

RKER 92.069

Geochemical investigation of five source rock samples from
well 3/7-5, Norway

by

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Sponsor: Shell Risavika EP

Code: 876.106.10

investigation: 8BAS0320

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Initial distribution:

Shell Risavika EP - 3 copies
SIPM-EPA/2 - 3 copies

**Summary of the Geochemical Data of the extract from
well 03/07-05 (3101 m.), Norway**

Gravity and Gross Composition

| | |
|-------------------------------|---------|
| % Extract : | 0.3 |
| % TOC after extract : | 2.2 |
| Extract/TOC : | 0.14 |
| Gross Composition (W%) | |
| Saturates : | 14 |
| Aromatics : | 11 |
| Heterocompounds : | 68 |
| Rest (High molecular) : | 7 |
| Sulphur (%) : | no data |
| Vanadium (ppm) : | no data |
| Nickel (ppm) : | no data |

Saturates Distributions
(Gaschromatography)

| | |
|----------------------|---------|
| Pristane / Phytane : | 1.7 |
| Pristane / n-C17 : | 1.5 |
| Phytane / n-C18 : | 1.0 |
| ACI : | 12 |
| Corr. Coeff. : | -0.9815 |

C-7 Distributions
(Gaschromatography)

| | |
|--|----|
| C-7 Alkanes (%) | |
| Normal C-7 : | 37 |
| Mono Branched : | 49 |
| Poly Branched : | 14 |
| C-7 Alkanes / Cyclo Alkanes (%) | |
| Normal C-7 : | 12 |
| Cyclo Alkanes : | 67 |
| Branched Alkanes : | 21 |
| C-7 Alk. / Cyclo Alk. / Aromatics (%) | |
| Alkanes : | 31 |
| Cyclo Alkanes : | 62 |
| Aromatics : | 7 |

Carbon Isotope Ratios
(Mass Spectrometry)

| | |
|-------------------------|---------|
| Total Sample (topped) : | -28.3 |
| Saturates : | no data |
| Aromatics : | no data |

Distribution of Ring Compounds
(Field Ionisation Mass Spectrometry)

| | |
|--------------------------------|---------|
| C-15 Ring Compounds (%) | |
| 1 ring : | no data |
| 2 ring : | |
| 3 ring : | |
| C-30 Ring Compounds (%) | |
| 3 ring : | no data |
| 4 ring : | |
| 5 ring : | |
| C-29 VR/E : | no data |

Sterane and Triterpane Distributions
(Gaschromatography / Mass Spectrometry)

| | |
|--------------------------------------|------|
| Steranes/Triterpanes (%) | |
| Iso Steranes : | 25 |
| Rearranged Steranes : | 64 |
| Triterpanes : | 11 |
| Steranes (%) | |
| Iso Steranes : | 22 |
| Rearranged Steranes : | 39 |
| Normal Steranes : | 39 |
| Triterpanes (%) | |
| C-30 Hopanes : | 100 |
| Oleanane ($\alpha + \beta$) : | 0 |
| W + T : | 0 |
| Steranes Carbon No. Dist. (%) | |
| C-27 : | 35 |
| C-28 : | 31 |
| C-29 : | 34 |
| C-29 Sterane Ratios | |
| 20S / 20R + 20S : | 0.38 |
| Iso / Iso + Normal : | 0.39 |
| Triterpane Ratios | |
| TS / TM : | 0.33 |
| 3R / 3R + 5R : | 0.17 |

**Summary of the Geochemical Data of the extract from
well 03/07-05 (3194.5 m.), Norway**

Gravity and Gross Composition

| | |
|-------------------------------|---------|
| % Extract : | 0.4 |
| % TOC after extract : | 2.7 |
| Extract/TOC : | 0.15 |
| Gross Composition (W%) | |
| Saturates : | 13 |
| Aromatics : | 23 |
| Heterocompounds : | 54 |
| Rest (High molecular) : | 10 |
| Sulphur (%) : | no data |
| Vanadium (ppm) : | no data |
| Nickel (ppm) : | no data |

Saturates Distributions
(Gaschromatography)

| | |
|----------------------|---------|
| Pristane / Phytane : | 1.4 |
| Pristane / n-C17 : | 1.0 |
| Phytane / n-C18 : | 0.8 |
| ACI : | 15 |
| Corr. Coeff. : | -0.9753 |

C-7 Distributions

(Gaschromatography)

| | |
|--|----|
| C-7 Alkanes (%) | |
| Normal C-7 : | 35 |
| Mono Branched : | 46 |
| Poly Branched : | 19 |
| C-7 Alkanes / Cyclo Alkanes (%) | |
| Normal C-7 : | 10 |
| Cyclo Alkanes : | 71 |
| Branched Alkanes : | 19 |
| C-7 Alk. / Cyclo Alk. / Aromatics (%) | |
| Alkanes : | 28 |
| Cyclo Alkanes : | 66 |
| Aromatics : | 6 |

Carbon Isotope Ratios
(Mass Spectrometry)

| | |
|-------------------------|---------|
| Total Sample (topped) : | -28.0 |
| Saturates : | no data |
| Aromatics : | no data |

Distribution of Ring Compounds

(Field Ionisation Mass Spectrometry)

| | |
|--------------------------------|---------|
| C-15 Ring Compounds (%) | |
| 1 ring : | no data |
| 2 ring : | |
| 3 ring : | |
| C-30 Ring Compounds (%) | |
| 3 ring : | no data |
| 4 ring : | |
| 5 ring : | |
| C-29 VR/E : | no data |

Sterane and Triterpane Distributions

(Gaschromatography / Mass Spectrometry)

| | |
|--------------------------------------|------|
| Steranes/Triterpanes (%) | |
| Iso Steranes : | 25 |
| Rearranged Steranes : | 60 |
| Triterpanes : | 15 |
| Steranes (%) | |
| Iso Steranes : | 24 |
| Rearranged Steranes : | 39 |
| Normal Steranes : | 37 |
| Triterpanes (%) | |
| C-30 Hopanes : | 100 |
| Oleanane ($\alpha + \beta$) : | 0 |
| W + T : | 0 |
| Steranes Carbon No. Dist. (%) | |
| C-27 : | 34 |
| C-28 : | 30 |
| C-29 : | 36 |
| C-29 Sterane Ratios | |
| 20S / 20R + 20S : | 0.32 |
| Iso / Iso + Normal : | 0.38 |
| Triterpane Ratios | |
| TS / TM : | 0.22 |
| 3R / 3R + 5R : | 0.20 |

**Summary of the Geochemical Data of the extract from
well 03/07-05 (3333 m.), Norway**

Gravity and Gross Composition

| | |
|-------------------------------|---------|
| % Extract : | 0.6 |
| % TOC after extract : | 4.5 |
| Extract/TOC : | 0.13 |
| Gross Composition (W%) | |
| Saturates : | 14 |
| Aromatics : | 25 |
| Heterocompounds : | 53 |
| Rest (High molecular) : | 8 |
| Sulphur (%) : | no data |
| Vanadium (ppm) : | no data |
| Nickel (ppm) : | no data |

Saturates Distributions
(Gaschromatography)

| | |
|----------------------|---------|
| Pristane / Phytane : | 1.7 |
| Pristane / n-C17 : | 1.2 |
| Phytane / n-C18 : | 0.9 |
| ACI : | 16 |
| Corr. Coeff. : | -0.9831 |

C-7 Distributions
(Gaschromatography)

| | |
|--|----|
| C-7 Alkanes (%) | |
| Normal C-7 : | 18 |
| Mono Branched : | 62 |
| Poly Branched : | 20 |
| C-7 Alkanes / Cyclo Alkanes (%) | |
| Normal C-7 : | 5 |
| Cyclo Alkanes : | 73 |
| Branched Alkanes : | 22 |
| C-7 Alk. / Cyclo Alk. / Aromatics (%) | |
| Alkanes : | 26 |
| Cyclo Alkanes : | 68 |
| Aromatics : | 6 |

Carbon Isotope Ratios
(Mass Spectrometry)

| | |
|-------------------------|---------|
| Total Sample (topped) : | no data |
| Saturates : | no data |
| Aromatics : | no data |

Distribution of Ring Compounds
(Field Ionisation Mass Spectrometry)

| | |
|--------------------------------|---------|
| C-15 Ring Compounds (%) | |
| 1 ring : | no data |
| 2 ring : | |
| 3 ring : | |
| C-30 Ring Compounds (%) | |
| 3 ring : | no data |
| 4 ring : | |
| 5 ring : | |
| C-29 VR/E : | no data |

Sterane and Triterpane Distributions
(Gaschromatography / Mass Spectrometry)

| | |
|--------------------------------------|------|
| Steranes/Triterpanes (%) | |
| Iso Steranes : | 27 |
| Rearranged Steranes : | 62 |
| Triterpanes : | 11 |
| Steranes (%) | |
| Iso Steranes : | 29 |
| Rearranged Steranes : | 45 |
| Normal Steranes : | 26 |
| Triterpanes (%) | |
| C-30 Hopanes : | 100 |
| Oleanane ($\alpha + \beta$) : | 0 |
| W + T : | 0 |
| Steranes Carbon No. Dist. (%) | |
| C-27 : | 45 |
| C-28 : | 27 |
| C-29 : | 28 |
| C-29 Sterane Ratios | |
| 20S / 20R + 20S : | 0.51 |
| Iso / Iso + Normal : | 0.50 |
| Triterpane Ratios | |
| TS / TM : | 0.35 |
| 3R / 3R + 5R : | 0.16 |

**Summary of the Geochemical Data of the extract from
well 03/07-05 (3388.4 m.), Norway**

Gravity and Gross Composition

| | |
|-------------------------------|---------|
| % Extract : | 1.1 |
| % TOC after extract : | 69.8 |
| Extract/TOC : | 0.02 |
| Gross Composition (W%) | |
| Saturates : | 5 |
| Aromatics : | 42 |
| Heterocompounds : | 47 |
| Rest (High molecular) : | 5 |
| Sulphur (%) : | no data |
| Vanadium (ppm) : | no data |
| Nickel (ppm) : | no data |

Saturates Distributions
(Gaschromatography)

| | |
|----------------------|---------|
| Pristane / Phytane : | 6.9 |
| Pristane / n-C17 : | 18.0 |
| Phytane / n-C18 : | 2.4 |
| ACI : | 22 |
| Corr. Coeff. : | -0.9440 |

C-7 Distributions
(Gaschromatography)

| | |
|--|----|
| C-7 Alkanes (%) | |
| Normal C-7 : | 44 |
| Mono Branched : | 45 |
| Poly Branched : | 11 |
| C-7 Alkanes / Cyclo Alkanes (%) | |
| Normal C-7 : | 17 |
| Cyclo Alkanes : | 62 |
| Branched Alkanes : | 21 |
| C-7 Alk. / Cyclo Alk. / Aromatics (%) | |
| Alkanes : | 27 |
| Cyclo Alkanes : | 44 |
| Aromatics : | 29 |

Carbon Isotope Ratios
(Mass Spectrometry)

| | |
|-------------------------|---------|
| Total Sample (topped) : | -24.3 |
| Saturates : | no data |
| Aromatics : | no data |

Distribution of Ring Compounds
(Field Ionisation Mass Spectrometry)

| | |
|--------------------------------|---------|
| C-15 Ring Compounds (%) | |
| 1 ring : | no data |
| 2 ring : | |
| 3 ring : | |
| C-30 Ring Compounds (%) | |
| 3 ring : | no data |
| 4 ring : | |
| 5 ring : | |
| C-29 VR/E : | no data |

Sterane and Triterpane Distributions
(Gaschromatography / Mass Spectrometry)

| | |
|--------------------------------------|------|
| Steranes/Triterpanes (%) | |
| Iso Steranes : | 26 |
| Rearranged Steranes : | 30 |
| Triterpanes : | 44 |
| Steranes (%) | |
| Iso Steranes : | 39 |
| Rearranged Steranes : | 30 |
| Normal Steranes : | 31 |
| Triterpanes (%) | |
| C-30 Hopanes : | 100 |
| Oleanane ($\alpha + \beta$) : | 0 |
| W + T : | 0 |
| Steranes Carbon No. Dist. (%) | |
| C-27 : | 16 |
| C-28 : | 28 |
| C-29 : | 56 |
| C-29 Sterane Ratios | |
| 20S / 20R + 20S : | 0.53 |
| Iso / Iso + Normal : | 0.52 |
| Triterpane Ratios | |
| TS / TM : | 0.04 |
| 3R / 3R + 5R : | 0.04 |

**Summary of the Geochemical Data of the extract from
well 03/07-05 (3602 m.), Norway**

Gravity and Gross Composition

| | |
|-------------------------------|---------|
| % Extract : | 0.6 |
| % TOC after extract : | 7.3 |
| Extract/TOC : | 0.08 |
| Gross Composition (W%) | |
| Saturates : | 11 |
| Aromatics : | 33 |
| Heterocompounds : | 46 |
| Rest (High molecular) : | 10 |
| Sulphur (%) : | no data |
| Vanadium (ppm) : | no data |
| Nickel (ppm) : | no data |

Saturates Distributions
(Gaschromatography)

| | |
|----------------------|---------|
| Pristane / Phytane : | 2.6 |
| Pristane / n-C17 : | 0.5 |
| Phytane / n-C18 : | 0.2 |
| ACI : | 23 |
| Corr. Coeff. : | -0.9243 |

C-7 Distributions
(Gaschromatography)

| | |
|--|----|
| C-7 Alkanes (%) | |
| Normal C-7 : | 29 |
| Mono Branched : | 45 |
| Poly Branched : | 26 |
| C-7 Alkanes / Cyclo Alkanes (%) | |
| Normal C-7 : | 11 |
| Cyclo Alkanes : | 62 |
| Branched Alkanes : | 27 |
| C-7 Alk. / Cyclo Alk. / Aromatics (%) | |
| Alkanes : | 34 |
| Cyclo Alkanes : | 56 |
| Aromatics : | 10 |

Carbon Isotope Ratios
(Mass Spectrometry)

| | |
|-------------------------|---------|
| Total Sample (topped) : | -24.8 |
| Saturates : | no data |
| Aromatics : | no data |

Distribution of Ring Compounds
(Field Ionisation Mass Spectrometry)

| | |
|--------------------------------|---------|
| C-15 Ring Compounds (%) | |
| 1 ring : | no data |
| 2 ring : | |
| 3 ring : | |
| C-30 Ring Compounds (%) | |
| 3 ring : | no data |
| 4 ring : | |
| 5 ring : | |
| C-29 VR/E : | no data |

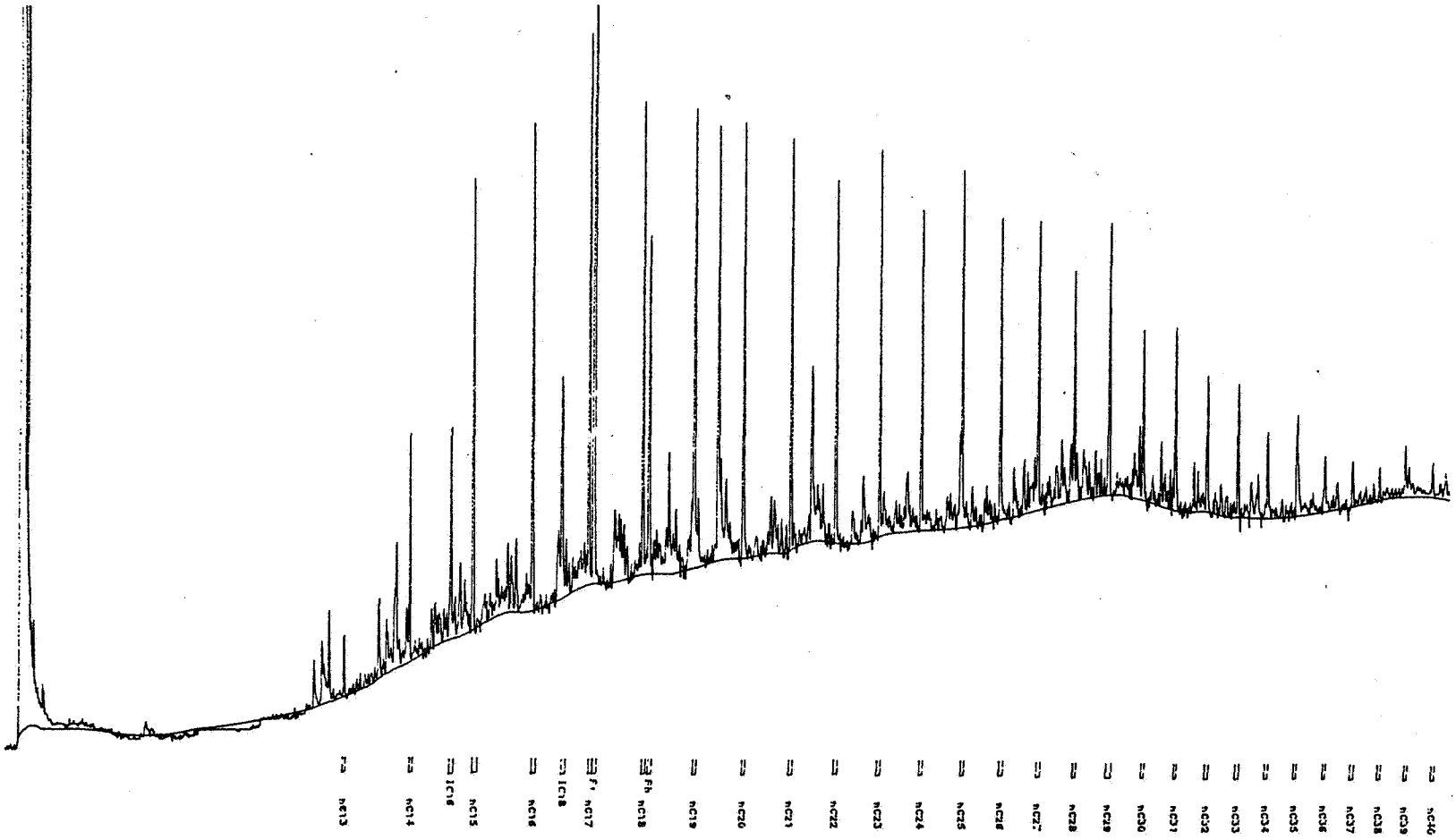
Sterane and Triterpane Distributions
(Gaschromatography / Mass Spectrometry)

| | |
|--------------------------------------|------|
| Steranes/Triterpanes (%) | |
| Iso Steranes : | 46 |
| Rearranged Steranes : | 30 |
| Triterpanes : | 24 |
| Steranes (%) | |
| Iso Steranes : | 50 |
| Rearranged Steranes : | 22 |
| Normal Steranes : | 28 |
| Triterpanes (%) | |
| C-30 Hopanes : | 100 |
| Oleanane ($\alpha + \beta$) : | 0 |
| W + T : | 0 |
| Steranes Carbon No. Dist. (%) | |
| C-27 : | 16 |
| C-28 : | 16 |
| C-29 : | 68 |
| C-29 Sterane Ratios | |
| 20S / 20R + 20S : | 0.55 |
| Iso / Iso + Normal : | 0.60 |
| Triterpane Ratios | |
| TS / TM : | 0.08 |
| 3R / 3R + 5R : | 0.16 |

ANALYTICAL DATA
well 03/07-05 (3101 m.), Norway

Gas chromatogram of the saturated hydrocarbons of the extract from well 03/07-05 (3101 m.), Norway

