GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

# GEOCHEMICAL EVALUATION OF WELLS FROM THE MANDAL HIGH AREA

## GEOCHEMICAL ANALYSIS

## Well NOCS 2/6-2

## PART 2


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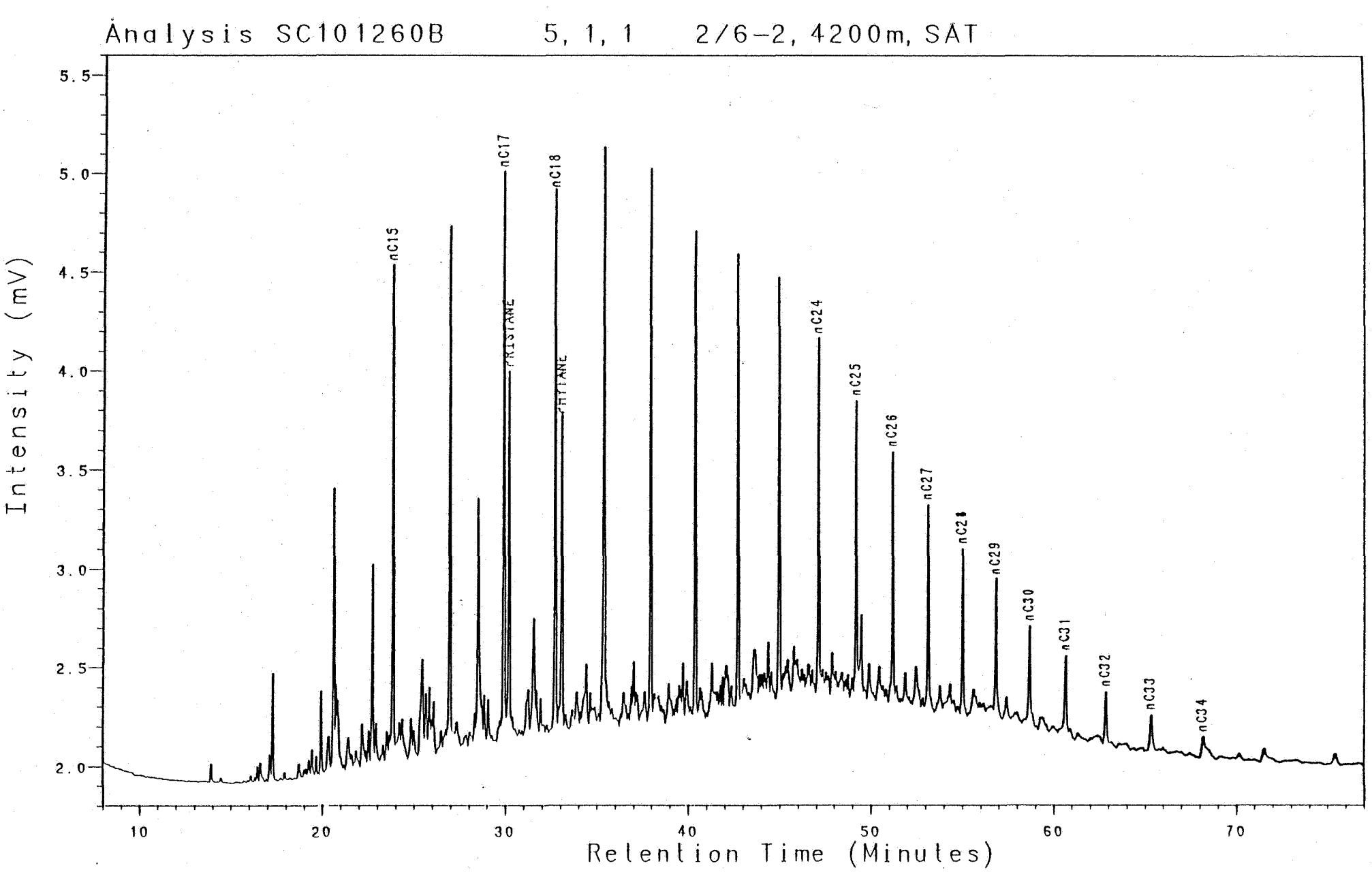
7038 Trondheim
Norway


Date : May 1989

# APPENDIX 4

# GAS CHROMATOGRAMS AND FRAGMENTOGRAMS




NOCS 2/6-2 4160-4200m
SATURATED GC
CLST: gy blk, brn blk

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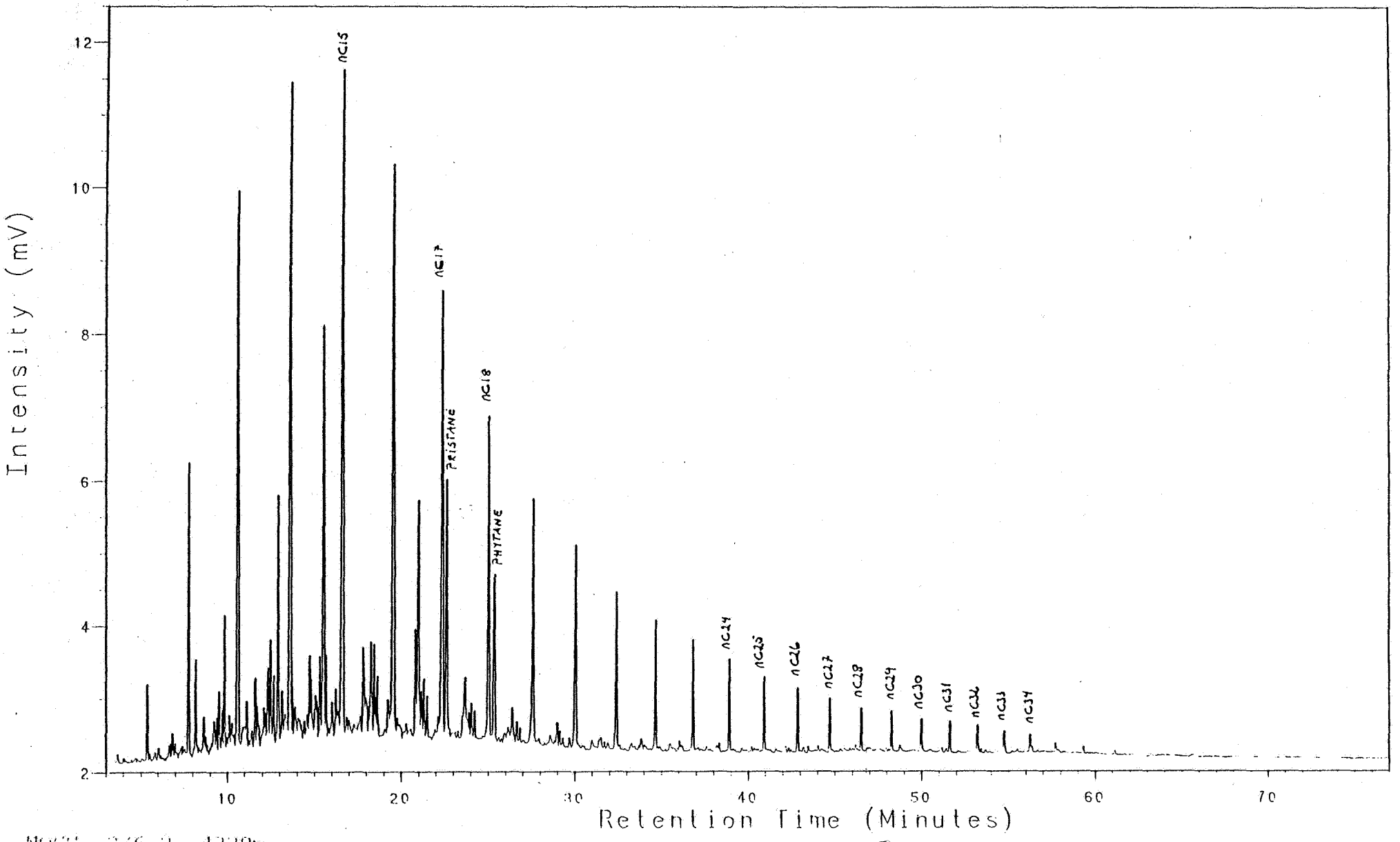
Analysis SA4034220 5, 1, 1 2/6-2 4220m SAT




NO33 2/6-2 4220m
SATURATED GC
PDF

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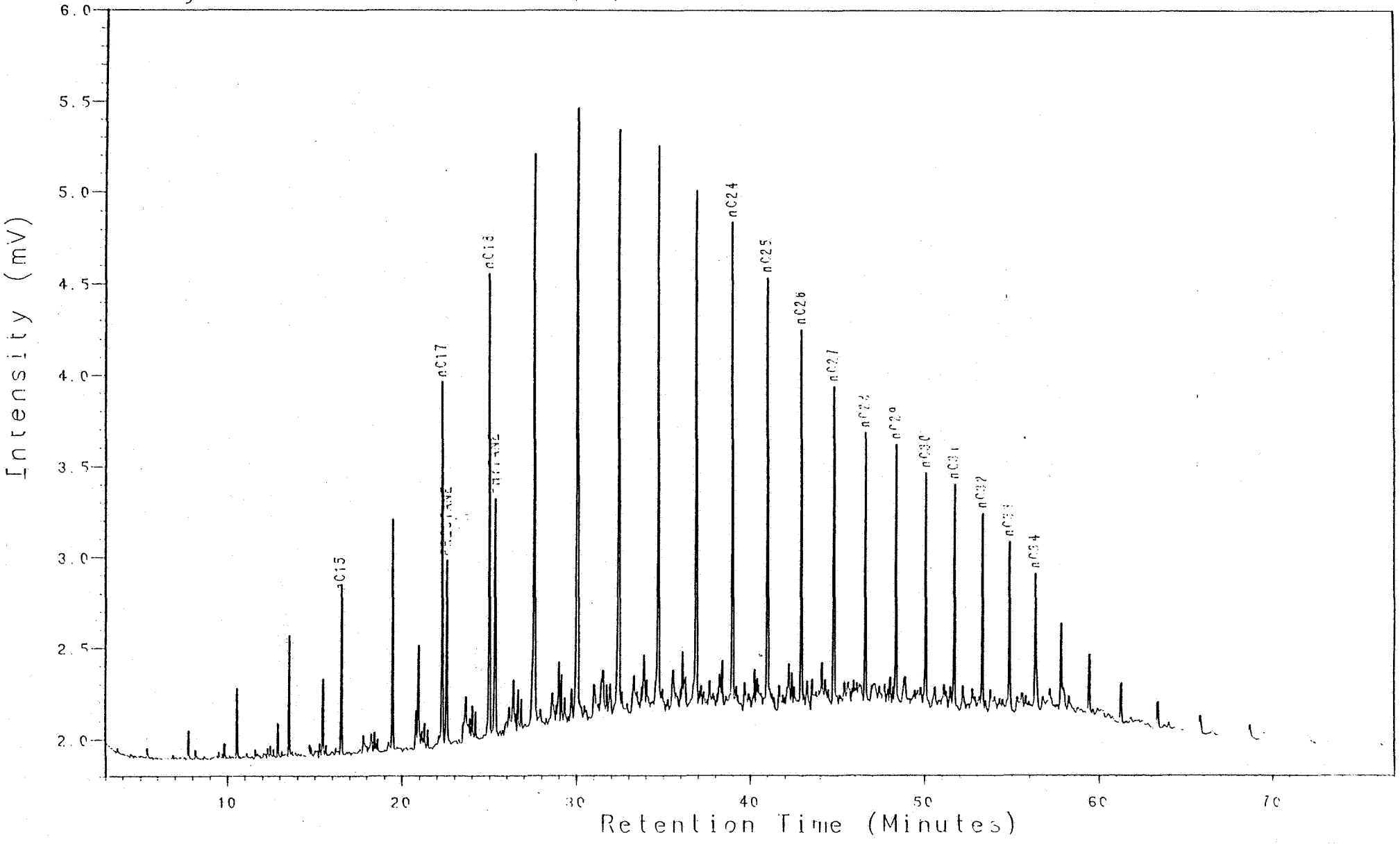
Analysis SA4034225 5, 1, 1 2/6-2 4225m SAT




HOCS 2/6-2 4225m
SATURATED GC
FULL

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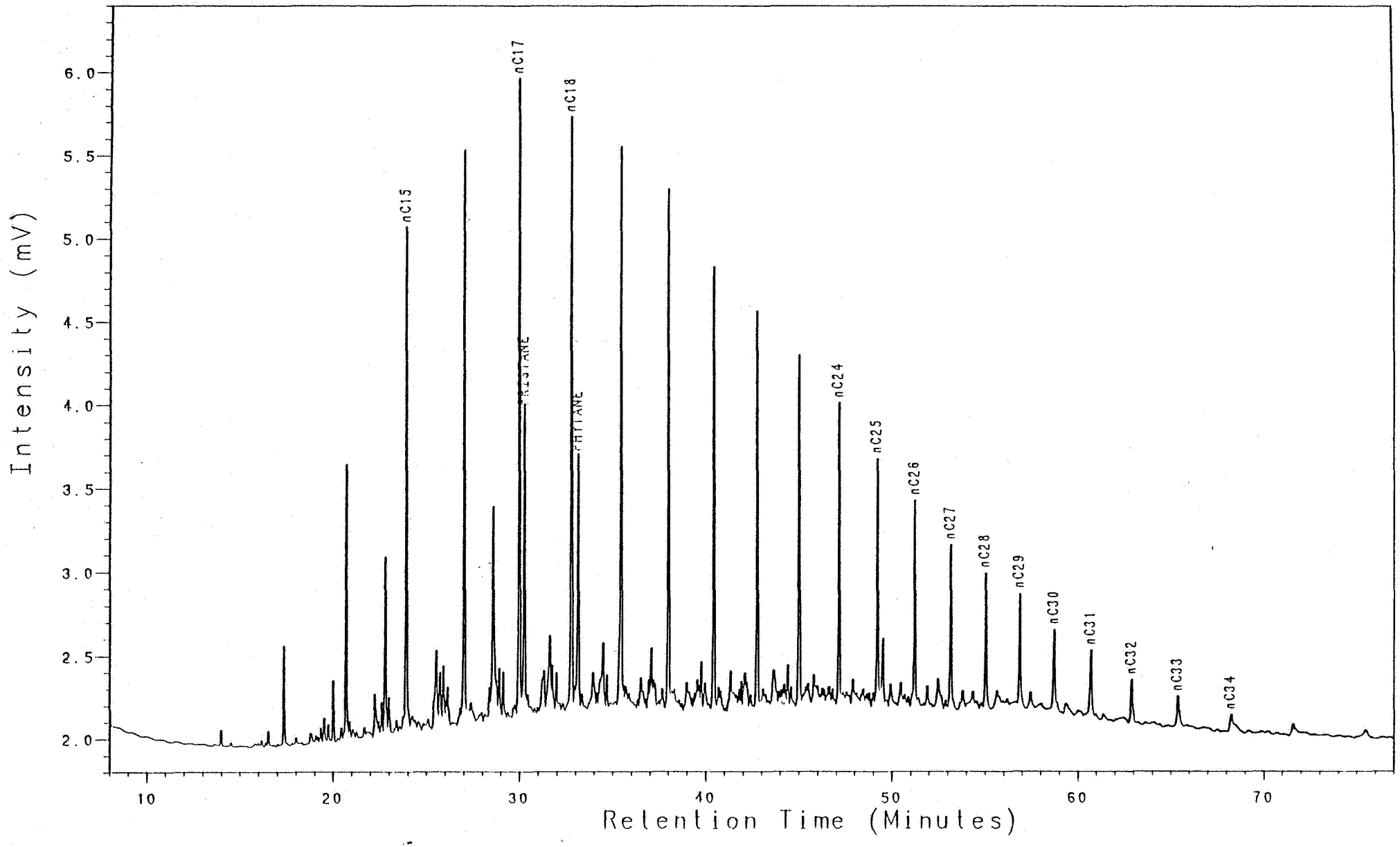


NOCS 2/6-2 4210-30m
SATURATED GC
CLST: blk, gy blk, brn blk

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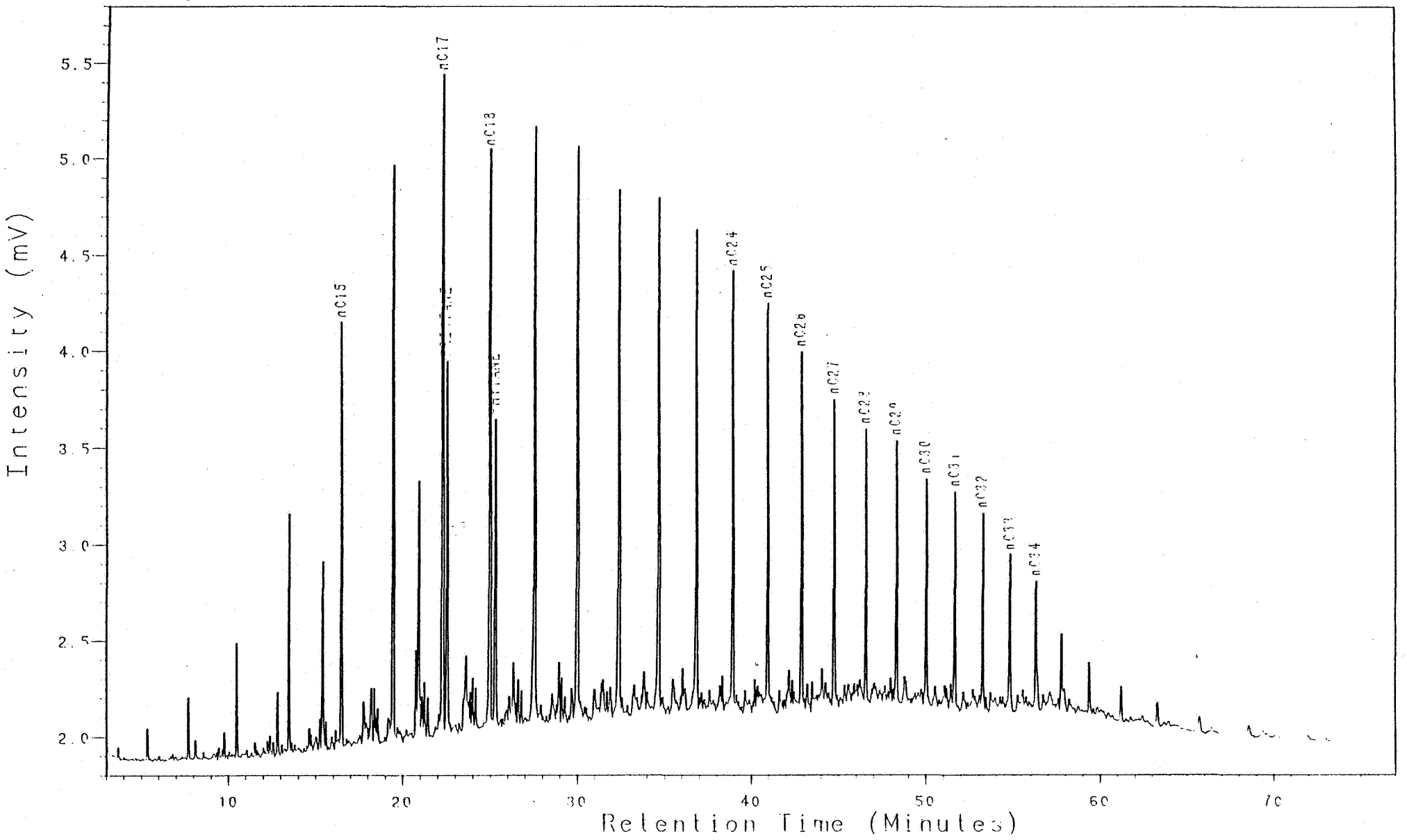
Analysis SA4034230 5, 1, 1 2/6-2 4230m SAT




NCCS 2/6-2 4230m
SATURATED GC
FULL

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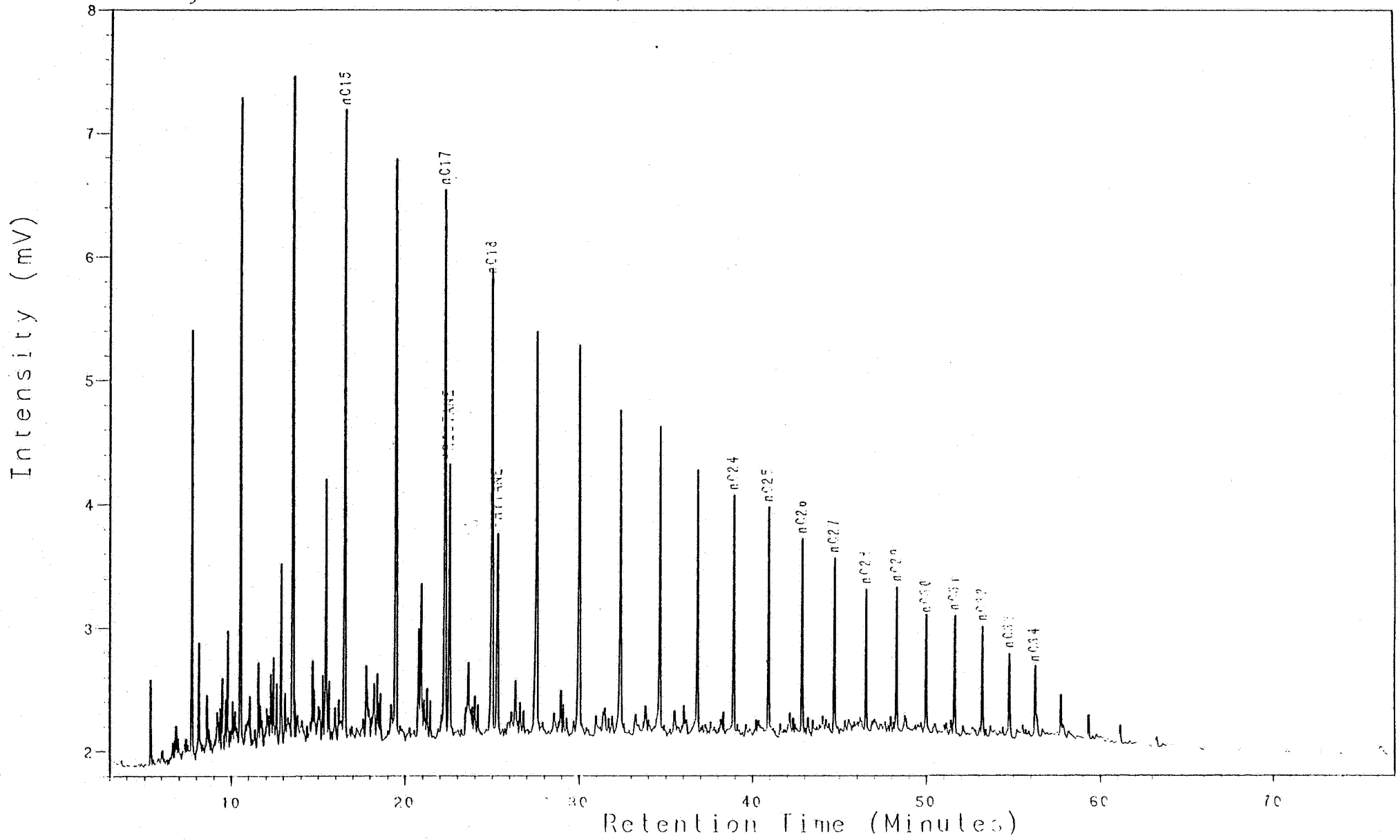


GC3 2/6-2 4235m
SATURATED GC
PLOT

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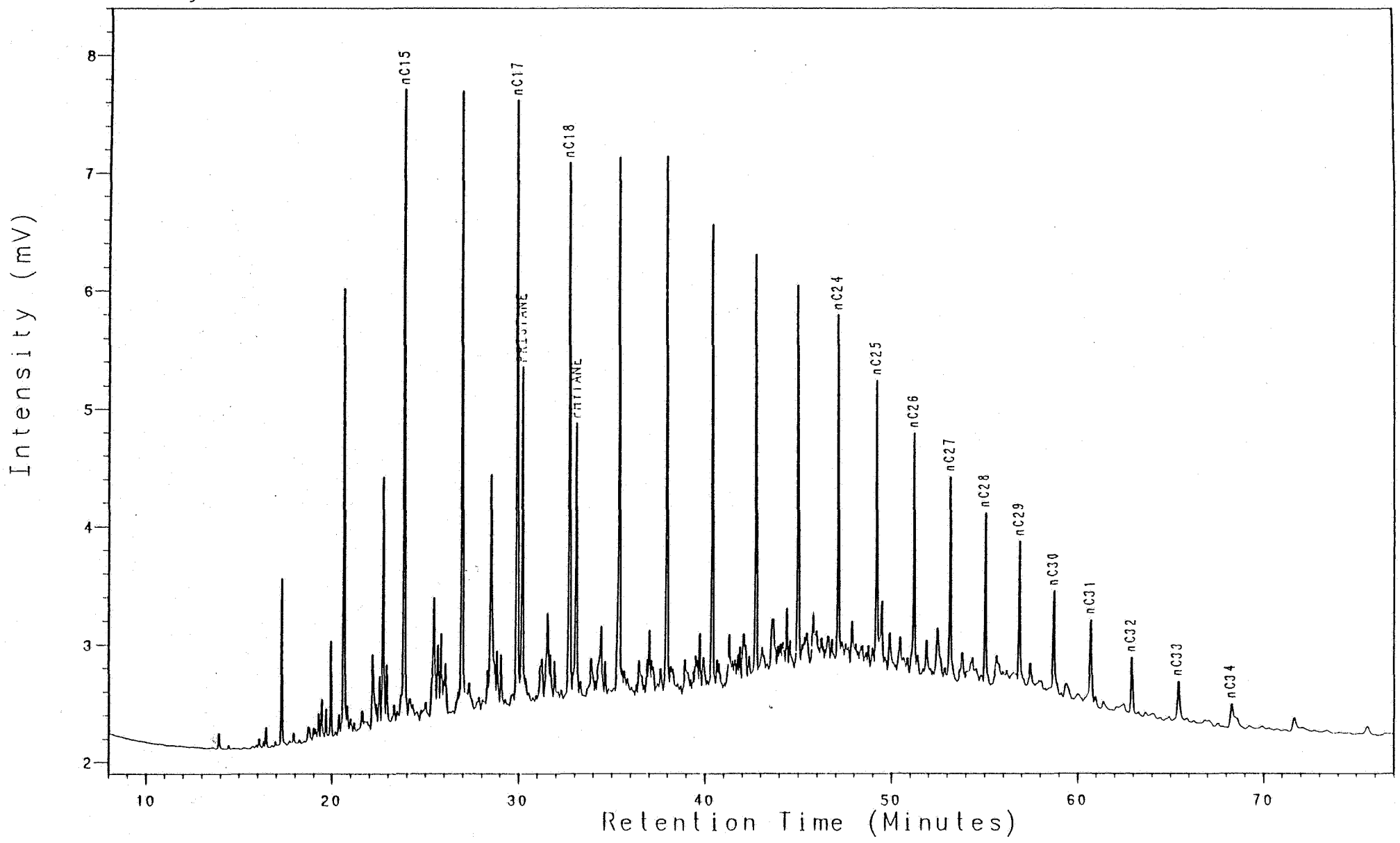
Analysis SC101280B 5, 1, 1 2/6-2, 4270m, SAT




NOCS 2/6-2 4240-70m
SATURATED GC
CLST: gy blk, brn blk

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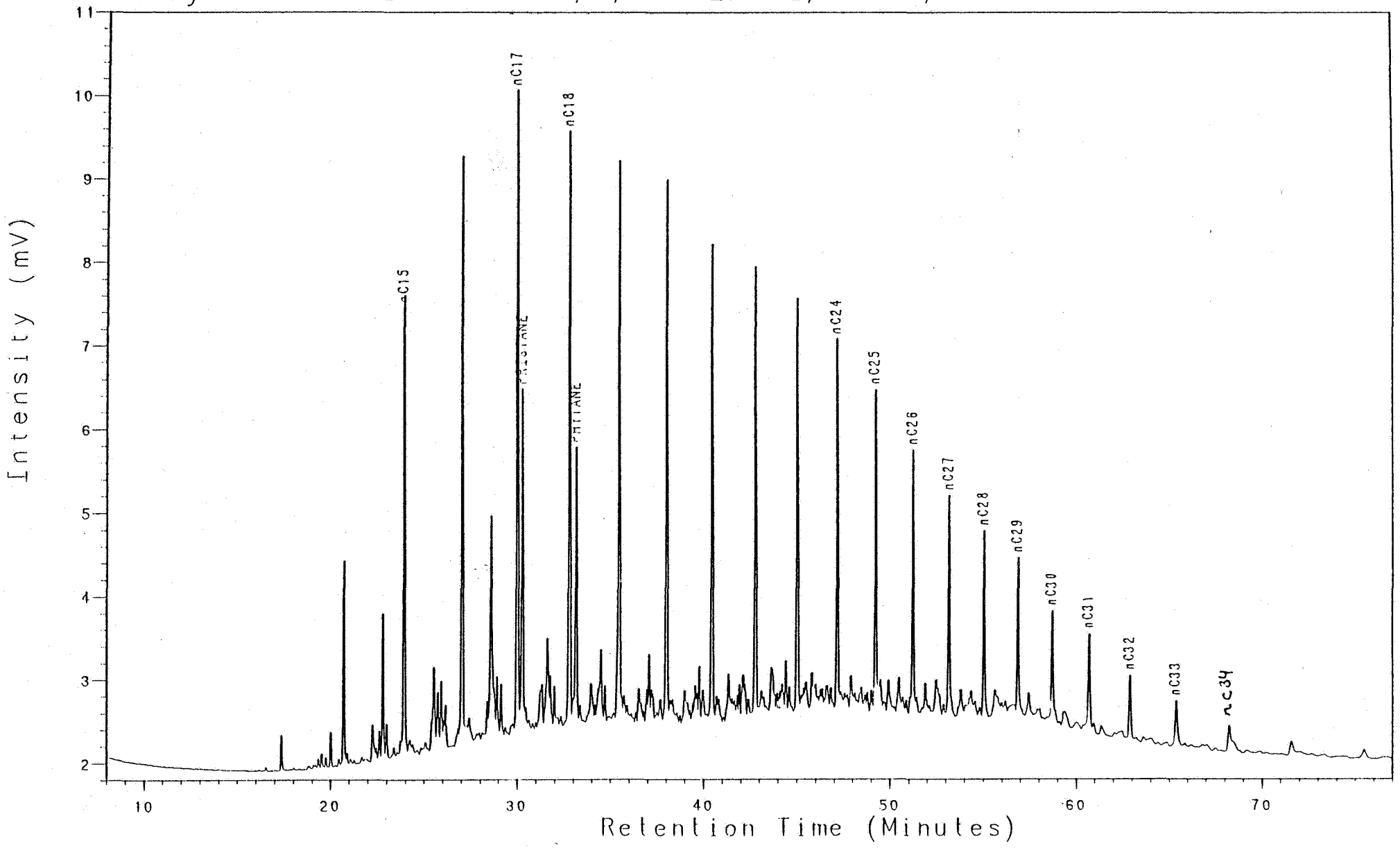


NOCS 2/6-2 4280-4300m
SATURATED GC
CLST: brn blk

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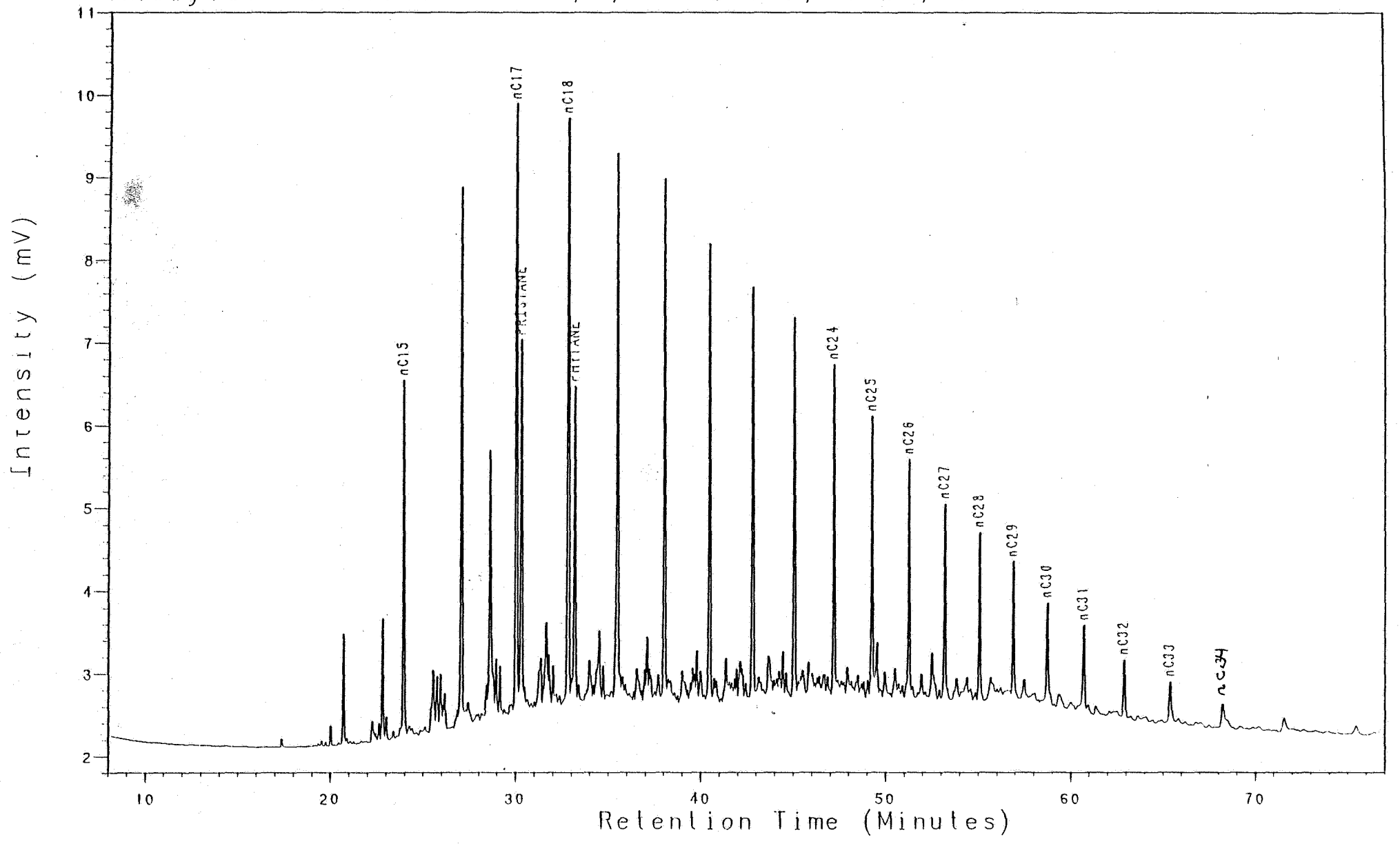


NOCS 2/6-2 4310-30m
SATURATED GC
CLST: brn blk

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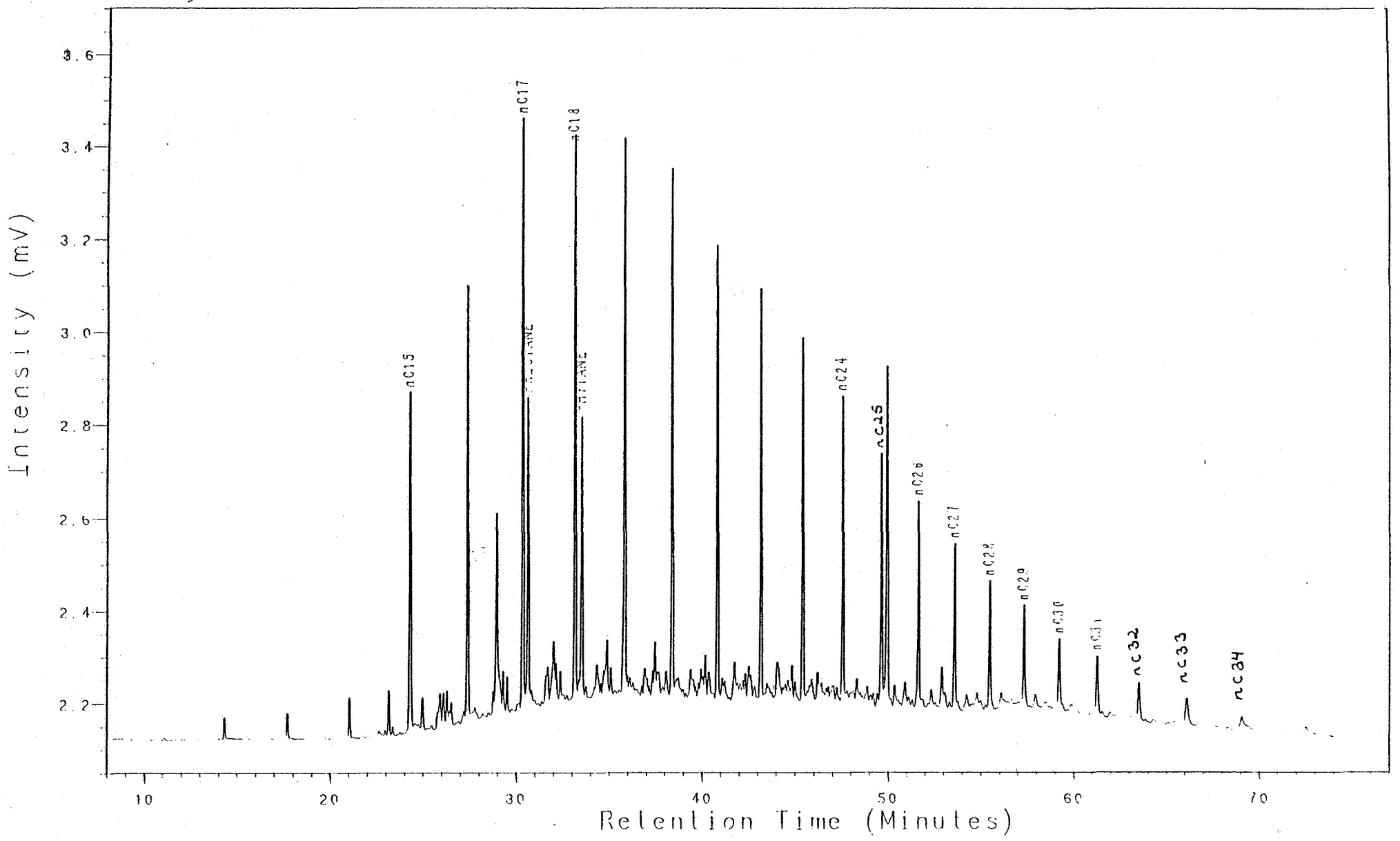
Analysis SC101310B 5, 1, 1 2/6-2, 4356m, SAT




NOCS 2/6-2 4336-56m
SATURATED GC
CLST: gy blk, brn blk

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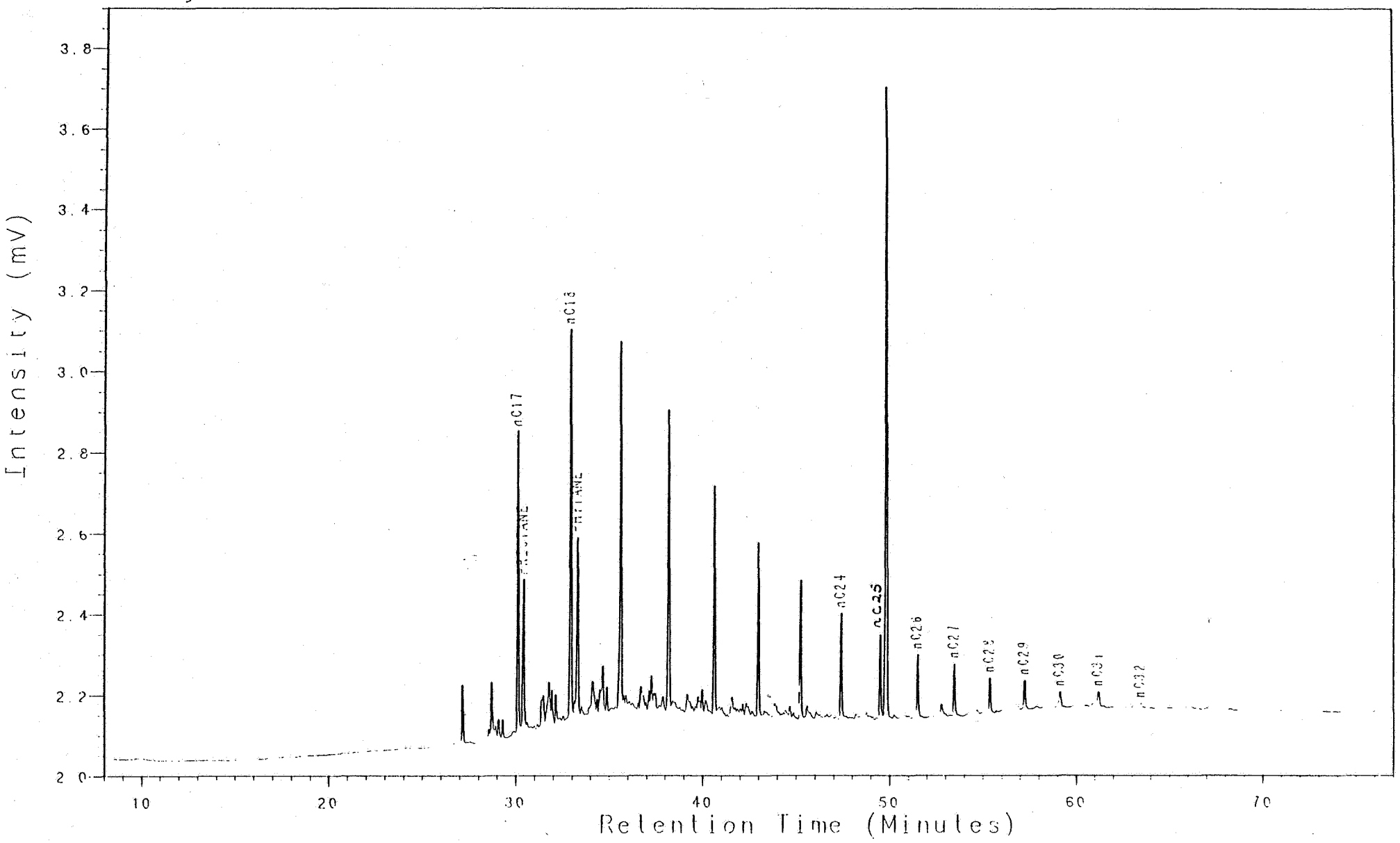
Analysis SC101320B 5, 1, 1 2/6-2, 4398m, SAT




NOCS 2/6-2 4380-98m
SATURATED GC
CLST: gy blk, brn blk

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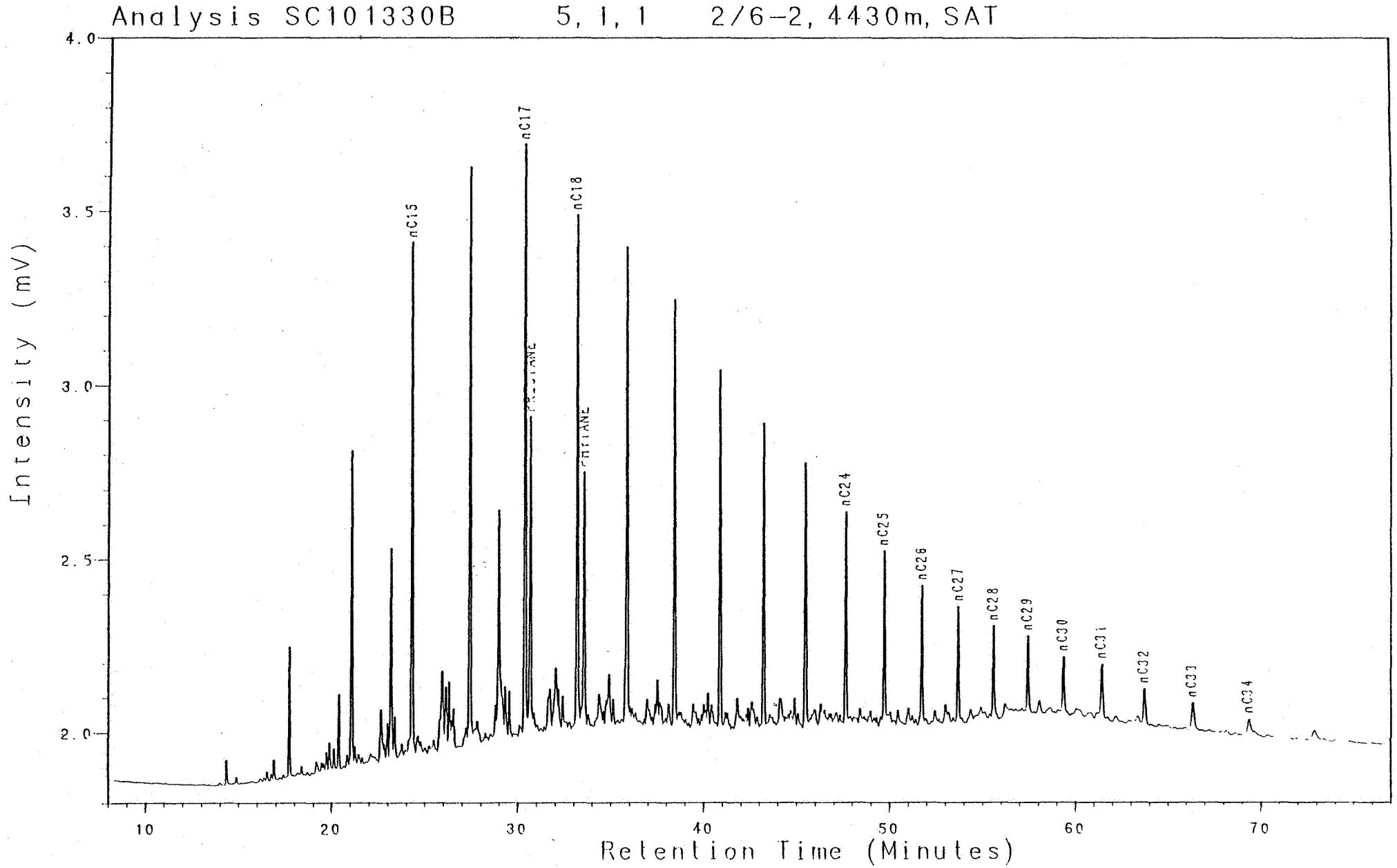


NOCS 2/6-2 4404-30m
SATURATED GC
CLST: gy blk, brn blk

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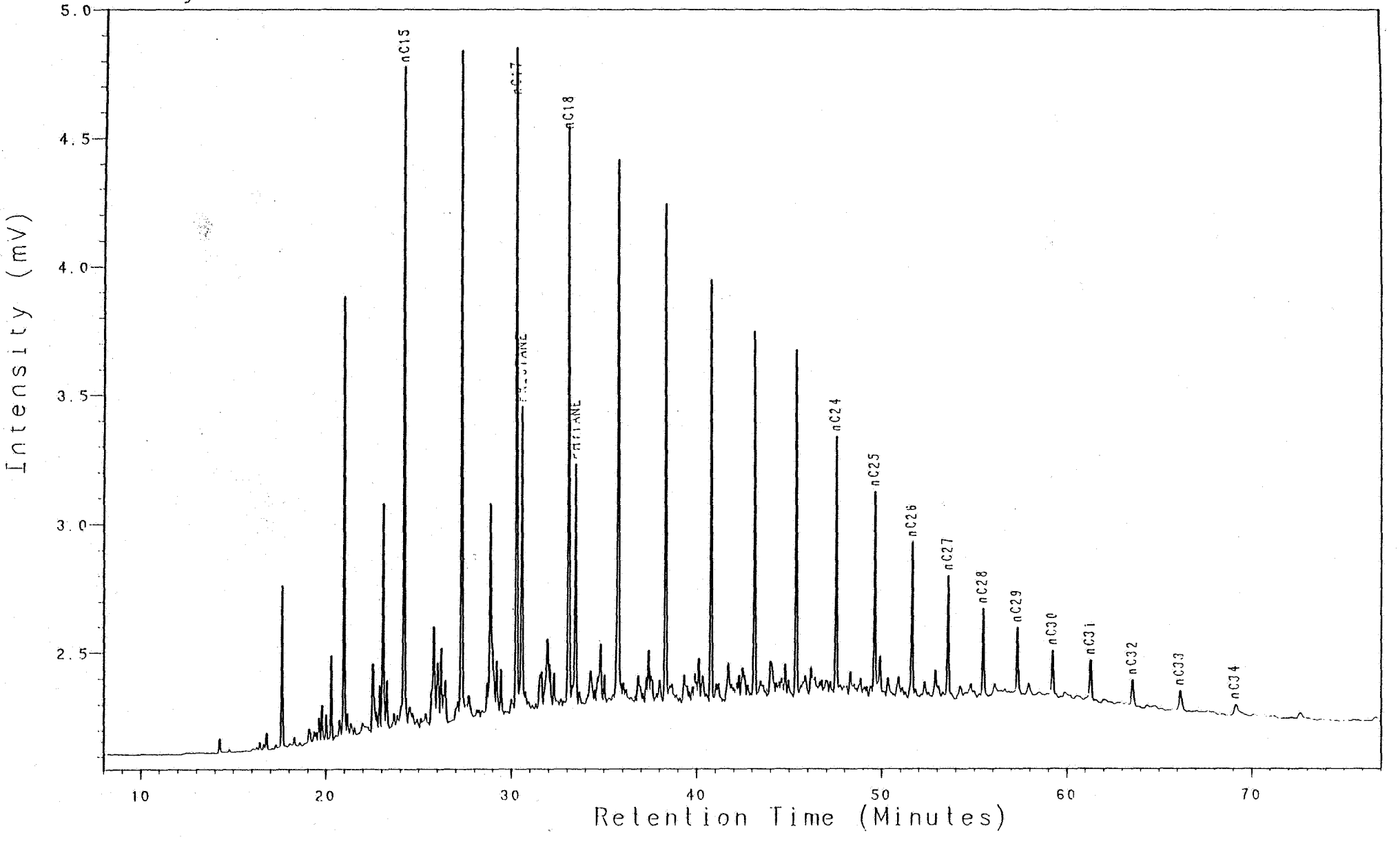
Analysis SC101340B 5, 1, 1 2/6-2, 4474m, SAT




NOCS 2/6-2 4436-74m
SATURATED GC
CLST: gy blk, brn blk

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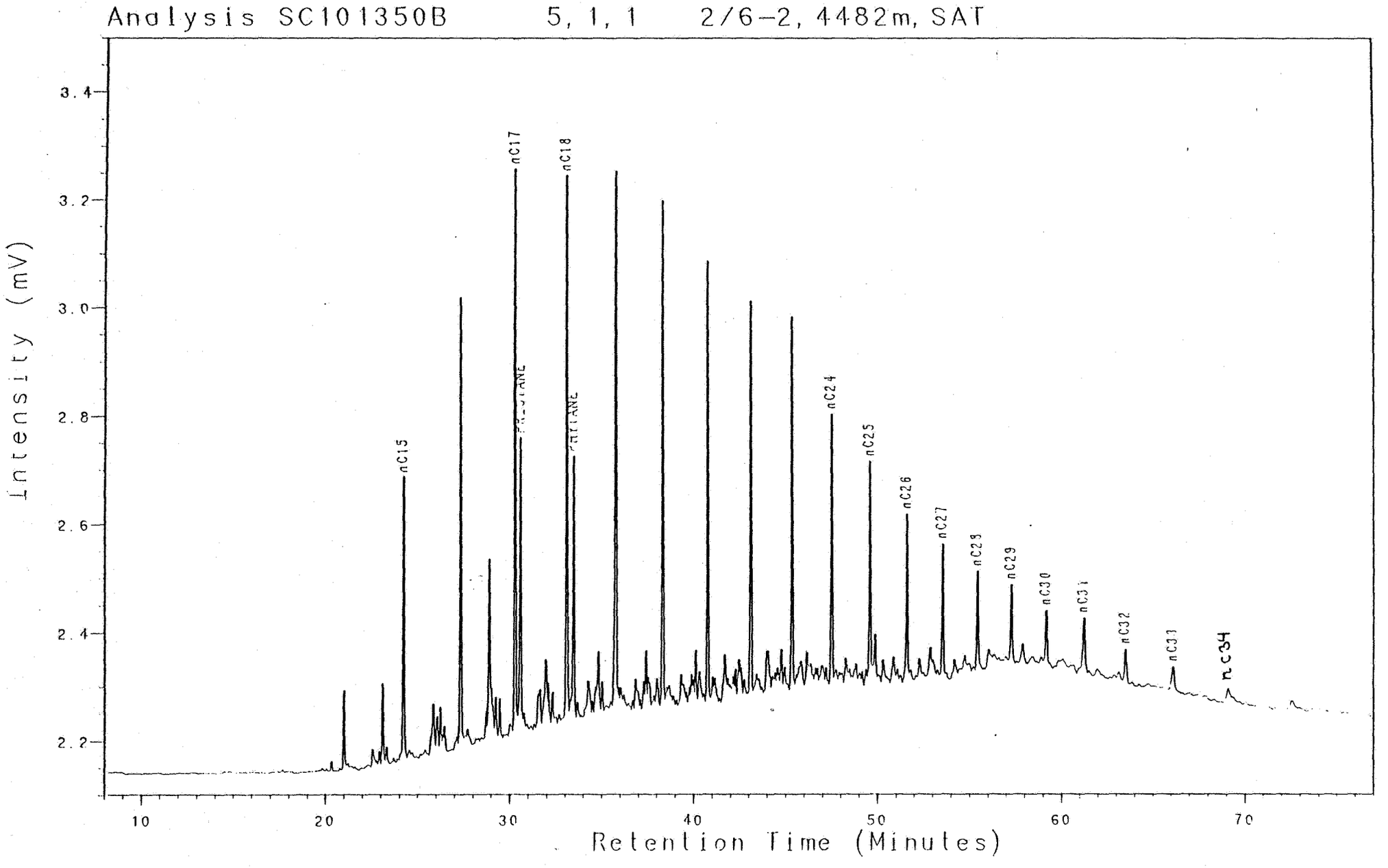


NOCS 2/6-2 4478-82m
SATURATED GC
CLST: gy blk, brn blk

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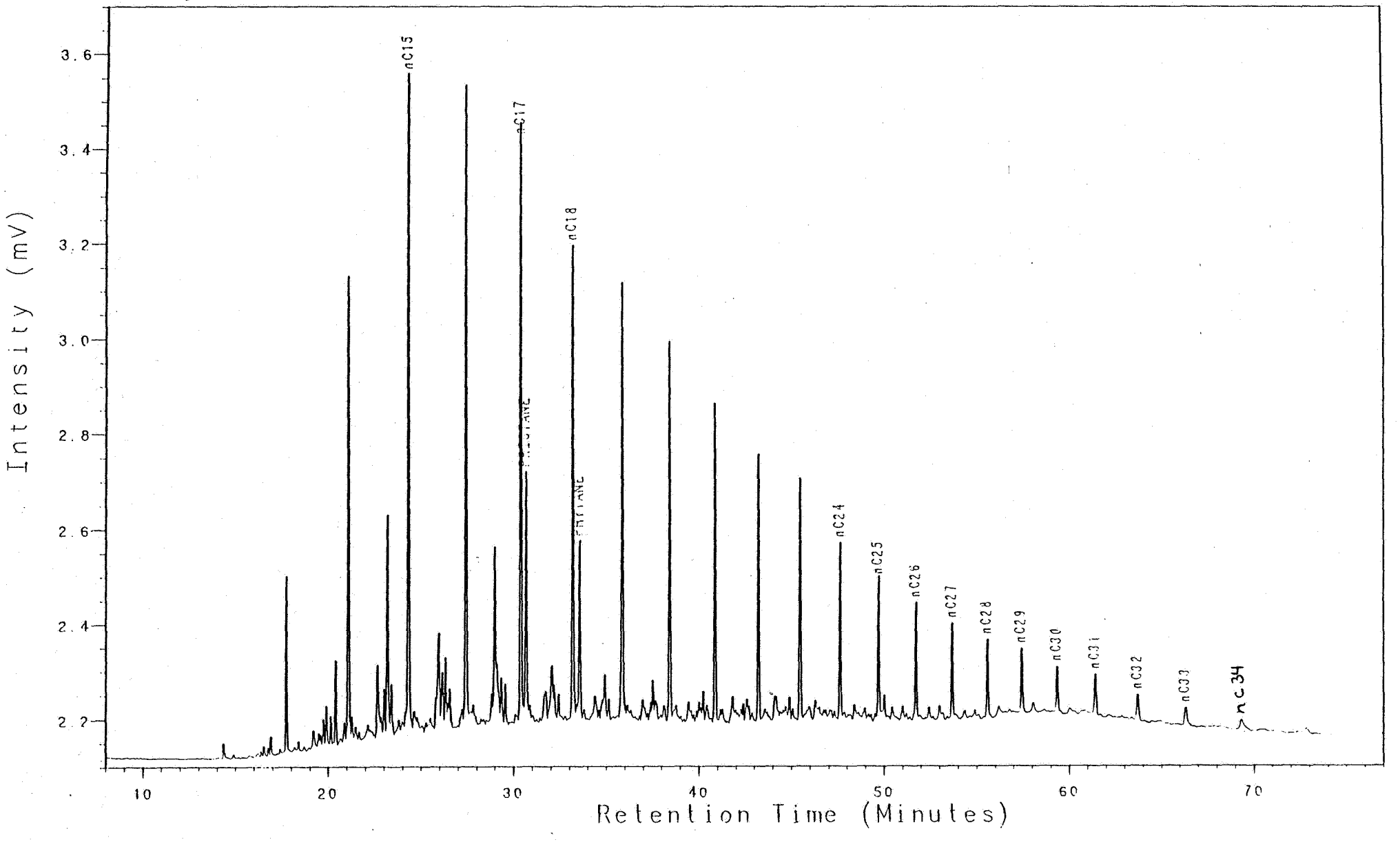
Analysis SC101360B 5, 1, 1 2/6-2, 4528m, SAT




[illegible] 2/6-2 4506.28m
SATURATED GC
CLST: gy blk, brn blk

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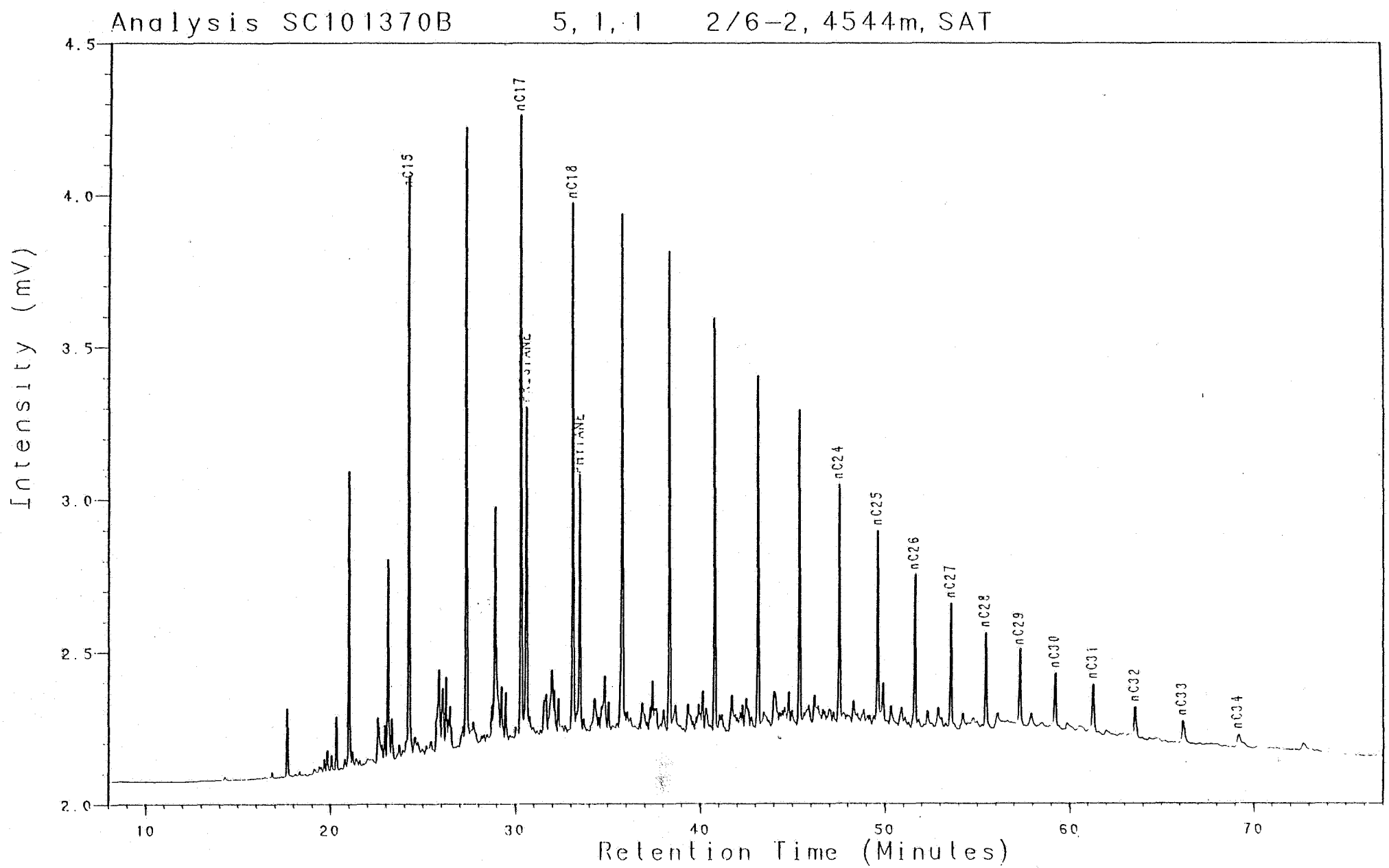


ROGS 2/6 2 4532-44m
SATURATED GC
CLST: gy blk, brn blk

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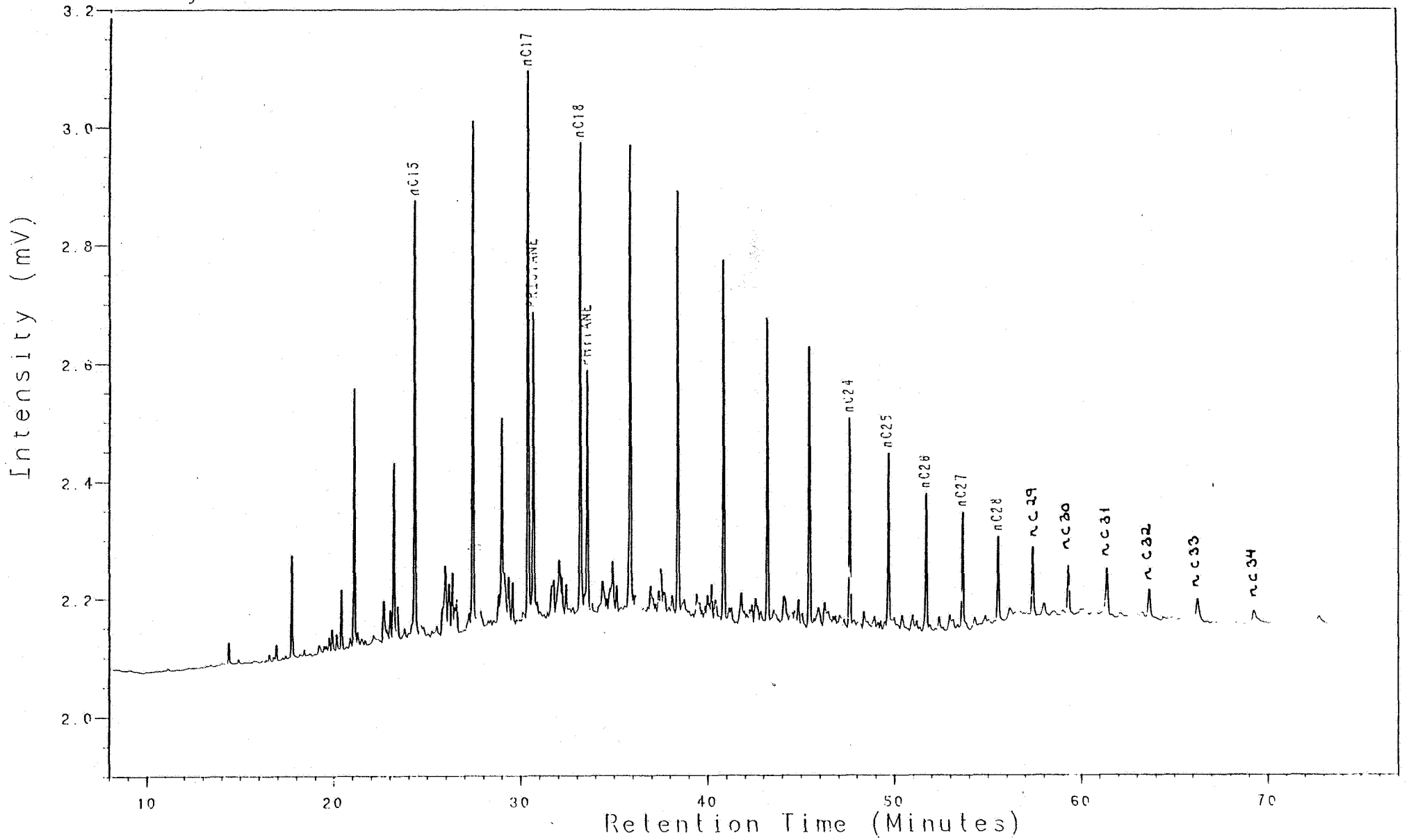


NOCS 2/6-2 4575-4602m
SATURATED GC
CLST: gy blk, brn blk

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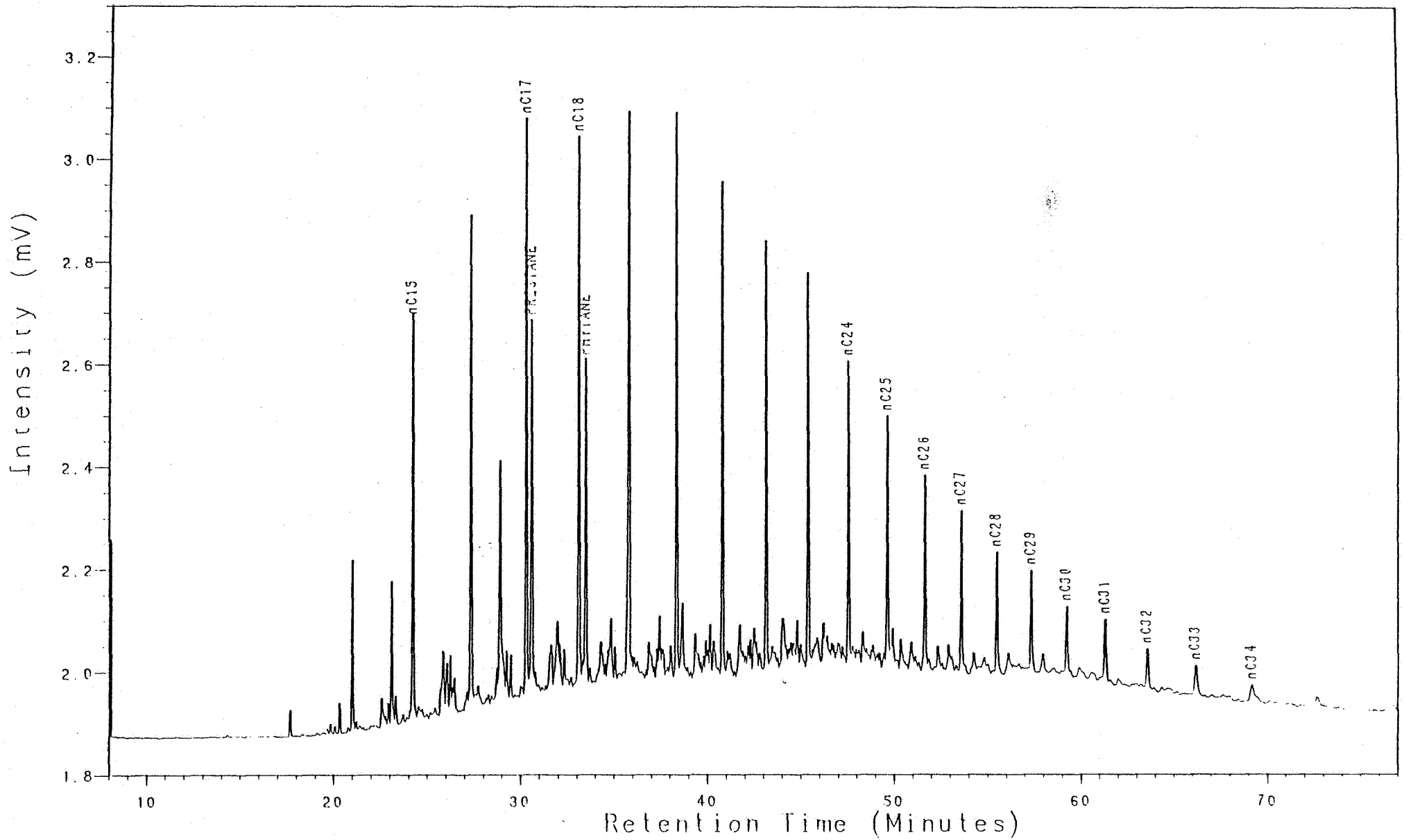
Analysis SC101390B 5, 1, 1 2/6-2, 4666m, SAT




NOCS 2/6-2 4616-66m
SATURATED GC
CLST: gy, gy red, m gy

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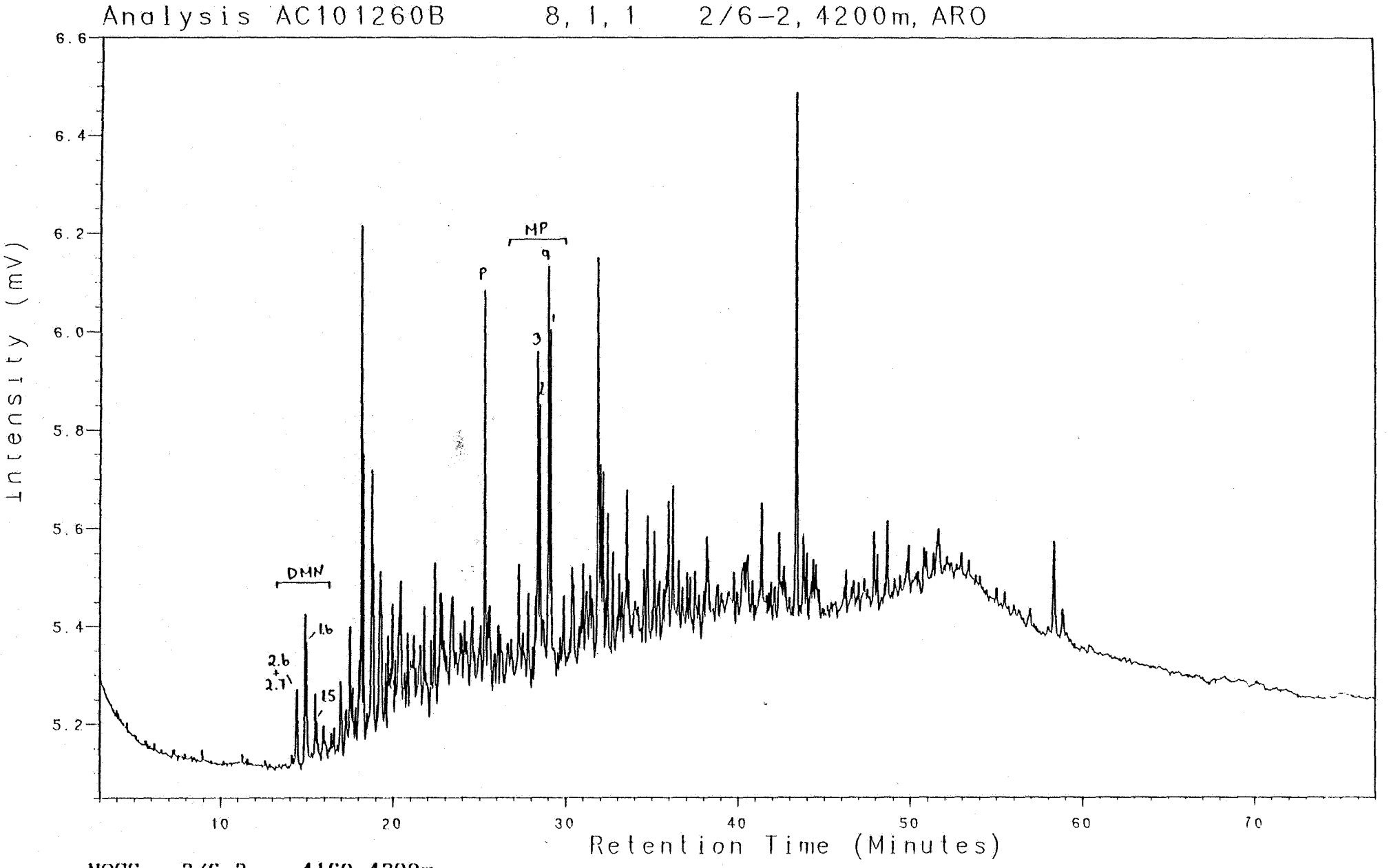


NOCS 2/6-2 4160-4200m
AROMATIC GC (FID)
CLST: gy blk, brn blk

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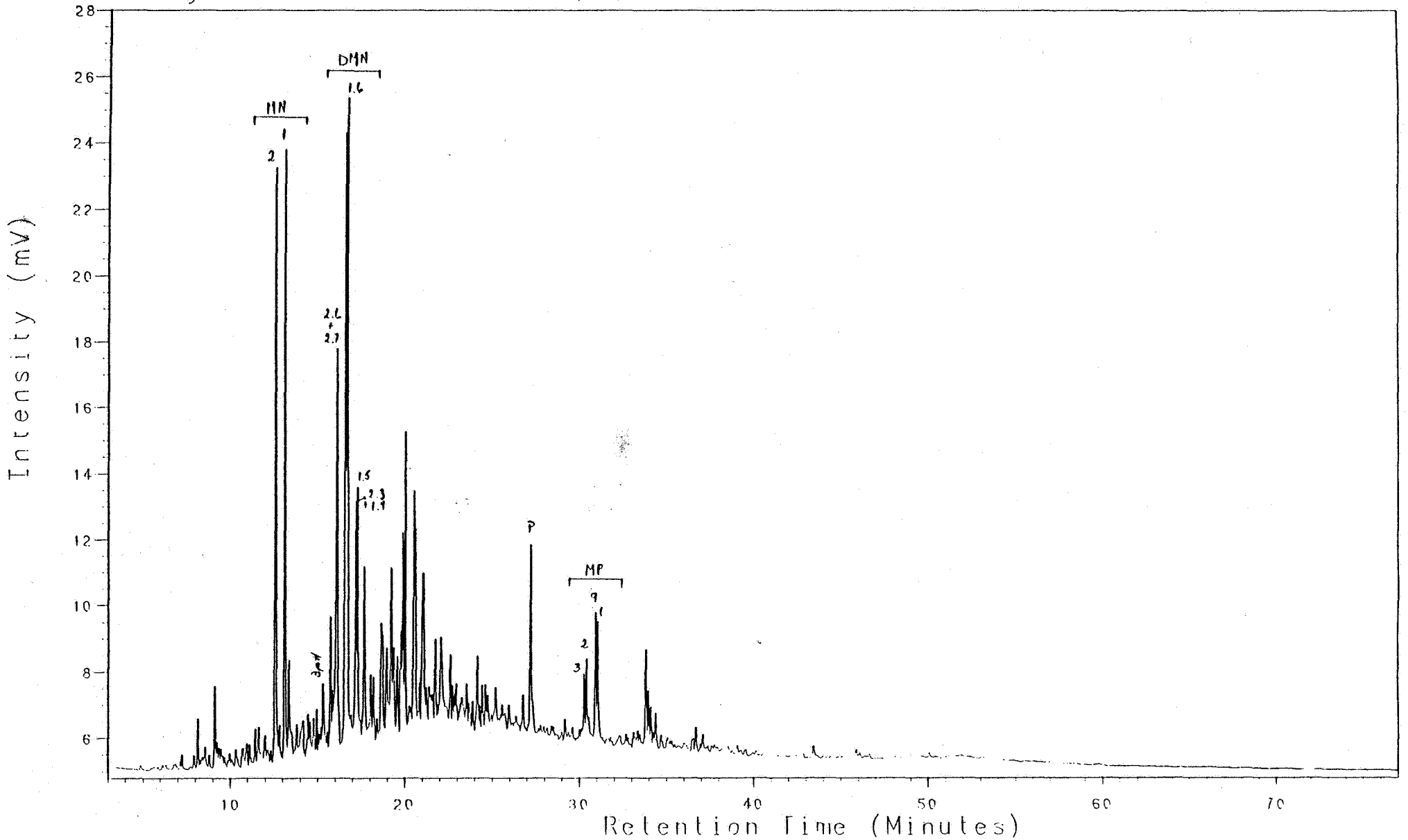
Analysis AR4034220 8, 1, 1 2/6-2 4220m ARO




NOCS 2/6-2 4220m
AROMATIC GC (FID)
RUN 1

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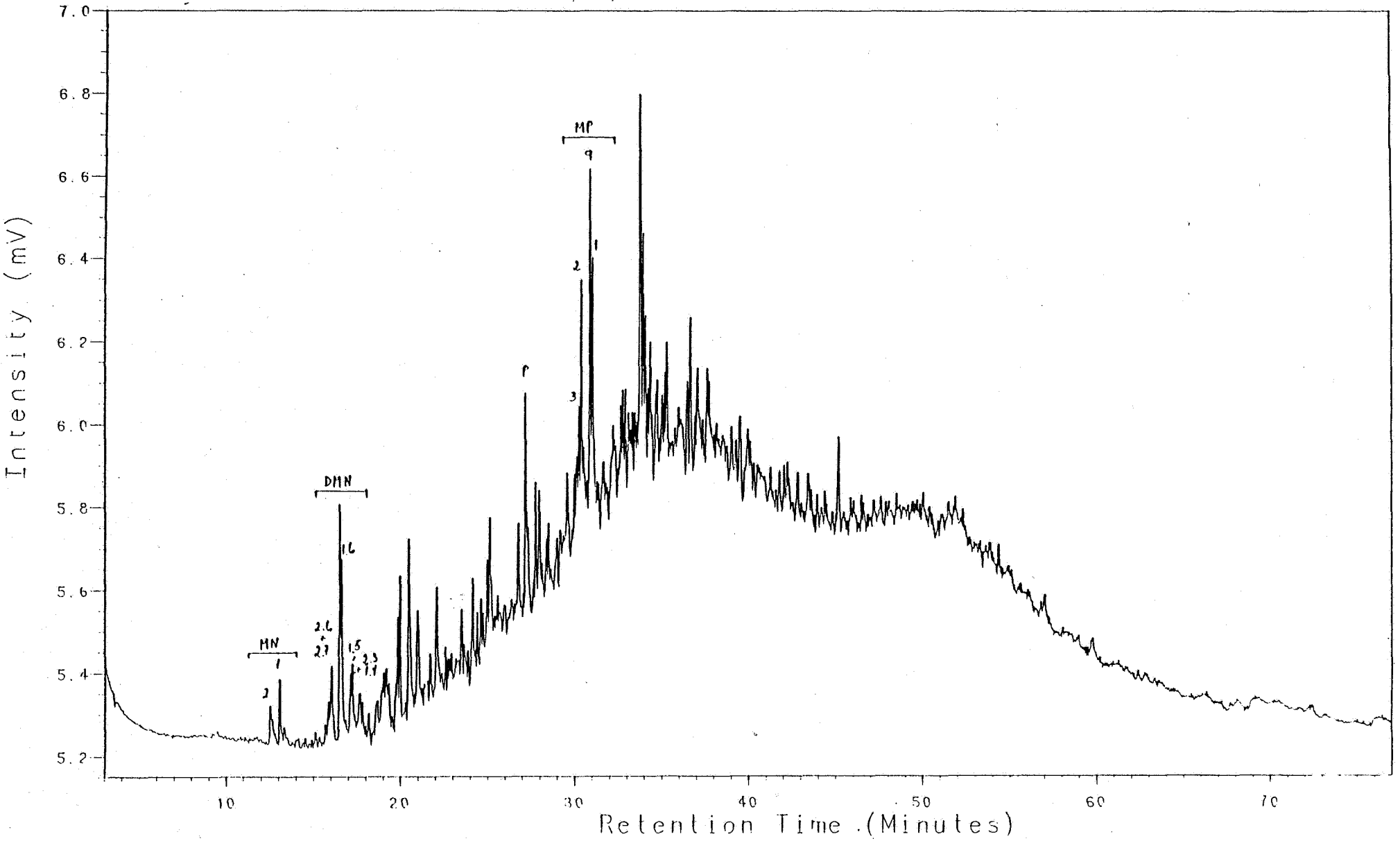


[illegible] 246-2 4225m
AROMATIC GC (FID)
BULK [illegible]

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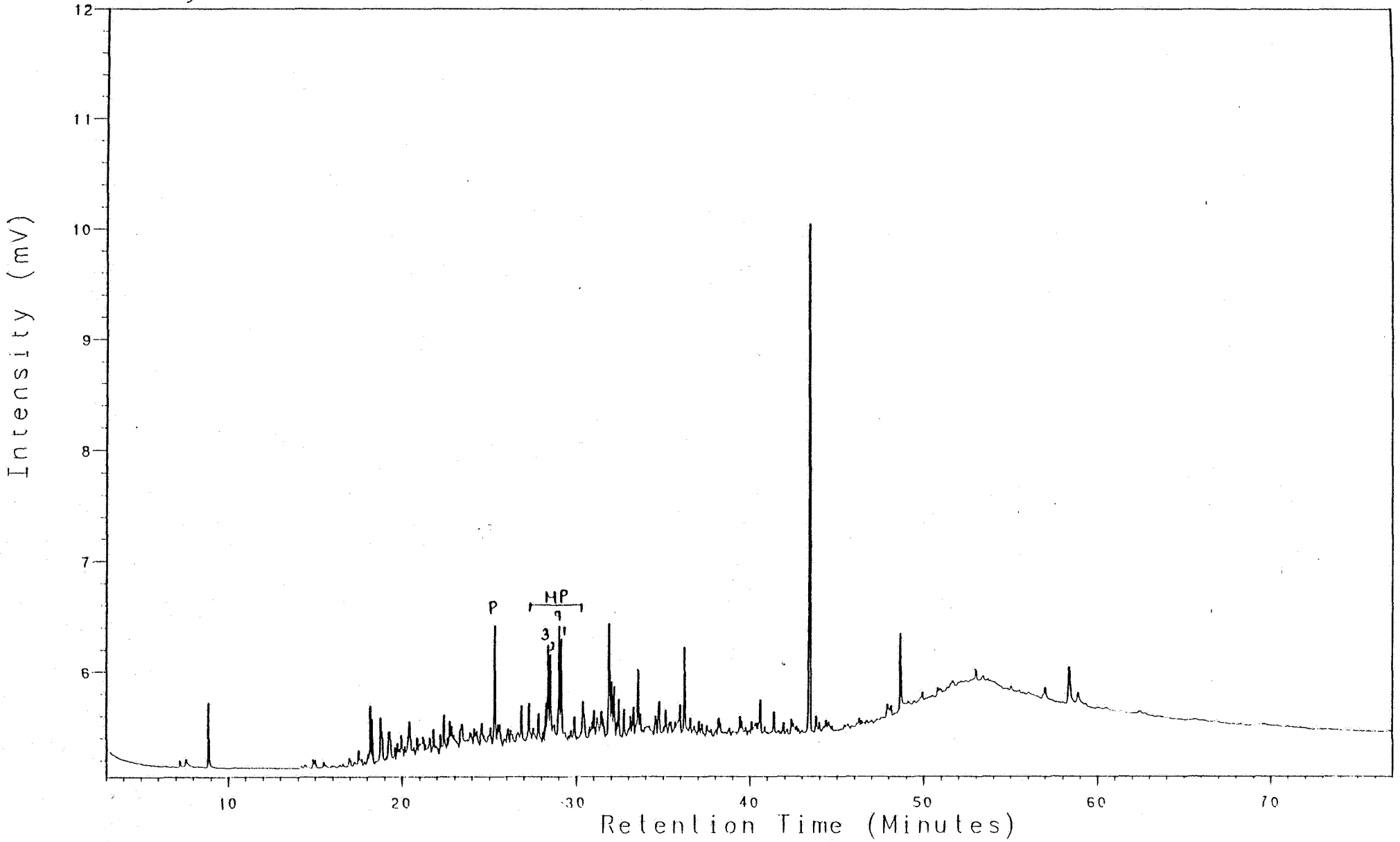
Analysis AC101270B 8, 1, 1 2/6-2, 4230m, ARO




NOCS 2/6-2 4210-30m
AROMATIC GC (FID)
CLST: blk, gy blk, brn blk

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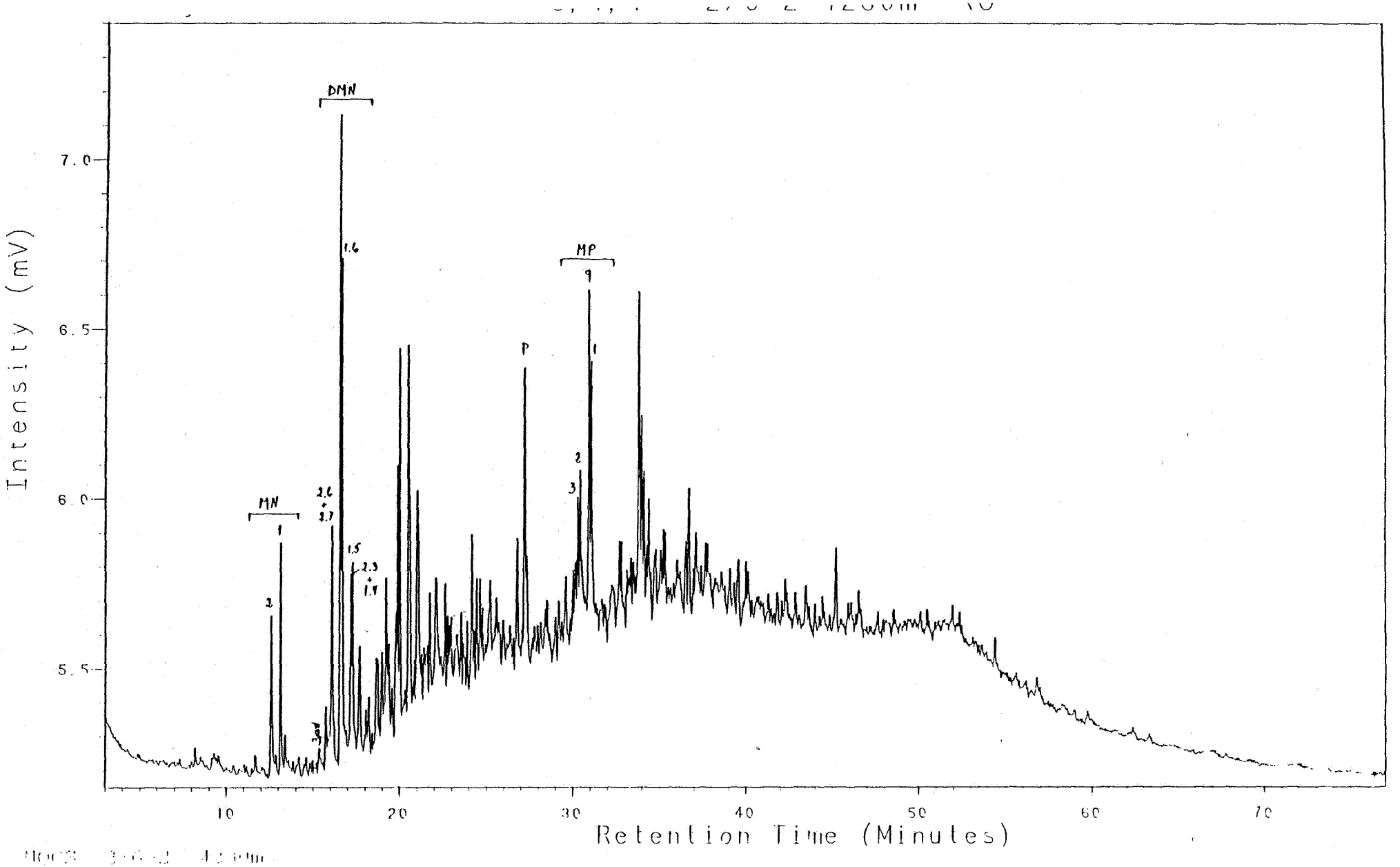


AROMATIC GC (FID)

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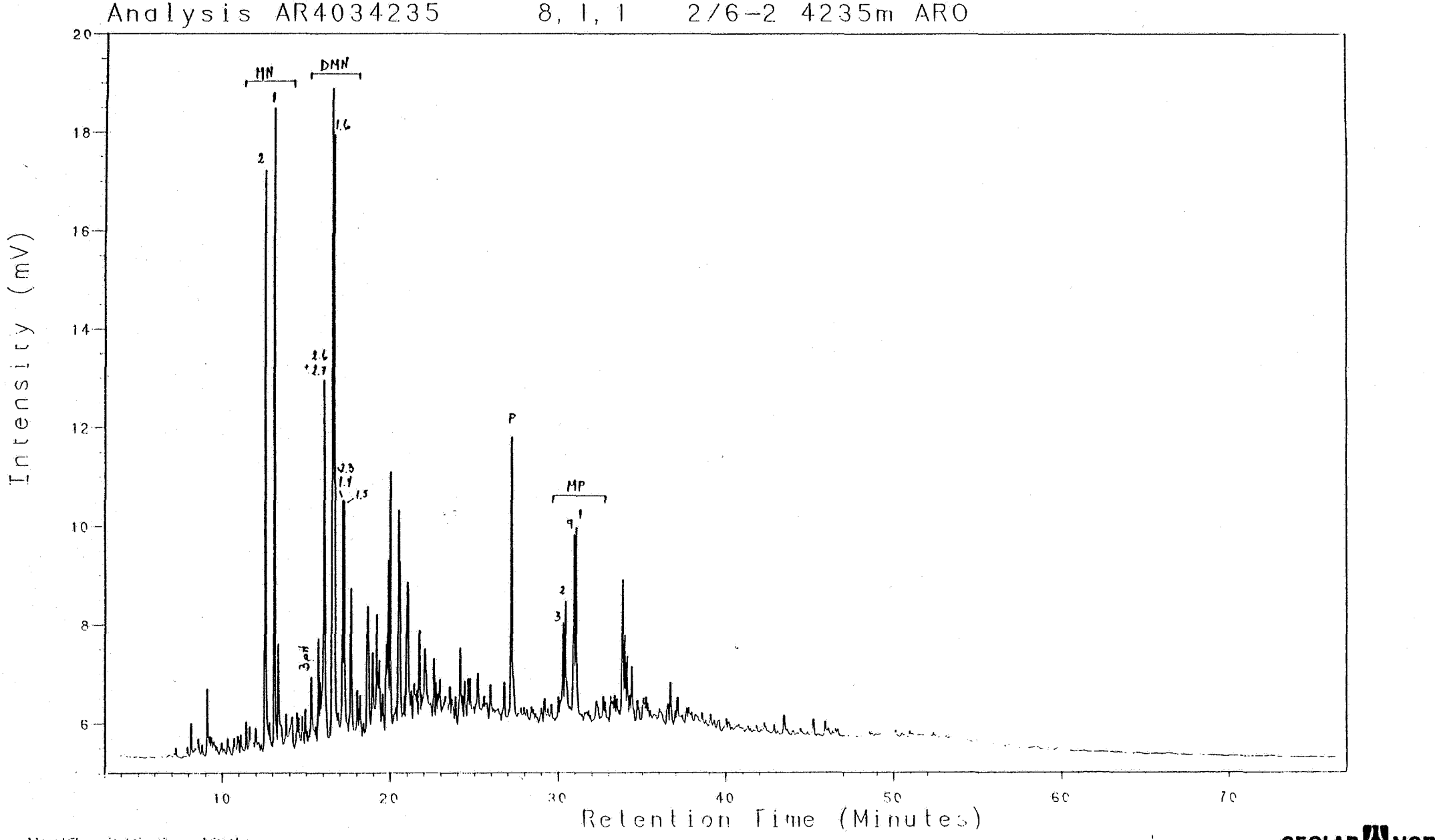


NOTES 2/6-2 4235m
AROMATIC GC (FID)
BULK

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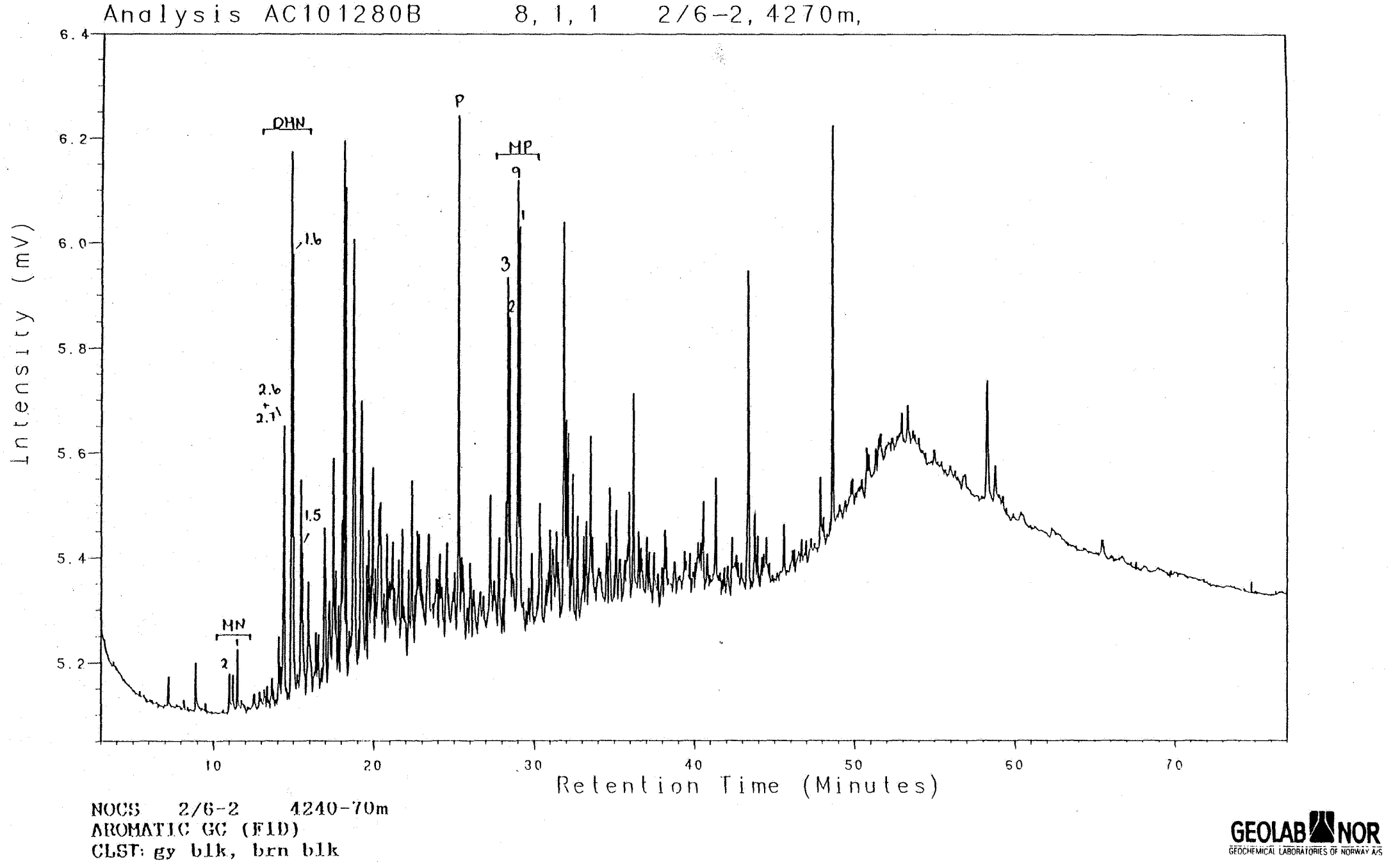


NOCS 2/6-2 4240-70m
AROMATIC GC (FID)
CLST: gy blk, brn blk

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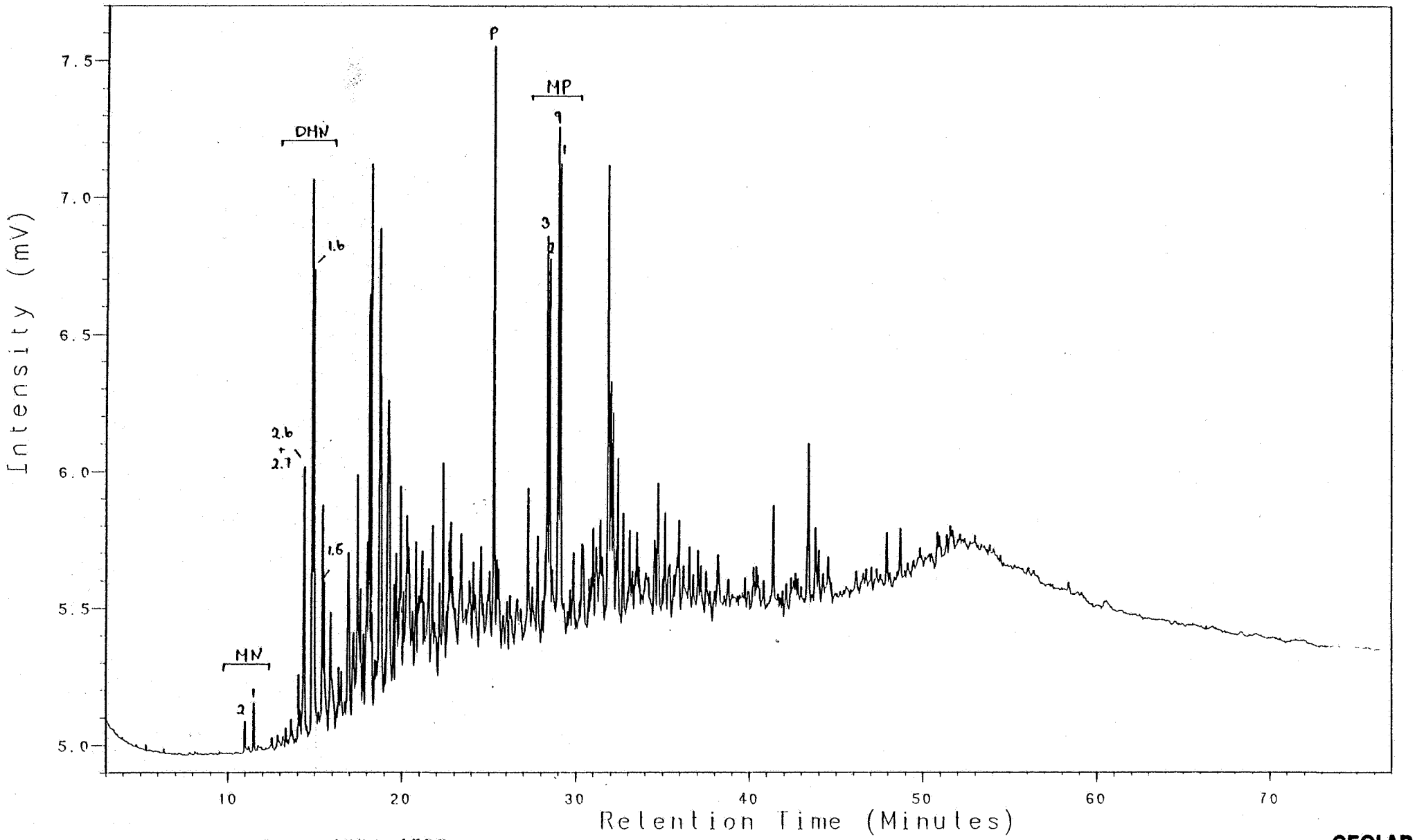
Analysis AC101290B 8, 1, 1 2/6-2, 4300m, ARO




NOCS 2/6-2 4280-4300m
AROMATIC GC (FID)
CLST: brn blk

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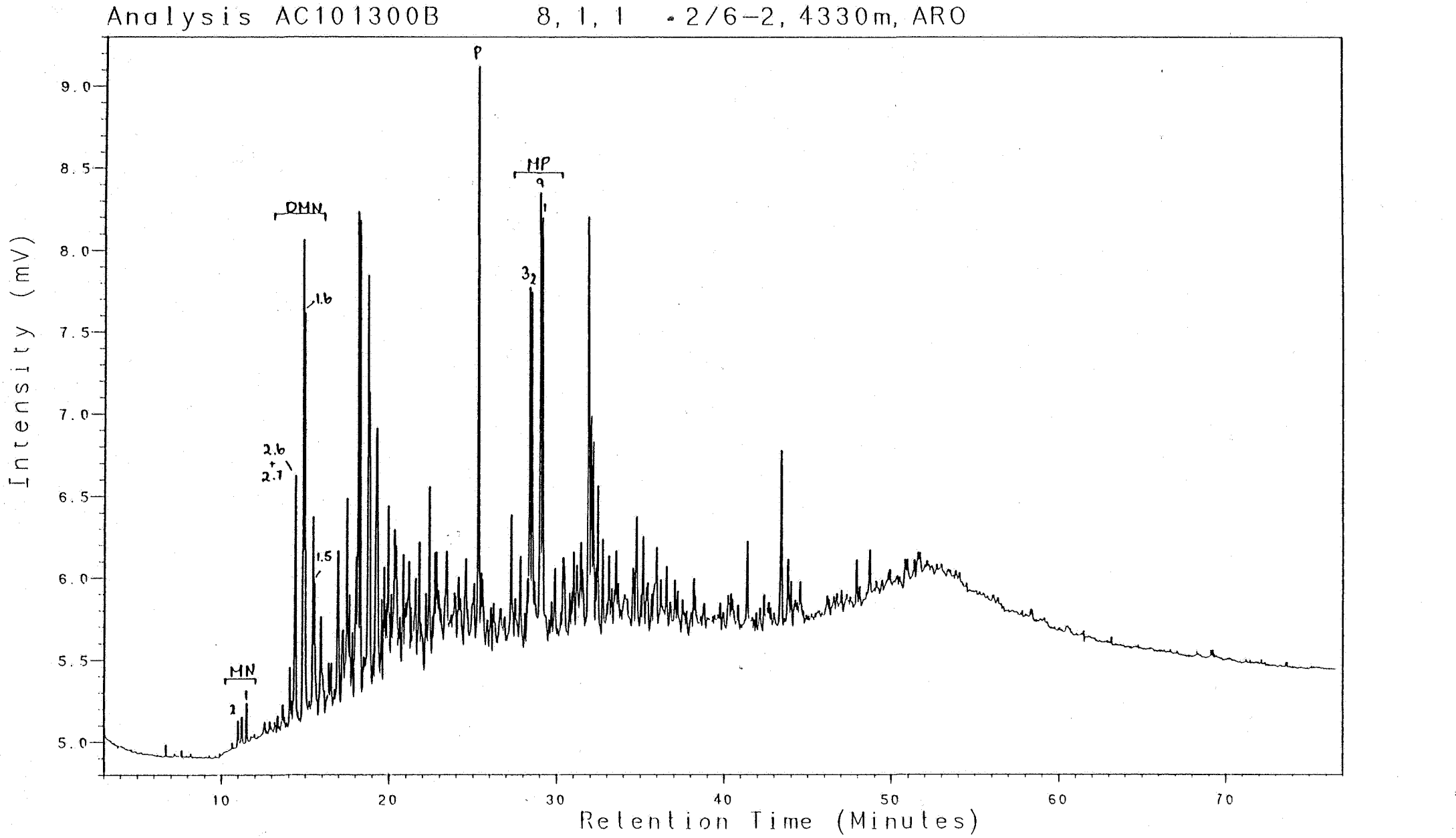
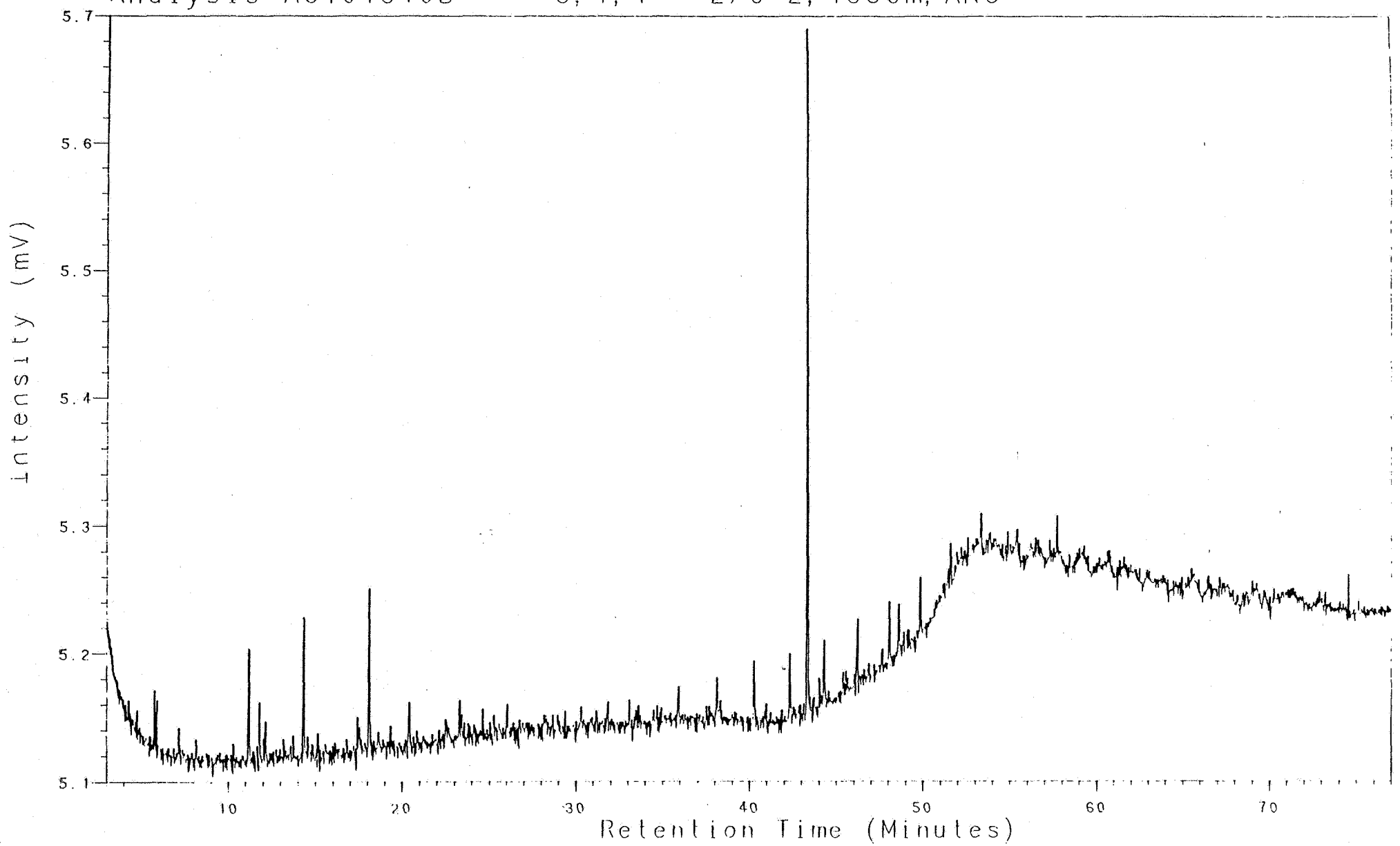



