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service report

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11 September 1985

F 3/1/4/0
F 6266/85

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Attention: Griff Weste

REPORT F 6266/85

YOUR REFERENCE: Req. no. 086 dated 3 July 1985

TITLE: Source rock data for Two Wells from the Officer Basin, South Australia

MATERIAL: Core

LOCALITY: MARLA-3, MERAMANGYE-1

DATE RECEIVED: 5 July 1985

WORK REQUIRED: Extraction of organic matter. Liquid chromatography. Gas chromatography of saturates

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1. INTRODUCTION

5 source rock samples were chosen for further geochemical analysis by the client from TOC and Rock-Eval pyrolysis data contained in AMDEL Report F 4489/85.

The results of these further analysis plus diagrammatic representation of the results are presented in this report.

2. ANALYTICAL PROCEDURE

2.1 Extraction of Organic Matter (EOM)

The total crushed samples were extracted with azeotropic chloroform/methanol (87:13) in a Soxhlet apparatus for 24 hours. Removal of solvent by careful rotary evaporation gave the EOM (nominally C_{15+}).

2.2 Liquid chromatography

The EOM was separated into hydrocarbons (saturates and aromatics) and resins plus asphaltene by liquid chromatography on activated alumina (sample: adsorbent ratio = 1:100). Hydrocarbons were eluted with petroleum ether/dichloromethane (50:50) and resins plus asphaltenes with methanol/dichloromethane (65:35). The saturated and aromatic hydrocarbons were then separated by liquid chromatography on activated silica gel (sample: adsorbent ratio = 1:100) eluting in turn with petroleum ether and petroleum ether/dichloromethane (91:9).

2.3 Gas Chromatography (GC)

The saturated hydrocarbons (alkanes) were examined by gas chromatography using the following instrumental parameters:

Gas chromatograph:	Perkin Elmer Sigma 2 fitted with on-column injector
Column:	25 m x 0.3 mm fused silica, SGE OC3/BP1
Detector temperature:	300°C
Carrier gas:	He at 85 kPa
Column temperature:	100-290°C at 5° per minute and held at 290°C until all peaks eluted
Quantitation:	Relative concentrations of individual normal and isoprenoid alkanes obtained by measurement of peak areas with a Hewlett Packard 3392A integrator

3. RESULTS

Analytical data on source rock samples from Meramangye-1 and Maria-3 are tabulated and presented in conjunction with diagrammatic representation of the n-alkane and isoprenoid distribution in saturates and the corresponding saturates gas chromatogram.

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SOURCE ROCK ANALYSIS

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WELL: MARLA-3

SAMPLE: 578.9 M
TYPE OF SAMPLE: CORE

total organic carbon	1.3 %
weight of sample extracted	42.23 g
weight of eom	45.9 mg
extracted organic matter	1087 ppm
eom as fraction of toc	83.6 mg/g

ANALYSIS OF EXTRACTED ORGANIC MATTER, (%)

SATURATES	17.4
AROMATICS	8.1
RESINS }	74.5
ASPHALTENES }	

N-ALKANE DISTRIBUTION IN SATURATES

C-NO.	%	C-NO.	%	C-NO.	%	C-NO.	%	C-NO.	%
12	.5	17	11.5	22	4.0	27	1.0	32	.5
13	3.8	18	8.2	23	3.4	28	1.4	33	.4
14	10.0	19	6.9	24	2.9	29	1.2	34	.0
15	13.8	20	5.4	25	2.5	30	.8	35	.0
16	13.9	21	4.5	26	2.1	31	.7	36	.0

