ORGANIC GEOCHEMICAL DATA FOR THE EOCENE RICHARDS FORMATION, BEAUFORT-MACKENZIE BASIN

by

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Hydrocarbon and extract yields on solvent extraction have been determined for Richards Formation samples from 13 Beaufort-Mackenzie wells (Fig. 1). Table I contains total organic carbon (TOC) data determined using a Leco WR12 analyzer along with the extraction and column chromatography results. Atomic H/C determinations have been made for kerogens of several of these samples and the results are also reported in Table I along with pristane/phytane ratios derived from peak area integrations of saturate fraction gas chromatograms (SFGC). Many of the SFGC (Figs. 2-120) indicate contamination by diesel fuel and/or pipe dope. The functionality is inferred because the percentage of hydrocarbons in the total extract does increase as much as in cases where samples are contaminated by refined petroleum products.

The extractable hydrocarbon yields are low (less than 50 mg/g except for contaminated samples, Fig. 121) and the overall average TOC content is about 1.25%. The samples are immature to marginally mature on the basis of odd to even predominance of the n-alkanes, the pristane/nC_{17} ratio and the percentage of hydrocarbons in the extract (of uncontaminated samples). This conclusion is also supported by the few vitrinite reflectance values available which all fall in the range of 0.35 to 0.49% R_o. Thus the petroleum source potential of this formation is interpreted to be very low in the areas sampled.

In several wells a lower member, known informally as the "low-velocity-zone" (LVZ), can be identified on logs and on seismic records (pers. com. J. Dixon, J. Dietrich). A marked decrease in the pristane/phytane ratio occurs in the Netserk F-40 well. A similar trend may be present in the Netserk B-44 well. The extract yields, TOC and atomic H/C values are not significantly different above and below the top of the LVZ. These results indicate that the overall nature of the organic debris input did not change

significantly but that the depositional environment was somewhat more reducing (lower Eh) than during deposition of the upper portion of the Richards Formation. An increased input of aquatic derived organic debris (algal) in the LVZ may be indicated by a modal occurrence of nC_{14} to nC_{18} hydrocarbons in very low maturity samples, such as those from the Toapolok O-54 well. The source potential of LVZ may increase in more distal areas but it must also be considered to have little or no source potential in the areas studied, because the bulk properties (H/C, TOC) are not significantly better than those of the upper member and because of the low level of thermal maturation. The extractable hydrocarbon yields from these very low maturity samples (typically 7mg/g organic carbon) may well represent biogenic or diagenetic material as opposed to catagenetic hydrocarbons. If this is the case, then their properties will not necessarily be related to the ultimate nature of their source potential.

Discrete diterpane peaks (C_{17} to C_{20} polycyclics) are present in the SFGC of several samples from the Adgo P-25, Arnak L-30, Pelly B-35 and Umiak N-10 wells. This suggests the samples are immature and that terrestrial organic matter dominates the input. This debris could of course be reworked from older sediments or it could be primary. The interpretation of the dominance of terrestrial organic matter is also indicated by the strong odd/even n-alkane predominance (especially in the marginally mature samples) and the nC_{27} or nC_{29} mode in the n-alkane distribution.

It must be emphasized that great care must be taken when interpreting this data because of the high level of contamination of the samples and the peculiar character of the extracts which are from samples of very low levels of thermal alteration. Many of the properties of these very immature samples may be related to primary hydrocarbon compounds derived directly from biological processes and/or to hydrocarbons carried with recycled clastic debris.

Fig 1

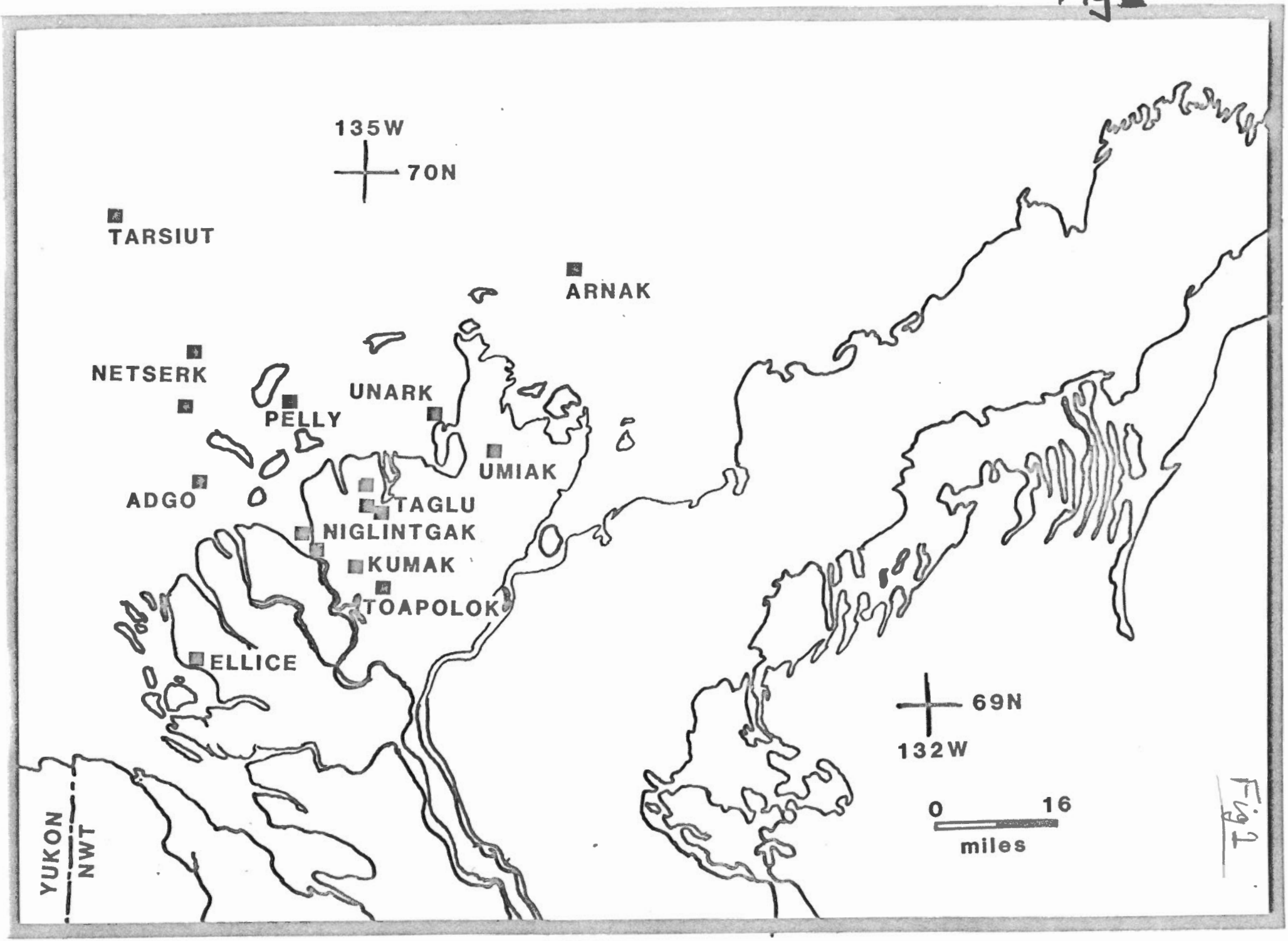

135W
70N
TARSIUT
ARNAK
NETSERK
UNARK
PELLY
UMIAK
ADGO
TAGLU
NIGLINTGAK
KUMAK
TOAPOLOK
ELLICE
69N
132W
0
16
miles
YUKON
NWT

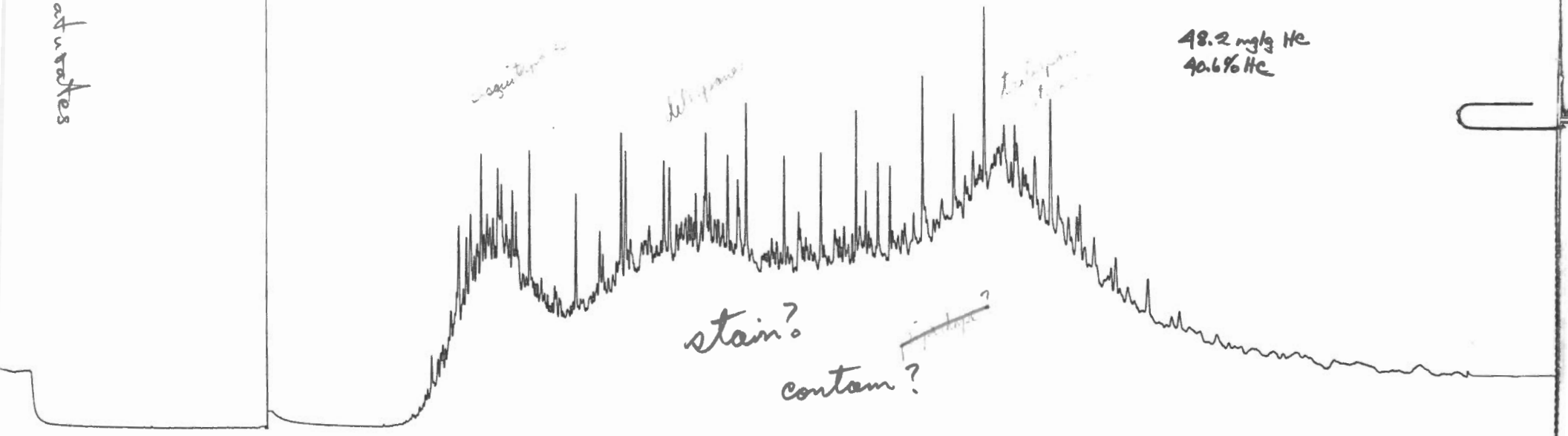
Fig 1

#6079 Adgo P-25 2790' Saturates

#6079
Adgo P-25
2790'

PRIST PHYT
PRIS/C17
OEP:27

48.2 mg/g HC
40.6% HC



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9

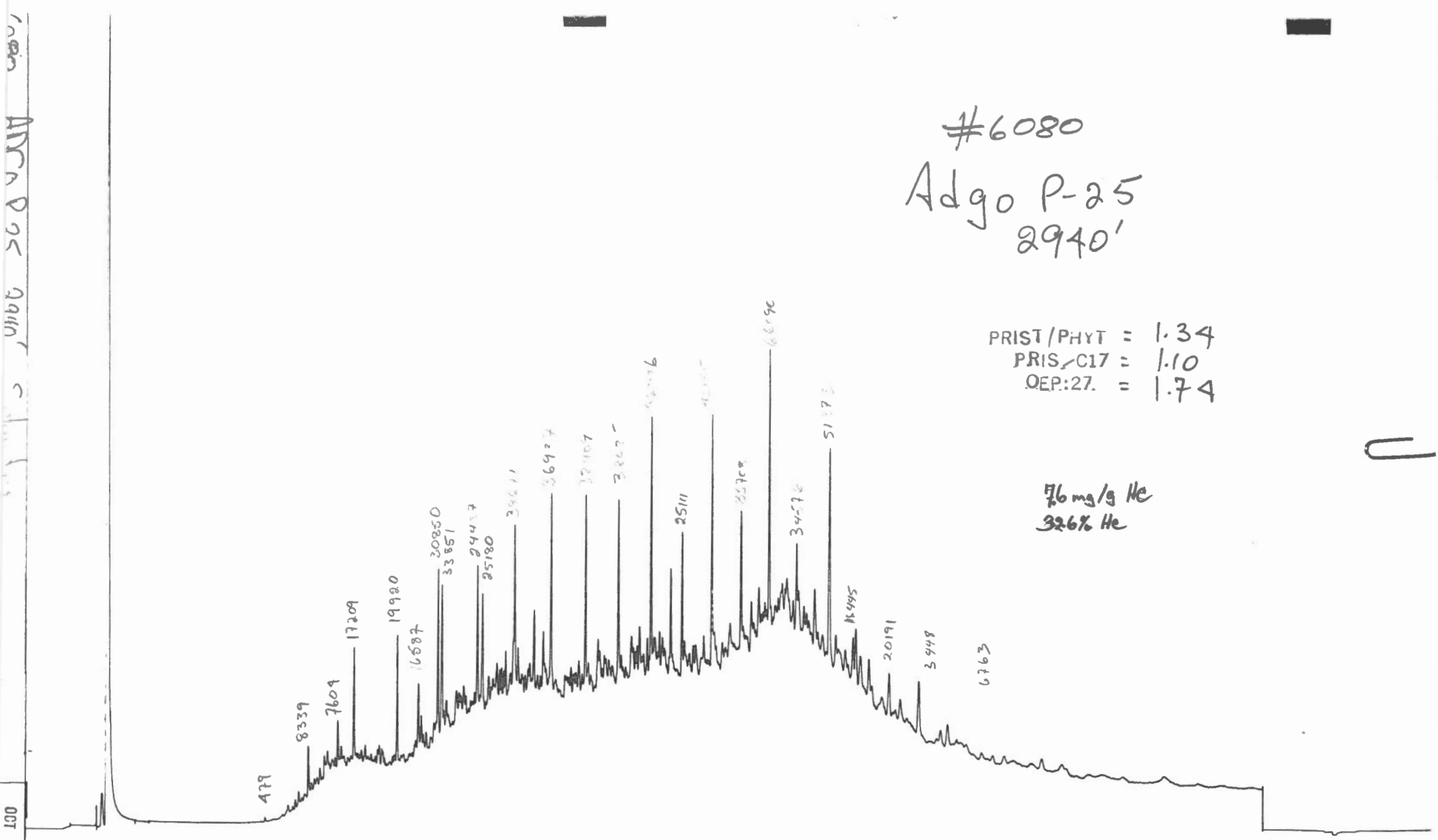
#6080

Adgo P-25

2940'

PRIST/PHYT = 1.34
PRIS/C17 = 1.10
OEP:27 = 1.74

76 mg/g HC
32.6% HC



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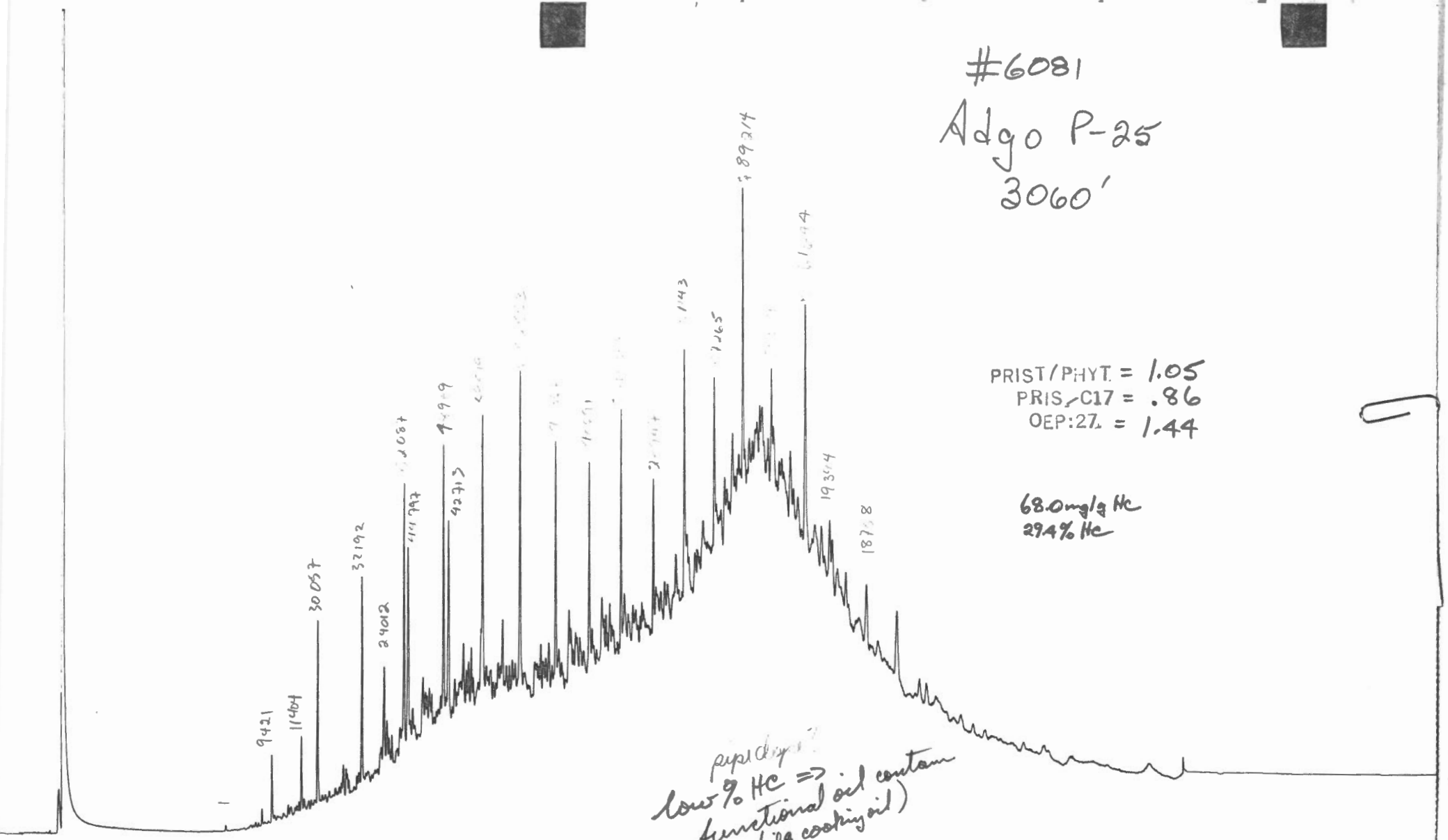
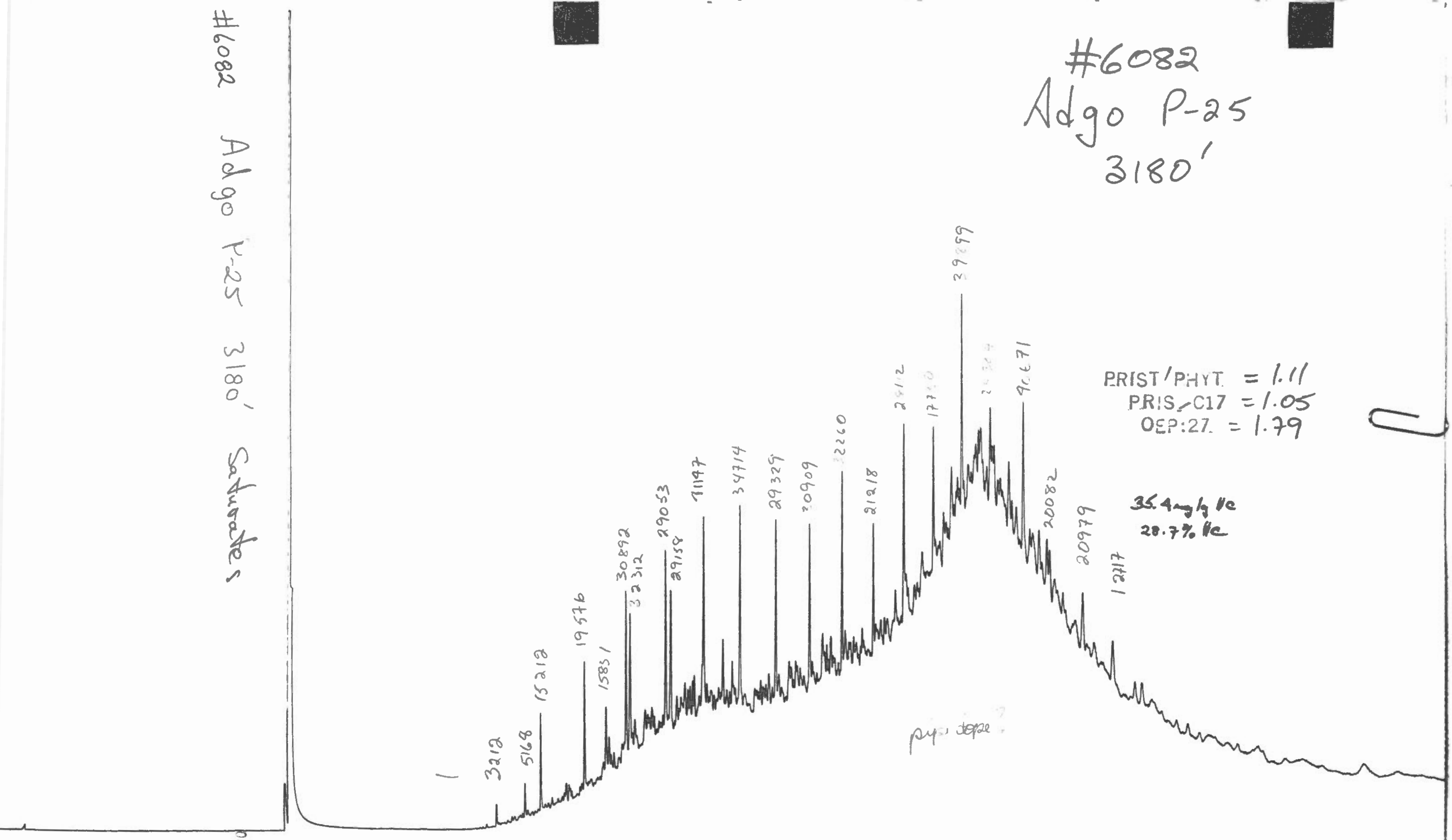

#6081
Adgo P-25
3060'
PRIST/PHYT = 1.05
PRIS/C17 = .86
OEP:27 = 1.44
68.0mg/g HC
29.4% HC
9421
11404
30057
32192
34012
42713
19314
18758
pipe dope
low % HC => oil contam
functional oil contam
(lg cooking oil)

#6082
Adgo P-25
3180'



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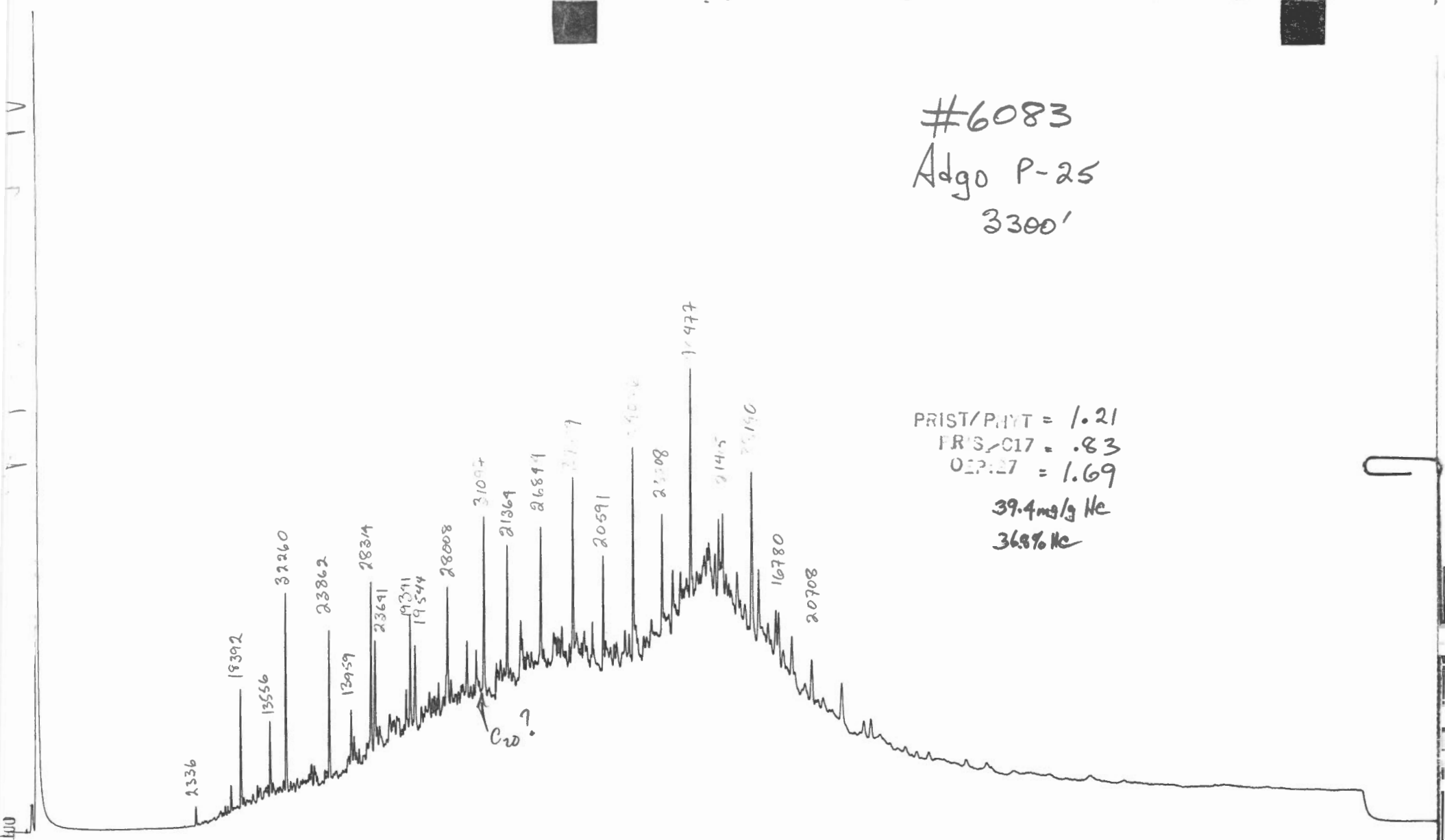
#6083
Adgo P-25
3300'



PRIST/PHYT = 1.21
PRIS/C17 = .83
PHYT/C17 = 1.69
39.4 mg/g HC
36.8% HC

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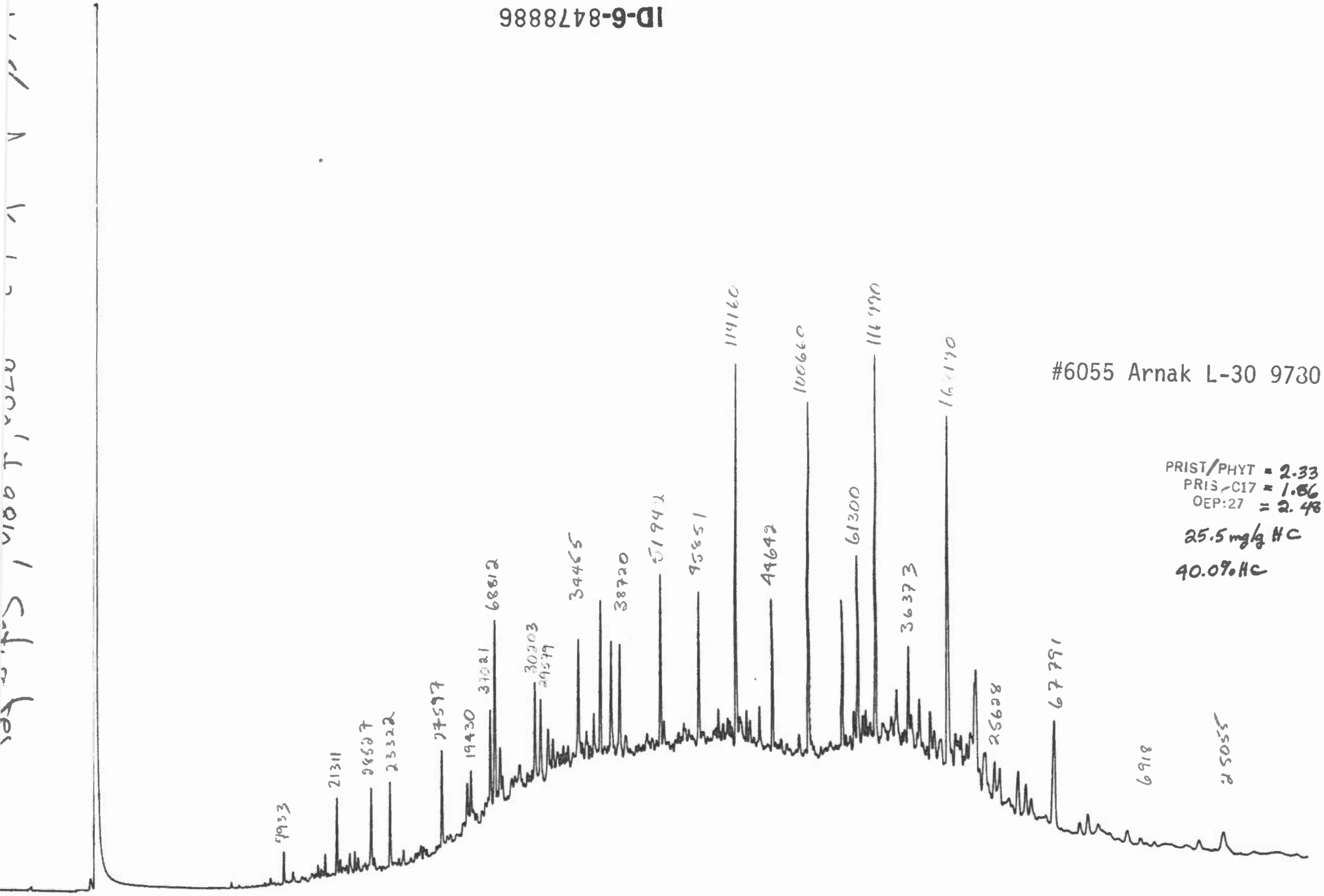

#6055 Arnak L-30 9730' and 9310' Saturates

PRIST/PHYT = 2.33
PRIS/C17 = 1.86
OEP:27 = 2.48

25.5 mg/g HC

40.0% HC

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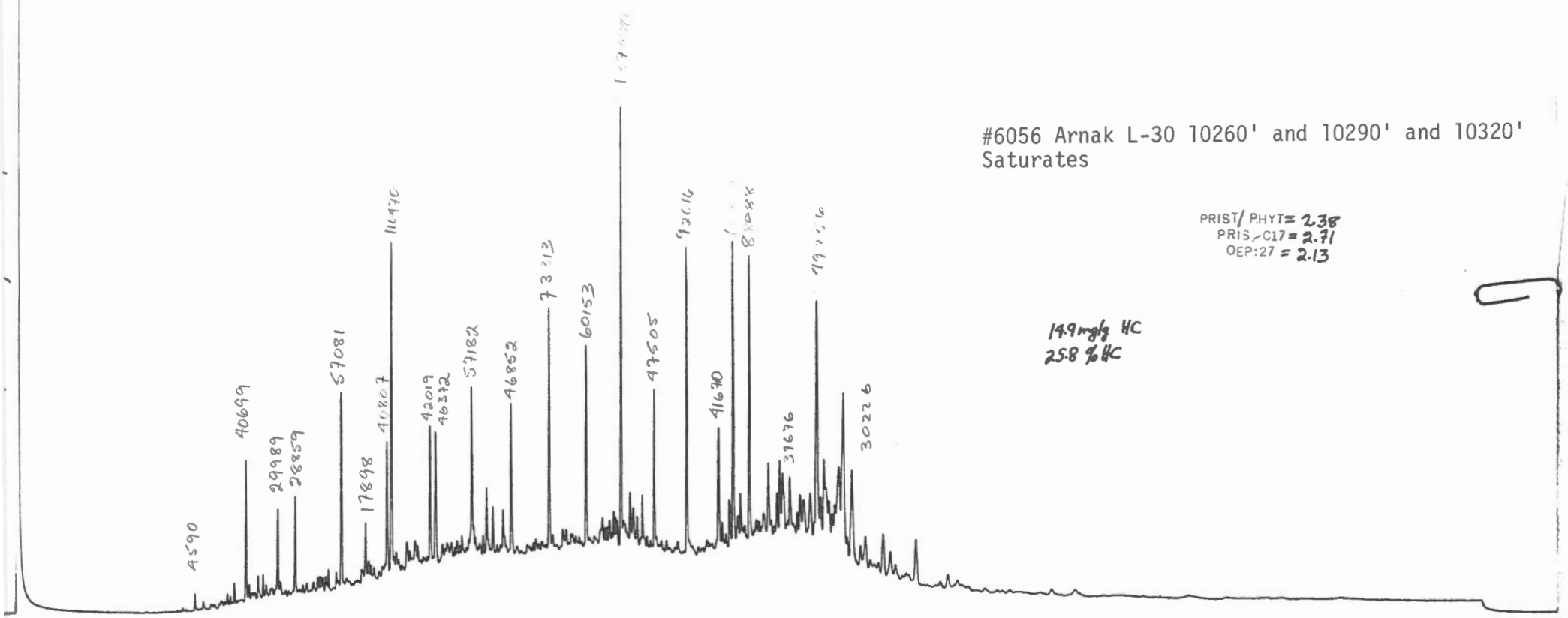
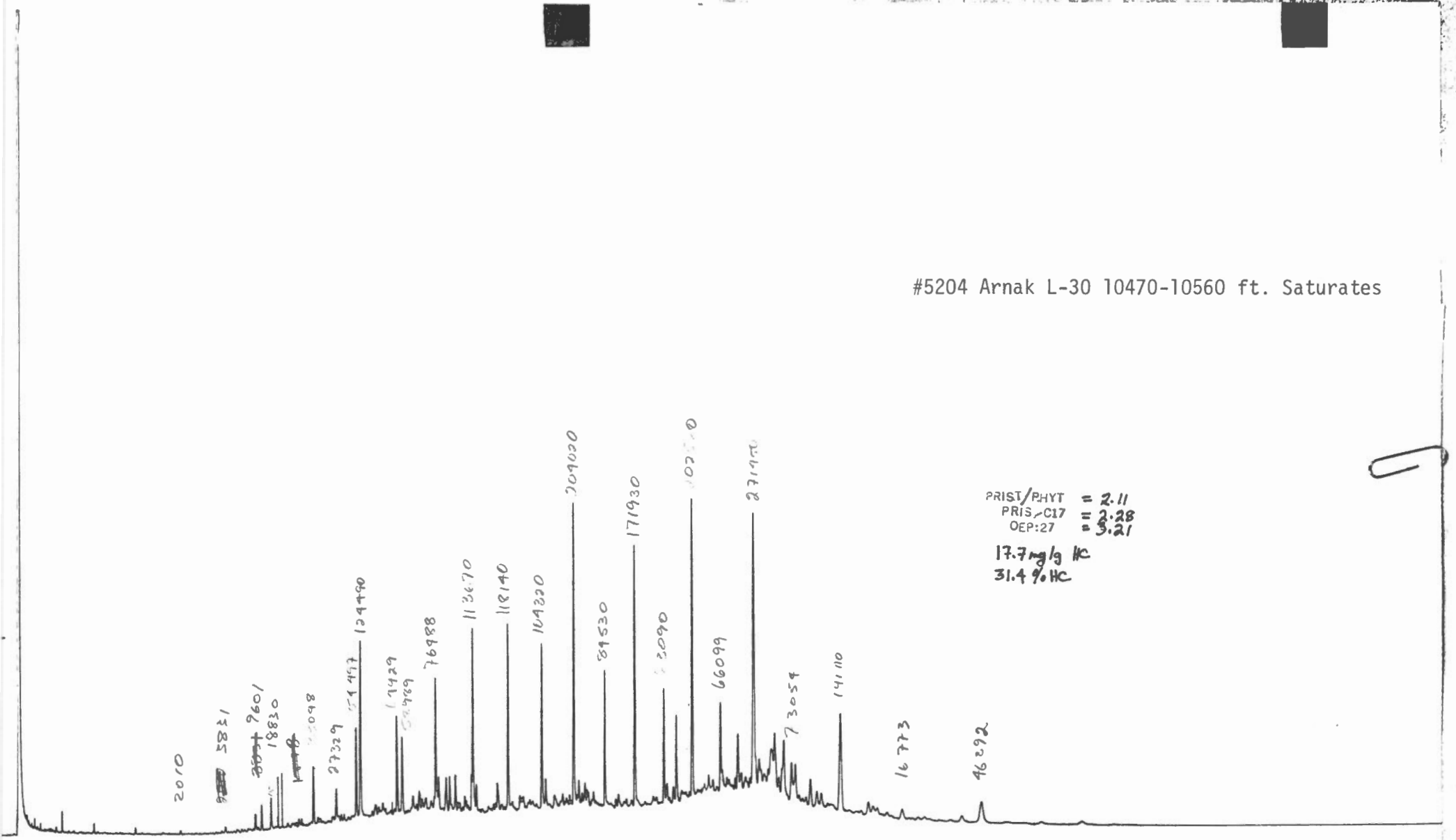
#6056 Arnak L-30 10260' and 10290' and 10320'
Saturates

PRIST/PHYT = 2.38
PRIS/C17 = 2.71
OEP:27 = 2.13

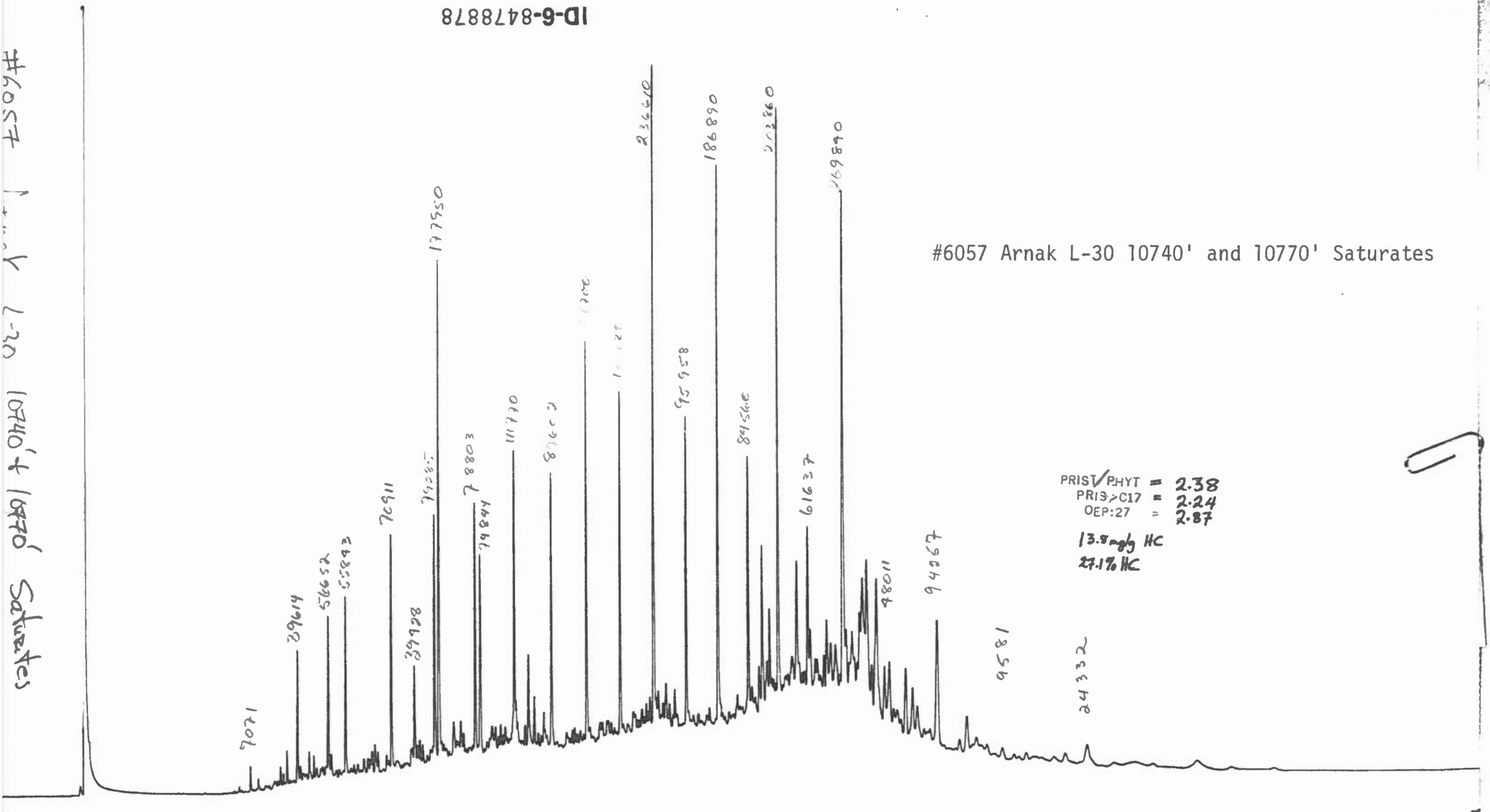
149 mg/g HC
25.8 % HC



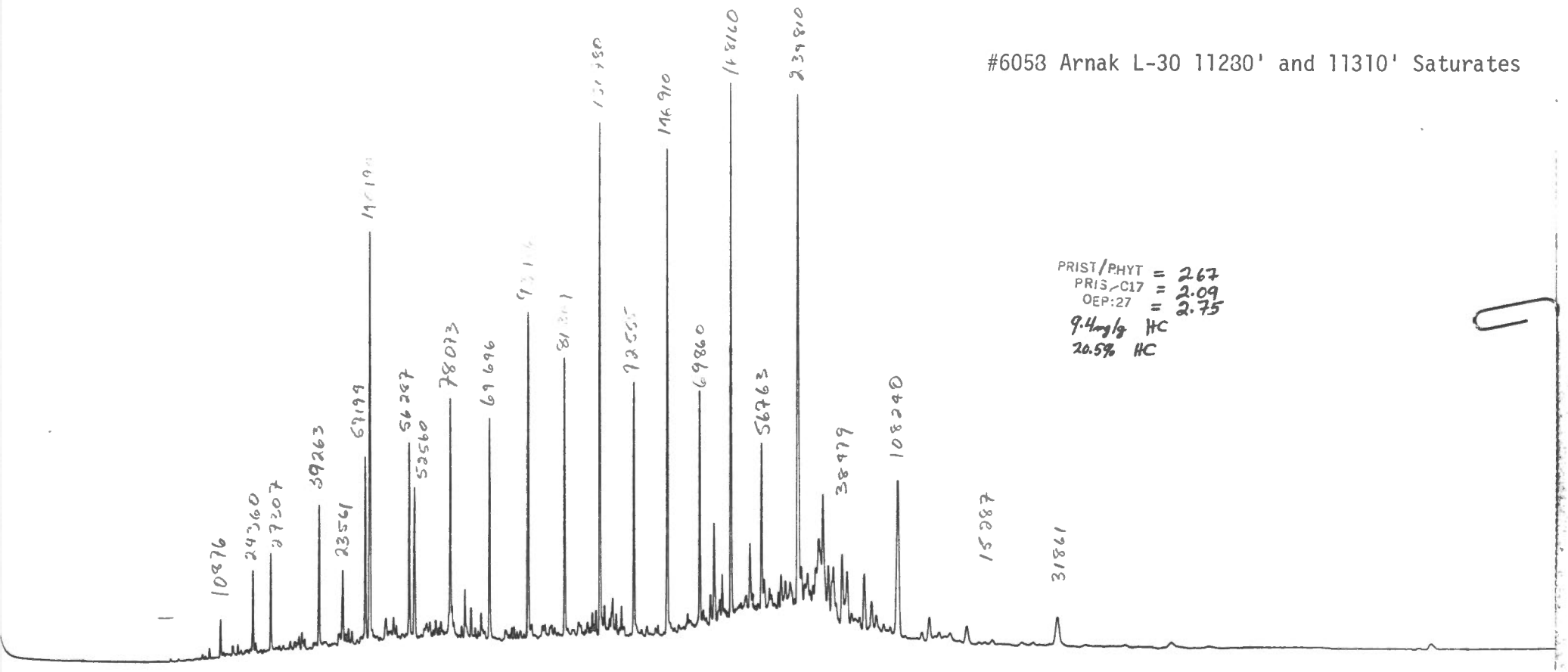
#5204 Arnak L-30 10470-10560 ft. Saturates



#6057 Arnak L-30 10740' and 10770' Saturates

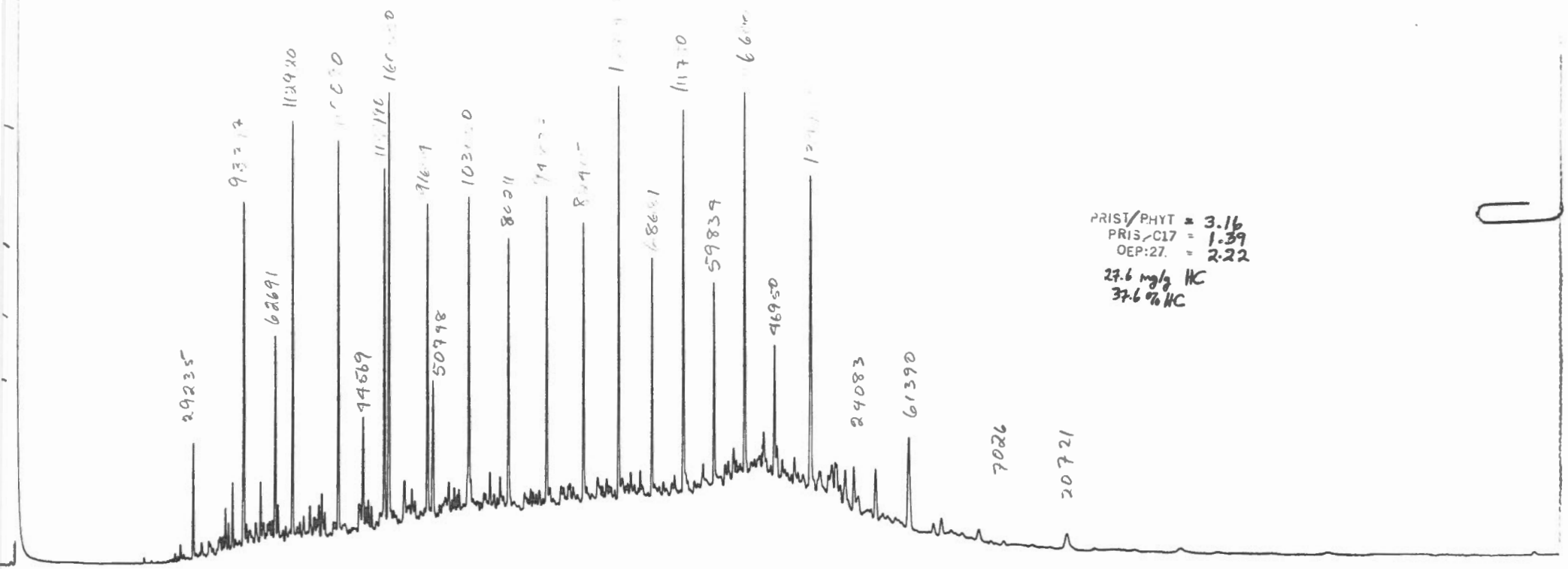


#6053 Arnak L-30 11230' and 11310' Saturates



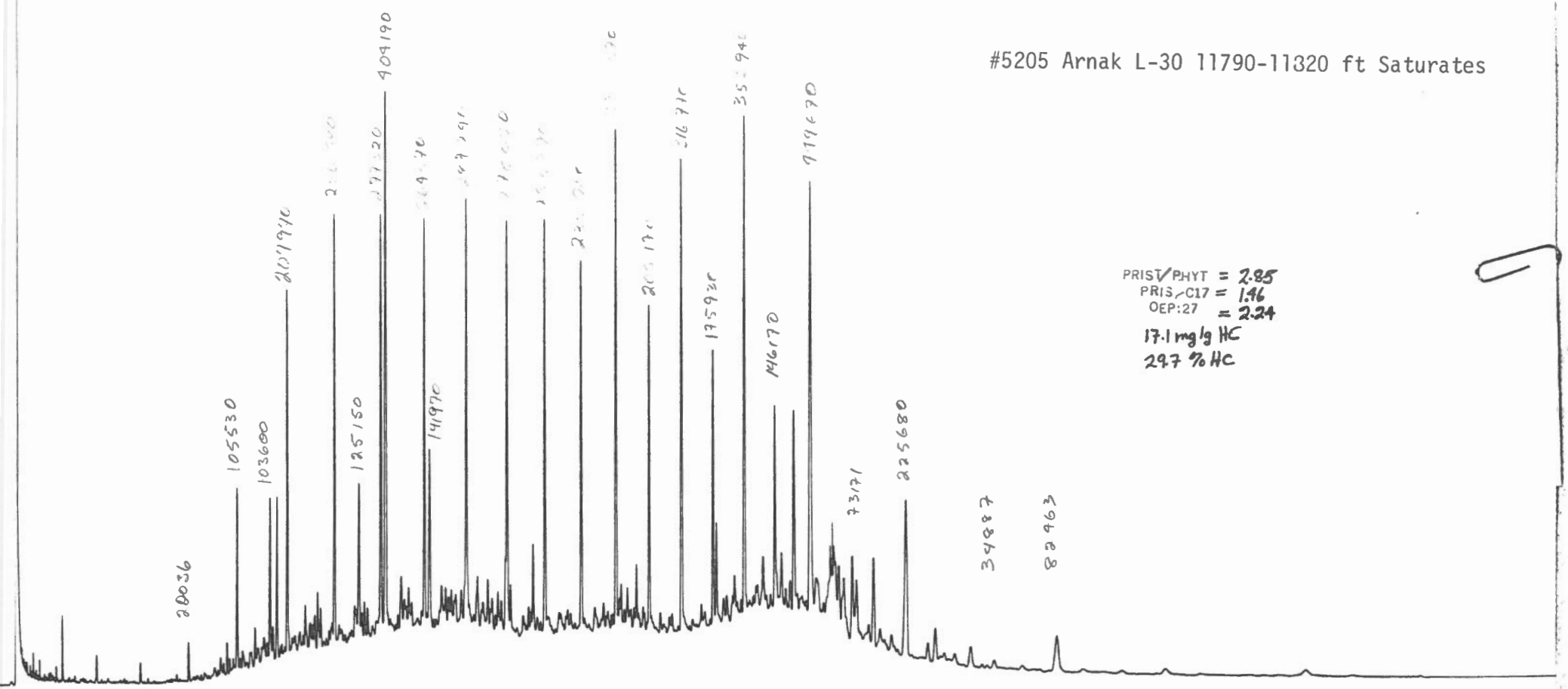
PRIST/PHYT = 2.67
PRIS/C17 = 2.09
OEP:27 = 2.75
9.4 mg/g HC
20.5% HC

#6059 Arnak L-30 11730' and 11760' Saturates



PRIST/PHYT = 3.16
PRIS/C17 = 1.39
OEP:27. = 2.22
27.6 mg/g HC
37.6 % HC

#5205 Arnak L-30 11790-11320 ft Saturates



PRIS/PHYT = 2.85
PRIS/C17 = 1.46
OEP:27 = 2.24
17.1 mg/g HC
29.7 % HC

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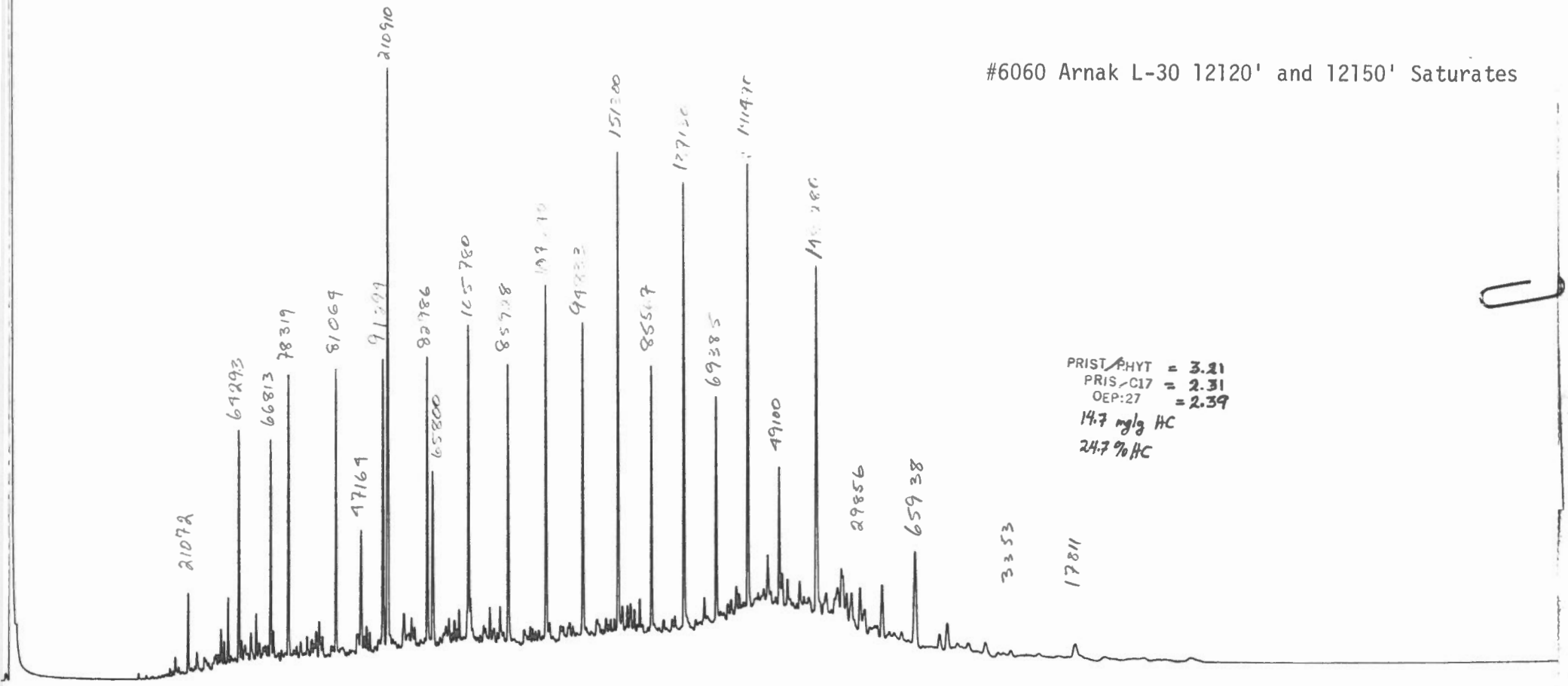
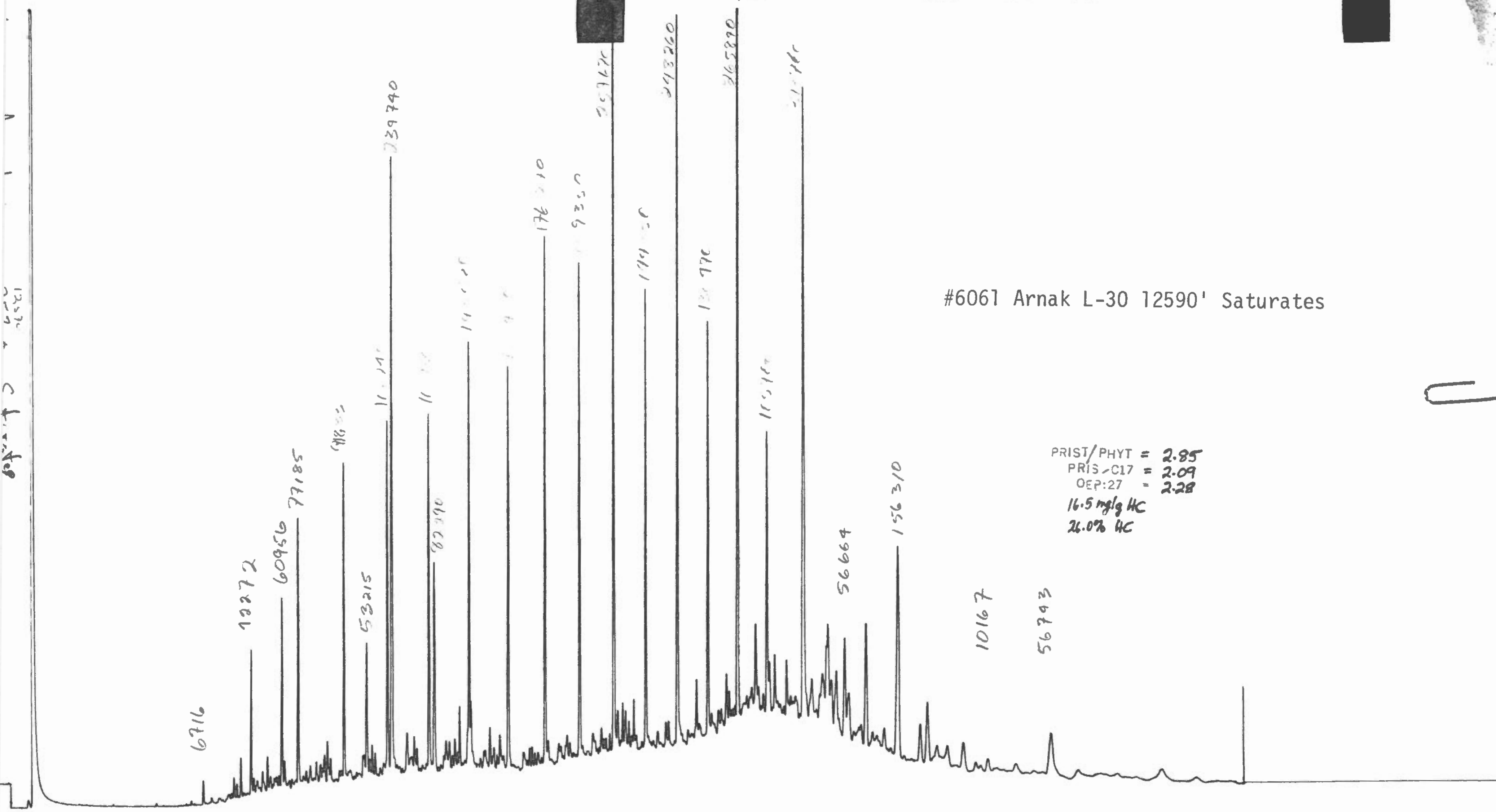
13

