

# GEOCHEM LABORATORIES LIMITED

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Prepared for

STATOIL

GEOCHEMICAL EVALUATION OF  
THE STATOIL 30/2-2 WELL  
OFFSHORE NORWAY

FIGURES

**GEOCHEM**

September 1985



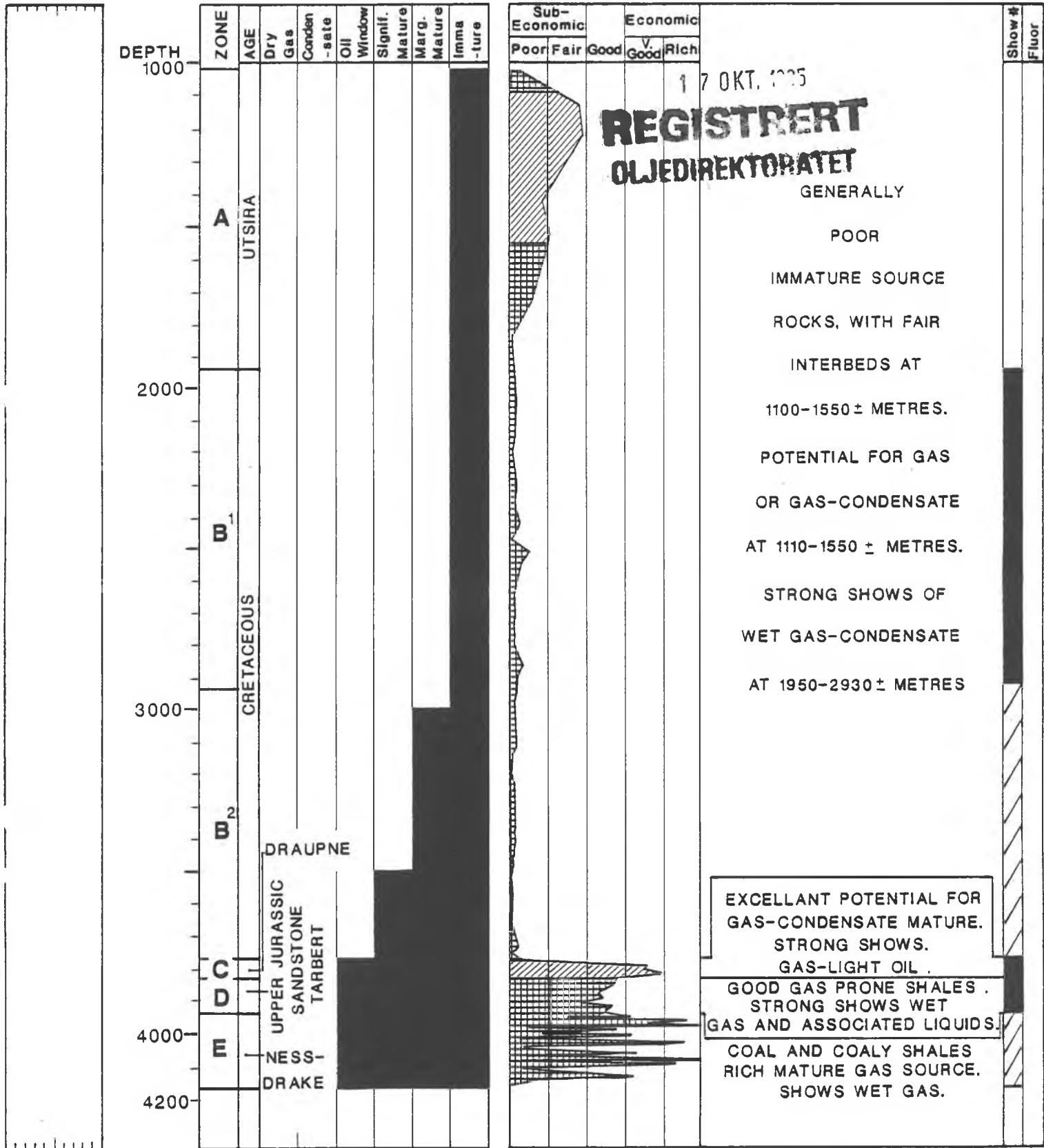
**Petroleum  
Geochemistry  
Division**

LITHO LOG

MATURITY

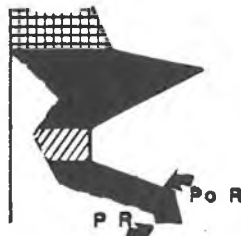
PRESENT AND POTENTIAL RICHNESS

COMMENTS



- Limestone
- Dolomite
- Shale
- Mudstone/Claystone
- Coal

- Siltstone
- Sandstone
- Evaporite
- Igneous
- L.C.M.

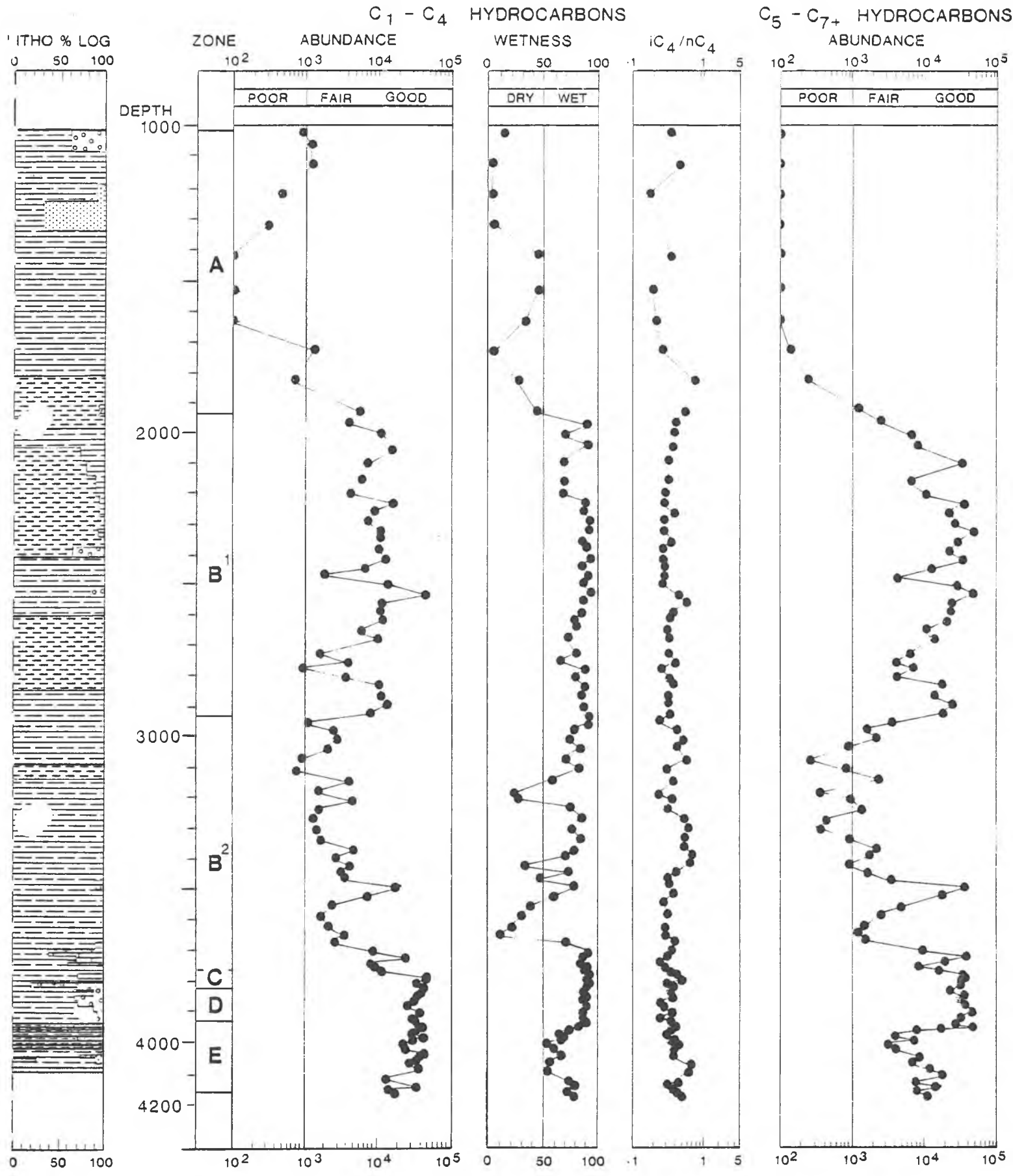


- GAS PRONE
- GAS AND CONDENSATE
- OIL PRONE
- Shows Recognized by Analysis
- Po R Potential Richness
- PR Present Richness

FIGURE 2

# C<sub>1</sub>-C<sub>7</sub> HYDROCARBONS

WELL 30/2-2



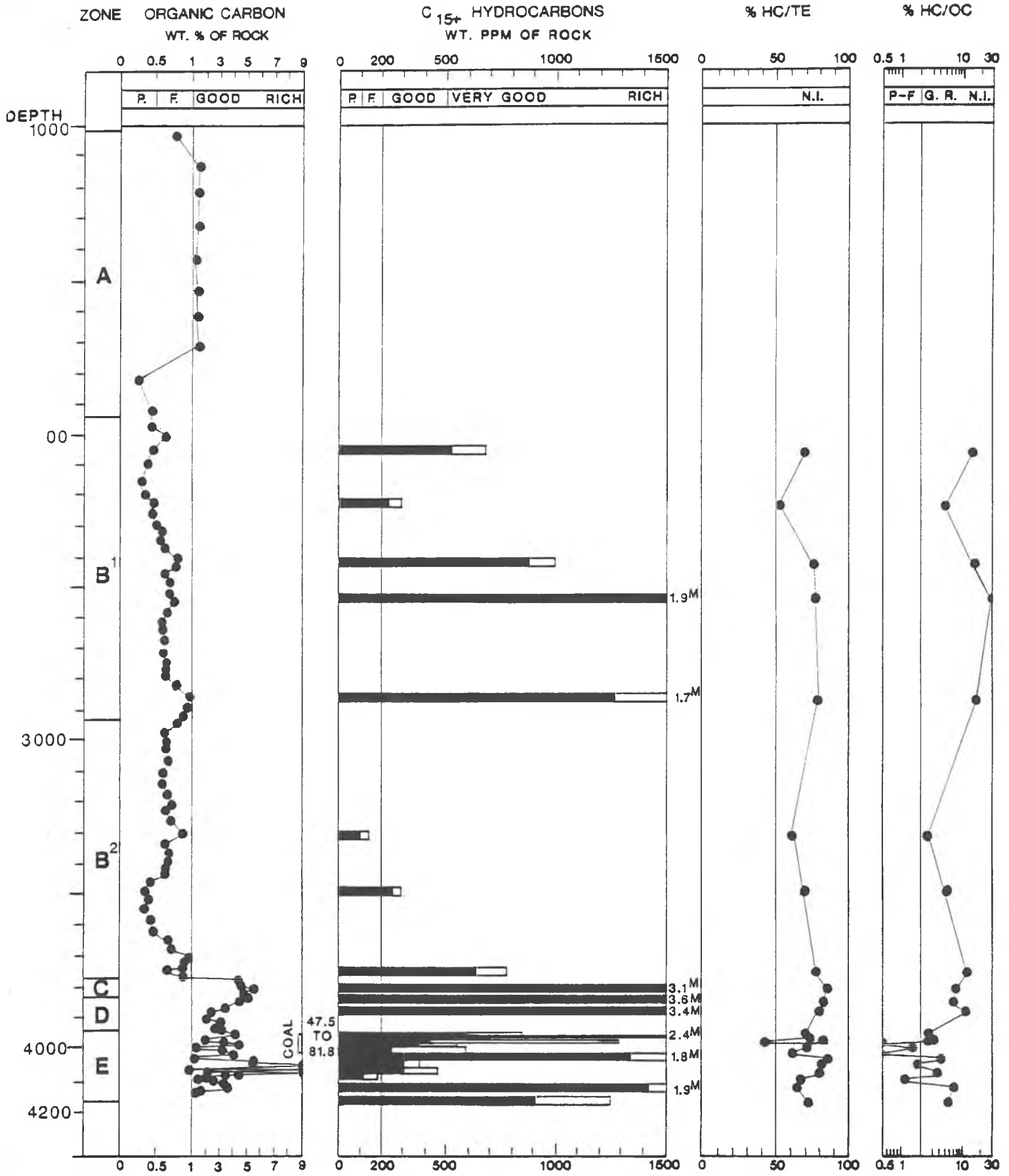
- Limestone
- Dolomite
- Shale
- Mudstone/Claystone
- Coal
- Siltstone
- Sandstone
- Evaporite
- Igneous
- L.C.M.

iC<sub>4</sub> - ISOBUTANE  
nC<sub>4</sub> - NORMAL BUTANE  
ABUNDANCE - VOLUME PPM OF ROCK  
WETNESS - % C<sub>2</sub>-C<sub>4</sub> IN C<sub>1</sub>-C<sub>4</sub>

FIGURE 3

RICHNESS

WELL 30/2-2

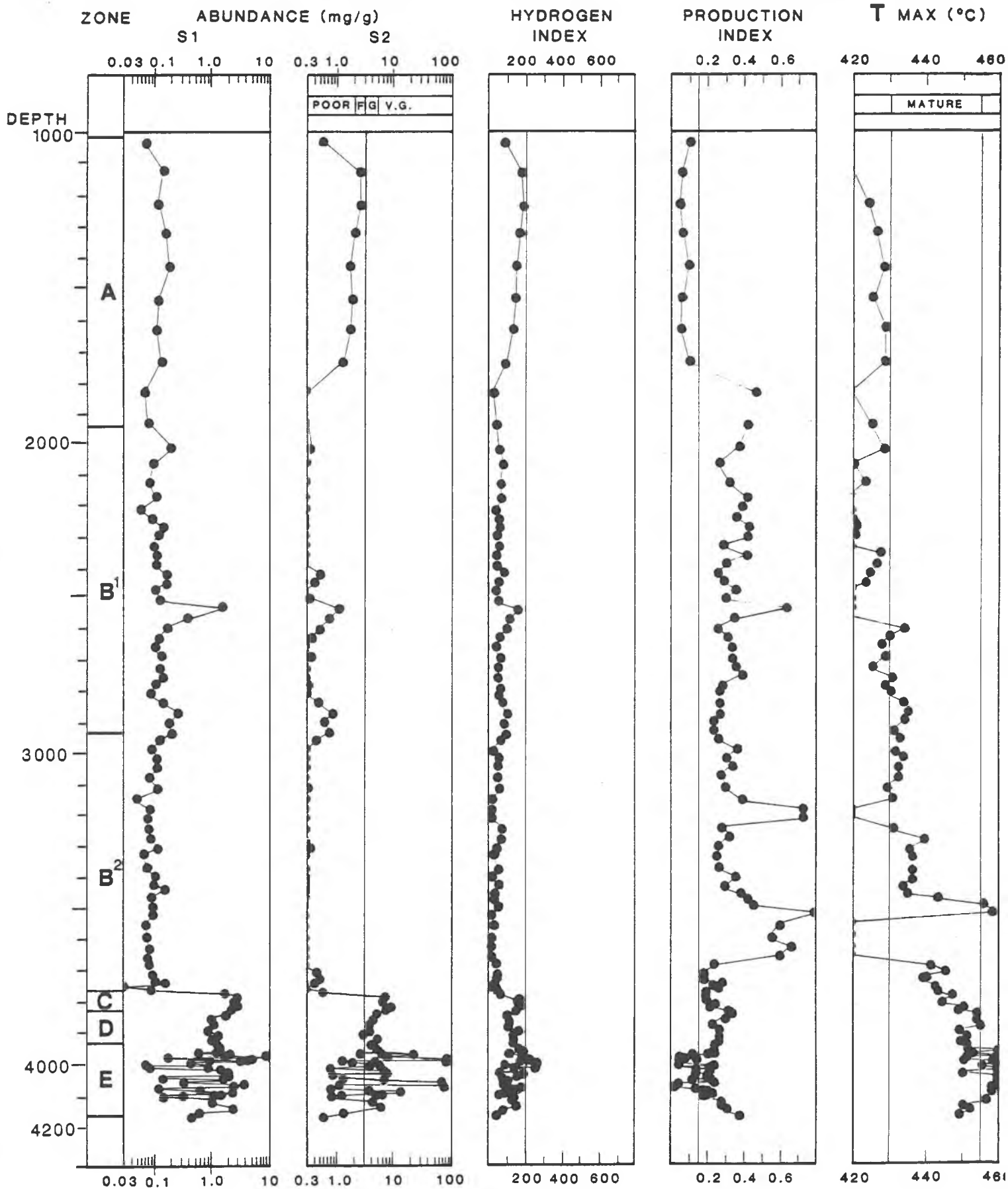


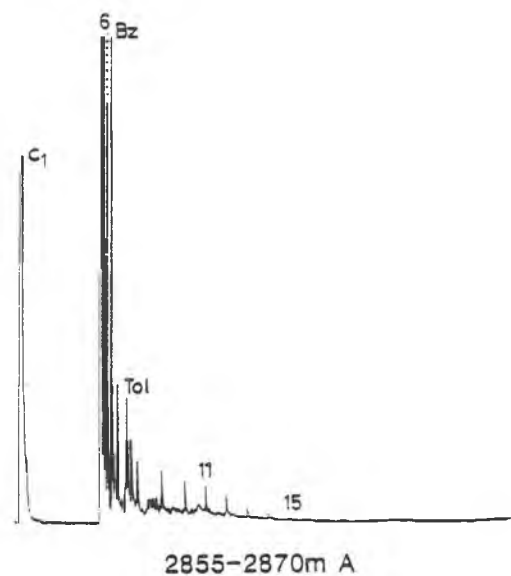
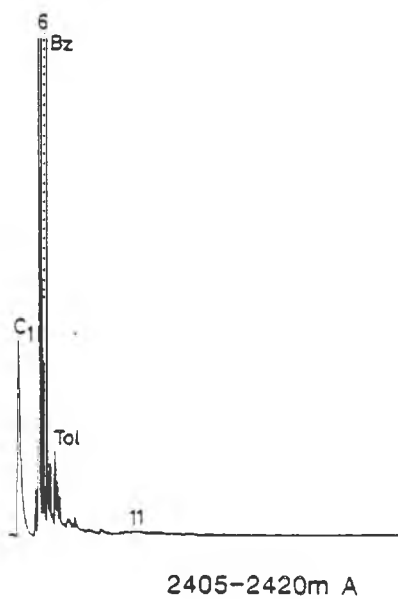
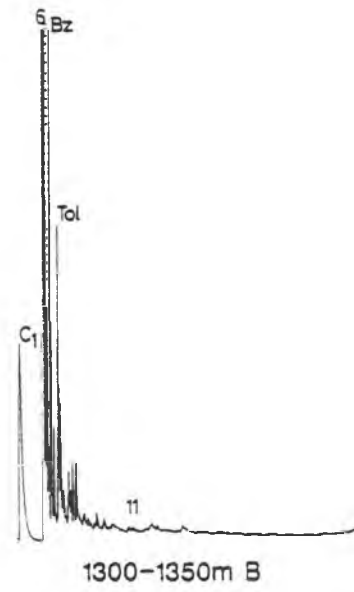
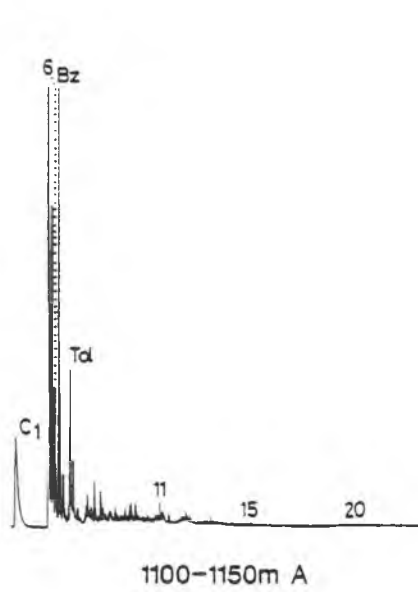
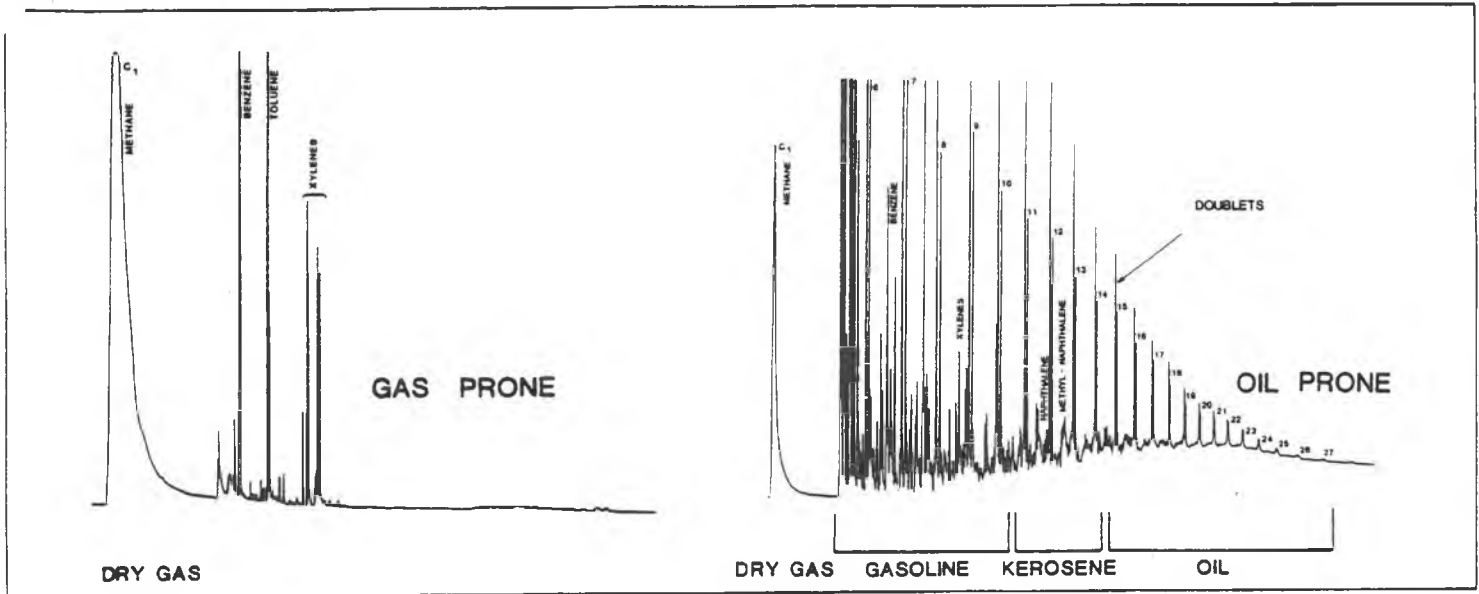
- SHALE/MUDSTONE
- OTHER LITHOLOGIES
- P - N - PARAFFIN - NAPHTHENES
- AROM - AROMATICS
- HC - C<sub>16+</sub> HYDROCARBONS
- OC - ORGANIC CARBON
- TE - TOTAL C<sub>15+</sub> EXTRACT
- P - POOR
- F - FAIR
- G - GOOD
- R - RICH
- N.I. - NON-INDIGENOUS HYDROCARBONS

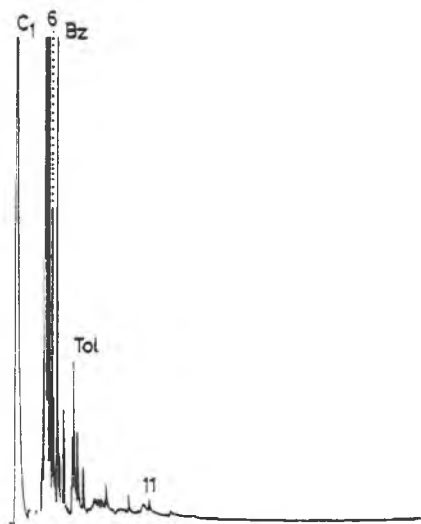
FIGURE 4

# ROCKEVAL DATA

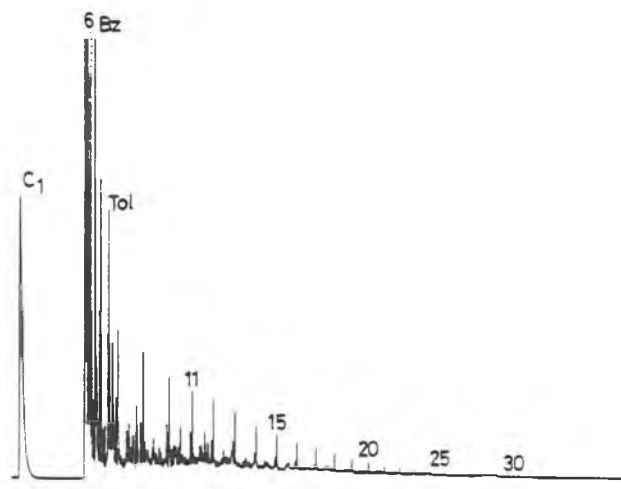
WELL 30/2-2



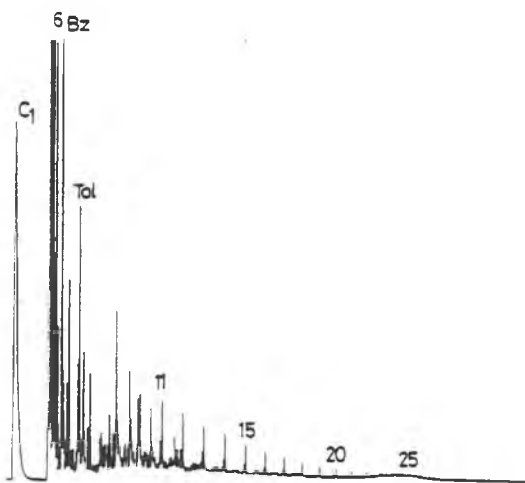




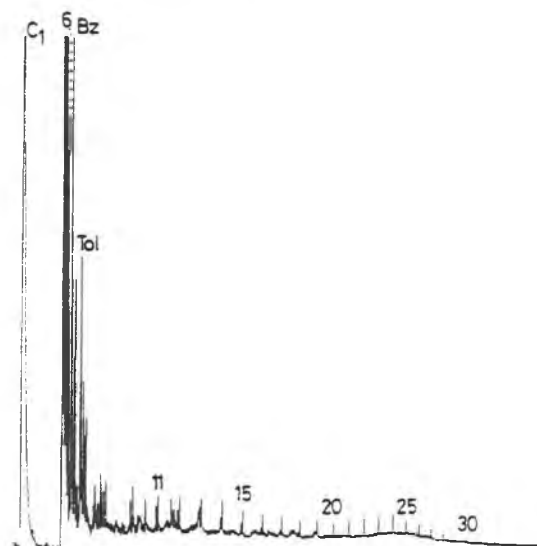
3290-3305m A



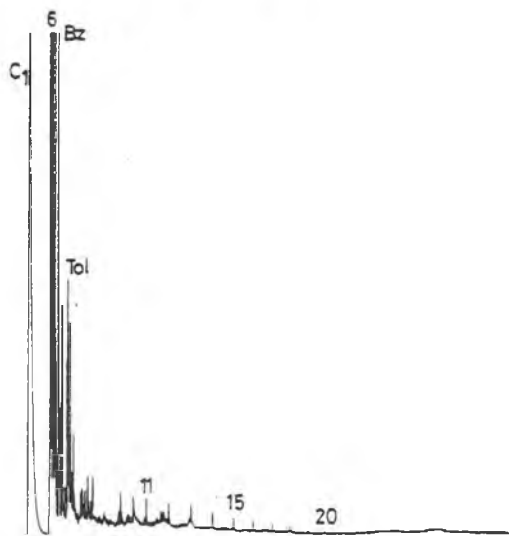
3775-3790m A



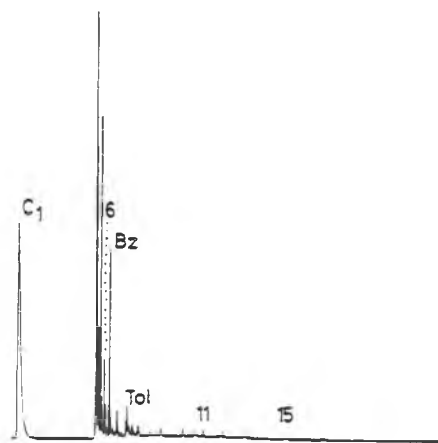
3800-3815m B



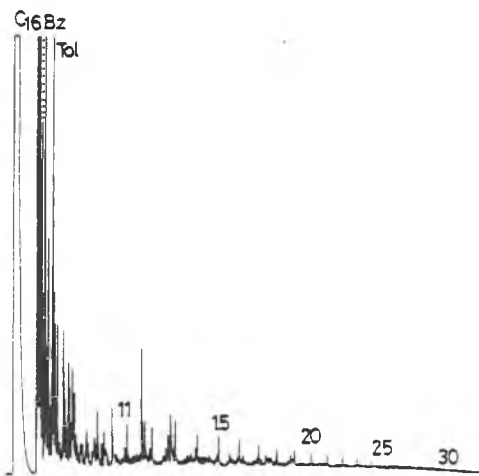
3830-3845m A



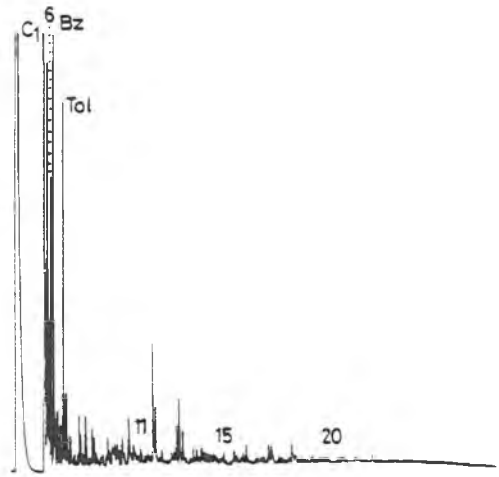
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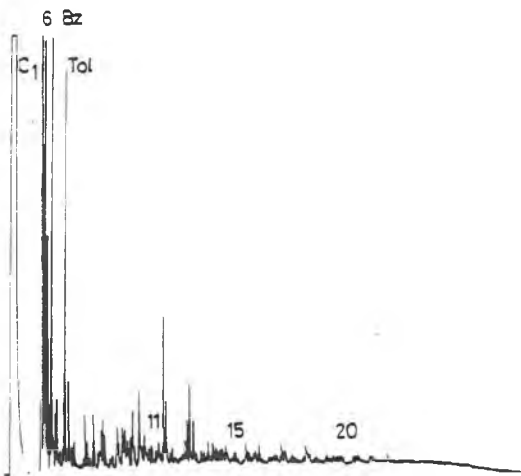
3956.70m A  
CORE



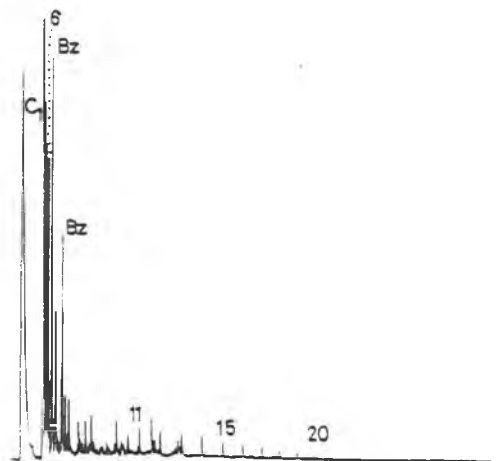
3961.70m A  
CORE # 3



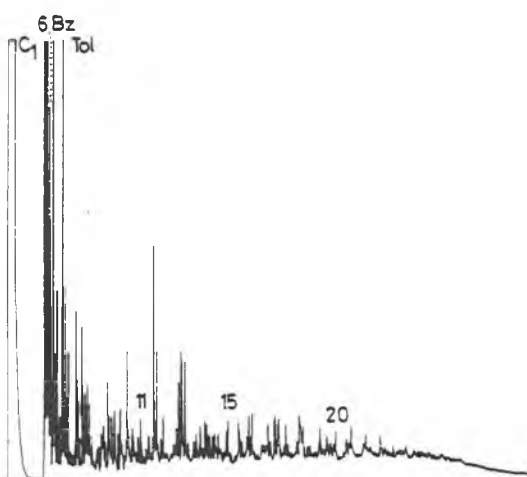
3970.30m A  
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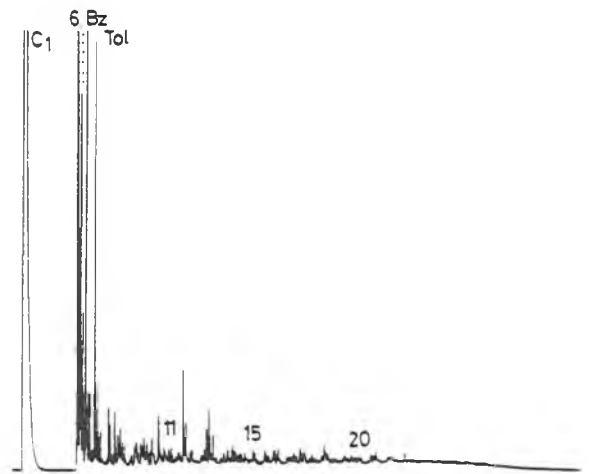
3979.29m A  
CORE # 5



3991.67m A  
CORE

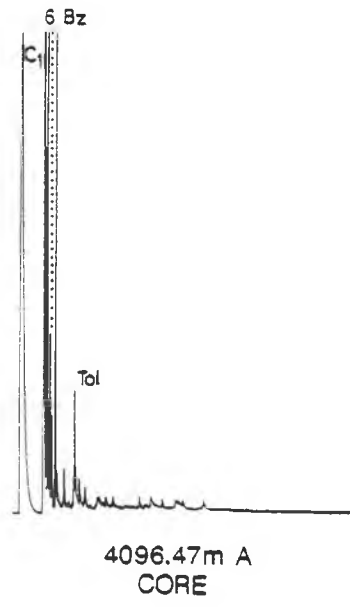
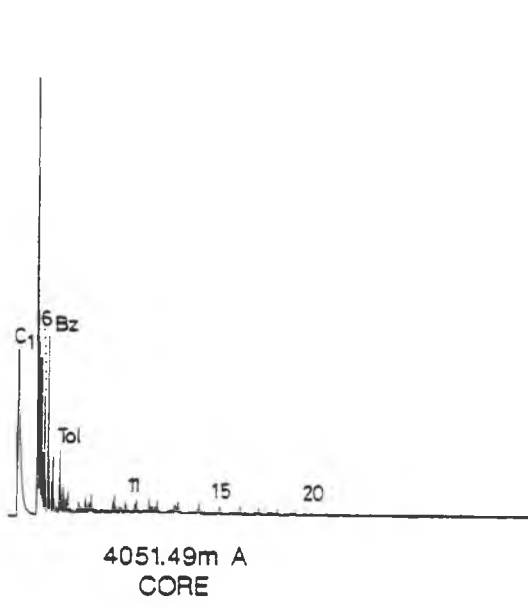


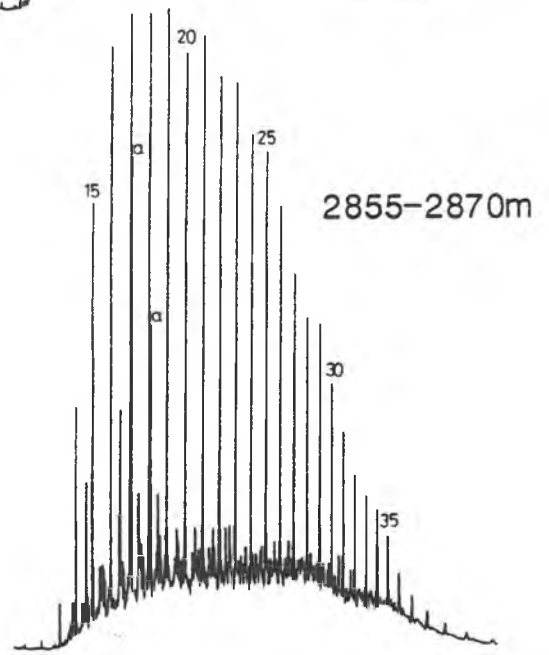
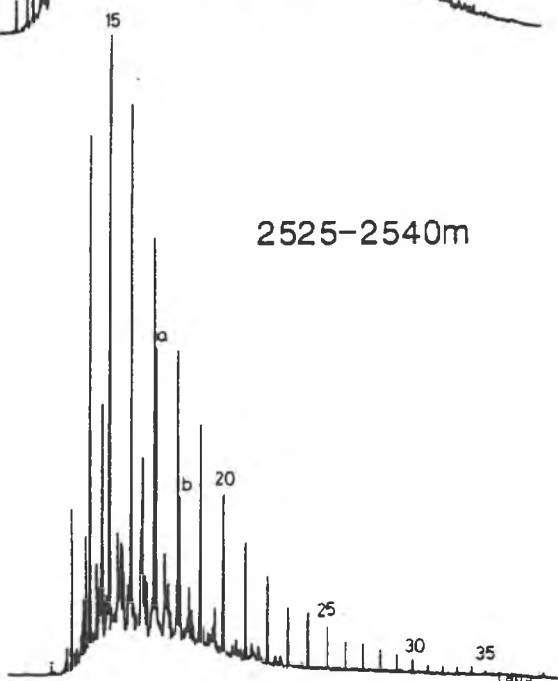
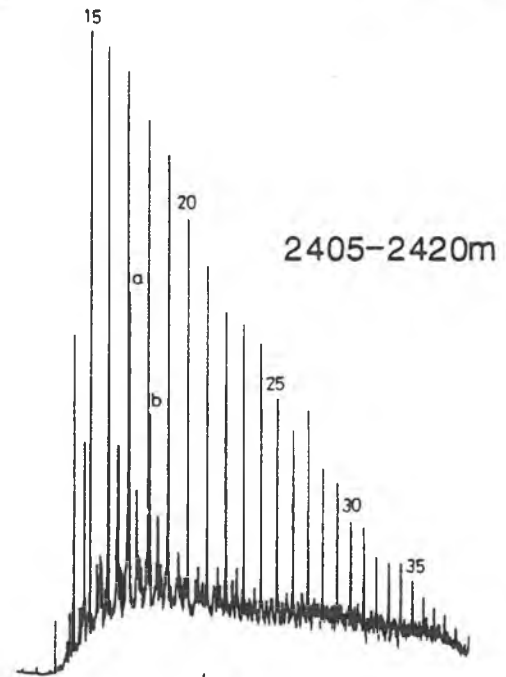
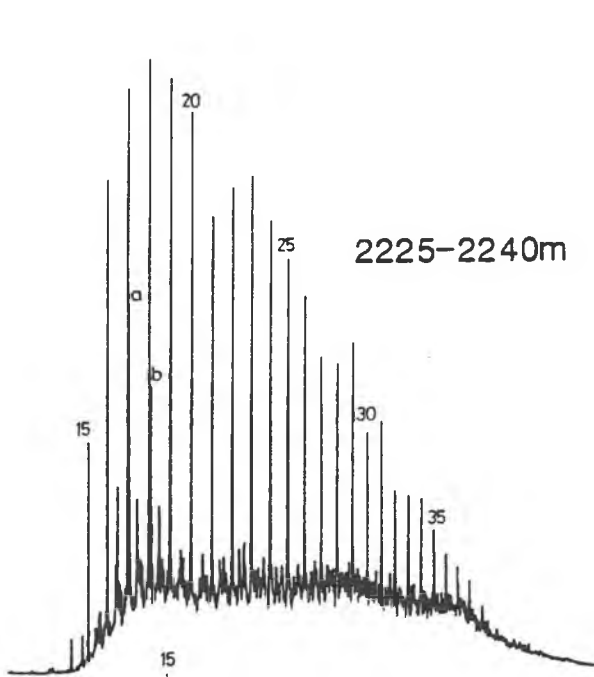
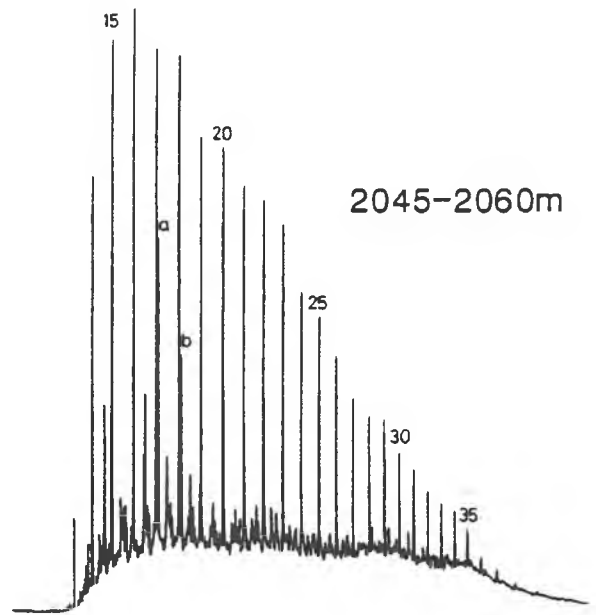
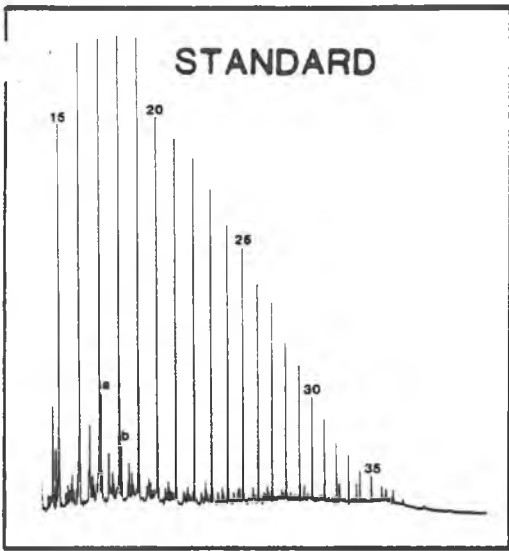
4017.40m A  
CORE



4048.95m A  
CORE

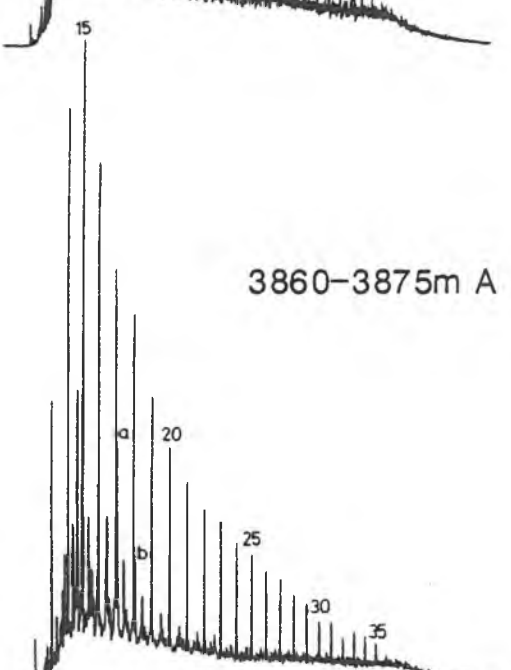
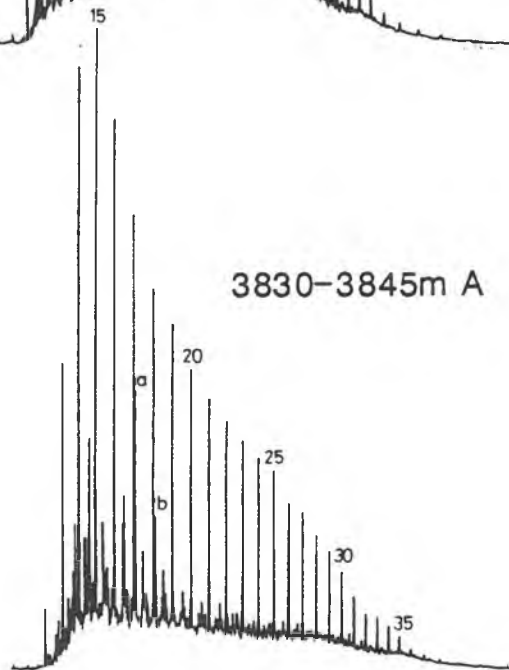
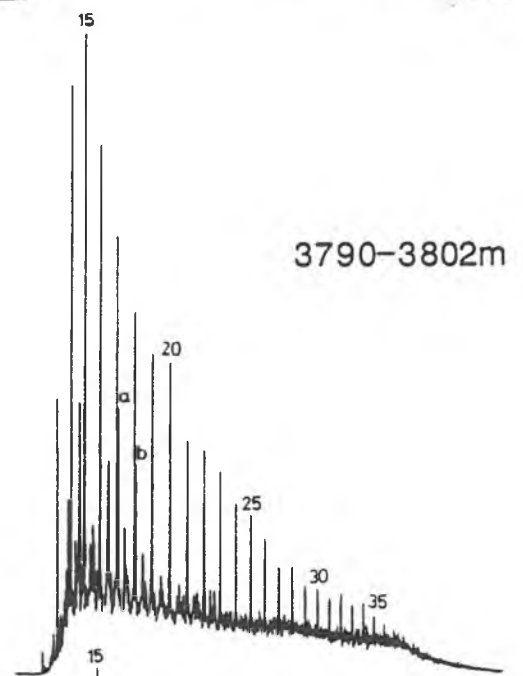
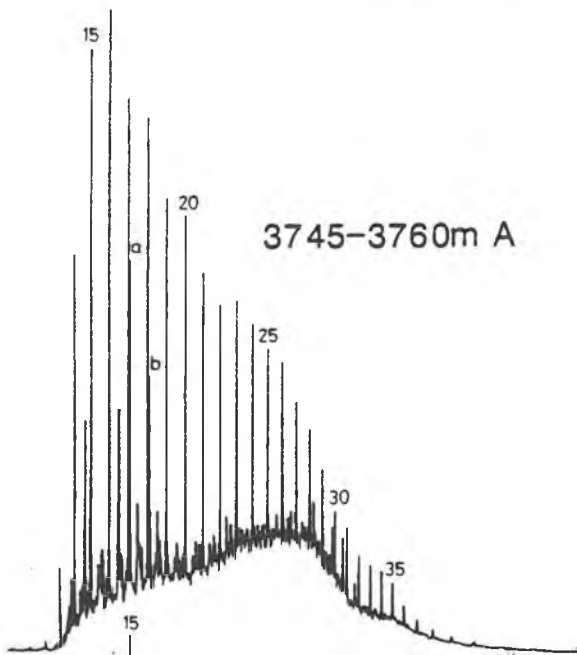
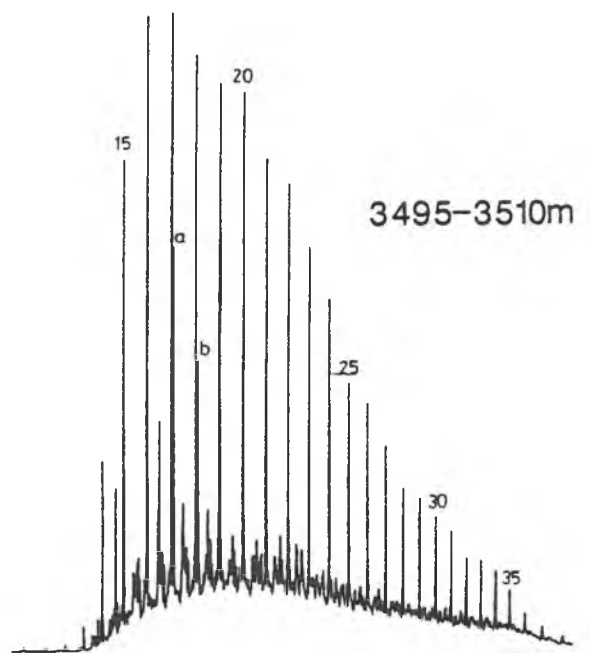
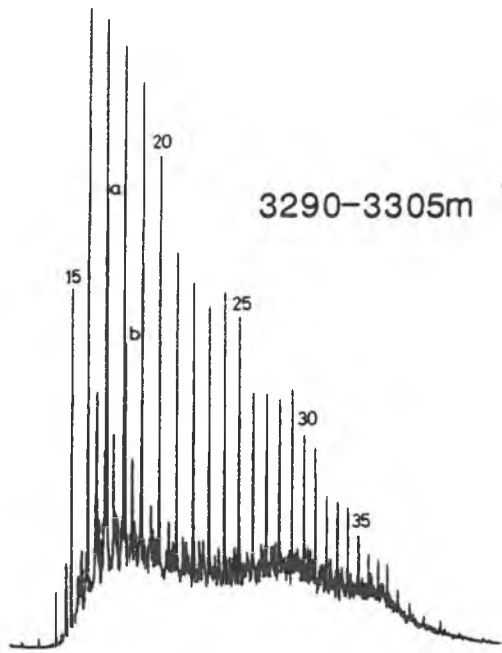






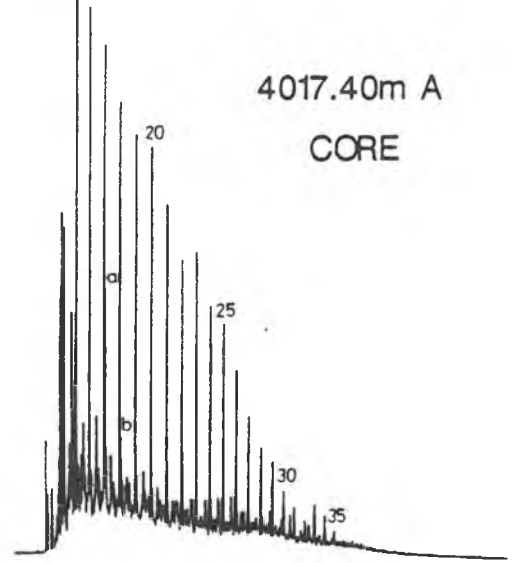
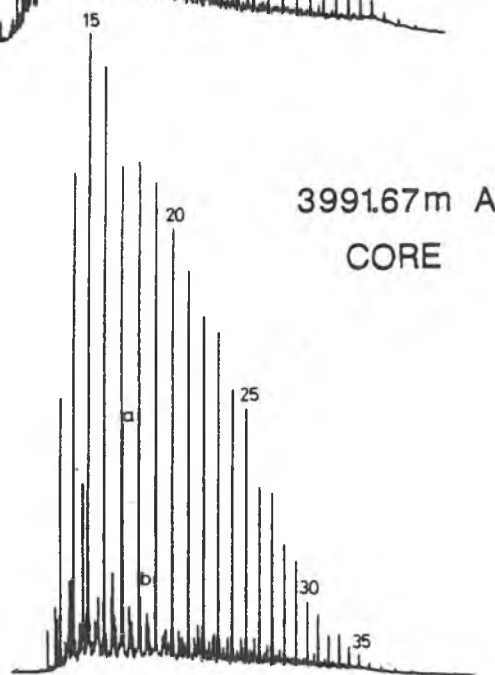
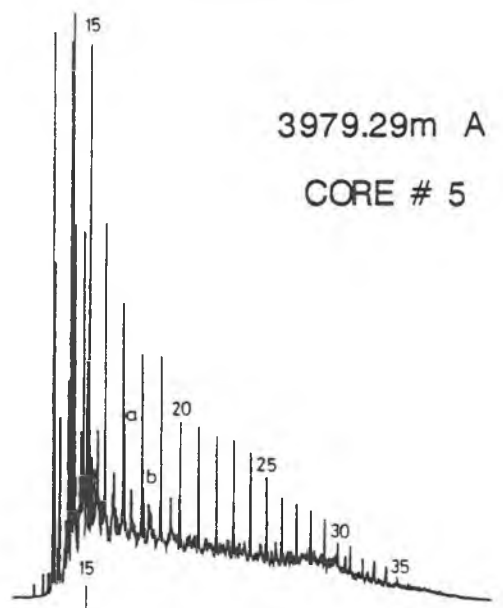
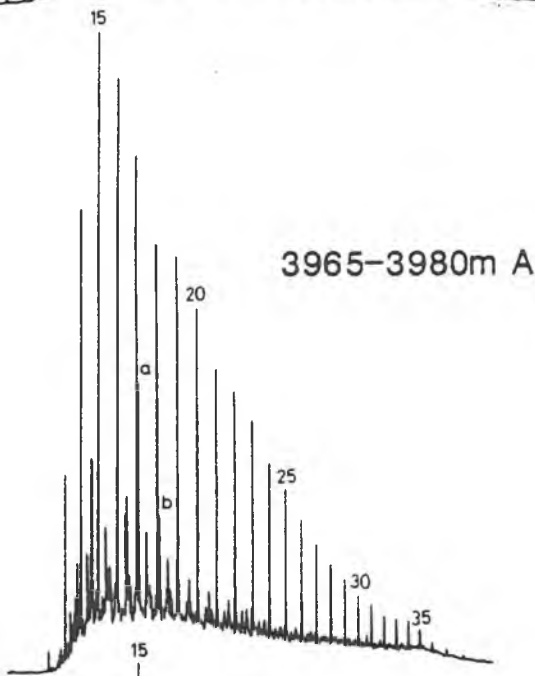
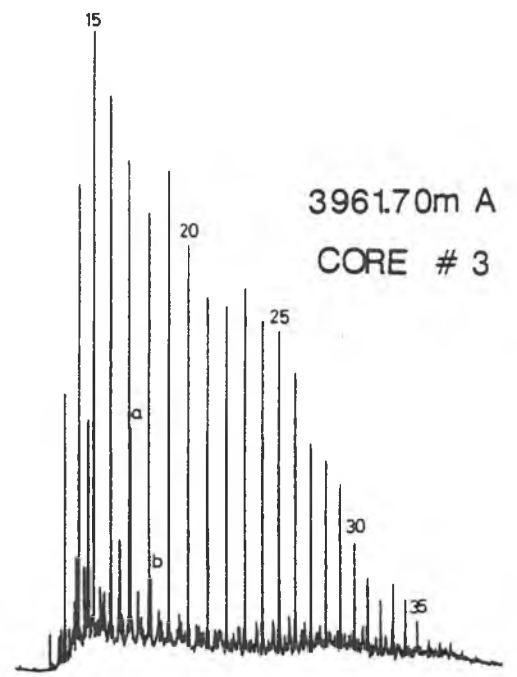
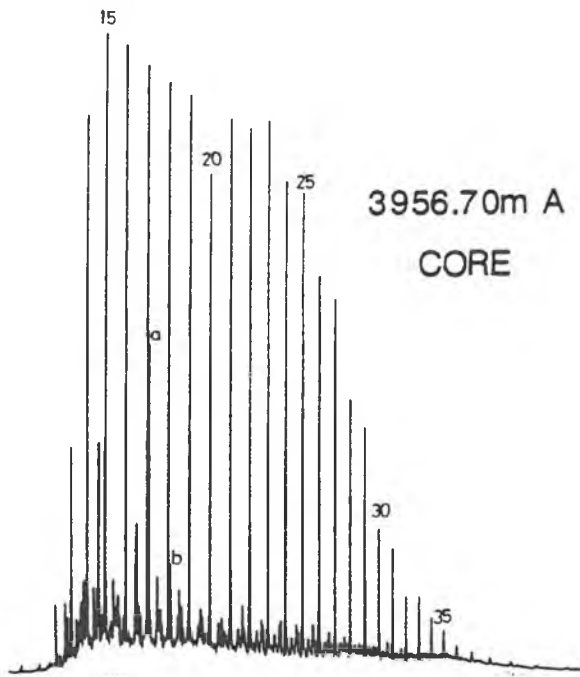
a - PRISTANE  
b - PHYTANE

CARBON NUMBERS OF NORMAL PARAFFINS INDICATED (20 - nC<sub>20</sub>)



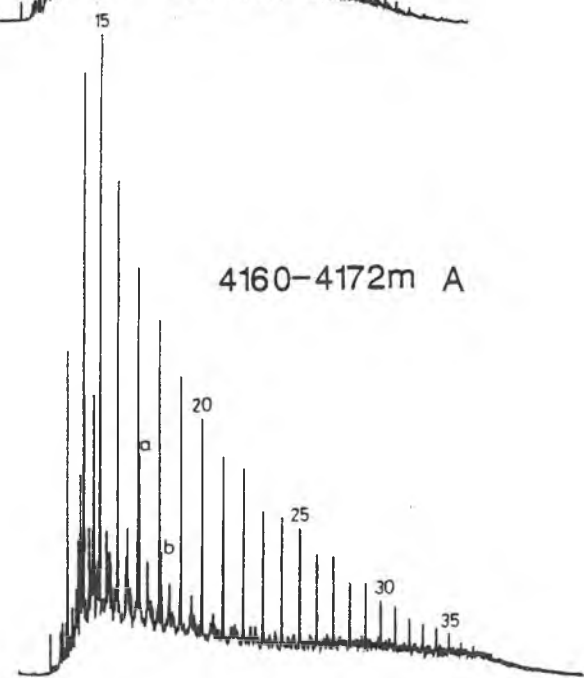
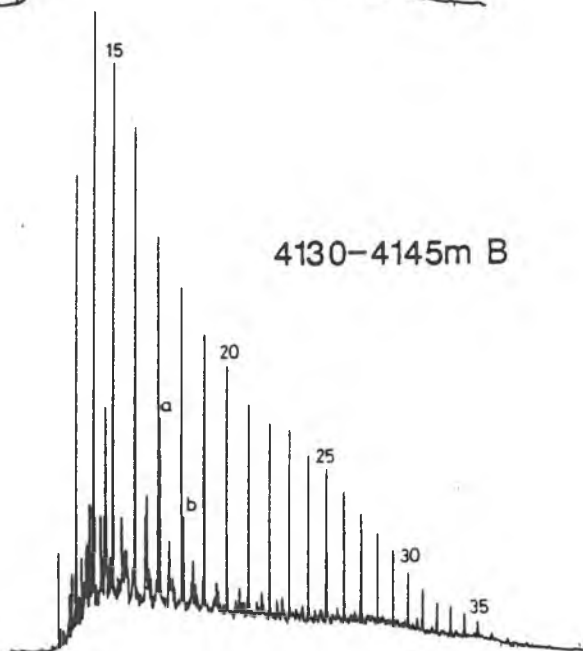
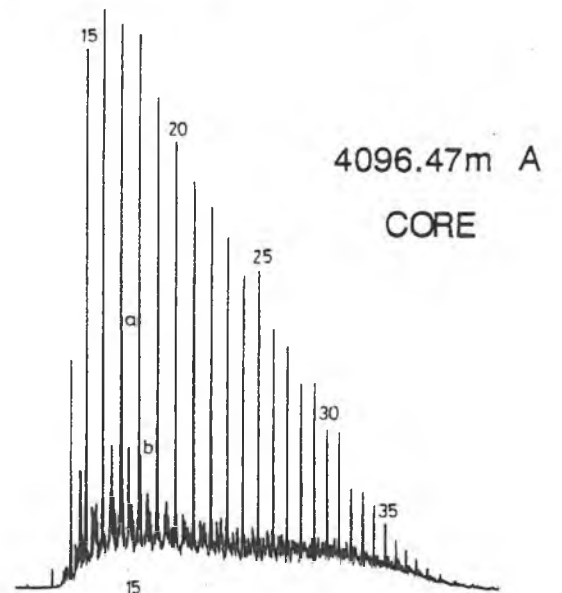
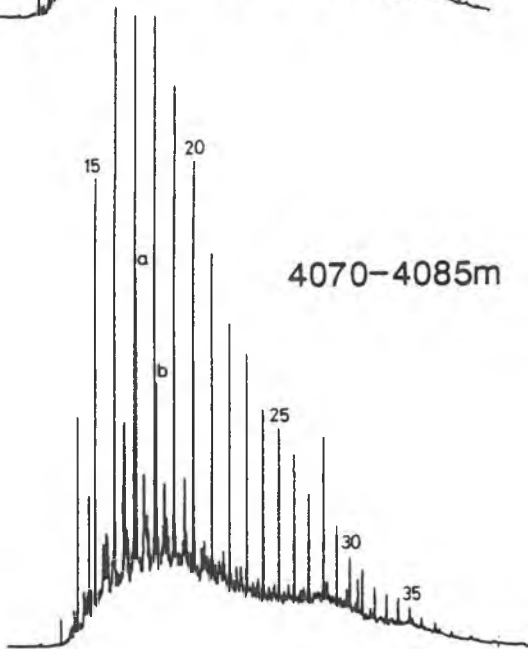
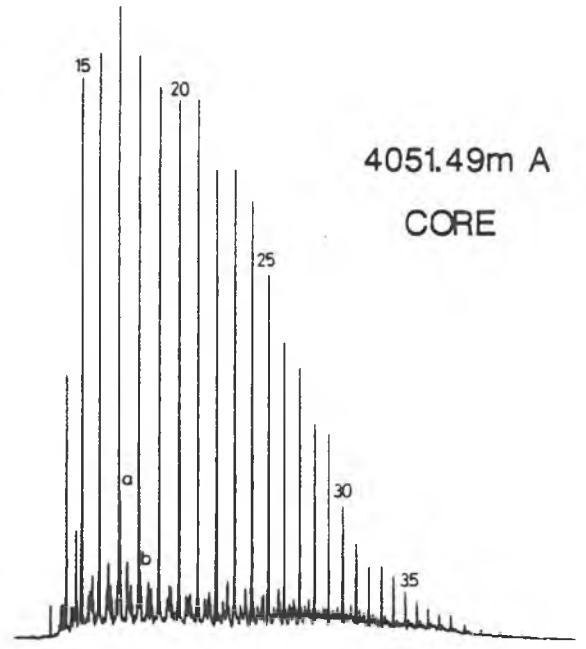
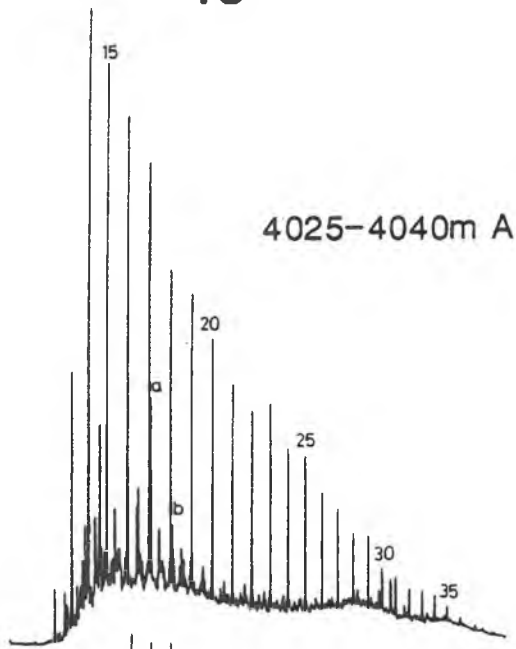
a - PRISTANE  
b - PHYTANE

CARBON NUMBERS OF NORMAL PARAFFINS INDICATED (20 - nC<sub>20</sub>)