ISOPRENOID RATIOS

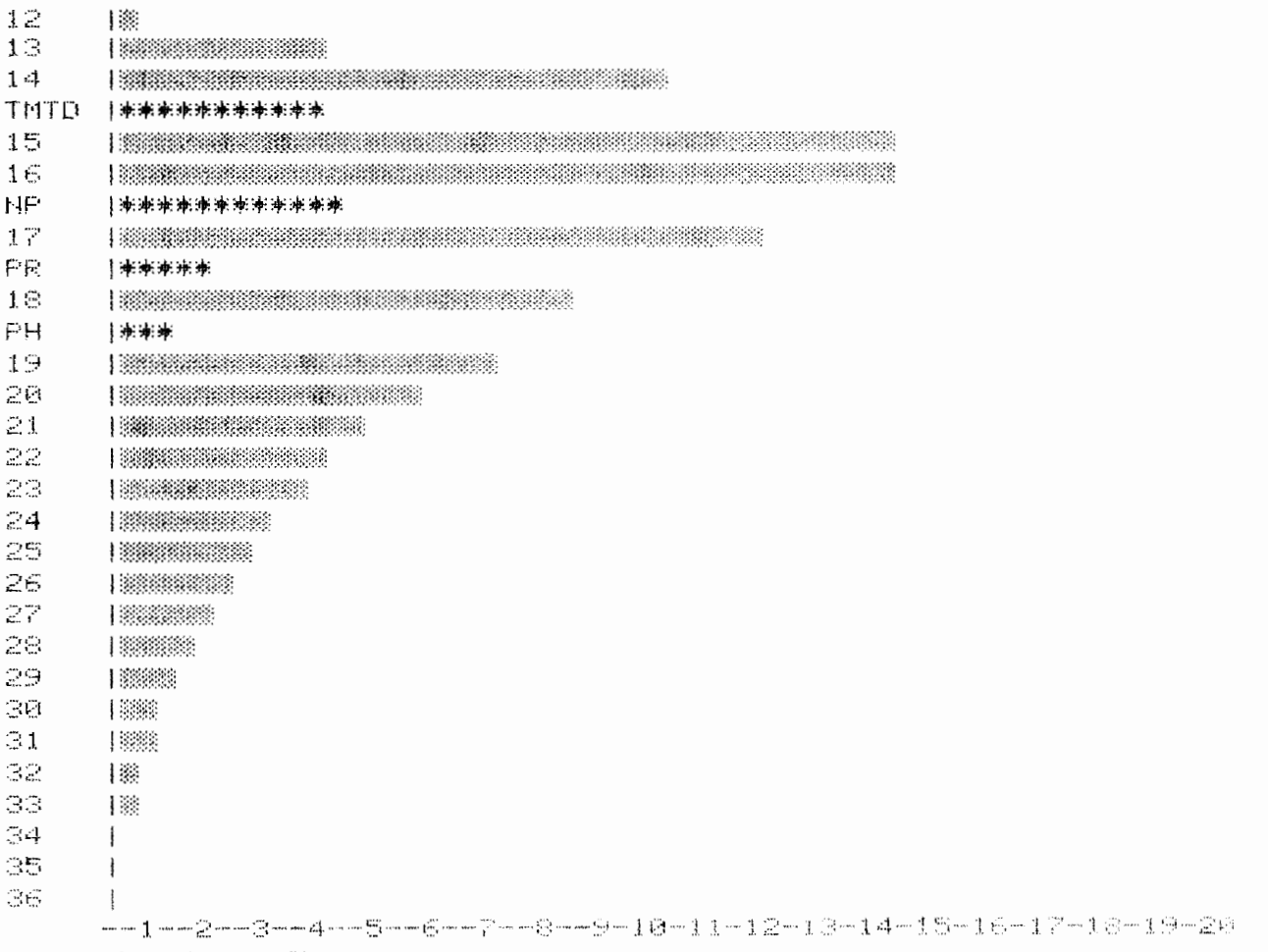
TMTD/pristane ratio	2.09
norpristane/pristane ratio	2.28
pristane/phytane ratio	1.65
pristane/C-17 ratio	.14
phytane/C-18 ratio	.12

CARBON PREFERENCE INDEX (C-23 TO C-33):