#6060 Arnak L-30 12120' and 12150' Saturates



PRIST/PHYT = 3.21
PRIS/C17 = 2.31
OEP:27 = 2.39
14.7 mg/g HC
24.7 % HC

14



#6061 Arnak L-30 12590' Saturates

PRIST/PHYT = 2.85
PRIS/C17 = 2.09
OEP:27 = 2.28
16.5 mg/g HC
26.0% HC

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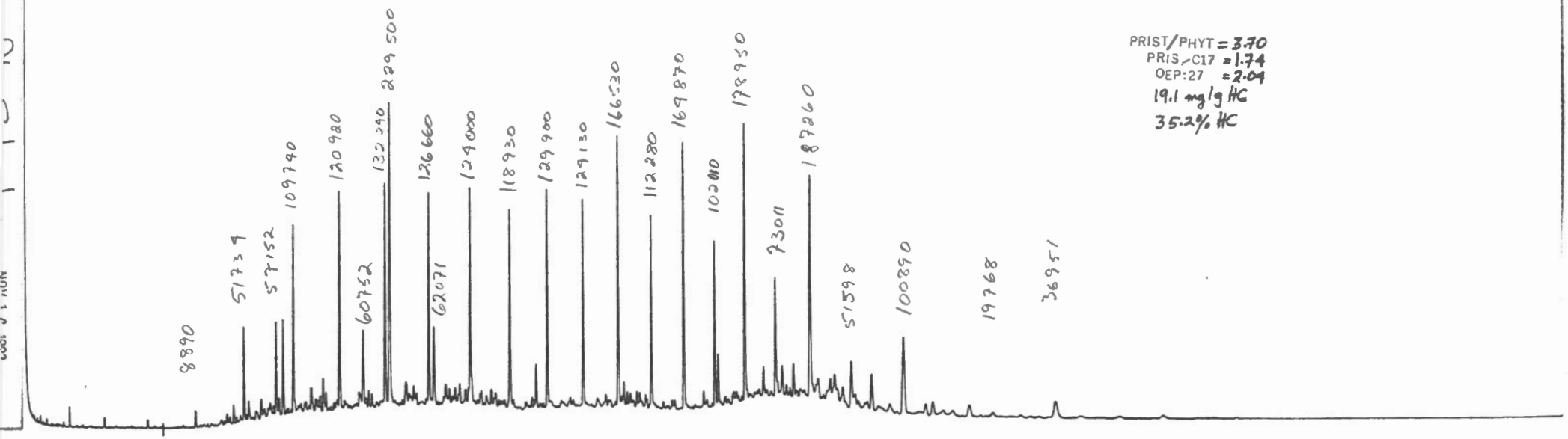
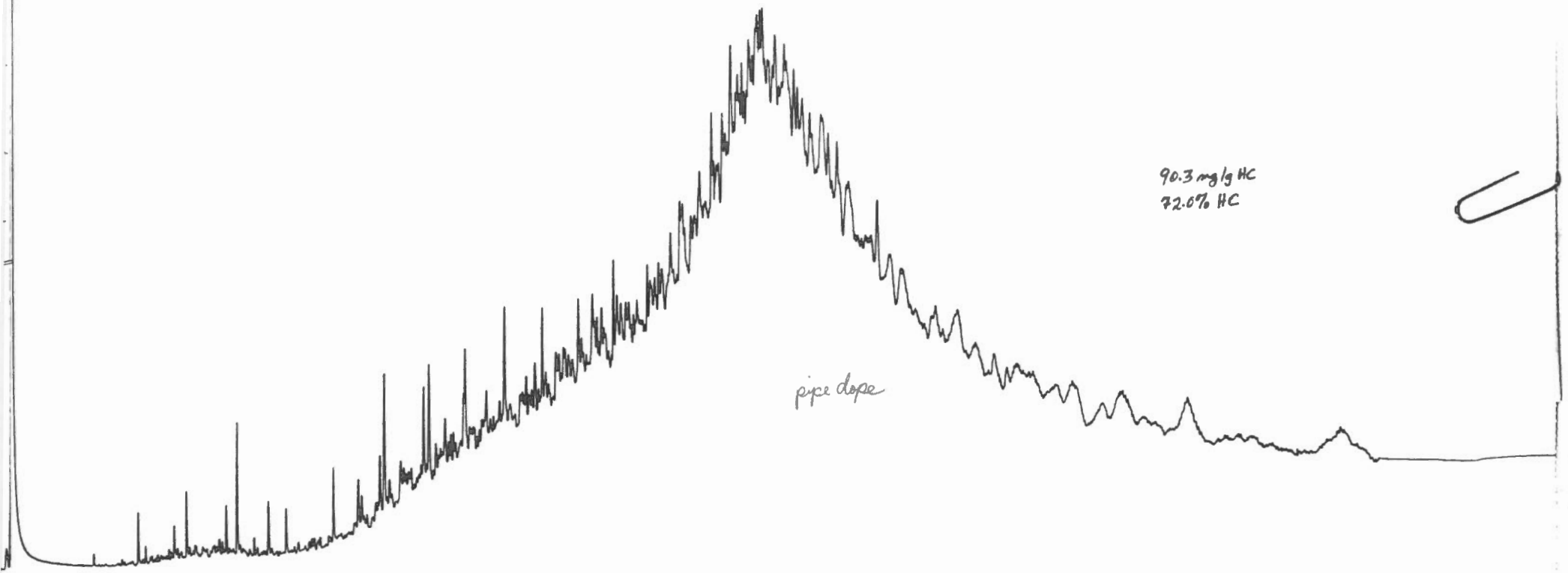
#5206 Arnak L-30 12840, 12870 ft. Saturates



PRIST/PHYT = 3.70
PRIS/C17 = 1.74
OEP:27 = 2.04
19.1 mg/g HC
35.2% HC

91

#6062 Arnak L-30 13050' and 13080' Saturates



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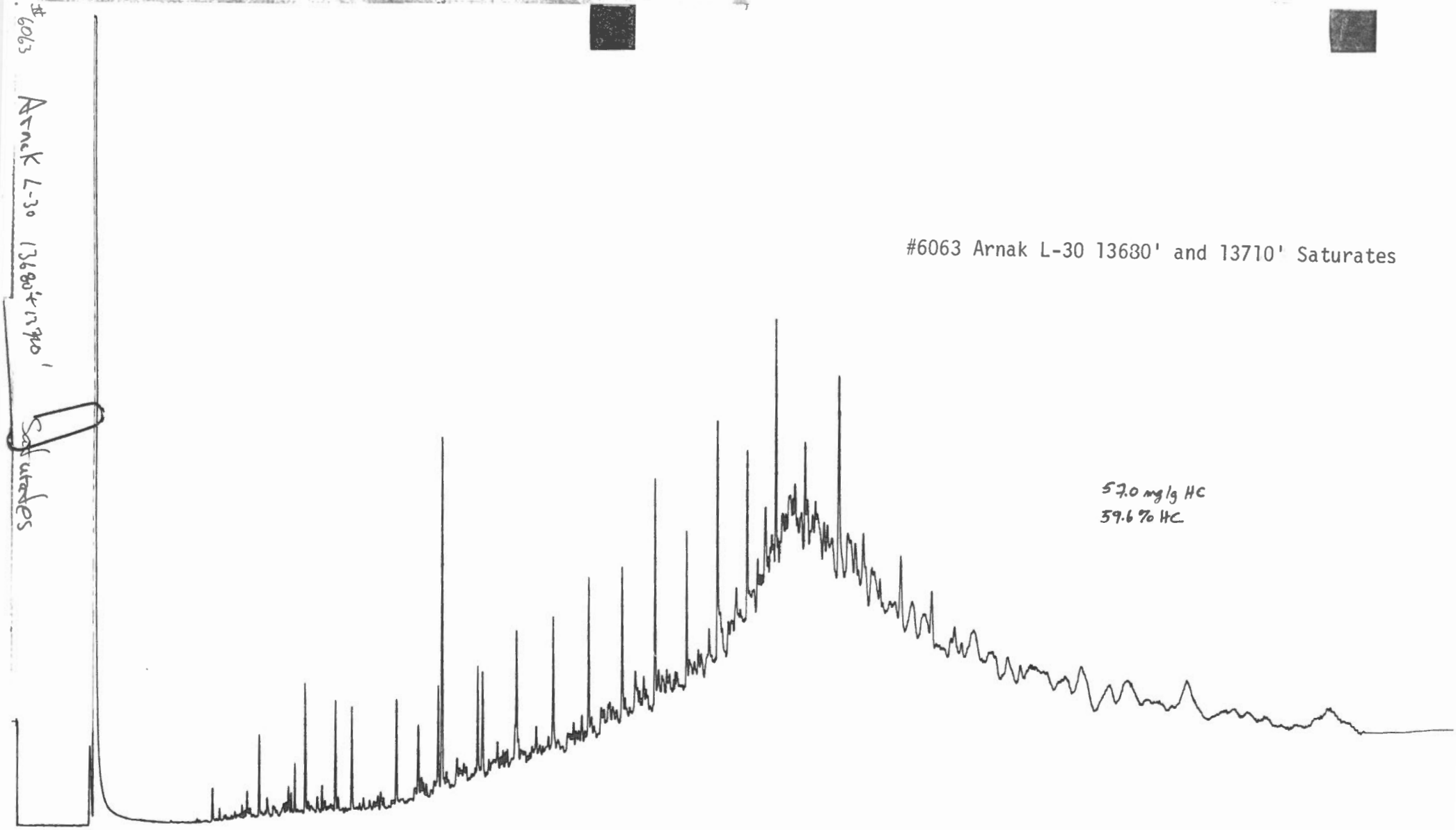
71

#6063 Arnak L-30 13680' and 13710' Saturates



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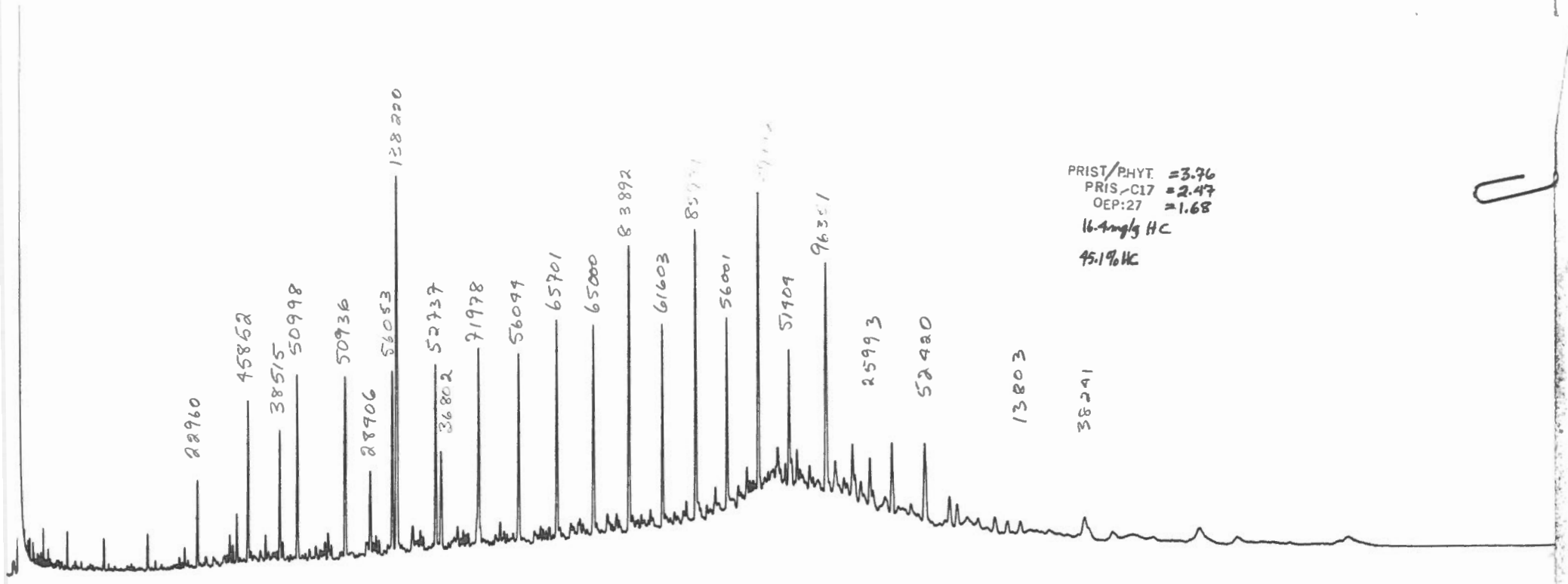
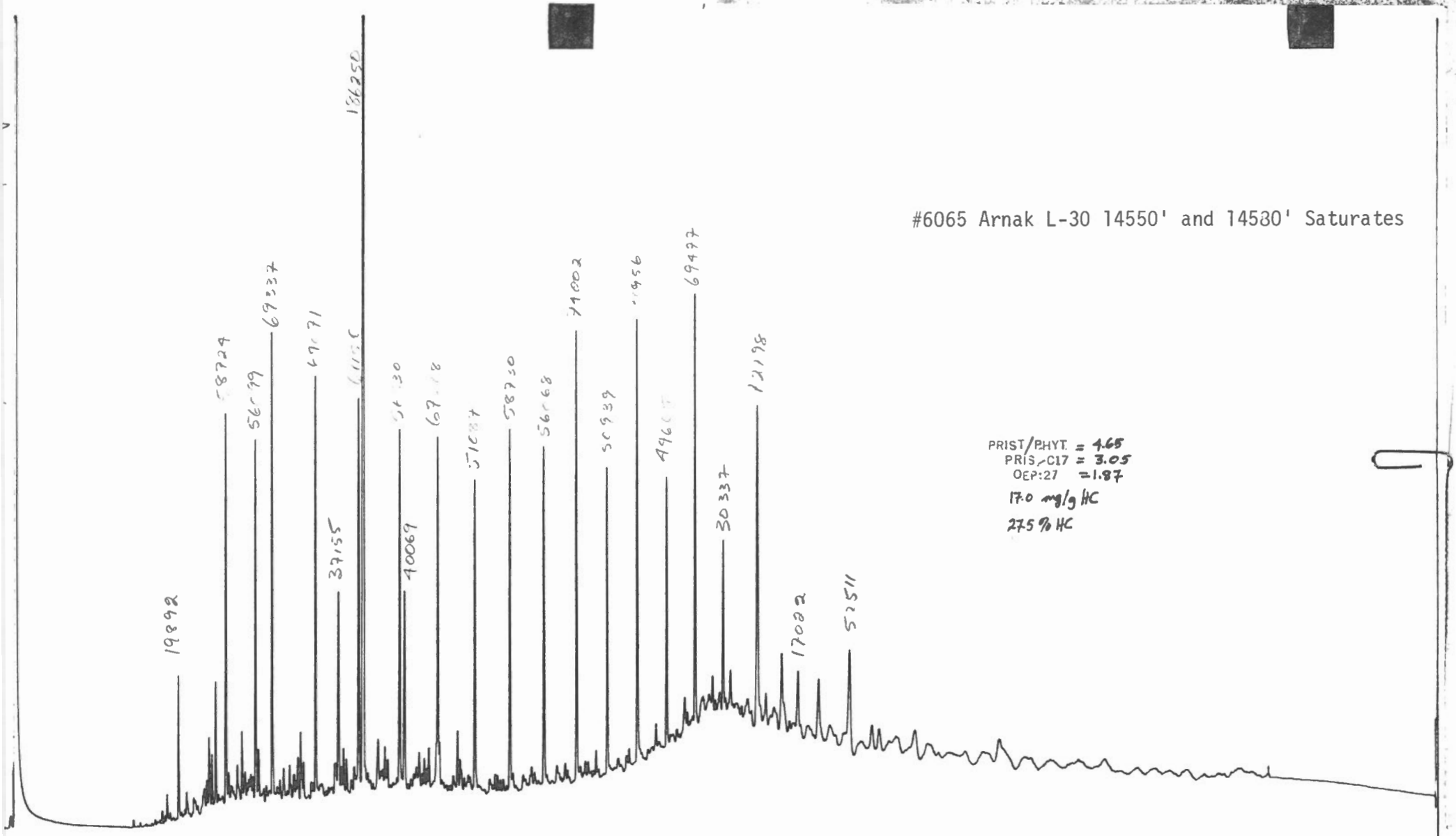
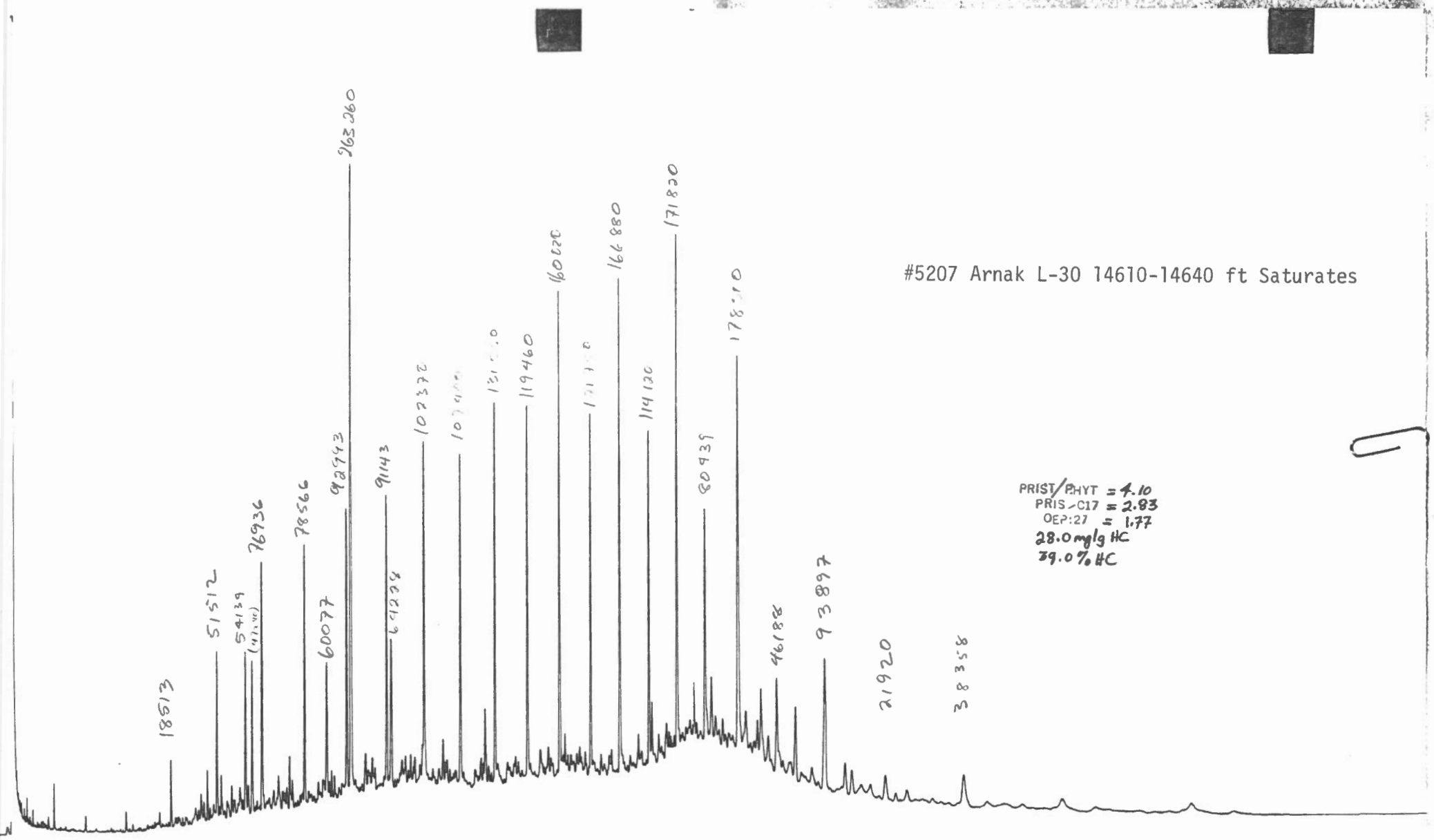
#6064 Arnak L-30 14070' and 14100' Saturates




#6065 Arnak L-30 14550' and 14530' Saturates
PRIST/PHYT. = 1.65
PRIS/C17 = 3.05
OEP:27 = 1.87
17.0 mg/g HC
27.5 % HC



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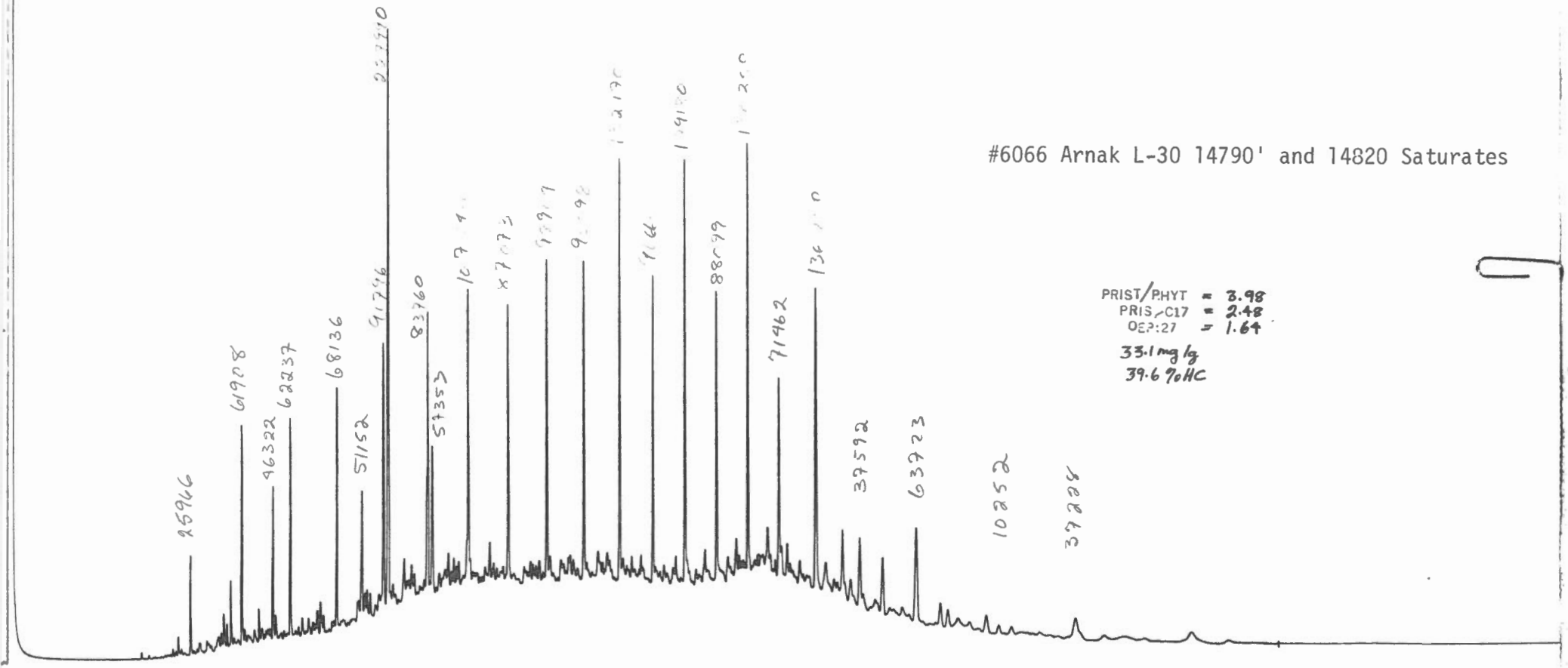
12

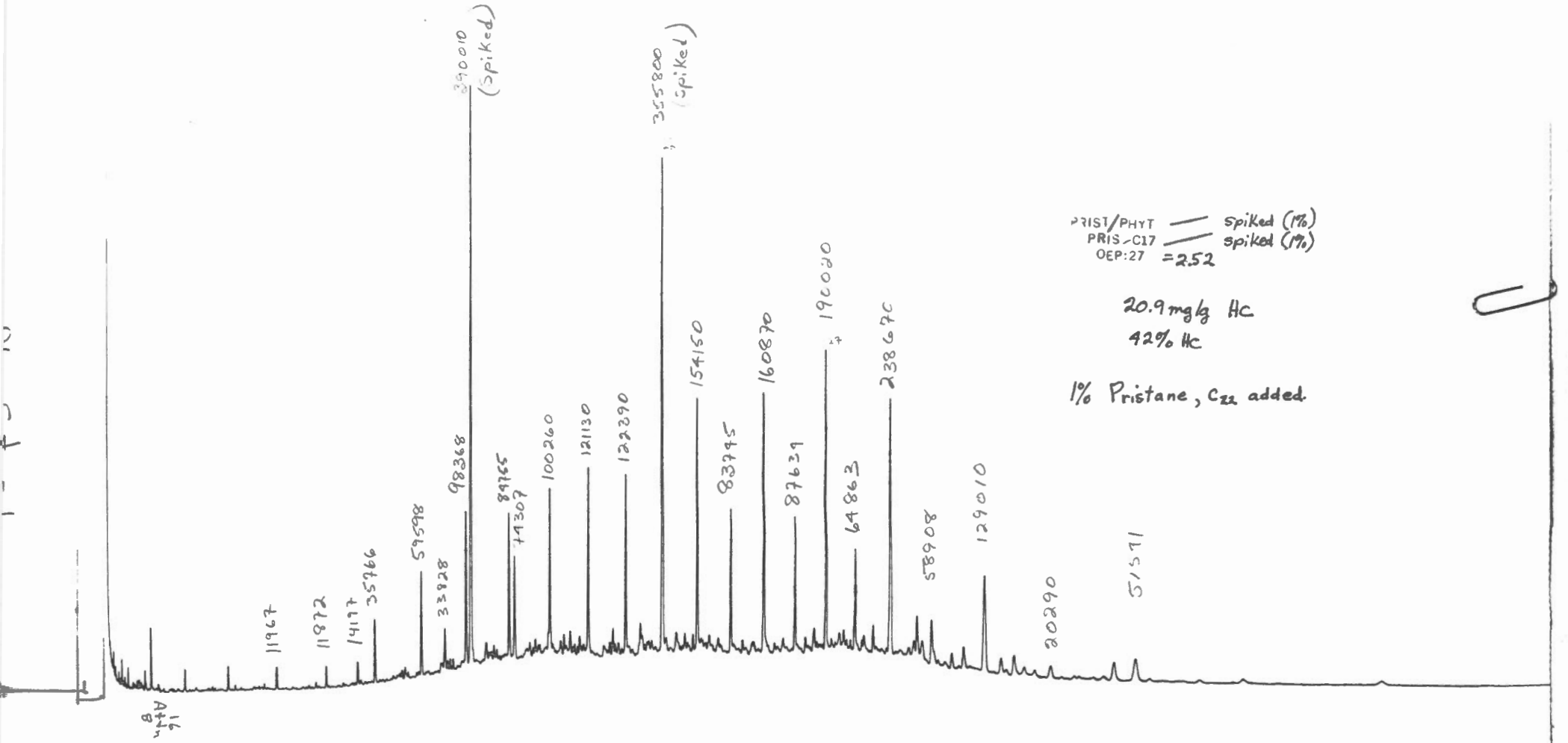
#6066 Arnak L-30 14790' and 14820 Saturates



PRIST/PHYT = 3.98
PRIS/C17 = 2.48
OEP:27 = 1.64

33.1 mg/g
39.6 %HC

#6039 Netserk B-44 5370-5430 ft. saturates



PRIST/PHYT — Spiked (1%)
PRIS-C17 — Spiked (1%)
OEP:27 = 2.52

20.9 mg/g Hc
42% Hc

1% Pristane, C_{22} added

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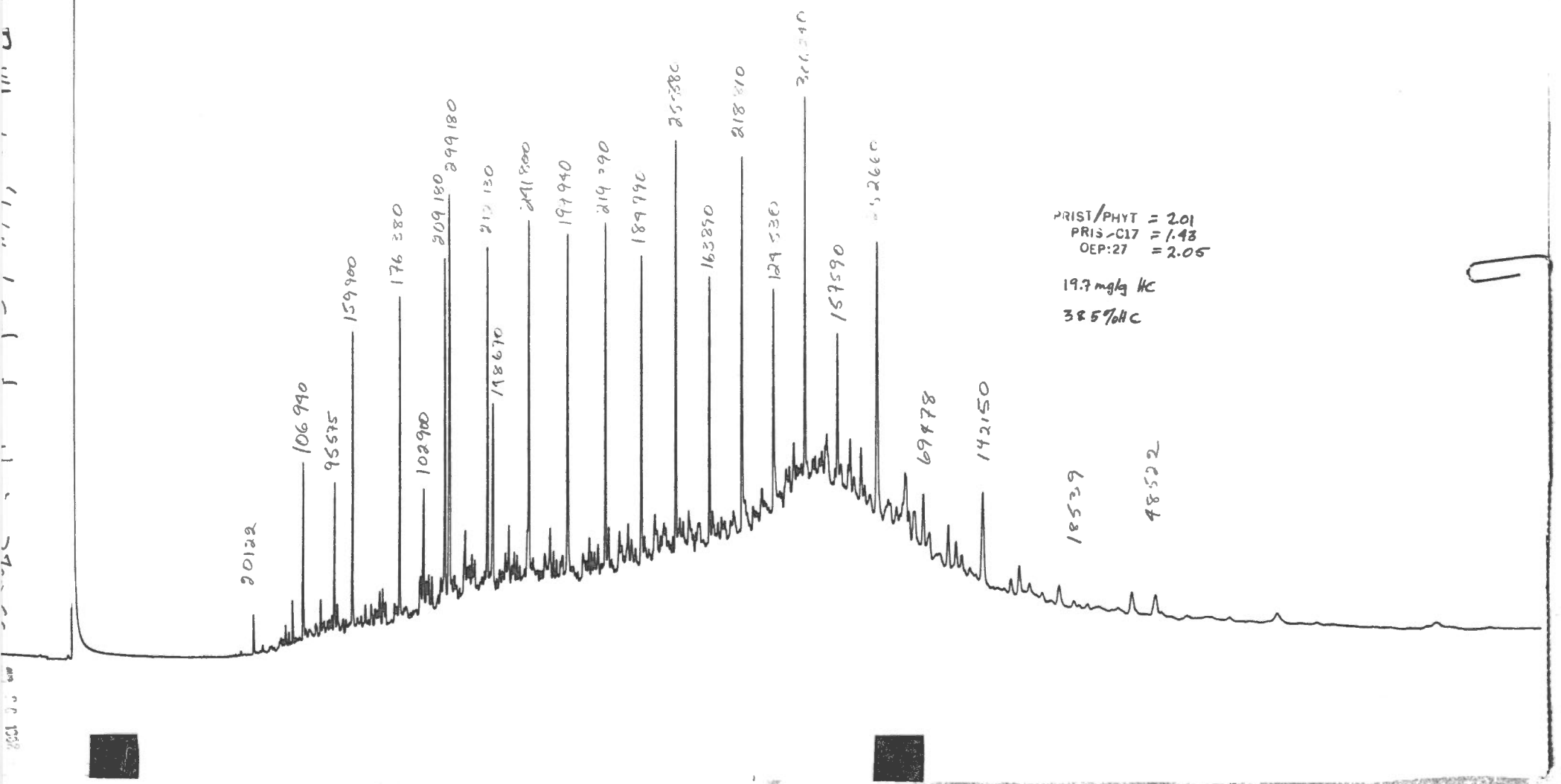
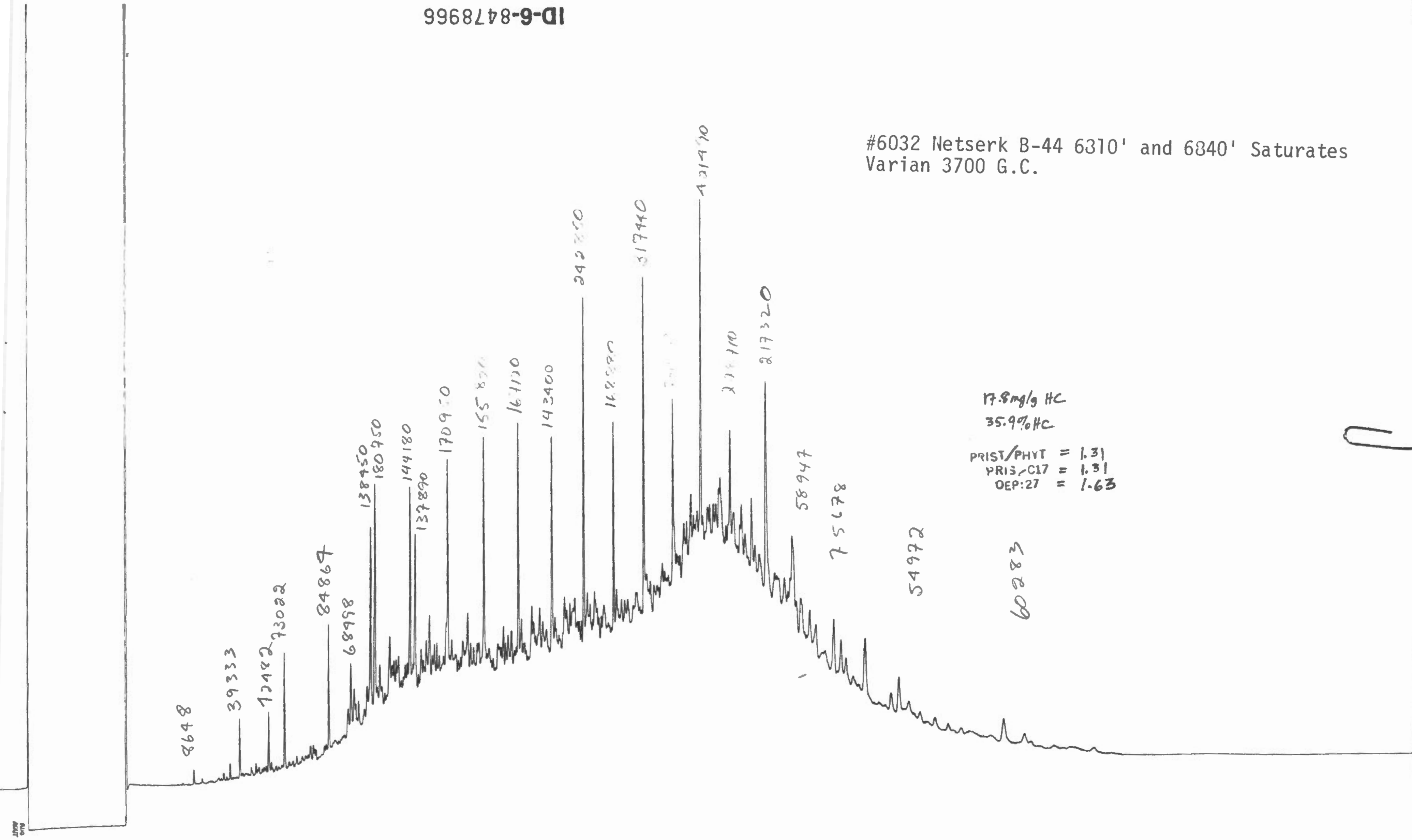
23

#6031 Netserk B-44 6420' and 6450' saturates
Varian 3700 G.C.



#6032 Netserk B-44 6310' and 6840' Saturates
Varian 3700 G.C.



17.8mg/g HC
35.9% HC

PRIST/PHYT = 1.31
PRIS/C17 = 1.31
OEP:27 = 1.63

28

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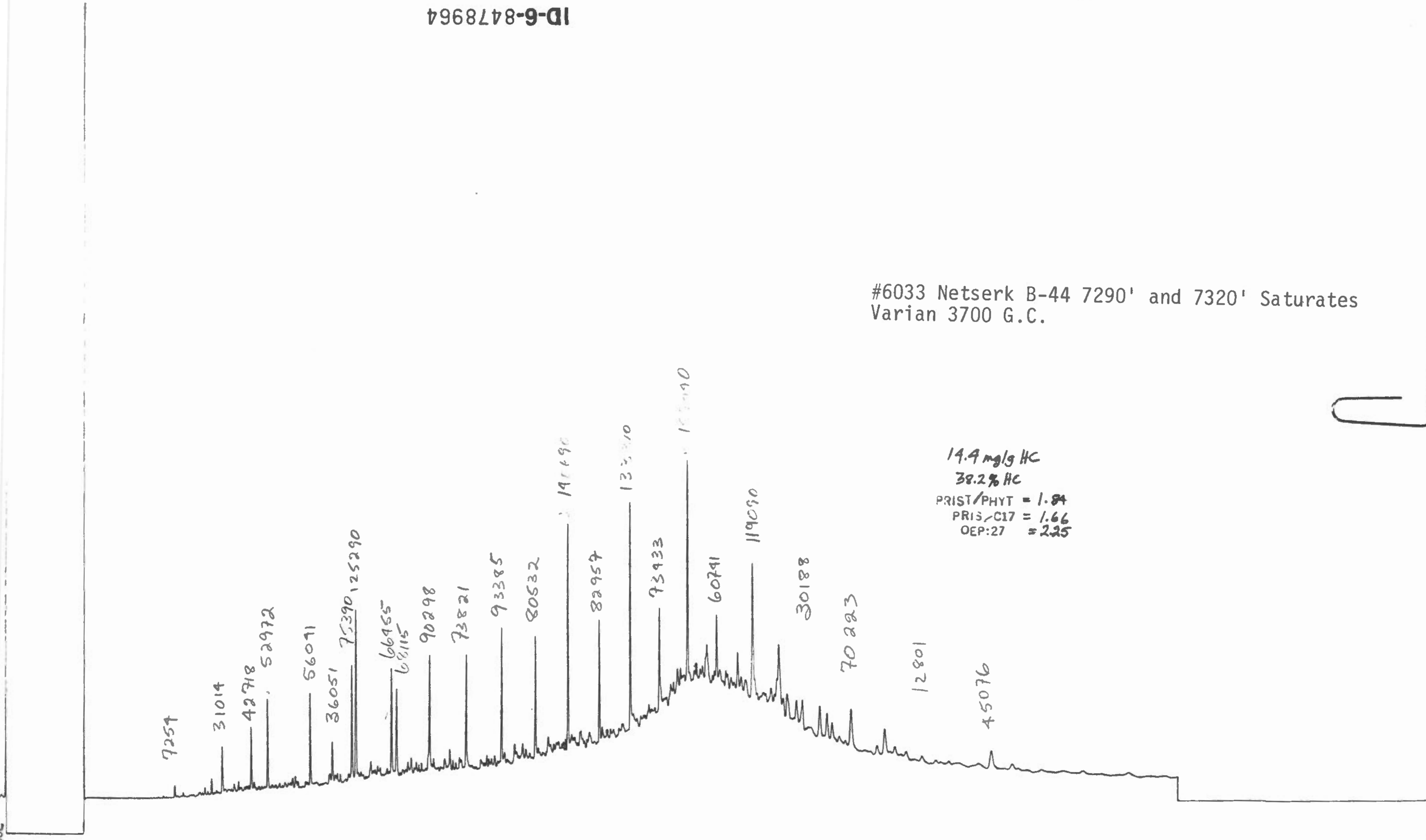
#6033 Netserk B-44 7290' and 7320' Saturates
Varian 3700 G.C.



14.4 mg/g HC
38.2% HC
PRIST/PHYT = 1.84
PRIS/C17 = 1.66
OEP:27 = 2.25

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26

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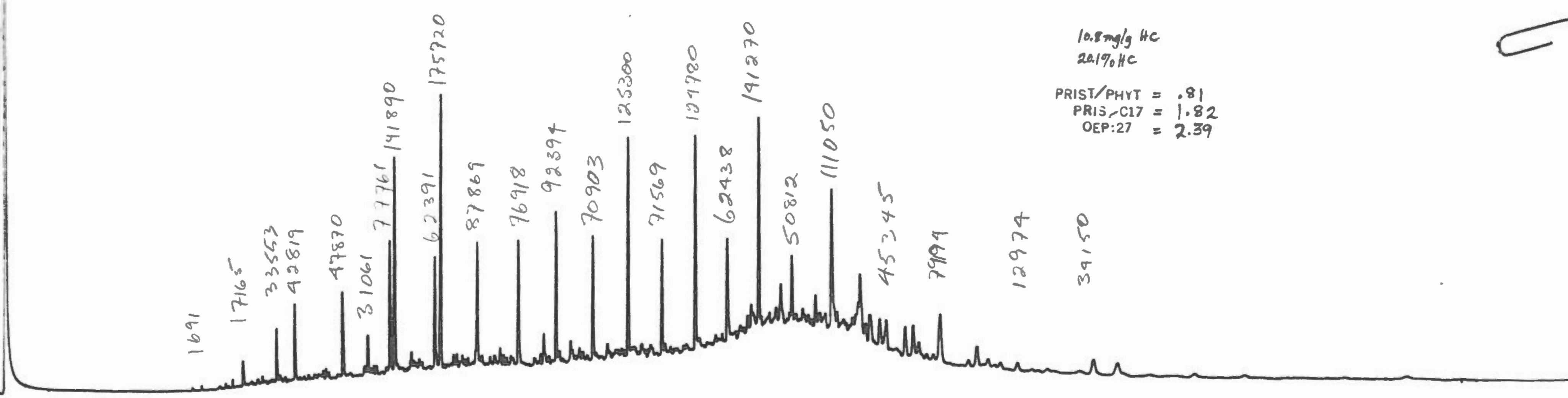
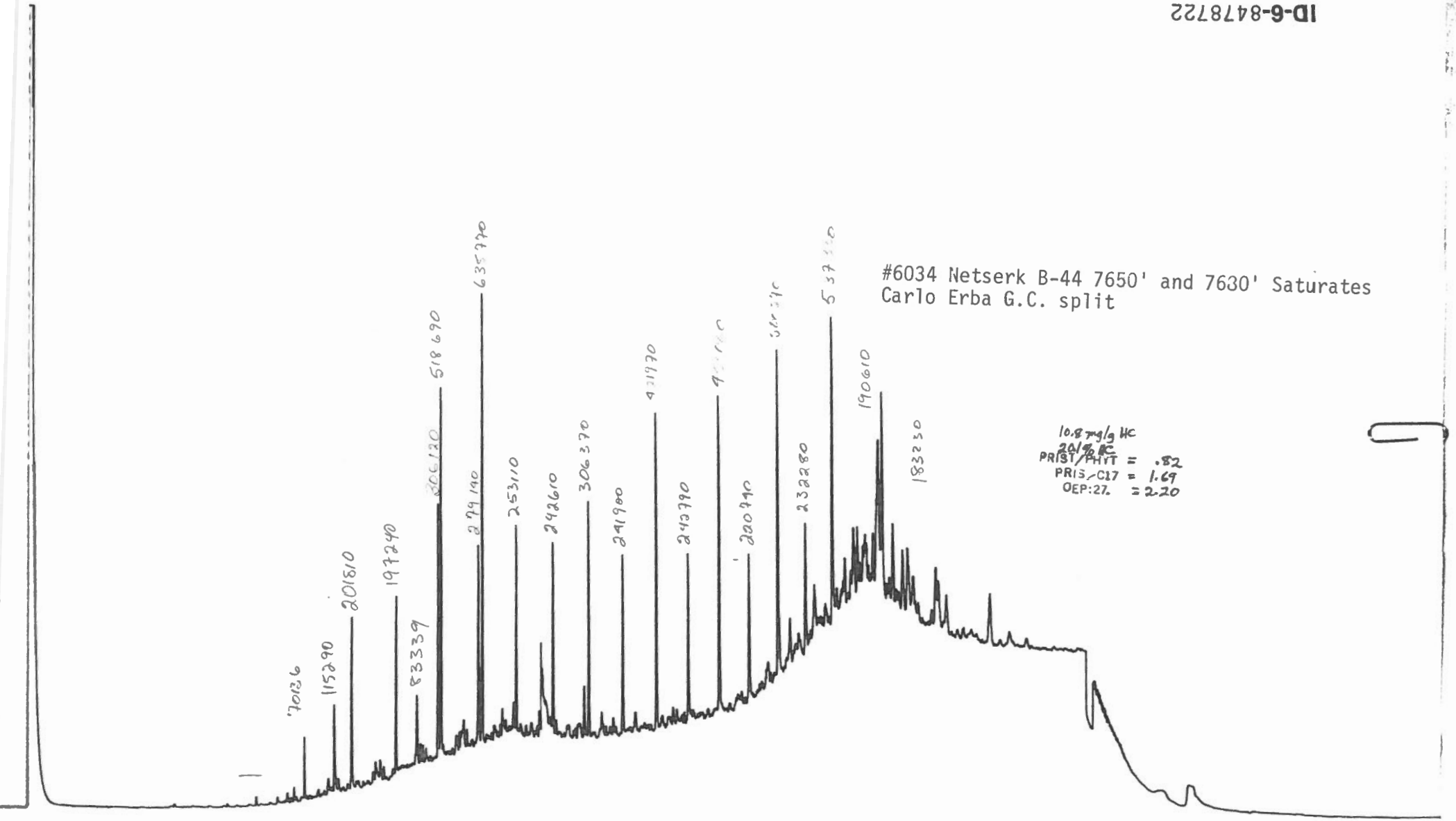
#6034 Netserk B-44 7650' and 7630' Saturates
Varian 3700 split

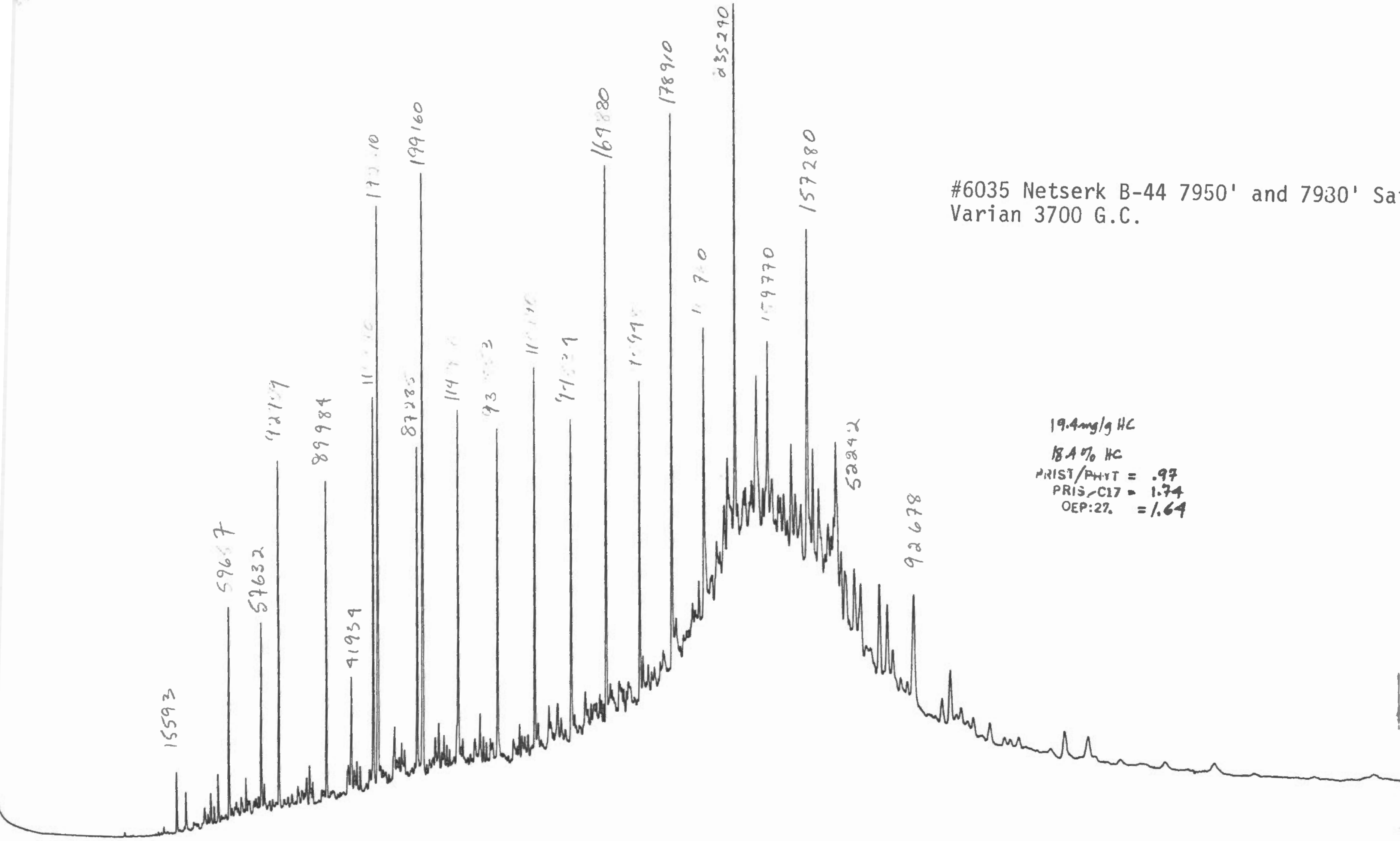
10.8 mg/g HC
20.1% HC

PRIST/PHYT = .81
PRIS/C17 = 1.82
OEP:27 = 2.39




#6034 Netserk B-44 7650' and 7630' Saturates
Carlo Erba G.C. split
70126
115290
201810
197240
83339
206120
518690
279190
635770
253110
242610
306370
241980
421970
413790
220990
332280
190610
183230
10.8 mg/g HC
20% EC
PRIST/PHIT = .82
PRIS/C17 = 1.69
OEP:27. = 2.20

#6035 Netserk B-44 7950' and 7930' Saturates
Varian 3700 G.C.



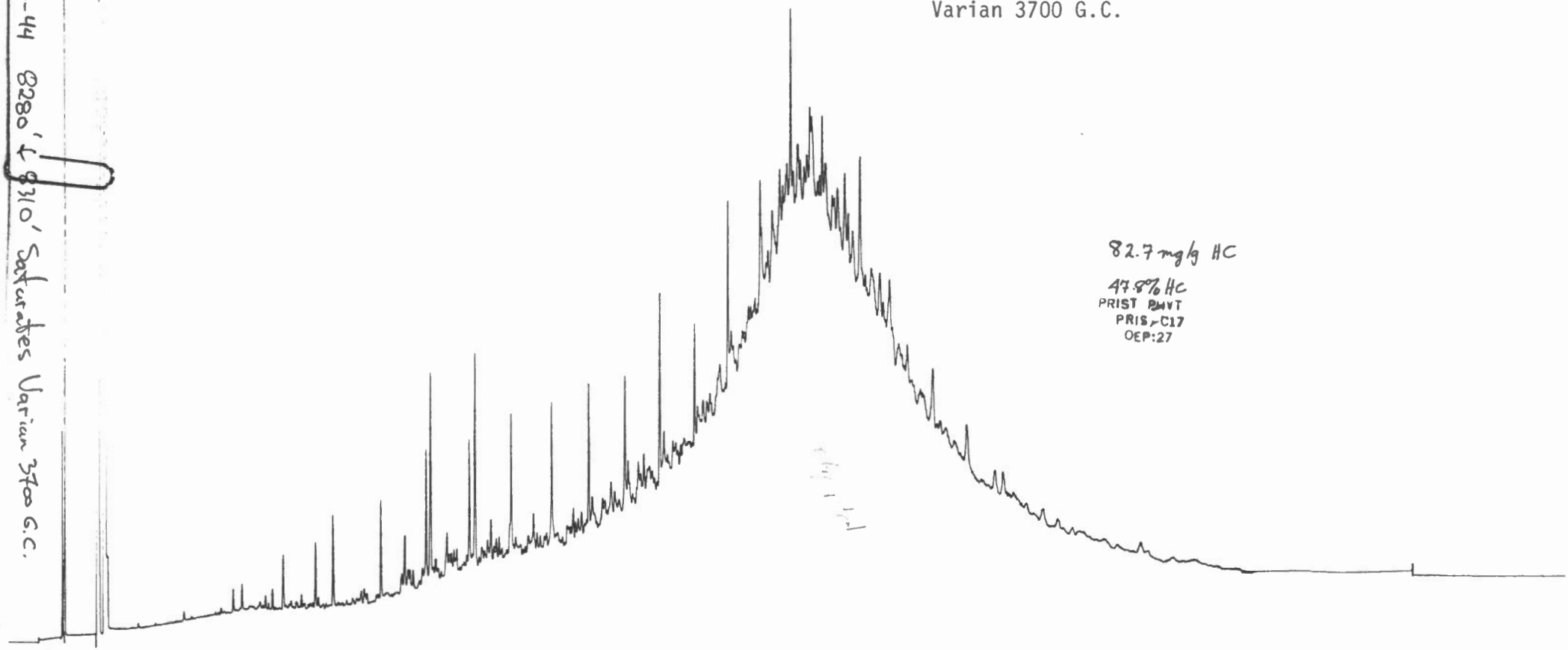
19.4 mg/g HC
18.4 % HC
PRIST/PHYT = .97
PRIS/C17 = 1.74
OEP:27 = 1.64

#6036 Netserk B-44 8280' & 8310' Saturates Varian 3700 G.C.

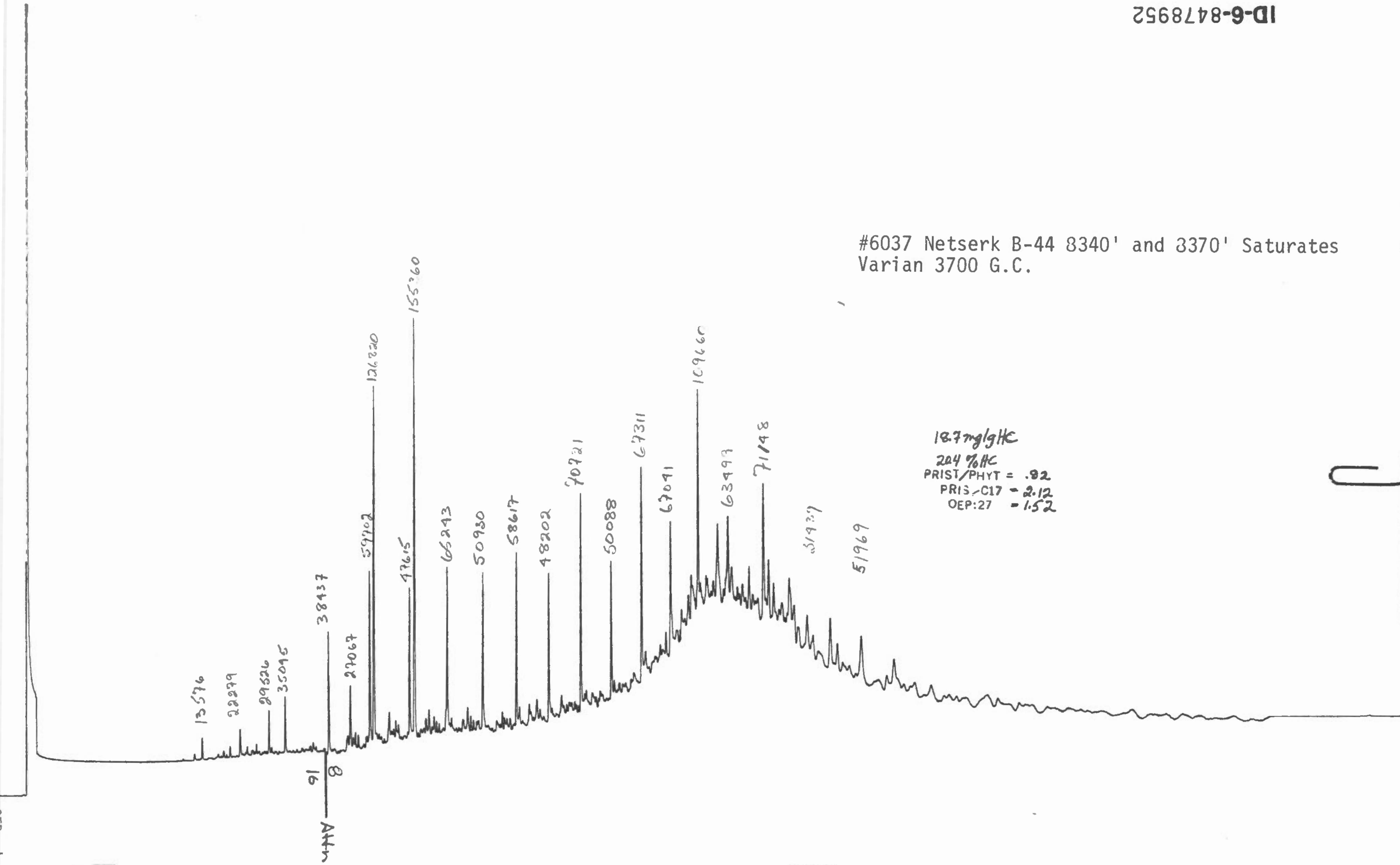
#6036 Netserk B-44 3280' and 3310' Saturates
Varian 3700 G.C.

82.7 mg/g HC

47.8% HC
PRIST PHYT
PRIS/C17
OEP:27



#6037 Netserk B-44 8340' and 8370' Saturates
Varian 3700 G.C.



