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# REPORT

| REG. NO.: | ACCESSIBILITY: |
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REPORT TITLE:

**ORGANIC GEOCHEMICAL CHARACTERISATION OF DST CORE/SWC SAMPLES FROM WELL 34/7-16**

REPORT NO.: 22.1962.00/01/91

AUTHORS:

Inghild Kaarstad

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| 11 febr.-91 | 169 | - | Inghild Kaarstad | Inghild Kaarstad |
| CLIENT: | | | APPROVED, RESEARCHER RESPONSIBLE: | SIGN.: |
| Saga Petroleum a.s. | | | Liv Schou | Liv Schou |

SUMMARY:

Three DST samples, one gas and two oils, have been characterised using organic geochemistry. Core samples and sidewall cores have also been analysed.



| KEY WORDS: | |
|---|---|
| Geochemical characterisation | Well 34/7-16 |
| Core | SWC |
| | |



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## 1. INTRODUCTION

Well 34/7-16 was drilled north-west of the former C structure in block 34/7 south of the Snorre Field (Figure 1). The well was proven to contain oil in sandstones of middle Jurassic age and three drill stem tests were performed.

Geochemical analysis of this well were performed for Saga Petroleum a.s. under contract KO-EUG-90-003. Samples were sent to IKU for organic geochemical characterisation, and to IFE for gas characterisation. The samples were handled by Geco Petroleum Laboratories, Stavanger.

From the DST tests, two oils and three gas samples were analysed.

Gas analysis:

- $\delta^{13}C$ stable isotope ratios for the $C_1$,$C_2$,$C_3$,$iC_4$ and $nC_4$ components.
- D/H isotope ratio of methane.
- Composition of the gas.

Oil analysis:

- Density/API gravity.
- Sulphur, Nickel and Vanadium content.
- Gas chromatography of $C_2$-$C_8$ hydrocarbons for recombination.
- Gas chromatography of whole oil.
- Topping of oils (210°C).
- Chromatographic separation of topped oil by MPLC, including asphaltene precipitation.
- Gas chromatography of saturated and aromatic hydrocarbons.
- Gas chromatography-mass spectrometry of saturate hydrocarbons.
- $\delta^{13}C$ stable isotope ratios of compound classes.

Five sidewall cores and eight core samples were analysed according to the following program:

- TOC and Rock Eval analysis (3 samples).
- Visual kerogen description (3 samples).
- Extraction.
- Chromatographic separation by MPLC including asphaltene precipitation.
- Gas chromatography of saturated and aromatic hydrocarbons.
- Gas chromatography-mass spectrometry of saturated hydrocarbons.
- $\delta^{13}C$ stable isotope ratios of compound classes and EOM.

Sixteen samples, sidewall cores and cores were also submitted for vitrinite

reflectance measurements.

The samples were analysed under IKU project number 22.1962.00. The first samples arrived on August 18, 1990 and the last on November 13, 1990. The samples were assigned the following IKU numbers:

| IKU nr. | Depth | Formation/Group/Age |
|---|---|---|
| **Core samples to vitrinite reflectance measurements:** | | |
| G1988 | 2410 m | |
| G1989 | 2506 m* | |
| G1990 | 2515 m* | |
| G1991 | 2520 m* | |
| **Sidewall cores to vitrinite reflectance measurements:** | | |
| G1992 | 1390 m | |
| G1993 | 1470 m | |
| G1994 | 1722 m | |
| G1995 | 1869 m | |
| G1996 | 1866 m | |
| G1997 | 2005 m | |
| G1998 | 2125 m | |
| G1999 | 2285 m | |
| G2000 | 2535 m | |
| G2001 | 2616 m | |
| G2002 | 2618 m | |
| G2003 | 2623 m | |
| **Core samples for extraction:** | | |
| G2004 | 2417 m | |
| G2005 | 2432 m | |
| G2008 | 2450 m | |
| G2006 | 2481 m | |
| G2007 | 2486 m | |
| **Sidewall cores for extraction:** | | |
| G2604 | 2612 m | |
| G2605 | 2614 m | |
| G2606 | 2616 m | |
| G2607 | 2618 m | |
| G2608 | 2620 m | |
| **DST test samples:** | | |
| G2603 | DST3, 2401-2414 m* | |
| G2602 | DST2, 2454-2458 m | |
| | DST1, 2821-2837 m | |

* On these samples TOC, Rock-Eval and follow-up analyses were done in addition to $R_0$ measurements.

* This oil sample was received from another IKU laboratory and had thus been opened several times before whole oil analysis.

Small amounts of sample material and "low" extraction yields from both the upper Dunlin Group and the Cook Formation gave some analytical problems.

*Table 1* *Data from Rock-Eval pyrolysis.*

| IKUNO | FRAC NAME | DEPTH (m) | SAMPLE TYPE | S1 (mg/g rock) | S2 (mg/g rock) | TOC (%) | HYDRO. INDEX (mg/g TOC ) | PETR. POTEN. S1+S2 | PROD. INDEX S1/(S1+S2) | Tmax (°C) |
|---|---|---|---|---|---|---|---|---|---|---|
| G2004 | ESED | 2417.00 | CORE | | | 0.18 | | | | |
| G2005 | ESED | 2432.00 | CORE | | | 0.14 | | | | |
| G2008 | ESED | 2450.00 | CORE | | | 0.16 | | | | |
| G2006 | ESED | 2481.00 | CORE | | | 0.35 | | | | |
| G2007 | ESED | 2486.00 | CORE | | | 0.28 | | | | |
| G1989 | | 2506.00 | CORE | 0.31 | 8.37 | 3.07 | 273 | 8.68 | 0.04 | 434 |
| G1990 | | 2515.00 | CORE | 0.11 | 1.95 | 1.41 | 138 | 2.06 | 0.05 | 434 |
| G1991 | | 2520.00 | CORE | 0.11 | 1.88 | 2.20 | 85 | 1.99 | 0.06 | 430 |

Legend
-1 - No data available.

Sample Identification: 34/7-16
Reference number:22.1962
(1/1)

Table 2 VITRINITE REFLECTANCE DATA

| IKU NO | SAMPLE ID | DEPTH (M) | VITRINITE REFLECTANCE | REL RAT | STANDARD DEVIATION | FLUORE-SCENCE |
|---|---|---|---|---|---|---|
| G-1992 | ---- | 1390 | 0.68 (1) | R | 0.00 | 2 |
| | | | 1.60 (2) | R | 0.38 | |
| G-1993 | ---- | 1470 | 0.61 (1) | R | 0.00 | 3 |
| G-1994 | ---- | 1722 | 0.86 (1) | R | 0.00 | 2-3 |
| | | | 1.21 (2) | R | 0.09 | |
| G-1995 | ---- | 1860 | 0.37 (2) | P | 0.02 | 3-4 |
| | | | 0.94 (6) | R | 0.14 | |
| | | | 1.33 (7) | R | 0.08 | |
| G-1996 | ---- | 1866 | 0.50 (3) | P | 0.08 | 3-4 |
| | | | 1.09 (2) | R | 0.07 | |
| | | | 1.62 (4) | R | 0.16 | |
| G-1997 | ---- | 2005 | 0.39 (3) | P | 0.07 | 3-4 |
| | | | 0.90 (13) | R | 0.17 | |
| G-1998 | ---- | 2125 | 0.37 (7) | P | 0.08 | 3-4 |
| | | | 0.76 (4) | R | 0.07 | |
| G-1999 | ---- | 2285 | 0.48 (9) | P | 0.10 | 2-4 |
| | | | 0.77 (4) | R | 0.06 | |
| | | | 1.06 (4) | R | 0.08 | |
| G-1988 | ---- | 2410 | 0.38 (24) | F | 0.07 | 2-3,4 |
| G-1989 | ---- | 2506 | 0.48 (18) | F | 0.07 | 2-3 |
| | | | 0.98 (1) | R | 0.00 | |
| G-1990 | ---- | 2515 | 0.48 (15) | F | 0.04 | 1-2 |
| | | | 0.74 (4) | R | 0.06 | |
| G-1991 | ---- | 2520 | 0.44 (15) | F | 0.09 | 1-2,6-7 |
| | | | 0.70 (4) | R | 0.04 | |
| G-2000 | ---- | 2535 | 0.49 (17) | F | 0.09 | 3-4 |
| | | | 0.81 (3) | R | 0.10 | |
| G-2001 | ---- | 2616 | 0.38 (16) | F | 0.08 | 4-5 |
| | | | 0.73 (2) | R | 0.06 | |
| G-2002 | ---- | 2618 | 0.46 (13) | F | 0.08 | 4 |
| | | | 0.86 (1) | R | 0.00 | |
| G-2003 | ---- | 2623 | 0.44 (18) | F | 0.12 | 3-4 |
| | | | 1.08 (1) | R | 0.00 | |

REL RAT (Reliability Rating): G = Good; F = Fair; P = Poor
S = Stained; R = Reworked.

## VISUAL KEROGEN ANALYSIS

**TABLE NO.:** 3
**WELL NO.:** 34/7-16

| Sample | Depth (m) | Composition of residue | Particle size | Preservation palynomorphs | Thermal maturation index * | Remarks |
|---|---|---|---|---|---|---|
| G1989 | 2506.00 | Am: 60-65%<br>Al: +<br>Lm: 15%<br>W: 5-10%<br>C: 10-15% | F-M-L | Fair | 2.0-3.0 | Dominated by amorphous matter, but also with significant proportions of liptinitic matter and woody/coaly fragments. Fresh-water algae present |
| G1990 | 2515.00 | Am: 70-75%<br>Lm: 5%<br>W: 5%<br>C: 10-15% | F-M-L | Fair | 2.0-3.0 | Comparable to sample G1989 but with a relative increased fraction of amorphous matter. |
| G1991 | 2520.00 | Am: 80%<br>Lm: 5%<br>W: 5%<br>C: 10% | F-M-L | Fair | 2.0-3.0 | Comparable to sample G1990. Abundant pyrite. |

**ABBREVIATIONS:**

**Am** = Amorphous
**Al** = Algae
**W** = Woody material
**C** = Coaly fragments
**Lm** = Liptinitic material
**+** = Present in traces

**F** = Fine
**M** = Medium
**L** = Large

* New TAI (1-10 scale; see experimental).

*Table 4* *Weight of chromatographic fractions.*

| IKUNO | DEPTH (m) | SAMPLE TYPE | ROCK EXTR. (g) | EOM (mg) | ASPH (mg) | SAT HC (mg) | ARO HC (mg) | POLAR COMP. (mg) | HC (mg) | NONHC # (mg) | TOC (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| G2004 | 2417.00 | CORE | 33.5 | 916.3 | 23.9 | 486.5 | 289.7 | 63.5 | 776.2 | 140.1 | 0.18* |
| G2005 | 2432.00 | CORE | 34.5 | 1092.6 | 26.6 | 591.5 | 338.8 | 89.5 | 930.3 | 162.3 | 0.14* |
| G2008 | 2450.00 | CORE | 40.2 | 759.1 | 23.1 | 384.4 | 232.8 | 67.9 | 617.2 | 141.9 | 0.16* |
| G2006 | 2481.00 | CORE | 43.9 | 362.6 | 22.1 | 181.2 | 111.5 | 30.0 | 292.7 | 69.9 | 0.35* |
| G2007 | 2486.00 | CORE | 26.3 | 282.6 | 15.4 | 144.6 | 85.8 | 28.9 | 230.4 | 52.2 | 0.28* |
| G1989 | 2506.00 | CORE | 11.6 | 8.9 | 7.2 | 0.9 | 1.1 | 2.6 | 2.0 | 6.9 | 3.07 |
| G1990 | 2515.00 | CORE | 13.9 | 8.4 | 6.0 | 0.8 | 0.7 | 2.4 | 1.5 | 6.9 | 1.41 |
| G1991 | 2520.00 | CORE | 15.0 | 9.6 | 6.6 | 0.6 | 1.2 | 2.8 | 1.8 | 7.8 | 2.20 |
| G2604 | 2612.00 | SWC | 5.2 | 14.2 | 4.7 | 4.9 | 2.5 | 3.9 | 7.4 | 6.8 | -1 |
| G2605 | 2614.00 | SWC | 3.7 | 4.7 | 2.8 | 1.5 | 1.6 | 2.0 | 3.1 | 1.6 | -1 |
| G2606 | 2616.00 | SWC | 6.8 | 13.9 | 6.2 | 3.0 | 2.8 | 3.7 | 5.8 | 8.1 | -1 |
| G2607 | 2618.00 | SWC | 3.6 | 9.0 | 2.8 | 2.4 | 1.6 | 2.9 | 4.0 | 5.0 | -1 |
| G2608 | 2620.00 | SWC | 2.8 | 8.5 | 4.8 | 2.3 | 1.4 | 2.0 | 3.7 | 4.8 | -1 |
| G2602 | DST2 | OIL | | 106.9 | 2.7 | 57.5 | 37.6 | 9.0 | 95.1 | 11.8 | |
| G2603 | DST3 | OIL | | 111.4 | 3.8 | 55.2 | 39.3 | 11.3 | 94.5 | 16.9 | |

Legend:

Samples with little EOM (<15 mg) yielded more SAT + ARO + POLAR (weight) than the amount of maltenes separated by MPLC. Composition is thus erroneous.

-1- No data available.

* - TOC values on pre-extracted rock.

# - NonHC = EOM - HC, calculated by difference.

*Table 5* *Concentration of EOM and chromatographic fractions.*

(Weight ppm of rock)

| IKUNO | DEPTH (m) | SAMPLE TYPE | EOM | ASPH | SAT HC | ARO HC | POLAR COMP. | HC | NONHC # |
|---|---|---|---|---|---|---|---|---|---|
| G2004 | 2417.00 | CORE | 27352 | 713 | 14522 | 8647 | 1897 | 23169 | 4183 |
| G2005 | 2432.00 | CORE | 31670 | 771 | 17146 | 9821 | 2593 | 26967 | 4703 |
| G2008 | 2450.00 | CORE | 18883 | 575 | 9562 | 5791 | 1690 | 15353 | 3530 |
| G2006 | 2481.00 | CORE | 8260 | 503 | 4128 | 2540 | 683 | 6668 | 1592 |
| G2007 | 2486.00 | CORE | 10745 | 586 | 5499 | 3262 | 1101 | 8761 | 1984 |
| G1989 | 2506.00 | CORE | 769 | 622 | 79 | 92 | 228 | 171 | 598 |
| G1990 | 2515.00 | CORE | 603 | 431 | 56 | 54 | 173 | 110 | 493 |
| G1991 | 2520.00 | CORE | 640 | 440 | 43 | 79 | 184 | 122 | 518 |
| G2604 | 2612.00 | SWC | 2714 | 898 | 934 | 486 | 740 | 1420 | 1294 |
| G2605 | 2614.00 | SWC | 1277 | 761 | 395 | 425 | 555 | 820 | 457 |
| G2606 | 2616.00 | SWC | 2043 | 911 | 444 | 419 | 550 | 863 | 1180 |
| G2607 | 2618.00 | SWC | 2479 | 771 | 661 | 451 | 797 | 1112 | 1367 |
| G2608 | 2620.00 | SWC | 3067 | 1732 | 812 | 521 | 738 | 1333 | 1734 |
| G2602 | DST2 | OIL | | | | | | -1 | -1 |
| G2603 | DST3 | OIL | | | | | | -1 | -1 |

Legend:

Samples with little EOM (<15 mg) yielded more SAT + ARO + POLAR (weight) than the amount of maltenes separated by MPLC. Composition is thus erroneous.

-1- No data available.

# - NonHC = EOM - HC, calculated by difference.

*Table 6* *Composition of EOM and chromatographic fractions.*

| IKUNO | DEPTH | SAMPLE TYPE | ASPH EOM (%) | SAT EOM (%) | ARO EOM (%) | HC EOM (%) | POLAR EOM (%) | SAT ARO x 100 | HC NONHC x 100 |
|---|---|---|---|---|---|---|---|---|---|
| | (m) | | | | | | | | |
| G2004 | 2417.00 | CORE | 2.6 | 53.1 | 31.6 | 84.7 | 6.9 | 167.9 | 553.9 |
| G2005 | 2432.00 | CORE | 2.4 | 54.1 | 31.0 | 85.1 | 8.2 | 174.6 | 573.4 |
| G2008 | 2450.00 | CORE | 3.0 | 50.6 | 30.7 | 81.3 | 8.9 | 165.1 | 435.0 |
| G2006 | 2481.00 | CORE | 6.1 | 50.0 | 30.7 | 80.7 | 8.3 | 162.5 | 418.9 |
| G2007 | 2486.00 | CORE | 5.4 | 51.2 | 30.4 | 81.6 | 10.2 | 168.6 | 441.6 |
| G1989 | 2506.00 | CORE | 80.9 | 10.3 | 12.0 | 22.3 | 29.7 | 85.4 | 28.7 |
| G1990 | 2515.00 | CORE | 71.4 | 9.3 | 8.9 | 18.2 | 28.6 | 104.8 | 22.2 |
| G1991 | 2520.00 | CORE | 68.8 | 6.6 | 12.4 | 19.0 | 28.8 | 53.5 | 23.5 |
| G2604 | 2612.00 | SWC | 33.1 | 34.4 | 17.9 | 52.3 | 27.3 | 192.4 | 109.7 |
| G2605 | 2614.00 | SWC | 59.6 | 30.9 | 33.2 | 64.1 | 43.5 | 93.1 | 179.2 |
| G2606 | 2616.00 | SWC | 44.6 | 21.7 | 20.5 | 42.2 | 26.9 | 105.9 | 73.0 |
| G2607 | 2618.00 | SWC | 31.1 | 26.6 | 18.2 | 44.8 | 32.1 | 146.3 | 81.3 |
| G2608 | 2620.00 | SWC | 56.5 | 26.5 | 17.0 | 43.5 | 24.1 | 155.8 | 76.9 |
| G2602 | DST2 | OIL | 2.5 | 53.8 | 35.1 | 88.9 | 8.5 | 153.1 | 803.5 |
| G2603 | DST3 | OIL | 3.4 | 49.6 | 35.3 | 84.9 | 10.2 | 140.5 | 560.2 |

Legend:
Samples with little EOM (<15 mg) yielded more SAT + ARO + POLAR (weight) than the amount of maltenes separated by MPLC. Composition is thus erroneous.

# - NonHC = EOM - HC, calculated by difference.

*Table 7* *Iatroscan data on samples from well 34/7-16.*

| IKU no. | Depth (m) | Sample type | Extr.mat (g) | EOM (mg) | SAT (%) | ARO (%) | RES-1 (%) | RES-2 (%) |
|---|---|---|---|---|---|---|---|---|
| G1989 | 2506.00 | core | 0.550 | 0.53 | 2.8 | 4.6 | 88.0 | 4.5 |
| G1990 | 2515.00 | core | 0.501 | 0.50 | 0 | 0 | 93.0 | 6.9 |
| G1991 | 2520.00 | core | 0.548 | 0.53 | 2.0 | 7.6 | 86.0 | 4.4 |
| G2604 | 2612.00 | SWC | 0.588 | 2.53 | 25.9 | 14.2 | 27.3 | 32.4 |
| G2605 | 2614.00 | SWC | 0.561 | 0.37 | 34.3 | 8.3 | 54.9 | 2.5 |
| G2606 | 2616.00 | SWC | 0.540 | 0.98 | 22.4 | 10.4 | 40.0 | 28.1 |
| G2607 | 2618.00 | SWC | 0.586 | 0.54 | 39.5 | 17.5 | 40.0 | 2.5 |
| G2608 | 2620.00 | SWC | 0.532 | 2.46 | 39.8 | 16.1 | 42.3 | 1.6 |
| G2602 | DST2 | oil | | 42.56 | 44.9 | 40.6 | 14.1 | 0.3 |
| G2603 | DST3 | oil | | 27.40 | 39.9 | 46.7 | 11.8 | 1.5 |

*Table 8* *Ratios derived from gas chromatograms of saturated hydrocarbons.*

| IKUNO | FRAC NAME | DEPTH | Pri / Phy | Pri A=----- n-C17 | Phy B=----- n-C18 | A / B | n-C17 ----- n-C27 | n-C31 ----- n-C19 | CPI 1 | CPI 2 |
|---|---|---|---|---|---|---|---|---|---|---|
| G2004 | | 2417.00 | 1.4 | 0.9 | 0.7 | 1.3 | 3.2 | 0.2 | 1.0 | 1.0 |
| G2005 | | 2432.00 | 1.4 | 0.9 | 0.7 | 1.2 | 2.8 | 0.3 | 1.0 | 1.0 |
| G2008 | | 2450.00 | 1.3 | 0.8 | 0.7 | 1.2 | 2.4 | 0.3 | 1.0 | 1.0 |
| G2006 | | 2481.00 | 1.4 | 0.9 | 0.6 | 1.4 | 1.9 | 0.4 | 1.0 | 1.0 |
| G2007 | | 2486.00 | 1.3 | 0.9 | 0.7 | 1.2 | 1.7 | 0.5 | 1.0 | 1.0 |
| G1989 | | 2506.00 | 4.8 | 1.3 | 0.3 | 4.1 | 0.5 | 0.8 | 1.9 | 2.0 |
| G1990 | | 2515.00 | 2.6 | 0.4 | 0.3 | 1.4 | 1.8 | 0.6 | 1.9 | 1.9 |
| G1991 | | 2520.00 | 4.7 | 1.3 | 0.3 | 4.1 | 0.3 | 1.3 | 1.9 | 2.0 |
| G2604 | | 2612.00 | 1.2 | 1.7 | 1.3 | 1.3 | 2.0 | 0.3 | 1.0 | 1.0 |
| G2605 | | 2614.00 | 1.5 | 1.3 | 0.9 | 1.5 | 2.3 | 0.2 | 1.1 | 1.1 |
| G2606 | | 2616.00 | 1.1 | 3.0 | 2.2 | 1.3 | 0.7 | 1.0 | 1.1 | 1.0 |
| G2607 | | 2618.00 | 1.3 | 1.8 | 1.3 | 1.4 | 1.3 | 0.6 | 1.1 | 1.0 |
| G2608 | | 2620.00 | 1.3 | 1.8 | 1.4 | 1.3 | 2.2 | 0.4 | 1.0 | 1.0 |
| G2602 | | DST2 | 1.4 | 0.8 | 0.7 | 1.3 | 3.0 | 0.2 | 1.0 | 1.0 |
| G2603 | | DST3 | 1.2 | 0.8 | 0.6 | 1.3 | 1.6 | 0.4 | 1.0 | 1.0 |

$$CPI1 = \frac{1}{2} * \left( \frac{C25+C27+C29+C31}{C24+C26+C28+C30} + \frac{C25+C27+C29+C31}{C26+C28+C30+C32} \right)$$

$$CPI2 = 2 * C27 / (C26+C28)$$

Ratios involving pristane and phytane are calculated from peak areas.
All other ratios are calculated from peak heights.

*Table 9* *Ratios derived from gas chromatograms of aromatic hydrocarbons.*

| IKUNO | Depth (m) | MPI 1 | MPI 2 |
|---|---|---|---|
| G2004 | 2417.00 | 0.82 | 1.02 |
| G2005 | 2432.00 | 0.82 | 1.02 |
| G2008 | 2450.00 | 0.81 | 1.03 |
| G2006 | 2481.00 | 0.78 | 0.93 |
| G2007 | 2486.00 | 0.79 | 0.96 |
| G1989 | 2506.00 | 0.45 | 0.49 |
| G1990 | 2515.00 | 0.59 | 0.64 |
| G1991 | 2520.00 | 0.55 | 0.59 |
| G2604 | 2612.00 | 1.15 | 1.21 |
| G2605 | 2614.00 | 0.74 | 0.83 |
| G2606 | 2616.00 | 0.94 | 1.05 |
| G2607 | 2618.00 | 0.97 | 1.03 |
| G2608 | 2620.00 | 0.90 | 1.01 |
| G2602 | DST2 | 0.82 | 0.89 |
| G2603 | DST3 | 0.83 | 0.91 |

Legend: All ratios are calculated from peak heights

$$MPI1 = \frac{3/2(2\text{-}MP + 3\text{-}MP)}{P + 1\text{-}MP + 9\text{-}MP)}$$

$$MPI2 = \frac{3*(2\text{-}MP)}{P + 1\text{-}MP + 9\text{-}MP)}$$

*Table 10* *Molecular ratios from terpanes and sterane mass fragmentograms. Maturity and source characteristic ratios.*

| IKUNO | DEPTH m | Q/E terpanes 1) | Tm/Ts terpanes 2) | X/E terpanes 3) | Z/E terpanes 4) | a/(a+j) steranes 5) |
|---|---|---|---|---|---|---|
| G2004 | 2417.00 | 0.21 | 0.80 | 0.08 | 0.31 | 0.77 |
| G2005 | 2432.00 | 0.17 | 0.70 | 0.08 | 0.31 | 0.76 |
| G2008 | 2450.00 | 0.18 | 0.67 | 0.07 | 0.32 | 0.75 |
| G2006 | 2481.00 | 0.17 | 0.77 | 0.07 | 0.29 | 0.76 |
| G2007 | 2486.00 | 0.16 | 0.69 | 0.09 | 0.28 | 0.77 |
| G1989 | 2506.00 | 0.03 | 17.12 | 0.03 | 0.00 | 0.64 |
| G1990 | 2515.00 | 0.05 | 4.14 | 0.03 | 0.00 | 0.58 |
| G1991 | 2520.00 | 0.10 | 10.38 | 0.04 | 0.00 | 0.69 |
| G2604 | 2612.00 | 0.07 | 0.95 | 0.03 | 0.32 | 0.63 |
| G2605 | 2614.00 | 0.20 | 1.35 | 0.07 | 0.21 | 0.60 |
| G2606 | 2616.00 | 0.07 | 0.99 | 0.04 | 0.28 | 0.58 |
| G2607 | 2618.00 | 0.06 | 1.13 | 0.04 | 0.30 | 0.62 |
| G2608 | 2620.00 | 0.07 | 1.28 | 0.04 | 0.22 | 0.55 |
| G2602 | DST 2 | 0.06 | 0.63 | 0.08 | 0.26 | 0.66 |
| G2603 | DST 3 | 0.05 | 0.69 | 0.09 | 0.25 | 0.65 |

Legend:
1) Q/E in m/z 191.
2) B/A in m/z 191.
3) X/E in m/z 191.
4) Z/E in m/z 191.
5) a/(a+j) in m/z 217.

*Table 11* *Molecular ratios from terpanes and sterane mass fragmentograms. Maturity characteristic ratios.*

| IKUNO | DEPTH m | αβ/αβ+βα hopanes 1) | 22S hopanes 2) | 22S hopanes 3) | 22S hopanes 4) | 20S steranes 5) | ββ steranes 6) | ββ steranes 7) |
|---|---|---|---|---|---|---|---|---|
| G2004 | 2417.00 | 0.94 | 62 | 60 | 61 | 48 | 75 | 60 |
| G2005 | 2432.00 | 0.95 | 63 | 60 | 60 | 47 | 75 | 60 |
| G2008 | 2450.00 | 0.95 | 61 | 62 | 61 | 49 | 76 | 61 |
| G2006 | 2481.00 | 0.95 | 62 | 59 | 60 | 48 | 75 | 60 |
| G2007 | 2486.00 | 0.94 | 62 | 61 | 61 | 47 | 75 | 60 |
| G1989 | 2506.00 | 0.74 | 38 | 24 | 28 | 10 | 59 | 41 |
| G1990 | 2515.00 | 0.81 | 47 | 45 | 48 | 20 | 42 | 27 |
| G1991 | 2520.00 | 0.72 | 34 | 20 | 34 | 17 | 47 | 30 |
| G2604 | 2612.00 | 0.93 | 60 | 59 | 59 | 46 | 73 | 57 |
| G2605 | 2614.00 | 0.91 | 55 | 59 | 60 | 40 | 72 | 56 |
| G2606 | 2616.00 | 0.92 | 57 | 58 | 59 | 40 | 72 | 56 |
| G2607 | 2618.00 | 0.92 | 58 | 59 | 59 | 41 | 73 | 58 |
| G2608 | 2620.00 | 0.92 | 56 | 59 | 59 | 44 | 69 | 53 |
| G2602 | DST 2 | 0.93 | 60 | 60 | 60 | 43 | 70 | 53 |
| G2603 | DST 3 | 0.93 | 59 | 59 | 60 | 44 | 70 | 54 |

Legend:
1) E/(E+F) in m/z 191.
2) 100 * G/(G+H) in m/z 191.
3) 100 * J1/(J1+J2) in m/z 191.
4) 100 * average of G/(G+H), J1/(J1+J2), ....M1/(M1+M2) in m/z 191.
5) 100 * q/(q+t) in m/z 217.
6) 100 * 2 * (r+s)/(q+t+2(r+s)) in m/z 217.
7) 100 * (r+s)/(q+t+r+s) in m/z 217.

*Table 12* *Molecular ratios of C27 : C28 : C29 steranes.*

| IKUNO | DEPTH m | from m/z 217 1) C27 (%) | C28 (%) | C29 (%) | from m/z 218 2) C27 (%) | C28 (%) | C29 (%) |
|---|---|---|---|---|---|---|---|
| G2004 | 2417.00 | 45.2 | 22.3 | 32.5 | 41.3 | 30.9 | 27.8 |
| G2005 | 2432.00 | 46.2 | 21.4 | 32.4 | 36.3 | 32.7 | 31.0 |
| G2008 | 2450.00 | 47.1 | 21.8 | 31.0 | 40.7 | 28.9 | 30.4 |
| G2006 | 2481.00 | 42.2 | 22.8 | 34.9 | 40.9 | 28.8 | 30.3 |
| G2007 | 2486.00 | 43.6 | 21.6 | 34.7 | 40.7 | 29.7 | 29.6 |
| G1989 | 2506.00 | 23.1 | 10.6 | 66.3 | 38.5 | 18.7 | 42.8 |
| G1990 | 2515.00 | 31.6 | 9.4 | 59.0 | 36.5 | 34.4 | 29.1 |
| G1991 | 2520.00 | 41.8 | 10.4 | 47.8 | 49.8 | 25.2 | 25.0 |
| G2604 | 2612.00 | 39.8 | 21.4 | 38.8 | 36.4 | 30.2 | 33.4 |
| G2605 | 2614.00 | 48.7 | 15.0 | 36.3 | 39.9 | 28.6 | 31.5 |
| G2606 | 2616.00 | 39.0 | 19.8 | 41.1 | 36.2 | 30.0 | 33.8 |
| G2607 | 2618.00 | 36.4 | 21.9 | 41.7 | 34.2 | 29.4 | 36.5 |
| G2608 | 2620.00 | 38.3 | 19.3 | 42.4 | 35.5 | 29.6 | 34.9 |
| G2602 | DST 2 | 34.6 | 21.0 | 44.3 | 35.2 | 29.9 | 35.0 |
| G2603 | DST 3 | 33.1 | 21.9 | 45.0 | 33.3 | 32.7 | 34.0 |

Legend:
1) distribution of peaks j,p,t in m/z 217.
2) distribution of peaks h+i, n+o, r+s in m/z 218.
-1 = Data are not available or cannot be calculated.

*Table 13* *Isotopical composition extracts and oils, well 34/07-16.*

| IKUno. | Depth (m) | Sample type | EOM $\delta^{13}C$ °/oo PDB | SAT $\delta^{13}C$ °/oo PDB | ARO $\delta^{13}C$ °/oo PDB | RSN $\delta^{13}C$ °/oo PDB | ASPH $\delta^{13}C$ °/oo PDB |
|---|---|---|---|---|---|---|---|
| G2004 | 2417.00 | core | -29.2 | -29.8 | -28.7 | -29.0 | -29.2 |
| G2005 | 2432.00 | core | -29.2 | -29.8 | -28.2 | -29.2 | -29.2 |
| G2006 | 2481.00 | core | -28.9 | -30.1 | -28.4 | -28.8 | -28.7 |
| G2007 | 2486.00 | core | -29.1 | -29.7 | -28.5 | -28.8 | -28.8 |
| G2008 | 2450.00 | core | -29.1 | -29.6 | -29.0 | -29.0 | -28.9 |
| G1989 | 2506.00 | core | -27.3 | -21.8[2)] | -27.5 | -27.8 | -26.5 |
| G1990 | 2515.00 | core | | -29.6 | -28.4 | [1)] | -26.6 |
| G1991 | 2520.00 | core | | -28.1 | -26.6 | -27.9 | -26.7 |
| G2604 | 2612.00 | SWC | -29.7 | -30.6 | -28.9 | -28.0 | -28.0 |
| G2605 | 2614.00 | SWC | | -29.0 | -28.8 | -22.3[2)] | -27.9 |
| G2606 | 2616.00 | SWC | -29.4 | -30.3 | -29.4 | -29.4 | 27.3 |
| G2607 | 2618.00 | SWC | | -30.1 | -29.4 | -26.2 | -27.6 |
| G2608 | 2620.00 | SWC | | -30.3 | -29.3 | -29.2 | -27.8 |
| G2602 | DST2 | oil | -29.2 | -29.9 | -28.8 | -28.8 | -28.7 |
| G2603 | DST3 | oil | -28.8 | -29.9 | -29.0 | -28.8 | -29.3 |

Legend:
[1)] - Not enough material to determine isotopical composition.
[2)] - Value is too high, probably due to small sample amount.

*Table 14* *Fraction boiling below 210°C.*

| IKUNO | EXTERNAL-ID | FRAC NAME | SAMPLE TYPE | Crude oil (g) | oil < 210°C (g) | Low molecular weight compunds (g) | (%) |
|---|---|---|---|---|---|---|---|
| G2602 | DST2 | OIL | OIL | 6.6 | 4.3 | 2.3 | 34.7 |
| G2603 | DST3 | OIL | OIL | 6.0 | 3.2 | 2.8 | 46.1 |

*Table 15* *API gravity of oil sample.*

| IKUNO | EXTERNAL-ID | SAMPLE TYPE | API GRAVITY (DENSITY) Crude oil | > 210°C |
|---|---|---|---|---|
| G2602 | DST2 | OIL | 35.48 (0.8474) | 23.79 (0.9112) |
| G2603 | DST3 | OIL | 36.43 (0.8426) | 26.18 (0.8974) |

*Table 16* *Content of sulphur,nickel and vanadium in oil >210°C.*

| IKUNO | EXTERNAL-ID | SAMPLE TYPE | S % | Ni (mg/kg) | V (mg/kg) |
|---|---|---|---|---|---|
| G2602 | DST2 | OIL | 0.41 | 2.70 | 0.50 |
| G2603 | DST3 | OIL | 0.40 | 1.112 | 0.32 |

*Table 17* *Volume composition of gases from well 34/07-16, normalized values.*

| | $C_1$ % | $C_2$ % | $C_3$ % | $iC_4$ % | $nC_4$ % | $iC_5$ % | $nC_5$ % | $CO_2$ % | Sum $C_1$-$C_5$ | Wet-ness | $iC_4$/ $nC_4$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A-17126,DST1 | 91.6 | 3.2 | 1.1 | 0.08 | 0.14 | 0.02 | 0.01 | 3.91 | 96.1 | 0.05 | 0.54 |
| A-17148,DST2 | 77.8 | 10.6 | 7.5 | 0.77 | 1.87 | 0.22 | 0.27 | 0.89 | 99.1 | 0.21 | 0.41 |
| A-17174,DST3 | 79.6 | 10.1 | 6.6 | 0.65 | 1.66 | 0.22 | 0.25 | 0.91 | 99.1 | 0.20 | 0.40 |

*Table 18* *Isotope composition of gases from well 34/07-16.*

| | $C_1$ $\delta^{13}C$ PDB | $C_1$ $\delta D$ SMOW | $C_2$ $\delta^{13}C$ PDB | $C_3$ $\delta^{13}C$ PDB | $iC_4$ $\delta^{13}C$ PDB | $nC_4$ $\delta^{13}C$ PDB |
|---|---|---|---|---|---|---|
| A-17126,DST1 | -48.1 | -204 | -35.6 | -33.8 | -32.0 | -33.2 |
| A-17148,DST2 | -46.2 | -209 | -32.7 | -31.1 | -31.8 | -31.1 |
| A-17174,DST3 | -46.5 | -208 | -32.8 | -20.7 | -31.9 | -31.3 |

Saga
Petroleum a.s.

| Your reference | Your date | Our reference | Sandvika |
|---|---|---|---|
| | | B-EUG-91021801/vbp/JM | 91.02.18 |

Dear Sirs,

Correction in table 18

Sample A-17174, DST 3 $\delta^{13}C$ for $C_3$ is -30.7.

Yours faithfully
for Saga Petroleum a.s.

Venche Bjerkreim Pedersen

Venche Bjerkreim Pedersen

J:\EU\WP\U13670\91021801.BRV


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# LOKALITETSKART, 34/7-16R, PL 089

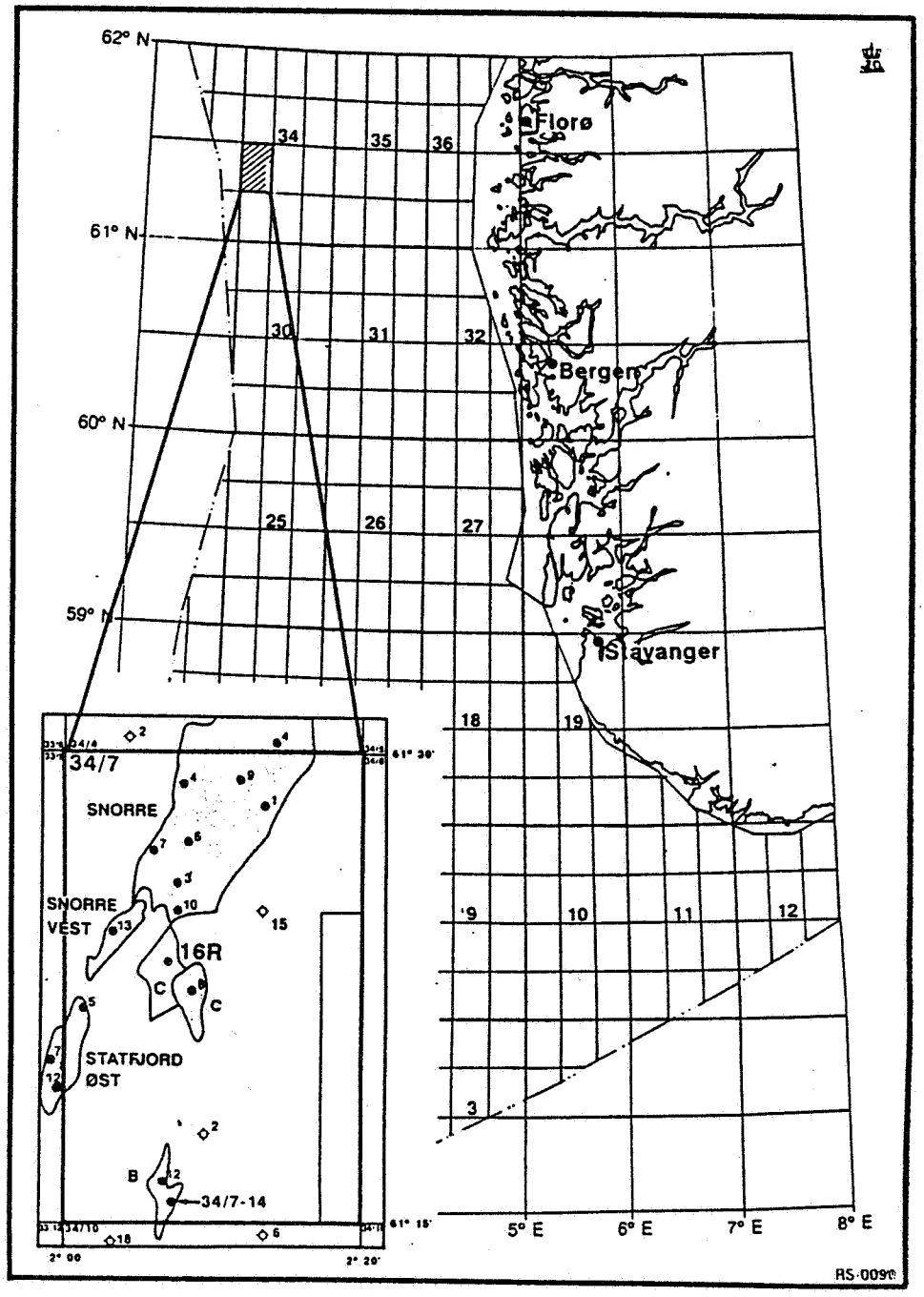
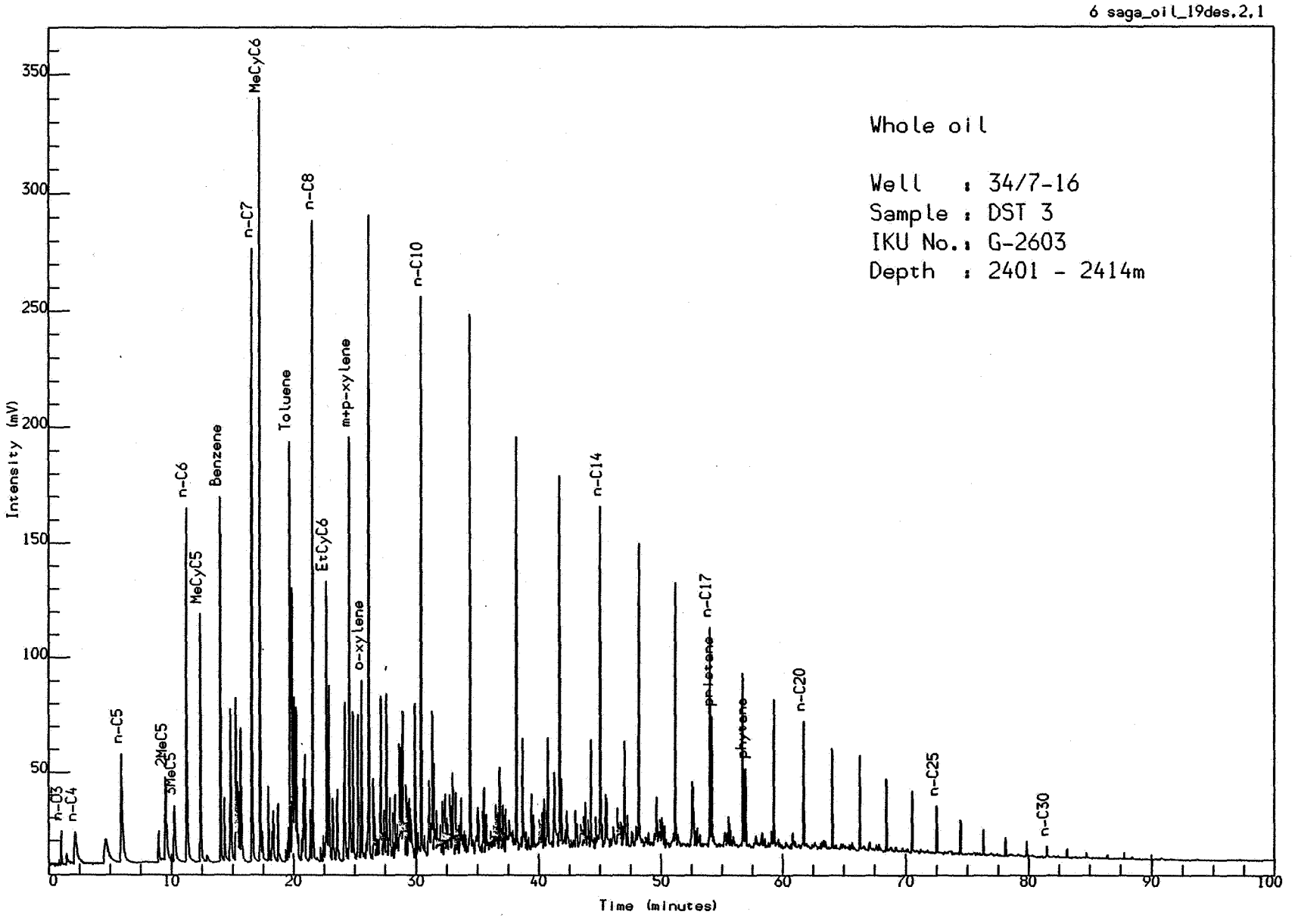



*Figure 1* *Location of Saga well 34/7-16R.*

*Figure 2*

*Chromatograms of Whole Oil*


6 saga_oil_19des.2.1
Whole oil
Well : 34/7-16
Sample : DST 3
IKU No.: G-2603
Depth : 2401 - 2414m
Intensity (mV)
Time (minutes)
n-C3
n-C4
n-C5
2MeC5
3MeC5
n-C6
MeCyC5
Benzene
MeCyC6
n-C7
Toluene
n-C8
EtCyC6
m+p-xylene
o-xylene
n-C10
n-C14
n-C17
pristane
phytane
n-C20
n-C25
n-C30

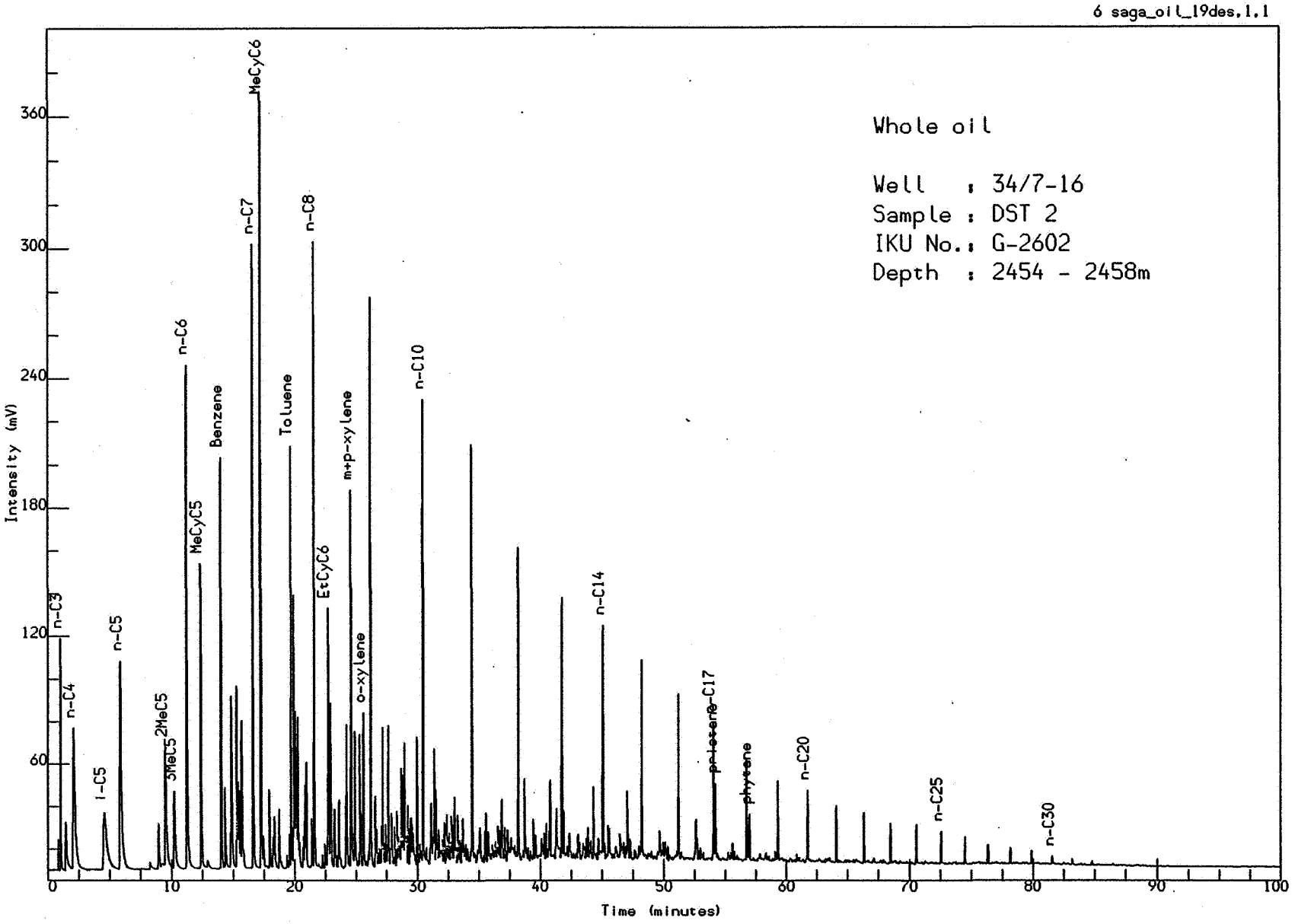
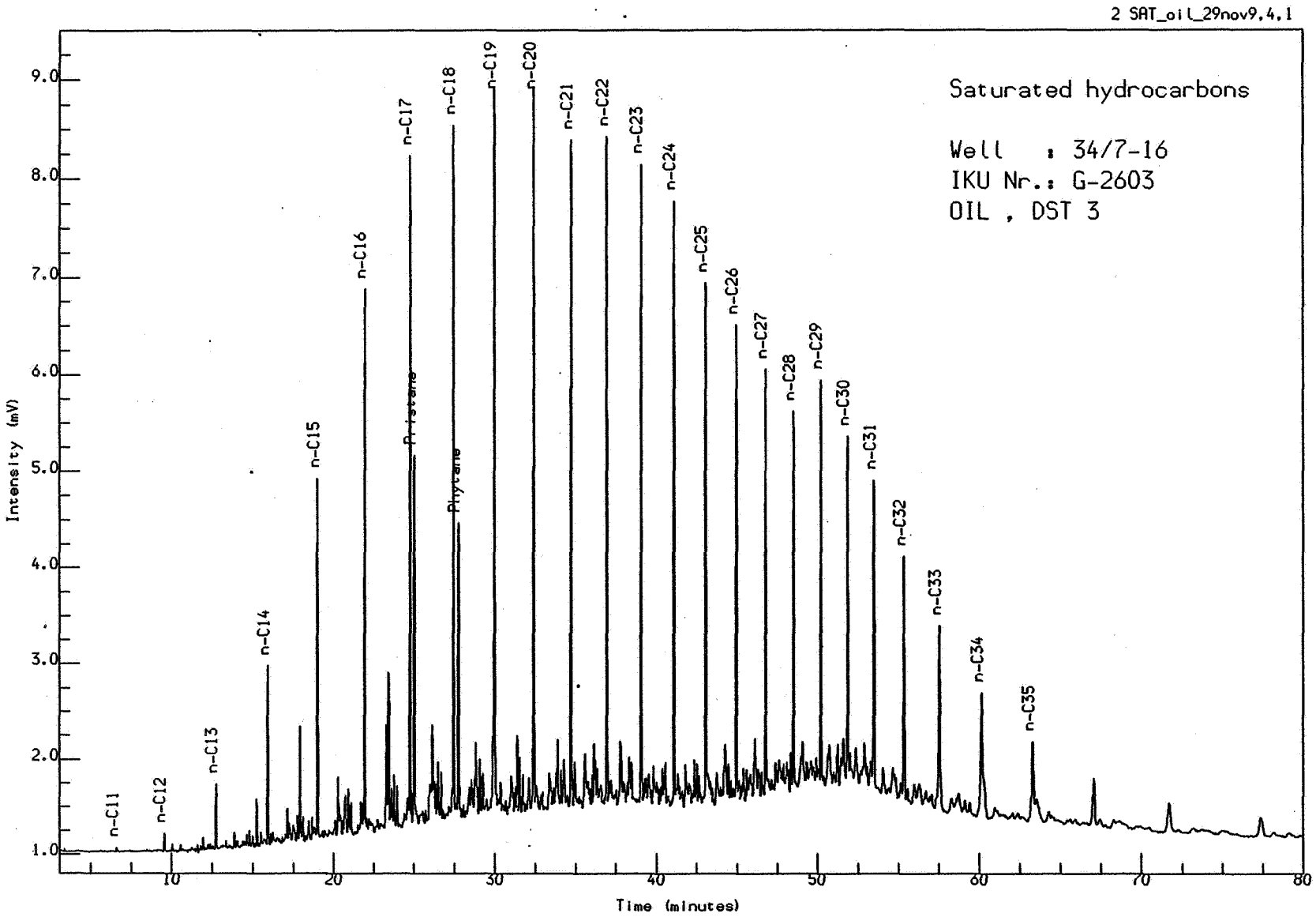
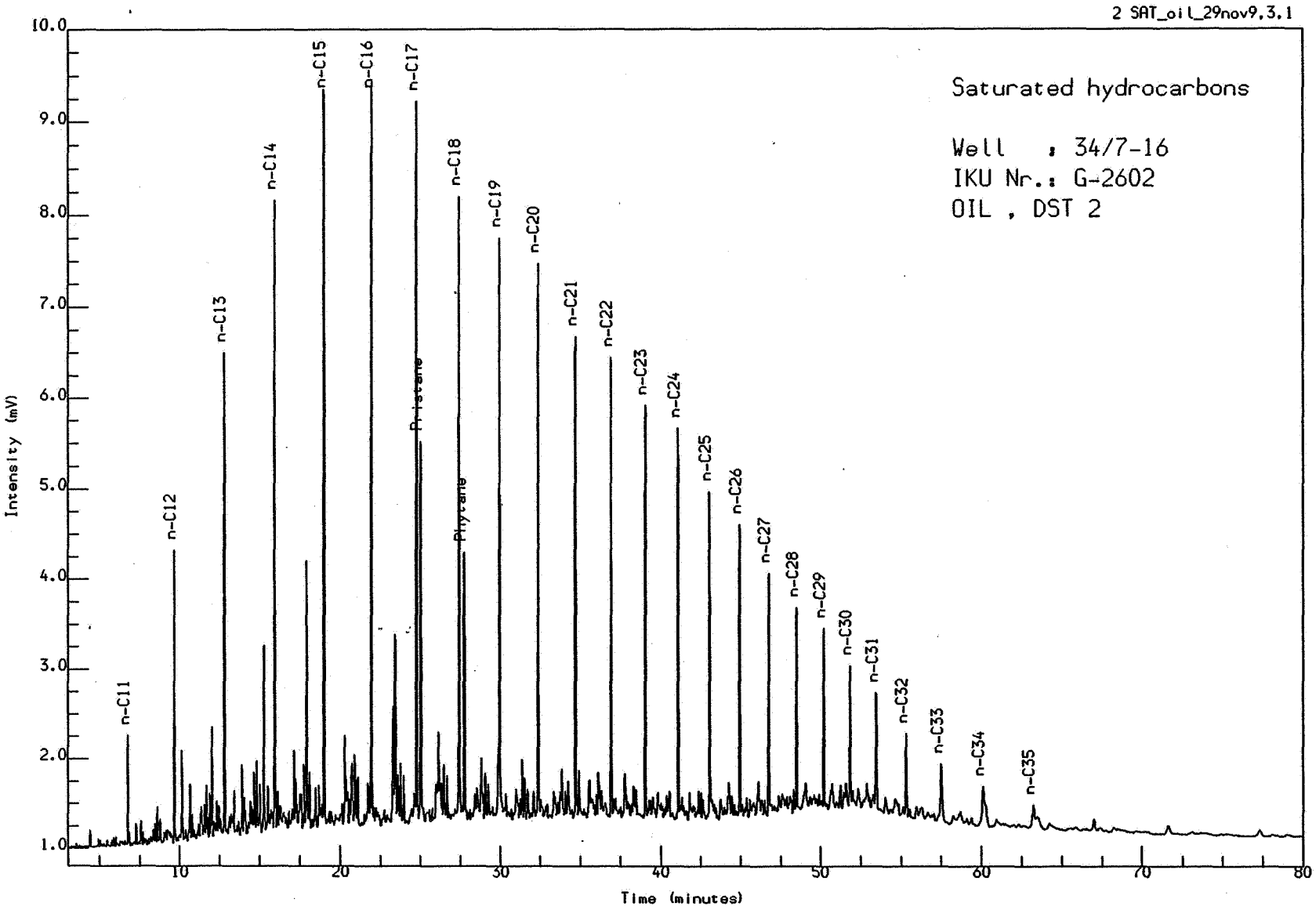
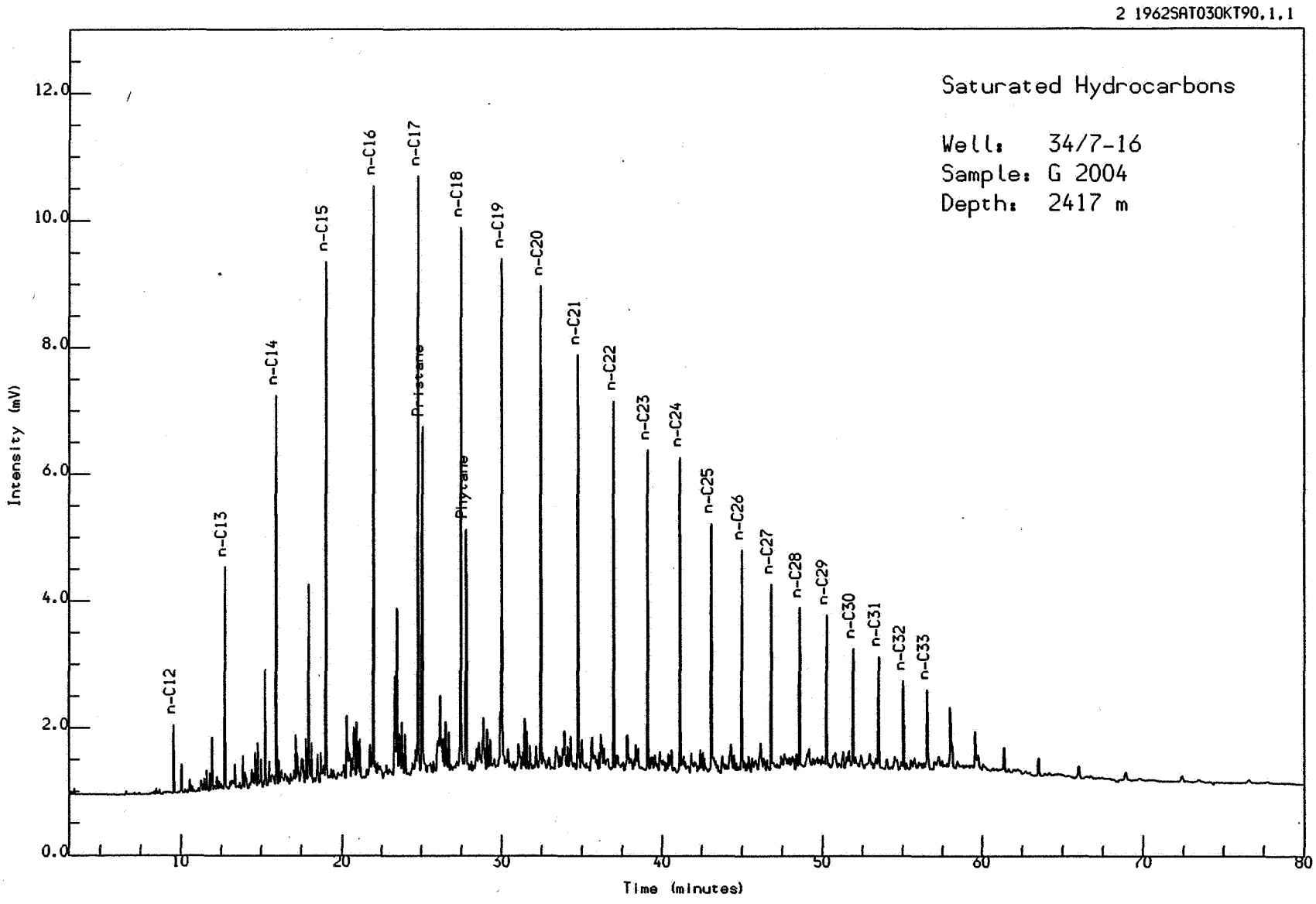

6 saga_oil_19des.1.1
Whole oil
Well : 34/7-16
Sample : DST 2
IKU No.: G-2602
Depth : 2454 - 2458m
Intensity (mV)
Time (minutes)
n-C3
n-C4
i-C5
n-C5
2MeC5
3MeC5
n-C6
MeCyC5
Benzene
n-C7
MeCyC6
Toluene
n-C8
EtCyC6
m+p-xylene
o-xylene
n-C10
n-C14
pristane
n-C17
phytene
n-C20
n-C25
n-C30

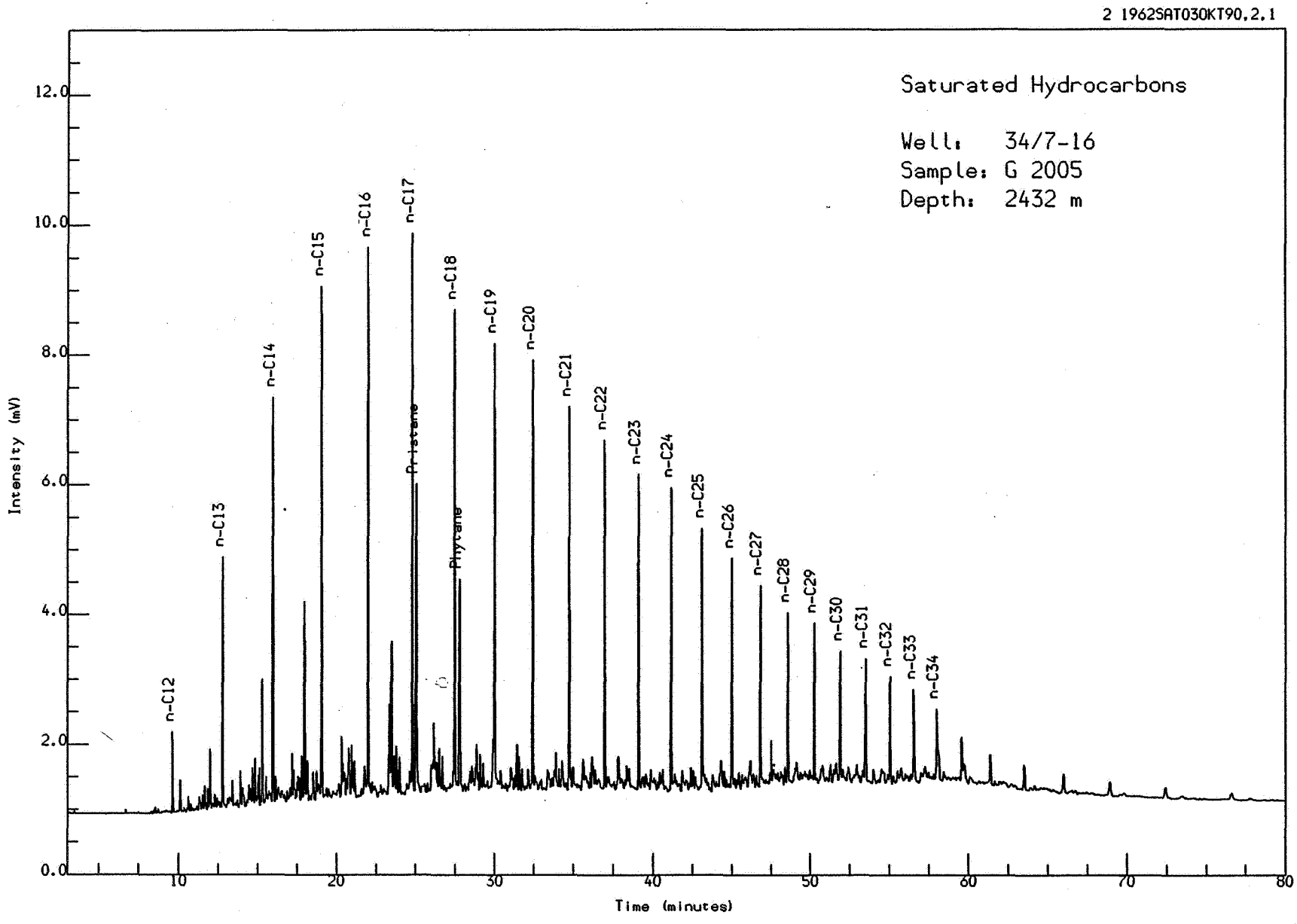
*Figure 3*

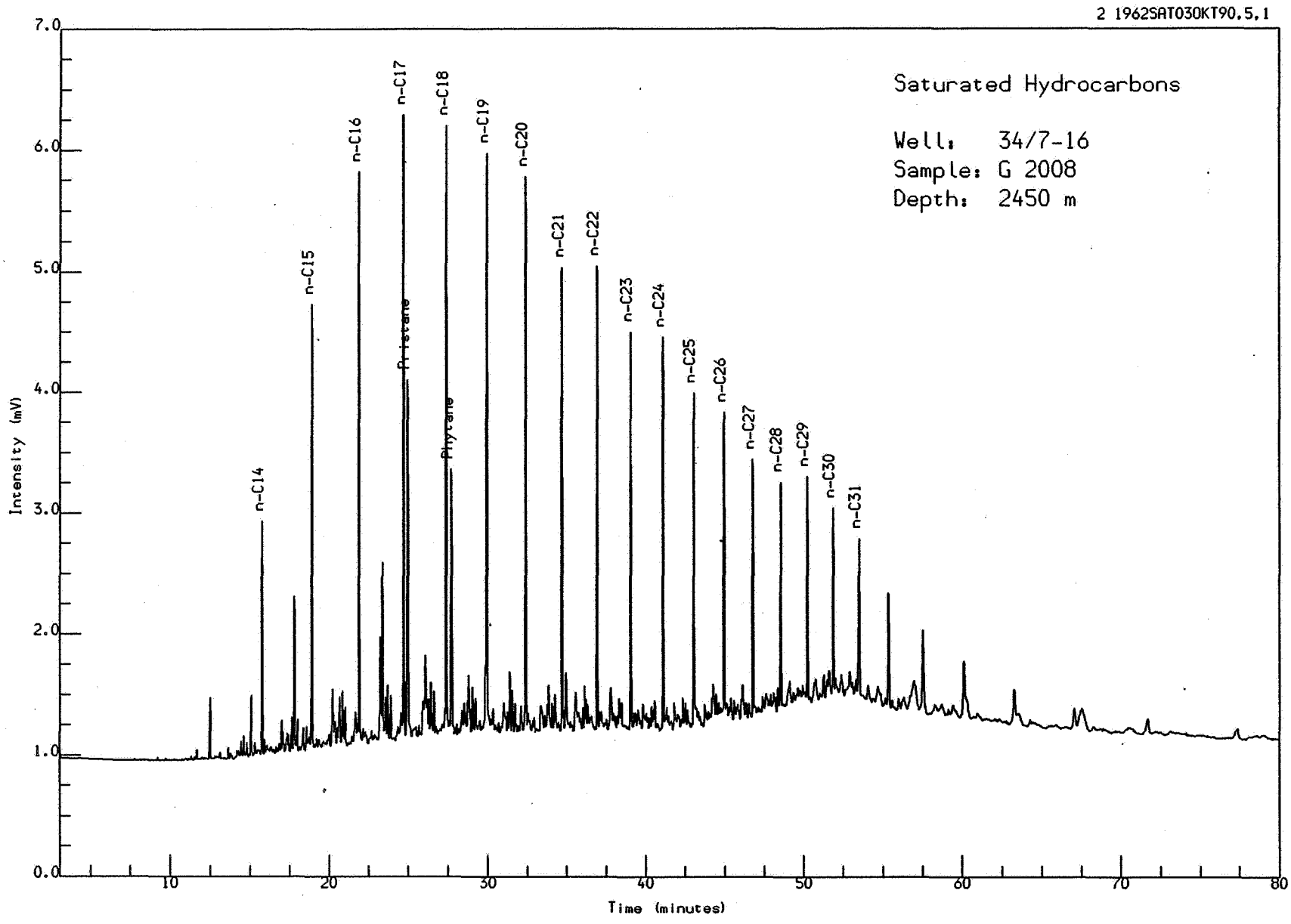
*Chromatograms of the Saturate fraction*

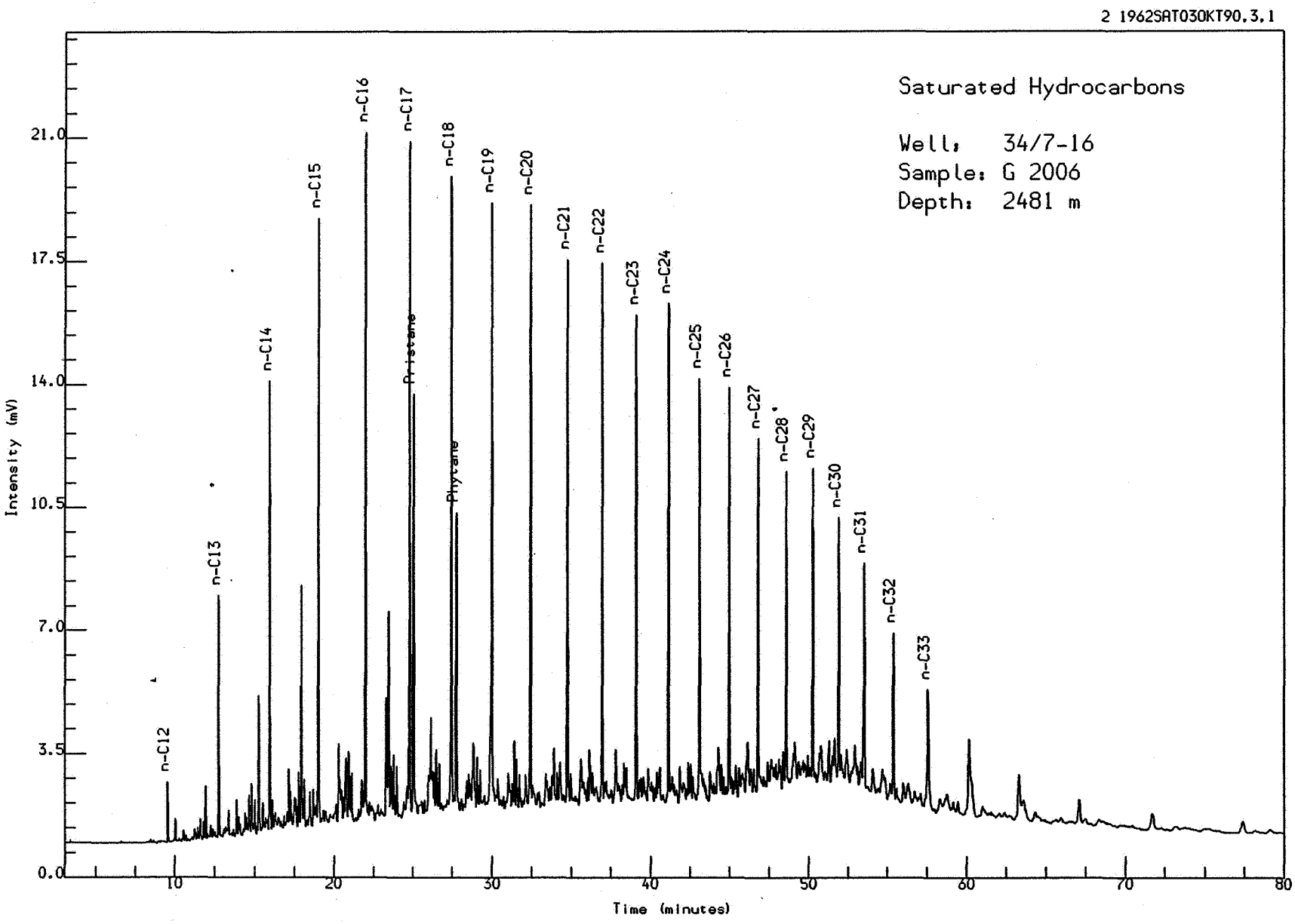

2 SAT_oil_29nov9,4,1
Saturated hydrocarbons
Well : 34/7-16
IKU Nr.: G-2603
OIL , DST 3
Intensity (mV)
Time (minutes)
n-C11
n-C12
n-C13
n-C14
n-C15
n-C16
Pristane
n-C17
Phytane
n-C18
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
n-C34
n-C35

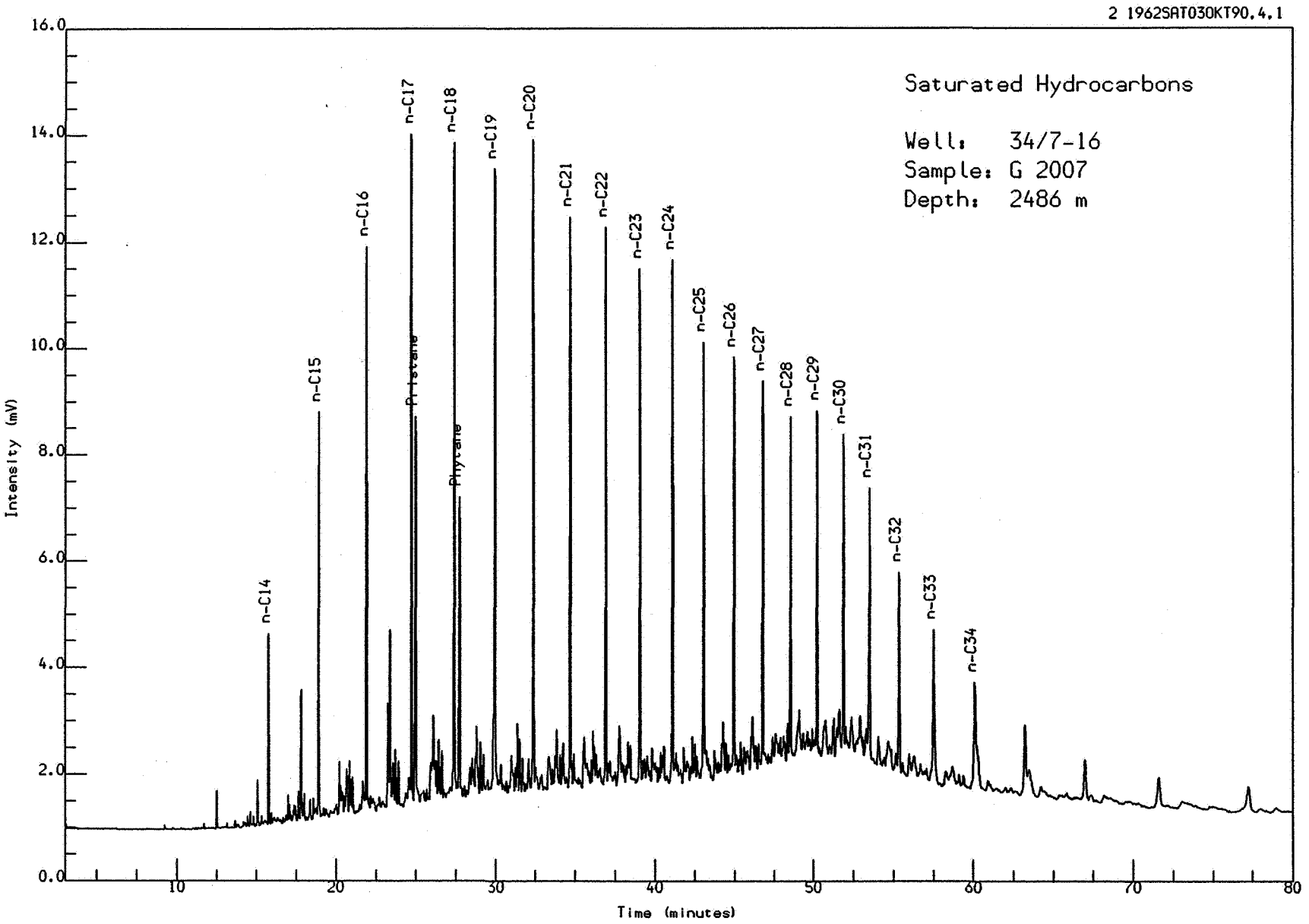

2 SAT_oil_29nov9,3.1
Saturated hydrocarbons
Well : 34/7-16
IKU Nr.: G-2602
OIL , DST 2
Intensity (mV)
Time (minutes)
n-C11
n-C12
n-C13
n-C14
n-C15
n-C16
n-C17
Pristane
n-C18
Phytane
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
n-C34
n-C35