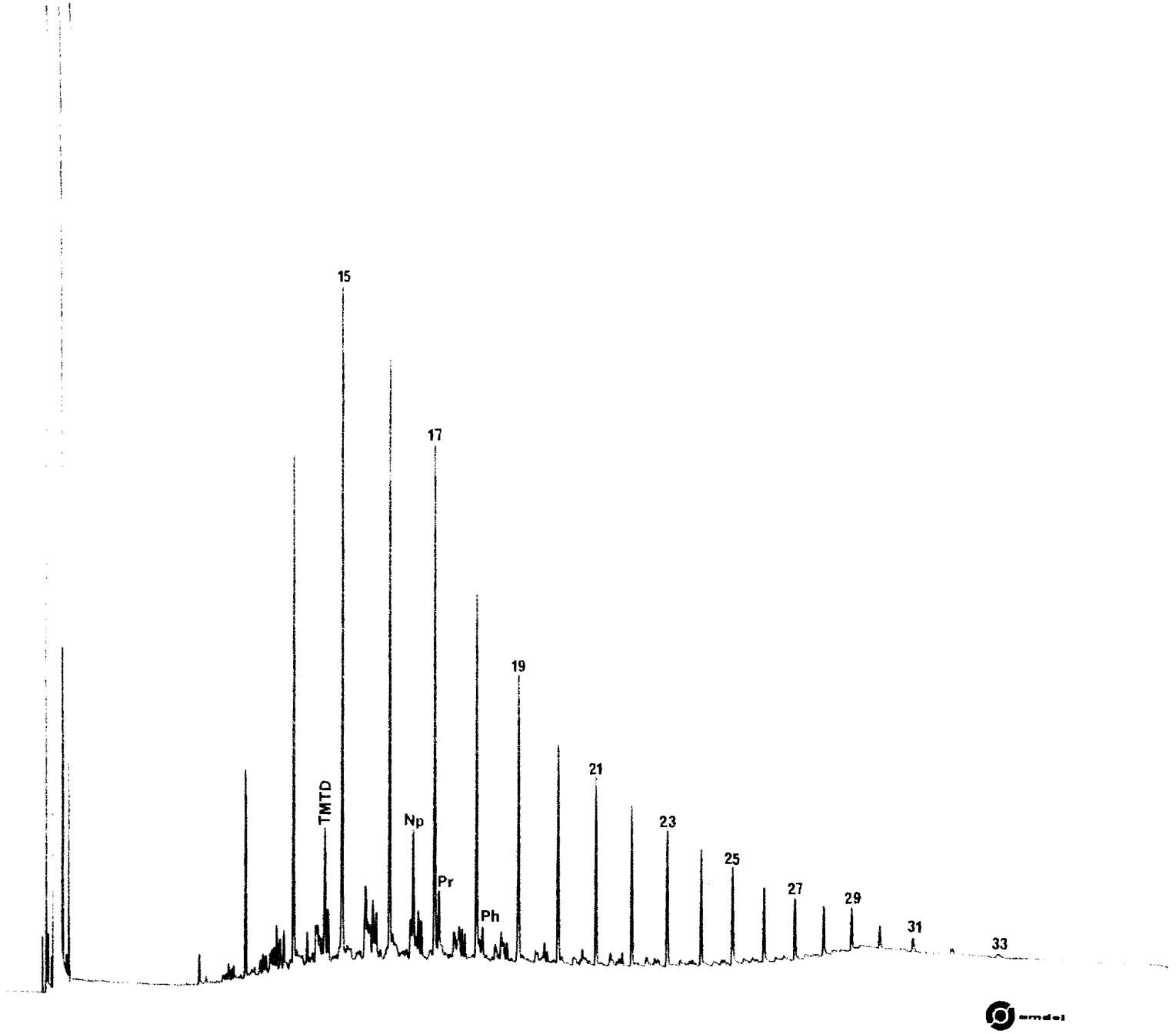
C.P.I. = 1.11

MARLA-3
578.9 M

N-ALKANE AND ISOPRENOID DISTRIBUTION IN SATURATES



Marla-3
578.9 m
Saturates



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SOURCE ROCK ANALYSIS

WELL: MARLA-3

SAMPLE: 609.07 M
TYPE OF SAMPLE: CORE

total organic carbon	2.22 %
weight of sample extracted	11.32 g
weight of eom	13.5 mg
extracted organic matter	1193 ppm
eom as fraction of toc	53.7 mg/g

ANALYSIS OF EXTRACTED ORGANIC MATTER, (%)

SATURATES	18.5
AROMATICS	8.1
RESINS, ASPHALTENES	73.3

N-ALKANE DISTRIBUTION IN SATURATES

C-NO.	%	C-NO.	%	C-NO.	%	C-NO.	%	C-NO.	%
12	.5	17	12.9	22	4.3	27	1.4	32	.2
13	3.4	18	9.5	23	3.6	28	1.0	33	.4
14	8.7	19	8.0	24	2.7	29	.9	34	.0
15	12.3	20	6.4	25	2.5	30	.6	35	.0
16	12.9	21	5.4	26	1.8	31	.5	36	.0

