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CHERRIE 1 TEST REPORTS

Submitted by

The Australian Mineral Development Laboratories
1970

22/1/99

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PRIMARY INDUSTRIES
AND RESOURCES SA

MINES ADMINISTRATION PTY. LIMITED

PALYNOLOGIC LABORATORY

REPORT NO. 128/3

CLIENT: Pexa Oil N.L.

STUDY: Cherri No.1.

I. SUMMARY

Sample	Depth	Age	Permian Stage	Remarks
S.W.C.	4000'	L. Permian	4 (upper)	-
S.W.C.	4038'	L. Permian	4 (upper)	-
S.W.C.	4141'	L. Permian	4 (upper)	-
S.W.C.	4175'	-	-	barren
Core 1	4233'	L. Permian	4 (upper)	-
S.W.C.	4287'	L. Permian	4 (?upper)	-
Core 2	4361'	L. Permian	-	-
S.W.C.	4481'	-	-	barren
S.W.C.	4516'	-	-	barren
S.W.C.	4538'	-	-	barren
Core 3	4586'	-	-	barren
Core 3	4593'	-	-	barren

II. DETAILED OBSERVATIONS

(i) S.W.C. 4000'

yield: abundant spores and pollen.

preservation: well preserved.

Kraeuselisporites spp.
Microbaculispora villosa
Granulatisporites micronodosus
Verrucosisporites sp. 94
Polypodiidites cicatricosus
Marsupipollenites triradiatus
"M." sinuosus
Parasaccites spp.
Striatoabietites multistriatus
Striatiti spp.

(ii) S.W.C. 4038'

yield: spores and pollen abundant.

preservation: adequate.

Kraeuselisporites spp.
Verrucosisporites sp. 94
Polypodiidites cicatricosus
Marsupipollenites triradiatus
"M." sinuosus
Parasaccites spp.

Sulcatisporites sp.
Vestigisporites sp.
Disacciatrileti sp.
Striatiti spp.

(iii) S.W.C. 4141'

yield: abundant palynomorphs.

preservation: very well preserved.

Leiotriletes directus
Granulatisporites trisinus
G. micronodosus
Kraeuselisporites spp.
Verrucosisporites sp. 94
Polypodiidites cicatricosus
Marsupipollenites triradiatus
"M." sinuosus
Parasaccites spp.
Sulcatisporites sp.
Striatoabietites multistriatus
Striatiti spp.

(iv) S.W.C. 4175'

yield: carbonaceous fragments without recognisable plant microfossils.

(v) Core 1/4233'

yield: abundant plant microfossils.

preservation: well preserved.

Leiotriletes directus
Kraeuselisporites spp.
Polypodiidites cicatricosus
Marsupipollenites triradiatus
"M." sinuosus
Sulcatisporites spp.
S. ovata
Parasaccites spp.
Striatopodocarpites fusus
Striatiti spp.
Disacciatrileti spp.

(vi) S.W.C. 4287'

yield: abundant plant microfossils.

preservation: well preserved.

Leiotriletes directus
Retusotriletes diversiformis
Granulatisporites trisinus
G. micronodosus
Apiculatisporis levis
Kraeuselisporites spp.
Verrucosisporites sp. 94
Polypodiidites cicatricosus
Marsupipollenites triradiatus
?"M." sinuosus
Parasaccites spp.
Sulcatisporites sp.
Protohaploxypinus amplus

Striatopodocarpites fusus
Striatoabietites multistriatus
Striatiti spp.
Disacciatrileti spp.

(vii) Core 2/4361'

yield: mainly macerated woody tissue with relatively few spores and pollen.

preservation: adequate.

Polypodiidites cicatricosus
Parasaccites spp.
Sulcatisporites spp.
S. ovata
Striatoabietites multistriatus
Striatopodocarpites fusus
Protohaploxypinus sp.
Striatiti spp.

(viii) S.W.C. 4481'

yield: a small amount of carbonaceous material without recognisable palynomorphs.

(ix) S.W.C. 4516'

yield: as for (viii) above.

(x) S.W.C. 4538'

yield: as for (viii) above.

(xi) Core 3/4586'

yield: as for (viii) above.

(xii) Core 3/4593'

yield: as for (viii) above.

III. DETAILED OBSERVATIONS

(i) Microfossil preservation in the fossiliferous samples was better than the average for the Cooper Basin Permian section. It was comparable with that of Tinga Tingana No.1 and it is evident that in the southern part of the basin, carbonization was markedly less intense than in the Moomba-Gidgealpa-Merrimelia region to the north.

(ii) S.W.C. 4000' (Lower Permian). The sample produced a typical Lower Permian assemblage containing striate bisaccate pollen, Parasaccites and a number of other forms including P. cicatricosus, "M." sinuosus and M. villosa. On the presence of P. cicatricosus and "M." sinuosus, in the absence of certain younger species, the assemblage is referred to the upper part of Permian stage 4 of Evans (1967) as presented by Paten (1969). The observed stratigraphic range of upper stage 4 in the Cooper Basin is uppermost Lower Member to the top of the middle part of the Middle Member of the Gidgealpa Formation.

The presence of M. villosa is significant. It first appears a short interval below the top of upper stage 4 and ranges throughout the remainder of the Permian. Its presence in this stage 4 assemblage implies that the section sampled lies at the top of the stage and correlation is inferred with a high level in the middle part of the Middle Member.

(iii) S.W.C's. 4038', 4141', 4233' and 4287' (Lower Permian). The assemblages recovered from these samples were similar to that from S.W.C. 4000'

with the exception that M. villosa was not present. They belong to upper stage 4 and lie within the stratigraphic limits for this stage outlined in III(ii) above.

(iv) S.W.C. 4361' (Lower Permian). Relatively few palynomorphs were recovered from this assemblage, the bulk of the residue consisting of macerated woody tissue. On the presence of a single specimen of P. cicatricosus, the assemblage is referred to stage 4. Because of the lack of diversity in the assemblage, its relative position within stage 4 cannot be determined. The palynologic evidence indicates that the section sampled is no older than the upper two-thirds of the Lower Member of the Gidgealpa Formation where that unit is typically develcped (e.g. D.S. Mulga No.1).

(v) S.W.C's. 4175', 4481', 4516', 4538', 4586' and 4593' These samples failed to produce recognisable plant microfossils. Consequently no opinion is offered on the age and stratigraphic affinity of the sections sampled.

IV. REFERENCES

EVANS, P.R., 1967 "Upper Carboniferous and Permian palynological stages and their distribution in Eastern Australia."

Bur. Min. Resour. Aust. Rec. 1967/99 (unpubl.)

PATEN, R.J., 1969 "Palynologic contributions to petroleum exploration in the Permian formation of the Cooper Basin, Australia."

A.P.E.A. Jour. 9(2)

(R.J. PATEN)
2/3/70

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE: (i) Unless otherwise stated, porosities and permeabilities were determined on two plugs (V&H) cut vertically and horizontally to the axis of the core. Ruska porosimeter and permeameter were used with air and dry nitrogen as the saturating and flowing media respectively. (ii) Oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates are recorded as Neg., Trace, Fair, Strong or Very Strong.