NOCS 2/6-2 4310-30m
AROMATIC GC (FID)
CLST: brn blk

GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S




NOCS 2/6-2 4336-56m
AROMATIC GC (FID)
CLST: gy blk, brn blk

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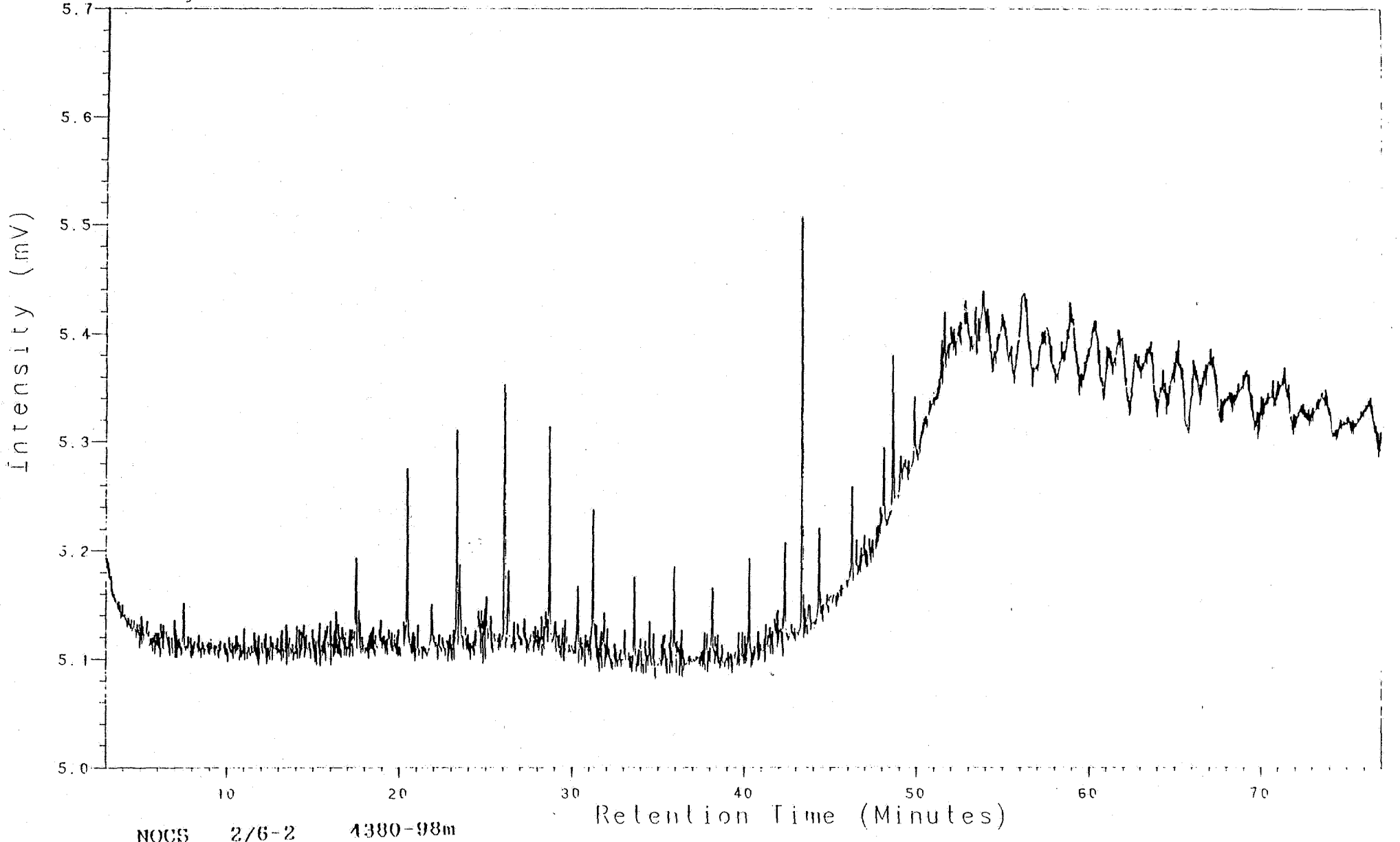
GEOCHEMICAL LABORATORIES OF NORWAY A/S

Analysis AC101320B 8, 1, 1 2/6-2, 4380-98m, ARO




NOCS 2/6-2 4380-98m
AROMATIC GC (FID)
CLST: gy blk, brn blk

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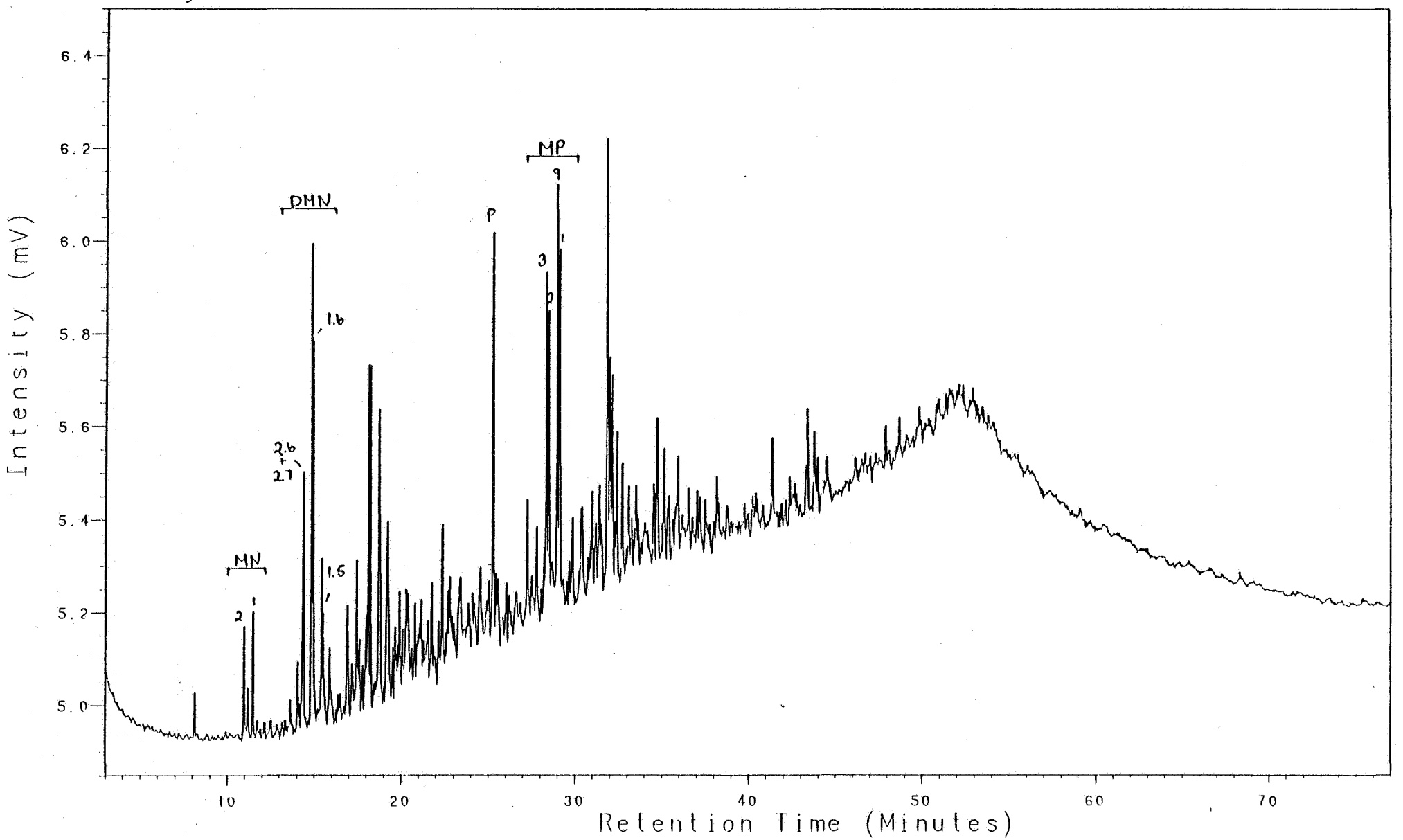
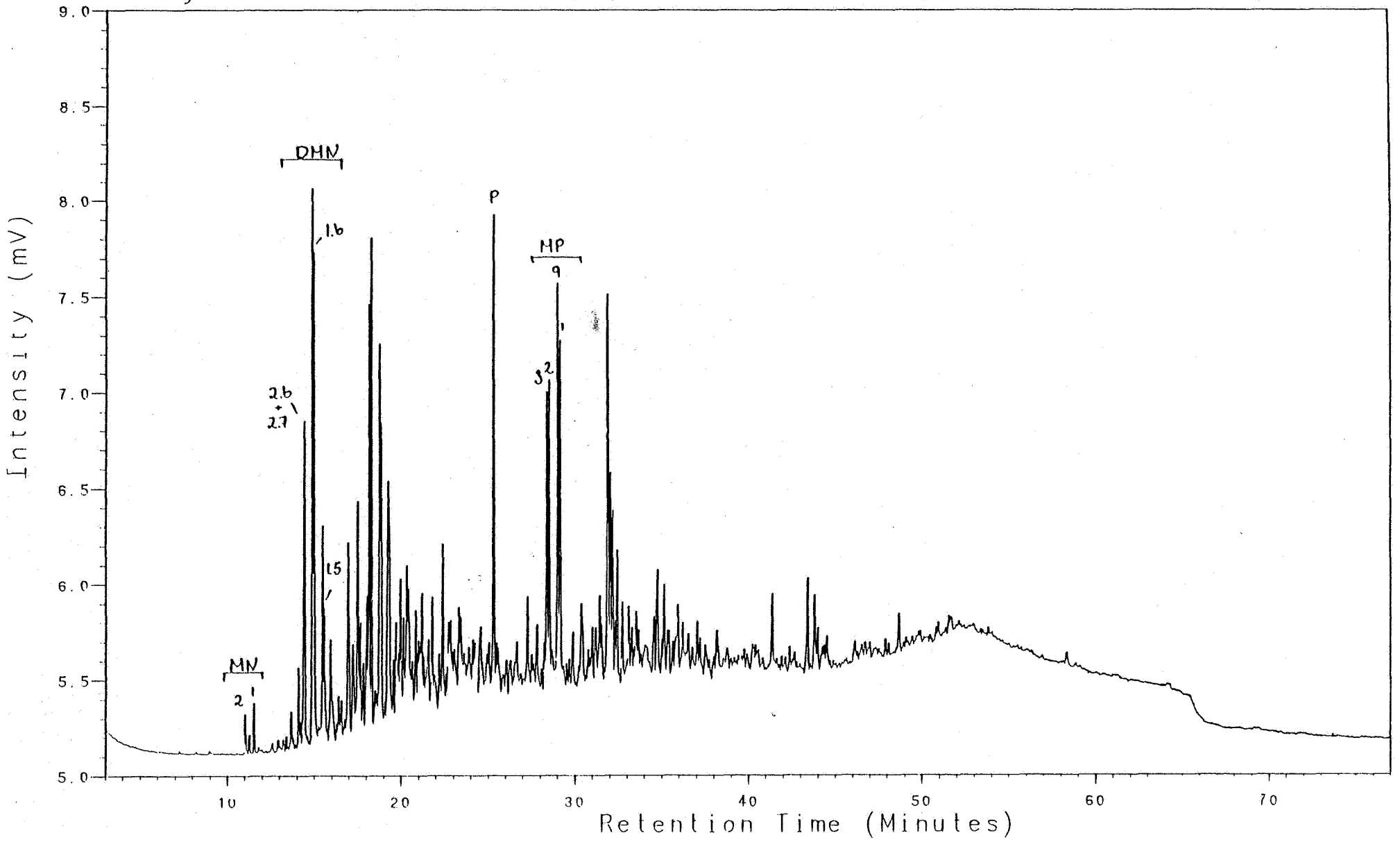
GEOCHEMICAL LABORATORIES OF NORWAY A/S

Analysis AC101330B 8, 1, 1 2/6-2, 4430m, ARO




NOCS 2/6-2 4404-30m
AROMATIC GC (FID)
CLST: gy blk, brn blk

GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S




NOCS 2/6-2 4436-74m
AROMATIC GC (FID)
CLST: gy blk, brn blk

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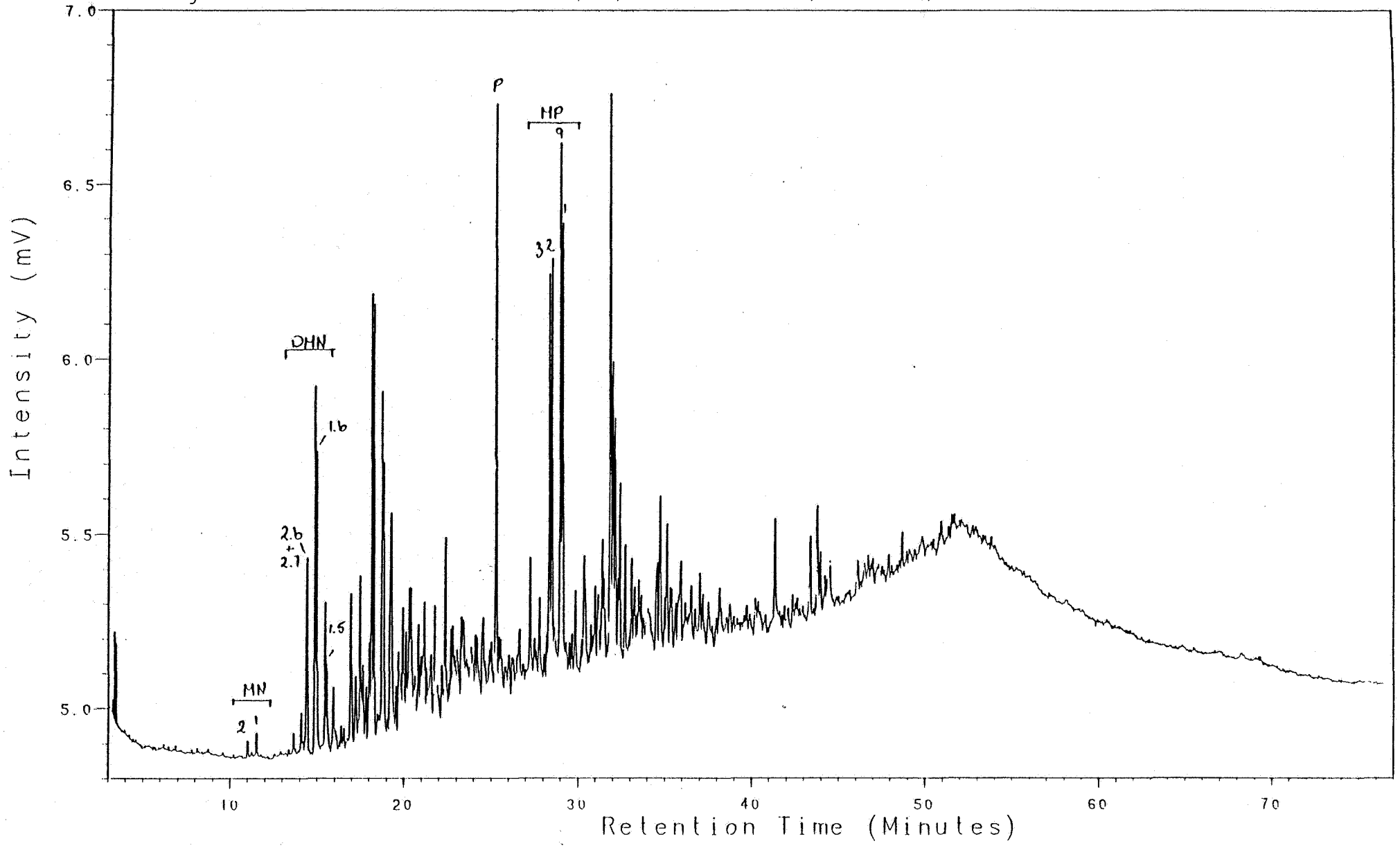
Analysis AC101350B 8, 1, 1 2/6-2, 4482m, ARO




NOCS 2/6-2 4478-82m
AROMATIC GC (FID)
CLST: gy blk, brn blk

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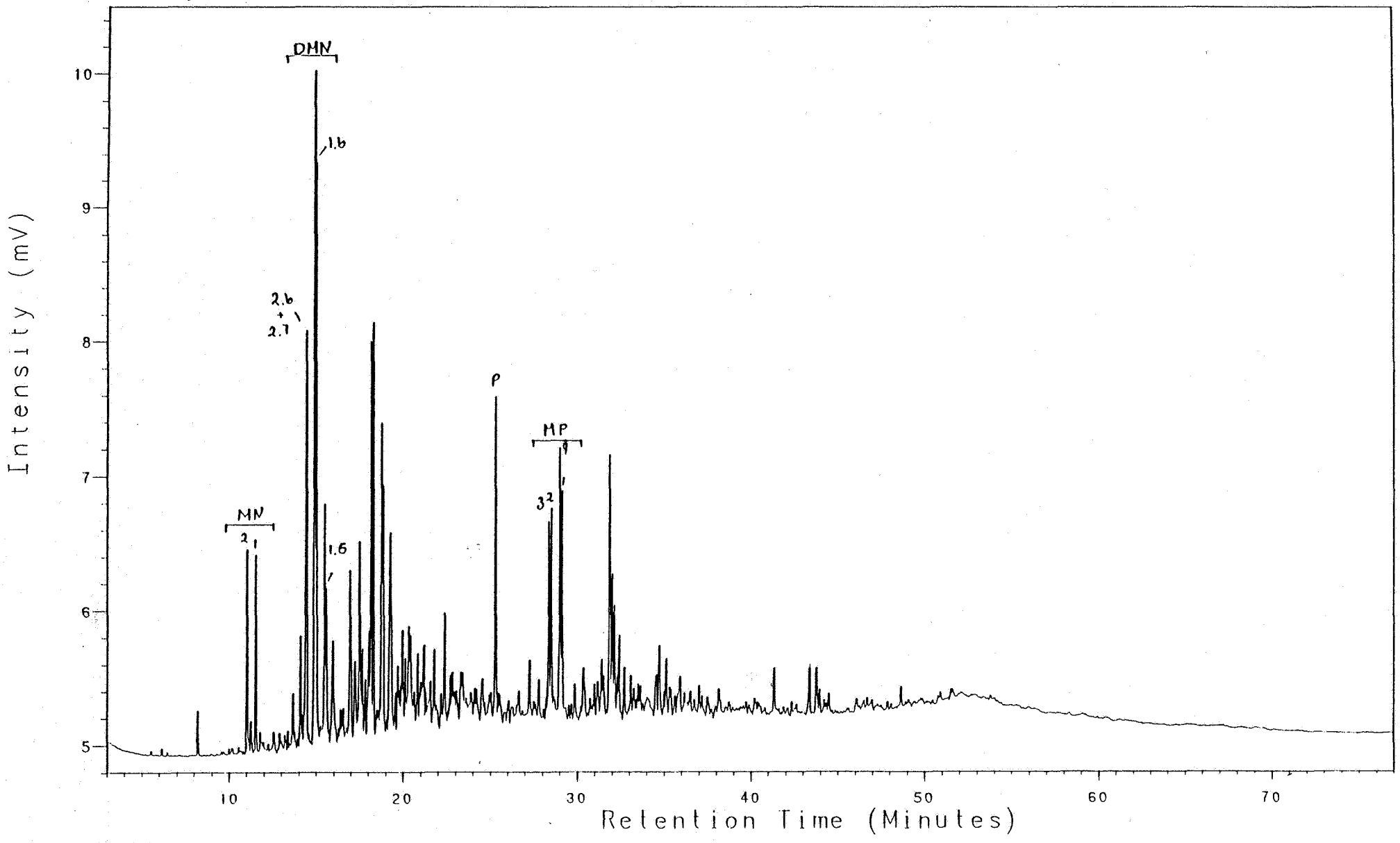
Analysis AC101360B 8, 1, 1 2/6-2, 4528m, ARO




NOCS 2/6-2 4506-28m
AROMATIC GC (FID)
CLST: gy blk, brn blk

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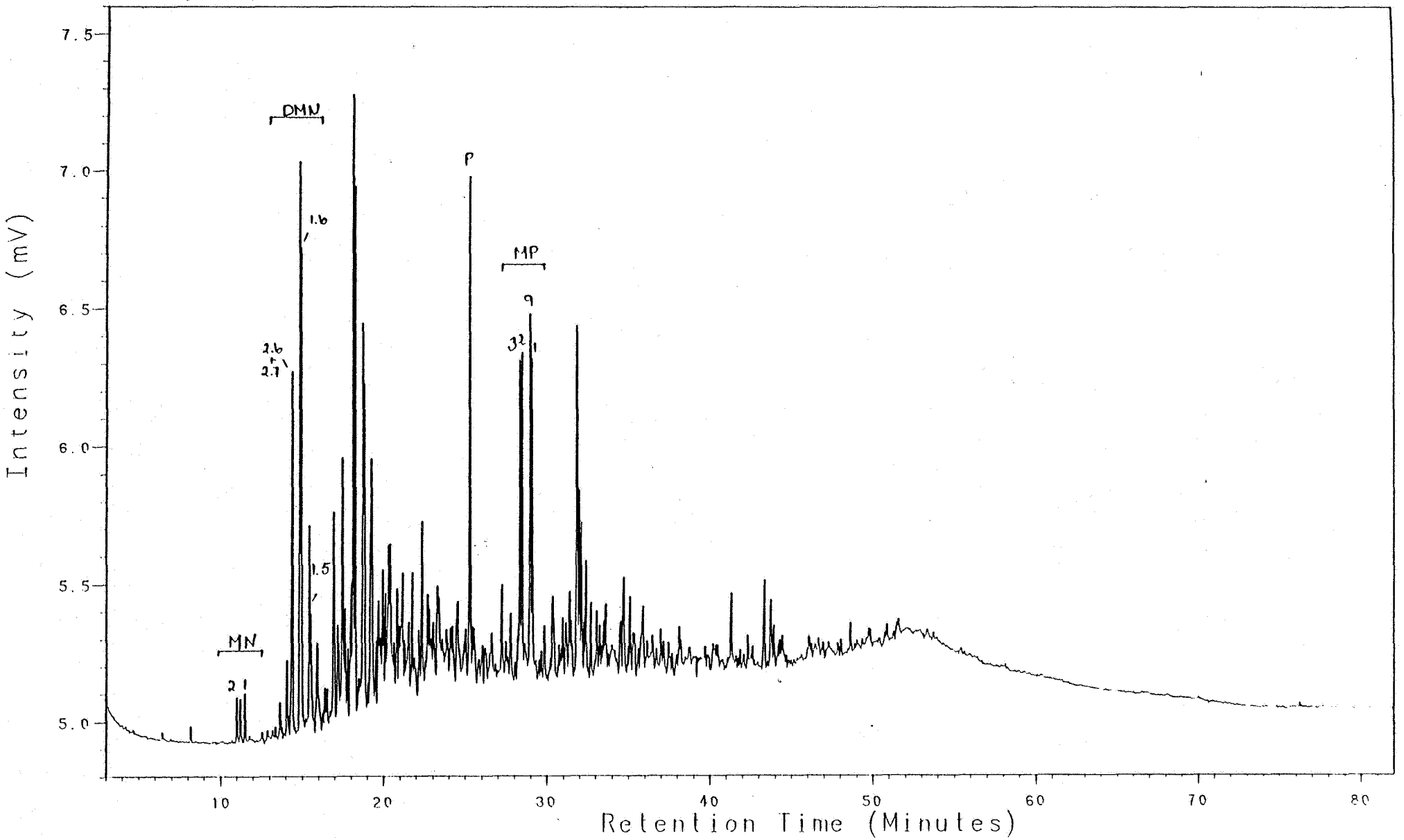
Analysis AC101370B 8, 1, 1 2/6-2, 4544m, ARO




NOCS 2/6-2 4532-44m
AROMATIC GC (FID)
CLST: gy blk,brn blk

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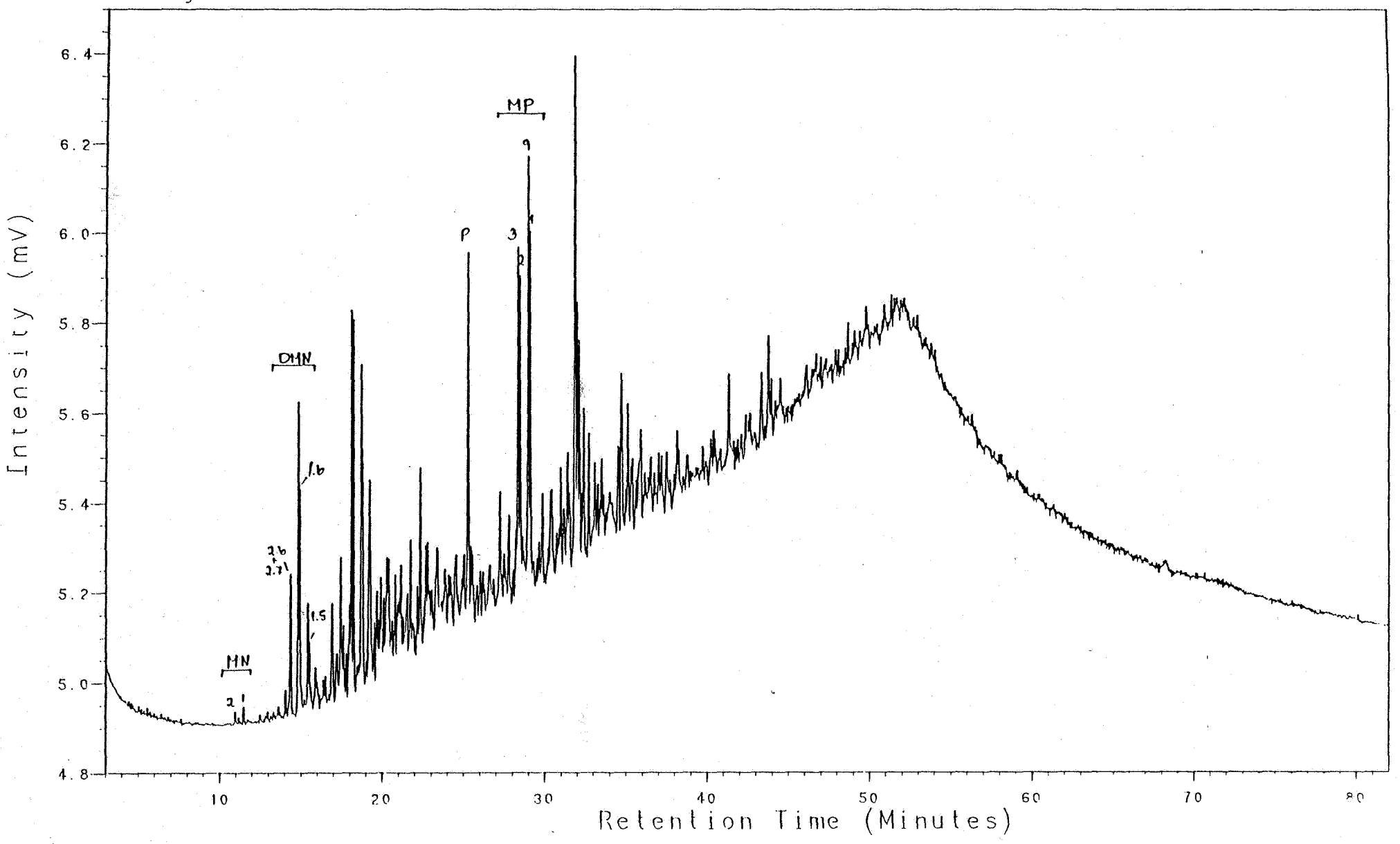
Analysis AC101380B 8, 1, 1 2/6-2, 4602m, ARO




NOCS 2/6-2 4575-4602m
AROMATIC GC (FID)
CLST: gy blk, brn blk

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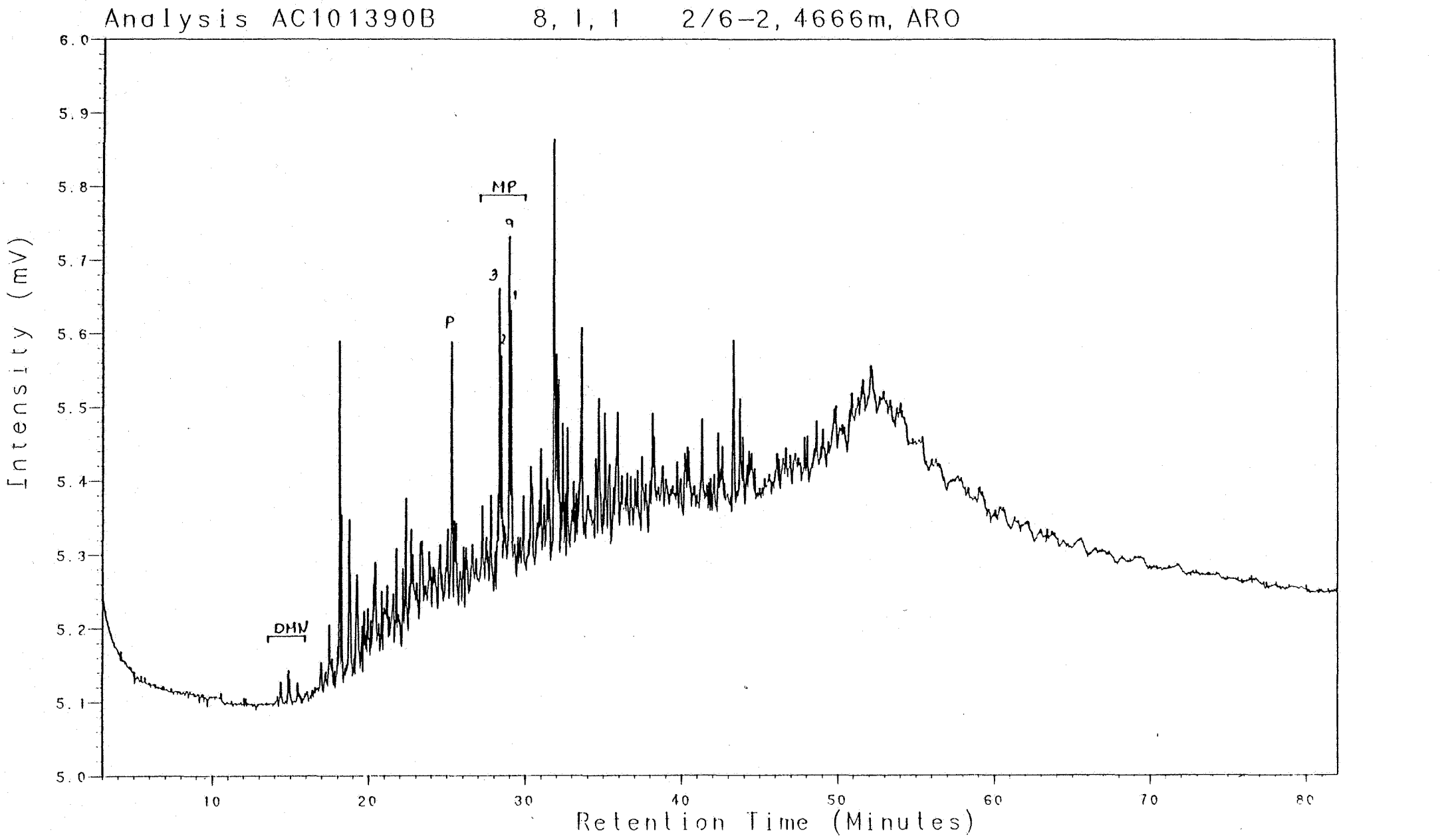
GEOCHEMICAL LABORATORIES OF NORWAY A/S




NOCS 2/6-2 4616-66m
AROMATIC GC (FID)
CLST: gy, gy red, m gy

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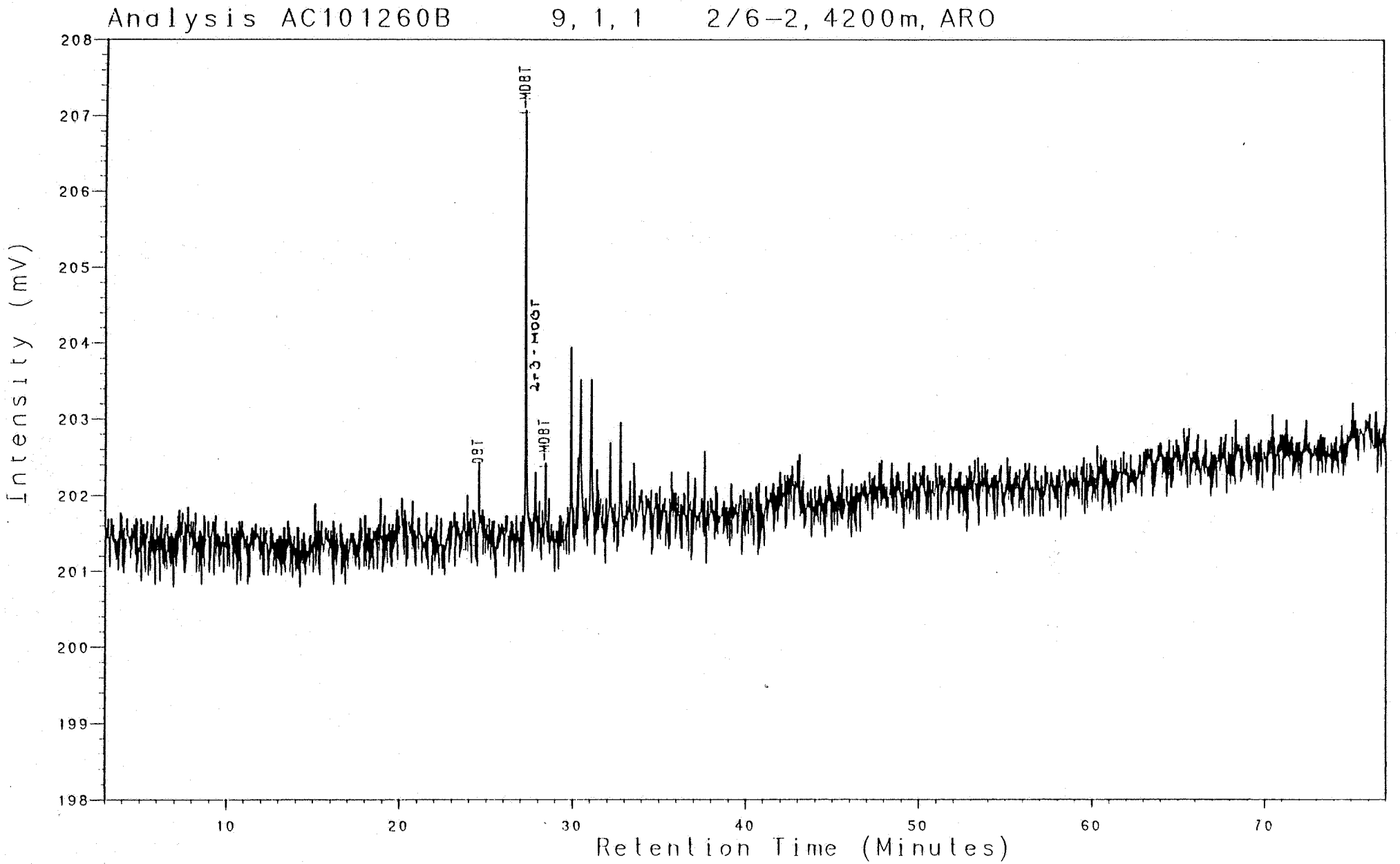
GEOCHEMICAL LABORATORIES OF NORWAY A/S




NOCS 2/6-2 4160-4200m
AROMATIC GC (FPD)
CLST: gy blk, brn blk

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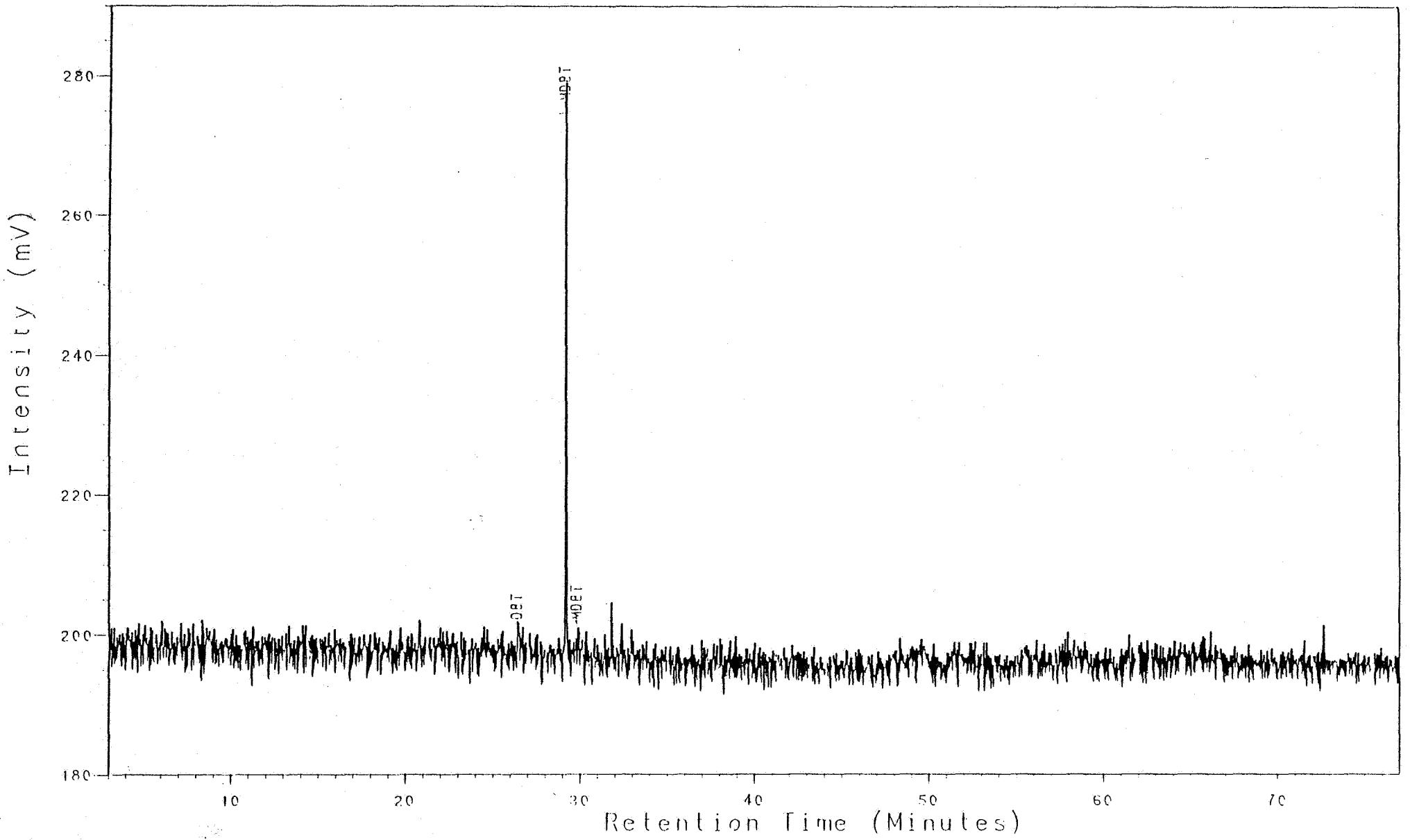
Analysis AR4034220 7, 1, 1 2/6-2 4220m ARO




NOCS 2/6-2 4220m
AROMATIC GC (FPD)
RUN

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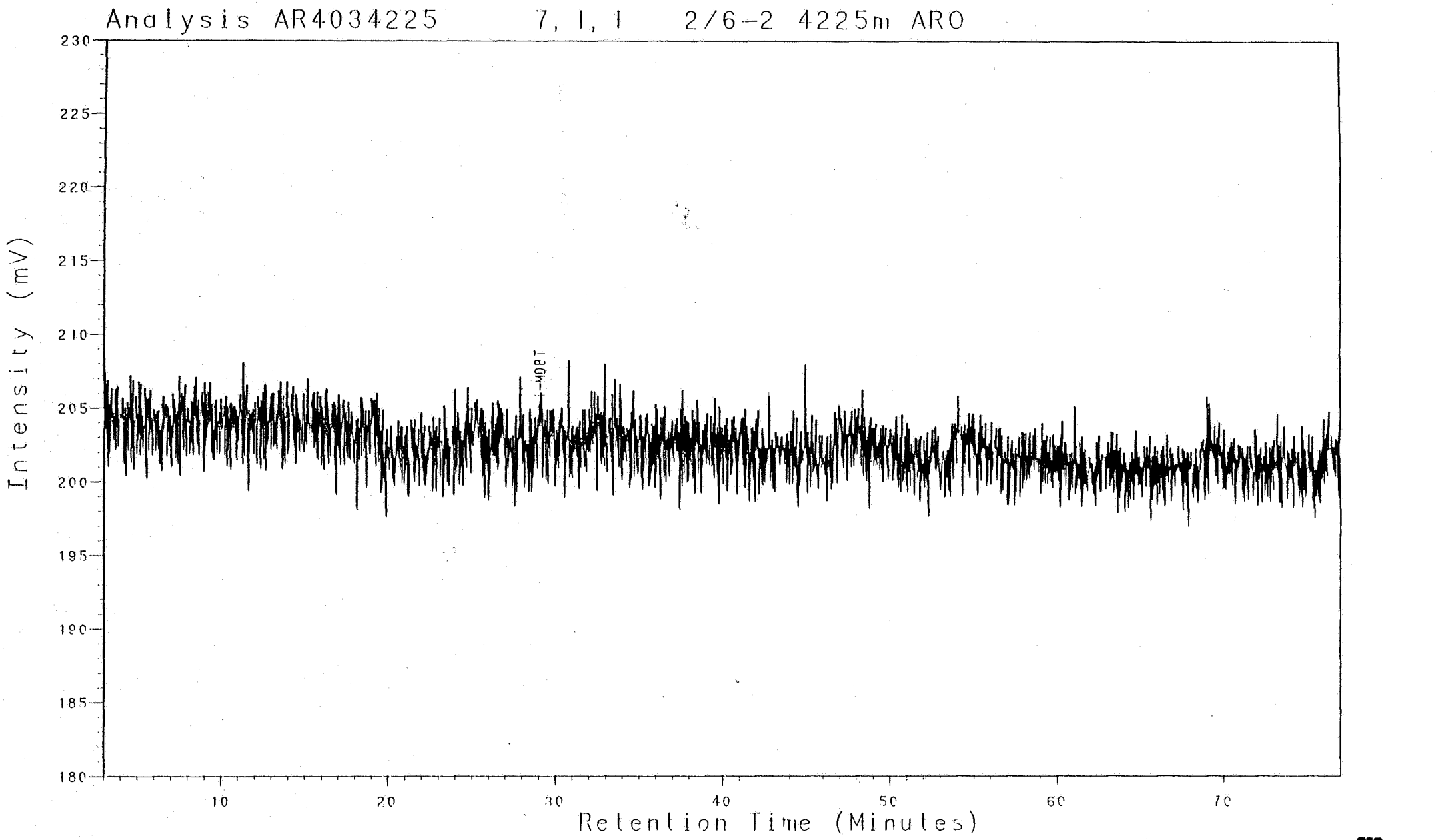


NOCS 2/6-2 4225m
AROMATIC GC (FPD)
FULL

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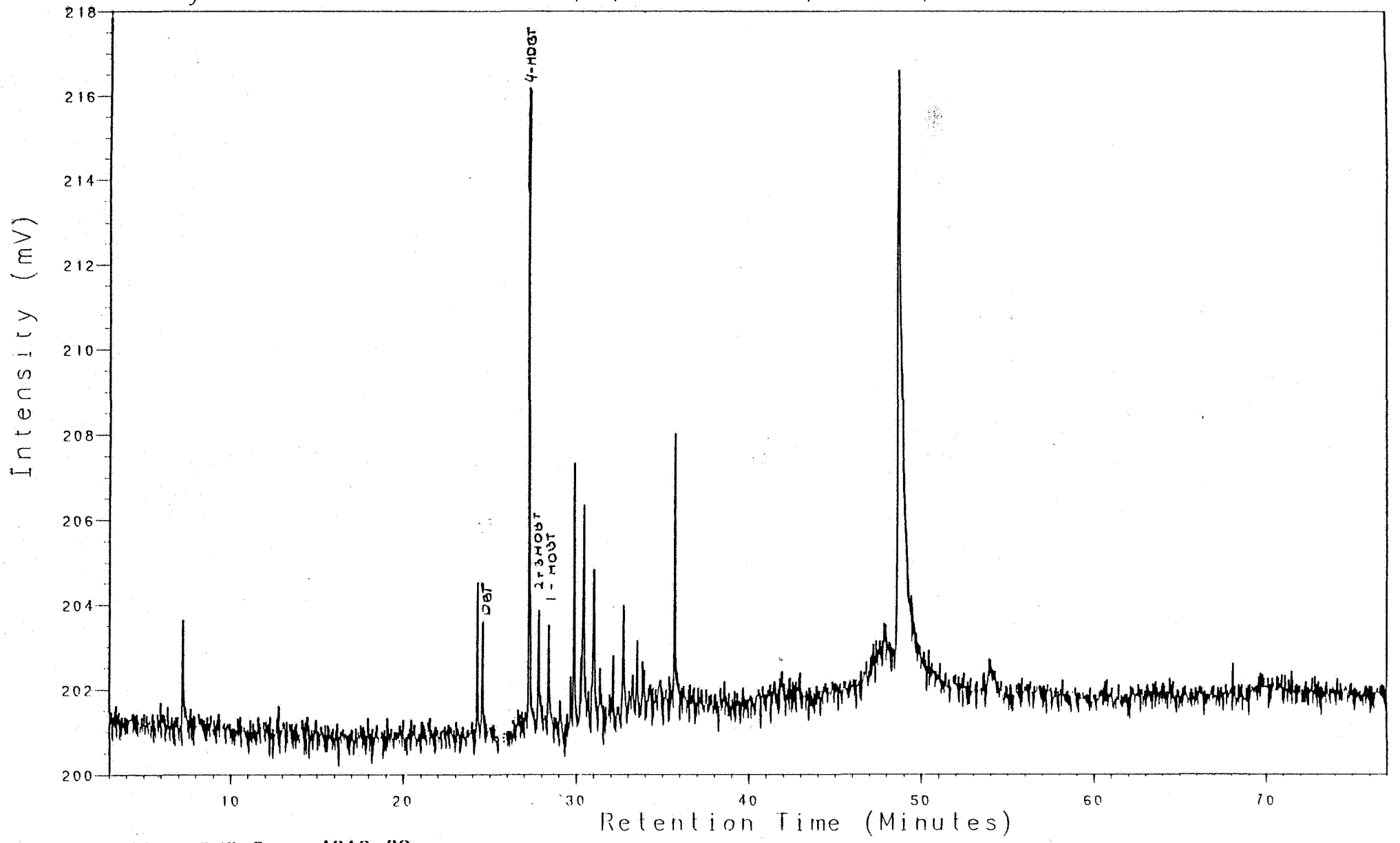
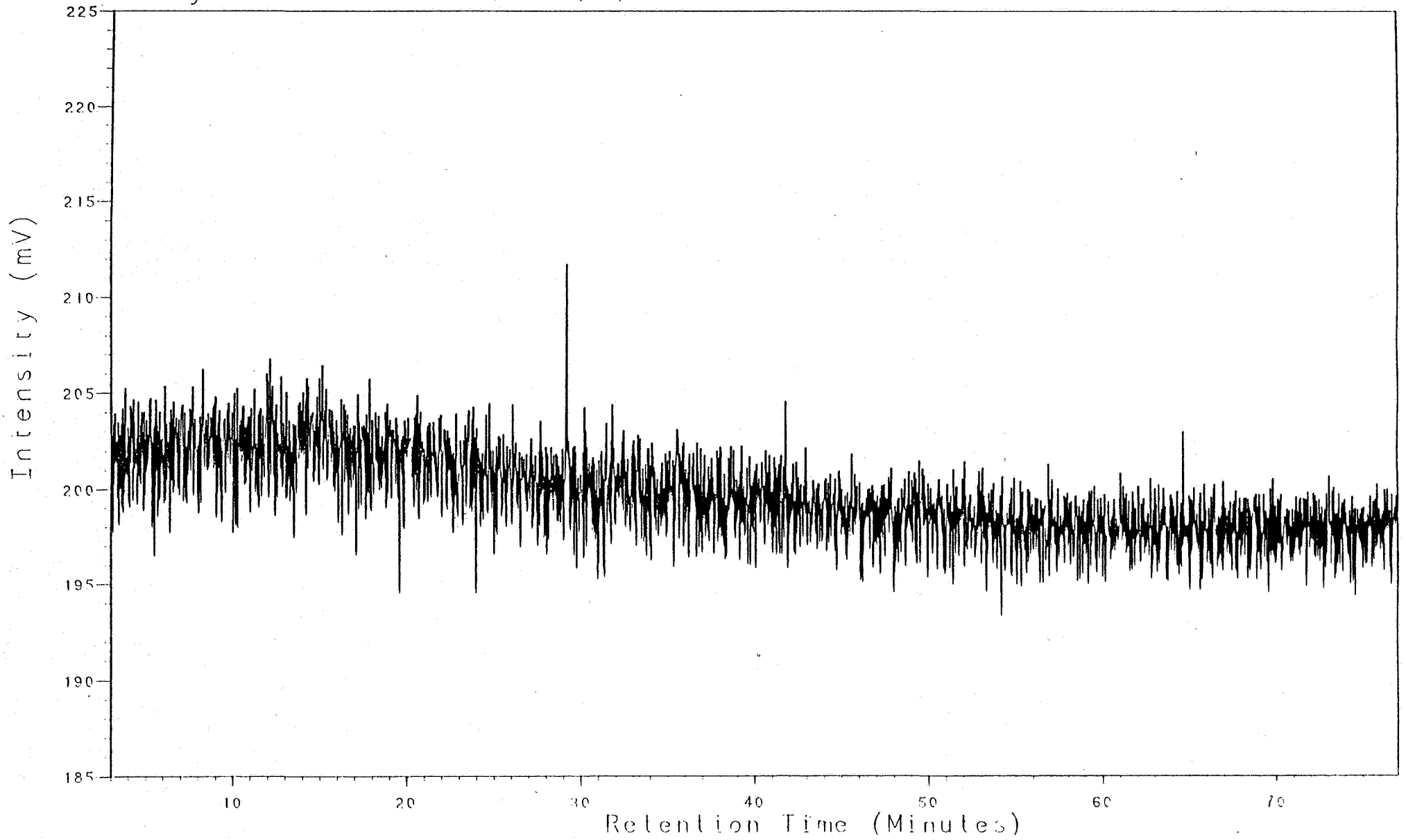
GEOCHEMICAL LABORATORIES OF NORWAY A/S

Analysis AC101270B 9, 1, 1 2/6-2, 4230m, ARO



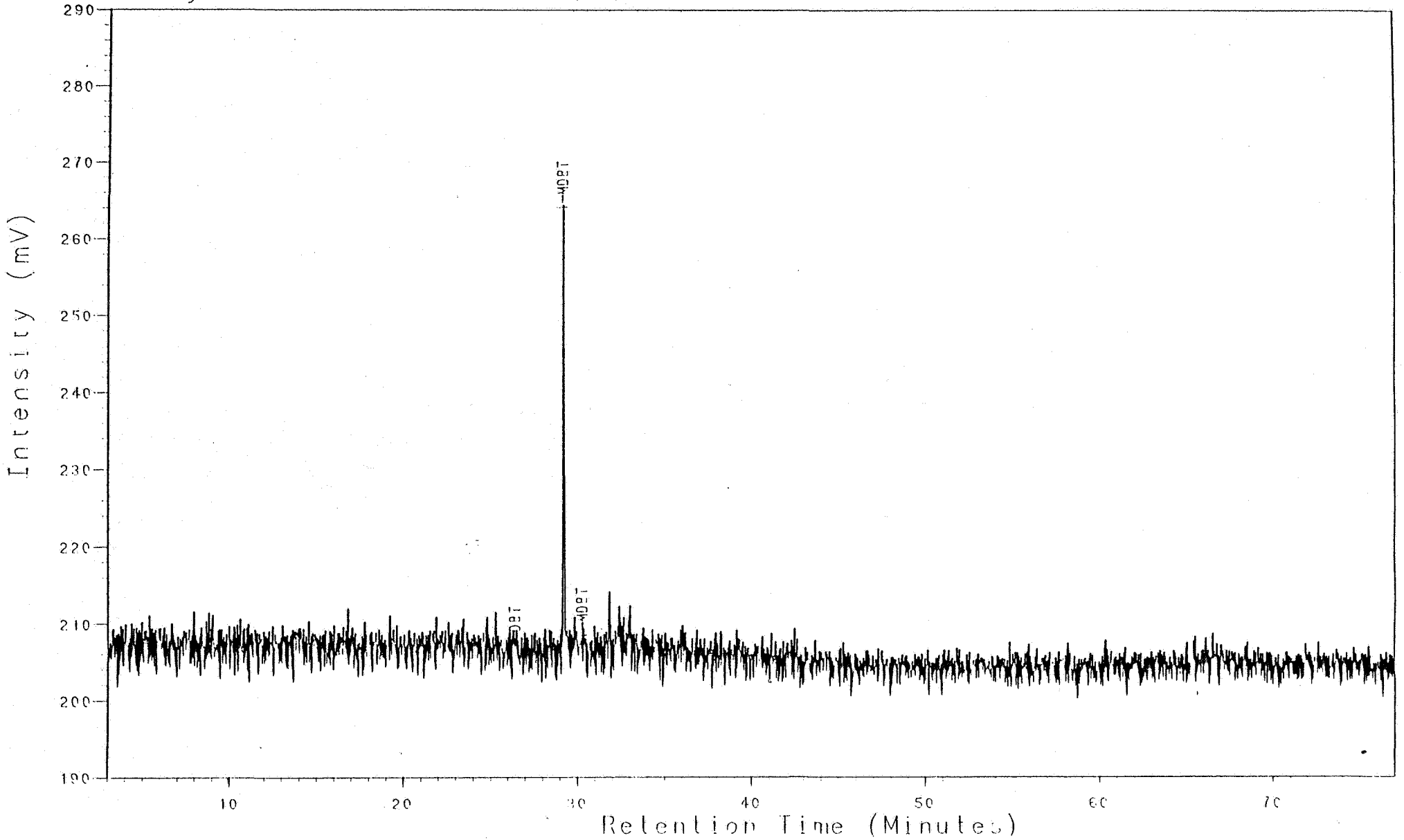

NOCS 2/6-2 4210-30m
AROMATIC GC (FPD)
CLST: blk, gy blk, brn blk

GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S




NOCS 2/6-2 4230m
AROMATIC GC (FPD)
RUN 1

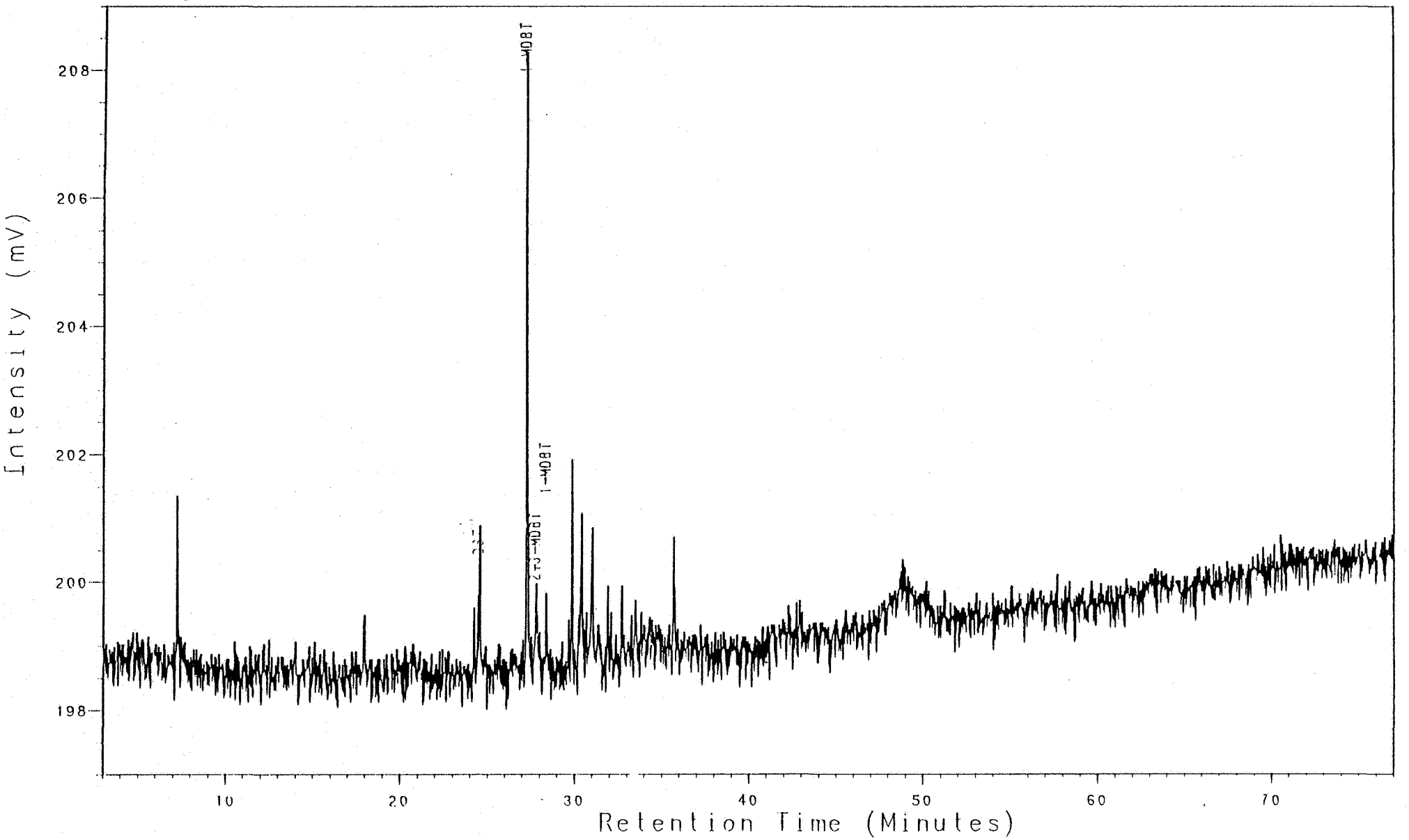
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S




[illegible] 2/6-2 4235m
AROMATIC GC (FPD)
BULK

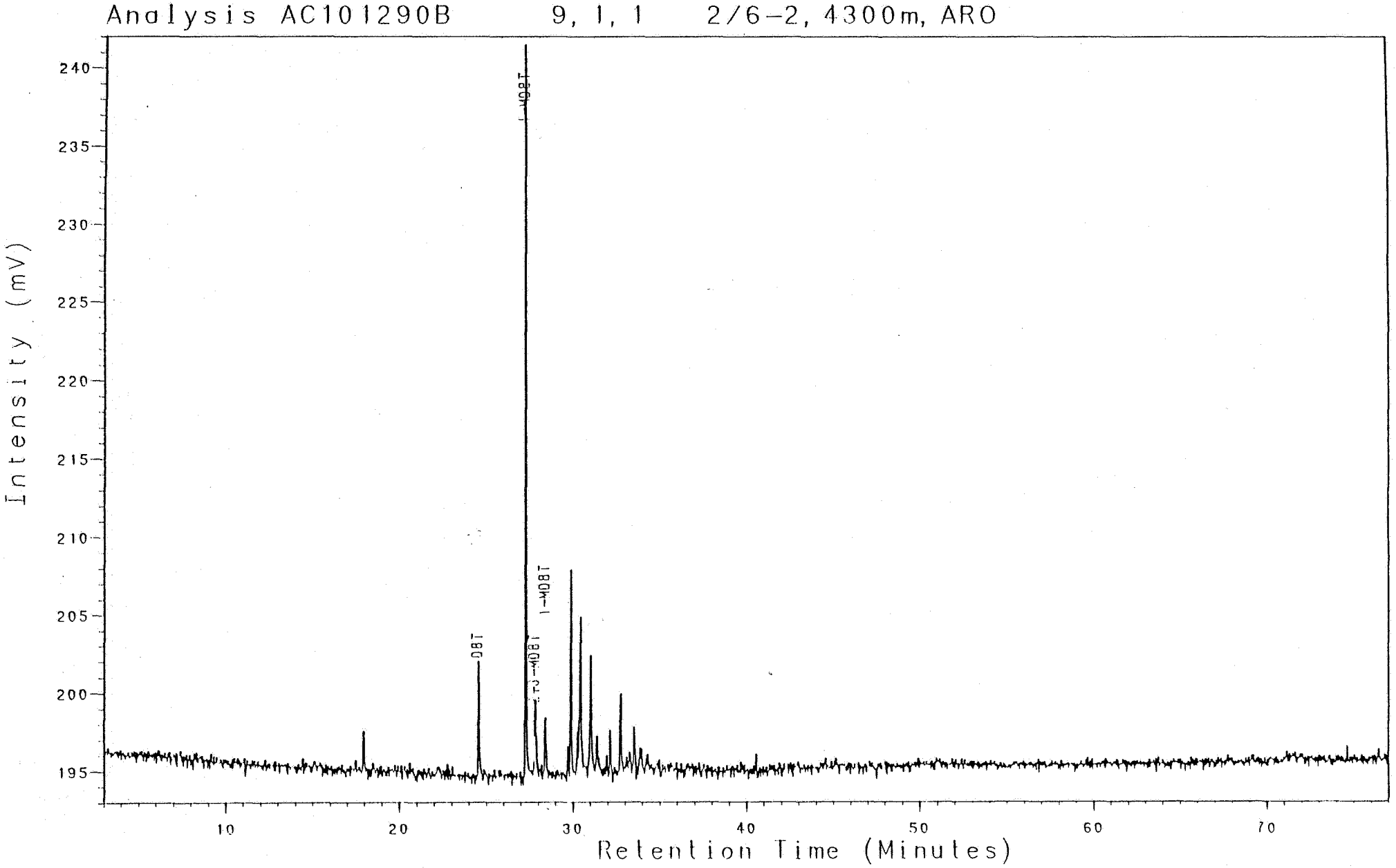
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

Analysis AC101280B 9, 1, 1 2/6-2, 4270m, SAT



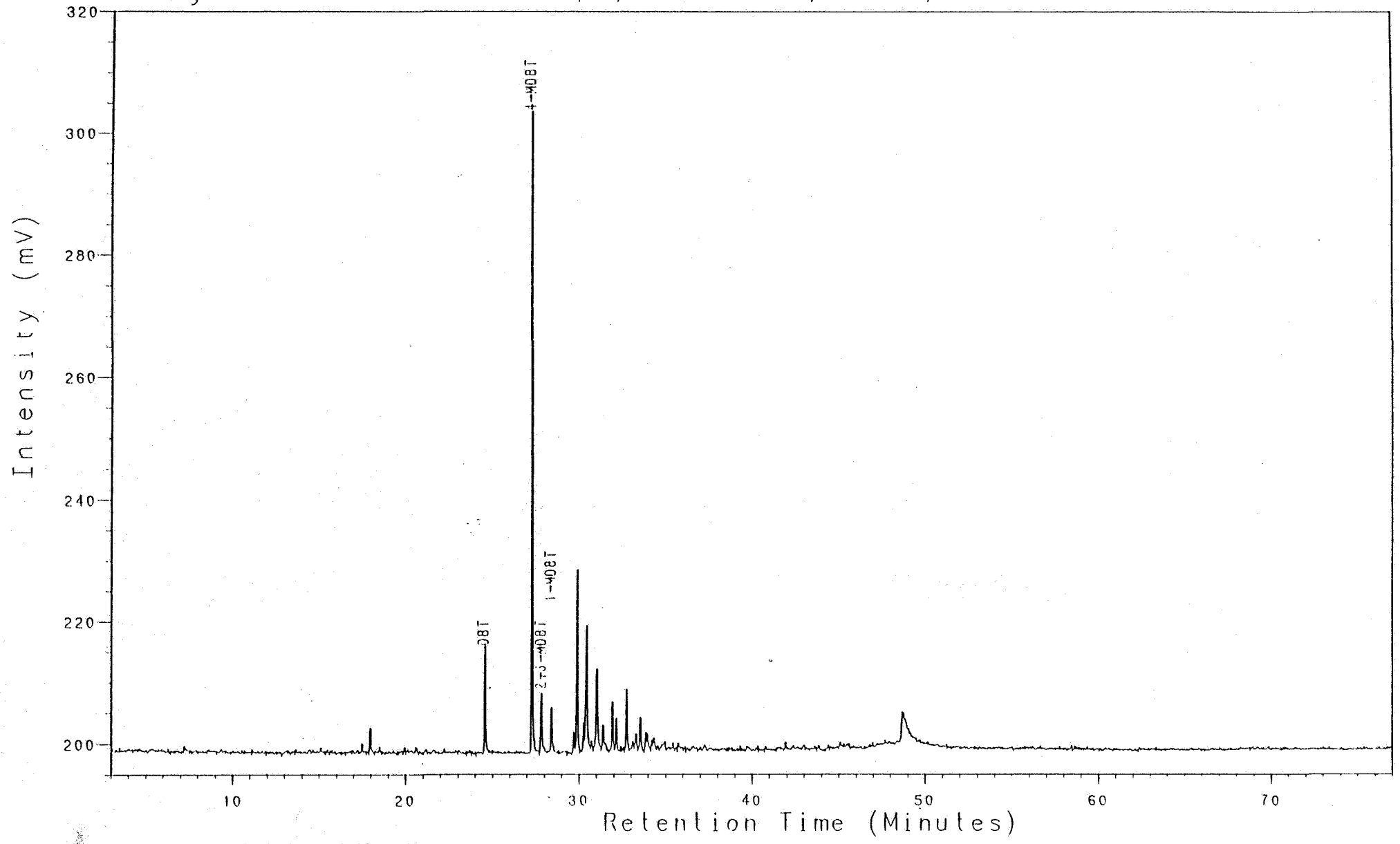

NOCS 2/6-2 4240-70m
AROMATIC GC (FPD)
CLST: gy blk, brn blk

GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S




NOCS 2/6-2 4280-4300m
AROMATIC GC (FPD)
CLST: brn blk

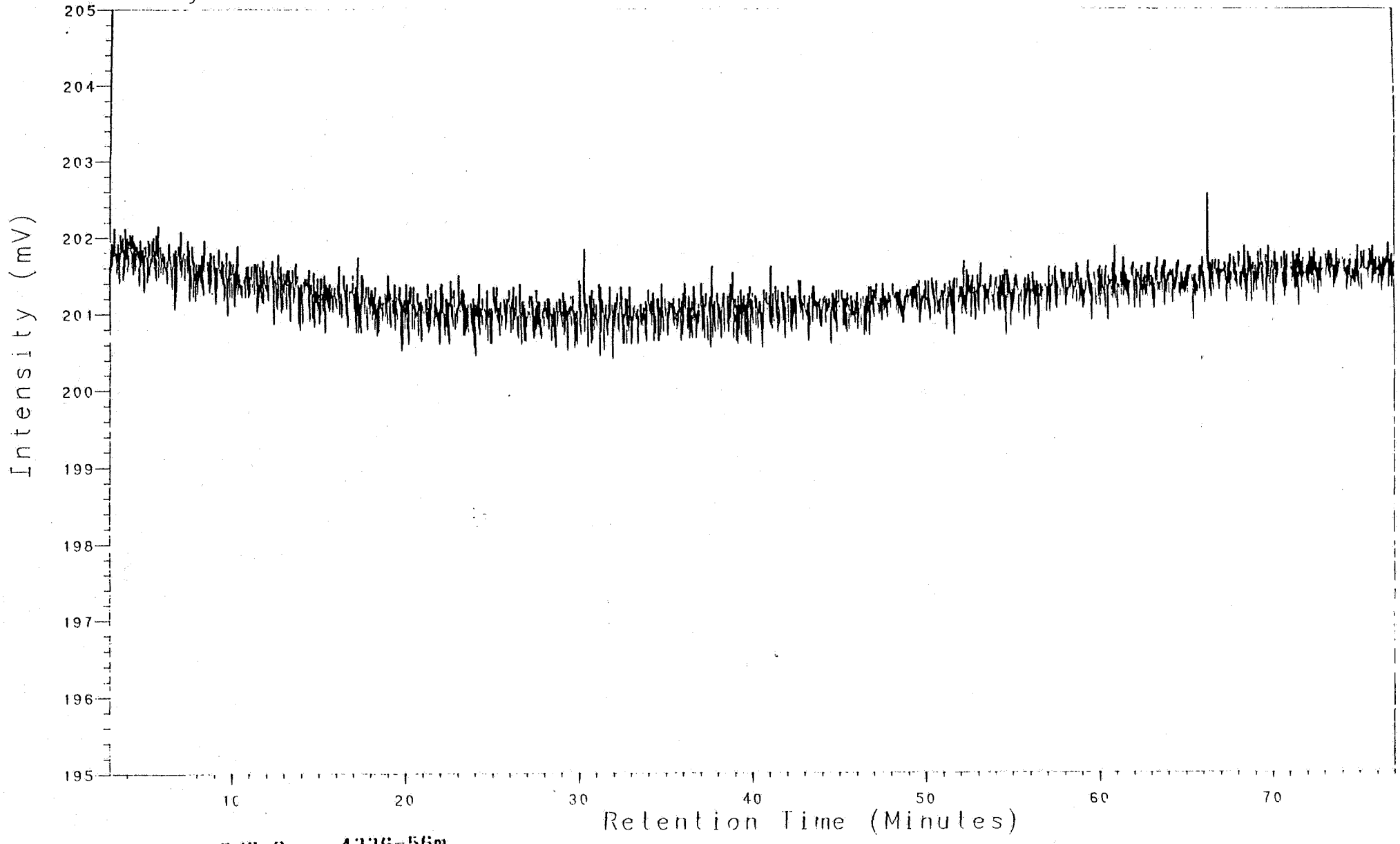
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S




NOCS 2/6-2 4310-30m
AROMATIC GC (FPD)
CLST: brn blk

GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

Analysis AC1013103 9, 1, 1 2/6-2, 4356m, ARO




NOCS 2/6-2 4336-56m
AROMATIC GC (FPD)
CLST: gy blk, brn blk

GEOLAB NOR
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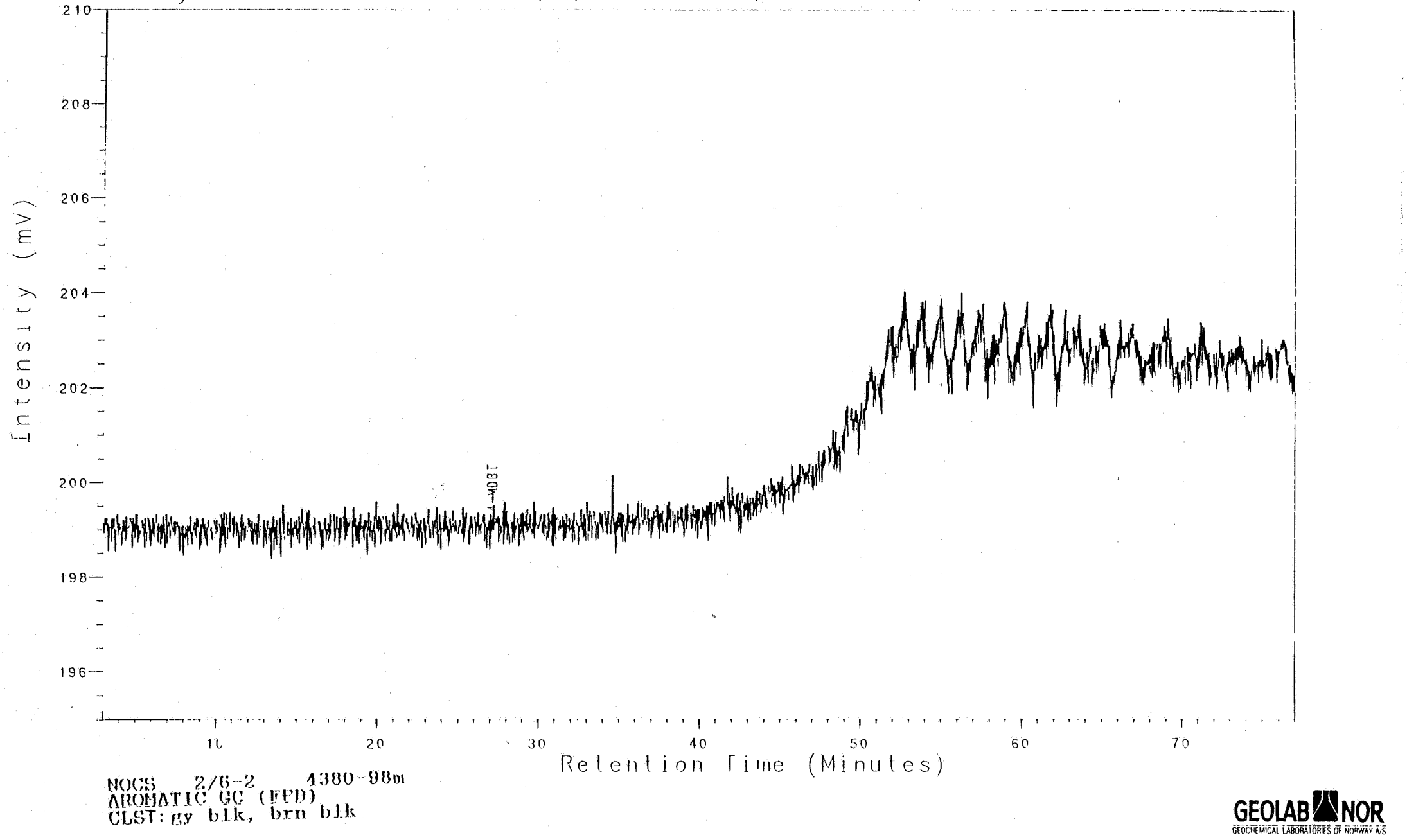
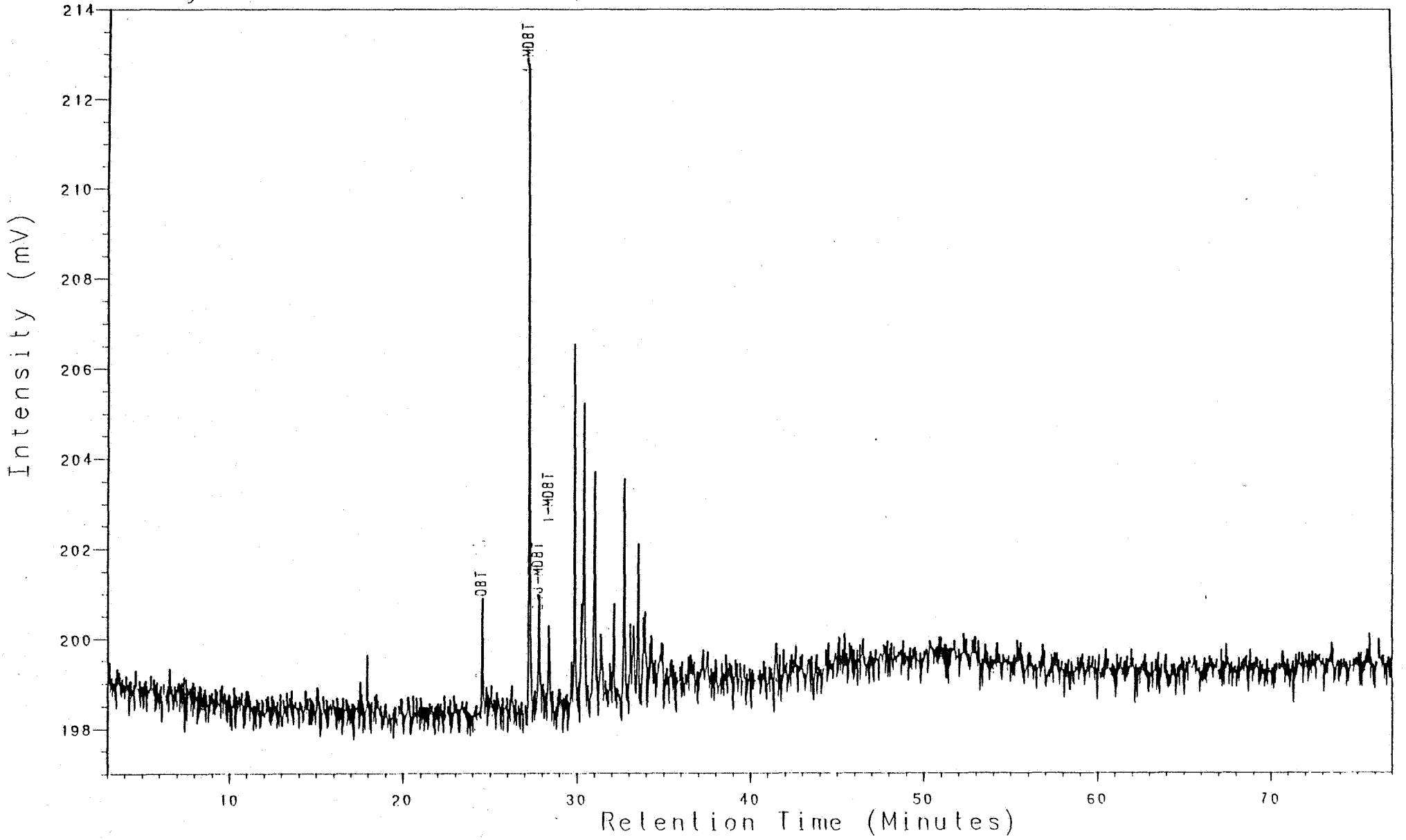

Analysis AC101320B 9, 1, 1 2/6-2, 4380-98m, ARO
210
208
206
204
202
200
198
196
Intensity (mV)
10
20
30
40
50
60
70
Retention Time (Minutes)
NOCS 2/6-2 4380-98m
AROMATIC GC (FPD)
CLST: gy blk, brn blk
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

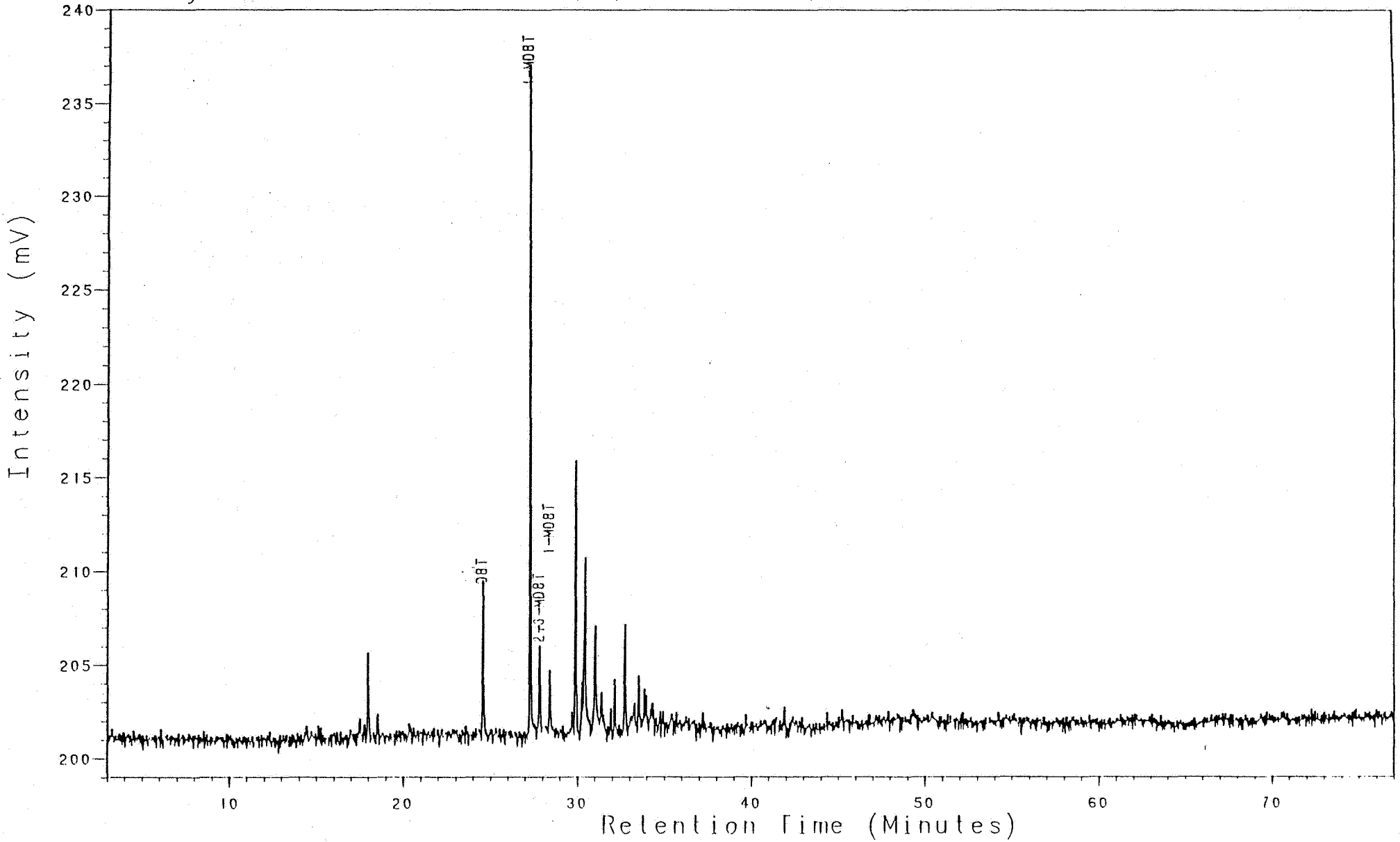
Analysis AC101330B 9, 1, 1 2/6-2, 4430m, ARO




NOCS 2/6-2 4404-30m
AROMATIC GC (FPD)
CLST: gy blk, brn blk

GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

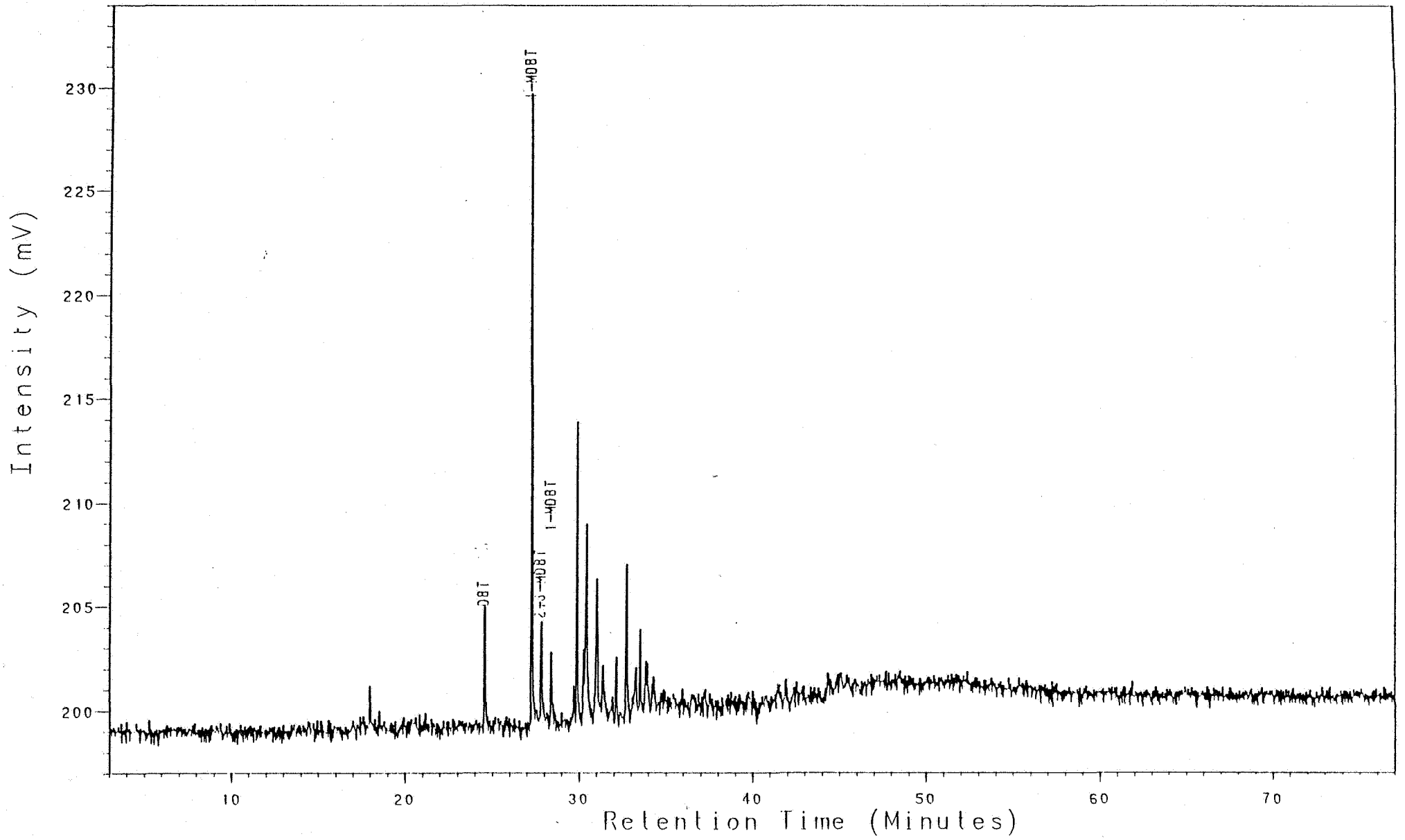
Analysis AC101340B 9, 1, 1 2/6-2, 4474m, ARO




NOCS 2/6-2 4436-74m
AROMATIC GC (FPD)
CLST: gy blk, brn blk

GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

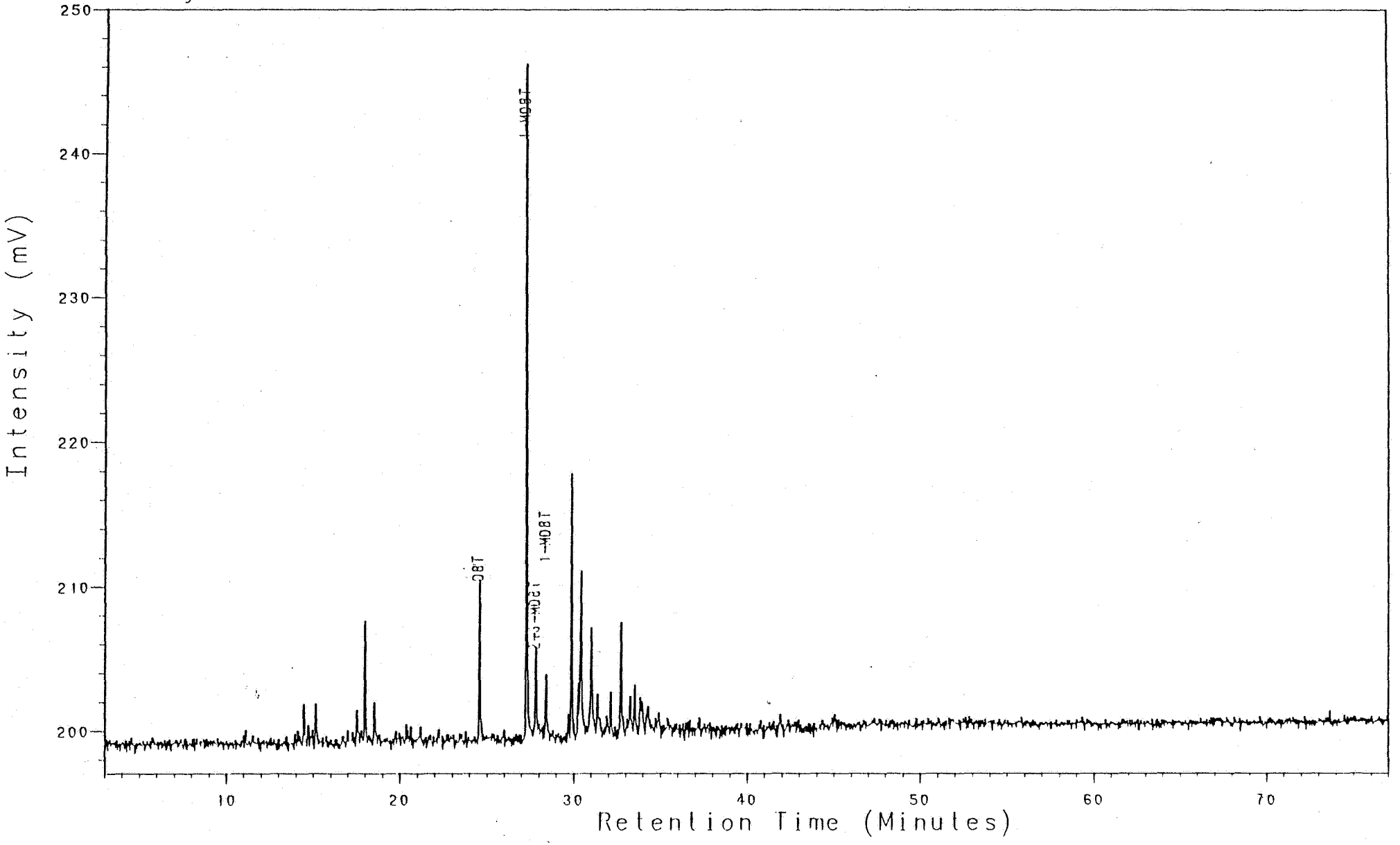
Analysis AC101350B 9, 1, 1 2/6-2, 4482m, ARO




NOCS 2/6-2 4478-82m
AROMATIC GC (FPD)
CLST: gy blk, brn blk

GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

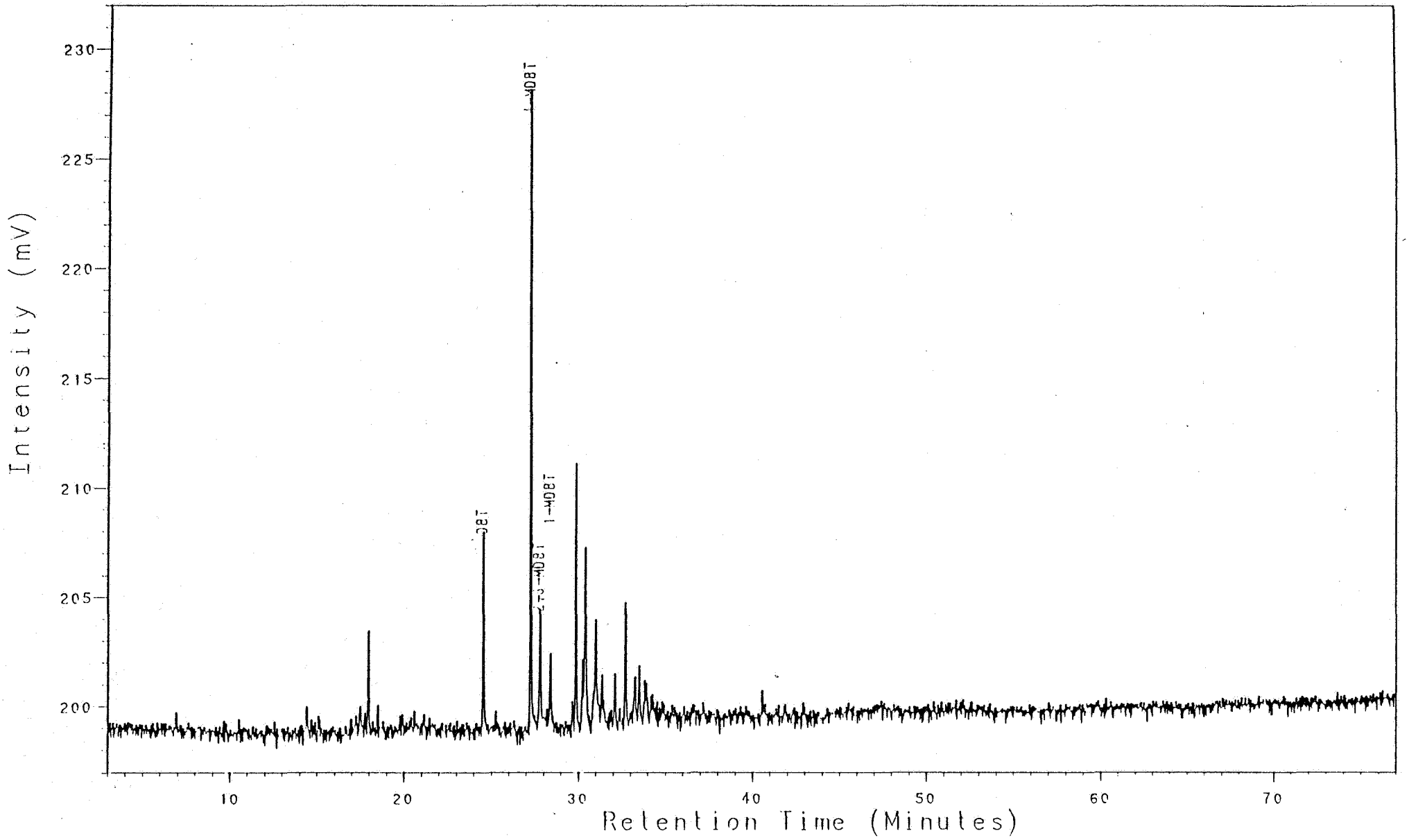
Analysis AC101360B 9, 1, 1 2/6-2, 4528m, ARO




NOCS 2/6-2 4506-28m
AROMATIC GC (FPD)
CLST: gy blk, brn blk

GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

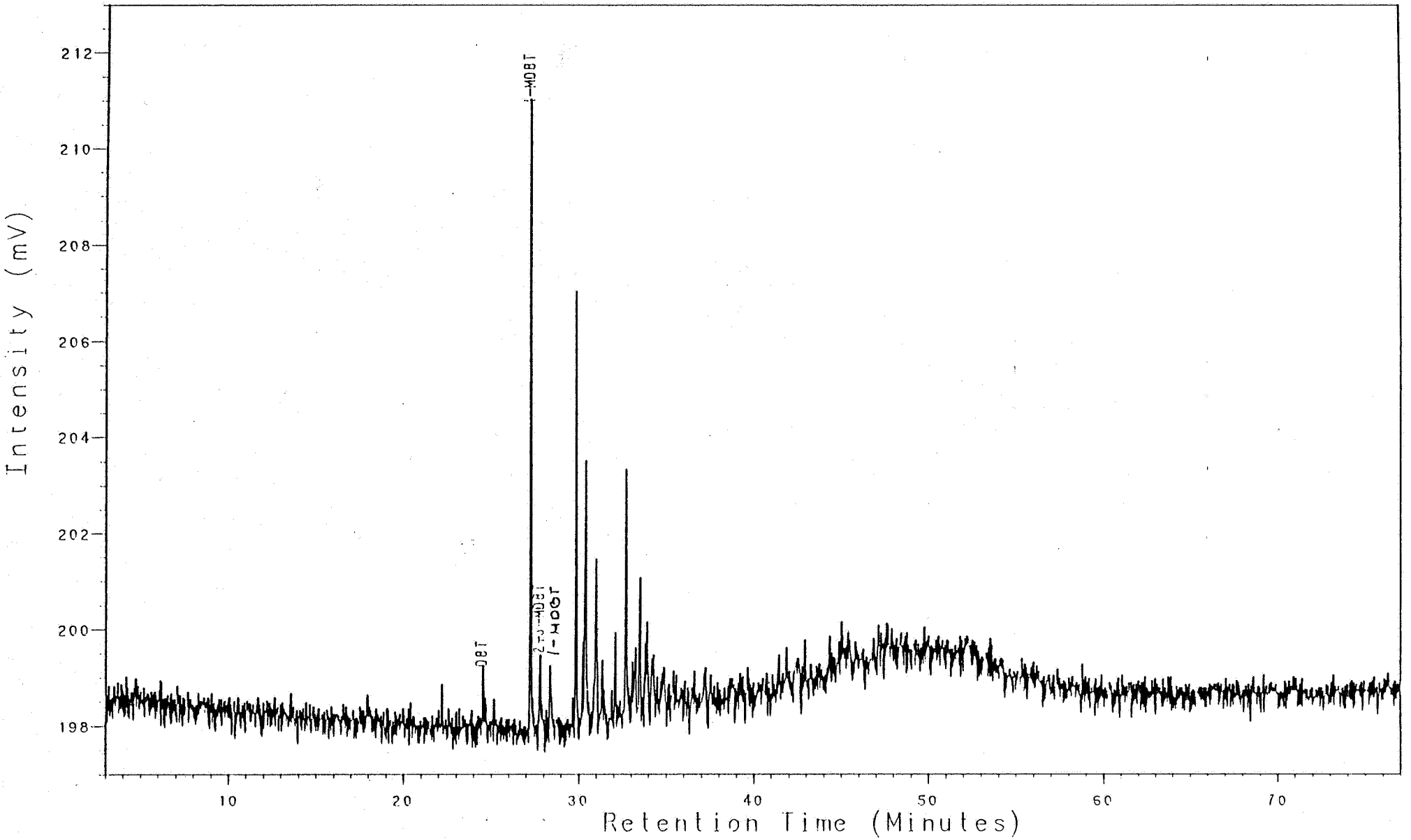
Analysis AC101370B 9, 1, 1 2/6-2, 4544m, ARO




NOCS 2/6-2 4532-44m
AROMATIC GC (FPD)
CLST: gy blk,brn blk

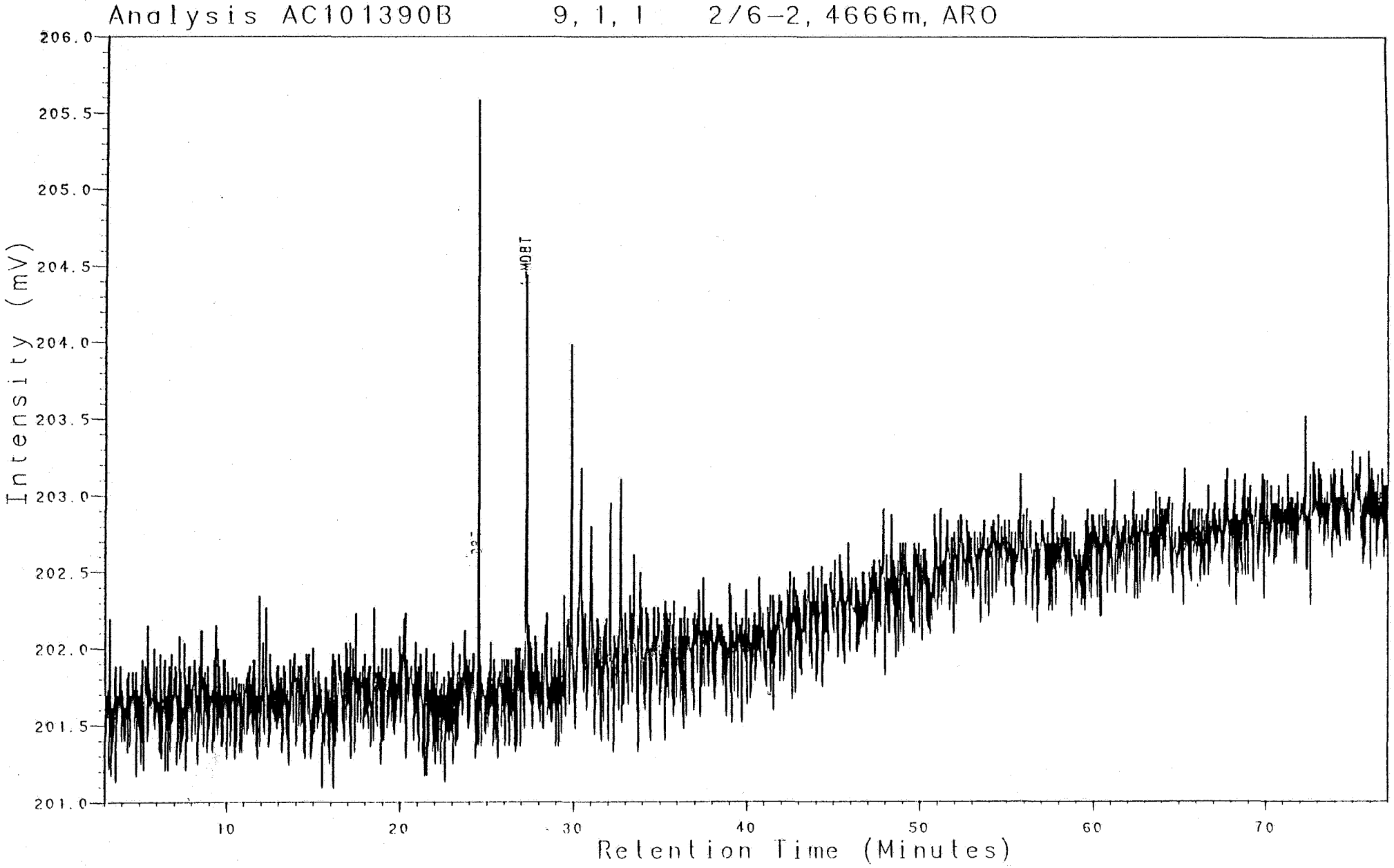
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

Analysis AC101380B 9, 1, 1 2/6-2, 4602m, ARO




NOCS 2/6-2 4575-4602m
AROMATIC GC (FPD)
CLST gy blk, brn blk

GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

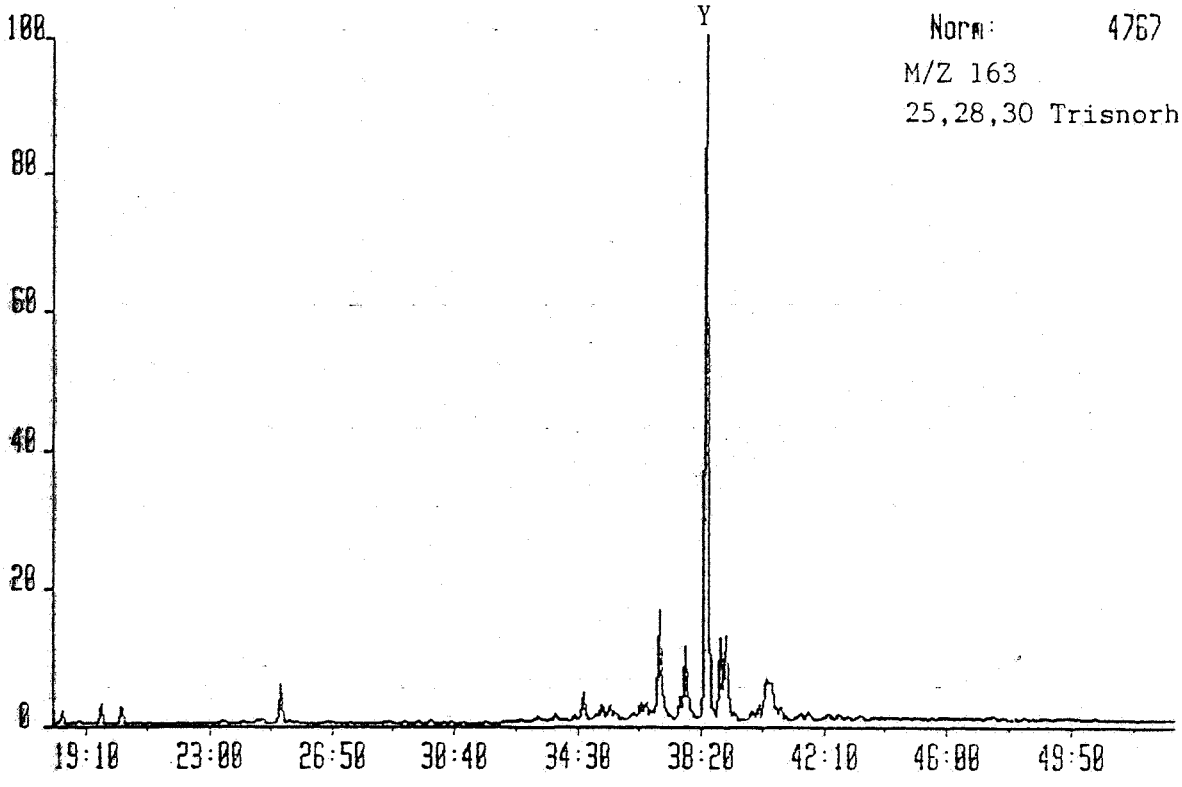



NOCS 2/6-2 4616-66m
AROMATIC GC (FPD)
CLST: gy, gy red, m gy

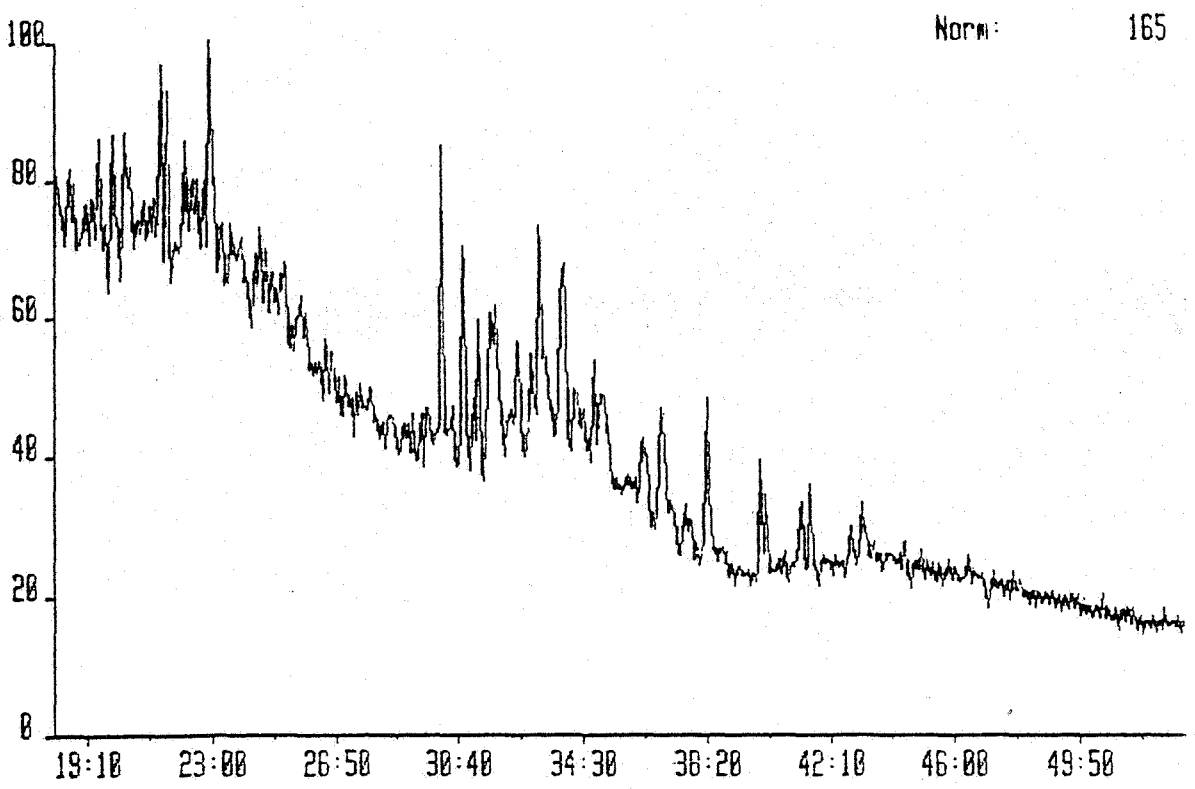
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

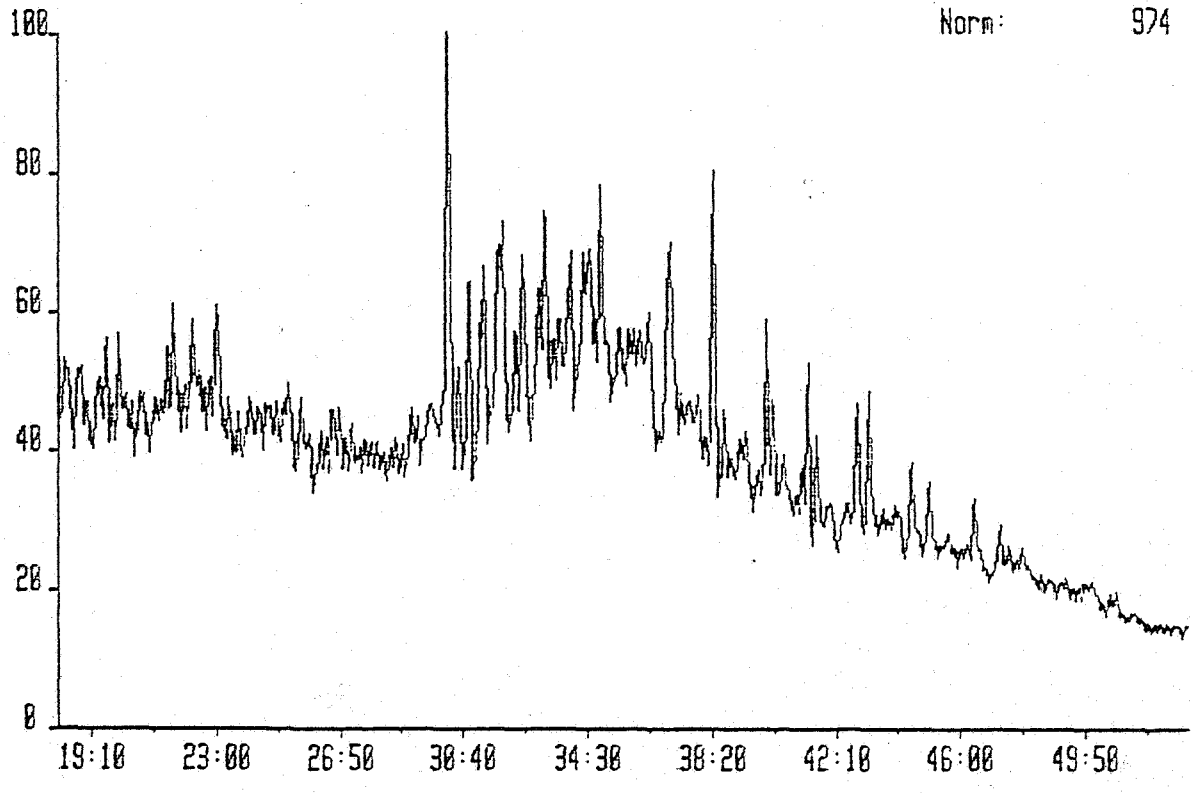
EXAMPLE OF PEAK IDENTIFICATION FOR 25, 28, 30 TRISNORHOPANE/MORETANE