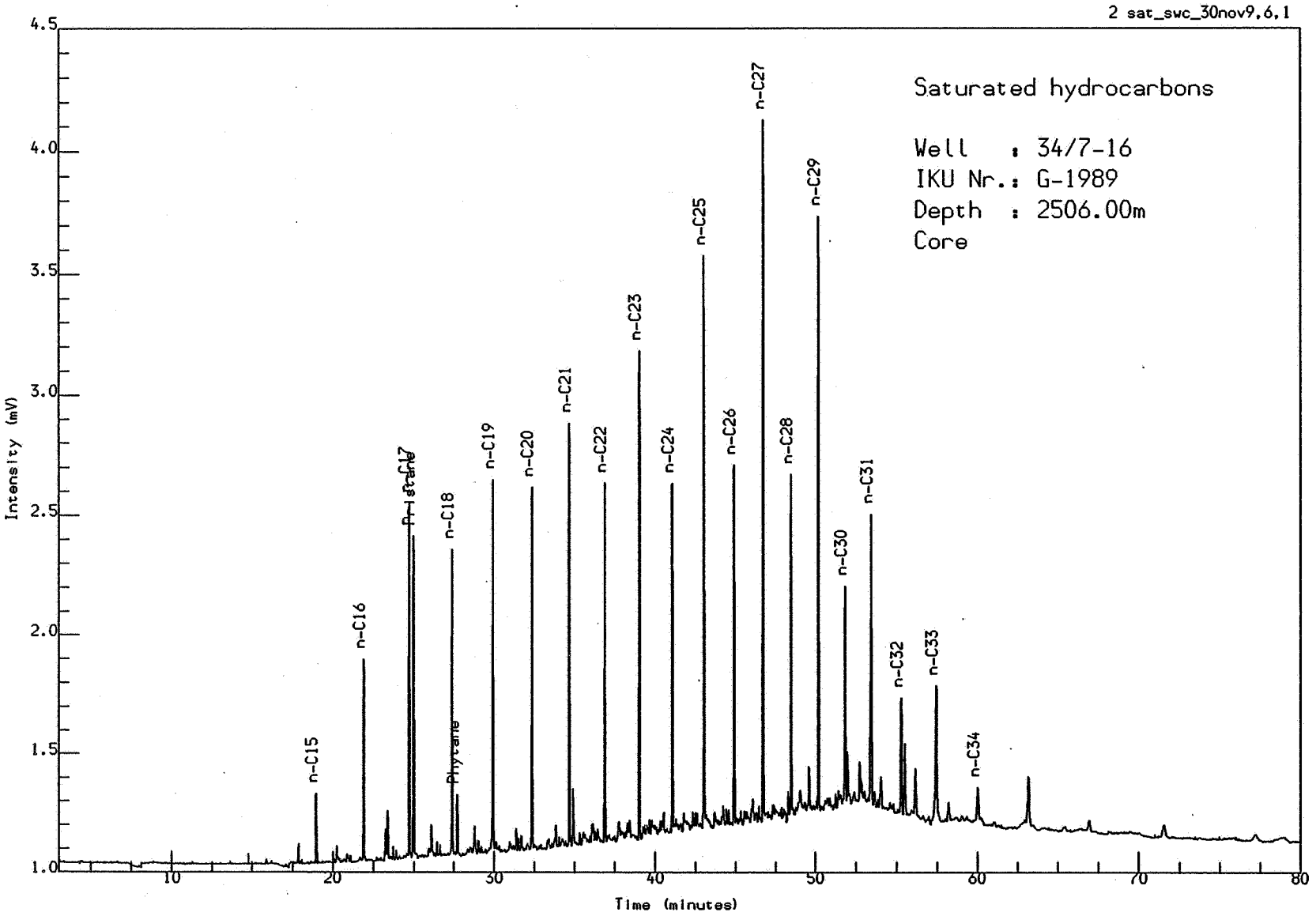

2 1962SAT030KT90,1,1
Saturated Hydrocarbons
Well: 34/7-16
Sample: G 2004
Depth: 2417 m
Intensity (mV)
Time (minutes)
n-C12
n-C13
n-C14
n-C15
n-C16
n-C17
Pristane
n-C18
Phytane
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33

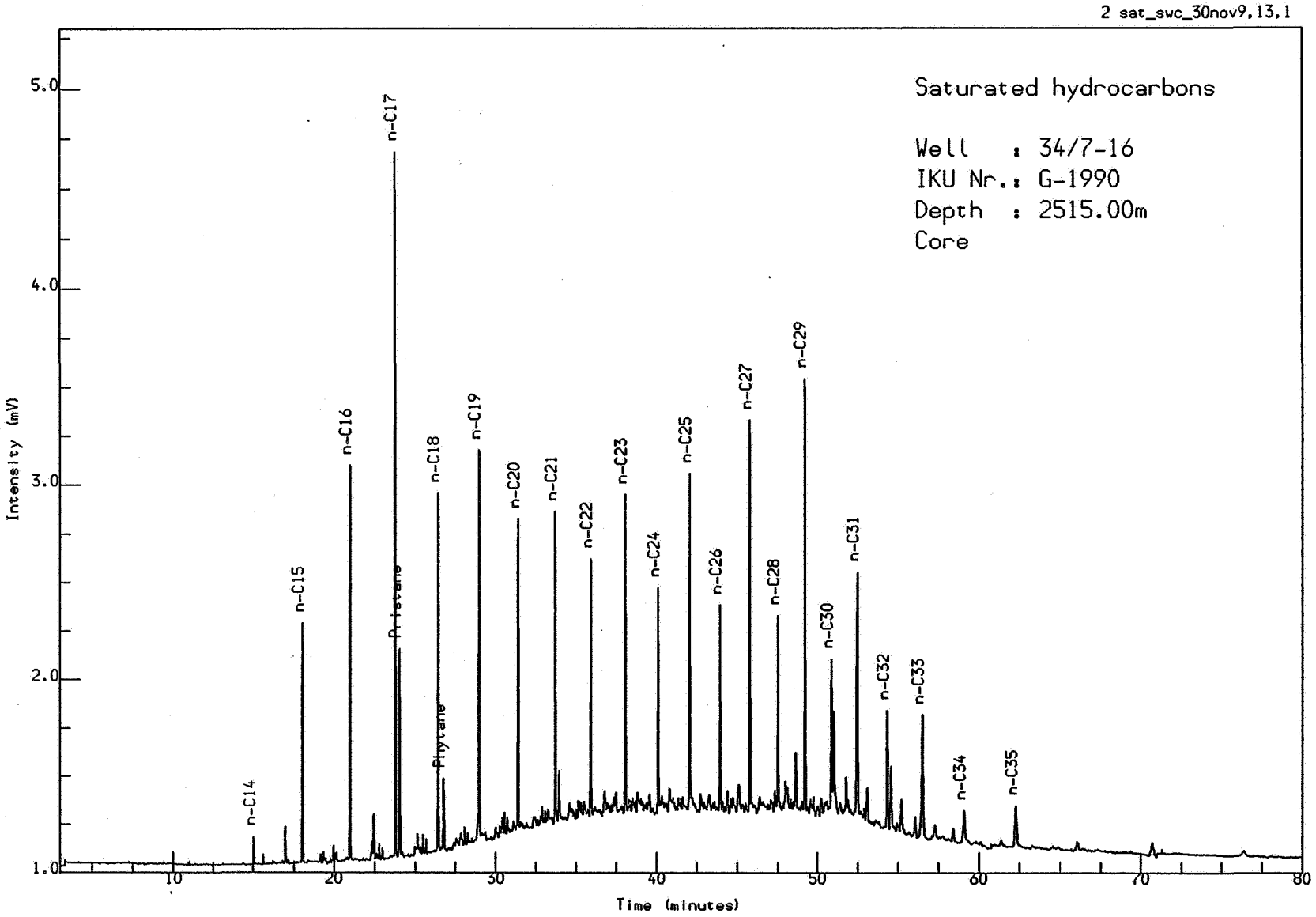

2 1962SAT030KT90,2.1
Saturated Hydrocarbons
Well: 34/7-16
Sample: G 2005
Depth: 2432 m
Intensity (mV)
Time (minutes)
n-C12
n-C13
n-C14
n-C15
n-C16
n-C17
Pristane
n-C18
Phytane
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
n-C34

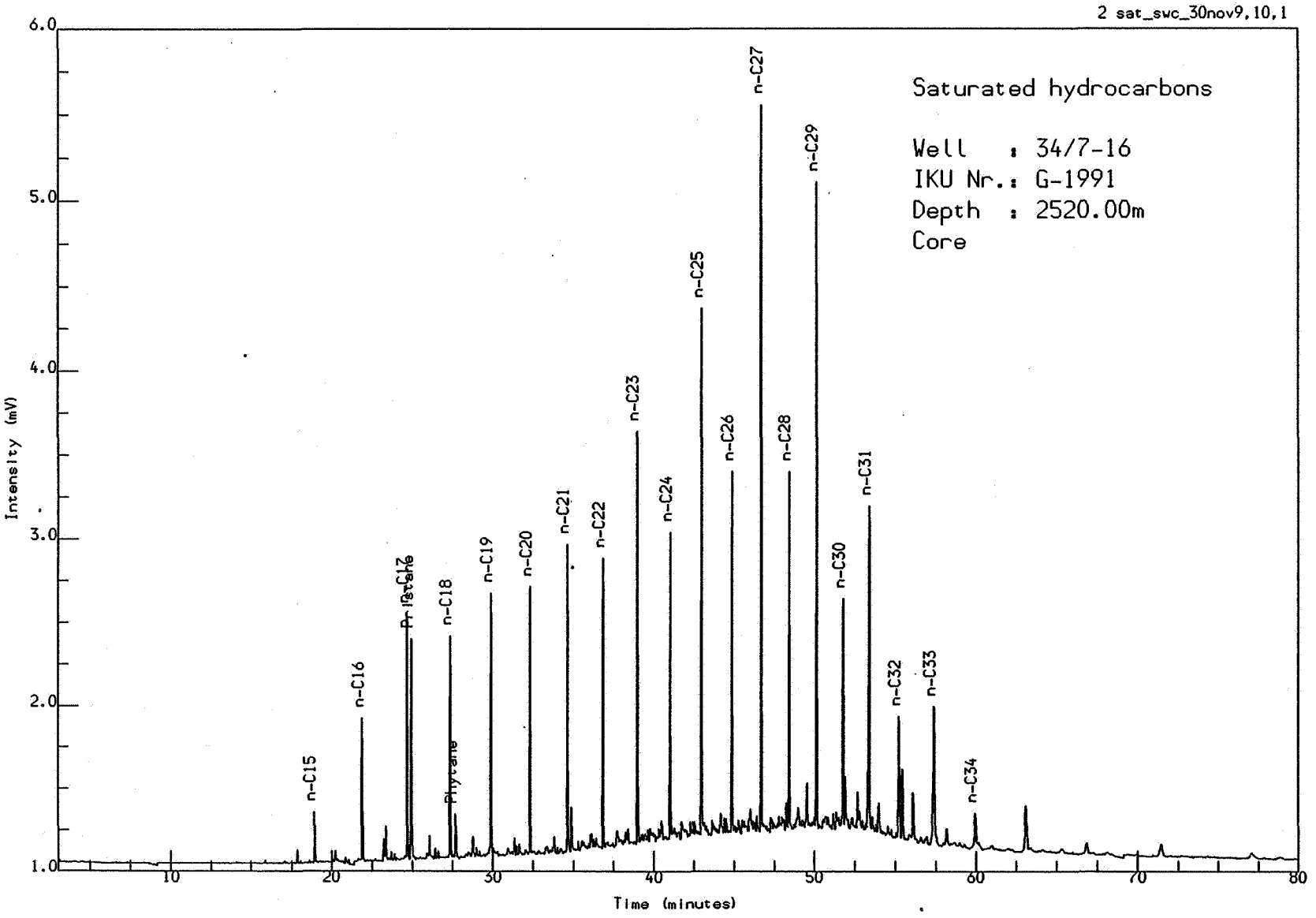

2 1962SAT030KT90,5,1
Saturated Hydrocarbons
Well: 34/7-16
Sample: G 2008
Depth: 2450 m
n-C14
n-C15
n-C16
n-C17
Pristane
n-C18
Phytane
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
Intensity (mV)
Time (minutes)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
10
20
30
40
50
60
70
80

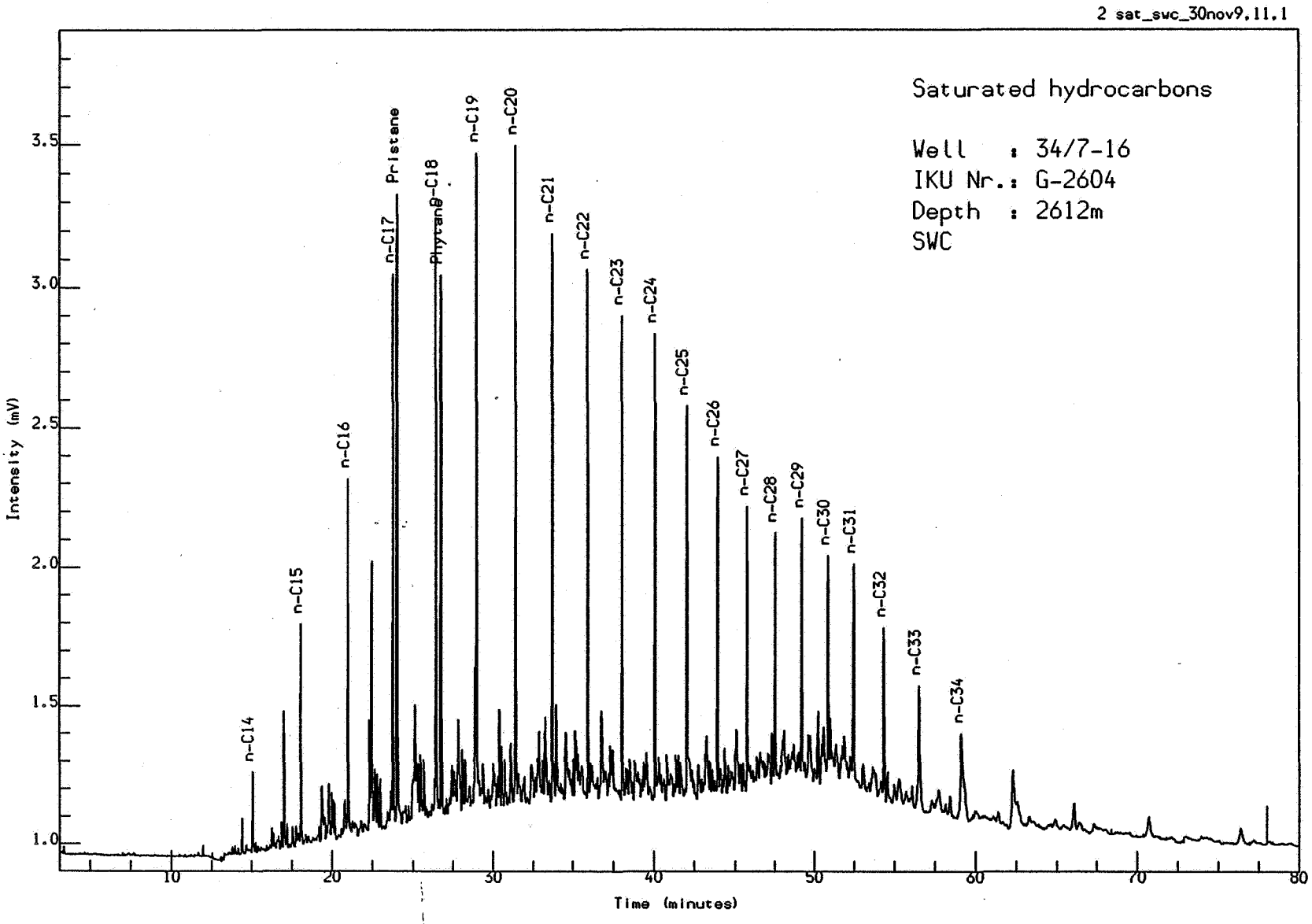

2 1962SAT030KT90.3.1
Saturated Hydrocarbons
Well: 34/7-16
Sample: G 2006
Depth: 2481 m
Intensity (mV)
21.0
17.5
14.0
10.5
7.0
3.5
0.0
n-C12
n-C13
n-C14
n-C15
n-C16
n-C17
Pristane
n-C18
Phytane
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
10
20
30
40
50
60
70
80
Time (minutes)

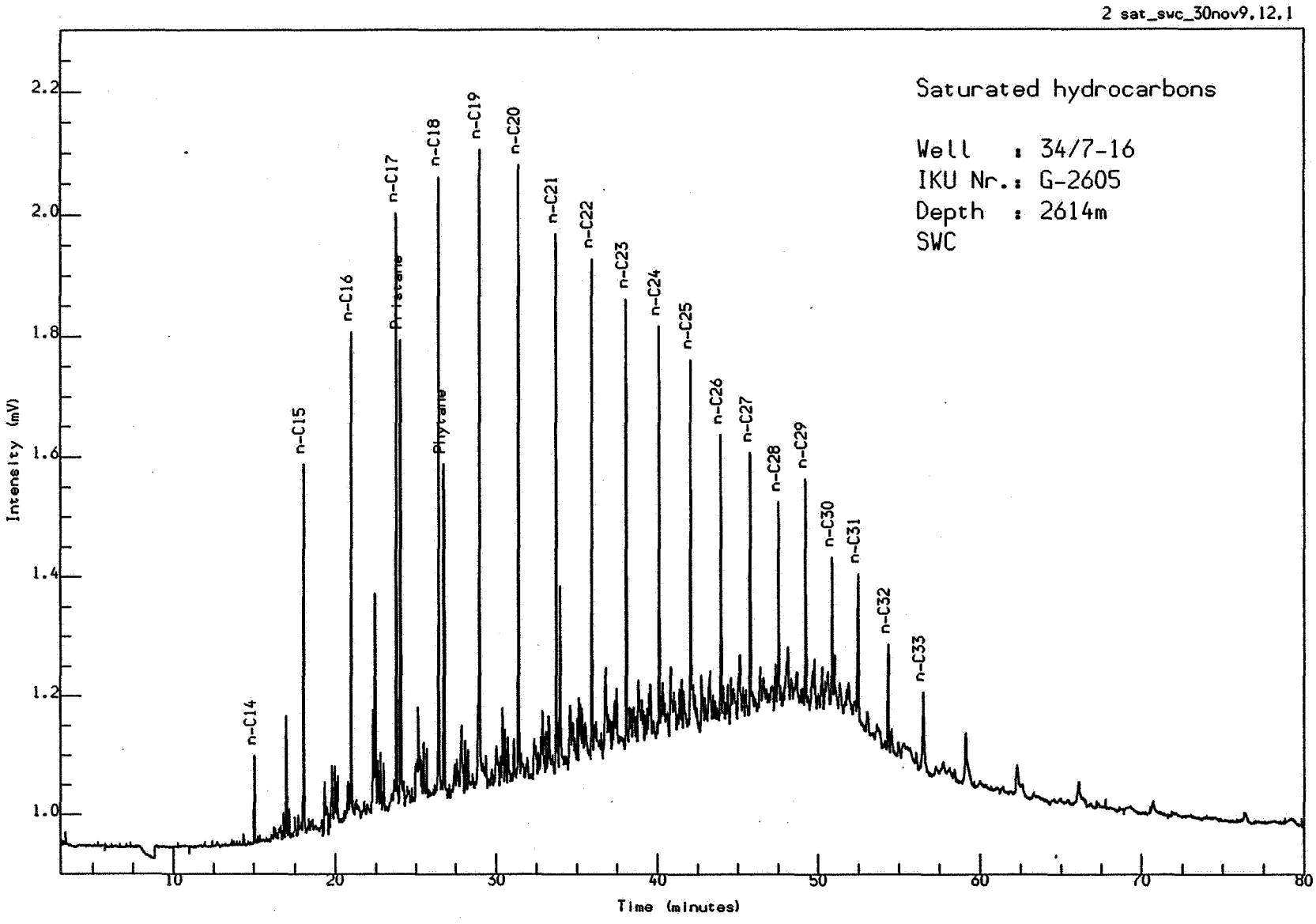

2 1962SAT030KT90.4.1
Saturated Hydrocarbons
Well: 34/7-16
Sample: G 2007
Depth: 2486 m
Intensity (mV)
Time (minutes)
n-C14
n-C15
n-C16
n-C17
Pristane
n-C18
Phytane
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
n-C34

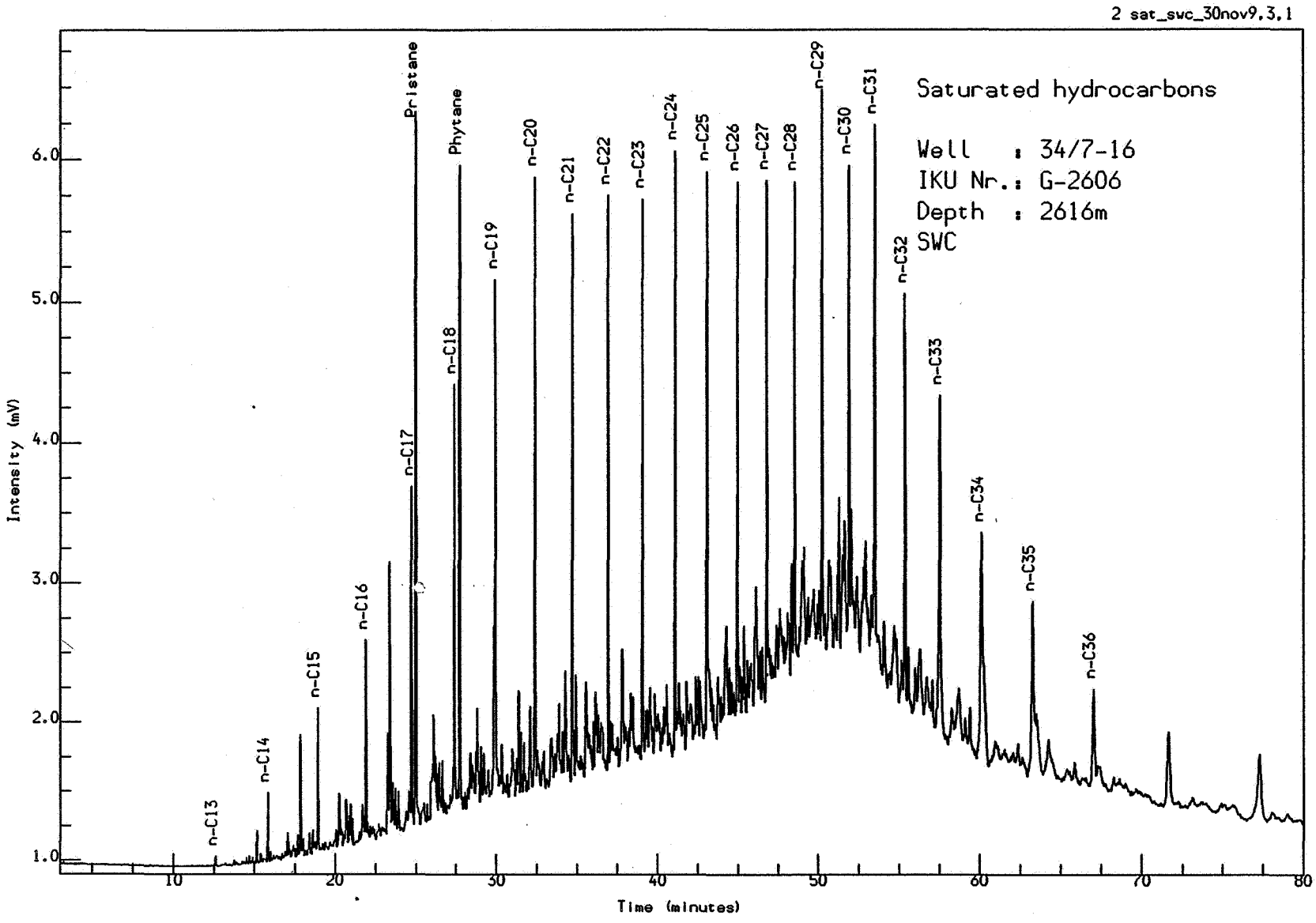

2 sat_swc_30nov9.6.1
Saturated hydrocarbons
Well : 34/7-16
IKU Nr.: G-1989
Depth : 2506.00m
Core
Intensity (mV)
Time (minutes)
n-C15
n-C16
Pristane
n-C17
Phytane
n-C18
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
n-C34

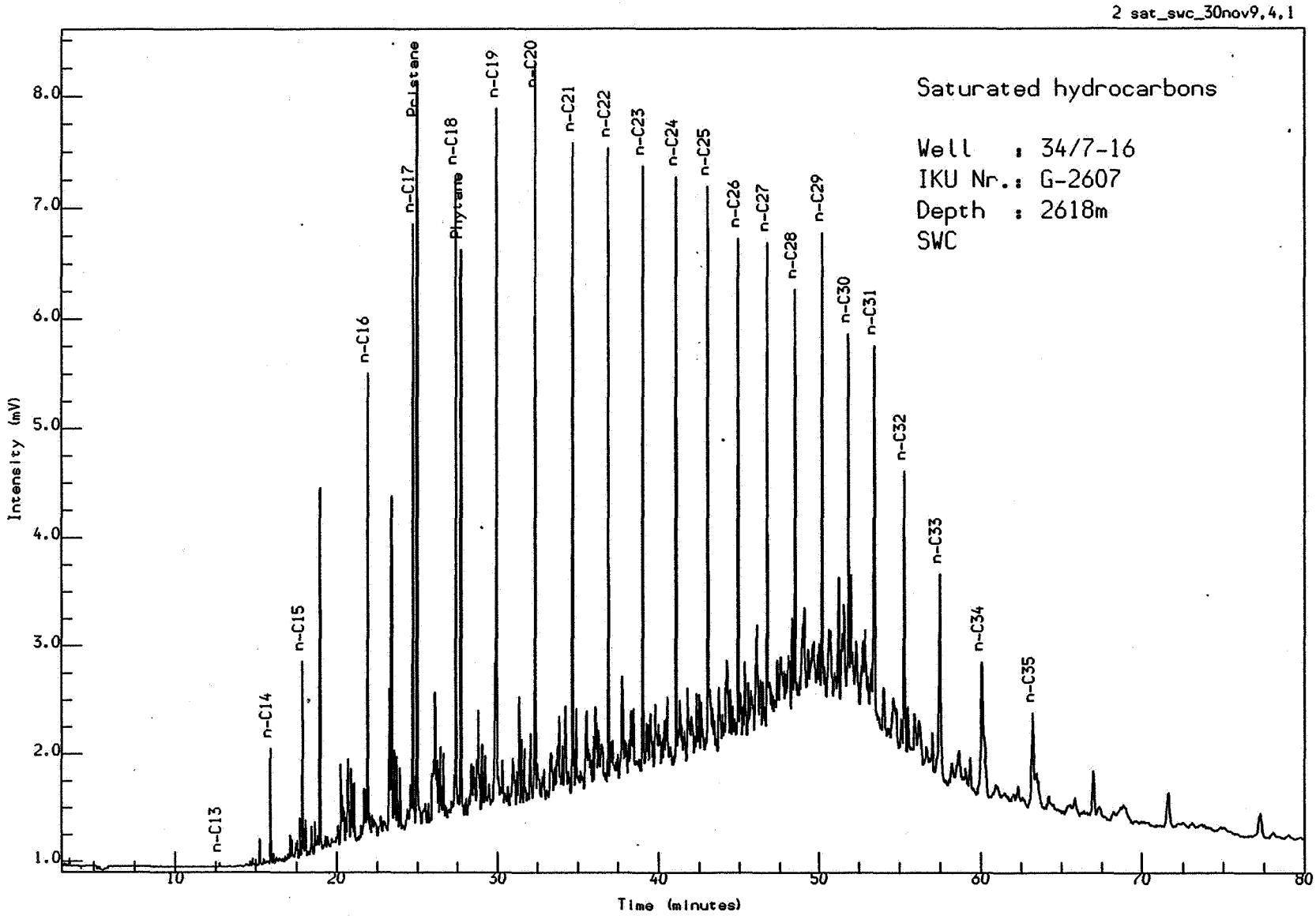

2 sat_swc_30nov9.13.1
Saturated hydrocarbons
Well : 34/7-16
IKU Nr.: G-1990
Depth : 2515.00m
Core
Intensity (mV)
5.0
4.0
3.0
2.0
1.0
Time (minutes)
10
20
30
40
50
60
70
80
n-C14
n-C15
n-C16
n-C17
Pristane
Phytane
n-C18
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
n-C34
n-C35


2 sat_swc_30nov9,10,1
Saturated hydrocarbons
Well : 34/7-16
IKU Nr.: G-1991
Depth : 2520.00m
Core
Intensity (mV)
Time (minutes)
n-C15
n-C16
Pristane
Phytane
n-C17
n-C18
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
n-C34


2 sat_swc_30nov9.11.1
Saturated hydrocarbons
Well : 34/7-16
IKU Nr.: G-2604
Depth : 2612m
SWC
Intensity (mV)
Time (minutes)
n-C14
n-C15
n-C16
n-C17
Pristane
Phytane
n-C18
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
n-C34


2 sat_svc_30nov9.12.1
Saturated hydrocarbons
Well : 34/7-16
IKU Nr.: G-2605
Depth : 2614m
SWC
Intensity (mV)
Time (minutes)
n-C14
n-C15
n-C16
n-C17
Pristane
n-C18
Phytane
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33


2 sat_svc_30nov9.3.1
Saturated hydrocarbons
Well : 34/7-16
IKU Nr.: G-2606
Depth : 2616m
SWC
Intensity (mV)
Time (minutes)
n-C13
n-C14
n-C15
n-C16
n-C17
Pristane
n-C18
Phytane
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
n-C34
n-C35
n-C36


2 sat_swc_30nov9,4,1
Saturated hydrocarbons
Well : 34/7-16
IKU Nr.: G-2607
Depth : 2618m
SWC
Intensity (mV)
Time (minutes)
n-C13
n-C14
n-C15
n-C16
n-C17
Pristane
Phytane
n-C18
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
n-C34
n-C35

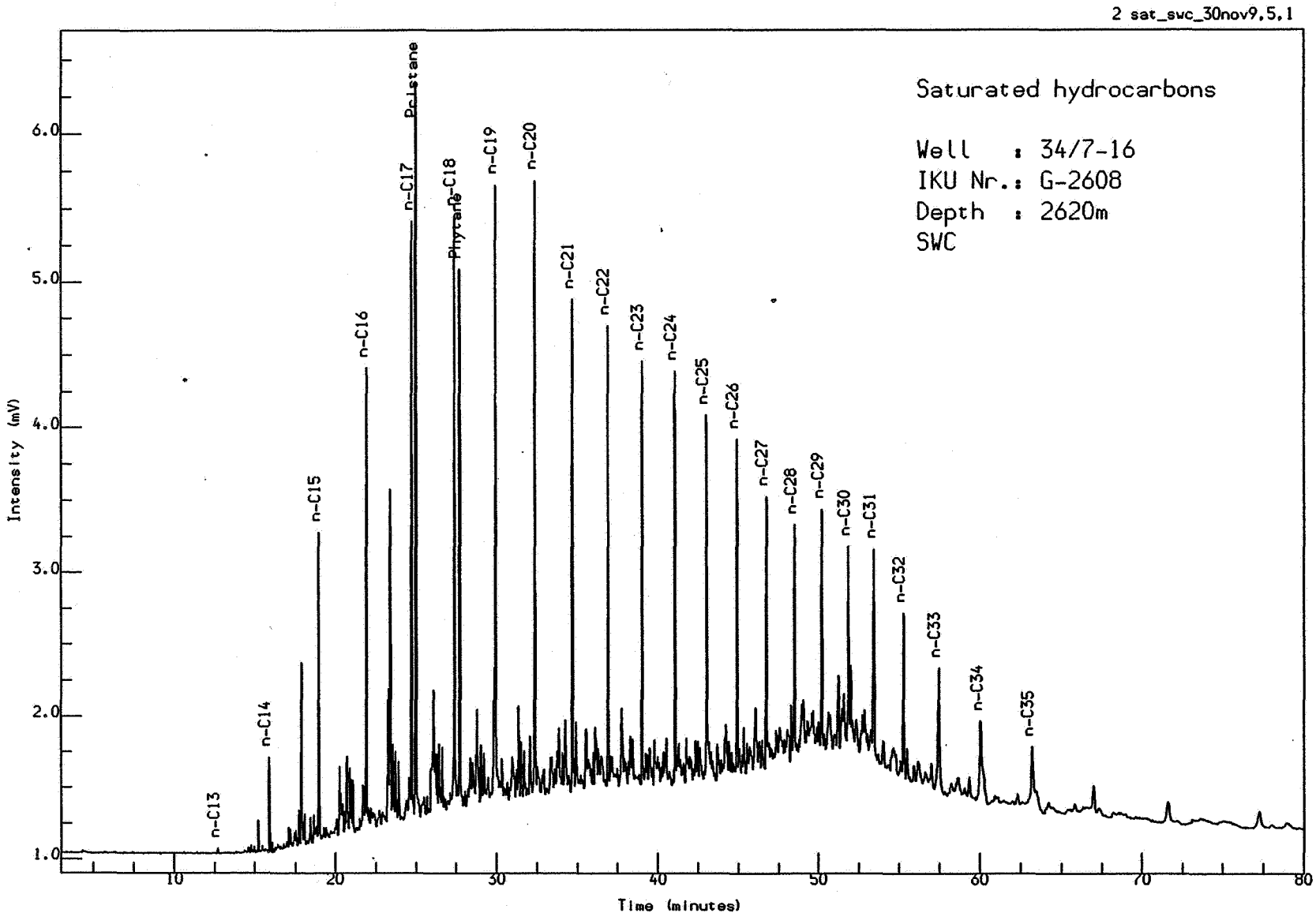
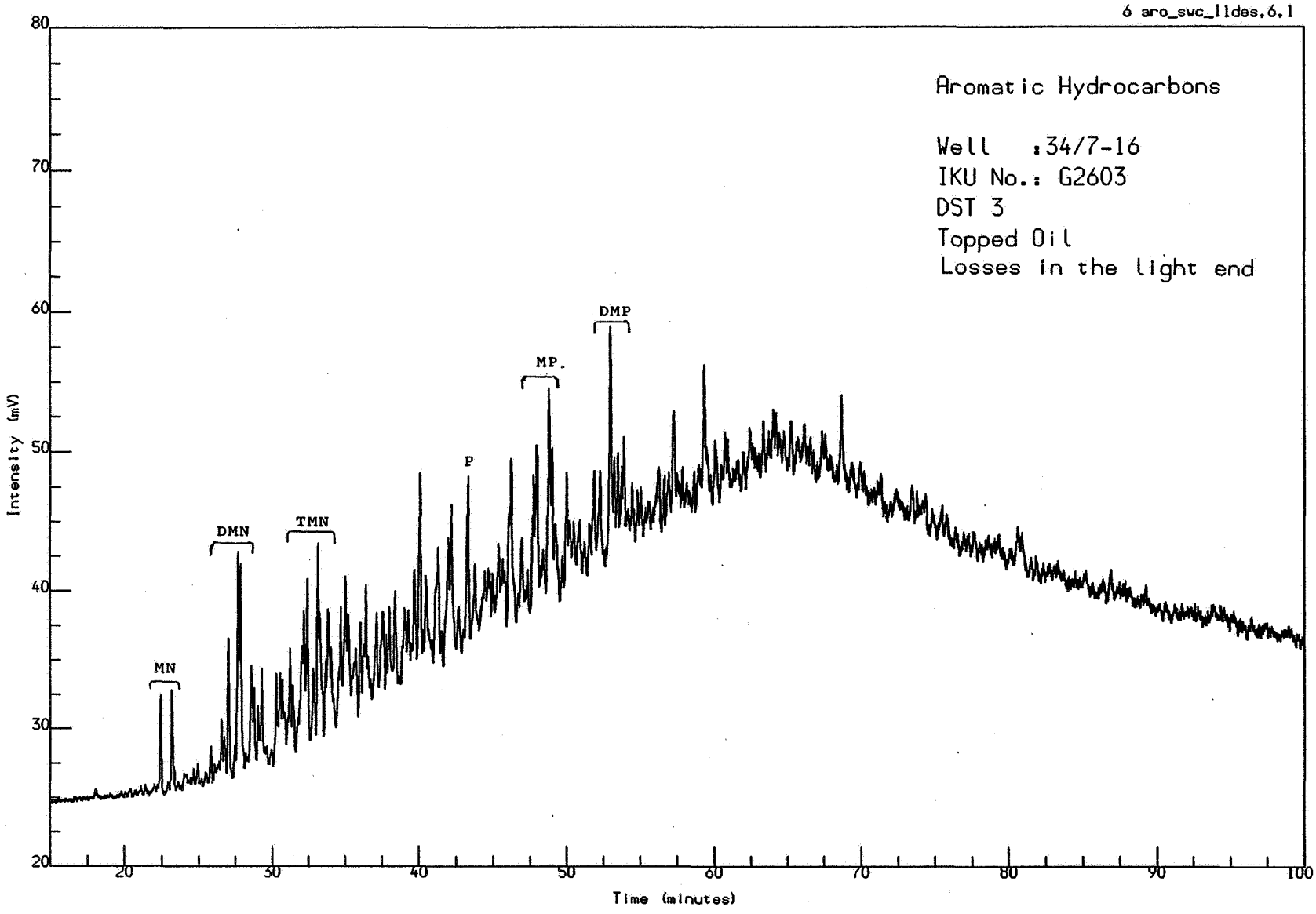

2 sat_swc_30nov9,5,1
Saturated hydrocarbons
Well : 34/7-16
IKU Nr.: G-2608
Depth : 2620m
SWC
Intensity (mV)
Time (minutes)
n-C13
n-C14
n-C15
n-C16
n-C17
Pristane
Phytane
n-C18
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
n-C27
n-C28
n-C29
n-C30
n-C31
n-C32
n-C33
n-C34
n-C35

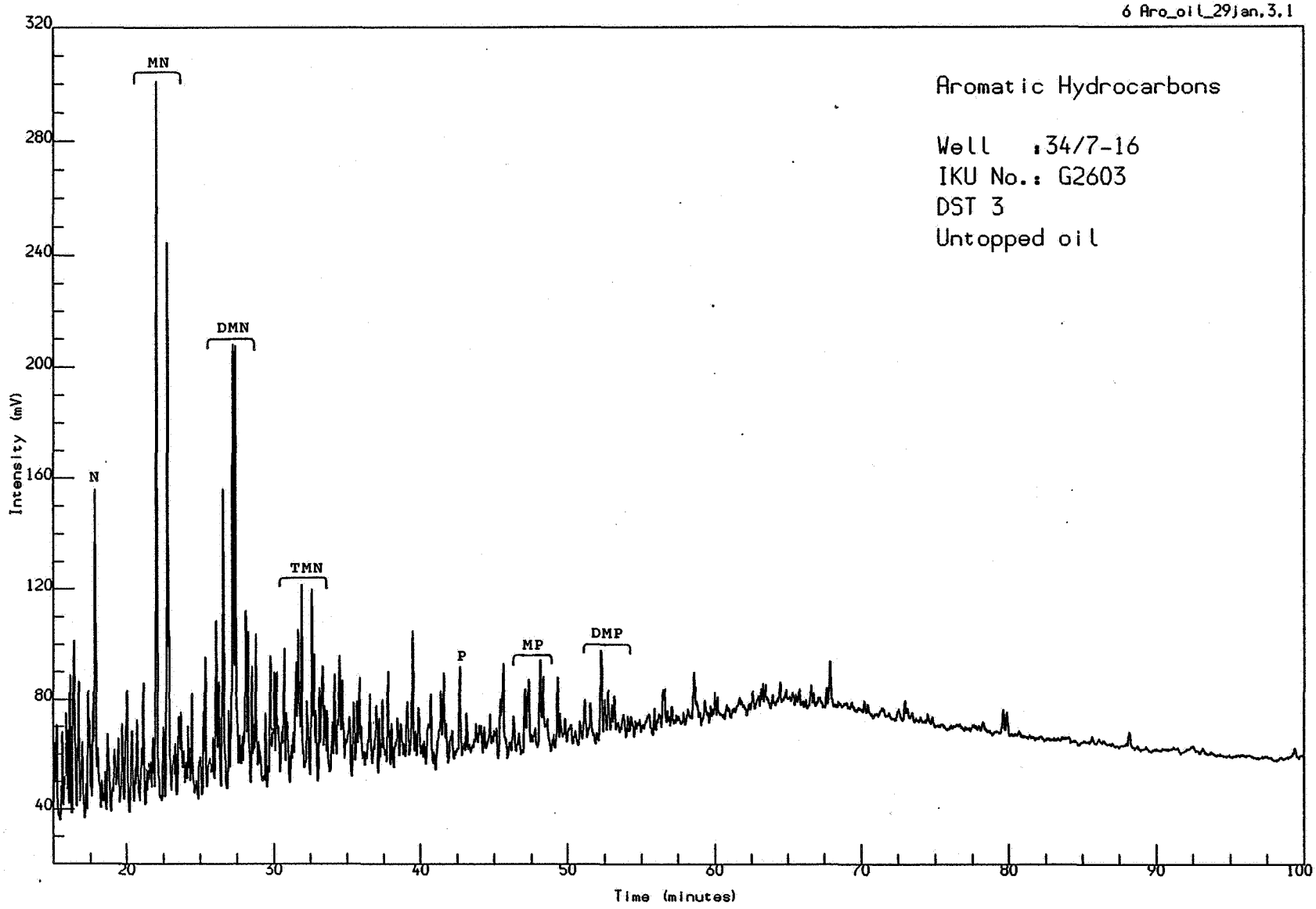
*Figure 4*

*Chromatograms of the Aromatic fraction*



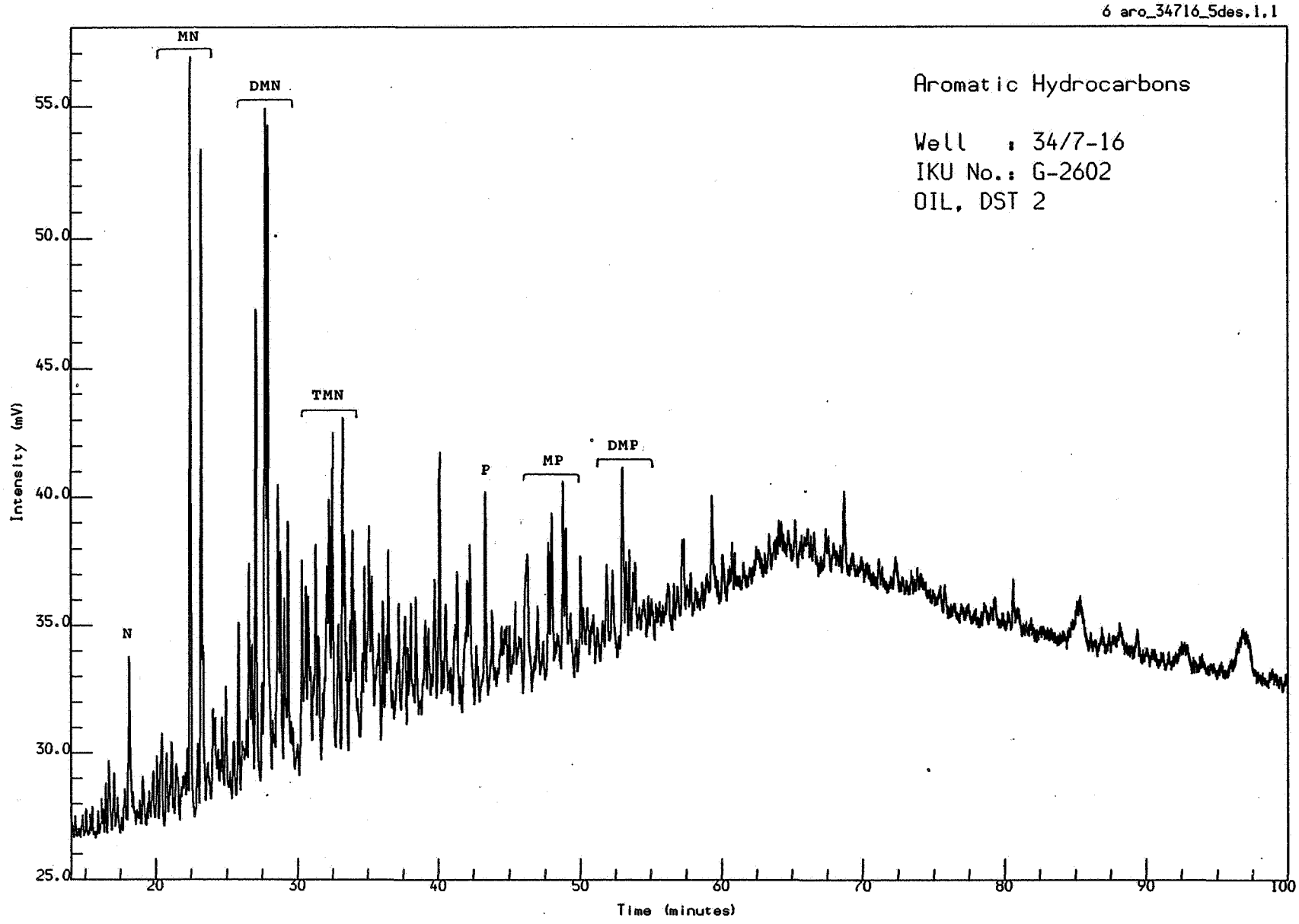


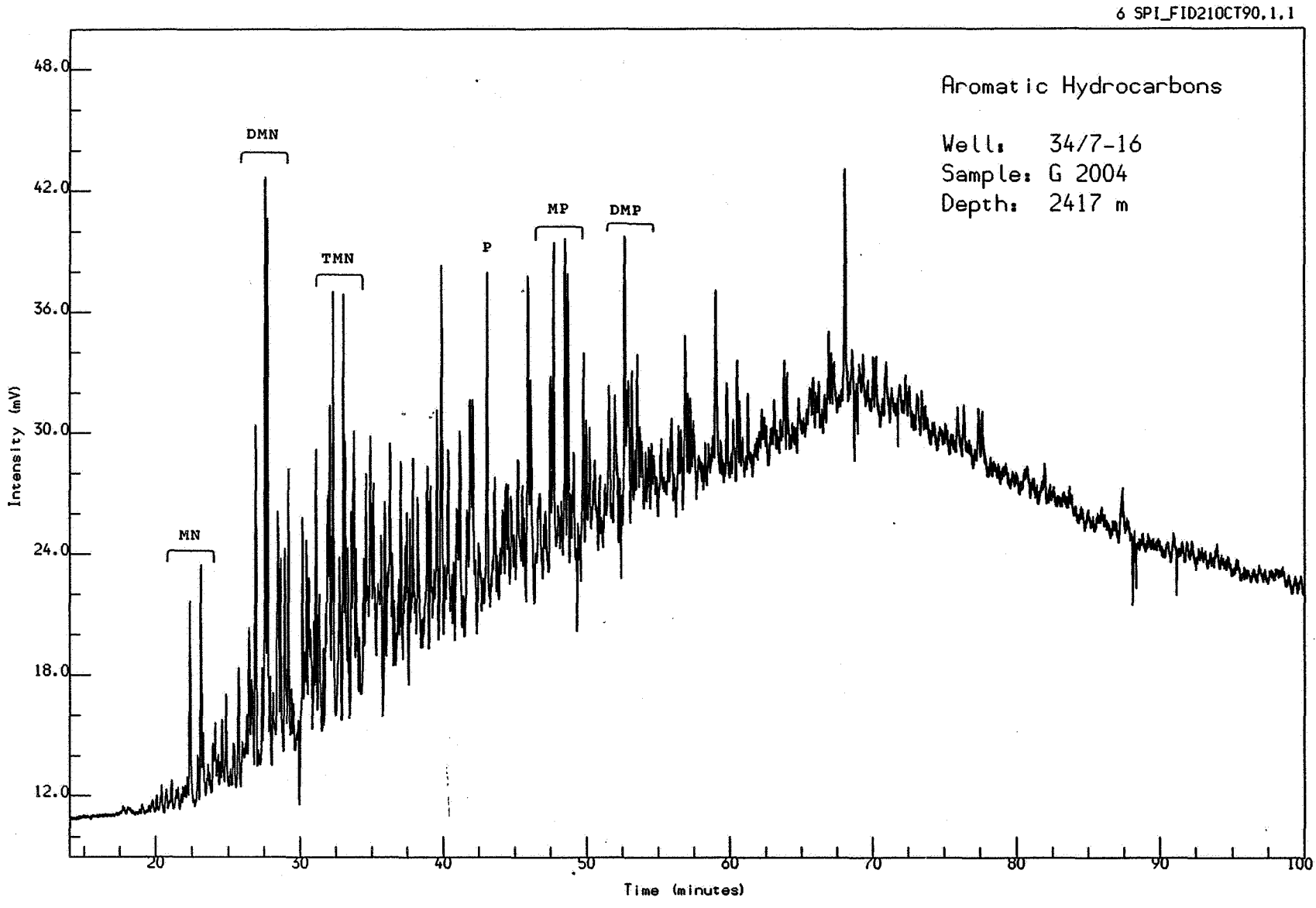

IKU SINTEF-GRUPPEN

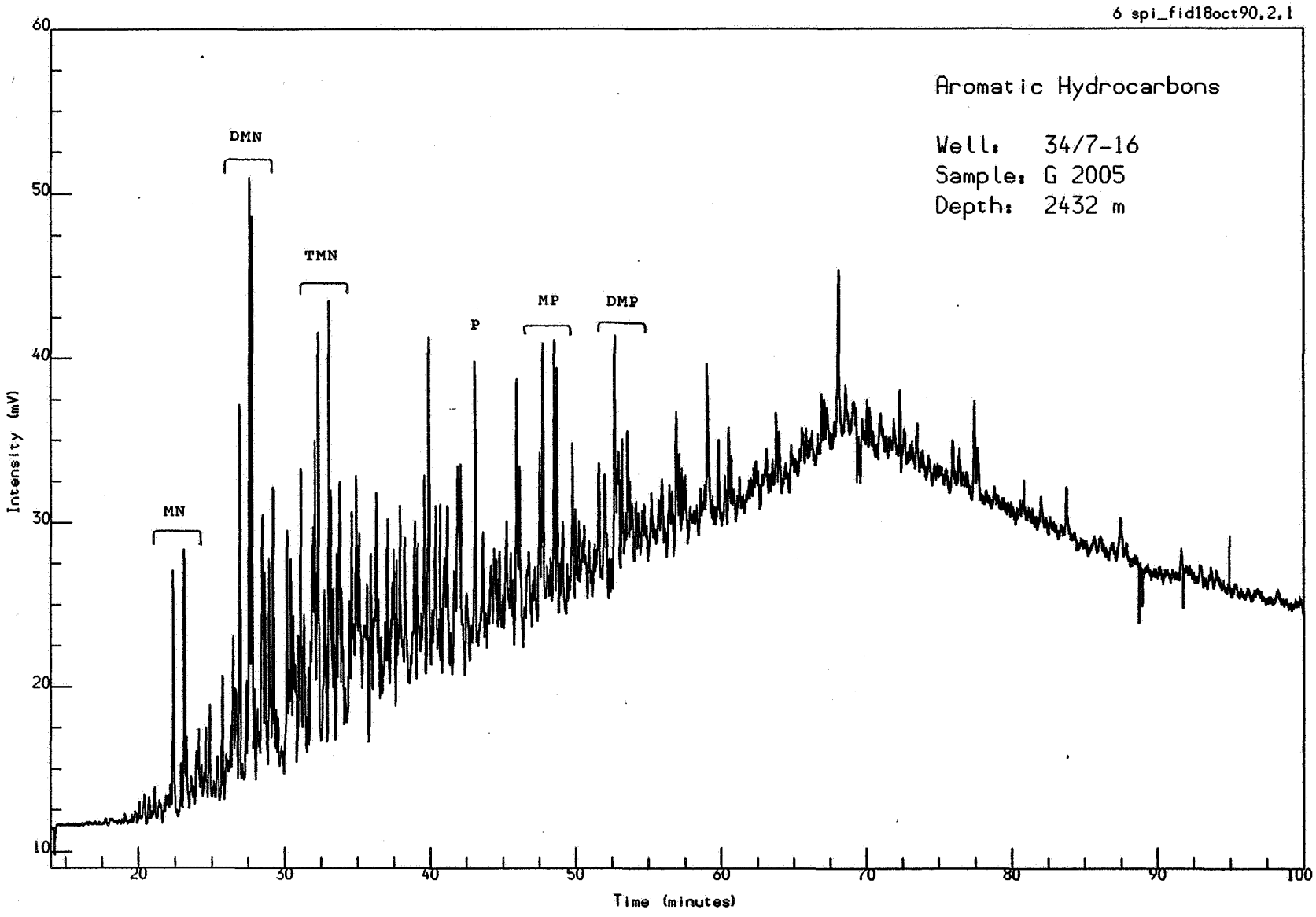





IKU SINTEF-GRUPPEN

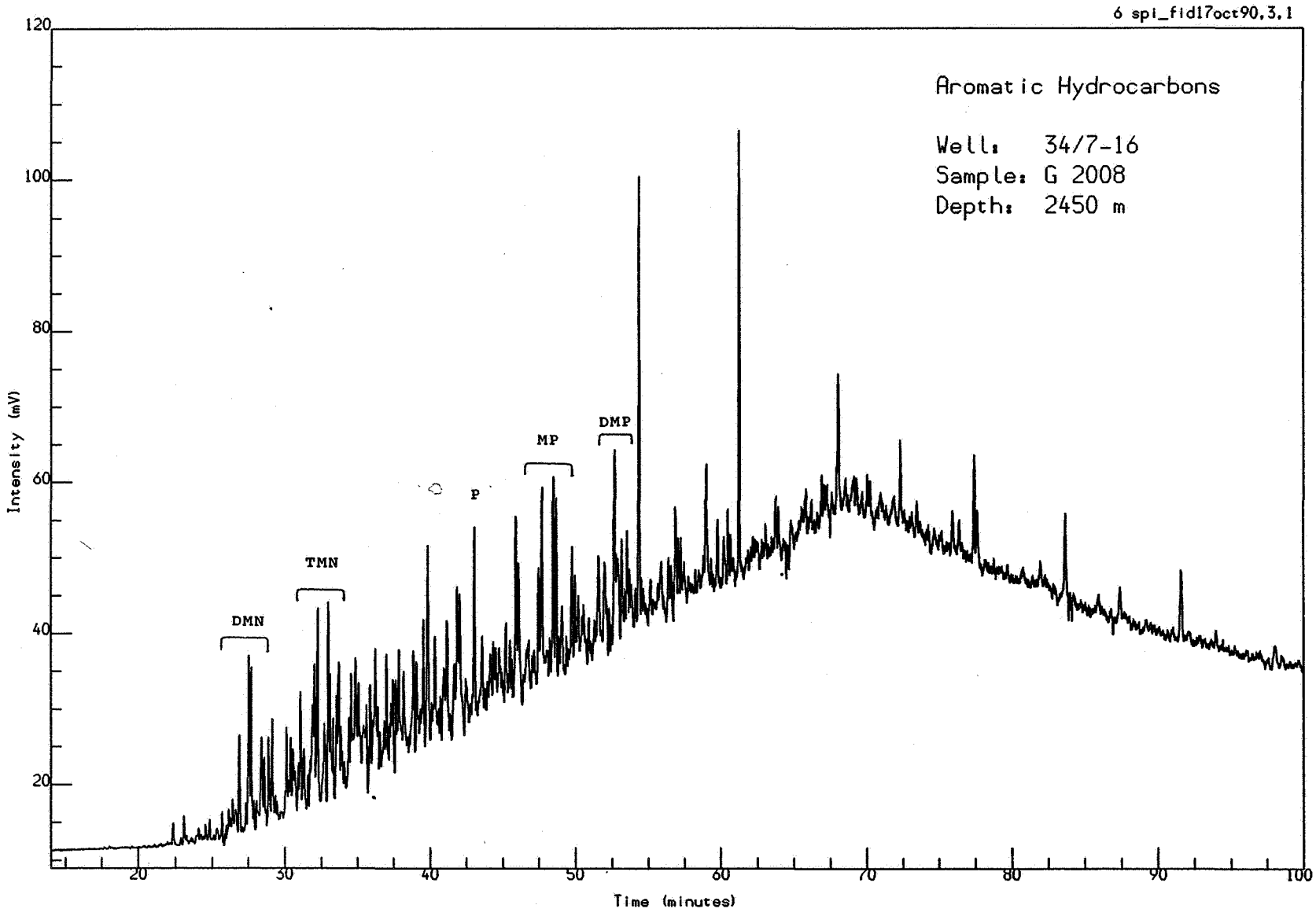


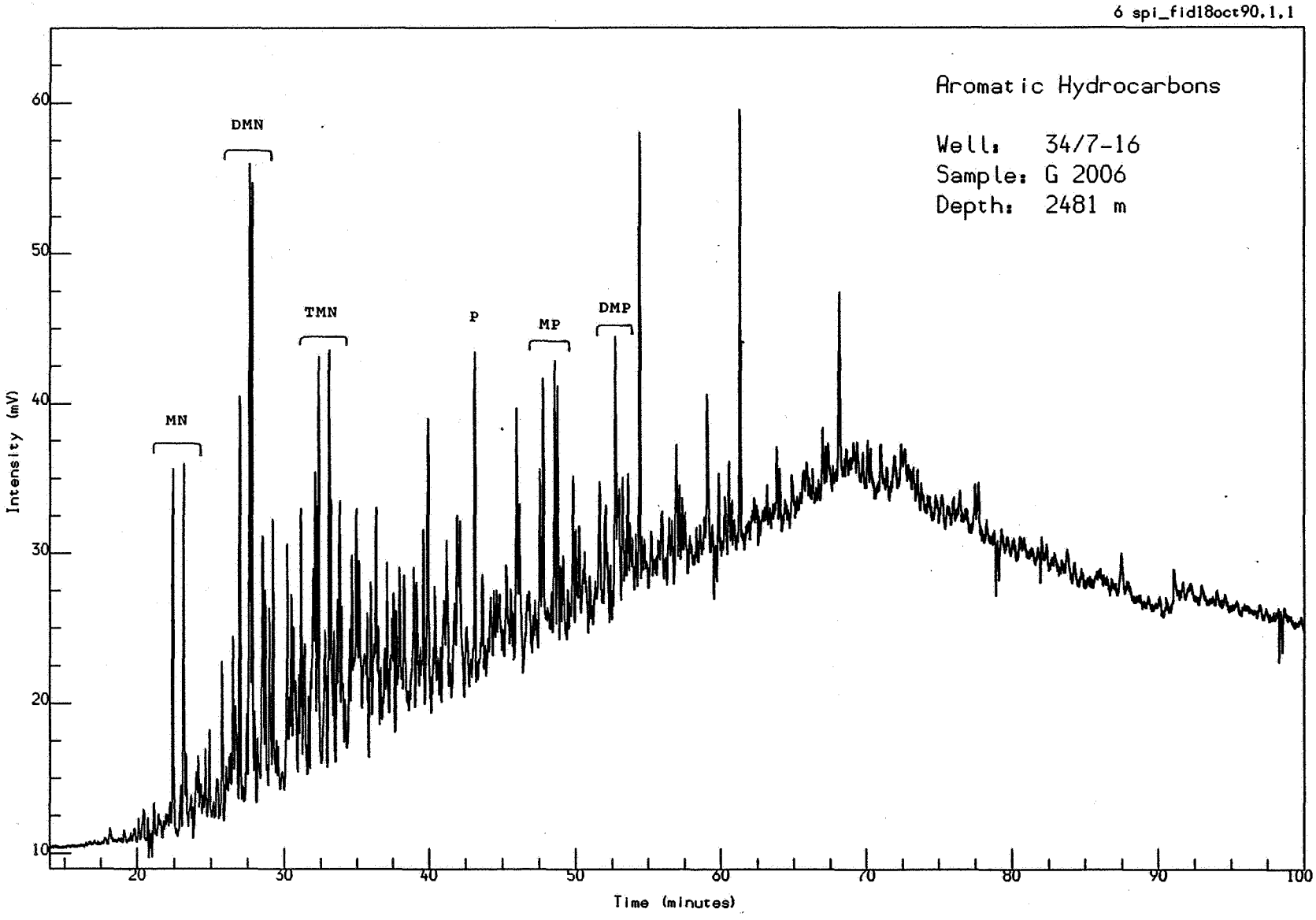

6 SPI_FID21OCT90,1,1
Aromatic Hydrocarbons
Well: 34/7-16
Sample: G 2004
Depth: 2417 m
MN
DMN
TMN
P
MP
DMP
Intensity (mV)
48.0
42.0
36.0
30.0
24.0
18.0
12.0
20
30
40
50
60
70
80
90
100
Time (minutes)





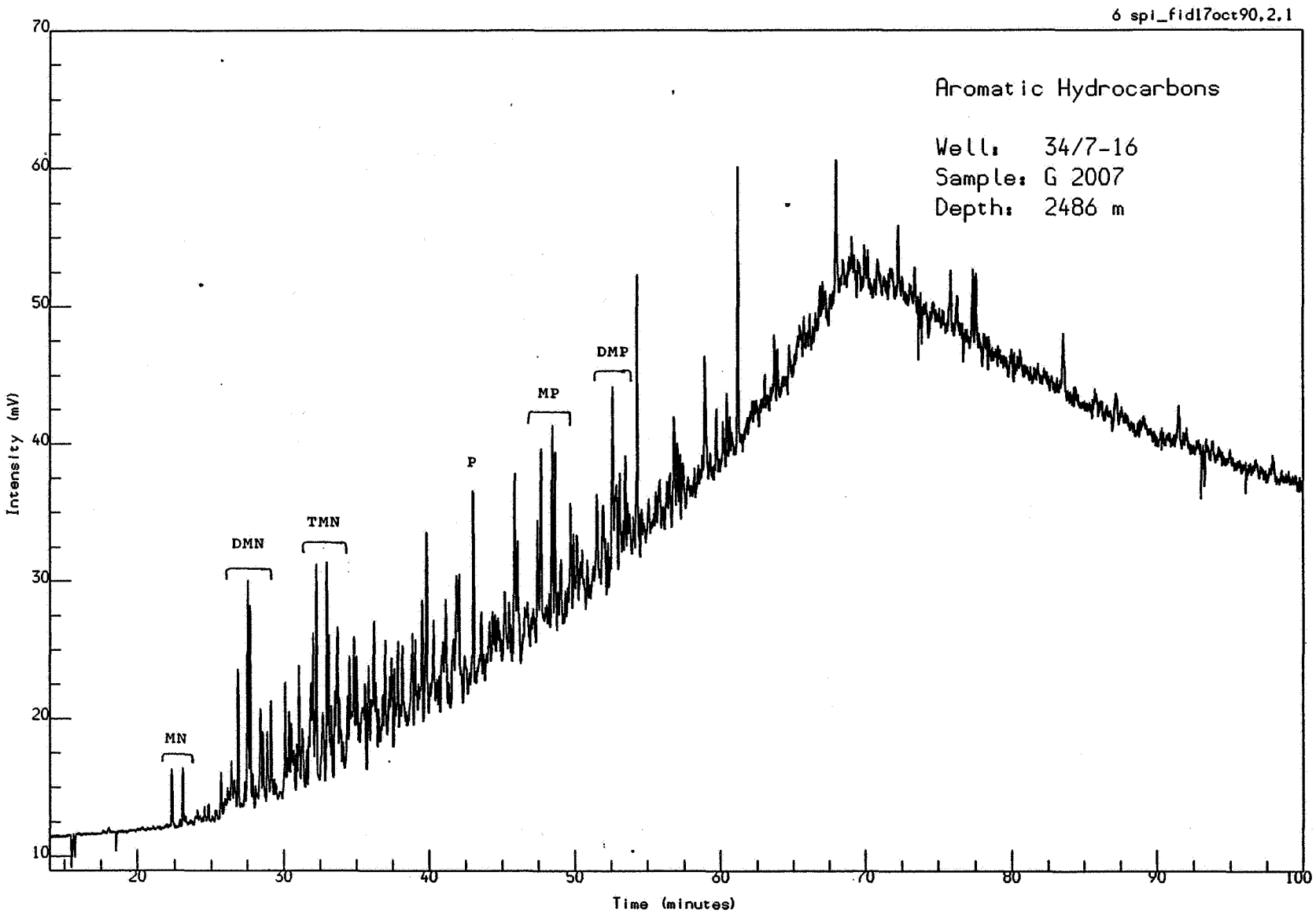

IKU SINTEF-GRUPPEN

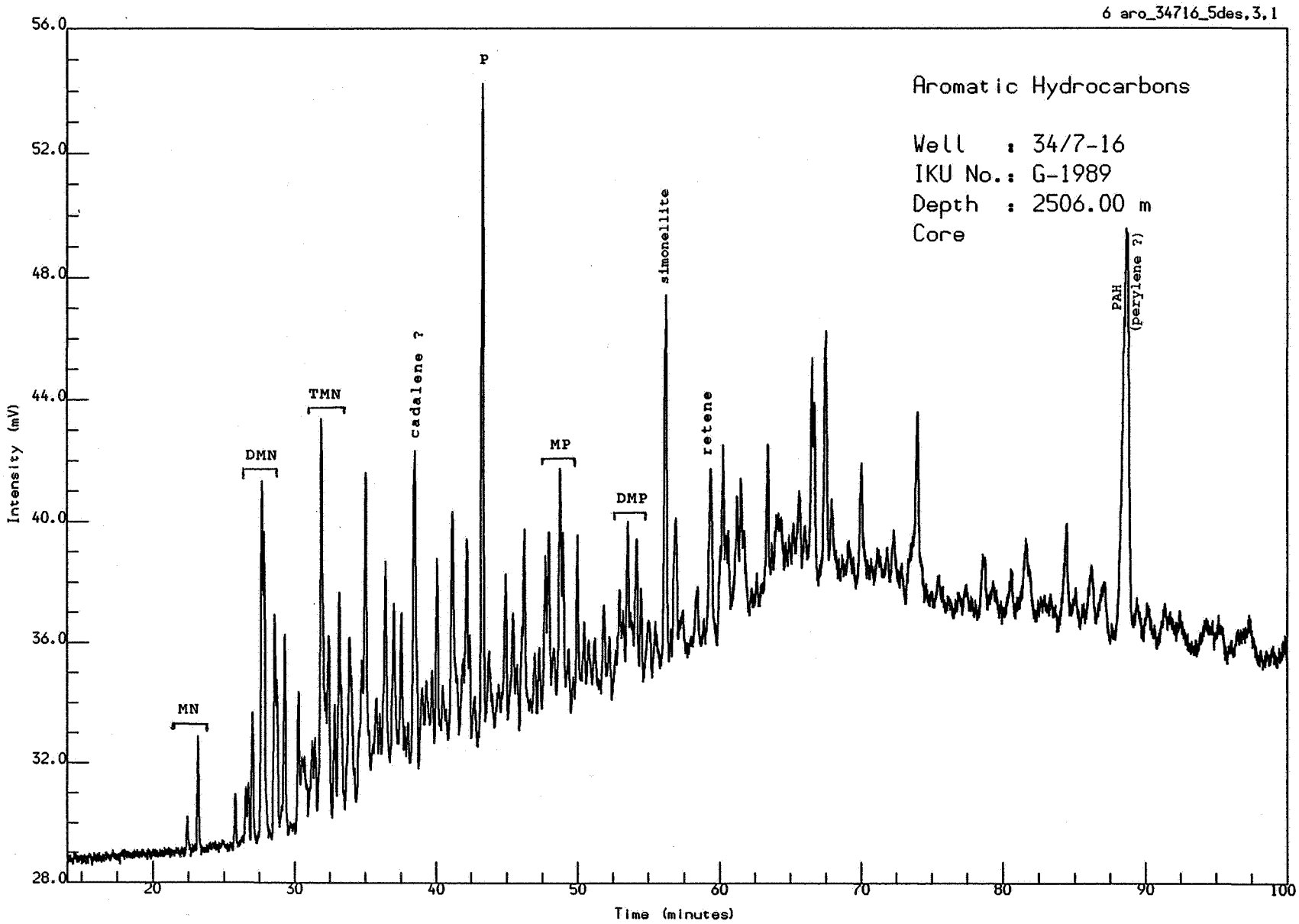


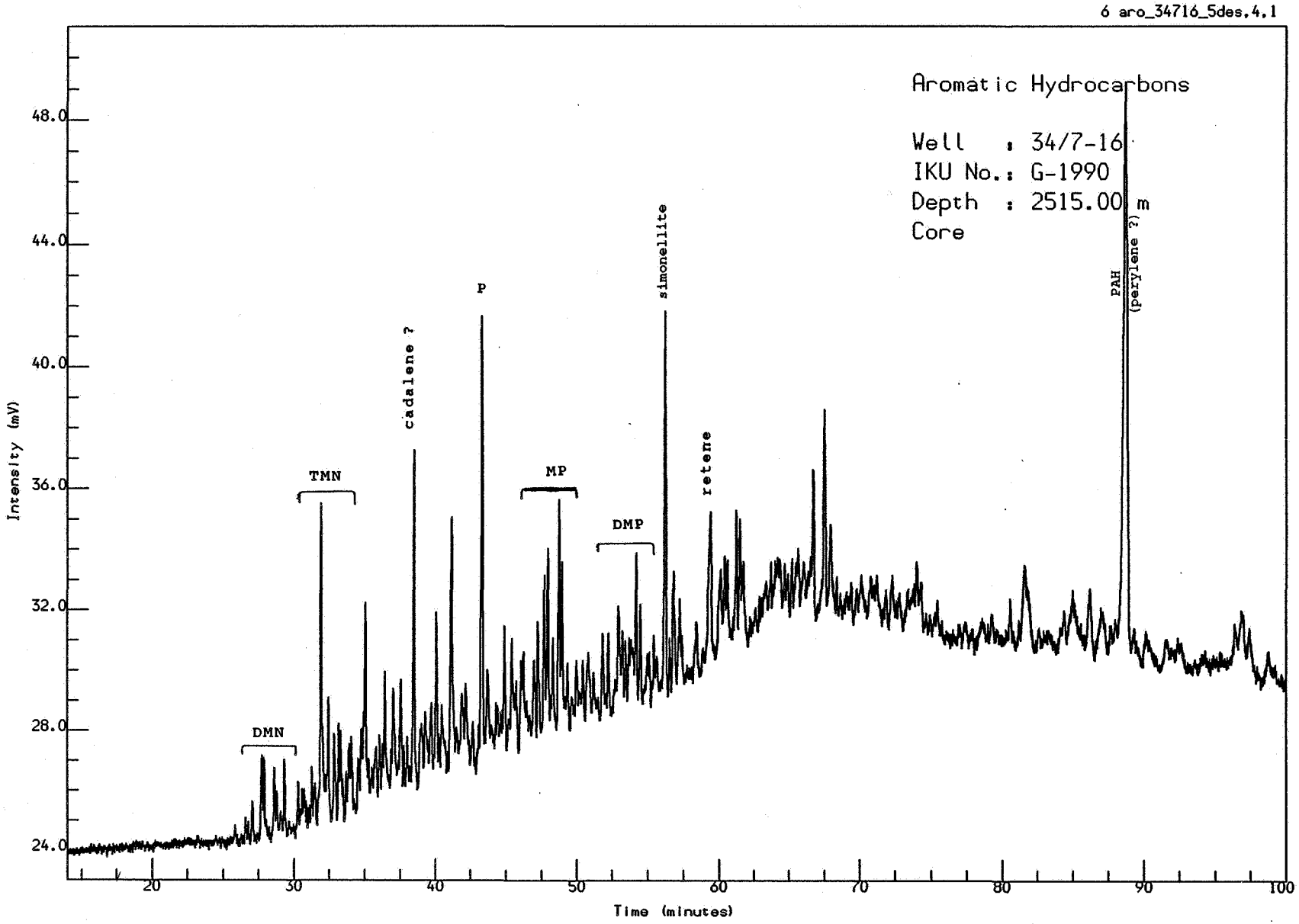


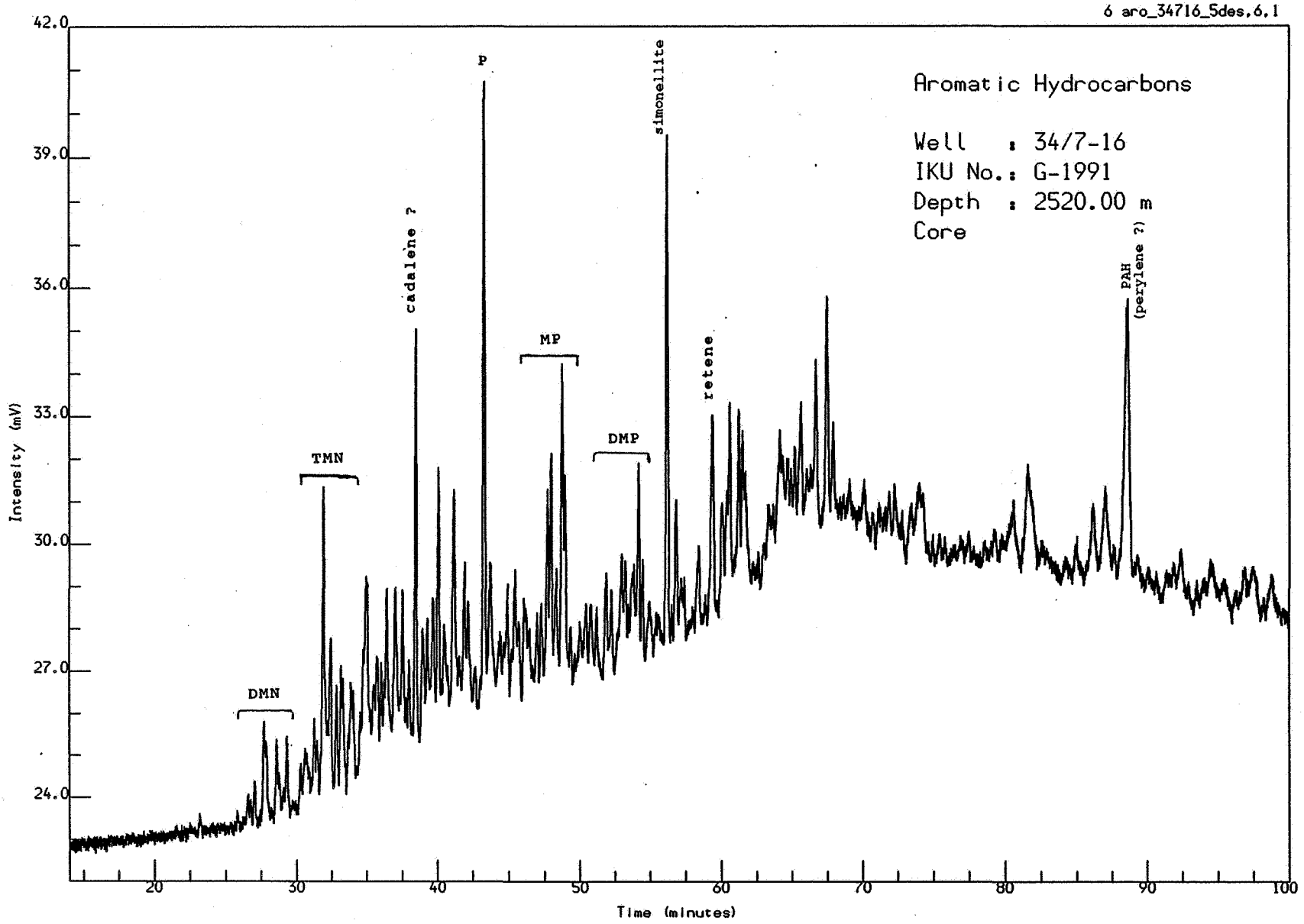


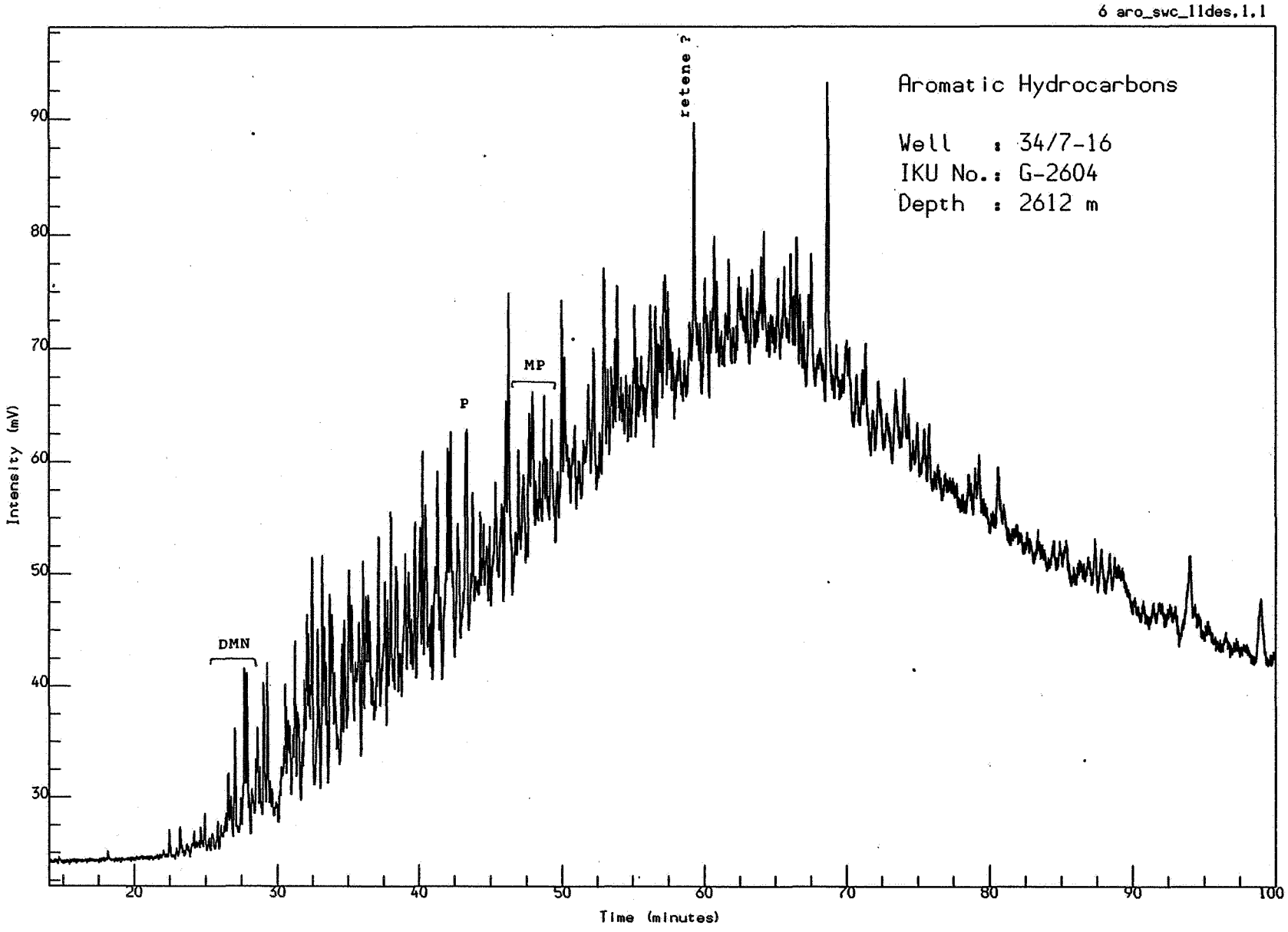

IKU SINTEF-GRUPPEN

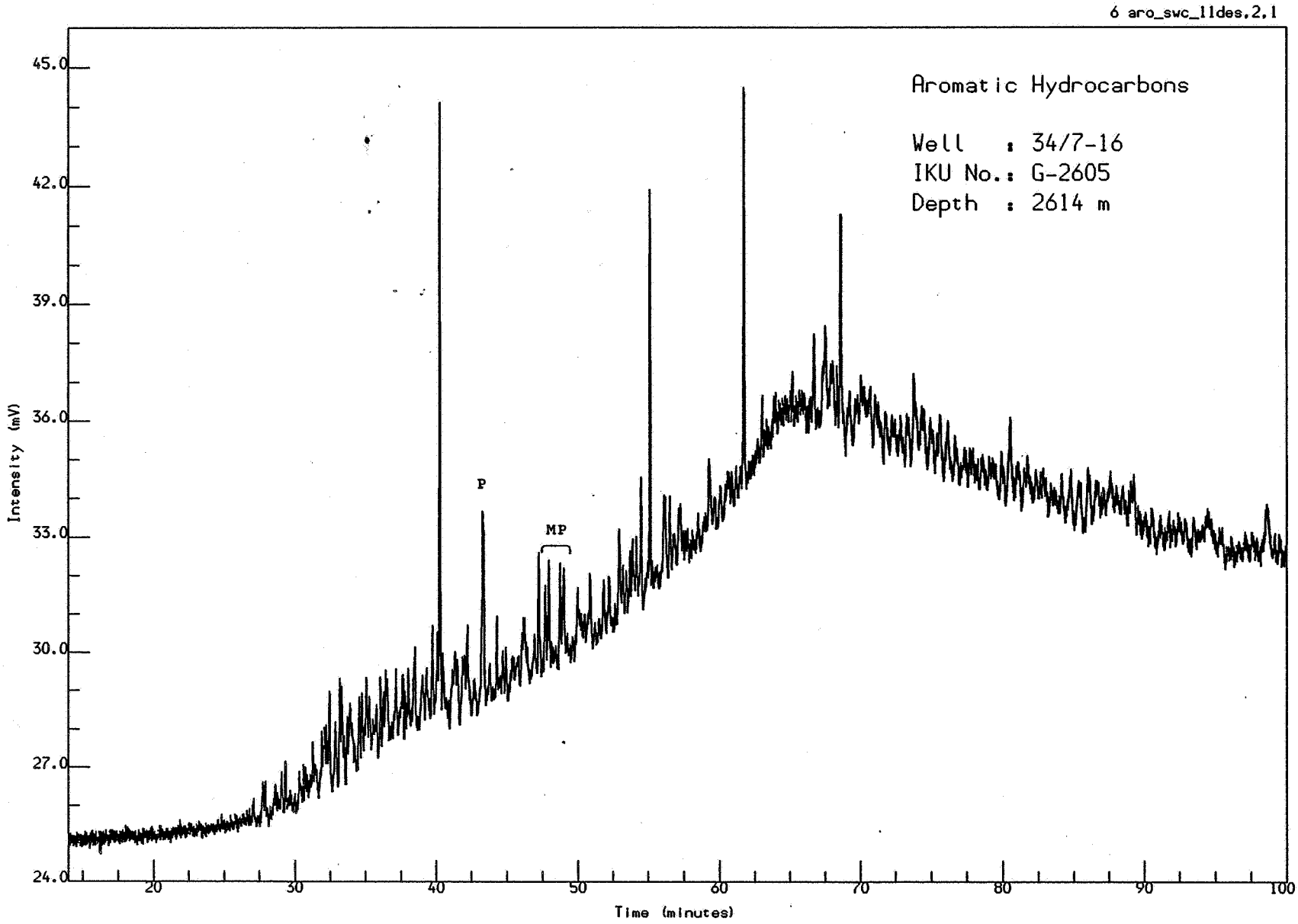


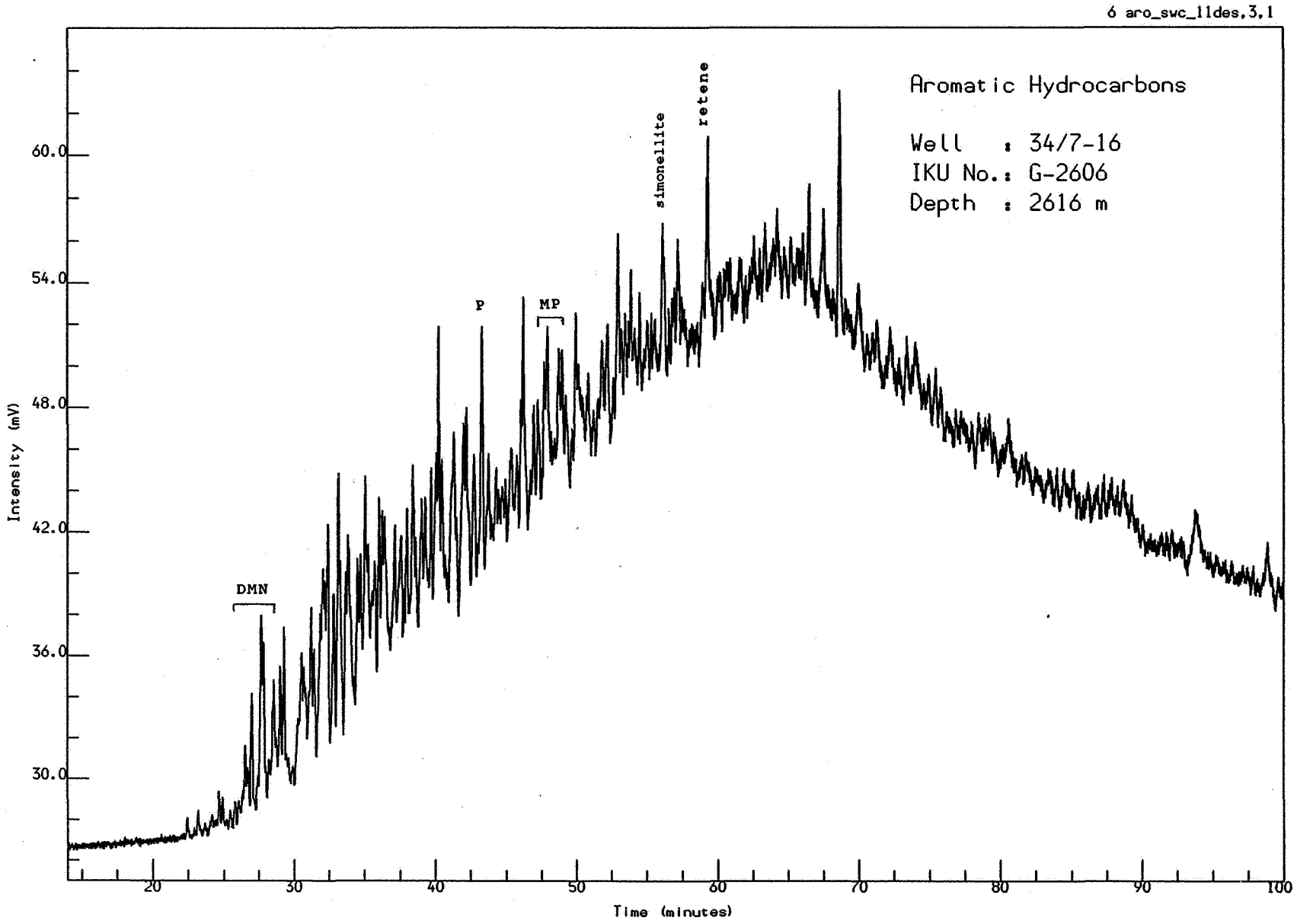

6 aro_34716_5des.3.1
Aromatic Hydrocarbons
Well : 34/7-16
IKU No.: G-1989
Depth : 2506.00 m
Core
Intensity (mV)
Time (minutes)
MN
DMN
TMN
cadalene ?
P
MP
DMP
simonellite
retene
PAH (perylene ?)