WELL NAME AND NO. CHERRI NO. 1

DATE ANALYSIS COMPLETED JANUARY 14, 1971

Core No.	Sample Depth		Lithology	Average Effective Porosity two plugs (% Bulk Vol.	Absolute Permeability (Millidarcy)		Average Density (gm/cc.)		Fluid Saturation (% pore space)		Core Water Salinity (p.p.m. NaCl)	Acetone Test	Fluorescence of freshly broken core	
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
1	4232'6"	4232'10"	Slst; carb.	18	Nil	Nil	2.27	2.76	14	Nil	N.D.	Neg.	Nil	
2	4355'6"	4355'11"	Sst; m.gr. arg.	29	259	976	1.87	2.65	3.0	"	"	"	Even yellow spotted	
3	4594'6"	4594'11"	Sh; pyr.	4.4	Nil	Nil	2.53	2.64	15	"	"	"	Nil	

Remarks: -

General File No. 69/1414
Well File No. 69/2044

SOURCE ROCK

SAMPLE NO: 131

WELL: CHERRI-1

SAMPLE IDENTIFICATION: Cooper

DEPTH: 12.90-1 m

TYPE OF SAMPLE: Drill core

Total organic carbon (TOC)	4.22	%
Weight of sample extracted	39.45	gm
Extracted organic matter (EOM)	2835	ppm
EOM as fraction of TOC	67.2	mg/g
Wt. EOM	111.8	mg

Analysis of extracted organic matter:-

Asphaltenes	44.8	% (wt)
Saturates	6.3	%
Aromatics	2.1	%
Resins	27.8	%
Loss on column	19.0	%

n-Alkane distribution of saturates:-

n-Alkane	C_{13}	C_{14}	C_{15}	C_{16}	C_{17}	C_{18}	C_{19}	C_{20}	C_{21}	C_{22}	C_{23}
Rel abund.	1.7	16.5	32.1	22.9	10.3	4.0	2.4	1.5	1.3	1.1	1.3
n-Alkane	C_{24}	C_{25}	C_{26}	C_{27}	C_{28}	C_{29}	C_{30}	C_{31}	C_{32}	C_{33}	C_{34}
Rel abund.	1.3	1.7	0.6	1.3	--	--	--	--	--	--	--

Isoprenoid distribution in saturates:

IP16	IP18	Pr	Ph
--	6.40	7.70	2.57

IP16/IP18	IP18/Pr	Pr/Ph	IP16/nC_{15}	IP18/nC_{16}	Pr/nC_{17}	Ph/nC_{18}
--	0.835	3.00	--	0.28	0.75	0.63

Sample extracted 48 hours

SOURCE ROCK

SAMPLE NO: 132

WELL: CHERRI -1

SAMPLE IDENTIFICATION: Cooper

DEPTH: 1398.3 ~~5090~~ m

TYPE OF SAMPLE: Drill core

Total organic carbon (TOC)	0.74	%
Weight of sample extracted	88.30	gm
Extracted organic matter (EOM)	109	ppm
EOM as fraction of TOC	14.7	mg/g
Wt. EOM	9.6	mg

Analysis of extracted organic matter:-

Asphaltenes	21.9	% (wt)
Saturates	35.4	%
Aromatics	12.5	%
Resins	26.0	%
Loss on column	4.2	%