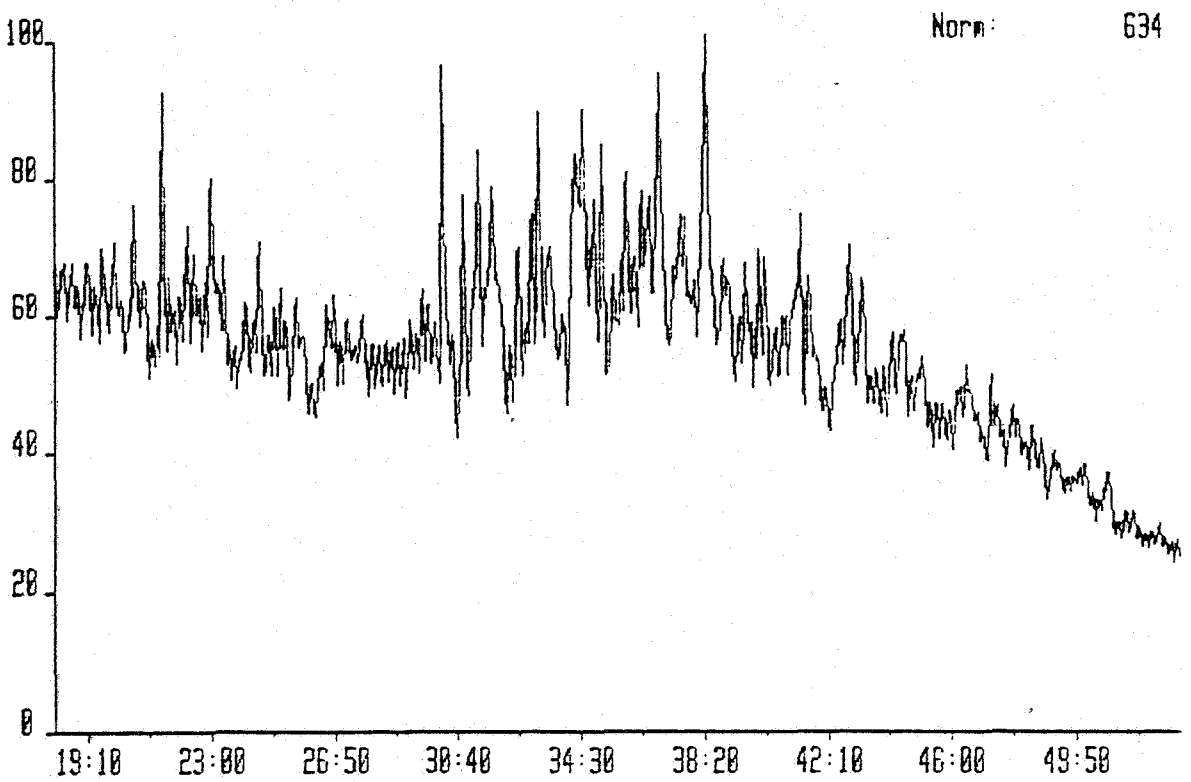
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 163.1485
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



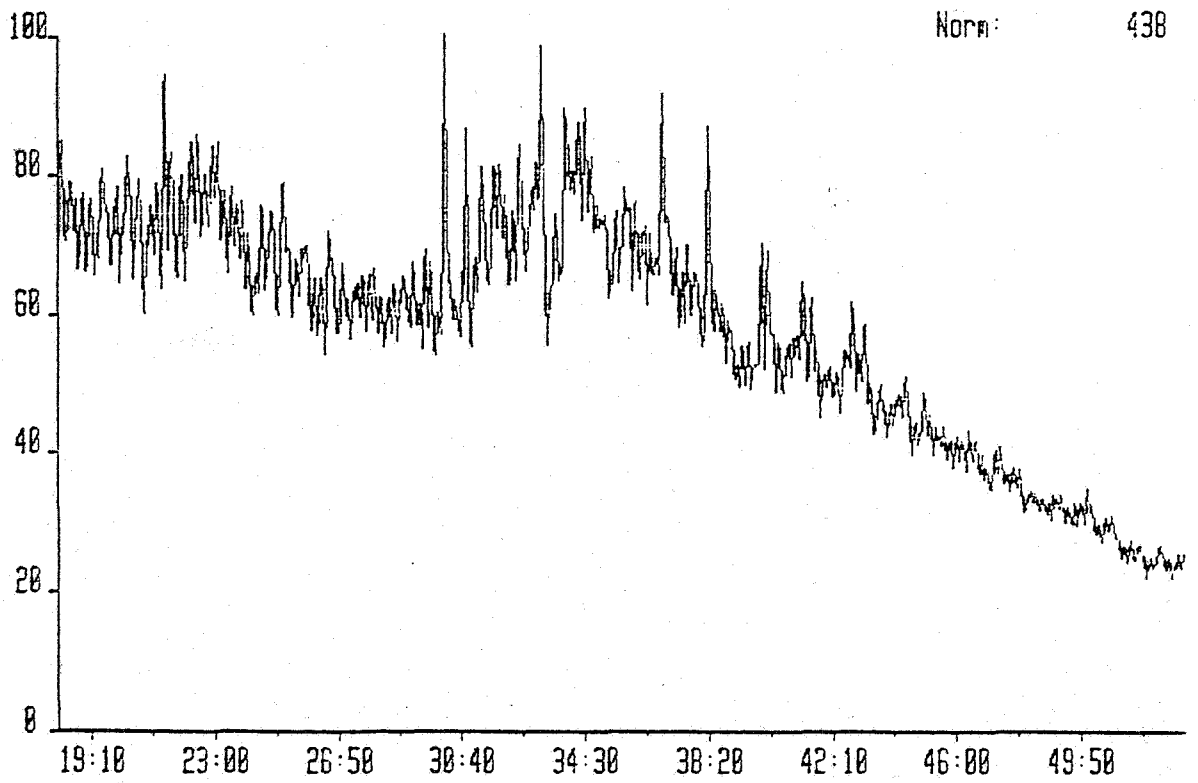

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 163.1485
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 163.1485
Text:WELL 2/6-2, 4430M, SATURATED FRACTION

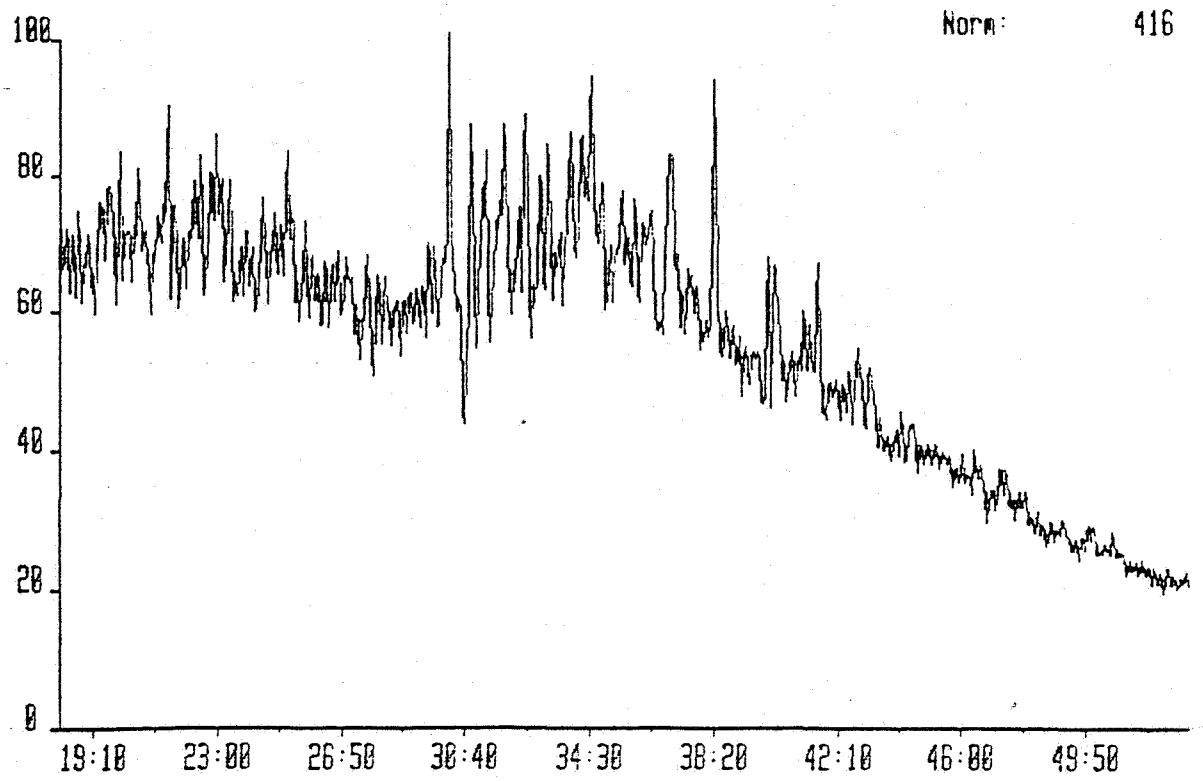



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 163.1485
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



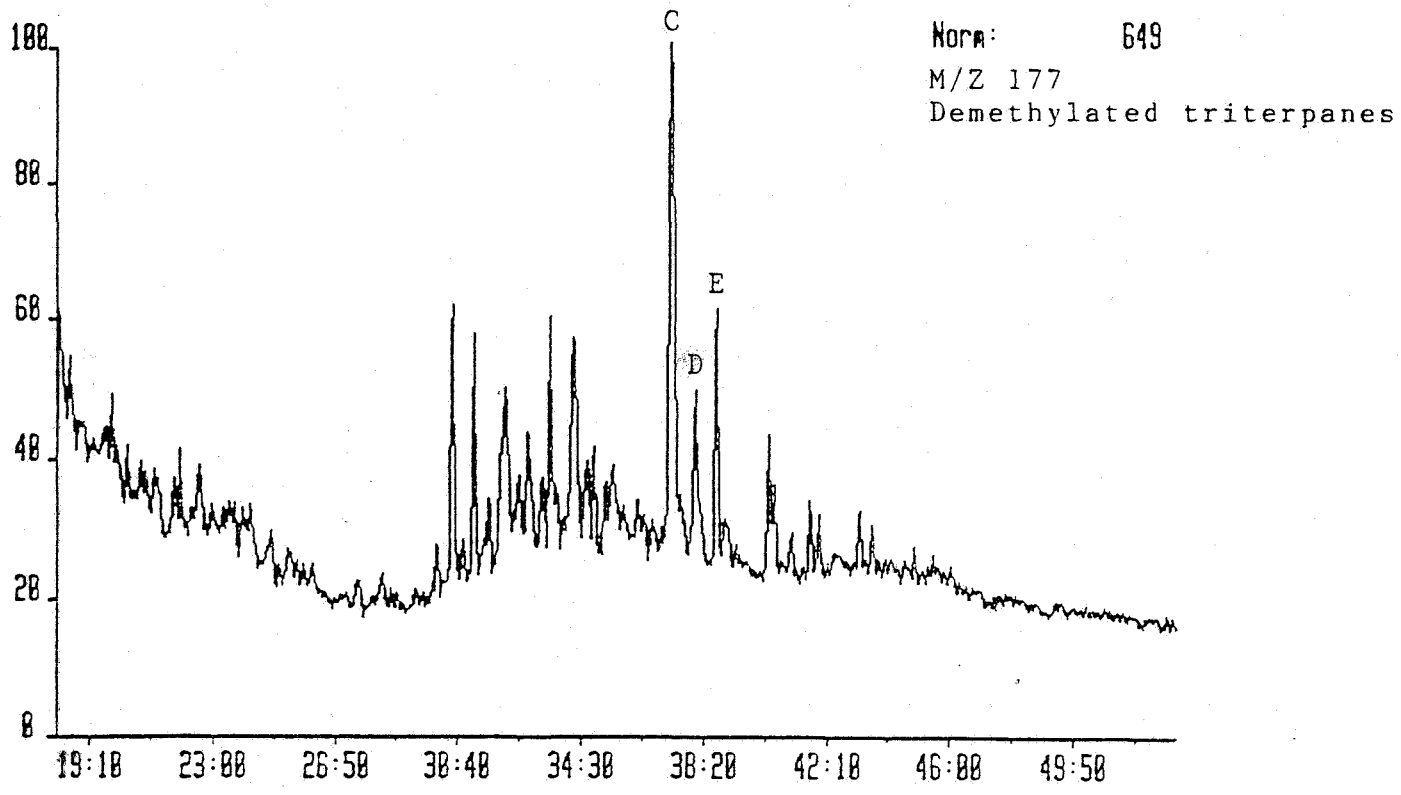
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 163.1485
Text:WELL 2/6-2, 4666M, SATURATED FRACTION

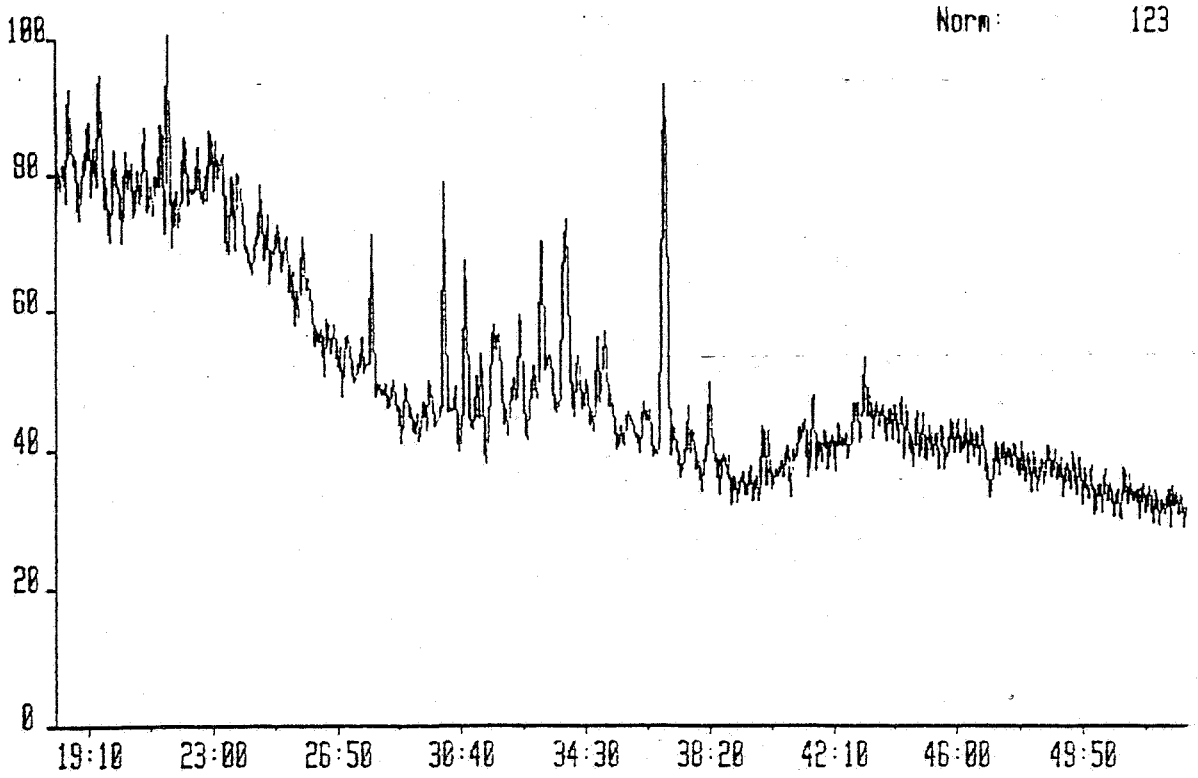


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

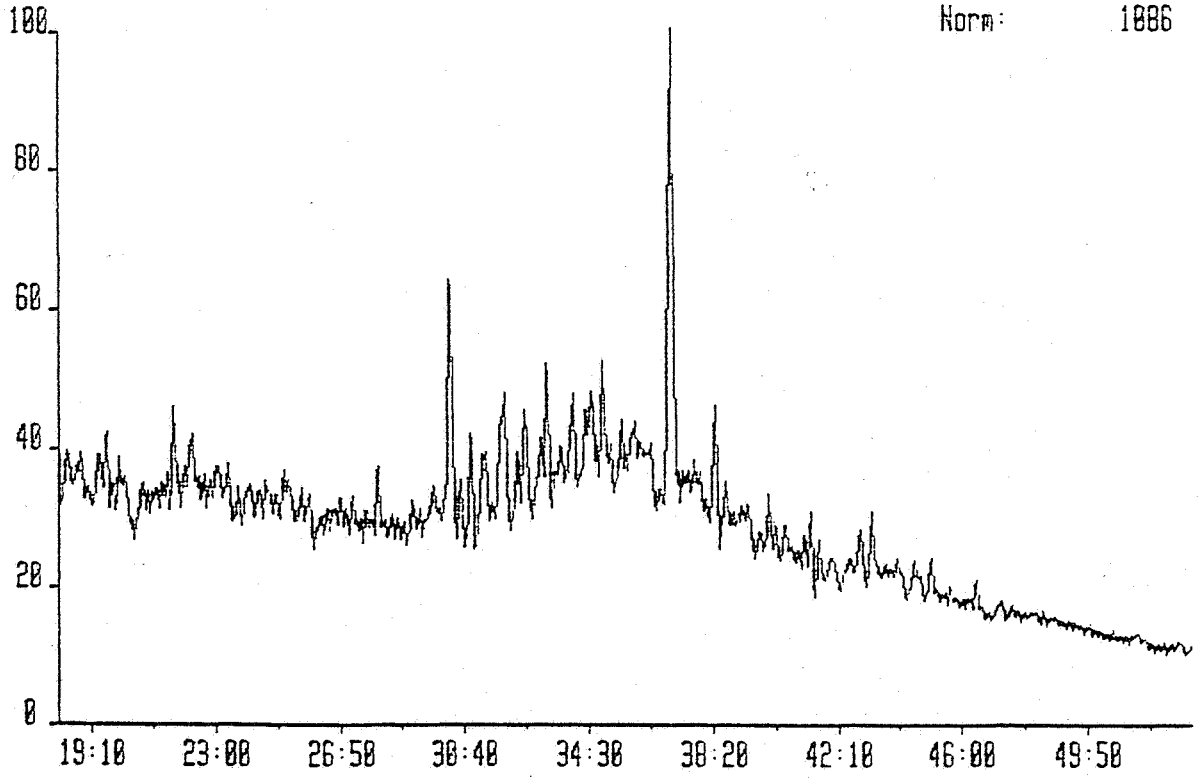
# EXAMPLE OF PEAK IDENTIFICATION FOR DEMETHYLATED TRITERPANES



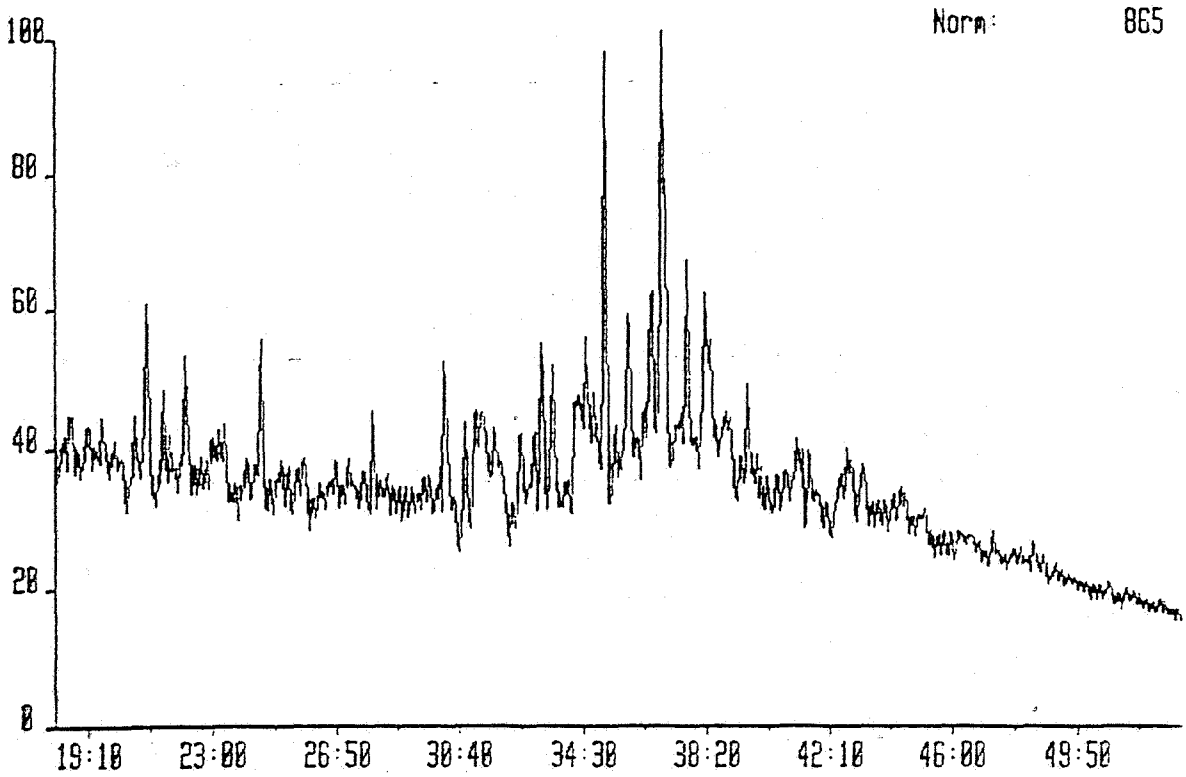
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 177.1642
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



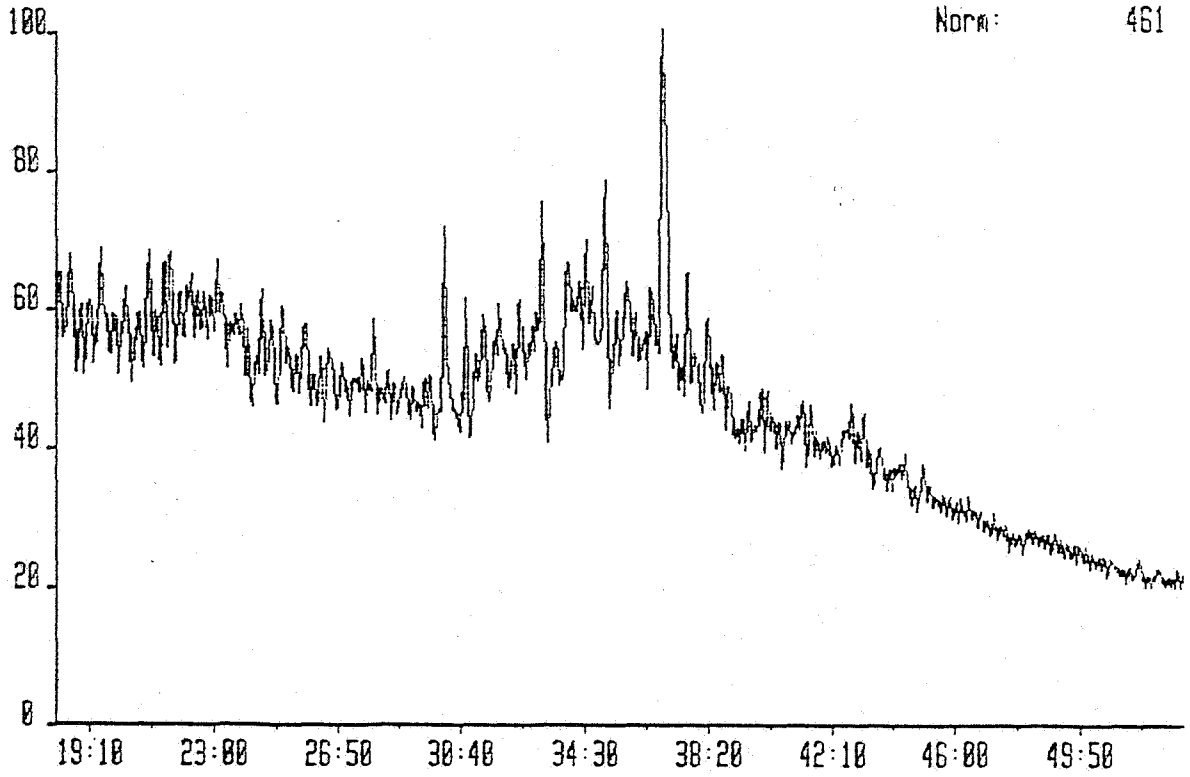

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 177.1642
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 177.1642
Text:WELL 2/6-2, 4430M, SATURATED FRACTION

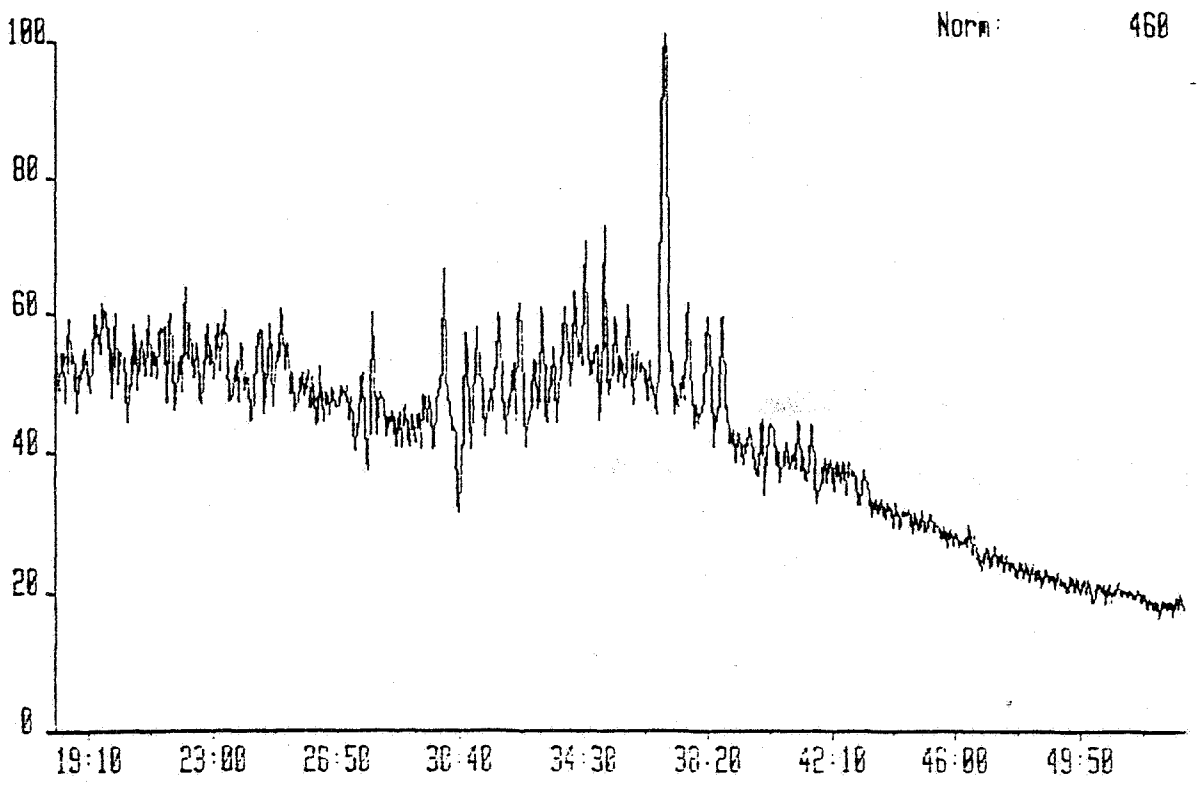



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 177.1642
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



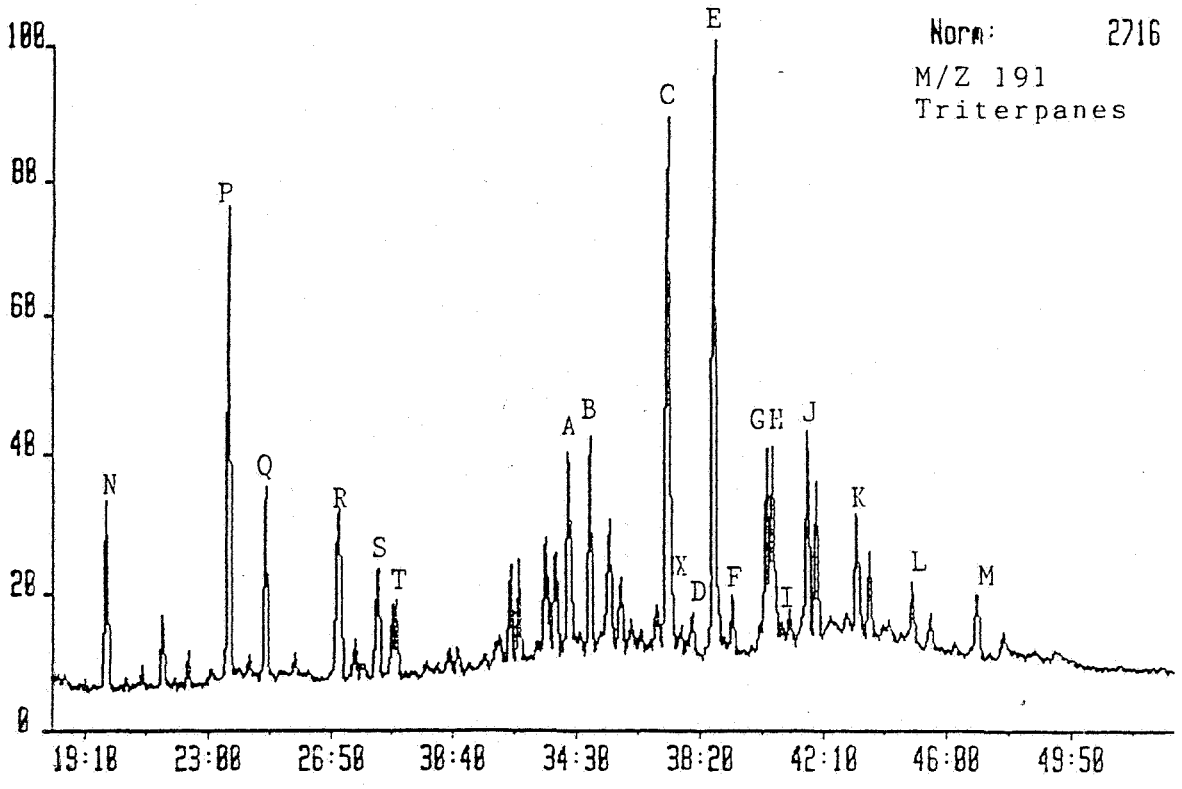
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 177.1642
Text:WELL 2/6-2, 4666M, SATURATED FRACTION

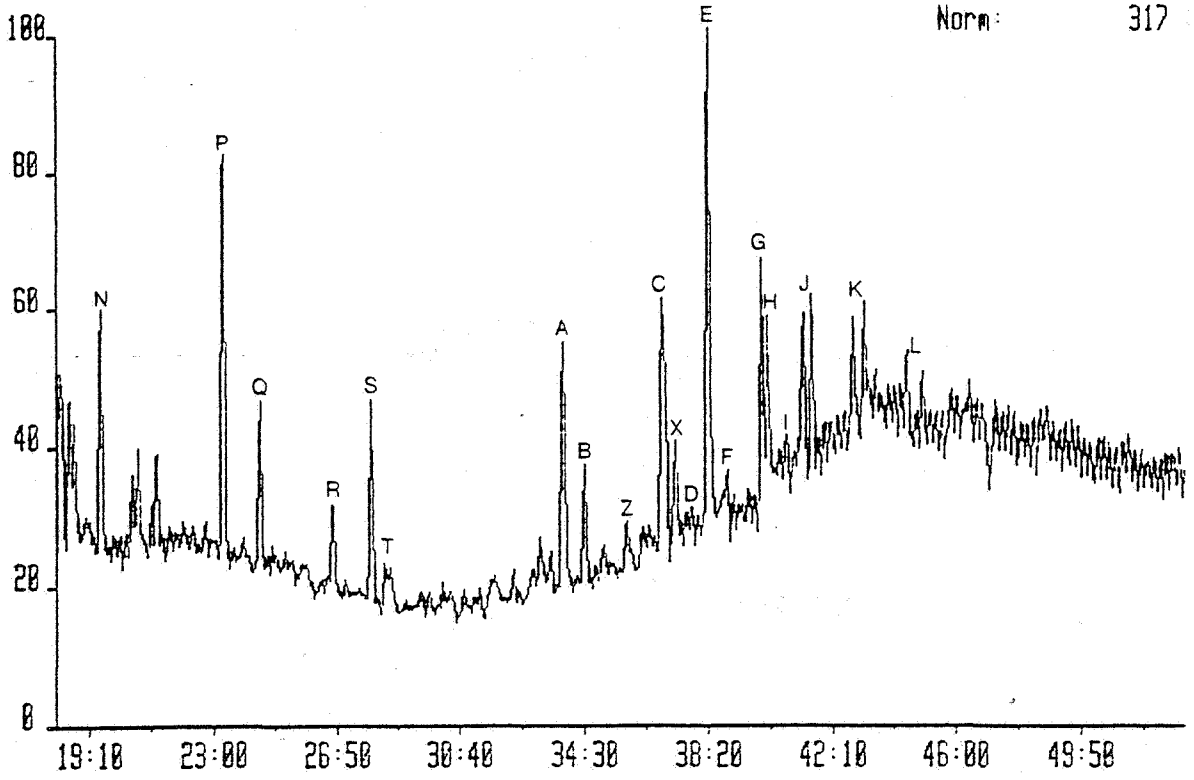


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

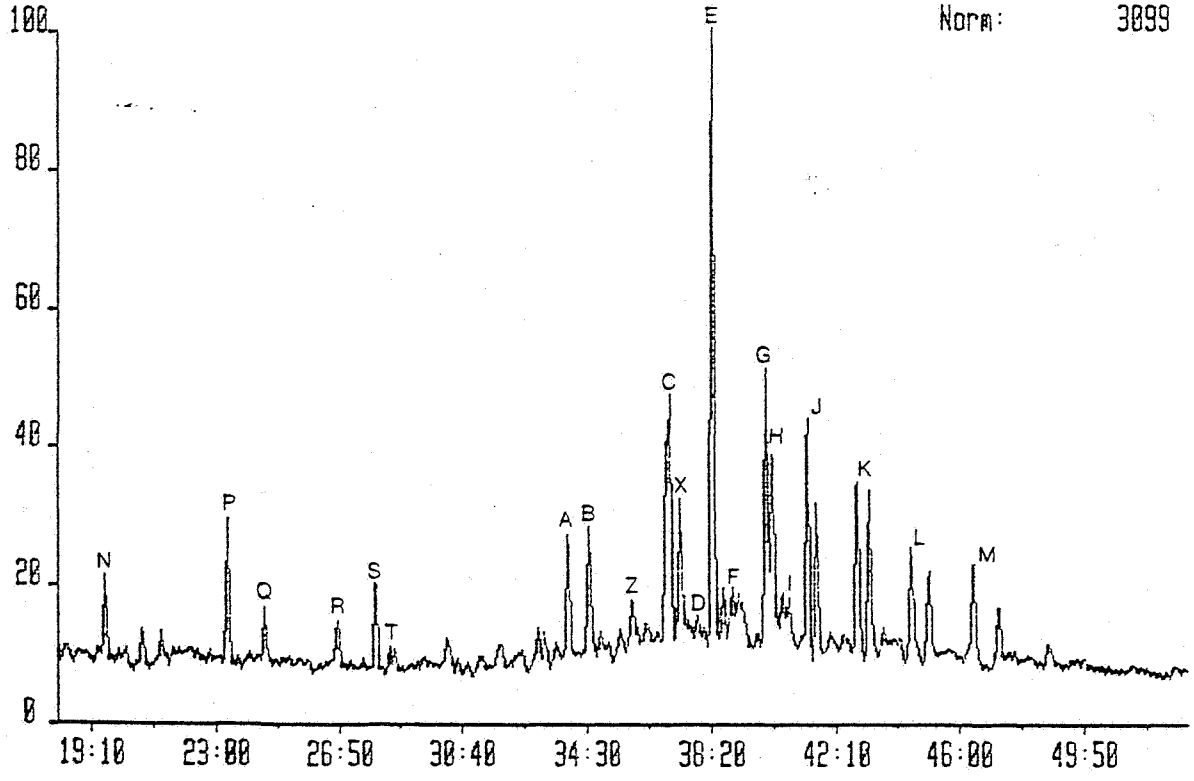
# EXAMPLE OF PEAK IDENTIFICATION FOR TRITERPANES



CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 191.1800
Text:WELL 2/6-2, 4200M, SATURATED FRACTION

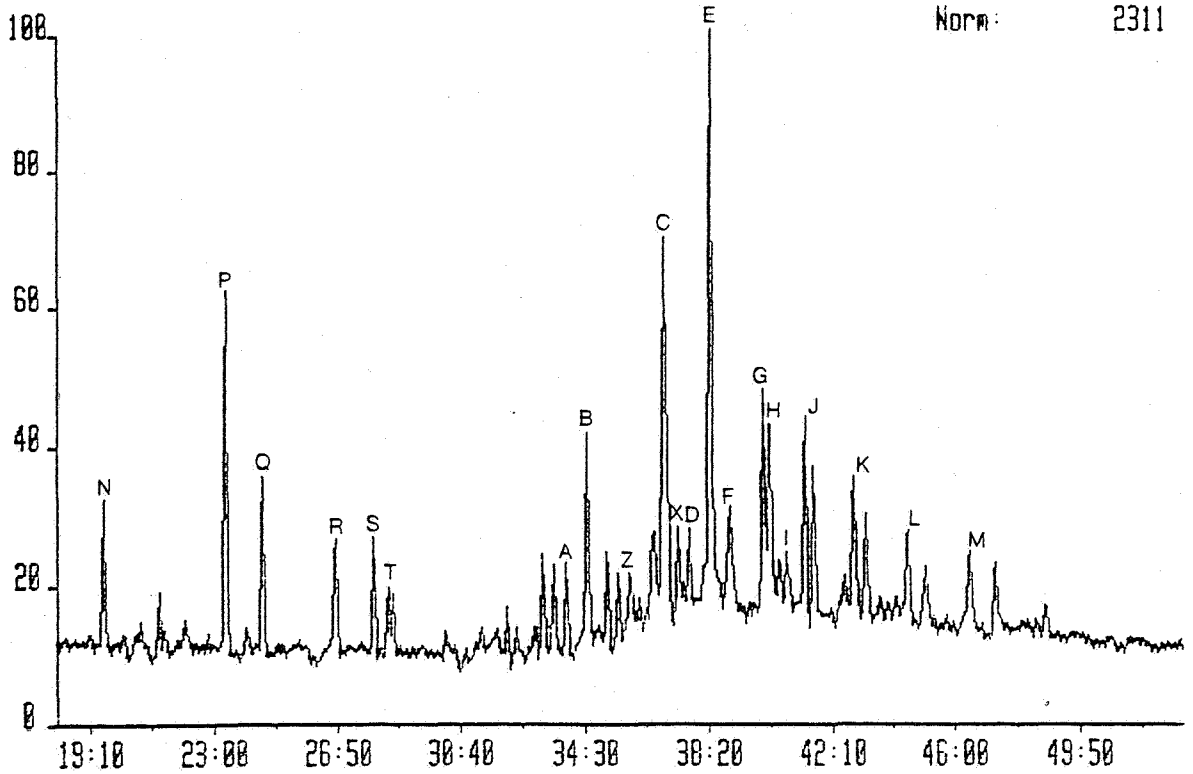



CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 191.1800
Text:WELL 2/6-2, 4300M, SATURATED FRACTION

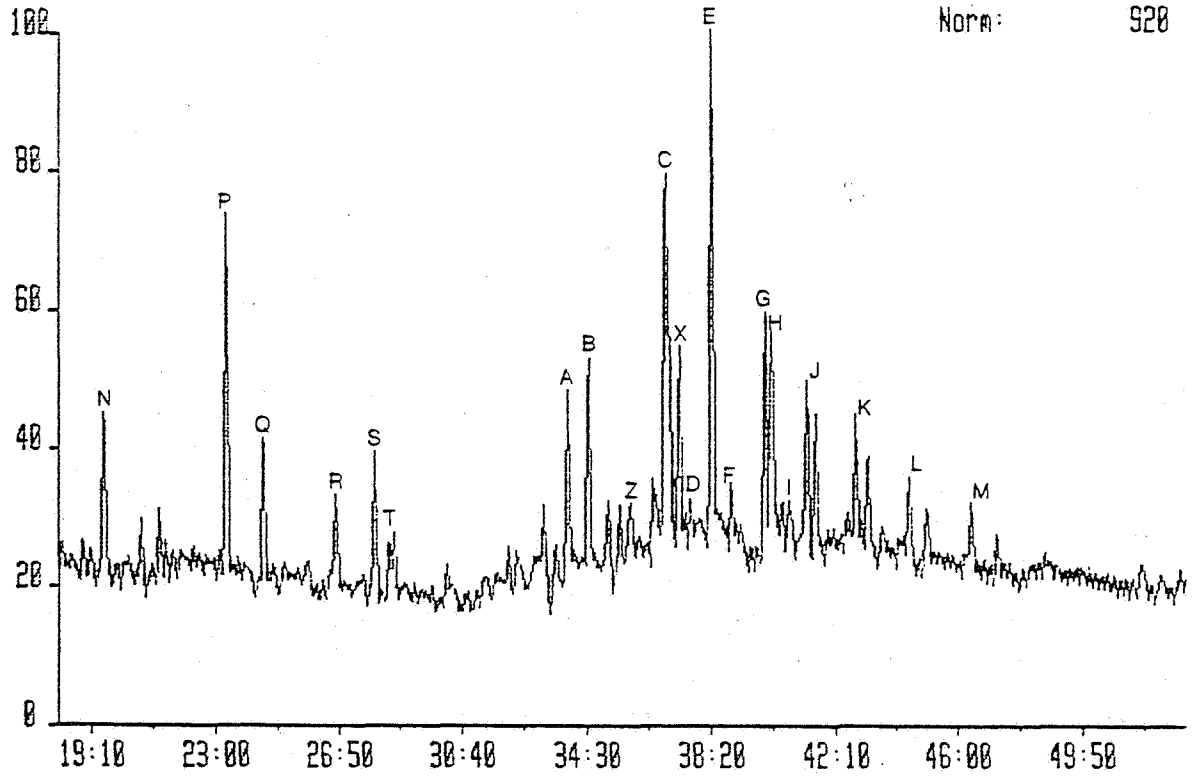


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A-S

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 191.1800
Text:WELL 2/6-2, 4430M, SATURATED FRACTION

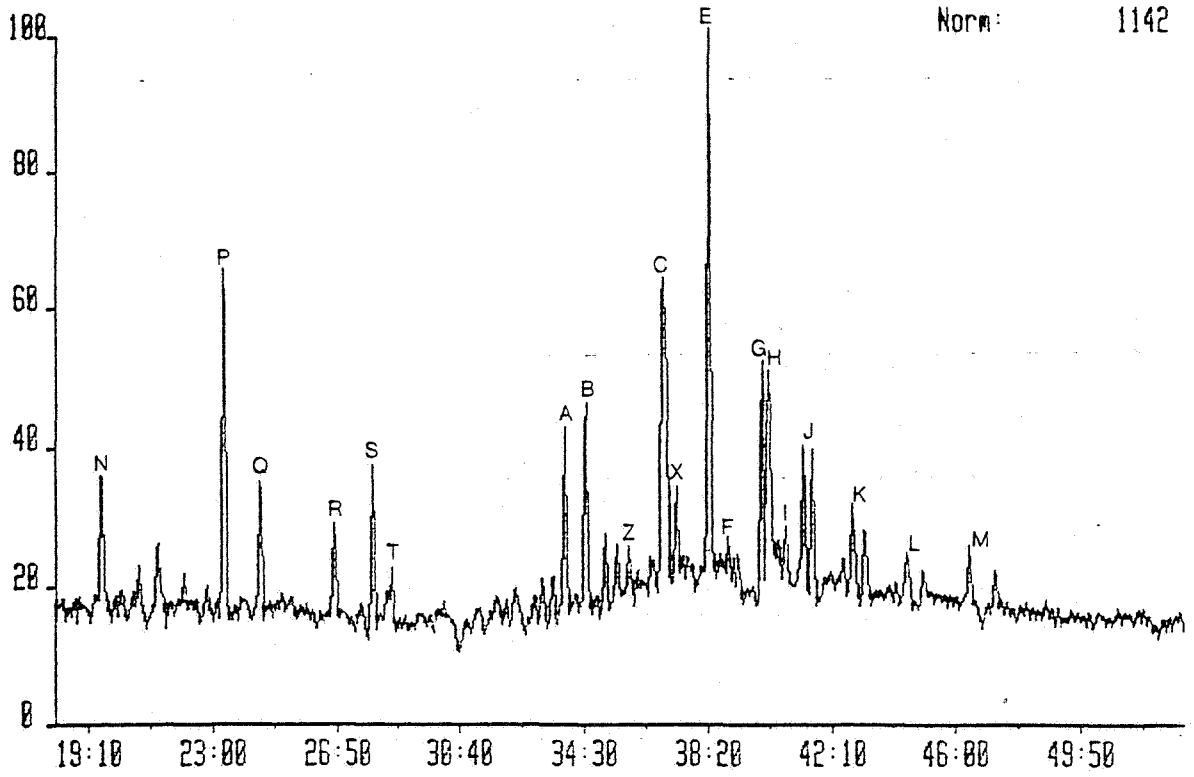



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 191.1800
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



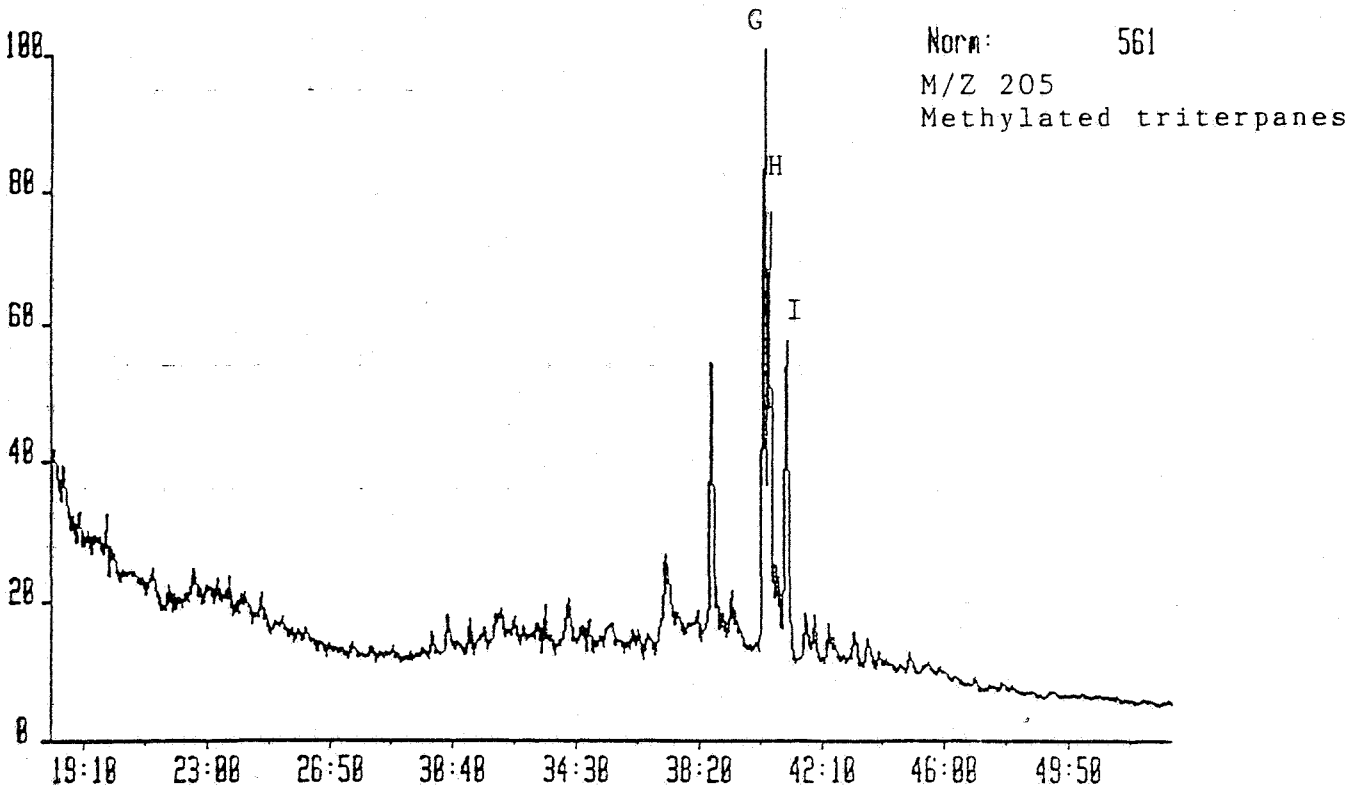
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 191.1800
Text:WELL 2/6-2, 4666M, SATURATED FRACTION

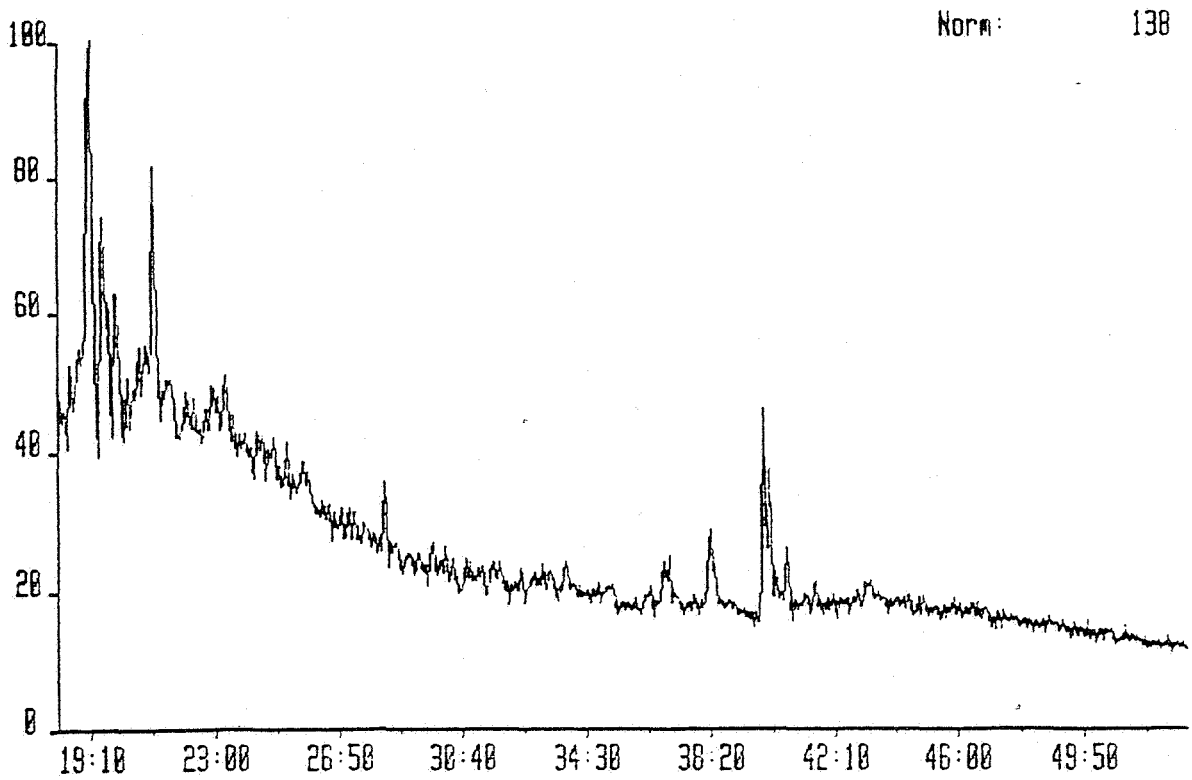


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

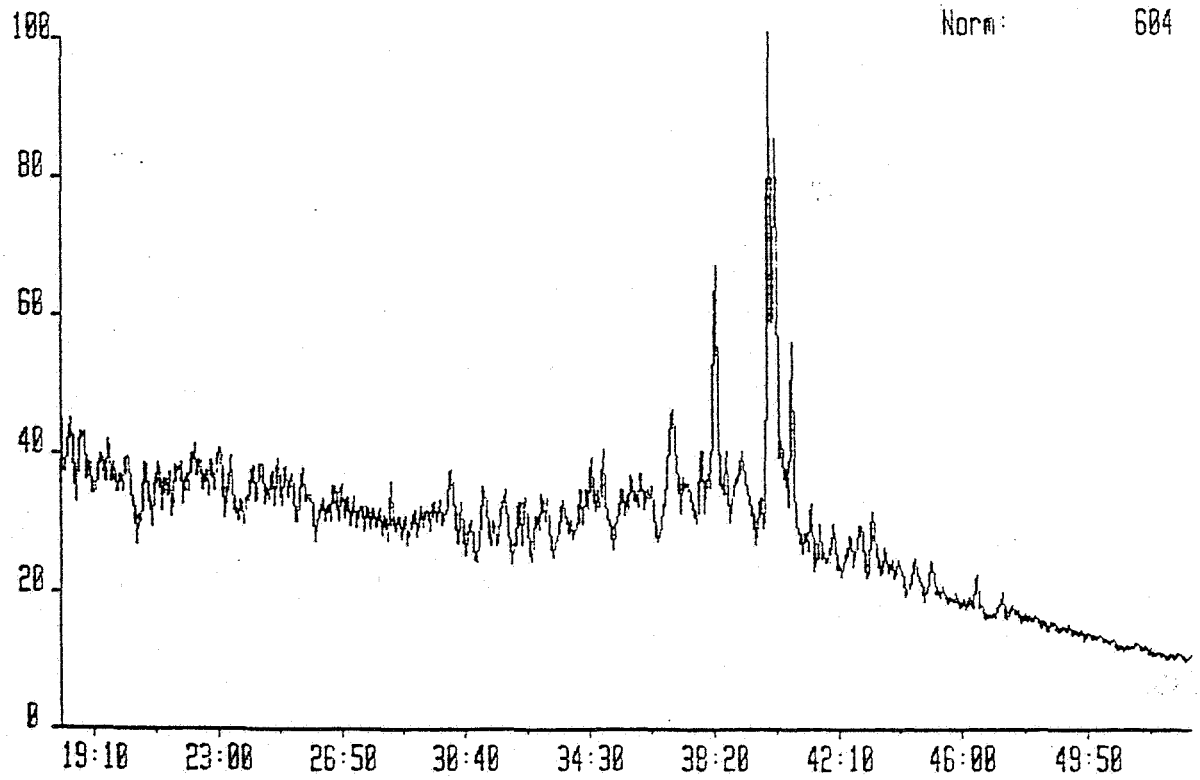
# EXAMPLE OF IDENTIFICATION FOR METHYLATED TRITERPANES



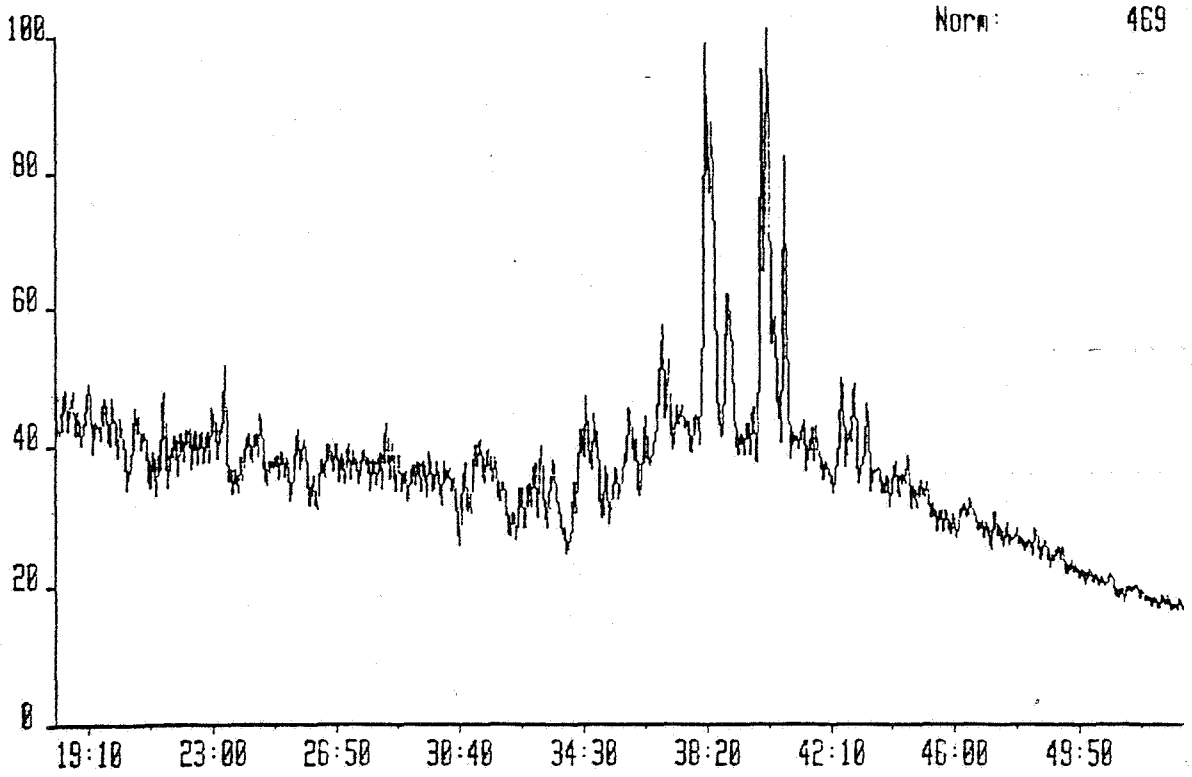
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 205.1956
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



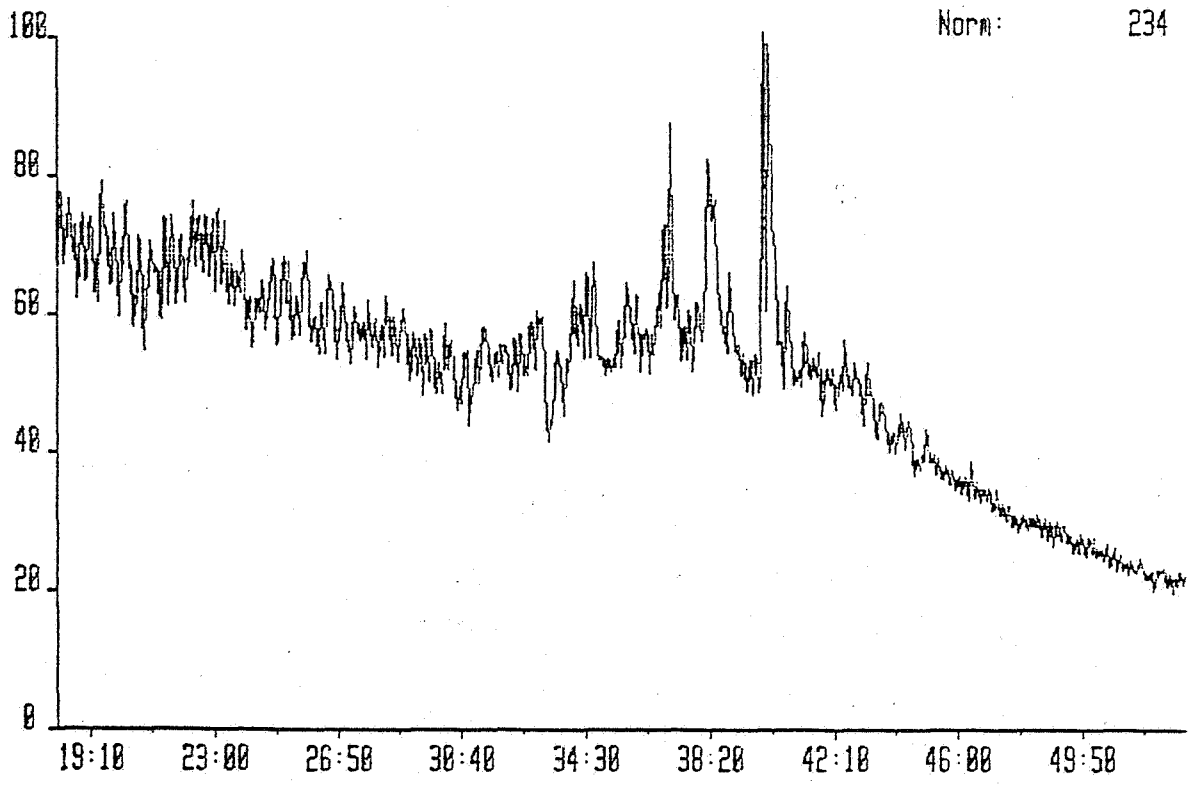

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 205.1956
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 205.1956
Text:WELL 2/6-2, 4430M, SATURATED FRACTION

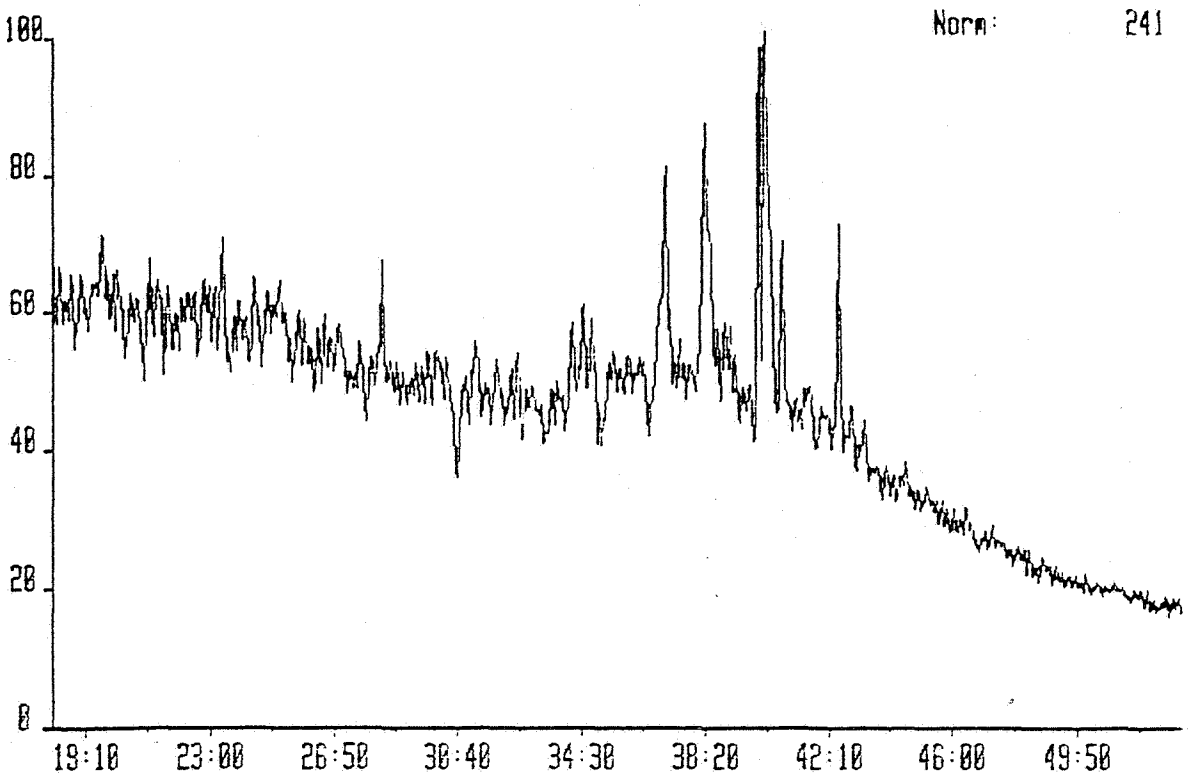



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 205.1956
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



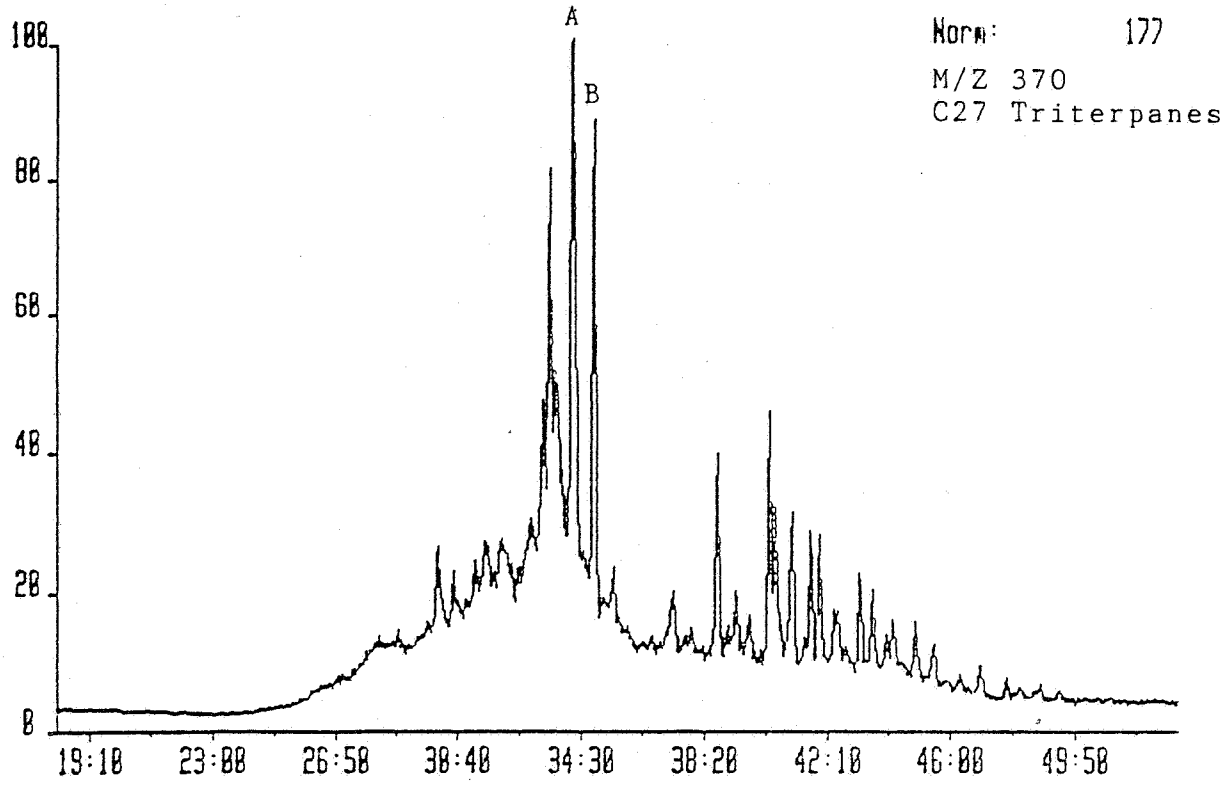
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 205.1956
Text:WELL 2/6-2, 4666M, SATURATED FRACTION

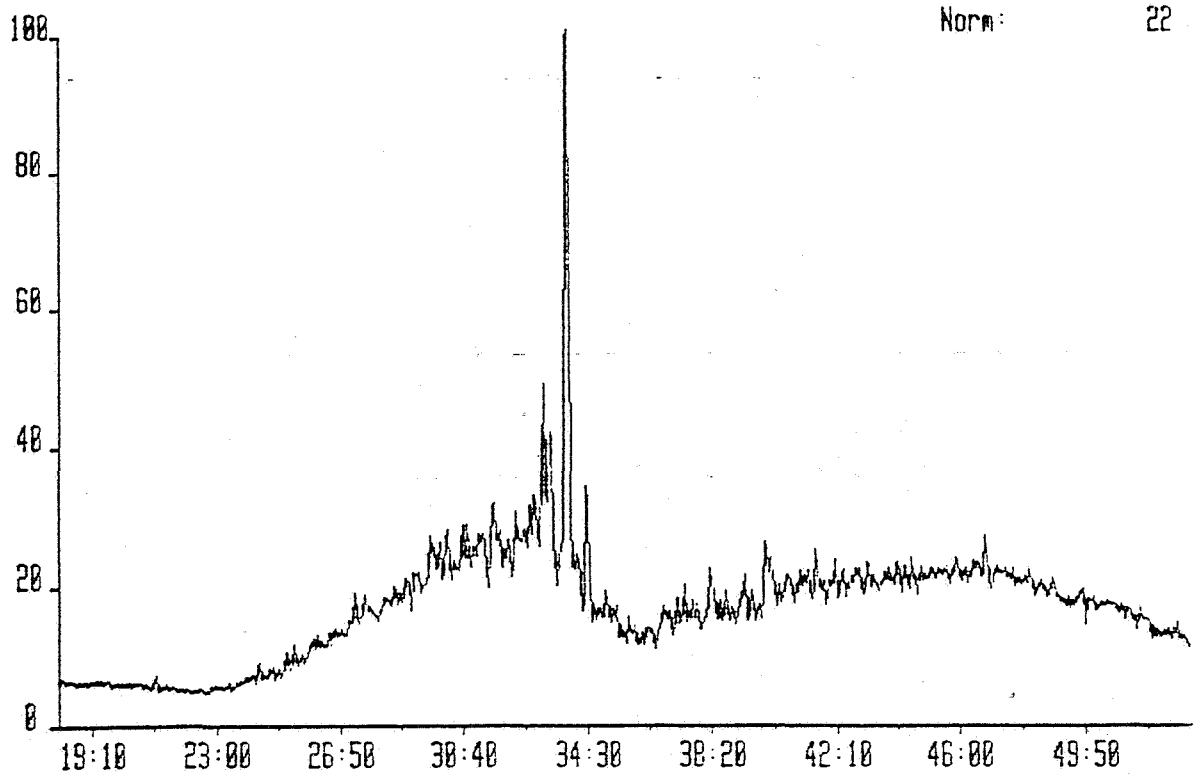


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

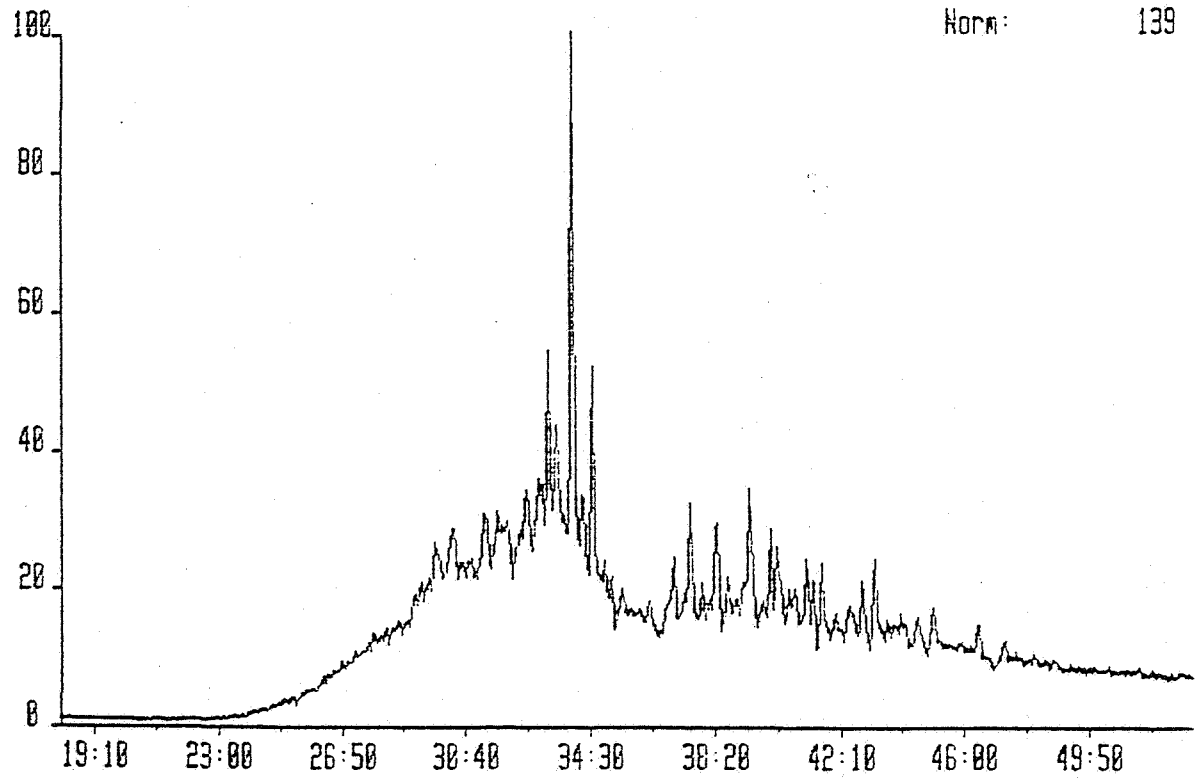
# EXAMPLE OF PEAK IDENTIFICATION FOR C27 TRITERPANES



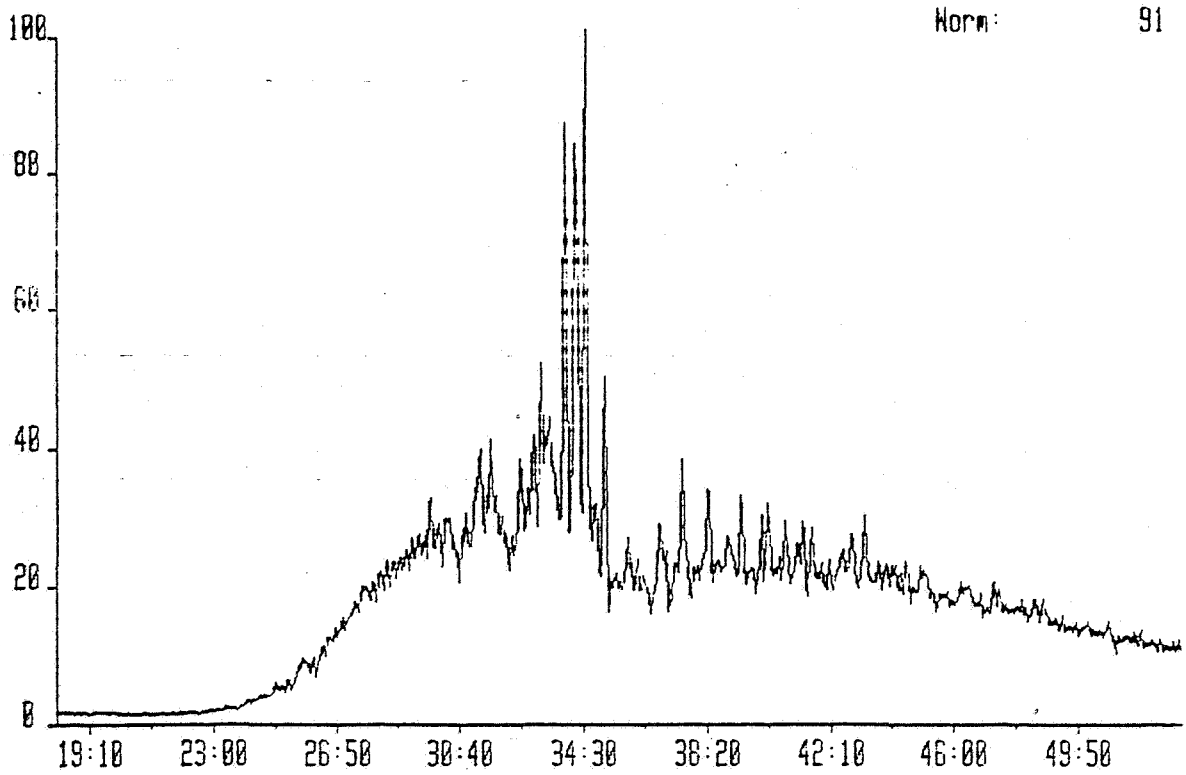
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 370.3600
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



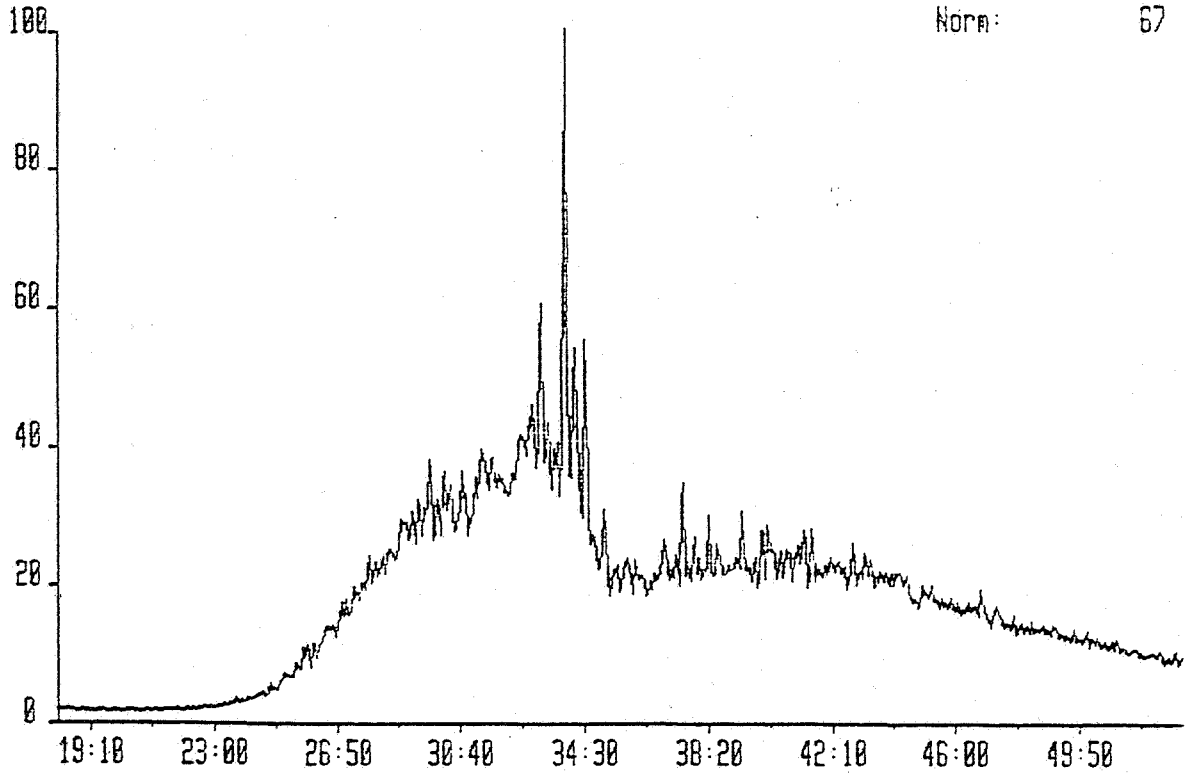

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 370.3600
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 370.3608
Text:WELL 2/6-2, 4430M, SATURATED FRACTION




CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 370.3608
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



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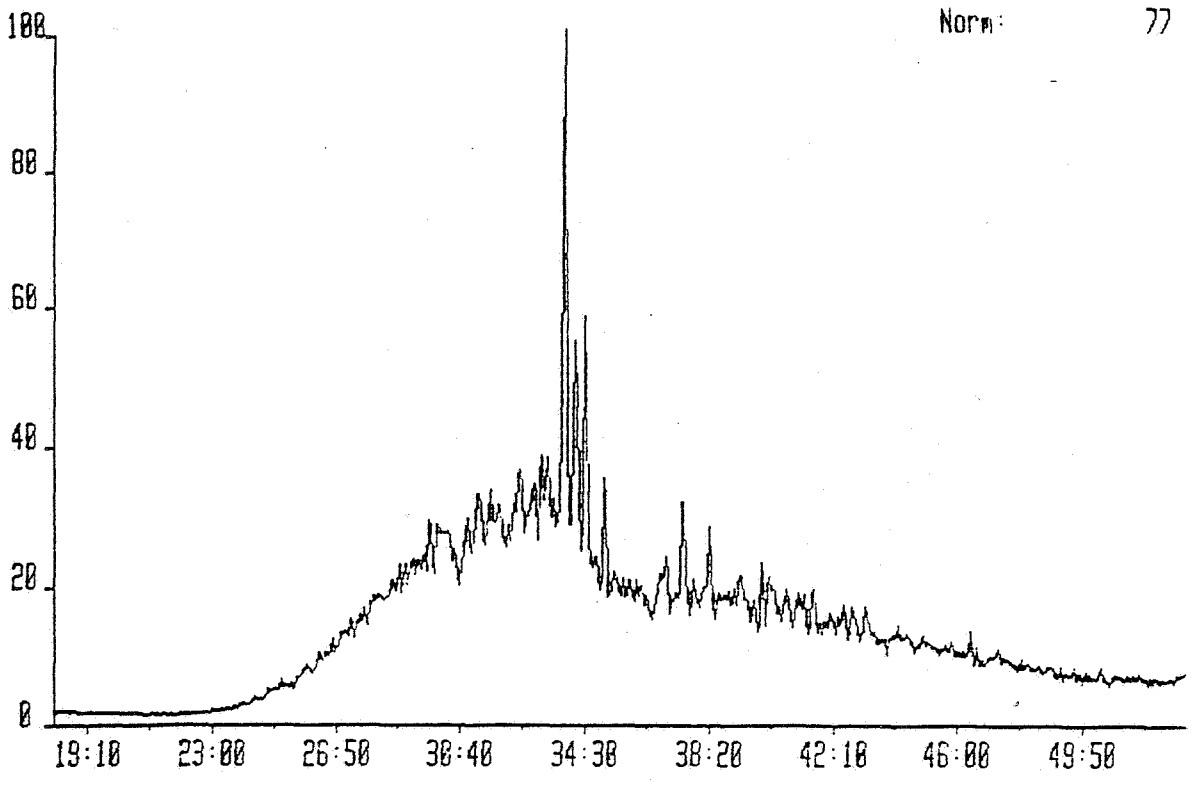
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 370.3688
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



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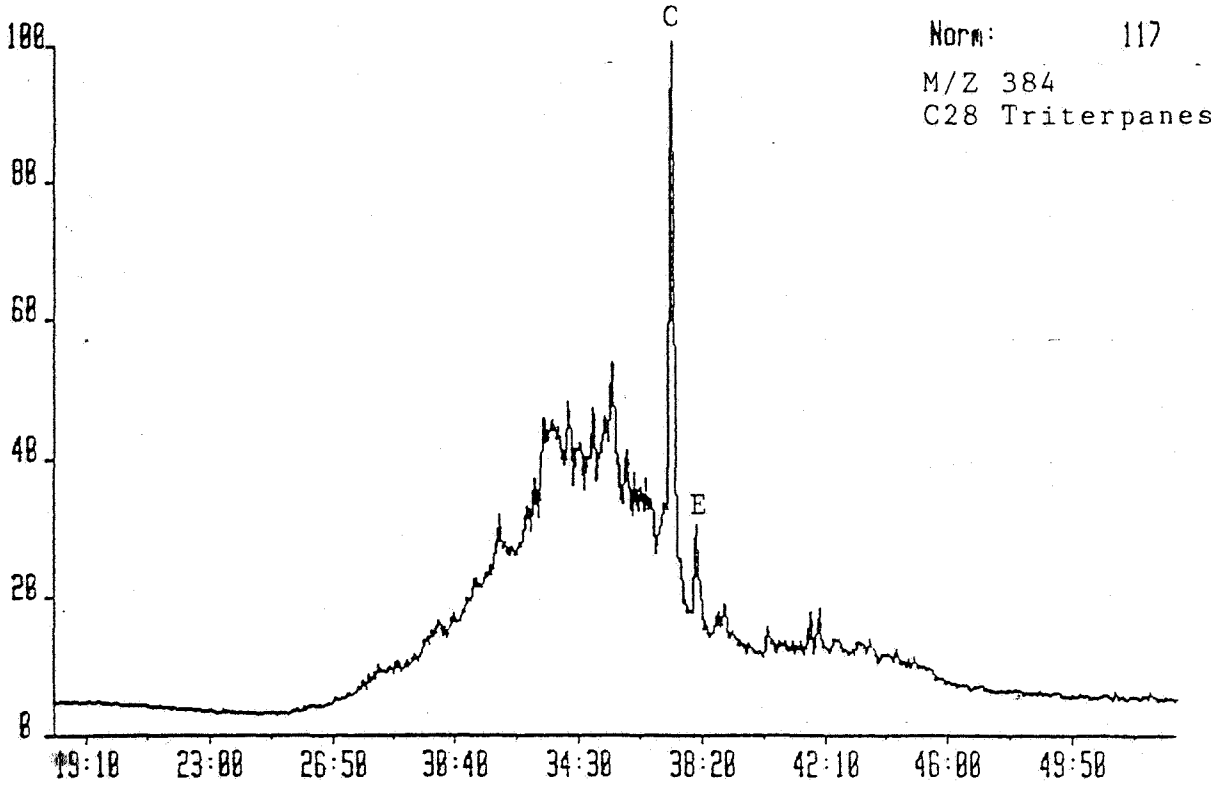
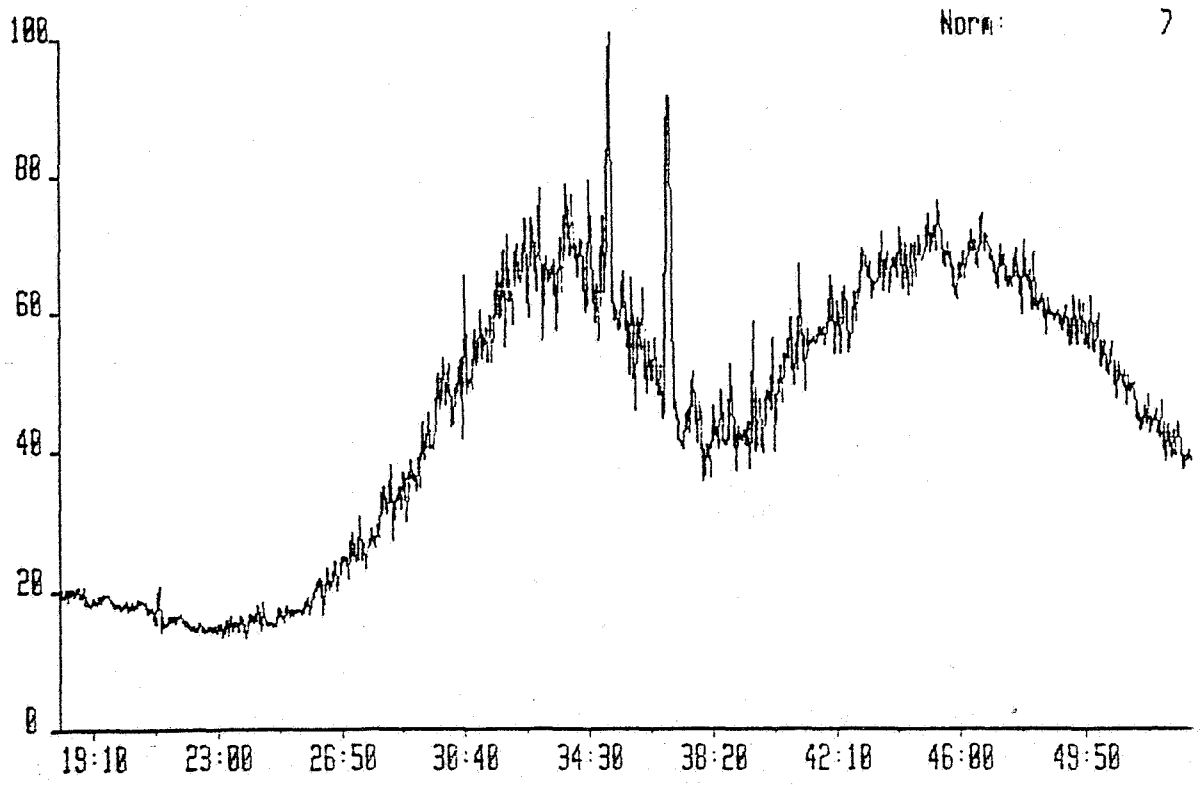
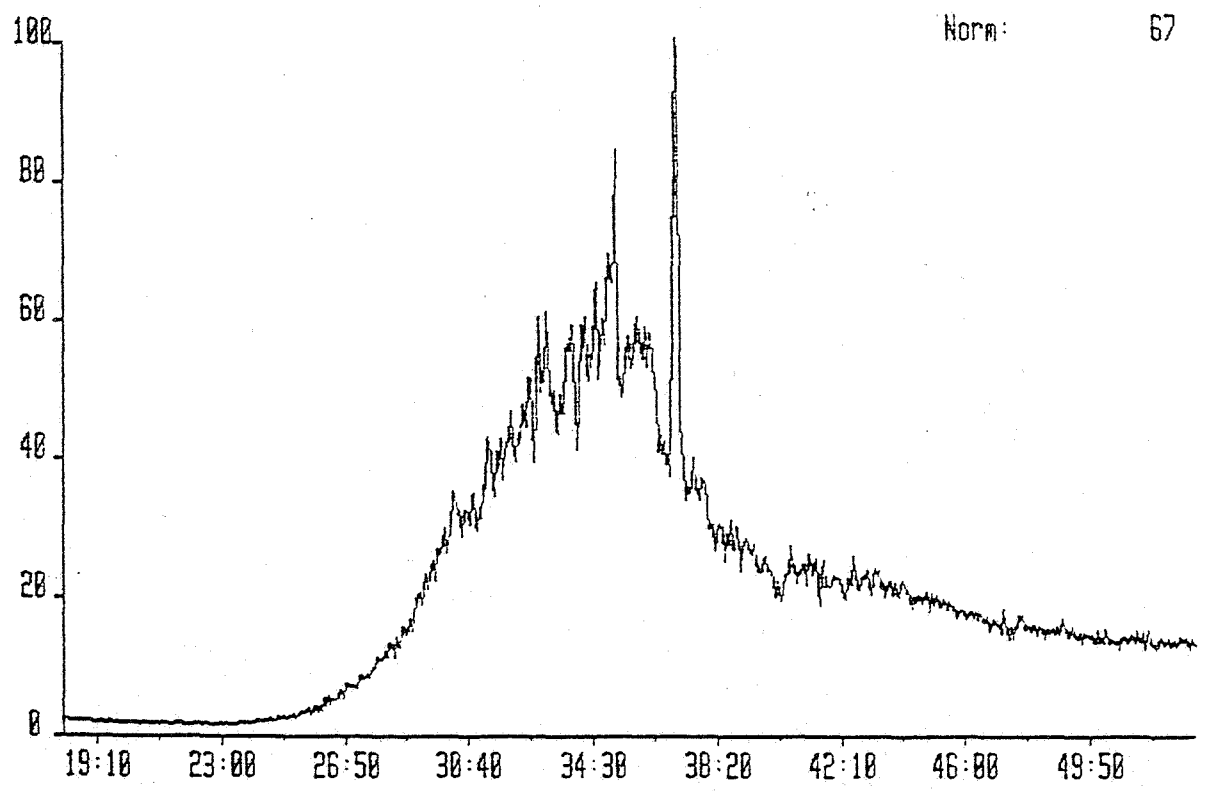
EXAMPLE OF PEAK IDENTIFICATION FOR C28 TRITERPANES



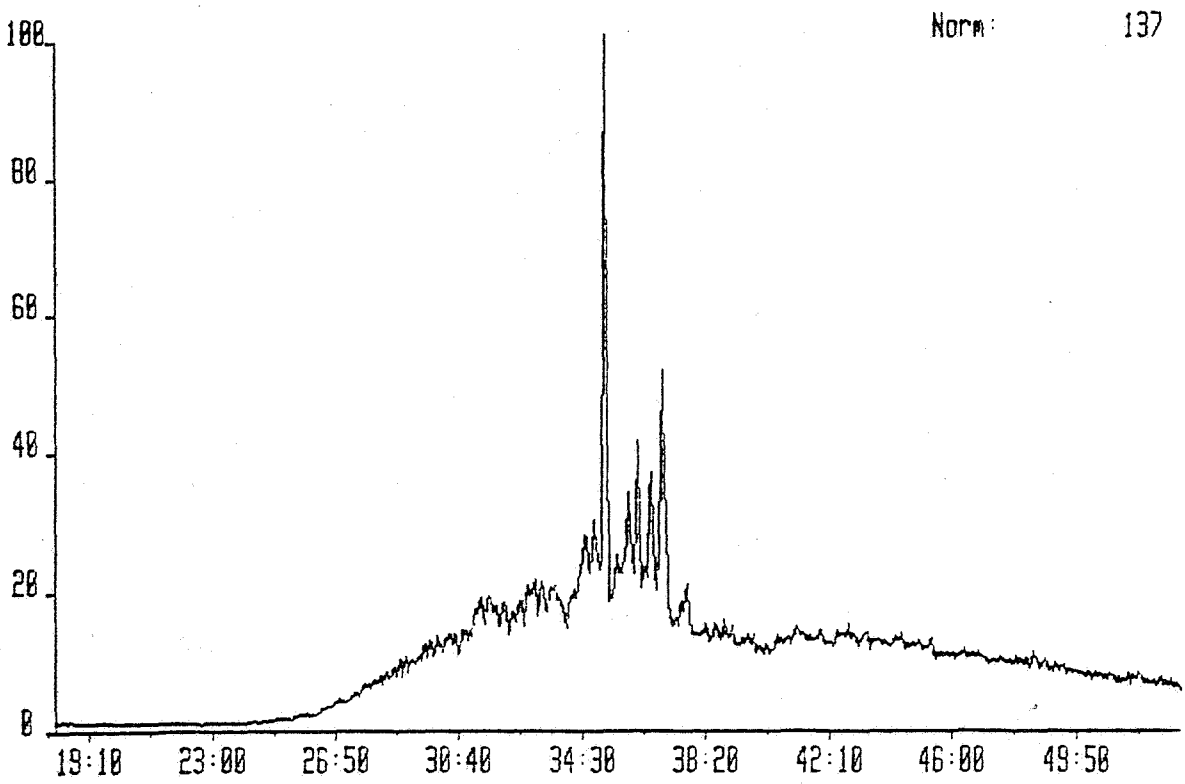
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 384.3757
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



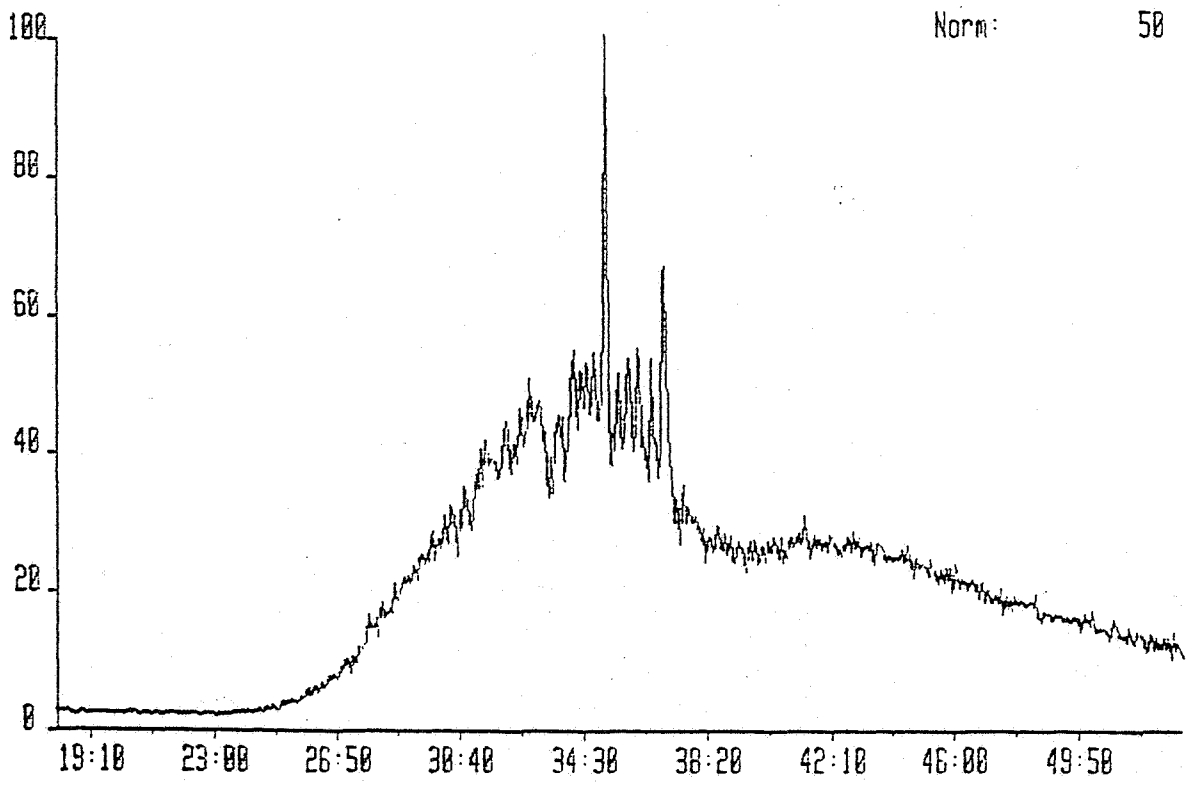

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 384.3757
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 384.3757
Text:WELL 2/6-2, 4430M, SATURATED FRACTION




CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 384.3757
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



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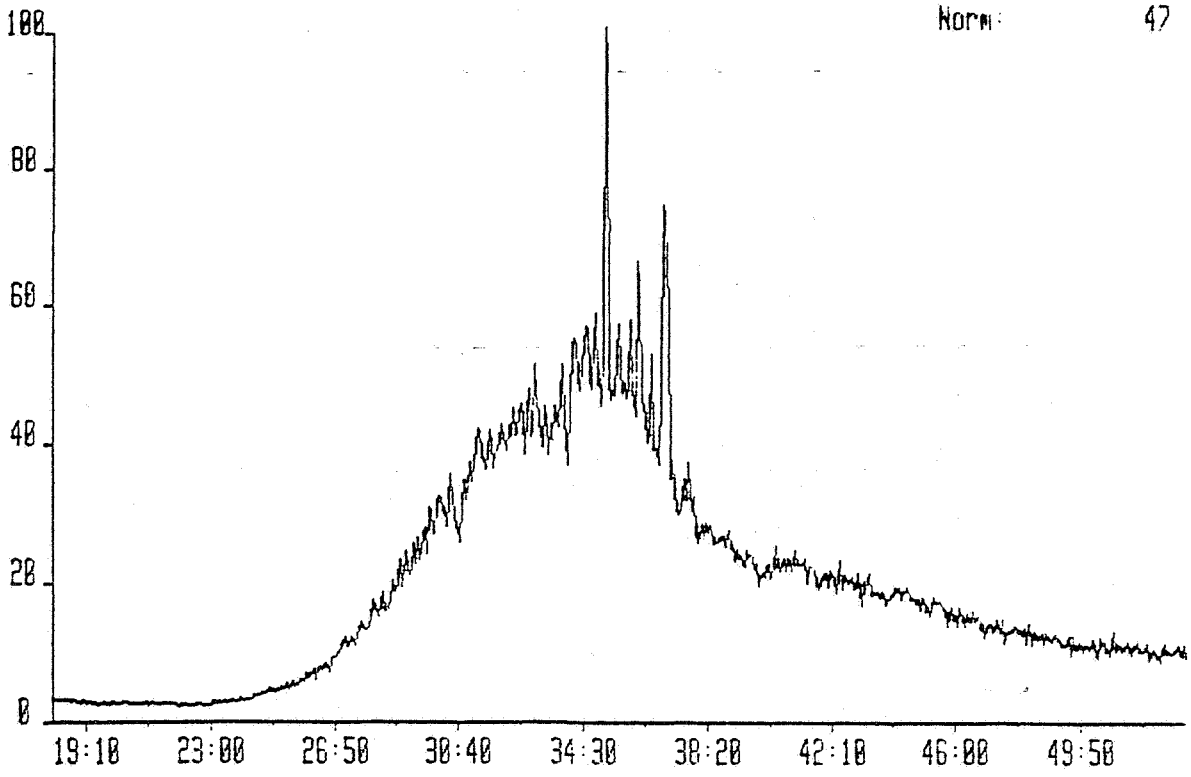
CGSAT6 24-NOV-87 Sir Magnetic TS250 Acnt GEOLAB System SAT1
Sample 14 Injection 1 Group 1 Mass 384.3757
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



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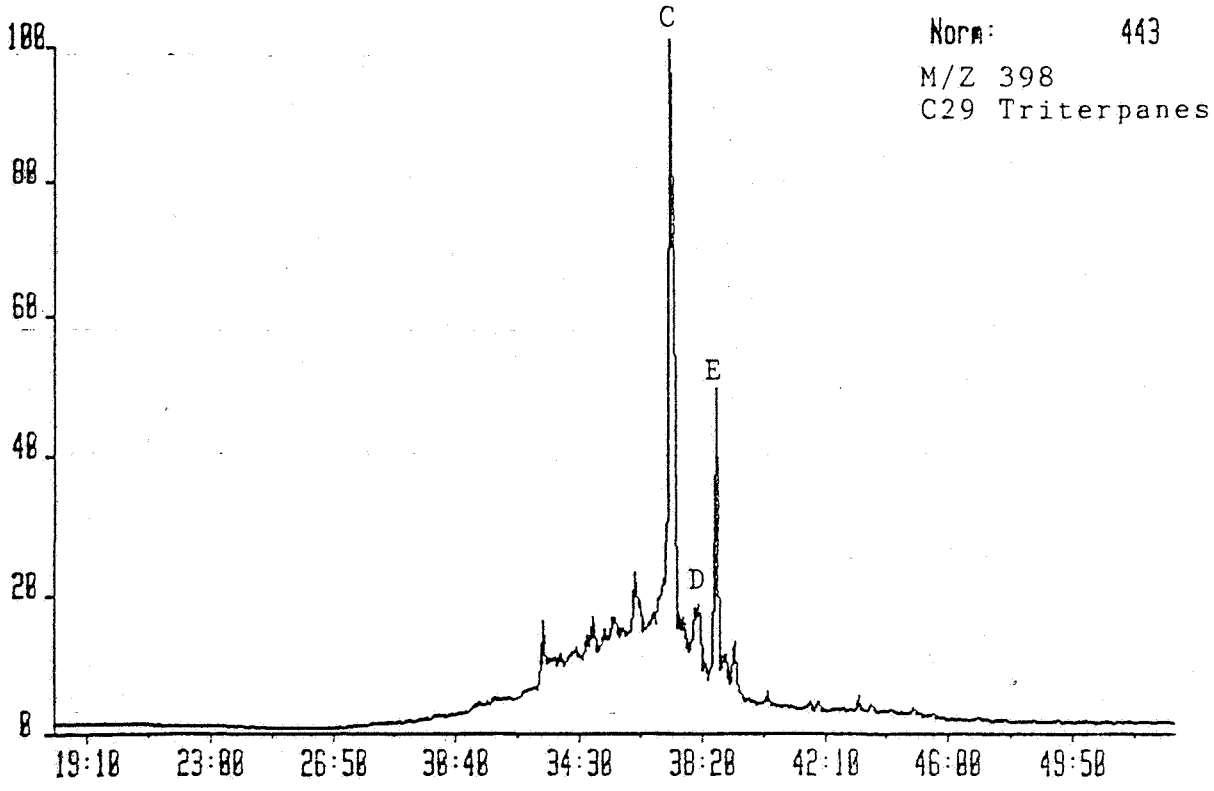
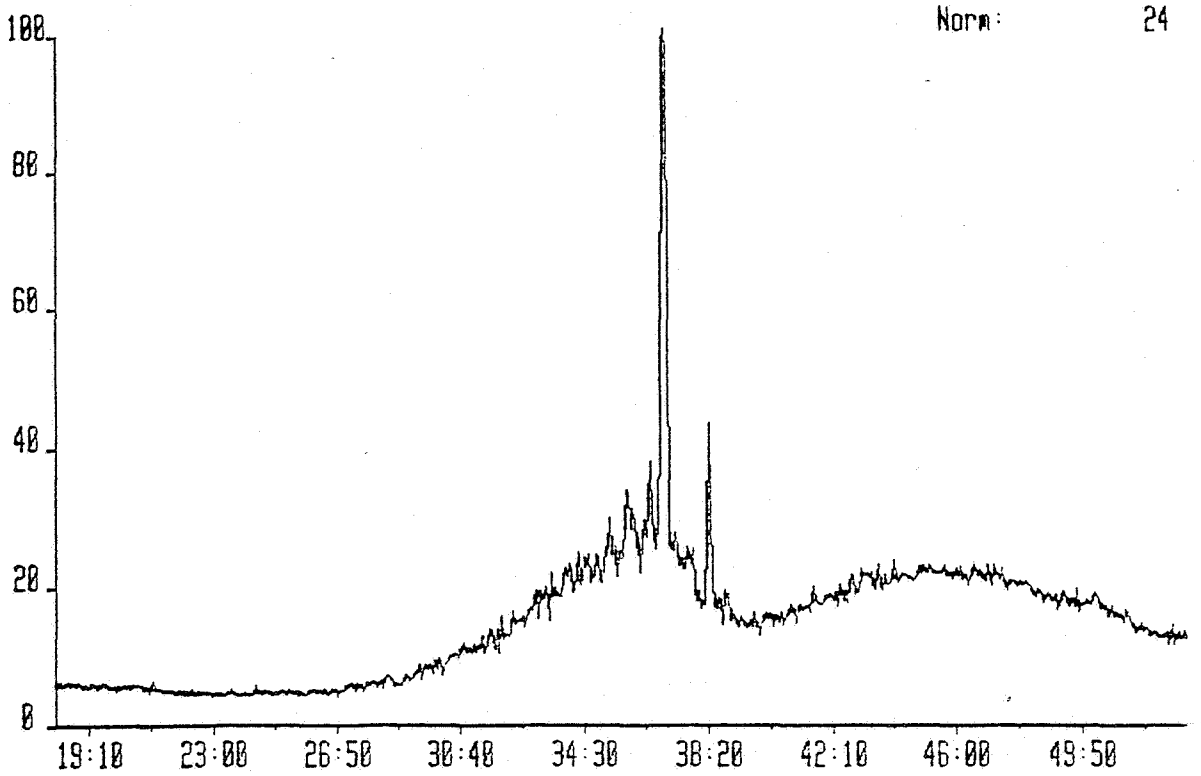
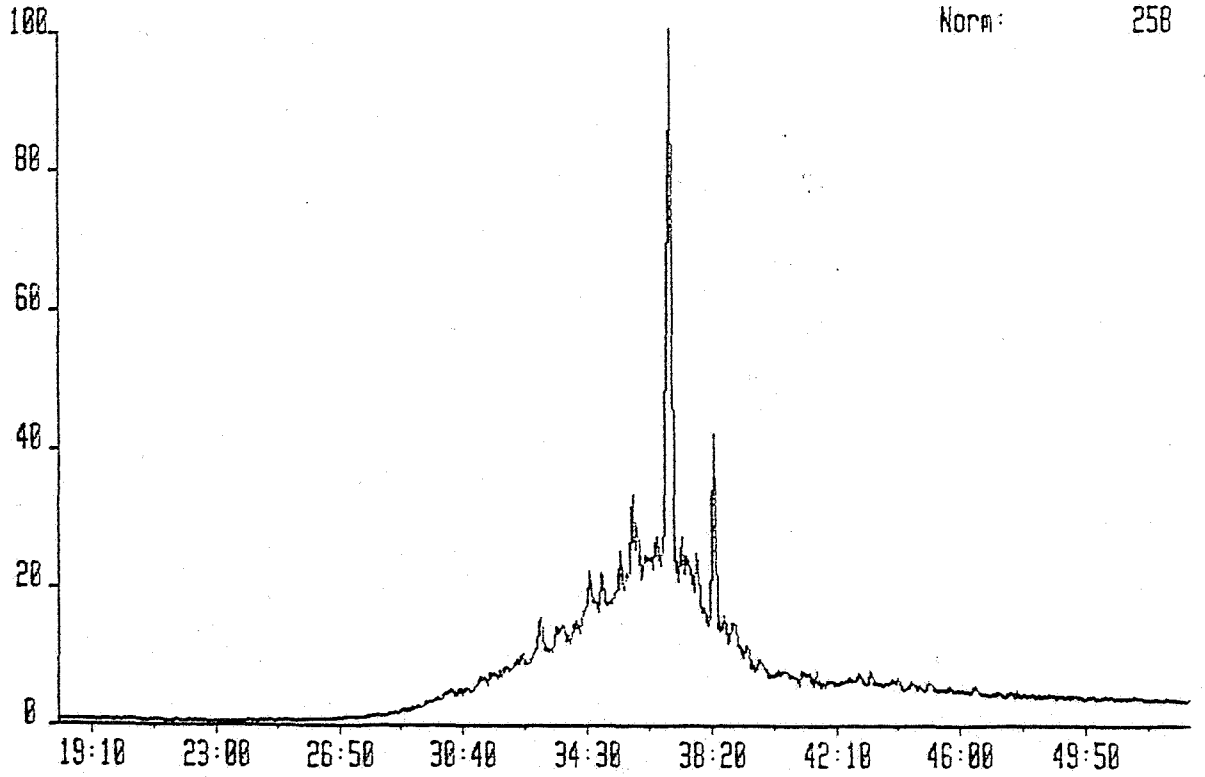
# EXAMPLE OF PEAK IDENTIFICATION FOR C29 TRITERPANES



