PETROLEUM GEOLOGY AND GEOCHEMISTRY

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GEOLOGY AND GEOPHYSICS

AUSTRALIA

NORTHWEST SHELF AUSTRALIA

VOLUME 2
WELL SUMMARY REPORTS PART 1

CONSTITUTION AVE. CANBERRA ACT 2601

SS 819 Pt.6(b)

Robertson Research

BMR record 1990/82

VOLUME 2

WELL SUMMARY REPORTS

NORTHWEST SHELF, AUSTRALIA - – PHASE II

PETROLEUM GEOLOGY AND GEOCHEMISTRY

SS 819 Pt. 6 (b)

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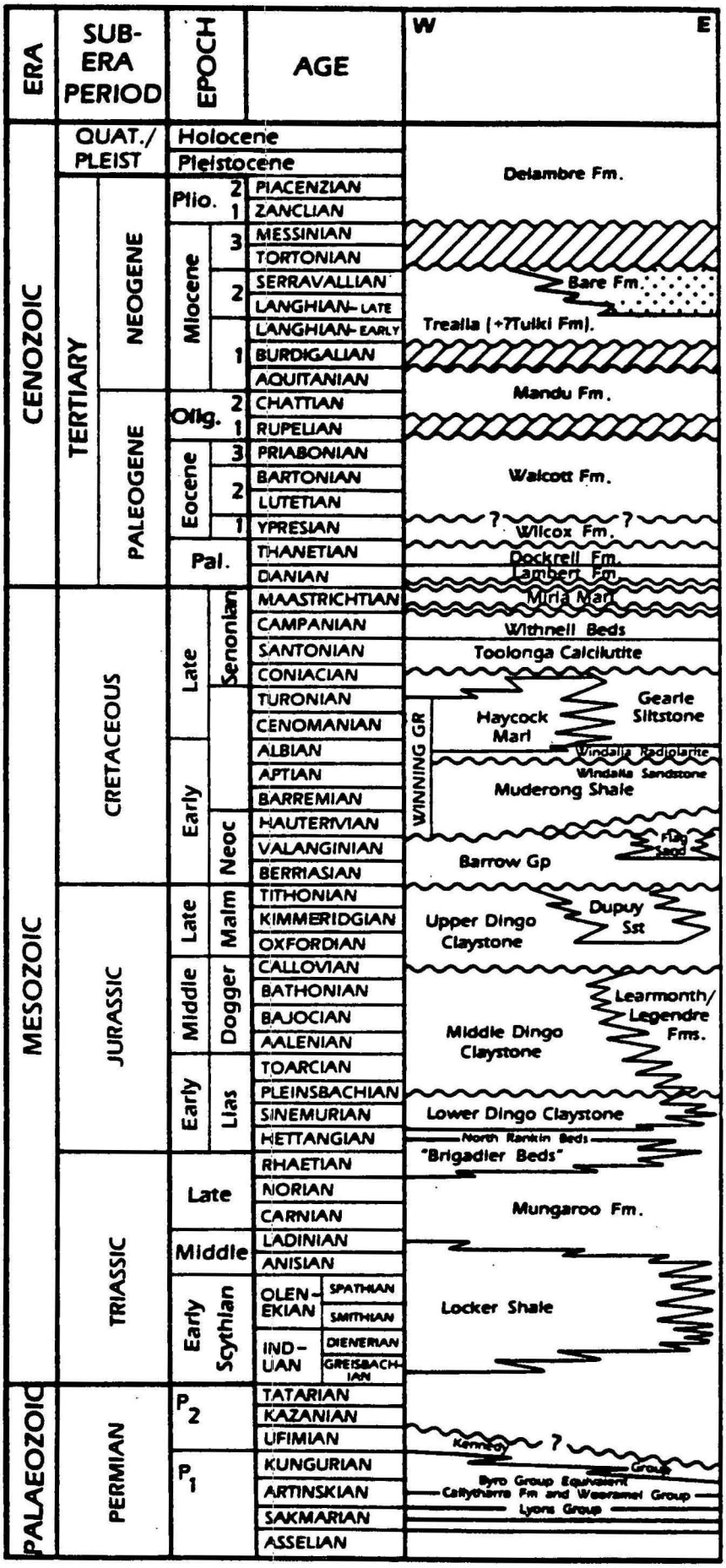
PREFACE

Volumes 2 and 3 of the report contain a petroleum geochemistry summary for each well and gas chromatography-mass spectrometry data for source rocks, oils and migrant oil stains analysed. Volume 2 contains the petroleum geochemistry well summaries, chemical analysis, gas chromatography and mass spectrometry and carbon isotope data for oils, migrant oil stains and source rocks from the Northern Carnarvon Basin. Volume 3 contains both the petroleum geochemistry well summaries for the Browse and Bonaparte Basins and oil analysis, carbon isotope and gas chromatography-mass spectrometry data for oils, migrant oil stains and source rocks from the Browse Basin and gas chromatography-mass spectrometry and carbon isotope data for source rocks and migrant oil stains from the Bonaparte Basin. Wells from which only oil stains have been analysed are included at the end of the well summaries of each basin.

A list of abbreviations used in the tables is shown on p. iii.

For each well studied, maturity data are presented in Table 1 and chemical analysis data in Table 2. Vitrinite reflectivity and spore colour index values against depth are presented in Figures 1 and 2 and Appendices 1 and 2. Alkane gas chromatography traces are shown in Figure 3. Tables of relevant geochemical data and gas chromatography-mass spectrometry traces for oil, migrant oil stains and source rocks from the Northern Carnarvon Basin are presented in Sections II, III and IV of this volume respectively.

Petroleum geochemistry charts at 1:5000 scale for each well are presented in Volume 5 of the report.



Stratigraphic nomenclature northern Carnarvon Basin

ABBREVIATIONS USED IN ANALYTICAL DATA SHEETS

LITHOLOGY

CHK	-	chalk
CHT	-	chert
CMT	-	cement
CGL	-	conglomerate
CLYST	-	claystone
DOL	-	dolomite/dolomitic
IGN	-	igneous rocks
LIG	-	lignite/lignitic
LST	-	limestone
MDST	-	mudstone
MET	-	metamorphic rock
MRL	-	marl(y)
QTZ	-	quartz
SH	-	shale
SND	-	sand
SLTST	-	siltstone
SST	-	sandstone
VOLC	-	volcanic rocks

COLOUR

bl	-	blue
blk	-	black
brn	-	brown
dk	-	dark
dsk	-	dusky
g	-	gold
gn	-	green
gy	-	grey
lt	-	light
ol	-	olive
org	-	orange
pal	-	pale
pnk	-	pink
pp	-	purple
rd	-	red
vgt	-	variegated
wht	-	white
yel	-	yellow
gy-gn	-	greyish green
gy/gn	-	grey-green (gradation)
gn-gy	-	greenish grey

DESCRIPTION

aren	-	arenaceous
arg	-	argillaceous
bd	-	bedded/bedding
bit	-	bitumen/bituminous
calc	-	calcareous
carb	-	carbonaceous
crs	-	coarse
cvd	-	caved
f	-	fine
fer	-	ferruginous
foss	-	fossils/fossiliferous
fr	-	friable
hd	-	hard
i/b	-	interbedded
med	-	medium
mic	-	mica/micaceous
mod	-	moderate
mnr	-	minor
mtl	-	mottled
occ	-	occasional
ool	-	oolitic
OS	-	oil stain
pyr	-	pyrite/pyritic
rew	-	reworked
sft	-	soft
shly	-	shaly
sl	-	slight(ly)
slty	-	silty
sndy	-	sandy
tr	-	trace
v	-	very
xln	-	crystalline

GENERAL

-	-	sample not analysed
*	-	analysed but no data obtained
A/a	-	as above
Ctg	-	ditch cuttings
Fluo	-	fluorescence
NC	-	no calculation
NDP	-	no determination possible
Pop	-	population
Swc	-	sidewall core

LIST OF CONTENTS

SECTION I PETROLEUM GEOCHEMISTRY WELL REPORTS

NORTHERN CARNARVON BASIN

	Page No.
Anchor-1	1
Angel-2	4
Bowers-1	8
Brigadier-1	12
Cape Range-2	15
Depuch-1	19
Eaglehawk-1	22
Egret-1	25
Flag-1	28
Flinders Shoal-1	32
Hampton-1	35
Hauy-1	38
Hermite-1	41
Hope Island-1	44
Jarman-1	47
Koolinda-1	50
Lambert-1	53
Legendre-1	56
Lowendal-1	59
Observation-1	62
Pepper-1	65
Picard-1	68
Ronsard-1	72
Rosemary-1	74
Sandy Point-1	77
Spar-1	80
Tryal Rocks-1	83
West Barrow-2	86
West Muiron-2	89
West Tryal Rocks-1	92
Withnell-1	95

Wells Analysed Only For Migrant Oil Stains

Barrow Deep-1, Delambre-1, Haycock-1,
Hilda-1A, Long Island-1, North Rankin-1,
Parker-1, Poissonier-1, Pueblo-1, Rankin-1,
West Tryal Rocks-2, Zeewulf-1

SECTION II OIL ANALYSIS DATA FROM THE NORTHERN CARNARVON BASIN

Table II.1 Physical analysis and liquid and gas chromatography data for oils from the Northern Carnarvon Basin.

Table II.2 Gasoline range hydrocarbon ratios for oils from the Northern Carnarvon Basin.

Table II.3 Gas chromatography - mass spectrometry and carbon isotope data for oils from the Northern Carnarvon Basin.

Table II.4 Gasoline hydrocarbon analysis data.

Figure II.1 $\delta 13_C$ saturates against $\delta 13_C$ aromatics for oils from the Northern Carnarvon Basin.

Figure II.2 Ternary diagram showing the relative percentages of normal iso- and cyclic alkanes for oils from the Northern Carnarvon Basin.

Figure II.3 Ternary diagram showing the relative percentages of C_{27}, C_{28} and C_{29} 5α(H), 14α(H), 17α(H)-20R steranes in oils from the Northern Carnarvon Basin.

Figure II.4 Whole oil gas chromatograms for oils from the Northern Carnarvon Basin.

Figure II.5 C_{15+} Alkane gas chromatograms for oils from the Northern Carnarvon Basin.

Figure II.6 Mass fragmentograms of the m/z 191 (triterpanes), 217 (regular steranes) and 259 (rearranged steranes) for oils from the Northern Carnarvon Basin.

SECTION III GAS CHROMATOGRAPHY-MASS SPECTROMETRY AND CARBON ISOTOPE DATA FOR MIGRANT OIL STAINS FROM THE NORTHERN CARNARVON BASIN

Table III.1 Extraction, gas and liquid chromatography, gas chromatography-mass spectrometry and carbon isotope data for selected migrant oil stains from the Northern Carnarvon Basin.

Figure III.1 $\delta 13_C$ saturates against $\delta 13_C$ aromatics for migrant oil stains from the Northern Carnarvon Basin.

Figure III.2 Ternary diagram showing the relative percentages of C_{27}, C_{28} and C_{29} 5α(H), 14α(H), 17α(H)-20R steranes in migrant oil stains from the Northern Carnarvon Basin.

Figure III.3 Mass fragmentograms for the m/z 191 (triterpanes), 217 (regular steranes) and 259 (rearranged steranes) for migrant oil stains in the Northern Carnarvon Basin.

SECTION IV GAS CHROMATOGRAPHY-MASS SPECTROMETRY AND CARBON ISOTOPE DATA FOR SOURCE ROCKS FROM THE NORTHERN CARNARVON BASIN

Table IV.1 Source rock, extraction, gas and liquid chromatography, gas chromatography-mass spectrometry and carbon isotope data for selected samples from source rock intervals in the Northern Carnarvon Basin.

Figure IV.1 $\delta 13_C$ saturates against $\delta 13_C$ aromatics for source rock extracts from the Northern Carnarvon Basin.

Figure IV.2 Ternary diagram showing the relative percentages of C_{27}, C_{28} and C_{29} 5α(H), 14α(H), 17α(H)-20R steranes in source rock extracts from the Northern Carnarvon Basin.

Figure IV.3 Mass fragmentograms of the m/z values 191 (triterpanes), 217 (regular steranes) and 259 (rearranged steranes) for source rock extracts

SECTION I

PETROLEUM GEOCHEMISTRY

WELL REPORTS

NORTHERN CARNARVON BASIN

ANCHOR-1 WELL

SUMMARY

Geochemical analysis of the interval 1198m to 3046m of the Anchor-1 well shows that the well section is early mature between 1198m and 1400m, middle mature between 1400m and 2600m and late mature between 2600m and 3048m TD. The maturity gradients show no evidence of any major erosional unconformities within the section analysed but extrapolation of the maturity gradients to seabed indicates approximately 1000m of missing Early Cretaceous to Recent sediments above 1198m. The section is not currently at its maximum depth of burial which was some 800m greater than present day burial depths and was reached sometime during the Early Cretaceous to Recent.

Mudstones in the interval 1945m to 1960m in the Upper Dingo Claystone and 2317m to 2454m in the Middle Dingo Claystone have good oil source potential. These intervals may have already generated significant quantities of oil. Thick uniform mudstones of average organic carbon content throughout the remainder of the interval 1642.6m to 3046m, of the Upper, Middle and Lower Dingo Claystones, will be fair gas sources at optimum maturity.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 21° 32' 51"S, 114° 42' 37"E.

Operator and date of drilling: West Australian Petroleum Pty Ltd 1969.

Well Status: Plugged and abandoned.

TD: 3048m.

Mud data: Seawater gel system: Seabed to 305m.
Seawater/gel, Lignosulphonate/CMC System: 305m to 3048m TD.

Casing data: 26" at 61.5m, 20" at 304m, $13^3/_8$" at 1209m.

Elevation: RT 24.5m ASL.

Water Depth: 18m.

BHT data: Not available.

Interval analysed: 1198m to 3046m.

Age of interval analysed:

	Depths (in metres)
Early Cretaceous	1198 -1554.5
Middle-Late Jurassic	1554.5-2286
Early-Middle Jurassic	2286 -2703.6
Early Jurassic	2703.6-3046

Sample type and quality: Dried ditch cuttings of good quality for geochemical analyses.

Maturation data quality:

a) Vitrinite Reflectance: Samples yielded sufficient quantities of vitrinite for measurements. Results: Good.

b) Spore Colour Index: Samples yielded sufficient sporomorphs for measurement but were complicated by contaminant and stained sporomorphs. Results: Fair.

Source rock data quality: Fair.

Gas chromatography run at: 1881m to 1896m, 2393m to 2409m and 2686m to 2701m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Vitrinite reflectance values over the analysed interval increase steadily from 0.45% at 1198m to 0.83% at 3048m TD. Spore colour index values increase from 4 to 4.5 SCI units to 7.5 to 8 SCI units over the same interval. The well section is early mature to between 1198m and 1400m, middle mature from 1400m to about 2600m and late mature below this depth. The vitrinite reflectance gradient suggests that the interval analysed contains no major erosional unconformities. Extrapolation of the maturity gradients to surface shows 1000m of missing Early Cretaceous and younger section above 1198m. Maximum depths of burial of the well section were around 800m greater than those of the present day and were reached during the Early Cretaceous to Recent.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

Mudstones in the intervals 1945m to 2064m in the Upper Dingo Claystone and 2317m to 2454m in the Middle Dingo Claystone contain average organic carbon contents of between 1.33% and 2.11%. Pyrolysis analysis of these mudstones shows that they have relatively high hydrogen indices of between 125 and 170 indicating between 10% and 20% content of oil-prone material. Extraction, fractionation and gas chromatography analysis of samples at 1881m to 1896m, 2393m to 2409m and 2686m to 2701m shows that these samples contain small quantities of indigenous hydrocarbons derived from mature terrestrially sourced waxy kerogen.

The electric logs show that the two intervals contain around 100m and 130m of mudstones respectively. The intervals have good oil source potential and may have generated significant quantities of oil in reaching their present level of maturity.

The remaining samples in the Upper, Middle and Lower Dingo Claystones between 1642.6m and 3046m contain mudstones with generally average organic carbon contents of between 0.93% and 2.38%. These mudstones contain only humic kerogen. They are, however, relatively thick (approx 1400m) and contain sufficient vitrinitic kerogen to constitute a fair gas source at optimum maturity.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2)

Mudstones analysed in the interval 1198m to 1642m in the Muderong Shale, Barrow Group and Dupuy Sandstone Member generally contain average organic carbon contents of between 1.55% and 2.27%. Pyrolysis analysis of the samples shows that they contain predominantly humic kerogens. These formations consist of interbedded sandstones and mudstones and it is unlikely that the mudstones are sufficiently thickly developed to be a significant gas source. These mudstones have no oil or gas source potential.

WELL: ANCHOR-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
1188.4		**Muderong Shale**									
1198-1217	Ctg	MDST, med lt gy	4.0-4.5	0.45(22)	60	35	5	60	40	*	*
1221.3		**Mardie Greensand Mbr**									
1253-1268	"	MDST, med lt gy						60	40	*	*
1302-1317	"	MDST, a/a						65	35	*	*
1343.3		**Barrow Gp**									
1396-1412	"	MDST, med lt gy + 40% SST, lt brn	5.0	*	25	75	mnr				
	P	MDST, a/a						50	50	*	*
1433-1448	Ctg	MDST, med gy + mnr SST						45	55	*	*
1527-1543	"	MDST, med lt gy + 10% SST	5.0	0.48(16)	50	45	5				
	P	MDST, med lt gy						70	30	*	*
1554.5		**Upper Dingo Claystone :Dupuy Sandstone Mbr**									
1642.6		**Upper Dingo Claystone**									
1662-1677	Ctg	MDST, a/a + mnr SST	5.0-5.5	0.50(3)	45	50	5	45	50	*	5
1881-1896	"	MDST, pal yel-brn, sl calc	5.5-6.0	0.55(3)	40	40	20	45	50	*	5
1945-1960	"	MDST, med-dk gy, slty						40	50	*	10
1988-2003	"	MDST, med lt gy	5.5-6.0	0.61(1)	35	45	20	30	55	*	15
2049-2064	"	MDST, dk med gy, slty						40	50	*	10
2110-2125	"	MDST, med gy-pal yel brn, slty						40	55	*	5
2226-2241	"	MDST, dk yel-brn, sl calc	6.0-6.5	0.67(1)	35	55	10	40	60	*	*
2286		**Middle Dingo Claystone**									
2317-2332	"	MDST, dk yel brn						30	60	*	10
2393-2409	"	MDST, dk yel-brn, sl calc + 40% MDST, med lt gy	6.0-6.5	0.64(8)	60	30	10				
	P	MDST, dk yel brn, calc						30	50	*	20
	P	MDST, med lt gy						35	50	*	15
2439-2454	Ctg	MDST, med-dk gy, slty + mnr SST, wht-lt gy						35	50	*	15
2470-2485	"	MDST, dk yel brn, slty						55	45	*	*
2546-2561	"	MDST, med gy	6.5-7.0	0.68(9)	55	45	mnr	50	45	*	5
2619-2637	"	MDST, med gy						45	50	*	5
2686-2701	"	MDST, a/a	7.5	0.65(3)	45	50	5	40	55	*	5

Table 1a Maturity and Kerogen Composition Data

WELL: ANCHOR-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
2703.6		**Lower Dingo Claystone**									
2774-2790	Ctg	MDST, med lt gy + mnr SST						45	55	*	*
2851-2866	"	MDST, med lt gn	7.5	0.76(13)	45	55	mnr	45	55	*	*
2957-2973	"	MDST, med lt gy						40	50	*	10
3030-3046	"	MDST, med lt gy	7.5-8.0	0.83(11)	60	40	mnr	50	40	*	10

Table 1b Maturity and Kerogen Composition Data

WELL: ANCHOR-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE °C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
1188.4		**Muderong Shale**													
1198-1217	Ctg	MDST, med lt gy	2.27	419	104	58	0.04	2.48							
1221.3		**Mardie Greensand Mbr**													
1253-1268	"	MDST, a/a	1.55	417	77	54	0.08	1.29							
1302-1317	"	MDST, a/a	1.82	417	68	40	0.10	1.38							
1343.3		**Barrow Gp**													
1396-1412	"	MDST, a/a + 40% SST, lt brn	-												
	P	MDST, a/a	1.99	413	92	38	0.12	2.08							
1433-1448	Ctg	MDST, med gy + mnr SST	1.93	420	84	53	0.10	1.82							
1527-1543	"	MDST, med lt gy + 10% SST	-												
	P	MDST, med lt gy	1.76	417	56	24	0.10	1.10							
1554.5		**Upper Dingo Claystone: Dupuy Sst Mbr**													
1642.6		**Upper Dingo Claystone**													
1662-1677	Ctg	MDST, a/a + mnr SST	1.48	423	115	115	0.11	1.90							
1768-1784	Ctg	MDST, pal yel brn, sl calc	0.93												
1881-1896	"	MDST, pal yel brn, sl calc	1.92	423	113	70	0.15	2.54	715	37	450	23	45	18	37
1945-1960	"	MDST, med-dk gy, slty	1.37	432	145	77	0.05	2.09							
1988-2003	"	MDST, med lt gy	1.55	425	167	101	0.08	2.82							
2049-2064	"	MDST, dk-med gy, slty	1.42	437	125	63	0.14	2.06							
2110-2125	"	MDST, med gy-pal yel brn slty	1.52	427	113	164	0.12	1.95							
2119-2134	"	MDST, med-dk gy + 50% SLTST, lt gy-lt brn	-												
	P	MDST, a/a	0.70												
	P	SLTST, a/a	0.86												
2226-2241	Ctg	MDST, dk yel brn, sl calc	2.15	432	93	132	0.16	2.38							
2286		**Middle Dingo Claystone**													
2287-2302	"	MDST, med-dk gy + 50% SLTST, lt gy-lt brn + 10% SST, wht	-												
	P	MDST, a/a	0.66												
	P	SLTST, a/a	0.45												
2317-2332	Ctg	MDST, dk yel brn	1.33	428	166	233	0.14	2.56							
2393-2409	"	MDST, dk yel brn, calc + 40% MDST, med lt gy	2.11						610	29	375	18	41	21	38
	P	MDST, dk yel brn, calc	1.33	433	170	224	0.14	2.63							
	P	MDST, med lt gy	1.73	433	167	123	0.12	3.29							

Table 2a Chemical Analysis Data

WELL: ANCHOR-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2439-2454	Ctg	MDST, med-dk gy, slty + mnr SST, wht-lt gy	1.26	433	156	102	0.05	2.08							
2470-2485	"	MDST, dk yel brn, slty	1.91	426	73	78	0.14	1.63							
2546-2561	"	MDST, med gy	2.31	430	89	87	0.14	2.37							
2619-2637	"	MDST, med gy	2.21	437	102	78	0.17	2.72							
2686-2701	"	MDST, a/a	2.38	433	103	58	0.16	2.89	810	34	495	21	45	16	39
2703.6		**Lower Dingo Claystone**													
2774-2790	"	MDST, med lt gy + mnr SST	1.26	435	89	93	0.16	1.34							
2851-2866	"	MDST, med lt gn	1.63	433	87	69	0.15	1.66							
2957-2973	"	MDST, med lt gy	1.55	431	65	64	0.15	1.18							
3030-3046	"	MDST, med lt gy	1.23	434	74	85	0.14	1.06							

Table 2b Chemical Analysis Data

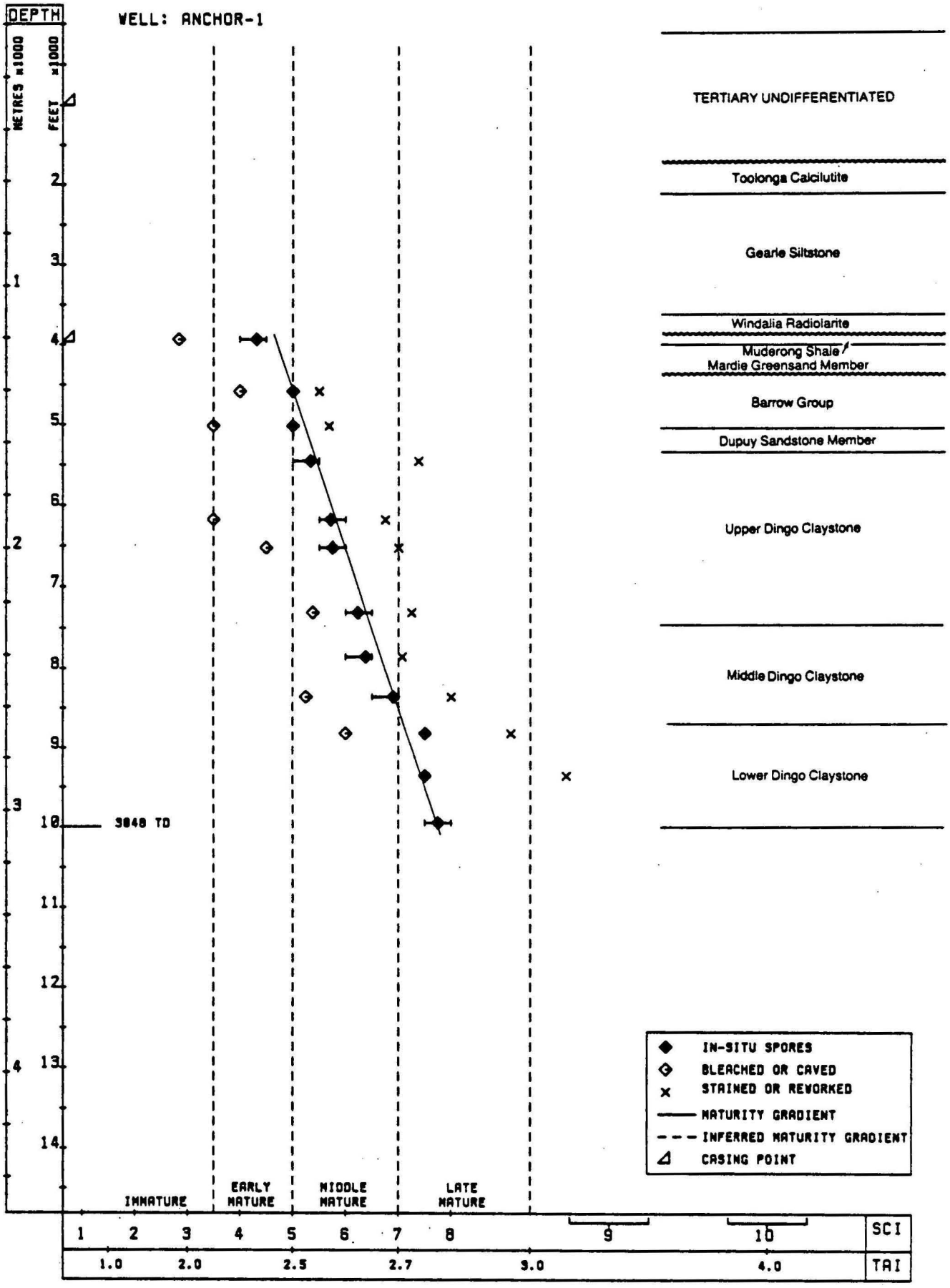


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

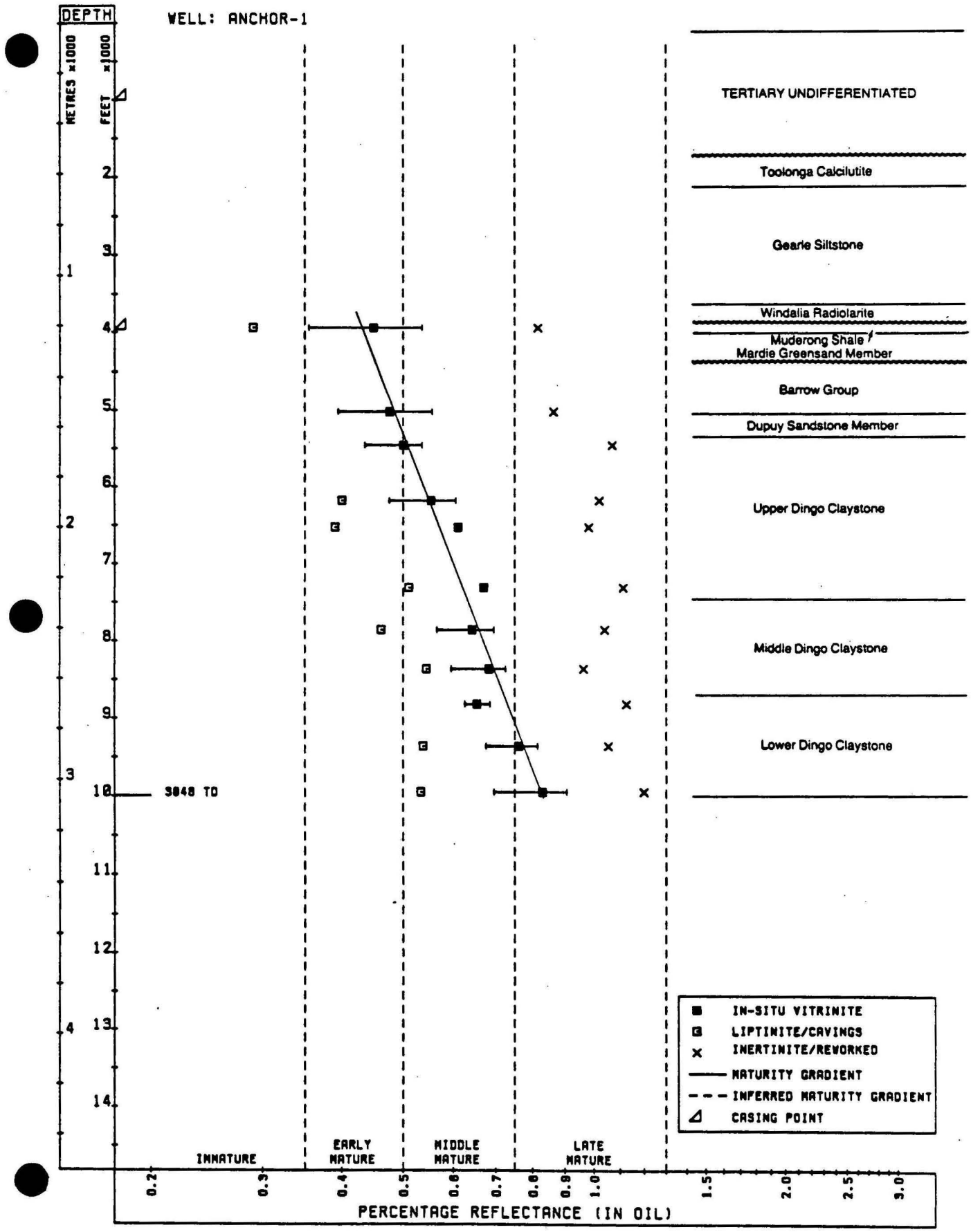
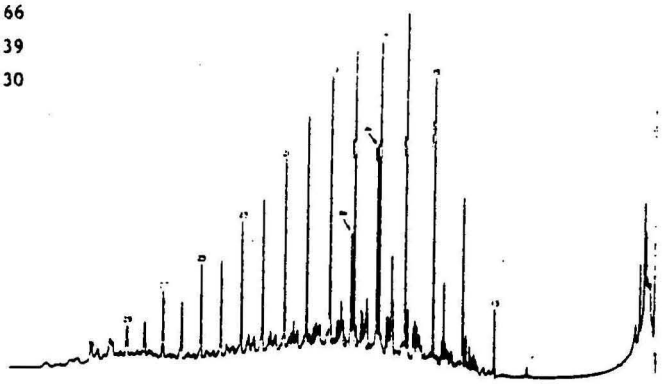
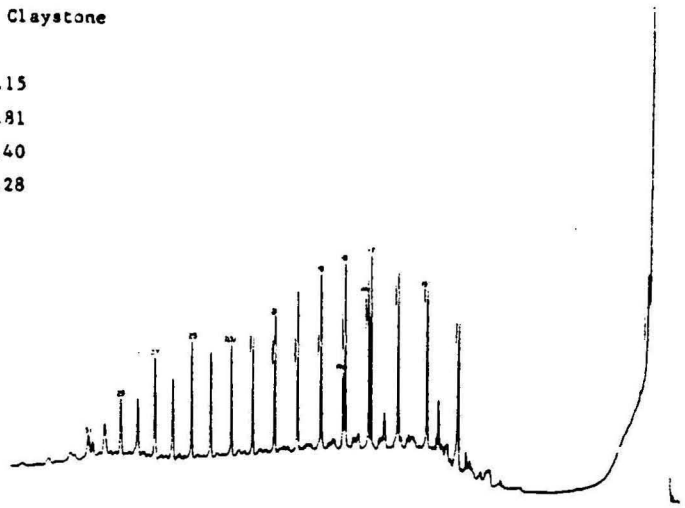


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH

Anchor-1
1881-1896m
Upper Dingo Claystone
SCI 5.5-6.0
Pr/Ph = 1.80
Pr/n-C_{17} = 0.66
Ph/n-C_{18} = 0.39
CPI = 1.30



Anchor-1
2393-2409m
Middle Dingo Claystone
SCI 6.0-6.5
Pr/Ph = 2.15
Pr/n-C_{17} = 0.81
Ph/n-C_{18} = 0.40
CPI = 1.28



Anchor-1
2686-2701m
Middle Dingo Claystone
SCI 7.5
Pr/Ph = 2.34
Pr/n-C_{17} = 0.45
Ph/n-C_{18} = 0.19
CPI = 1.15