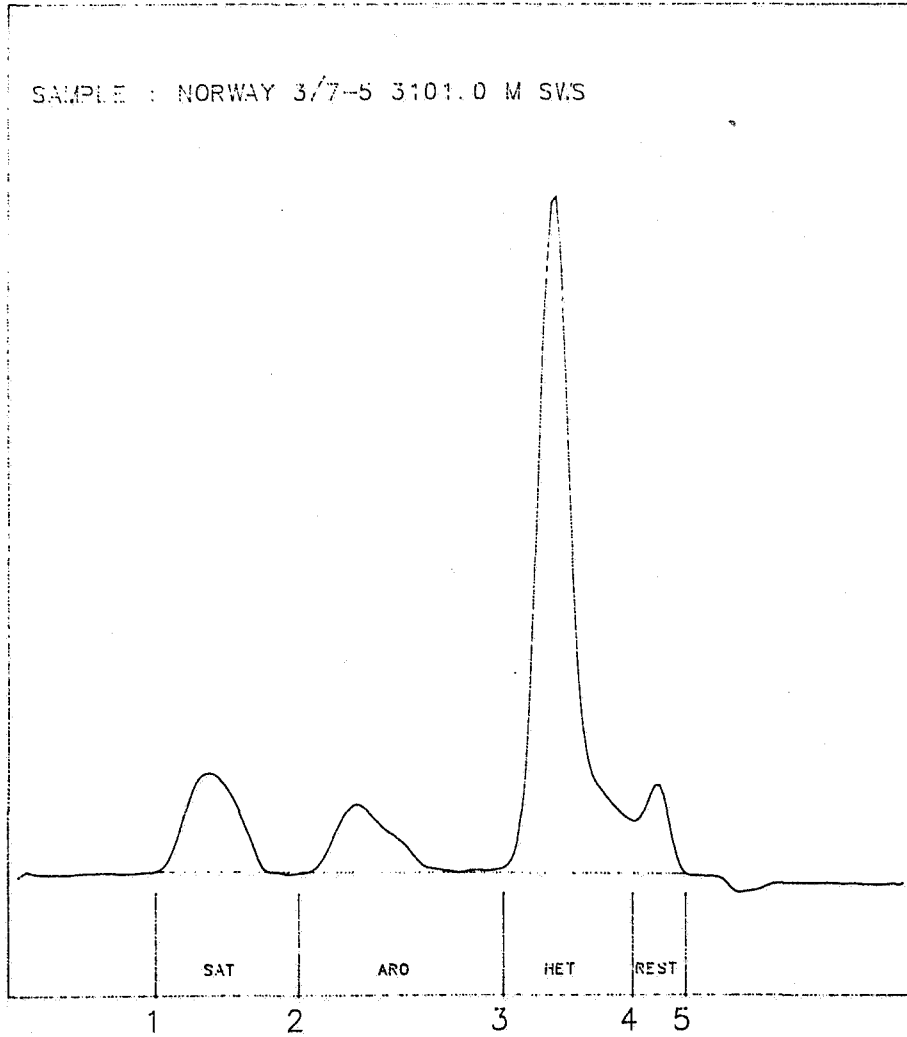
815665702



S15665702

Gross Composition of the extract from well 03/07-05 (3101 m.), Norway

RKER 92.069

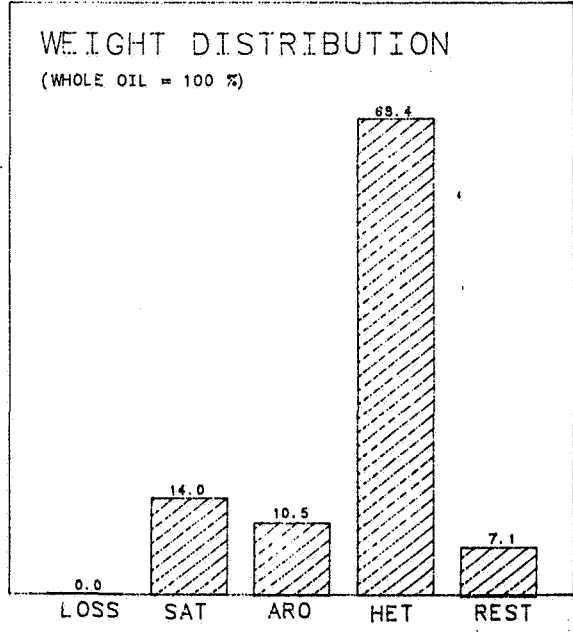


SAMPLE : S156657-2

WEIGHT LOST ON TOPPING : 0.0 %

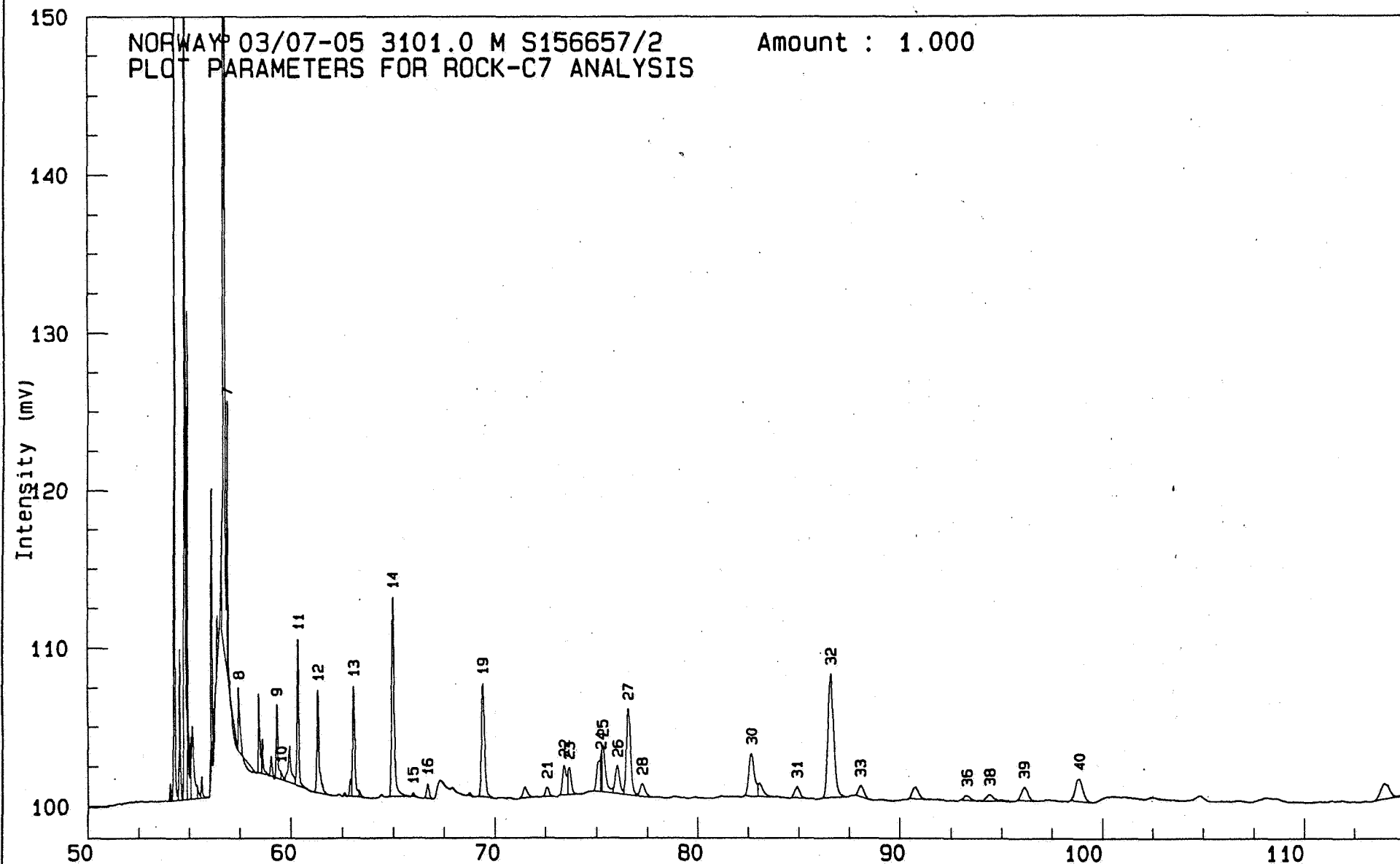
| | |
|--------------------|----------|
| - SATURATES | : 14.0 % |
| - AROMATICS | : 10.5 % |
| - HETEROCOMPOUNDS | : 68.4 % |
| - REST (HIGH MOL.) | : 7.1 % |

• WEIGHT PERCENTAGES CALCULATED FROM FID RESPONSE



Confidential

Gas chromatogram of the light fraction (< 120 C.) of the extract from well 03/07-05 (3101 m.), Norway



S15665702

**Gas chromatographic hydrocarbons analysis (< 120 C.)
well 03/07-05 (3101 m.), Norway**

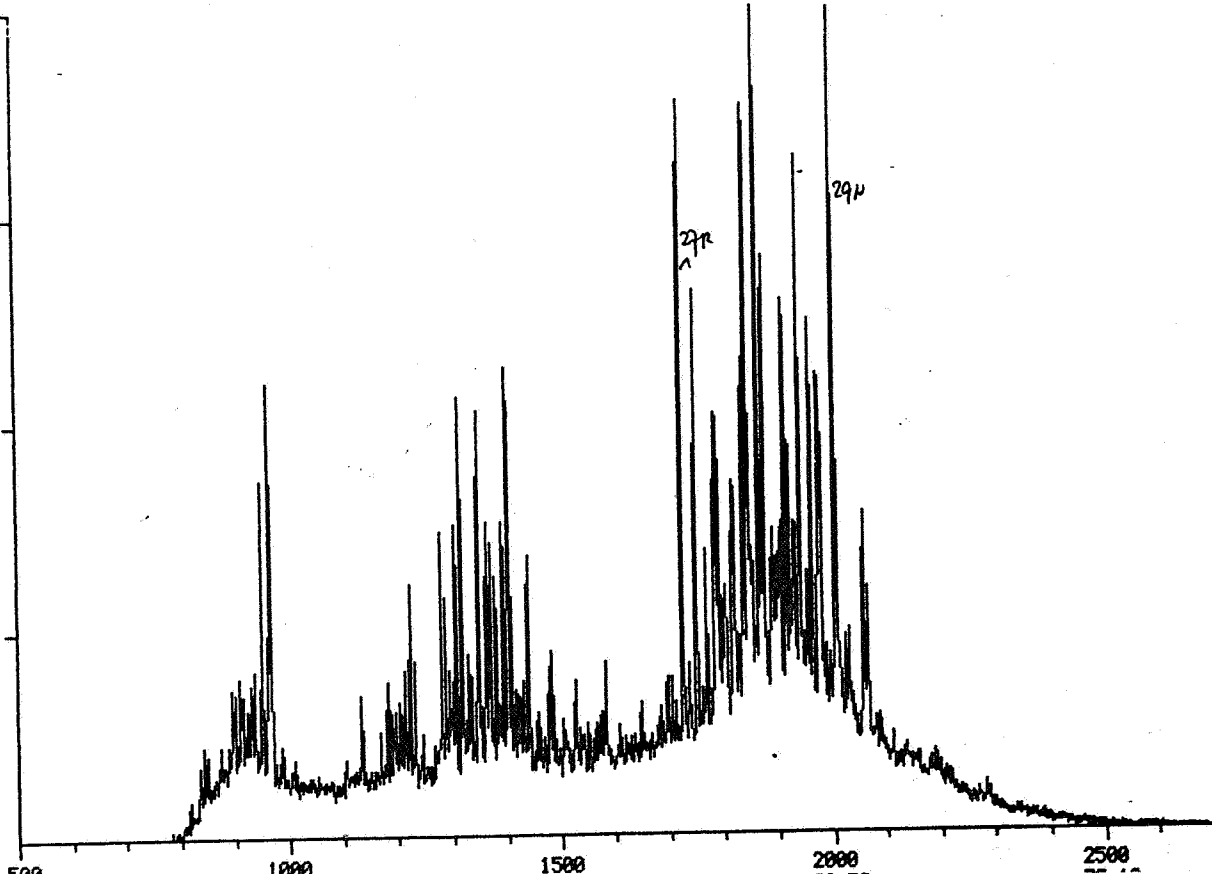
GAS CHROMATOGRAPHICS ANALYSIS OF THE FRACTION BOILING BELOW
120 DEGREES CENTIGRADE

Sample: NORWAY 03/07-05 3101.0 M S156657/2

| COMPONENT No. Name | RET. TIME (min) | HEIGHT (mV) | AREA (cnts) |
|-----------------------|----------------------------------|----------------|----------------|
| 1 | methane | 0.00 | 0 |
| 2 | ethane | 0.00 | 0 |
| 3 | propane | 0.00 | 0 |
| 4 | i-butane | 0.00 | 0 |
| 5 | n-butane | 0.00 | 0 |
| 6 | i-pentane | 56.75 | 58919 |
| 7 | n-pentane | 56.87 | 17231 |
| 8 | 2.2-dimethylbutane | 57.42 | 4002 |
| 9 | cyclopentane | 59.30 | 4617 |
| 10 | 2.3-dimethylbutane | 59.51 | 460 |
| 11 | 2-methylpentane | 60.33 | 9193 |
| 12 | 3-methylpentane | 61.31 | 6441 |
| 13 | n-hexane | 63.06 | 6952 |
| 14 | methylcyclopentane | 64.99 | 12535 |
| 15 | 2.2-dimethylpentane | 65.98 | 208 |
| 16 | benzene | 66.69 | 883 |
| 17 | 2.4-dimethylpentane | 0.00 | 0 |
| 18 | 2.2.3-trimethylbutane | 0.00 | 0 |
| 19 | cyclohexane | 69.41 | 7152 |
| 20 | 3.3-dimethylpentane | 0.00 | 0 |
| 21 | 1.1-dimethylcyclopentane | 72.57 | 584 |
| 22 | 2-methylhexane | 73.41 | 1846 |
| 23 | 2.3-dimethylpentane | 73.64 | 1670 |
| 24 | 1-c-3-dimethylcyclopentane | 75.20 | 2108 |
| 25 | 3-methylhexane | 75.30 | 2920 |
| 26 | 1-tr-3-dimethylcyclopentane | 76.03 | 1744 |
| 27 | 1-tr-2-dimethylcyclopentane | 76.56 | 5444 |
| 28 | 3-ethylpentane | 77.24 | 790 |
| 29 | reference | 0.00 | 0 |
| 30 | n-heptane | 82.66 | 2675 |
| 31 | 1-c-2-dimethylcyclopentane | 84.92 | 682 |
| 32 | methylcyclohexane | 86.59 | 7792 |
| 33 | 1.1.3-trimethylcyclopentane | 88.06 | 688 |
| 34 | 2.2-dimethylhexane | 0.00 | 0 |
| 35 | ethylcyclopentane | 0.00 | 0 |
| 36 | 2.5-dimethylhexane | 93.29 | 317 |
| 37 | not-present | 0.00 | 0 |
| 38 | 2.2.3-trimethylpentane | 94.41 | 404 |
| 39 | 1-tr-2-c-4-trimethylcyclopentane | 96.11 | 835 |
| 40 | toluene | 98.85 | 1402 |

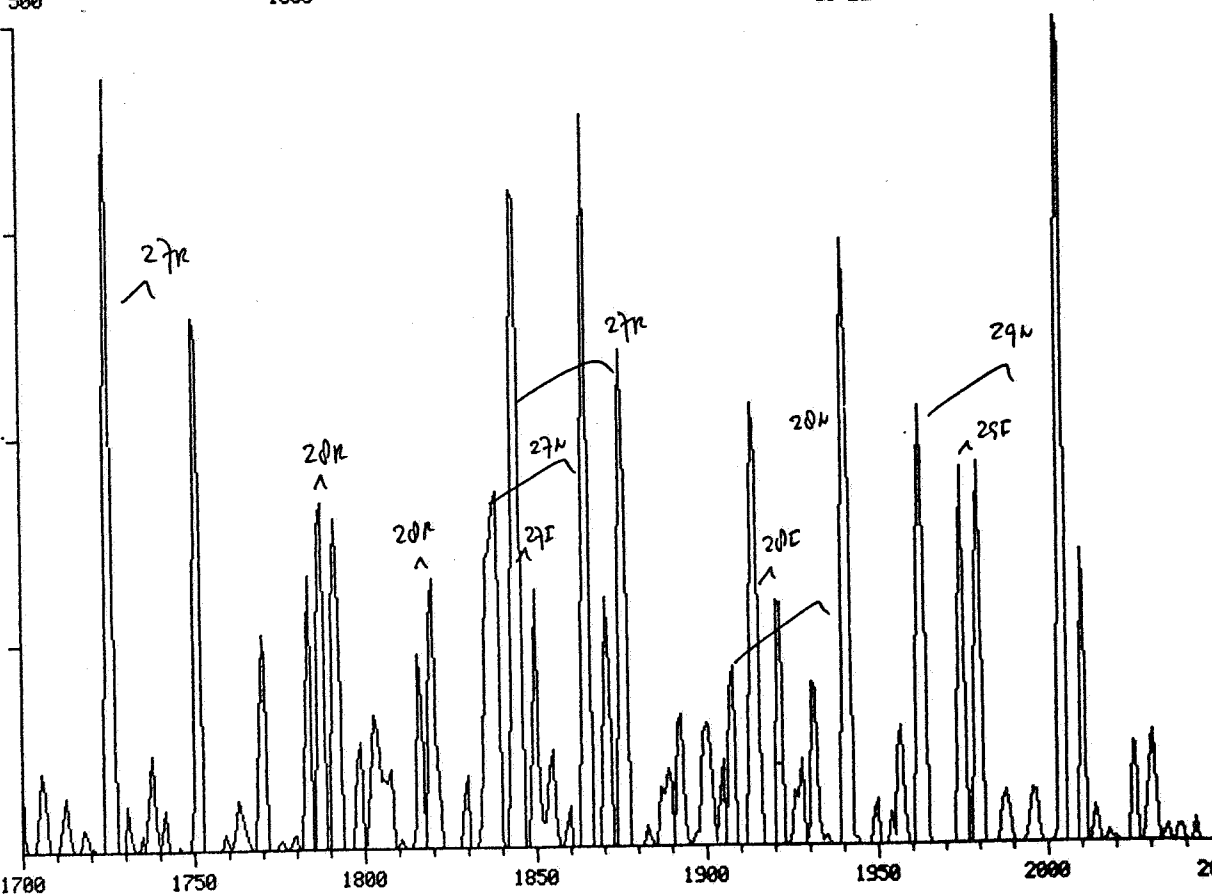
Sterane Fragmentograms of the extract from well 03/07-05 (3101 m.), Norway

48512.