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31

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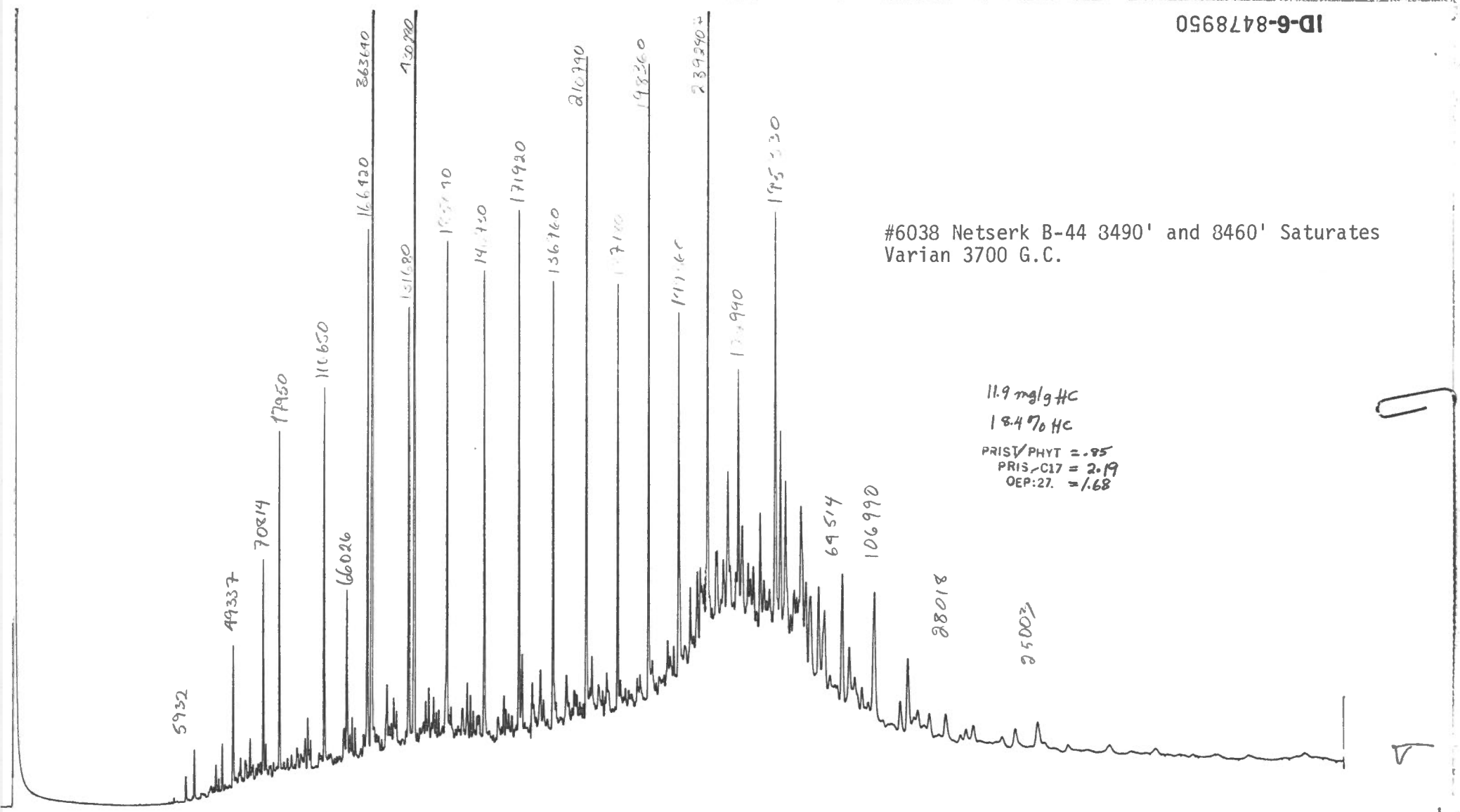

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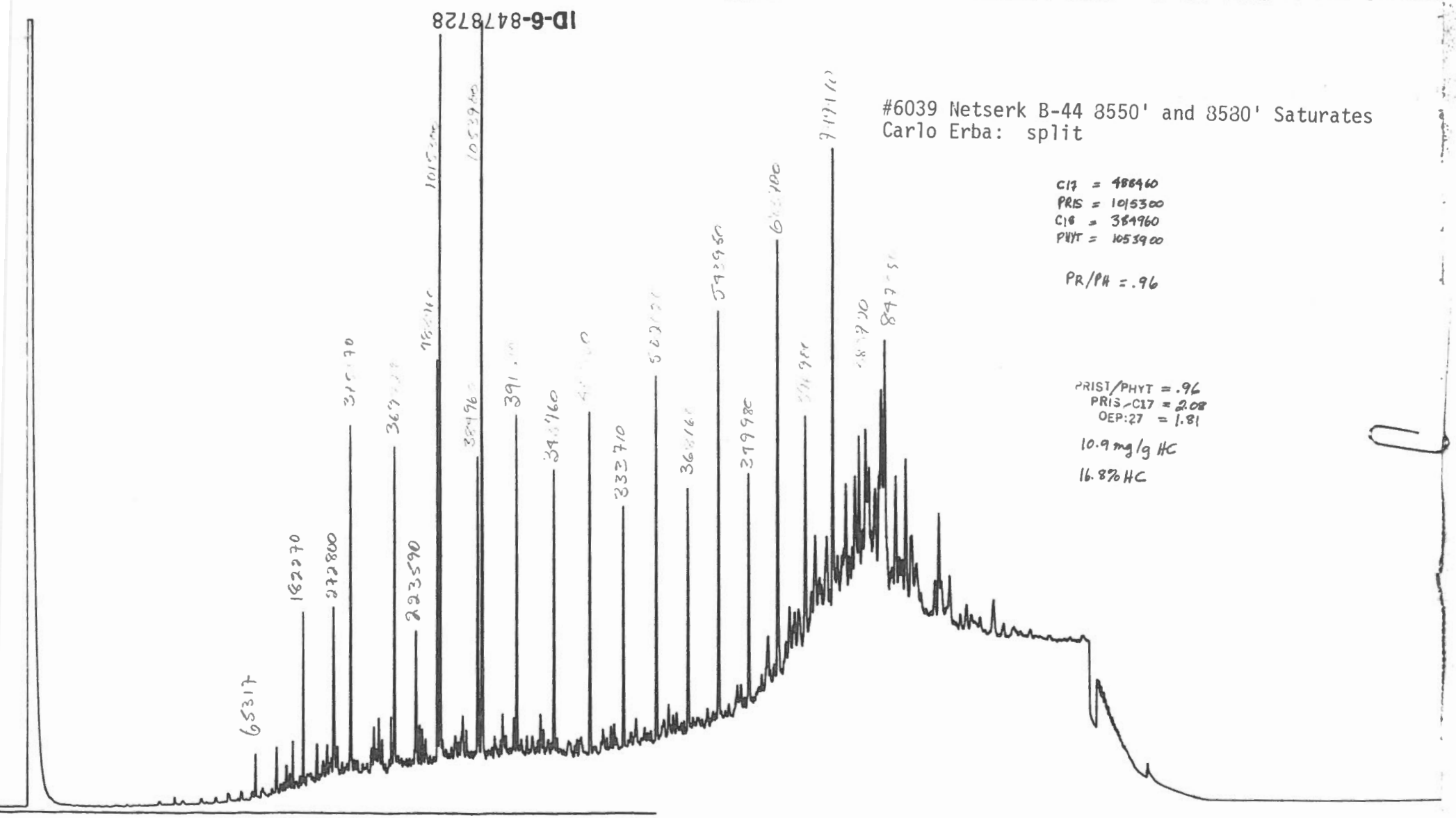

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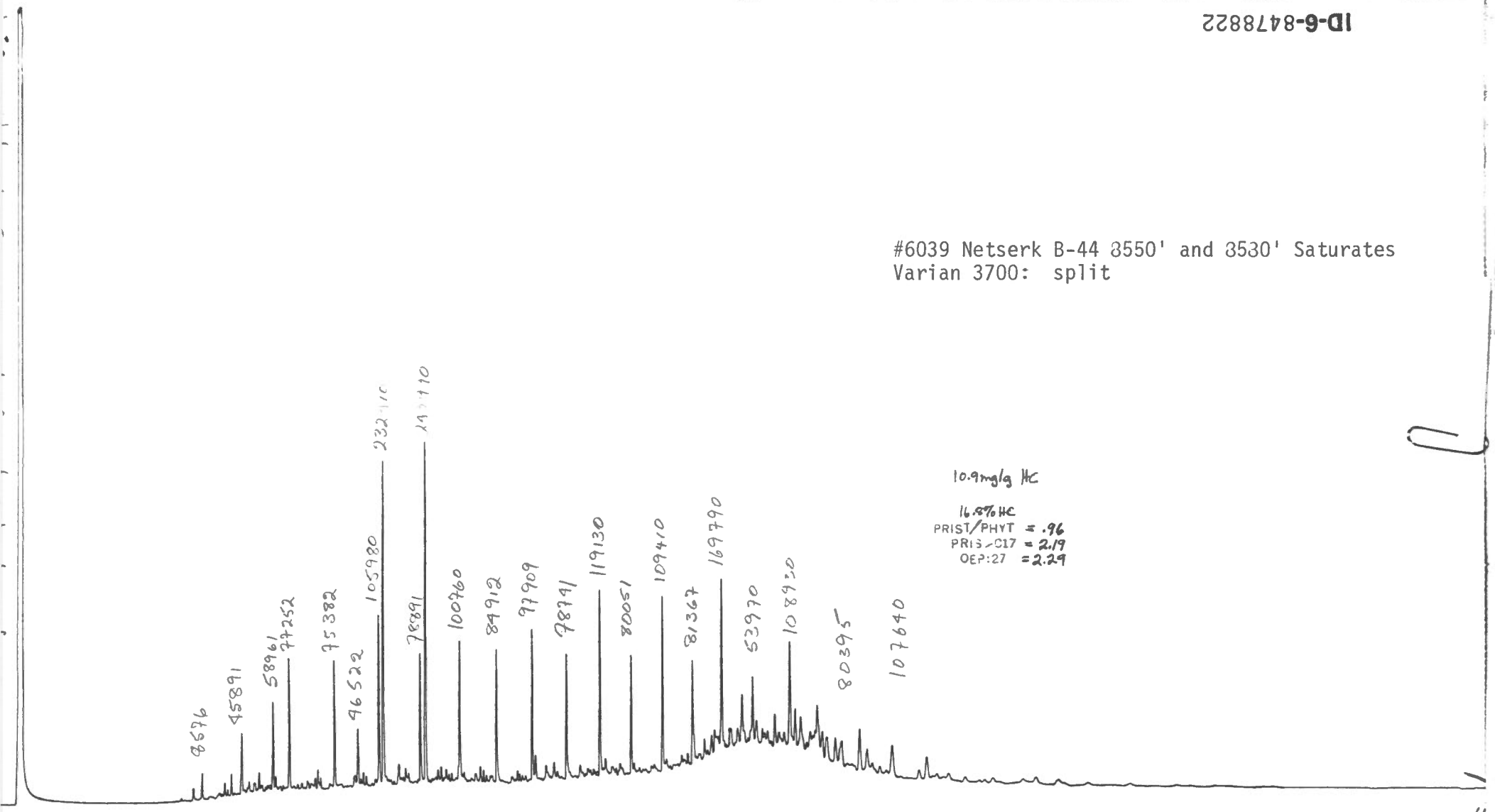
#6039 Netserk B-44 3550' and 3530' Saturates
Varian 3700: split



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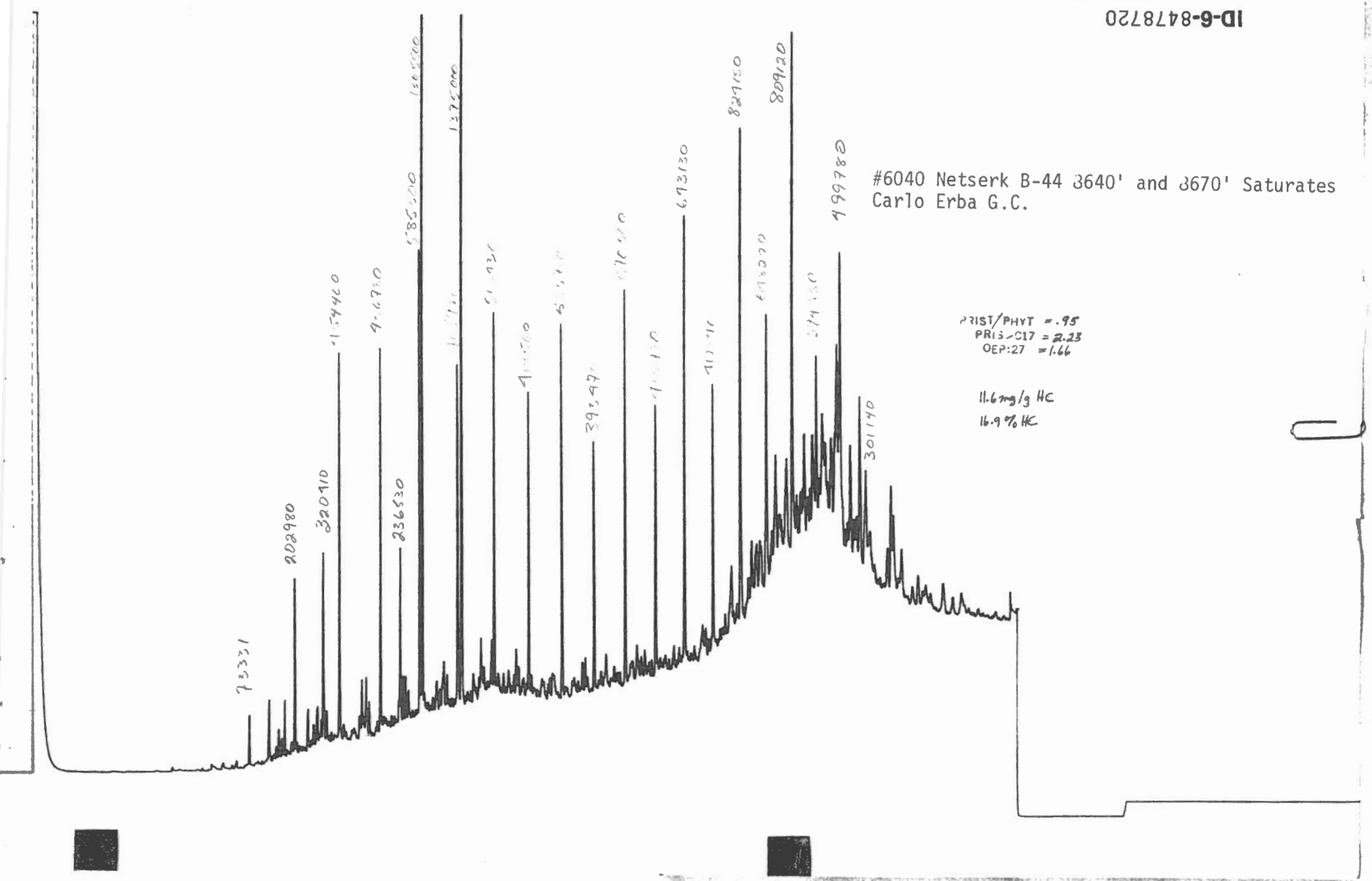

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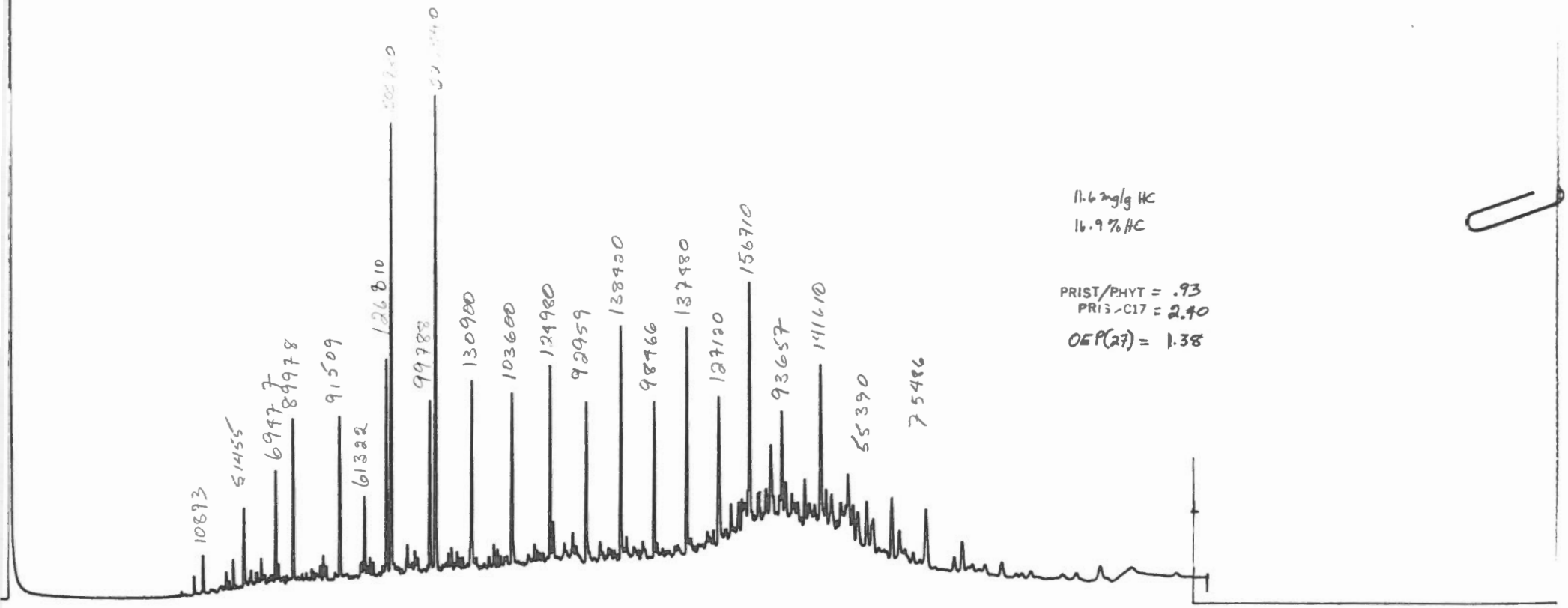
33

#6040 Netserk B-44 3640' and 3670' Saturates
Varian 3700 G.C.



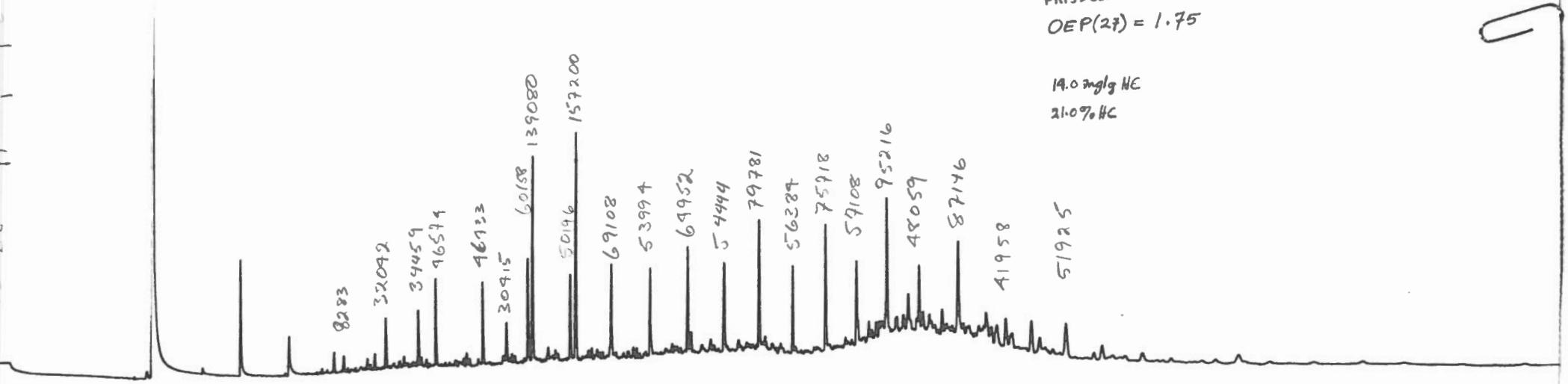
11.6 mg/g HC
16.9% HC

PRIST/PHYT = .93
PRIS-C17 = 2.40
OEP(27) = 1.38

#6041 Netserk B-44 3760' and 3790 Saturates
Varian 3700 G.C.

PRIST/PHYT = .88
PRIS/C17 = 2.31
OEP(27) = 1.75

14.0 mg/g HC
21.0% HC



37

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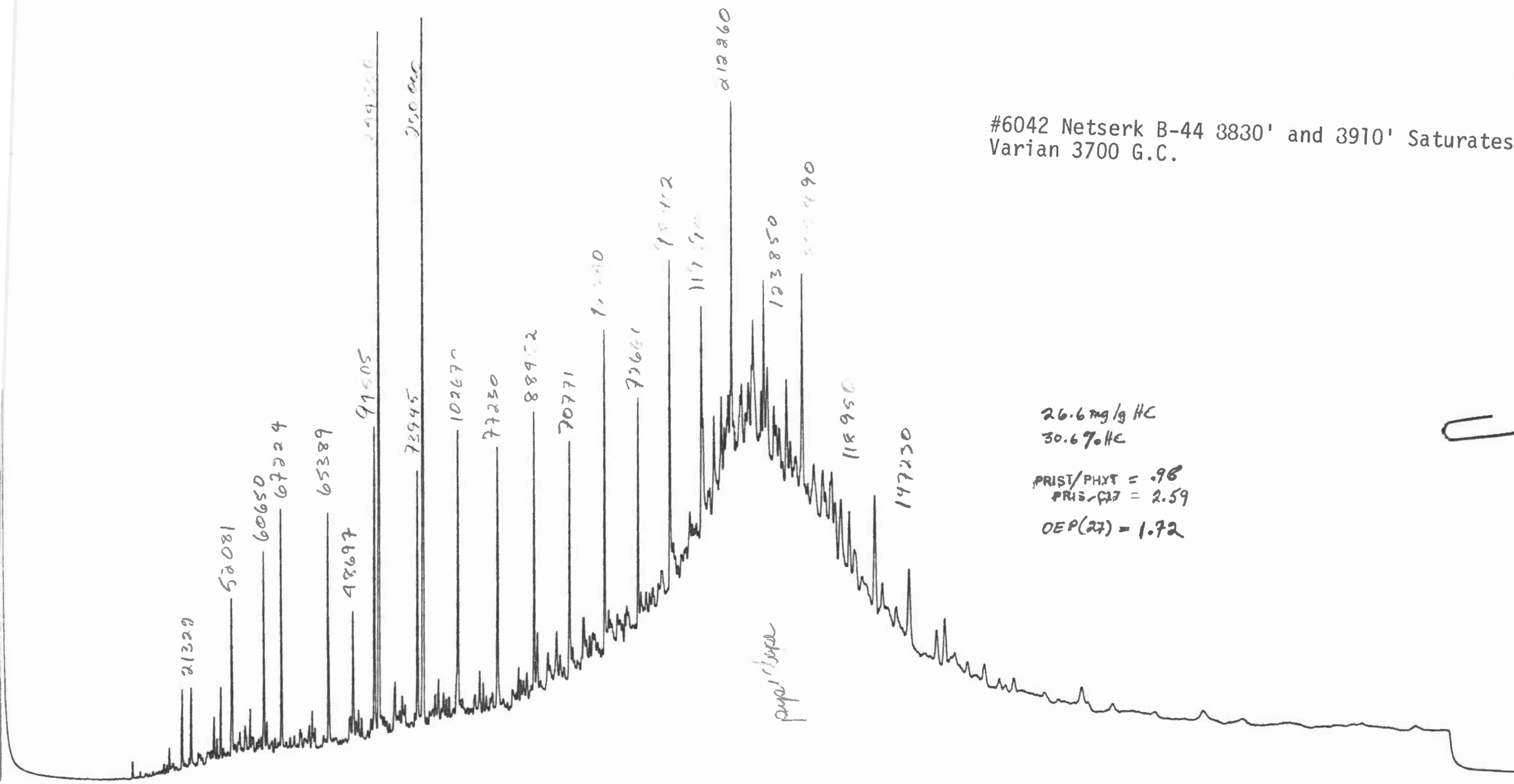
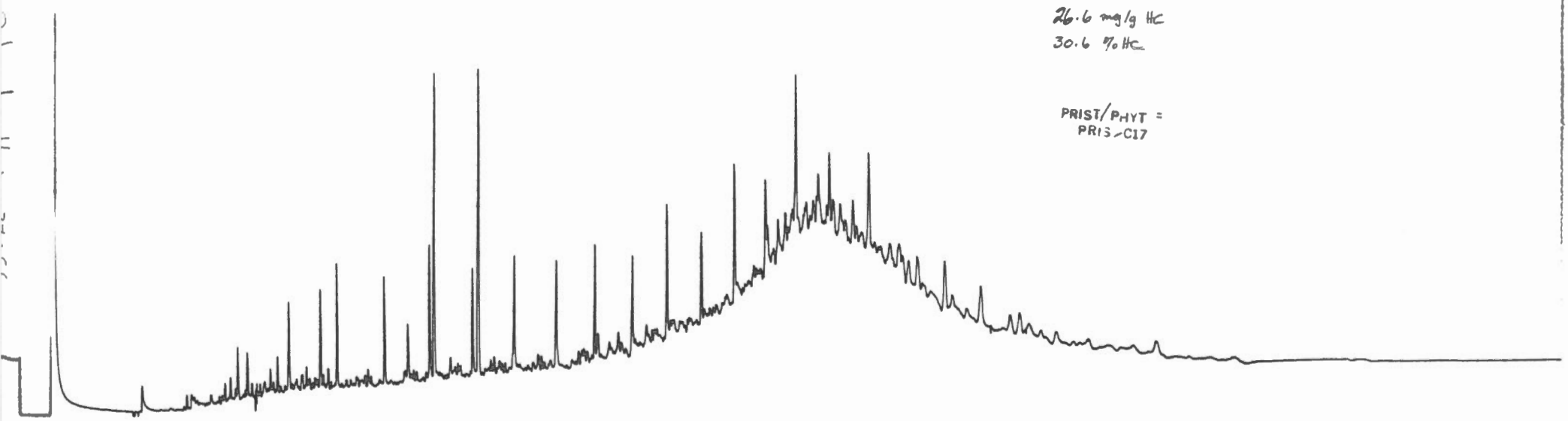
#6042 Netserk B-44 3830' and 3910' Saturates
Varian 3700 G.C.



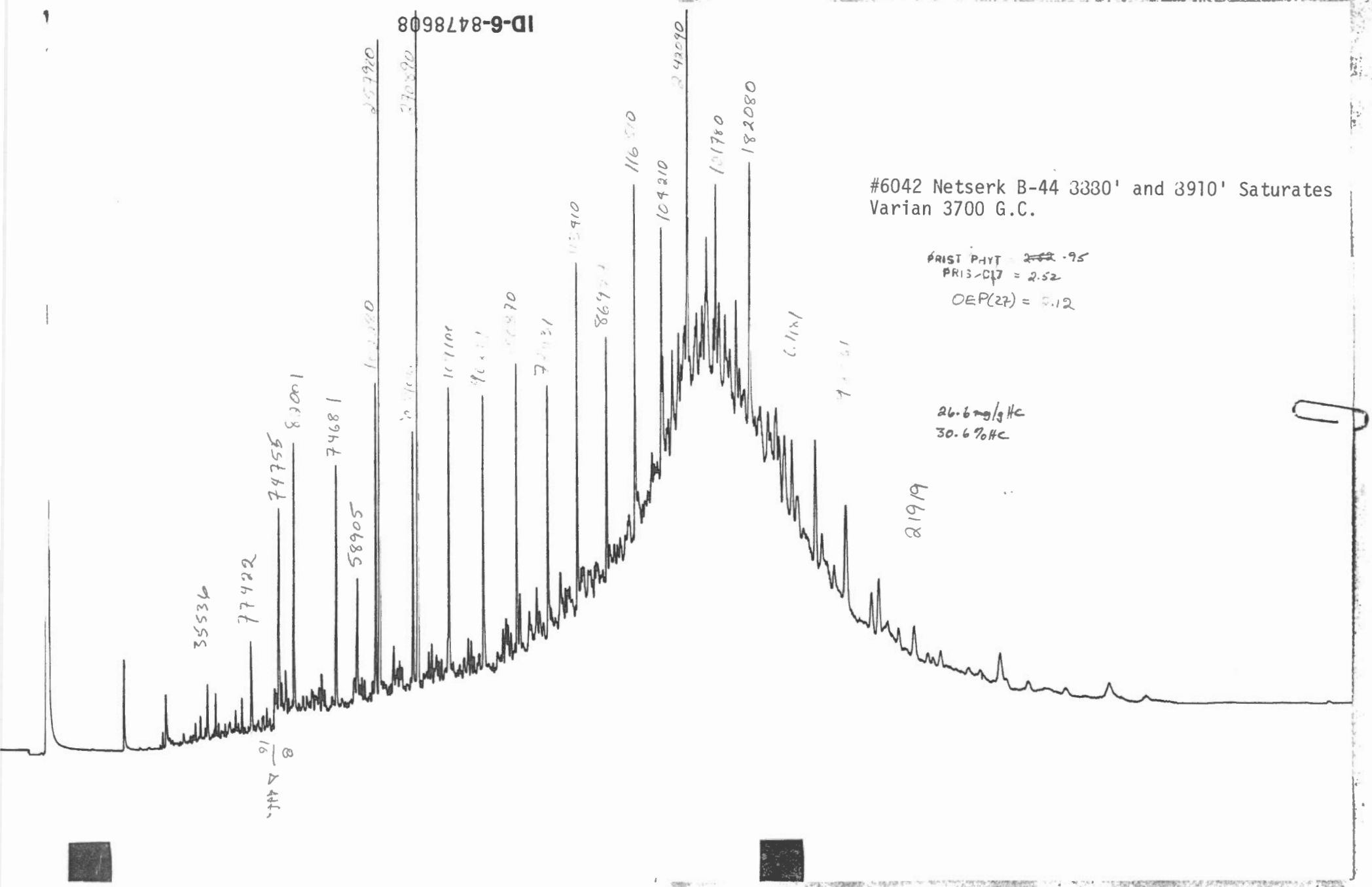
38

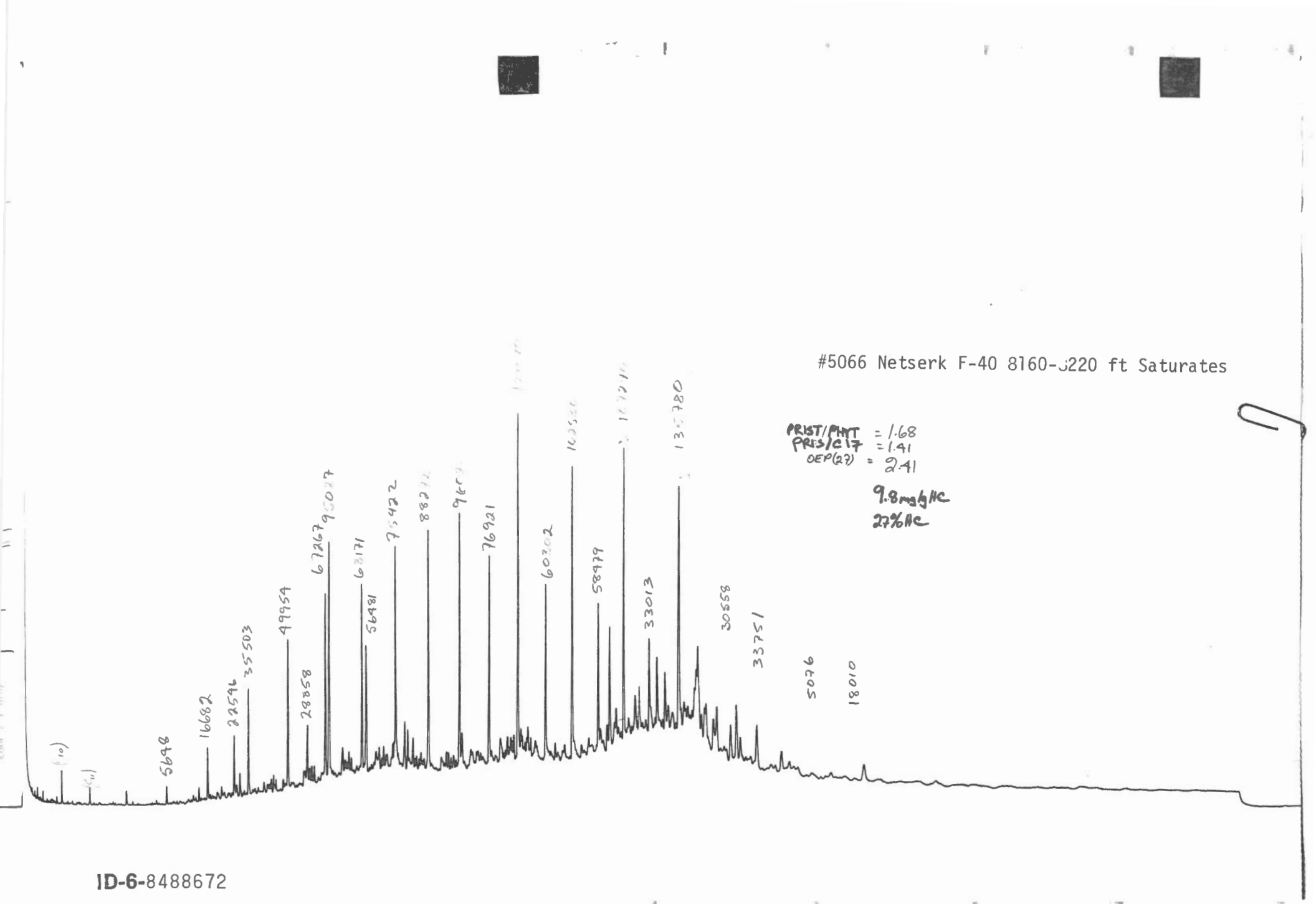
#6042 Netserk B-44 8380' and 8910' Saturates
Varian 3700 G.C.

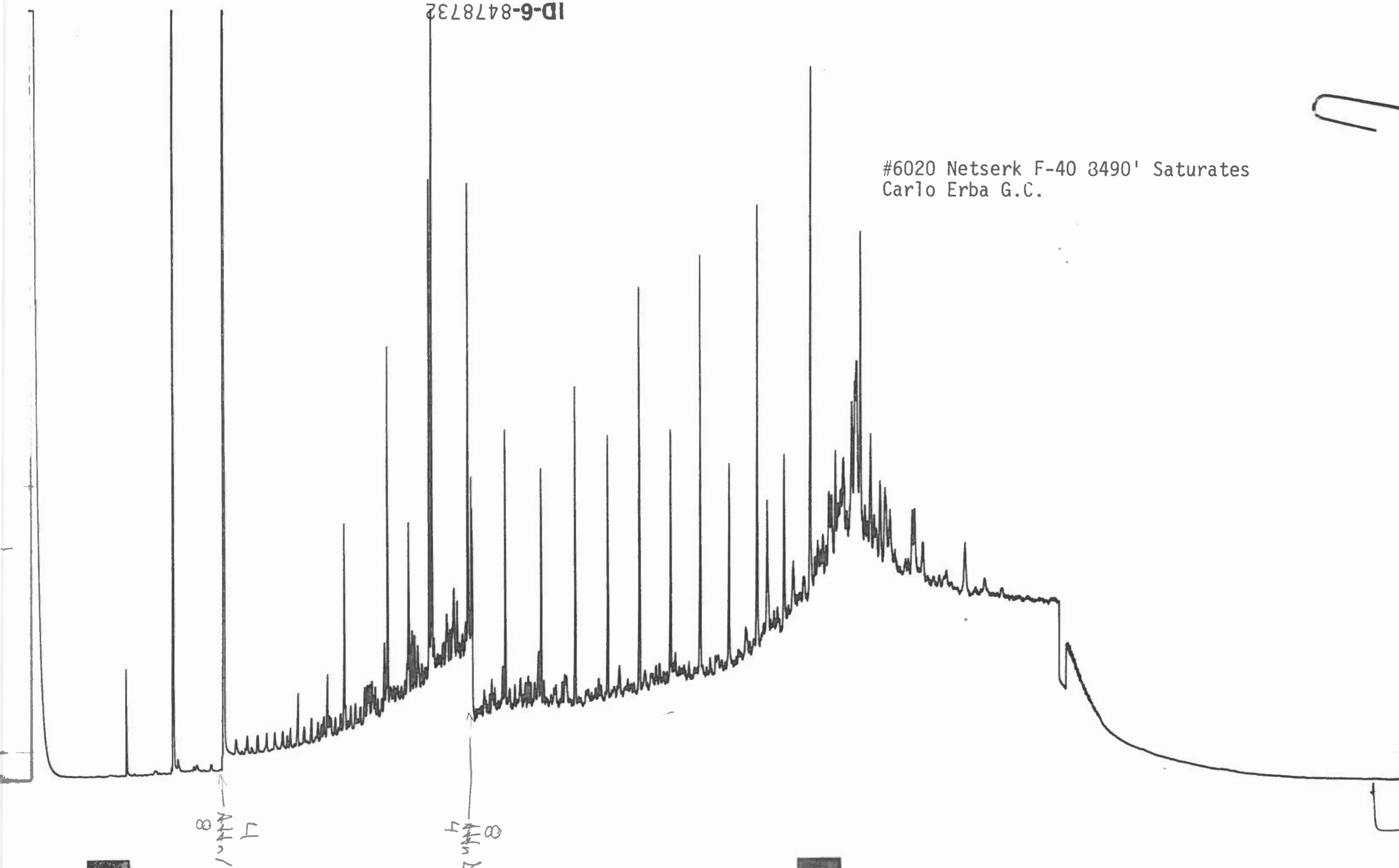


26.6 mg/g HC
30.6 % HC

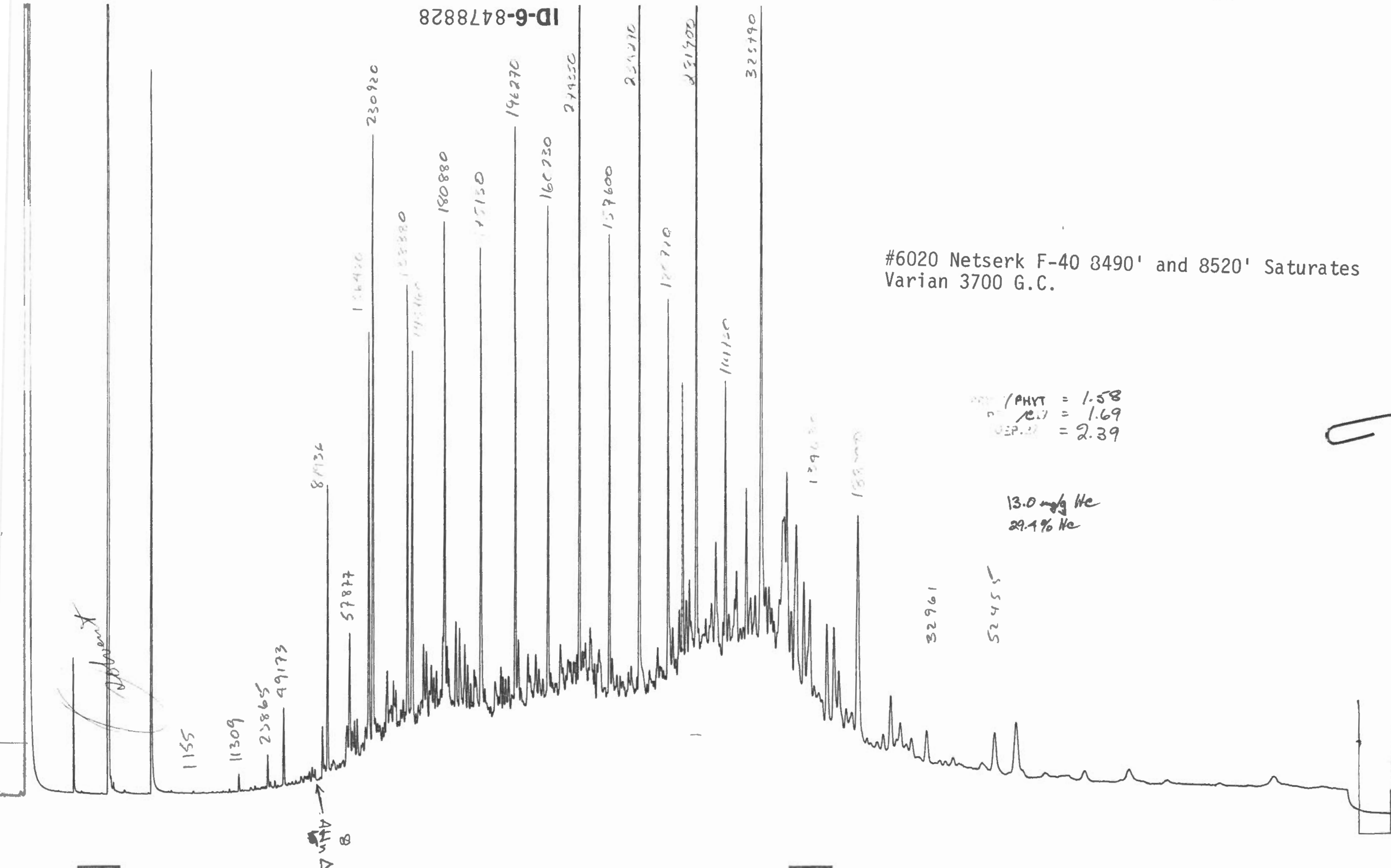
PRIST/PHYT =
PRIS/C17


ID-6-8478608
#6042 Netserk B-44 3380' and 3910' Saturates
Varian 3700 G.C.
PRIST PHYT .95
PRIS-C17 = 2.52
OEP(27) = .12
26.6 mg/g HC
30.6 %HC
35536
77422
74758
74681
58905
104210
182080
21919


#5066 Netserk F-40 8160-8220 ft Saturates
PRIST/PHYT = 1.68
PRIS/C17 = 1.41
OEP(27) = 2.41
9.8 mg/g HC
27% HC
5648
16682
22596
25503
49954
28858
67267
68171
56981
75422
88212
76921
60302
58979
33013
30558
33751
5076
18010



#6020 Netserk F-40 3490' Saturates
Carlo Erba G.C.

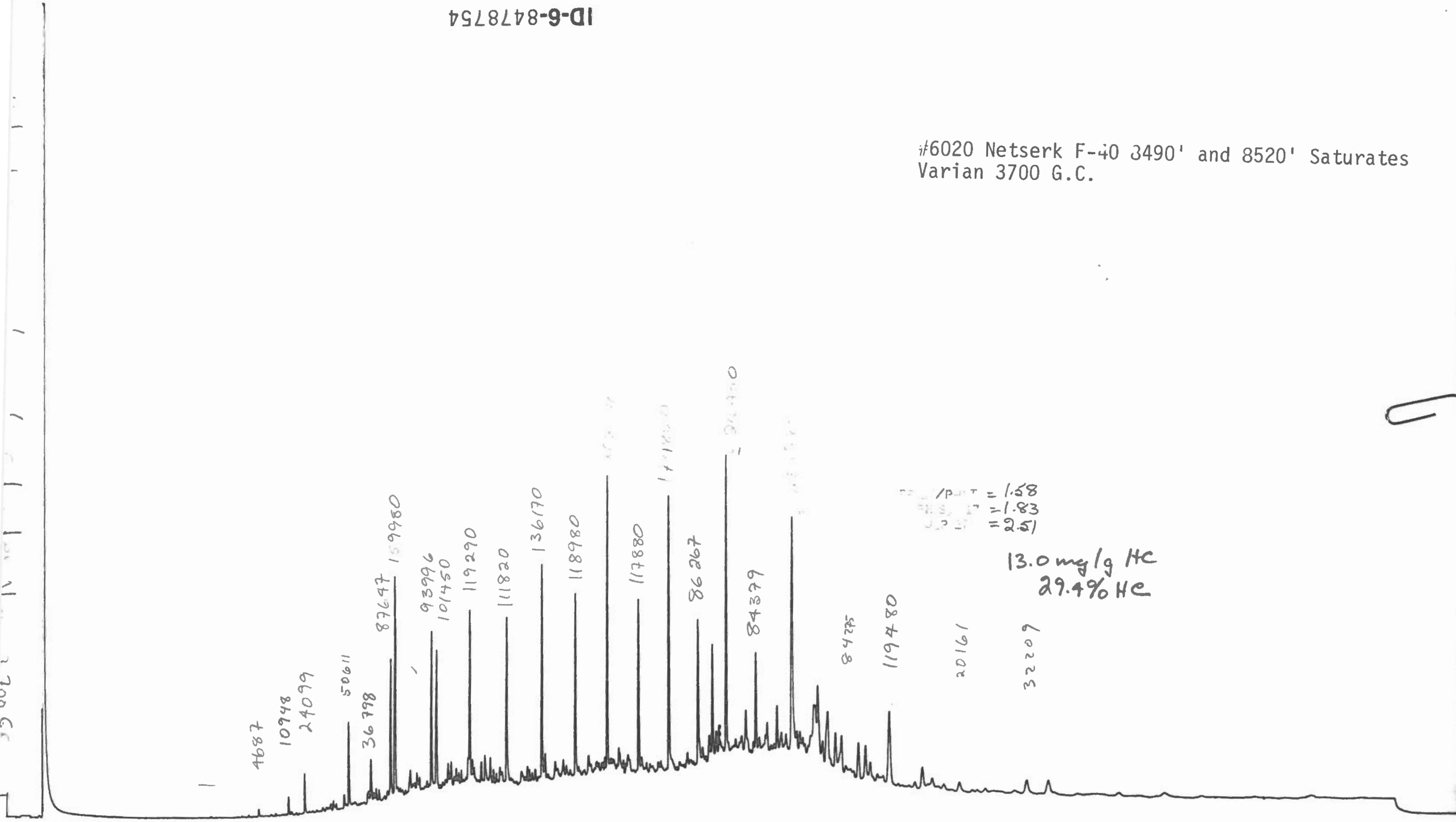


#6020 Netserk F-40 8490' and 8520' Saturates
Varian 3700 G.C.

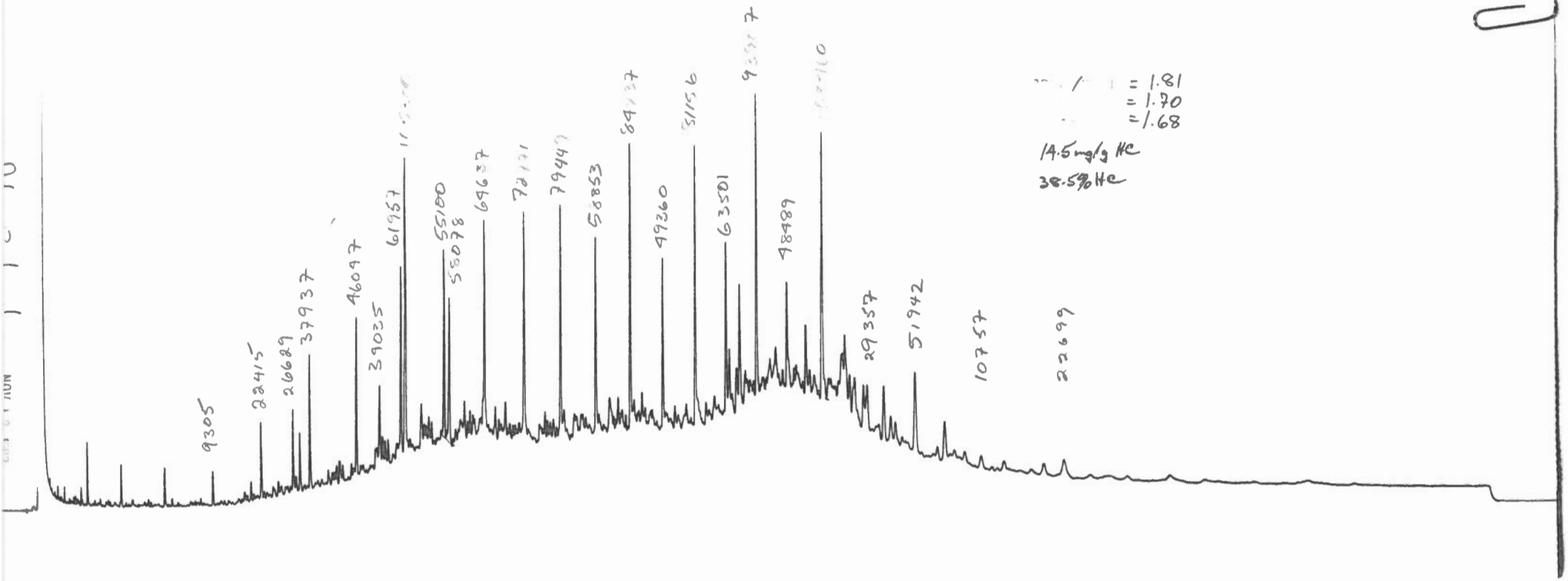
… /PHYT = 1.58
… = 1.69
… = 2.39

13.0 mg/g HC
29.4% HC

#6020 Netserk F-40 3490' and 8520' Saturates
Varian 3700 G.C.

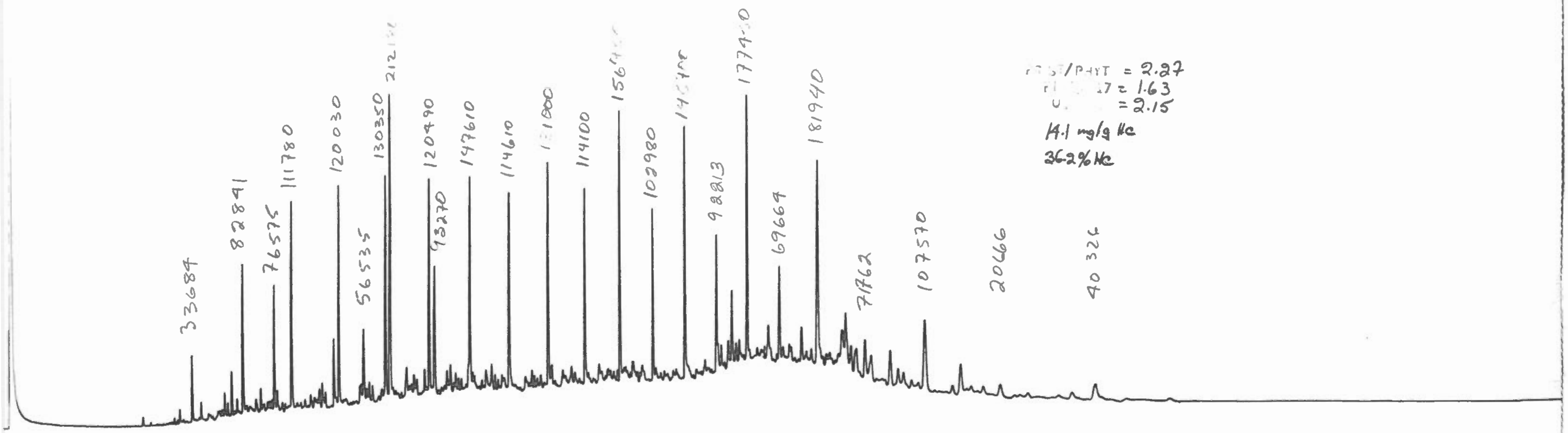


#5067 Netserk F-40 9000-9030 ft Saturates



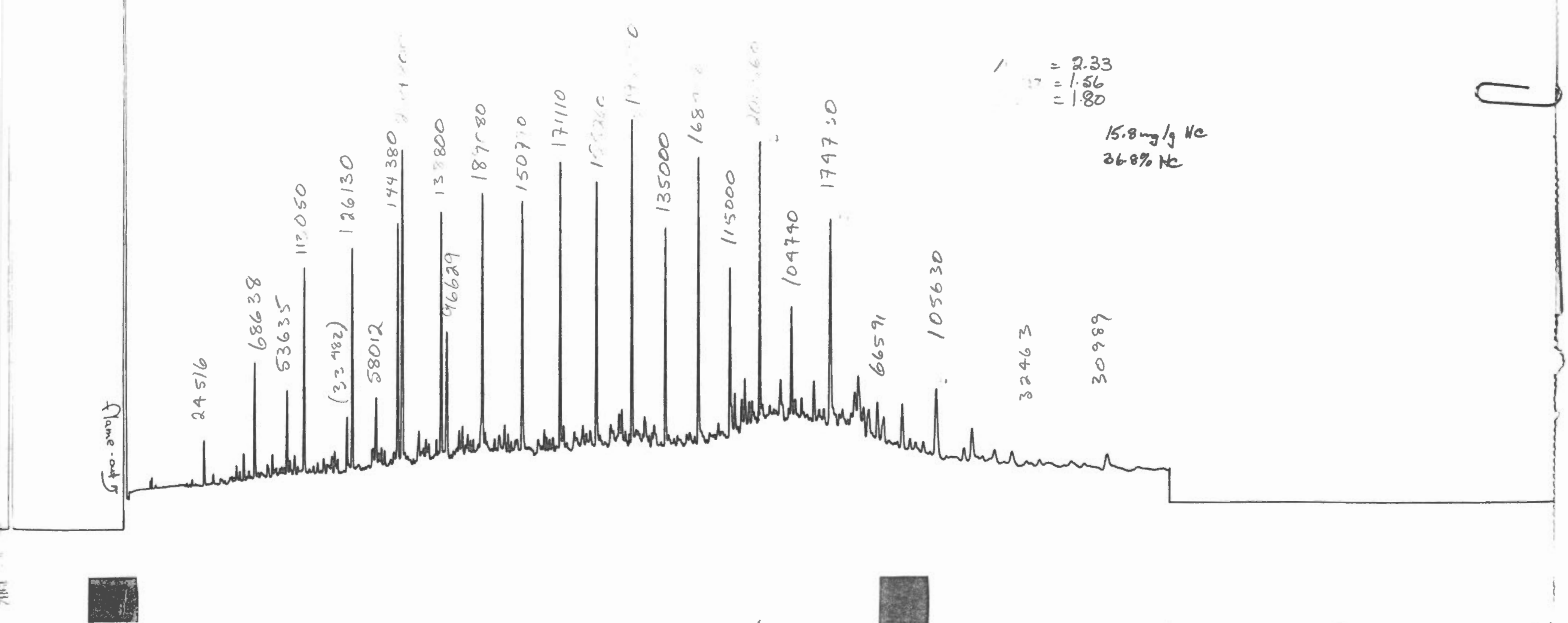
ID-6-8488676

#6021 Netserk F-40 9000' and 9030' and 9060'
Saturates Varian 3700 G.C.

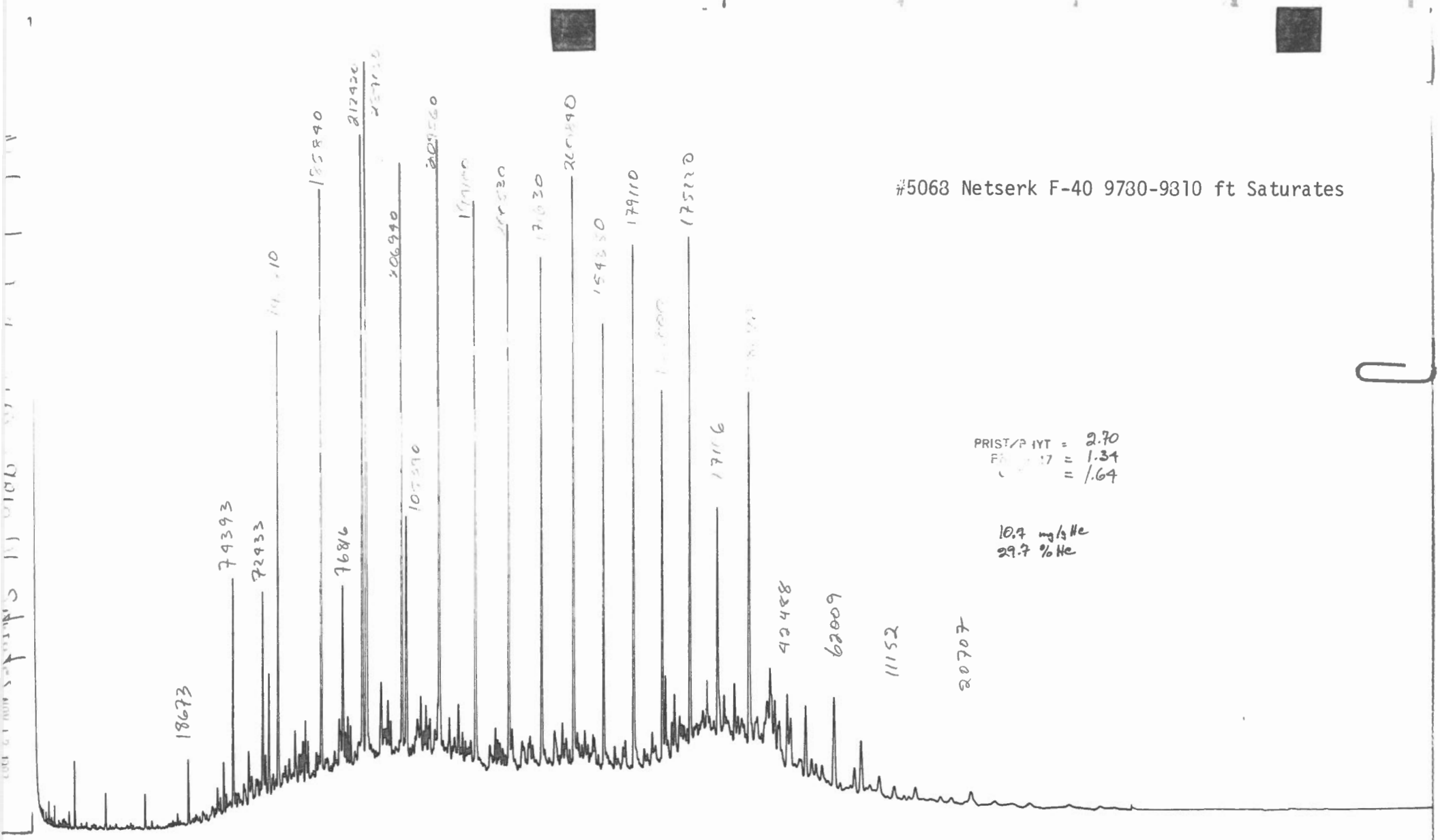


PRIST/PHYT = 2.27
[illegible]/C17 = 1.63
[illegible] = 2.15
14.1 mg/g Hc
36.2% Hc

#6022 Netserk F-40 9540' and 9570' Saturates
Varian 3700 G.C.



