

FIGURE 1

HYDROCARBON WEIGHT DISTRIBUTION

7000-85-2-2

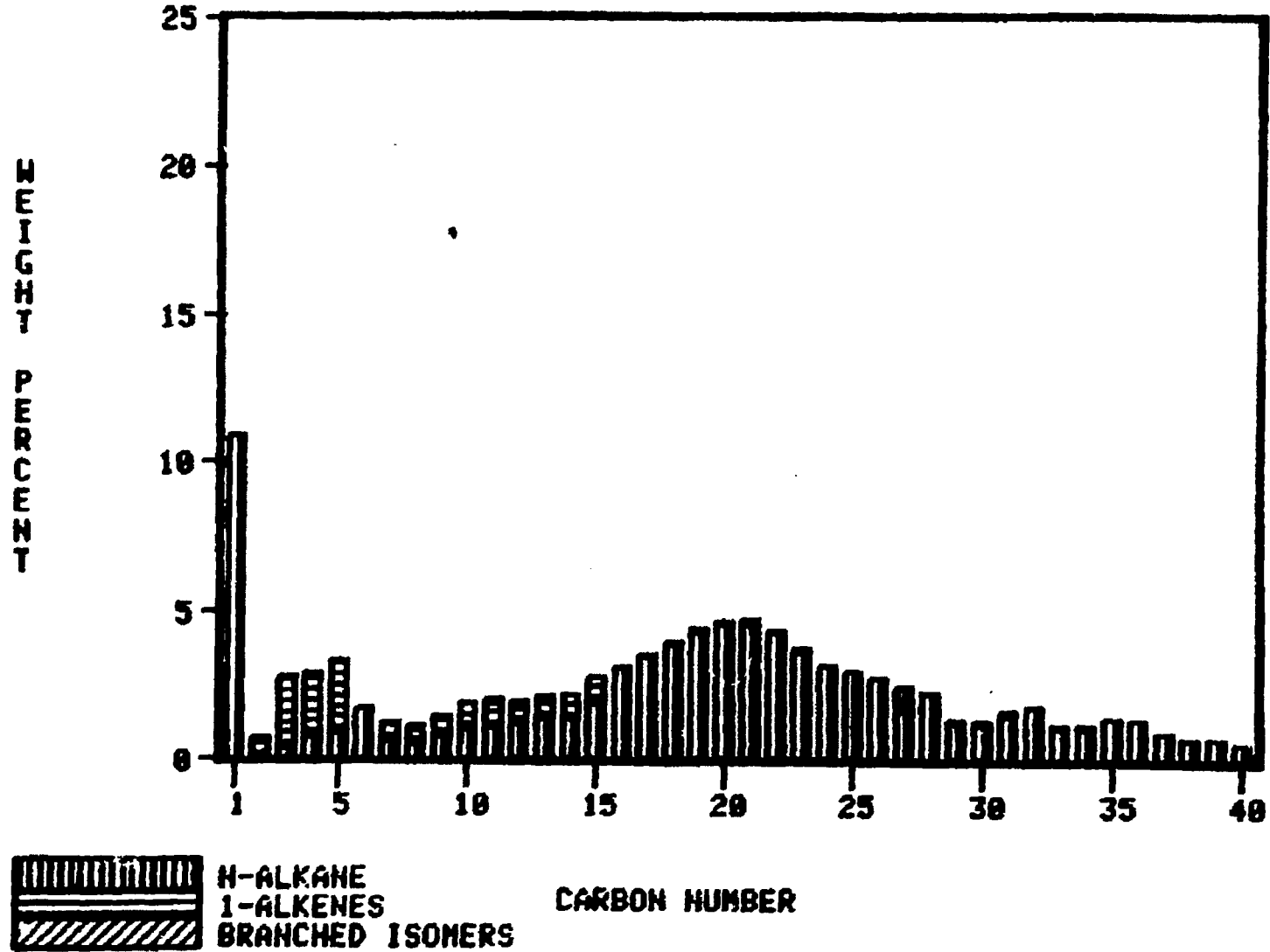
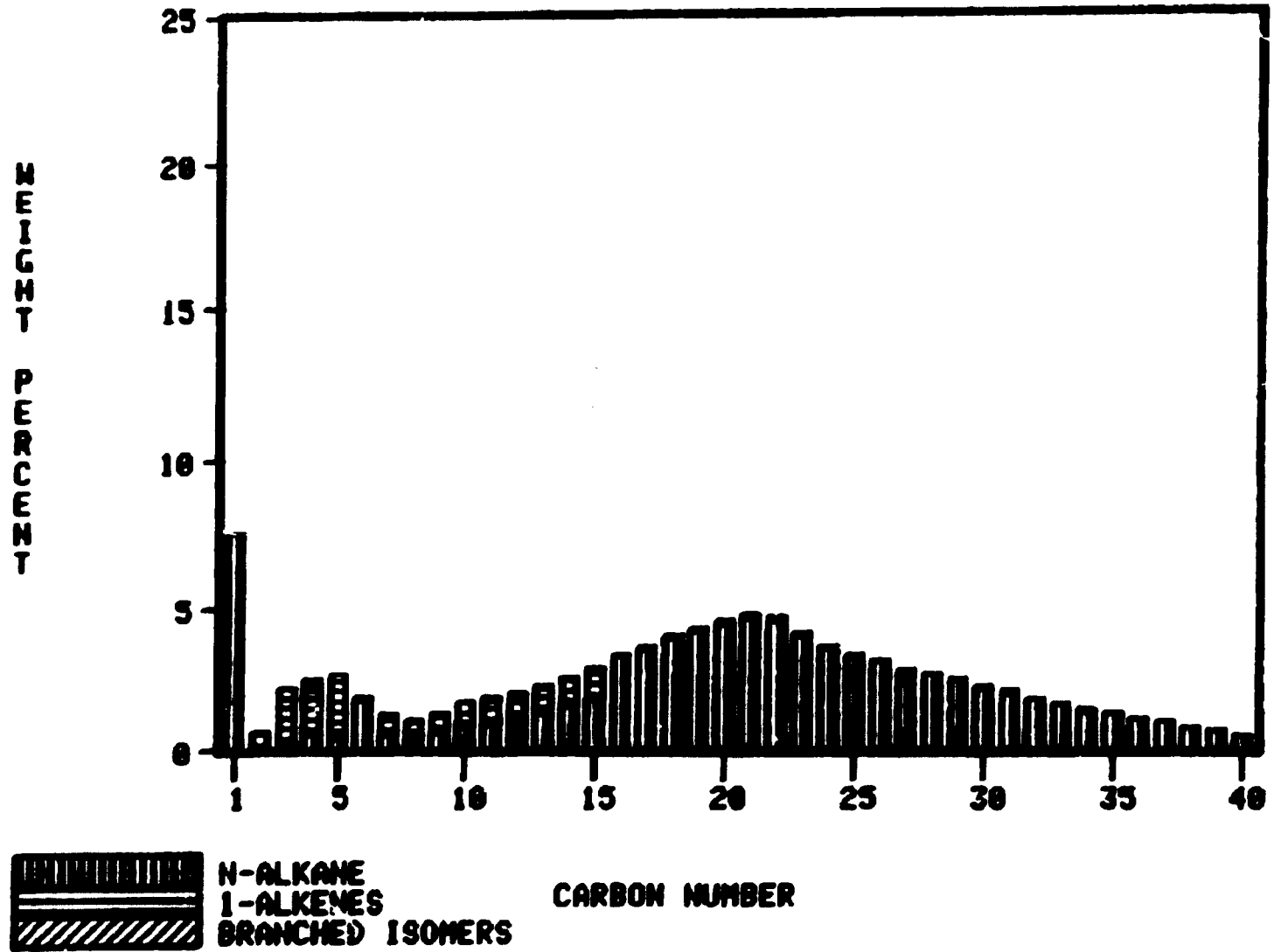


FIGURE 2

HYDROCARBON WEIGHT DISTRIBUTION

7888-85-2-5



08.

FIGURE 3

HYDROCARBON WEIGHT DISTRIBUTION

7888-85-2-8

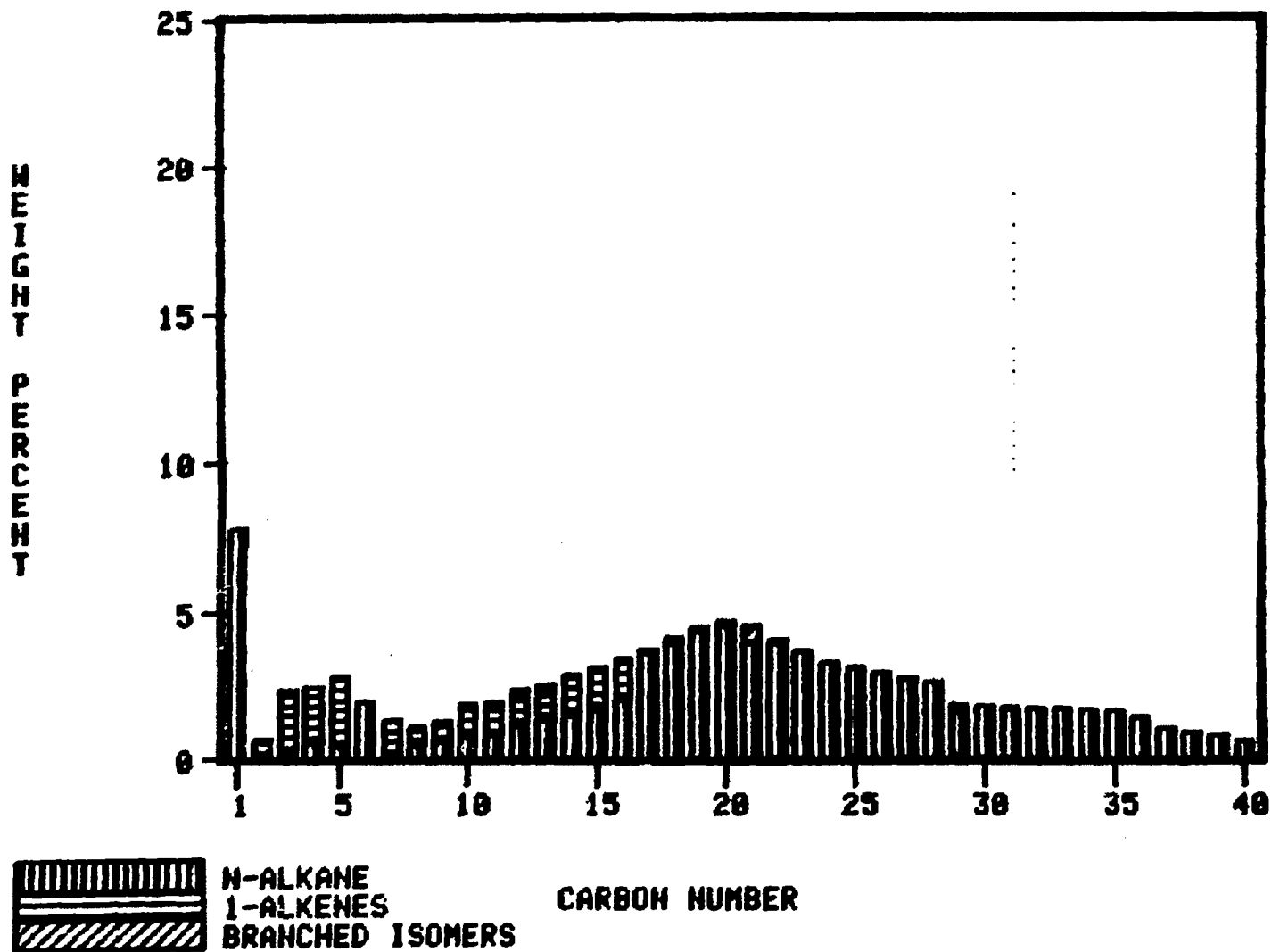


FIGURE 4

HYDROCARBON WEIGHT DISTRIBUTION

7888-85-2-12

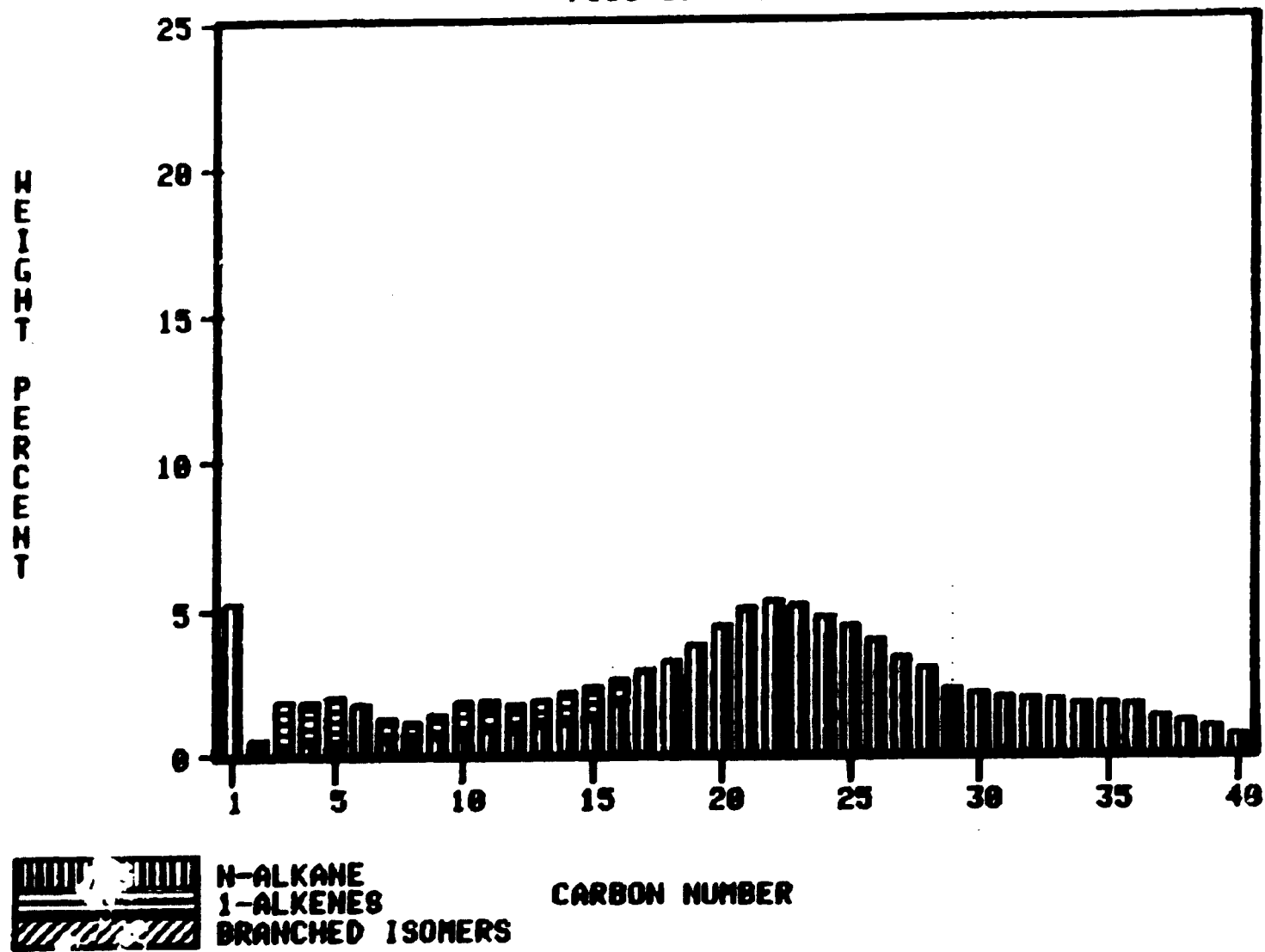


FIGURE 5

HYDROCARBON WEIGHT DISTRIBUTION

7000-05-2-14

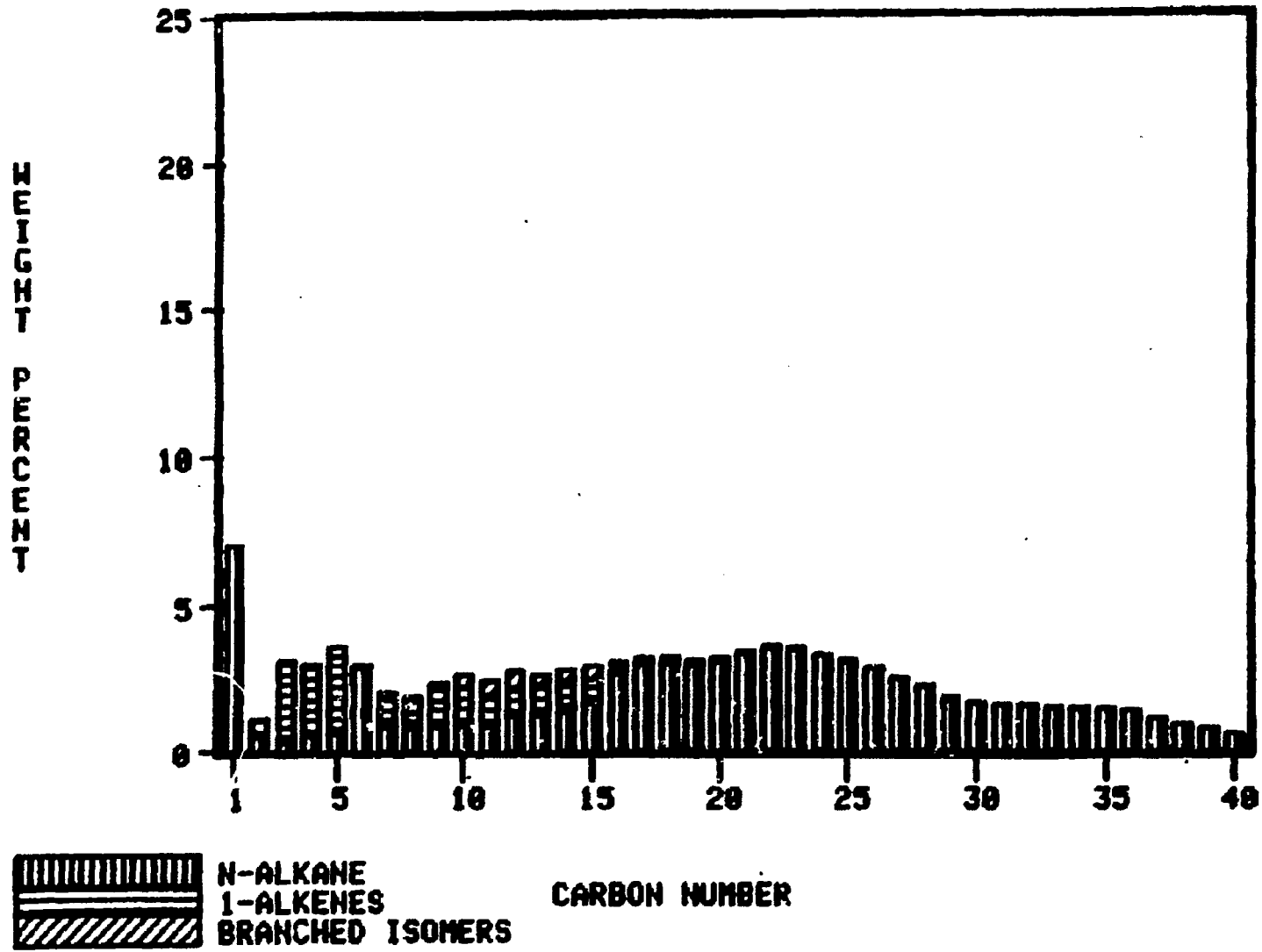


FIGURE 6

HYDROCARBON WEIGHT DISTRIBUTION

7888-85-2-16

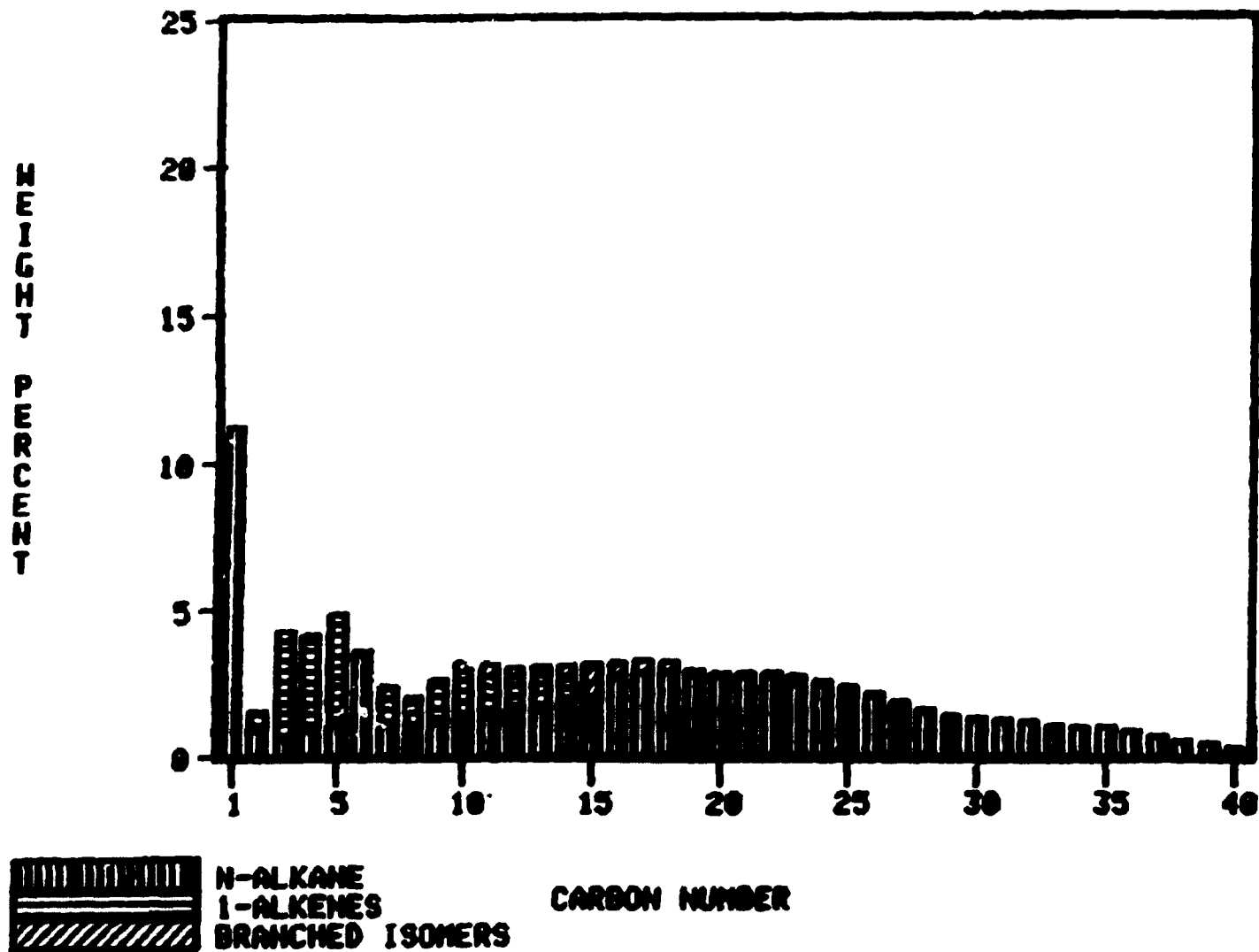
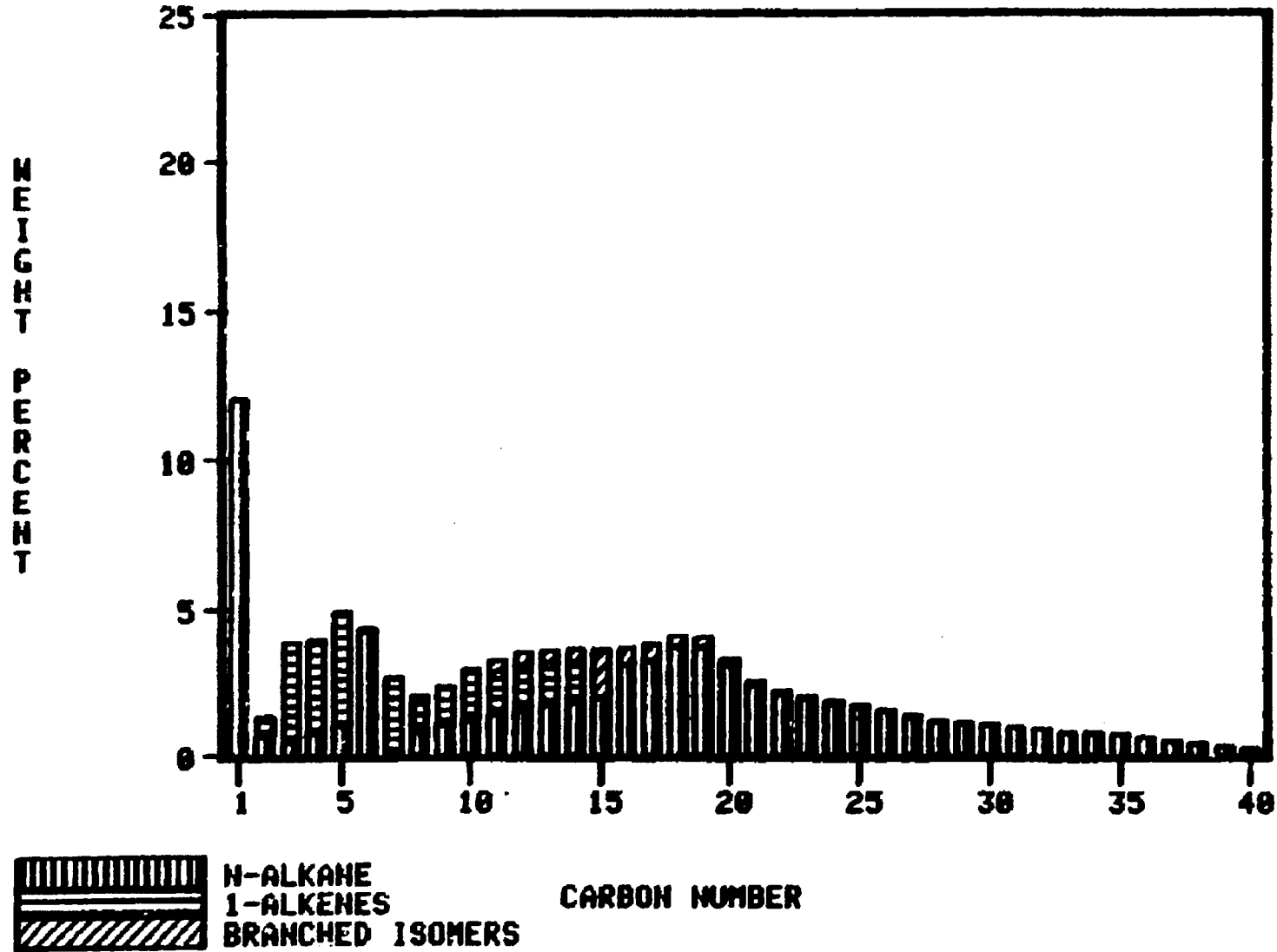