ISOPRENOID RATIOS

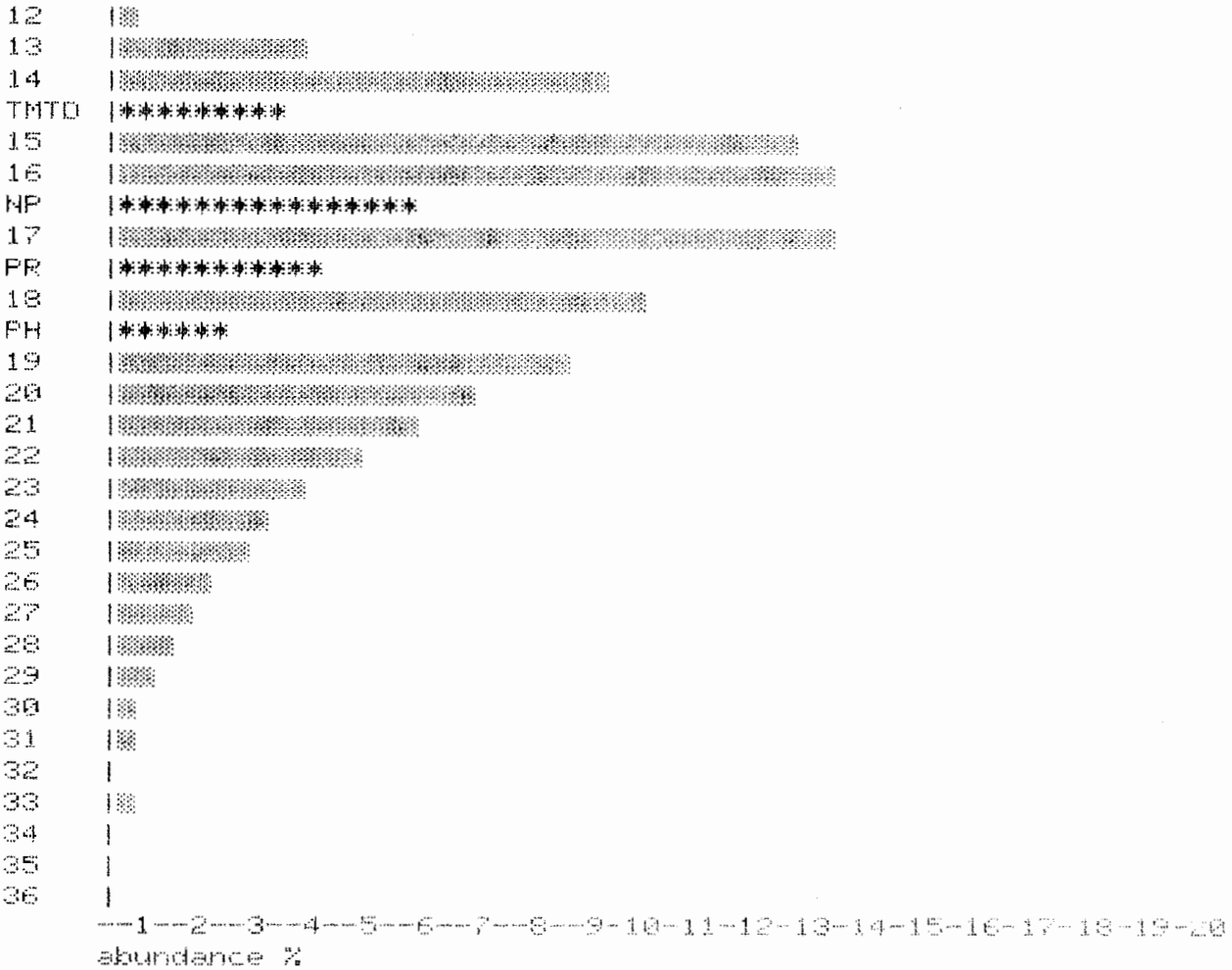
TMTD/pristane ratio	.80
norpristane/pristane ratio	1.44
pristane/phytane ratio	1.82
pristane/C-17 ratio	.27
phytane/C-18 ratio	.20