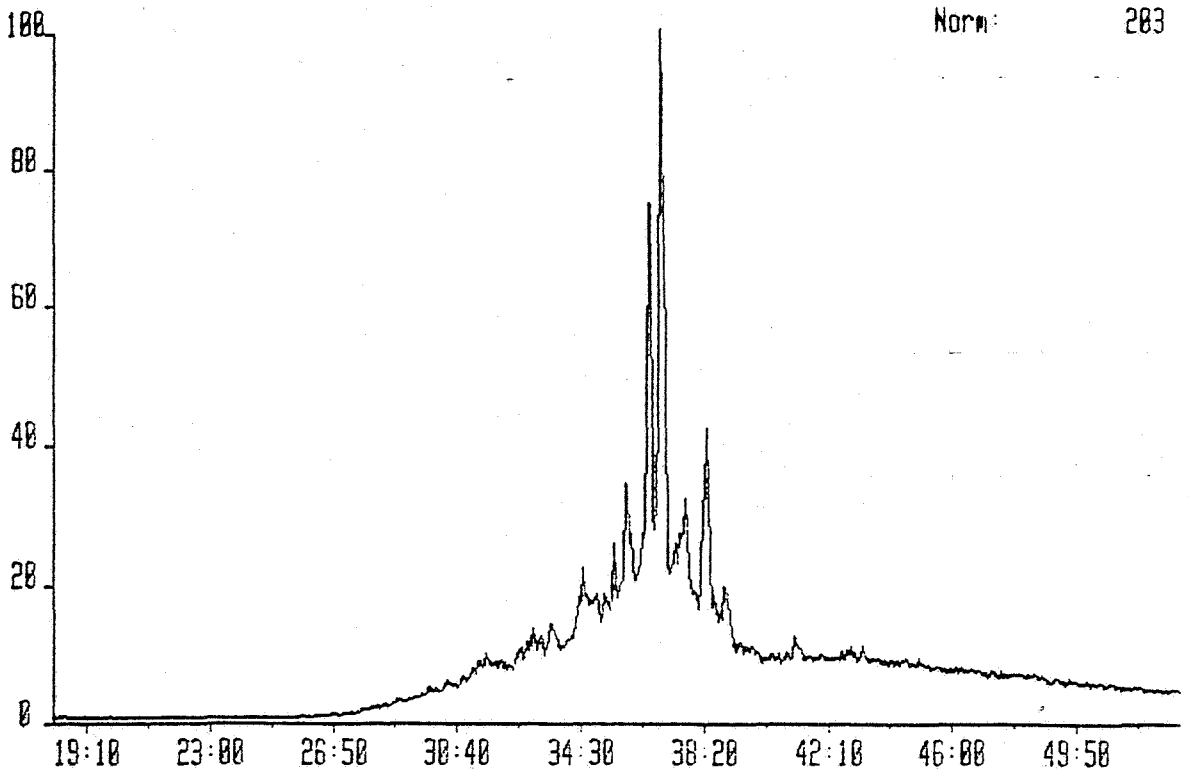
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 398.3914
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



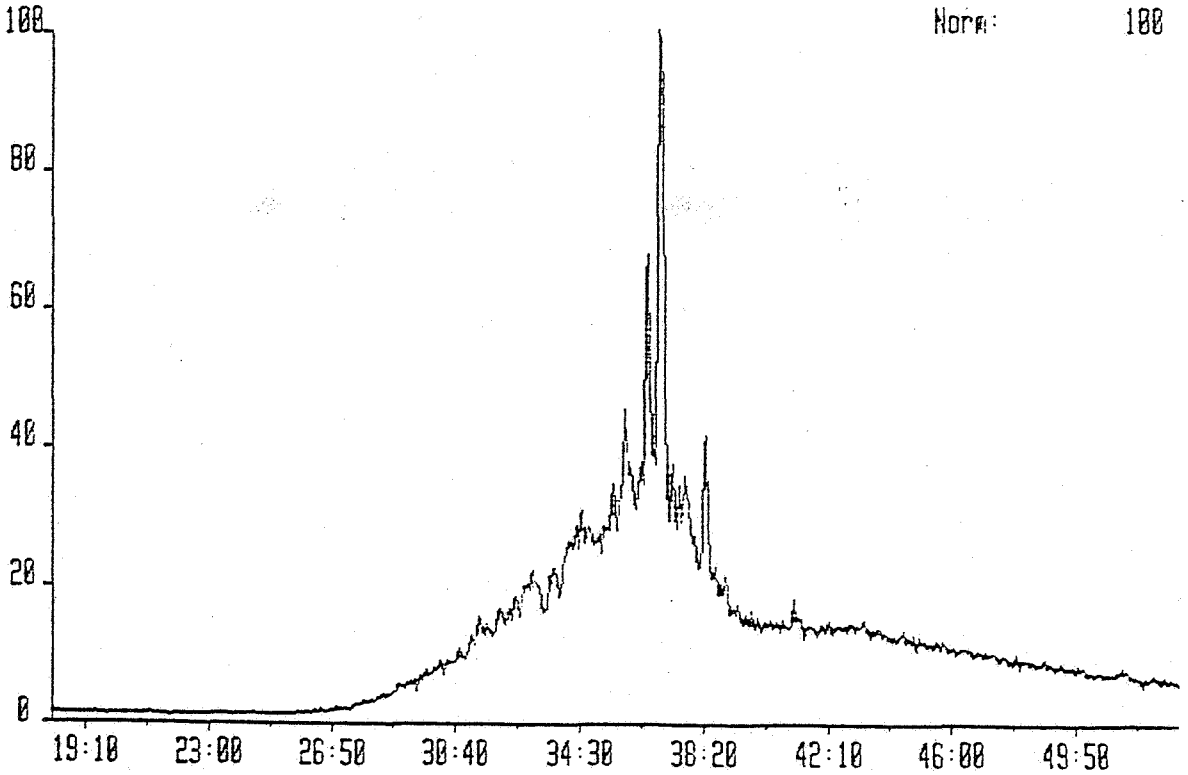

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 398.3914
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 398.3914
Text:WELL 2/6-2, 4430M, SATURATED FRACTION




CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 398.3914
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



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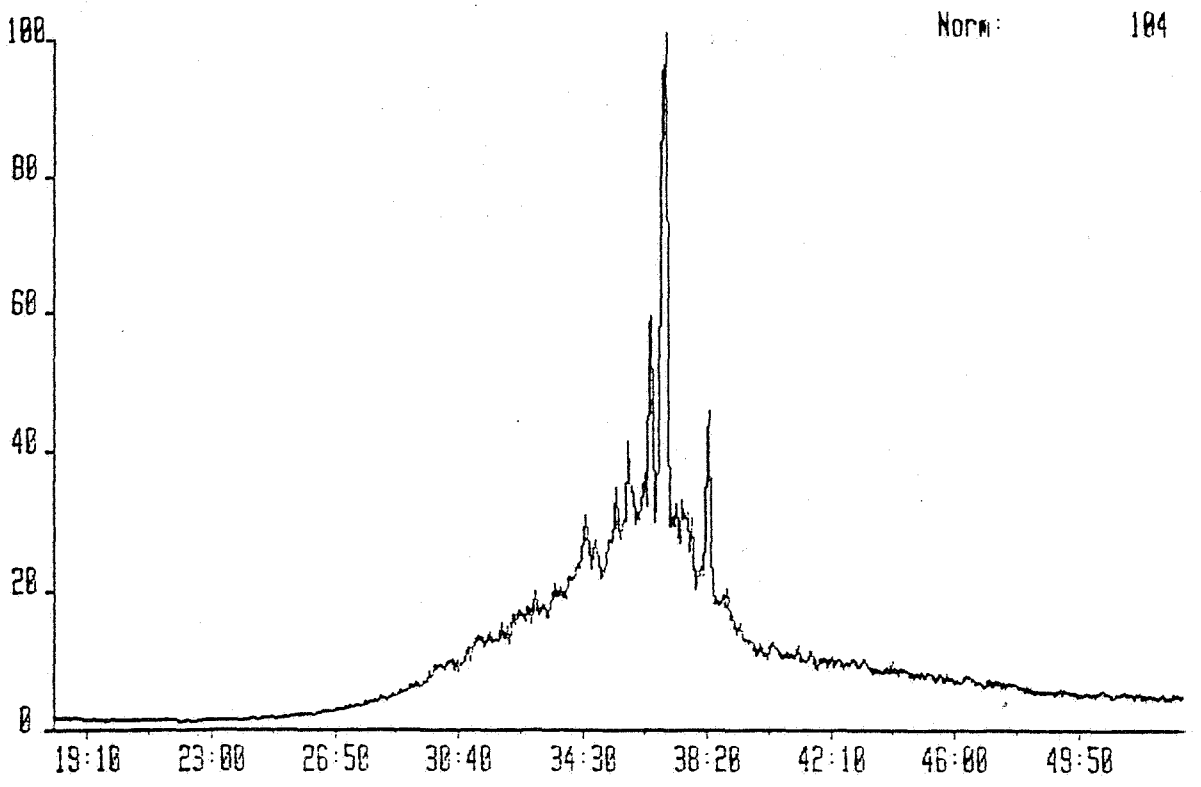
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 398.3914
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



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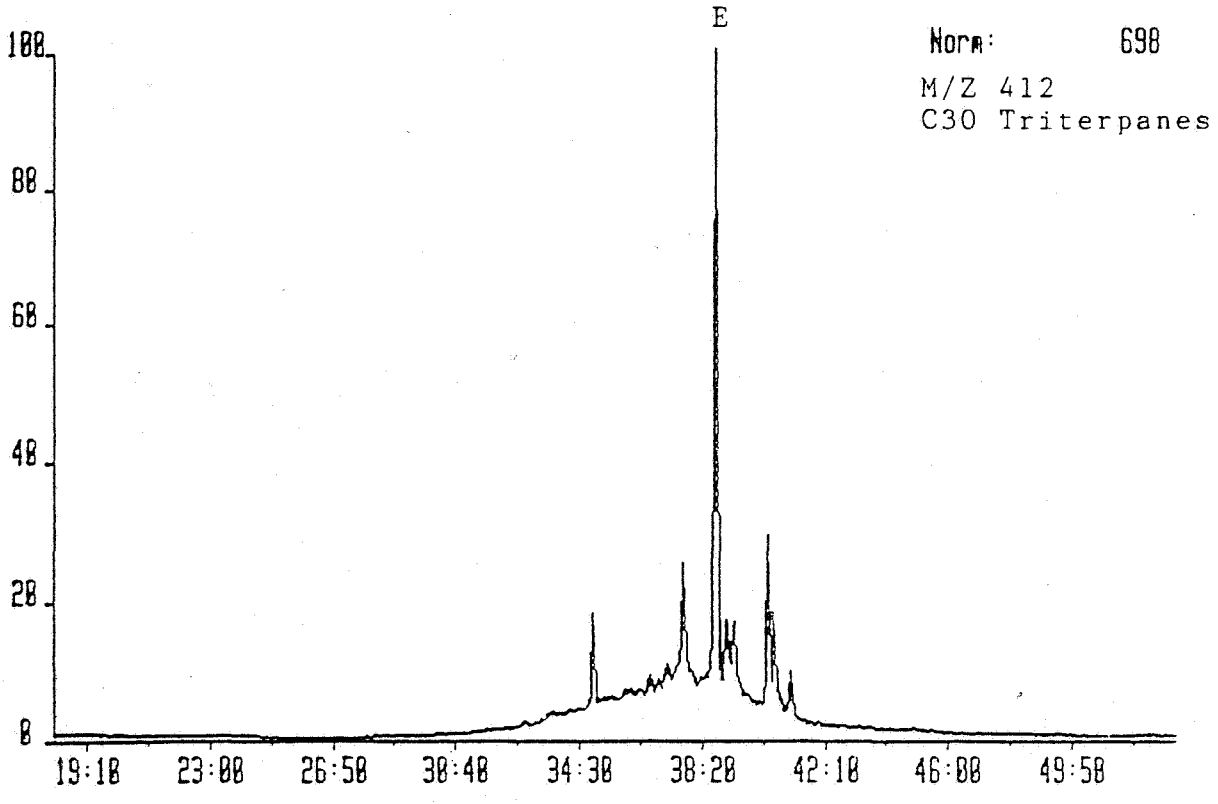
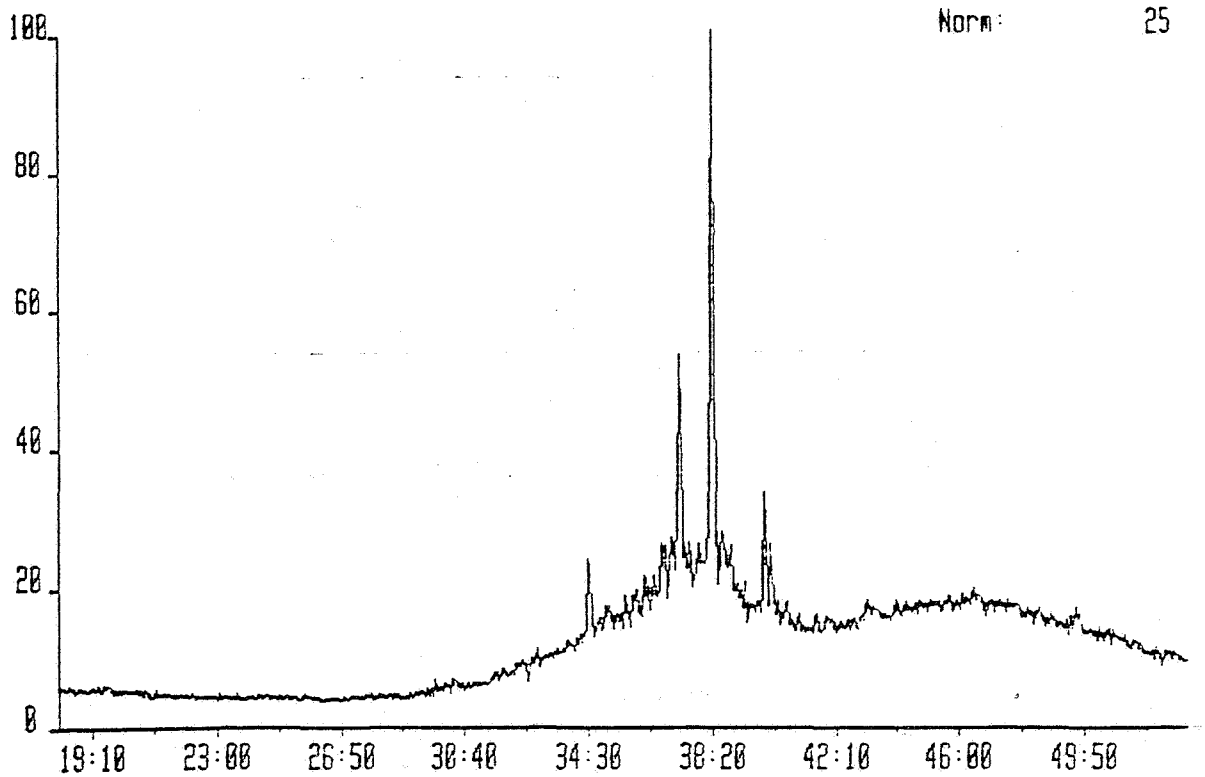
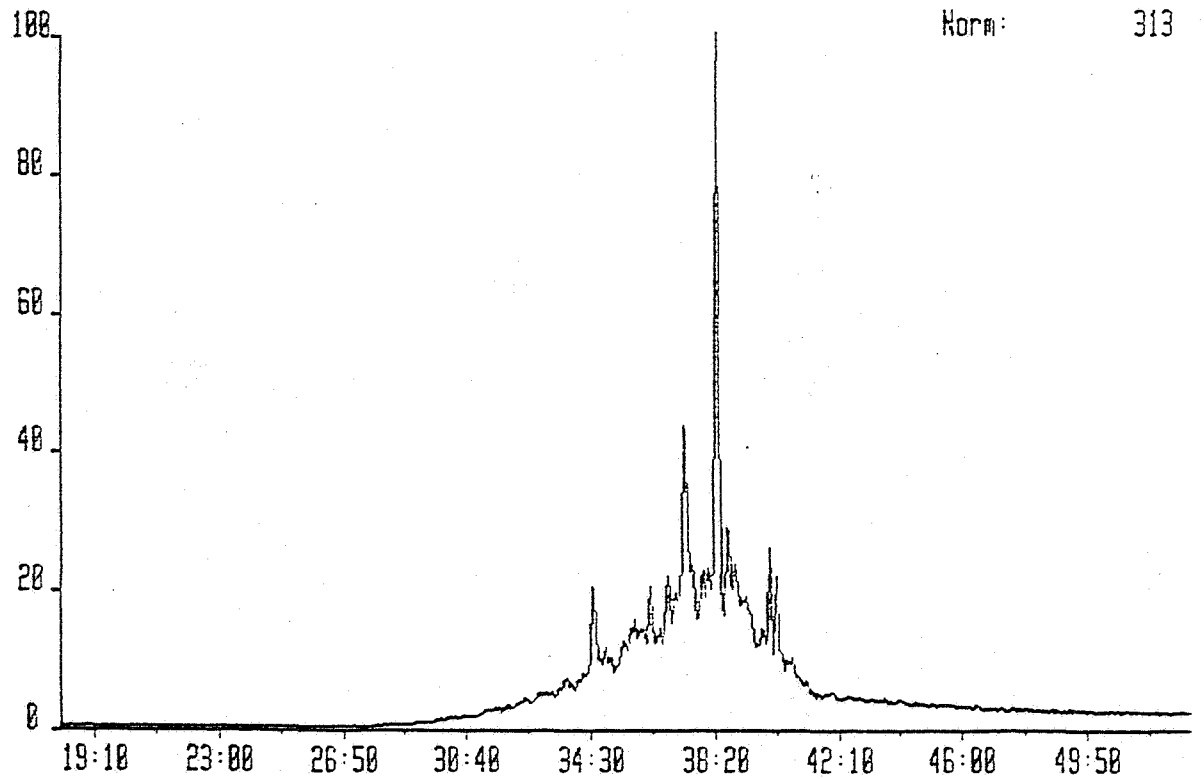
EXAMPLE OF PEAK IDENTIFICATION FOR C30 TRITERPANES



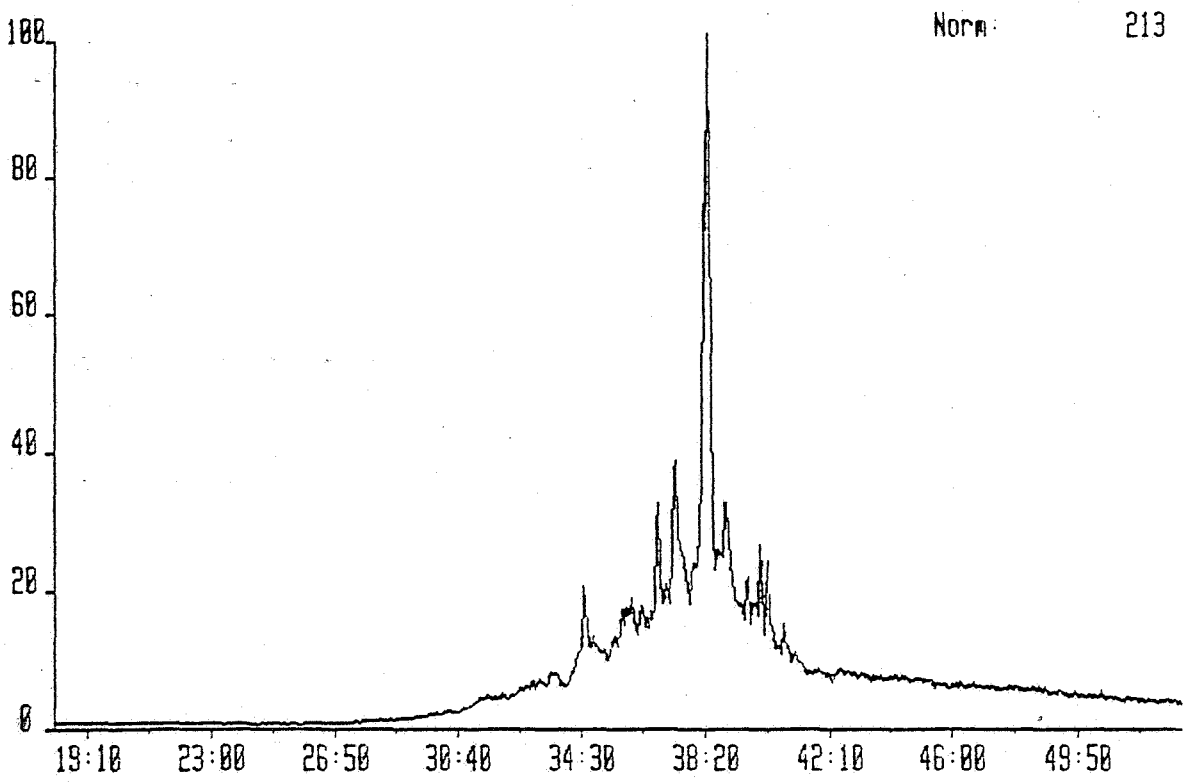
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 412.4069
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



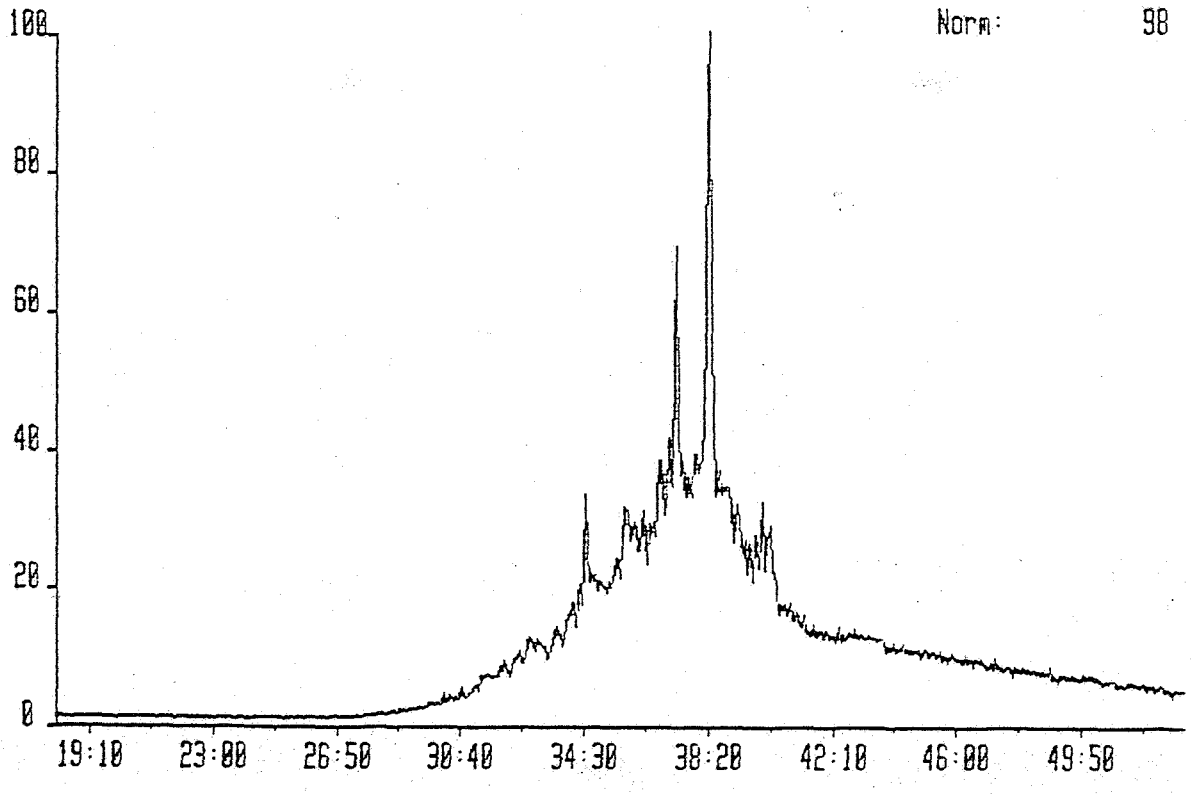

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 412.4069
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 412.4069
Text:WELL 2/6-2, 4430M, SATURATED FRACTION




CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 412.4069
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



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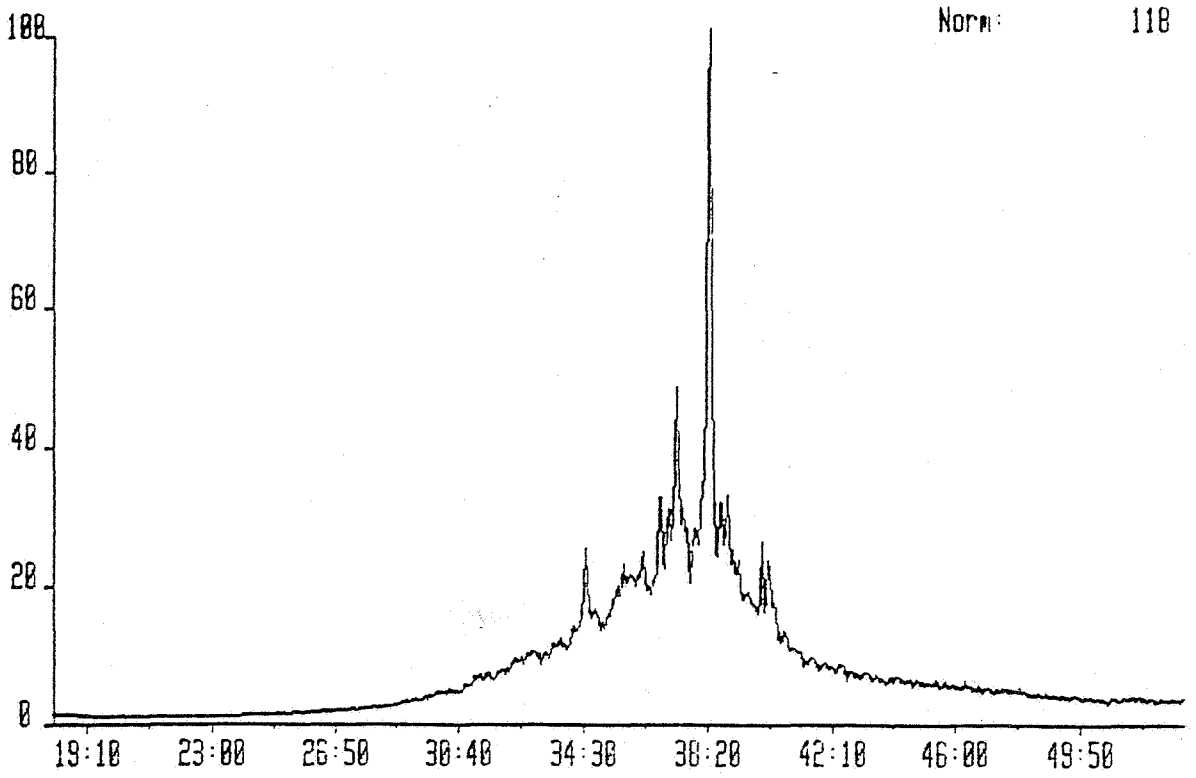
CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System SAT1
Sample 14 Injection 1 Group 1 Mass 412.4069
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



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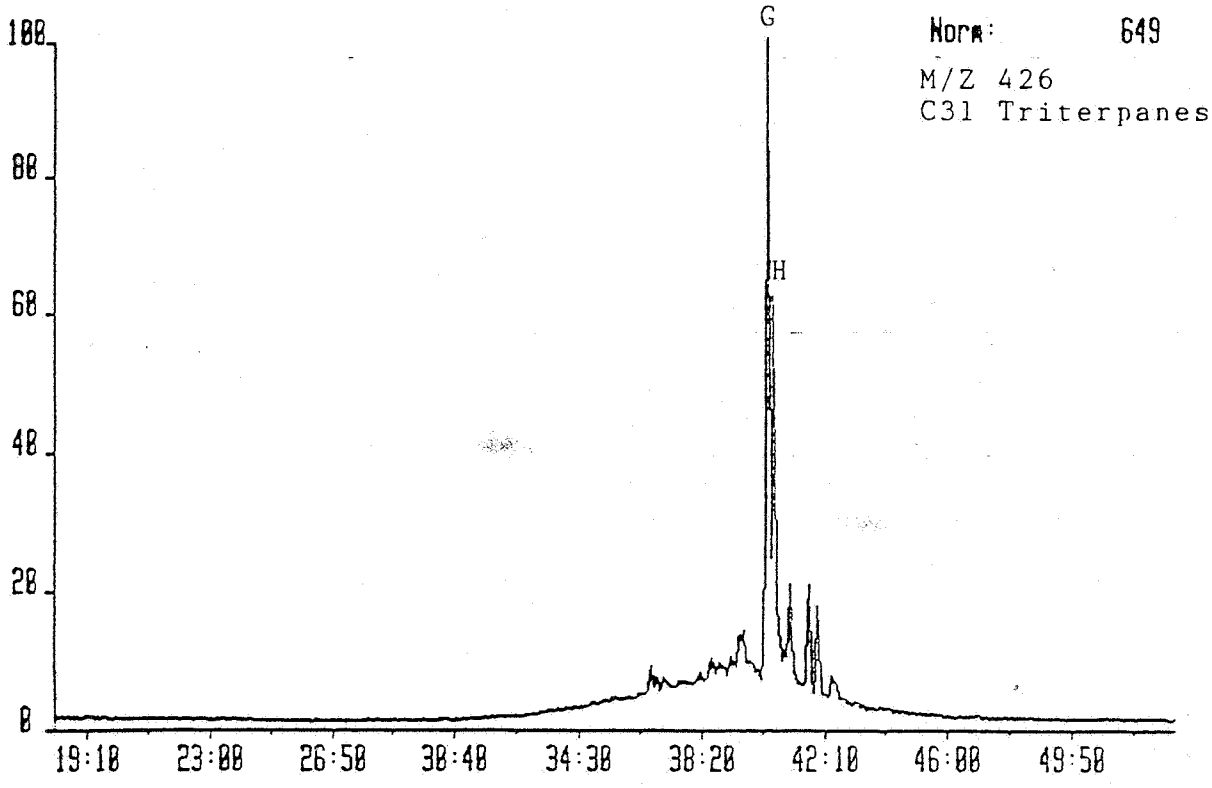
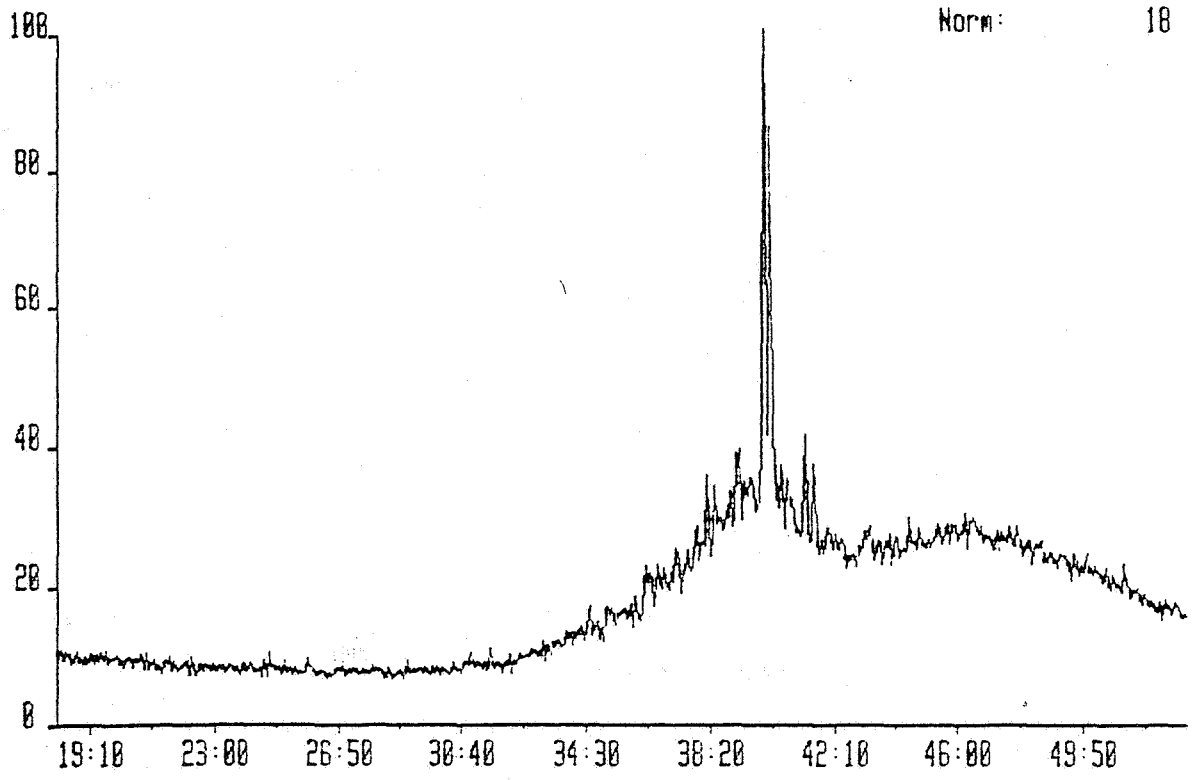
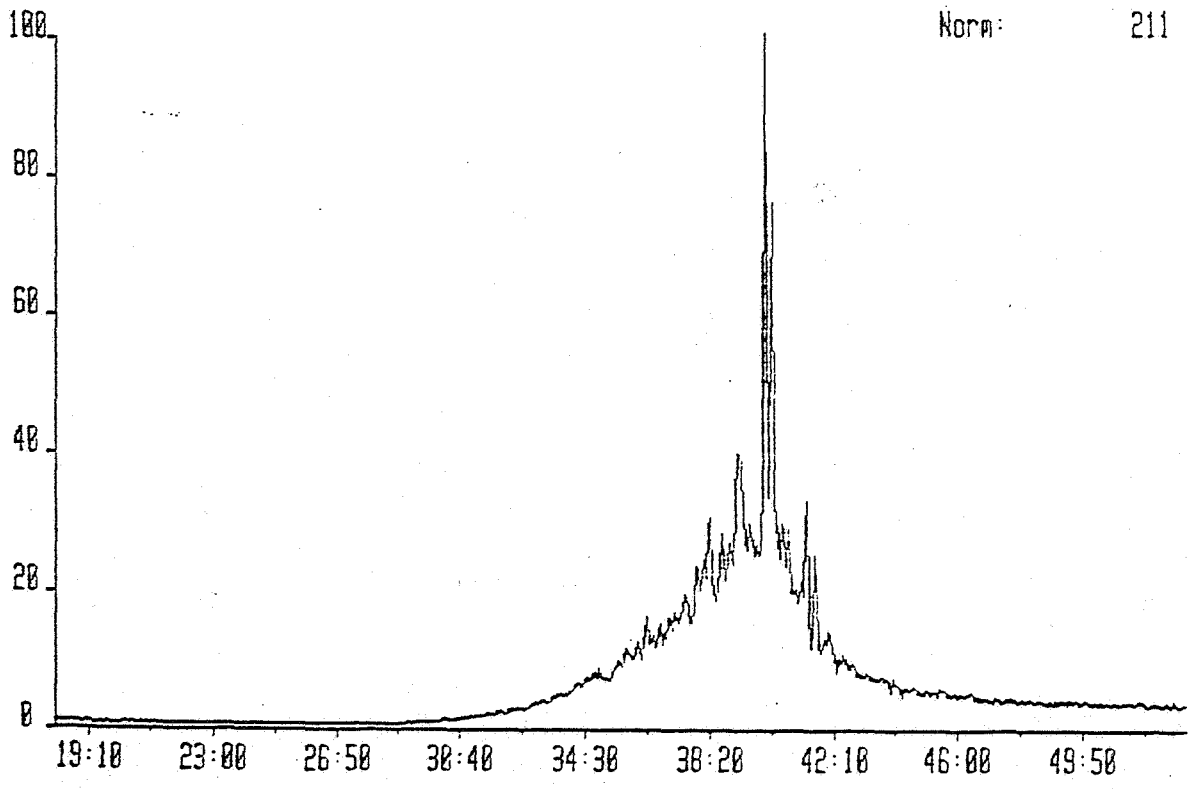
EXAMPLE OF PEAK IDENTIFICATION FOR C31 TRITERPANES



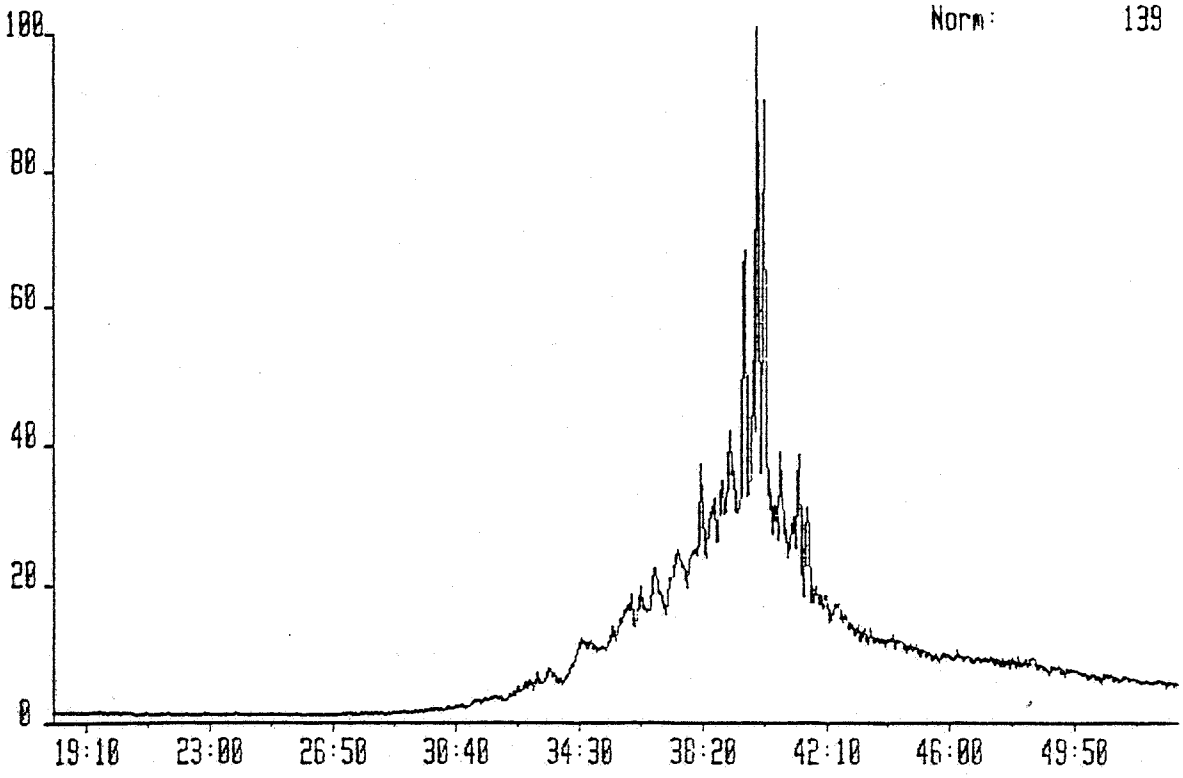
CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 426.4226
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



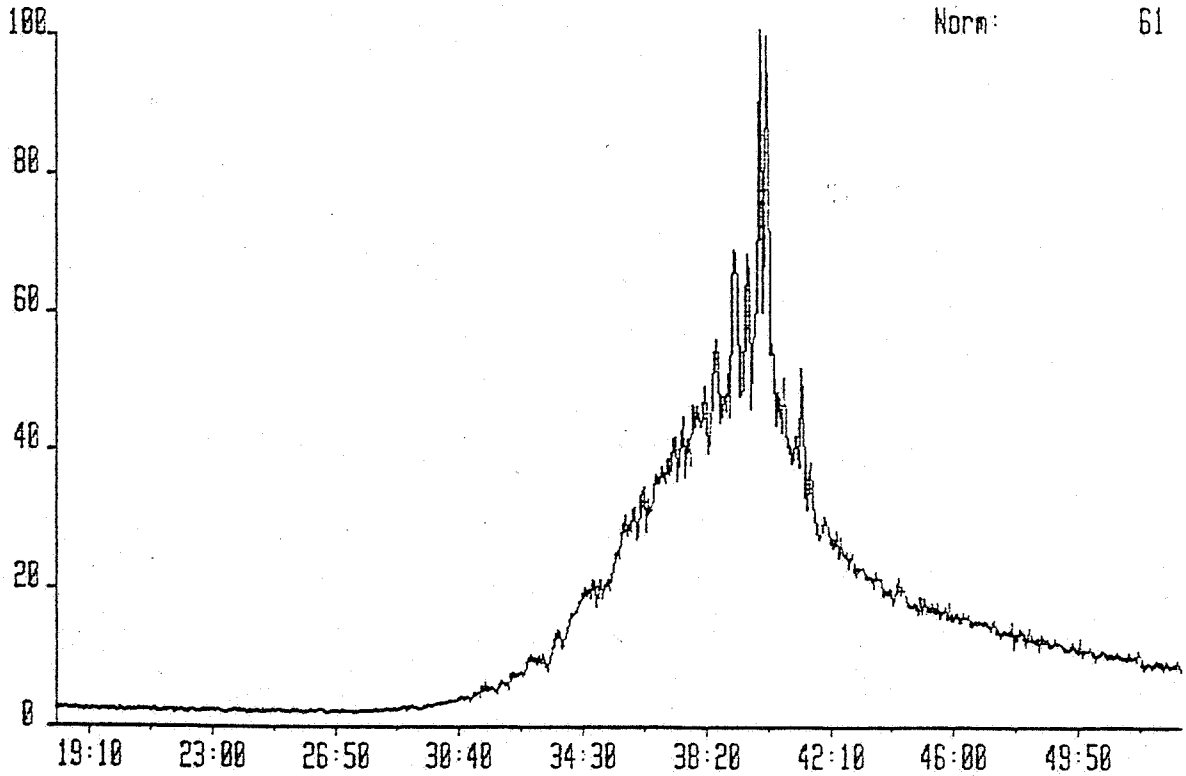

CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 426.4226
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 426.4226
Text:WELL 2/6-2, 4430M, SATURATED FRACTION




CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 426.4226
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



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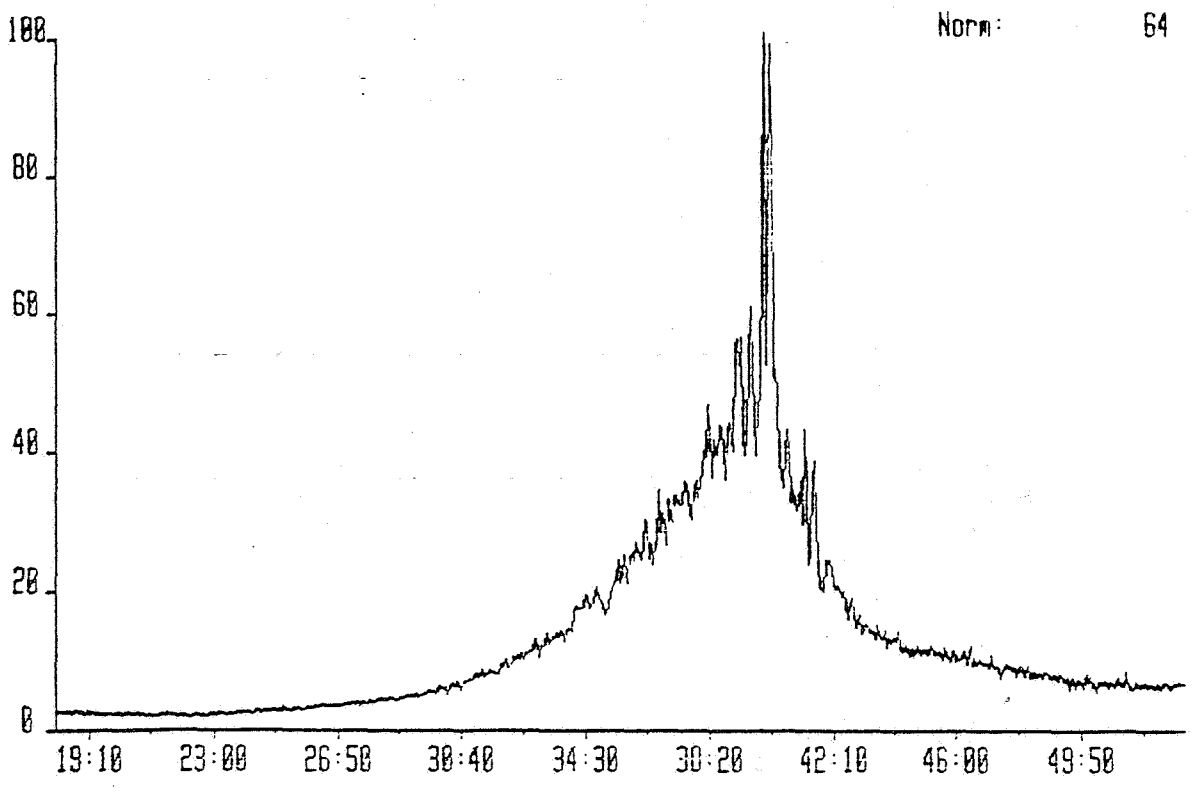
CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 426.4226
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



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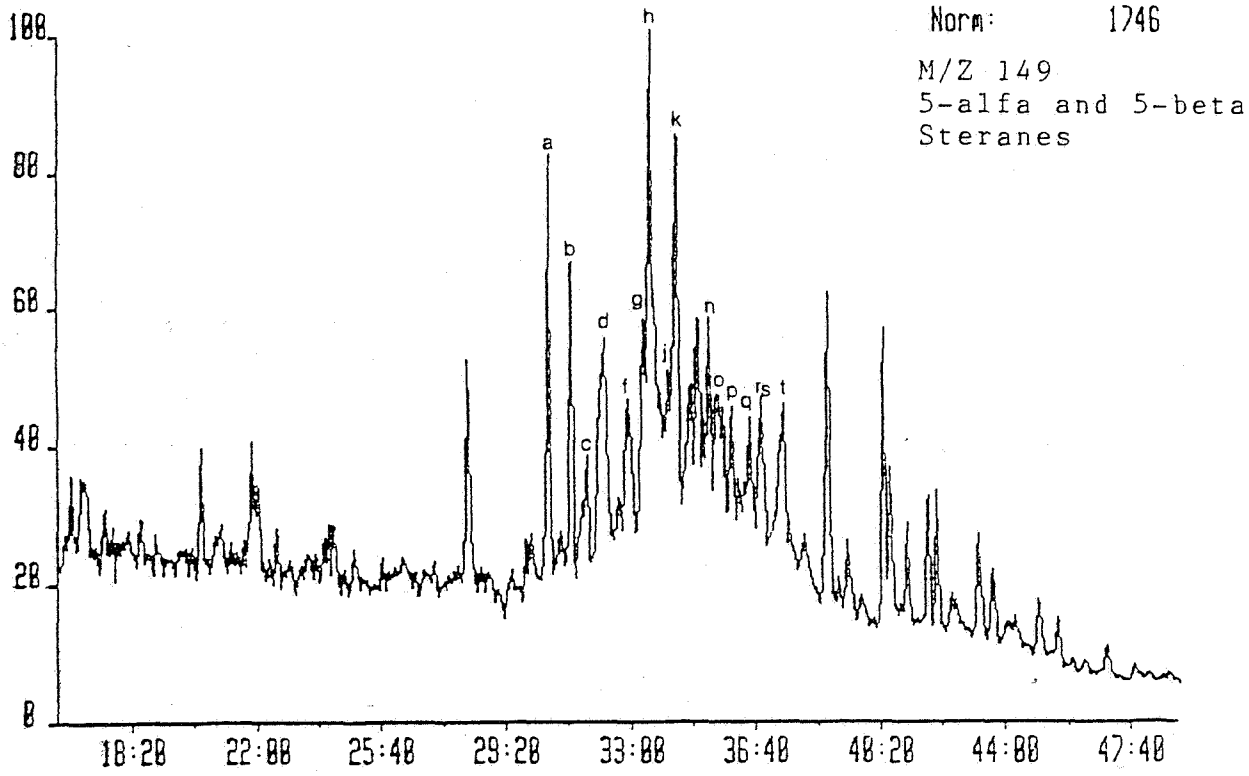
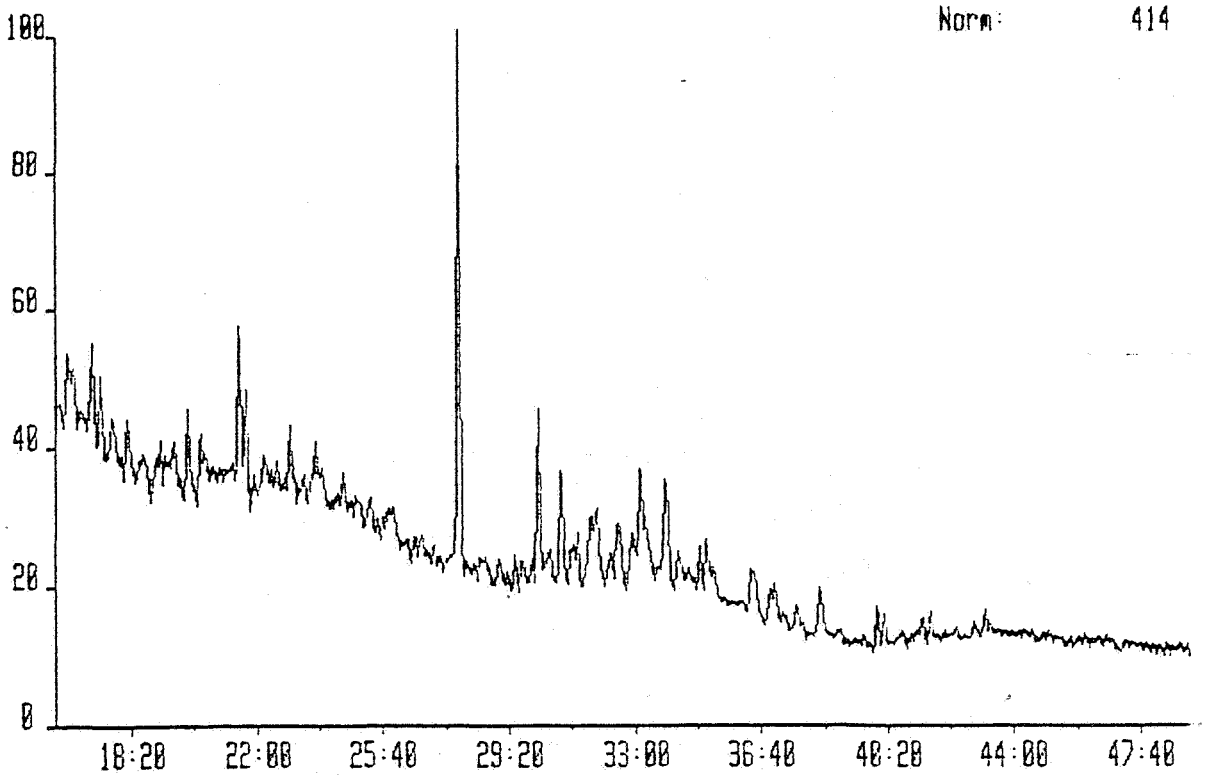
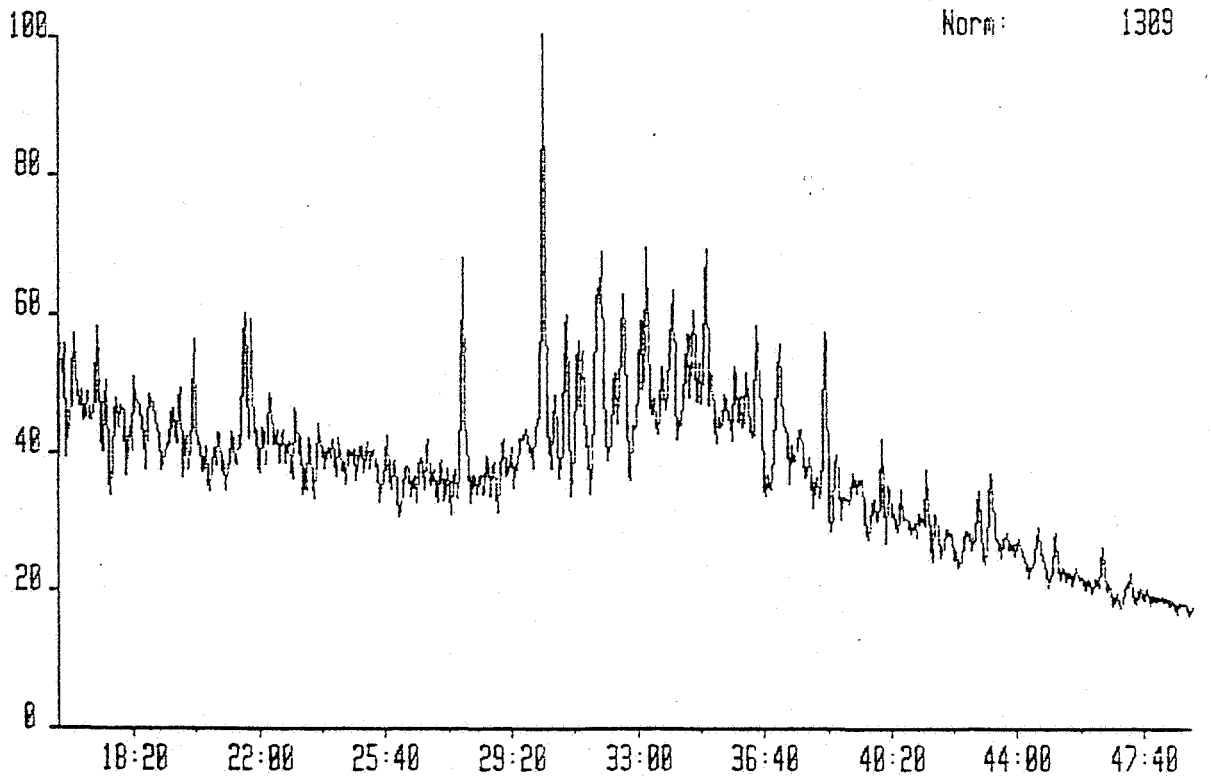
# EXAMPLE OF PEAK IDENTIFICATION FOR 5-ALFA AND 5-BETA STERANES



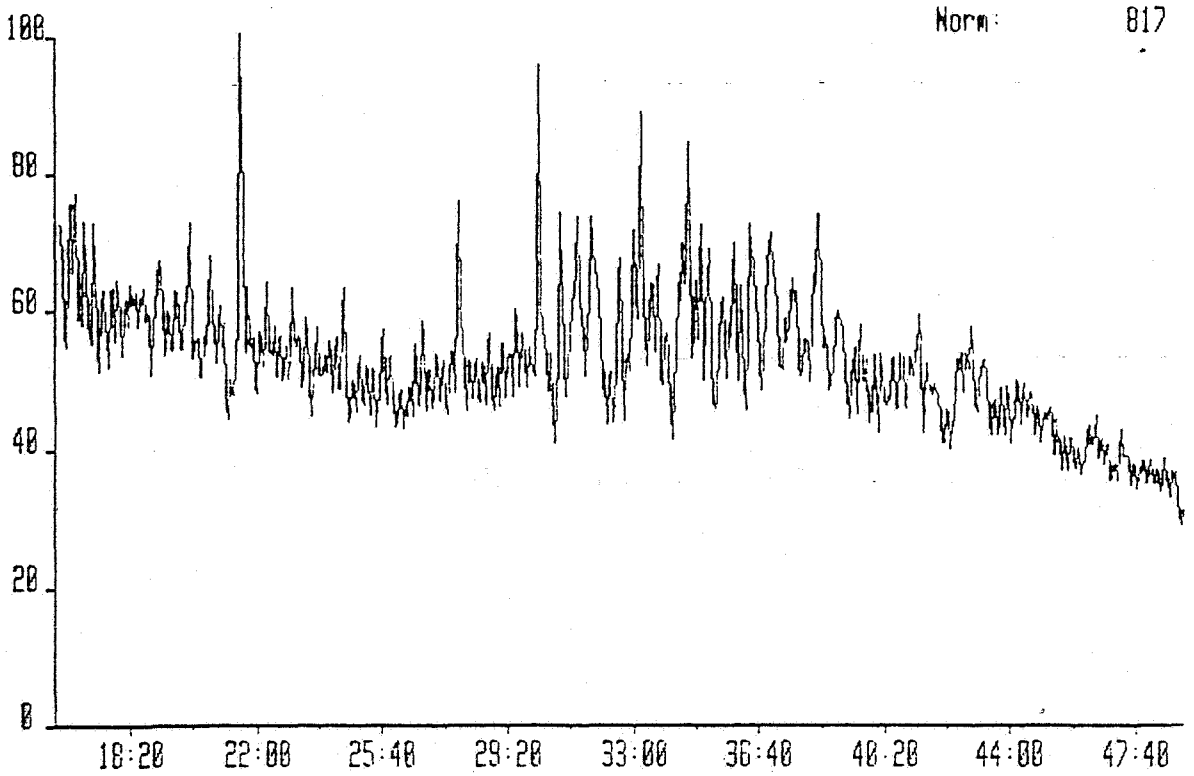
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 149.1328
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



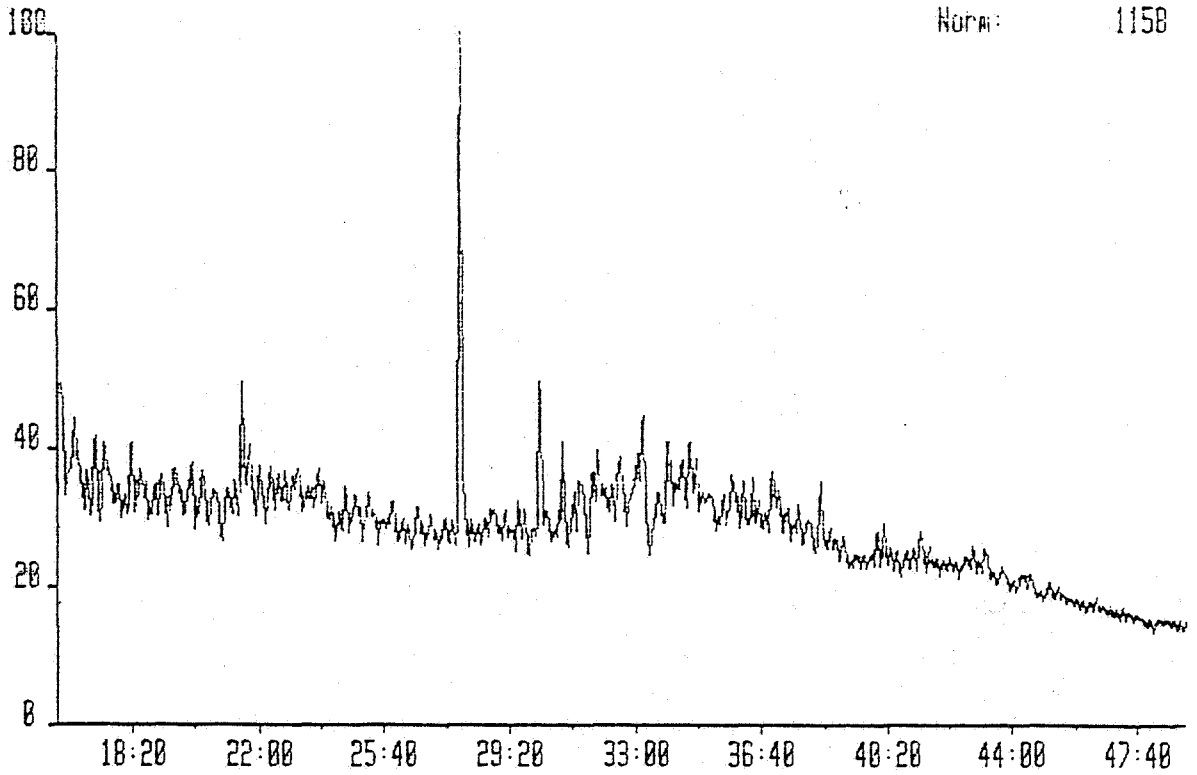

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 149.1328
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 149.1328
Text:WELL 2/6-2, 4430M, SATURATED FRACTION




CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 149.1328
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



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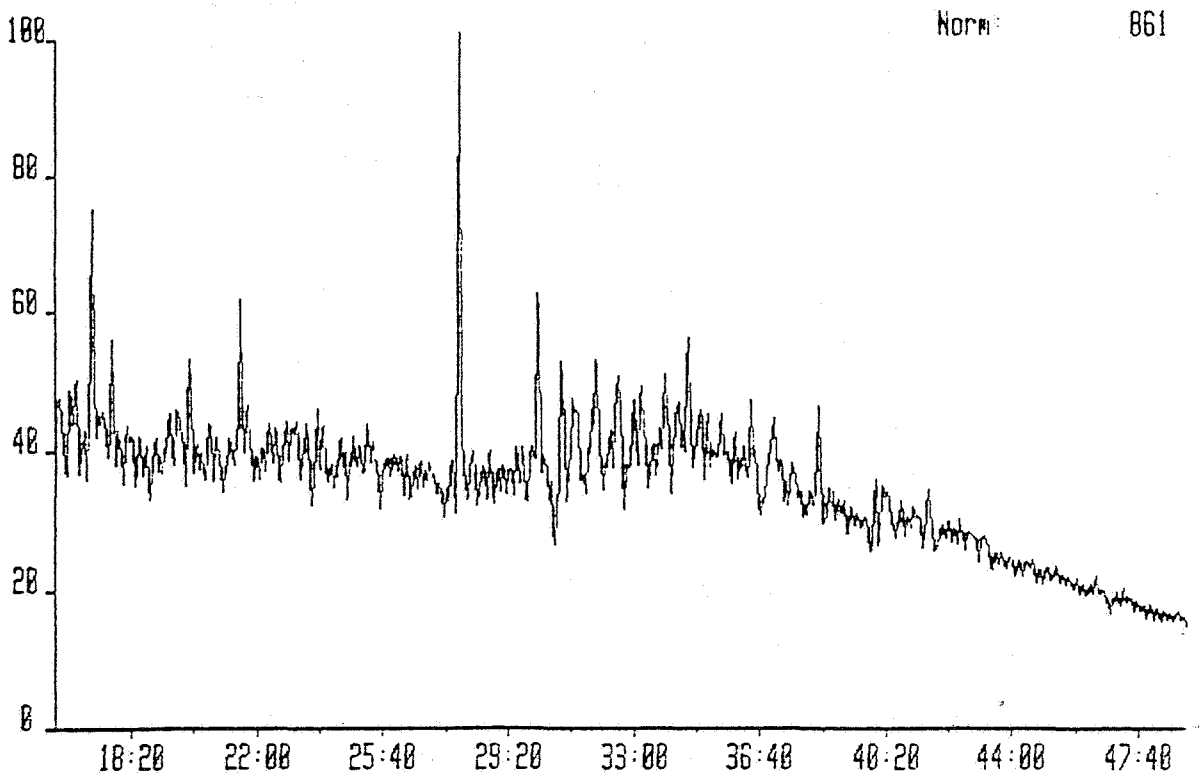
CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System SAT1
Sample 14 Injection 1 Group 1 Mass 149.1328
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



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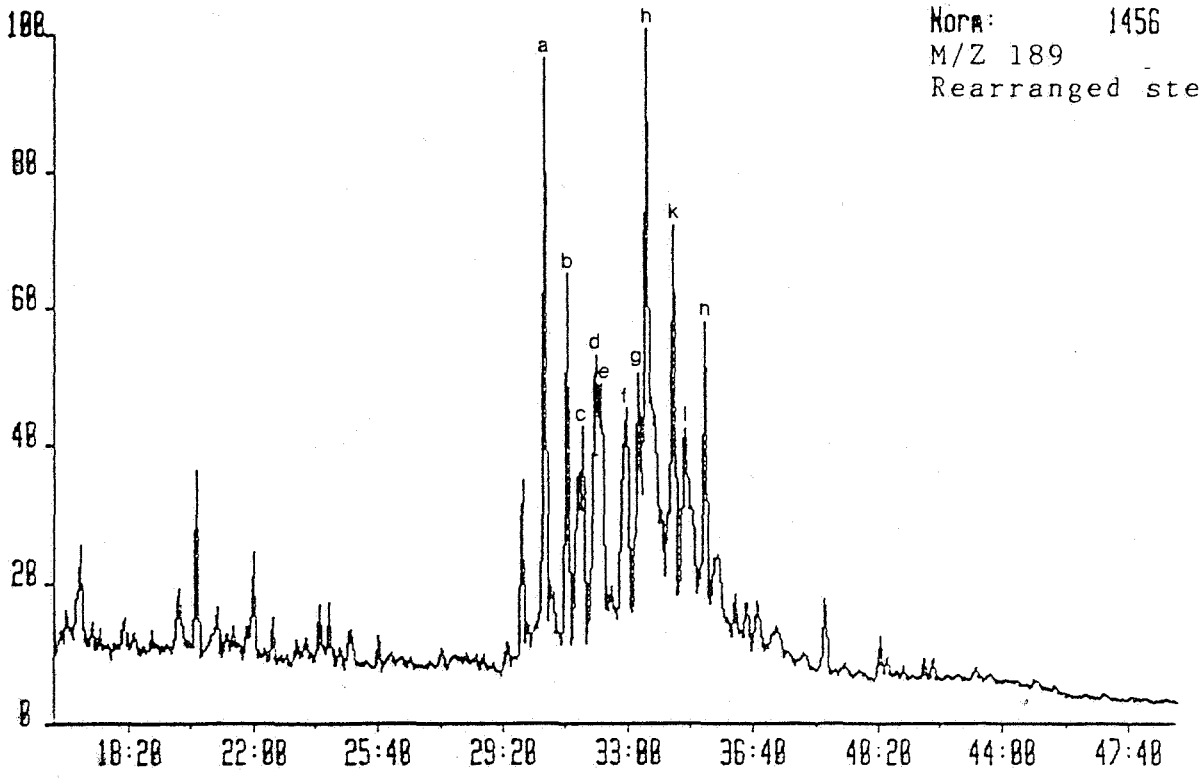
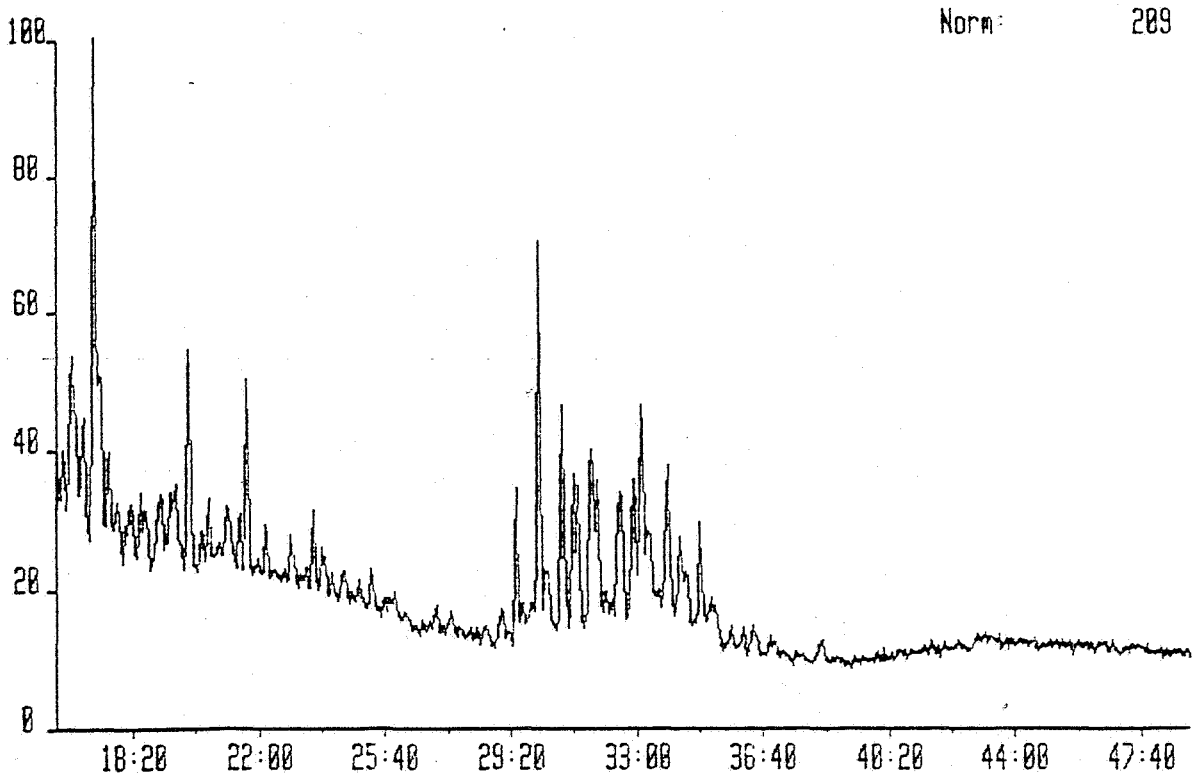
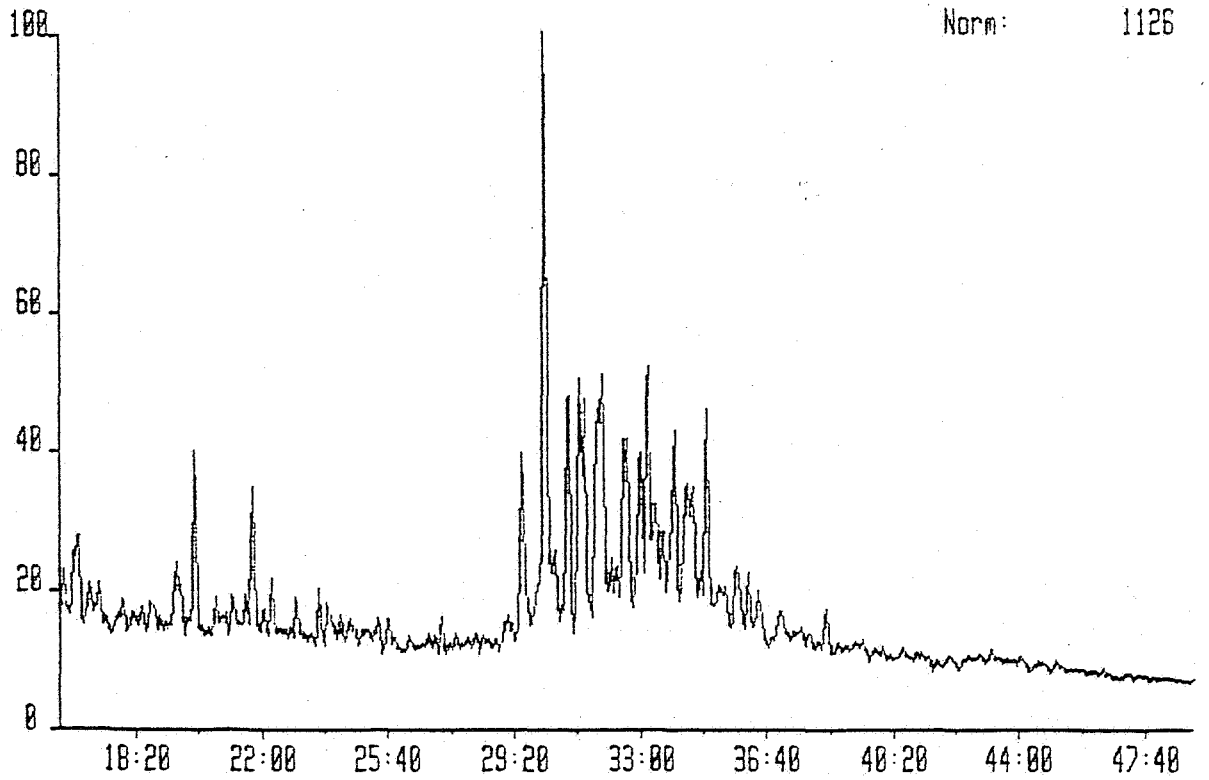
# EXAMPLE OF PEAK IDENTIFICATION FOR REARRANGED STERANES



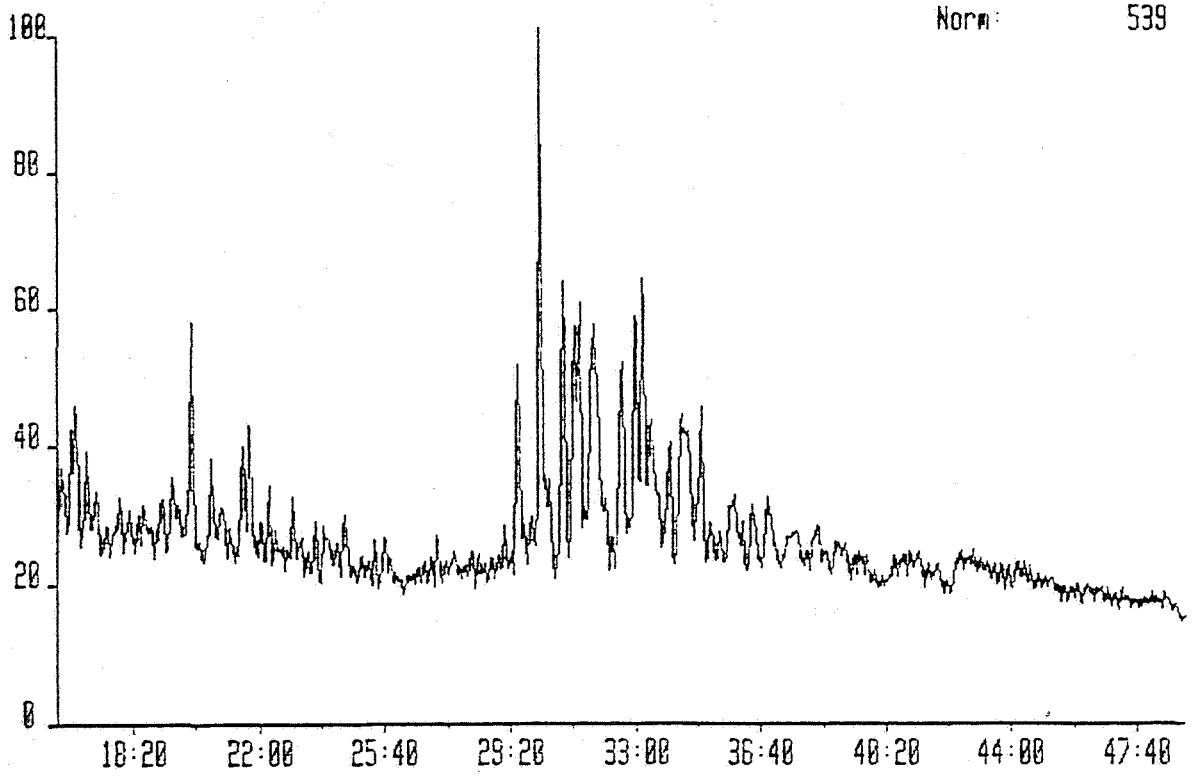
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System SAT1
Sample 10 Injection 1 Group 1 Mass 189.1643
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



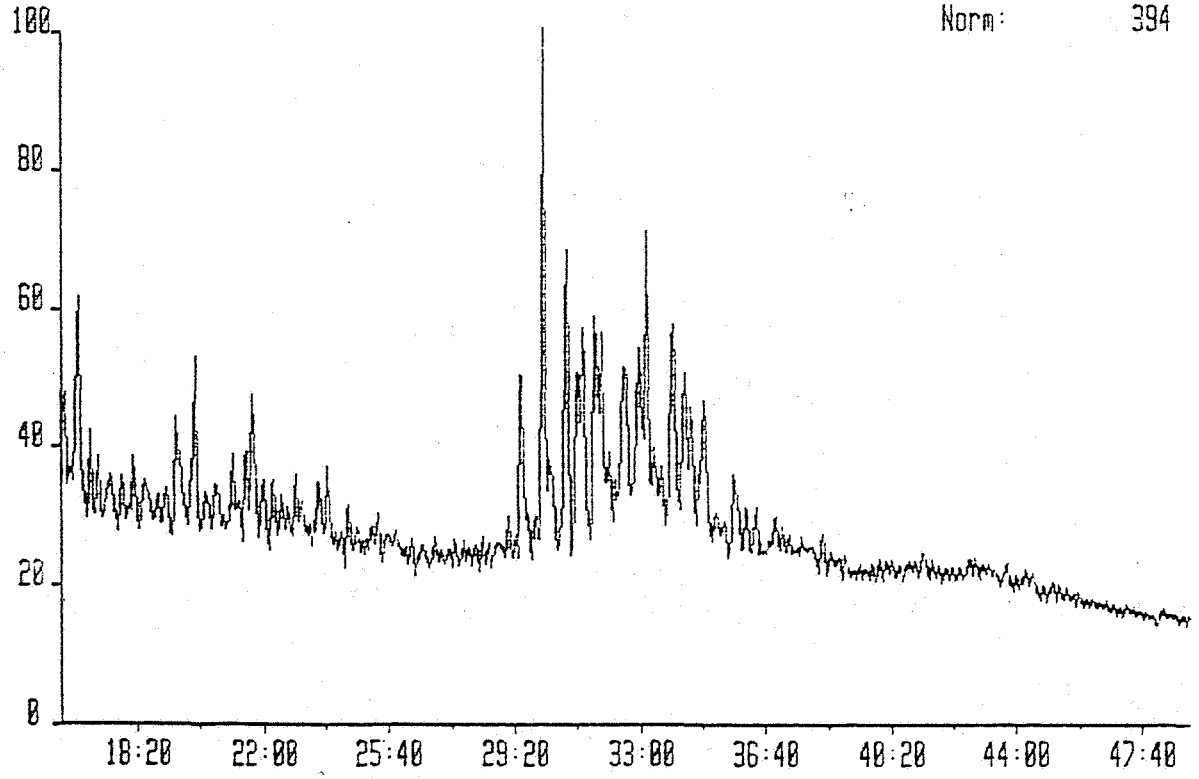

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 189.1643
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 189.1643
Text:WELL 2/6-2, 4430M, SATURATED FRACTION




CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 189.1643
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



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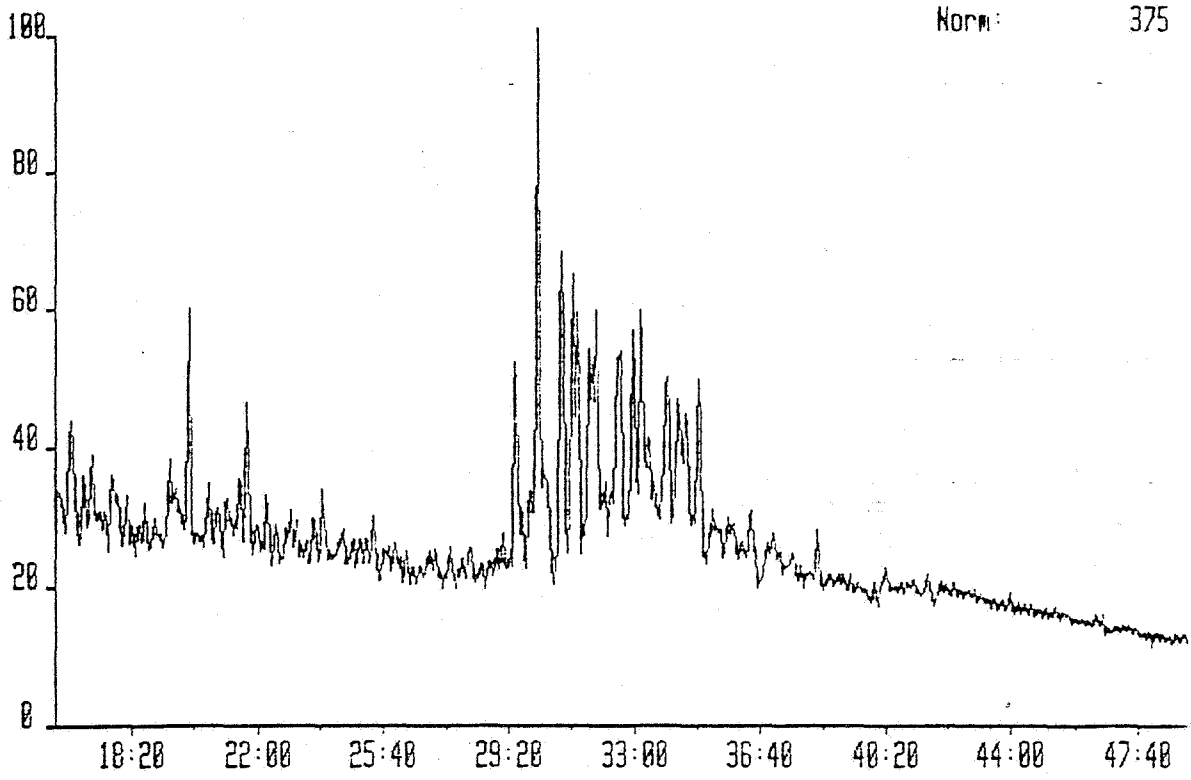
CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 189.1643
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



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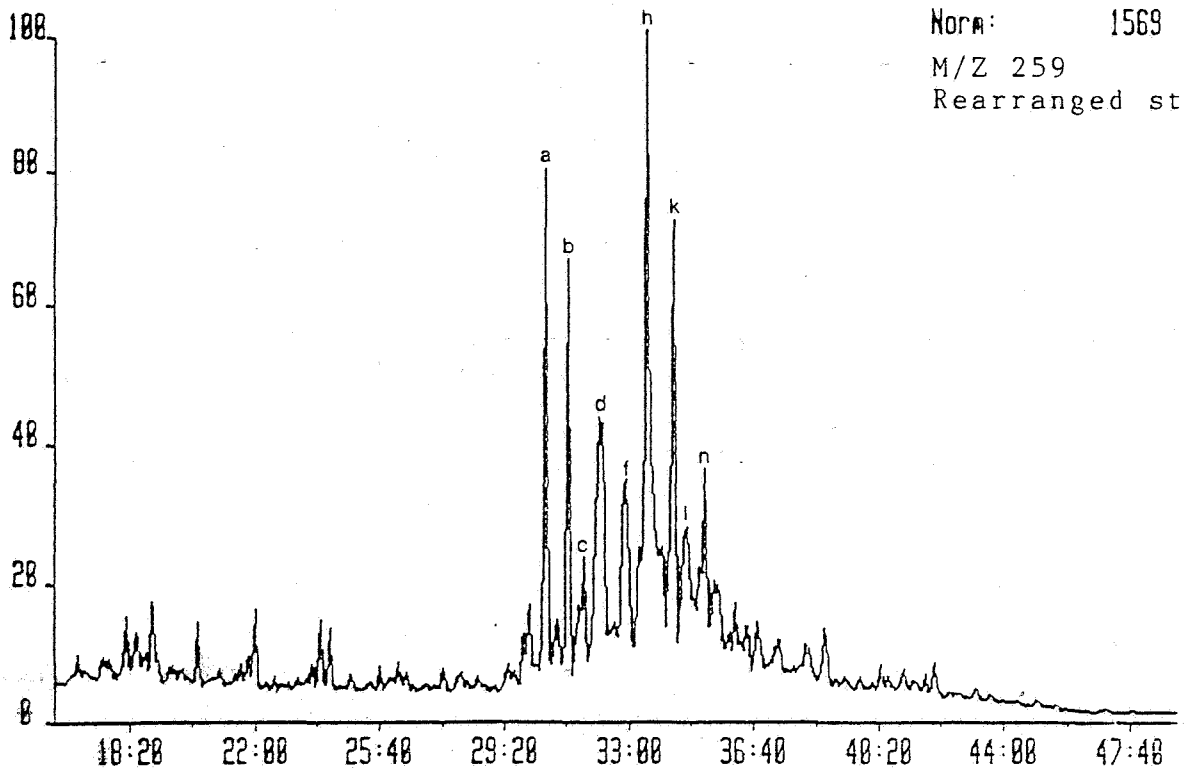
# EXAMPLE OF PEAK IDENTIFICATION FOR REARRANGED STERANES



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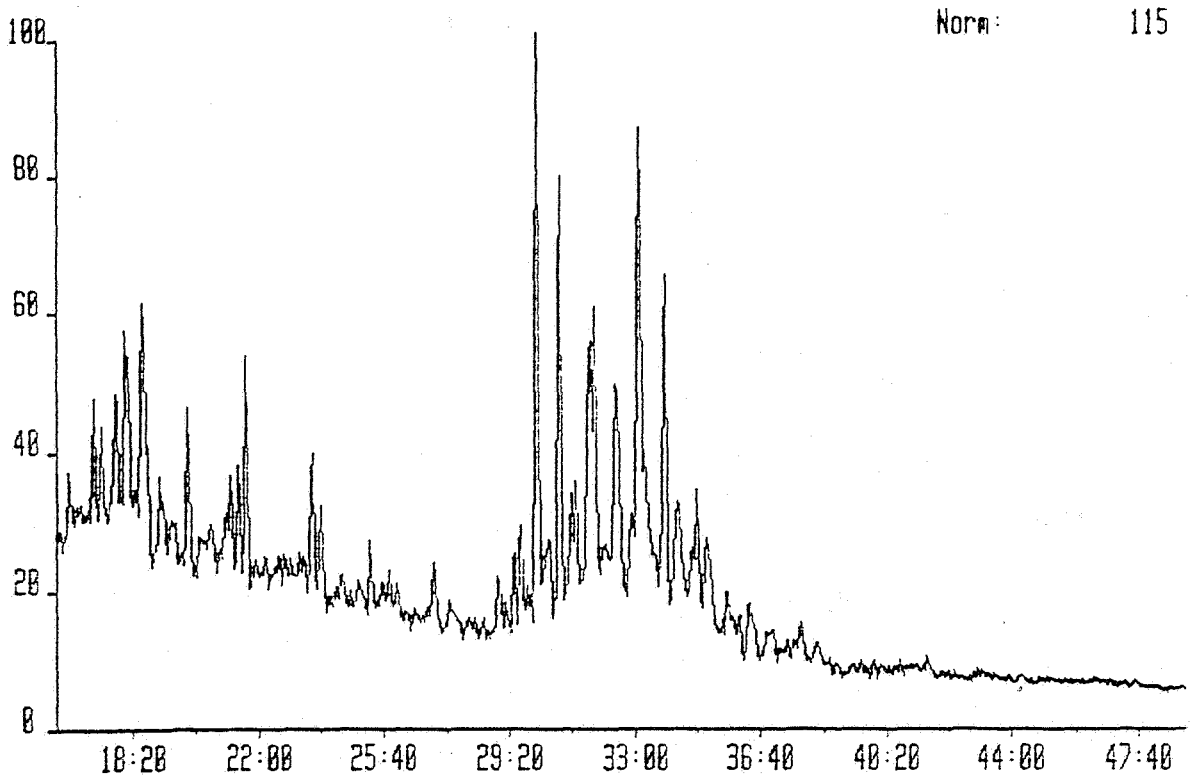
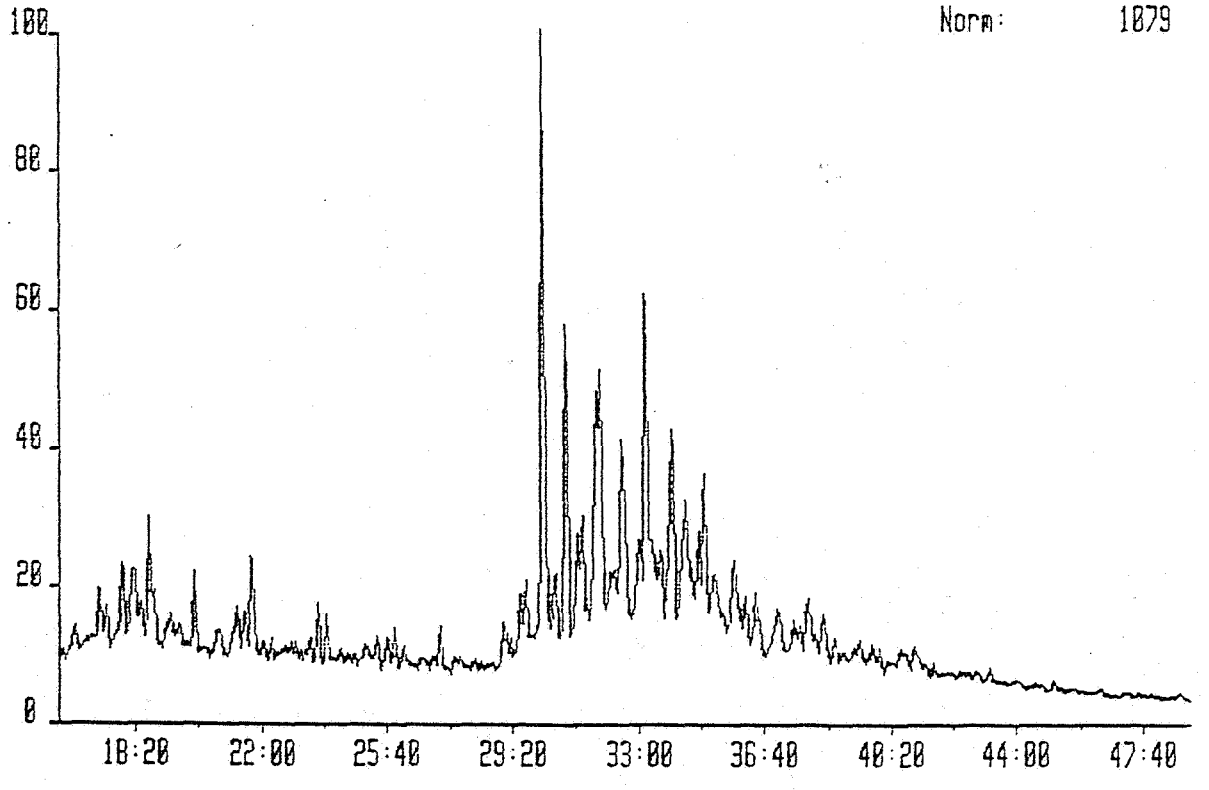
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 259.2427
Text:WELL 2/6-2, 4200M, SATURATED FRACTION

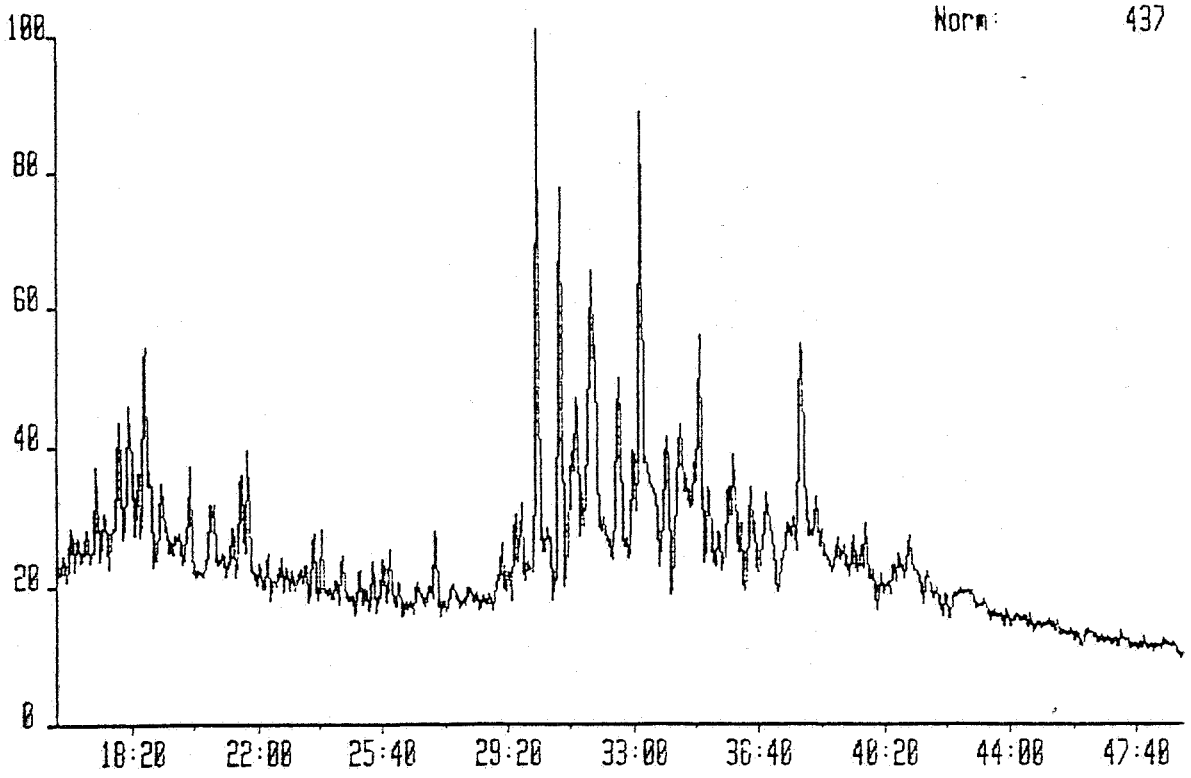



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 259.2427
Text:WELL 2/6-2, 4300M, SATURATED FRACTION

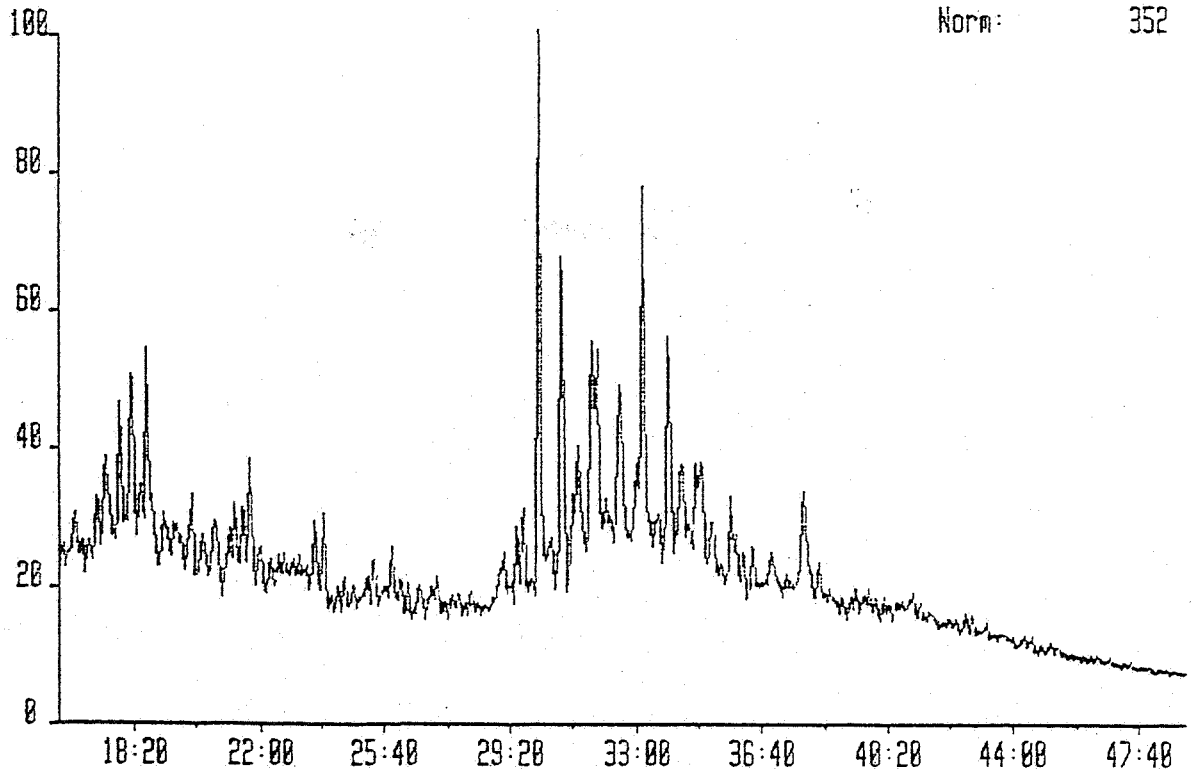


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 259.2427
Text:WELL 2/6-2, 4430M, SATURATED FRACTION

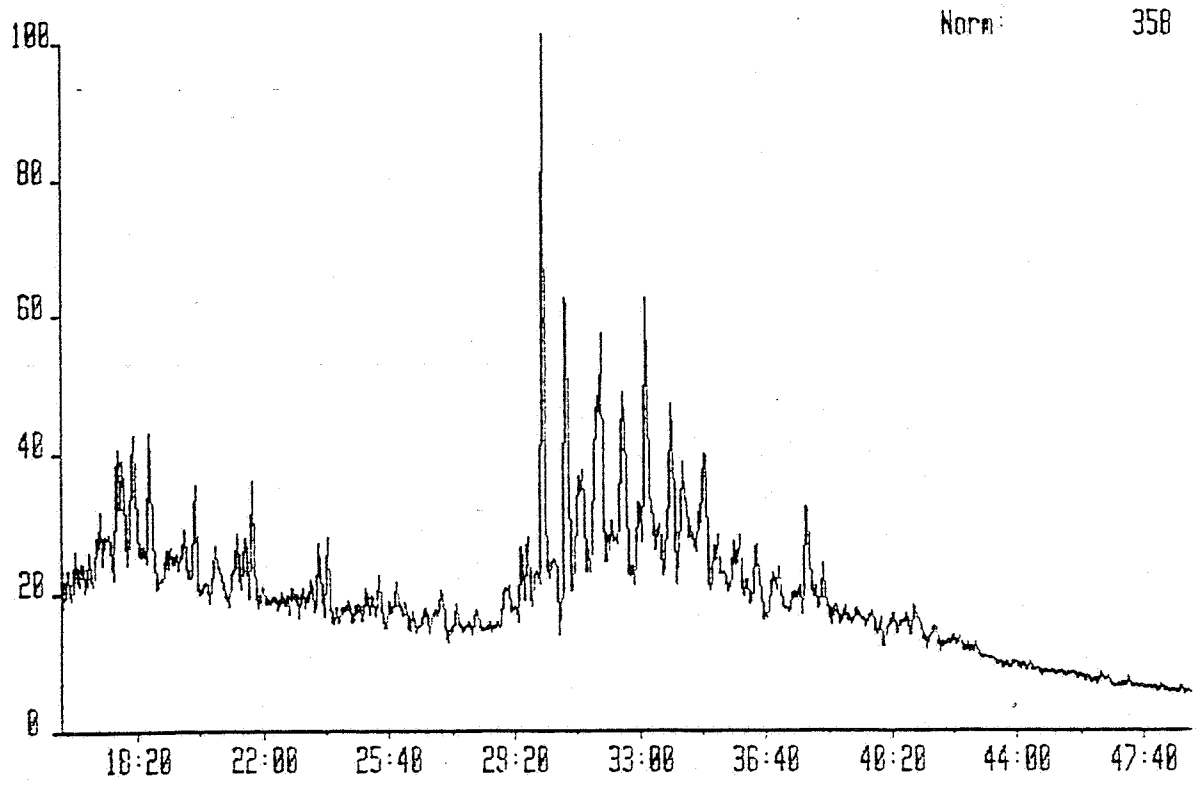



CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 259.2427
Text:WELL 2/6-2, 4520M, SATURATED FRACTION



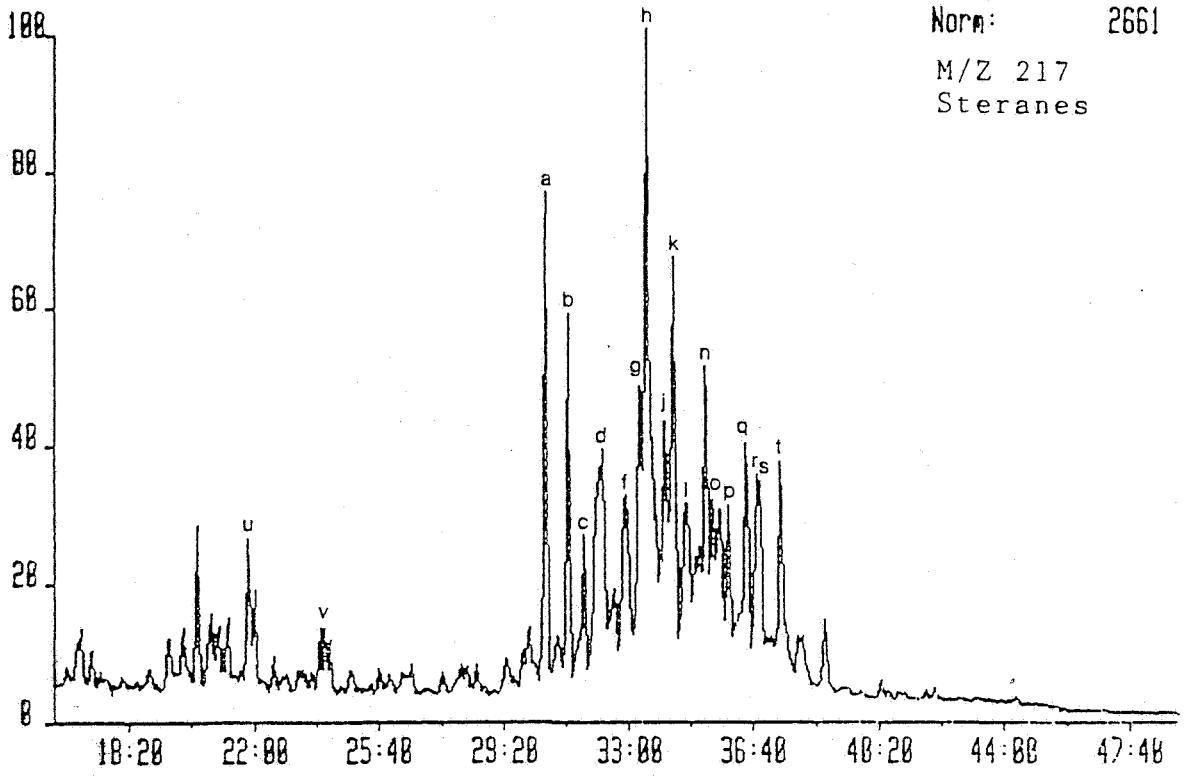
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 259.2427
Text:WELL 2/6-2, 4666M, SATURATED FRACTION

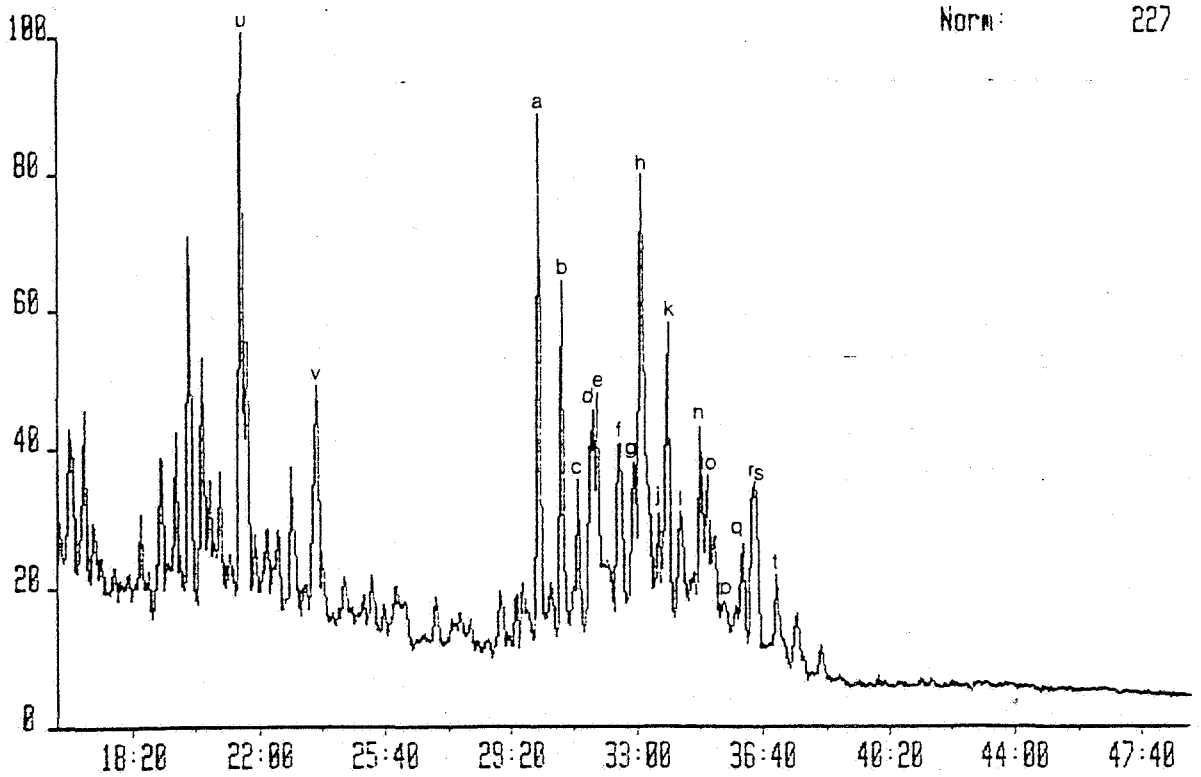


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

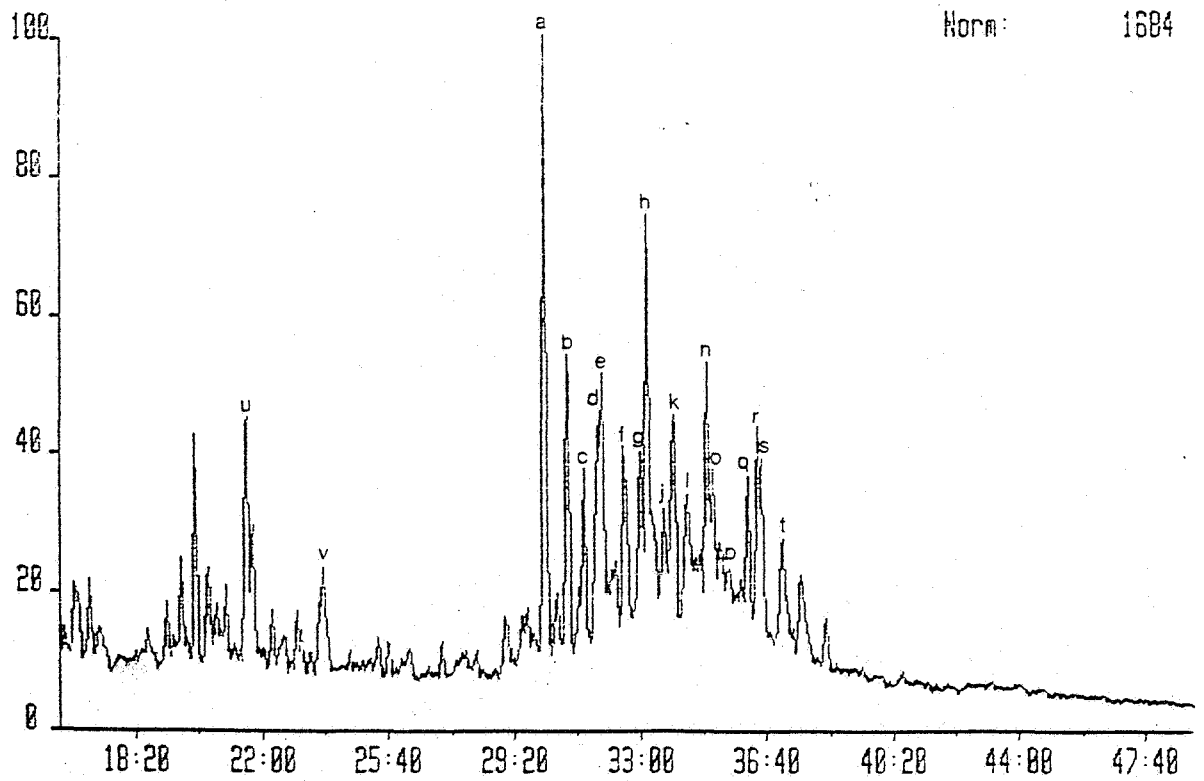
# EXAMPLE OF PEAK IDENTIFICATION FOR STERANES



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 217.1956
Text:WELL 2/6-2, 4200M, SATURATED FRACTION

