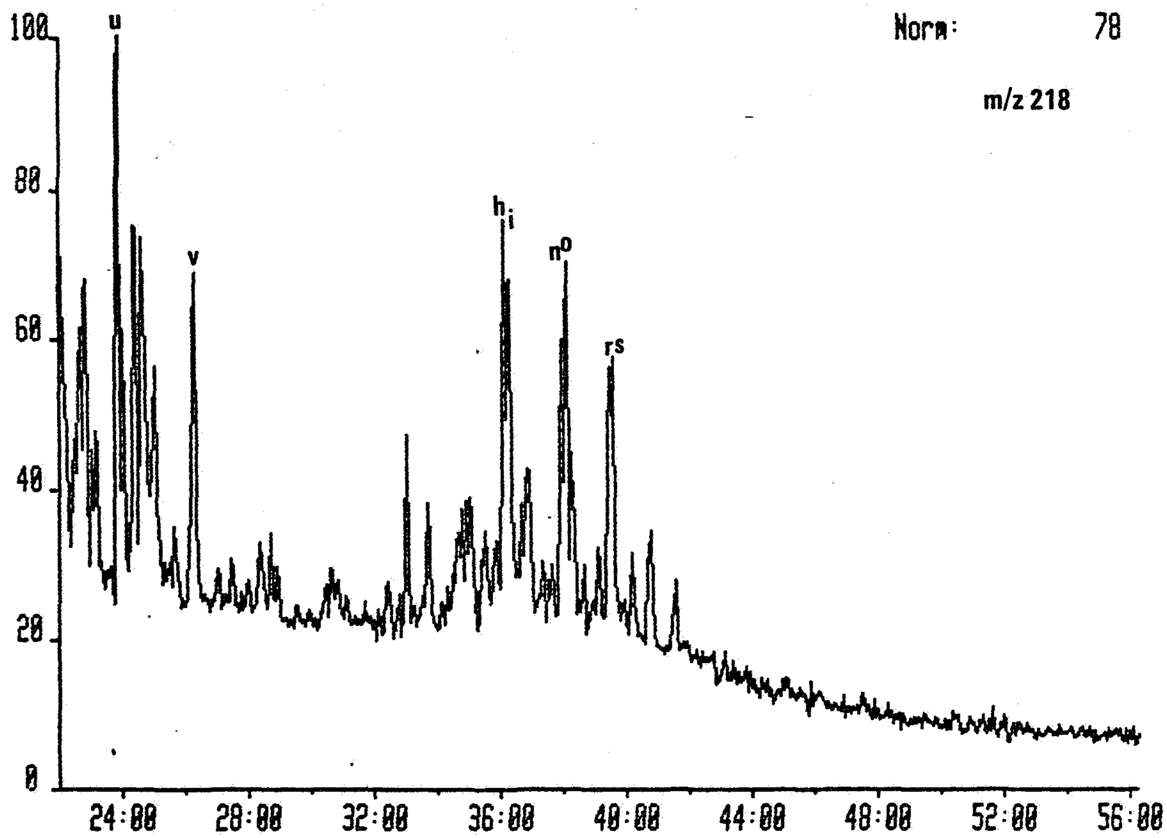
C6012 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



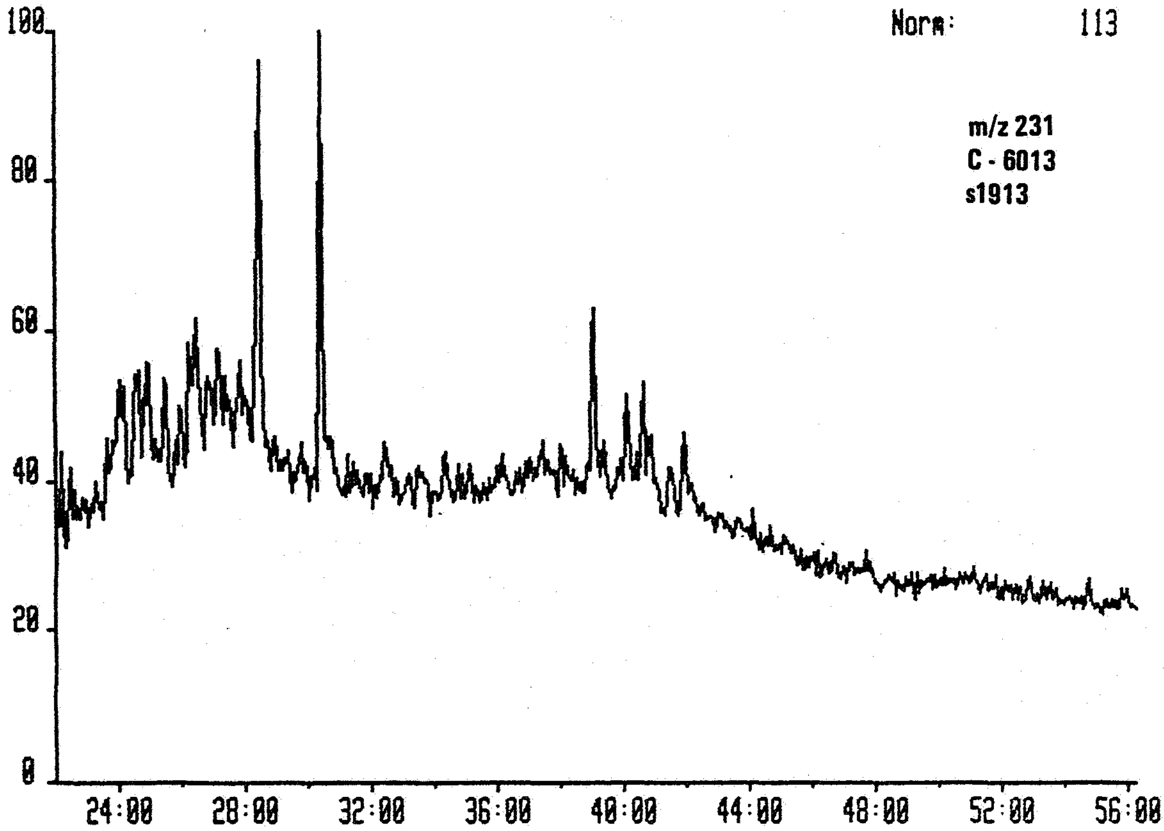
C6013 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



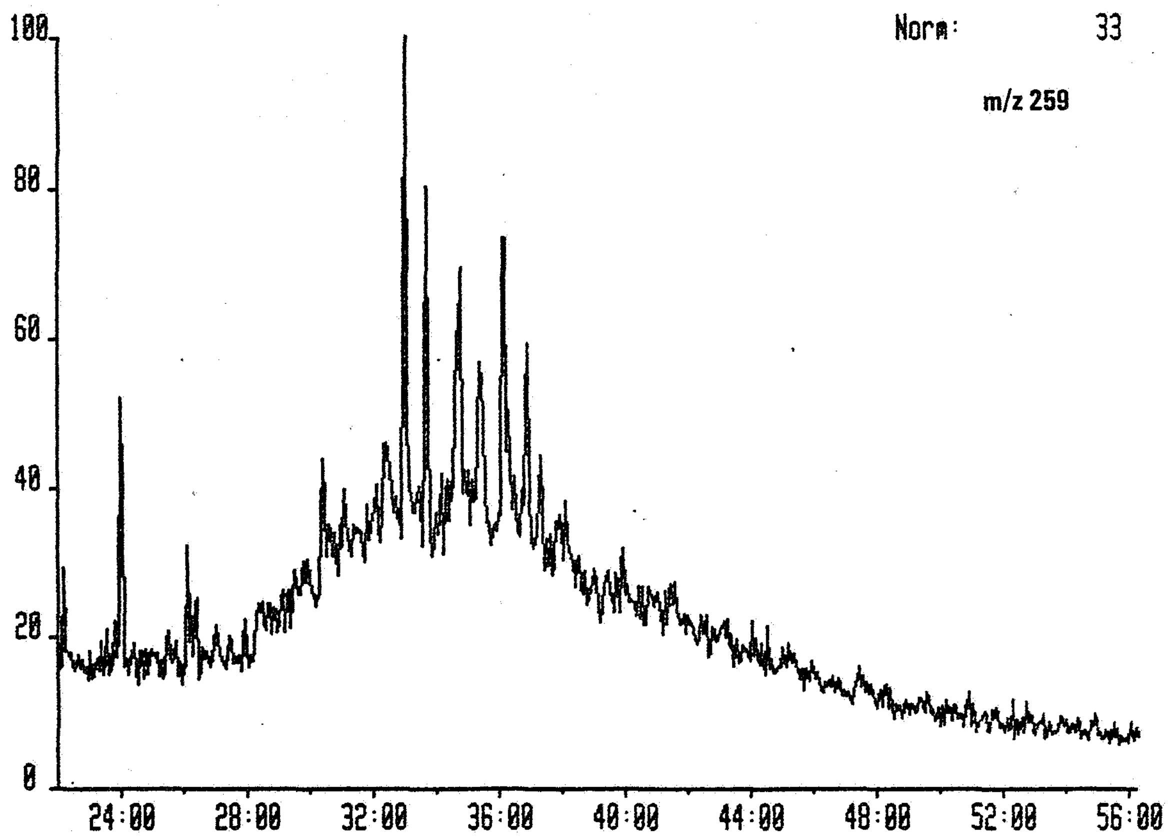
C6013 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



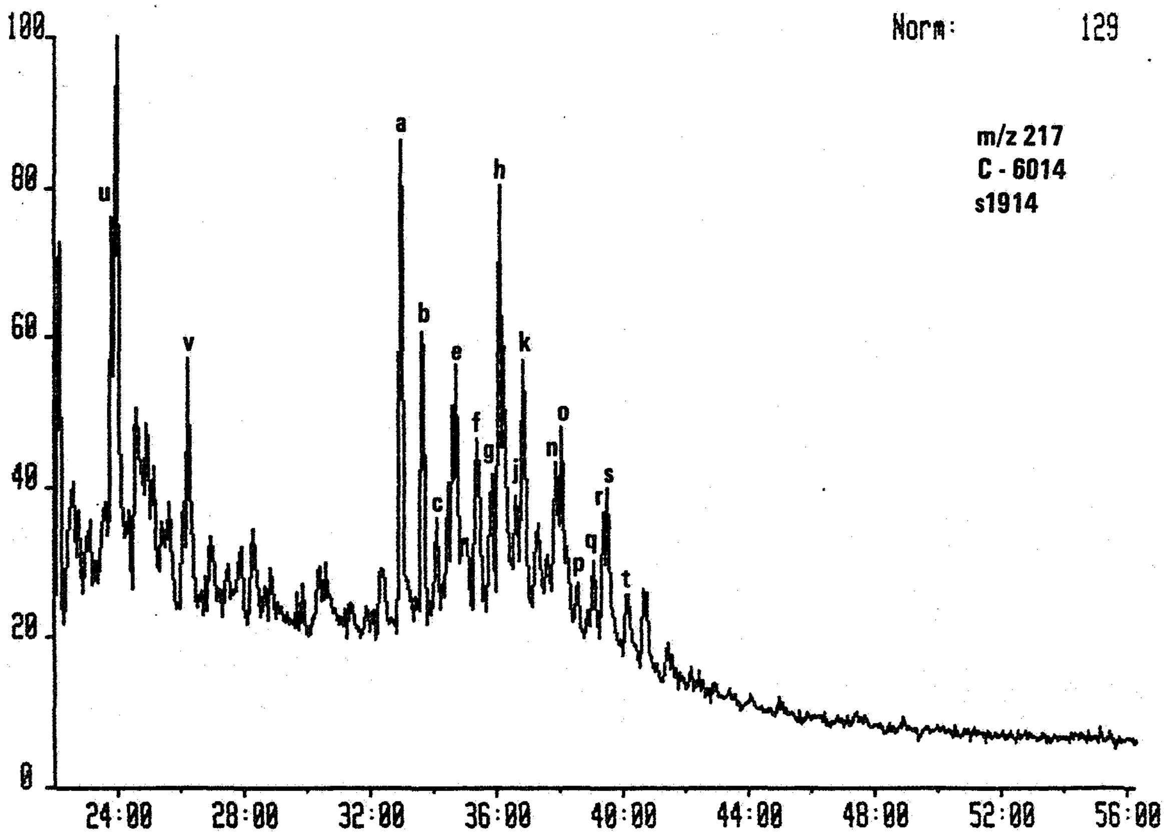
C6013 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



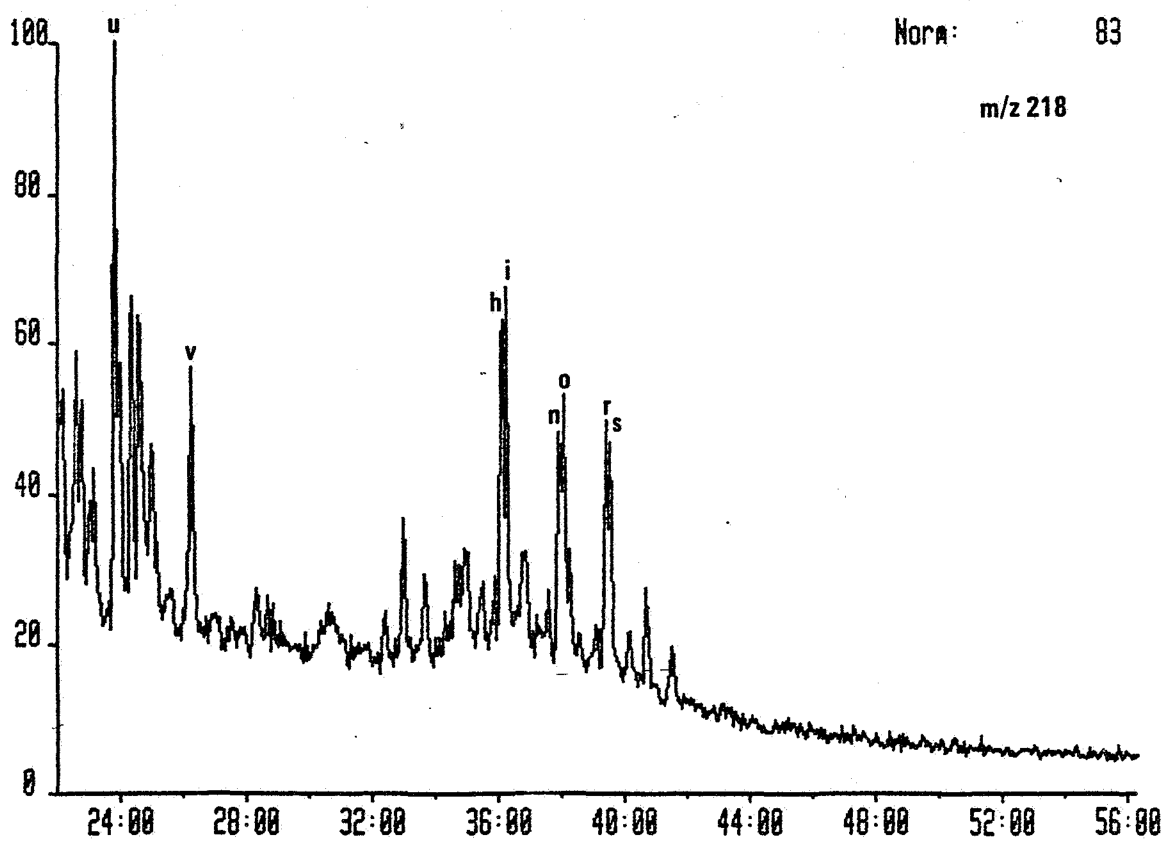
C6013 24-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



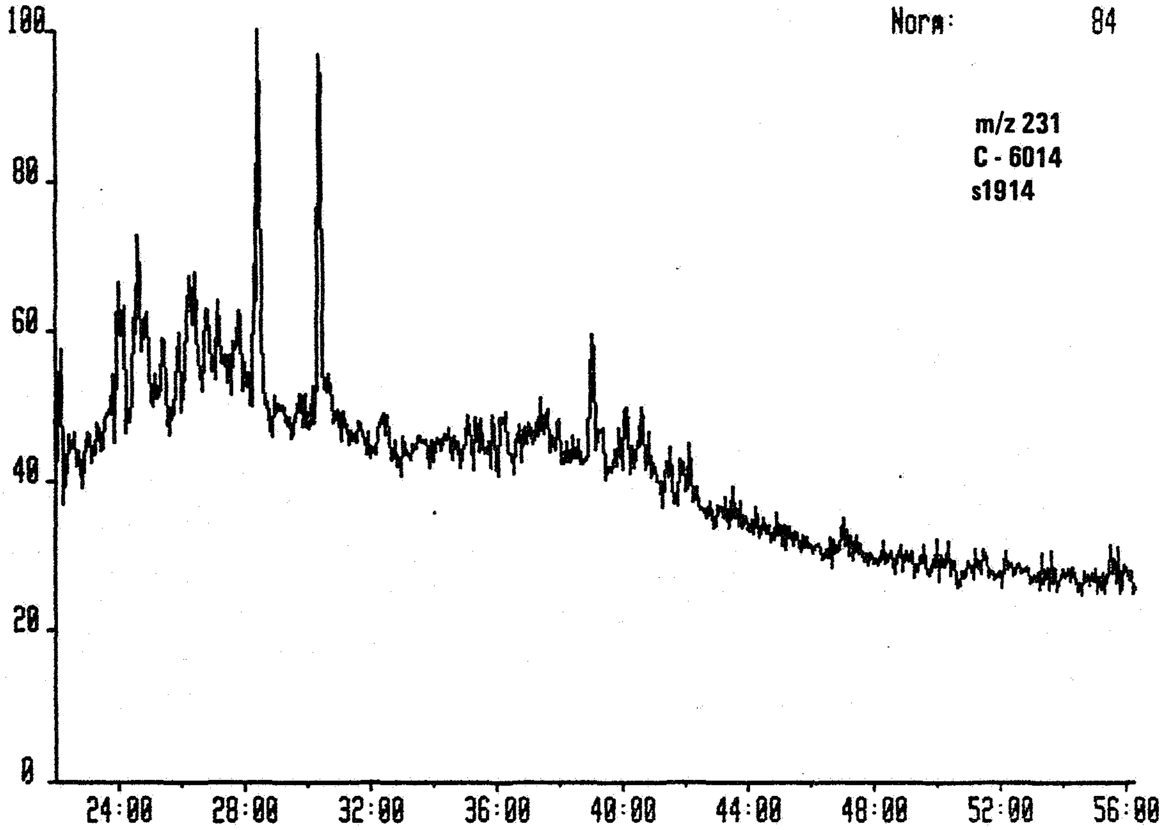
C6014 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



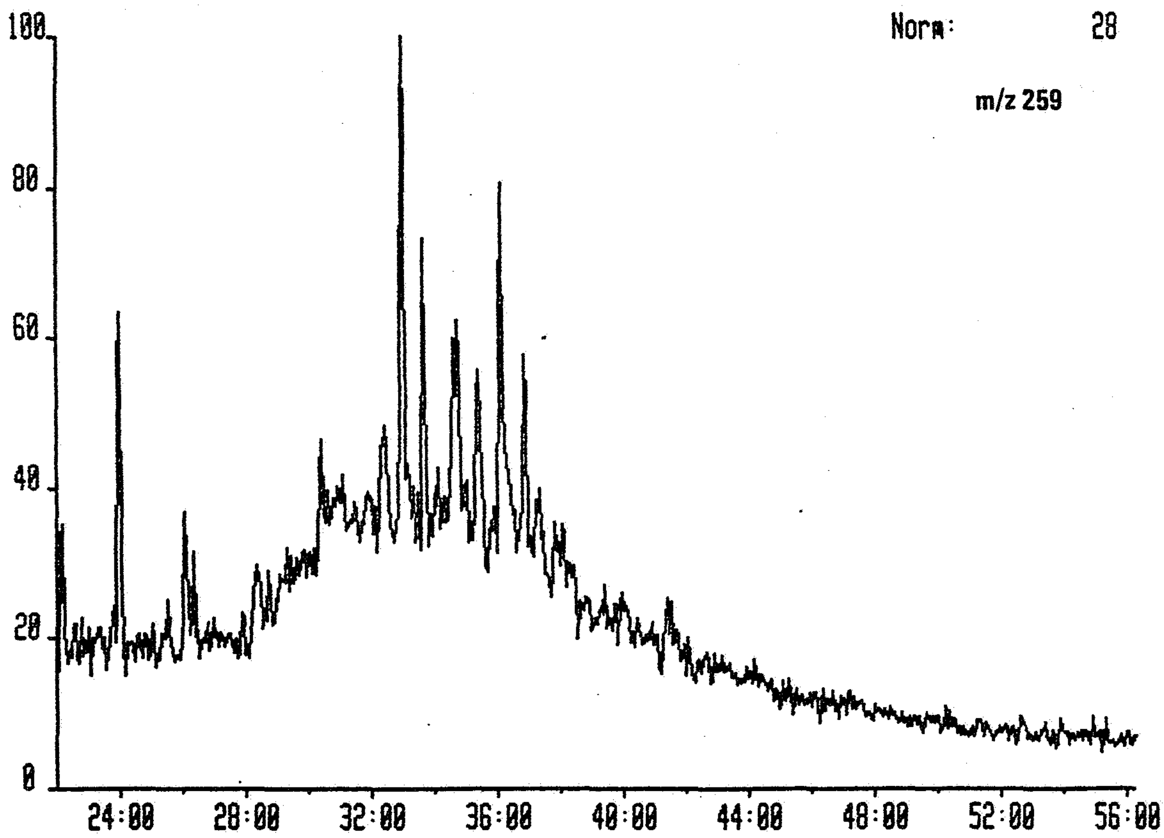
C6014 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



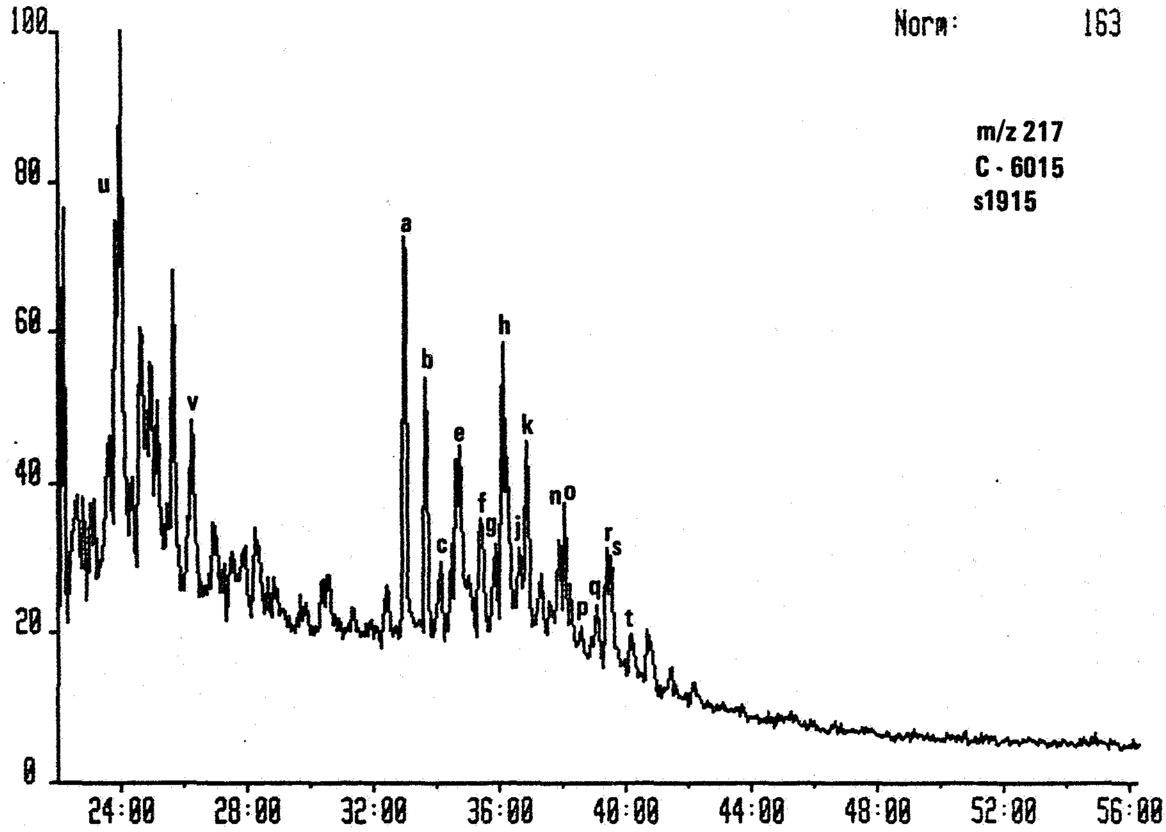
C6014 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



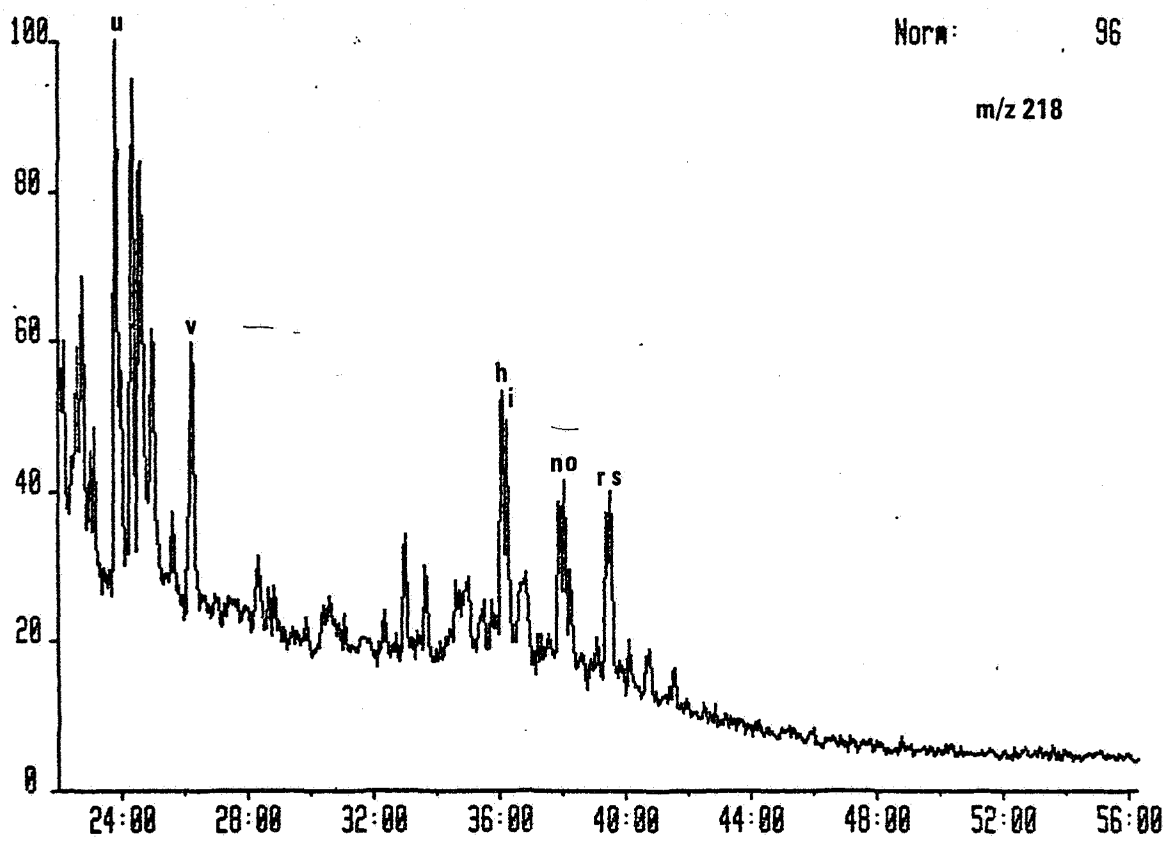
C6014 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



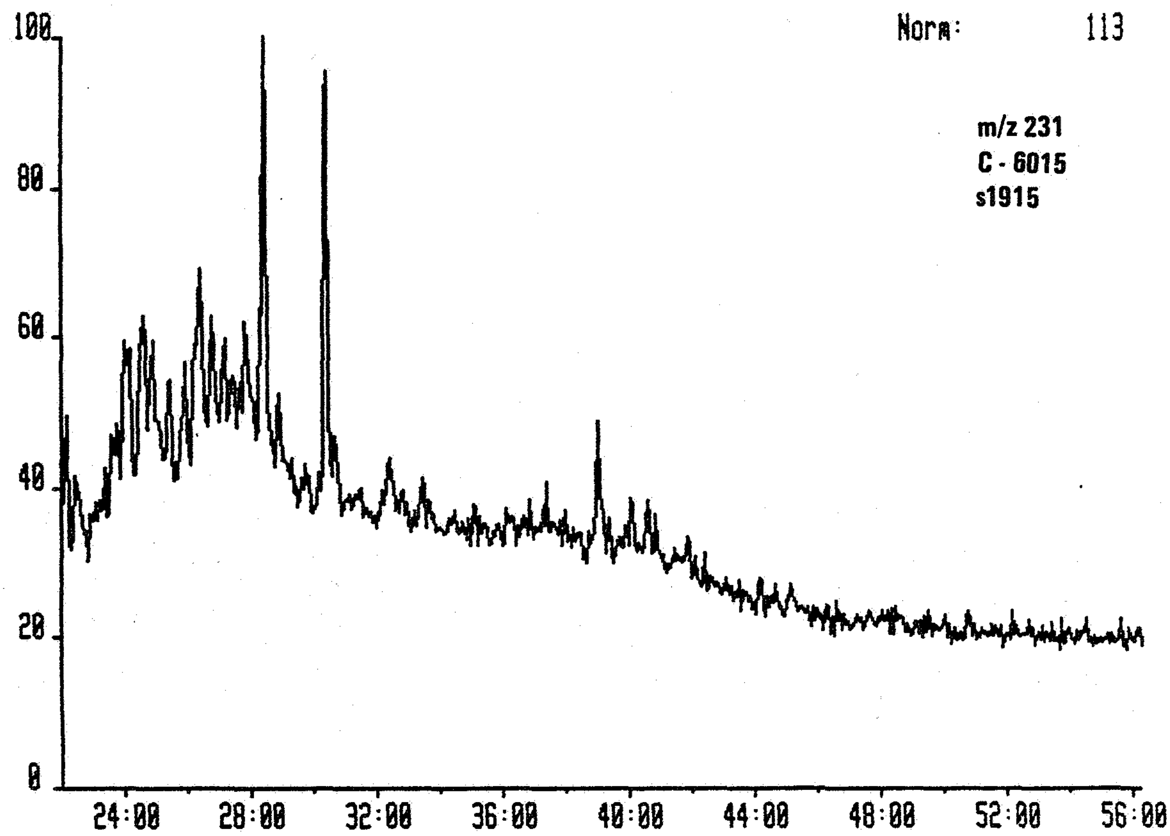
C6015 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



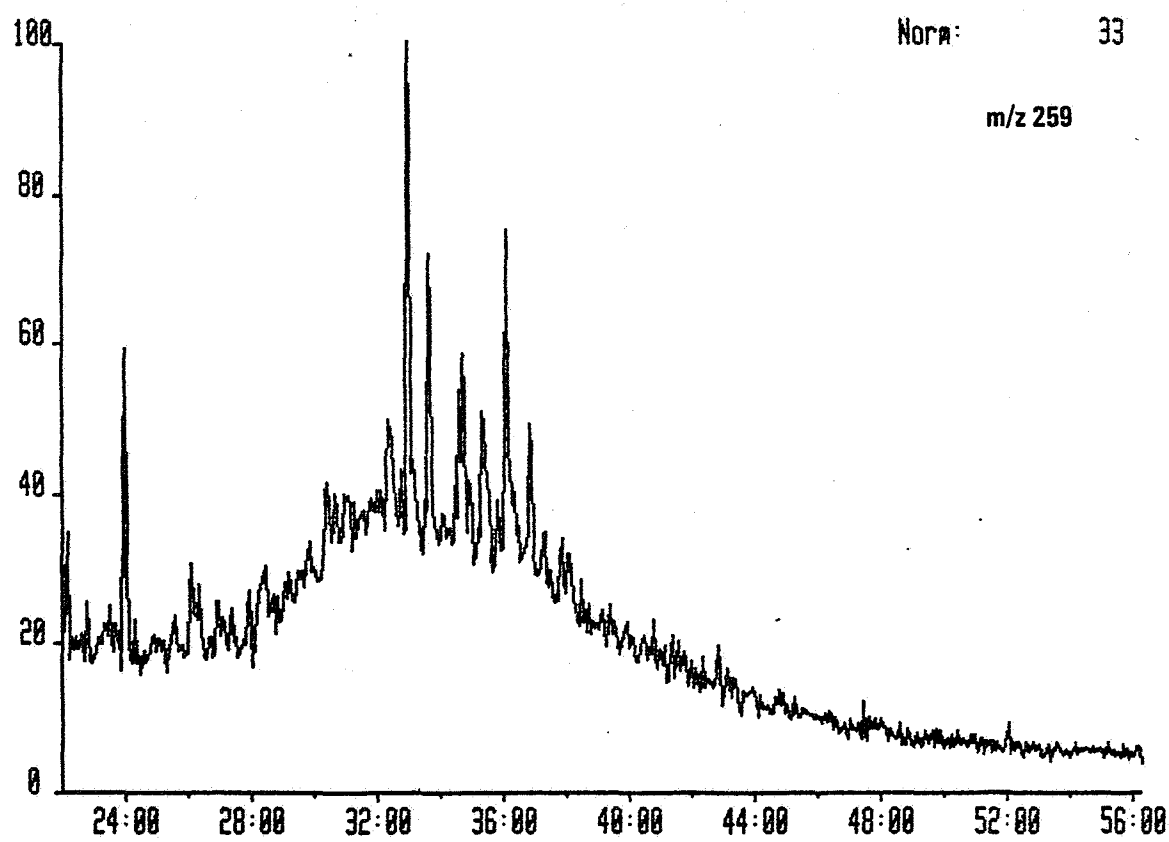
C6015 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