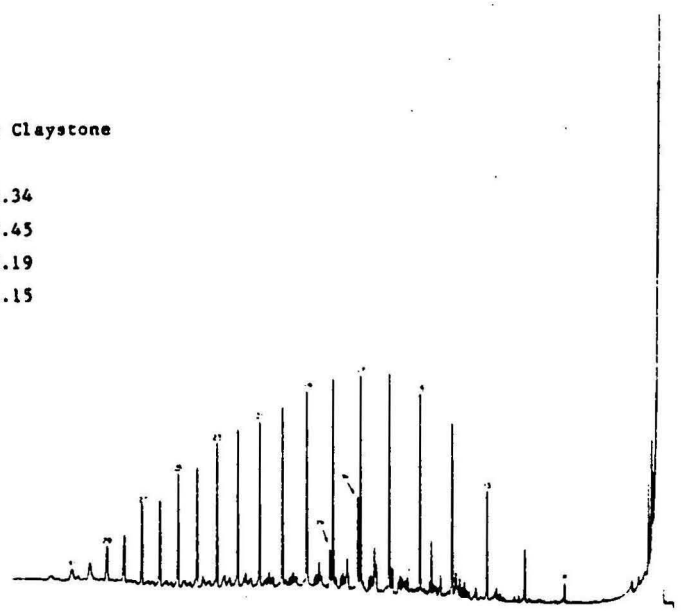


Figure 3

Robertson Research

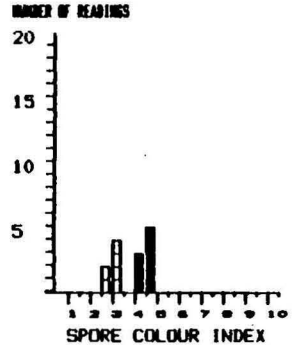
ANCHOR-1

IN SITU POPULATION

SAMPLE 1198-1217M

2.5 2.5 3.0 3.0 3.0 3.0 4.0 4.0 4.0 4.5
4.5 4.5 4.5 4.5

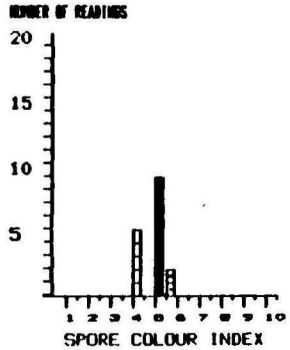
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.0-4.5	8
BLEACHED OR CAVED	2.5-3.0	6
STAINED OR REWORKED	-	0



SAMPLE 1396-1412M

4.0 4.0 4.0 4.0 4.0 5.0 5.0 5.0 5.0 5.0
5.0 5.0 5.0 5.0 5.5 5.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.0	9
BLEACHED OR CAVED	4.0-4.0	5
STAINED OR REWORKED	5.5-5.5	2



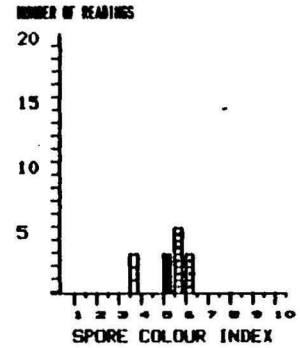
ANCHOR-1

IN SITU POPULATION

SAMPLE 1527-1543M

3.5 3.5 3.5 5.0 5.0 5.0 5.5 5.5 5.5 5.5
5.5 6.0 6.0 6.0

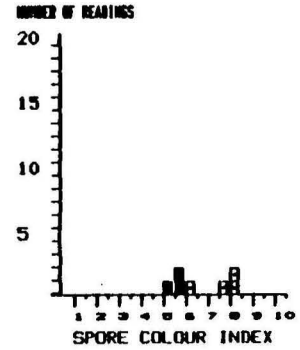
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.0	3
BLEACHED OR CAVED	3.5-3.5	3
STAINED OR REWORKED	5.5-6.0	8



SAMPLE 1662-1677M

5.0 5.5 5.5 6.0 7.5 8.0 8.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.5	3
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	6.0-8.0	4



Appendix 1a

Robertson Research

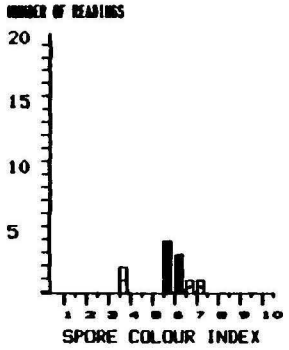
ANCHOR-1

IN SITU POPULATION

SAMPLE 1881-1896M

3.5 3.5 5.5 5.5 5.5 5.5 6.0 6.0 6.0 6.5 7.0

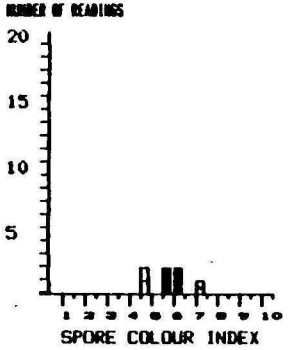
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.5-6.0	7
BLEACHED OR CAVED	3.5-3.5	2
STAINED OR REWORKED	6.5-7.0	2



SAMPLE 1988-2003M

4.5 4.5 5.5 5.5 6.0 6.0 7.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.5-6.0	4
BLEACHED OR CAVED	4.5-4.5	2
STAINED OR REWORKED	7.0-7.0	1



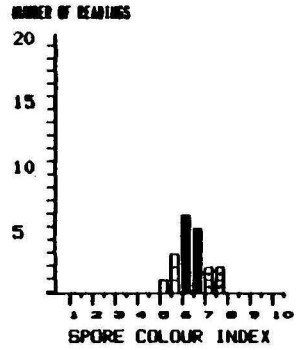
ANCHOR-1

IN SITU POPULATION

SAMPLE 2226-2241M

5.0 5.5 5.5 5.5 6.0 6.0 6.0 6.0 6.0 6.0 6.5 6.5 6.5 6.5 6.5 7.0 7.0 7.5 7.5

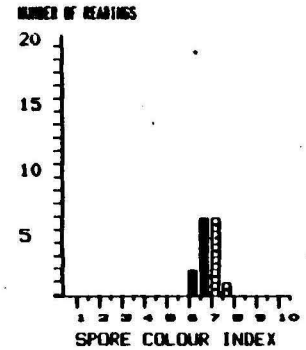
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.0-6.5	11
BLEACHED OR CAVED	5.0-5.5	4
STAINED OR REWORKED	7.0-7.5	4



SAMPLE 2393-2409M

6.0 6.0 6.5 6.5 6.5 6.5 6.5 6.5 7.0 7.0 7.0 7.0 7.0 7.0 7.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.0-6.5	8
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	7.0-7.5	7



Appendix 1b

Robertson Research

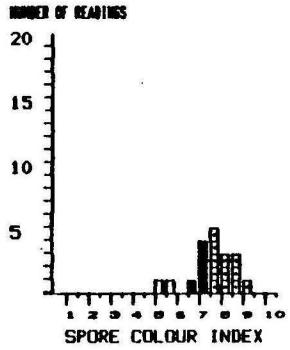
ANCHOR-1

IN SITU POPULATION

SAMPLE 2546-2561M

5.0 5.5 6.5 7.0 7.0 7.0 7.0 7.5 7.5 7.5
7.5 7.5 8.0 8.0 8.0 8.5 8.5 8.5 9.0

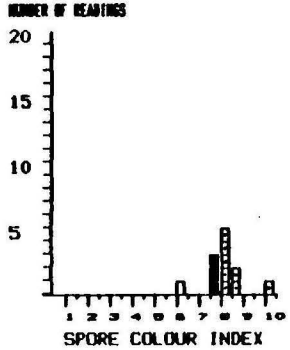
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.5-7.0	5
BLEACHED OR CAVED	5.0-5.5	2
STAINED OR REWORKED	7.5-9.0	12



SAMPLE 2686-2701M

6.0 7.5 7.5 7.5 8.0 8.0 8.0 8.0 8.0 8.5
8.5 10.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	7.5-7.5	3
BLEACHED OR CAVED	6.0-6.0	1 *
STAINED OR REWORKED	8.0-10.0	8



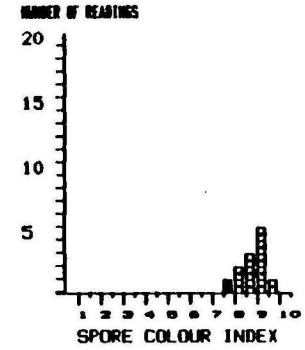
ANCHOR-1

IN SITU POPULATION

SAMPLE 2851-2866M

7.5 8.0 8.0 8.5 8.5 8.5 9.0 9.0 9.0 9.0
9.0 9.5

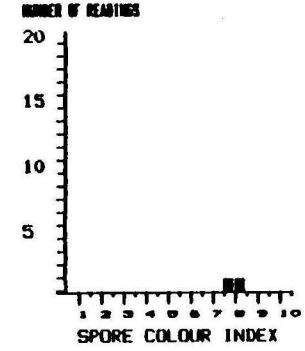
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	7.5-7.5	1
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	8.0-9.5	11



SAMPLE 3030-3046M

7.5 8.0

SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	7.5-8.0	2
BLEACHED/CAVINGS	-	0
STAINED/REWORKED	-	0



Appendix 1c

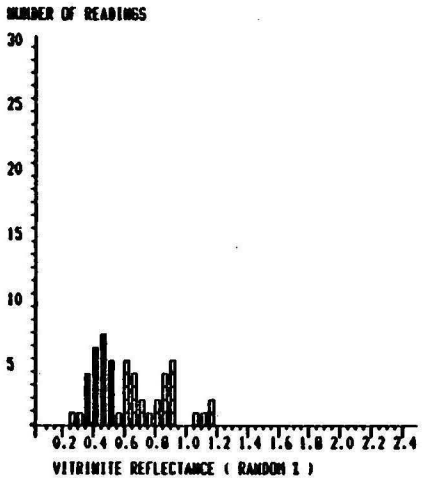
Robertson Research

ANCHOR-1

SAMPLE 1198-1217M

0.28 0.30 0.36 0.37 0.37 0.38 0.41 0.41 0.42 0.42
0.43 0.43 0.45 0.45 0.46 0.47 0.48 0.49 0.49 0.50
0.51 0.52 0.52 0.53 0.57 0.62 0.63 0.63 0.64 0.64
0.65 0.66 0.69 0.69 0.70 0.72 0.77 0.82 0.83 0.85
0.86 0.87 0.88 0.90 0.90 0.91 0.92 0.92 1.09 1.10
1.19 1.19

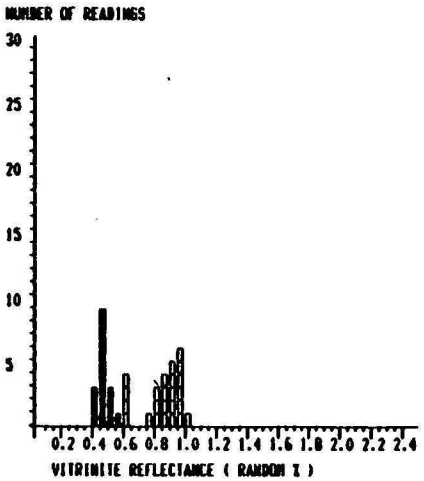
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.36-0.53	22	0.45	0.05
LIPTINITE/CAVINGS	0.28-0.30	2	0.29	0.01
INERTINITE/REWORKED	0.57-1.19	20	0.82	0.18



SAMPLE 1527-1543M

0.40 0.41 0.43 0.45 0.46 0.47 0.47 0.48 0.48 0.49
0.49 0.49 0.50 0.50 0.54 0.55 0.61 0.62 0.62 0.63
0.77 0.82 0.84 0.84 0.87 0.88 0.89 0.89 0.90 0.92
0.92 0.93 0.94 0.95 0.96 0.97 0.97 0.97 0.98 1.03

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.40-0.55	16	0.48	0.04
INERTINITE/REWORKED	0.61-1.03	24	0.86	0.13

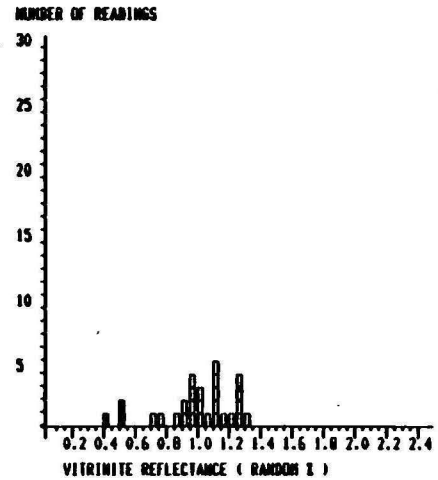


ANCHOR-1

SAMPLE 1662-1677M

0.44 0.53 0.53 0.72 0.76 0.87 0.90 0.92 0.95 0.96
0.97 0.98 1.02 1.03 1.04 1.07 1.12 1.12 1.14 1.14
1.14 1.17 1.24 1.26 1.28 1.29 1.29 1.30

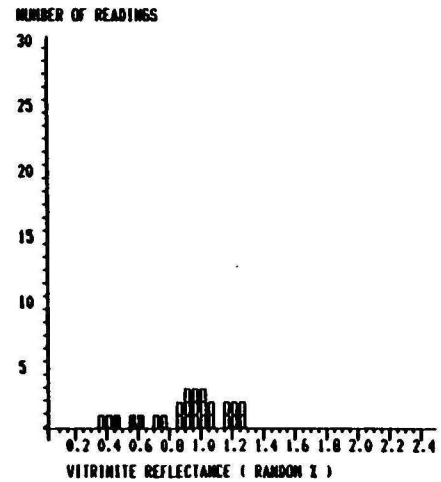
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.44-0.53	3	0.50	0.05
INERTINITE/REWORKED	0.72-1.30	25	1.07	0.16



SAMPLE 1881-1896M

0.39 0.41 0.48 0.58 0.60 0.74 0.75 0.86 0.88 0.90
0.91 0.93 0.95 0.95 0.97 1.00 1.01 1.02 1.08 1.09
1.19 1.19 1.20 1.24 1.25 1.28

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.48-0.60	3	0.55	0.06
LIPTINITE/CAVINGS	0.39-0.41	2	0.40	0.01
INERTINITE/REWORKED	0.74-1.28	21	1.02	0.16



Appendix 2a

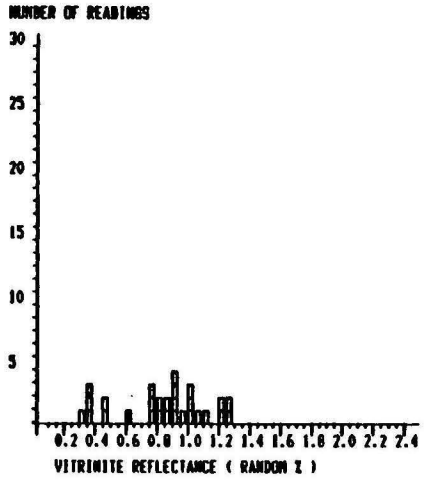
Robertson Research

ANCHOR-1

SAMPLE 1988-2003M

0.32 0.35 0.36 0.39 0.45 0.47 0.61 0.77 0.78 0.78
0.80 0.83 0.85 0.89 0.91 0.91 0.93 0.94 0.97 1.00
1.01 1.04 1.08 1.10 1.22 1.24 1.25 1.28

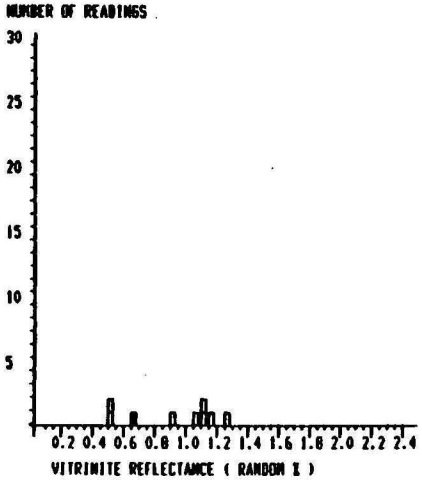
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.61-0.61	1	0.61	
LIPTINITE/CAVINGS	0.32-0.47	6	0.39	0.06
INERTINITE/REWORKED	0.77-1.28	21	0.98	0.16



SAMPLE 2226-2241M

0.51 0.51 0.67 0.90 1.09 1.11 1.12 1.17 1.28

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.67-0.67	1	0.67	
LIPTINITE/CAVINGS	0.51-0.51	2	0.51	
INERTINITE/REWORKED	0.90-1.28	6	1.11	0.12

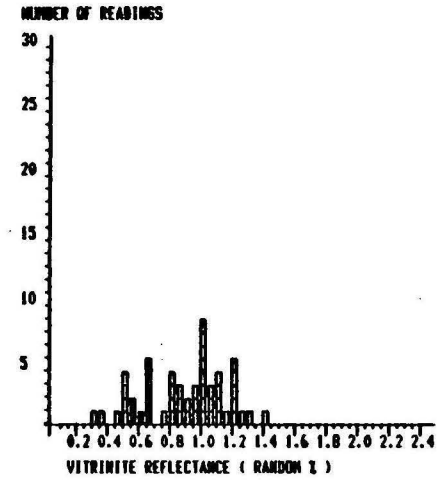


ANCHOR-1

SAMPLE 2393-2409M

0.31 0.39 0.47 0.50 0.51 0.52 0.53 0.57 0.58 0.64
0.65 0.66 0.67 0.68 0.69 0.77 0.80 0.80 0.84 0.84
0.86 0.87 0.88 0.90 0.92 0.96 0.97 0.97 1.00 1.01
1.01 1.02 1.02 1.03 1.03 1.04 1.05 1.05 1.06 1.10
1.12 1.12 1.13 1.19 1.20 1.20 1.21 1.22 1.24 1.28
1.33 1.40

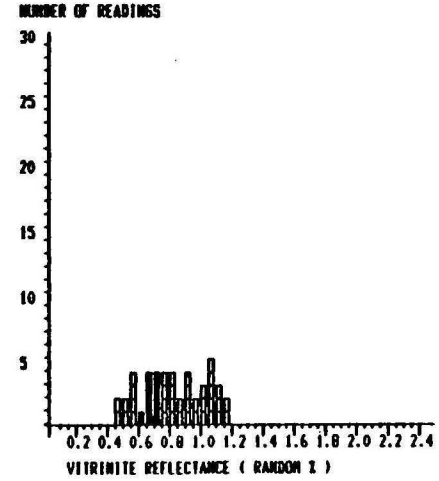
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.57-0.69	8	0.64	0.04
LIPTINITE/CAVINGS	0.31-0.53	7	0.46	0.08
INERTINITE/REWORKED	0.77-1.40	37	1.04	0.16



SAMPLE 2546-2561M

0.49 0.49 0.52 0.53 0.57 0.58 0.58 0.59 0.60 0.65
0.68 0.69 0.69 0.70 0.70 0.71 0.72 0.75 0.76 0.77
0.79 0.80 0.82 0.83 0.84 0.85 0.89 0.90 0.90 0.91
0.92 0.98 0.99 1.01 1.01 1.04 1.07 1.08 1.08 1.09
1.09 1.11 1.12 1.13 1.17 1.19

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.60-0.72	9	0.68	0.04
LIPTINITE/CAVINGS	0.49-0.59	8	0.54	0.04
INERTINITE/REWORKED	0.75-1.19	29	0.96	0.14



Appendix 2b

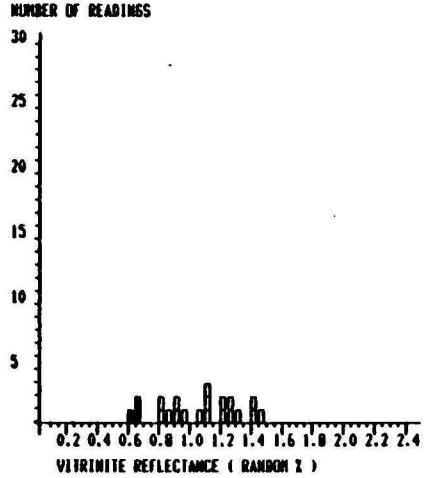
Robertson Research

ANCHOR-1

SAMPLE 2686-2701M

0.63 0.65 0.68 0.80 0.80 0.86 0.92 0.94 0.96 1.07
1.10 1.10 1.11 1.20 1.22 1.28 1.29 1.30 1.40 1.42
1.47

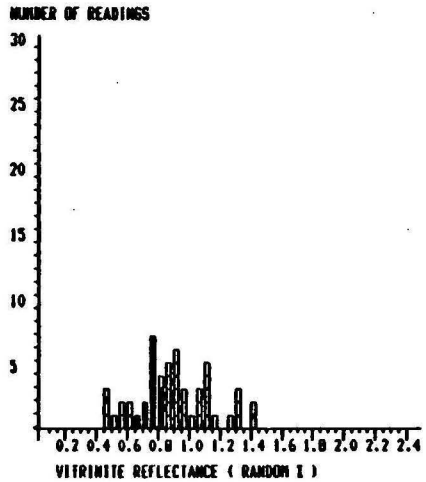
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.63-0.68	3	0.65	0.03
INERTINITE/REWORKED	0.80-1.47	18	1.12	0.21



SAMPLE 2851-2866M

0.45 0.45 0.48 0.52 0.58 0.59 0.61 0.62 0.68 0.72
0.72 0.75 0.76 0.76 0.76 0.77 0.77 0.79 0.80 0.80
0.81 0.84 0.85 0.86 0.87 0.88 0.89 0.90 0.91 0.92
0.93 0.94 0.94 0.96 0.98 0.98 1.03 1.05 1.07 1.08
1.10 1.11 1.11 1.12 1.14 1.16 1.25 1.30 1.31 1.32
1.40 1.44

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.68-0.81	13	0.76	0.04
LIPTINITE/CAVINGS	0.45-0.62	8	0.54	0.07
INERTINITE/REWORKED	0.84-1.44	31	1.05	0.17

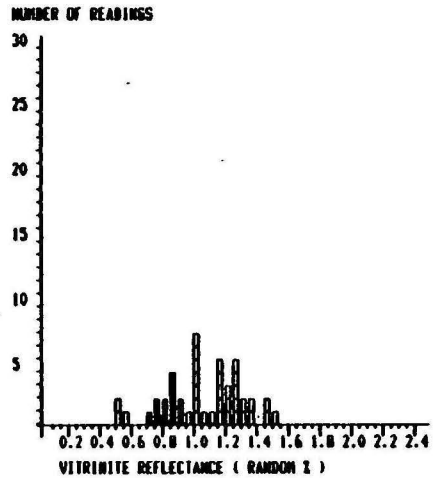


ANCHOR-1

SAMPLE 3030-3046M

0.52 0.53 0.55 0.70 0.77 0.78 0.80 0.81 0.85 0.86
0.87 0.87 0.90 0.90 0.98 1.00 1.00 1.01 1.01 1.01
1.03 1.04 1.09 1.13 1.15 1.16 1.16 1.19 1.19 1.22
1.22 1.23 1.25 1.26 1.26 1.27 1.29 1.30 1.34 1.35
1.36 1.45 1.49 1.50

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.70-0.90	11	0.83	0.06
LIPTINITE/CAVINGS	0.52-0.55	3	0.53	0.02
INERTINITE/REWORKED	0.98-1.50	30	1.20	0.15



Appendix 2c

ANGEL-2 WELL

SUMMARY

Geochemical analysis of samples from the interval 2759m to 4390m of the Angel-2 well has shown that the well section becomes middle mature at around 3200m. The maturity gradients show no evidence of any major erosional unconformities within the interval analysed. Extrapolation of the gradients to seabed suggests that only limited Middle Jurassic and younger sediments are missing above 3170m. The sediments analysed are currently at or near their maximum depths of burial.

Coals in the interval 3168m to 3293m of the Learmonth Formation have very good oil source potential and fair gas source potential. At their present level of maturity these coals will have already generated significant quantities of oil. Mudstones in the interval 3454m to 3506m of the Learmonth Formation and 3933m to 4390m of the Learmonth Formation and Lower Dingo Claystone have fair and very good oil source potential respectively. The lower source unit will already have generated significant quantities of oil.

Mudstones and coals within the interval 3139.4m to 4390m in the Learmonth Formation and Lower Dingo Claystone have good gas source potential.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 19° 27' 58.6"S, 116° 39' 24.8"E.

Operator and date of drilling: Bocal, 1972.

Well Status: Capped gas/Condensate producer.

TD: 4397m.

Mud data: Seawater/Dextrid mud system: 388.7m to 4397m TD.

Casing data: 30" at 120m, 20" at 386m, $13^3/_8$" at 1597m, $9^5/_8$" at 2828m.

BHT data: 49.5°C at 1607m, stopped circulation time unknown.
92°C at 2833.5m, stopped circulation time unknown.
116°C at 3792m, stopped circulation time unknown.

ANGEL-2 WELL

Elevation: RT 9.5m ASL.

Water depth: 86.5m.

Interval analysed: 2759m to 4390m.

Age of interval analysed:

	Depths (in metres)
Late Jurassic	2759 -3139.4
Early-Middle Jurassic	3139.4-4294.6
Early Jurassic	4294.6-4390

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: Samples analysed in Phase I, data quality unknown.

b) Spore Colour Index: Samples analysed in Phase I, data quality unknown.

Source rock data quality: Data for samples analysed in the Phase II study between 2933m and 4390m is of good quality. Phase I data quality unknown.

Gas chromatography run at: 3204m to 3220m, 3454m to 3473m, 3872m to 3887m, 4131m to 4146m and 4360m to 4375m.

MATURATION (Table 1, Figures 1 and 2)

Spore colour index values rise from interpreted values of around 5 SCI units at 3170m to 6.5 SCI units at 4390m. Vitrinite reflectance values rise from 0.51% to 0.75% over the same interval. The maturity gradients show no evidence of any major erosional unconformities within the section analysed and extrapolation of the gradients to seabed suggests that little Middle Jurassic and younger section is missing above 3170m. The sediments analysed are presently at or near their maximum depths of burial. The results show that the well section becomes middle mature at around 3200m and is middle mature below this depth to 4397m TD.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

The interval 3168m to 3293m of the Learmonth Formation contains a cumulative thickness of around 8m of thin coals. Pyrolysis analysis of these coals in the sample at 3204m to 3220m shows that they are rich in oil-prone kerogen. Extraction, fractionation and gas chromatography analysis of the sample at 3204m to 3220m shows that the sample contains hydrocarbons derived from a mixture of mature terrestrially sourced waxy kerogens and algal kerogen. These coals have very good oil source potential. At their present level of maturity significant quantities of oil will have already been generated from these source rocks.

The medium to dark grey, carbonaceous mudstones in the intervals 3454m to 3506m and 3933m to 4390m are organically rich (TOC between 2.34% and 4.10%). Pyrolysis analysis of these samples shows that they contain 15% to 20% of oil-prone kerogen. Extraction, fractionation and gas chromatography analysis of samples at 3454m to 3473m, 4131m to 4146m and 4360m to 4375m shows that these samples contain hydrocarbons derived predominantly from mature terrestrially sourced waxy kerogens. The sample at 3454m to 3473m contains a migrant oil derived from a similar source.

Analysis of the electric logs for the well suggests a cumulative thickness of around 18m and 200m of mudstone in the intervals 3454m to 3506m and 3933m to 4397m TD respectively. These intervals have fair and very good oil source potential respectively. The lower interval between 3933m and 4397m TD will have already generated significant quantities of oil at its present level of maturity.

Mudstones and coals in the interval 3139m to 4397m TD in the Learmonth Formation and Lower Dingo Claystone contain above average organic carbon contents of between 2.34% and 4.1%. These mudstones contain approximately 40% of gas-prone vitrinitic kerogen on average and are likely to be good gas sources at optimum maturity.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

The remaining thin mudstones in the Dupuy Sandstone Member Equivalent between 2759m and 3139.4m contain generally average organic carbon contents of between 1.54% and 1.36%. Pyrolysis

analysis shows that these mudstones contain mostly humic kerogen mixed with small quantities of oil-prone kerogen.

These mudstones have no significant oil or gas source potential.

WELL: ANGEL-2

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
2694.4		**Upper Dingo Claystone : Dupuy Sandstone Mbr Eqv**									
2774-2790	P	MDST, med gy						45	35	5	15
2933-2951	P	MDST, med lt gy						55	45	*	*
3139.4		**Learmonth Fm**									
3171-3186	P	COAL		0.40cvd							
3204-3220	P	COAL, blk						40	15	25	20
3232-3247	Ctg	SST, gy + 30% MDST, med-dk gy + tr COAL	5.0-5.5	0.54(13)	30	55	15				
	P	MDST, med dk gy						70	20	5	5
3268-3284	P	MDST, med gy, slty						50	45	5	*
3293-3308	P	COAL		0.52(27)							
3430-3445	Ctg	MDST, med-dk gy, slty + 50% SST, gy + tr COAL	5.0-5.5	0.55(13)	20	65	15				
3454-3473	P	MDST, dk gy, carb						65	15	5	15
3476-3491	P	COAL		0.52(23)							
3521-3537	P	MDST, a/a						45	45	*	10
3536-3552	Ctg	SST, gy + 30% MDST, med-dk gy, slty + tr COAL	5.5	0.41cvd	20	70	10				
3588-3607	P	MDST, med dk gy, carb						45	45	5	5
3628-3643	P	MDST, med gy, slty						60	35	*	5
3643-3658	P	COAL		0.60(30)							
3674-3689	Ctg	SST, gy + 40% MDST, med-dk gy, slty + tr COAL	5.5	0.65(10)	30	60	10				
	P	MDST, a/a						30	60	*	10
3704-3719	P	MDST, med dk gy, slty						45	55	*	*
3726-3741	P	MDST, lt gy, med gy, slty, micromic						45	50	*	5
3750-3765	P	COAL		0.63(20)							
3796-3811	Ctg	SST, gy + 40% MDST, med-dk gy, slty + mnr COAL	5.5-6.0	0.67(10)	45	45	10				
	P	MDST, a/a						45	55	*	*
3872-3887	P	MDST, med gy-med dk gy, carb						40	50	5	5
3933-3948	P	COAL		0.71(9)							
	P	MDST, med dk gy-dk gy, occ carb						45	45	*	10
3948-3963	P	MDST, a/a						50	40	*	10

Table 1a Maturity and Kerogen Composition Data

WELL: ANGEL-2

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
3963-3979	Ctg	MDST, med-dk gy, slty + 30% SST, gy + tr COAL	6.0	0.67(15)	40	45	15				
	P	MDST, a/a						35	65	*	*
4024-4070	P	MDST, med dk gy-dk gy, carb						45	40	*	15
4070-4085	P	MDST, med dk gy						40	45	*	15
4085-4101	Ctg	MDST, a/a, slty + 30% SST, gy + tr COAL	6.0	0.69(4)	20	60	20				
4131-4146	P	MDST, med dk gy						35	50	*	15
4162-4177	P	MDST, dk gy, micromic						40	45	*	15
4223-4238	P	MDST, a/a						40	45	*	15
4238-4253	Ctg	MDST, med dk gy, slty + 50% SST, gy + tr COAL	6.0-6.5	0.72(5)	40	50	10				
4271-4287	P	MDST, dk gy, micromic						40	50	*	10
4294.6		**Lower Dingo Claystone**									
4299-4314	P	MDST, med dk gy, slty						45	35	*	20
4314-4329	P	MDST, dk gy, micromic						35	50	*	15
4329-4344	P	MDST, med dk gy, slty						55	40	*	5
4344-4360	P	COAL		0.75(15)							
4360-4375	P	MDST, med dk gy-dk gy, slty						20	50	*	30
4375-4390	Ctg	SST, gy + 40% MDST, med-dk gy, slty + tr COAL	6.0-6.5	0.77(16)	40	40	20				
	P	MDST, a/a						40	40	*	20

Table 1b Maturity and Kerogen Composition Data

WELL: ANGEL-2

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g T O C.)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T.O.C.)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2694.4		**Upper Dingo Claystone: Dupuy Set Mbr Eqv**													
2759-2774	Ctg	MDST, med gy, occ med-dk gy + 10% MDST, lt gn-gy + 10% SST, wht/lt gy	1.13												
2774-2790	"	MDST, med gy, occ med-dk gy + 20% MDST, lt gn-gy + 20% SST, a/a	-												
	P	MDST, med gy, occ med -dk gy	1.36	NDP	228	35	0.00	3.10							
	"	MDST, lt gn-gy	0.10												
2927-2942	Ctg	SST, lt gy + 30% MDST, lt gy, calc	0.69												
2933-2951	"	MDST, med-lt gy + 30% SND/SST, wht	-												
	P	MDST, med-lt gy	1.04	425	63	37	0.44	1.18							
2942-2957	Ctg	SST, lt gy + 30% MDST, med gy, occ med-dk gy	0.79												
3139.4		**Learmonth Fm**													
3171-3186	Ctg	SST, wht/org-gy + 10% COAL + tr MDST, med gy	-												
3204-3220	"	SND, wht + 20% COAL, blk	3.75						2650	71	1970	53	58	17	26
	P	COAL, blk	61.00	429	324	9	0.06	210.80							
3201-3216	Ctg	SST, a/a + 10% COAL + tr MDST, a/a	-												
3232-3247	"	SST, wht/lt ol-gy + 30% MDST, med-dk gy, carb + tr COAL	-												
	P	MDST, med-dk gy, carb	3.66	429	109	11	0.40	6.67							
3247-3262	Ctg	SST, a/a + 305 MDST, a/a + tr COAL	2.00												
3268-3284	"	MDST, med gy, slty + 20% SST, wht-yel gy	-												
	P	MDST, med gy, slty	3.21	430	115	22	0.22	4.74							
3293-3308	Ctg	MDST, med-dk gy, slty + 40% SST, wht/lt ol-gy + tr COAL	-												
	P	MDST, med-dk gy, slty	2.93												
3430-3445	Ctg	MDST, a/a + 50% SST, a/a + tr COAL	3.02												
3454-3473	"	SND + SST, wht-yel gy + 30% MDST, dk gy, carb	1.67						3085	185	930	56	23	7	70
	P	MDST, dk gy carb	4.10	428	160	10	0.12	7.48							
3476-3491	Ctg	60% SST, yel gy/lt ol-gy + 40% MDST, med-dk gy, slty + tr COAL	1.66												