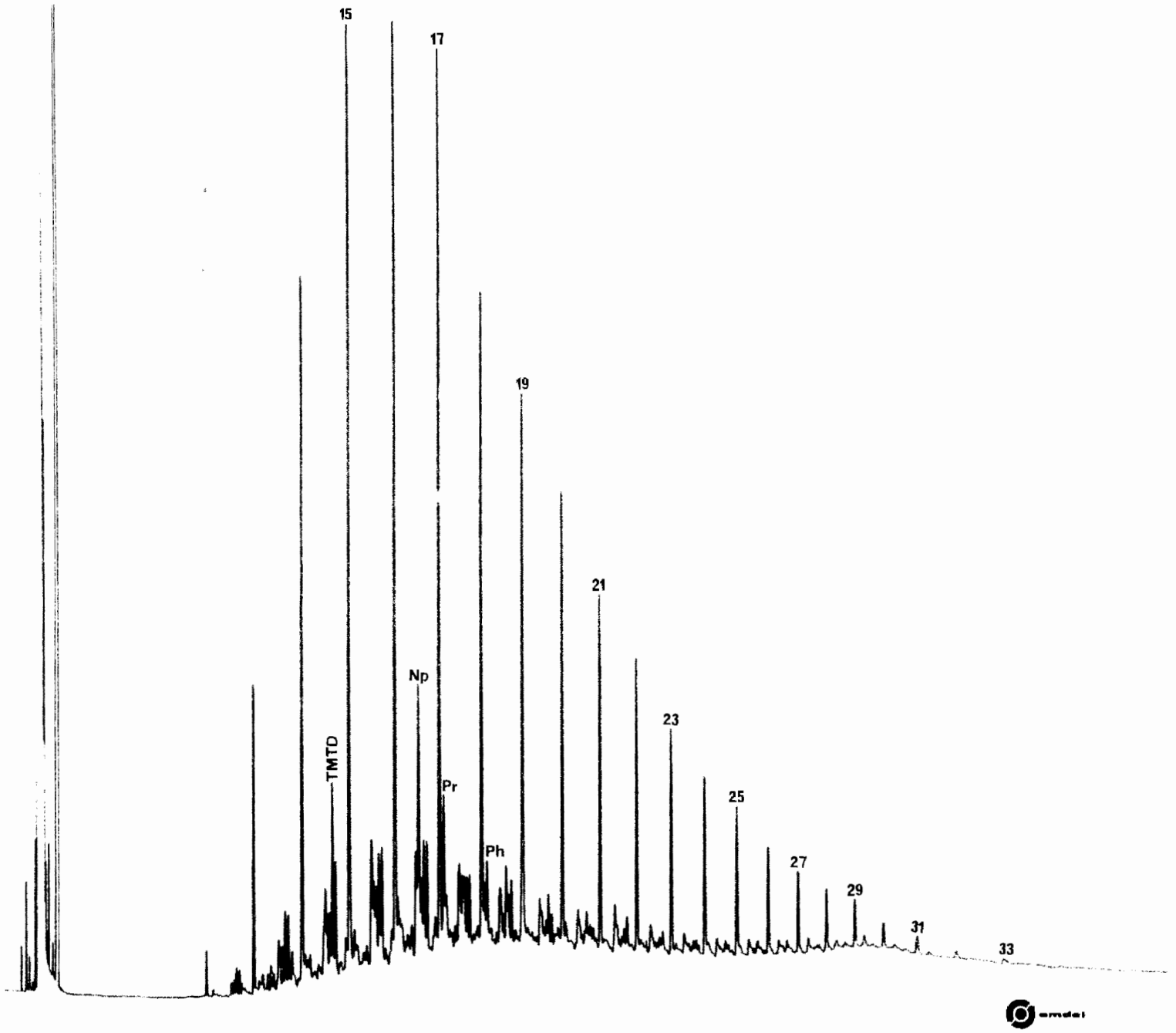
CARBON PREFERENCE INDEX (C-23 TO C-33):

C.P.I. = 1.24

MARLA-3
609.07 M

N-ALKANE AND ISOPRENOID DISTRIBUTION IN SATURATES





Marla-3
609.07
Saturates

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SOURCE ROCK ANALYSIS

WELL: MERAMANGYE-1

SAMPLE: 334.75 M Obs Hill Beds
TYPE OF SAMPLE: CORE

total organic carbon	1.01 %
weight of sample extracted	52.09 g
weight of eom	100.1 mg
extracted organic matter	1922 ppm
extracted elemental sulphur	33 ppm
eom as fraction of toc	190.3 mg/g

ANALYSIS OF EXTRACTED ORGANIC MATTER, (%)

SATURATES	7.3
AROMATICS	2.5
RESINS + ASPHALTENES	90.2

N-ALKANE DISTRIBUTION IN SATURATES

C-NO.	%	C-NO.	%	C-NO.	%	C-NO.	%	C-NO.	%
12	.0	17	17.6	22	5.5	27	2.8	32	.2
13	.7	18	7.1	23	5.7	28	3.8	33	1.3
14	2.7	19	11.4	24	4.0	29	3.3	34	.0
15	6.2	20	6.5	25	3.6	30	1.2	35	.0
16	7.5	21	5.9	26	2.1	31	1.0	36	.0