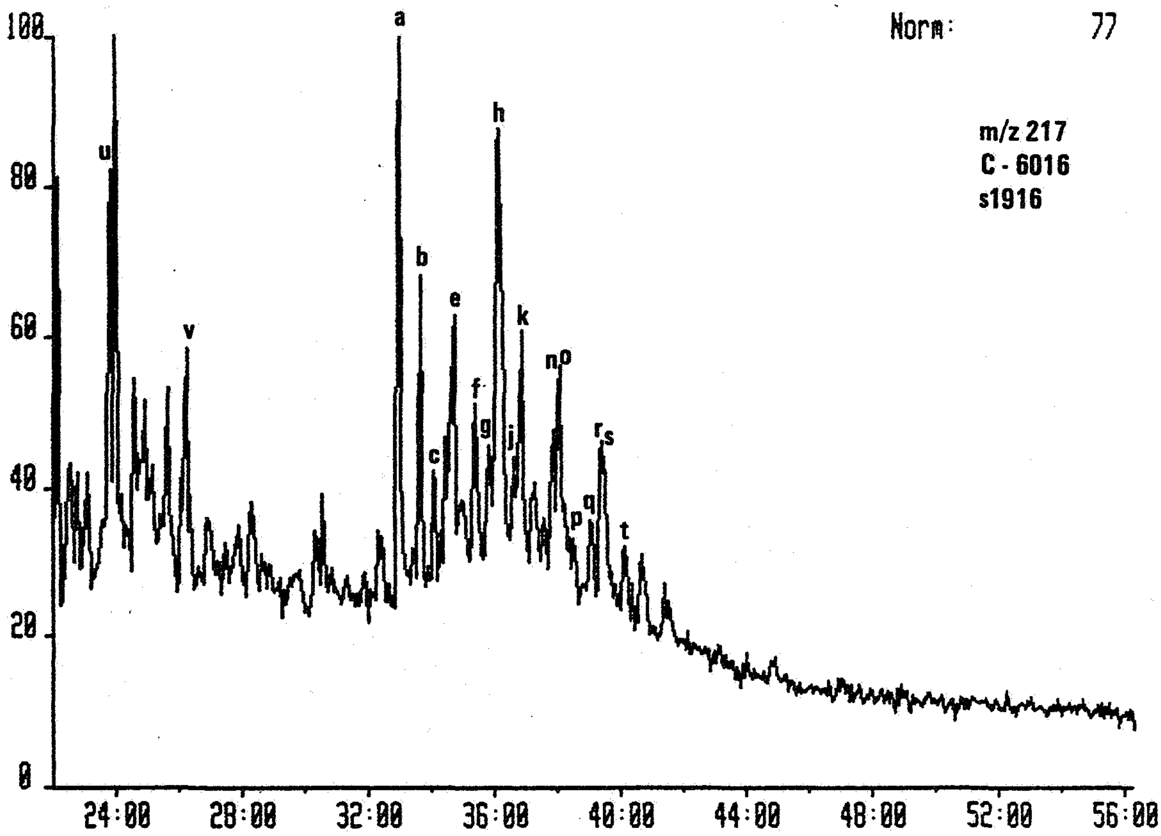
C6015 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



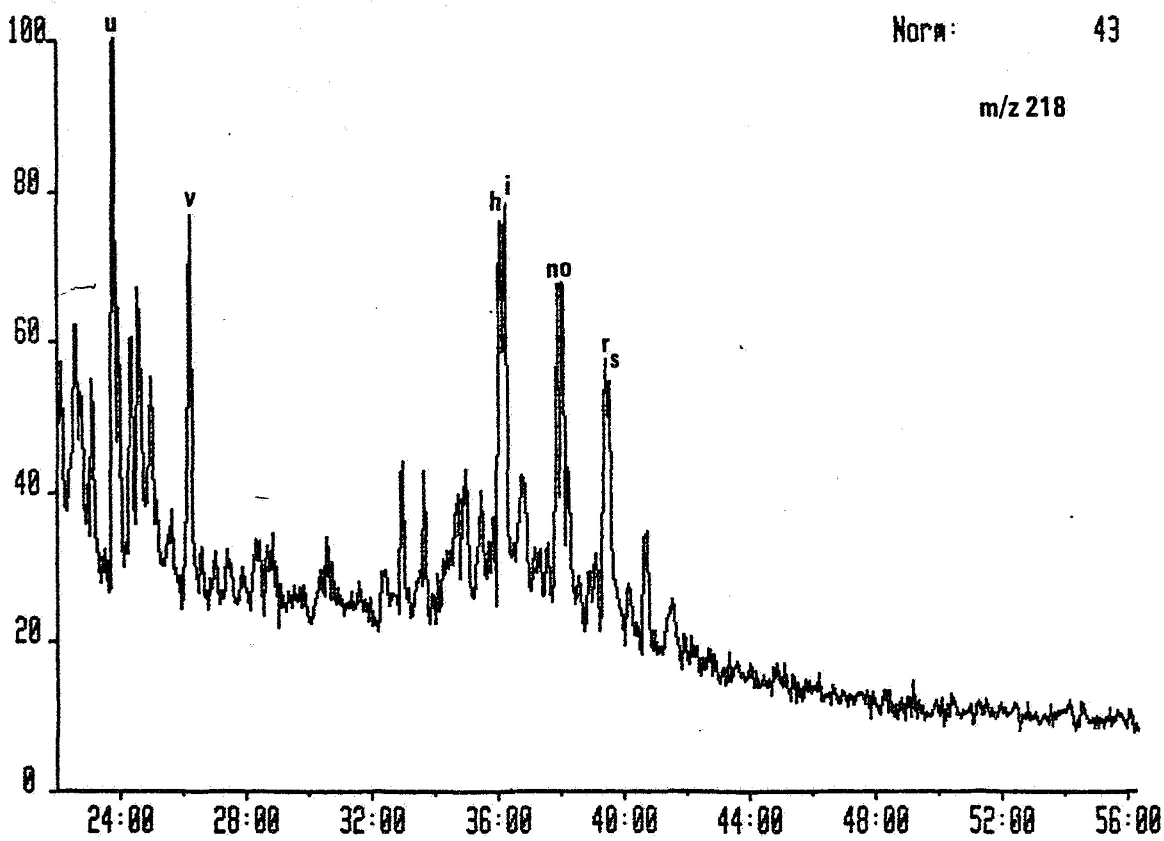
C6015 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



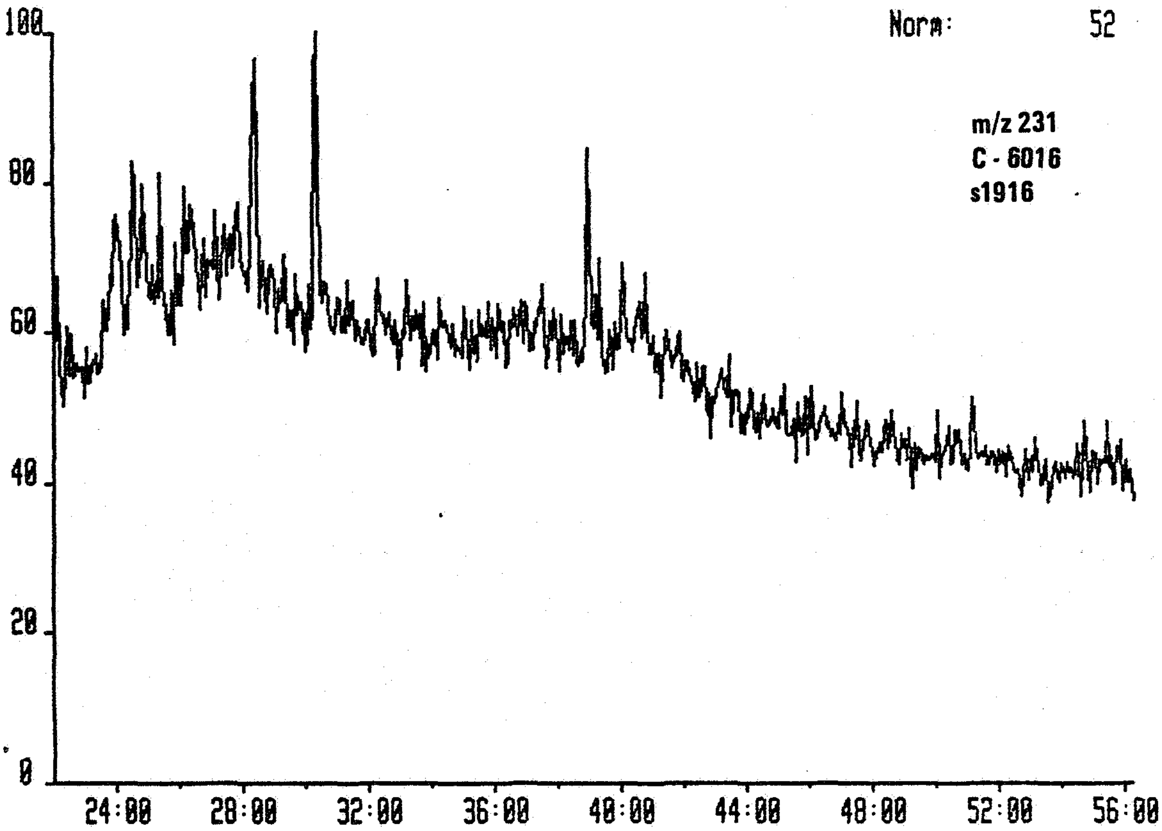
C6016 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



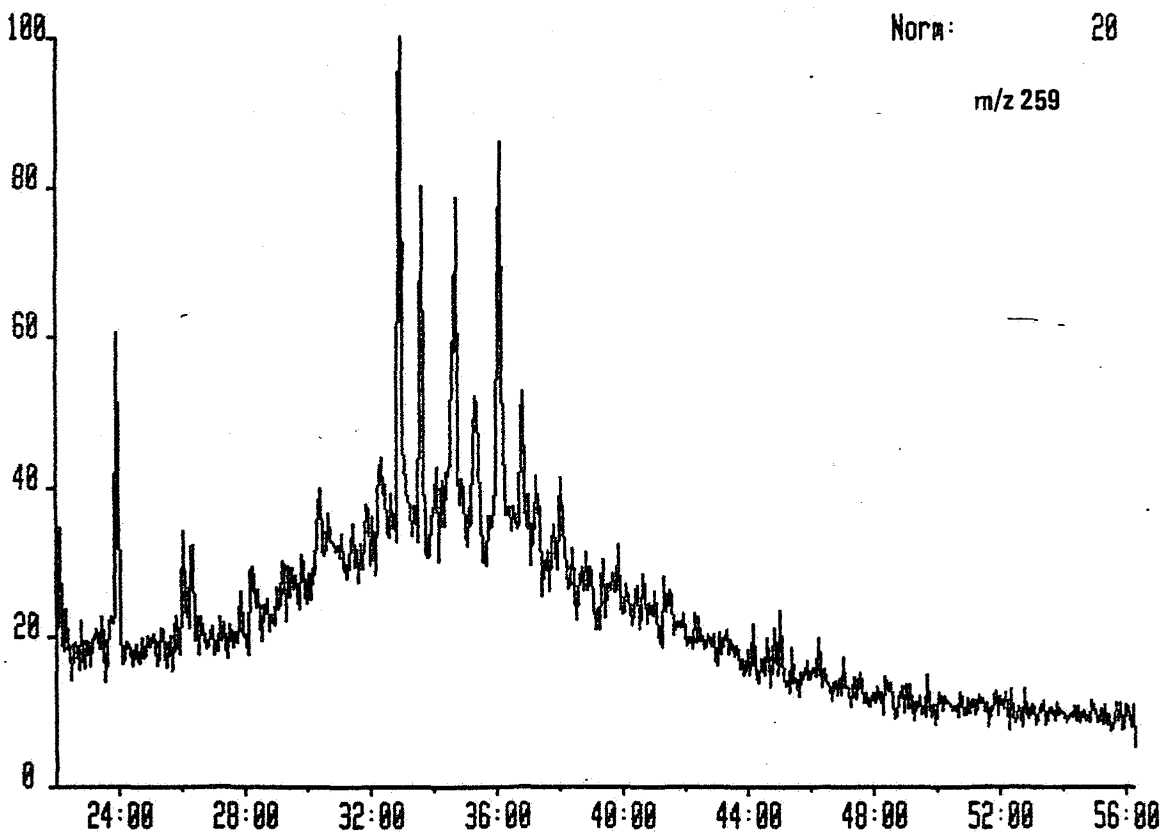
C6016 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



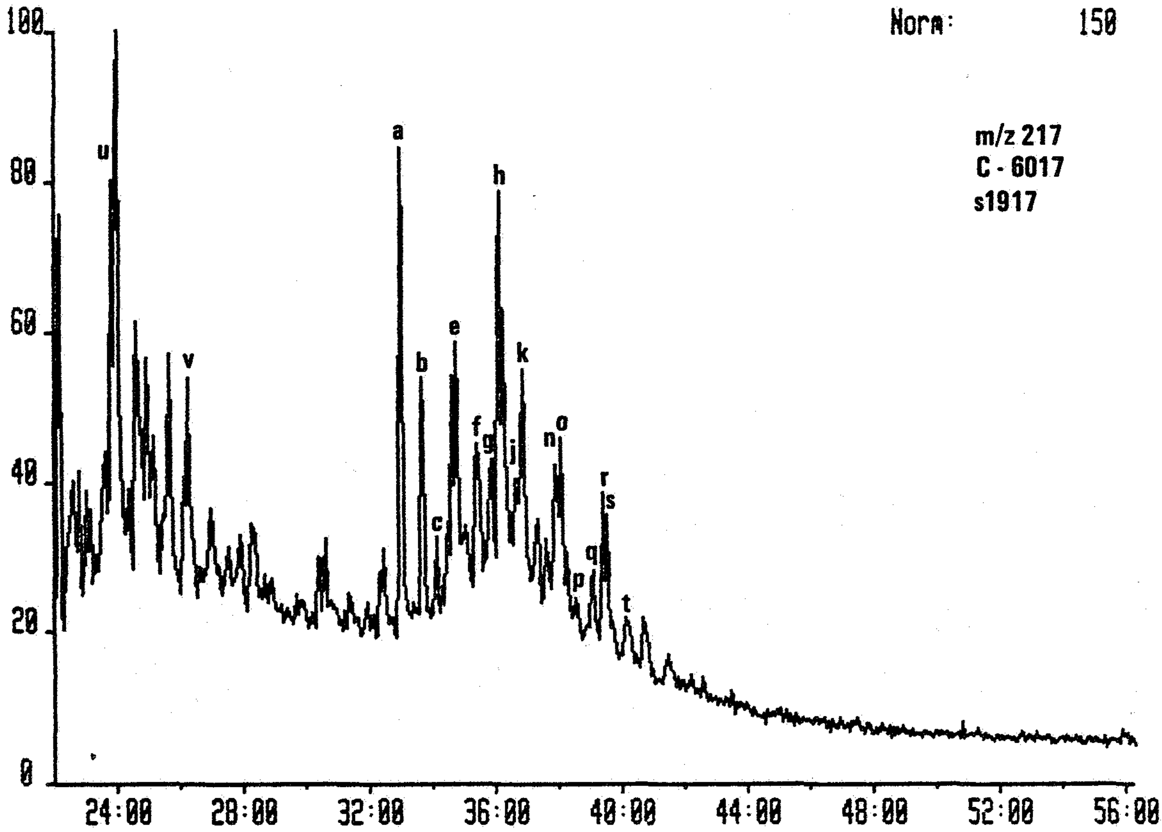
C6016 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



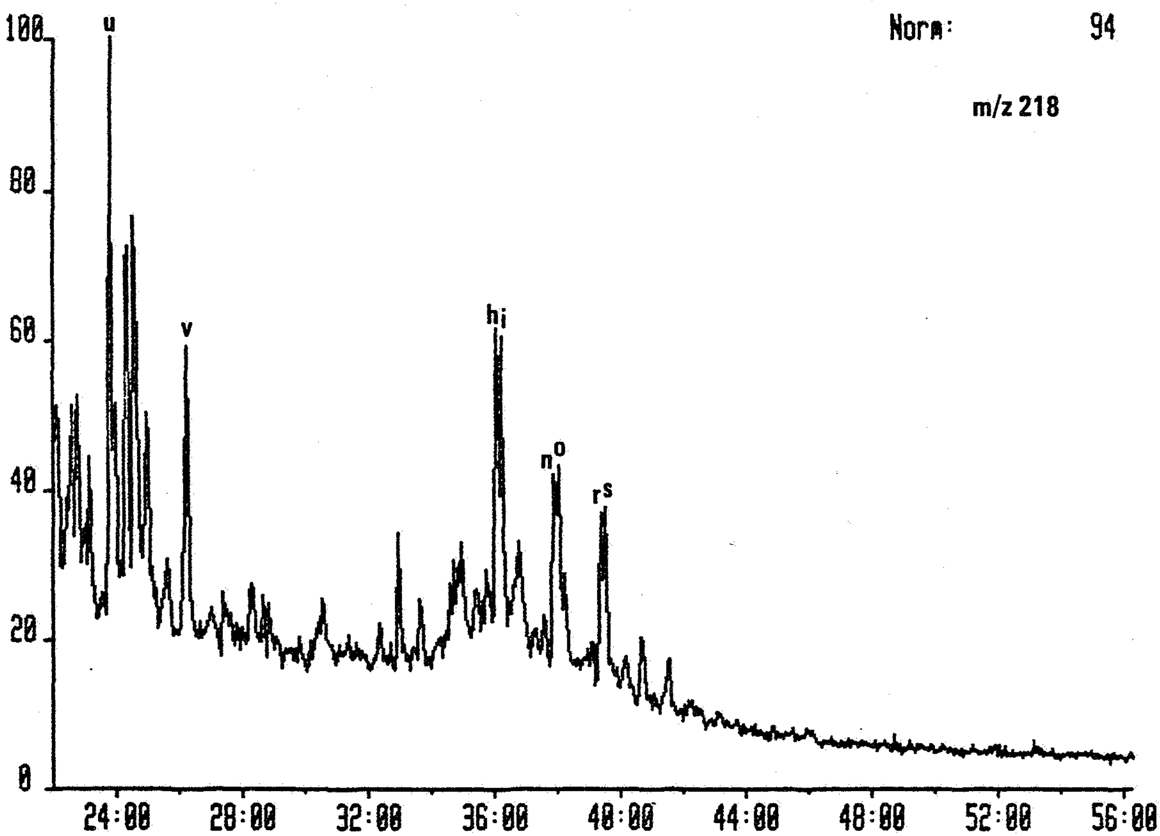
C6016 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



C6017 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:

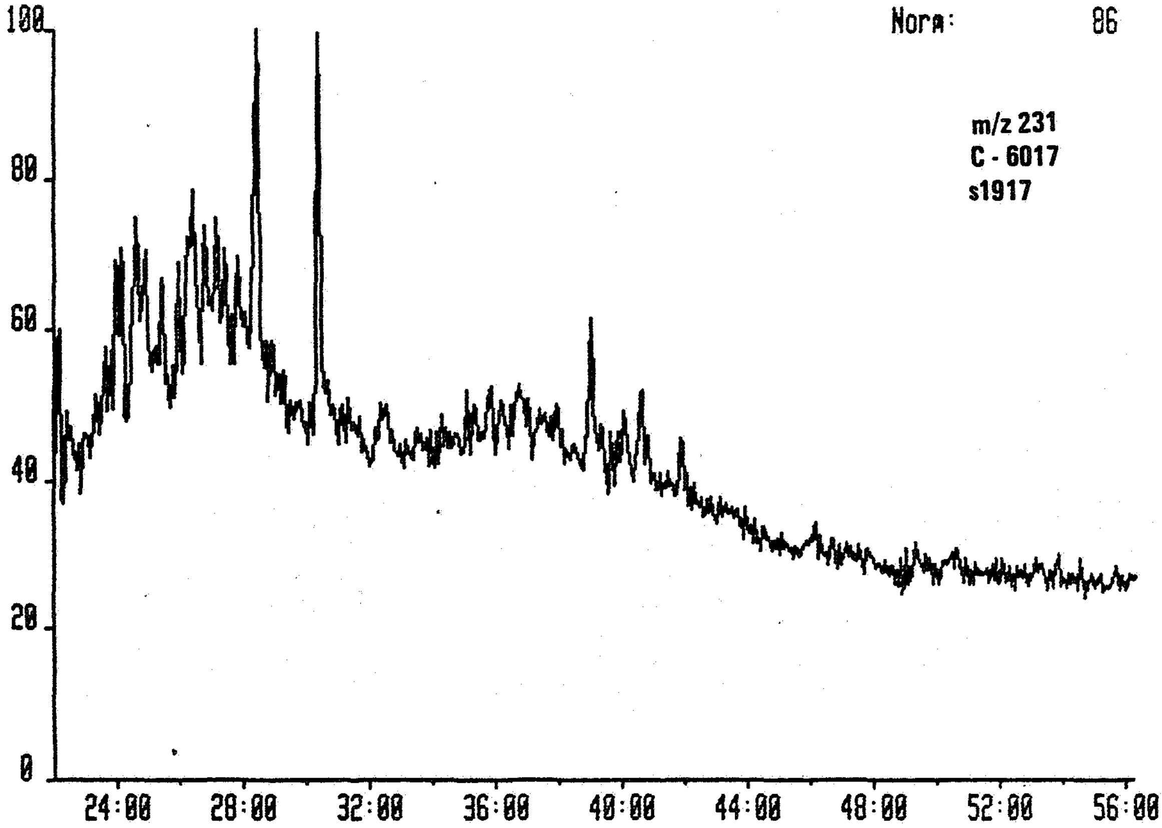


C6017 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:

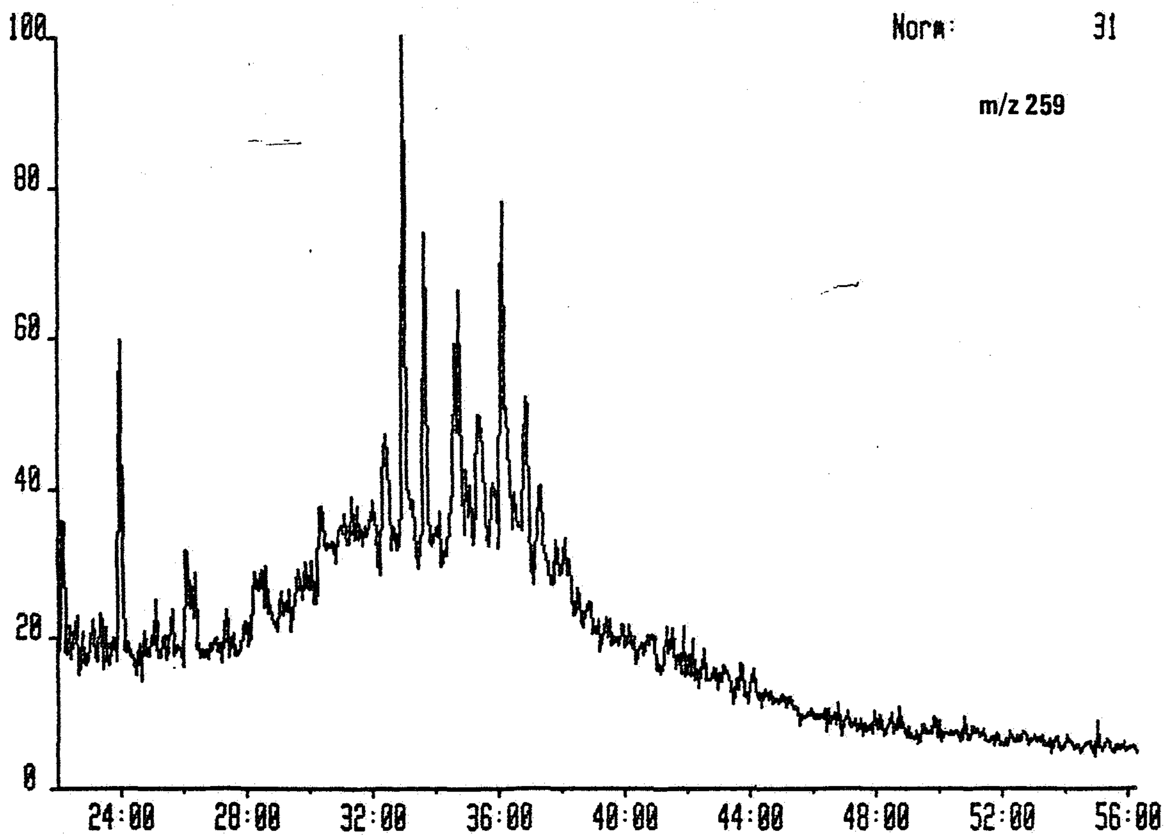


IKU SINTEF-GRUPPEN

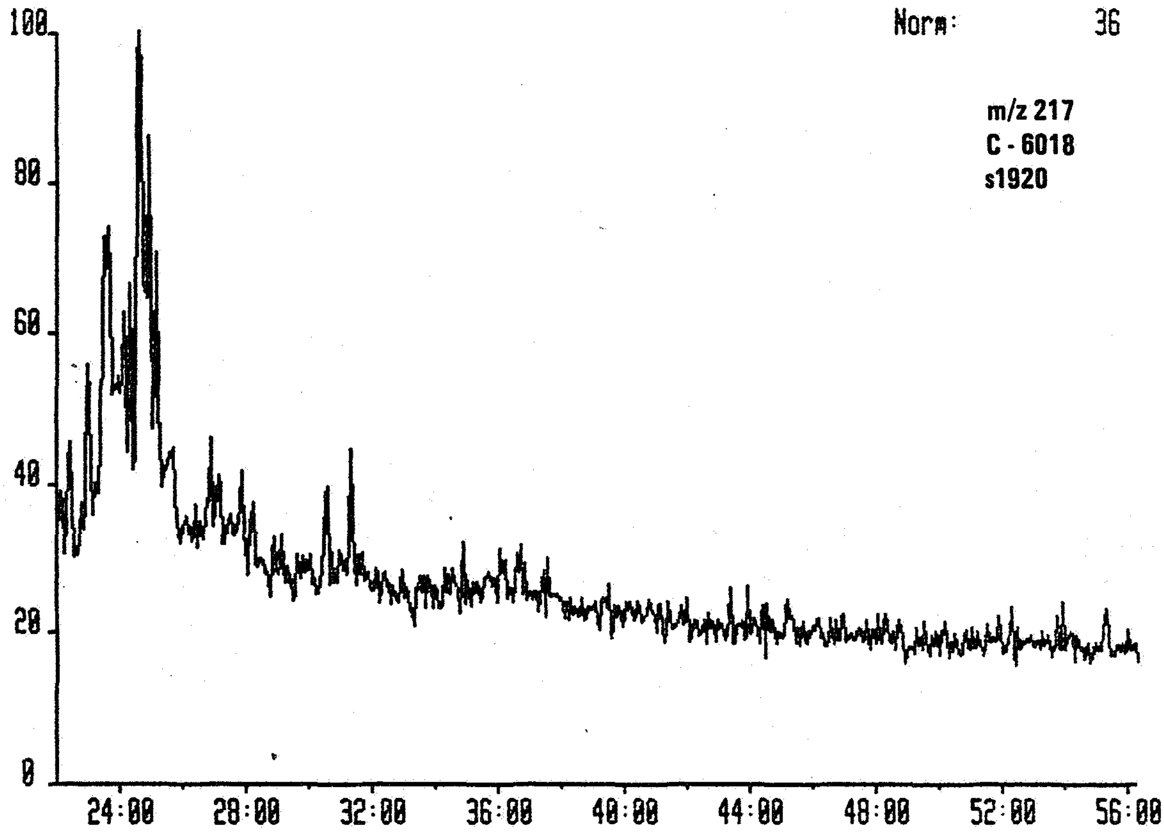
C6017 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



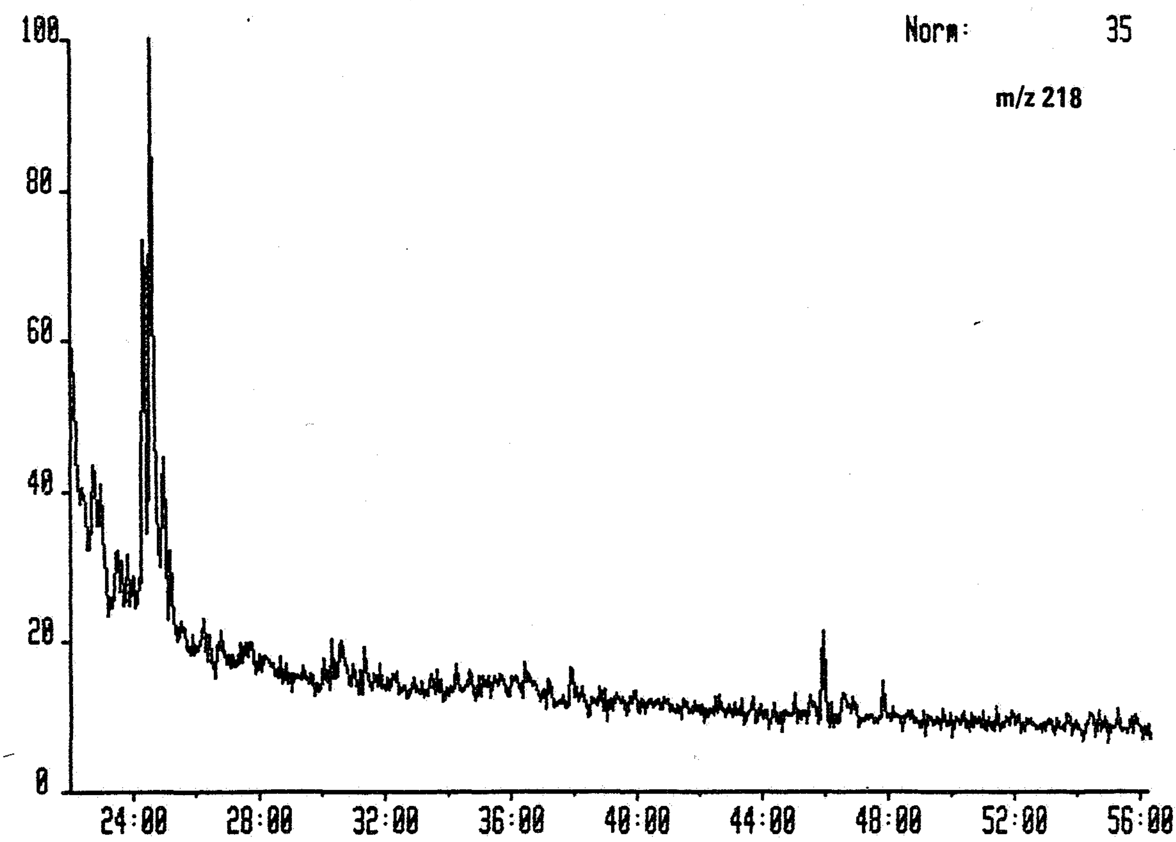
C6017 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