FIGURE 7

HYDROCARBON WEIGHT DISTRIBUTION

7000-05-2-18



05

FIGURE 8

HYDROCARBON WEIGHT DISTRIBUTION

7888-85-2-21

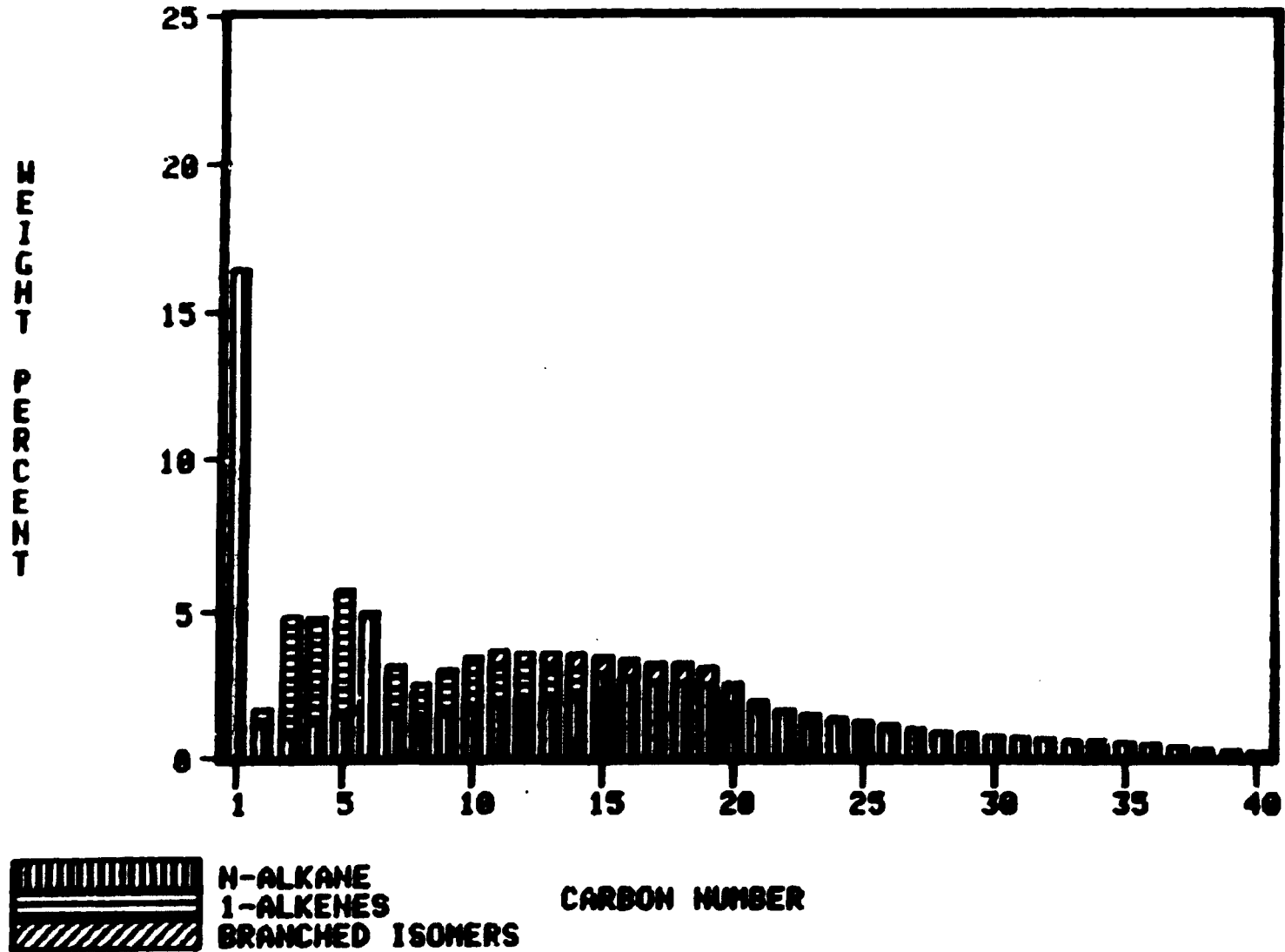




FIGURE 9

HYDROCARBON WEIGHT DISTRIBUTION

7898-85-2-25

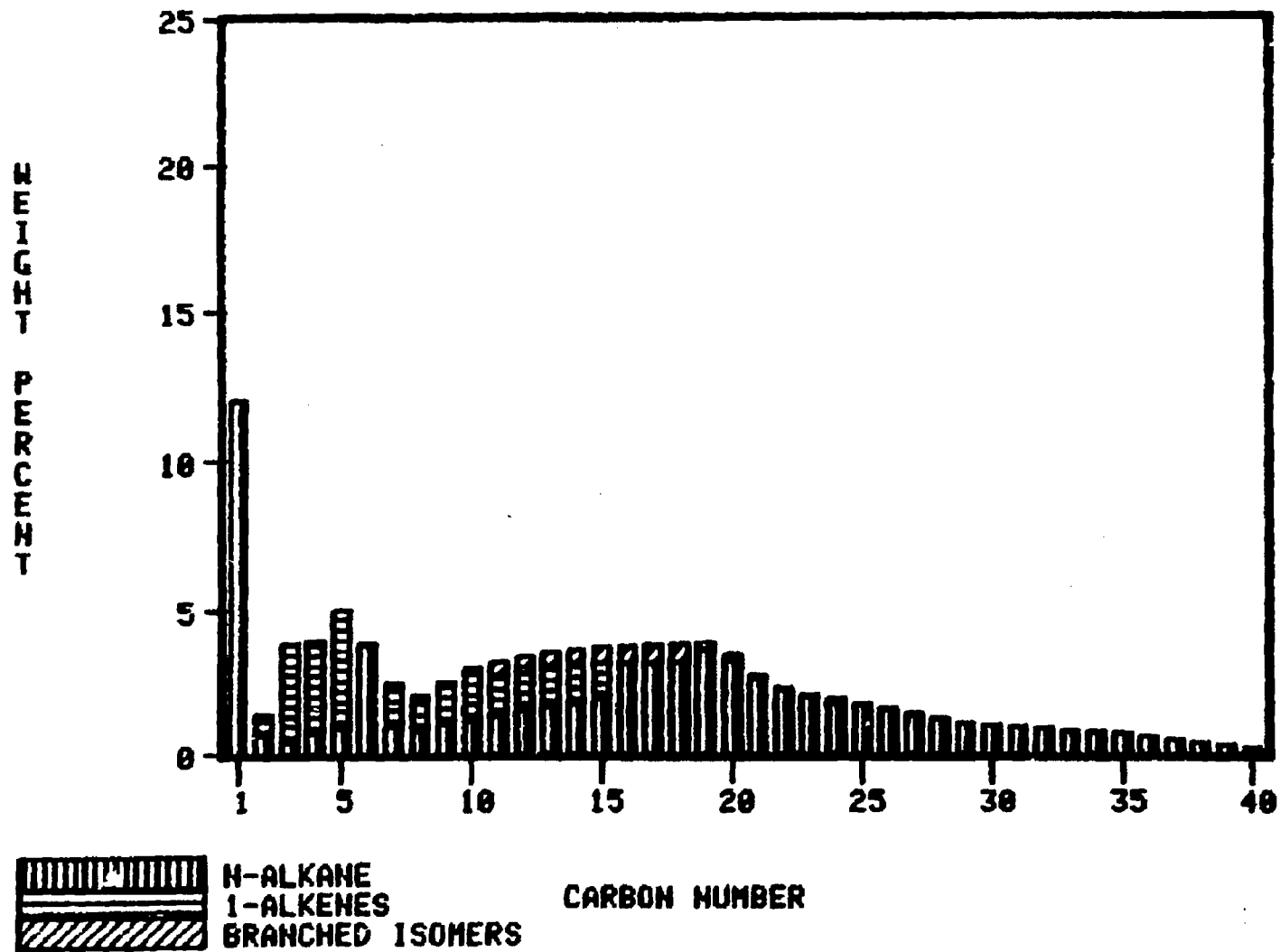


FIGURE 10

HYDROCARBON WEIGHT DISTRIBUTION

7988-85-2-32

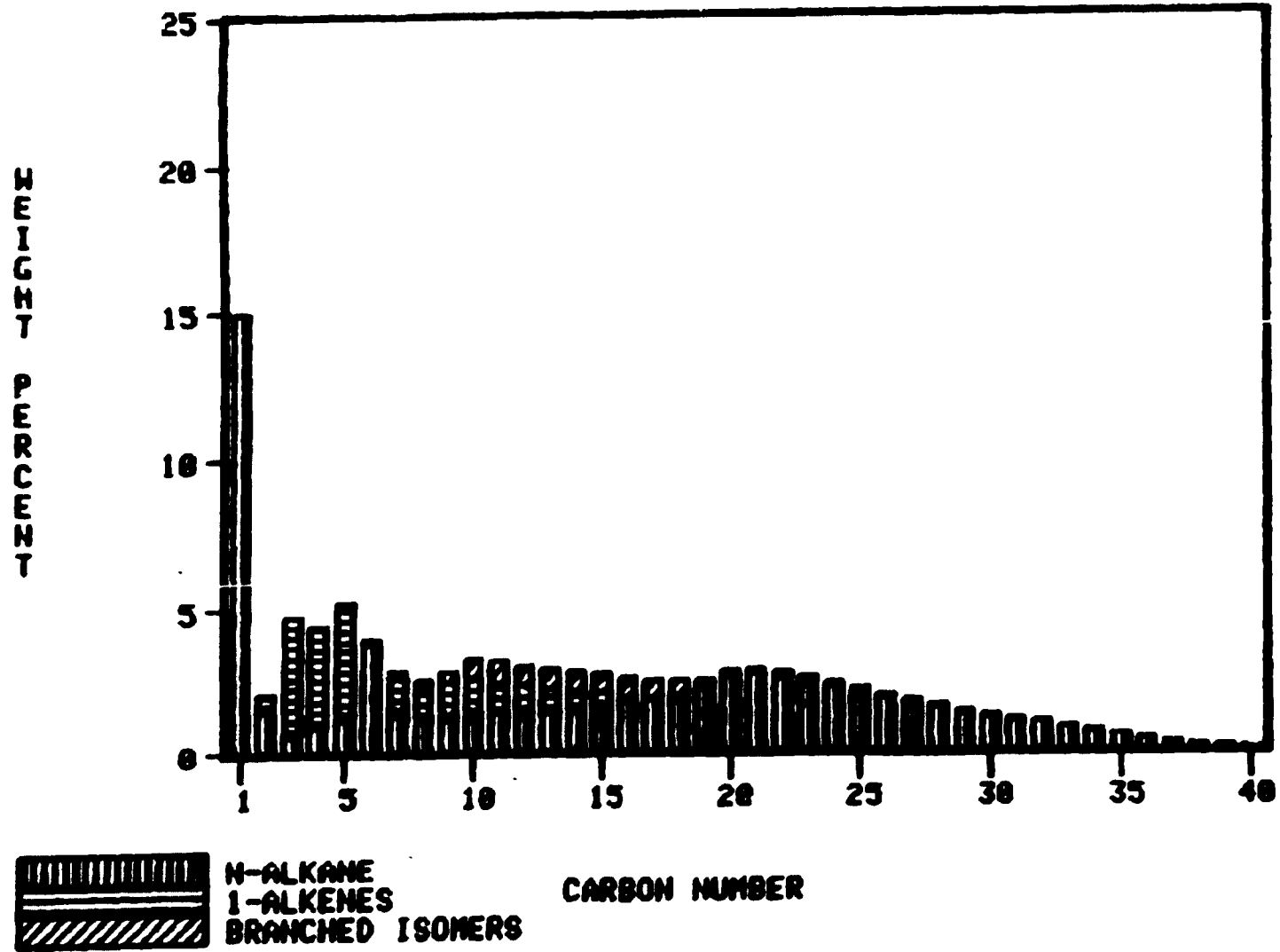
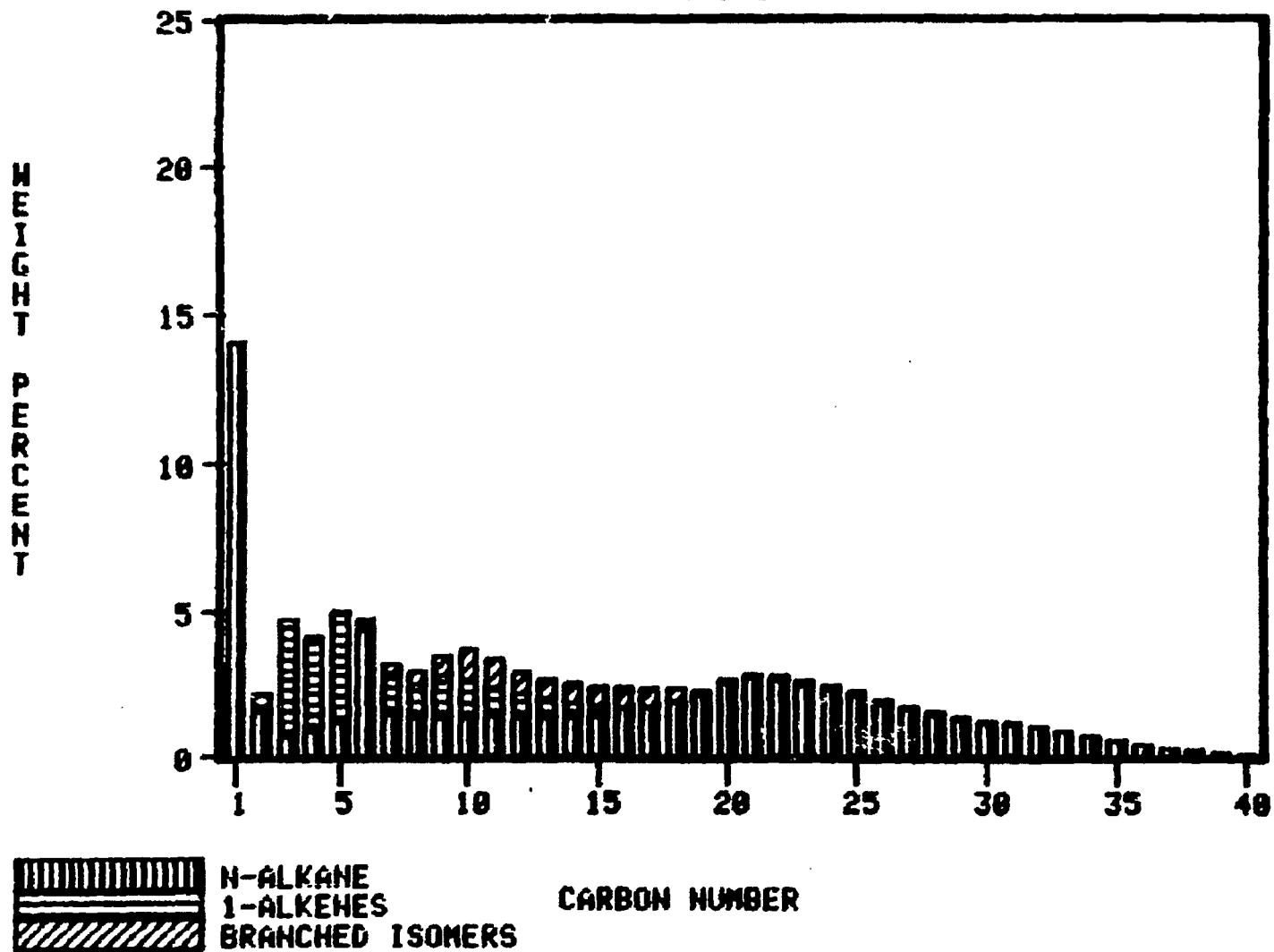


FIGURE 11

HYDROCARBON WEIGHT DISTRIBUTION

7800-65-2-35

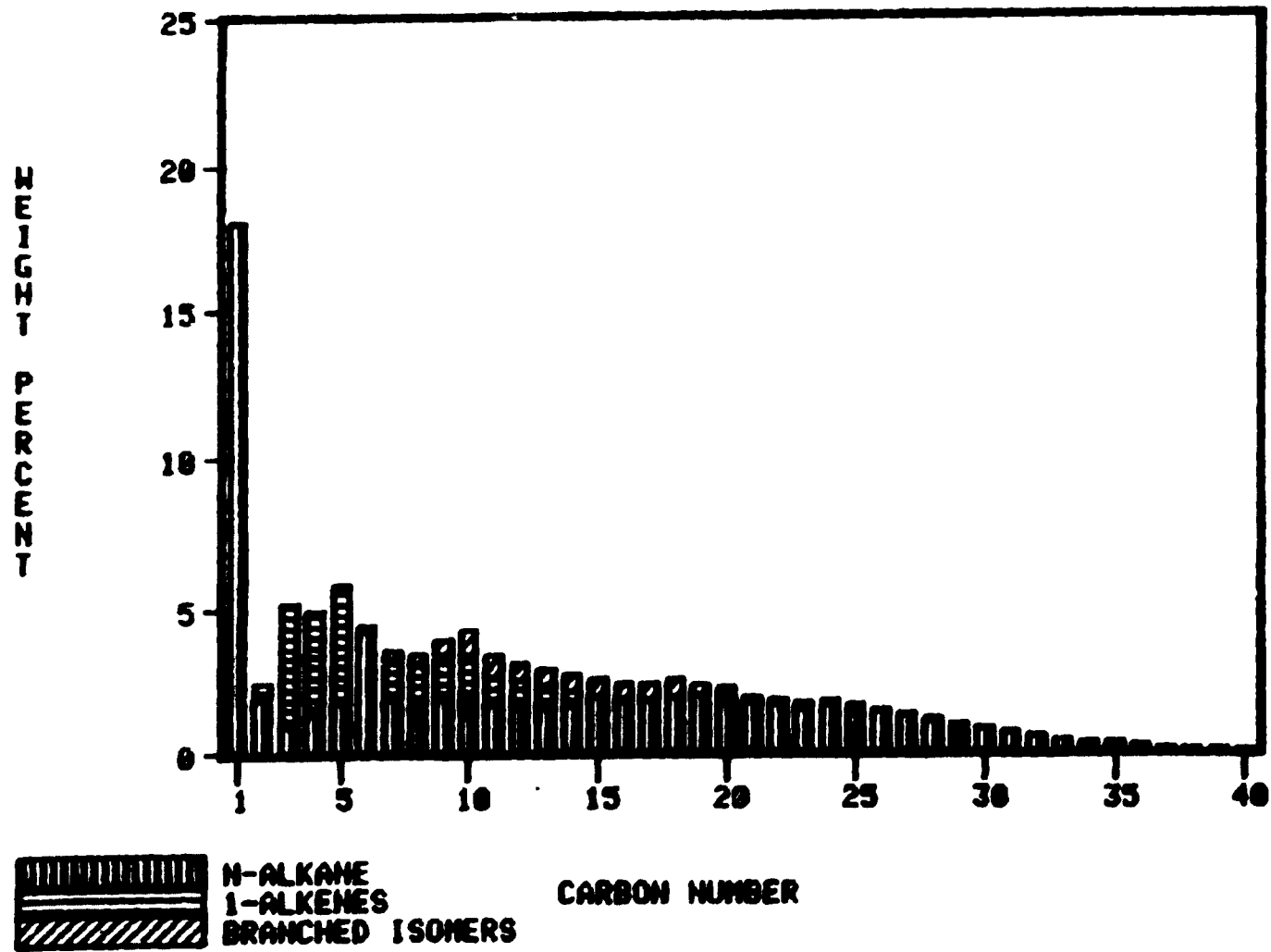


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FIGURE 12

HYDROCARBON WEIGHT DISTRIBUTION

7000-05-2-30

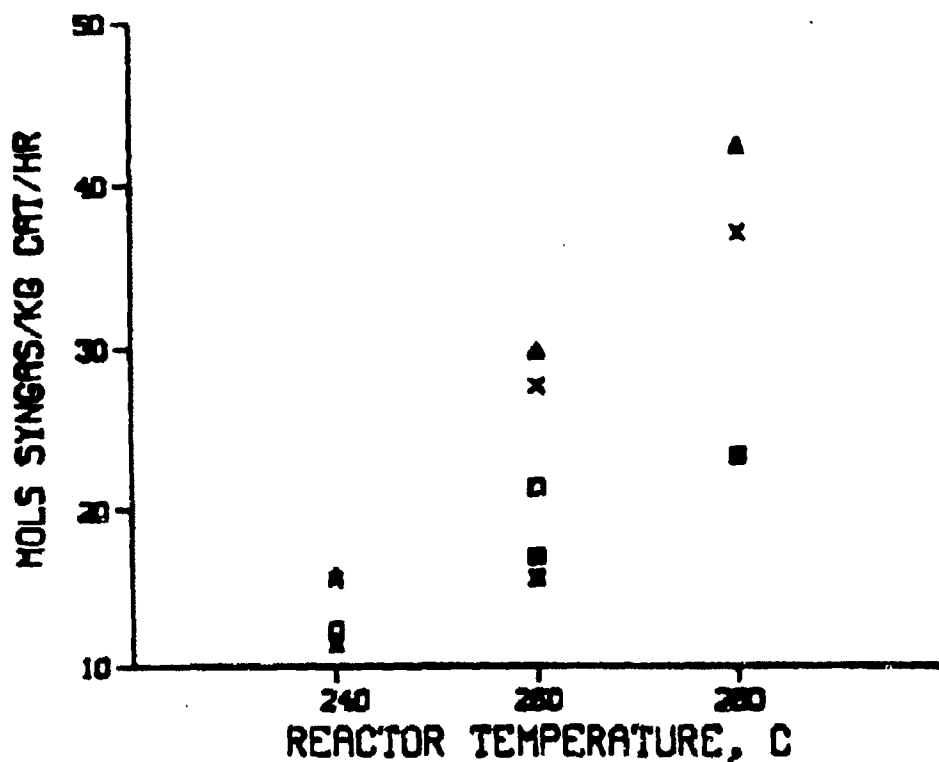
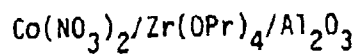