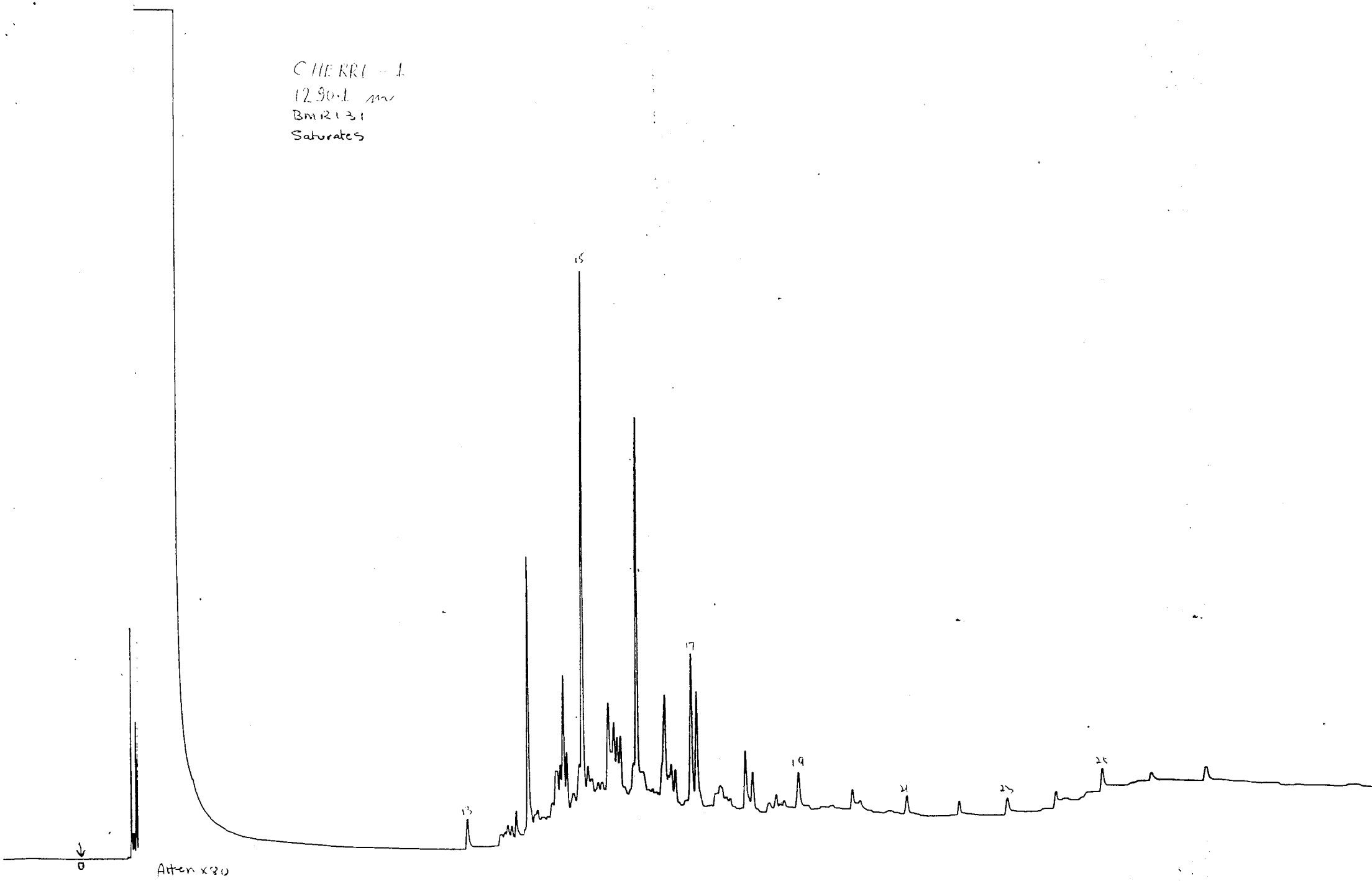
n-Alkane distribution of saturates:-

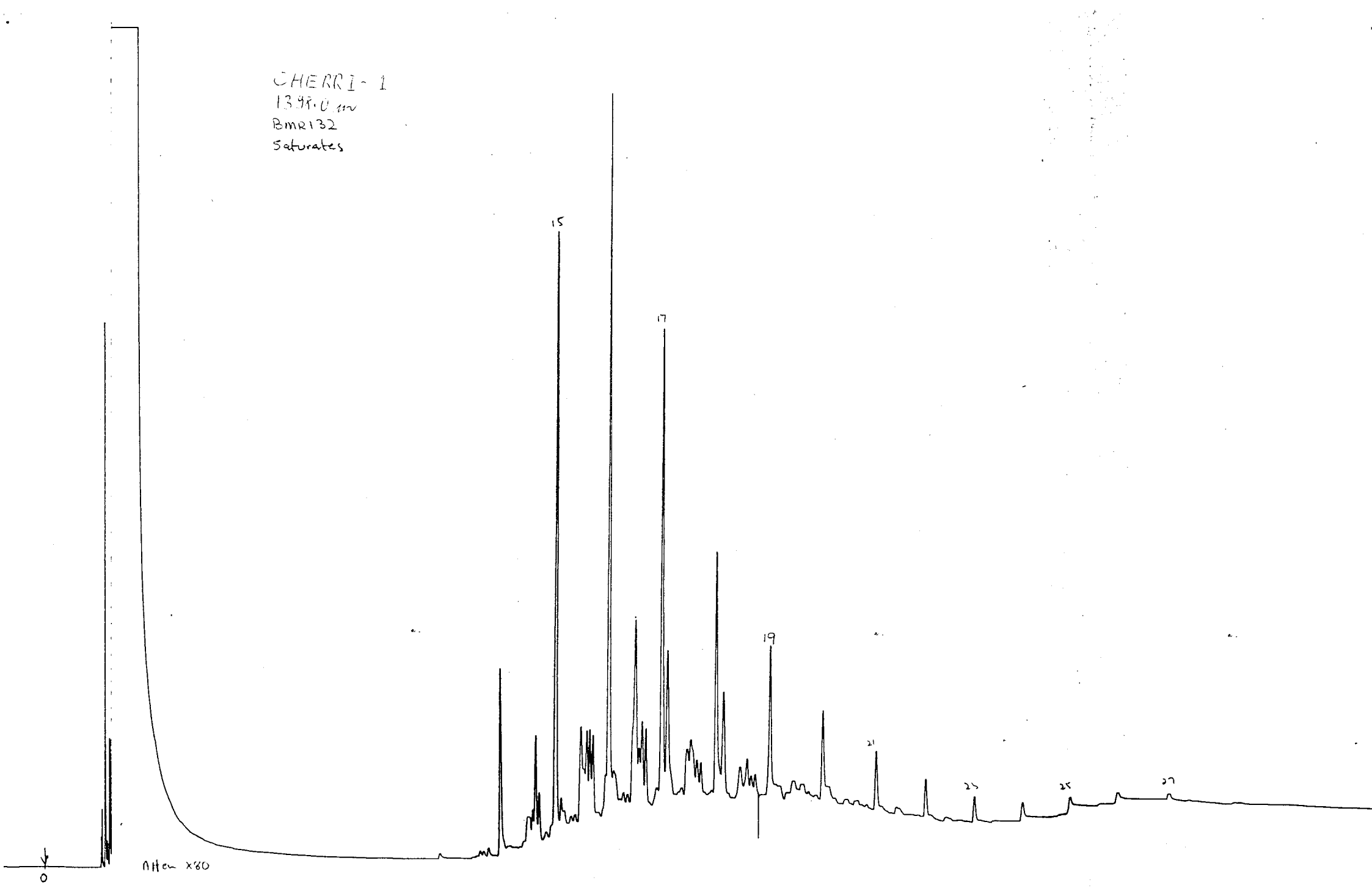
n-Alkane	C_{13}	C_{14}	C_{15}	C_{16}	C_{17}	C_{18}	C_{19}	C_{20}	C_{21}	C_{22}	C_{23}
Rel abund.	--	6.7	21.6	26.0	18.8	9.8	6.3	3.8	2.5	1.6	1.0
n-Alkane	C_{24}	C_{25}	C_{26}	C_{27}	C_{28}	C_{29}	C_{30}	C_{31}	C_{32}	C_{33}	C_{34}
Rel abund.	0.8	0.5	0.4	0.2	--	--	--	--	--	--	--

Isoprenoid distribution in saturates:

IP16	IP18	Pr	Ph
3.90	6.78	6.05	4.27

$\frac{IP16}{IP18}$	$\frac{IP18}{Pr}$	$\frac{Pr}{Ph}$	$\frac{IP16}{nC_{15}}$	$\frac{IP18}{nC_{16}}$	$\frac{Pr}{nC_{17}}$	$\frac{Ph}{nC_{18}}$
0.575	1.13	1.41	0.18	0.26	0.32	0.435


CHERRY - 1
12,90-1 mv
BM121 31
Saturates
15
17
19
13
0
Atten x30


CHERRI - 1
1398.0 m
BMR132
Saturates
15
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CONYNGHAM ST FREWVILLE SOUTH AUSTRALIA 5063 TELEPHONE 79 1662 TELEGRAMS 'AMDEL' ADELAIDE

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

PLEASE ADDRESS ALL CORRESPONDENCE TO THE DIRECTOR.

OUR REFERENCE: AN3/443/0 2575/70

YOUR REFERENCE: Cherri No.1 Borewater

25th February, 1970.

The Manager,
Pexa Oil No Liability,
78 Downing Street,
BRIGHTON SA 5048.

FORM 13

WATER ANALYSIS

Constituent	Parts Per Million	Equivalents Per Million
Anions		
Chloride (Cl)	4075	114.9
Sulphate (SO_4)	1830	38.1
Bicarbonate (HCO_3)	150	2.5
Nitrate (NO_3)*	Nil	-
Fluoride (F)		
Cations		
Sodium (Na)	3017	131.2
Potassium (K)	33	0.8
Calcium (Ca)	281	14.0
Magnesium (Mg)	115	9.5
Iron (Fe)		
Silica (SiO_2)		

Assumed Composition of Salts	Parts Per Million
Calcium bicarbonate	199
Calcium sulphate	788
Calcium chloride	
Magnesium bicarbonate	
Magnesium sulphate	569
Magnesium chloride	
Sodium bicarbonate	
Sodium sulphate	1213
Sodium chloride	6669
Sodium nitrate	
Potassium chloride	63
Iron bicarbonate	

Hardness as Calcium carbonate)	Parts Per Million
Total	1175
Temporary	120
Permanent	1055
Due to Calcium	700
Due to Magnesium	475
Due to Iron	
Total alkalinity as Calcium carbonate	125
Free Carbon dioxide	

pH ..... units

Sodium to Total Cations Ratio (Equivs.) 84.5 %

Conductivity 13000 Micromhos/cm/25°C

Total Dissolved Salts a. Determined at 180°C ppm
b. Calculated (Carbonate as CO_3) ppm

REMARKS

Resistivity

76.9 omhs/cm/25°

*Note: Trace NO_3 =< 20 ppm Detected. Nil NO_3 =< 20 ppm Not Detected.

Name ..... Hole No. .....

..... Water Cut .....

Address ..... Water Level .....

..... Supply .....

Hundred ..... Depth Hole .....

Section ..... Date Collected .....

Sample collected by .....

Director

CONYNGHAM ST. FREWVILLE SOUTH AUSTRALIA 5063 TELEPHONE 79 1662 TELEGRAMS 'AMDEL' ADELAIDE

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

PLEASE ADDRESS ALL CORRESPONDENCE TO THE DIRECTOR.

OUR REFERENCE: AN3/443/0 2575/70

YOUR REFERENCE: Cherri DST No. 1

25th February, 1970.

The Manager,
Pexa Oil No Liability,
78 Downing Street,
BRIGHTON. SA 5048.

FORM 13

WATER ANALYSIS

Constituent	Parts Per Million	Equivalents Per Million
Anions		
Chloride (Cl)	569	16.1
Sulphate (SO_4)	100	2.1
Bicarbonate (HCO_3)	1120	18.4
Nitrate (NO_3)*	Nil	-
Fluoride (F)		
Cations		
Sodium (Na)	726	31.6
Potassium (K)	32	0.8
Calcium (Ca)	40	2.0
Magnesium (Mg)	20	1.6
Iron (Fe)	13	0.5
Silica (SiO_2)		

Assumed Composition of Salts	Parts Per Million
Calcium bicarbonate	162
Calcium sulphate	
Calcium chloride	
Magnesium bicarbonate	120
Magnesium sulphate	
Magnesium chloride	
Sodium bicarbonate	1198
Sodium sulphate	148
Sodium chloride	890
Sodium nitrate	
Potassium chloride	61
Iron bicarbonate	41
pH ..... units	

Hardness as Calcium carbonate)	Parts Per Million
Total	205
Temporary	205
Permanent	Nil
Due to Calcium	100
Due to Magnesium	80
Due to Iron	25
Total alkalinity as Calcium carbonate	920
Free Carbon dioxide	

Sodium to Total Cations Ratio (Equivs.) 86.5 %

Conductivity 3300 Micromhos/cm/25°C

Total Dissolved Salts a. Determined at 180°C ppm
b. Calculated (Carbonate as CO_3) ppm

REMARKS

Resistivity
303.0 ohms/cm

*Note: Trace NO_3 =< 20 ppm Detected. Nil NO_3 =< 20 ppm Not Detected.