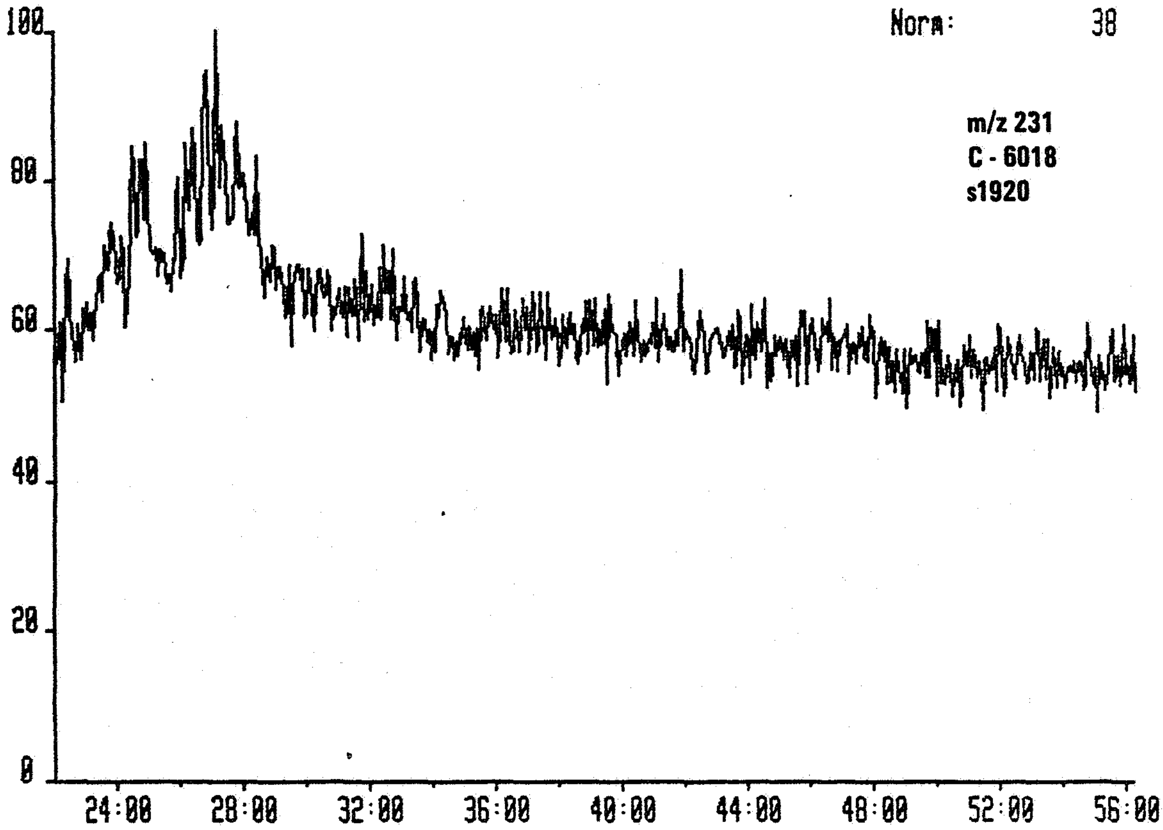
C6018 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



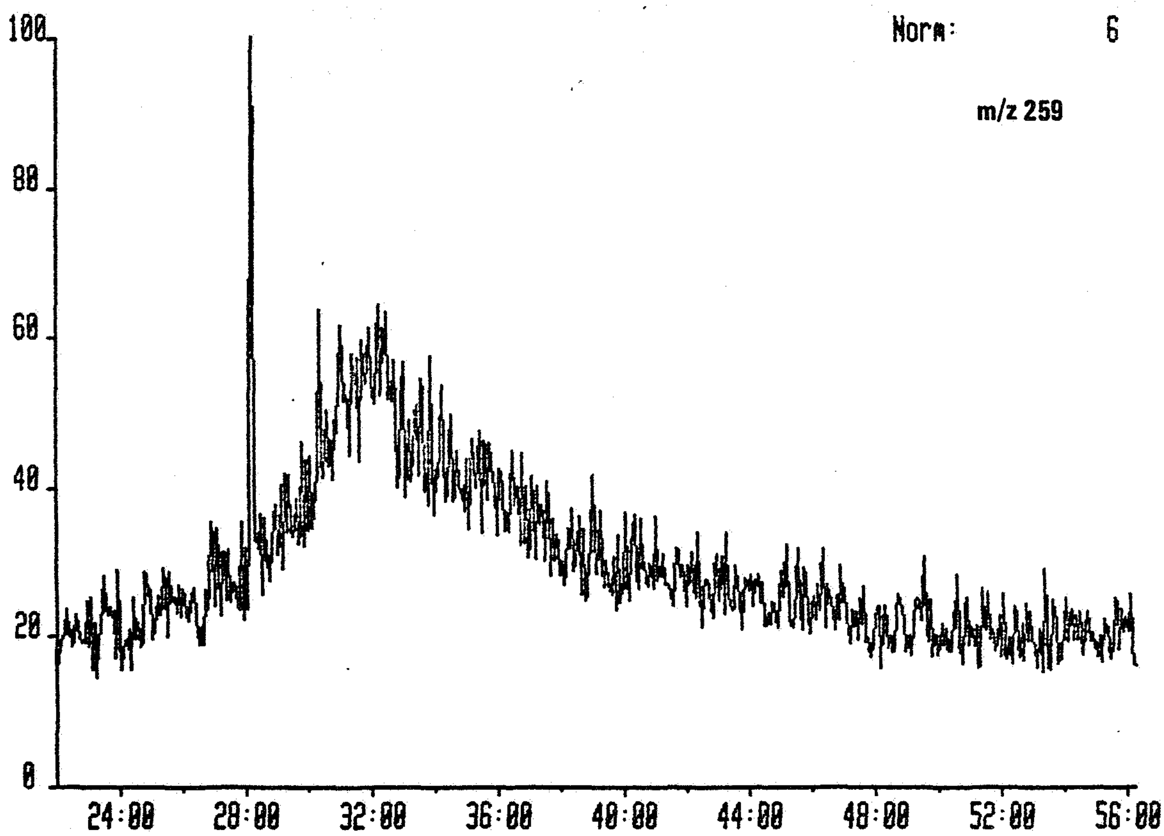
C6018 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



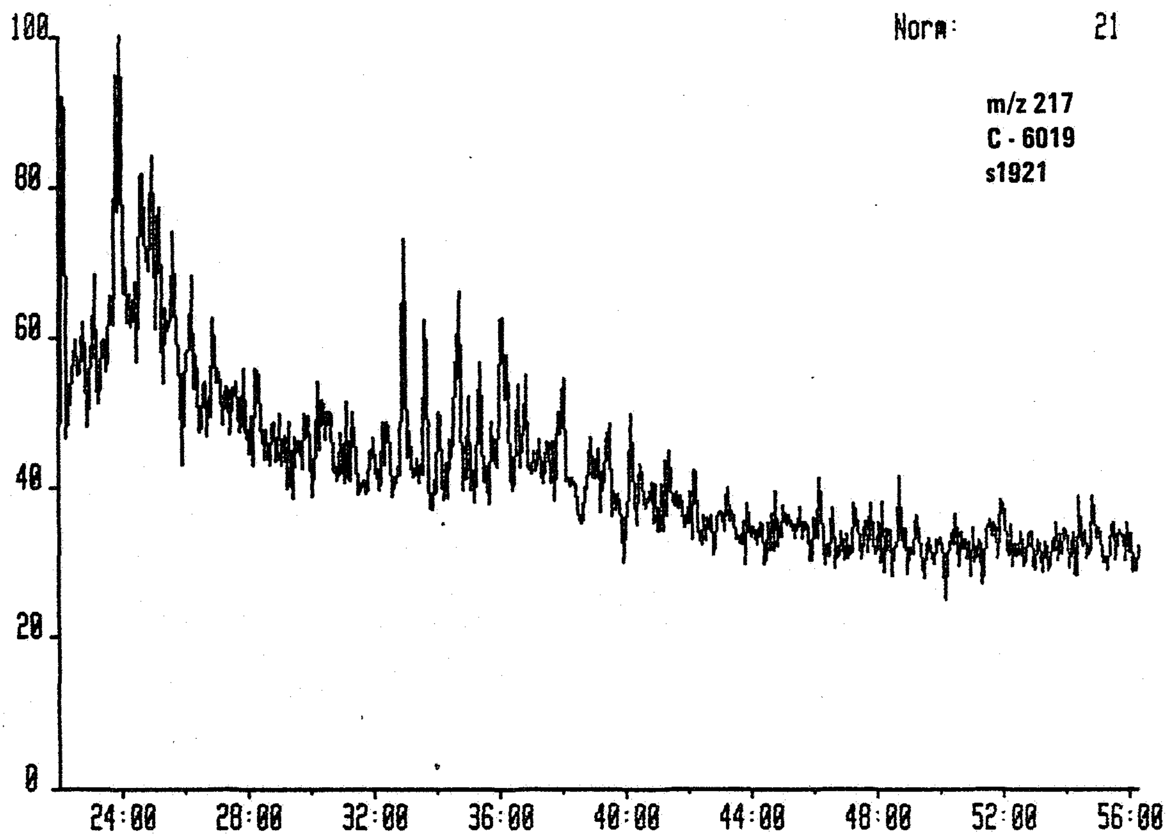
C6018 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



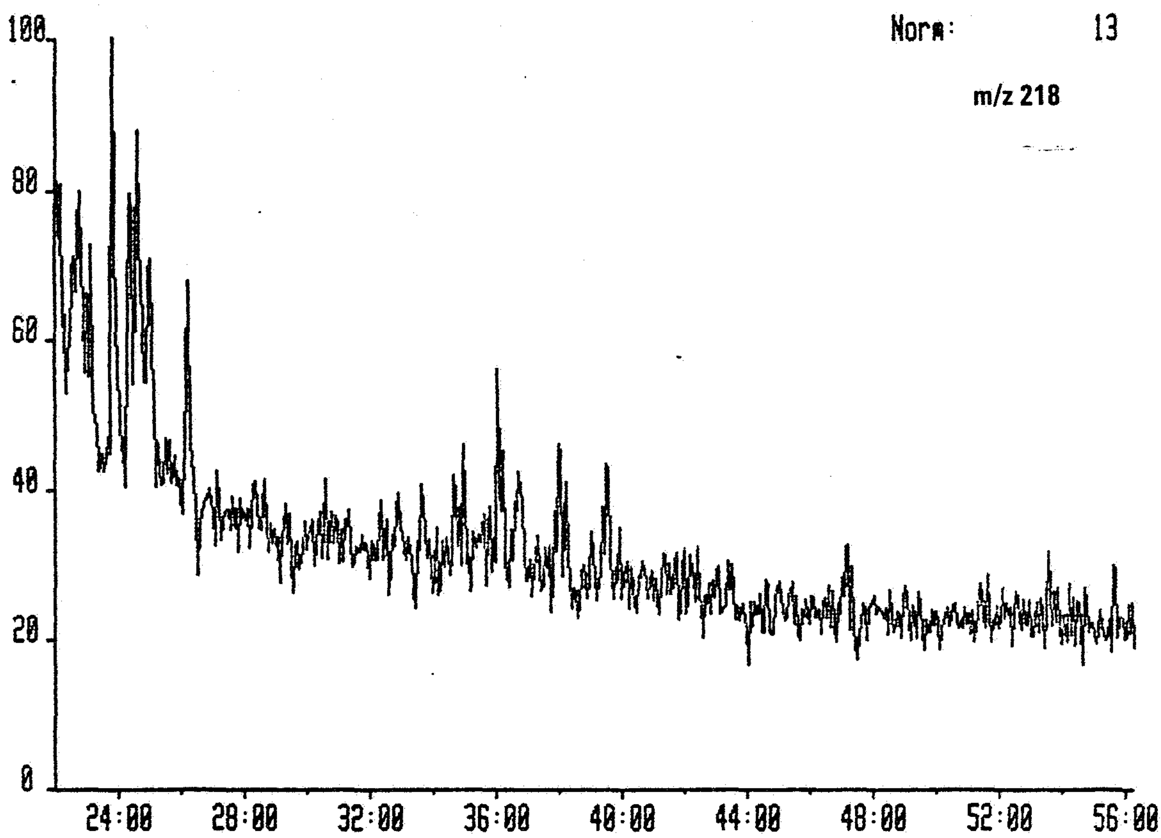
C6018 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



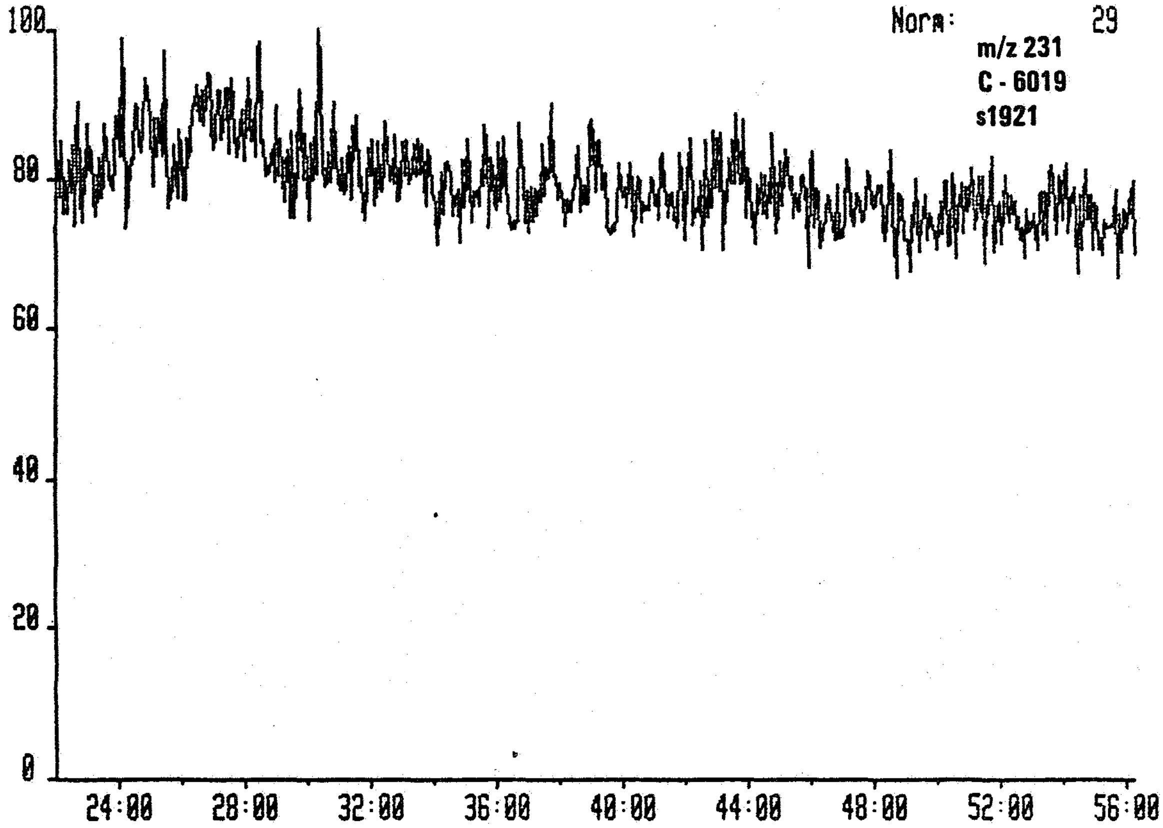
C6019 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



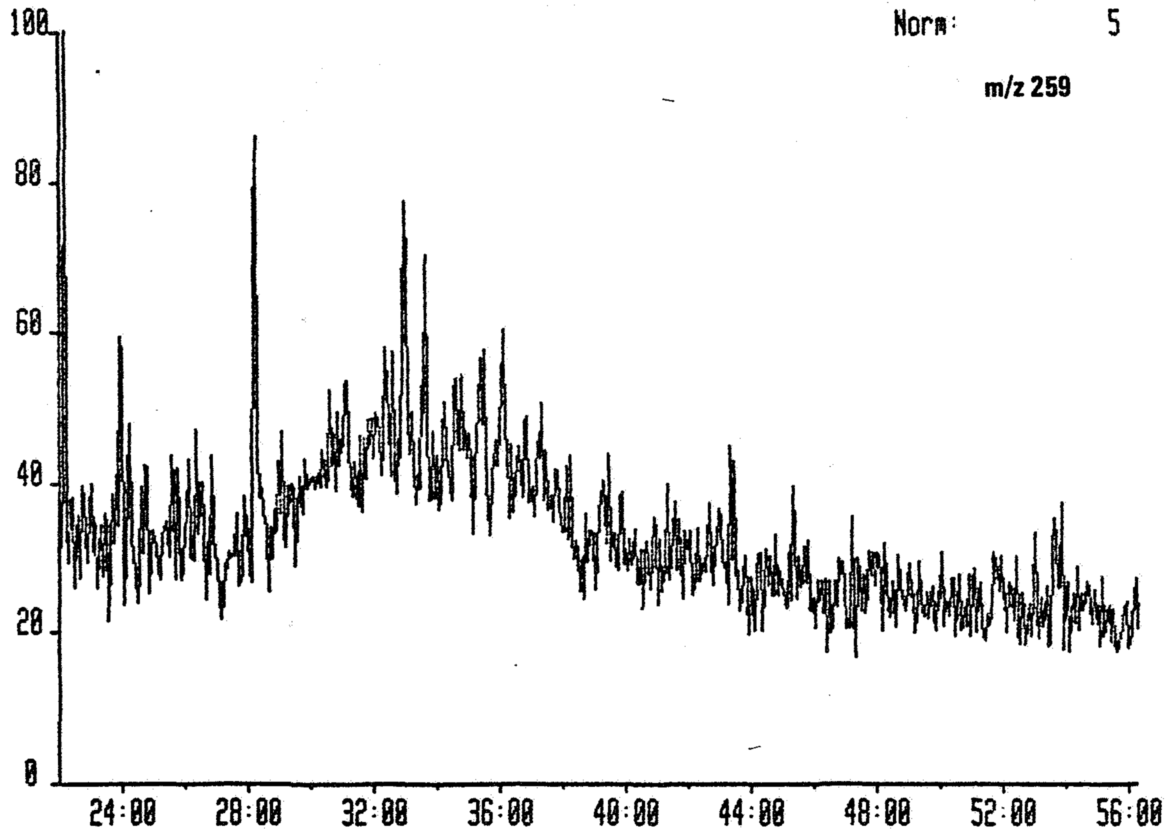
C6019 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



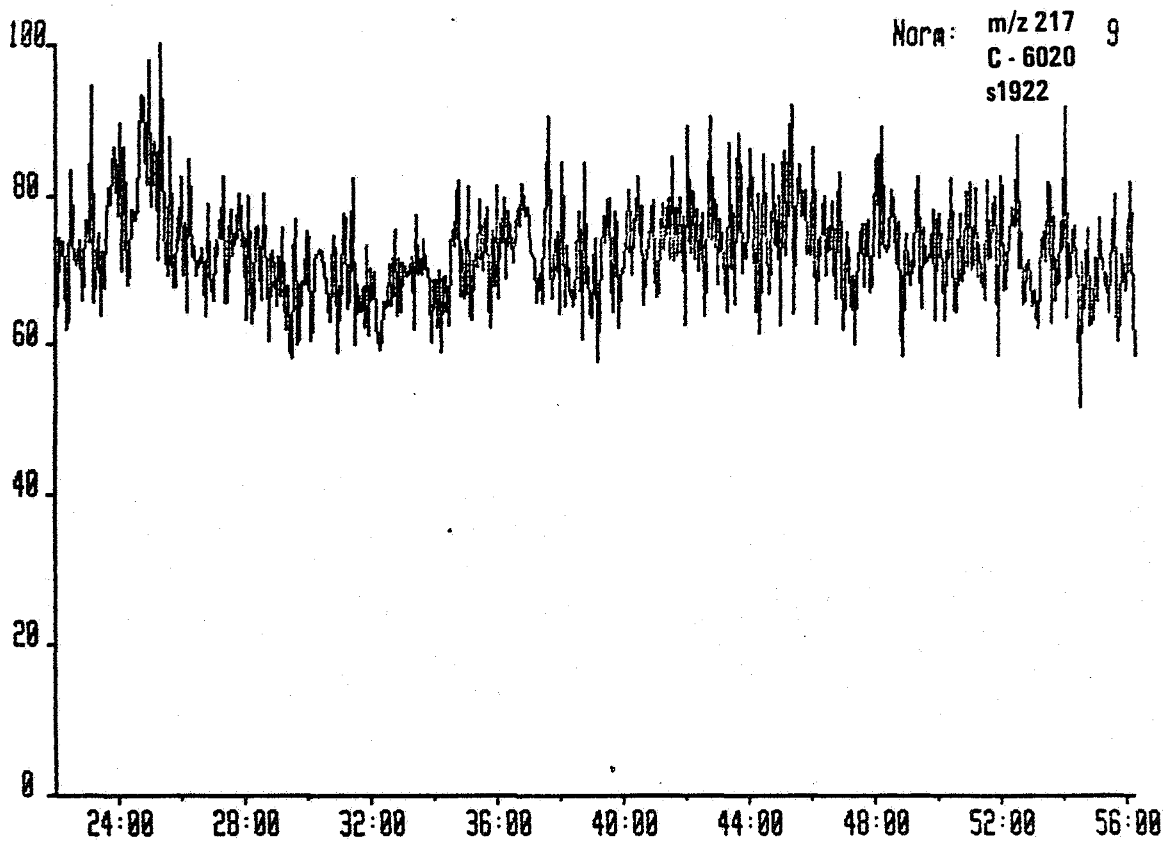
C6019 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



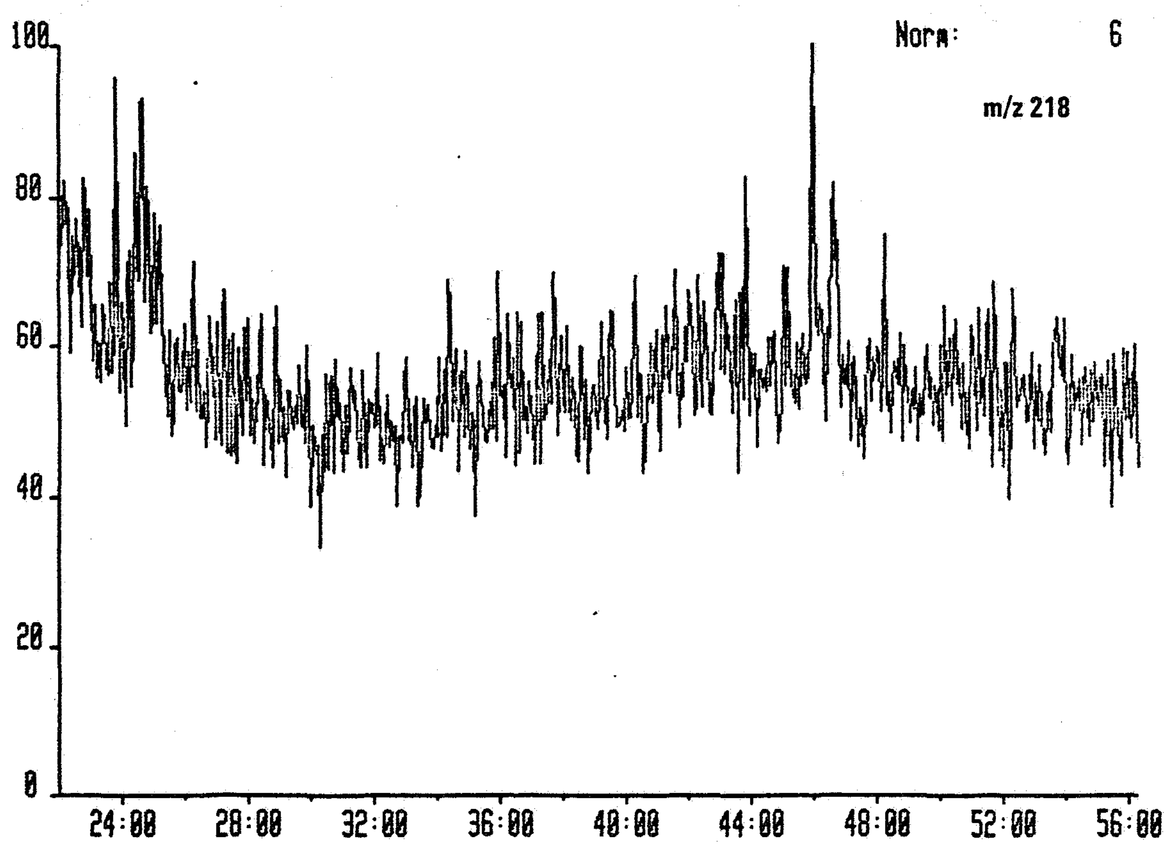
C6019 25-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



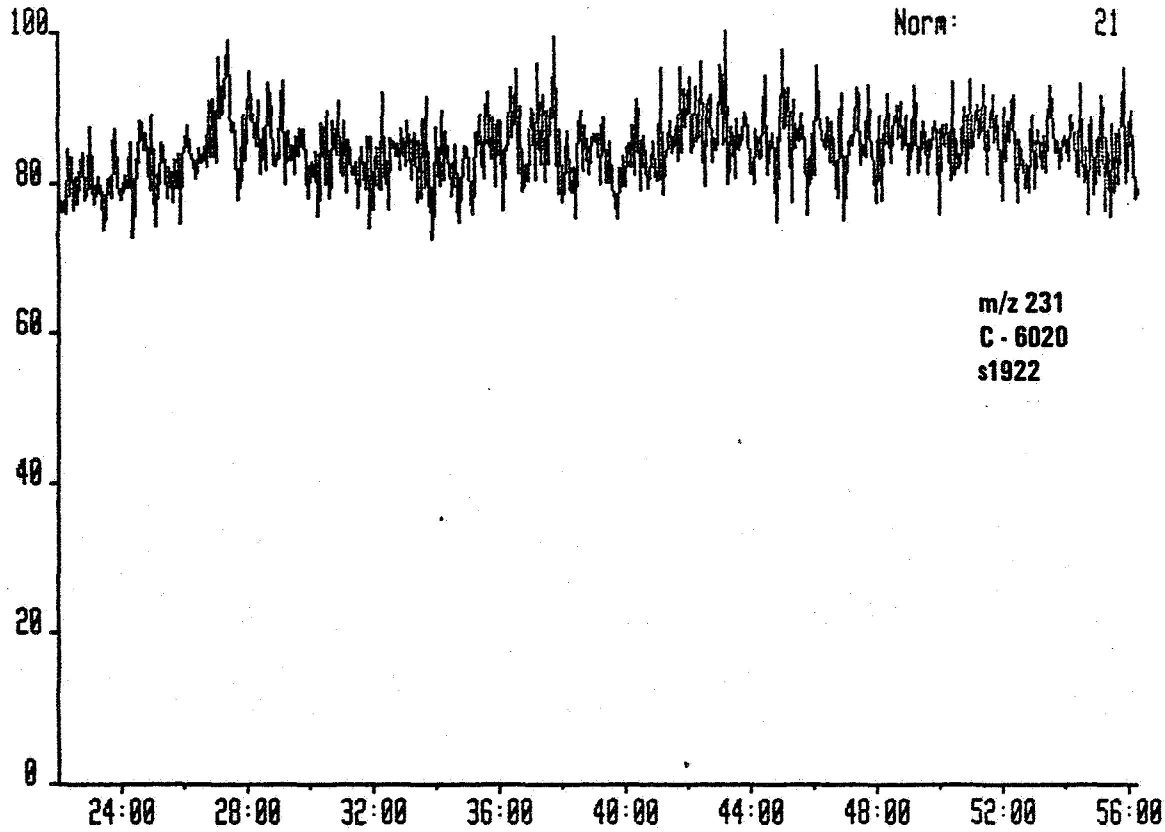
C6020 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



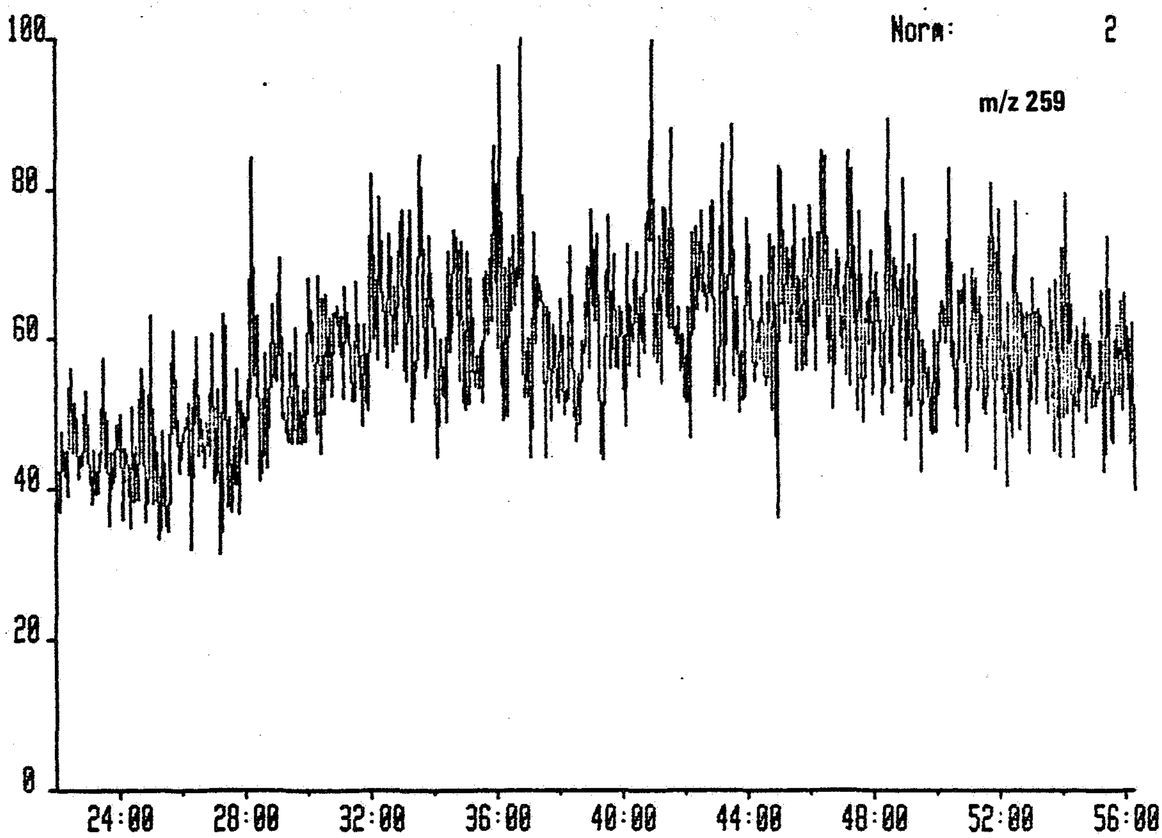
C6020 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



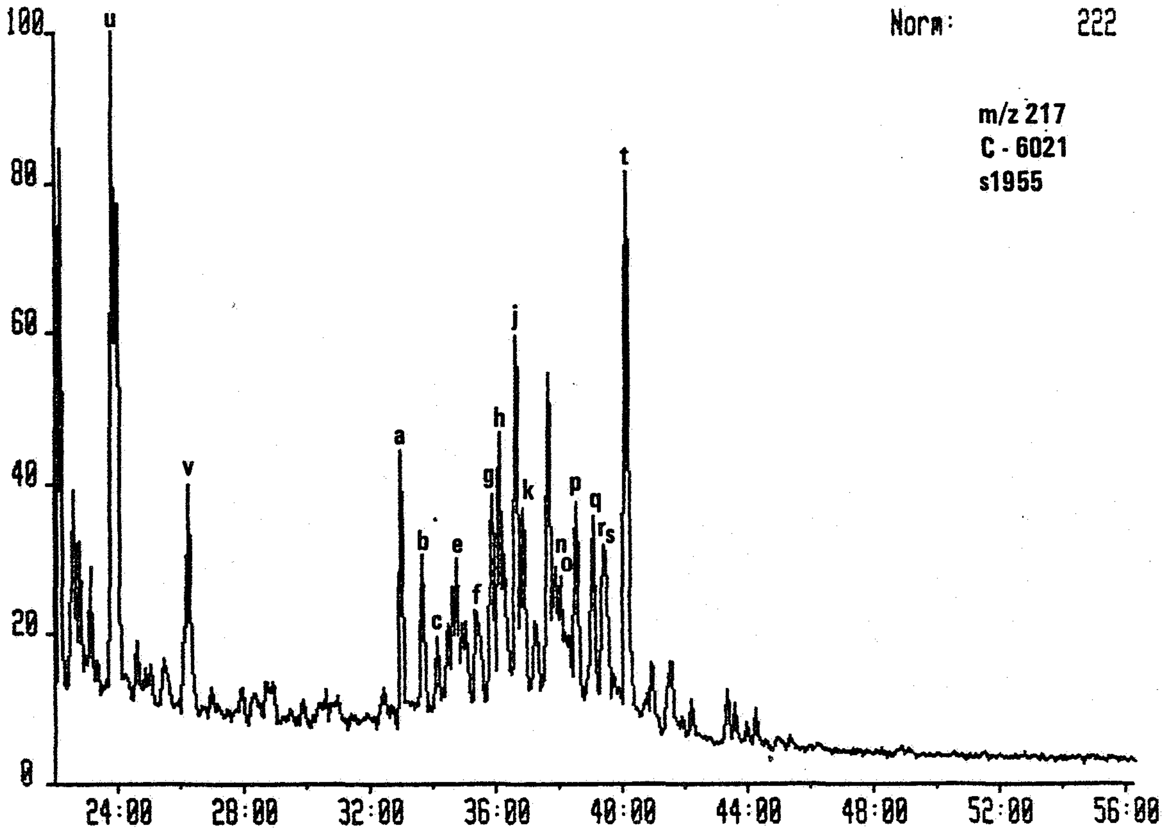
C6020 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