217- 217
218- 218
259- 259

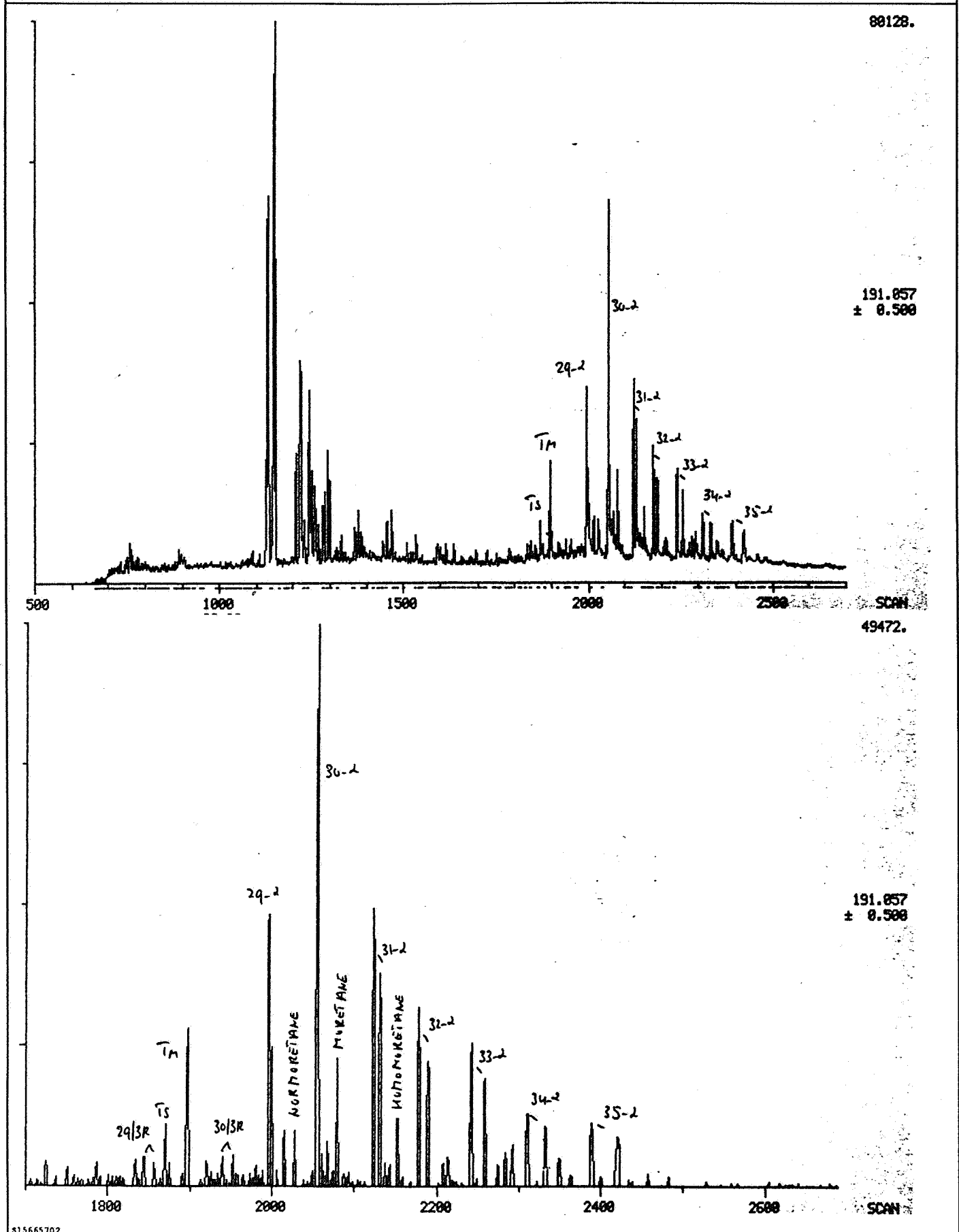
SCAN
33856.



217- 217
218- 218
259- 259

SCAN

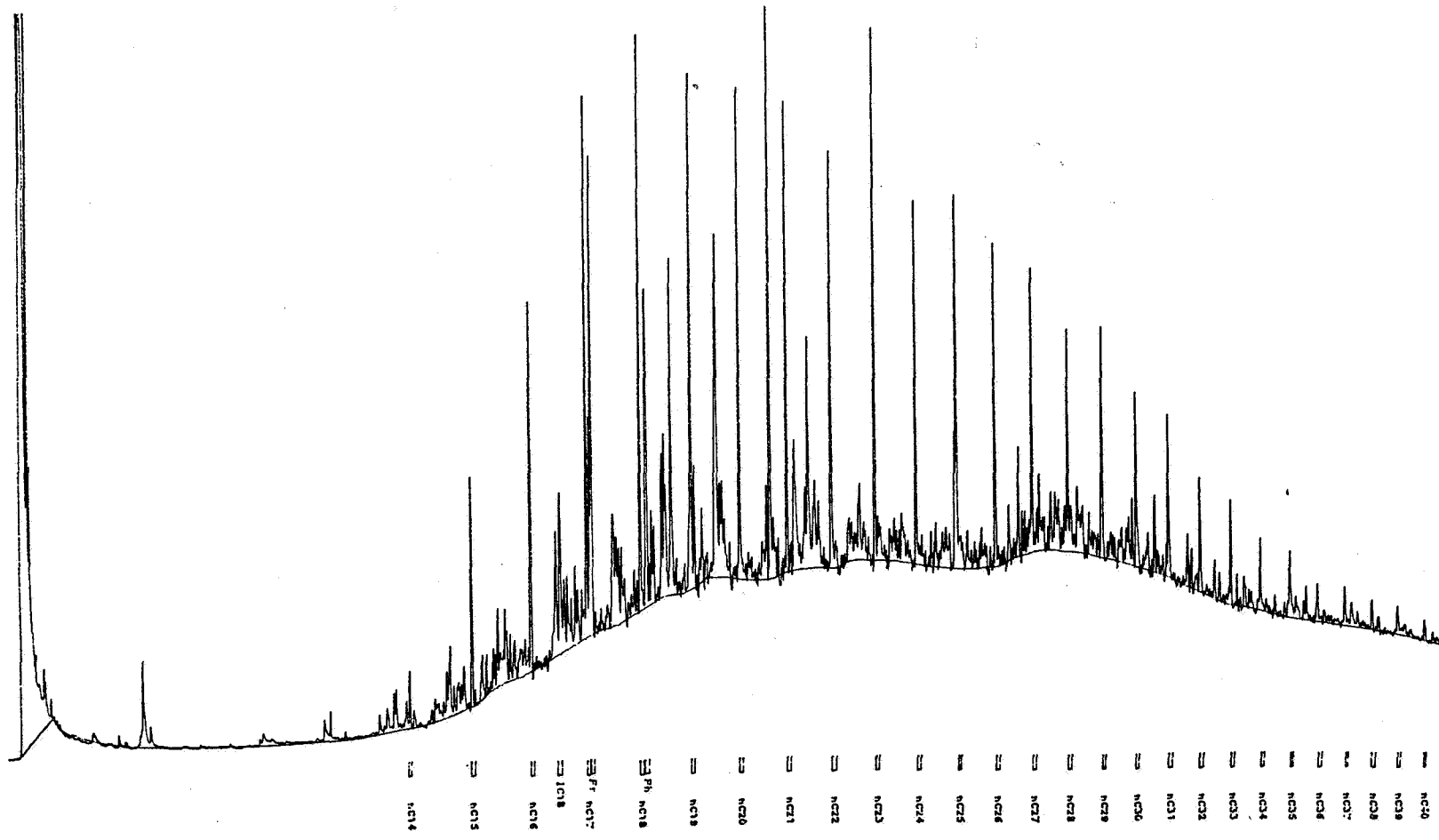
Triterpane Fragmentograms of the extract from well 03/07-05 (3101 m.), Norway



ANALYTICAL DATA
well 03/07-05 (3194.5 m.), Norway

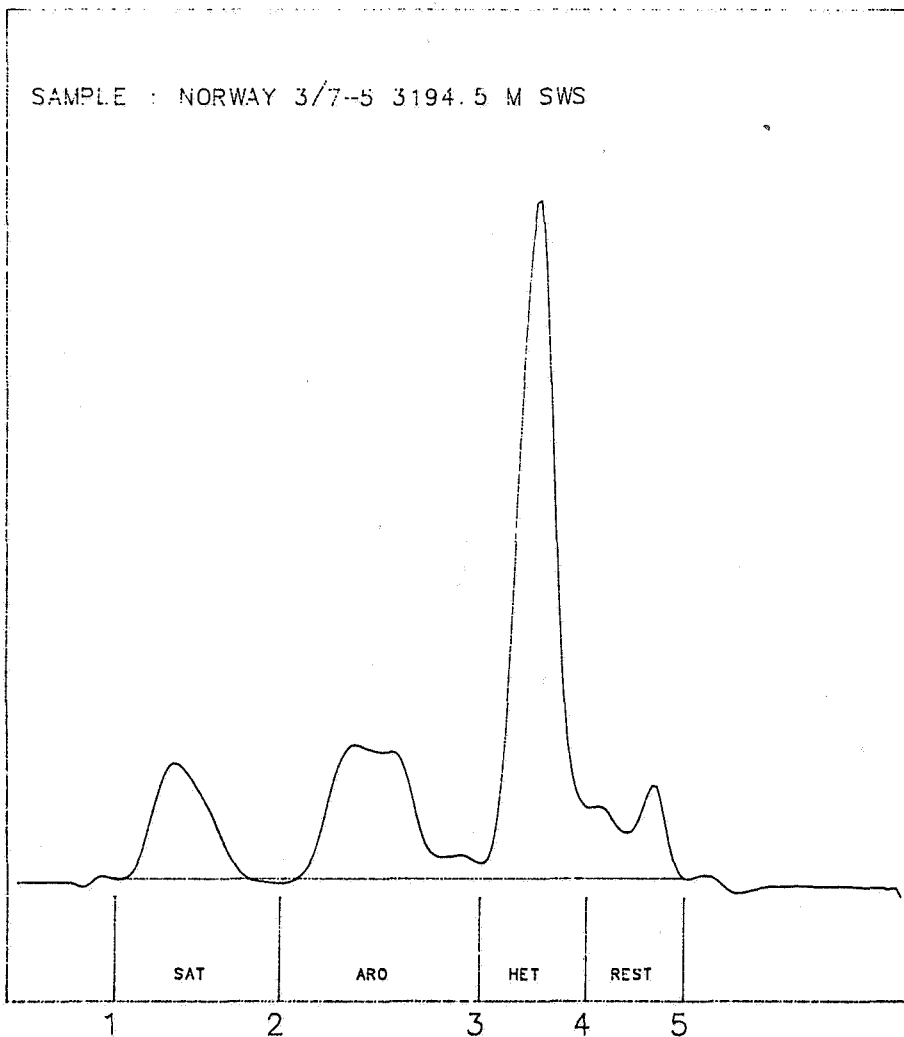
Gas chromatogram of the saturated hydrocarbons of the extract from well 03/07-05 (3194.5 m.), Norway

51565802



Gross Composition of the extract from well 03/07-05 (3194.5 m.), Norway

S1566802



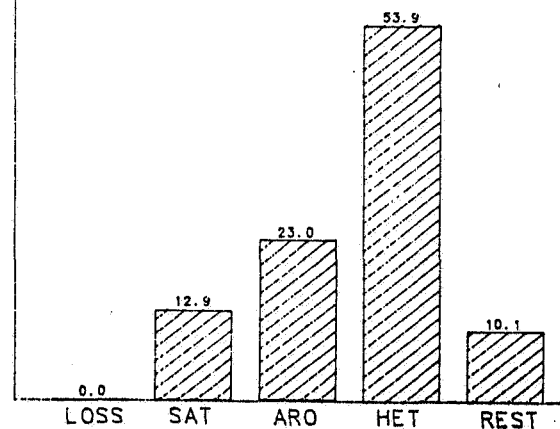
SAMPLE : S156658-2

WEIGHT LOST ON TOPPING : 0.0 %
 -- SATURATES : 12.9 %
 -- AROMATICS : 23.0 %
 -- HETEROCOMPOUNDS : 53.9 %
 -- REST (HIGH MOL.) : 10.1 %

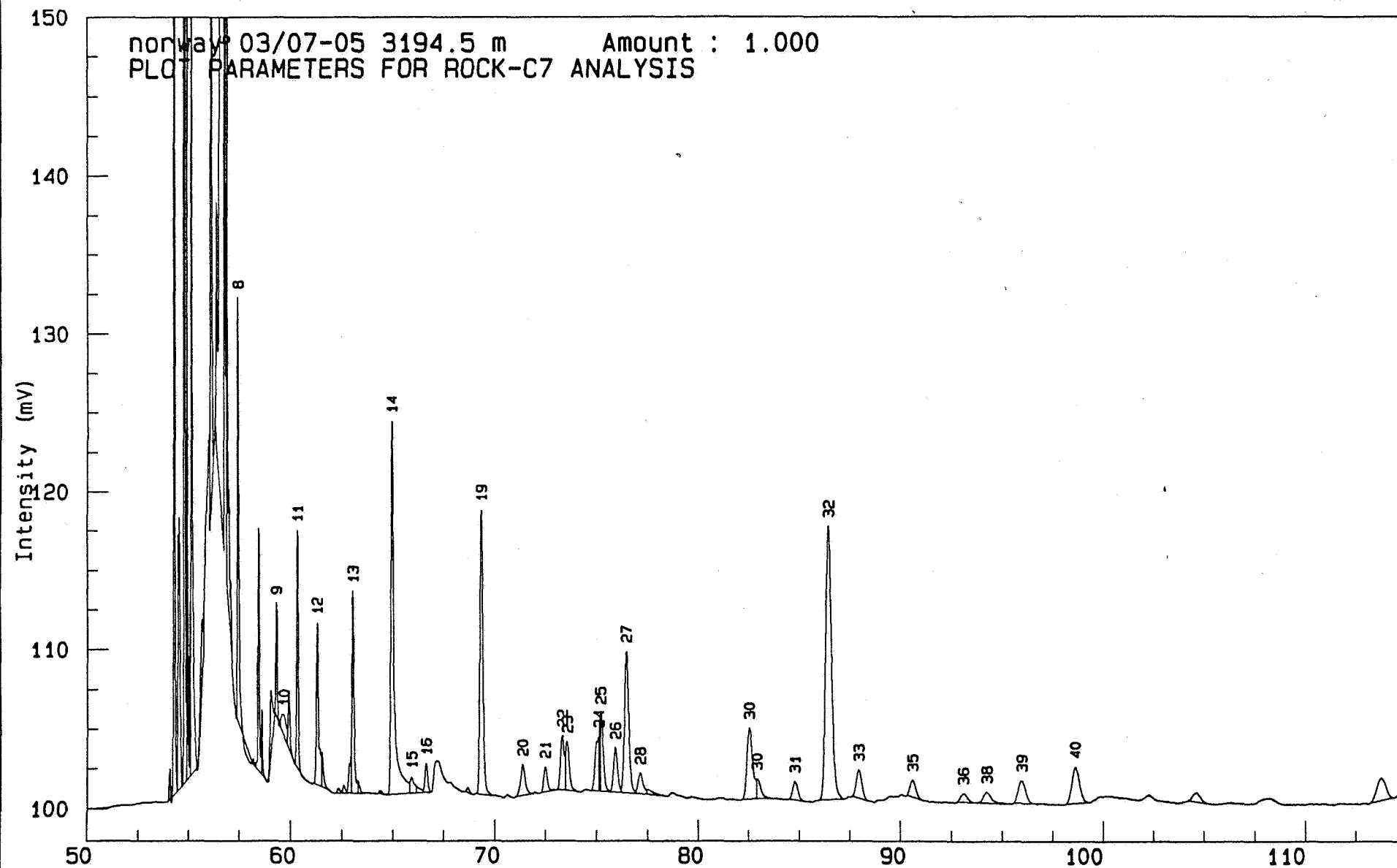
• WEIGHT PERCENTAGES CALCULATED FROM FID RESPONSE

WEIGHT DISTRIBUTION

(WHOLE OIL = 100 %)



Gas chromatogram of the light fraction (< 120 C.) of the extract from well 03/07-05 (3194.5 m.), Norway



51565802

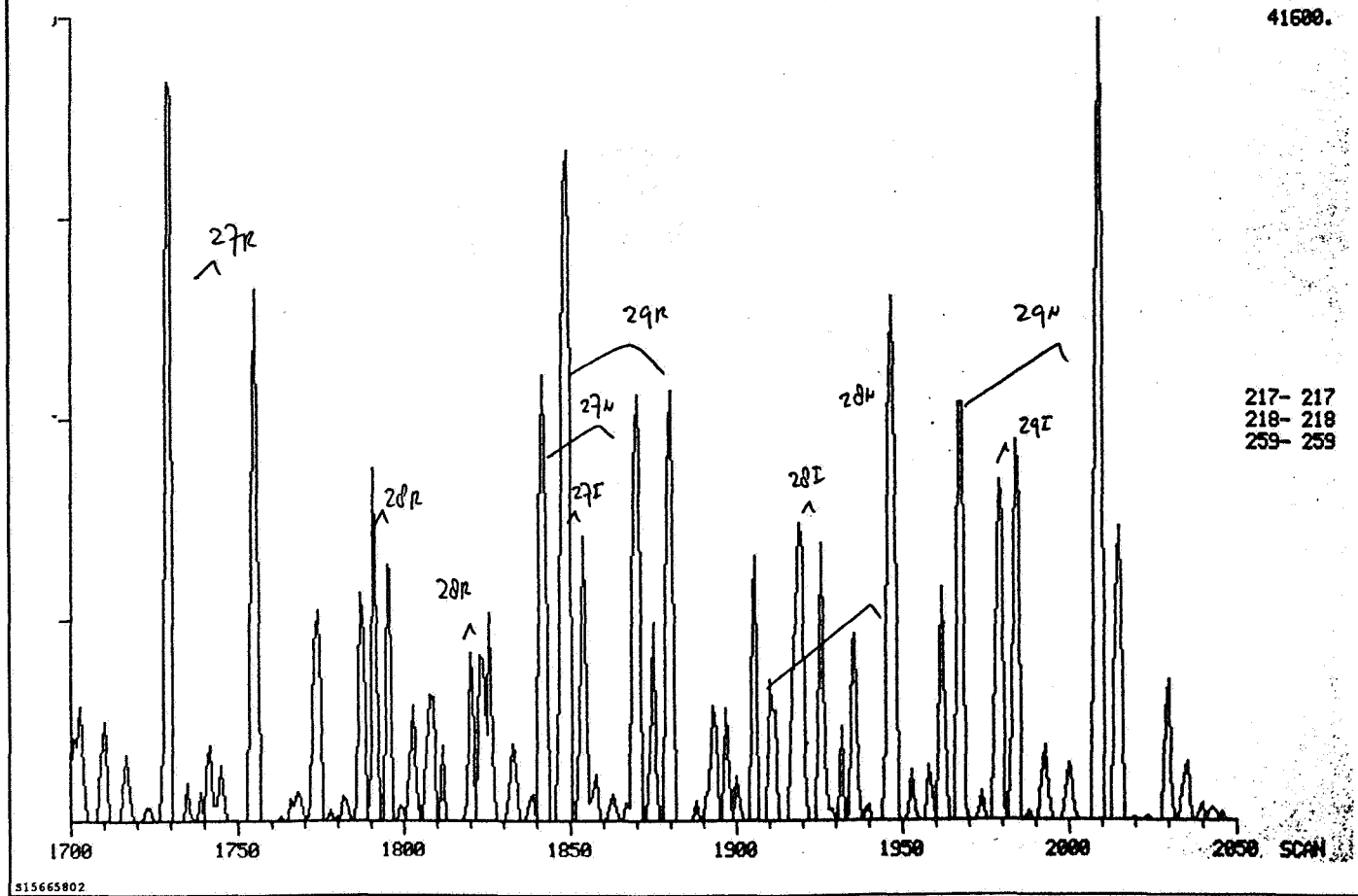
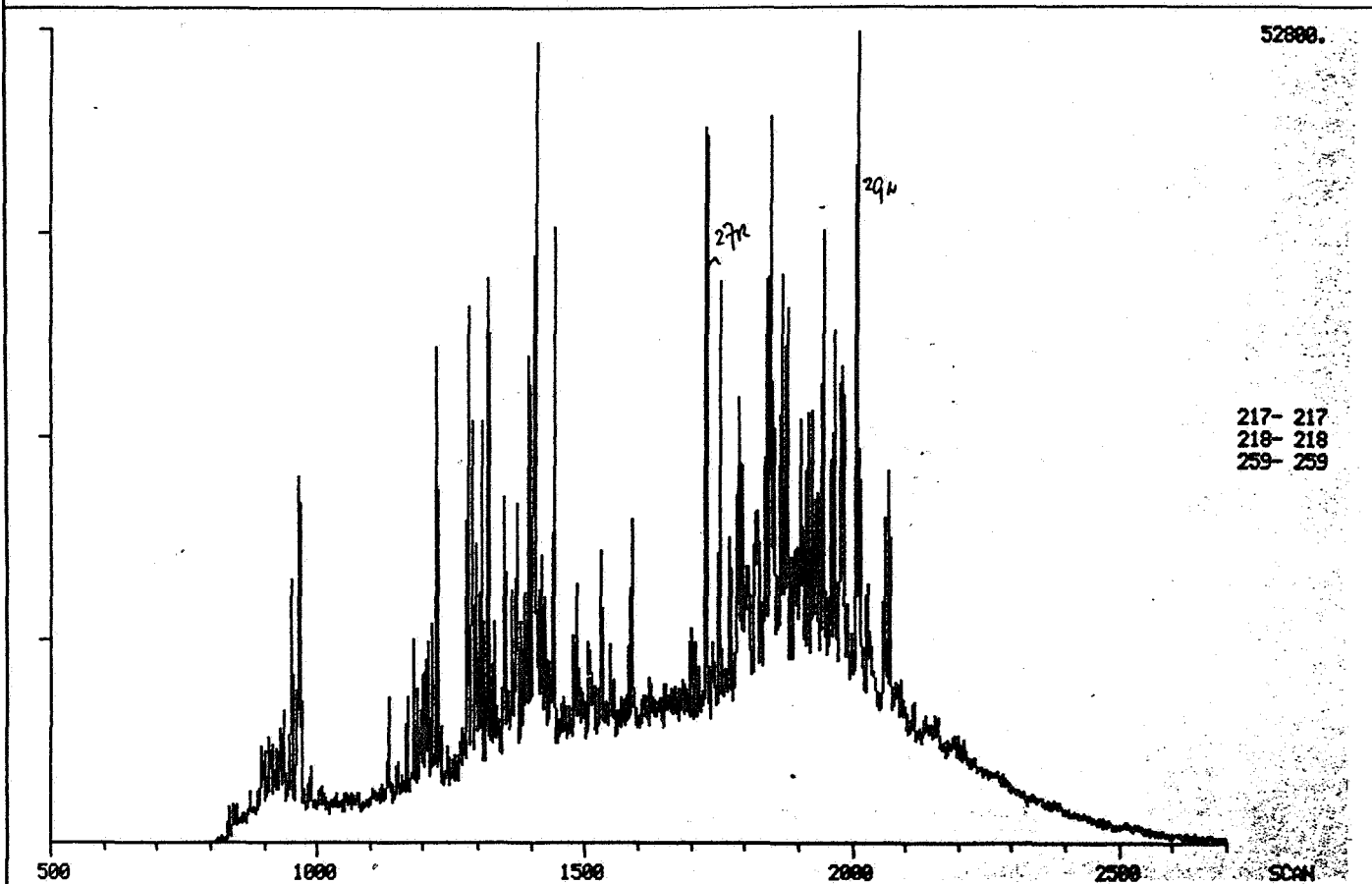
**Gas chromatographic hydrocarbons analysis (< 120 C.)
well 03/07-05 (3194.5 m.), Norway**