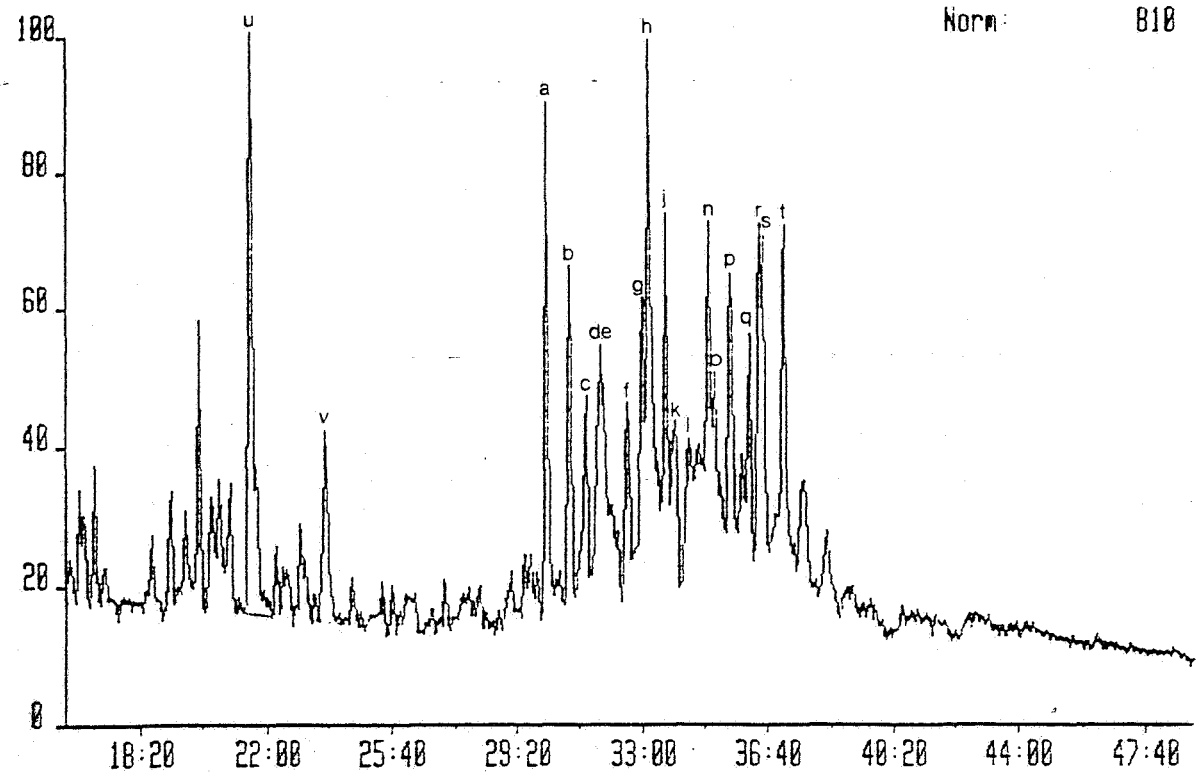



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 217.1956
Text:WELL 2/6-2, 4300M, SATURATED FRACTION

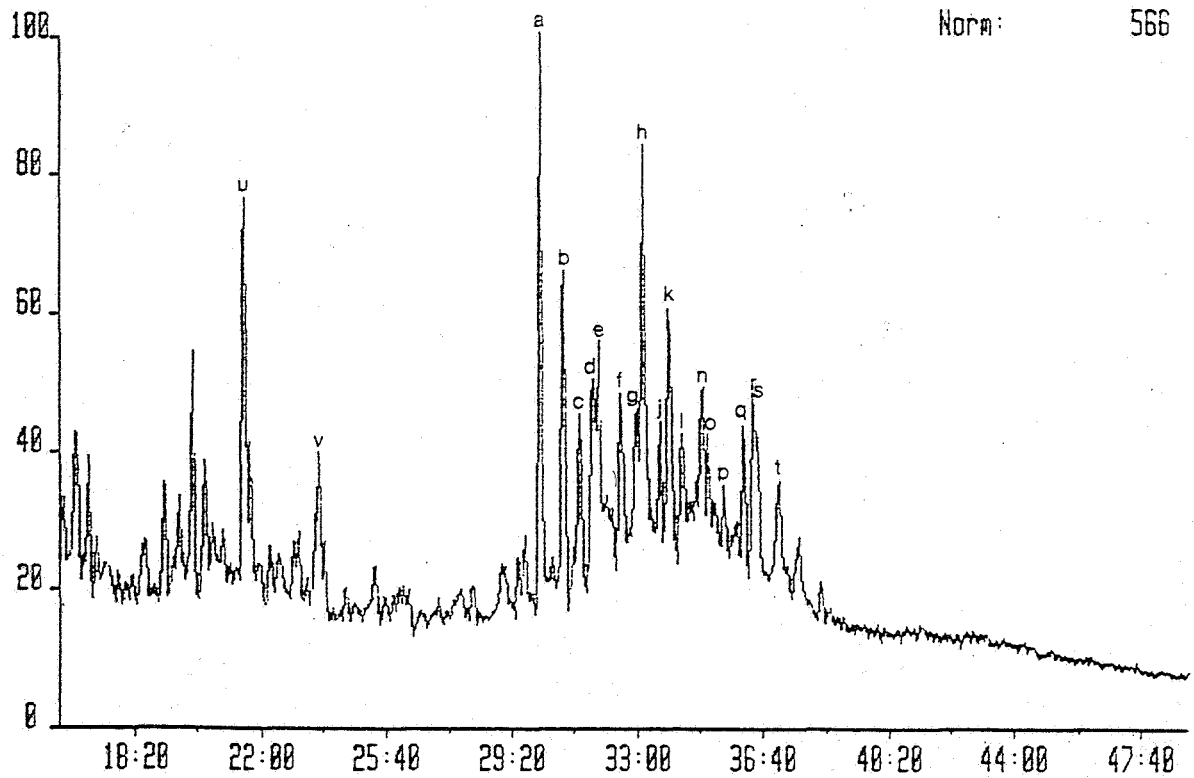


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 217.1956
Text:WELL 2/6-2, 4430M, SATURATED FRACTION

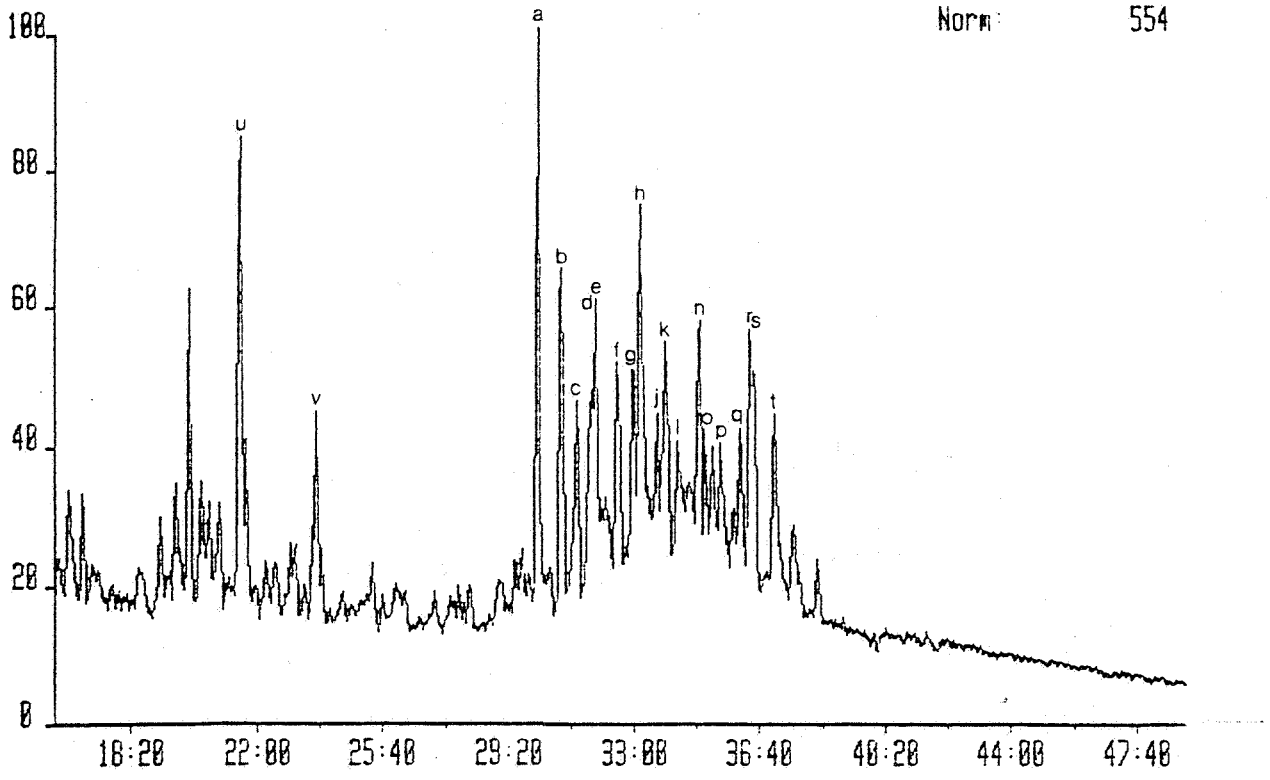



CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 217.1956
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



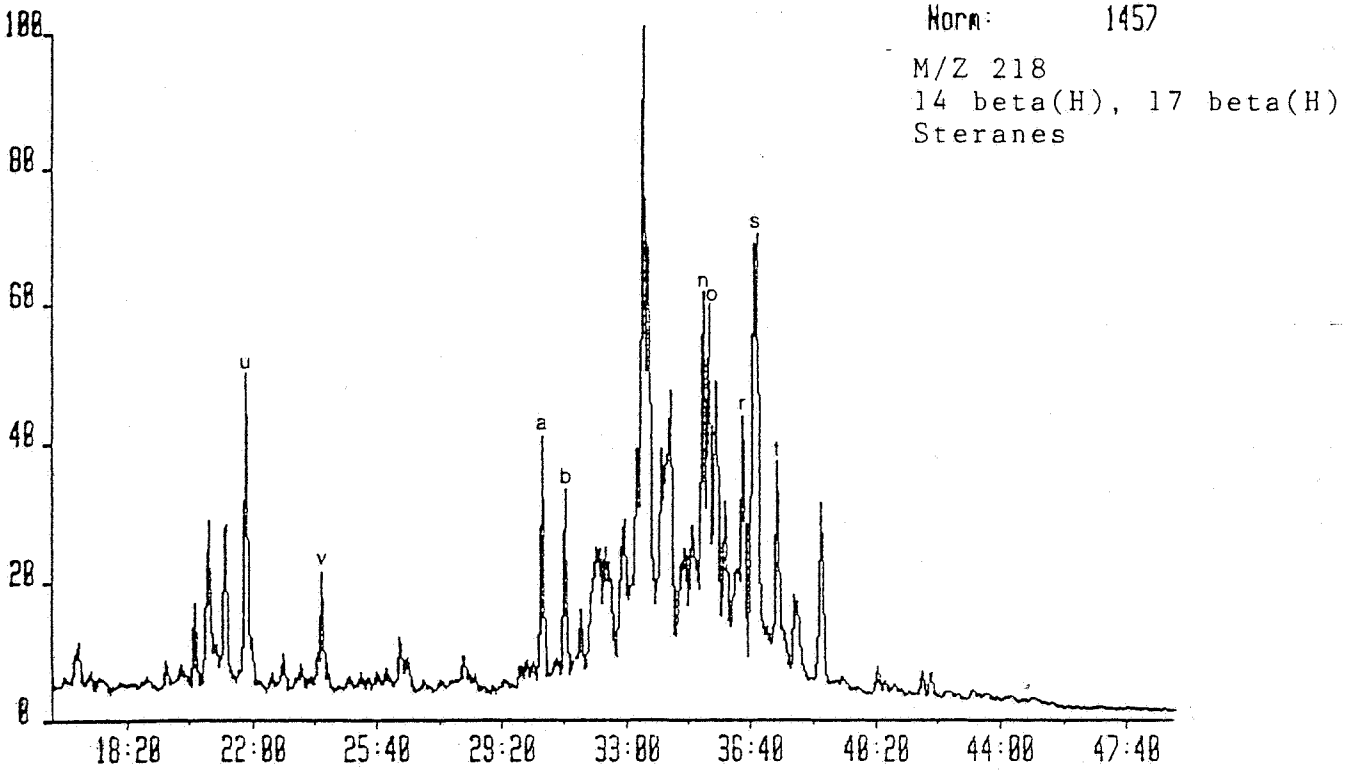
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 217.1956
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



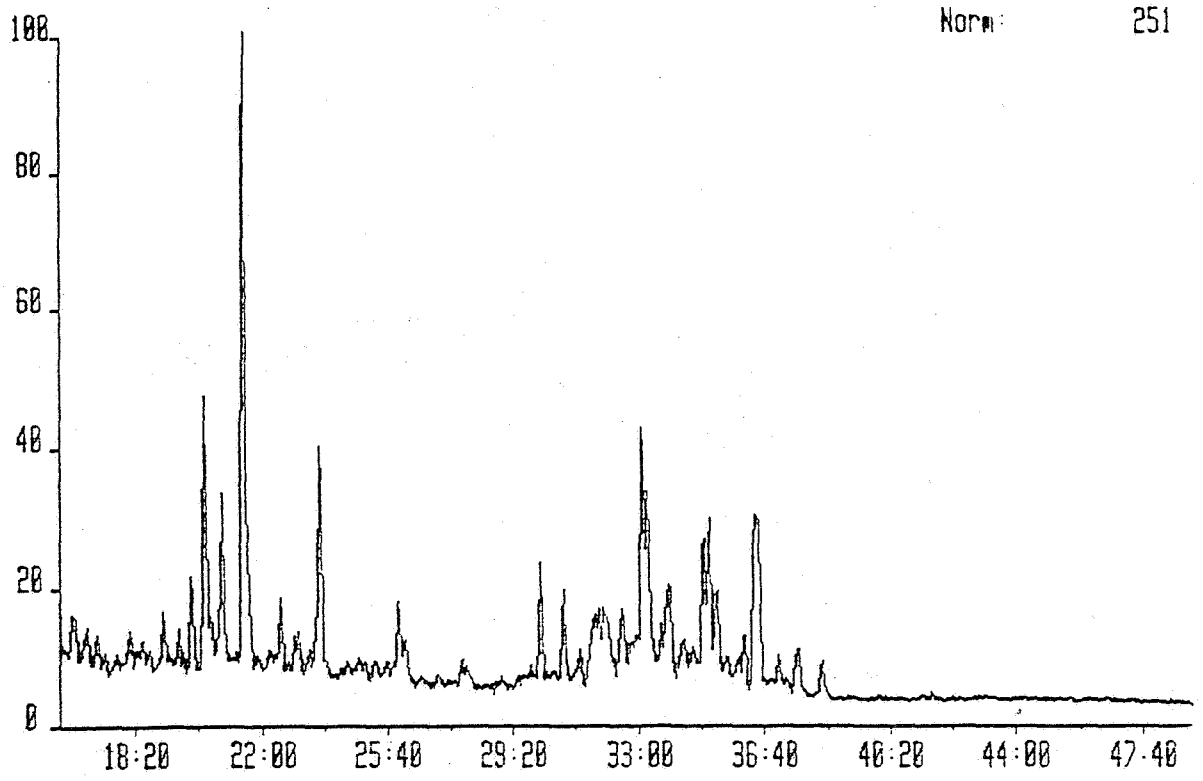
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

# EXAMPLE OF PEAK IDENTIFICATION FOR 14 BETA(H), 17 BETA(H) STERANES

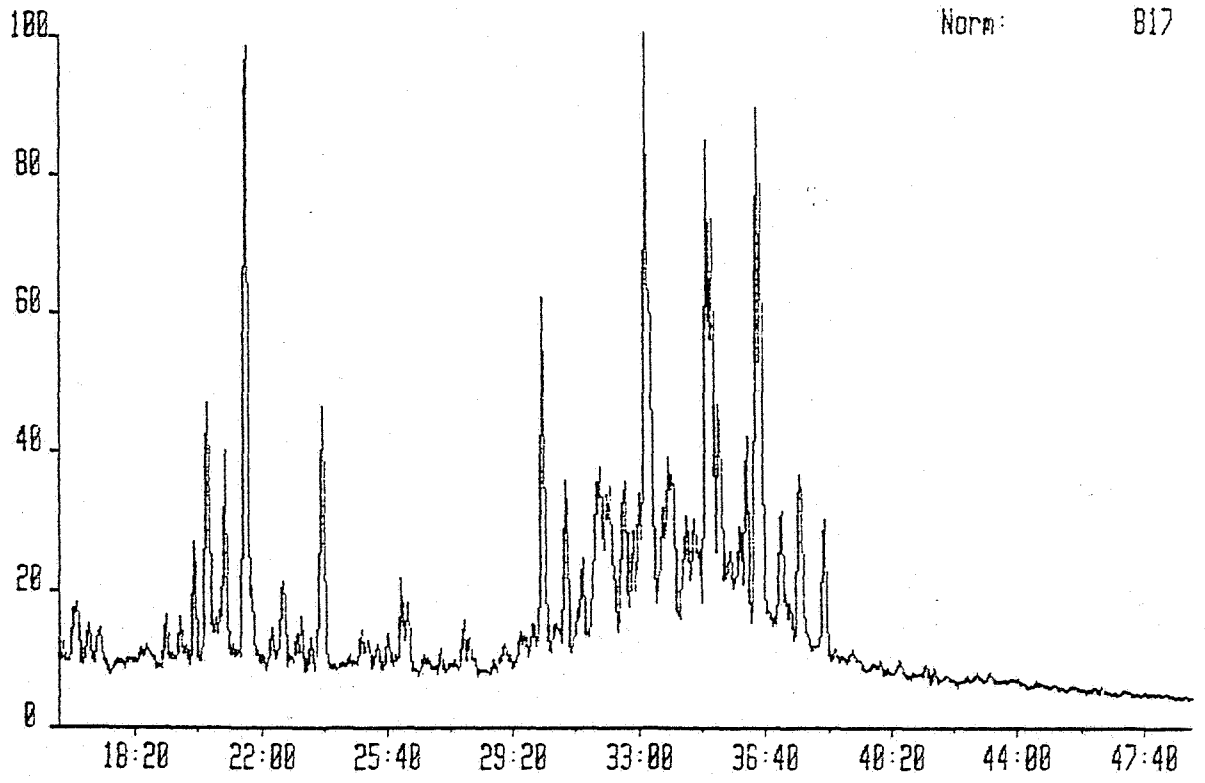


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

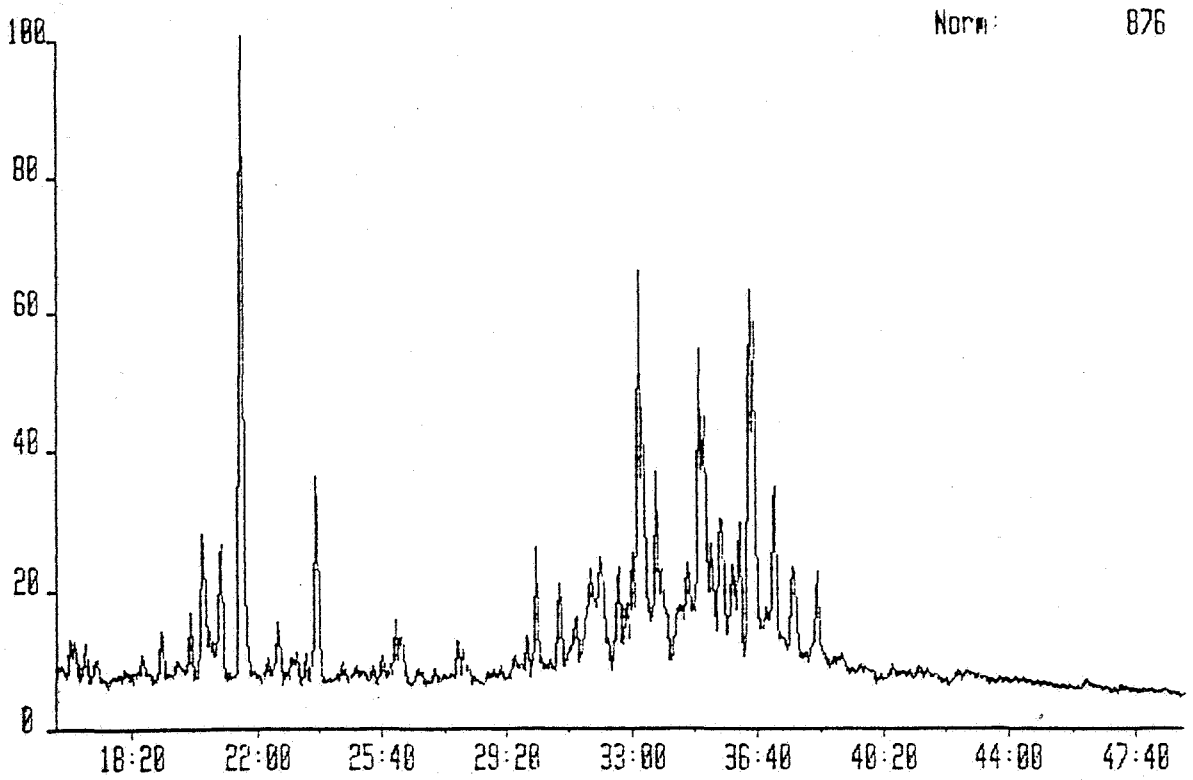
CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 218.2034
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



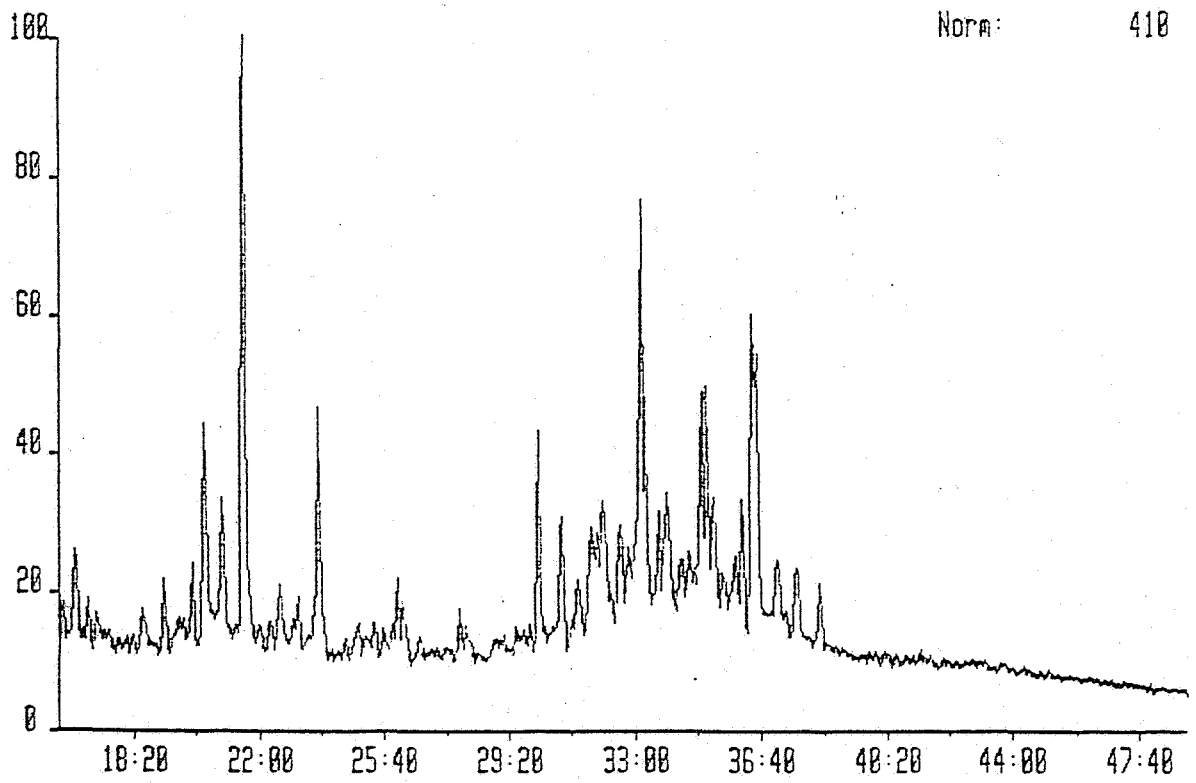

CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 218.2034
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 218.2034
Text:WELL 2/6-2, 4430M, SATURATED FRACTION

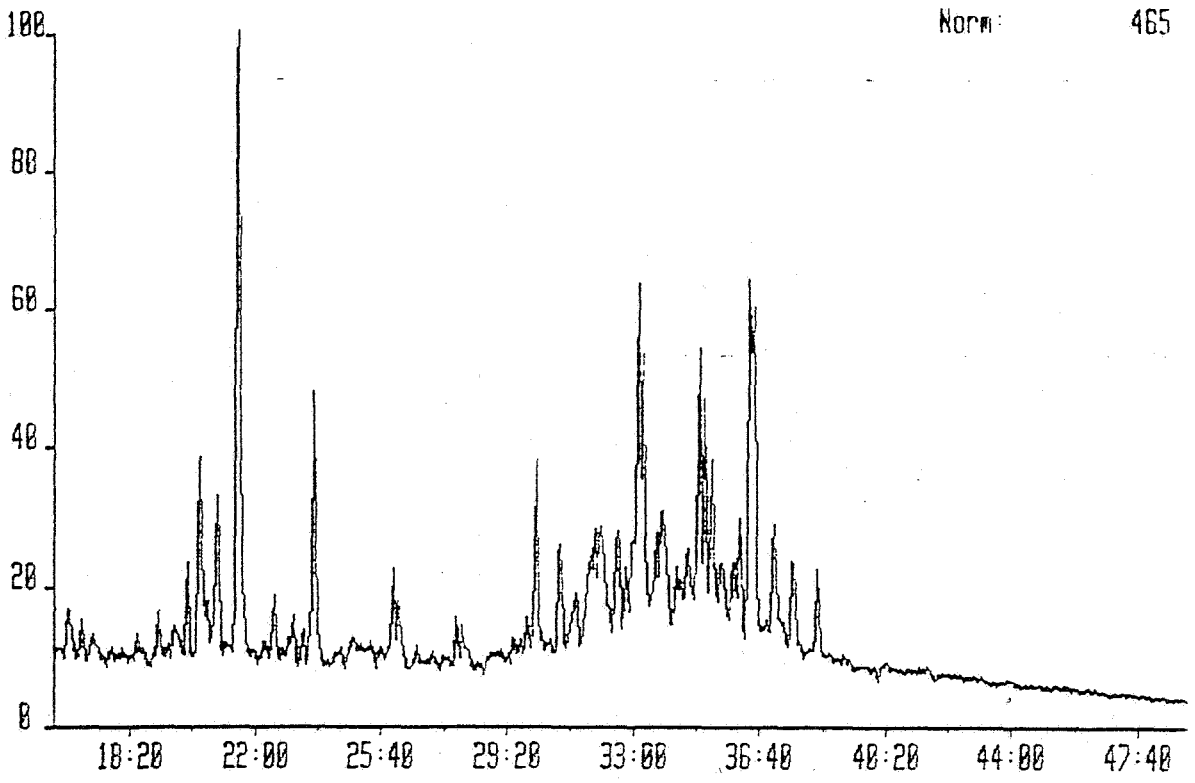



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 218.2034
Text:WELL 2/6-2, 4528M, SATURATED FRACTION

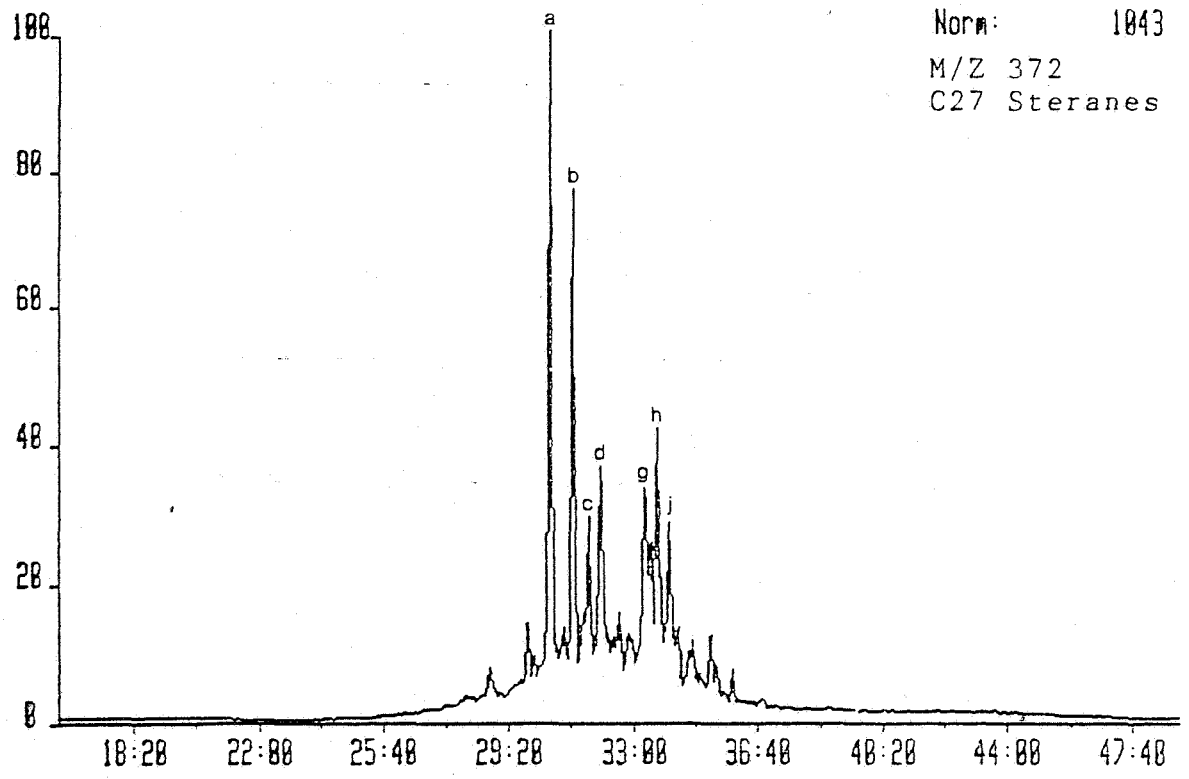


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

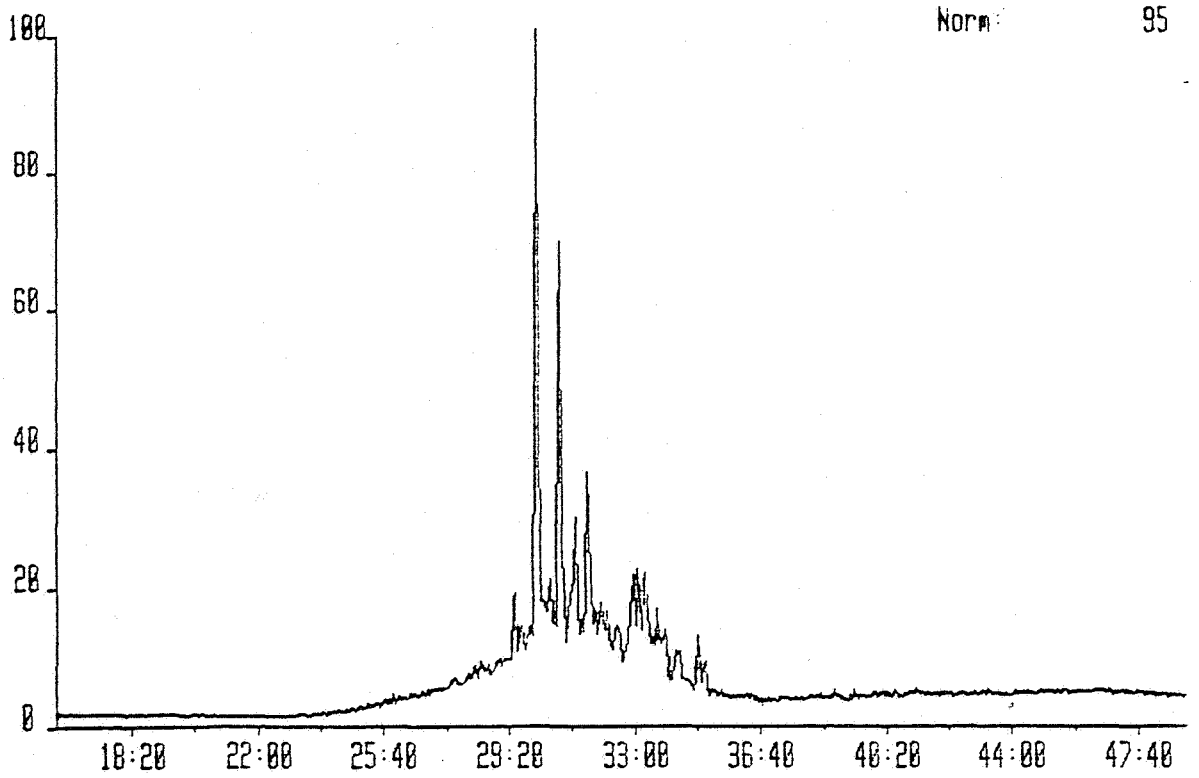
CGSAT6 24-NOV-87 Scr:Magnetic TS250 Acnt:GEOLAB System SAT1
Sample 14 Injection 1 Group 1 Mass 218.2834
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



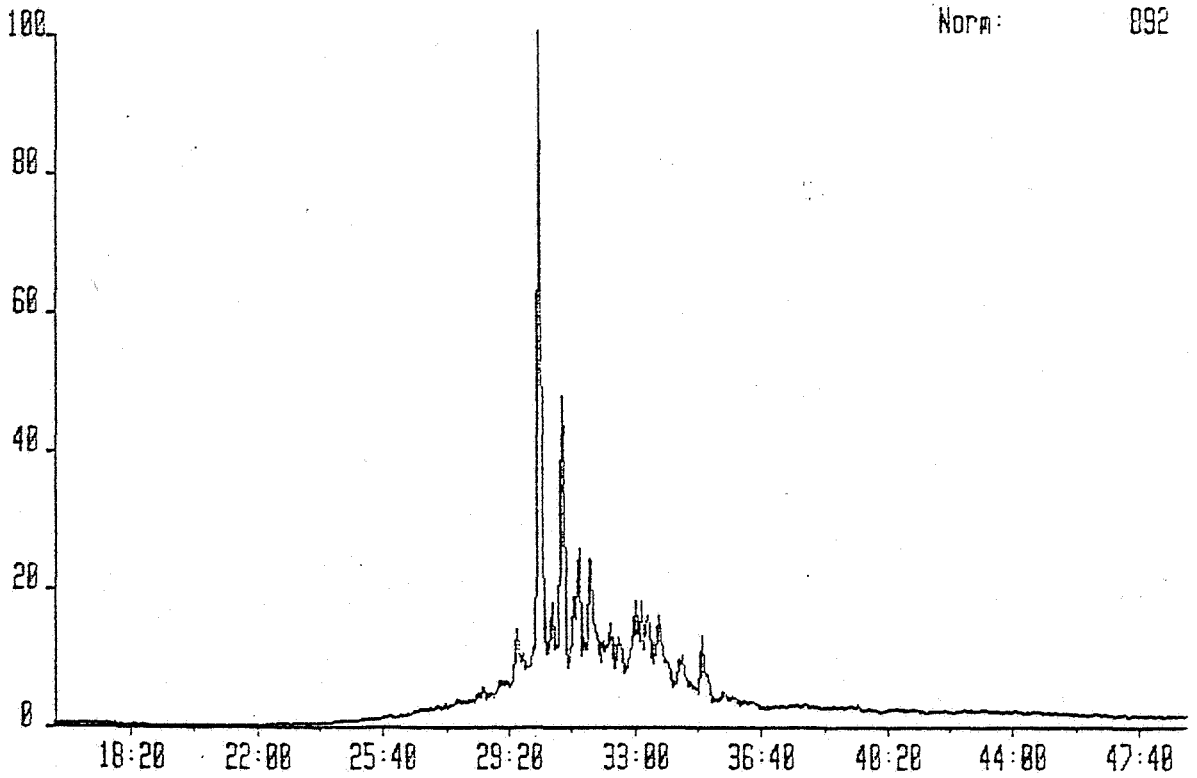
# EXAMPLE OF PEAK IDENTIFICATION FOR C27 STERANES



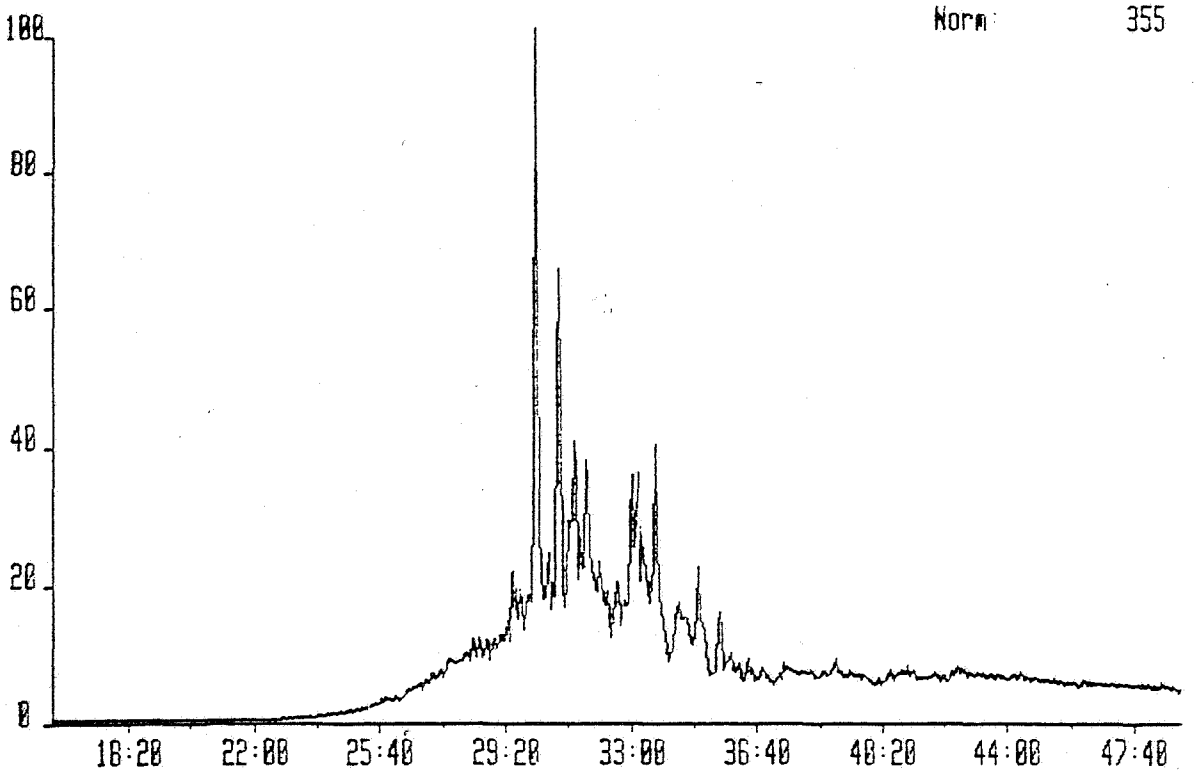
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 372.3756
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



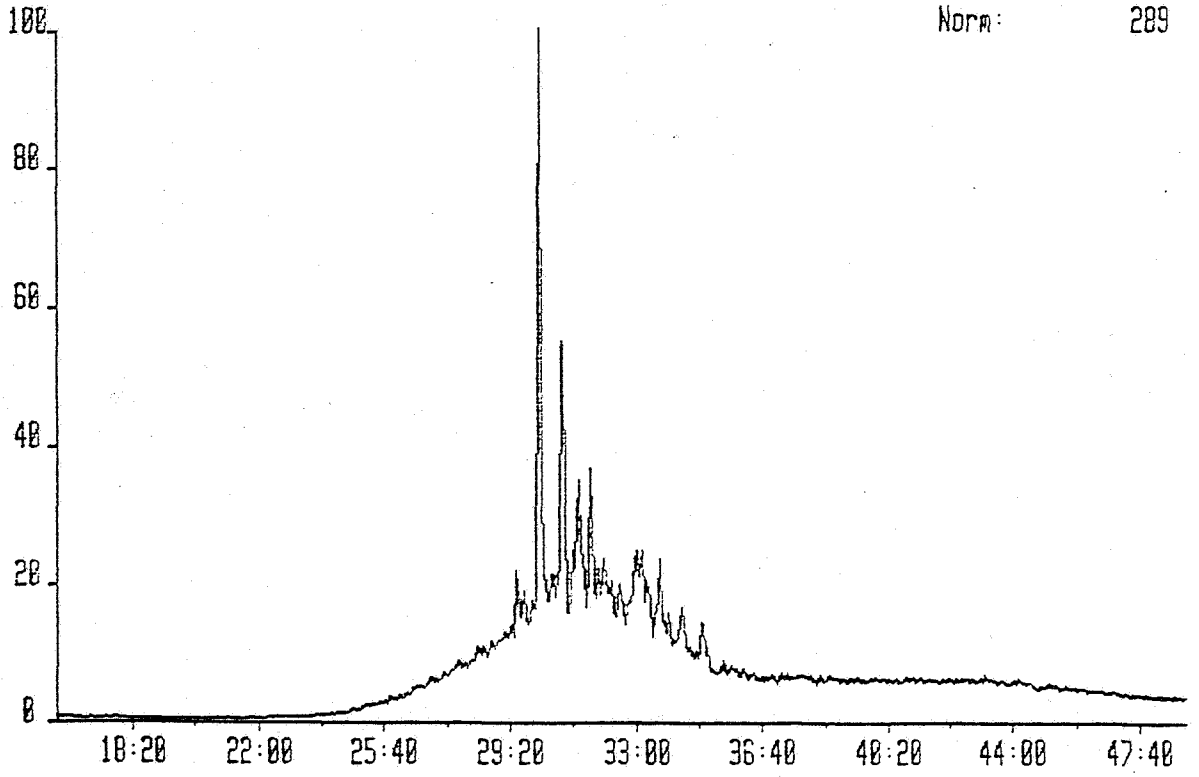

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 372.3756
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 372.3756
Text:WELL 2/6-2, 4430M, SATURATED FRACTION




CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 372.3756
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



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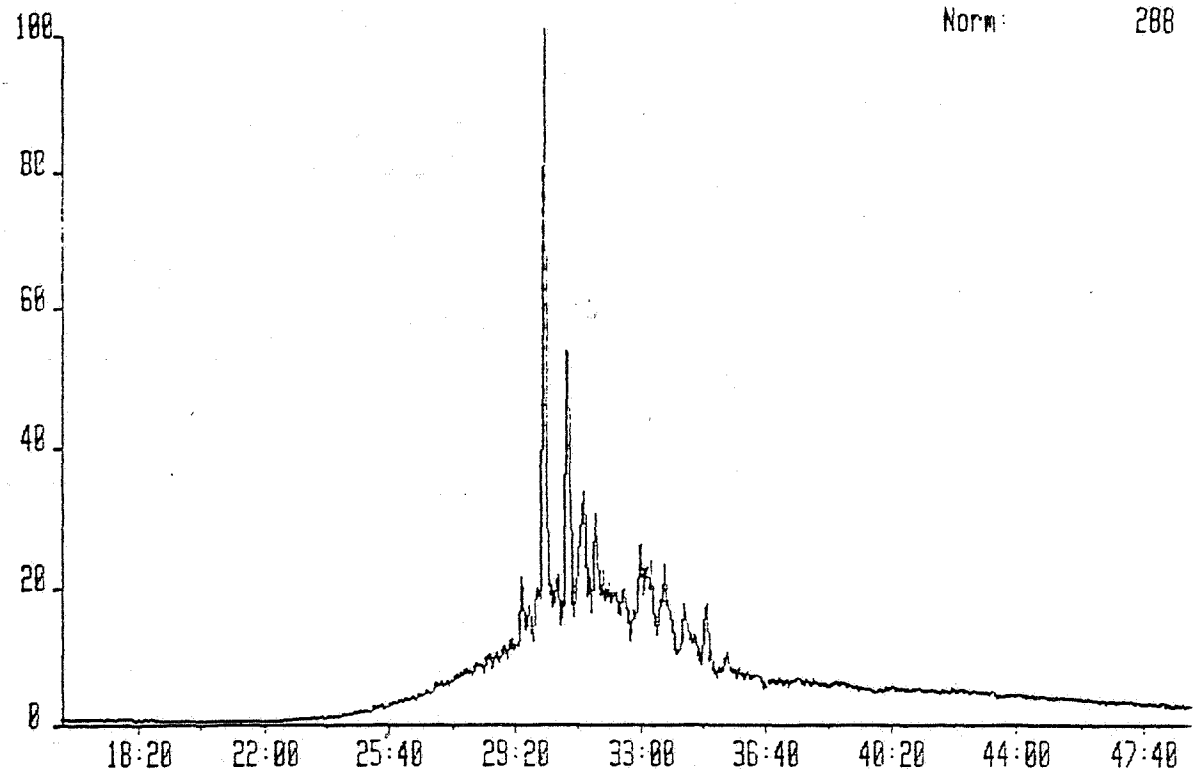
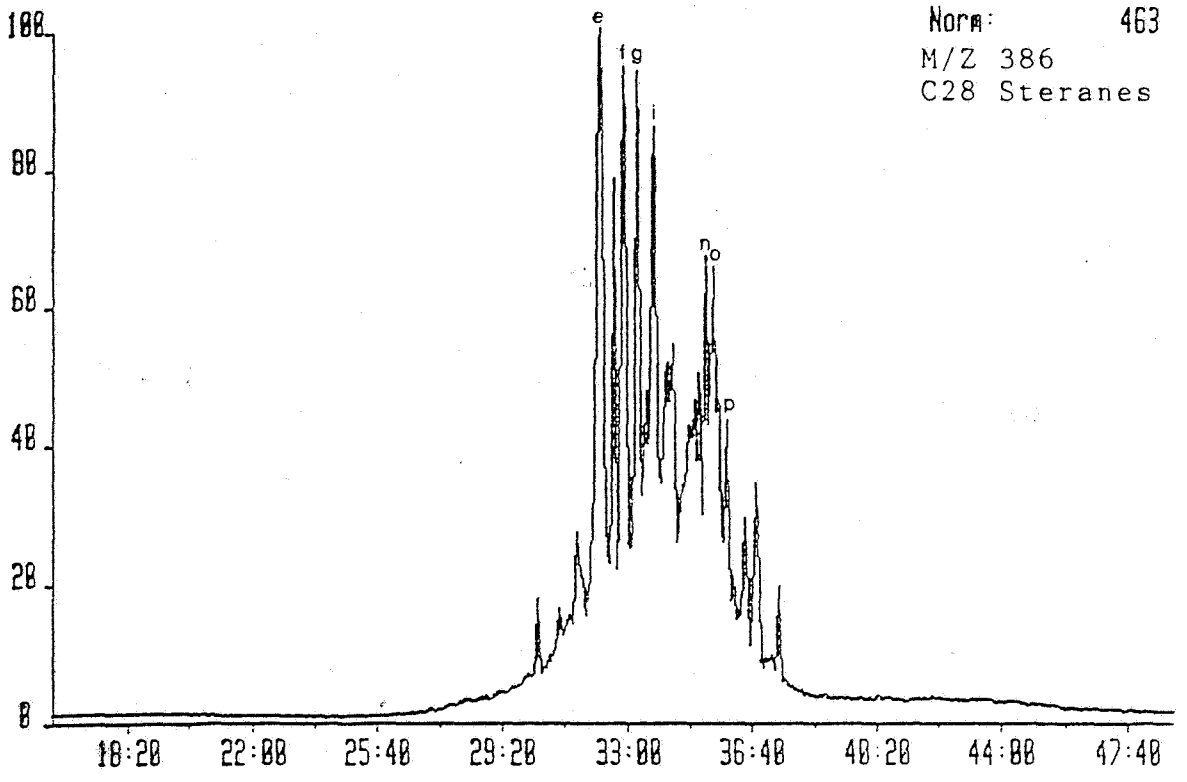
CGSAT6 24-NOV-87 Str Magnetic TS250 Acnt GEOLAB System SAT1
Sample 14 Injection 1 Group 1 Mass 372.3756
Text:WELL 2/6-2, 4666M, SATURATED FRACTION

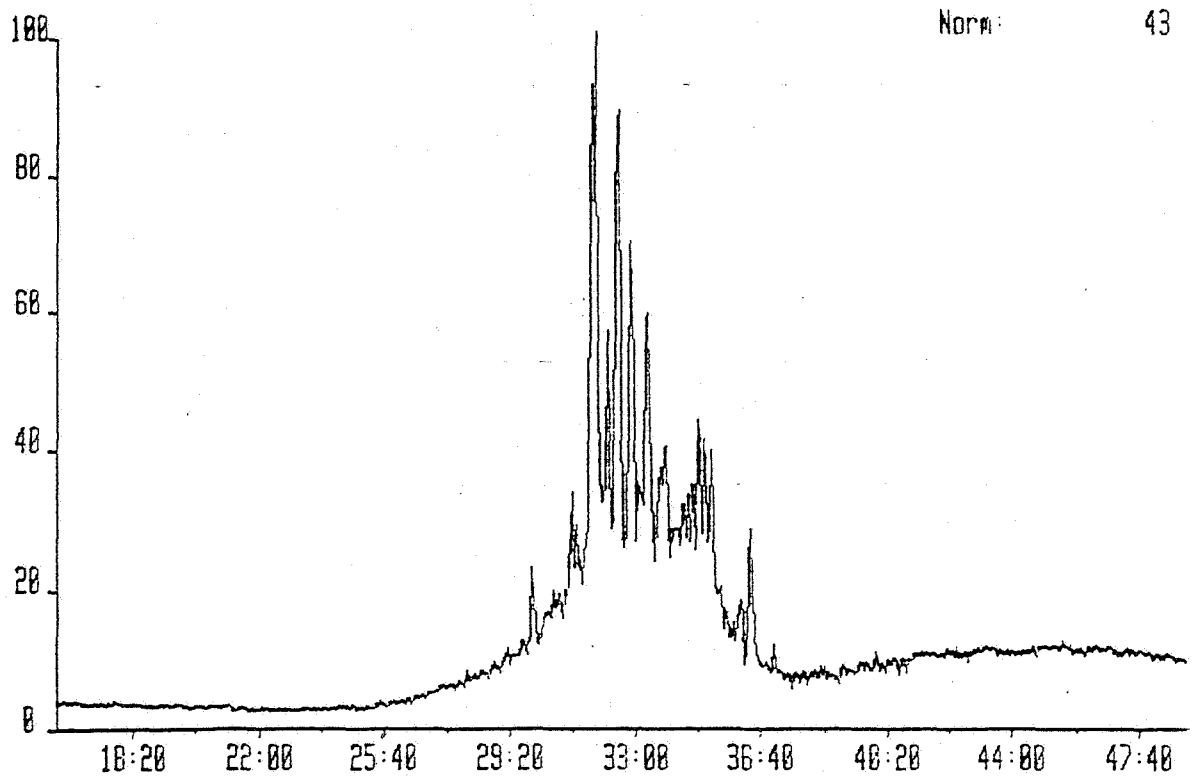


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

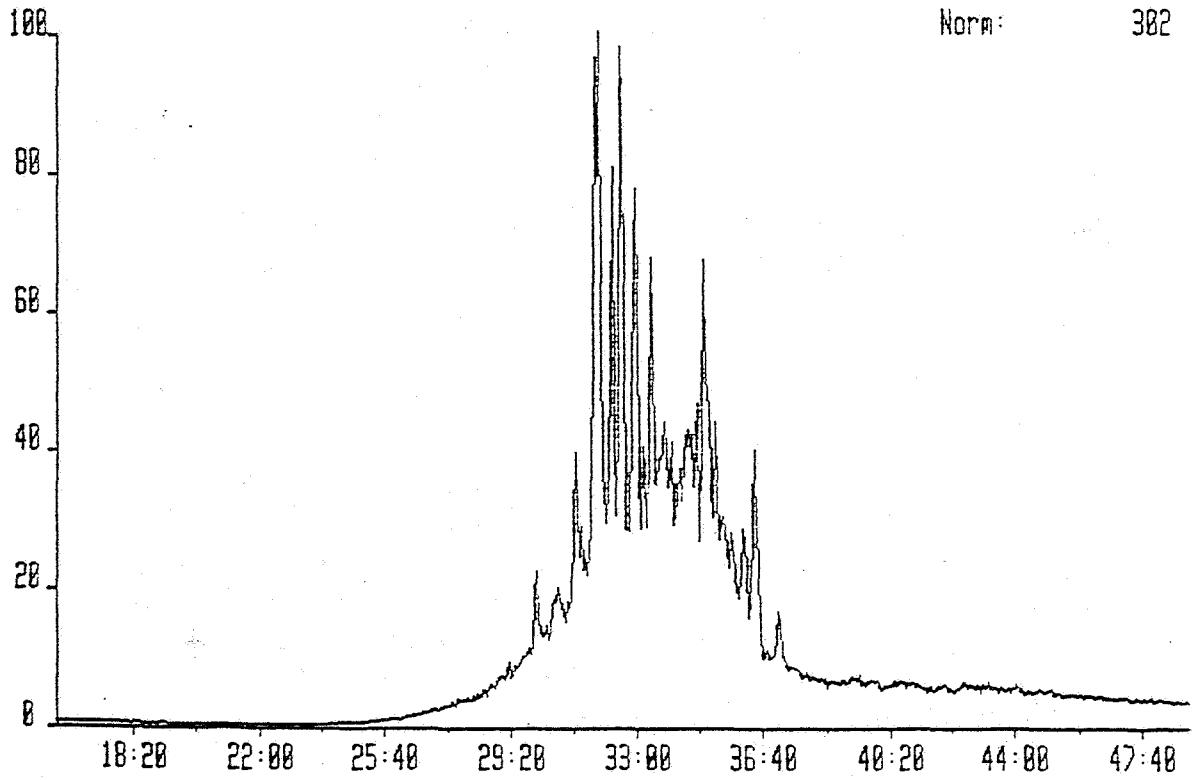
# EXAMPLE OF PEAK IDENTIFICATION FOR C28 STERANES



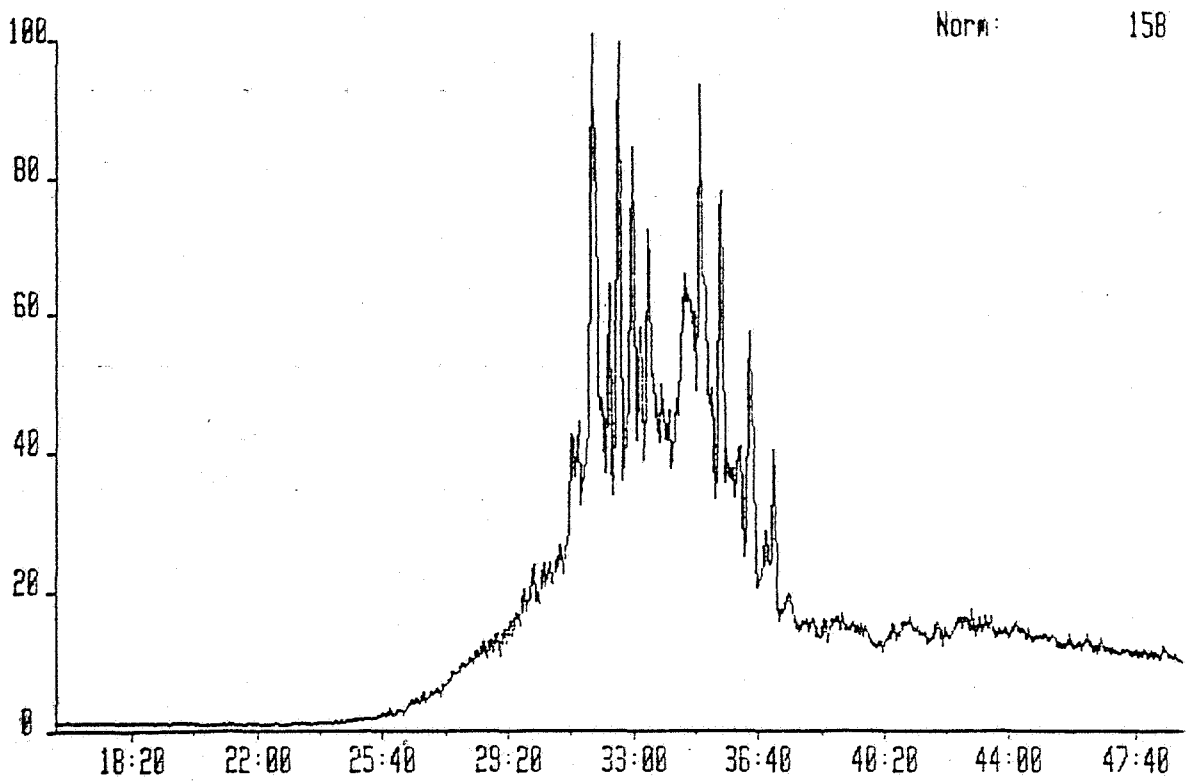
CGSAT6 24-NOV-87 Sir Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 386.3913
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



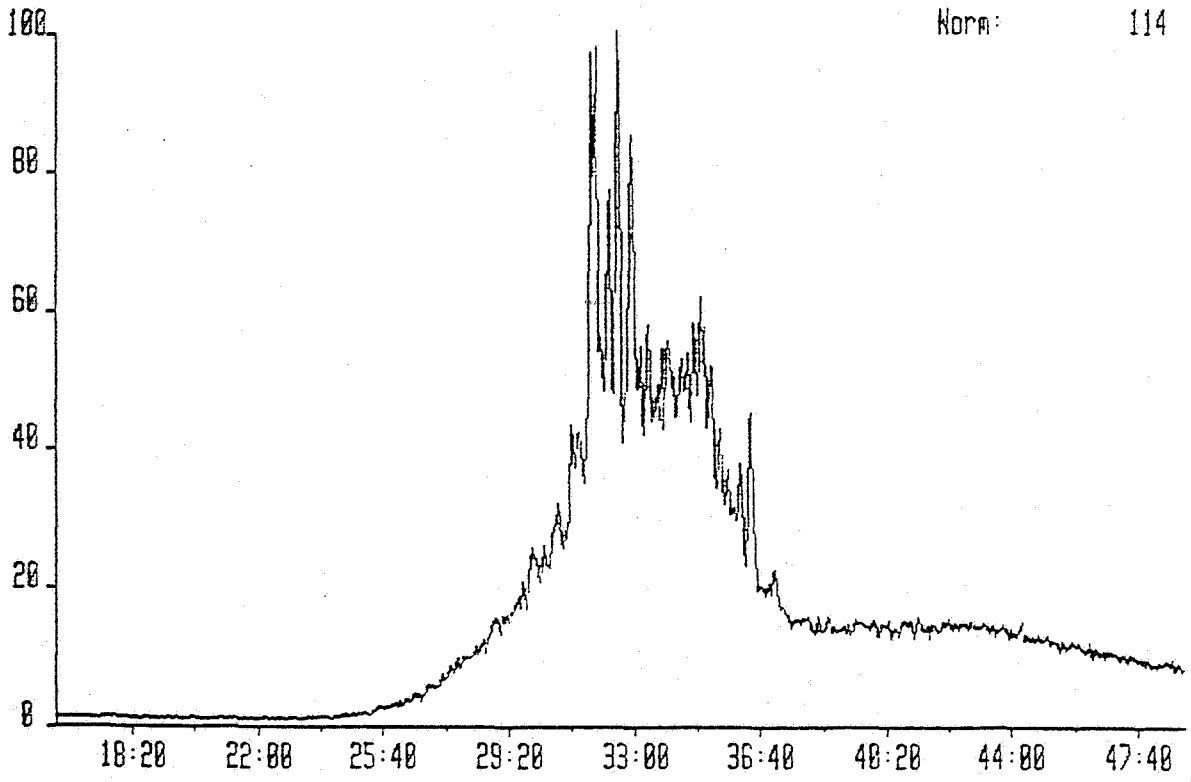

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 386.3913
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System SAT1
Sample 12 Injection 1 Group 1 Mass 386.3913
Text:WELL 2/6-2, 4430M, SATURATED FRACTION




CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 386.3913
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



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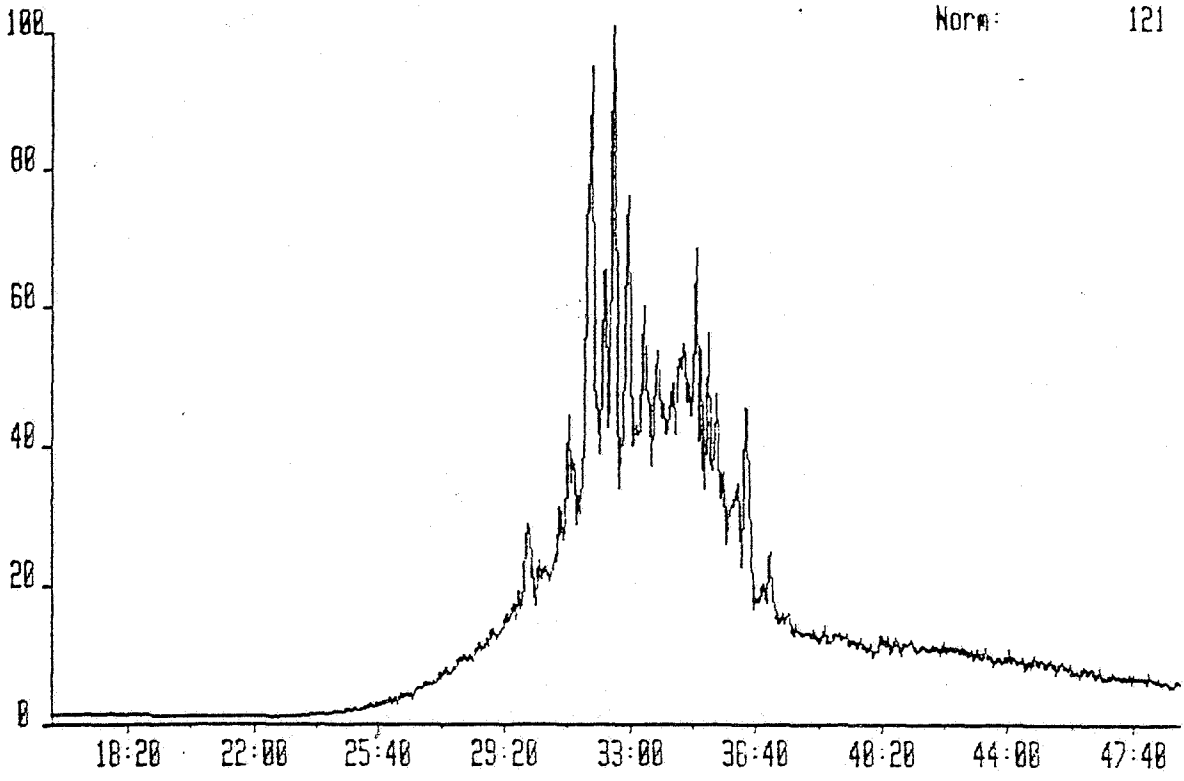
CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System SAT1
Sample 14 Injection 1 Group 1 Mass 386.3913
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



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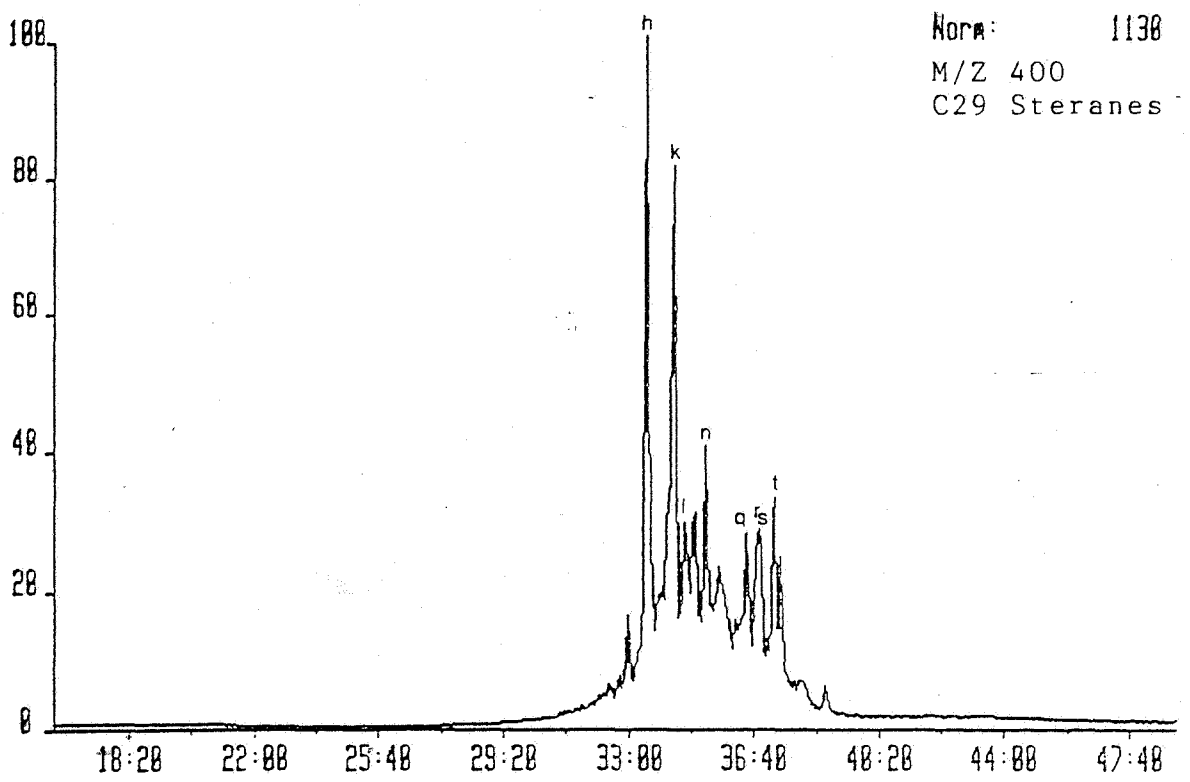
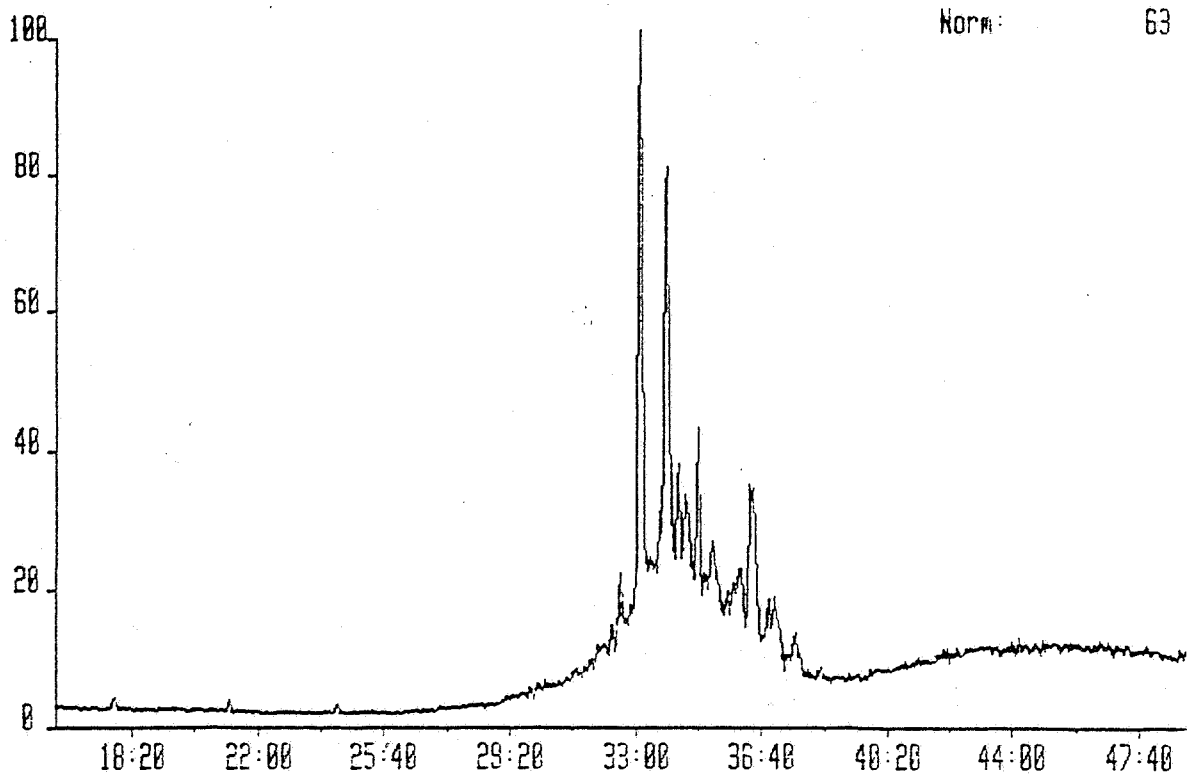
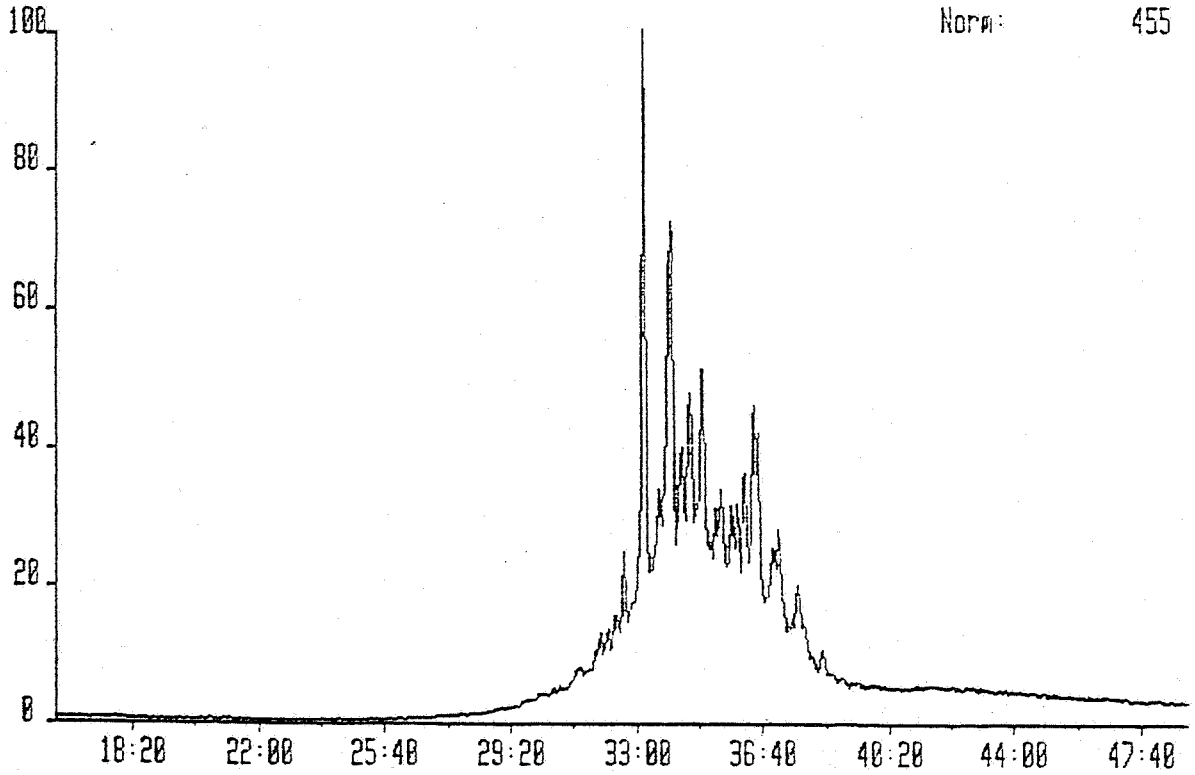
EXAMPLE OF PEAK IDENTIFICATION FOR C29 STERANES



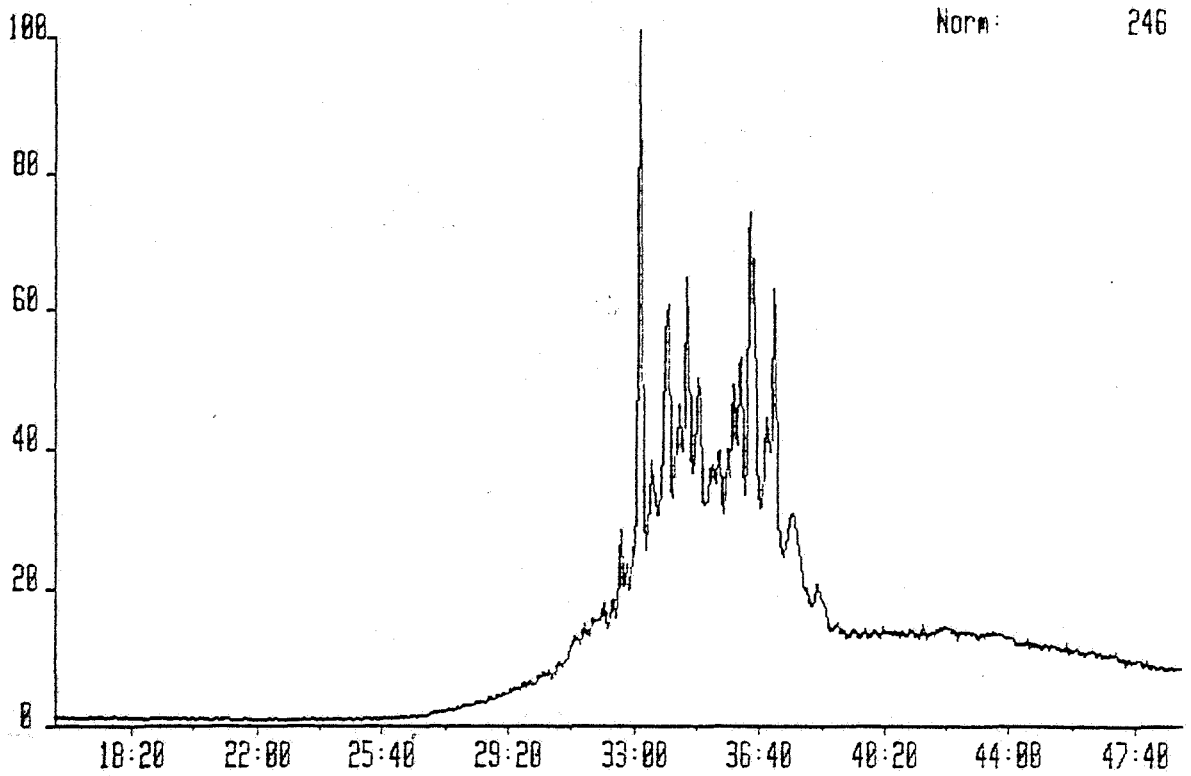
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System SAT1
Sample 10 Injection 1 Group 1 Mass 400.4069
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



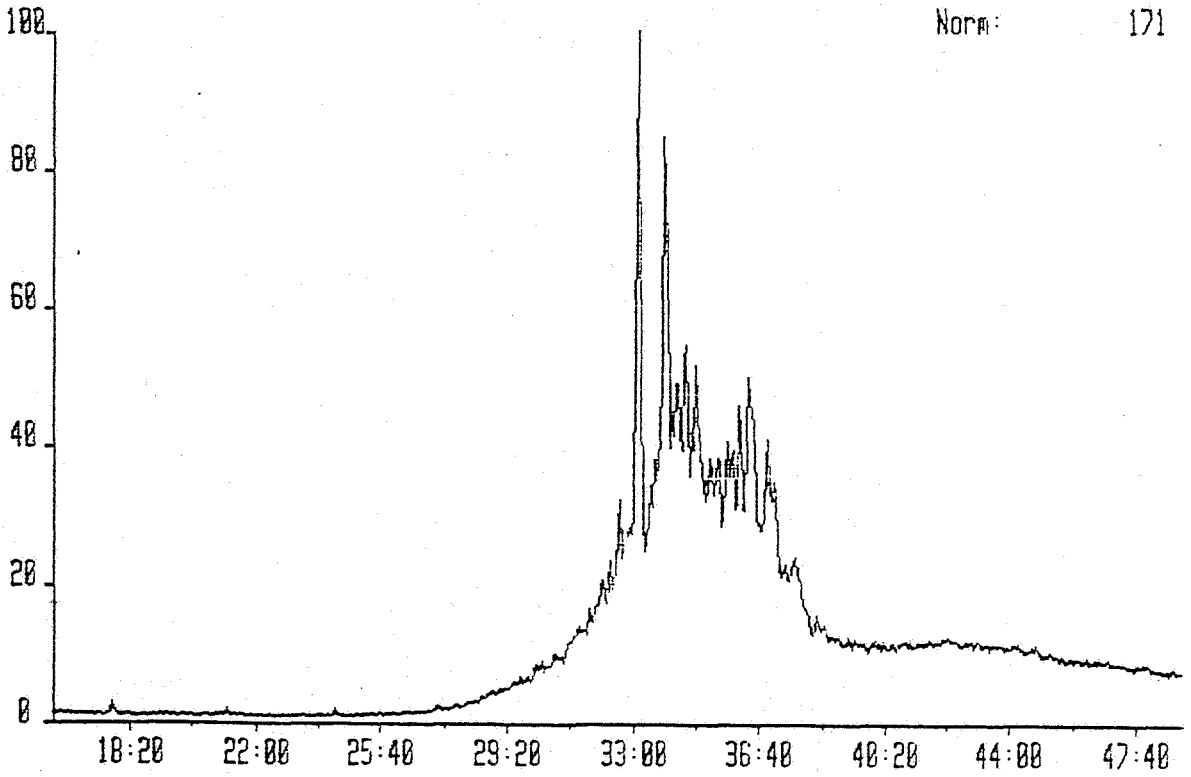

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 400.4069
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



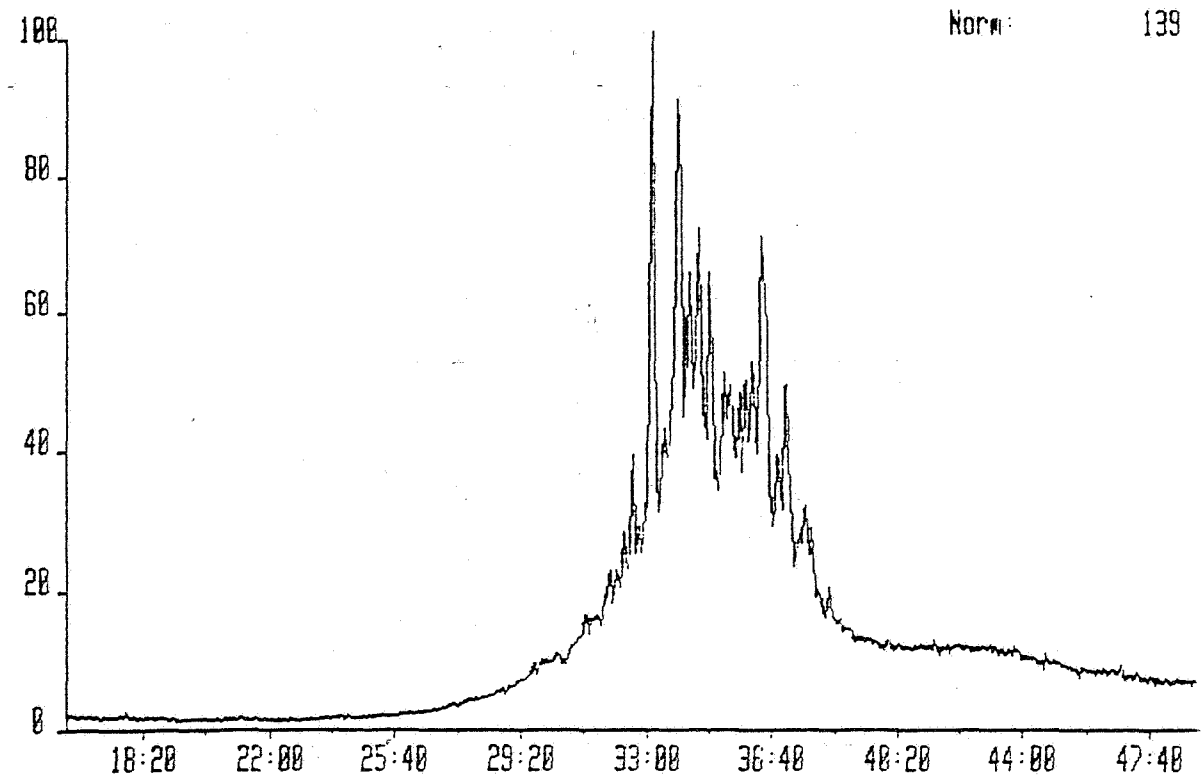
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 400.4069
Text:WELL 2/6-2, 4430M, SATURATED FRACTION




CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 400.4069
Text:WELL 2/6-2, 4520M, SATURATED FRACTION

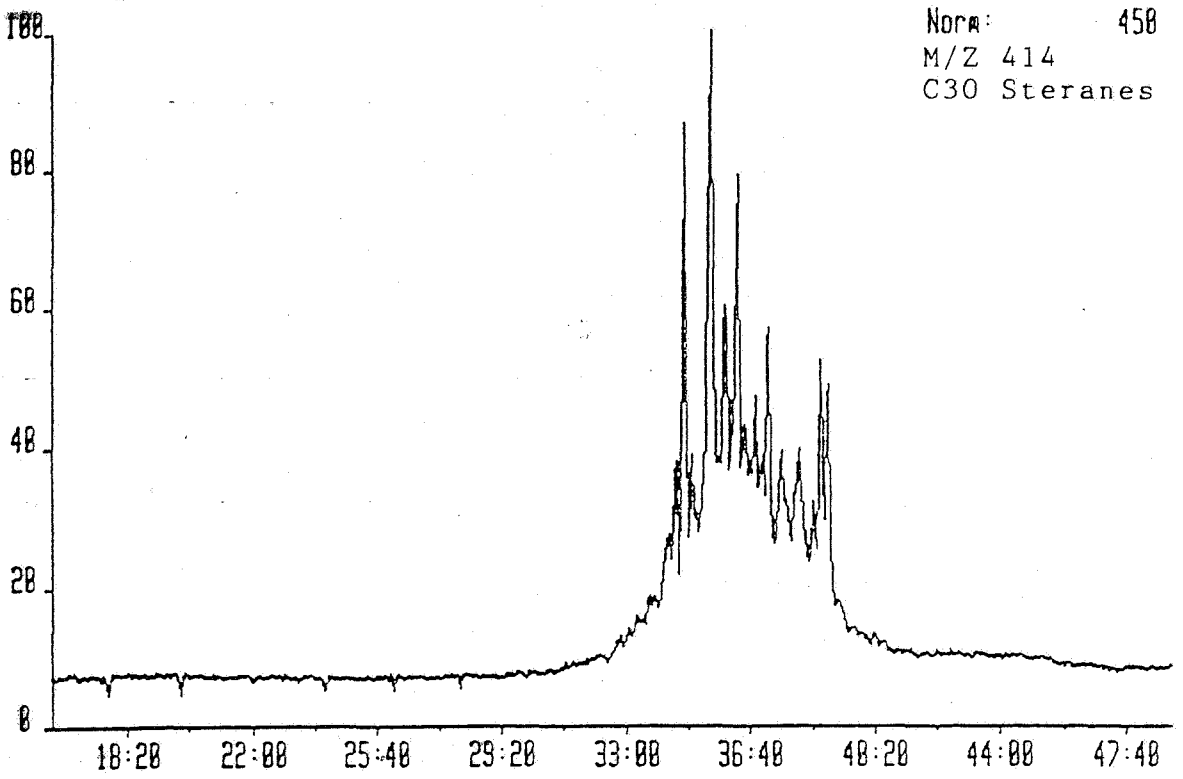


CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 400.4069
Text:WELL 2/6-2, 4666M, SATURATED FRACTION

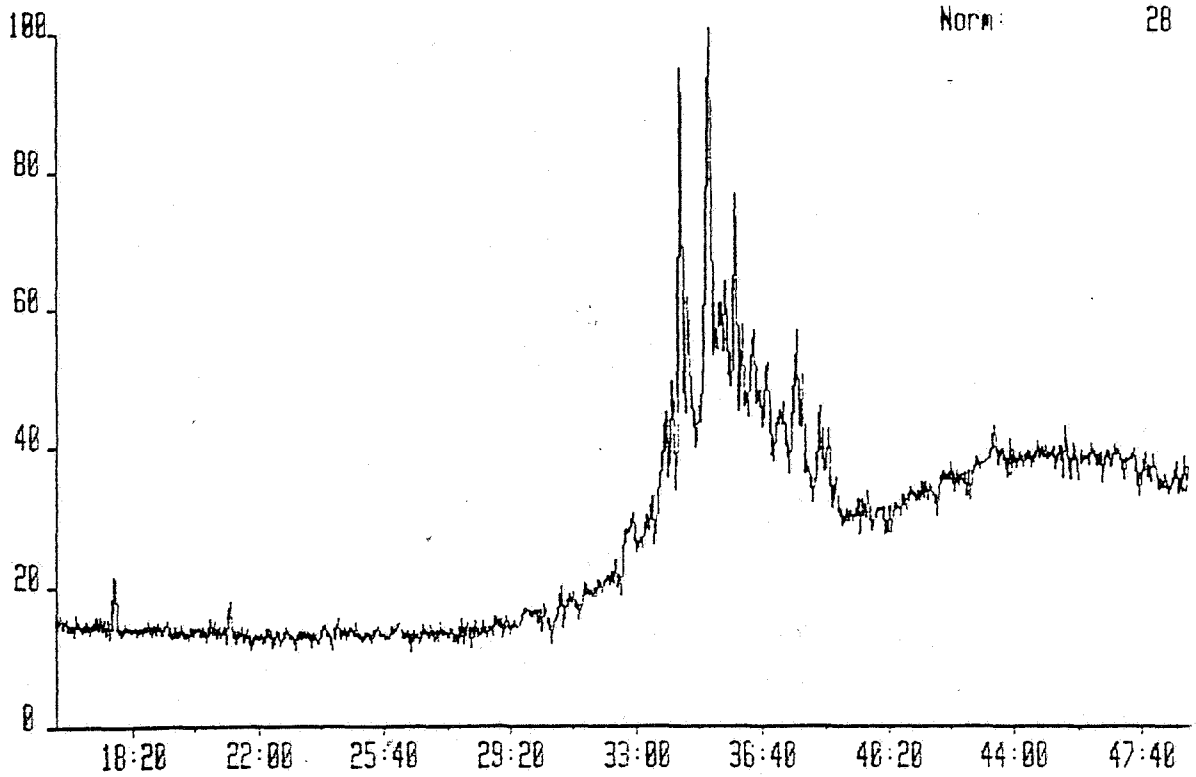


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

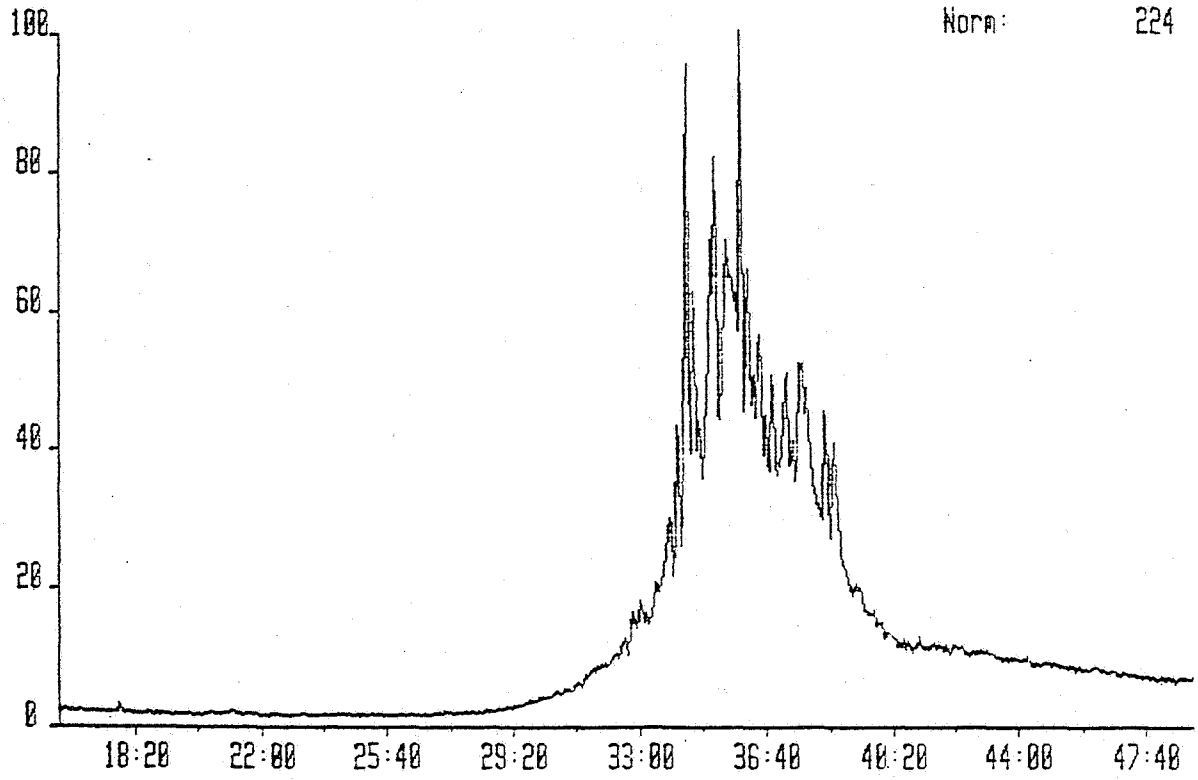
EXAMPLE OF PEAK IDENTIFICATION FOR C30 STERANES



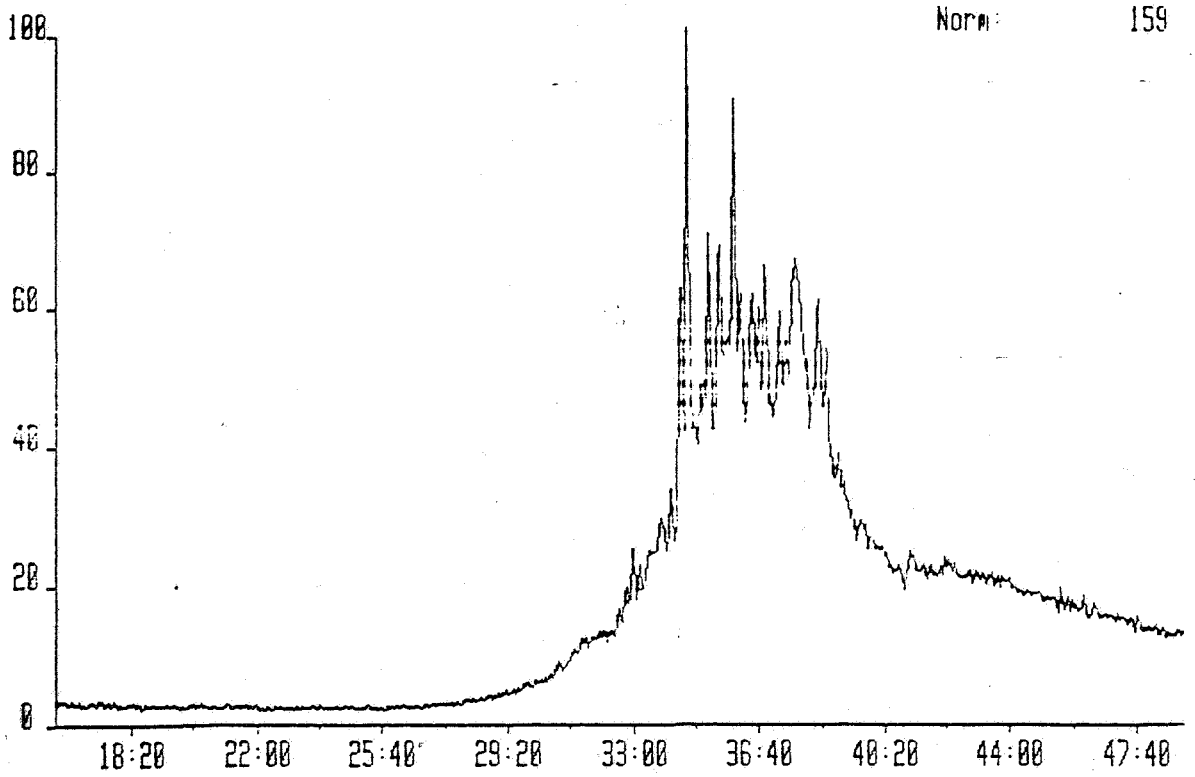
CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 414.4226
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



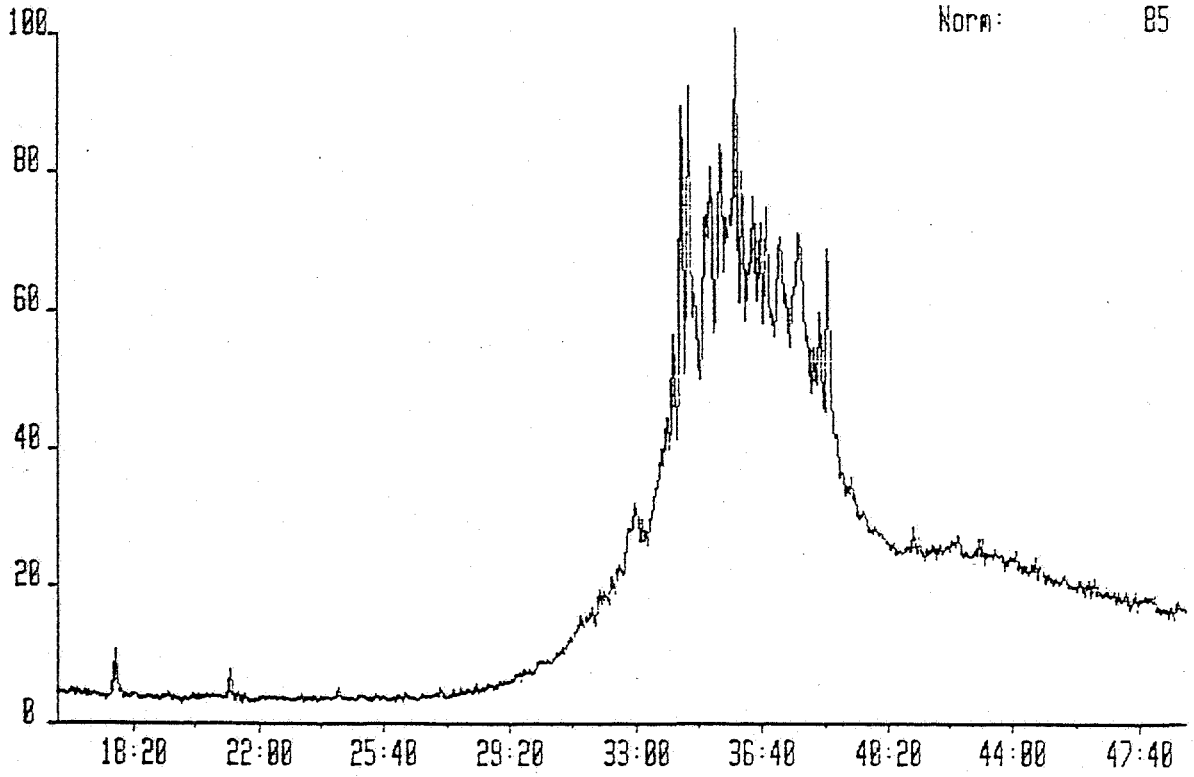

CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 414.4226
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



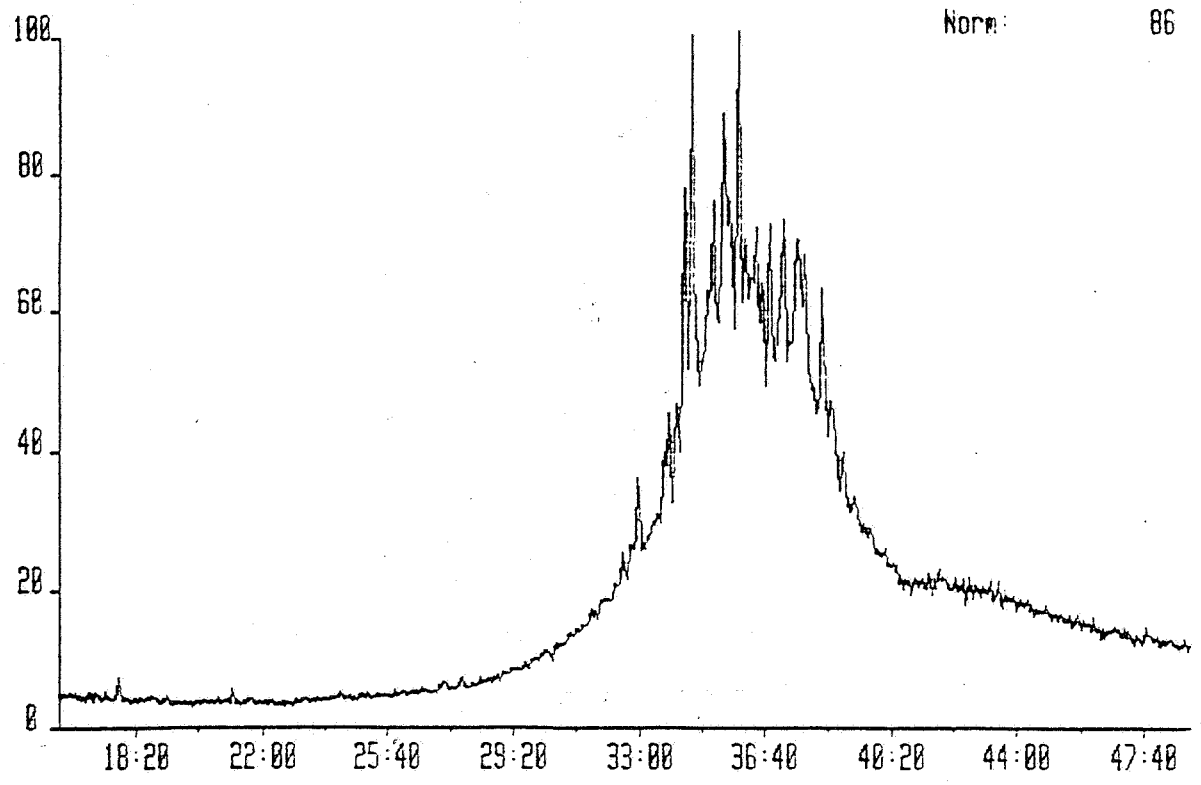
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 414.4226
Text:WELL 2/6-2, 4430M, SATURATED FRACTION




CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 414.4226
Text:WELL 2/6-2, 4528M, SATURATED FRACTION

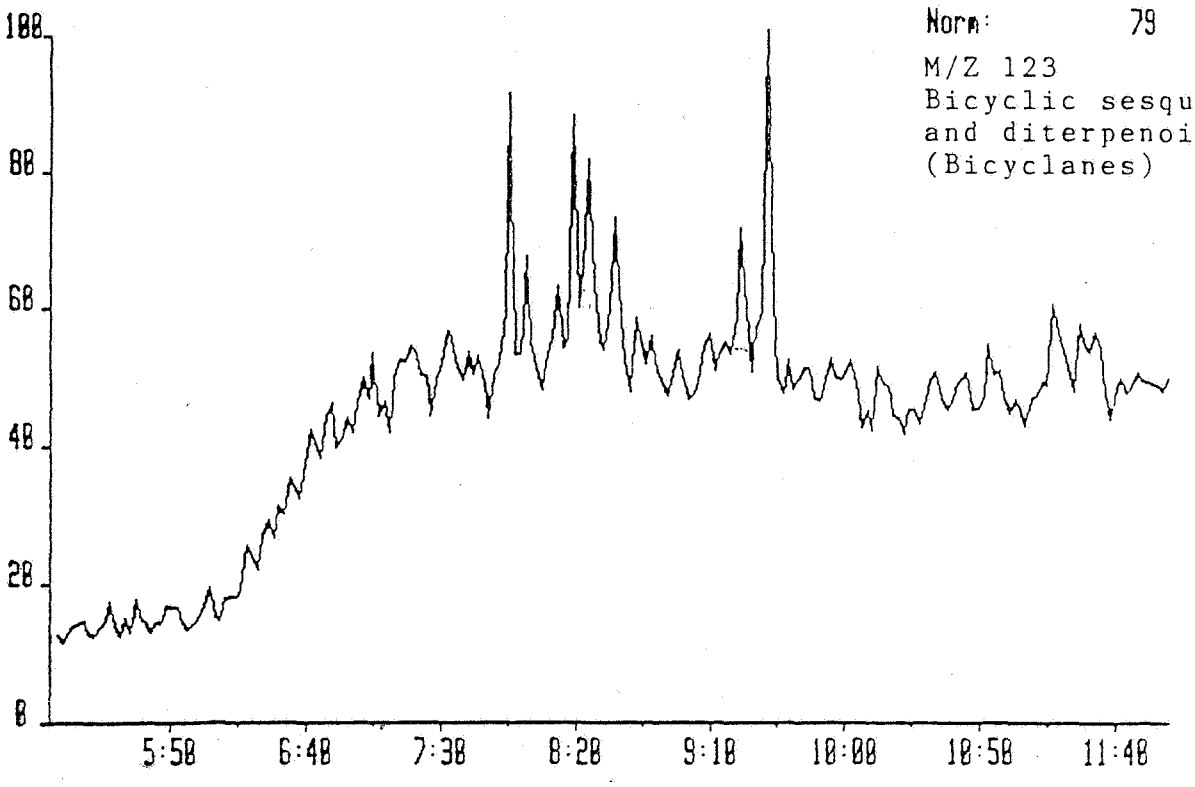


CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 414.4226
Text:WELL 2/6-2, 4666M, SATURATED FRACTION

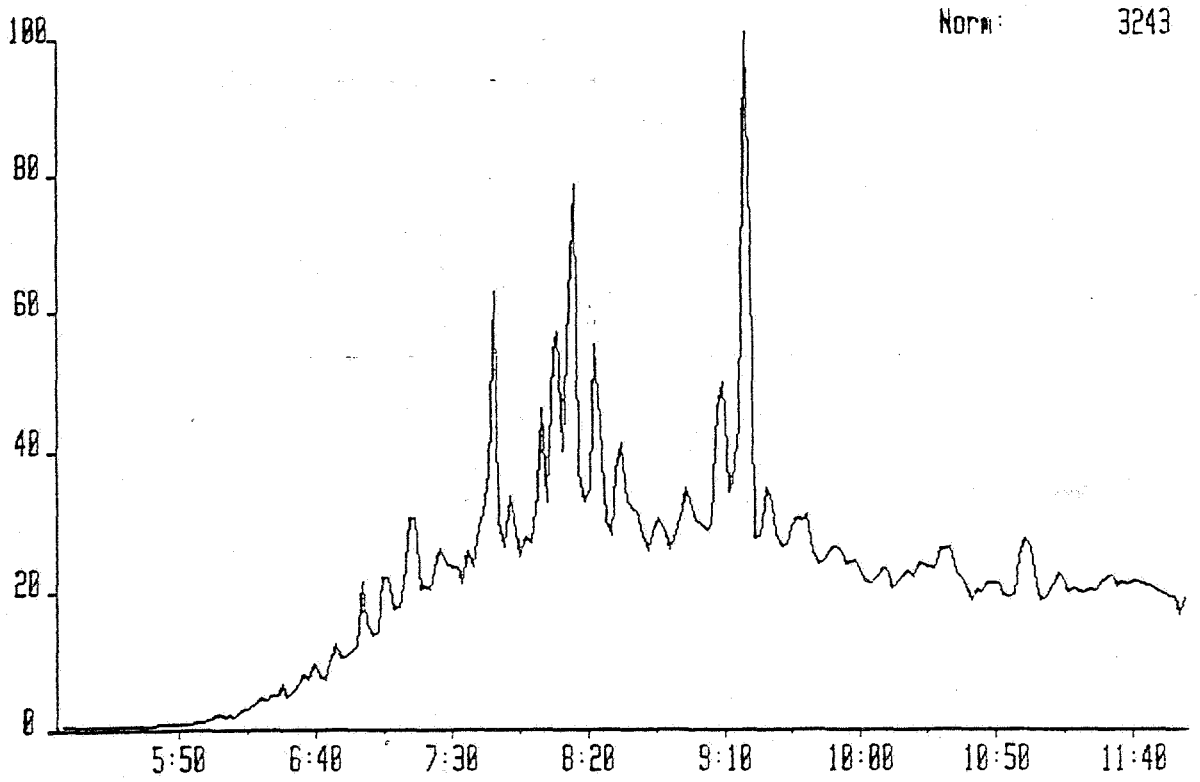


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

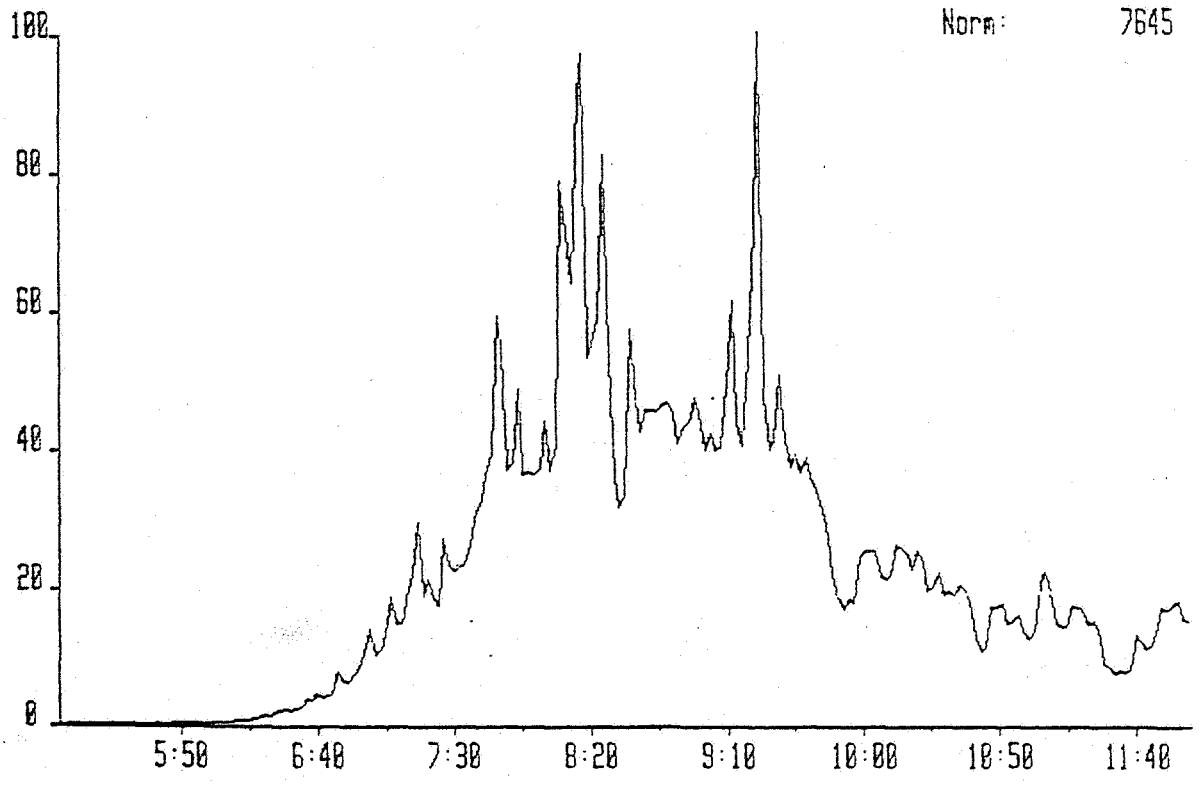
# EXAMPLE OF PEAK IDENTIFICATION FOR BICYCLIC SESQUITERPENOIDS AND DITERPENOIDS (BICYCLANES)