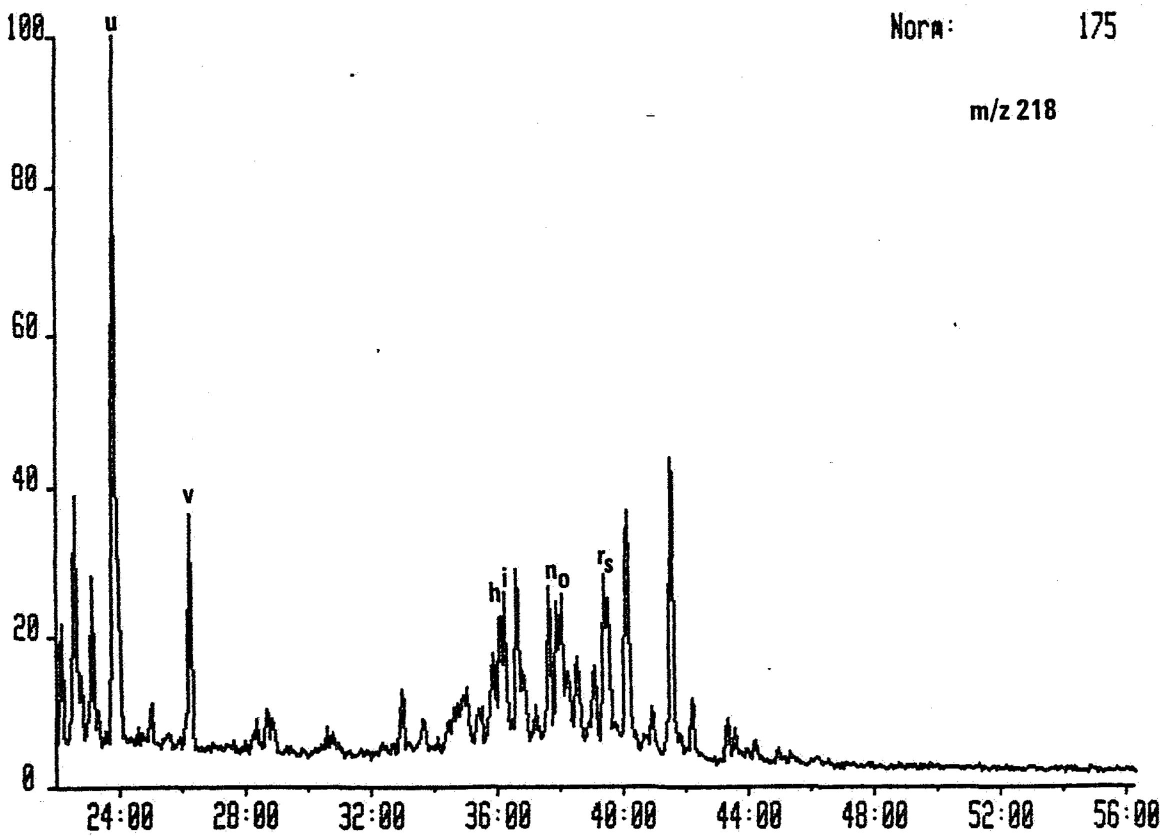
C6020 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



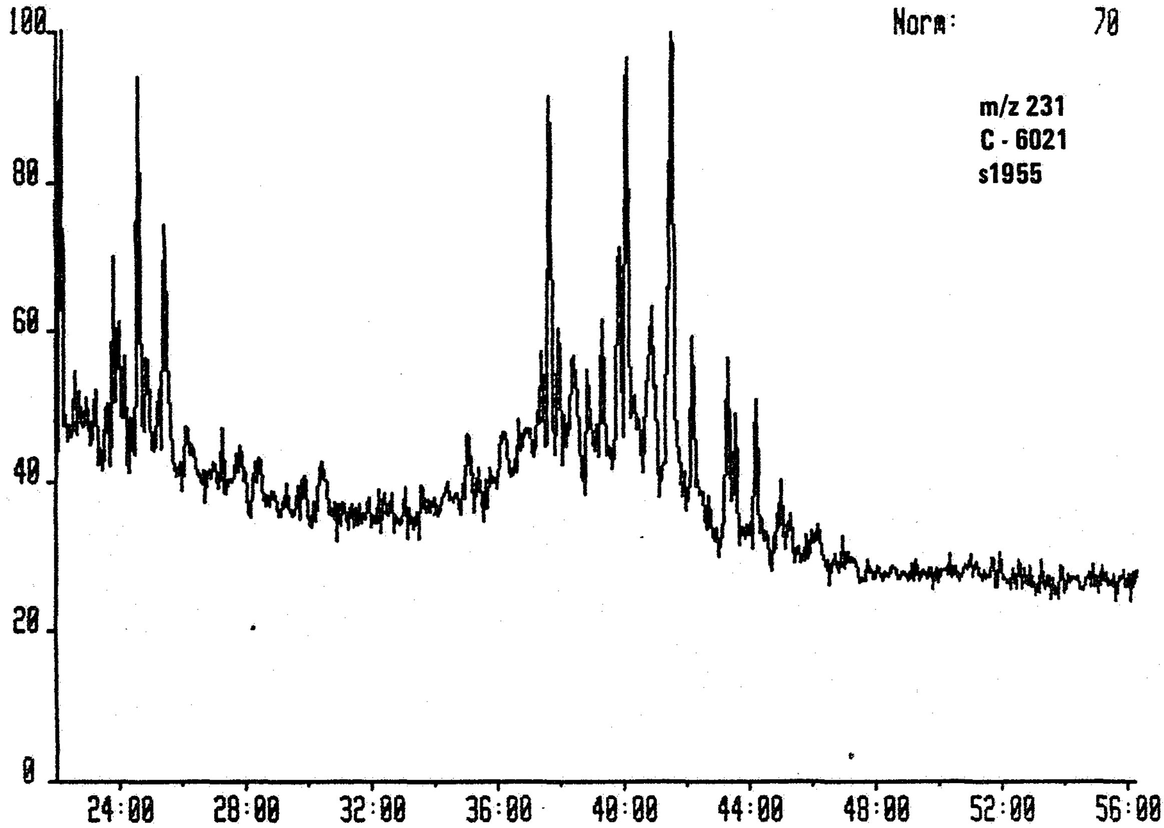
C6021 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



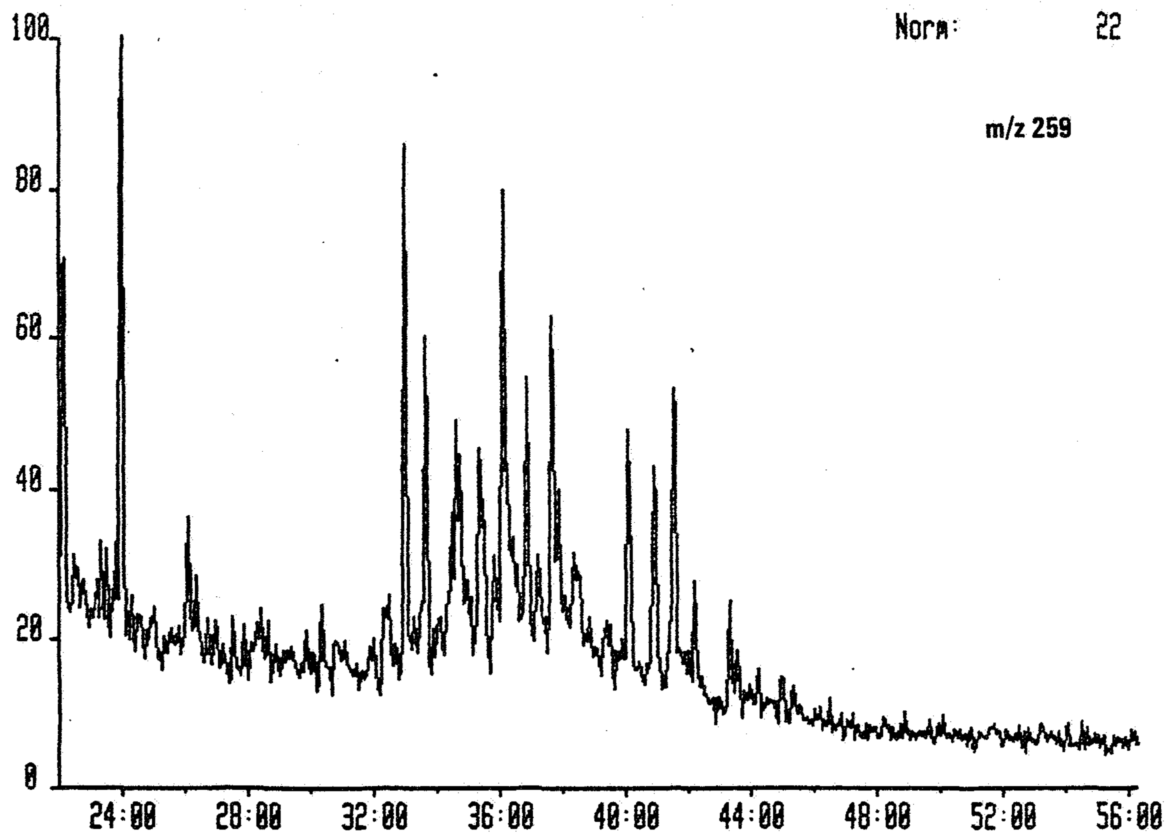
C6021 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



C6021 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:

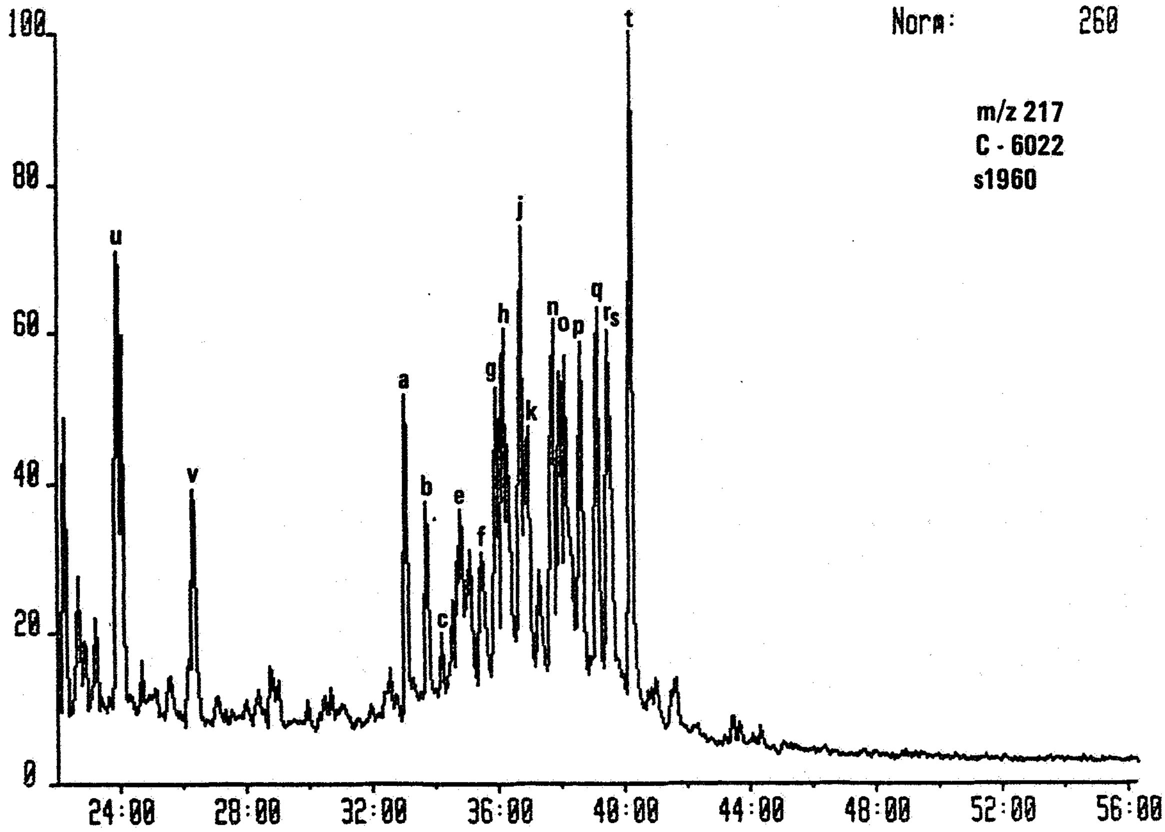


C6021 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:

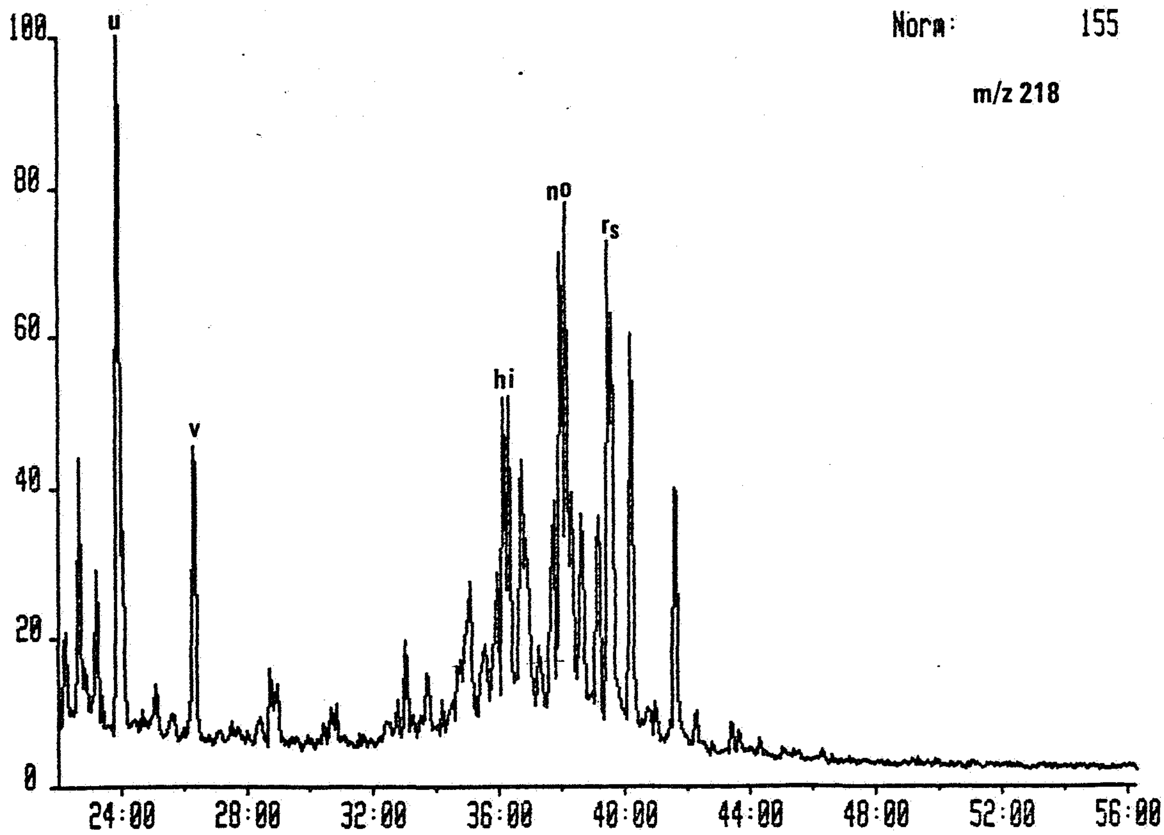


IKU SINTEF-GRUPPEN

C6022 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:

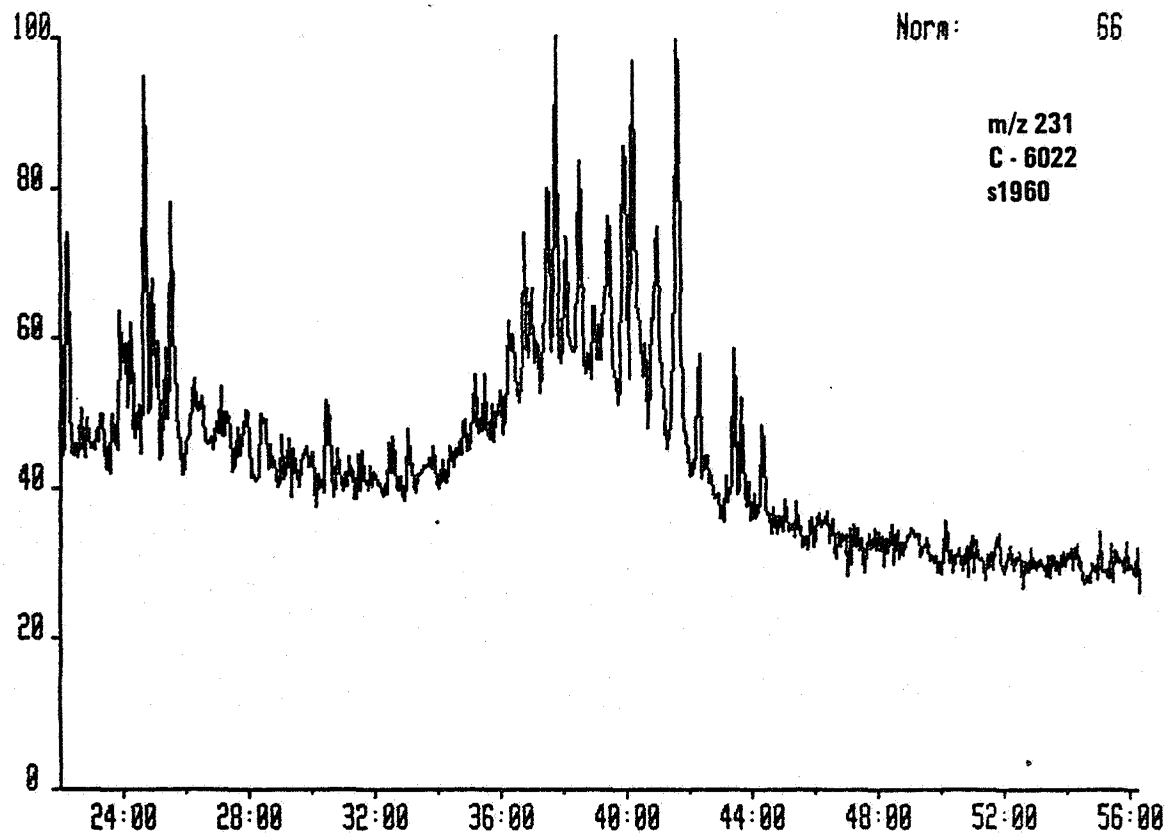


C6022 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:

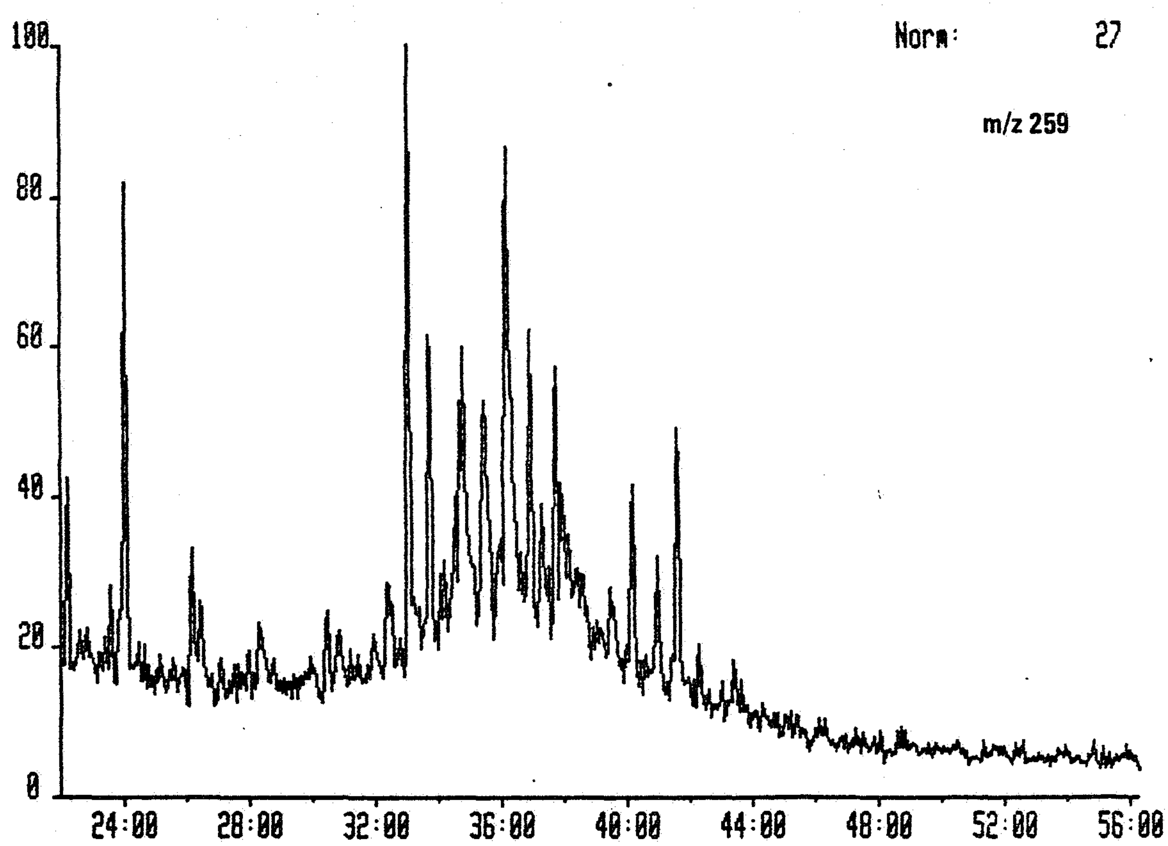


IKU
SINTEF-GRUPPEN

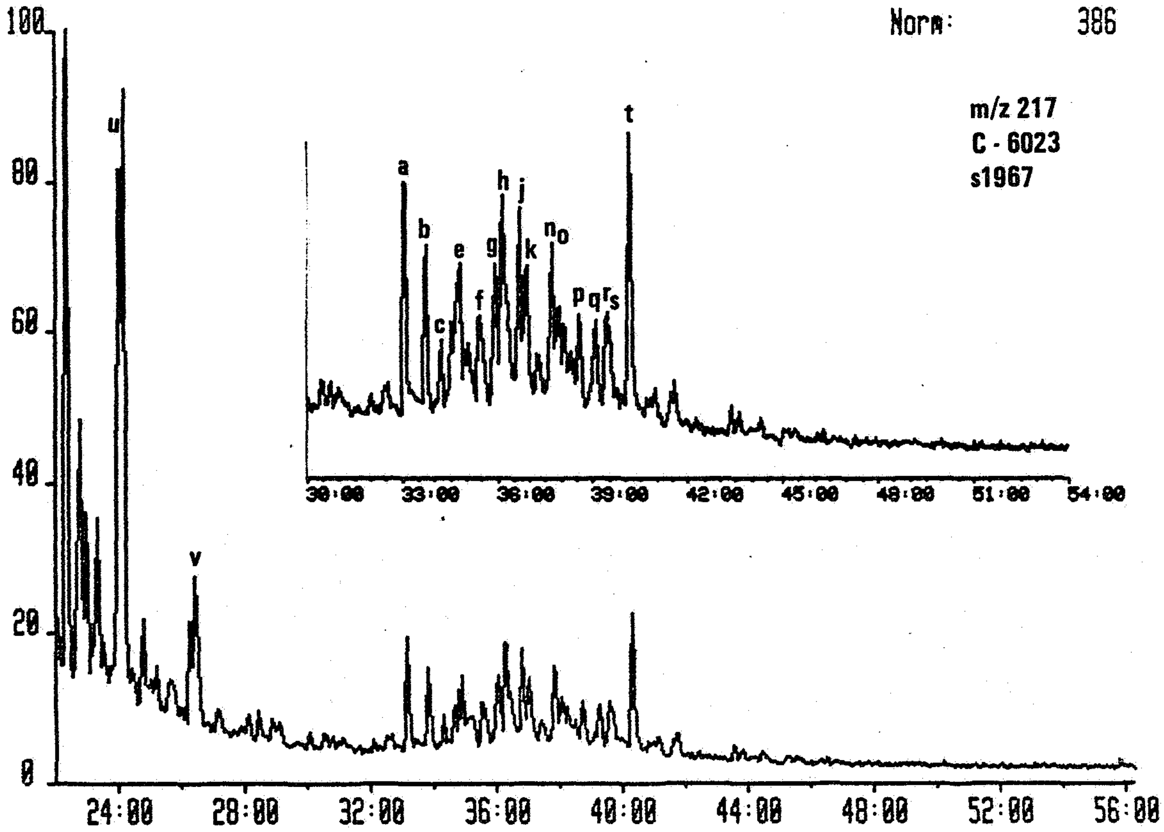
C6022 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



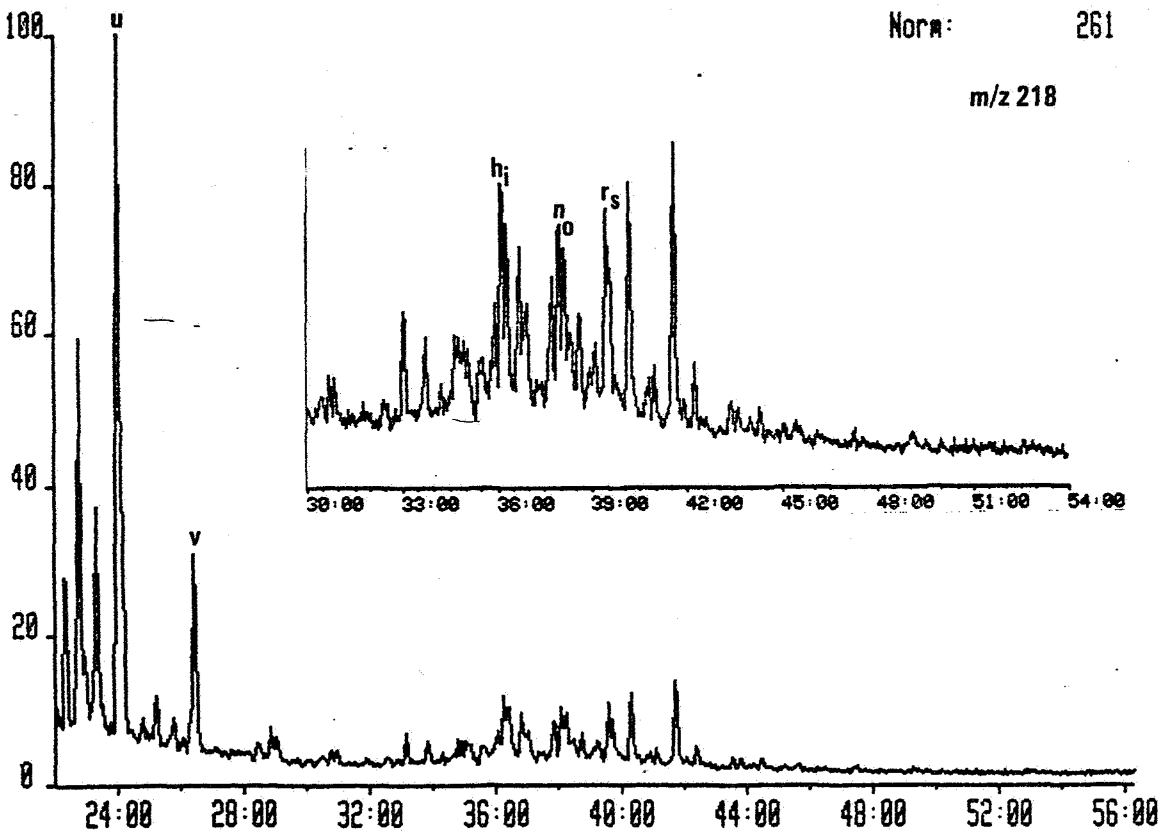
C6022 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



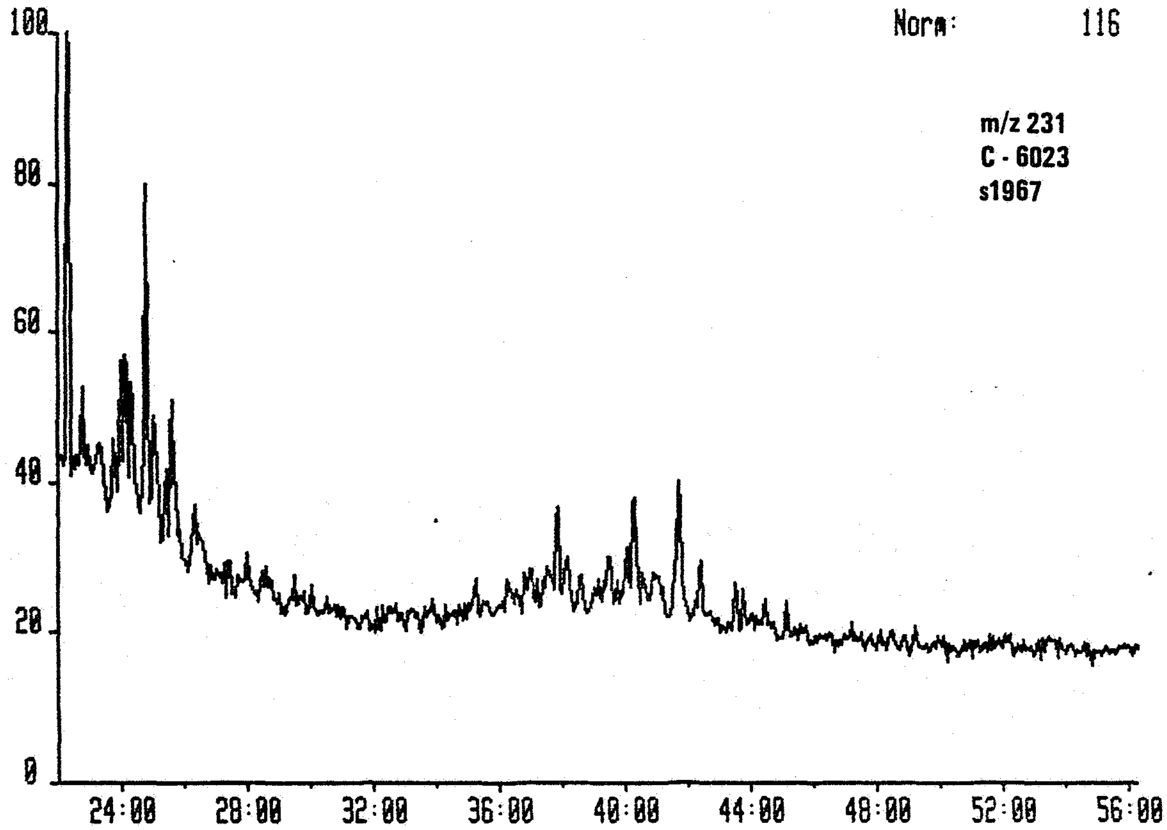
C6023 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



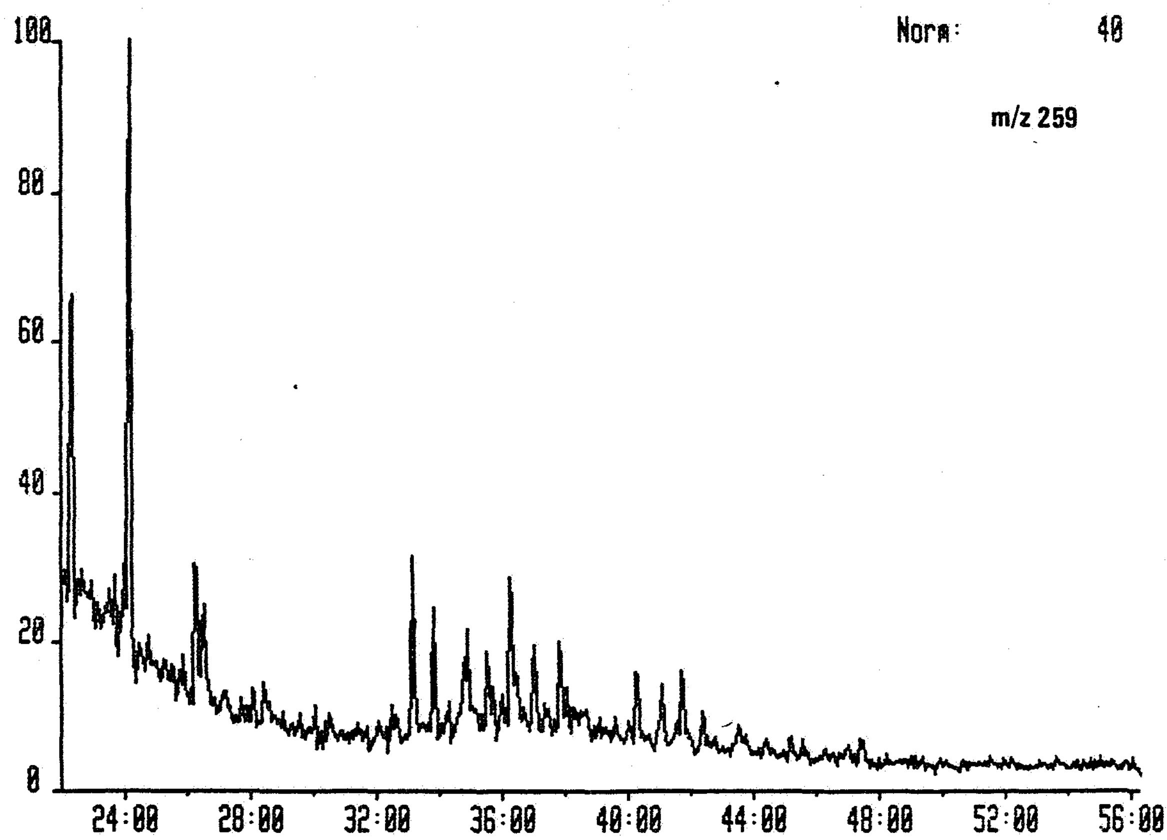
C6023 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