100

FIGURE 13

BULK ACTIVITY VS. REACTOR TEMPERATURE

7888-85-2



▲ CO/H<sub>2</sub> ≈ 1.0, SV ≈ 2.50 NL/g cat/hr

× 1.5, 2.50

◻ 2.0, 2.50

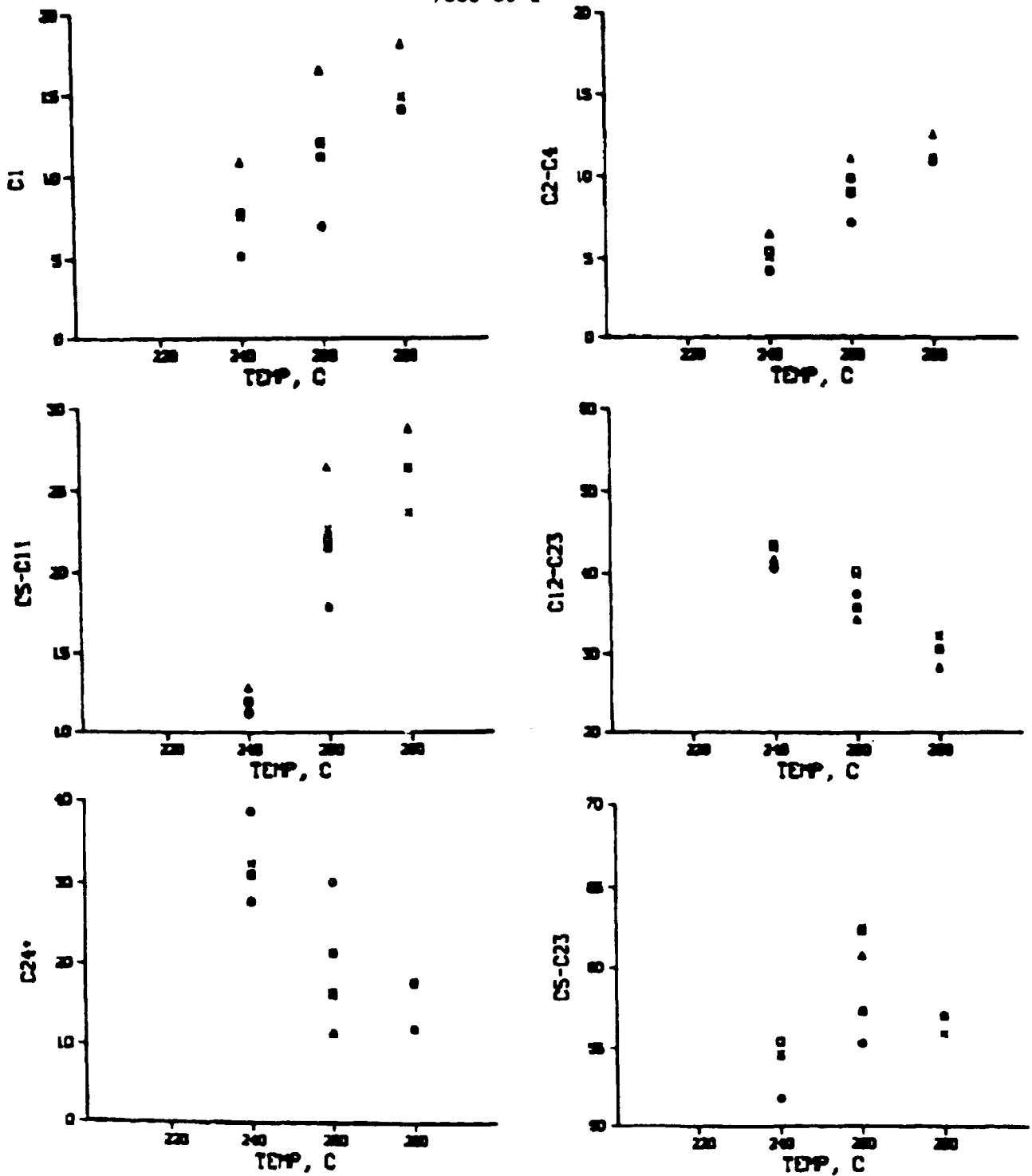
■ 1.5, 1.25

● 2.0, 1.25

FIGURE 14

# HYDROCARBON SELECTIVITY- WT%

7888-85-2



▲ CO/H<sub>2</sub> ≈ 1.0, SV ≈ 2.50 NL/g cat/hr

■ " 1.5, 2.50

● " 2.0, 2.50

■ " 1.5, 1.25

● " 2.0, 1.25

FIGURE 15

HYDROCARBON HEIGHT DISTRIBUTION

8523-41-9-3

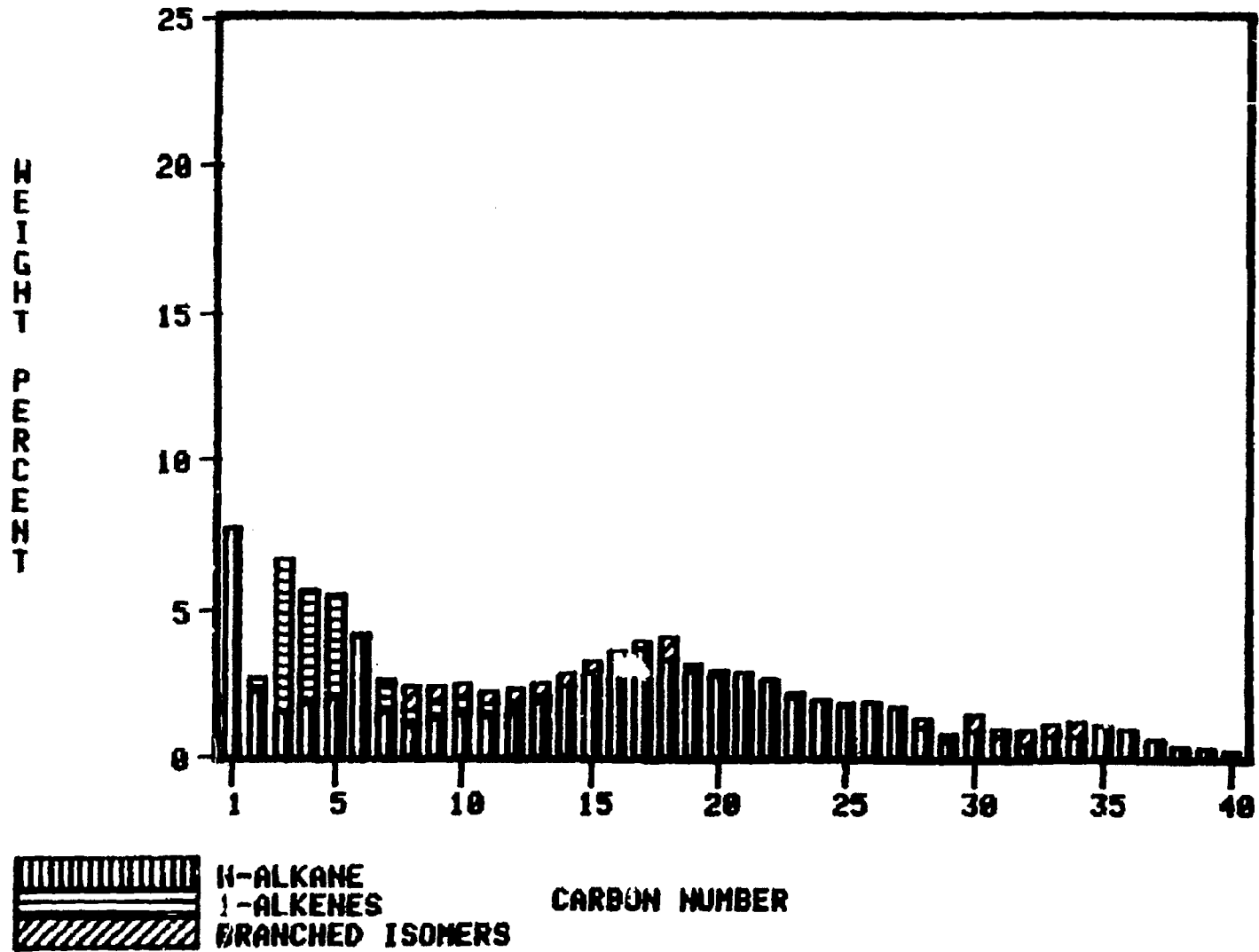
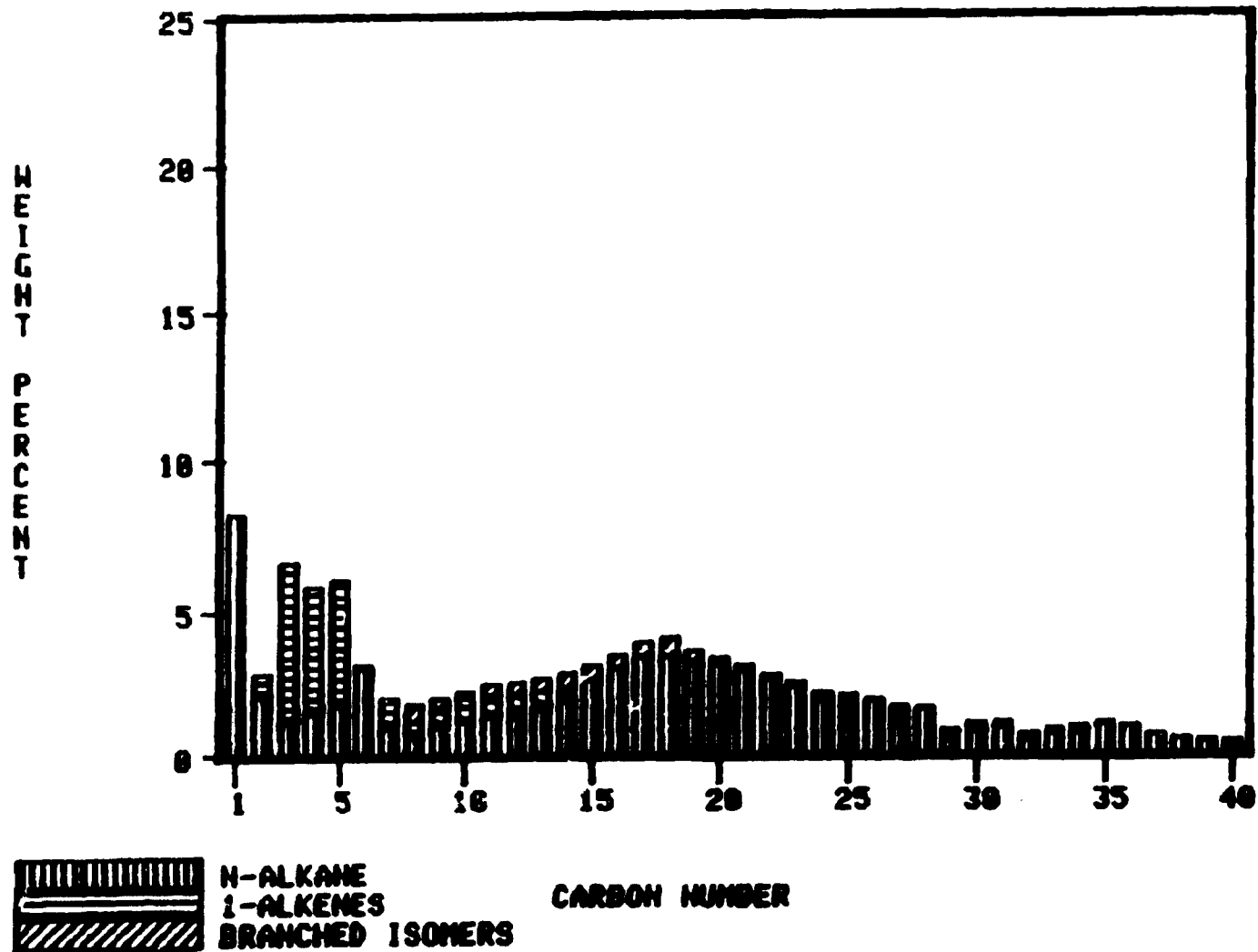