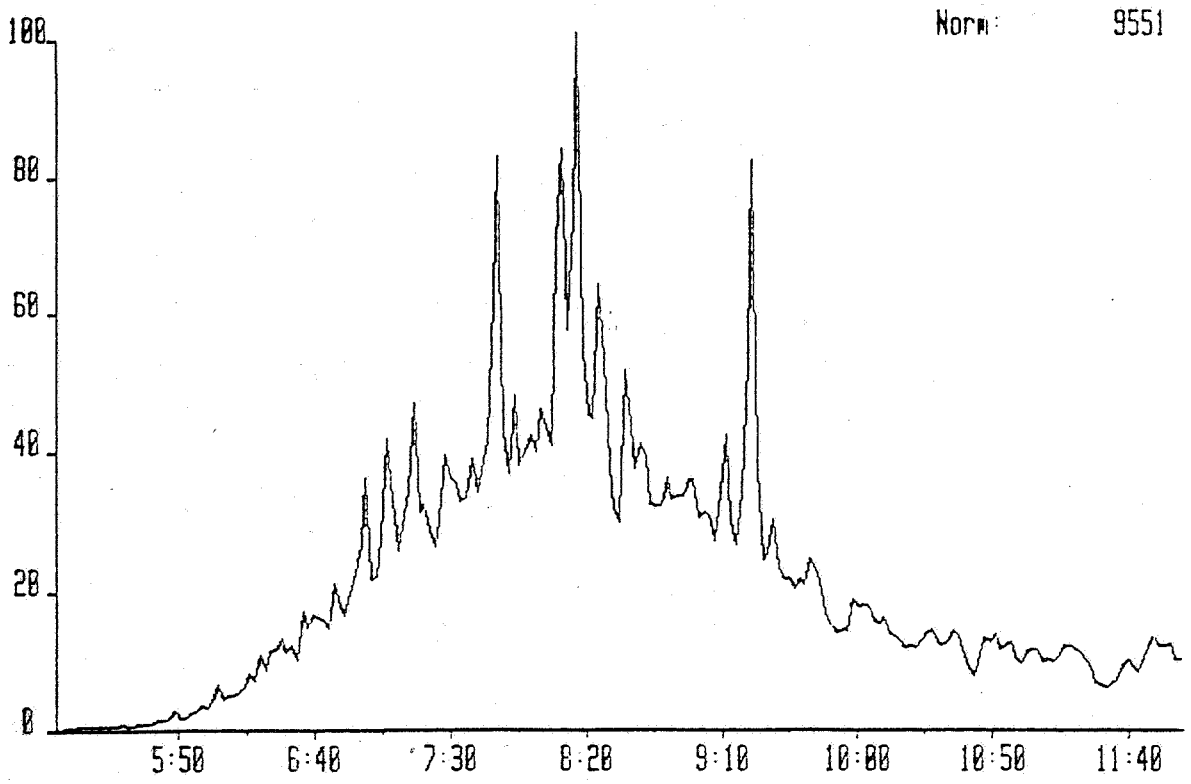
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 123.1174
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



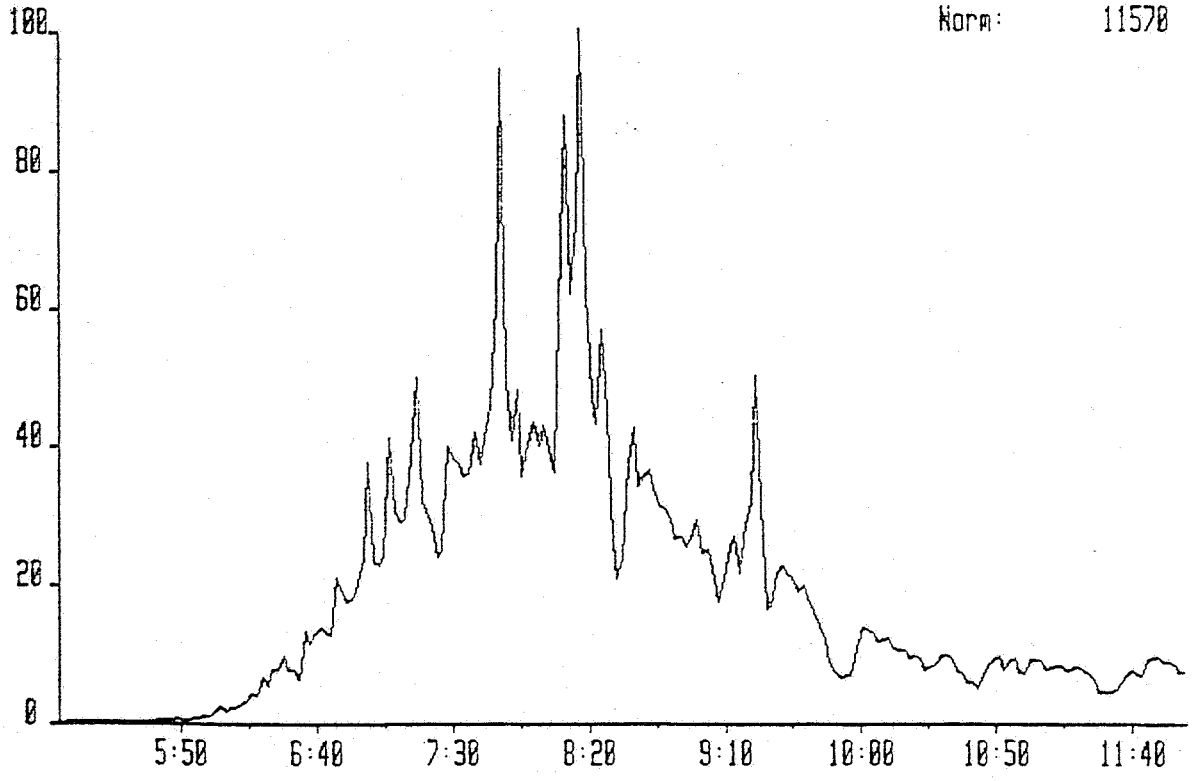

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 123.1174
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 123.1174
Text:WELL 2/6-2, 4430M, SATURATED FRACTION

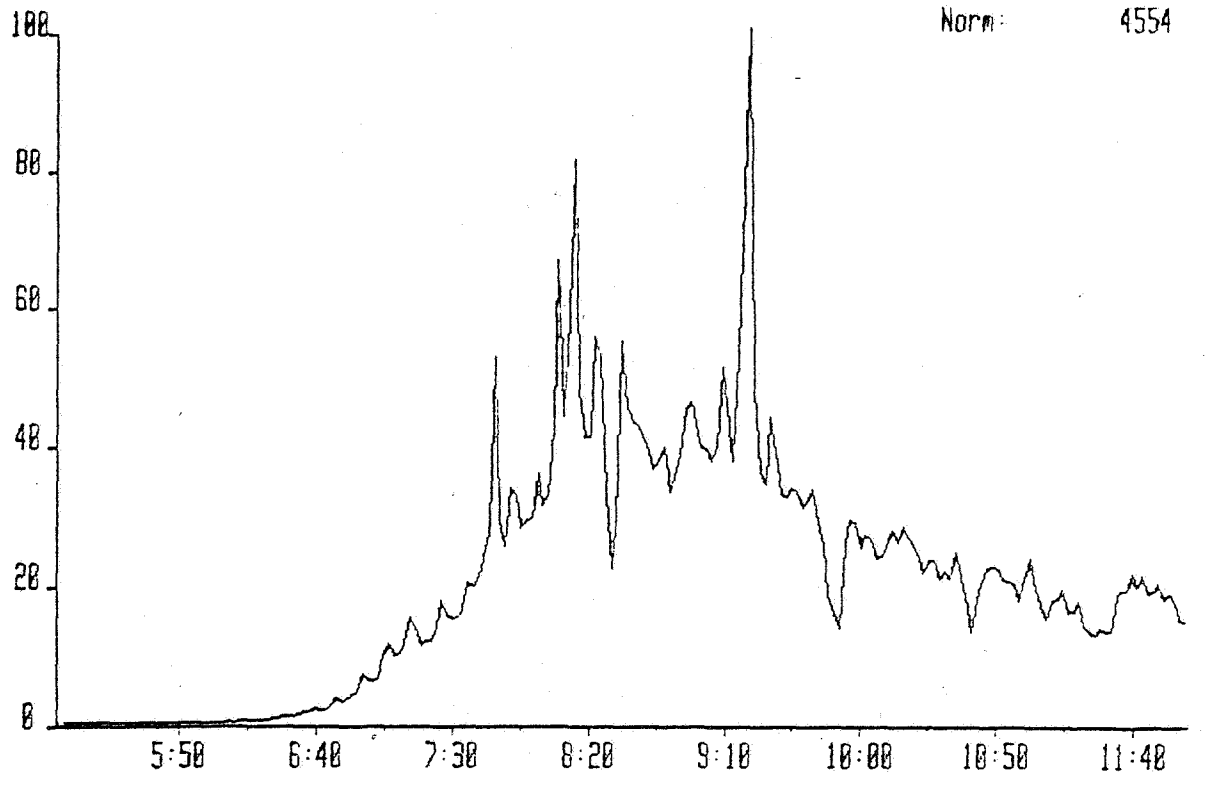



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 123.1174
Text:WELL 2/6-2, 4528M, SATURATED FRACTION

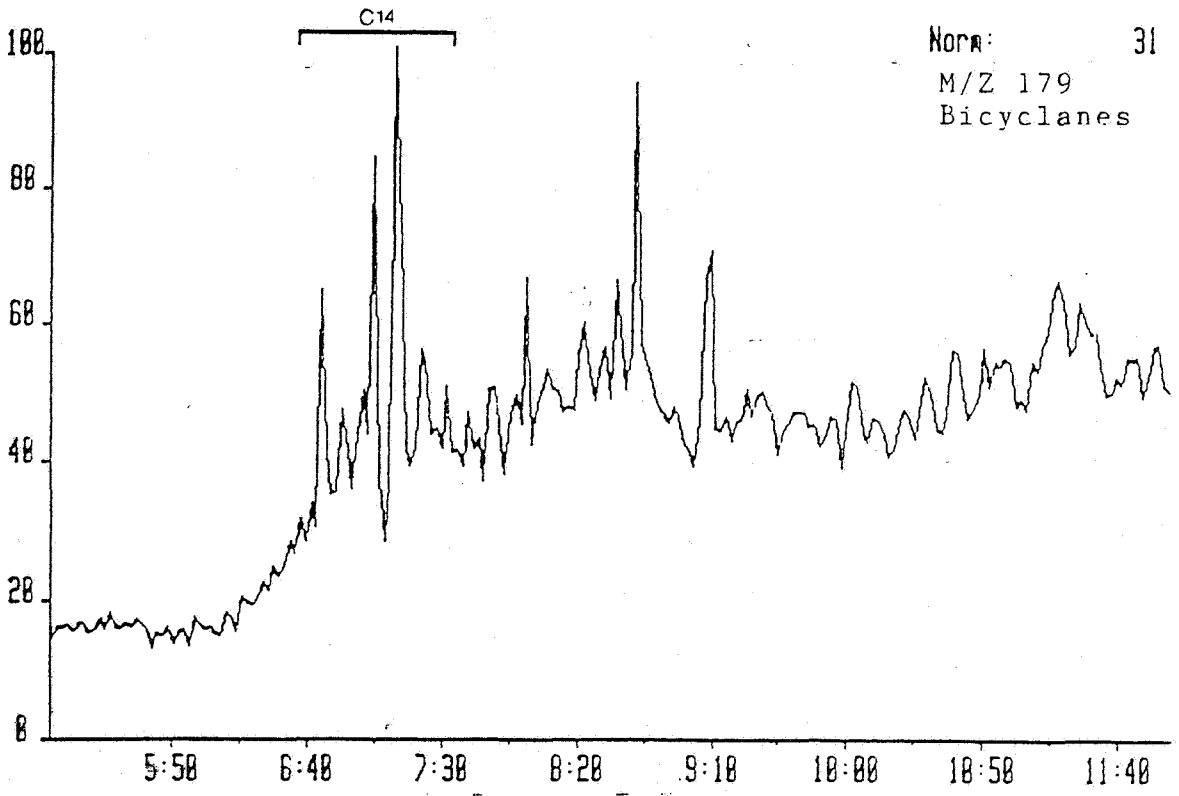


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

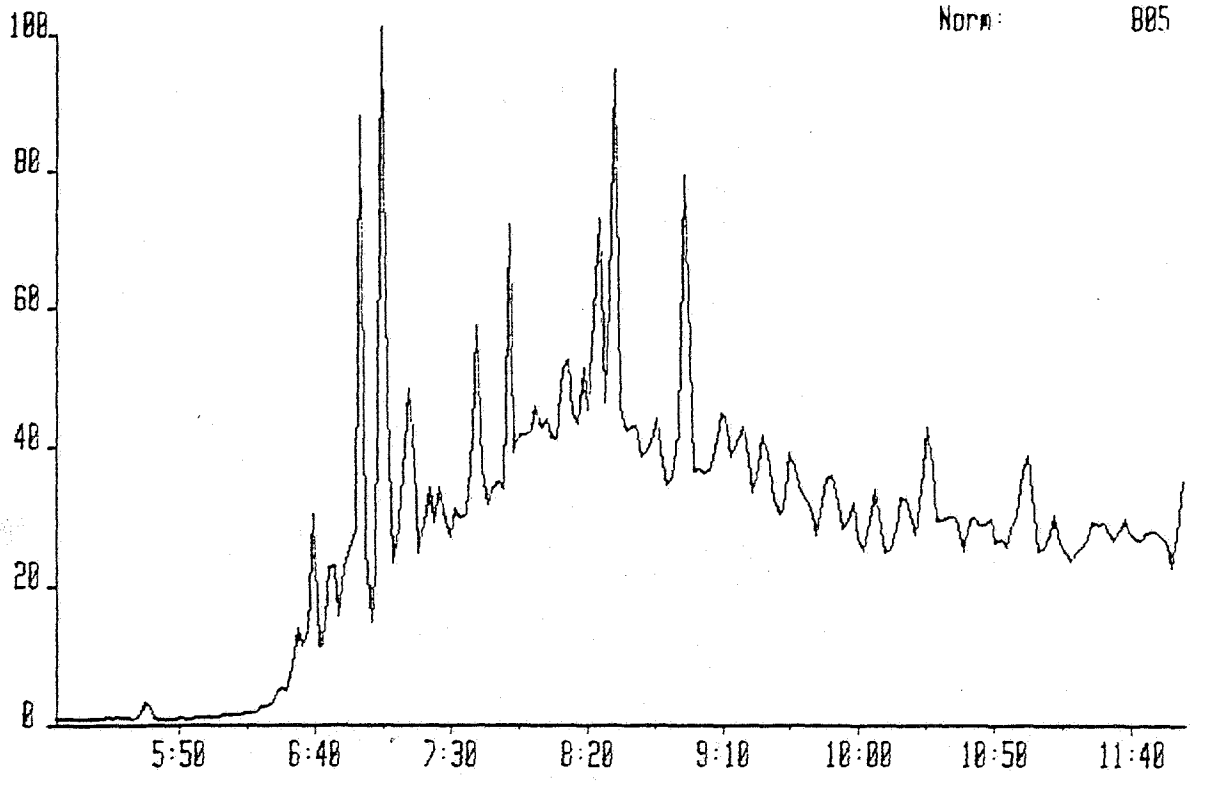
CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System SAT1
Sample 14 Injection 1 Group 1 Mass 123.1174
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



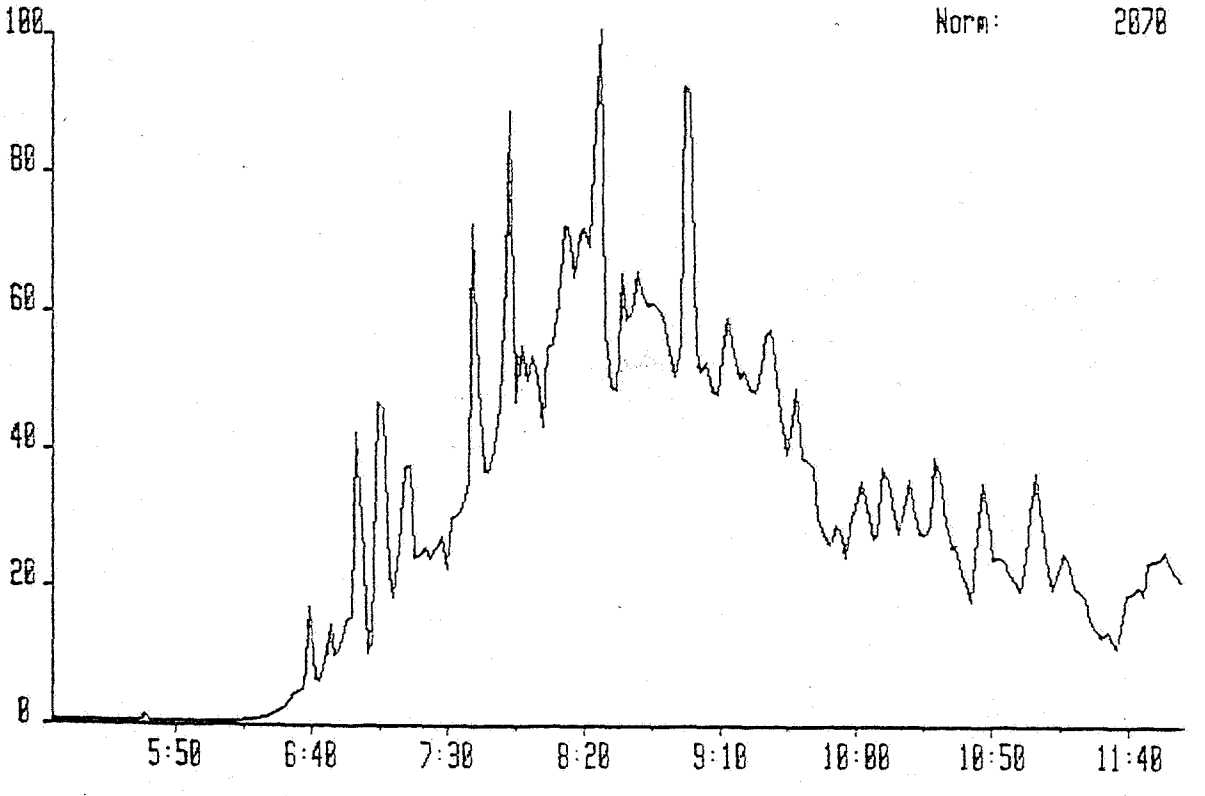
# EXAMPLE OF PEAK IDENTIFICATION FOR BICYCLANES



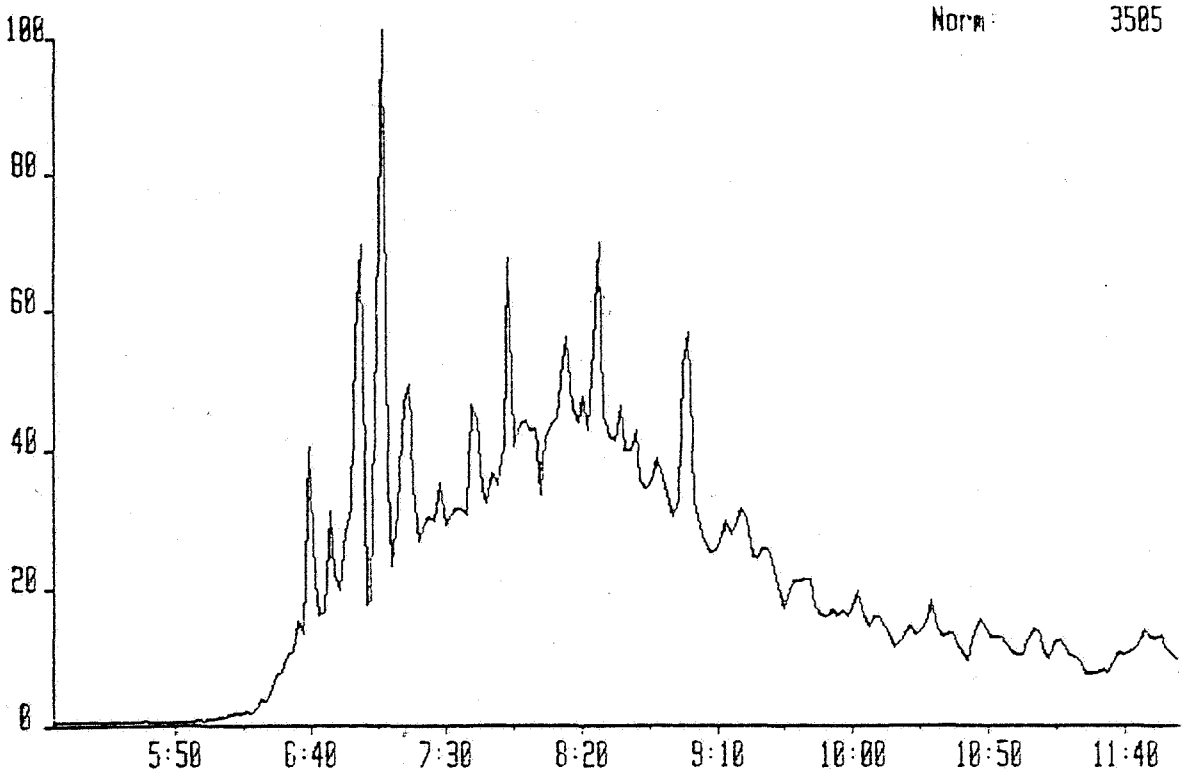
CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 179.1800
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



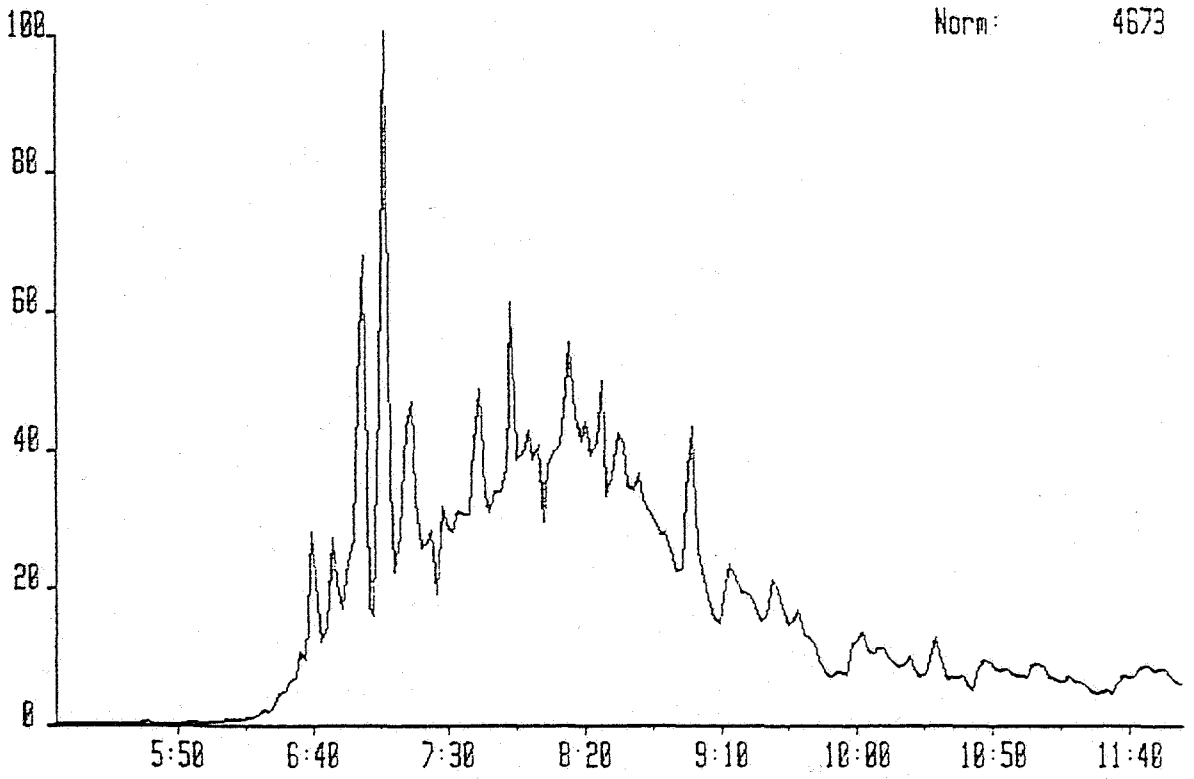

CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 179.1800
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 179.1800
Text:WELL 2/6-2, 4430M, SATURATED FRACTION

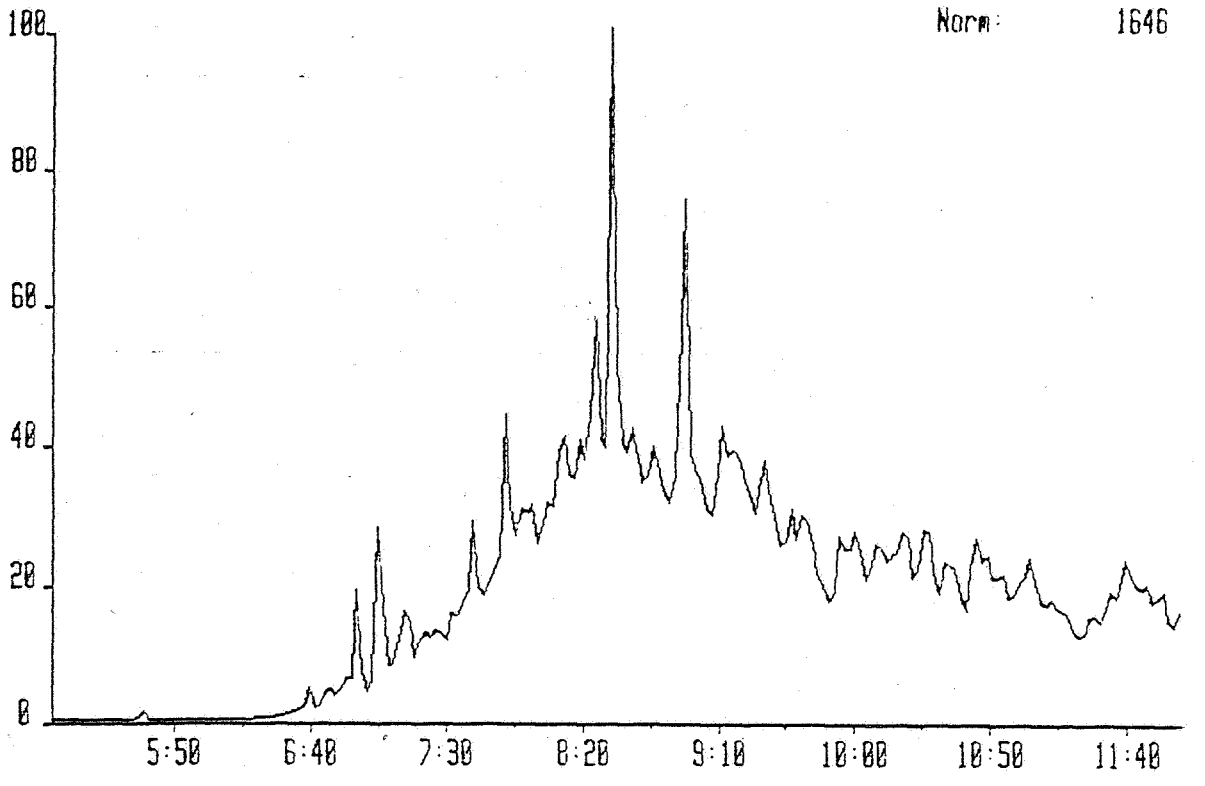



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 179.1800
Text:WELL 2/6-2, 4528M, SATURATED FRACTION

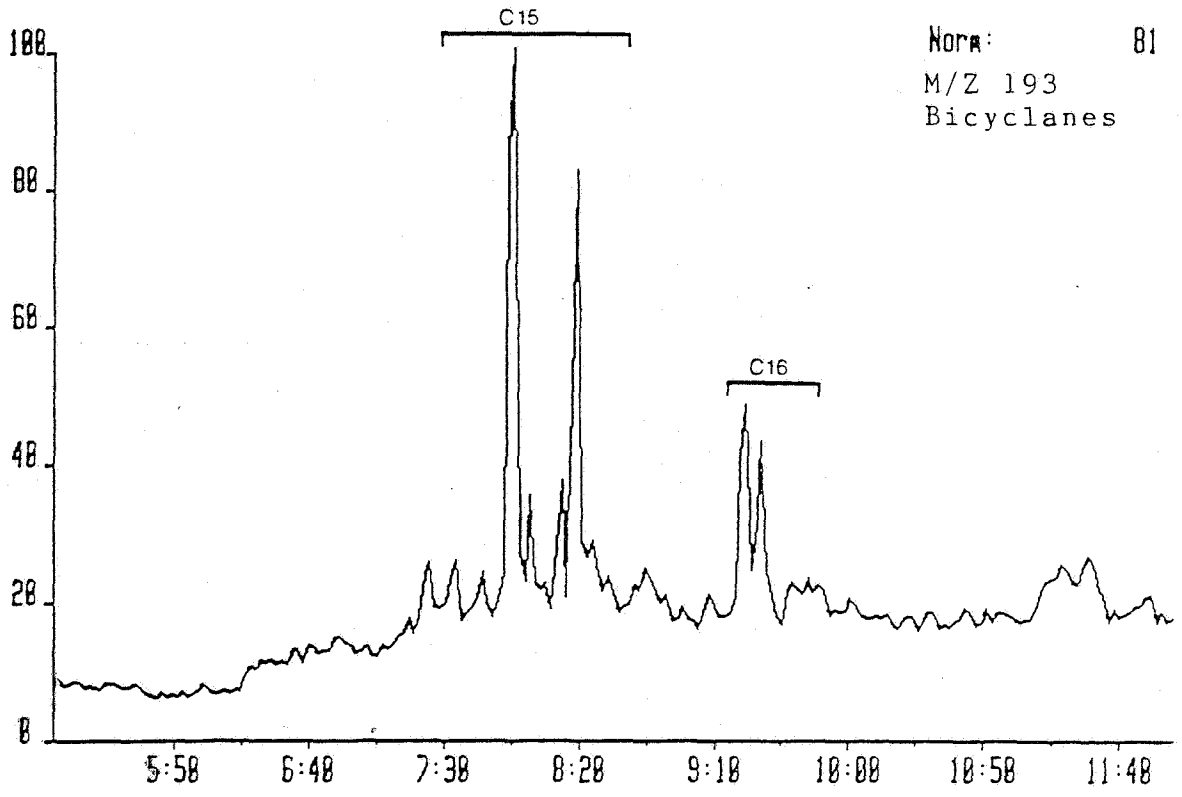


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

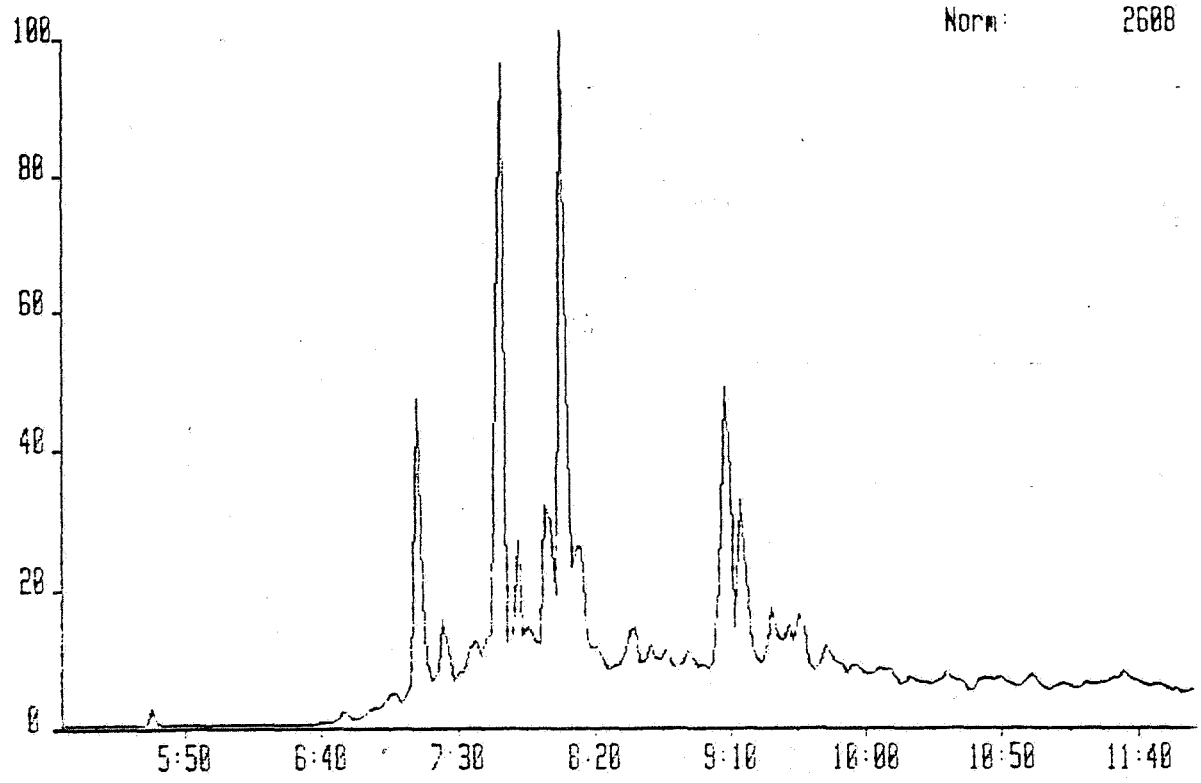
CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 14 Injection 1 Group 1 Mass 179.1800
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



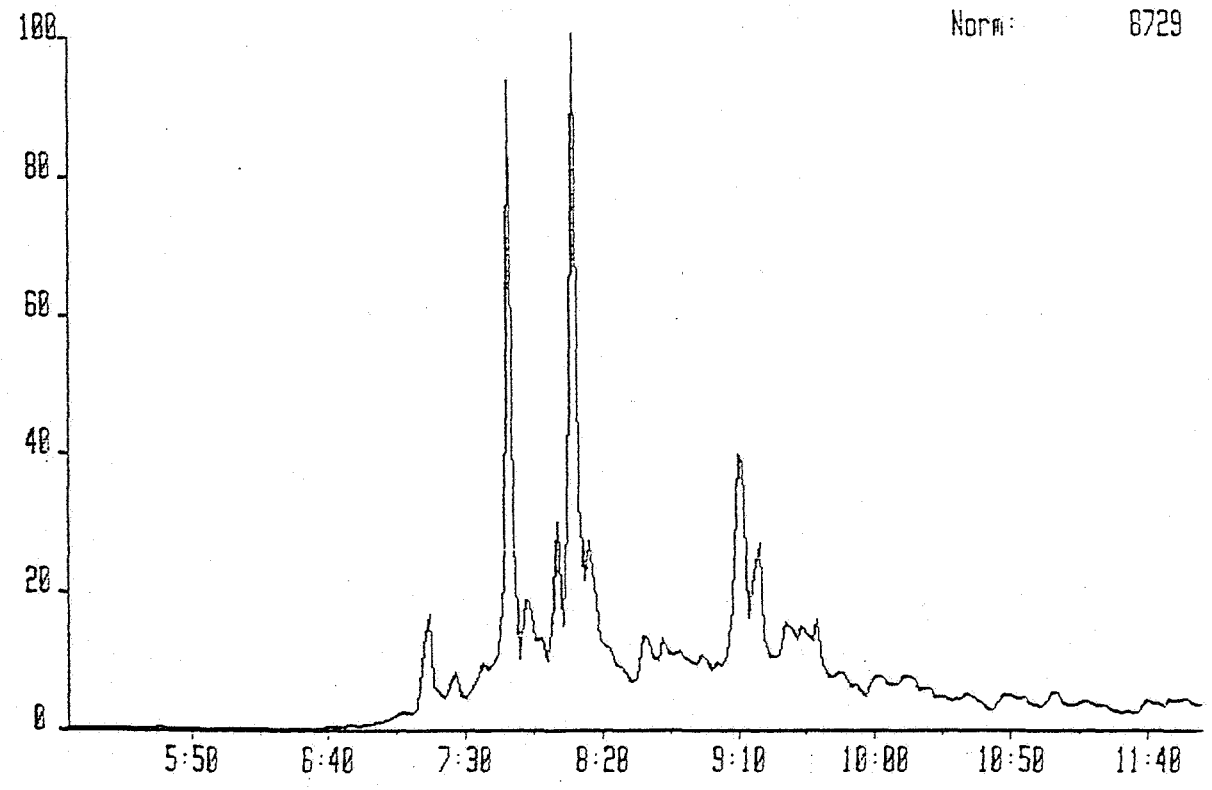
# EXAMPLE OF PEAK IDENTIFICATION FOR BICYCLANES



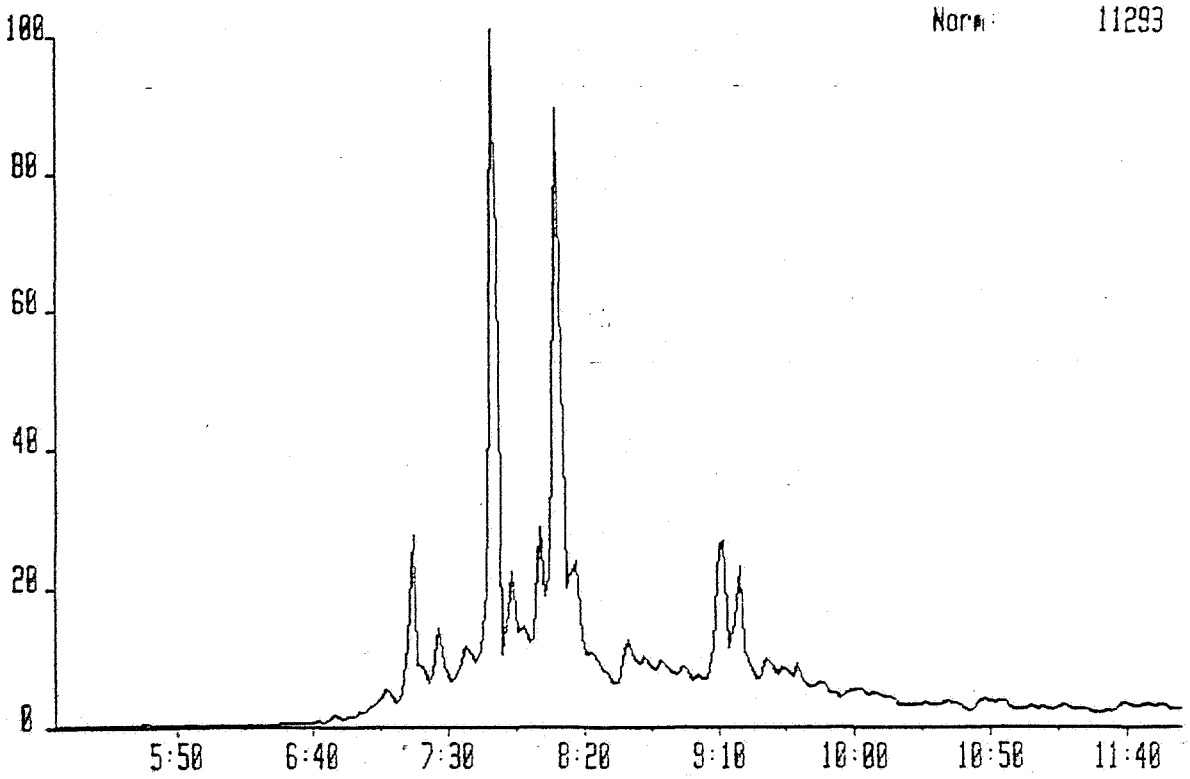
CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 10 Injection 1 Group 1 Mass 193.1956
Text:WELL 2/6-2, 4200M, SATURATED FRACTION



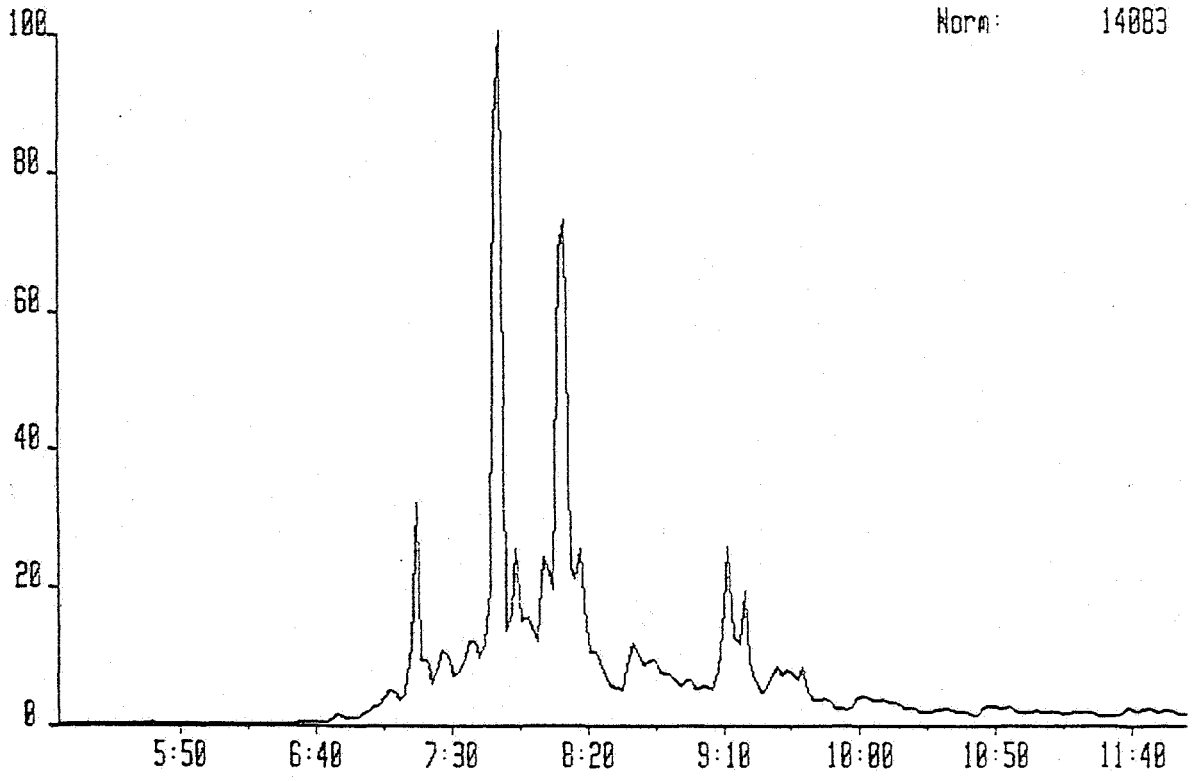

CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 11 Injection 1 Group 1 Mass 193.1956
Text:WELL 2/6-2, 4300M, SATURATED FRACTION



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 12 Injection 1 Group 1 Mass 193.1956
Text:WELL 2/6-2, 4430M, SATURATED FRACTION

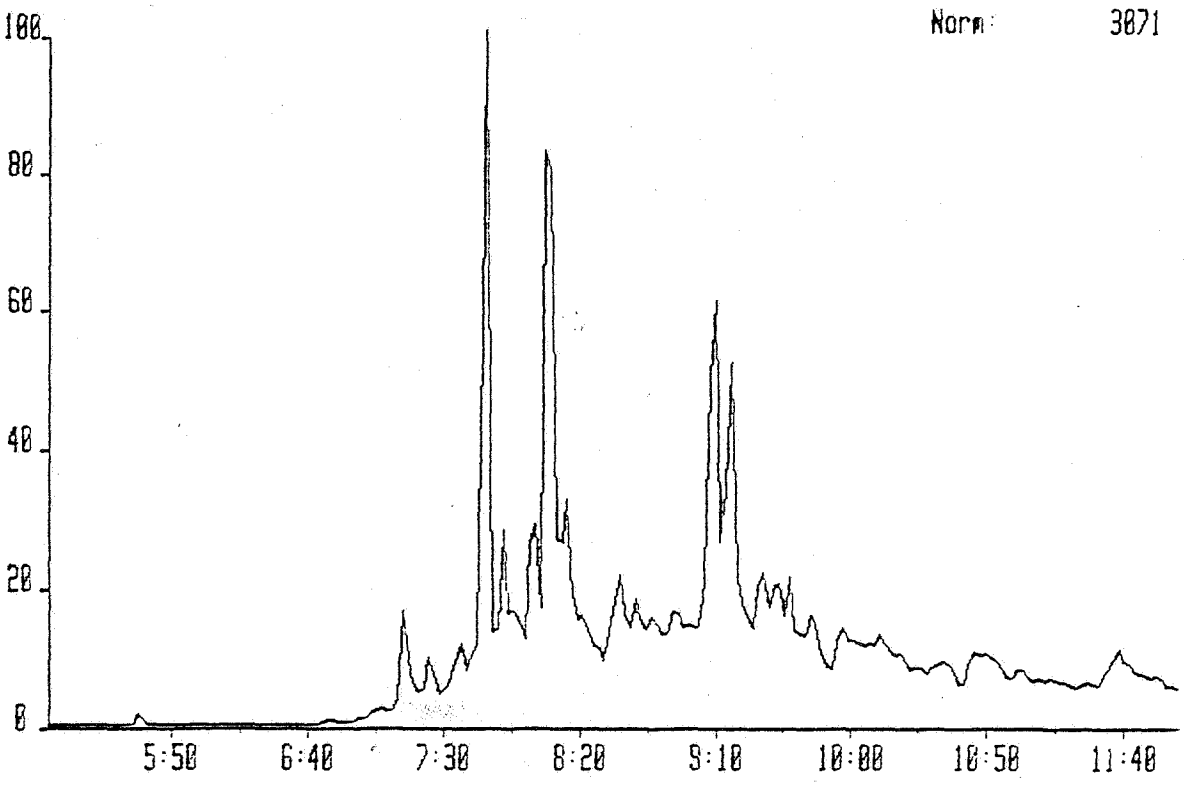



CGSAT6 24-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:SAT1
Sample 13 Injection 1 Group 1 Mass 193.1956
Text:WELL 2/6-2, 4528M, SATURATED FRACTION



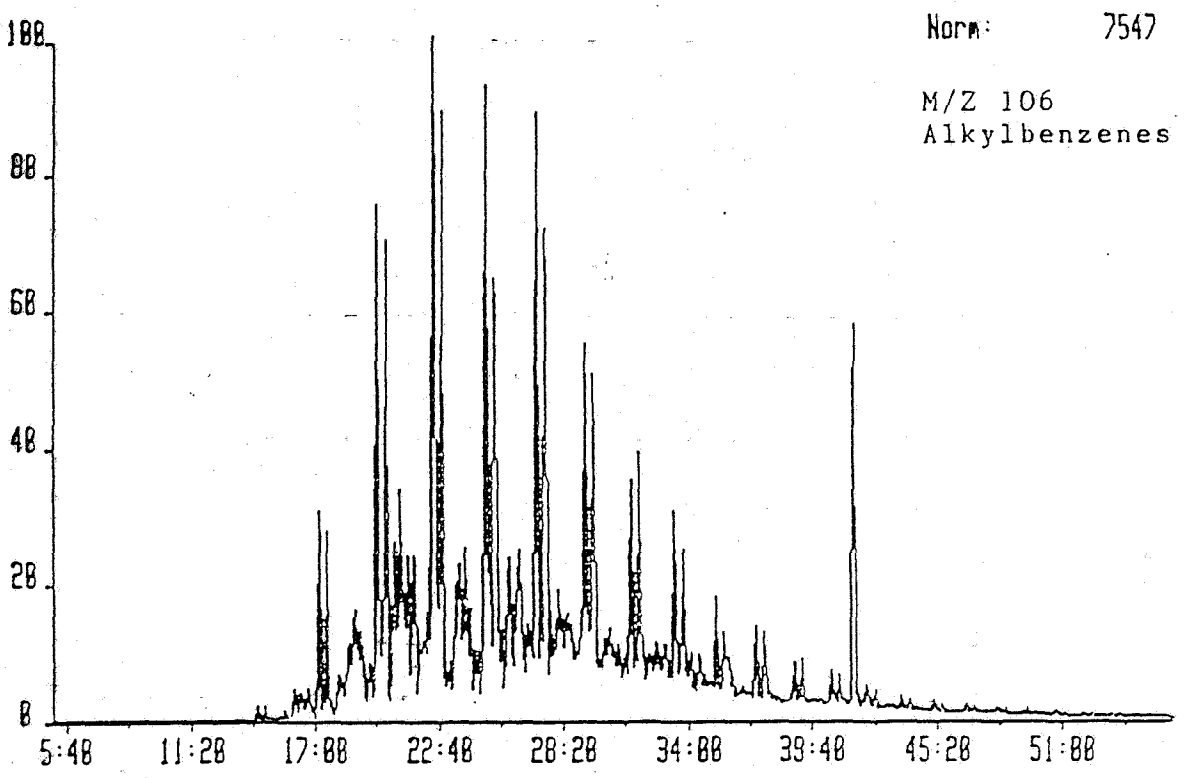
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGSAT6 24-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System SAT1
Sample 14 Injection 1 Group 1 Mass 193.1956
Text:WELL 2/6-2, 4666M, SATURATED FRACTION



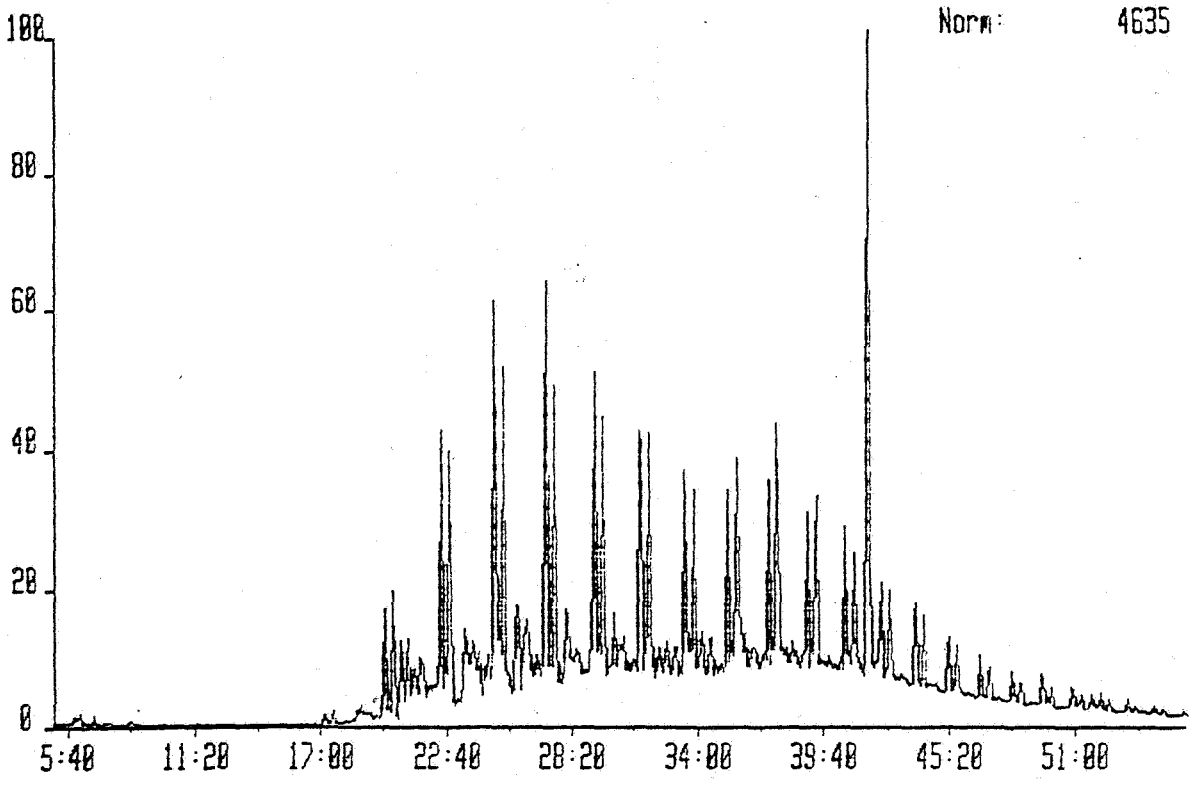
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

EXAMPLE OF PEAK IDENTIFICATION FOR ALKYLBENZENES.

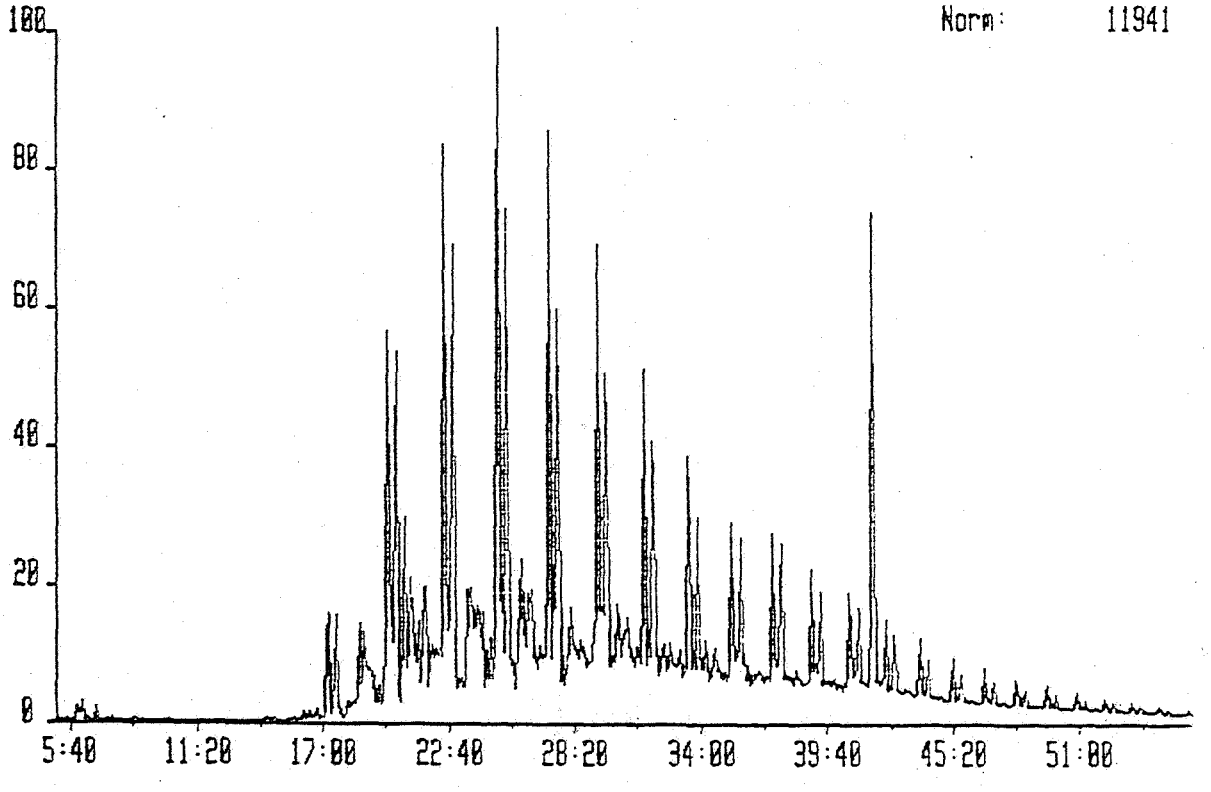


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 2 Injection 1 Group 1 Mass 106.0783
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION

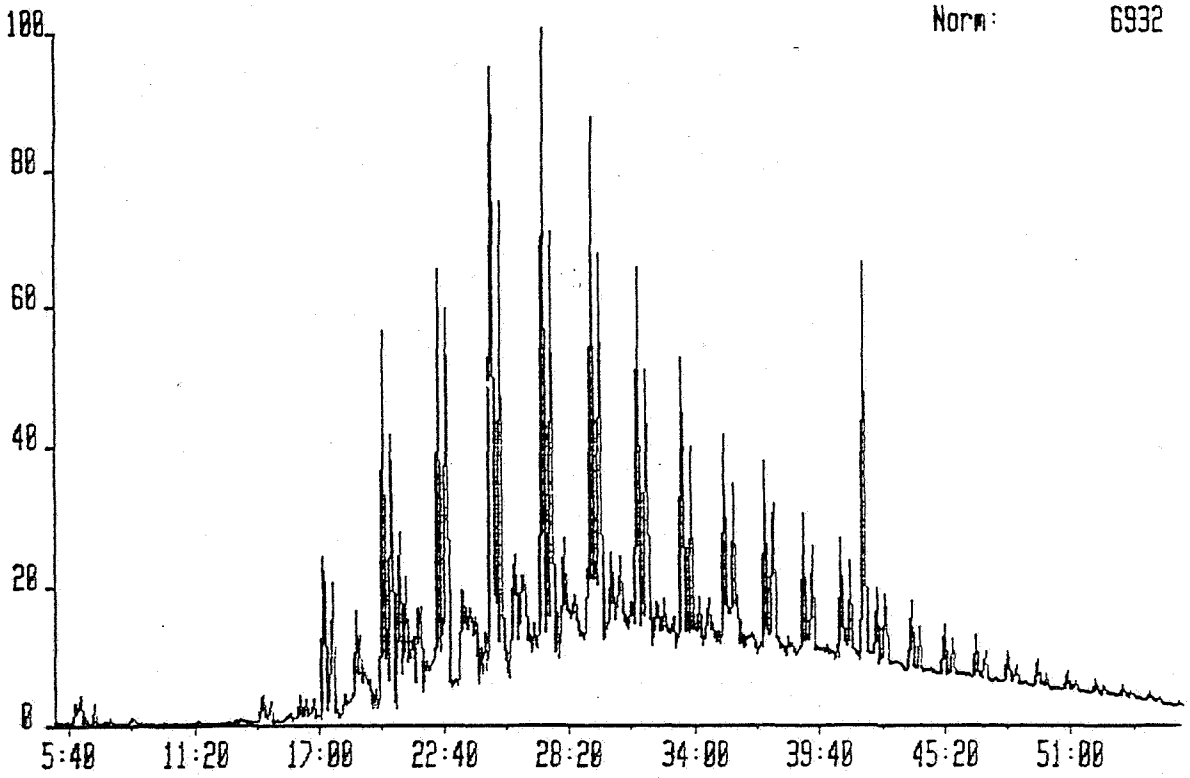



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 3 Injection 1 Group 1 Mass 106.0783
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION

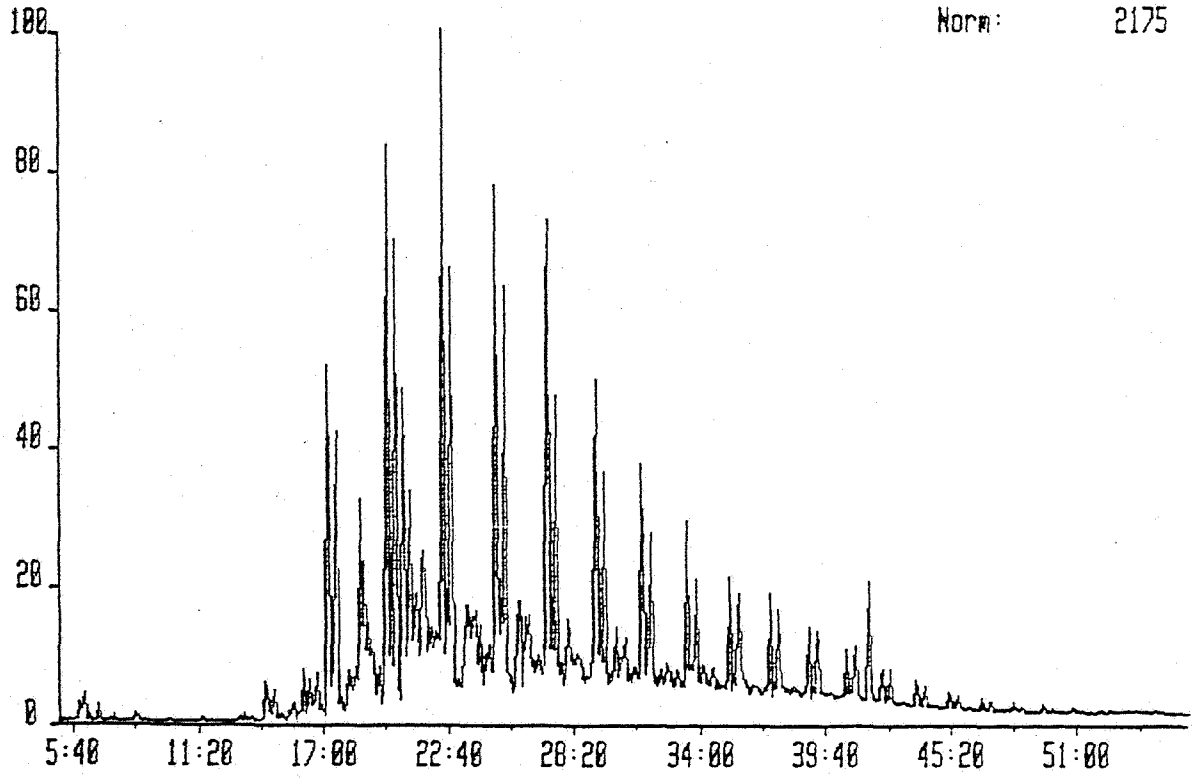


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 4 Injection 1 Group 1 Mass 186.0783
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

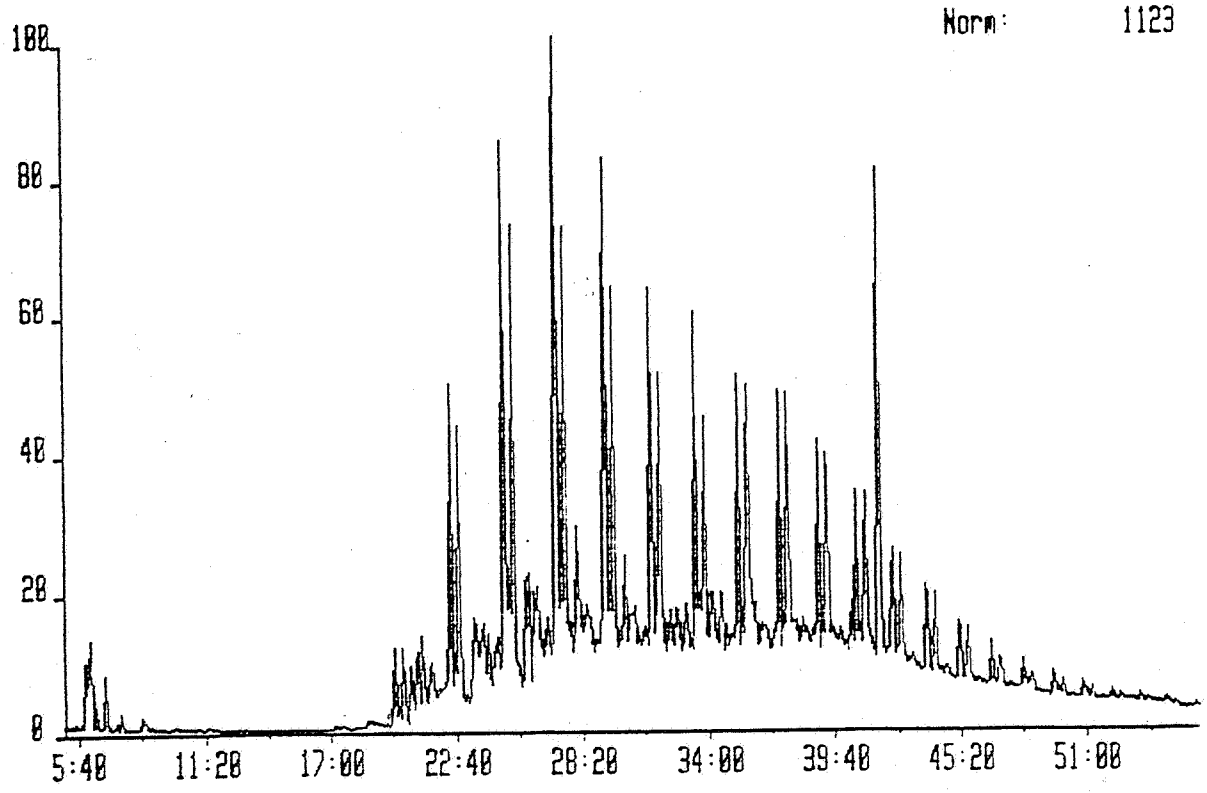



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 5 Injection 1 Group 1 Mass 186.0783
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION

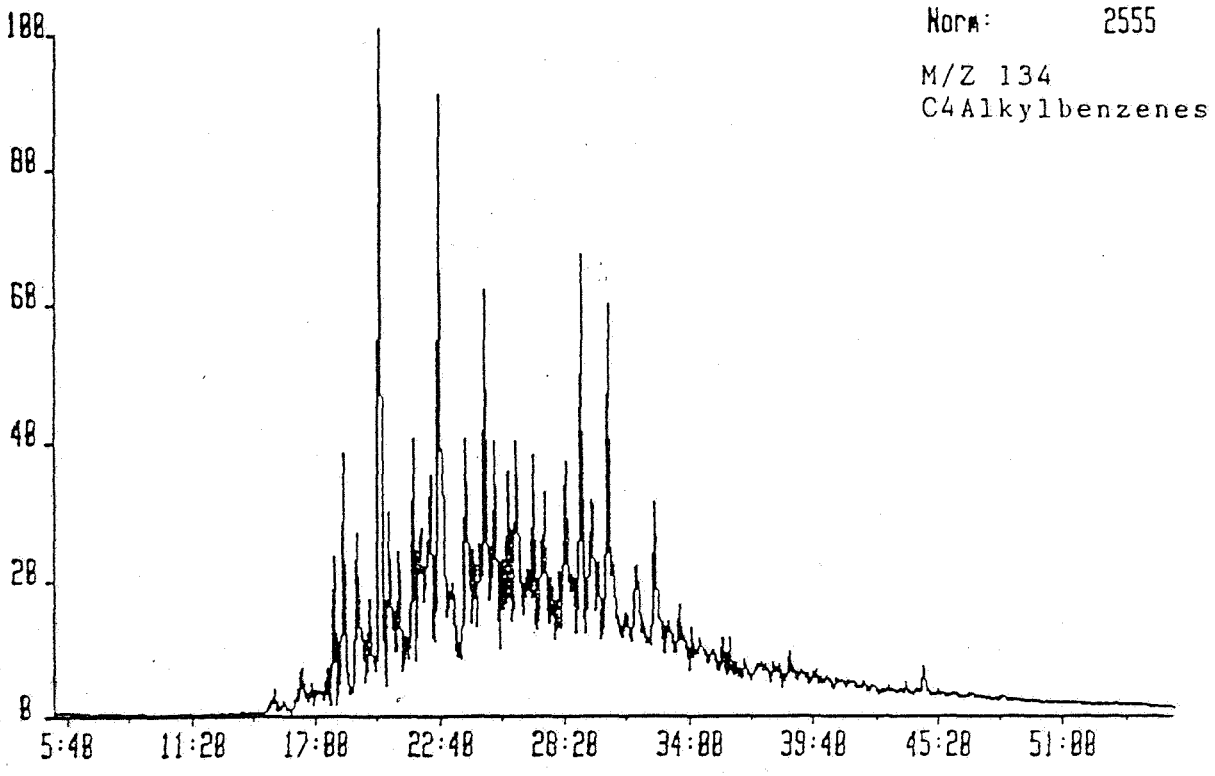


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

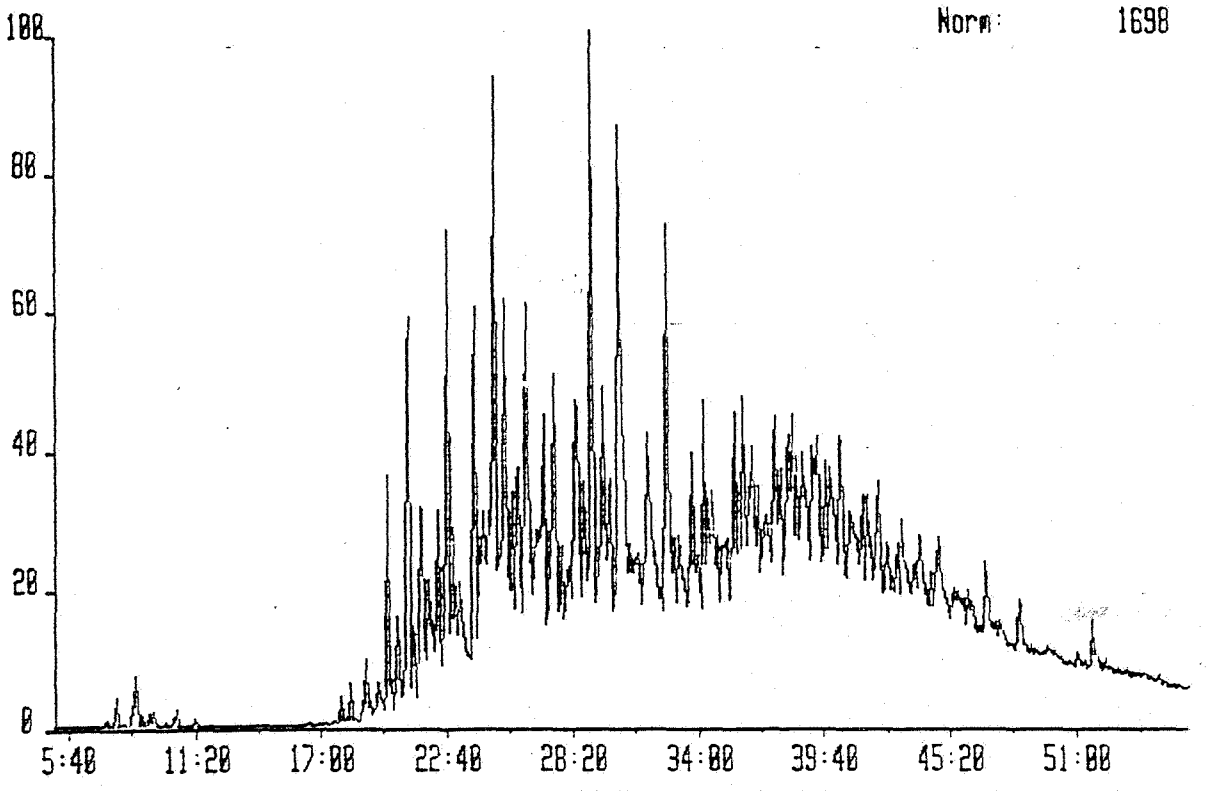
CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 6 Injection 1 Group 1 Mass 106.0783
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION



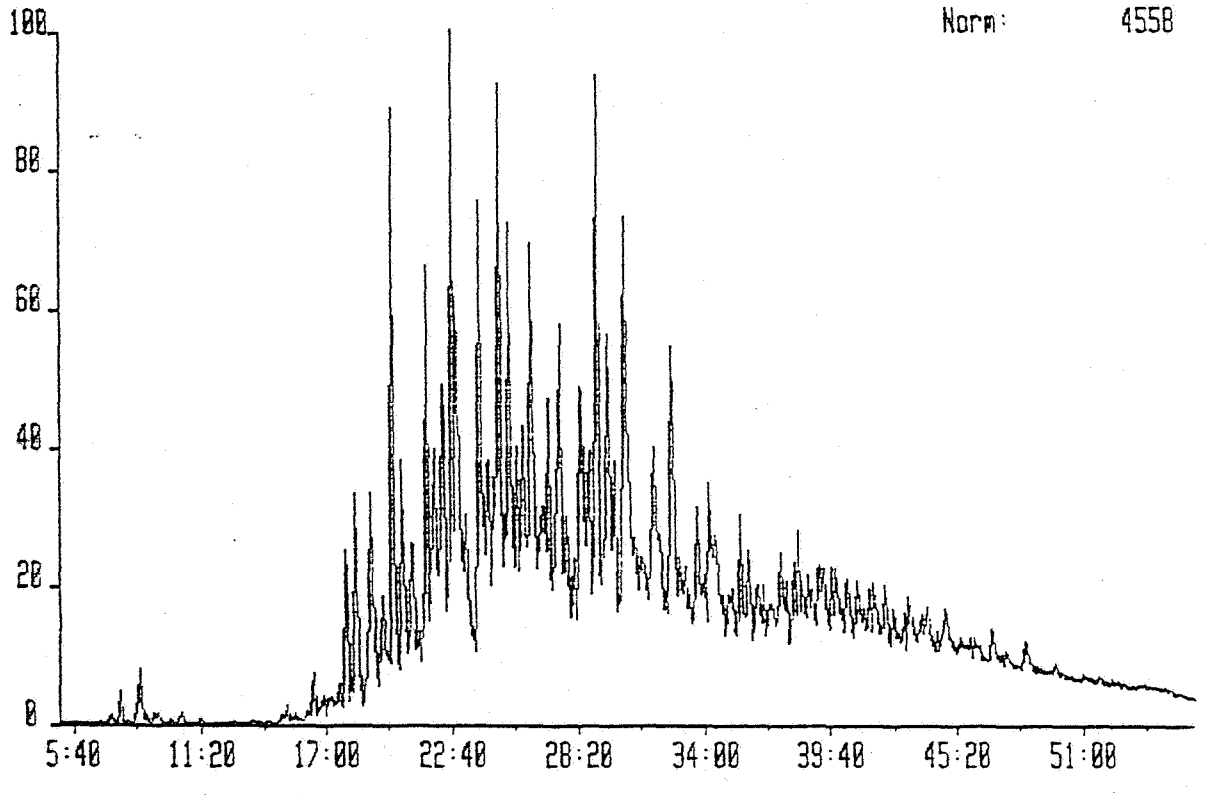
EXAMPL OF PEAK IDENTIFICATION FOR ALKYLBENZENES.



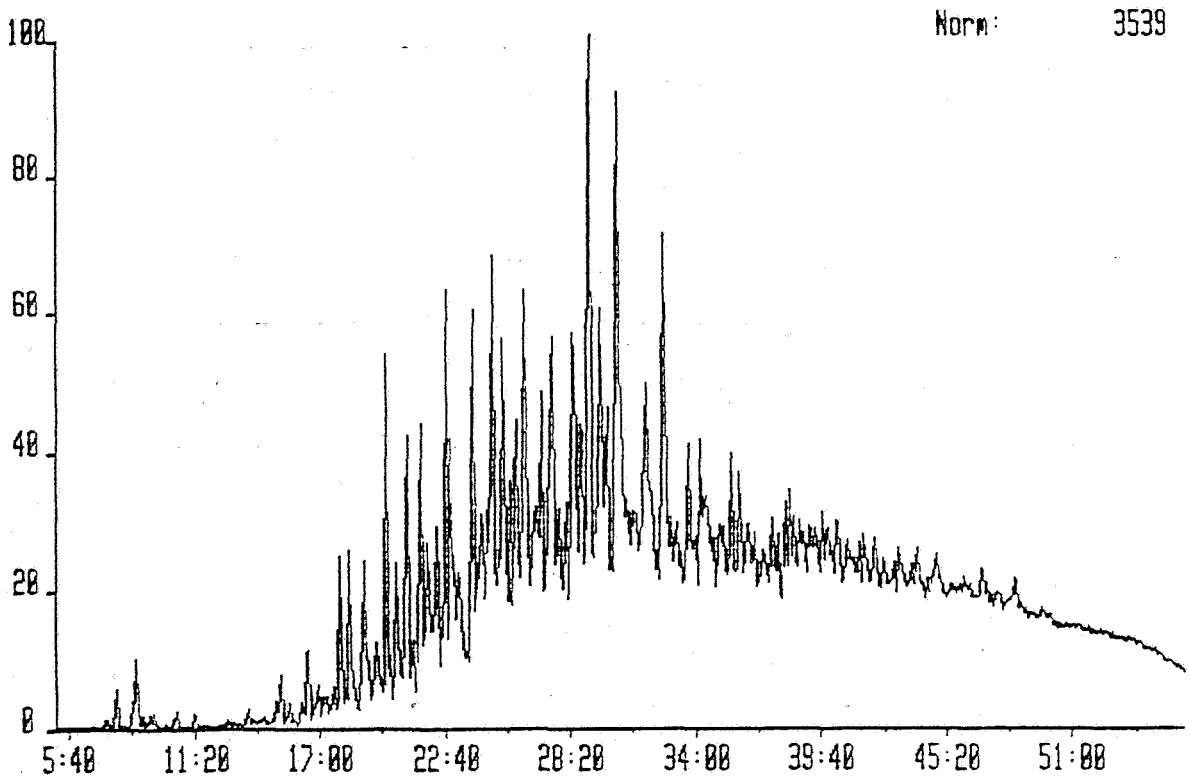
CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 2 Injection 1 Group 1 Mass 134.1096
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION



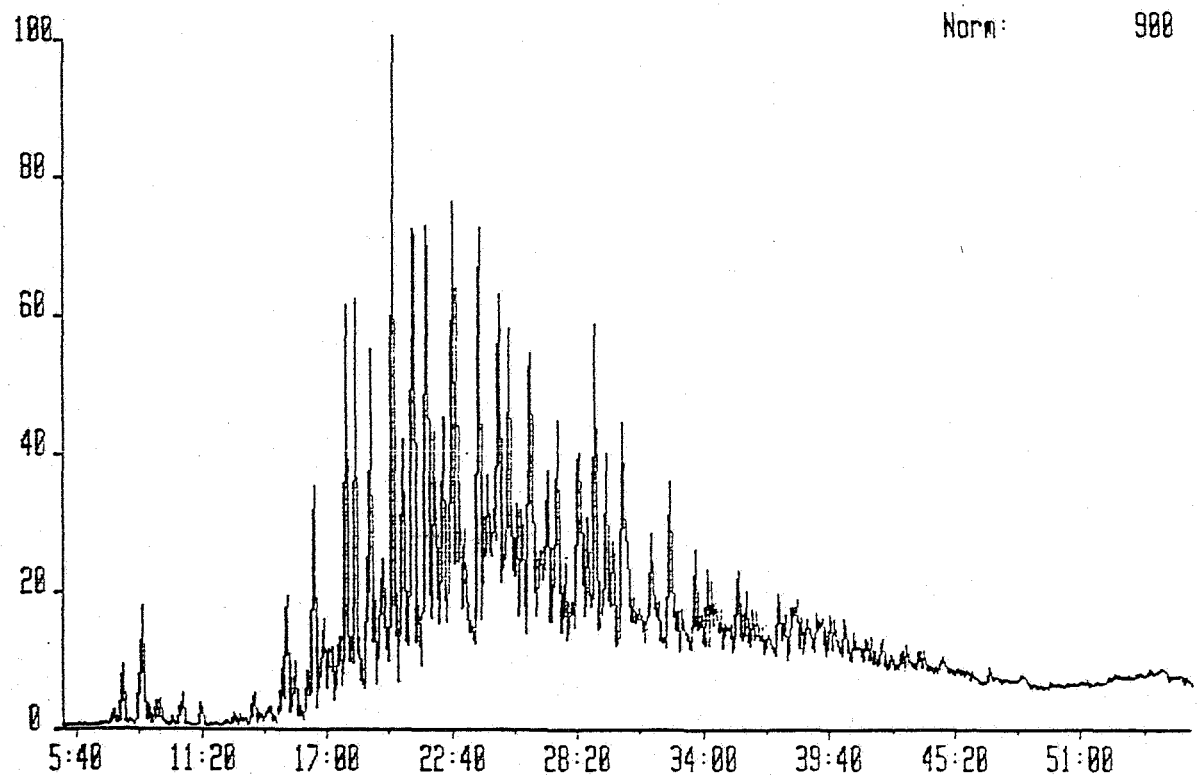

CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 3 Injection 1 Group 1 Mass 134.1096
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION



CGARO5 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 4 Injection 1 Group 1 Mass 134.1096
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

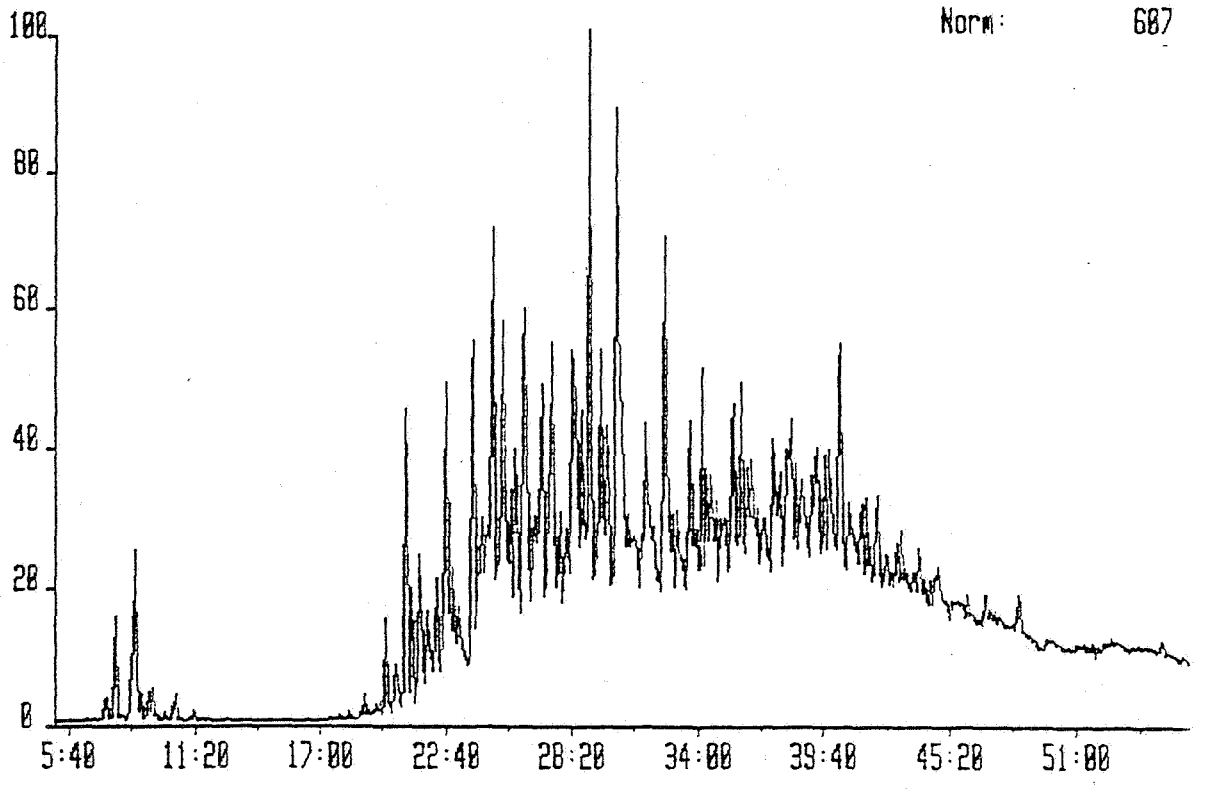



CGARO5 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 5 Injection 1 Group 1 Mass 134.1096
Text:WELL 2/6-2, 4520M, AROMATIC FRACTION



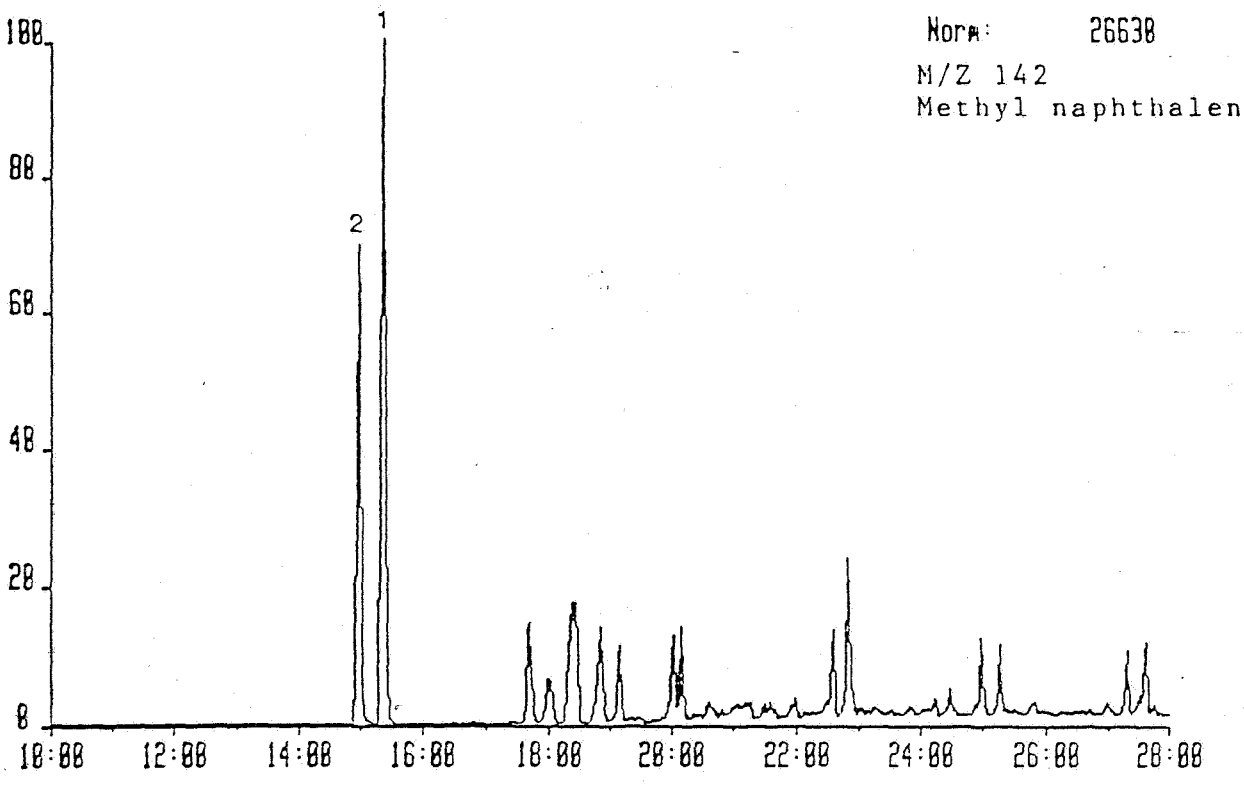
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGAR05 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 6 Injection 1 Group 1 Mass 134.1096
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION

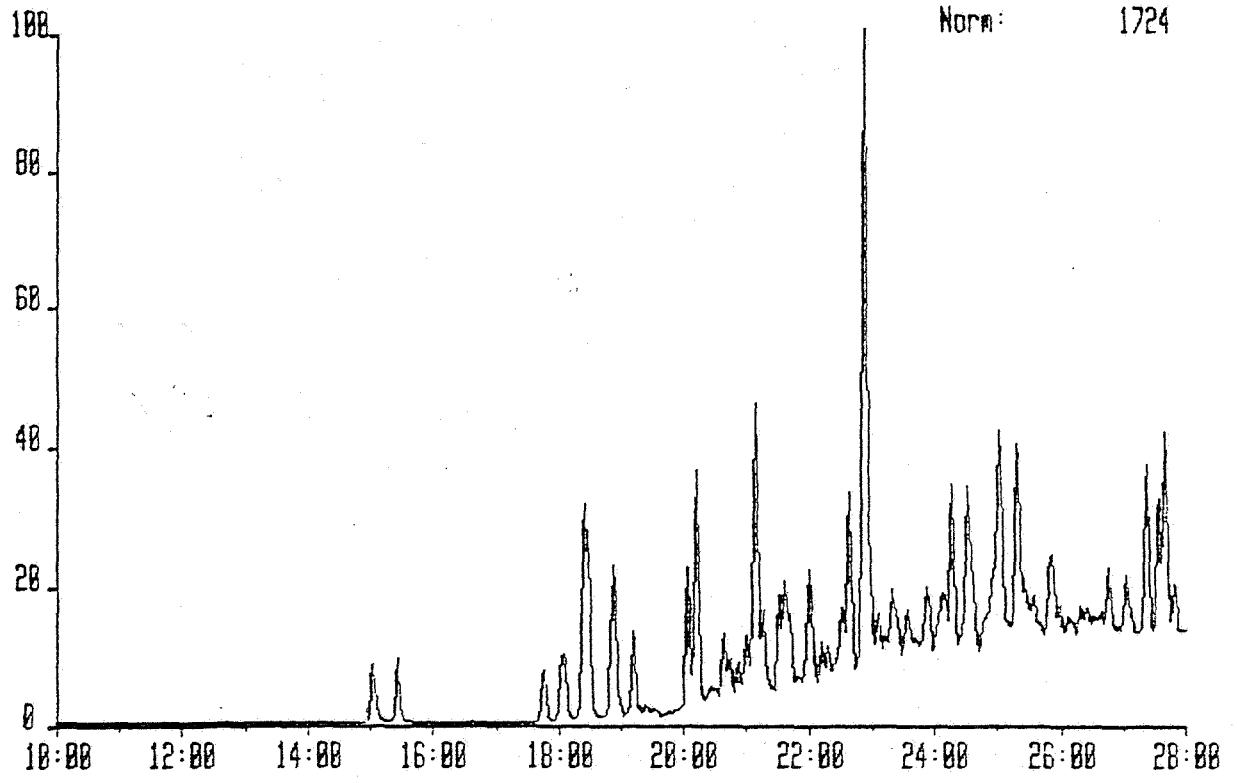


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

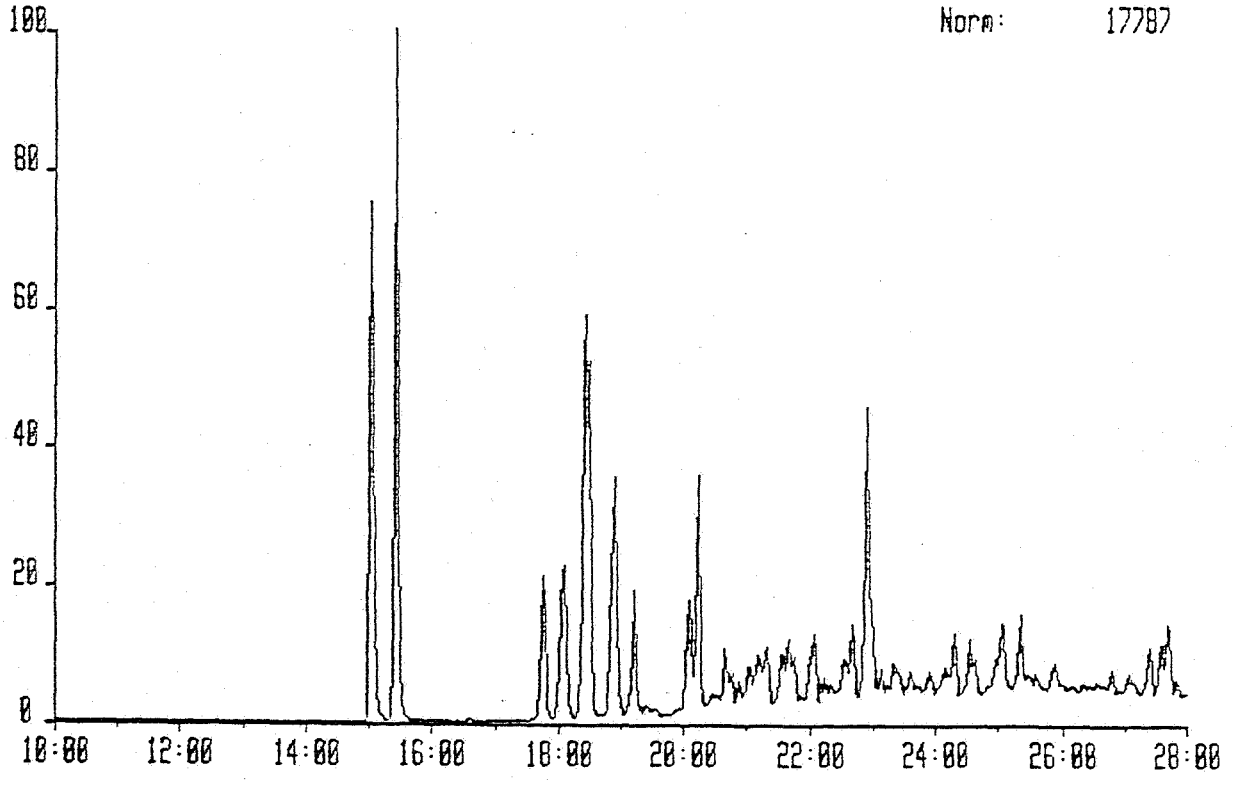
EXAPLE OF PEAK IDENTIFICATION FOR METHYL NAPHTHALENES.



CGAR05 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 2 Injection 1 Group 1 Mass 142.0783
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION

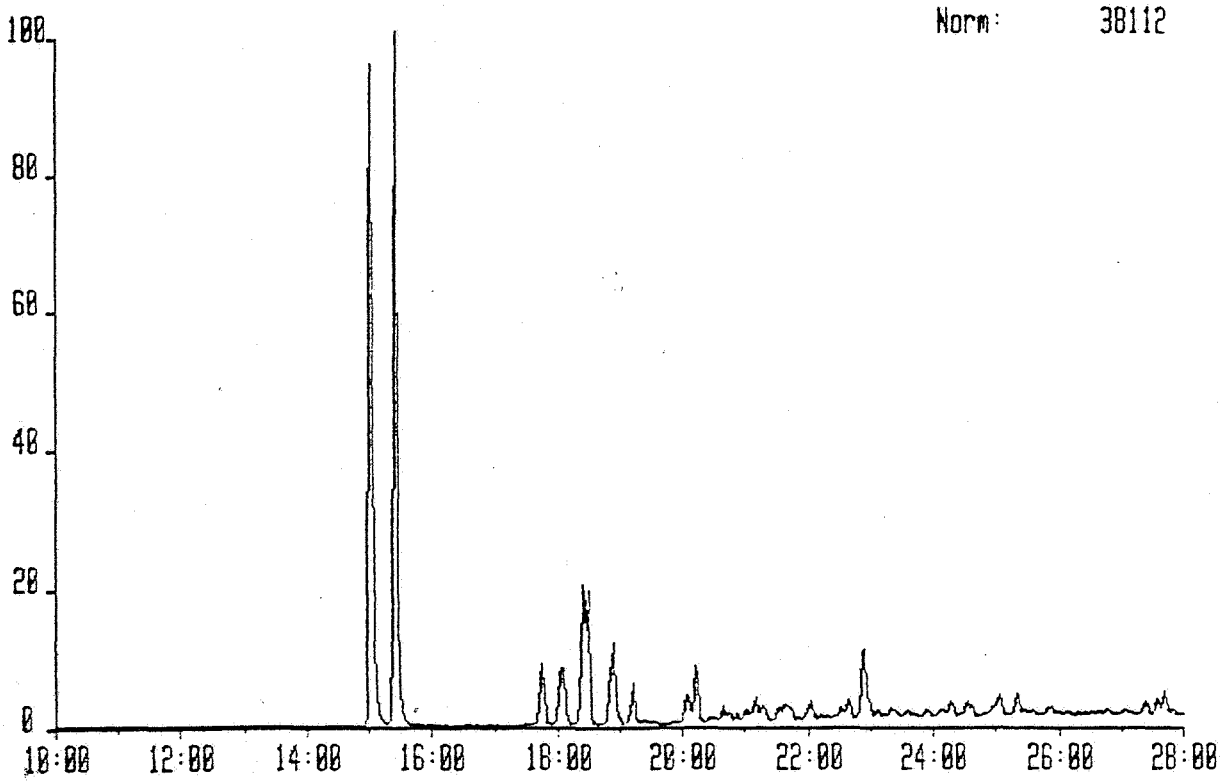



CGAR05 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 3 Injection 1 Group 1 Mass 142.0783
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION

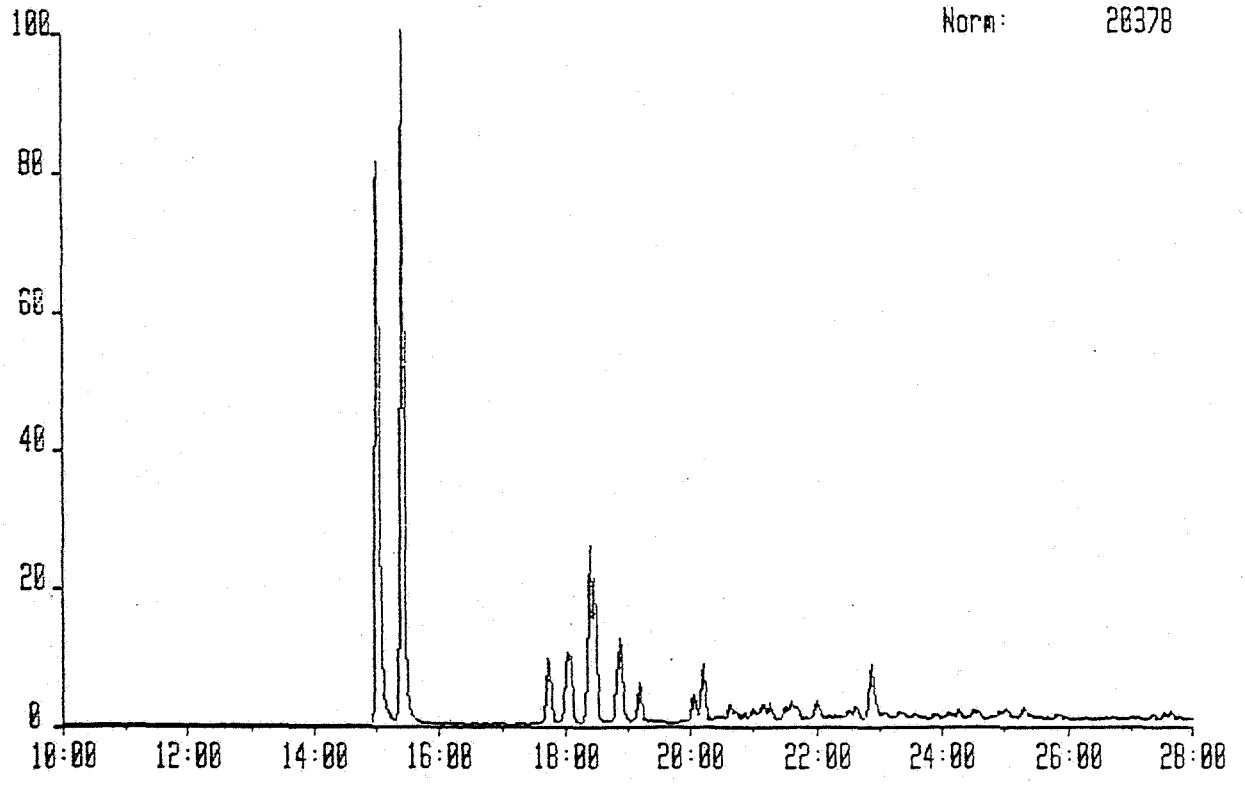


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 4 Injection 1 Group 1 Mass 142.0783
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

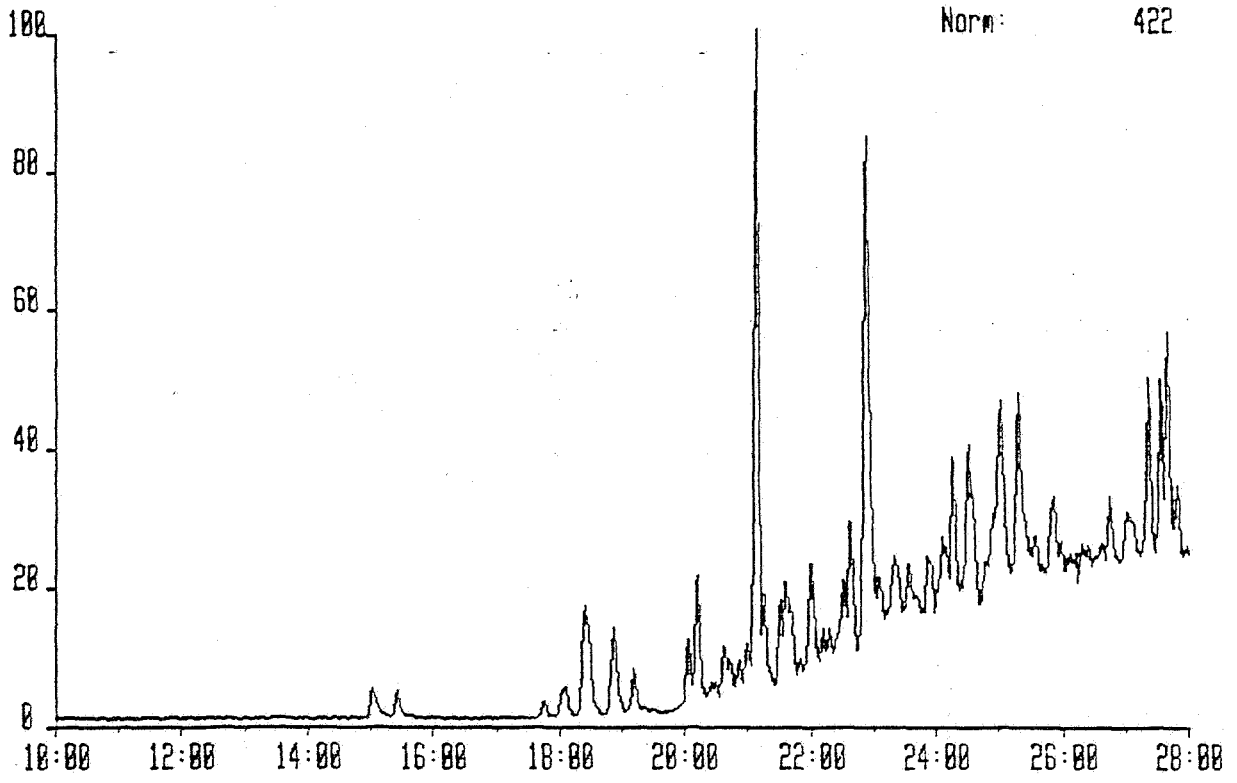



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 5 Injection 1 Group 1 Mass 142.0783
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION



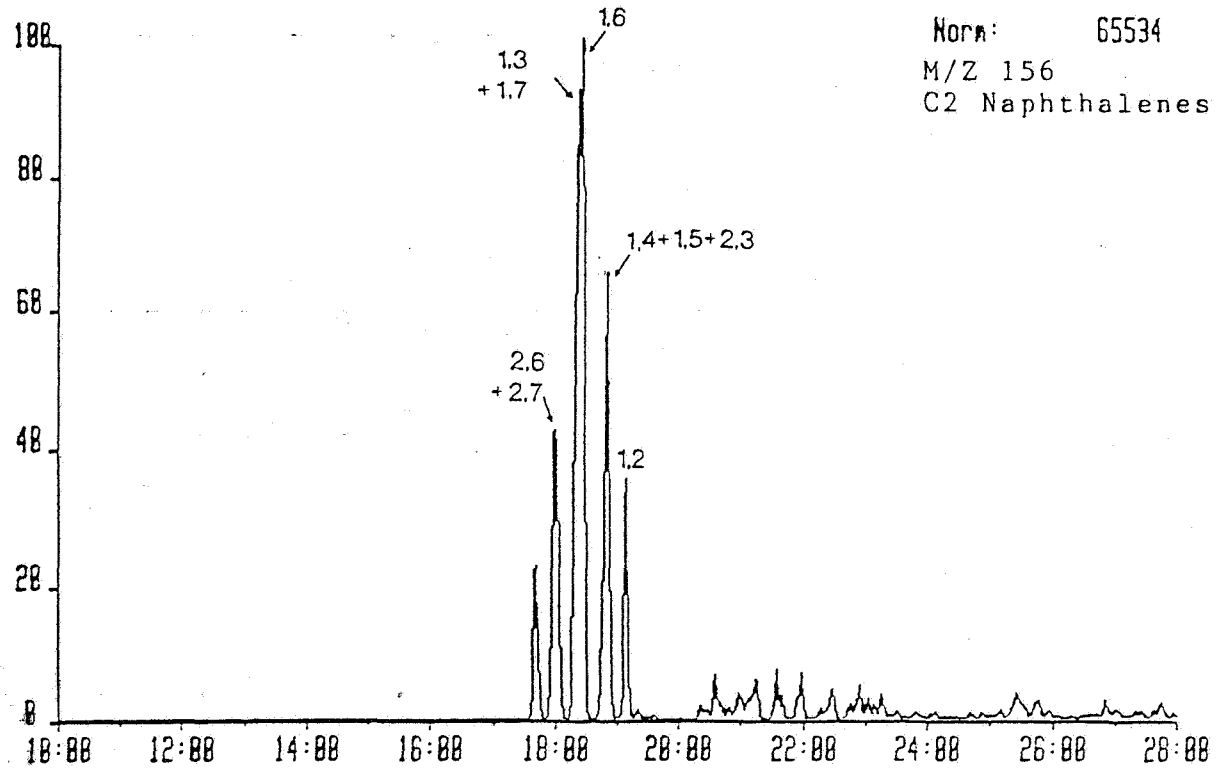
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 6 Injection 1 Group 1 Mass 142.0783
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION

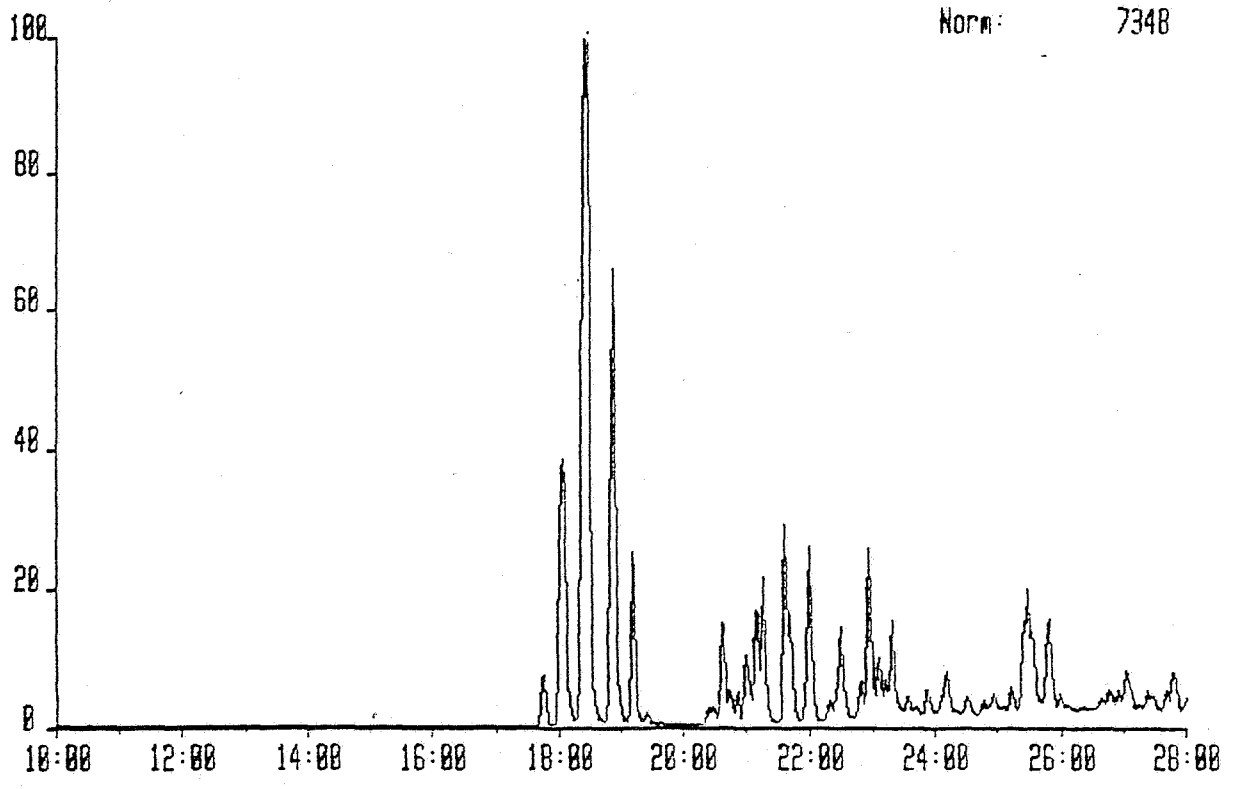


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

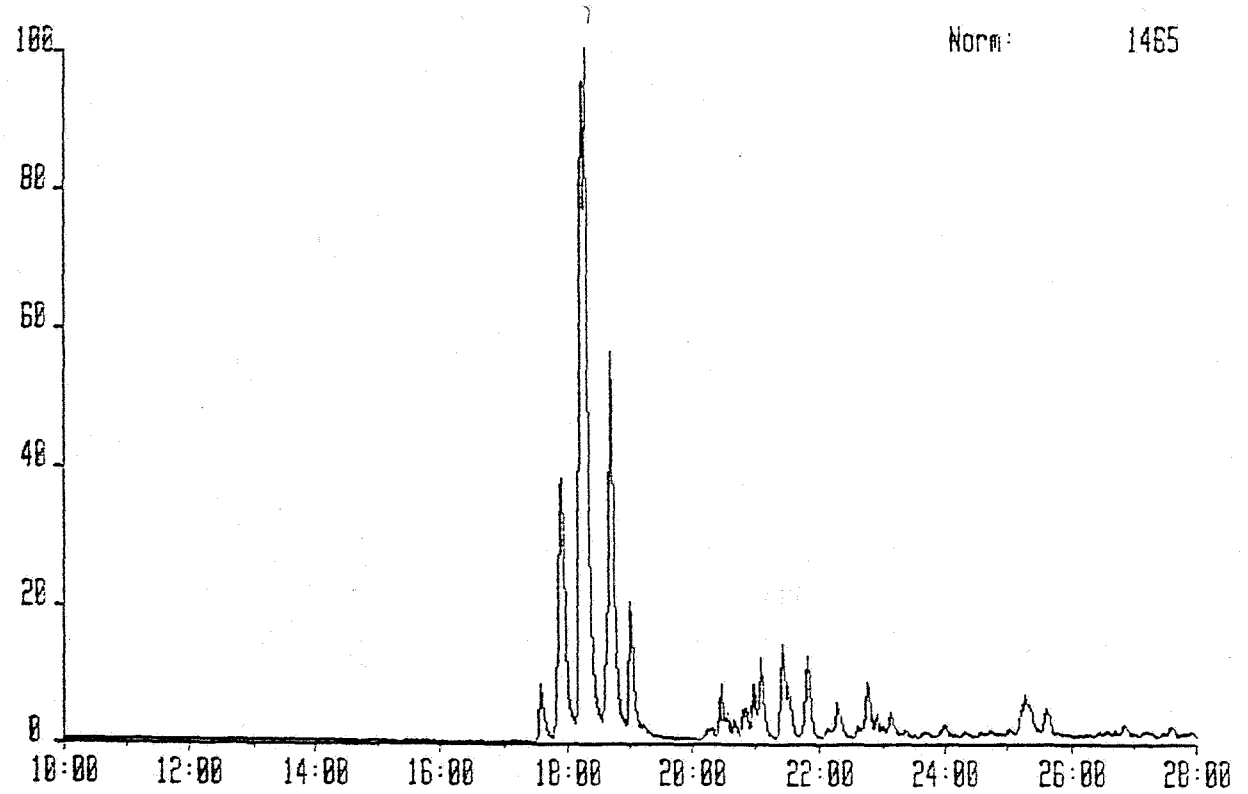
EXAMPLE OF PEAK IDENTIFICATION FOR C2 NAPHTHALENES.