**GAS CHROMATOGRAPHICS ANALYSIS OF THE FRACTION BOILING BELOW
120 DEGREES CENTIGRADE**

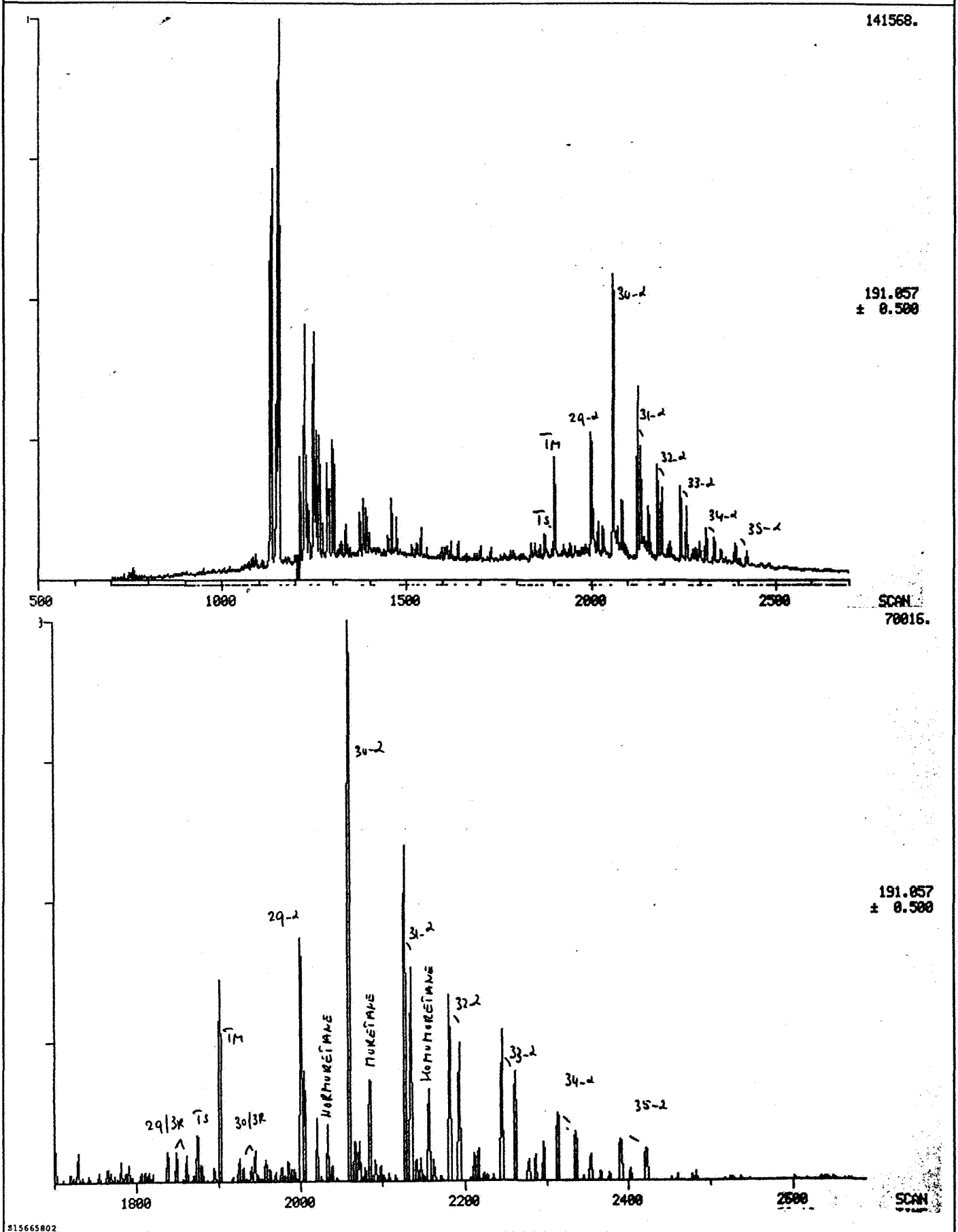
Sample: norway 03/07-05 3194.5 m

| COMPONENT No. Name | RET.TIME (min) | HEIGHT (mV) | AREA (cnts) |
|-----------------------|----------------------------------|----------------|----------------|
| 1 | methane | 0.00 | 0 |
| 2 | ethane | 0.00 | 0 |
| 3 | propane | 0.00 | 0 |
| 4 | i-butane | 0.00 | 0 |
| 5 | n-butane | 0.00 | 0 |
| 6 | i-pentane | 56.73 | 194370 |
| 7 | n-pentane | 56.73 | 194370 |
| 8 | 2.2-dimethylbutane | 57.40 | 26835 |
| 9 | cyclopentane | 59.30 | 7171 |
| 10 | 2.3-dimethylbutane | 59.67 | 1364 |
| 11 | 2-methylpentane | 60.32 | 14938 |
| 12 | 3-methylpentane | 61.29 | 10143 |
| 13 | n-hexane | 63.04 | 12682 |
| 14 | methylcyclopentane | 64.97 | 23520 |
| 15 | 2.2-dimethylpentane | 65.94 | 990 |
| 16 | benzene | 66.65 | 1781 |
| 17 | 2.4-dimethylpentane | 0.00 | 0 |
| 18 | 2.2.3-trimethylbutane | 0.00 | 0 |
| 19 | cyclohexane | 69.35 | 17909 |
| 20 | 3.3-dimethylpentane | 0.00 | 0 |
| 21 | 1.1-dimethylcyclopentane | 72.50 | 1555 |
| 22 | 2-methylhexane | 73.33 | 3428 |
| 23 | 2.3-dimethylpentane | 73.57 | 3074 |
| 24 | 1-c-3-dimethylcyclopentane | 75.12 | 3450 |
| 25 | 3-methylhexane | 75.22 | 4930 |
| 26 | 1-tr-3-dimethylcyclopentane | 75.93 | 2773 |
| 27 | 1-tr-2-dimethylcyclopentane | 76.47 | 8891 |
| 28 | 3-ethylpentane | 77.15 | 1287 |
| 29 | reference | 0.00 | 0 |
| 30 | n-heptane | 82.54 | 4461 |
| 31 | 1-c-2-dimethylcyclopentane | 84.79 | 1150 |
| 32 | methylcyclohexane | 86.47 | 17251 |
| 33 | 1.1.3-trimethylcyclopentane | 87.96 | 1767 |
| 34 | 2.2-dimethylhexane | 0.00 | 0 |
| 35 | ethylcyclopentane | 90.61 | 1060 |
| 36 | 2.5-dimethylhexane | 93.09 | 542 |
| 37 | not-present | 0.00 | 0 |
| 38 | 2.2.3-trimethylpentane | 94.25 | 688 |
| 39 | 1-tr-2-c-4-trimethylcyclopentane | 95.97 | 1414 |
| 40 | toluene | 98.62 | 2268 |

Sterane Fragmentograms of the extract from well 03/07-05 (3194.5 m.), Norway



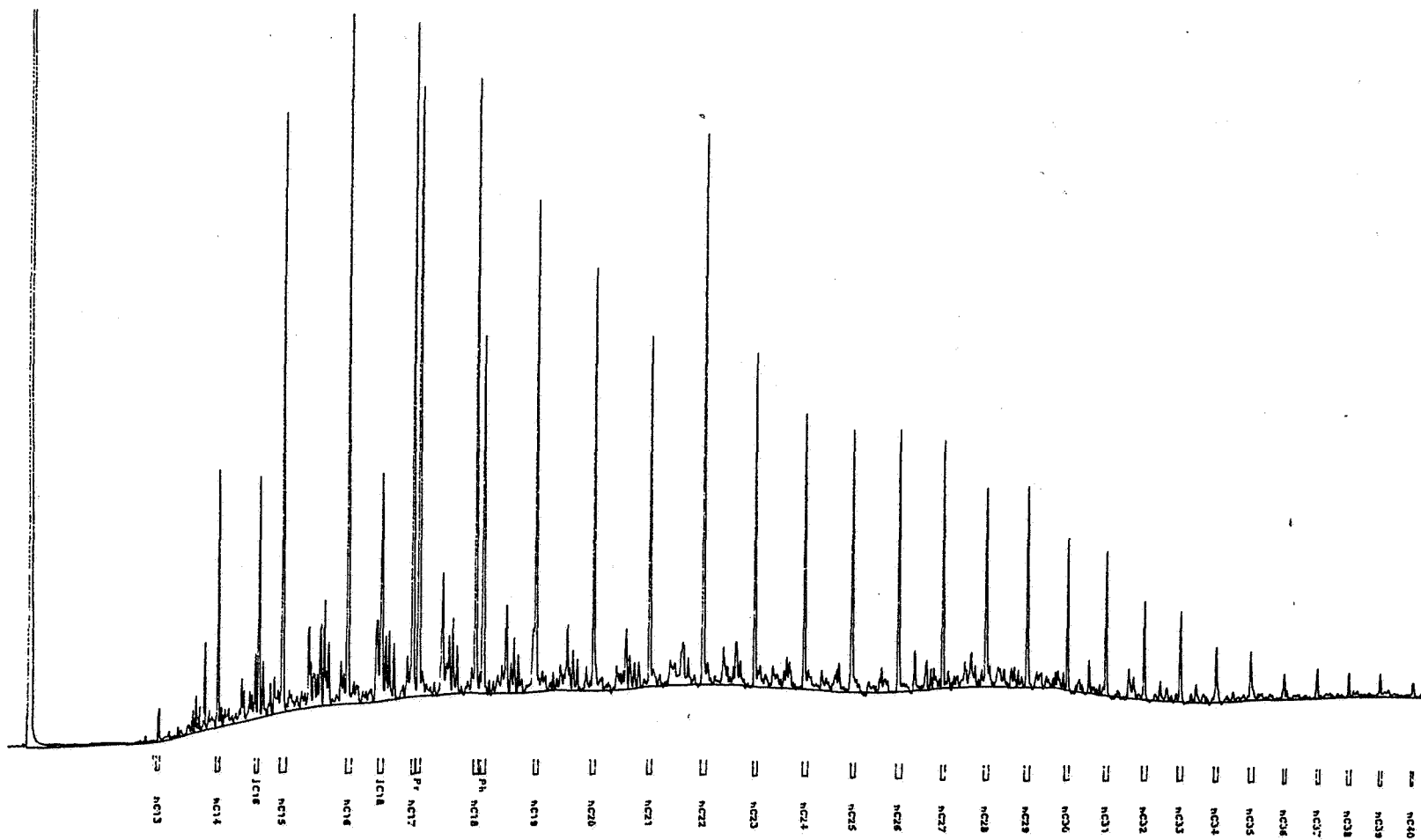
Triterpane Fragmentograms of the extract from well 03/07-05 (3194.5 m.), Norway



ANALYTICAL DATA
well 03/07-05 (3333 m.), Norway

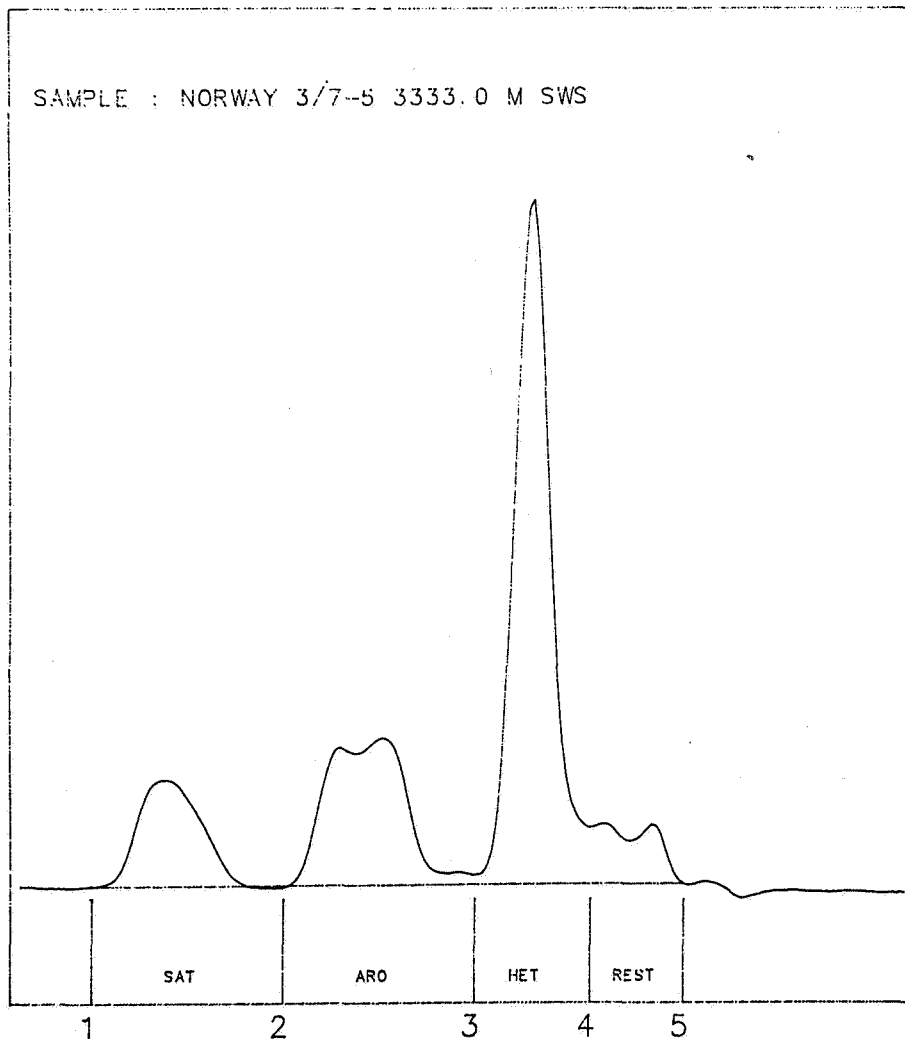
Gas chromatogram of the saturated hydrocarbons of the extract from well 03/07-05 (3333 m.), Norway

31565902



Gross Composition of the extract from well 03/07-05 (3333 m.), Norway

SAMPLE : NORWAY 3/7-5 3333.0 M SWS



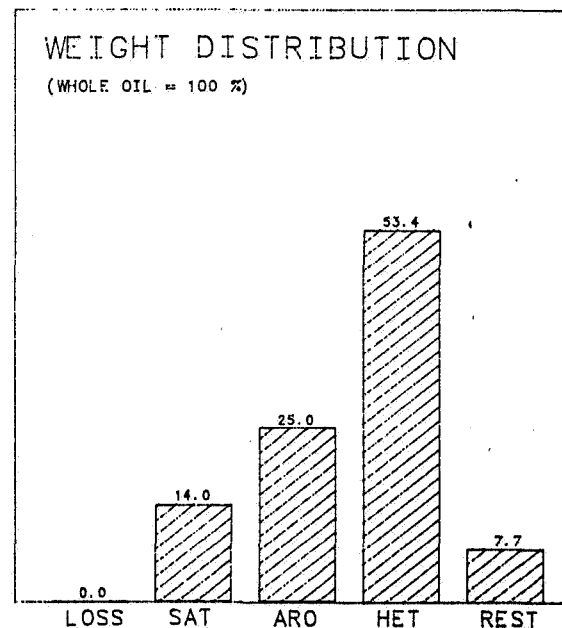
SAMPLE : S156659-2

WEIGHT LOST ON TOPPING : 0.0 %
- SATURATES : 14.0 %
- AROMATICS : 25.0 %
- HETEROCOMPOUNDS : 53.4 %
- REST (HIGH MOL.) : 7.7 %