Name ..... Hole No. .....

..... Water Cut .....

Address ..... Water Level .....

..... Supply .....

Hundred ..... Depth Hole .....

Section ..... Date Collected .....

Sample collected by .....

Director

FLUID SAMPLE ANALYSIS (BMR, July 1970)

Well Name and Number	CHERRI NO. 1.	GURRA NO. 1.			WEEDINA NO. 1.		KUMBARIE NO. 1.	
Test Number	DST No. 1	DST No. 2	DST No. 3	Bore Water	DST No. 3	Bore Water	DST No. 1	Bore Water
Depth interval (Feet)	4210 - 4281	4344 4686	4115 4342	-	2685 2880	-	4818 - 5037	-
pH	6.5	7.0	6.5	5.5	6.0	6.0	6.5	6.0
Resistivity (ohm-meters)	2.94 at 65°F	0.80 at 65°F	2.60 at 65°F	0.41at 65°F	1.9 at 60°F	2.1 at 60°F	2.0 at 60°F	0.32 at 60°F
Salinity (ppm NaCl)	1155	6100	1485	16000	2310	2375	2145	20285
Total dissolved Solids (ppm)	2720	10120	2620	19400	4200	3340	3680	27380

The Australian Mineral Development Laboratories

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SA 5063
In reply quote:

amdel

10 August 1984

F3/51/0
F331/85 - Part 1 of 2

Delhi Petroleum Pty. Limited,
GPO Box 2364,
ADELAIDE SA 5000

Attention: M.P. Middleton

REPORT F331/85

CLIENT REFERENCE:	SA1-302:NSH/11f WP:LYN026/20; Letter of 19/7/84
TITLE:	Preliminary source rock evaluation, Cherri-1
SAMPLE IDENTIFICATION:	3300-4490 feet depth interval
MATERIAL:	Cuttings
LOCALITY:	Cherri-1
DATE RECEIVED:	20 July 1984
WORK REQUIRED:	TOC and Rock-Eval

Investigation and Report by: Andrew Koutrouzas and Teresa O'Leary

Chief - Fuels Section: Dr Brian G. Steveson

for Dr William G. Spencer
Manager,
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cah

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1. INTRODUCTION

This report formally presents total organic carbon and Rock-Eval pyrolysis data for fifteen cuttings samples from Cherri-1 (Table 1). This report also includes brief descriptions of analytical procedures, graphical representation of the data and some interpretative comments.

2. ANALYTICAL PROCEDURE

2.1 Sample Preparation

Cuttings were washed in water and air-dried at 60°C before grinding in a Siebtechnik mill for 20-30 secs.

2.2 Total Organic Carbon (TOC)

Total organic carbon was determined by digestion of a known weight (0.2-0.5 g) of powdered rock in 50% HCl to remove carbonates, followed by combustion in oxygen in the induction furnace of a Leco IR-12 Carbon Determinator and measurement of the resultant CO_2 by infra-red detection.

2.3 Rock-Eval Analysis

A 100 mg portion of powdered rock was analysed by the Rock-Eval pyrolysis technique (Girdel IFP-Fina Mark 2 instrument; operating mode, Cycle 1).

3. RESULTS

TOC and Rock-Eval pyrolysis data for the thirteen cuttings samples are listed in Table 2. The variation of Tmax, production index ($S_1/S_1 + S_2$), TOC, potential yield ($S_1 + S_2$) and hydrogen index with depth is illustrated in Figures 1A and 1B. Figures 2-6 are cross plots of hydrogen index versus Tmax which demonstrate kerogen type and maturity for the intervals shown in Table 1.

4. INTERPRETATION

Tmax values generally range between 423-440°C over the 3300-4250 feet depth interval sampled (Table 2, Fig. 1A). Maturities expressed in terms of vitrinite reflectance range from VR ~0.4% to VR ~0.6%.

Insofar as their organic matter is predominantly of woody-herbaceous origin (Type III kerogen) (Figs. 2-6), the Murta Member, McKinlay Member, Epsilon Formation, Murteree Shale and Patchawarra Formation are immature to marginally mature for significant gas generation (VR = 0.4-0.6%) (Figs 2-6).

4.1 Source Richness

Organic richness ranges from poor to very good (TOC <0.4 to 11.3%) in the Cherri-1 section. Source richness for hydrocarbons is also variable. Potential hydrocarbon yields characteristic of fair oil source beds ($S_1 + S_2$ = 2-6 kg hydrocarbon/tonne) occur in the Epsilon Formation (Table 2, Fig. 1B). Excellent source richness is also displayed by the Epsilon Formation at 4070-4100 feet ($S_1 + S_2$ = 8.16 kg hydrocarbons/tonne).

4.3 Kerogen Type and Source Quality

Hydrogen indices in the range HI = 22-86 (Fig. 1B) suggest that the intervals studied contain matter of gas prone Type III tending to inertinitic Type IV composition (Figs. 2-6).

TABLE 1

SOURCE ROCK ANALYSIS

TOC AND ROCK-EVAL

Cherri 1

Murta

3300-3330
3330-3350
3350-3380

McKinlay

3380-3410

Namur

3590-3620

Epsilon

3980-4010
4010-4040
4040-4070
4070-4100

Murteree

4120-4150
4150-4180

Patchawarra

4190-4220
4220-4250
4250-4280

Tirrawarra

4460-4490

TABLE 2

ROCK-EVAL PYROLYSIS 01/08/84

Client DELHI PETROLEUM

Well CHERRI #1

DEPTH	T MAX	S1	S2	S3	S1+S2	PI	S2/S3	PC	TOC	HI	OI
3300.00	440	0.10	0.35	3.21	0.45	0.23	0.10	0.03	1.02	34	315
3330.00	430	0.09	0.34	5.61	0.43	0.21	0.06	0.03	0.82	54	684
3350.00	431	0.14	0.68	5.99	0.82	0.17	0.11	0.06	0.79	86	758
3380.00	426	0.09	0.41	5.51	0.50	0.18	0.07	0.04	0.56	73	984
3590.00									0.10		
3980.00	428	0.10	0.50	0.71	0.60	0.17	0.70	0.05	0.67	75	106
+4010.00	429	0.21	2.99	2.79	3.20	0.07	1.07	0.26	4.05	74	69
+4040.00	441	0.57	2.90	4.47	3.47	0.16	0.64	0.28	11.30	26	40
+4070.00	425	0.38	7.78	4.65	8.16	0.05	1.67	0.68	9.10	85	51
+4120.00	426	0.10	0.59	2.60	0.69	0.15	0.22	0.05	2.16	27	120
+4150.00	423	0.08	0.60	19.32	0.68	0.12	0.03	0.05	1.99	30	971
4190.00	425	0.12	0.49	6.76	0.61	0.20	0.07	0.05	1.83	27	369
4220.00	447	0.09	0.31	2.48	0.40	0.22	0.12	0.03	1.39	22	178
4250.00	430	0.23	1.03	2.77	1.26	0.18	0.37	0.10	2.42	43	114
4460.00									0.34		

+ Denotes minor coal content

KEY TO ROCK-EVAL PYROLYSIS DATA SHEET

	PARAMETER	SPECIFICITY
T max	position of S_2 peak in temperature program (^{o}C)	Maturity/Kerogen type
S_1	kg hydrocarbons (extractable)/tonne rock	Kerogen type/Maturity/Migrated oil
S_2	kg hydrocarbons (kerogen pyrolysate)/tonne rock	Kerogen type/Maturity
S_3	kg CO_2 (organic)/tonne rock	Kerogen type/Maturity *
$S_1 + S_2$	Potential Yield	Organic richness/Kerogen type
PI	Production Index ($S_1/S_1 + S_2$)	Maturity/Migrated Oil
PC	Pyrolysable Carbon (wt. percent)	Organic richness/Kerogen type/Maturity
TOC	Total Organic Carbon (wt. percent)	Organic richness
HI	Hydrogen Index (mg h'c (S_2)/g TOC)	Kerogen type/Maturity
OI	Oxygen Index (mg CO_2(S_3)/g TOC)	Kerogen type/Maturity *

*Also subject to interference by CO_2 from decomposition of carbonate minerals.