FIGURE 16

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-5



701



FIGURE

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-5

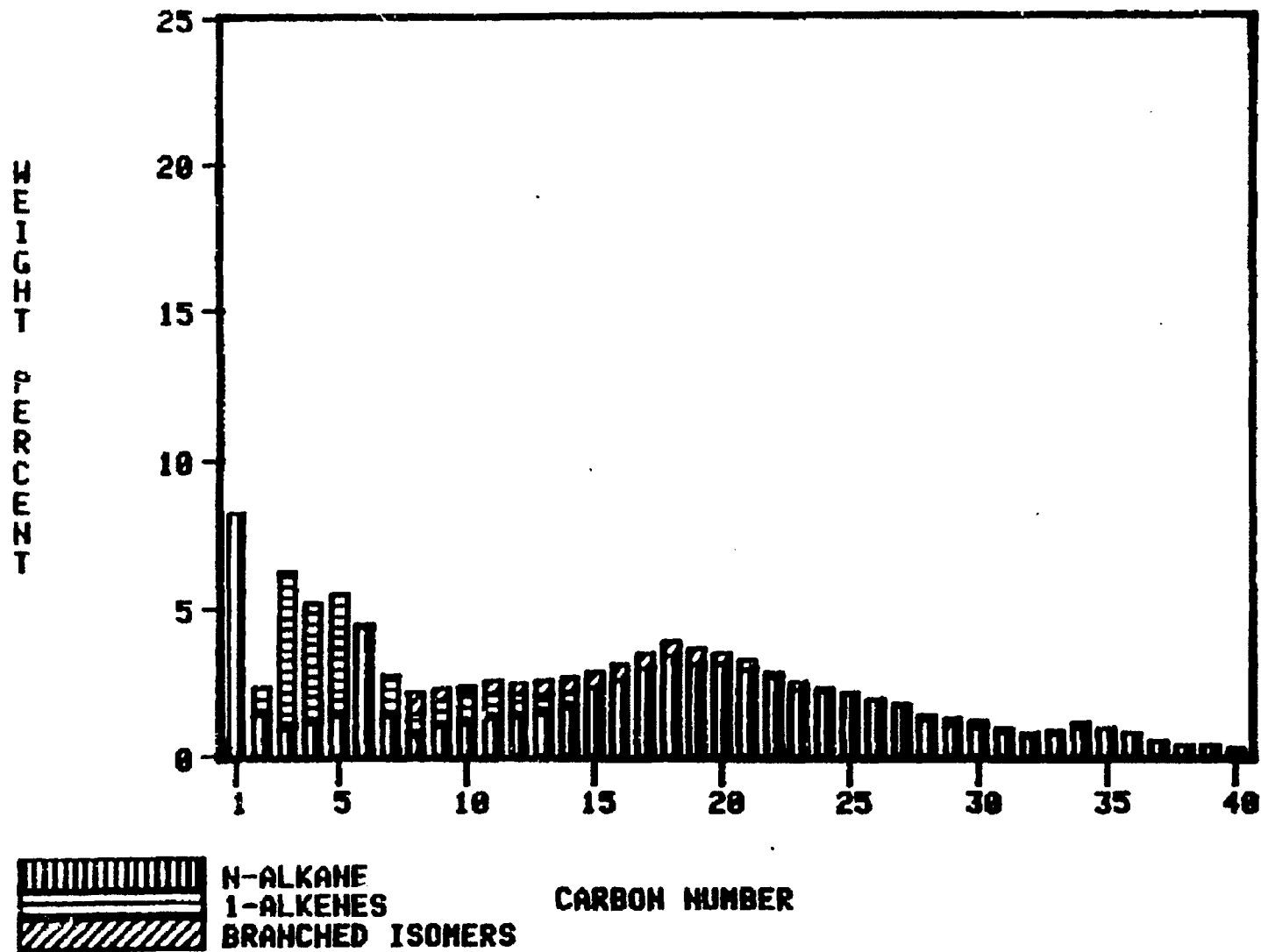


FIGURE 18

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-12

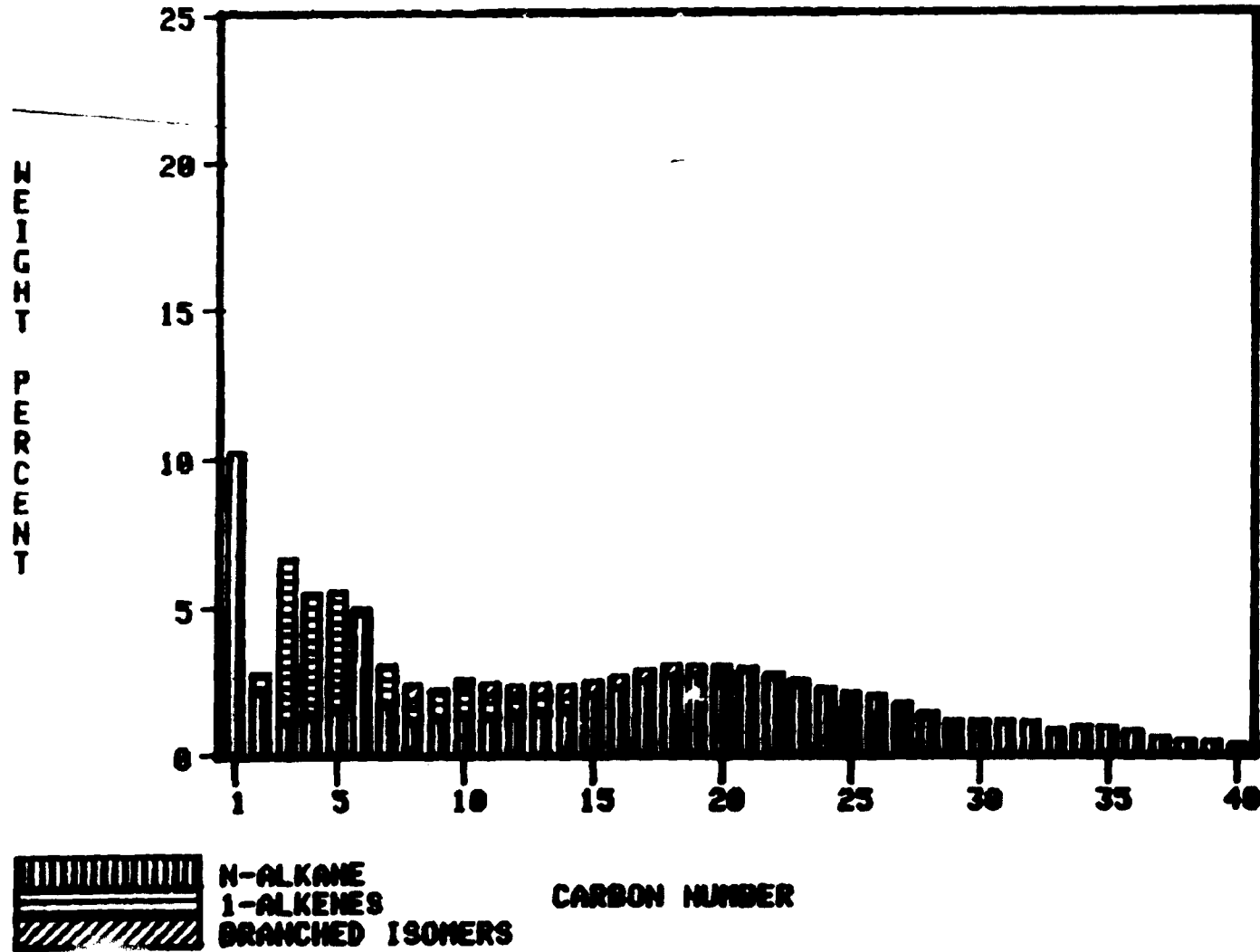


FIGURE 19

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-16

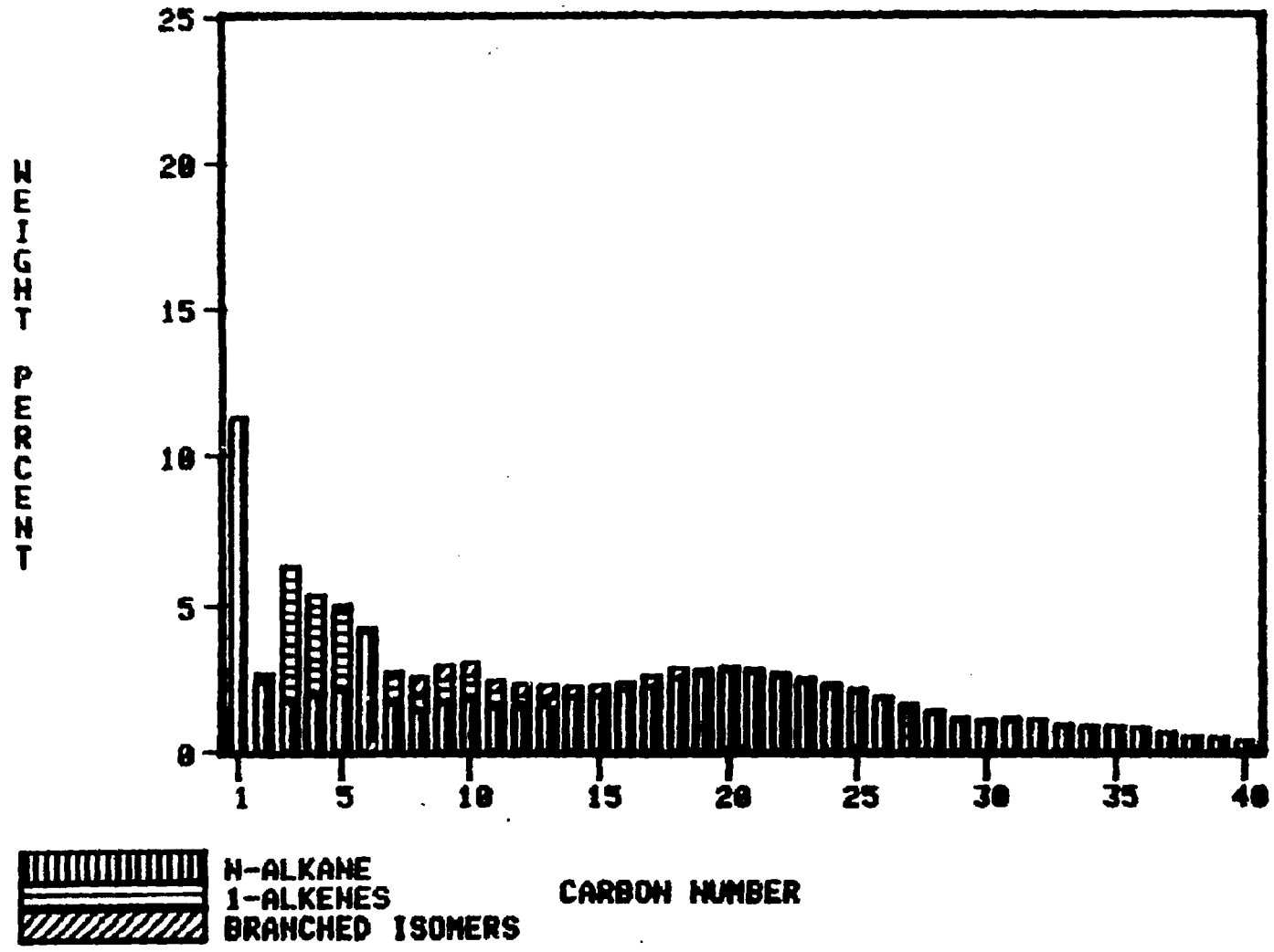


FIGURE 20

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-19

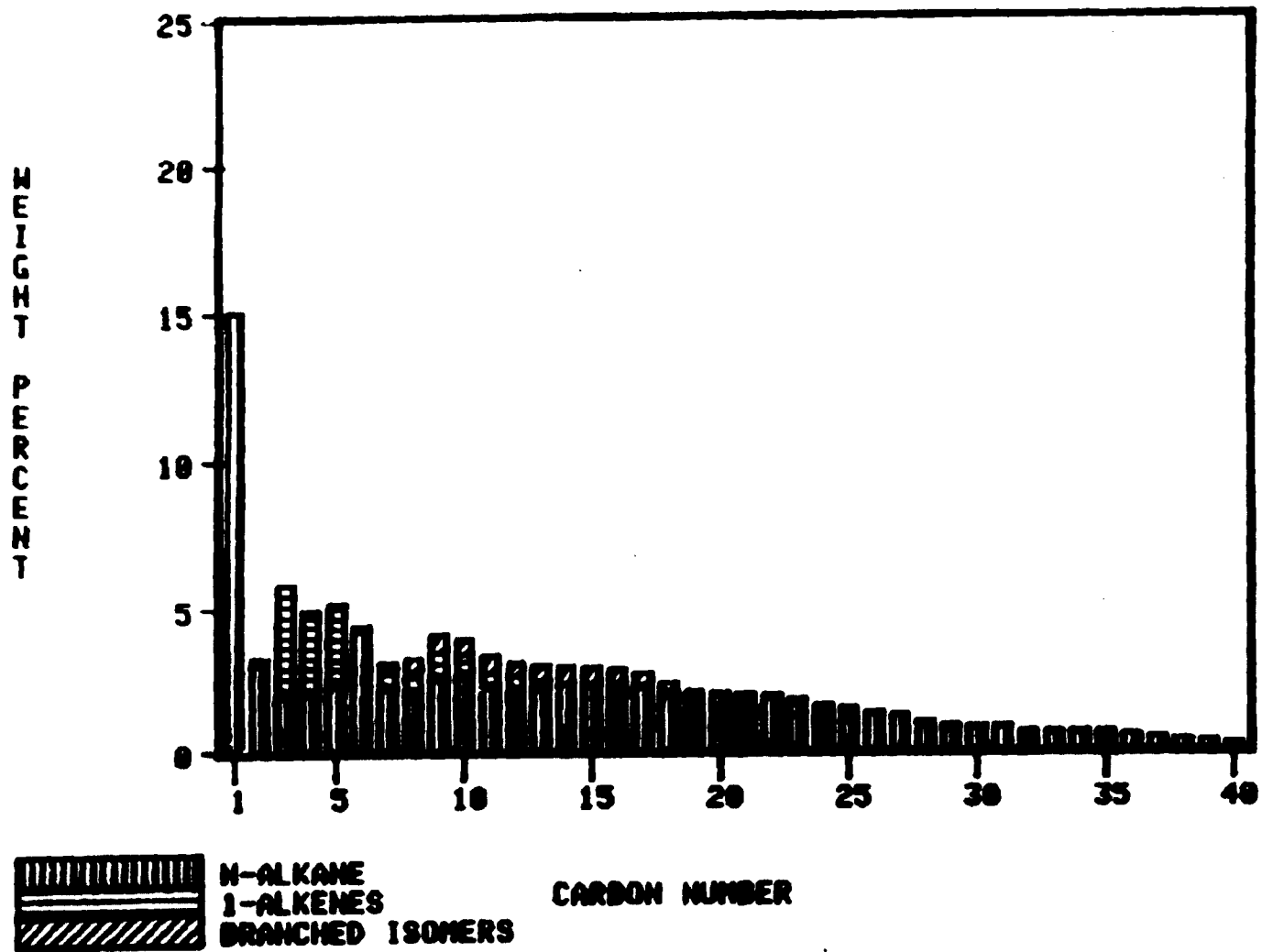


FIGURE 21  
HYDROCARBON WEIGHT DISTRIBUTION  
8523-41-9-22

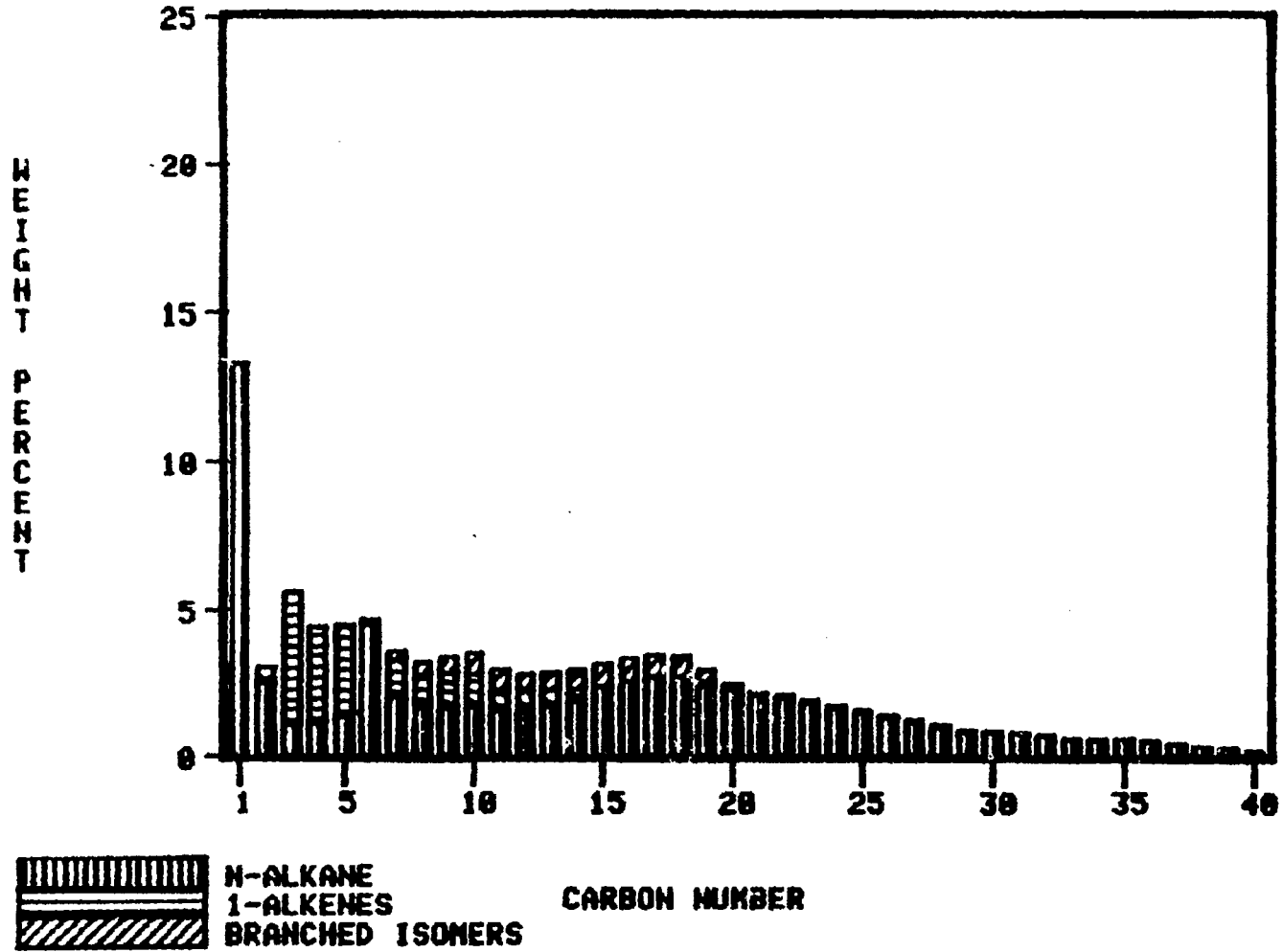


FIGURE 22

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-25

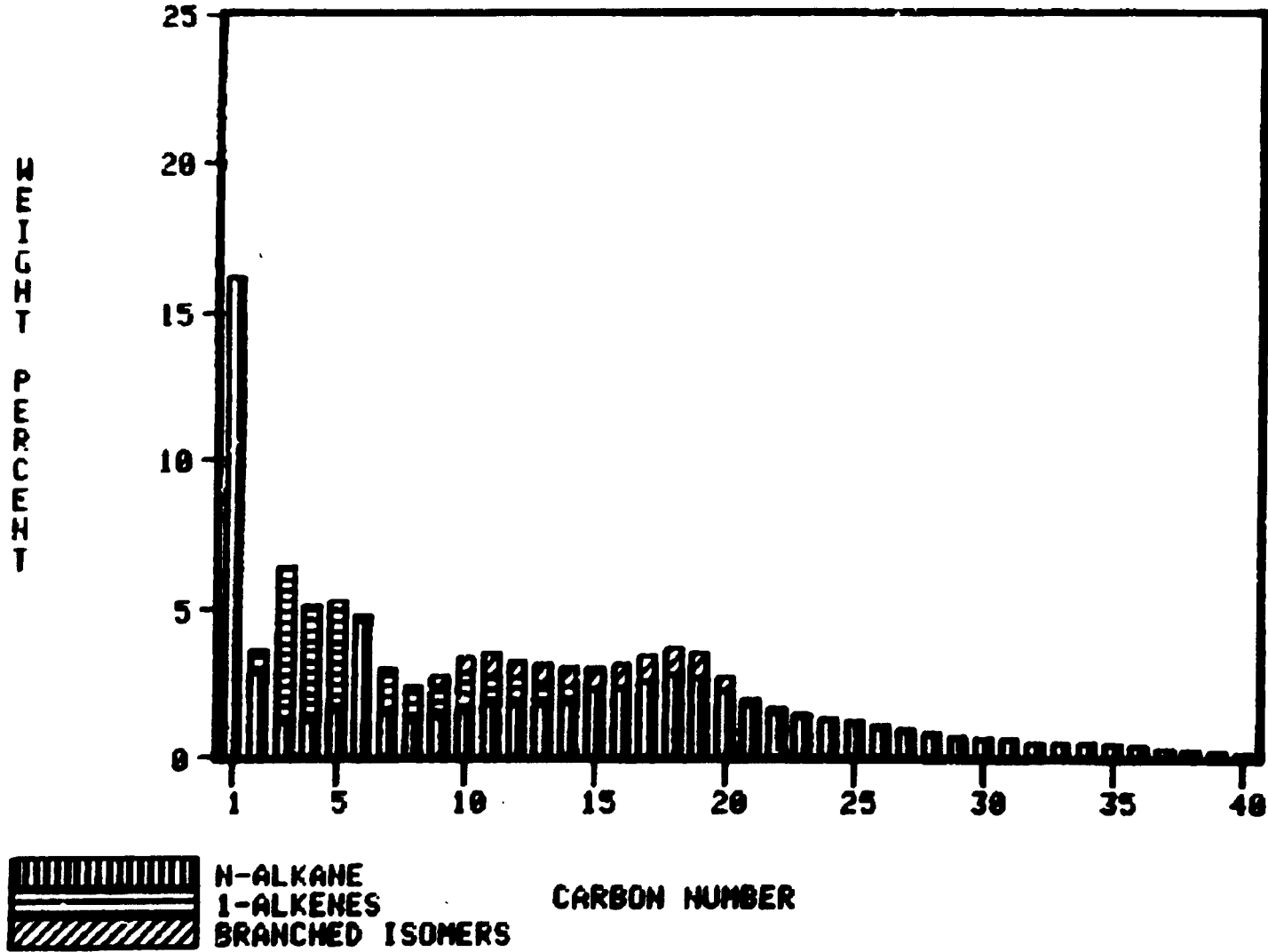


FIGURE 23

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-27

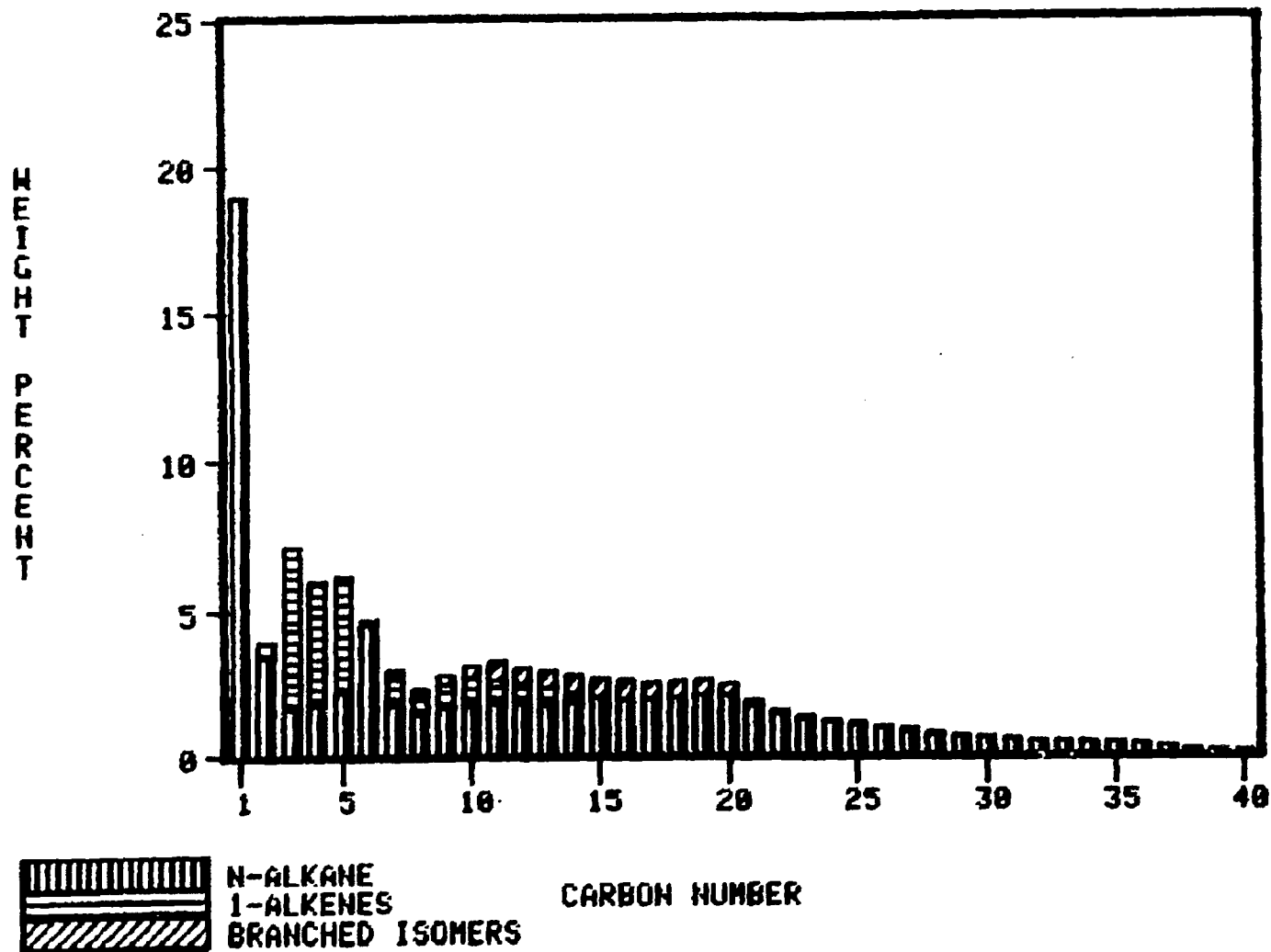


FIGURE 24

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-30

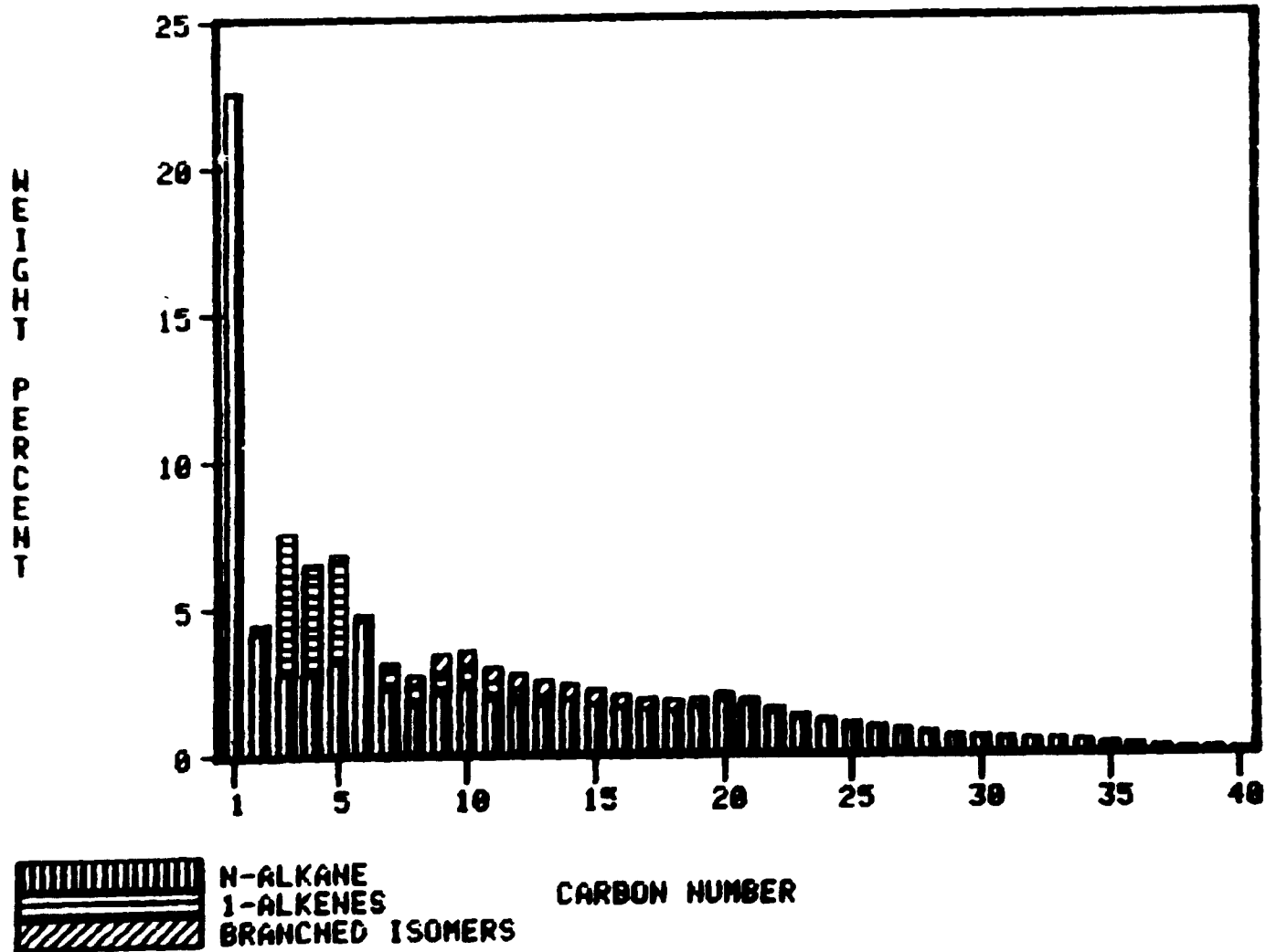
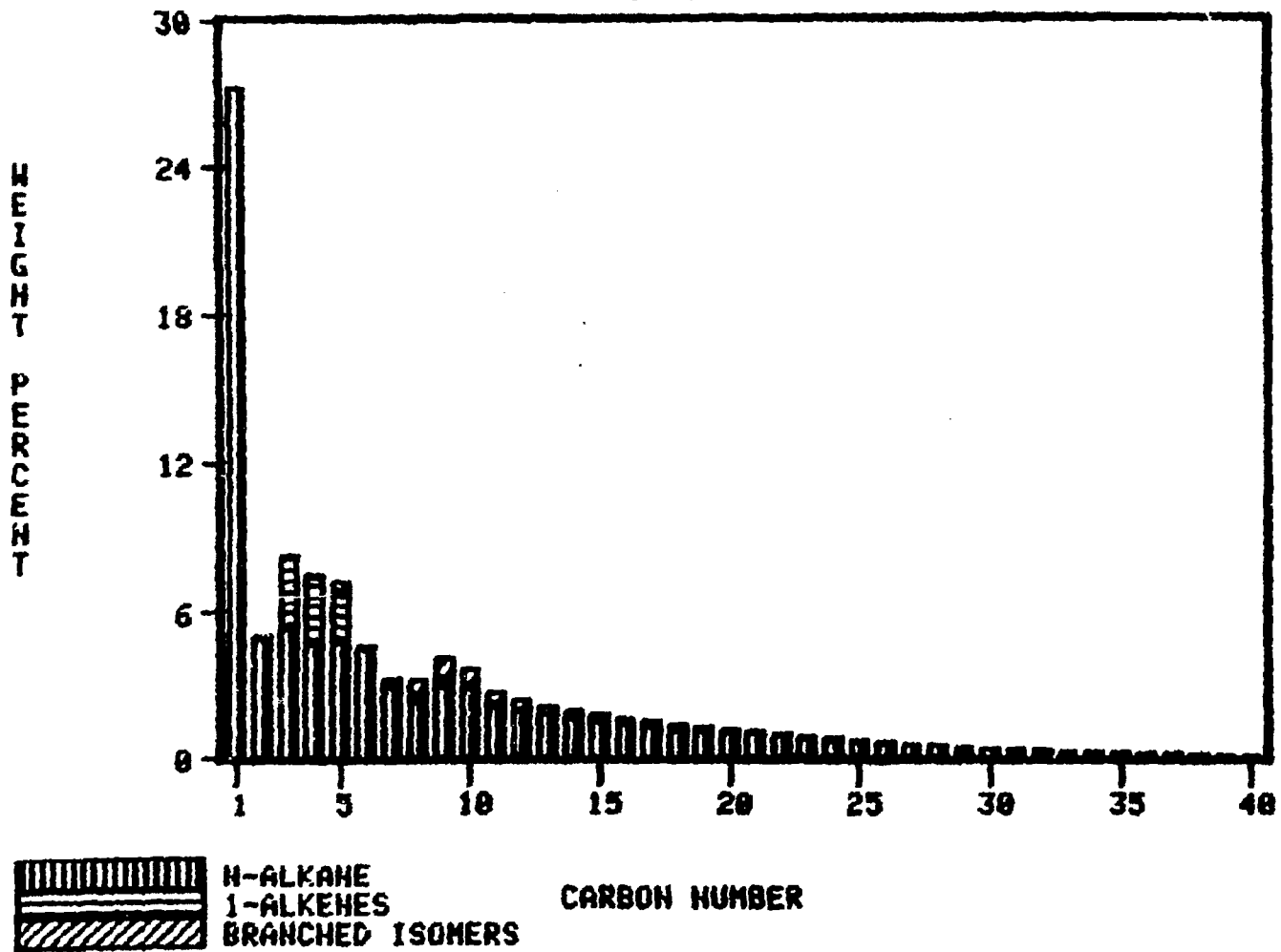




FIGURE 25

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-37



**FIGURE 26**  
**CONVERSION DEPENDENCY**  
**ON CO/H<sub>2</sub> FEED**

$\text{Co}_2(\text{CO})_8/\text{Zr}(\text{OPr})_4/\text{Al}_2\text{O}_3$

8523-41-9

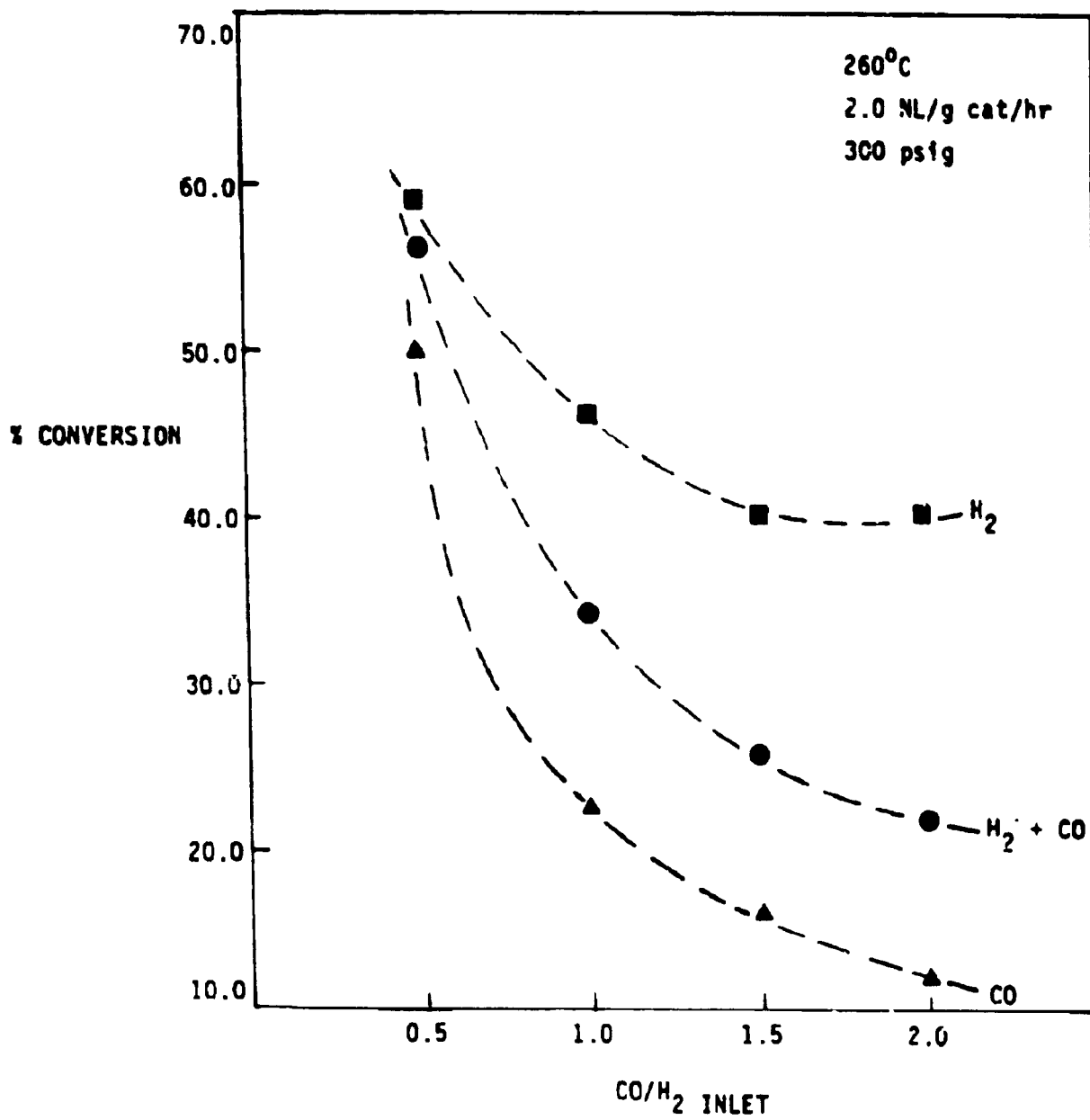


FIGURE 27

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-36

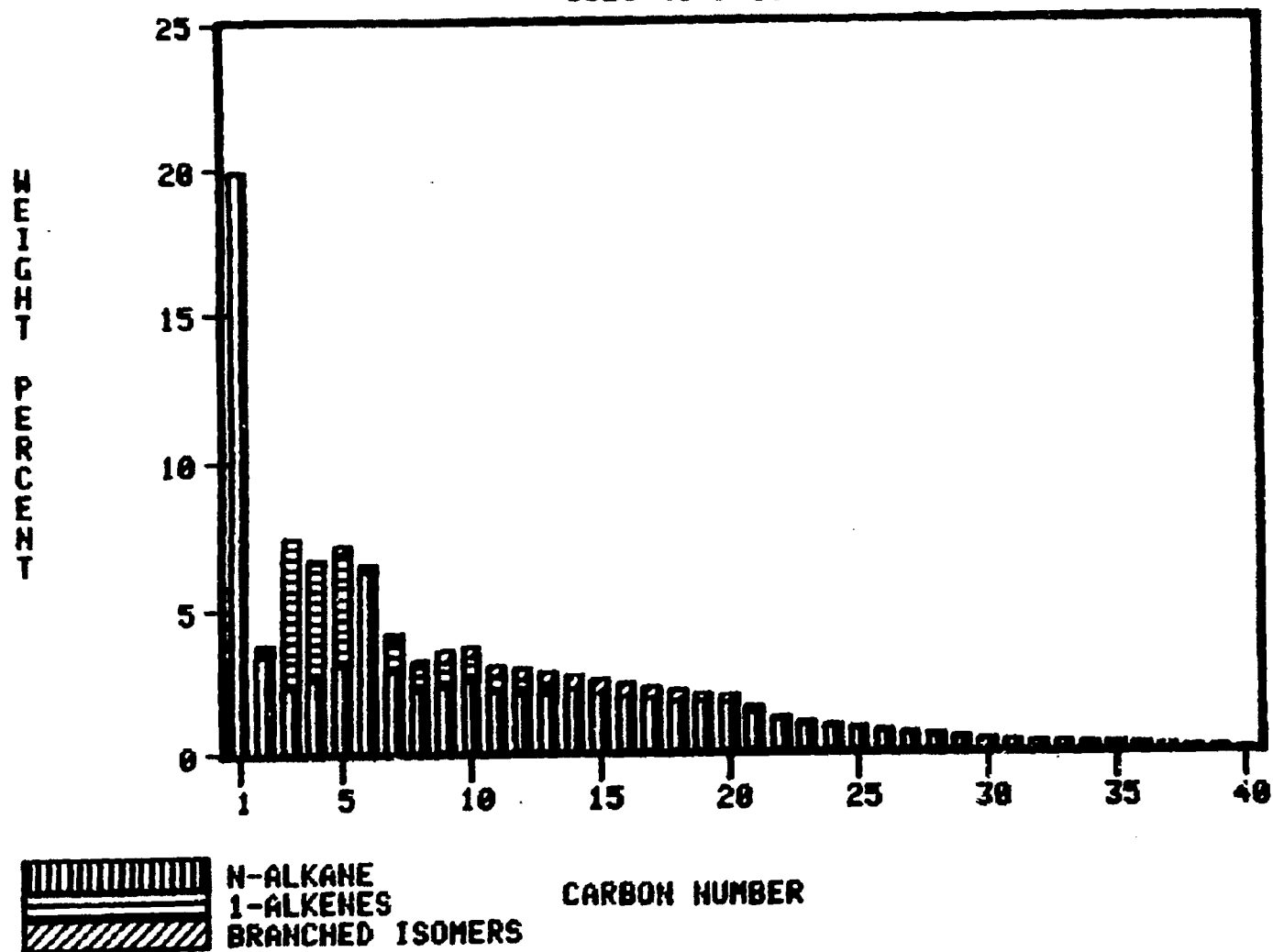
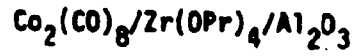