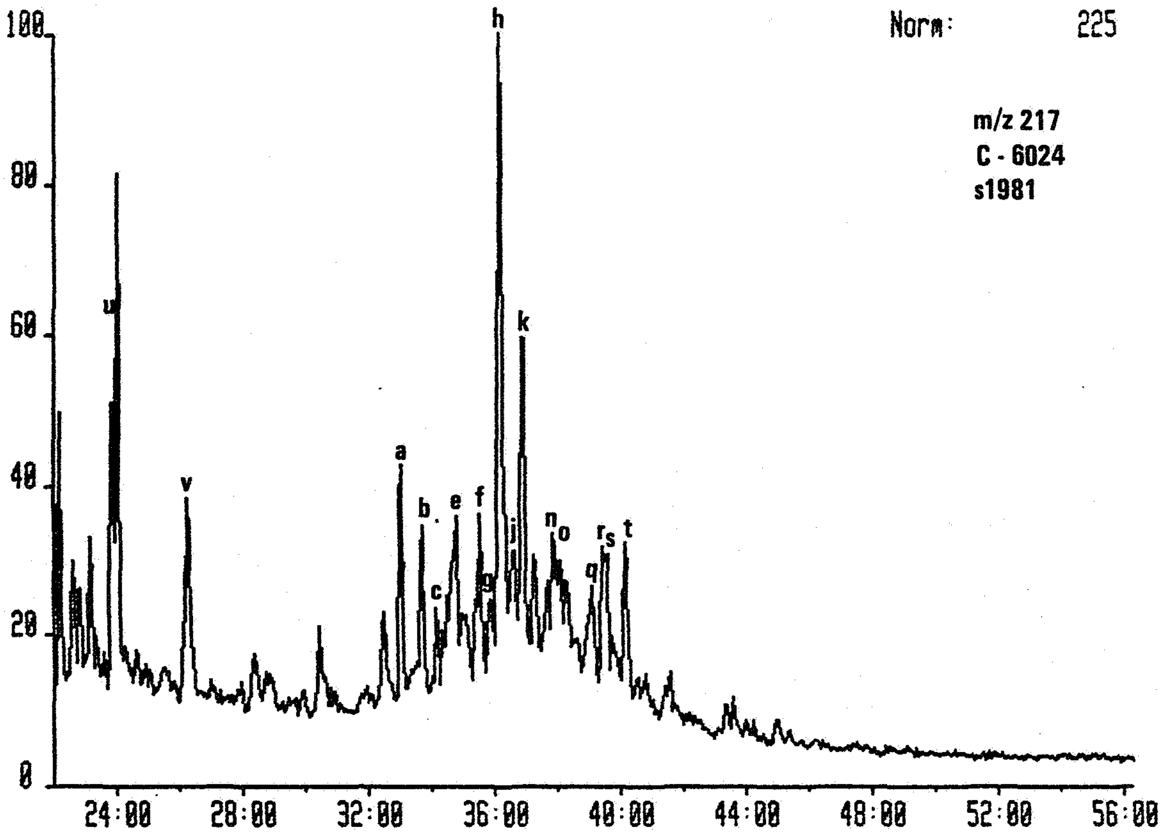
C6023 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



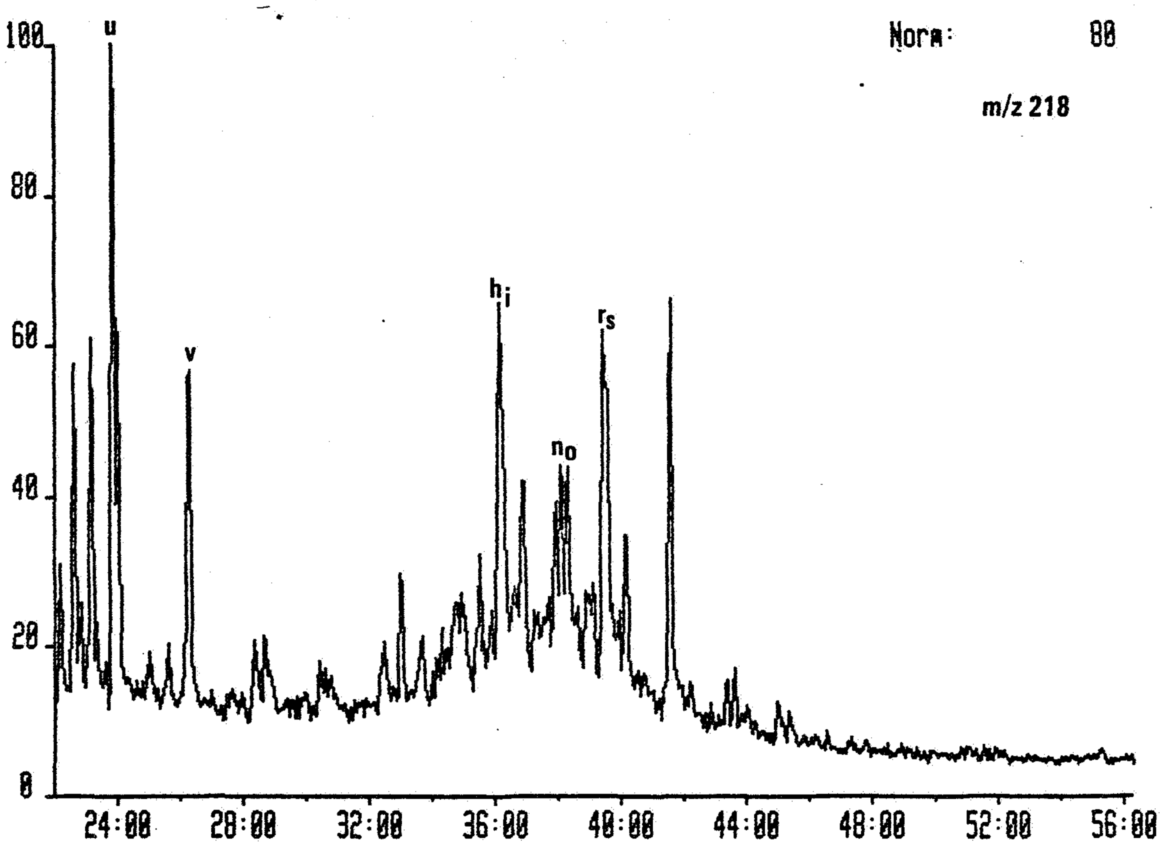
C6023 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



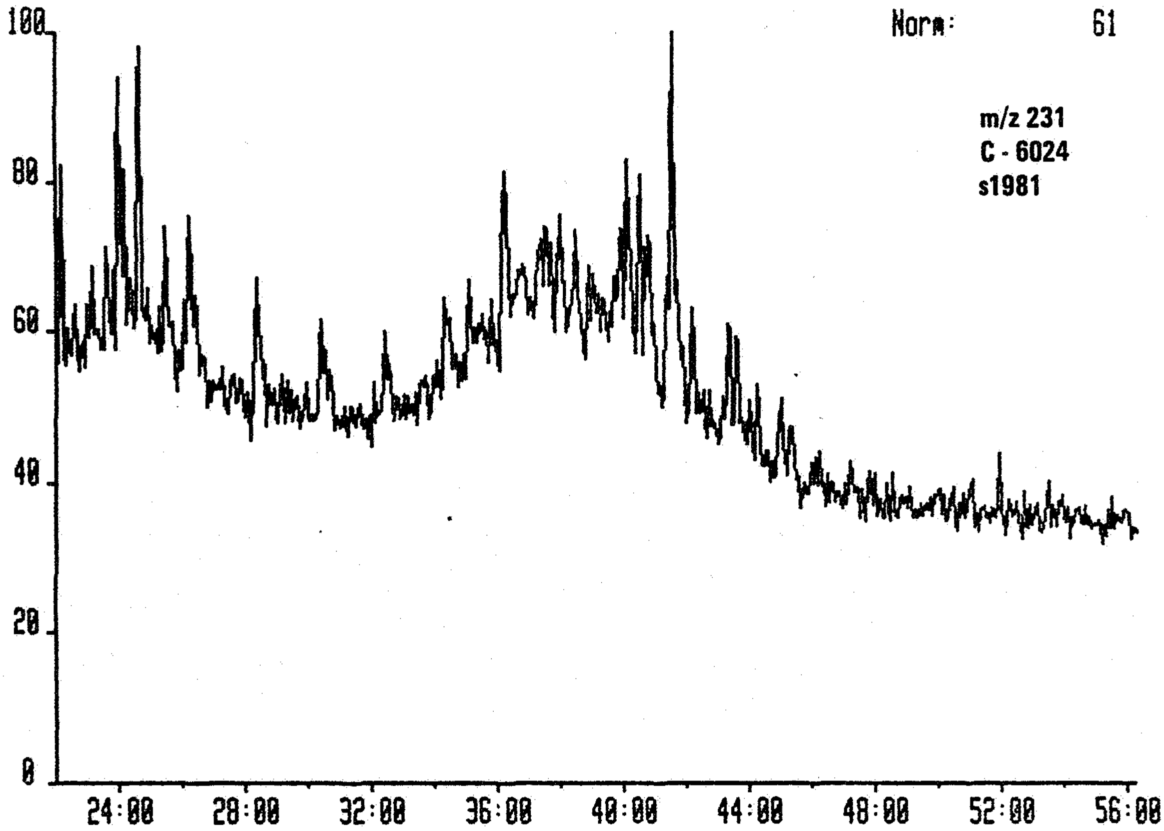
C6024 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



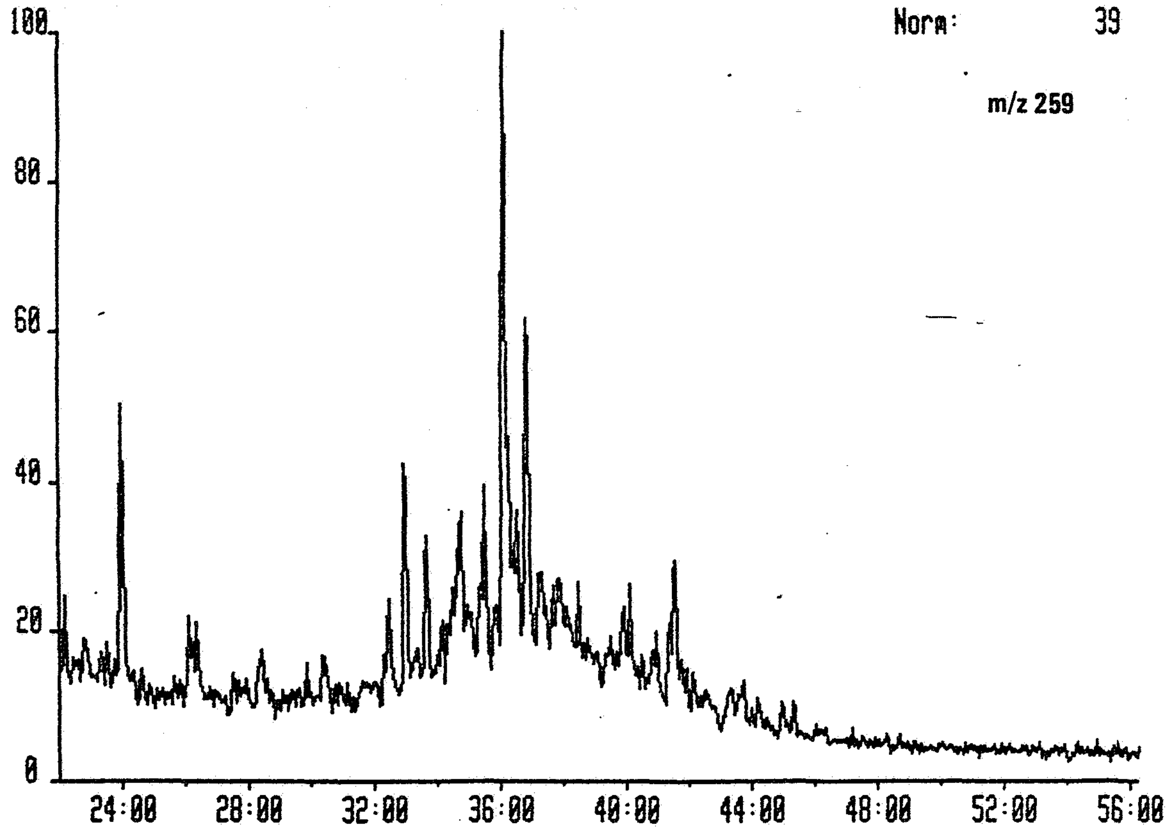
C6024 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



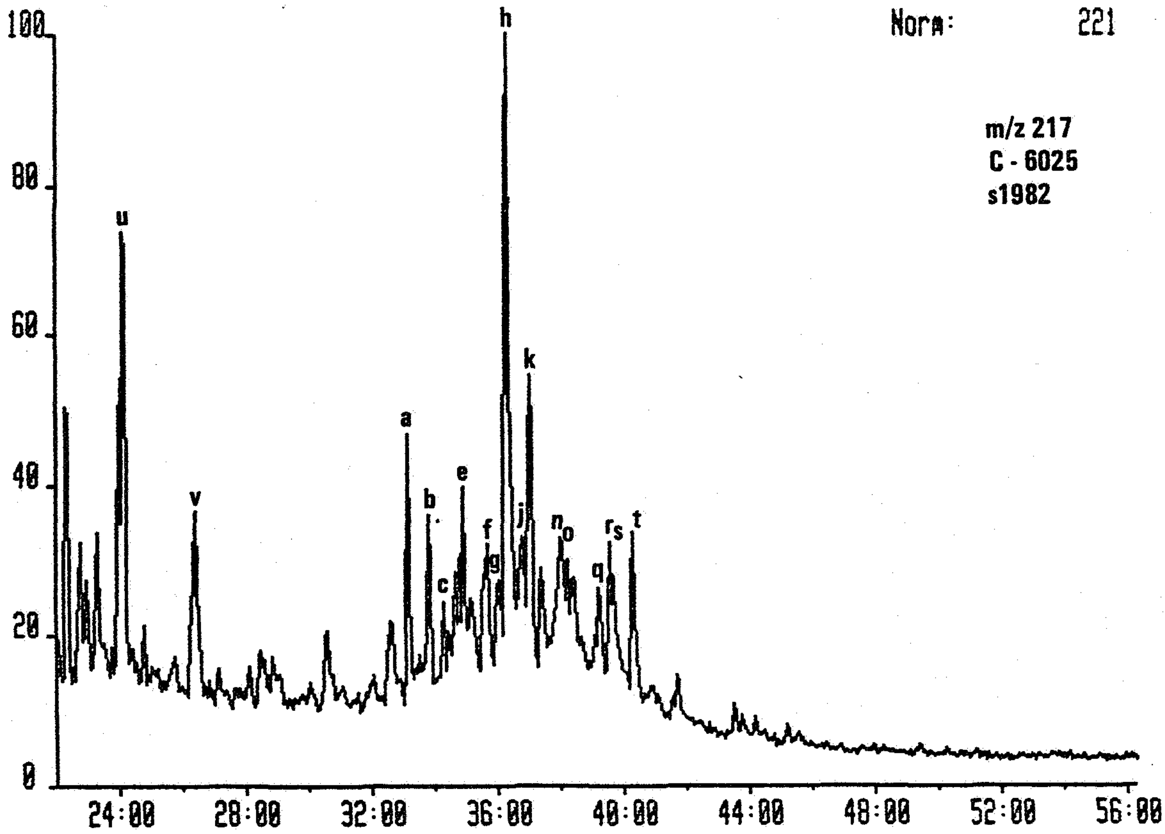
C6024 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



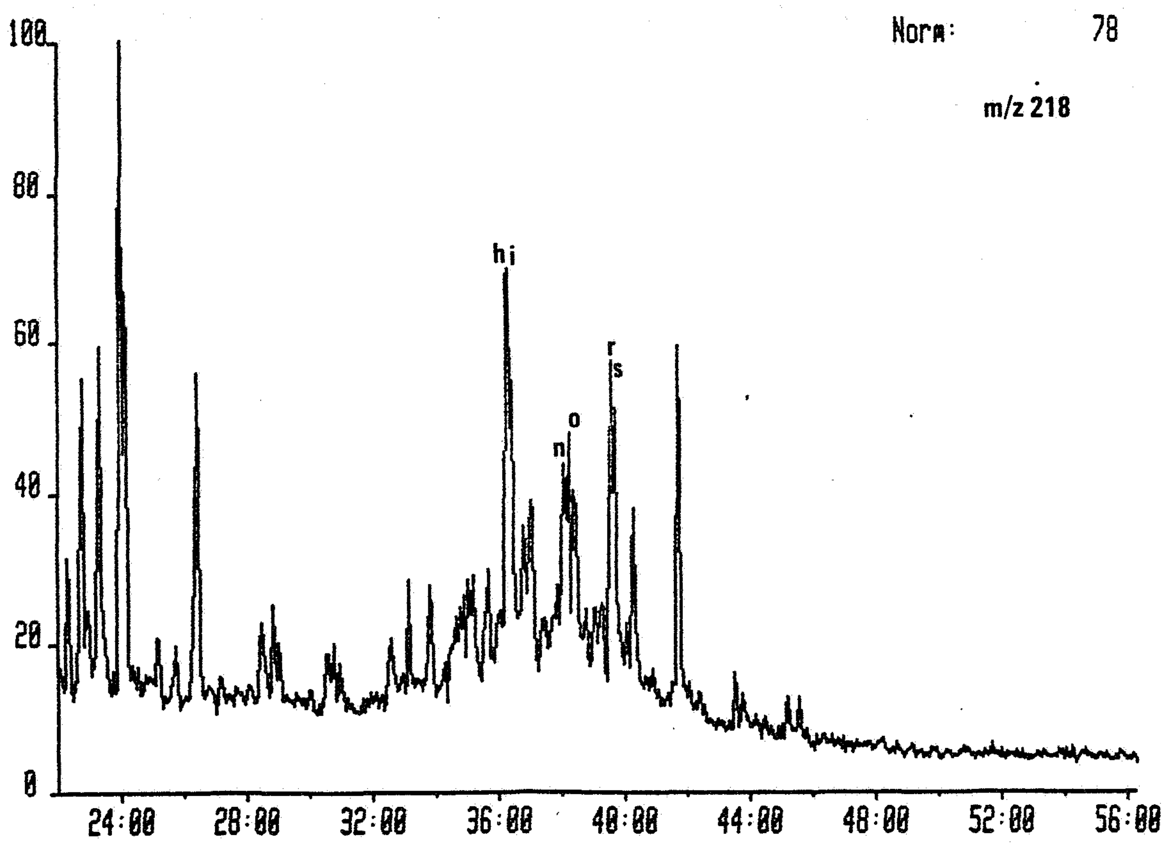
C6024 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



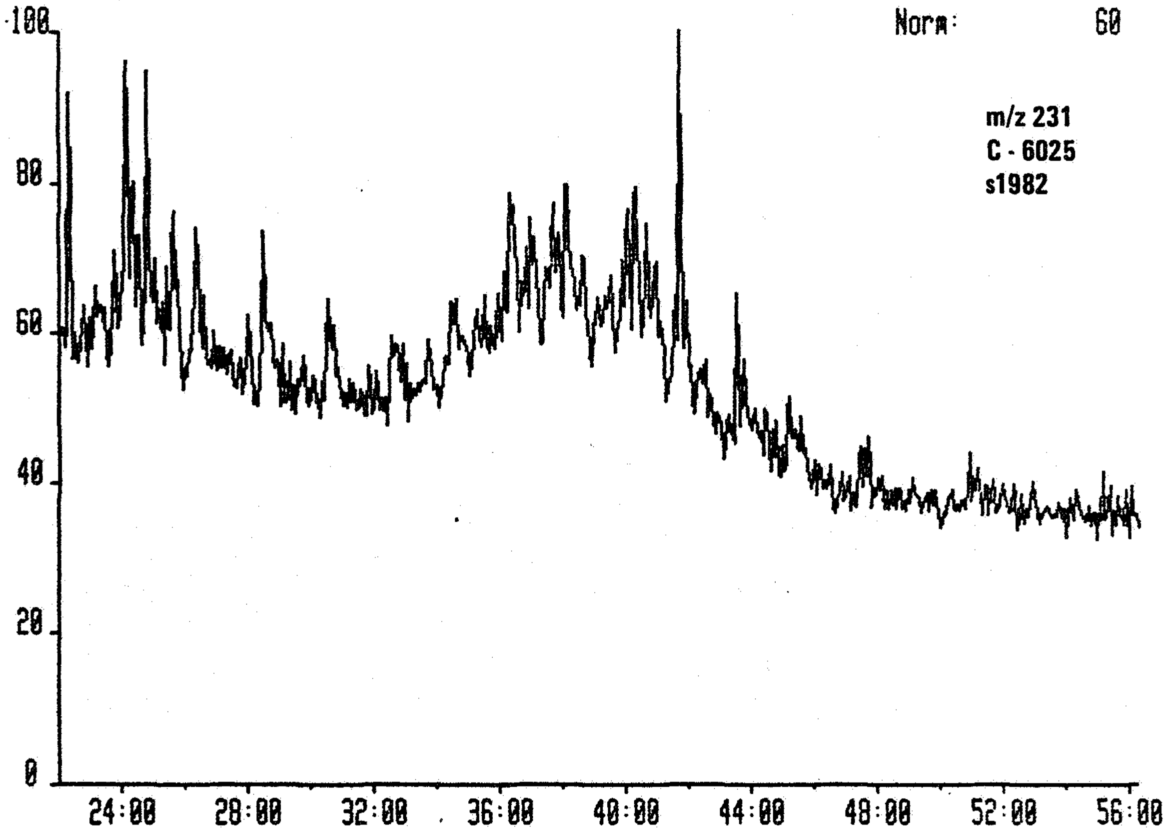
C6025 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



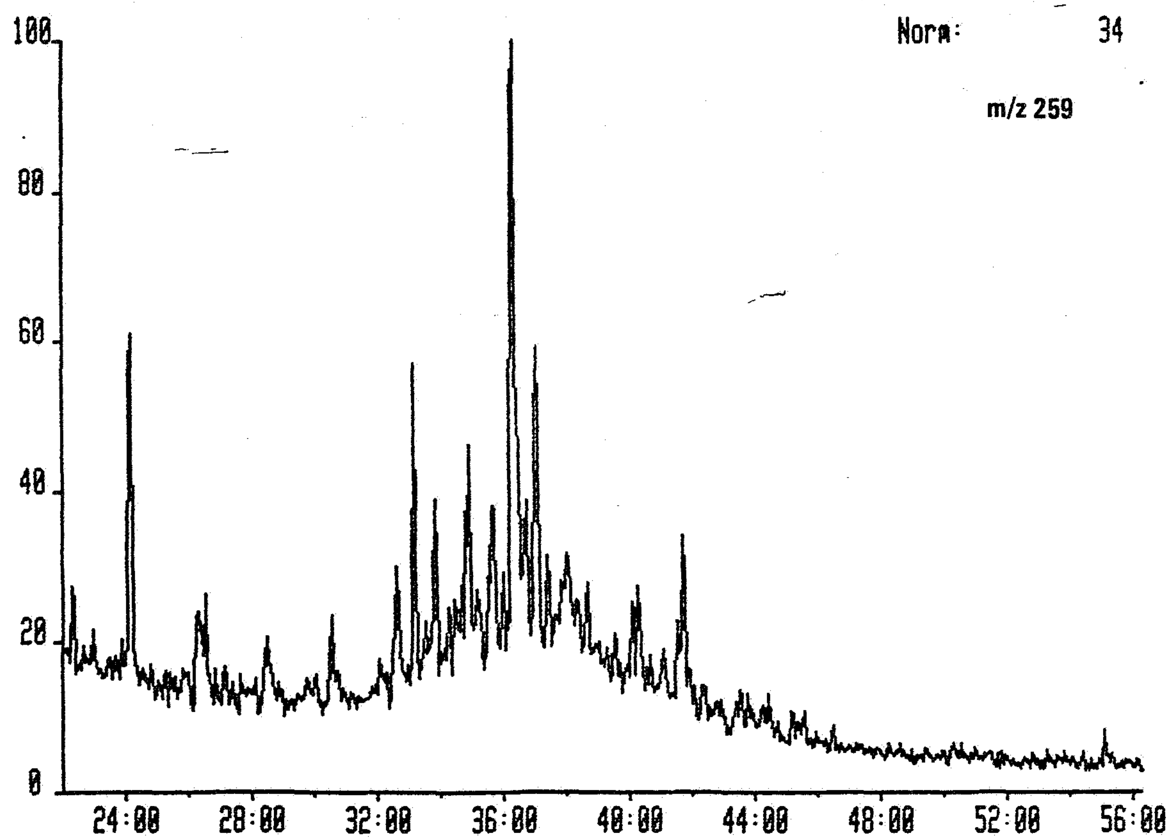
C6025 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



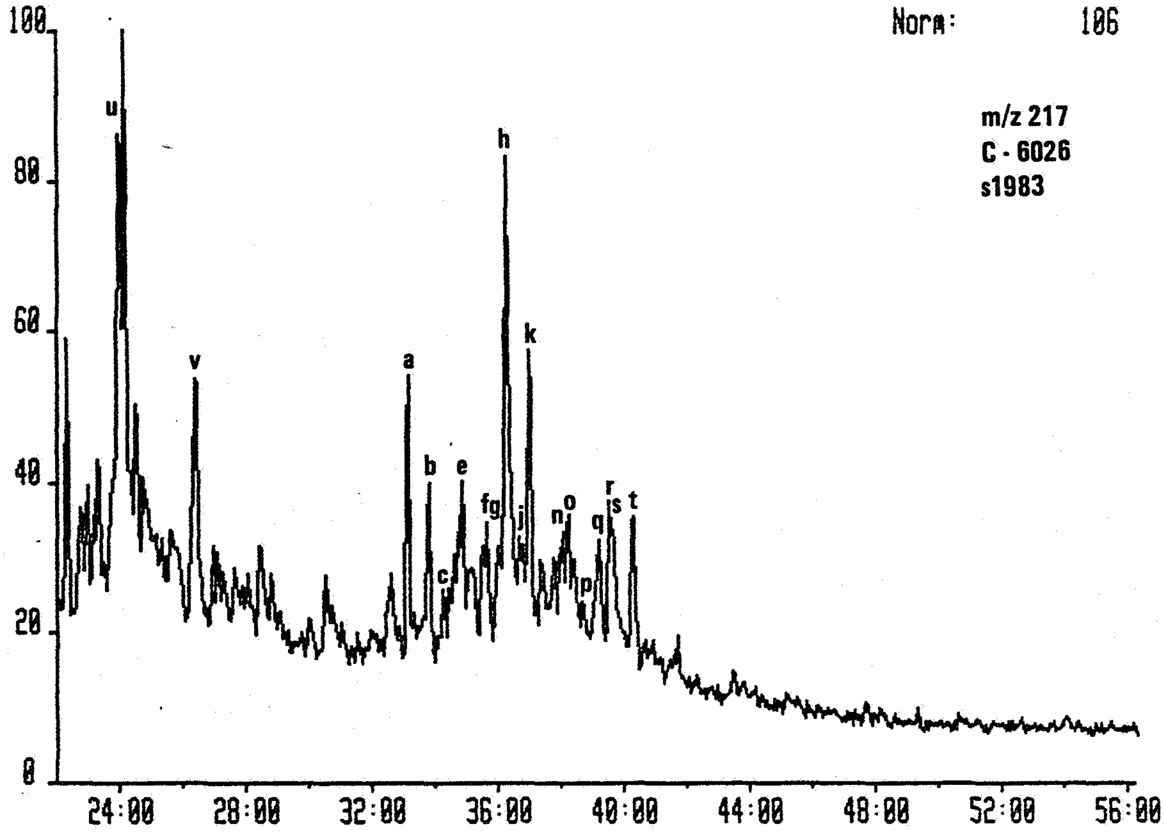
C6025 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



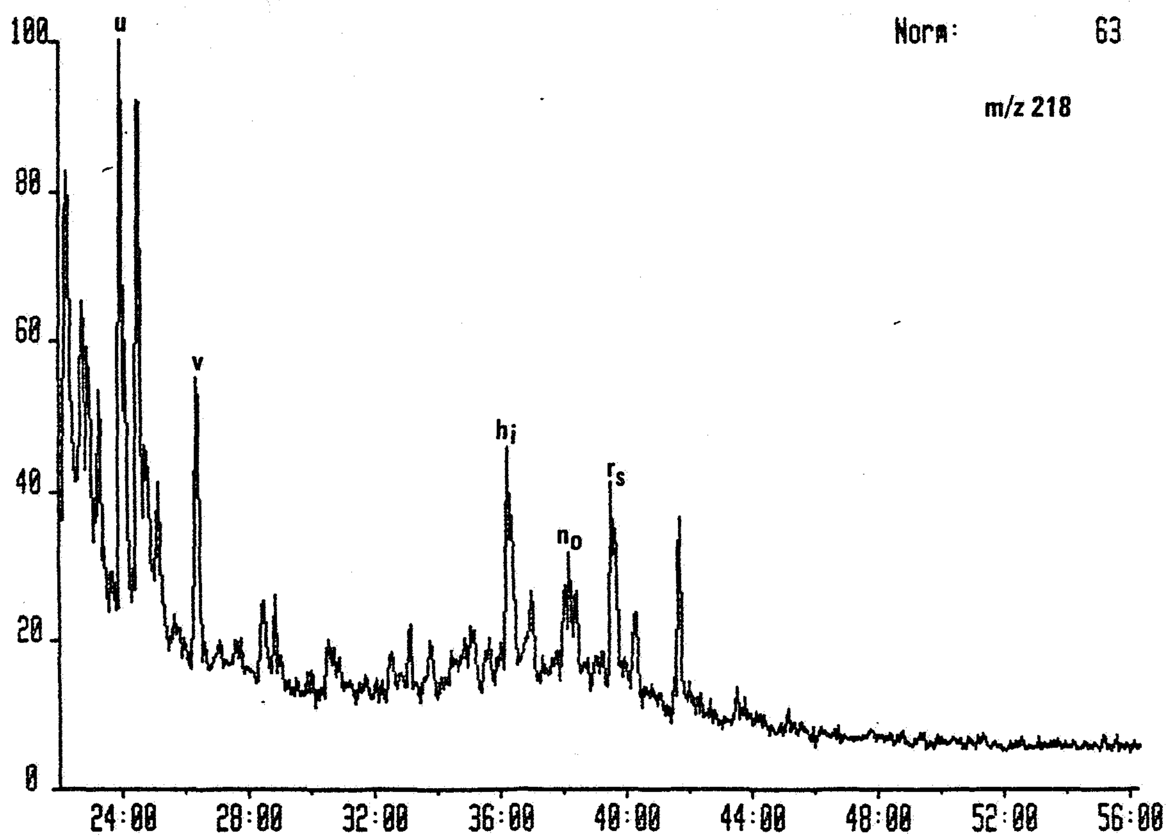
C6025 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