Client : DELHI PETROLEUM Well name : CHERRI #1

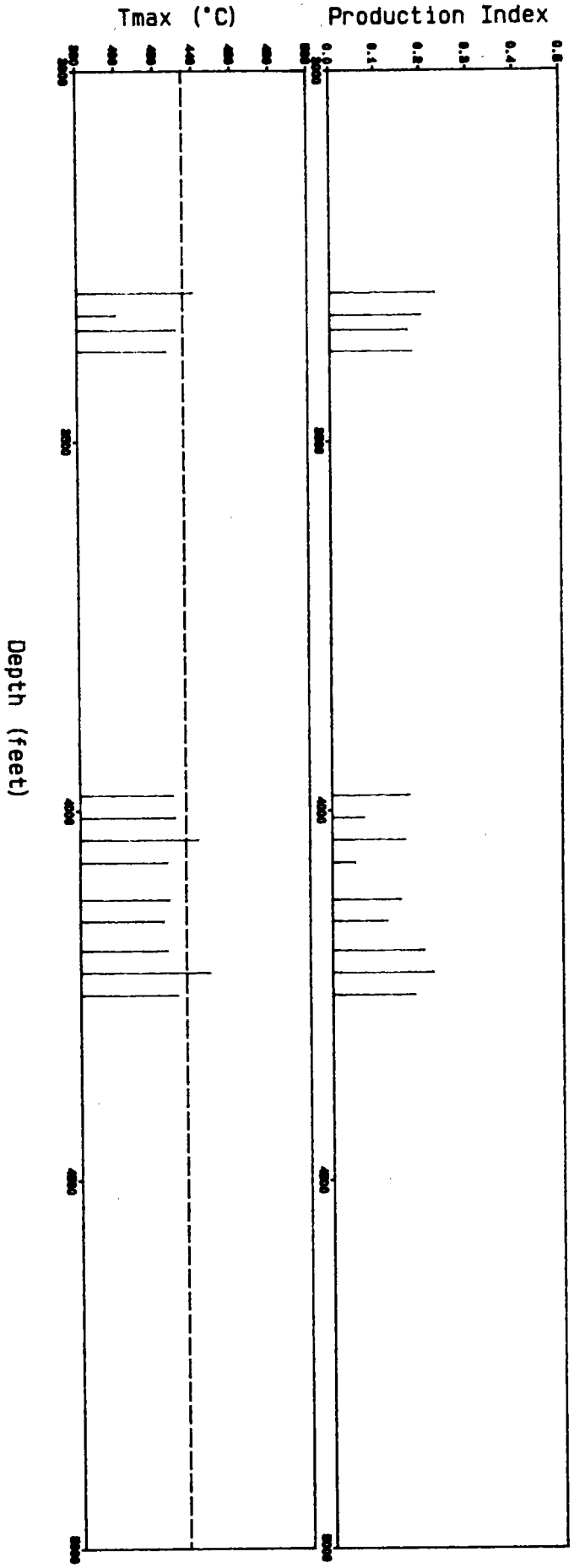
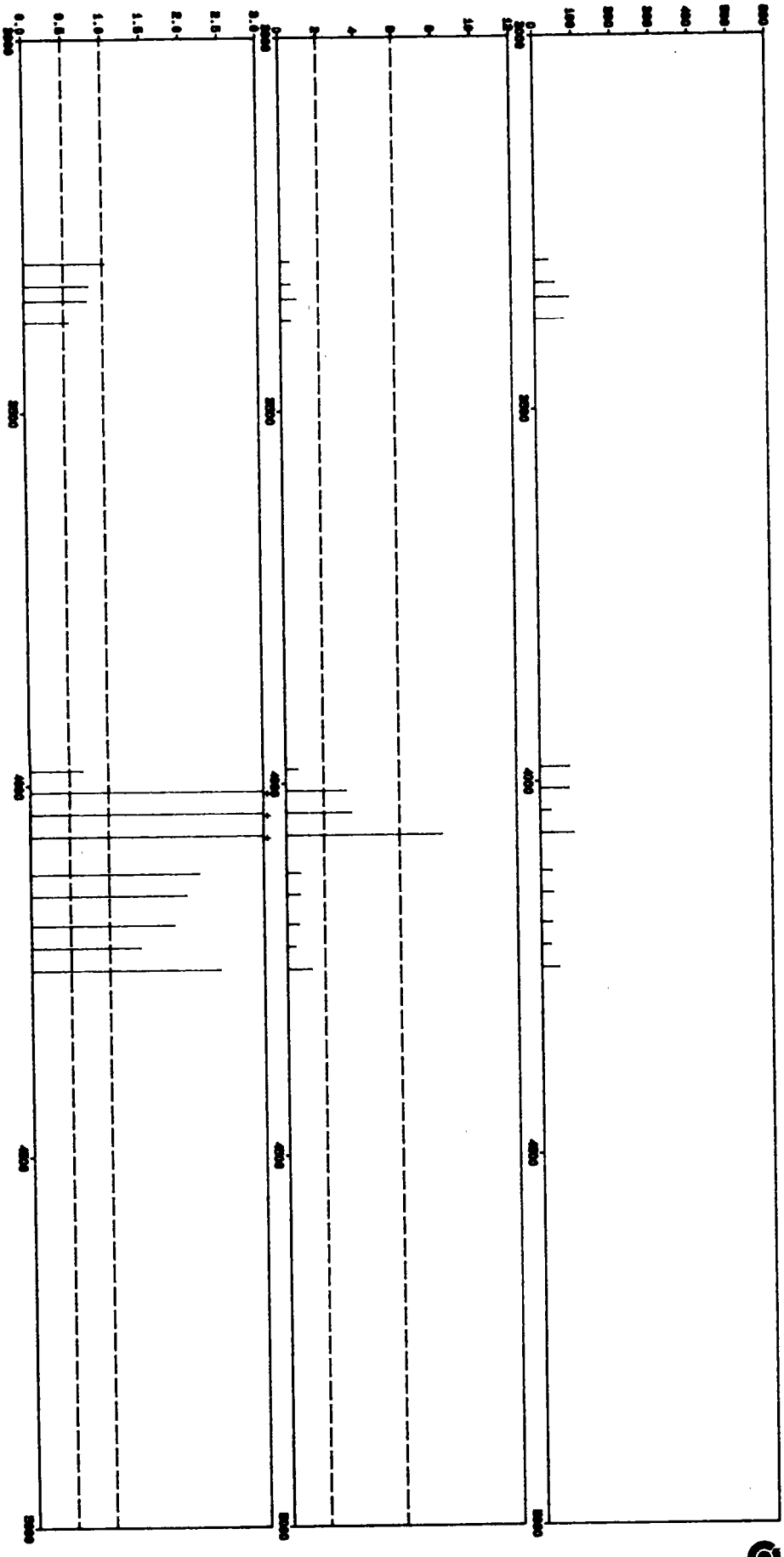