Table 2a Chemical Analysis Data

WELL: ANGEL-2

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
3491-3506	Ctg	SST, yel gy/lt ol-gy + 40% MDST, med-dk gy, slty + tr COAL	-												
	P	MDST, a/a	3.86												
3506-3521	Ctg	SST, a/a + 30% MDST, a/a + tr COAL	0.87												
3521-3537	"	SST, wht-yel gy + 60% MDST, dk gy, carb	-												
	P	MDST, dk gy, carb	3.95	430	143	24	0.11	6.32							
3537-3552	Ctg	SST, yel gy/lt ol-gy + 30% MDST, med-dk gy, slty + tr COAL	1.00												
3558-3607	"	SST, wht-yel gy + 30% MDST, dk gy, carb	-												
	P	MDST, dk gy, carb	3.48	434	123	30	0.15	5.03							
3628-3643	Ctg	SST, a/a + 40% MDST, med gy, slty	-												
	P	MDST, med gy, slty	3.78	429	111	20	0.11	4.73							
3643-3659	CTg	SST, yel gy/lt ol-gy + 40% MDST, med-dk gy, slty + tr COAL	1.29												
3659-3674	"	SST, a/a + 50% MDST, a/a + tr COAL	1.78												
3674-3689	"	SST, wht-lt gy, slty + 40% MDST, med gy, occ carb	-												
	P	MDST, med gy, occ carb	2.91	432	153	44	0.08	4.85							
3689-3704	Ctg	SST, yel gy/lt ol-gy + 30% MDST, med-dk gy, slty + tr COAL	0,90												
3704-3719	"	SST, lt ol-gy/med-lt gy + 40% MDST, med-dk gy, slty + tr COAL	-												
	P	MDST, med-dk gy, slty	1.78	436	84	80	0.20	1.88							
3726-3741	Ctg	MDST, lt gy, med gy, slty, micromic + 10% SST, lt gy	-												
	P	MDST, a/a	2.66	437	139	38	0.11	4.15							
3750-3765	Ctg	SST, lt ol-gy/med-lt gy + 40% MDST, med-dk gy, slty + tr COAL	1.30												
3765-3780	"	SST, lt ol-gy/med-lt gy + 30% MDST, med-dk gy, slty + tr COAL	-												
	P	MDST, a/a	2.28												
3780-3796	Ctg	SST, a/a + 40% MDST, a/a + tr COAL	1.52												
3796-3811	"	SST, a/a + MDST, a/a + mnr COAL	-												
	P	MDST, a/a	2.21	439	90	23	0.20	2.50							

Table 2b Chemical Analysis Data

WELL: ANGEL-2

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE °C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g T.O.C.)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
3872-3887	Ctg	SST, lt gy + 50% MDST, med-gy-med dk gy, carb	2.06						1560	76	825	40	44	9	47
	P	MDST, a/a	3.07	434	155	41	0.11	5.35							
3887-3902	Ctg	SST, lt ol-gy/med-lt gy + 30% MDST, med-dk gy, slty + tr CO~	1.05												
3933-3948	"	SST, lt gy + 60% MDST, med-dk gy-dk gy, occ carb	-												
	P	MDST, a/a	2.80	429	138	37	0.13	4.43							
3948-3963	Ctg	SST, a/a + 70% MDST, a/a	-												
	P	MDST, a/a	3.46	433	124	41	0.10	4.75							
3963-3979	Ctg	MDST, med-dk gy, slty + 305 SST, lt ol-gy/med-lt gy + tr COAL	-												
	P	MDST, a/a	2.85	435	102	21	0.20	3.63							
4040-4055	Ctg	MDST, a/a + 30% SST, a/a + tr COAL	2.55												
4055-4070	Ctg	MDST, a/a + 30% SST, a/a + tr COAL	1.77												
4024-4070	"	SST, lt gy + 70% MDST, med-dk gy-dk gy, carb	-												
	P	MDST, a/a	3.18	433	150	41	0.12	5.44							
4070-4085	Ctg	MDST, med-dk gy, 10% SST, wht-lt gy	-												
	P	MDST, med-dk-gy	3.42	432	147	34	0.12	5.71							
4085-4101	Ctg	MDST, med-dk gy, slty + 30% SST, lt ol-gy/med-lt gy + tr COAL	1.71												
4101-4116	"	MDST, a/a + 50% SST, a/a + tr COAL	1.81												
4116-4131	"	SST, med-dk gy, slty + 30% SST, lt ol-gy/med-lt gy + tr COAL	1.48												
4131-4146	"	MDST, med-dk gy + 20% SST, wht-lt gy	2.42						1020	42	540	22	51	3	47
	P	MDST, a/a	3.17	437	152	39	0.09	5.30							
4146-4162	Ctg	MDST, a/a + 40% SST, lt ol-gy/med lt gy + tr COAL	1.69												
4162-4177	"	SST, wht-lt gy + 30% MDST, dk gy, micromic	-												
	P	MDST, a/a	3.15	436	151	39	0.10	5.28							
4223-4238	Ctg	SST, a/a + 20% MDST, a/a	-												
	P	MDST, a/a	3.92	433	148	38	0.12	6.63							
4238-4253	Ctg	MDST, med-dk gy, slty + 50% SST, lt ol-gy/med-lt gy + tr COAL	2.19												

Table 2c Chemical Analysis Data

WELL: ANGEL-2

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g TOC)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g TOC)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
4253-4268	Ctg	MDST, a/a + 50% SST, a/a + tr COAL	1.60												
4271-4287	"	SST, wht-lt gy + 40% MDST, dk gy, micromic	-												
	P	MDST, a/a	3.84	439	158	29	0.10	6.72							
4294.6		**Lower Dingo Claystone**													
4299-4314	Ctg	SST, lt ol-gy/med lt gy + 40% MDST, med-dk gy, slty + tr COAL	4.13	434	136	10	0.10	6.22							
4314-4329	"	SST + 60% MDST, dk gy, micromic	-												
	P	MDST, a/a	3.37	434	156	40	0.12	6.00							
5329-4344	Ctg	MDST, med-dk gy, slty + 30% SST, lt ol-gy/ med lt gy + tr COAL	-												
	P	MDST, a/a	2.87	431	94	24	0.30	3.86							
4345-4360	Ctg	SST, a/a + 30% MDST, med -dk gy, slty + tr COAL	1.11												
4360-4375	"	SST, lt-gy + 70% MDST, med-dk gy-dk gy, slty	2.59						1350	52	760	29	39	18	44
	P	MDST, med-dk gy-dk gy, slty	2.34	434	228	36	0.10	5.92							
4375-4390	Ctg	SST, a/a + 20% MDST, a/a	-												
	P	MDST, a/a	3.43	435	180	27	0.10	6.86							

Table 2d Chemical Analysis Data

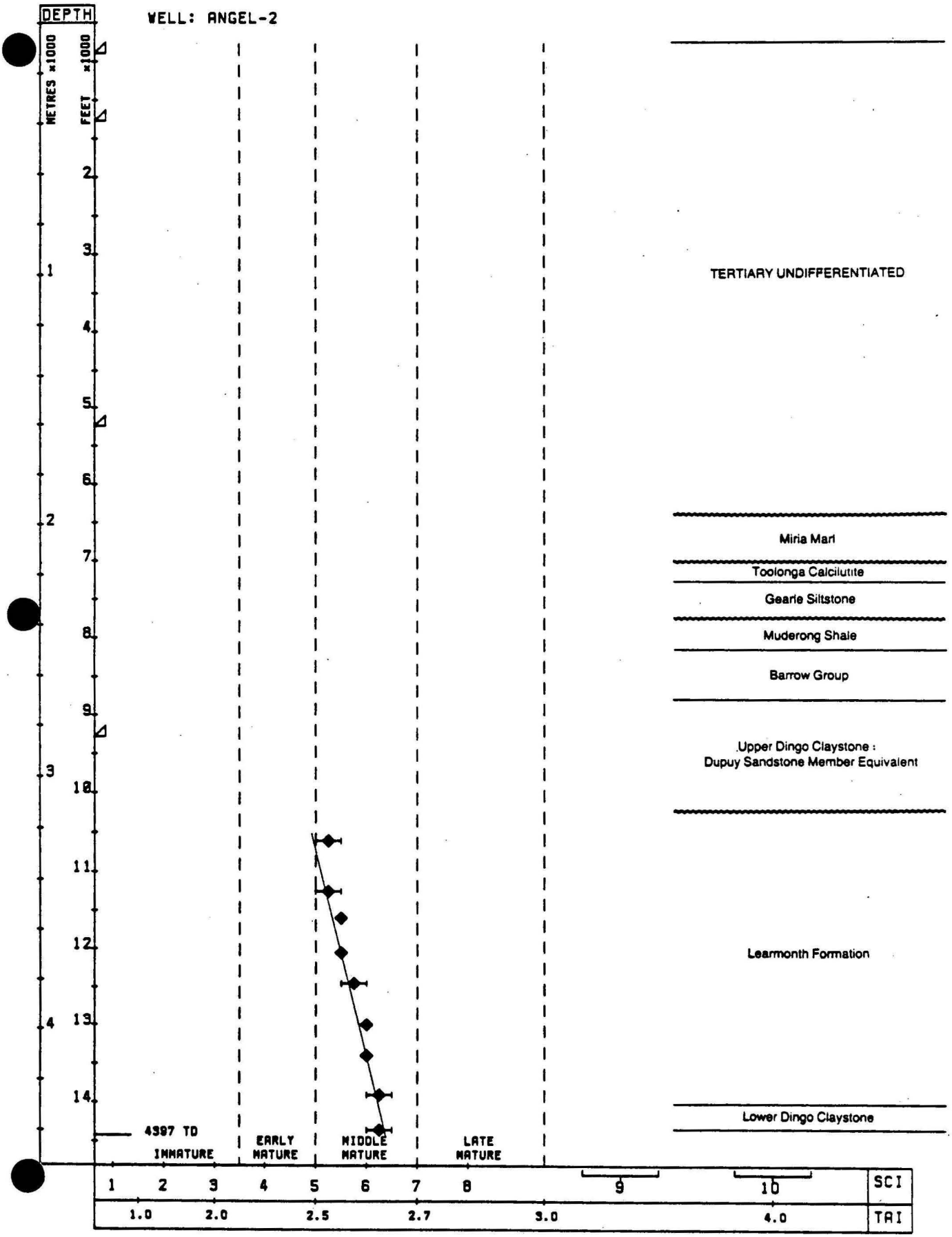


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

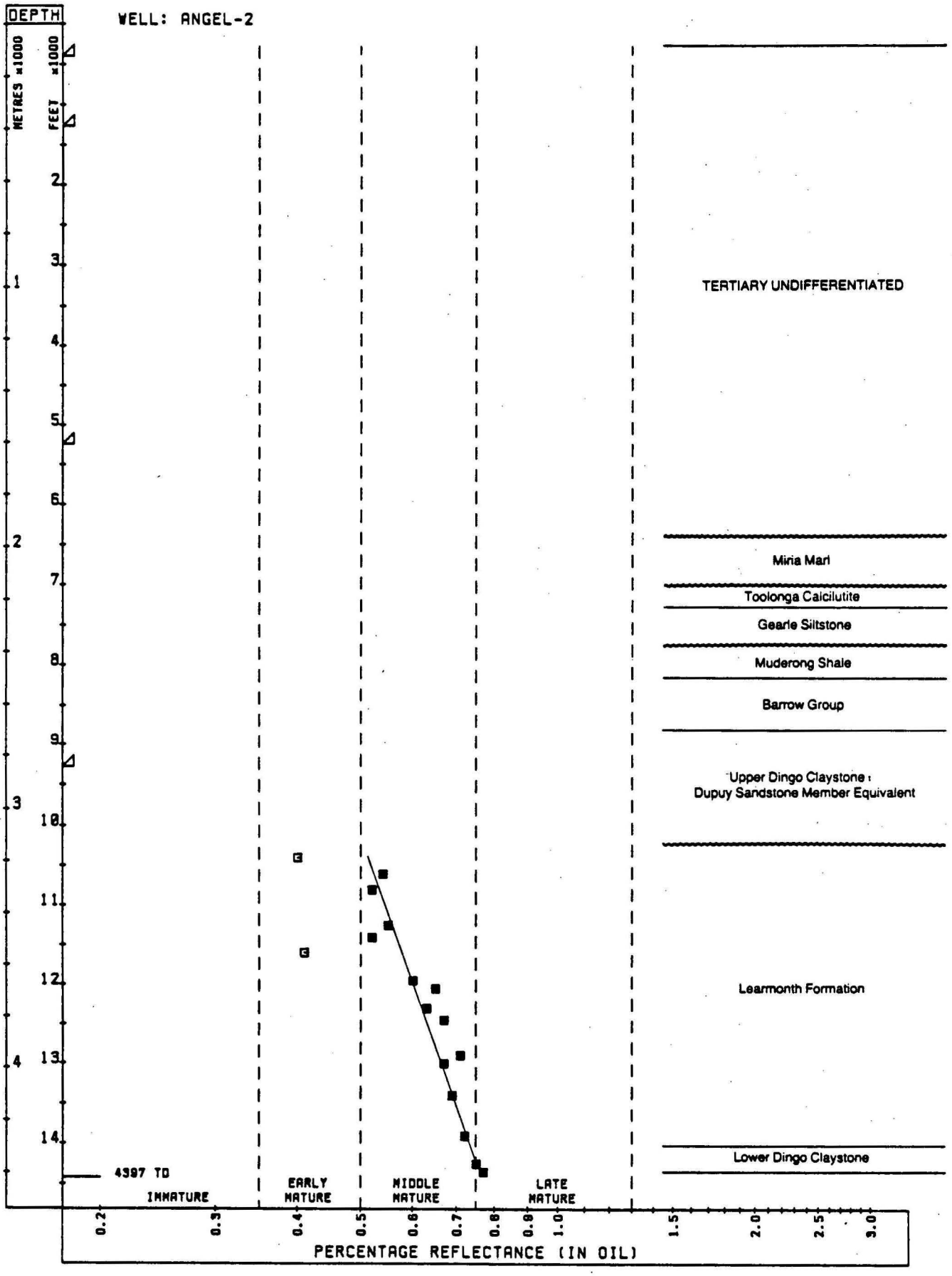
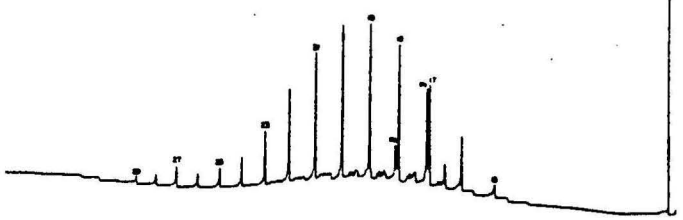
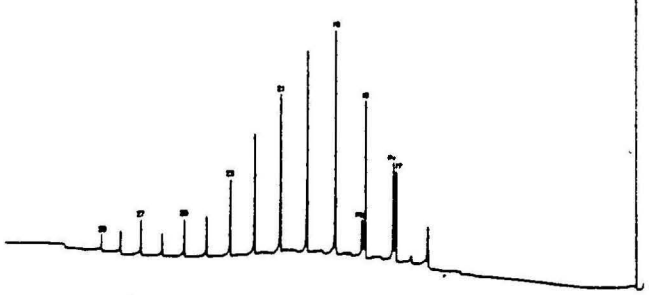


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH

Angel-2
3204-3220m
Learmonth Fm
SCI 5.0
Pr/Ph = 2.70
Pr/n-C_{17} = 0.97
Ph/n-C_{18} = 0.27
CPI = 1.37



Angel-2
3454-3473m
Learmonth Fm
SCI 5.25
Pr/Ph = 2.55
Pr/n-C_{17} = 1.09
Ph/n-C_{18} = 0.25
CPI = 1.49



Angel-2
3872-3887m
Learmonth Fm
SCI 5.75
Pr/Ph = 2.45
Pr/n-C_{17} = 1.20
Ph/n-C_{18} = 0.30
CPI = 1.18

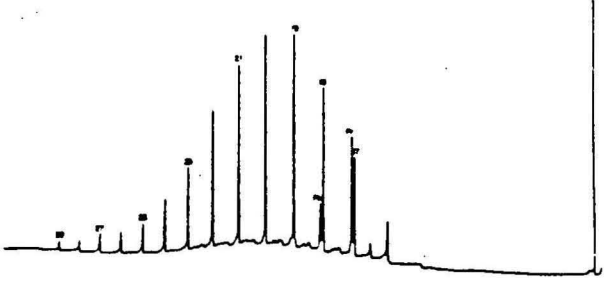
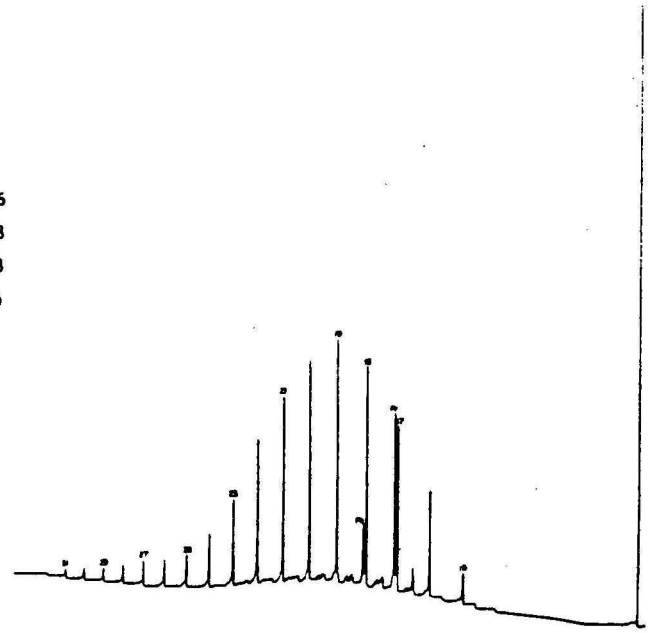


Figure 3a

Angel-2
4131-4146m
Learmonth Mbr
SCI 6.0
Pr/Ph = 2.86
Pr/n-C_{17} = 1.08
Ph/n-C_{18} = 0.28
CPI = 1.16



Angel-2
4360-4375m
Lower Dingo Claystone
SCI 6.25
Pr/Ph = 3.09
Pr/n-C_{17} = 0.85
Ph/n-C_{18} = 0.22
CPI = 1.19

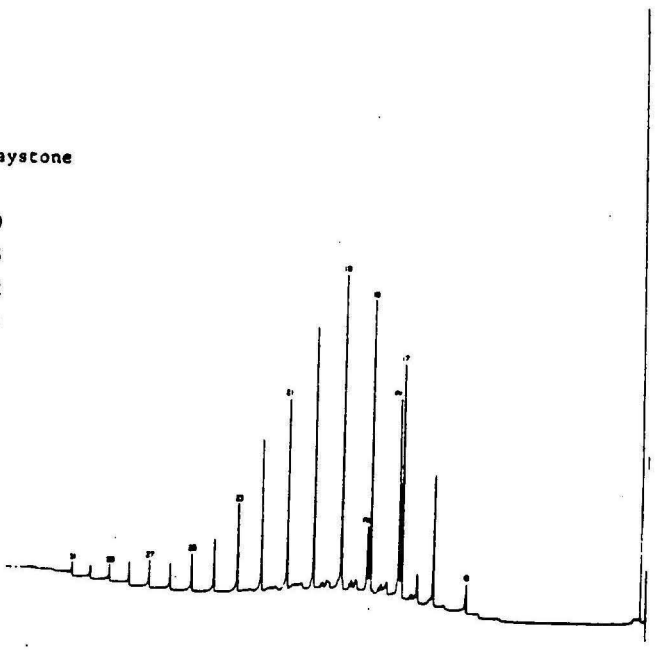


Figure 3b

BOWERS-1 WELL

SUMMARY

Geochemical analysis of samples from the interval 2700m to 4285m of the Bowers-1 well have shown that the interval analysed is late mature between 2700m and 3600m and post mature for oil generation below this depth. The vitrinite reflectance gradient shows that the well section becomes post mature for gas generation at around 3600m.

The vitrinite reflectance gradient may indicate 200m of uplift and erosion at the top of the Mungaroo Formation. Extrapolation of the maturity to seabed indicates that little Early Cretaceous and younger section is missing above 2700m and that the sediments analysed are currently at or near their maximum depths of burial.

The interval 2760m to 2835m of the Muderong Formation has good to very good oil source potential. The interval 3810m to 3906m of the Middle Dingo Claystone and the intervals 3906m to 4030m and 4240m to 4255m of the Mungaroo Formation contain high residual organic carbon contents and probably originally had some oil source potential. These intervals have fair gas source potential and will already have generated significant quantities of gas at the levels of maturity seen on structure.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 21° 06' 13.9"S, 114° 42' 54"E.

Operator and date of drilling: West Australian Petroleum Pty Ltd, 1982.

Well Status: Plugged and abandoned.

TD: 4300m.

Mud data: Seawater/gel system: Seabed to 1762m.
KCL/XL polymer system: 1762m to 2922m.
Freshwater/KCL/XC polymer system: 2922m to 4300m TD.

Casing data: 30" at 184m, 20" at 509m, 13 3/8" at 1748m, 9 5/8" at 2903m.

BHT data: 60°C at 1762m, stopped circulation time unknown.
94°C at 2922m, stopped circulation time unknown.

127°C at 3713m, stopped circulation time unknown.
133°C at 4300m, stopped circulation time unknown.
155°C at 4300m TD, stopped circulation time unknown.

Elevation: RT 25m ASL.

Water depth: 108m.

Interval analysed: 2700m to 4285m.

Age of interval analysed:

	Depths (in metres)
Early Cretaceous	2700-2927
Late Jurassic-Early Cretaceous	2927-3731
Early-Middle Jurassic	3731-3906
Late Triassic	3906-4285

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: The samples analysed yielded sufficent in situ vitrinite for measurement. Results: Good.

b) Spore Colour Index: The samples analysed yielded sufficient in situ sporomorphs for measurements. Results: Good.

Source rock data quality: Good, but complicated by the high maturity of the section.

Gas chromatography run at: 2790m to 2805m, 3750m to 3765m, 3825m to 3840m, 3970m to 3985m and 4240m to 4255m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Spore colour index values rise steadily from values of around 7 SCI units at 2700m to around 9.5 to 10 SCI units at 4300m. Vitrinite reflectance values rise from 0.7% to 1.85% over the same interval. The interpreted maturity gradients show a small discontinuity at the top of the Mungaroo Formation possibly indicating around 200m of uplift and erosion at the unconformity at the top of this formation.

Extrapolation of the maturity gradients to seabed shows no evidence of any major uplift and erosion at unconformities in the section above 3906m. Present day burial depths are probably maximum burial depths for sediments at the well location.

The spore colour index gradient shows that the well section analysed is late mature between 2700m and 3600m and post mature for oil generation below this depth. The vitrinite reflectance gradient shows sediments become mature for gas generation at around 3600m.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

Mudstone lithologies analysed in the Cretaceous Muderong Shale, the Jurassic Dingo Claystone and the Triassic Mungaroo Formation contain average to above average organic carbon contents of 1.63% to 3.26%, 1.59% to 2.44% and 1.00% to 5.32% respectively. The interval 3970m to 4000m of the Mungaroo Formation also contains minor coals.

Pyrolysis analysis of samples in the Muderong Shale shows minor but significant content of sapropel in the interval 2760m to 2835m. This interval has very good oil source potential.

Extraction of the mudstone sample at 2790m to 2805m yielded a relatively large quantity of extractable bitumen. Fractionation of the extract showed it to contain mostly hydrocarbons. The alkane gas chromatogram of the sample shows hydrocarbons derived from a late mature waxy sapropel.

The high maturity of samples in the Dingo Claystone and Mungaroo Formations (8.5-10 SCI units) has made quantitative evaluation of any past oil source potential difficult. It is likely that the intervals with above average residual organic carbon contents at 3780m to 3795m and 3810m to 3906m in the Middle Dingo Claystone and 3906m to 4030m and 4240m to 4255m in the Mungaroo Formation originally had some oil potential although this cannot be confirmed by visual kerogen or pyrolysis data. The low oxygen indices of coals in the Mungaroo Formation, however, may indicate that they were originally sapropel rich.

Extraction of samples at 3750m to 3765m and 3825m to 3840m in the Middle Dingo Claystone yielded moderate quantities of extractable bitumen most of which is hydrocarbons. The alkane gas chromatograms of these samples show hydrocarbon distributions

typical of extracts derived from late to post mature waxy sapropel.

The baseline hump is thought be due to a high content of napthenic material in the kerogen from which these extracts are derived.

Extraction of samples at 3970m to 3985m and 4240m to 4255m in the Mungaroo Formation yielded moderate to low quantities of extractable bitumen. The alkane gas chromatograms of these samples show similar hydrocarbon distributions to samples from the overlying Dingo Claystone except that the isoprenoids pristane and phytane are present in relatively larger quantities. The extract at 4240m to 4255m also contains abundant branched cyclic material eluting between $\underline{n}$-C_{27} and $\underline{n}$-C_{33}. This extract may contain small amounts of an extensively biodegraded oil.

Mudstones in the Dingo Claystone and mudstones and coals in the Mungaroo Formation are fair gas source rocks. Calculations suggest that the Dingo Claystone and Mungaroo Formation will have generated around $6.9 \times 10^5 m^3$ and $2.59 \times 10^6 m^3$ of gas per acre on structure.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

Analysis of mudstone lithologies in the interval 3265m to 3355m in the Flacourt Formation shows them to contain between 0.13% and 0.31% organic carbon. These samples have no oil or gas source potential.

WELL: BOWERS-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
2650		**Muderong Shale**									
2700-2715	Ctg	MDST, ol gy	7.0	0.94(15)rew	40	55	5	30	65	*	5
2730-2745	"	MDST, a/a						35	65	*	*
2760-2775	"	MDST, a/a						25	65	*	10
2790-2805	"	MDST, a/a						20	65	*	15
2820-2835	"	MDST, dk yel brn	7.0-7.5	0.74(17)	50	50	mnr	35	50	*	15
2850-2865	"	MDST, ol gy						50	50	*	*
2880.5		**Hardie Greensand Mbr**									
2927		**Flacourt Fm**									
3225-3240	"	SND + mnr MDST, lt gy	8.0-8.5	0.95(9)	35	55	10				
3340-3355	"	MDST, a/a	8.0-9.0	1.09(7)	60	40	tr				
3519		**Malonet Fm**									
3731		**Middle Dingo Claystone**									
3735-3750	"	MDST, med-dk gy	8.5-9.0	1.27(10)	65	35	*				
3840-3855	"	MDST, a/a	8.5	1.31(8)	45	50	5				
3906		**Mungaroo Fm**									
3900-3915	"	MDST, med-dk gy	8.5-9.0	1.43(13)	60	40	*				
3985-4000	P	COAL, blk		1.43(35)							
4000-4015	Ctg	MDST, med gy + 40% SST, wht-v lt gy, arg	9.0	1.56(7)	50	50	*				
4180-4195	"	MDST, med gy + 40% SST, pnk gy	9.0	1.78(14)	50	50	*				
4270-4285	"	MDST, med-dk gy + 40% SST, a/a	9.0	1.87(13)	60	40	*				

Table 1 Maturity and Kerogen Composition Data

WELL: BOWERS-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2650		**Muderong Shale**													
2700-2715	Ctg	MDST, ol gy	2.24	434	109	80	0.17	2.94							
2730-2745	"	MDST, a/a	2.41	434	95	112	0.15	2.72							
2760-2775	"	MDST, a/a	2.85	439	124	77	0.14	4.07							
2790-2805	"	MDST, a/a	3.26	439	137	62	0.12	5.06	1775	54	1090	33	46	16	38
2820-2835	"	MDST, dk yel brn	2.96	440	104	97	0.13	3.54							
2850-2865	"	MDST, ol gy	1.63	436	77	198	0.22	1.61							
2880.5		**Mardie Greensand Mbr**													
2927		**Flacourt Fm**													
3225-3240	"	SND + mnr MDST, lt gy	-												
3265-3280	"	MDST, lt ol gy, v sndy	0.32												
3300-3315	"	MDST, a/a, v sndy	0.24												
3340-3355	"	MDST, a/a	0.13												
3519		**Malouet Fm**													
3731		**Middle Dingo Claystone**													
3735-3750	"	MDST, med-dk gy	1.70	459	70	114	0.24	1.56							
3750-3765	"	MDST, a/a	1.99	456	93	111	0.25	2.48	1600	80	1240	62	66	12	22
3765-3780	"	MDST, med gy-med dk gy	1.59	457	67	82	0.29	1.49							
3780-3795	"	MDST, med-dk gy	2.00	458	59	65	0.21	1.49							
3795-3810	"	MDST, med-dk gy	1.78	455	60	76	0.20	1.33							
3810-3825	"	MDST, med-dk gy	2.32	457	57	51	0.17	1.58							
3825-3840	"	MDST, a/a	2.53	466	33	100	0.24	1.09	905	36	595	24	57	9	34
3840-3855	"	MDST, a/a	2.12	459	53	56	0.20	1.41							
3855-3870	"	MDST, a/a	2.07	460	55	59	0.20	1.42							
3870-3885	"	MDST, a/a	2.13	458	56	79	0.21	1.52							
3885-3900	"	MDST, med-dk gy + 20% LST, wht-lt gy	-												
	P	MDST, med-dk gy	2.44	459	56	36	0.18	1.66							
3906		**Mungaroo Fm**													
3900-3915	Ctg	MDST, med dk gy	2.80	468	51	72	0.21	1.83							
3970-3985	Ctg	MDST, a/a + 40% MDST, pnk gy, slty + mnr COAL, blk	1.62						695	43	380	24	43	12	45
	P	MDST, med-dk gy	5.32	470	62	30	0.13	3.82							
	P	COAL, blk	39.60	468	88	7	0.07	37.45							
3985-4000	Ctg	MDST, dk gy + 30% SST, lt gy, arg + 10% COAL, blk	-												
	P	MDST, dk gy	4.67	474	45	124	0.14	2.42							
	P	COAL, blk	32.55	471	68	10	0.08	24.00							

Table 2a Chemical Analysis Data

WELL: BOWERS-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg.g T.O.C.)	HYDROCARBONS (ppm)	HYDROCARBONS (mg.g T.O.C.)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
4000-4015	Ctg	MDST, med gy + 40% SST, wht-v lt gy, arg	-												
	P	MDST, med gy	2.49	468	51	145	0.14	1.48							
4015-4030	Ctg	MDST, med-dk gy + 50% SND +SST, lt gy	-												
	P	MDST, med-dk gy	2.21	467	52	74	0.22	1.47							
4180-4195	Ctg	MDST, med gy + 40% SST, pnk gy	-												
	P	MDST, med gy	1.59	472	52	118	0.18	1.00							
4210-4225	Ctg	MDST, med gy + 40% pnk gy	-												
	P	MDST, med gy	1.85	477	48	82	0.16	1.06							
4240-4255	Ctg	MDST, med-dk gy + 40% SST, pnk gy-lt gy	1.18						910	77	560	48	50	11	39
	P	MDST, med-dk gy	2.49	467	59	59	0.20	1.53							
4270-4285	Ctg	MDST, med-dk gy + 40% SST, a/a	-												
	P	MDST, med-dk gy	1.00	457	57	170	0.19	0.70							