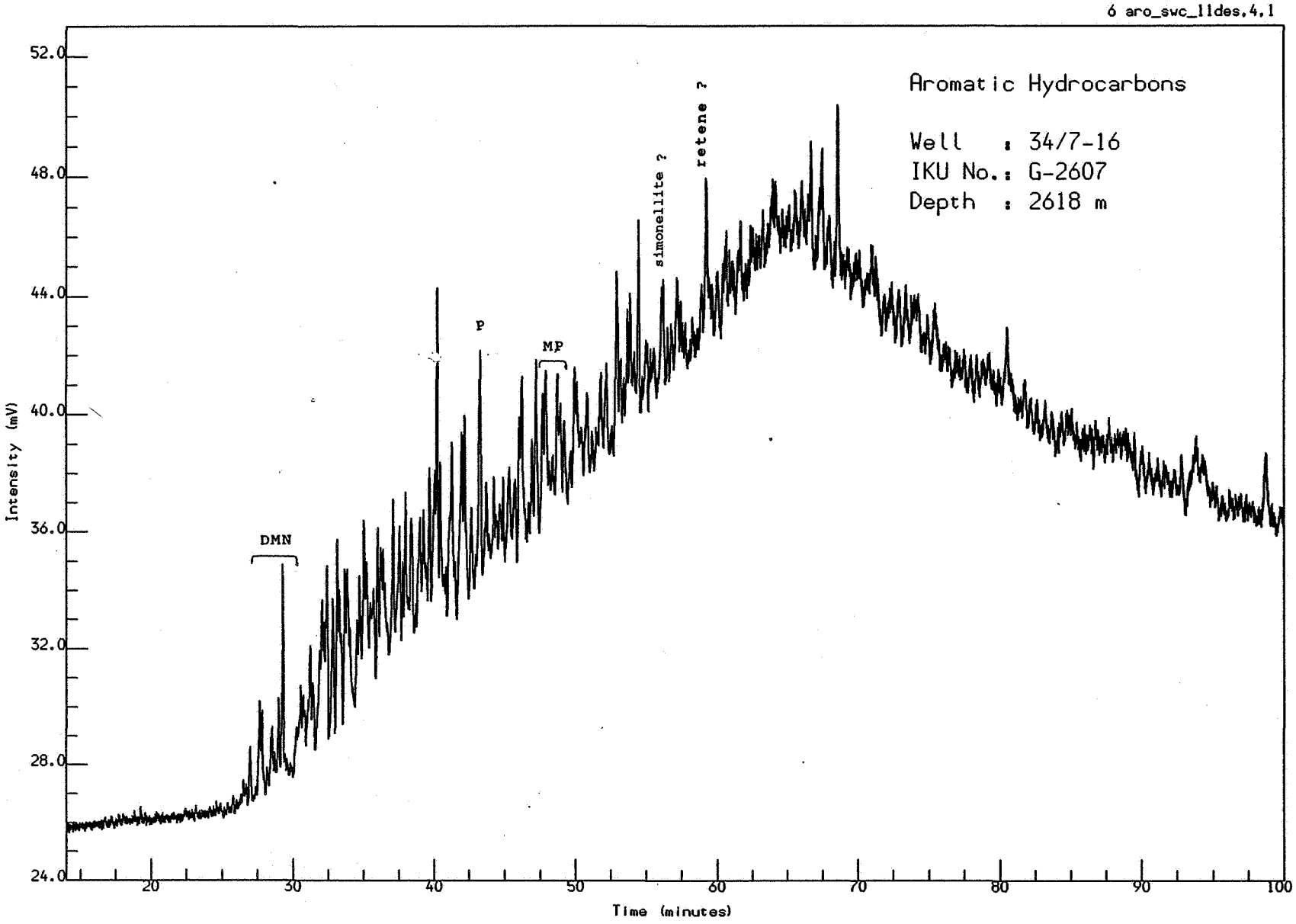

6 aro_34716_5des.4.1
Aromatic Hydrocarbons
Well : 34/7-16
IKU No.: G-1990
Depth : 2515.00 m
Core
Intensity (mV)
48.0
44.0
40.0
36.0
32.0
28.0
24.0
DMN
TMN
cadalene ?
P
MP
DMP
simonellite
retene
PAH (perylene ?)
20
30
40
50
60
70
80
90
100
Time (minutes)


6 aro_34716_5des,6,1
Aromatic Hydrocarbons
Well : 34/7-16
IKU No.: G-1991
Depth : 2520.00 m
Core
Intensity (mV)
Time (minutes)
42.0
39.0
36.0
33.0
30.0
27.0
24.0
20
30
40
50
60
70
80
90
100
DMN
TMN
cadalene ?
P
MP
DMP
simonellite
retene
PAH
(perylene ?)


6 aro_svc_1ldes,1.1
Aromatic Hydrocarbons
Well : 34/7-16
IKU No.: G-2604
Depth : 2612 m
retene ?
MP
P
DMN
Intensity (mV)
Time (minutes)
90
80
70
60
50
40
30
20
30
40
50
60
70
80
90
100


6 aro_swc_11des.2.1
Aromatic Hydrocarbons
Well : 34/7-16
IKU No.: G-2605
Depth : 2614 m
P
MP
Intensity (mV)
45.0
42.0
39.0
36.0
33.0
30.0
27.0
24.0
20
30
40
50
60
70
80
90
100
Time (minutes)


6 aro_swc_11des,3,1
Aromatic Hydrocarbons
Well : 34/7-16
IKU No.: G-2606
Depth : 2616 m
DMN
P
MP
simonellite
retene
Intensity (mV)
60.0
54.0
48.0
42.0
36.0
30.0
20
30
40
50
60
70
80
90
100
Time (minutes)


6 aro_swc_1ides.4.1
Aromatic Hydrocarbons
Well : 34/7-16
IKU No.: G-2607
Depth : 2618 m
DMN
P
MP
simonellite ?
retene ?
Intensity (mV)
52.0
48.0
44.0
40.0
36.0
32.0
28.0
24.0
20
30
40
50
60
70
80
90
100
Time (minutes)

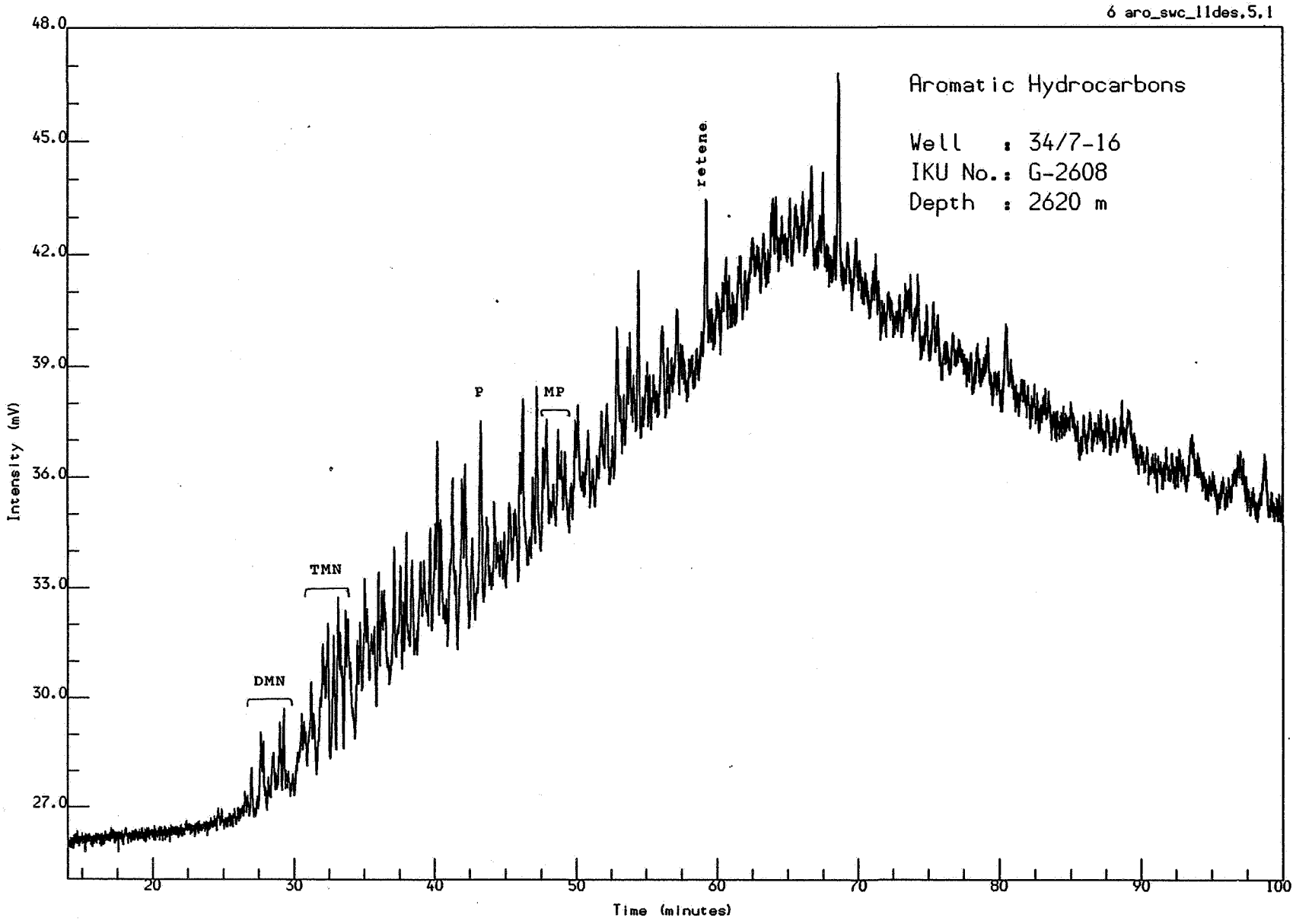

6 aro_swc_1ldes.5.1
Aromatic Hydrocarbons
Well : 34/7-16
IKU No.: G-2608
Depth : 2620 m
Intensity (mV)
48.0
45.0
42.0
39.0
36.0
33.0
30.0
27.0
DMN
TMN
P
MP
retene
20
30
40
50
60
70
80
90
100
Time (minutes)

*Figure 5*

*Gas Chromatography-Mass Spectrometry*

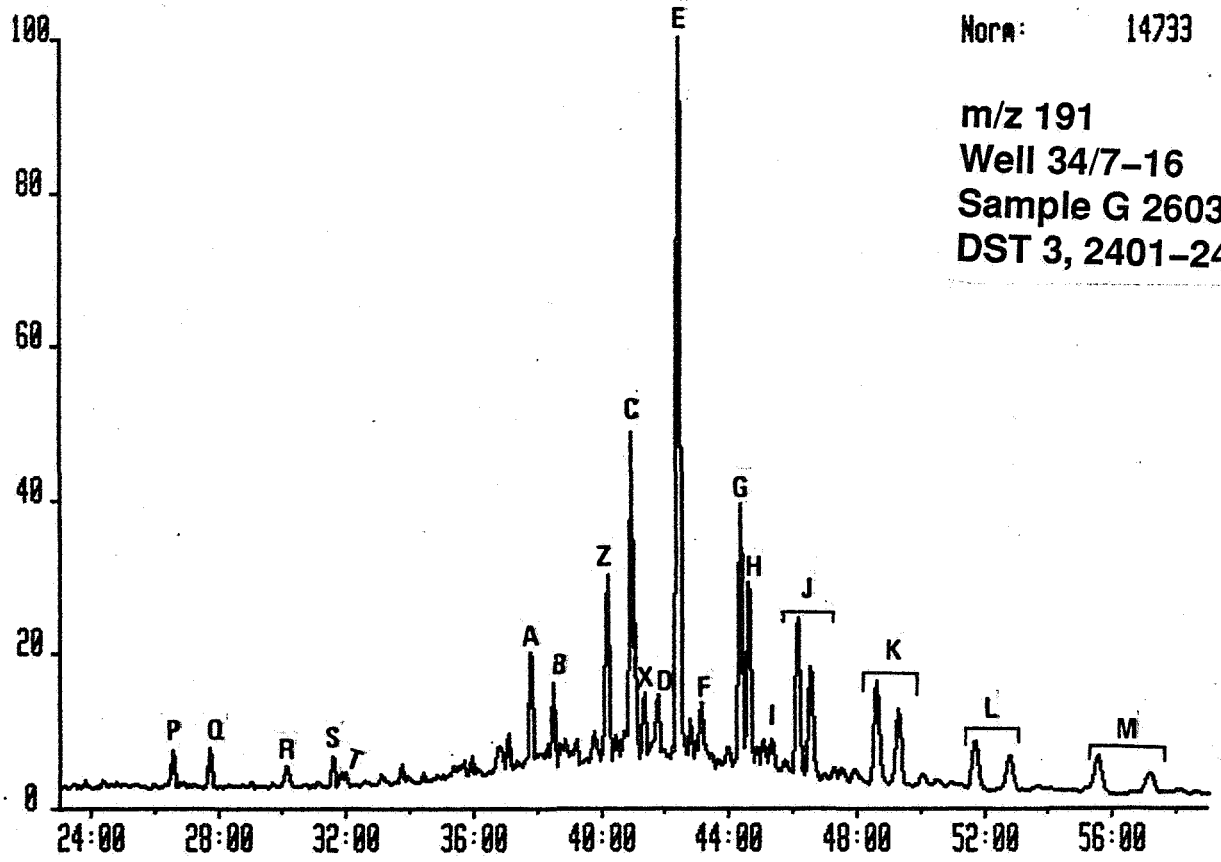
Key for m/z 191 (terpanes):

| Peak code | Identification | C-atoms : double bonds |
|---|---|---|
| P | $C_{23}$ tricyclic terpane | ($C_{23:0}$) |
| Q | $C_{24}$ tricyclic terpane | ($C_{24:0}$) |
| R | $C_{25}$ tricyclic terpane (17R,17S) | ($C_{25:0}$) |
| S | $C_{24}$ tetracyclic terpane | ($C_{24:0}$) |
| T | $C_{26}$ tricyclic terpane (17R,17S) | ($C_{26:0}$) |
| A | 18α(H)-trisnorneohopane, Ts (?) | ($C_{27:0}$) |
| B | 17α(H)-trisnorhopane, Tm | ($C_{27:0}$) |
| Z | Bisnorhopane | |
| C | 17α(H), 21β(H)-norhopane | ($C_{29:0}$) |
| X | Unknown tricyclic terpane | |
| D | 17β(H),21α(H)-norhopane (= normoretane) | ($C_{29:0}$) |
| E | 17α(H),21β(H)-hopane | ($C_{30:0}$) |
| F | 17β(H),21α(H)-hopane (= moretane) | ($C_{30:0}$) |
| G | 17α(H),21β(H)-homohopane (22S) | ($C_{31:0}$) |
| H | 17α(H),21β(H)-homohopane (22R) | ($C_{31:0}$) |
| I | 17β(H),21α(H)-homohopane (= homomoretane) | ($C_{31:0}$) |
| J | 17α(H),21β(H)-bishomohopane (22S,22R) | ($C_{32:0}$) |
| K | 17α(H),21β(H)-trishomohopane (22S,22R) | ($C_{33:0}$) |
| L | 17α(H),21β(H)-tetrakishomohopane (22S,22R) | ($C_{34:0}$) |
| M | 17α(H),21β(H)-pentakishomohopane (22S,22R) | ($C_{35:0}$) |

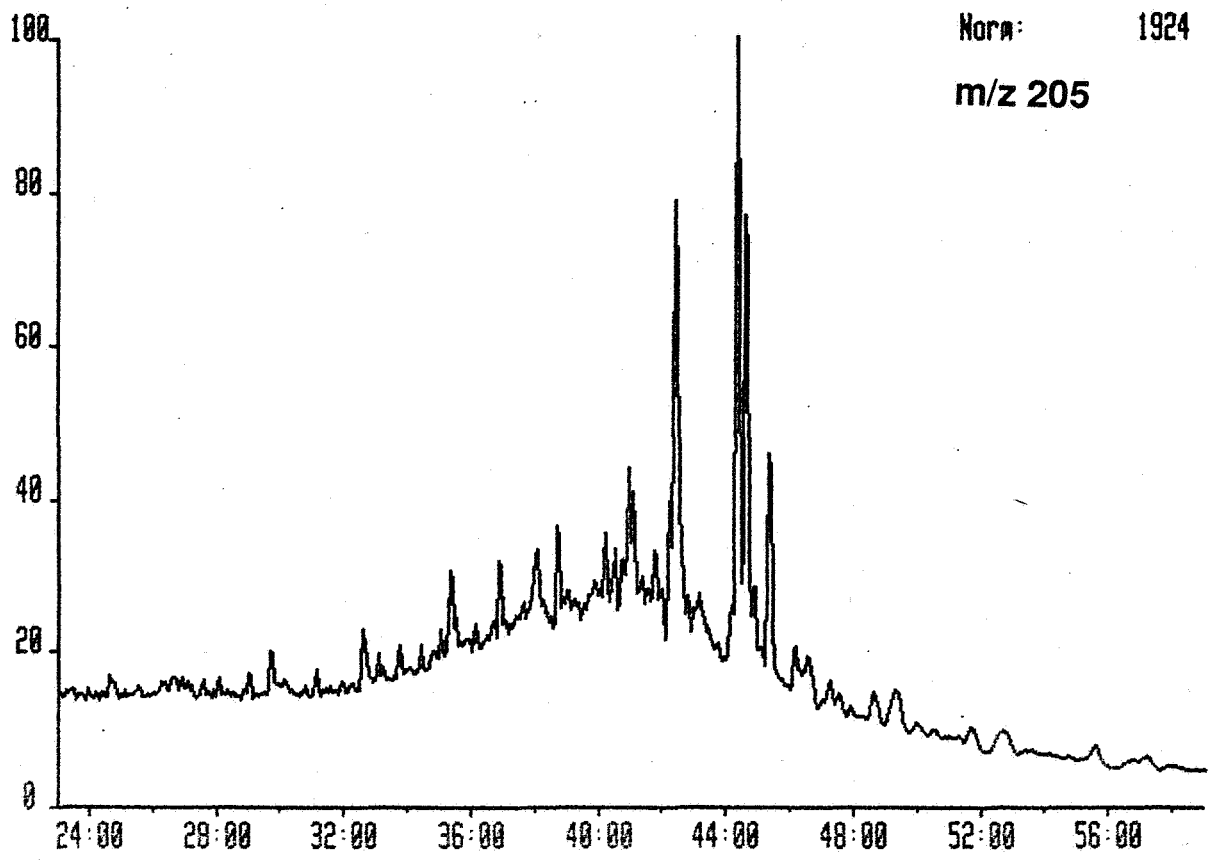
Key for m/z 217 and 218 (steranes):

| Peak code | Identification | Formula |
|---|---|---|
| u | 5α(H)-sterane | $C_{21}H_{36}$ |
| v | 5α(H)-sterane | $C_{22}H_{38}$ |
| a | 13β(H),17α(H)-diasterane (20S) | $C_{27}H_{48}$ |
| b | 13β(H),17α(H)-diasterane (20R) | $C_{27}H_{48}$ |
| c | 13α(H),17β(H)-diasterane (20S) | $C_{27}H_{48}$ |
| d | 13α(H),17β(H)-diasterane (20R) | $C_{27}H_{48}$ |
| e | 13β(H),17α(H)-diasterane (20S) | $C_{28}H_{50}$ |
| f | 13β(H),17α(H)-diasterane (20R) | $C_{28}H_{50}$ |
| g | 13α(H),17β(H)-diasterane (20S) | $C_{28}H_{50}$ |
| | + 14α(H),17α(H)-sterane (20S) | $C_{27}H_{48}$ |
| h | 13β(H),17α()H)-diasterane (20S) | $C_{29}H_{52}$ |
| | + 14β(H),17β(H)-sterane (20R) | $C_{27}H_{48}$ |
| i | 14β(H),17β(H)-sterane (20S) | $C_{27}H_{48}$ |
| | + 13α(H),17β(H)-diasterane (20R) | $C_{28}H_{50}$ |
| j | 14α(H),17α(H)-sterane (20R) | $C_{27}H_{48}$ |
| k | 13β(H),17α(H)-diasterane (20R) | $C_{29}H_{52}$ |
| l | 13α(H),17β(H)-diasterane (20S) | $C_{29}H_{52}$ |
| m | 14α(H),17α(H)-sterane (20S) | $C_{28}H_{50}$ |
| n | 13α(H),17β(H)-diasterane (20R) | $C_{29}H_{52}$ |
| | + 14β(H),17β(H)-sterane (20R) | $C_{28}H_{50}$ |
| o | 14β(H),17β(H)-sterane (20S) | $C_{28}H_{50}$ |
| p | 14α(H),17α(H)-sterane (20R) | $C_{28}H_{50}$ |
| q | 14α(H),17α(H)-sterane (20S) | $C_{29}H_{52}$ |
| r | 14β(H),17β(H)-sterane (20R) | $C_{29}H_{52}$ |
| | + unknown sterane | |
| s | 14β(H),17β(H)-sterane (20S) | $C_{29}H_{52}$ |
| t | 14α(H),17α(H)-sterane (20R) | $C_{29}H_{52}$ |

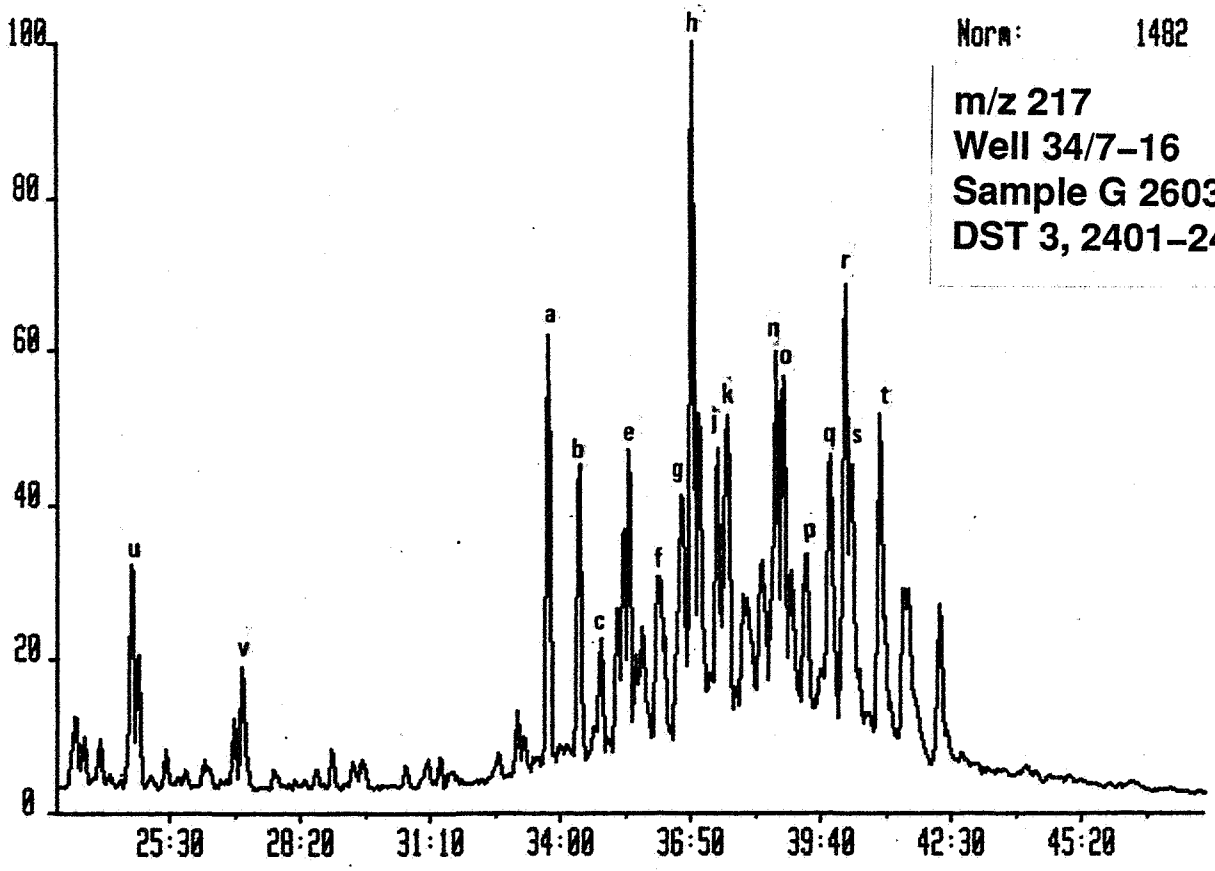
G2603SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA



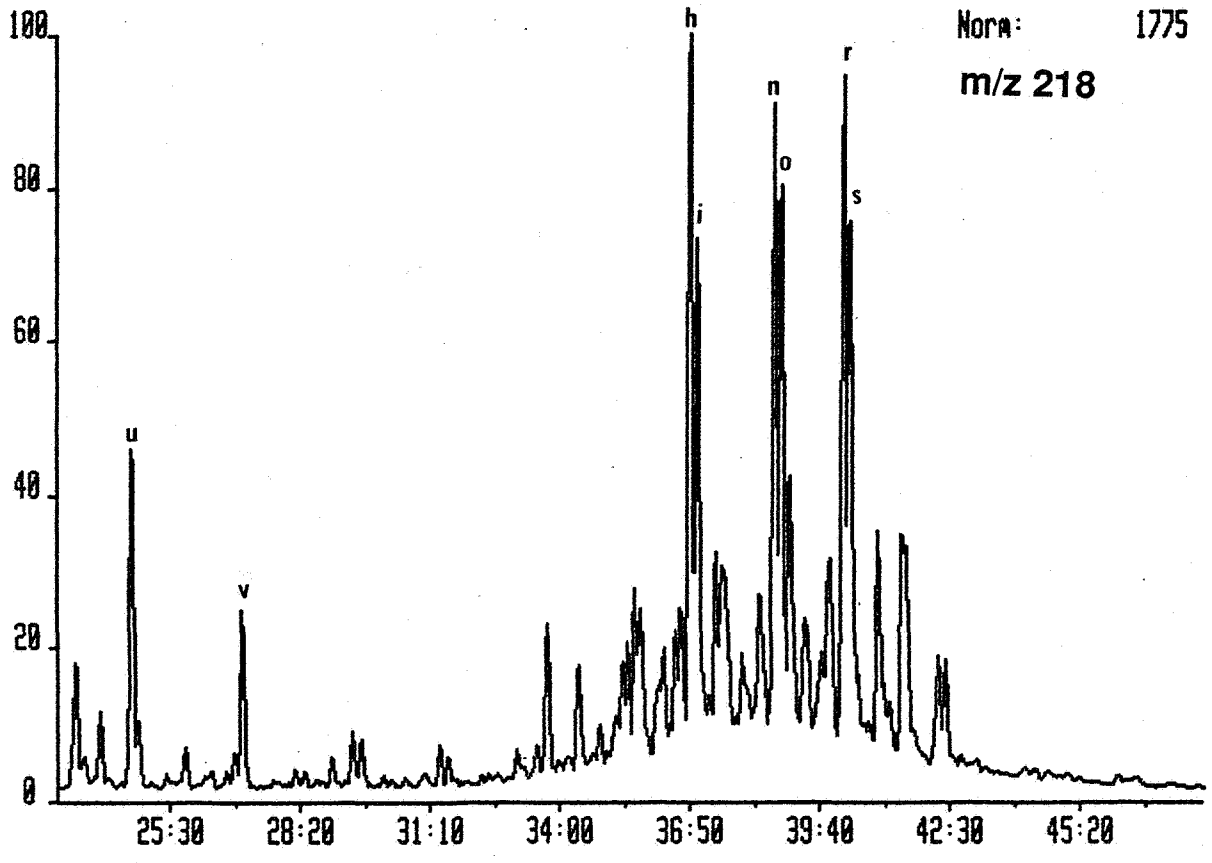

G2603SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA



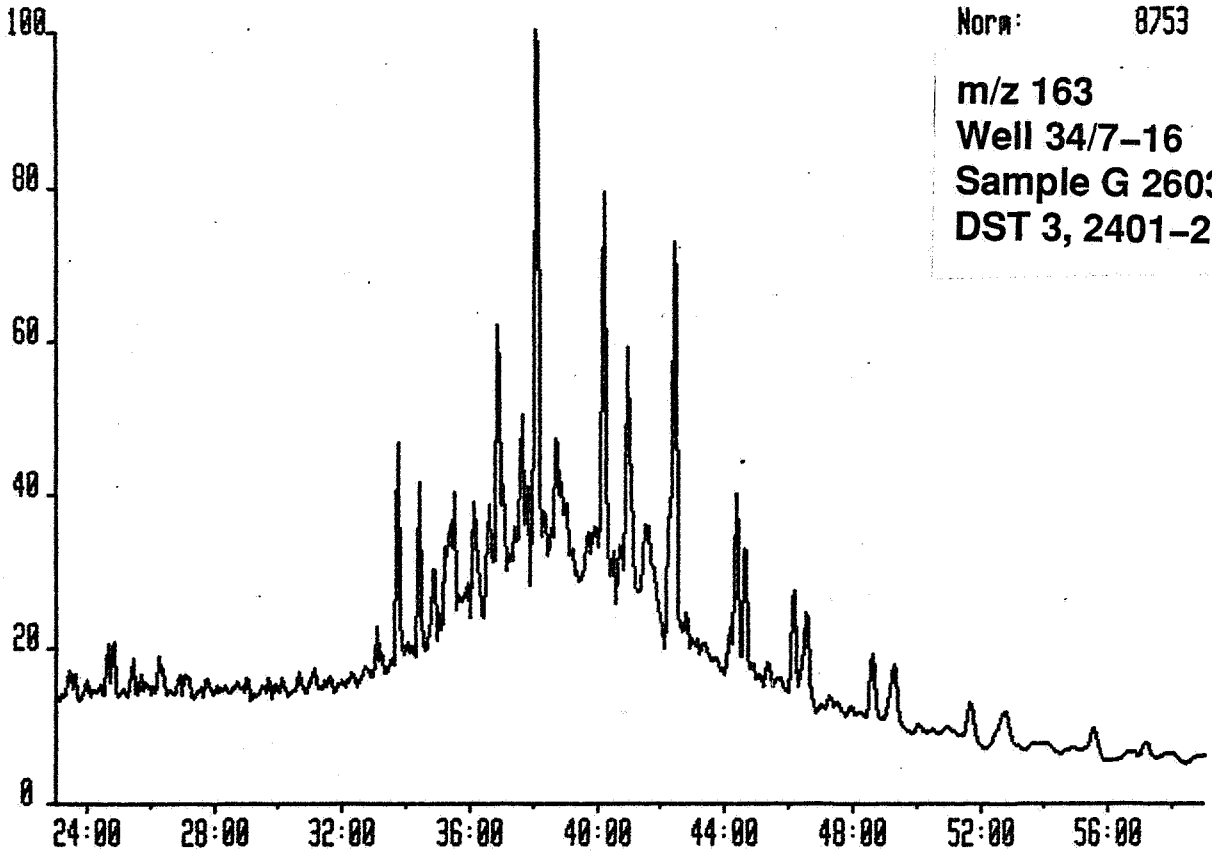
G2603SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA



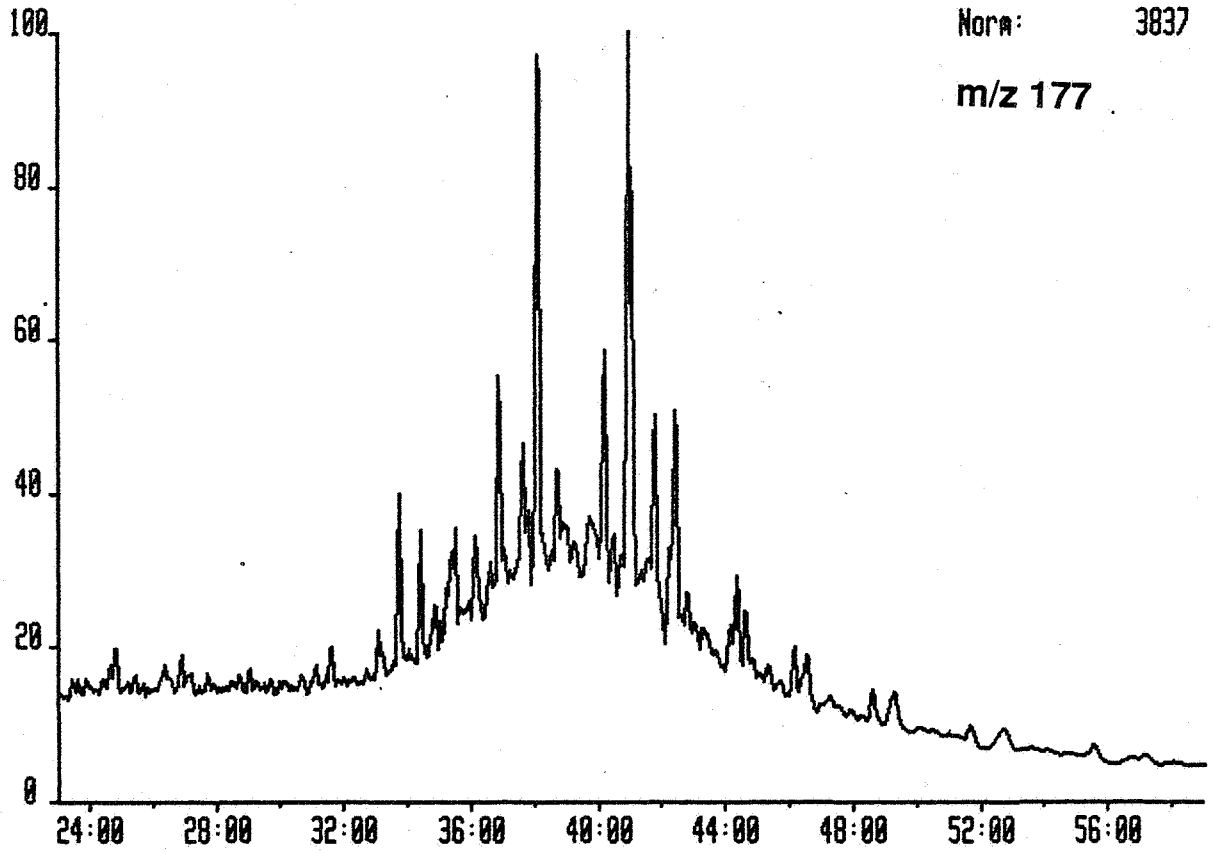

G2603SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA



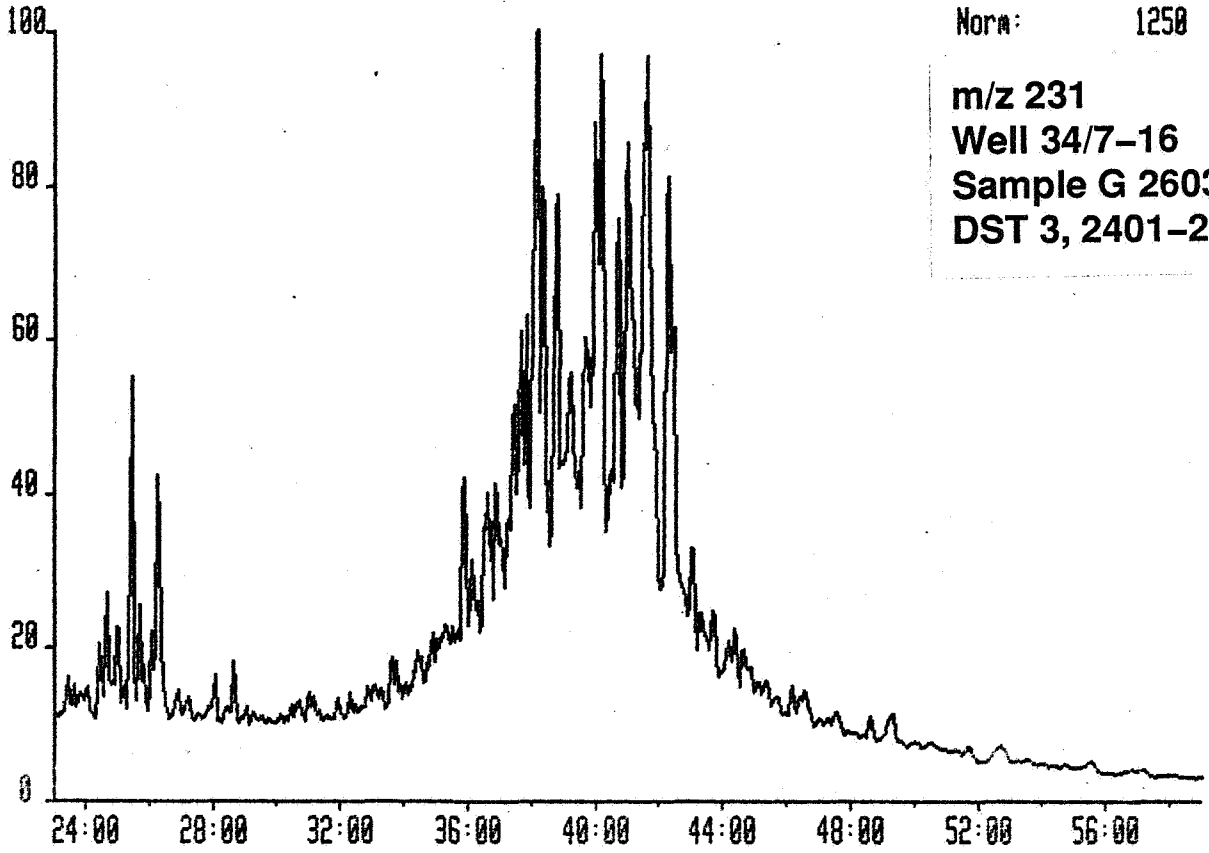
G2603SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA



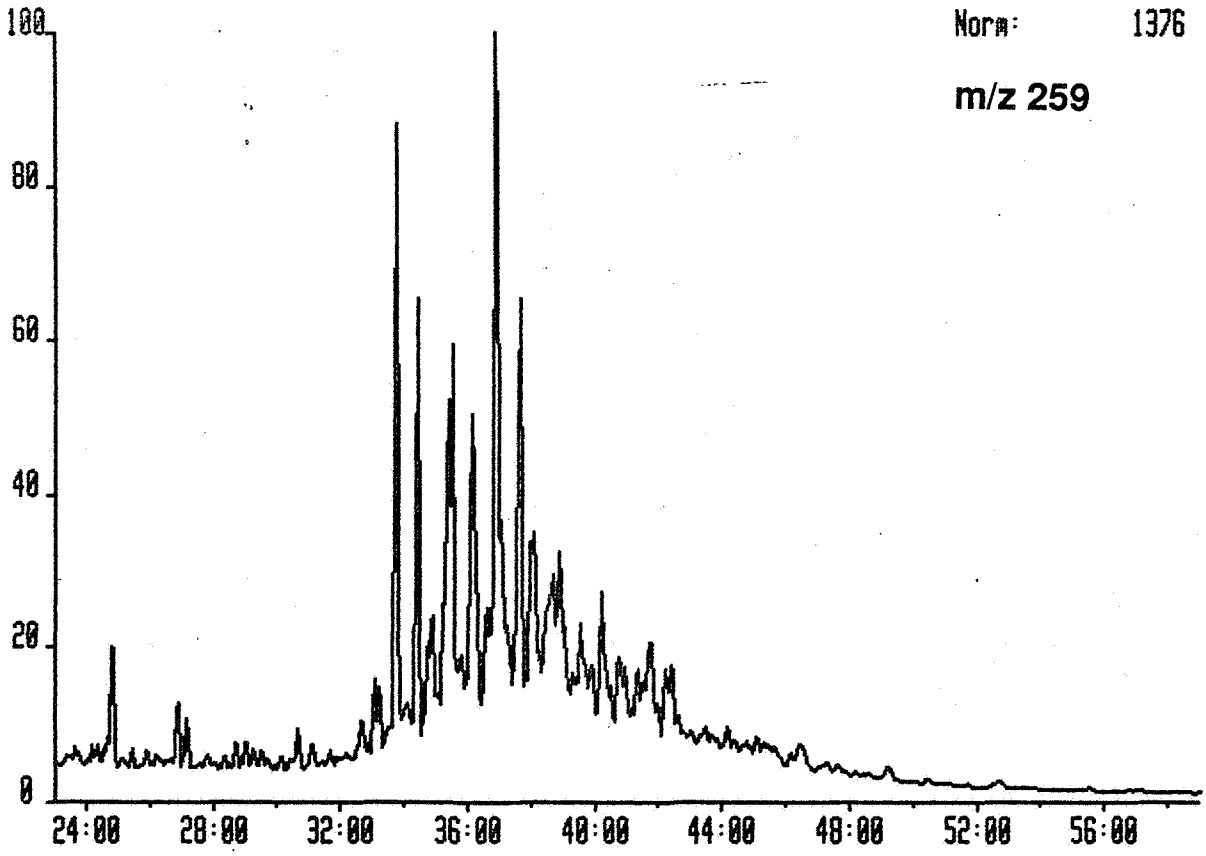

G2603SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA



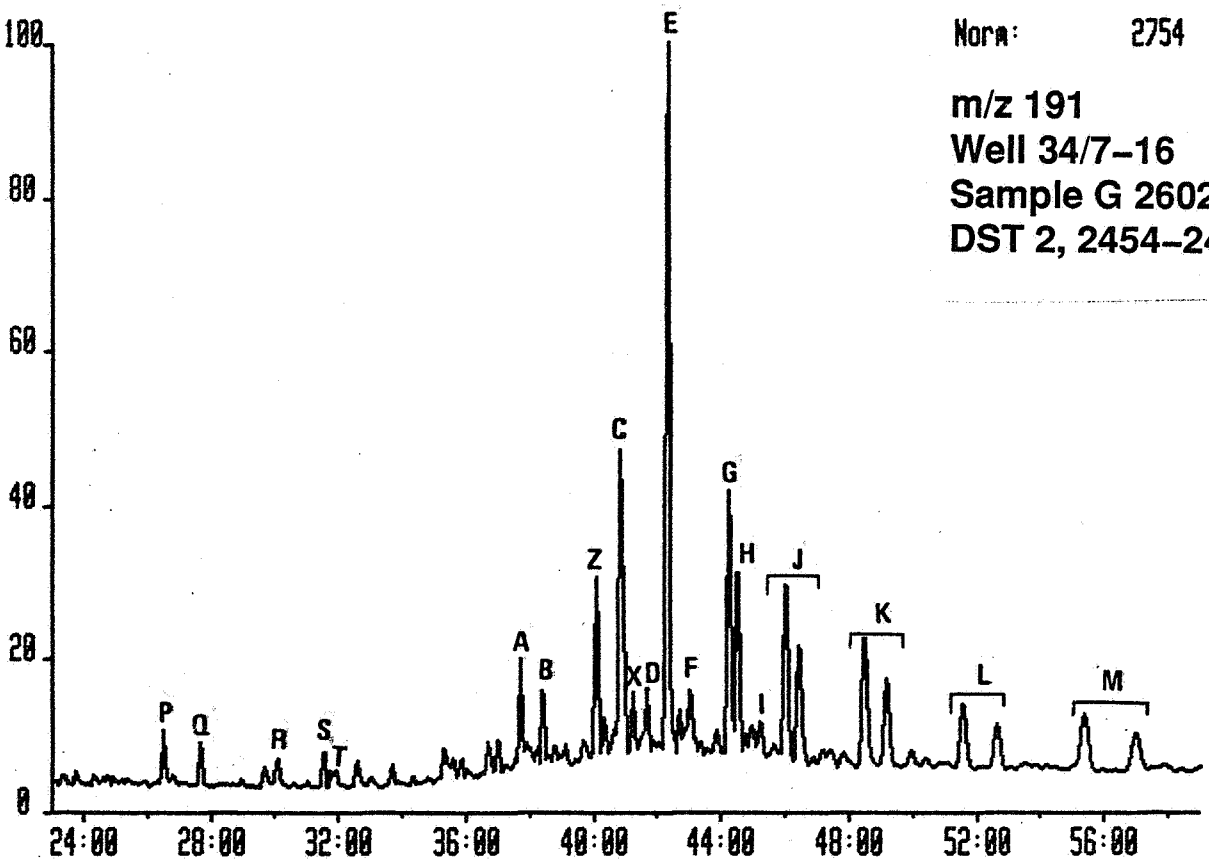
G2603SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA



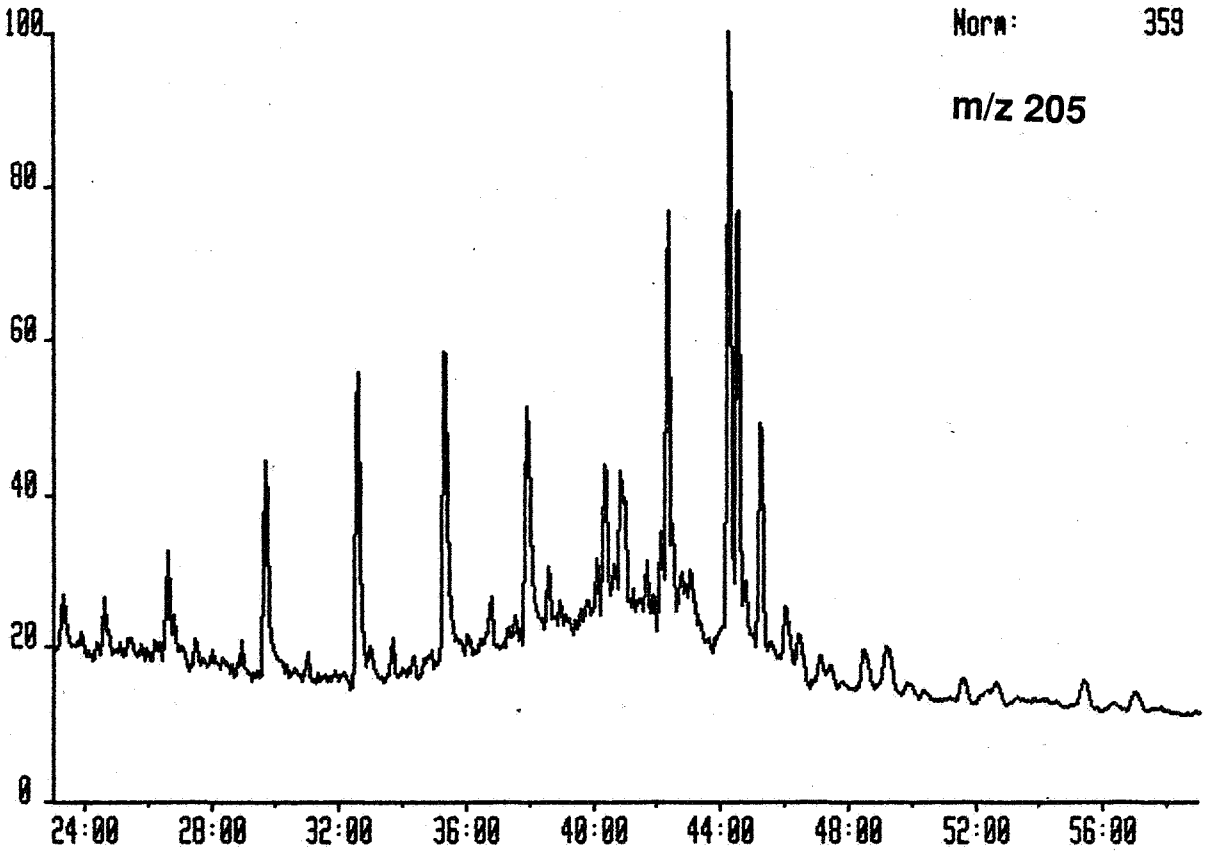

G2603SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA



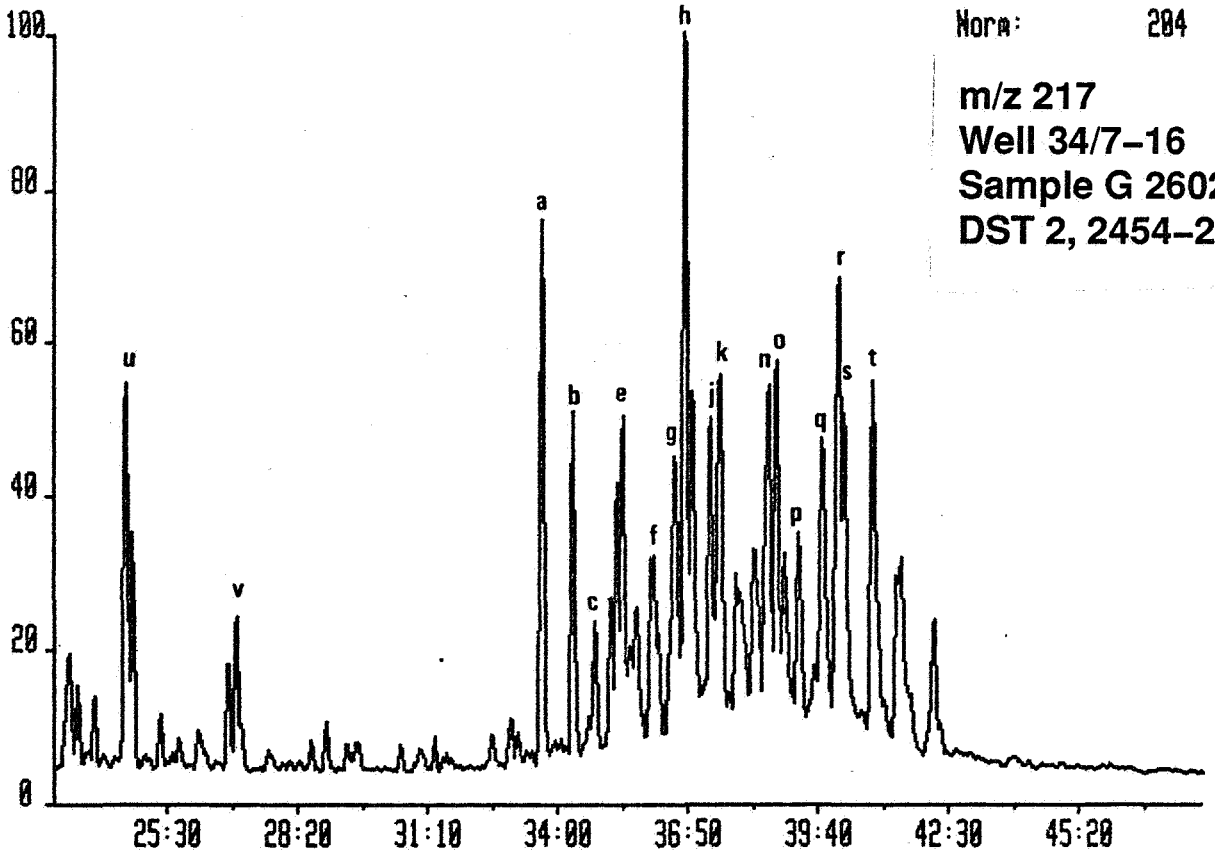
G2602SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA



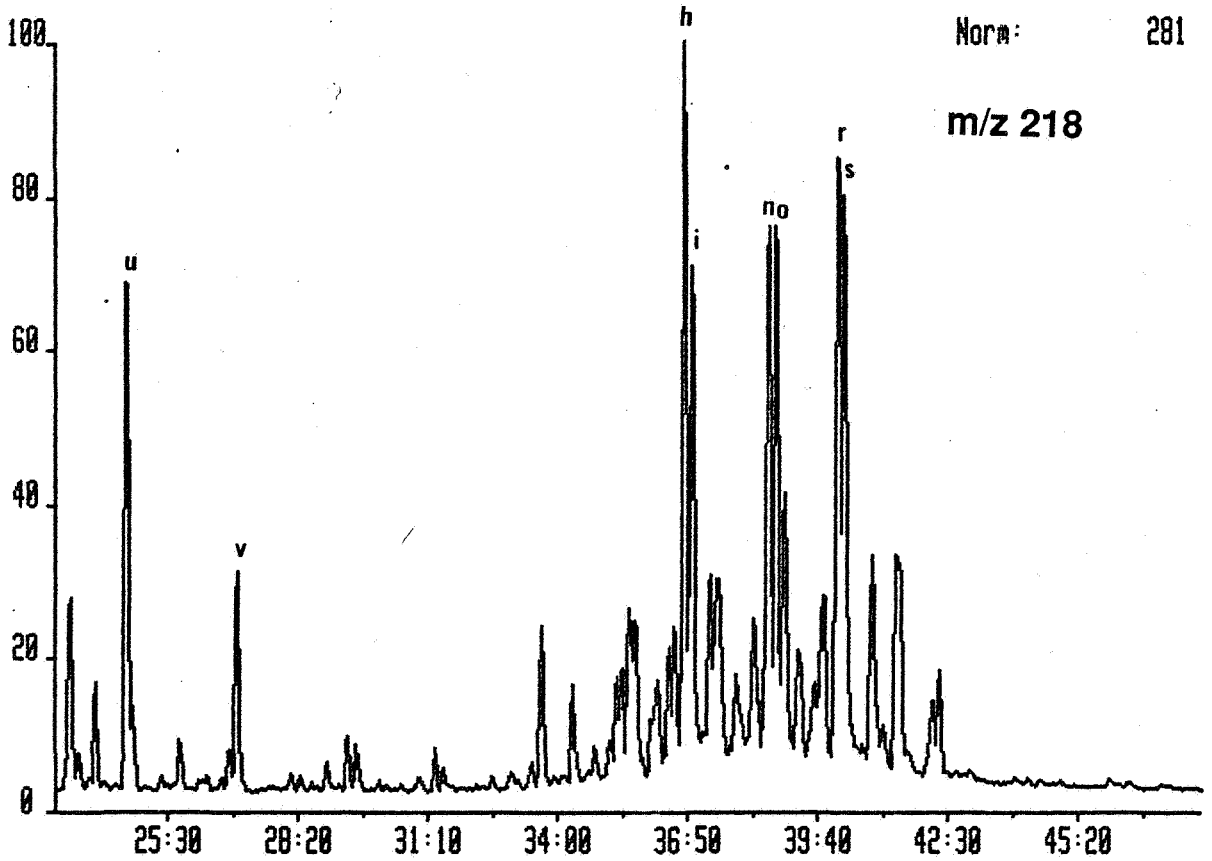

G2602SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA



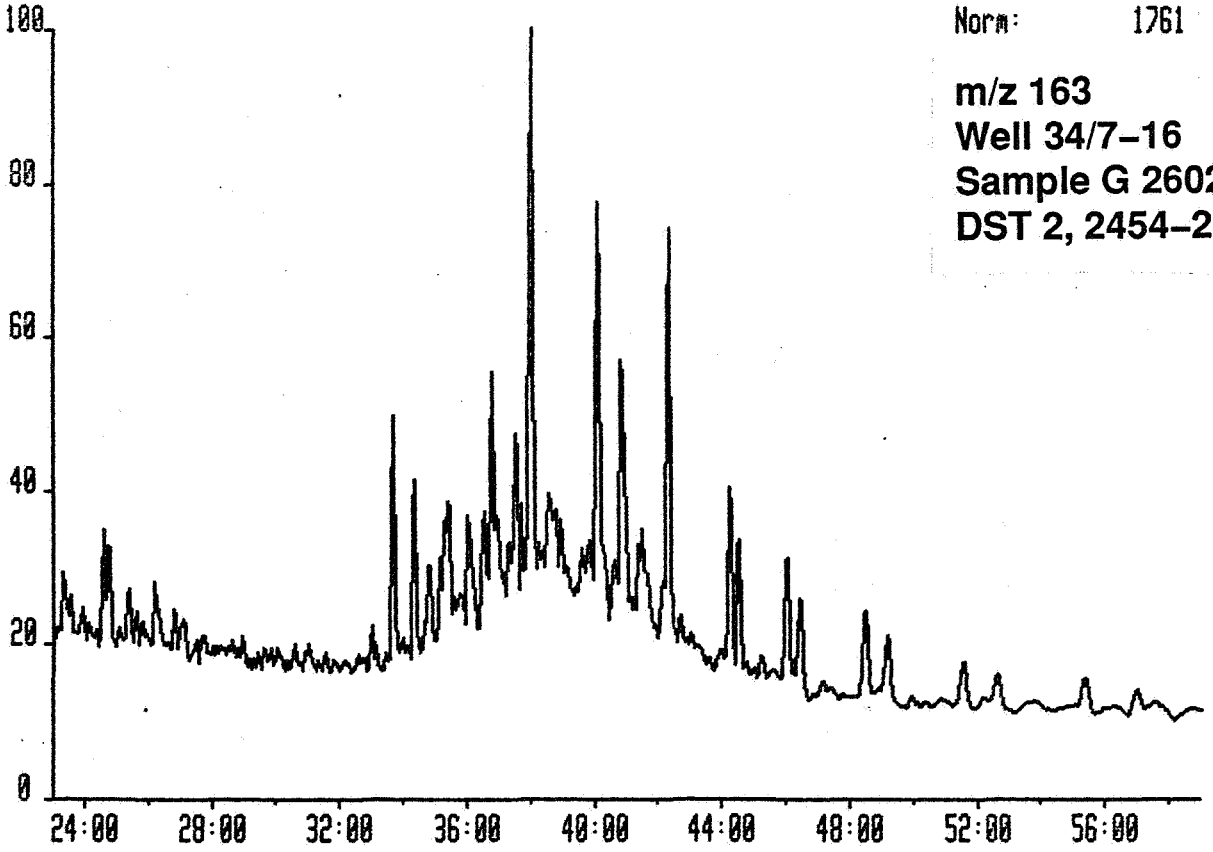
G2602SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA



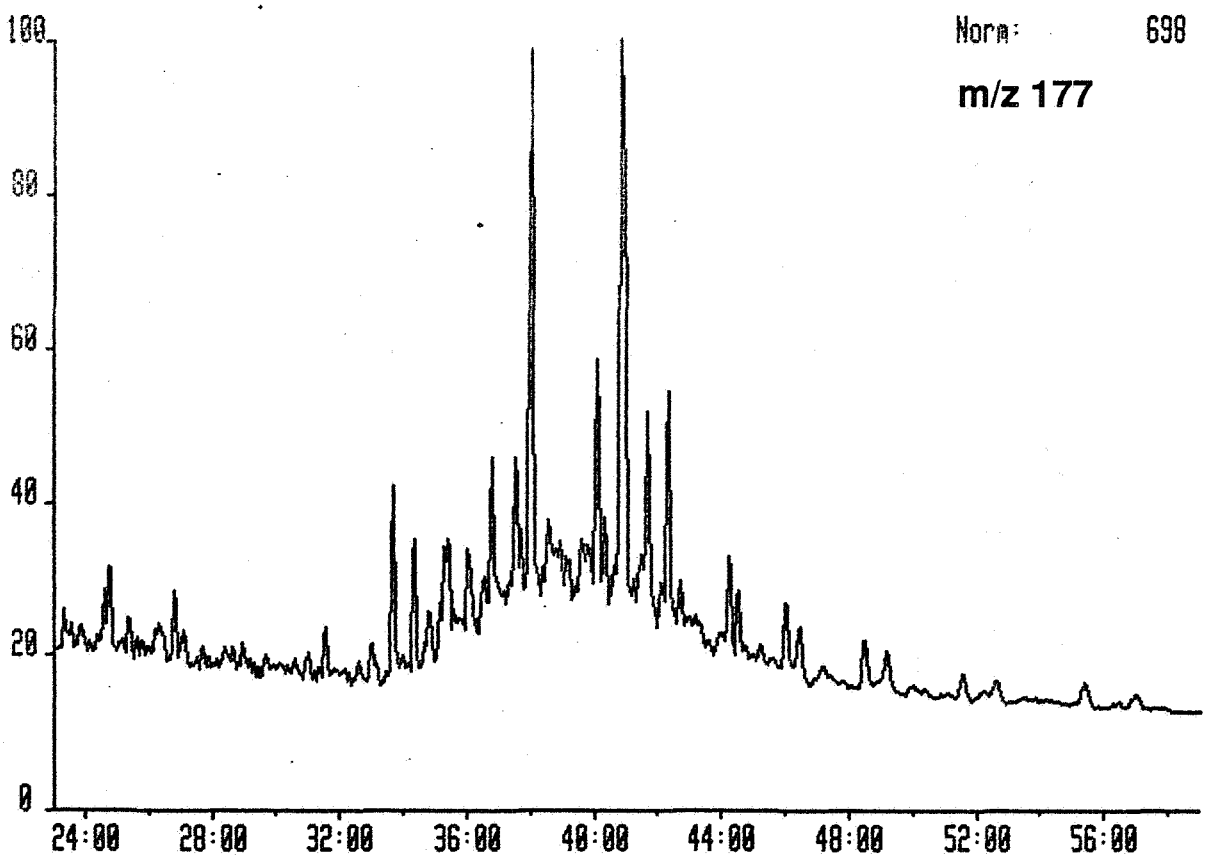

G2602SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA



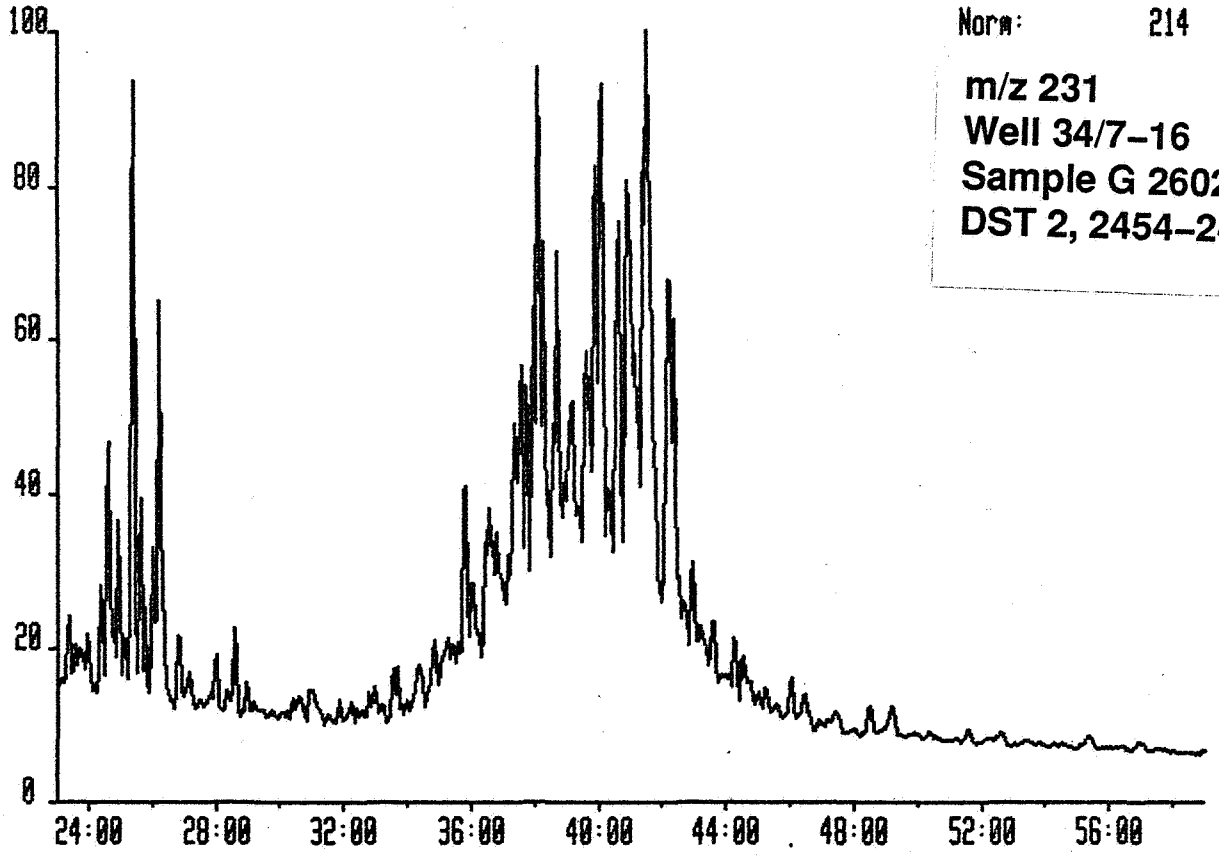
G2602SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA



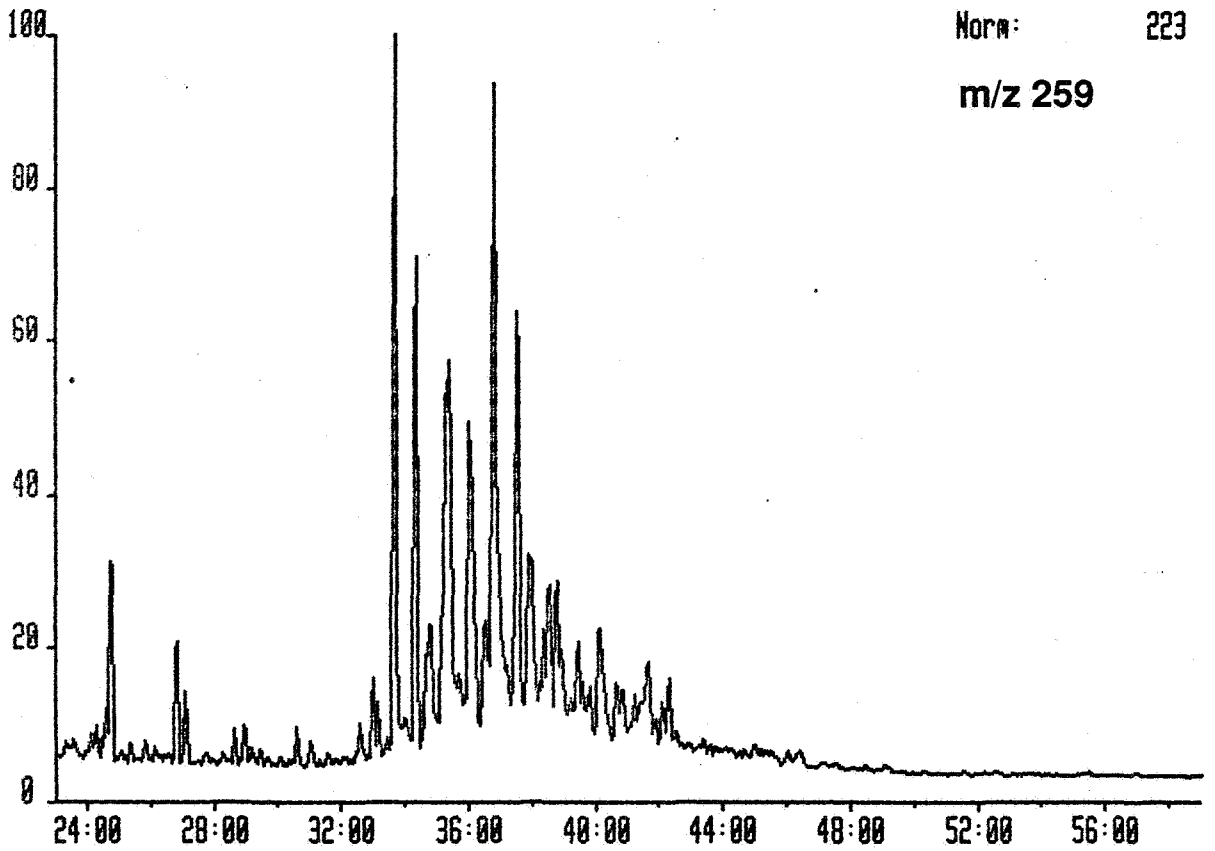

G2602SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA



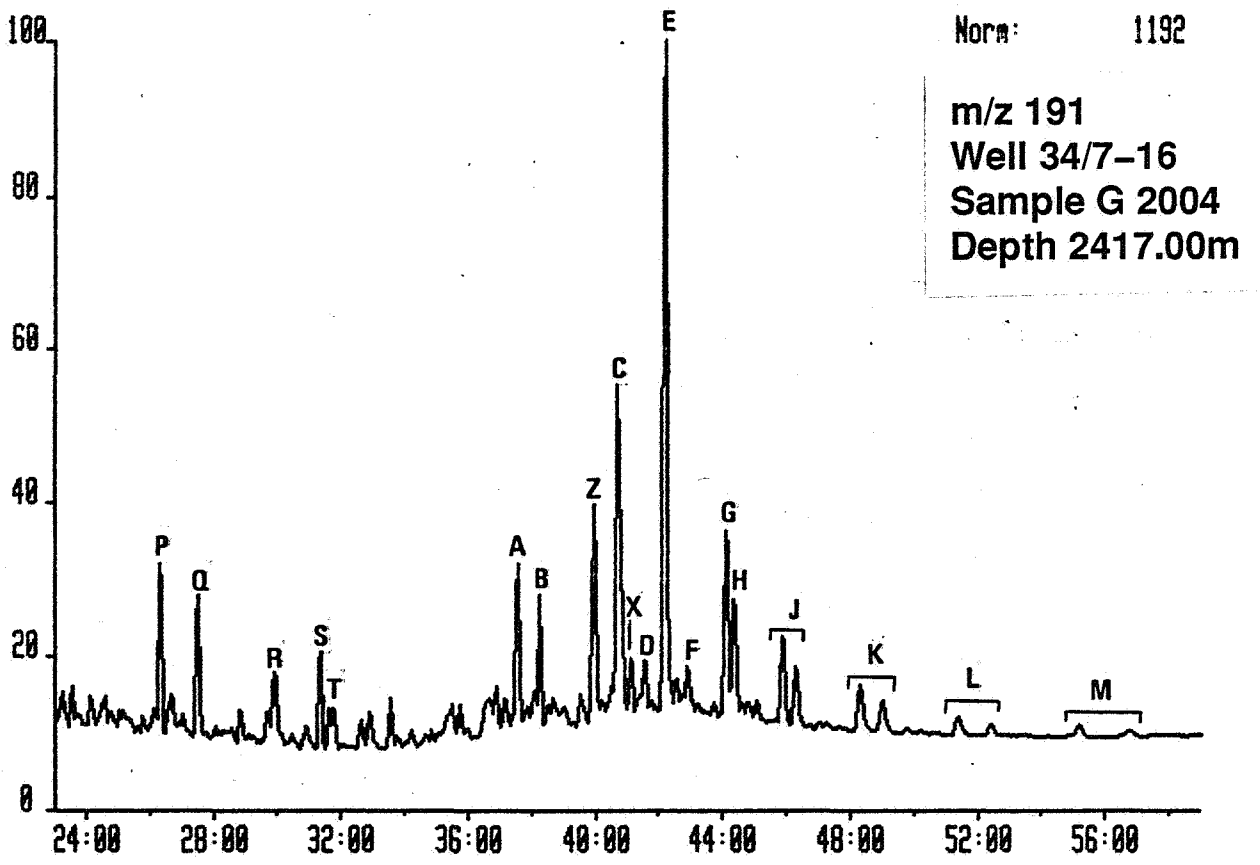
G2602SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA



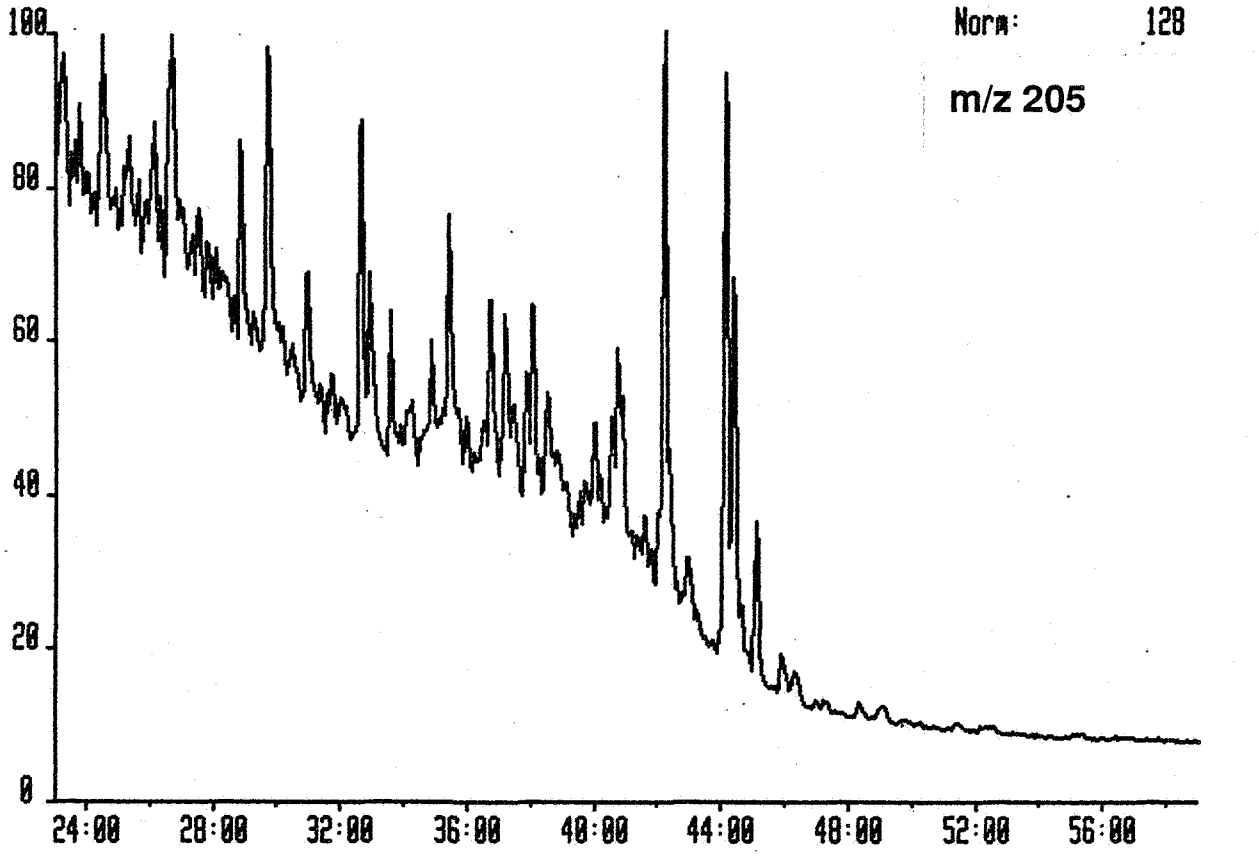

G2602SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA



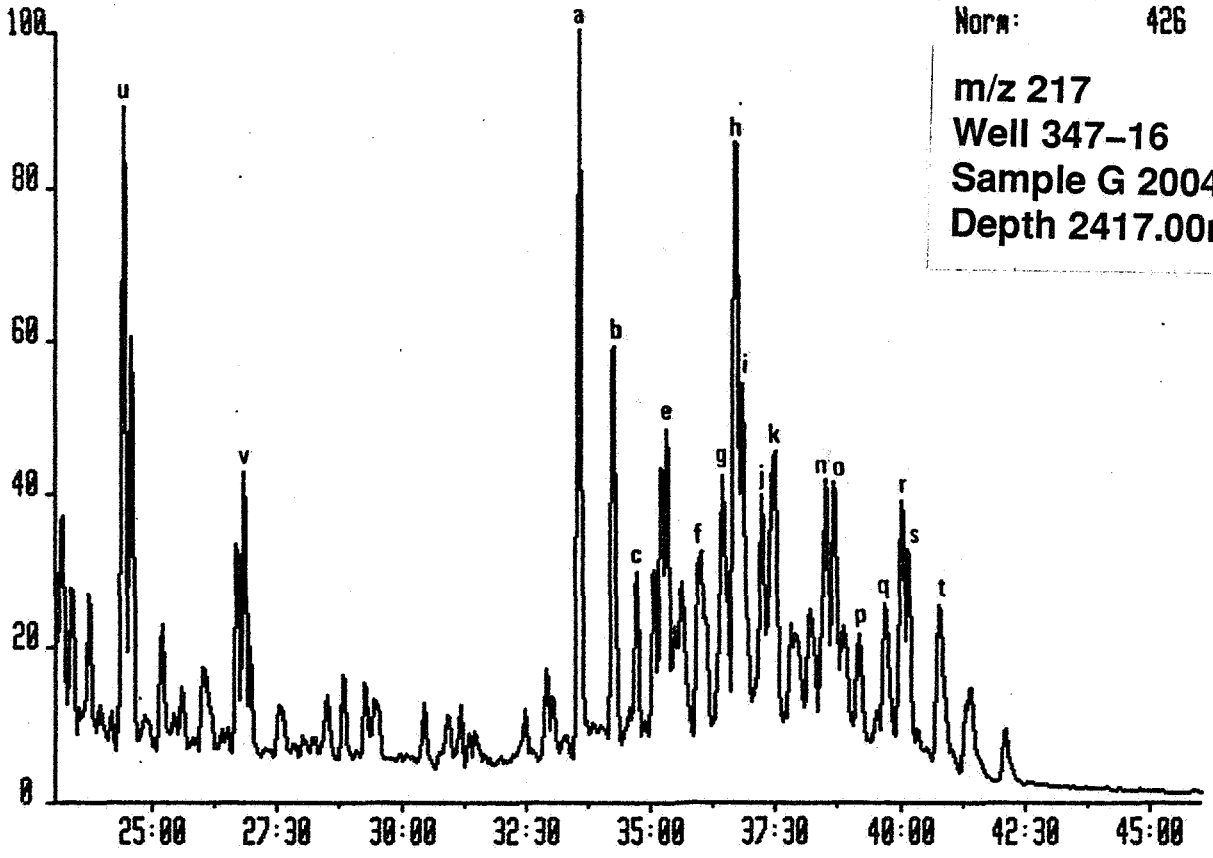
G2004SAT 8-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA 34/7-16



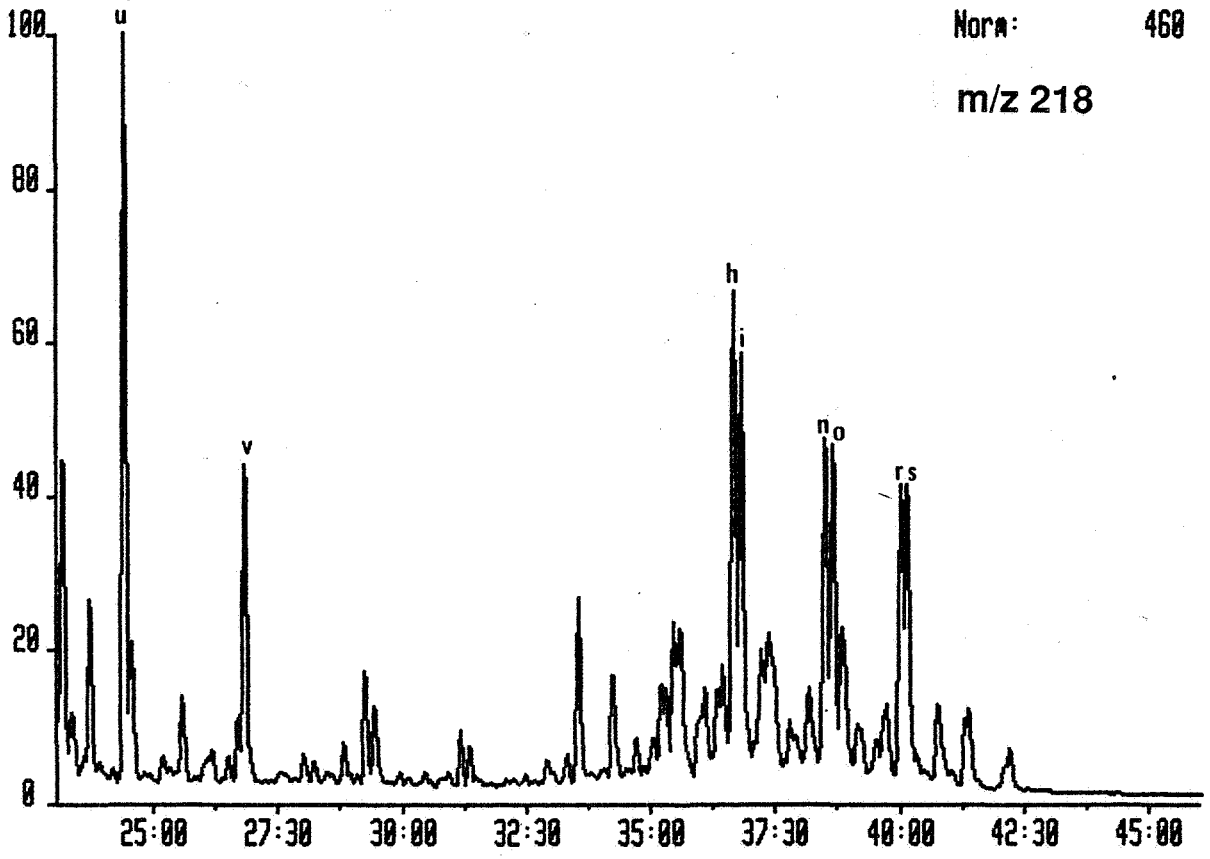

G2004SAT 8-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA 34/7-16



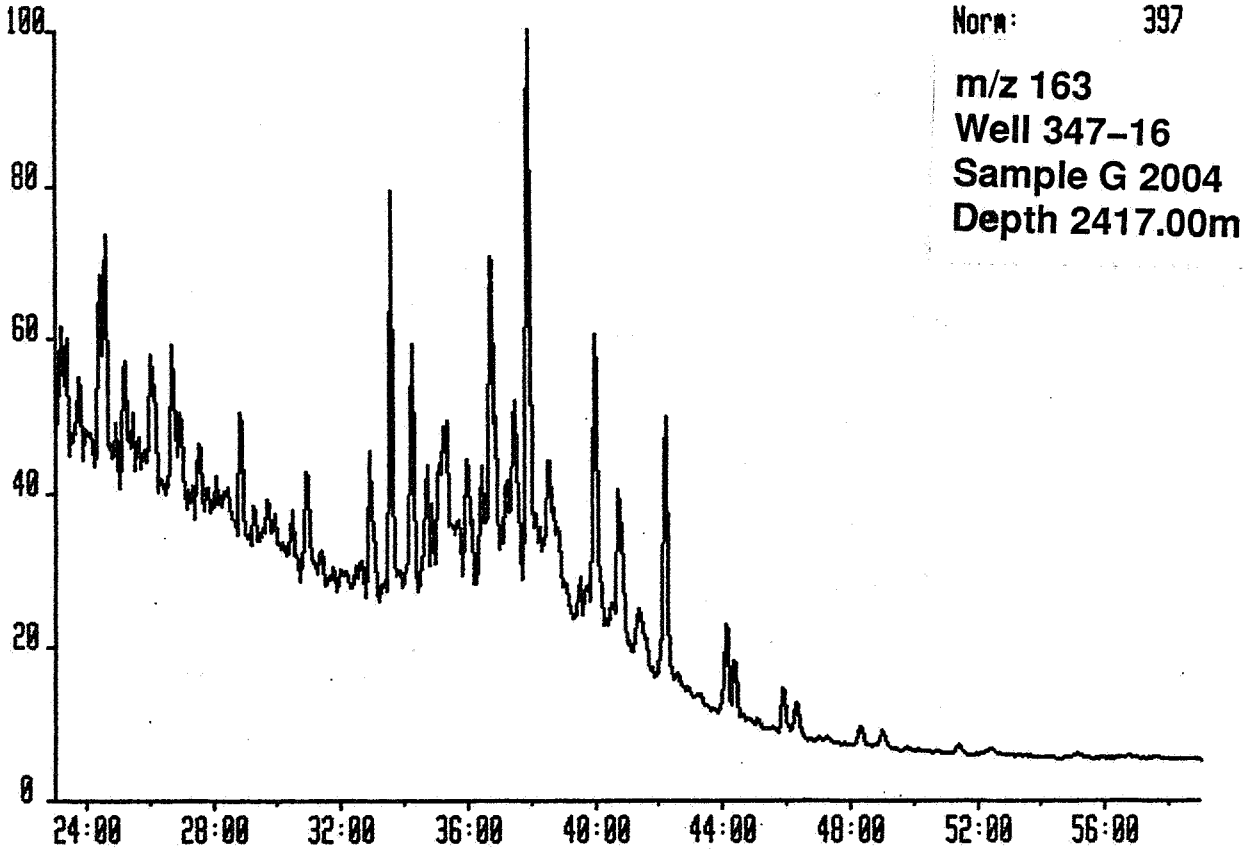
G2004SAT 8-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA 34/7-16



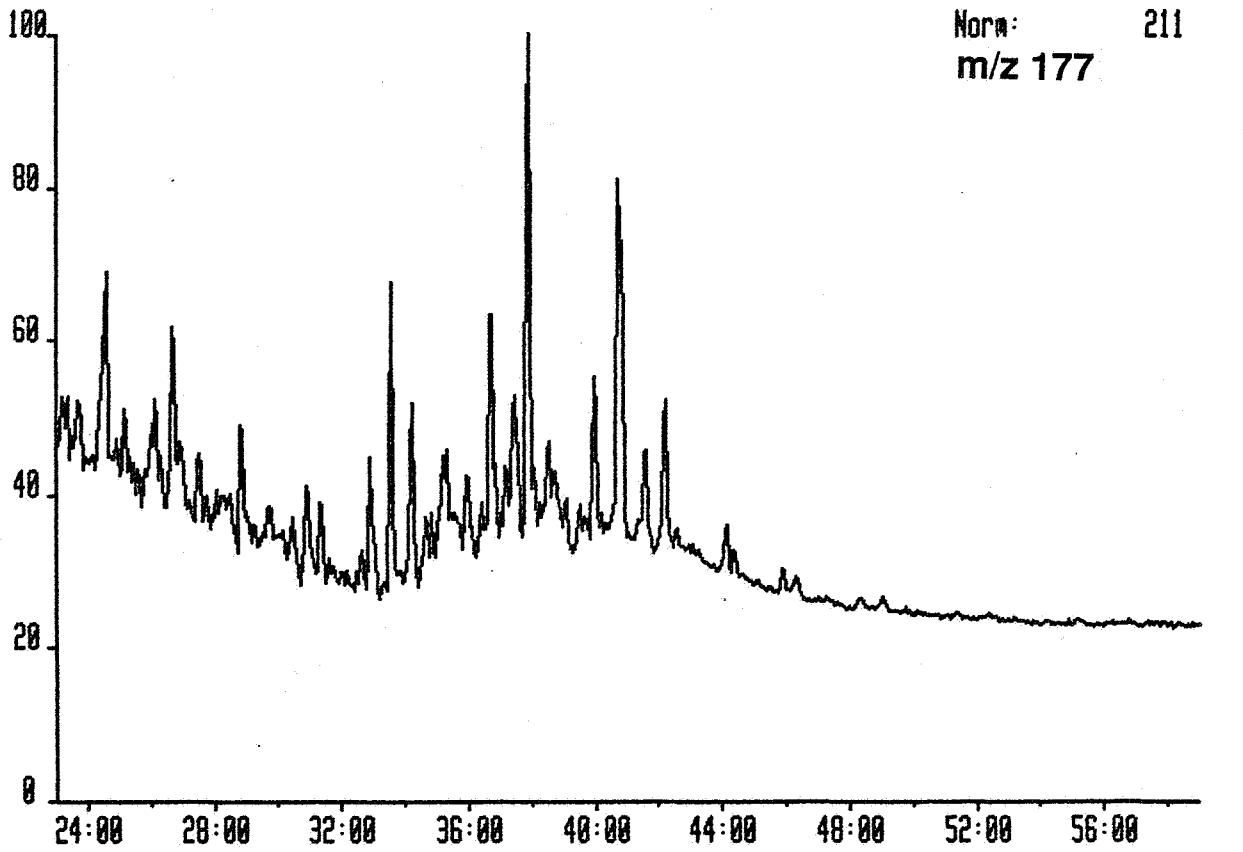

G2004SAT 8-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA 34/7-16



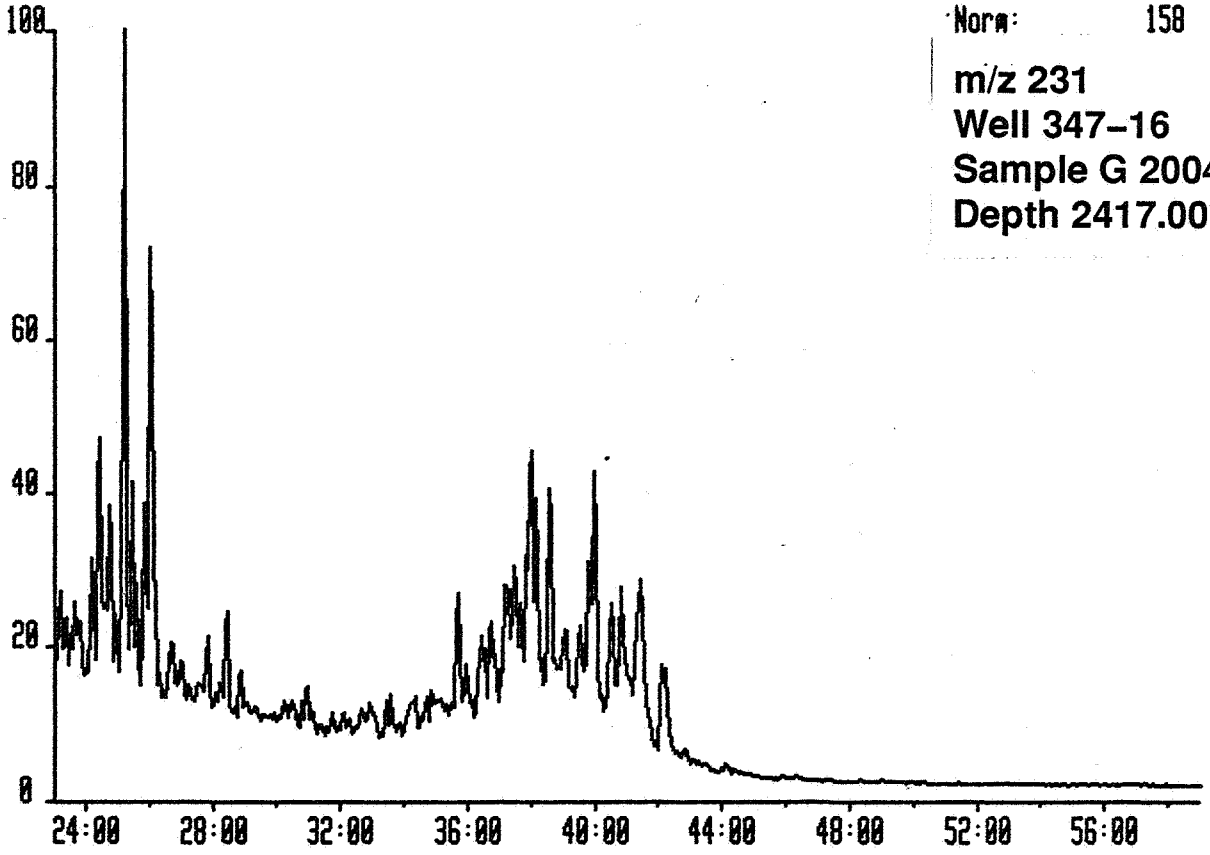
G2004SAT 8-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA 34/7-16



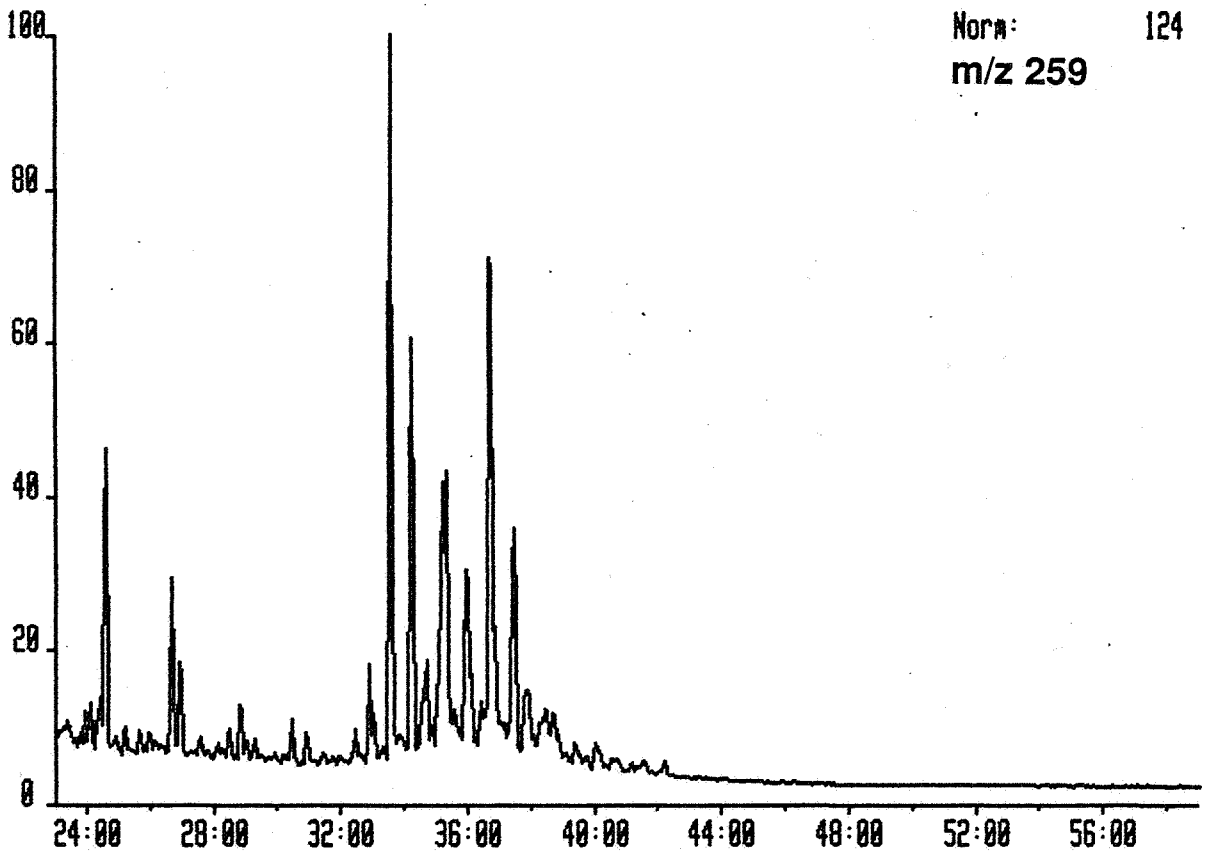

G2004SAT 8-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA 34/7-16



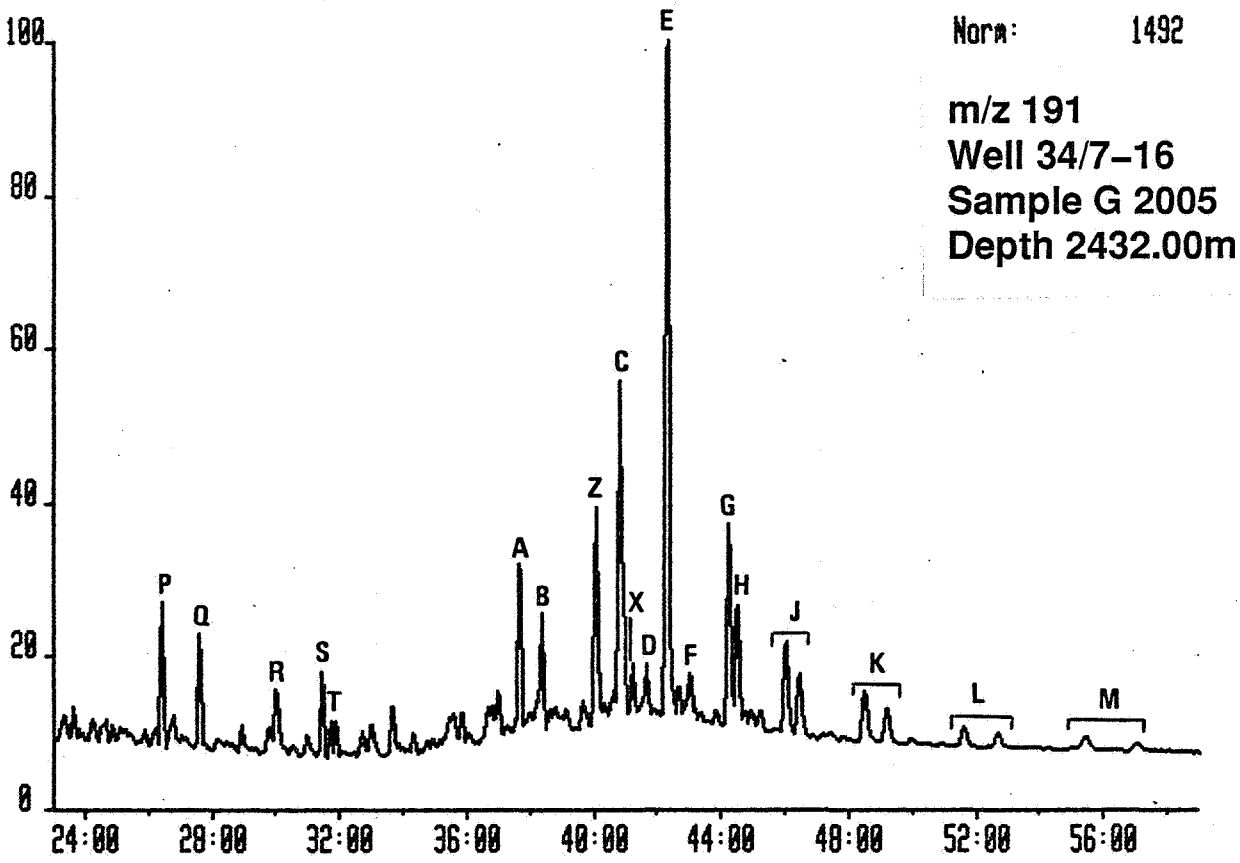
G2004SAT 8-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA 34/7-16



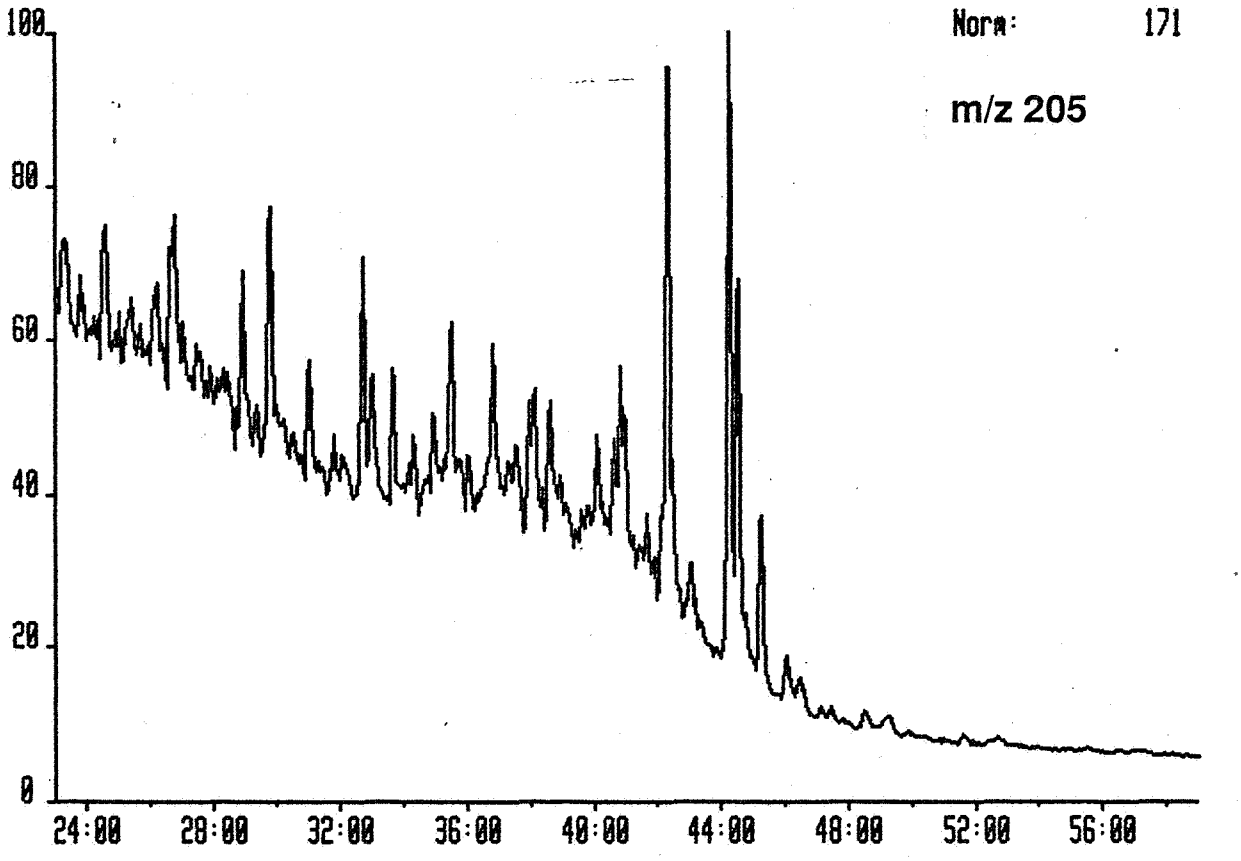

G2004SAT 8-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA 34/7-16



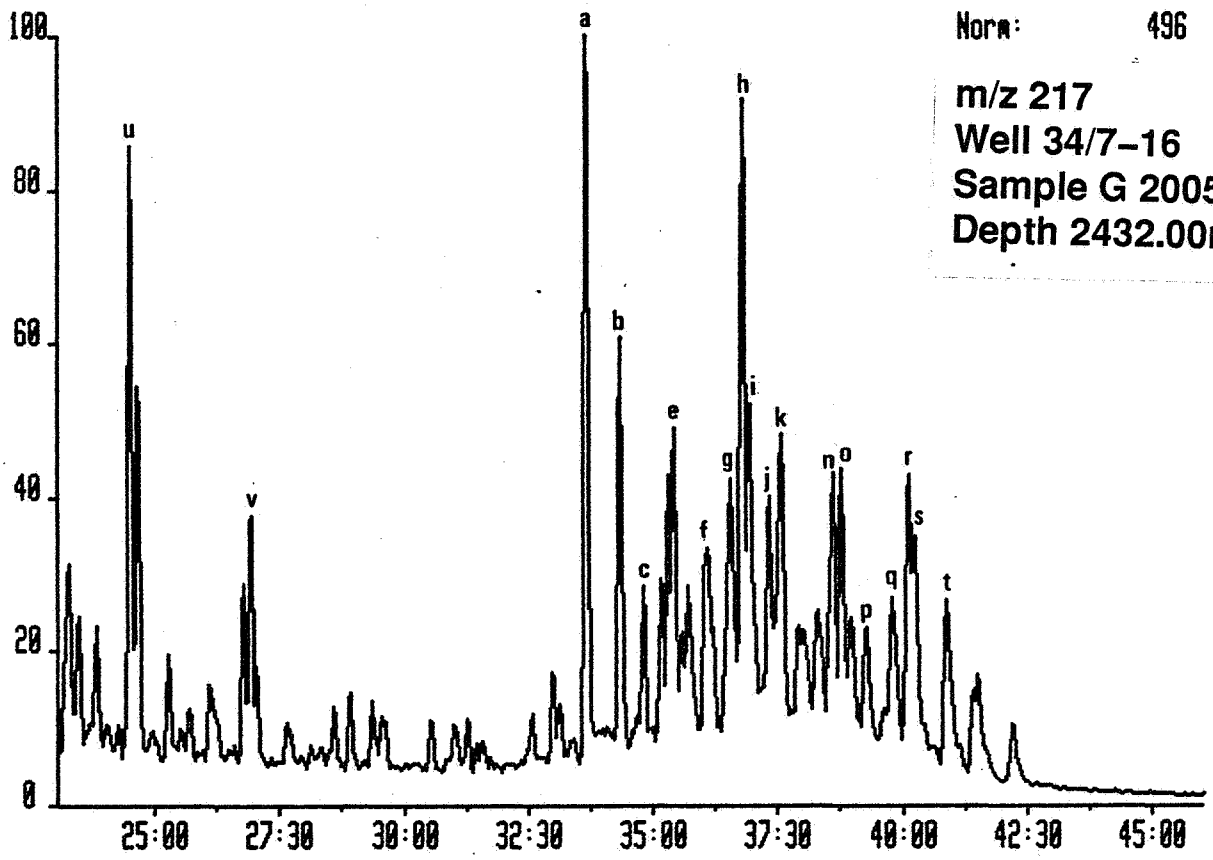
G2005SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA 34/7-16



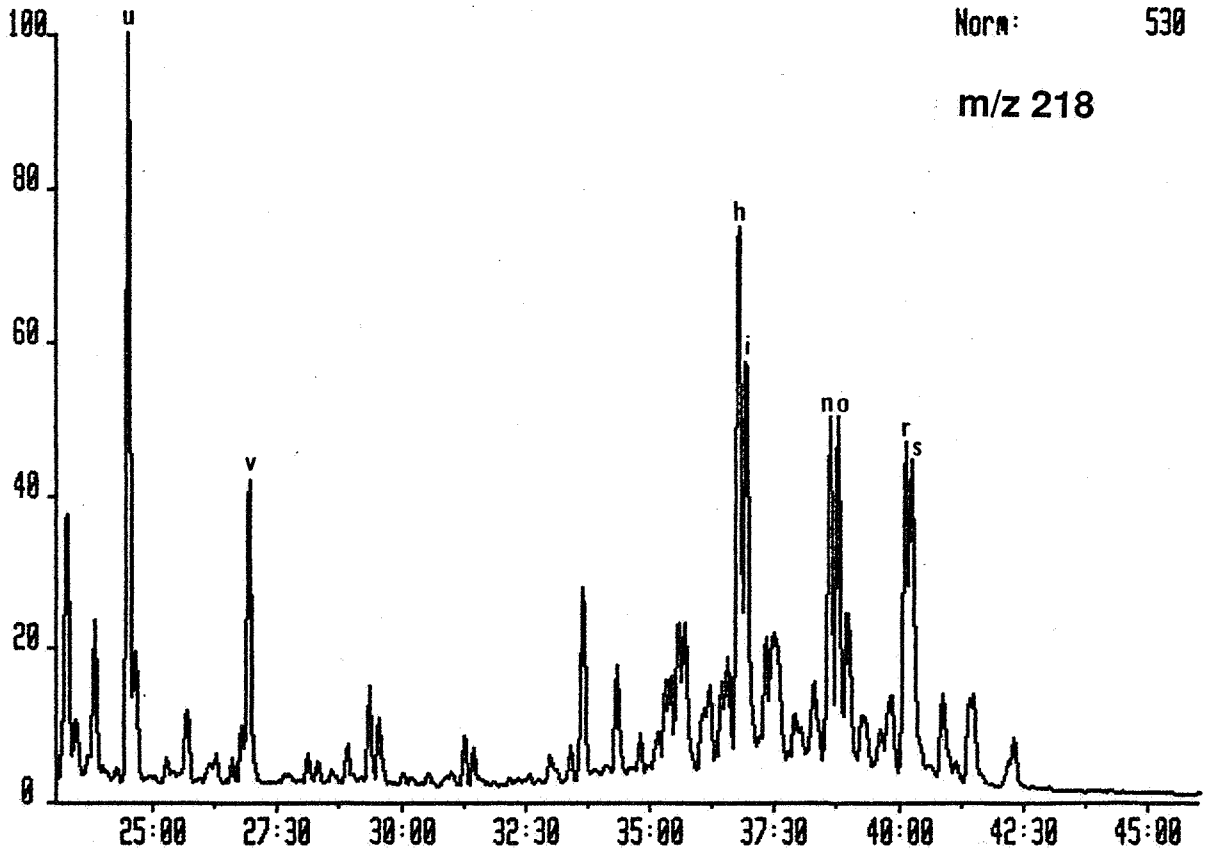

G2005SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA 34/7-16



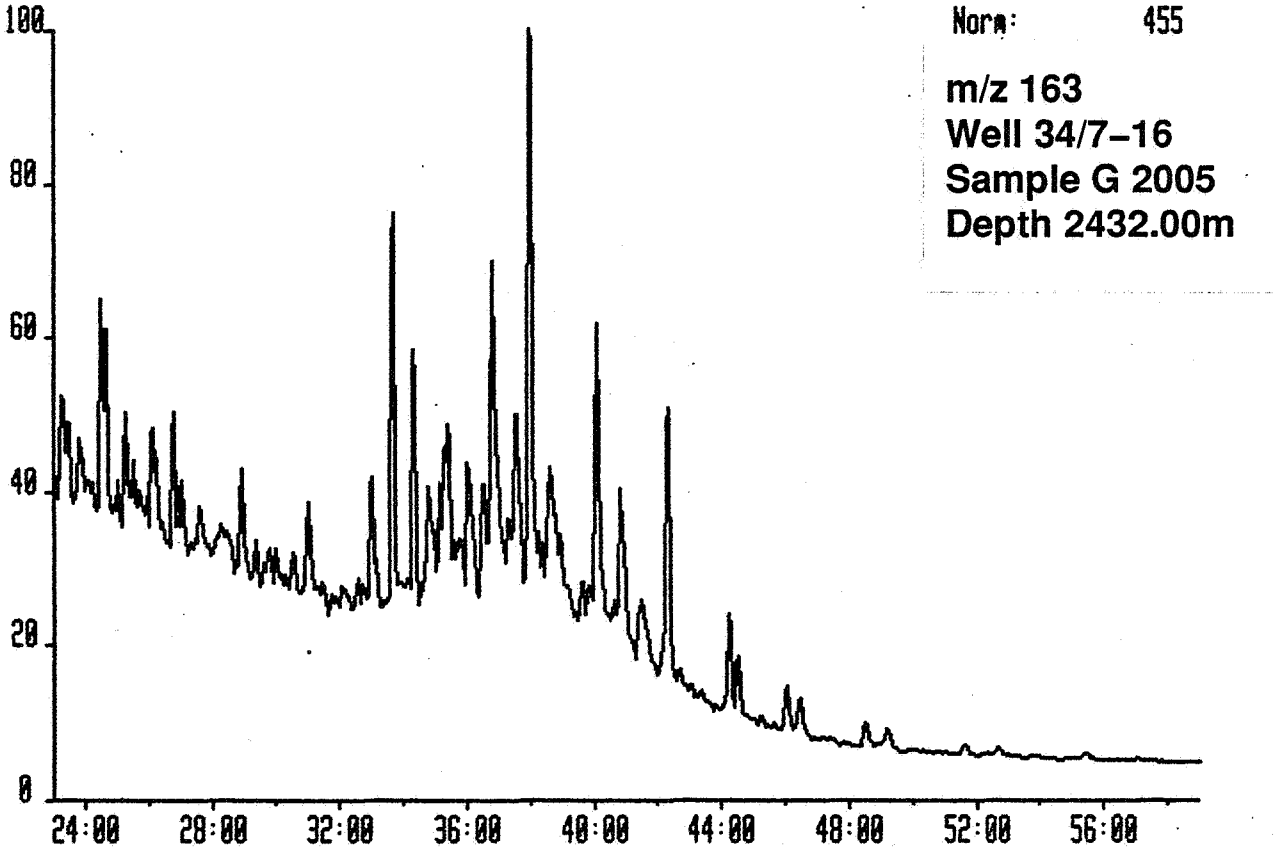
G2005SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA 34/7-16



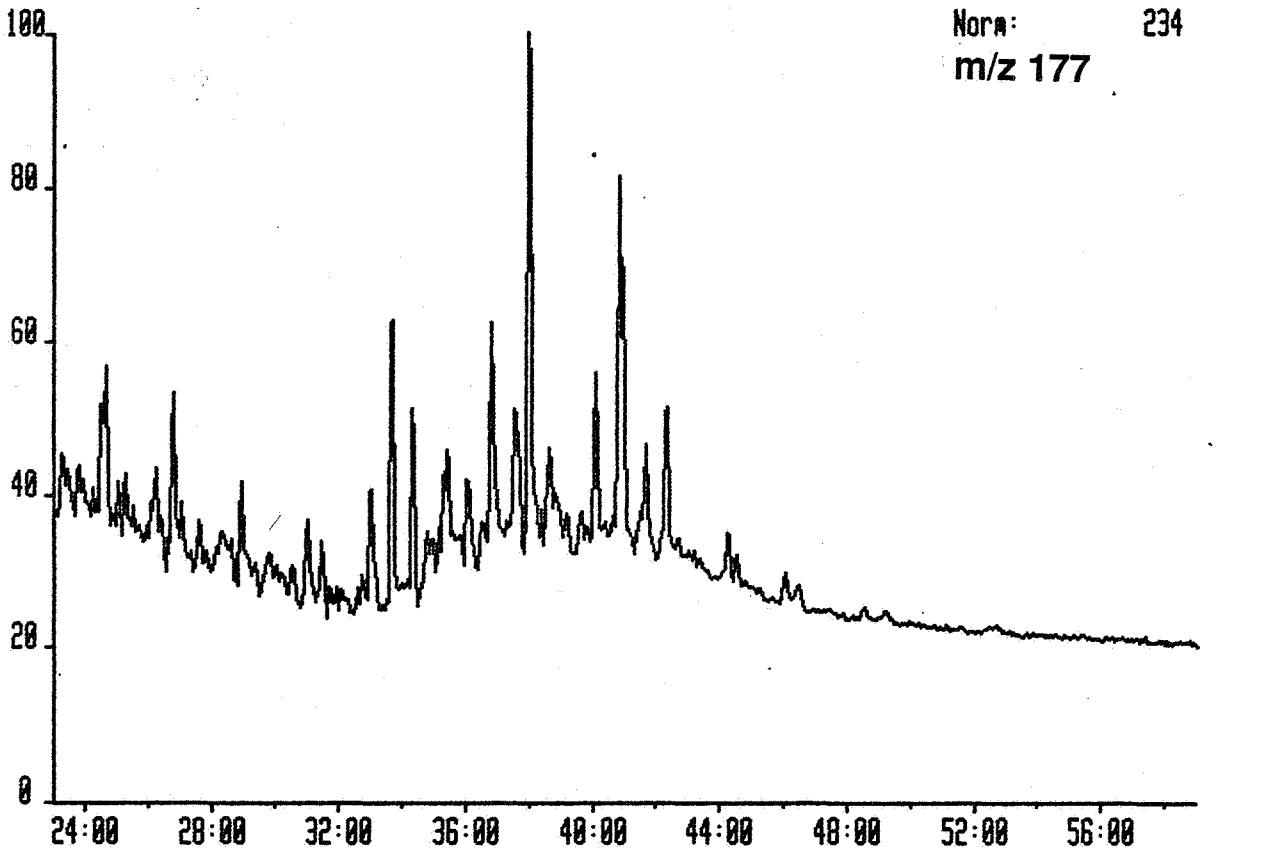

G2005SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA 34/7-16



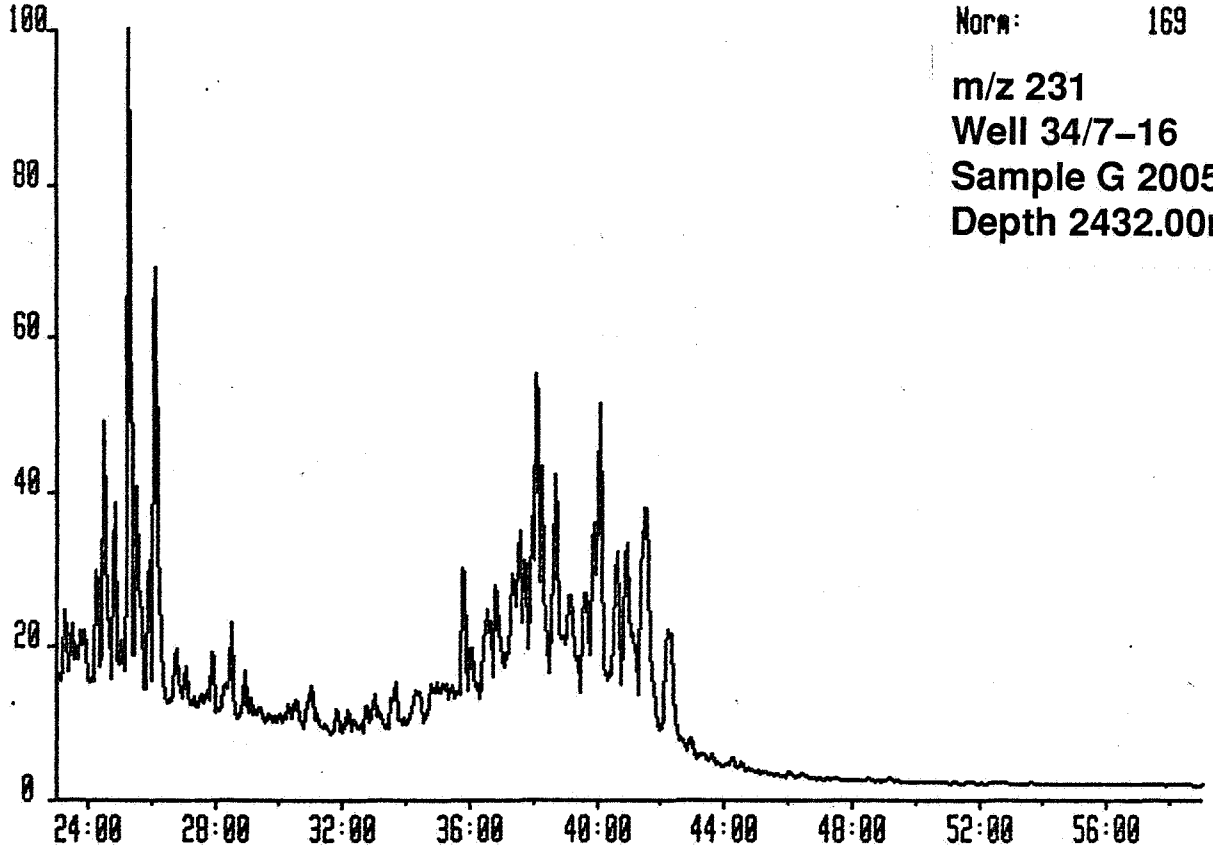
G2005SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA 34/7-16



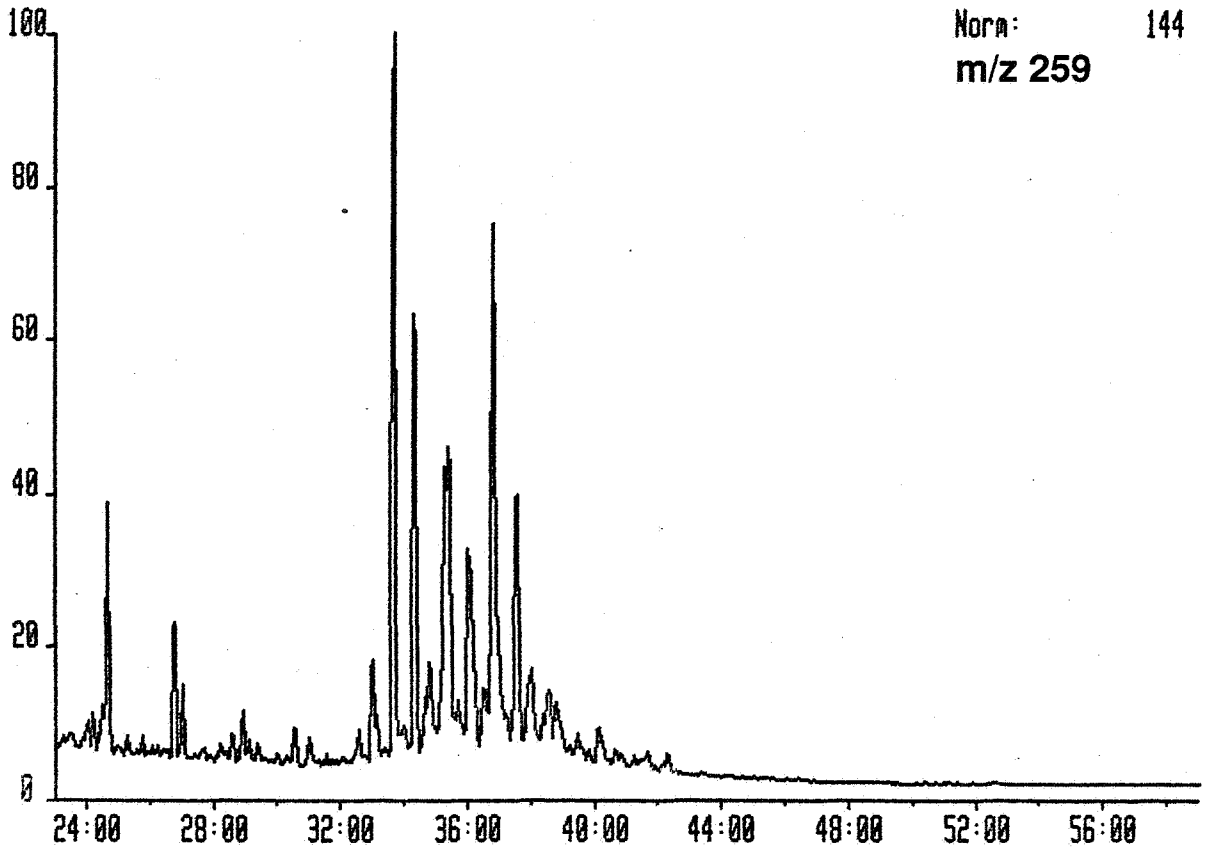

G2005SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA 34/7-16



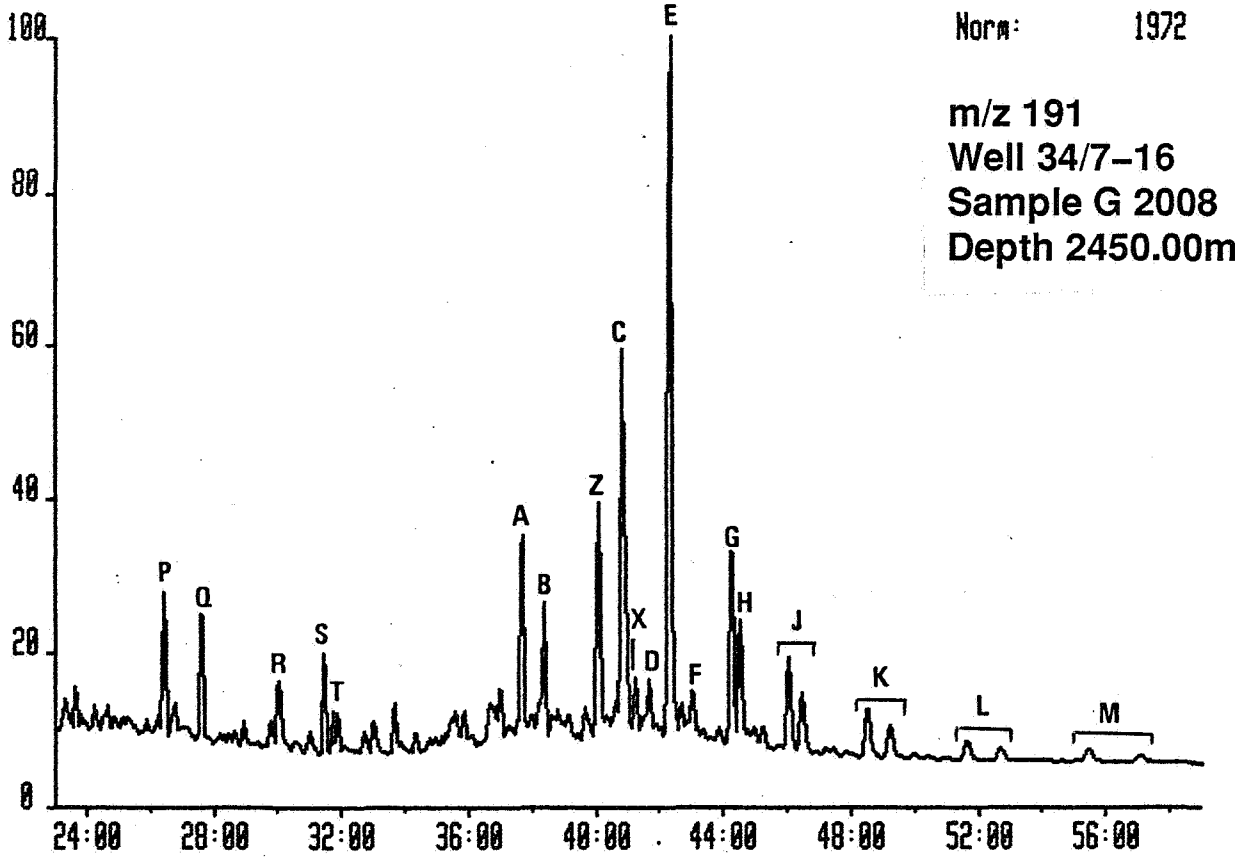
G2005SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA 34/7-16



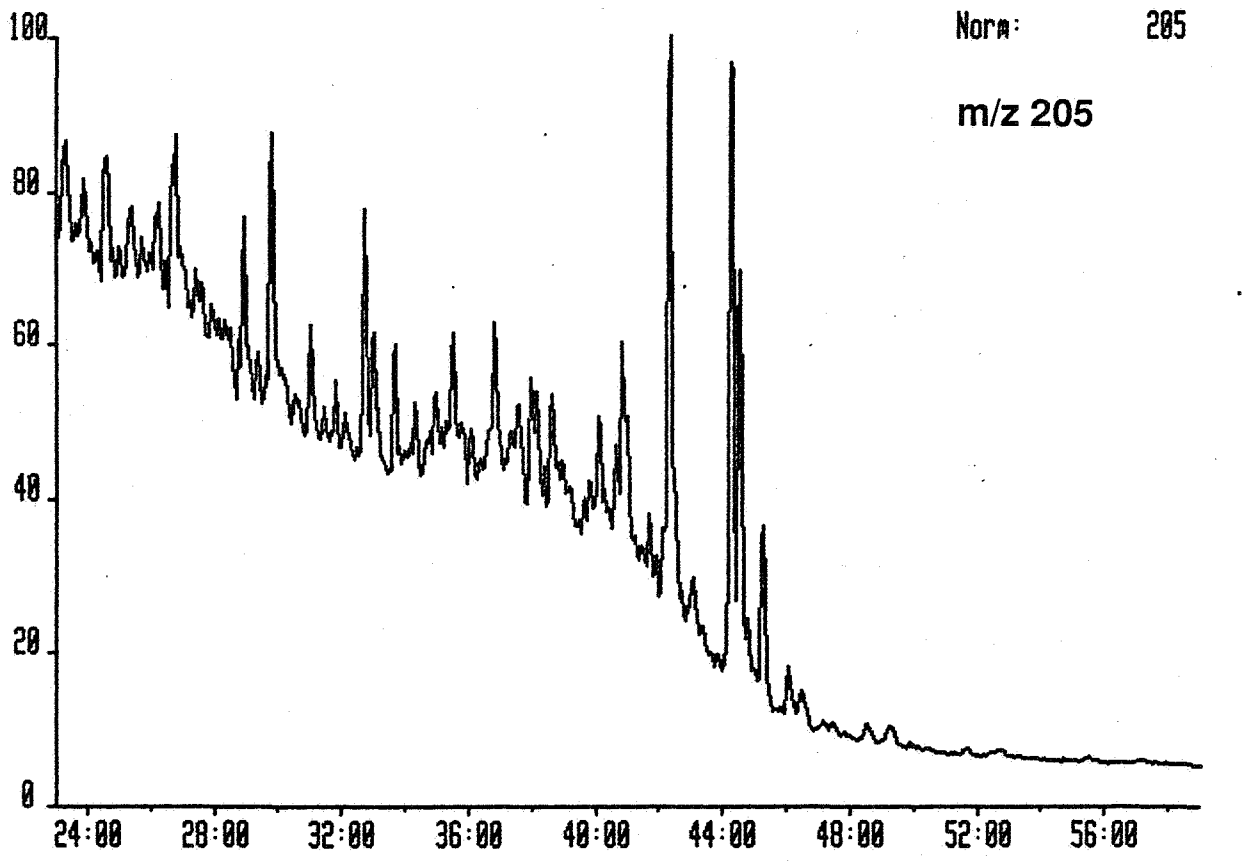

G2005SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA 34/7-16



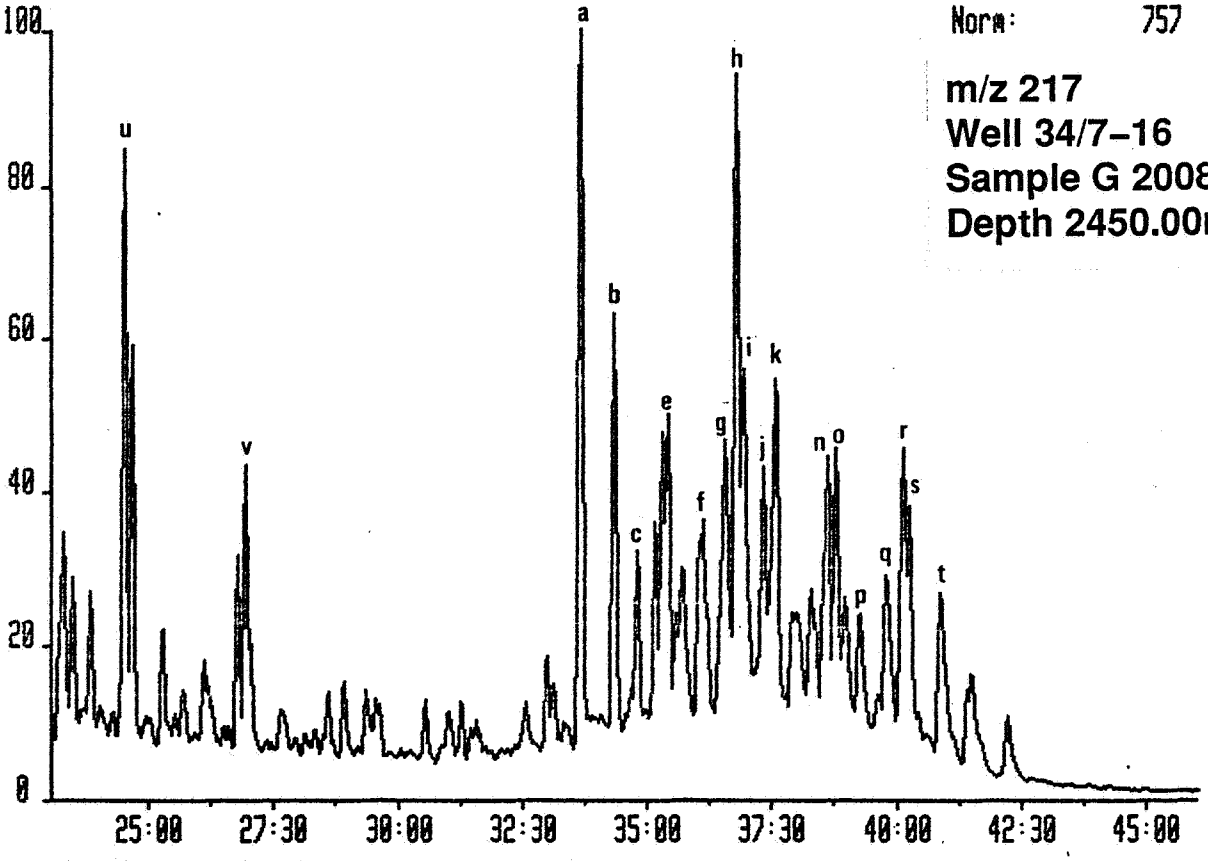
G2008SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA 34/7-16



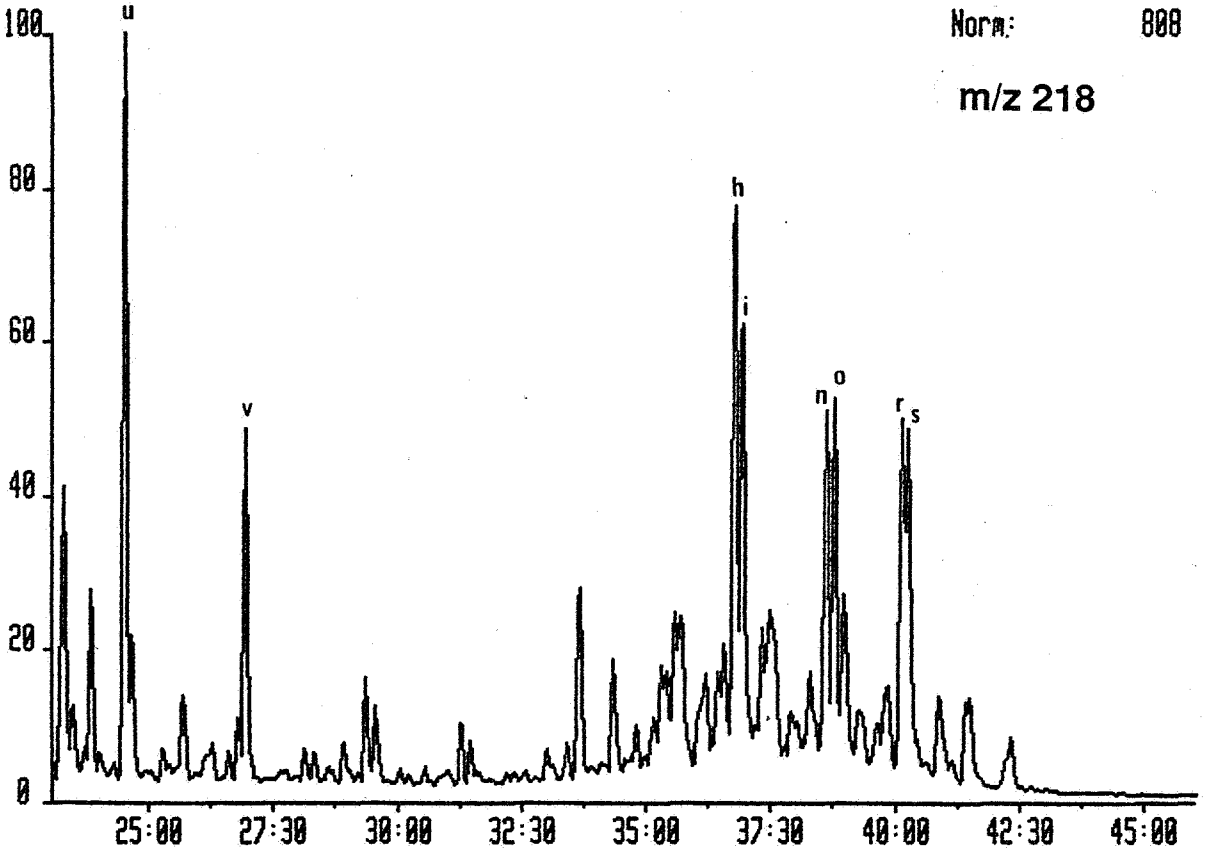

G2008SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA 34/7-16



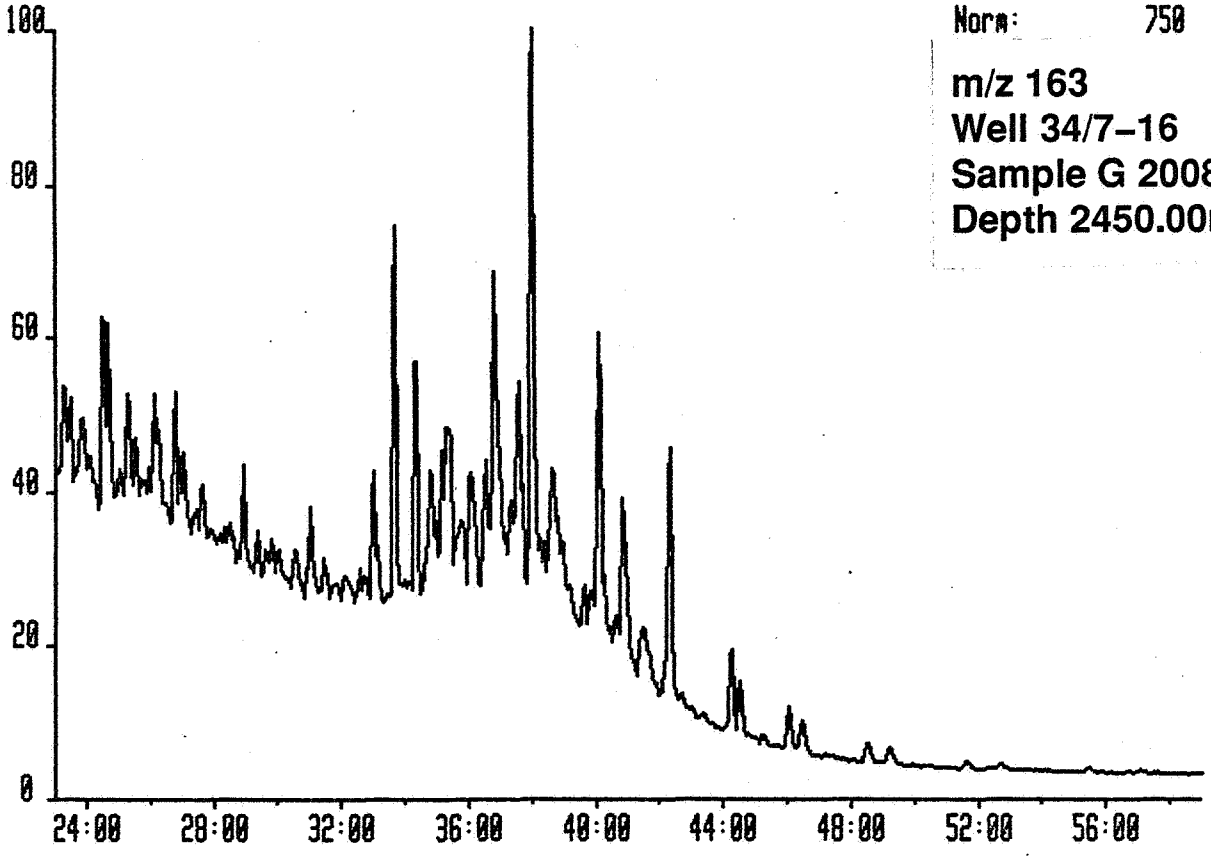
G2008SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA 34/7-16



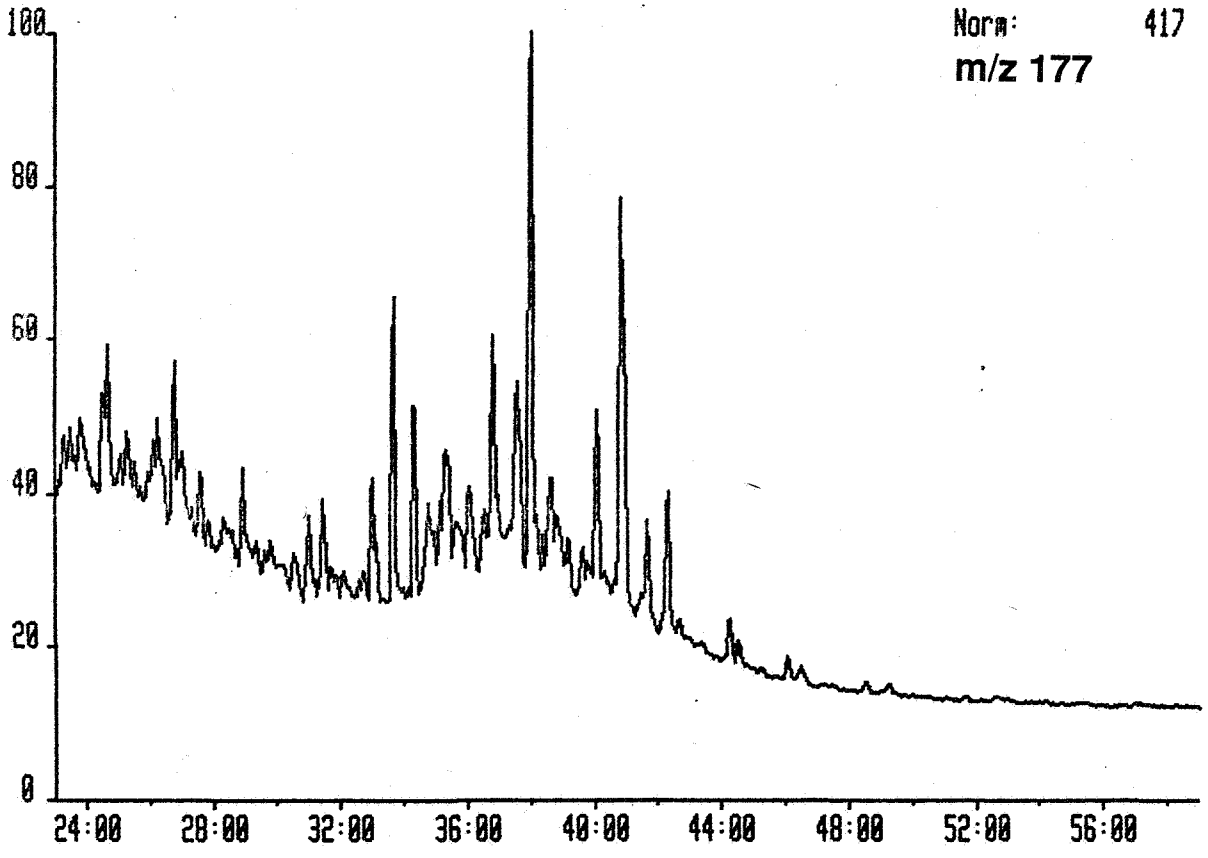

G2008SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA 34/7-16



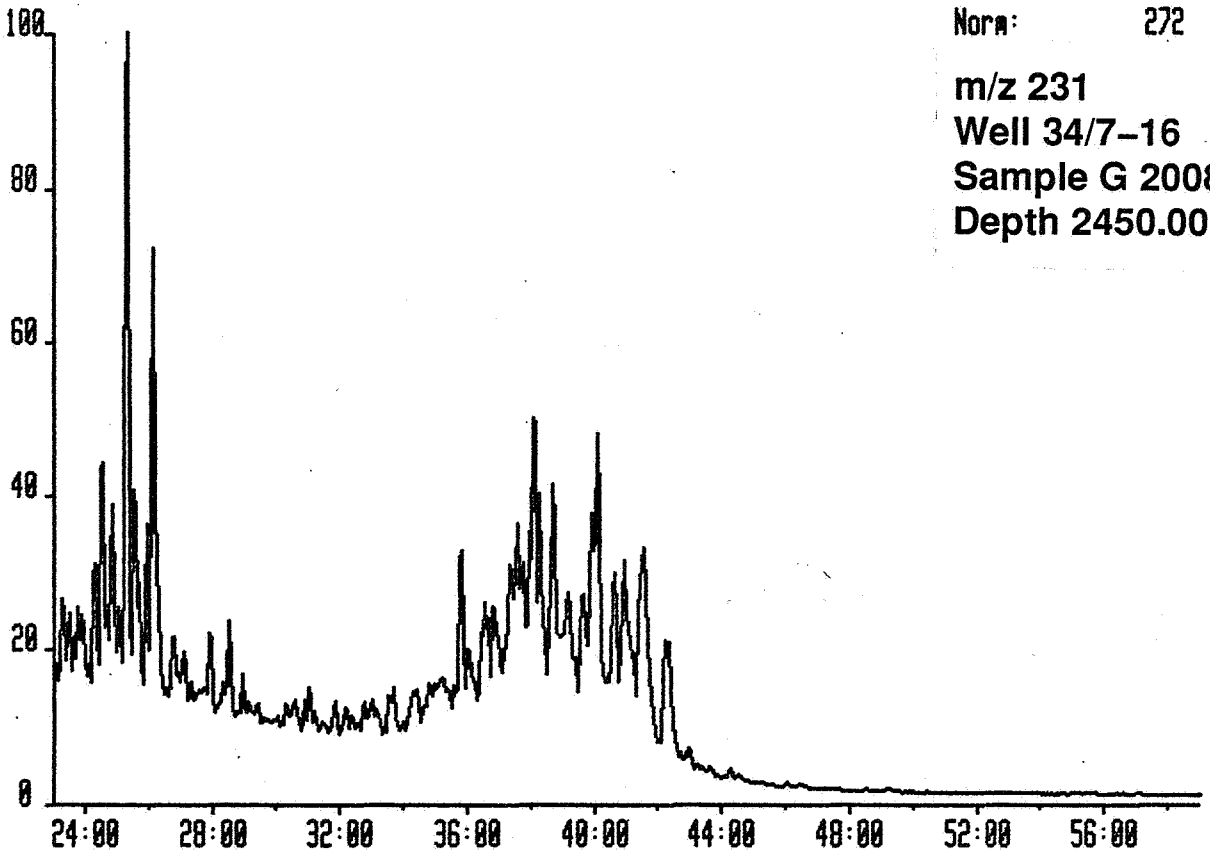
G2008SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA 34/7-16




G2008SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA 34/7-16



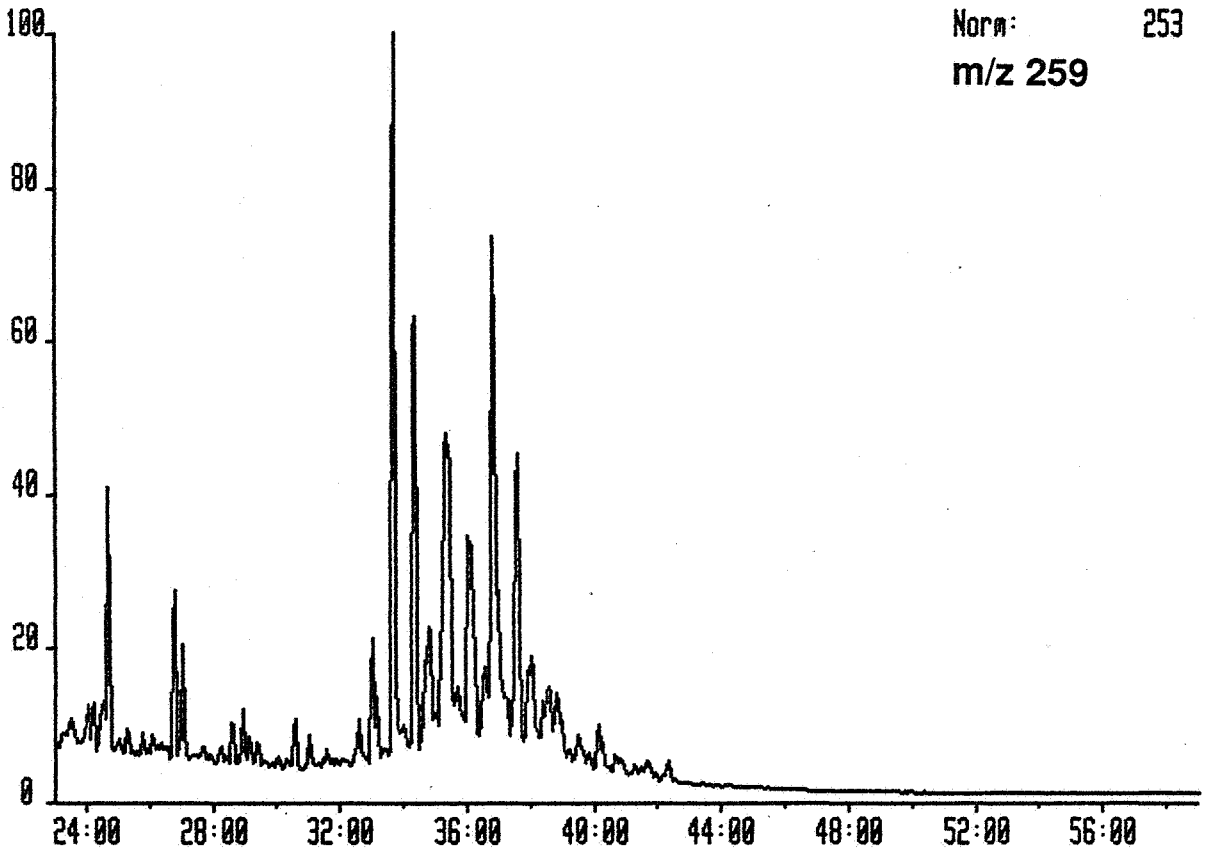
G2008SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA 34/7-16