FIGURE 1A

Client : DELHI PETROLEUM Well name : CHERRI #1

% TOC Potential Yield Hydrogen Index



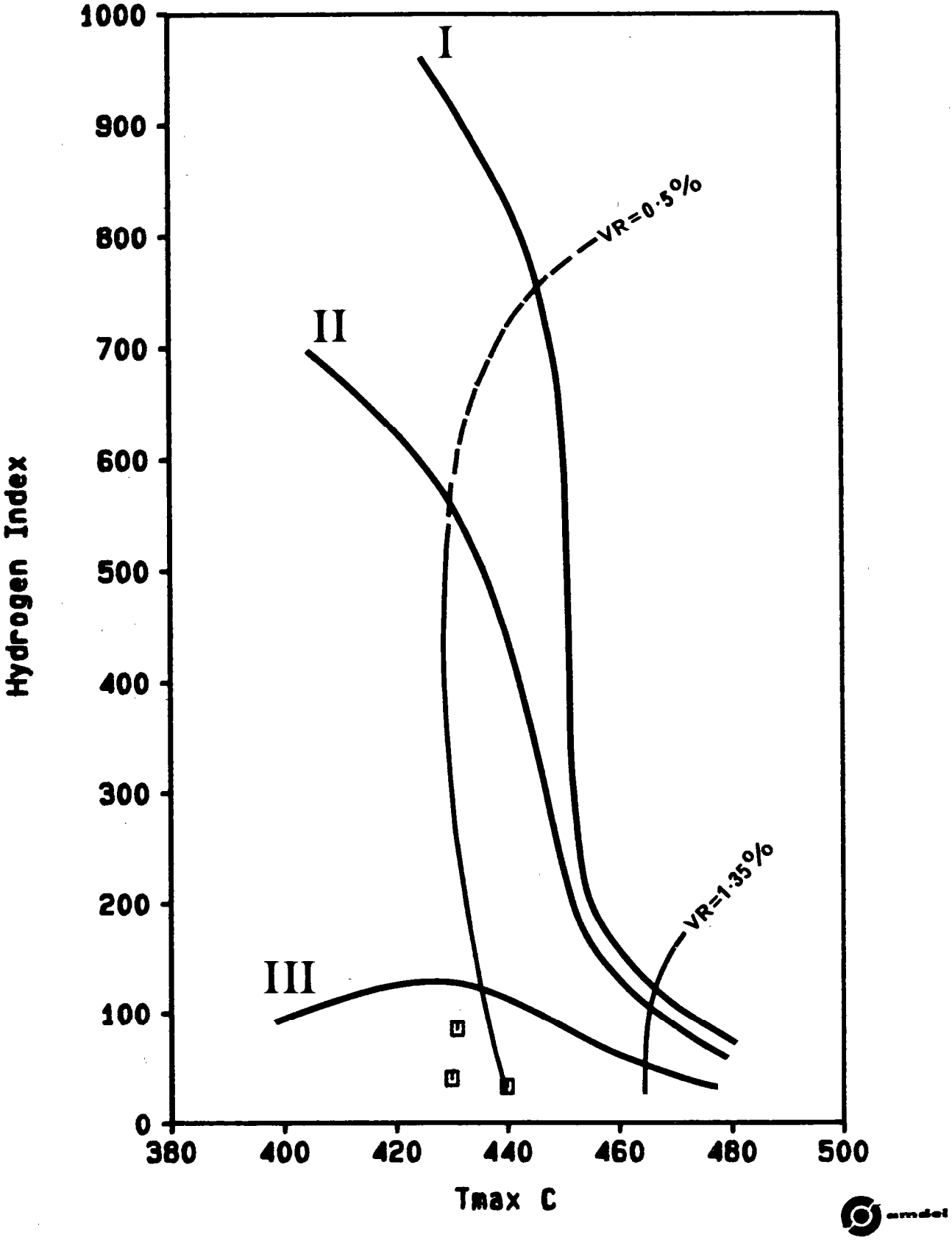
Depth (feet)