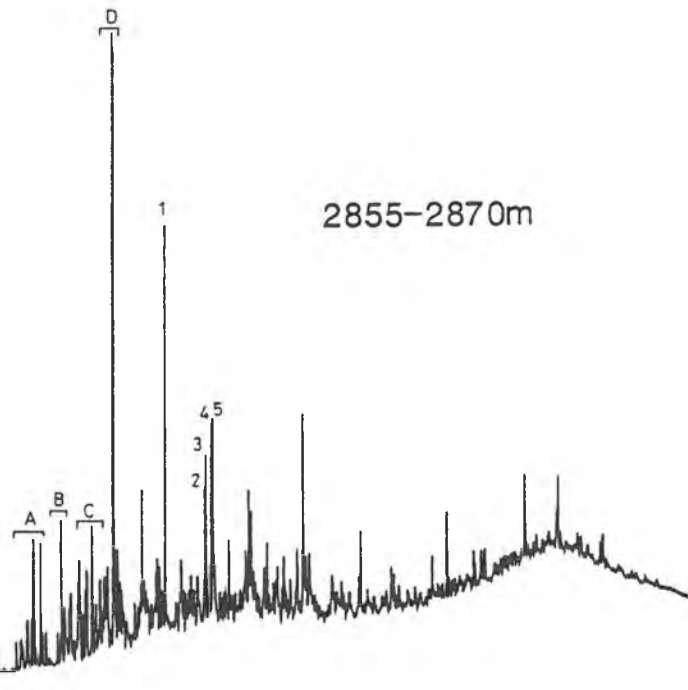
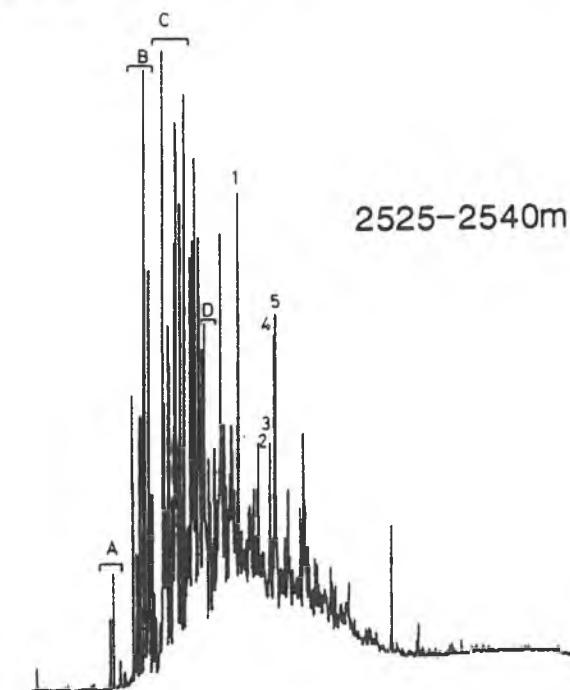
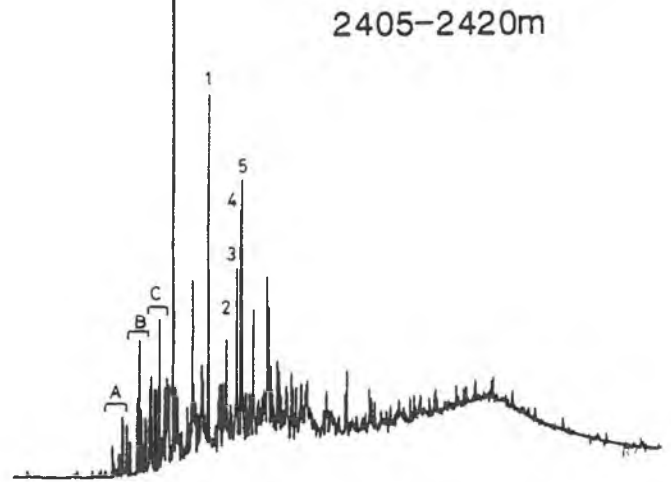
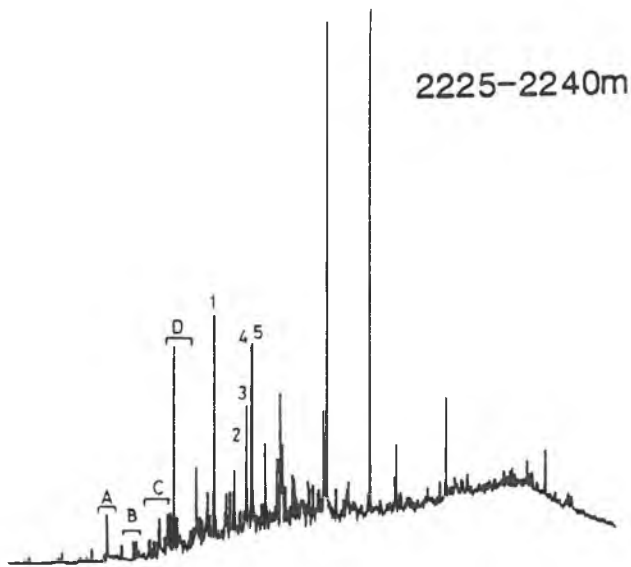
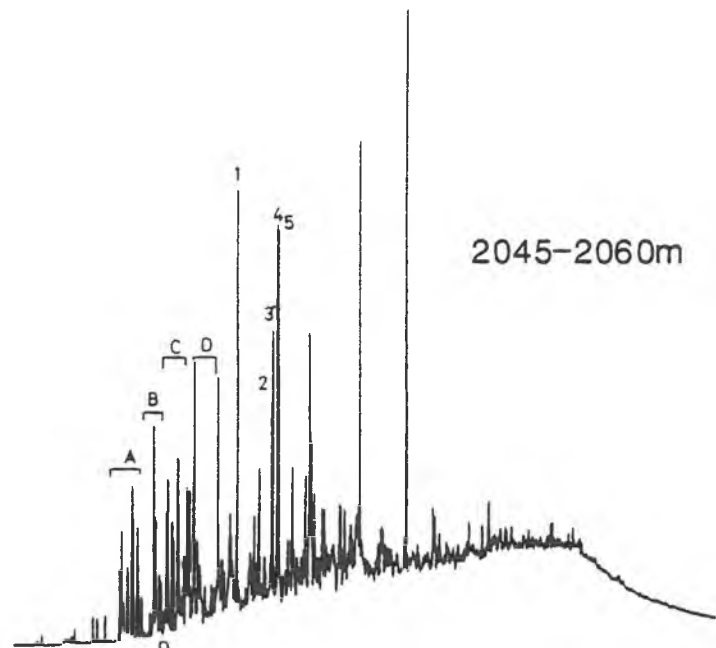
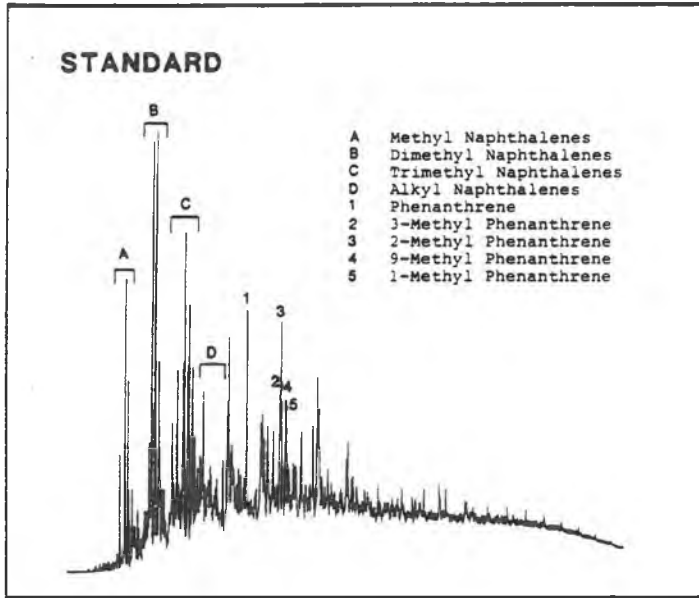
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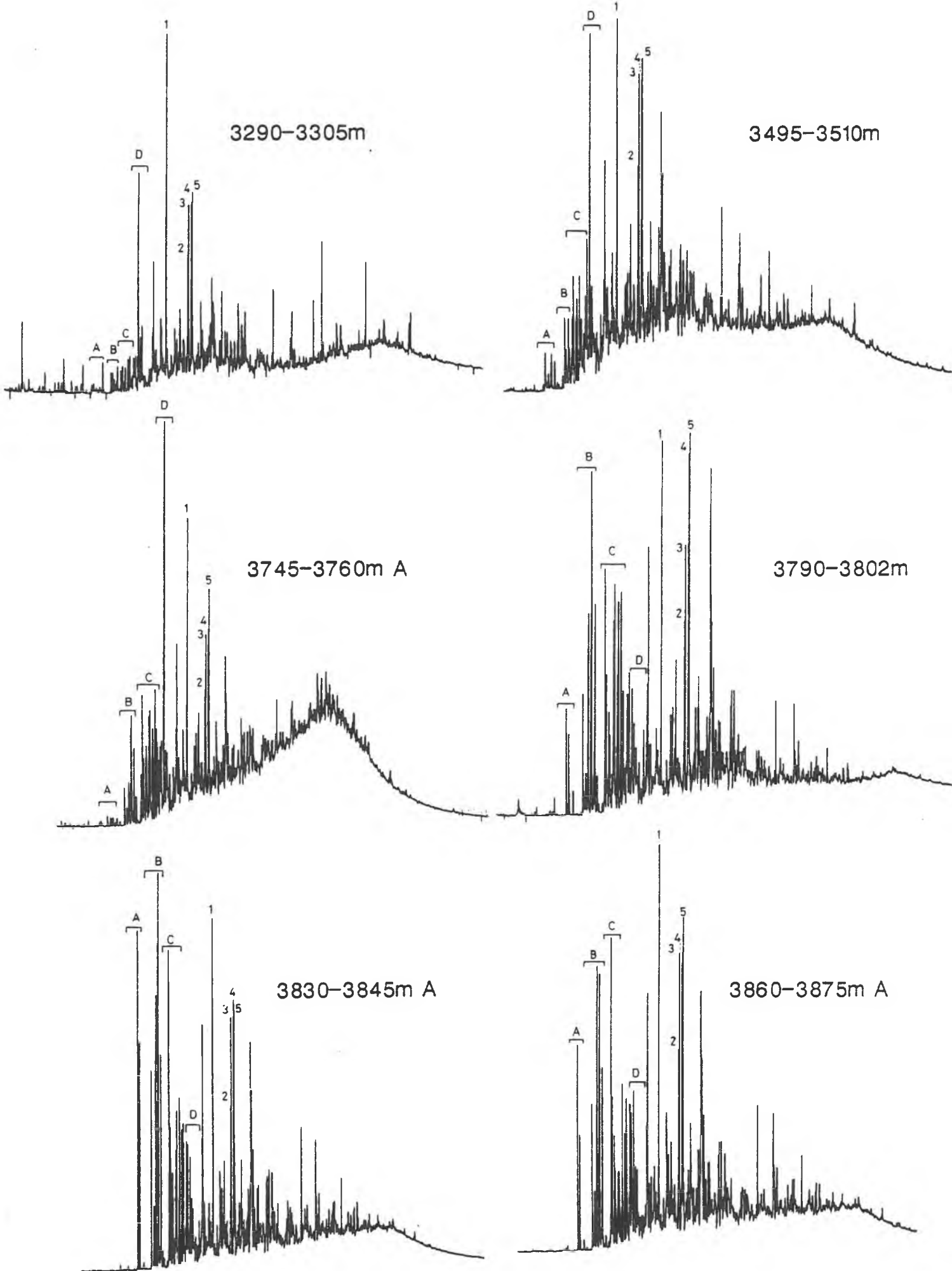
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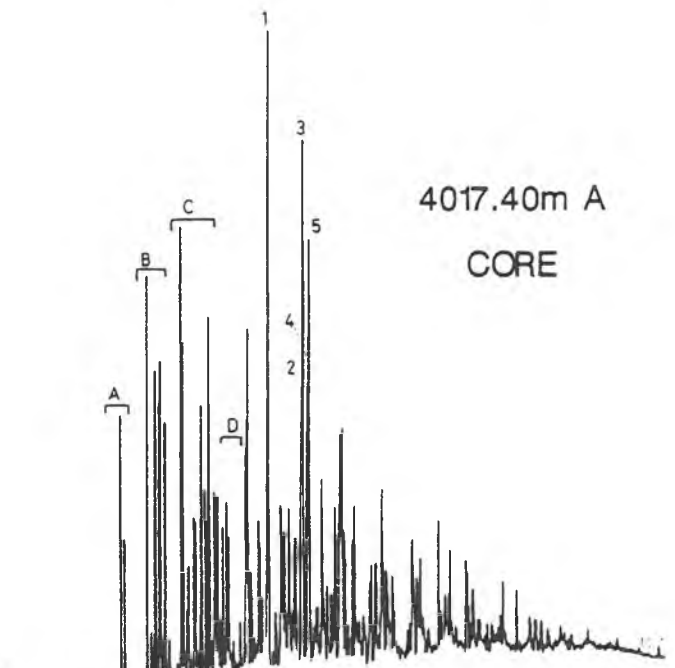
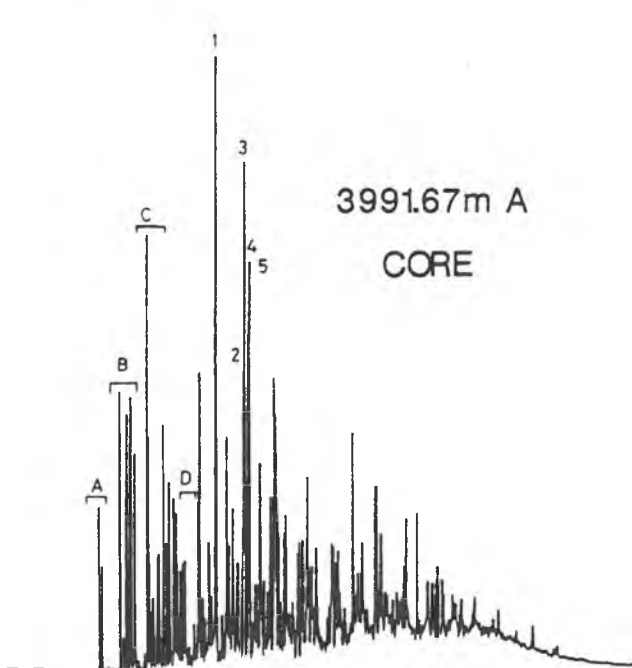
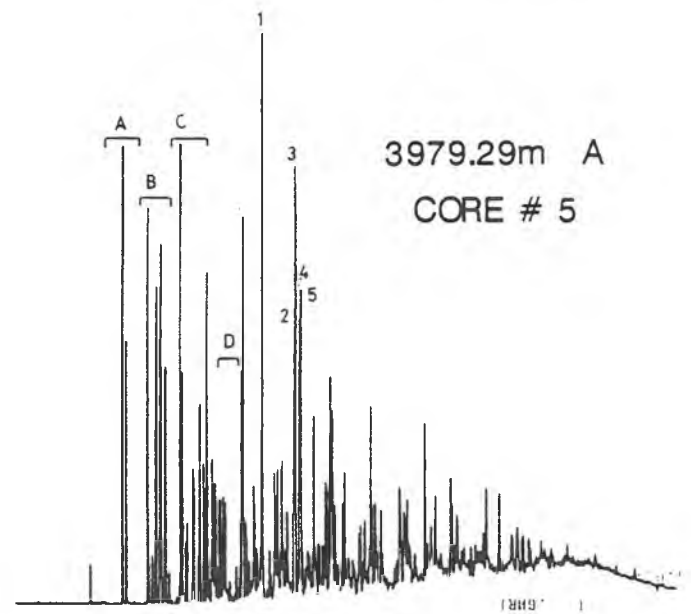
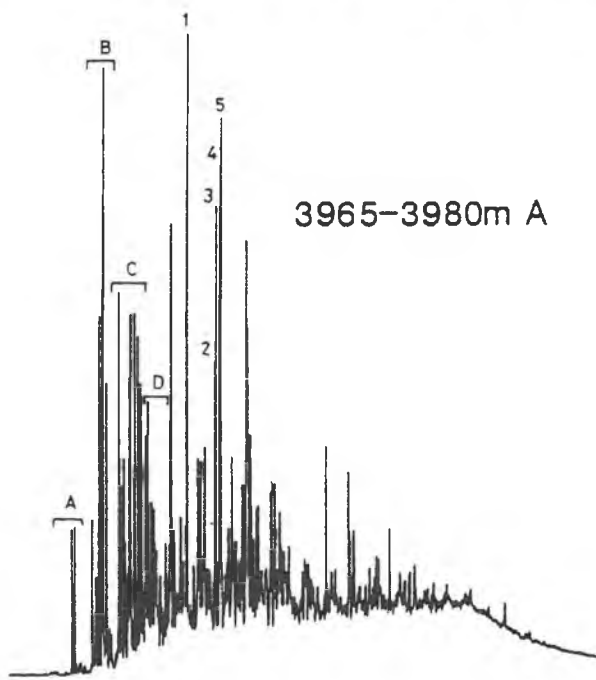
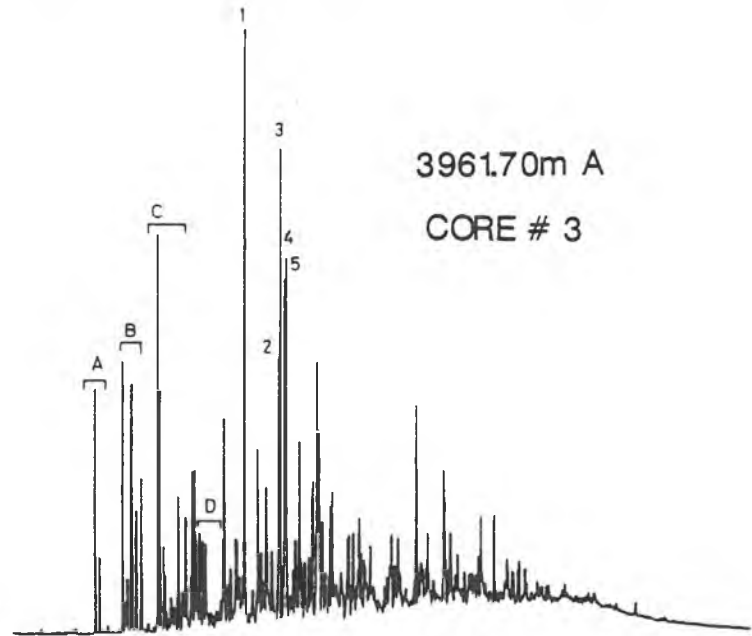
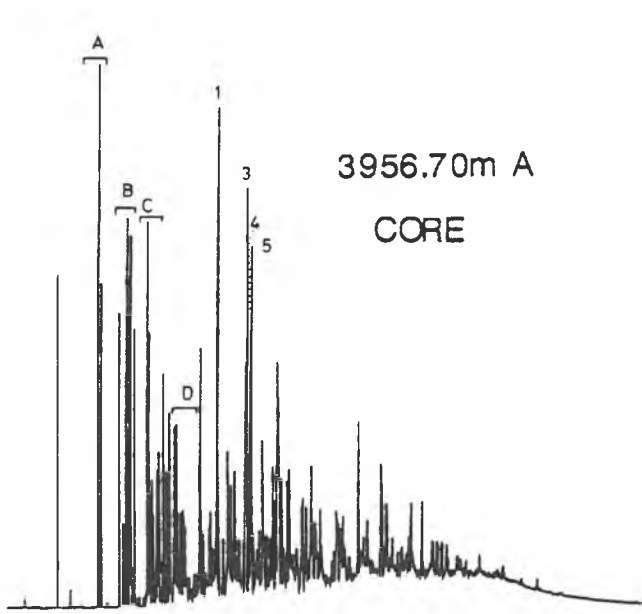


a - PRISTANE  
b - PHYTANE

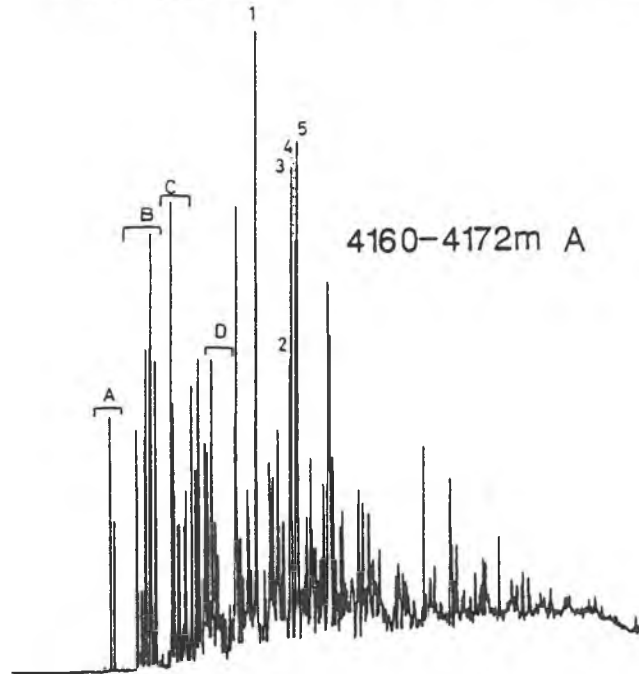
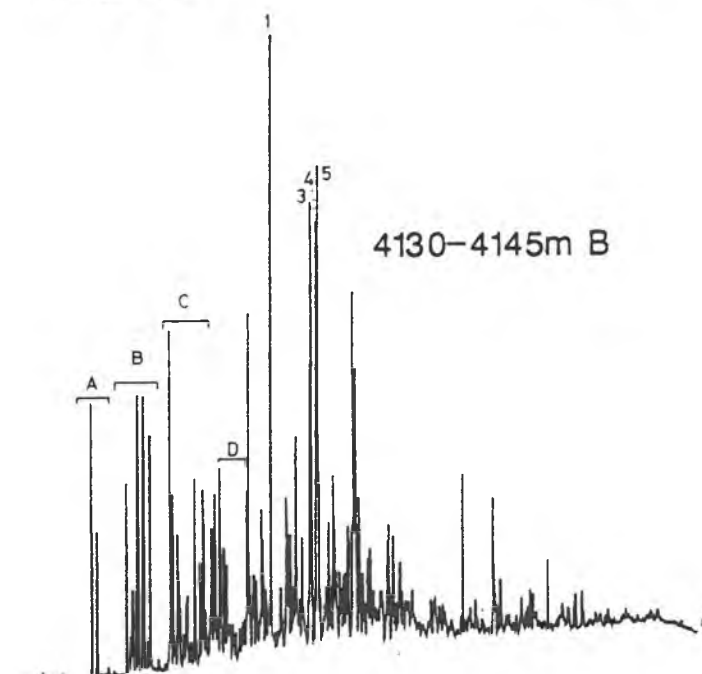
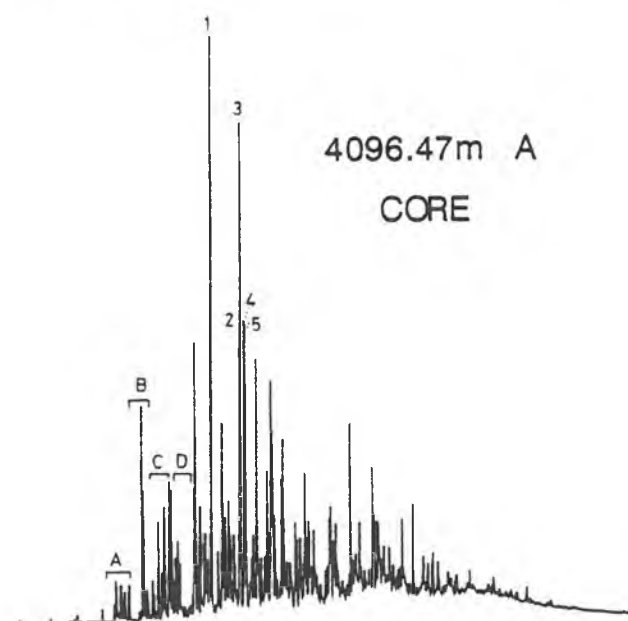
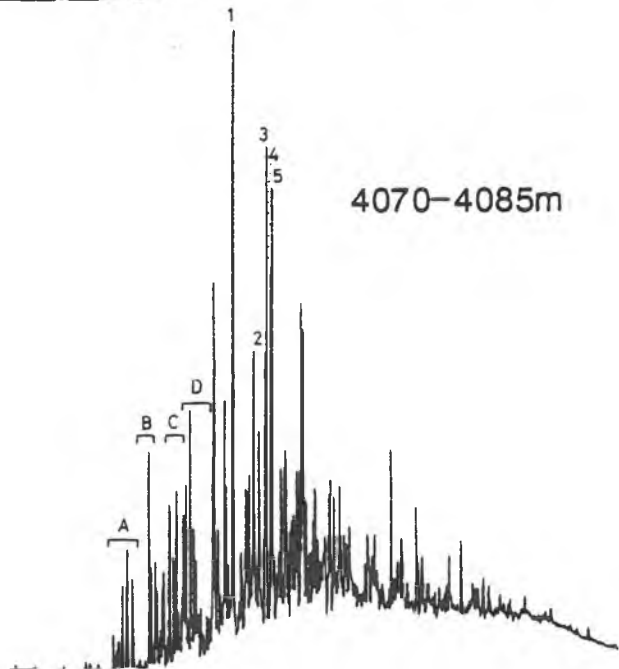
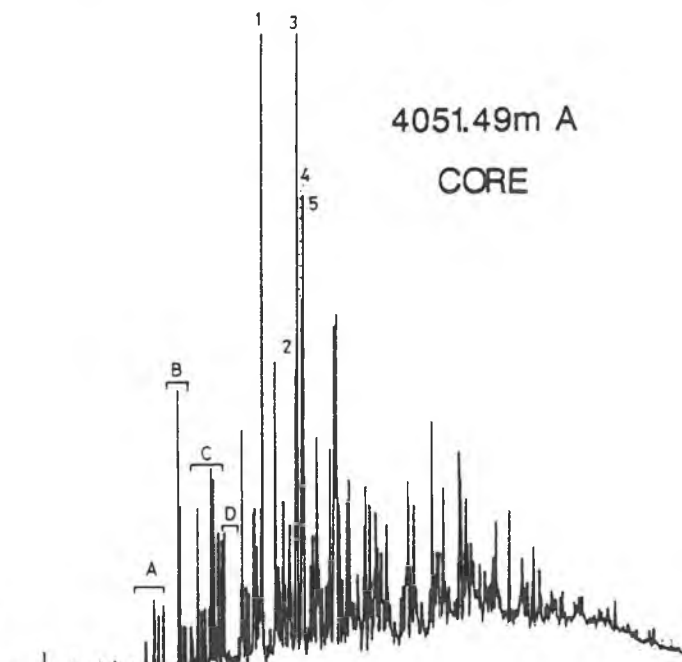
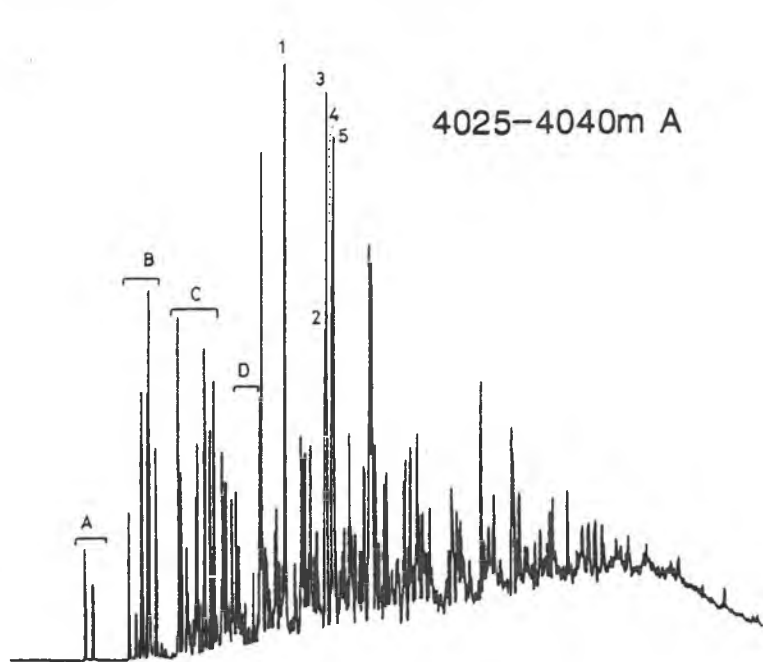
CARBON NUMBERS OF NORMAL PARAFFINS INDICATED (20 - nC<sub>20</sub>)





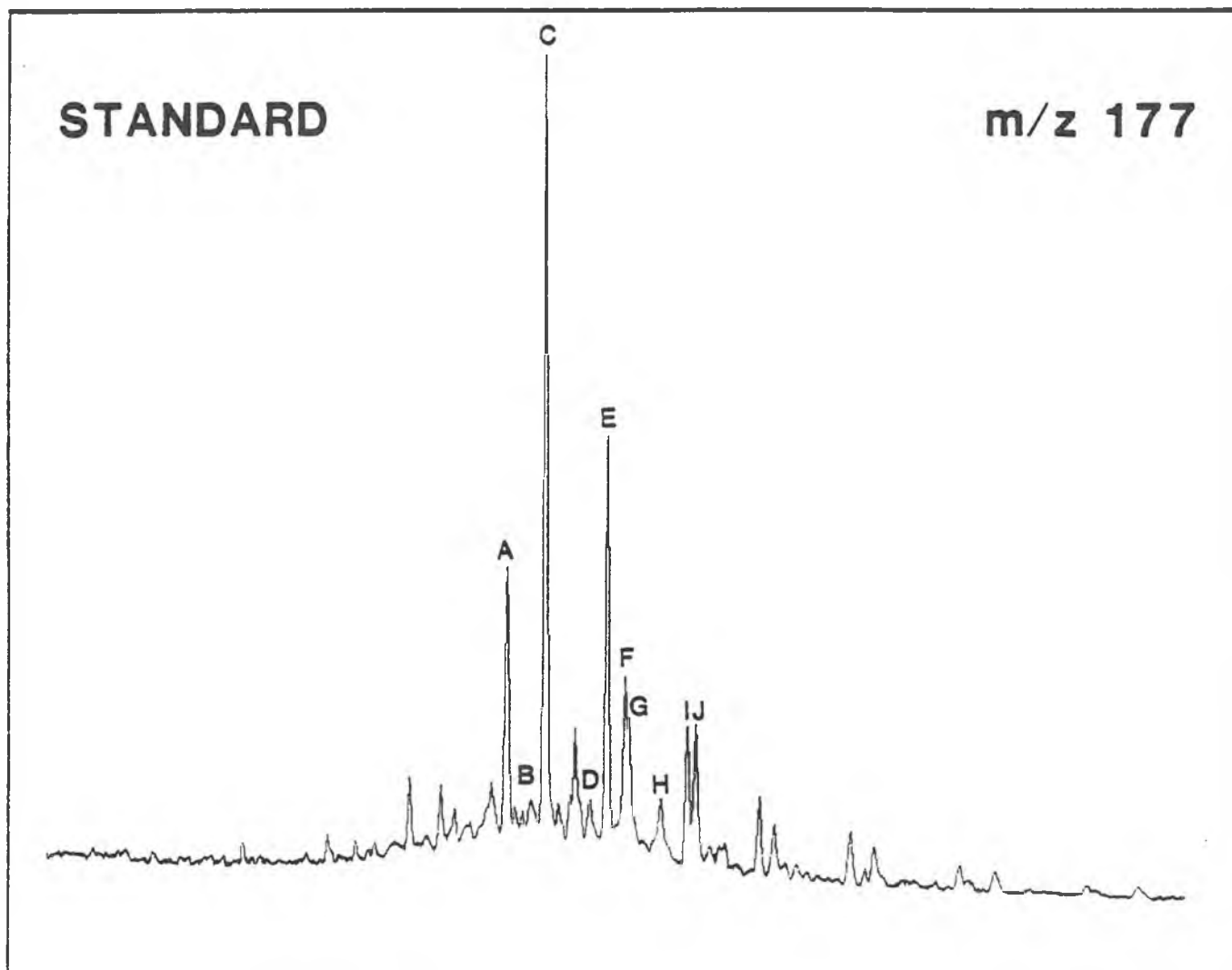






STANDARD

m/z 177



DEMETHYLATED HOPANES

(m/z 177 FRAGMENTOGRAM)

COMPOUND

A	17 $\alpha$ (H), 18 $\alpha$ (H), 21 $\beta$ (H) 25, 28, 30 - trisnorhopane	} C <sub>27</sub>
B	17 $\beta$ (H), 18 $\alpha$ (H), 21 $\alpha$ (H) 25, 28, 30 - trisnormoretane	
C	17 $\infty$ (H) -25, 30 - bisnorhopane	} C <sub>28</sub>
D	17 $\infty$ (H), 18 $\infty$ (H), 21 $\beta$ (H) -28, 30 bisnorhopane	
E	17 $\infty$ (H) -25 - norhopane	
F	17 $\infty$ (H) -30 - norhopane	
G	?	
H	17 $\beta$ (H) -30 - normoretane	
I	(22S) -17 $\infty$ (H) -25 - norhomohopane	
J	(22R) -17 $\infty$ (H) - homohopane	

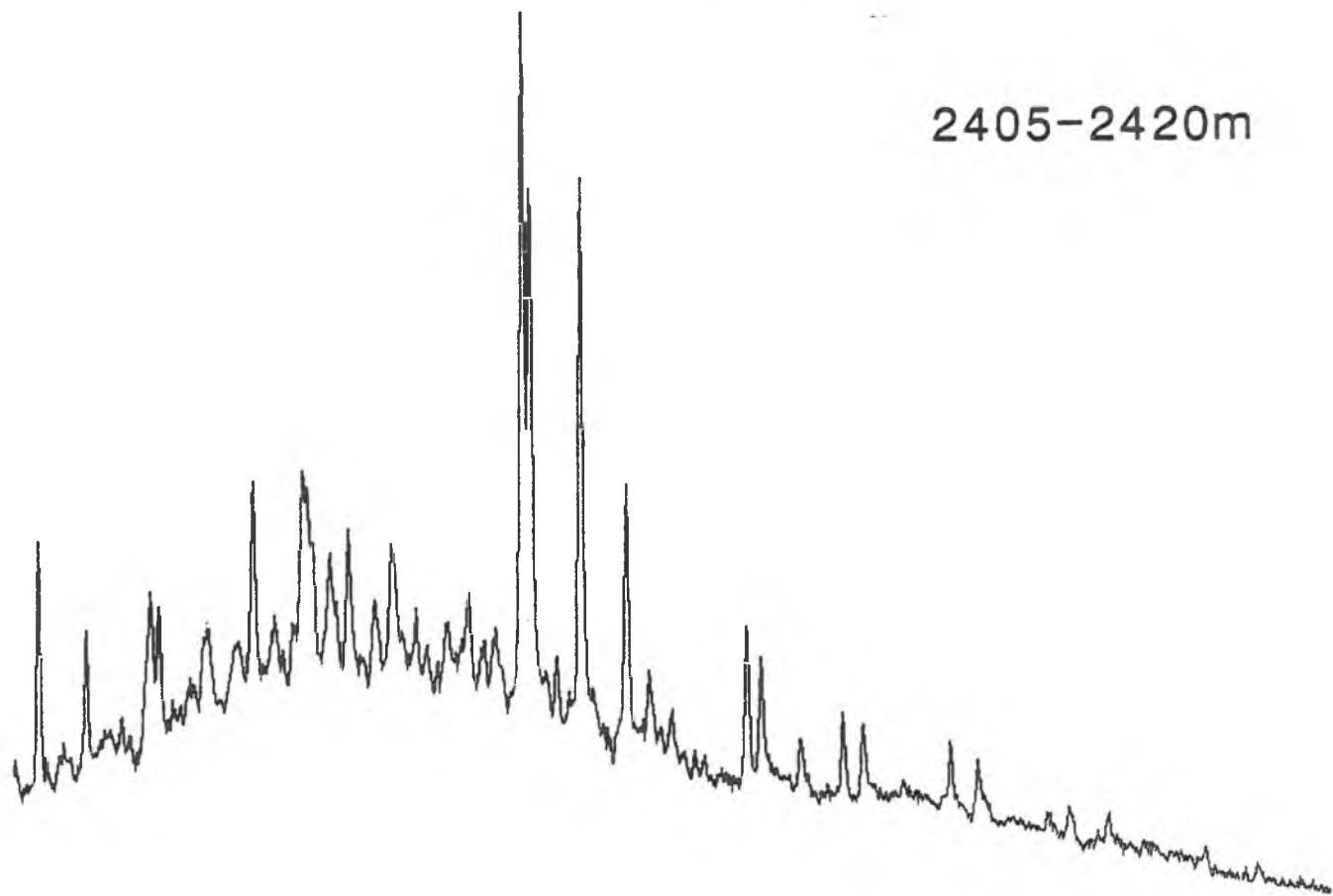
FIGURE 8a

MASS FRAGMENTOGRAMS

WELL 30/2-2

TRITERPANES  $m/z$  177

2405-2420m



2855-2870m

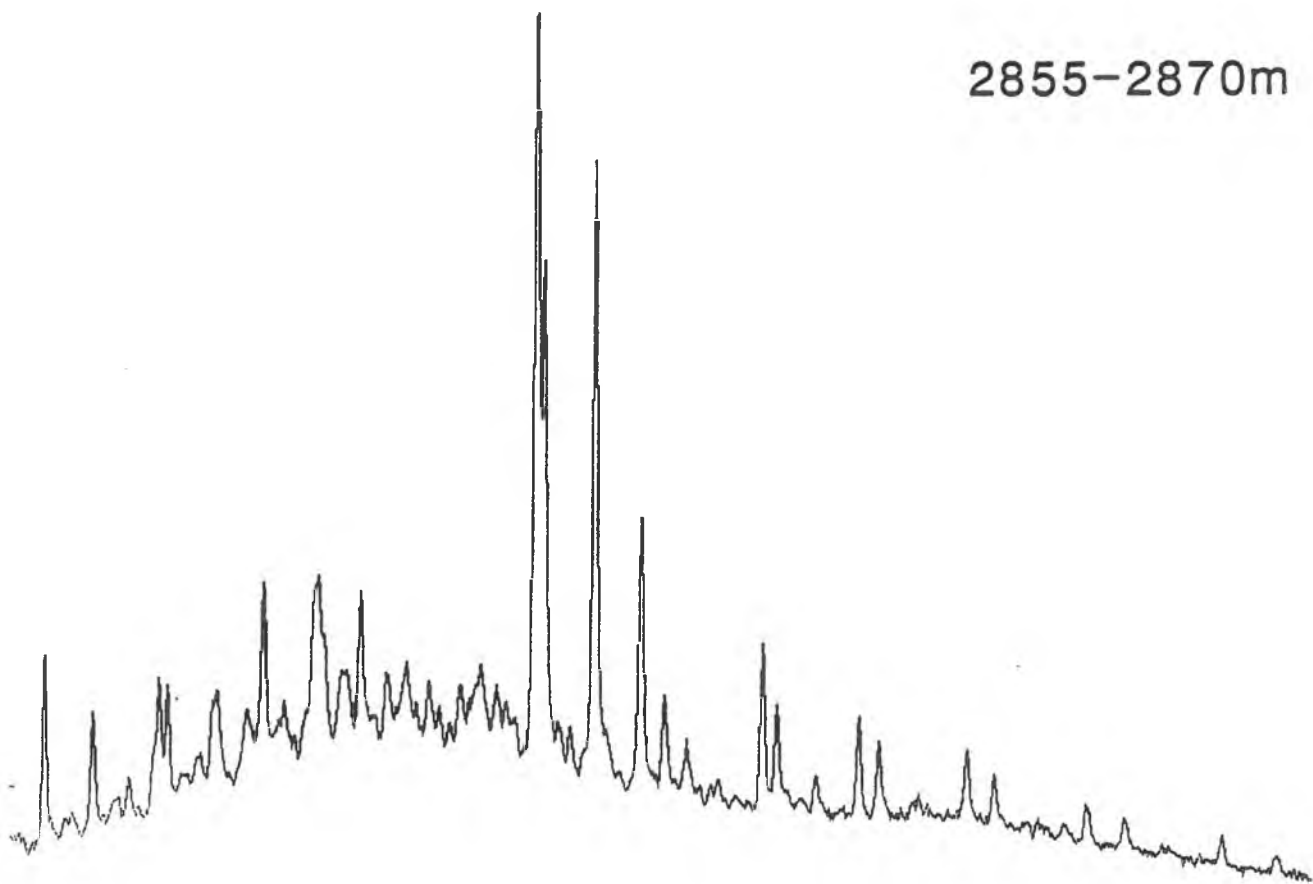


FIGURE 8b

MASS FRAGMENTOGRAMS

WELL 30/2-2

TRITERPANES  $m/z$  177

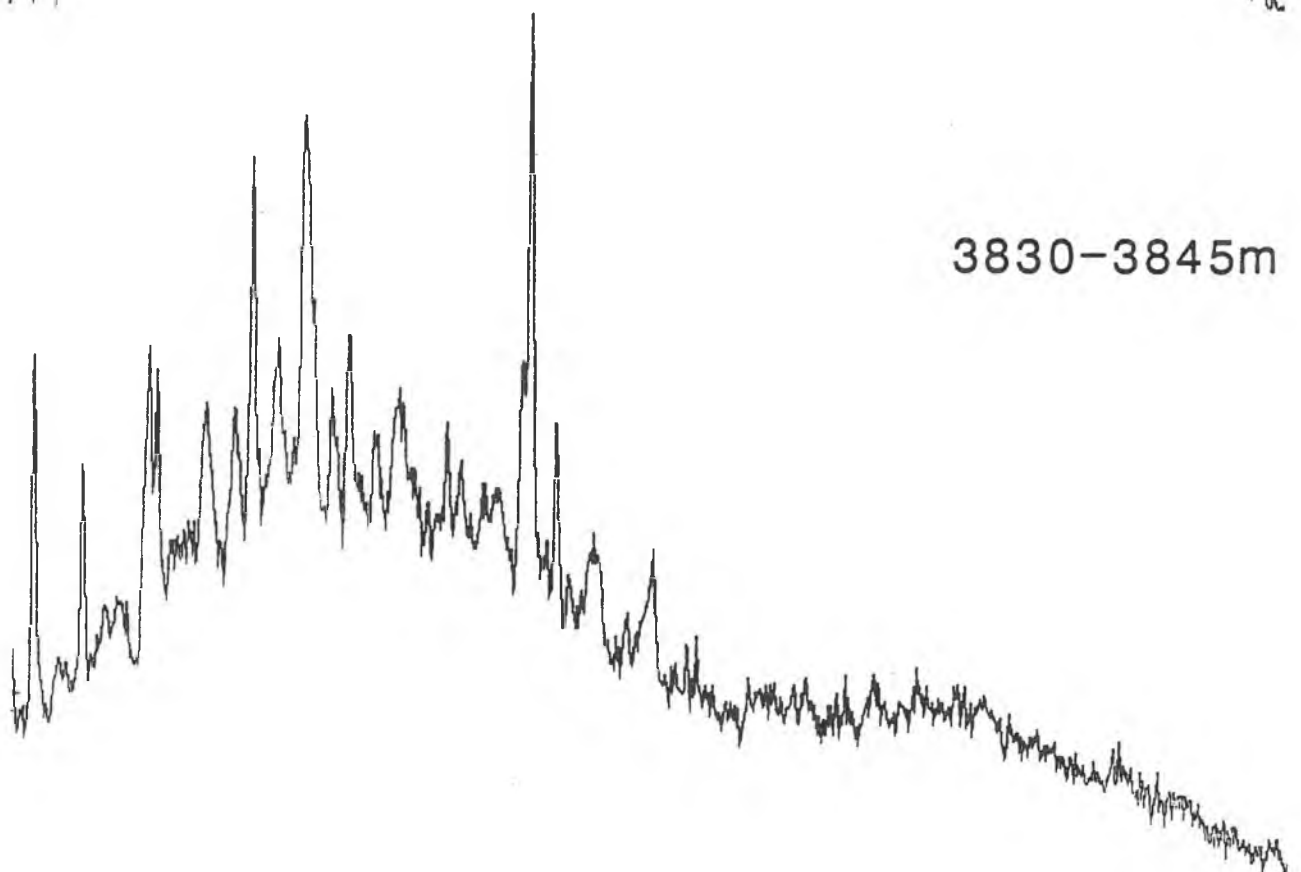
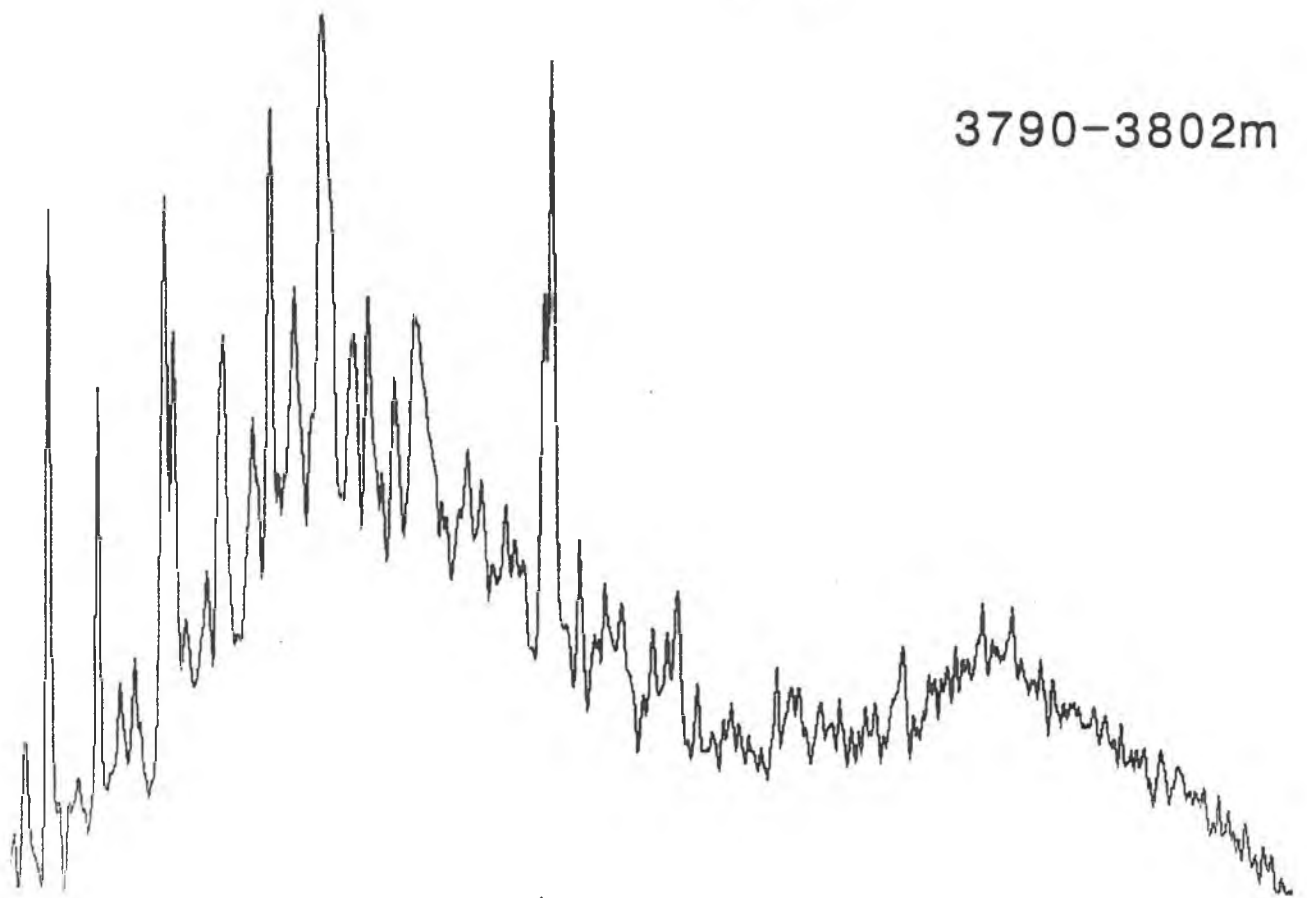


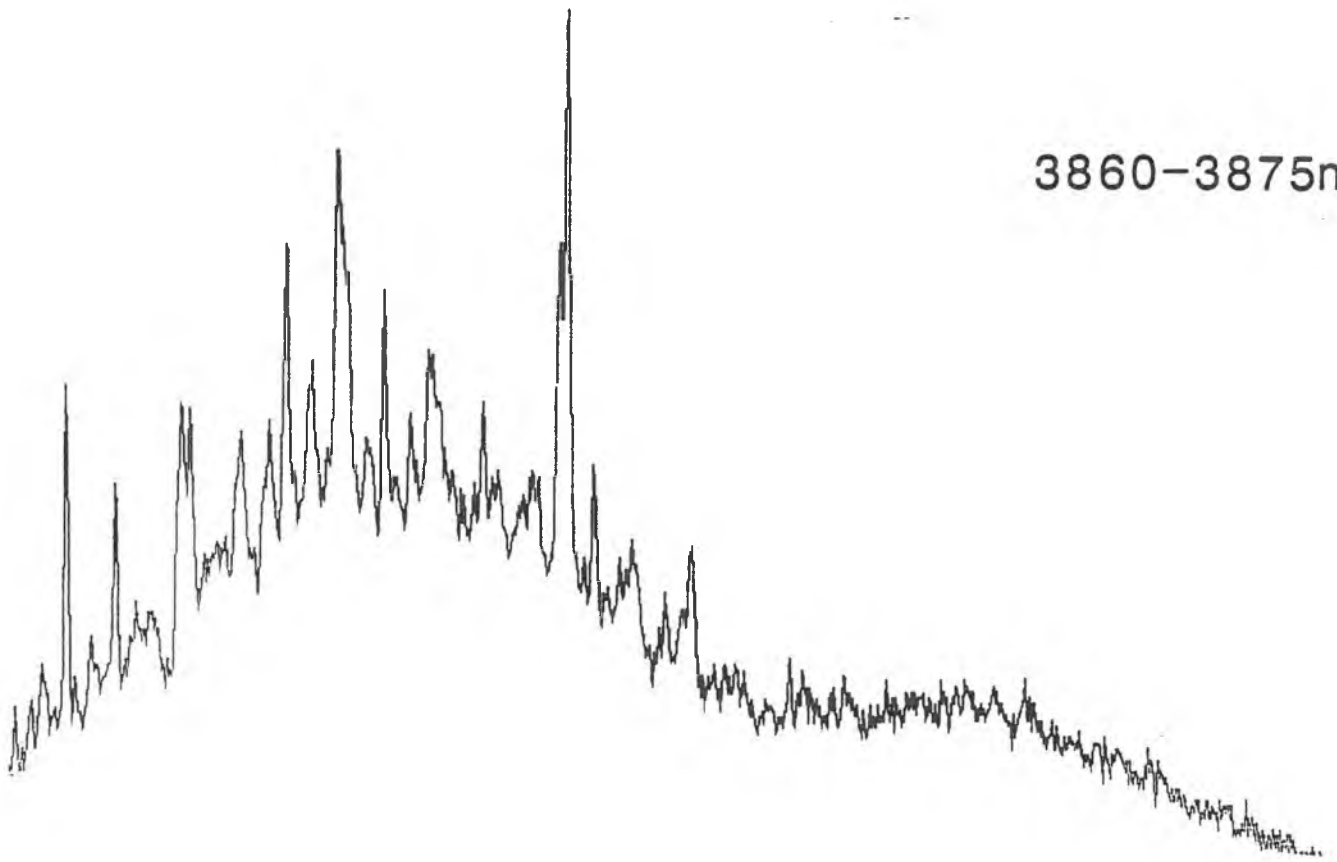
FIGURE 8c

MASS FRAGMENTOGRAMS

WELL 30/2-2

TRITERPANES m/z 177

3860-3875m



3956.70m CORE

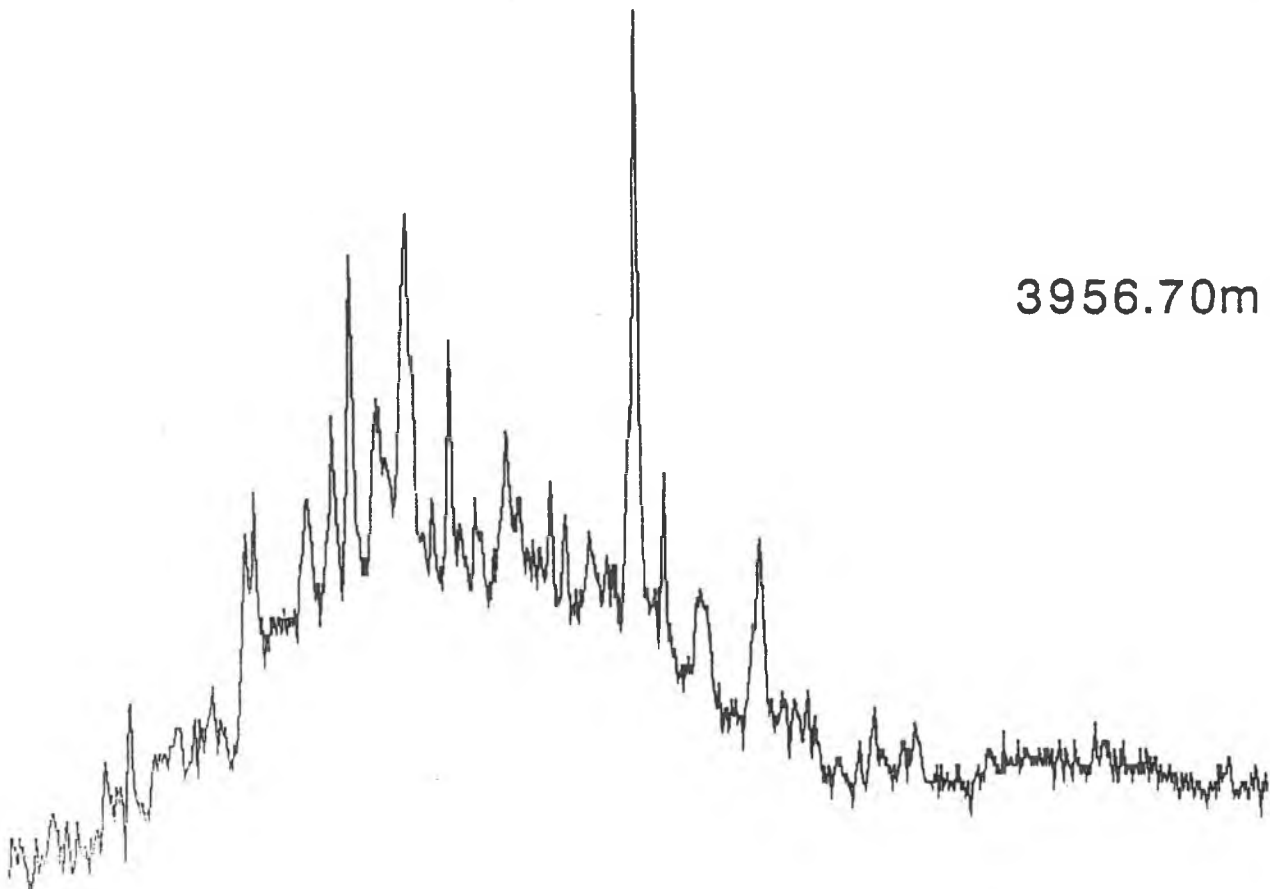


FIGURE 8d

MASS FRAGMENTOGRAMS

WELL 30/2-2

TRITERPANES m/z 177

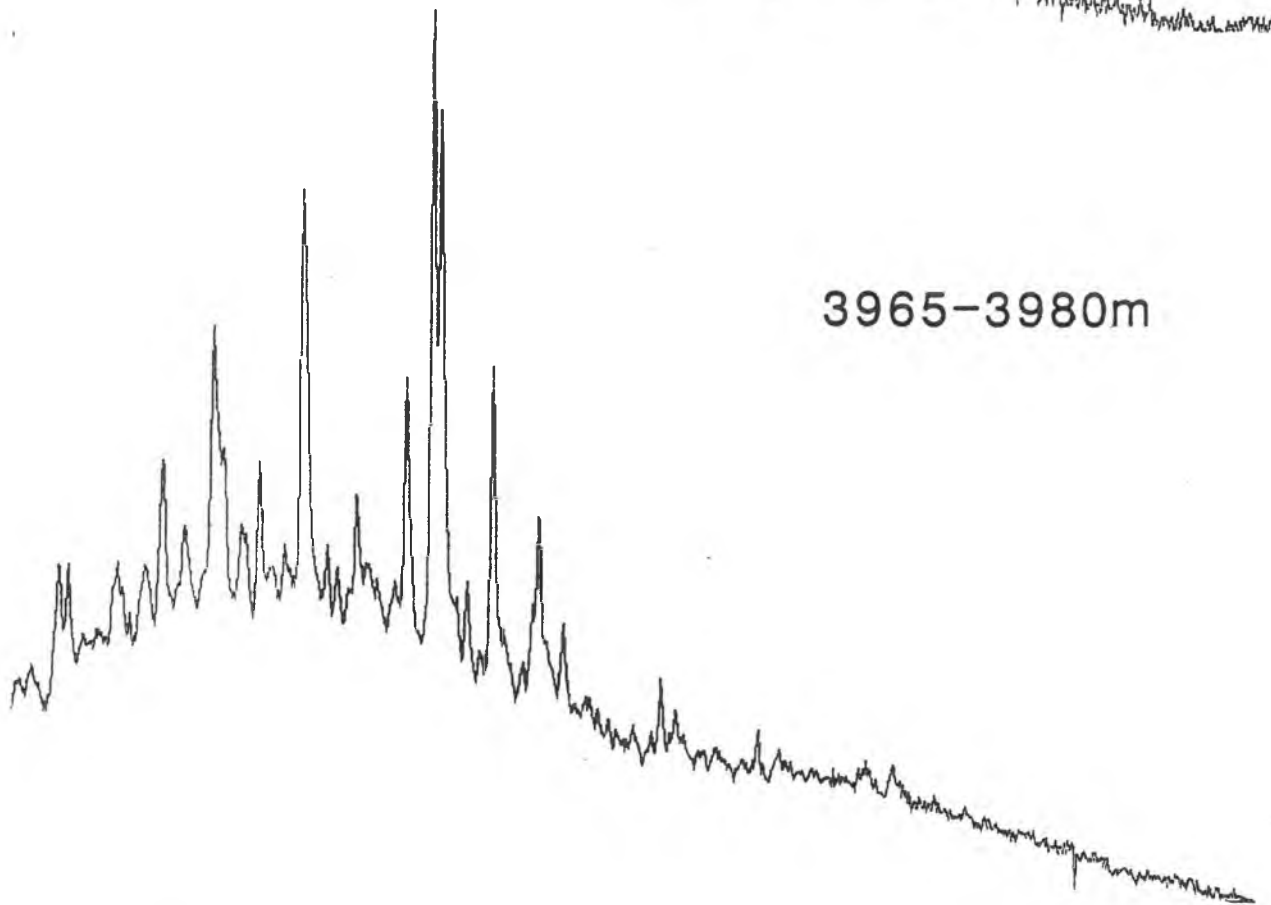
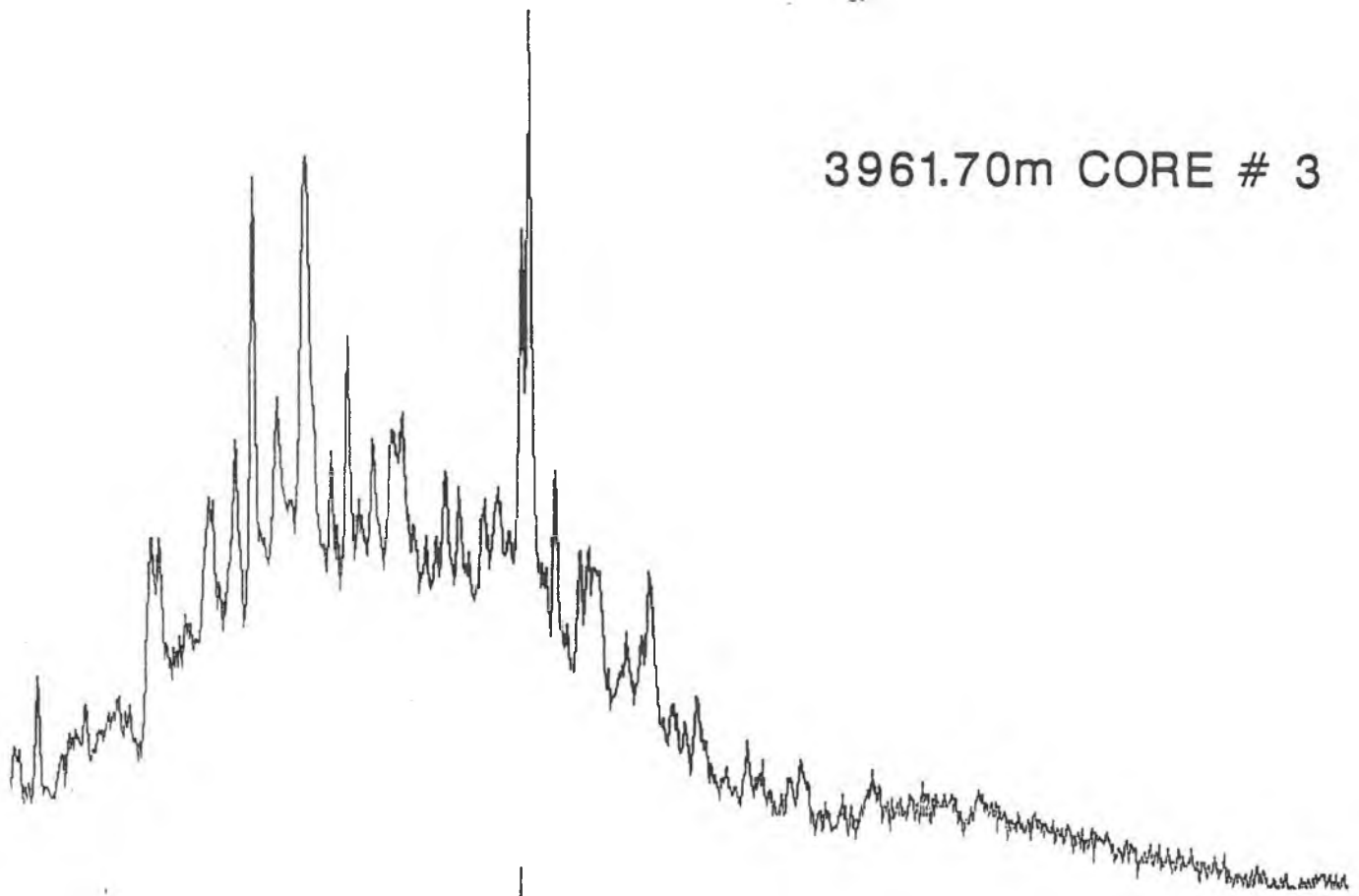


FIGURE 8e

MASS FRAGMENTOGRAMS

WELL 30/2-2

TRITERPANES  $m/z$  177

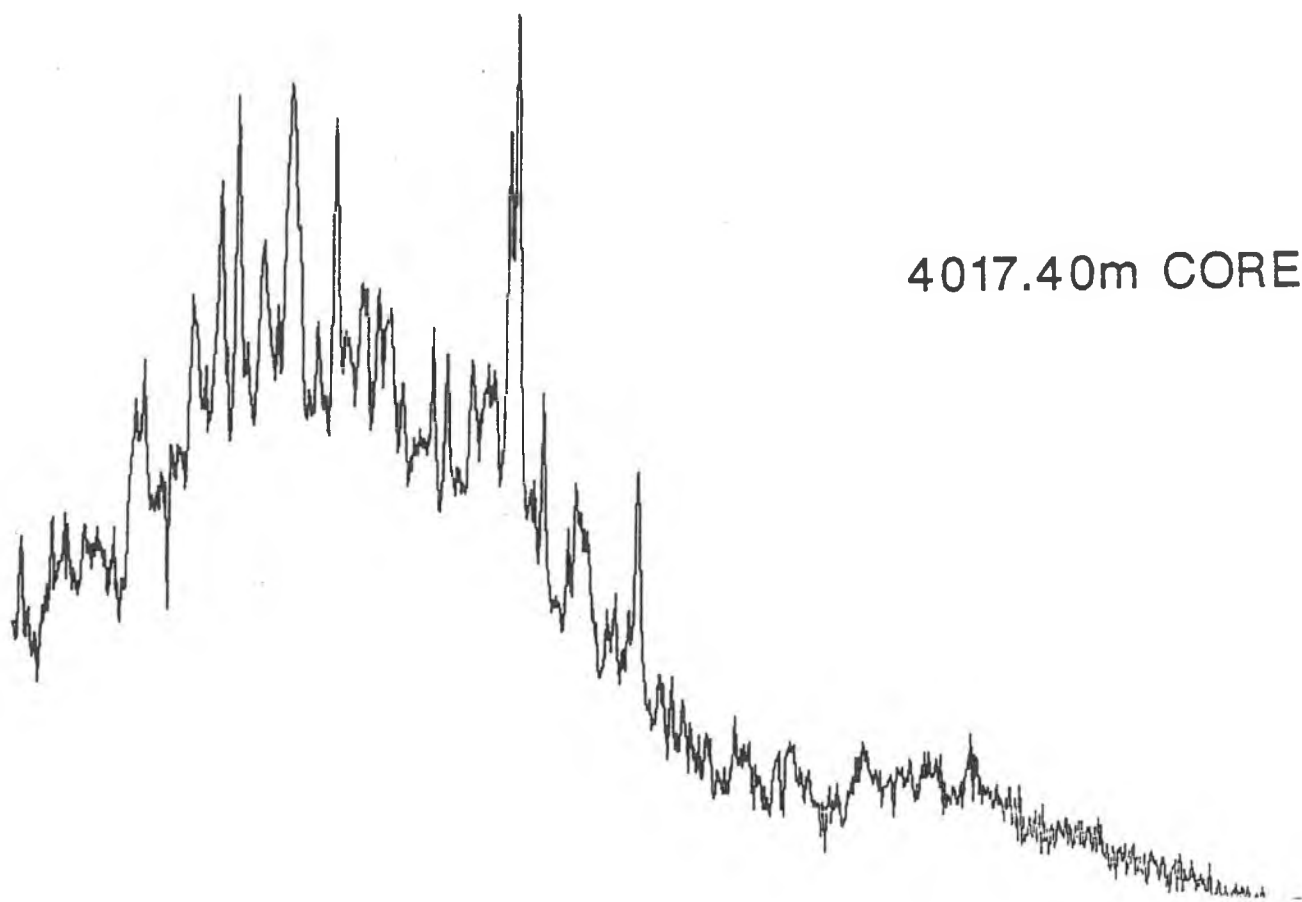
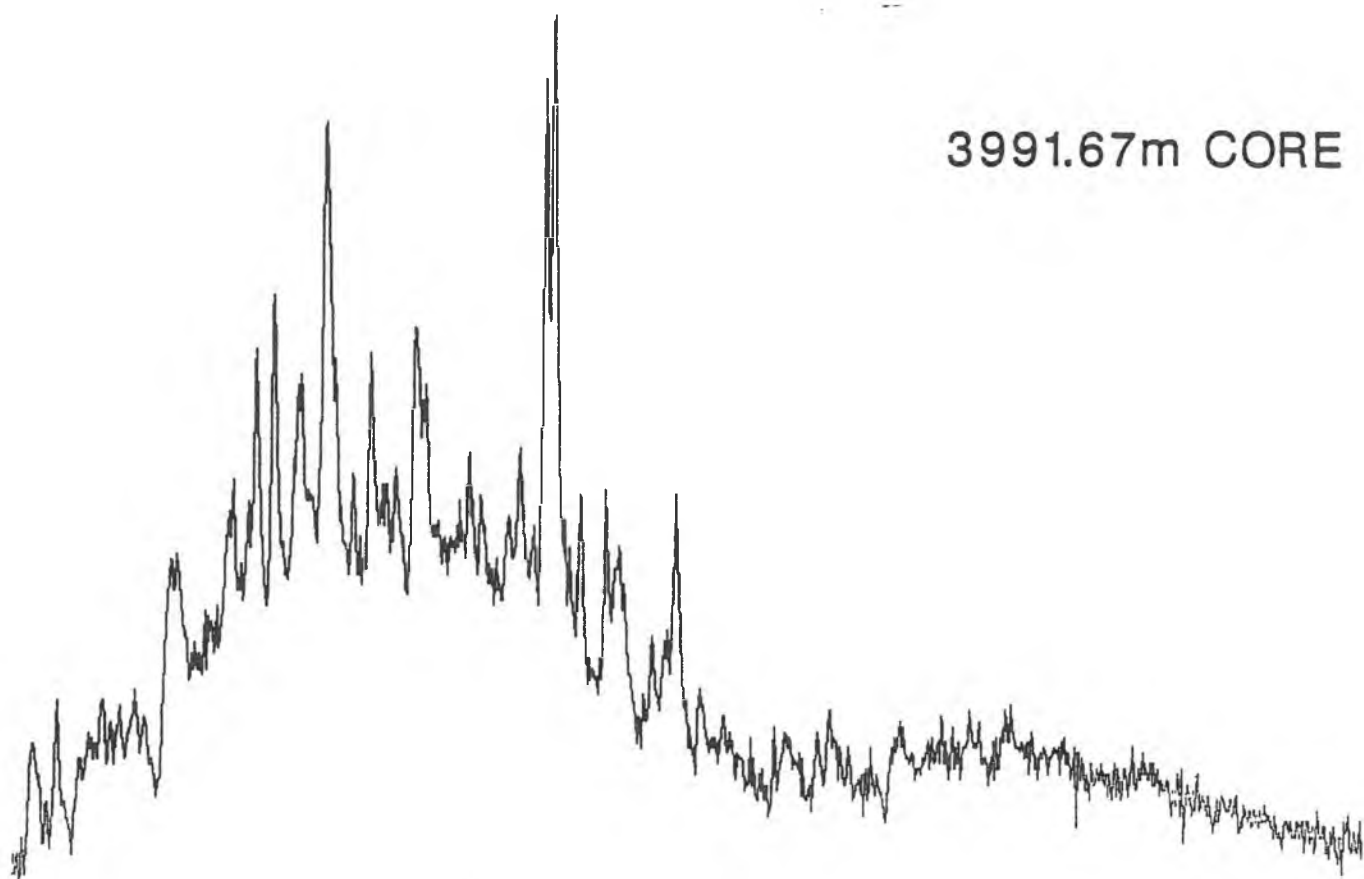