#5068 Netserk F-40 9730-9810 ft Saturates

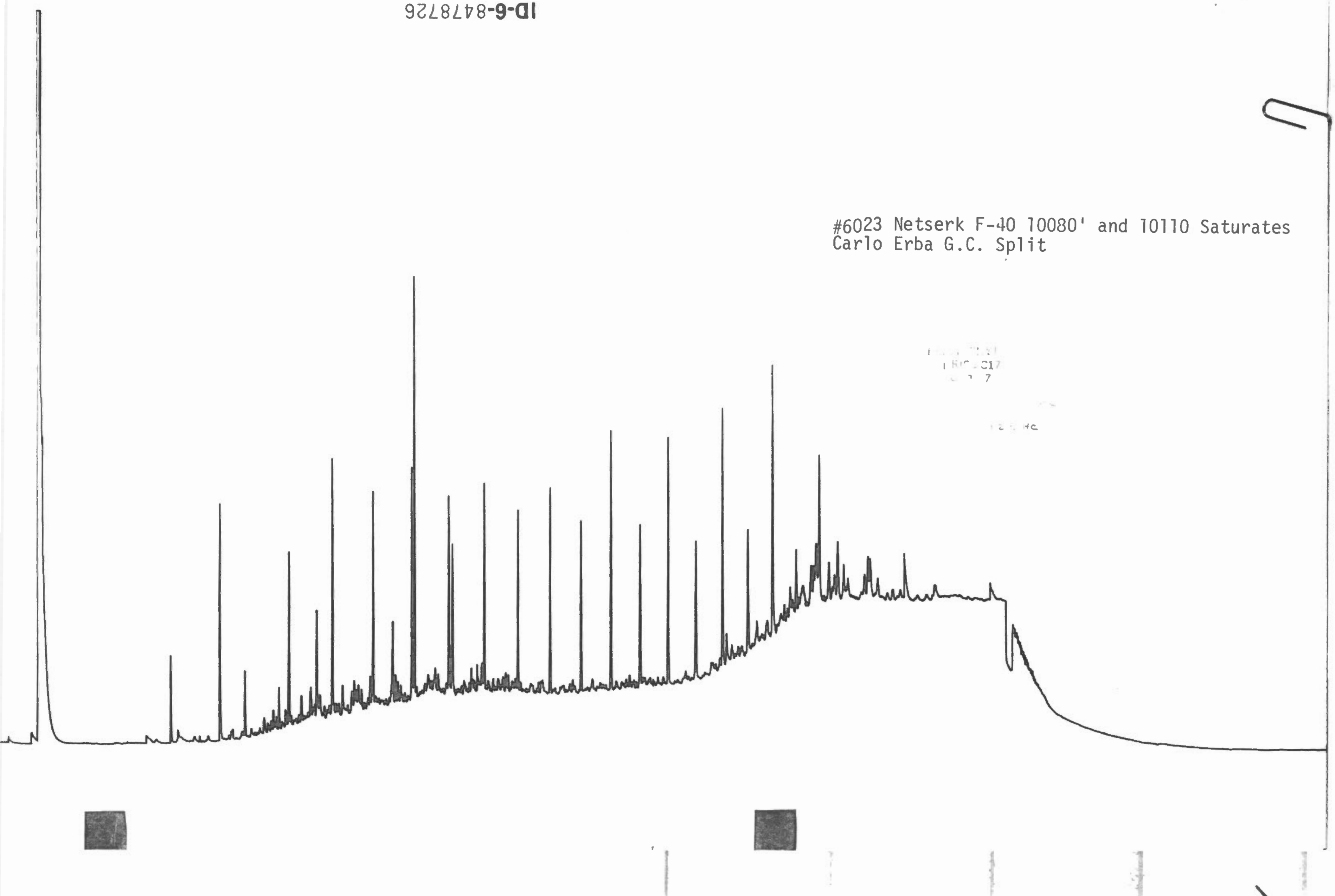


PRIST/PHYT = 2.70
F[illegible]7 = 1.34
[illegible] = 1.64

10.7 mg/g He
29.7 % He

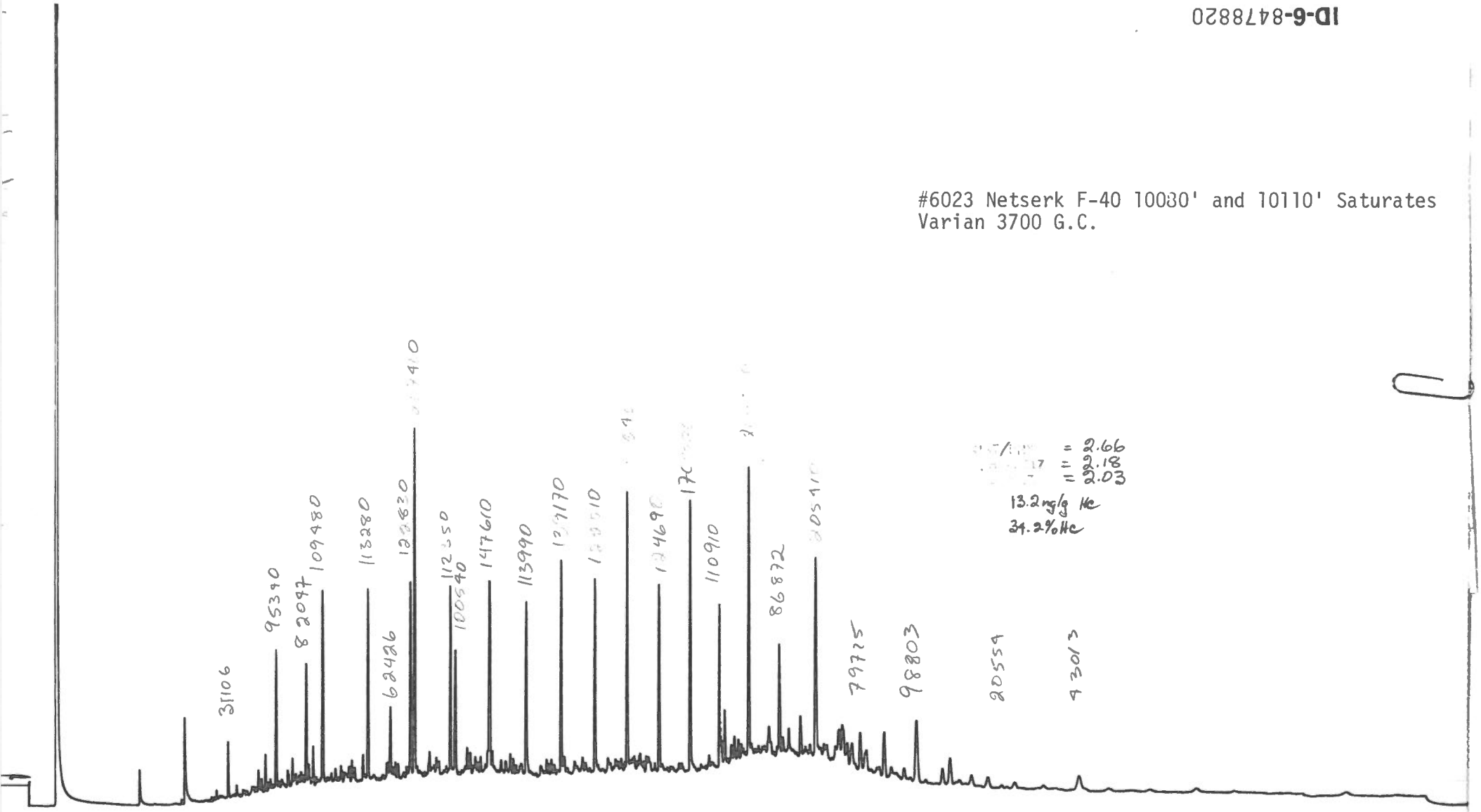
ID-6-8488680

24

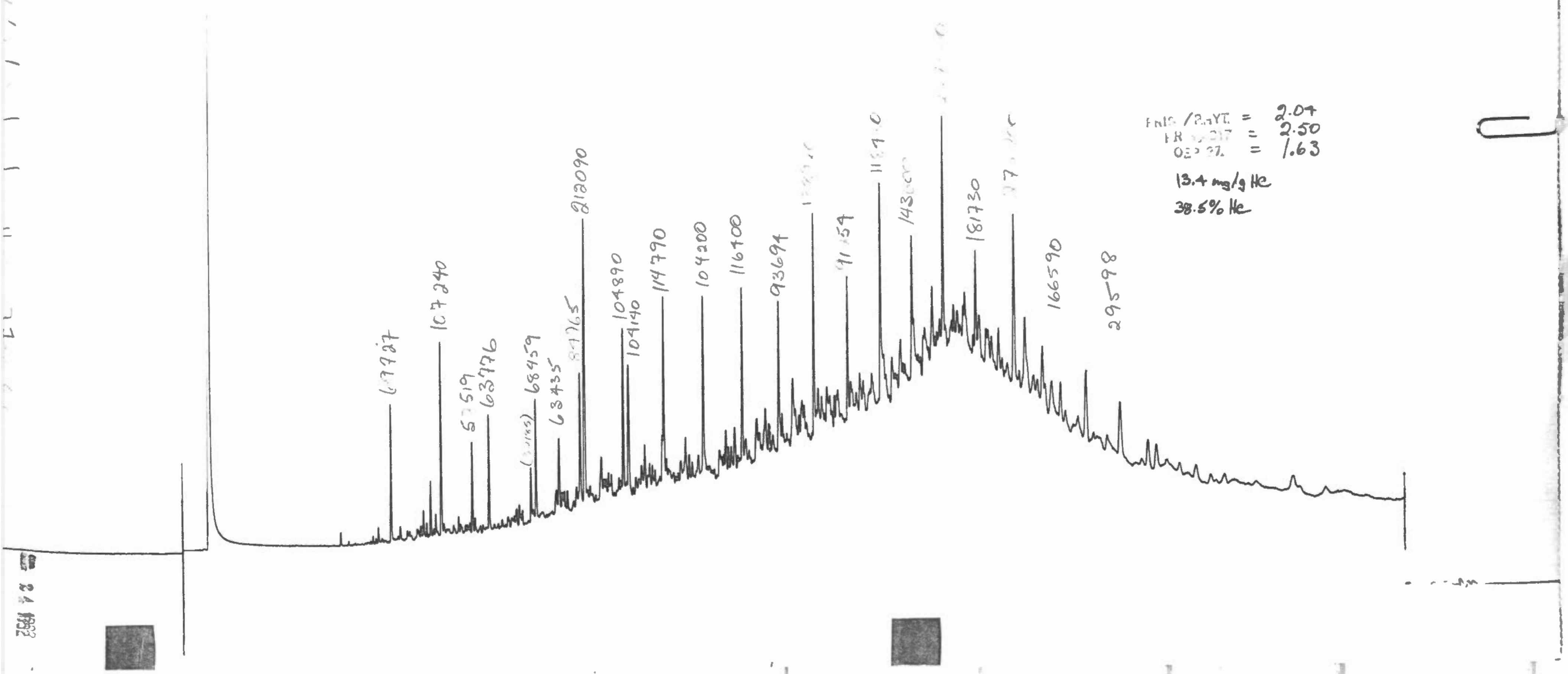


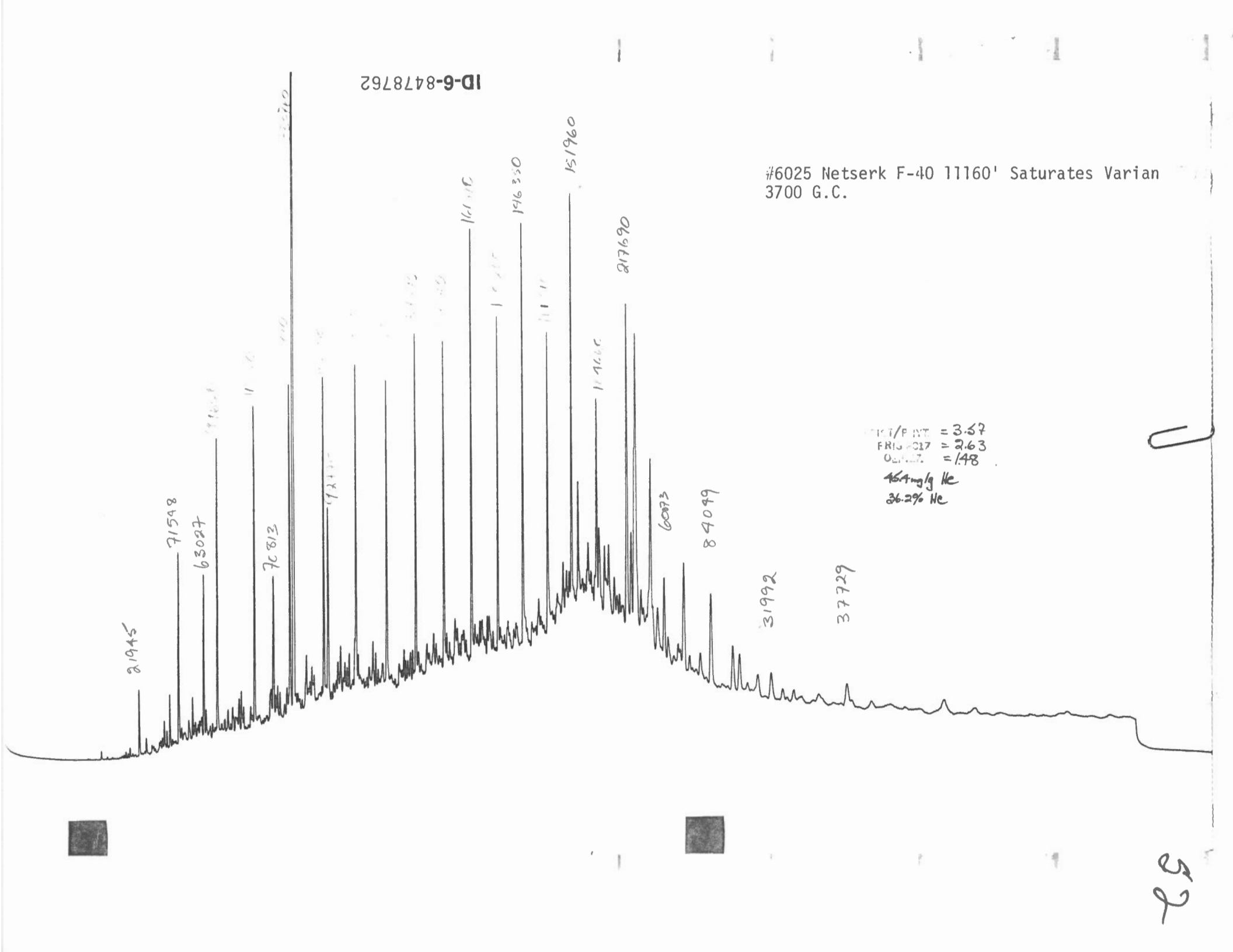
#6023 Netserk F-40 10080' and 10110 Saturates
Carlo Erba G.C. Split

#6023 Netserk F-40 10030' and 10110' Saturates
Varian 3700 G.C.



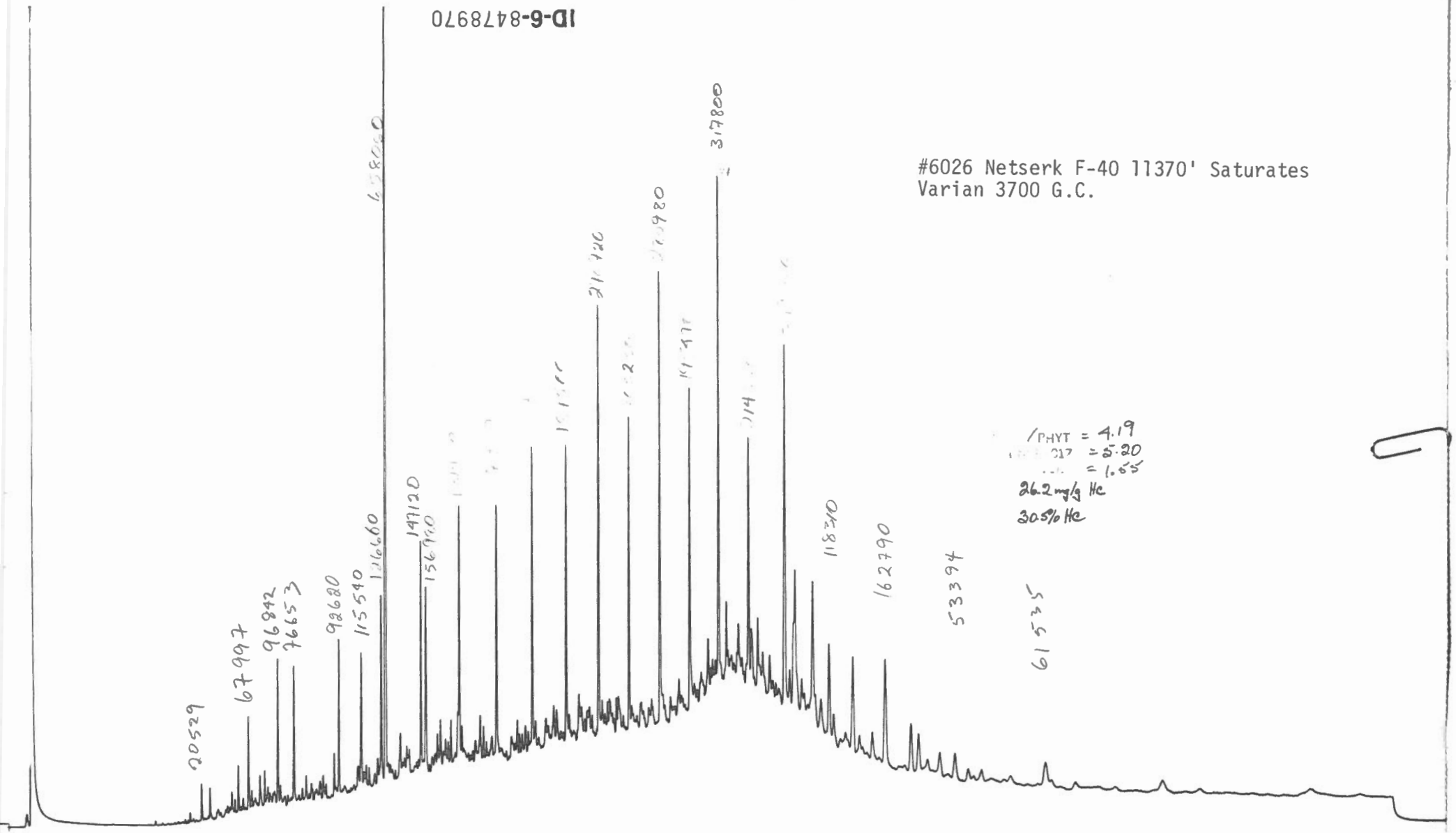
#6024 Netserk F-40 10620' Saturates Varian 3700 G.C.




ID-6-8478762
#6025 Netserk F-40 11160' Saturates Varian
3700 G.C.
21945
71548
63027
70813
146350
151960
217690
60073
84099
31992
37729
PRIST/PHYT = 3.57
PRIS/217 = 2.63
ODD/EVEN = 1.48
454 mg/g HC
36.2% HC

ID-6-8478970

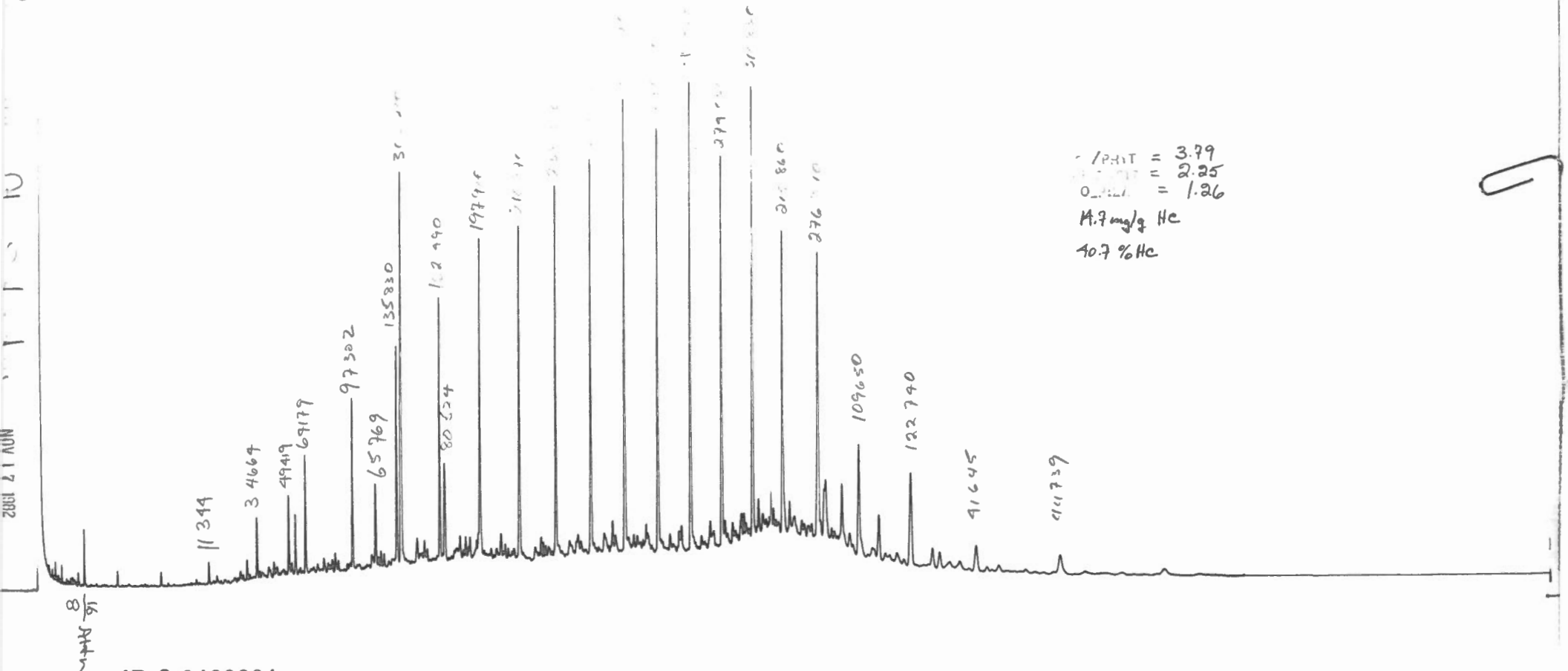
#6026 Netserk F-40 11370' Saturates
Varian 3700 G.C.



/PHYT = 4.19
217 = 5.20
... = 1.55
26.2 mg/g HC
30.5% HC

53

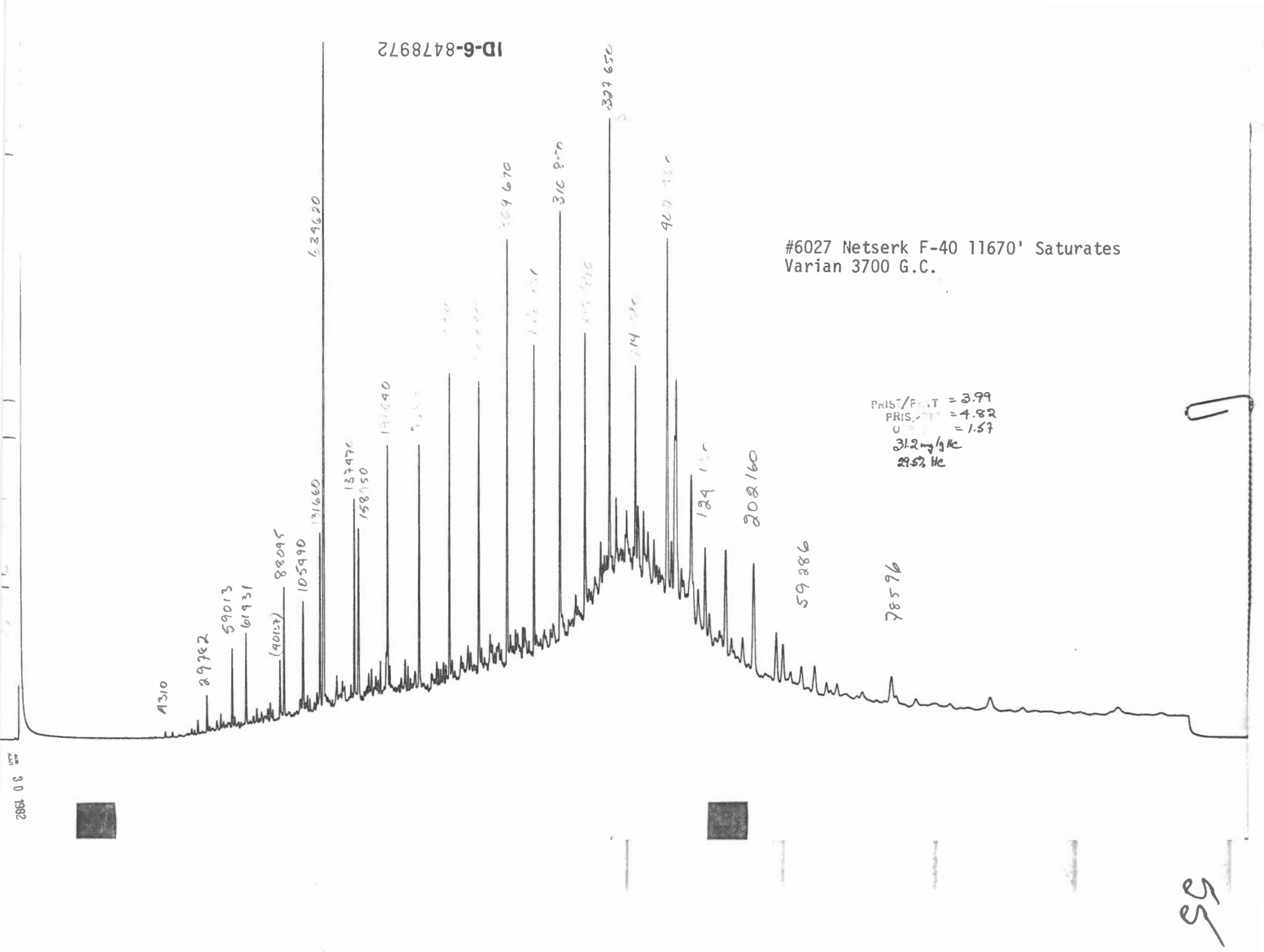
#5069 Netserk F-40 11400-11430 ft Saturates



/PRIT = 3.79
= 2.25
O_ = 1.26
M.7 mg/g Hc
40.7 %Hc

ID-6-8488684

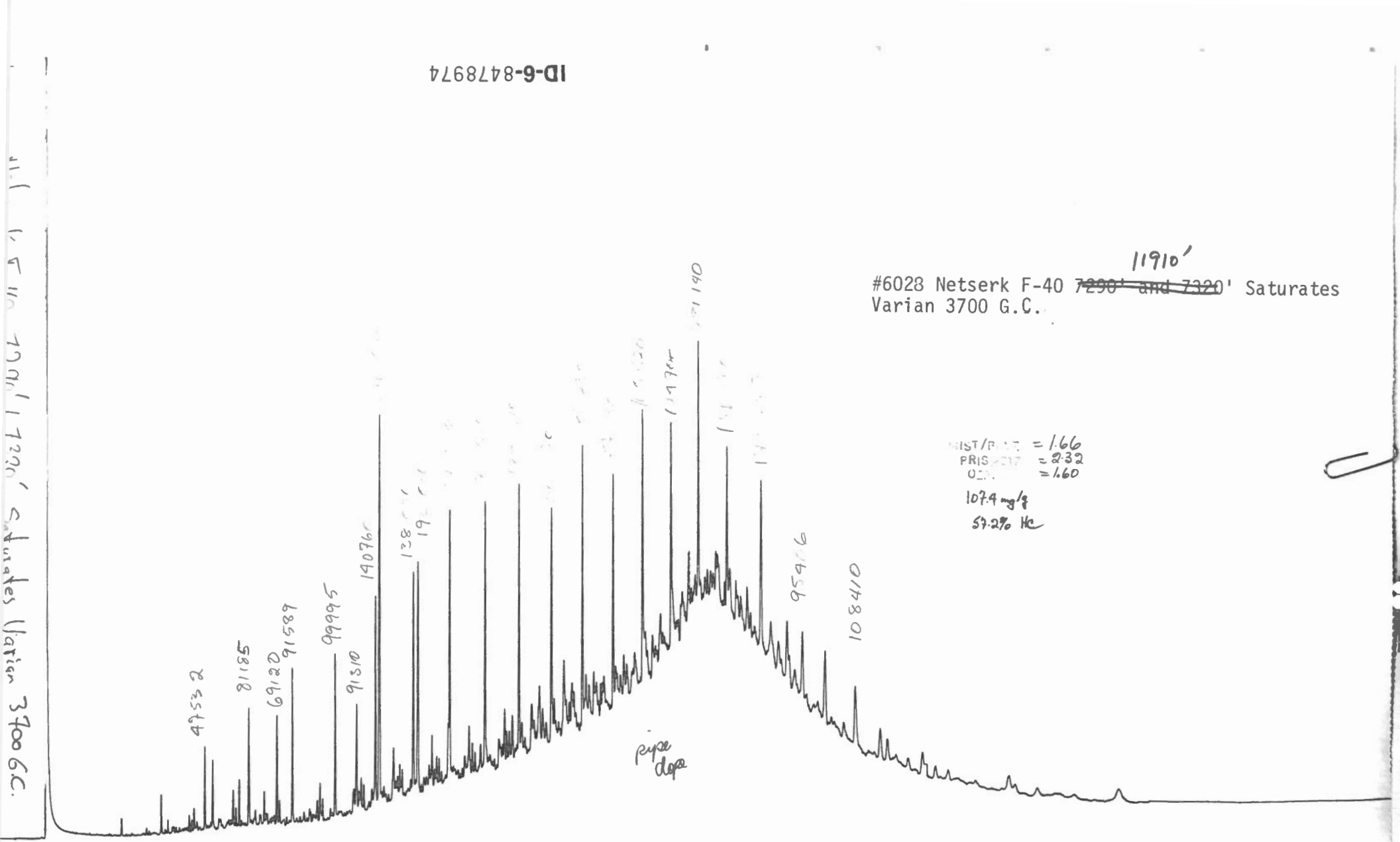
54



ID-6-8478974

11910'

#6028 Netserk F-40 ~~7290' and 7320~~' Saturates
Varian 3700 G.C.



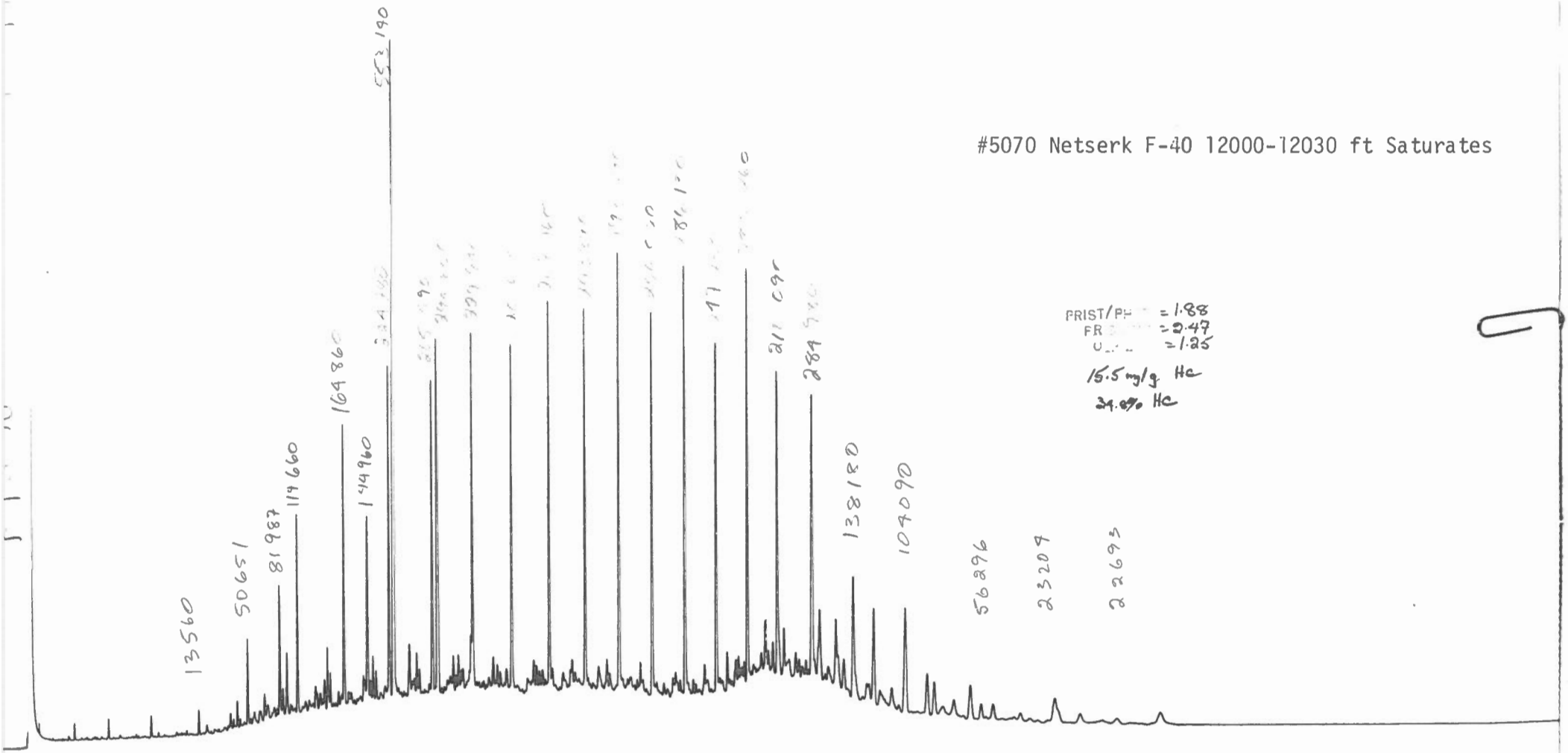
PRIST/PHYT = 1.66
PRIS/C17 = 2.32
OEP = 1.60
107.4 mg/g
57.2% HC

Varian 3700 G.C. Saturates 11910' 7290' and 7320'

1982

29

#5070 Netserk F-40 12000-12030 ft Saturates

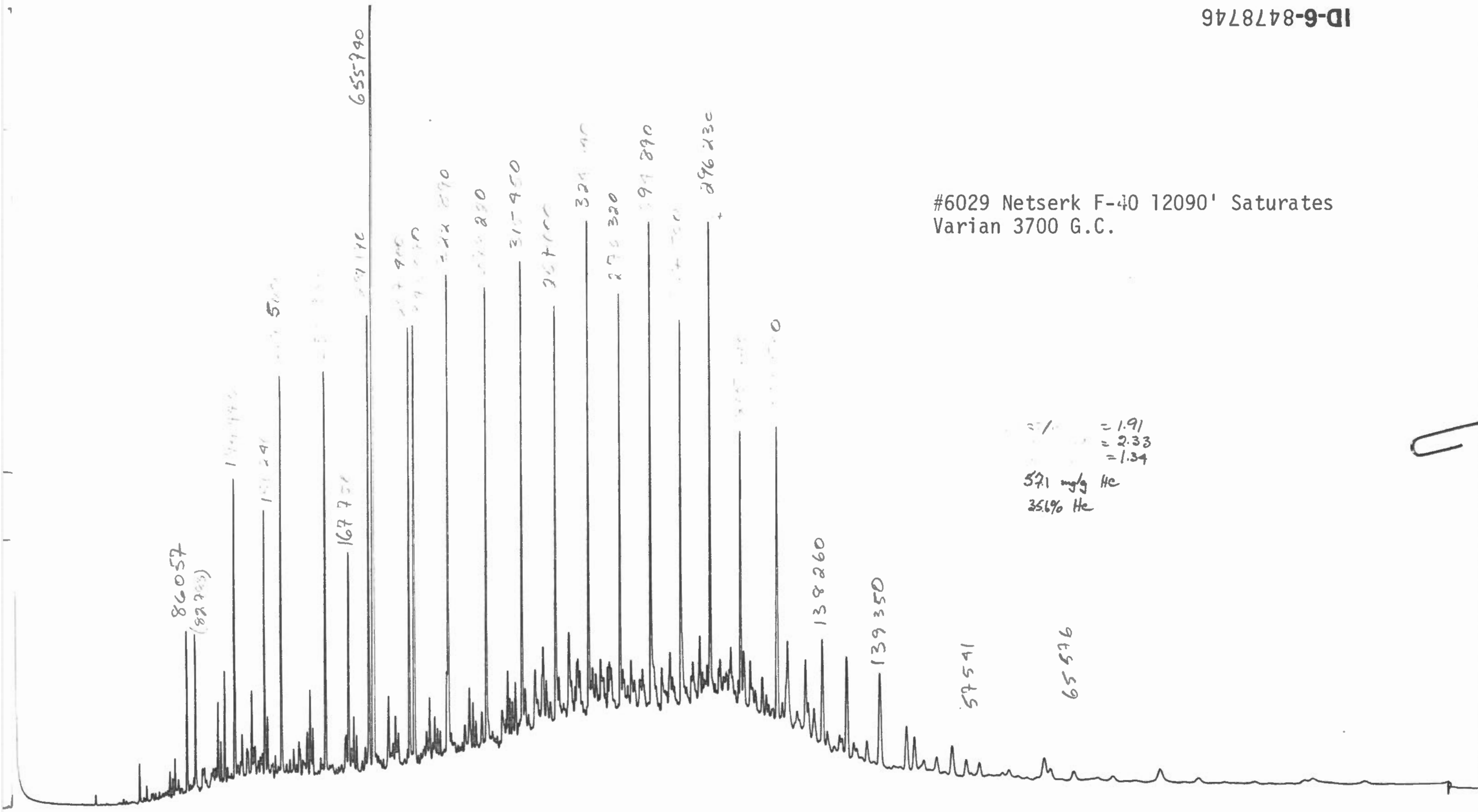


PRIST/PH = 1.88
FR = 2.47
= 1.25

15.5 mg/g Hc
24.8% Hc

ID-6-8488686

37



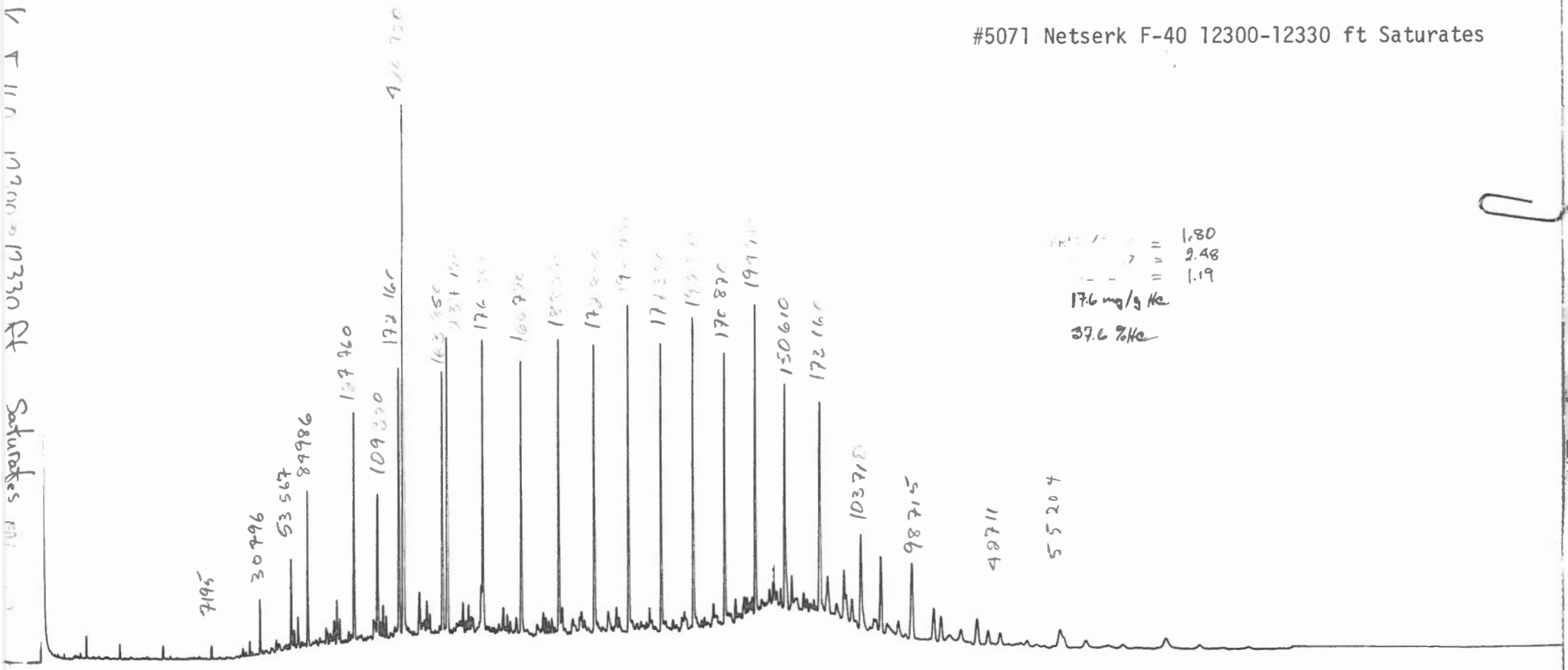
#6029 Netserk F-40 12090' Saturates
Varian 3700 G.C.

= 1.91
= 2.33
= 1.34
571 mg/g He
35.6% He

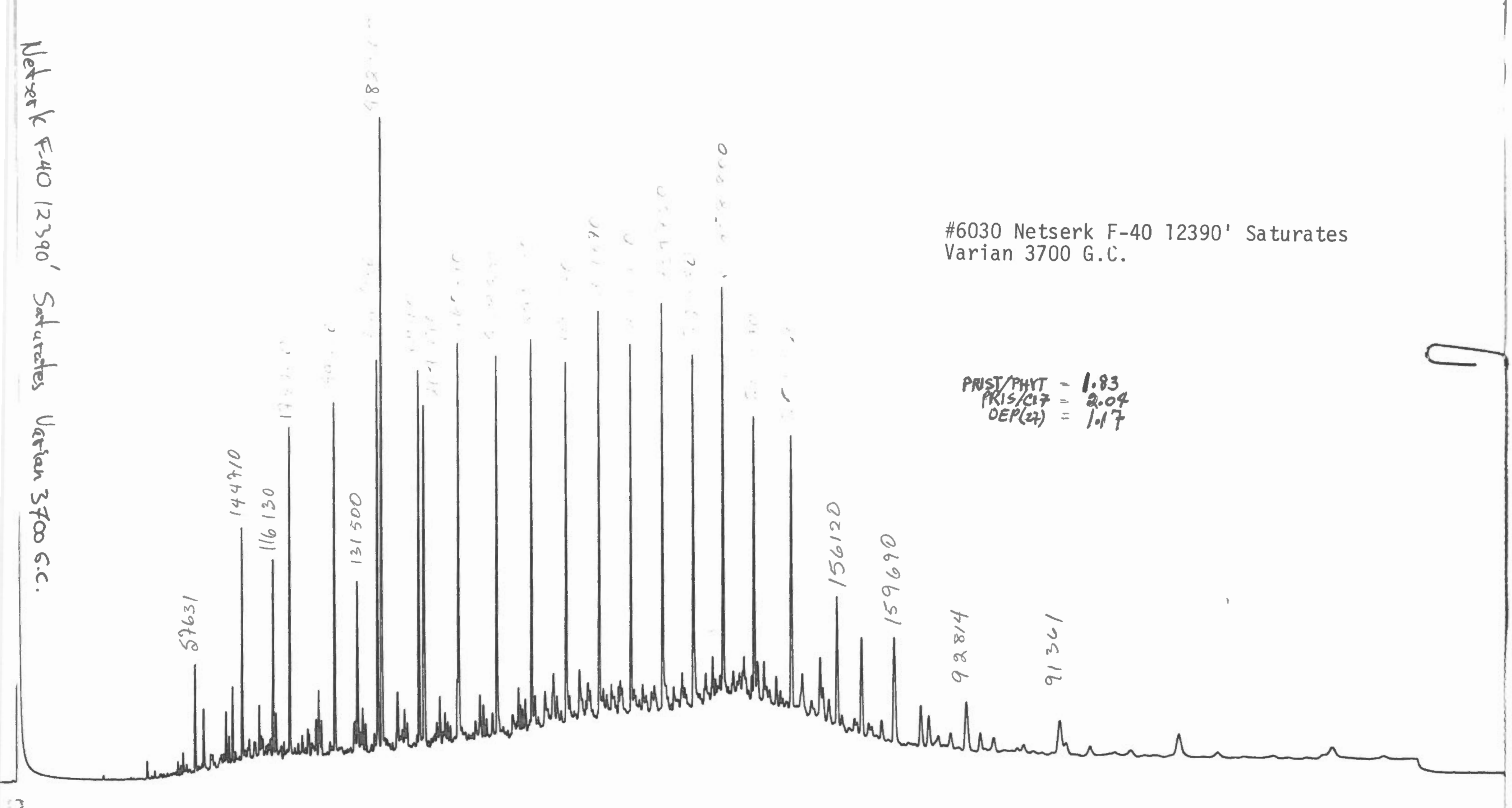
ID-6-8478746

82

#5071 Netserk F-40 12300-12330 ft Saturates



ID-6-8478750

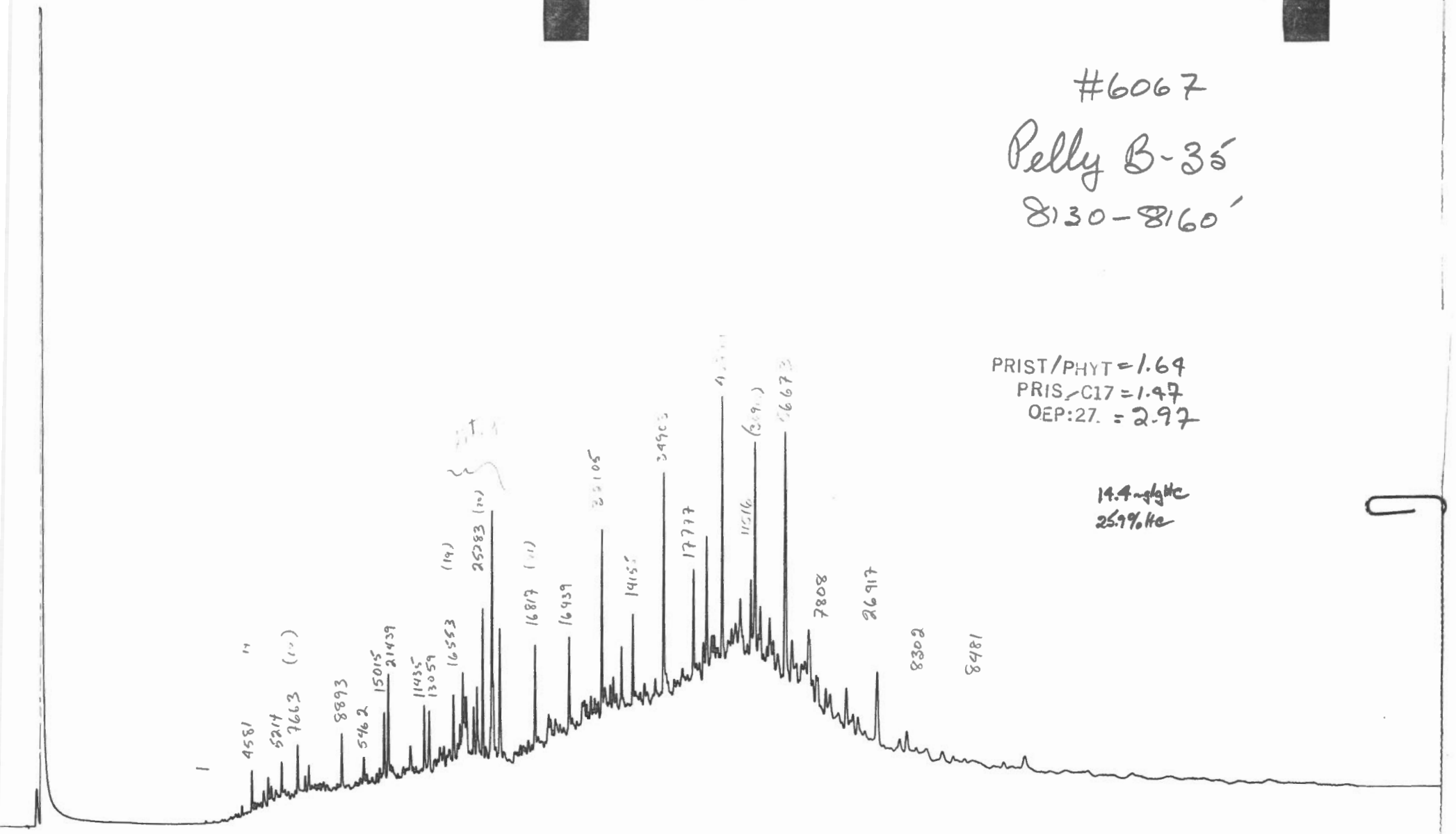


60

#6067

Pelly B-35

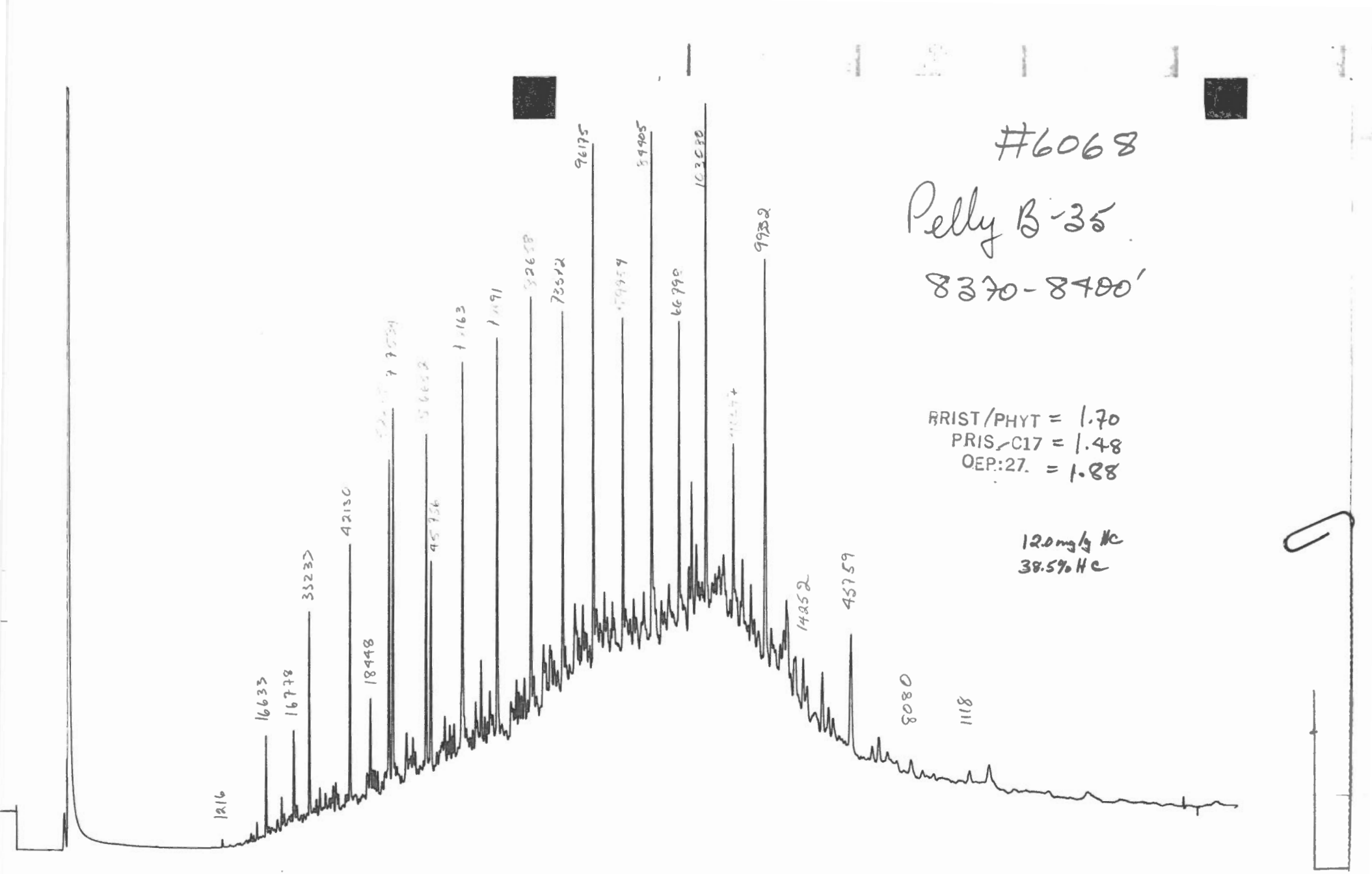
8130-8160'

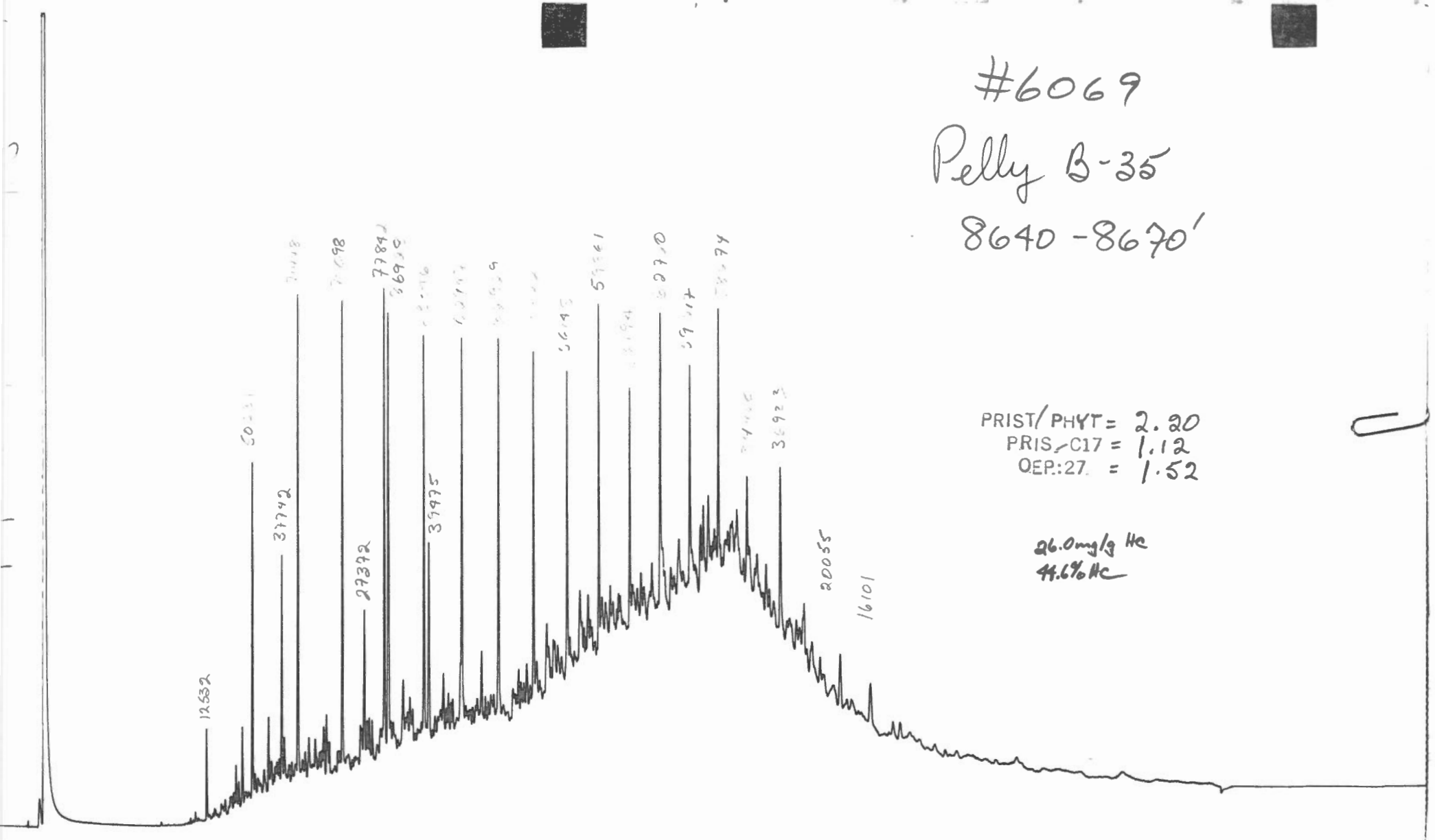


PRIST/PHYT = 1.64
PRIS/C17 = 1.47
OEP:27. = 2.97

14.4 mg/g HC
25.9% HC

19


#6068
Pelly B-35
8370-8400'
PRIST/PHYT = 1.70
PRIS/C17 = 1.48
OEP:27. = 1.88
120 mg/g HC
38.5% HC
1216
16633
16778
33233
42130
18448
1163
1191
32658
72512
96175
99405
66799
9932
14252
45159
8080
1118


#6069
Pelly B-35
8640 -8670'
PRIST/PHYT = 2.20
PRIS/C17 = 1.12
OEP:27 = 1.52
26.0 mg/g HC
44.6% HC
12532
27392
37975
20055
16101