Norm: 272

**m/z 231**
**Well 34/7–16**
**Sample G 2008**
**Depth 2450.00m**

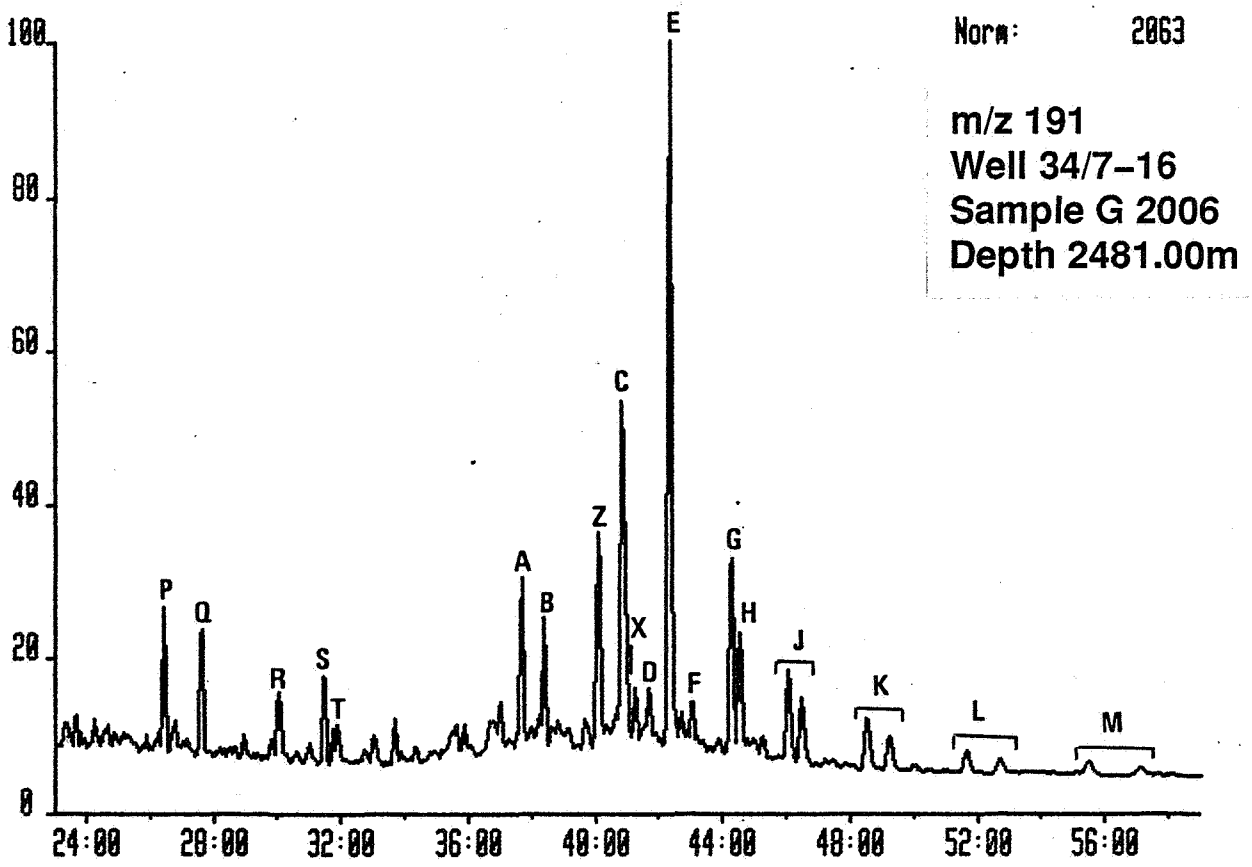
G2008SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA 34/7-16



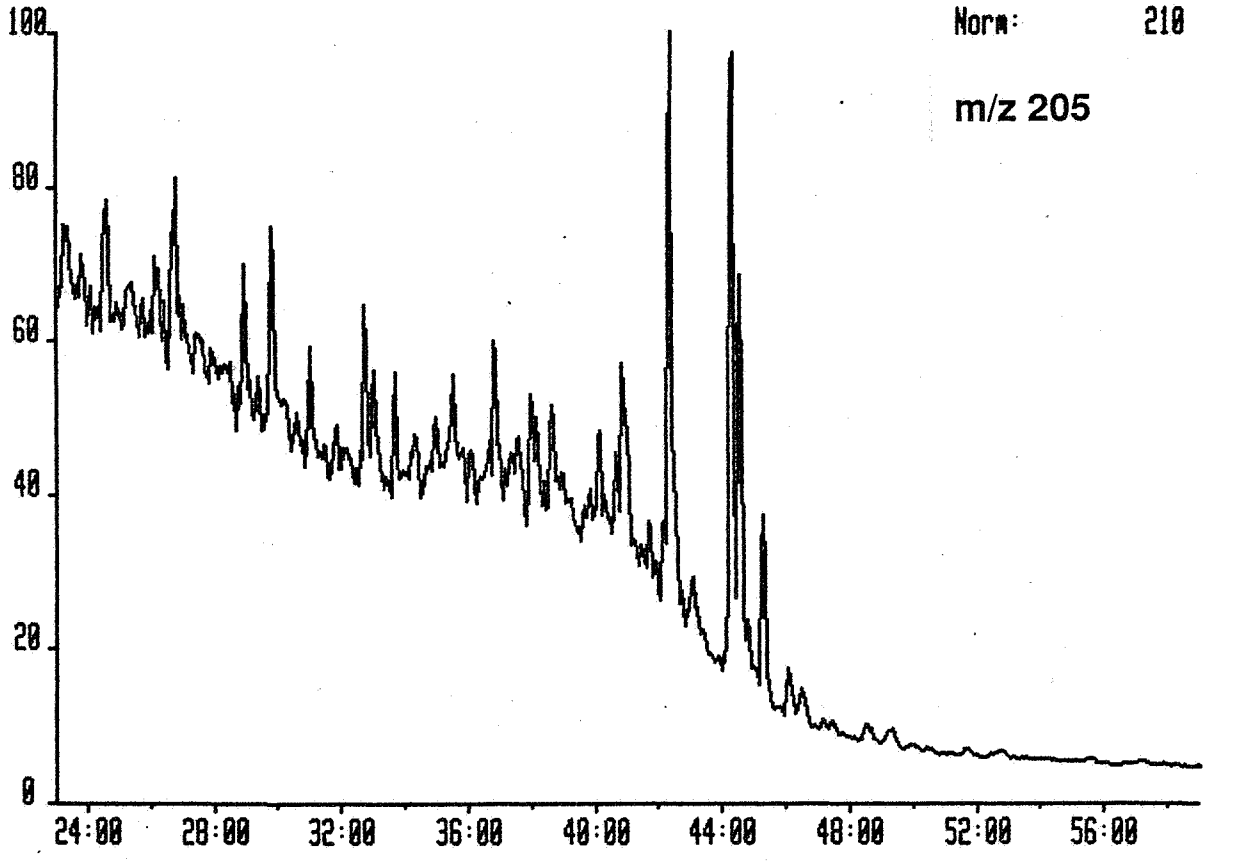

Norm: 253

**m/z 259**

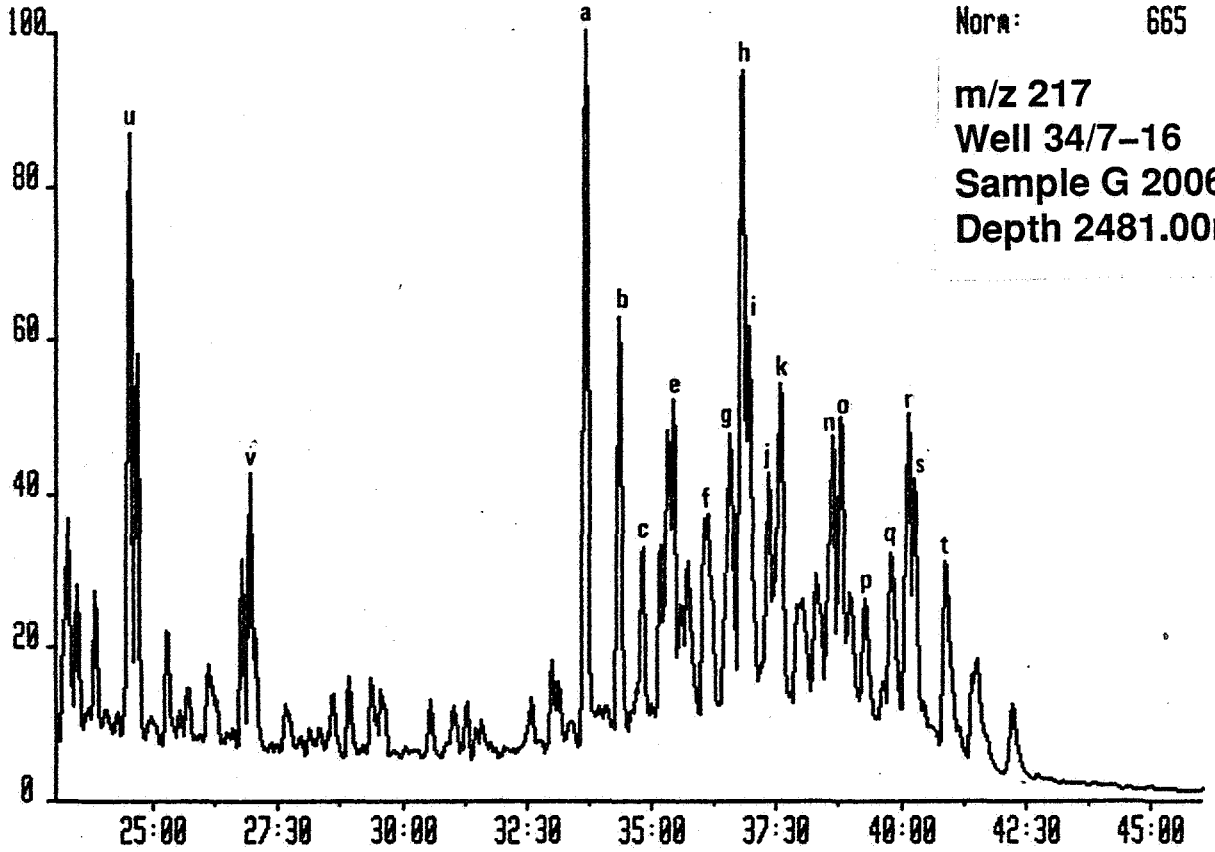
G2006SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA 34/7-16



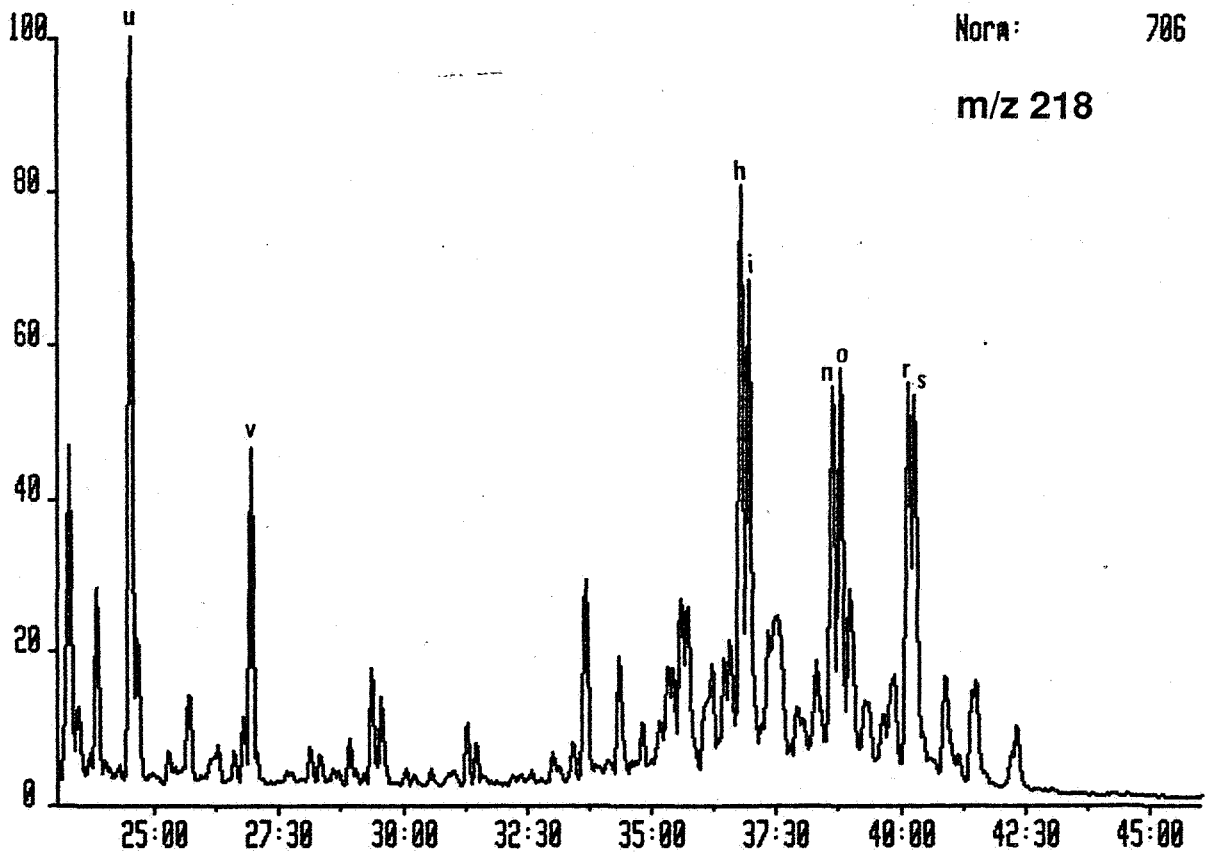

G2006SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA 34/7-16



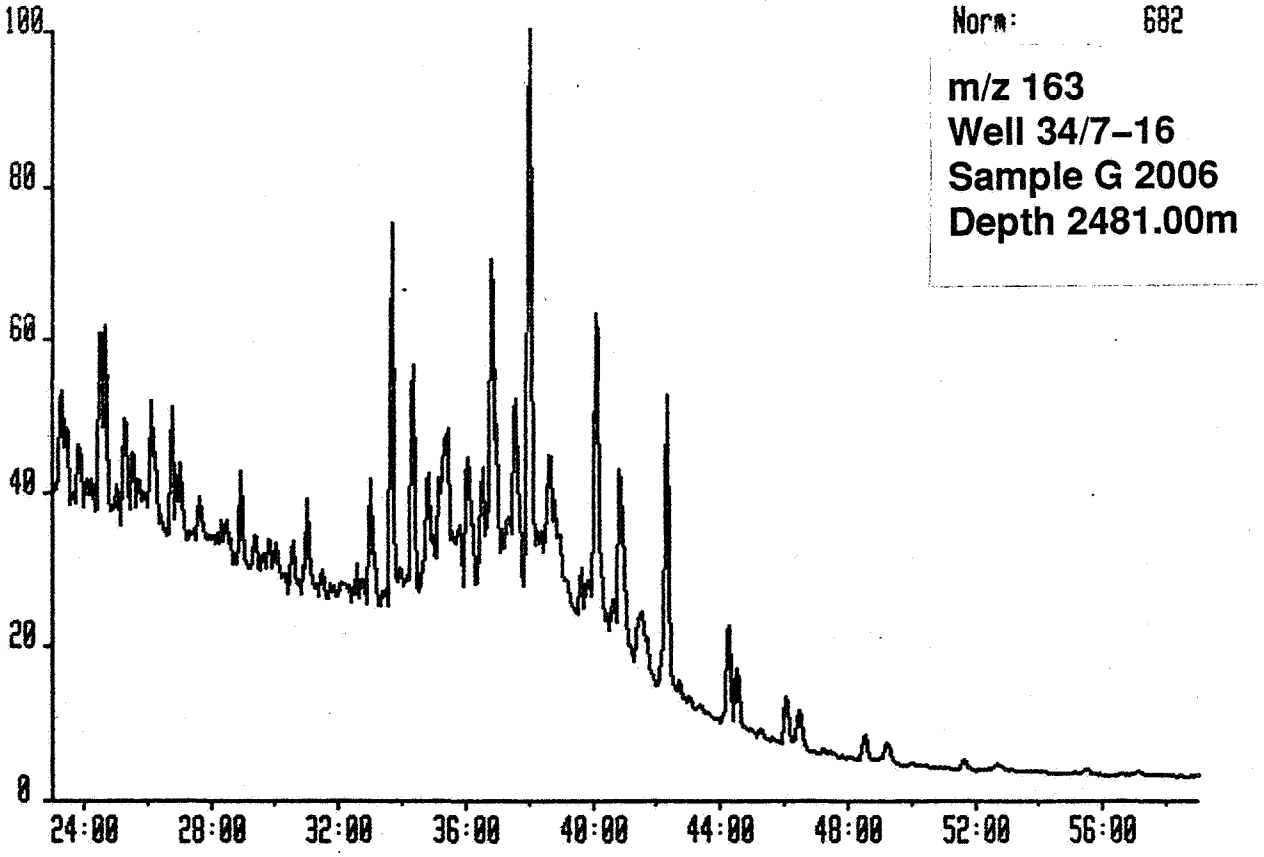
G2006SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA 34/7-16



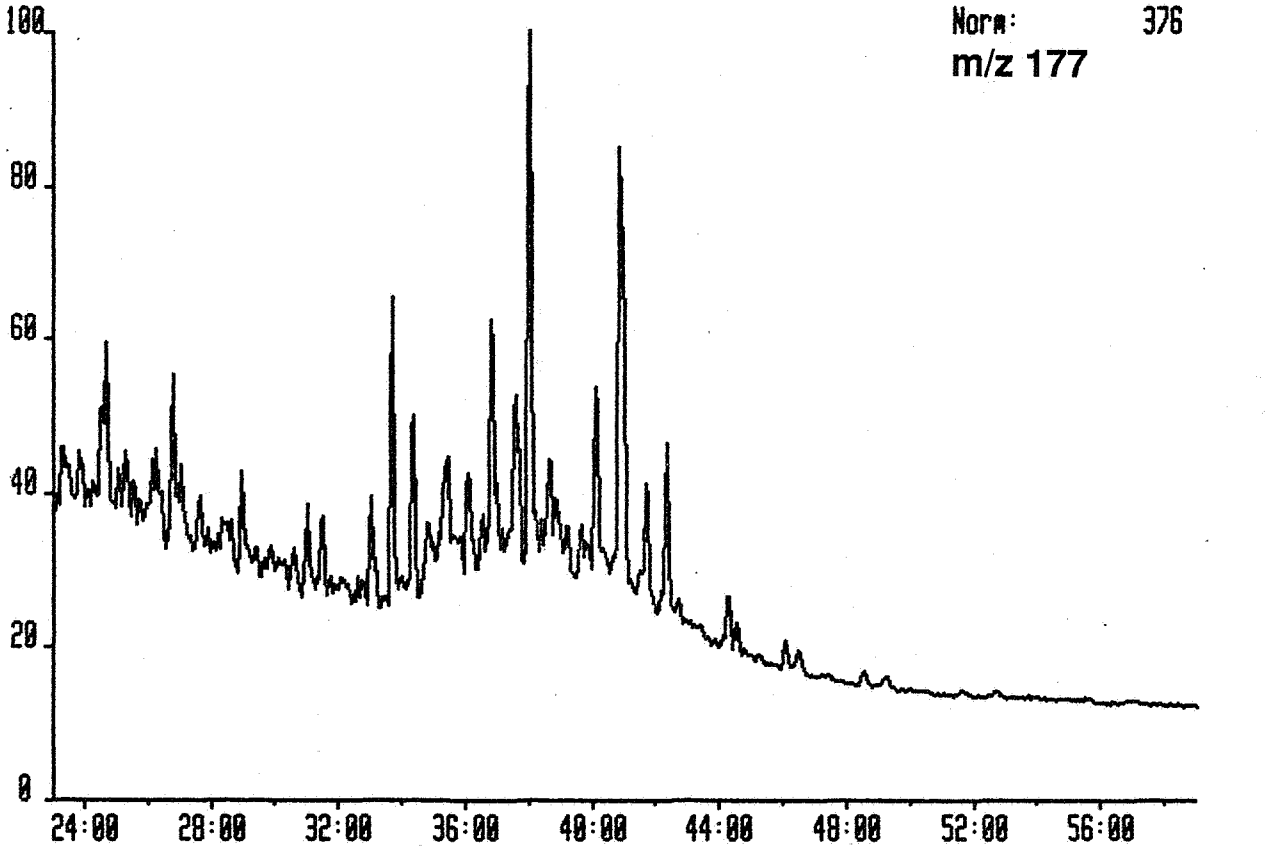

G2006SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA 34/7-16



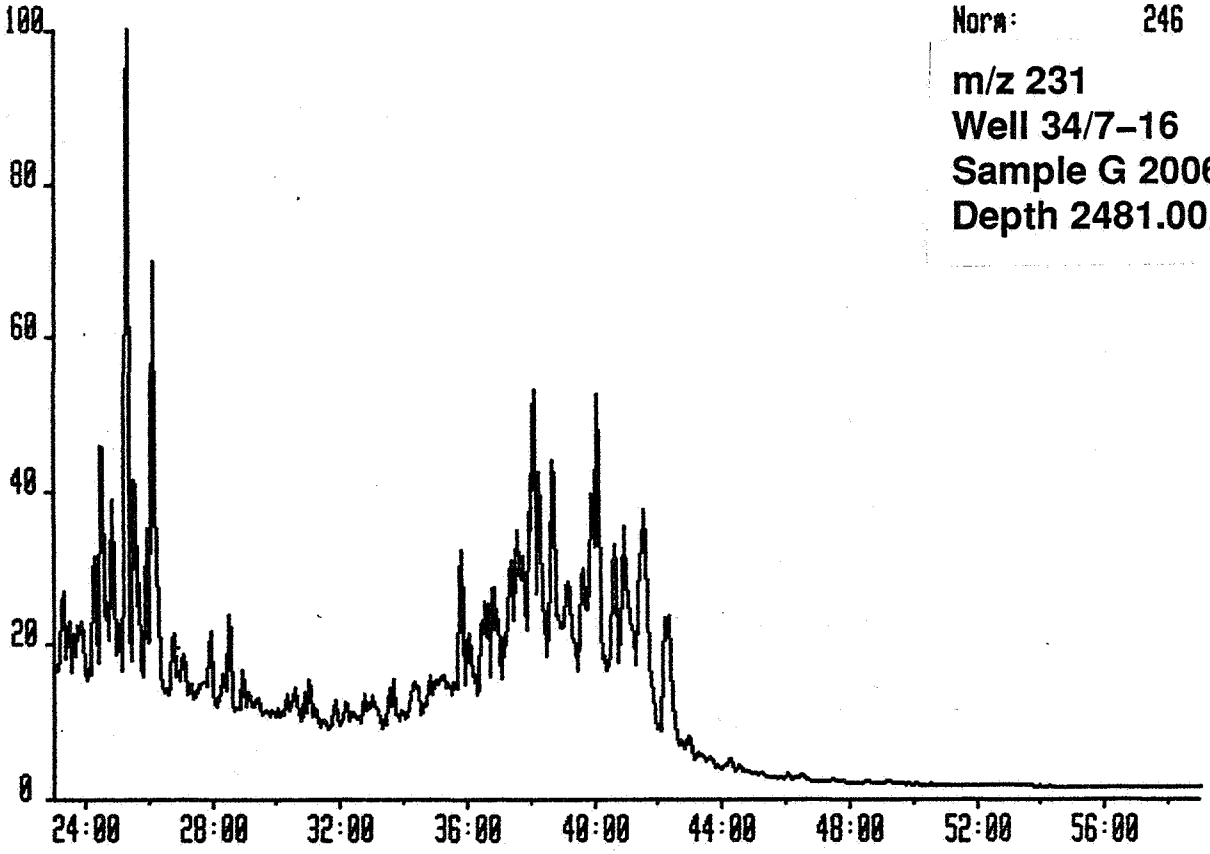
G2006SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA 34/7-16



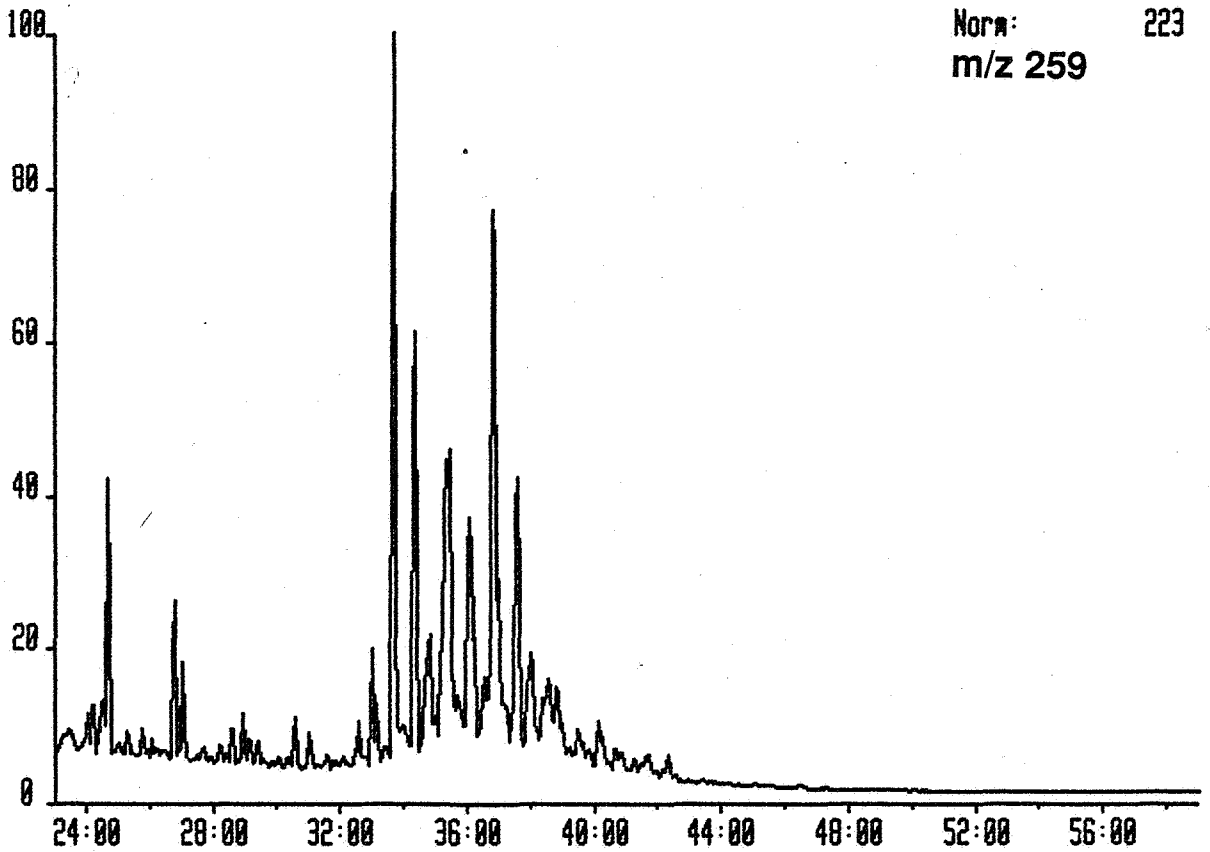

G2006SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA 34/7-16



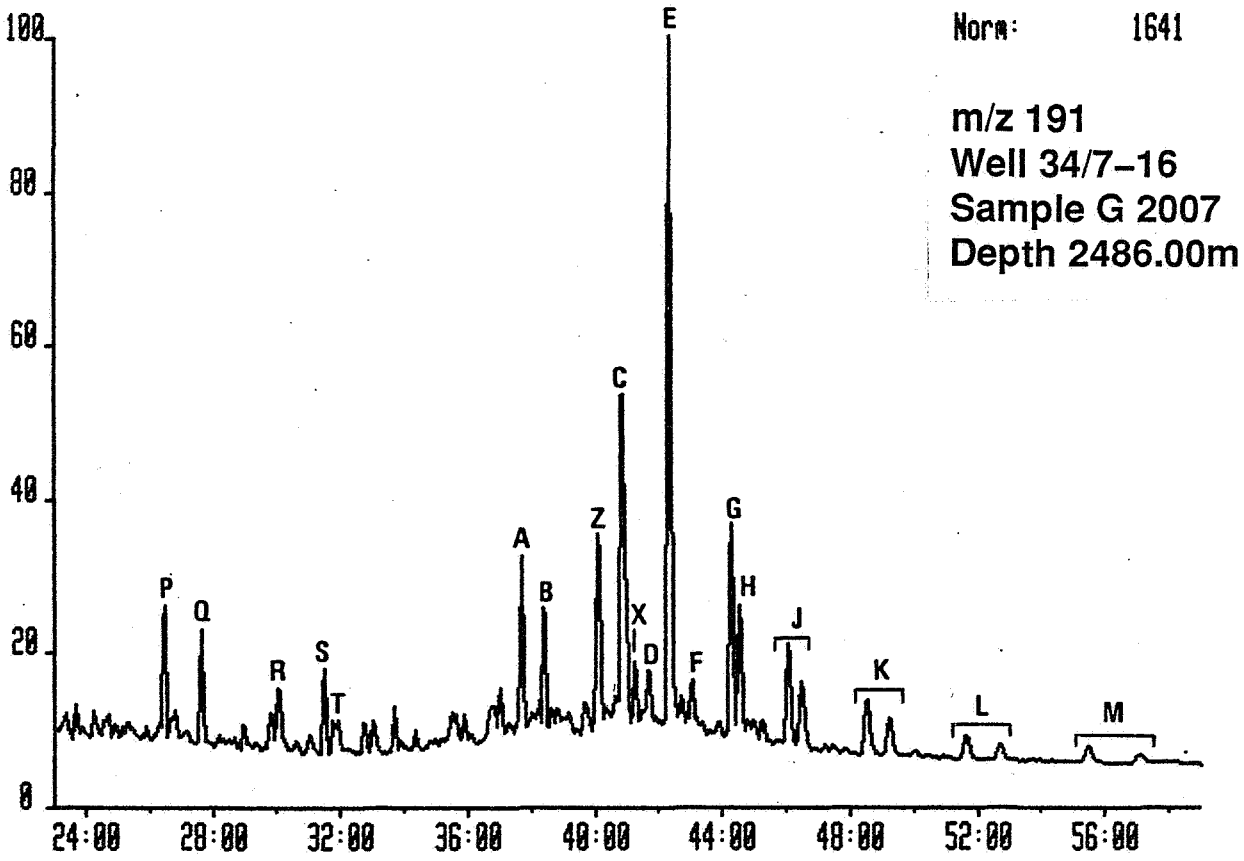
G2006SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA 34/7-16



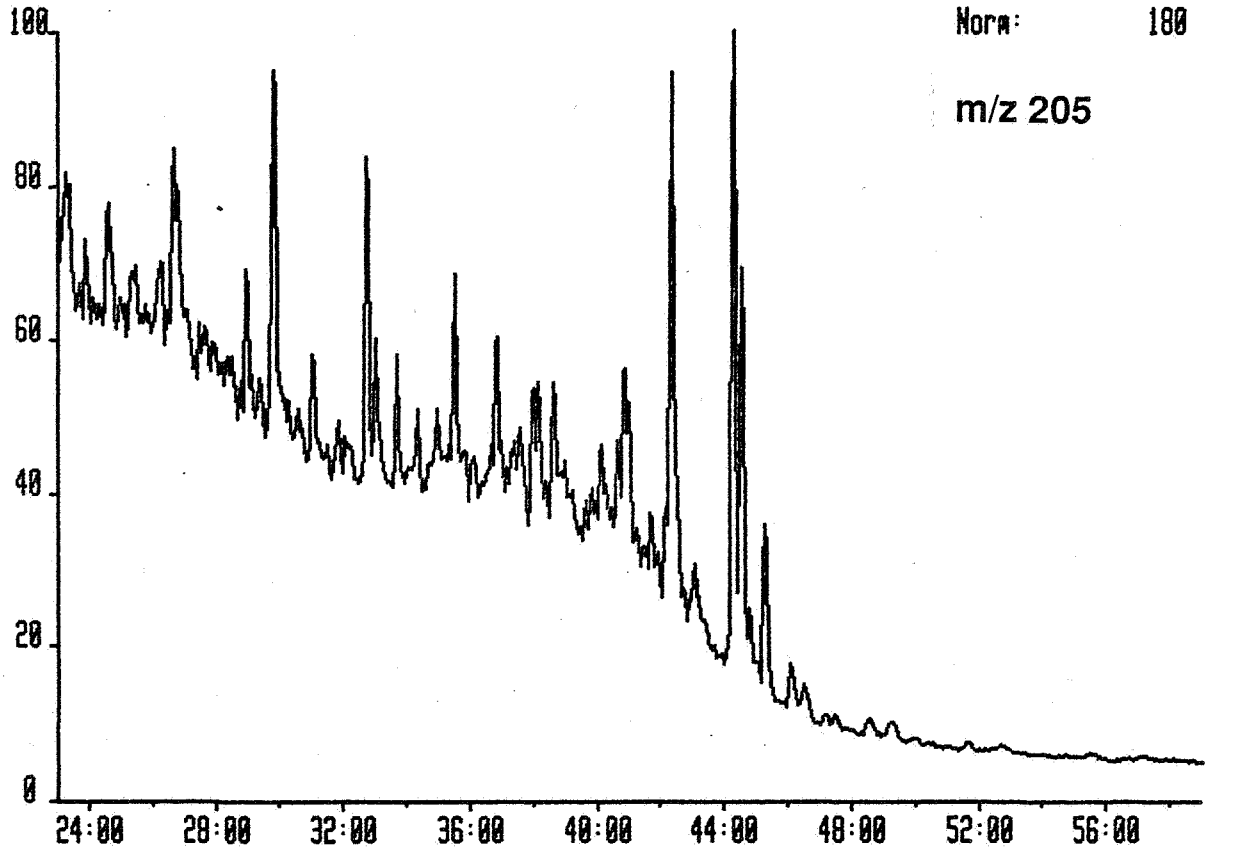

G2006SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA 34/7-16



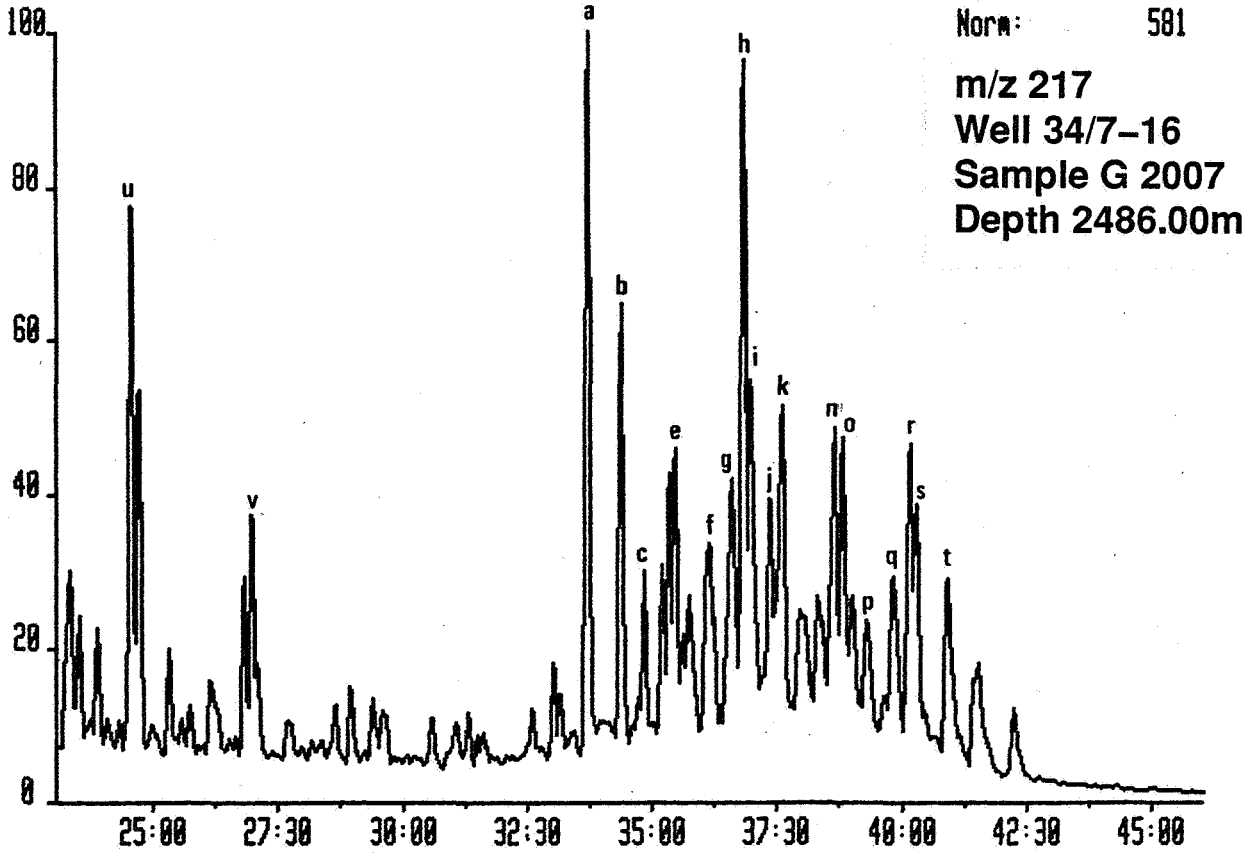
G2007SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA 34/7-16



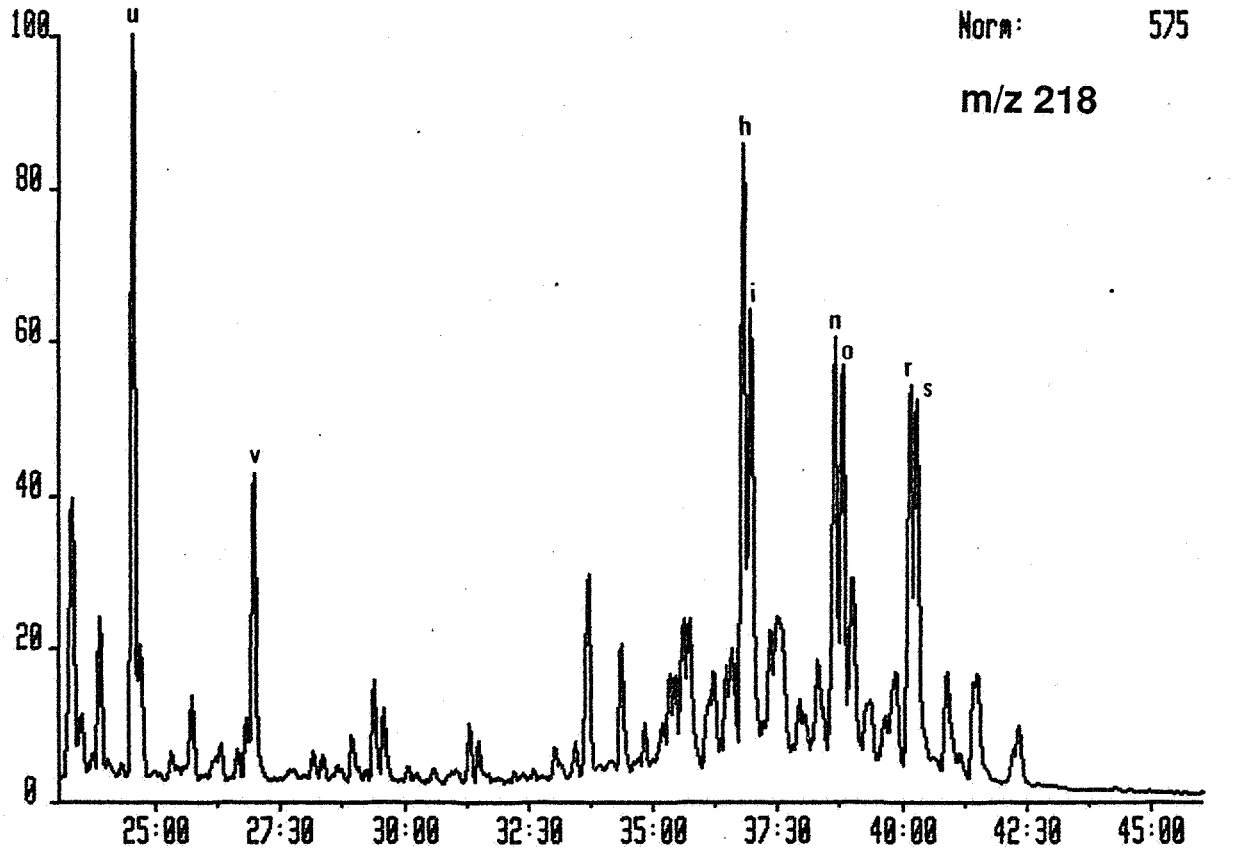

G2007SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA 34/7-16



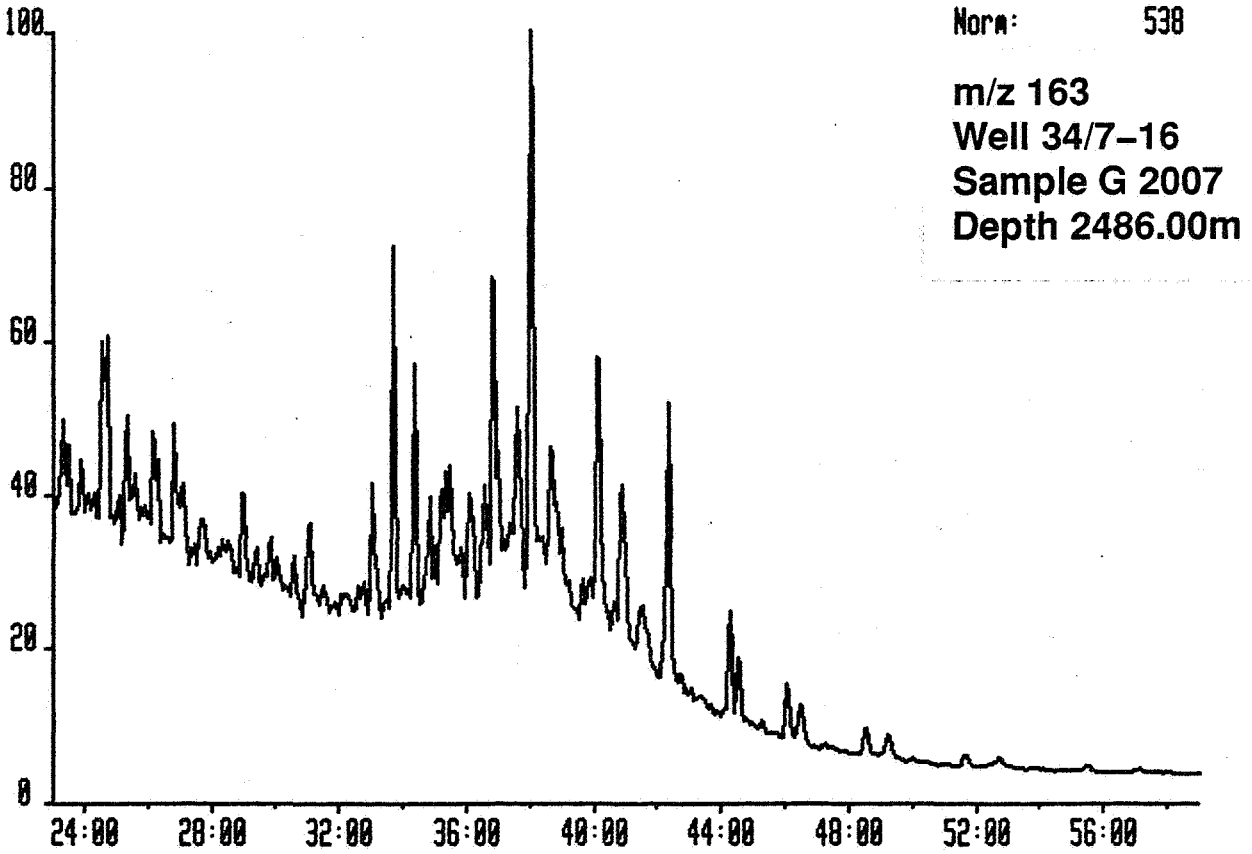
G2007SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA 34/7-16



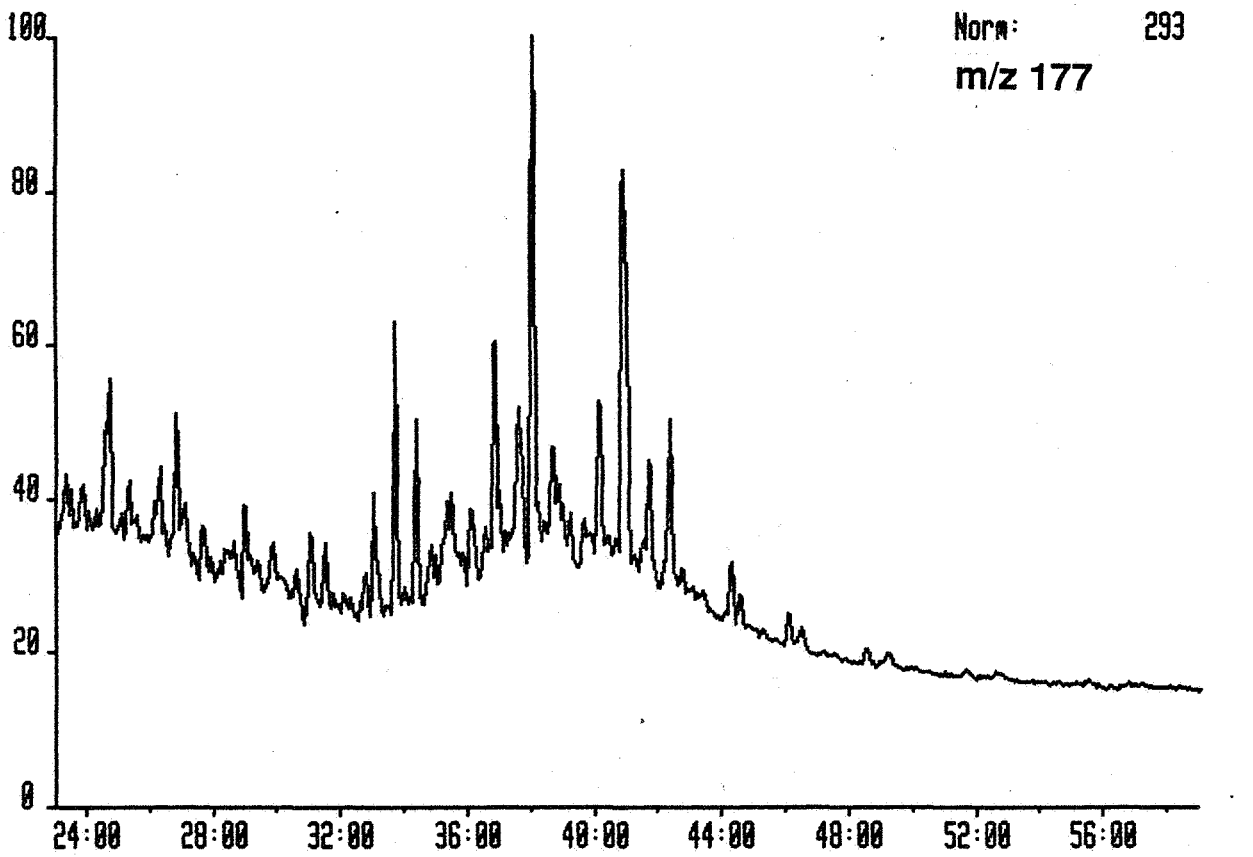

G2007SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA 34/7-16



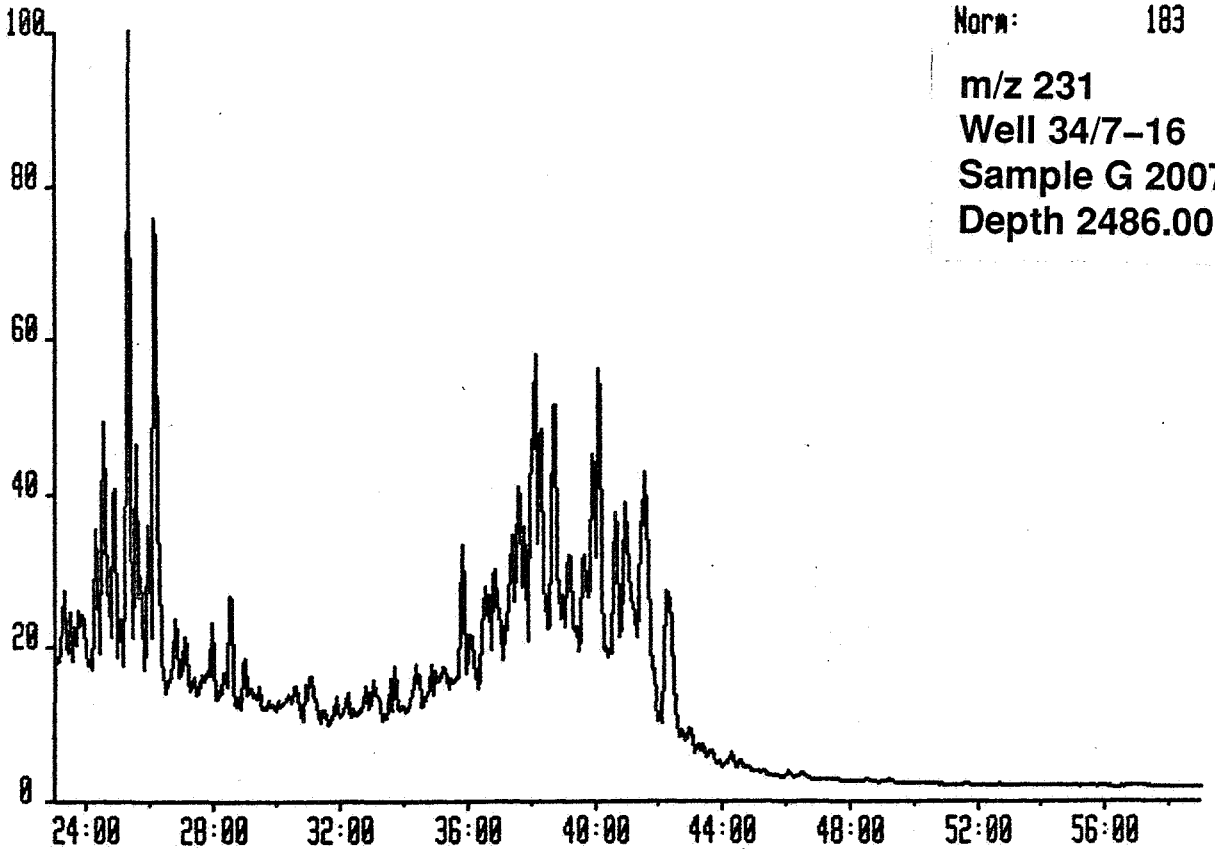
G2007SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA 34/7-16



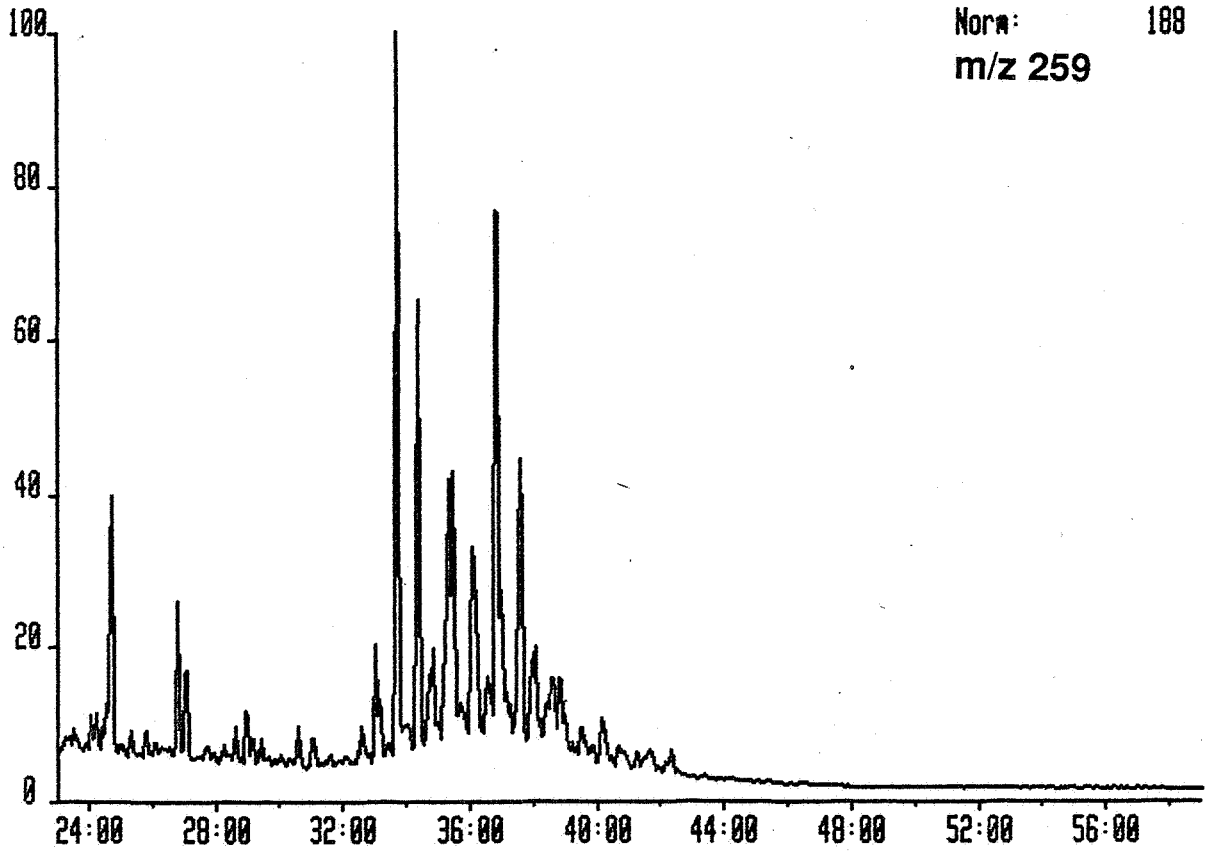

G2007SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA 34/7-16



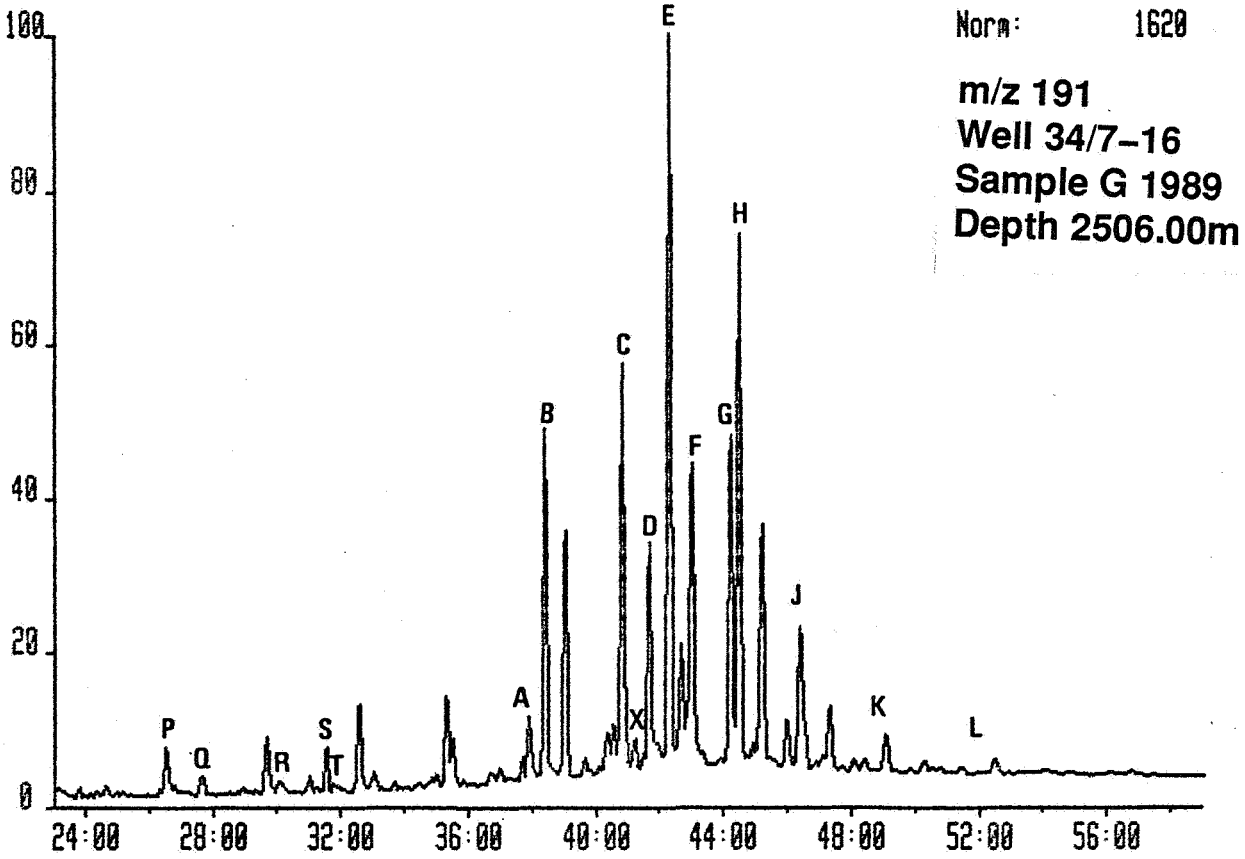
G2007SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA 34/7-16



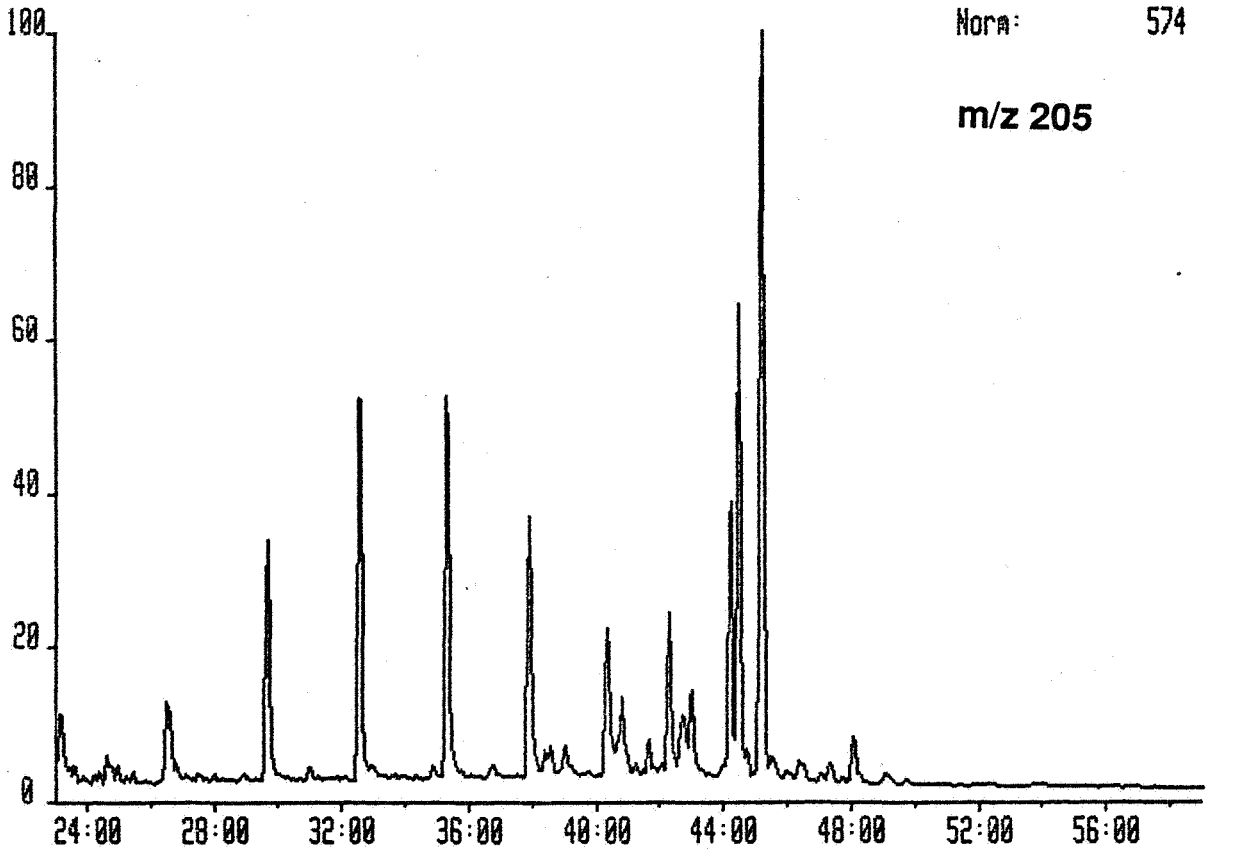

G2007SAT 9-OCT-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA 34/7-16



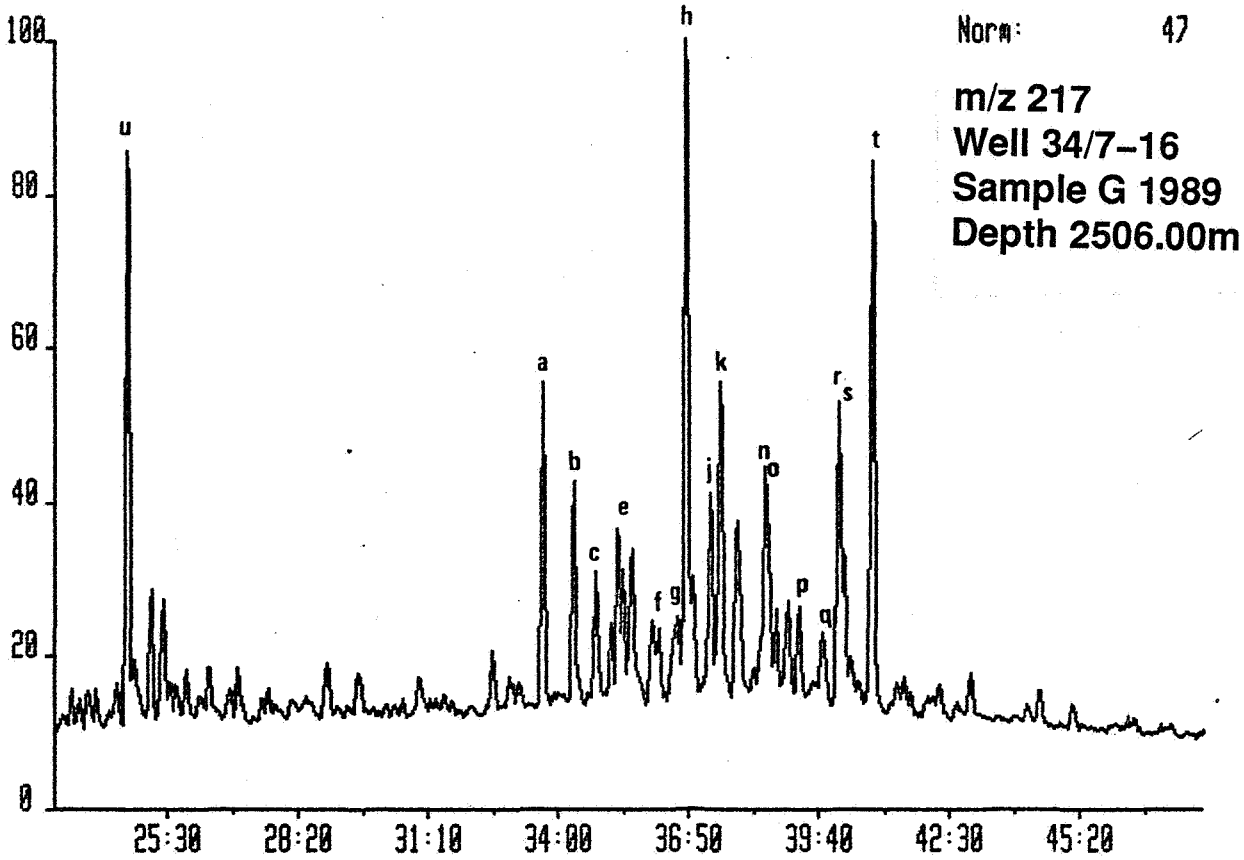
G1989SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA 34/7-16



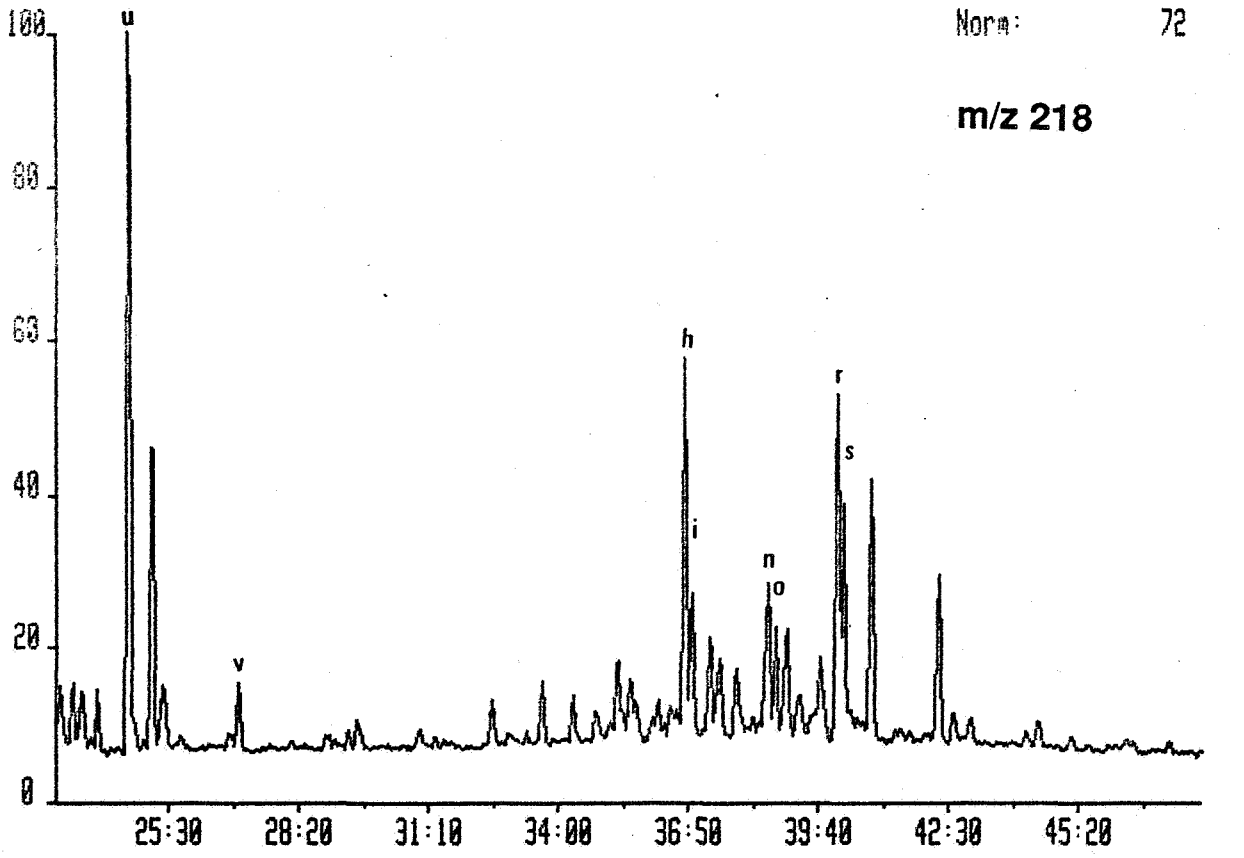

G1989SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA 34/7-16



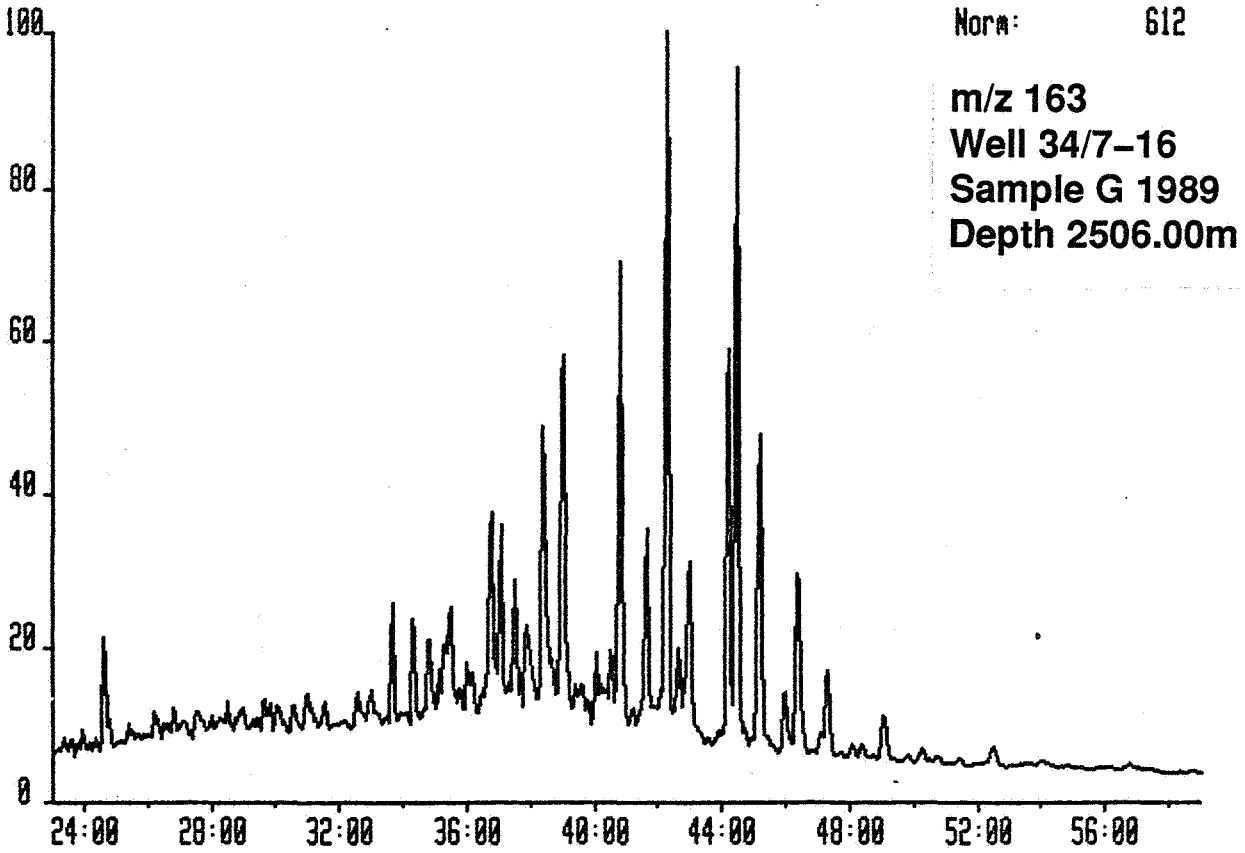
G1989SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA 34/7-16



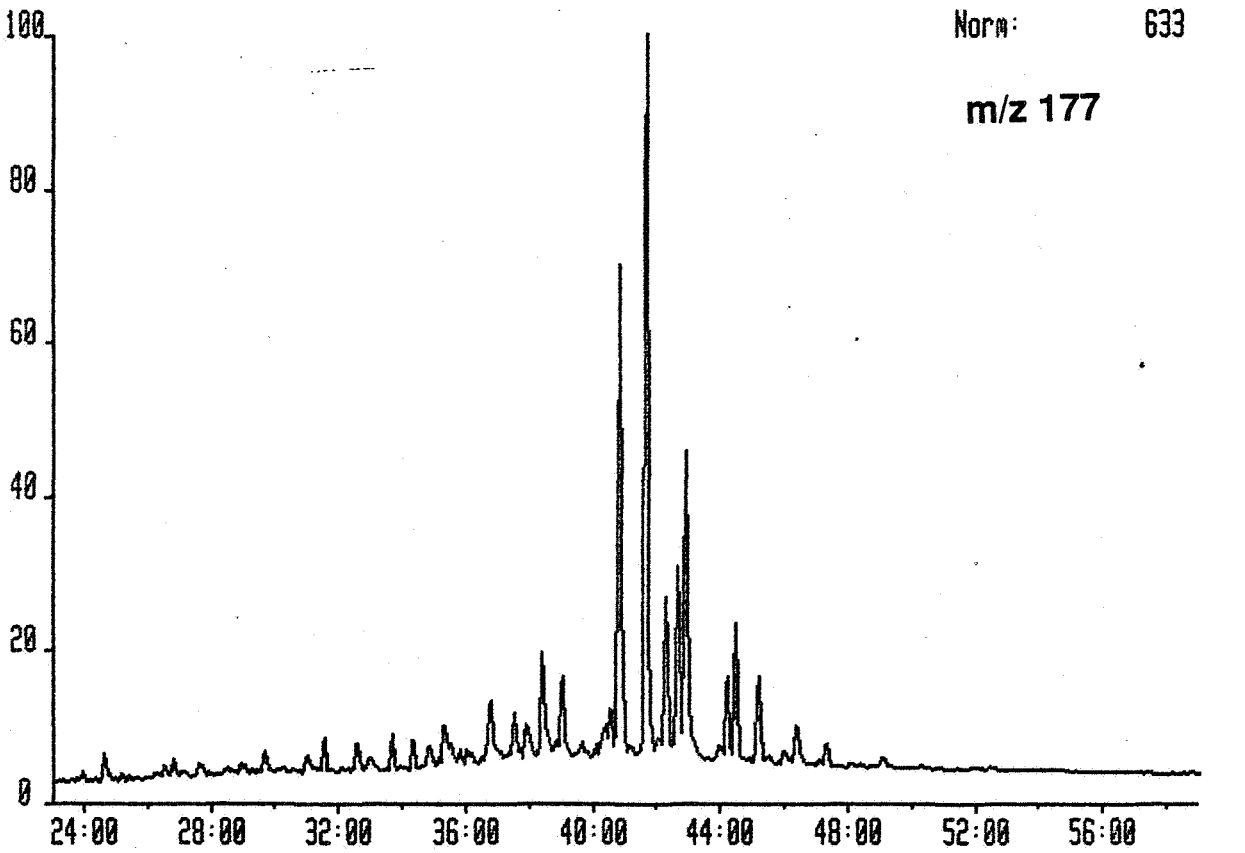

G1989SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA 34/7-16



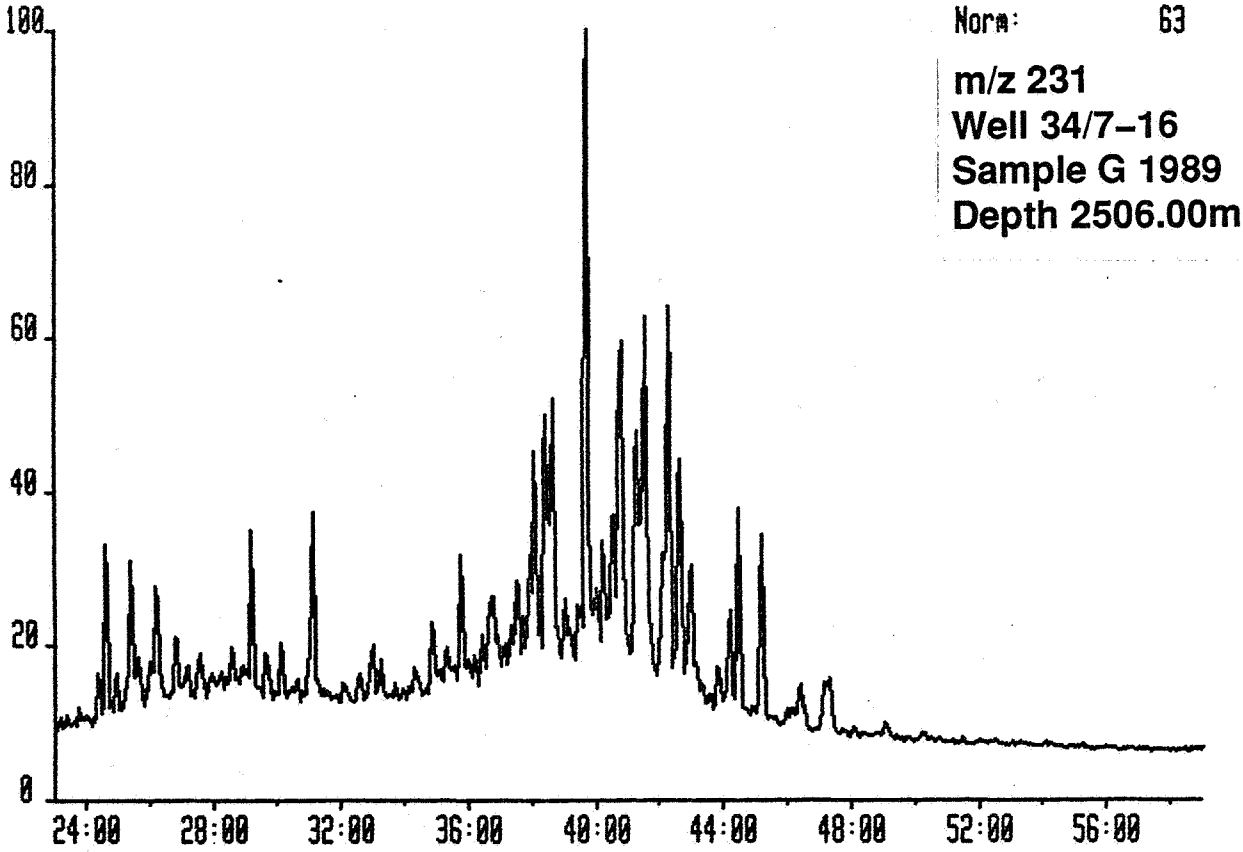
G1989SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA 34/7-16