CGAR05 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 2 Injection 1 Group 1 Mass 156.0939
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION

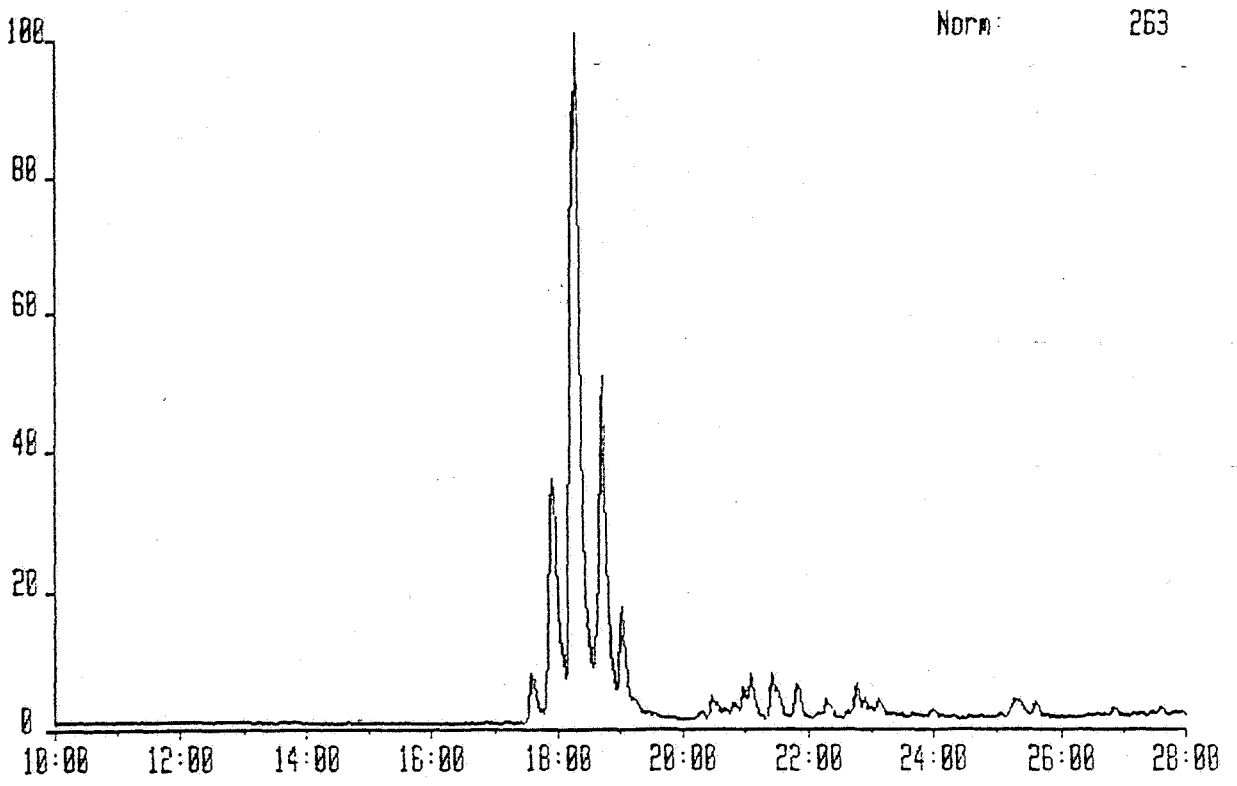



CGAR07 25-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 16 Injection 1 Group 1 Mass 156.0939
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION

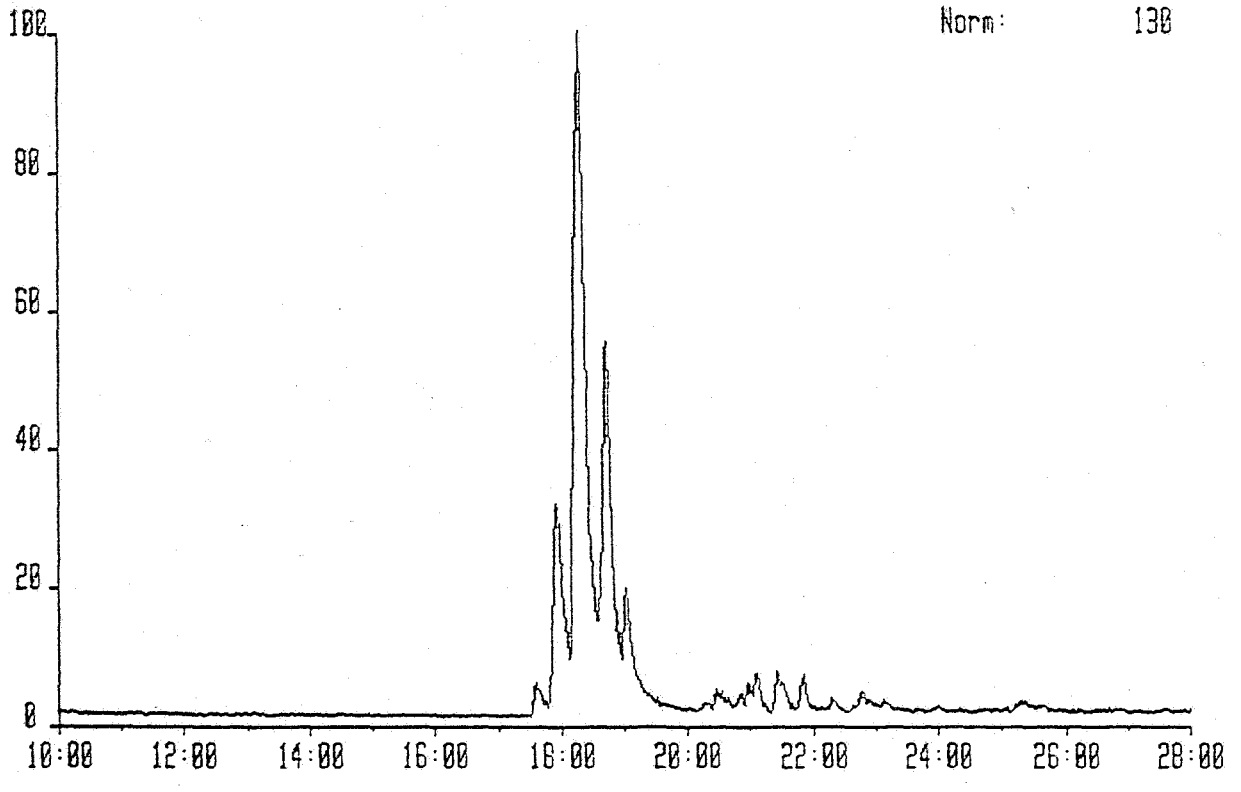


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO7 25-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 17 Injection 1 Group 1 Mass 156.0939
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

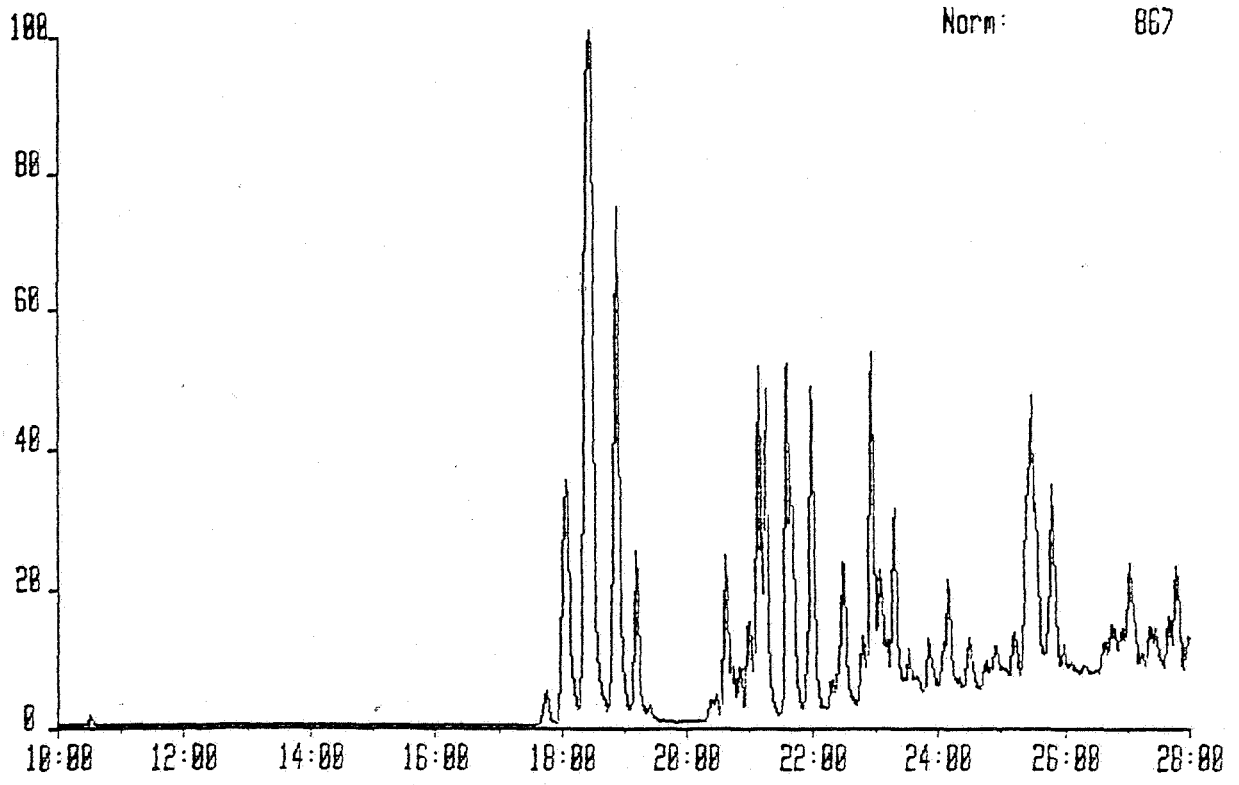



CGARO7 25-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 18 Injection 1 Group 1 Mass 156.0939
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION



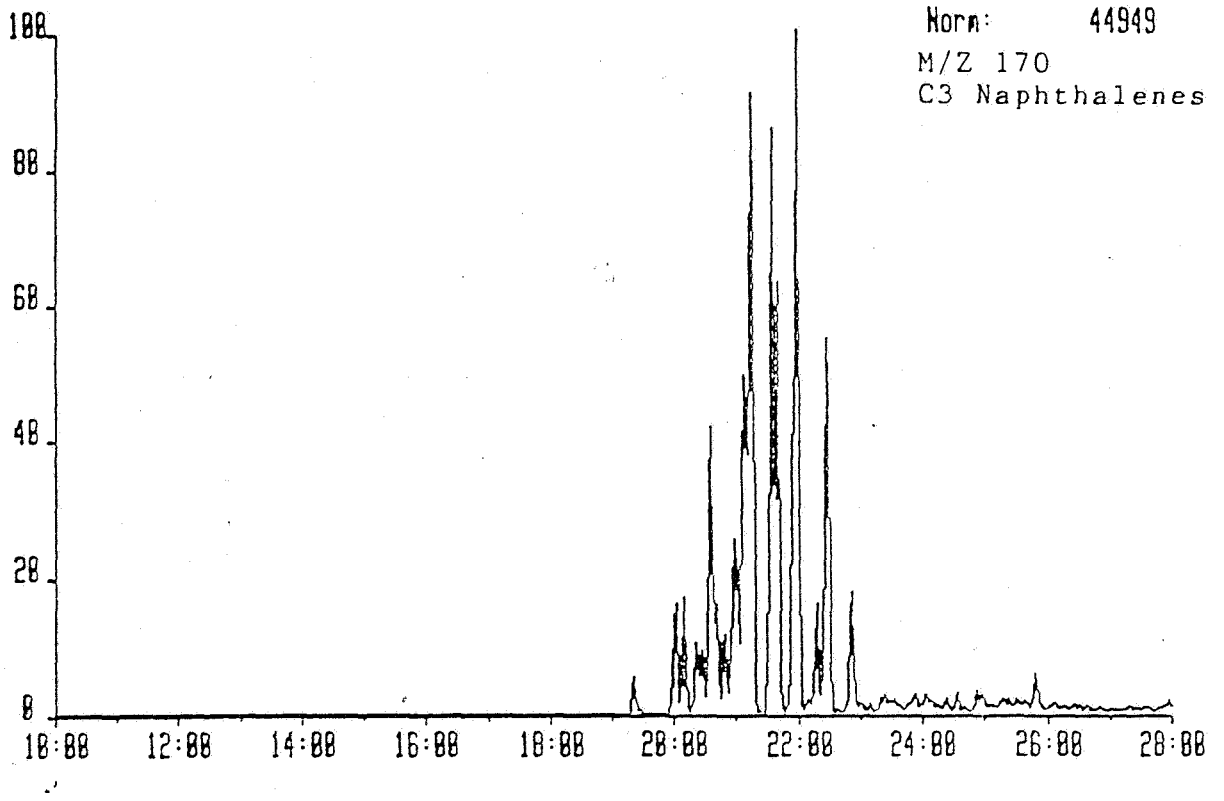
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO5 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 6 Injection 1 Group 1 Mass 156.0939
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION



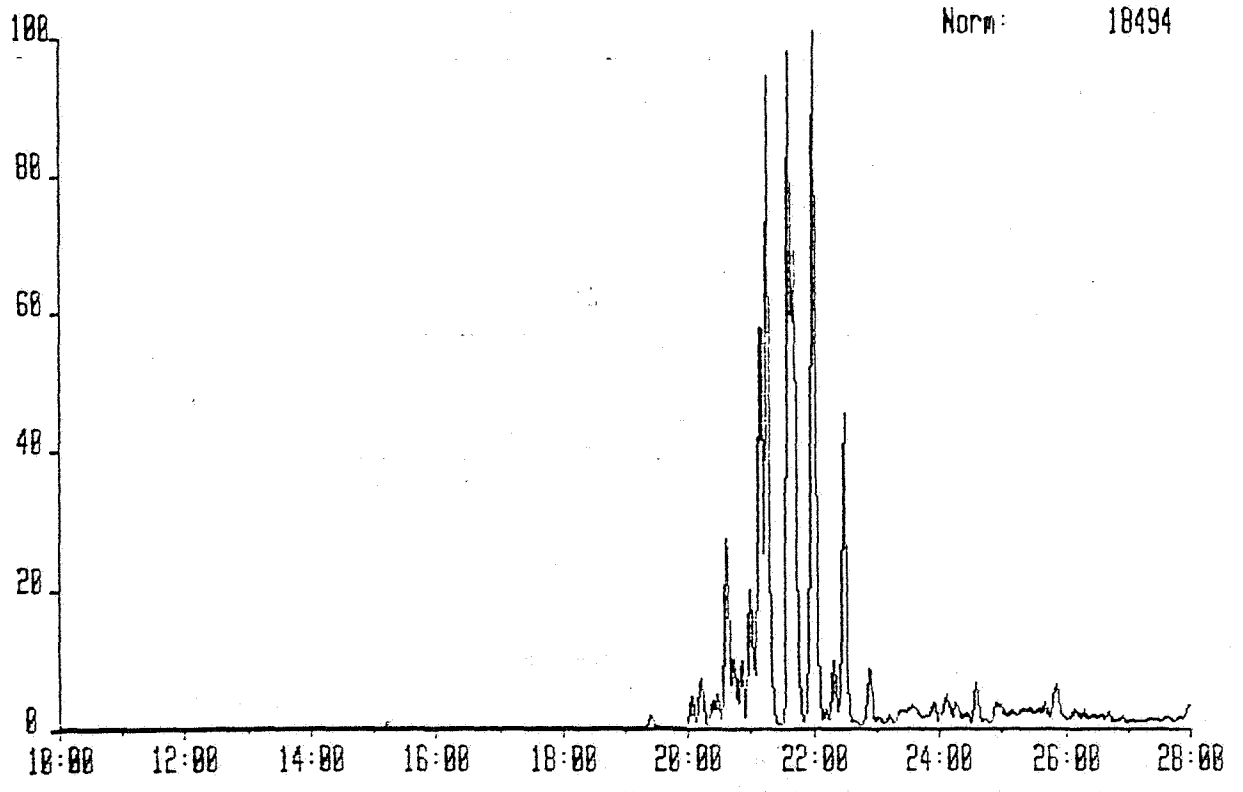
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

EXAMPLE OF PEAK IDENTIFICATION FOR C3 NAPHTHALENES.

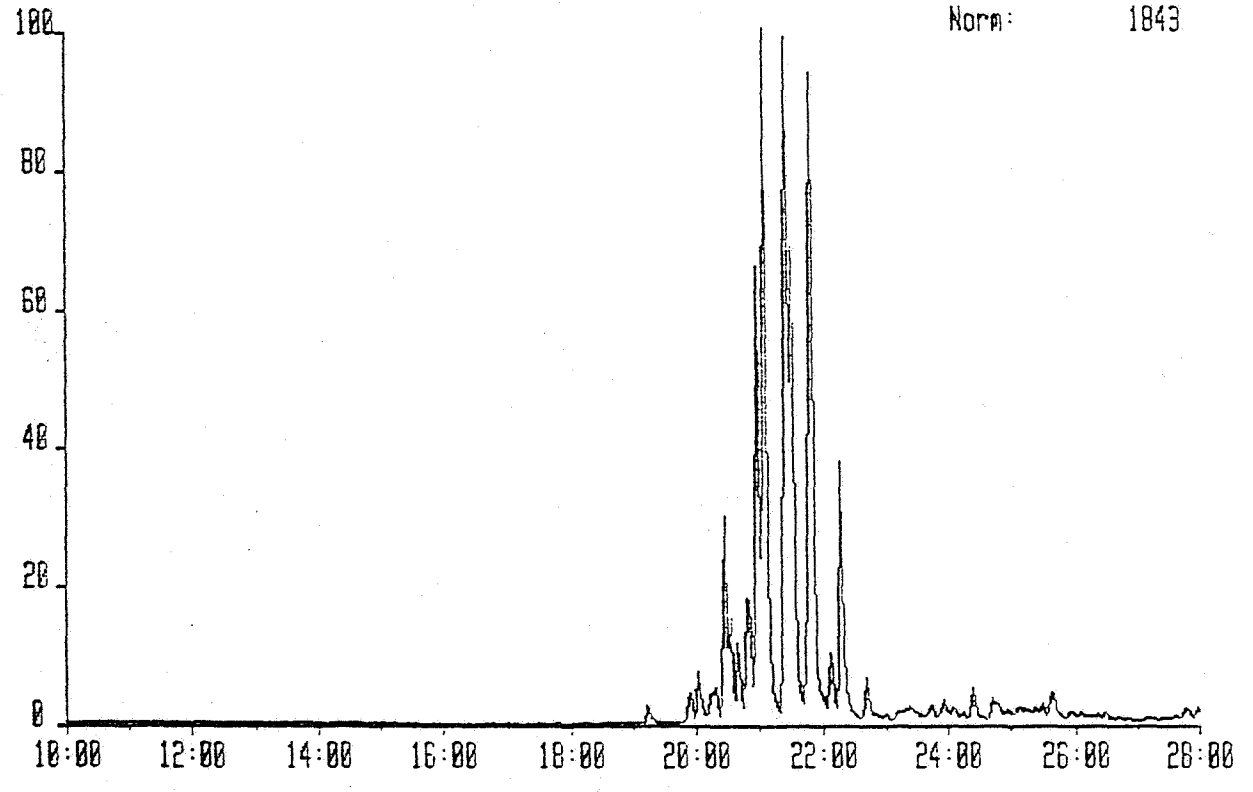


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGAR05 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 2 Injection 1 Group 1 Mass 178.1096
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION

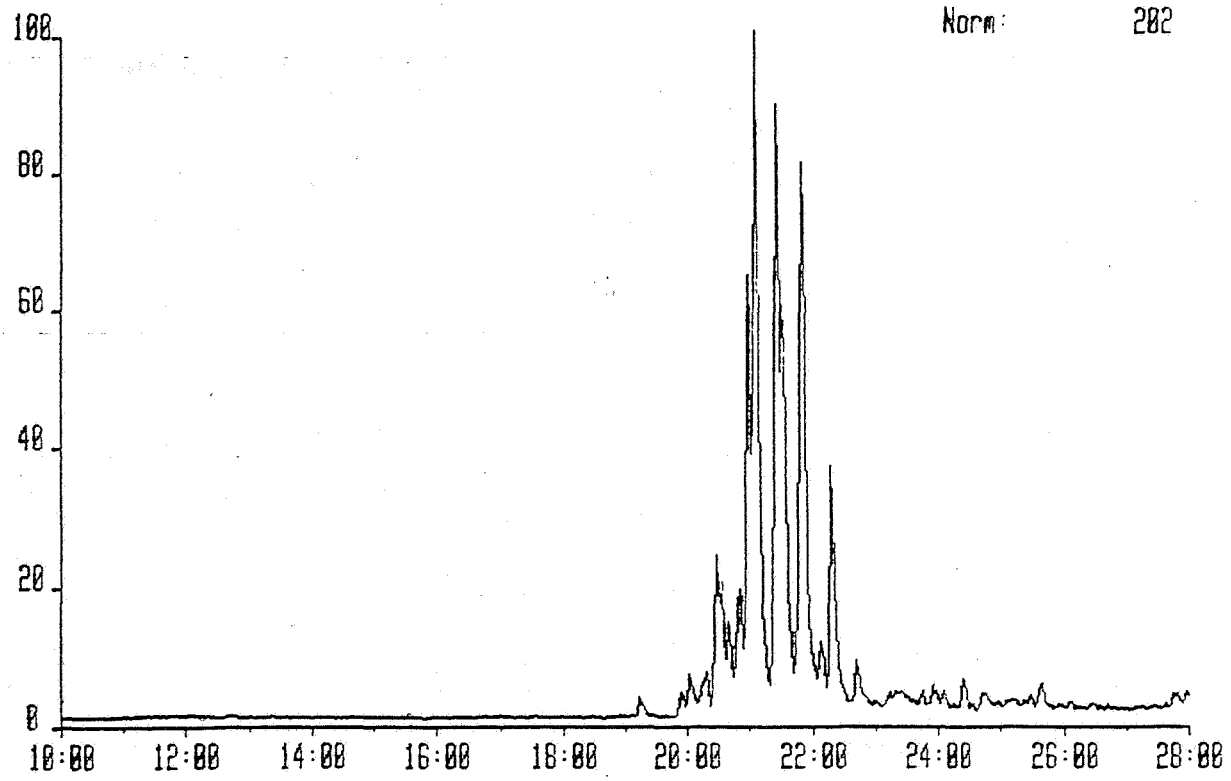



CGAR07 25-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 16 Injection 1 Group 1 Mass 178.1096
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION

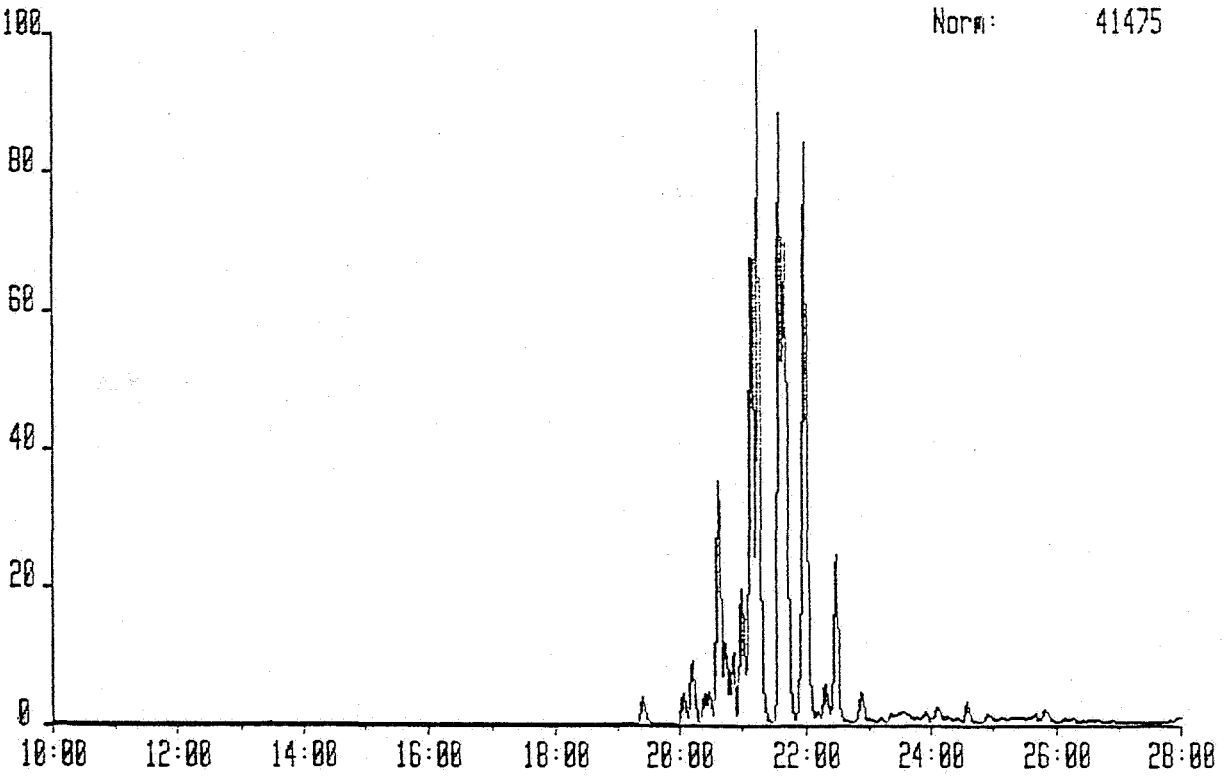


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO7 25-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 17 Injection 1 Group 1 Mass 170.1096
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

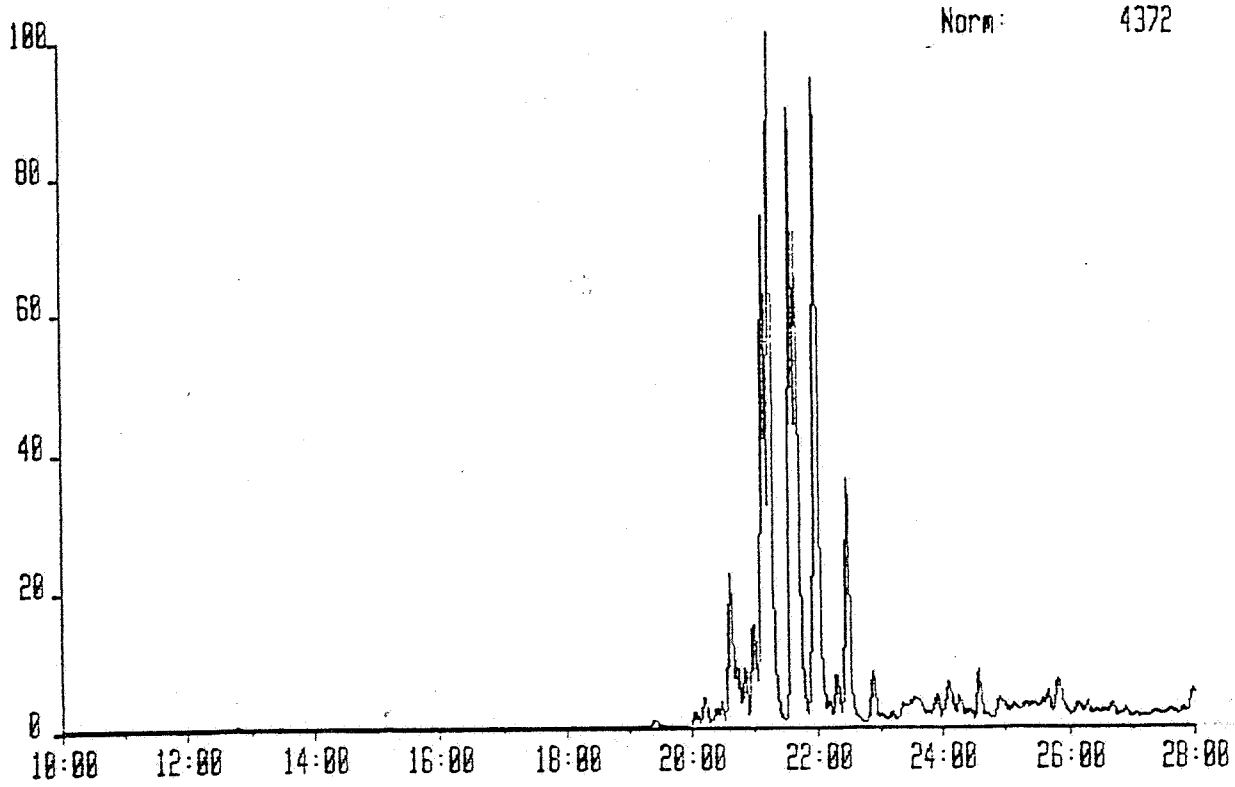



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 5 Injection 1 Group 1 Mass 170.1096
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION



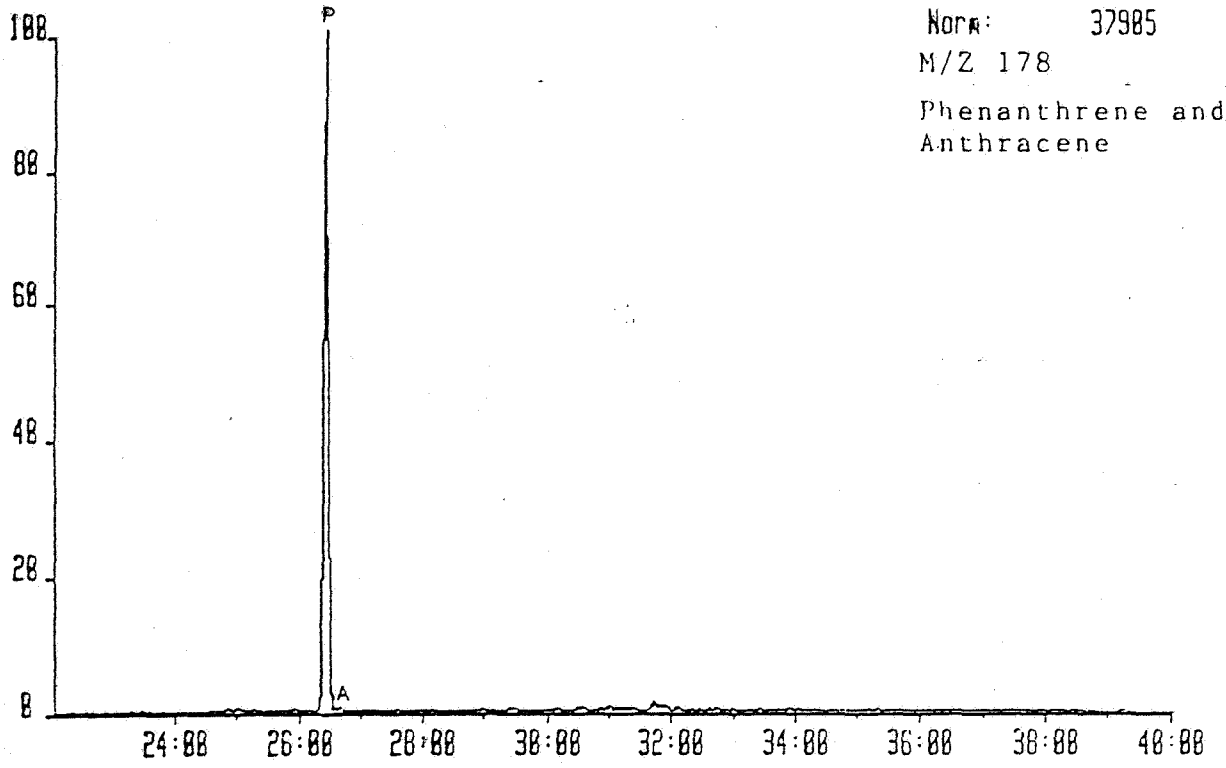
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGAR05 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 6 Injection 1 Group 1 Mass 178.1096
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION

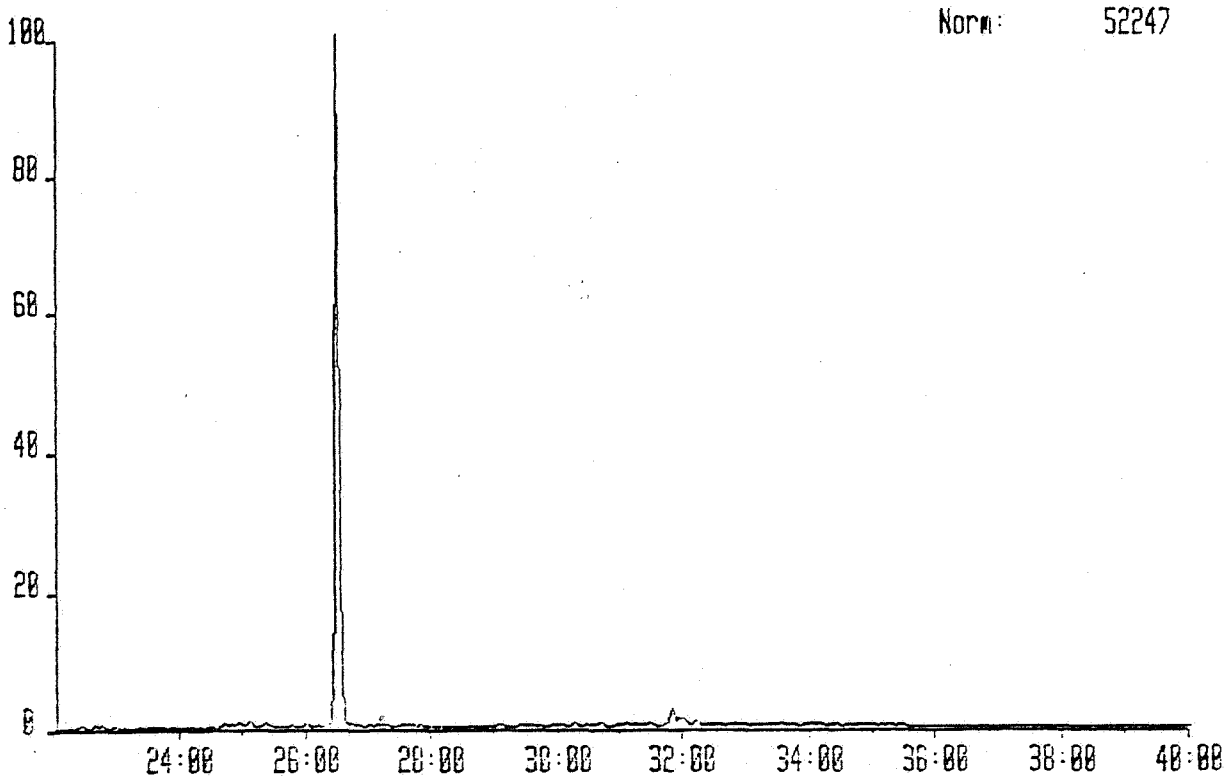


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

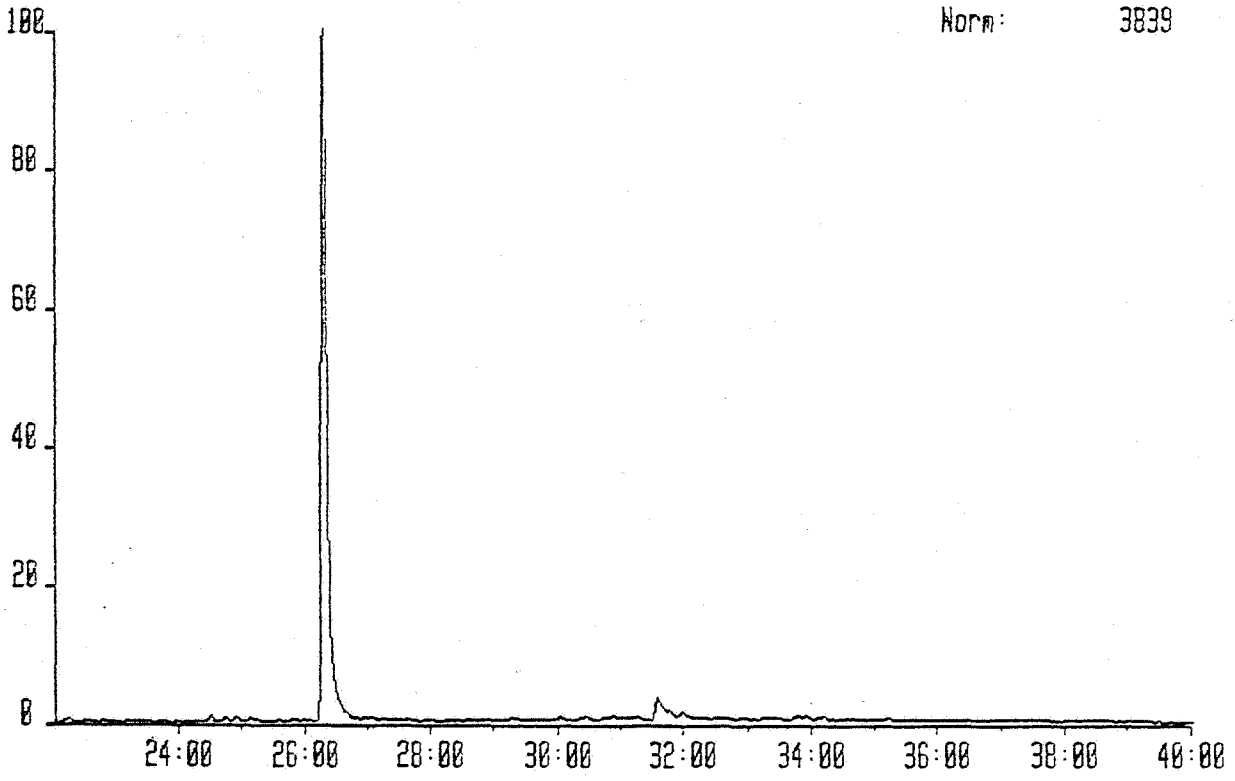
EXAMPLE OF PEAK IDENTIFICATION FOR PHENANTHRENE AND ANTHRACENE.



CGAR05 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 2 Injection 1 Group 1 Mass 178.0783
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION

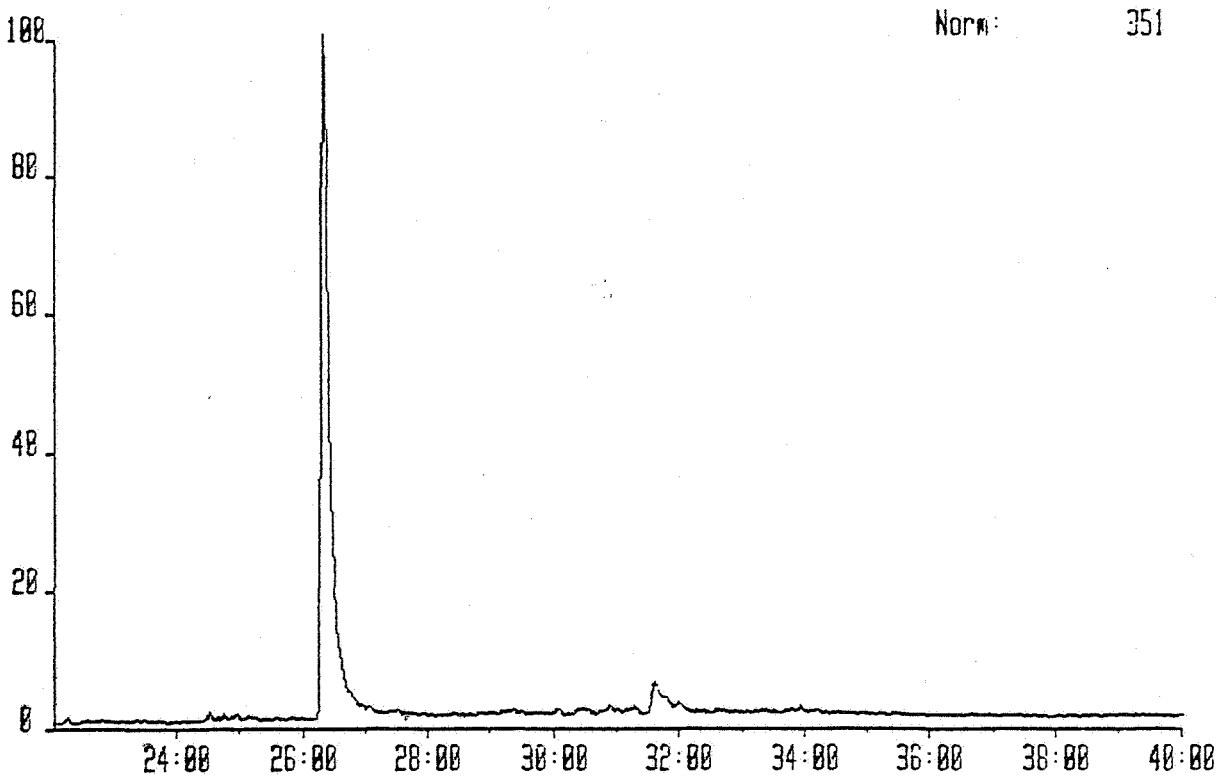



CGAR07 25-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 16 Injection 1 Group 1 Mass 178.0783
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION

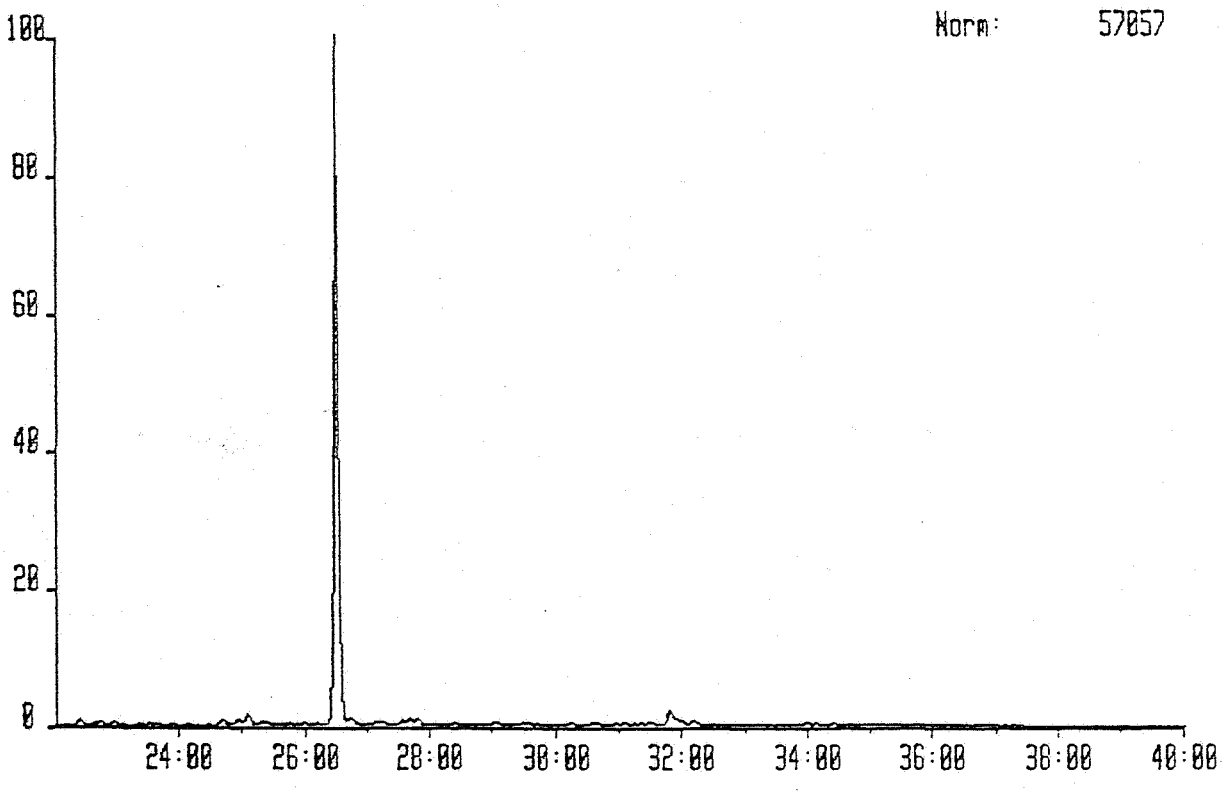


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGAR07 25-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 17 Injection 1 Group 1 Mass 178.0783
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

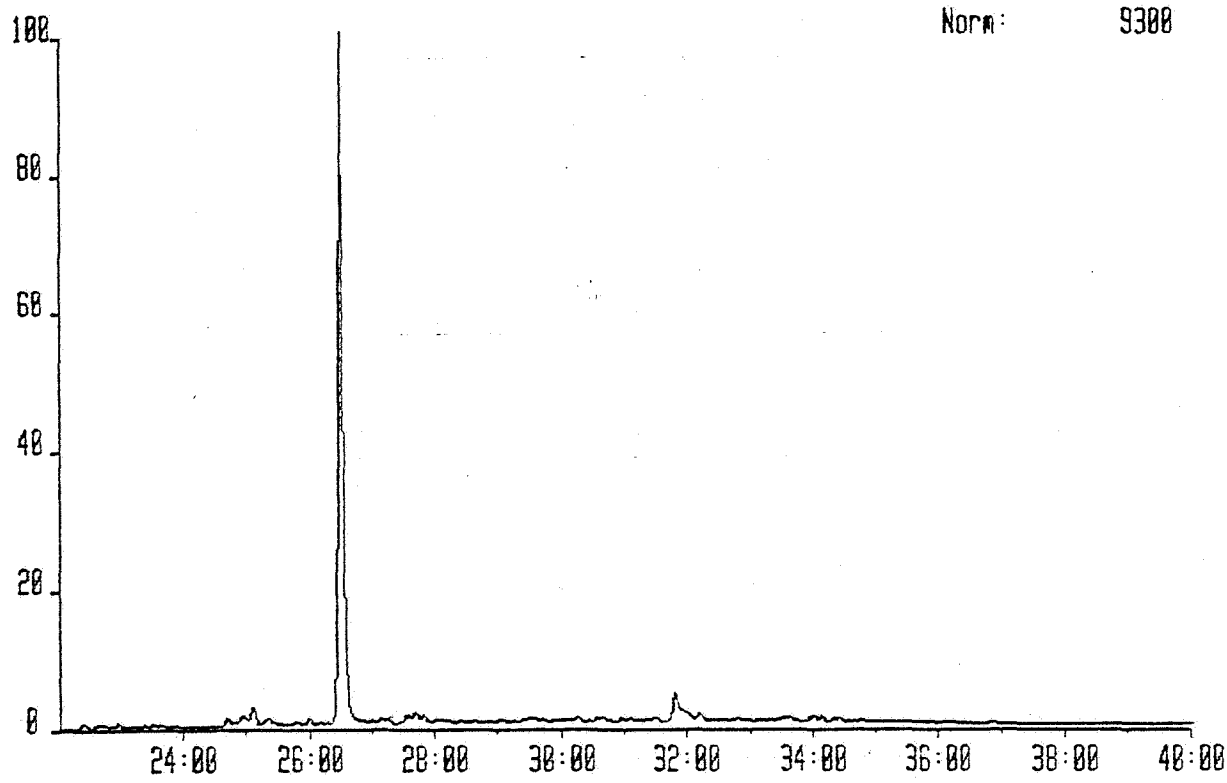



CGAR05 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 5 Injection 1 Group 1 Mass 178.0783
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION



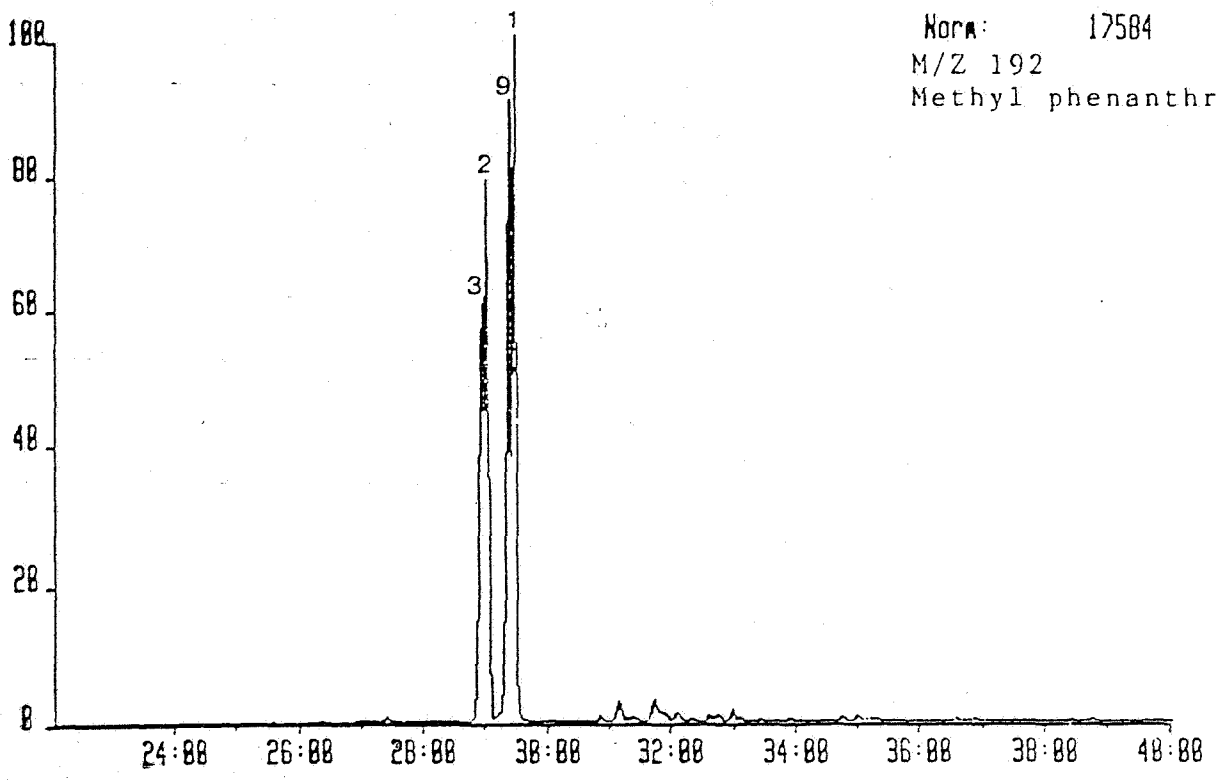
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGAR05 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 6 Injection 1 Group 1 Mass 178.0783
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION

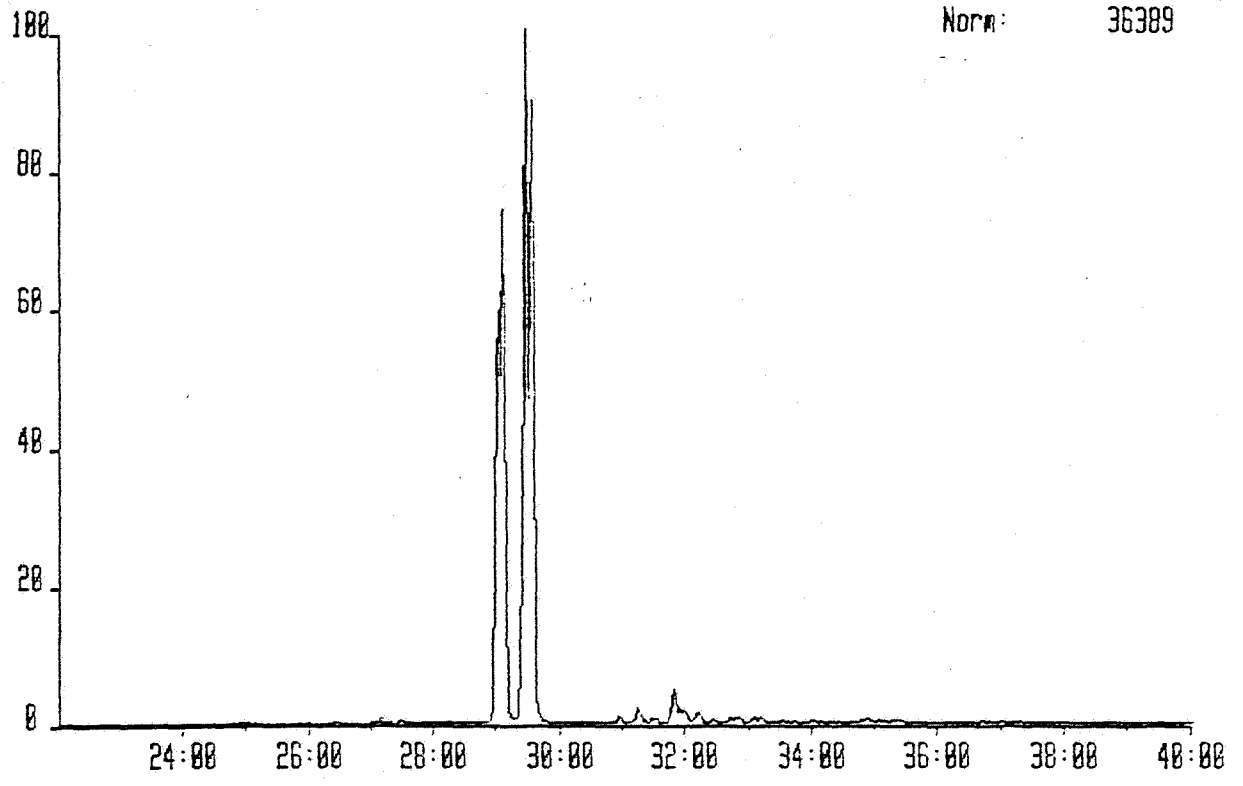


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A/S

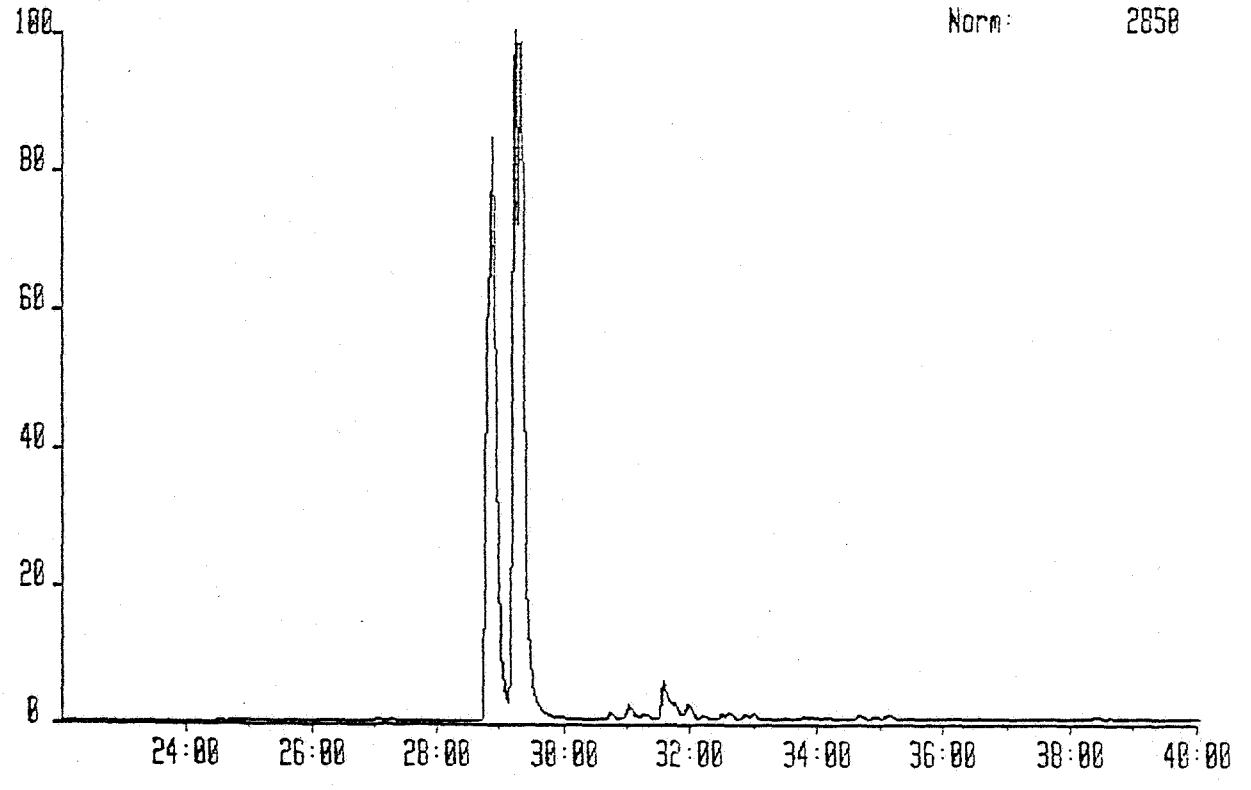
EXAMPLE OF PEAK IDENTIFICATION FOR METHYL PHENANTHRENES.



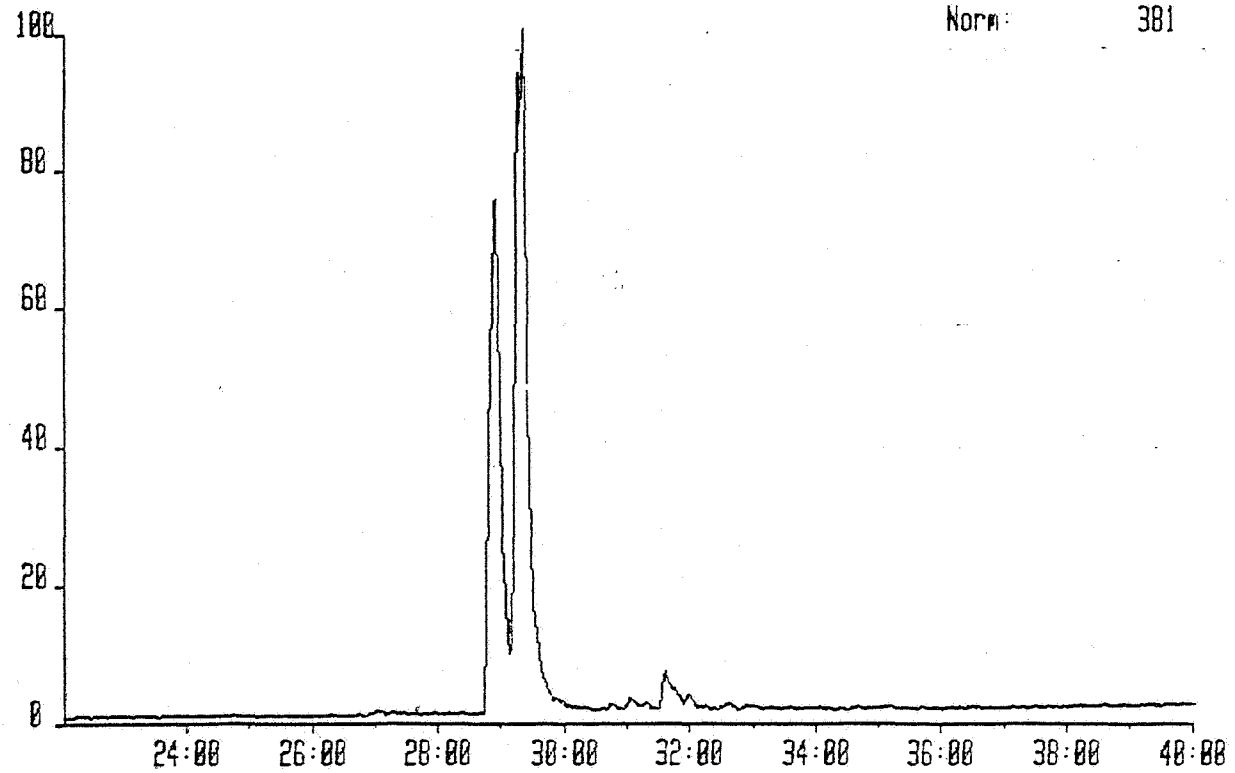
CGAR05 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 2 Injection 1 Group 1 Mass 192.0939
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION



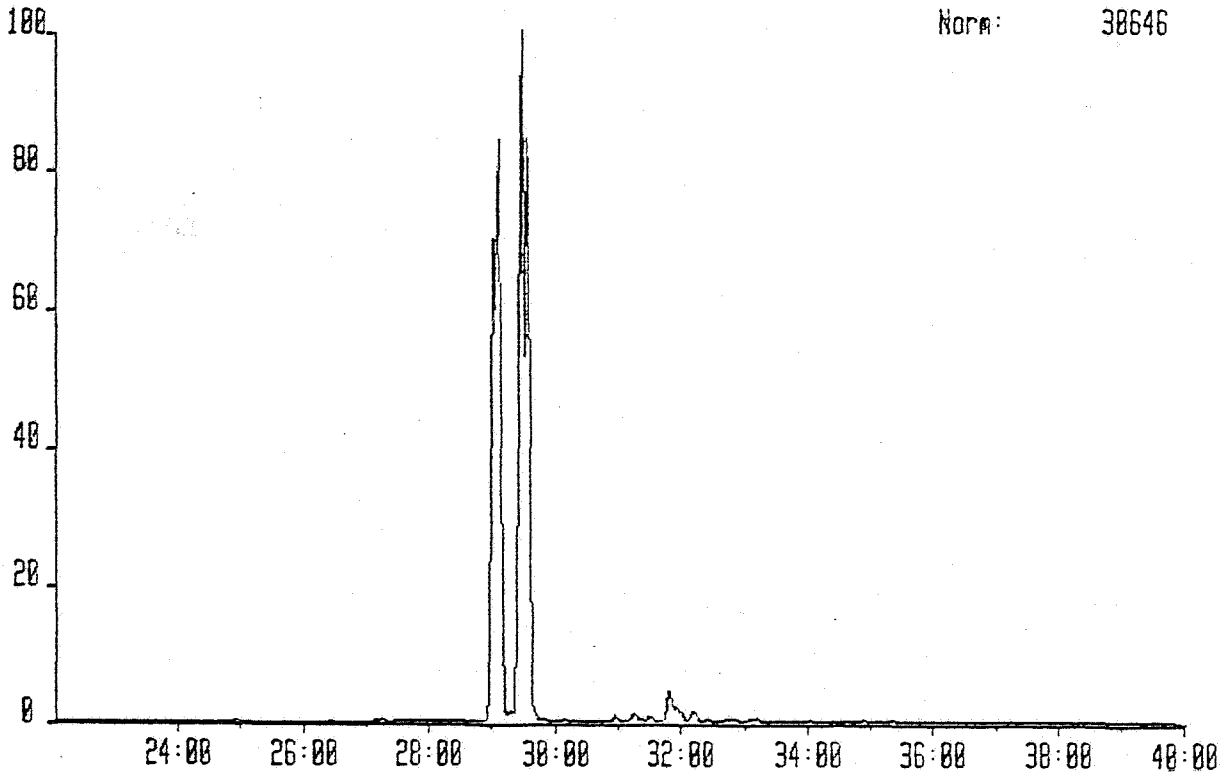

CGAR07 25-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 16 Injection 1 Group 1 Mass 192.0939
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION



CGARD7 25-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARD1
Sample 17 Injection 1 Group 1 Mass 192.0939
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

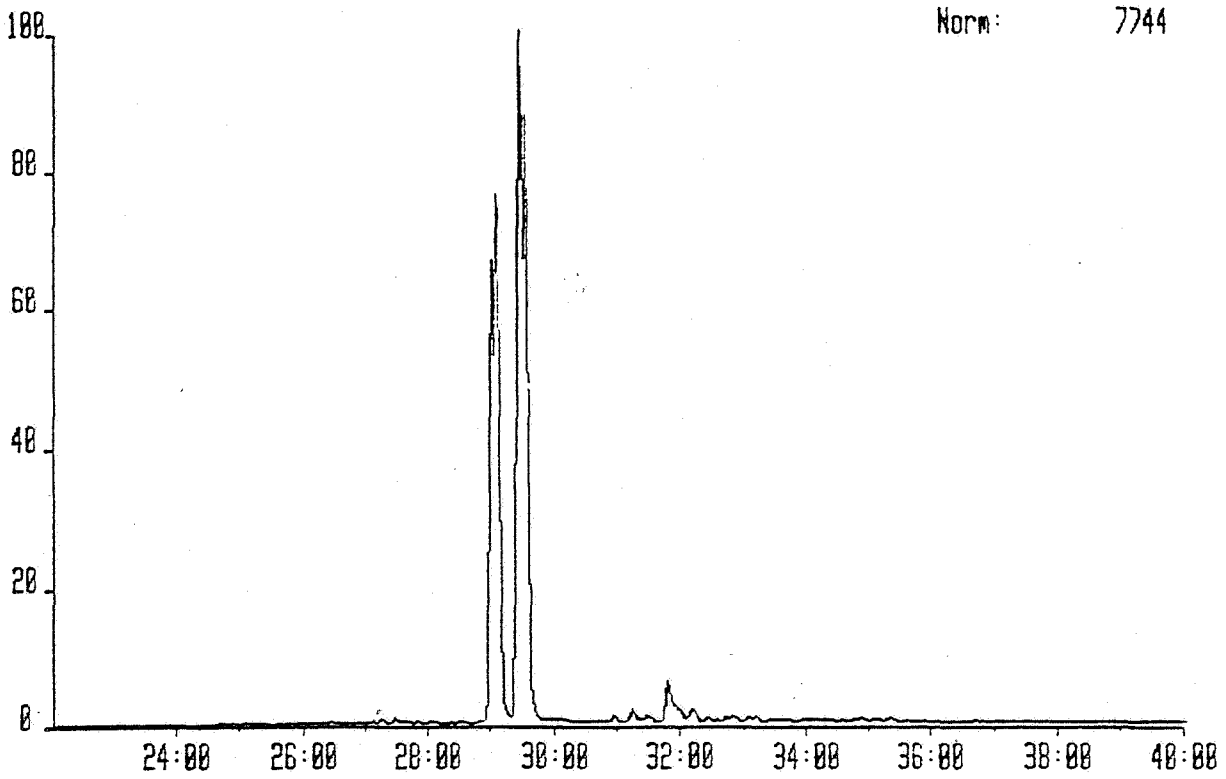



CGARD5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARD1
Sample 5 Injection 1 Group 1 Mass 192.0939
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION



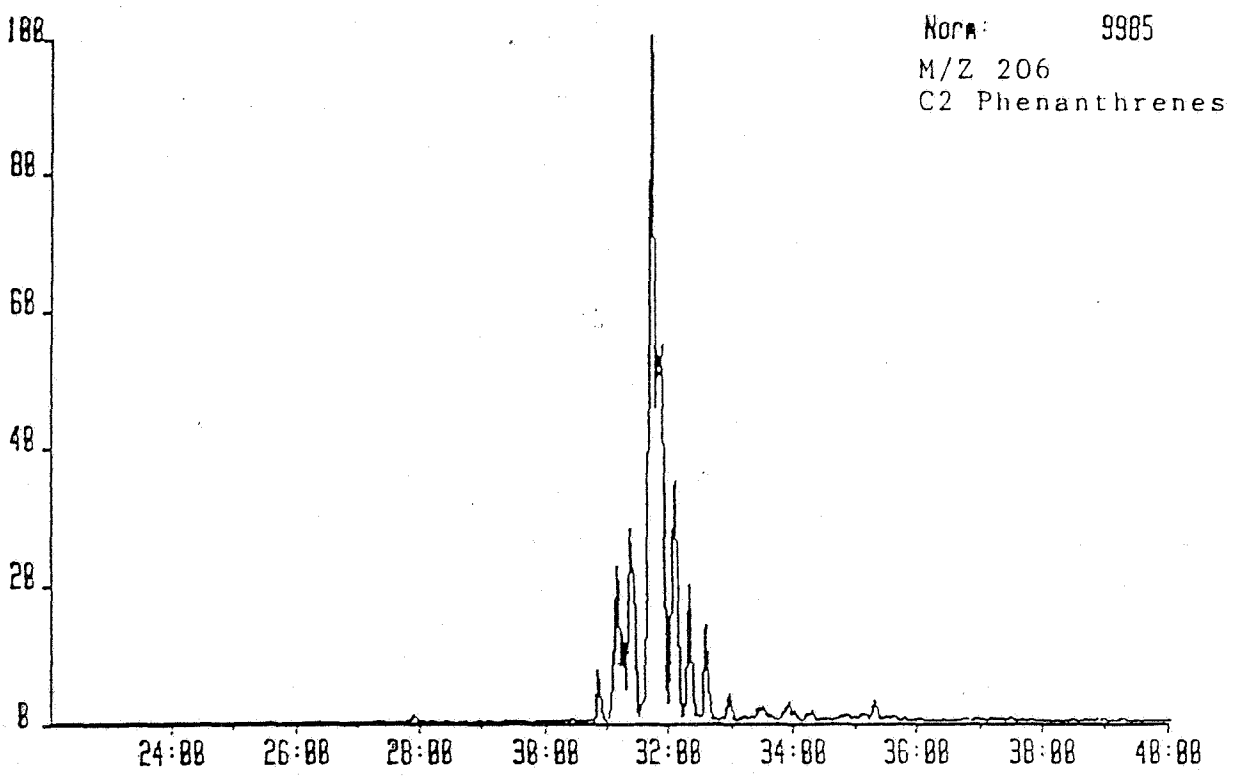
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 6 Injection 1 Group 1 Mass 192.0939
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION



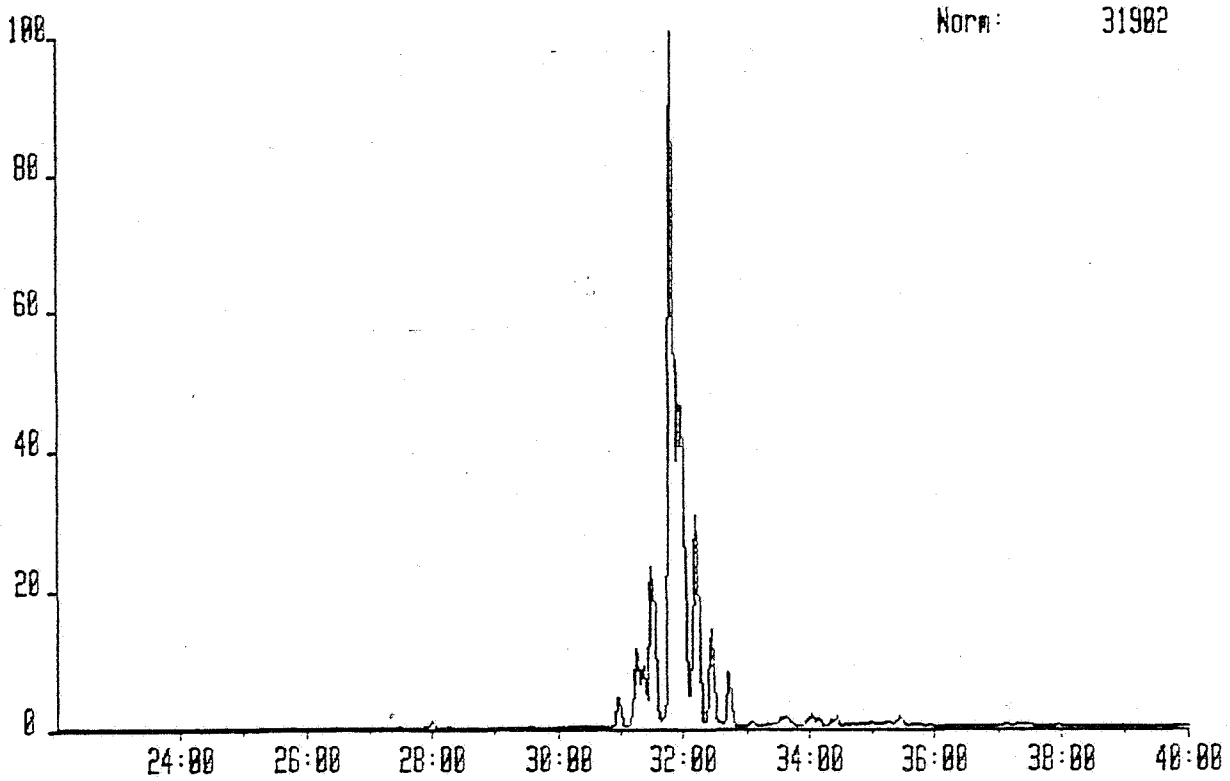
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

EXAMPLE OF PEAK IDENTIFICATION FOR C2 PHENANTHRENES.

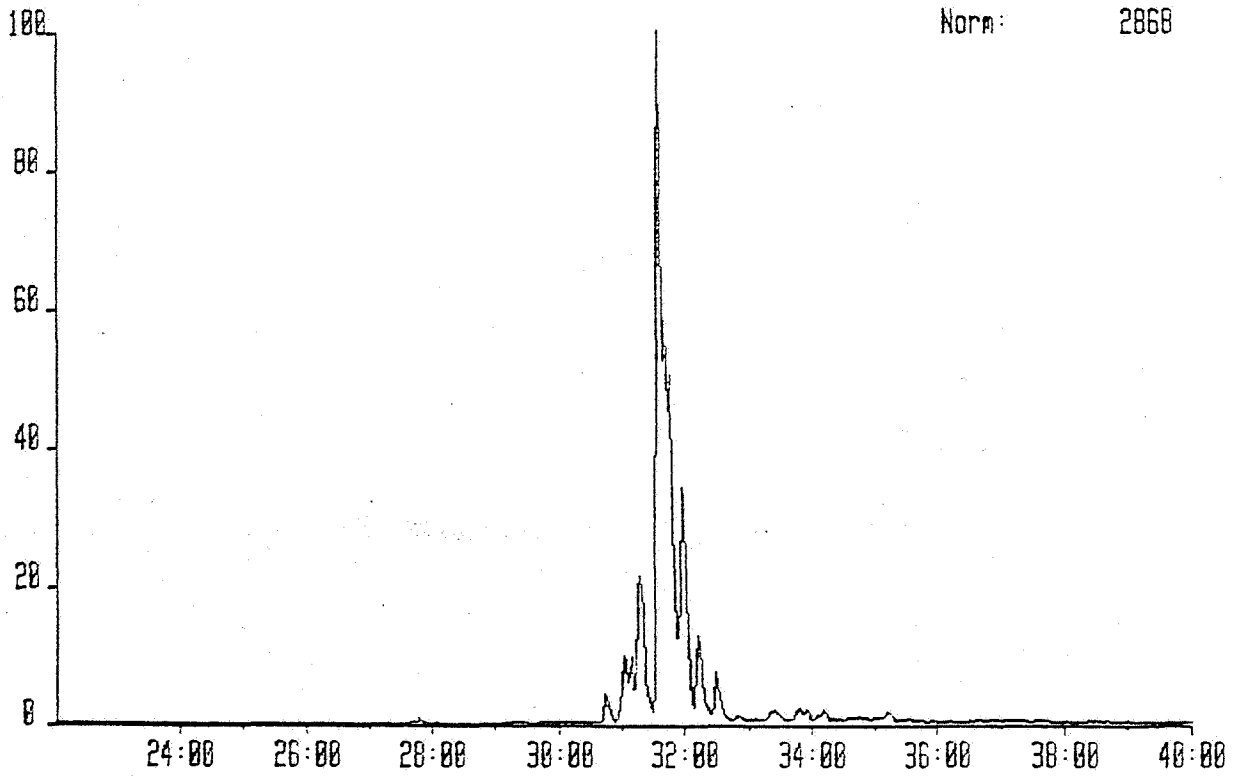


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO5 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 2 Injection 1 Group 1 Mass 206.1096
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION

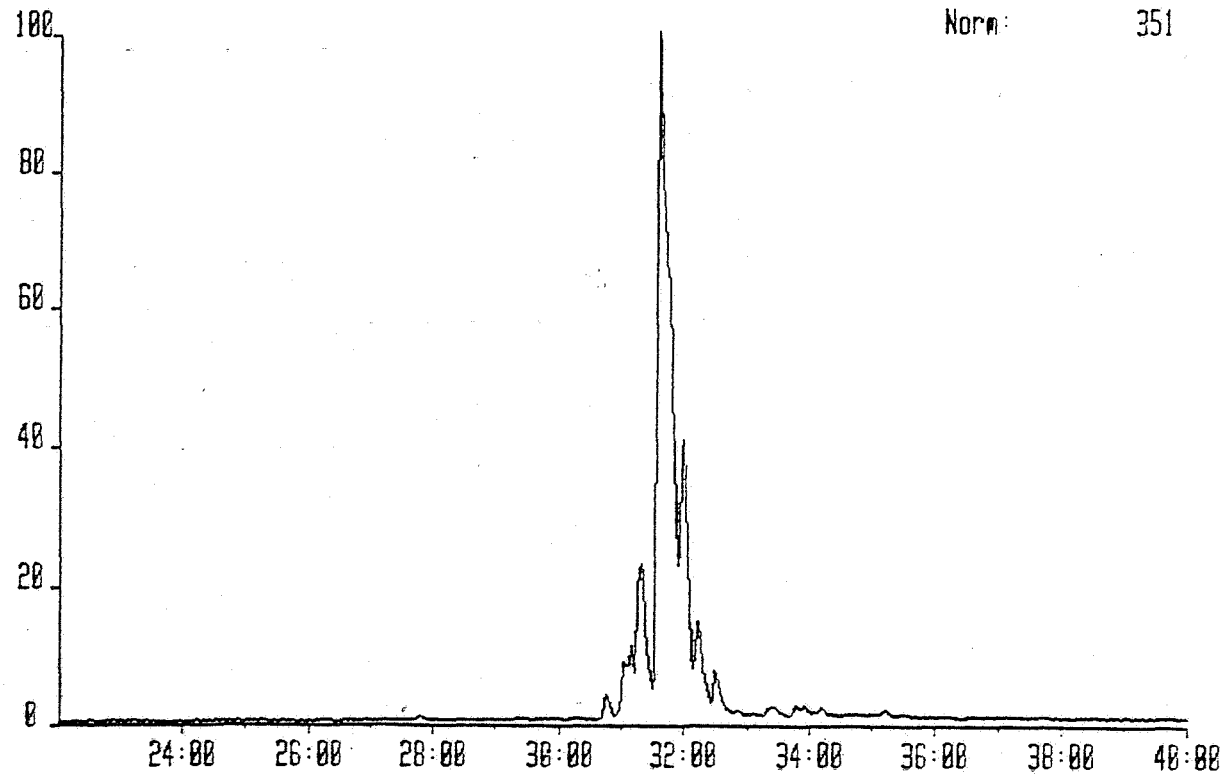



CGARO7 25-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 16 Injection 1 Group 1 Mass 206.1096
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION

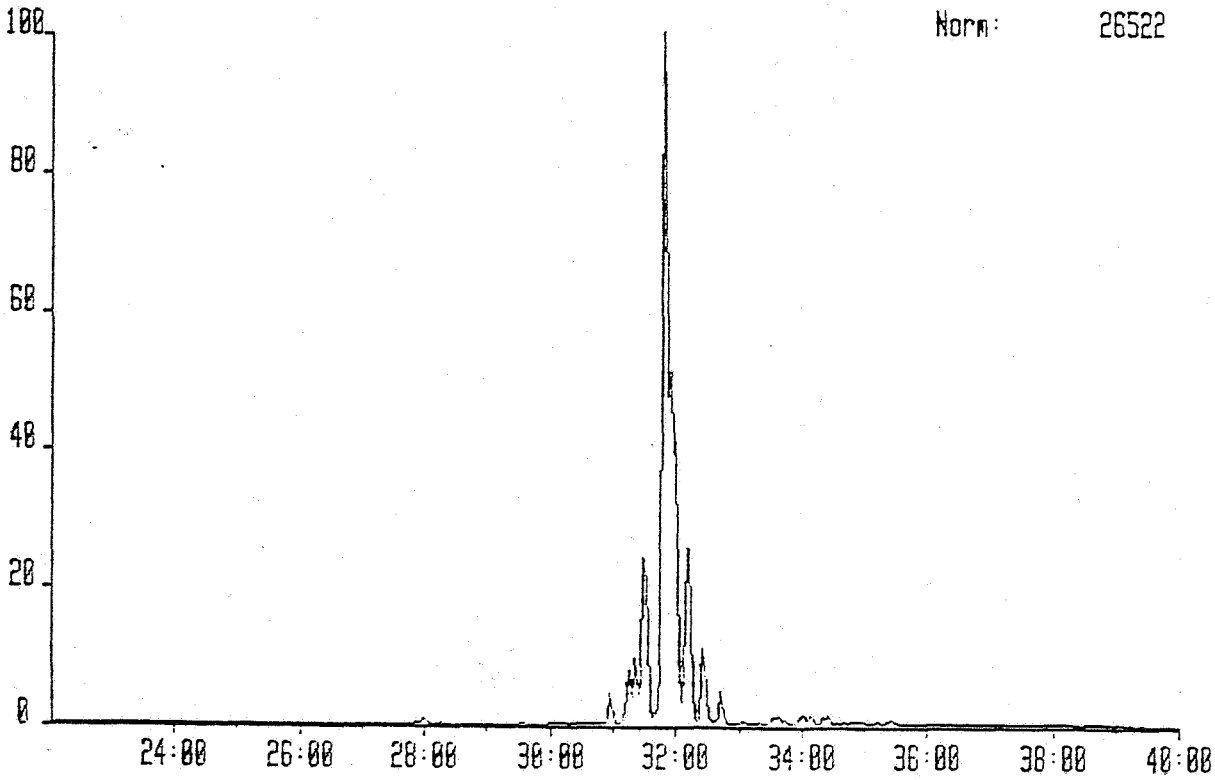


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO7 25-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 17 Injection 1 Group 1 Mass 206.1096
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

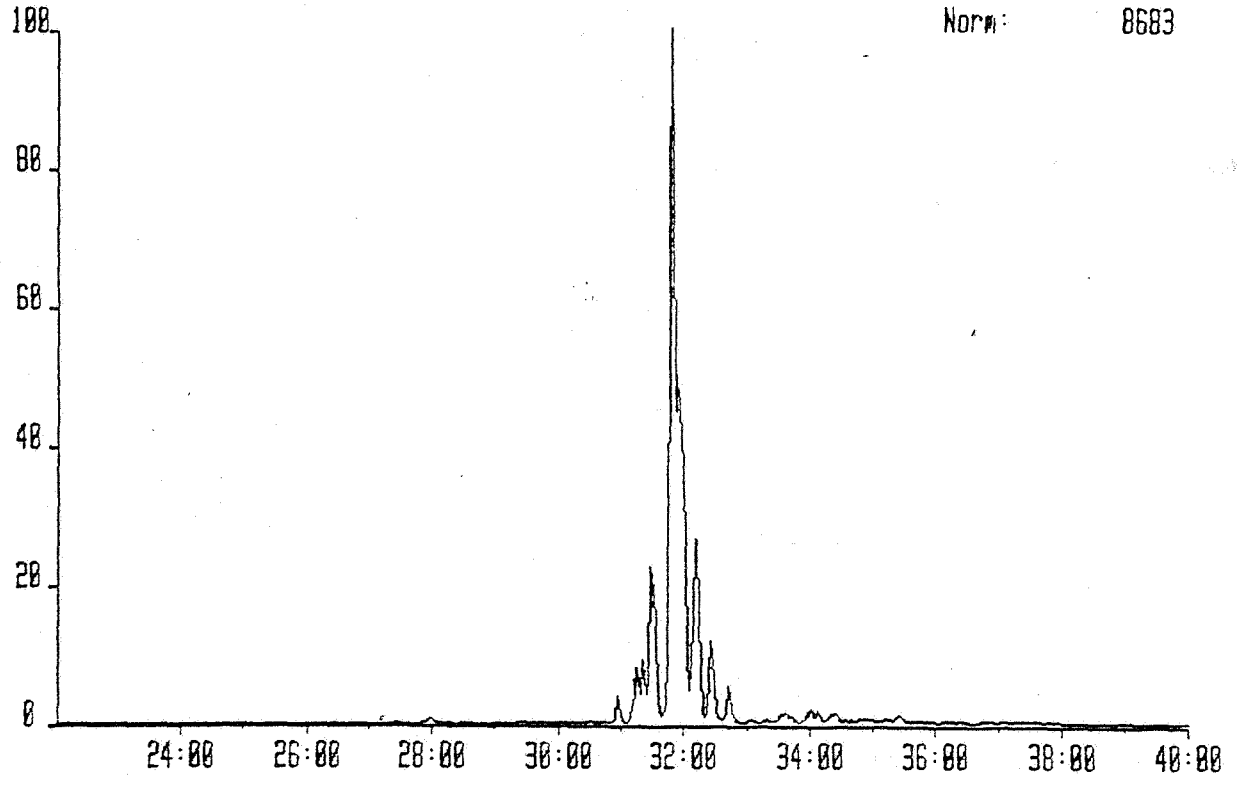



CGARO5 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 5 Injection 1 Group 1 Mass 206.1096
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION

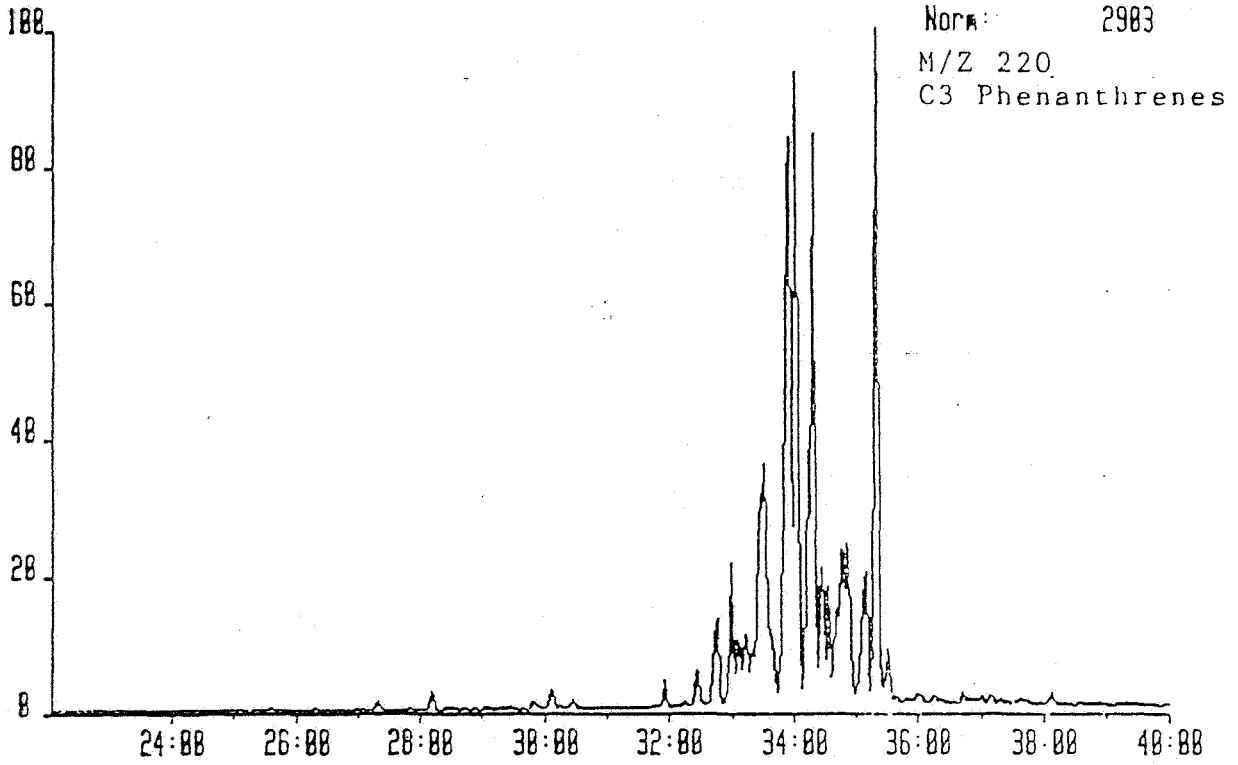


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

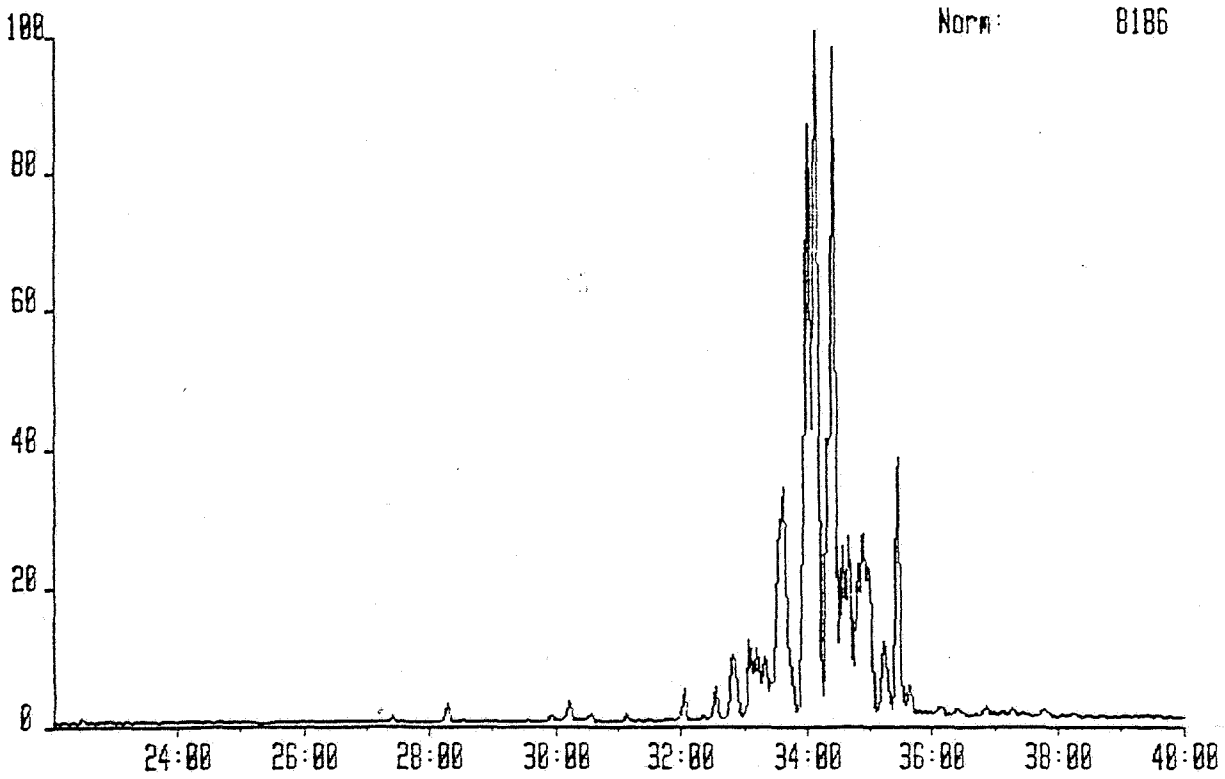
CGAR05 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 6 Injection 1 Group 1 Mass 206.1096
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION



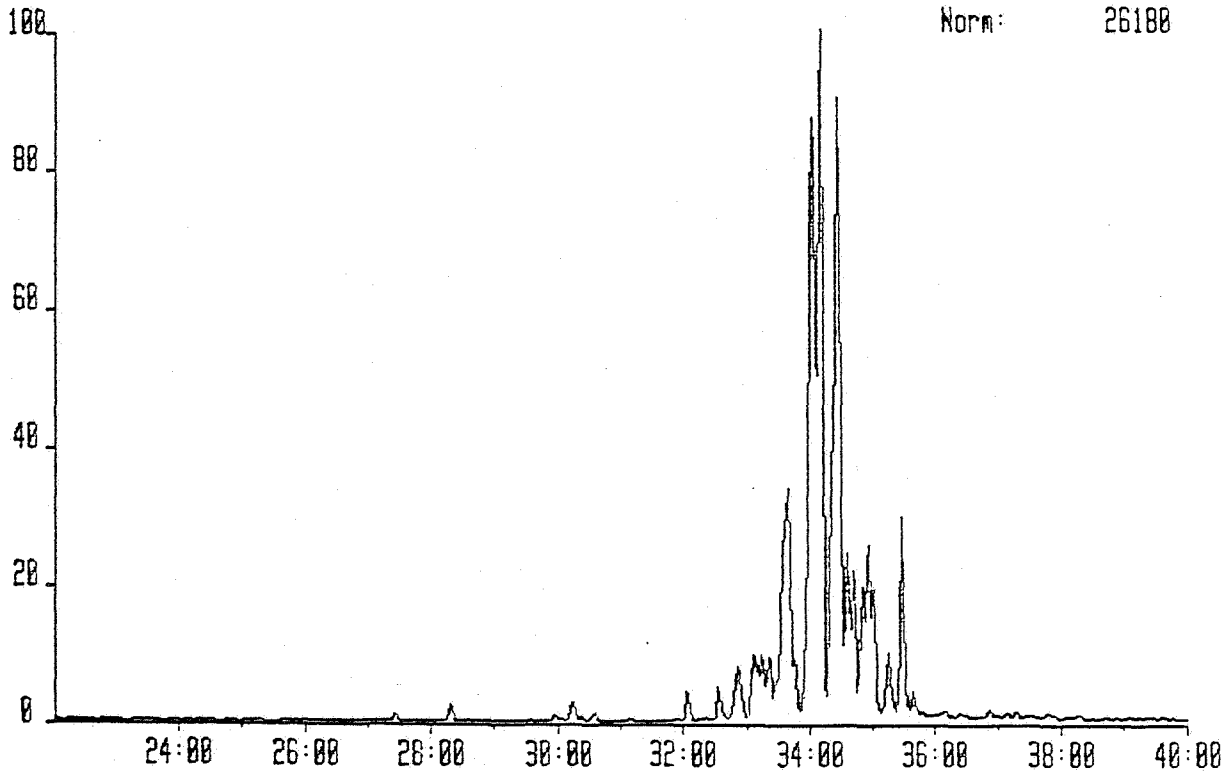
EXAMPLE OF PEAK IDENTIFICATION FOR C3 PHENANTHRENES.



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 2 Injection 1 Group 1 Mass 220.1253
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION

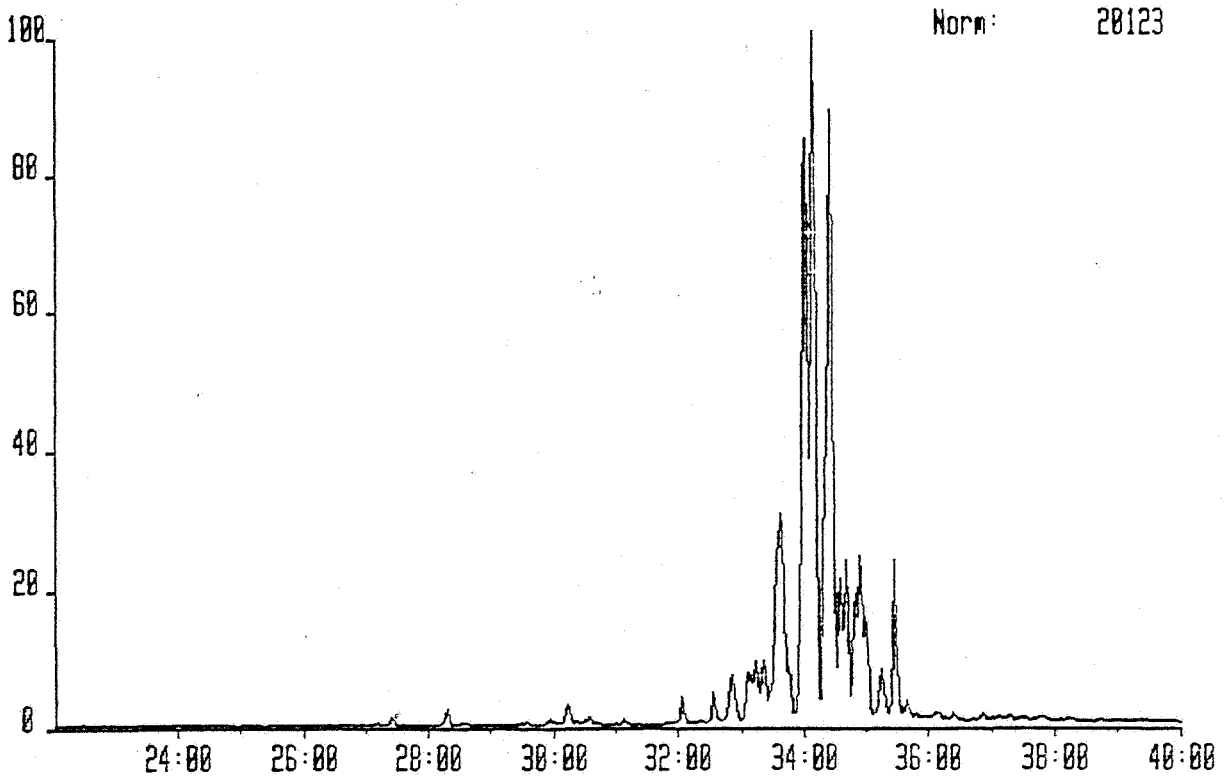



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 3 Injection 1 Group 1 Mass 220.1253
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION

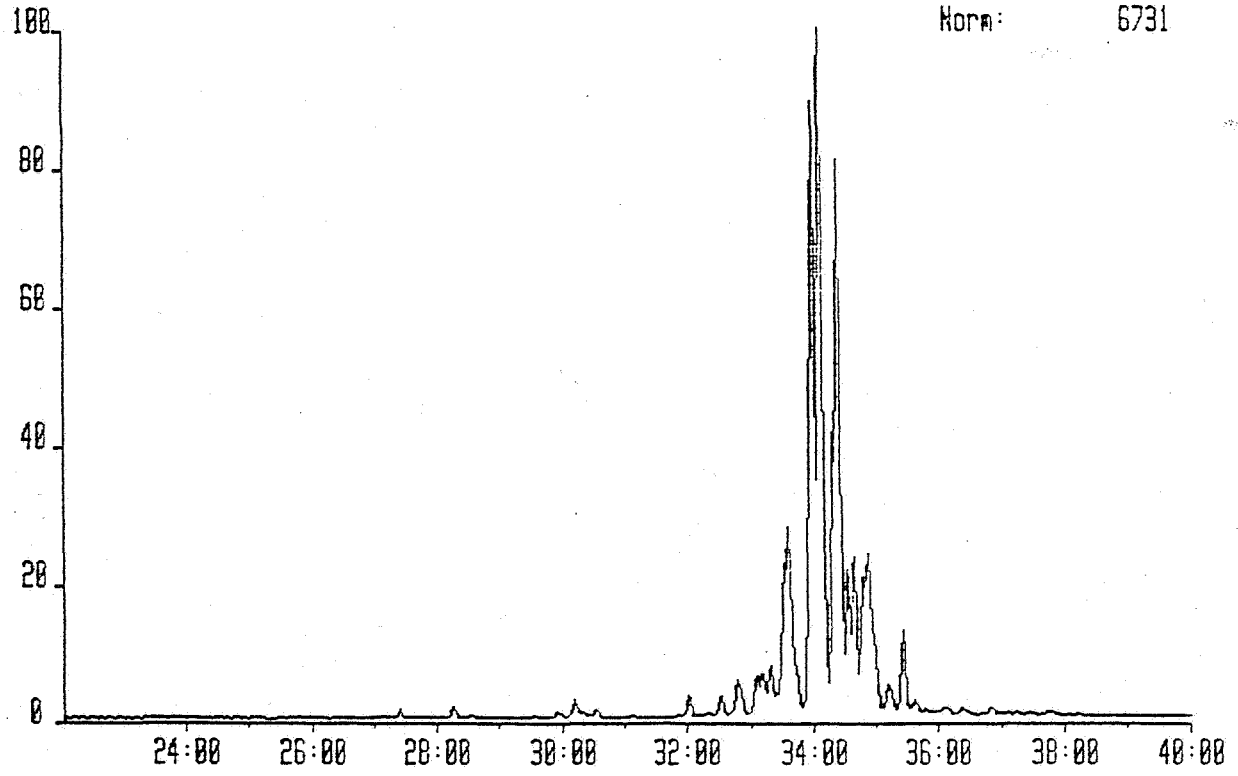


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 4 Injection 1 Group 1 Mass 220.1253
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

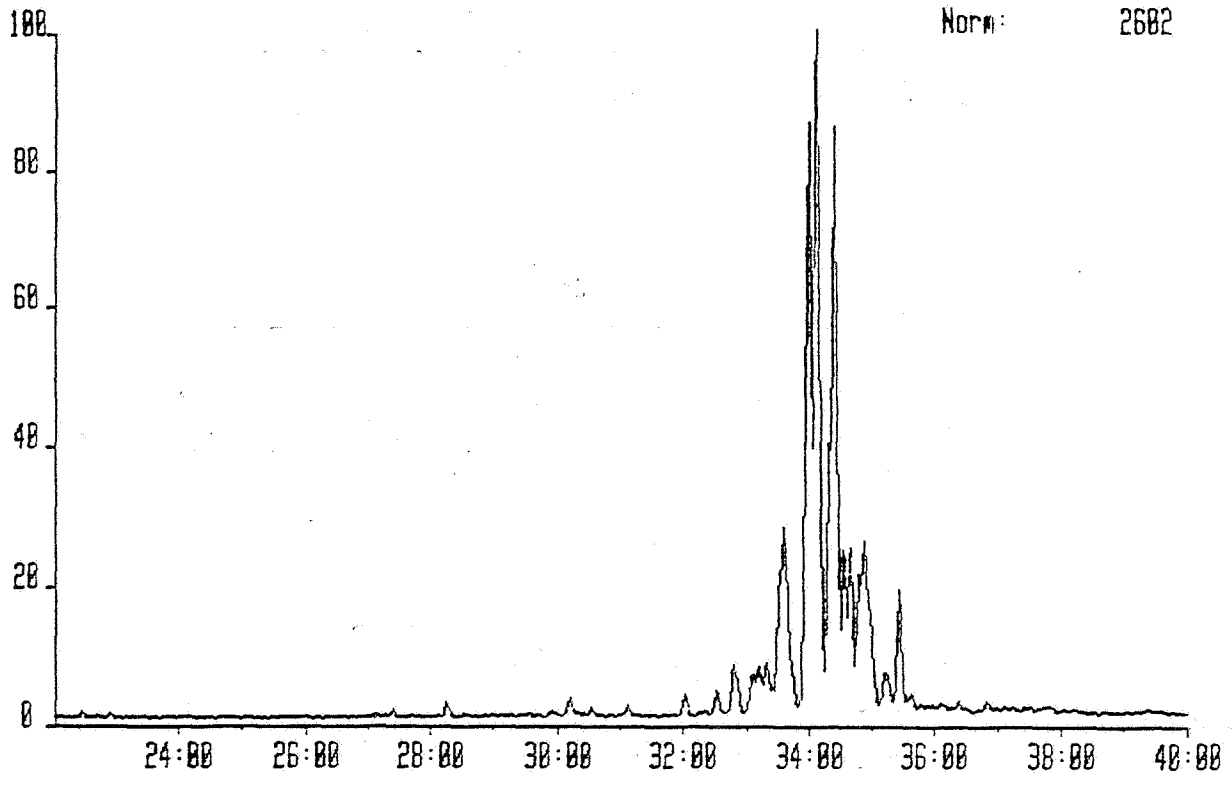



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 5 Injection 1 Group 1 Mass 220.1253
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION



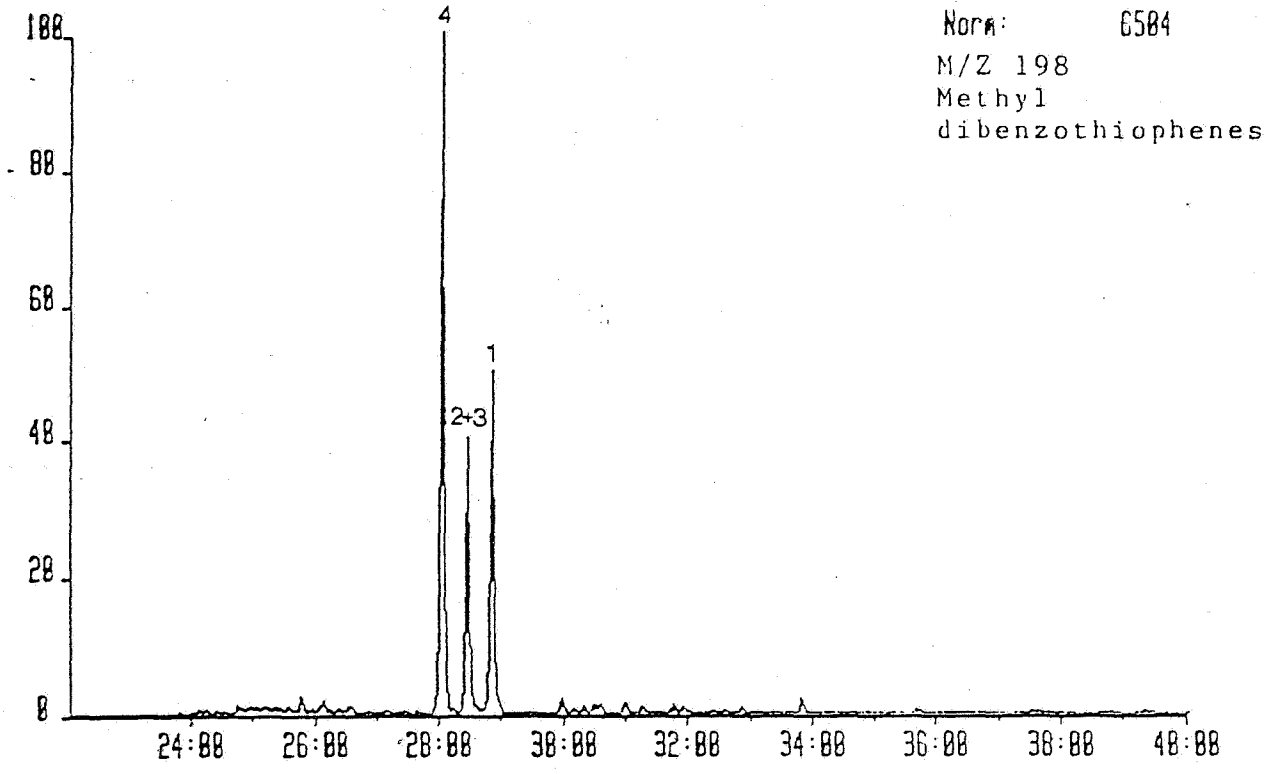
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARD5 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:ARD1
Sample 6 Injection 1 Group 1 Mass 228.1253
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION



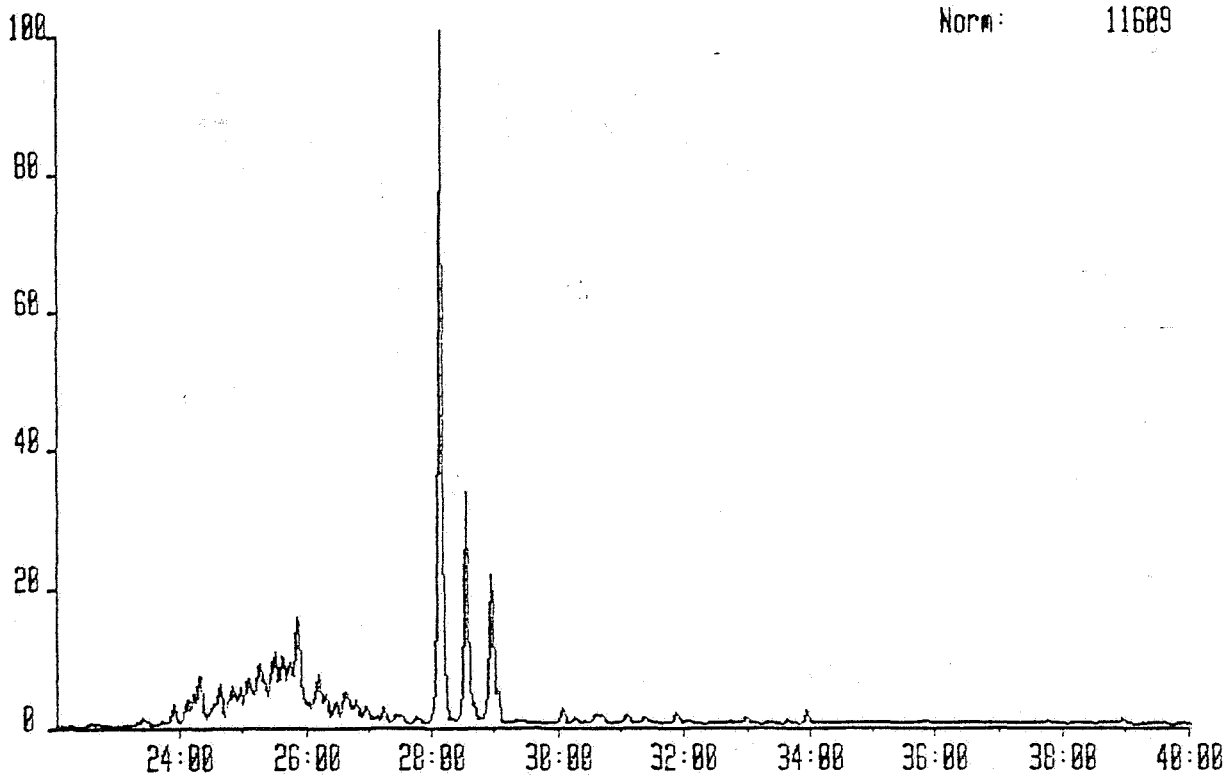
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

EXAMPLE OF PEAK IDENTIFICATION FOR METHYL DIBENZOTHIOPHENES.