ISOPRENOID RATIOS

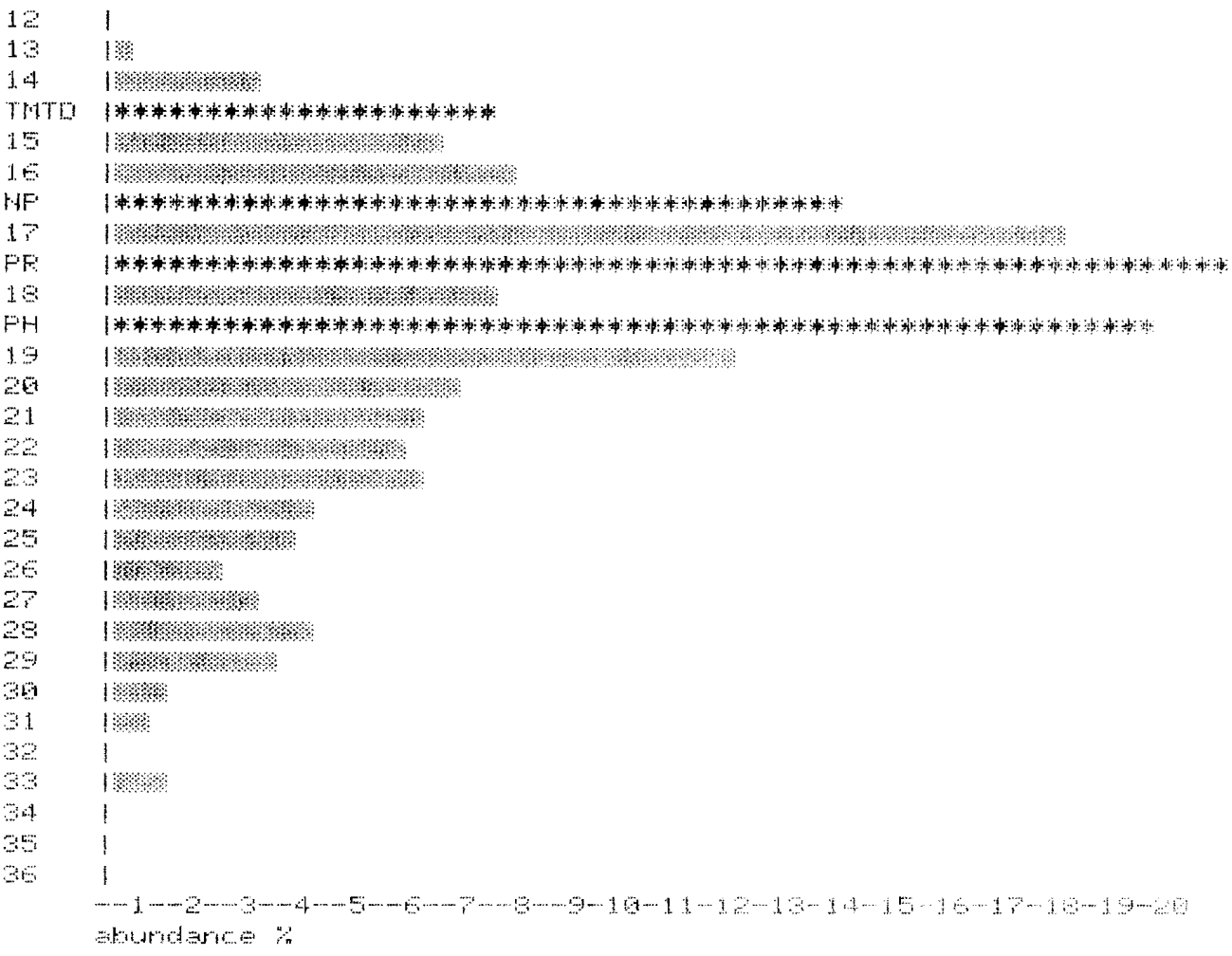
TMTD/pristane ratio	.33
norpristane/pristane ratio	.62
pristane/phytane ratio	1.10
pristane/C-17 ratio	1.19
phytane/C-18 ratio	2.69

CARBON PREFERENCE INDEX (C-23 TO C-33):