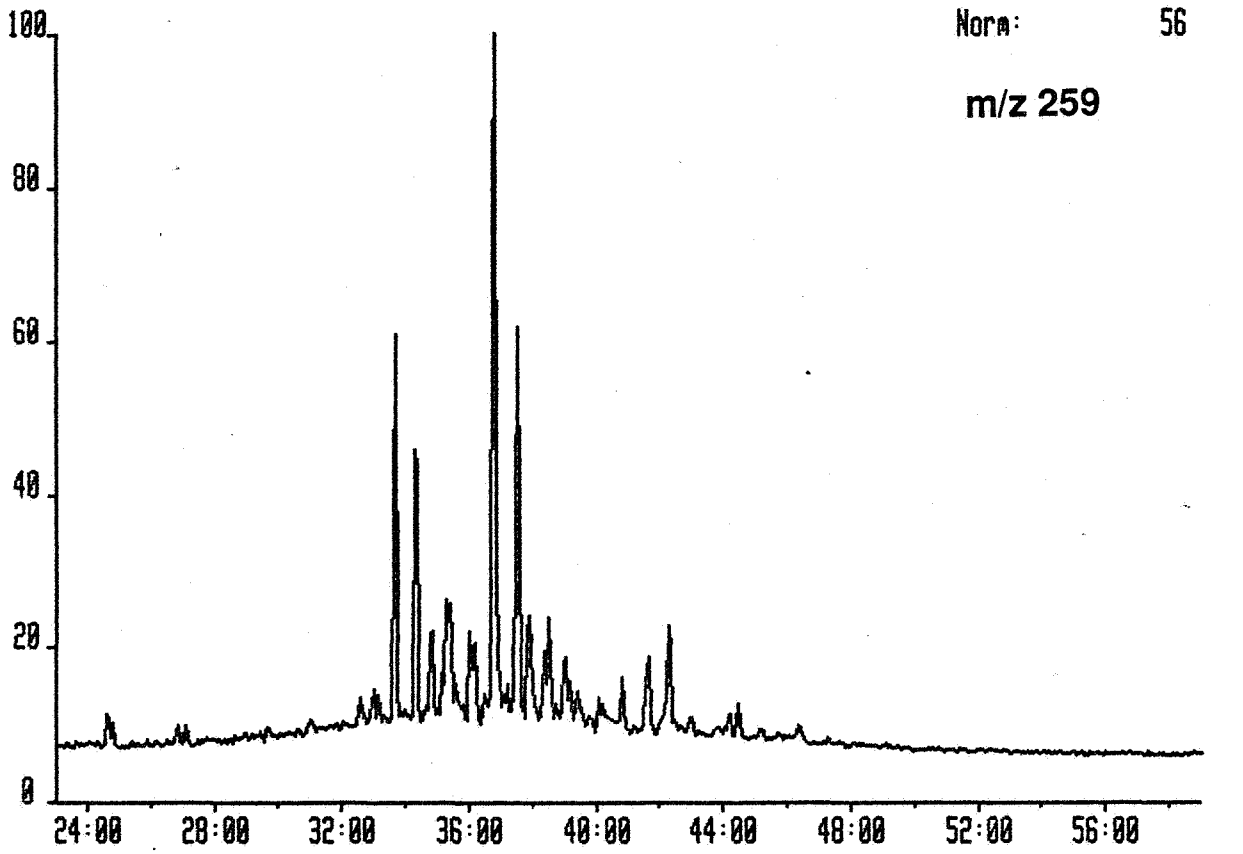

G1989SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA 34/7-16



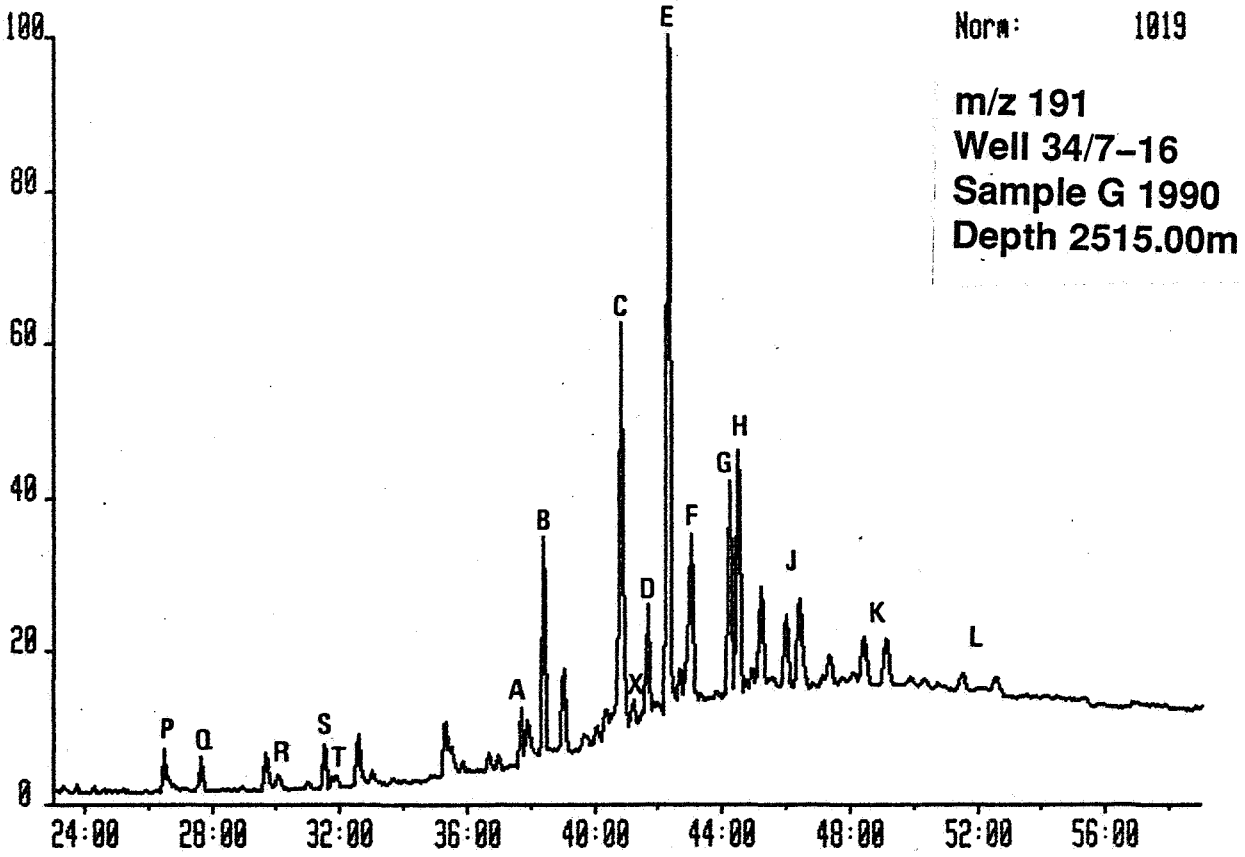
G1989SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA 34/7-16



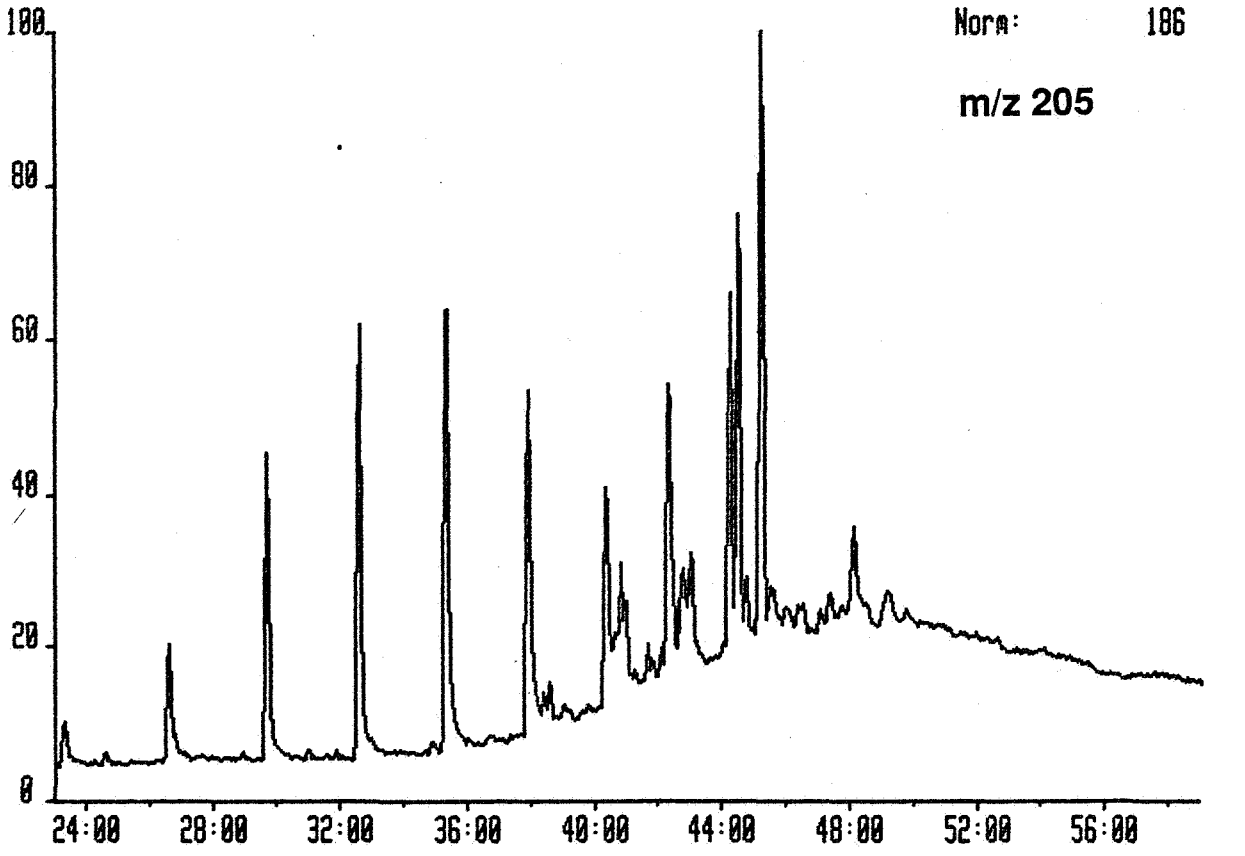

G1989SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA 34/7-16



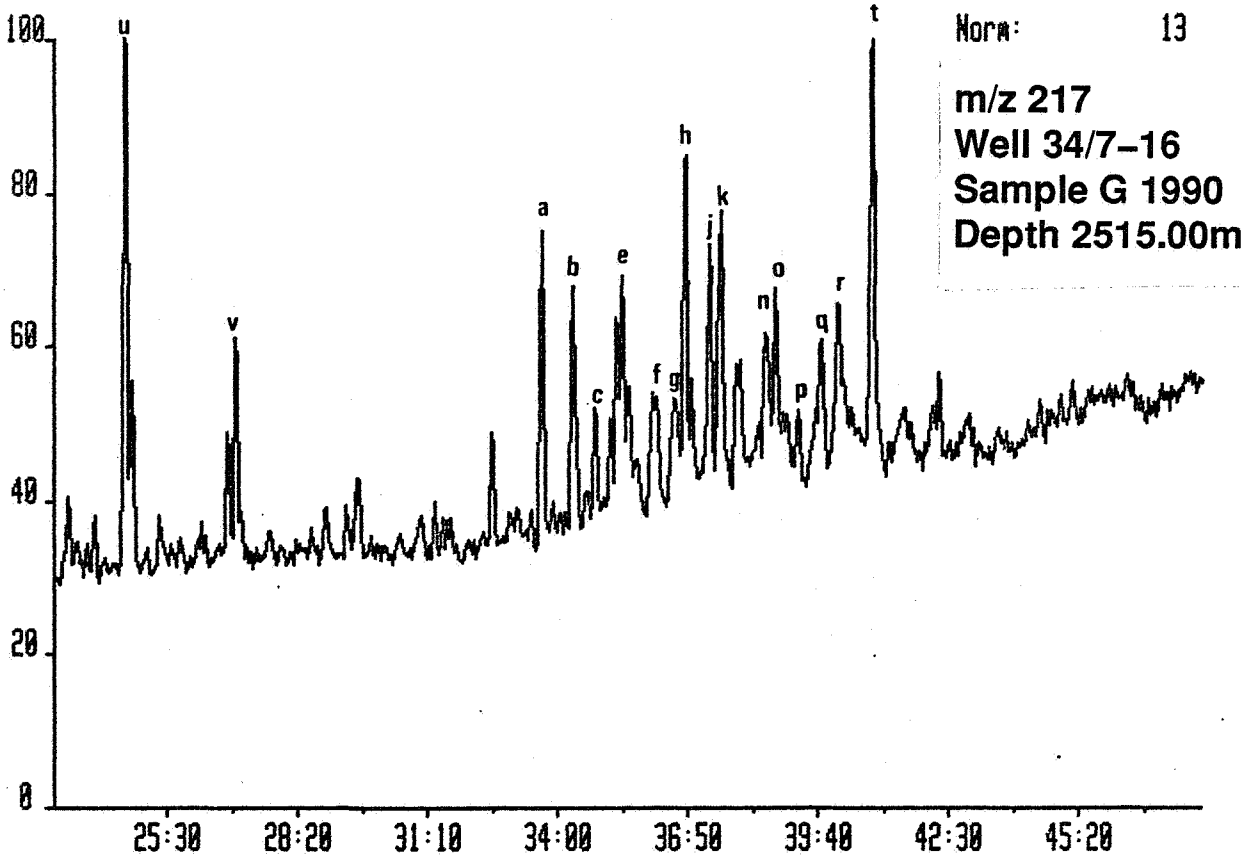
G1990SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA



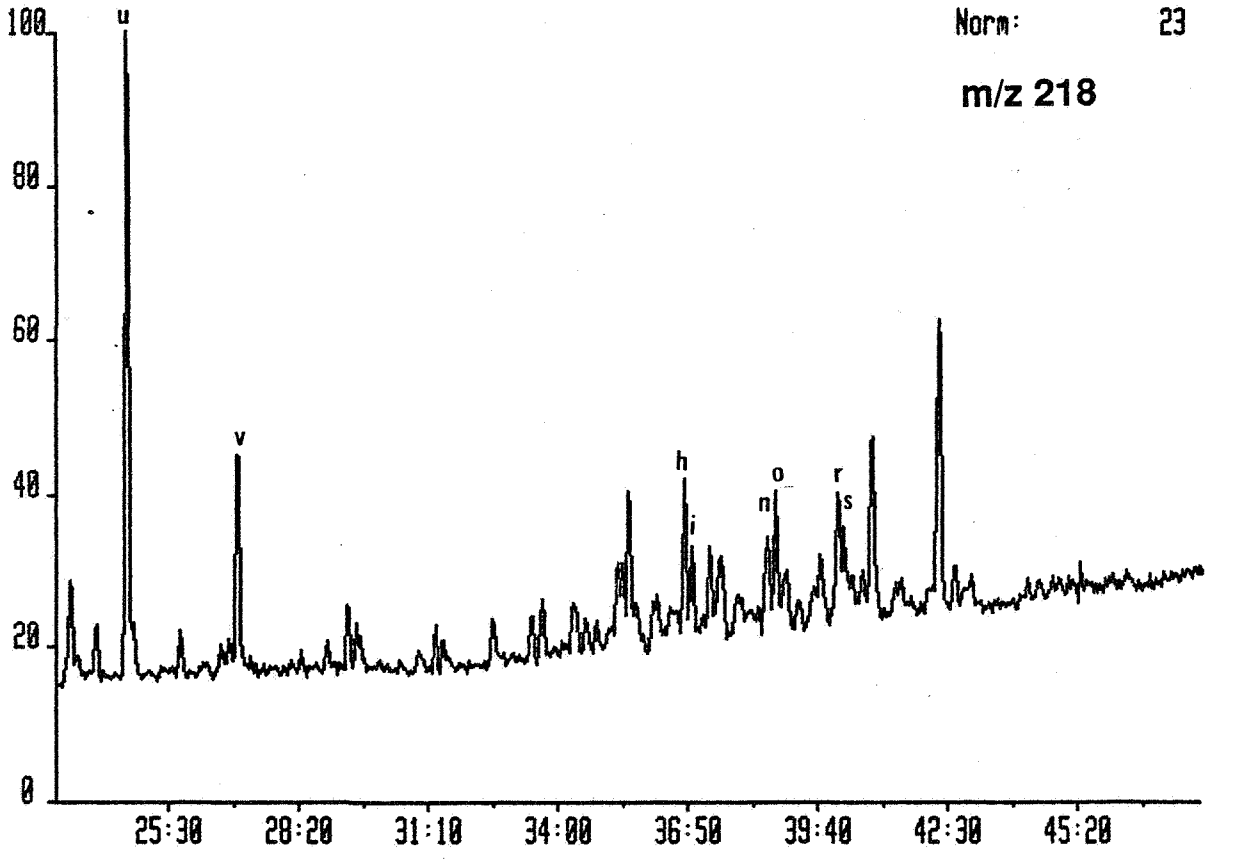

G1990SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA



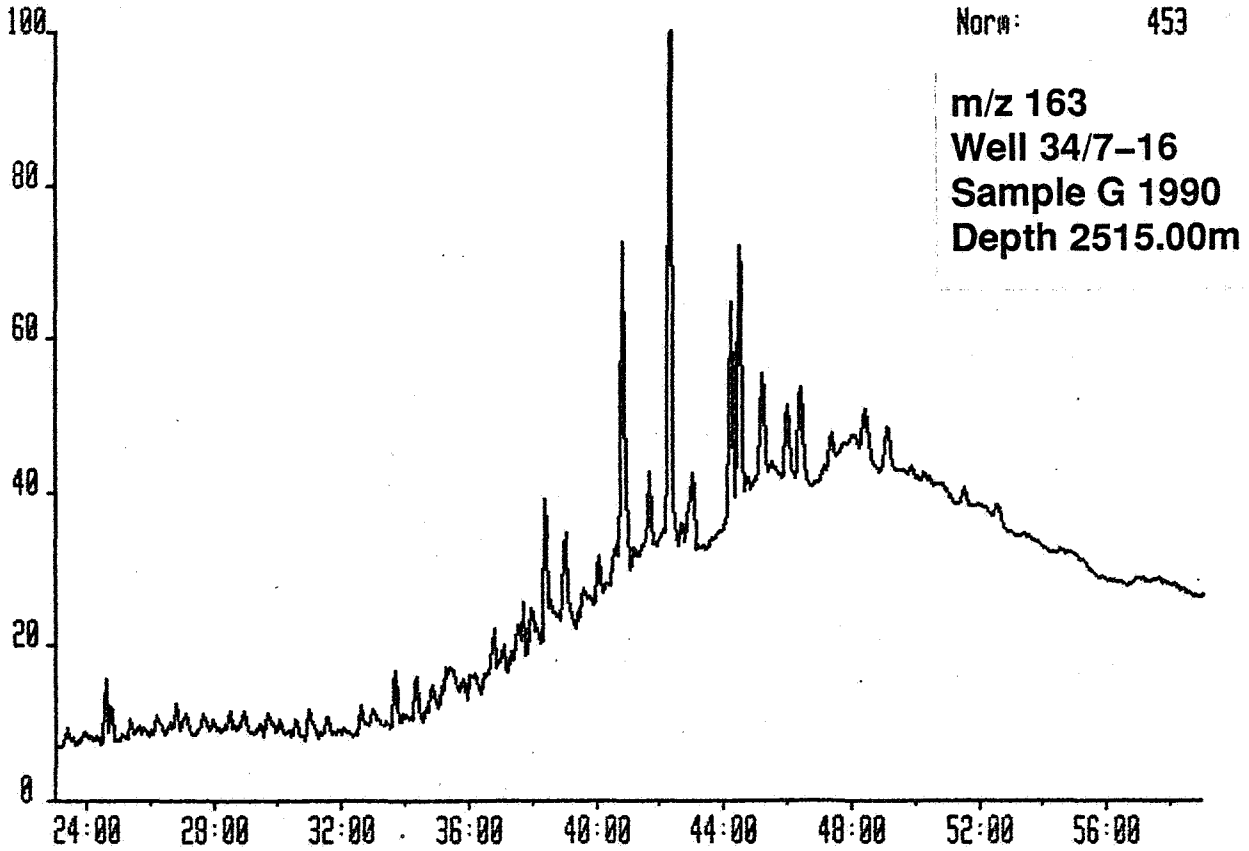
G1990SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA



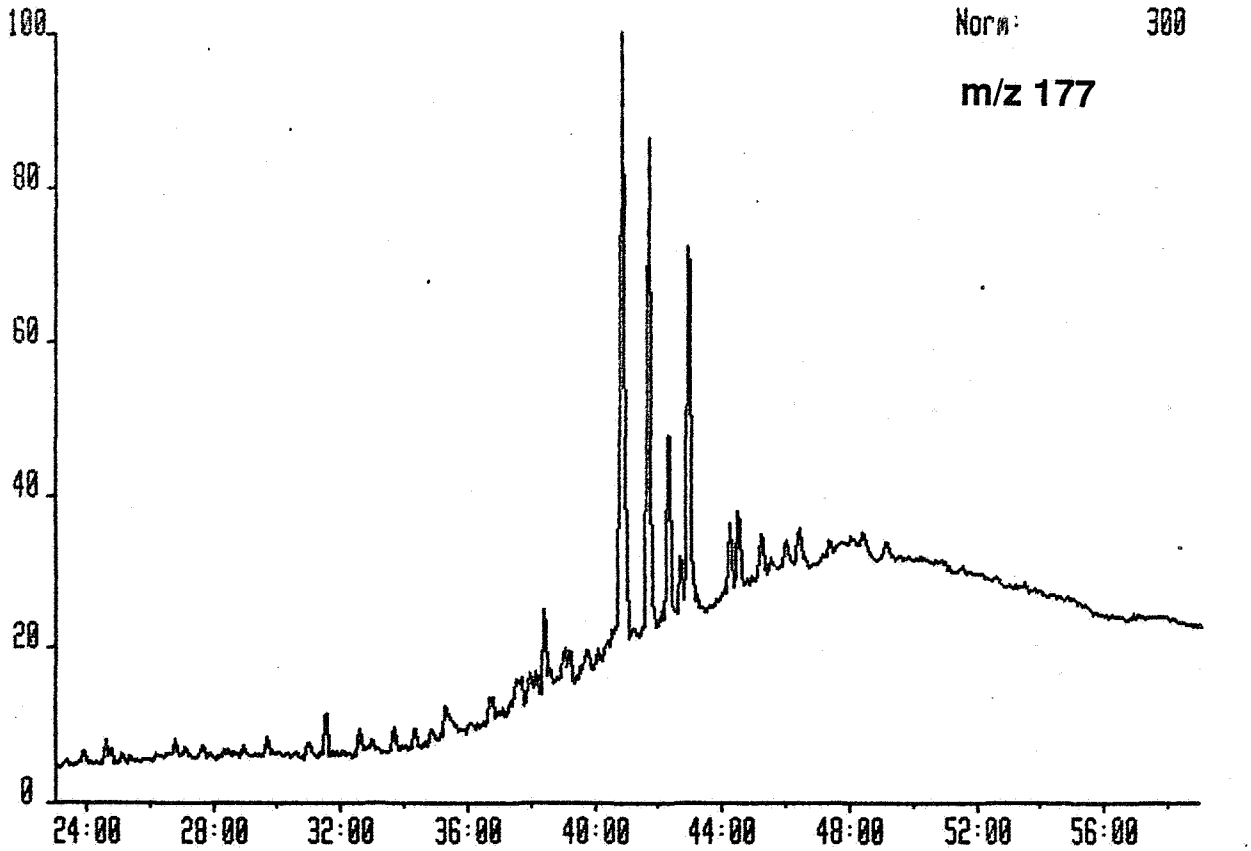

G1990SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA



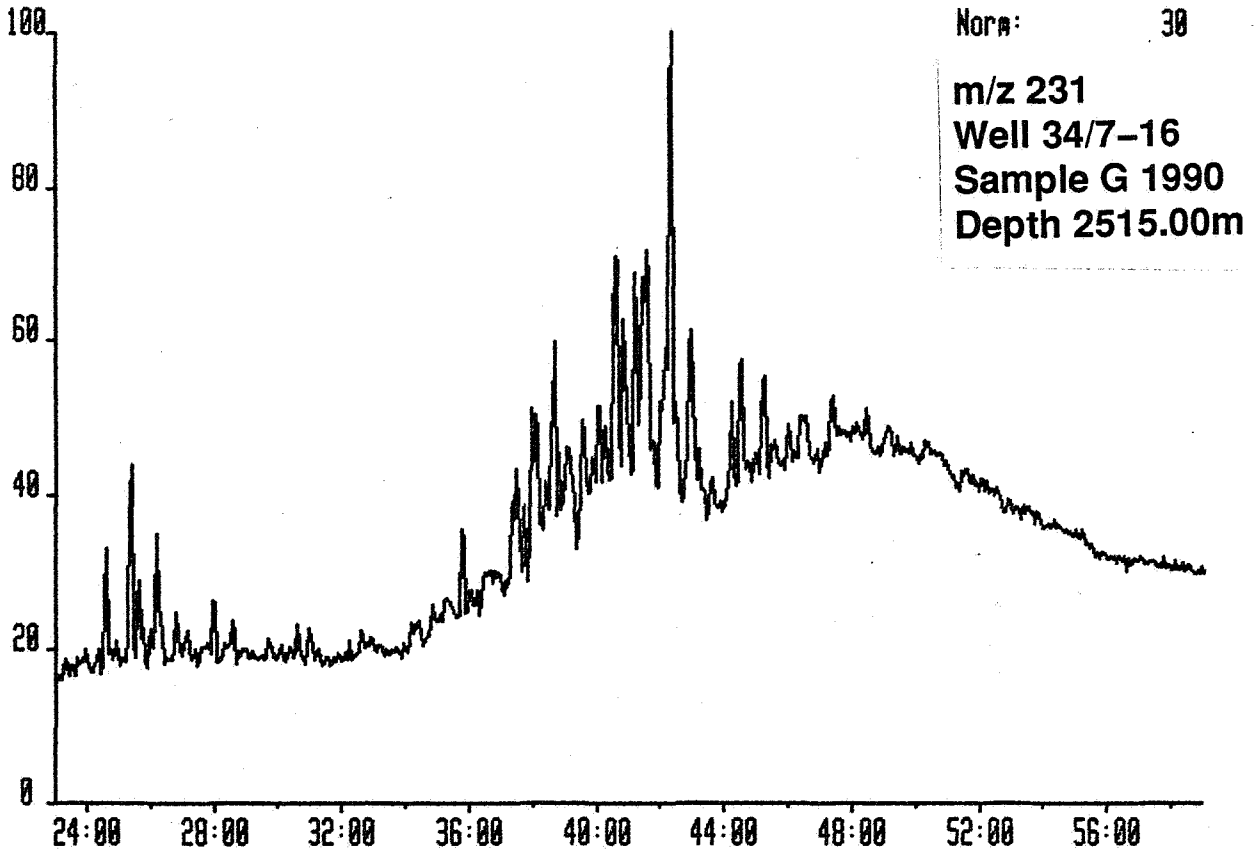
G1990SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA



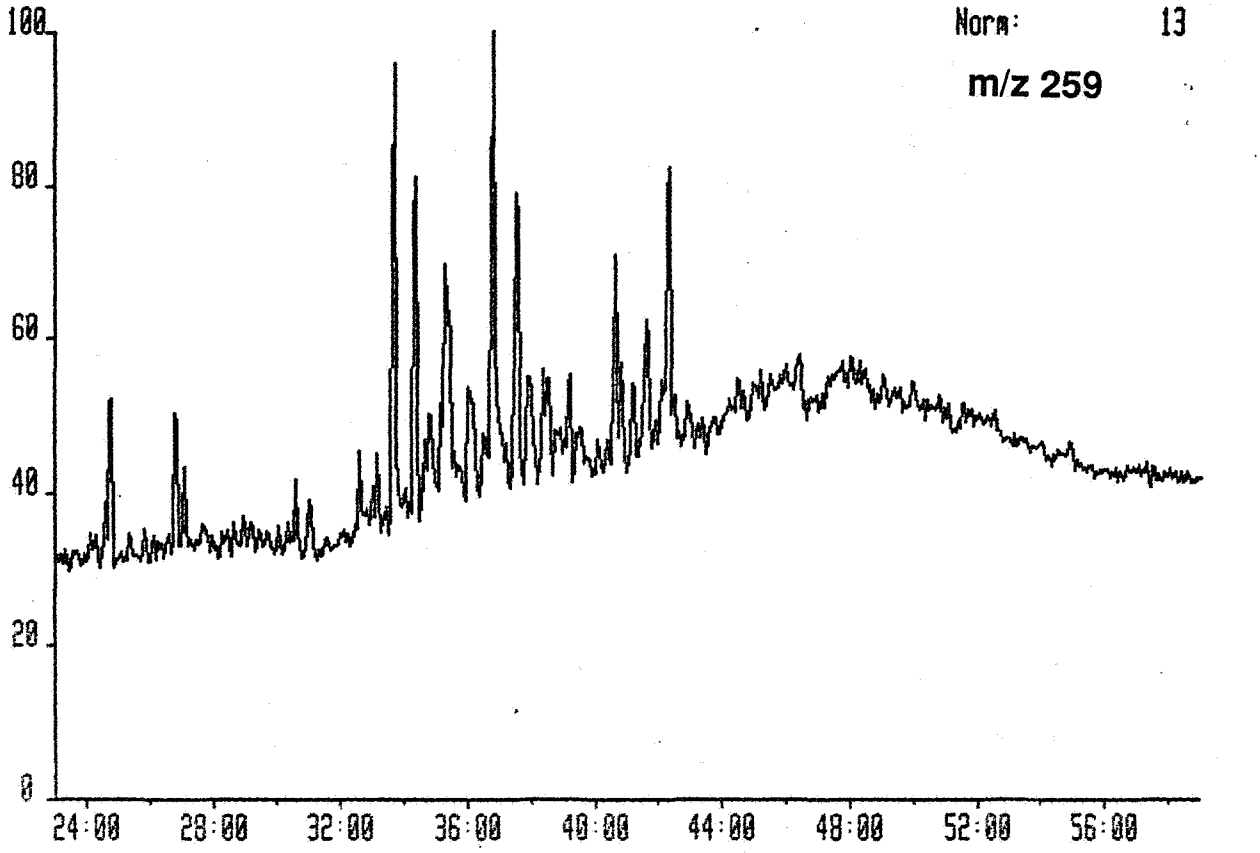

G1990SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA



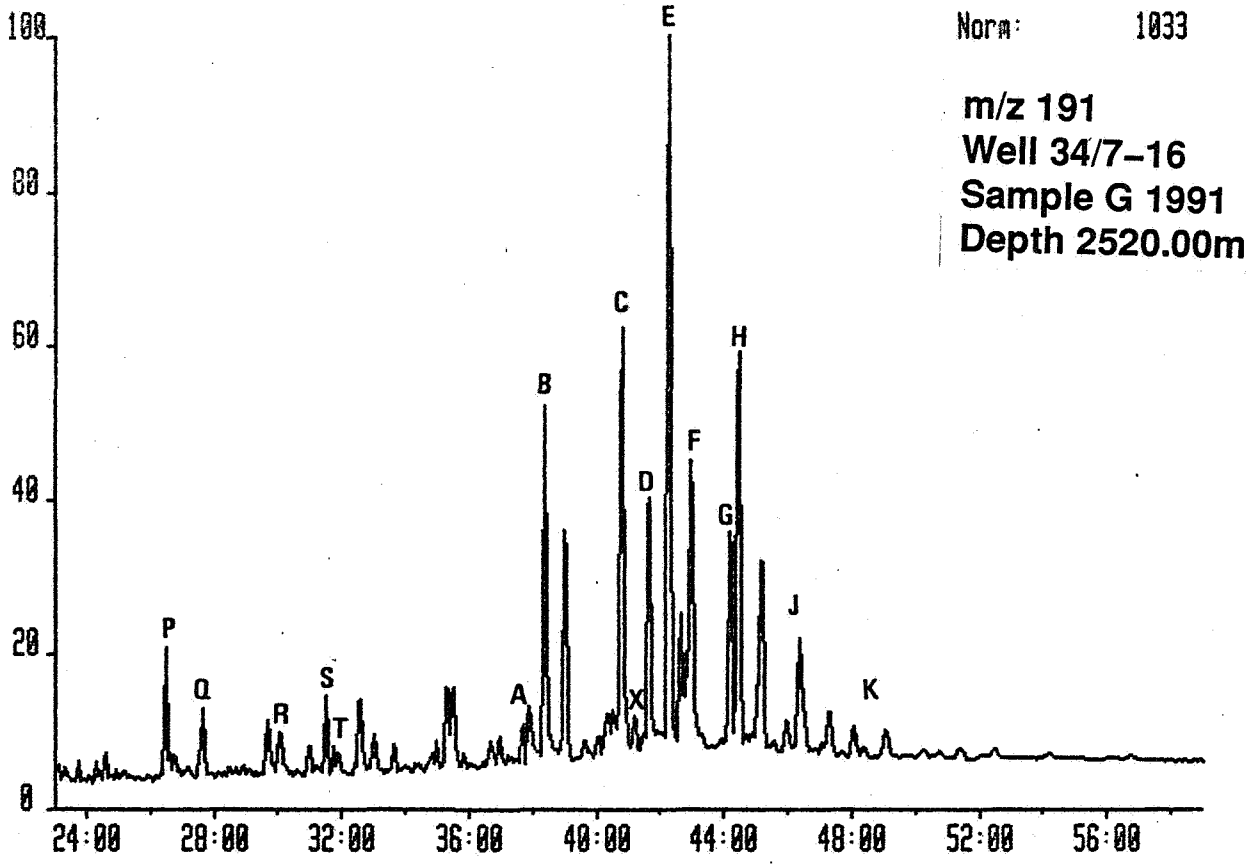
G1990SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA



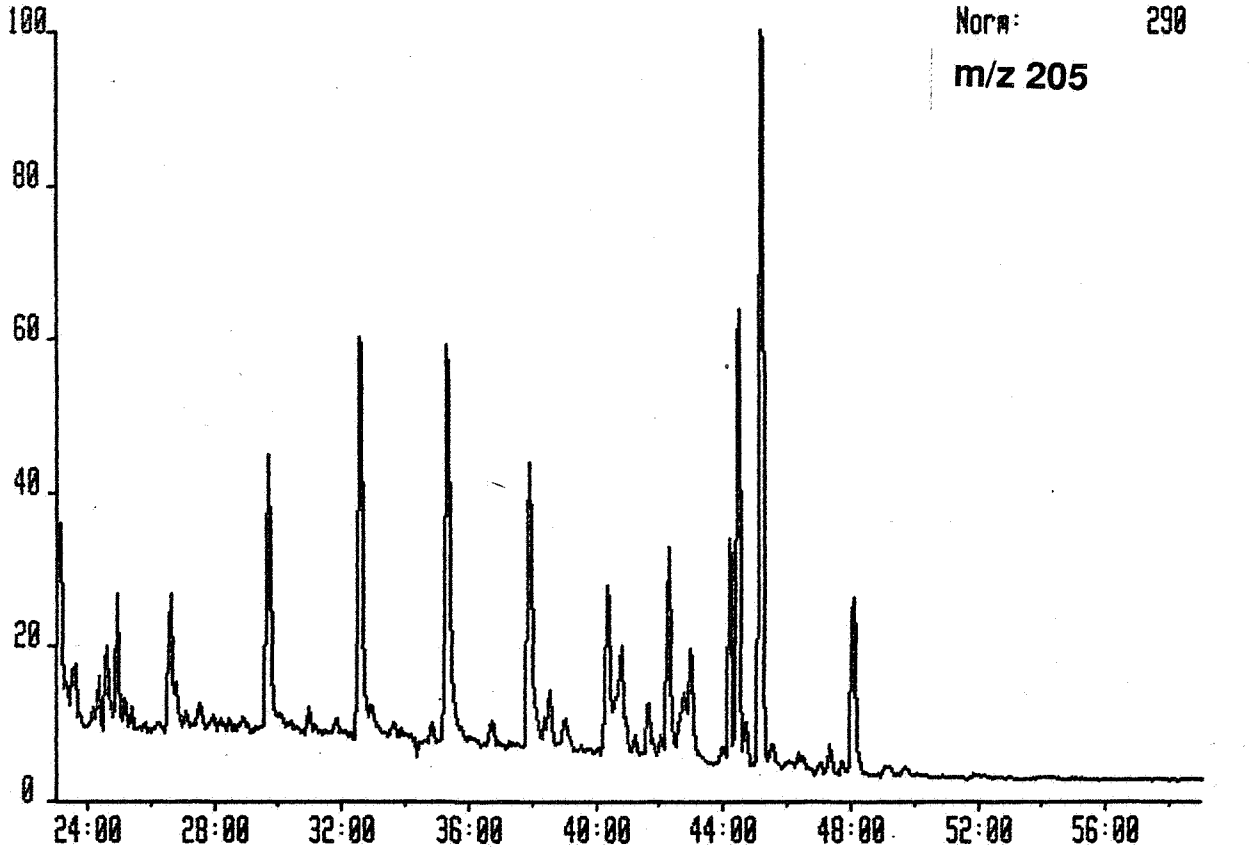

G1990SAT1 11-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA



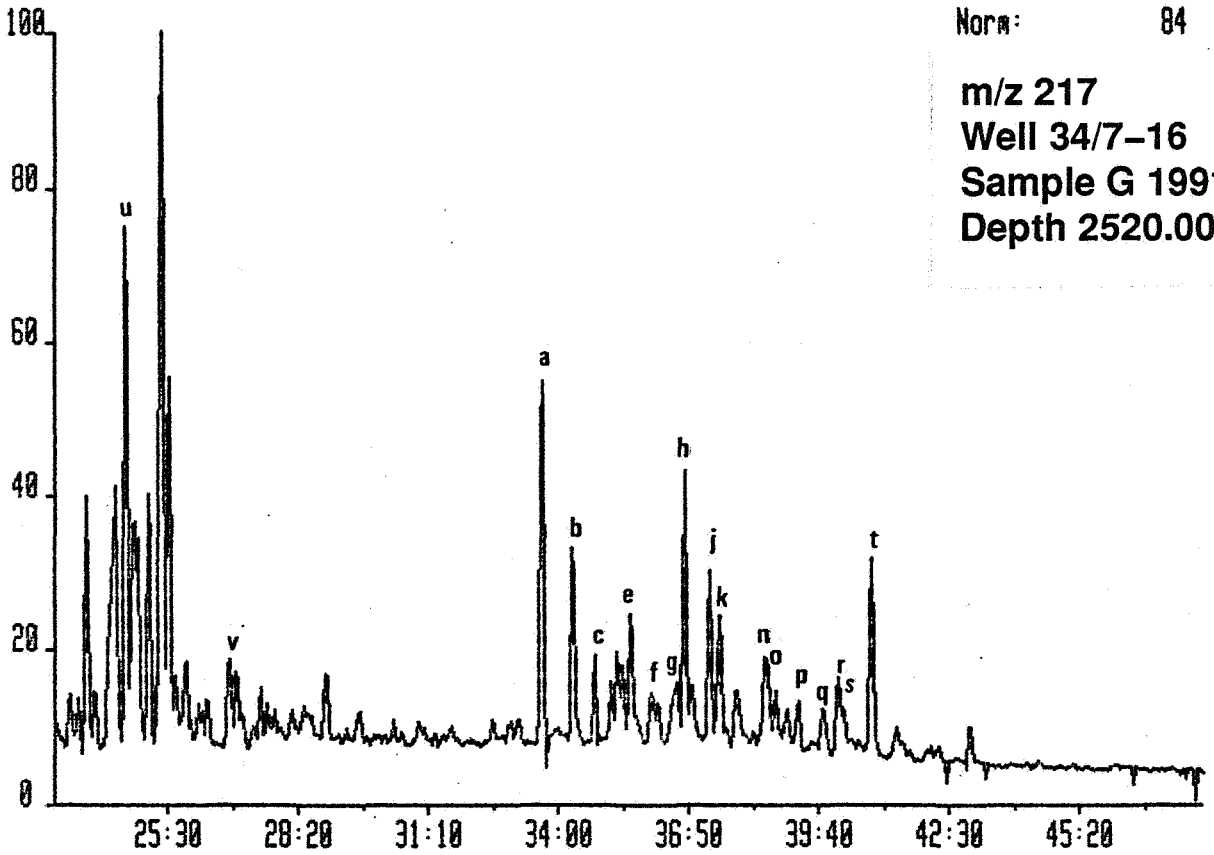
G1991SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA 34/7-16



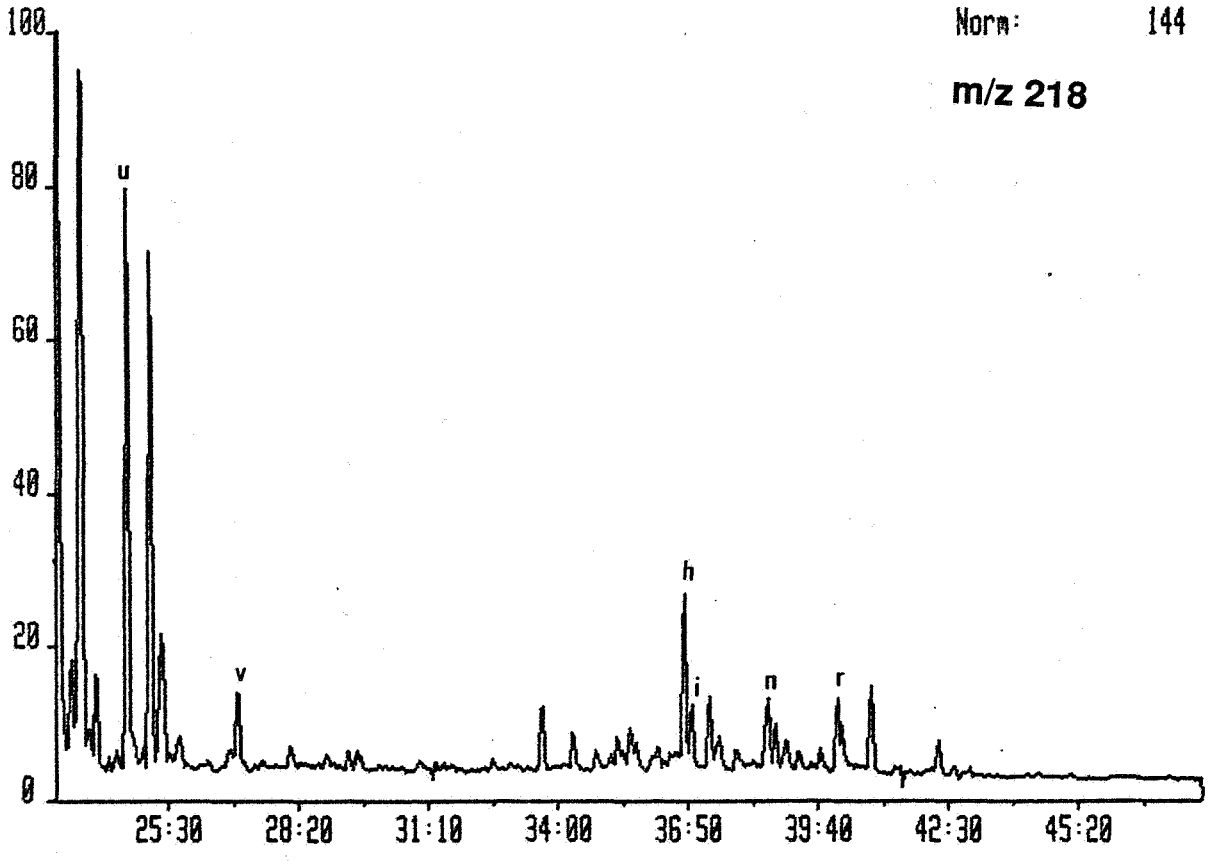

G1991SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA 34/7-16



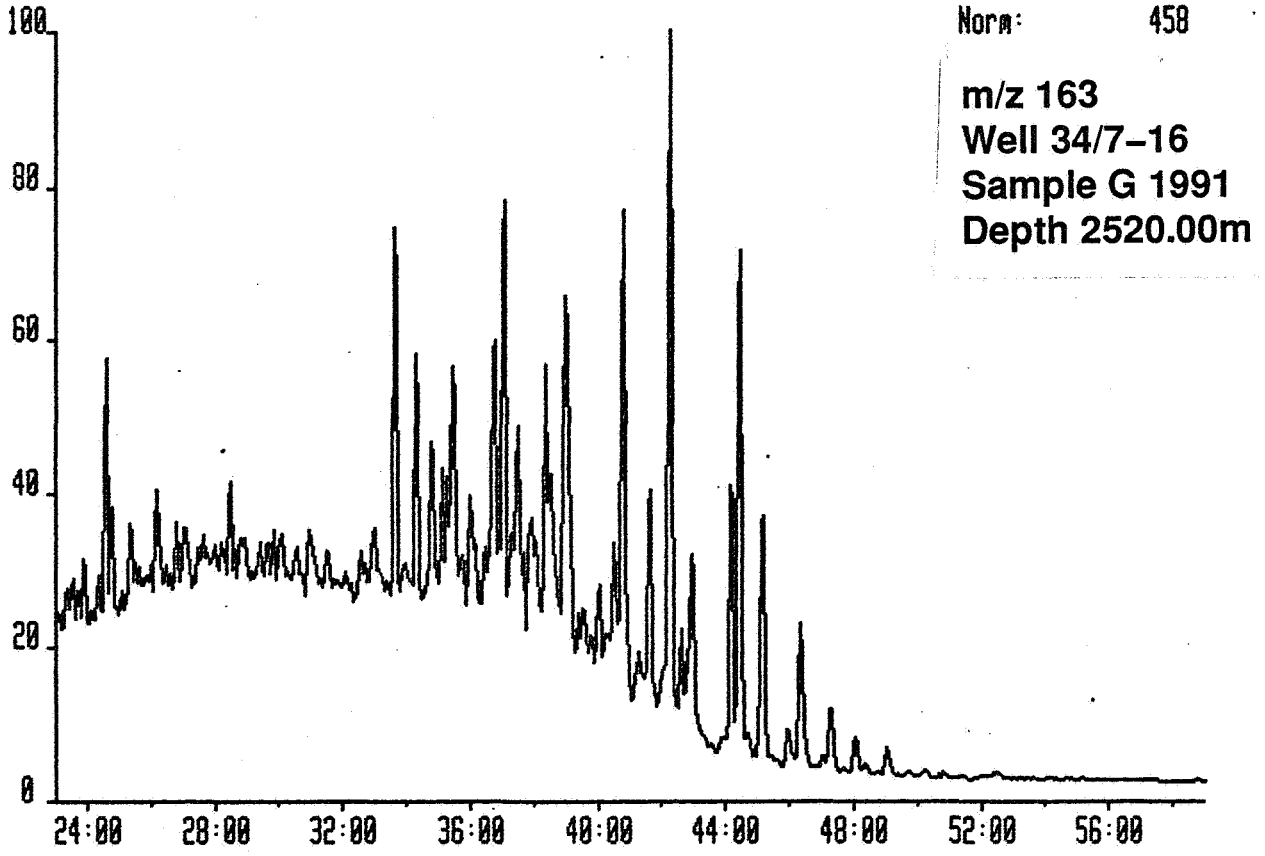
G1991SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA 34/7-16



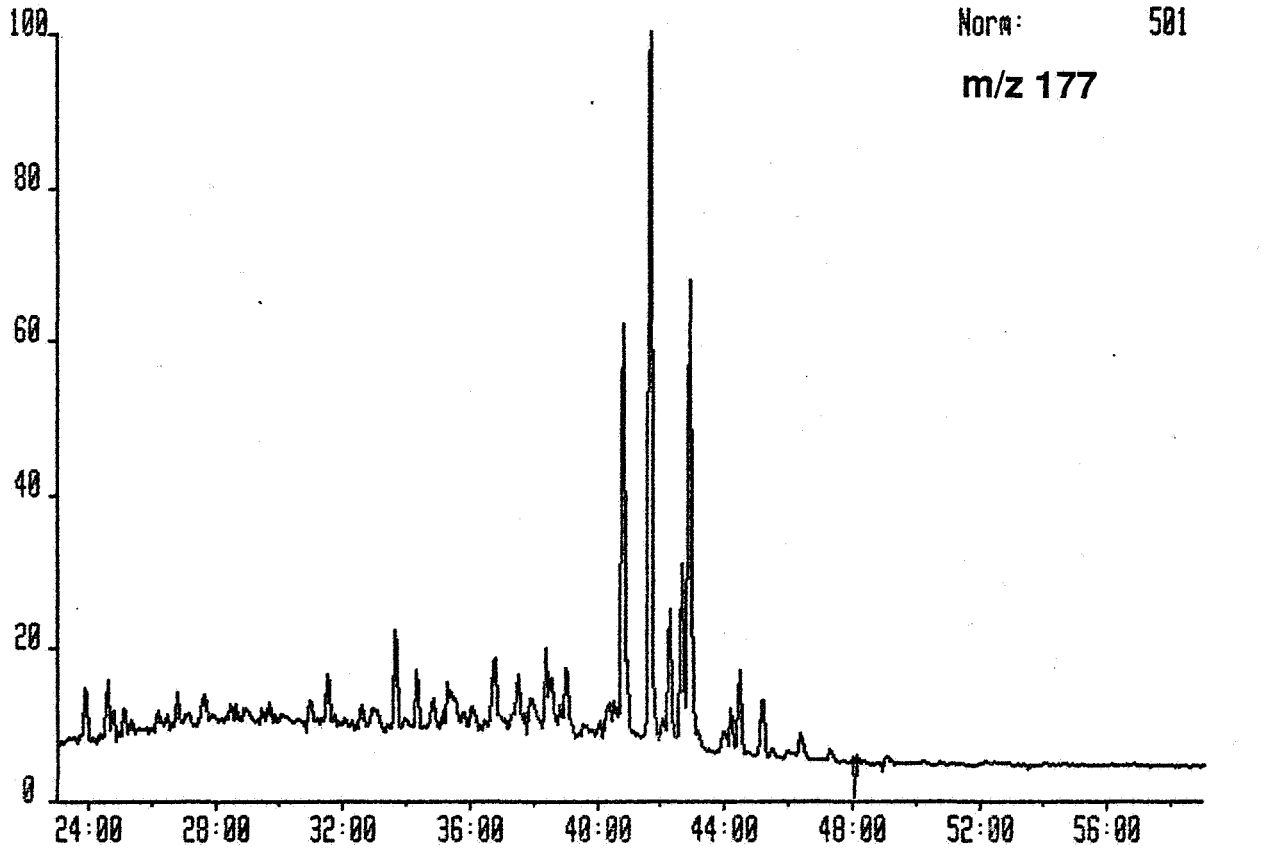

G1991SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA 34/7-16



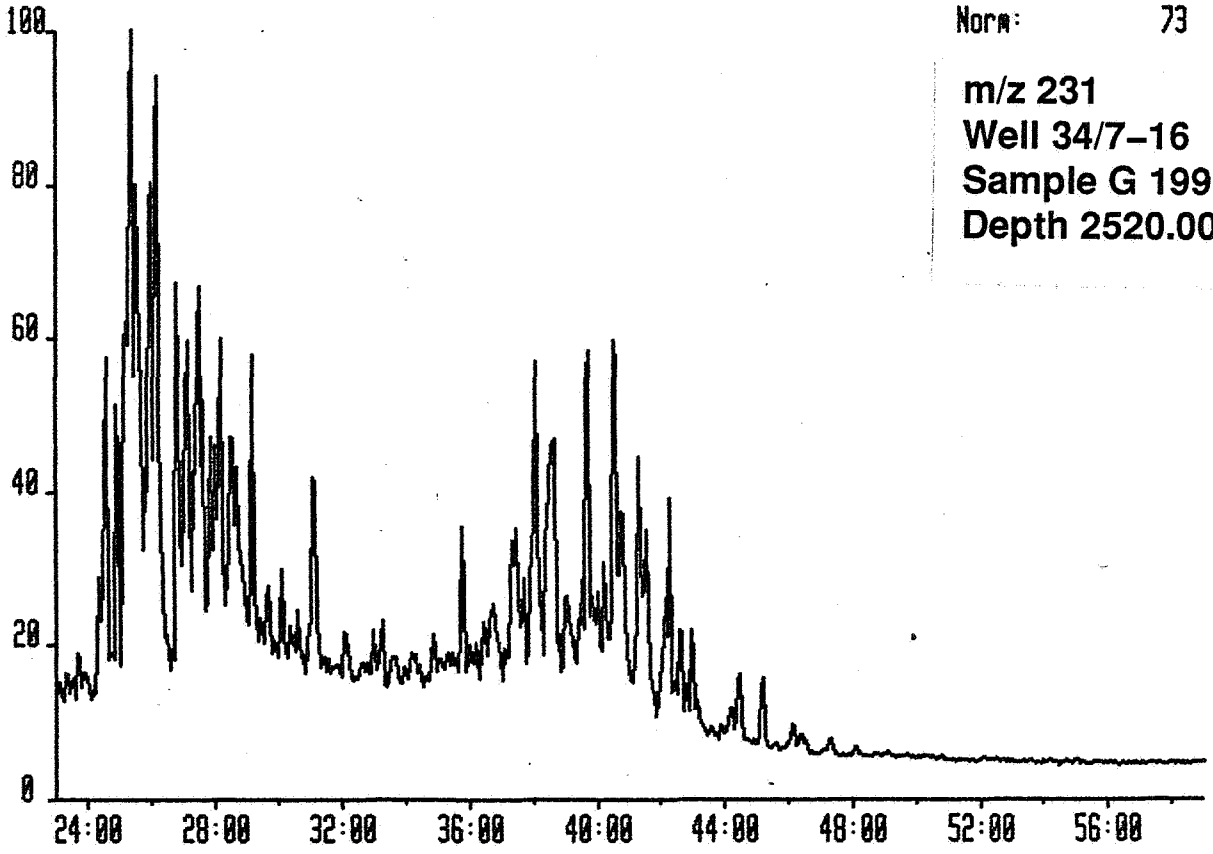
G1991SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA 34/7-16



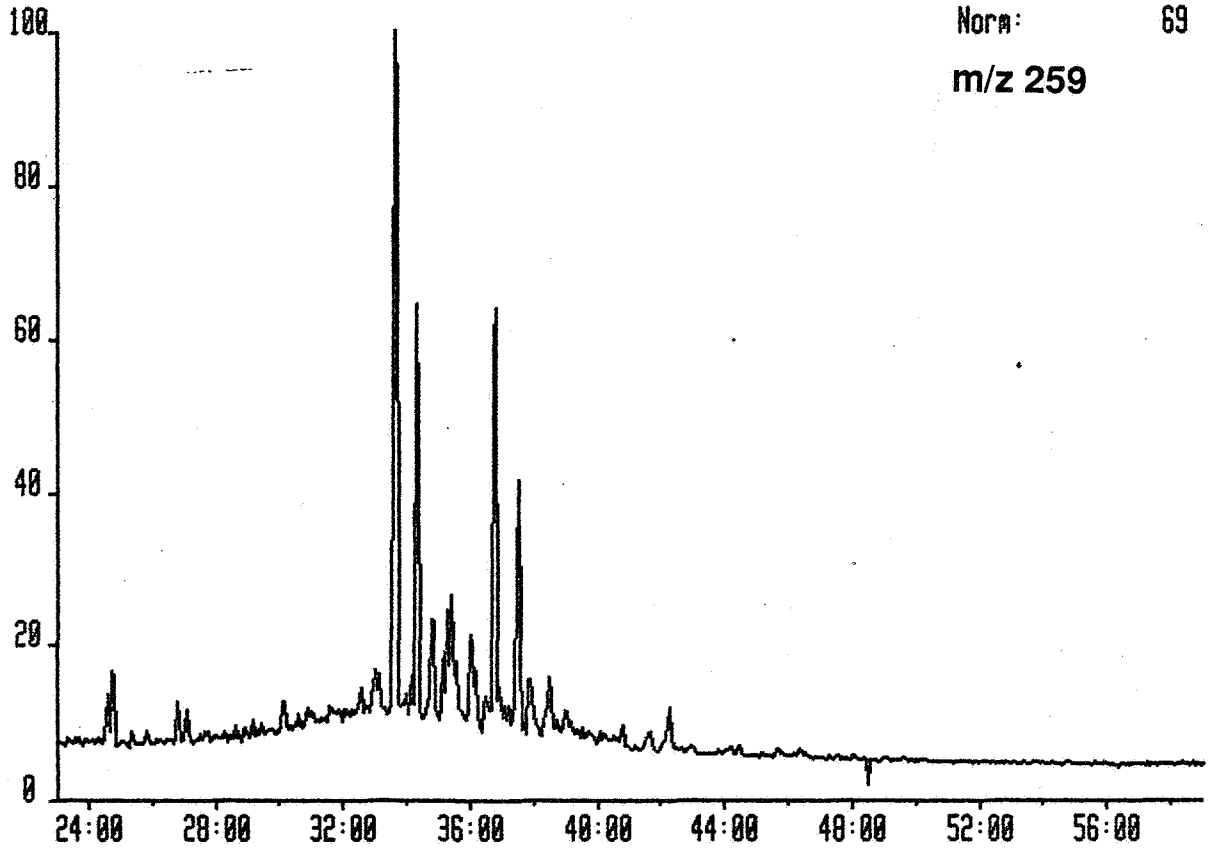

G1991SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA 34/7-16



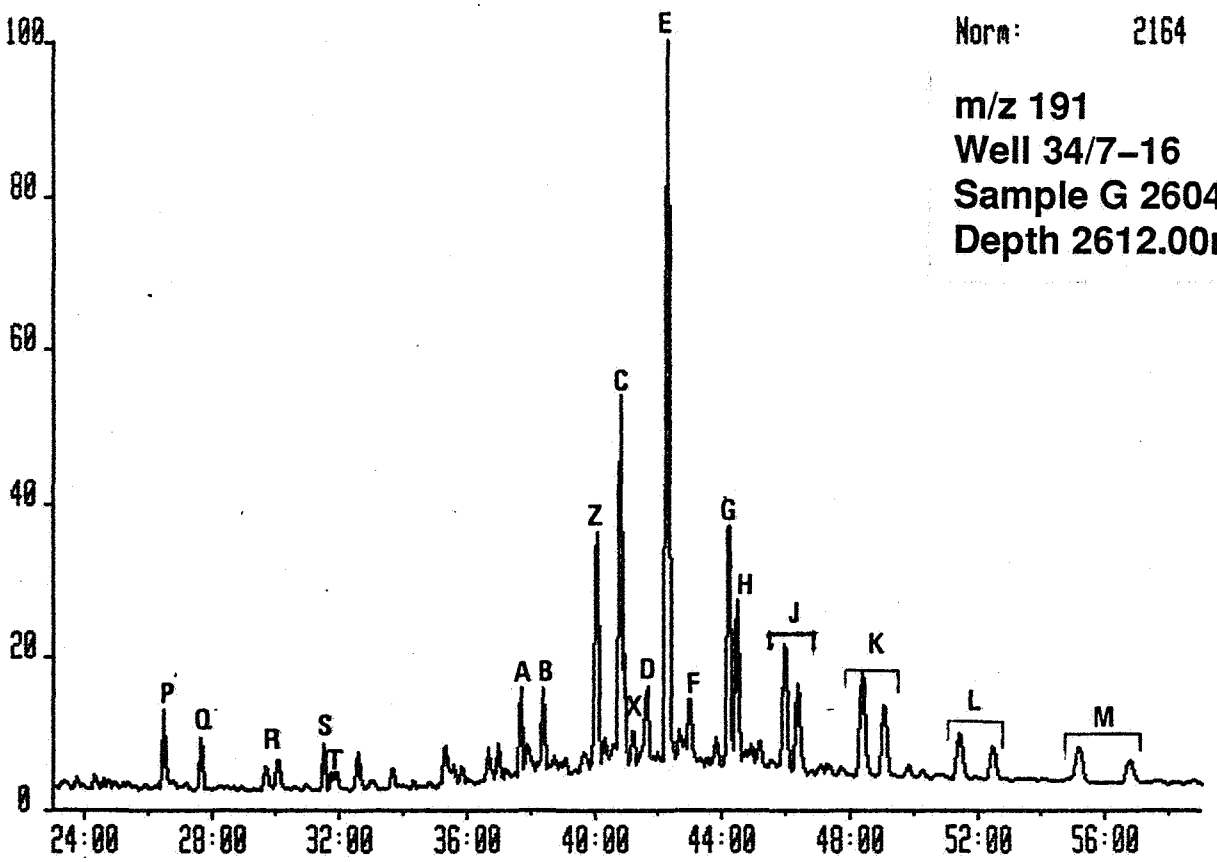
G1991SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA 34/7-16



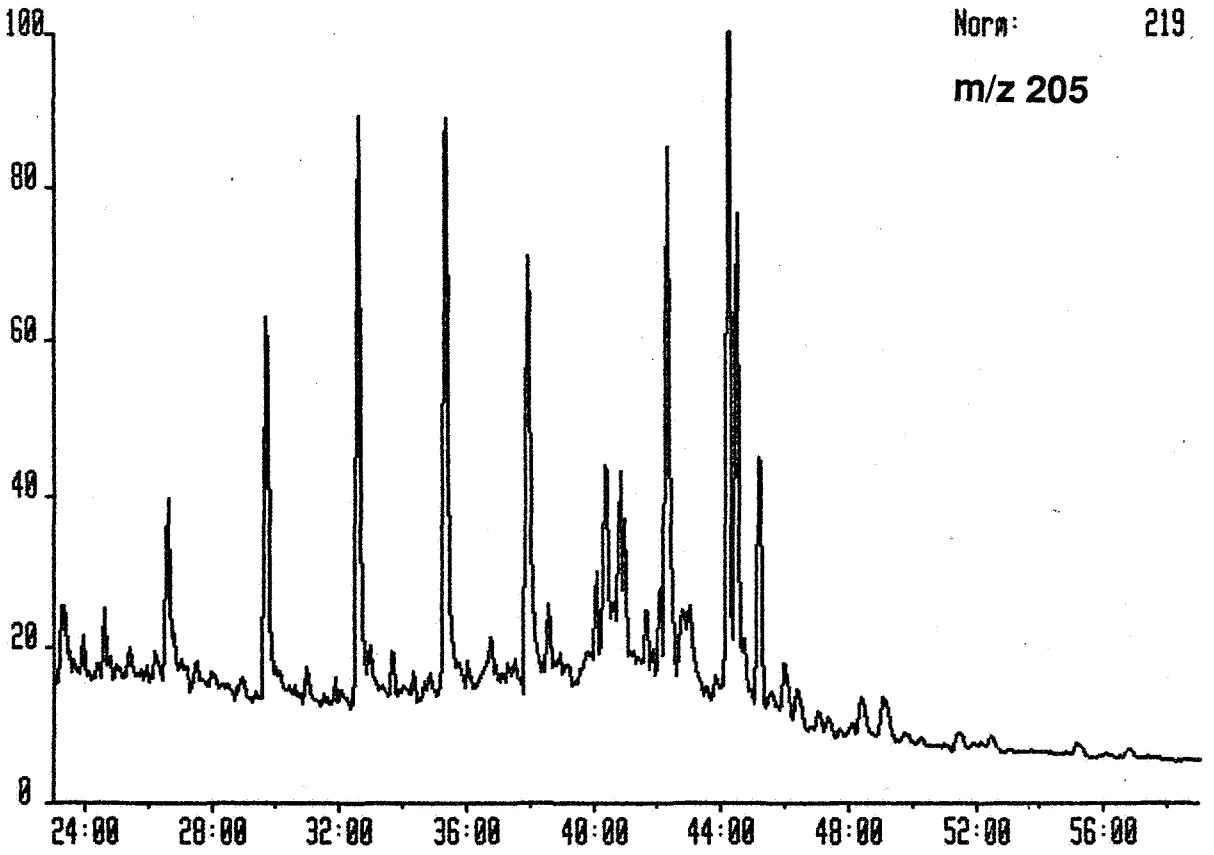

G1991SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA 34/7-16



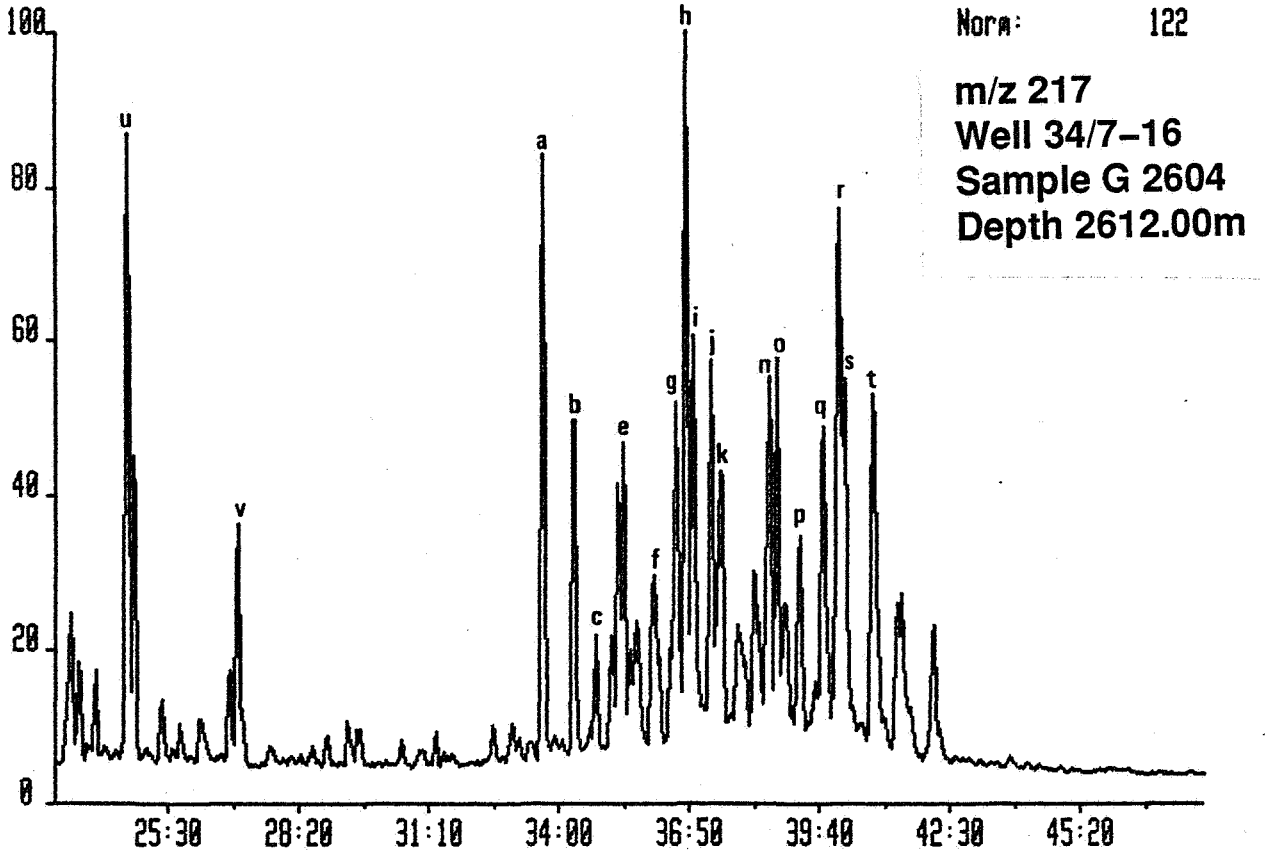
G2604SAT1 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA 34/7-16



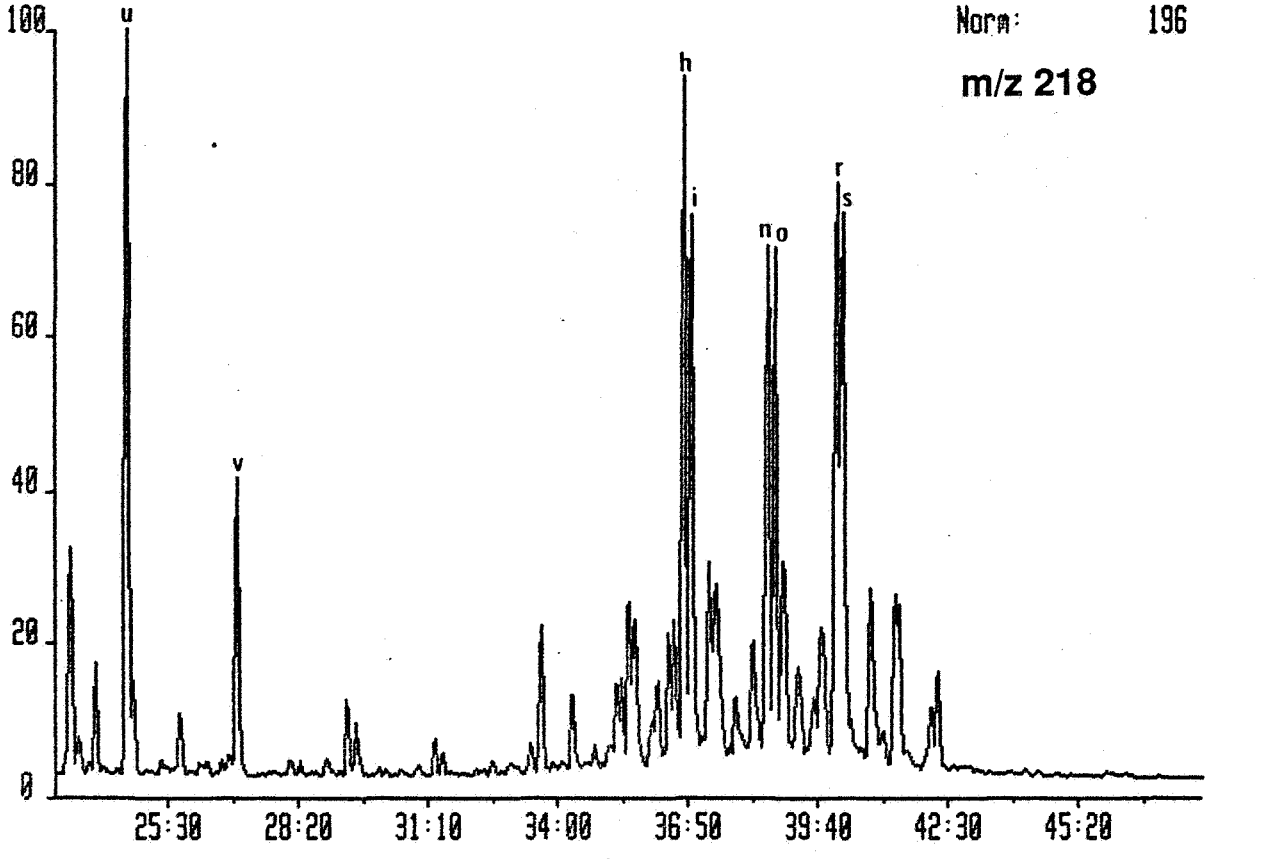

G2604SAT1 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA 34/7-16



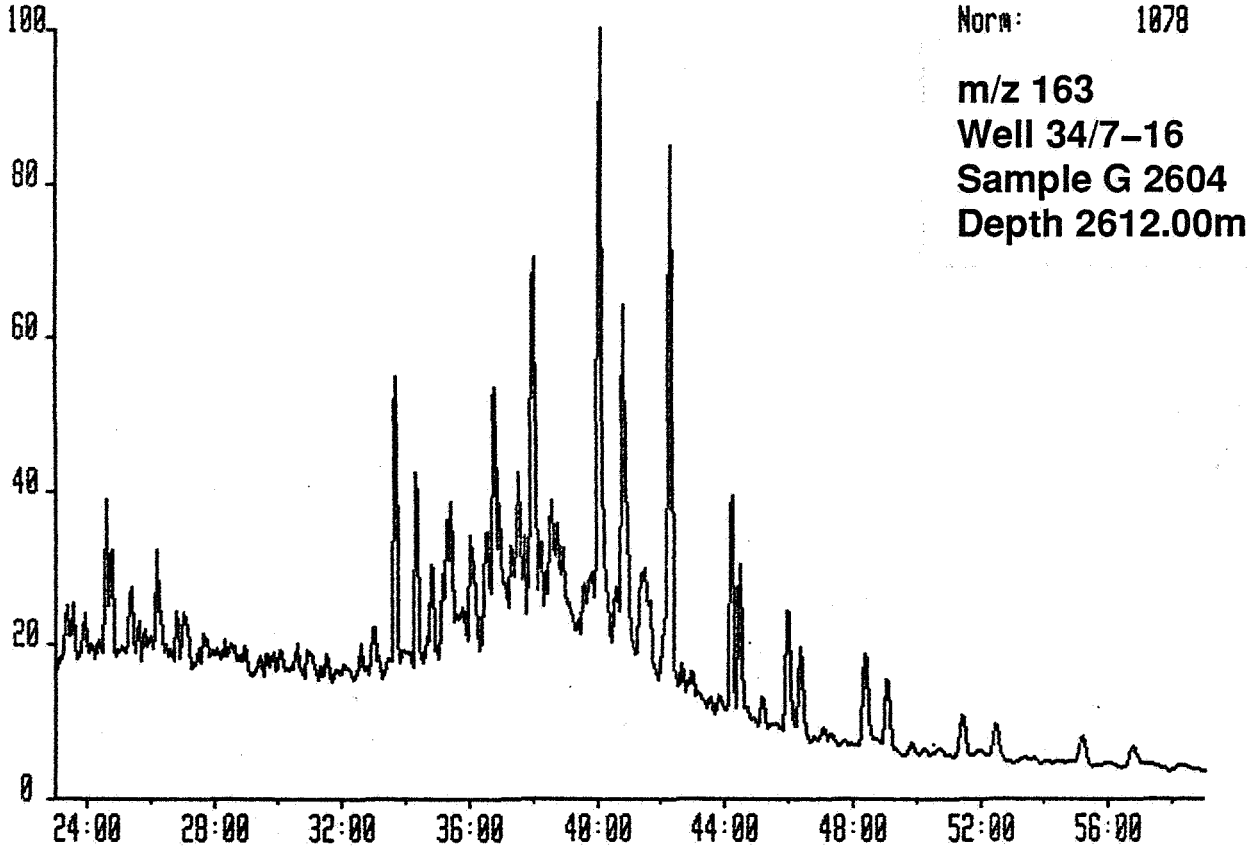
G2604SAT1 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA 34/7-16