FIGURE 28

Co/Zr RATIO EFFECT ON ACTIVITY



□ Test #8523-1-4, Co/Zr= 0.63, H<sub>2</sub> activation

○ Test #8523-41-9, Co/Zr= 1.27, H<sub>2</sub> activation

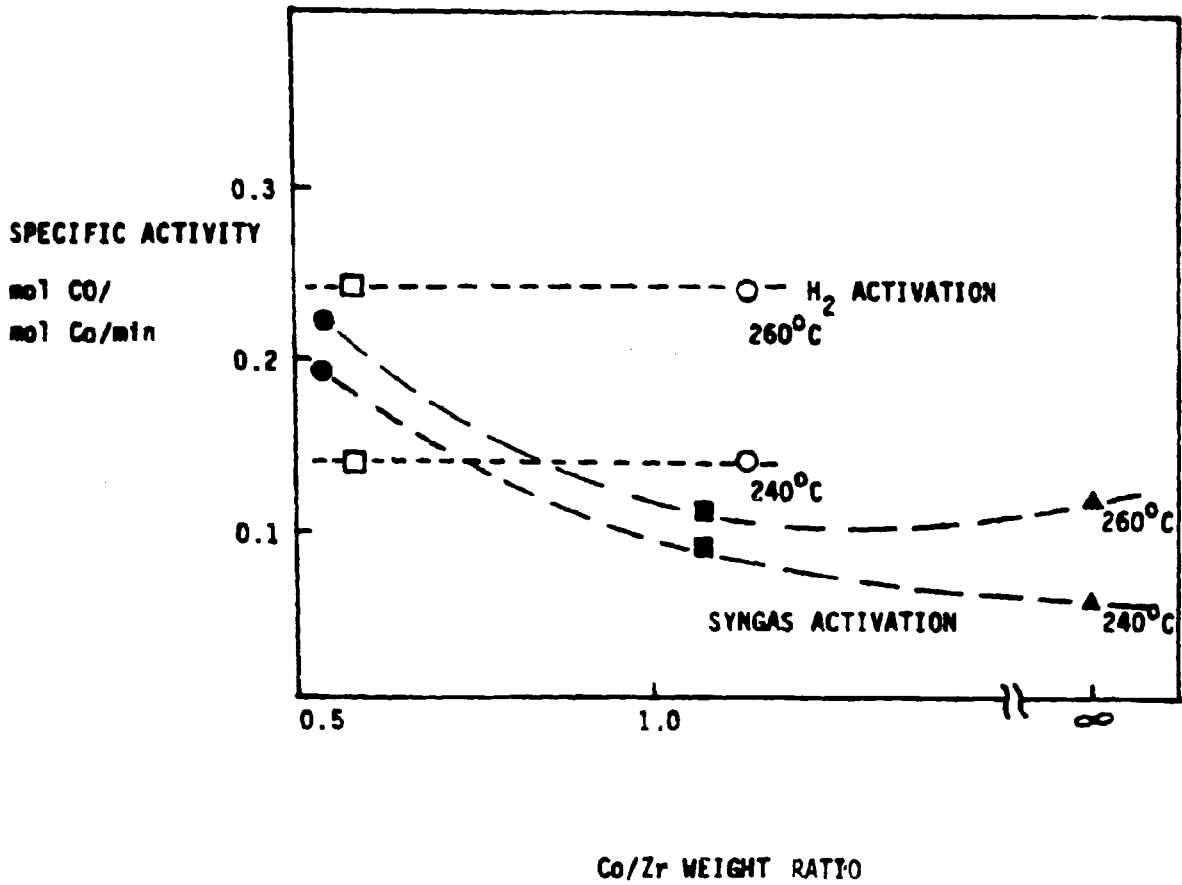


FIGURE 29

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-39

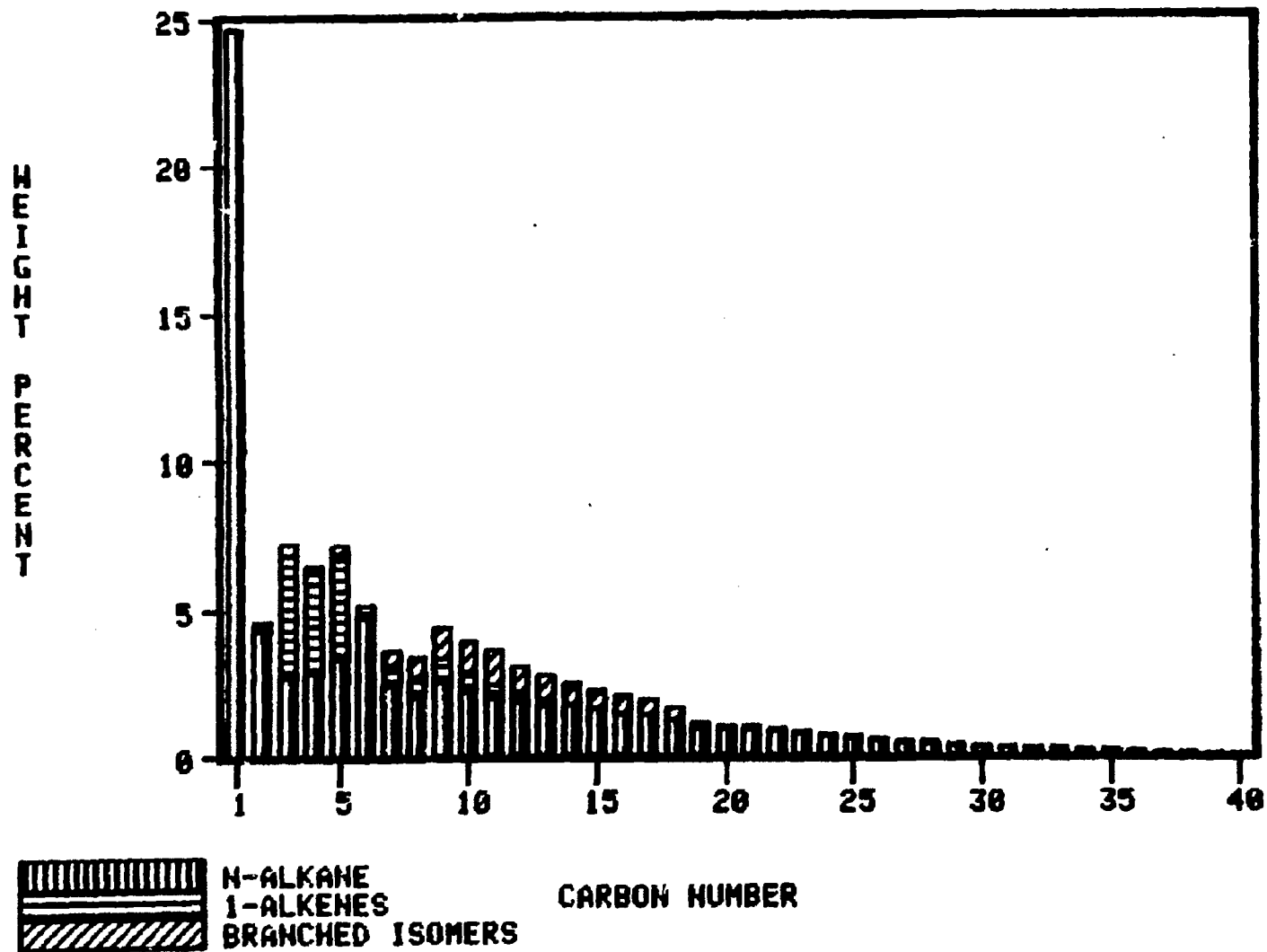


FIGURE 30

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-42

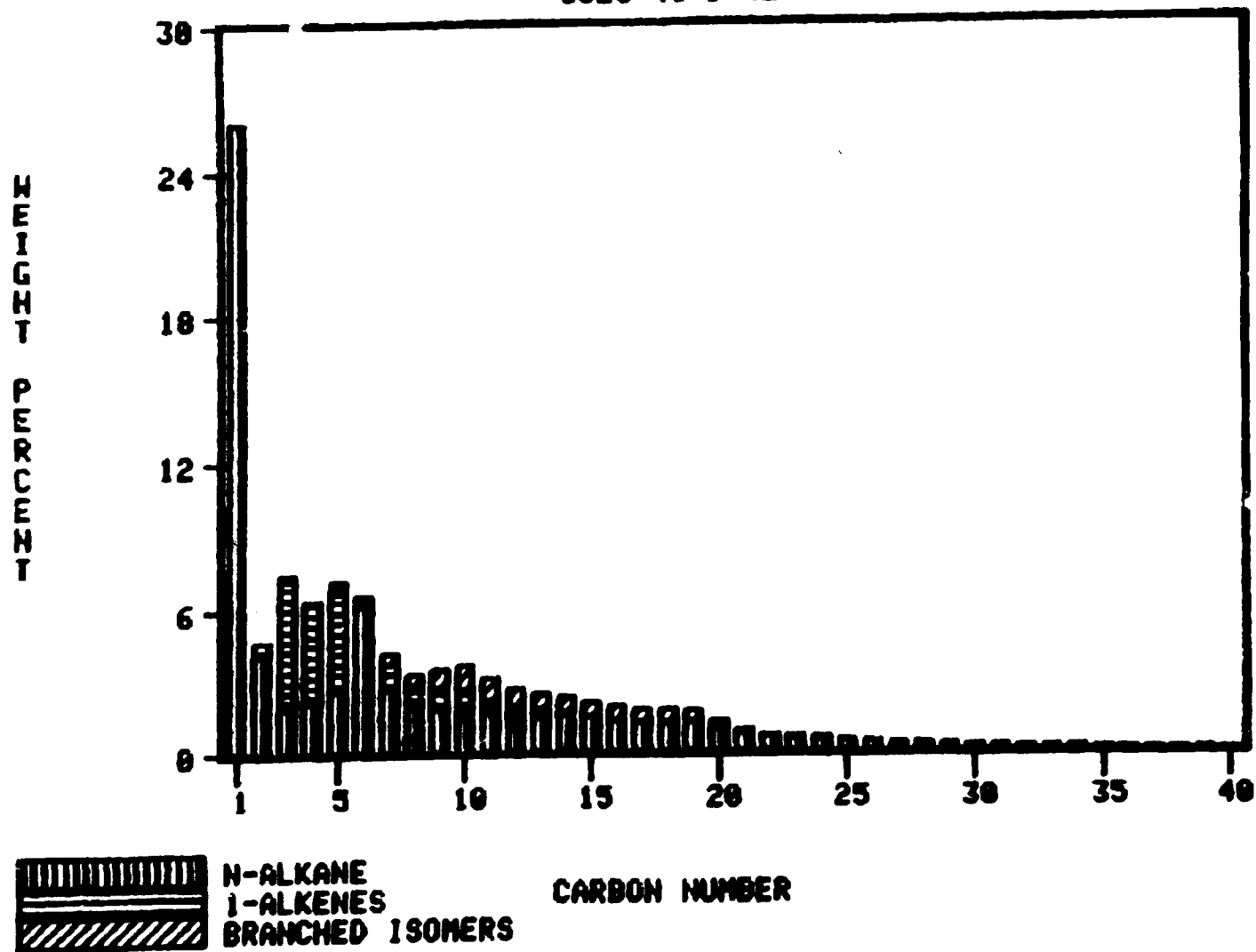


FIGURE 31  
HYDROCARBON WEIGHT DISTRIBUTION  
8523-41-9-47

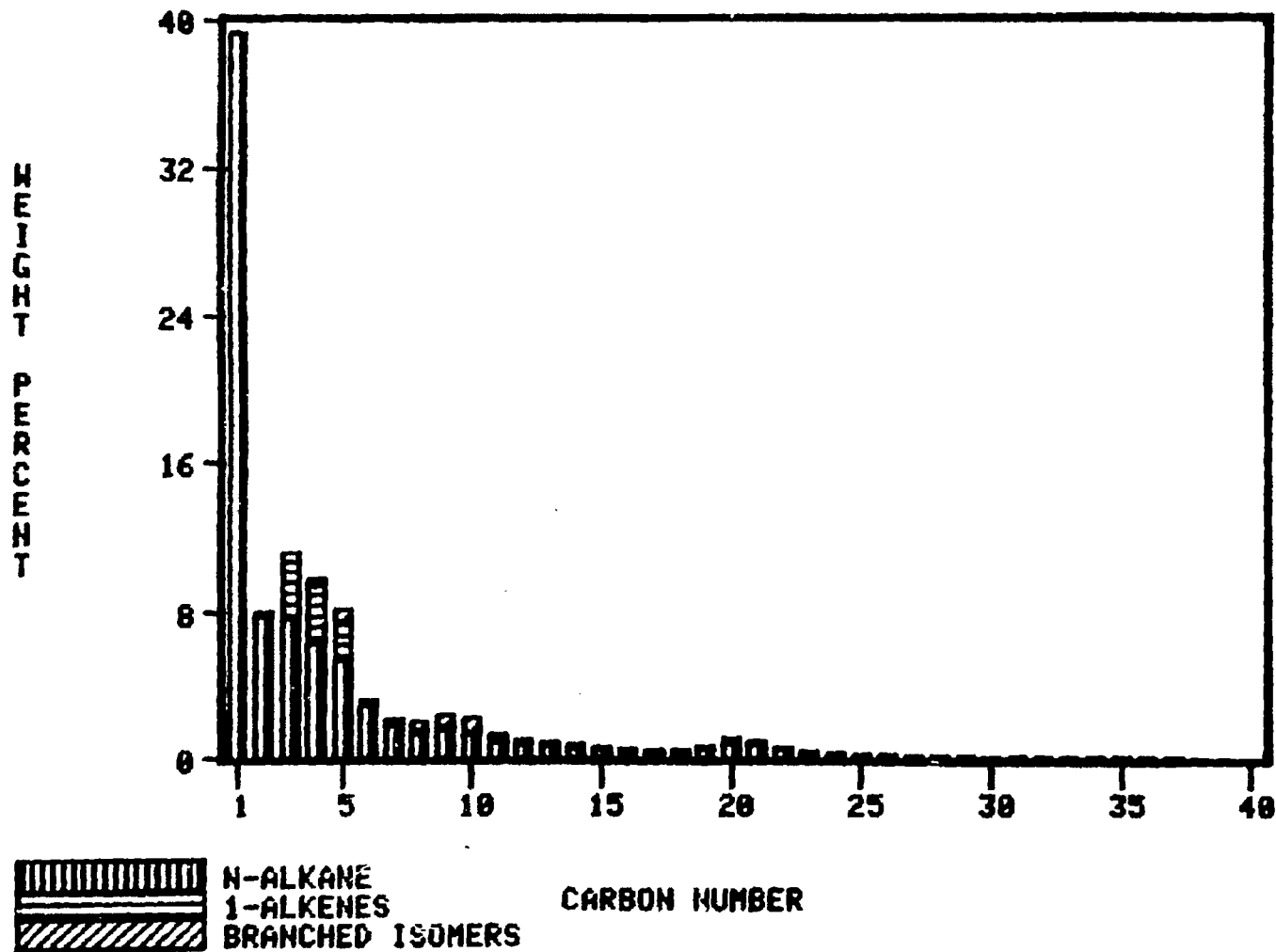


FIGURE 32

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-53

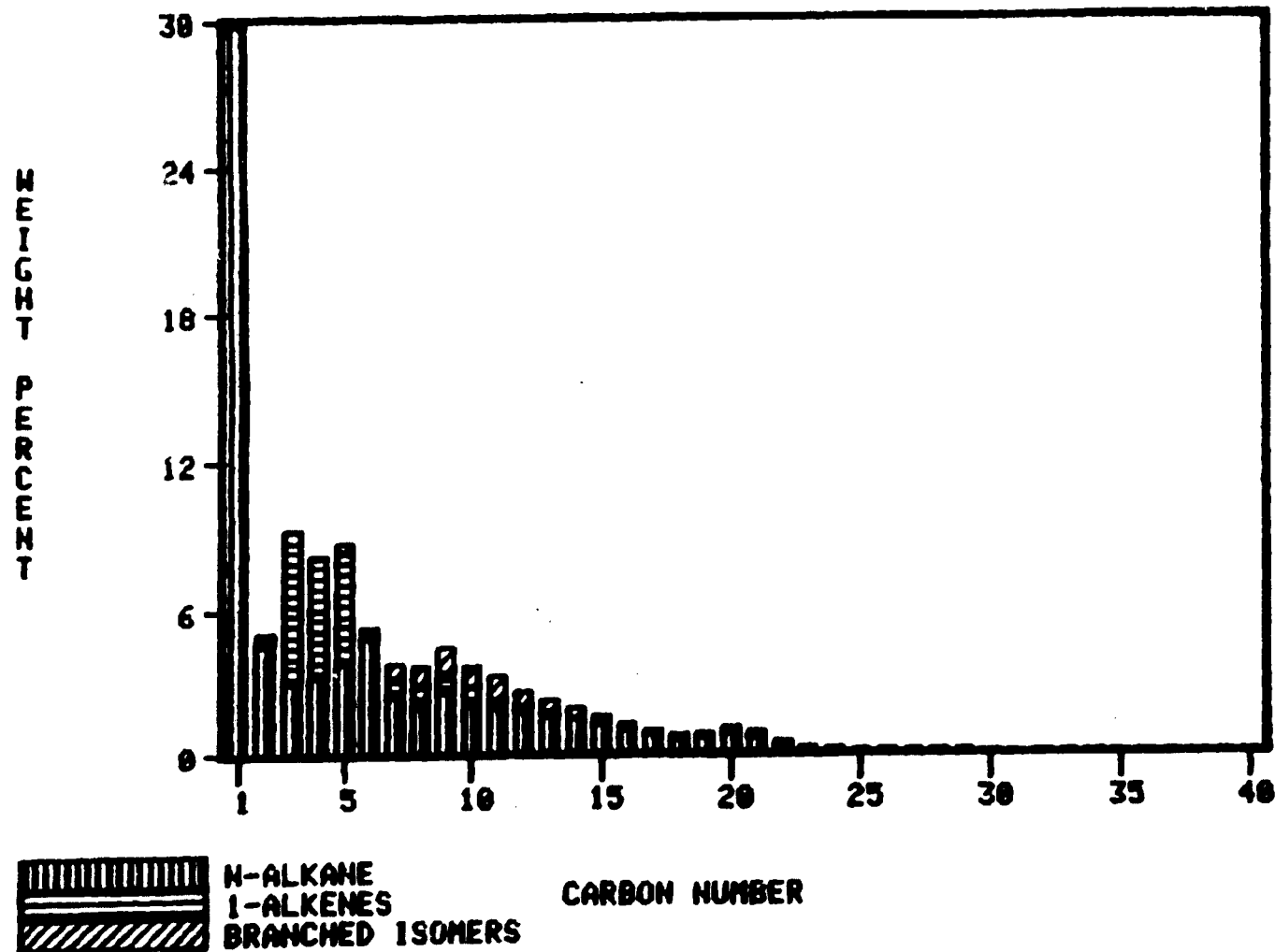




FIGURE 33

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-58

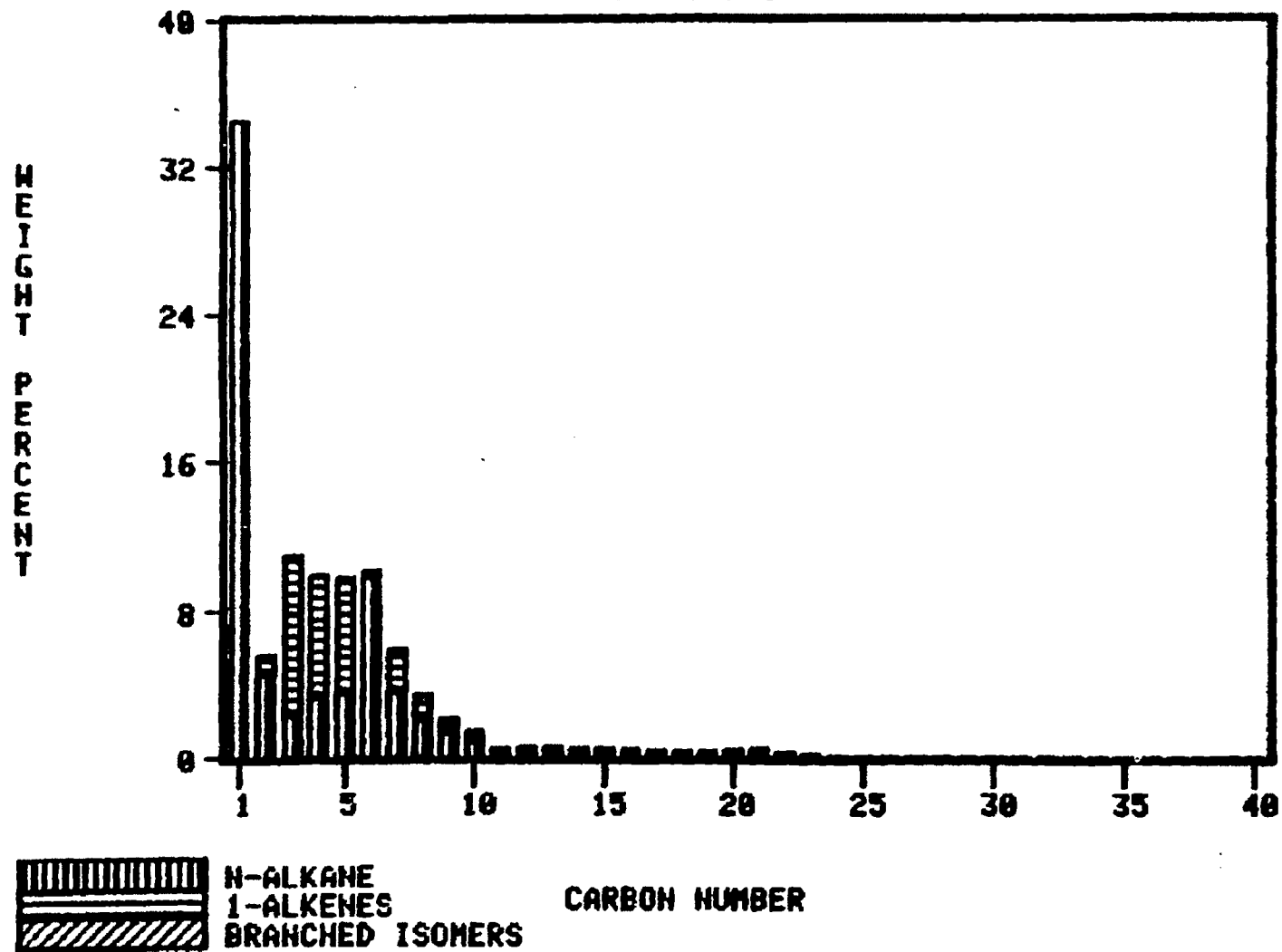
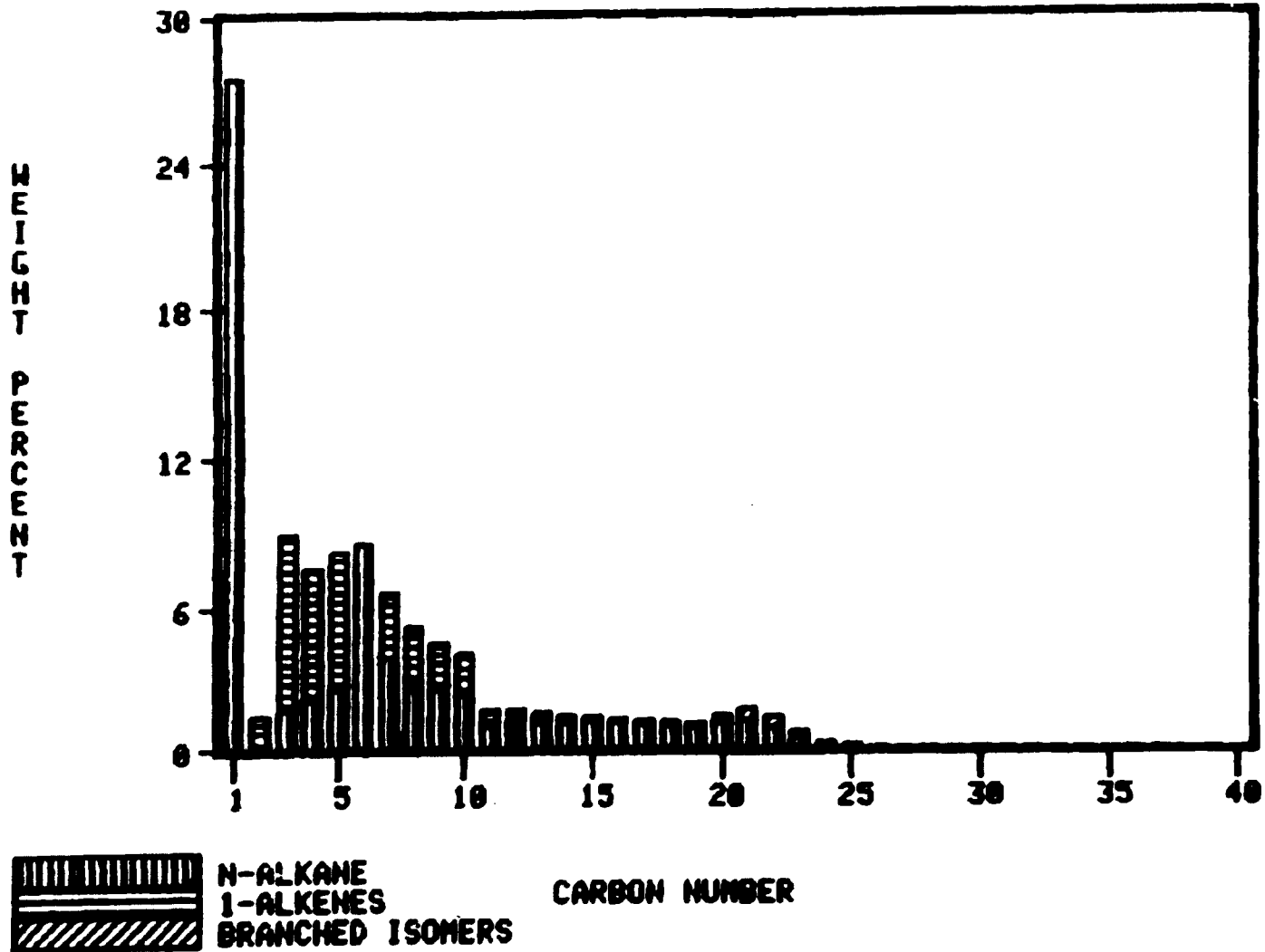


FIGURE 34

HYDROCARBON WEIGHT DISTRIBUTION

8523-41-9-63



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FIGURE 35

Activity vs. Temperature --  $\text{Co}_2\text{O}_3/\text{ZrO}_2/\text{Al}_2\text{O}_3$  -- 8523-41-9