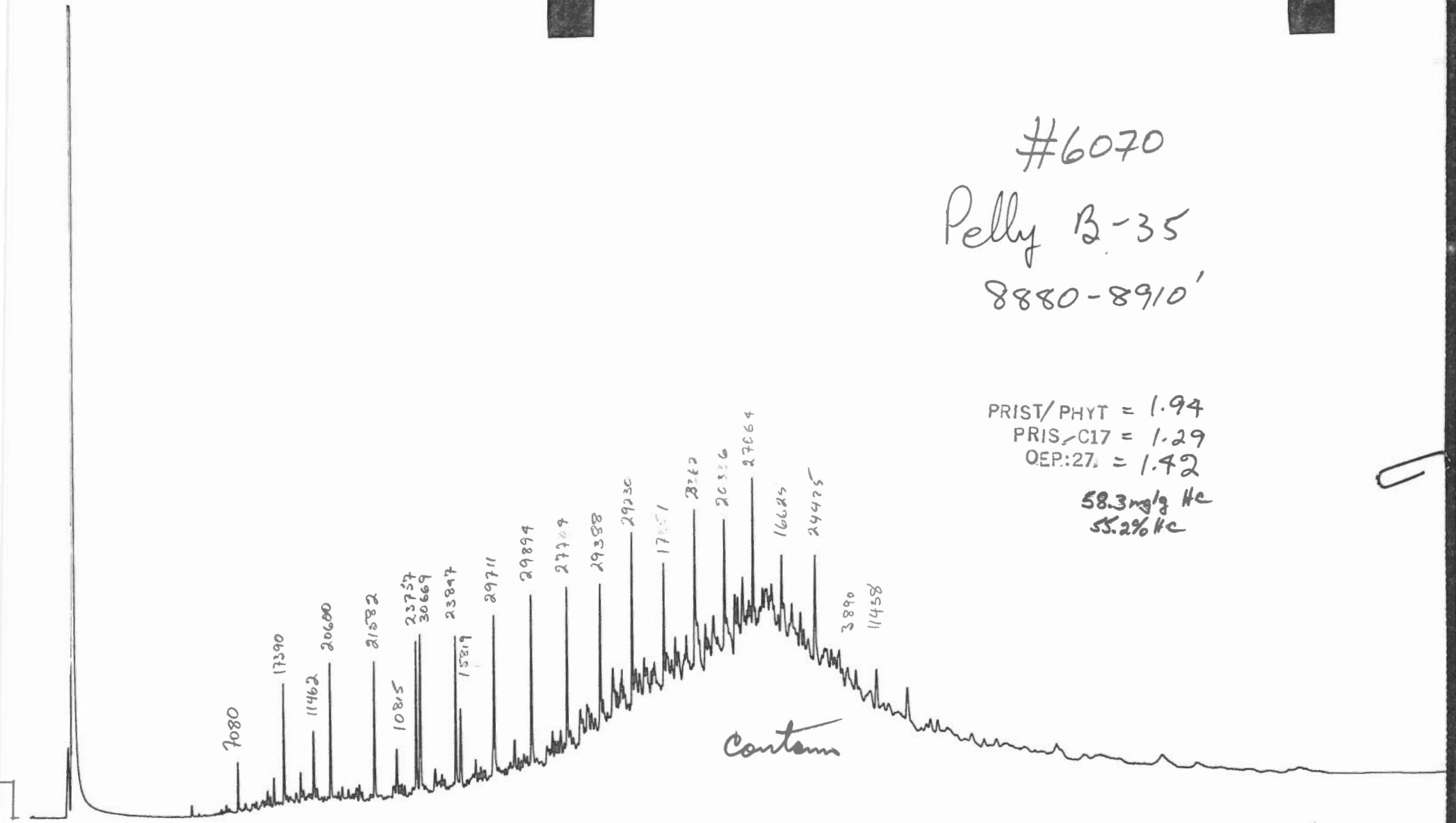
#6070

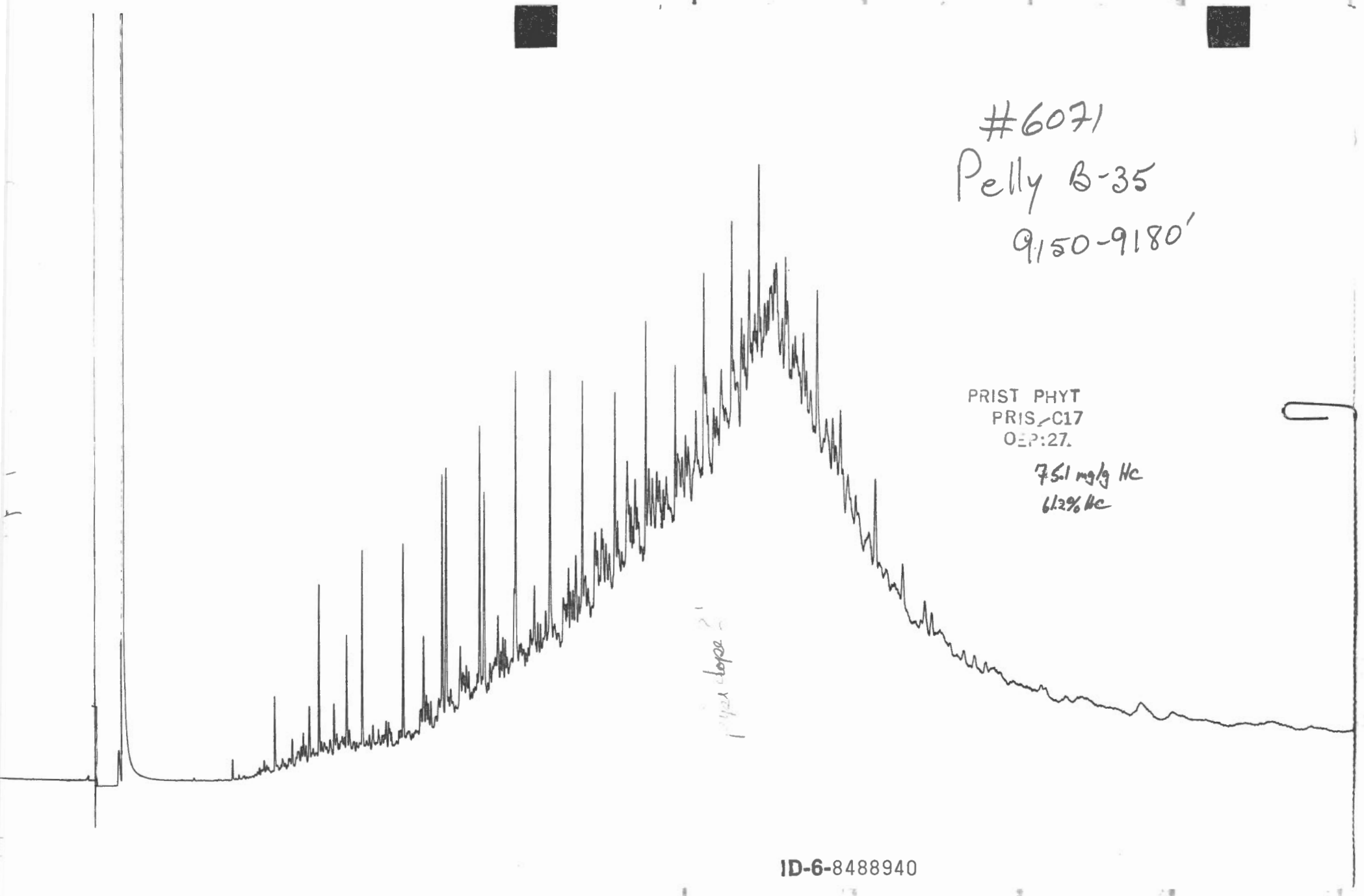
Pelly B-35

8880-8910'

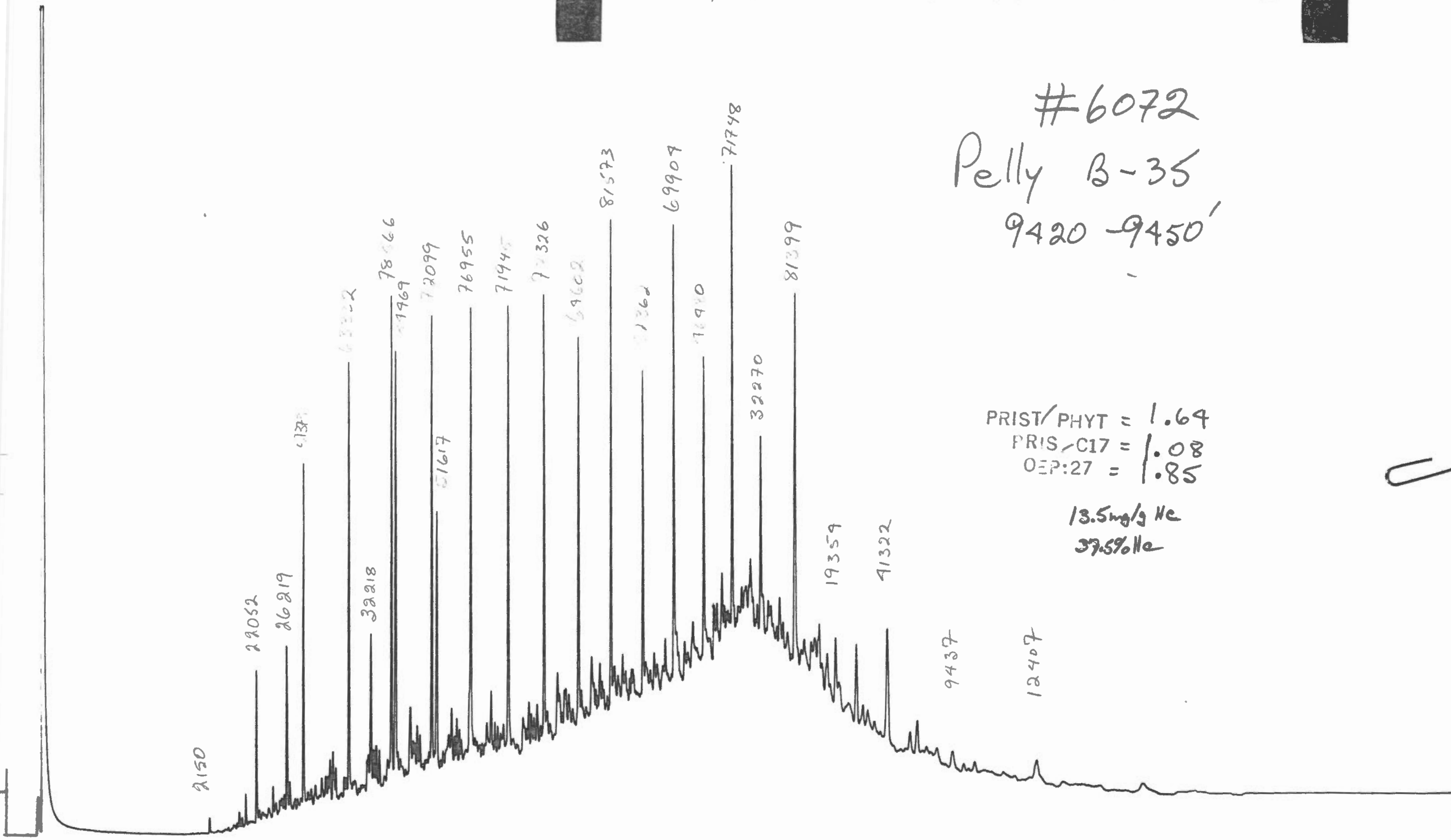
PRIST/PHYT = 1.94
PRIS/C17 = 1.29
OEP:27 = 1.42

58.3 mg/g HC
55.2% HC




#6071
Pelly B-35
9150-9180'
PRIST PHYT
PRIS/C17
OEP:27.
75.1 mg/g Hc
6.12% Hc

ID-6-8488940



#6072
Pelly B-35
9420-9450'

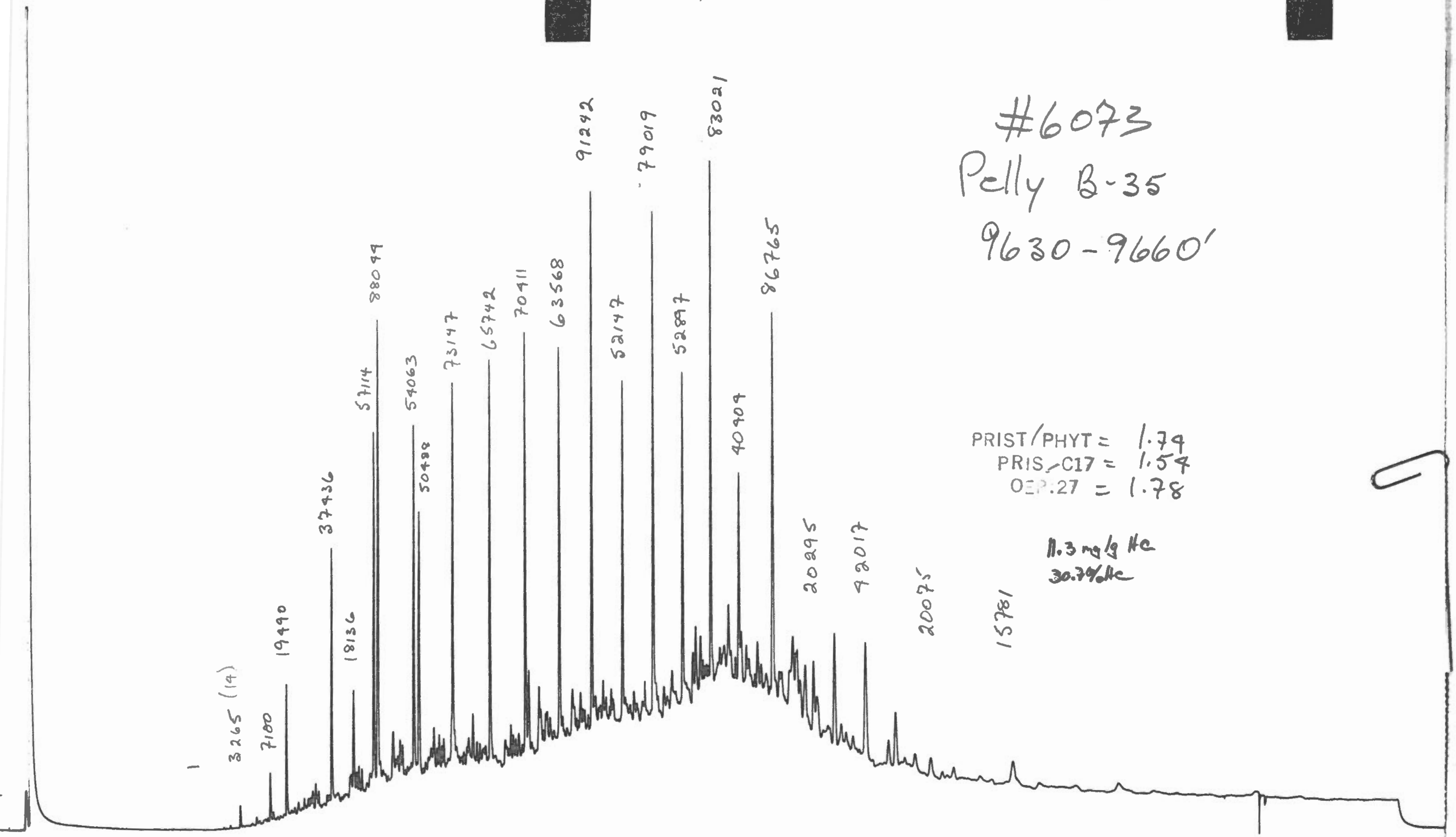
PRIST/PHYT = 1.64
PRIS/C17 = 1.08
OEP:27 = 1.85

13.5mg/g He
37.5% He

ID-6-8488912

99

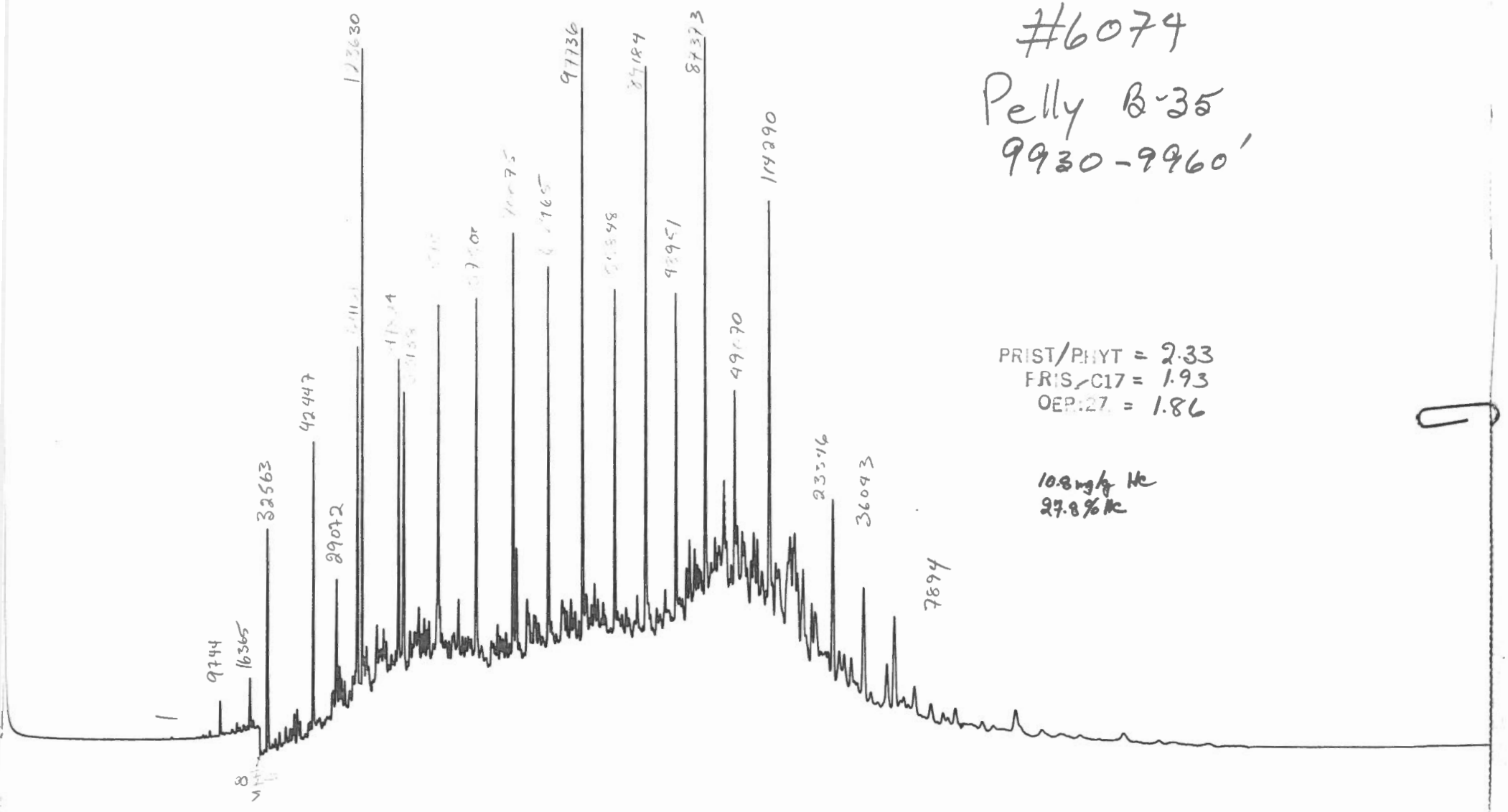
#6073
Pelly B-35
9630-9660'



PRIST/PHYT = 1.79
PRIS/C17 = 1.54
OEP:27 = 1.78

11.3 mg/g Hc
30.7% Hc

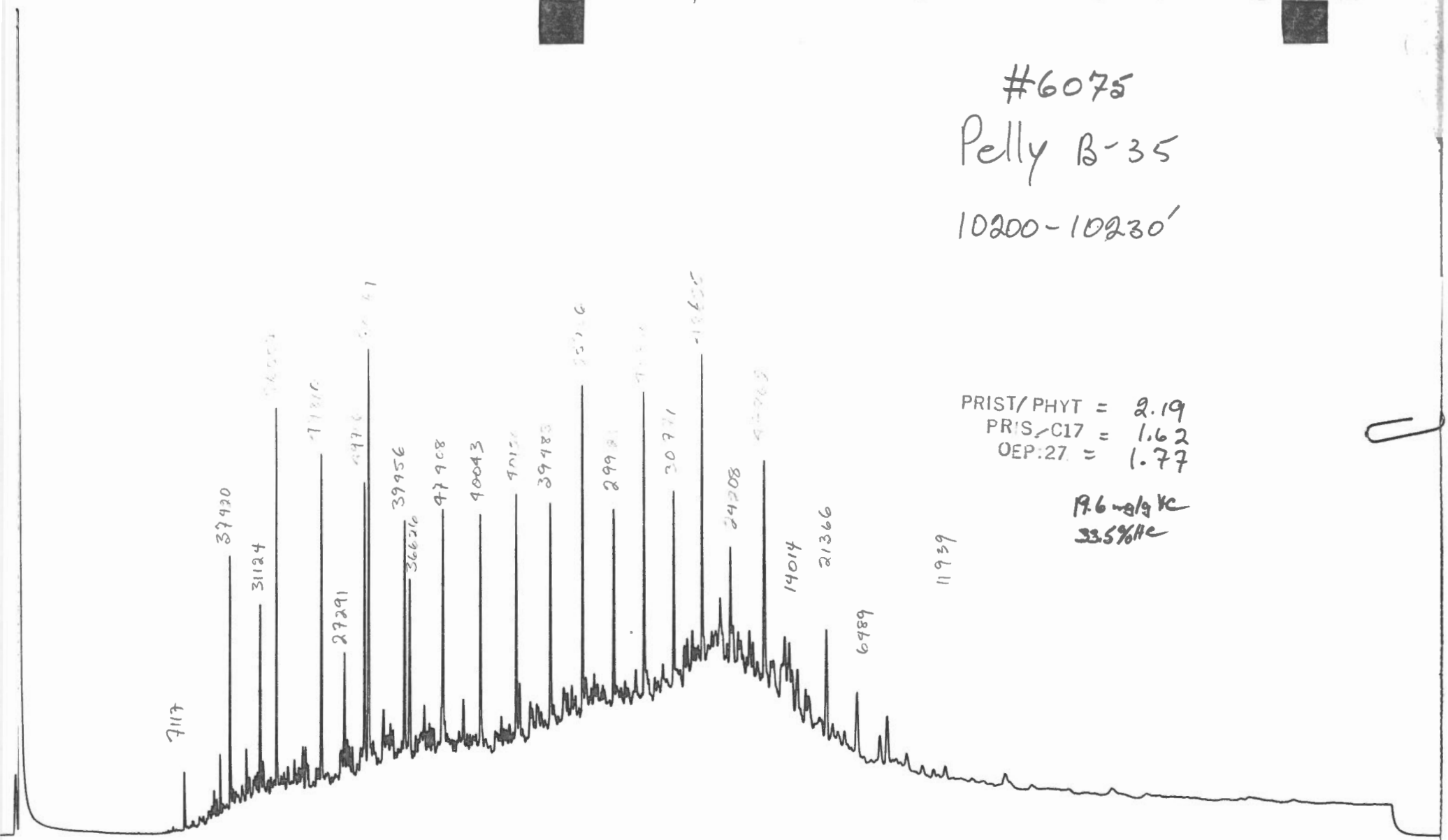
ID-6-8488916


#6074
Pelly B-35
9930-9960'
PRIST/PHYT = 2.33
PRIS/C17 = 1.93
OEP:27 = 1.86
10.8 mg/g HC
27.8% HC
9744
16365
32563
42447
89072
123630
97136
87184
87323
49170
114290
23316
36093
7694

#6075

Pelly B-35

10200-10230'

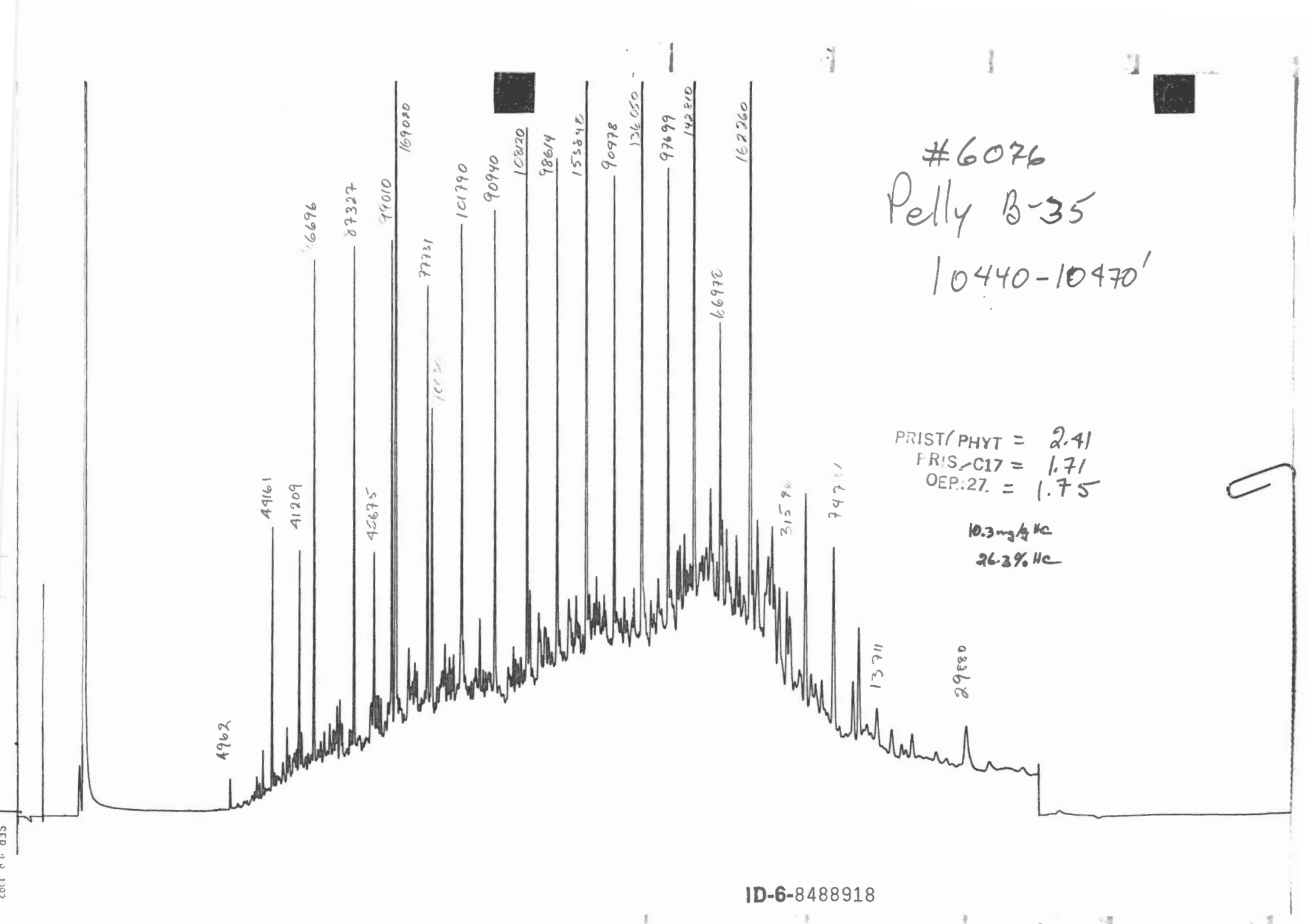


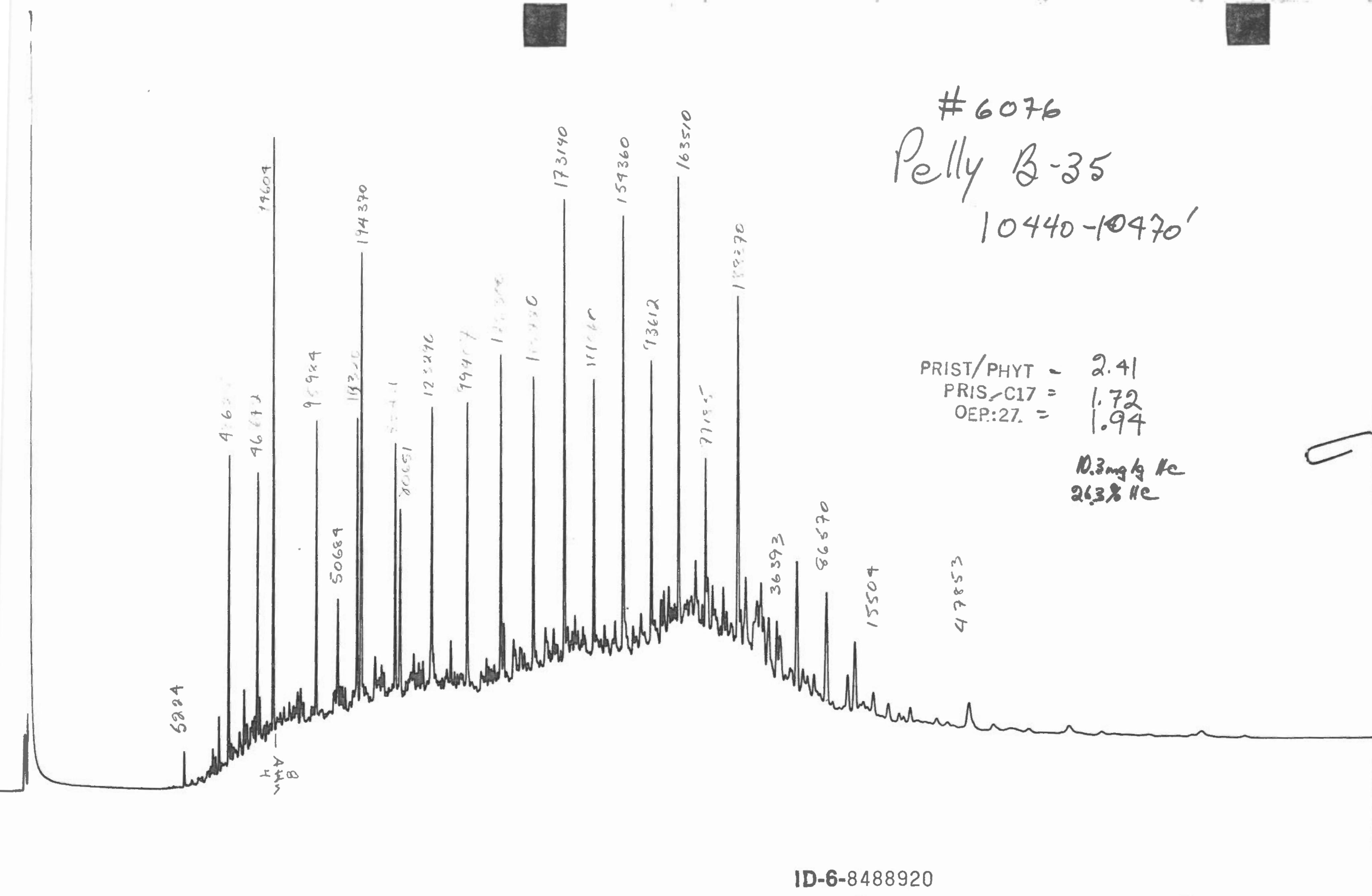
PRIST/PHYT = 2.19
PRIS/C17 = 1.62
OEP:27 = 1.77

19.6 mg/g TC
33.5% HC

ID-6-8488924

69


#6076
Pelly B-35
10440-10470'
4962
49161
41209
66696
87327
45675
99010
169020
77731
101790
90940
108120
98614
153894
90978
136050
97699
142810
66970
162360
31594
74721
13711
29680
PRIST/PHYT = 2.41
PRIS/C17 = 1.71
OEP:27 = 1.75
10.3 mg/g HC
26.3% HC



6076
Pelly B-35
10440-10470'

PRIST/PHYT = 2.41
PRIS/C17 = 1.72
OEP:27 = 1.94

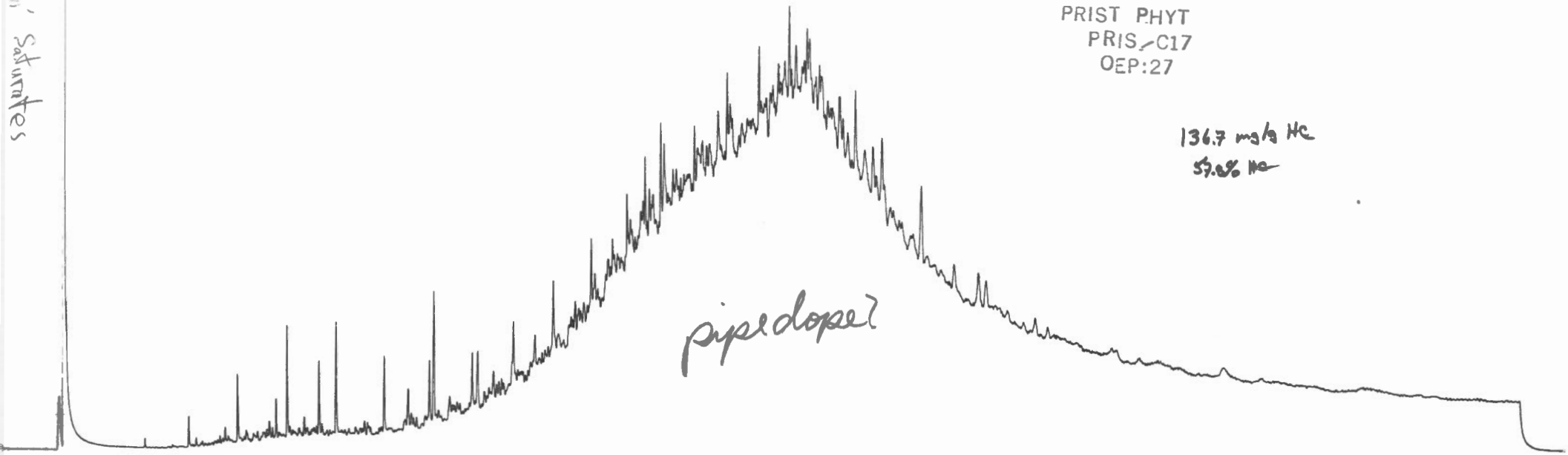
10.3 mg/kg HC
26.3% HC

ID-6-8488920

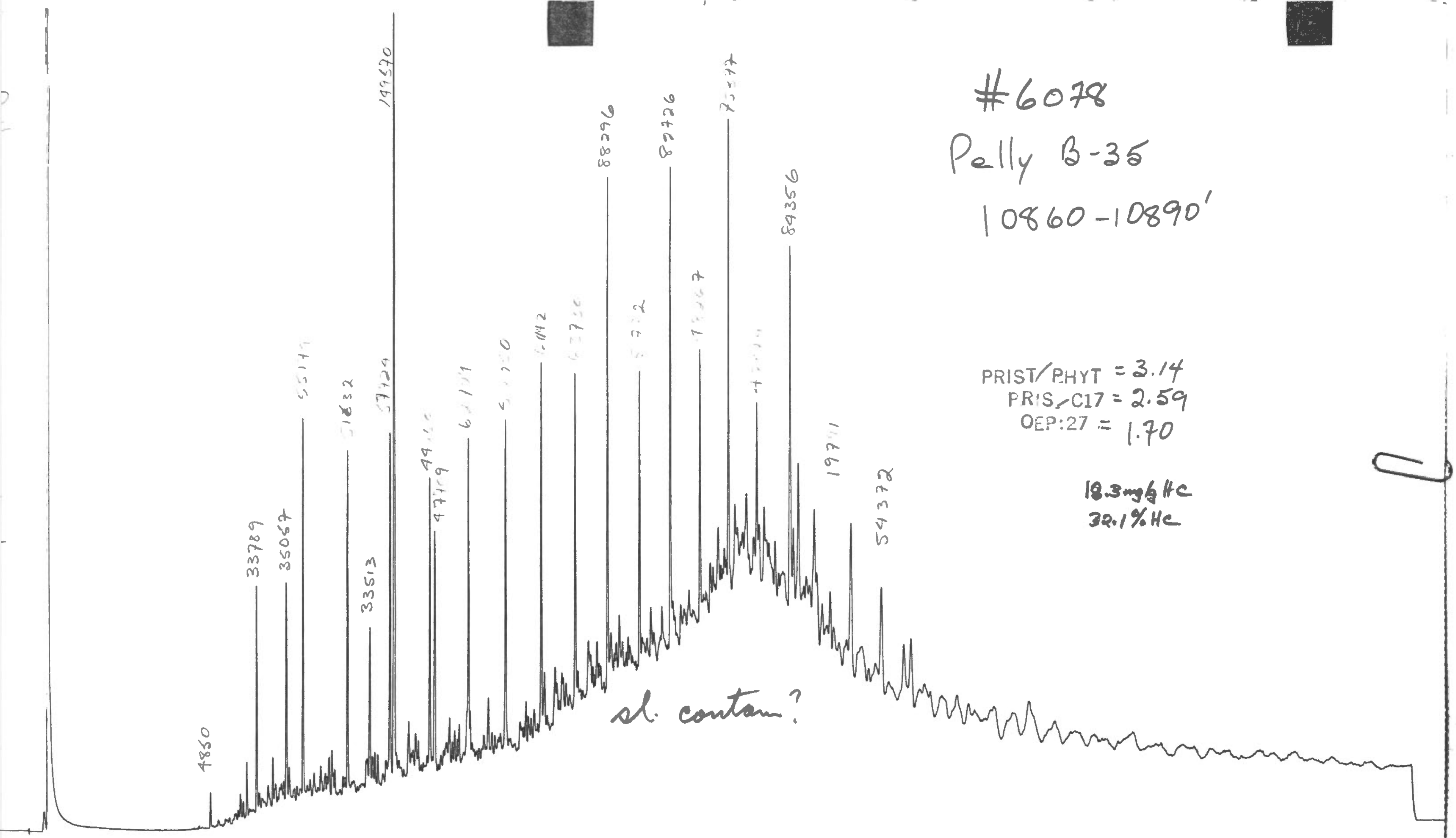
#6077

Pelly B-35

10660-10710



ID-6-8488932

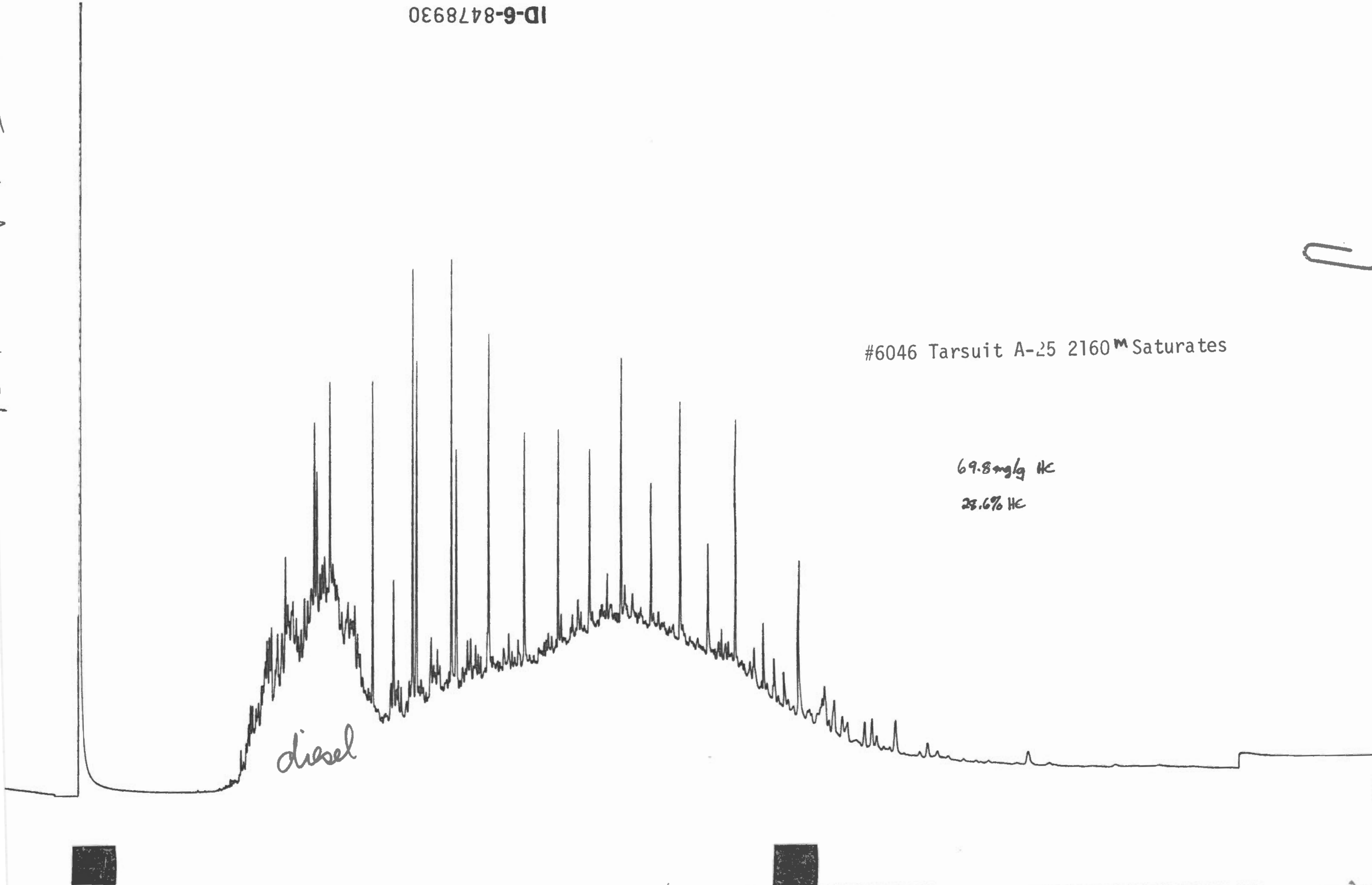


#6078
Pelly B-35
10860-10890'

PRIST/PHYT = 3.14
PRIS/C17 = 2.59
OEP:27 = 1.70

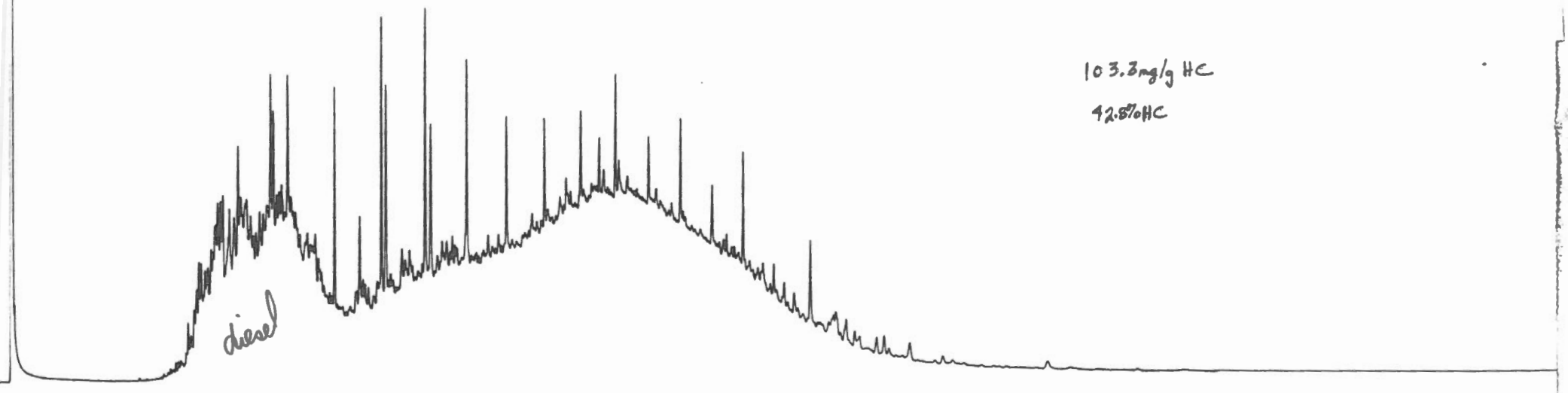
18.3 mg/g HC
32.1% HC

ID-6-8488936


#6046 Tarsuit A-25 2160M Saturates
69.8 mg/g HC
28.6% HC
diesel

ID-6-8478898

#6047 Tarsuit A-25 2200 M Saturates



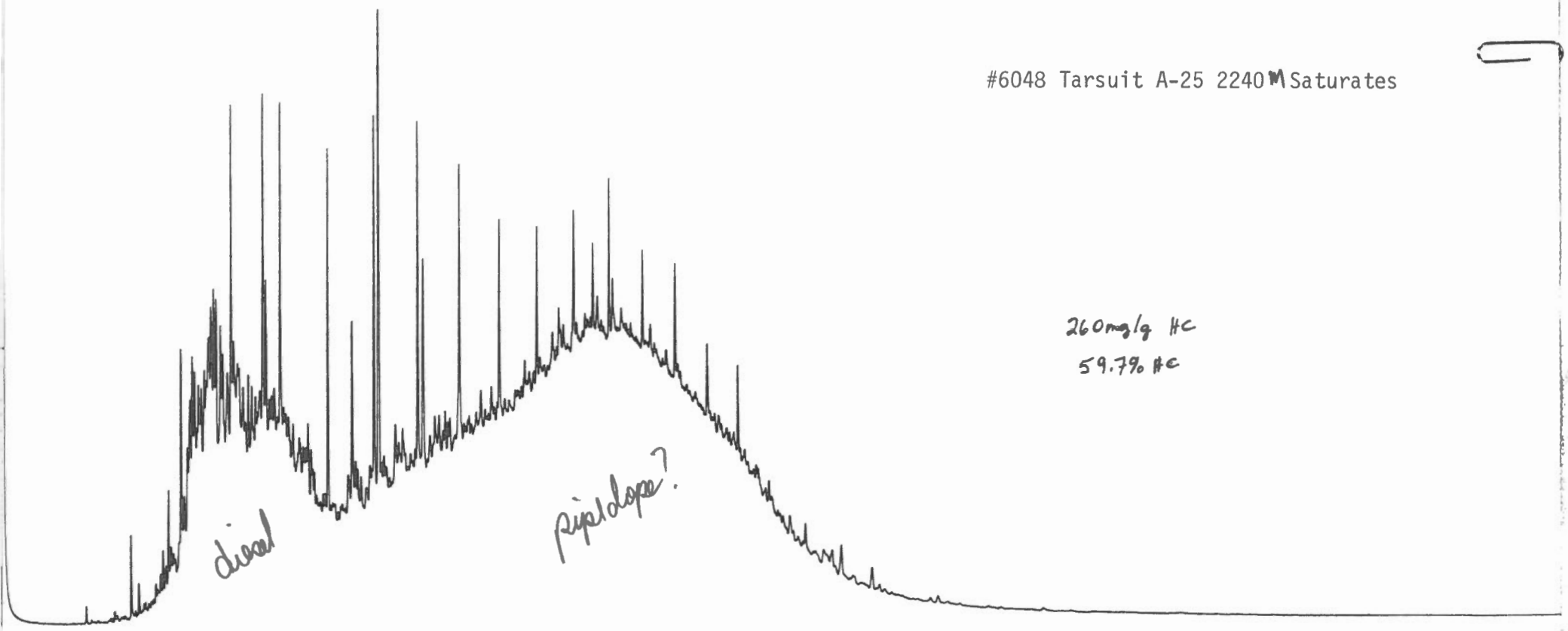
103.3 mg/g HC

42.8% HC

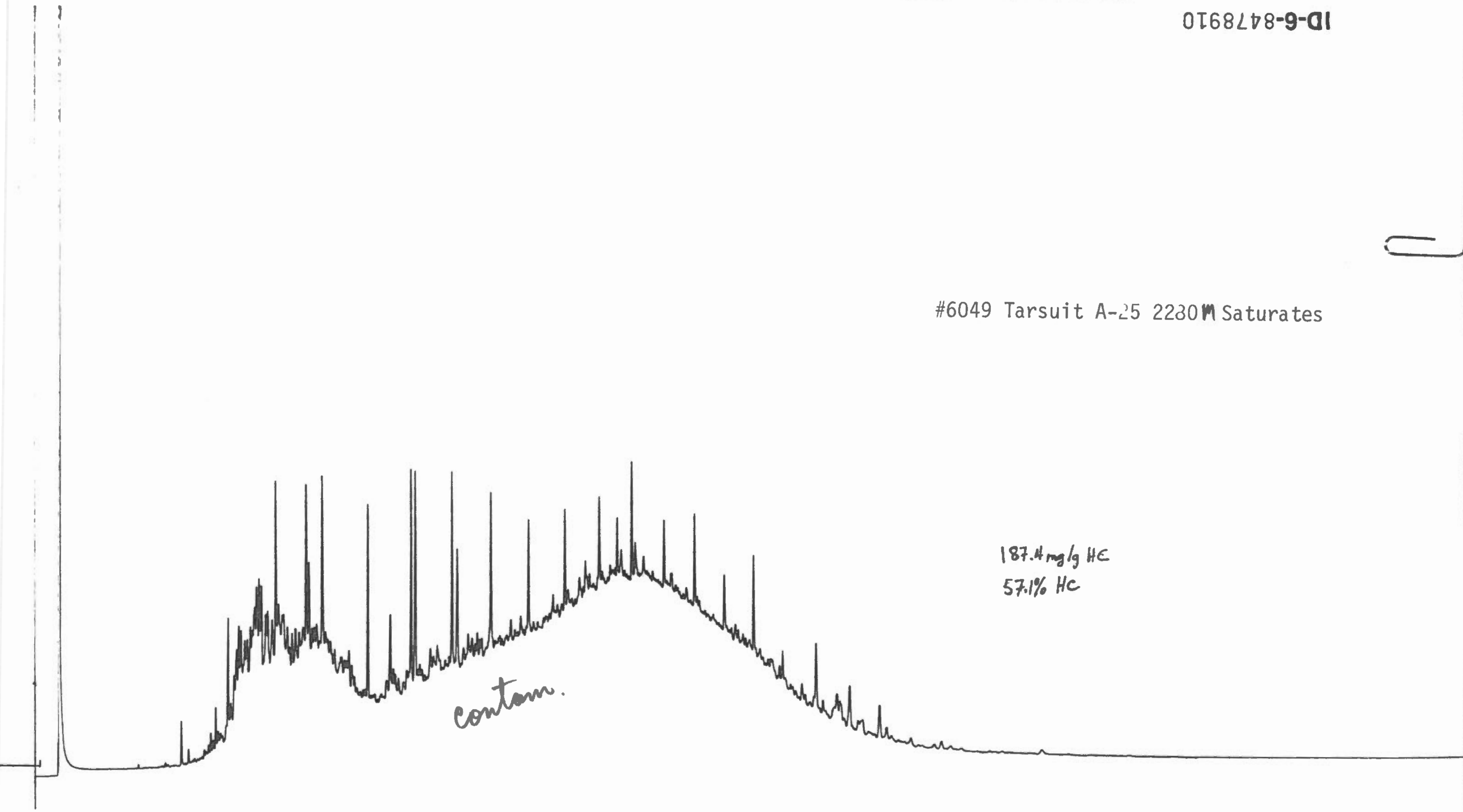
[redacted]

[redacted]

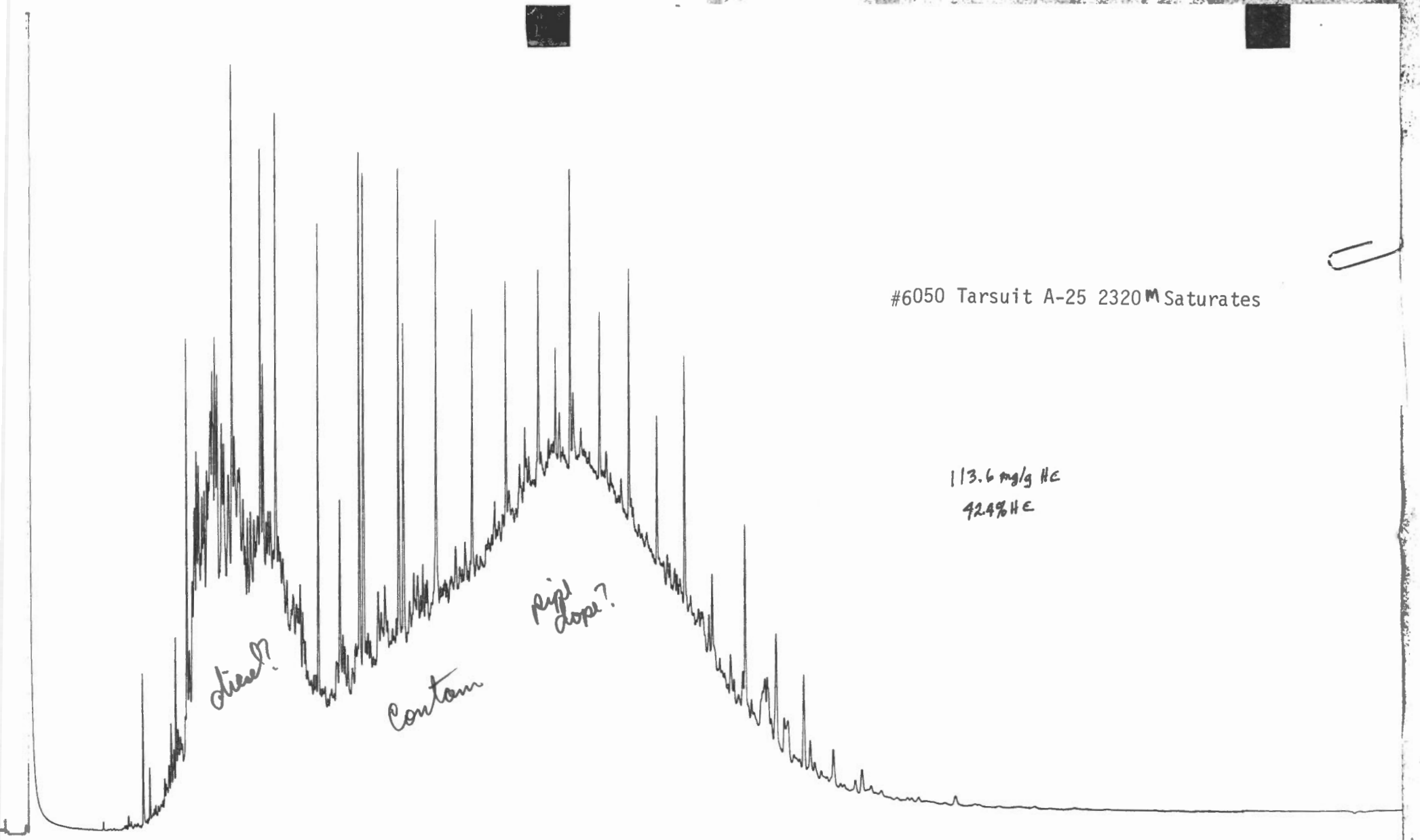
#6048 Tarsuit A-25 2240M Saturates



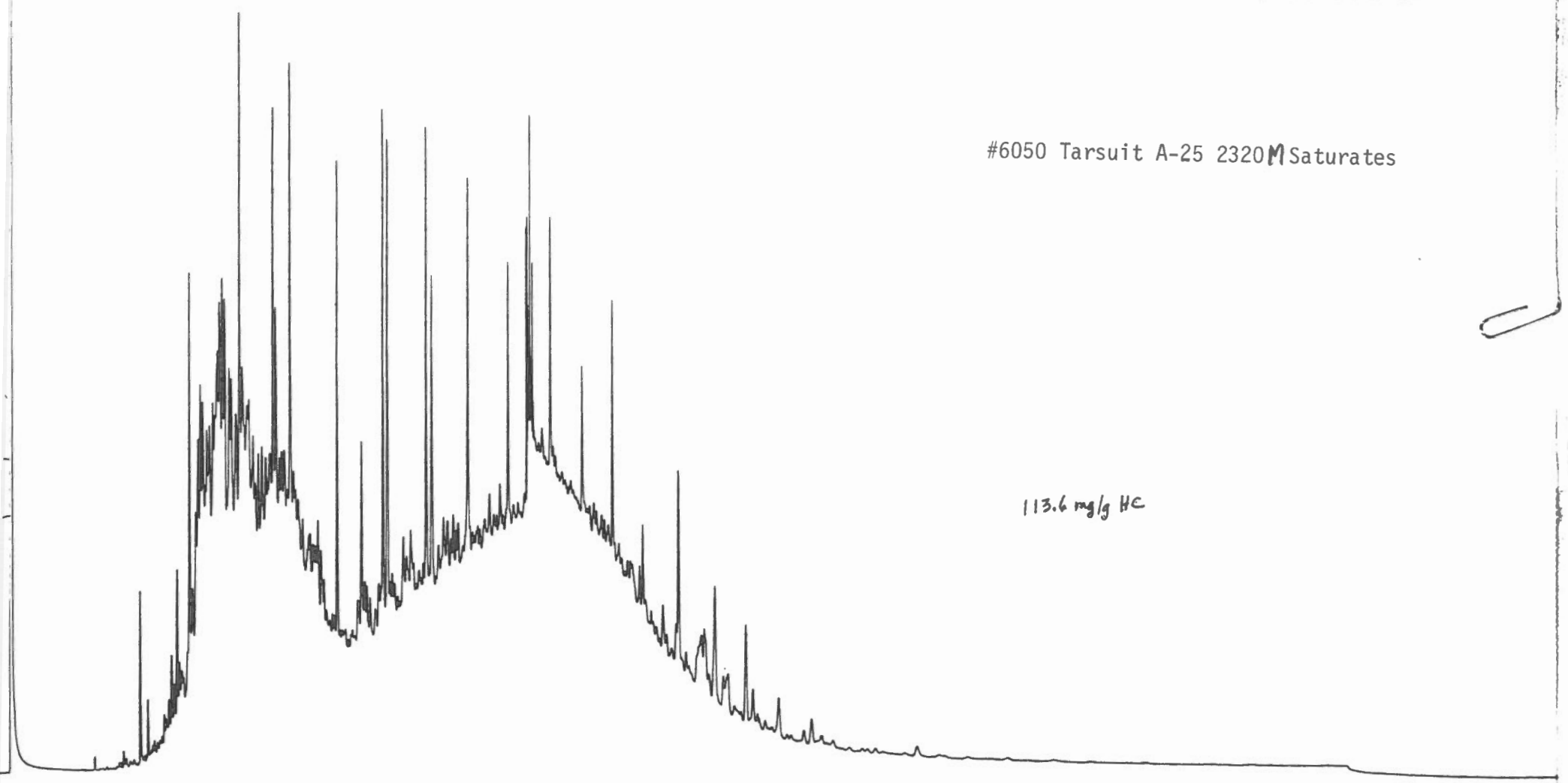
260mg/g HC
59.7% HC


ID-6-8478910
#6049 Tarsuit A-25 2280M Saturates
187.4 mg/g HC
57.1% HC
contam.

tt


#6050 Tarsuit A-25 2320M Saturates
113.6 mg/g HC
42.4% HC
diesel?
contam
pipe dope?