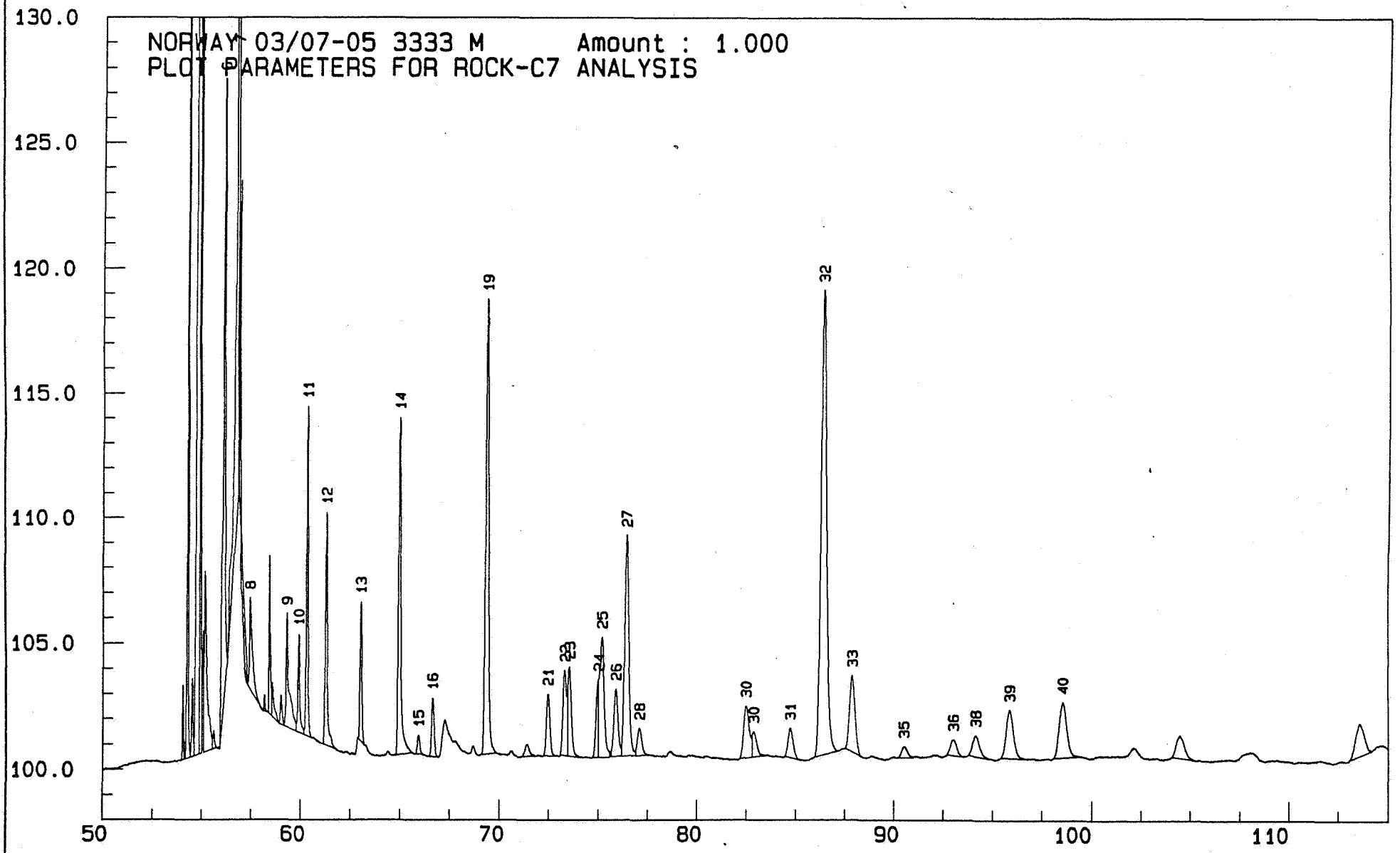
* WEIGHT PERCENTAGES CALCULATED FROM FID RESPONSE

WEIGHT DISTRIBUTION

(WHOLE OIL = 100 %)



Gas chromatogram of the light fraction (< 120 C.) of the extract from well 03/07-05 (3333 m.), Norway



51565902

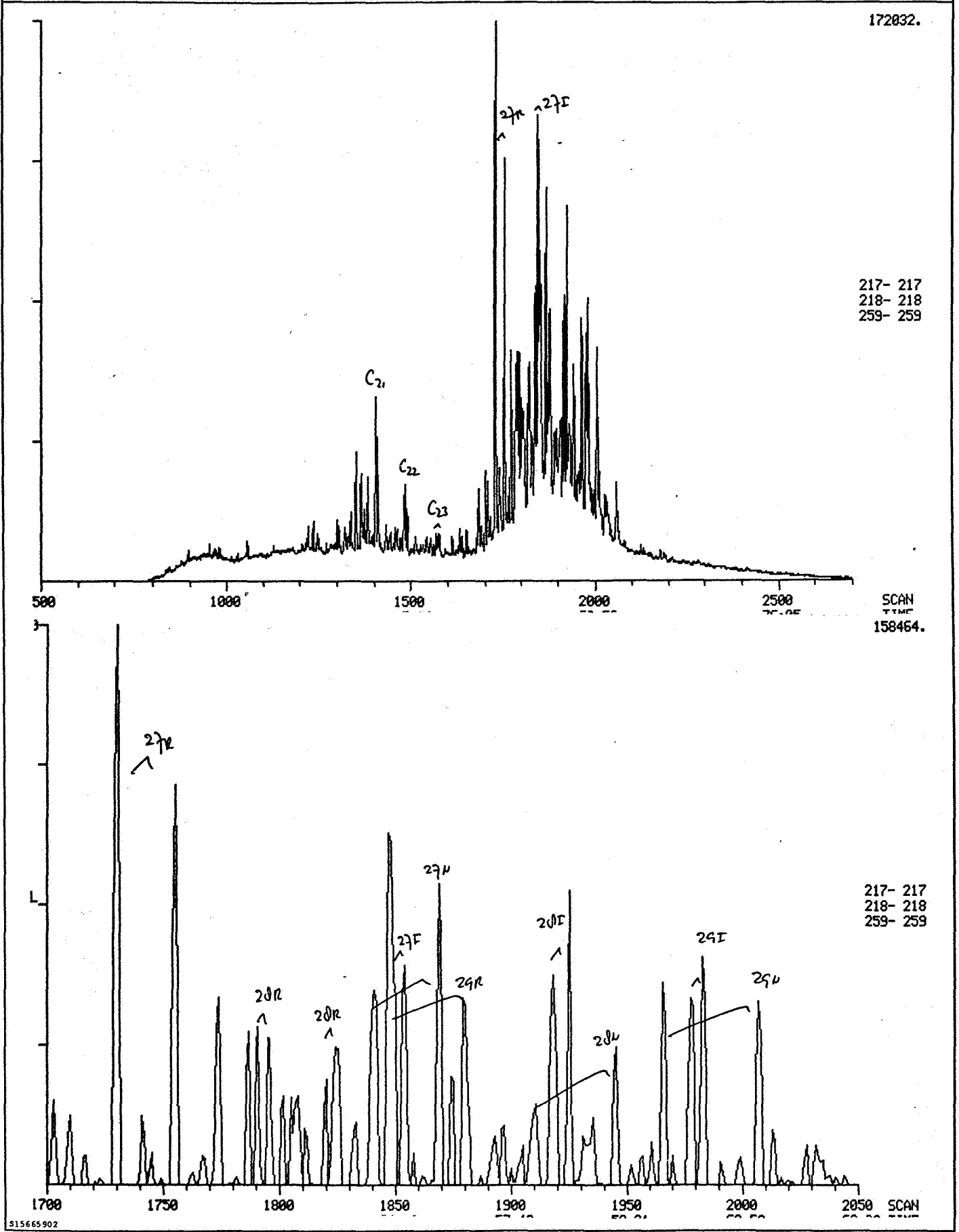
**Gas chromatographic hydrocarbons analysis (< 120 C.)
well 03/07-05 (3333 m.), Norway**

**GAS CHROMATOGRAPHICS ANALYSIS OF THE FRACTION BOILING BELOW
120 DEGREES CENTIGRADE**

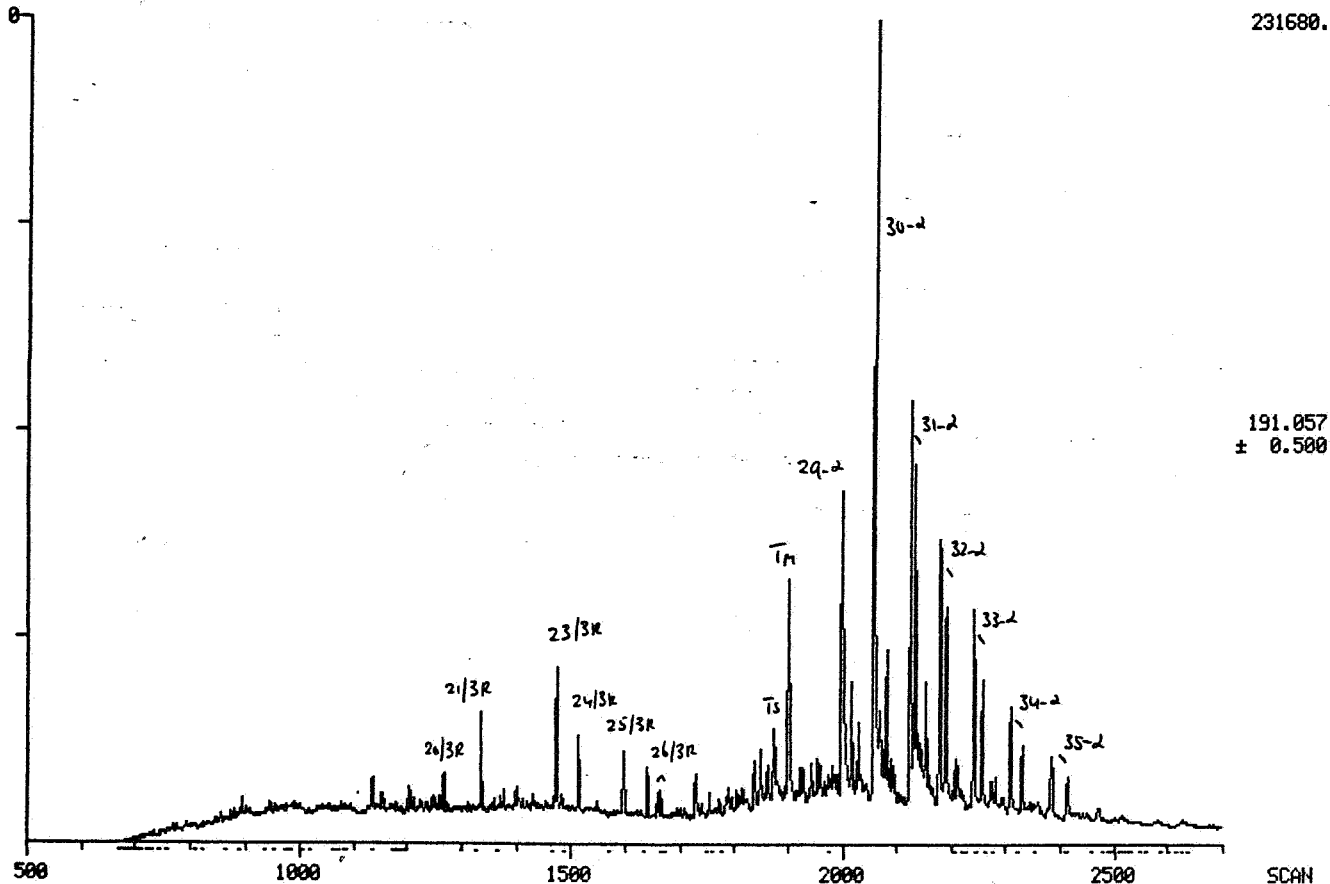
Sample: NORWAY 03/07-05 3333 M

| COMPONENT No. Name | RET. TIME (min) | HEIGHT (mV) | AREA (cnts) |
|-------------------------------------|--------------------|----------------|----------------|
| 1 methane | 0.00 | 0 | 0 |
| 2 ethane | 0.00 | 0 | 0 |
| 3 propane | 0.00 | 0 | 0 |
| 4 i-butane | 0.00 | 0 | 0 |
| 5 n-butane | 0.00 | 0 | 0 |
| 6 i-pentane | 56.08 | 25097 | 175734 |
| 7 n-pentane | 56.77 | 54823 | 290415 |
| 8 2.2-dimethylbutane | 57.42 | 3579 | 36933 |
| 9 cyclopentane | 59.30 | 4502 | 46470 |
| 10 2.3-dimethylbutane | 59.90 | 3884 | 25698 |
| 11 2-methylpentane | 60.31 | 13129 | 74586 |
| 12 3-methylpentane | 61.29 | 9257 | 64666 |
| 13 n-hexane | 63.04 | 5511 | 35889 |
| 14 methylcyclopentane | 64.96 | 13436 | 117999 |
| 15 2.2-dimethylpentane | 65.94 | 732 | 6100 |
| 16 benzene | 66.65 | 2315 | 20533 |
| 17 2.4-dimethylpentane | 0.00 | 0 | 0 |
| 18 2.2.3-trimethylbutane | 0.00 | 0 | 0 |
| 19 cyclohexane | 69.35 | 18132 | 189966 |
| 20 3.3-dimethylpentane | 0.00 | 0 | 0 |
| 21 1.1-dimethylcyclopentane | 72.47 | 2462 | 30051 |
| 22 2-methylhexane | 73.31 | 3392 | 48724 |
| 23 2.3-dimethylpentane | 73.55 | 3538 | 39986 |
| 24 1-c-3-dimethylcyclopentane | 75.03 | 3093 | 26876 |
| 25 3-methylhexane | 75.19 | 4766 | 77103 |
| 26 1-tr-3-dimethylcyclopentane | 75.91 | 2673 | 39511 |
| 27 1-tr-2-dimethylcyclopentane | 76.43 | 8769 | 129864 |
| 28 3-ethylpentane | 77.10 | 1078 | 17112 |
| 29 reference | 0.00 | 0 | 0 |
| 30 n-heptane | 82.49 | 2064 | 41440 |
| 31 1-c-2-dimethylcyclopentane | 84.73 | 1154 | 20970 |
| 32 methylcyclohexane | 86.38 | 18564 | 364079 |
| 33 1.1.3-trimethylcyclopentane | 87.87 | 3042 | 58788 |
| 34 2.2-dimethylhexane | 0.00 | 0 | 0 |
| 35 ethylcyclopentane | 90.51 | 440 | 9154 |
| 36 2.5-dimethylhexane | 93.02 | 633 | 14083 |
| 37 not-present | 0.00 | 0 | 0 |
| 38 2.2.3-trimethylpentane | 94.15 | 833 | 20246 |
| 39 1-tr-2-c-4-trimethylcyclopentane | 95.87 | 1919 | 47990 |
| 40 toluene | 98.53 | 2208 | 58459 |

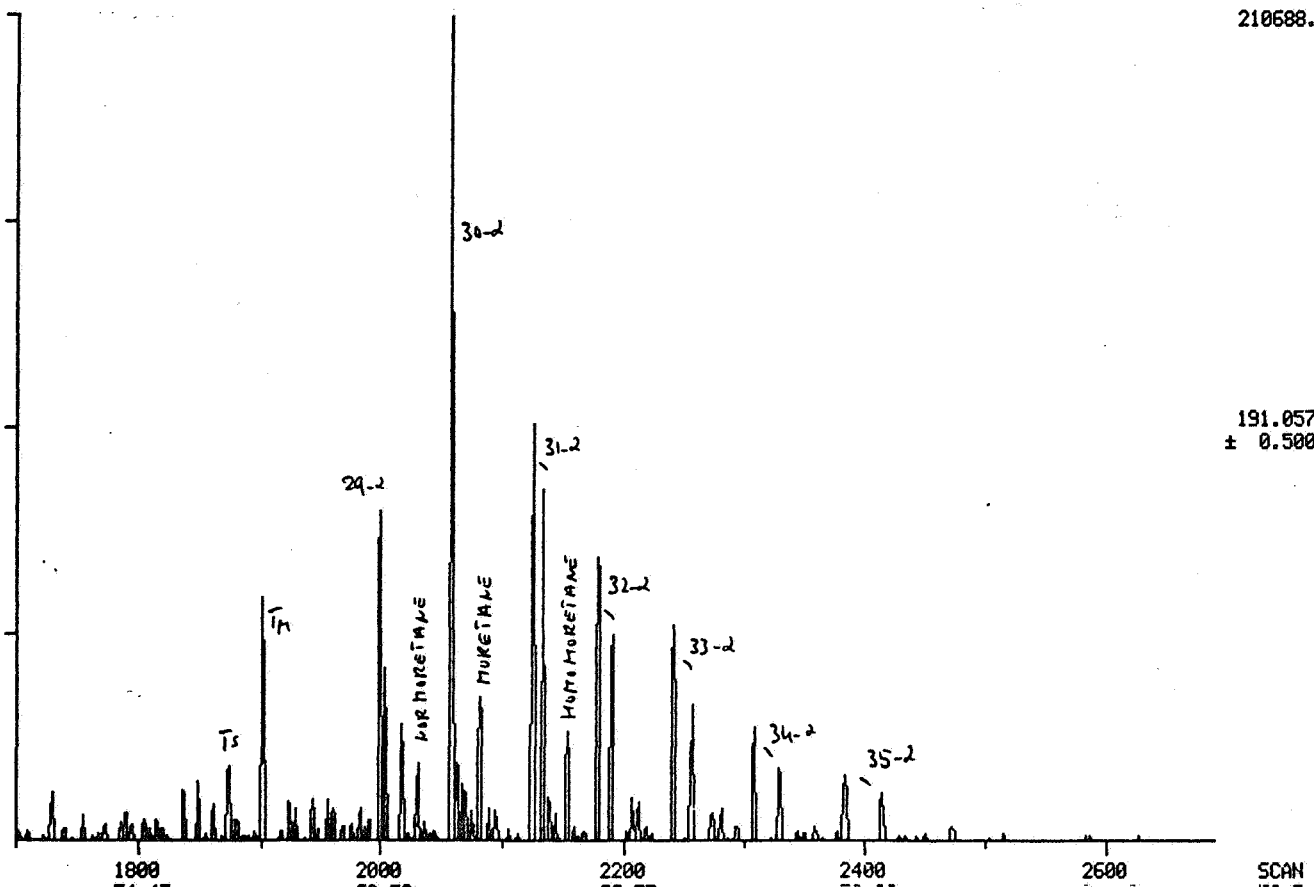
Sterane Fragmentograms of the extract from well 03/07-05 (3333 m.), Norway



Triterpane Fragmentograms of the extract from well 03/07-05 (3333 m.), Norway



SCAN 210688.