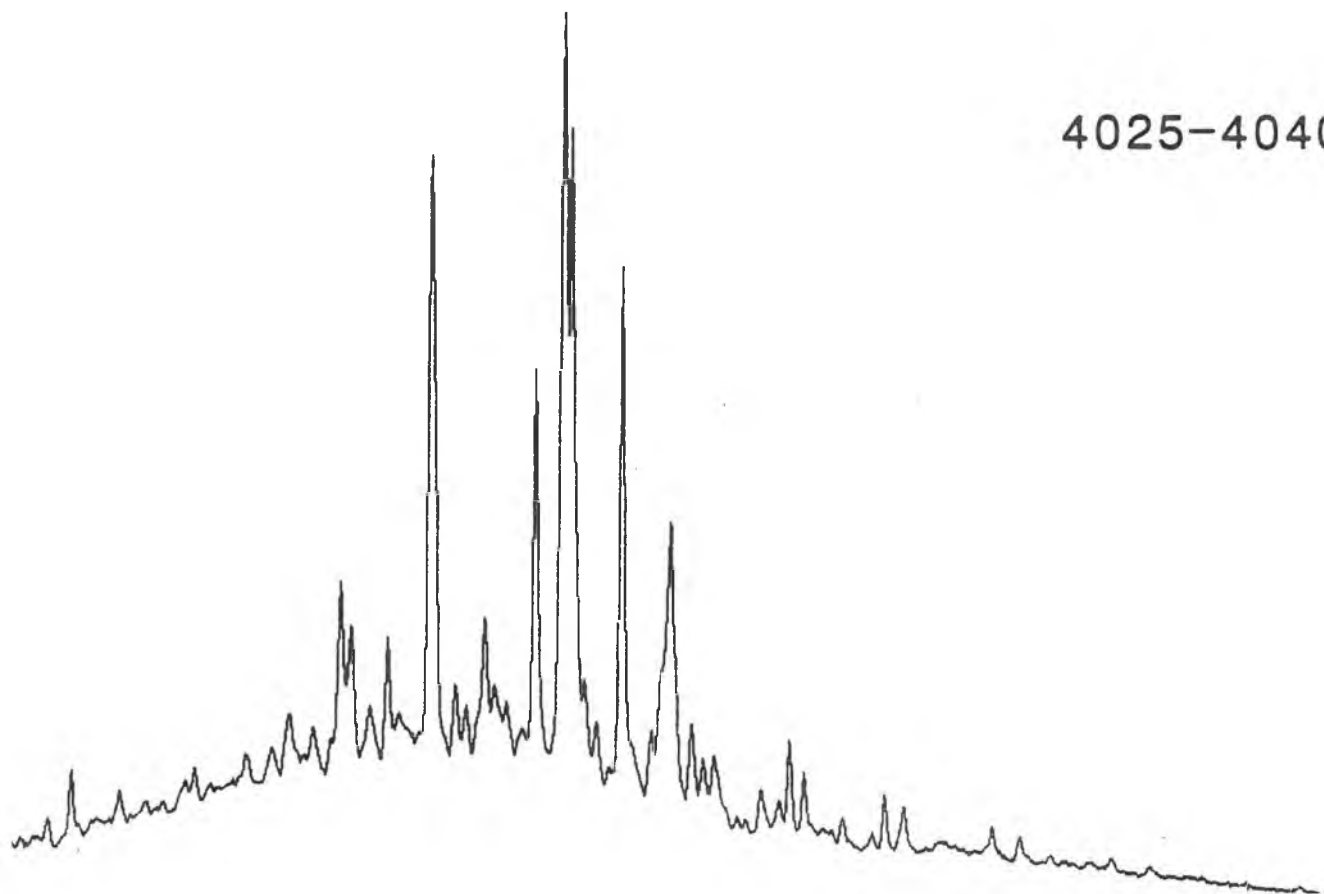
FIGURE 8f

MASS FRAGMENTOGRAMS

WELL 30/2-2

TRITERPANES  $m/z$  177

4025-4040m



4051.49m CORE

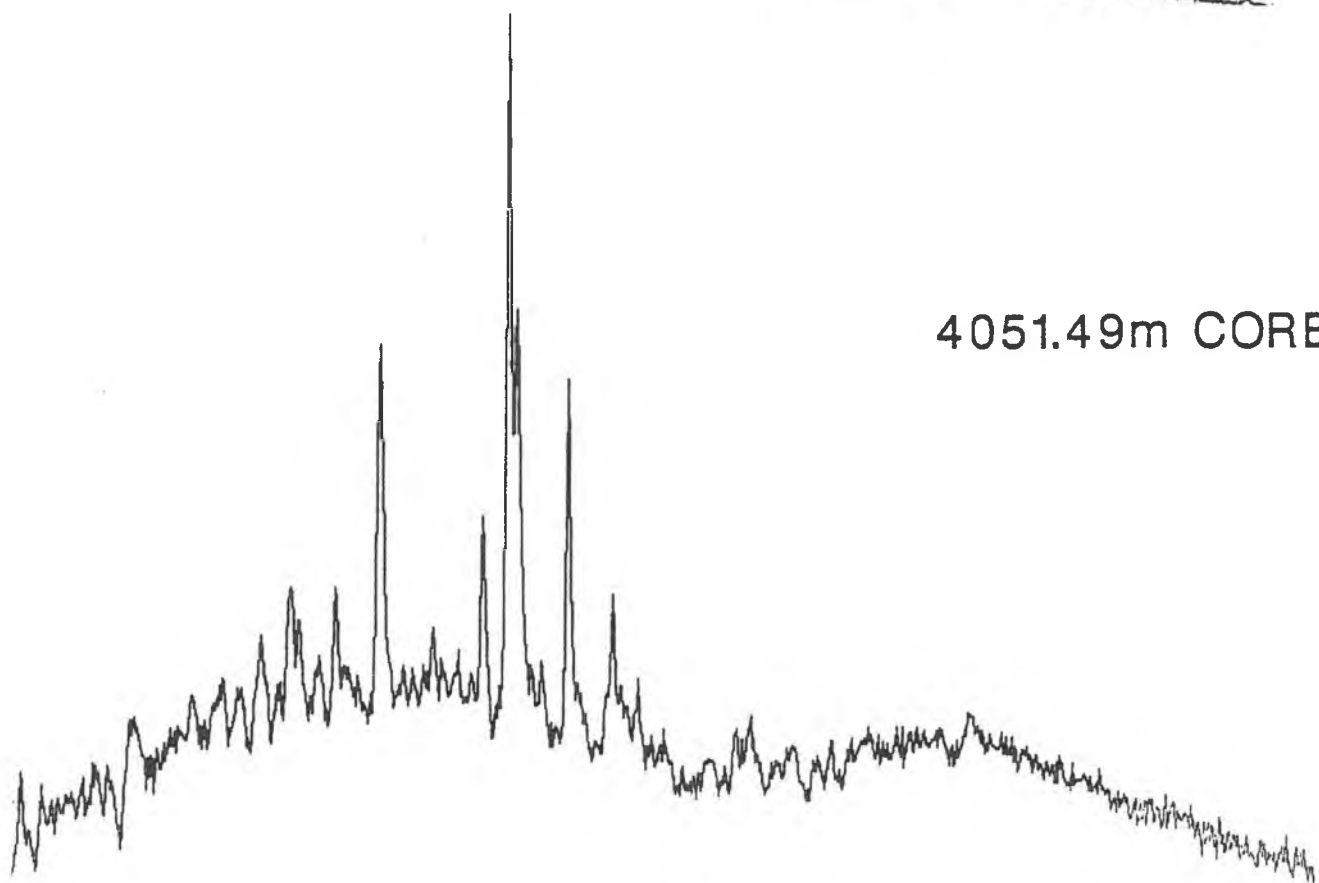




FIGURE 8g

MASS FRAGMENTOGRAMS

WELL 30/2-2

TRITERPANES m/z 177

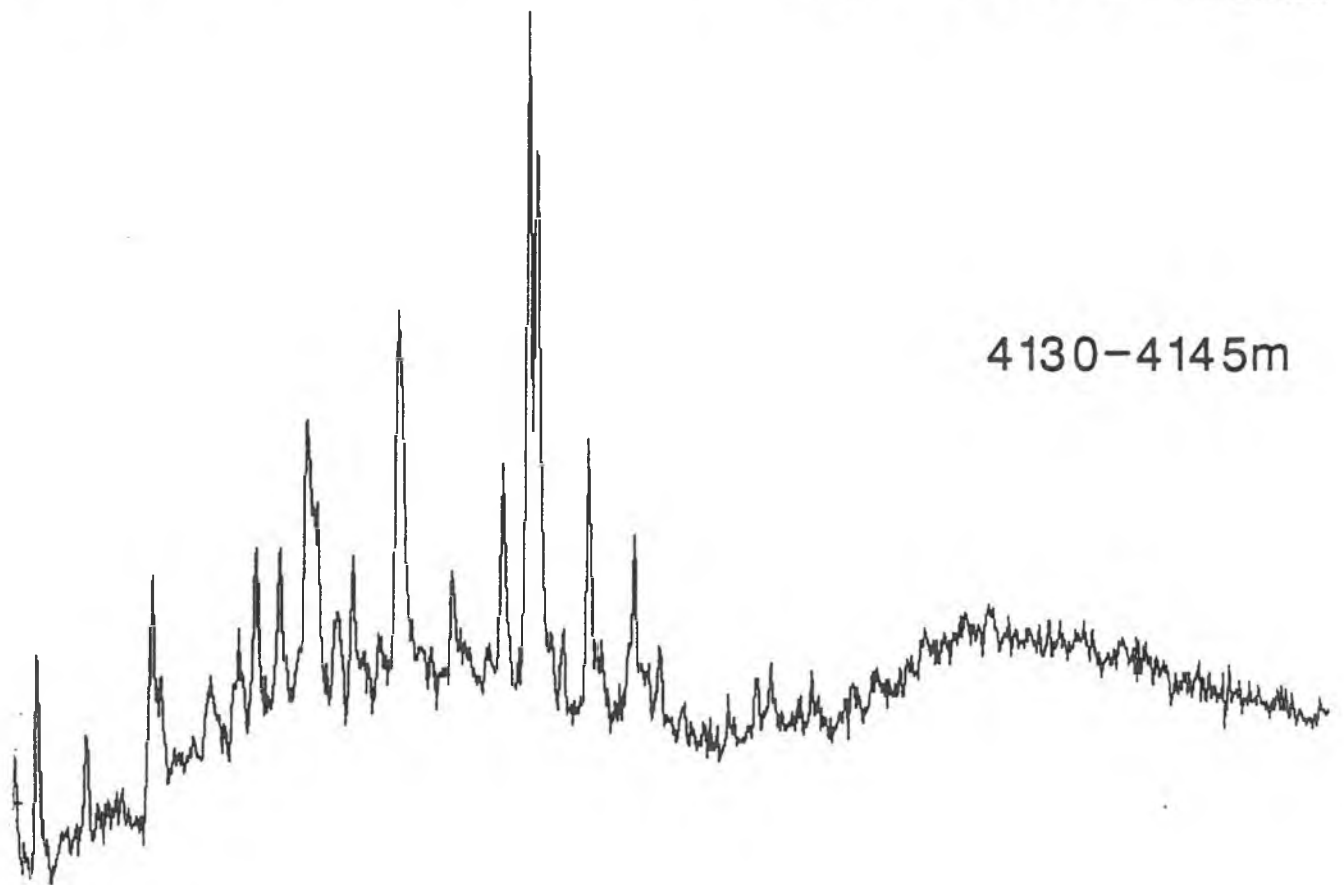
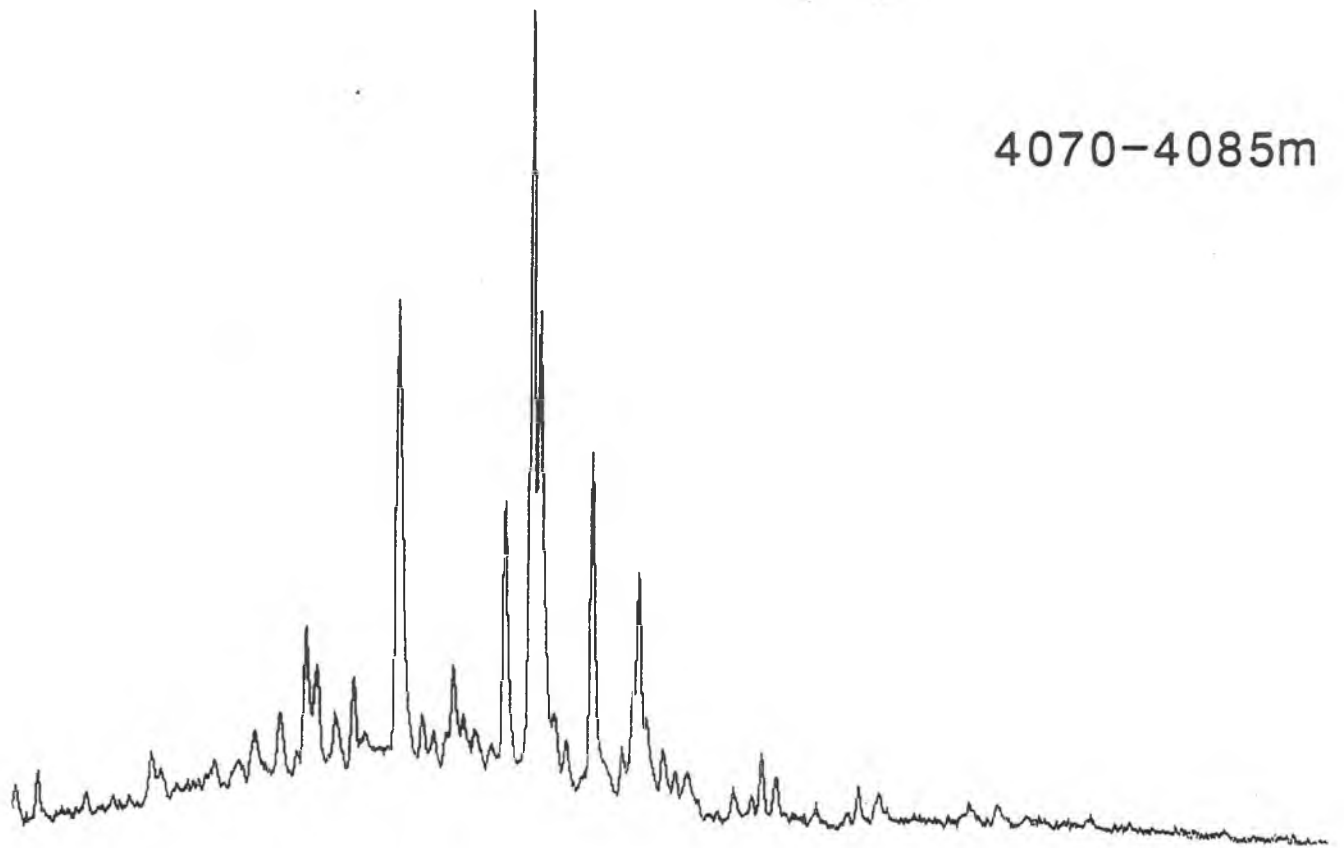
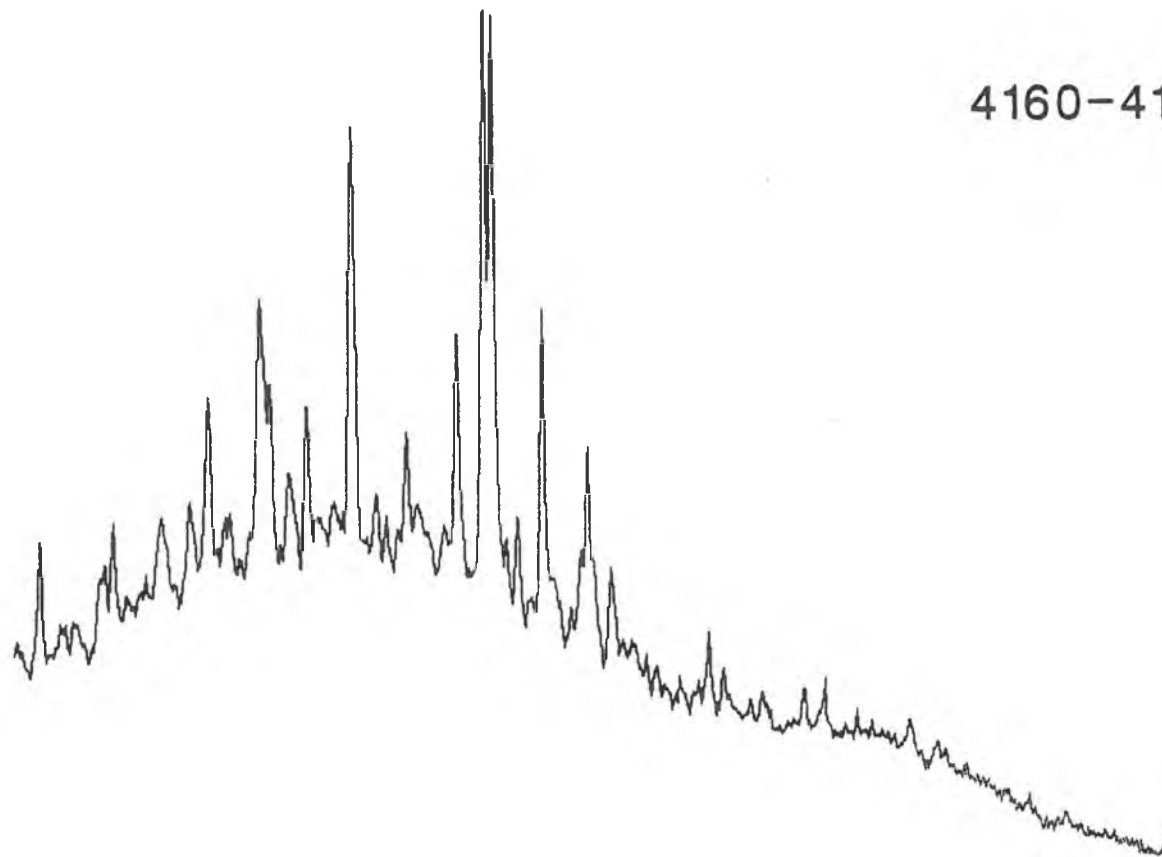


FIGURE 8h

MASS FRAGMENTOGRAMS

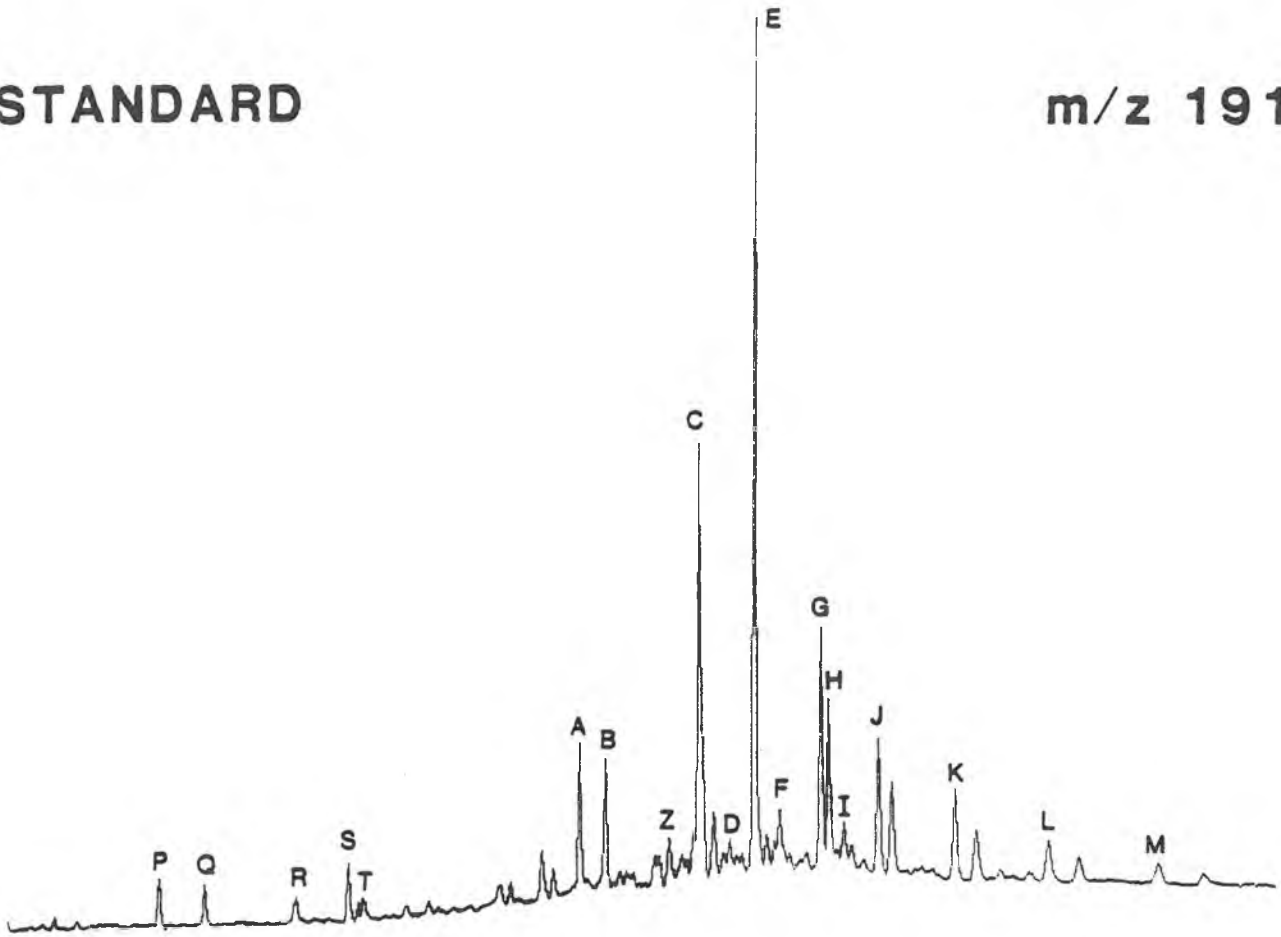
WELL 30/2-2

TRITERPANES  $m/z$  177



STANDARD

m/z 191



TRITERPANE IDENTIFICATION

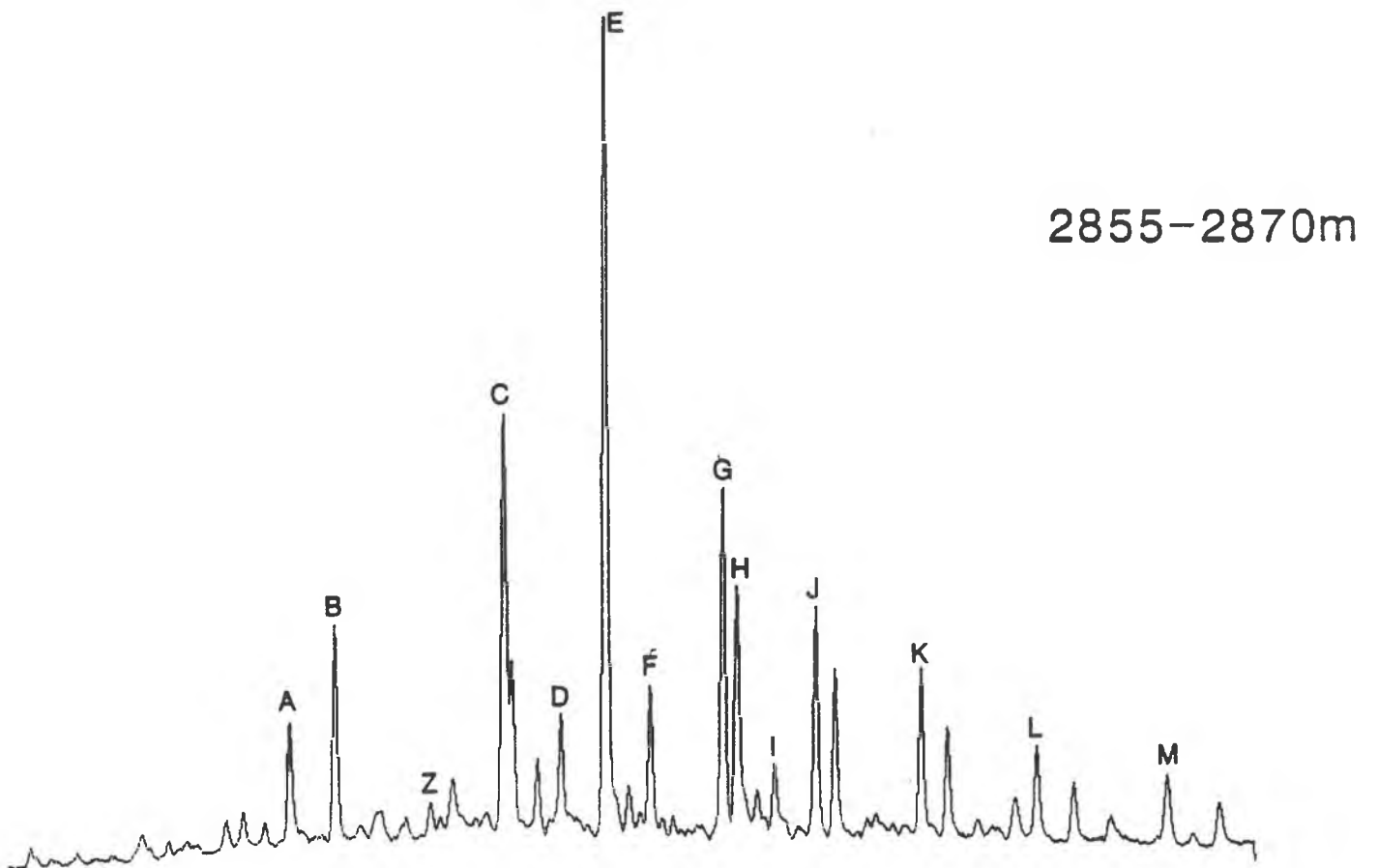
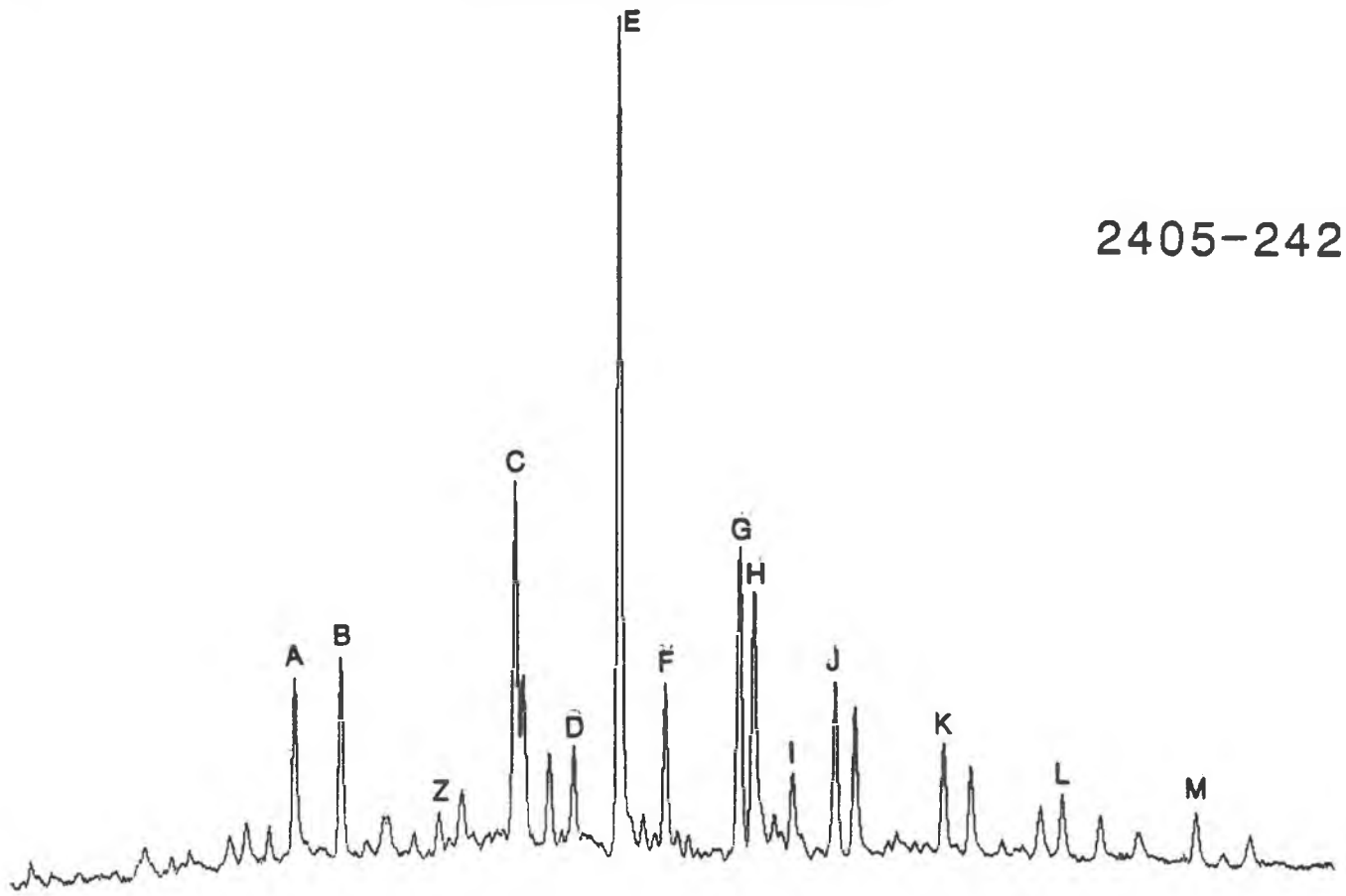
(M/Z 191 FRAGMENTOGRAM)

<u>COMPOUND</u>	<u>ELEMENTAL COMPOSITION</u>
A 18 (H), 21 (H)-trisorneohopane (Ts)	C <sub>27</sub> H <sub>46</sub>
B 17 (H), 21 (H)-trisorhopane (Tm)	C <sub>27</sub> H <sub>46</sub>
C 17 (H), 21 (H)-norhopane	C <sub>29</sub> H <sub>50</sub>
D 17 (H), 21 (H)-norhopane (normoretane)	C <sub>29</sub> H <sub>50</sub>
E 17 (H), 21 (H)-hopane	C <sub>30</sub> H <sub>52</sub>
F 17 (H), 21 (H)-hopane (moretane)	C <sub>30</sub> H <sub>52</sub>
G 17 (H), 21 (H)-homohopane (22S)	C <sub>31</sub> H <sub>54</sub>
H 17 (H), 21 (H)-homohopane (22R)	C <sub>31</sub> H <sub>54</sub>
I 17 (H), 21 (H)-homohopane (homomoretane)	C <sub>31</sub> H <sub>54</sub>
J 17 (H), 21 (H)-bishomohopane (22S and 22R)	C <sub>32</sub> H <sub>56</sub>
K 17 (H), 21 (H)-trishomohopane (22S and 22R)	C <sub>33</sub> H <sub>58</sub>
L 17 (H), 21 (H)-tetrakishomohopane (22S and 22R)	C <sub>34</sub> H <sub>58</sub>
M 17 (H), 21 (H)-pentakishomohopane (22S and 22R)	C <sub>35</sub> H <sub>60</sub>
Z = C <sub>28</sub> bisnorhopane	

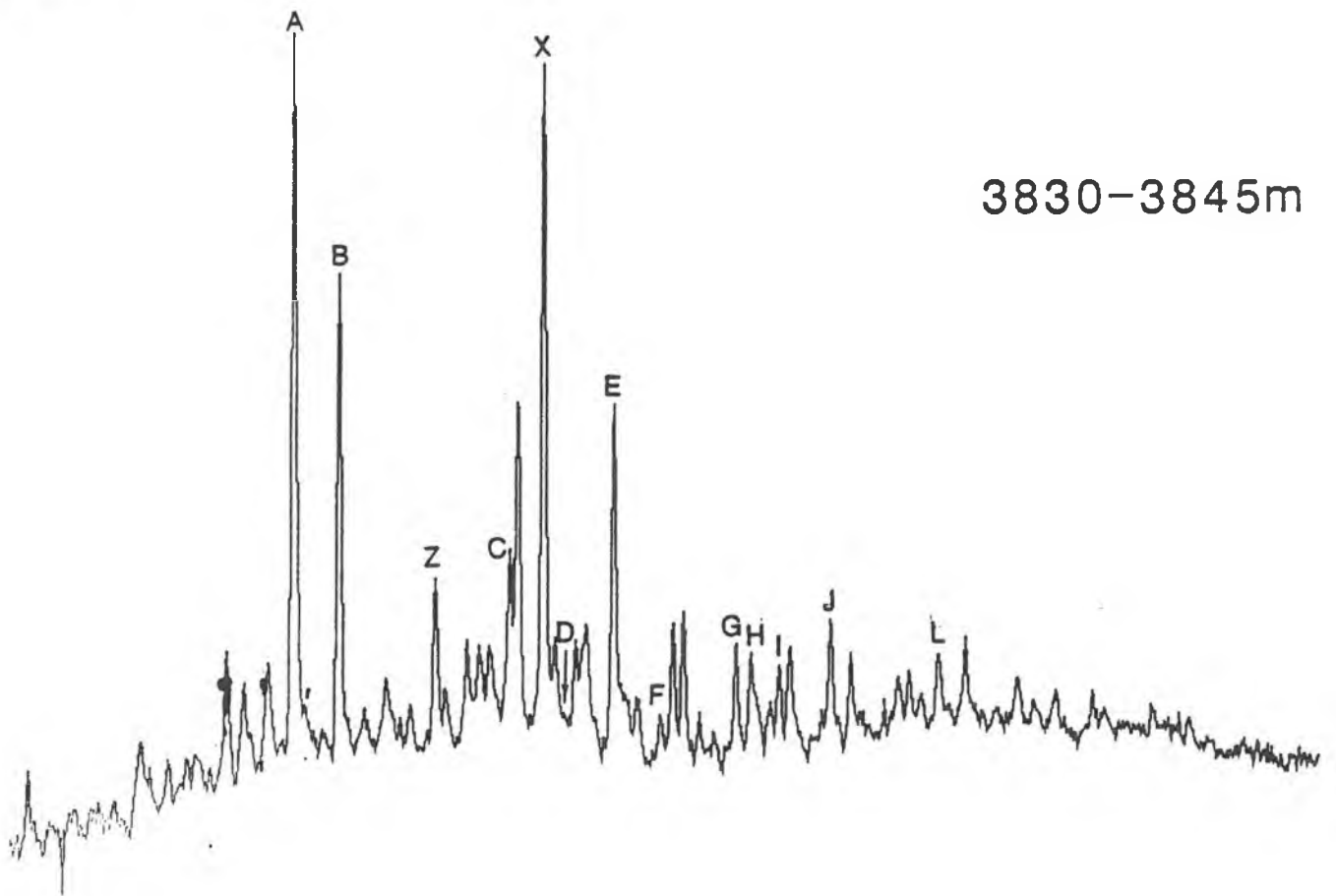
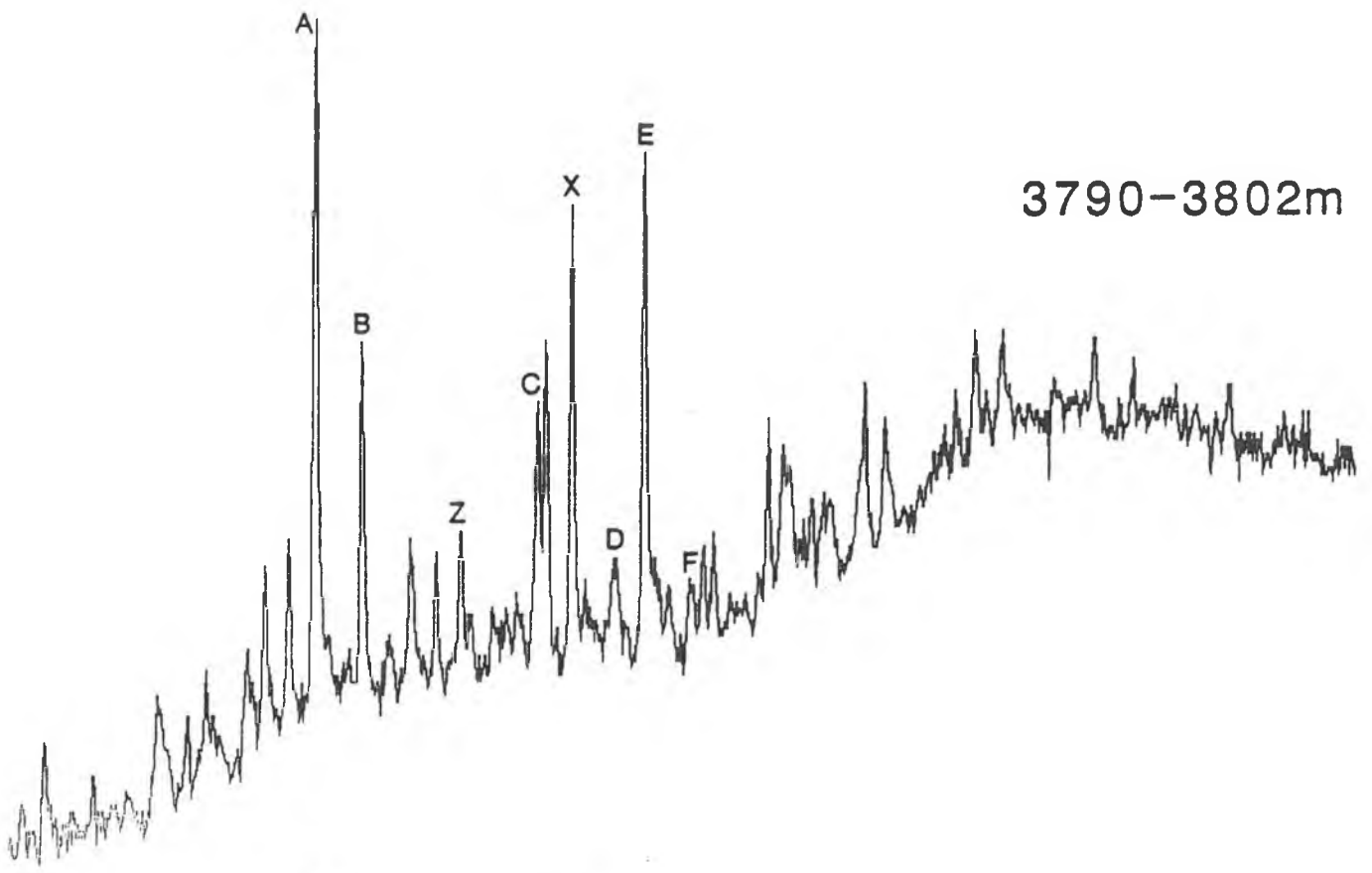
TRICYCLIC AND TETRACYCLIC TERPANES (M/Z 191)

P	C <sub>23</sub> H <sub>42</sub>
Q	C <sub>24</sub> H <sub>44</sub>
R	C <sub>25</sub> H <sub>46</sub>
S	C <sub>24</sub> H <sub>42</sub>
T	C <sub>26</sub> H <sub>48</sub>

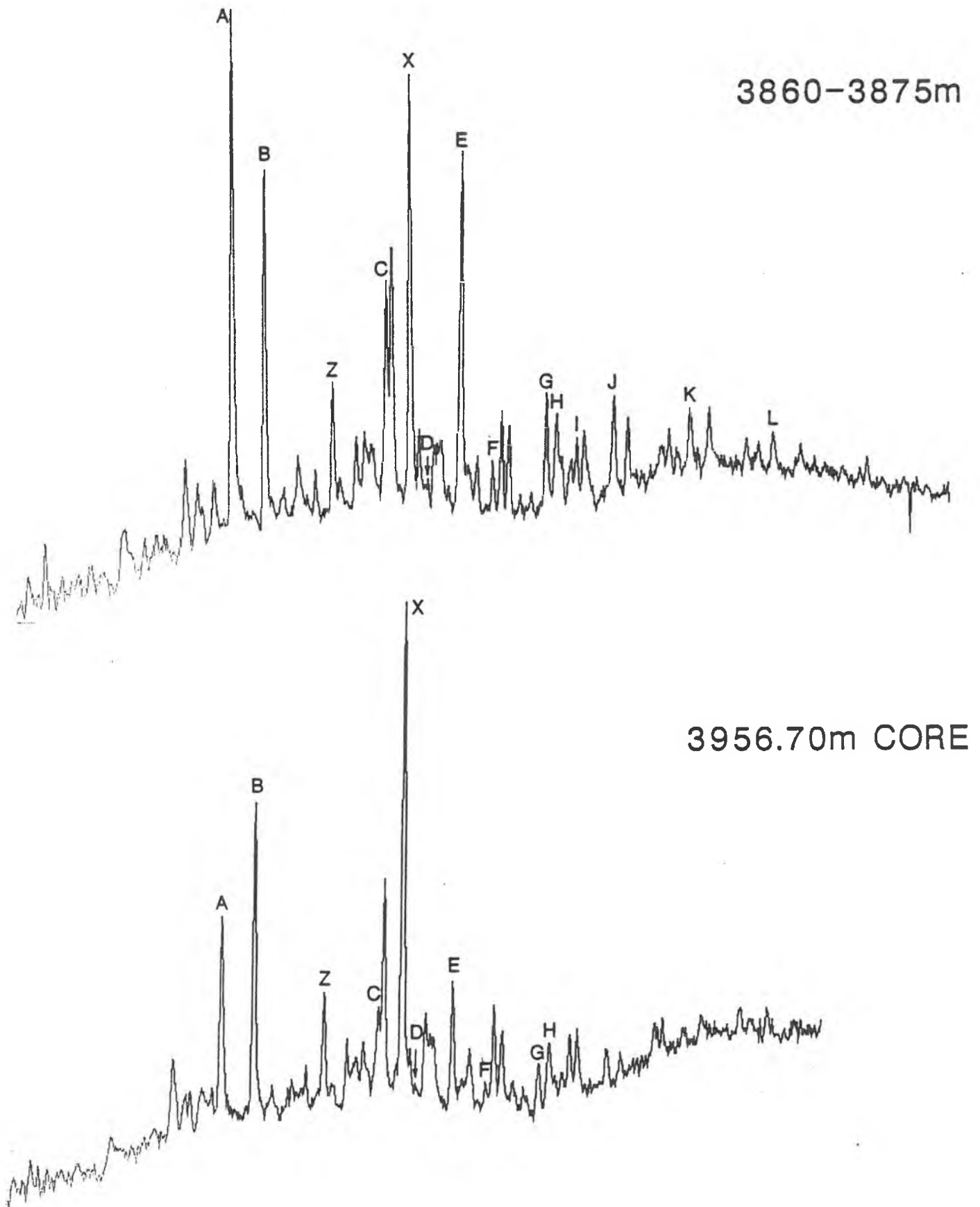
TRITERPANES m/z 191



TRITERPANES m/z 191

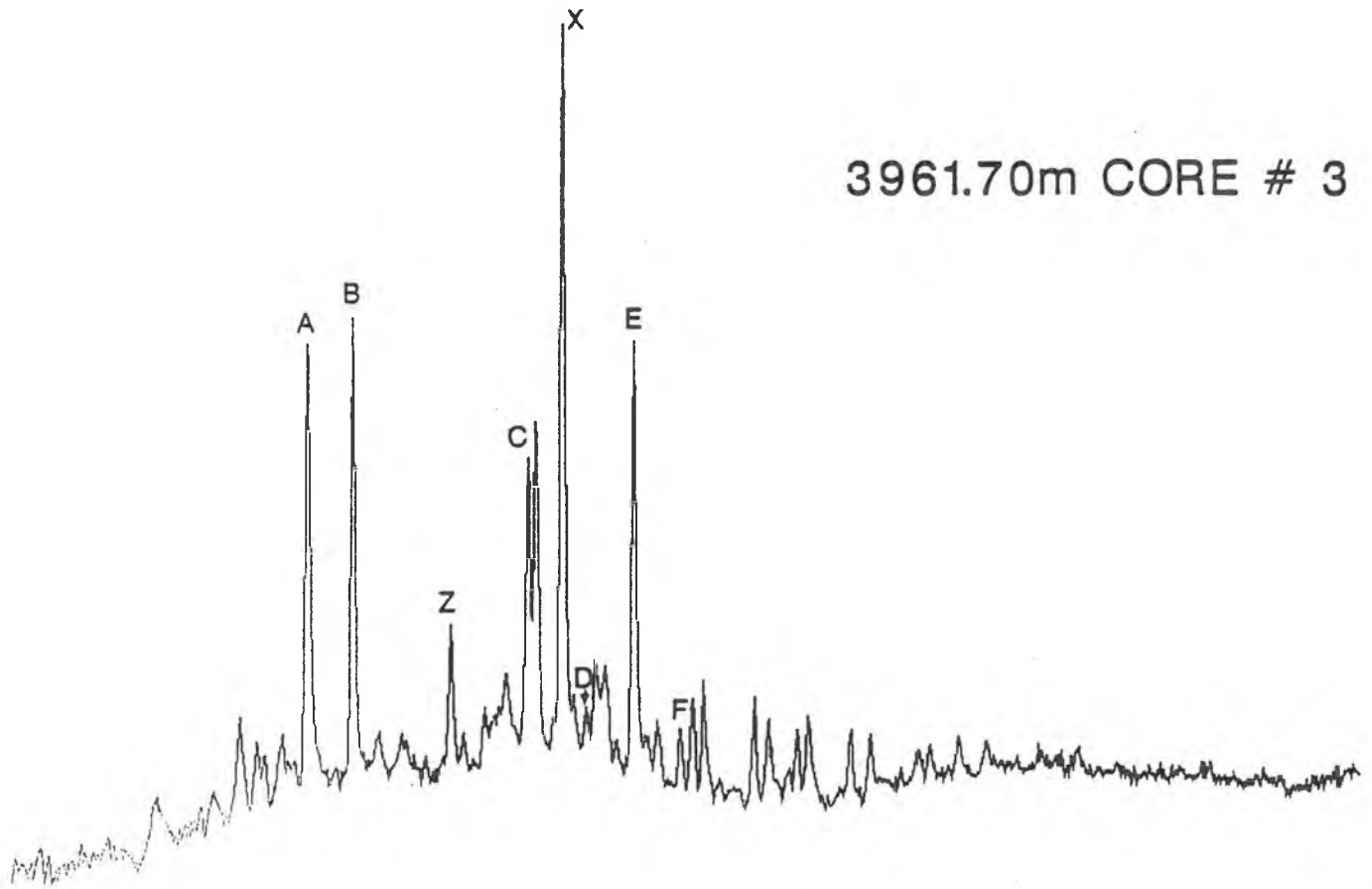


TRITERPANES m/z 191

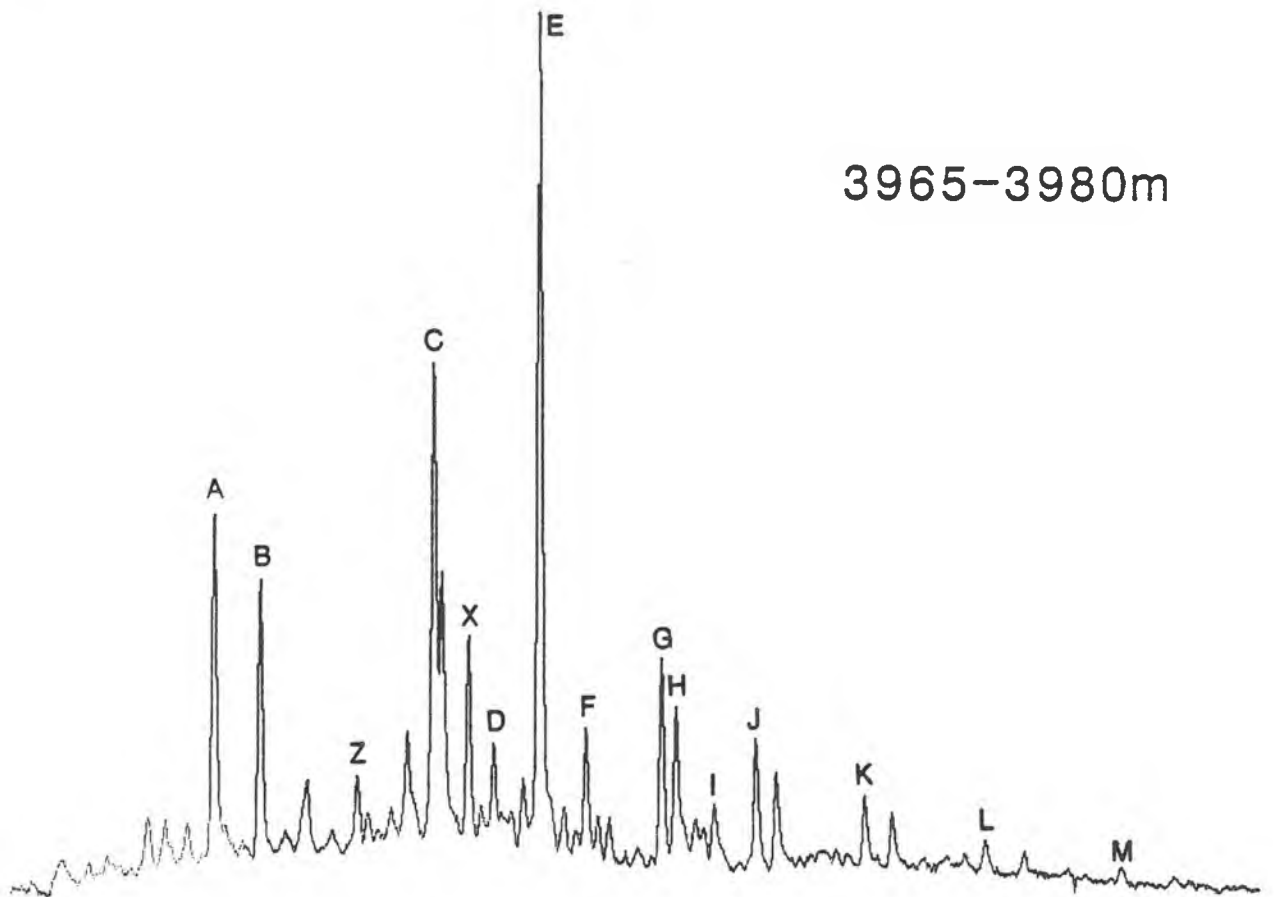


TRITERPANES m/z 191

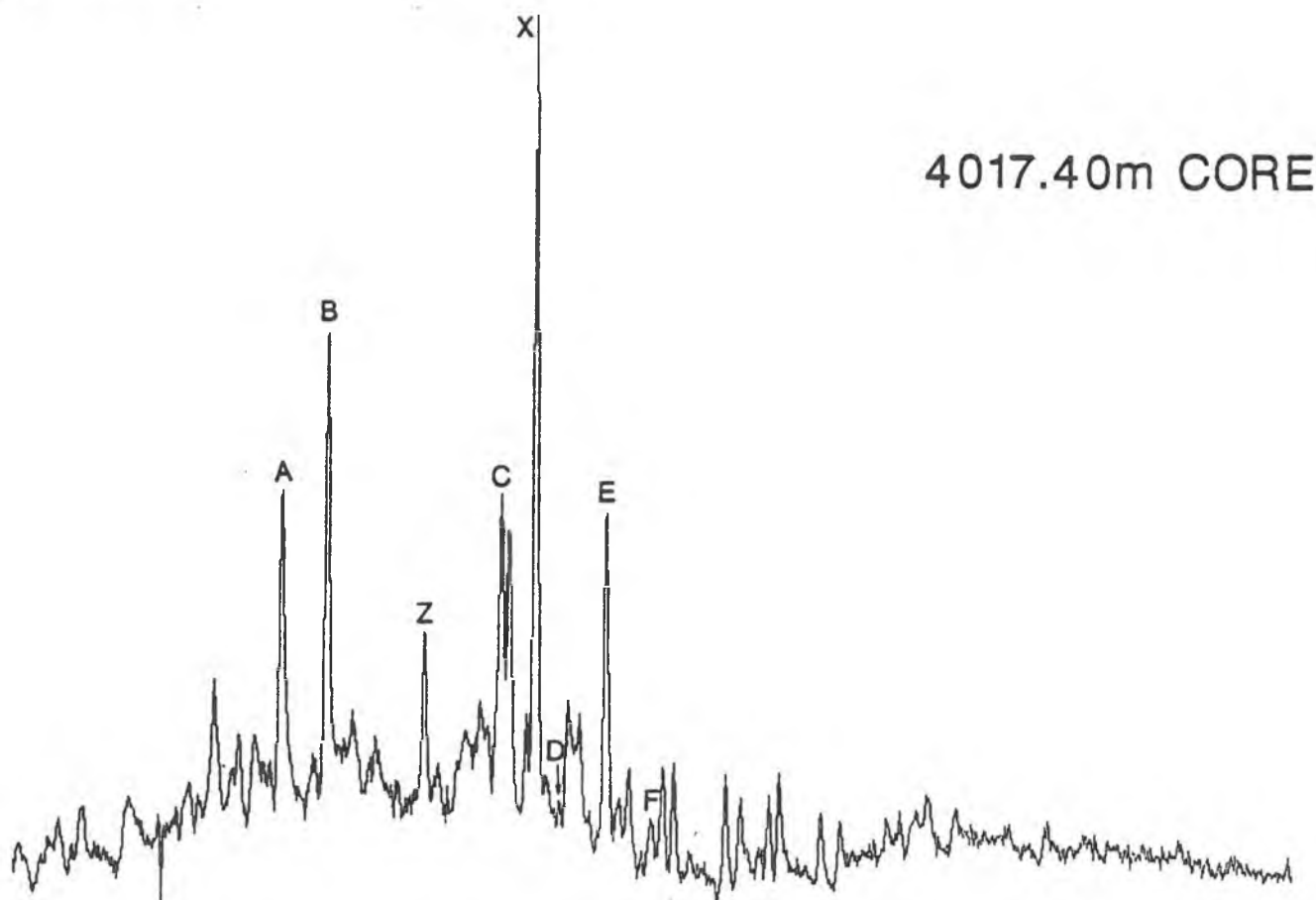
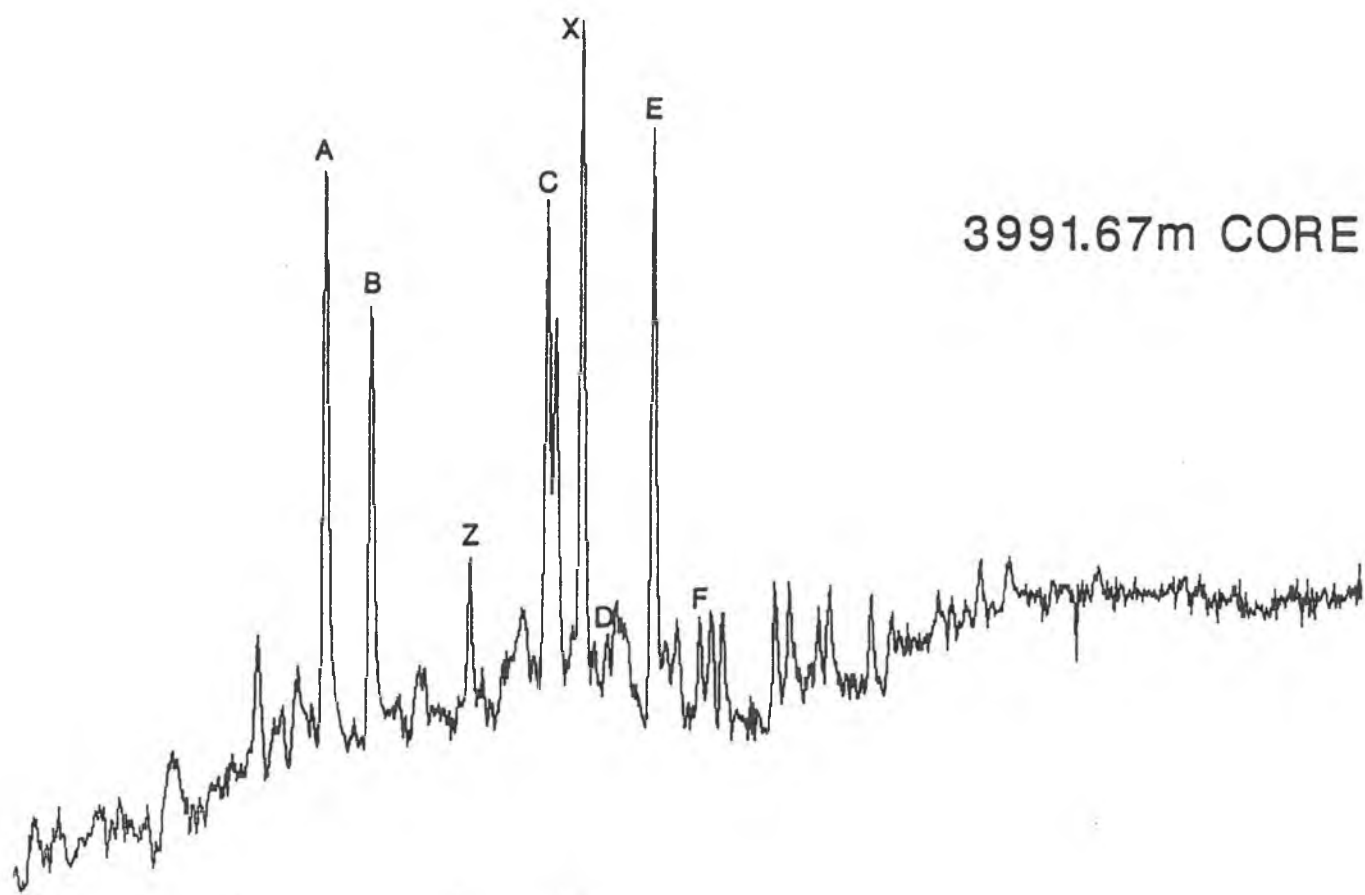
3961.70m CORE # 3



3965-3980m

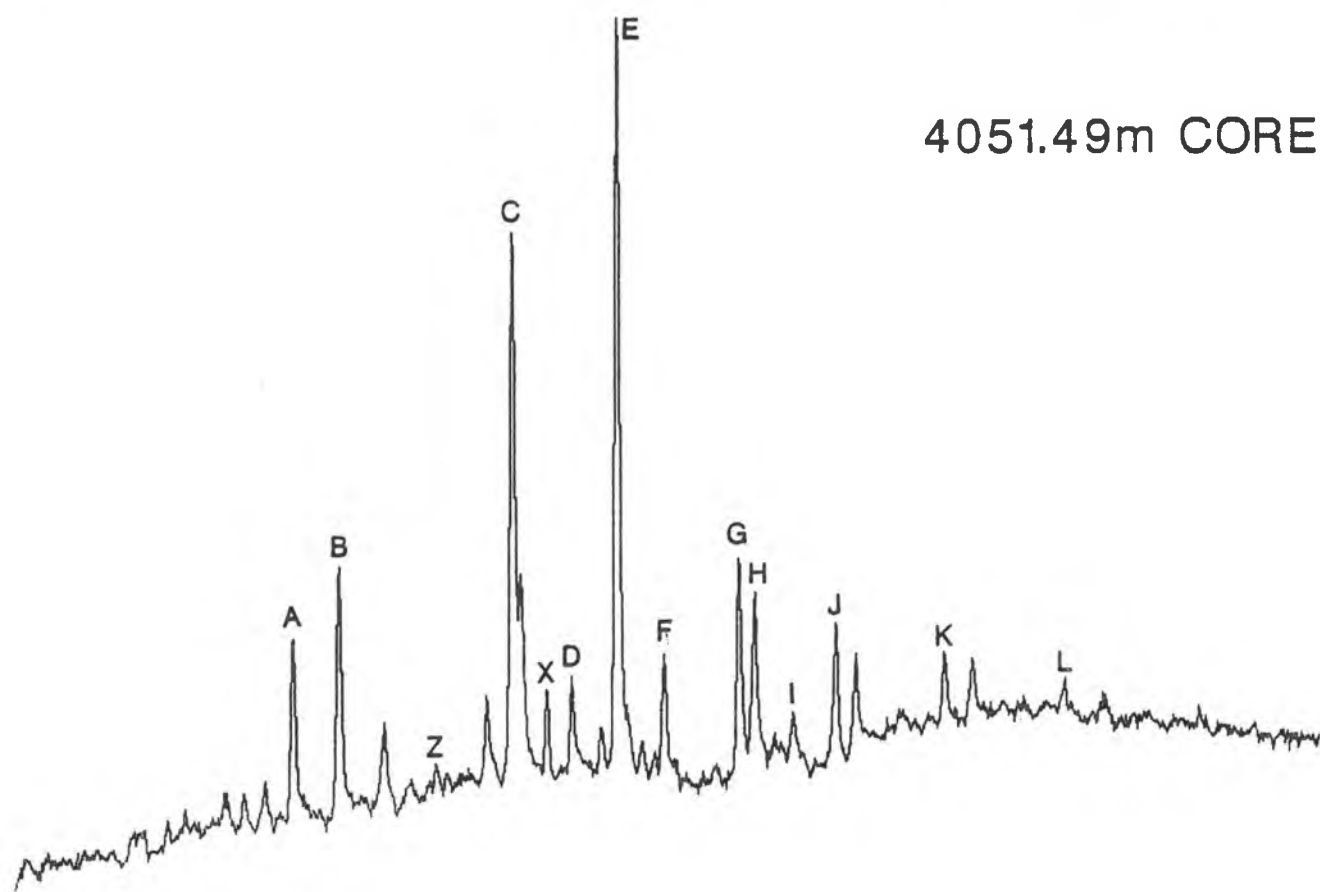
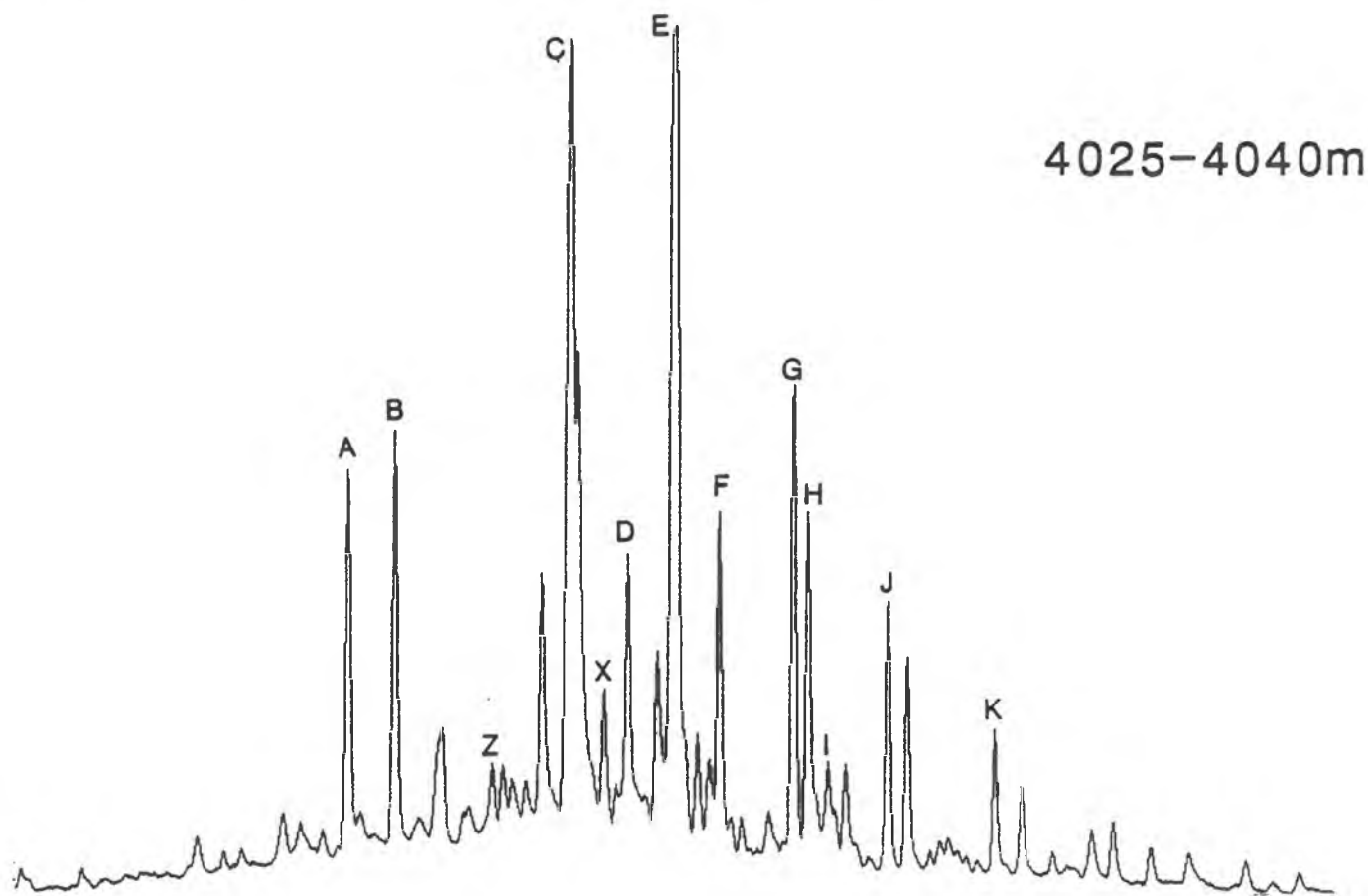