Table 2b Chemical Analysis Data

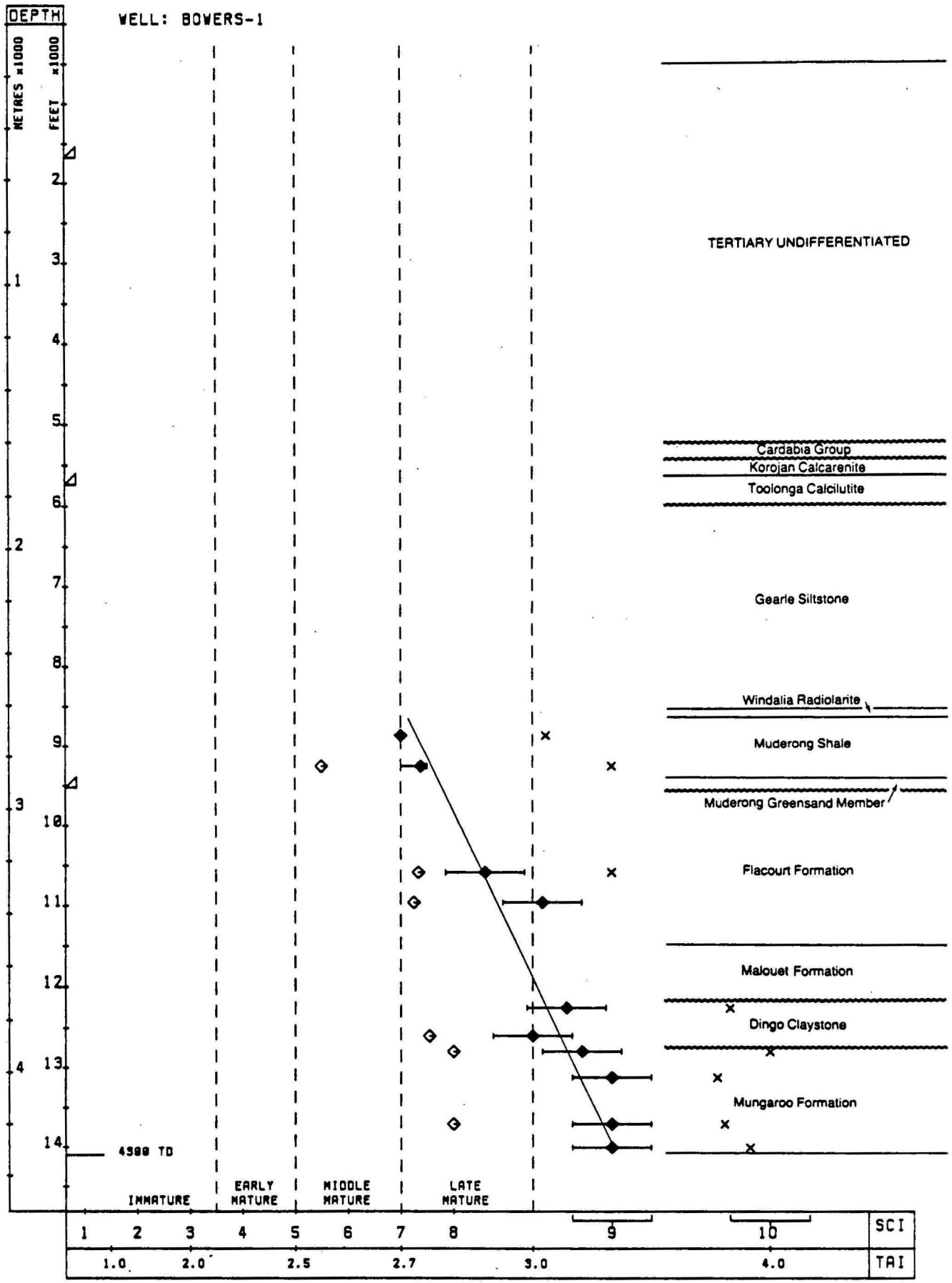


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

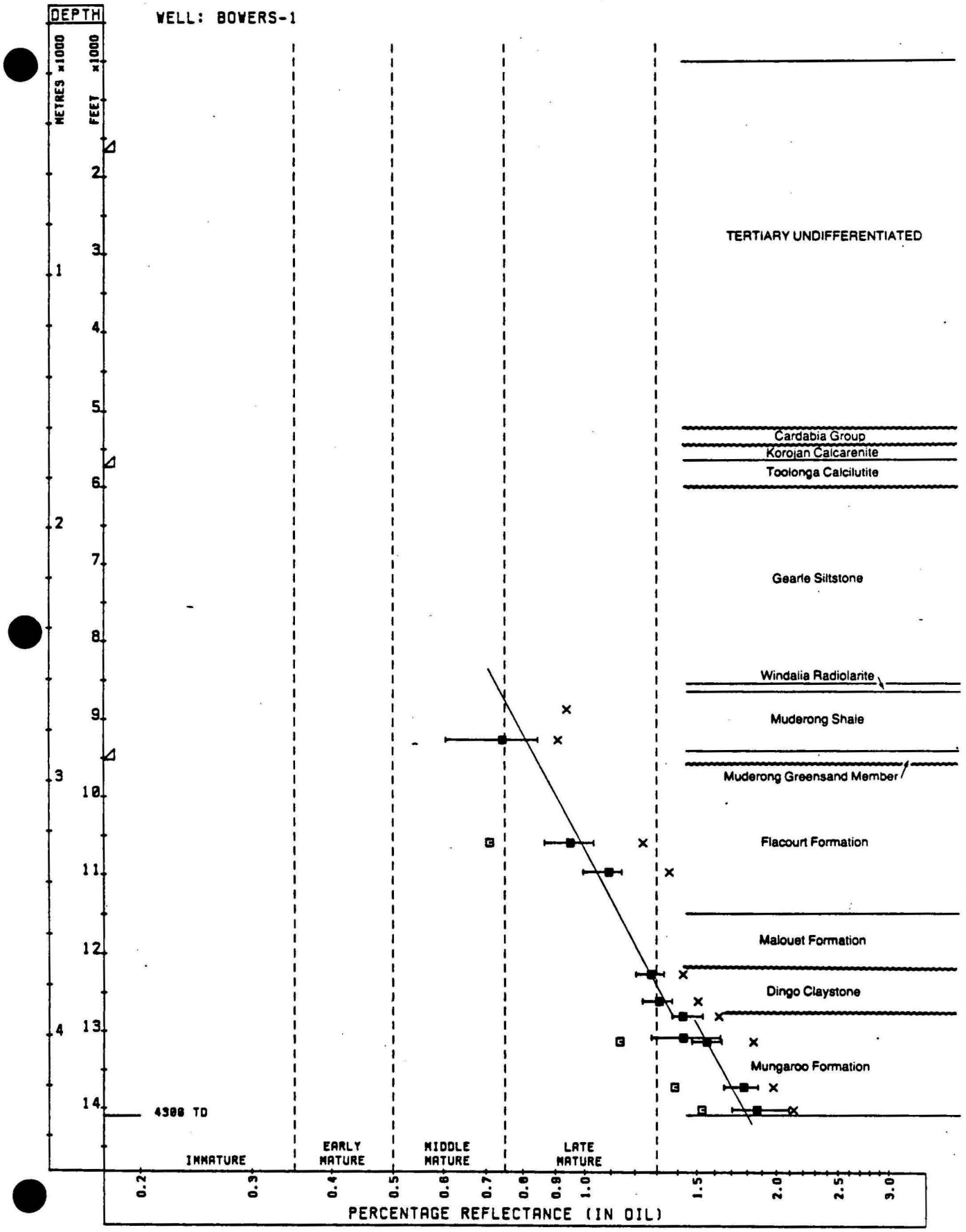
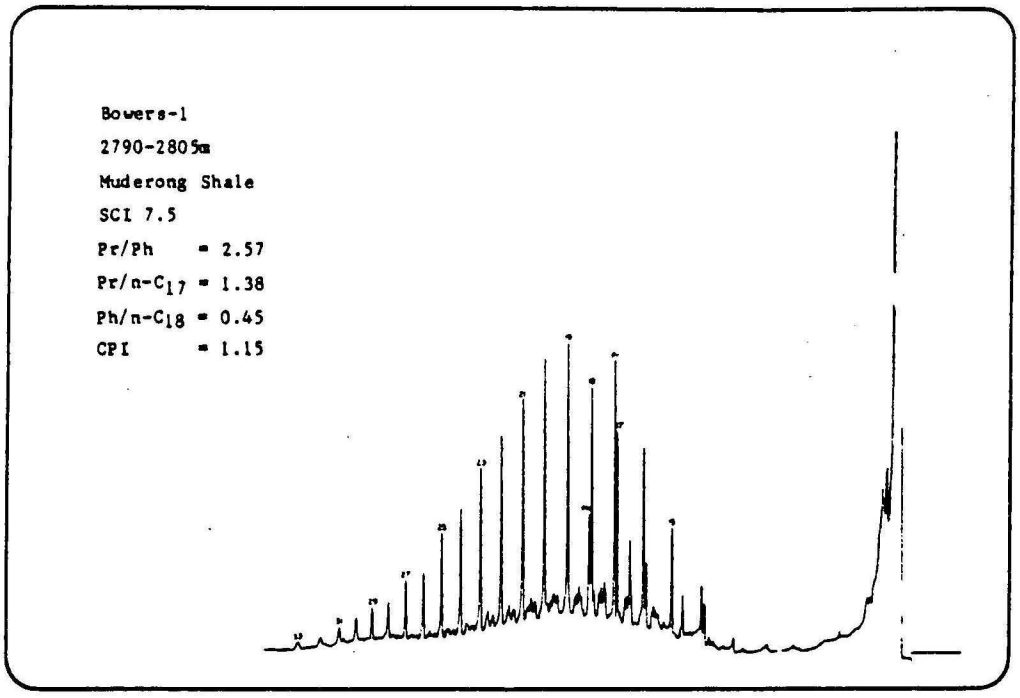
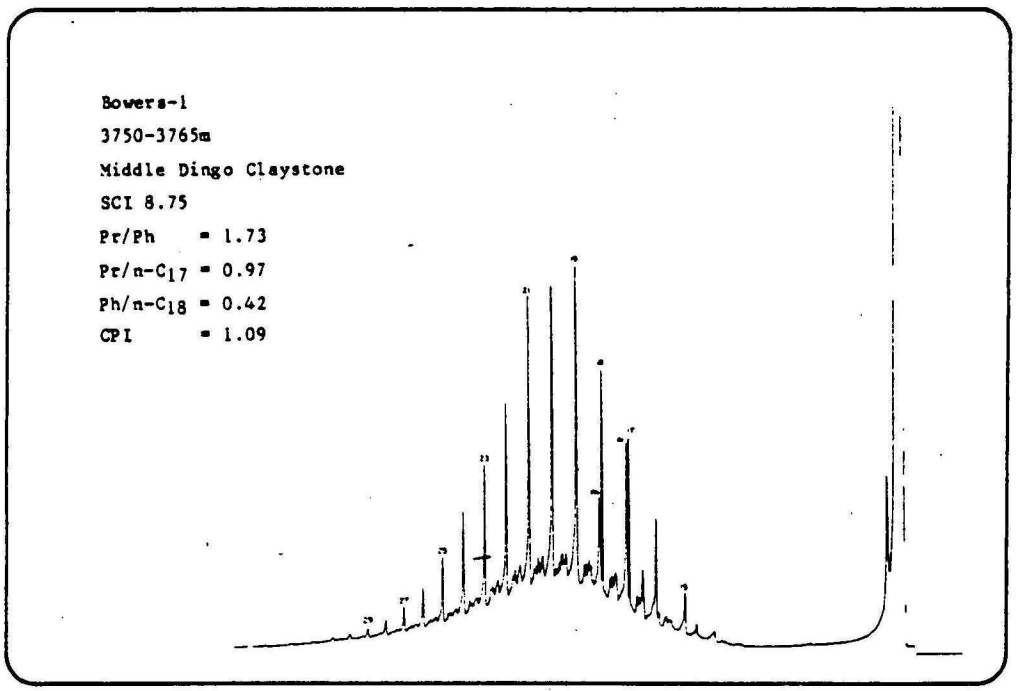


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH


Bowers-1
2790-2805m
Muderong Shale
SCI 7.5
Pr/Ph = 2.57
Pr/n-C17 = 1.38
Ph/n-C18 = 0.45
CPI = 1.15


Bowers-1
3750-3765m
Middle Dingo Claystone
SCI 8.75
Pr/Ph = 1.73
Pr/n-C17 = 0.97
Ph/n-C18 = 0.42
CPI = 1.09

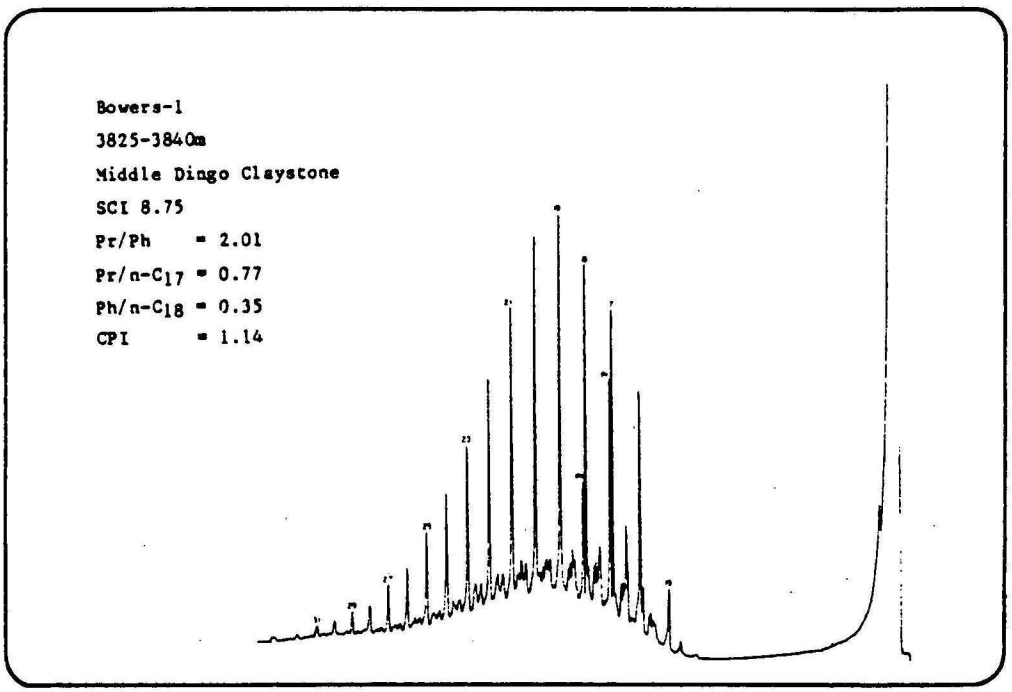
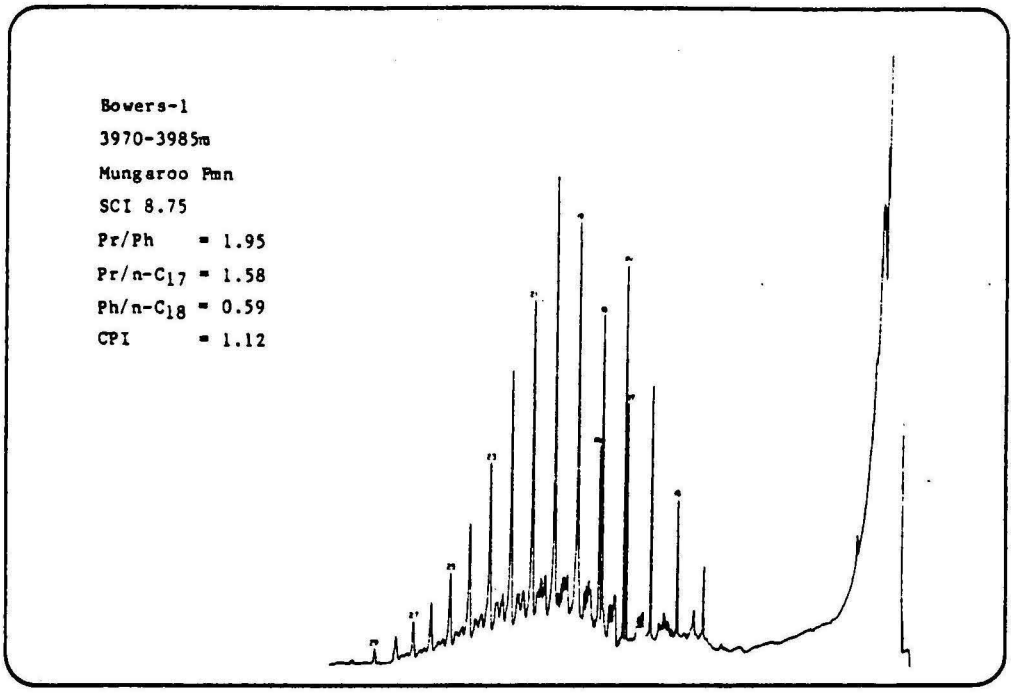
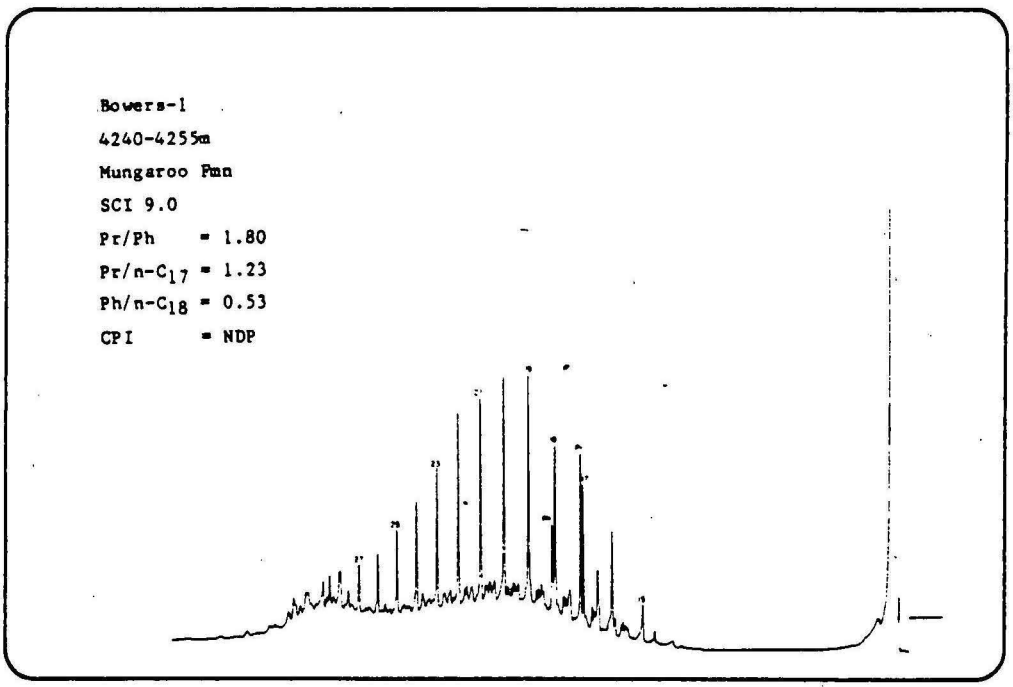

Bowers-1
3825-3840m
Middle Dingo Claystone
SCI 8.75
Pr/Ph = 2.01
Pr/n-C17 = 0.77
Ph/n-C18 = 0.35
CPI = 1.14

Figure 3a


Bowers-1
3970-3985m
Mungaroo Pmn
SCI 8.75
Pr/Ph = 1.95
Pr/n-C17 = 1.58
Ph/n-C18 = 0.59
CPI = 1.12


Bowers-1
4240-4255m
Mungaroo Pmn
SCI 9.0
Pr/Ph = 1.80
Pr/n-C17 = 1.23
Ph/n-C18 = 0.53
CPI = NDP

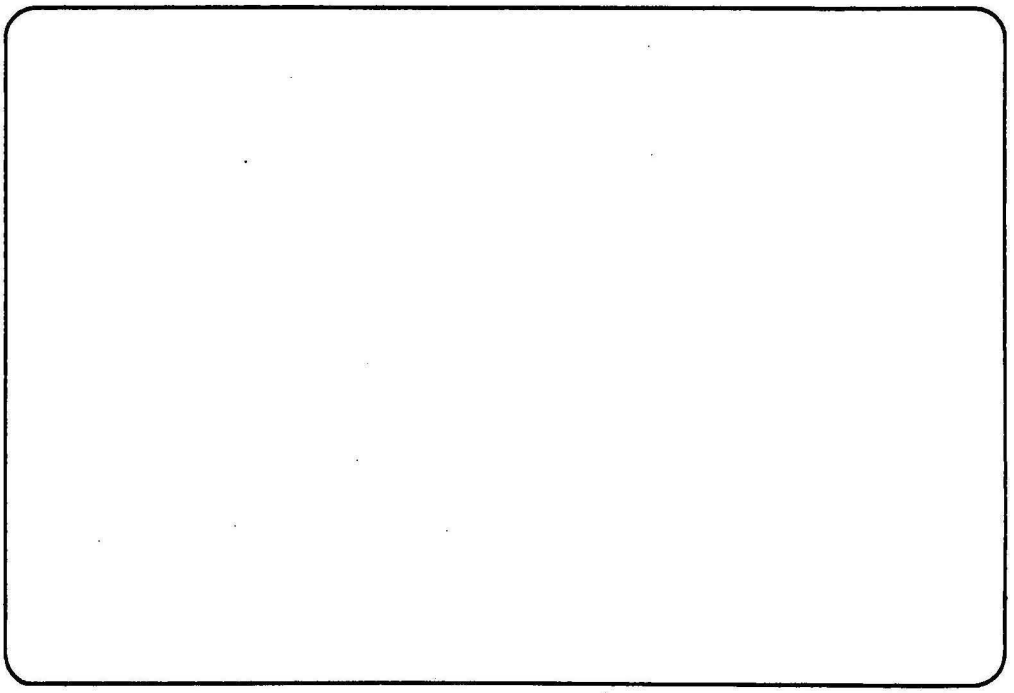


Figure 3b

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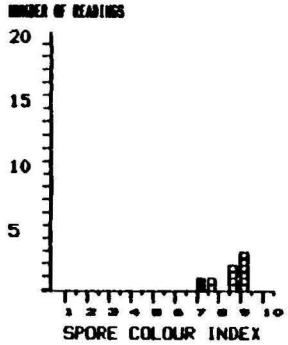
BOWERS-1

IN SITU POPULATION

SAMPLE 2700-2715M

7.0 7.5 8.5 8.5 9.0 9.0 9.0

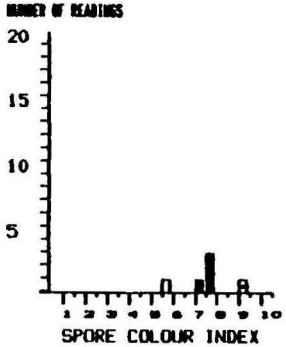
SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	7.0-7.0	1
BLEACHED/CAVINGS	-	0
STAINED/REWORKED	7.5-9.0	6



SAMPLE 2820-2835M

5.5 7.0 7.5 7.5 7.5 9.0

SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	7.0-7.5	4
BLEACHED/CAVINGS	5.5-5.5	1
STAINED/REWORKED	9.0-9.0	1



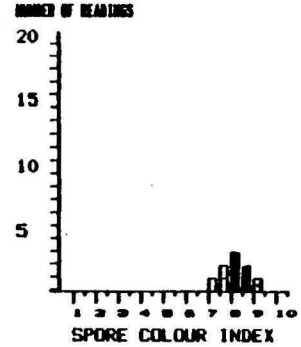
BOWERS-1

IN SITU POPULATION

SAMPLE 3225-3240M

7.0 7.5 7.5 8.0 8.0 8.0 8.5 8.5 9.0

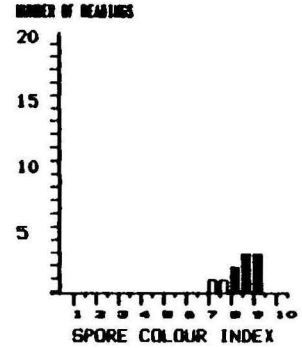
SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	8.0-8.5	5
BLEACHED/CAVINGS	7.0-7.5	3
STAINED/REWORKED	9.0-9.0	1



SAMPLE 3340-3355M

7.0 7.5 8.0 8.0 8.5 8.5 8.5 9.0 9.0 9.0

SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	8.0-9.0	8
BLEACHED/CAVINGS	7.0-7.5	2
STAINED/REWORKED	-	0



Appendix 1a

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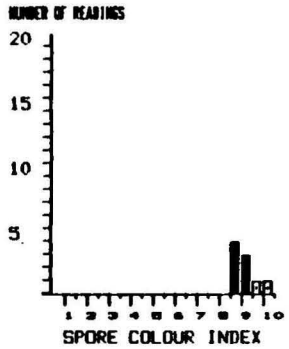
BOWERS-1

IN SITU POPULATION

SAMPLE 3735-3750M

8.5 8.5 8.5 8.5 9.0 9.0 9.0 9.5 10.0

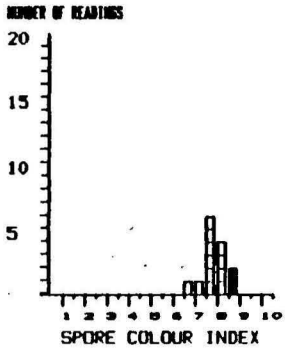
SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	8.5-9.0	7
BLEACHED/CAVINGS	-	0
STAINED/REWORKED	9.5-10.0	2



SAMPLE 3840-3855M

6.5 7.0 7.5 7.5 7.5 7.5 7.5 7.5 8.0 8.0
8.0 8.0 8.5 8.5

SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	8.5-8.5	2
CORRODED/CAVINGS	6.5-8.0	12
STAINED/REWORKED	-	0



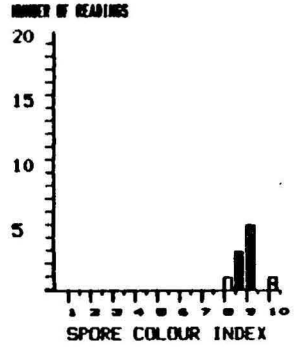
BOWERS-1

IN SITU POPULATION

SAMPLE 3900-3915M

8.0 8.5 8.5 8.5 9.0 9.0 9.0 9.0 9.0 10.0

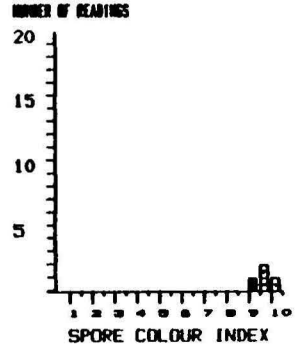
SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	8.5-9.0	8
CORRODED/CAVINGS	8.0-8.0	1
STAINED/REWORKED	10.0-10.0	1



SAMPLE 4000-4015M

9.0 9.5 9.5 10.0

SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	9.0-9.0	1
CORRODED/CAVINGS	-	0
STAINED/REWORKED	9.5-10.0	3



Appendix 1b

Robertson Research

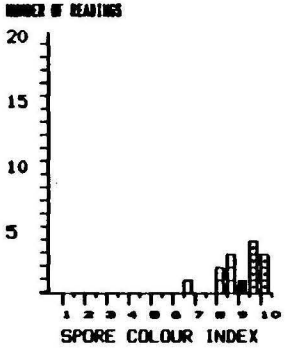
BOWERS-1

IN SITU POPULATION

SAMPLE 4180-4195M

6.5 8.0 8.0 8.5 8.5 8.5 9.0 9.5 9.5 9.5
9.5 10.0 10.0 10.0

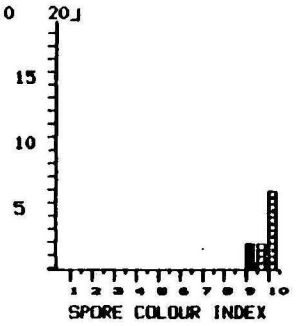
SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	9.0-9.0	1
CORRODED/CAVINGS	6.5-8.5	6
STAINED/REWORKED	9.5-10.0	7



SAMPLE 4270-4285M

9.0 9.0 9.5 9.5 10.0 10.0 10.0 10.0 10.0 10.0

SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	9.0-9.0	2
CORRODED/CAVINGS	-	0
STAINED/REWORKED	9.5-10.0	8



Appendix 1c

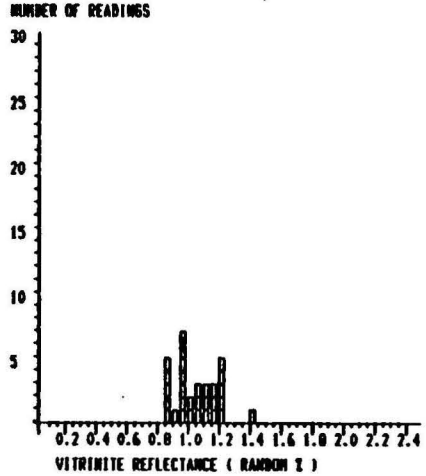
Robertson Research

BOWERS-1

SAMPLE 2700-2715M

0.86 0.86 0.87 0.87 0.89 0.91 0.95 0.96 0.96 0.97
0.97 0.98 0.99 1.01 1.02 1.05 1.07 1.07 1.11 1.12
1.14 1.15 1.16 1.19 1.20 1.21 1.22 1.23 1.24 1.40

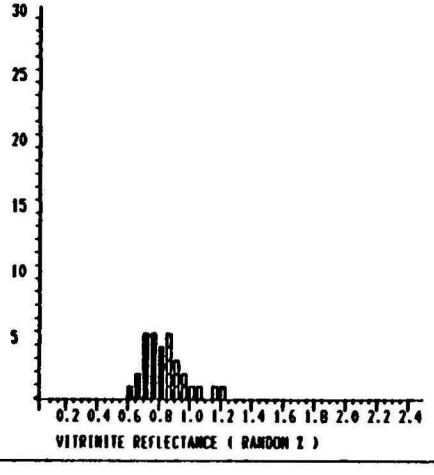
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
INERTINITE/REWORKED	0.86-1.02	15	0.94	0.06



SAMPLE 2820-2835M

0.61 0.65 0.68 0.70 0.70 0.73 0.73 0.74 0.76 0.76
0.77 0.78 0.78 0.80 0.80 0.81 0.84 0.85 0.85 0.85
0.86 0.88 0.91 0.92 0.94 0.96 0.97 1.01 1.08 1.16
1.22

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.61-0.84	17	0.74	0.06
INERTINITE/REWORKED	0.85-1.01	11	0.91	0.06

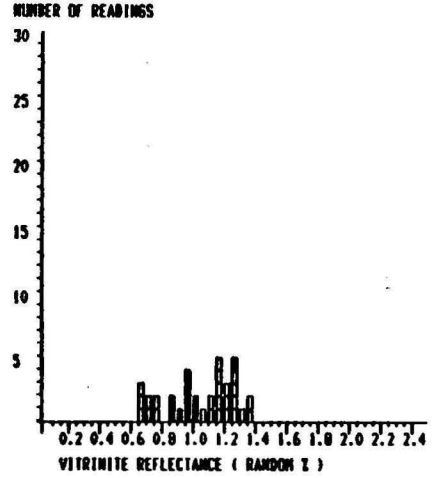


BOWERS-1

SAMPLE 3225-3240M

0.66 0.68 0.69 0.70 0.74 0.75 0.75 0.87 0.88 0.92
0.95 0.95 0.97 0.99 1.00 1.03 1.06 1.11 1.12 1.15
1.15 1.17 1.18 1.18 1.21 1.22 1.23 1.25 1.26 1.26
1.28 1.28 1.32 1.36 1.38

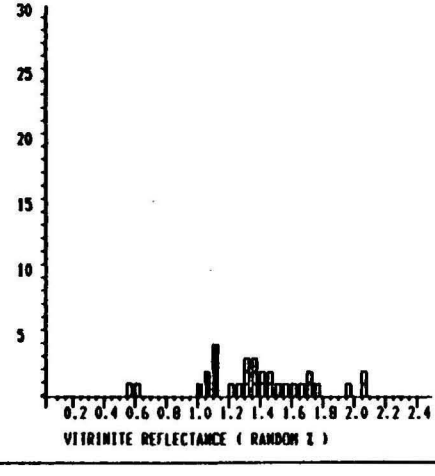
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.87-1.03	9	0.95	0.05
LIPTINITE/CAVINGS	0.66-0.75	7	0.71	0.04
INERTINITE/REWORKED	1.16-1.32	12	1.24	0.05



SAMPLE 3340-3355M

0.56 0.64 1.00 1.06 1.09 1.11 1.12 1.13 1.14 1.20
1.27 1.31 1.32 1.33 1.35 1.37 1.39 1.41 1.42 1.46
1.49 1.50 1.59 1.64 1.66 1.72 1.72 1.76 1.97 2.06
2.07

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.00-1.14	7	1.09	0.05
INERTINITE/REWORKED	1.20-1.49	12	1.36	0.08



Appendix 2a

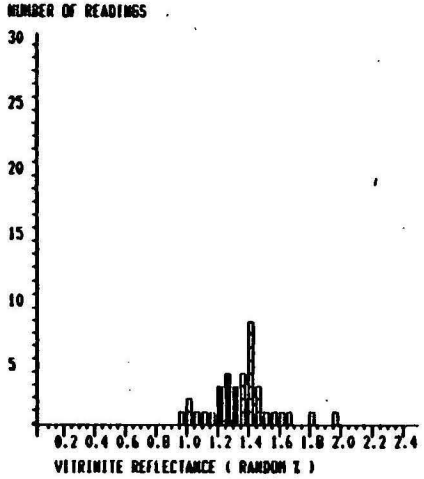
Robertson Research

BOWERS-1

SAMPLE 3735-3750M

0.98 1.00 1.01 1.09 1.10 1.15 1.21 1.21 1.24 1.27
1.28 1.28 1.28 1.31 1.33 1.33 1.35 1.38 1.39 1.39
1.41 1.42 1.43 1.43 1.43 1.43 1.44 1.44 1.46 1.48
1.49 1.52 1.55 1.64 1.66 1.83 1.97

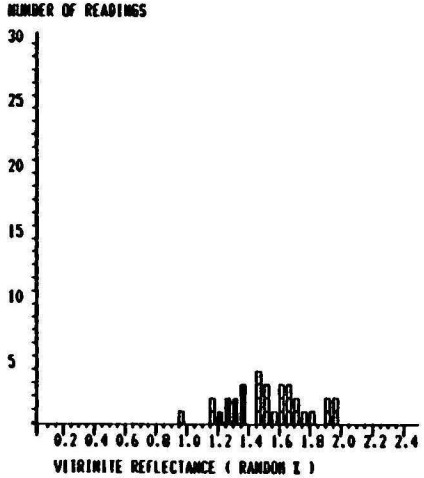
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.21-1.33	10	1.27	0.04
INERTINITE/REWORKED	1.35-1.52	16	1.43	0.04



SAMPLE 3840-3855M

0.96 1.18 1.18 1.24 1.26 1.28 1.30 1.33 1.35 1.37
1.37 1.47 1.48 1.48 1.49 1.51 1.53 1.53 1.59 1.60
1.61 1.63 1.68 1.68 1.69 1.70 1.71 1.79 1.82 1.90
1.93 1.96 1.96

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.24-1.37	8	1.31	0.05
INERTINITE/REWORKED	1.47-1.59	8	1.51	0.04

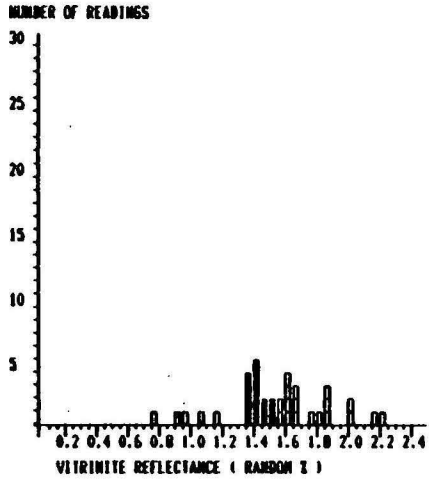


BOWERS-1

SAMPLE 3900-3915M

0.75 0.94 0.96 1.09 1.18 1.38 1.39 1.39 1.39 1.40
1.40 1.40 1.42 1.43 1.45 1.48 1.50 1.53 1.58 1.59
1.61 1.61 1.62 1.62 1.66 1.67 1.68 1.79 1.82 1.85
1.88 1.89 2.03 2.03 2.17 2.20

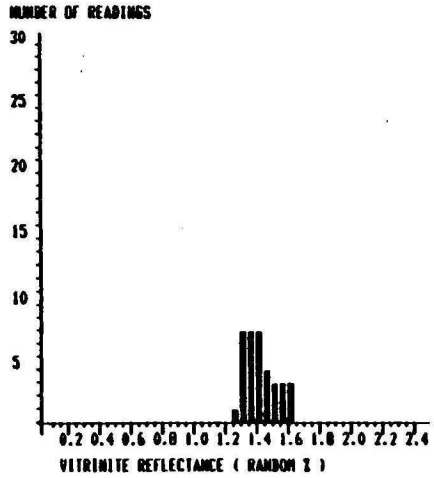
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.38-1.53	13	1.43	0.05
INERTINITE/REWORKED	1.58-1.68	9	1.63	0.04