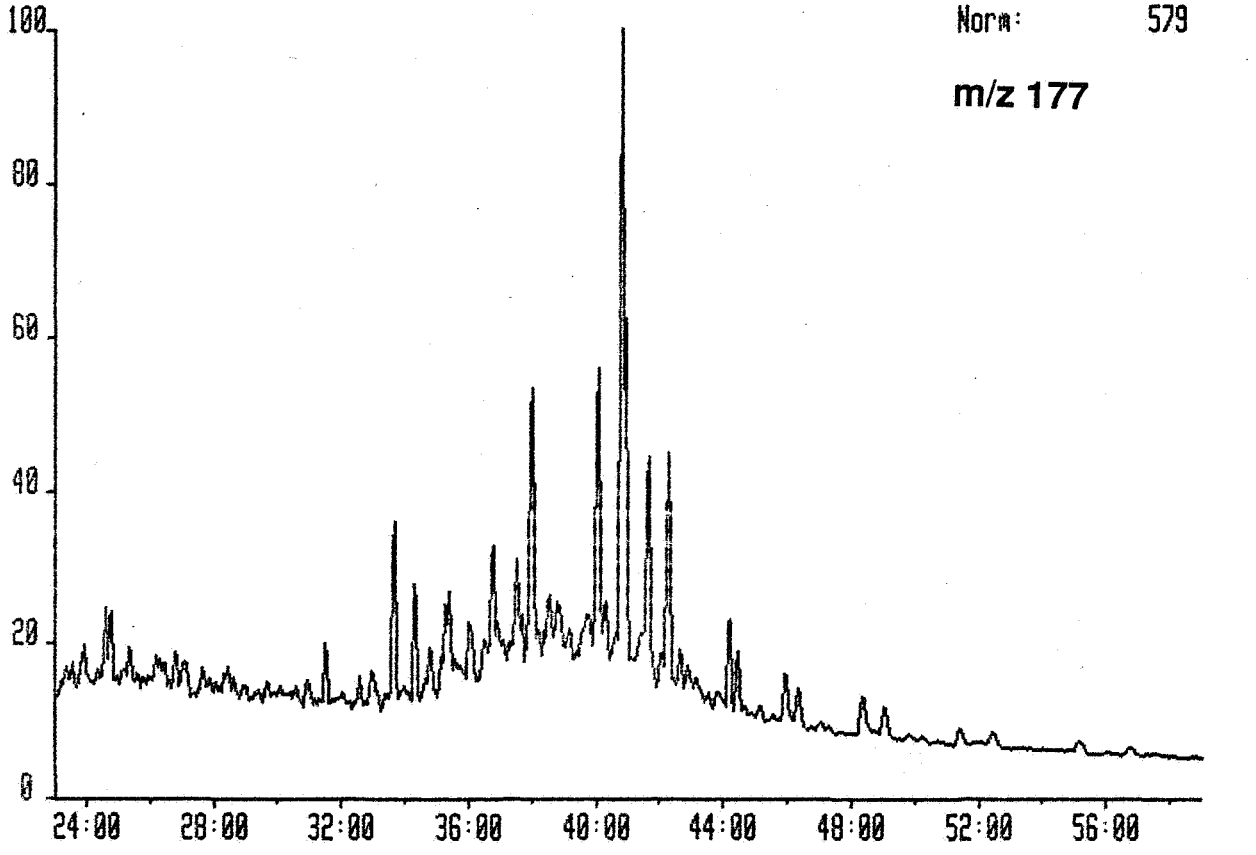

G2604SAT1 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA 34/7-16



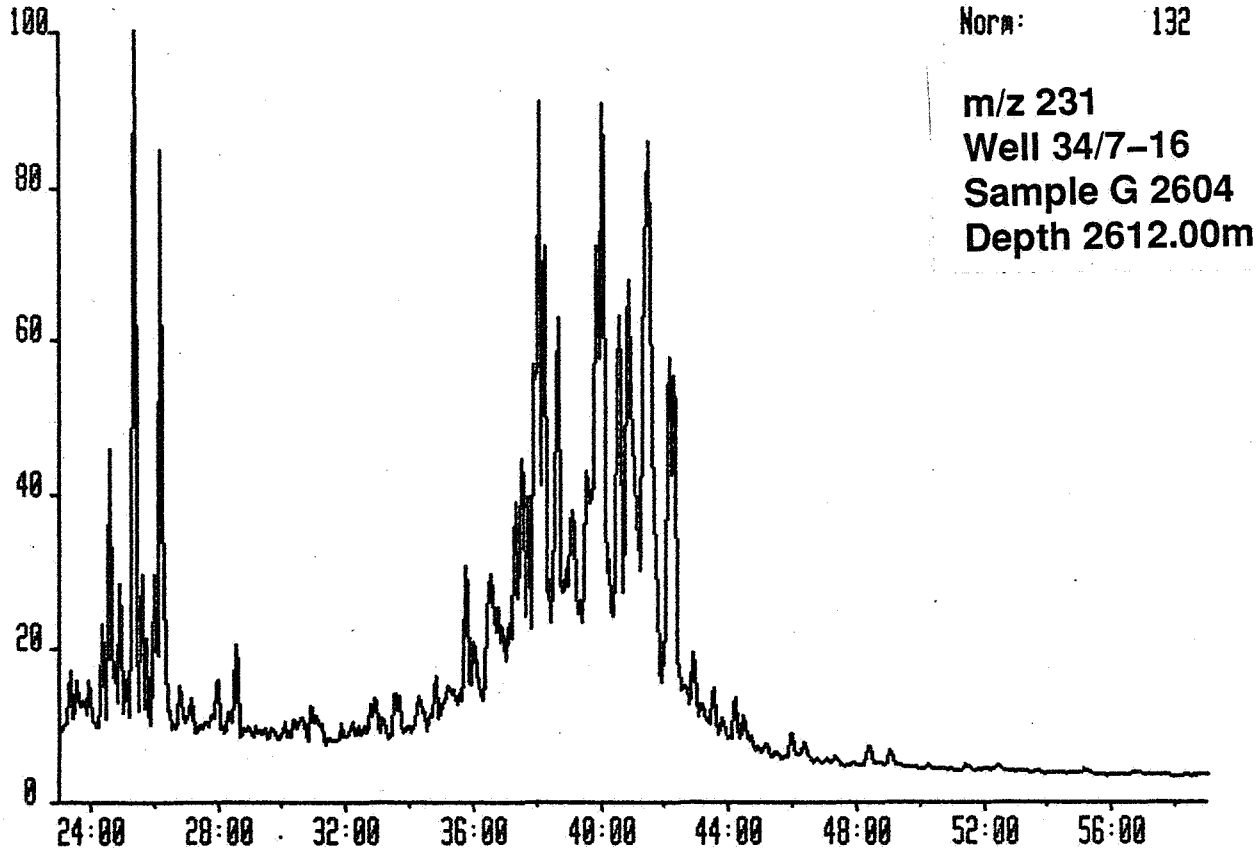
G2604SAT1 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA 34/7-16



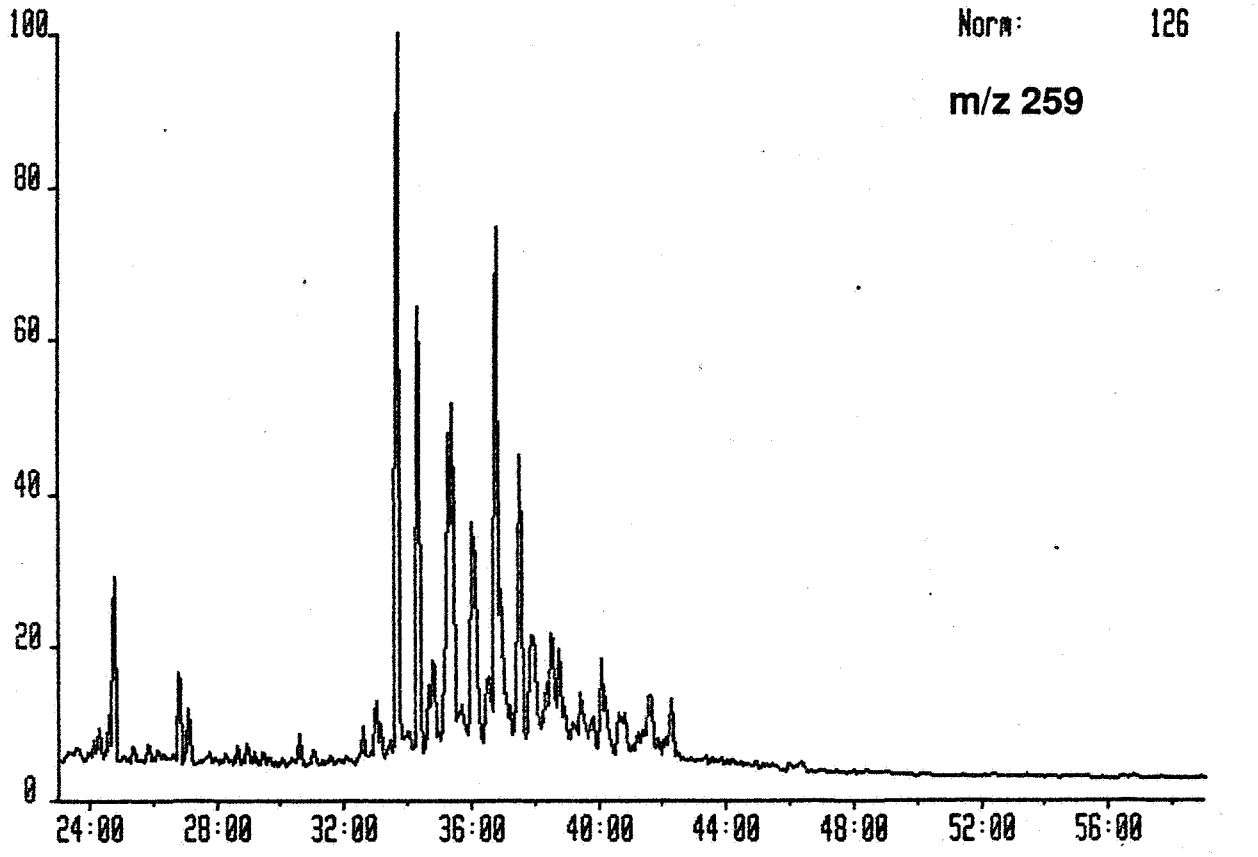

G2604SAT1 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA 34/7-16



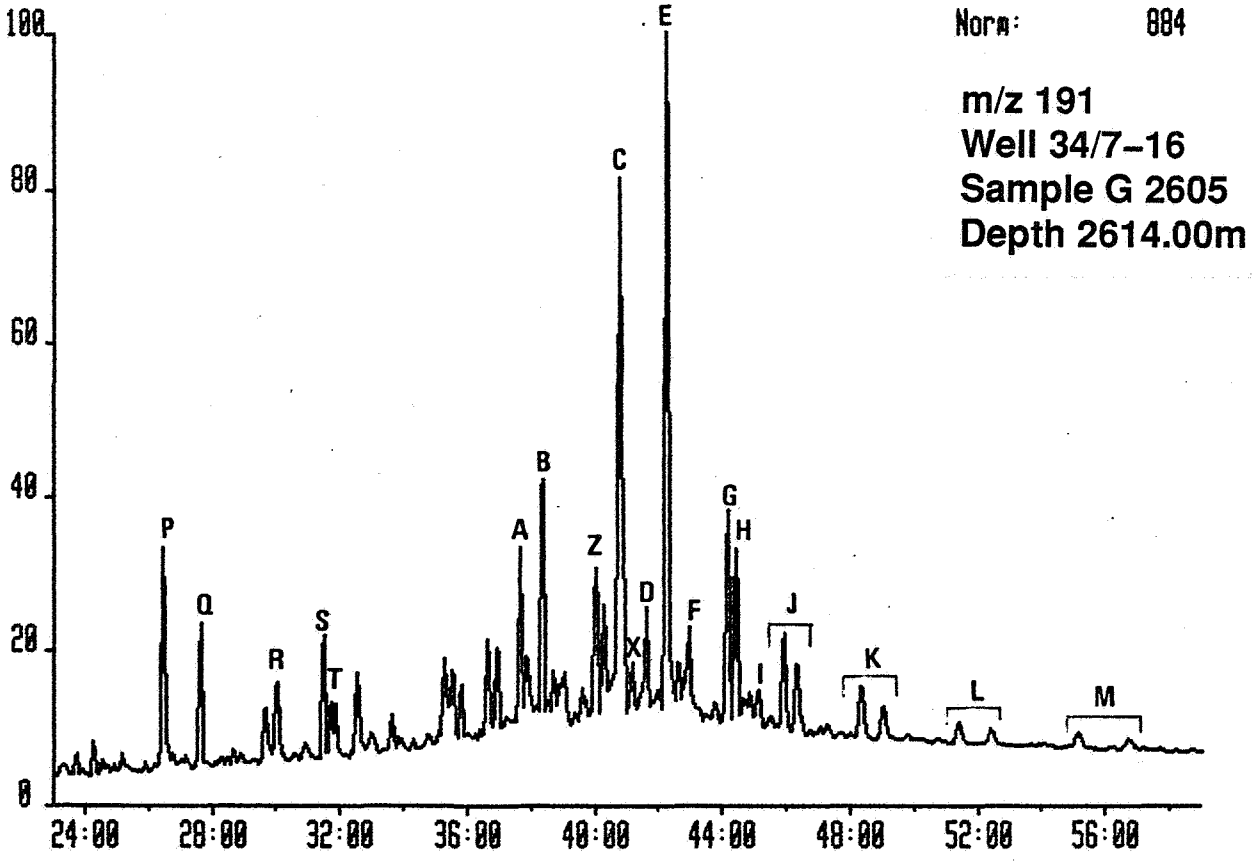
G2604SAT1 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA 34/7-16



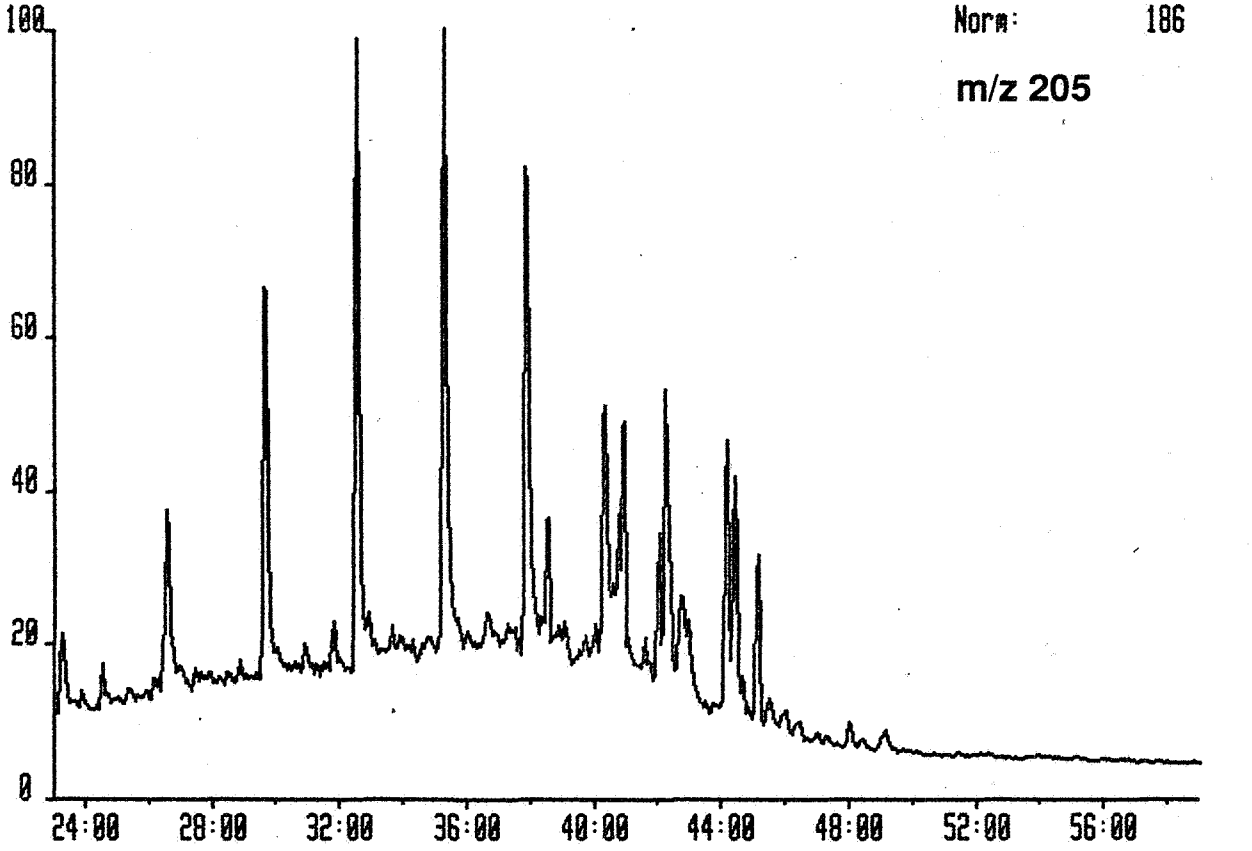

G2604SAT1 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA 34/7-16



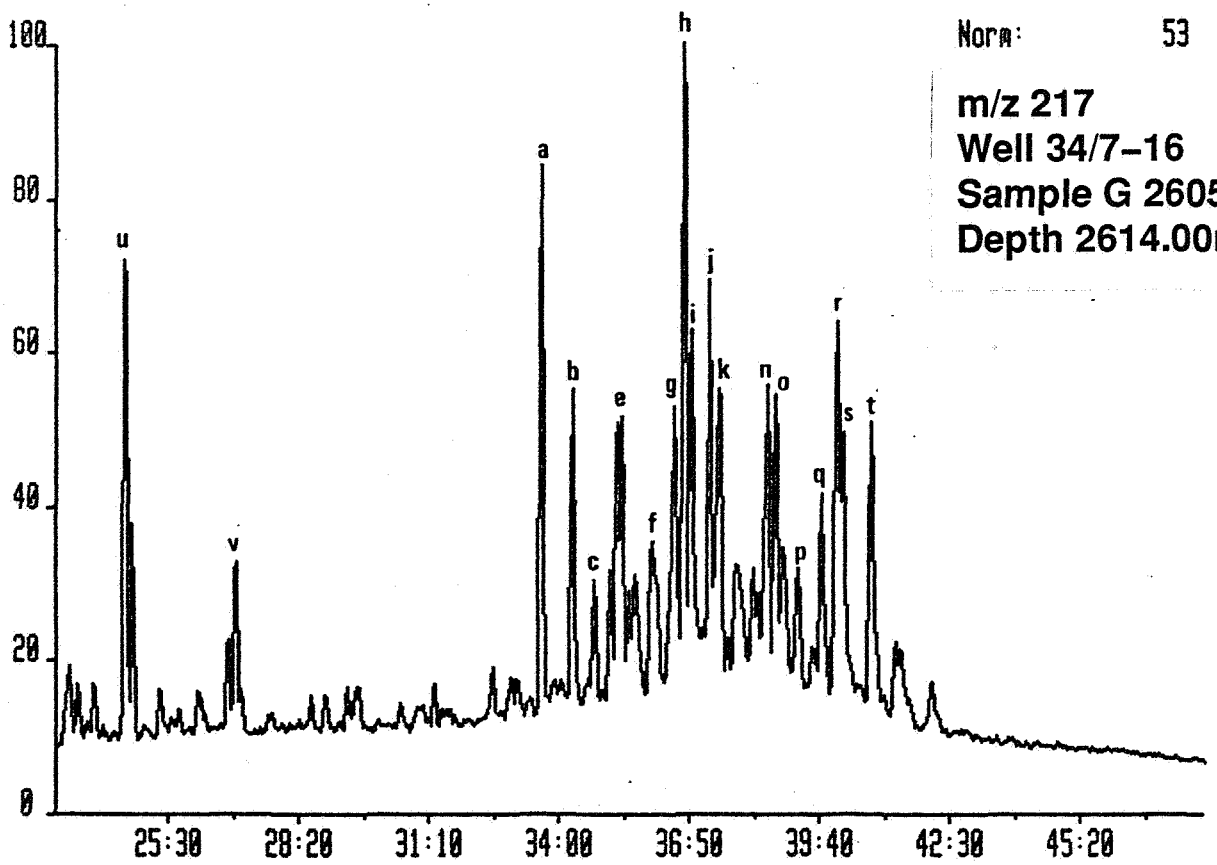
G2605SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA 34/7-16



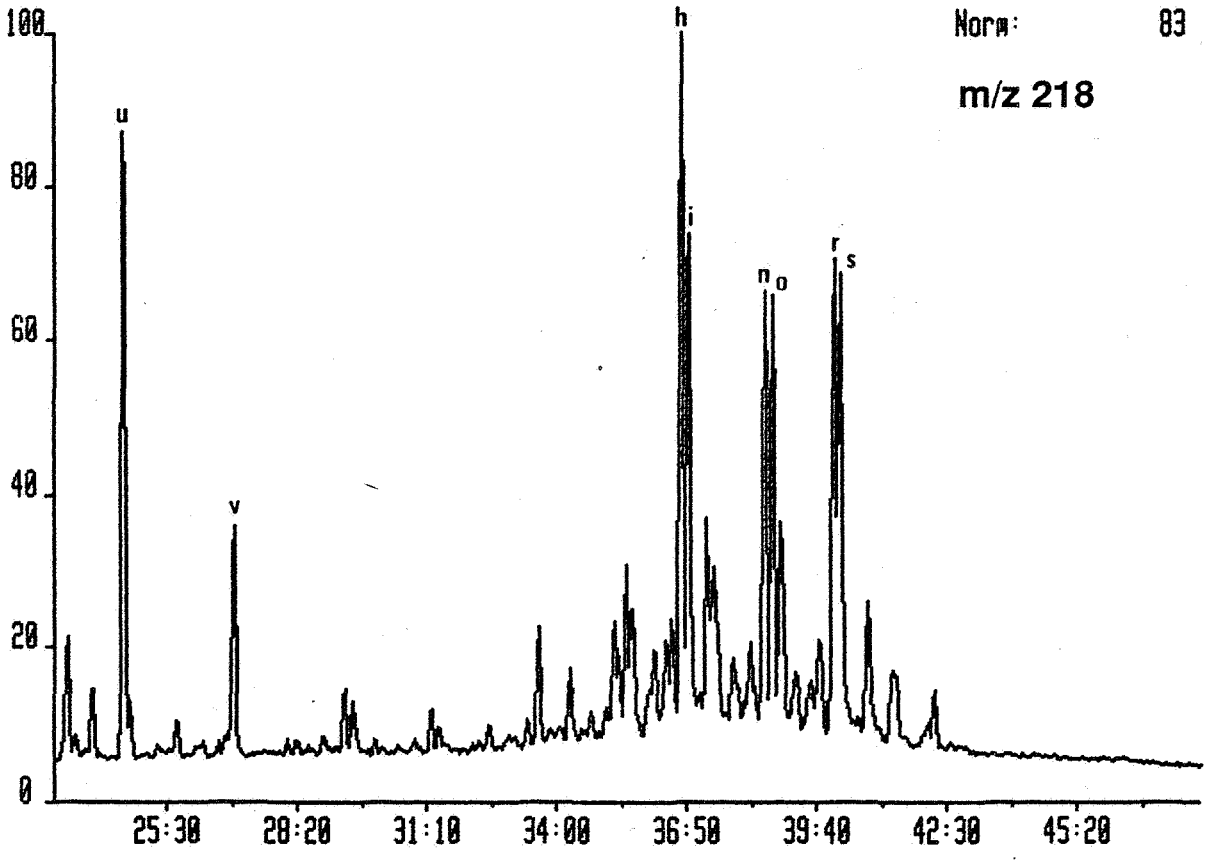

G2605SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA 34/7-16



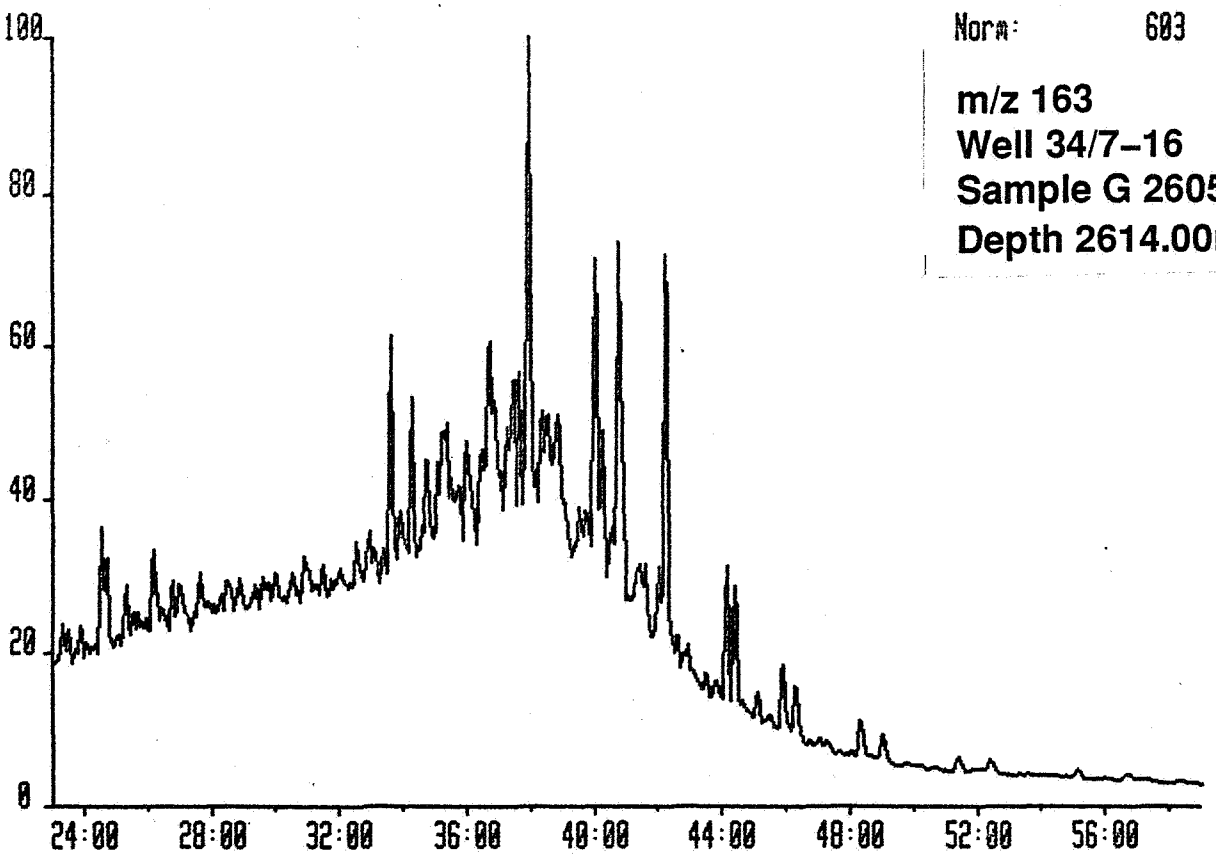
G2605SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA 34/7-16



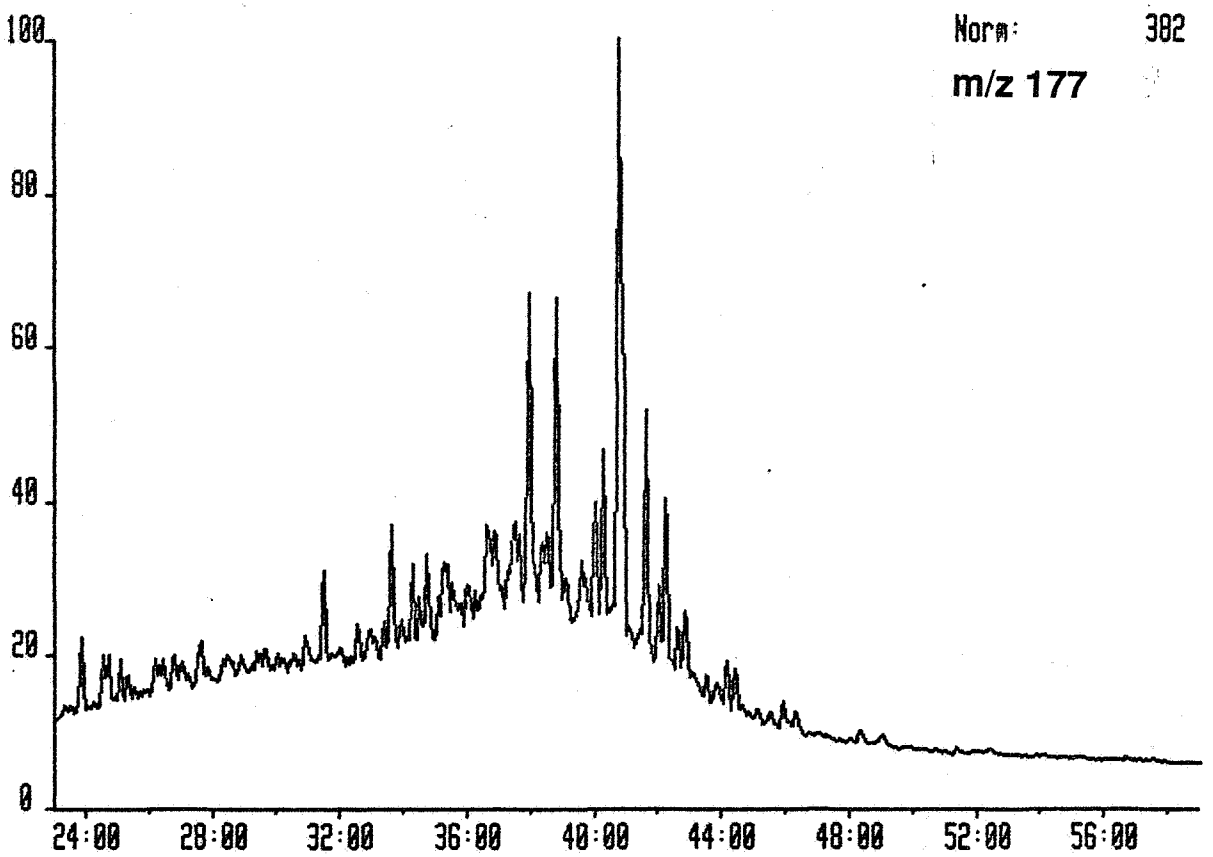

G2605SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA 34/7-16



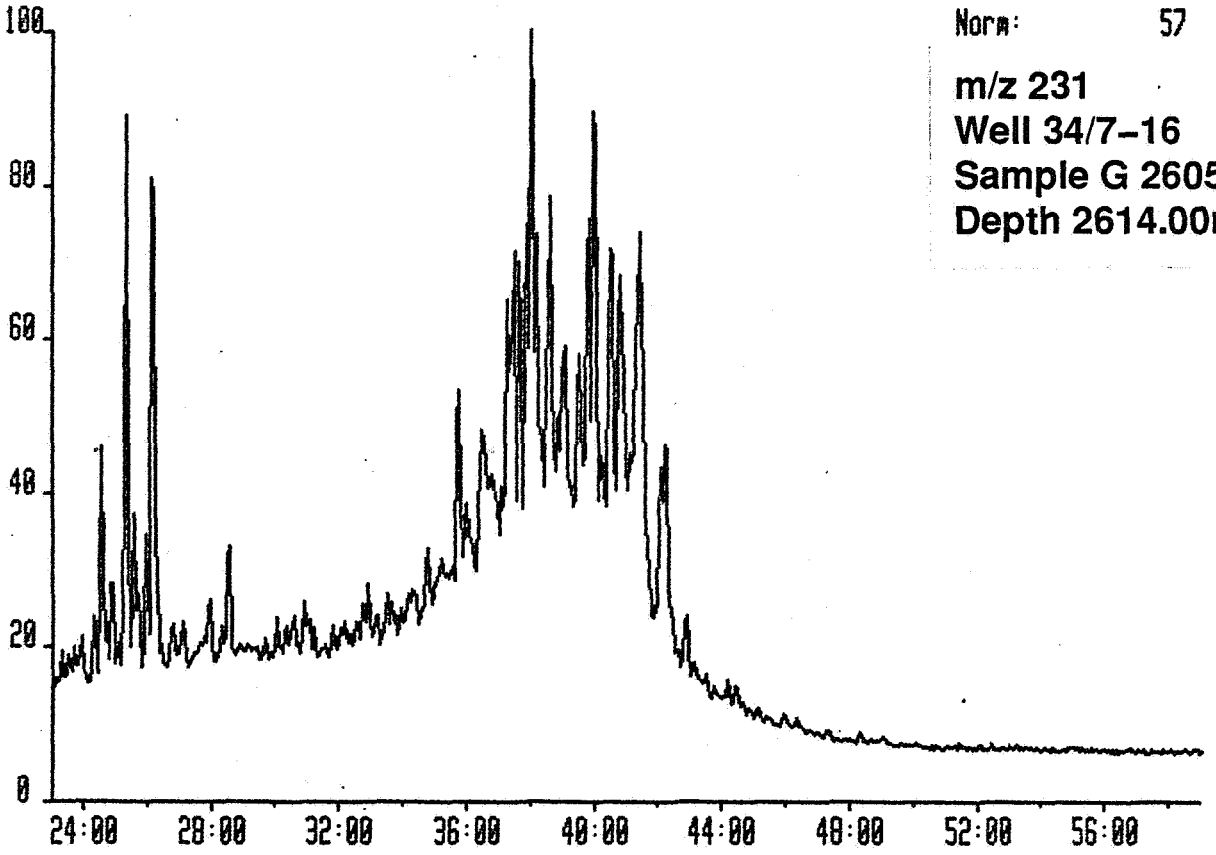
G2605SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA 34/7-16



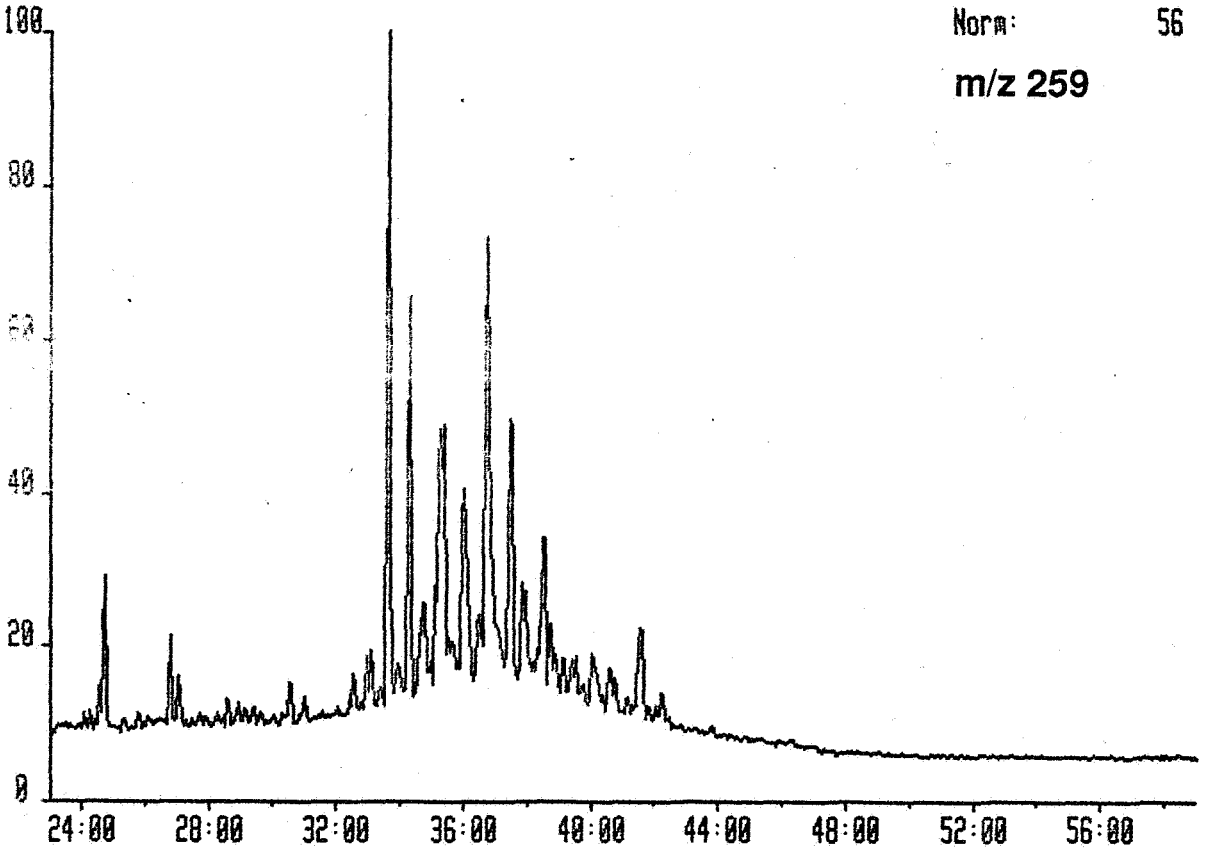

G2605SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA 34/7-16



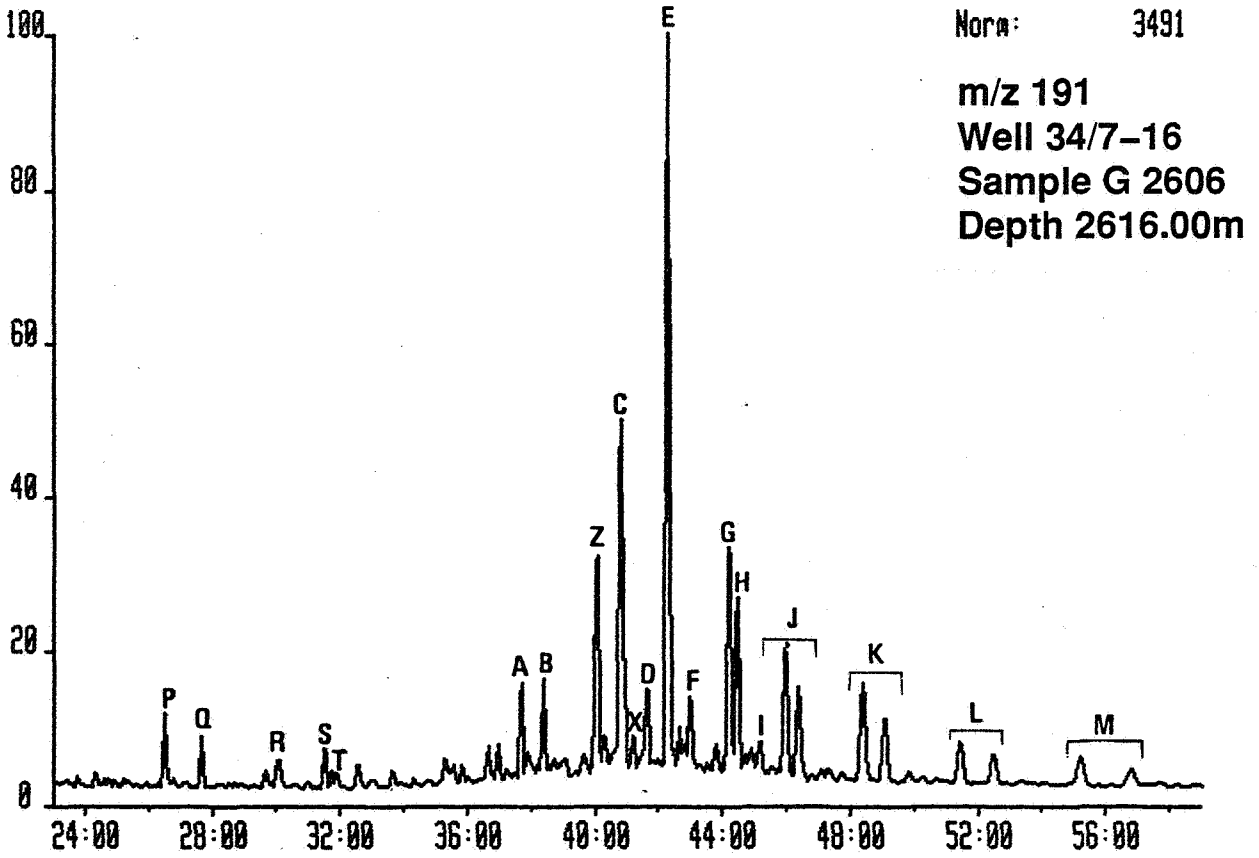
G2605SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA 34/7-16



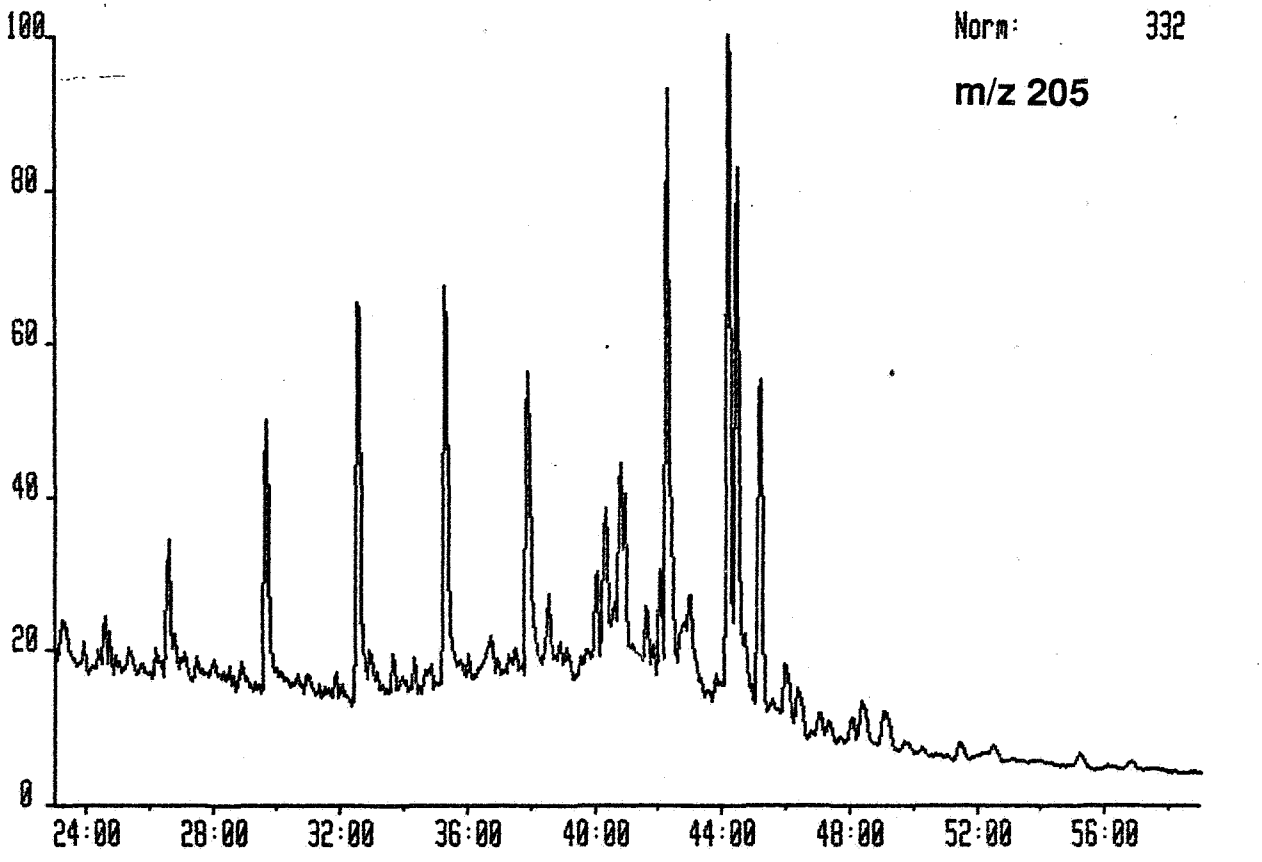

G2605SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA 34/7-16



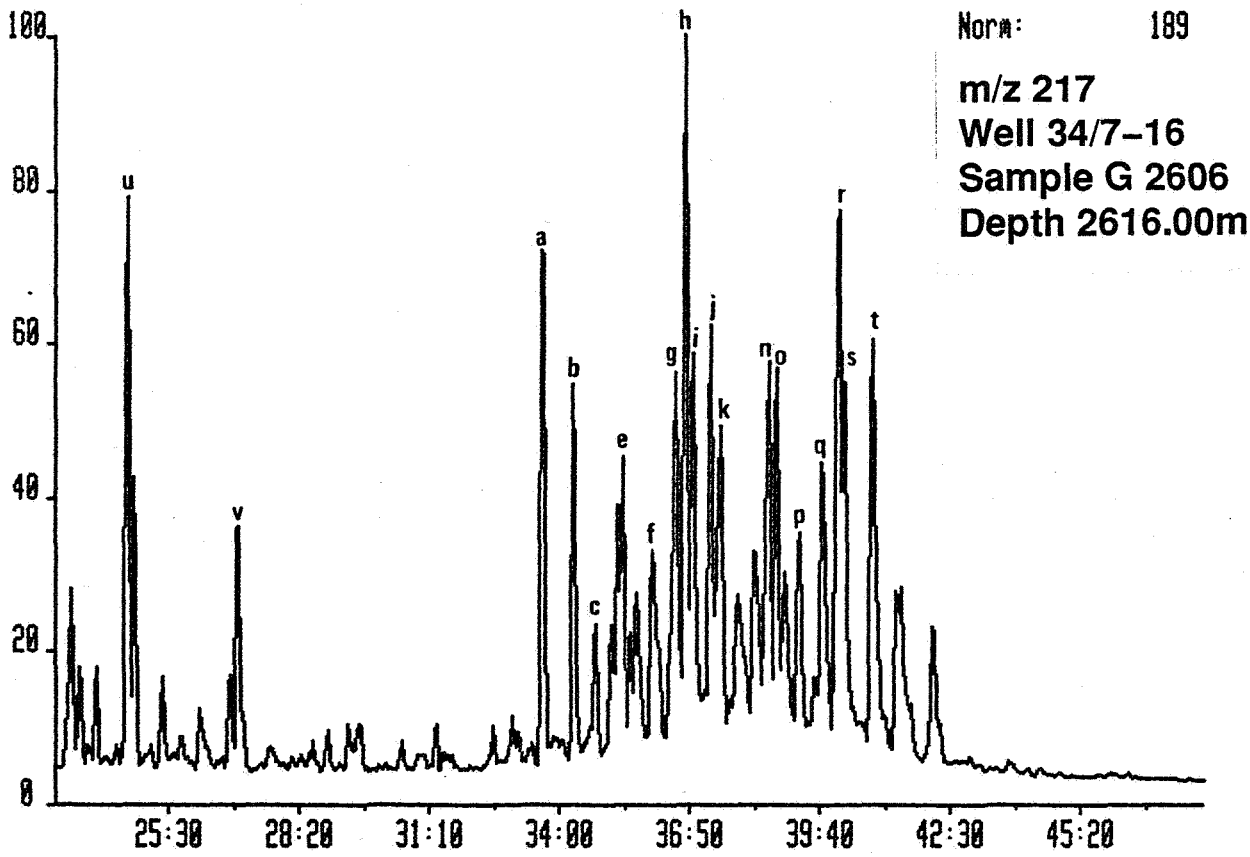
G2606SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 191.1000
Text:22.1962.00 SAGA 34/7-16



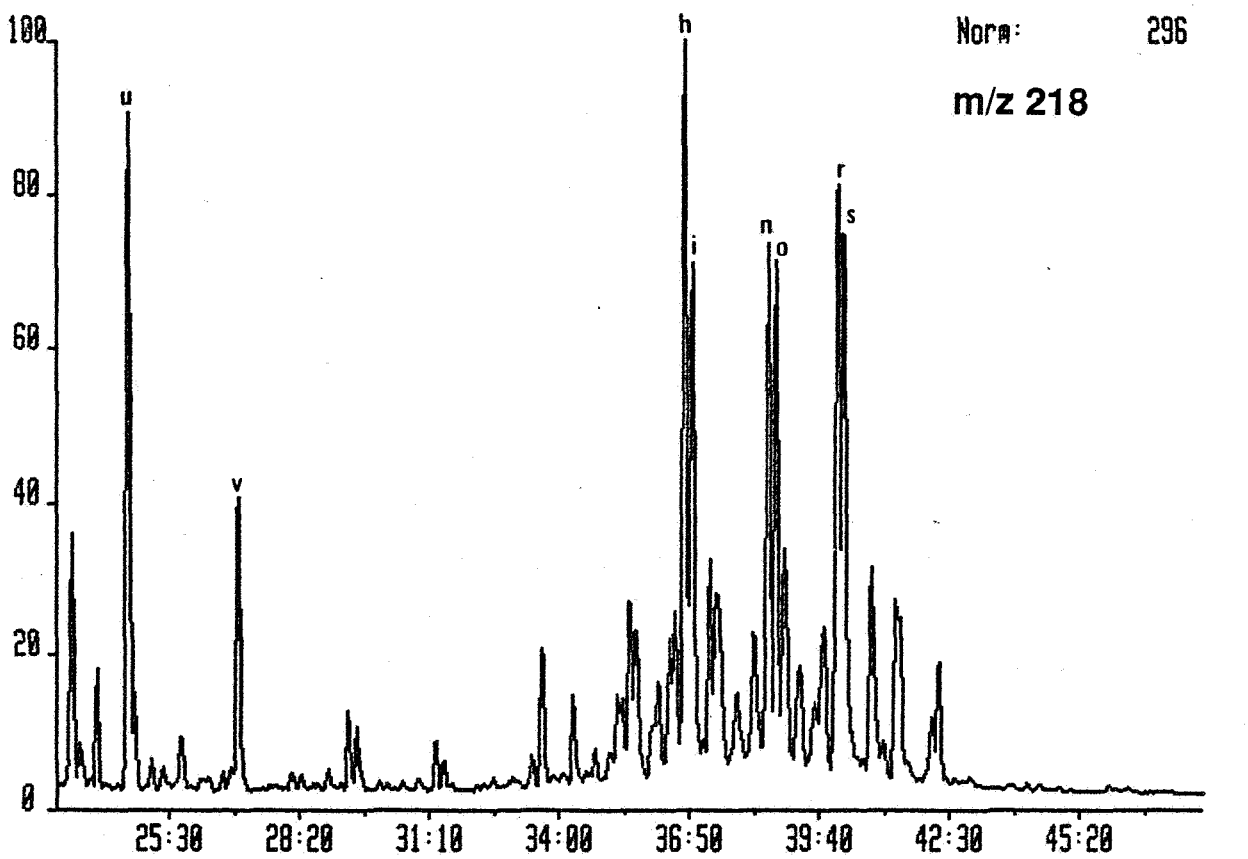

G2606SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 .Injection 1 Group 1 Mass 205.1000
Text:22.1962.00 SAGA 34/7-16



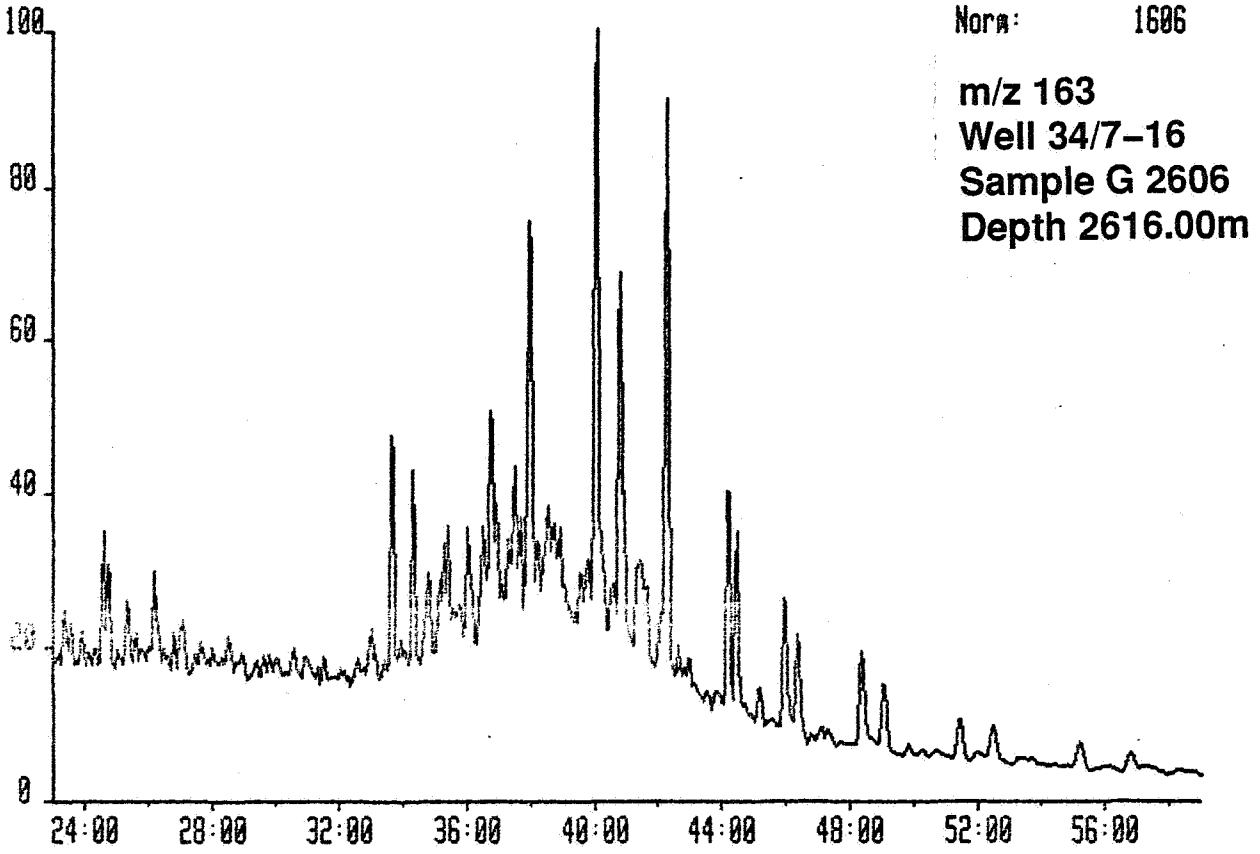
G2606SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA 34/7-16




G2606SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA 34/7-16



G2606SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA 34/7-16

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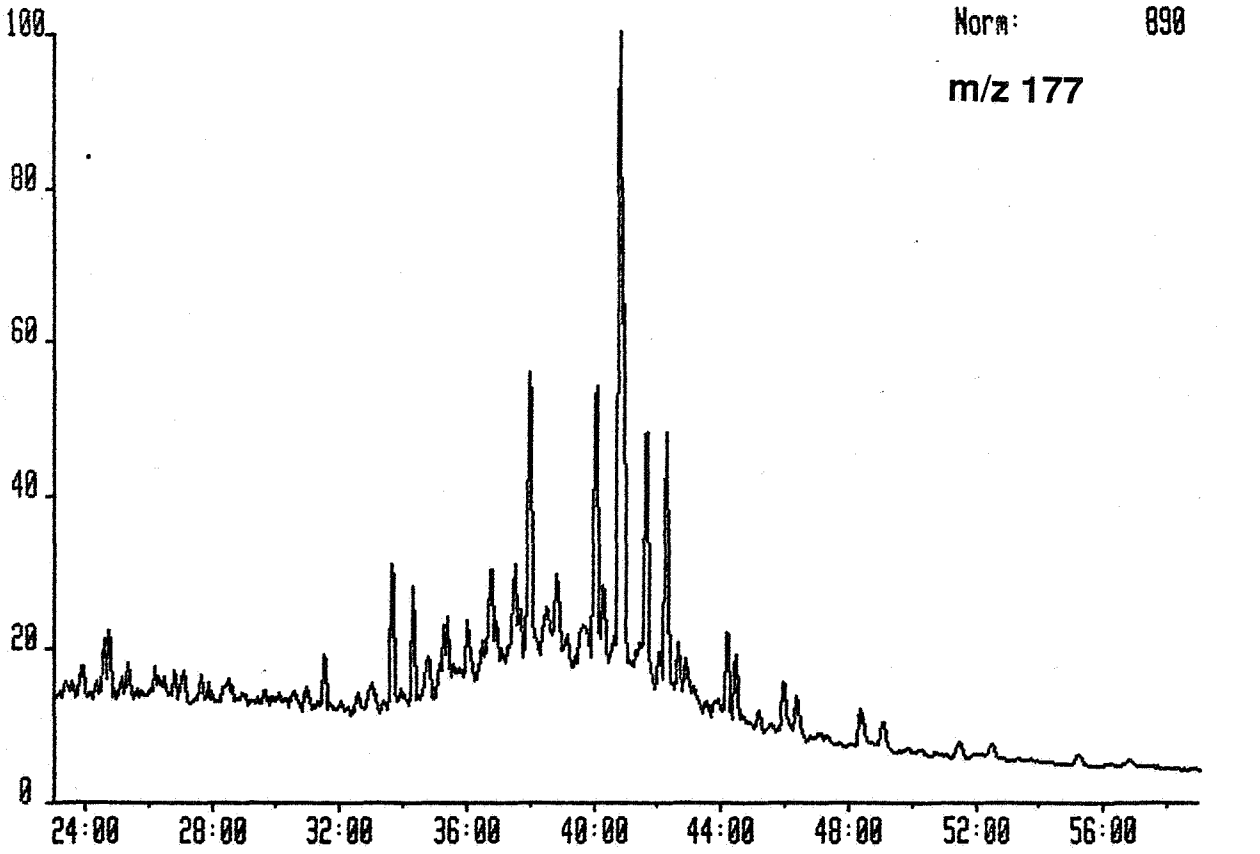

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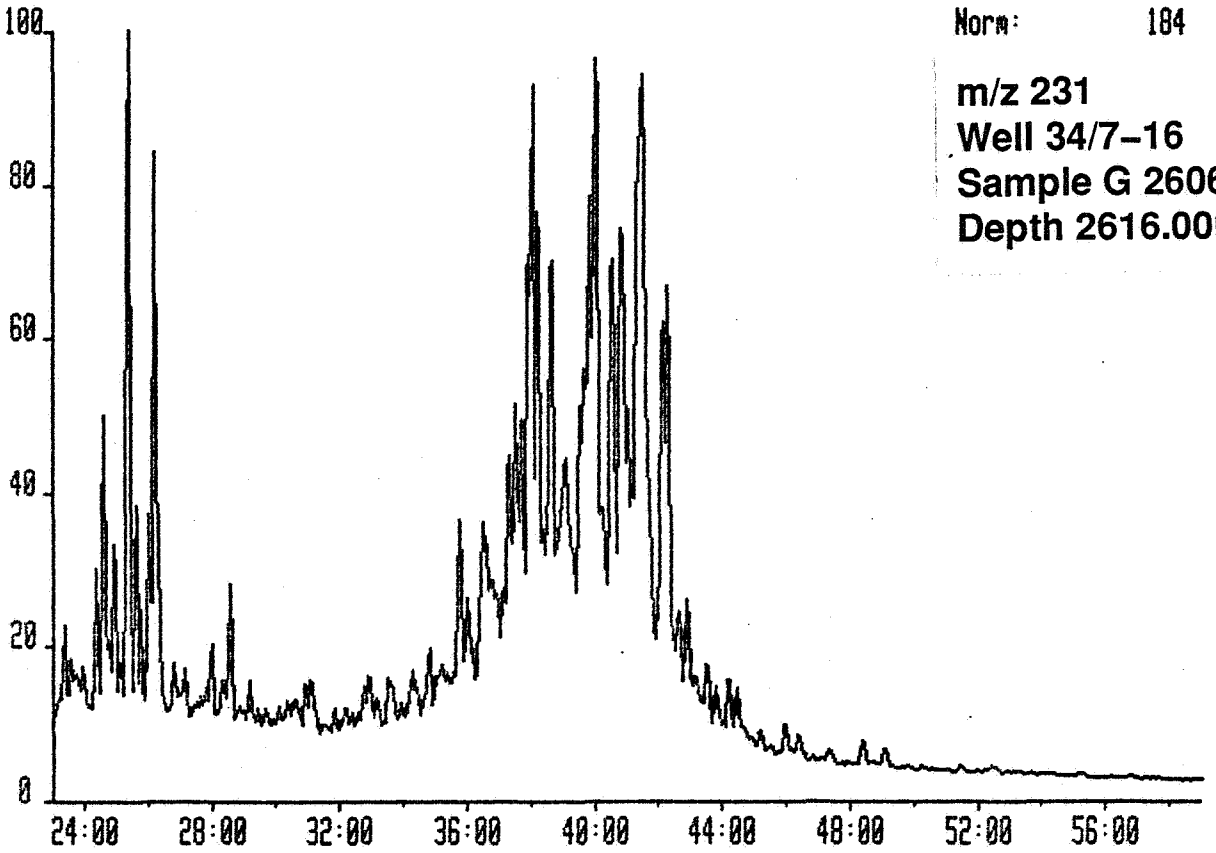
Text:22.1962.00 SAGA 34/7-16

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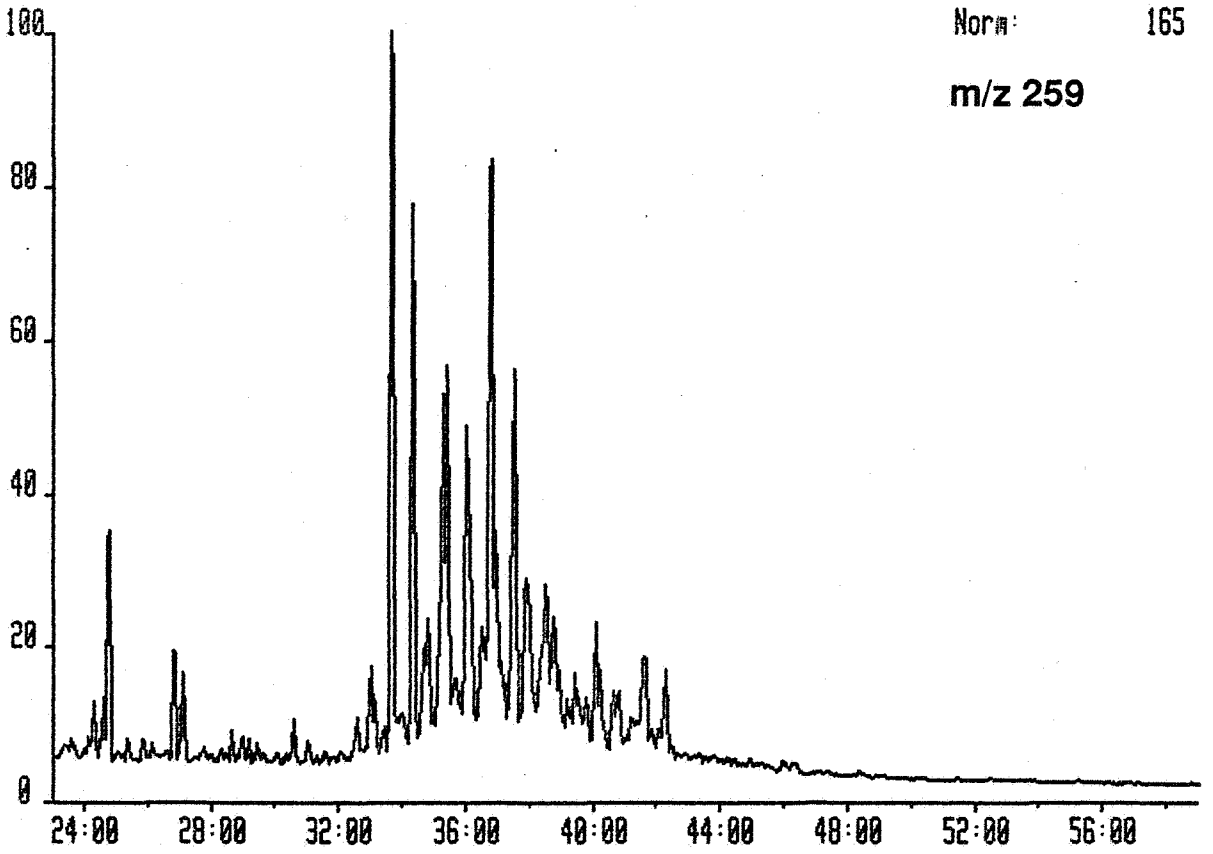
Text:22.1962.00 SAGA 34/7-16



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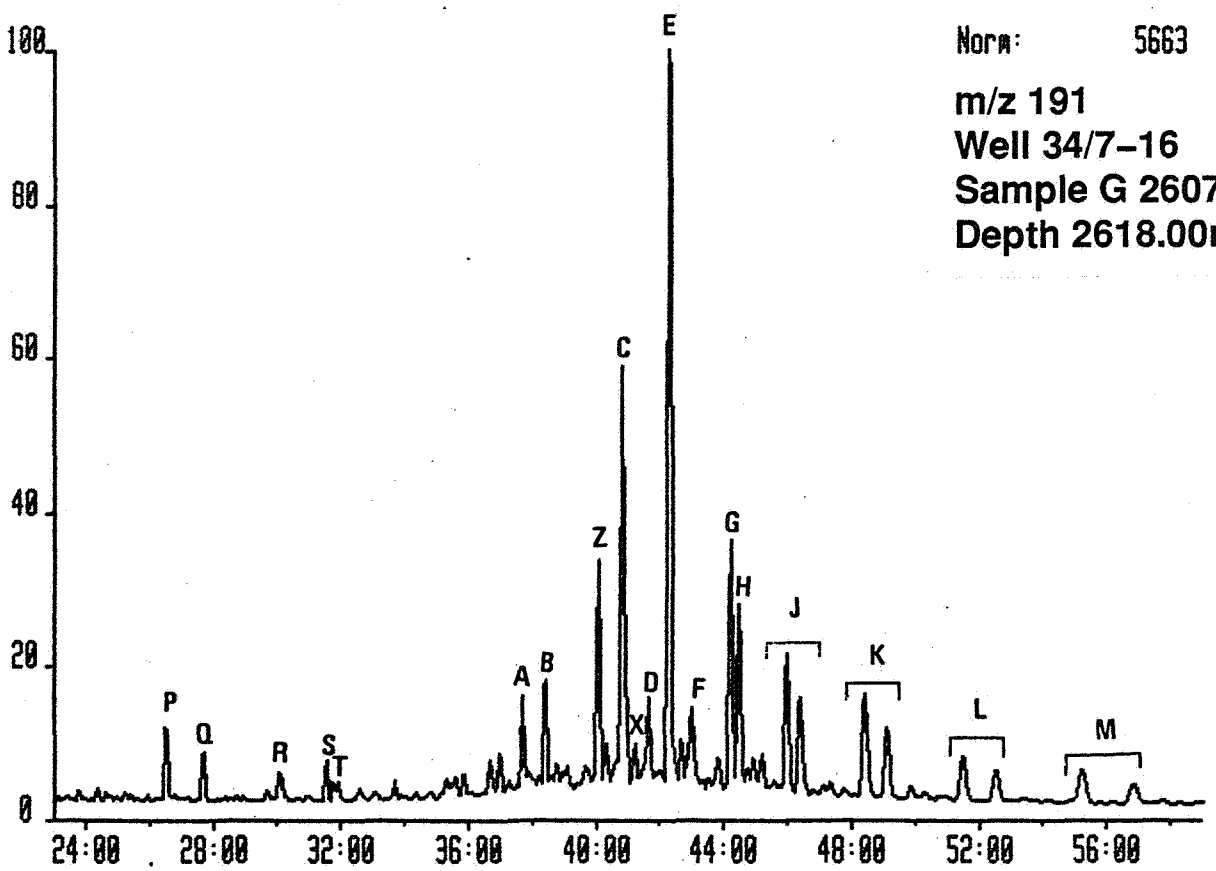


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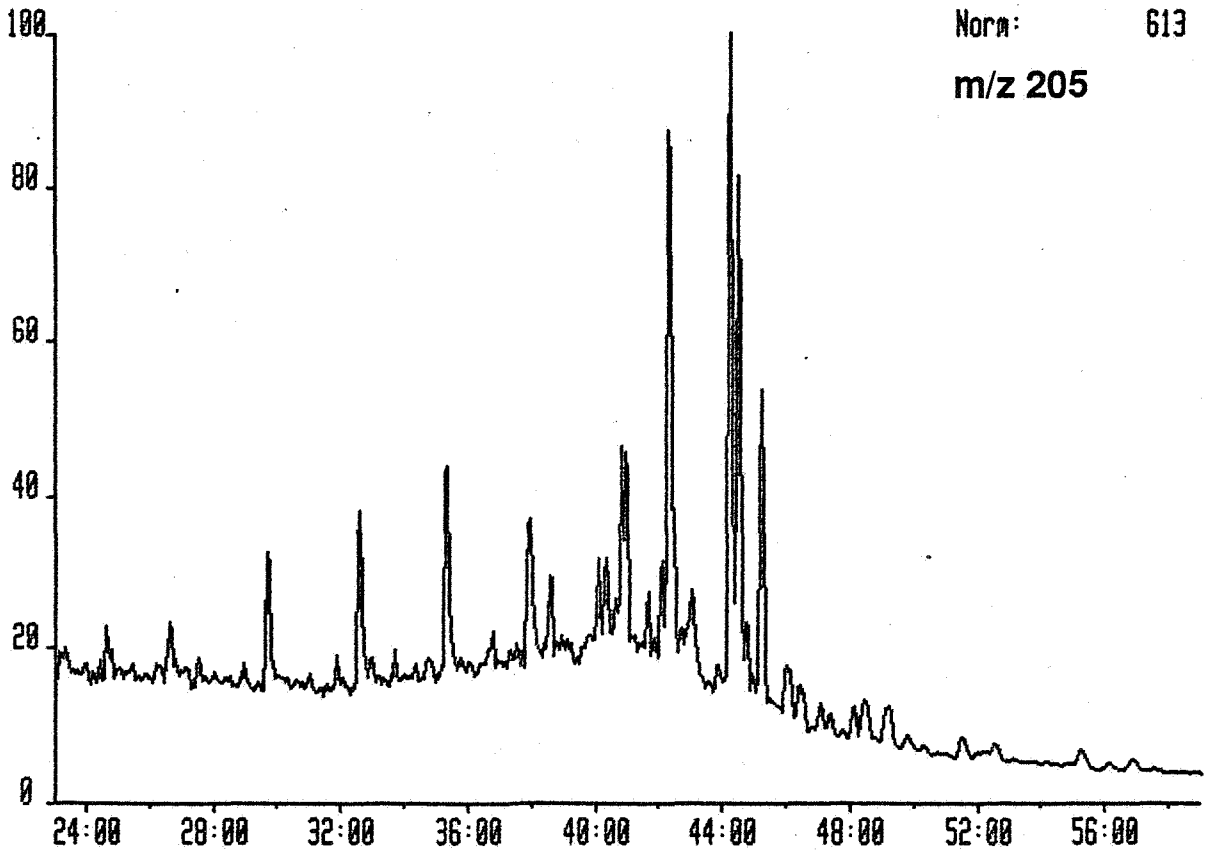
Text:22.1962.00 SAGA 34/7-16



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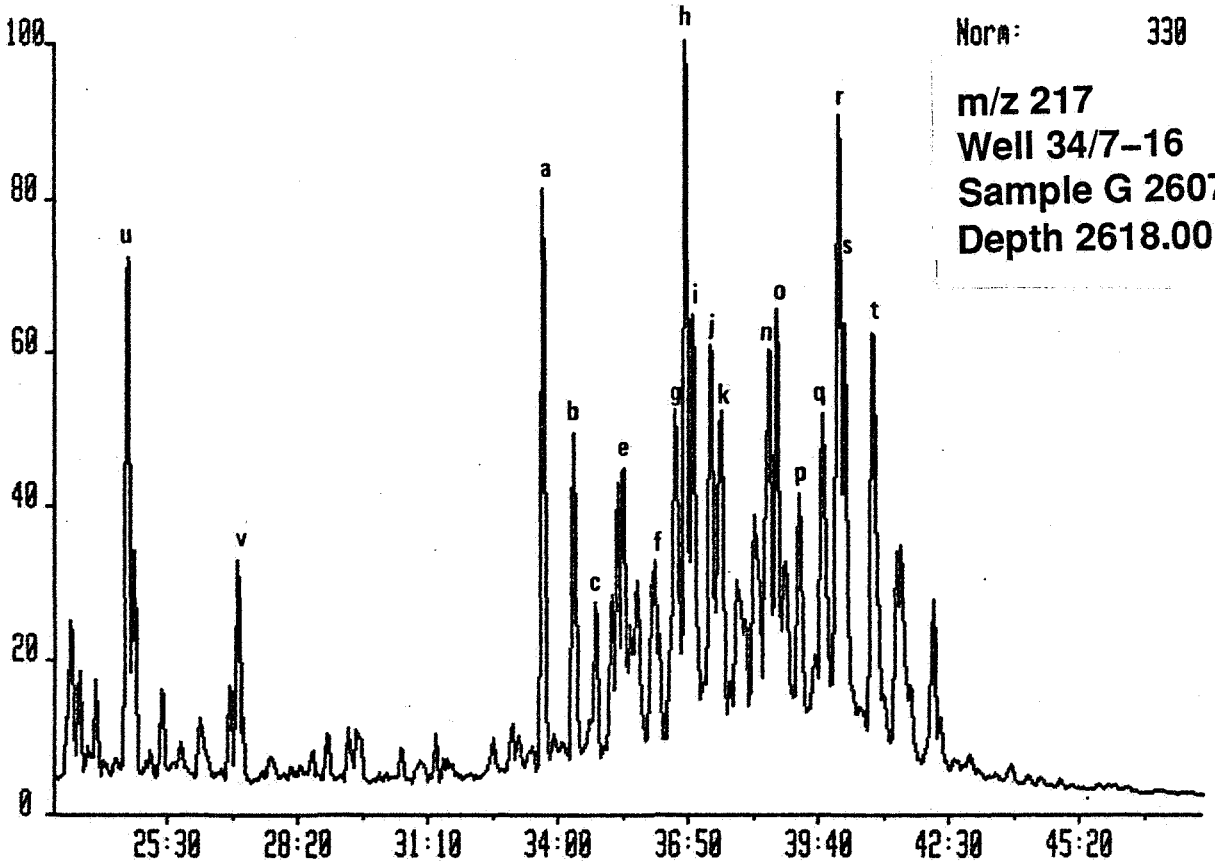
Sample 1 Injection 1 Group 1 Mass 217.1000
Text:22.1962.00 SAGA 34/7-16

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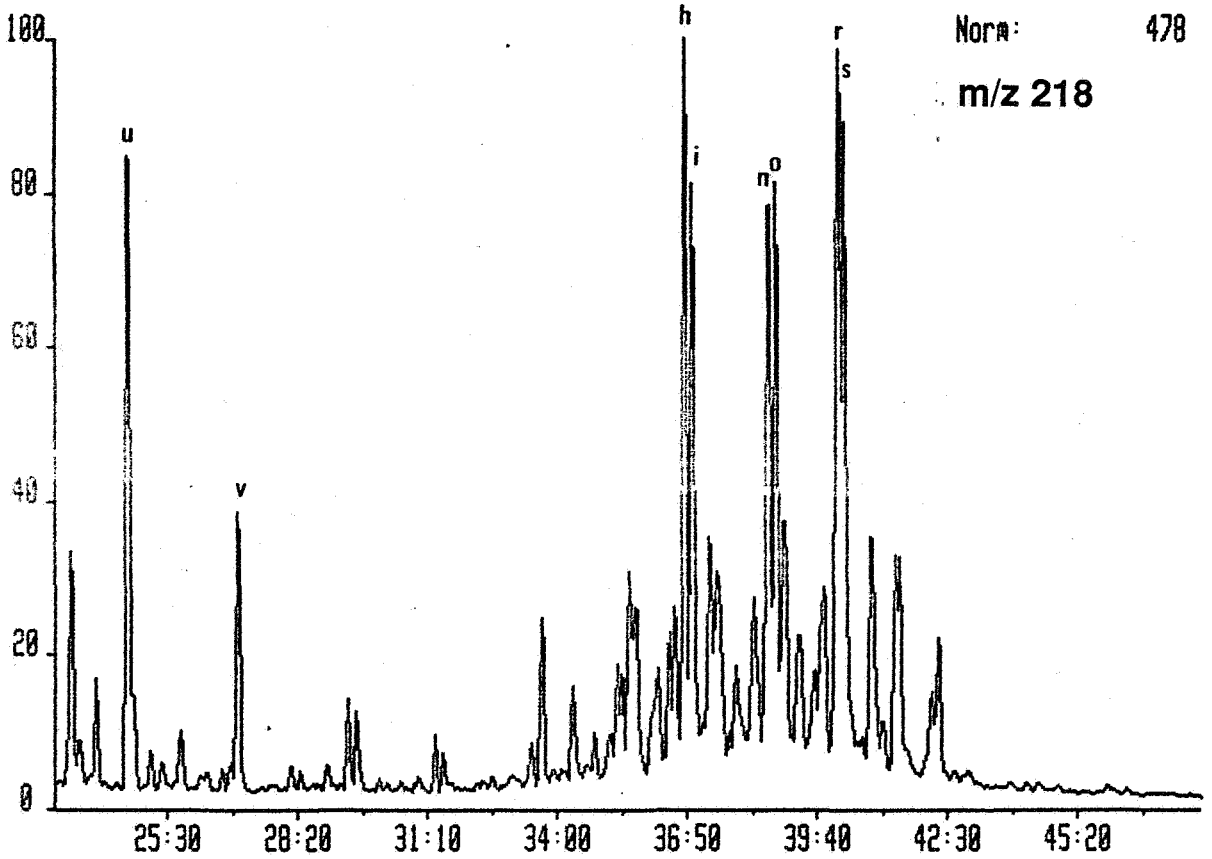
Sample 1 Injection 1 Group 1 Mass 218.1000
Text:22.1962.00 SAGA 34/7-16