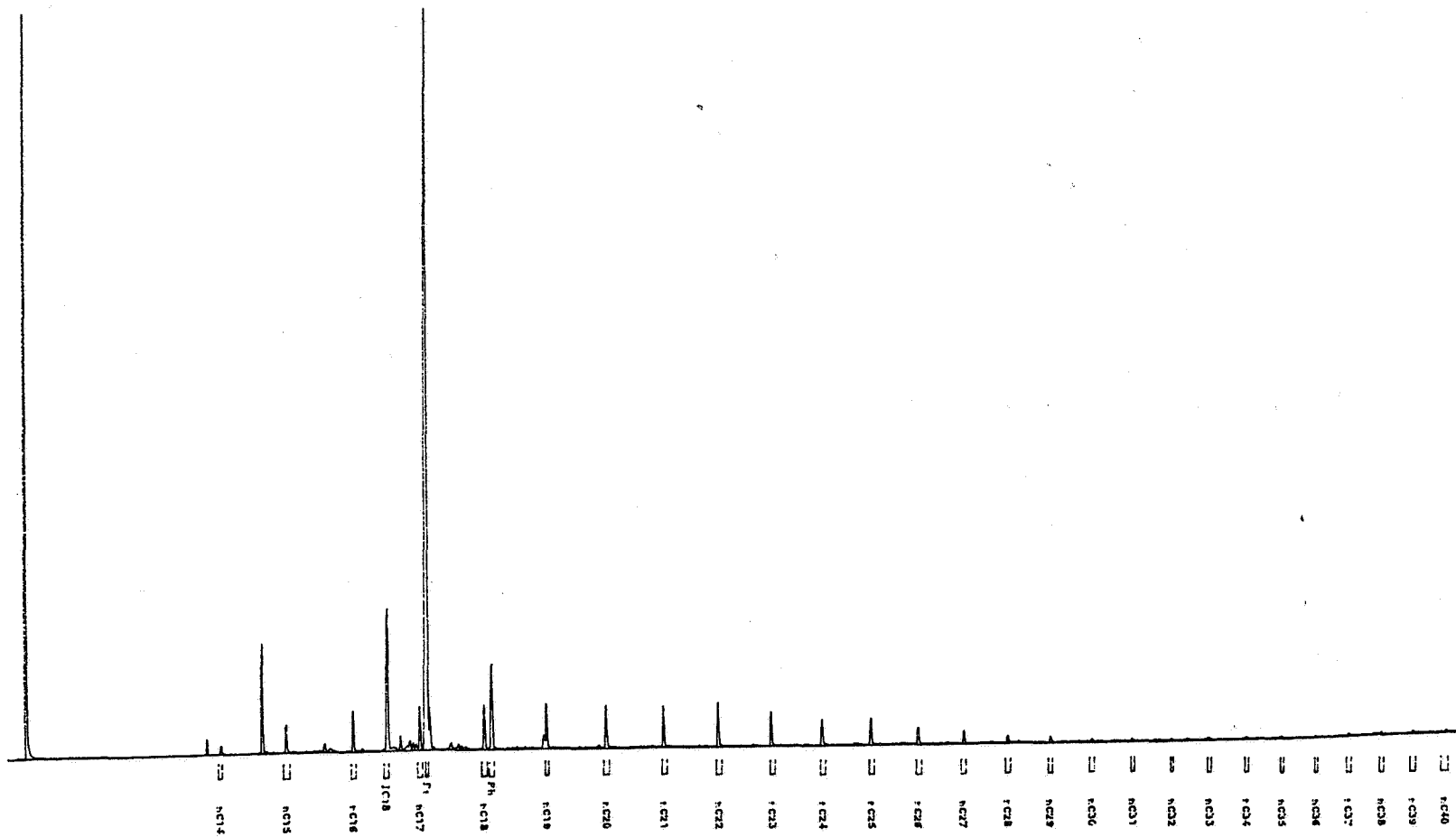


SCAN

ANALYTICAL DATA
well 03/07-05 (3388.4 m.), Norway

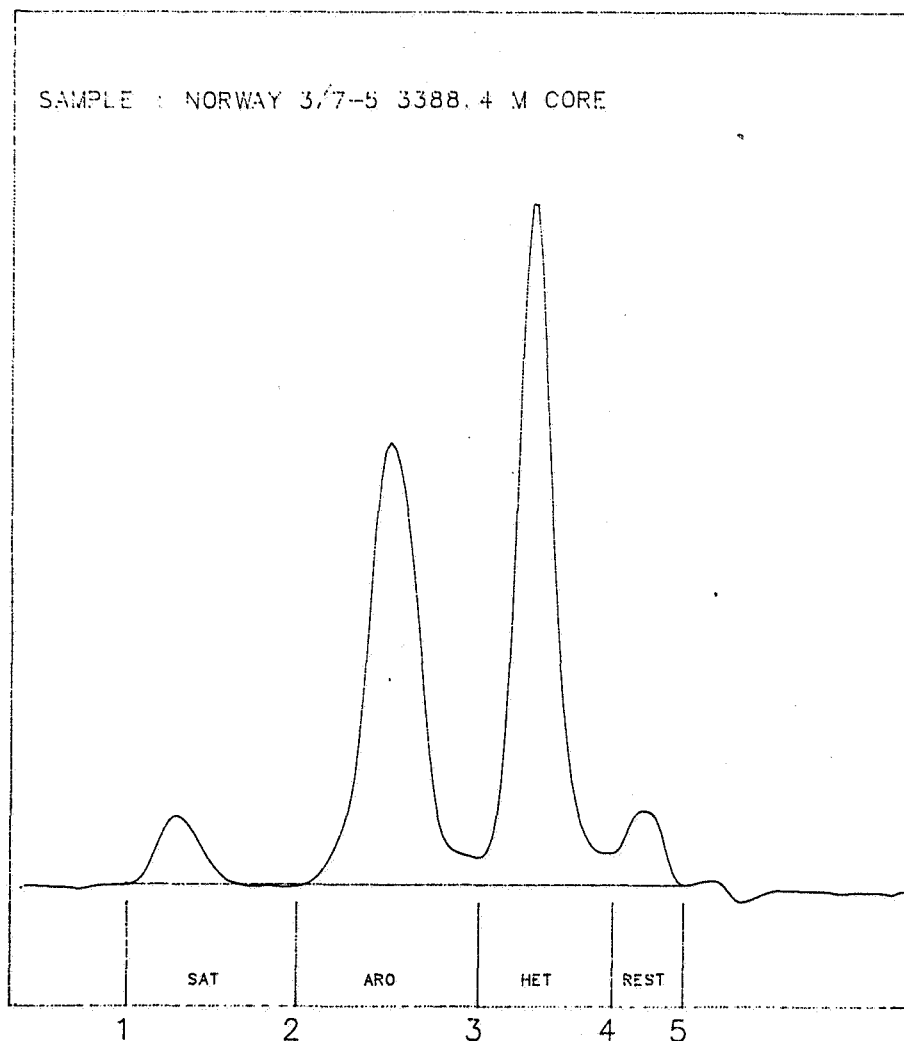
Gas chromatogram of the saturated hydrocarbons of the extract from well 03/07-05 (3388.4 m.), Norway

51566002



Gross Composition of the extract from well 03/07-05 (3388.4 m.), Norway

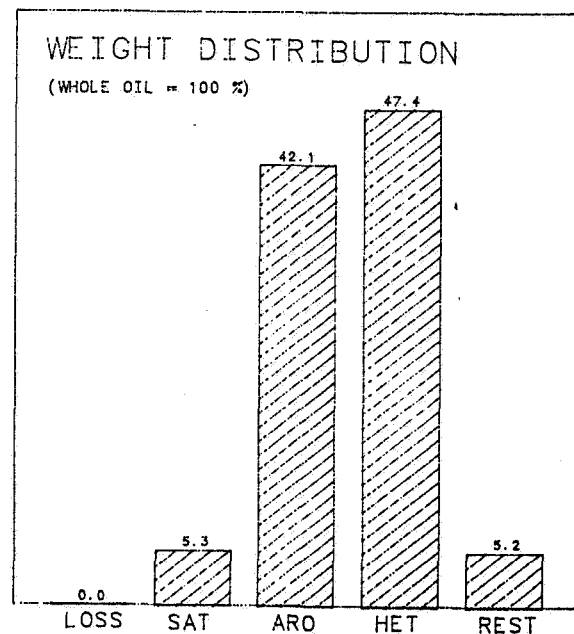
S1566602



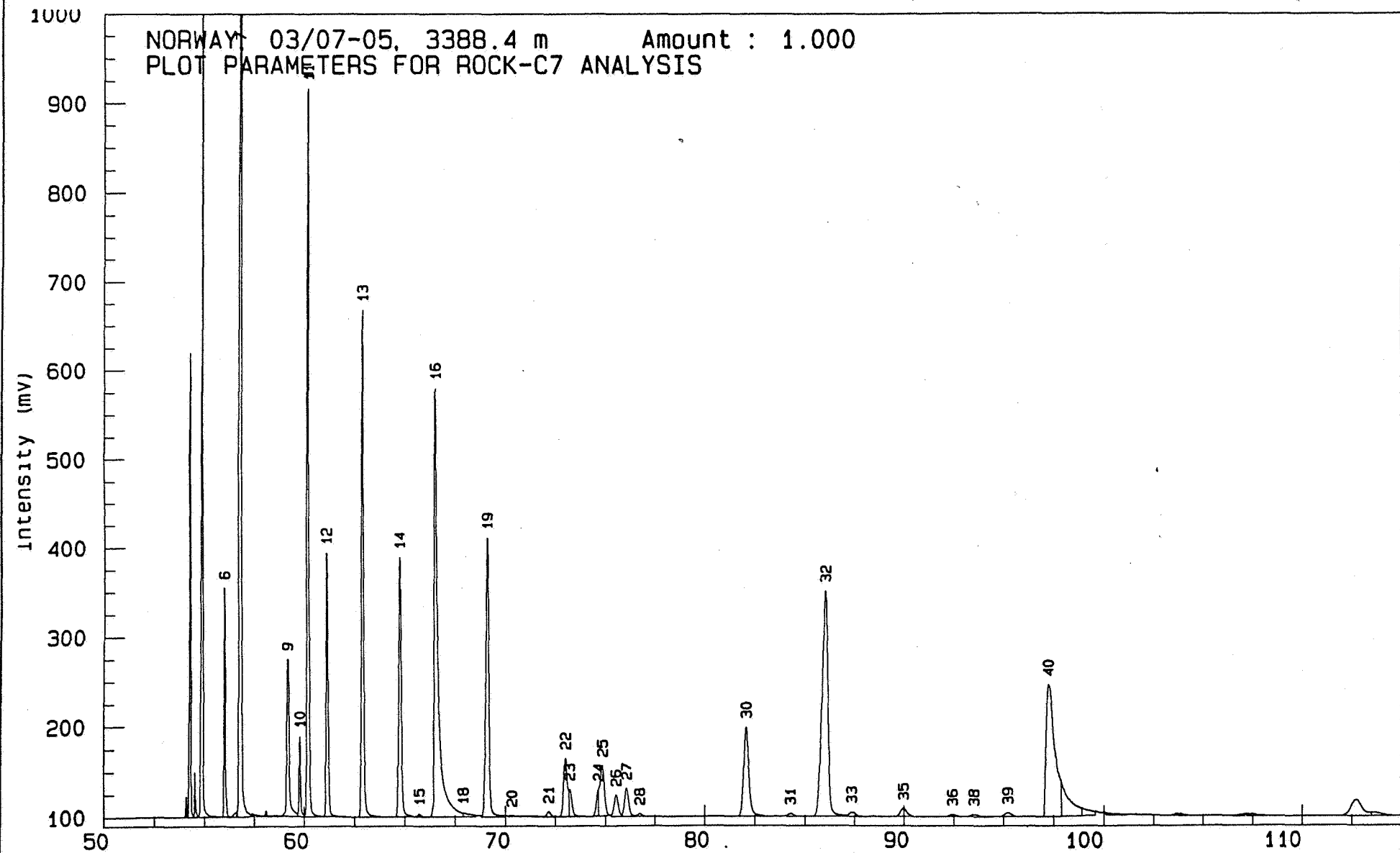
SAMPLE : S156660-2

| | |
|--------------------------|--------|
| WEIGHT LOST ON TOPPING : | 0.0 % |
| -- SATURATES : | 5.3 % |
| -- AROMATICS : | 42.1 % |
| -- HETEROCOMPOUNDS : | 47.4 % |
| -- REST (HIGH MOL.) : | 5.2 % |

▼ WEIGHT PERCENTAGES CALCULATED FROM FID RESPONSE



Gas chromatogram of the light fraction (< 120 C.) of the extract from well 03/07-05 (3388.4 m.), Norway



20099915

Gas chromatographic hydrocarbons analysis (< 120 C.) well 03/07-05 (3388.4 m.), Norway

[DEFPROJECT] 10 S15666002_2ROC,1,1
Reported on 2-JUN-1992 at 11:00

Page 1

Injection Report

Acquired on 13-MAY-1992 at 09:13

VAX MULTICHROM V1.8 running at KSEPL

Analyst Name : RAY
Lims Id :
Comment :
Method Title : HEADSPACE/GAS ANALYSIS FOR ROCKS-C7
Sample Name : NORWAY, 03/07-05, 3388.4 m
Sample Id :
Sample Type : Sample Amount=1.00000
Bottle No : 3

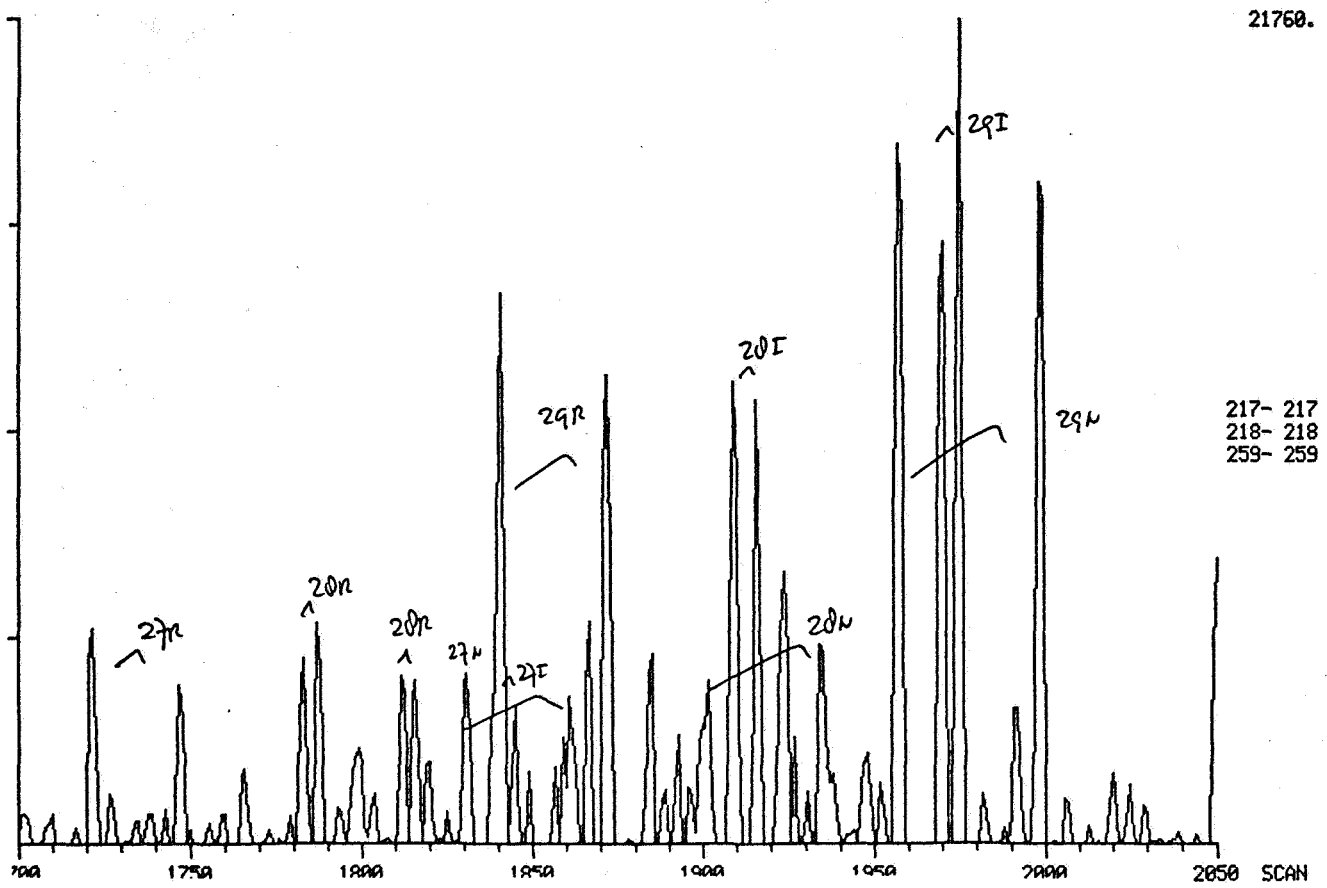
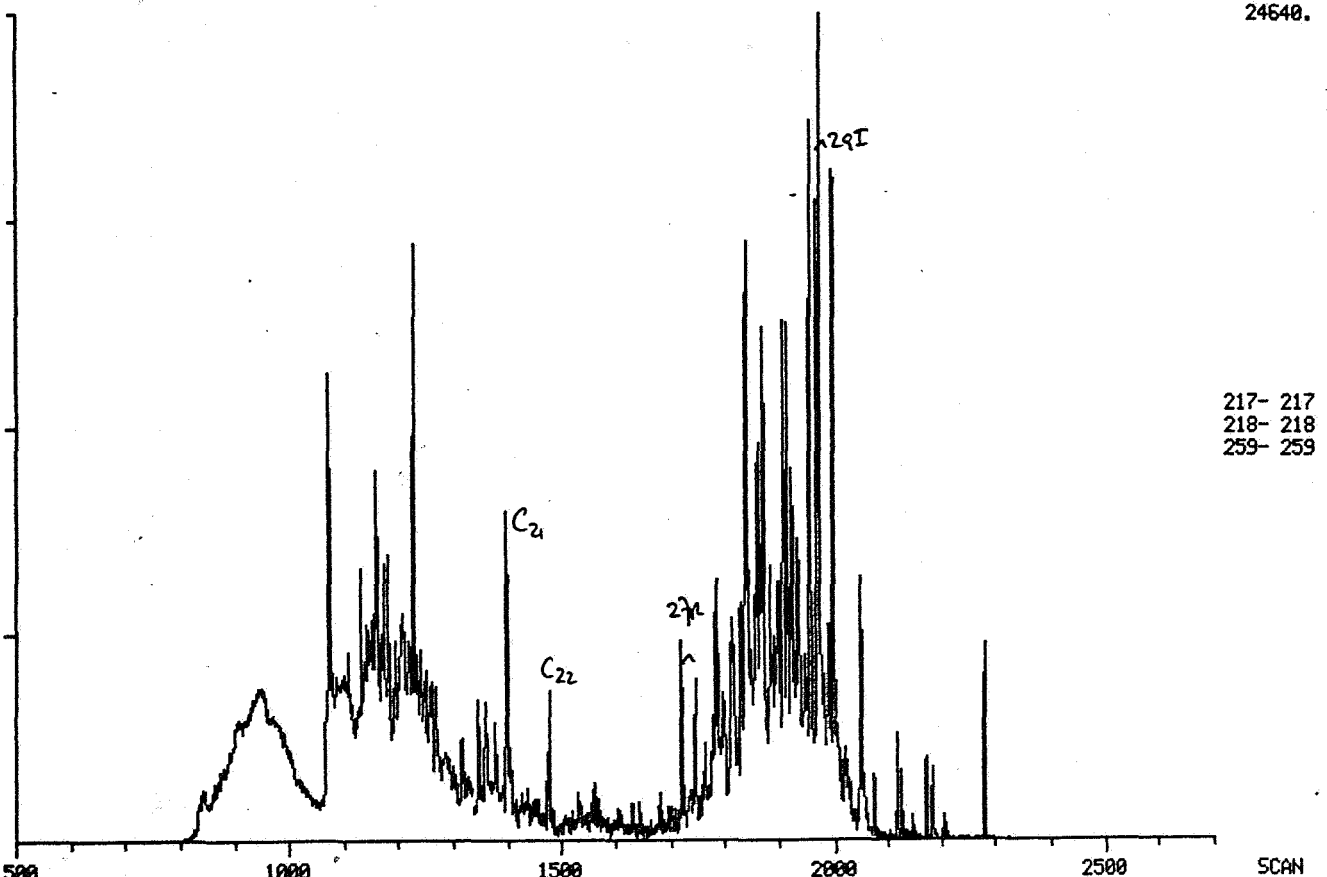
PEAK INFORMATION

| Peak | RT mins | Hght uV | Area uVs | Peak name | Width |
|------|---------|---------|----------|-----------|-------|
| 6 | 56.011 | 255167 | 1107885 | 6 | 4.2 |
| 8 | 56.821 | 898872 | 7952745 | 7 | 8.6 |
| 12 | 59.179 | 174638 | 1572848 | 9 | 8.0 |
| 13 | 59.781 | 88307 | 472588 | 10 | 4.8 |
| 14 | 60.192 | 815023 | 4945019 | 11 | 5.8 |
| 15 | 61.136 | 293598 | 1886953 | 12 | 6.1 |
| 16 | 62.917 | 567729 | 3921977 | 13 | 6.4 |
| 18 | 64.773 | 288996 | 2585415 | 14 | 8.3 |
| 19 | 65.717 | 3263 | 30933 | 15 | 8.6 |
| 20 | 66.517 | 479382 | 6149445 | 16 | 9.0 |
| 21 | 67.893 | 3887 | 92988 | 18 | 57.6A |
| 22 | 69.120 | 310829 | 3394056 | 19 | 10.2 |
| 23 | 70.325 | 1197 | 17646 | 20 | 14.1 |
| 25 | 72.176 | 5570 | 68125 | 21 | 11.8 |
| 26 | 73.019 | 64778 | 907738 | 22 | 14.1 |
| 27 | 73.232 | 30424 | 299886 | 23 | 13.4A |
| 28 | 74.683 | 29480 | 229268 | 24 | 14.7A |
| 29 | 74.869 | 55926 | 881333 | 25 | 14.1A |
| 30 | 75.563 | 23826 | 350788 | 26 | 13.8 |
| 31 | 76.096 | 31272 | 465356 | 27 | 13.8 |
| 32 | 76.747 | 3036 | 46973 | 28 | 14.4 |
| 34 | 82.085 | 98990 | 1777688 | 30 | 16.3 |
| 36 | 84.277 | 3387 | 66499 | 31 | 18.6 |
| 37 | 86.059 | 251405 | 5259347 | 32 | 19.5 |
| 38 | 87.365 | 5142 | 111769 | 33 | 20.2 |
| 39 | 89.973 | 8886 | 211260 | 35 | 21.8 |
| 40 | 92.437 | 2324 | 58282 | 36 | 23.7 |
| 41 | 93.520 | 2433 | 64597 | 38 | 24.0 |
| 42 | 95.221 | 4406 | 113272 | 39 | 24.0 |
| 43 | 97.248 | 146355 | 4410472 | 40 | 27.2 |