SAMPLE 3985-4000M COAL

1.28 1.32 1.32 1.33 1.34 1.34 1.34 1.34 1.35 1.36
1.37 1.37 1.37 1.39 1.39 1.40 1.41 1.41 1.42 1.44
1.44 1.44 1.45 1.45 1.46 1.46 1.51 1.52 1.52 1.55
1.56 1.57 1.62 1.62 1.63

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.28-1.63	35	1.43	0.09



Appendix 2b

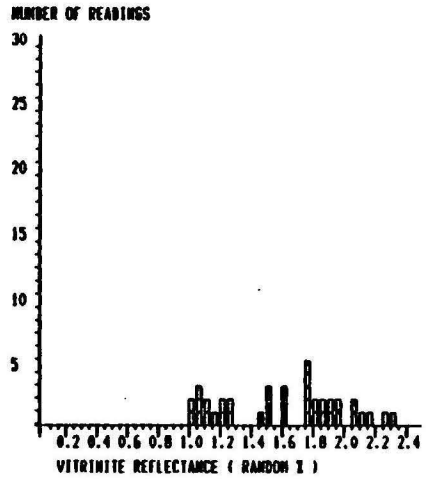
Robertson Research

BOWERS-1

SAMPLE 4000-4015M

1.03 1.03 1.05 1.07 1.09 1.10 1.10 1.15 1.23 1.24
1.27 1.29 1.48 1.50 1.51 1.51 1.63 1.63 1.64 1.75
1.77 1.78 1.78 1.79 1.82 1.83 1.85 1.85 1.93 1.94
1.95 1.96 2.06 2.06 2.13 2.18 2.28 2.34 2.52 2.59

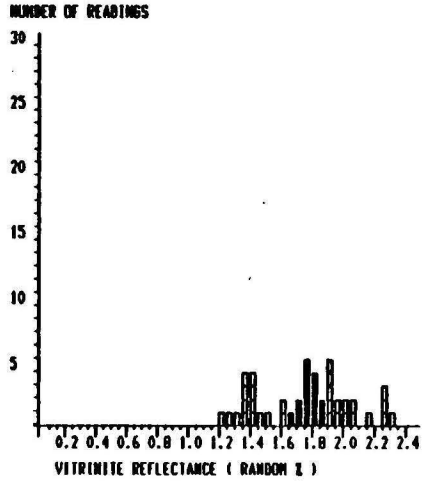
SELECTED CLASS	RANGE (I)	COUNT	AV(I)	ST.DEV
IN SITU VITRINITE	1.48-1.64	7	1.56	0.07
LIPTINITE/CAVINGS	1.03-1.29	12	1.14	0.10
INERTINITE/REWORKED	1.75-1.96	13	1.85	0.08



SAMPLE 4180-4195M

1.24 1.29 1.32 1.35 1.35 1.37 1.38 1.42 1.43 1.44
1.44 1.47 1.52 1.62 1.63 1.66 1.71 1.74 1.75 1.76
1.78 1.78 1.79 1.80 1.80 1.81 1.82 1.85 1.87 1.90
1.93 1.93 1.94 1.94 1.97 1.99 2.00 2.03 2.08 2.09
2.19 2.25 2.26 2.28 2.31 2.40 2.52 2.57

SELECTED CLASS	RANGE (I)	COUNT	AV(I)	ST.DEV
IN SITU VITRINITE	1.66-1.87	14	1.78	0.05
LIPTINITE/CAVINGS	1.24-1.52	13	1.39	0.08
INERTINITE/REWORKED	1.90-2.09	11	1.98	0.06

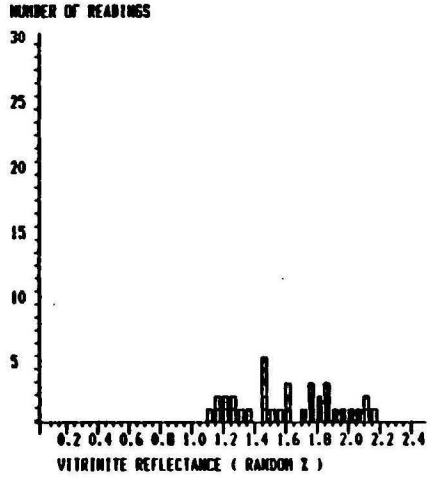


BOWERS-1

SAMPLE 4270-4295M

1.12 1.16 1.17 1.23 1.23 1.27 1.29 1.30 1.38 1.46
1.46 1.48 1.48 1.49 1.52 1.56 1.60 1.62 1.63 1.71
1.75 1.77 1.77 1.81 1.84 1.86 1.87 1.88 1.94 1.95
2.02 2.09 2.11 2.12 2.16

SELECTED CLASS	RANGE (I)	COUNT	AV(I)	ST.DEV
IN SITU VITRINITE	1.71-2.09	13	1.87	0.11
LIPTINITE/CAVINGS	1.46-1.63	10	1.53	0.07
INERTINITE/REWORKED	2.11-2.16	3	2.13	0.03



Appendix 2c

BRIGADIER-1 WELL

SUMMARY

Geochemical analysis of samples from the interval 3405m to 4255m of the Brigadier-1 well have shown that the well section becomes middle mature at around 3400m. The maturity gradients show no evidence of any major erosional unconformities within the section analysed and extrapolation to seabed suggests only a minor amount of section is missing above 3405m. The sediments penetrated are at or near their maximum depths of burial.

Thin, organically rich intervals in the section 3855m to 4165m in the Brigadier Beds and Mungaroo Formation have fair oil source potential. The section is stained by small quantities of biodegraded oil residues mixed with indigenous or small quantities of migrant extracts derived from mature, terrestrially sourced, waxy kerogens.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 19° 05' 48.8"S, 116° 08' 09.5"E.

Operator and date of drilling: Woodside Petroleum Pty Ltd, 1978.

Well Status: Plugged and abandoned.

TD: 4292m.

Mud data: Seawater and polymer system: Seabed to 4292m TD.

Casing data: 30" at 355m, 20" at 697m, $13^3/_8$" at 2191m, $9^5/_8$" at 3381.5m.

BHT data: 82°C at 3388.5m, after 10 hours stopped circulation.
107°C at 4292m TD, after 7.5 hours stopped circulation.

Elevation: RT 8m ASL.

Water depth: 313m.

Interval analysed: 3405m to 4255m.

BRIGADIER-1 WELL

Age of interval analysed:

	Depths (in metres)
Early-Middle Jurassic	3405-3491
Early Jurassic	3491-3612
Late Triassic-Early Jurassic	3612-3968
Late Triassic	3968-4255

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: The samples yielded abundant vitrinitic kerogen but measurements were hindered by reworked and caved material. Results: Fair.

b) Spore Colour Index: The samples yielded sufficient indigenous sporomorphs for measurements. Results: Good.

Source rock data quality: Good.

Gas chromatography run at: 3465m to 3475m, 3855m to 3865m, 3905m to 3925m, 4125m to 4135m and 4155m to 4165m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Vitrinite reflectance values rise steadily from an interpreted value of around 0.5% at 3405m to a value of around 0.65% at 4255m. Spore colour index values rise from 5 to 6.5 SCI units over the same interval. The results show that the section reaches middle maturity at around 3400m.

The vitrinite reflectance gradient does not indicate that any major erosional unconformities are present within the section analysed. Extrapolation of the interpreted maturity gradients to seabed indicates that no major amounts of Middle Jurassic and younger sediments are missing above 3405m and that the sediments penetrated are currently at or near their maximum depths of burial.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

Mudstones in the intervals 3855m to 3865m, 4040m to 4050m and 4155m to 4165m in the Brigadier Beds and Mungaroo Formation contain above average organic carbon contents of between 2.61% and 6.46%. Pyrolysis analysis of these samples shows that they contain mostly humic kerogens mixed with smaller quantities (around 10% to 20%) of oil-prone kerogen. These samples are fair quality oil source rocks. These organically rich intervals are thin (generally between 3m and 9m) and separately each interval has only poor source potential. However the cumulative thickness of the three intervals is around 19 metres and is sufficient for the interval 3855m to 4165m to have fair oil source potential. This interval is middle mature and will have already generated some of its oil potential. These organically rich intervals and the organically rich interval at 4250m to 4255m are also fair quality gas source rocks. They are too thin, however, to generate significant quantities of gas at optimum maturity.

Extraction, fractionation and gas chromatography analysis of samples at 3855m to 3865m and 4155m to 4165m shows that they contain small quantities of hydrocarbons derived from terrestrially sourced waxy kerogens mixed with small amounts of one or possibly two extensively biodegraded oil residues.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

The remaining mudstones analysed generally contain below average to average organic carbon contents of between 0.25% and 1.93%. These samples contain mostly humic kerogen and have no oil or gas source potential.

Extraction, fractionation and gas chromatography analysis of samples at 3465m to 3475m, 3905m to 3925m and 4125m to 4135m shows that these samples contain small quantities of hydrocarbon derived from mature waxy kerogens mixed with one or more biodegraded oil residues.

WELL: BRIGADIER-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
2827		**Middle Dingo Claystone**									
3405-3415	Ctg	MDST, lt ol gy	5.0	0.51(36)	45	45	10	35	55	*	10
3465-3475	"	MDST, med gy-ol gy						40	45	*	15
3491		**Lower Dingo Claystone**									
3530-3540	"	MDST, med gy						60	30	*	10
3558		**North Rankin Beds**									
3612		**Brigadier Beds**									
3655-3665	"	MDST, lt med gy	5.0-5.5	0.53(26)	70	20	10				
3700-3705	"	MDST, med-lt gy						65	30	*	5
3750	"	MDST, med lt gy	5.0-5.5	0.51(12)	80	15	5				
3765-3775	"	MDST, med lt gy	5.5	0.53(24)	55	40	5	40	45	*	15
3805-3815	"	MDST, a/a						40	45	*	15
3835-3840	"	MDST, med lt gy	5.5-6.0	0.55(19)	60	25	15	55	40	*	5
3855-3865	P	MDST, a/a						40	40	*	20
3890-3895	Ctg	MDST, a/a + mnr SND						50	40	*	10
3905-3925	"	MDST, med gy + mnr SND						45	35	*	20
3968		**Mungaroo Fm**									
4040-4050	"	MDST, lt-v lt gy + mnr SST						50	30	*	20
4080	"	MDST, lt med gy	5.5-6.0	0.60(15)	65	25	10	60	30	*	10
4110-4120	"	MDST, a/a + mnr SST						60	35	*	5
4125-4135	P	MDST, dk gy, carb						60	35	*	5
	P	MDST, lt-med gy						60	35	*	5
4140-4150	P	MDST, dk gy, carb						55	35	*	10
4155-4165	P	MDST, dk gy, carb						55	35	*	10
4170-4180	P	MDST, dk gy, carb						60	35	*	5
4250-4255	Ctg	MDST, lt med gy + 10% SND	6.0-6.5	0.64(33)	50	40	10				
	P	MDST, lt-med gy						50	45	*	5

Table 1 Maturity and Kerogen Composition Data

WELL: BRIGADIER-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2827		**Middle Dingo Claystone**													
3405-3415	Ctg	MDST, lt ol gy	1.79	425	153	241	0.05	2.88							
3465-3475	"	MDST, med gy-ol-gy	1.78	427	183	209	0.03	3.36	755	42	280	16	21	16	63
3491		**Lower Dingo Claystone**													
3530-3540	"	MDST, med gy	1.13	418	105	184	0.09	1.31							
3558		**North Rankin Beds**													
3612		**Brigadier Beds**													
3625	"	LST, v lt gy-pnk gy, arg	0.14												
3640-3645	"	MDST, lt-med gy	0.25												
3655-3665	"	MDST, lt-med gy	0.51												
3680-3685	"	MDST, lt ol gy	0.56												
3700-3705	"	MDST, med-lt gy	1.47	425	91	105	0.06	1.43							
3750	"	MDST, med-lt gy	0.95												
3765-3775	"	MDST, a/a	1.53	426	158	124	0.05	2.56							
3805-3815	"	MDST, a/a	1.21	426	171	202	0.05	2.18							
3835-3840	"	MDST, med-lt gy	1.43	427	103	194	0.05	1.56							
3855-3865	"	MDST, med-lt gy + 20% SST	1.83						645	35	280	15	18	26	56
	P	MDST, med-lt gy	3.11	428	169	84	0.03	5.41							
3875-3880	Ctg	MDST, a/a	0.90												
3890-3895	"	MDST, med-lt gy + mnr SND	1.50	430	115	140	0.04	1.81							
3905-3925	"	MDST, med gy + mnr SND	1.93	425	192	89	0.05	3.91	805	42	240	12	15	15	70
3968		**Mungaroo Fm**													
4040-4050	"	MDST, lt-v lt gy + mnr SST	2.61	430	153	77	0.05	4.20							
4080	"	MDST, lt-med gy	1.63	428	85	69	0.07	1.49							
4110-4120	"	MDST, a/a + mnr SST	1.86	429	93	101	0.07	1.85							
4125-4135	"	MDST, dk gy, carb + 40% MDST, lt med gy + 10% SLTST, v lt gy	1.22						755	62	340	28	35	10	55
	P	MDST, dk gy, carb	1.45	431	73	26	0.05	1.12							
	P	MDST, lt med gy	1.23	429	85	73	0.05	1.10							
4140-4150	Ctg	MDST, dk gy carb + 40% SLTST, v lt gy + 30% MDST, lt me gy	-												
	P	MDST, dk gy carb	1.68	429	107	30	0.03	1.84							
	P	SLTST, v lt gy	0.02												
	P	30% MDST, lt med gy	0.54												

Table 2a Chemical Analysis Data

WELL: BRIGADIER-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
4155-4165	Ctg	MDST, dk gy, carb + 50% MDST, med lt gy	4.64						1435	31	550	12	11	27	62
	P	MDST, dk gy carb	6.46	426	119	25	0.02	7.86							
	P	MDST, med lt gy	0.82												
4170-4180	Ctg	MDST, dk gy, [illegible]co + 20% SST, v lt gy	-												
	P	MDST, dk gy, carb	1.53	432	77	54	0.05	1.24							
4185-4200	Ctg	MDST, lt-med gy	0.64												
4250-4255	Ctg	MDST, lt-med gy + 10% SND	-												
	P	MDST, lt-med gy	3.16	431	89	28	0.06	2.99							

Table 2b Chemical Analysis Data

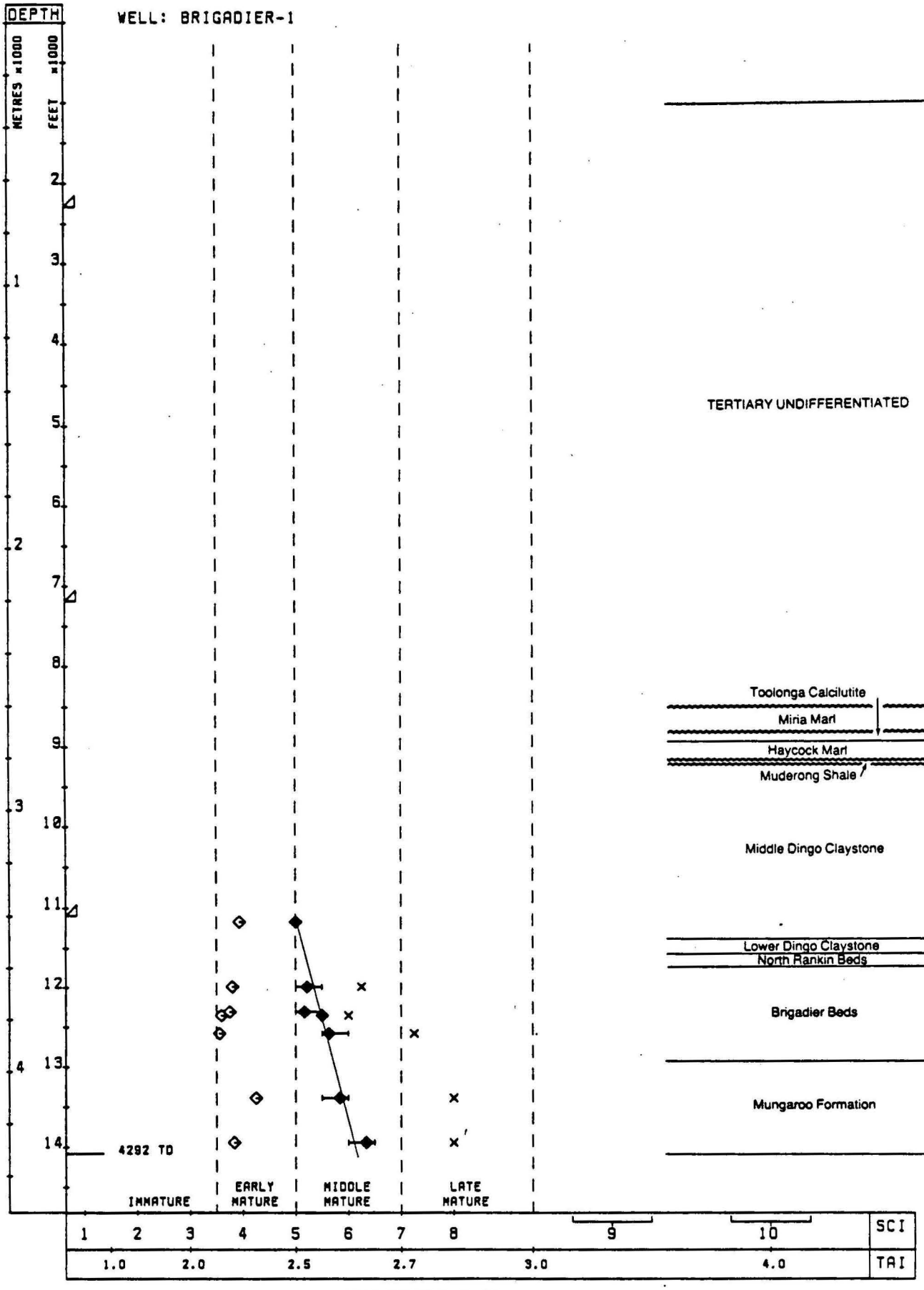


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

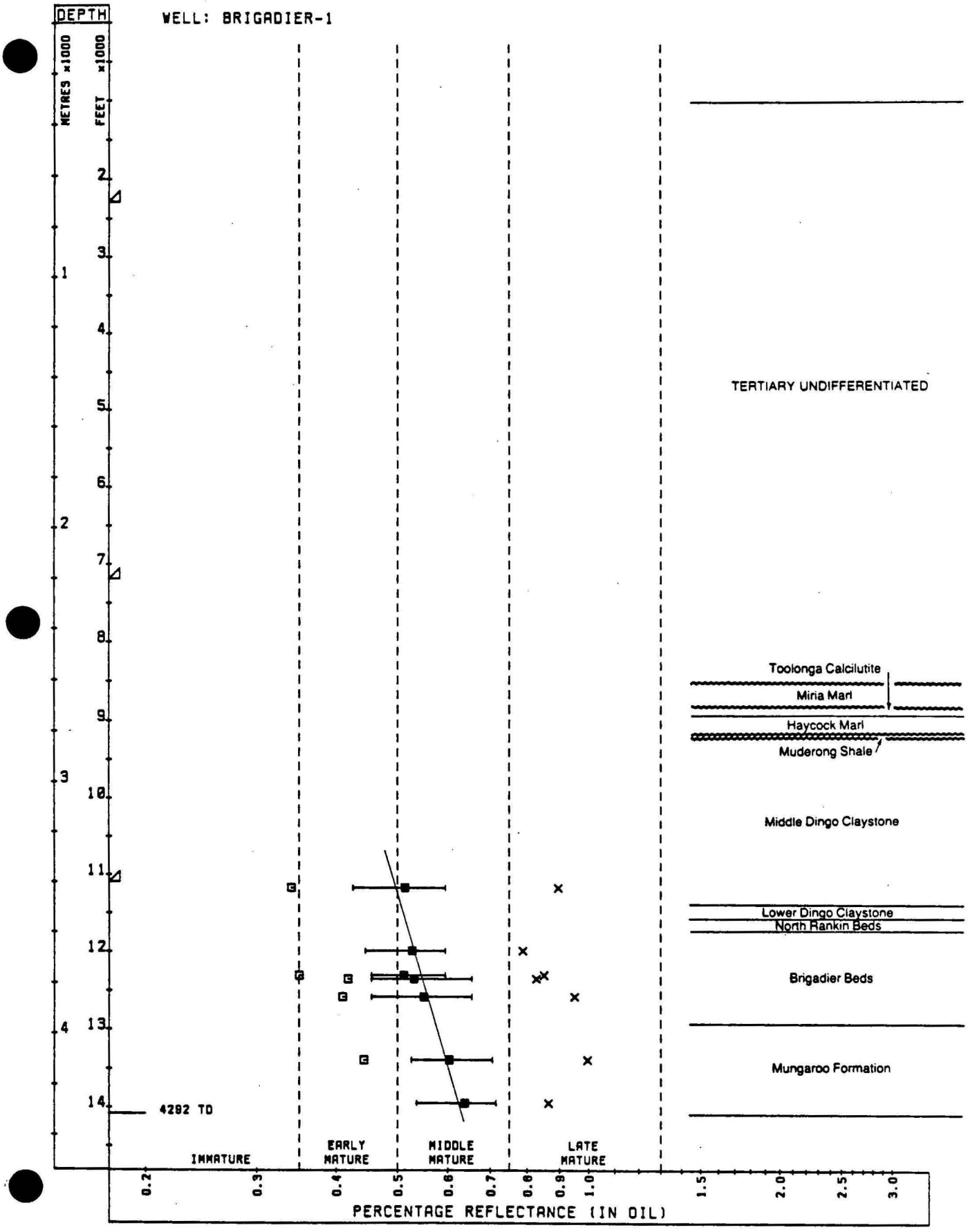
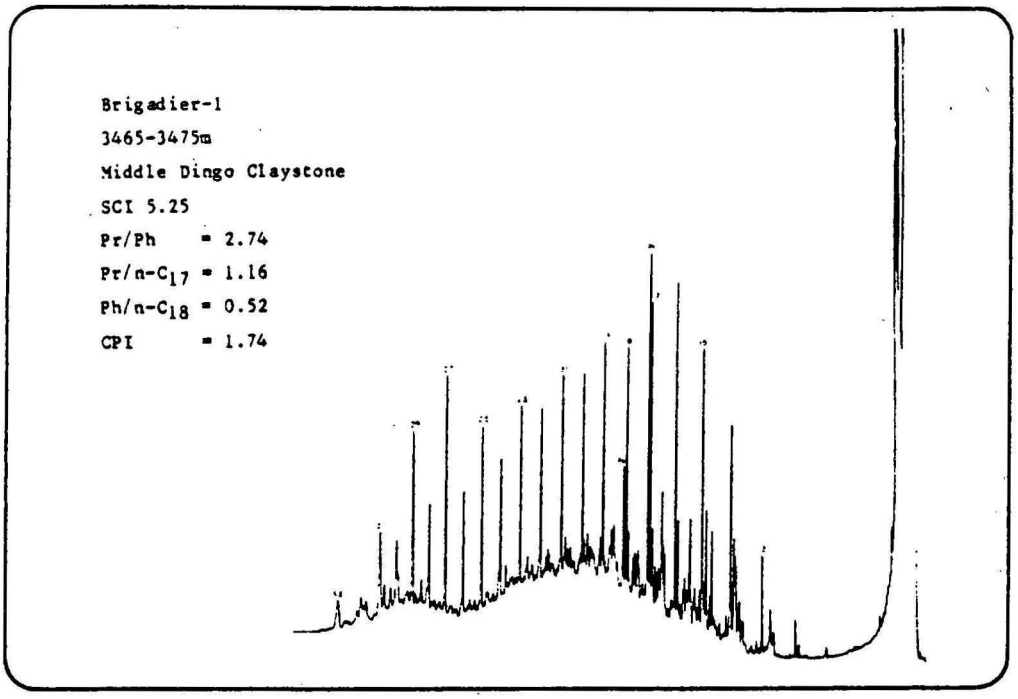
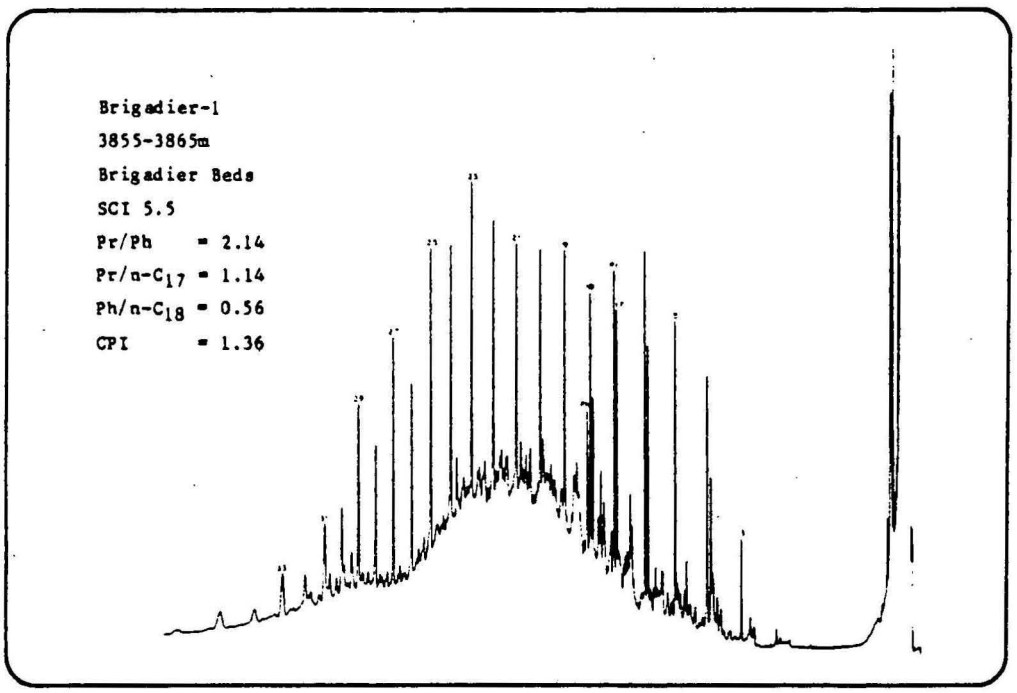


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH


Brigadier-1
3465-3475m
Middle Dingo Claystone
SCI 5.25
Pr/Ph = 2.74
Pr/n-C17 = 1.16
Ph/n-C18 = 0.52
CPI = 1.74


Brigadier-1
3855-3865m
Brigadier Beds
SCI 5.5
Pr/Ph = 2.14
Pr/n-C17 = 1.14
Ph/n-C18 = 0.56
CPI = 1.36

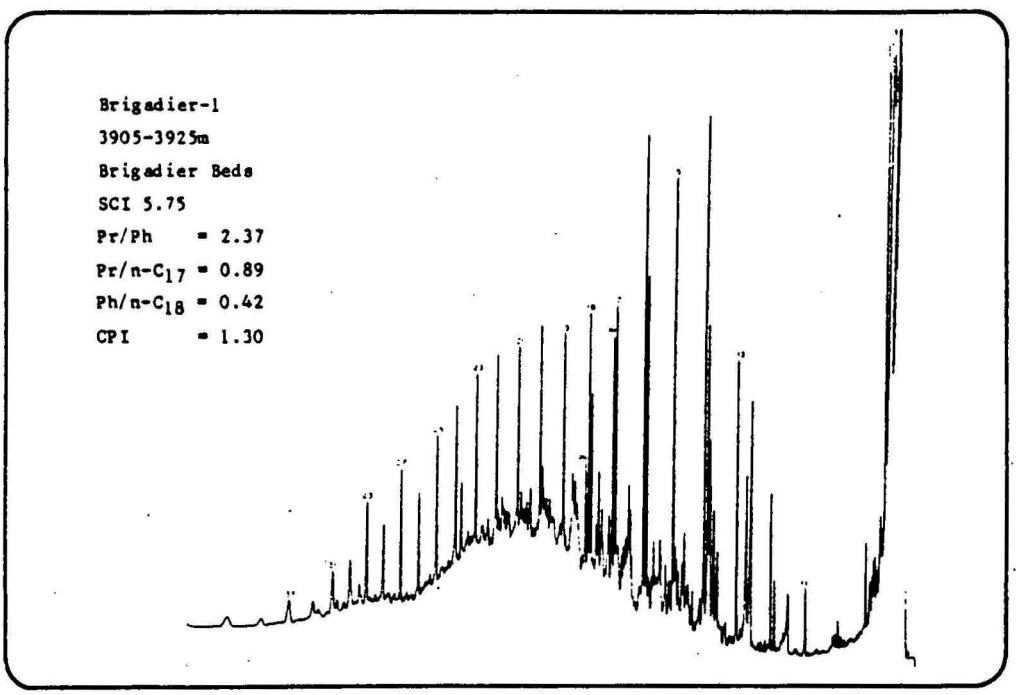
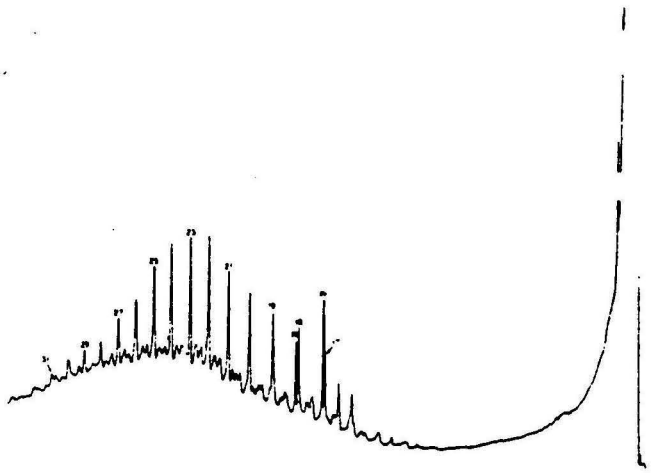

Brigadier-1
3905-3925m
Brigadier Beds
SCI 5.75
Pr/Ph = 2.37
Pr/n-C17 = 0.89
Ph/n-C18 = 0.42
CPI = 1.30

Figure 3a

Brigadier-1
4125-4135m
Mungaroo Fmn
SCI 6.0
Pr/Ph = 1.73
Pr/n-C_{17} = 1.75
Ph/n-C_{18} = 0.85
CPI = 1.06



Brigadier-1
4155-4165m
Mungaroo Fmn
SCI 6.0
Pr/Ph = 5.13
Pr/n-C_{17} = 2.13
Ph/n-C_{18} = 0.50
CPI = 1.21

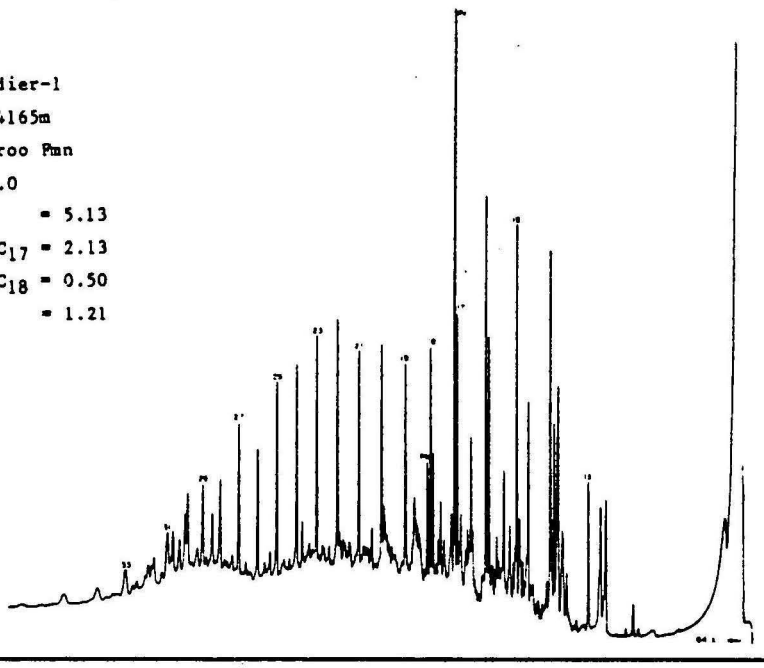


Figure 3b

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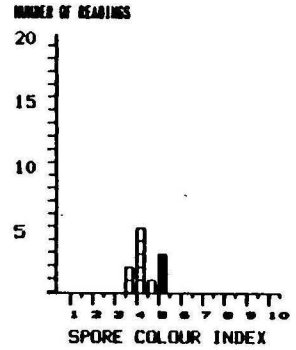
BRIGADIER-1

IN SITU POPULATION

SAMPLE 3405-3415M

3.5 3.5 4.0 4.0 4.0 4.0 4.0 4.5 5.0 5.0 5.0

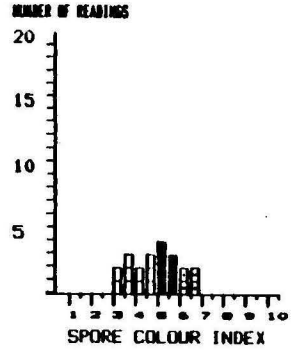
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.0	3
BLEACHED OR CAVED	3.5-4.5	8
STAINED OR REWORKED	-	0



SAMPLE 3655-3665M

3.0 3.0 3.5 3.5 3.5 4.0 4.0 4.5 4.5 4.5 5.0 5.0 5.0 5.0 5.5 5.5 5.5 6.0 6.0 6.5 6.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.5	7
BLEACHED OR CAVED	3.0-4.5	10
STAINED OR REWORKED	6.0-6.5	4