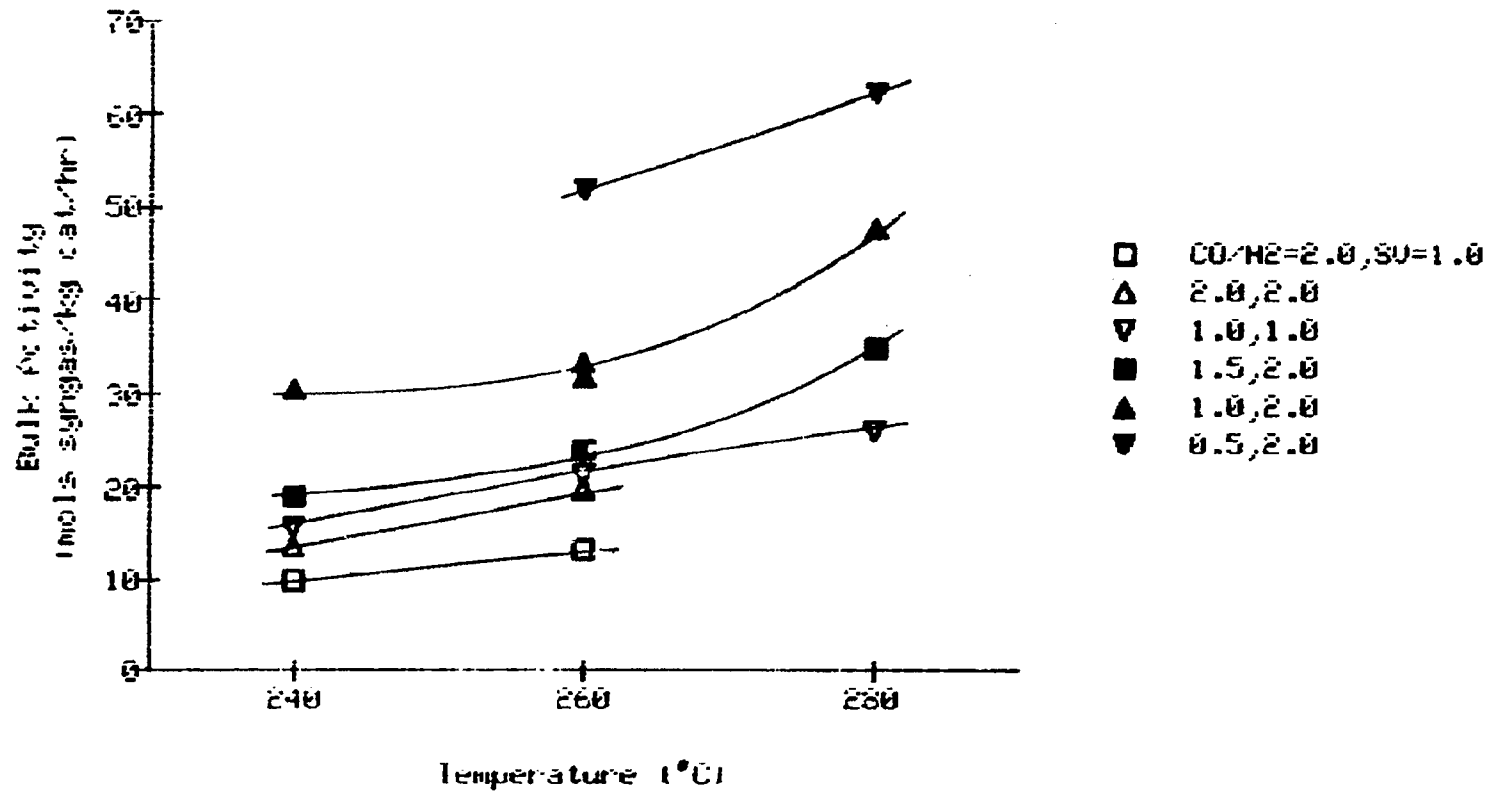


FIGURE 36

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-18-9

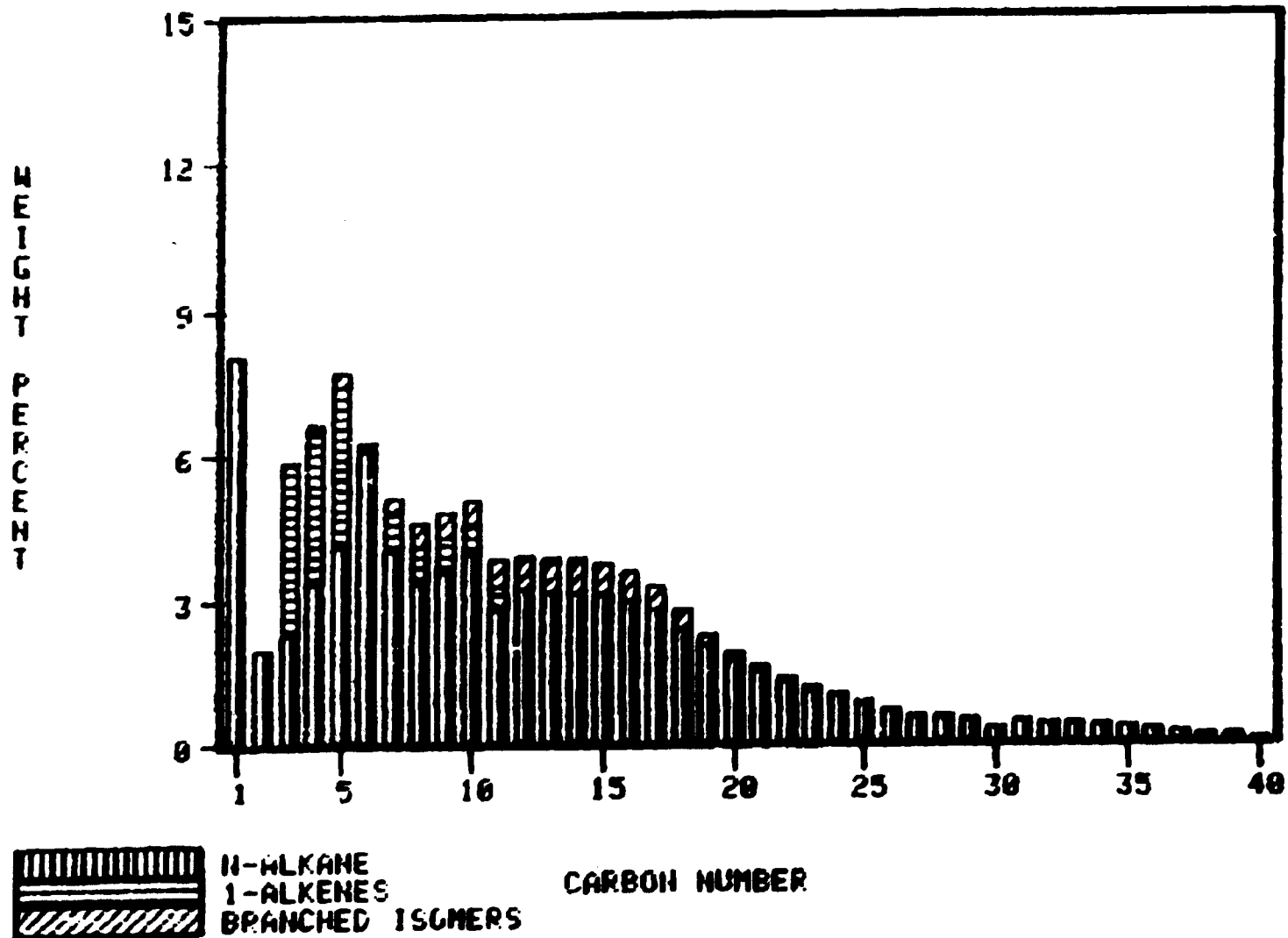


FIGURE 37

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-18-12

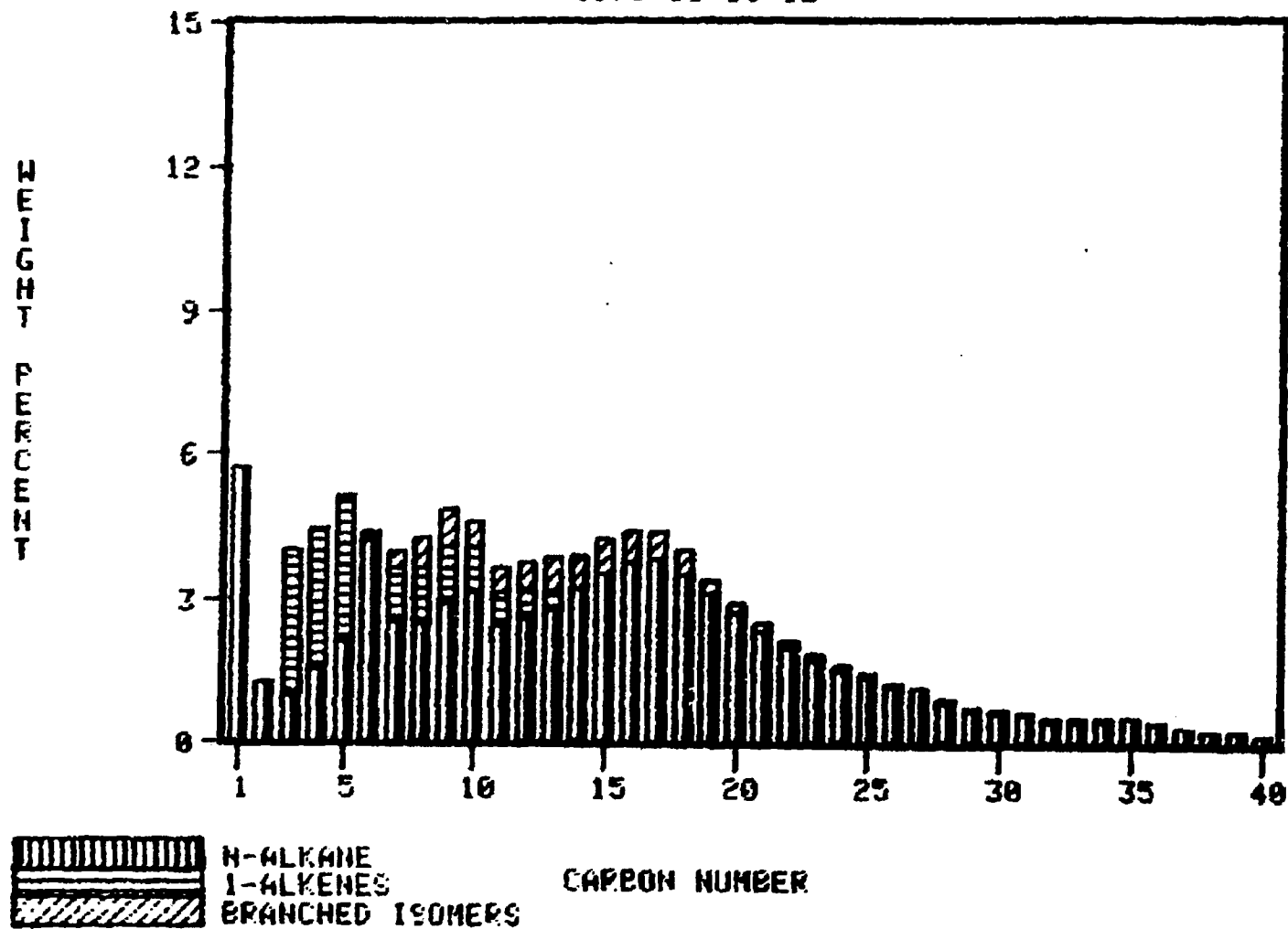


FIGURE 38

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-18-14

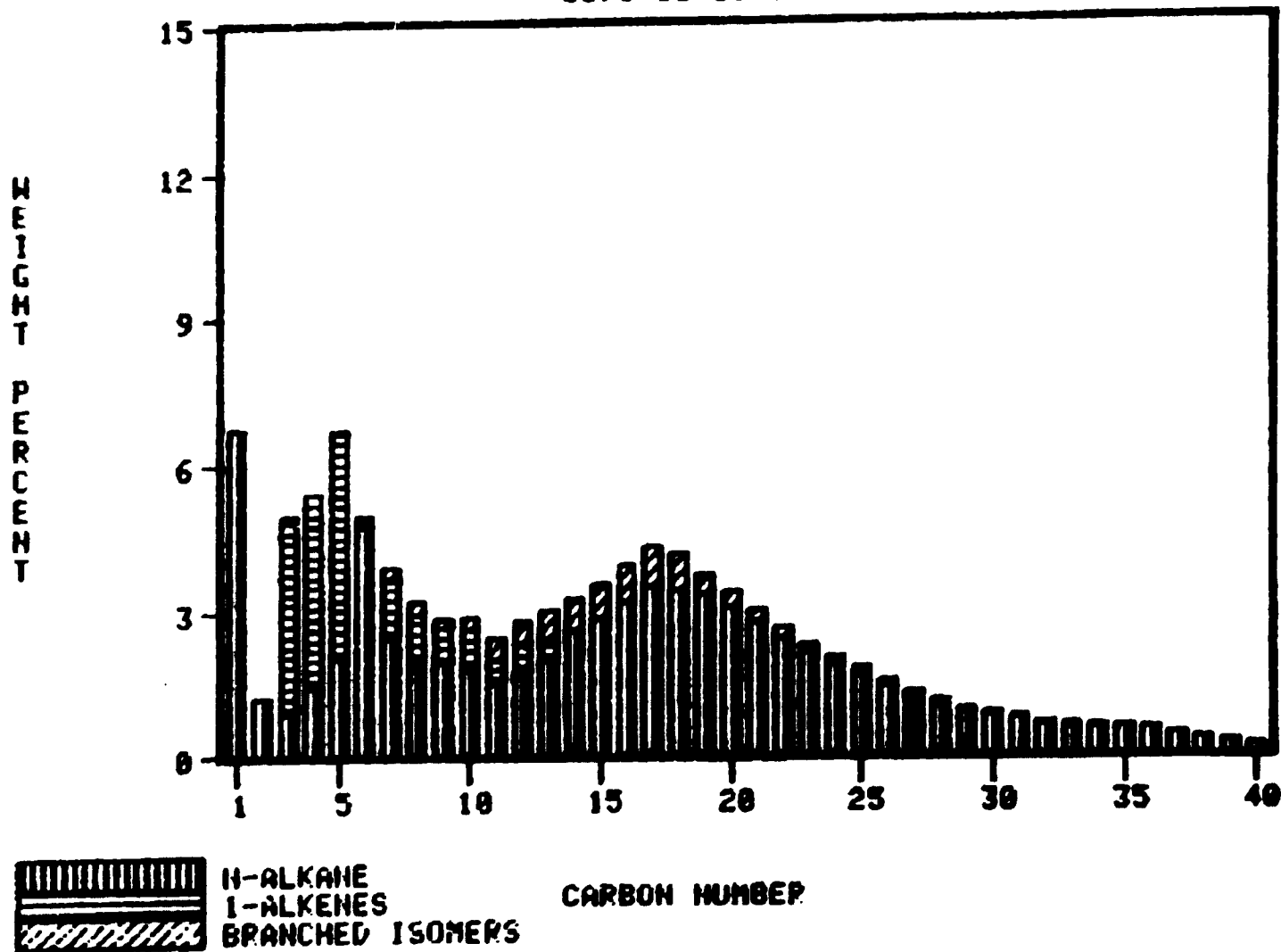


FIGURE 39

HYDROCARBON WEIGHT DISTRIBUTION

8678-11-18-18

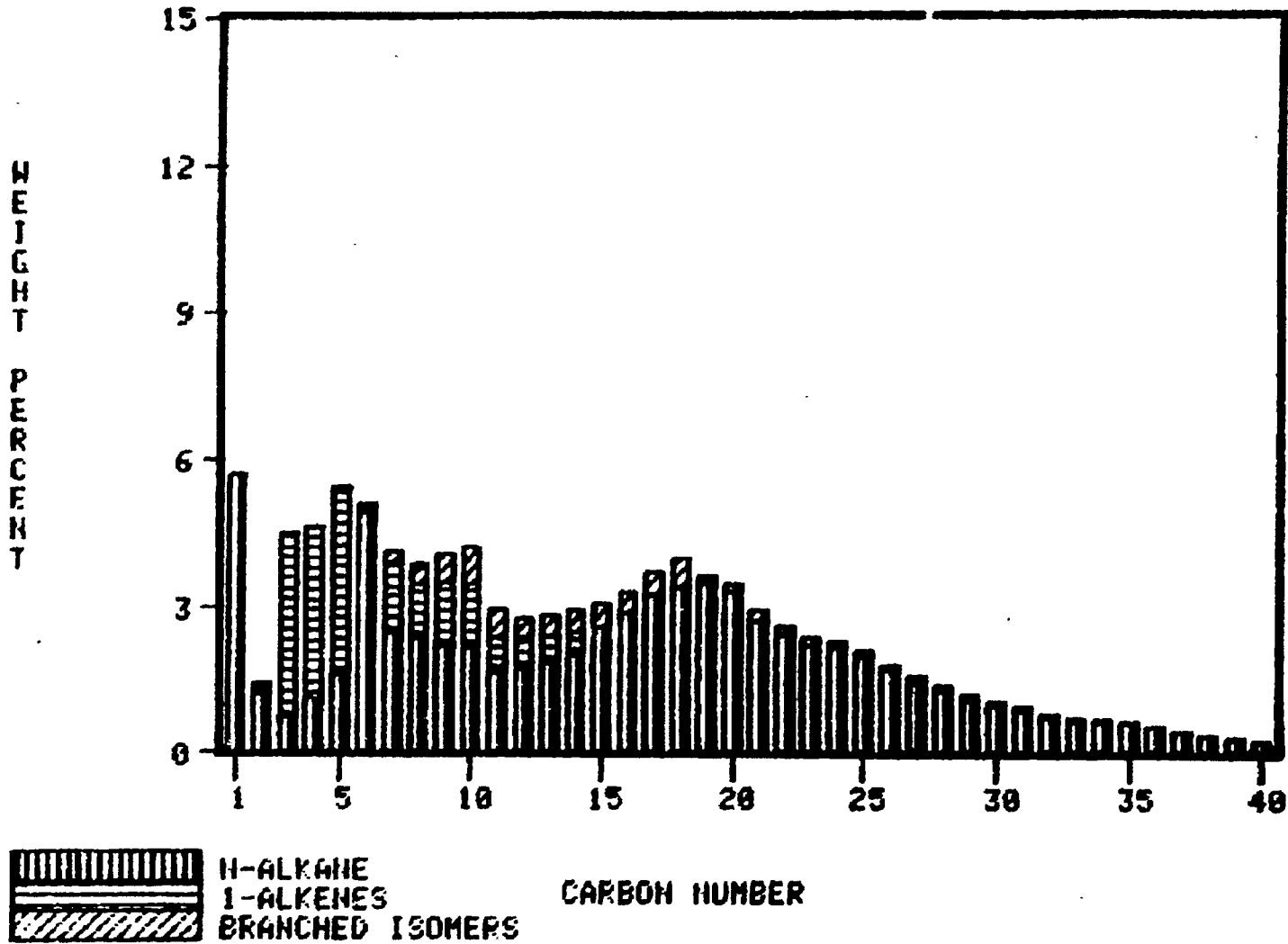


FIGURE 40

HYDROCARBON WEIGHT DISTRIBUTION  
8670-11-10-21

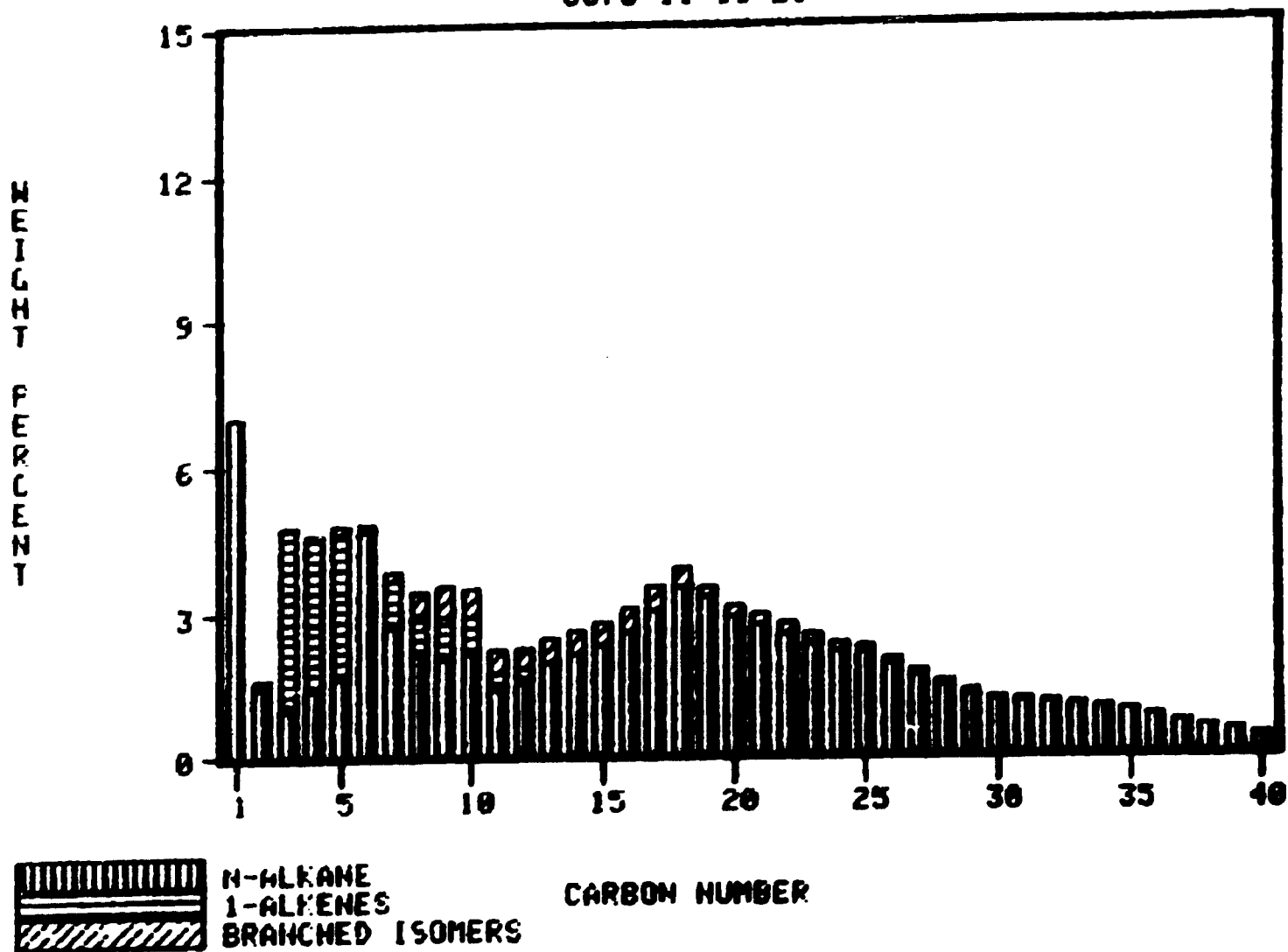




FIGURE 41

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-18-24

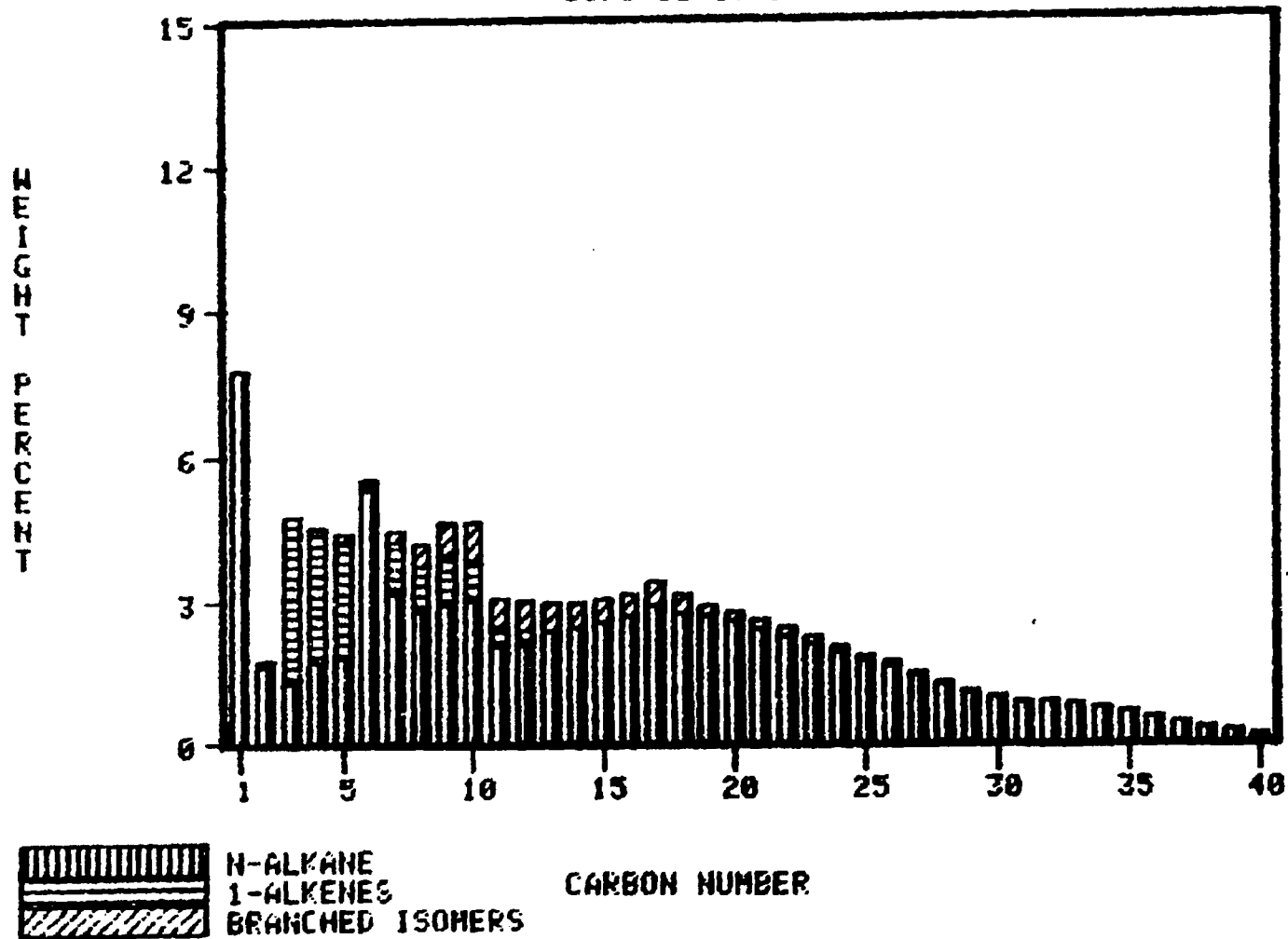


FIGURE 42

HYDROCARBON WEIGHT DISTRIBUTION

8678-11-18-26

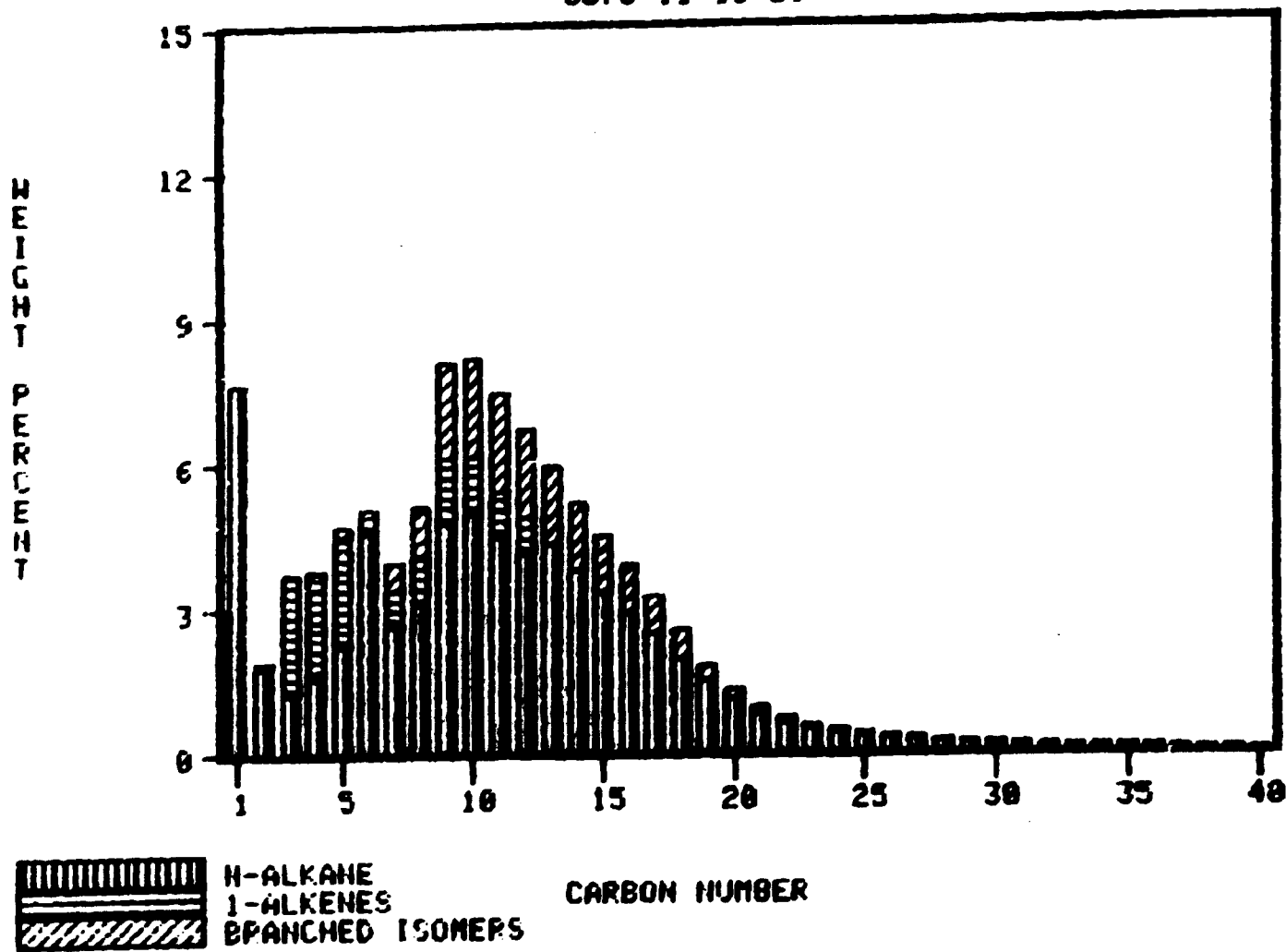


FIGURE 43

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-19-30

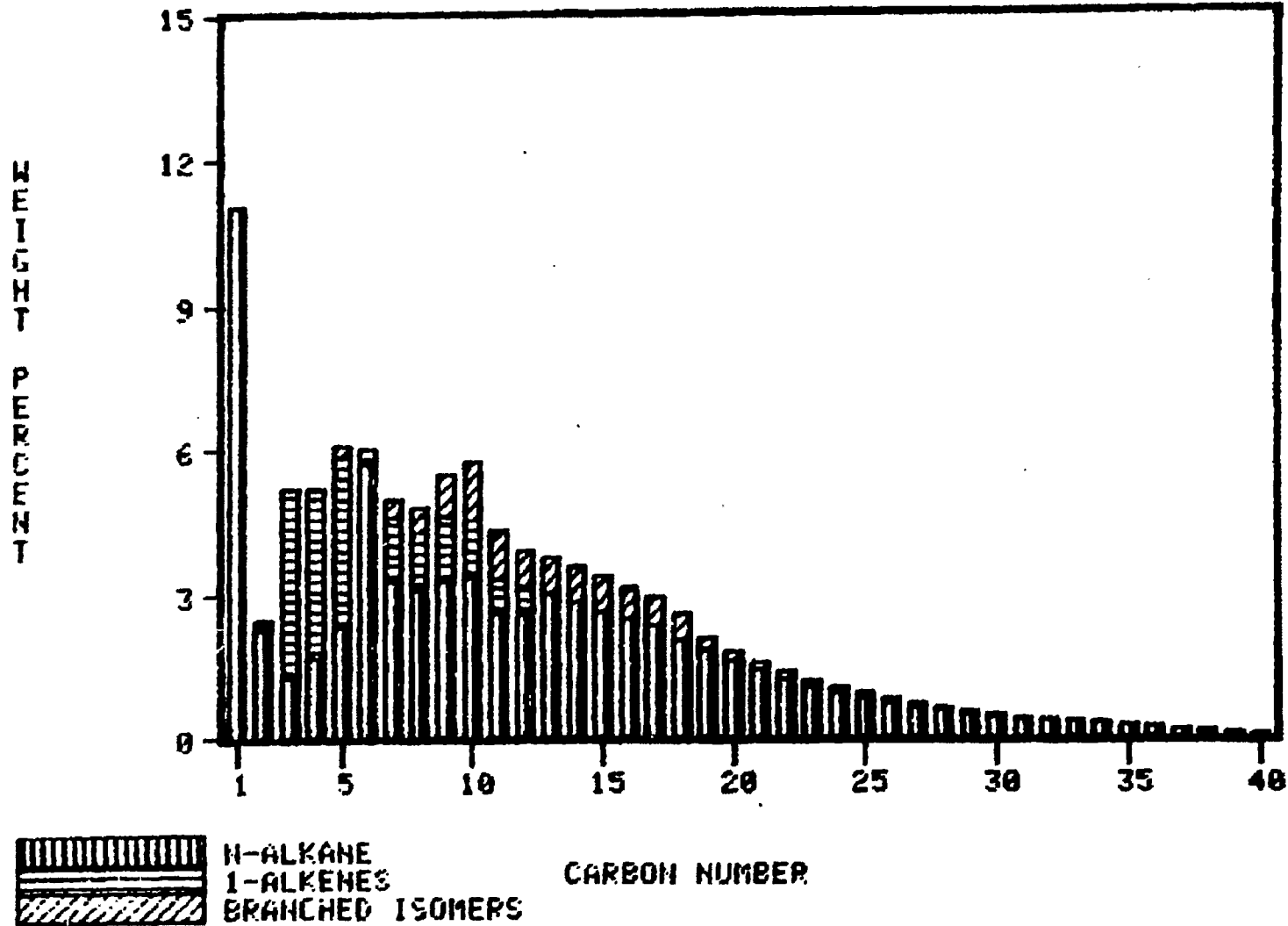
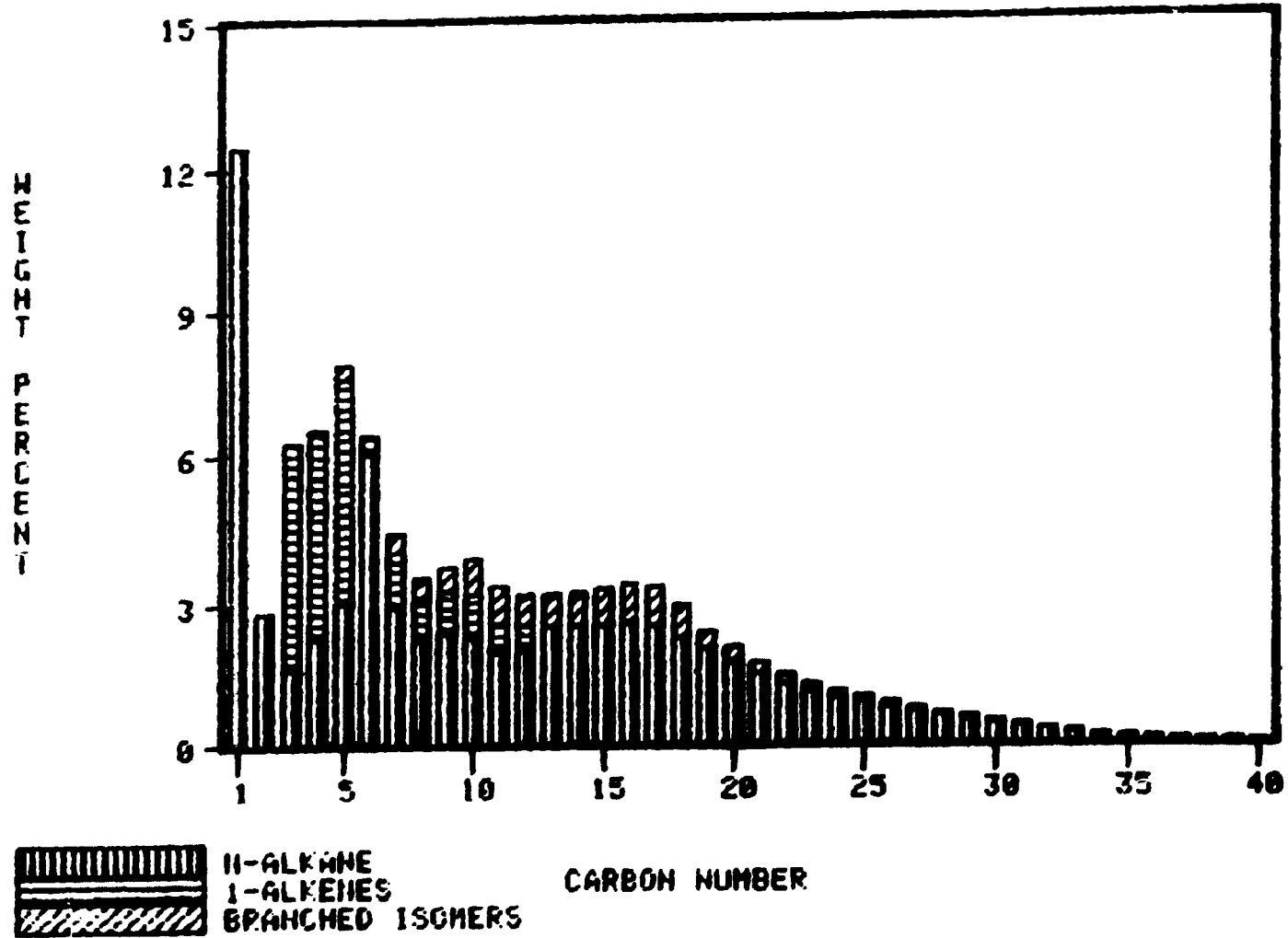