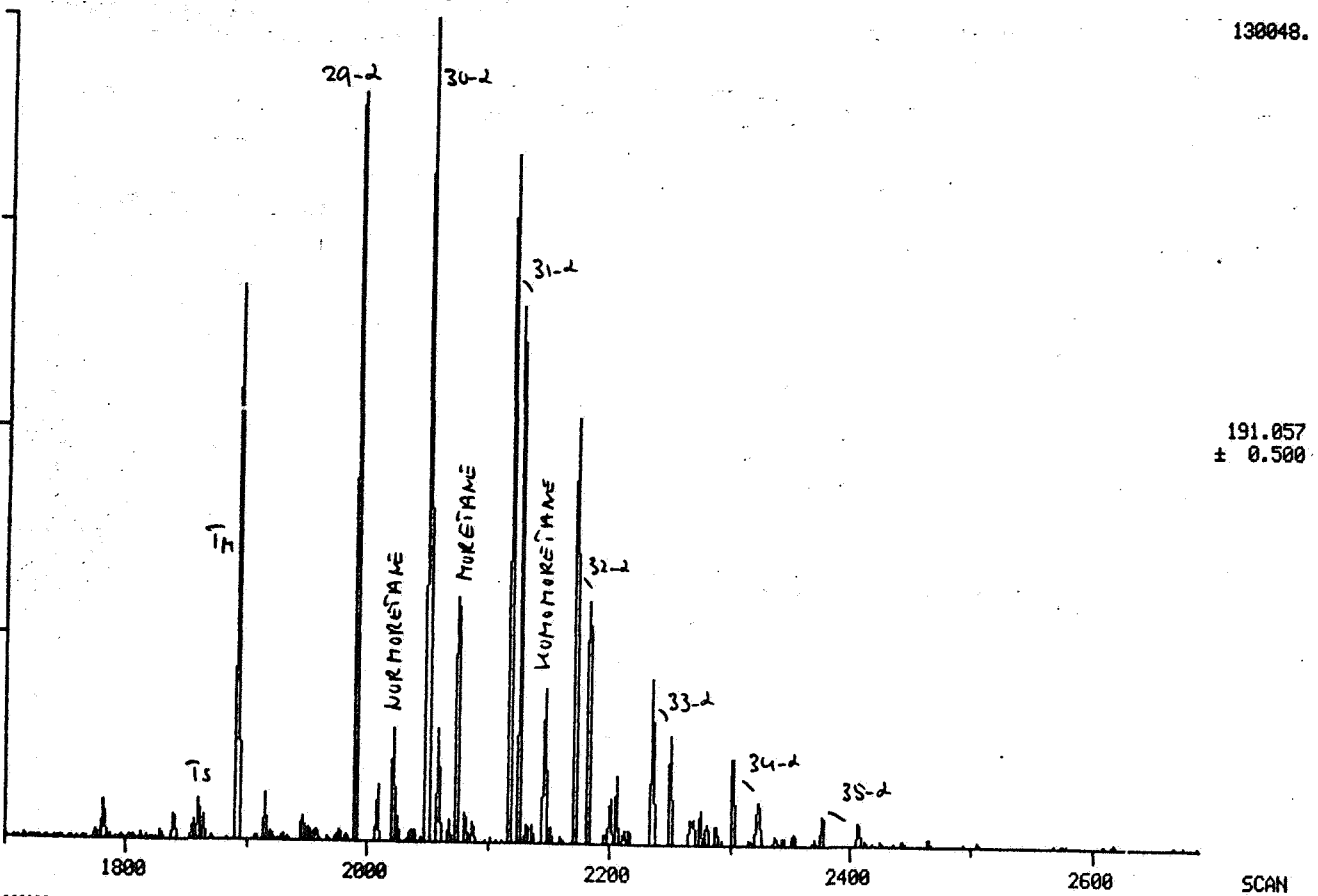
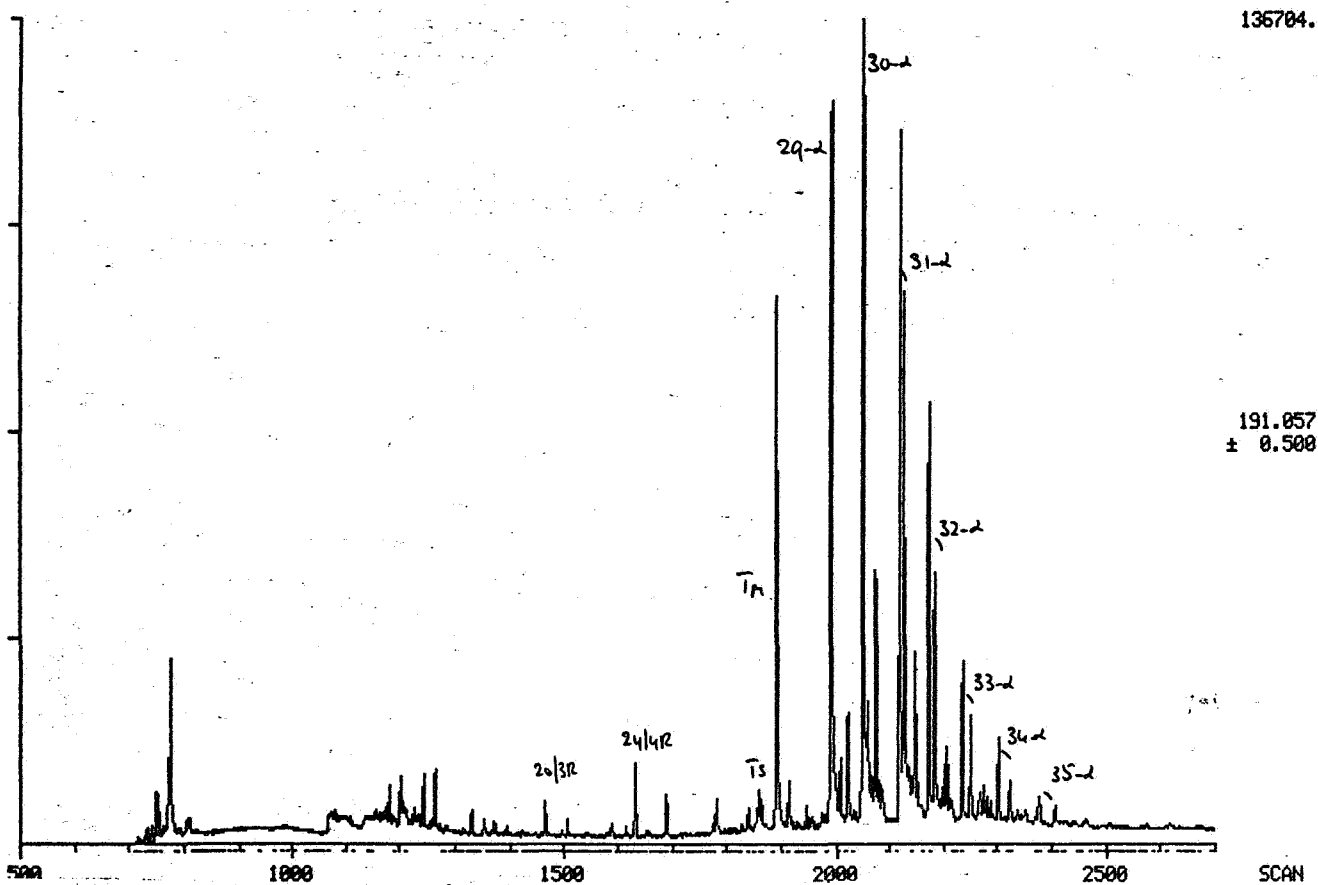
Totals

| | | |
|-------------|---------|----------|
| Unknowns | 1609817 | 9715036 |
| Quantified | 4948529 | 49453152 |
| Grand Total | 6558346 | 59168188 |

Sterane Fragmentograms of the extract from well 03/07-05 (3388.4 m.), Norway



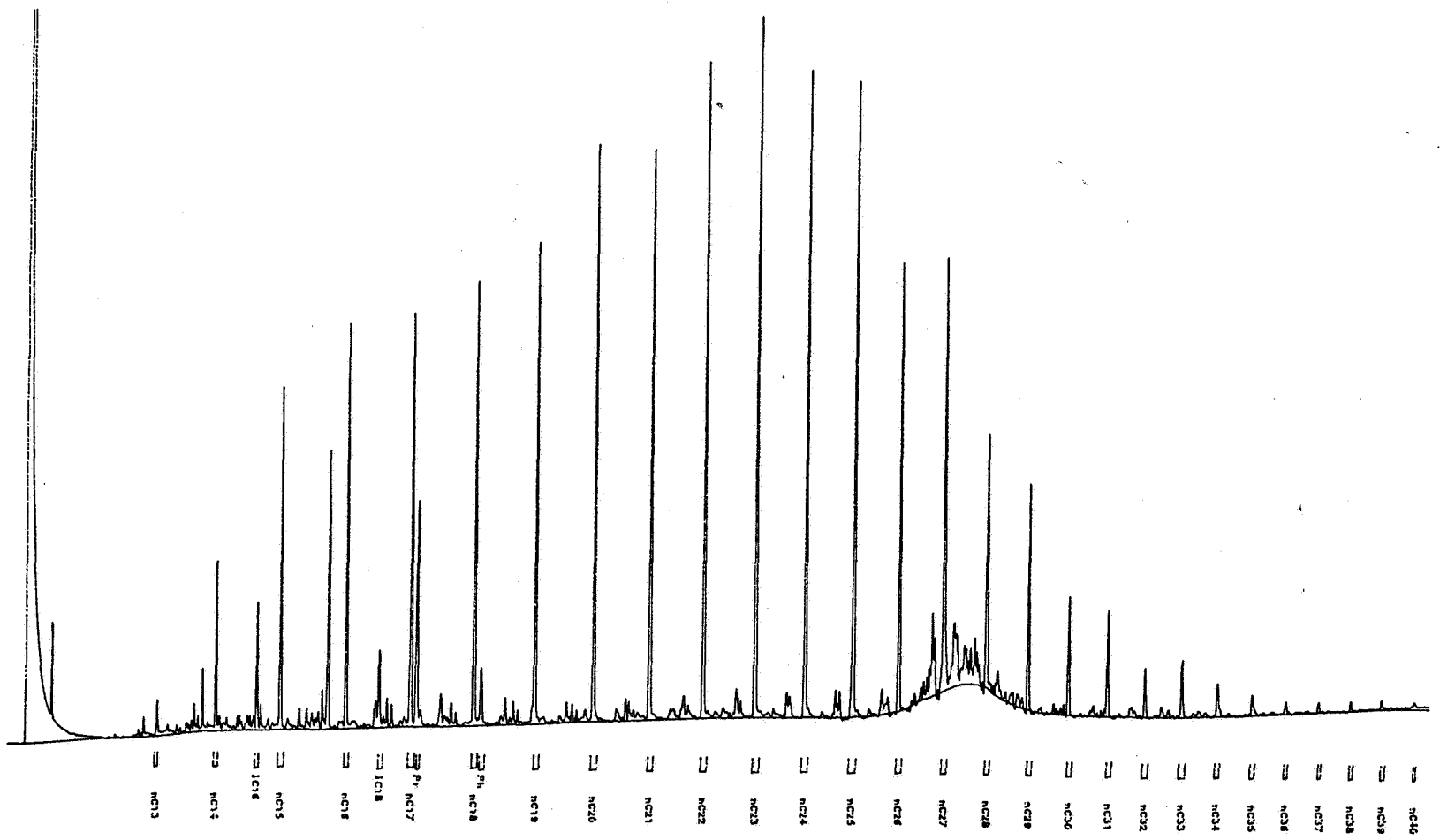
Triterpane Fragmentograms of the extract from well 03/07-05 (3388.4 m.), Norway



ANALYTICAL DATA
well 03/07-05 (3602 m.), Norway

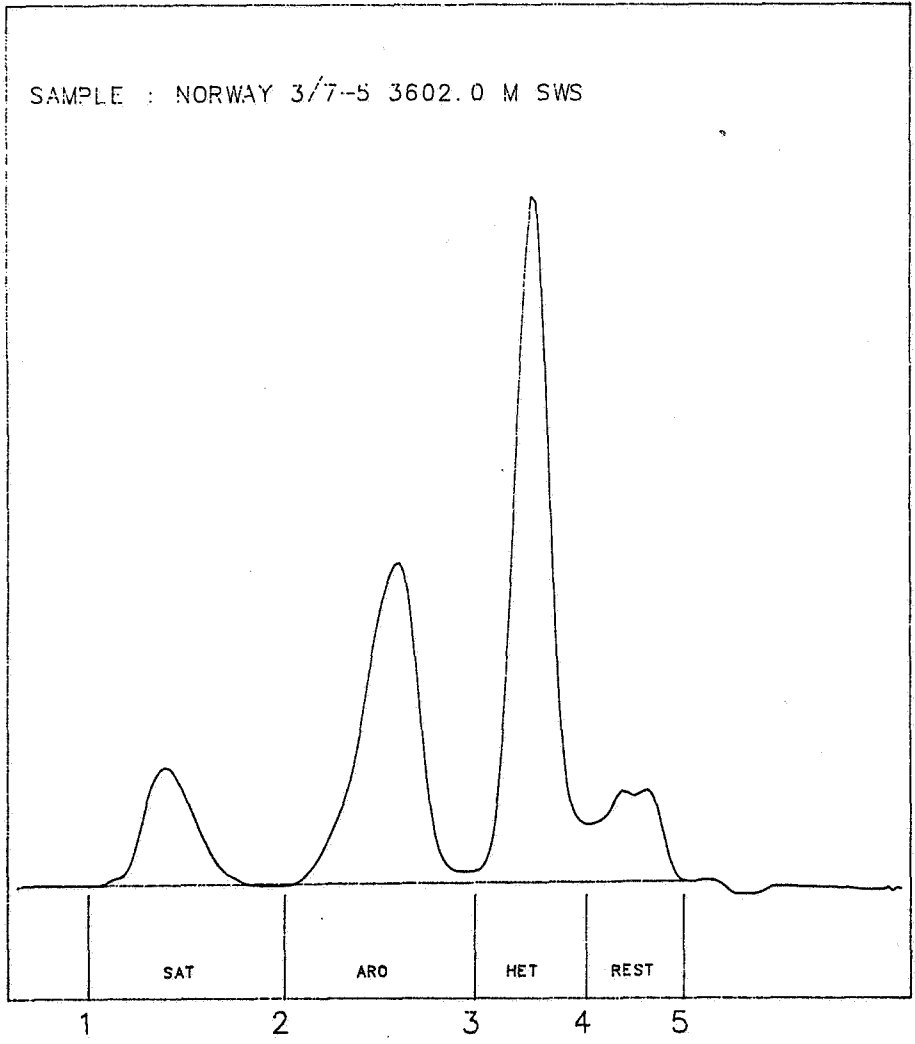
Gas chromatogram of the saturated hydrocarbons of the extract from well 03/07-05 (3602 m.), Norway

51566102



Gross Composition of the extract from well 03/07-05 (3602 m.), Norway

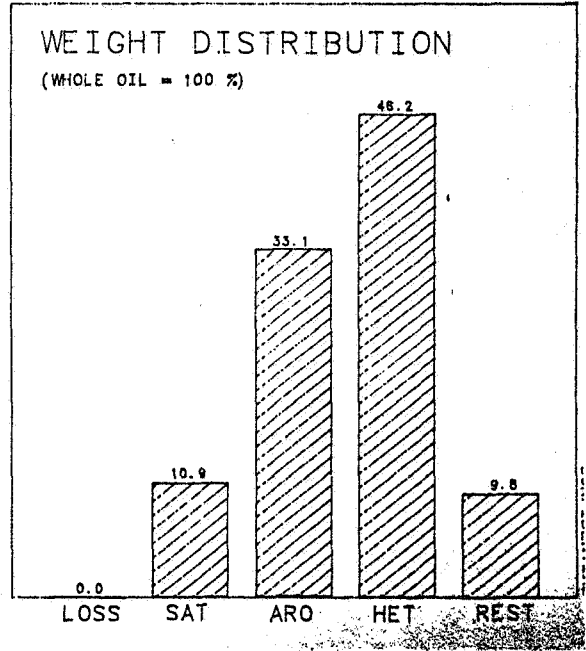
S15666102



SAMPLE : S156661--2

| | |
|--------------------------|--------|
| WEIGHT LOST ON TOPPING : | 0.0 % |
| - SATURATES : | 10.9 % |
| - AROMATICS : | 33.1 % |
| - HETEROCOMPOUNDS : | 46.2 % |
| - REST (HIGH MOL.) : | 9.8 % |

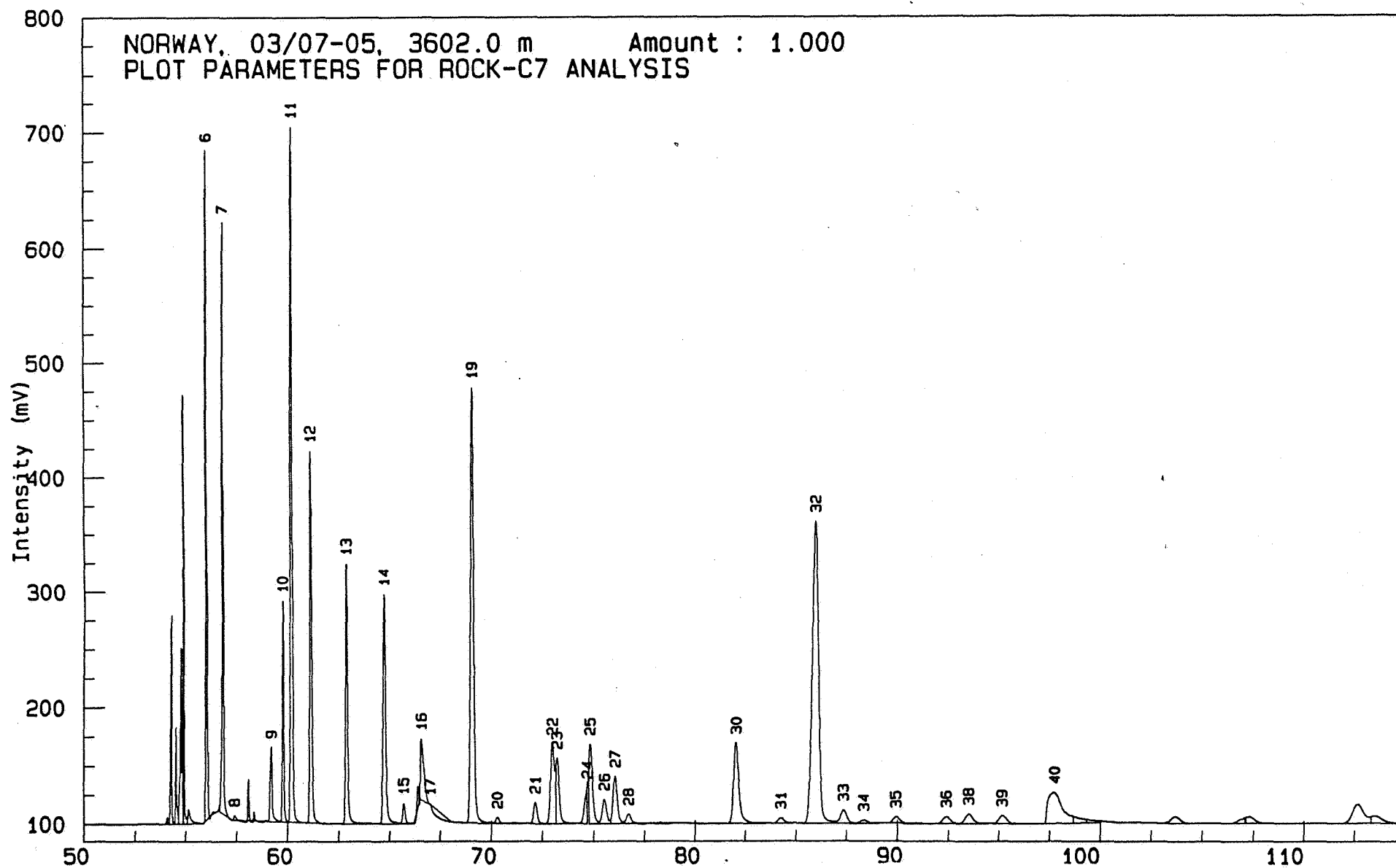
* WEIGHT PERCENTAGES CALCULATED FROM FID RESPONSE