TRITERPANES m/z 191

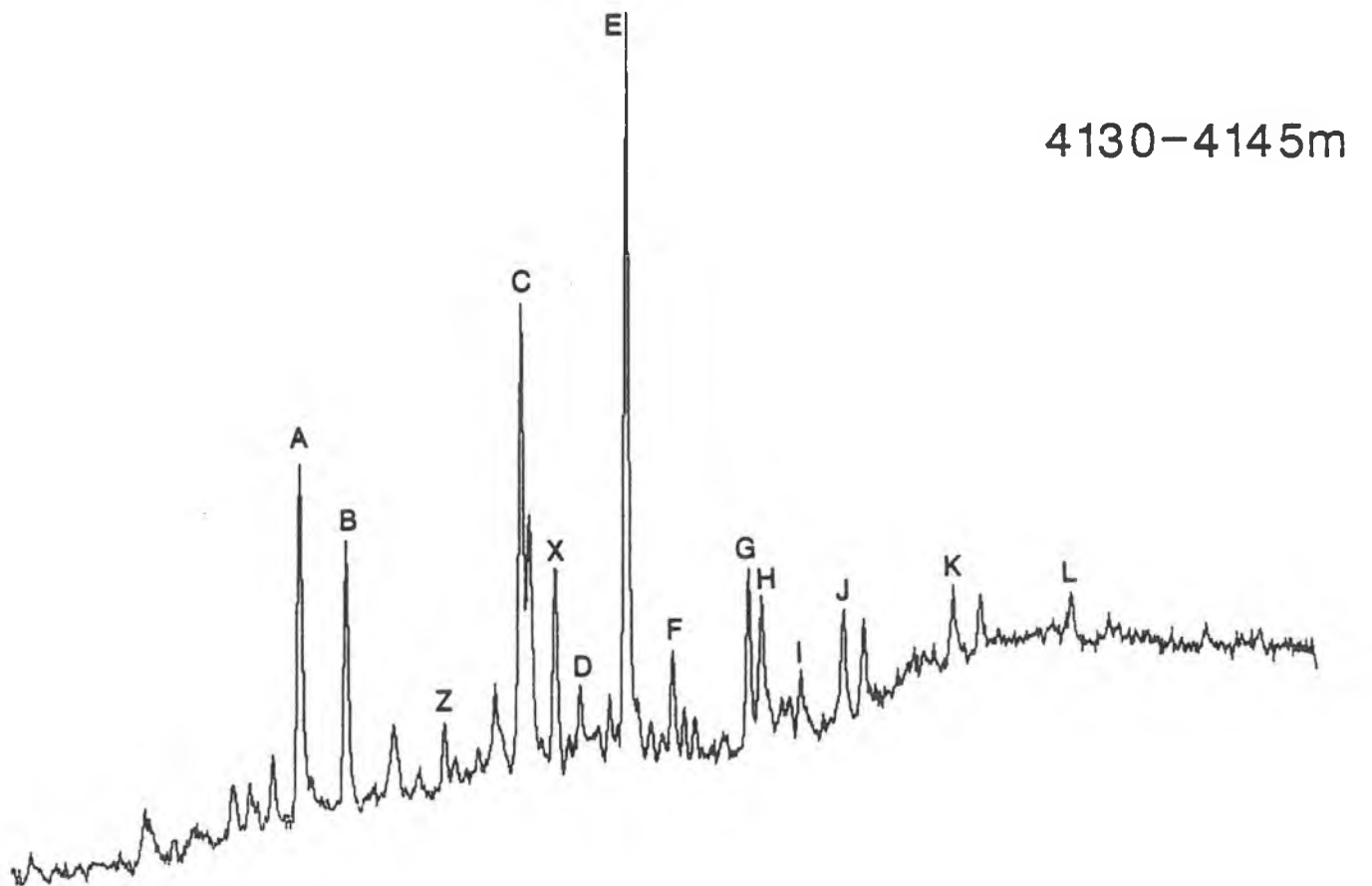
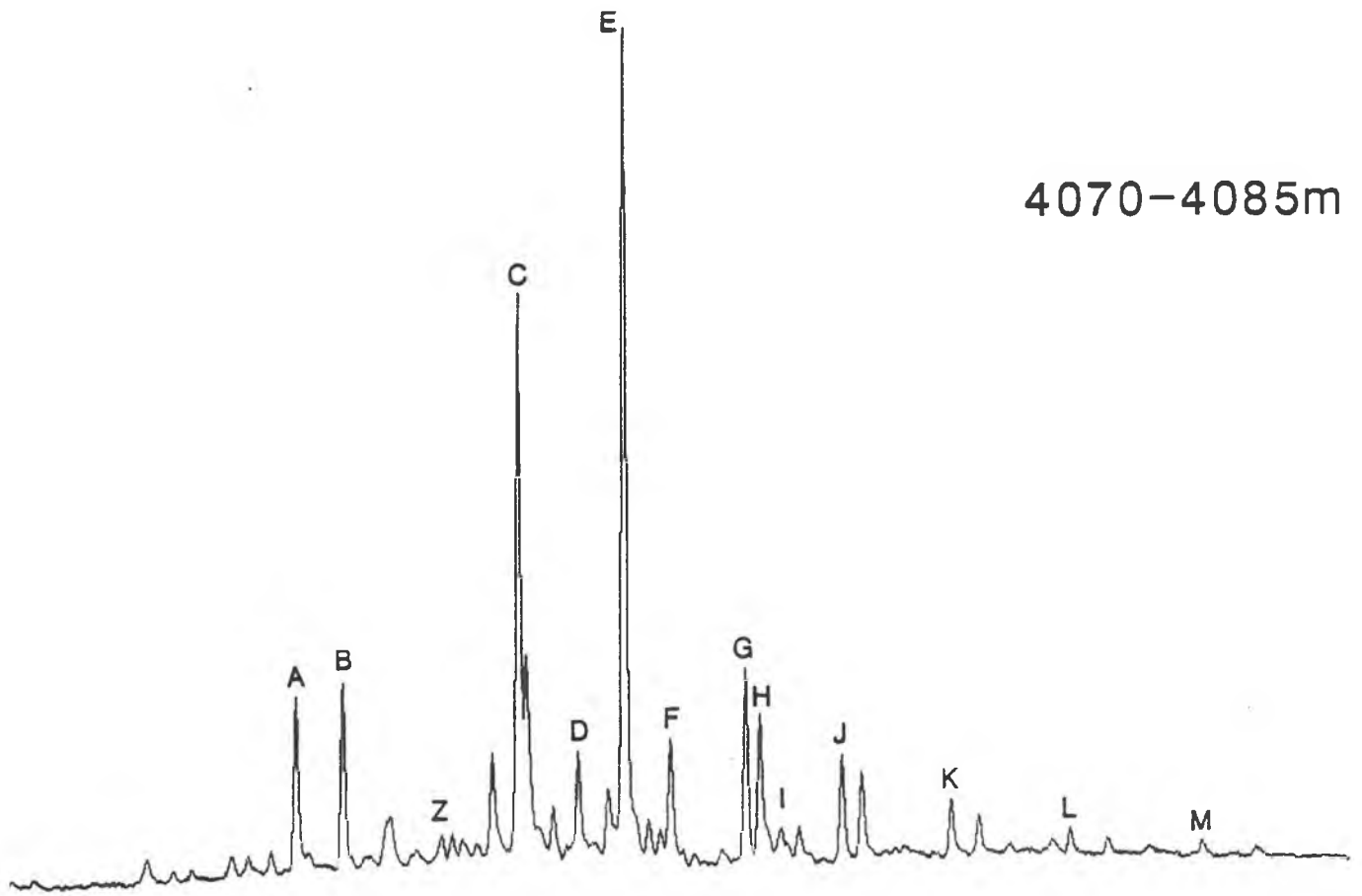




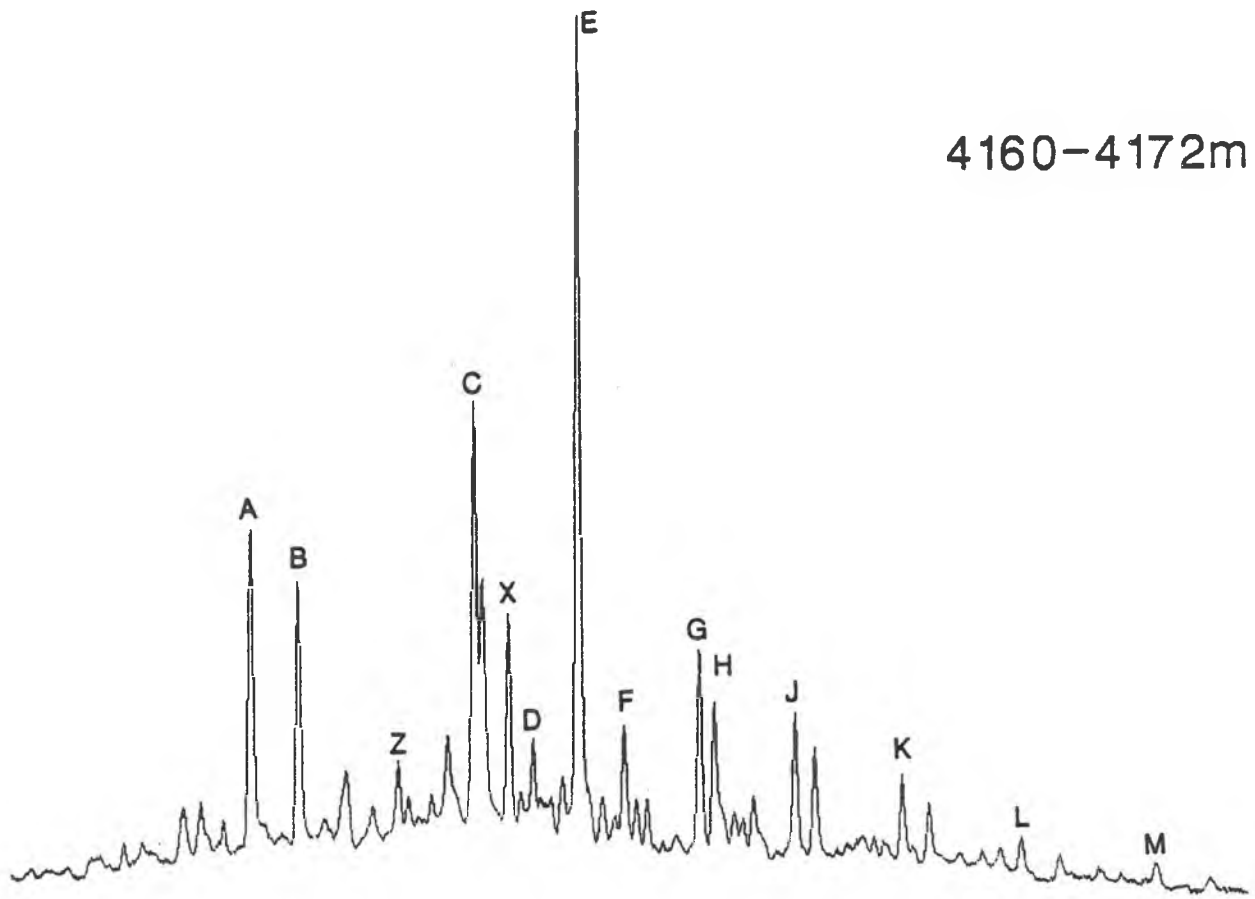
TRITERPANES m/z 191



TRITERPANES m/z 191

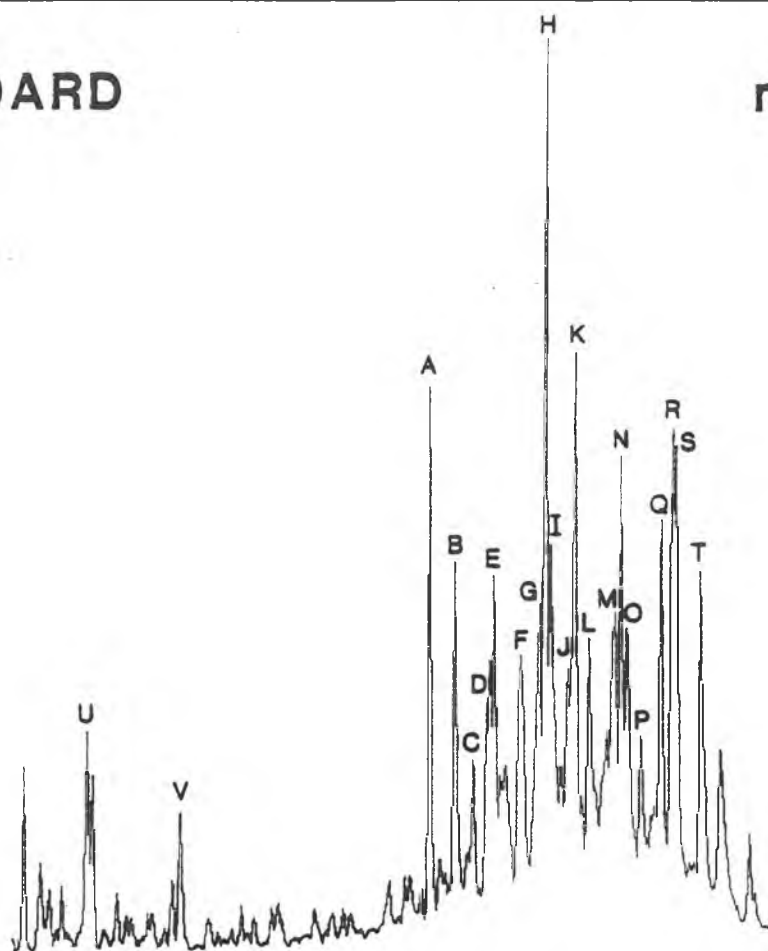


TRITERPANES m/z 191



STANDARD

m/z 217



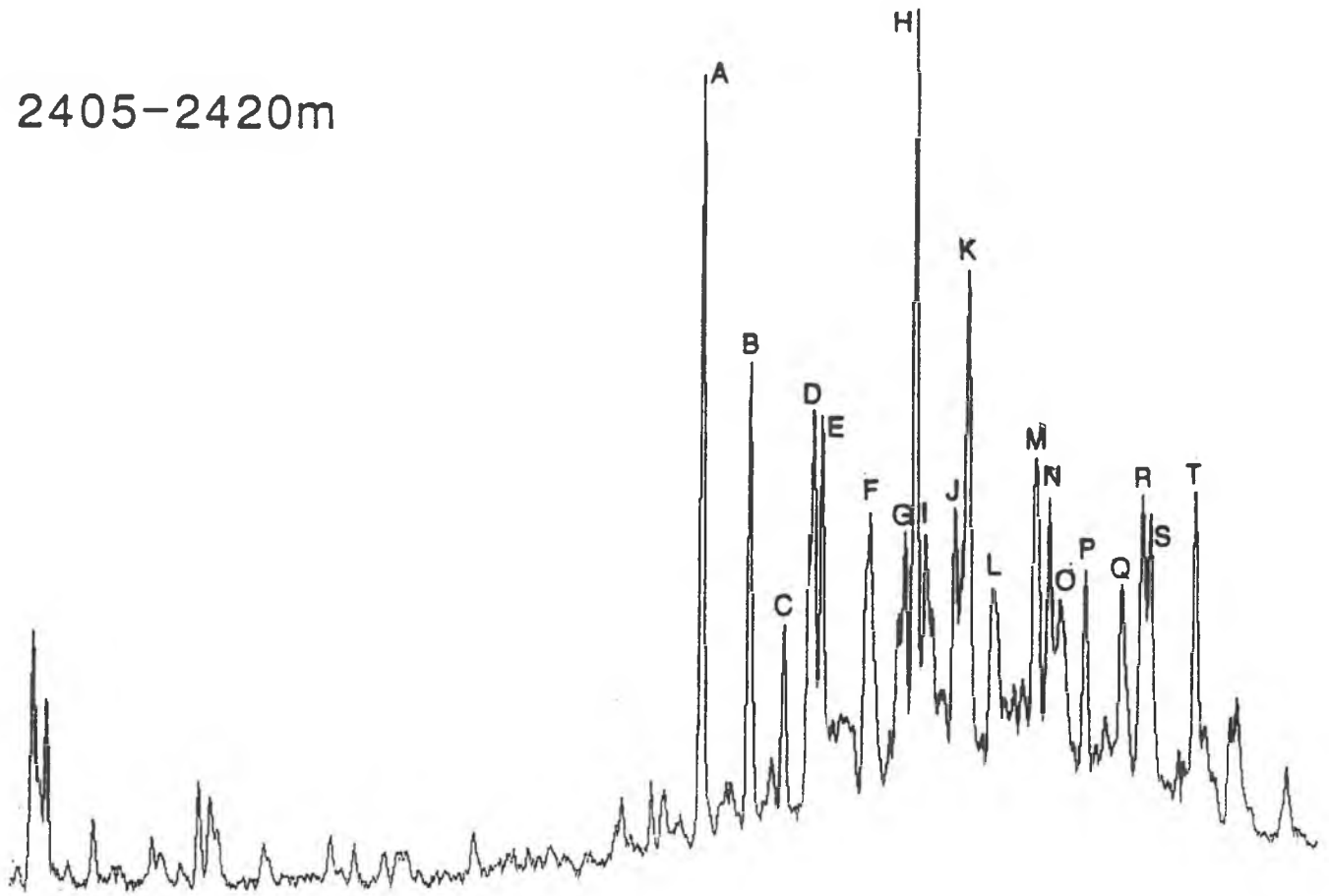
## STERANE IDENTIFICATION

(M/Z 217 FRAGMENTOGRAM)

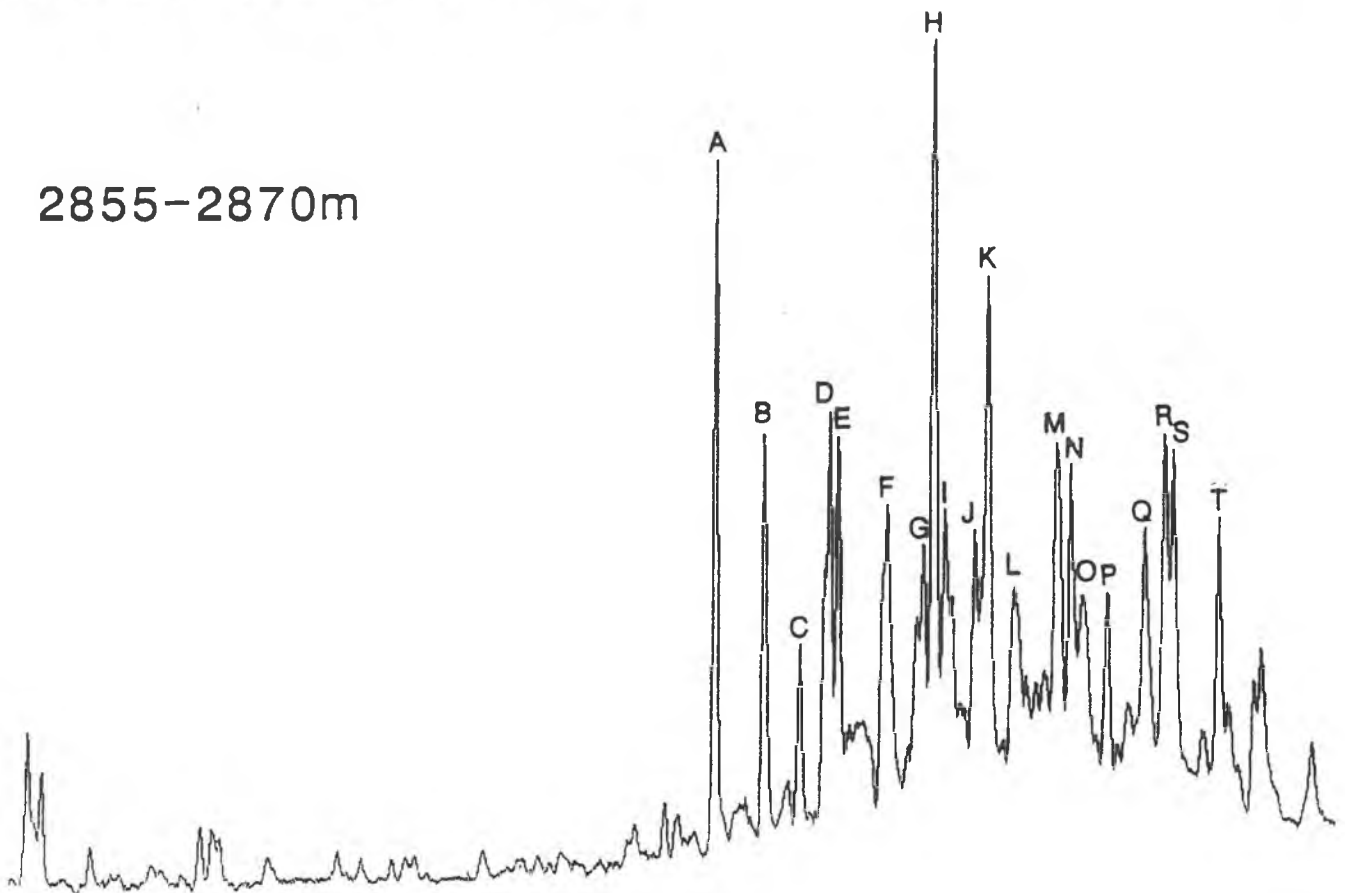
COMPOUND	(M/Z 217 FRAGMENTOGRAM)	ELEMENTAL COMPOSITION
A	13 $\beta$ ,17 $\alpha$ -diacholestane (20S)	C <sub>27</sub> H <sub>48</sub>
B	13 $\beta$ ,17 $\alpha$ -diacholestane (20R)	C <sub>27</sub> H <sub>48</sub>
C	13 $\alpha$ ,17 $\beta$ -diacholestane (20S)	C <sub>27</sub> H <sub>48</sub>
D	13 $\alpha$ ,17 $\beta$ -diacholestane (20R)	C <sub>27</sub> H <sub>48</sub>
E	24-methyl-13 $\beta$ ,17 $\alpha$ -diacholestane (20S)	C <sub>28</sub> H <sub>50</sub>
F	24-methyl-13 $\beta$ ,17 $\alpha$ -diacholestane (20R)	C <sub>28</sub> H <sub>50</sub>
G	24-methyl-13 $\alpha$ ,17 $\beta$ -diacholestane (20S)	C <sub>28</sub> H <sub>50</sub>
+	14 $\alpha$ ,17 $\alpha$ -cholestane (20S)	C <sub>27</sub> H <sub>48</sub>
H	24-ethyl-13 $\beta$ ,17 $\alpha$ -diacholestane (20S)	C <sub>29</sub> H <sub>52</sub>
+	14 $\beta$ ,17 $\beta$ -cholestane (20R)	C <sub>27</sub> H <sub>48</sub>
I	14 $\beta$ ,17 $\beta$ -cholestane (20S)	C <sub>27</sub> H <sub>48</sub>
+	24-methyl-13 $\alpha$ ,17 $\beta$ -diacholestane (20R)	C <sub>28</sub> H <sub>50</sub>
J	14 $\alpha$ ,17 $\alpha$ -cholestane (20R)	C <sub>27</sub> H <sub>48</sub>
K	24-ethyl-13 $\beta$ ,17 $\alpha$ -diacholestane (20R)	C <sub>29</sub> H <sub>52</sub>
L	24-ethyl-14 $\alpha$ ,17 $\beta$ -diacholestane (20S)	C <sub>29</sub> H <sub>52</sub>
M	24-methyl-13 $\alpha$ ,17 $\alpha$ -cholestane (20S)	C <sub>28</sub> H <sub>50</sub>
N	24-ethyl-13 $\alpha$ ,17 $\beta$ -diacholestane (20R)	C <sub>29</sub> H <sub>52</sub>
+	24-methyl-14 $\beta$ ,17 $\beta$ -cholestane (20R)	C <sub>28</sub> H <sub>50</sub>
O	24-methyl-14 $\beta$ ,17 $\beta$ -cholestane (20S)	C <sub>28</sub> H <sub>50</sub>
P	24-methyl-14 $\alpha$ ,17 $\alpha$ -cholestane (20R)	C <sub>28</sub> H <sub>50</sub>
Q	24-ethyl-14 $\alpha$ ,17 $\alpha$ -cholestane (20S)	C <sub>29</sub> H <sub>52</sub>
R	24-ethyl-14 $\beta$ ,17 $\beta$ -cholestane (20R)	C <sub>29</sub> H <sub>52</sub>
+	UNKNOWN STERANE	
S	24-ethyl-14 $\beta$ ,17 $\beta$ -cholestane (20S)	C <sub>29</sub> H <sub>52</sub>
T	24-ethyl-14 $\alpha$ ,17 $\alpha$ -cholestane (20R)	C <sub>29</sub> H <sub>52</sub>
U	5 $\alpha$ (H)-pregnane	C <sub>21</sub> H <sub>36</sub>
V	5 $\alpha$ (H)-bisanorcholane	C <sub>22</sub> H <sub>38</sub>

STERANES  $m/z$  217

2405-2420m

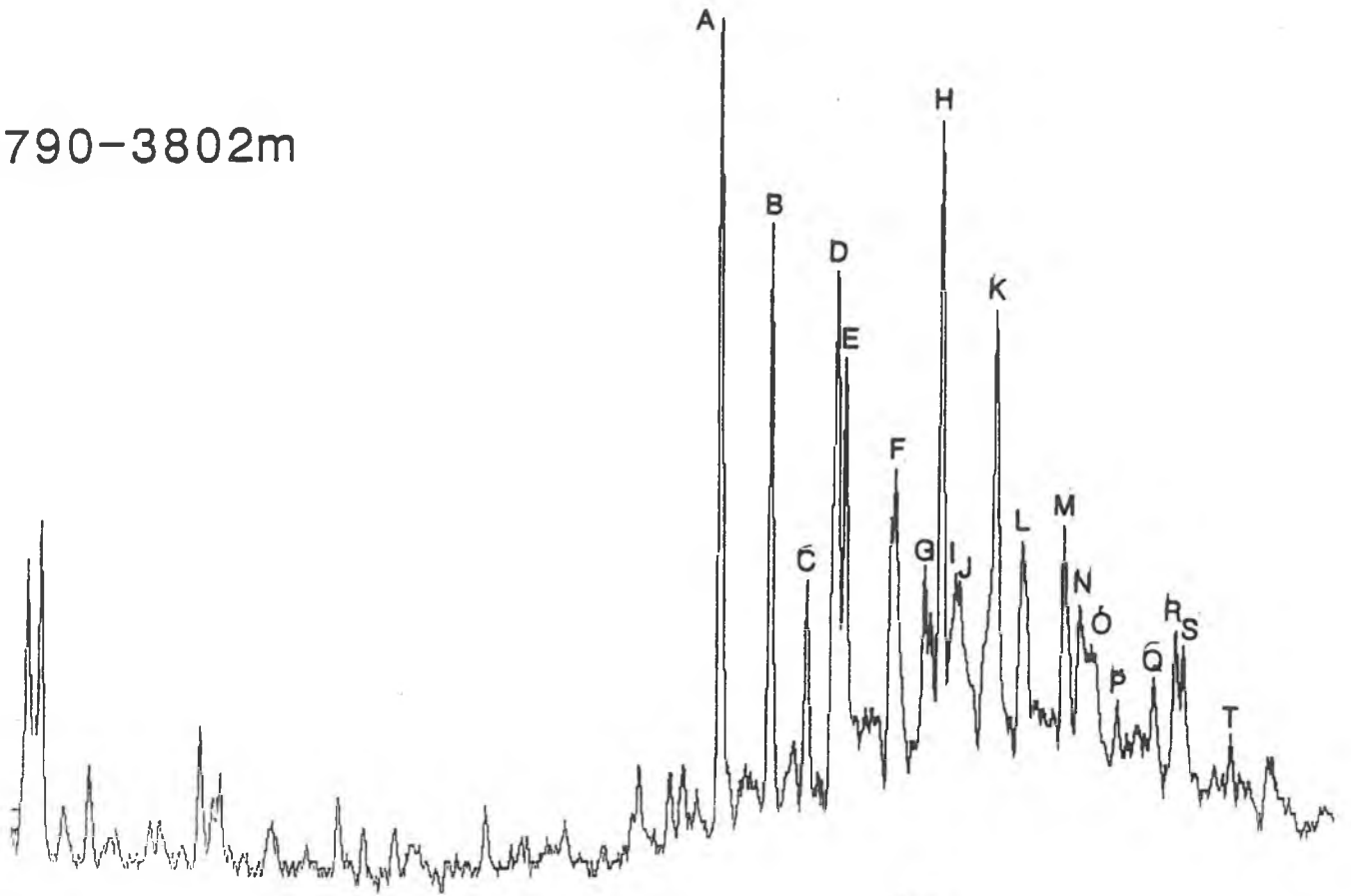


2855-2870m

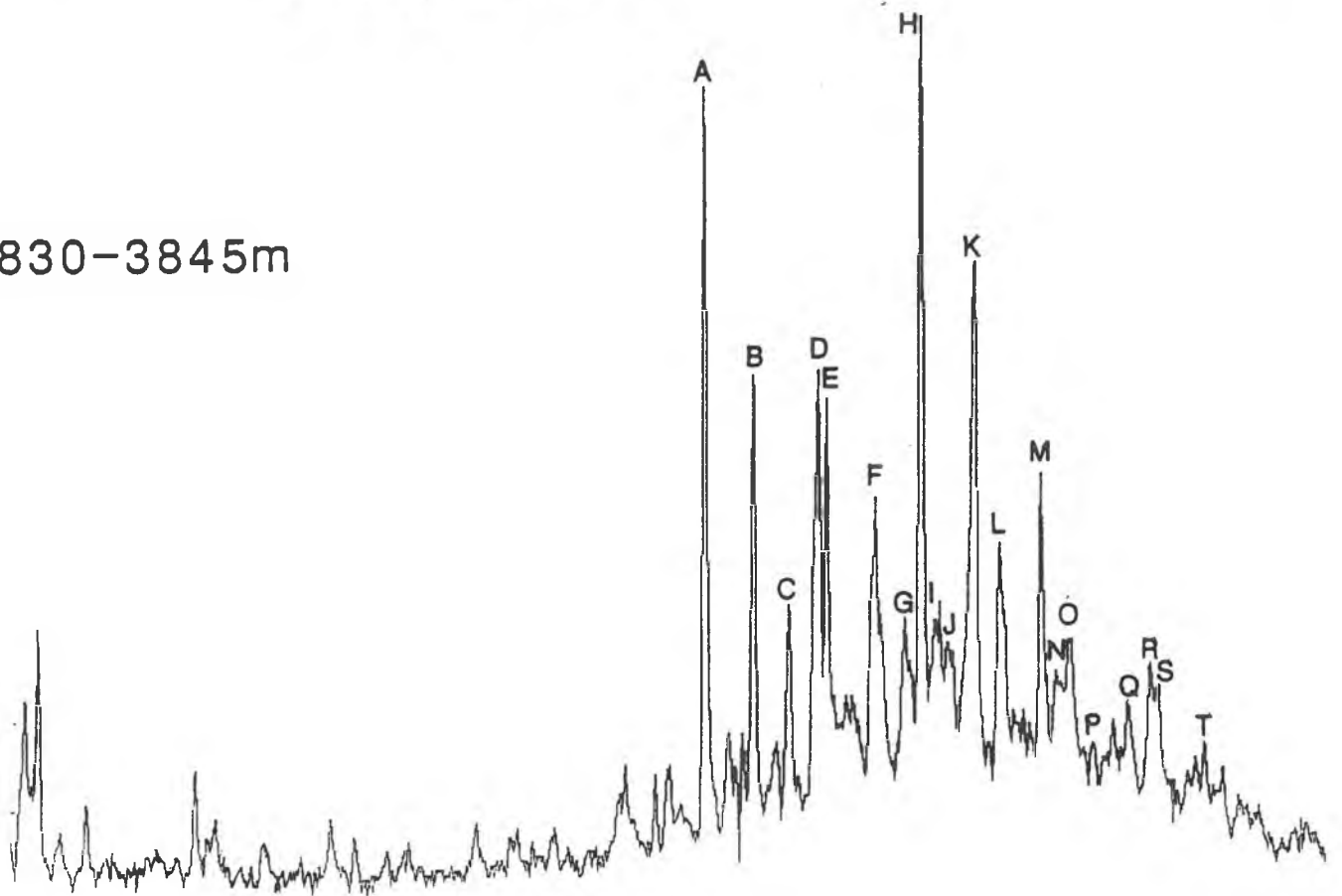


STERANES  $m/z$  217

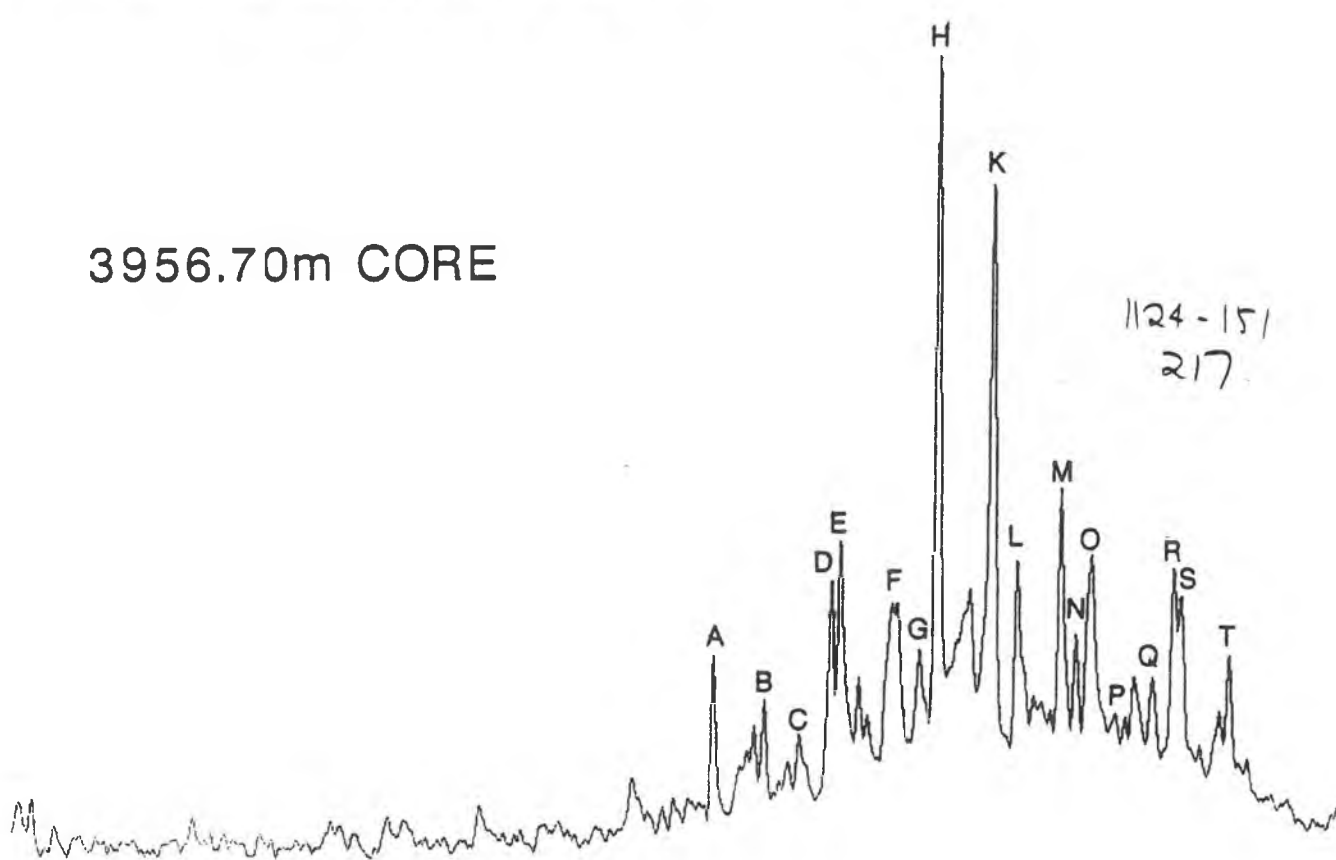
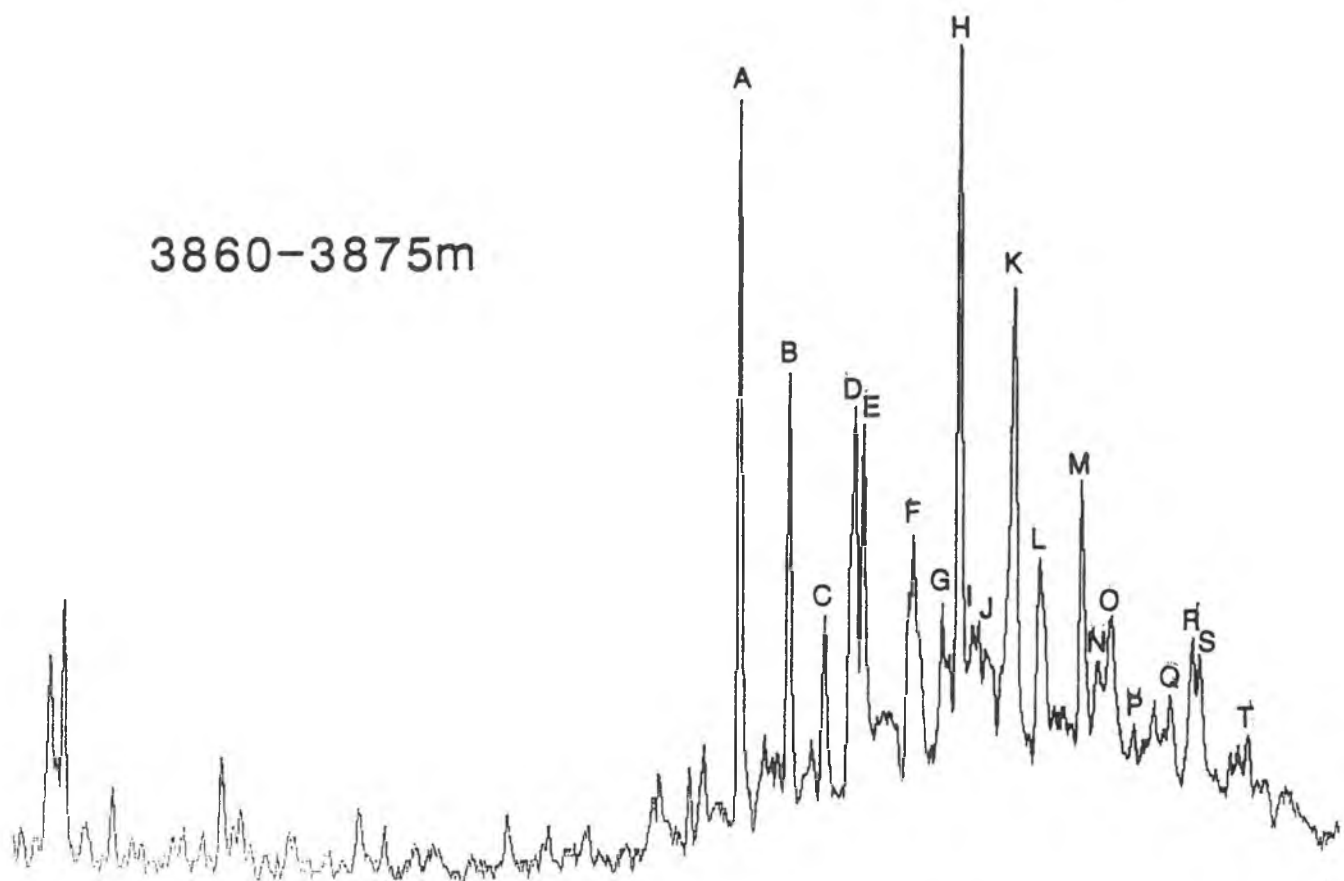
3790-3802m



3830-3845m

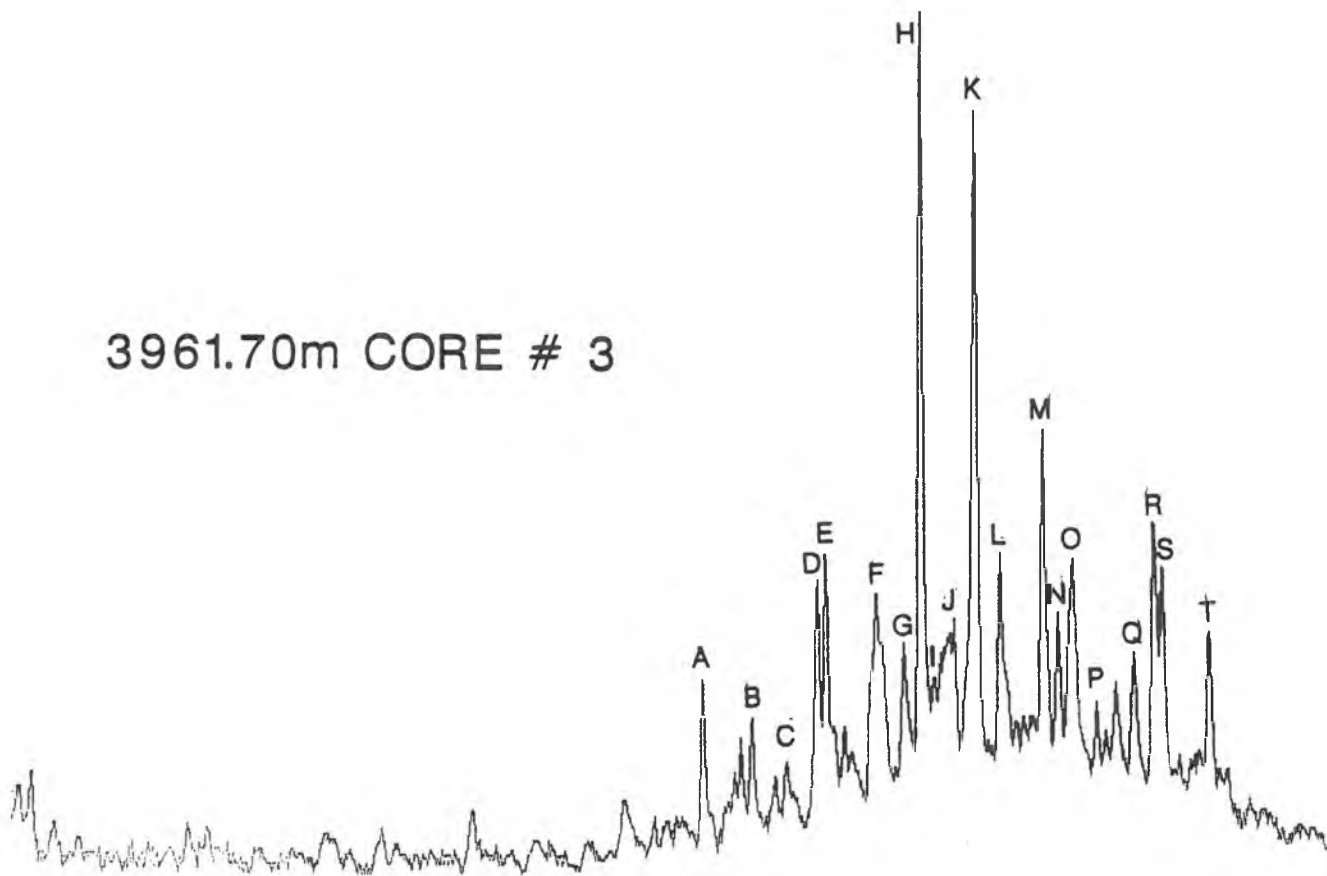


STERANES  $m/z$  217

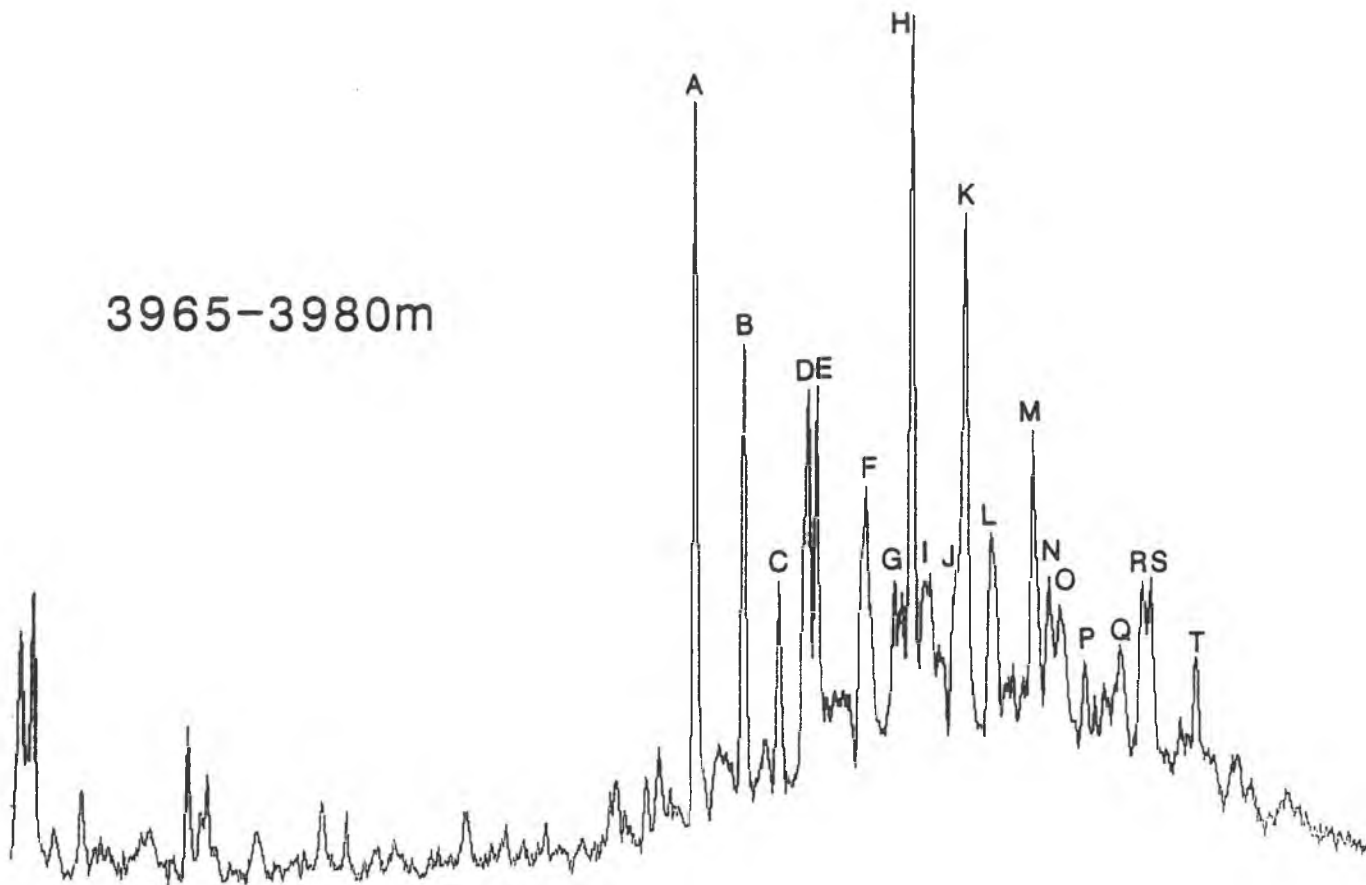


STERANES  $m/z$  217

3961.70m CORE # 3



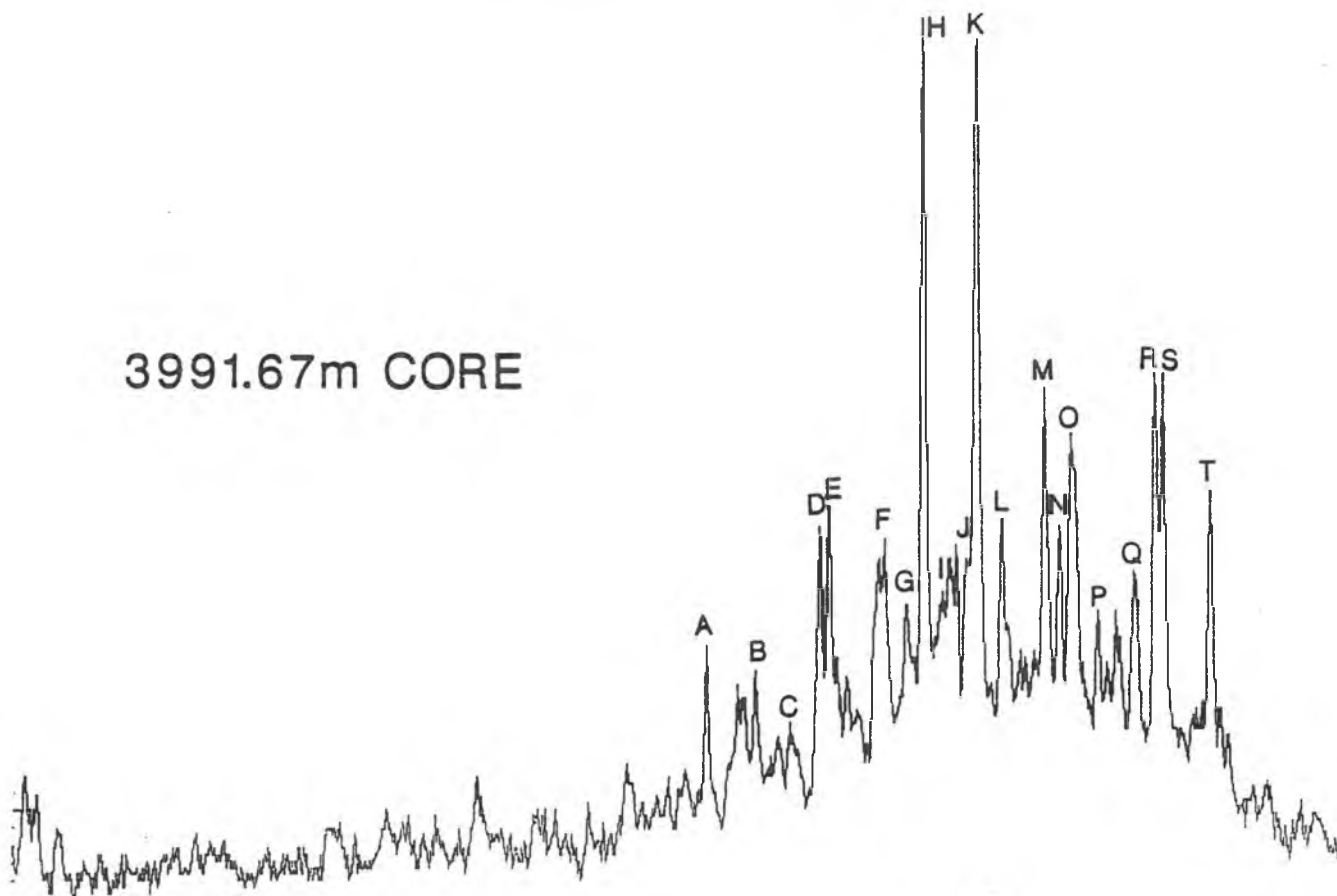
3965-3980m



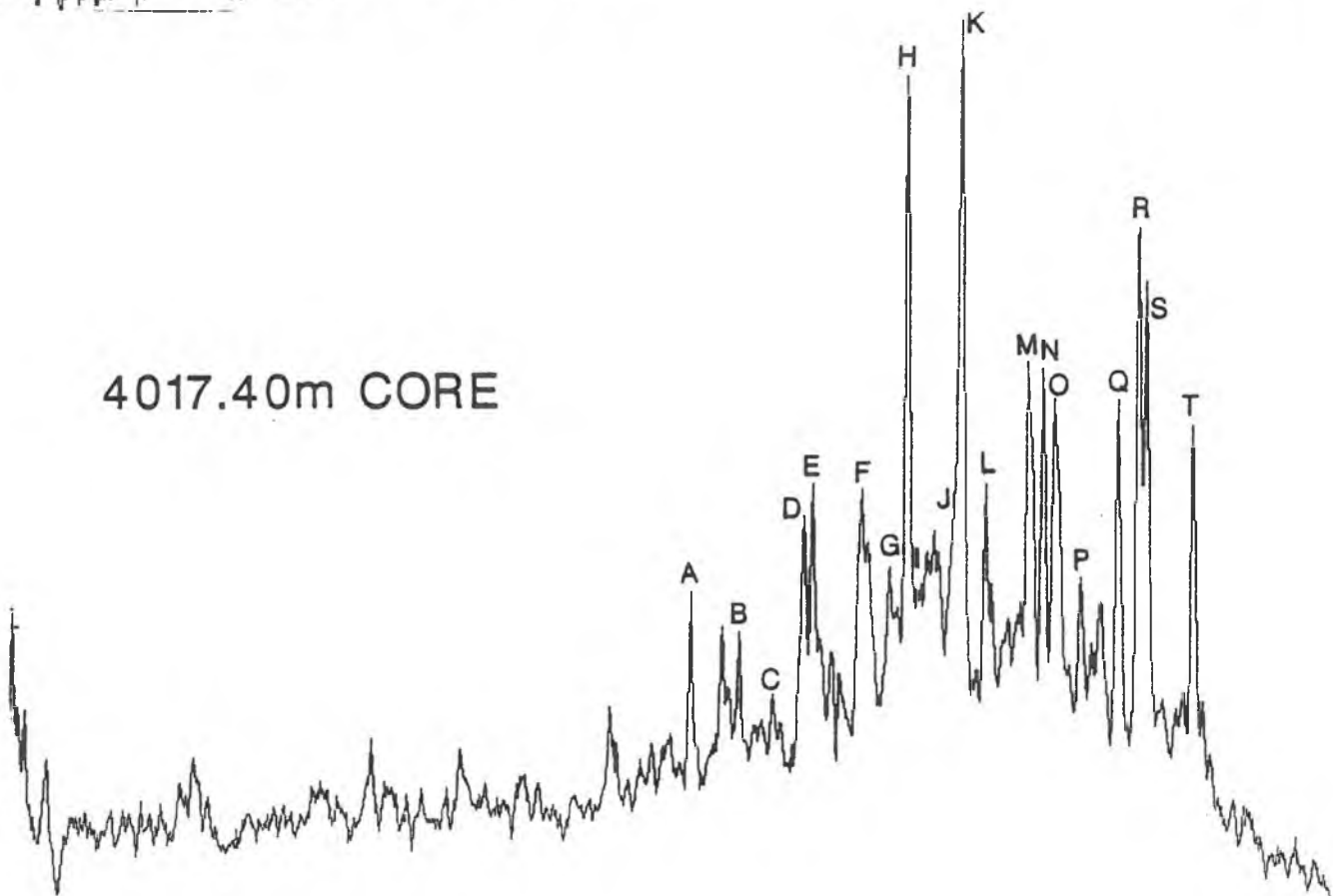


STERANES  $m/z$  217

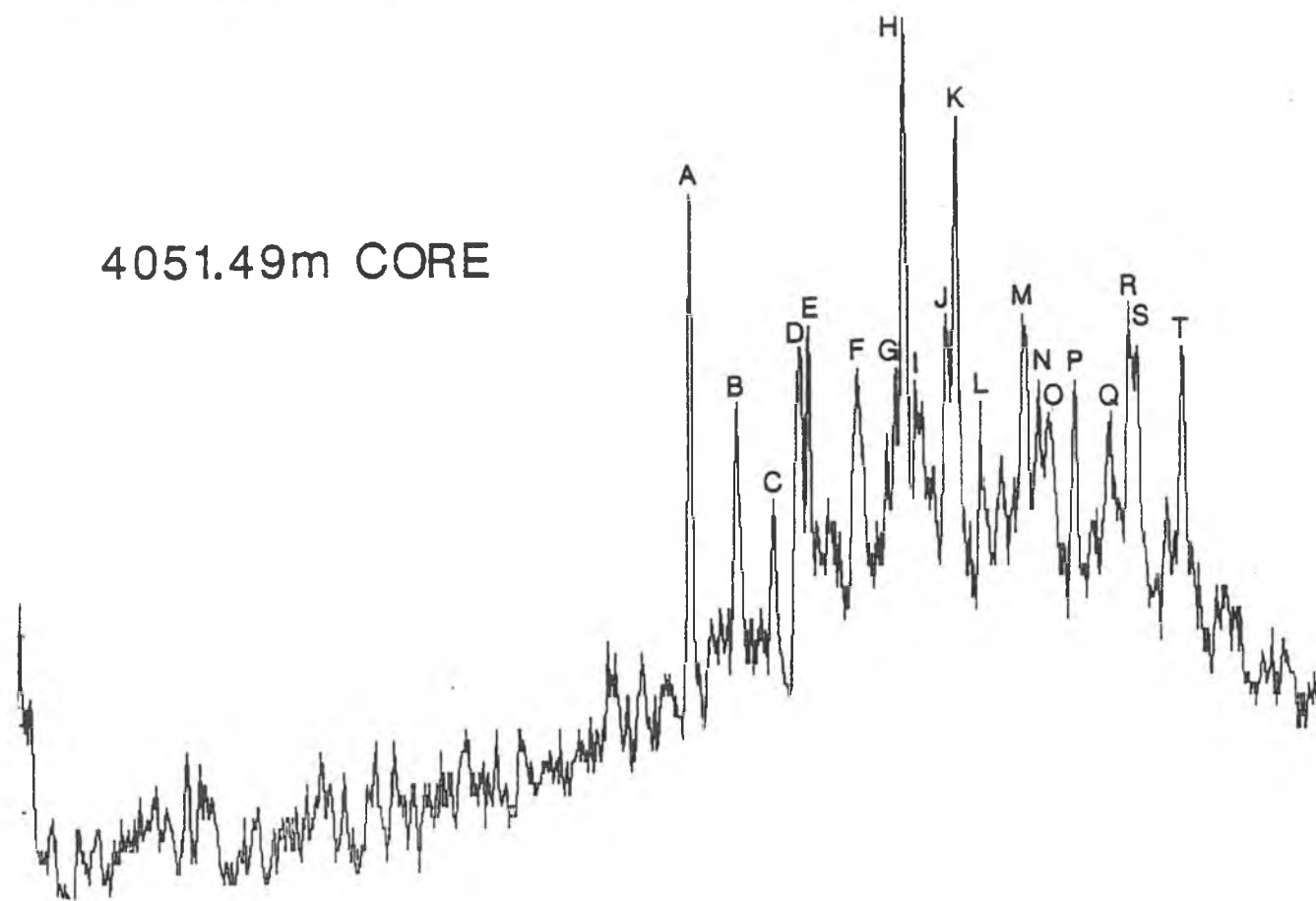
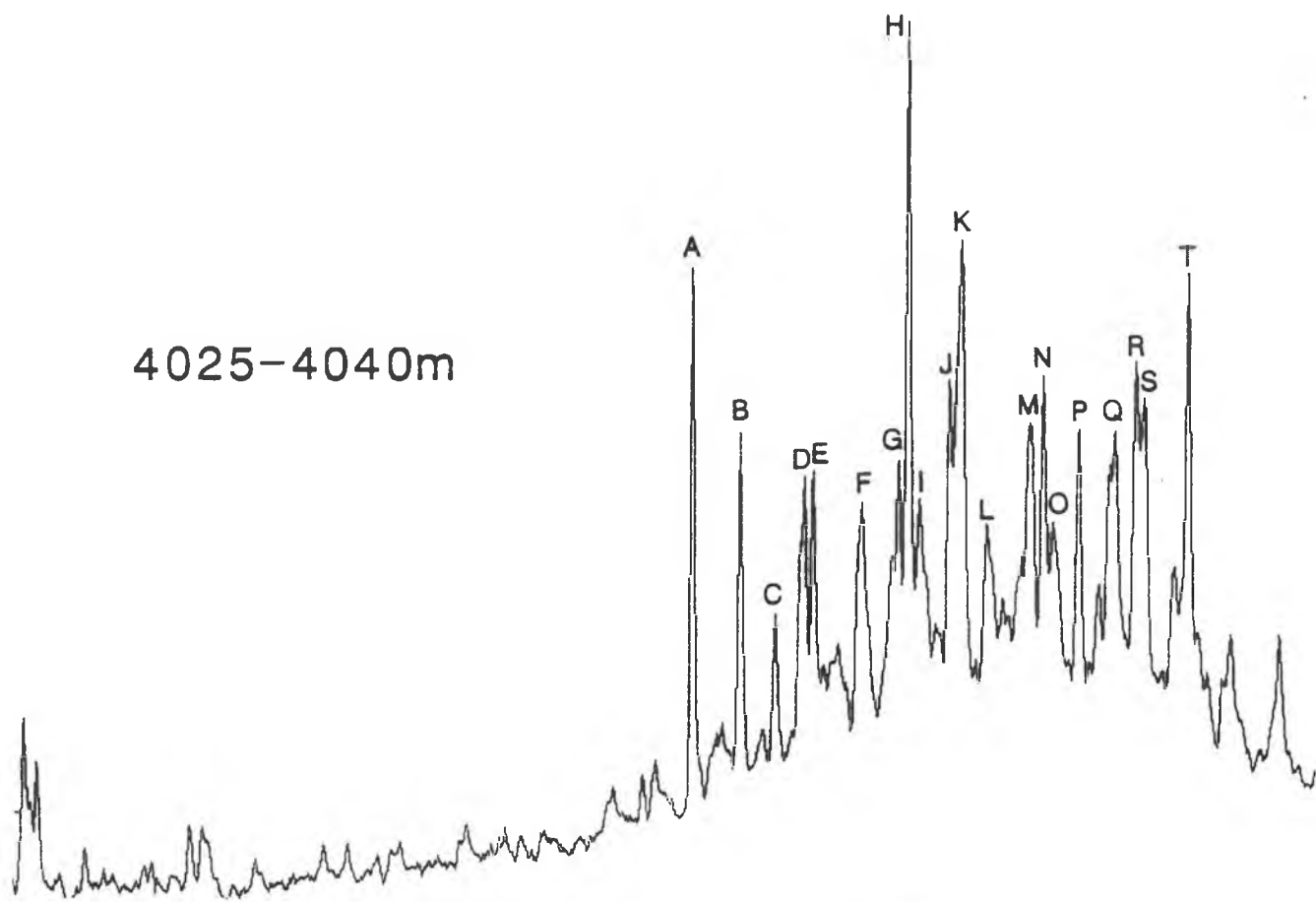
3991.67m CORE