FIGURE 44

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-10-33



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FIGURE 45

HYDROCARBON HEIGHT DISTRIBUTION

8670-11-10-36

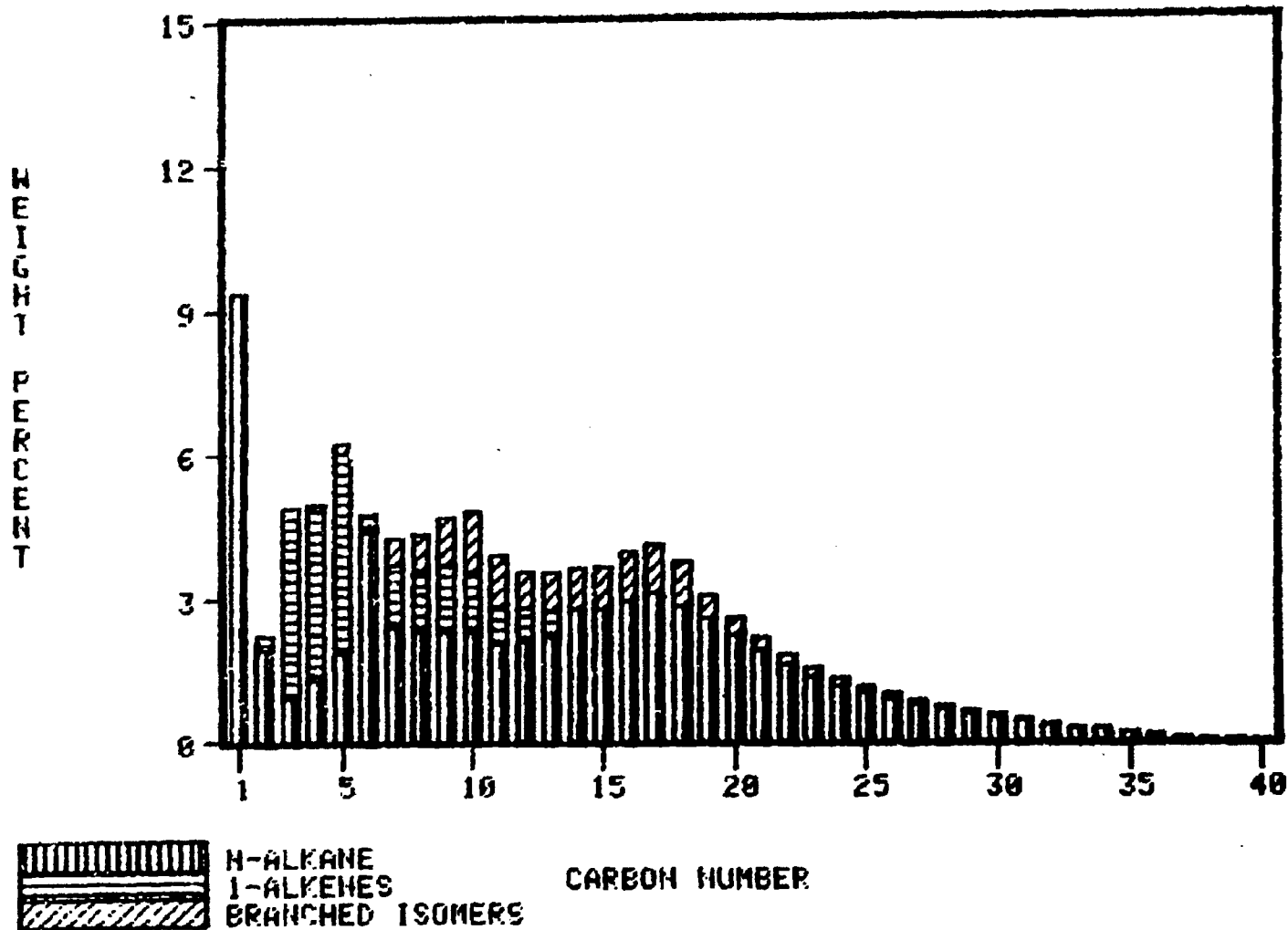


FIGURE 46

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-18-39

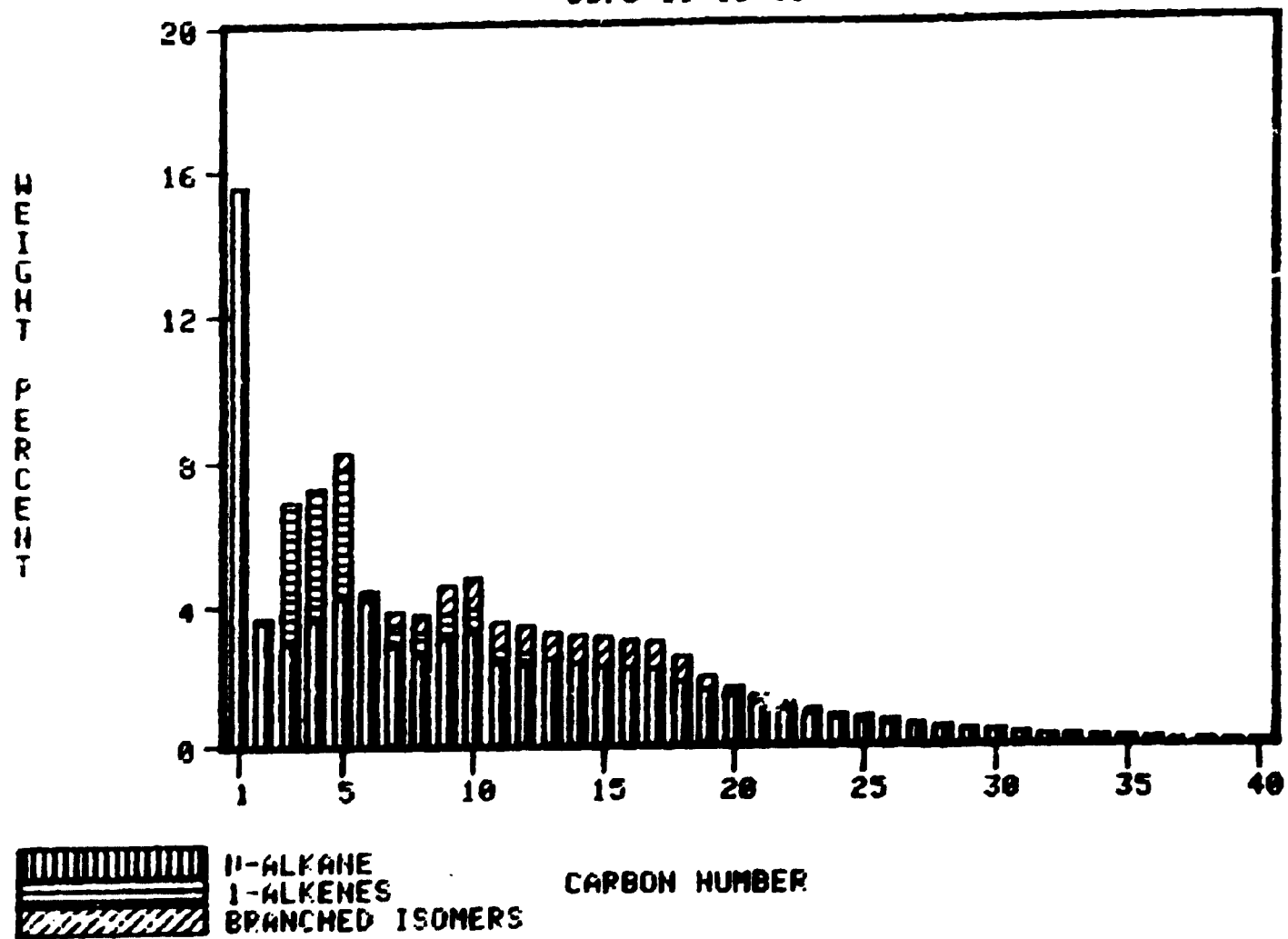
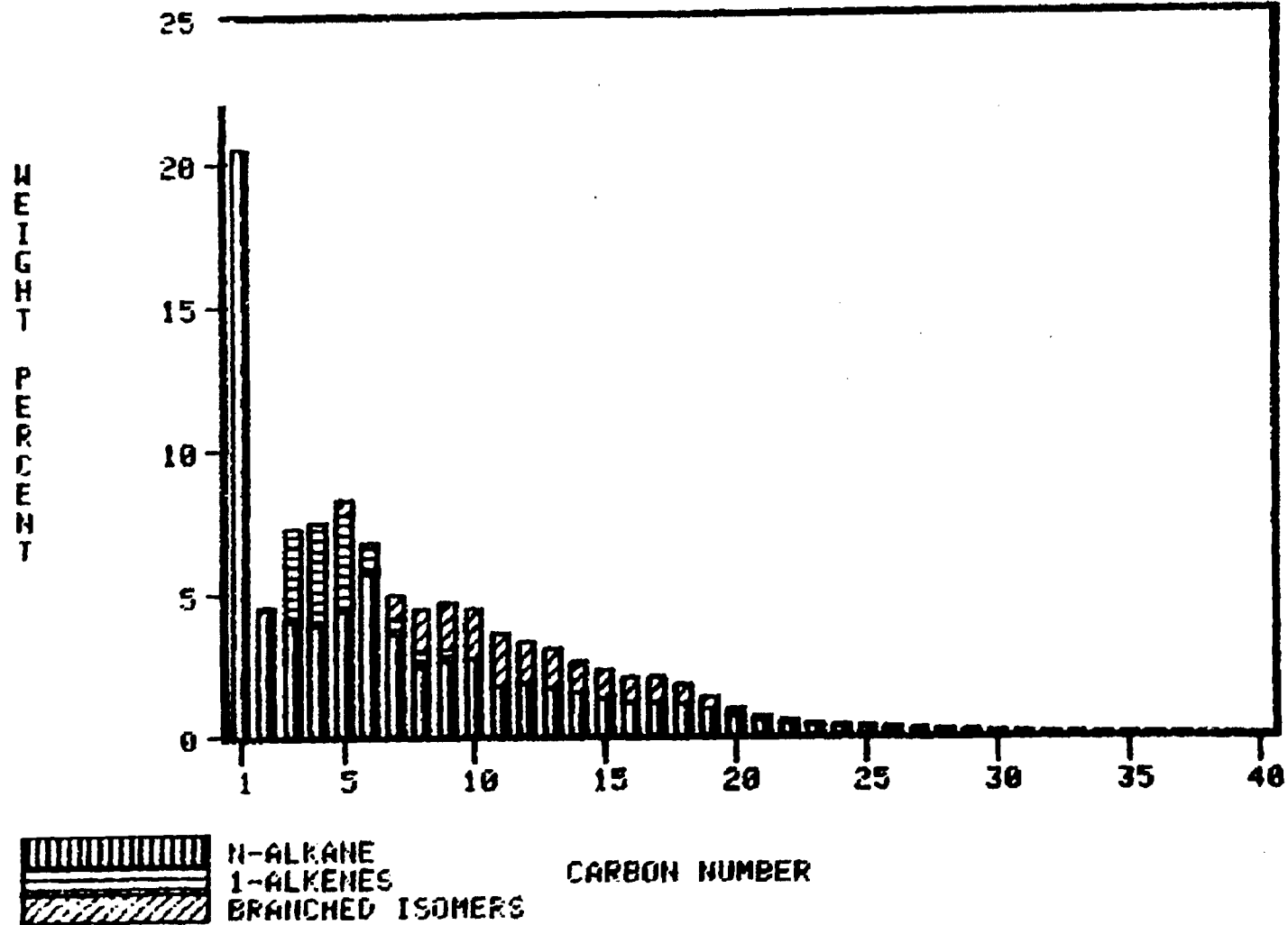


FIGURE 47

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-18-42



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FIGURE 48

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-18-45

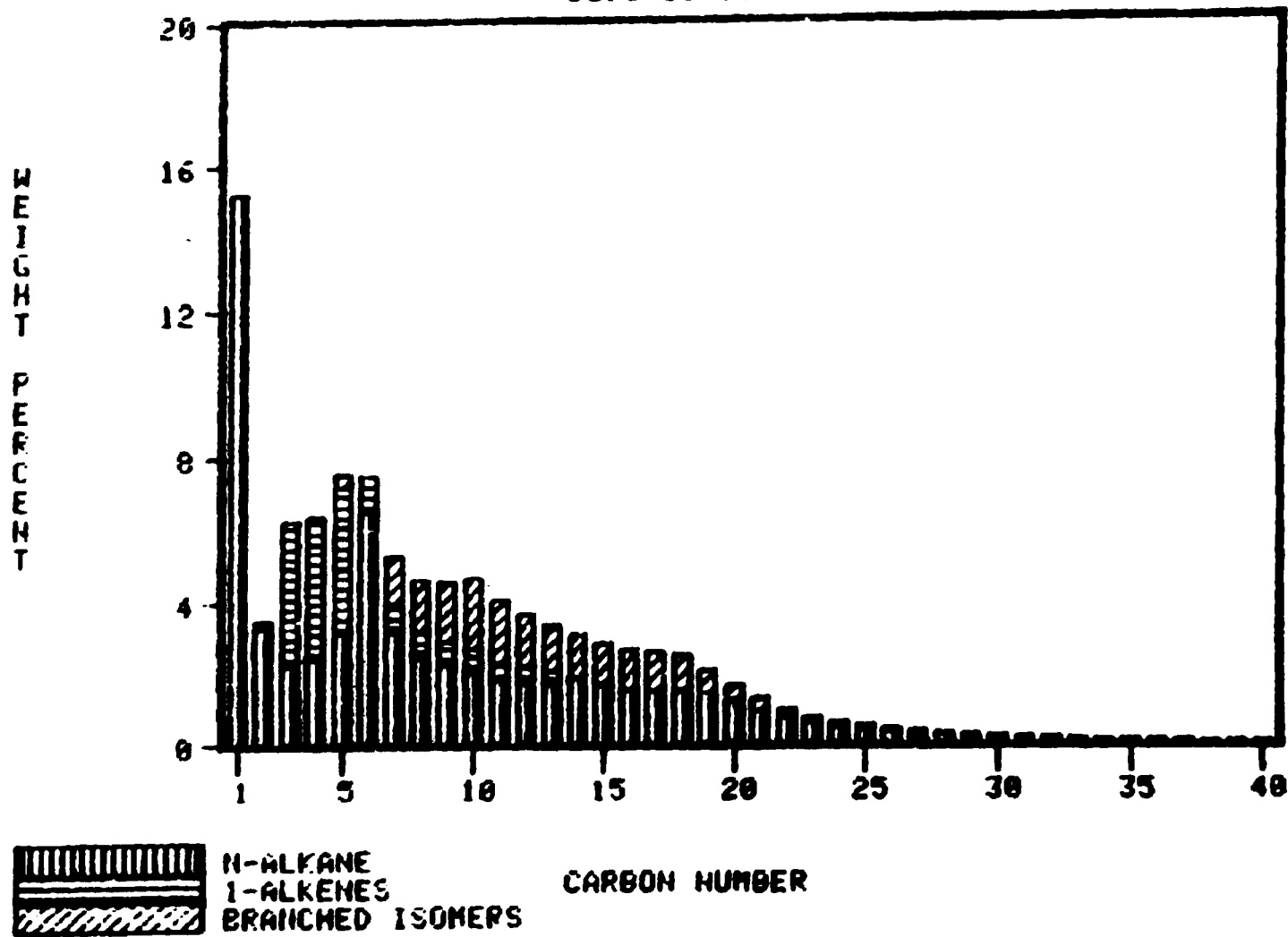




FIGURE 49

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-18-48

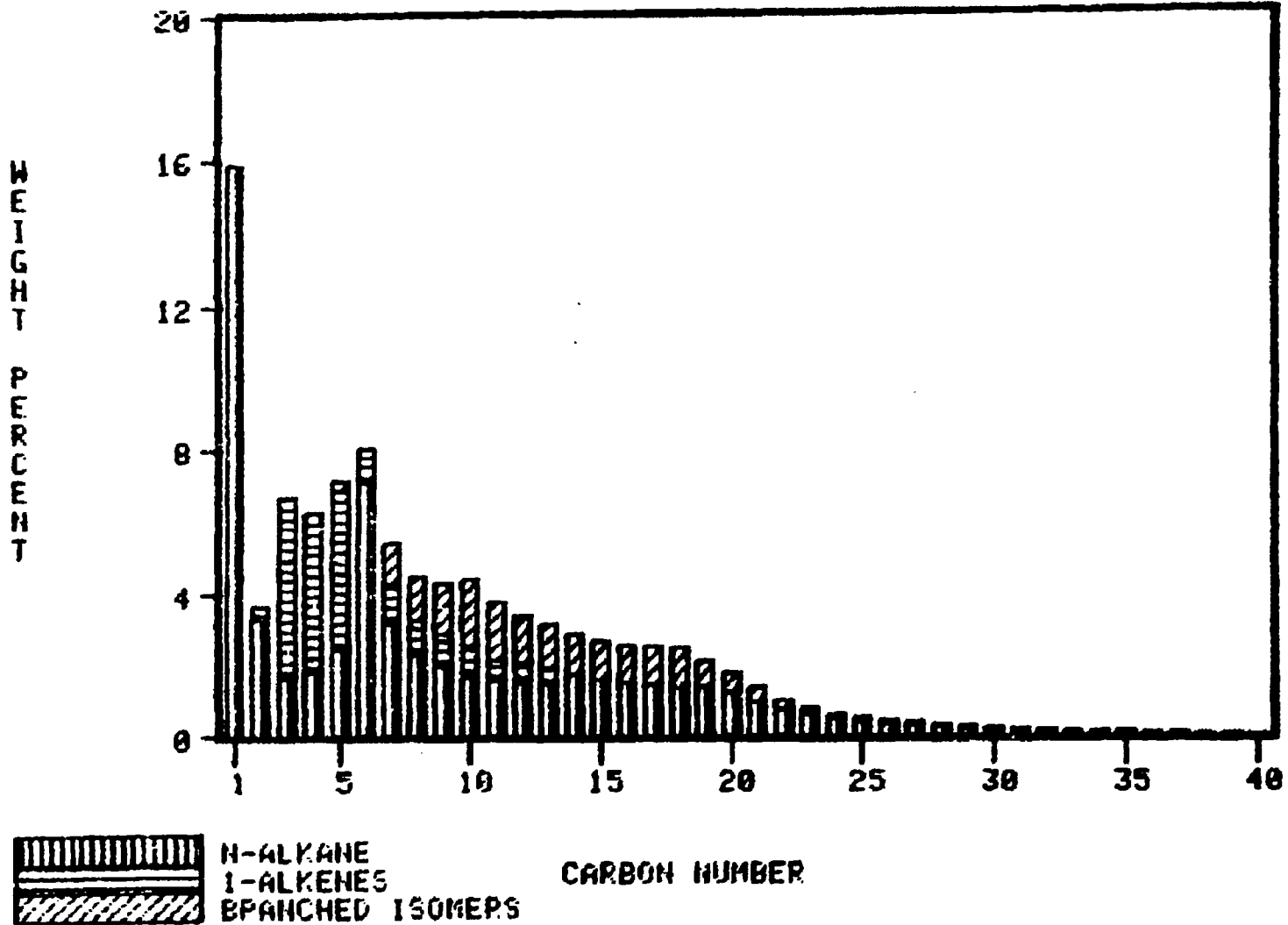
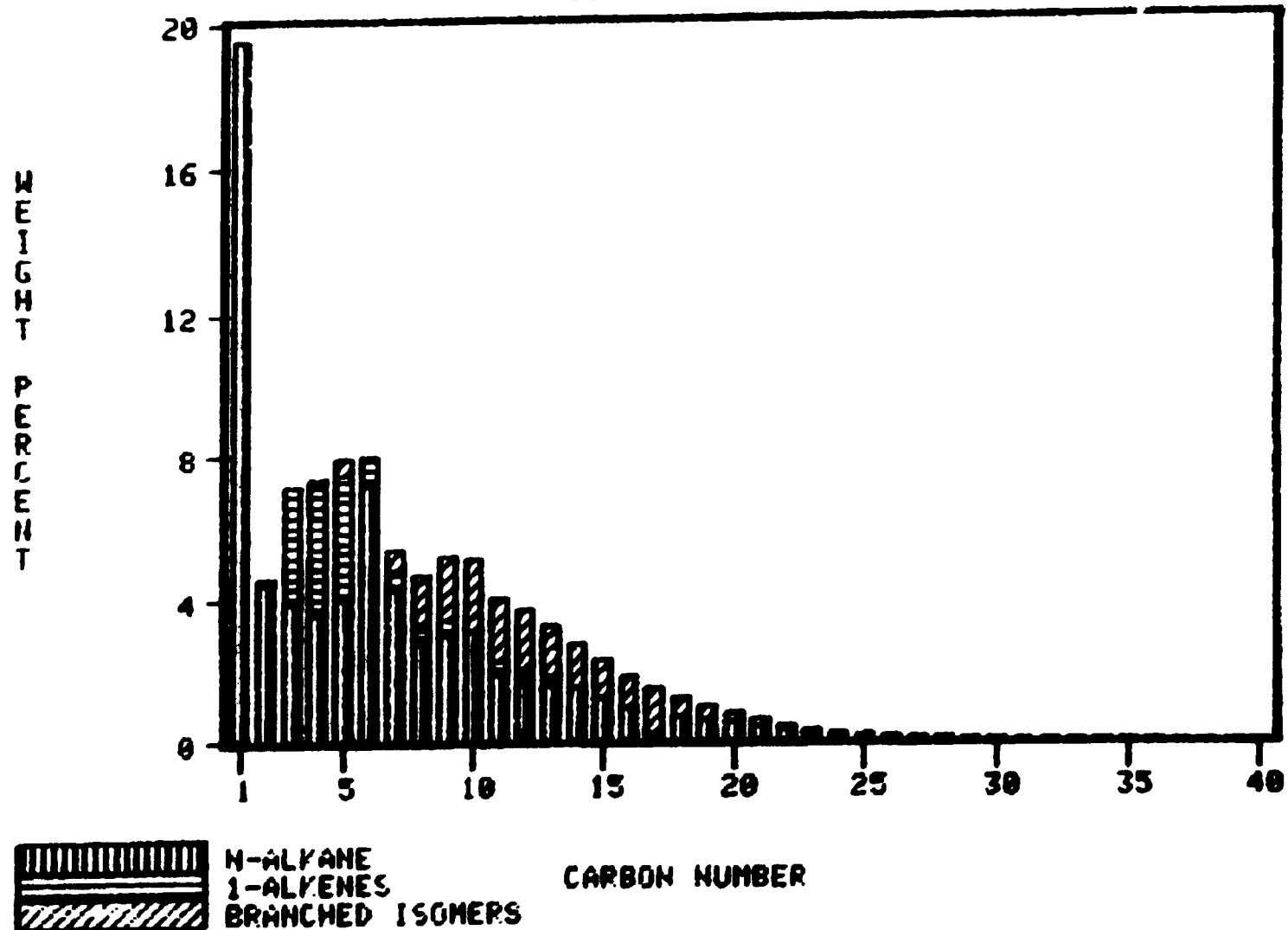