C6026 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



C6026 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



C6026 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
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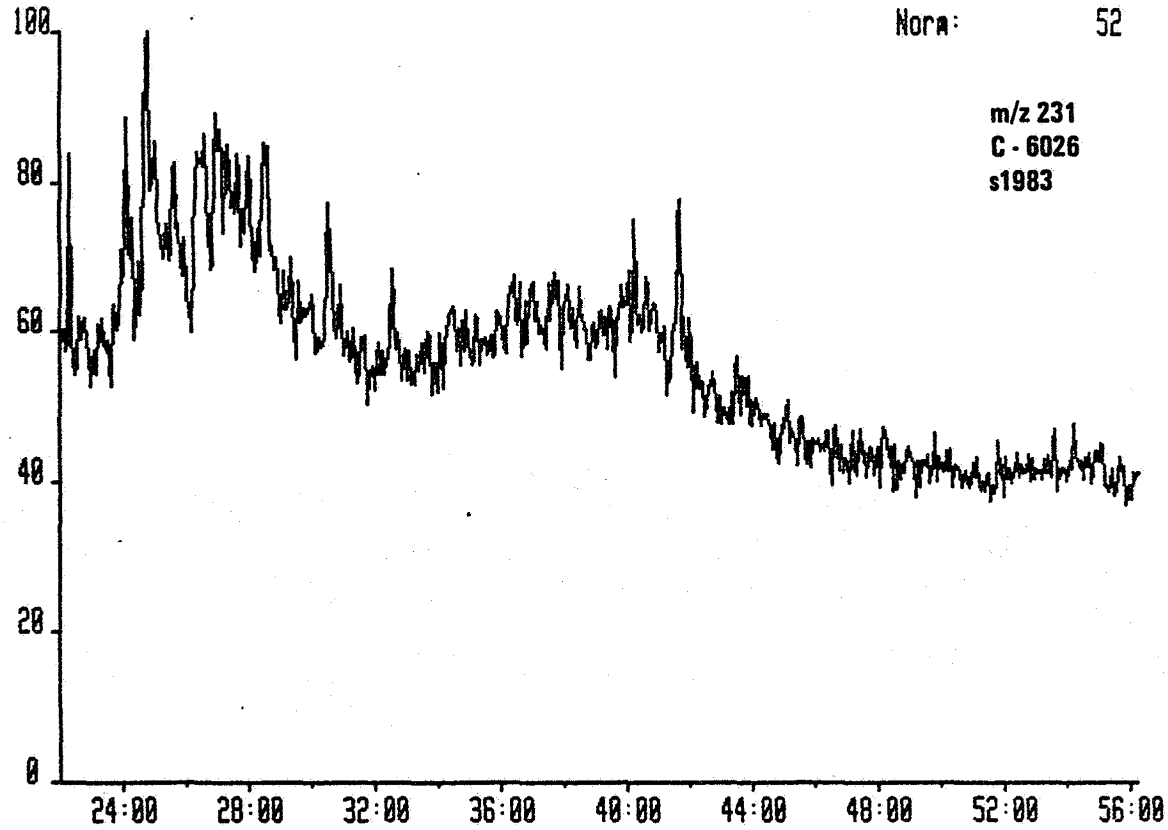

C6026 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
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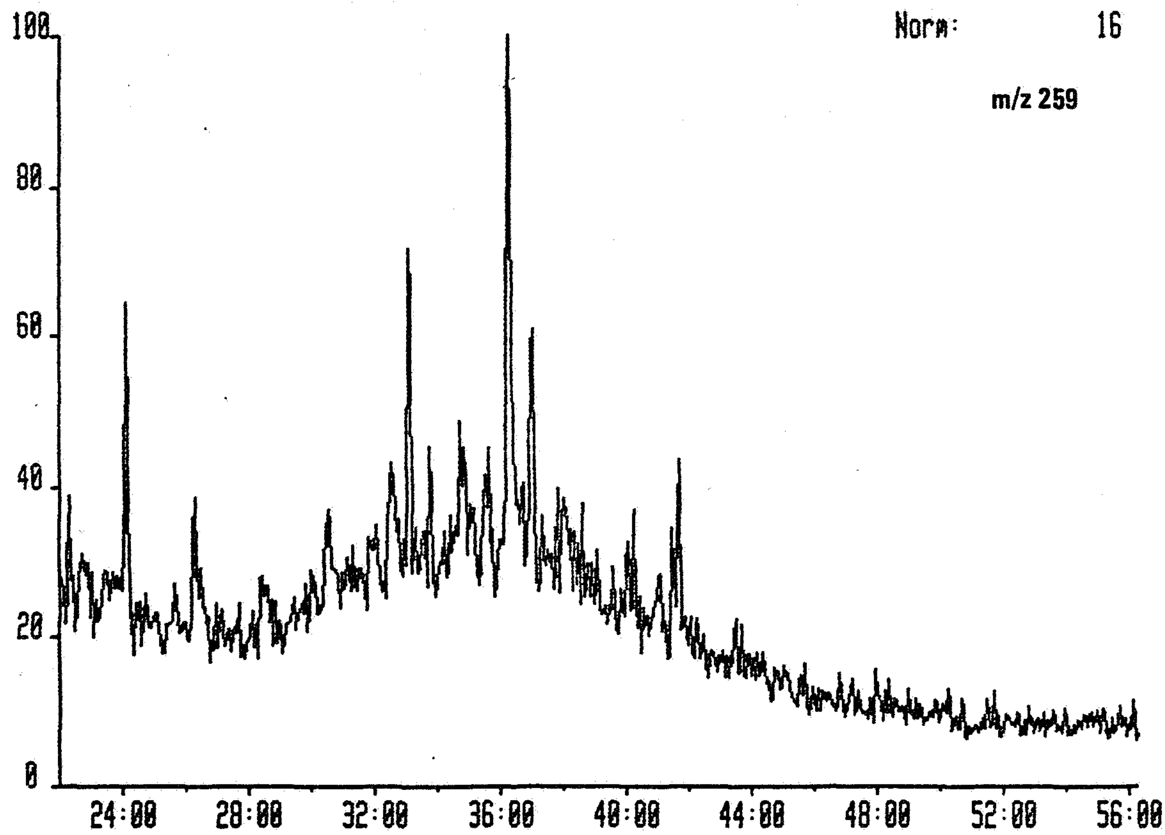
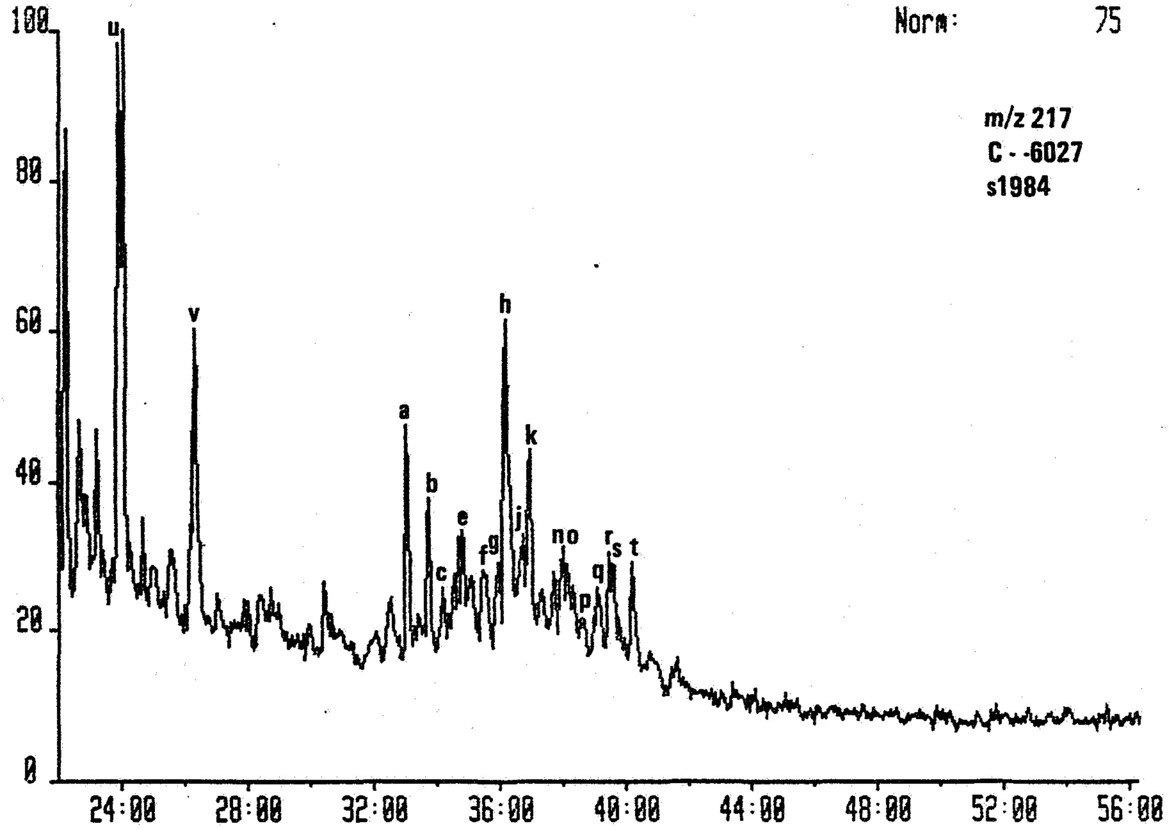
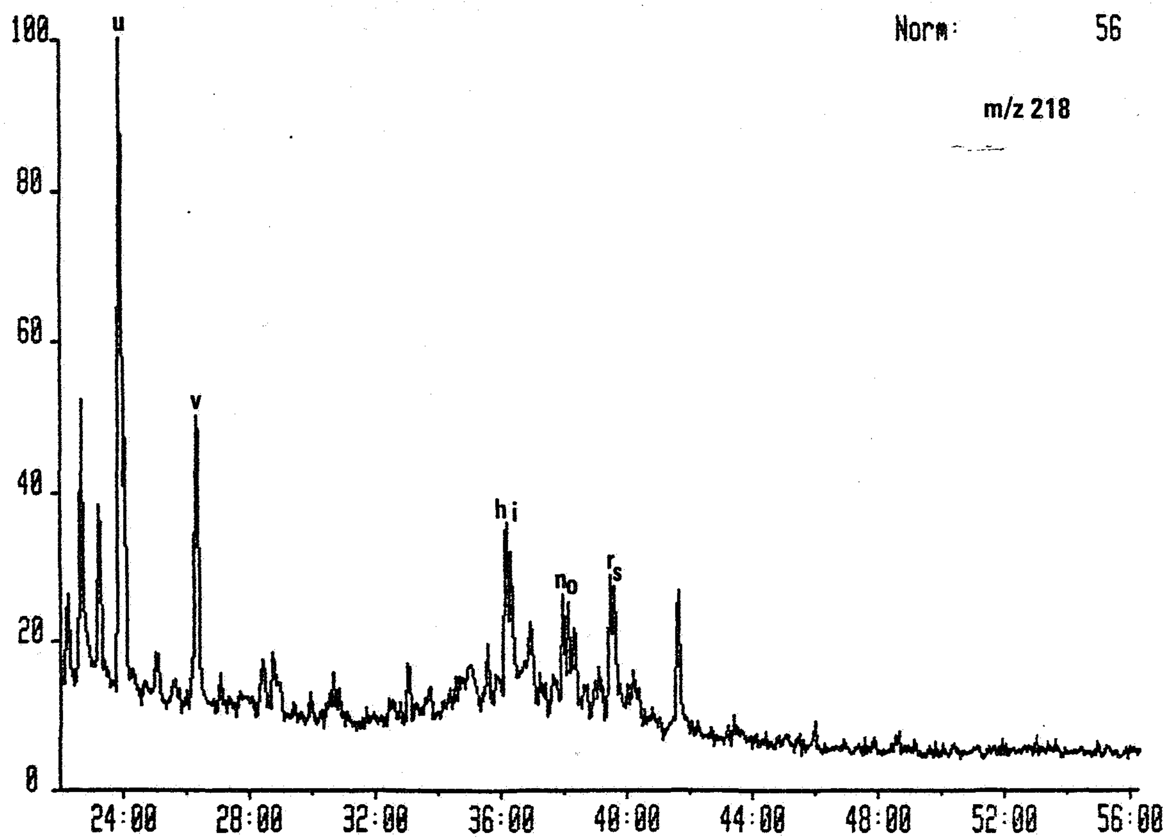


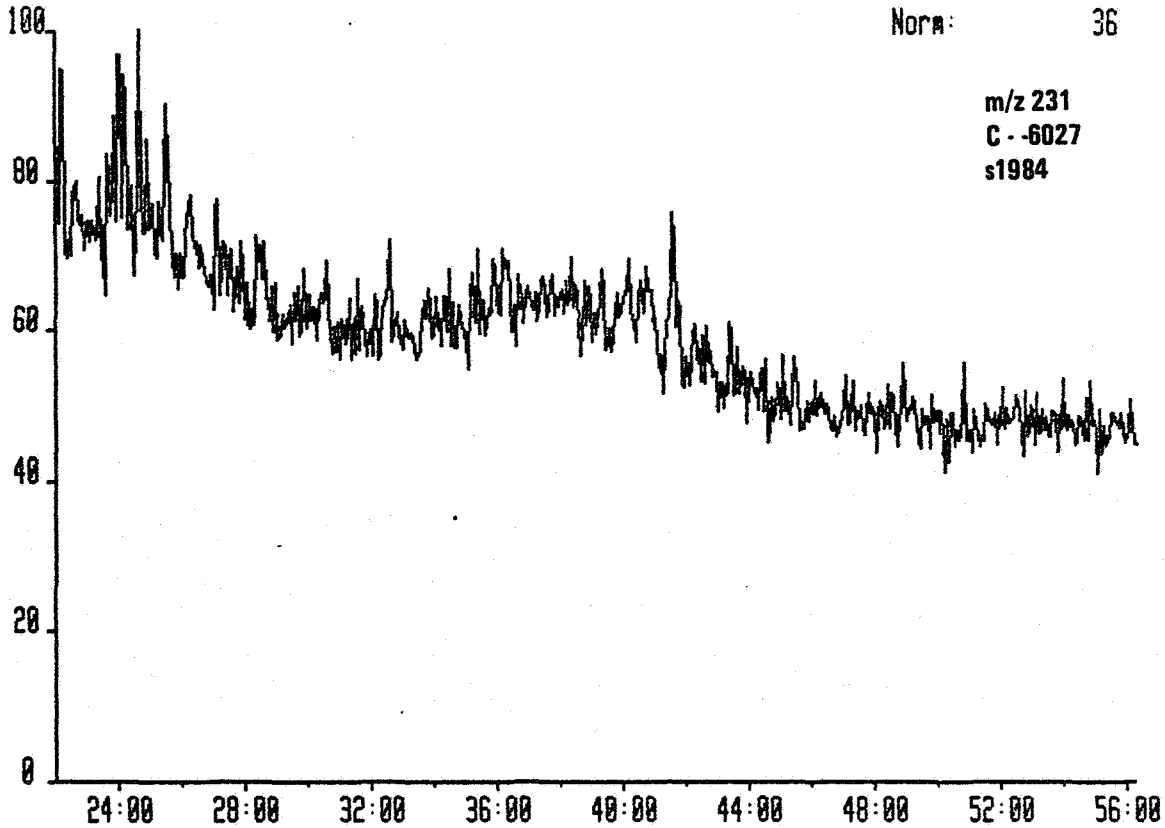
C6027 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



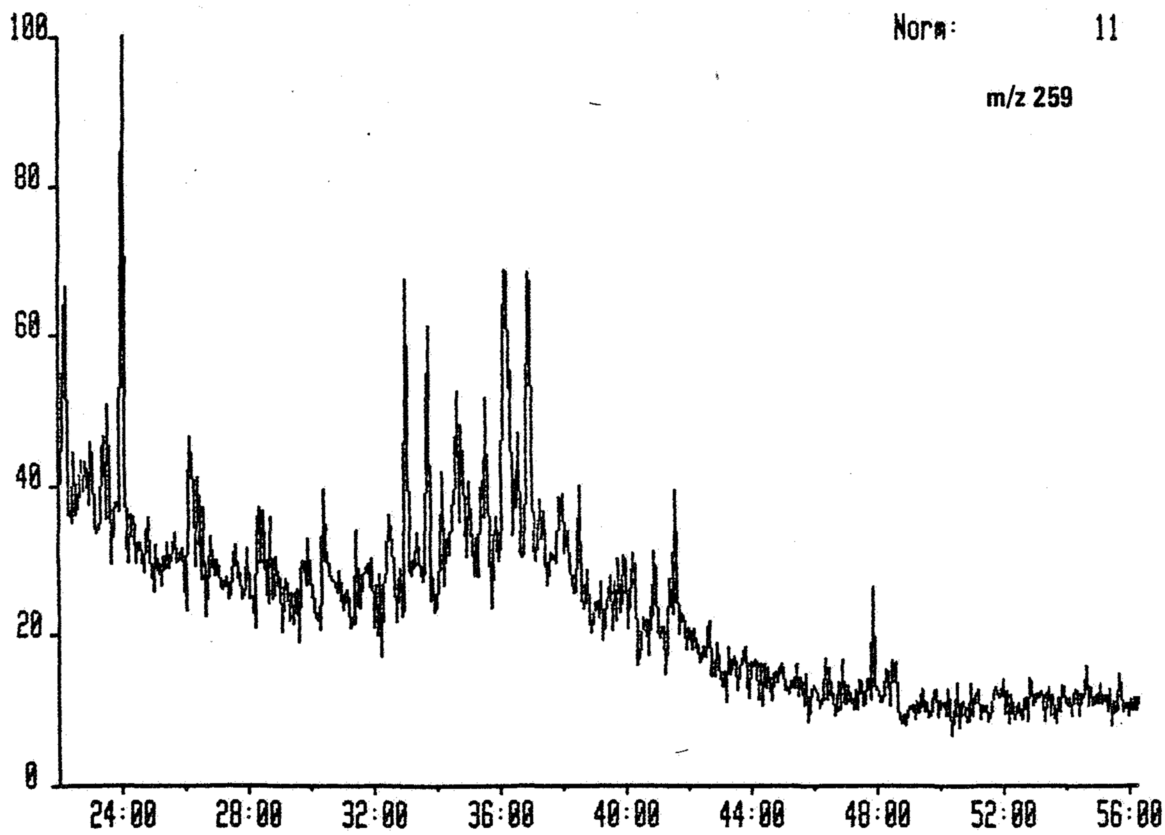
C6027 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



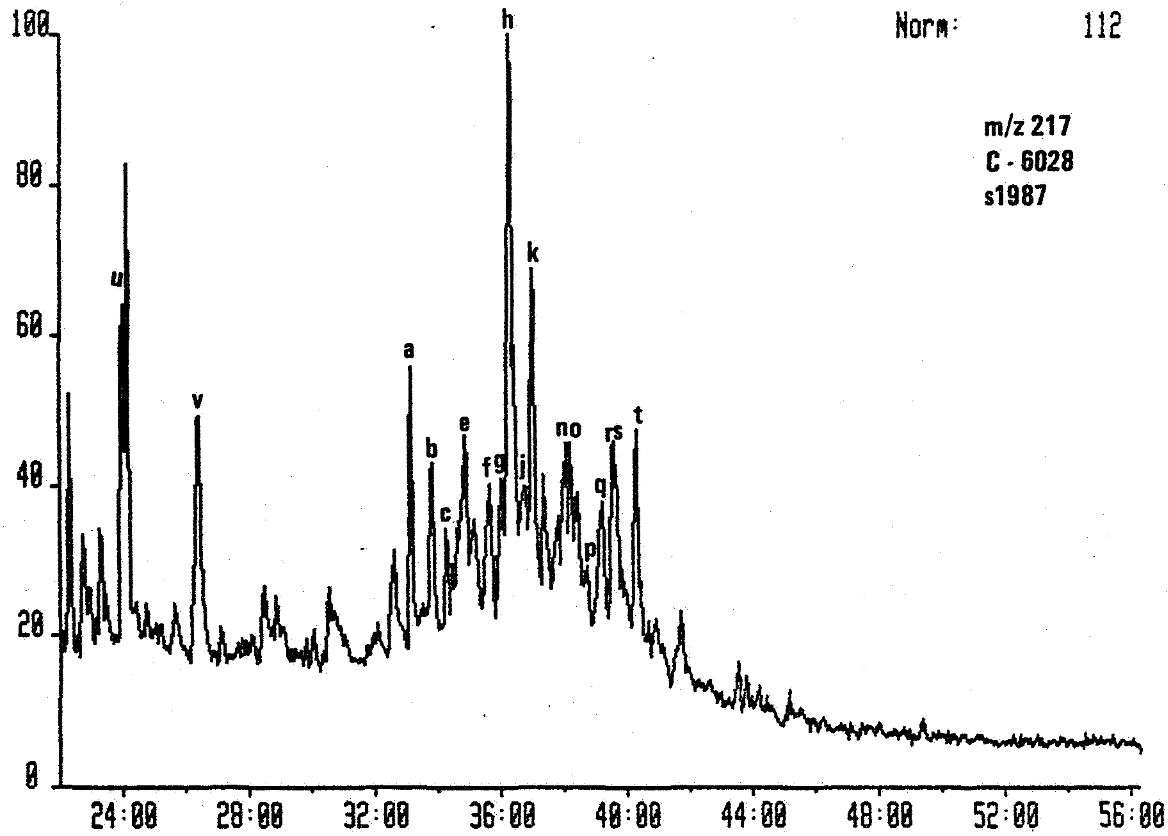
C6027 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



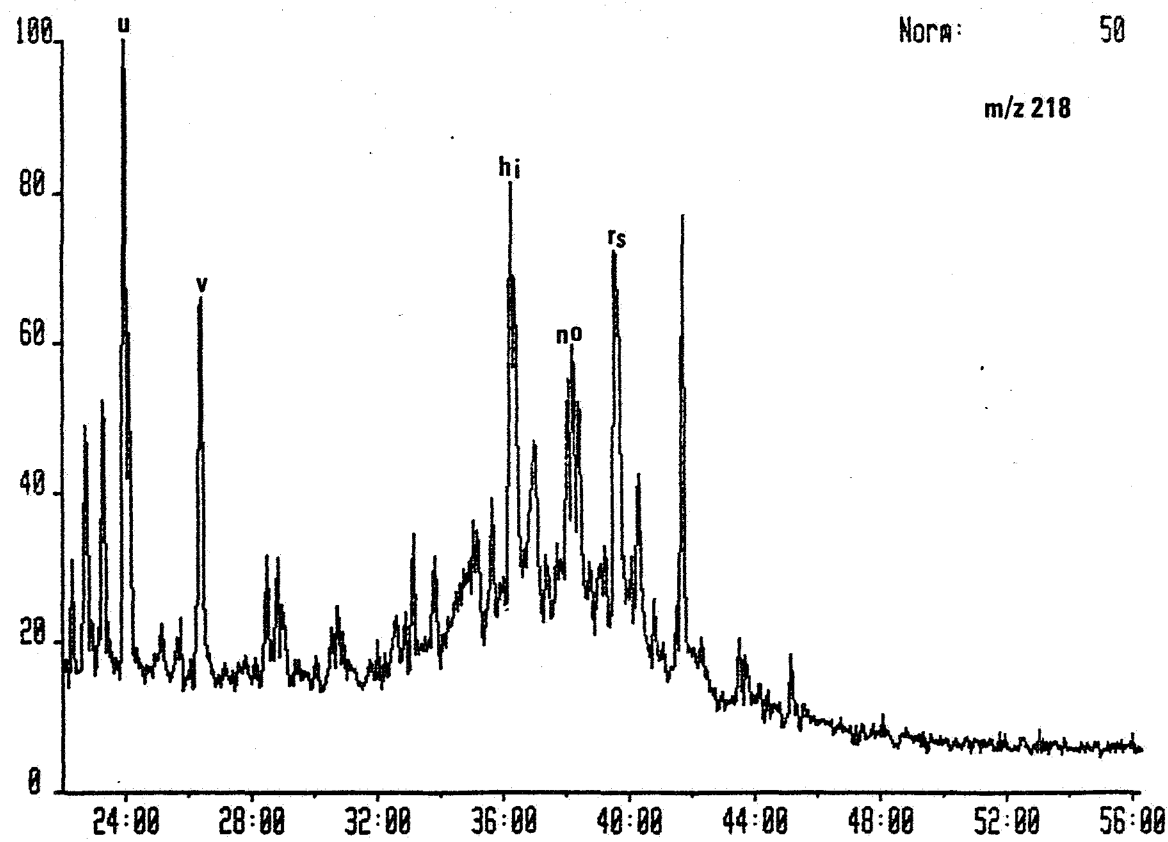
C6027 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



C6028 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:

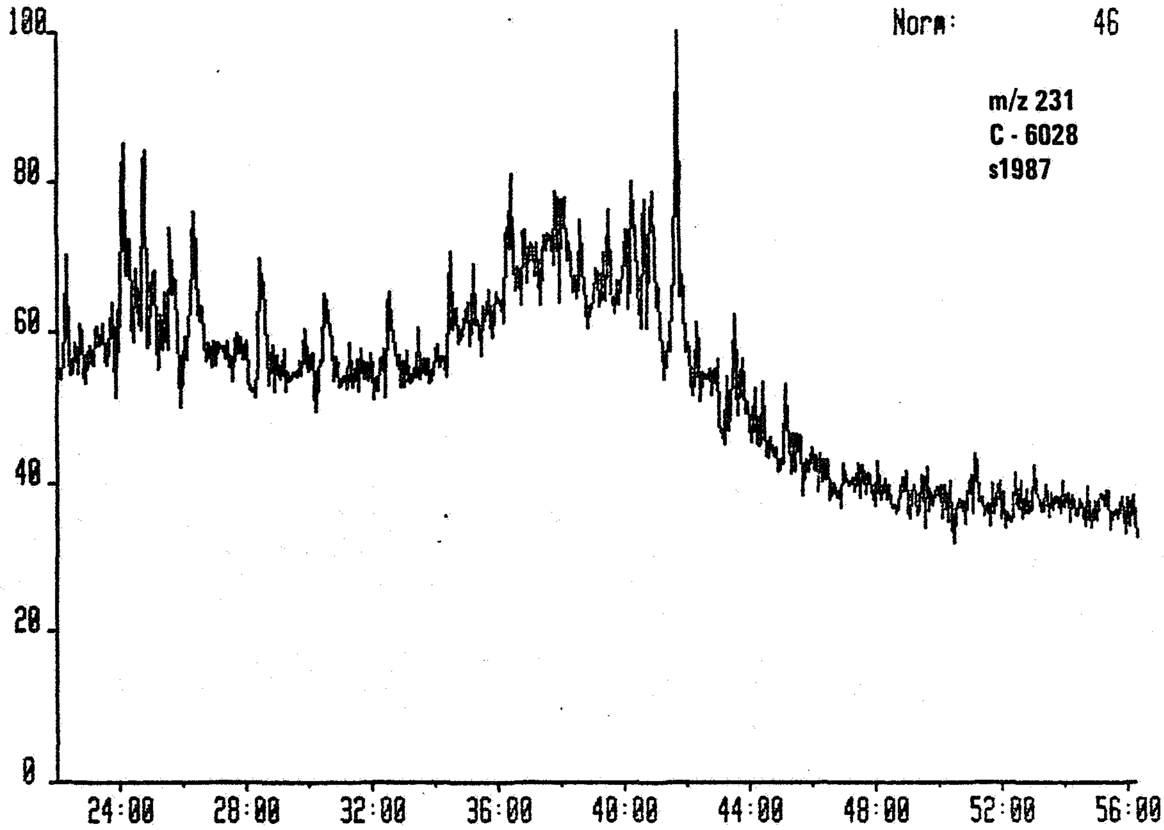


C6028 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:

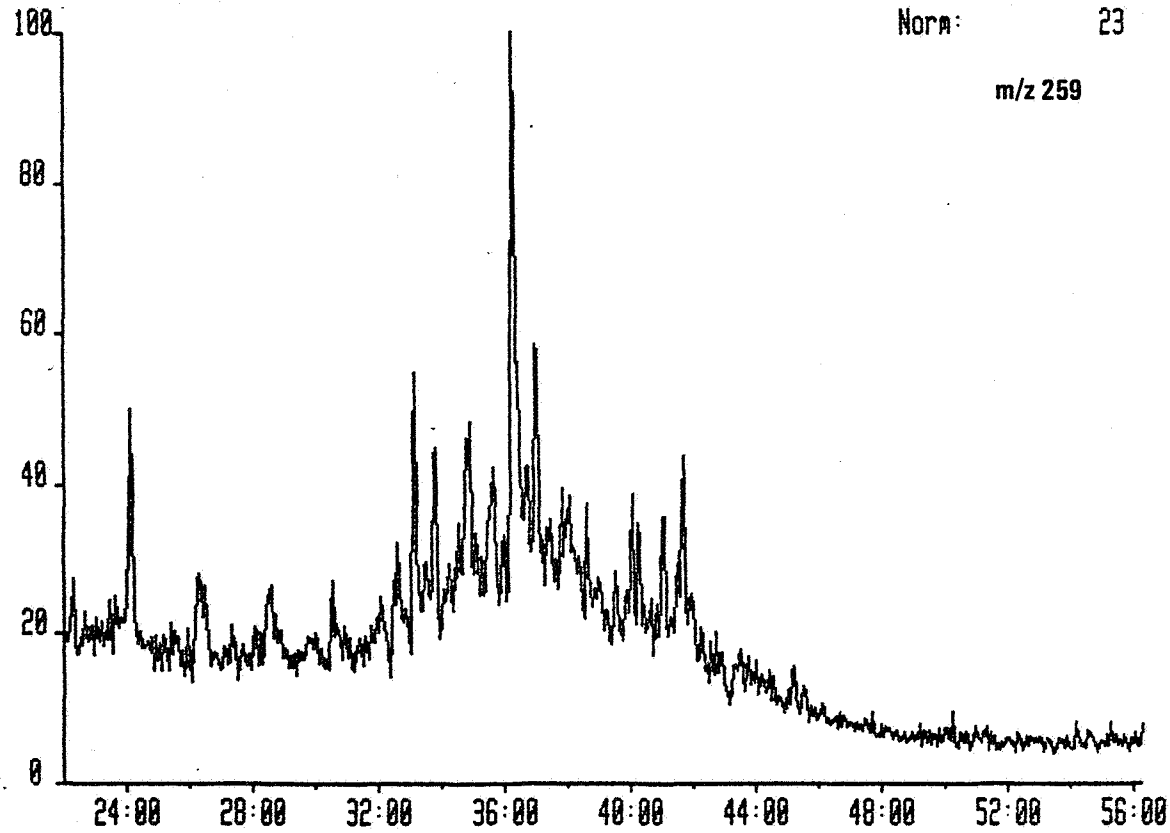


IKU SINTEF-GRUPPEN

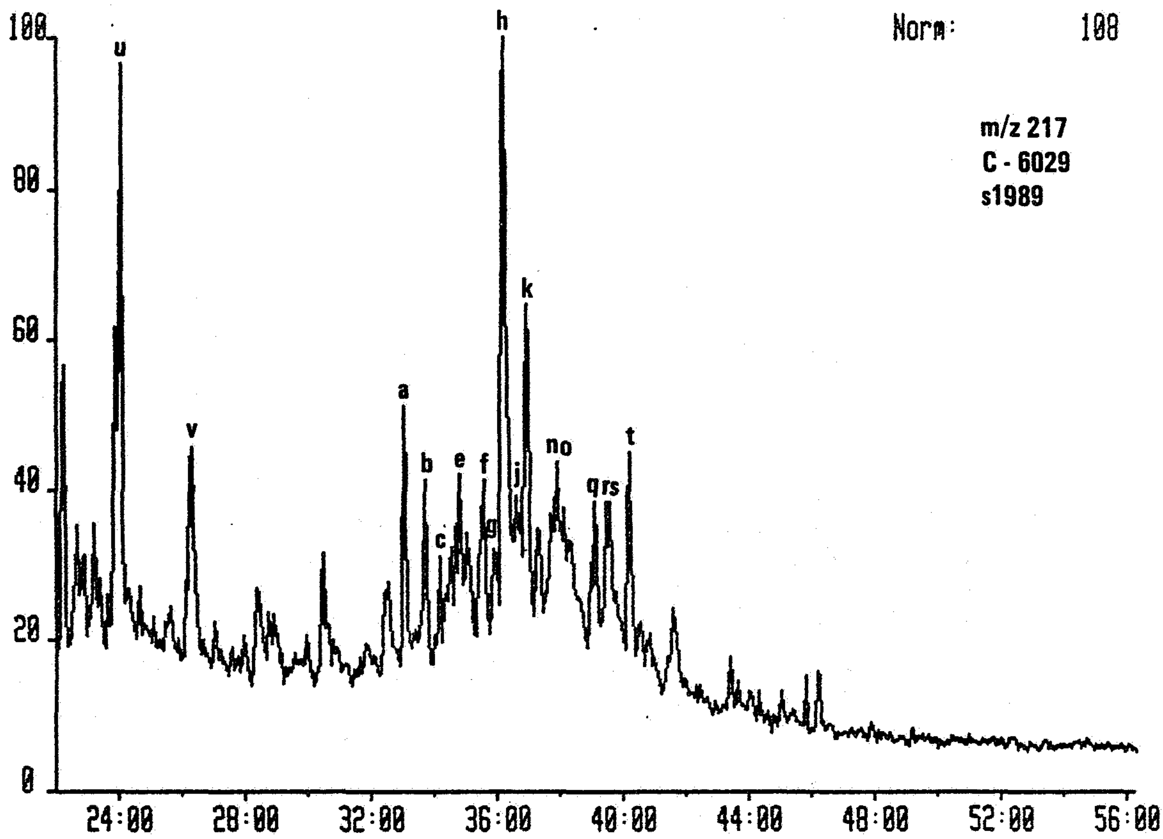
C6028 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