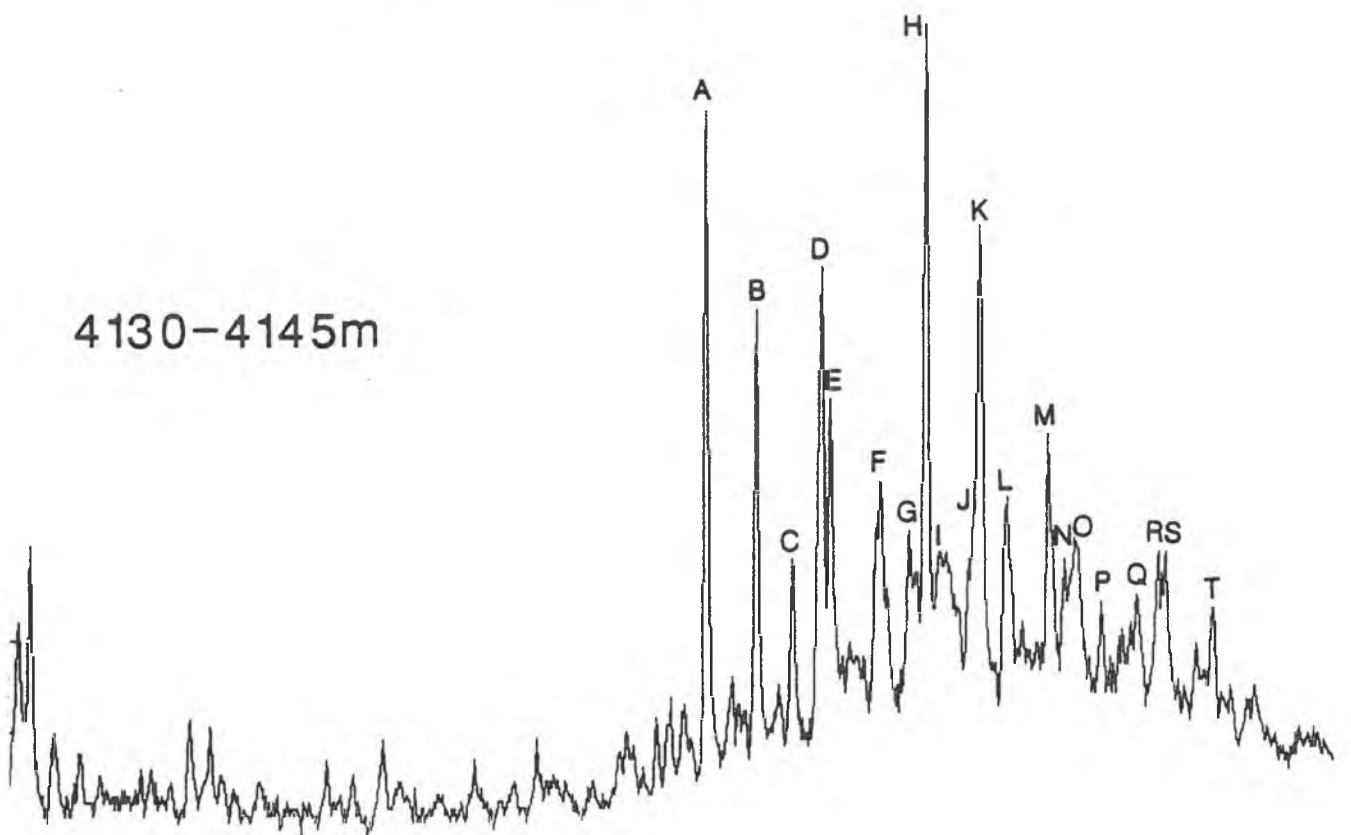
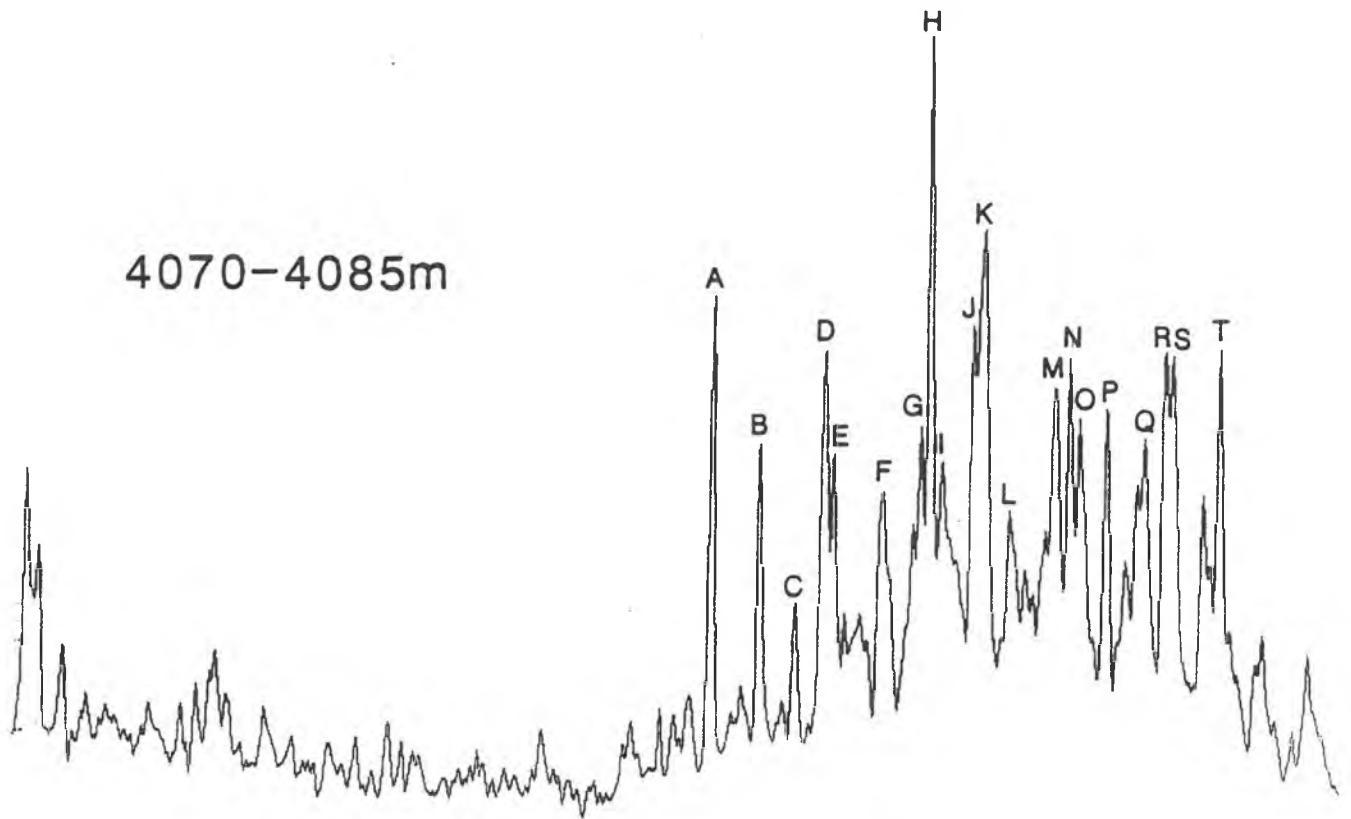
4017.40m CORE



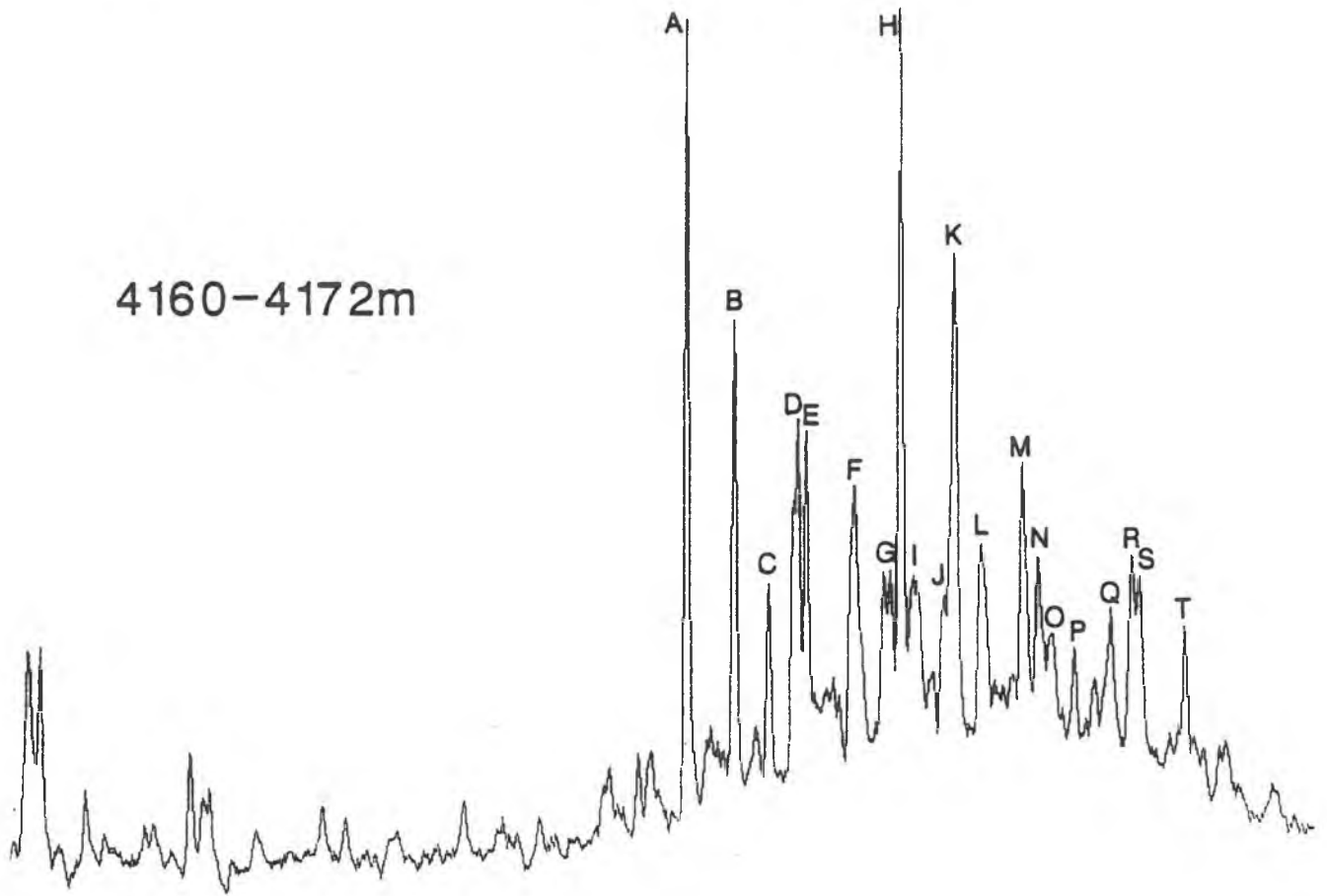
STERANES  $m/z$  217



STERANES  $m/z$  217

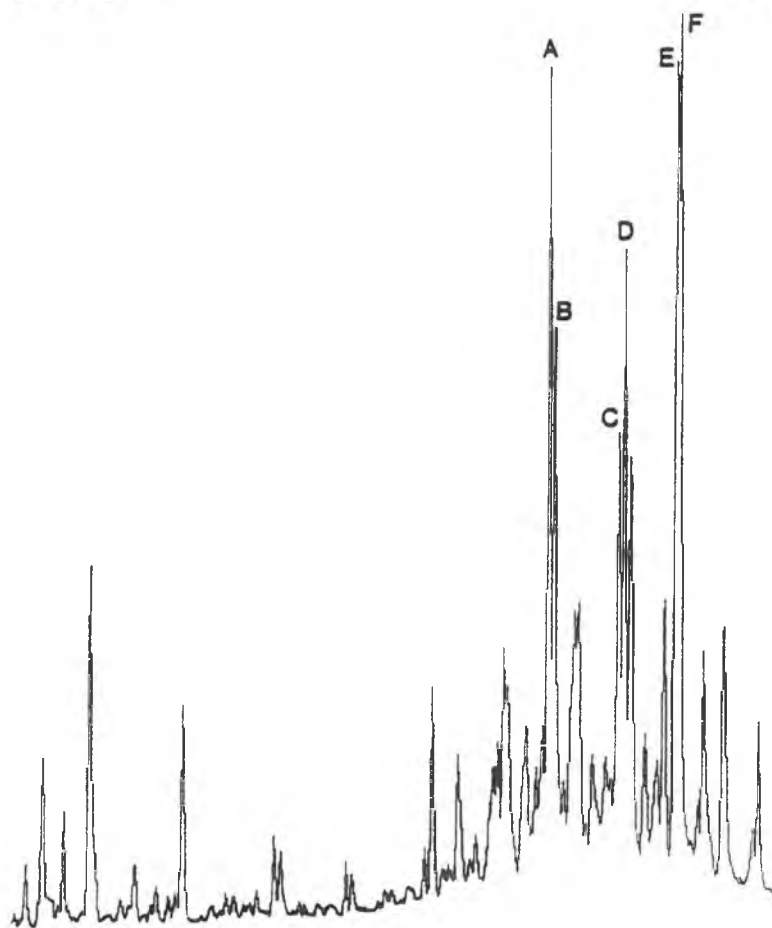


STERANES m/z 217



STANDARD

m/z 218



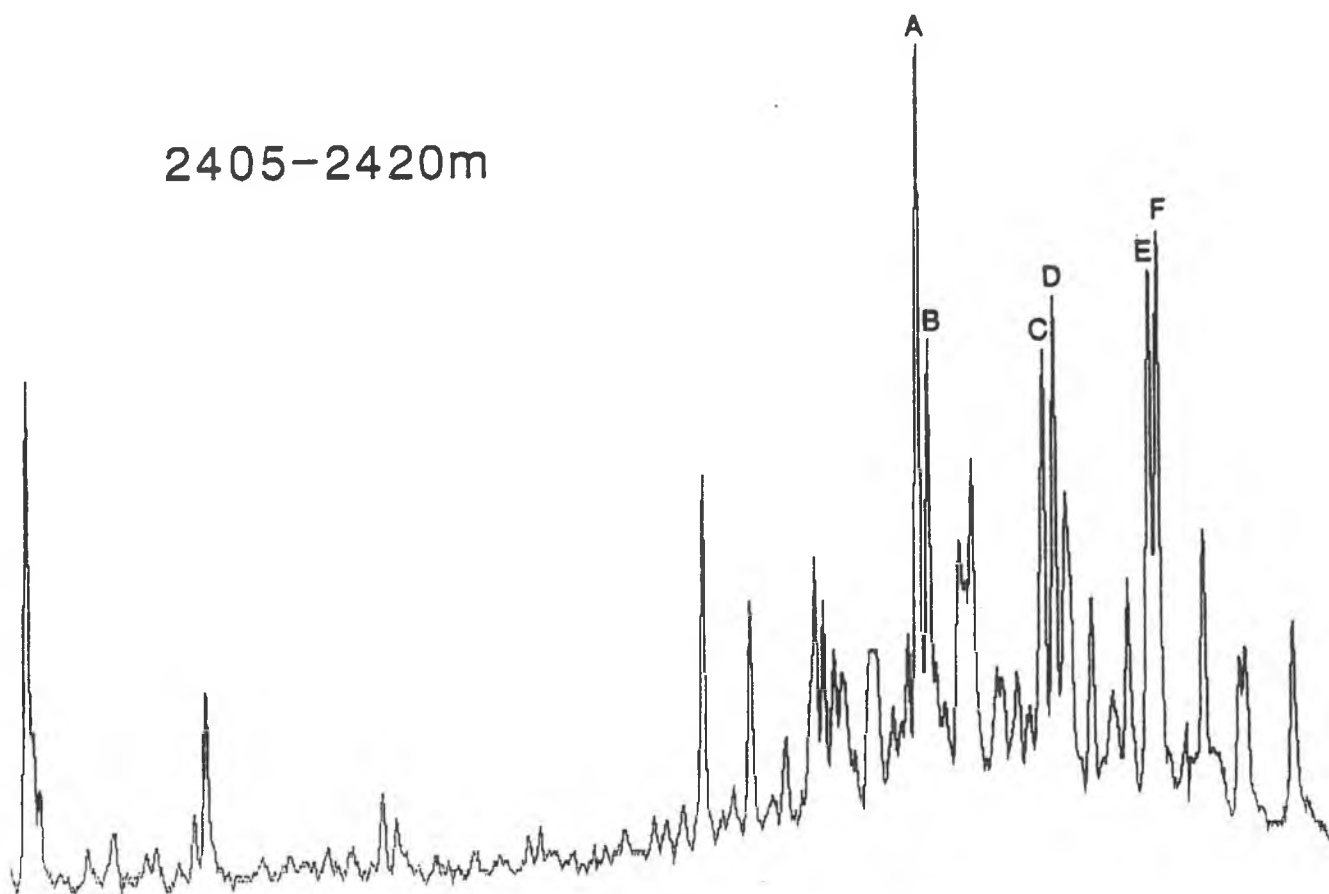
STERANE IDENTIFICATION

(M/Z 218 FRAGMENTOGRAM)

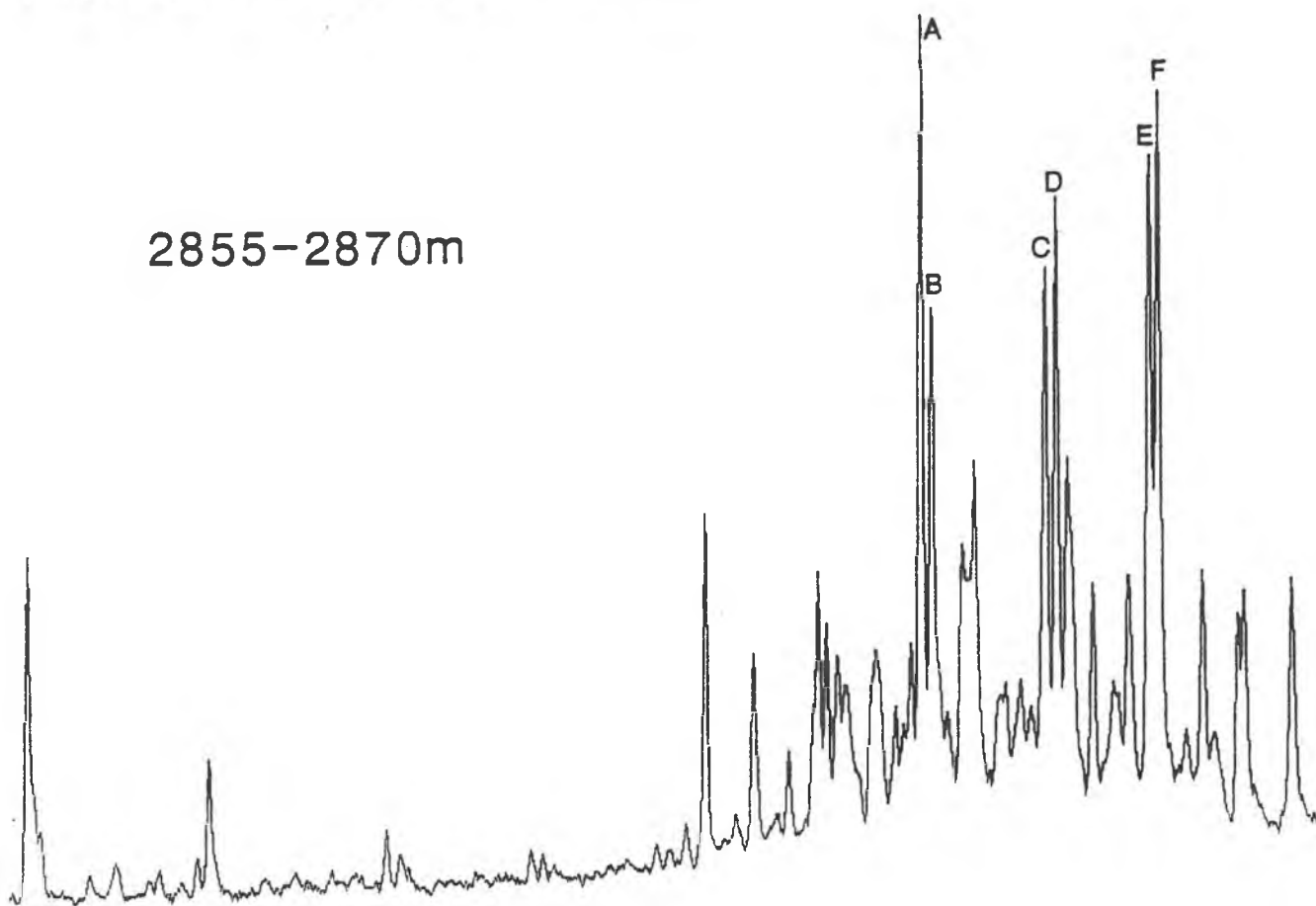
<u>COMPOUND</u>	<u>ELEMENTAL COMPOUND</u>
A     14 $\beta$ ,17 $\beta$ -cholestane (20R)	C <sub>27</sub> H <sub>48</sub>
B     14 $\beta$ ,17 $\beta$ -cholestane (20S)	C <sub>27</sub> H <sub>48</sub>
C     24-methyl-14 $\beta$ ,17 $\beta$ -cholestane (20R)	C <sub>28</sub> H <sub>50</sub>
D     24-methyl-14 $\beta$ ,17 $\beta$ -cholestane (20S)	C <sub>28</sub> H <sub>50</sub>
E     24-ethyl-14 $\beta$ ,17 $\beta$ -cholestane (20R)	C <sub>29</sub> H <sub>52</sub>
F     24-ethyl-14 $\beta$ ,17 $\beta$ -cholestane (20S)	C <sub>29</sub> H <sub>52</sub>

STERANES  $m/z$  218

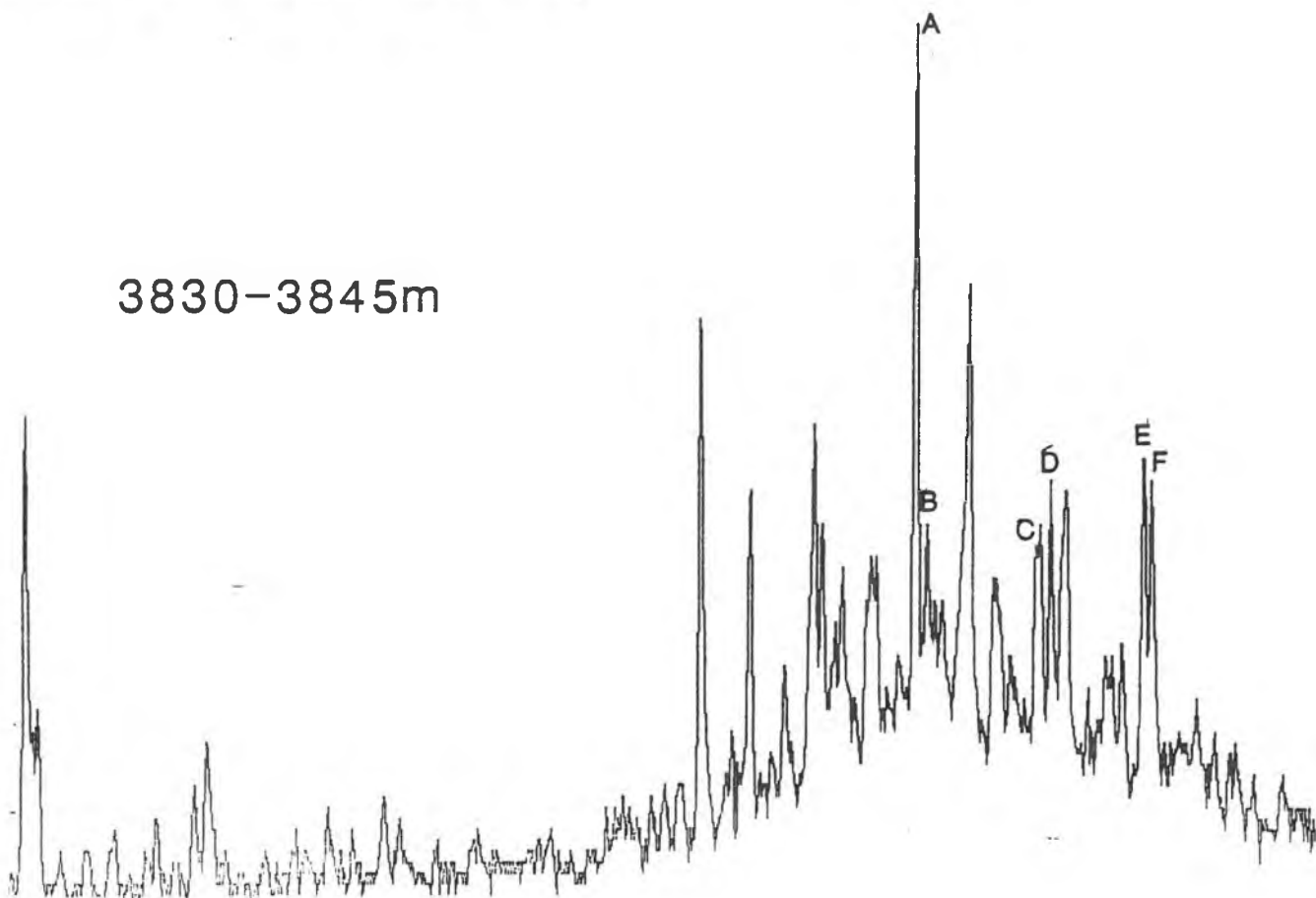
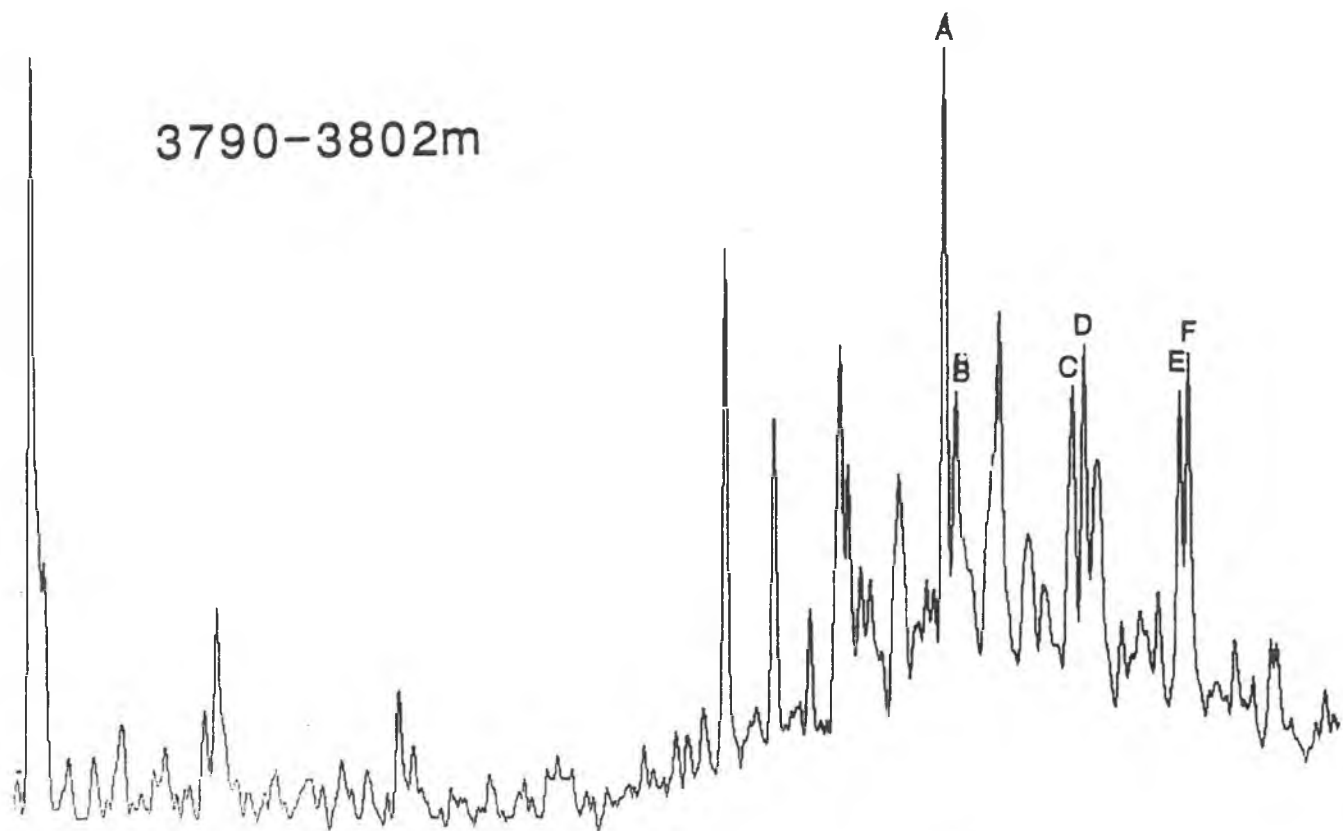
2405-2420m



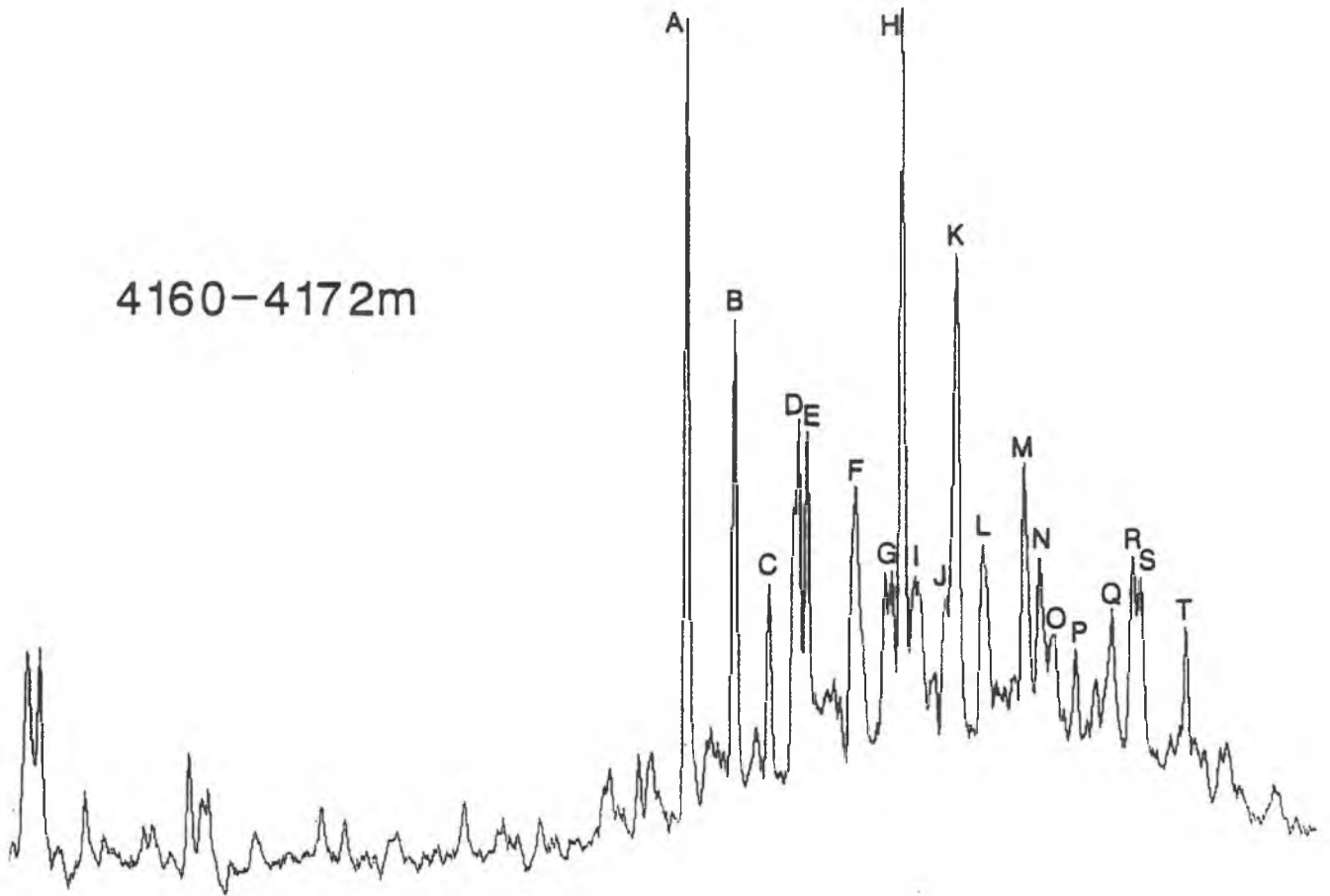
2855-2870m



STERANES  $m/z$  218

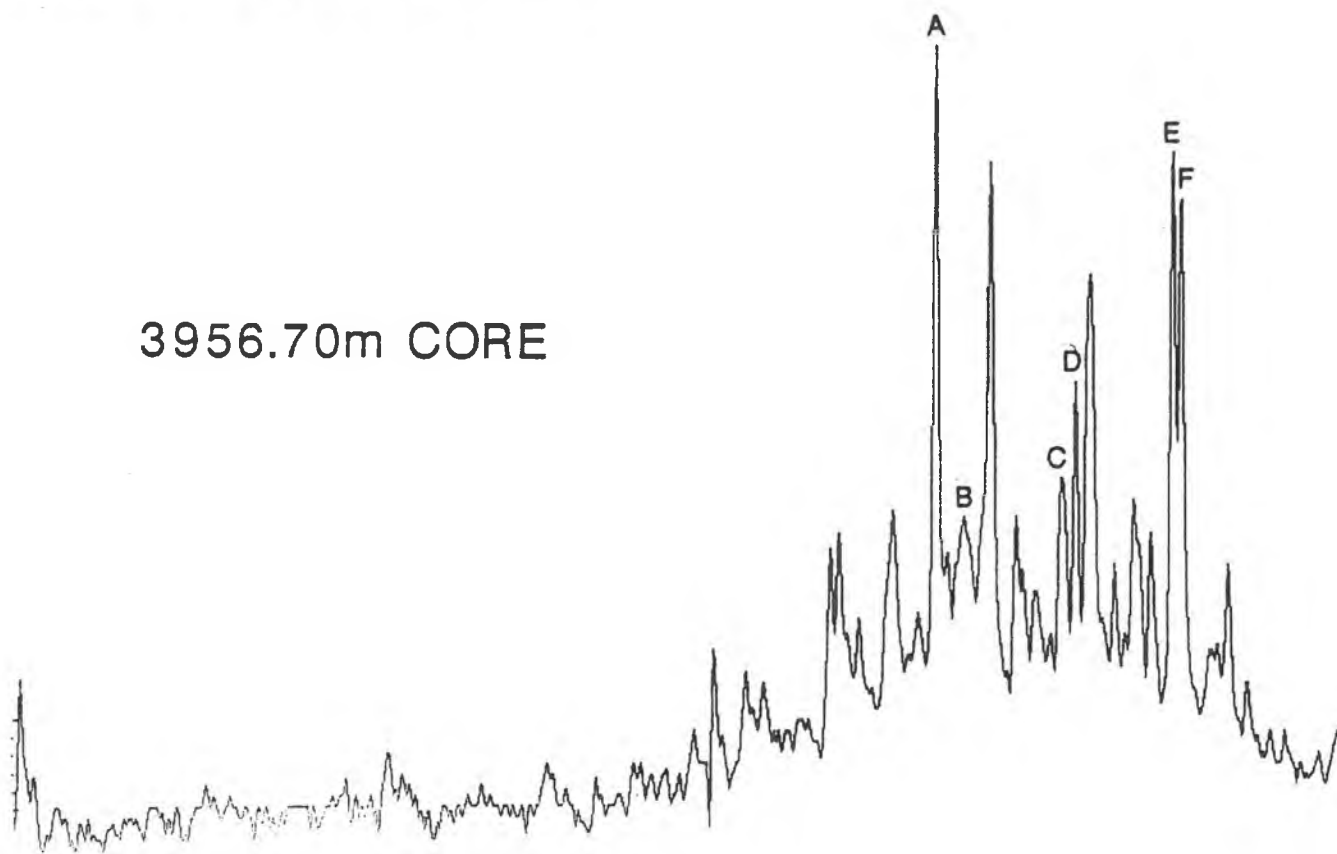
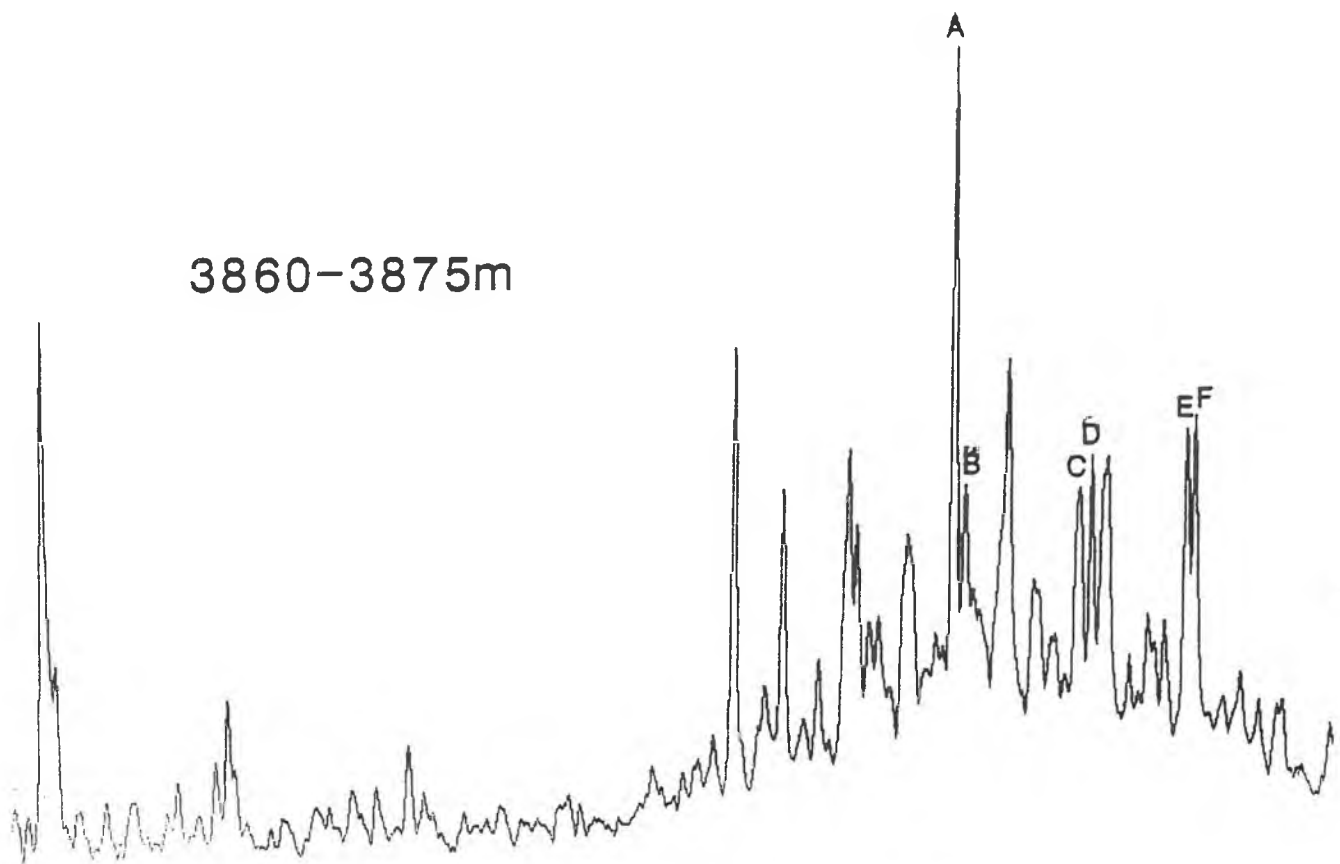