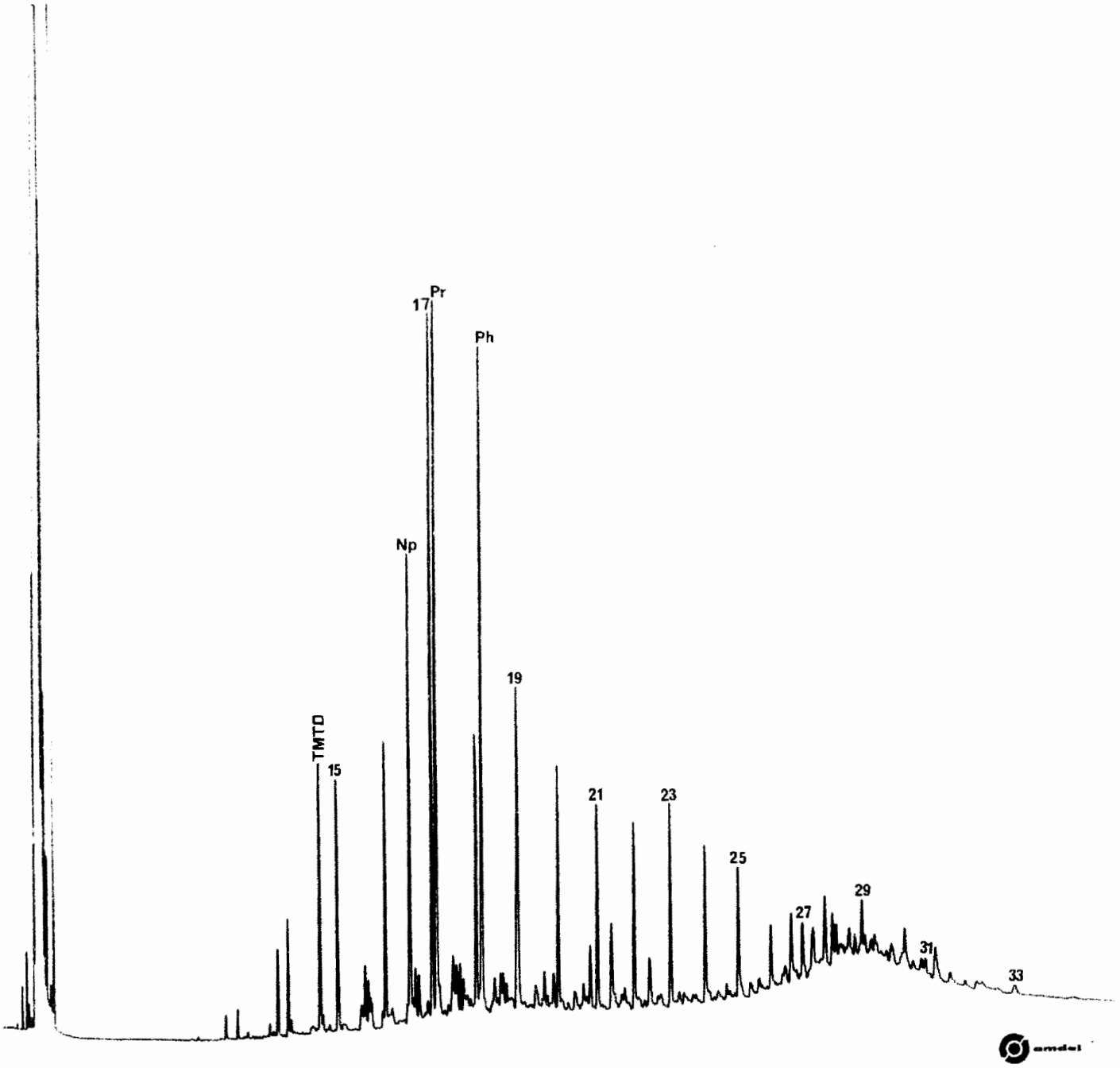
C.P.I. = 1.34

MERAMANGYE-1
334.75 M

N-ALKANE AND ISOPRENOID DISTRIBUTION IN SATURATES



Meramangye-1
334.75 m
Saturates



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SOURCE ROCK ANALYSIS

WELL: MERAMANGYE-1

Obs. Hill Beds

SAMPLE: 341.65 M
TYPE OF SAMPLE: CORE

total organic carbon	.57 %
weight of sample extracted	64.2 g
weight of eom	77 mg
extracted organic matter	1199 ppm
extracted elemental sulphur	36 ppm
eom as fraction of toc	210.4 mg/g

ANALYSIS OF EXTRACTED ORGANIC MATTER, (%)

SATURATES	5.6
AROMATICS	2.6
RESINS, ASPHALTENES	91.8

N-ALKANE DISTRIBUTION IN SATURATES

C-NO.	%	C-NO.	%	C-NO.	%	C-NO.	%	C-NO.	%
12	.0	17	7.1	22	6.7	27	4.1	32	.5
13	.4	18	7.4	23	6.0	28	3.7	33	2.1
14	1.4	19	13.2	24	5.1	29	4.0	34	.7
15	3.1	20	6.5	25	5.3	30	3.5	35	1.2
16	4.1	21	7.3	26	3.9	31	2.8	36	.0