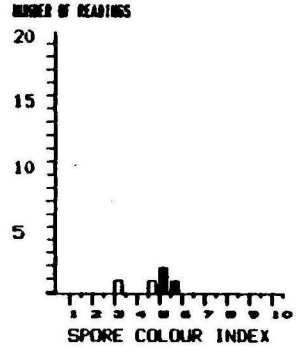
BRIGADIER-1

IN SITU POPULATION

SAMPLE 3750M

3.0 4.5 5.0 5.0 5.5

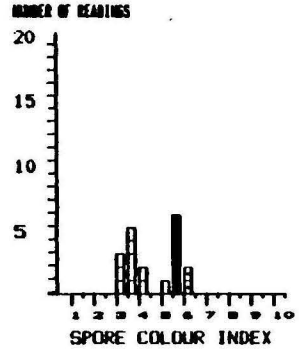
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.5	3
BLEACHED OR CAVED	3.0-4.5	2
STAINED OR REWORKED	-	0



SAMPLE 3765-3775M

3.0 3.0 3.0 3.5 3.5 3.5 3.5 3.5 4.0 4.0 5.0 5.5 5.5 5.5 5.5 5.5 5.5 6.0 6.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.5-5.5	6
BLEACHED OR CAVED	3.0-5.0	11
STAINED OR REWORKED	6.0-6.0	2



Appendix 1a

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Appendix 1b

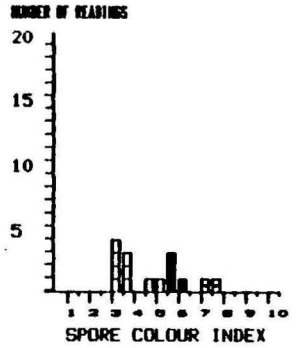
BRIGADIER-1

IN SITU POPULATION

SAMPLE 3835-3840M

3.0 3.0 3.0 3.0 3.5 3.5 3.5 4.5 5.0 5.5
5.5 5.5 6.0 7.0 7.5

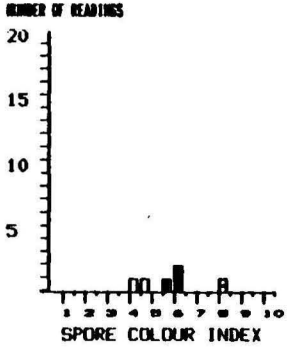
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.5-6.0	4
BLEACHED OR CAVED	3.0-5.0	9
STAINED OR REWORKED	7.0-7.5	2



SAMPLE 4080M

4.0 4.5 5.5 6.0 6.0 8.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.5-6.0	3
BLEACHED OR CAVED	4.0-4.5	2
STAINED OR REWORKED	8.0-8.0	1



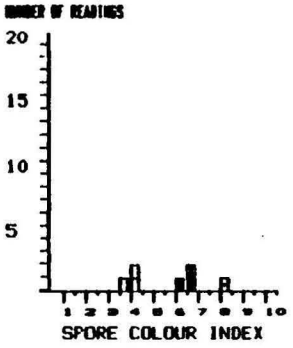
BRIGADIER-1

IN SITU POPULATION

SAMPLE 4250-4255M

3.5 4.0 4.0 6.0 6.5 6.5 8.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.0-6.5	3
BLEACHED OR CAVED	3.5-4.0	3
STAINED OR REWORKED	8.0-8.0	1



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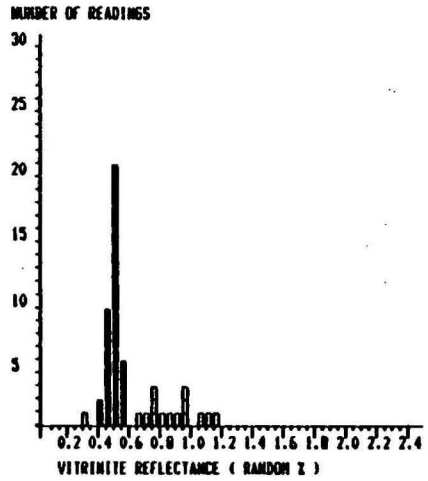
BRIGADIER-1

SAMPLE 3405-3415M

0.34 0.43 0.44 0.45 0.46 0.47 0.48 0.48 0.48 0.49
0.49 0.49 0.50 0.51 0.51 0.51 0.51 0.51 0.52 0.52
0.52 0.52 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.54
0.54 0.54 0.55 0.56 0.58 0.58 0.59 0.68 0.72 0.76
0.77 0.79 0.80 0.87 0.92 0.95 0.96 0.96 1.07 1.11
1.18

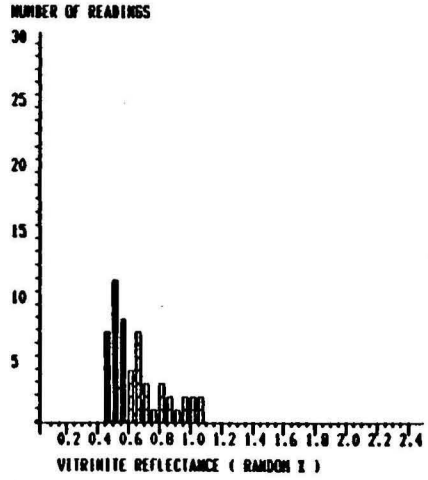
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.43-0.59	36	0.51	0.04
LIPTINITE/CAVINGS	0.34-0.34	1	0.34	
INERTINITE/REWORKED	0.68-1.18	14	0.90	0.15



SAMPLE 3655-3665M

0.45 0.45 0.48 0.48 0.49 0.49 0.49 0.50 0.51 0.51
0.53 0.53 0.53 0.53 0.54 0.54 0.54 0.54 0.55 0.56
0.56 0.56 0.58 0.59 0.59 0.59 0.62 0.62 0.64 0.64
0.65 0.65 0.66 0.67 0.68 0.68 0.69 0.70 0.73 0.74
0.75 0.81 0.81 0.82 0.85 0.86 0.91 0.95 0.97 1.02
1.04 1.06 1.06

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.45-0.59	26	0.53	0.04
INERTINITE/REWORKED	0.62-1.06	27	0.79	0.15

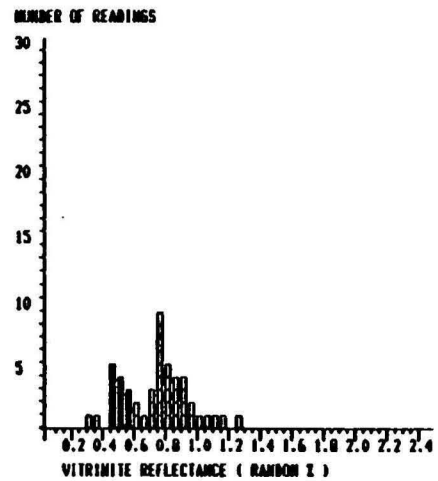


BRIGADIER-1

SAMPLE 3750M

0.34 0.36 0.46 0.47 0.48 0.48 0.49 0.50 0.51 0.51
0.54 0.55 0.56 0.59 0.64 0.64 0.68 0.70 0.71 0.73
0.75 0.75 0.76 0.76 0.77 0.77 0.78 0.78 0.79 0.80
0.82 0.82 0.83 0.84 0.85 0.85 0.85 0.86 0.90 0.92
0.93 0.94 0.97 0.99 1.01 1.05 1.11 1.15 1.28

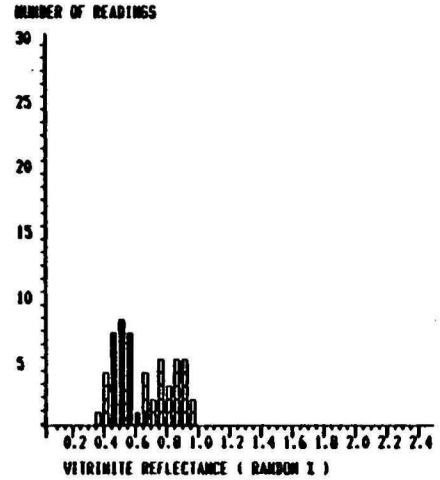
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.46-0.59	12	0.51	0.04
LIPTINITE/CAVINGS	0.34-0.36	2	0.35	0.01
INERTINITE/REWORKED	0.64-1.28	25	0.85	0.14



SAMPLE 3765-3775M

0.38 0.40 0.43 0.44 0.44 0.46 0.47 0.47 0.48 0.49
0.49 0.49 0.50 0.51 0.51 0.51 0.52 0.52 0.53 0.54
0.55 0.55 0.55 0.57 0.57 0.58 0.59 0.64 0.65 0.67
0.68 0.69 0.70 0.73 0.77 0.78 0.78 0.79 0.79 0.80
0.80 0.82 0.85 0.85 0.86 0.88 0.89 0.90 0.90 0.91
0.94 0.94 0.98 0.99

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.46-0.65	24	0.53	0.05
LIPTINITE/CAVINGS	0.38-0.44	5	0.42	0.03
INERTINITE/REWORKED	0.67-0.99	25	0.83	0.09



Appendix 2a

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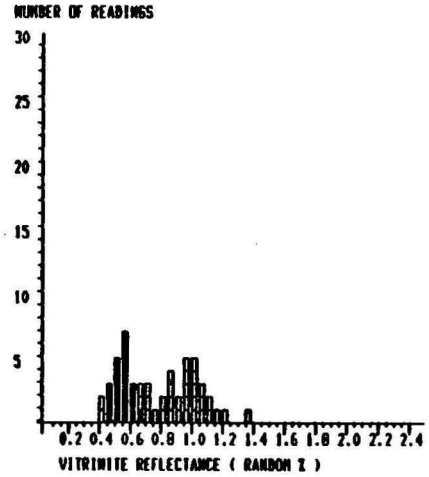
BRIGADIER-1

SAMPLE 3835-3840M

0.41 0.41 0.46 0.46 0.47 0.50 0.51 0.51 0.54 0.54
0.55 0.55 0.57 0.57 0.58 0.58 0.59 0.60 0.61 0.61
0.65 0.68 0.69 0.70 0.73 0.74 0.78 0.83 0.84 0.85
0.86 0.87 0.88 0.91 0.94 0.95 0.96 0.96 0.97 0.99
1.00 1.00 1.01 1.03 1.03 1.06 1.07 1.07 1.12 1.12
1.18 1.22 1.37

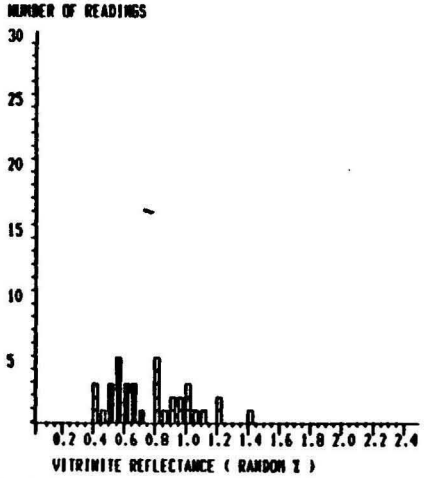
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.46-0.65	19	0.55	0.05
LIPTINITE/CAVINGS	0.41-0.41	2	0.41	
INERTINITE/REWORKED	0.68-1.37	32	0.95	0.16



SAMPLE 4080M

0.42 0.43 0.43 0.49 0.53 0.53 0.54 0.55 0.56 0.58
0.58 0.59 0.60 0.63 0.64 0.65 0.67 0.69 0.70 0.81
0.82 0.83 0.84 0.84 0.88 0.90 0.93 0.96 0.99 1.00
1.03 1.04 1.06 1.13 1.23 1.23 1.41

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.53-0.70	15	0.60	0.06
LIPTINITE/CAVINGS	0.42-0.49	4	0.44	0.03
INERTINITE/REWORKED	0.81-1.41	18	1.00	0.17

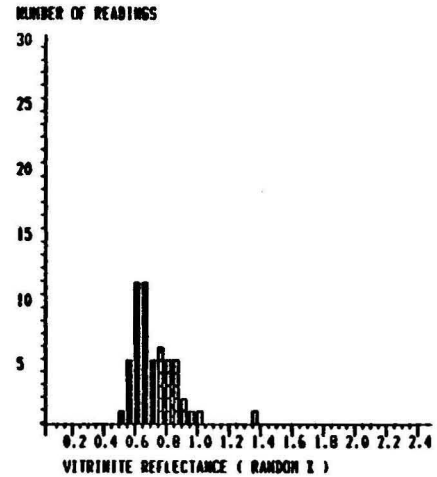


BRIGADIER-1

SAMPLE 4250-4255M

0.54 0.55 0.57 0.58 0.58 0.59 0.60 0.60 0.60 0.61
0.61 0.62 0.62 0.62 0.63 0.64 0.64 0.65 0.65 0.65
0.65 0.66 0.66 0.67 0.67 0.68 0.69 0.69 0.70 0.70
0.70 0.71 0.71 0.75 0.75 0.75 0.76 0.76 0.79 0.80
0.81 0.82 0.83 0.83 0.86 0.86 0.86 0.87 0.88 0.92
0.93 0.95 1.02 1.36

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.54-0.71	33	0.64	0.05
INERTINITE/REWORKED	0.75-1.36	21	0.86	0.13



Appendix 2b

CAPE RANGE-2 WELL

SUMMARY

Geochemical analysis of samples from the interval 1210m to 4484m of the Cape Range-2 well have shown that the well section is early mature between 1210m and 1800m, middle mature between 1800m and 2300m, late mature between 2300m and 3000m and post-mature below this depth. The maturity gradients suggest that the well section has been affected by a nearby intrusive dyke which dips towards the base of the well section. Extrapolation of the maturity gradients to surface shows that little Middle Jurassic and younger section is missing above 1210m. The sediments analysed are currently at or near their maximum depths of burial.

The interval 1989m to 2258m has very good oil and gas source potential. Samples with high residual organic carbon contents below 2800m may have poor to fair gas source potential and may have generated significant quantities of gas, especially towards the base of the well section. This gas generation however, is only likely to be of local significance and is in response to heating by the nearby intrusive body.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 22° 05' 57"S, 113° 59' 32"E.

Operator and date of drilling: West Australian Petroleum Pty Ltd, 1956.

Well Status: Plugged and abandoned.

TD: 4624m.

Mud data: Freshwater: Surface to 456m.
Gel/Soda system: 456m to 1157m.
Freshwater/Bentonite system: 1157m to 1606m.
Freshwater/Lime system with Diesel: 1606m to 3362m.
Oil emulsion mud system: 3362m to 4584m.
Freshwater/Bentonite/Soda system: 4584m to 4624m TD.

Casing data: 30" at 7m, $13^3/_8$" at 457m, $9^5/_8$" at 2560m.

BHT data: None available.

Elevation: RT 285m ASL.

CAPE RANGE-2 WELL

Ground elevation: 282m.

Interval analysed: 1210m to 4484m.

Age of interval analysed:

	Depths (in metres)
Middle-Late Jurassic	1210-?1372
Middle Jurassic	?1372- 4484

Sample type and quality: Core samples of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: The samples analysed yielded sufficient vitrinite for measurement. Results: Good.

b) Spore Colour Index: The samples analysed yielded sufficient sporomorphs for measurements but were complicated by a wide range of values in the lower section of the well. Results: Good.

Source rock data quality: Good.

Gas chromatography run at: 1989m to 1992m and 3696m to 3699m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Spore colour index values rise steadily between 1210m and 1763m before increasing rapidly with depth between 1992m and 4484m. The results show the section to be early mature between 1210m and 1800m, middle mature between 1800m and 2300m, late mature between 2300m and 3000m and post mature below this depth.

The vitrinite reflectance gradient shows similar depths to the maturity zones. The reflectance gradient below 2391m is non-linear, indicative of high heat flow. The results are consistent with thermal metamorphism of the sediments by heat from a dyke close to the well section. Results indicate that the postulated dyke dips towards the base of the well and cuts the line of the well at a depth not far below the TD of the well. Extrapolation of the maturity gradients to surface indicates that little Middle Jurassic and younger section is missing above 1210m and that the sediments are currently at or near their maximum depths of burial.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

With the exception of samples at 1605m to 1608m, 2386m to 2391m, 2500m to 2503m and 3964m to 3967m, the samples analysed contain average to above average organic carbon contents of between 1.01% and 2.65%. Pyrolysis analysis of samples shows samples in the interval 1761m to 2258m to have moderate hydrogen indices of between 172 and 216 suggesting a small content of sapropelic kerogen. This is confirmed by visual kerogen analysis which shows 10% to 25% liptinite content in the samples in this interval. The remaining samples have generally low hydrogen indices suggesting mainly humic kerogen content, but also reflecting the carbonized nature of kerogen present in sediments towards the base of the well section.

Solvent extraction of samples at 1989m to 1992m and 3696m to 3699m yielded moderate quantities of extractable bitumen. Fractionation data indicates that around 57% and 73% of this bitumen is hydrocarbon at 1989m to 1992m and 3696m to 3699m respectively. The gas chromatogram of the sample at 1989m to 1992m shows an alkane distribution typical of hydrocarbons derived from mixed algal and waxy kerogen at early to middle maturity. The chromatogram for the sample at 3696m to 3699m shows a very restricted range of n-alkanes and may represent the water washed remains of a light oil derived from late mature kerogen. Alternatively, however, this restricted range may indicate contamination by a refined oil fraction.

The results suggest very good oil and fair gas source potential for samples in the interval 1761m to 2258m. The generally high residual organic carbon contents of sediments below 2800m may indicate that these sediments have poor to fair gas source potential. Humic kerogens towards the base of the well section may have generated significant quantities of gas although this is only likely to be of local significance and it is in response to heating from a nearby intrusive body.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

Samples with below average organic carbon contents at 1605m to 1608m, 2386m to 2391m, 2500m to 2503m and 3964m to 3967m are unlikely to have any significant oil or gas source potential.

CAPE RANGE-2 WELL

Extraction of samples over the intervals 2985m to 2987m and 3064m to 3066m from the tested interval 2983m to 3079m yielded only very small quantities of extract. No further analysis was therefore performed on these samples.

WELL: CAPE RANGE-2

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
1129.9		**Upper Dingo Claystone**									
1210-1217	Core	MDST, med gy	4.0	?0.40(3)	60	30	10	90	10	*	*
?1371.9		**Middle Dingo Claystone**									
1375-1380	"	MDST, med-dk gy	4.0-4.5	0.42(28)	50	40	10	80	15	5	*
1605-1608	"	MDST, rd-gy	4.0-4.5	0.45(35)	35	60	5				
1761-1763	"	MDST, dk gy	5.0	0.53(39)	60	20	20	15	80	*	5
1989-1992	"	MDST, dk gy	5.5-6.0	0.52(16)	50	25	25	*	85	5	10
2134-2137	"	MDST, dk gy	6.0-7.0	0.64(40)	45	45	10	*	80	10	10
2254-2258	"	MDST, a/a	6.5-7.0	0.73(42)	50	50	*				
2386-2391	"	MDST, a/a	7.0-7.5	0.83(49)	40	55	5				
2500-2503	"	MDST, a/a	7.5-8.0	1.00(32)	60	30	10				
2589-2593	"	MDST, a/a, slicken-slided	7.5-8.0	1.13(41)	60	40	*				
2752-2753	"	MDST, gy blk	8.0-8.5	1.37(25)	55	45	*				
2918-2919	"	MDST, dk gy	8.5-9.0	1.56(26)	40	60	*				
3125-3128	"	MDST, a/a	9.0	2.00(43)	50	50	*				
3270-3272	"	MDST, dk gy	9.0	2.55(36)	60	40	*				
3477-3478	"	MDST, dk gy, mic	9.0	2.82(40)	70	30	*				
3696-3699	"	MDST, dk gy	9.5-10.0	3.05(34)	70	30	*				
3964-3967	"	MDST, med dk gy	8.5-9.5cvd	3.88(33)	75	25	*				
4276-4279	"	MDST, a/a	10.0	3.85(34)	85	15	*				
4482-4484	"	MDST, a/a	10.0	4.14(30)	90	10	*				

Table 1 Maturity and Kerogen Composition Data

WELL: CAPE RANGE-2

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE °C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g T.O.C.)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T.O.C.)	EXTRACT COMPOSITION (%)		
													SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
1129.9		**Upper Dingo Claystone**													
1210-1217	Core # 6	MDST, med gy	2.01	414	39	32	0.12	0.89							
?1371.9		**Middle Dingo Claystone**													
1375-1380	Core # 18	MDST, med-dk gy	1.82	416	71	26	0.11	1.46							
1605-1608	Core # 21	MDST, rd-gy	0.91												
1761-1763	Core # 23	MDST, dk gy	2.65	432	180	51	0.06	5.10							
1989-1992	Core # 26	MDST, dk gy	1.79	436	216	56	0.08	4.21	645	36	370	21	54	3	43
2134-2137	Core # 28	MDST, dk gy	2.00	440	161	72	0.12	3.67							
2254-2258	Core # 29	MDST, a/a	1.01	442	172	113	0.13	1.99							
2386-2391	Core # 31	MDST, a/a	0.86												
2500-2503	Core # 33	MDST, a/a	0.55												
2589-2593	Core # 35	MDST, a/a slickenslided	1.23	448	94	18	0.19	1.42							
2752-2753	Core # 39	MDST, gy blk	1.74	454	67	31	0.28	1.62							
2918-2919	Core # 42	MDST, dk gy	1.71	466	53	22	0.32	1.32							
2985-2987	Core	MDST, dk gy	1.74						160	9					
3064-3066	Core	MDST, a/a	2.60						235	9					
3125-3128	Core # 47	MDST, a/a	1.17	500	24	13	0.26	0.38							
3270-3272	Core # 58	MDST, dk gy	1.28	486	24	23	0.21	0.39							
3477-3478	Core # 64	MDST, dk gy, mic	1.09	NDP	33	25	0.28	0.50							
3696-3699	Core # 73	MDST, dk gy	2.31	NDP	36	49	0.26	1.13	1165	50	855	37	69	5	26
3964-3967	Core # 79	MDST, med dk gy	0.83												
4276-4279	Core # 67	MDST, a/a	2.05	NDP	8	10	0.33	0.24							
4482-4484	Core # 90	MDST, a/a	1.08	NDP	3	16	0.67	0.09							

Table 2 Chemical Analysis Data

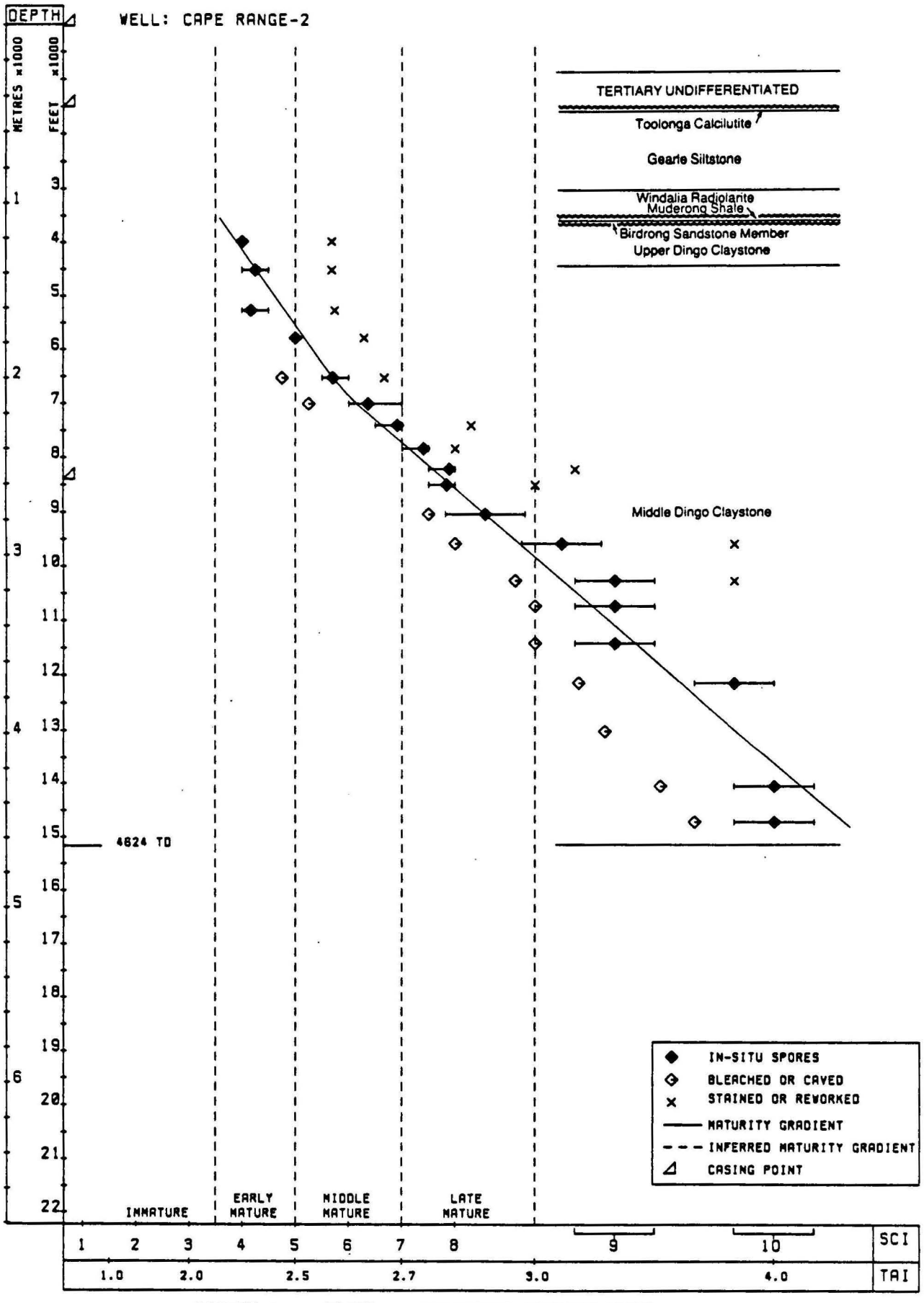


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

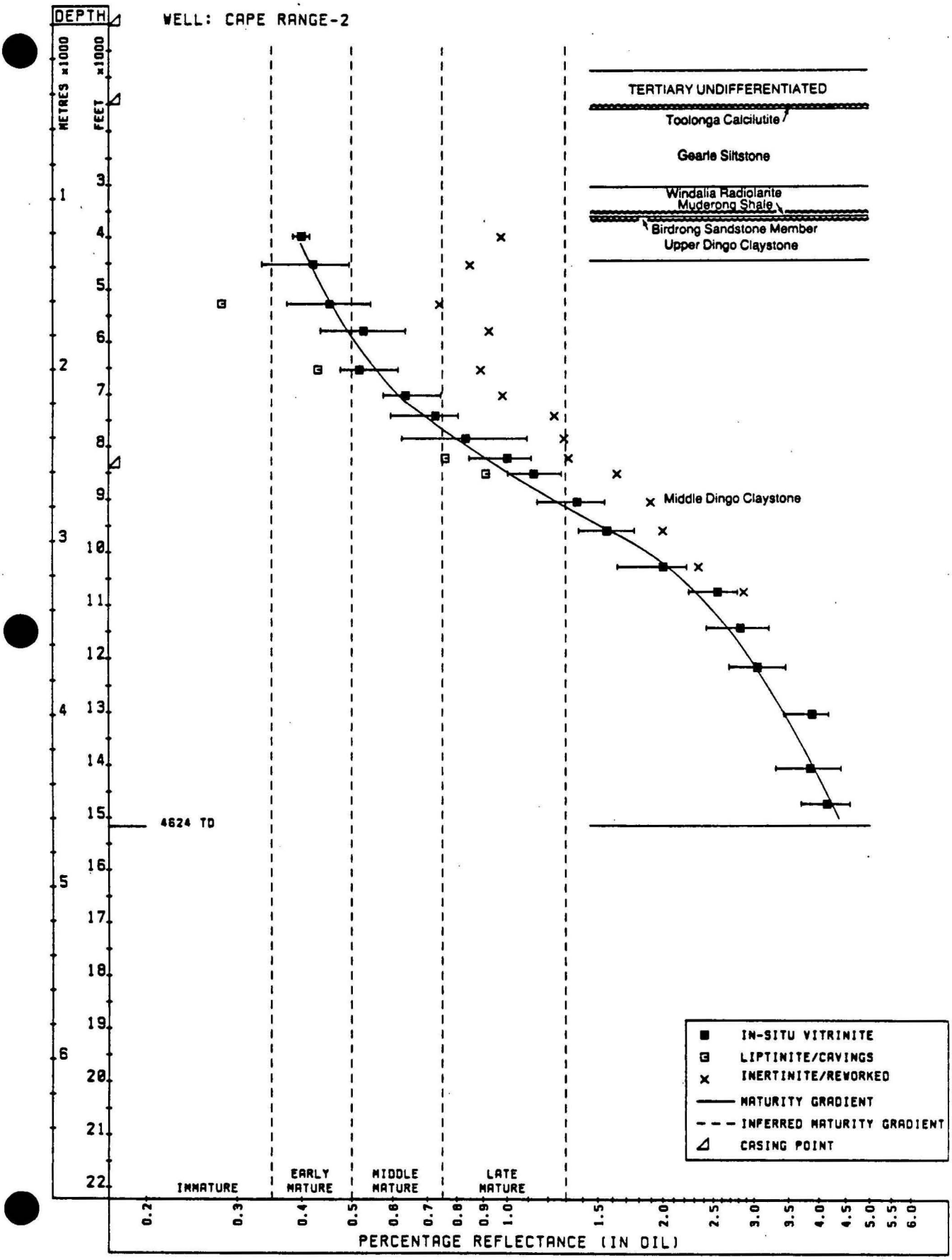
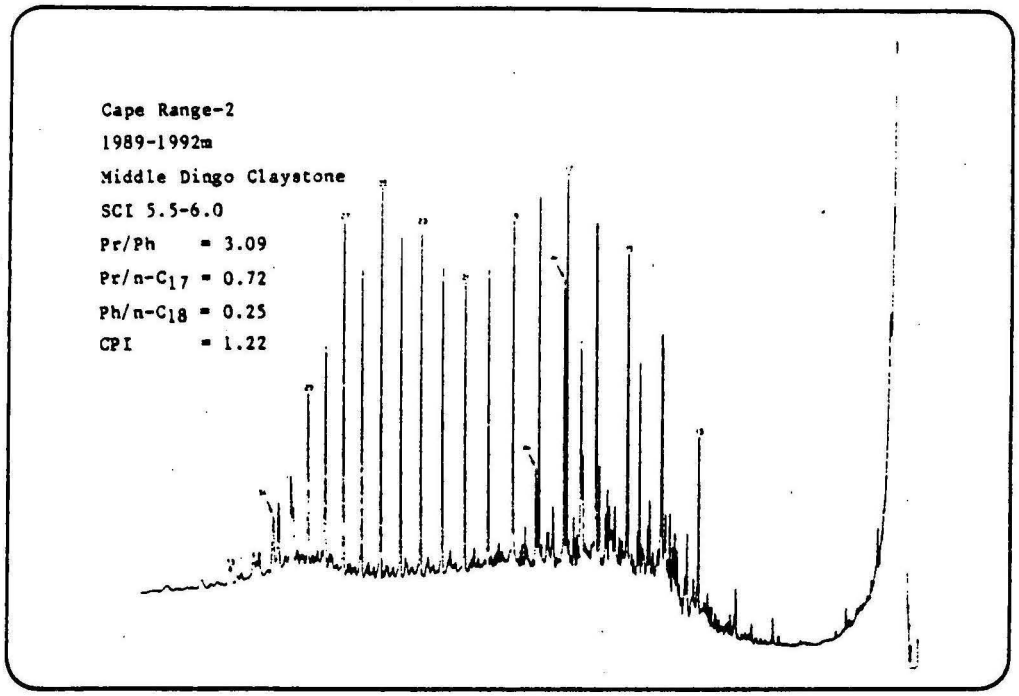


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH


Cape Range-2
1989-1992m
Middle Dingo Claystone
SCI 5.5-6.0
Pr/Ph = 3.09
Pr/n-C17 = 0.72
Ph/n-C18 = 0.25
CPI = 1.22

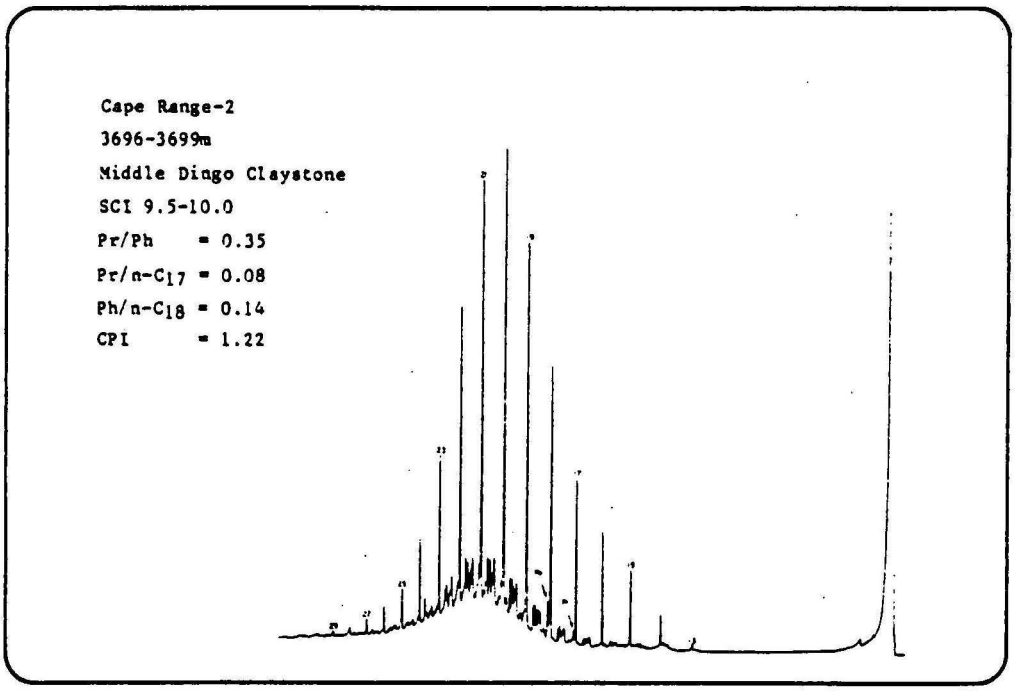

Cape Range-2
3696-3699m
Middle Dingo Claystone
SCI 9.5-10.0
Pr/Ph = 0.35
Pr/n-C17 = 0.08
Ph/n-C18 = 0.14
CPI = 1.22