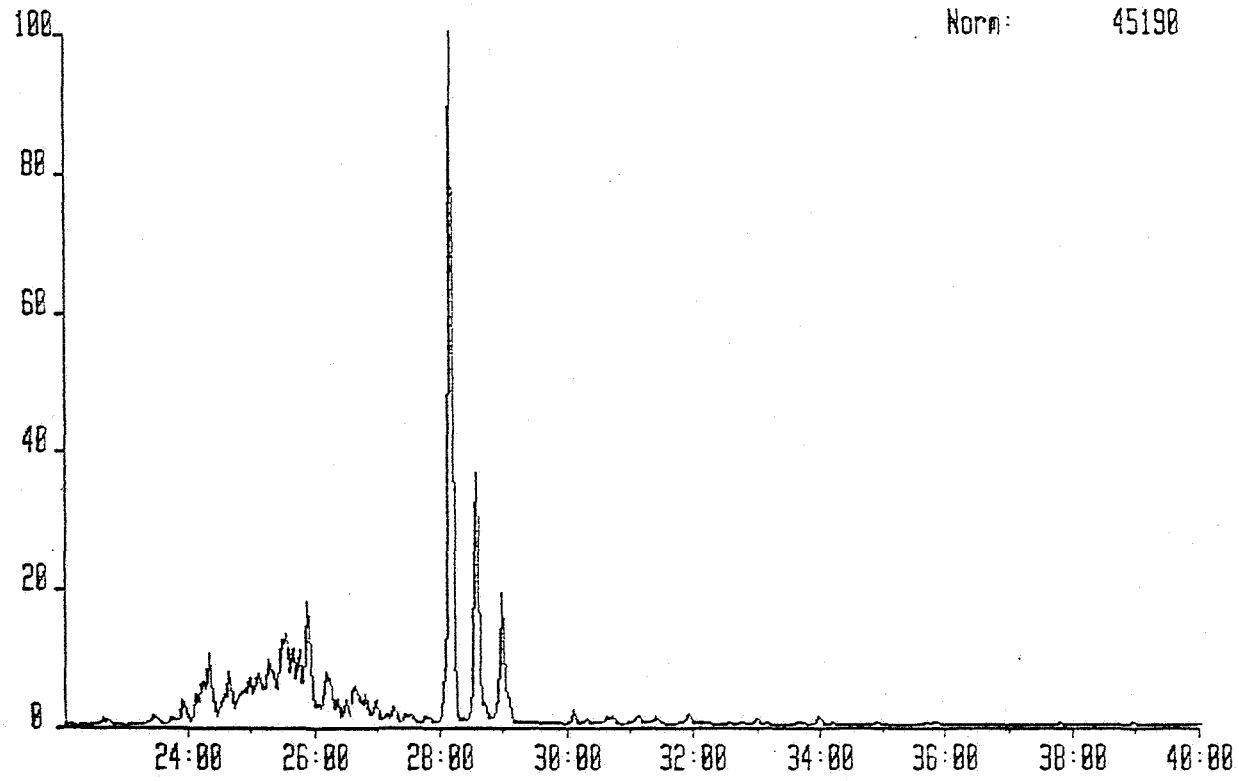


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

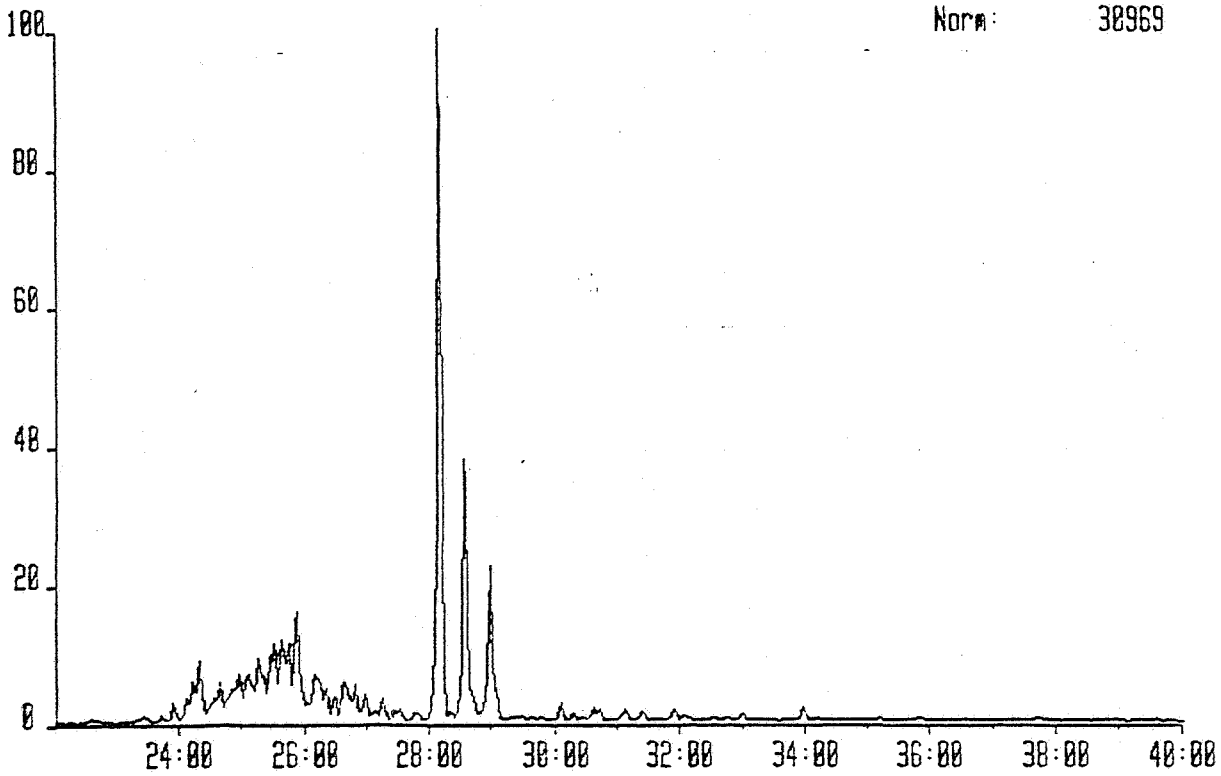
CGARD5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARD1
Sample 2 Injection 1 Group 1 Mass 198.0503
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION



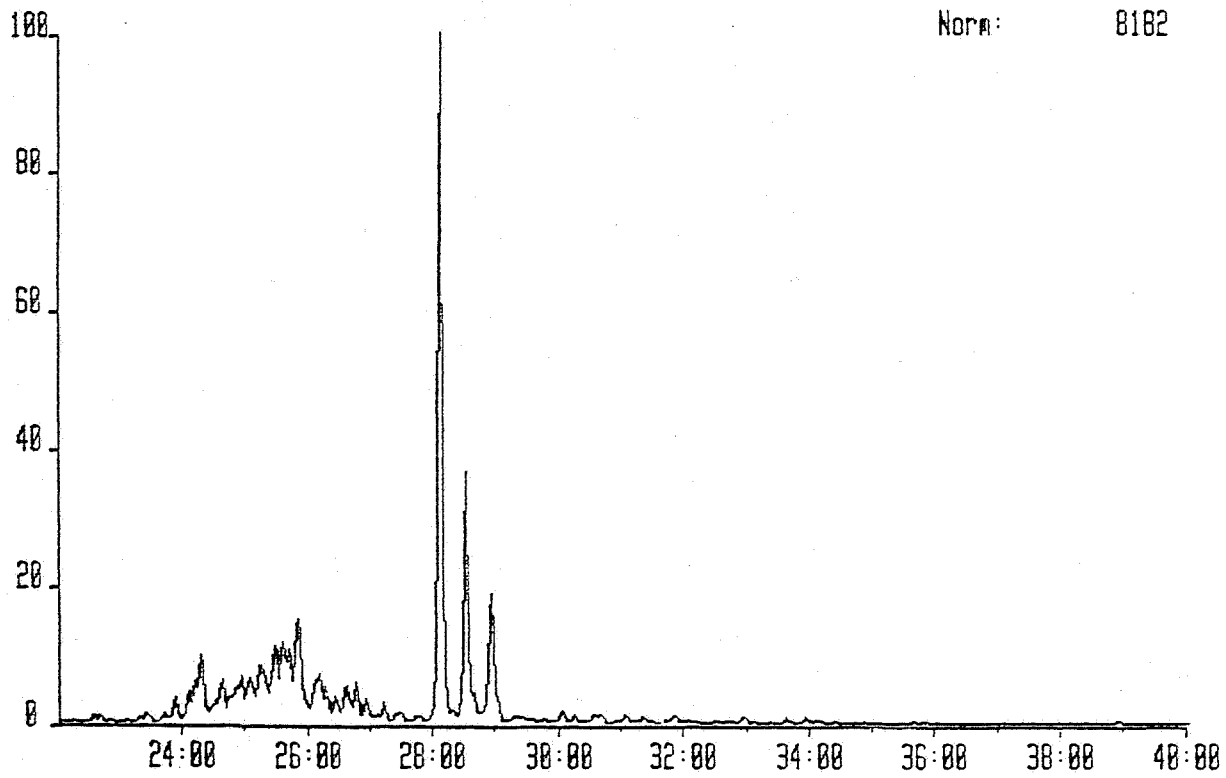

CGARD5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARD1
Sample 3 Injection 1 Group 1 Mass 198.0503
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 4 Injection 1 Group 1 Mass 198.0503
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

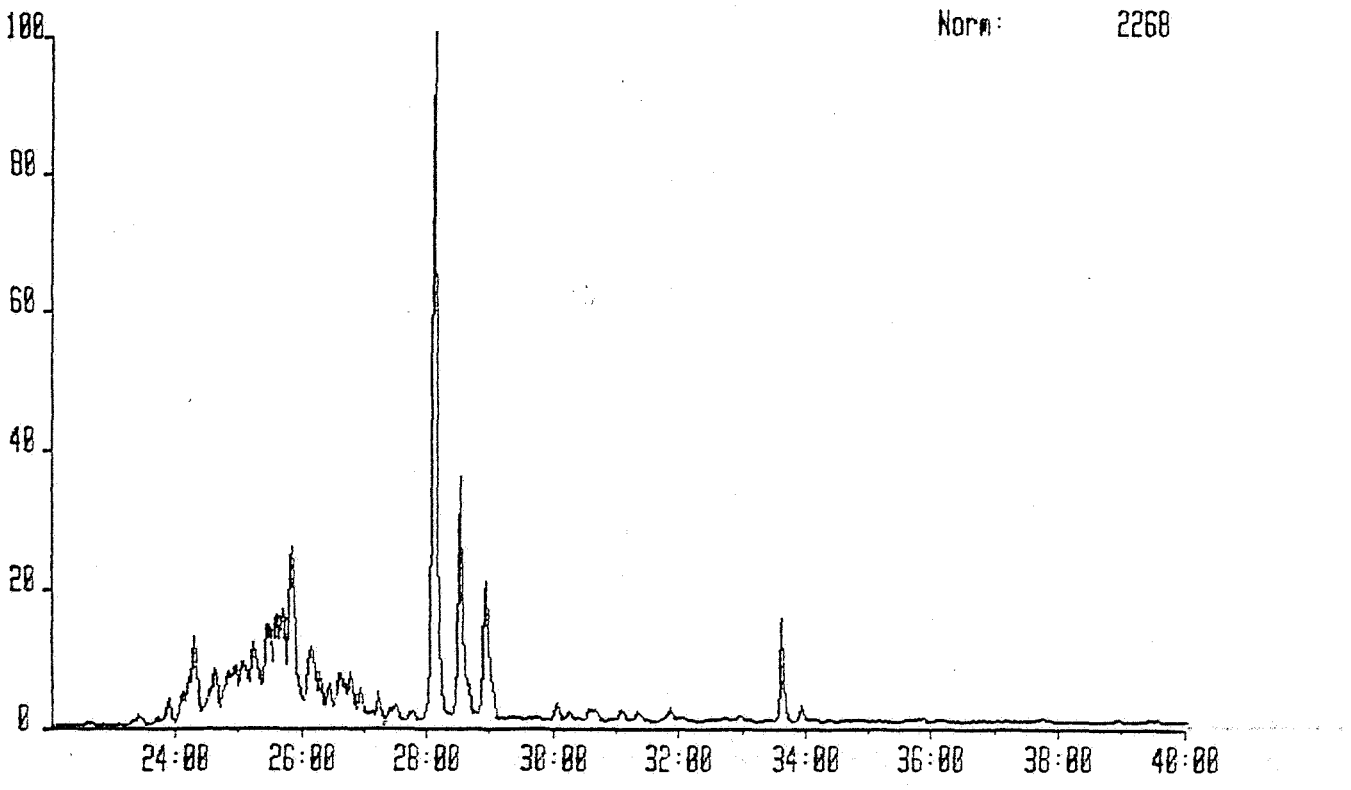



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 5 Injection 1 Group 1 Mass 198.0503
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION



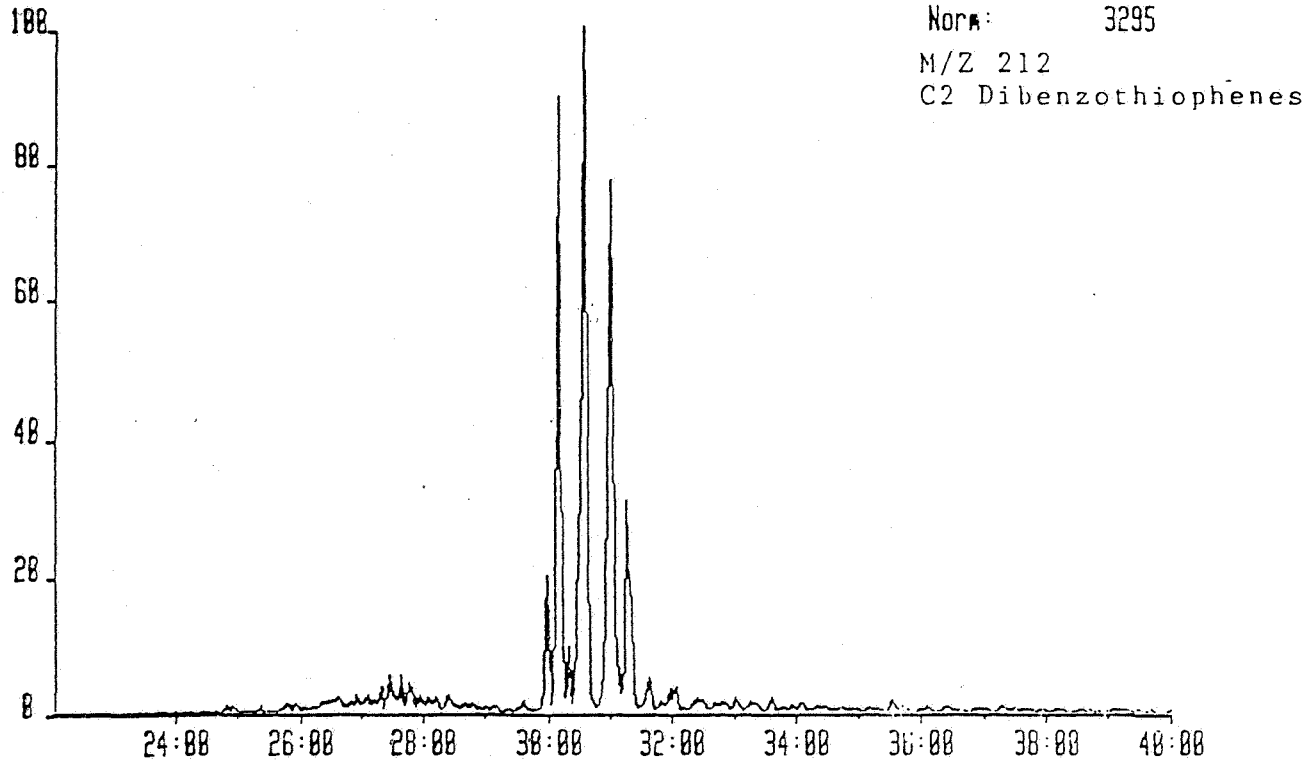
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGAR05 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB Syste:AR01
Sample 6 Injection 1 Group 1 Mass 198.0583
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION



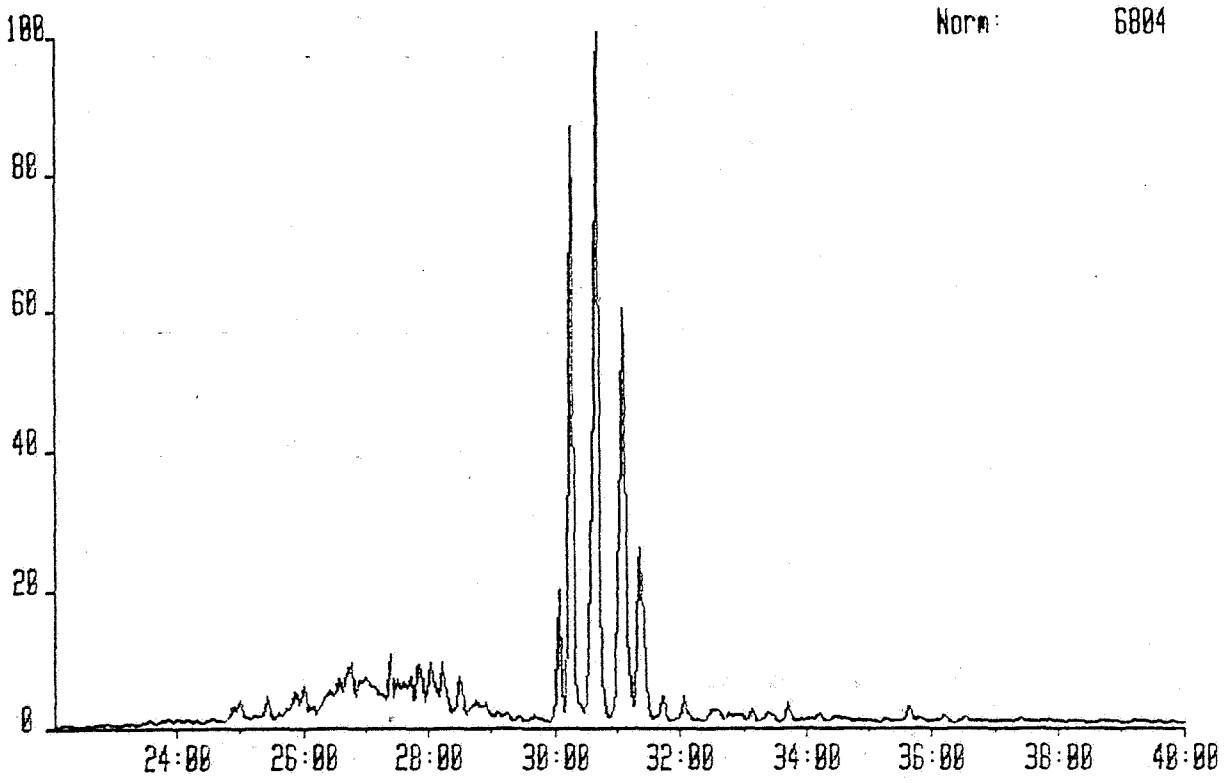
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

EXAMPLE OF PEAK IDENTIFICATION FOR C2 DIBENZOTHIOPHENES.

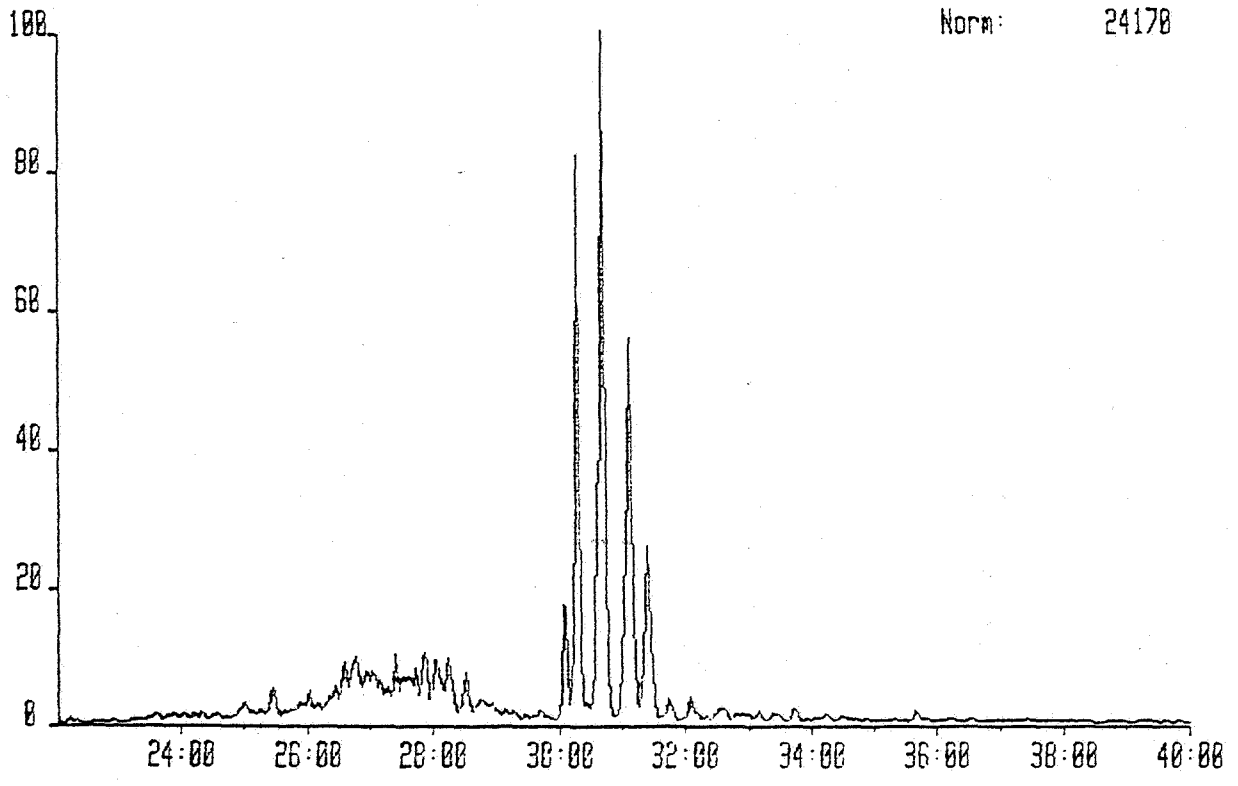


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 2 Injection 1 Group 1 Mass 212.0660
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION

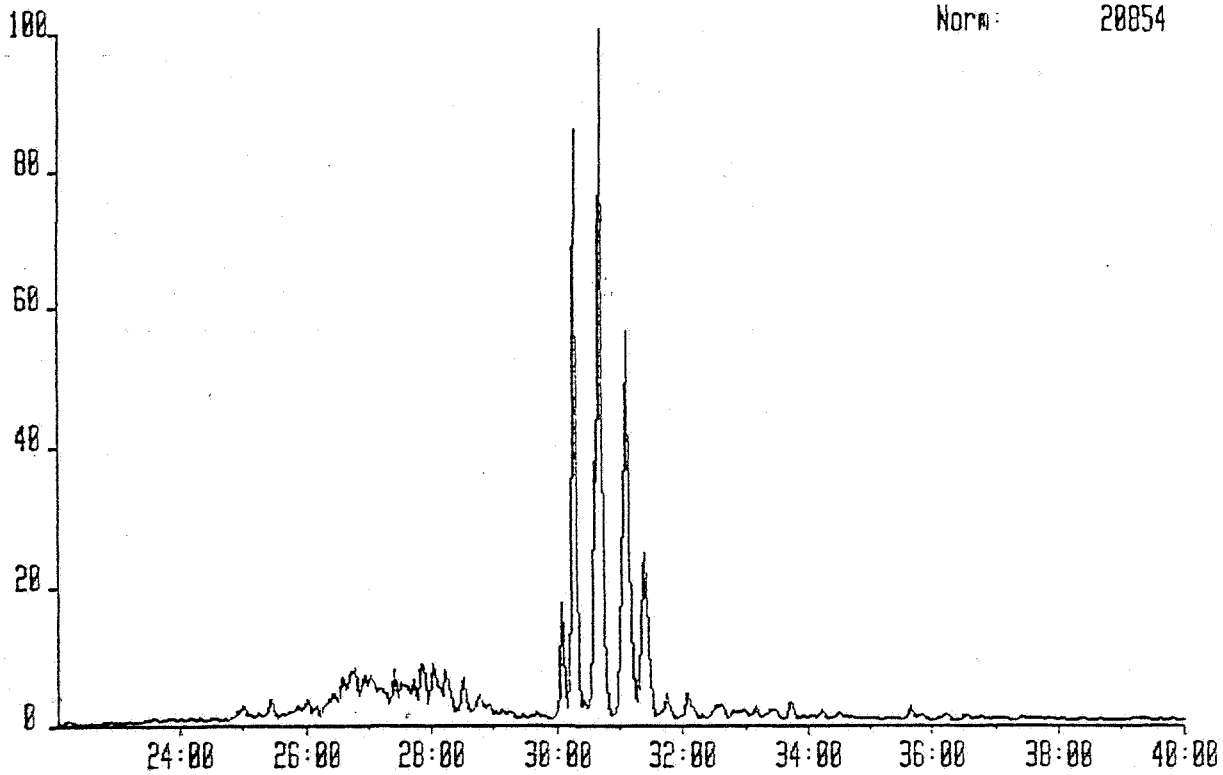



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 3 Injection 1 Group 1 Mass 212.0660
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION

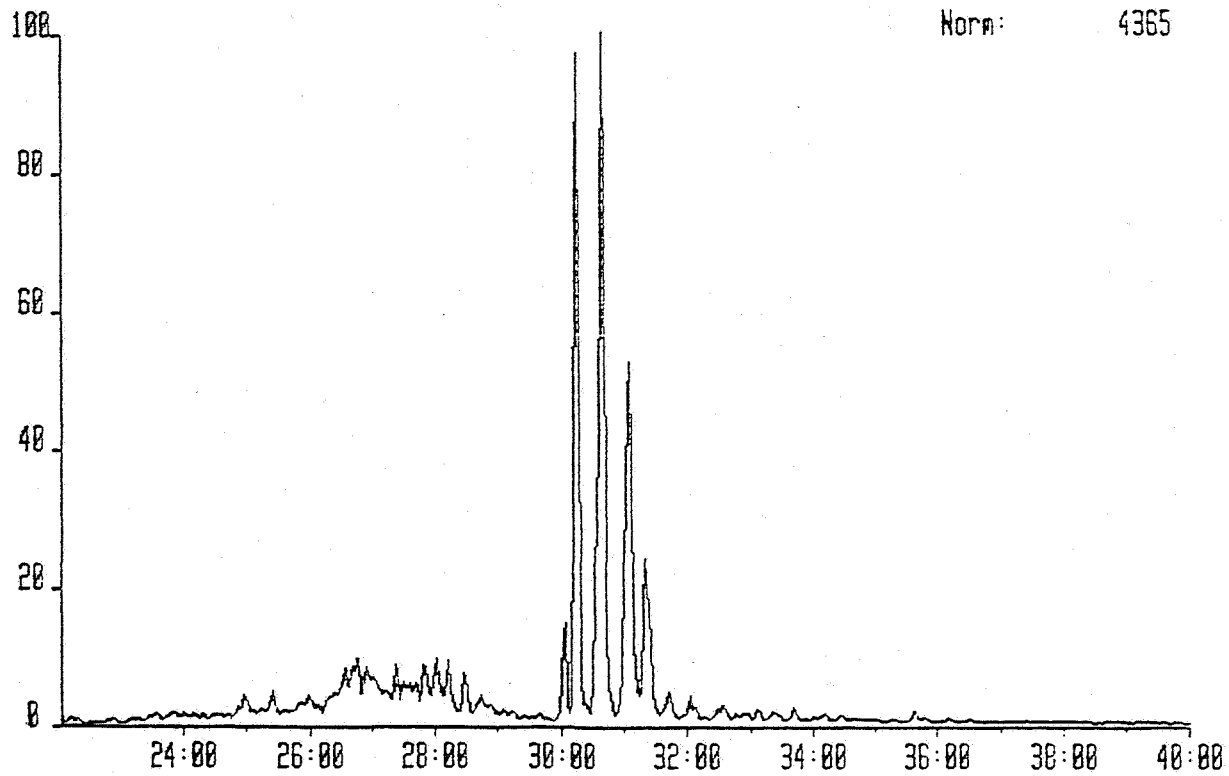


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGAR05 19-NOV-87 Str:Magnetic TS250 Acnt GEOLAB System ARO1
Sample 4 Injection 1 Group 1 Mass 212.0660
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

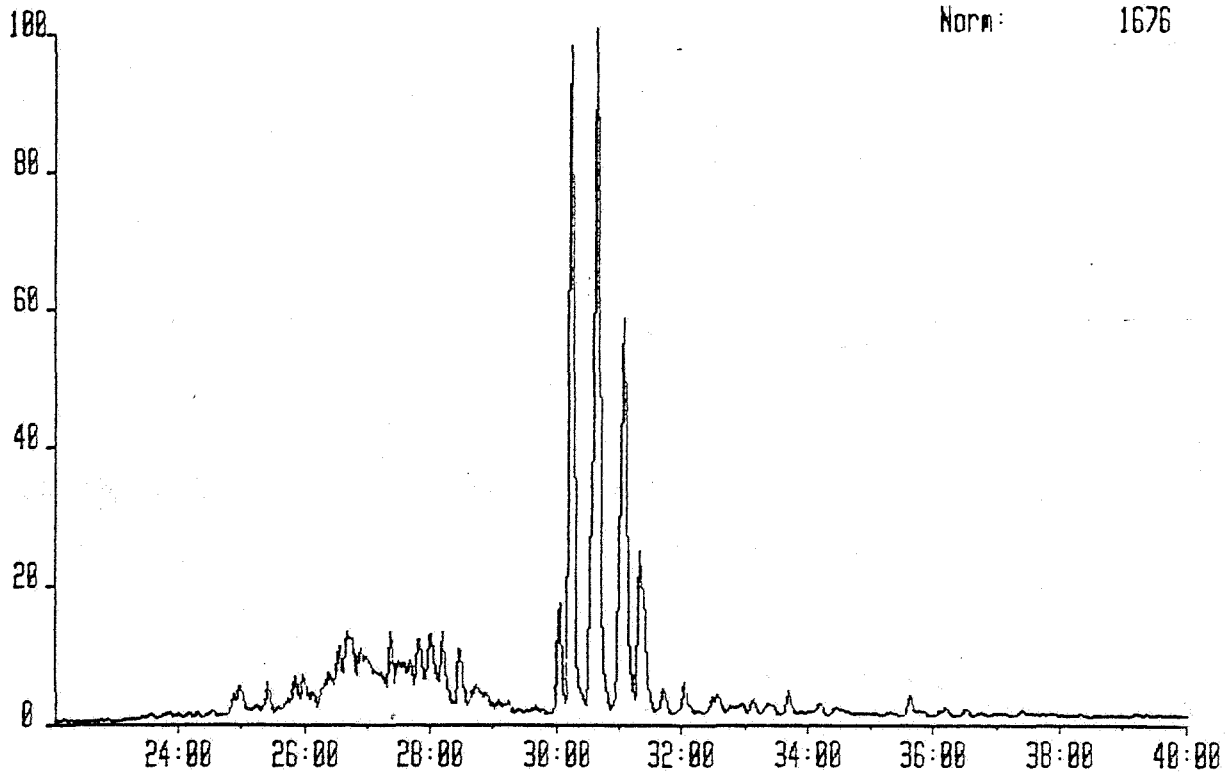



CGAR05 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 5 Injection 1 Group 1 Mass 212.0660
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION



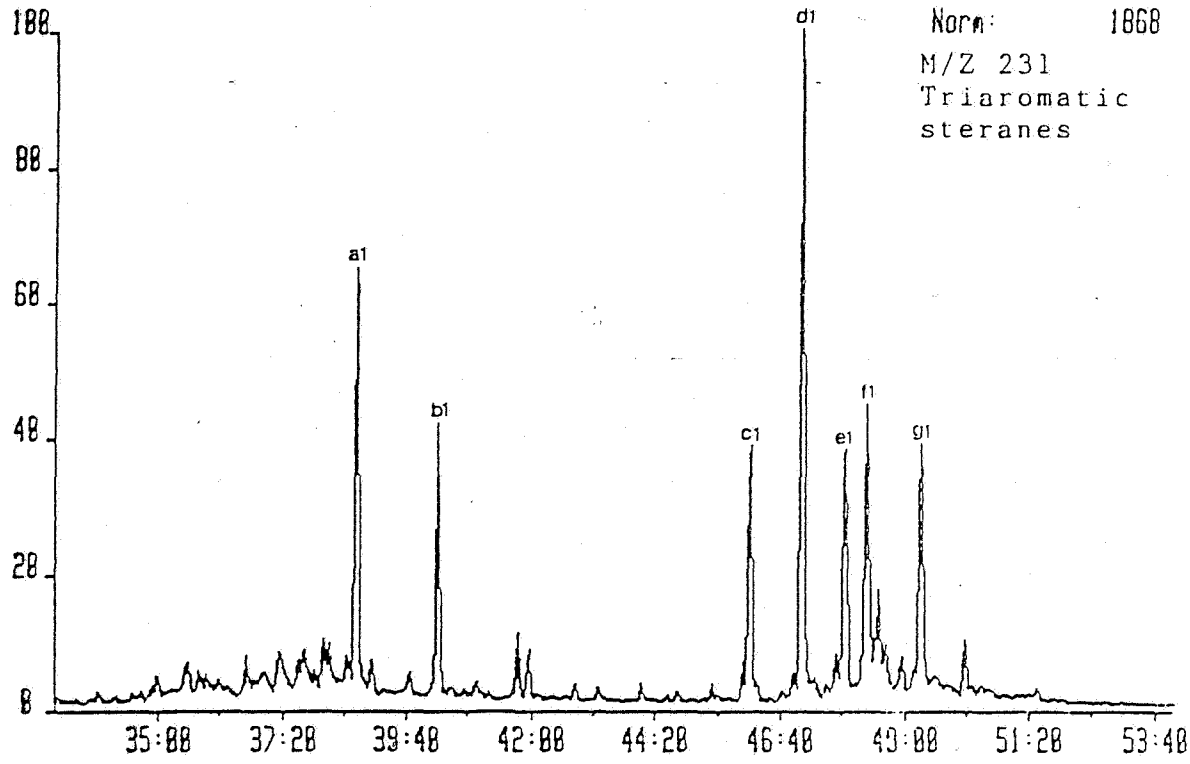
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGAR05 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:AR01
Sample 6 Injection 1 Group 1 Mass 212.0668
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION



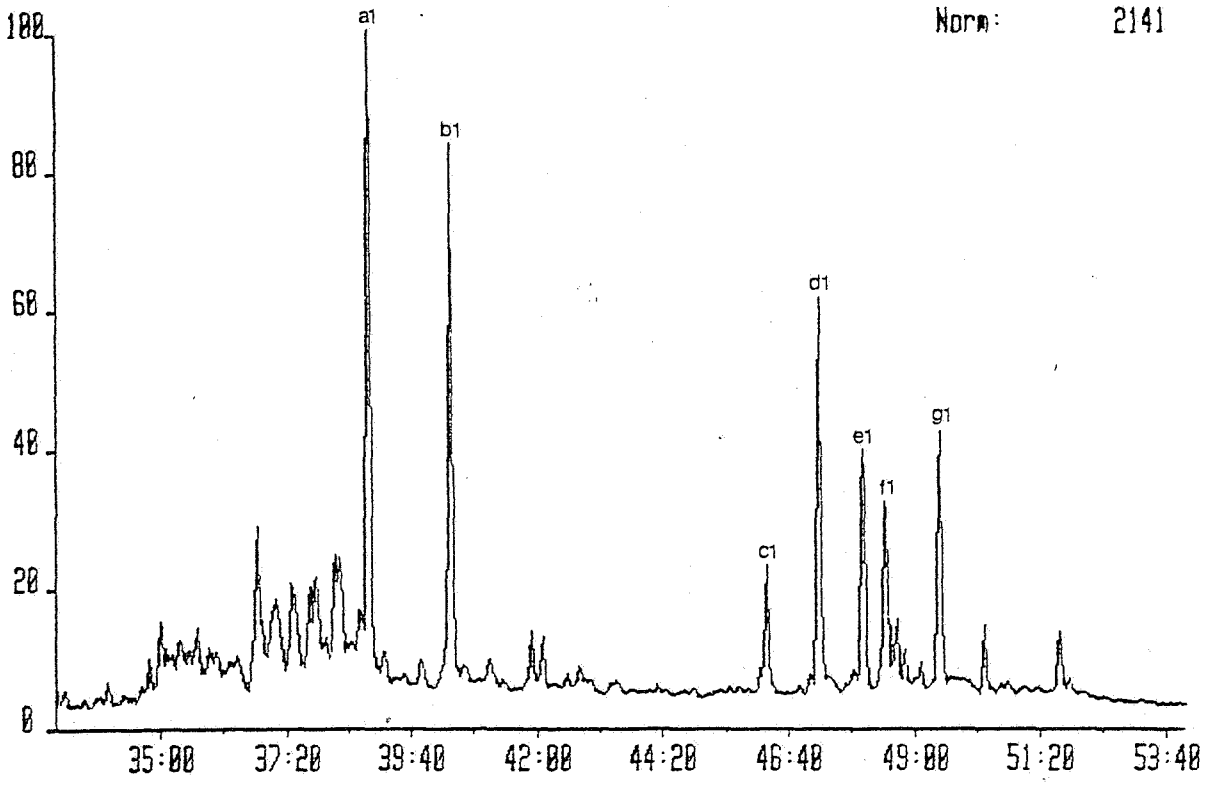
GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

EXAMPLE OF PEAK IDENTIFICATION FOR TRIAROMATIC STERANES.

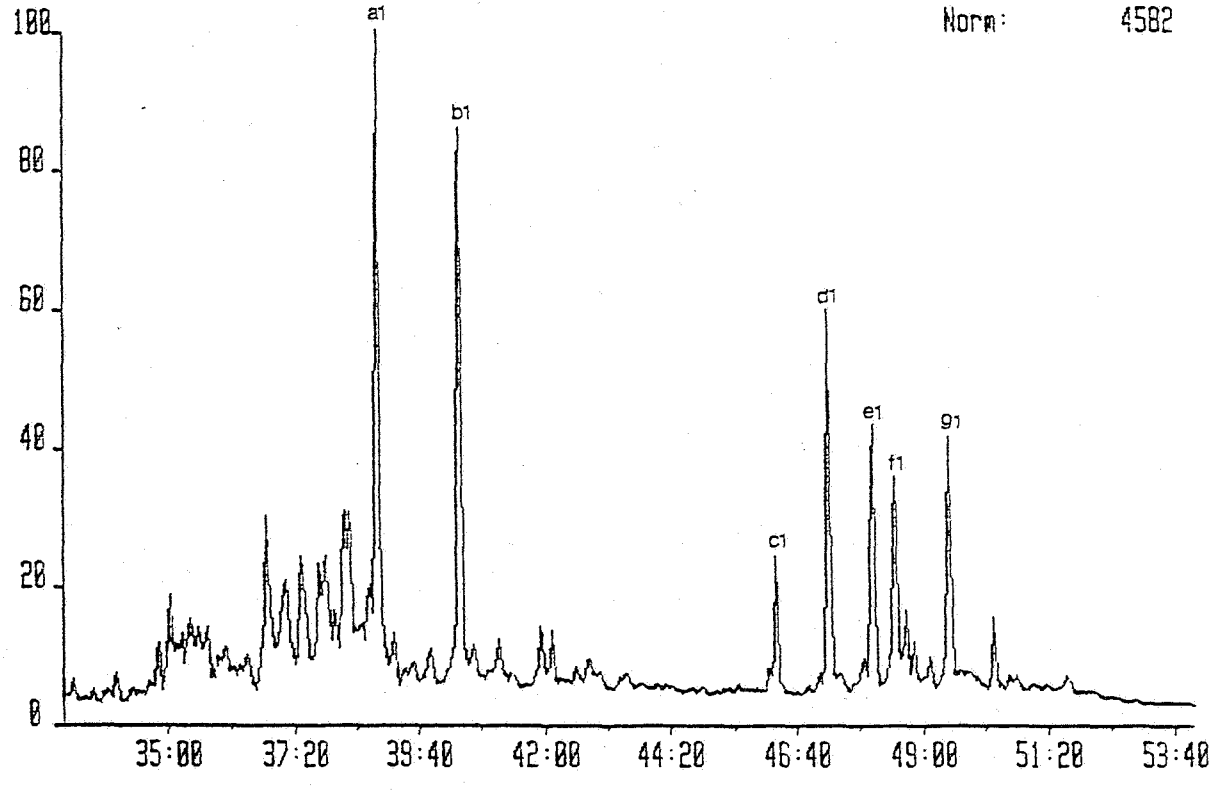


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 2 Injection 1 Group 1 Mass 231.1174
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION

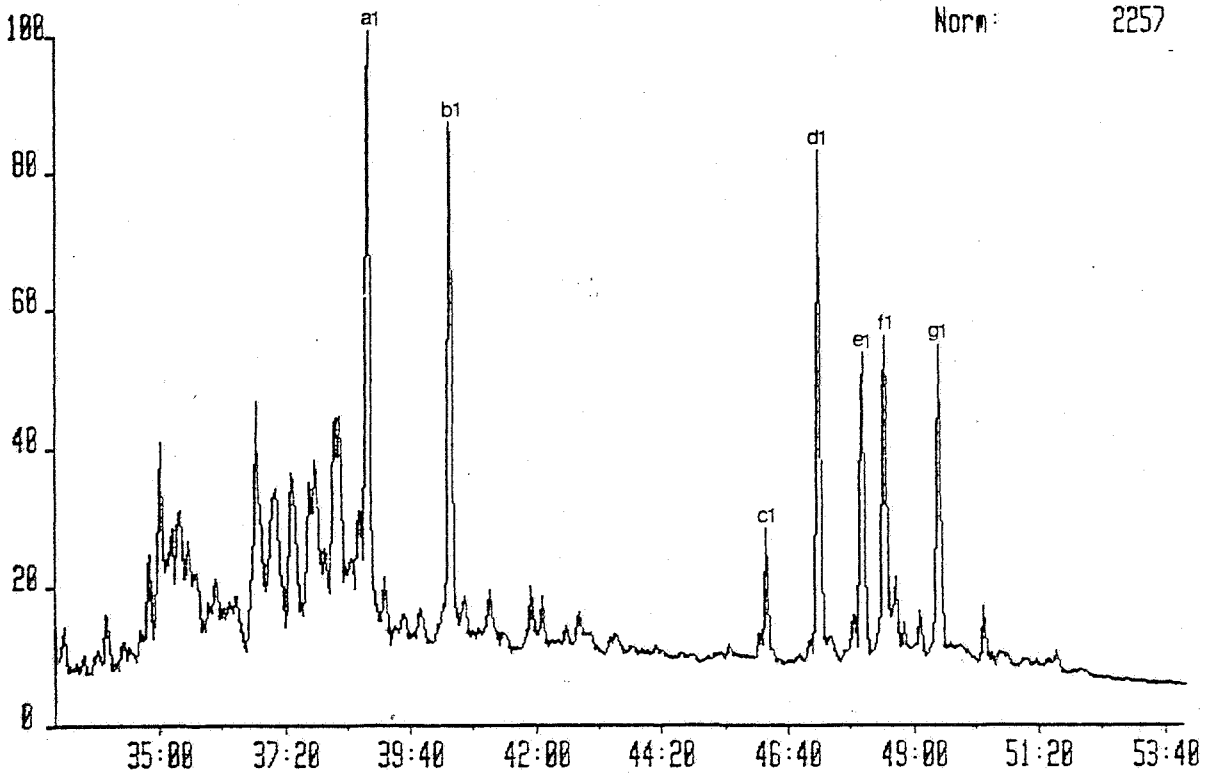



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 3 Injection 1 Group 1 Mass 231.1174
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION

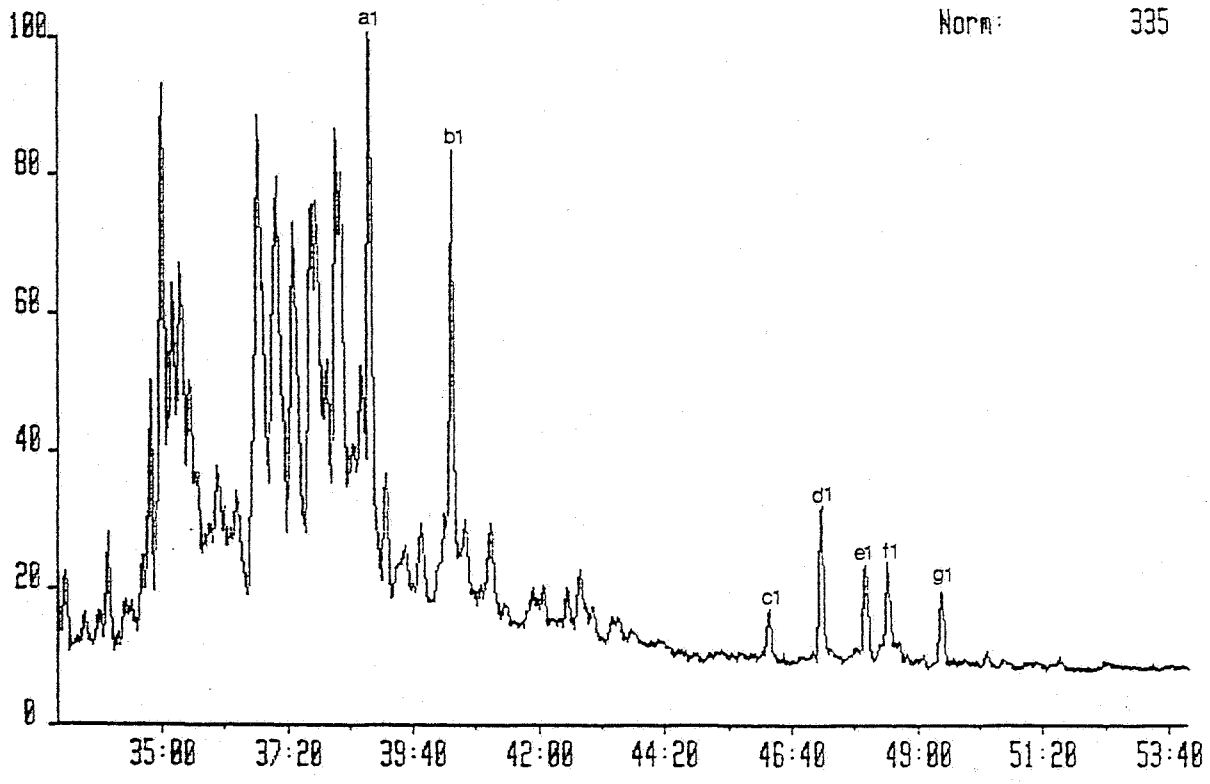


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 4 Injection 1 Group 1 Mass 231.1174
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

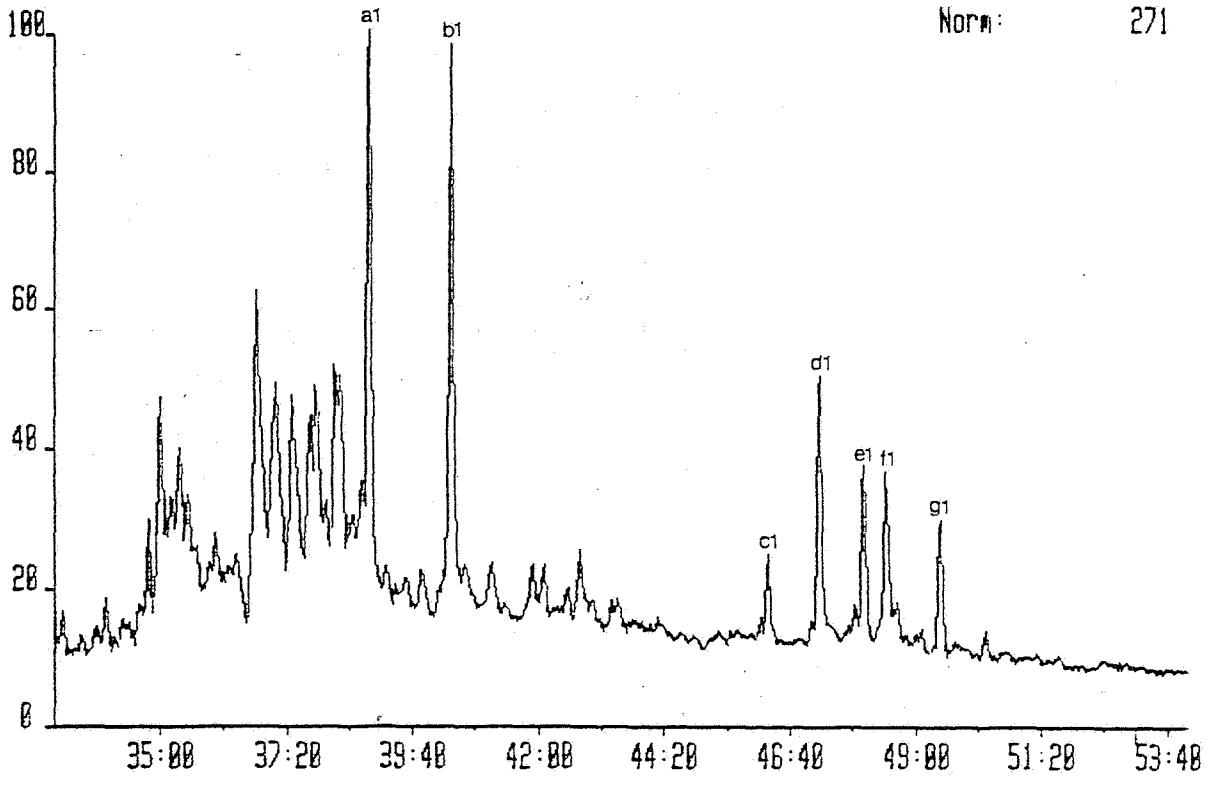



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 5 Injection 1 Group 1 Mass 231.1174
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION

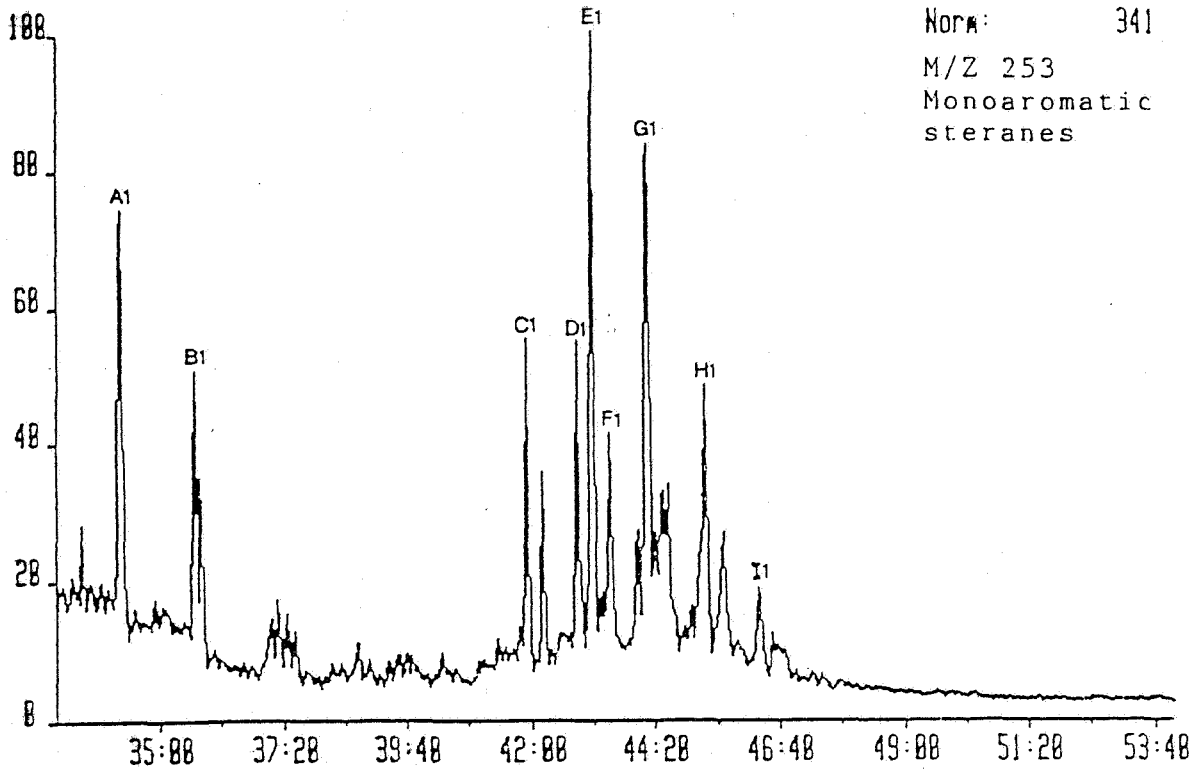


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

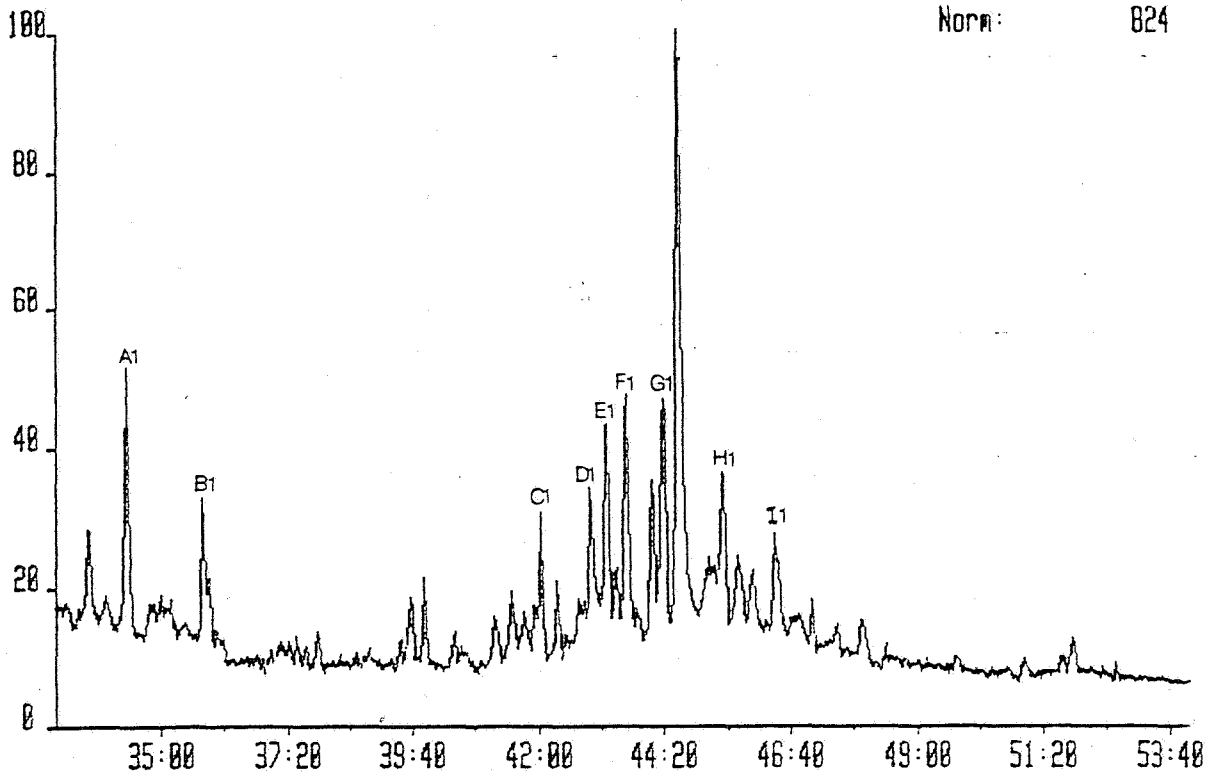
CGARO5 19-NOV-87 Str:Magnetic TS250 Acnt:GEOLAB Syste:ARO1
Sample 6 Injection 1 Group 1 Mass 231.1174
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION



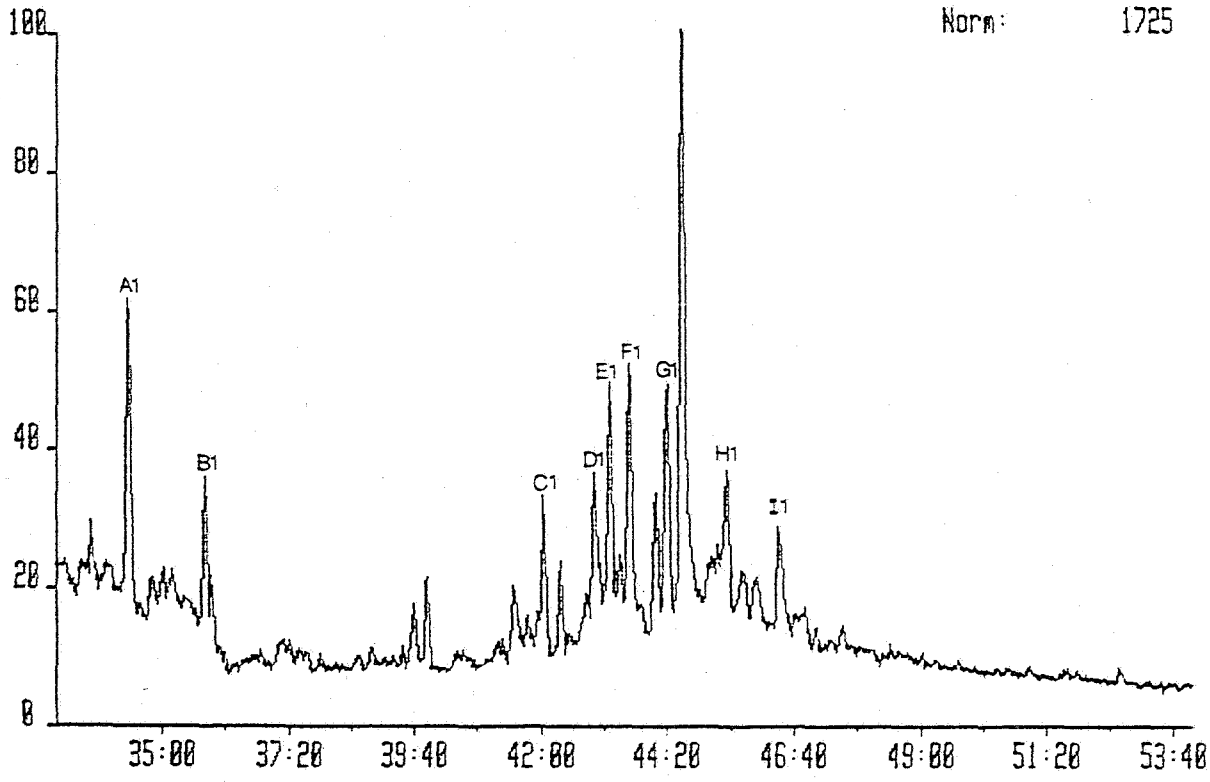
EXAMPLE OF PEAK IDENTIFICATION FOR MONOAROMATIC STERANES.



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 2 Injection 1 Group 1 Mass 253.1956
Text:WELL 2/6-2, 4200M, AROMATIC FRACTION

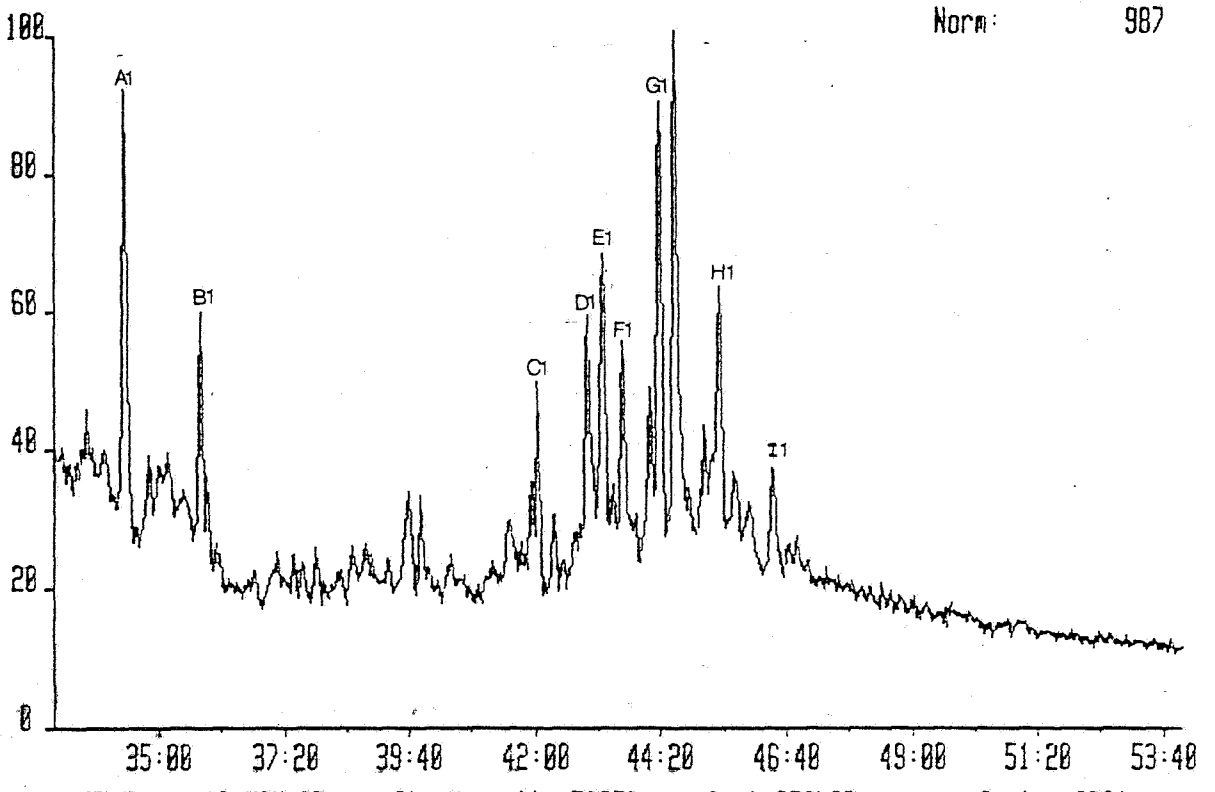



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 3 Injection 1 Group 1 Mass 253.1956
Text:WELL 2/6-2, 4300M, AROMATIC FRACTION

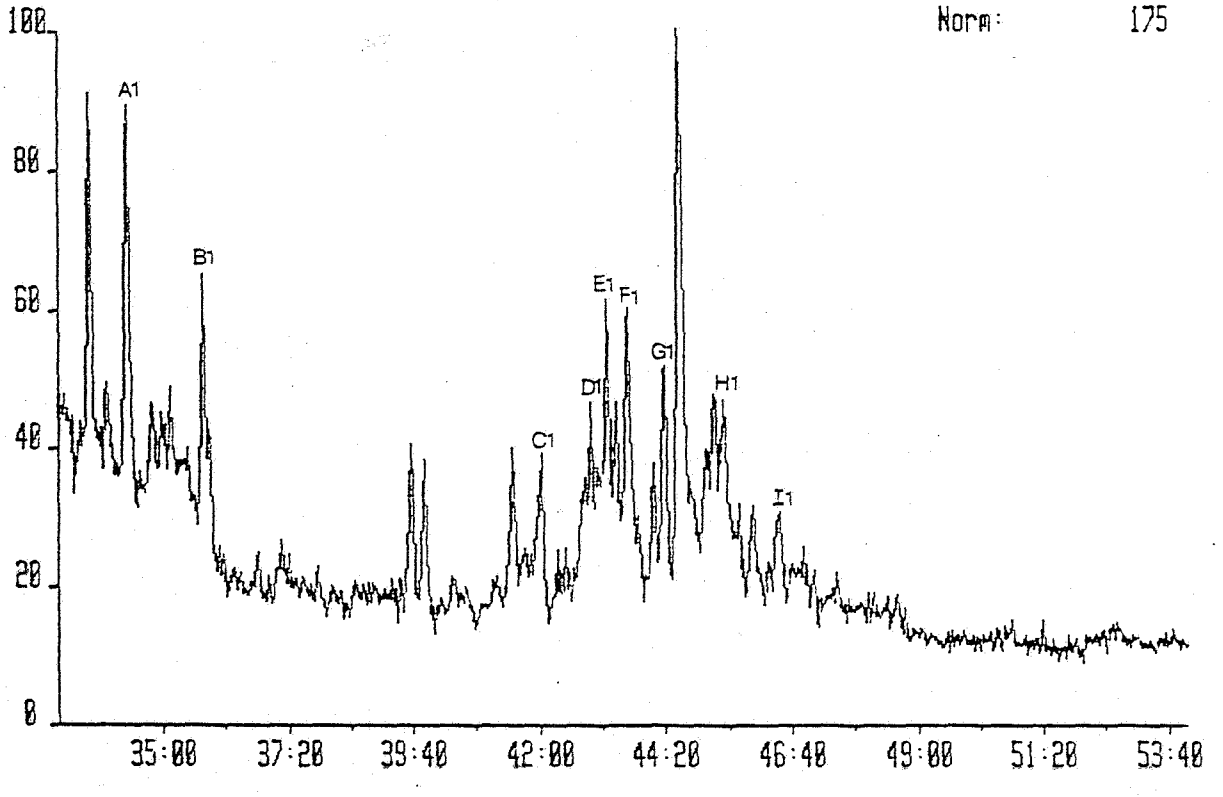


GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 4 Injection 1 Group 1 Mass 253.1956
Text:WELL 2/6-2, 4430M, AROMATIC FRACTION

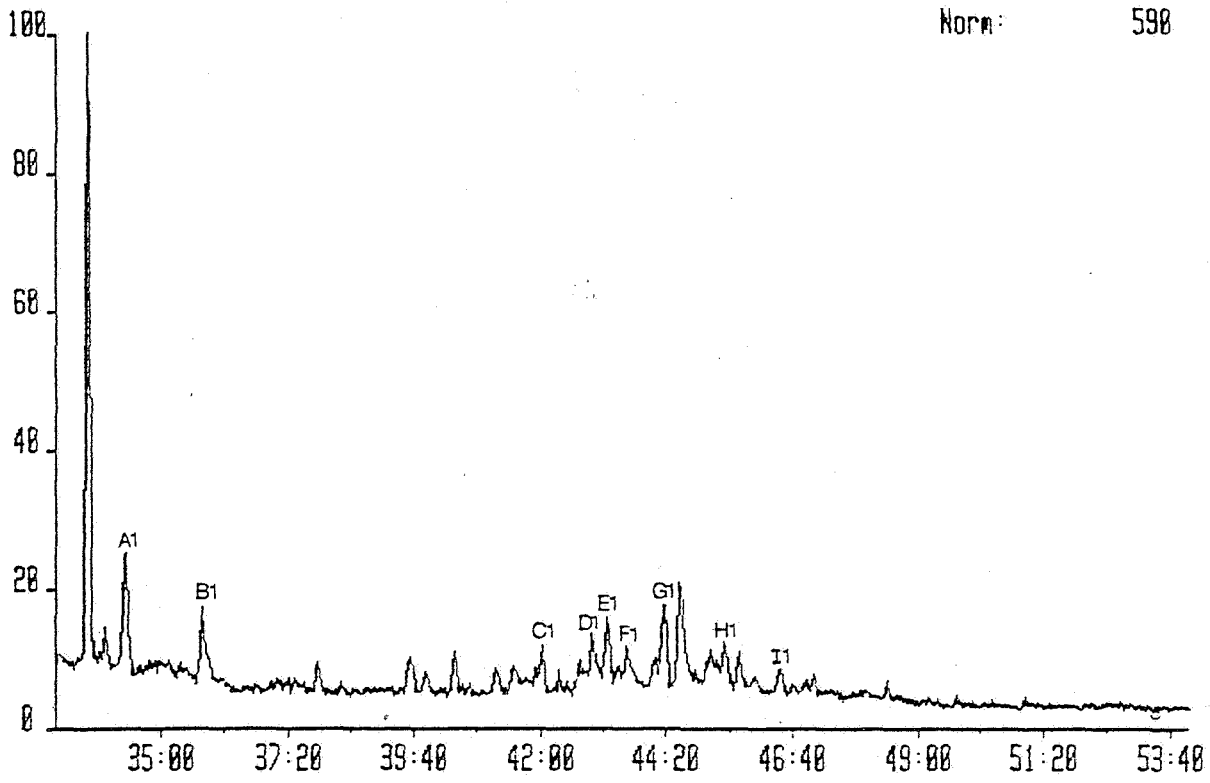



CGARO5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARO1
Sample 5 Injection 1 Group 1 Mass 253.1956
Text:WELL 2/6-2, 4528M, AROMATIC FRACTION



GEOLAB NOR
GEOCHEMICAL LABORATORIES OF NORWAY A.S

CGARD5 19-NOV-87 Sir:Magnetic TS250 Acnt:GEOLAB System:ARD1
Sample 6 Injection 1 Group 1 Mass 253.1956
Text:WELL 2/6-2, 4666M, AROMATIC FRACTION



# INTERPRETATION LIMITS

# ANALYSIS PROCEDURES

# ABBREVIATIONS

Table 1. Richness Parameters

1a. Classification based on Head space plus Cutting Gas analysis.

| $C_1 - C_4$ ul gas/kg dry sed. | $C_5+$ ul gas/kg dry sed. | classification |
|---|---|---|
| <1000 | <1000 | Poor |
| 1000 - 3000 | 1000 - 3000 | Fair |
| 3000 - 10000 | 3000 - 10000 | Good |
| >10000 | >10000 | Rich |

1b. Classification based on Total Organic Carbon Analysis

| TOC % (shale) | TOC % (carbonate) | Classification |
|---|---|---|
| 0 - 0.3 | 0 - 0.1 | Poor |
| 0.3 - 1.0 | 0.1 - 0.25 | Fair |
| 1.0 - 2.0 | 0.25 - 0.5 | Good |
| >2 | >0.5 | Rich |

1c. Classification based on Rock Eval Pyrolysis

| Petroleum Potential ($S_1+S_2$) mgHC/g rock | Classification |
|---|---|
| <2 | Poor |
| 2 - 6 | Fair |
| 6 - 15 | Good |
| >15 | Rich |

1d. Classification based on Extraction Data
(At maturity 0.5% or less vitrinite reflectance)

| Extractable Organic Matter | | Extractable Hydrocarbons | | Classification |
|---|---|---|---|---|
| ppm of sediment | mg EOM/g Corg | ppm of sediment | mg EHC/g Corg | |
| <500 | 50 | <100 | 10 | Poor |
| 500 - 1000 | 50 - 100 | 100 - 200 | 10 - 20 | Fair |
| 1000 - 2000 | 100 - 200 | 200 - 500 | 20 - 50 | Good |
| >2000 | >200 | >500 | >50 | Rich |

Table 2. Maturity Parameters

| Vitrinite Reflectance | Fluorescence Colour | SCI (1-10) | TAI | Tmax typeII | Tmax typeIII | Maturity Phases typeII Kerogen |
|---|---|---|---|---|---|---|
| 0.2 | G | 1 | | | | |
| | G Y | 2 | | | | |
| 0.3 | Y | 3 | | | 425 | Immature |
| 0.4 | Y O | 4 | 1+ | 420 | | |
| | | | | 425 | 430 | |
| 0.5 | L.O. | 5 | | | | |
| | | | | 430 | 435 | Moderately Mature |
| 0.6 | M.O. | | 2 | | | |
| | | 6 | | 435 | 440 | |
| 0.7 | | | | | | |
| | D.O. | | | | | Mature |
| 0.8 | | 7 | | | | |
| | | | | 440 | | |
| 0.9 | | | 2+ | | 450 | Peak Oil |
| | O/R | | | | | |
| 1.0 | | 8 | 3- | 450 | 460 | |
| 1.1 | | | | | | |
| | R. | | | | | |
| 1.2 | | | | | | Gas/Condensate |
| 1.3 | | 9 | 3+ | | | Maturity |
| 1.4 | | | | | | |
| 1.5-2.0 | | 10 | | | | |

Table 3. Kerogen Typing Parameters

3a. Kerogen Typing based on Rock Eval Pyrolysis
(Immature samples, $R_o \leq 0.5\%$)

| Hydrogen Index (HI) | Oxygen Index (OI) | Kerogen Type | Hydrocarbon Type |
|---|---|---|---|
| >700 | 10 - 40 | I | Paraffinic Oil |
| 350 - 700 | 20 - 60 | II | Oil |
| 200 - 300 | 40 - 80 | II/III | Oil/Gas |
| 100 - 200 | 50 - 150 | III | Gas/Heavy Oil |
| 0 - 100 | 20 - 200 | IV | No Potential |

3b. Kerogen Typing based on Rock Eval Pyrolysis
(Peak Oil Generation, $R_o$ = 0.8 - 1.0%)

| Hydrogen Index (HI) | Oxygen Index (OI) | Kerogen Type | Hydrocarbon Type |
|---|---|---|---|
| 200 - 250 | 10 - 20 | I | Paraffinic Oil |
| 200 - 250 | 10 - 20 | II | Oil |
| 100 - 150 | 20 - 40 | II/III | Oil/Gas |
| 50 - 150 | 20 - 60 | III | Gas/Heavy Oil |
| <50 | 20 - 100 | IV | No Potential |

Table 3c. Kerogen Typing based on Rock Eval Pyrolysis
(Summary table)

| Types of kerogen | Hydrogen Index HI | | | | Oxygen Index OI | | | |
|---|---|---|---|---|---|---|---|---|
| I | 700 - 1000 | 200 - 250 | 100 - 150 | 50 - 80 | 10 - 40 | 10 - 20 | 10 - 20 | 10 - 20 |
| II | 350 - 700 | 200 - 250 | 100 - 150 | 50 - 80 | 20 - 60 | 10 - 20 | 10 - 20 | 10 - 20 |
| II/III | 200 - 350 | 100 - 150 | 100 - 150 | 50 - 80 | 40 - 80 | 20 - 40 | 10 - 20 | 10 - 20 |
| III | 100 - 200 | 50 - 150 | 50 - 100 | 50 - 80 | 50 - 150 | 20 - 60 | 10 - 30 | 10 - 20 |
| IV | 0 - 100 | <50 | <50 | <50 | 20 - 200 | 20 - 100 | 10 - 100 | 10 - 50 |
| Maturity (Vitr. refl.) | 0.5 | 1.0 | 1.3 | 2.0 | 0.5 | 1.0 | 1.3 | 2.0 |

Table 3d. Kerogen Typing based on Elemental Analysis

| Kerogen Type | H/C | | | | O/C | | | |
|---|---|---|---|---|---|---|---|---|
| I | 1.45 | 1.0 | 0.7 | 0.5 | 0.05 | 0.05 | 0.05 | 0.05 |
| II | 1.25 | 0.9 | 0.7 | 0.5 | 0.05 | 0.05 | 0.05 | 0.05 |
| II/III | 1.0 | 0.8 | 0.7 | 0.5 | 0.12 | 0.10 | 0.06 | 0.05 |
| III | 0.8 | 0.7 | 0.6 | 0.5 | 0.25 | 0.15 | 0.10 | 0.06 |
| IV | 0.5 | 0.5 | 0.5 | 0.5 | 0.35 | 0.20 | 0.15 | 0.08 |
| Maturity (Vitr. refl.) | 0.5 | 1.0 | 1.3 | 2.0 | 0.5 | 1.0 | 1.3 | 2.0 |

Table 3e. Kerogen Typing based on Optical Examination (Alterative subunits may be distinguished according to client's classification preferences).

| Kerogen Major | Components Subunits | | Classification in terms of orginal potential hydrocarbon products | Kerogen "type" |
|---|---|---|---|---|
| LIPTINITE | Dinoflagellate | D | "Oil Prone" | I,II,(II/III) |
| | Algae | Al | | |
| | Acritarch | Ac | | |
| | Cuticle | Cu | | |
| | Spore/pollen | Sp | | |
| | Resinite | Res | | |
| | Liptodetrinite | Ld | | |
| | Amorphinite-L | AL | | |
| | Bituminite-L | BL | | |
| VITRINITE | Telinite | Te | "Gas Prone" | III,(II/III) |
| | Collinite | Co | | |
| | Vitrodetrinite | Vd | | |
| | Amorphinite-V | Av | | |
| | Bituminite-V | Bv | | |
| INERTINITE | Fusinite | | "Inert"/"Dead" | IV |
| | Semifusinite | SF | | |
| | Micrinite | Mic | | |
| | Sclerotinite | Sc | | |
| | Inertodetrinite | Id | | |
| | Bituminite-I | BI | | |

EXPERIMENTAL PROCEDURES

## Headspace gas analysis

The analysis is performed using a gas chromatograph with a 50 m capillary column, loop injector and flame ionisation detector. Helium is used as carrier gas.

Two $cm^3$ of headspace gas are removed from each sample can for chromatographic analysis of the $C_1$ to $C_7$ range of hydrocarbons.

## Occluded gas analysis

The analysis is performed using a gas chromatograph with a 50 m capillary column, loop injector and flame ionisation detector. Helium is used as carrier gas.

The canned samples are washed in thermostatted water to remove drilling contaminants and sieved on a 2 mm mesh sieve to remove large, caved rock fragments. An aliquot (ca 25 mg) of sieved sample is crushed with 25 $cm^3$ water in an airtight ball mill. After crushing, 2 $cm^3$ of the released gas are removed from the ball mill for gas chromatographic analysis.

## Total organic carbon (TOC) and total carbon analysis

This analysis is performed using a LECO CS244 Carbon Analyser.

Hand-picked lithologies from cutting samples are crushed with a mortar and pestle and approximately 200 mg (50 mg for coals) are accurately weighed into LECO crucibles. The samples are then treated three times with dilute hydrochloric acid, to remove oxidised (carbonate) carbon, and

washed four times with distilled water. The samples are dried on a hotplate at 60-70°C before analysis of total organic carbon. Total carbon is analysed on the same instrument using approximately 200 mg of untreated crushed whole rock. Oxidised (carbonate) carbon is calculated by difference.

Total organic carbon can also be determined on the ROCK EVAL II Pyrolyser.

## Extractable Organic Matter (EOM) Analysis

Samples are selected for extraction on the basis of screening analysis. Approximately 10 - 20 g of whole rock are accurately weighed.

Extraction is carried out in a Tecator Soxtec HT system, using dichloromethane as extraction solvent and in the presence of activated copper. A 1 h boiling period followed by 2 h rinsing is used. The extract is filtered into a tared flask and the solvent is removed by rotary evaporation at 35°C and 200 mB. The dry residue is weighed in the flask to determine the amount of EOM.

## Separation of asphaltenes

Asphaltenes are removed from the EOM by precipitation in n-pentane. The amount of n-pentane to be used is prescribed by the formula:

$$\frac{\text{wt of EOM(g)} \times 40}{\text{density of n-pentane } (g/cm^{-3}) \times 1000} = \text{Volume of n-pentane}(cm^3)$$

The n-hexane and EOM are poured into a pre-weighed plastic column containing a small amount of activated silica. The column is allowed to run and then dried and weighed. The amount of asphaltenes recovered is calculated by weight difference.

After the removal of asphaltenes the solvent is evaporated from the remaining EOM by rotary evaporation, at 35°C. If the dried sample is not to be processed immediately, it is stored in a freezer.

## Liquid chromatographic separation

Chromatographic separation is performed using an MPLC system developed by the company. The EOM (after removal of asphaltenes) is injected into the MPLC and chromatographed using hexane as eluent. This effects a separation into saturated and aromatic fractions which are collected and concentrated on a rotary evaporator, at 35°C and 200 mB, to remove the bulk of the hexane. The fractions are then transferred to small tared vials and evaporated to dryness in a stream of nitrogen. The vials are re-weighed to obtain the weights of both fractions. The weight of the NSO fraction, which is retained on the chromatography column, is obtained by difference.

## Gas chromatographic analyses

### Saturated fraction

The instrument used for this analysis is a gas chromatograph with a 25 m OV1 column, split injector and FID detector. The carrier gas is helium and the temperature program runs isothermally at 60°C, for 2 minutes and then rises to 290°C at a rate of 4°C/min.

The sample of saturated fraction is diluted by 1:20 with hexane and a 1 microlitre aliquot of this is injected into the instrument.

Aromatic fraction

The instrument used is a gas chromatograph with a 25 m SE-54 capillary column, split injector and effluent splitter leading to FID and FPD detectors, allowing simultaneous analysis of hydrocarbons and sulphur compounds. The carrier gas is helium and the temperature program runs from 60°C to 300°C at a rate of 4°C/min.

The sample of aromatic fraction is diluted by 1:20 with hexane and a 1 microlitre aliquot of this is injected into the instrument.

Whole Oil

Whole oil chromatograms are determined on a gas chromatograph fitted with a split injector, 25m SE54 capillary column and effluent splitter connected to FID and sulphur mode FPD detectors allowing simultaneous determination of hydrocarbons and sulphur compounds. Approximately 0.1 microlitres of whole oil are injected and the temperature program on the chromatograph runs from -10°C to 300°C at 4°C/min.

Rock Eval pyrolysis

This analysis is performed using a ROCK EVAL II Pyrolyser into which approximately 100 mg of crushed whole rock are loaded. Analysis involves heating the sample, from 300°C to 600°C, in an inert atmosphere (helium) to release naturally generated hydrocarbons (S1 peak) and then pyrolytically

generated hydrocarbons (S2 peak), both of which are detected by an FID. In the temperature interval between 300°C and 390°C, the released gases are split and a proportion passed through a carbon dioxide trap, which is connected to a thermal conductivity detector (TCD). The value obtained from the TCD corresponds to the amount of oxygen contained in the kerogen of the sample and is reported as the S3 peak. The temperature corresponding to the maximum of the $S_2$ peak, $T_{max}$, is also recorded.

The ROCK EVAL II Pyrolyser also determines the TOC of each sample subsequent to pyrolysis.

Thermal extraction/pyrolysis gas chromatography

The instrument used for this analysis is a gas chromatograph connected to a pyrolysis oven. A very small amount ( 2 mg) of whole rock sample is loaded into the oven and heated isothermally, at 300°C, for 3 minutes, during which time thermal extraction of the generated hydrocarbons occurs (equivalent to the S1 peak of Rock Eval). The released gases pass to a 15 m OV1 column with a nitrogen-cooled trap.

After 3 minutes the pyrolysis oven heats up to 510°C, at a rate of 40°C per minute, causing bound hydrocarbons to be released from the kerogen of the sample (equivalent to the S2 peak of Rock Eval). These gases are passed through a 25m DB1 capillary column with a nitrogen-cooled trap.

The temperature program for the chromatographic oven, in which both columns are situated, rises from 0°C to 290°C at a rate of 4°C/min. Both columns are linked to FID detectors.

Vitrinite reflectance analysis

Samples, in the form of small granules, are mounted in a

fast setting resin. The resin blocks are ground on coarse corundum paper to expose the rock granule surfaces and then on three finer grades of corundum paper to improve these surfaces and reduce scratches. The resin blocks are finally polished on a rotating Selvyt-covered lap using two grades of polishing alumina. Isopropyl alcohol is used to lubricate the entire grinding and polishing process except in the case of coal samples, when water is used.

Reflectance measurements are taken under oil immersion (n =1.518) using a ZEISS MPM03 microscope photometer with a 546nm interference filter. The polished blocks are mounted on the microscope stage and scanned manually in order to locate and measure particles of vitrinite. An attempt is made to obtain readings from 20 individual particles per sample but this is not always possible in samples with low amounts of phytoclasts.

Spore fluorescence colour

Samples are also analysed microscopically in U.V. light, using an exciter filter with a band pass of 400 - 440 nm and a barrier filter with a long pass of 470 nm, and the colour of the spore fluorescence is determined. This is used as an alternative maturity parameter to verify the result obtained from vitrinite reflectance and is reported on a numerical scale from 1 to 9:

| Fluorescence Colour | Colour Index | Corresp. Vitrinite Reflectance |
|---|---|---|
| Green | 1 | 0.2% |
| Green/Yellow | 2 | 0.2/0.3% |
| Yellow | 3 | 0.3% |
| Yellow/Orange | 4 | 0.4% |
| Light Orange | 5 | 0.5% |
| Mid-Orange | 6 | 0.6% |
| Dark Orange | 7 | 0.8% |
| Orange/Red | 8 | 1.0% |
| Red | 9 | 1.1% |

NB. This table only provides a rough correlation as vitrinite reflectance and spore fluorescence colour are both independently affected by factors such as depositional environment and catagenic history.

## Preparation of Kerogen Concentrates

Samples are stirred for 16 h with 25 $cm^3$ concentrated hydrocloric acid at 35 - 40°C. The acid is decanted and the residue washed by stirring for 3 h with 25 $cm^3$ distilled water. The washing is repeated twice more.

If the concentrate is not being prepared for slides the residue is washed, rapidly, at this point, with 25 $cm^3$ dichloromethane.

25 $cm^3$ hydrofluoric acid are then added to the residue and the mixture stirred for 16 h at room temperature. The acid is decanted and the residue washed by stirring for 3 h with distilled water. The water washing is repeated three times with fresh aliquots of distilled water each time. The water is then decanted and the residue either dried in an oven at 40 - 50°C to constant weight, or, if slides are to be made, it is transferred to a microscope cover slip and dried on a hot bench at 40 -50°C.

## Preparation of Slides

The dry kerogen concentrate is mounted on a slide in glycerine/gelatine and left to dry at room temperature overnight.

## EXPERIMENTAL

### Isotope Ratio Mass Spectrometry

The isotope analysis were performed on a dual inlet VG SIRA 10 instrument. The combustion of the samples were done by a Carlo Erba EA 1108 element analyser directly connected to the inlet system of the mass spectrometer.

The combustion temperature was 1020°C and the carries gas used was Helium. After the combustion $H_2O$ and $CO_2$ were trapped in different cool traps. The $CO_2$ gas was then heated up before it was admitted to the mass spectrometer. The whole operation was controlled by a IBM PC50 computer system.

### δ-values

The isotope ratios are given as δ-values in °/₀₀ versus the PDB-standard:

$$\delta^{13}C = (R\ sample - R\ standard\ /\ R\ standard) * 1000$$

$$R = {}^{13}C\ /\ {}^{12}C$$

The PDB standard (a marine chalk of the Pee Dee-formation, USA) was created by Craig 1957. All results of $^{13}C$ / $^{12}C$ - analysis of organic matter today are calculated (Craig correction) against this international standard.

### Reproducebility

The presision of the combustion system and the mass spectrometer is controlled by determinations of an international calibrated standard, NBS22 oil and a house standard of carbon.

Double analysis on samples are also done.

## Experimental, combined gas chromatography - mass spectrometry (GC-MS)

The GC-MS analyses were performed on a VG TS250 system interfaced to a Hewlett Packard 5890 gas chromatograph. The GC was fitted with a fused silica SE 54 capillary column (50 m x 0.22 mm i.d.) directly into the ion source. Helium (12psi) was used as carrier gas and the injections were performed in splitless mode. The GC oven was programmed from 45°C to 150°C at 35°C/min at which point the programme rate was 2°C/min. up to 310°C where the column was held isothermally for 15 min. For the aromatic hydrocarbons, the GC oven was programmed from 50°C to 310°C at 5°C/min and held isothermally at 310°C for 15 min. The mass spectrometer was operated in electron impact (EI) mode at 70 eV electron energy, a trap current of 500 uA and a source temperature of 220°C. The instrument resolution used was 1500 (10% valley).

The data system used was a VG PDP11/73 system. The samples were analysed in multiple ion detection mode (MID) at a scan cycle time of approximately 1,1 sec.

Calculation of peak ratios was done from peak heights in the appropriate mass fragmentograms.

In the discussion of the GC-MS data, the results will be discussed by area. The wells within an area will be discussed separately. In the discussion, samples within one formation are discussed together. The discussion is further divided into types of compounds as follows:

Saturated Fractions:

Terpanes

The most commonly used fragment ions for detection of terpanes are M/Z 163 for detection of 25, 28, 30 trisnormoretane or 25, 28, 30 trisnorhopane, M/Z 177 for detection of demethylated hopanes or moretanes, M/Z 191 for detection of tricyclic, tetracyclic- and pentacyclic terpanes and M/Z 205 for methylated hopanes or moretanes.The molecular ions M/Z 370 and 384 are also recorded for identification of $C_{27}$ and $C_{28}$ triterpanes respectively.

Steranes

The most commonly used fragment ions for detection of steranes are M/Z 149 to distinguish betweem 5 $\alpha$ and 5 $\beta$ steranes, M/Z 189 and 259 for detection of rearranged steranes, M/Z 217 for detection of rearranged and normal steranes and M/Z 218 for detection of 14$\beta$ (H), 17$\beta$ (H) steranes.

The M/Z 231 fragment ion is used to detect possible aromatic contamination of the saturated fraction. It is also used for detection of methyl steranes.

## Aromatic Fractions:

### Alkyl-substituted Benzenes

The M/Z 106 fragment ion is often used to detect the alkyl-substituted benzenes. It is especially useful for the detection of di-substituted benzenes. M/Z 134 can also be used for the detection of $C_4$-alkylbenzenes, but benzothiophene will also give a signal with this fragment ion.

### Naphthalenes

Methylnaphthalenes are normally detected by the M/Z 142 fragment ion while $C_2$-naphthalenes are detected by M/Z 156 and $C_3$-naphthalenes by M/Z 170.

### Benzothiophenes and Dibenzothiophenes

Benzothiophene can be detected, as mentioned above, by M/Z 134. The M/Z 198 and M/Z 212 fragment ions are used for methylsubstituted dibenzothiophenes and dimethylsubstituted dibenzothiophenes respectively.

### Phenanthrenes

Phenanthrene is detected using the M/Z 178 fragment ion. Anthracene will, if present also give a signal in the M/Z 178 fragmention. Methyl-substituted phenanthrenes give signals in the M/Z 192 fragment ion while the M/Z 206 fragment ion shows the dimethyl-substituted phenanthrenes and the M/Z 220 fragmentation shows the $C_3$ substituted phenanthrenes.

Aromatic Steranes

Monoaromatic steranes are detected using the M/Z 253 fragment ion while the triaromatic steranes are detected using the M/Z 231 fragmention.

## 2a. Mass Fragmentograms representing Terpanes

(M/Z 163, 177, 191, 205, 370, 384, 398, 412 and 426)

Peak identification. (α and β refer to hydrogen atoms at C-17 and C-21 respectively unless indicated otherwise).

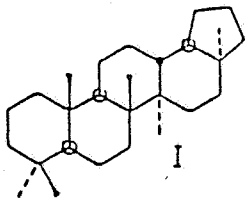
| | | | |
|---|---|---|---|
| A. | 18 α trisnorneohopane (Ts) | $C_{27}H_{44}$ | ( I) |
| B. | 17 α trisnorhopane (Tm) | $C_{27}H_{46}$ | ( II, R=H) |
| Z. | Bisnorhopane | $C_{28}H_{48}$ | ( IV) |
| C. | αβ norhopane | $C_{29}H_{50}$ | ( II, R=$C_2H_5$) |
| D. | βα norhopane | $C_{29}H_{50}$ | (III, R=$C_2H_5$) |
| E. | αβ hopane | $C_{30}H_{52}$ | ( II, R=i-$C_3H_7$) |
| F. | βα hopane | $C_{30}H_{52}$ | (III, R=i-$C_3H_7$) |
| G. | 22S αβ homohopane | $C_{31}H_{54}$ | ( II, R=i-$C_4H_9$) |
| H. | 22R αβ homohopane | $C_{31}H_{54}$ | ( II, R=i-$C_4H_9$) |
| I. | βα homomoretane | $C_{31}H_{54}$ | (III, R=i-$C_4H_9$) |
| J. | 22S αβ bishomohopane | $C_{32}H_{56}$ | ( II, R=i-$C_5H_{11}$) |
| | 22R αβ bishomohopane | $C_{32}H_{56}$ | ( II, R=i-$C_5H_{11}$) |
| K. | 22S αβ trishomohopane | $C_{33}H_{58}$ | ( II, R=i-$C_6H_{13}$) |
| | 22R αβ trishomohopane | $C_{33}H_{58}$ | ( II, R=i-$C_6H_{13}$) |
| L. | 22S αβ tetrakishomohopane | $C_{34}H_{60}$ | ( II, R=i-$C_7H_{15}$) |
| | 22R αβ tetrakishomohopane | $C_{34}H_{60}$ | ( II, R=i-$C_7H_{15}$) |
| M. | 22S αβ pentakishomohopane | $C_{35}H_{62}$ | ( II, R=i-$C_8H_{17}$) |
| | 22R αβ pentakishomohopane | $C_{35}H_{62}$ | ( II, R=i-$C_8H_{17}$) |
| P. | Tricyclic terpane | $C_{23}H_{42}$ | ( V, R=i-$C_4H_9$) |
| Q. | Tricyclic terpane | $C_{24}H_{44}$ | ( V, R=i-$C_5H_{11}$) |
| R. | Tricyclic terpane (17R, 17S) | $C_{25}H_{66}$ | ( V, R=i-$C_6H_{13}$) |
| S. | Tetracyclic terpane | $C_{24}H_{42}$ | ( VI) |
| T. | Tricyclic terpane (17R, 17S) | $C_{26}H_{48}$ | ( V, R=i-$C_7H_{15}$) |
| N. | Tricyclic terpane | $C_{21}H_{38}$ | ( V, R=$C_2H_5$) |
| O. | Tricyclic terpane | $C_{22}H_{40}$ | ( V, R=$C_3H_7$) |
| Y. | 25,28,30-Trisnorhopane/Moretane | $C_{27}H_{46}$ | (VII) |
| X. | Unknown triterpane | $C_{30}H_{52}$ | |

2b. Mass Fragmentograms representing Steranes
(M/Z 149, 189, 217, 218, 259, 372, 386, 400 and 414)

Peak identifications. ( α and β refer to hydrogen atoms at C-5, C-14 and C-17 in regular steranes and at C-13 and C-17 in diasteranes).

| | | | |
|---|---|---|---|
| a. | 20S βα diacholestane | $C_{27}H_{48}$ | ( I, R=H) |
| b. | 20R βα diacholestane | $C_{27}H_{48}$ | ( I, R=H) |
| c. | 20S αβ diacholestane | $C_{27}H_{48}$ | ( II, R=H) |
| d. | 20R αβ diacholestane | $C_{27}H_{48}$ | ( II, R=H) |
| e. | 20S βα 24-methyl-diacholestane | $C_{28}H_{50}$ | ( I, R=$CH_3$) |
| f. | 20R βα 24-methyl-diacholestane | $C_{28}H_{50}$ | ( I, R=$CH_3$) |
| g. | 20S αβ 24-methyl-diacholestane | $C_{28}H_{50}$ | ( II, R=$CH_3$) |
| | + 20S ααα cholestane | $C_{27}H_{48}$ | (III, R=H) |
| h. | 20S βα 24-ethyl-diacholestane | $C_{29}H_{52}$ | ( II, R=$C_2H_5$) |
| | +20R αββ cholestane | $C_{27}H_{48}$ | ( IV, R=H) |
| i. | 20S αββ cholestane | $C_{27}H_{48}$ | ( IV, R=H) |
| | +20R αβ 24-methyl-diacholestane | $C_{28}H_{50}$ | ( II, R=$CH_3$) |
| j. | 20R ααα cholestane | $C_{27}H_{48}$ | (III, R=H) |
| k. | 20R βα 24-ethyl-diacholestane | $C_{29}H_{52}$ | ( I, R=$C_2H_5$) |
| l. | 20S αβ 24-ethyl-diacholestane | $C_{29}H_{52}$ | ( II, R=$C_2H_5$) |
| m. | 20S ααα 24-methyl-cholestane | $C_{28}H_{50}$ | (III, R=$CH_3$) |
| n. | 20R αββ 24-methyl-cholestane | $C_{28}H_{50}$ | ( IV, R=$CH_3$) |
| | + 20R αβ 24-ethyl-diacholestane | $C_{29}H_{52}$ | ( II, R=$C_2H_5$) |
| o. | 20S αββ 24-methyl-cholestane | $C_{28}H_{50}$ | ( IV, R=$CH_3$) |
| p. | 20R ααα 24-methyl-cholestane | $C_{28}H_{50}$ | (III, R=$CH_3$) |
| q. | 20S ααα 24-ethyl-cholestane | $C_{29}H_{52}$ | (III, R=$C_2H_5$) |
| r. | 20R αββ 24-ethyl-cholestane | $C_{29}H_{52}$ | ( IV, R=$C_2H_5$) |
| s. | 20S αββ 24-ethyl-cholestane | $C_{29}H_{52}$ | ( IV, R=$C_2H_5$) |
| t. | 20R ααα 24-ethyl-cholestane | $C_{29}H_{52}$ | (III, R=$C_2H_5$) |
| u. | 5 α sterane | $C_{21}H_{36}$ | ( VI, R=$C_2H_5$) |
| V. | 5 α sterane | $C_{22}H_{38}$ | ( VI, R=$C_3H_7$) |

## STRUCTURES REPRESENTING TERPANES



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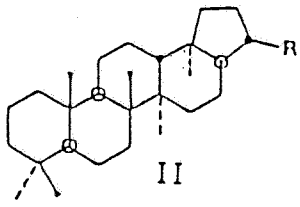


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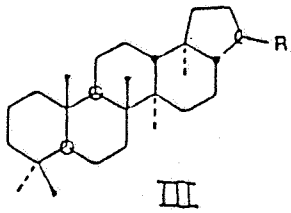


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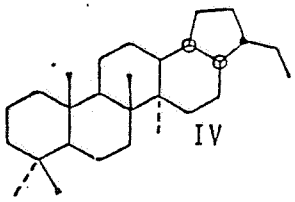

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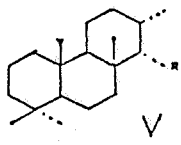

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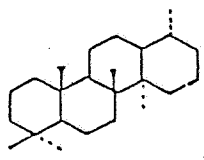

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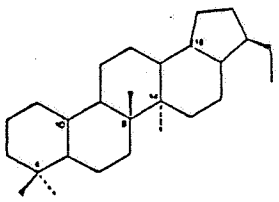
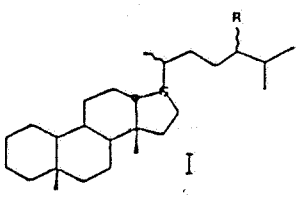


VII

## STRUCTURES REPRESENTING STERANES

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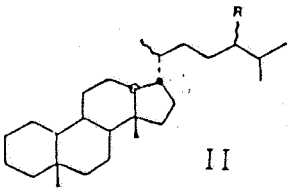


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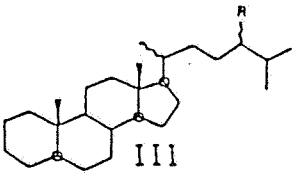


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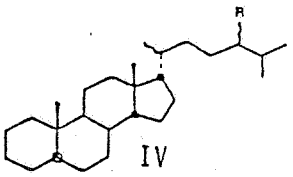


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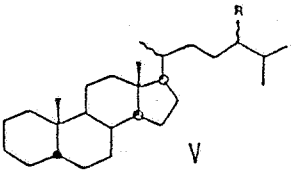


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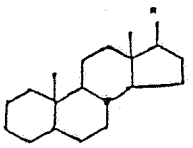


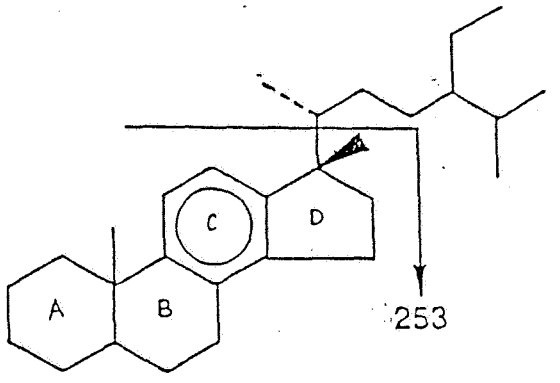
VI

Mass Fragmentograms representing Monoaromatic Steranes
(M/Z 253)

Description of C-ring monoaromatic steroid hydrocarbons

| Peak | Substituents $R_1$ | $R_2$ | $R_3$ | $R_4$ | Abbreviation of Compound |
|---|---|---|---|---|---|
| A1 | | | | | $C_{21}$MA |
| B1 | | | | | $C_{22}$MA |
| C1 | β(H) | $CH_3$ | S($CH_3$) | H | β$SC_{27}$MA |
| | $CH_3$ | H | S($CH_3$) | H | $SC_{27}$DMA |
| | β(H) | $CH_3$ | R($CH_3$) | H | β$RC_{27}$MA |
| D1 | $CH_3$ | H | R($CH_3$) | H | $RC_{27}$DMA |
| | α(H) | $CH_3$ | S($CH_3$) | H | α$SC_{27}$MA |
| E1 | β(H) | $CH_3$ | S($CH_3$) | $CH_3$ | β$SC_{28}$MA |
| | $CH_3$ | H | S($CH_3$) | $CH_3$ | $SC_{28}$DMA |
| F1 | α(H) | $CH_3$ | R($CH_3$) | H | α$RC_{27}$MA |
| | α(H) | $CH_3$ | S($CH_3$) | $CH_3$ | α$SC_{28}$MA |
| | β(H) | $CH_3$ | R($CH_3$) | $CH_3$ | β$RC_{28}$MA |
| G1 | $CH_3$ | H | R($CH_3$) | $CH_3$ | $RC_{28}$DMA |
| | β(H) | $CH_3$ | S($CH_3$) | $C_2H_5$ | β$SC_{29}$MA |
| | $CH_3$ | H | S($CH_3$) | $C_2H_5$ | $SC_{29}$DMA |
| | α(H) | $CH_3$ | R($CH_3$) | $CH_3$ | α$RC_{28}$MA |
| H1 | β(H) | $CH_3$ | R($CH_3$) | $C_2H_5$ | β$RC_{29}$MA |
| | $CH_3$ | H | R($CH_3$) | $C_2H_5$ | $RC_{29}$DMA |
| I1 | α(H) | $CH_3$ | R($CH_3$) | $C_2H_5$ | α$RC_{29}$MA |

STRUCTURES REPRESENTING MONOAROMATIC STERANES:

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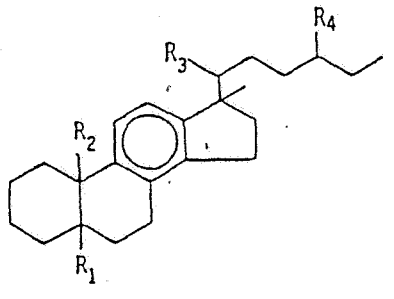
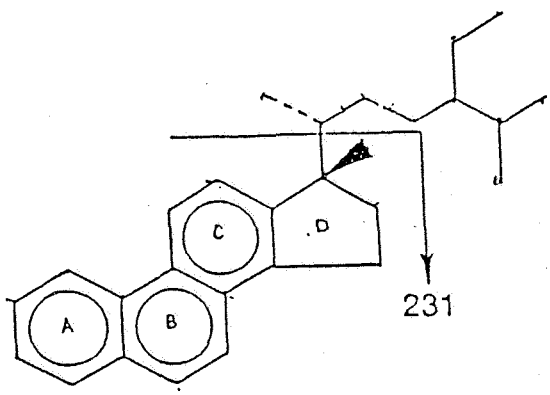


Mass Fragmentograms representing Triaromatic Steranes
(M/Z 231)

Description of ABC-ring triaromatic steroid hydrocarbons

| Peak | Substituents $R_1$ | $R_2$ | Abbreviation of Compound |
|---|---|---|---|
| a1 | $CH_3$ | H | $C_{20}TA$ |
| b1 | $CH_3$ | $CH_3$ | $C_{21}TA$ |
| c1 | $S(CH_3)$ | $C_6H_{13}$ | $SC_{26}TA$ |
| d1 | $R(CH_3)$ | $C_6H_{13}$ | $RC_{26}TA$ |
| | $S(CH_3)$ | $C_7H_{15}$ | $SC_{27}TA$ |
| e1 | $S(CH_3)$ | $C_8H_{17}$ | $SC_{28}TA$ |
| f1 | $S(CH_3)$ | $C_7H_{15}$ | $RC_{27}TA$ |
| g1 | $R(CH_3)$ | $C_8H_{17}$ | $RC_{28}TA$ |

STRUCTURES REPRESENTING TRIAROMATIC STERANES

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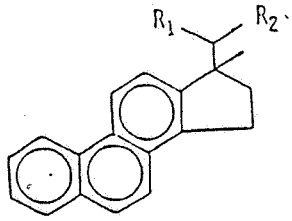

List of abbreviations used for lithology description
(sorted alphabetically)

| | |
|---|---|
| ang | = angular |
| bar | = Baryte (mud additive) |
| bl | = blue/blueish |
| blk | = black |
| br | = brittle |
| brn | = brown/brownish |
| Ca | = Carbonate (Limestone/Chalk/Dolomite/Siderite) |
| calc | = calcareous |
| carb | = carbonaceous |
| cem | = cement used as additive (under "Cont") or to describe cemented S/Sst |
| Chert | = Chert |
| chk | = Chalk/chalky |
| cly | = clayey/shaley |
| cngl | = conglomeratic |
| Coal | = Coal |
| Coal-ad | = Coal-like additive (e.g. chromlignosulfonate) |
| Congl | = Conglomerate |
| Cont | = Contamination |
| crs | = coarse grained |
| cvd | = caved |
| dd | = dried drilling mud |
| dol | = Dolomite/dolomitic |
| drk | = dark (colour) |
| dsk | = dusky (colour) |
| evap | = Salt/Gypsum/Halite (natural "Other" or as additive "Cont") |
| f | = fine grained |
| fib | = fibres (mud additive/contamination) |
| fis | = fissile |
| fos | = fossiliferous |
| glauc | = Glauconite/glauconitic |
| gn | = green/greenish |
| gy | = grey/greyish |
| hd | = hard |
| ign | = Igneous (material derived from igneous source) |
| int | = percentage interpreted from logs |
| Kaolin | = Kaolin(ite) |
| kln | = kaolinitic |
| l | = loose |
| lam | = laminated/laminae |
| lt | = light (colour) |
| m | = medium (colour or grain size) |

List of abbreviations used for lithology description
(sorted alphabetically)

| | |
|---|---|
| Marl | = Marl (calcareous claystone/mudstone) |
| mic | = micaceous |
| Mica-ad | = Mica used as mud additive |
| mrl | = marly |
| No Mat. | = No material left after washing |
| ns | = nutshells (mud additive) |
| ol | = olive |
| ool | = Oolite/oolitic |
| or | = orange |
| Other | = Other lithology/mineral, specified after this word |
| pi | = pink/pinkish |
| pl | = pale (colour) |
| prp | = paint/rust/plastic contamination/additives |
| pu | = purple |
| pyr | = Pyrite/pyritic |
| red | = red/reddish |
| rnd | = round/rounded |
| s | = sandy |
| S/Sst | = Sand and/or sandstone |
| Sh/Clst | = Shale and/or claystone |
| sid | = Siderite/sideritic |
| sil | = siliceous/cherty |
| slt | = silty |
| Sltst | = Siltstone |
| st | = stained (with natural oil or oil-like additive) |
| tar-ad | = Tar-like additive (e.g. "Black Magic") |
| Tuff | = Tuff |
| tuff | = tuffaceous |
| v col | = Various colours |
| w | = white |
| wx | = waxy |
| y | = yellow/yellowish |