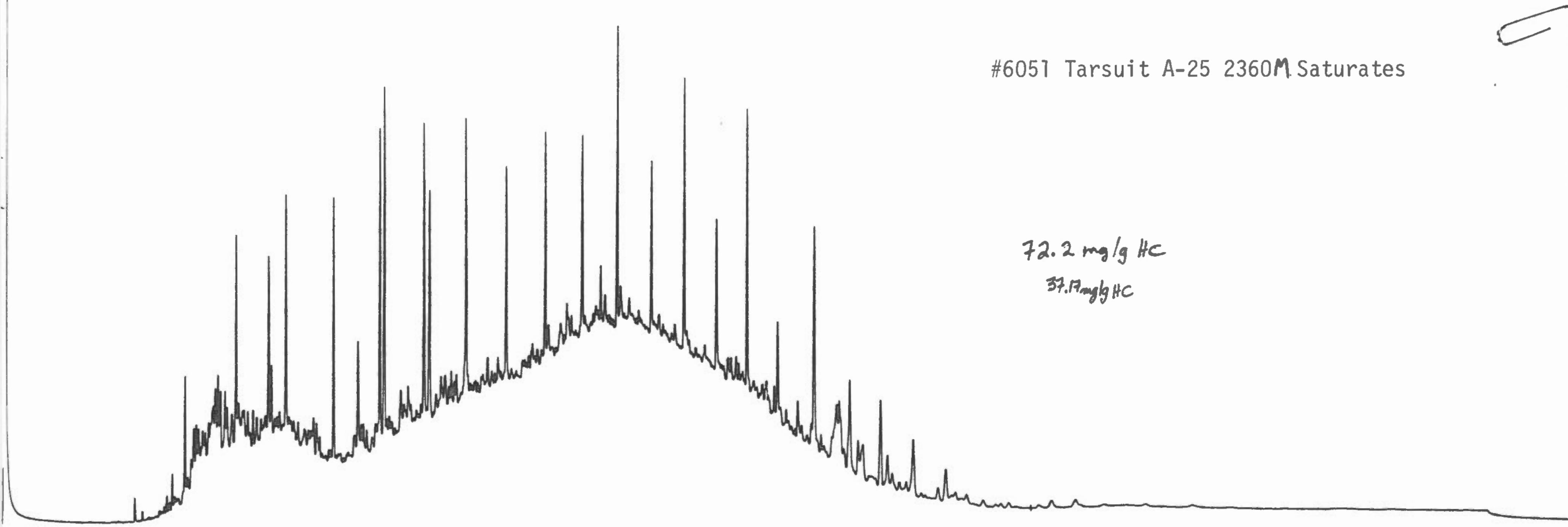
ID-6-8488800

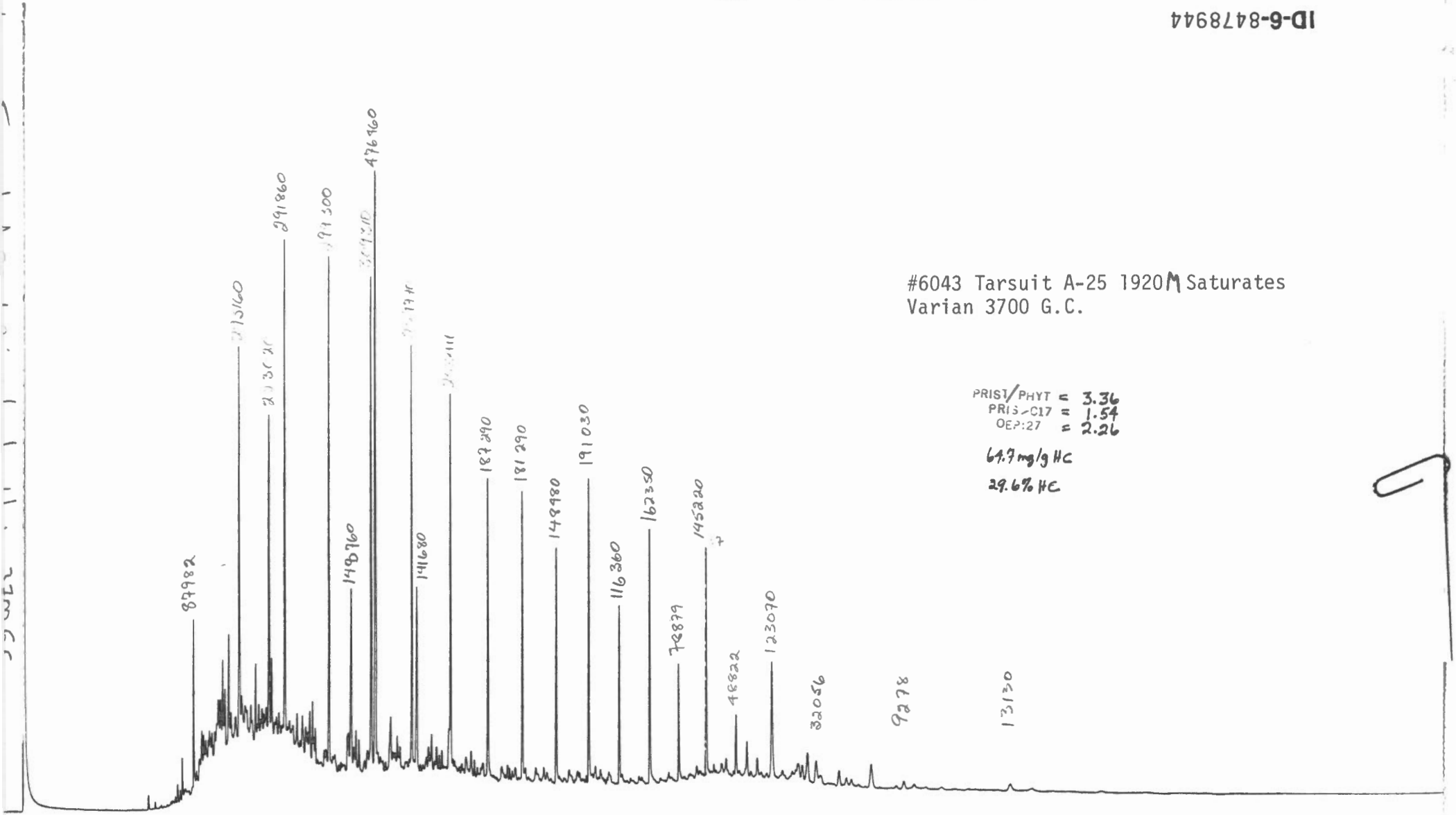


#6050 Tarsuit A-25 2320M Saturates

113.6 mg/g HC

ID-6-8478912





#6043 Tarsuit A-25 1920M Saturates
Varian 3700 G.C.

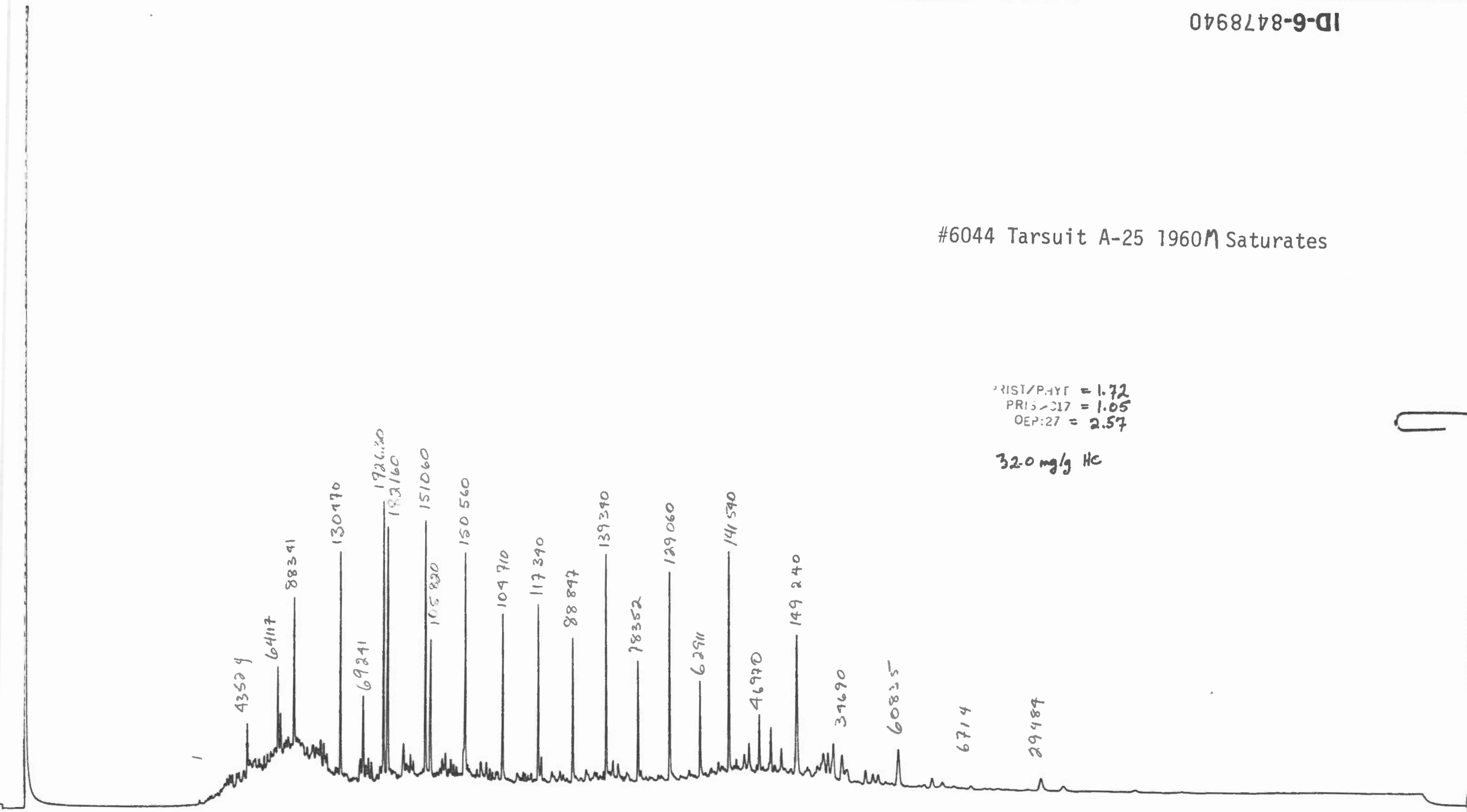
PRIST/PHYT = 3.36
PRIS/C17 = 1.54
OEP:27 = 2.26

64.7 mg/g HC

29.6% HC

ID-6-8478940

#6044 Tarsuit A-25 1960M Saturates



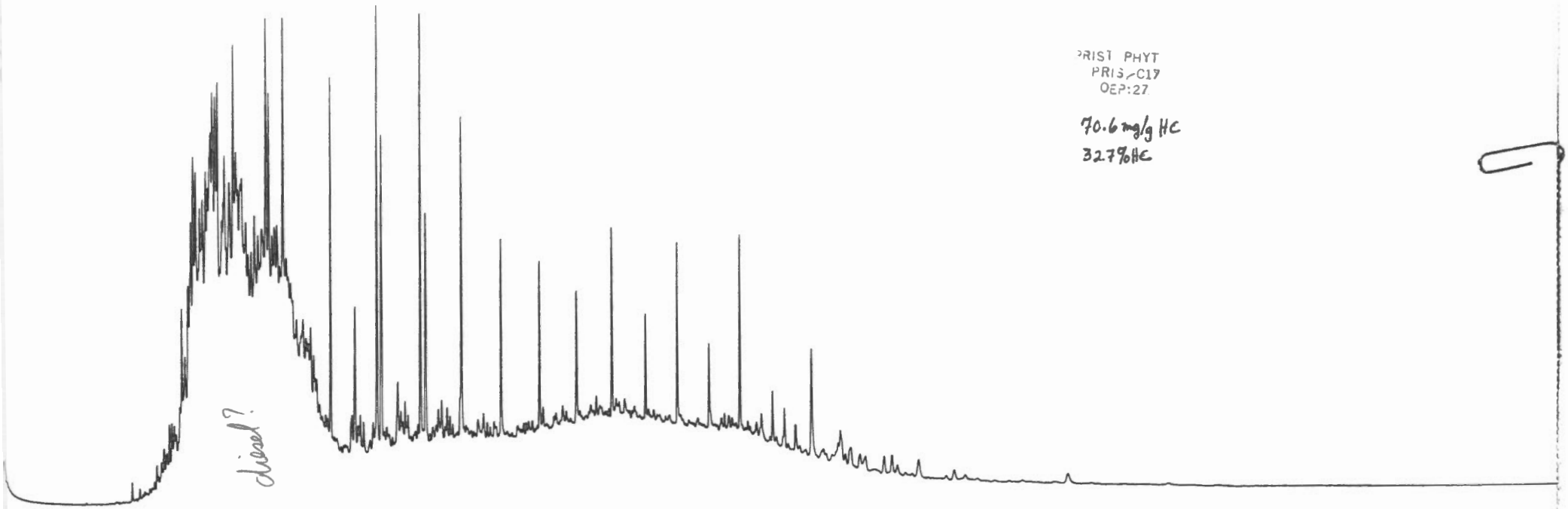
29

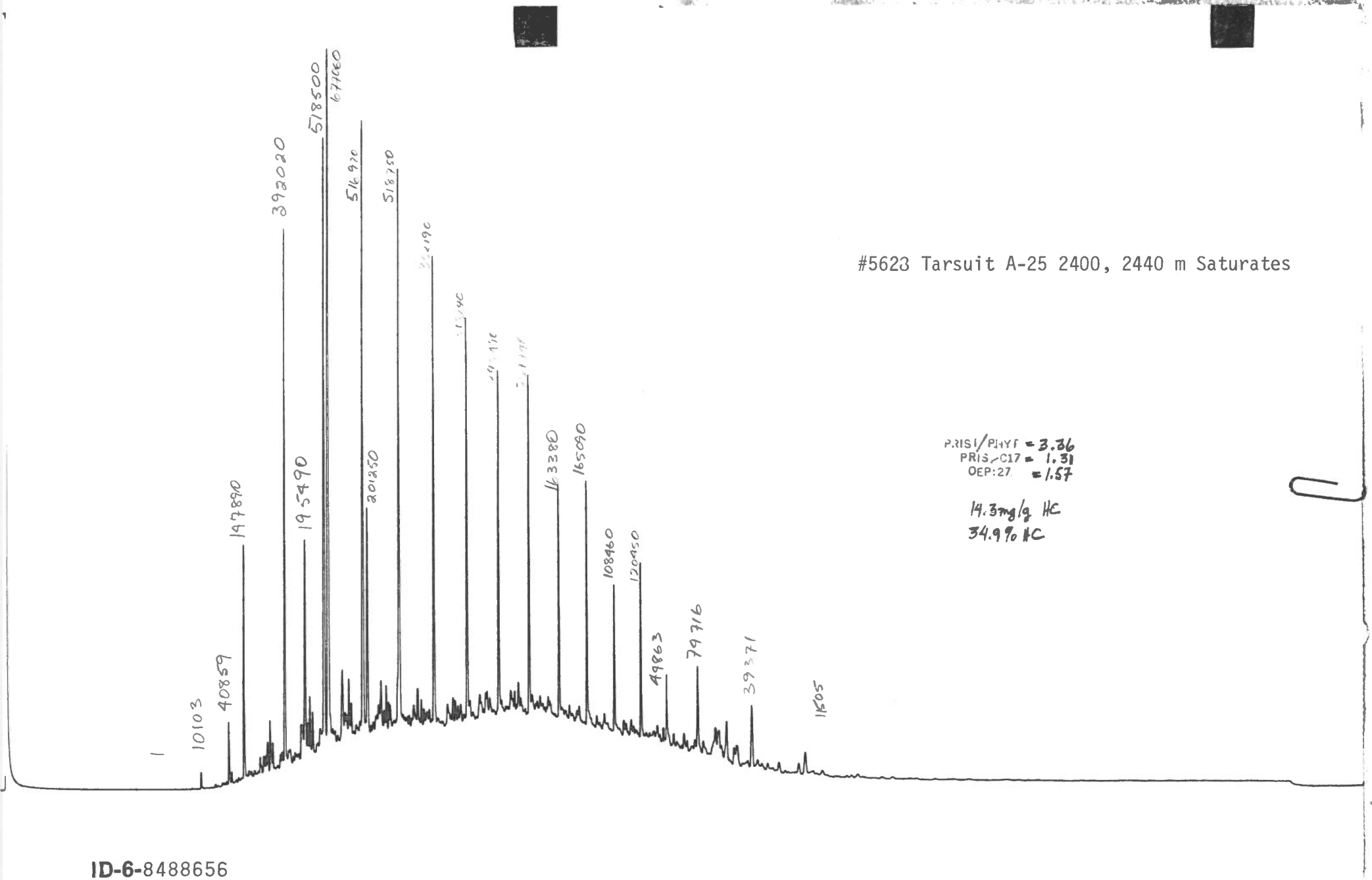
#6045 Tarsuit A-25 2030M and 2120 Saturates

PRIST PHYT
PRIS/C17
OEP:27

70.6 mg/g HC
32.7% HC

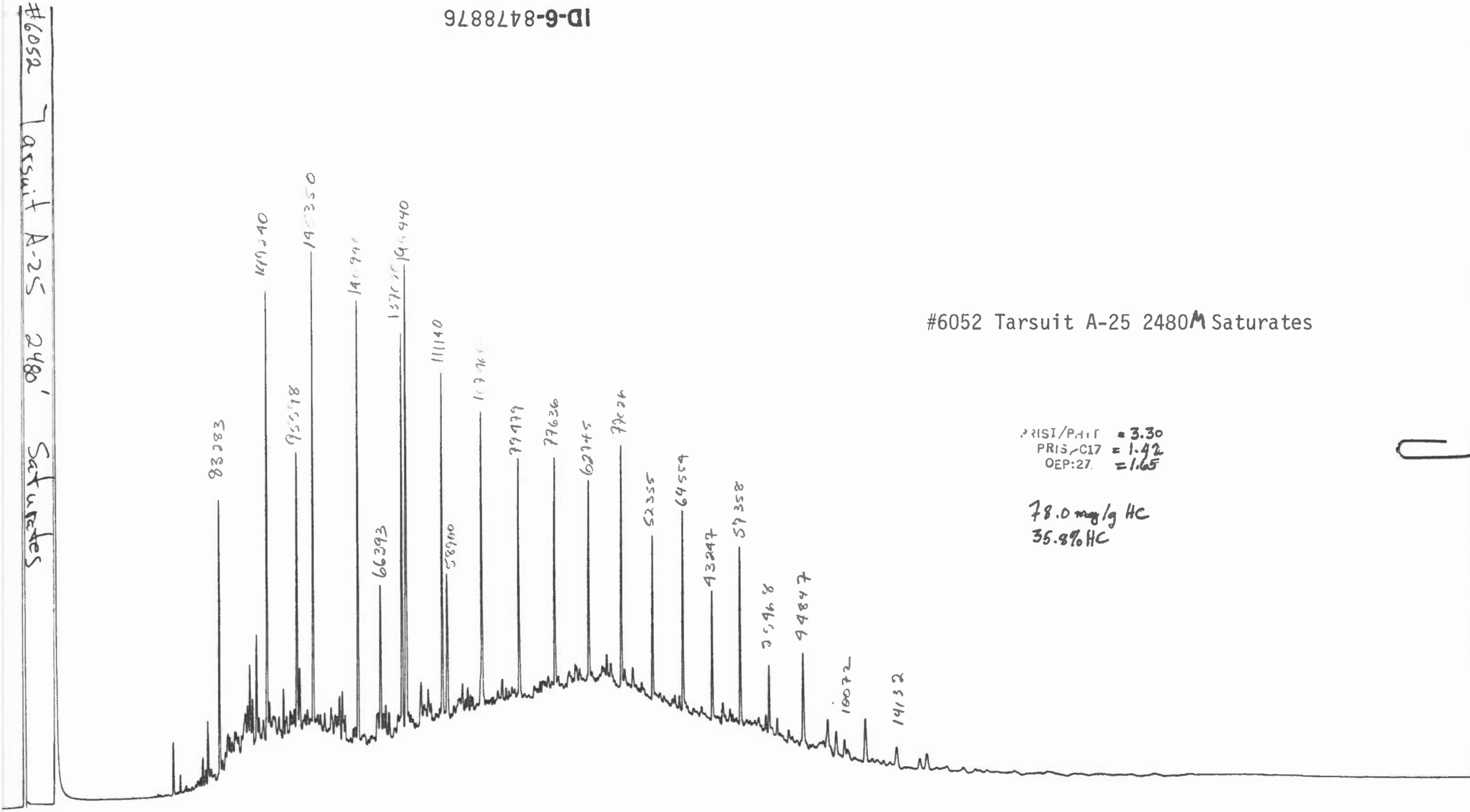
diesel?





ID-6-8488656

64

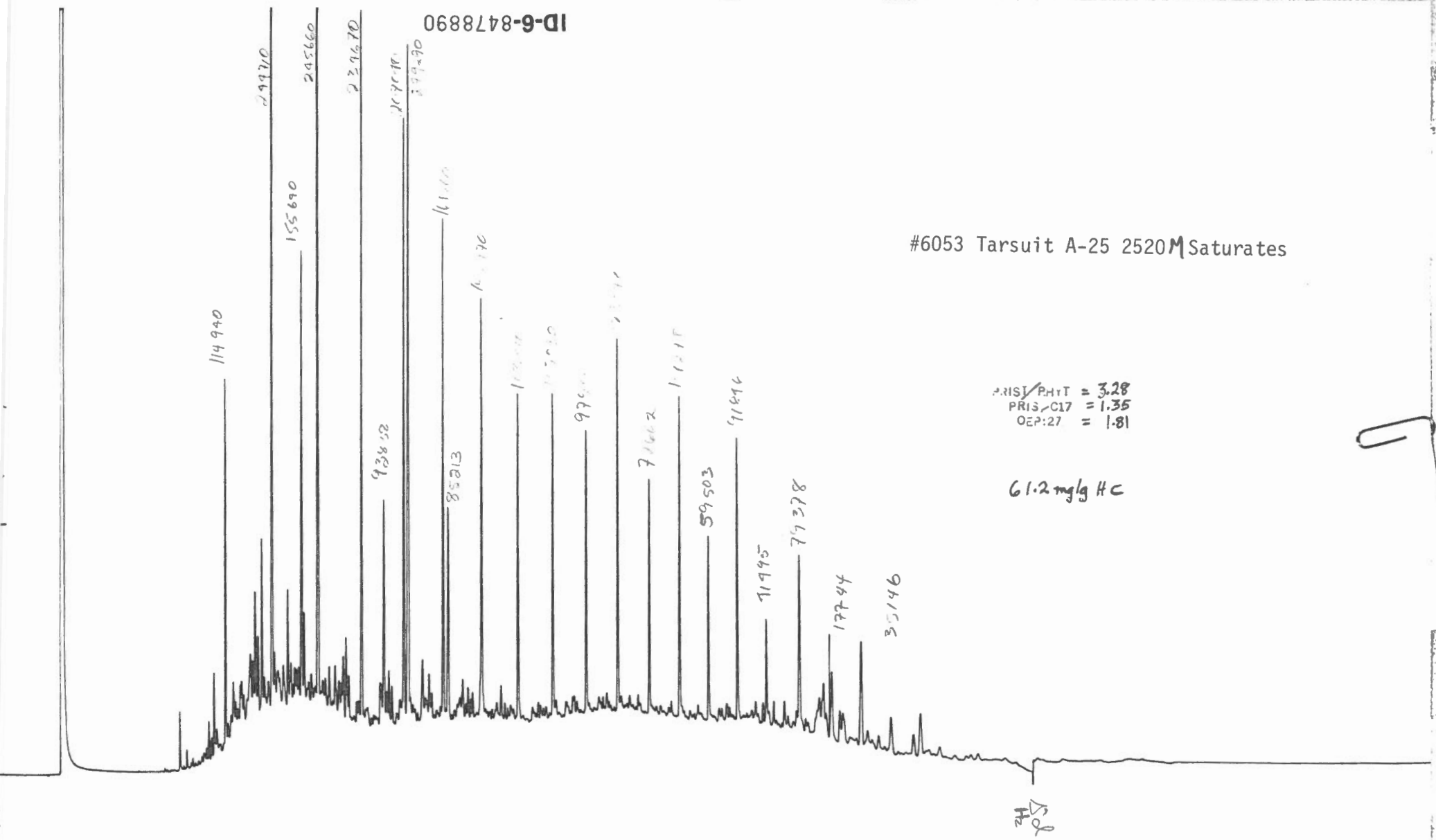


#6052 Tarsuit A-25 2480M Saturates

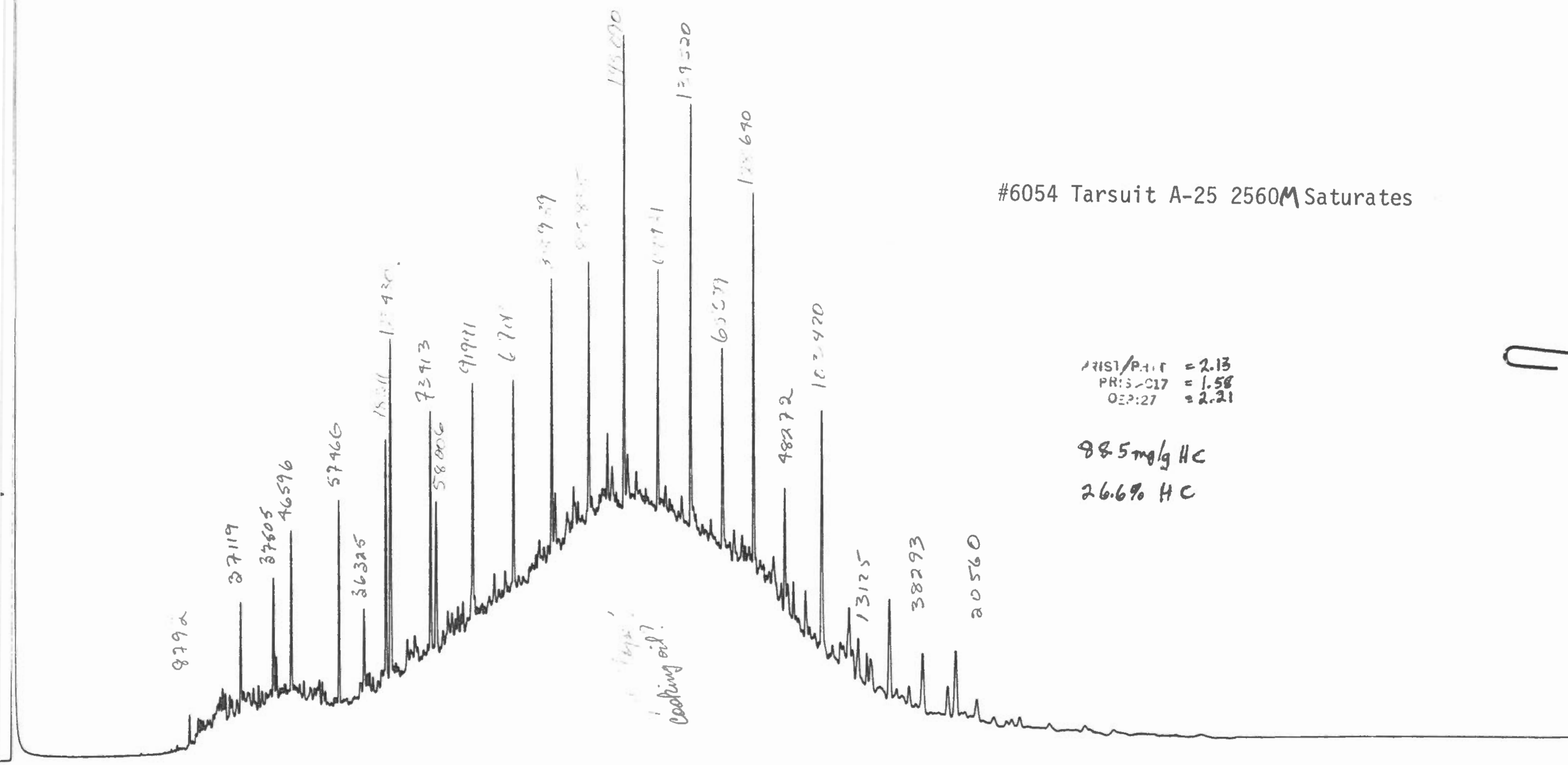
PRIST/PHYT = 3.30
PRIS/C17 = 1.42
OEP:27 = 1.65

78.0 mg/g HC
35.8% HC

ID-6-8478890


#6053 Tarsuit A-25 2520M Saturates
PRIS/PHYT = 3.28
PRIS/C17 = 1.35
OEP:27 = 1.81
61.2 mg/g HC
114940
155690
245660
93852
85213
59503
71378
177.44
35146

ID-6-8478884



#6054 Tarsuit A-25 2560M Saturates

PRIST/PHYT = 2.13
PRIST/C17 = 1.58
OEP:27 = 2.21

88.5 mg/g HC

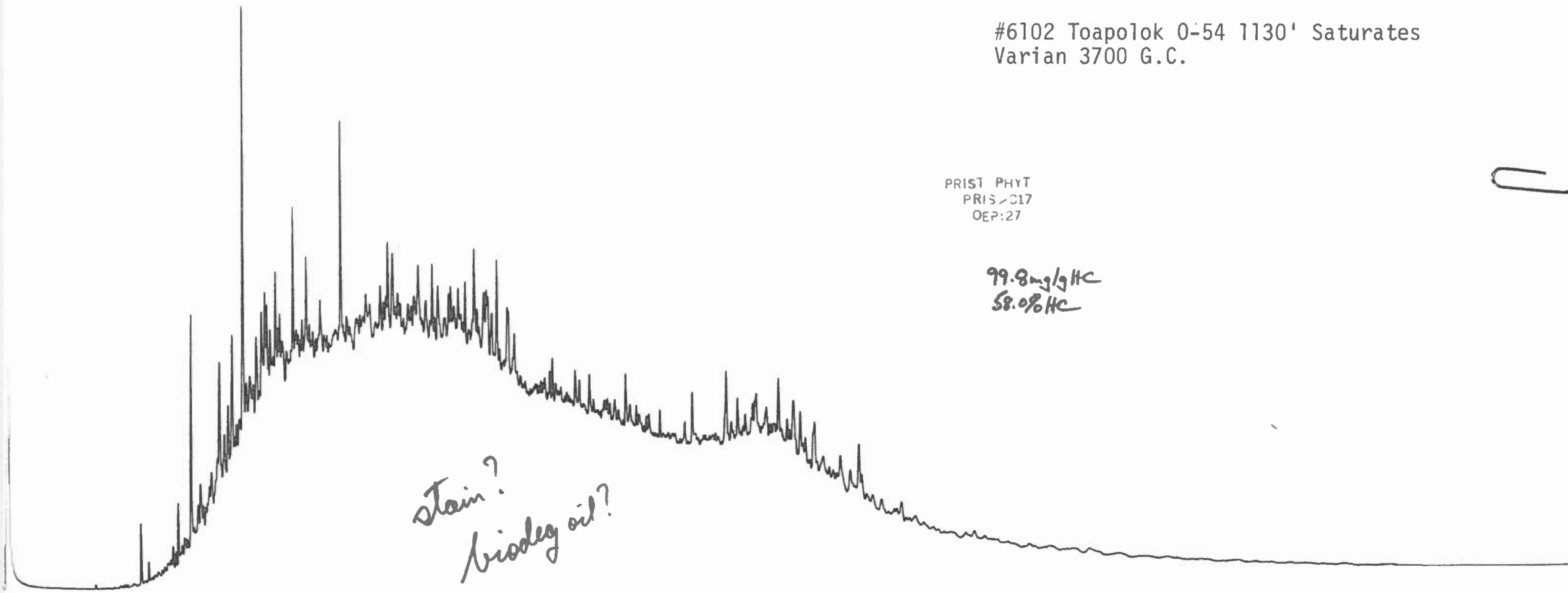
26.6% HC

67

#6102 Toapolok 0-54 1130' Saturates
Varian 3700 G.C.

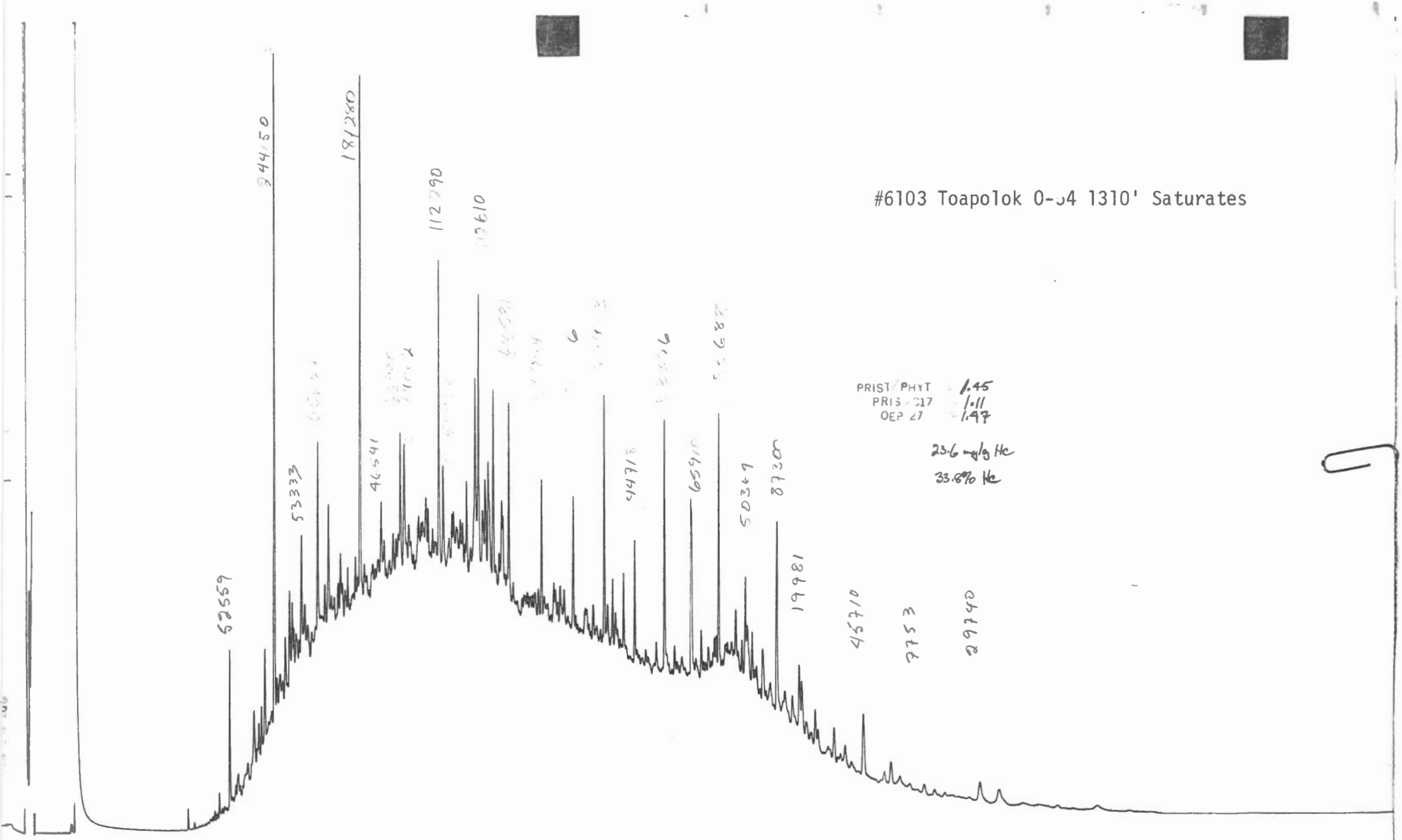
PRIST PHYT
PRIS/C17
OEP:27

99.8mg/gHC
58.0%HC



88

#6103 Toapolok 0-34 1310' Saturates



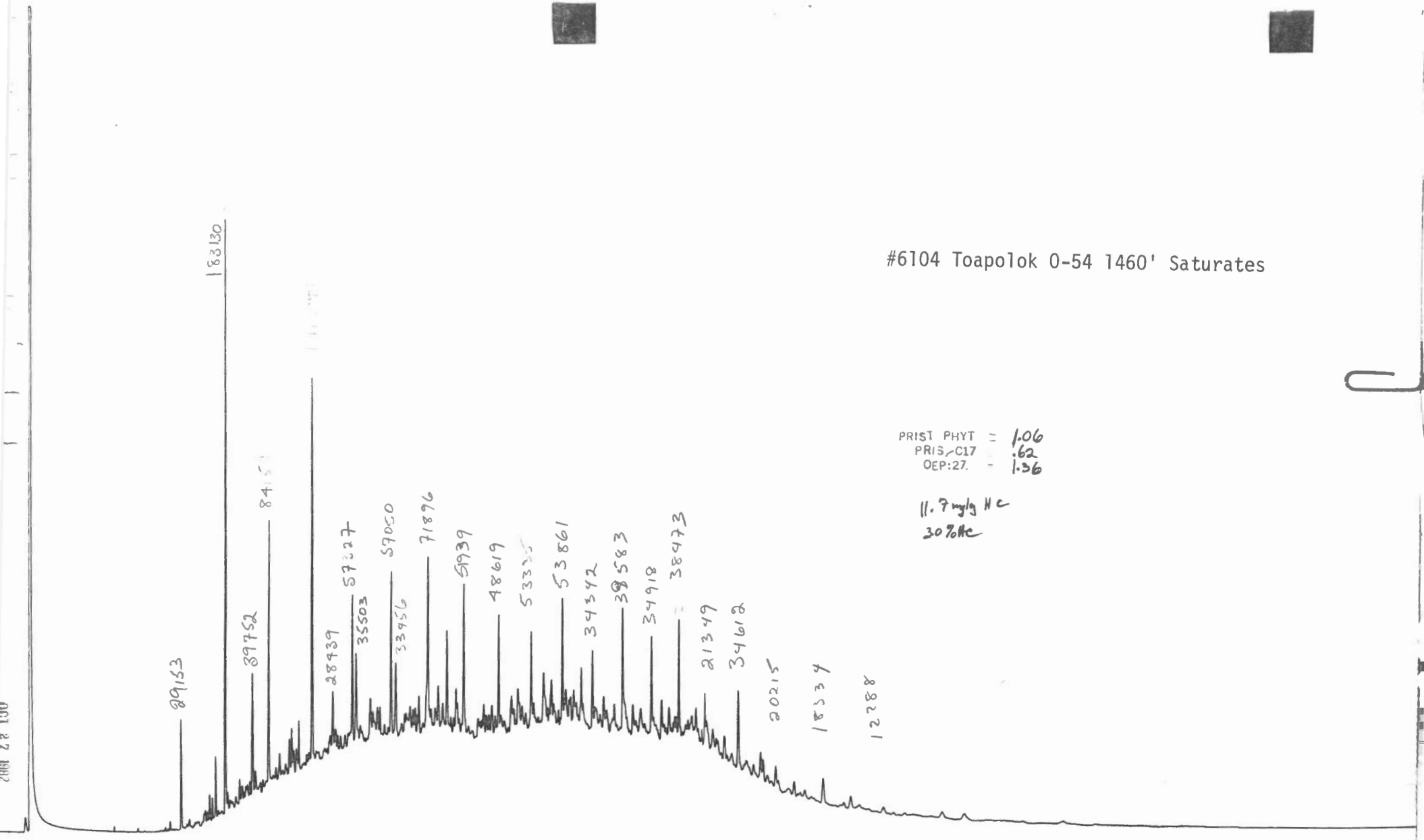
PRIST/PHYT = 1.45
PRIS/C17 = 1.11
OEP 27 = 1.97

23.6 mg/g Hc
33.8% Hc

ID-6-8488814

68

#6104 Toapolok 0-54 1460' Saturates



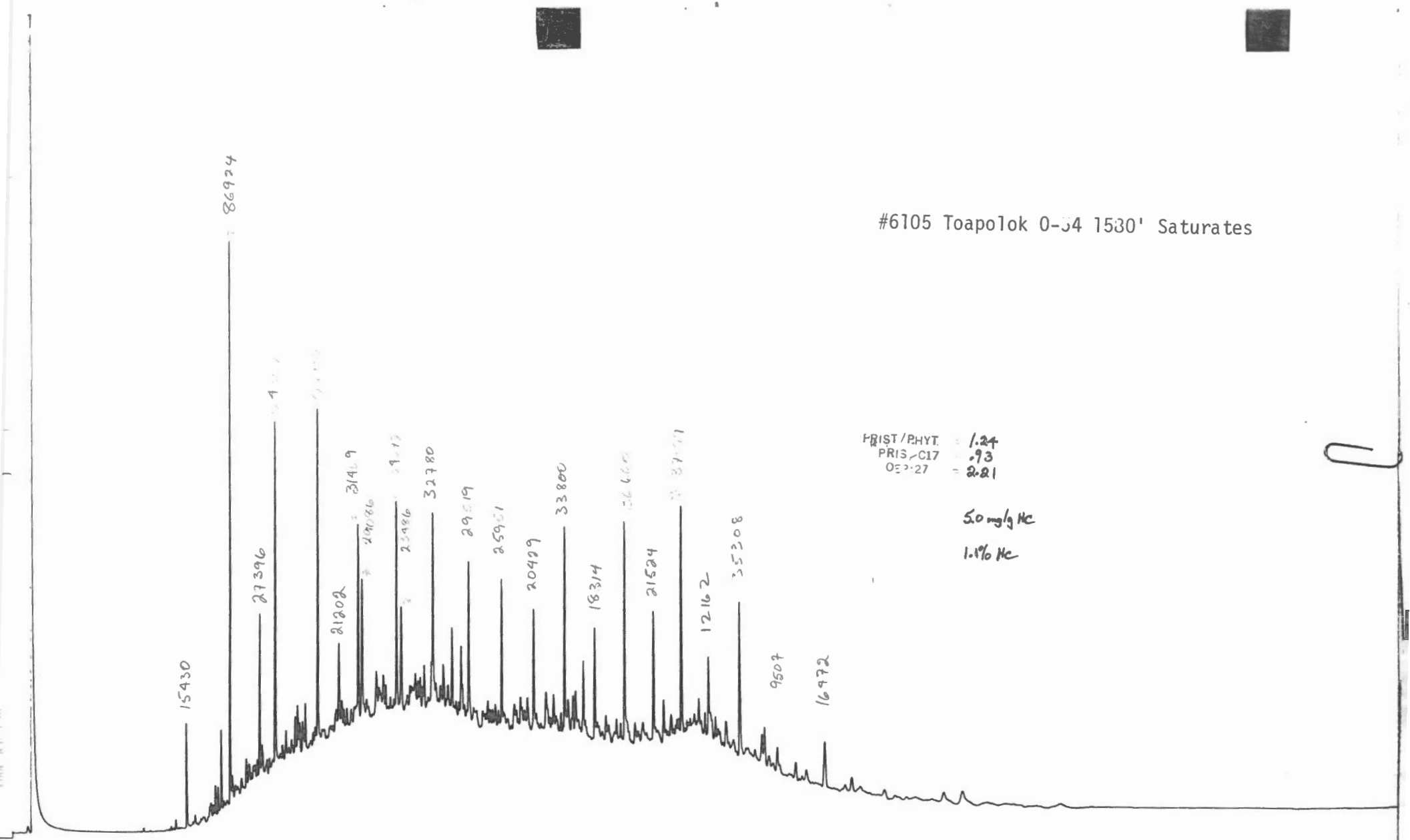
PRIST PHYT = 1.06
PRIS/C17 = .62
OEP:27. = 1.36

11.7 mg/g HC
30% HC

ID-6-8488694

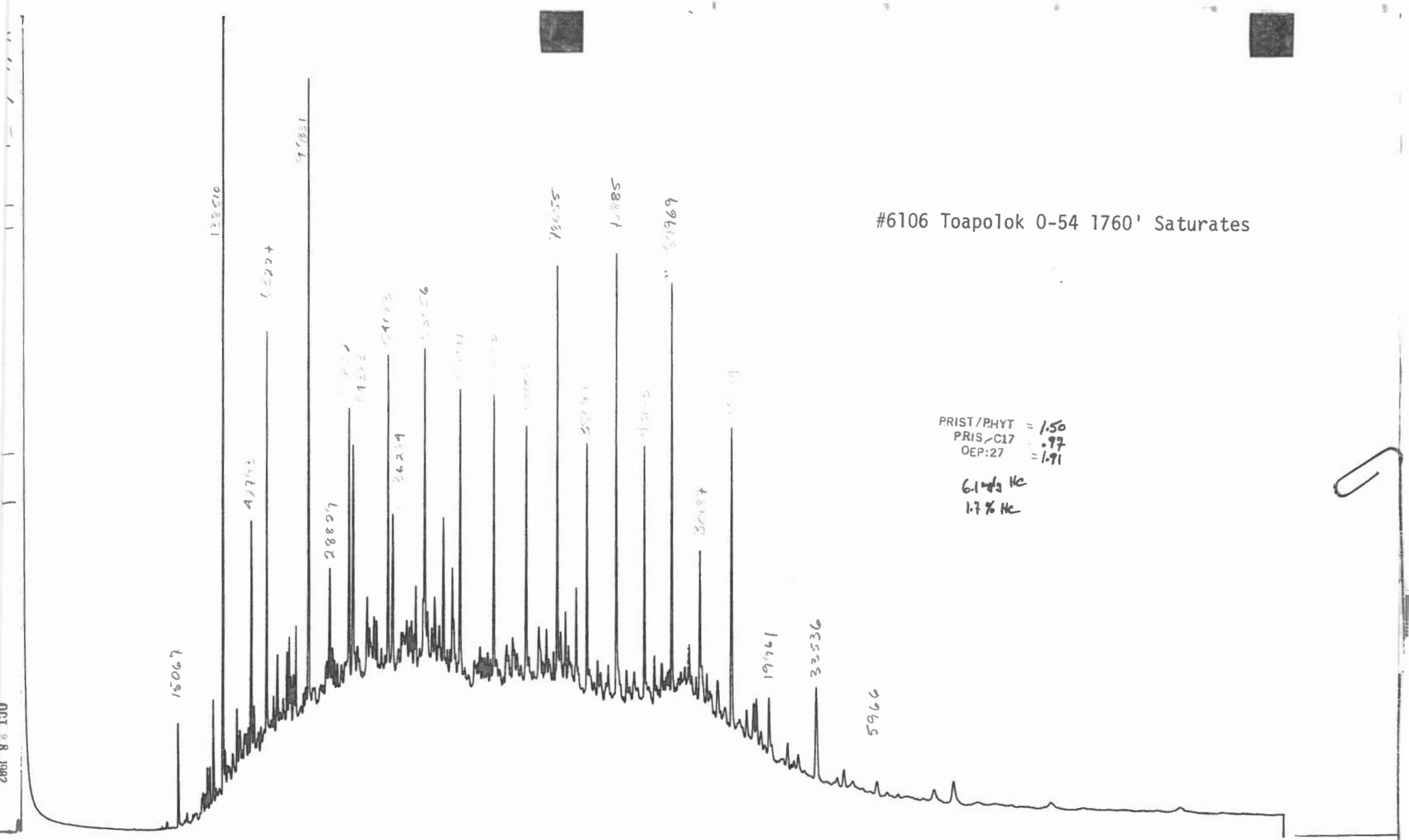
06

#6105 Toapolok 0-34 1530' Saturates



ID-6-8488702

#6106 Toapolok 0-54 1760' Saturates

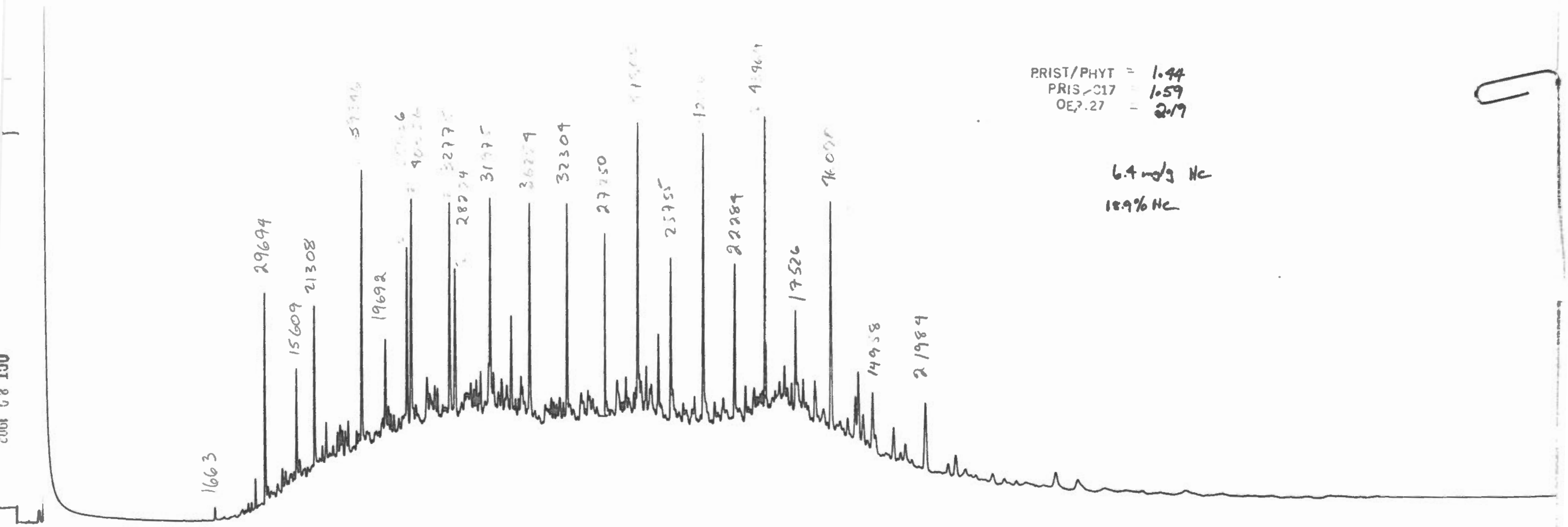


PRIST/PHYT = 1.50
PRIS/C17 = .97
OEP:27 = 1.91

6.1 mg/g HC
1.7 % HC

ID-6-8488704

#6107 Toapolok 0-54 1940' Saturates

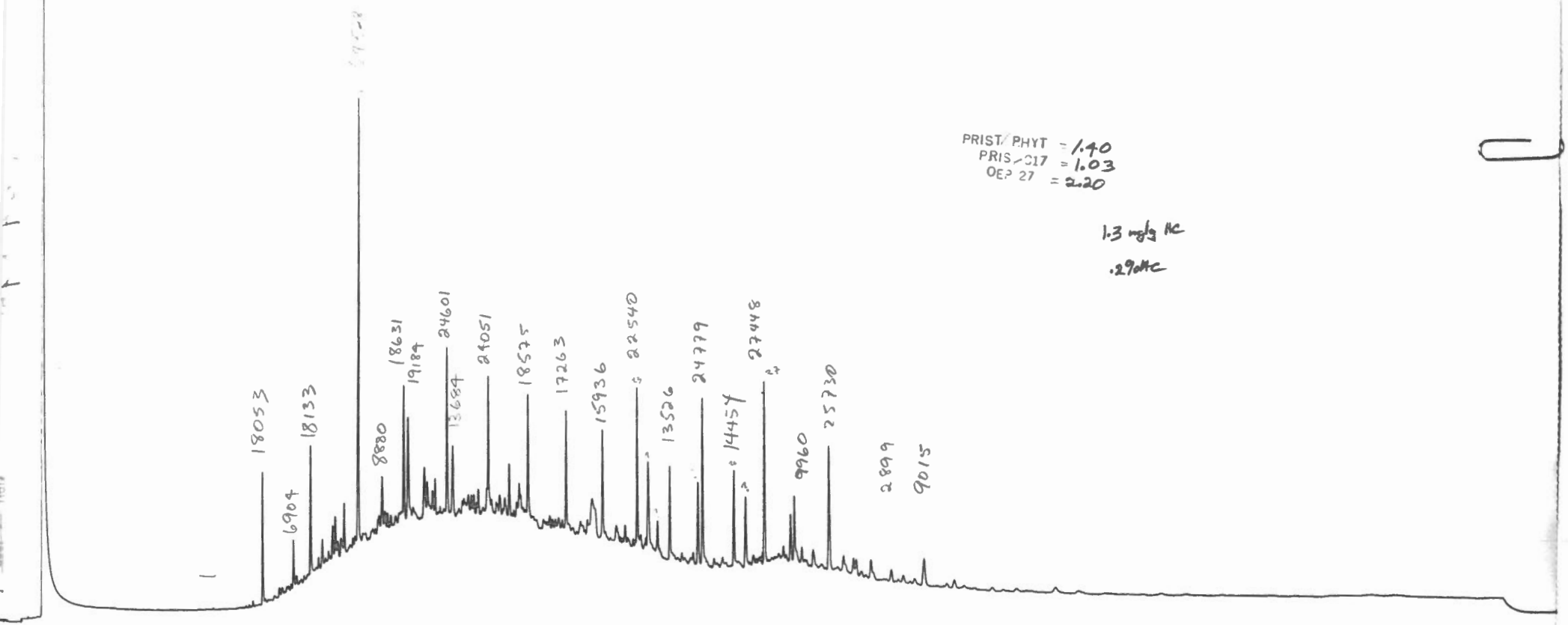


ID-6-8488712

#6108 Toapolok 0-54 2120' Saturates

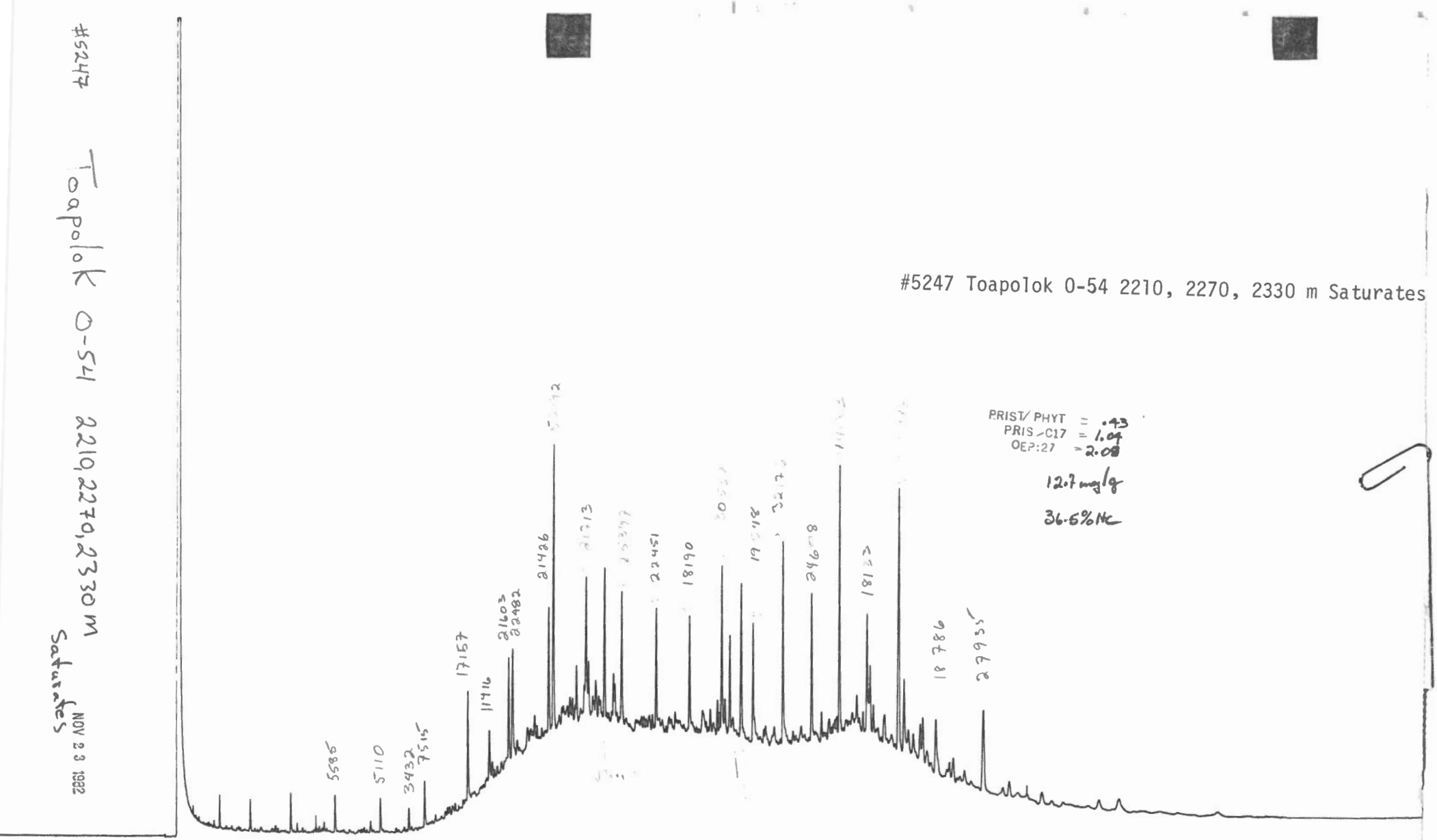
PRIST/PHYT = 1.40
PRIS/C17 = 1.03
OEP 27 = 2.20