Figure 3

Robertson Research

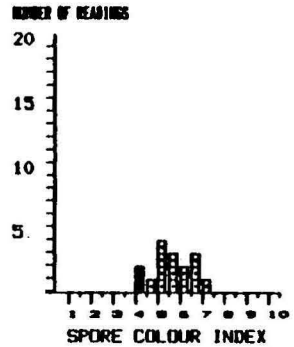
CAPE RANGE-2

IN SITU POPULATION

SAMPLE 1210-1217M

4.0 4.0 4.5 5.0 5.0 5.0 5.0 5.5 5.5 5.5
6.0 6.0 6.5 6.5 6.5 7.0

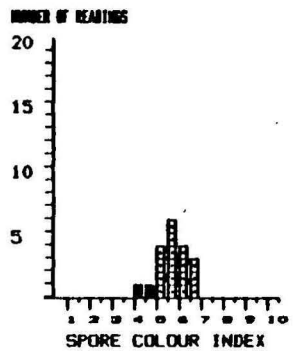
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.0-4.0	2
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	4.5-7.0	14



SAMPLE 1375-1380M

4.0 4.5 5.0 5.0 5.0 5.0 5.5 5.5 5.5 5.5
5.5 5.5 6.0 6.0 6.0 6.0 6.5 6.5 6.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.0-4.5	2
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	5.0-6.5	17



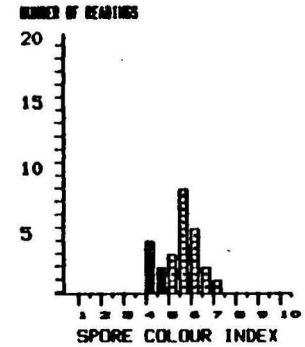
CAPE RANGE-2

IN SITU POPULATION

SAMPLE 1605-1608M

4.0 4.0 4.0 4.0 4.5 4.5 5.0 5.0 5.0 5.5
5.5 5.5 5.5 5.5 5.5 5.5 5.5 6.0 6.0 6.0
6.0 6.0 6.5 6.5 7.0

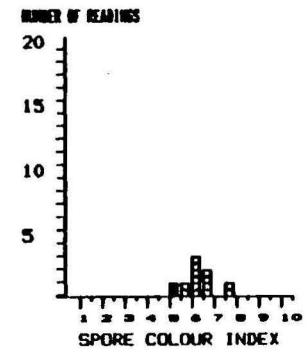
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.0-4.5	6
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	5.0-7.0	19



SAMPLE 1761-1763M

5.0 5.5 6.0 6.0 6.0 6.5 6.5 7.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.0	1
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	5.5-7.5	7



Appendix 1a

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Appendix 1b

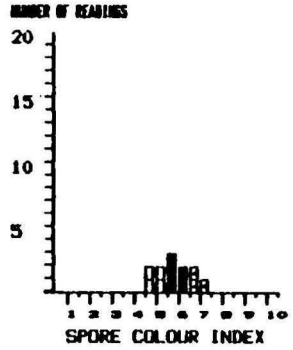
CAPE RANGE-2

IN SITU POPULATION

SAMPLE 1989-1992M

4.5 4.5 5.0 5.0 5.5 5.5 5.5 6.0 6.0 6.5
6.5 7.0

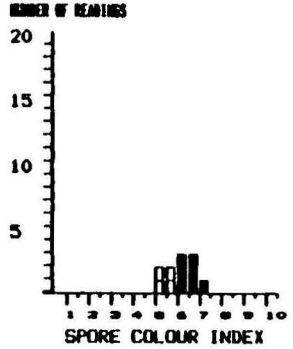
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.5-6.0	5
BLEACHED OR CAVED	4.5-5.0	4
STAINED OR REWORKED	6.5-7.0	3



SAMPLE 2134-2137M

5.0 5.0 5.5 5.5 6.0 6.0 6.0 6.5 6.5 6.5
7.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.0-7.0	7
BLEACHED OR CAVED	5.0-5.5	4
STAINED OR REWORKED	-	0



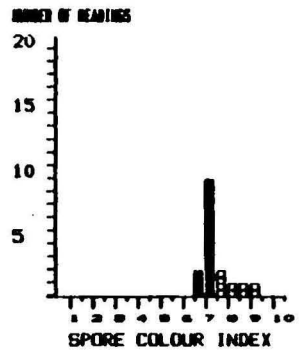
CAPE RANGE-2

IN SITU POPULATION

SAMPLE 2254-2258M

6.5 6.5 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0
7.0 7.5 7.5 8.0 8.5 9.0

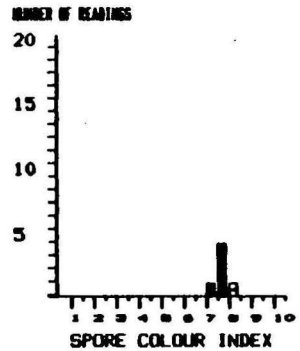
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.5-7.0	11
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	7.5-9.0	5



SAMPLE 2386-2391M

7.0 7.5 7.5 7.5 7.5 8.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	7.0-7.5	5
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	8.0-8.0	1



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Appendix 1c

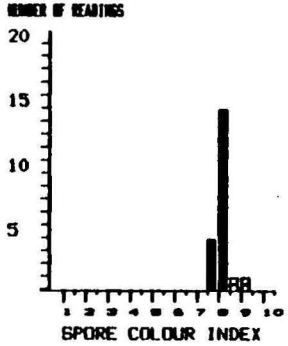
CAPE RANGE-2

IN SITU POPULATION

SAMPLE 2500-2503M

7.5 7.5 7.5 7.5 8.0 8.0 8.0 8.0 8.0 8.0
8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.5 9.0

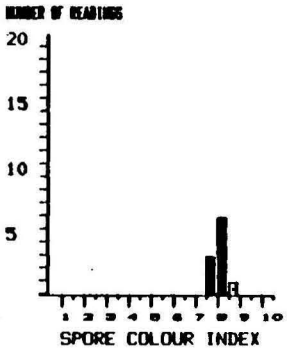
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	7.5-8.0	18
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	8.5-9.0	2



SAMPLE 2589-2593M

7.5 7.5 7.5 8.0 8.0 8.0 8.0 8.0 8.0 8.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	7.5-8.0	9
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	8.5-8.5	1



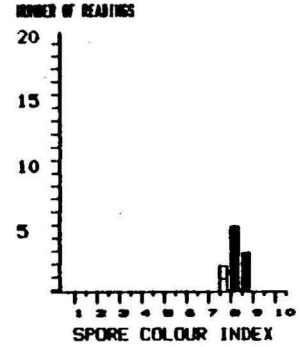
CAPE RANGE-2

IN SITU POPULATION

SAMPLE 2752-2753M

7.5 7.5 8.0 8.0 8.0 8.0 8.0 8.5 8.5 8.5

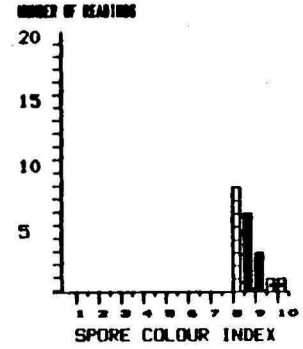
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	8.0-8.5	8
BLEACHED OR CAVED	7.5-7.5	2
STAINED OR REWORKED	-	0



SAMPLE 2918-2919M

8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.5 8.5
8.5 8.5 8.5 8.5 9.0 9.0 9.0 9.5 10.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	8.5-9.0	9
BLEACHED OR CAVED	8.0-8.0	8
STAINED OR REWORKED	9.5-10.0	2



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Appendix 1d

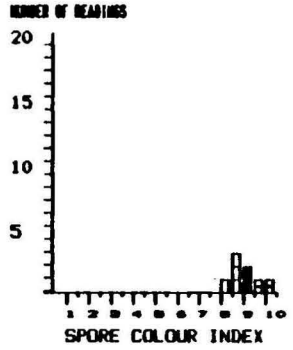
CAPE RANGE-2

IN SITU POPULATION

SAMPLE 3125-3128M

8.0 8.5 8.5 8.5 9.0 9.0 9.5 10.0

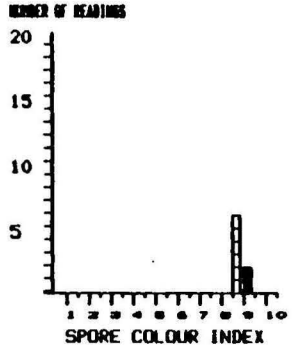
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	9.0-9.0	2
BLEACHED OR CAVED	8.0-8.5	4
STAINED OR REWORKED	9.5-10.0	2



SAMPLE 3270-3272M

8.5 8.5 8.5 8.5 8.5 8.5 9.0 9.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	9.0-9.0	2
BLEACHED OR CAVED	8.5-8.5	6
STAINED OR REWORKED	-	0



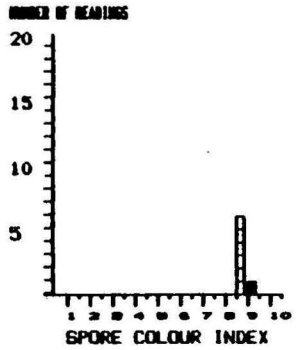
CAPE RANGE-2

IN SITU POPULATION

SAMPLE 3477-3478M

8.5 8.5 8.5 8.5 8.5 8.5 9.0

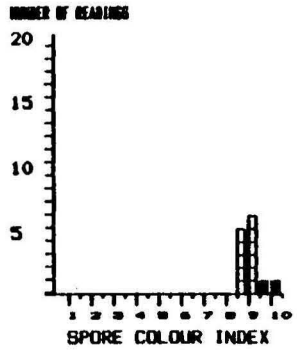
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	9.0-9.0	1
BLEACHED OR CAVED	8.5-8.5	6
STAINED OR REWORKED	-	0



SAMPLE 3696-3699M

8.5 8.5 8.5 8.5 8.5 9.0 9.0 9.0 9.0 9.0
9.0 9.5 10.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	9.5-10.0	2
BLEACHED OR CAVED	8.5-9.0	11
STAINED OR REWORKED	-	0



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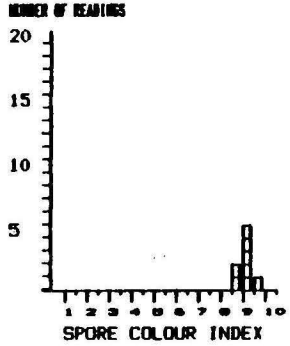
CAPE RANGE-2

IN SITU POPULATION

SAMPLE 3964-3967M

8.5 8.5 9.0 9.0 9.0 9.0 9.0 9.5

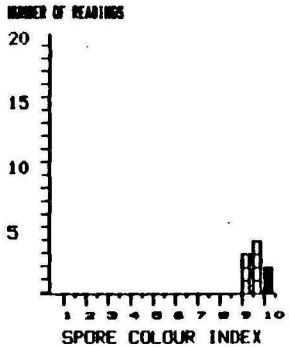
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	-	0
BLEACHED OR CAVED	8.5-9.5	8
STAINED OR REWORKED	-	0



SAMPLE 4276-4279M

9.0 9.0 9.0 9.5 9.5 9.5 9.5 10.0 10.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	10.0-10.0	2
BLEACHED OR CAVED	9.0-9.5	7
STAINED OR REWORKED	-	0



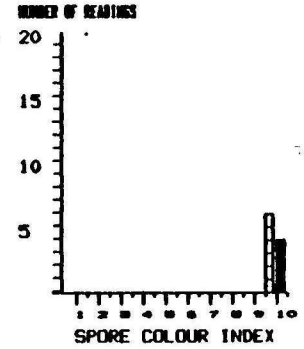
CAPE RANGE-2

IN SITU POPULATION

SAMPLE 4482-4484M

9.5 9.5 9.5 9.5 9.5 9.5 10.0 10.0 10.0 10.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	10.0-10.0	4
BLEACHED OR CAVED	9.5-9.5	6
STAINED OR REWORKED	-	0



Appendix 1e

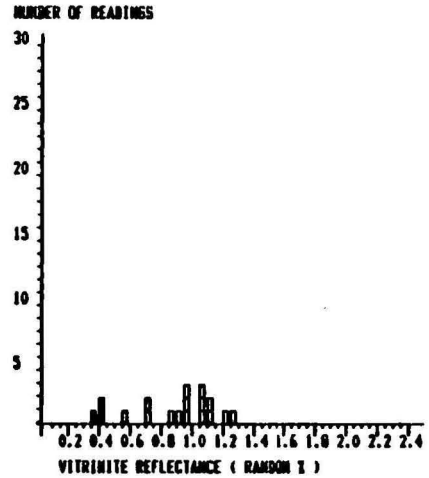
Robertson Research

CAPE RANGE-2

SAMPLE 1210-1217M

0.39 0.40 0.41 0.56 0.70 0.70 0.87 0.92 0.97 0.97
0.98 1.06 1.08 1.09 1.13 1.13 1.20 1.28

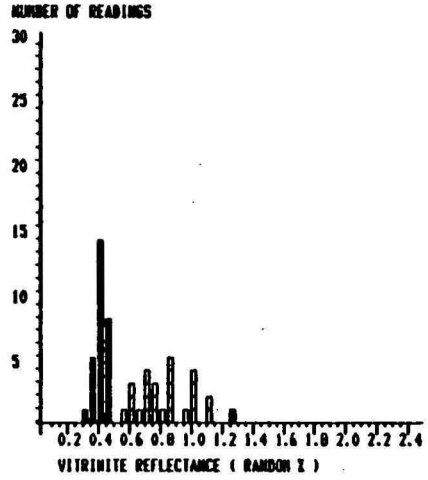
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.39-0.41	3	0.40	0.01
INERTINITE/REWORKED	0.56-1.28	15	0.98	0.20



SAMPLE 1375-1380M

0.34 0.36 0.37 0.37 0.38 0.39 0.40 0.40 0.40 0.40
0.41 0.41 0.41 0.42 0.42 0.43 0.43 0.43 0.43 0.44
0.45 0.46 0.46 0.46 0.47 0.48 0.48 0.49 0.59 0.61
0.61 0.64 0.67 0.71 0.71 0.74 0.74 0.76 0.77 0.79
0.83 0.85 0.87 0.88 0.88 0.89 0.99 1.01 1.02 1.02
1.03 1.10 1.13 1.26

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.34-0.49	28	0.42	0.04
INERTINITE/REWORKED	0.59-1.26	26	0.85	0.18

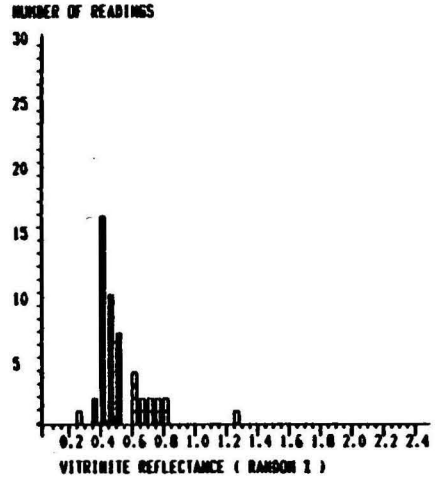


CAPE RANGE-2

SAMPLE 1605-1608M

0.28 0.38 0.39 0.40 0.41 0.41 0.41 0.42 0.42 0.42
0.43 0.43 0.43 0.43 0.44 0.44 0.44 0.44 0.44 0.45
0.45 0.45 0.46 0.47 0.47 0.48 0.48 0.48 0.49 0.50
0.50 0.50 0.50 0.53 0.54 0.54 0.60 0.61 0.62 0.63
0.65 0.67 0.70 0.71 0.75 0.77 0.80 0.83 1.29

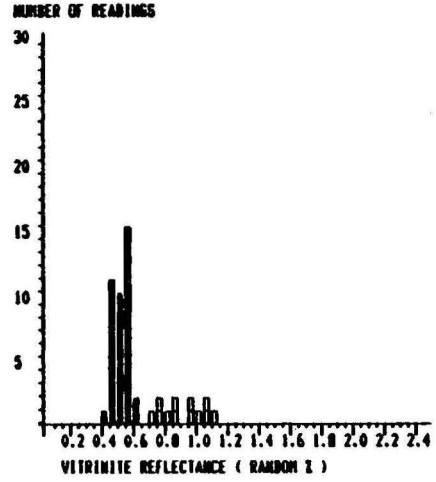
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.38-0.54	35	0.45	0.04
LIPTINITE/CAVINGS	0.28-0.28	1	0.28	
INERTINITE/REWORKED	0.60-1.29	13	0.74	0.18



SAMPLE 1761-1763M

0.44 0.45 0.45 0.46 0.46 0.47 0.47 0.48 0.49 0.49
0.49 0.49 0.50 0.50 0.50 0.51 0.51 0.51 0.52 0.54
0.54 0.54 0.55 0.55 0.55 0.56 0.56 0.56 0.56 0.56
0.56 0.57 0.57 0.57 0.58 0.59 0.59 0.61 0.63 0.74
0.75 0.77 0.84 0.89 0.89 0.98 0.99 1.01 1.05 1.07
1.11

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.44-0.63	39	0.53	0.05
INERTINITE/REWORKED	0.74-1.11	12	0.92	0.13



Appendix 2a

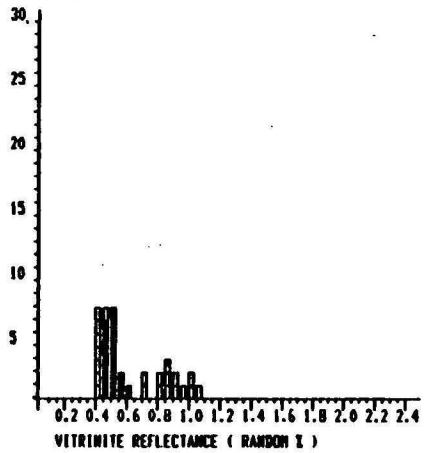
Robertson Research

CAPE RANGE-2

SAMPLE 1989-1992M

0.41 0.42 0.42 0.42 0.44 0.44 0.44 0.45 0.48 0.48
0.49 0.49 0.49 0.49 0.50 0.51 0.51 0.52 0.52 0.52
0.54 0.55 0.57 0.61 0.71 0.72 0.80 0.81 0.85 0.88
0.88 0.92 0.93 0.95 1.02 1.04 1.06

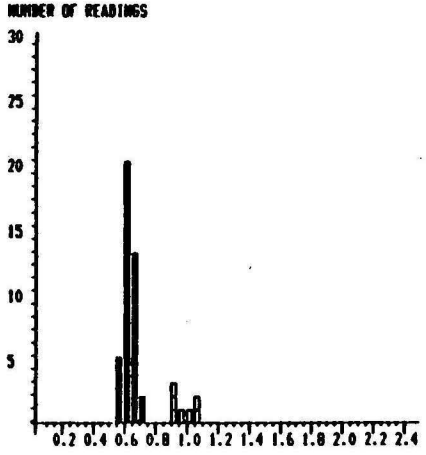
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.48-0.61	16	0.52	0.04
LIPTINITE/CAVINGS	0.41-0.45	8	0.43	0.01
INERTINITE/REWORKED	0.71-1.06	13	0.89	0.11



SAMPLE 2134-2137M

0.58 0.58 0.59 0.59 0.59 0.60 0.60 0.60 0.60 0.60
0.61 0.61 0.61 0.62 0.62 0.62 0.62 0.62 0.63 0.63
0.64 0.64 0.64 0.64 0.64 0.65 0.65 0.66 0.66 0.66
0.66 0.66 0.66 0.67 0.67 0.68 0.68 0.68 0.70 0.74
0.90 0.91 0.93 0.96 1.00 1.08 1.09

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.58-0.74	40	0.64	0.04
INERTINITE/REWORKED	0.90-1.09	7	0.98	0.08

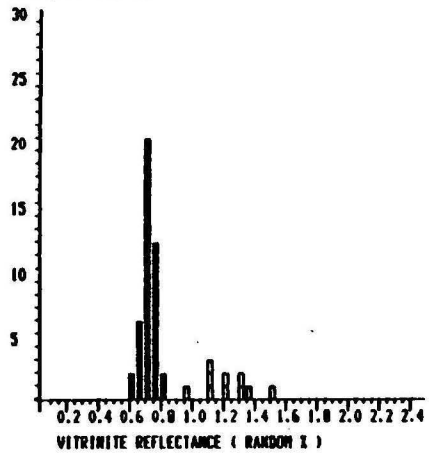


CAPE RANGE-2

SAMPLE 2254-2258M

0.60 0.60 0.65 0.65 0.67 0.68 0.69 0.69 0.70 0.70
0.70 0.70 0.71 0.71 0.71 0.72 0.72 0.73 0.74 0.74
0.74 0.74 0.74 0.74 0.74 0.74 0.74 0.74 0.75 0.75
0.76 0.76 0.76 0.76 0.77 0.77 0.77 0.78 0.78 0.79
0.80 0.80 0.99 1.10 1.10 1.13 1.21 1.24 1.32 1.34
1.38 1.54

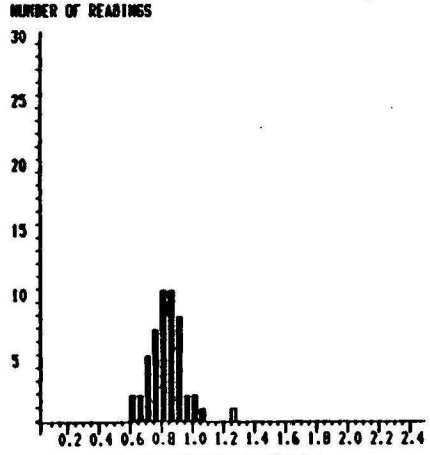
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.60-0.80	42	0.73	0.05
INERTINITE/REWORKED	0.99-1.54	10	1.24	0.16



SAMPLE 2386-2391M

0.63 0.64 0.65 0.66 0.70 0.71 0.72 0.72 0.73 0.75
0.75 0.76 0.76 0.77 0.77 0.78 0.80 0.81 0.81 0.81
0.82 0.82 0.83 0.83 0.84 0.84 0.85 0.85 0.86 0.86
0.86 0.86 0.86 0.87 0.88 0.88 0.90 0.92 0.92 0.92
0.93 0.93 0.93 0.94 0.95 0.95 1.02 1.03 1.09 1.29

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.63-1.09	49	0.83	0.10
INERTINITE/REWORKED	1.29-1.29	1	1.29	



Appendix 2b

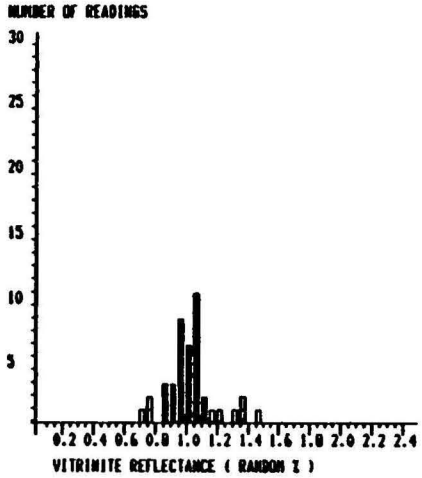
Robertson Research

CAPE RANGE-2

SAMPLE 2500-2503M

0.71 0.78 0.79 0.85 0.85 0.87 0.90 0.92 0.94 0.95
0.95 0.96 0.96 0.97 0.98 0.98 0.98 1.01 1.02 1.02
1.03 1.03 1.04 1.05 1.05 1.05 1.05 1.07 1.07 1.08
1.08 1.08 1.08 1.10 1.11 1.19 1.20 1.32 1.35 1.37
1.47

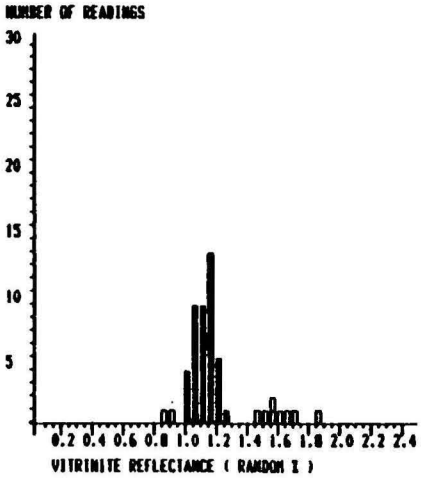
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.85-1.11	32	1.00	0.07
LIPTINITE/CAVINGS	0.71-0.79	3	0.76	0.04
INERTINITE/REWORKED	1.19-1.47	6	1.32	0.11



SAMPLE 2589-2593M

0.88 0.94 1.01 1.01 1.02 1.03 1.06 1.06 1.06 1.06
1.06 1.08 1.08 1.09 1.09 1.10 1.10 1.10 1.10 1.11
1.12 1.12 1.14 1.14 1.15 1.15 1.16 1.16 1.16 1.16
1.17 1.17 1.17 1.17 1.19 1.19 1.19 1.20 1.21 1.21
1.22 1.23 1.27 1.49 1.50 1.58 1.59 1.62 1.65 1.74
1.88

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.01-1.27	41	1.13	0.06
LIPTINITE/CAVINGS	0.88-0.94	2	0.91	0.04
INERTINITE/REWORKED	1.49-1.88	8	1.63	0.13

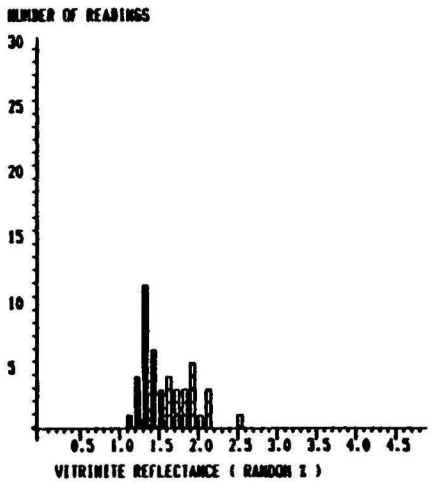


CAPE RANGE-2

SAMPLE 2752-2753M

1.15 1.22 1.24 1.27 1.28 1.30 1.31 1.32 1.33 1.34
1.35 1.35 1.35 1.37 1.38 1.39 1.40 1.43 1.43 1.45
1.46 1.49 1.50 1.53 1.54 1.60 1.66 1.66 1.67 1.71
1.77 1.79 1.81 1.82 1.86 1.90 1.91 1.91 1.96 1.96
2.00 2.12 2.14 2.15 2.50

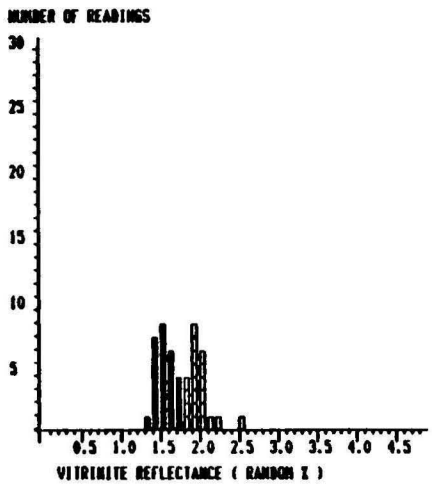
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.15-1.54	25	1.37	0.10
INERTINITE/REWORKED	1.60-2.50	20	1.89	0.22



SAMPLE 2918-2919M

1.38 1.40 1.42 1.42 1.45 1.46 1.48 1.49 1.50 1.52
1.52 1.54 1.55 1.57 1.58 1.59 1.60 1.60 1.62 1.63
1.65 1.66 1.71 1.74 1.75 1.76 1.81 1.85 1.86 1.88
1.91 1.92 1.92 1.94 1.95 1.96 1.97 1.97 2.00 2.01
2.01 2.05 2.09 2.09 2.10 2.27 2.50

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.38-1.76	26	1.56	0.11
INERTINITE/REWORKED	1.81-2.50	21	2.00	0.15



Appendix 2c

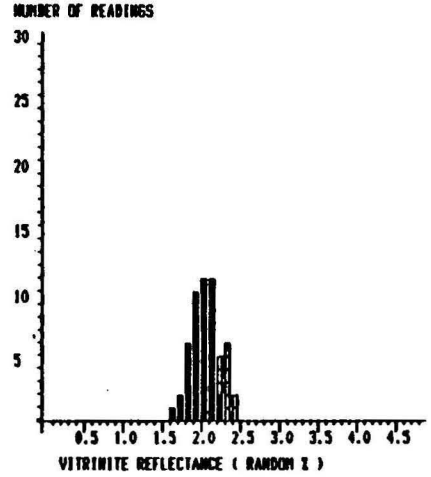
Robertson Research

CAPE RANGE-2

SAMPLE 3125-3128M

1.64 1.75 1.78 1.83 1.84 1.85 1.87 1.87 1.88 1.91
1.92 1.93 1.93 1.94 1.95 1.96 1.98 1.99 1.99 2.00
2.01 2.01 2.01 2.01 2.02 2.02 2.03 2.07 2.09 2.09
2.10 2.10 2.10 2.12 2.12 2.15 2.16 2.17 2.17 2.19
2.19 2.20 2.22 2.25 2.27 2.29 2.30 2.30 2.34 2.36
2.37 2.38 2.42 2.48

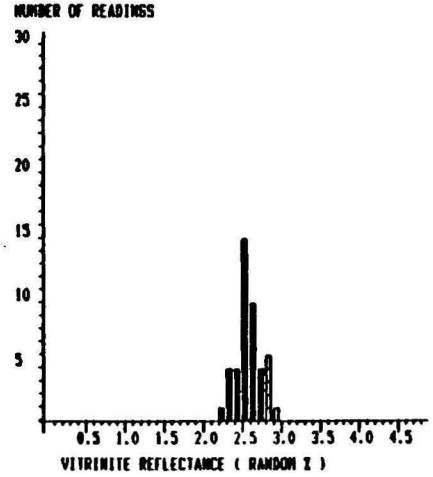
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.64-2.22	43	2.00	0.13
INERTINITE/REWORKED	2.25-2.48	11	2.34	0.07



SAMPLE 3270-3272M

2.25 2.32 2.36 2.38 2.39 2.40 2.44 2.45 2.48 2.50
2.50 2.51 2.52 2.53 2.55 2.55 2.55 2.56 2.56 2.57
2.58 2.58 2.59 2.60 2.60 2.61 2.61 2.65 2.67 2.67
2.68 2.68 2.70 2.71 2.77 2.78 2.82 2.84 2.86 2.87
2.87 2.92

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	2.25-2.78	36	2.55	0.12
INERTINITE/REWORKED	2.82-2.92	6	2.86	0.03

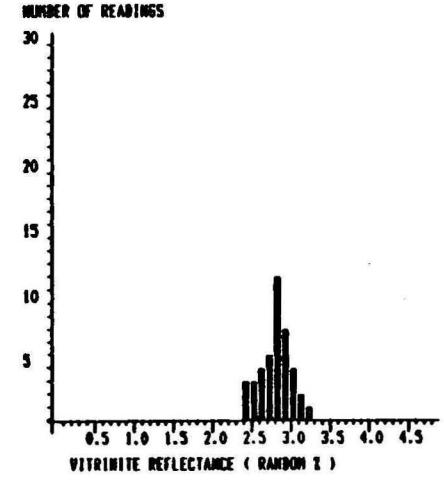


CAPE RANGE-2

SAMPLE 3477-3478M

2.43 2.46 2.48 2.50 2.57 2.58 2.65 2.67 2.68 2.69
2.70 2.72 2.76 2.78 2.79 2.80 2.80 2.82 2.82 2.83
2.84 2.85 2.86 2.88 2.89 2.89 2.90 2.91 2.91 2.93
2.94 2.95 2.97 3.00 3.02 3.03 3.06 3.12 3.16 3.20

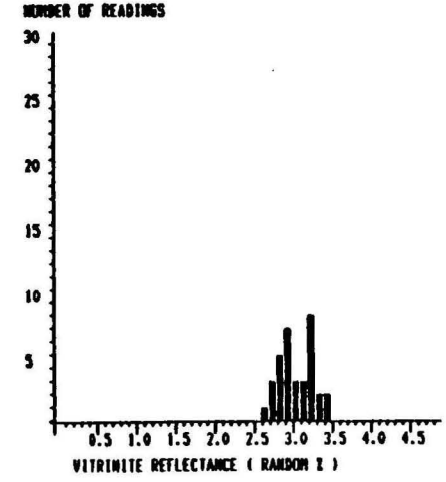
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	2.43-3.20	40	2.82	0.19



SAMPLE 3696-3699M

2.69 2.70 2.73 2.78 2.81 2.81 2.82 2.83 2.89 2.91
2.91 2.93 2.94 2.96 2.97 2.99 3.02 3.04 3.08 3.11
3.11 3.17 3.20 3.21 3.21 3.22 3.23 3.27 3.28 3.28
3.31 3.31 3.42 3.45

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	2.69-3.45	34	3.05	0.21



Appendix 2d

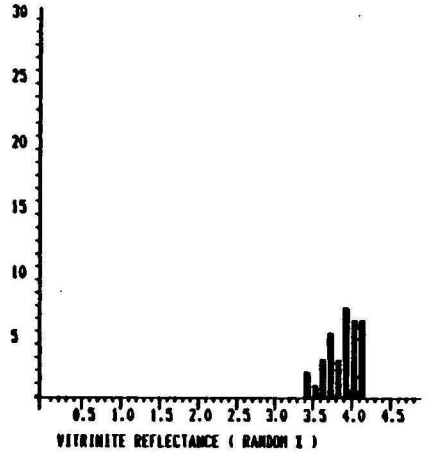
Robertson Research

CAPE RANGE-2

SAMPLE 3964-3967M

3.43 3.49 3.51 3.60 3.61 3.62 3.70 3.70 3.74 3.77
3.79 3.82 3.83 3.85 3.90 3.90 3.93 3.94 3.94 3.95
3.98 4.01 4.03 4.06 4.07 4.07 4.09 4.10 4.11 4.12
4.12 4.13 4.17

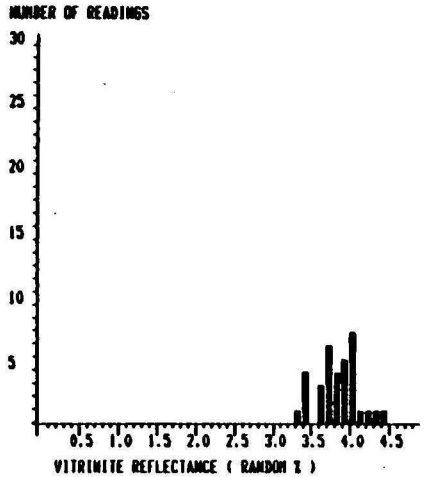
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	3.43-4.17	33	3.88	0.21



SAMPLE 4276-4279M

3.31 3.40 3.44 3.45 3.49 3.60 3.60 3.65 3.71 3.73
3.73 3.76 3.76 3.77 3.84 3.85 3.86 3.89 3.90 3.91
3.93 3.97 3.99 4.00 4.01 4.01 4.01 4.02 4.03 4.03
4.11 4.26 4.35 4.40

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	3.31-4.40	34	3.85	0.26

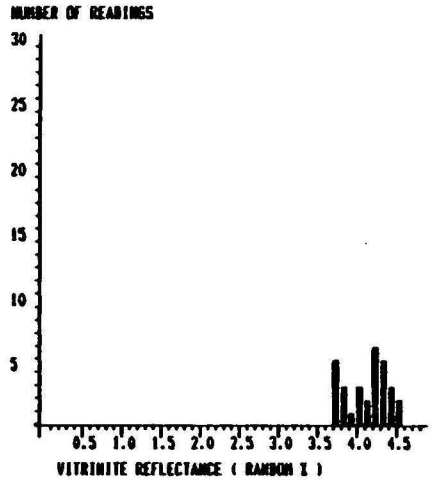


CAPE RANGE-2

SAMPLE 4402-4404M

3.70 3.71 3.73 3.75 3.79 3.82 3.84 3.86 3.98 4.01
4.05 4.07 4.11 4.16 4.24 4.26 4.27 4.28 4.29 4.29
4.30 4.31 4.34 4.34 4.35 4.40 4.40 4.48 4.57 4.58

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	3.70-4.58	30	4.14	0.27



Appendix 2e

DEPUCH-1 WELL

SUMMARY

Geochemical analysis of the interval 1560m to 4240m of the Depuch-1 well shows that the well section is immature to around 1800m, early mature between 1800m and 3100m and middle mature between 3100m and 4300m TD. Extrapolation of the maturity gradients to surface indicates around 400m of missing Tertiary to recent sediments above 1560m. The well section is currently at or near its maximum depth of burial.