C6028 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



C6029 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



C6029 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
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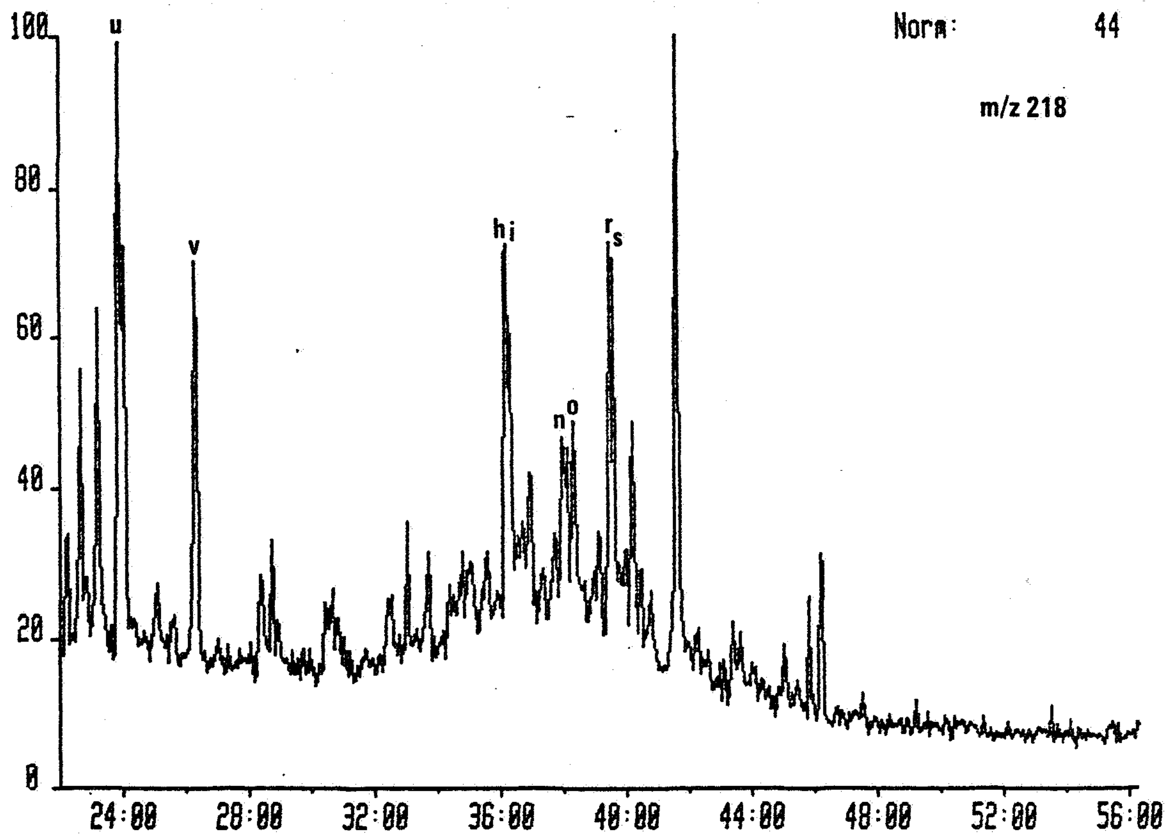
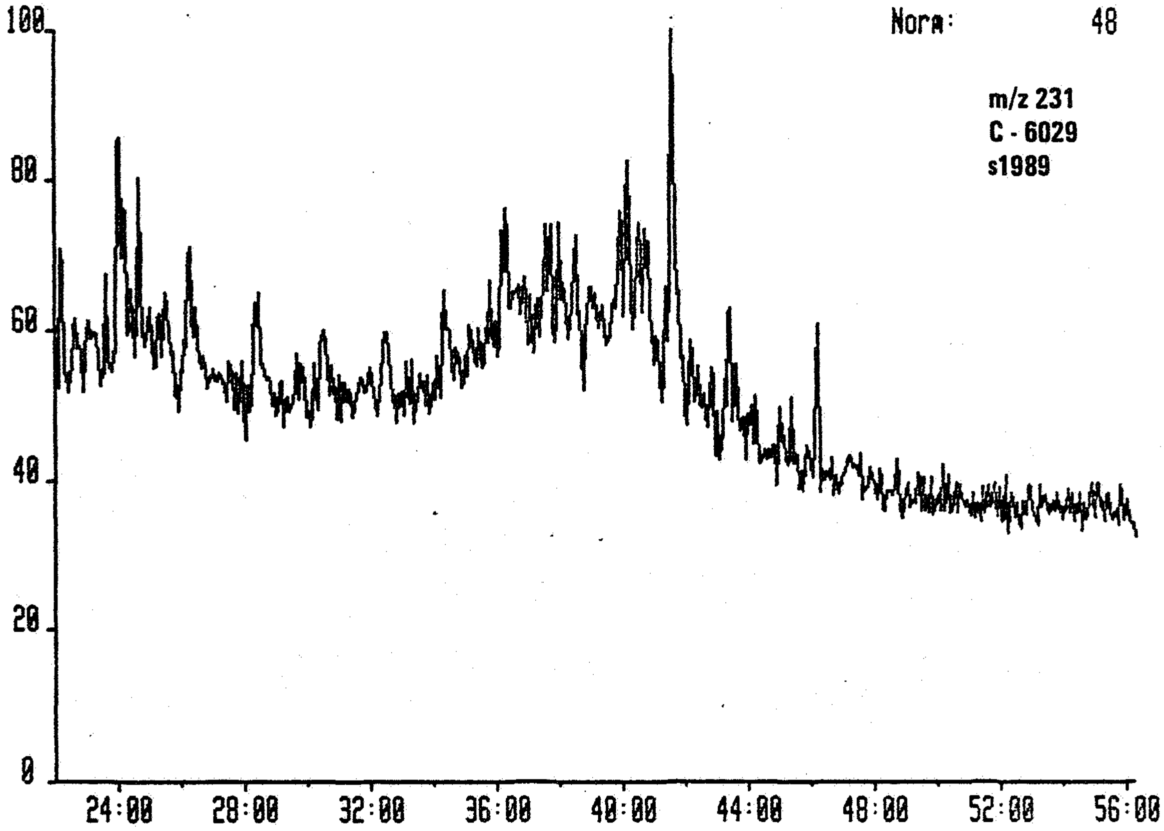
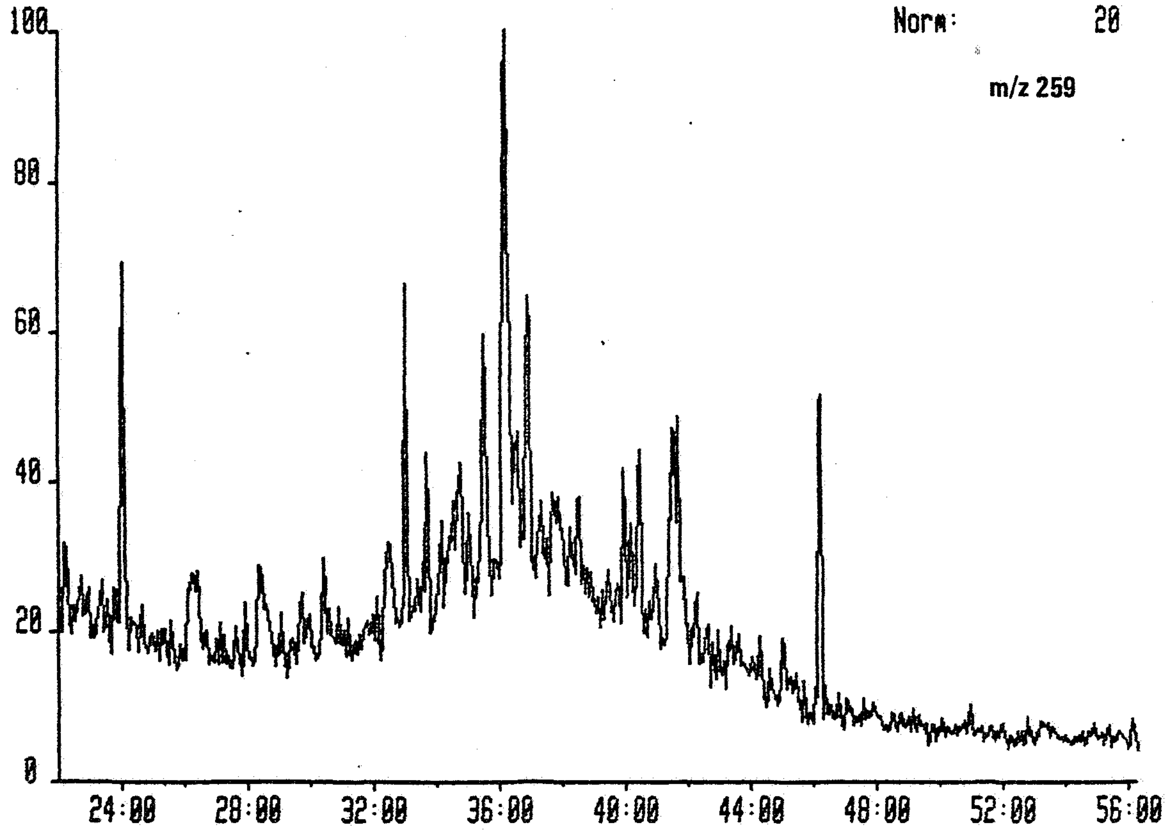


IKU SINTEF-GRUPPEN

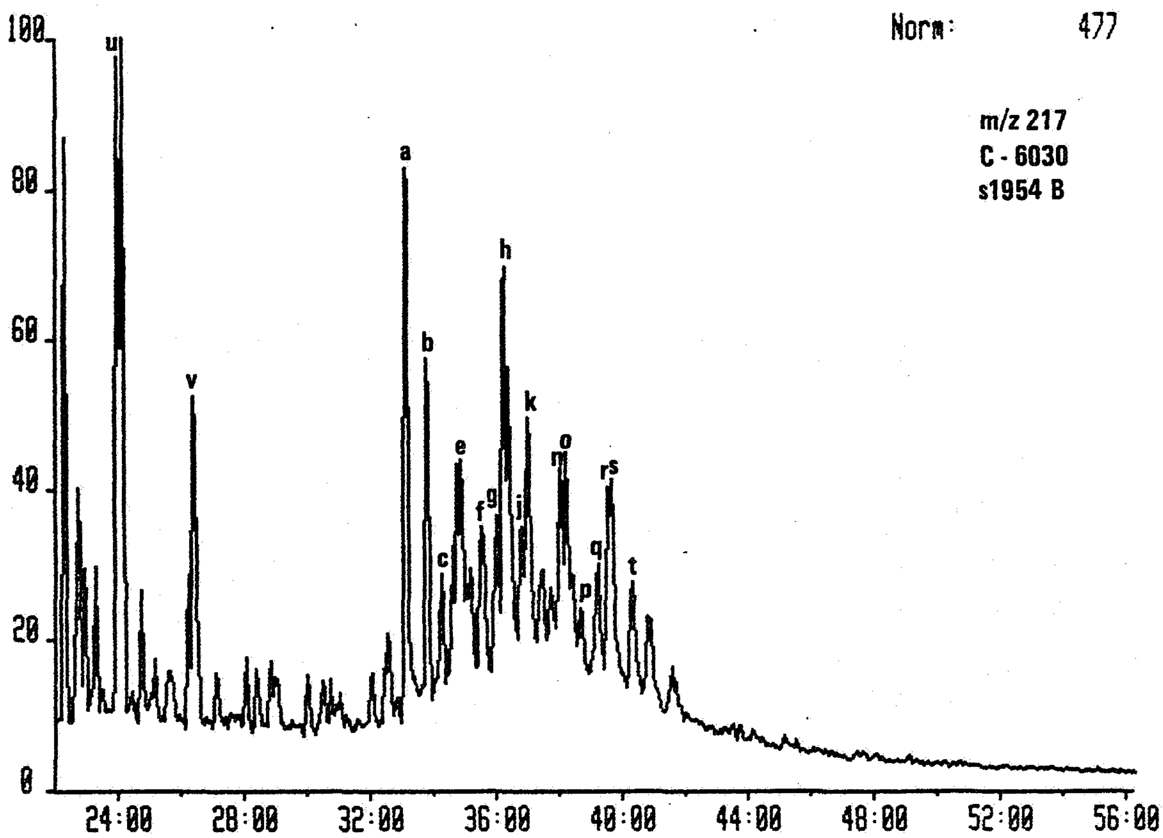
C6029 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



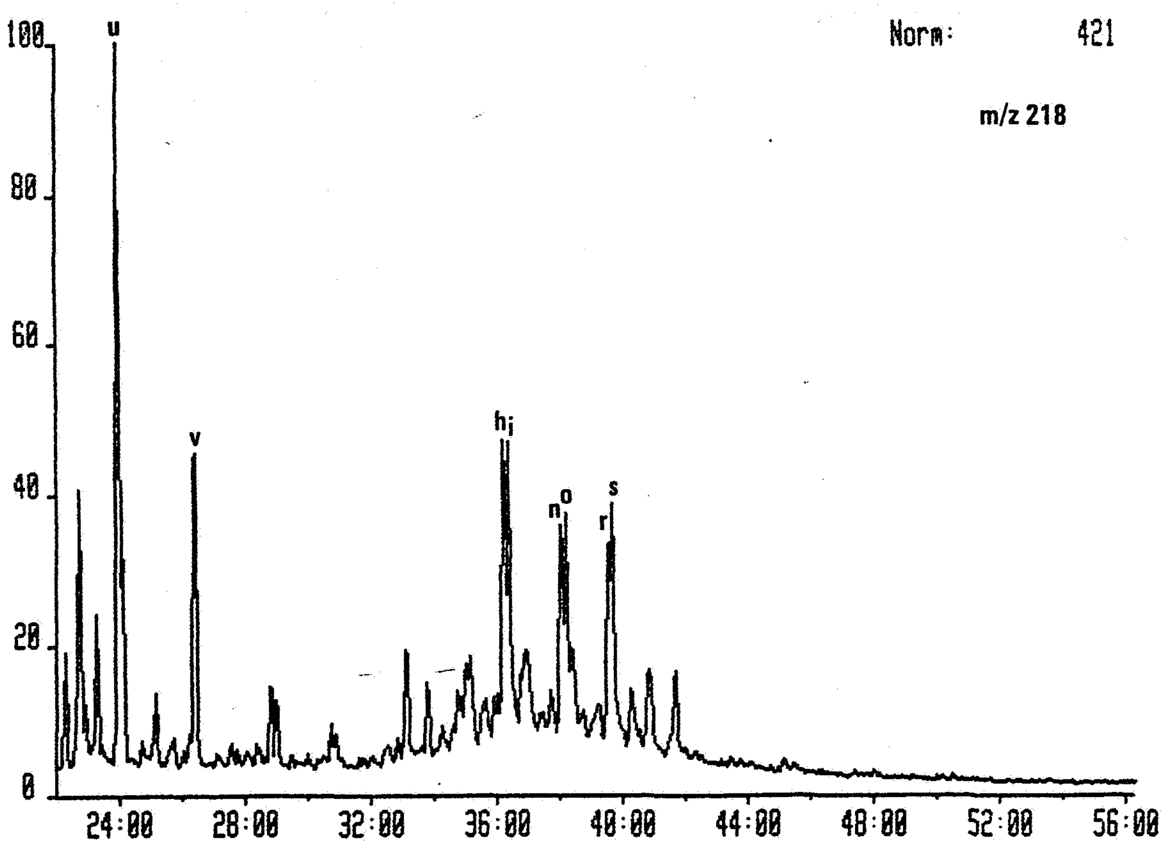
C6029 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



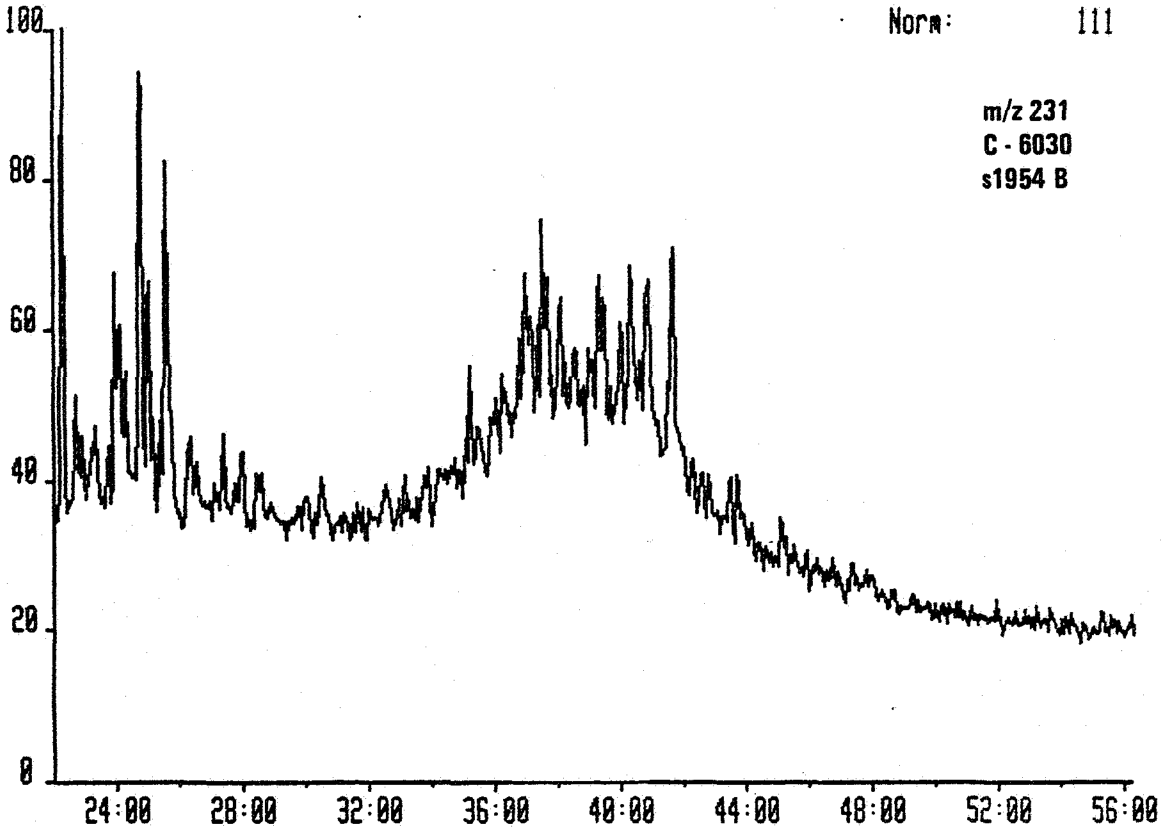
C6030 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



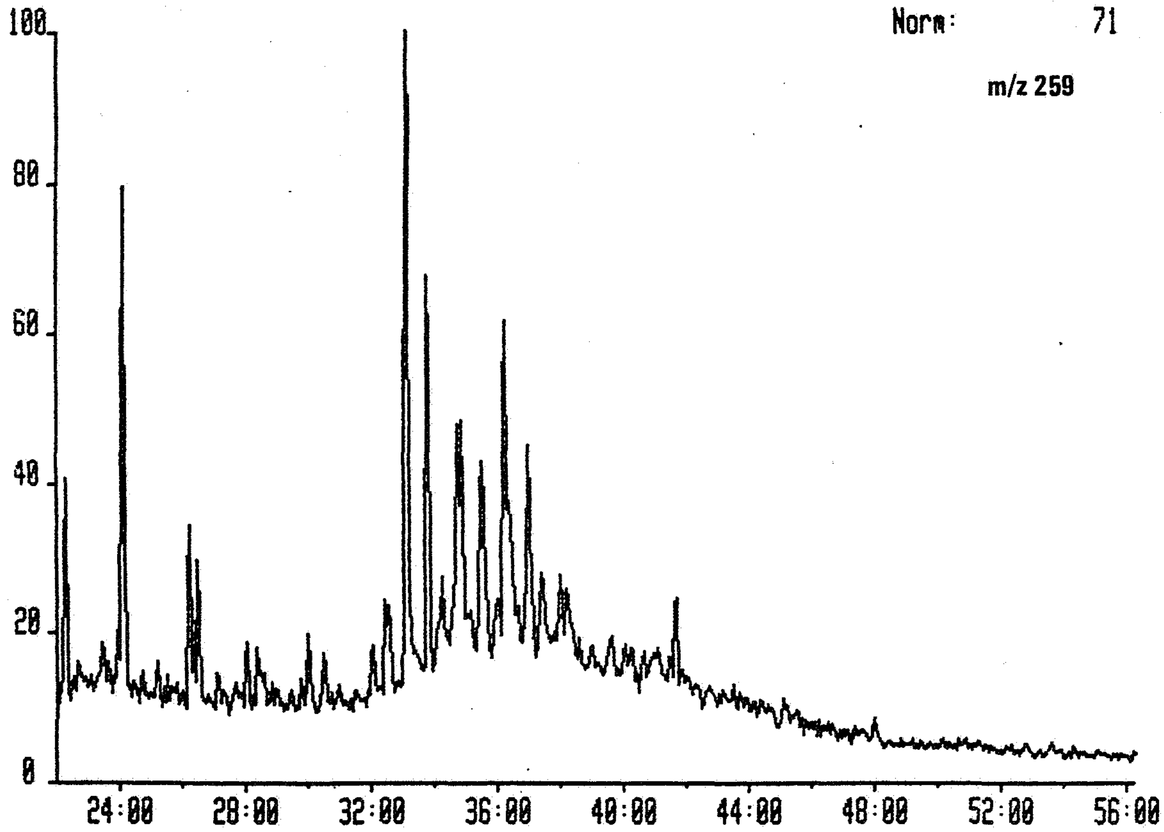
C6030 26-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



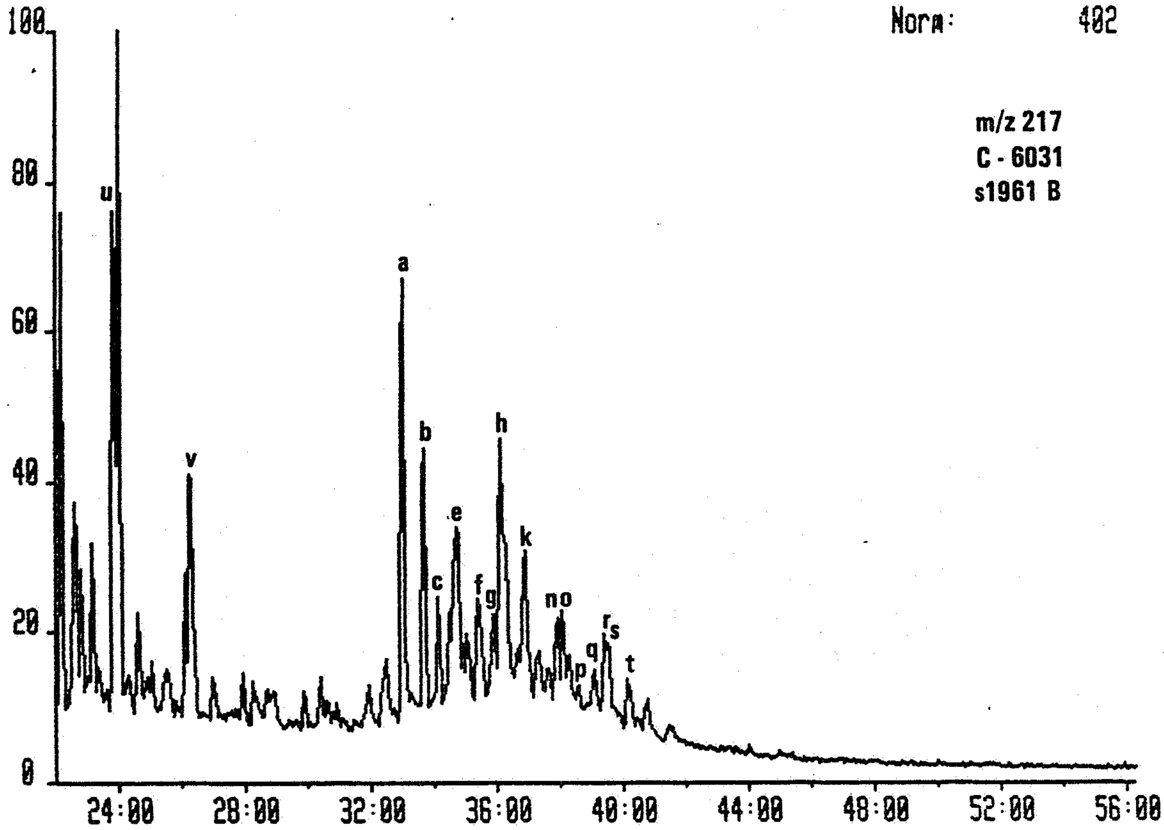
C6030   26-FEB-87   Sir:Voltage 7070H   Acnt:IKU   System:TRIT
Sample 1   Injection 1   Group 1   Mass 231.1000
Text:



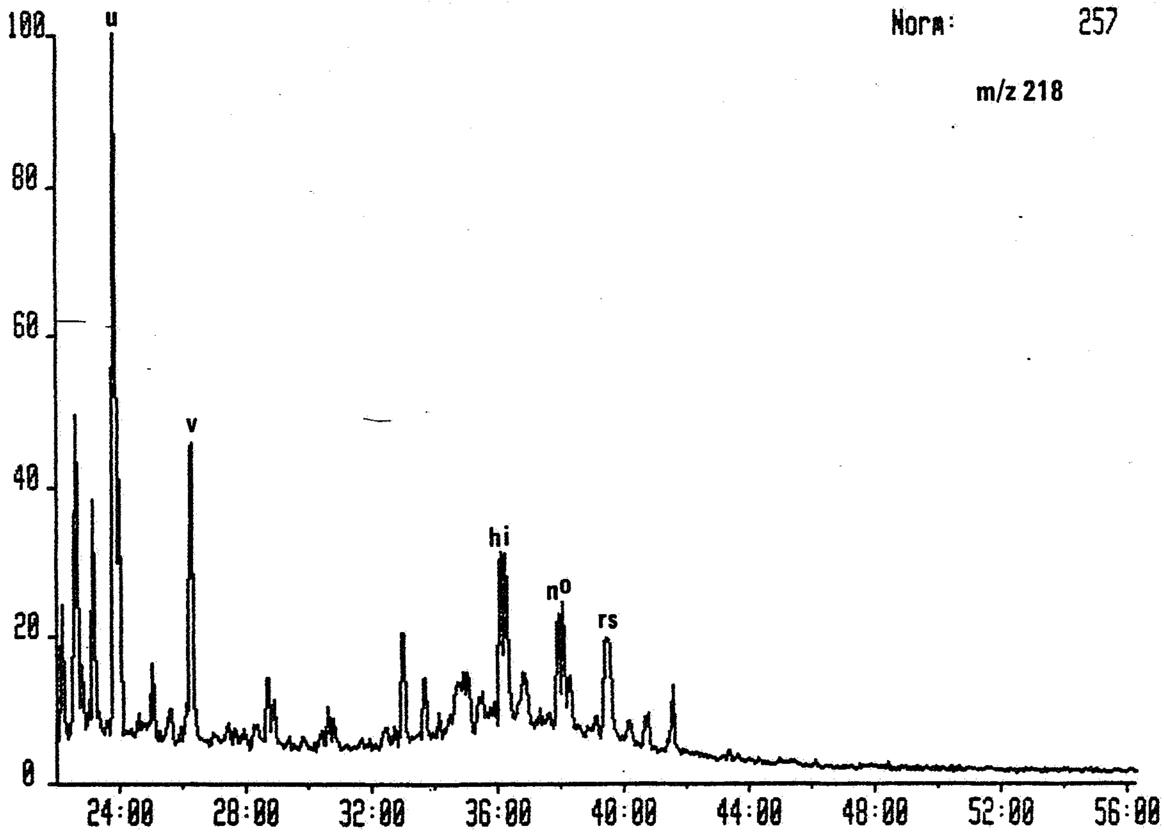
C6030   26-FEB-87   Sir:Voltage 7070H   Acnt:IKU   System:TRIT
Sample 1   Injection 1   Group 1   Mass 259.1000
Text:



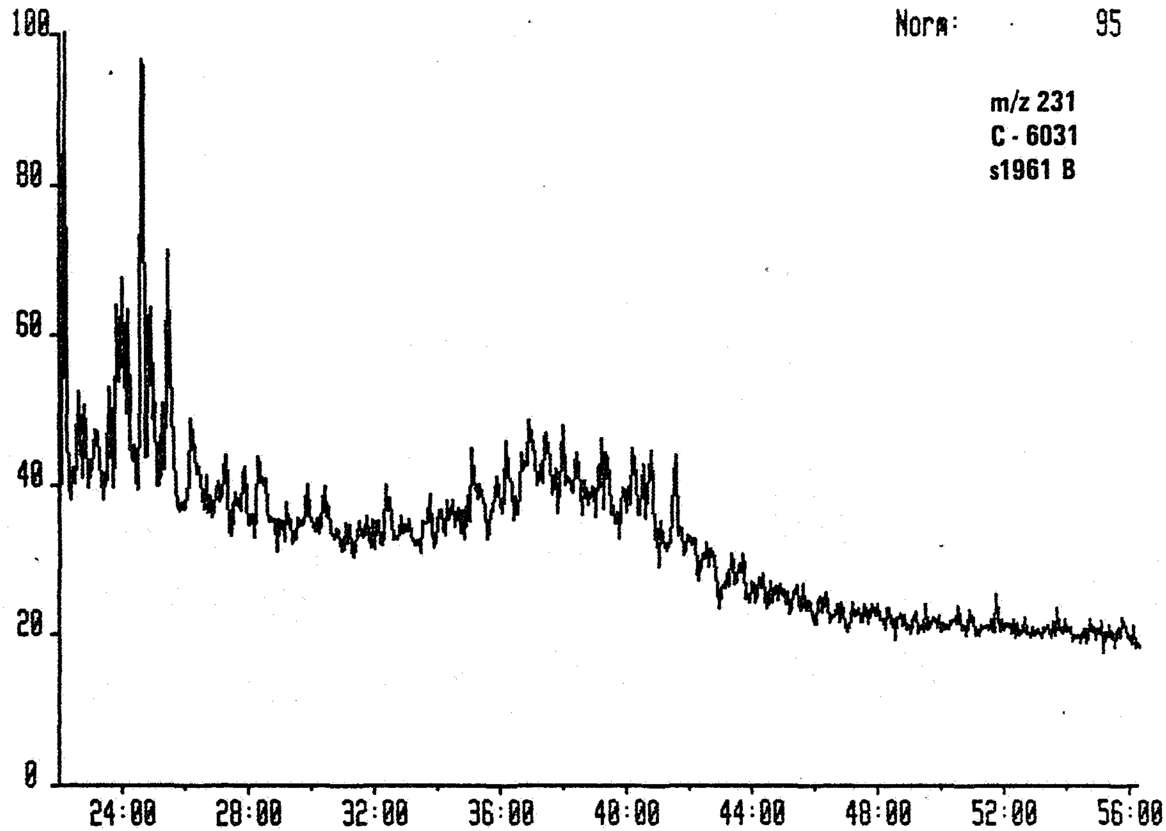
C6031 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



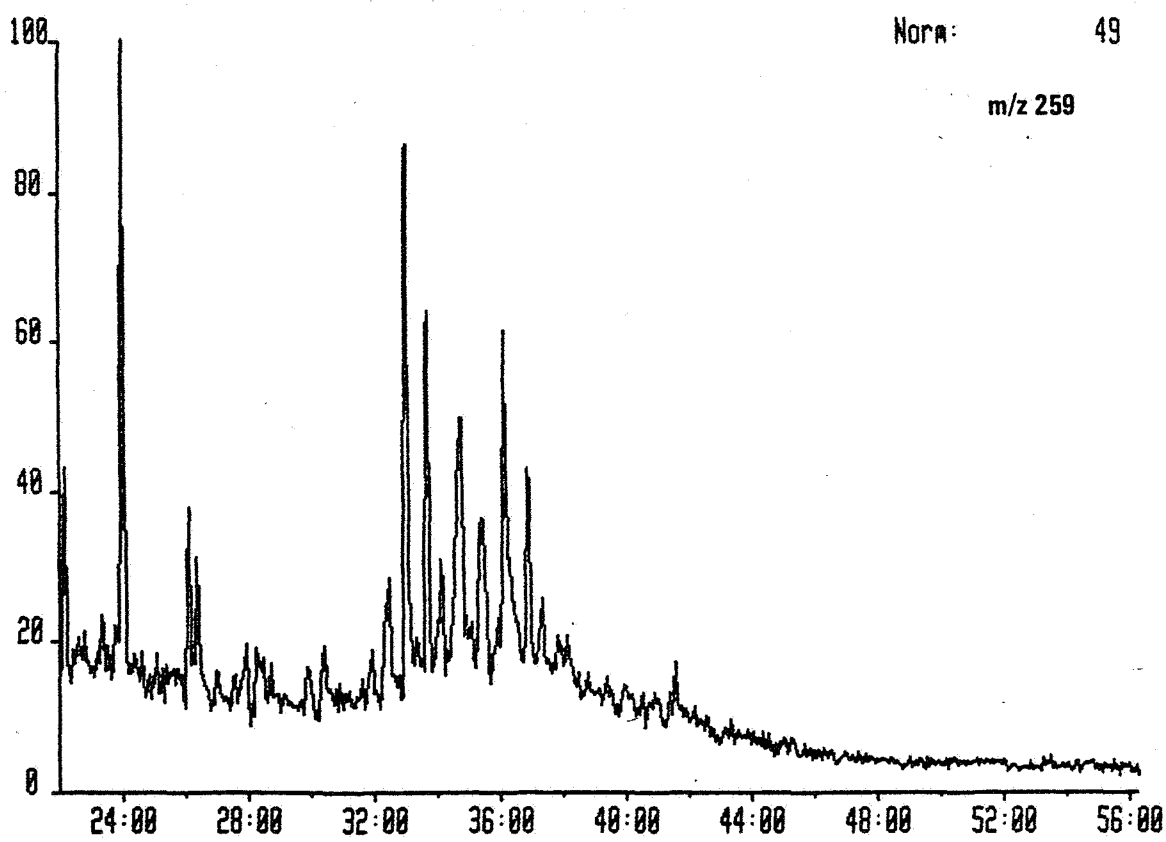
C6031 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