STERANES  $m/z$  217



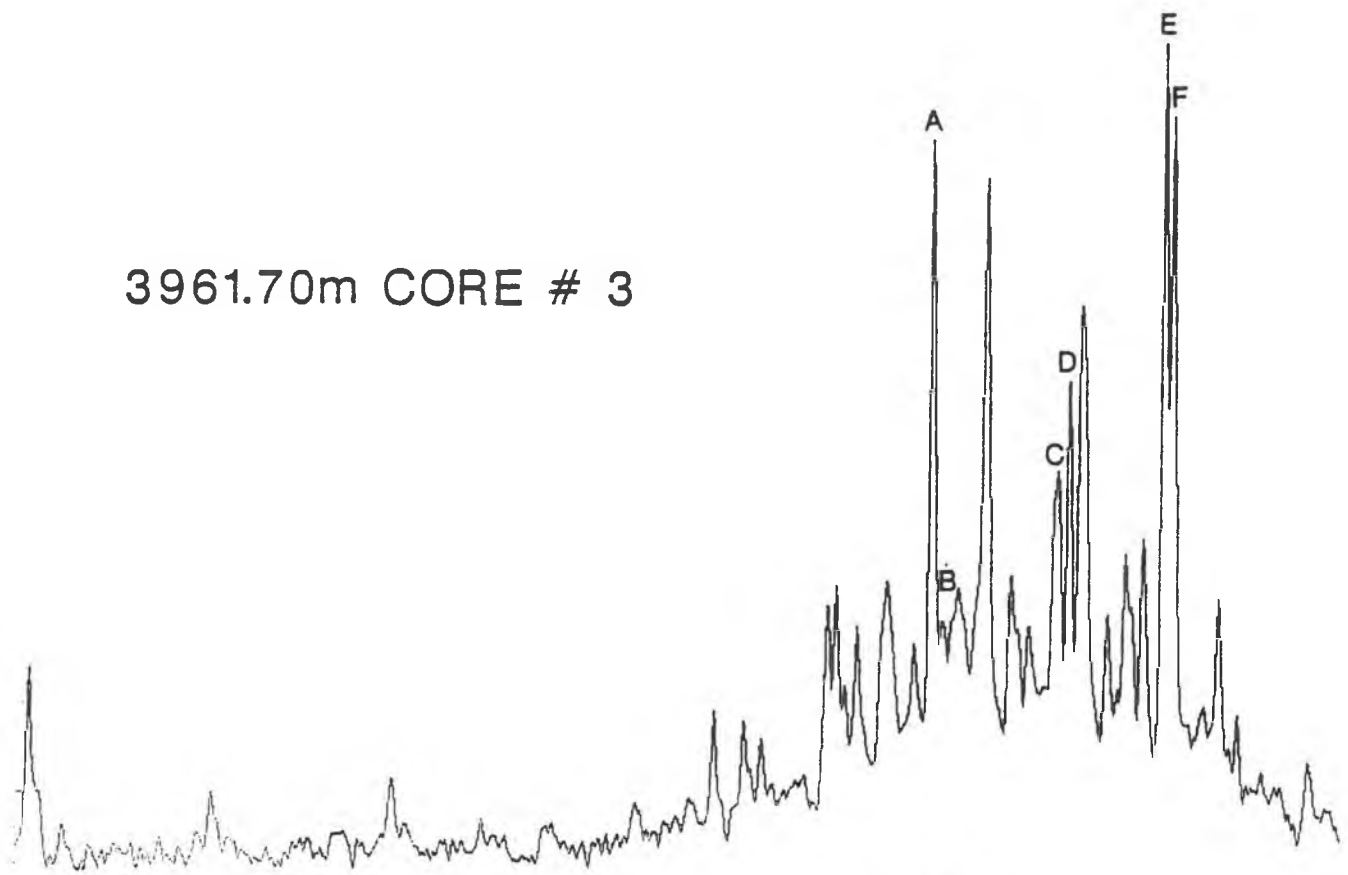


STERANES m/z 218

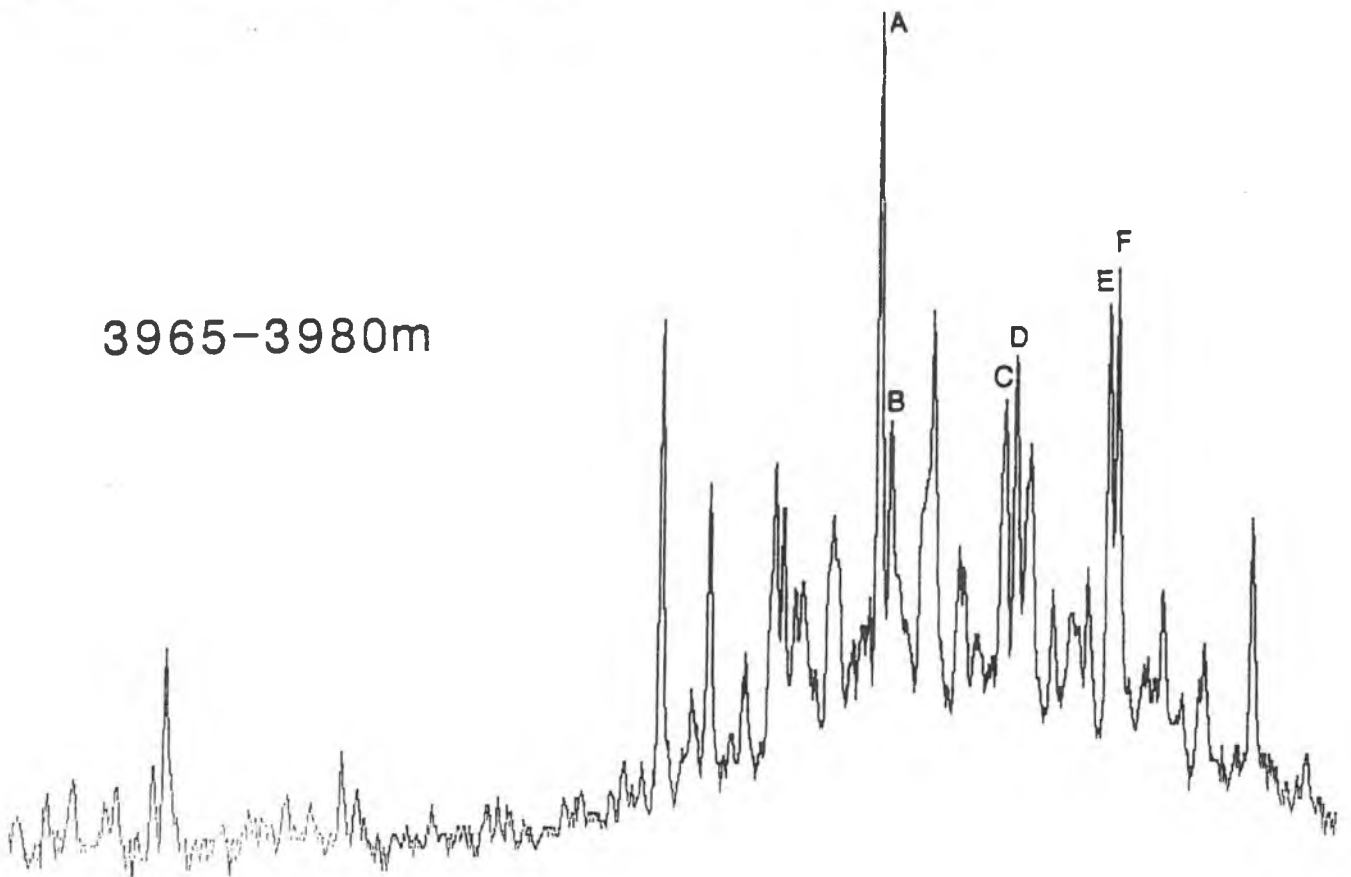


STERANES m/z 218

3961.70m CORE # 3

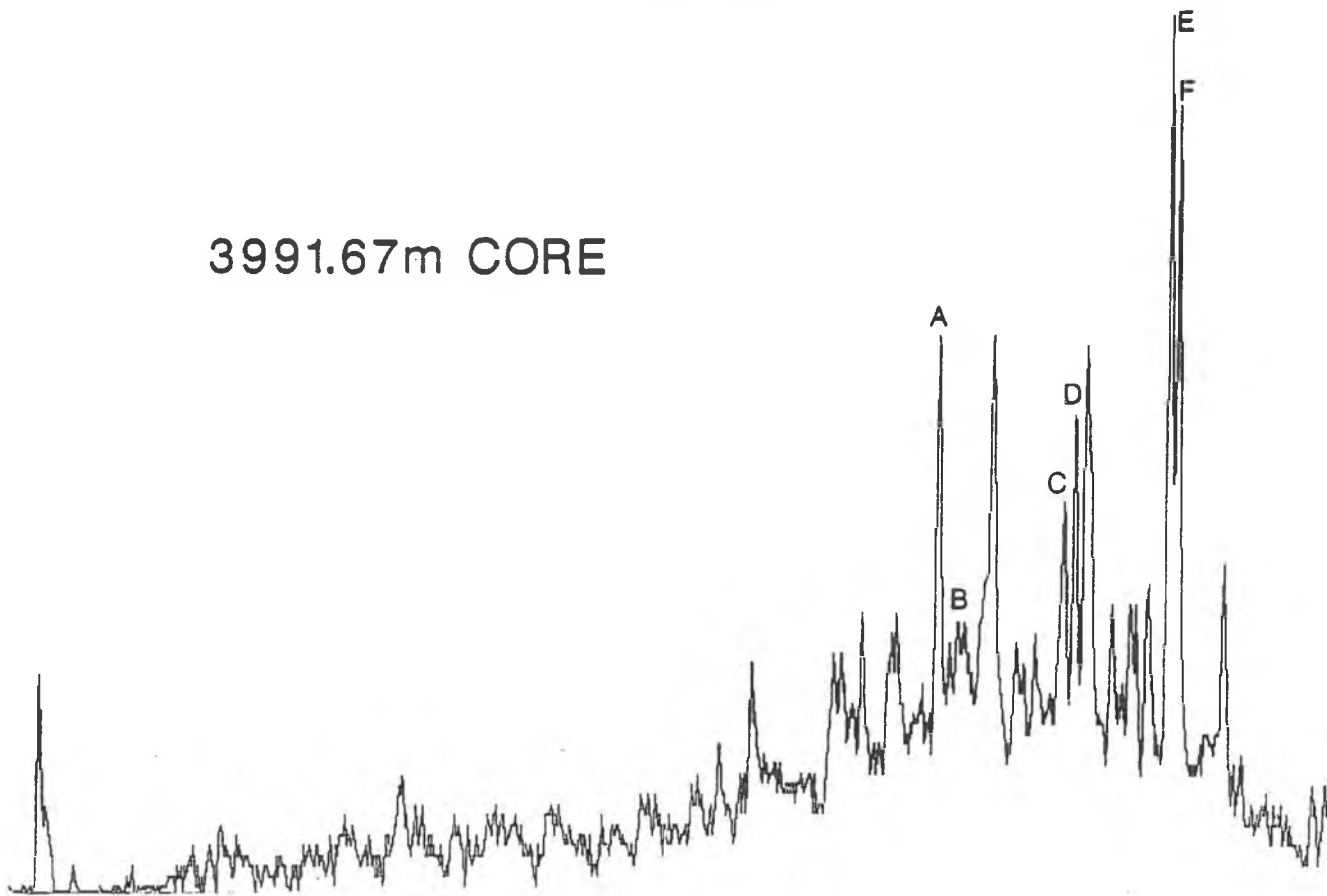


3965-3980m

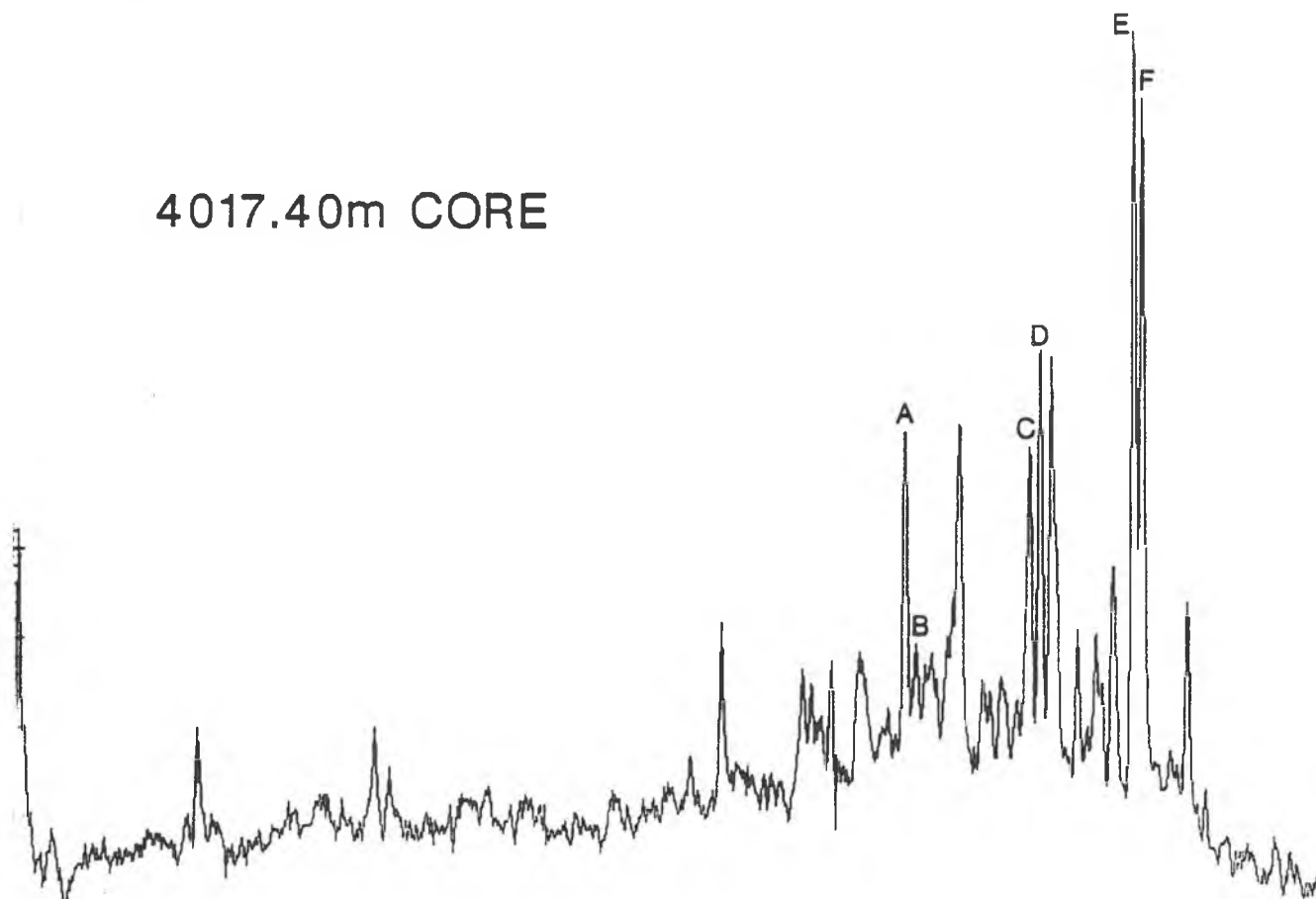


STERANES m/z 218

3991.67m CORE

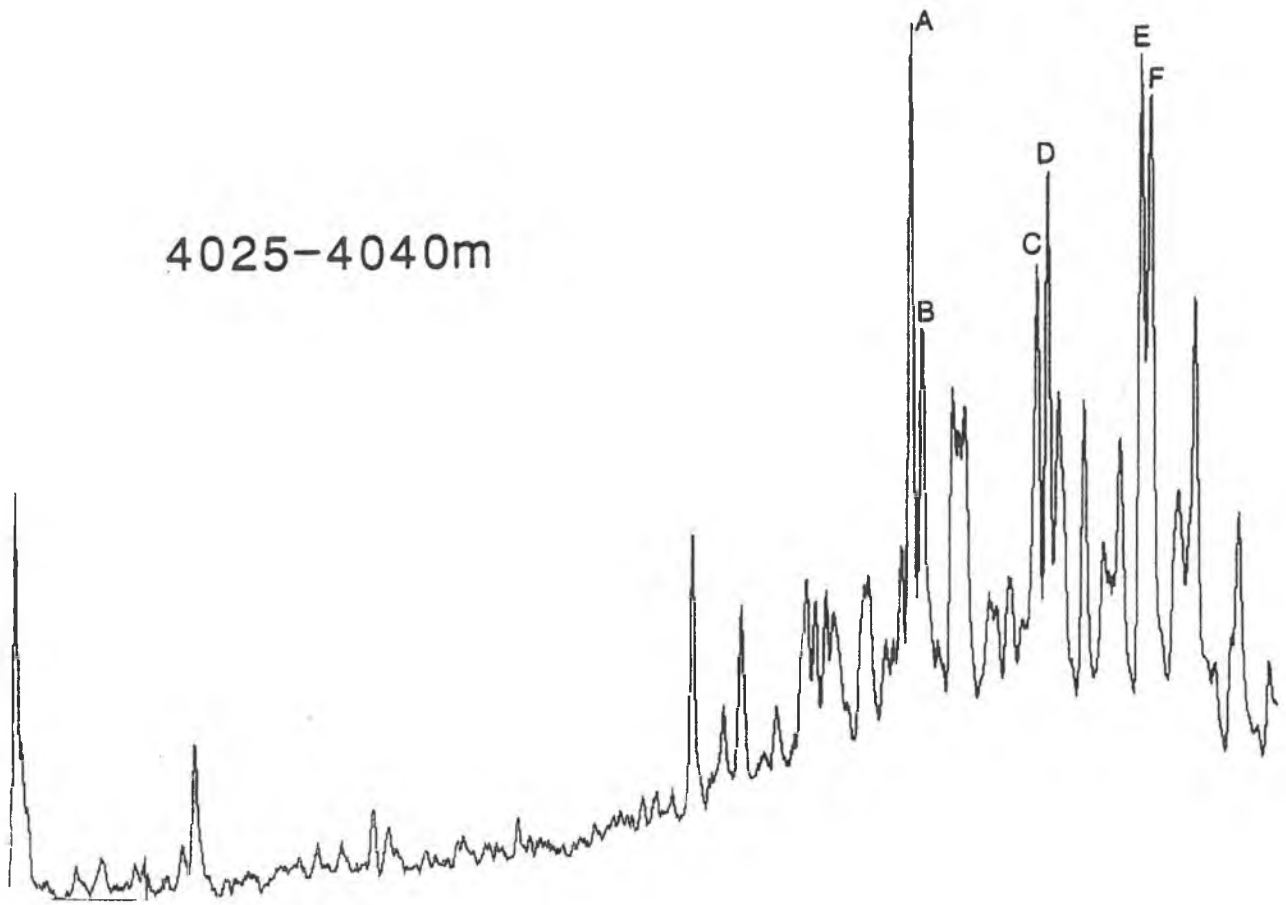


4017.40m CORE

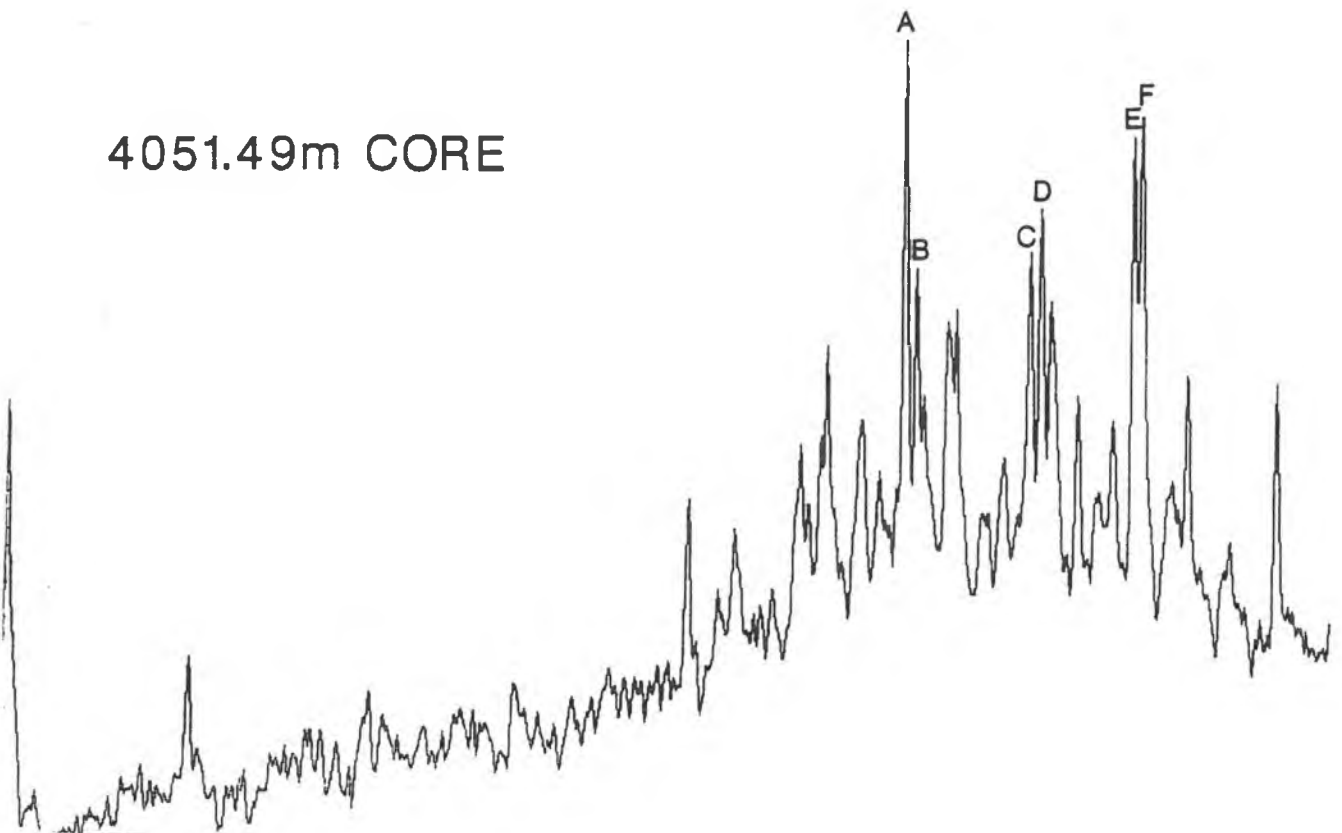


STERANES  $m/z$  218

4025-4040m

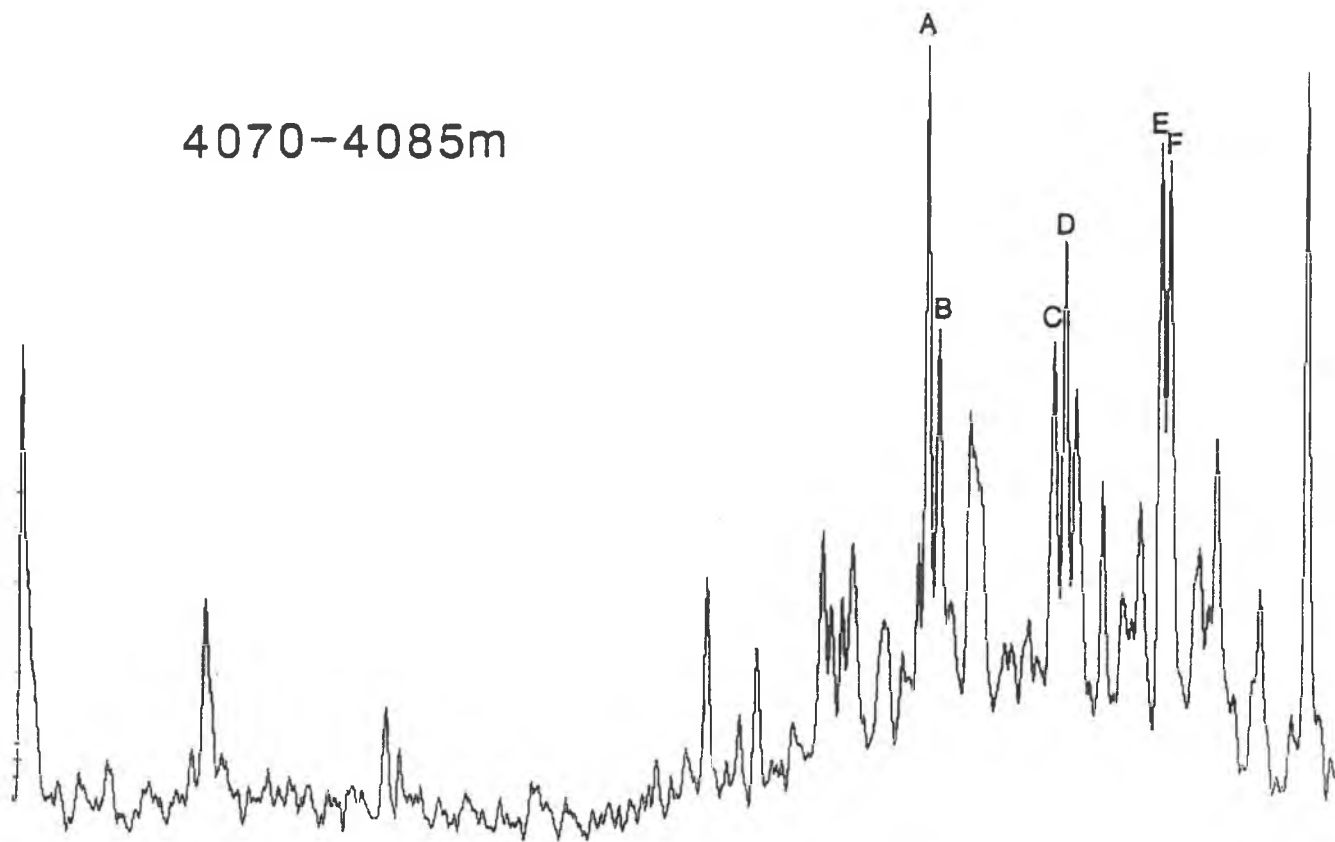


4051.49m CORE

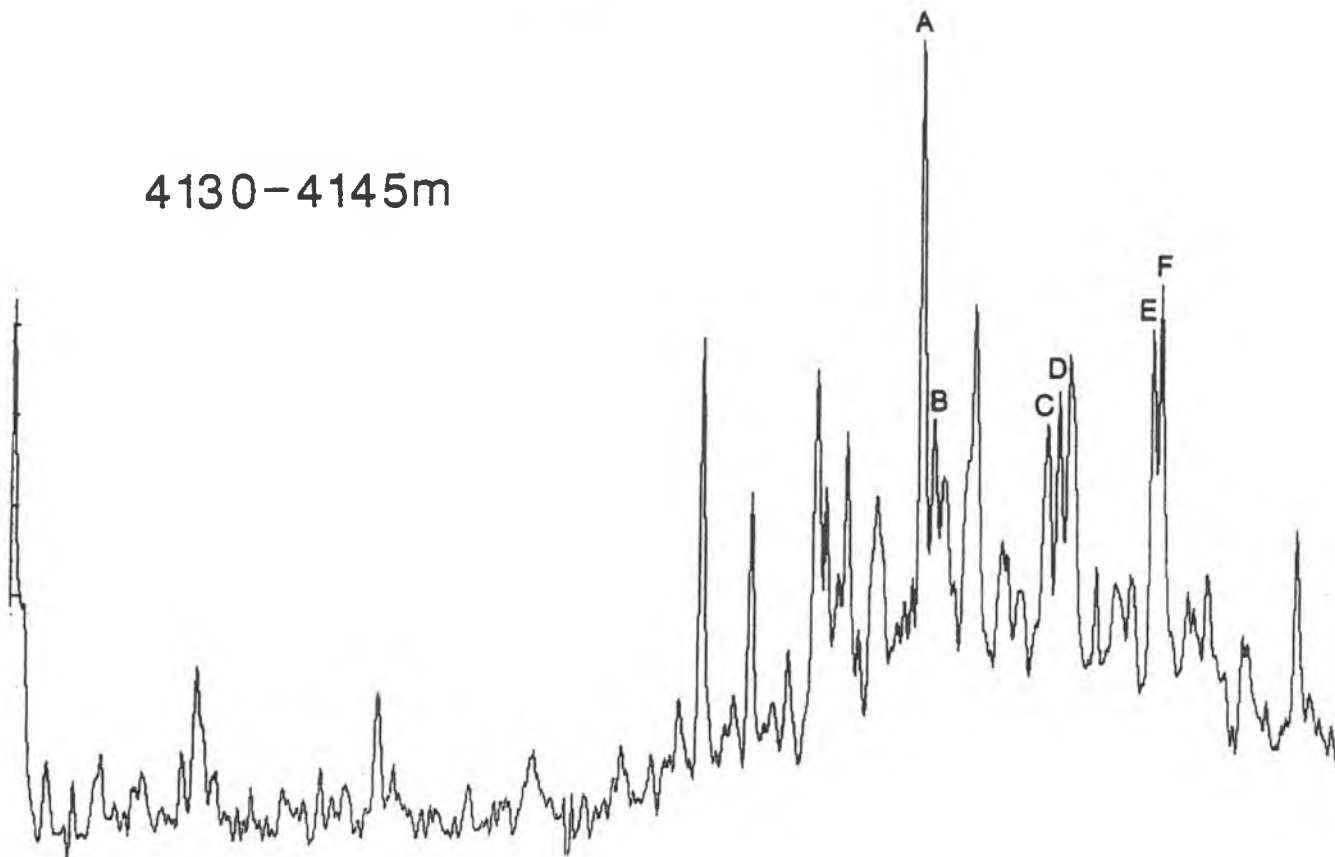


STERANES  $m/z$  218

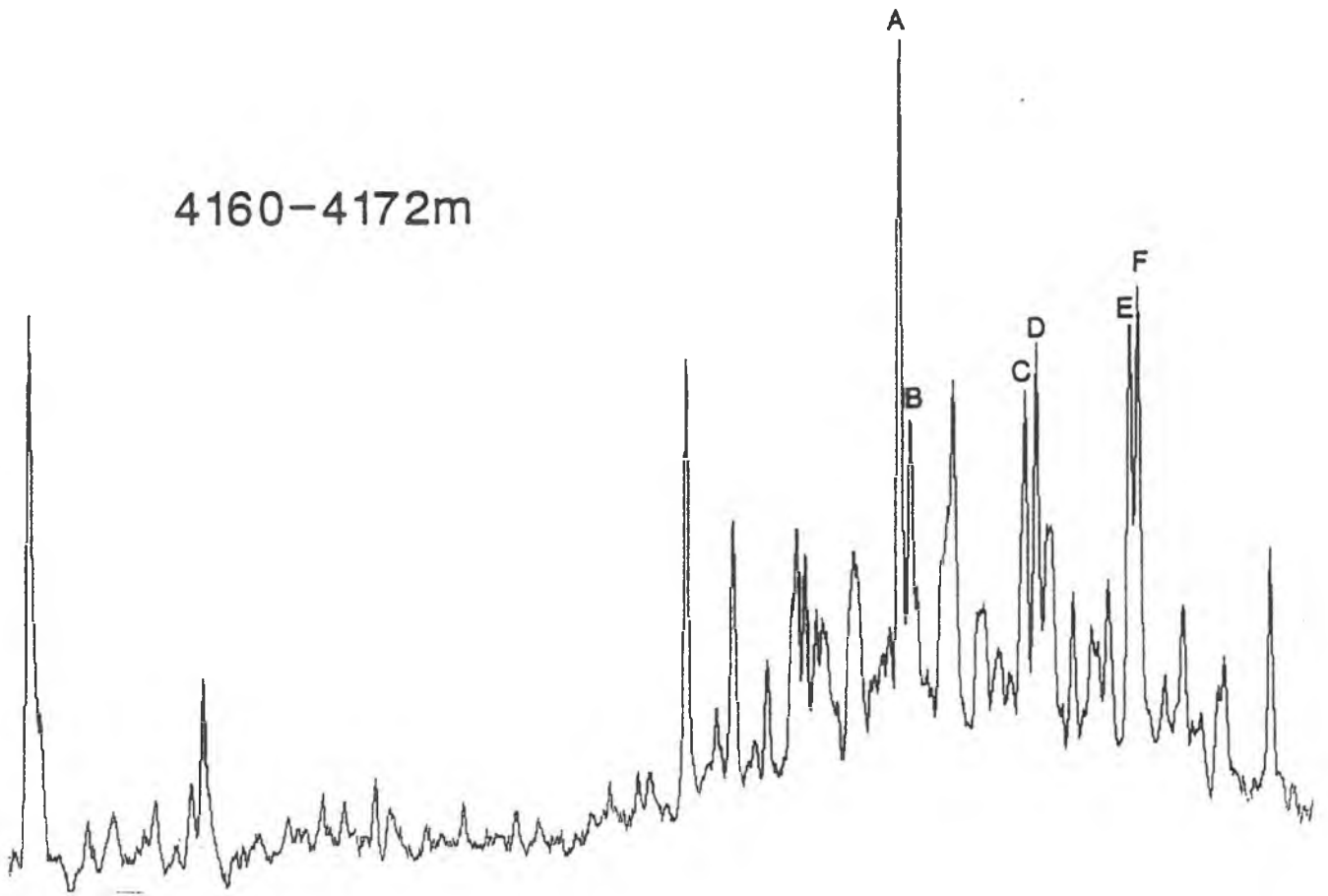
4070-4085m

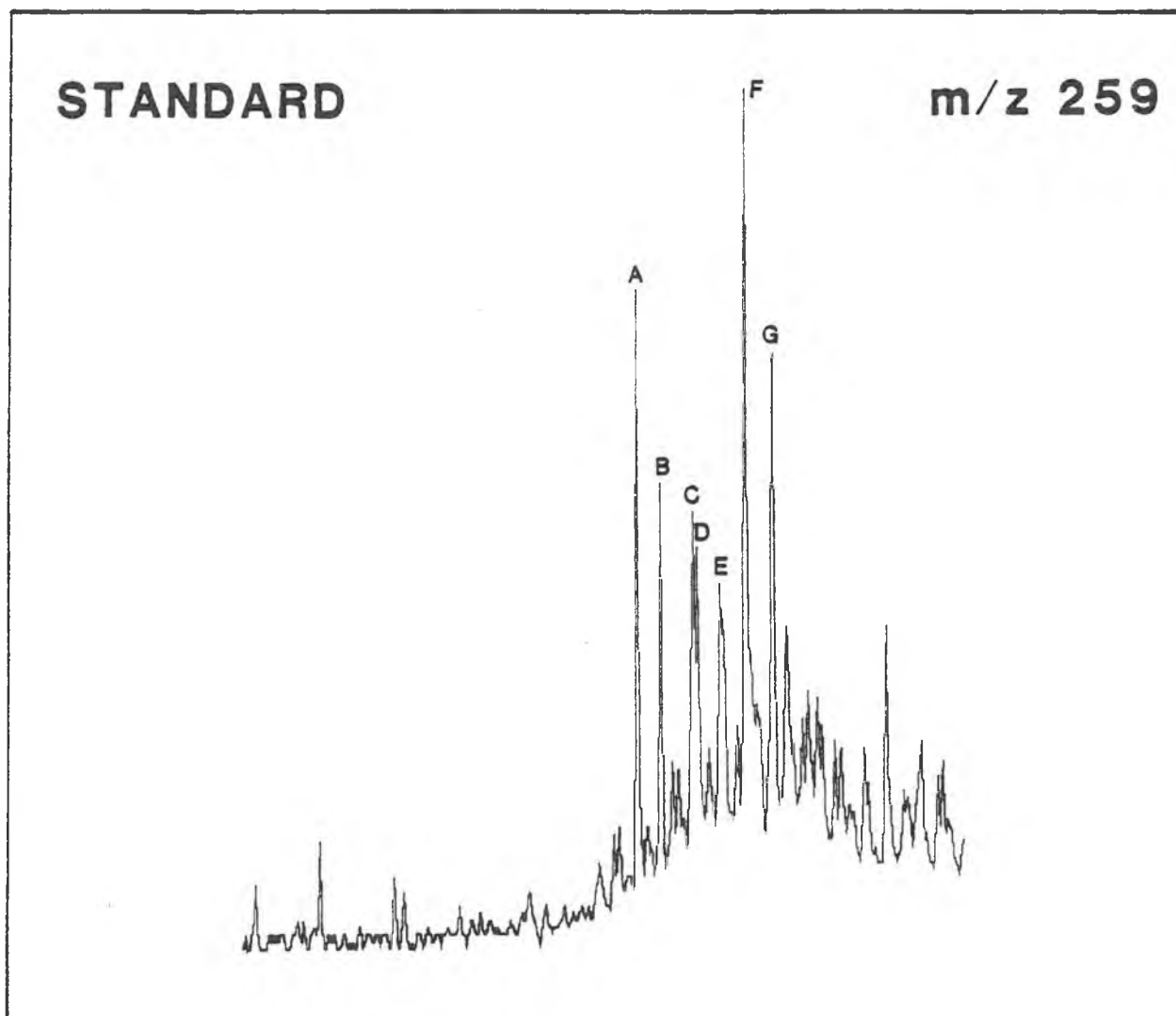


4130-4145m



STERANES m/z 218



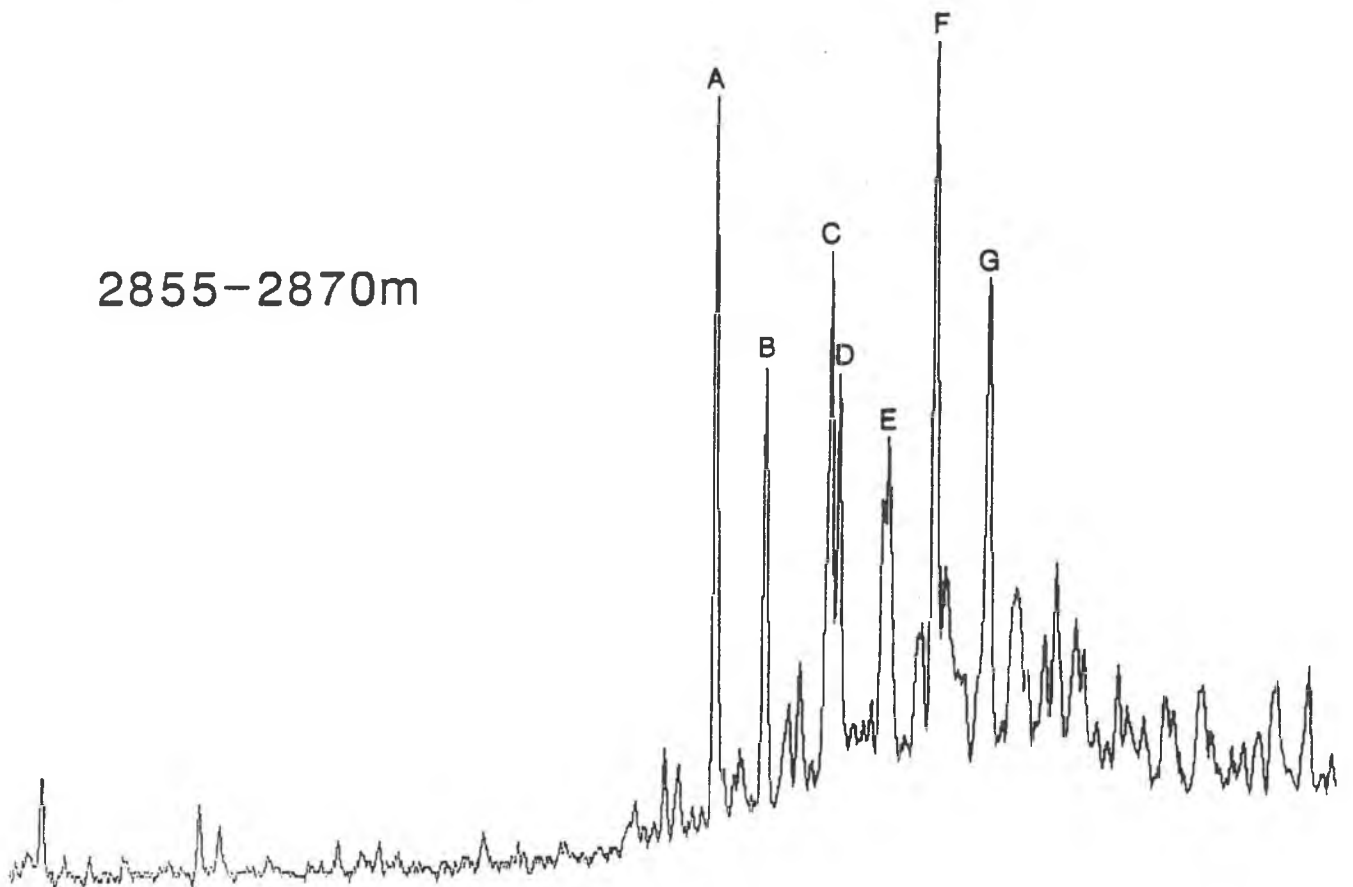
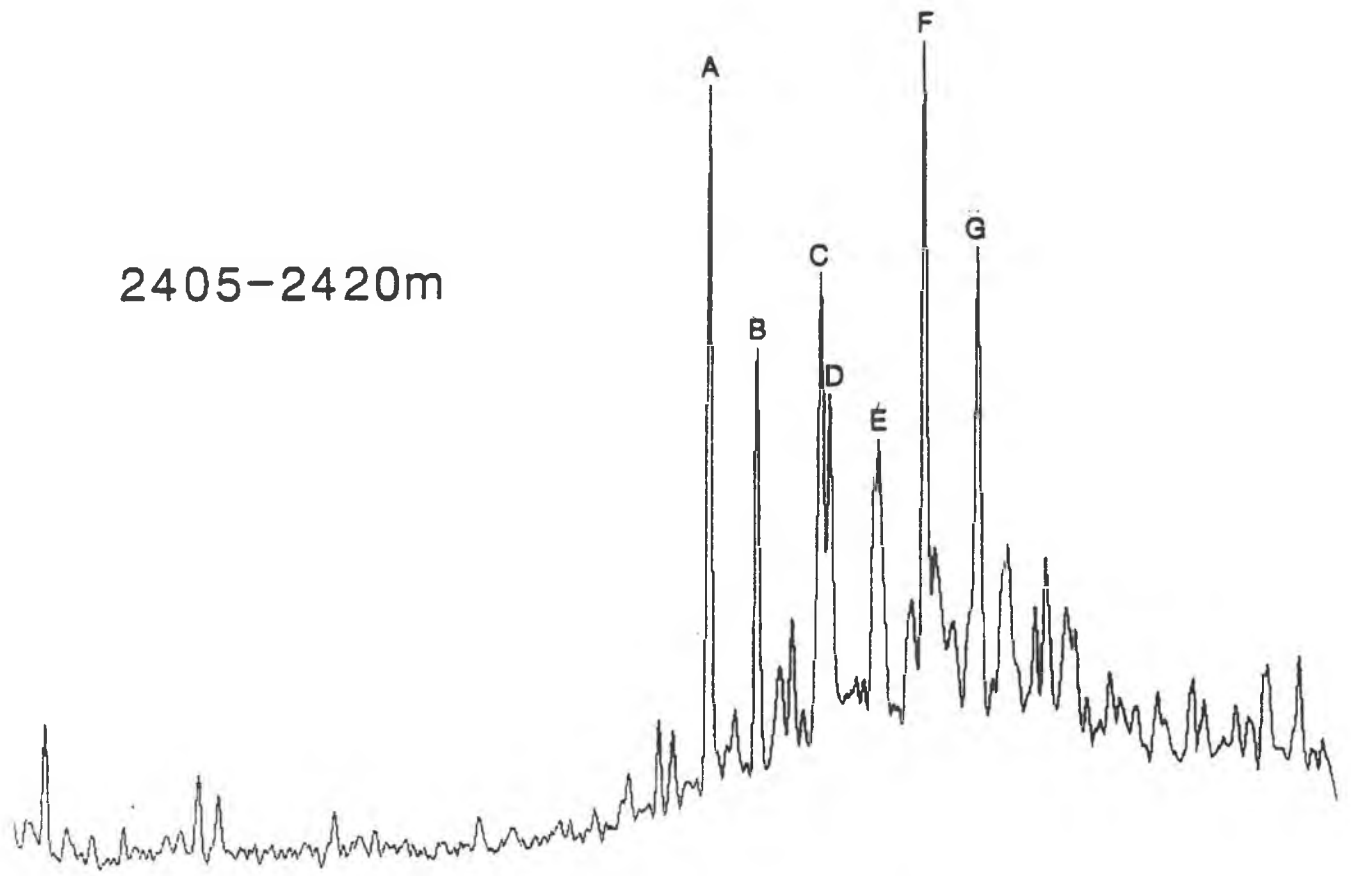


STERANE IDENTIFICATION

(M/Z 259 FRAGMENTOGRAM)

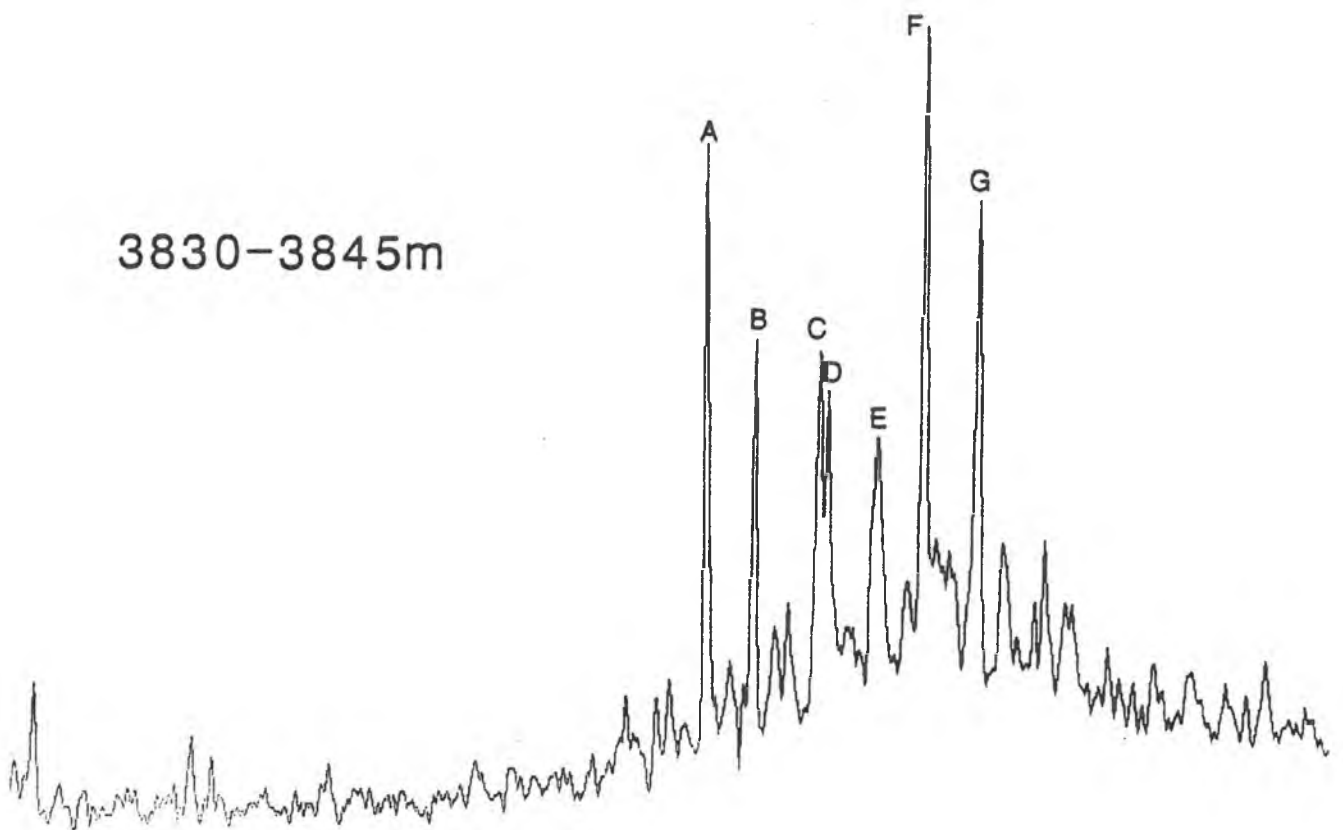
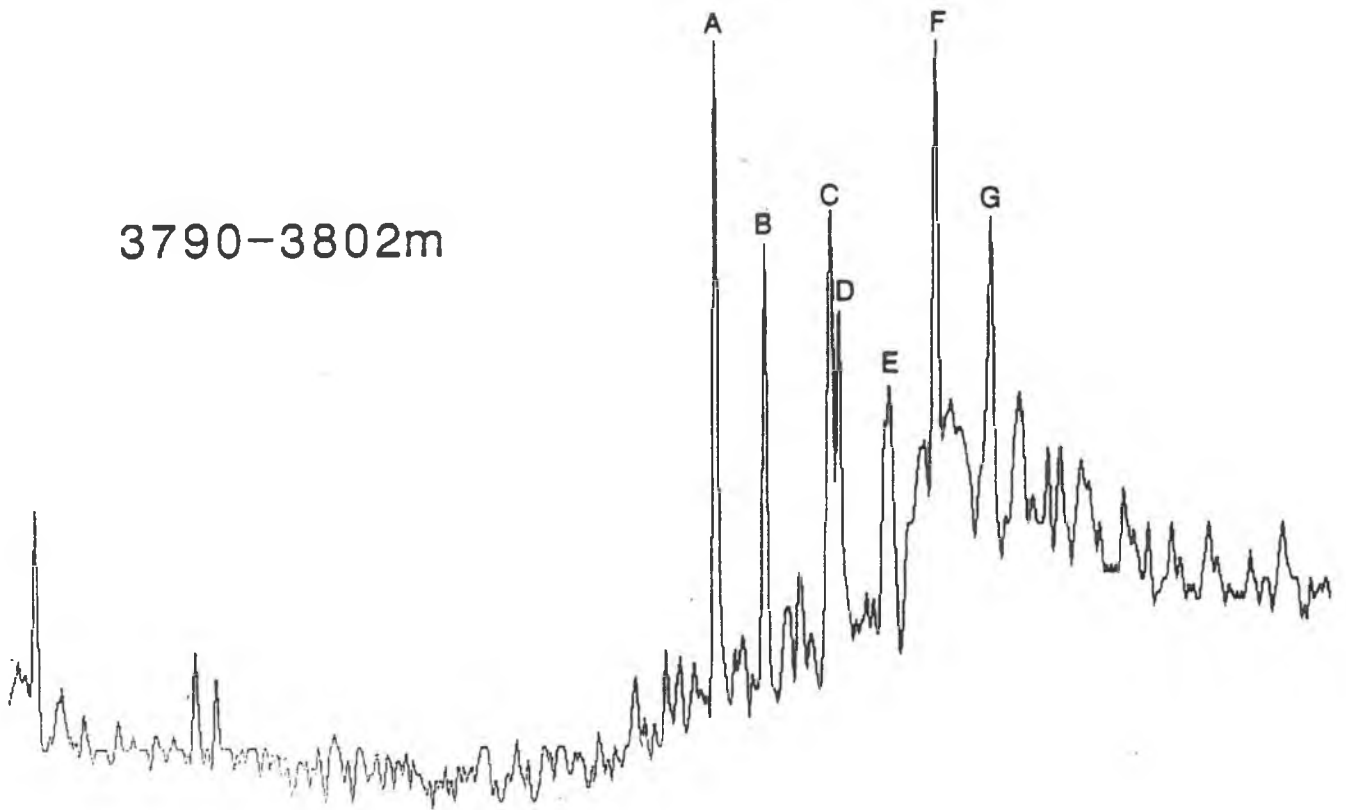
	<u>COMPOUND</u>	<u>ELEMENTAL COMPOSITION</u>
A	13 $\beta$ ,17 $\alpha$ -diacholestane (20S)	C <sub>27</sub> H <sub>48</sub>
B	13 $\beta$ ,17 $\alpha$ -diacholestane (20R)	C <sub>27</sub> H <sub>48</sub>
C	13 $\alpha$ ,17 $\beta$ -diacholestane (20R)	C <sub>27</sub> H <sub>48</sub>
D	24,-methyl-13 $\beta$ ,17 $\alpha$ -diacholestane (20S)	C <sub>28</sub> H <sub>50</sub>
E	24,-methyl-13 $\beta$ ,17 $\alpha$ -diacholestane (20R)	C <sub>28</sub> H <sub>50</sub>
F	24,-ethyl-13 $\beta$ ,17 $\alpha$ -diacholestane (20S)	C <sub>29</sub> H <sub>52</sub>
G	24,-ethyl-13 $\beta$ ,17 $\alpha$ -diacholestane (20R)	C <sub>29</sub> H <sub>52</sub>

REARRANGED STERANES  $m/z$  259

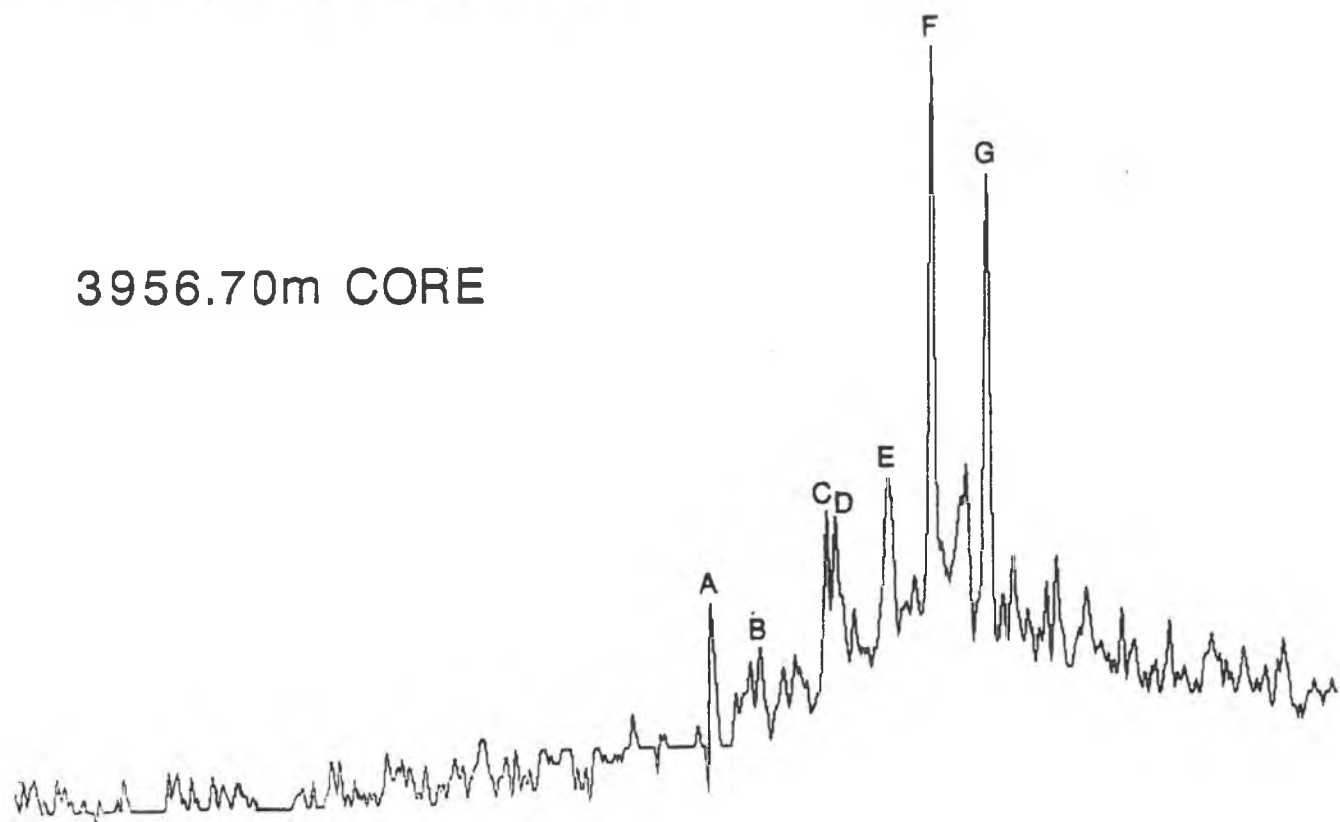
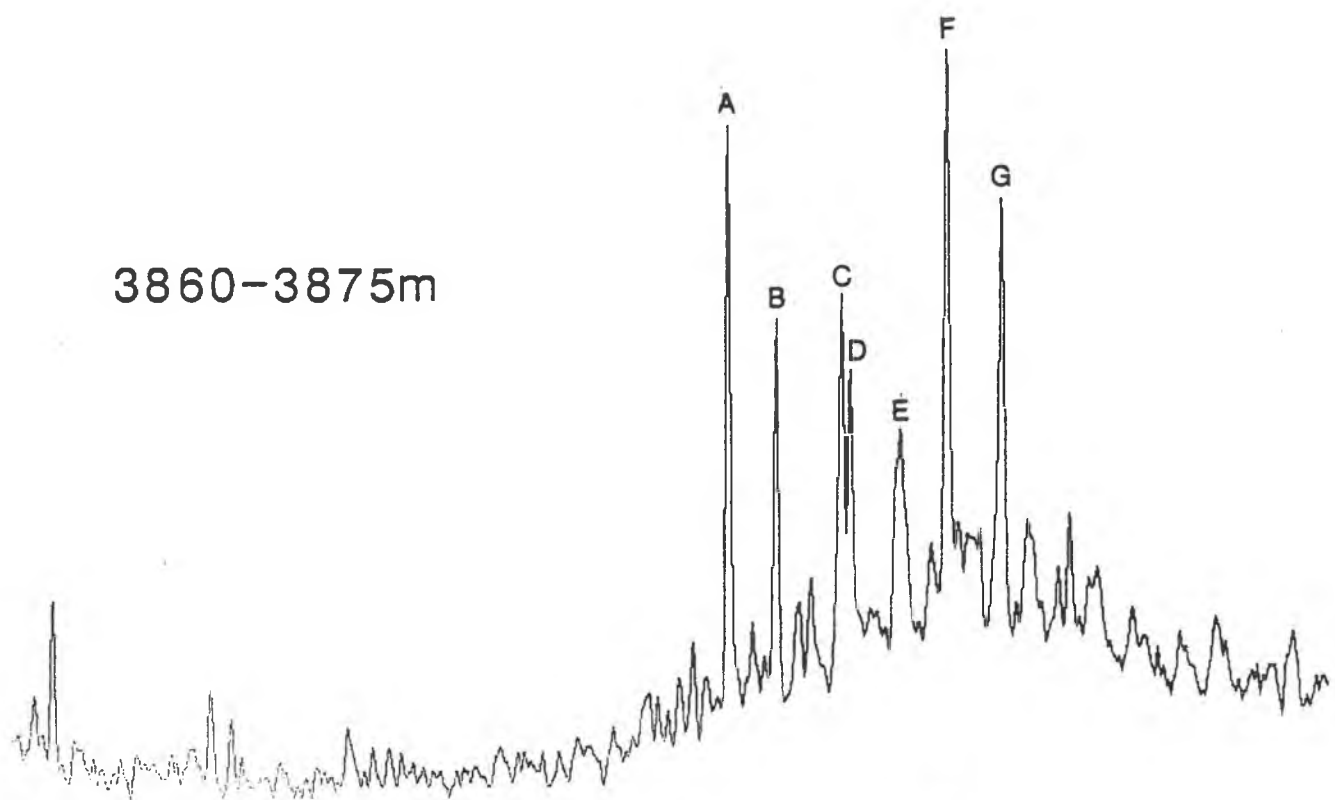




REARRANGED STERANES  $m/z$  259

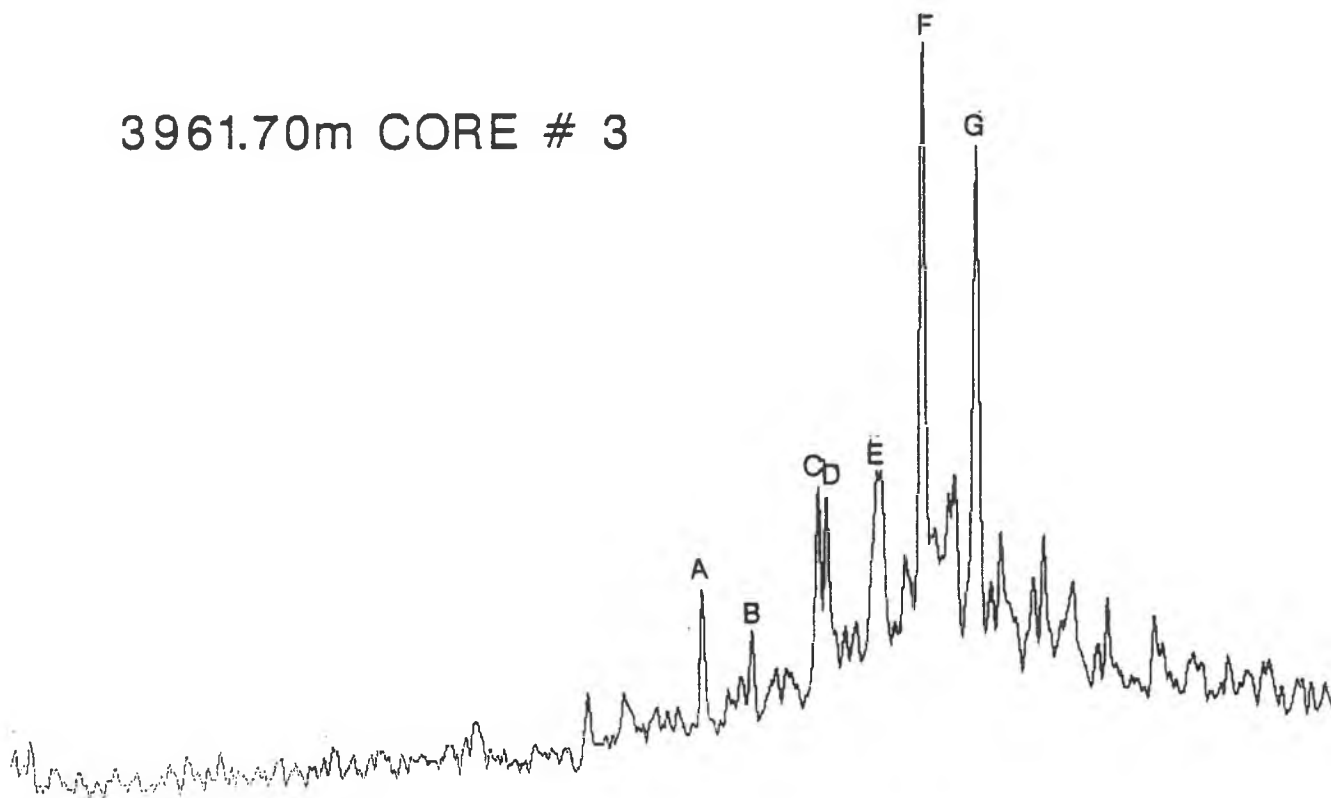


REARRANGED STERANES  $m/z$  259

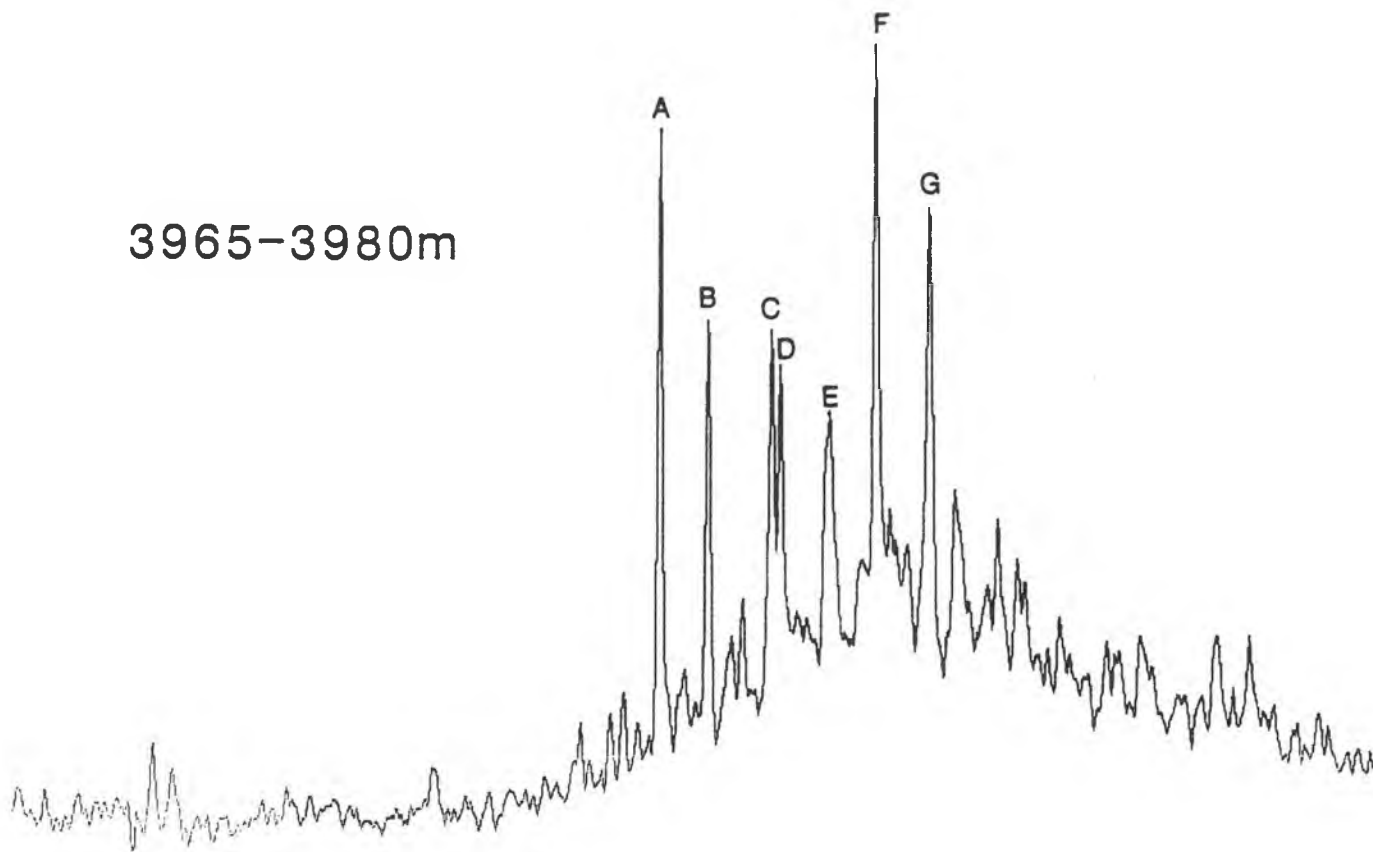


REARRANGED STERANES  $m/z$  259

3961.70m CORE # 3

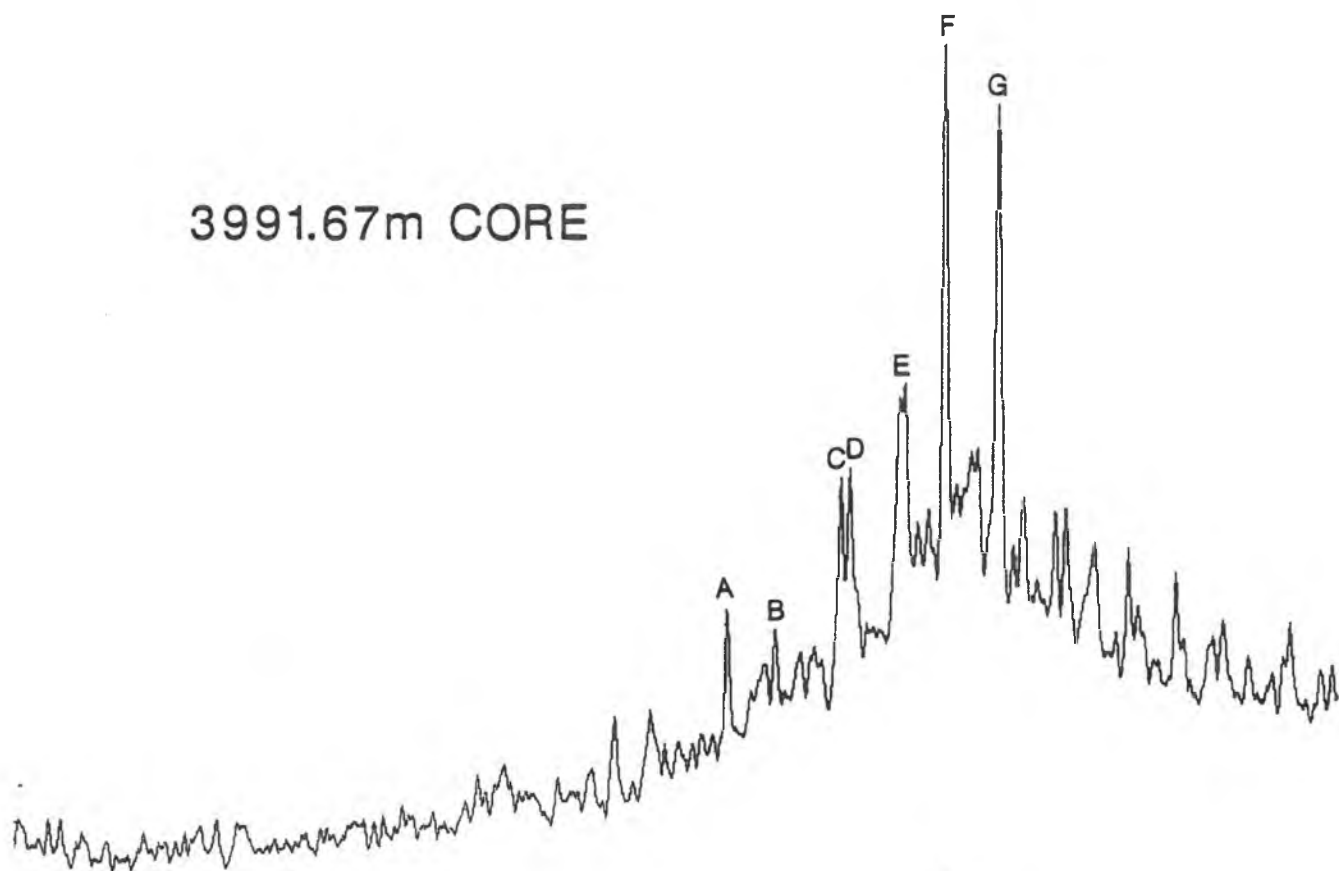


3965-3980m

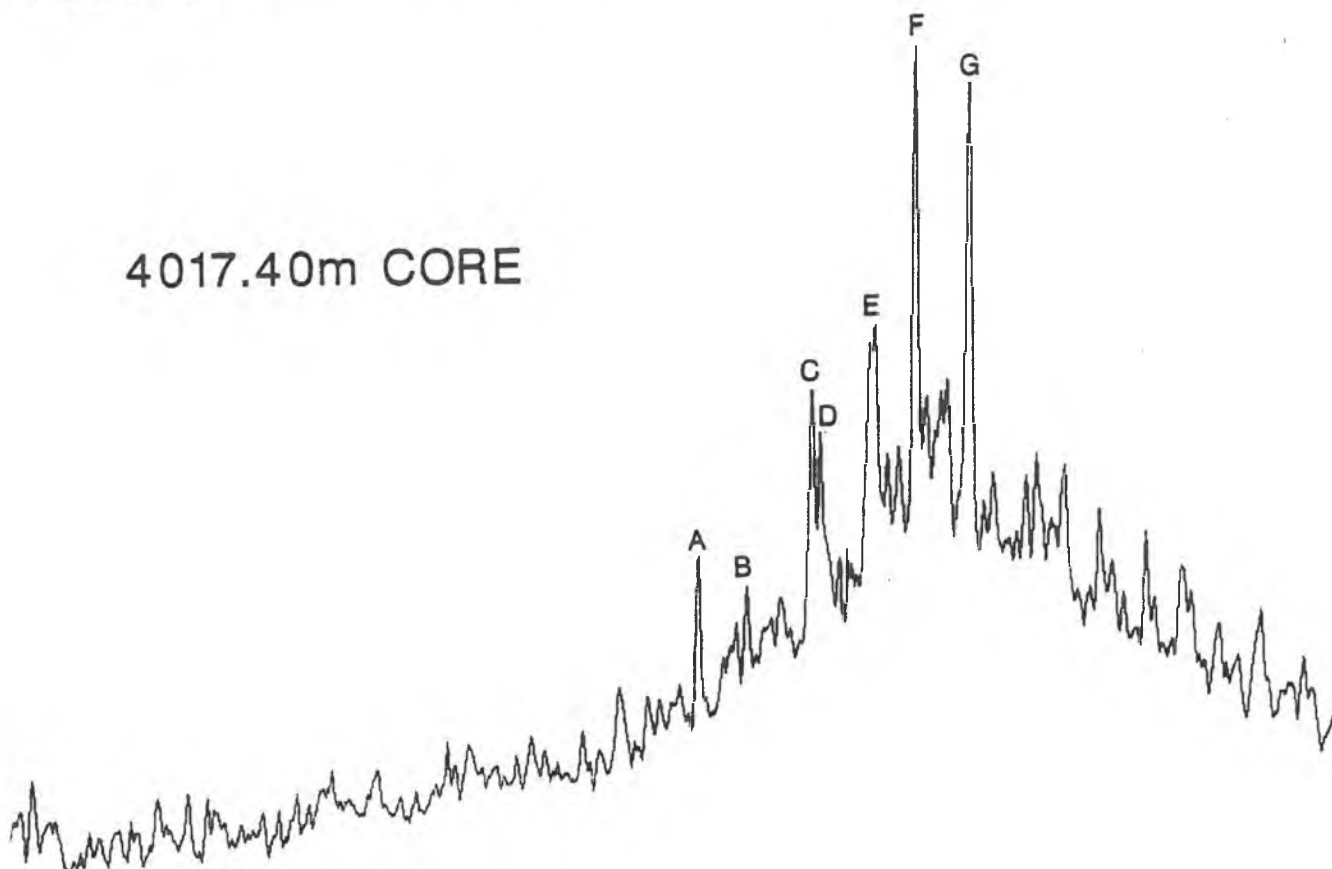


REARRANGED STERANES  $m/z$  259

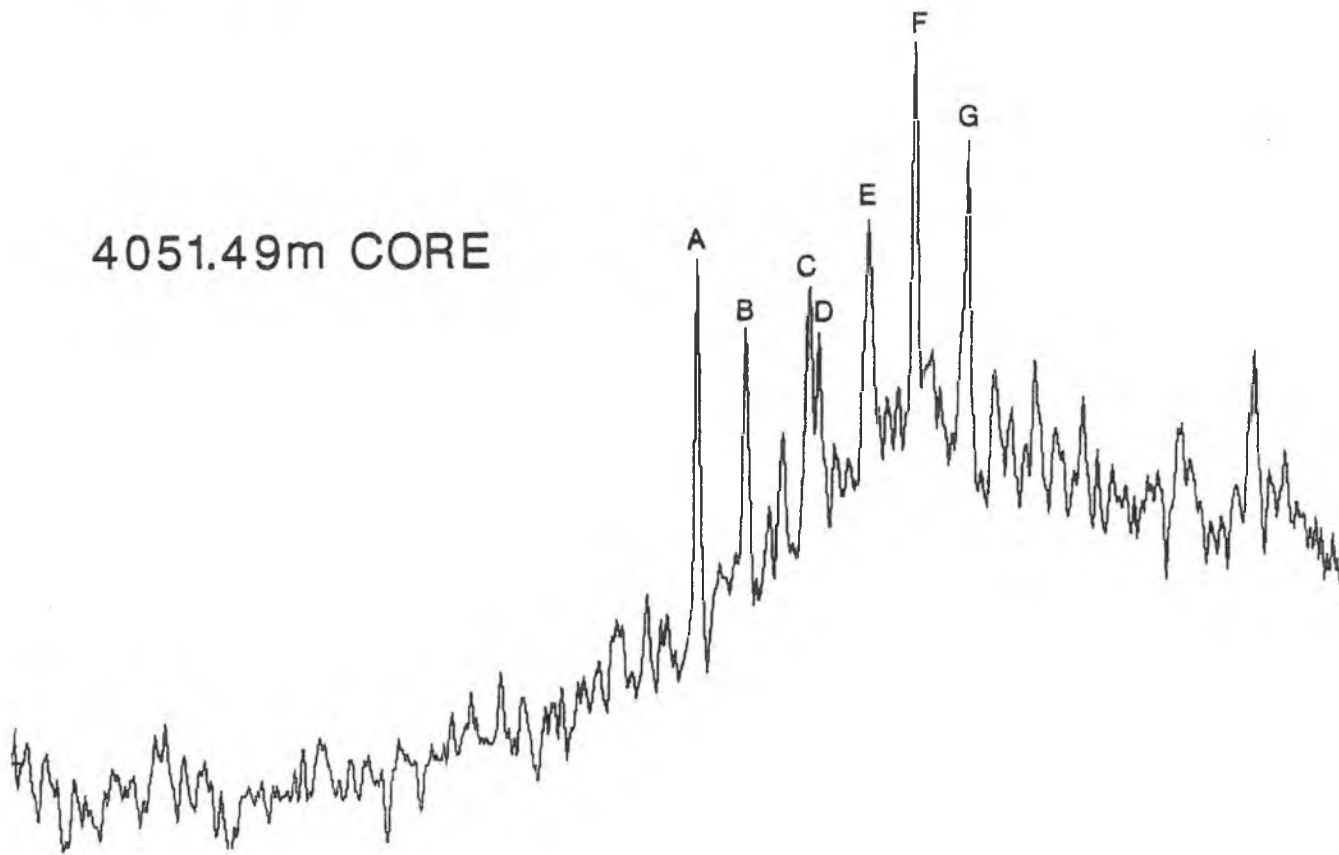
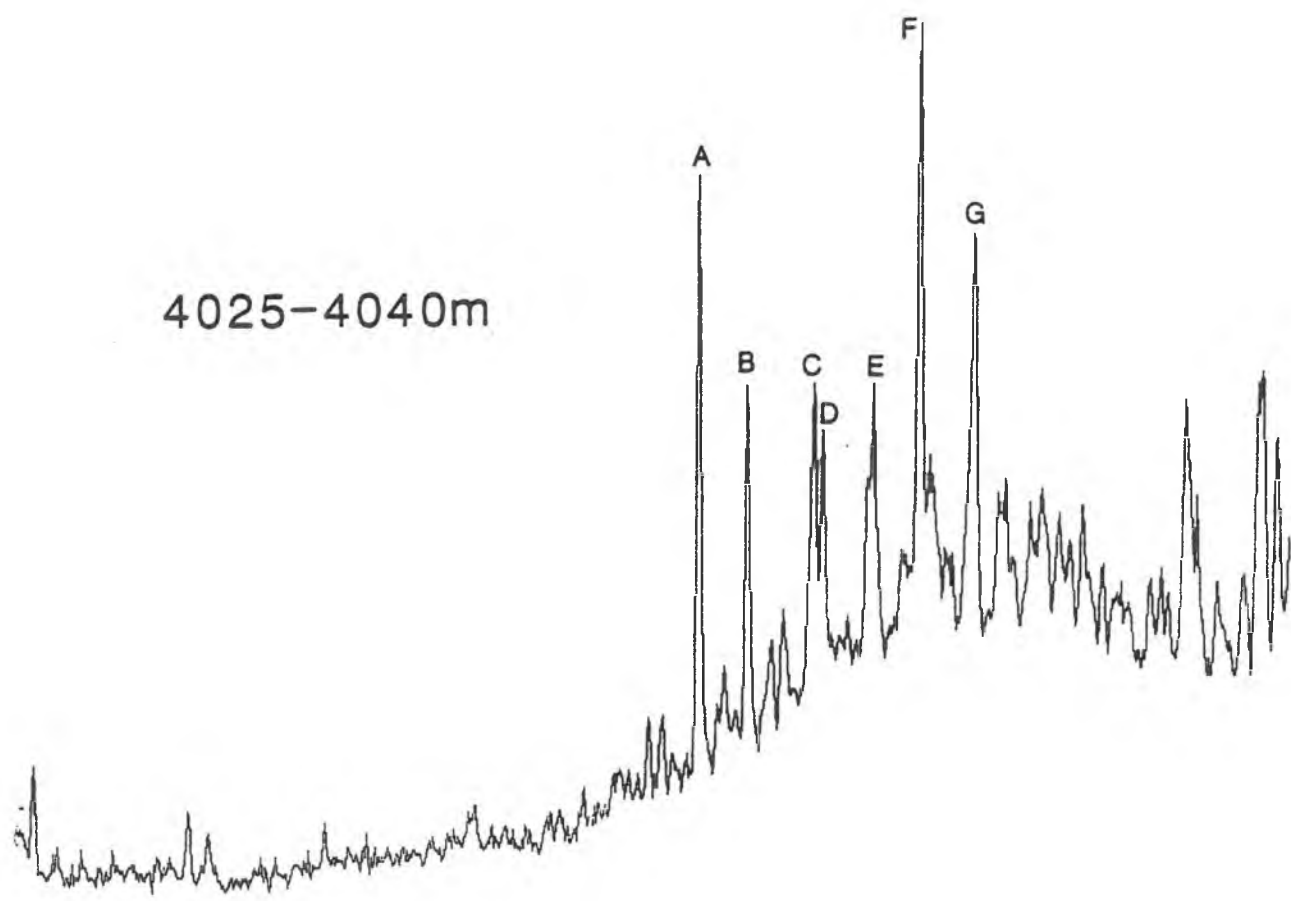
3991.67m CORE



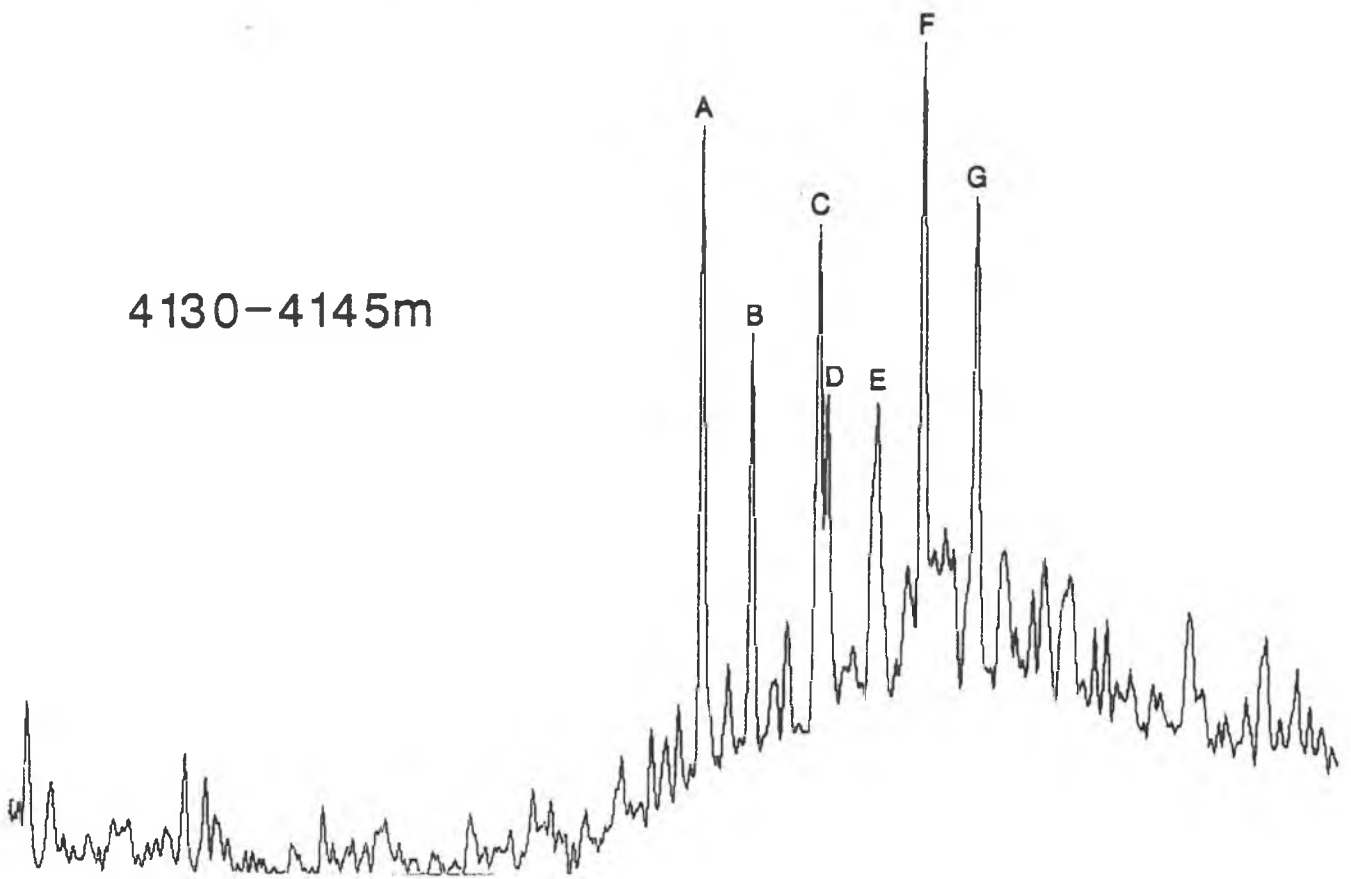
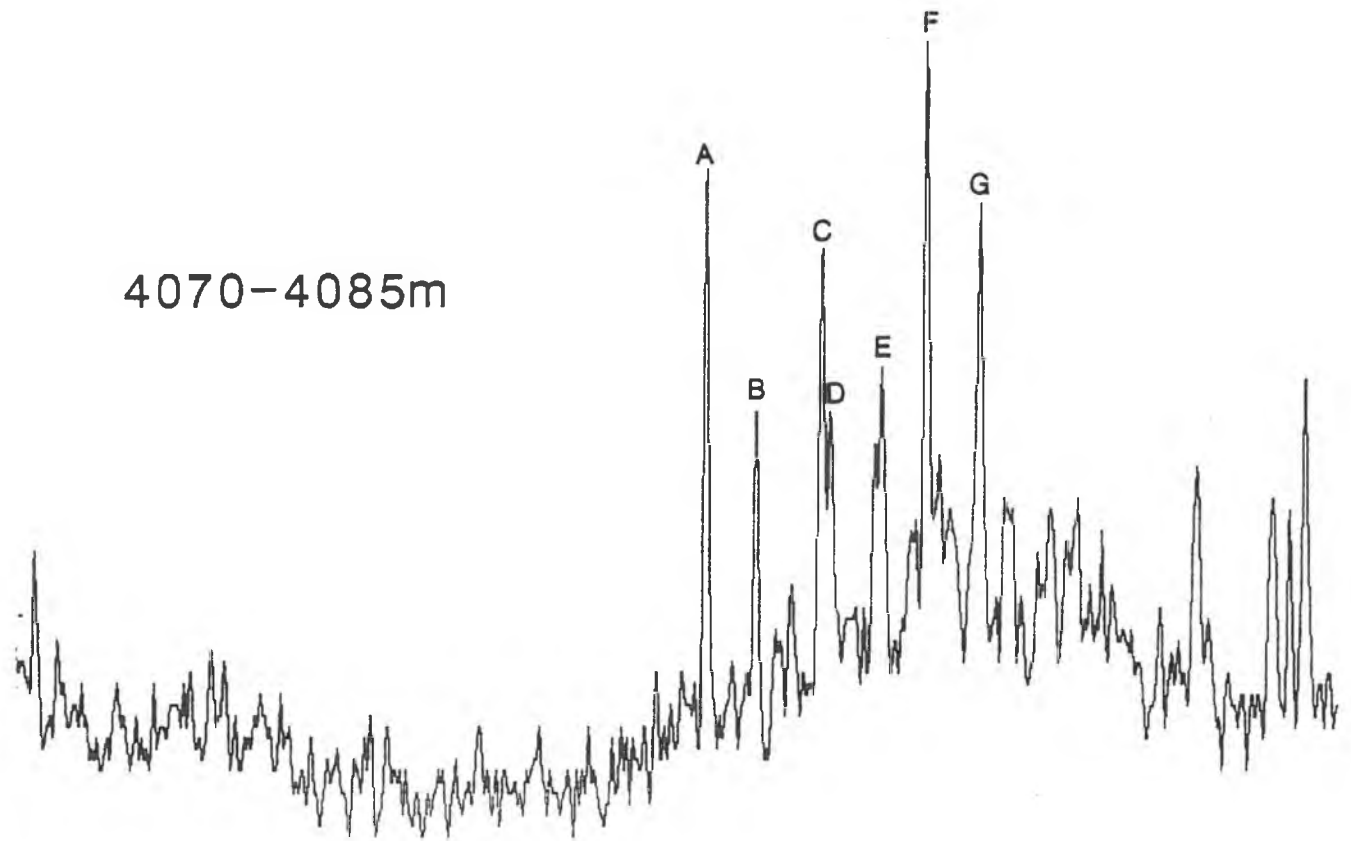
4017.40m CORE



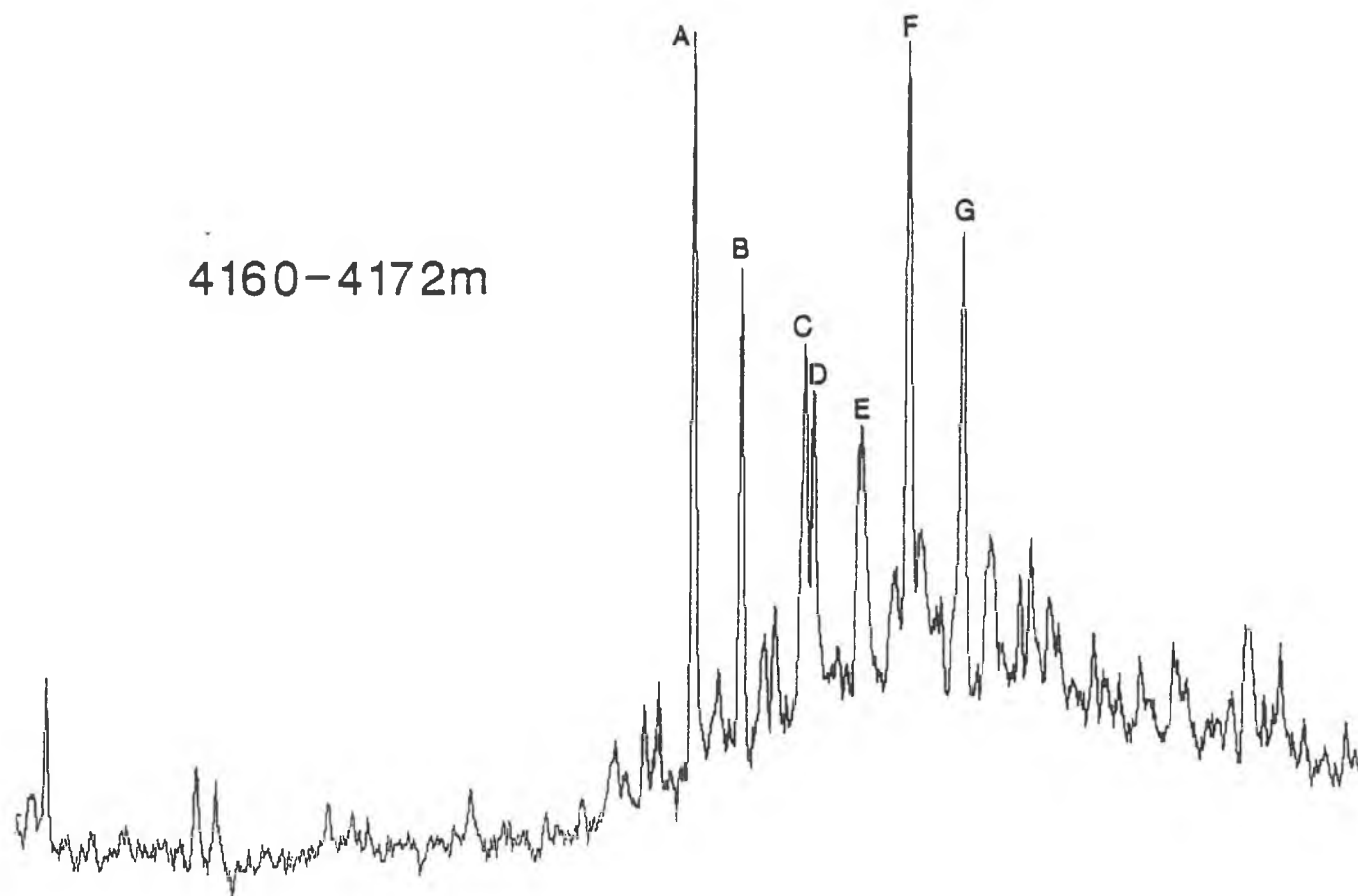
REARRANGED STERANES  $m/z$  259



REARRANGED STERANES  $m/z$  259



REARRANGED STERANES  $m/z$  259



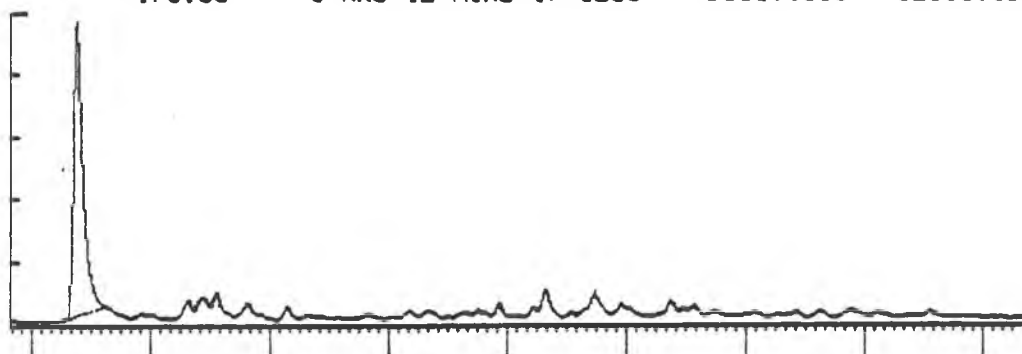
# AROMATIC MASS FRAGMENTOGRAMS

## PHENANTHRENE SERIES

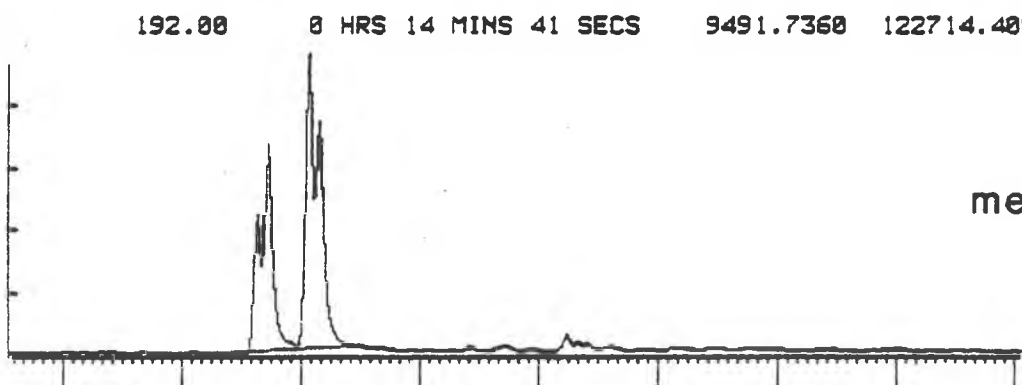
SIR REPORT. FILE - STD. .SD RUN - 1

UNCALIBRATED.  
MASS

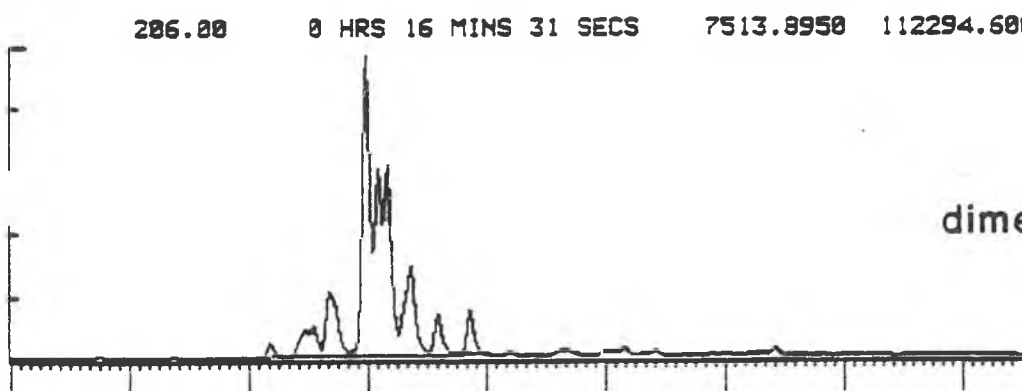
RETENTION TIME	HEIGHT	AREA	CONC. (H)	CONC. (A)
178.00 0 HRS 12 MINS 17 SECS	9885.1530	52963.6900	0.0000	0.0000
192.00 0 HRS 14 MINS 41 SECS	9491.7360	122714.4000	0.0000	0.0000
206.00 0 HRS 16 MINS 31 SECS	7513.8950	112294.6000	0.0000	0.0000
220.00 0 HRS 18 MINS 21 SECS	3435.1420	60707.0400	0.0000	0.0000