FIGURE 1B

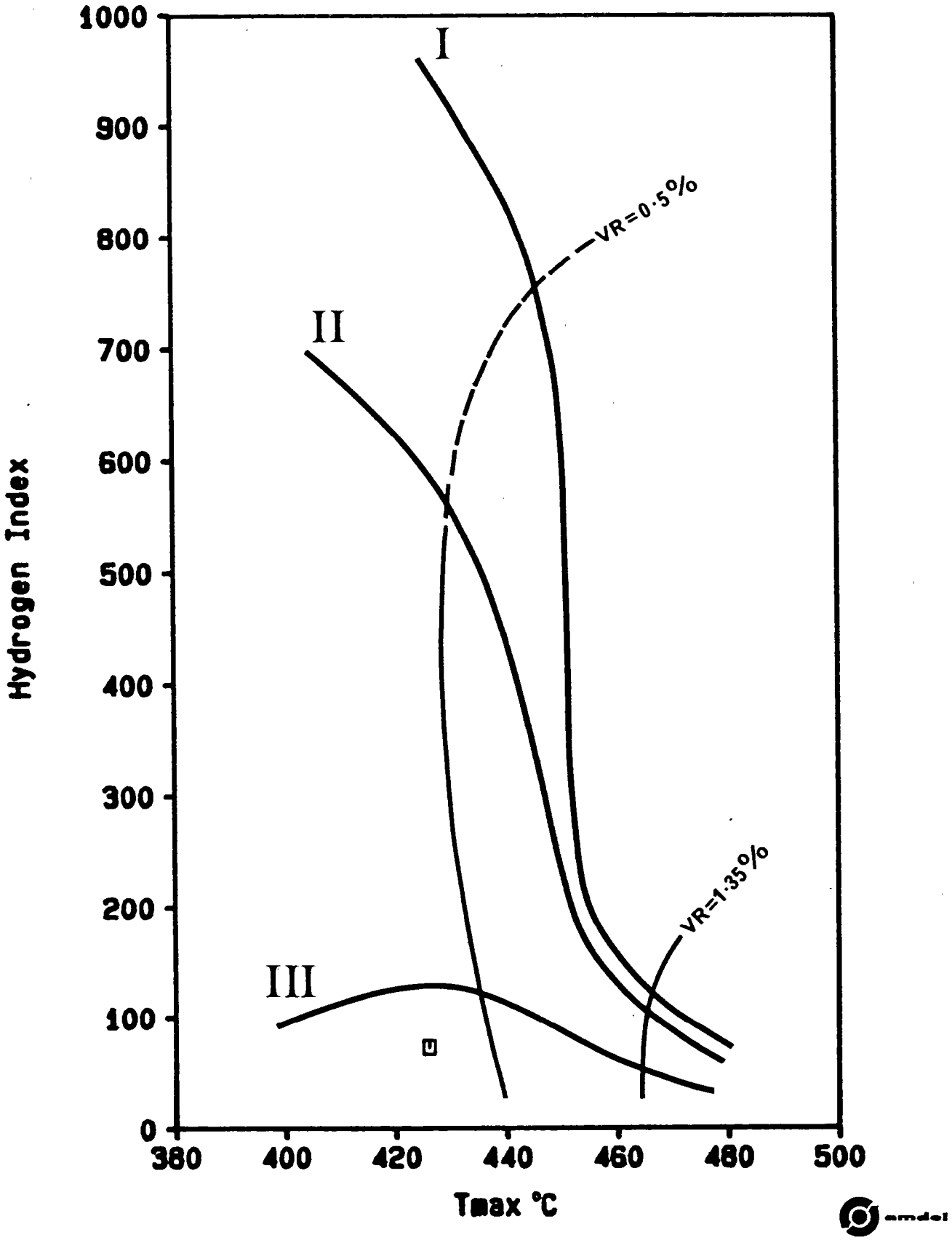
KEY TO HYDROGEN INDEX *vs* Tmax PLOTS

<2% TOC	◻
2-5% TOC	○
5-20% TOC	△
>20% TOC	◇

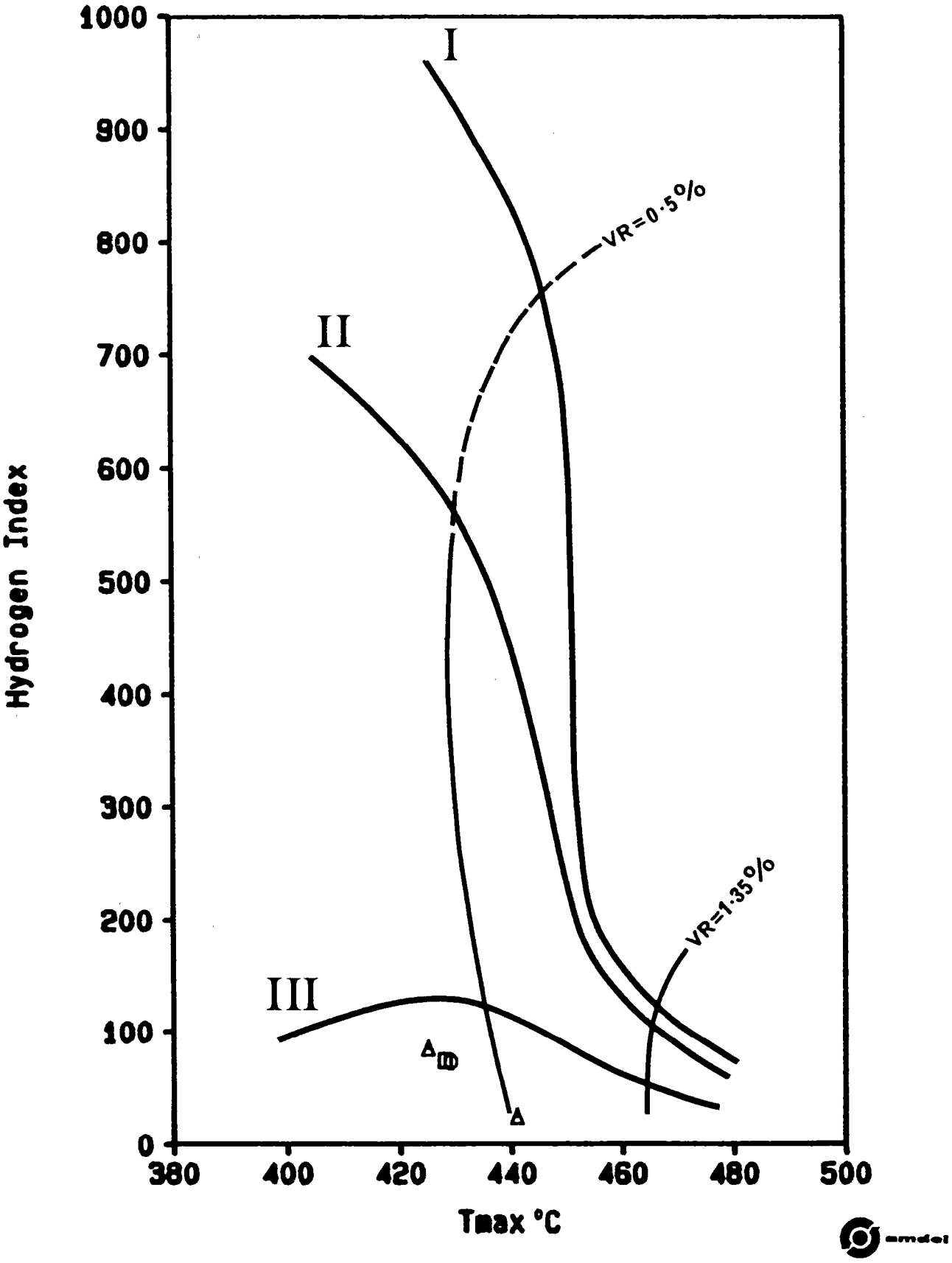
Client : DELHI PETROLEUM
Well name : CHERRI #1
Interval : MURTA MEMBER



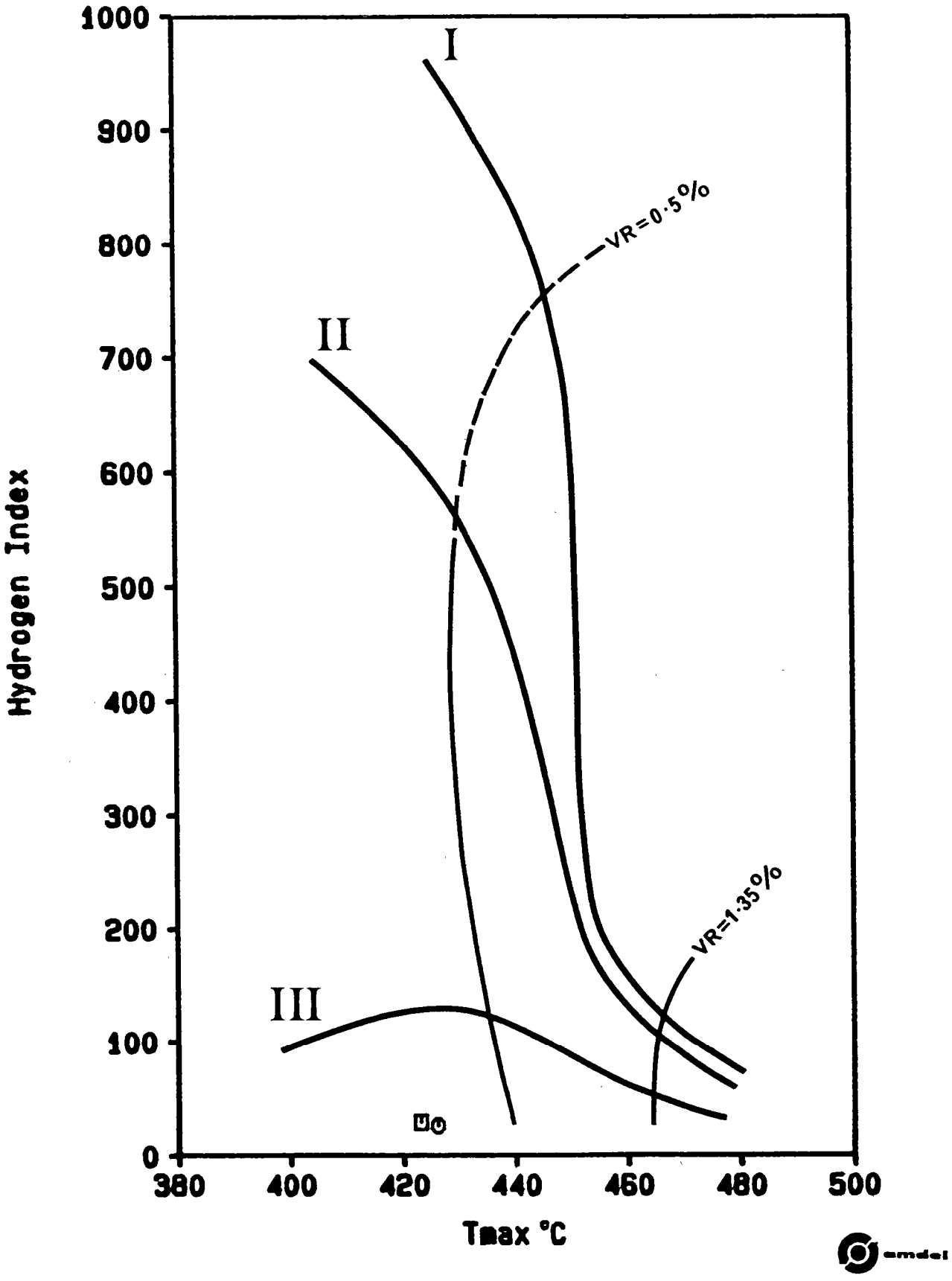
Client : DELHI PETROLEUM
Well name : CHERRI #1
Interval : McKINLAY MEMBER