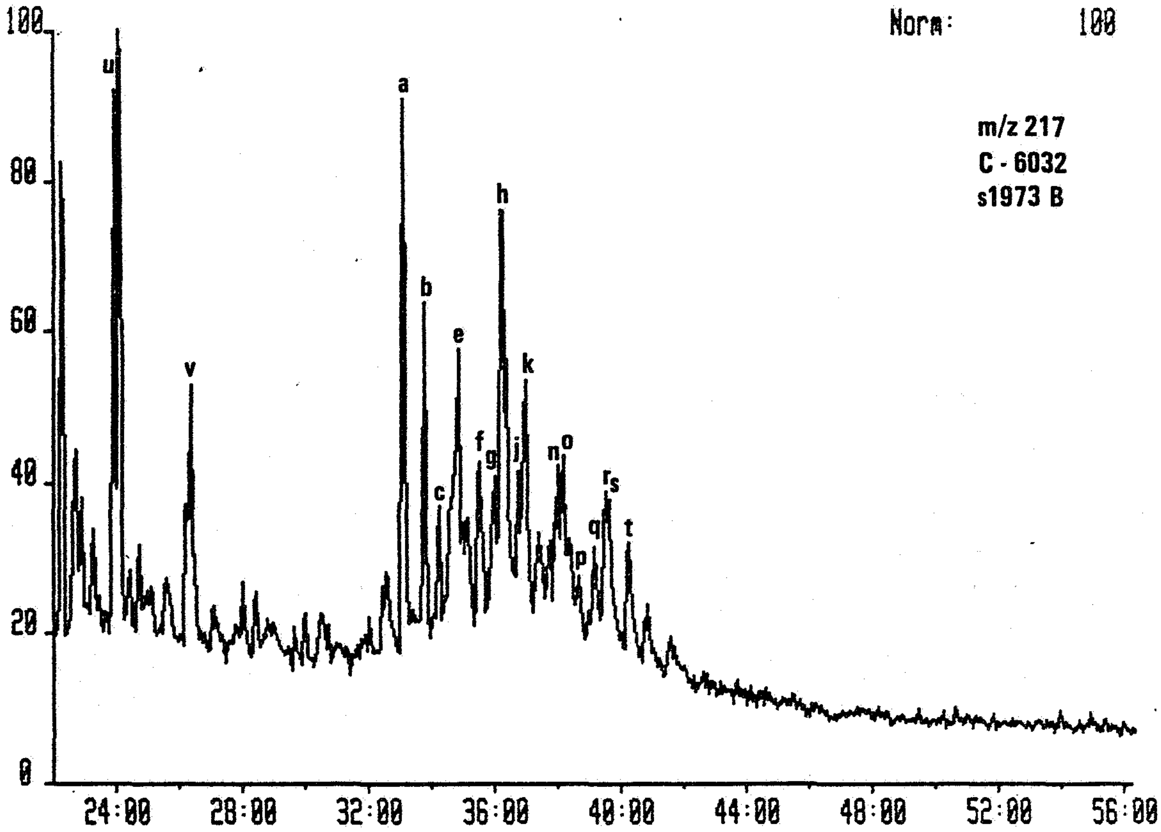
C6031 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



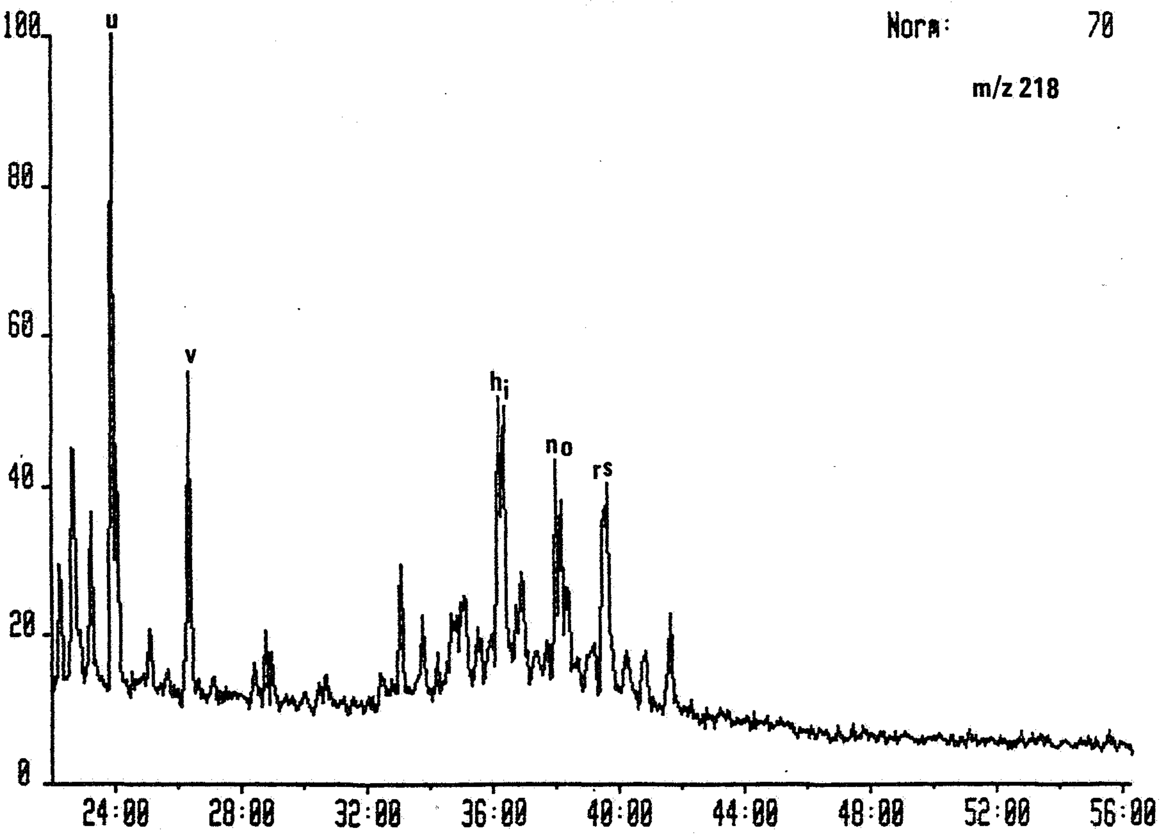
C6031 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



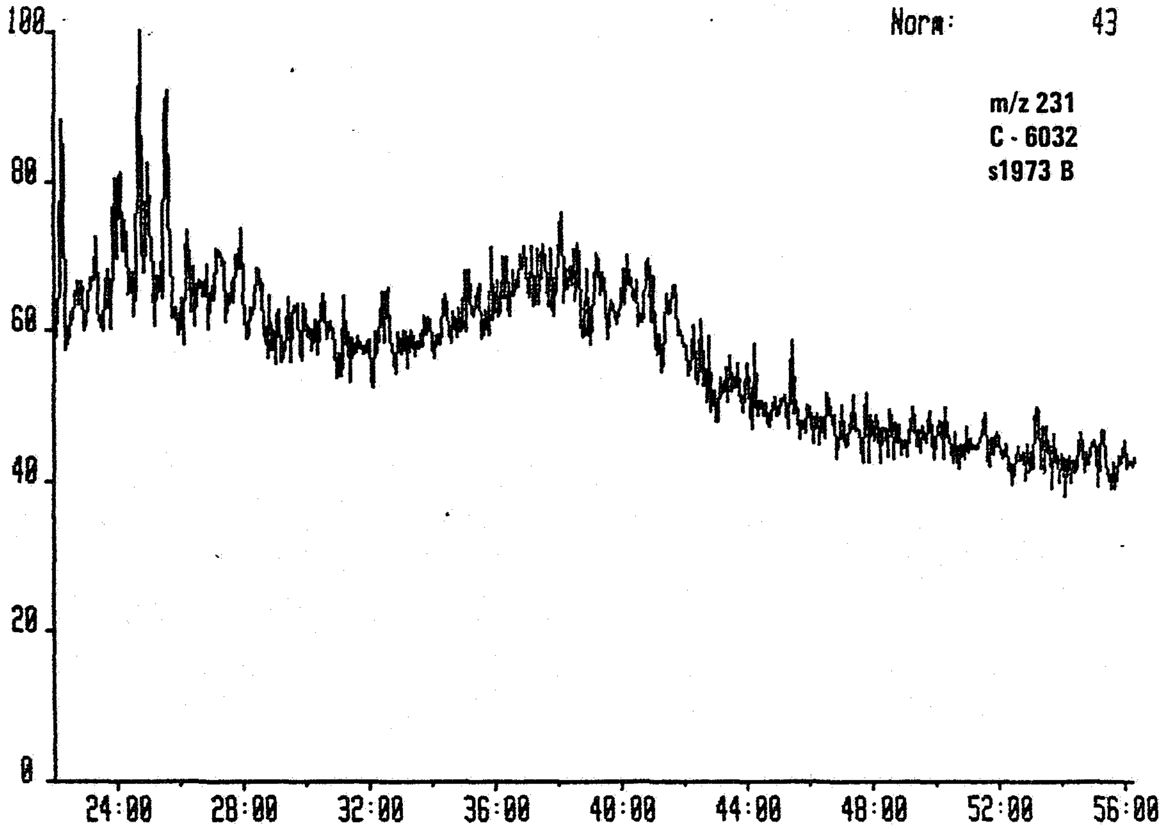
C6032 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:



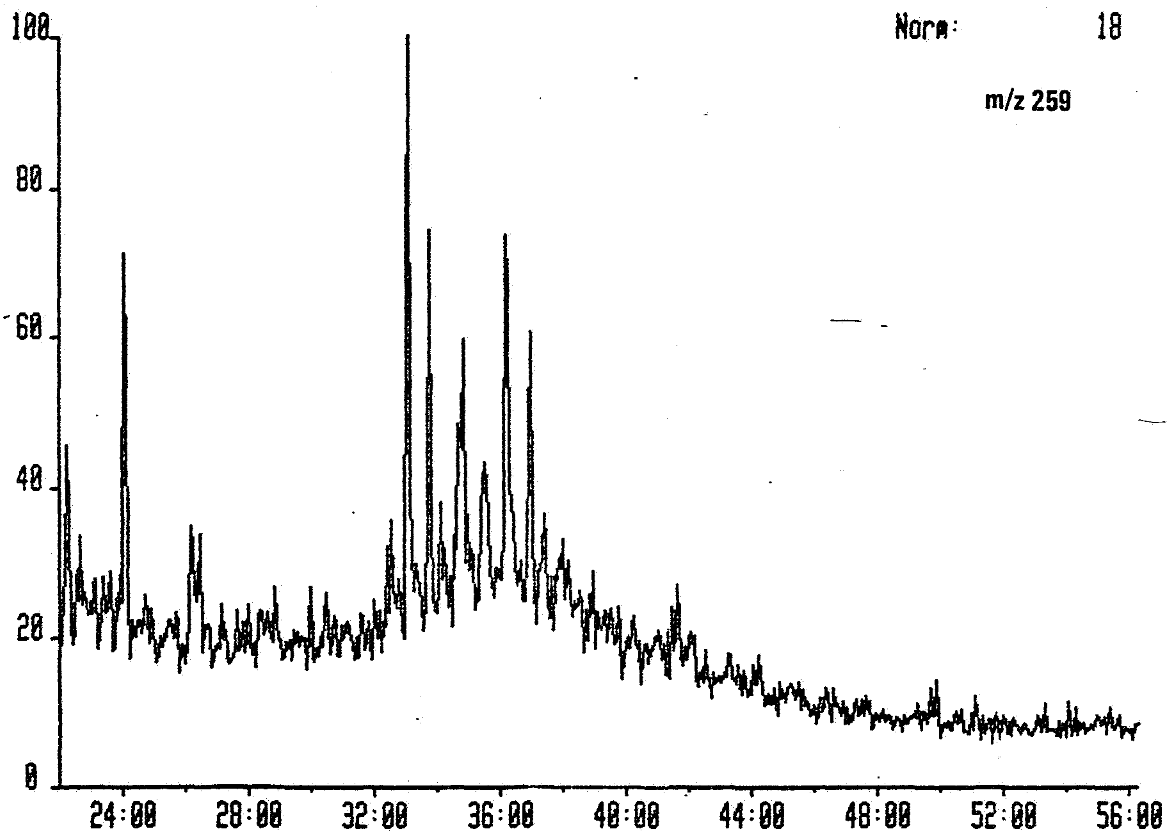
C6032 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



C6032 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:

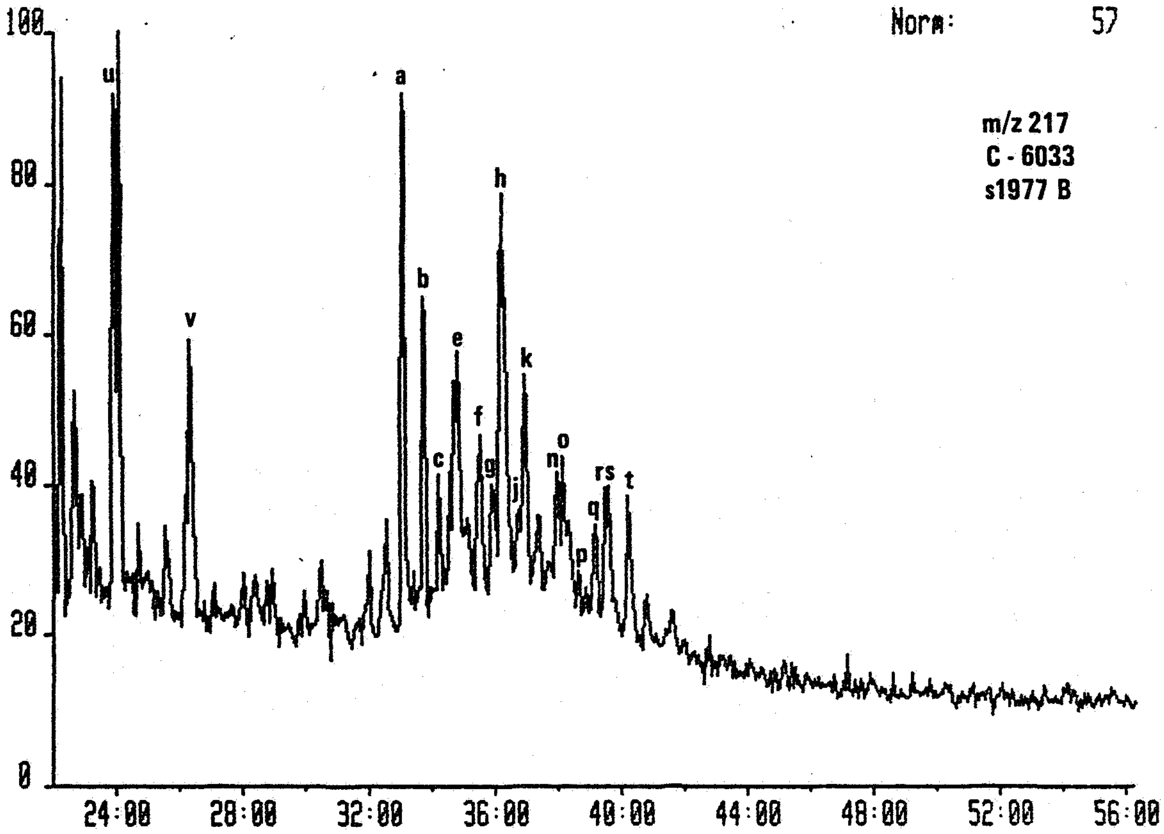


C6032 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:

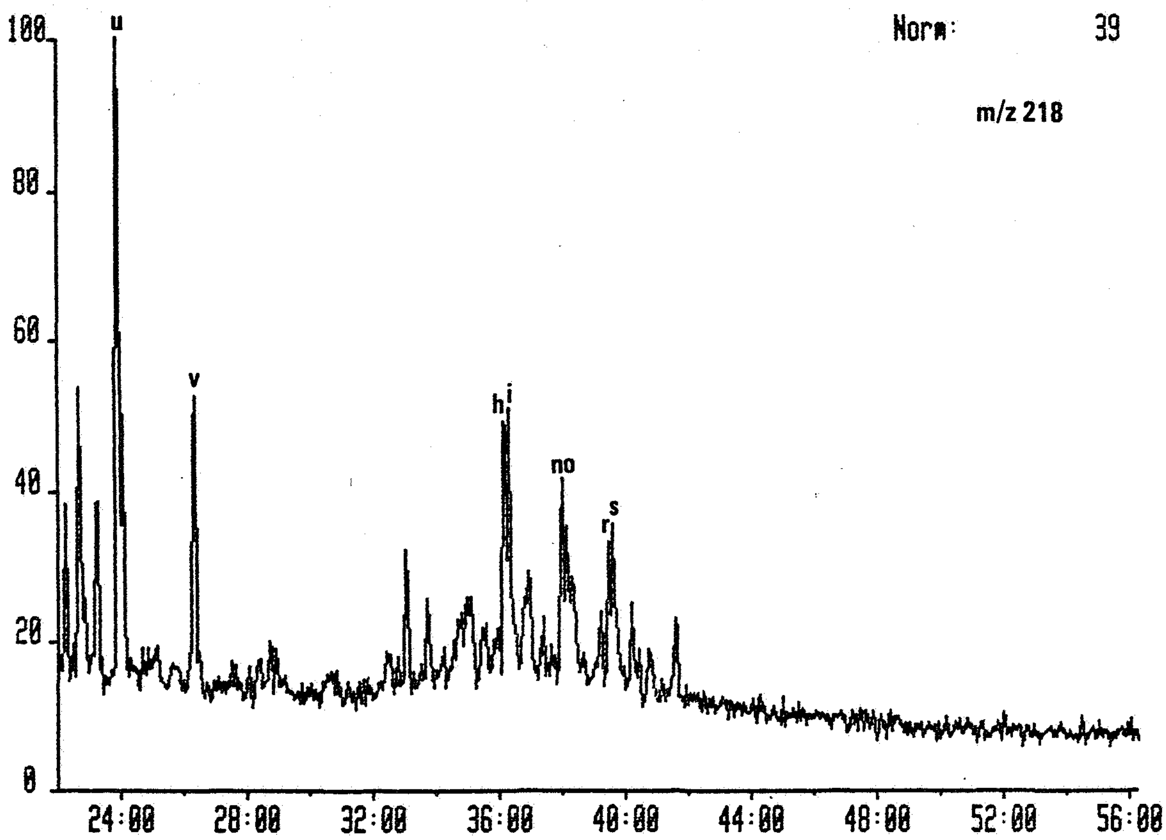


IKU
SINTEF-GRUPPEN

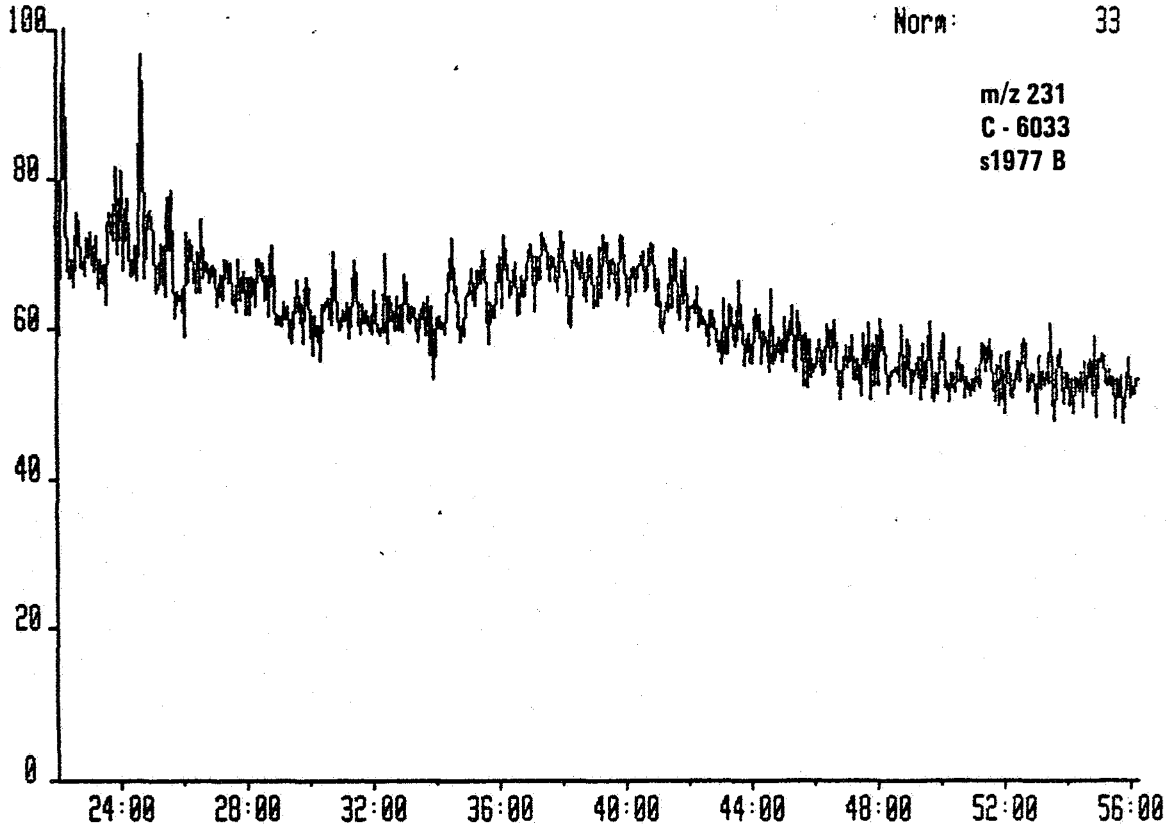
C6033 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1: Injection 1 Group 1 Mass 217.1000
Text:



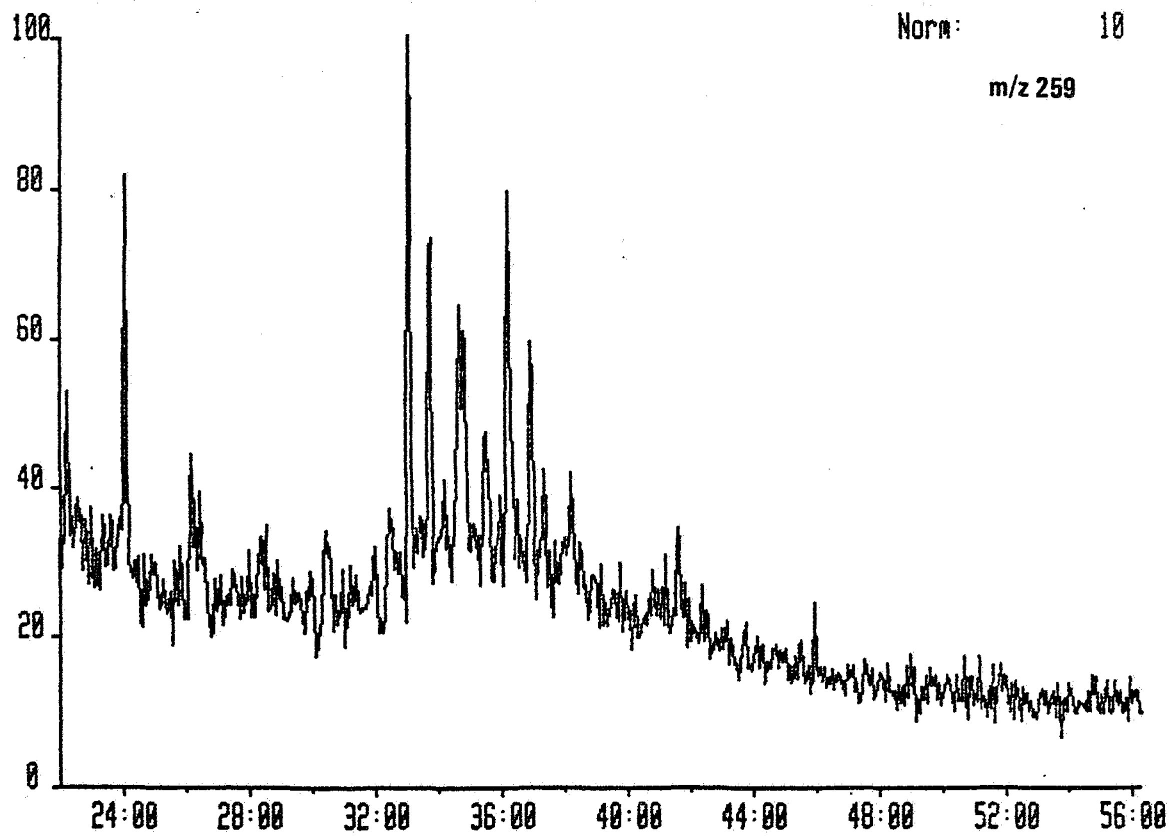
C6033 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:



C6033 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:



C6033 27-FEB-87 Sir:Voltage 7070H Acnt:IKU System:TRIT
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:



5. ANALYTICAL PROCEDURES

Vitrinite reflectance

Vitrinite reflectance measurements were carried out on whole-rock samples using the following method. The rock samples were broken up, if necessary, and mounted in a fast-setting, synthetic resin. Temperatures in excess of about 50^{o}C were avoided as these can result in alteration of the organic material. Once the resin was set, the samples were ground on coarse silicon carbine paper in order to expose an area of sample for polishing. The samples were then ground on 600 and 280 grade silicon carbide paper to remove any coarse scratches. Where clastic sediments were involved, grinding and polishing was carried out using propan-2-ol to avoid swelling of any clay minerals in the sample. If coals were to be measured, water was used. The samples were then polished on Selvyt cloth using 5/20, 3/50 and gamma grade alumina powder. Following polishing, the surface of the samples was carefully cleaned to remove any traces of the polishing powders.

Reflectance measurements were carried out using a Leitz M.P.V. microscope and photomultiplier combination. The measurements were made under oil immersion, using an oil with a refractive index of 1.518, at a wavelength of 546 nm. The surface of the sample was examined for suitable particles of vitrinite and reflectance measurements were taken on these. The reflectance of the vitrinite particle was determined relative to an optical glass standard with a known reflectance of a similar order to that of the sample. If possible, a minimum of twenty reflectance measurements were made on each rock sample. Coals and carbonaceous claystones generally provide the most reliable data, while sandstones and carbonates generally provide the least reliable data.

UV-fluorescence of liptinite

The samples were also examined in ultra-violet light in order to determine the composition and colour of the fluorescent material present in the sample. The colour of certain liptinite macerals in ultra-violet light can be related to the thermal maturity of the sample. A scale comparing vitrinite reflectance measurements and spore fluorescence to thermal maturity is shown below.

VITRINITE REFLECTANCE (% Ro)	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10
% CARBON CONTENT DAF.	57	62	70	73	76	79	80.5	82.5	84	85.5

LIPTINITE FLUOR. (EXC. 400 nm BAR. 530 nm)									
colour	G	G/Y	Y	Y/O	L.O	M.O.	D.O.	O/R	R
zone	1	2	3	4	5	6	7	8	9

NOTE: The relationship between liptinite fluorescence colour, vitrinite reflectance and carbon content may vary with depositional environment and catagenic history. The above is only a guide.

<u>Evaluation of kerogen type and thermal maturity in transmitted light</u>

The rock samples were crushed and treated with hydrochloric acid and hydrofluoric acid in order to remove the mineral matter and isolate the kerogen. The isolated organic matter/kerogen was mounted in glycerine jelly on microscope slides as a strew mount.

The treatment of the isolated kerogen varied according the requirements and preservation of the samples. This included:

<u>T-slide</u>: represented the total acid residue
<u>O-slide</u>: represented the kerogen debris remaining after flotation in 3nBr$_2$ to remove heavy minerals
<u>N-slide</u>: represented a sieved residue (15 _m mesh)
<u>X-slide</u>: represented oxidised residue.

T and/or O slides were necessary in order to evaluate the kerogen composition/palyno-facies of the samples.

N and/or X slides were required if it was necessary to concentrate larger kerogen fragments or spores/pollen for age determination or spore colour (NB: oxidised residue is not used for spore colour determination as oxidation will alter the colour).

The samples were studied using a Leitz Dialux microscope with a white halogen light source. Objective lenses of 10x and 63x magnification were used. The higher magnification allowed a more detailed description of the kerogen, with resolution of particles down to 2 _m diameter. The thermal alteration index (TAI) measurements were obtained from the colour of spores and pollen. The techniques used in visual kerogen study are adapted from Staplin (1969) and Burgess (1974).

COMPARISON OF MICROSCOPIC THERMAL MATURATION SYSTEMS AT IKU

MATURATION LEVEL	SPORE COLOUR		VITRINITE REFLECTANCE	SPORINITE FLUORESCENCE
	TAI	NEWTAI	%	
IMMATURE	1 - 2-	1.0- 3.5	0.25-0.40	1-4
EARLY MATURITY	2- - 2	3.5- 4.0	0.40-0.60	4-6
MODERATE MATURITY	2 - 2+	4.0- 4.5	0.60-0.80	6-7
MATURITY	2+ - 3-	4.5- 5.5	0.80-1.00	7-8
LATE MATURITY	3- - 3	5.5- 6.0	1.00-1.20	8-9
POST-MATURE	3 - 5	6.0-10.0	>1.20	Absent

<u>Gas chromatography - mass spectrometry (GC-MS)</u>

GC-MS analysis 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 0.3 mm i.d.). Helium (1.5 ml/min) was used as carrier gas and the injections were performed in split mode (1.5 _l, split ratio 1:15).

The GC oven was programmed from 120°C (2 min.) to 280°C at 4°C/min. for analysis of the saturated hydrocarbons which were analysed in multiple ion mode (MID) at a scan cycle time of approximately 2 secs. The mass spectrometers operated at 70eV electron energy with an ion source temperature of 200°C. Data acquisition was performed using VG data systems.

Appendix B

(Analyses performed by IFE)

Institutt for energiteknikk

ISOTOPANALYSE AV FRAKSJONER OG KEROGENKONSENTRAT FRA BRØNN 6406/3-3

T.6269 NR. 90

1. INNLEDNING

104 fraksjoner og 13 kerogenkonsentrat fra brønn 6406/3-3 ble mottat og analysert for bestemmelse av $^{13}C/^{12}C$ isotopforhold i februar/mars 1987.

2. ANALYTISK PROSEDYRE

Fraksjoner:

2-3 mg (eller så mye som mulig) av prøven forbrennes i lukkede glassampuller med CuO ved 550^{0}C i 1 time.

Kerogenkonsentrat:

Prøven forbrennes med CuO ved 900^{0}C i et separat, lukket forbrenningssystem.

Etter forbrenning utføres isotopbestemmelsene på et Finnigan MAT 251 massespektrometer. Vår $\delta^{13}C$ verdi på NBS 22 standard er -29.77 $\pm$ 0.06 o/oo PDB.

3. RESULTATER

Resultatet av karbonisotopbestemmelsene av fraksjonene er gitt i tabell 1, av kerogenkonsentratene i tabell 2.

Tabell 2 $\delta^{13}C$ verdier i kerogenkonsentrater fra brønn 6406/3-3

Prøve nr.	IFE nr.	$\delta^{13}C_{PDB}$
C 5991	6098	-29.4
C 5992	6099	-23.9
C 5993	6100	-26.1
C 5994	6101	-26.8
C 5995	6102	-25.1
C 5996	6103	-23.9
C 5997	6104	-23.3
C 5998	6105	-23.2
C 5999	6106	-23.6
C 6000	6107	-23.7
C 6001	6108	-23.9
C 6002	6109	-23.5
C 6003	6110	-23.6