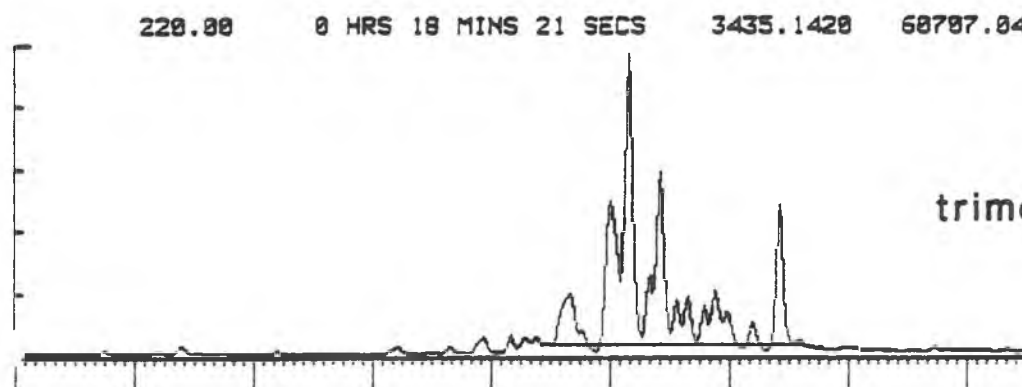
phenanthrene



methyl phenanthrenes



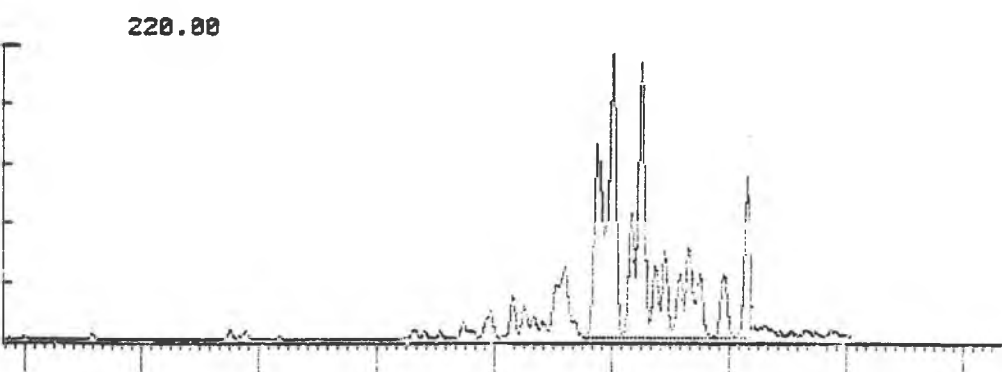
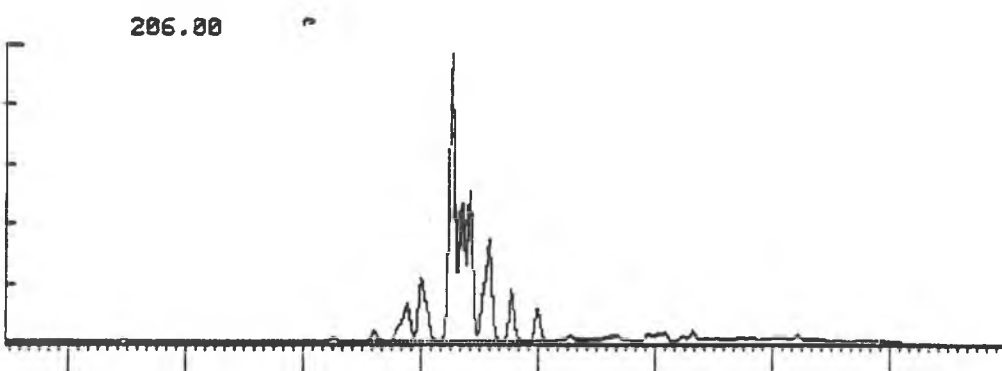
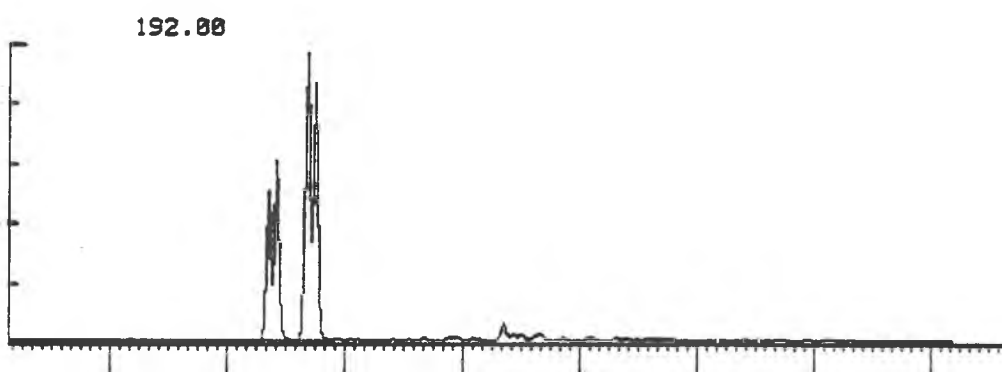
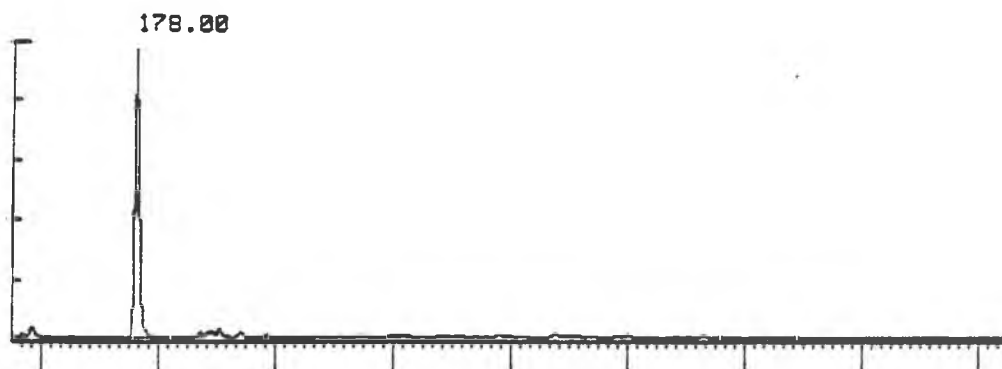
dimethyl phenanthrenes



trimethyl phenanthrenes

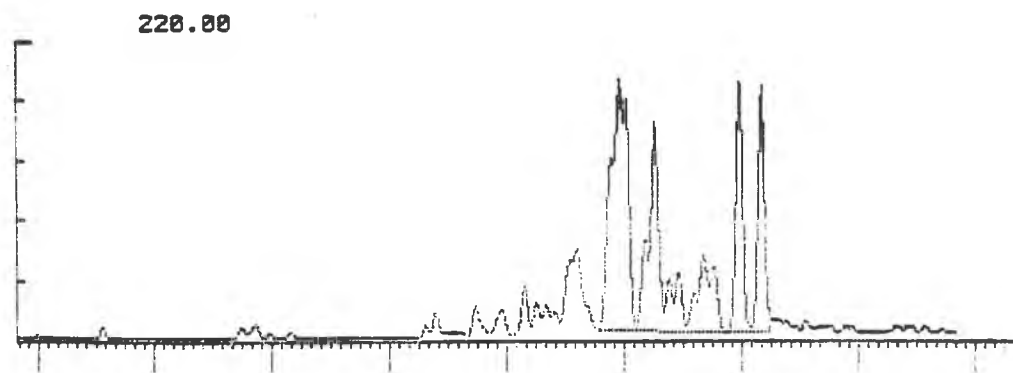
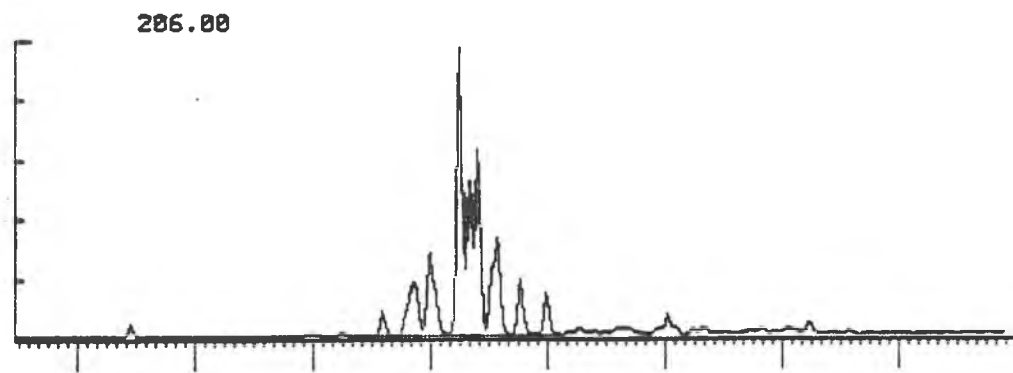
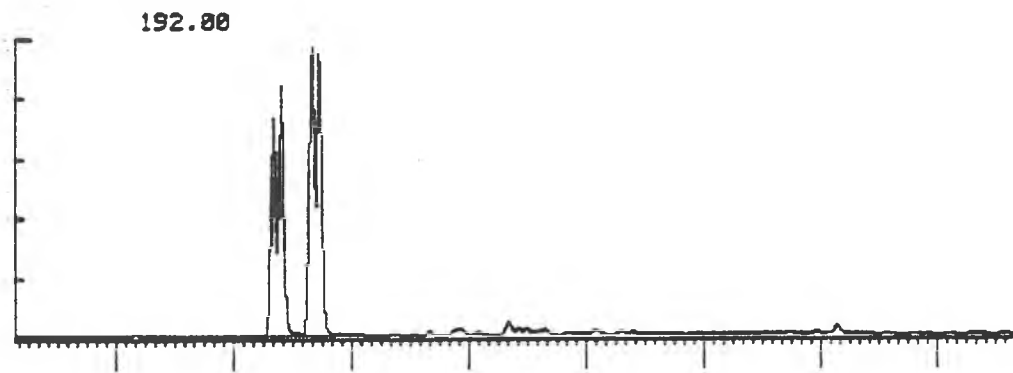


FIGURE 13a AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2  
PHENANTHRENE SERIES



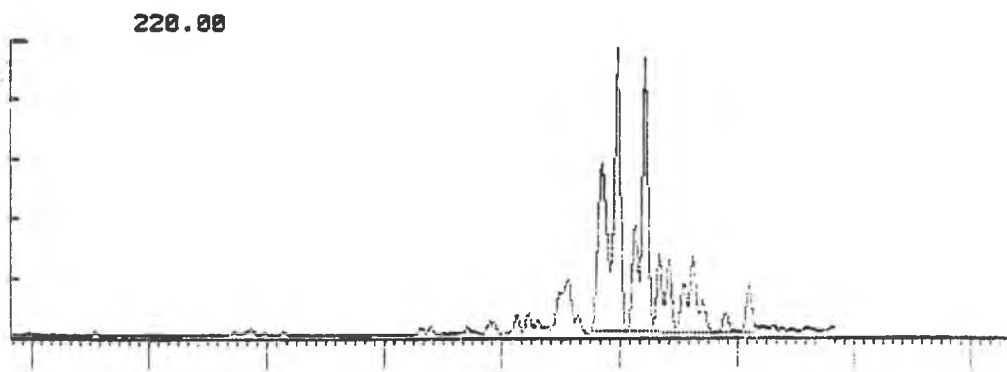
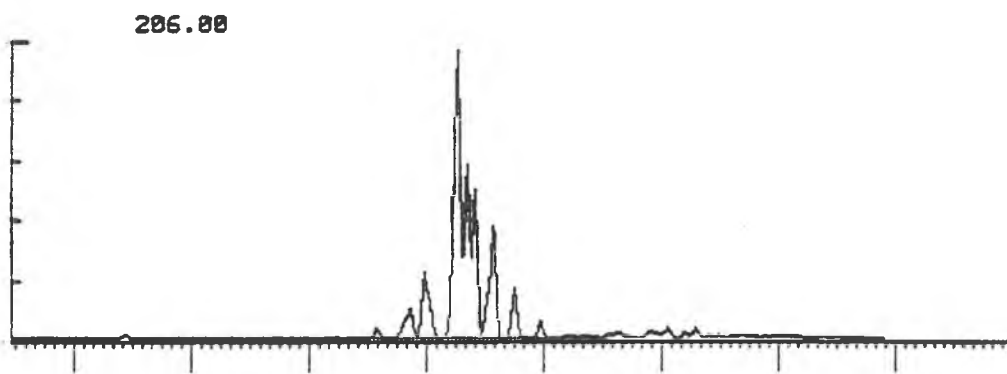
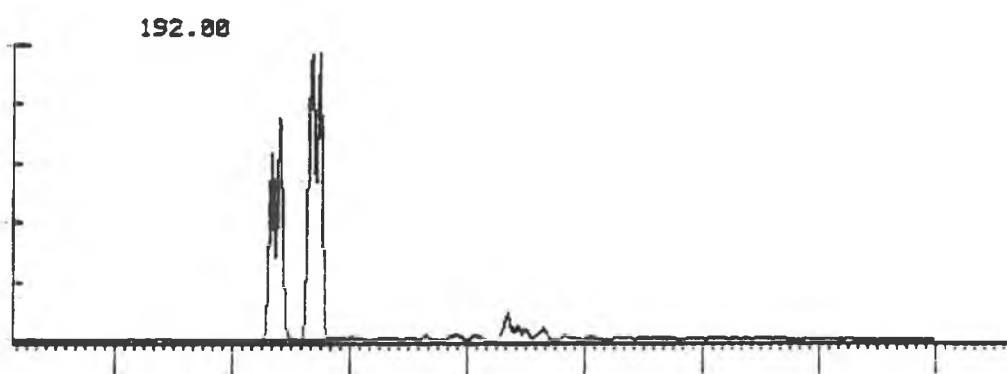
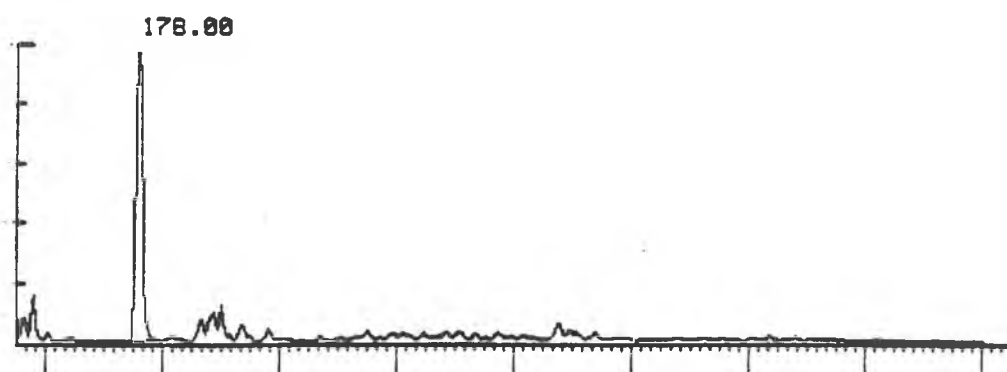
2405-2420m

FIGURE 13b AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2  
PHENANTHRENE SERIES



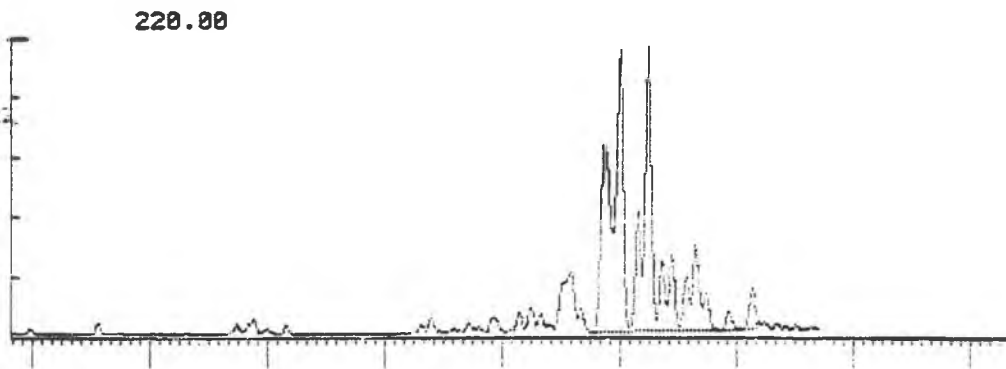
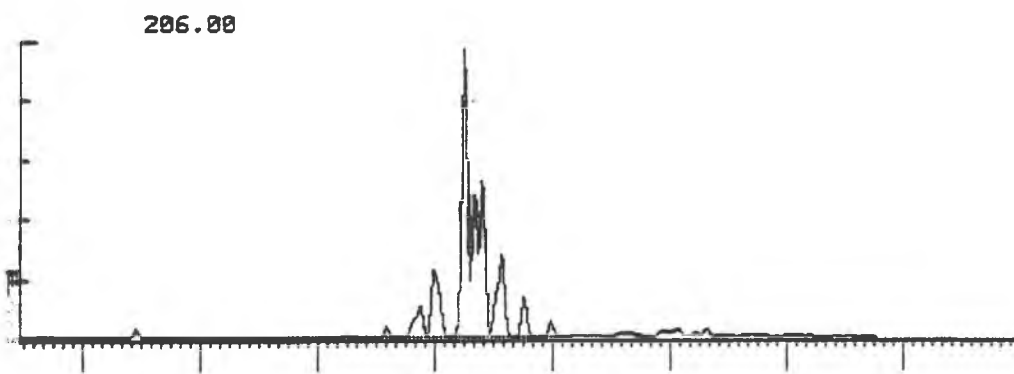
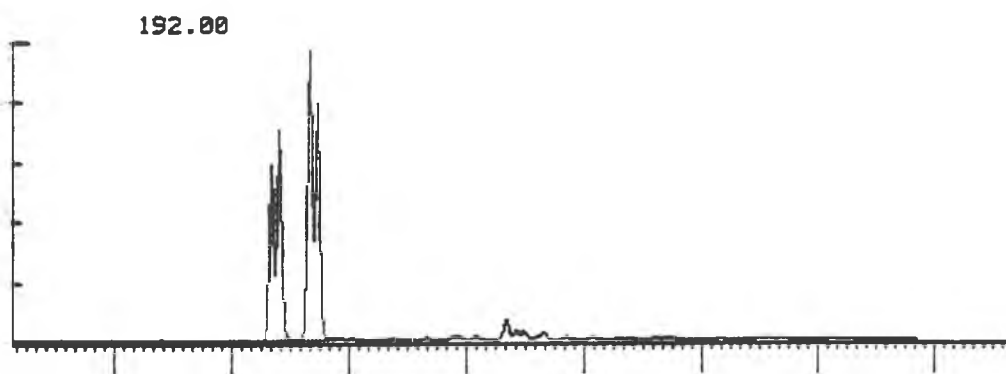
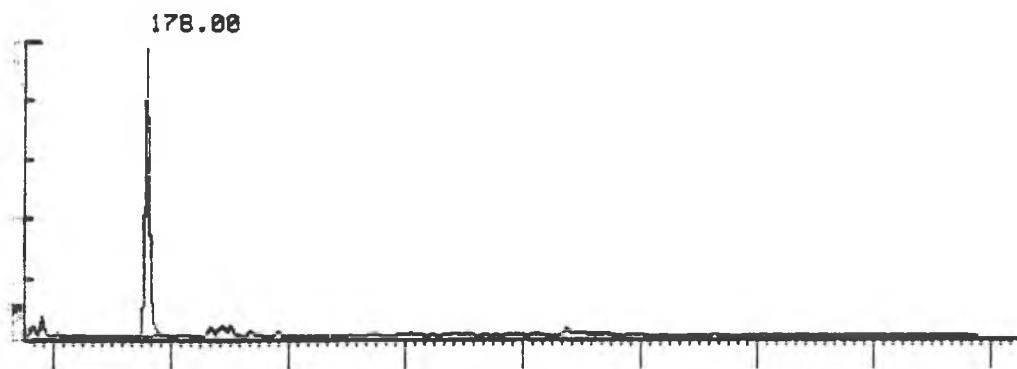
2855-2870m

PHENANTHRENE SERIES



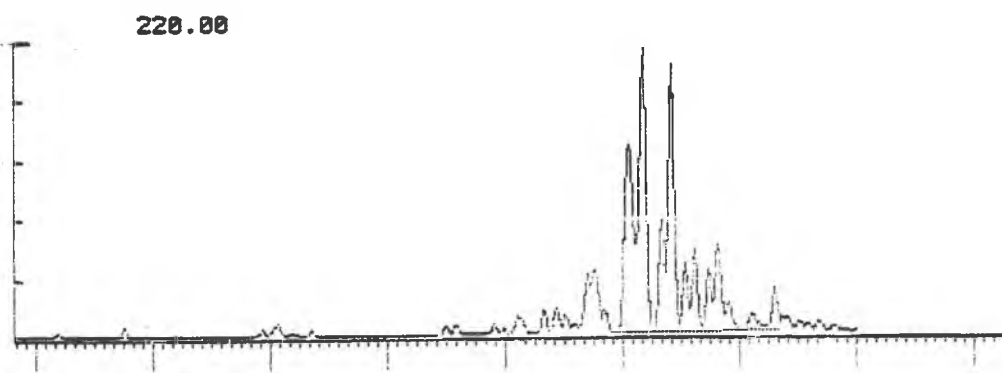
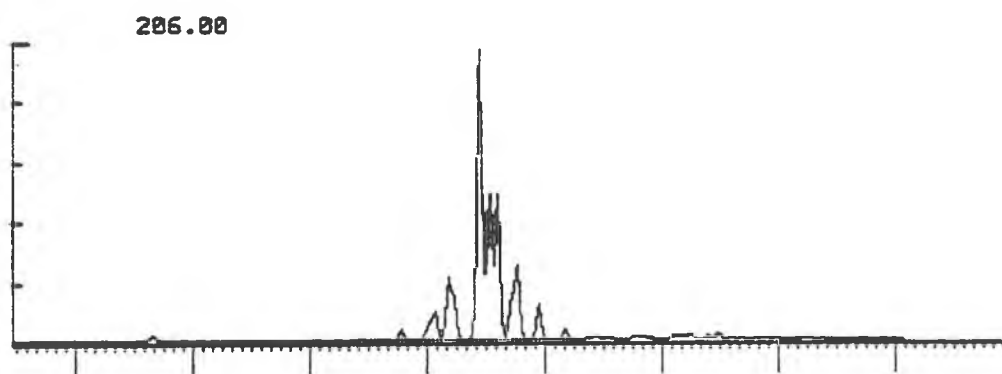
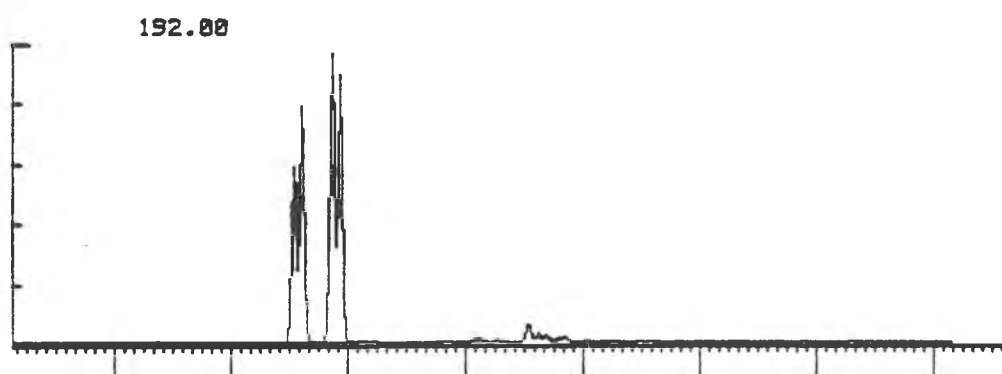
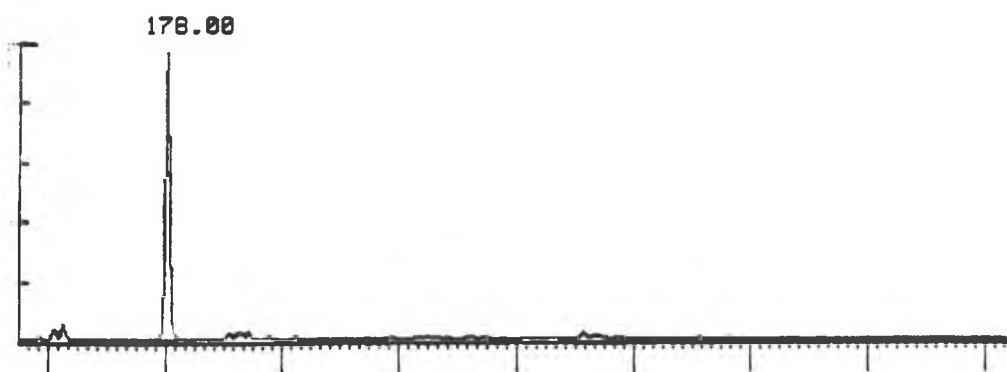
3790-3802m

PHENANTHRENE SERIES



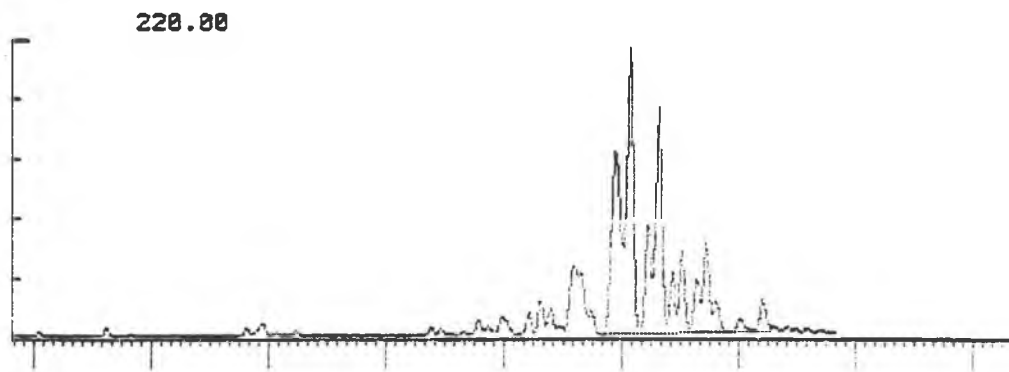
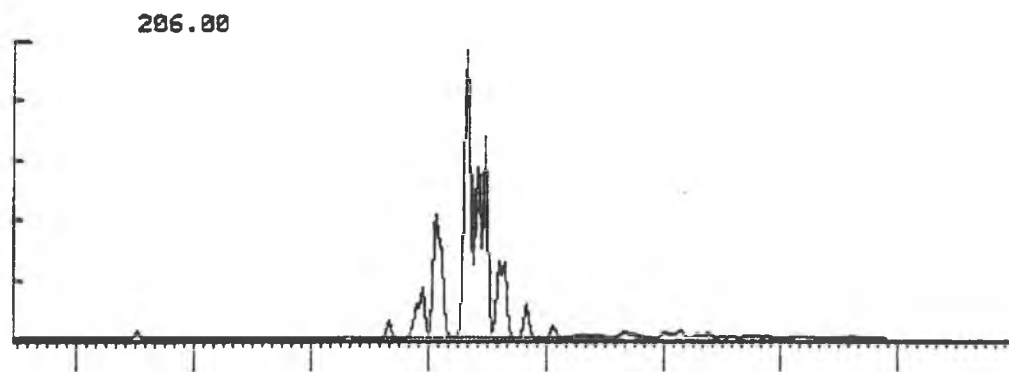
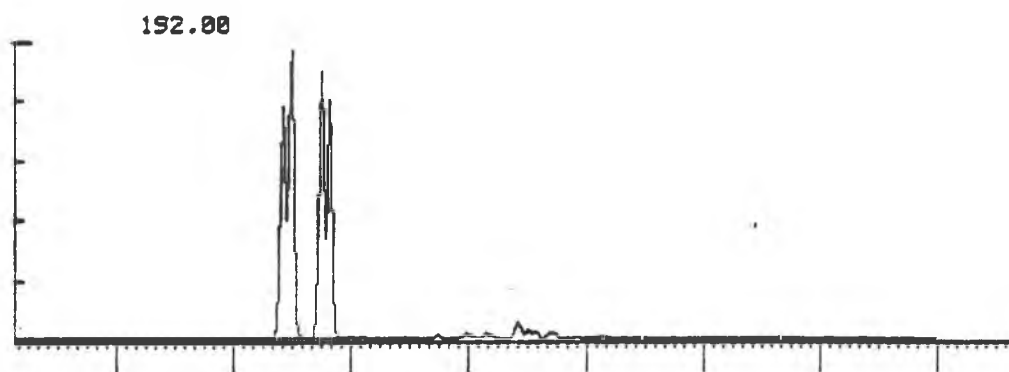
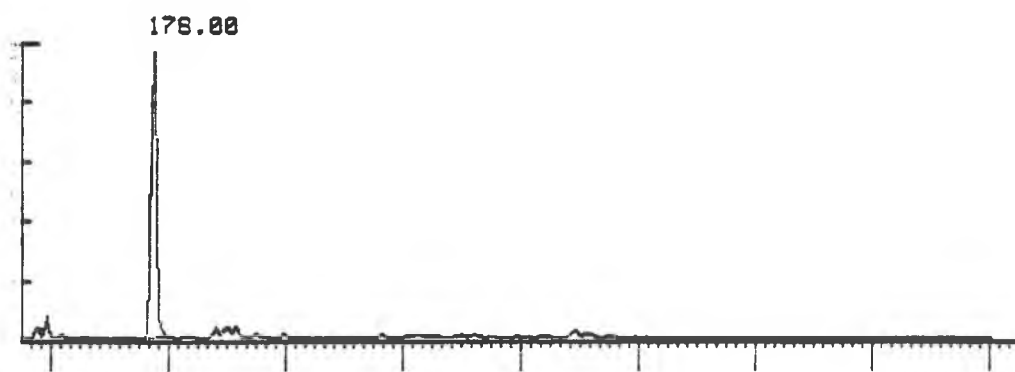
3830-3845m

PHENANTHRENE SERIES



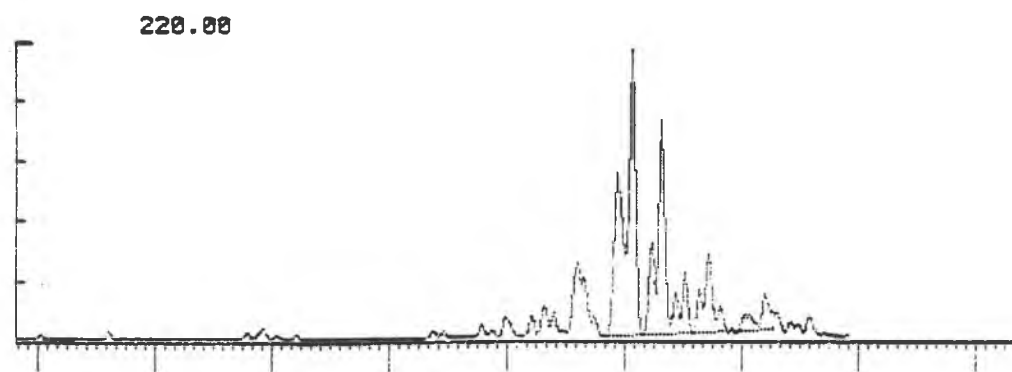
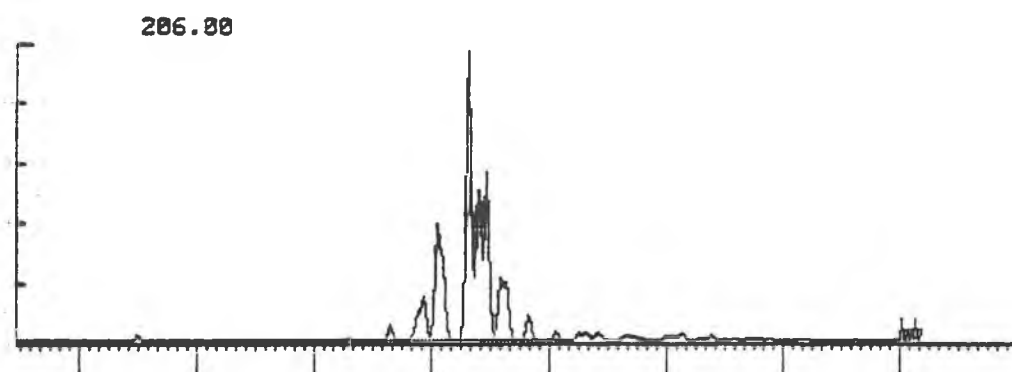
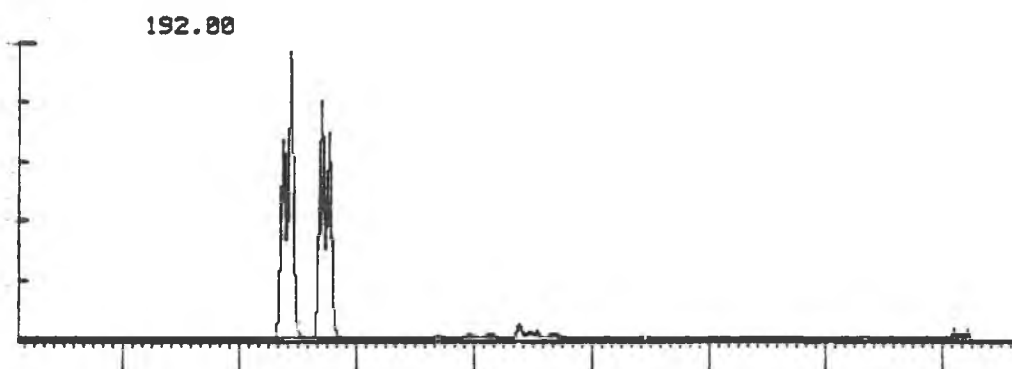
3860-3875m

PHENANTHRENE SERIES

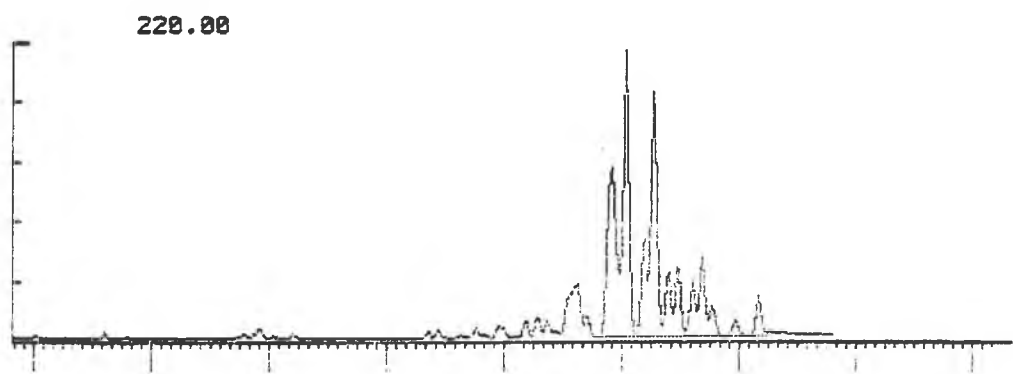
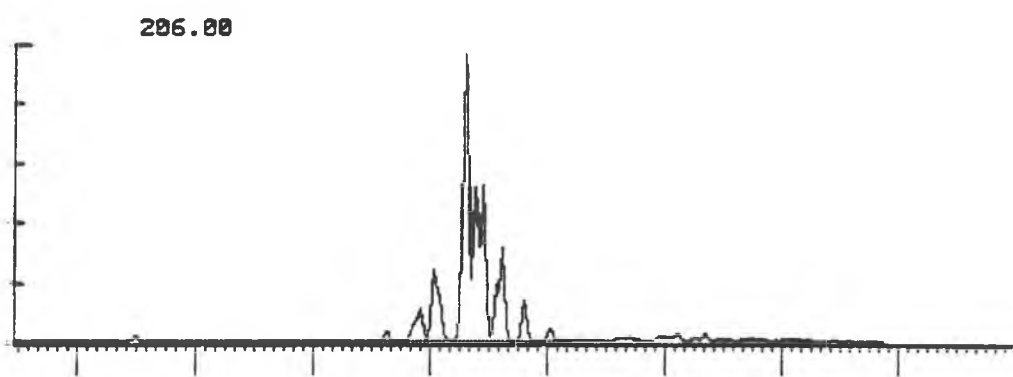
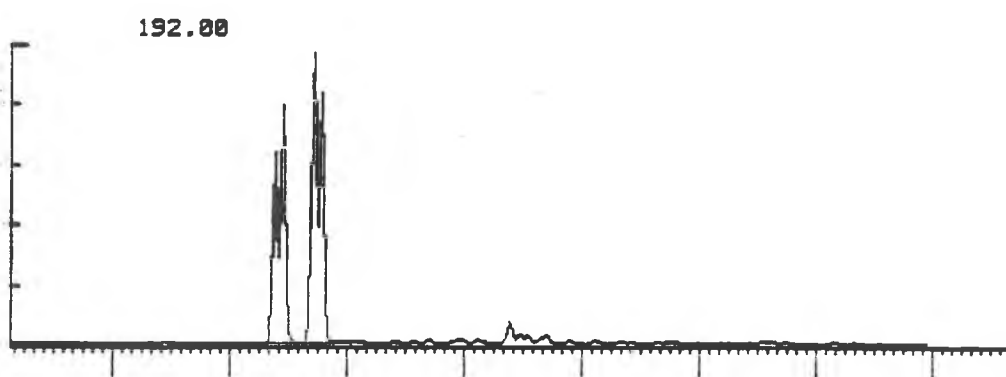
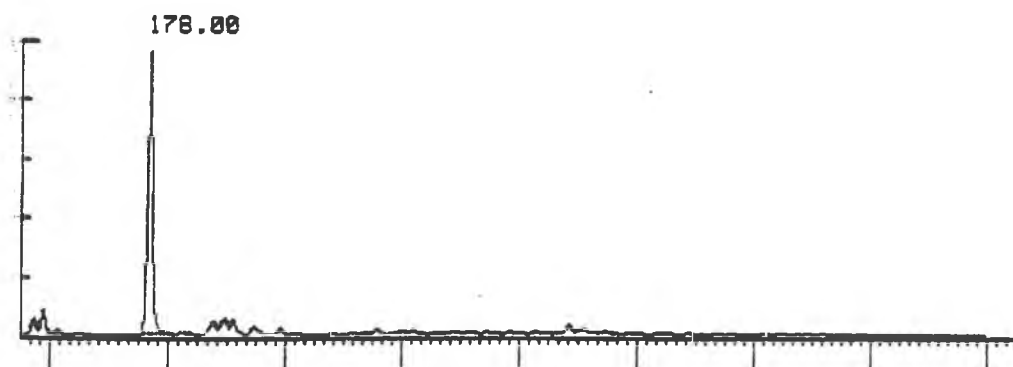


3956.70m CORE

PHENANTHRENE SERIES

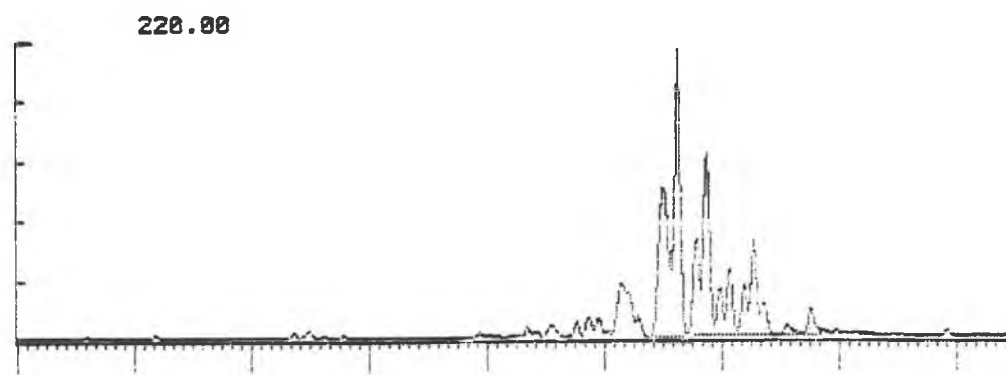
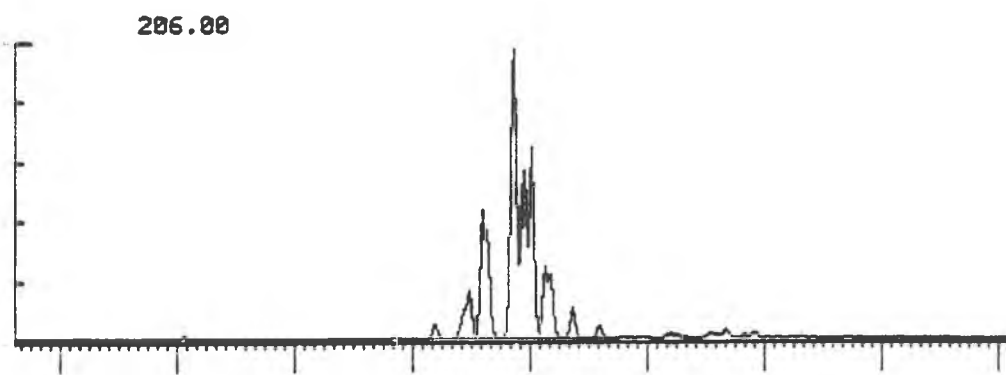
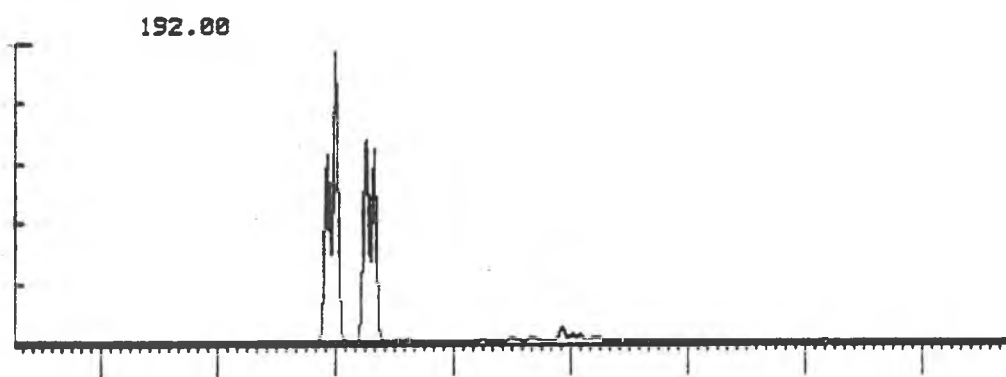
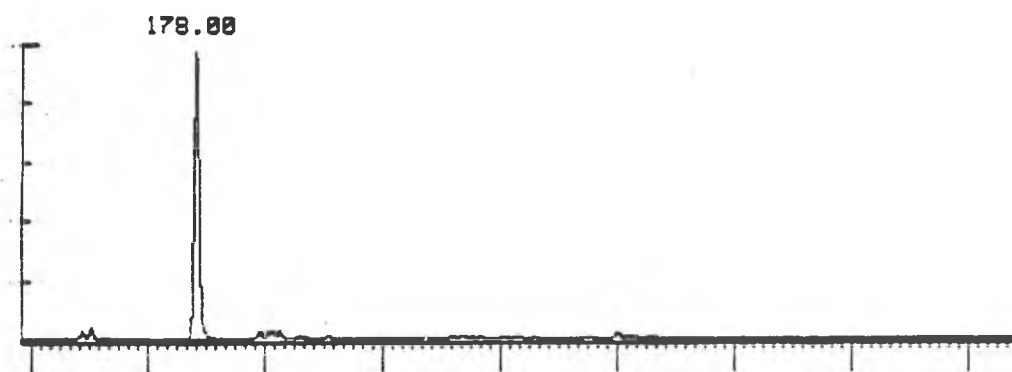


PHENANTHRENE SERIES



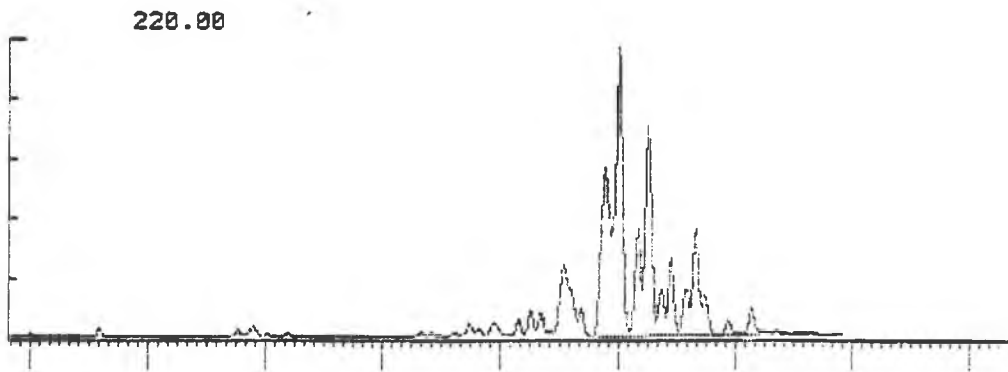
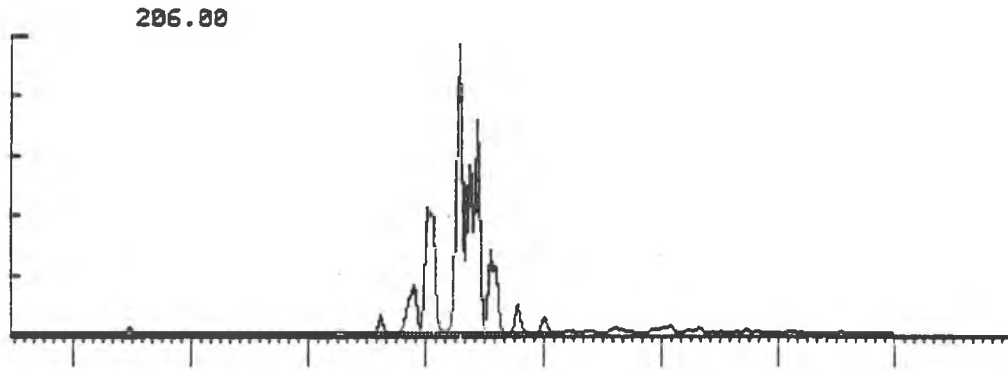
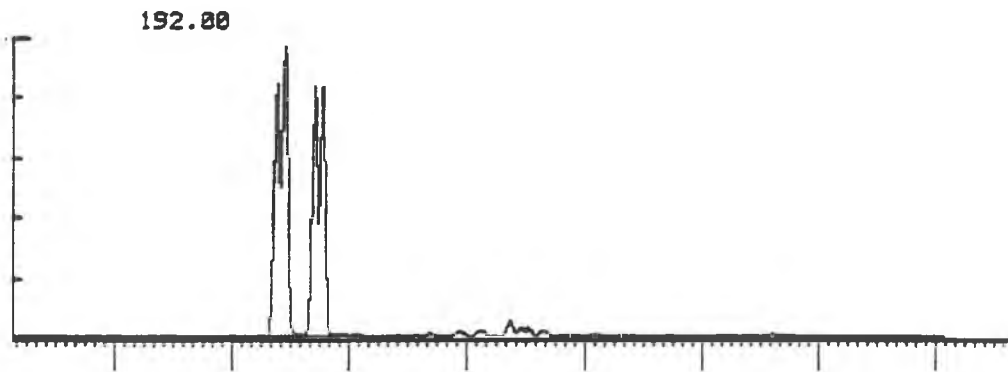
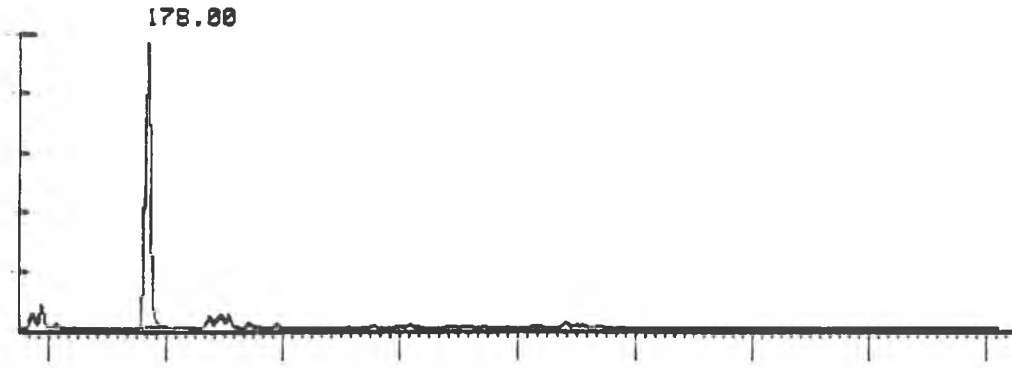


PHENANTHRENE SERIES



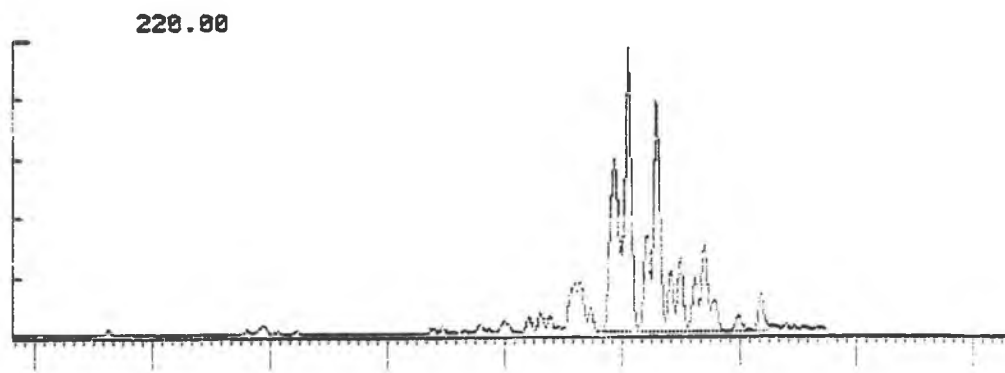
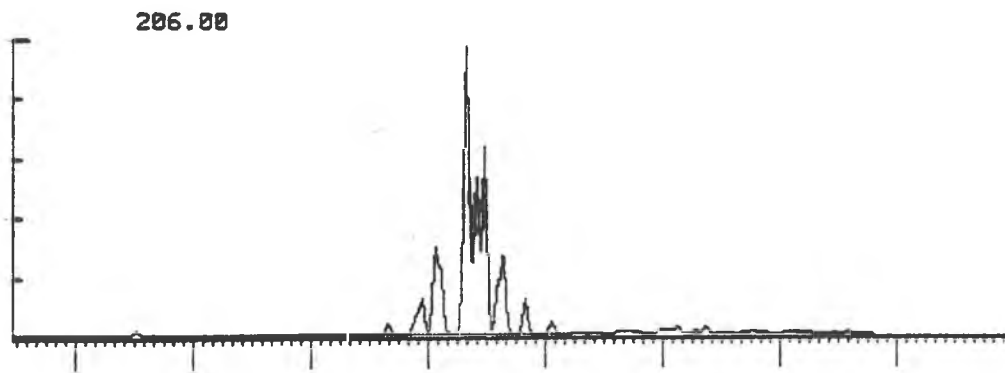
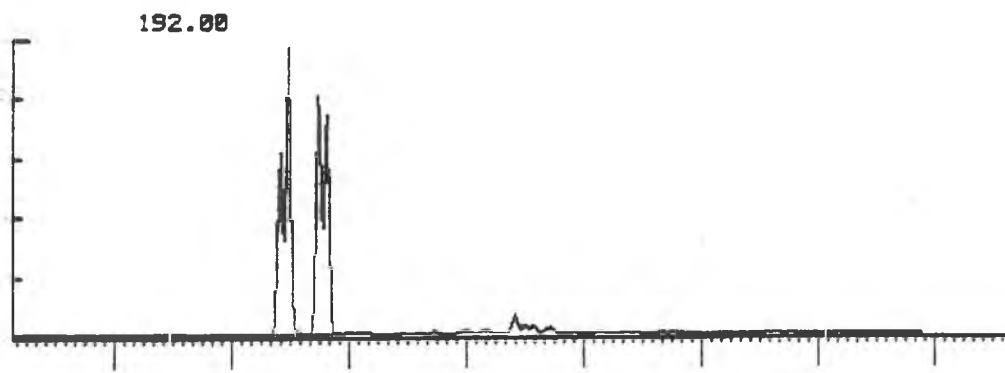
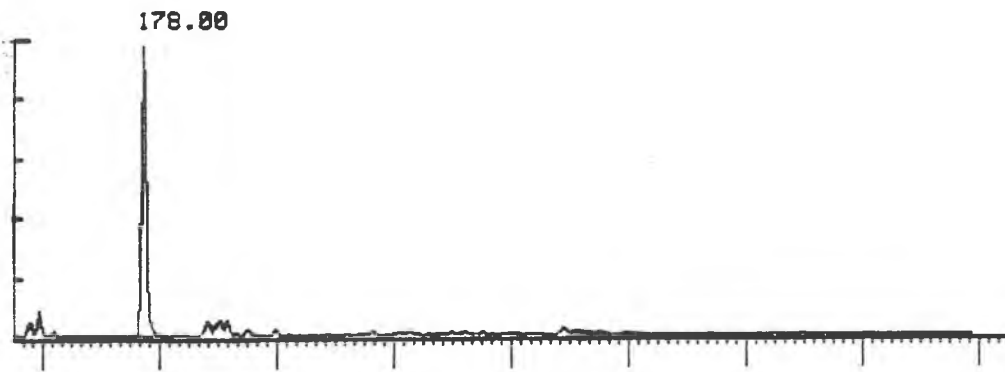
3991.67m CORE

FIGURE 13] AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2  
PHENANTHRENE SERIES



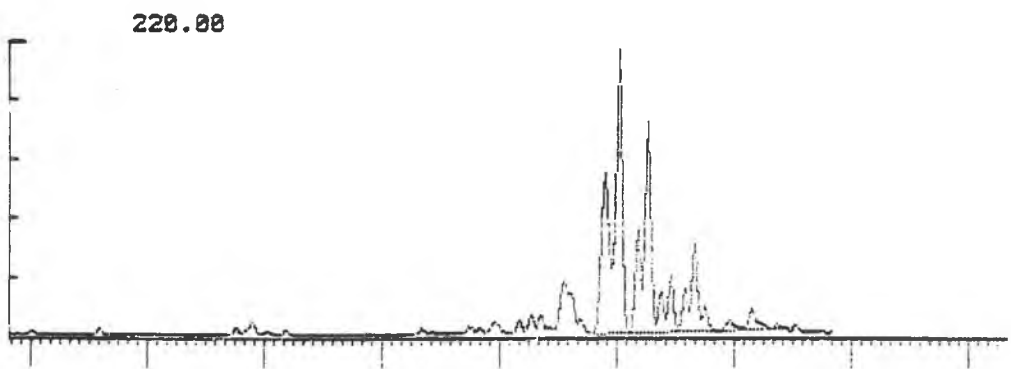
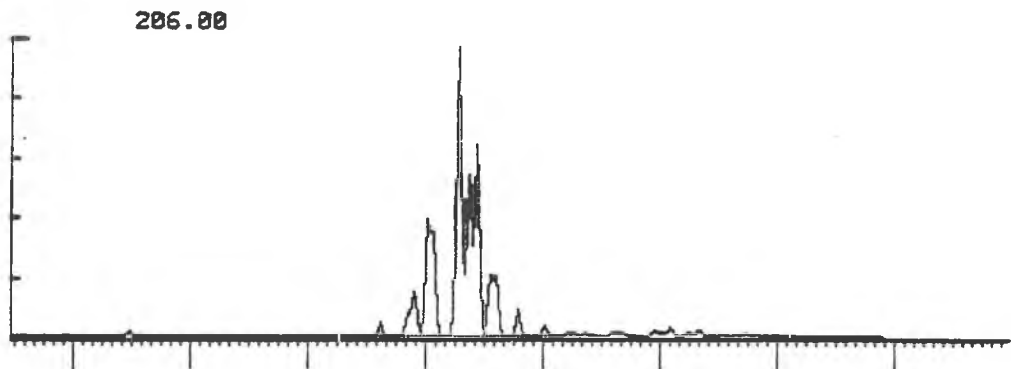
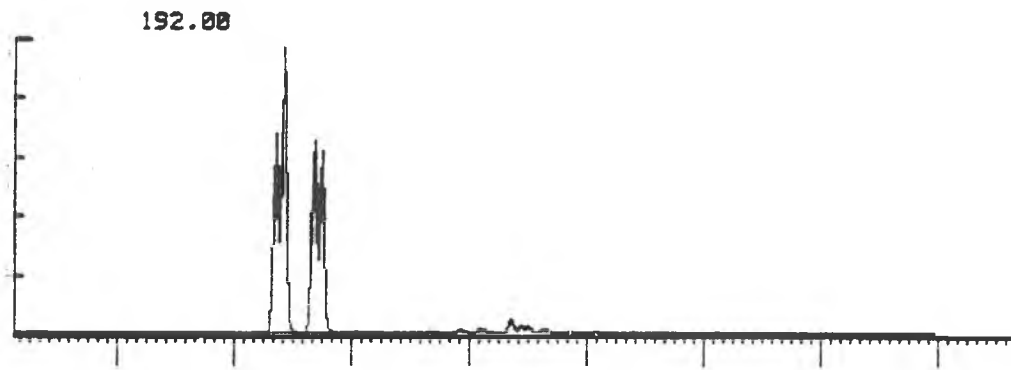
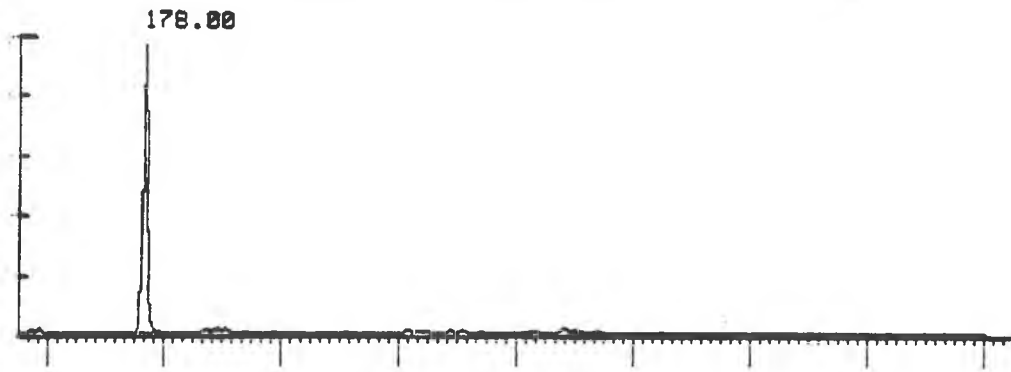
4017.40m CORE

PHENANTHRENE SERIES



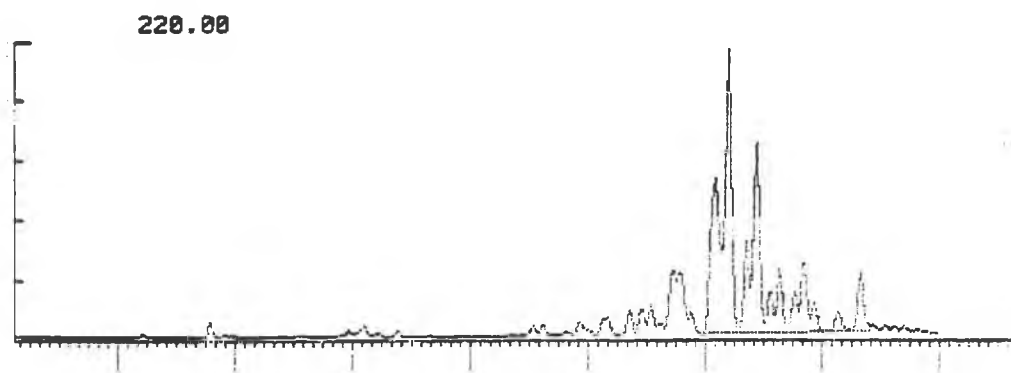
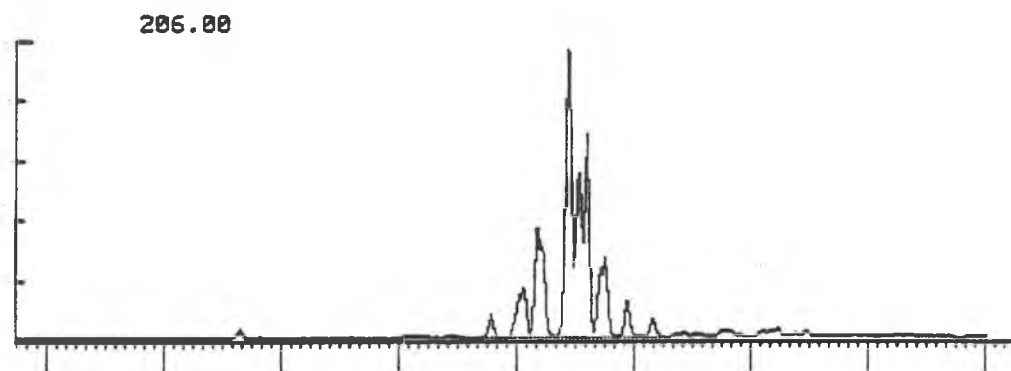
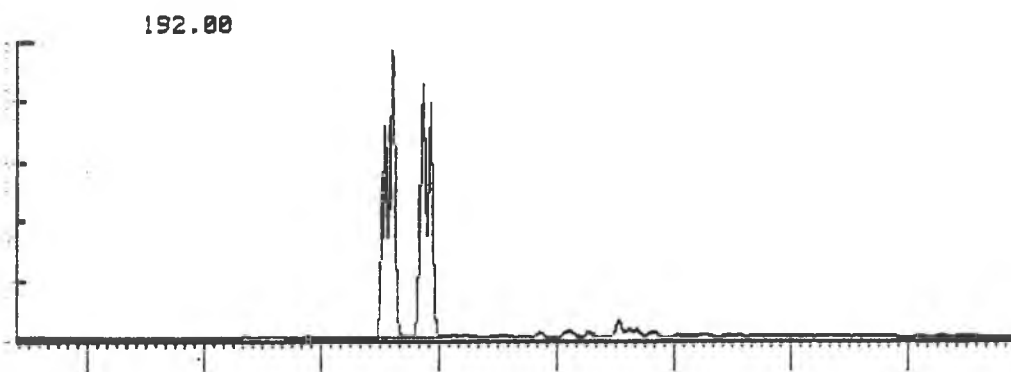
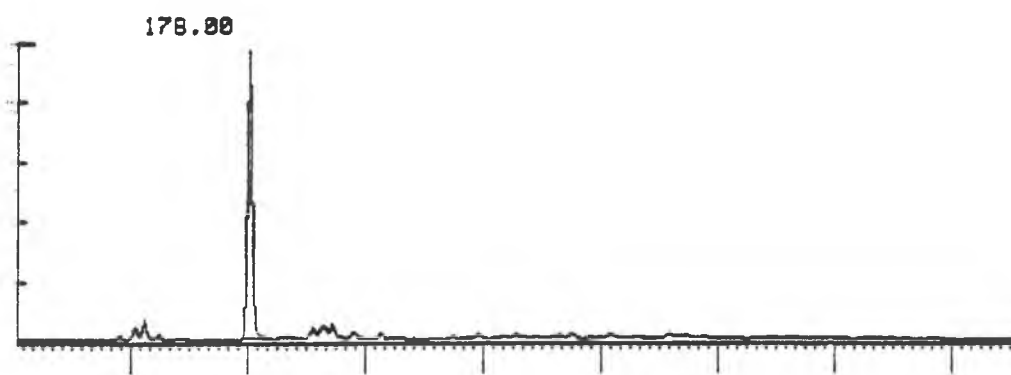
4025-4040m