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Sample 1 Injection 1 Group 1 Mass 163.1000
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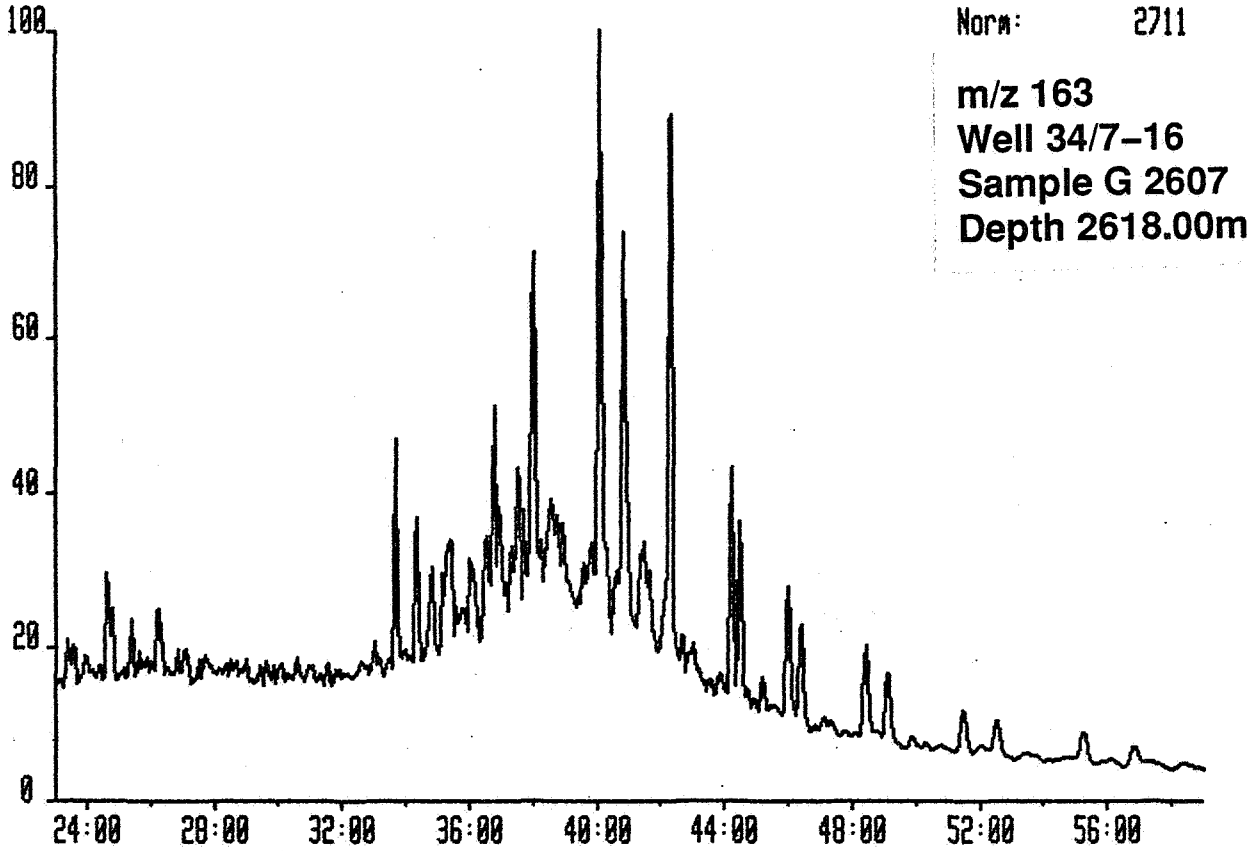


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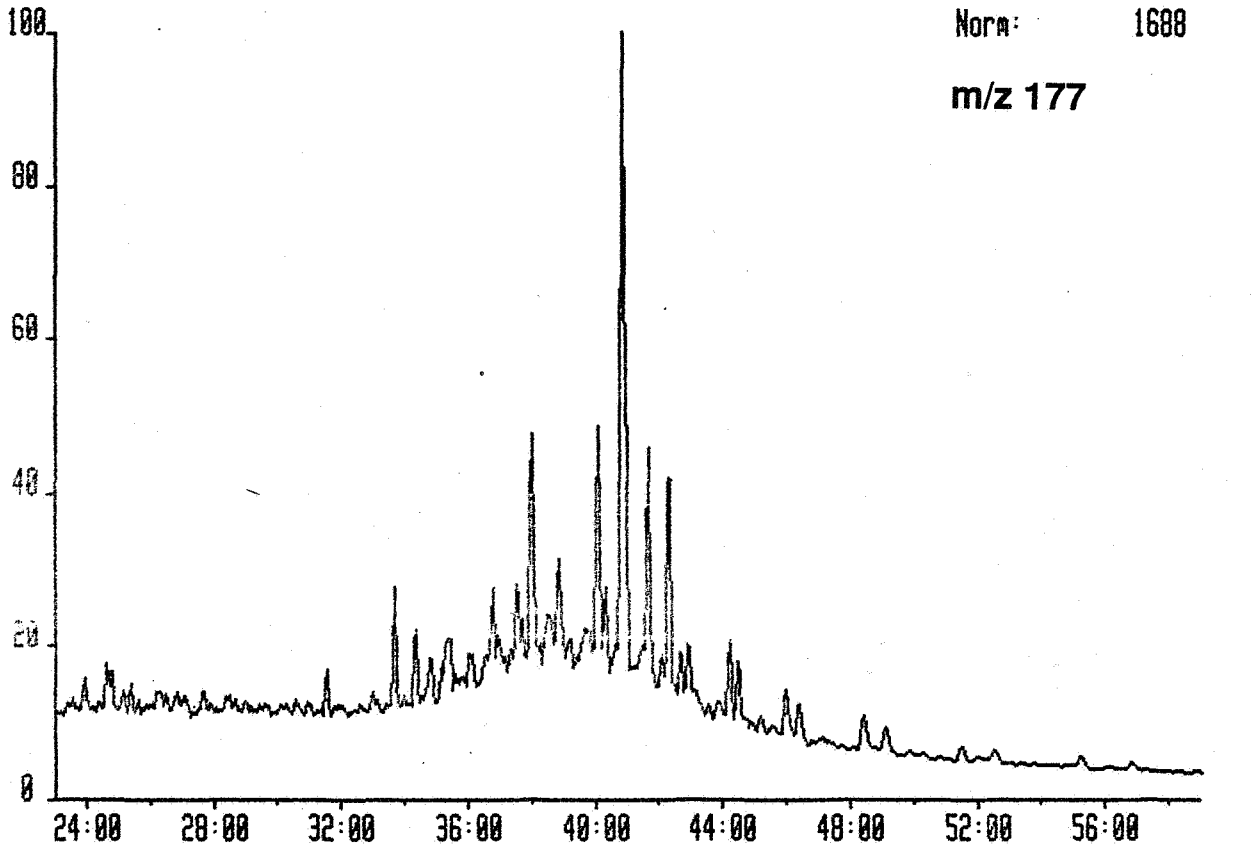
Sample 1 Injection 1 Group 1 Mass 177.1000
Text:22.1962.00 SAGA 34/7-16



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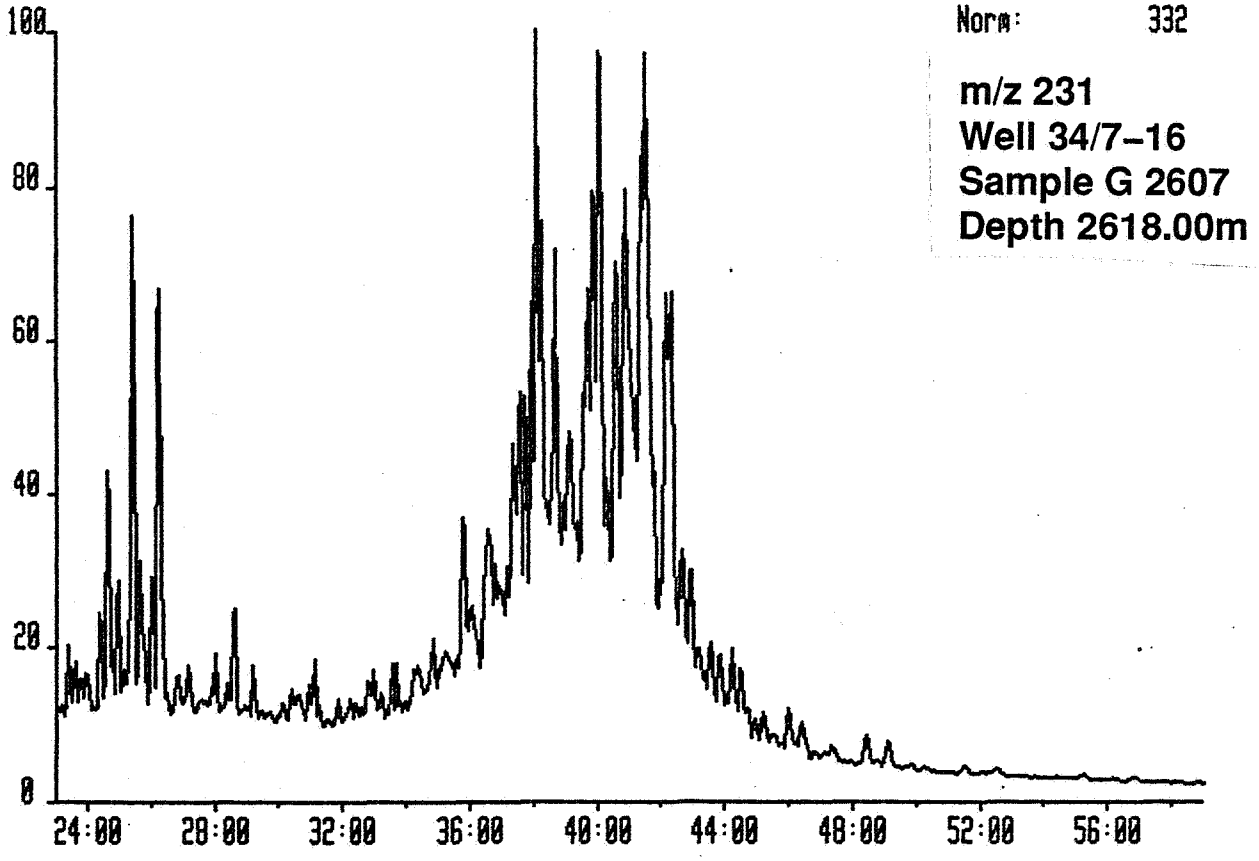
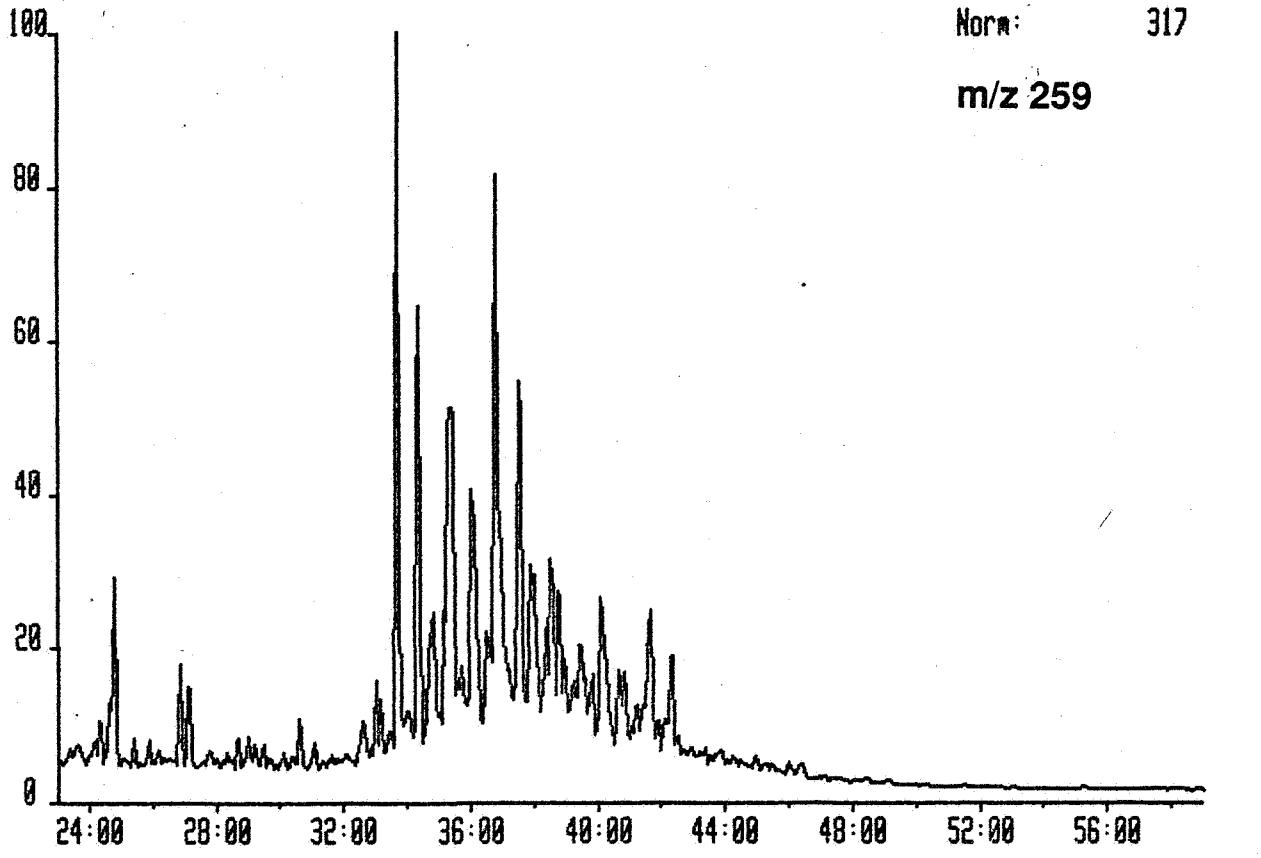
Sample 1 Injection 1 Group 1 Mass 231.1000
Text:22.1962.00 SAGA 34/7-16




G2607SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
Text:22.1962.00 SAGA 34/7-16



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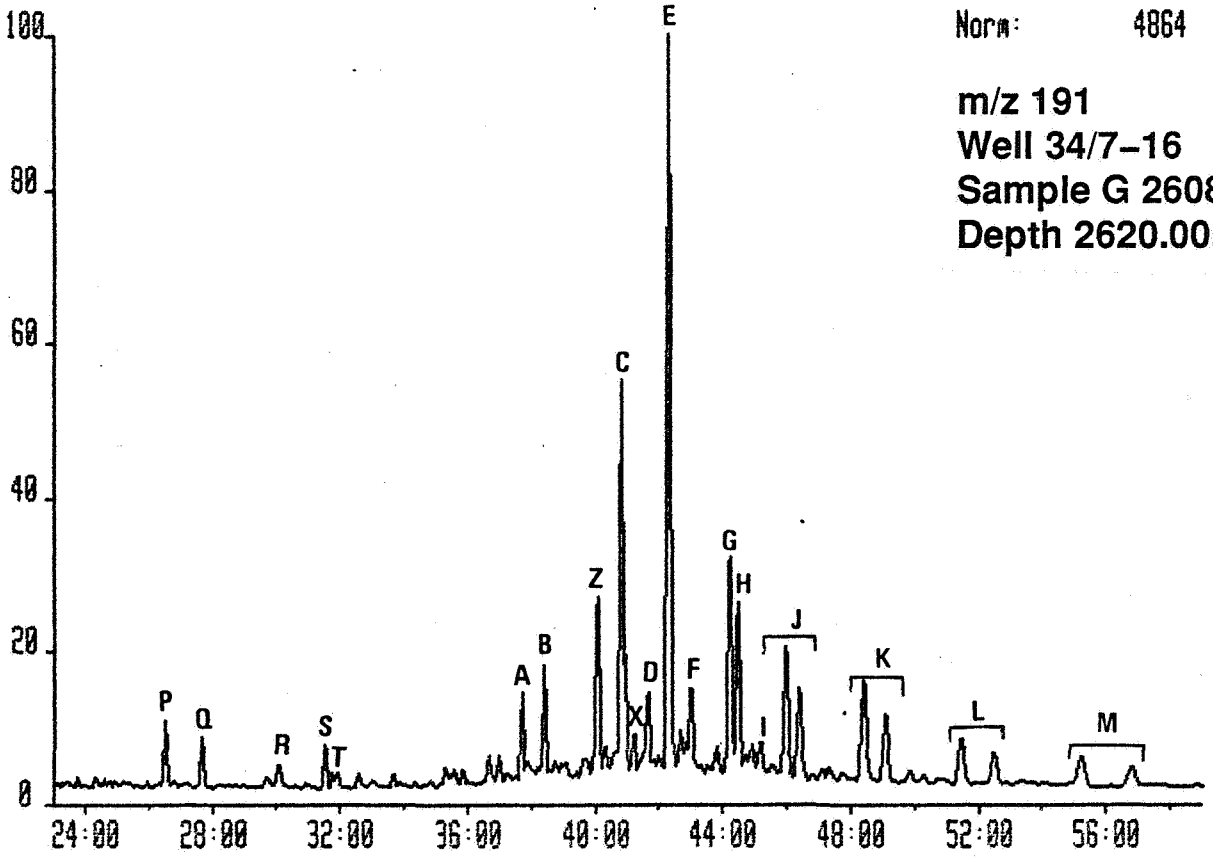


G2608SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 205.1000
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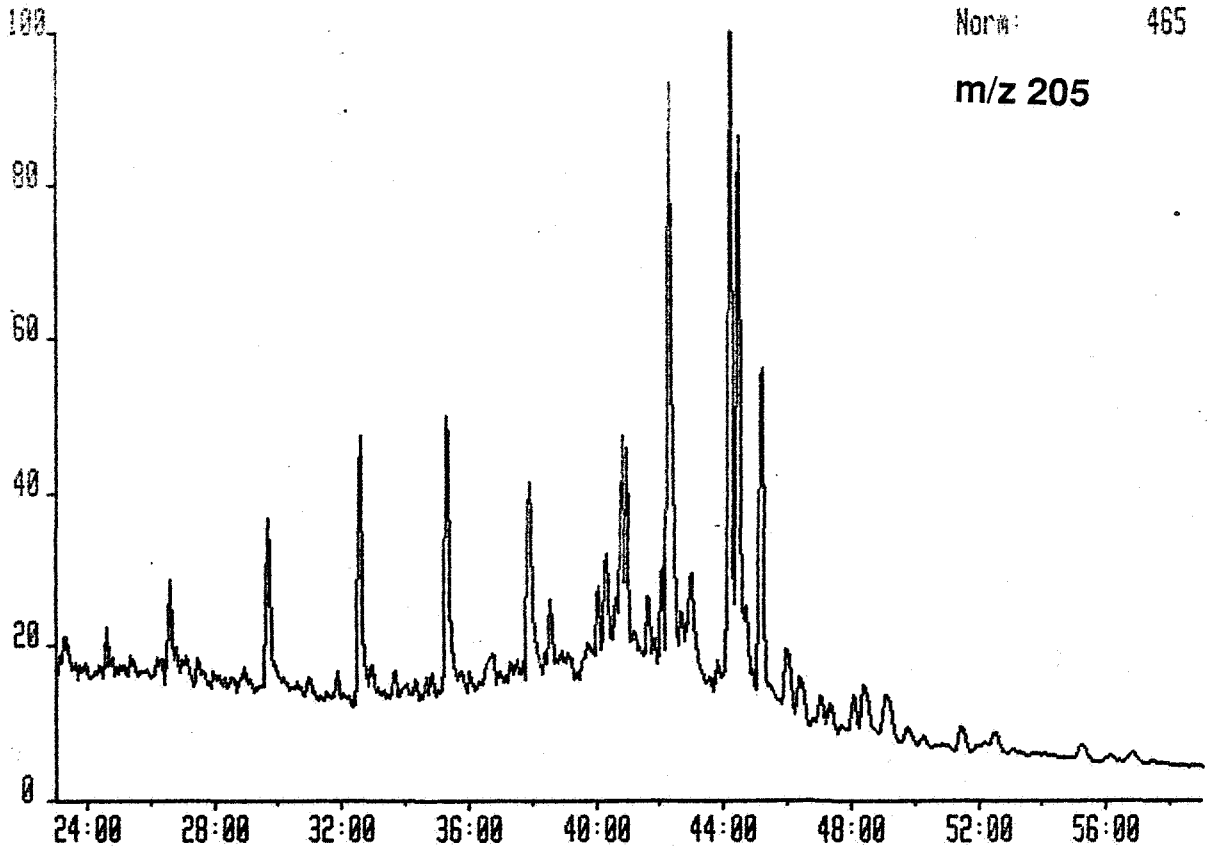

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Sample 1 Injection 1 Group 1 Mass 217.1000
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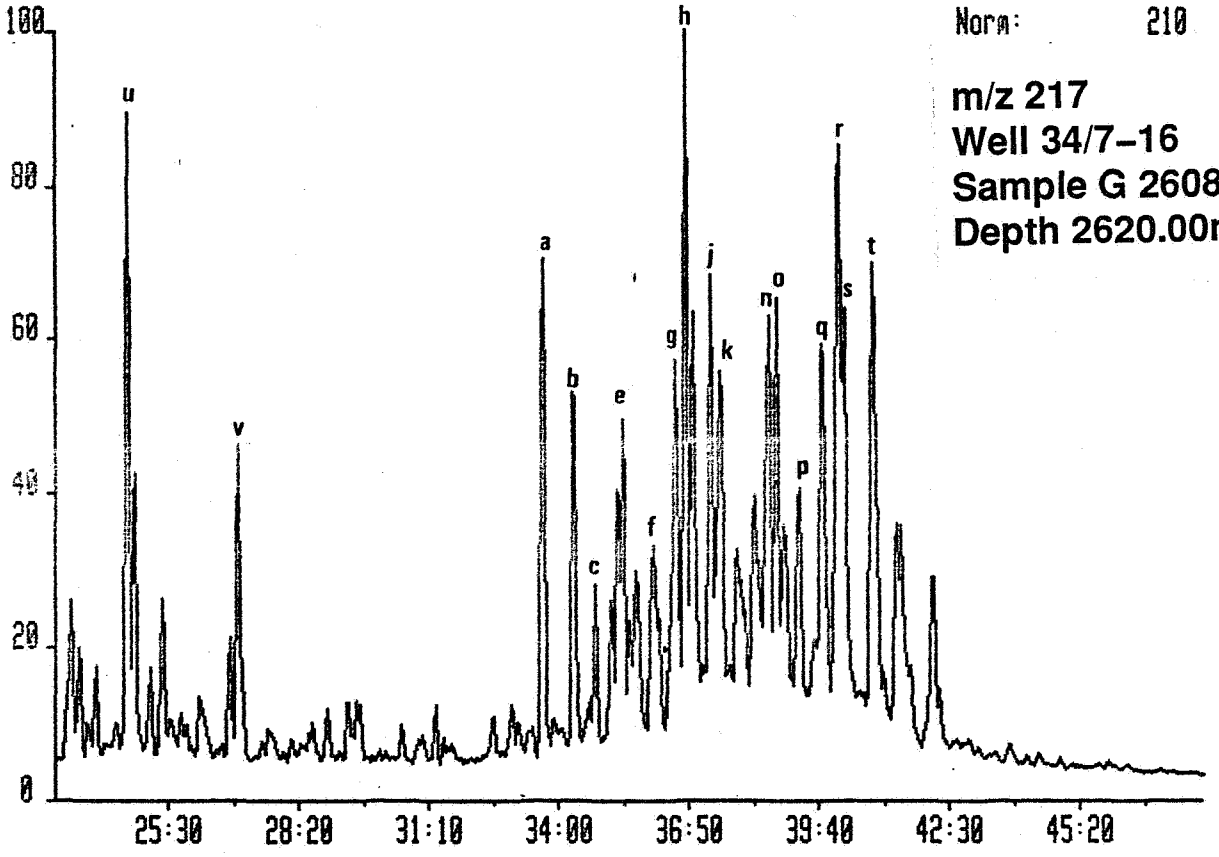


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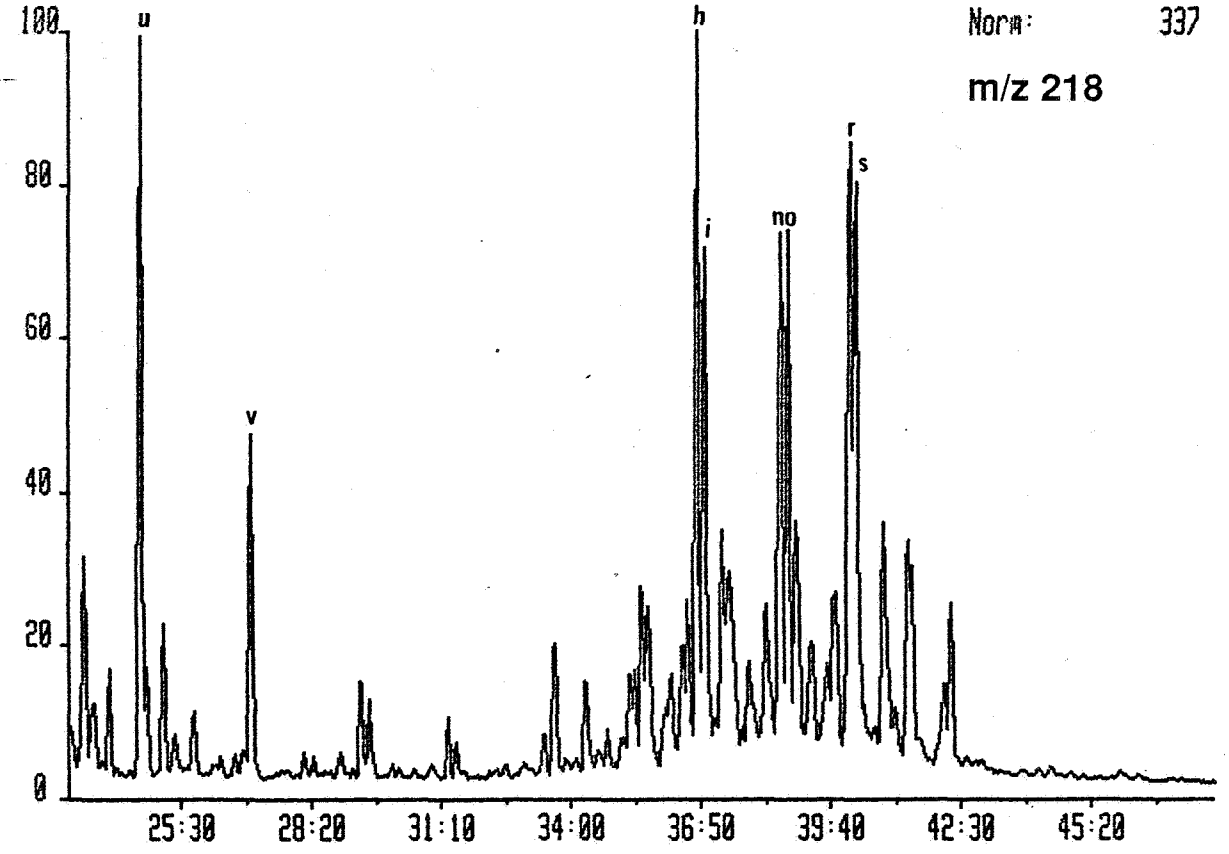
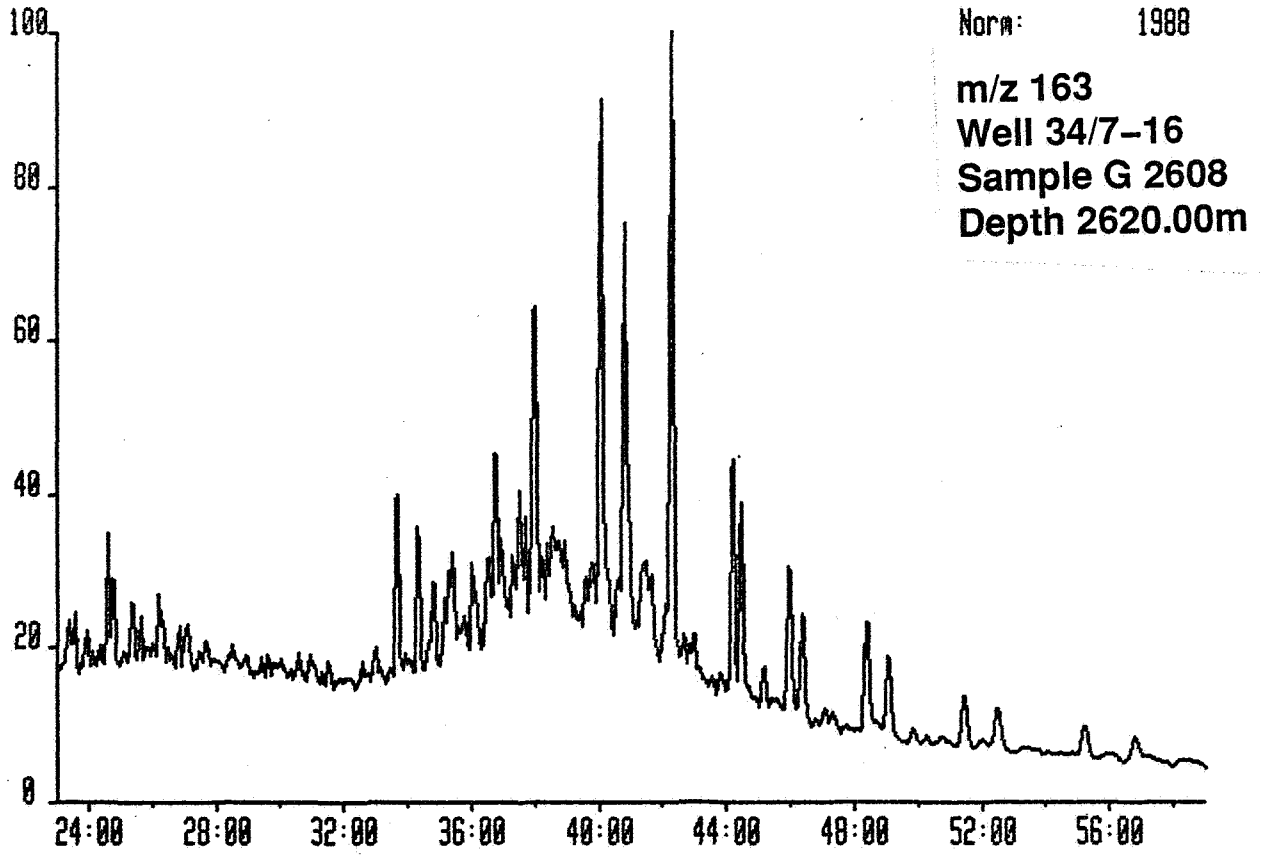


G2608SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 163.1000
Text:22.1962.00 SAGA 34/7-16

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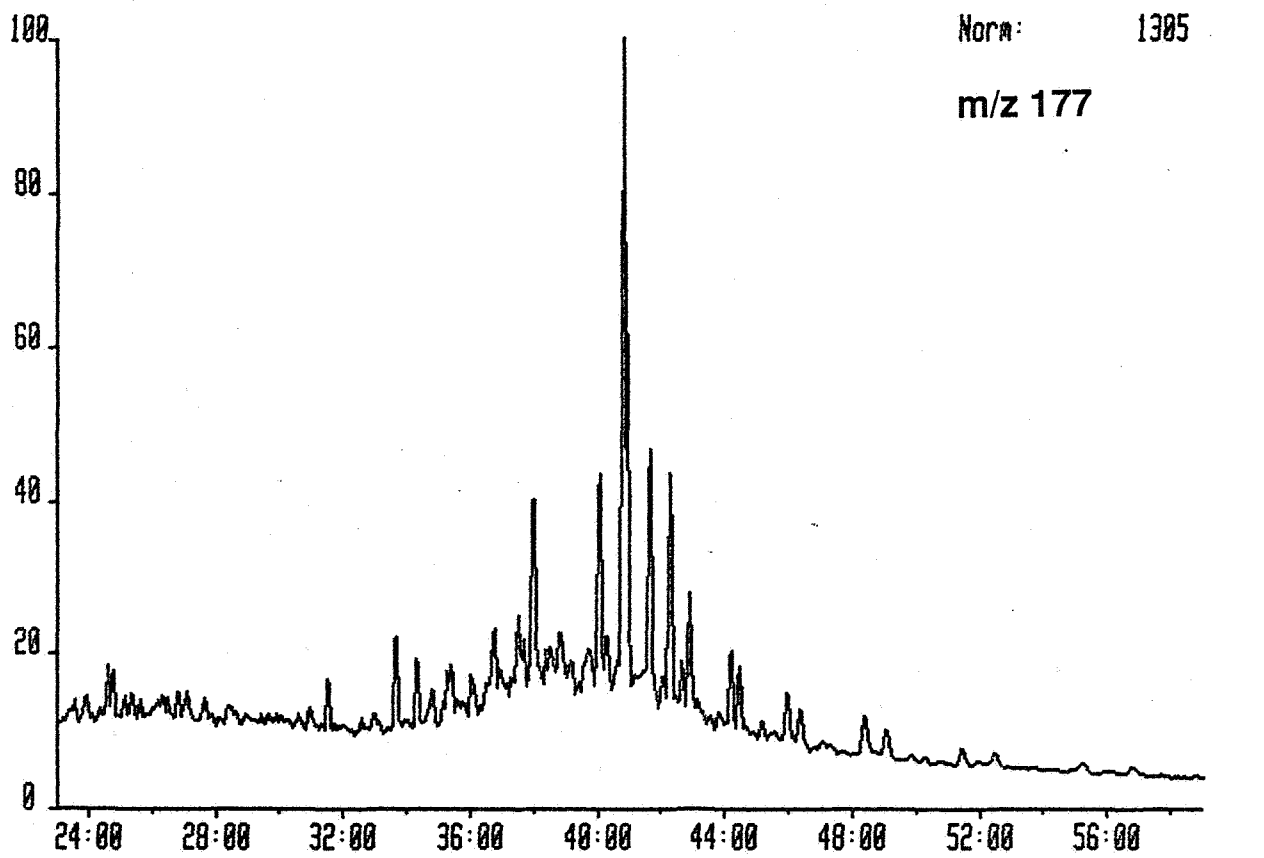

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Sample 1 Injection 1 Group 1 Mass 231.1000
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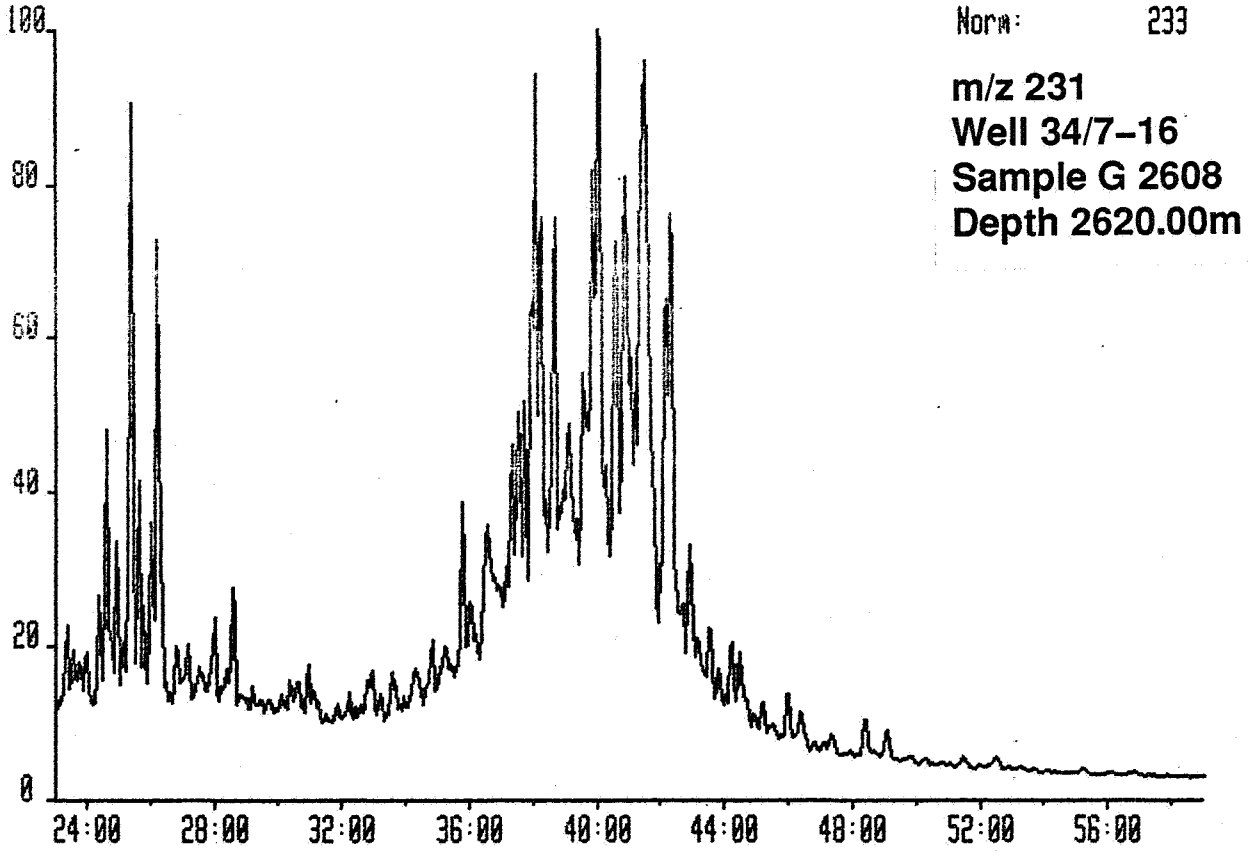


G2608SAT 10-JAN-90 Sir:Voltage 70H Sys: BIOMARKER
Sample 1 Injection 1 Group 1 Mass 259.1000
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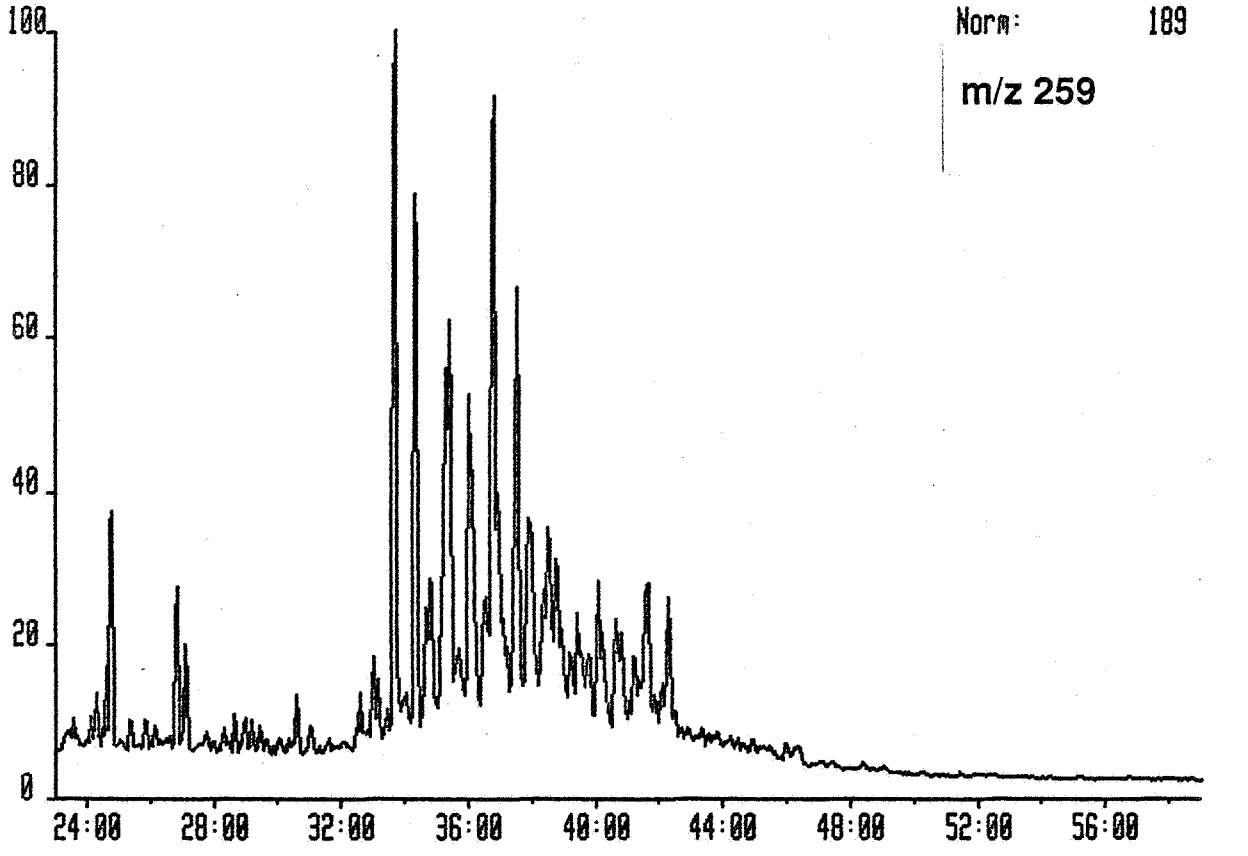

IKU SINTEF-GRUPPEN

# APPENDIX

## EXPERIMENTAL PROCEDURES

### Total Organic Carbon

Bulk samples were crushed in a disk mill or mortar. Aliquots of the samples were then weighed into Leco crucibles, then treated three times with hot 10% HCl in order to remove carbonate, and finally washed four times with distilled water in order to remove any traces of HCl. The crucibles were then placed on a hot plate (60°C) and dried for 24 hours. The total organic carbon (TOC) content of the dried samples was determined using a CS 244 carbon/sulphur analyser.

The instrument was calibrated using a syntetic standard with 5.0 % carbon. Calibration and blank runs were carried out every 15th measurement.

### Rock-Eval pyrolysis

Powdered sample (100 mg shale, 5-10 mg coal) was weighed into a platinum crucible (the base and cover of which are made of sintered steel), and analysed on a Rock-Eval II pyrolyser (Girdel/IFP) under standard conditions (Carrier gas: helium; flow rate: 100 ml/min.; temperature programme: 300°C (3 min.) - 25°C/min. - 550°C).

### Extractable Organic Matter

Powdered rock was extracted by Soxhlet technique with boiling dichloromethane (DCM) containing 7%(v/v) methanol as solvent in a Soxhlet apparatus for 18 hours.

DCM of organic geochemical grade was used and blank analyses indicated that the occurrence of contaminating hydrocarbons was negligible. Activated copper fillings were used in order to remove any free sulphur from the samples.

After extraction, the solvent was evaporated off using a Büchi Rotavapor and the amount of extracted organic matter (EOM) was determined.

## Evaporation of the light components in fluid samples

Prior to chromatographic separation, the oil/condensate samples were heated to 210°C at atmospheric pressure until constant weight (at 210°C) was obtained.

The fraction of light components was determined as the weight difference between the original sample and the residuum left after heating.

## Medium-pressure liquid chromatography (MPLC)

The EOM or oil (>210°C) sample was diluted in DCM (1:3 mg/µl) and the asphaltenes were precipitated using excess n-pentane (40:1 pentane: (DCM+EOM)). The asphaltene fraction was weighed after drying at 50°C for 12 hours.

The remaining maltenes were separated into saturated, aromatic and non-hydrocarbon fractions using an MPLC system with n-hexane as eluant (Radke et al. 1980). The various fractions were concentrated using a Büchi Rotavapor. Then they were transferred to glass vials. The remaining solvent was removed.

## Iatroscan

The extractable organic material was diluted with DCM and ca. 20-30 µg of the solution were applied to a precleaned and activated Chromarod (type SII). Three replicates of each sample were analysed. The rods were fully developed with n-hexane (10-11 cm), then dried and redeveloped to half-rod height (5.5 cm) in toluene, and finally developed in DCM+MeOH (93:7 v/v, 2.5 cm).

The rods were passed through the flame-ionisation detector (FID) of a Iatroscan TH-10 ($H_2$ = 160 ml/min; air = 2 l/min; scan speed = 0.38 cm/sec (gear no. 30)). The FID response was recorded and integrated using a VG Multichrom lab data system. The retention factors of the aliphatic and aromatic hydrocarbons were then determined by comparison with standards ($nC_{20}$ and fluorene).

Relative response factors for Iatroscan: Sat=1.0, Aro=1.15, Res1=1.51 and Res2= 2.03.

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## Iatroscan

The extractable organic material was diluted with DCM and ca. 20-30 µg of the solution were applied to a precleaned and activated Chromarod (type SII). Three replicates of each sample were analysed. The rods were fully developed with n-hexane (10-11 cm), then dried and redeveloped to half-rod height (5.5 cm) in toluene, and finally developed in DCM+MeOH (93:7 v/v, 2.5 cm).

The rods were passed through the flame-ionisation detector (FID) of a Iatroscan TH-10 ($H_2$ = 160 ml/min; air = 2 l/min; scan speed = 0.38 cm/sec (gear no. 30)). The FID response was recorded and integrated using a DEC Minichrom system. The retention factors of the aliphatic and aromatic hydrocarbons were then determined by comparison with standards ($nC_{20}$ and fluorene).

## Gas chromatographic analysis (GC)

The saturated hydrocarbon fractions were diluted with n-hexane and analysed on HP 5730 gas chromatographs equipped with a 15 m DB-1 fused silica column. Hydrogen was used as a carrier gas with a flow rate of about 1.5 ml/min. Injections were performed in split mode (split ratio 1:10). The temperature program used was 80°C (2 min.) - 4°C/min. - 280°C.

The aromatic hydrocarbon fractions were diluted with n-hexane and analysed on a 3400 Varian gas chromatographs equipped with a 50 m DB-5 fused silica column. Hydrogen was used as a carrier gas with a flow rate of about 1 ml/min. Injections were performed in on column mode. The temperature program used was 70°C (1 min.) - 8°C/min. - 120°C - 3°C/min. - 290°C.

The whole oil was analysed using an Varian 3400 gas chromatograph fitted with a 30m DB-5 fused silica column. 0.02µl of sample solution were injected in split mode (split ratio 1:20). Hydrogen with a flow rate of 2.5 ml/min. was used as a carrier gas, and the temperature programme used was -50°C (2 min.) - 4°C/min. - 280°C.

All the data from the GC analyses were processed on a VG Multichrom lab data system.

## Gas chromatography - mass spectrometry (GC-MS)

GC-MS analyses were performed on a VG Micromass 70-70H GC-MS-DS system.

A Varian Series 3700 GC was fitted with a fused silica DB-5 capillary column (30 m x 0.3 mm i.d.). Helium (1.5 ml/min.) was used as a carrier gas and the injections were performed in split mode (split ratio 1:15). The GC oven was programmed from 120°C (2 min.) to 280°C at 4°C/min..

The saturated hydrocarbons 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.

Peaks were identified by comparison with elution patterns in certain mass chromatograms. Peak ratios were calculated from peak heights in the appropriate mass chromatograms.

## Vitrinite Reflectance

Vitrinite reflectance measurements were carried out on whole-rock samples as follows: the rock samples were broken up if necessary, and mounted in a fast-setting synthetic resin. Temperatures in excess of 50°C were avoided as these can result in alteration of the organic material. Once the resin was set, the sample plugs were ground on coarse silicon carbide 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, then water was used.

After coarse grinding, the samples are polished on Selvyt-covered laps using 5/20 and gamma grade alumina powder. Following polishing, the surface of the sample plugs was carefully cleaned to remove any traces of the polishing powders.

Reflectance measurements were carried out using a Leitz MPV-Compact microscope and photo-multiplier 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 vitrinite particles, and measurements were taken on these. The reflectance of a 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 was taken on each sample. Coals and carbonaceous claystone samples provide the most reliable data, while sandstones and carbonates provide the least reliable data.

The samples were also examined in ultra-violet light in order to better 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 kerogen. A scale comparing vitrinite reflectance measurements and sporinite fluorescence to thermal maturity is shown in Table 3 of the interpretation levels.

## Evaluation of kerogen type and thermal maturity in transmitted light

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 kerogen was mounted in glycerine jelly on microscope slides as a strew-mount.

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

T-slide: total acid residue.
O-slide: kerogen debris remaining after flotation in $ZnBr_2$ to remove heavy minerals.
Si-slide: sieved residue.
X-slide: oxidised residue.

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

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

The samples were examined 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 down to 2µm diameter.

Thermal alteration indices (TAI) were measured from the colour of spores and pollen. The techniques used for this are adapted from Staplin (1969) and Burgess (1974). IKU has used a 1-10 scale for thermal alteration index (TAI)/Spore colouration index (SCI) since December, 1986.

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**Kerogen terminology**

The following kerogen terminology is used:

1. Amorphous material - degraded, unstructured material of unidentified origin.
2. Algal material - particles of recogniseably algal origin.
3. Liptinitic material - recogniseable spores, pollen, cuticle and cysts.
4. Woody material - structured and unstructured woody tissue.
5. Coaly material - black, reworked or oxidised material.

**Comparison of microscopic thermal maturation systems at IKU**

| SPORE COLOUR | | VITRINITE REFLECTANCE | SPORINITE FLUORESCENCE |
|---|---|---|---|
| TAI | NEW TAI | % | |
| 1 - 2- | 1.0- 3.5 | 0.25-0.40 | 1-4 |
| 2- - 2 | 3.5- 4.0 | 0.40-0.60 | 4-6 |
| 2 - 2+ | 4.0- 4.5 | 0.60-0.80 | 6-7 |
| 2+ - 3- | 4.5- 5.5 | 0.80-1.00 | 7-8 |
| 3- - 3 | 5.5- 6.0 | 1.00-1.20 | 8-9 |
| 3 - 5 | 6.0-10.0 | <1.20 | Absent |

At IKU, TAI determination is generally undertaken on bisaccates.

Relation between fluorescence colour and sporinite fluorescence zones:

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 |

## Carbon Isotope analysis (IFE)

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

## Nickel, Vanadium and Sulphur content

These elements were determined by SINTEF, Teknisk Kjemi, according to their method.

**Molecular ratios from terpane and sterane mass chromatograms applied as maturity and source characteristic parameters**

Geochemical fossils or biological marker components are characteristic of the type of organic matter present at the time the sediments were deposited. The biological isomers of these components undergo changes due to increased maturity in particular, but also to a certain degree caused by migration and weathering processes.

**Source characteristic parameters**

In the m/z 191 mass chromatograms which represent the terpanes, the hopanes and moretanes are the major components in most extracts and oils. Of the hopanes the $C_{27}$ and $C_{29}$-$C_{35}$ homologs are ubiquitous, while the $C_{28}$ bisnorhopane is believed to be typical of certain types of source rocks. This is also the case for the component, probably gammacerane, sometimes seen to coelute with the 22S isomer of the $C_{31}$ 17α(H)-hopanes (H). In the sterane mass chromatograms, m/z 217 and m/z 218, the molecular weight distribution of the $C_{27}$-$C_{29}$ regular steranes is believed to be representative of the original input of organic matter. The highest molecular weight compounds, the $C_{29}$ steranes, represent organic matter of terrestrial origin, while the lower molecular weight analogs originate from more marine type environments.

**Maturity dependent parameters**

The biological isomers of the hopanes, the 17β(H),21β(H)-hopanes, undergo structural changes during the maturation process. The isomerisation reactions are thought to be produced via the 17β(H),21α(H)-hopanes (moretanes) to the most stable 17α(H),21β(H)-hopanes. At equilibrium 100% of the 17α(H)-hopanes are seen. The ratio αβ/αβ+βα is used to describe this reaction. In the extended hopanes (>$C_{31}$), the thermally stable S configurations at C-22 become increasingly more abundant as compared to the biologically preferred R configurations at increased maturity level. The equilibrium ratio is approximately 60% of the 22S configuration. Another ratio that is known to change with maturity is the Tm/Ts (Seifert et al., 1978) of the $C_{27}$ hopanes. The maturable 18α(H)-trisnorneohopane (Tm) is reduced in intensity relative to the more stable 17α(H)-trisnorneohopane (Ts), causing the Tm/Ts to decrease at increased maturity. This ratio is also believed to source dependant, and this should be born in mind when

applying the ratio for maturity comparison. The amount of tricyclic terpanes is also to a certain extent seen to be maturity dependant.

Two isomerisation reactions taking place in the steranes are most commonly applied for maturity assignments from the m/z 217 mass chromatograms. The biologically preferred 14α(H),17α(H)-isomers of the regular steranes is transformed to the thermally stable 14β(H),17β(H)-steranes, the %ββ approaching 75% at equilibrium. An equilibrium concentration of 50% is seen of the stable S configuration at C-20 as opposed to the 100% of the biological 20R epimer (Mackenzie et al., 1980). The abundance of rearranged steranes increased with increasing maturity.

One of the reactions taking place at an early stage of diagenesis is the aromatisation of steranes, leading to the formation of mono- and triaromatic analogs. This process is measured as the abundance of triaromatic relative to mono-aromatic compounds. (% tri/tri + mono) in the m/z 231 and 253 mass chromatograms, respectively. In addition the degree of side chain cracking, as $\%C_{20}/C_{26,27}$ and $\%C_{21}/C_{28,29}$ respectively, is applied. These cracking processes are also taking place during early diagenesis, and are used for maturity assignment together with the previously mentioned ratios.

**Migration and weathering**

The effect on the geochemical fossils of migration and weathering, is less apparent than the maturity induced changes. Migration is believed to cause an increase in the relative amounts of rearranged and 14β(H),17β(H) regular steranes (Seifert and Moldowan, 1978, 1981). Severe biological alteration leads to the formation of desmethyl-hopanes (Seifert and Moldowan, 1979).

*Peak data from m/z 217, 218 and 191 mass fragmentograms*

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2603 Depth : Type : OIL

Fraction : OIL Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 661.90 | -1 |
| v | -1 | -1 | | | Q | 724.70 | -1 |
| a | 809.10 | -1 | | | R | 363.20 | -1 |
| b | -1 | -1 | | | S | 559.60 | -1 |
| c | -1 | -1 | | | T | 230.10 | -1 |
| f | -1 | -1 | | | A | 2048.00 | -1 |
| g | 412.20 | -1 | | | B | 1414.10 | -1 |
| h | 1230.90 | -1 | 1541.50 | -1 | Z | 3393.70 | -1 |
| i | 485.00 | -1 | 1031.90 | -1 | C | 6042.20 | -1 |
| j | 439.90 | -1 | | | X | 1180.10 | -1 |
| k | 500.10 | -1 | | | D | 914.50 | -1 |
| n | 610.40 | -1 | 1374.10 | -1 | E | 13610.40 | -1 |
| o | 547.90 | -1 | 1158.70 | -1 | F | 975.20 | -1 |
| p | 291.90 | -1 | | | G | 4905.10 | -1 |
| q | 463.10 | -1 | | | H | 3385.20 | -1 |
| r | 809.50 | -1 | 1495.10 | -1 | I | 438.40 | -1 |
| s | 454.30 | -1 | 1135.80 | -1 | J1 | 2895.50 | -1 |
| t | 598.60 | -1 | | | J2 | 2025.70 | -1 |
| | | | | | K1 | 1893.20 | -1 |
| | | | | | K2 | 1372.20 | -1 |
| | | | | | L1 | 845.10 | -1 |
| | | | | | L2 | 605.20 | -1 |
| | | | | | M1 | 627.40 | -1 |
| | | | | | M2 | 322.80 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2602 Depth : Type : OIL

Fraction : OIL Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 184.90 | -1 |
| v | -1 | -1 | | | Q | 148.90 | -1 |
| a | 141.00 | -1 | | | R | 89.80 | -1 |
| b | -1 | -1 | | | S | 126.50 | -1 |
| c | -1 | -1 | | | T | 50.40 | -1 |
| f | -1 | -1 | | | A | 374.00 | -1 |
| g | 67.40 | -1 | | | B | 237.00 | -1 |
| h | 169.50 | -1 | 251.30 | -1 | Z | 636.60 | -1 |
| i | 69.40 | -1 | 164.70 | -1 | C | 1051.80 | -1 |
| j | 71.40 | -1 | | | X | 191.70 | -1 |
| k | 85.40 | -1 | | | D | 182.80 | -1 |
| n | 78.50 | -1 | 180.00 | -1 | E | 2487.90 | -1 |
| o | 81.80 | -1 | 173.60 | -1 | F | 179.50 | -1 |
| p | 43.40 | -1 | | | G | 925.80 | -1 |
| q | 69.80 | -1 | | | H | 624.20 | -1 |
| r | 113.70 | -1 | 214.90 | -1 | I | 92.80 | -1 |
| s | 75.10 | -1 | 198.90 | -1 | J1 | 608.00 | -1 |
| t | 91.40 | -1 | | | J2 | 407.50 | -1 |
| | | | | | K1 | 455.00 | -1 |
| | | | | | K2 | 303.00 | -1 |
| | | | | | L1 | 219.20 | -1 |
| | | | | | L2 | 146.40 | -1 |
| | | | | | M1 | 186.70 | -1 |
| | | | | | M2 | 118.30 | -1 |

IKU SINTEF GRUPPEN

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2004 Depth : 2417 Type : CORE

Fraction : ESED Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 265.50 | -1 |
| v | -1 | -1 | | | Q | 216.20 | -1 |
| a | 396.40 | -1 | | | R | 108.40 | -1 |
| b | -1 | -1 | | | S | 146.80 | -1 |
| c | -1 | -1 | | | T | 58.80 | -1 |
| f | -1 | -1 | | | A | 234.50 | -1 |
| g | -1 | -1 | | | B | 187.80 | -1 |
| h | -1 | -1 | 271.00 | -1 | Z | 322.80 | -1 |
| i | -1 | -1 | 232.80 | -1 | C | 500.90 | -1 |
| j | 118.10 | -1 | | | X | 78.00 | -1 |
| k | -1 | -1 | | | D | 74.30 | -1 |
| n | -1 | -1 | 192.40 | -1 | E | 1036.00 | -1 |
| o | -1 | -1 | 184.20 | -1 | F | 65.80 | -1 |
| p | 58.10 | -1 | | | G | 282.20 | -1 |
| q | 77.50 | -1 | -1 | -1 | H | 175.20 | -1 |
| r | 135.40 | -1 | 170.20 | -1 | I | -1 | -1 |
| s | 108.90 | -1 | 169.60 | -1 | J1 | 131.10 | -1 |
| t | 84.80 | -1 | -1 | -1 | J2 | 87.20 | -1 |
| | | | | | K1 | 70.40 | -1 |
| | | | | | K2 | 44.00 | -1 |
| | | | | | L1 | 25.50 | -1 |
| | | | | | L2 | 15.40 | -1 |
| | | | | | M1 | -1 | -1 |
| | | | | | M2 | -1 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2005 Depth : 2432 Type : CORE

Fraction : ESED Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 282.80 | -1 |
| v | -1 | -1 | | | Q | 217.80 | -1 |
| a | 463.70 | -1 | | | R | 114.60 | -1 |
| b | -1 | -1 | | | S | 165.50 | -1 |
| c | -1 | -1 | | | T | 67.20 | -1 |
| f | -1 | -1 | | | A | 315.70 | -1 |
| g | -1 | -1 | | | B | 219.50 | -1 |
| h | -1 | -1 | 253.60 | -1 | Z | 412.10 | -1 |
| i | -1 | -1 | 254.60 | -1 | C | 649.40 | -1 |
| j | 146.20 | -1 | | | X | 100.70 | -1 |
| k | -1 | -1 | | | D | 90.40 | -1 |
| n | -1 | -1 | 233.00 | -1 | E | 1314.00 | -1 |
| o | -1 | -1 | 225.20 | -1 | F | 71.90 | -1 |
| p | 67.60 | -1 | | | G | 395.90 | -1 |
| q | 90.50 | -1 | -1 | -1 | H | 236.80 | -1 |
| r | 170.80 | -1 | 224.00 | -1 | I | -1 | -1 |
| s | 130.40 | -1 | 209.90 | -1 | J1 | 178.90 | -1 |
| t | 102.60 | -1 | -1 | -1 | J2 | 117.10 | -1 |
| | | | | | K1 | 90.60 | -1 |
| | | | | | K2 | 60.40 | -1 |
| | | | | | L1 | 33.60 | -1 |
| | | | | | L2 | 22.50 | -1 |
| | | | | | M1 | -1 | -1 |
| | | | | | M2 | -1 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2008 Depth : 2450 Type : CORE

Fraction : ESED Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 365.60 | -1 |
| v | -1 | -1 | | | Q | 315.10 | -1 |
| a | 694.70 | -1 | | | R | 163.60 | -1 |
| b | -1 | -1 | | | S | 255.10 | -1 |
| c | -1 | -1 | | | T | 99.90 | -1 |
| f | -1 | -1 | | | A | 480.10 | -1 |
| g | -1 | -1 | | | B | 321.50 | -1 |
| h | -1 | -1 | 542.00 | -1 | Z | 575.80 | -1 |
| i | -1 | -1 | 401.50 | -1 | C | 959.70 | -1 |
| j | 234.50 | -1 | | | X | 120.10 | -1 |
| k | -1 | -1 | | | D | 119.50 | -1 |
| n | -1 | -1 | 336.60 | -1 | E | 1775.50 | -1 |
| o | -1 | -1 | 333.80 | -1 | F | 98.30 | -1 |
| p | 108.60 | -1 | | | G | 486.00 | -1 |
| q | 148.20 | -1 | -1 | -1 | H | 313.10 | -1 |
| r | 274.20 | -1 | 359.70 | -1 | I | -1 | -1 |
| s | 217.70 | -1 | 344.80 | -1 | J1 | 235.80 | -1 |
| t | 154.50 | -1 | -1 | -1 | J2 | 145.00 | -1 |
| | | | | | K1 | 116.60 | -1 |
| | | | | | K2 | 74.40 | -1 |
| | | | | | L1 | 42.20 | -1 |
| | | | | | L2 | 25.60 | -1 |
| | | | | | M1 | 25.50 | -1 |
| | | | | | M2 | 15.20 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2006 Depth : 2481 Type : CORE

Fraction : ESED Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 380.80 | -1 |
| v | -1 | -1 | | | Q | 324.70 | -1 |
| a | 611.80 | -1 | | | R | 173.00 | -1 |
| b | -1 | -1 | | | S | 232.00 | -1 |
| c | -1 | -1 | | | T | 100.00 | -1 |
| f | -1 | -1 | | | A | 421.90 | -1 |
| g | -1 | -1 | | | B | 322.90 | -1 |
| h | -1 | -1 | 500.90 | -1 | Z | 540.20 | -1 |
| i | -1 | -1 | 407.70 | -1 | C | 895.80 | -1 |
| j | 193.90 | -1 | | | X | 124.60 | -1 |
| k | -1 | -1 | | | D | 125.20 | -1 |
| n | -1 | -1 | 319.10 | -1 | E | 1869.60 | -1 |
| o | -1 | -1 | 322.10 | -1 | F | 100.10 | -1 |
| p | 104.80 | -1 | | | G | 515.00 | -1 |
| q | 146.60 | -1 | -1 | -1 | H | 317.20 | -1 |
| r | 267.50 | -1 | 344.60 | -1 | I | -1 | -1 |
| s | 211.50 | -1 | 328.80 | -1 | J1 | 240.30 | -1 |
| t | 160.40 | -1 | -1 | -1 | J2 | 167.00 | -1 |
| | | | | | K1 | 127.90 | -1 |
| | | | | | K2 | 83.30 | -1 |
| | | | | | L1 | 47.60 | -1 |
| | | | | | L2 | 30.50 | -1 |
| | | | | | M1 | -1 | -1 |
| | | | | | M2 | -1 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2007 Depth : 2486 Type : CORE

Fraction : ESED Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 287.60 | -1 |
| v | -1 | -1 | | | Q | 240.70 | -1 |
| a | 541.10 | -1 | | | R | 127.20 | -1 |
| b | -1 | -1 | | | S | 179.90 | -1 |
| c | -1 | -1 | | | T | 67.90 | -1 |
| f | -1 | -1 | | | A | 363.60 | -1 |
| g | -1 | -1 | | | B | 252.10 | -1 |
| h | -1 | -1 | 435.40 | -1 | Z | 406.60 | -1 |
| i | -1 | -1 | 303.60 | -1 | C | 703.20 | -1 |
| j | 163.90 | -1 | | | X | 125.10 | -1 |
| k | -1 | -1 | | | D | 110.00 | -1 |
| n | -1 | -1 | 285.10 | -1 | E | 1463.80 | -1 |
| o | -1 | -1 | 253.30 | -1 | F | 90.40 | -1 |
| p | 81.20 | -1 | | | G | 451.10 | -1 |
| q | 115.70 | -1 | -1 | -1 | H | 276.70 | -1 |
| r | 213.40 | -1 | 275.60 | -1 | I | -1 | -1 |
| s | 168.30 | -1 | 261.70 | -1 | J1 | 211.10 | -1 |
| t | 130.50 | -1 | -1 | -1 | J2 | 132.60 | -1 |
| | | | | | K1 | 115.50 | -1 |
| | | | | | K2 | 77.30 | -1 |
| | | | | | L1 | 44.00 | -1 |
| | | | | | L2 | 27.50 | -1 |
| | | | | | M1 | 26.90 | -1 |
| | | | | | M2 | 14.90 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G1989 Depth : 2506 Type : CORE

Fraction : Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 96.00 | -1 |
| v | -1 | -1 | | | Q | 38.20 | -1 |
| a | 19.40 | -1 | | | R | 21.90 | -1 |
| b | -1 | -1 | | | S | 92.50 | -1 |
| c | -1 | -1 | | | T | 9.90 | -1 |
| f | -1 | -1 | | | A | 41.30 | -1 |
| g | 3.30 | -1 | | | B | 707.20 | -1 |
| h | 37.30 | -1 | 33.90 | -1 | Z | -1 | -1 |
| i | 4.80 | -1 | 11.80 | -1 | C | 831.10 | -1 |
| j | 11.10 | -1 | | | X | 43.10 | -1 |
| k | 18.00 | -1 | | | D | 428.10 | -1 |
| n | 11.80 | -1 | 13.10 | -1 | E | 1501.50 | -1 |
| o | -1 | -1 | 9.10 | -1 | F | 529.20 | -1 |
| p | 5.10 | -1 | | | G | 670.20 | -1 |
| q | 3.70 | -1 | | | H | 1092.20 | -1 |
| r | 17.60 | -1 | 31.00 | -1 | I | -1 | -1 |
| s | 8.00 | -1 | 19.90 | -1 | J1 | 86.90 | -1 |
| t | 31.80 | -1 | | | J2 | 277.60 | -1 |
| | | | | | K1 | 14.10 | -1 |
| | | | | | K2 | 63.20 | -1 |
| | | | | | L1 | 11.30 | -1 |
| | | | | | L2 | 22.10 | -1 |
| | | | | | M1 | -1 | -1 |
| | | | | | M2 | -1 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G1990 Depth : 2515 Type : CORE

Fraction : Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 55.20 | -1 |
| v | -1 | -1 | | | Q | 46.00 | -1 |
| a | 5.10 | -1 | | | R | 19.30 | -1 |
| b | -1 | -1 | | | S | 59.20 | -1 |
| c | -1 | -1 | | | T | 13.80 | -1 |
| f | -1 | -1 | | | A | 69.40 | -1 |
| g | 1.40 | -1 | | | B | 287.60 | -1 |
| h | 5.10 | -1 | 4.50 | -1 | Z | -1 | -1 |
| i | 1.30 | -1 | 2.40 | -1 | C | 510.20 | -1 |
| j | 3.70 | -1 | | | X | 27.90 | -1 |
| k | 4.40 | -1 | | | D | 136.80 | -1 |
| n | 1.70 | -1 | 2.70 | -1 | E | 882.40 | -1 |
| o | 2.40 | -1 | 3.80 | -1 | F | 212.10 | -1 |
| p | 1.10 | -1 | | | G | 279.90 | -1 |
| q | 1.70 | -1 | | | H | 318.70 | -1 |
| r | 2.30 | -1 | 3.30 | -1 | I | -1 | -1 |
| s | 0.90 | -1 | 2.20 | -1 | J1 | 94.00 | -1 |
| t | 6.90 | -1 | | | J2 | 116.10 | -1 |
| | | | | | K1 | 57.20 | -1 |
| | | | | | K2 | 58.00 | -1 |
| | | | | | L1 | 21.50 | -1 |
| | | | | | L2 | 20.50 | -1 |
| | | | | | M1 | -1 | -1 |
| | | | | | M2 | -1 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G1991 Depth : 2520 Type : CORE

Fraction : Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 167.30 | -1 |
| v | -1 | -1 | | | Q | 90.10 | -1 |
| a | 39.20 | -1 | | | R | 50.60 | -1 |
| b | -1 | -1 | | | S | 101.90 | -1 |
| c | -1 | -1 | | | T | 23.70 | -1 |
| f | -1 | -1 | | | A | 44.10 | -1 |
| g | 4.70 | -1 | | | B | 457.90 | -1 |
| h | 27.30 | -1 | 30.90 | -1 | Z | -1 | -1 |
| i | 4.00 | -1 | 10.20 | -1 | C | 545.70 | -1 |
| j | 17.70 | -1 | | | X | 39.60 | -1 |
| k | 12.30 | -1 | | | D | 310.20 | -1 |
| n | 8.70 | -1 | 12.60 | -1 | E | 928.70 | -1 |
| o | 5.20 | -1 | 8.20 | -1 | F | 358.30 | -1 |
| p | 4.40 | -1 | | | G | 274.50 | -1 |
| q | 4.00 | -1 | | | H | 524.50 | -1 |
| r | 7.40 | -1 | 13.30 | -1 | I | -1 | -1 |
| s | 3.40 | -1 | 7.30 | -1 | J1 | 34.90 | -1 |
| t | 20.20 | -1 | | | J2 | 143.90 | -1 |
| | | | | | K1 | 12.10 | -1 |
| | | | | | K2 | 33.50 | -1 |
| | | | | | L1 | 12.00 | -1 |
| | | | | | L2 | 9.20 | -1 |
| | | | | | M1 | -1 | -1 |
| | | | | | M2 | -1 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2604 Depth : 2612 Type : SWC

Fraction : Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 212.20 | -1 |
| v | -1 | -1 | | | Q | 139.80 | -1 |
| a | 94.10 | -1 | | | R | 75.10 | -1 |
| b | -1 | -1 | | | S | 129.20 | -1 |
| c | -1 | -1 | | | T | 45.70 | -1 |
| f | -1 | -1 | | | A | 229.70 | -1 |
| g | 49.70 | -1 | | | B | 218.60 | -1 |
| h | 104.20 | -1 | 168.40 | -1 | Z | 636.10 | -1 |
| i | 52.70 | -1 | 129.00 | -1 | C | 1005.70 | -1 |
| j | 54.60 | -1 | | | X | 64.10 | -1 |
| k | 39.10 | -1 | | | D | 177.00 | -1 |
| n | 51.00 | -1 | 125.10 | -1 | E | 2001.10 | -1 |
| o | 52.40 | -1 | 121.00 | -1 | F | 141.10 | -1 |
| p | 29.40 | -1 | | | G | 668.40 | -1 |
| q | 45.20 | -1 | | | H | 452.50 | -1 |
| r | 80.40 | -1 | 141.70 | -1 | I | -1 | -1 |
| s | 52.70 | -1 | 130.90 | -1 | J1 | 338.40 | -1 |
| t | 53.20 | -1 | | | J2 | 237.60 | -1 |
| | | | | | K1 | 281.10 | -1 |
| | | | | | K2 | 189.60 | -1 |
| | | | | | L1 | 120.00 | -1 |
| | | | | | L2 | 86.10 | -1 |
| | | | | | M1 | 85.50 | -1 |
| | | | | | M2 | 55.30 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2605 Depth : 2614 Type : SWC

Fraction : Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 247.10 | -1 |
| v | -1 | -1 | | | Q | 154.40 | -1 |
| a | 37.20 | -1 | | | R | 79.00 | -1 |
| b | -1 | -1 | | | S | 135.40 | -1 |
| c | -1 | -1 | | | T | 52.60 | -1 |
| f | -1 | -1 | | | A | 198.70 | -1 |
| g | 17.50 | -1 | | | B | 268.10 | -1 |
| h | 41.00 | -1 | 72.80 | -1 | Z | 161.10 | -1 |
| i | 20.70 | -1 | 49.60 | -1 | C | 590.60 | -1 |
| j | 25.30 | -1 | | | X | 55.70 | -1 |
| k | 18.30 | -1 | | | D | 108.40 | -1 |
| n | 18.30 | -1 | 44.50 | -1 | E | 770.70 | -1 |
| o | 17.00 | -1 | 43.10 | -1 | F | 80.10 | -1 |
| p | 7.80 | -1 | | | G | 235.90 | -1 |
| q | 12.50 | -1 | | | H | 191.90 | -1 |
| r | 24.80 | -1 | 49.30 | -1 | I | 32.40 | -1 |
| s | 16.30 | -1 | 47.10 | -1 | J1 | 105.30 | -1 |
| t | 18.90 | -1 | | | J2 | 73.40 | -1 |
| | | | | | K1 | 55.90 | -1 |
| | | | | | K2 | 34.30 | -1 |
| | | | | | L1 | 22.00 | -1 |
| | | | | | L2 | 14.00 | -1 |
| | | | | | M1 | 14.20 | -1 |
| | | | | | M2 | 7.80 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2606 Depth : 2616 Type : SWC

Fraction : Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 315.60 | -1 |
| v | -1 | -1 | | | Q | 225.00 | -1 |
| a | 123.80 | -1 | | | R | 114.90 | -1 |
| b | -1 | -1 | | | S | 177.00 | -1 |
| c | -1 | -1 | | | T | 63.60 | -1 |
| f | -1 | -1 | | | A | 390.70 | -1 |
| g | 81.50 | -1 | | | B | 385.40 | -1 |
| h | 158.50 | -1 | 270.90 | -1 | Z | 930.40 | -1 |
| i | 75.00 | -1 | 178.70 | -1 | C | 1504.10 | -1 |
| j | 91.50 | -1 | | | X | 134.00 | -1 |
| k | 67.90 | -1 | | | D | 307.30 | -1 |
| n | 80.70 | -1 | 191.70 | -1 | E | 3288.30 | -1 |
| o | 76.90 | -1 | 181.50 | -1 | F | 276.20 | -1 |
| p | 46.50 | -1 | | | G | 992.20 | -1 |
| q | 63.20 | -1 | | | H | 761.20 | -1 |
| r | 125.80 | -1 | 220.30 | -1 | I | 125.30 | -1 |
| s | 82.20 | -1 | 199.60 | -1 | J1 | 555.70 | -1 |
| t | 96.40 | -1 | | | J2 | 398.90 | -1 |
| | | | | | K1 | 420.30 | -1 |
| | | | | | K2 | 265.50 | -1 |
| | | | | | L1 | 174.20 | -1 |
| | | | | | L2 | 127.60 | -1 |
| | | | | | M1 | 114.90 | -1 |
| | | | | | M2 | 65.20 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2607 Depth : 2618 Type : SWC

Fraction : Aliquot : 1

| | m/z 217 | | m/z 218 | | | m/z 191 | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 509.70 | -1 |
| v | -1 | -1 | | | Q | 334.90 | -1 |
| a | 240.90 | -1 | | | R | 199.00 | -1 |
| b | -1 | -1 | | | S | 301.00 | -1 |
| c | -1 | -1 | | | T | 116.00 | -1 |
| f | -1 | -1 | | | A | 647.30 | -1 |
| g | 129.30 | -1 | | | B | 734.30 | -1 |
| h | 272.20 | -1 | 424.90 | -1 | Z | 1597.60 | -1 |
| i | 151.80 | -1 | 332.50 | -1 | C | 2993.80 | -1 |
| j | 150.00 | -1 | | | X | 237.10 | -1 |
| k | 125.30 | -1 | | | D | 548.00 | -1 |
| n | 137.70 | -1 | 323.10 | -1 | E | 5336.30 | -1 |
| o | 150.00 | -1 | 327.90 | -1 | F | 478.10 | -1 |
| p | 90.30 | -1 | | | G | 1785.40 | -1 |
| q | 121.50 | -1 | | | H | 1283.10 | -1 |
| r | 251.00 | -1 | 429.10 | -1 | I | 208.60 | -1 |
| s | 162.00 | -1 | 379.30 | -1 | J1 | 987.10 | -1 |
| t | 172.00 | -1 | | | J2 | 687.70 | -1 |
| | | | | | K1 | 741.80 | -1 |
| | | | | | K2 | 494.00 | -1 |
| | | | | | L1 | 311.20 | -1 |
| | | | | | L2 | 220.90 | -1 |
| | | | | | M1 | 236.30 | -1 |
| | | | | | M2 | 136.30 | -1 |

Peak data from m/z 217, 218 and 191 mass fragmentograms

Project : 22196200 Location : 34/7-16 Date : 91.01.30

IKUno. : G2608 Depth : 2620 Type : SWC

Fraction : Aliquot : 1

| m/z 217 | | | m/z 218 | | m/z 191 | | |
|---|---|---|---|---|---|---|---|
| Peak identity | Height | Area | Height | Area | Peak identity | Height | Area |
| u | -1 | -1 | | | P | 396.90 | -1 |
| v | -1 | -1 | | | Q | 308.70 | -1 |
| a | 131.60 | -1 | | | R | 133.00 | -1 |
| b | -1 | -1 | | | S | 278.20 | -1 |
| c | -1 | -1 | | | T | 82.40 | -1 |
| f | -1 | -1 | | | A | 512.70 | -1 |
| g | 90.70 | -1 | | | B | 658.80 | -1 |
| h | 170.30 | -1 | 307.30 | -1 | Z | 1021.50 | -1 |
| i | 91.90 | -1 | 200.10 | -1 | C | 2395.00 | -1 |
| j | 109.30 | -1 | | | X | 190.20 | -1 |
| k | 84.90 | -1 | | | D | 426.40 | -1 |
| n | 91.70 | -1 | 213.80 | -1 | E | 4550.50 | -1 |
| o | 92.20 | -1 | 209.60 | -1 | F | 421.30 | -1 |
| p | 55.00 | -1 | | | G | 1344.90 | -1 |
| q | 95.60 | -1 | | | H | 1036.90 | -1 |
| r | 149.60 | -1 | 260.40 | -1 | I | 156.30 | -1 |
| s | 102.40 | -1 | 238.90 | -1 | J1 | 791.80 | -1 |
| t | 121.00 | -1 | | | J2 | 552.10 | -1 |
| | | | | | K1 | 623.10 | -1 |
| | | | | | K2 | 408.30 | -1 |
| | | | | | L1 | 279.90 | -1 |
| | | | | | L2 | 190.00 | -1 |
| | | | | | M1 | 178.20 | -1 |
| | | | | | M2 | 104.30 | -1 |