ISOPRENOID RATIOS

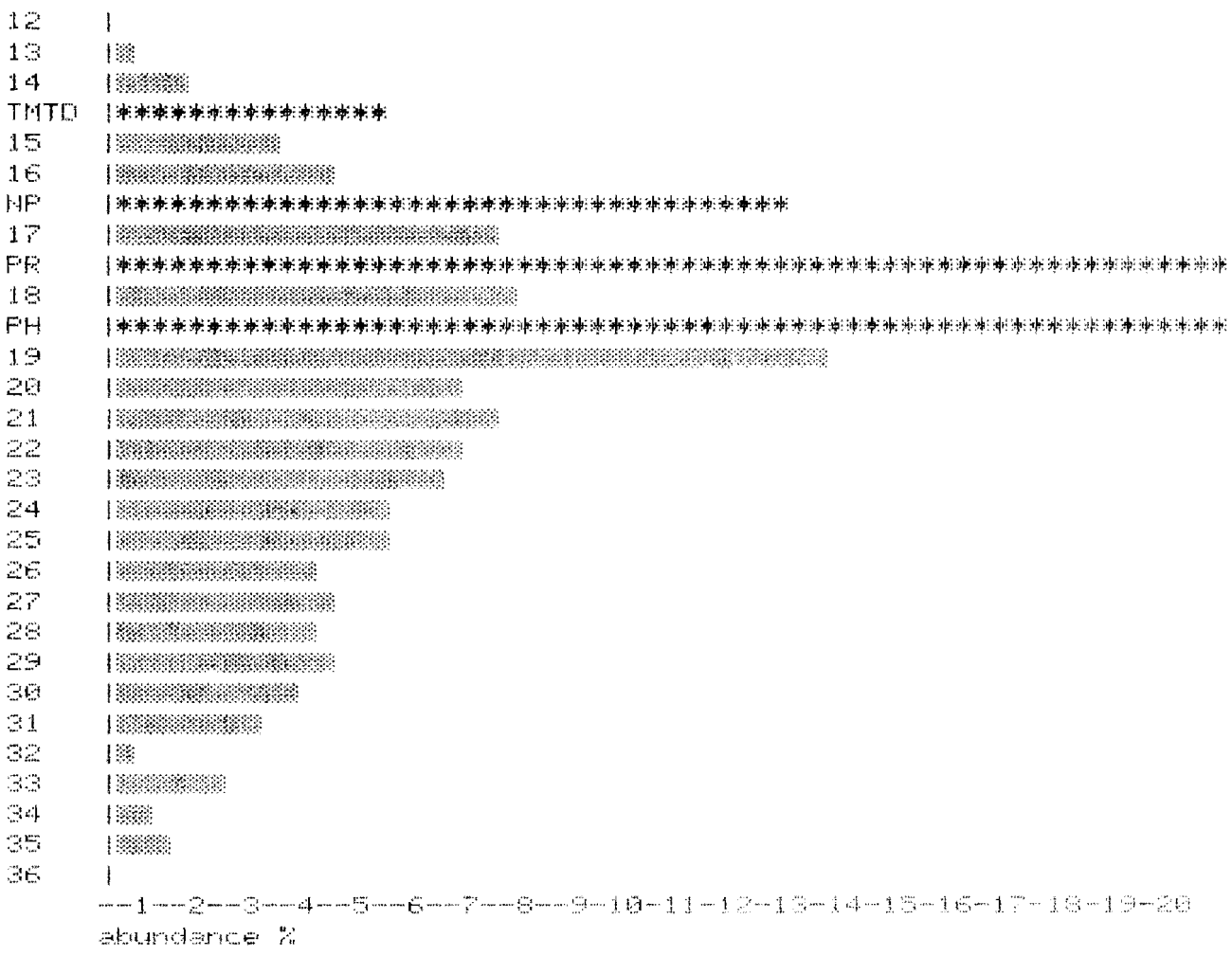
TMTD/pristane ratio	.23
norpristane/pristane ratio	.57
pristane/phytane ratio	.69
pristane/C-17 ratio	3.04
phytane/C-18 ratio	4.23

CARBON PREFERENCE INDEX (C-23 TO C-33):

C.P.I. = 1.29

MERAMANGYE-1
341.65 M

N-ALKANE AND ISOPRENOID DISTRIBUTION IN SATURATES



Meramangye-1
341.65 m
Saturates