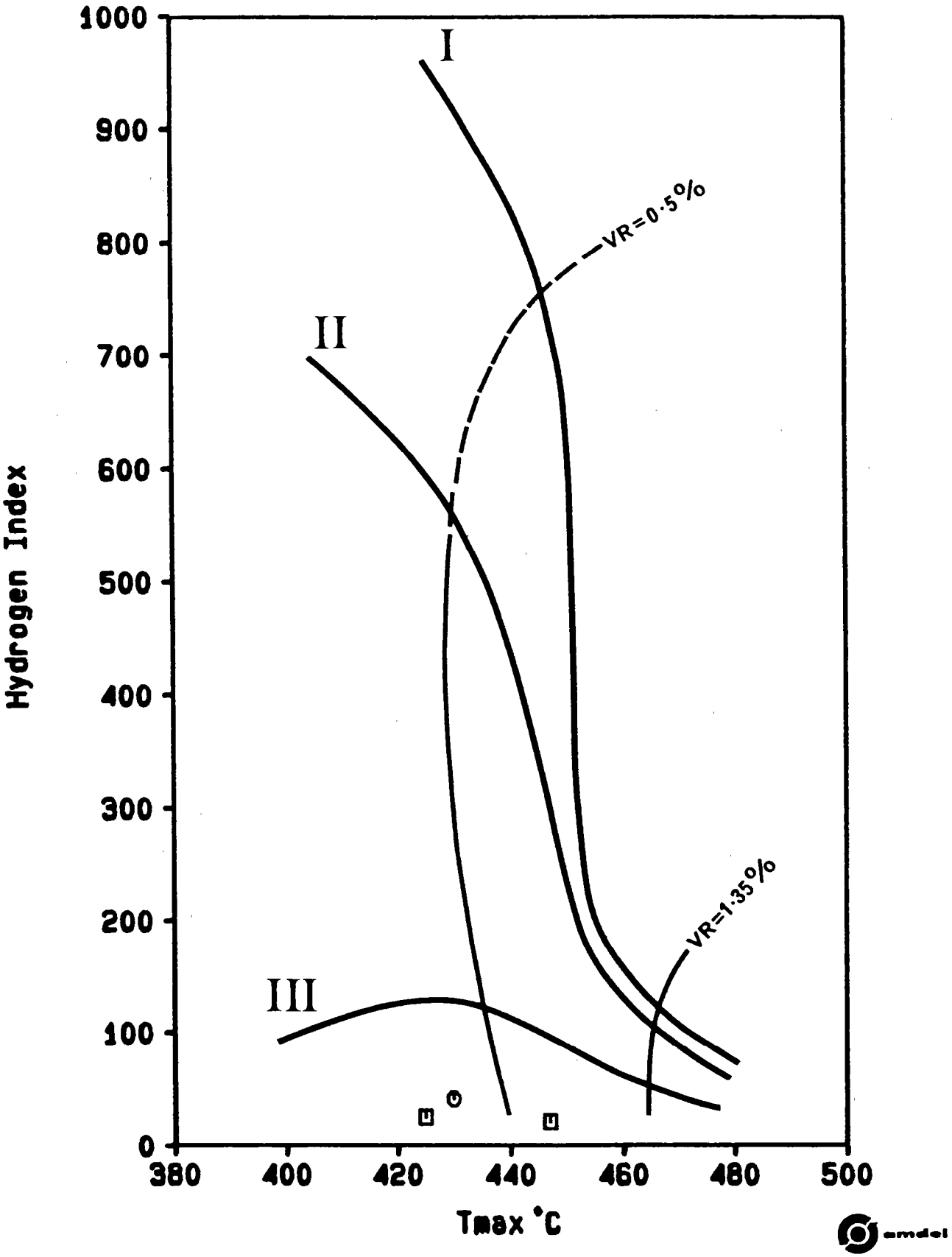
Client : DELHI PETROLEUM
Well name : CHERRI #1
Interval : EPSILON FORMATION



Client : DELHI PETROLEUM
Well name : CHERRI #1
Interval : MURTEREE SHALE



Client : DELHI PETROLEUM
Well name : CHERRI #1
Interval : PATCHAWARRA FORMATION



CHERRI NO. 1

PALYNOLOGICAL REPORT ON

CUTTINGS SAMPLES, 3750-3950'

(REPORT NO. 13/307)

Alan J. Williams,
Delhi Petroleum Pty. Ltd.
June, 1985.
AJW/td/111/5

CHERRI NO. 1 - PALYNOLOGY OF CUTTINGS SAMPLES, 3750-3950'

Results:

Sporomorphs recorded from cuttings samples between 3750' and 3950' were derived from Cretaceous cavings. See table 1 and discussion below.

Problem:

Mr. L. Endebrock (SA1 team) requested study of samples within the internal 3700' to 3960' from Cherri No. 1; the purpose was to date palynologically a seismically mappable unit, formerly included in the Jurassic, but thought now to be of Permian age.

Discussion:

Paten (1970) reported on the palynology of sidewall core and core samples from Cherri No. 1 between 4000' and 4953'. The shallowest sample, at 4000', was dated as Early Permian.

Only cuttings samples were available in the interval 3700' to 3960' - a sidewall core was taken at 3893' for evaluation, and was described as pale grey sandstone. The cuttings comprised dominantly sandstones (generally lacking in organic matter and unsuitable for palynological study); the samples with the highest proportions of shale and siltstone were picked, and in some cases composited, for palynological processing.

Although due to problems of caving and mud contamination cuttings samples are unreliable for differentiating the finer subdivisions of palynostratigraphical zonations based on successive first appearances of species in time (as used in Delhi's exploration area), often they can be used successfully to pick significant stratigraphic differences such as proposed here (cf. Williams 1984, 1985). However, study of the Cherri No. 1 cuttings samples indicated that most, if not all of the cuttings chips that yielded organic matter were derived as cavings from the lower part of the marine Bulldog Shale. The assemblages lacked the dominance of certain forms characteristic of assemblages from the early to mid Jurassic (although some of the spores and pollen identified were long-ranging Jurassic-Cretaceous ones, and these could have been derived 'in place' from the interval, should it be of Jurassic age). A single Permian specimen was recorded, but as very low proportions of reworked Permian forms are found in many Jurassic and Cretaceous samples, it is insufficient to give a Permian age connotation to these assemblages. It seems that the 3700' to 3960' interval comprises essentially sandstones lacking organic matter, as indicated by the gamma ray-sonic log, thus the palynological method cannot be used to date it.

References:

Paten, R.J. 1970 : Cherri No. 1 palynological report. Mines Administration Palynology Lab. Rpt. 128/3 in Pexa Oil N.L. Final report on Cherri No. 1 Well, S.A. (unpubl.).

Williams, A.J. 1984 : Merrimelia Nos. 7,8 & 9 palynological reports. Delhi Palynology Lab. Rpts. 13/222, 223, 224 (unpubl.).

Williams, A.J. 1985 : Kenny No. 1 palynological report. Delhi Palynology Lab. Rpt. 13/298 (unpubl.).

Alan J. Williams

June 1985

STUDY: CHERRI NO. 1

PALYNOLOGICAL REPORT

REPORT NO. 13/307

SAMPLE(& LITHOLOGY)	DEPTH (FEET)	AGE	STRATIGRAPHY		REMARKS
			BIOSTRATIGRAPHICAL UNIT	INFERRED STRATIGRAPHICAL LIMIT	
Cuttings (Sst/Sltst)	3750-70'	-	-	-	Virtually barren; extremely rare Jurassic-Cretaceous sporomorphs noted.
Cuttings (Sst/Sltst)	3780-90'	-	-	-	
Cuttings (Sst/Sltst)	3820-70'	-	-	-	Fairly abundant spores, pollen, and dinoflagellates; some of the spores and pollen are long-ranging Jurassic-Cretaceous forms; a single specimen of Protohaploxypinus (Permian) was noted. The assemblages are consistent with being derived entirely from the Odontochitina operculata zone, characteristic of the lower part of the Bulldog Shale (i.e. from cavings into a barren 'in place' section). The assemblages are not dominated by inaperturates or Classopollis, as early to mid Jurassic ones commonly are. Low proportions of reworked Permian forms are found in many Jurassic and Cretaceous assemblages.
Cuttings (Sst/Sltst)	3910-50'	-	-	-	

TABLE 1