PHENANTHRENE SERIES



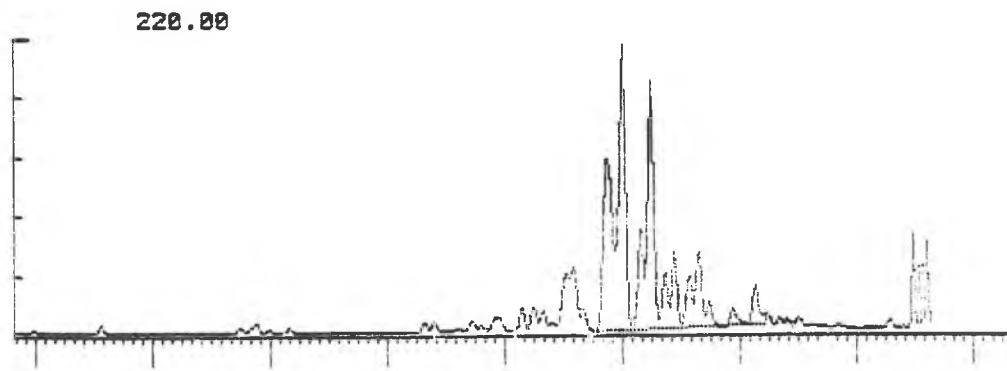
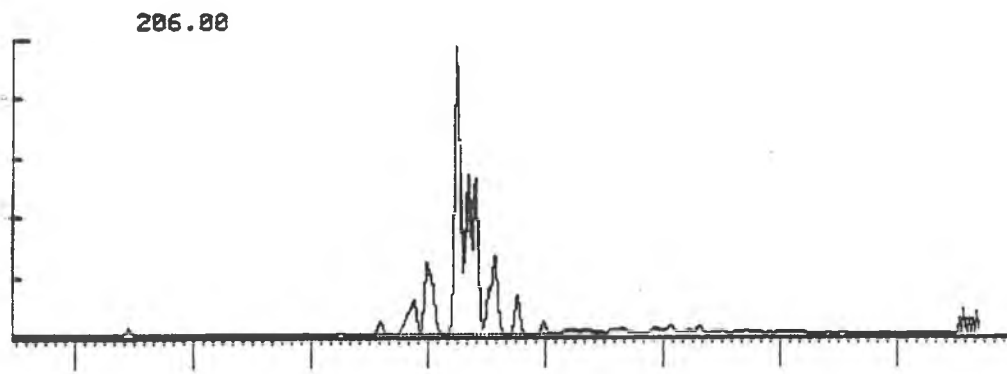
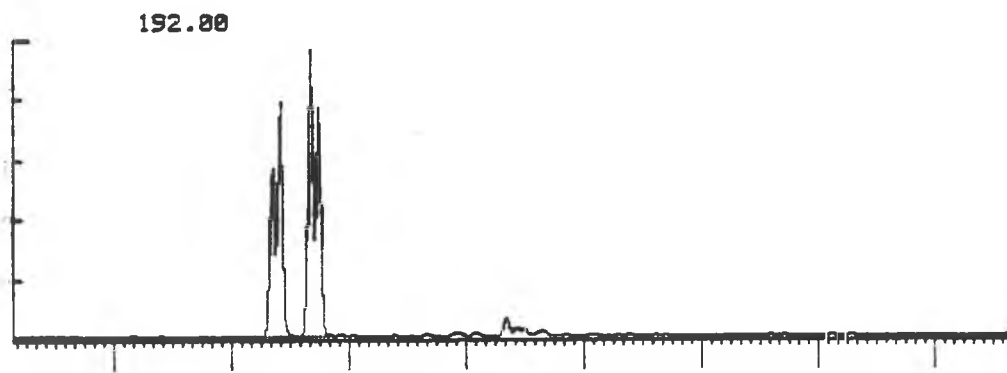
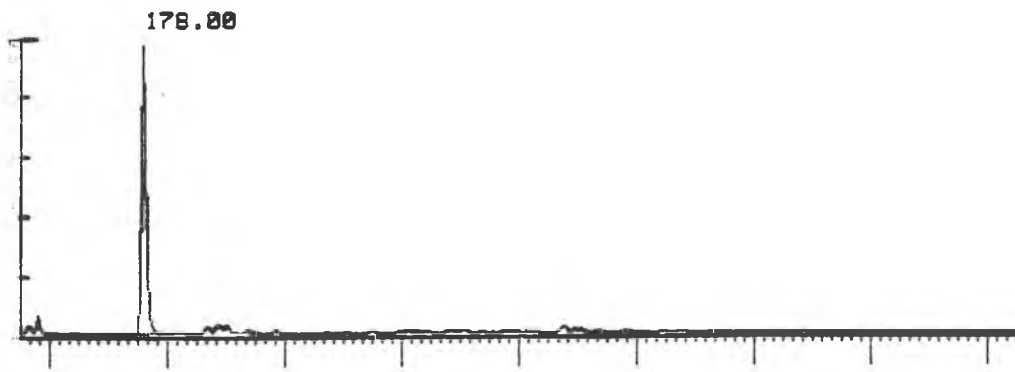
4051.49m CORE

PHENANTHRENE SERIES



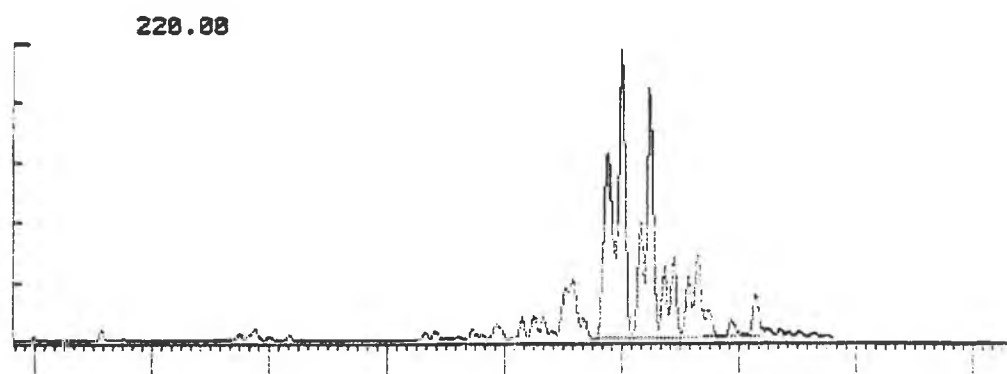
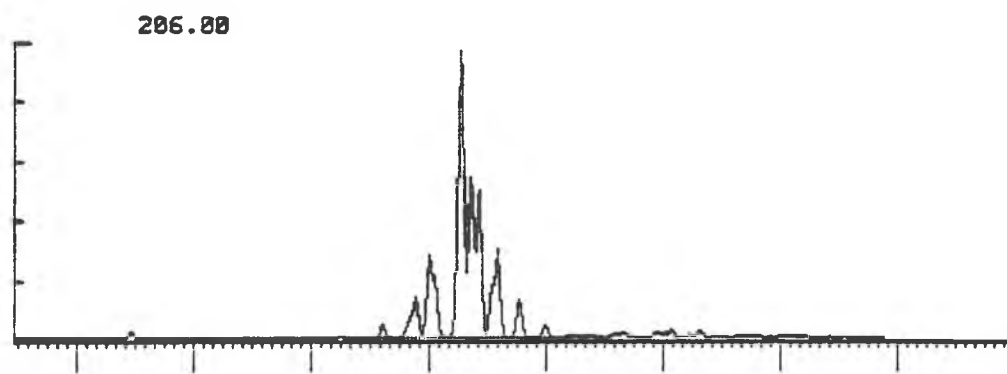
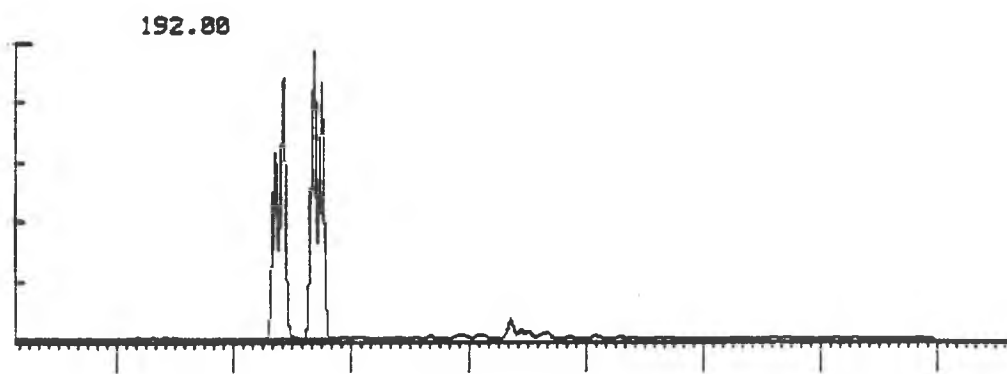
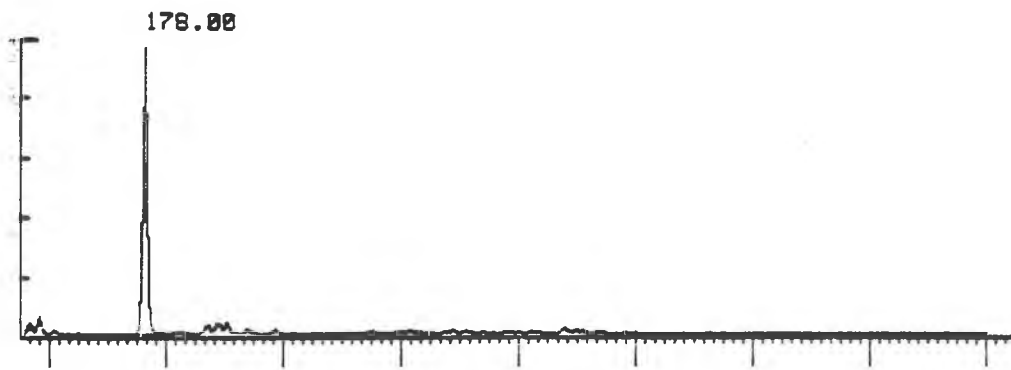
4070-4085m

PHENANTHRENE SERIES



4130-4145m

PHENANTHRENE SERIES



4160-4172m

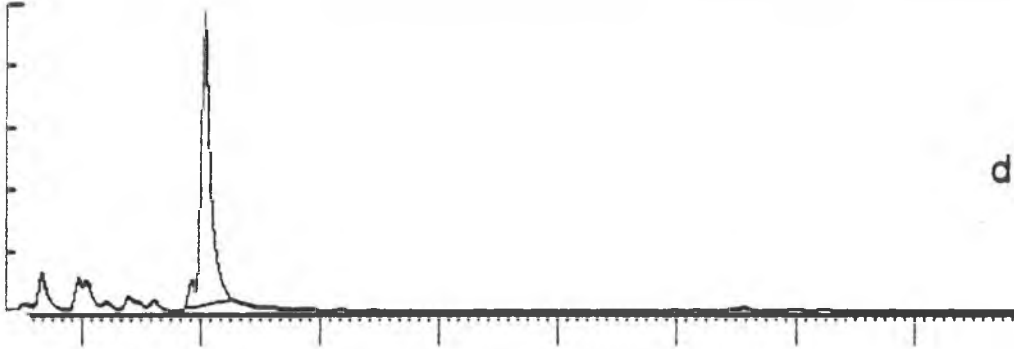
# AROMATIC MASS FRAGMENTOGRAMS

## DIBENZOTHIOPHENE SERIES

SIR REPORT. FILE - STD. .SD RUN - 1

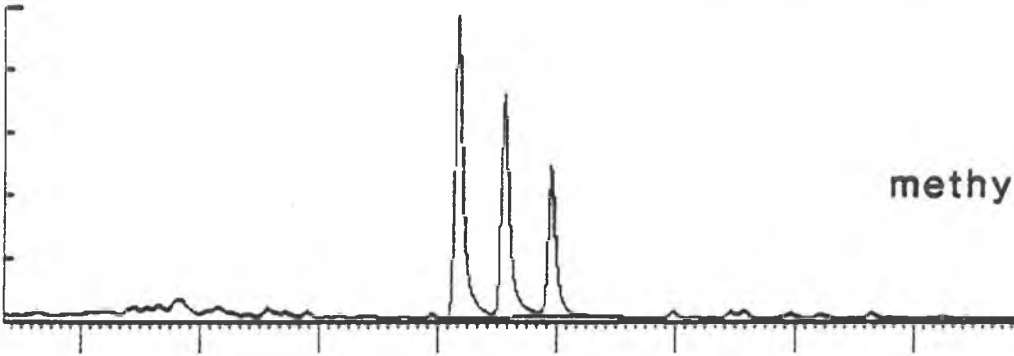
UNCALIBRATED.

MASS	RETENTION TIME	HEIGHT	AREA	CONC. (H)	CONC. (A)
184.00	0 HRS 11 MINS 47 SECS	26003.8900	144753.9000	0.0000	0.0000



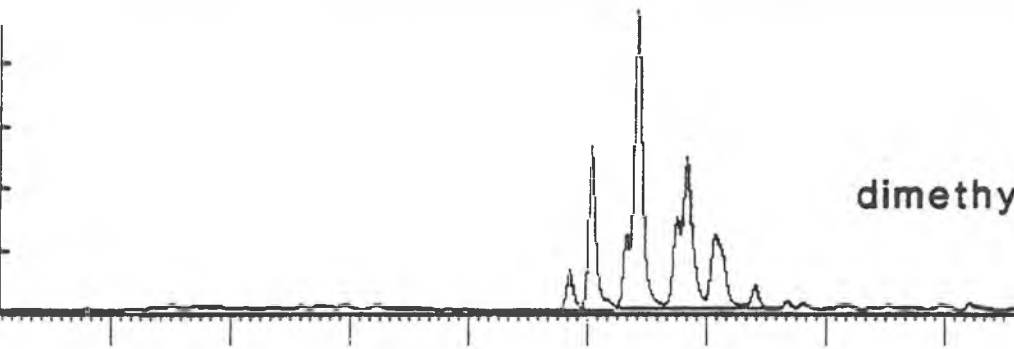
dibenzothiophene

196.00	0 HRS 13 MINS 36 SECS	16854.6700	187694.7000	0.0000	0.0000
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methyl dibenzothiophenes

212.00	0 HRS 15 MINS 36 SECS	14042.6900	200491.3000	0.0000	0.0000
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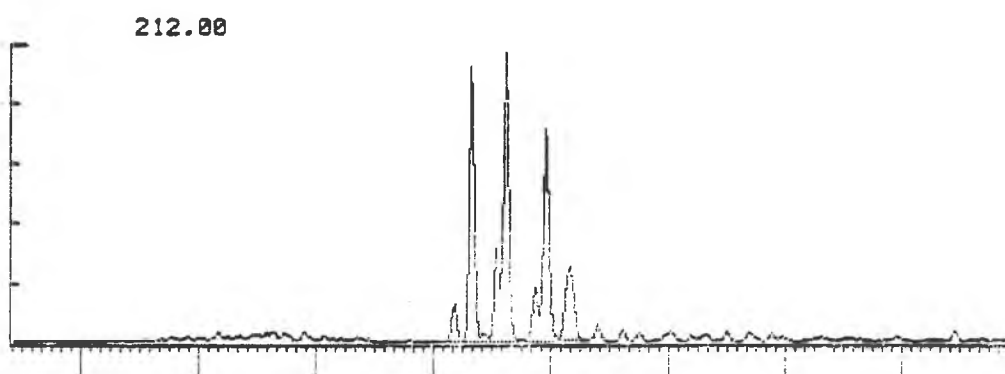
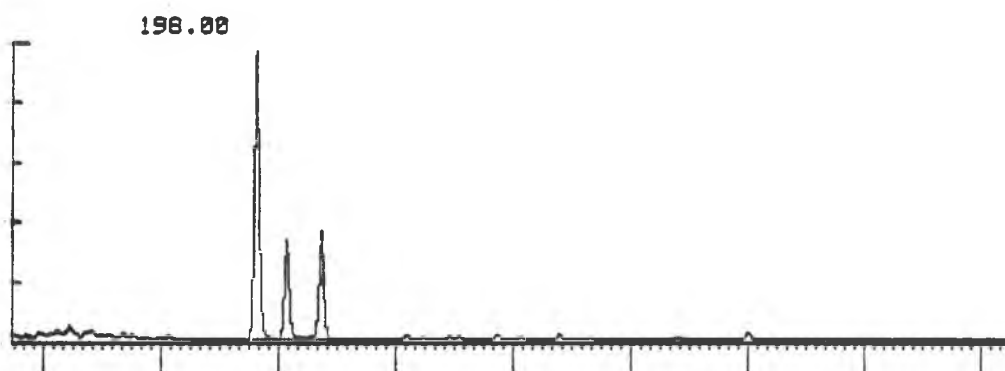
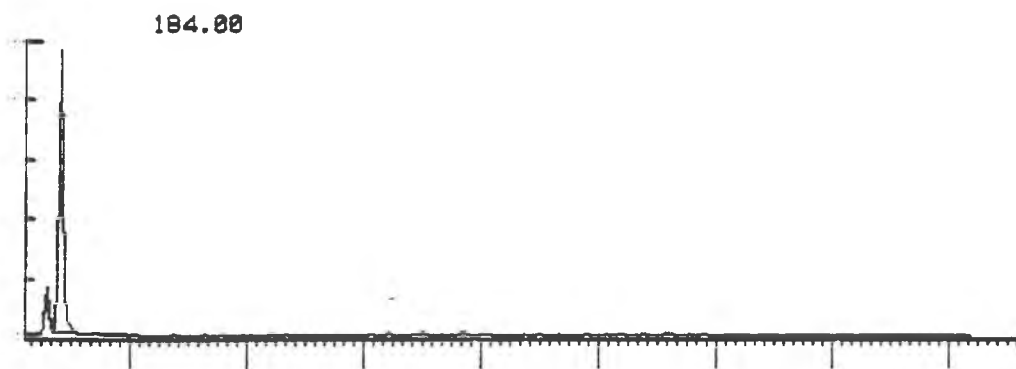
dimethyl dibenzothiophenes

0 HRS 11 MINS 4 SECS

0 HRS 19 MINS 16 SECS



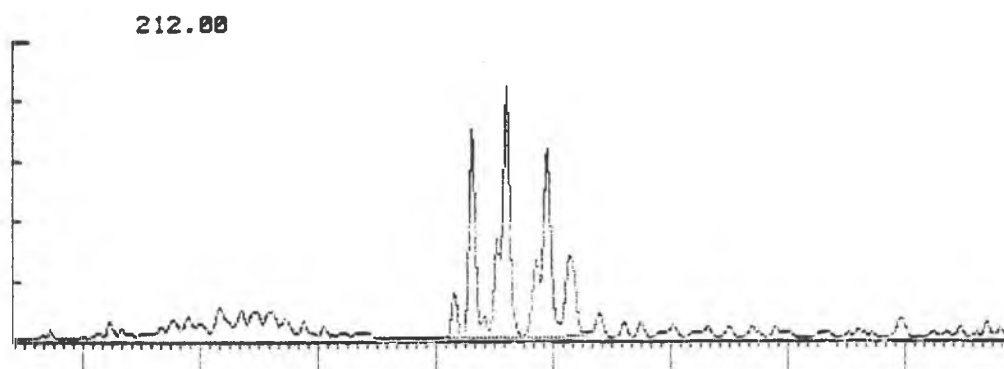
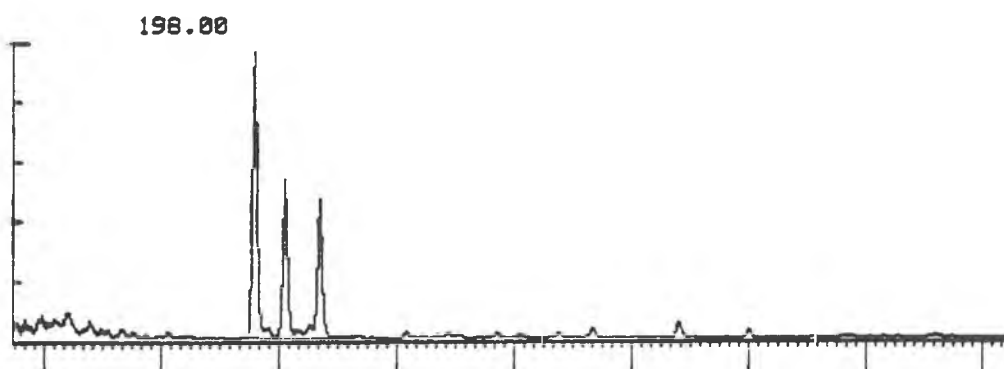
FIGURE 14a AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2  
DIBENZOTHIOPHENE SERIES



2405-2420m

FIGURE 14 b

AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2  
DIBENZOTHIOPHENE SERIES

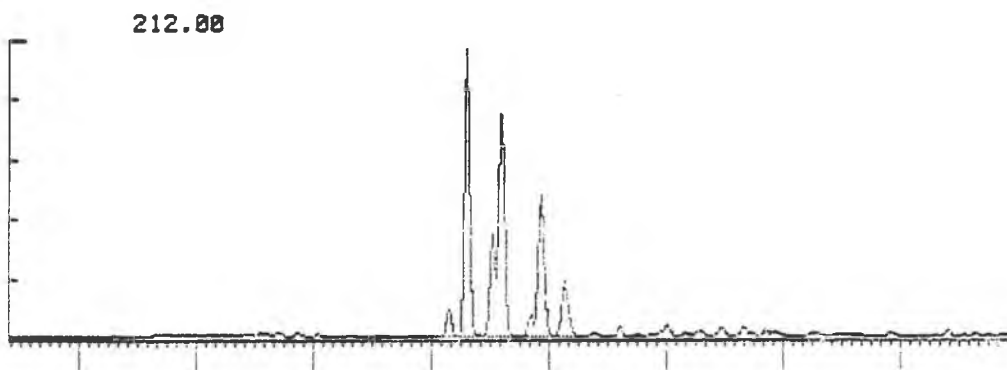
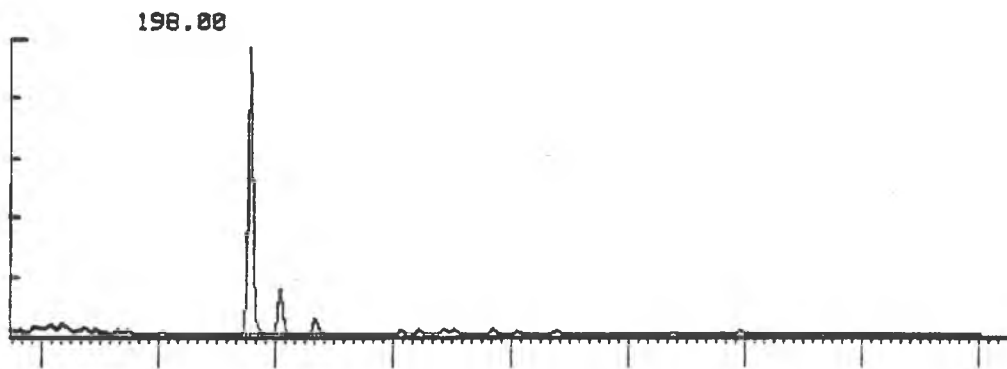
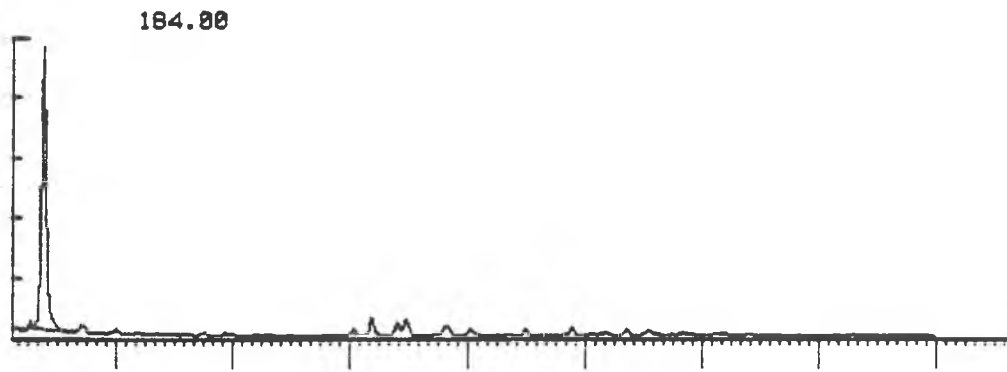


2855-2870m

FIGURE 14c

AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2

DIBENZOTHIOPHENE SERIES

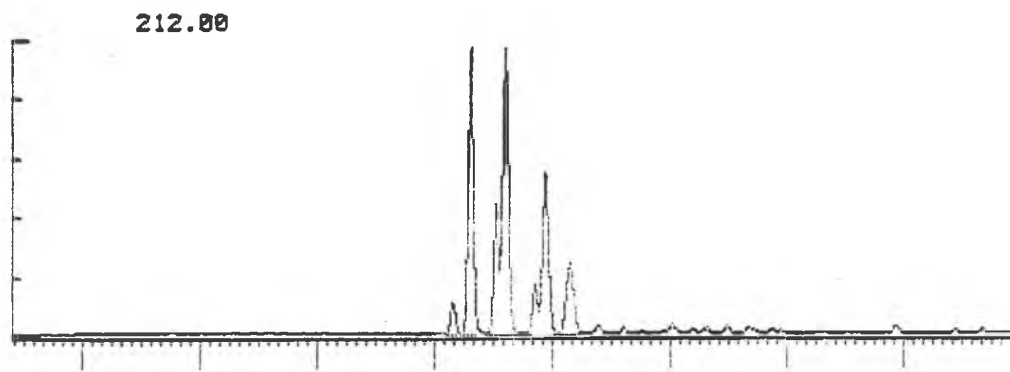
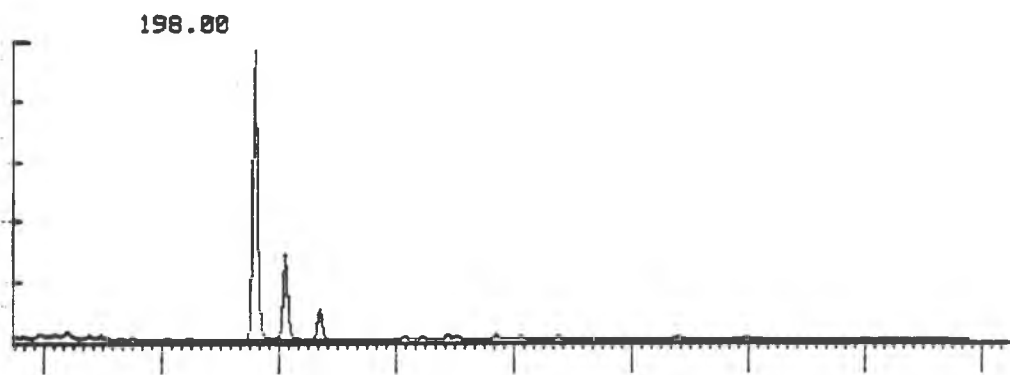
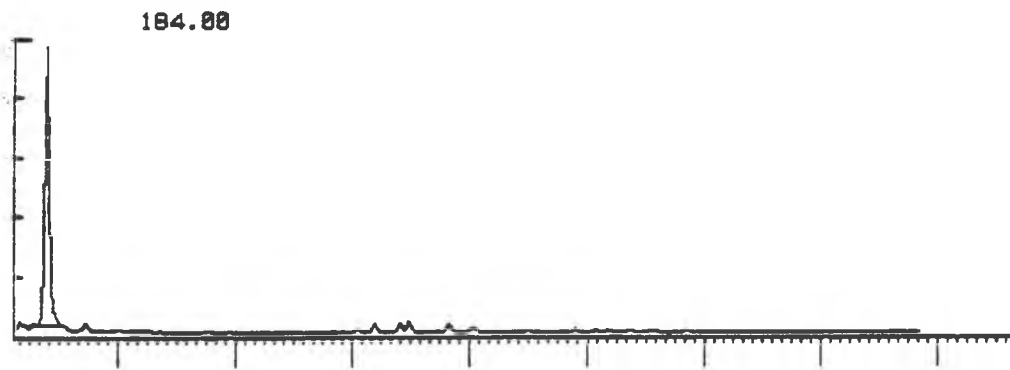


3790-3802m

FIGURE 14d

AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2

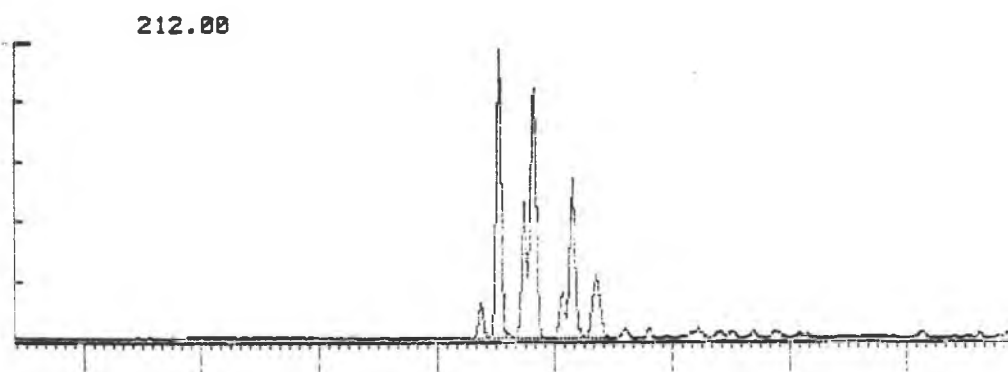
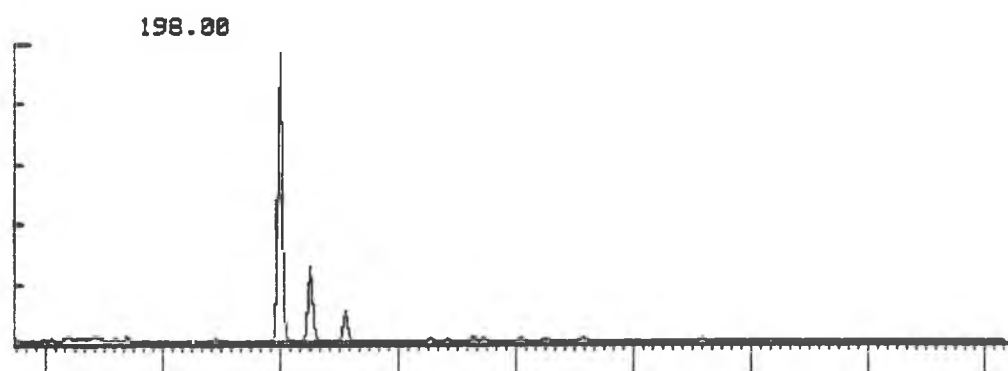
DIBENZOTHIOPHENE SERIES



3830-3845m

FIGURE 14e

AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2  
DIBENZOTHIOPHENE SERIES

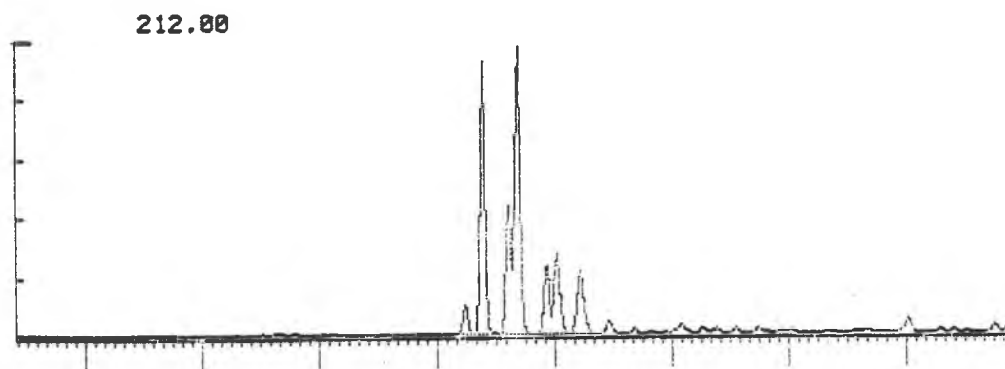
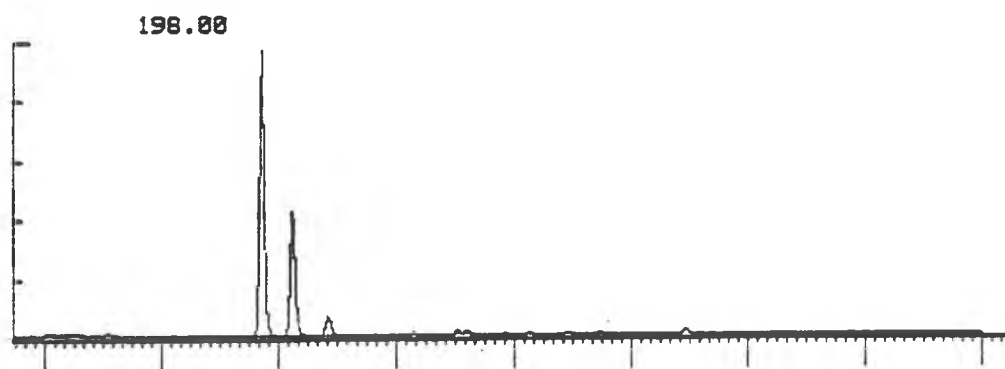


3860-3875m

FIGURE 14f

AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2

DIBENZOTHIOPHENE SERIES

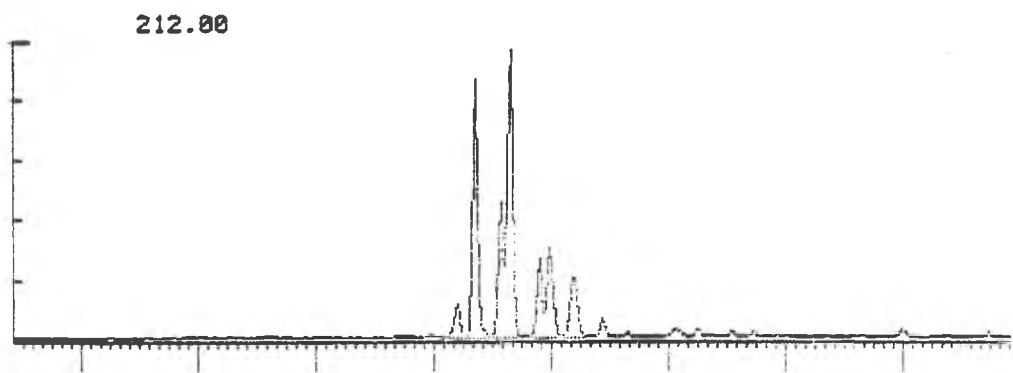
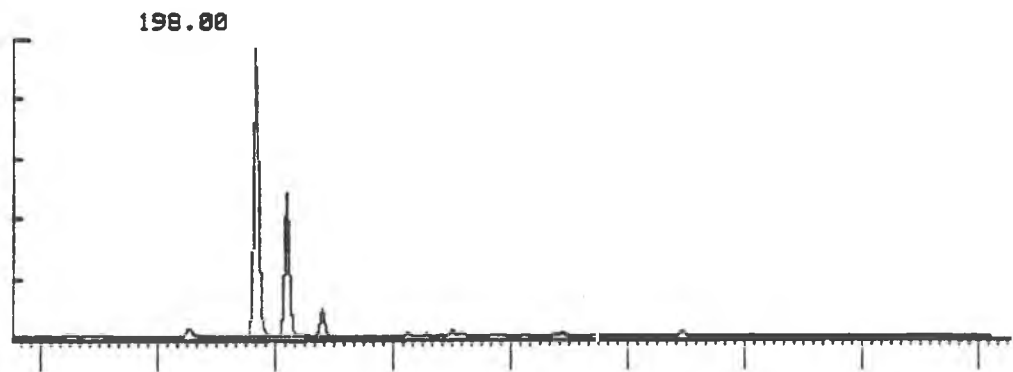
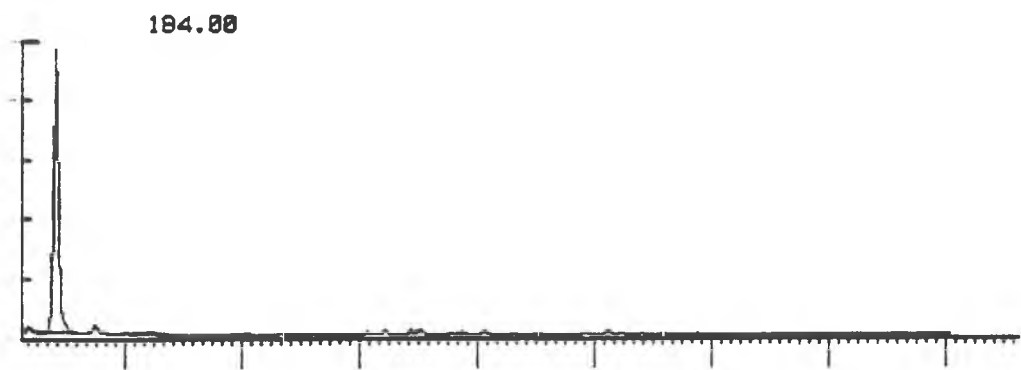


3956.70m CORE

FIGURE 14g

AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2

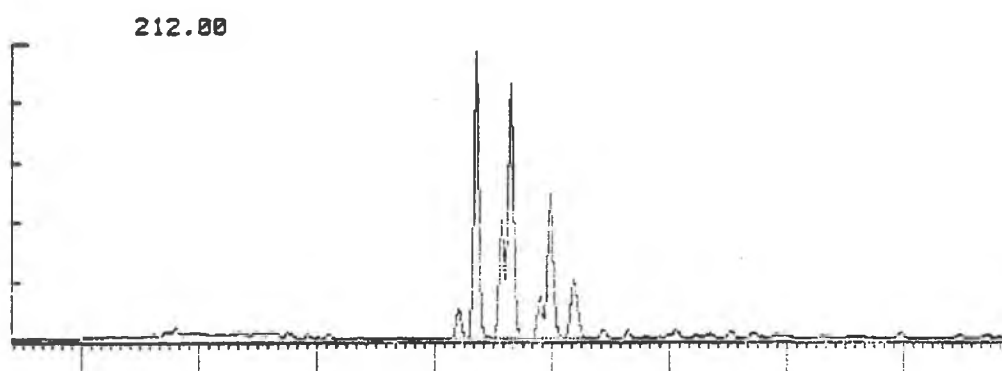
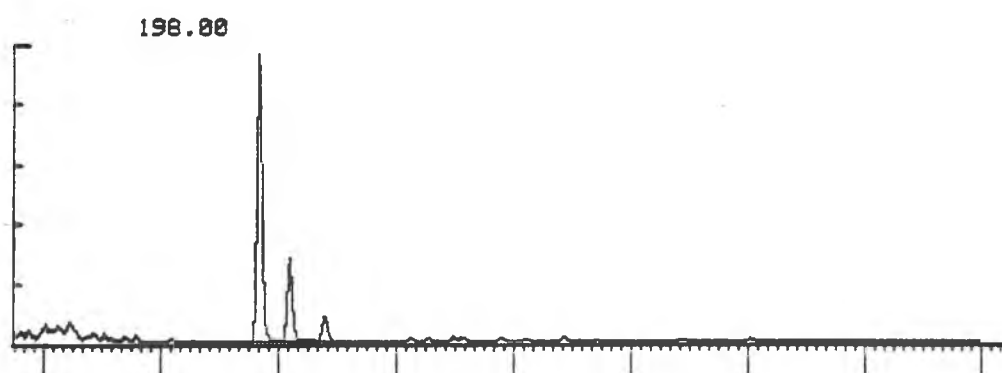
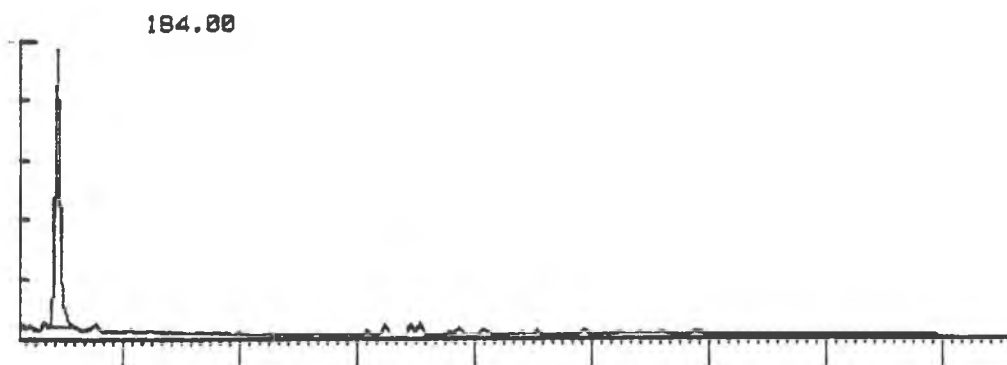
DIBENZOTHIOPHENE SERIES



3961.70m CORE # 3

FIGURE 14h

AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2  
DIBENZOTHIOPHENE SERIES



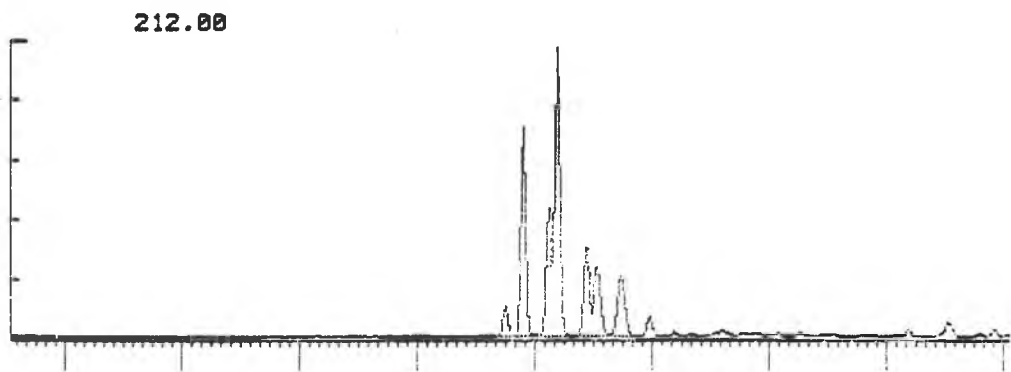
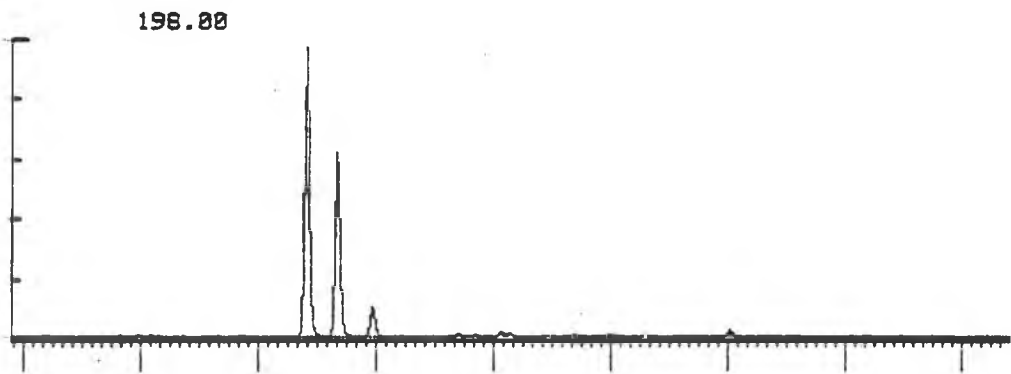
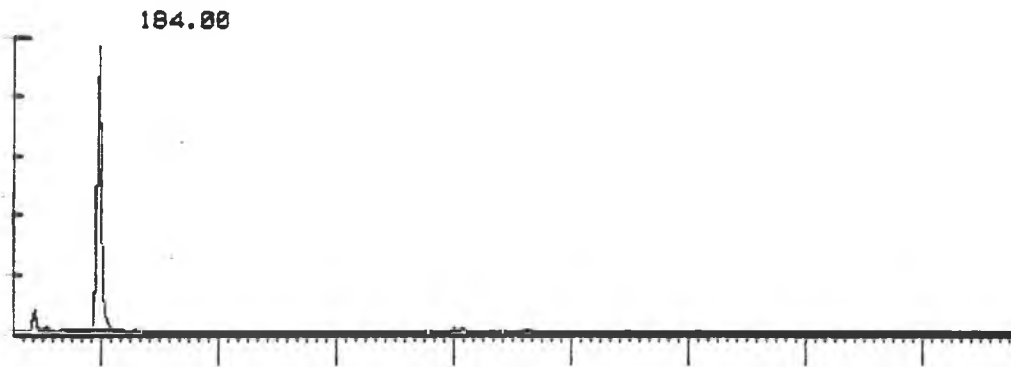
3965-3980m



FIGURE 14i

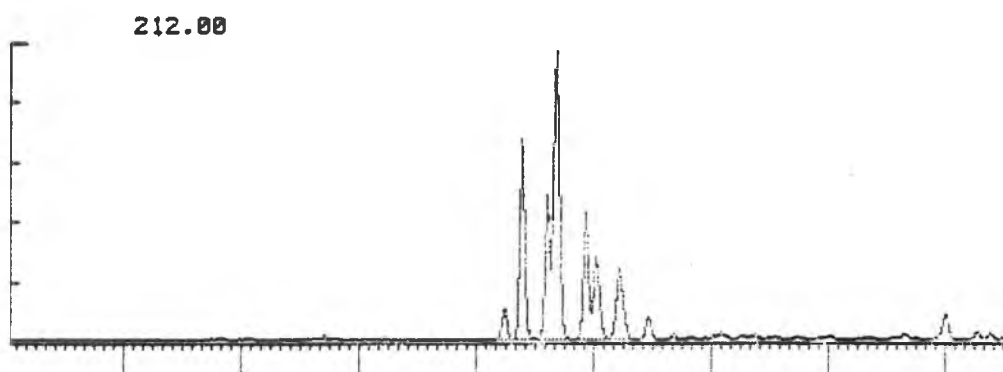
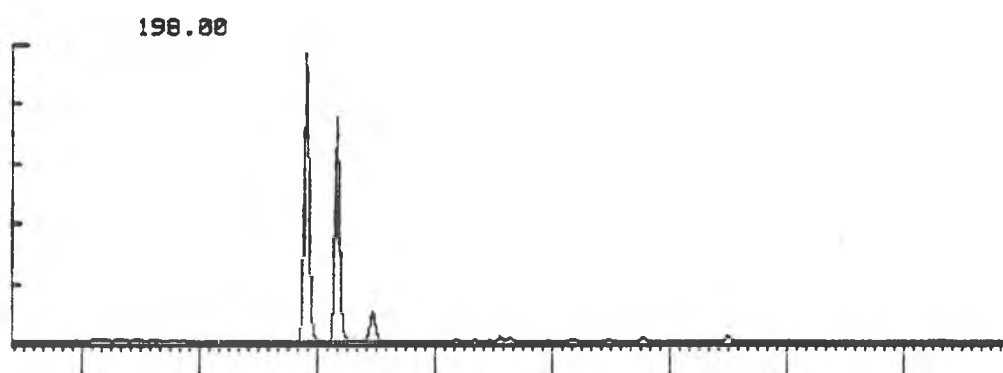
AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2

DIBENZOTHIOPHENE SERIES



3991.67m CORE

FIGURE 14j AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2  
DIBENZOTHIOPHENE SERIES

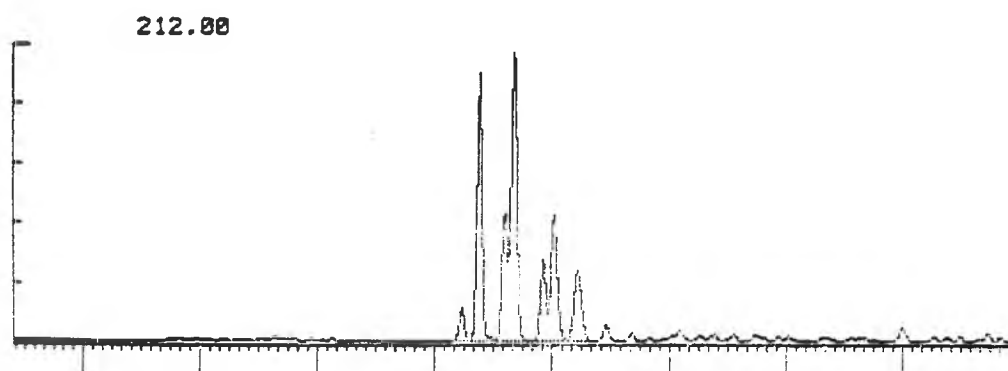
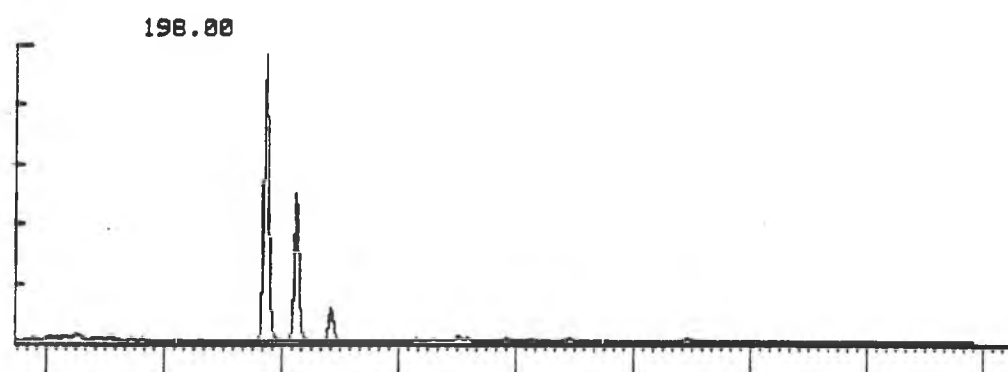
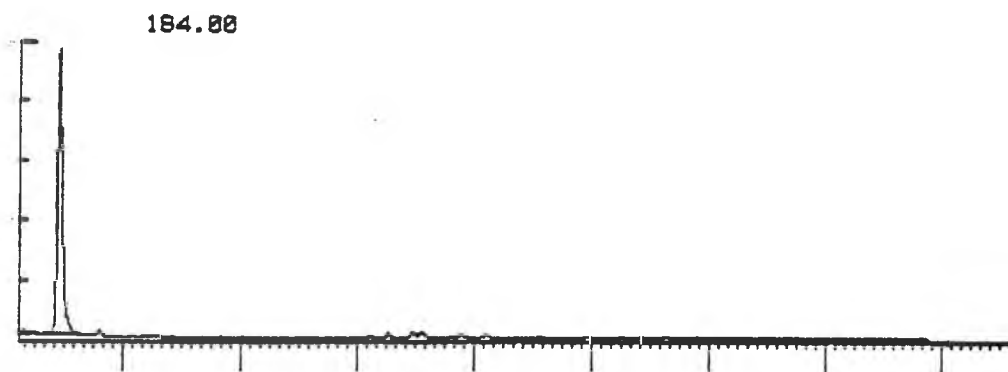


4017.40m CORE

FIGURE 14k

AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2

DIBENZOTHIOPHENE SERIES

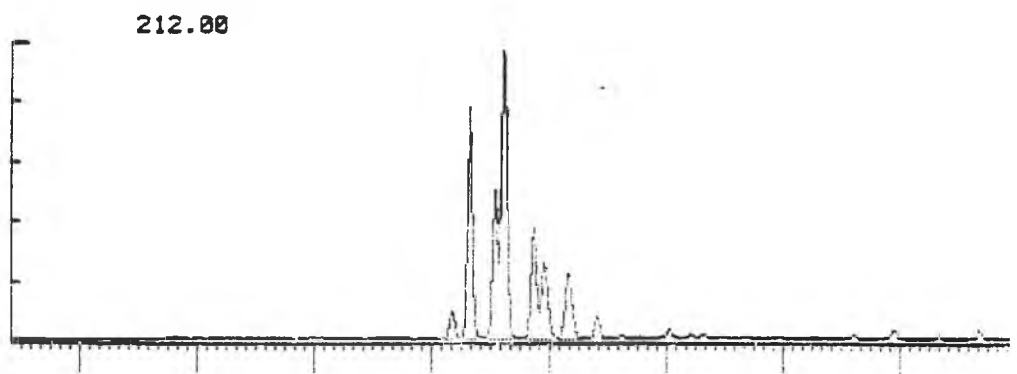
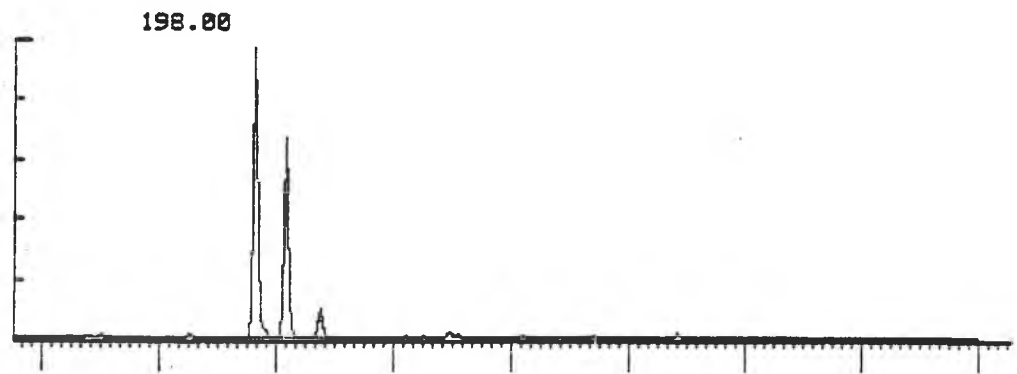
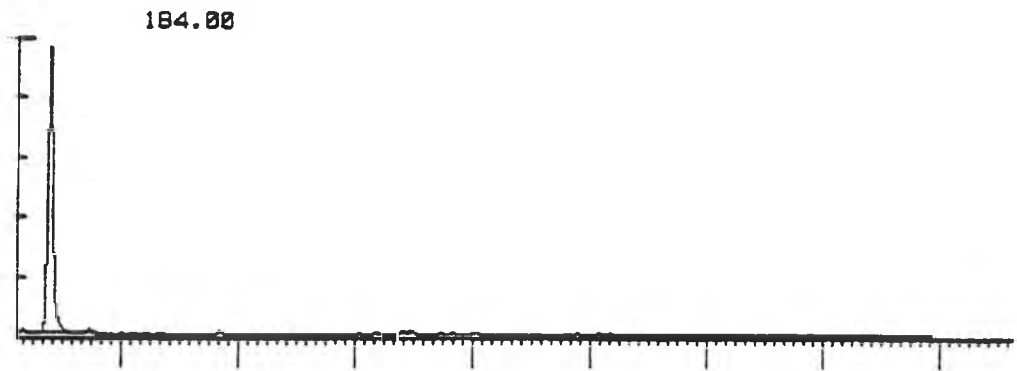


4025-4040m

FIGURE 14I

AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2

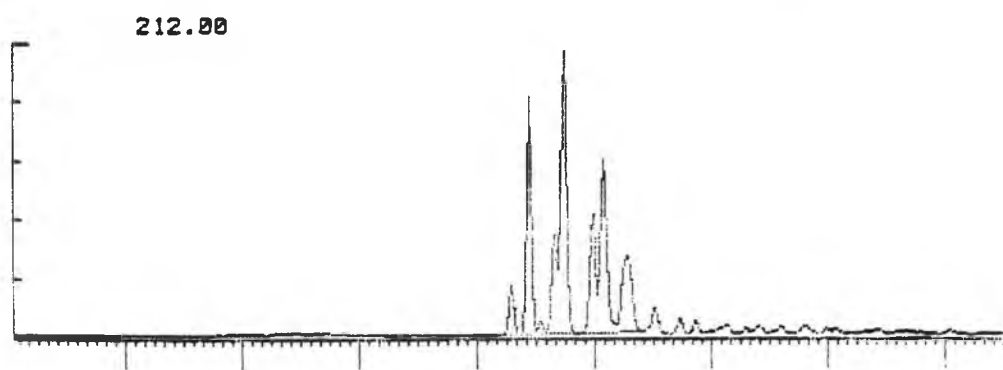
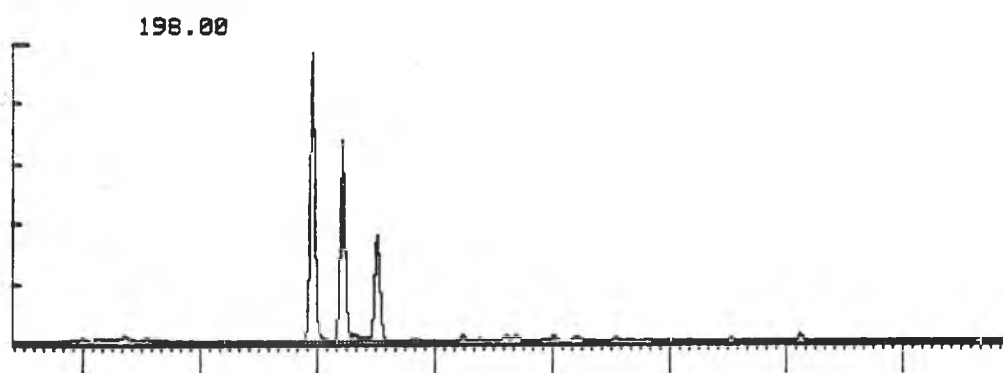
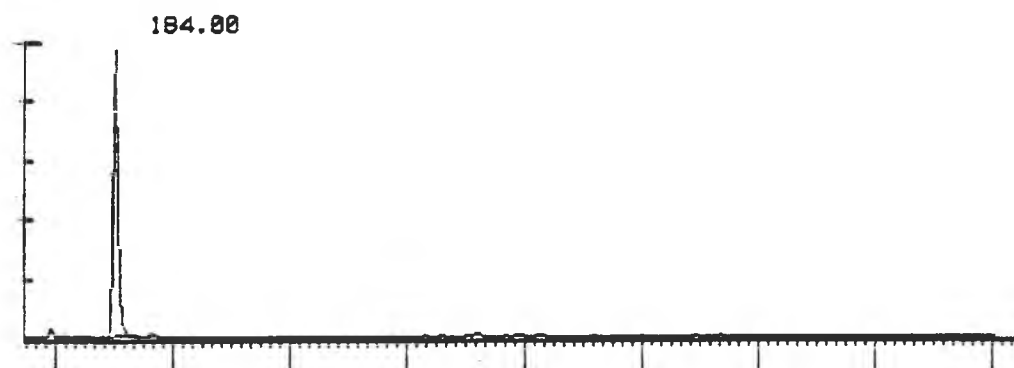
DIBENZOTHIOPHENE SERIES



4051.49m CORE

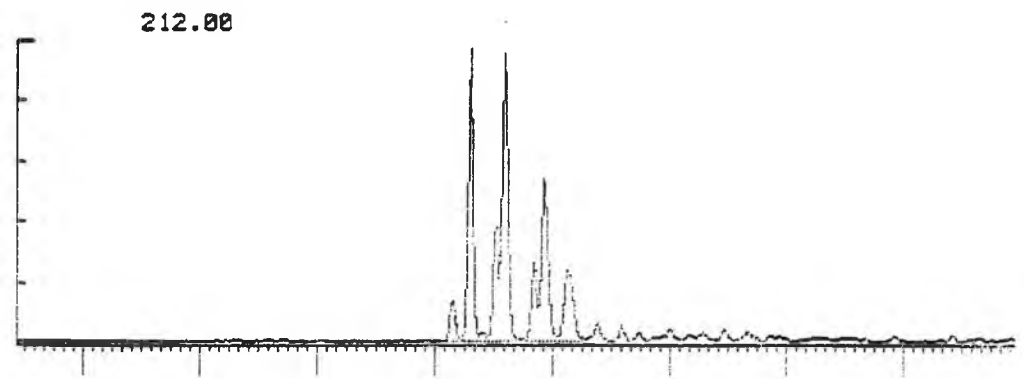
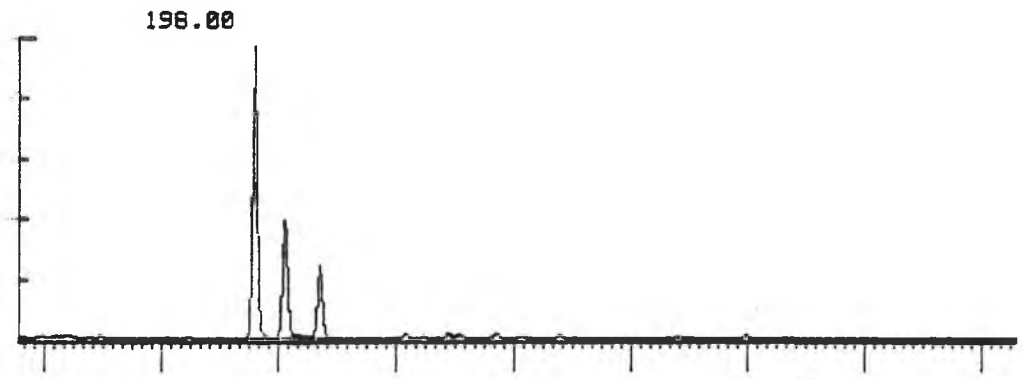
FIGURE 14m

AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2  
DIBENZOTHIOPHENE SERIES



4070-4085m

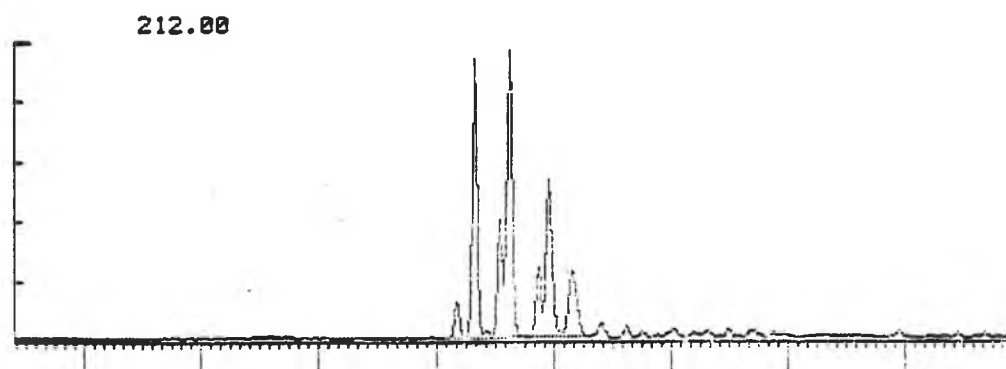
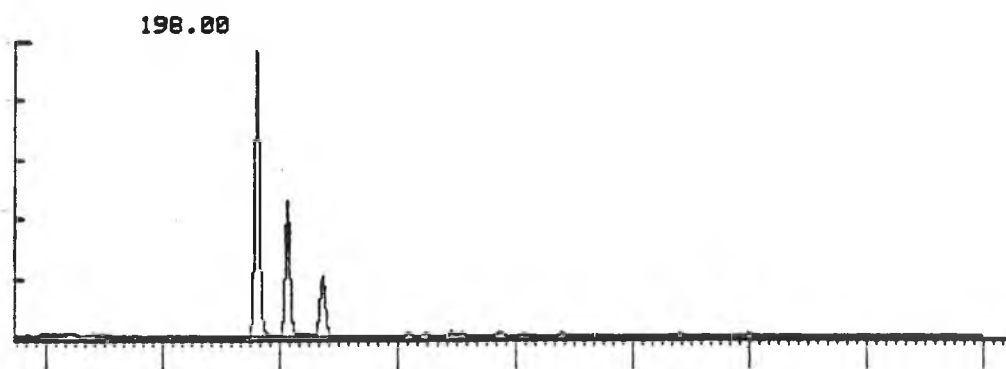
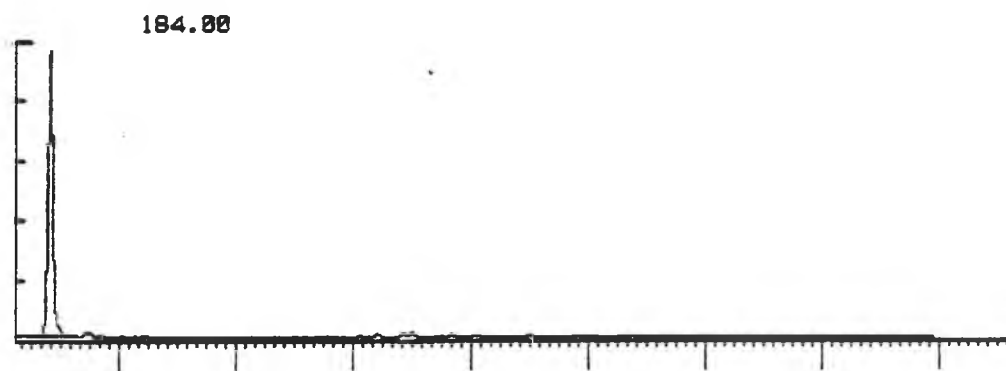
DIBENZOTHIOPHENE SERIES



4130-4145m

FIGURE 14o

AROMATIC MASS FRAGMENTOGRAMS WELL 30/2-2  
DIBENZOTHIOPHENE SERIES



4160-4172m

FIGURE 15

# CARBON ISOTOPES RATIOS (‰ PDB)

WELL 30/2-2