1.3 mg/g HC
.29 mg/g

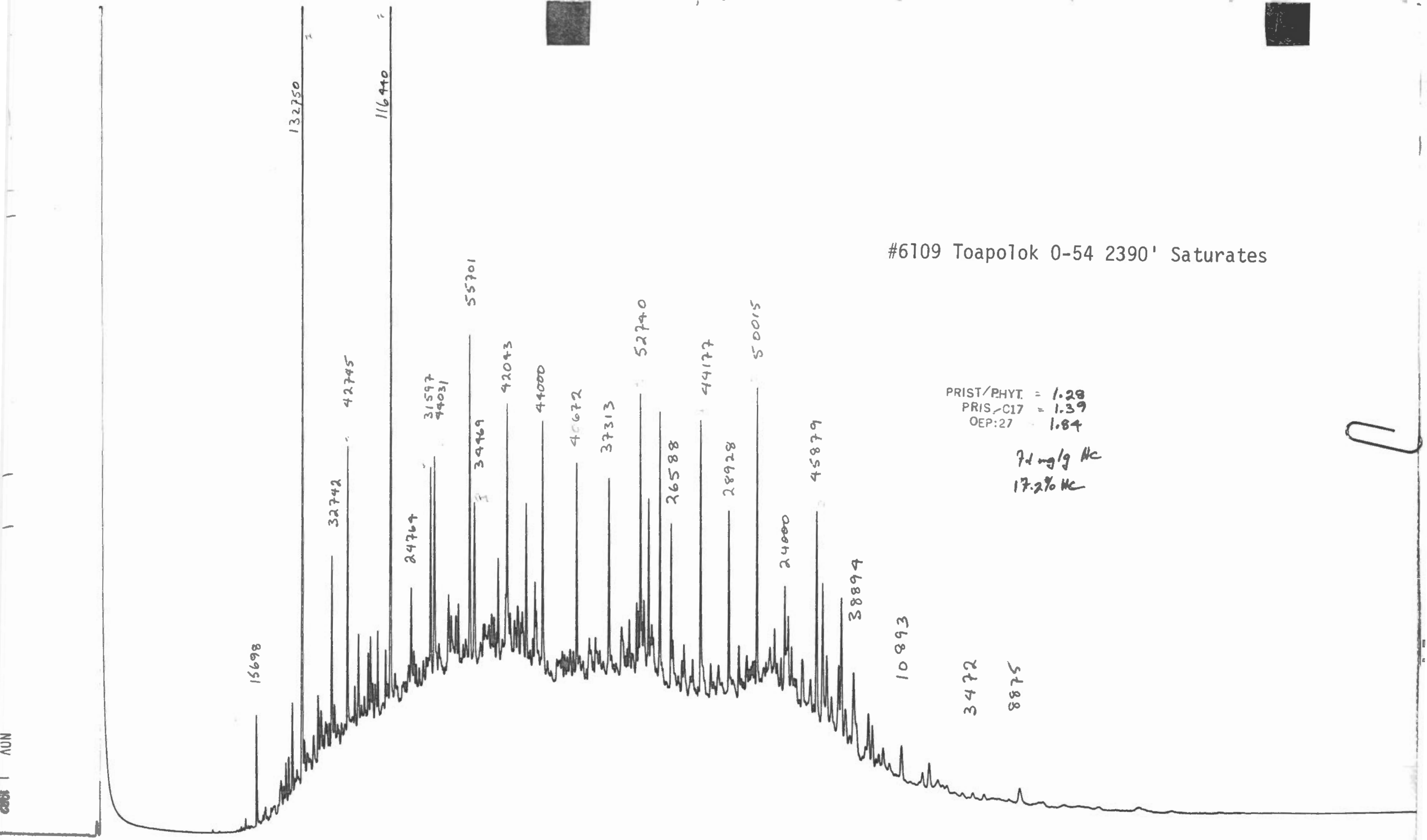


94

#5247 Toapolok 0-54 2210,2270,2330 m Saturates



#5247 Toapolok 0-54 2210,2270,2330 m Saturates



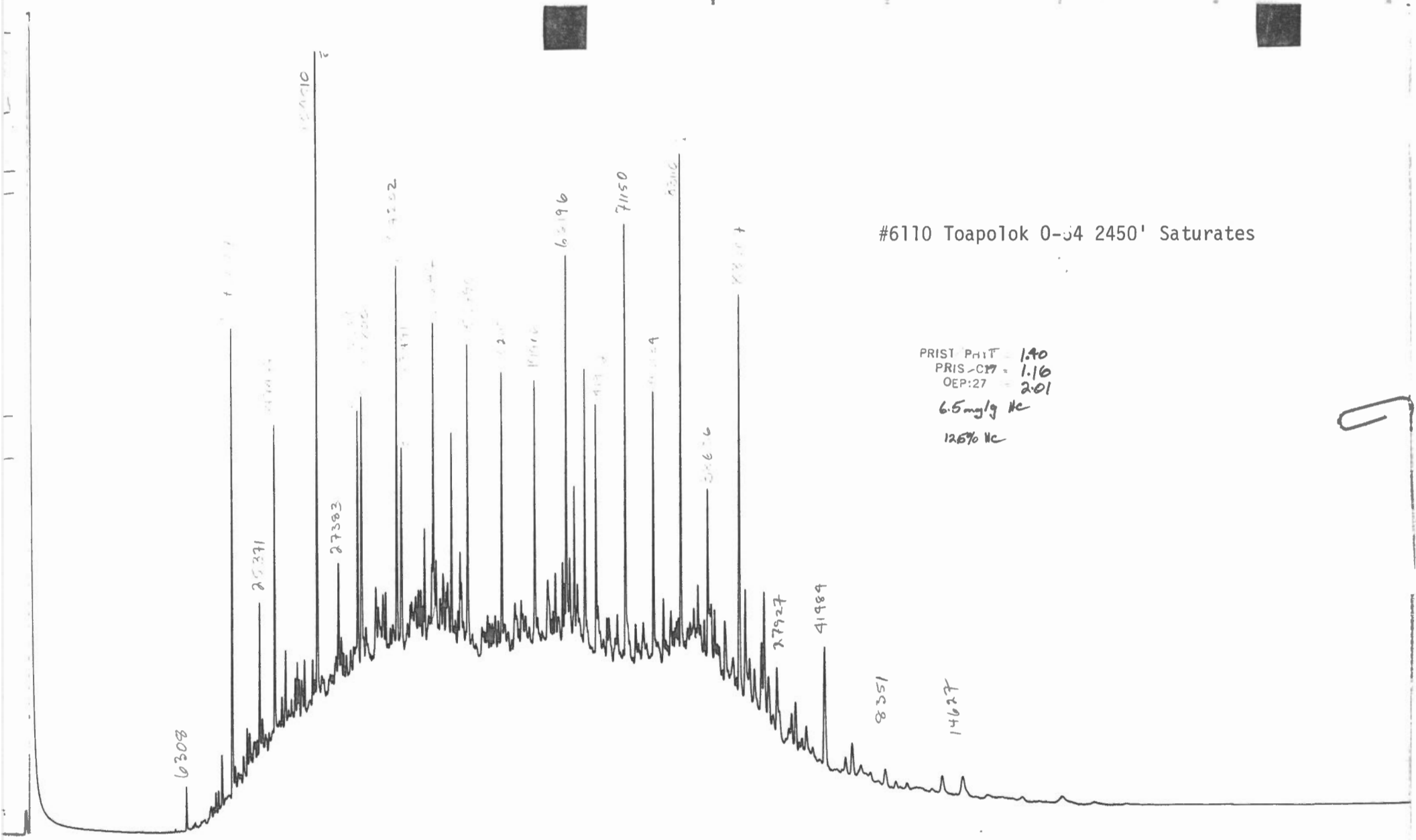
#6109 Toapolok 0-54 2390' Saturates

PRIST/PHYT. = 1.28
PRIS./C17 = 1.39
OEP:27 1.84

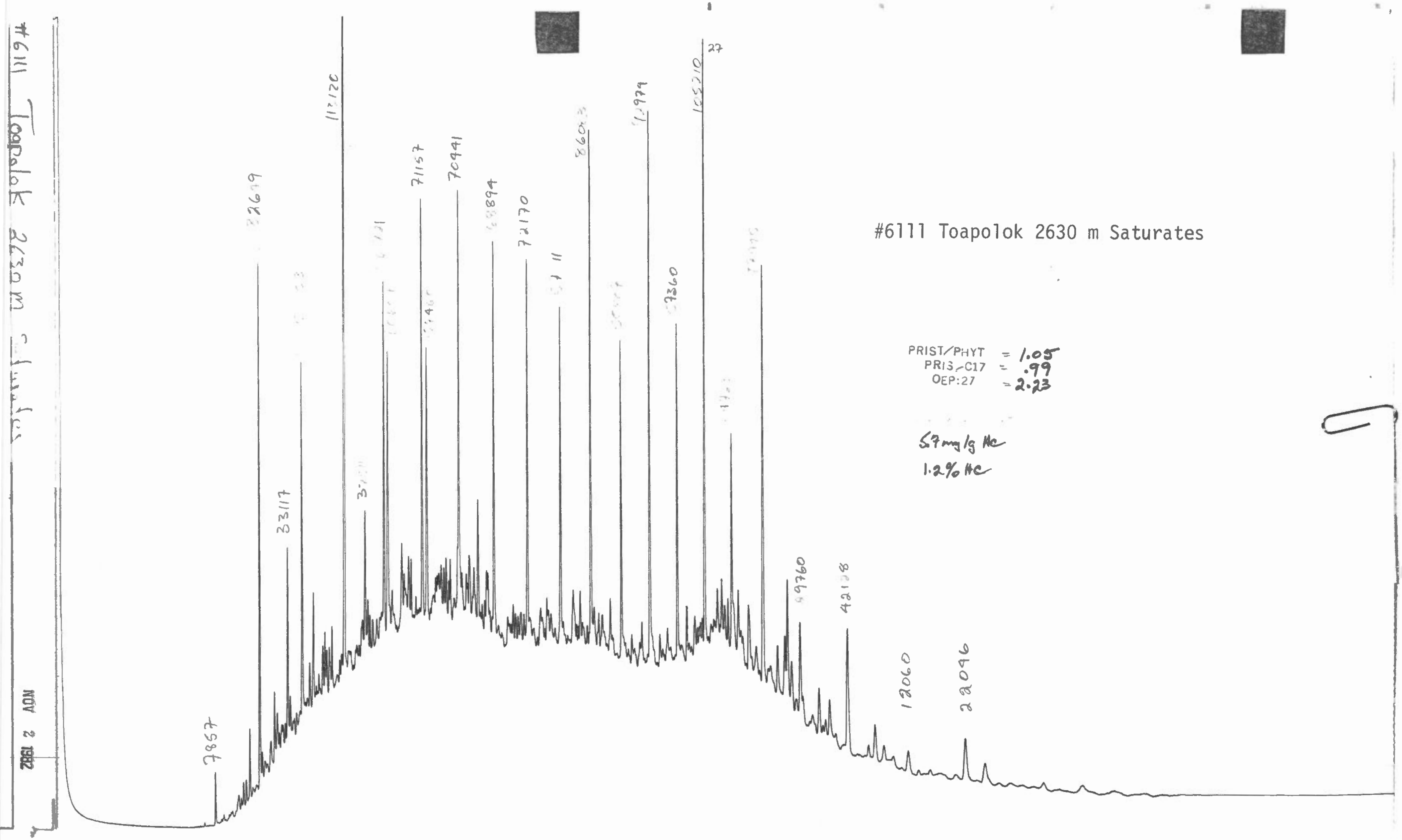
71 mg/g Hc
17.2% Hc

ID-6-8488720

96


#6110 Toapolok 0-54 2450' Saturates
PRIST/PHIT = 1.40
PRIS/C17 = 1.16
OEP:27 = 2.01
6.5 mg/g HC
12.5% HC
60308
25371
27383
63196
71150
27927
41989
83511
146127

ID-6-8488722



#6111 Toapolok 2630 m Saturates

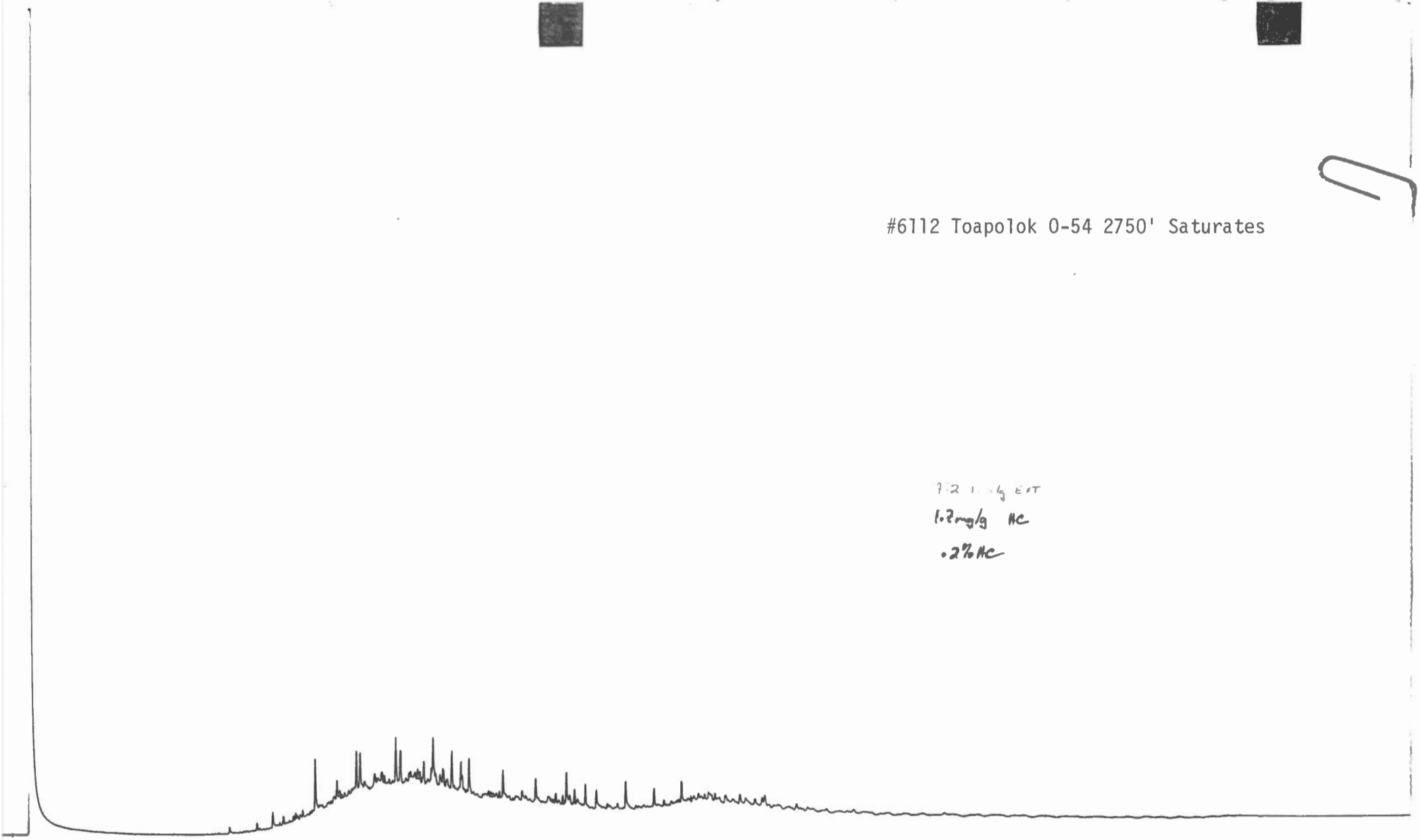
PRIST/PHYT = 1.05
PRIS/C17 = .99
OEP:27 = 2.23

5.7 mg/g HC
1.2% HC

ID-6-8488728

#6112 Toapolok 0-54 2750' Saturates

1.2 mg/g EXT
1.2 mg/g HC
.2% HC



29

#5299

Umiak N-10

6210 - 6300'

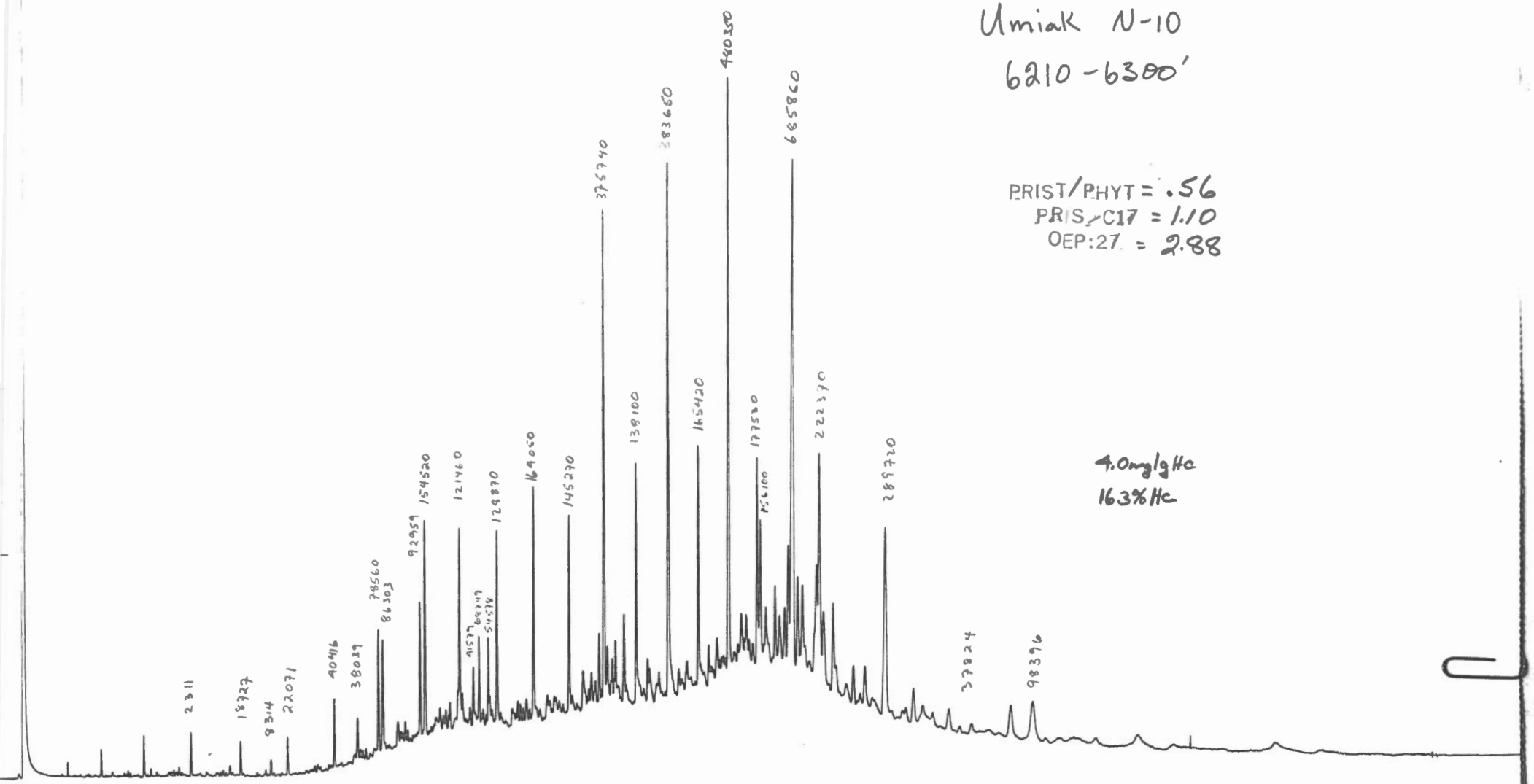
PRIST/PHYT = .56

PRIS/C17 = 1.10

OEP:27 = 2.88

4.0 mg/g Hc

16.3% Hc

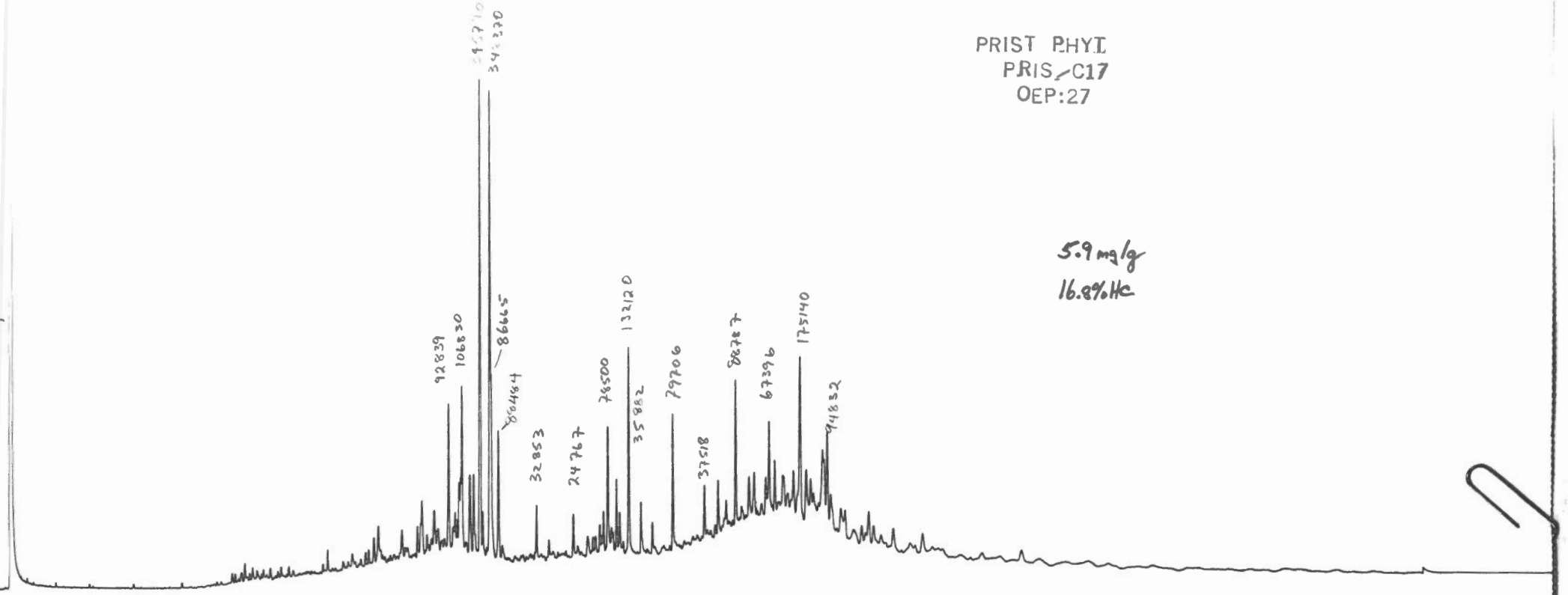


091

#5212
Umiak N-10
7500-7590'

PRIST PHYT
PRIS/C17
OEP:27

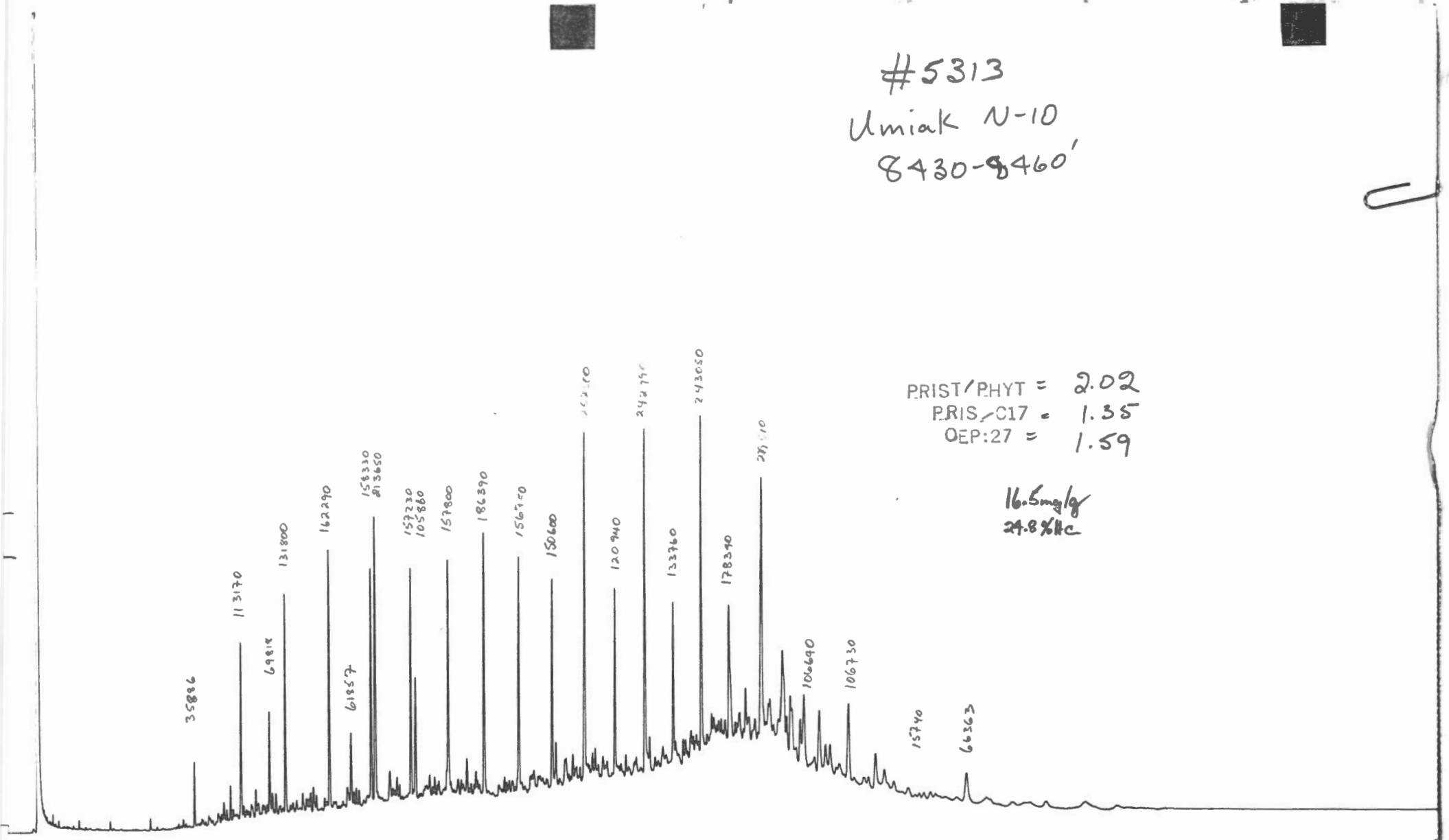
5.9 mg/g
16.8% Hc



ID-6-8488578

101

#5313
Umiak N-10
8430-8460'



PRIST/PHYT = 2.02
PRIS/C17 = 1.35
OEP:27 = 1.59

16.5mg/g
24.8%HC

ID-6-8488580

202

5314 Umiak N#9210, 9240 ft Saturates

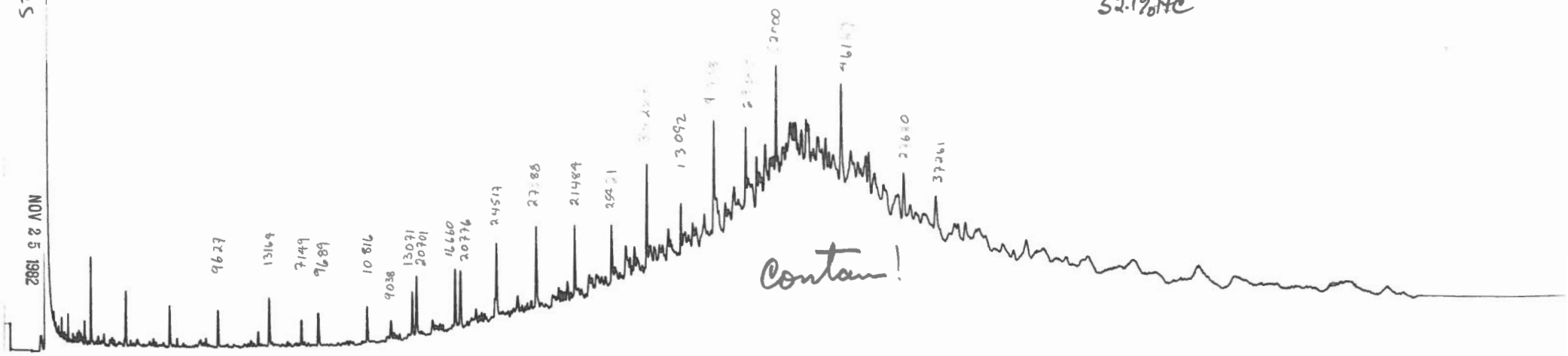
#5314

Umiak N-10

9210 - 9240'

PRIST/PHYT = 1.00
PRIS/C17 = 1.58
OEP:27 = 1.26

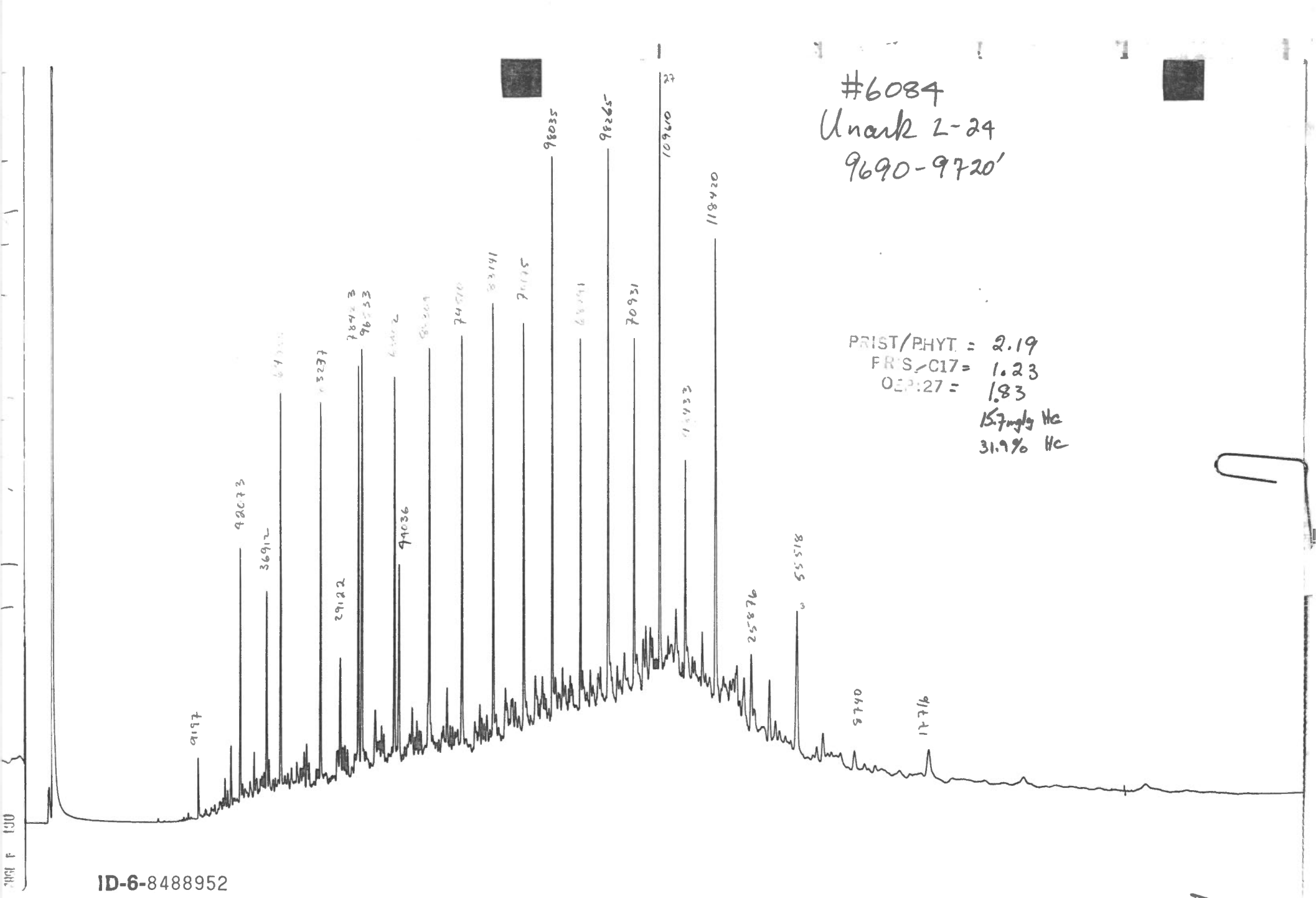
99.3 mg/g HC
52.1% HC



Contam!

ID-6-8488584

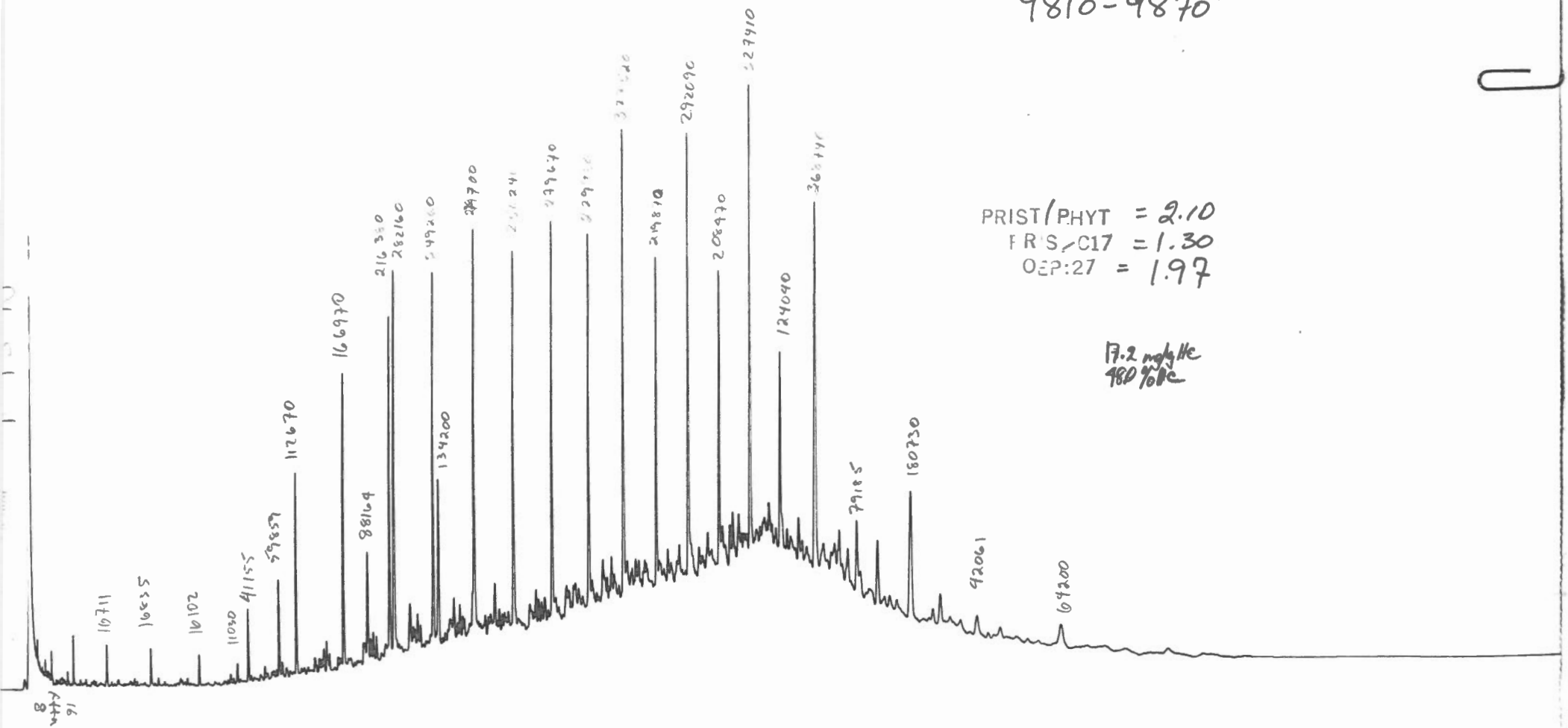
103



ID-6-8488952

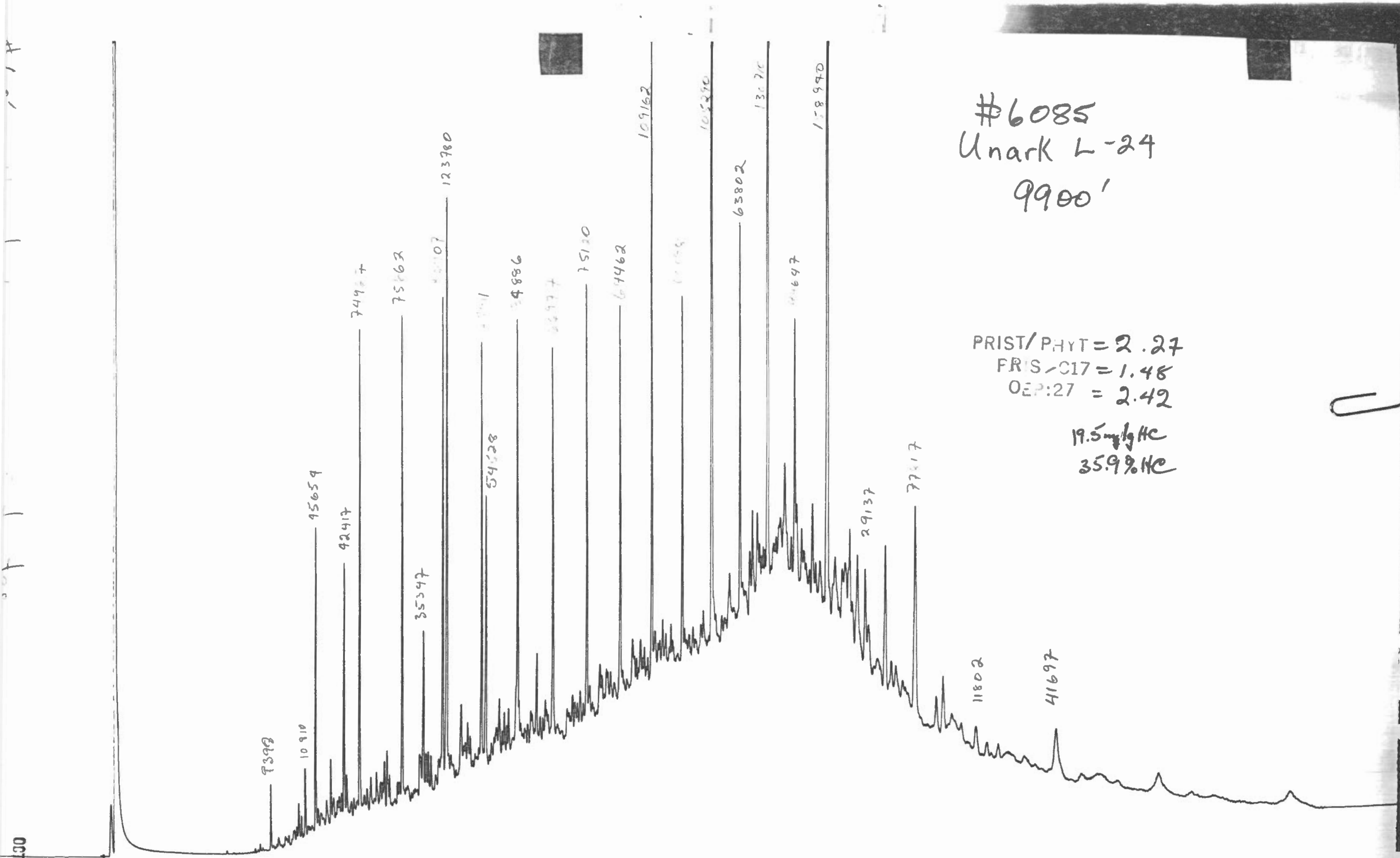
107

#2629
Unark L-24
9810-9870'



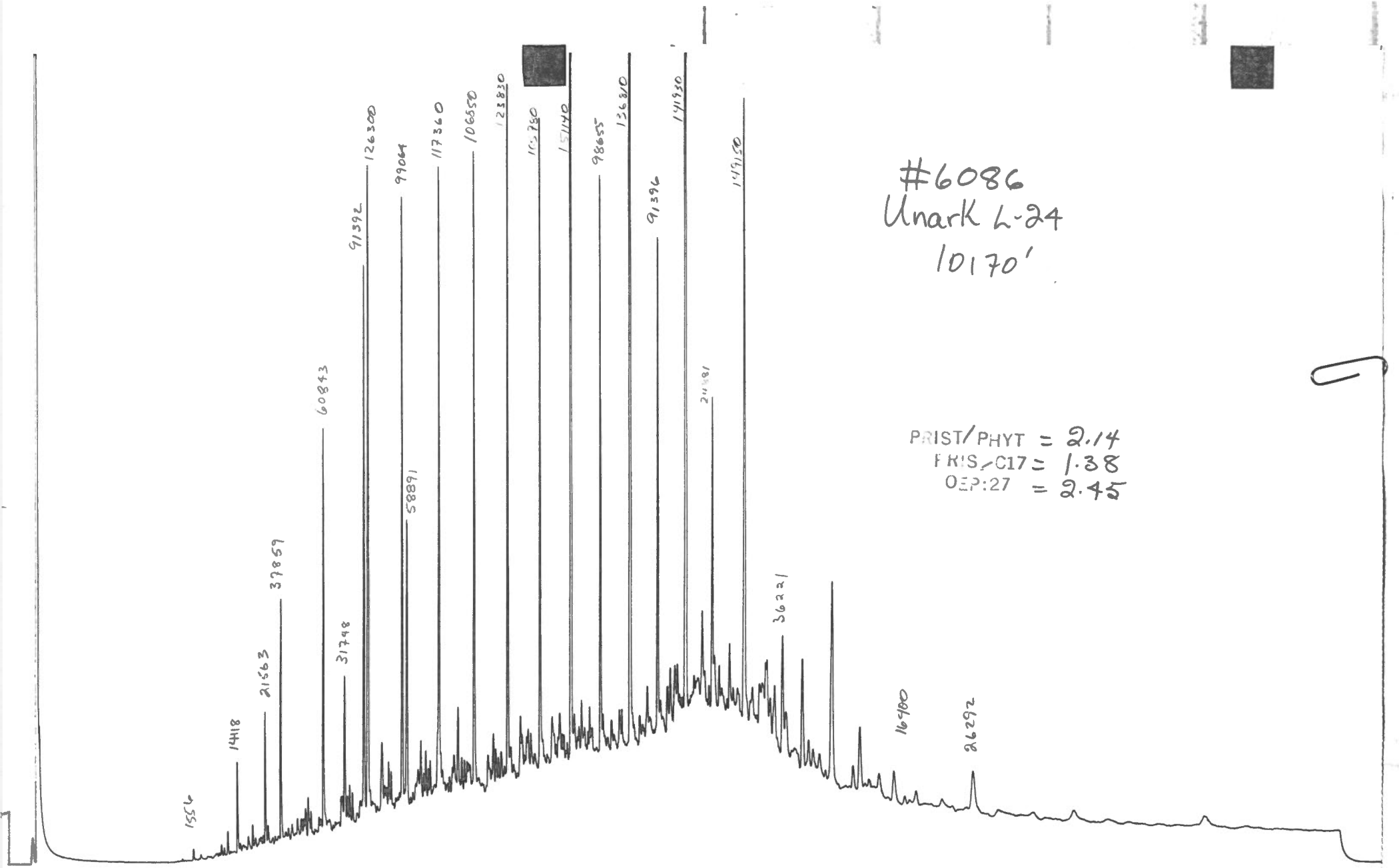
ID-6-8488586

105



ID-6-8488956

106



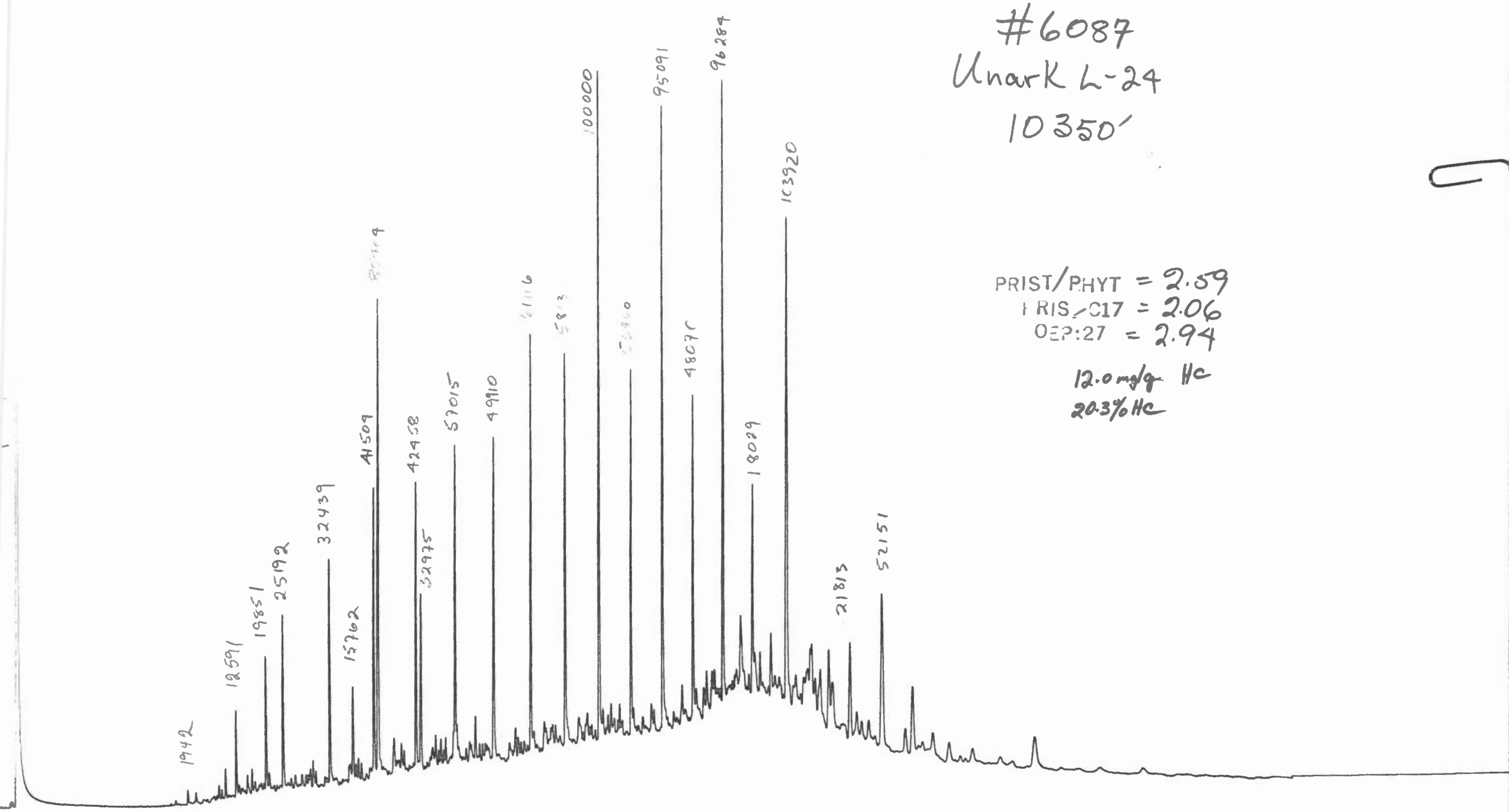
ID-6-8488958

107

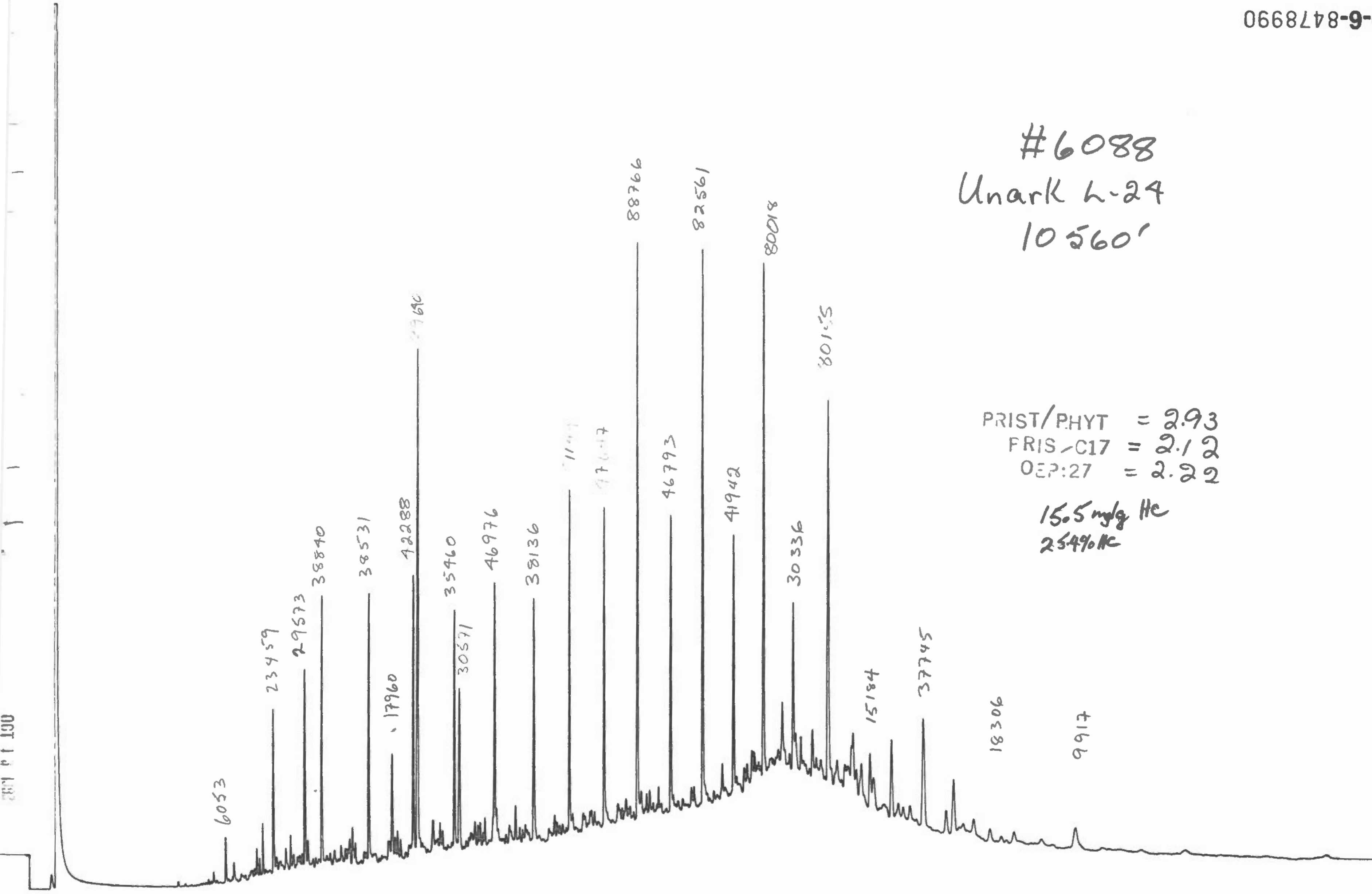
#6087
Unark L-24
10350'

PRIST/PHYT = 2.59
PRIS/C17 = 2.06
OEP:27 = 2.94

12.0 mg/g HC
20.3% HC



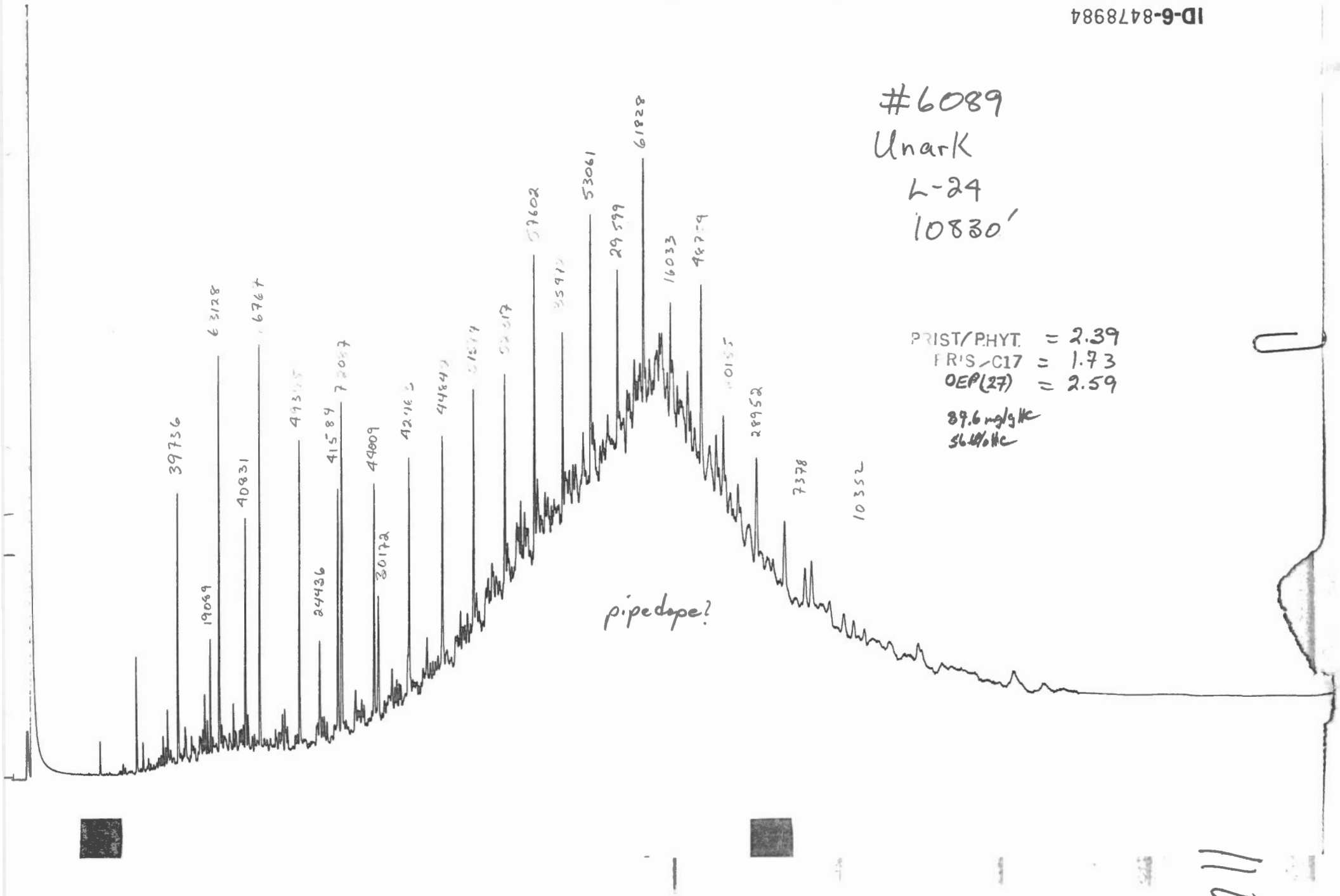
#6088
Unark L-24
10560'



PRIST/PHYT = 2.93
PRIS/C17 = 2.12
OEP:27 = 2.22

15.5 mg/g HC
25.4% HC

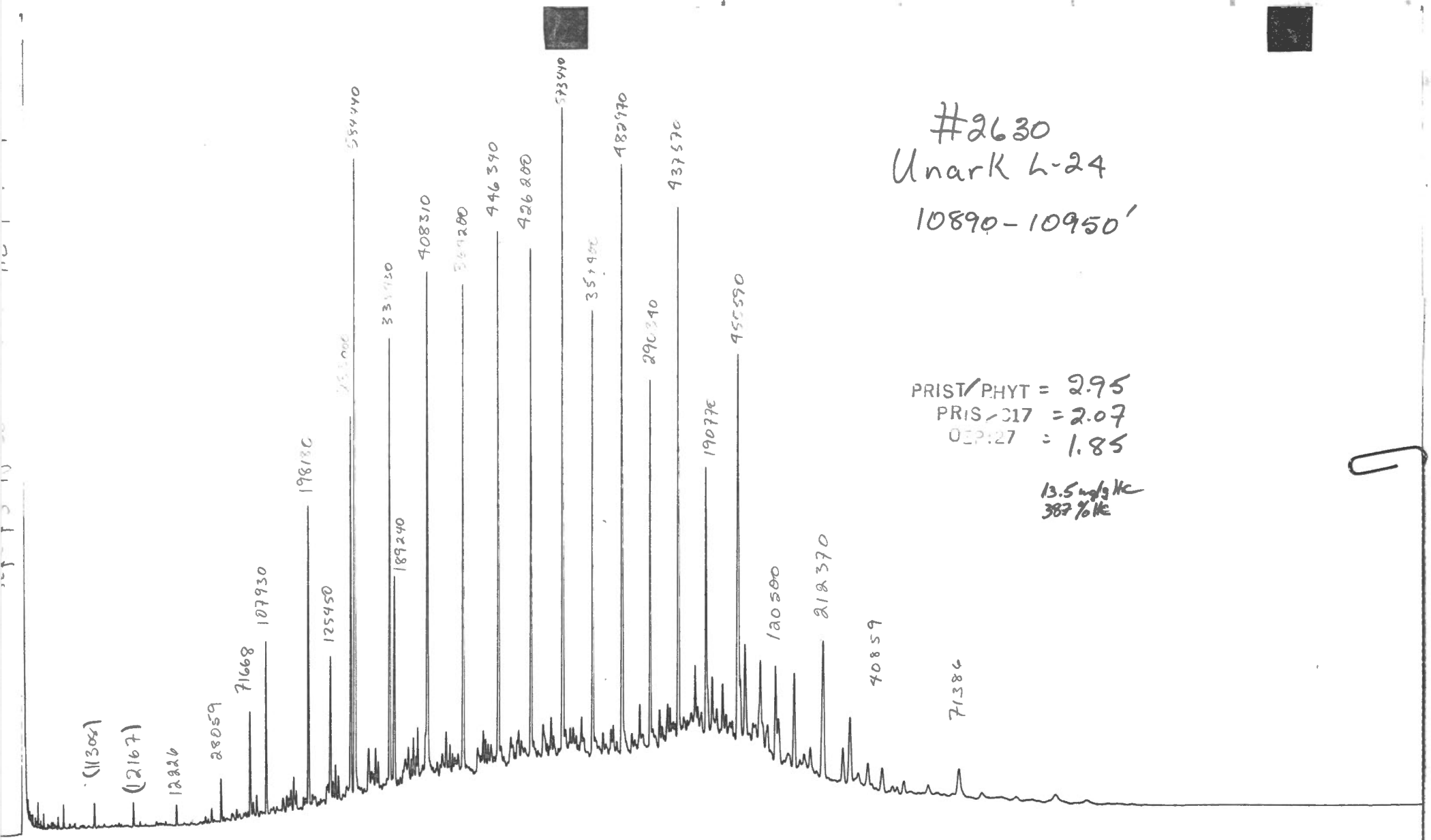
#6089
Unark
L-24
10830'