FIGURE 50

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-18-51

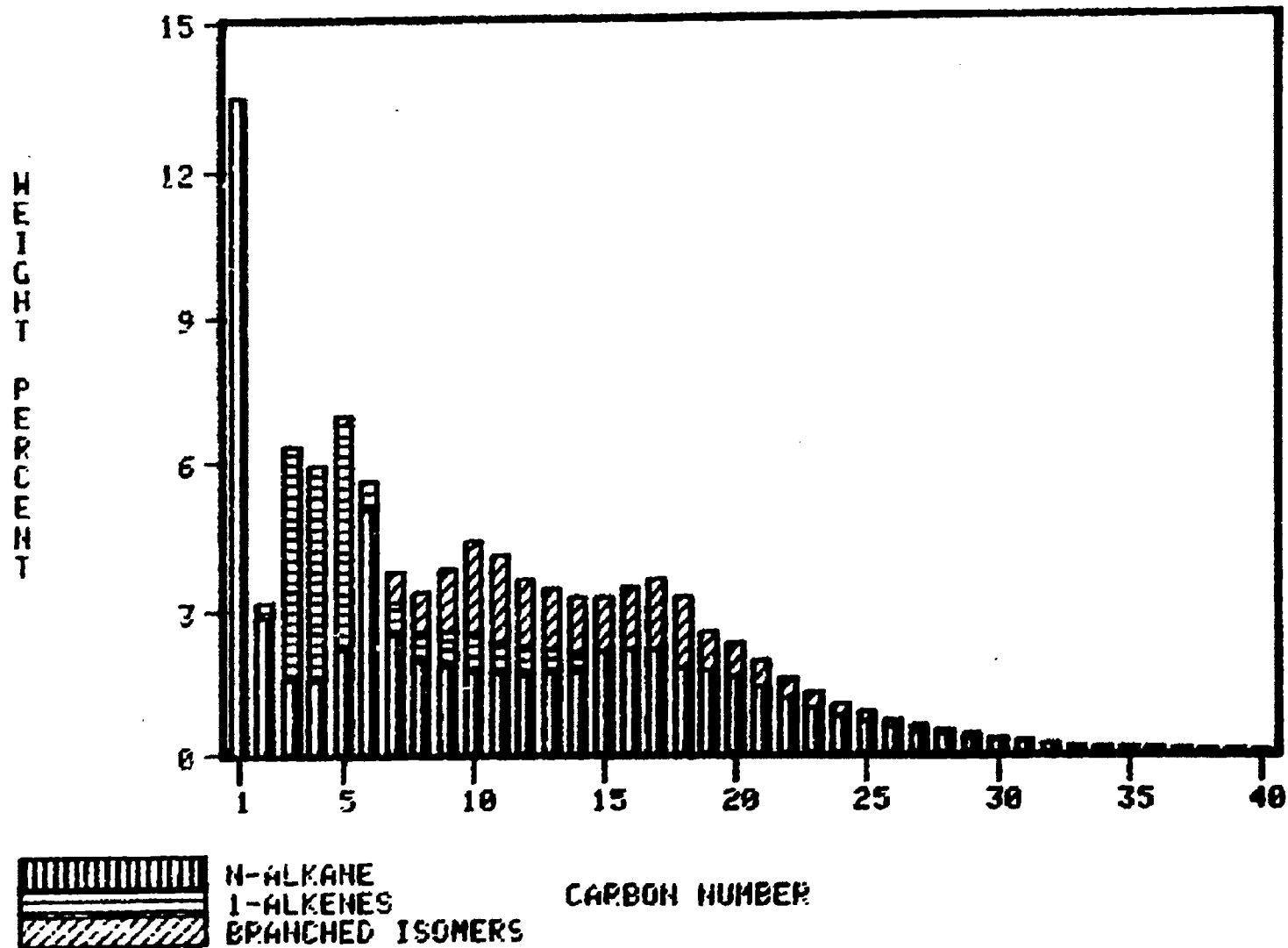


033

FIGURE 51

HYDROCARBON WEIGHT DISTRIBUTION

6670-11-18-54



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FIGURE 52

HYDROCARBON WEIGHT DISTRIBUTION

8670-11-18-57

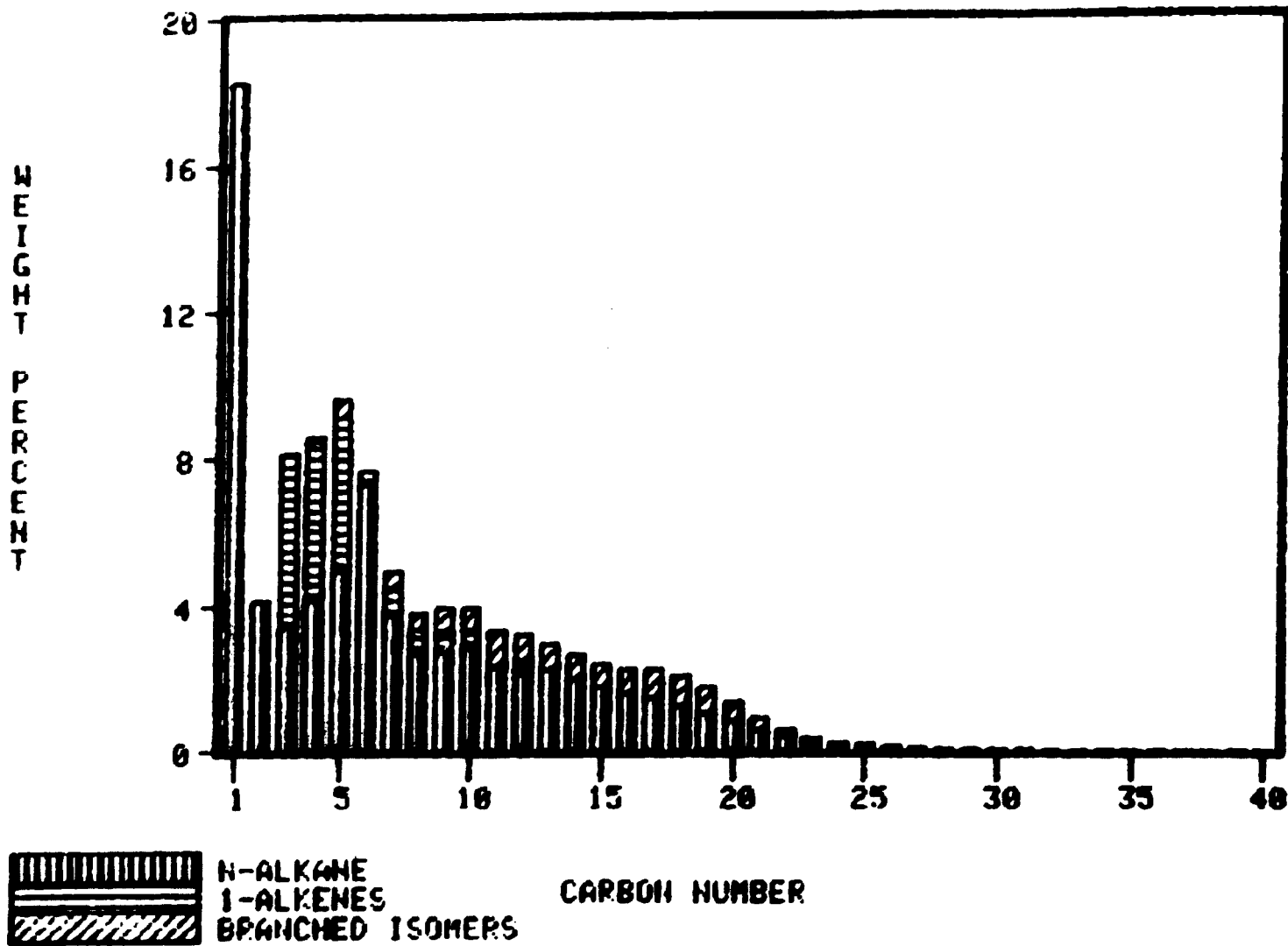
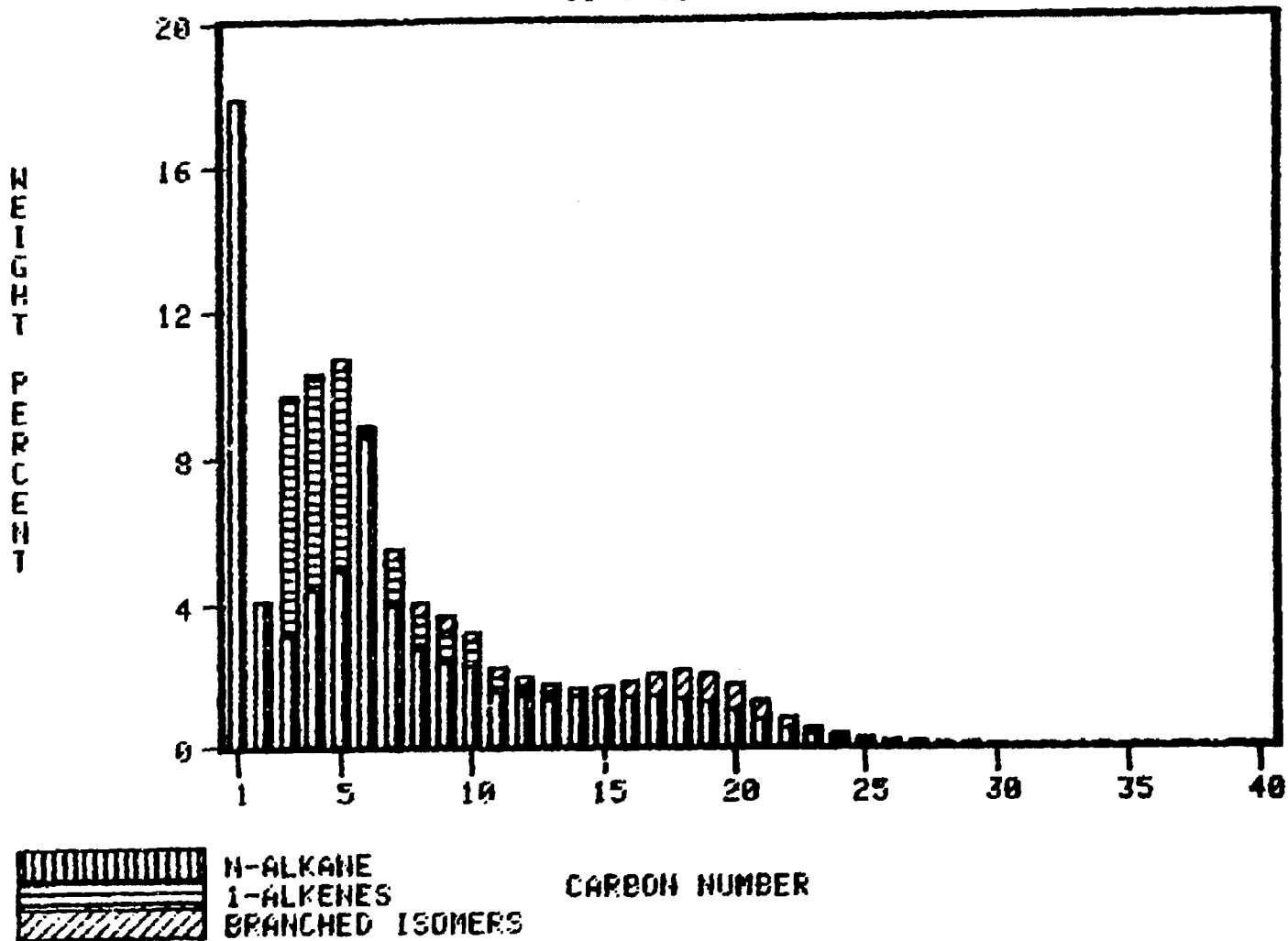


FIGURE 53

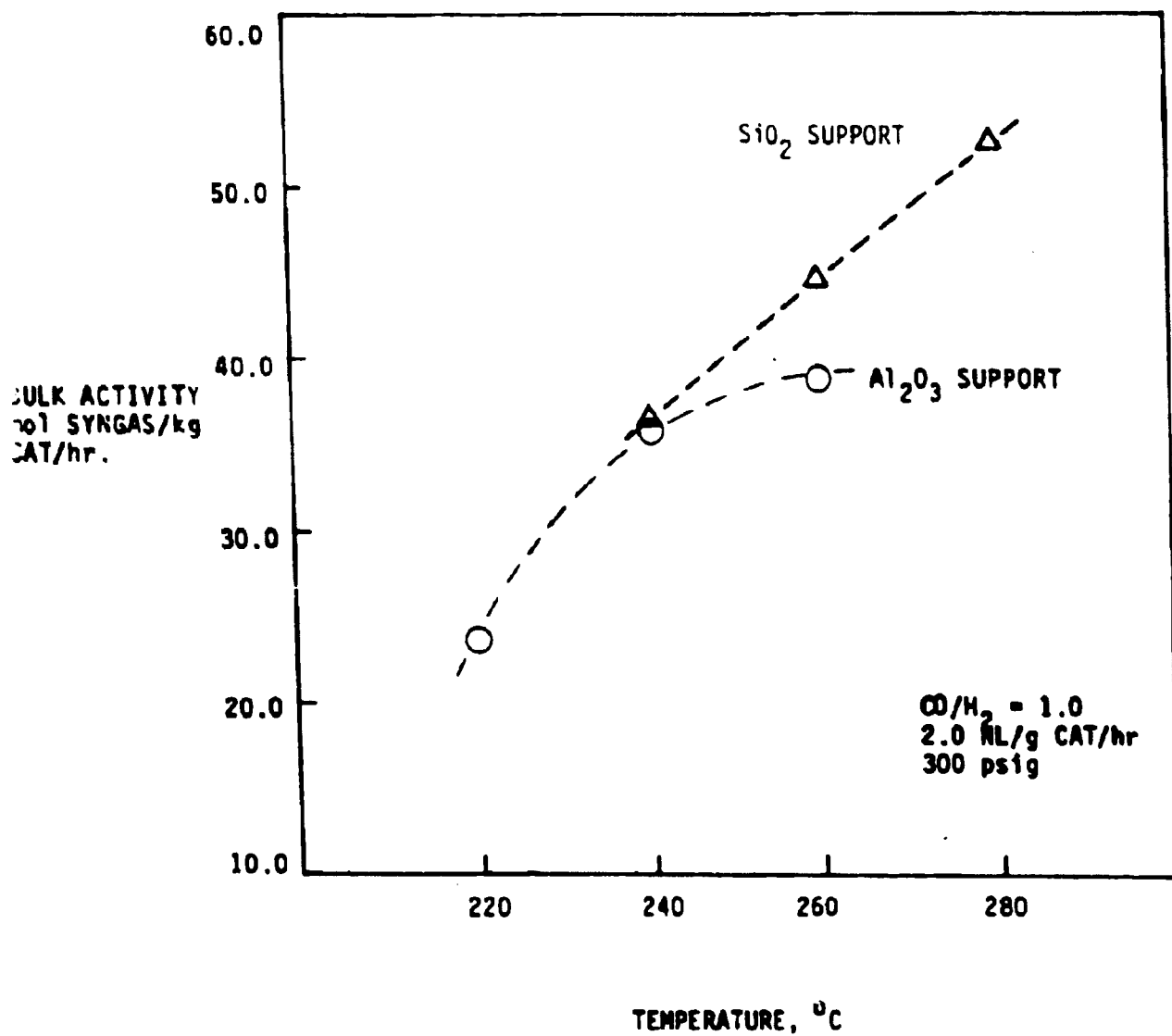
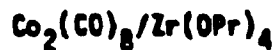
HYDROCARBON WEIGHT DISTRIBUTION

8670-11-18-60



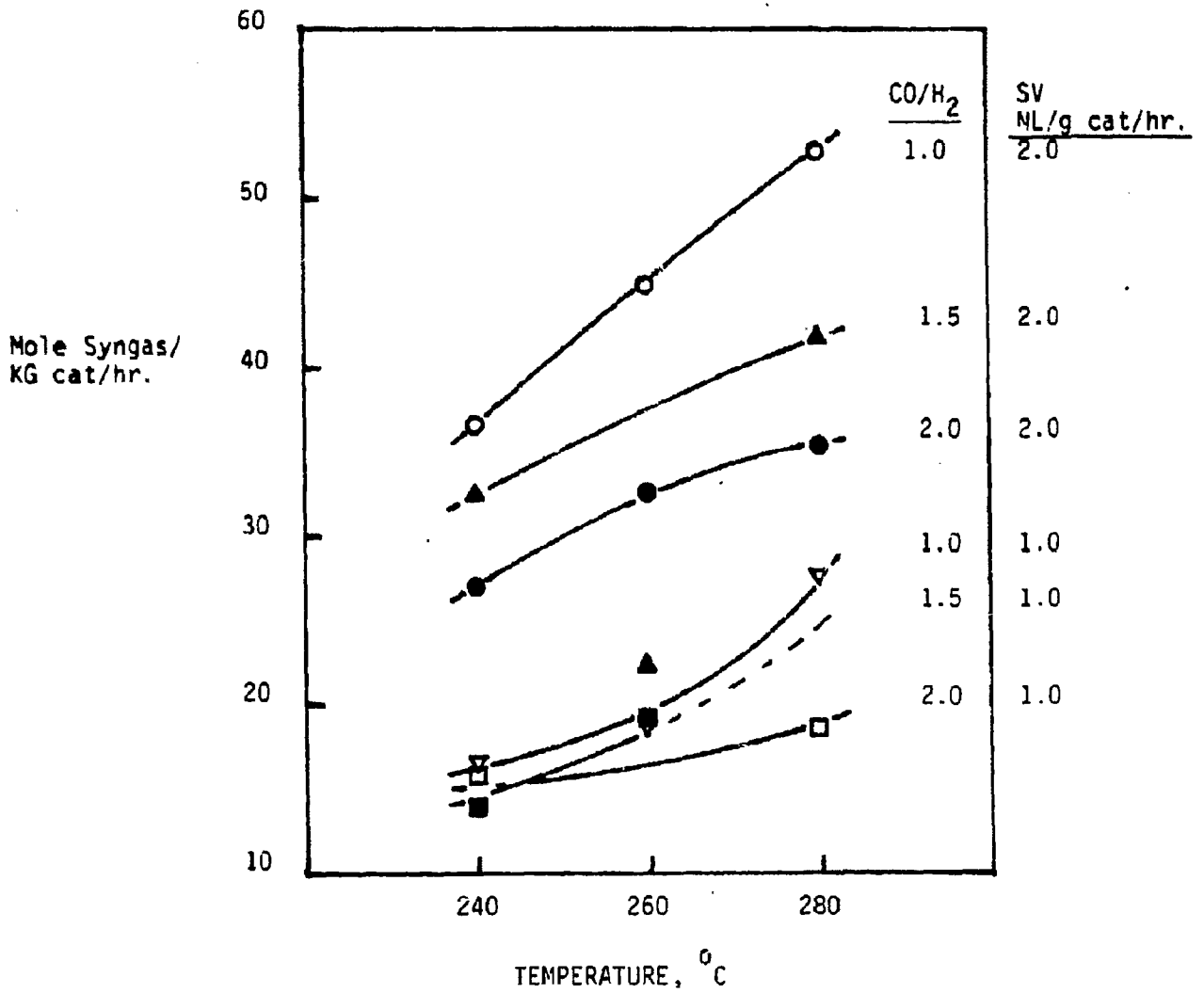
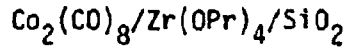
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**FIGURE 54**  
**BULK ACTIVITY DEPENDENCY ON TEMPERATURE**



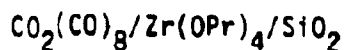
**FIGURE 55**

EFFECT OF SPACE VELOCITY, CO/H<sub>2</sub> FEED,  
TEMPERATURE ON BULK ACTIVITY

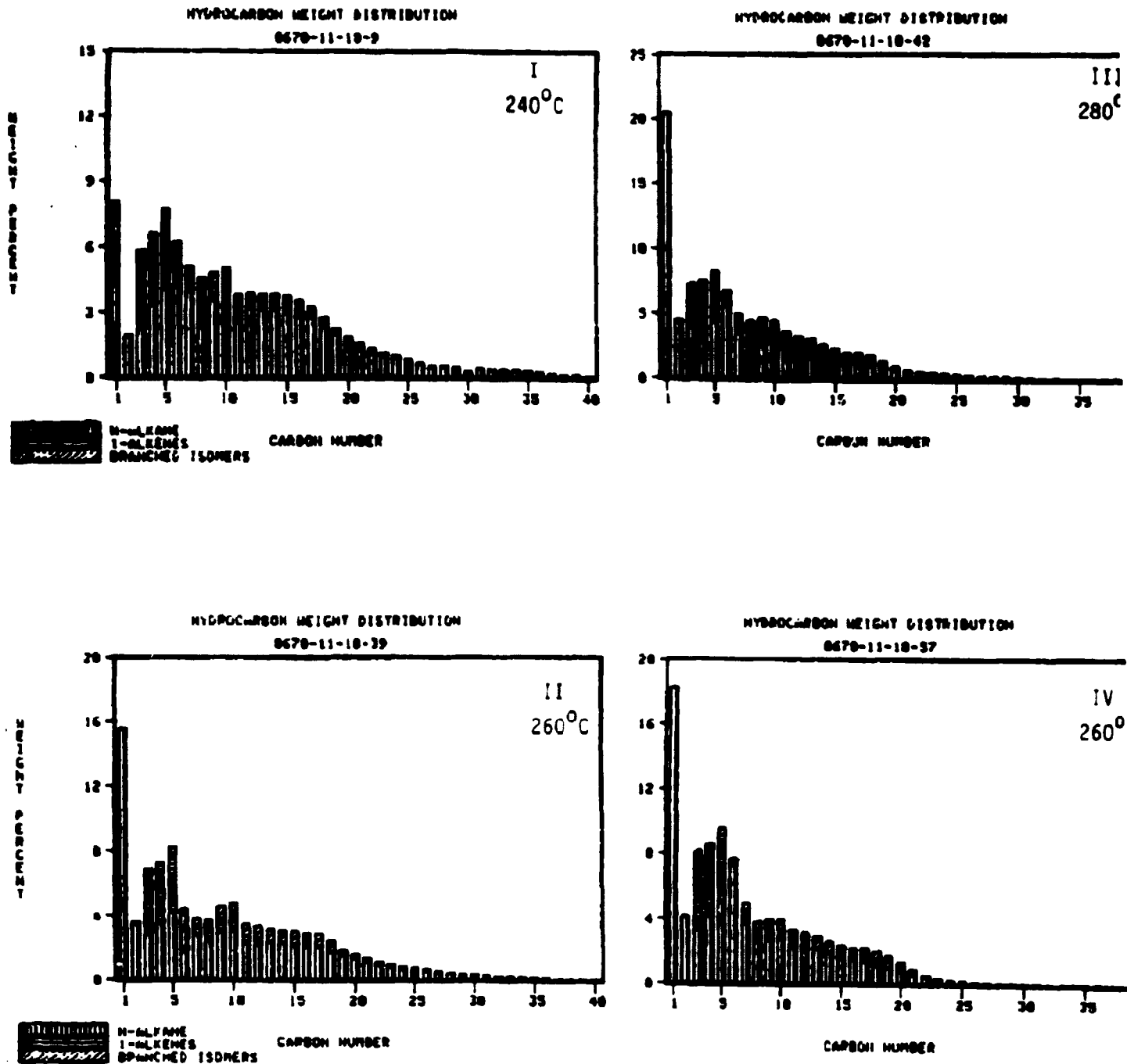


**FIGURE 56**

**EFFECT OF TEMPERATURE ON HYDROCARBON SELECTIVITY**



SV = 2.0 NL/g cat/hr.  
 P = 300 psig  
 CO/H<sub>2</sub> = 1.0



NOTE: Wt.% scales are not the same for each graph



FIGURE 57

WATER - GAS SHIFT ACTIVITY

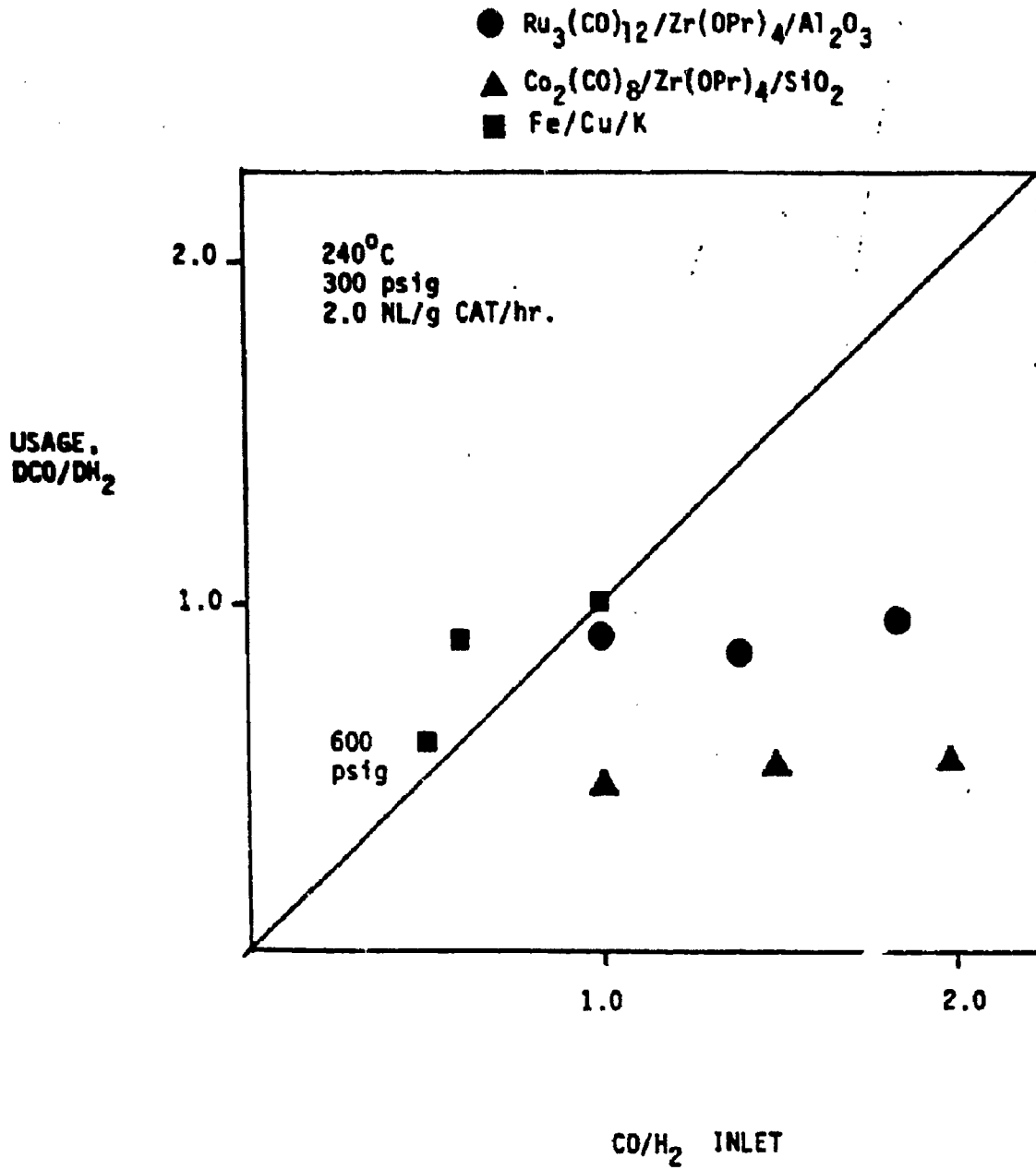
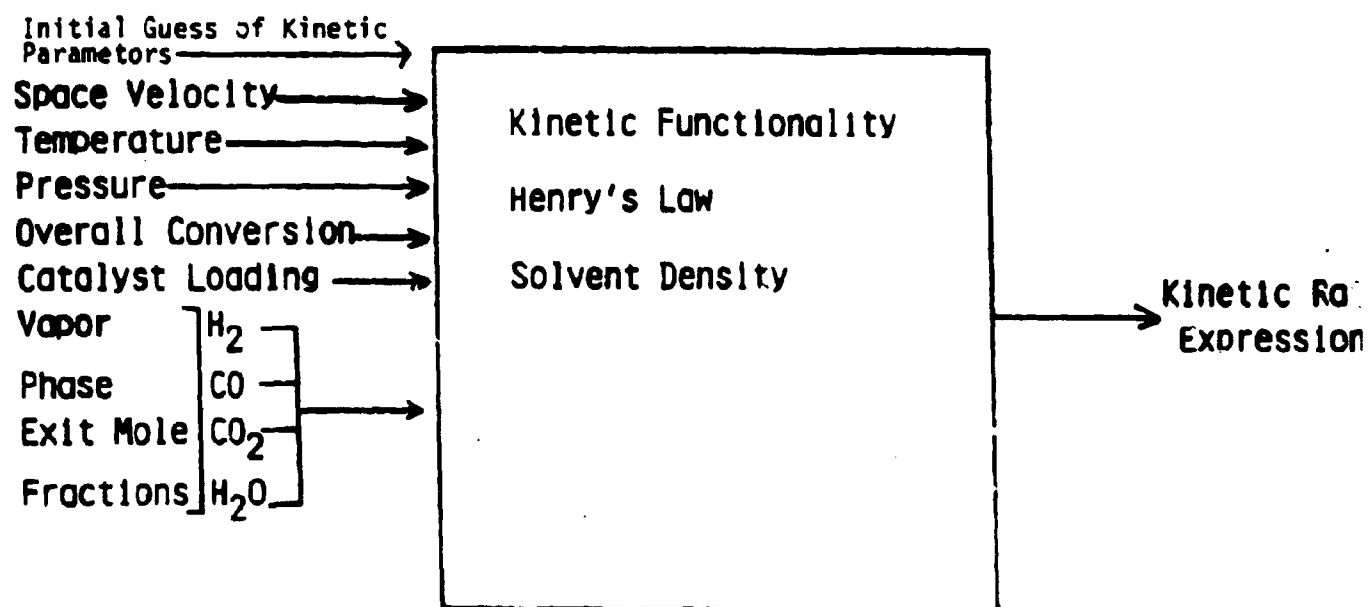


FIGURE 58

KINETIC DATA ANALYSIS PROGRAM



$$\rho^1 = 0.758 - 0.555 \cdot (T_k - 373)$$

$$He_{H_2}^2 = 34.162 \cdot \exp(739.486/T_k) \cdot 14.23 \text{ psia/mol/kg oil}$$

$$He_{CO} = 44.583 \cdot \exp(433.391/T_k) \cdot 14.23$$

$$He_{CO_2} = 119.925 \cdot \exp(-438.926/T_k) \cdot 14.23$$

$$He_{H_2O} = 275.113 \cdot \exp(-1122.92/T_k) \cdot 14.23$$

<sup>1</sup>Deckwer et.al., I&EC PDD, 1980, 19, 609.

<sup>2</sup>Peter and Wehnert, Z. F. P. Chemie, 5, 1955, 114.

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