Gas chromatogram of the light fraction (< 120 C.) of the extract from well 03/07-05 (3602 m.), Norway

201999515

RKER 92.069



Confidential

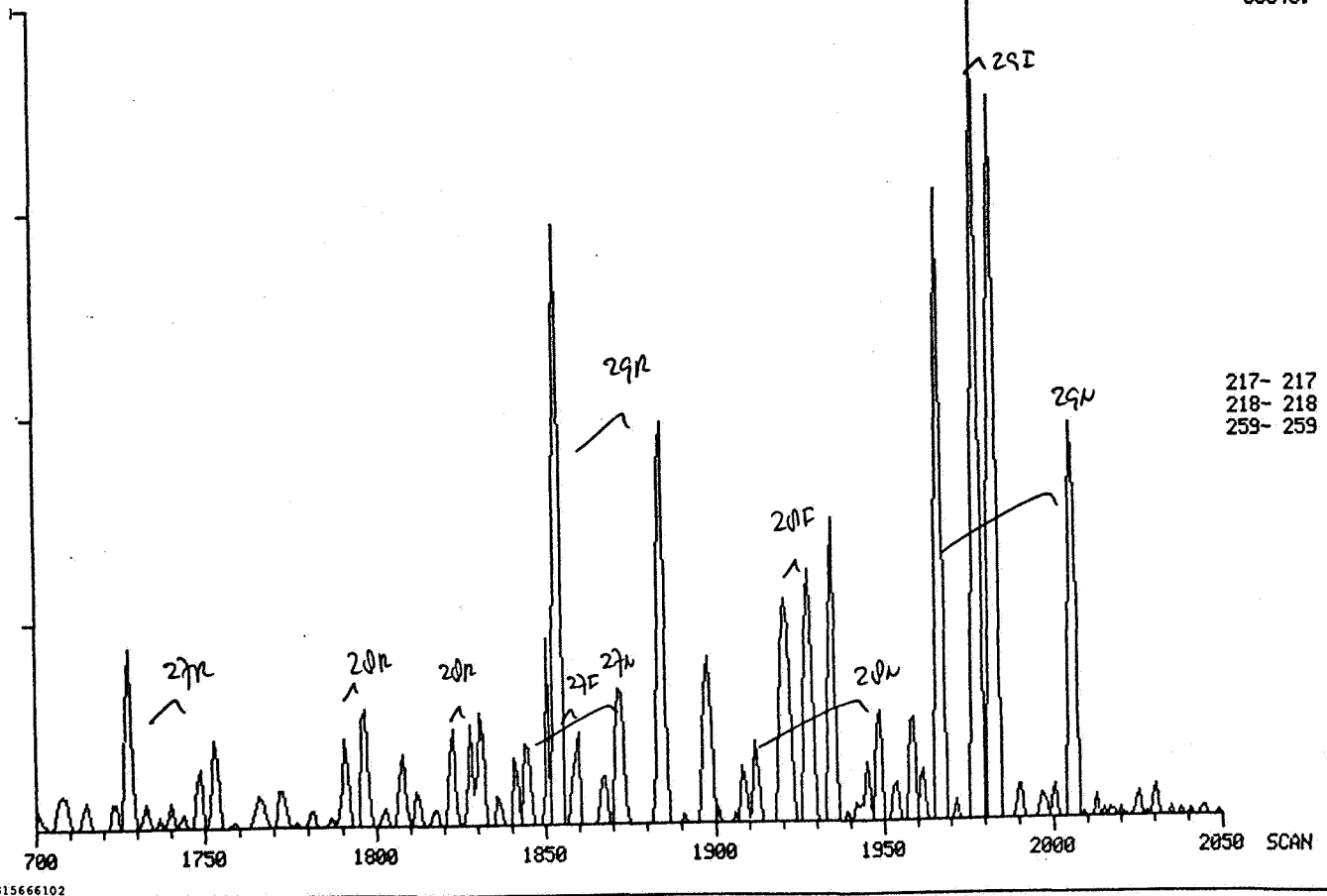
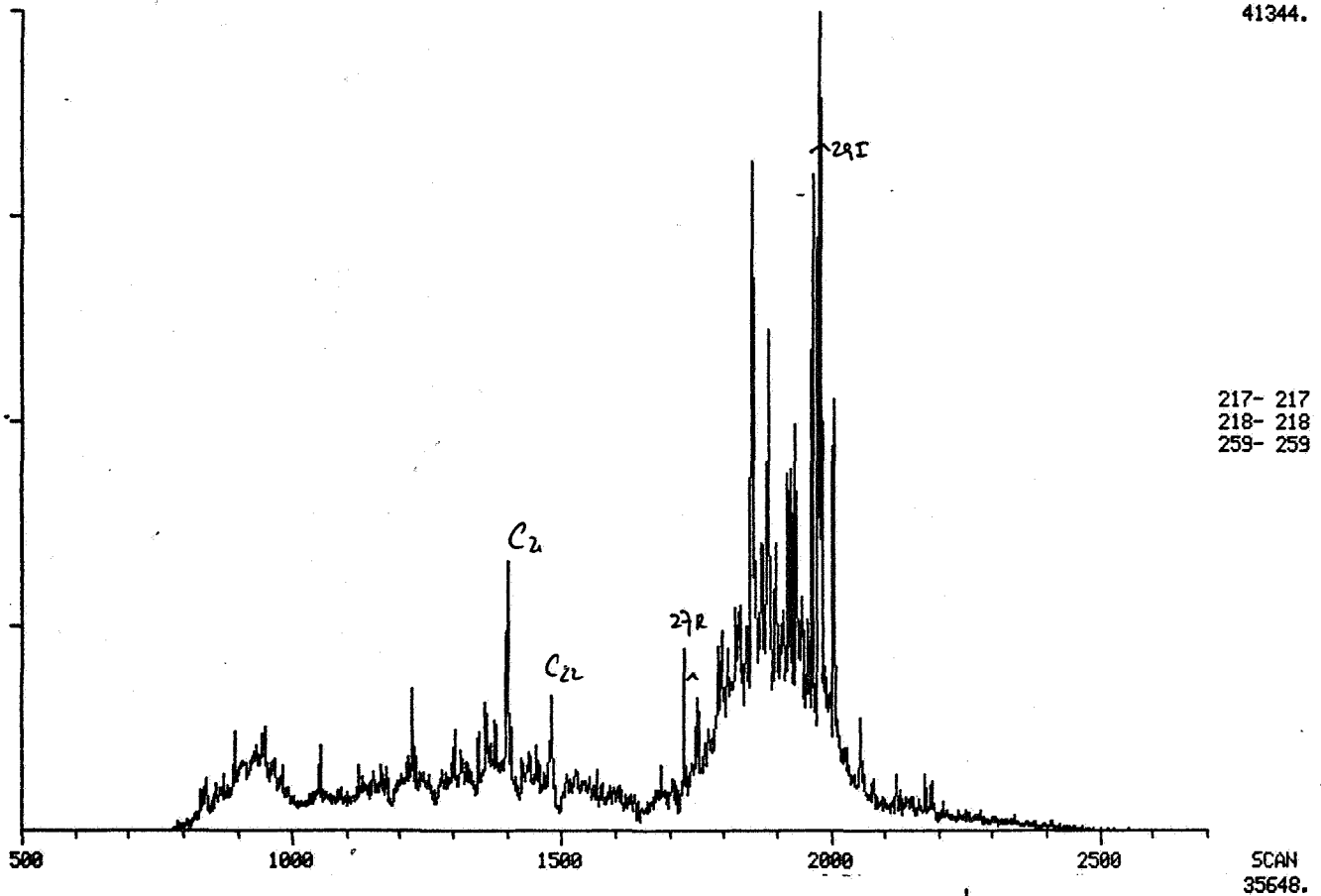
**Gas chromatographic hydrocarbons analysis (< 120 C.)
well 03/07-05 (3602 m.), Norway**

**GAS CHROMATOGRAPHICS ANALYSIS OF THE FRACTION BOILING BELOW
120 DEGREES CENTIGRADE**

Sample: NORWAY, 03/07-05, 3602.0 m

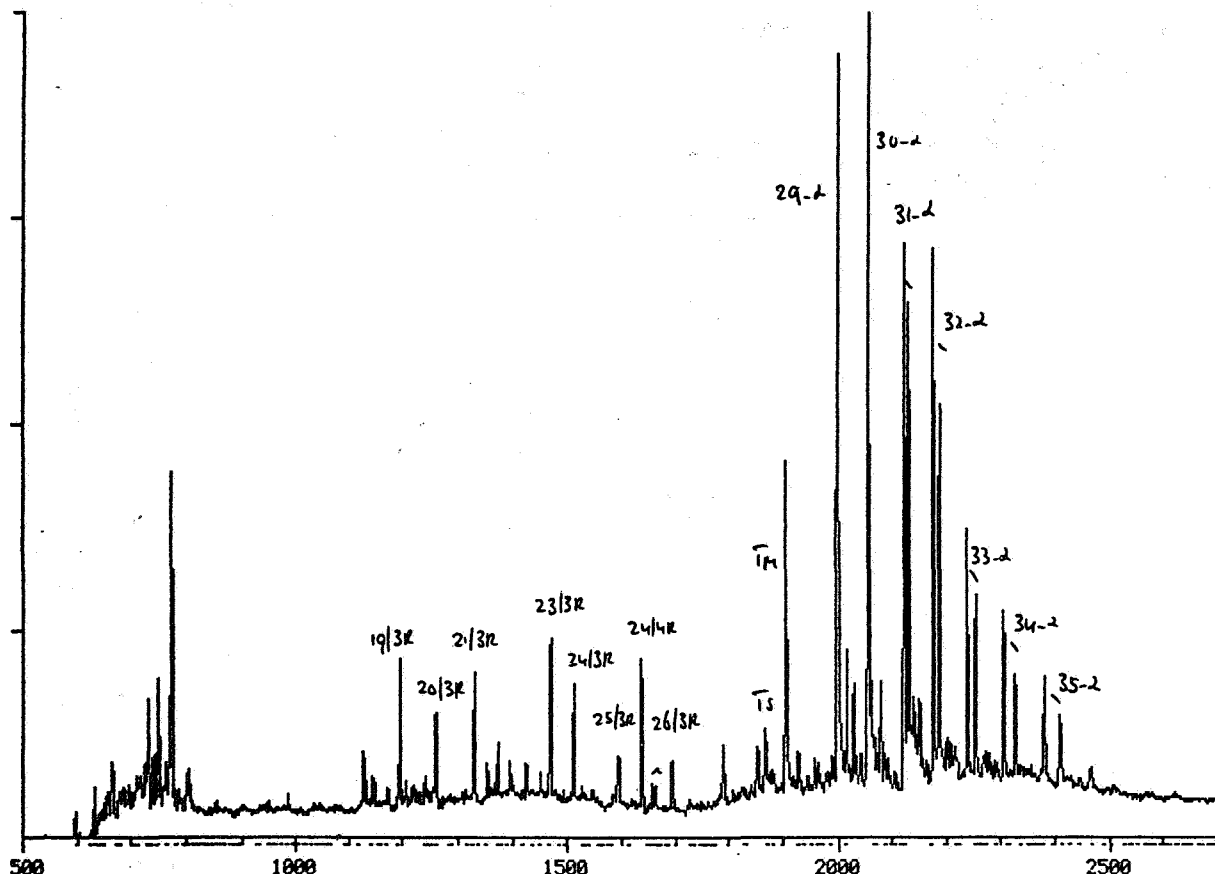
| COMPONENT No. Name | RET. TIME (min) | HEIGHT (mV) | AREA (cnts) |
|-------------------------------------|--------------------|----------------|----------------|
| 1 methane | 0.00 | 0 | 0 |
| 2 ethane | 0.00 | 0 | 0 |
| 3 propane | 0.00 | 0 | 0 |
| 4 i-butane | 0.00 | 0 | 0 |
| 5 n-butane | 0.00 | 0 | 0 |
| 6 i-pentane | 56.00 | 581873 | 2259609 |
| 7 n-pentane | 56.83 | 514238 | 2099036 |
| 8 2.2-dimethylbutane | 57.39 | 4107 | 10452 |
| 9 cyclopentane | 59.19 | 63969 | 451997 |
| 10 2.3-dimethylbutane | 59.77 | 189946 | 928221 |
| 11 2-methylpentane | 60.18 | 602479 | 3781026 |
| 12 3-methylpentane | 61.13 | 321551 | 2096880 |
| 13 n-hexane | 62.89 | 224247 | 1541864 |
| 14 methylcyclopentane | 64.75 | 197713 | 1825780 |
| 15 2.2-dimethylpentane | 65.70 | 17339 | 148104 |
| 16 benzene | 66.58 | 72510 | 1180165 |
| 17 2.4-dimethylpentane | 67.00 | 16902 | 336510 |
| 18 2.2.3-trimethylbutane | 68.02 | 1493 | 24551 |
| 19 cyclohexane | 69.11 | 377593 | 4060031 |
| 20 3.3-dimethylpentane | 70.30 | 5277 | 61872 |
| 21 1.1-dimethylcyclopentane | 72.16 | 18474 | 224454 |
| 22 2-methylhexane | 73.00 | 68533 | 1063497 |
| 23 2.3-dimethylpentane | 73.23 | 56619 | 554778 |
| 24 1-c-3-dimethylcyclopentane | 74.70 | 31376 | 267434 |
| 25 3-methylhexane | 74.86 | 68524 | 806525 |
| 26 1-tr-3-dimethylcyclopentane | 75.54 | 20916 | 309390 |
| 27 1-tr-2-dimethylcyclopentane | 76.07 | 40792 | 596666 |
| 28 3-ethylpentane | 76.73 | 7906 | 126553 |
| 29 reference | 0.00 | 0 | 0 |
| 30 n-heptane | 82.06 | 69157 | 1294034 |
| 31 1-c-2-dimethylcyclopentane | 84.26 | 4681 | 93501 |
| 32 methylcyclohexane | 86.05 | 261215 | 5625294 |
| 33 1.1.3-trimethylcyclopentane | 87.37 | 11358 | 250759 |
| 34 2.2-dimethylhexane | 88.36 | 2904 | 64955 |
| 35 ethylcyclopentane | 89.93 | 5465 | 133552 |
| 36 2.5-dimethylhexane | 92.41 | 6028 | 146973 |
| 37 not-present | 0.00 | 0 | 0 |
| 38 2.2.3-trimethylpentane | 93.51 | 8552 | 221720 |
| 39 1-tr-2-c-4-trimethylcyclopentane | 95.17 | 6877 | 176132 |
| 40 toluene | 97.75 | 26948 | 1330106 |

Sterane Fragmentograms of the extract from well 03/07-05 (3602 m.), Norway



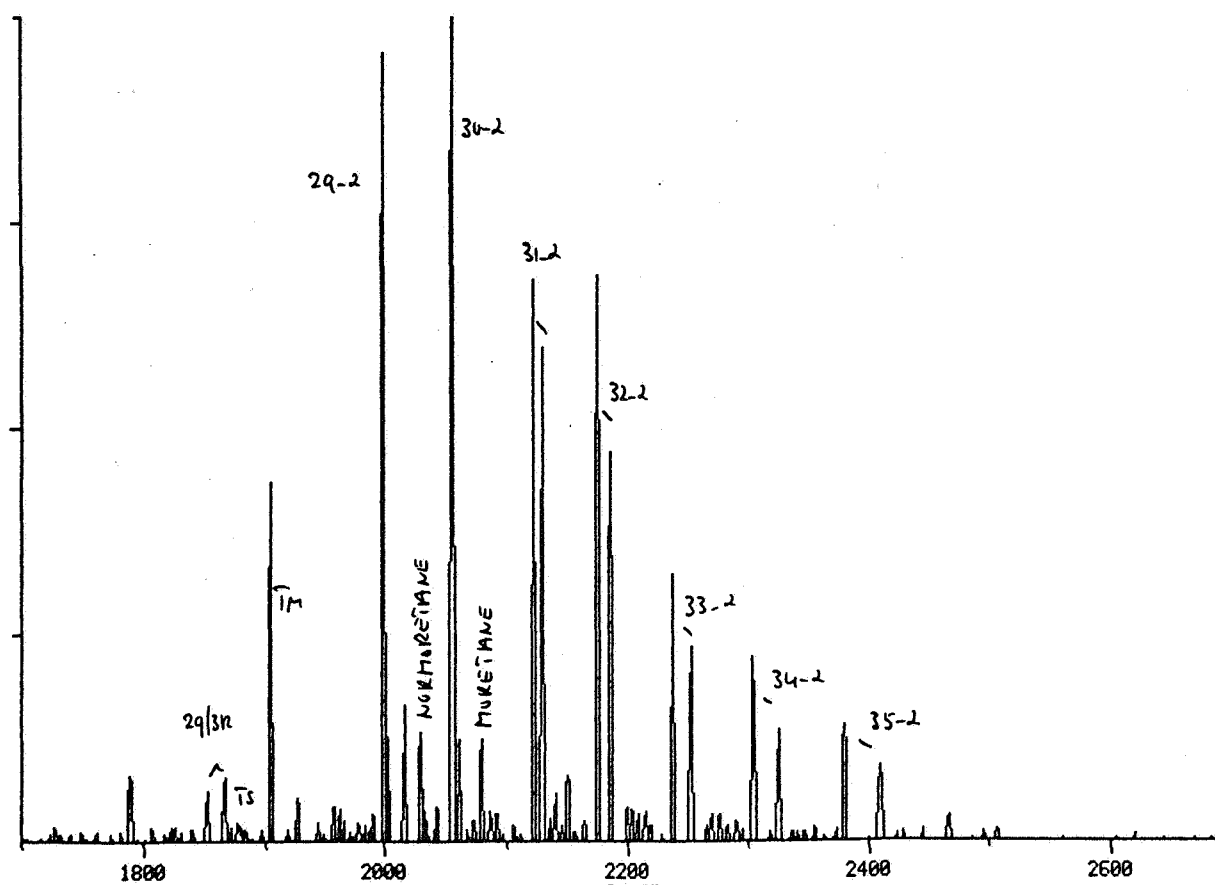
Triterpane Fragmentograms of the extract from well 03/07-05 (3602 m.), Norway

66588.



191.057
± 0.500

SCAN
61248.



191.057
± 0.500

SCAN