PRIST/PHYT. = 2.39
PRIS/C17 = 1.73
OEP(27) = 2.59

89.6 mg/g HC
56.4% HC

011

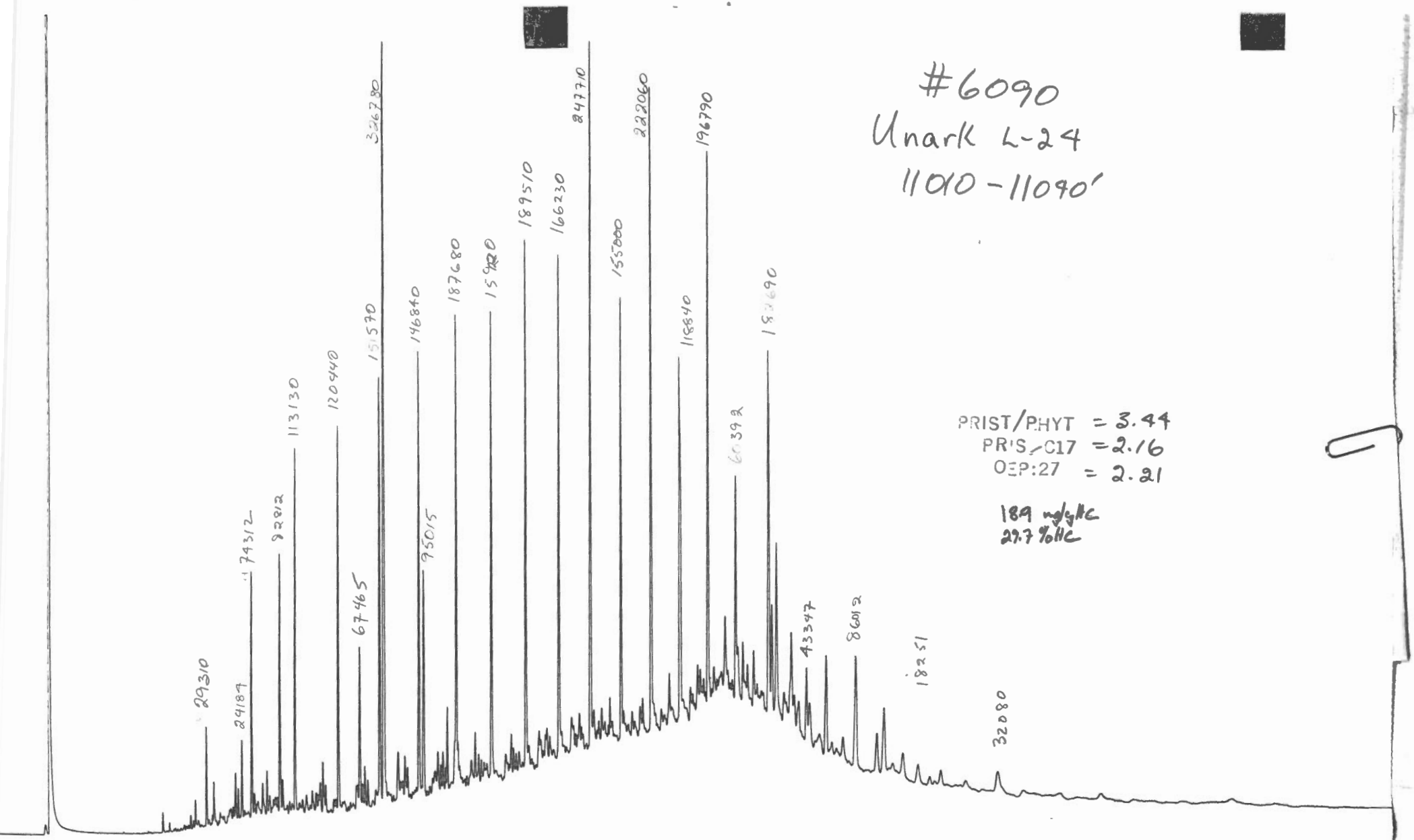


#2630
Unark L-24
10890-10950'

PRIST/PHYT = 2.95
PRIS/C17 = 2.07
OEP:27 = 1.85

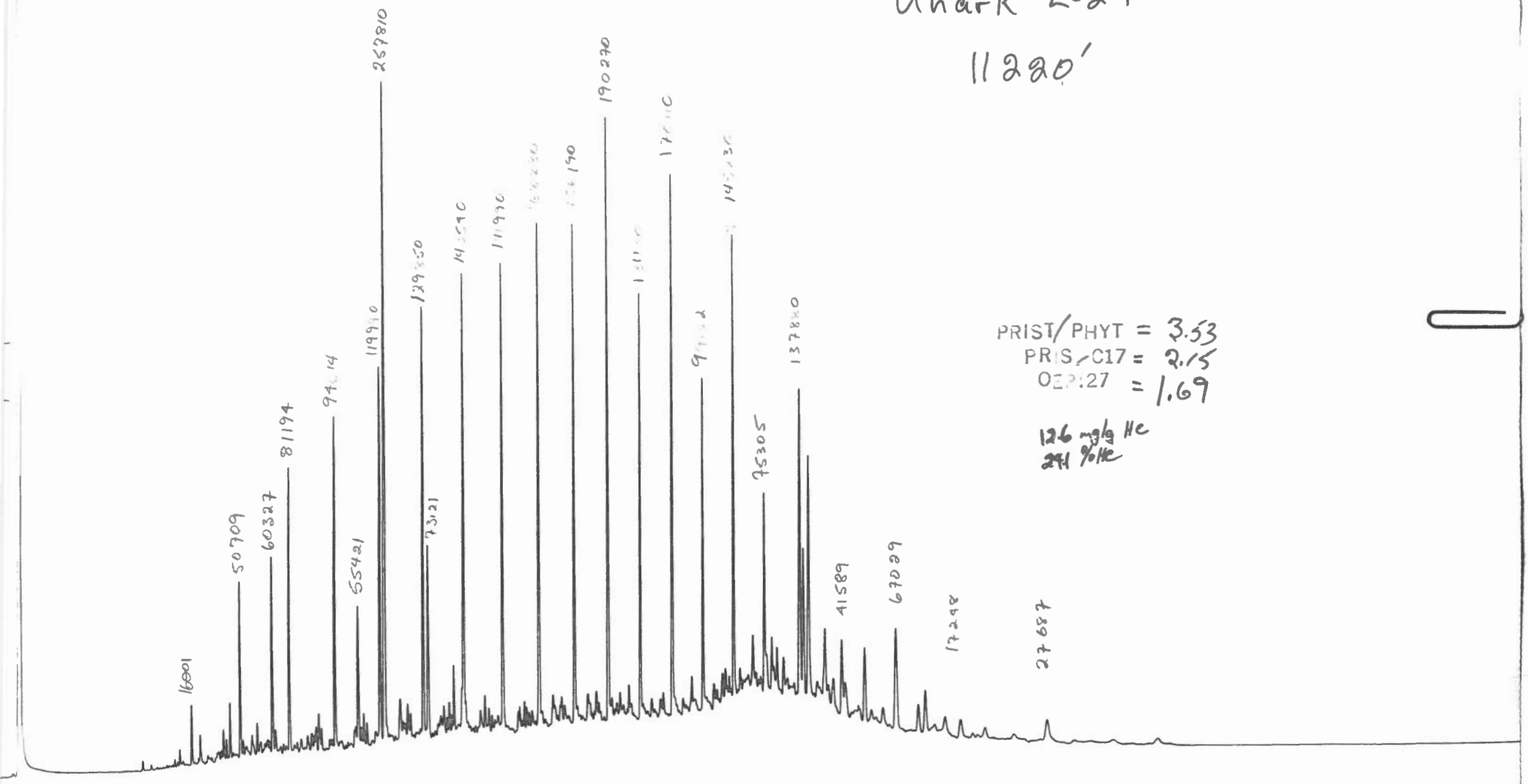
13.5 mg/g HC
38.7 % HC

ID-6-8488588


#6090
Unark L-24
11010 - 11090'
PRIST/PHYT = 3.44
PRIS/C17 = 2.16
OEP:27 = 2.21
189 mg/gHC
27.7 %HC
29310
24189
74312
92812
113130
120440
67465
326780
151570
146840
95015
187680
154920
189510
166230
84770
155000
222060
116840
196790
60392
183690
43347
86012
18251
32080

ID-6-8488758

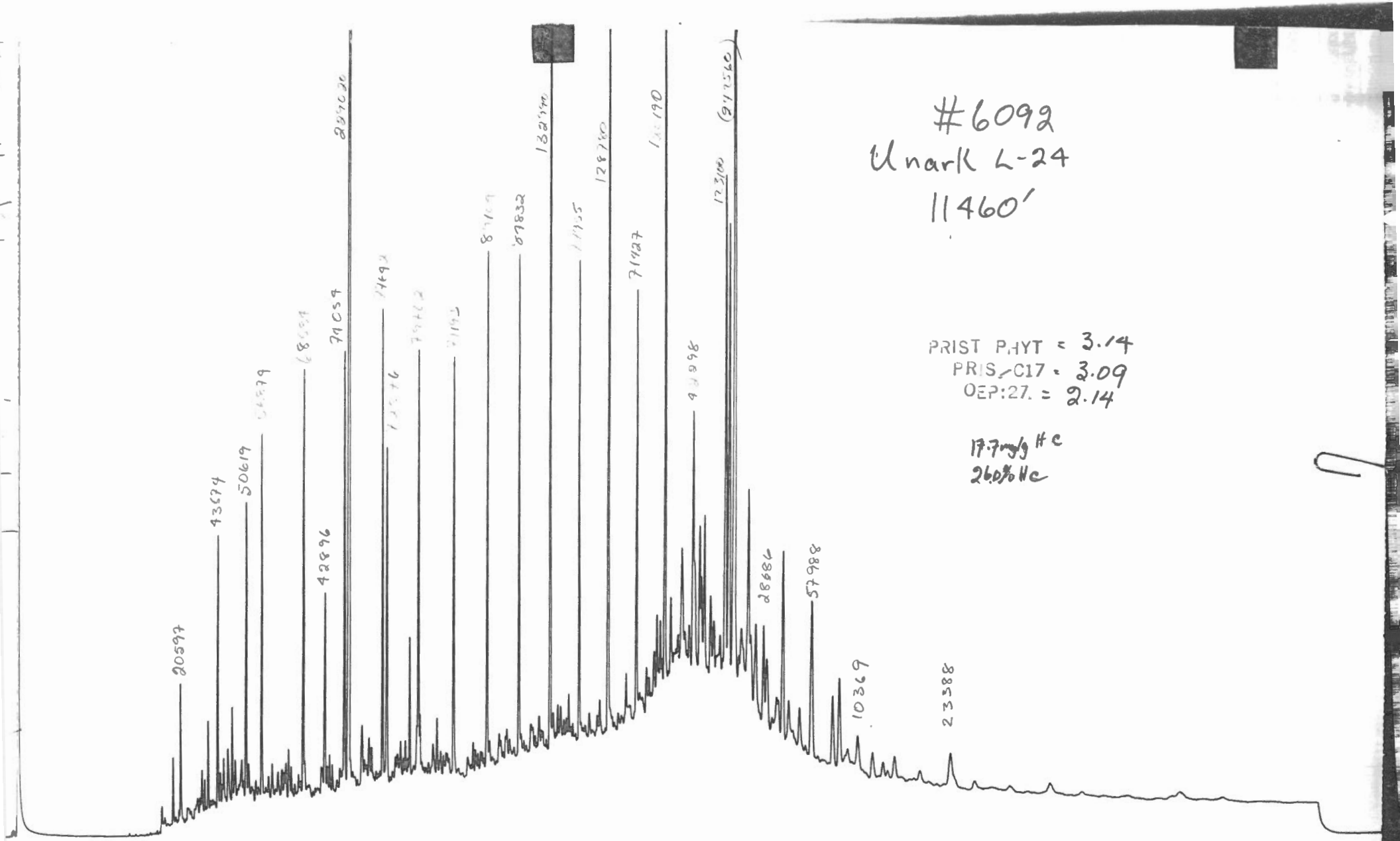
#6091
Unark L-24
11220'



PRIST/PHYT = 3.53
PRIS/C17 = 2.15
OEP:27 = 1.69

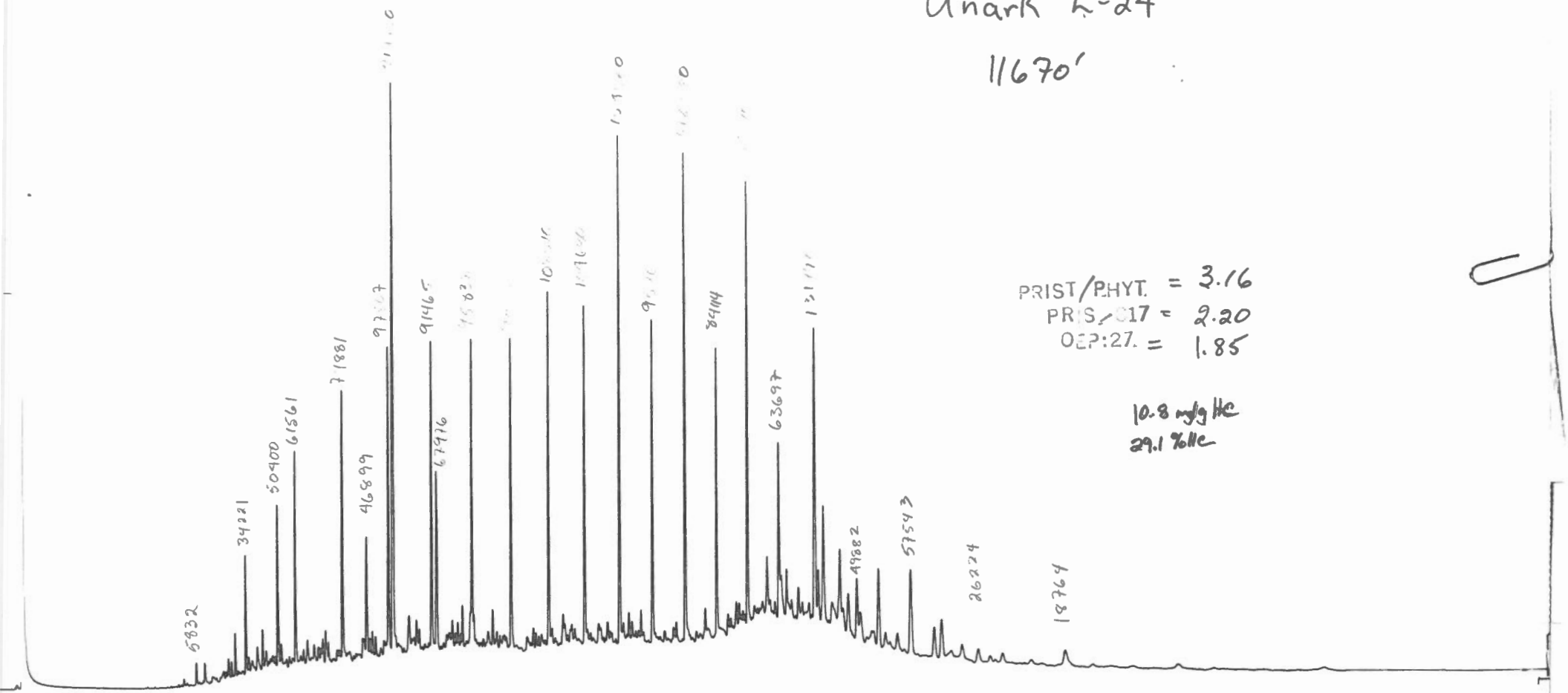
126 mg/g HC
29% %HC

ID-6-8488762


#6092
Unark L-24
11460'
PRIST PHYT = 3.14
PRIS/C17 = 3.09
OEP:27. = 2.14
17.7 mg/g HC
26.0% HC
20597
43674
50619
42896
79059
71927
123760
57988
28684
10369
23388

ID-6-8488764

#6093
Unark L-24
11670'



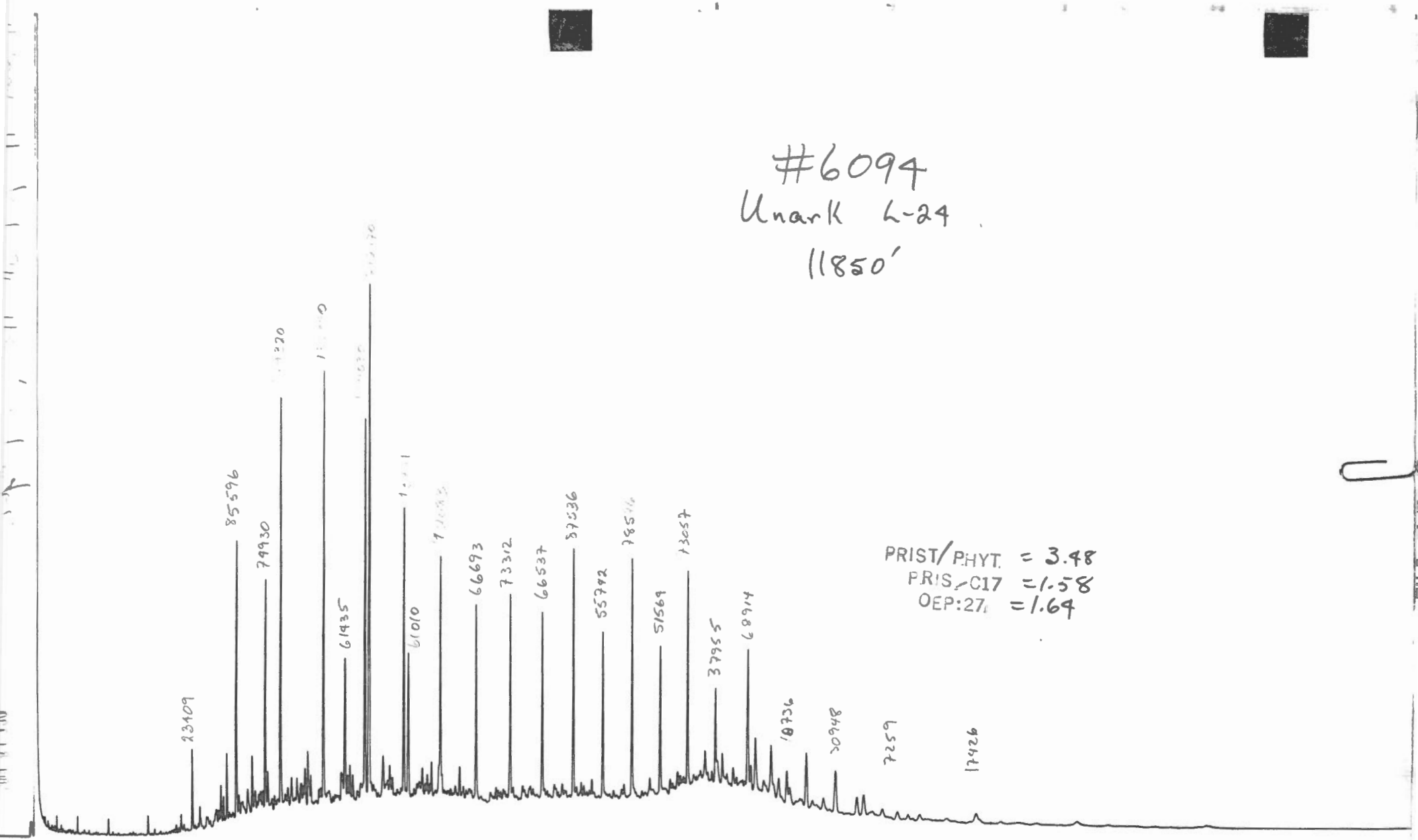
PRIST/PHYT. = 3.16
PRIS/C17 = 2.20
OEP:27. = 1.85

10.8 mg/g HC
29.1 %HC

ID-6-8488768

9/11

#6094
Unark L-24
11850'

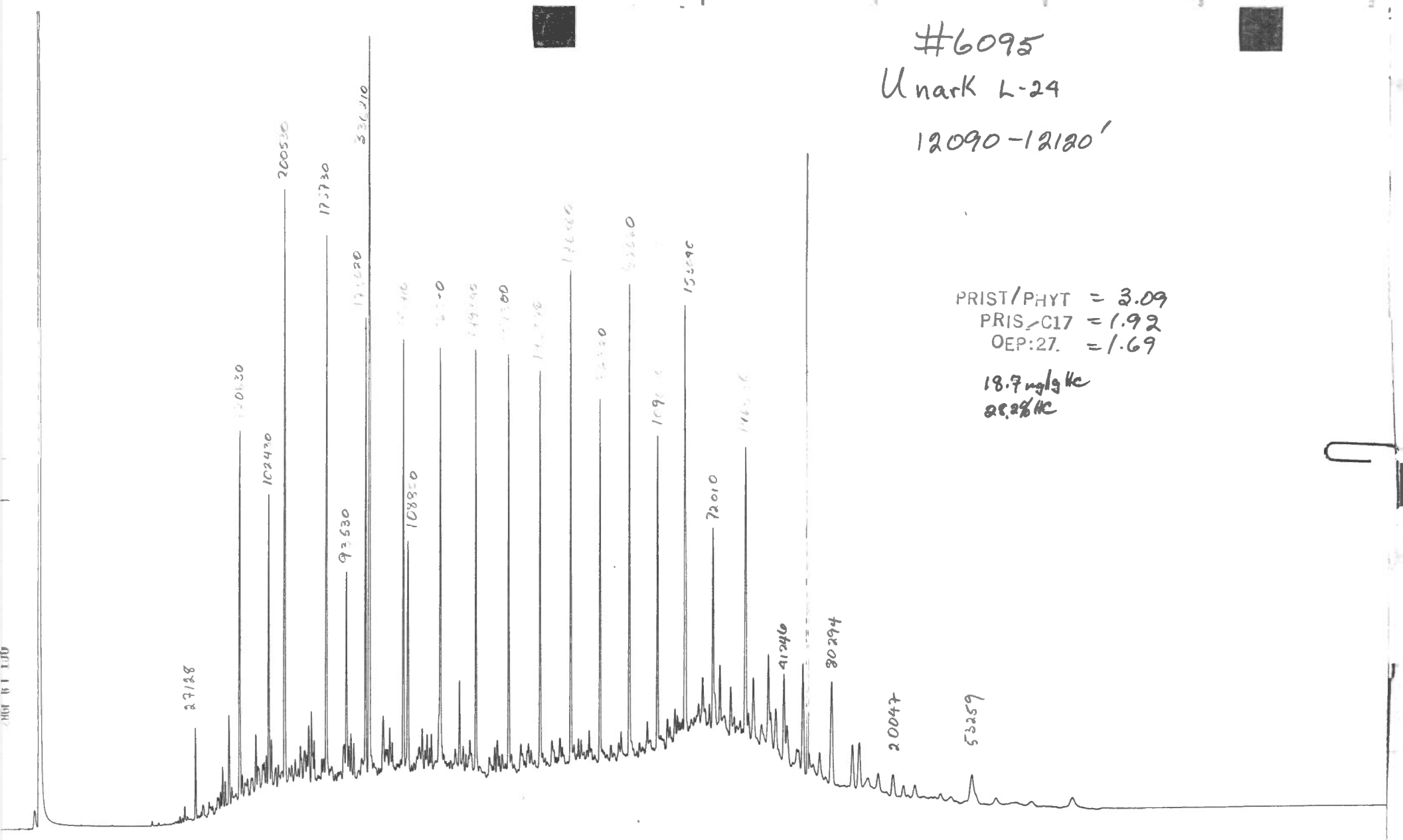


PRIST/PHYT. = 3.48
PRIS/C17 = 1.58
OEP:27 = 1.64

ID-6-8488776

911

#6095
Unark L-24
12090-12120'



PRIST/PHYT = 3.09
PRIS/C17 = 1.92
OEP:27 = 1.69

18.7 mg/g HC
26.2% HC

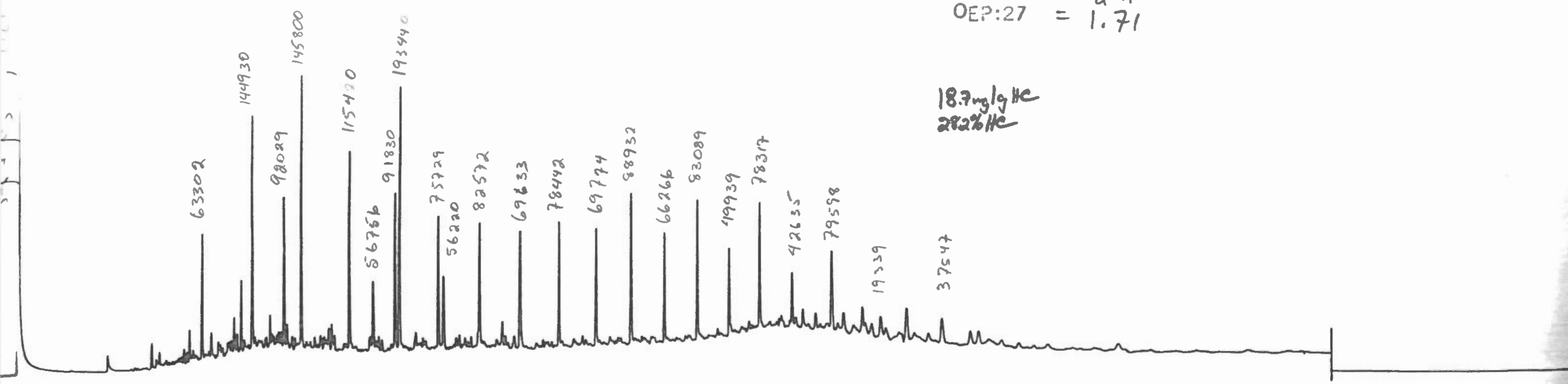
ID-6-8488778

117

#6095
Unark L-24
12090-12120'

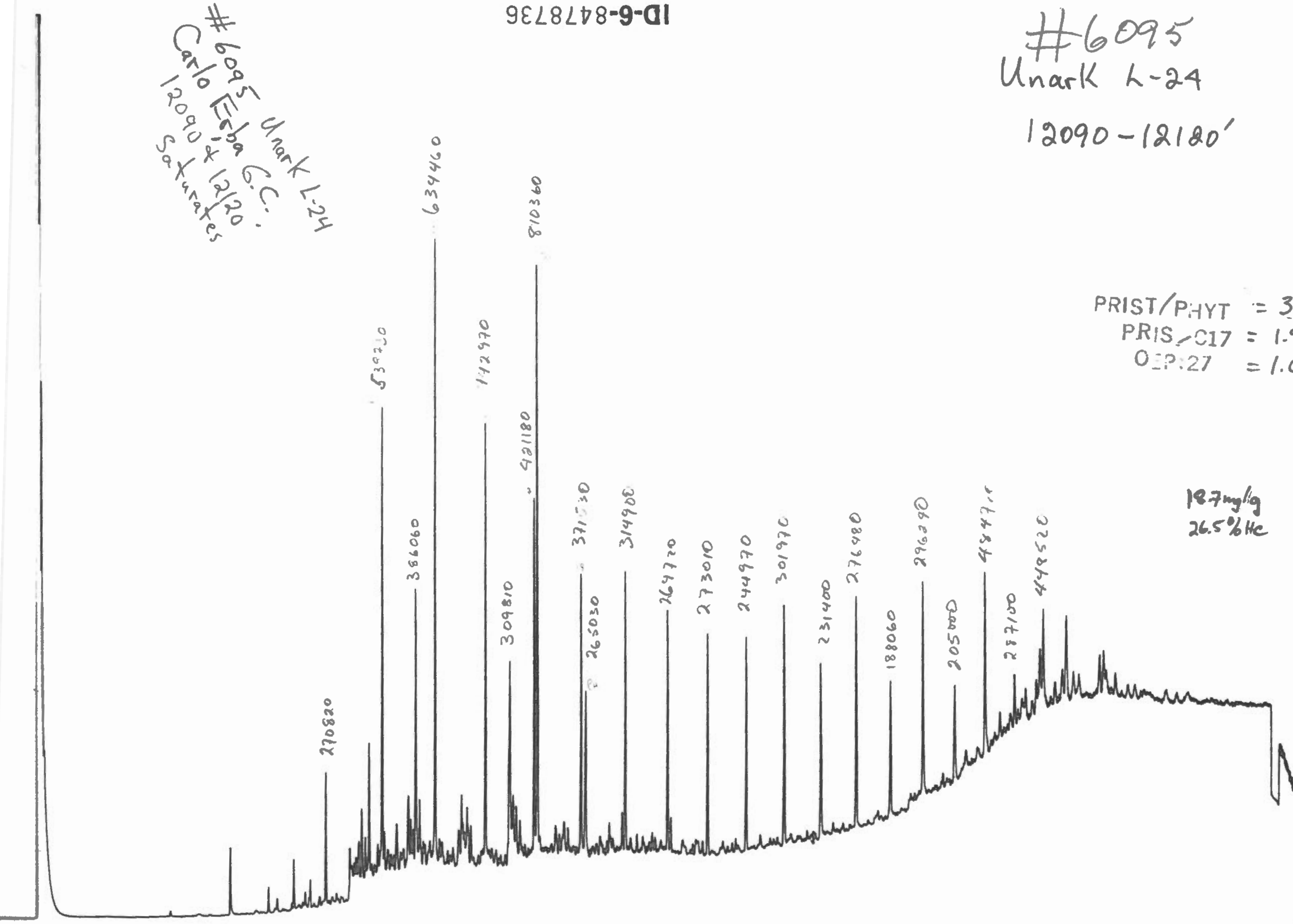
PRIST PHYT = 3.44
PRIS/C17 = 2.11
OEP:27 = 1.71

18.7mg/g HC
28.2% HC



#6095 Unark L-24
Carlo Erba G.C.
12090 & 12120
Saturates

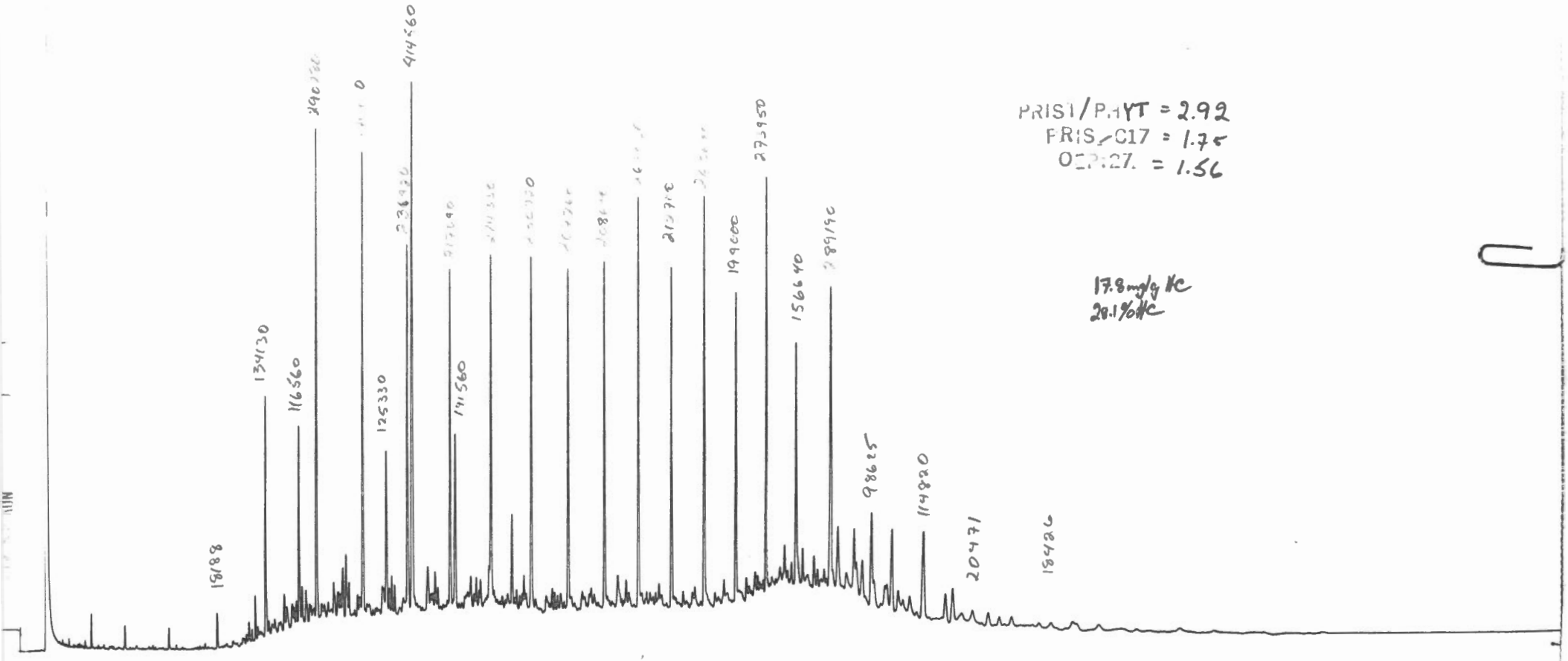
#6095
Unark L-24
12090-12120'



PRIST/PHYT = 3.06
PRIS/C17 = 1.92
OEP:27 = 1.61

18.7 mg/g
26.5% HC

#2631
Unark L-24
12,150 - 12,220'



ID-6-8488590

Fig 121

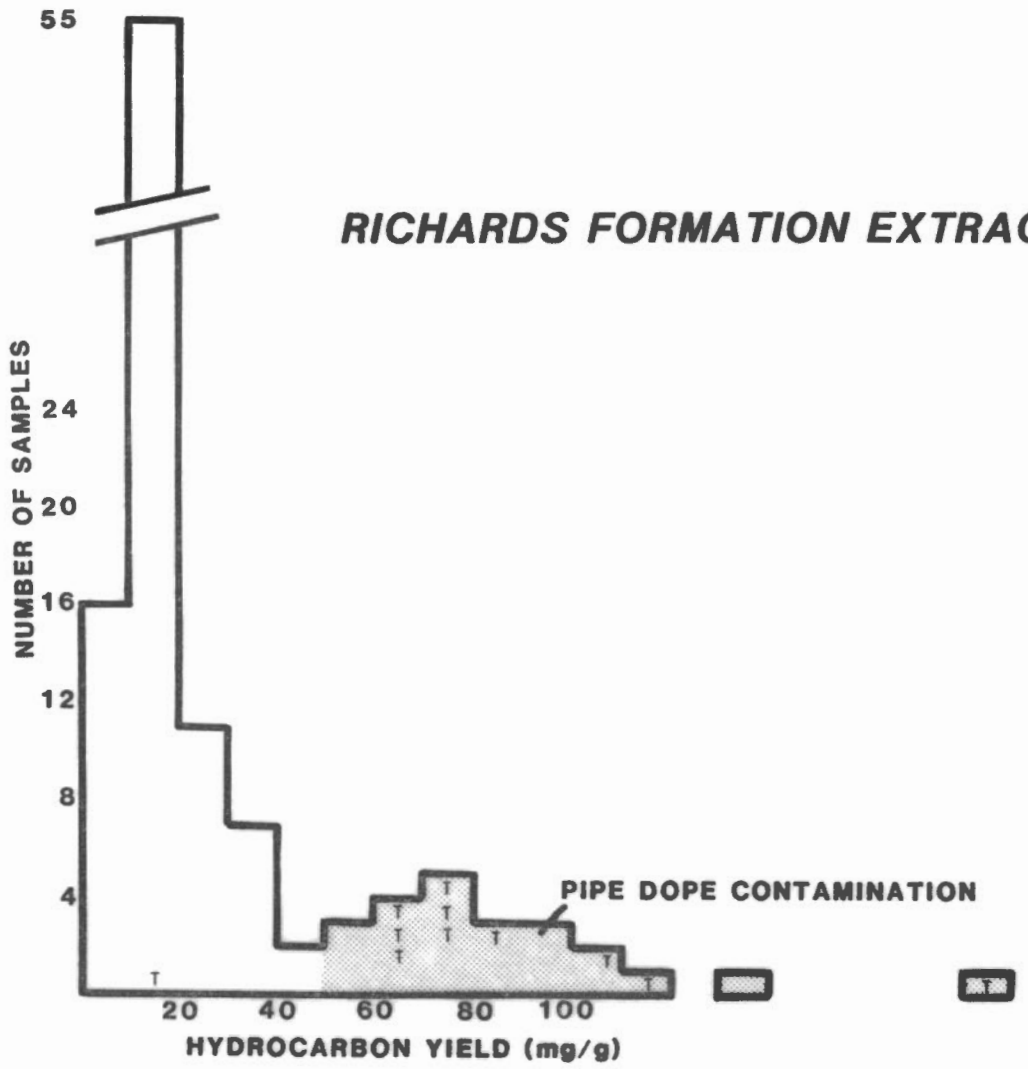

RICHARDS FORMATION EXTRACTS
NUMBER OF SAMPLES
55
24
20
16
12
8
4
PIPE DOPE CONTAMINATION
20
40
60
80
100
HYDROCARBON YIELD (mg/g)

TABLE 1

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
ADGO P-25	850	850	.25	118.6	48.2	40.6	55.8	24.9	15.7	66.4	19.7	4.9	3.1	7.9	3.1		.65	6079	RICHARDS	
	896	896	.97	23.3	7.6	32.6	63.8	18.4	14.2	62.3	14.1	2.6	2.0	6.7	2.3	1.3	.71	6080	RICHARDS	
	932	932	.32	231.0	68.0	29.4	68.2	18.8	10.7	63.4	46.9	8.8	5.0	13.4	18.6	1.0		6081	RICHARDS	
	969	969	.32	123.4	35.4	28.7	68.6	18.4	10.2	74.2	29.3	5.4	3.0	7.1	13.0	1.1		6082	RICHARDS	
	1005	1005	.25	107.0	39.4	36.8	60.1	22.7	14.1	60.9	16.3	3.7	2.3	6.9	2.9	1.2	.67	6083	RICHARDS	
AVERAGES			.42		39.70	33.6										.94				

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
ARNAK L-30	2980	2990	1.20	63.6	25.5	40.0	56.4	24.8	15.2	67.1	51.2	12.7	7.8	13.5	15.4	2.3	.76	6055	RICHARDS	
	3127	3145	1.28	57.8	14.9	25.8	73.5	12.2	13.5	52.9	39.2	4.8	5.3	11.8	17.0	2.3	.75	6056	RICHARDS	
	3191	3218	1.28	56.3	17.7	31.4	60.8	20.5	10.9	124.0	89.7	18.4	9.8	10.3	41.1	2.1		5204	RICHARDS	
	3273	3282	1.31	50.9	13.8	27.1	69.2	13.5	13.5	52.0	34.7	4.7	4.7	7.6	16.4	2.3	.73	6057	RICHARDS	
	3438	3447	1.30	45.9	9.4	20.5	75.7	9.5	11.0	74.4	44.4	4.2	4.9	7.7	25.9		.72	6058	RICHARDS	
	3575	3584	1.06	73.4	27.6	37.6	59.1	22.1	15.5	68.8	53.5	11.8	8.3	7.4	24.2	3.1	.77	6059	RICHARDS	
	3593	3602	1.14	57.6	17.1	29.7	52.8	20.4	9.3	120.0	78.8	16.1	7.3	7.4	31.8	2.8		5205	RICHARDS	
	3694	3703	1.46	59.5	14.7	24.7	72.2	11.0	13.7	64.7	56.2	6.2	7.7	7.8	32.8	3.2	.72	6060	RICHARDS	
	3831	3831	1.11	63.3	16.5	26.0	71.5	12.0	14.0	57.9	40.7	4.9	5.7	6.9	22.2	2.8	.73	6061	RICHARDS	
	3913	3922	1.13	54.4	19.1	35.2	59.2	21.8	13.4	139.0	85.3	18.6	11.4	8.5	39.1	3.7		5206	RICHARDS	
	3977	3995	1.74	125.4	90.3	72.0	26.1	54.7	17.3	91.9	200.7	109.7	34.8	29.4	22.9		.79	6062	RICHARDS	
	4169	4178	2.08	95.6	57.0	59.6	40.2	42.6	17.0	77.1	153.4	65.3	26.1	17.8	43.8		.80	6063	RICHARDS	
	4288	4297	2.72	36.2	16.4	45.1	54.3	29.5	15.7	78.4	77.3	22.8	12.1	7.3	34.7	3.7	.77	6064	RICHARDS	
	4434	4444	1.38	61.9	17.0	27.5	71.6	14.9	12.6	69.8	59.6	8.9	7.5	5.4	37.3	4.6	.72	6065	RICHARDS	
	4453	4462	1.15	71.8	28.0	39.0	54.2	26.2	12.9	140.0	115.8	30.3	14.9	10.0	50.5	4.1		5207	RICHARDS	
	4508	4517	.90	83.8	33.1	39.6	58.6	23.1	16.5	66.0	49.8	11.5	8.2	8.7	20.5	3.9	.74	6066	RICHARDS	
AVERAGES			1.39		26.10	36.3										2.59				

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
KUMAK C-58	984	1002	1.21	40.1	12.6	31.4	68.7	13.4	17.9	72.0	35.0							1112	RICHARDS	
AVERAGES			1.21		12.60	31.4														
J-06	964																	5430	RICHARDS	
	970																	5431	RICHARDS	
AVERAGES																				

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
ELLICE 014	545	546																1093	RICHARDS	.49
	550	551																1094	RICHARDS	.35
	551		2.15	86.6	22.5	26.0	74.0	16.1	9.9	150.0	279.0							1084	RICHARDS	
AVERAGES			.71		7.50	8.6														

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
NETSERK B-44	1636	1655	.92	49.7	20.9	42.0	58.0	14.9	22.1	112.0	51.0							1039	RICHARDS	
	1956	1966	1.16	51.2	19.7	38.5	59.7	24.2	14.3	56.3	33.5	8.1	4.8	8.5	11.5	2.0	.63	6031	RICHARDS	
	2075	2084	1.26	49.6	17.8	35.9	62.5	21.2	14.7	59.6	37.3	7.9	5.5	13.6	9.7	1.3	.70	6032	RICHARDS	
	2222	2231	1.20	37.6	14.4	38.2	59.9	22.0	16.2	69.6	31.4	6.9	5.1	7.4	11.4	1.8	.72	6033	RICHARDS	
	2331	2340	1.23	53.7	10.8	20.1	78.8	9.1	11.0	73.0	48.2	4.4	5.3	8.1	29.9	.8	.72	6034	RICHARDS	
	2423	2432	1.45	105.9	19.4	18.4	80.8	9.4	8.9	68.4	105.1	9.9	9.4	16.1	68.8	.9	.74	6035	RICHARDS	
	2523	2532	1.36	173.1	82.7	47.8	51.2	34.8	13.0	71.4	168.3	58.5	21.9	17.9	68.2		.77	6036	RICHARDS	
	2542	2551	1.41	91.7	18.7	20.4	78.9	10.6	9.8	73.2	94.7	10.0	9.3	8.7	66.0	.8	.72	6037	RICHARDS-LVZ	
	2578	2587	1.65	64.8	11.9	18.4	79.7	7.3	11.1	65.5	70.0	5.1	7.8	9.0	46.8	.8	.72	6038	RICHARDS-LVZ	
	2606	2615	1.57	64.8	10.9	16.8	82.1	7.0	9.9	63.6	64.7	4.5	6.4	8.1	45.0	.9	.75	6039	RICHARDS-LVZ	
	2633	2642	1.83	68.4	11.6	16.9	82.3	6.3	10.6	60.4	75.6	4.8	8.0	7.7	54.5	.9	.75	6040	RICHARDS-LVZ	
	2670	2679	1.63	66.7	14.0	21.0	77.6	9.2	11.8	54.7	59.5	5.5	7.0	4.9	41.3	.8	.74	6041	RICHARDS-LVZ	
	2706	2715	1.70	87.0	26.6	30.6	68.8	17.9	12.6	66.3	98.1	17.6	12.4	15.2	52.3	.9	.74	6042	RICHARDS-LVZ	
AVERAGES			1.41		21.40	28.0										.95				
F-40	2432	2450	1.13	41.1	14.2	34.6	64.2	19.8	14.8	55.2	25.7	5.1	3.8	12.9	3.6		.70	6019	RICHARDS	
	2487	2505	1.60	36.3	9.8	27.0	72.7	10.8	16.3	115.0	67.0	7.2	10.9	16.7	32.0	1.6	.72	5066	RICHARDS	
	2587	2596	1.12	44.3	13.0	29.4	69.0	16.9	12.5	51.4	25.5	4.3	3.2	10.7	6.9	1.5	.67	6020	RICHARDS	
	2743	2752	1.55	37.8	14.5	38.5	62.2	23.9	14.6	128.0	74.9	17.9	10.9	16.1	30.5	1.8	.69	5067	RICHARDS	
	2743	2761	1.05	39.1	14.1	36.2	63.0	19.9	16.3	59.9	24.6	4.9	4.0	9.1	6.4	2.2	.69	6021	RICHARDS	
	2907	2916	1.08	43.0	15.8	36.8	62.3	21.2	15.6	45.6	21.2	4.5	3.3	7.3	5.9	2.3	.68	6022	RICHARDS	
	2980	2990	1.63	36.0	10.7	29.7	68.0	11.8	17.9	149.0	87.3	10.3	15.6	15.8	43.6	2.7	.72	5068	RICHARDS	
	3072	3081	1.03	38.7	13.2	34.2	64.2	17.6	16.6	46.9	18.7	3.3	3.1	8.6	3.4	2.6	.74	6023	RICHARDS	
	3237	3246	2.37	34.9	13.4	38.5	60.0	27.3	11.3	81.6	67.5	18.4	7.6	15.6	24.9	2.0	1.02	6024	RICHARDS	
	3401	3401	.58	125.5	45.4	36.2	62.7	19.7	16.5	60.0	43.7	8.6	7.2	12.0	15.4	3.5	.83	6025	RICHARDS	
	3465	3465	1.03	85.8	26.2	30.5	68.3	14.2	16.3	54.2	47.9	6.8	7.8	11.0	21.7	4.1	.73	6026	RICHARDS	
	3474	3483	1.15	36.0	14.7	40.7	55.6	19.1	21.8	157.0	64.9	12.4	14.0	11.6	24.5	3.7	.72	5069	RICHARDS	
	3557	3557	.84	105.9	31.2	29.5	68.7	14.2	15.2	55.3	49.2	7.0	7.5	12.0	21.8	3.9	.73	6027	RICHARDS	
	3630	3630	1.17	187.9	107.4	57.2	42.1	35.7	21.4	62.0	136.3	48.7	29.2	16.8	40.6	1.6	.76	6028	RICHARDS-LVZ	
	3657	3666	1.94	44.4	15.5	34.8	59.8	12.7	22.1	149.0	128.4	16.3	28.4	26.3	50.5	1.8	.73	5070	RICHARDS-LVZ	
	3685	3685	.73	160.1	57.1	35.6	63.4	16.7	18.9	77.7	90.9	15.2	17.2	11.6	46.0	1.9	.76	6029	RICHARDS-LVZ	
	3749	3758	2.34	46.9	17.6	37.6	62.2	15.0	22.6	130.0	142.7	21.4	32.3	22.0	66.9	1.8		5071	RICHARDS-LVZ	
AVERAGES			1.31		25.50	35.7										2.34				

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
NIGLINTGAK M-19	612	630	1.26	30.3	4.5	14.8	62.1	5.7	8.3	110.0	41.9	2.4	3.8	10.8	15.2	.5	.75	5257	RICHARDS	
																.58				
AVERAGES			1.26		4.50	14.8														

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
PELLY B-35	2478	2487	1.53	55.7	14.4	25.9	67.3	12.2	13.6	59.8	55.7	6.8	7.6	12.2	25.3	1.6	.82	6067	RICHARDS	
	2551	2560	1.00	31.2	12.0	38.5	54.2	22.8	15.7	54.2	31.2	7.1	4.9	7.5	9.4	1.7	.75	6068	RICHARDS	
	2633	2642	1.59	58.3	26.0	44.6	49.2	31.4	13.2	61.0	58.3	18.3	7.7	12.2	16.5	2.2	.68	6069	RICHARDS	
	2706		1.42	105.7	58.3	55.2	38.1	39.4	15.8	59.1	105.7	41.6	16.7	17.6	22.7	1.9	.83	6070	RICHARDS	
	2788	2798	1.25	122.8	75.1	61.2	34.9	44.9	16.3	58.0	122.8	55.1	20.0	21.1	21.7		.66	6071	RICHARDS	
	2871	2880	.84	36.0	13.5	37.5	57.2	23.3	14.2	60.4	36.0	8.4	5.1	6.4	14.2	1.6	.66	6072	RICHARDS	
	2935	2944	.98	36.8	11.3	30.7	63.6	12.8	17.9	60.8	36.8	4.7	6.6	7.7	15.7	1.7	.59	6073	RICHARDS	
	3026	3035	1.42	38.9	10.8	27.8	67.1	14.4	13.4	61.0	38.9	5.6	5.2	6.9	19.2	2.3	.63	6074	RICHARDS	
	3109	3118	4.00	58.5	19.6	33.5	61.5	19.8	13.7	63.4	58.5	11.6	8.0	11.7	24.3	2.1	.73	6075	RICHARDS	
	3182	3191	2.20	39.2	10.3	26.3	68.4	13.8	12.5	66.9	39.2	5.4	4.9	7.1	19.7	2.4	.73	6076	RICHARDS	
	3255	3264	3.00	236.4	136.7	57.8	40.2	39.1	18.7	64.1	236.4	92.5	44.2	47.6	47.5		.69	6077	RICHARDS	
	3310	3319	2.40	57.0	18.3	32.1	65.8	15.8	16.3	60.8	57.0	9.0	9.3	8.6	28.9	3.1	.75	6078	RICHARDS	
AVERAGES			1.80		33.80	39.2										1.74				

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
TAGLU D-55	2898	2898	.94	64.5	21.7	33.7	66.0	18.7	15.0	197.0	119.4	22.3	17.9	32.7	46.1	2.5		5471	RICHARDS	
AVERAGES			.94		21.70	33.7										2.54				
F-43	1524																	1062	RICHARDS	.38
	1679																	1063	RICHARDS	.38
	1822																	1064	RICHARDS	.40
	2005																	1065	RICHARDS	
	2094	2087	1.39	92.6	34.9	37.7	62.3	19.7	18.1	201.0	259.0							1045	RICHARDS	
	2112																	1066	RICHARDS	.43
	2365																	1067	RICHARDS	
	2438																	1068	RICHARDS	.46
AVERAGES			.17		4.30	4.7														
G-33	1642	1642	.98	48.2	31.0	64.2	34.4	51.1	13.1	139.0	65.7	33.6	8.6	17.4	5.2			2586	RICHARDS	
	1906	1906	.51	145.5	71.7	49.3	21.5	37.5	11.8	157.0	116.5	43.7	13.7	11.6	13.4	1.3		2587	RICHARDS	
	2075	2075	.76	44.6	18.1	40.6	57.9	30.7	9.9	140.0	47.5	14.6	4.7	12.1	15.4	1.4		2588	RICHARDS	
	2279	2279	.79	29.1	7.2	24.8	73.8	13.0	11.8	151.0	34.7	4.5	4.1	10.5	15.1	1.4		2589	RICHARDS	
	2462	2462	1.93	13.8	3.9	27.9	72.1	14.5	13.5	148.0	39.4	5.7	5.3	10.9	17.5	.7		2590	RICHARDS	
AVERAGES			.99		26.30	41.3										.98				

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
TARSIUT A-25	1920	1920	.37	218.7	64.7	29.6	60.4	19.8	9.8	56.8	46.0	9.1	4.5	12.7	15.1	3.3	.68	6043	RICHARDS	
	1960	1960	.33	194.3	32.0	16.4	77.4	8.6	7.8	57.8	37.1	3.2	2.9	11.6	17.1	1.7	.66	6044	RICHARDS	
	2080	2080	.46	216.0	70.6	32.7	60.2	26.0	6.7	63.4	63.0	16.4	4.2	15.6	22.3		.67	6045	RICHARDS	
	2160	2160	.39	244.0	69.8	28.6	65.3	21.1	7.5	59.9	57.0	12.0	4.3	14.8	22.4		.61	6046	RICHARDS	
	2200	2200	.46	241.5	103.3	42.8	51.0	36.7	6.1	66.7	74.1	27.2	4.5	15.6	22.2		.63	6047	RICHARDS	
	2240	2240	.42	436.0	260.2	59.7	34.6	52.5	7.2	61.2	112.1	58.8	8.1	24.3	14.5		.66	6048	RICHARDS	
	2280	2280	.40	328.1	187.4	57.1	38.5	48.3	8.8	57.7	75.8	36.6	6.7	14.7	14.5		.66	6049	RICHARDS-LVZ	
	2320	2320	.48	267.6	113.6	42.4	54.3	34.3	8.1	59.2	76.1	26.1	6.2	16.4	24.9		.66	6050	RICHARDS-LVZ	
	2360	2360	.33	194.3	72.2	37.2	60.0	27.2	9.9	78.4	50.3	13.7	5.0	14.6	15.6		.65	6051	RICHARDS-LVZ	
	2400	2440	3.28	40.8	14.3	34.9	56.3	17.2	17.8	37.4	50.1	8.6	8.9	8.1	20.1	3.3	.73	5628	RICHARDS-LVZ	
	2480	2480	.73	217.7	78.0	35.8	60.9	22.5	13.3	68.1	108.3	24.4	14.4	17.7	48.3	3.3	.63	6052	RICHARDS-LVZ	
	2520	2520	.46	203.8	61.2	30.0	65.9	20.9	9.1	68.9	64.6	13.5	5.9	12.6	30.0	3.2	.70	6053	RICHARDS-LVZ	
	2560	2560	.42	332.7	88.5	26.6	72.3	18.6	8.0	60.5	84.6	15.7	6.8	10.2	51.0	2.1	.74	6054	RICHARDS-LVZ	
AVERAGES			.65		93.50	36.4										~~1.71~~				

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
TOAPOLOK O-54	344	344	.87	172.0	99.8	58.0	37.7	39.6	18.4	60.6	90.7	35.9	16.7	15.5	18.7			6102	RICHARDS	
	399	399	1.00	69.8	23.6	33.8	62.2	20.1	13.7	69.0	48.2	9.7	6.6	9.7	20.3	1.4		6103	RICHARDS	
	445	445	.42	388.9	11.7	3.0	95.8	1.6	1.4	83.5	136.4	2.2	1.9	3.2	127.5	1.0		6104	RICHARDS	
	481	481	.95	460.2	5.0	1.1	98.8	.6	.5	84.6	370.1	2.1	1.9	1.8	363.7	1.2		6105	RICHARDS	
	536	536	.97	369.2	6.1	1.7	98.1	.6	1.0	79.3	284.0	1.8	2.9	3.8	274.9	1.5		6106	RICHARDS	
	591	591	.82	34.0	6.4	18.9	78.9	10.5	8.4	68.1	19.0	2.0	1.6	6.8	8.2	1.4		6107	RICHARDS	
	646	646	.99	593.2	1.3	.2	99.6	.1	.1	71.7	421.1	.5	.4	1.6	417.9	1.4		6108	RICHARDS	
	673	710	.59	34.9	12.7	36.5	37.2	20.6	15.9	135.0	27.7	5.7	4.4	6.2	4.1	.4	.75	5247	RICHARDS	
	728	728	.80	41.3	7.1	17.2	79.9	10.5	6.7	72.3	23.9	2.5	1.6	8.0	11.1	1.2		6109	RICHARDS	
	746	746	.97	51.9	6.5	12.5	84.5	6.9	5.7	66.5	33.5	2.3	1.9	6.1	22.2	1.4		6110	RICHARDS	
	801	801	1.20	480.7	5.7	1.2	98.3	.6	.6	79.8	460.3	2.9	2.6	5.5	447.2	1.0		6111	RICHARDS-LVZ	
	838	838	.77	752.4	1.7	.2	99.6	.1	.1	75.9	440.1	.5	.5	2.1	436.1			6112	RICHARDS-LVZ	
AVERAGES			.86		15.60	15.3										1.02				

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
UMIAK N-10	1892	1920	1.24	24.8	4.0	16.3	82.3	15.3	1.0	66.0	20.3	3.1	.2	9.2	7.5	.5		5299	RICHARDS	
	2286	2313	3.04	35.2	5.9	16.8	77.2	6.8	9.9	115.0	123.0	8.4	12.2	25.9	69.1			5312	RICHARDS	
	2569	2578	1.28	66.8	16.5	24.8	64.3	14.3	10.4	111.0	94.9	13.6	9.9	20.7	40.3	2.0		5313	RICHARDS	
	2807	2816	1.60	190.6	99.3	52.1	41.5	36.0	16.1	116.0	353.7	127.3	57.0	66.4	80.3	1.0		5314	RICHARDS	
AVERAGES			1.79		31.40	27.5										.89				

WELL NAME	DEPTH	RANGE(M)	%TOC	EXT YLD	HC YLD	%HC	%R+A	%SAT	%ARO	ROCK WT-g	EXT (mg)	SATS (mg)	AROM (mg)	NSO (mg)	ASPH (mg)	PR/PH	H/C	SPL #	FORMATION	Ro
UNARK L-24	2953	2962	1.26	49.3	15.7	31.9	66.3	22.0	9.9	63.6	39.5	8.7	3.9	7.5	18.7	2.1	.69	6084	RICHARDS	
	2990	3008	1.05	36.0	17.3	48.0	51.6	29.6	18.4	203.0	76.7	22.7	14.1	16.1	23.5	2.1	.68	2629	RICHARDS	
	3017	3017	1.36	54.3	19.5	35.9	62.4	22.3	13.6	64.8	47.9	10.7	6.5	9.3	20.6	2.2	.69	6085	RICHARDS	
	3099	3099	1.94	31.3	8.8	28.2	69.7	14.9	13.3	69.6	42.2	6.3	5.6	8.2	21.2	2.1	.70	6086	RICHARDS	
	3154	3154	1.37	59.4	12.0	20.3	78.2	10.6	9.7	64.9	52.8	5.6	5.1	8.2	33.1	2.5	.70	6087	RICHARDS	
	3218	3218	1.46	61.2	15.5	25.4	72.9	13.2	12.2	64.4	57.5	7.6	7.0	9.8	32.1	2.9	.75	6088	RICHARDS	
	3301	3301	2.17	154.9	87.6	56.6	41.1	39.7	16.8	63.2	212.5	84.4	35.8	37.8	49.5	2.3	.86	6089	RICHARDS	
	3319	3337	1.21	34.9	13.5	38.7	61.2	18.9	19.8	211.0	89.0	16.8	17.6	19.4	35.1	2.9		2630	RICHARDS	
	3355	3365	1.81	63.7	18.9	29.7	69.0	15.7	14.0	60.8	70.1	11.0	9.8	9.4	39.0	3.4	.80	6090	RICHARDS	
	3419	3419	2.00	52.0	12.5	24.1	74.0	12.7	11.4	62.5	65.1	8.3	7.4	10.2	38.0	3.5	.74	6091	RICHARDS	
	3493	3493	1.53	68.0	17.7	26.0	72.7	11.6	14.4	60.3	62.7	7.3	9.0	8.5	37.1	3.1	.72	6092	RICHARDS	
	3557	3557	1.31	37.1	10.8	29.1	68.7	11.8	17.3	66.4	32.3	3.8	5.6	5.6	16.6	3.1	.77	6093	RICHARDS	
	3611	3611	1.81	45.7	14.3	31.3	66.9	15.5	15.7	60.6	50.2	7.8	7.9	6.8	26.8	3.4	.74	6094	RICHARDS	
	3685	3694	1.77	70.7	18.7	26.5	72.0	12.5	14.0	60.6	75.8	9.5	10.6	10.9	43.7	3.0	.75	6095	RICHARDS	
	3703	3721	1.46	63.0	17.8	28.2	70.7	11.2	17.0	147.0	135.3	15.1	23.0	37.2	58.4	2.9	.76	2631	RICHARDS	
AVERAGES			1.56		20.00	31.9										2.82				