Very good oil and gas source potential is present in the organically rich mudstones and coals in the Early to Middle Jurassic section below 2512m. Below 3100m these sources will have generated significant quantities of oil.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 18° 50' 06.6"S, 117° 55' 18.9"E.

Operator and date of drilling: Bocal, 1974.

Well status: Plugged and abandoned.

TD: 4300m.

Mud data: Seawater with high viscosity gel slugs: Seabed to 486m.
Seawater/gel/CMC/Qmix system: 486m to 1169m.
Brine/polymer system with added Drispac, Dextrid: 1169m to 2621m.
Seawater/gel with CMC, Dextrid, Drispac; 2621m to 4300m TD.

Casing data: 30" at 175m, 20" at 477m, $13^3/_8$" at 1158m, $9^5/_8$" at 2613m.

BHT data: 53°C at 1167m, stopped circulation time unknown.
84°C at 2612m, stopped circulation time unknown.
126°C at 4288m, stopped circulation time unknown.

Elevation: RT 10m ASL.

Water depth: 143m.

Interval analysed: 1560m to 4240m.

DEPUCH-1 WELL

Age of interval analysed:

	Depths (in metres)
Tertiary	1560-1636
Late Cretaceous	1636-1952
Early-Late Cretaceous	1952-2133
Early Cretaceous	2133-2512
Early-Middle Jurassic	2512-4240

Sample type and quality: Dried ditch cuttings of generally good quality for geochemical analyses.

Maturation data quality:

a) Vitrinite Reflectance: The results used are taken from the Phase I report, data quality unknown.

b) Spore Colour Index: The results used are taken from, the Phase I report, data quality unknown.

Source rock data quality: The bulk of the data is from the Phase I study, the quality of this data is unknown. All data generated during the Phase II study are of good quality.

Gas chromatography run at: 3000m to 3015m, 3065m to 3070m, 3120m to 3125m, 3230m to 3235m, 3360m to 3365m, 3470m to 3475m, 4180m to 4190m (mudstone) and 4180m to 4190m (coal).

MATURATION (Table 1, Figures 1 and 2)

The spore colour index gradient increases from values of 3.5 SCI units at 1780m to around 6 to 6.5 SCI units at 4240m. Vitrinite reflectance values increase from 0.35% to 0.69% over the same interval. The non-linearity present in the maturity gradients between 2000m and 2500m is interpreted as being due to changes in thermal gradients caused by overpressuring in this interval. Extrapolation of the vitrinite reflectance gradient to surface indicates that 400m of Tertiary to Recent section is missing at the well location above 1560m. Extrapolation of the spore colour gradient to seabed indicates that the well section is at or near its maximum depth of burial.

The maturity gradients show that the well section is immature to around 1800m, early mature between 1800m and 3100m and middle mature between 3100m and 4300m TD.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

The Early to Middle Jurassic section below 2512m to 4300m TD contains a sequence of interbedded sandstones, mudstones and coals. These sediments are organically rich, the mudstones containing between 2.51% and 12.81% organic carbon. Pyrolysis analysis of the mudstones and coals shows that mudstones in the intervals 2587m to 3070m, 3210m to 3365m, 3470m to 3475m, 3475m to 3740m and 4180m to 4240m contain abundant terrestrially derived waxy sapropel mixed with smaller amounts of algally derived kerogen. Coals in the interval also contain abundant waxy kerogen. These coals and mudstones have very good oil and gas source potential and where middle mature, below 3100m, will have generated significant quantities of oil.

Extraction of these source rocks shows that they contain abundant extractable material mostly made up of polar compounds. The alkane gas chromatograms of the extracts show hydrocarbon distributions typical of early mature to mature extracts derived from sources rich in terrestrially derived waxy kerogens.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

Mudstones analysed in the Cretaceous section contain average to above average organic carbon contents of between 1.31% and 2.18%. Pyrolysis analysis of these samples shows low hydrogen indices of between 11 and 63, indicating that they contain predominantly inertinitic kerogen. These sediments have no oil or gas source potential.

WELL: DEPUCH-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
153		**Tertiary Undiff**									
1560-1580	Ctg	MDST, med-lt gy/lt gy + 20% LST, wht/v lt gy	*		50	40	10				
1636		**Miria Marl**									
1780-1800	"	MDST, med-dk gy + 20% MDST, ol gy-dk gn gy, v calc	?3.5	0.35(30)	60	30	10	90	10	*	*
1855		**Toolonga Calcilutite**									
1952		**Gearle Siltstone**									
2133		**Muderong Shale**									
2200-2220	"	MDST, med dk gy + mnr MDST, gn-gy, v calc	4.0-4.5	0.42(16)	70	25	5	80	20	*	*
2360		**Barrow Gp**									
2400-2420	P	MDST, med dk gy						70	30	*	*
2450-2470	Ctg	MDST, lt ol-gy + 30% MDST, med-dk gy	4.5-5.0	*	40	40	20	60	40	*	*
2512		**Learmouth Fm**									
2840-2860	P	COAL		0.51(30)							
	P	MDST, med-dk gy, slty						50	15	*	35
3000-3015	P	MDST, med-dk gy						60	20	5	15
	P	COAL, blk						55	10	15	20
3065-3070	P	MDST, dk gy, v carb						50	10	5	35
3120-3125	P	MDST, med-dk gy						40	55	*	5
	P	COAL, blk						65	10	5	20
3150-3170	Ctg	SST, lt gy/lt ol gy + 25% MDST, med-dk gy + 15% COAL	5.0	0.55(21)	50	30	20				
3210-3215	P	MDST, med-dk gy						50	35	5	10
	P	COAL, blk						60	15	5	20
3230-3235	P	MDST, dk gy-blk, v carb						30	10	15	45
3310-3320	P	MDST, dk gy						40	40	5	15
3335-3345	P	MDST, med-dk gy						40	40	5	15
3360-3365	P	MDST, med-dk gy						40	40	5	15
	P	COAL, blk						55	5	5	35
3420-3425	P	MDST, dk gy, occ carb						35	60	*	5
3470-3475	P	MDST, dk gy						80	10	*	10
	P	COAL						50	10	10	30
3530-3550	Ctg	SST, lt gy/lt ol gy + 15% MDST, med-dk gy + mnr COAL	5.5	0.59(16)	70	20	10				

Table 1a Maturity and Kerogen Composition Data

WELL: DEPUCH-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
3610-3620	P	MDST, dk gy-blk, carb						25	60	10	5
3735-3740	P	MDST, a/a						35	45	5	15
3760-3780	Ctg	SST, lt gy/lt ol gy + 30% MDST, med dk gy + 10% COAL	6.0		30	50	20				
	P	MDST, a/a						55	35	5	5
3780-3785	P	MDST, dk gy						45	45	5	5
3800		Middle Dingo Claystone									
3850-3870	P	COAL		0.62(13)							
4050-4070	Ctg	SST, lt gy/lt ol gy + 45% MDST, med-dk gy + 5% COAL	6.0-6.5		45	40	15				
4180-4190	P	MDST, dk gy-blk, carb						30	20	*	50
	P	COAL, blk						35	20	*	45
4220-4240	P	COAL		0.67(19)							

Table 1b Maturity and Kerogen Composition Data

WELL: DEPUCH-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE °C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g T.O.C.)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T.O.C.)	EXTRACT COMPOSITION (%)		
													SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
153		**Tertiary Undiff**													
1560-1590	Ctg	MDST, med-lt gy/lt gy, v calc + 20% LST, wht/v lt gy	0.69												
1636		**Miria Marl**													
1680-1700	"	MDST, ol-gy/dk gn-gy, v calc + 40% MDST, med-dk gy	0.93												
1730-1750	"	MDST, med-dk-gy + 20% MDST, ol-gy-dk gn-gy, v calc	1.28												
1780-1800	"	MDST, med-dk gy + 20% MDST, ol-gy-dk gy-gy, v calc	1.31	432	11	194	0.00	0.20							
1830-1850	"	MDST, ol gy-dk gn-gy, v v calc + 40% MDST, med-dk gy	-												
	P	MDST, a/a	1.30	*	*	70	*	*							
1855		**Toolonga calcilutite**													
1952		**Gearle Siltstone**													
2050-2070	Ctg	MDST, lt gy/lt gn-gy, v calc + mnr MDST, a/a	0.46												
2133		**Maderong Shale**													
2150-2170	"	MDST, med-dk gy + mnr MDST, gn-gy, v calc	-												
	P	MDST, gn-gy, v calc	0.89												
2200-2220	Ctg	MDST, a/a + mnr MDST, a/a	2.22	429	37	109	0.10	0.89							
2250-2270	"	MDST, a/a + mnr MDST, a/a	1.15												
2300-2320	"	MDST, a/a + mnr MDST, a/a	1.84												
2360		**Barrow Gp**													
2350-2370	"	MDST, med-dk gy + 50% MDST, med-lt gy/gn-gy, calc	0.72												
2400-2420	"	MDST, lt ol-gy, calc + 40% MDST, med-dk gy	-												
	P	MDST, med-dk gy	2.18	434	54	25	0.00	1.20							
2450-2470	Ctg	MDST, lt ol-gy, calc + 30% MDST, med-dk gy	1.18	434	63	181	0.10	0.78							
2512		**Learmouth Fm**													
2500-2520	"	MDST, a/a + 40% MDST, a/a	1.77												
2840-2860	"	SST, lt gy/lt-ol gy + 25% MDST, med-dk gy, slty + 15% COAL	-												
	"	MDST, med-dk gy, slty	2.51	436	265	17	0.06	7.02							

Table 2a Chemical Analysis Data

WELL: DEPUCH-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T.O.C.)	HYDROCARBONS (ppm) .	HYDROCARBONS (mg/g T.O.C.)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2980-3000	Ctg	SST, lt gy/lt ol-gy + 30% MDST, med-dk gy, occ v slty + mnr COAL	-												
3000-3015	Ctg	SST + 30% MDST, med-dk gy + mnr COAL, blk	-												
	P	MDST, med-dk gy	11.89	433	167	15	0.02	20.26							
	P	COAL, blk	46.35	427	241	12	0.02	114.50	23225	50	10450	23	24	21	55
3065-3070	Ctg	SND + 20% MDST, dk gy, v carb	-												
	P	MDST, dk-gy, v carb	6.91	434	290	17	0.02	20.43	3820	55	1620	23	25	17	58
3120-3125	Ctg	SND + 20% MDST, med-dk gy + mnr COAL, blk	-												
	P	MDST, med-dk gy	2.58	435	124	57	0.04	3.33							
	P	COAL, blk	47.63	432	190	10	0.02	92.40	20380	43	7280	15	16	20	64
3150-3170	Ctg	SST, lt gy/lt ol-gy + 25% MDST, med-dk gy, slty + 15% COAL	-												
3210-3215	"	SND + 10% MDST, med-dk gy + mnr COAL, blk	-												
	P	MDST, med-dk gy	6.51	434	146	17	0.06	10.08							
	P	COAL, blk	22.08	434	171	12	0.02	38.75							
3230-3235	Ctg	SND + 10% MDST, dk gy, blk, v carb	-												
	P	MDST, a/a	12.81	433	389	17	0.01	50.58	10000	78	380	3	19	19	62
3290-3310	Ctg	SST, lt gy/lt-ol-gy + 15% MDST, med-dk gy + mnr COAL	- -												
3310-3320	"	SND + 10% MDST, dk gy	-												
	P	MDST, dk-gy	7.28	435	169	20	0.02	12.59							
3335-3345	Ctg	SST, lt gy + 40% MDST, med-dk gy	-												
	P	MDST, med-dk gy	4.82	434	187	23	0.02	9.21							
3360-3365	Ctg	SST/SND + 10% COAL, blk + 20% MDST, med-dk gy	-												
	P	MDST, med-dk gy	7.22	435	168	19	0.01	12.24							
	P	COAL, blk	47.75	436	255	11	0.01	123.55	24920	52	11115	23	21	24	55
3370-3390	Ctg	SST, lt gy/lt ol-gy + 15% MDST, med-dk gy + mnr COAL	-												
3420-3425	"	SND/SST + 10% MDST, dk gy, occ carb	-												
	P	MDST, dk gy, occ carb	6.12	438	135	47	0.03	8.48							
3470-3475	Ctg	SND + 30% MDST, dk gy + 10% COAL	-												

Table 2b Chemical Analysis Data

WELL: DEPUCH-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g TOC)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g TOC)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
3470-3475	P	MDST, dk gy	23.95	440	51	4	0.01	12.32							
	"	COAL	48.88	434	250	10	0.02	124.90	24500	50	10220	21	22	19	58
3530-3550	Ctg	SST, lt gy/lt ol-gy + 15% MDST, med-dk gy	-												
3610-3620	"	SND/SST, wht-lt gy + 50% MDST, dk gy-blk, carb	-												
	P	MDST, dk gy-blk, carb	4.15	433	200	24	0.03	8.52							
		SND/SST, wht-lt gy + 50% MDST, dk gy-blk, carb	-												
3680-3700	Ctg	SST, lt gy/lt ol-gy + 15% MDST, med-dk gy	-												
3735-3740	Ctg	SND/SST, wht-lt-gy + 70% MDST, dk gy-blk, carb	-												
	P	MDST, a/a	3.06	435	194	21	0.03	6.09							
3760-3780	Ctg	SST, lt gy/lt ol-gy + 30% MDST, med-dk gy + 10% COAL	-												
	P	MDST, med-dk gy	4.91	435	98	14	0.01	4.85							
3780-3785	Ctg	SST/SND, wht + 40% MDST, dk gy	-												
	P	MDST, dk gy	4.41	433	144	18	0.04	6.58							
3800		**Middle Dingo Claystone**													
3850-3870	Ctg	SST, lt gy/lt ol-gy + 30% MDST, med dk gy + 10% COAL + LCM	-												
3870-3875	"	SND + mnr MDST, dk gy	-												
3950-3970	"	SST, lt gy/lt ol-gy + 40% MDST, med dk gy + 10% COAL + LCM	-												
4050-4070	"	SST, a/a + 45% MDST, a/a + 5% COAL	3.77												
4110-4130	"	SST, lt ol-gy + 35% MDST, a/a + 5% COAL	10.65												
4180-4190	"	SND + 60% MDST, dk gy-blk, carb + 10% COAL, blk	4.70												
	P	MDST, dk gy-blk, carb	5.26	438	332	16	0.05	18.34	3660	70	1210	23	26	8	66
	P	COAL, blk	54.15	440	257	10	0.05	146.20	28500	53	11830	22	13	28	59
4220-4240	Ctg	SST, lt gy/lt ol-gy + 45% MDST, med dk gy + 5% COAL	5.40												

Table 2c Chemical Analysis Data

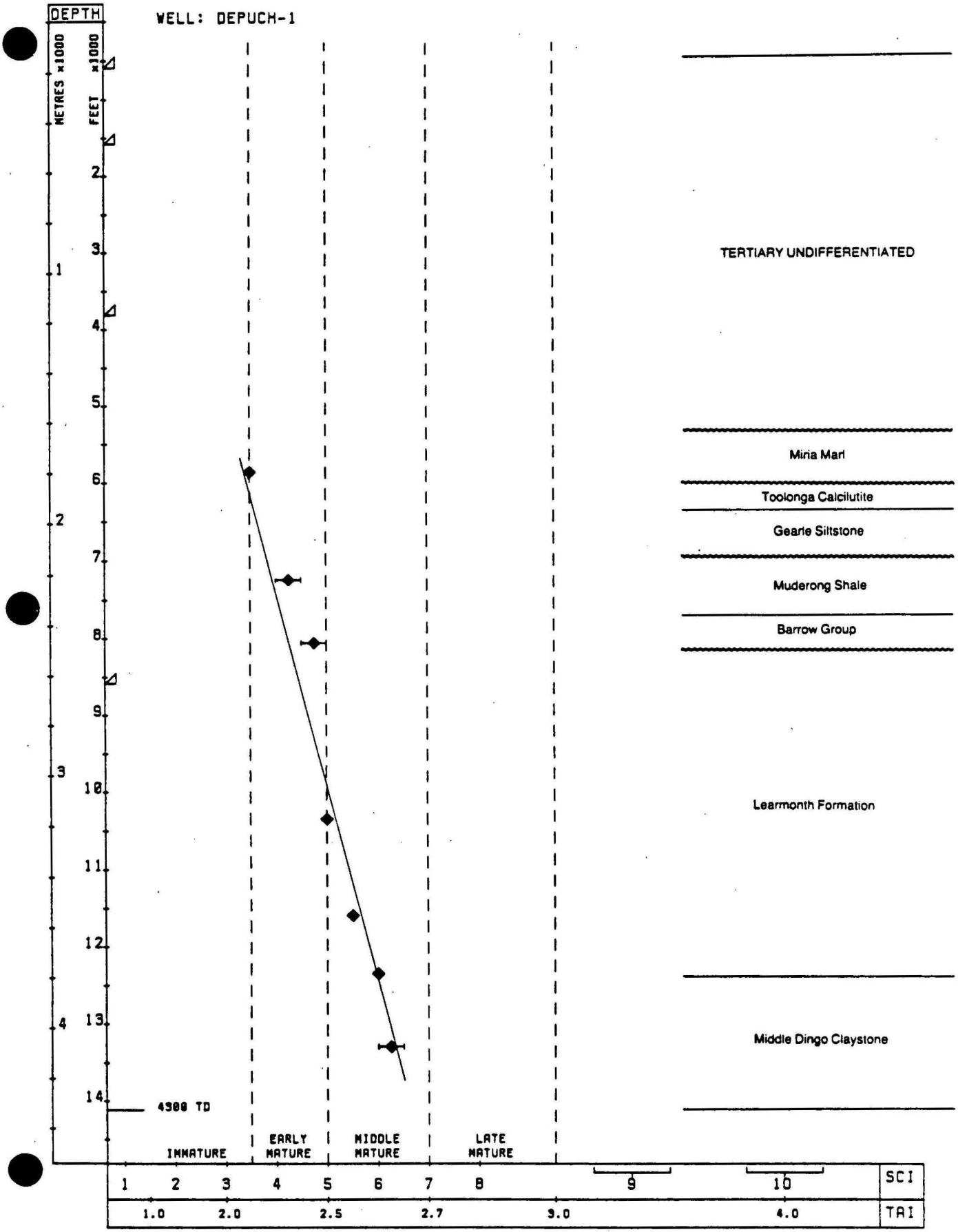


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

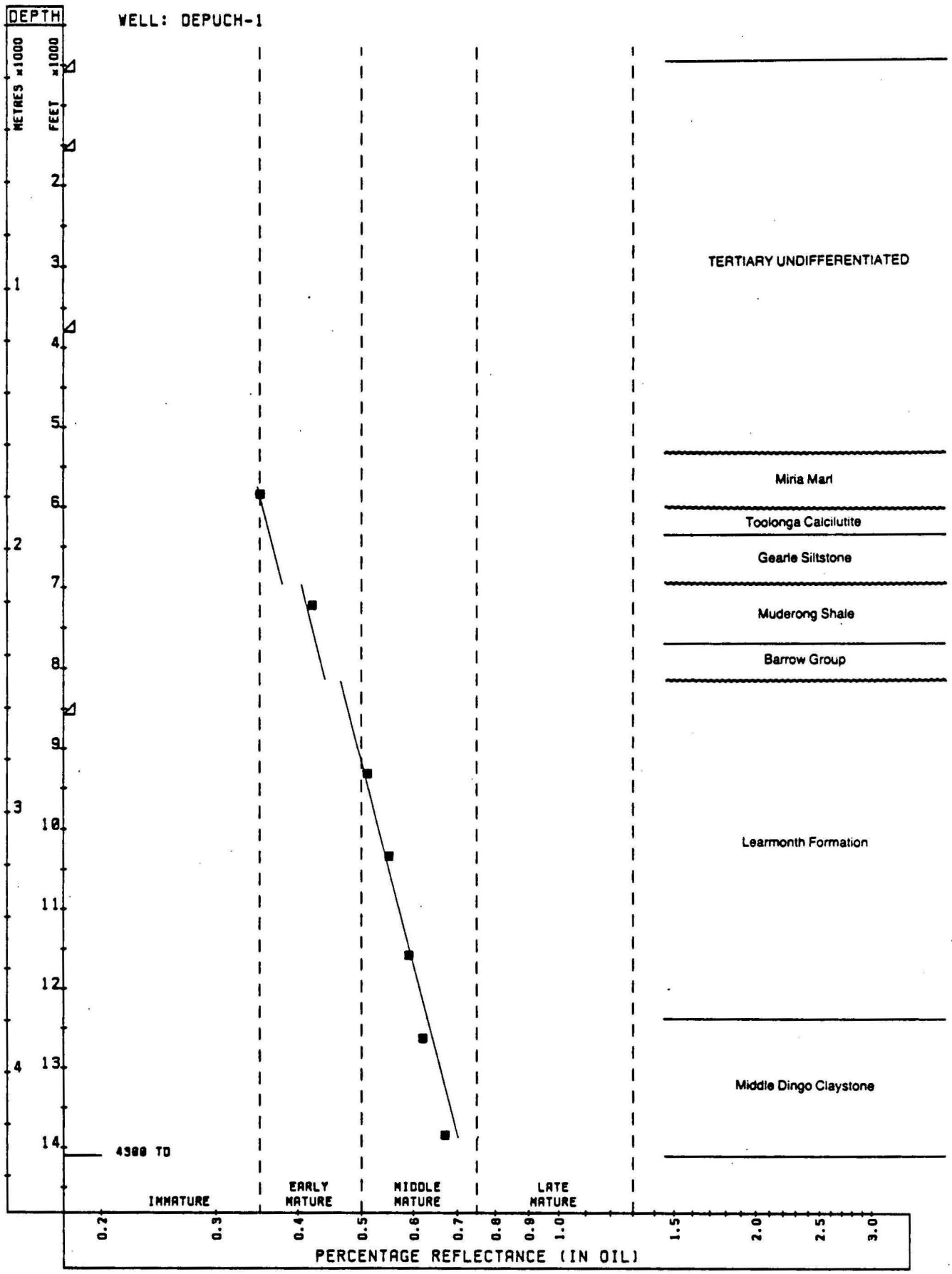
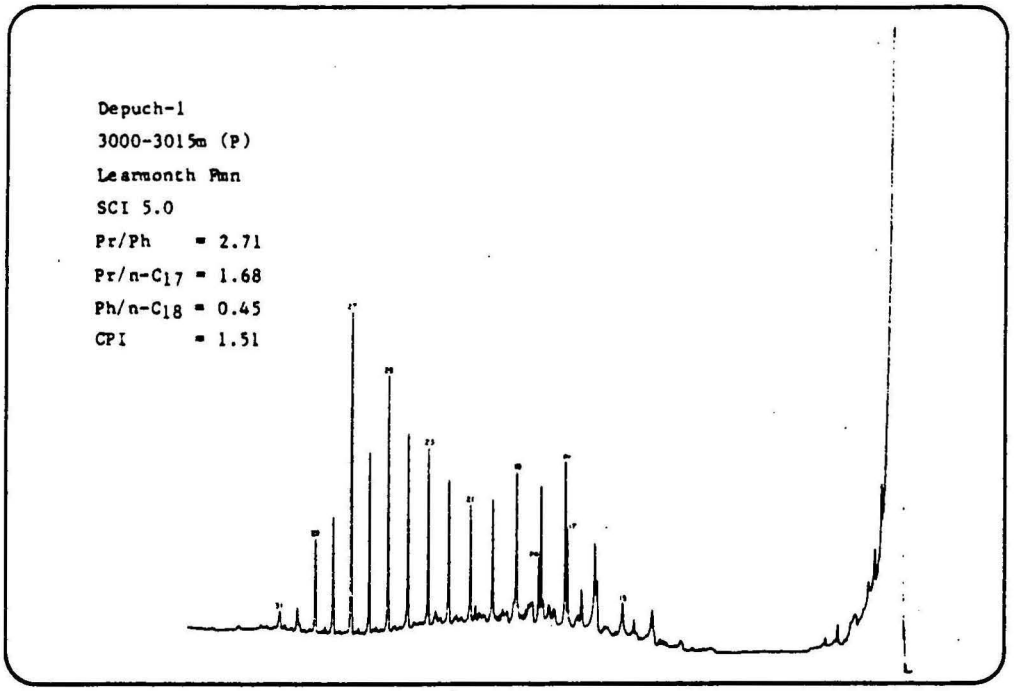
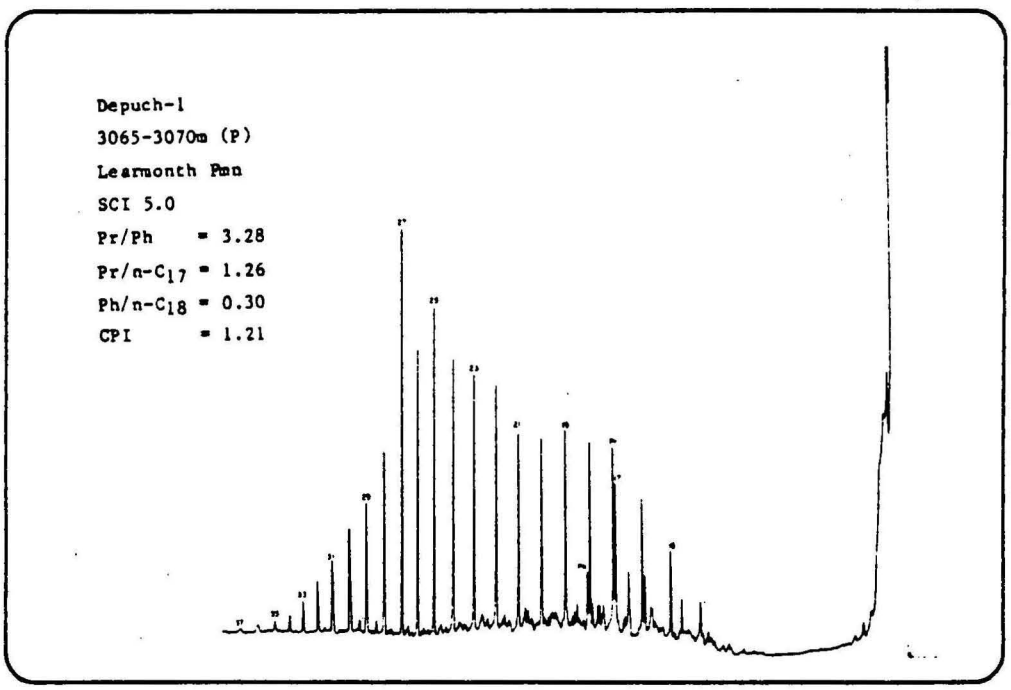


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH


Depuch-1
3000-3015m (P)
Learmonth Pmn
SCI 5.0
Pr/Ph = 2.71
Pr/n-C17 = 1.68
Ph/n-C18 = 0.45
CPI = 1.51


Depuch-1
3065-3070m (P)
Learmonth Pmn
SCI 5.0
Pr/Ph = 3.28
Pr/n-C17 = 1.26
Ph/n-C18 = 0.30
CPI = 1.21

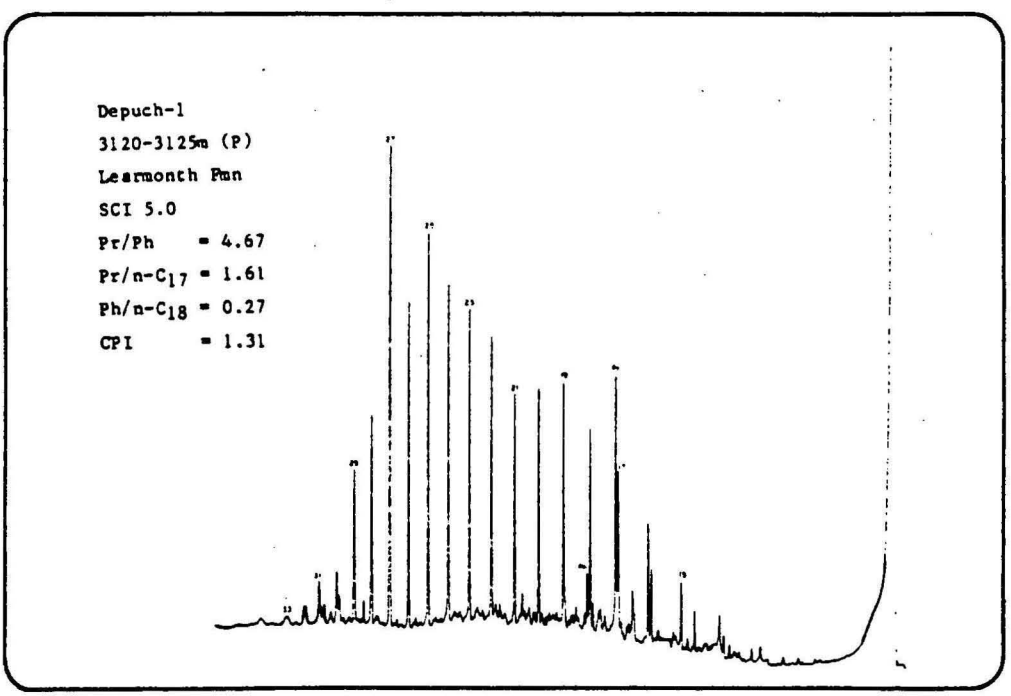
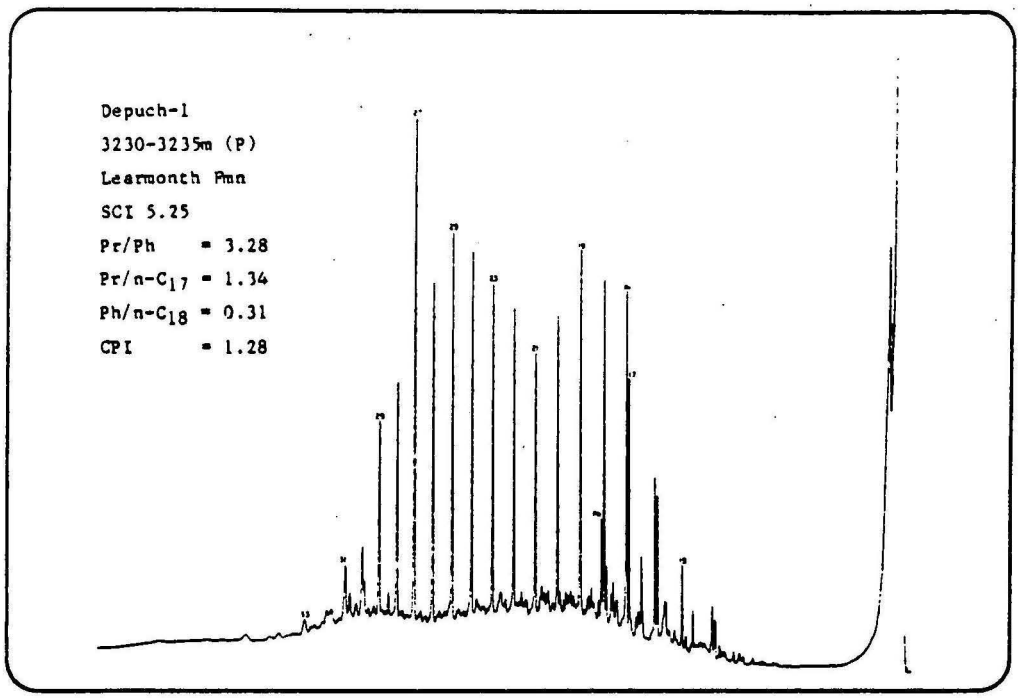
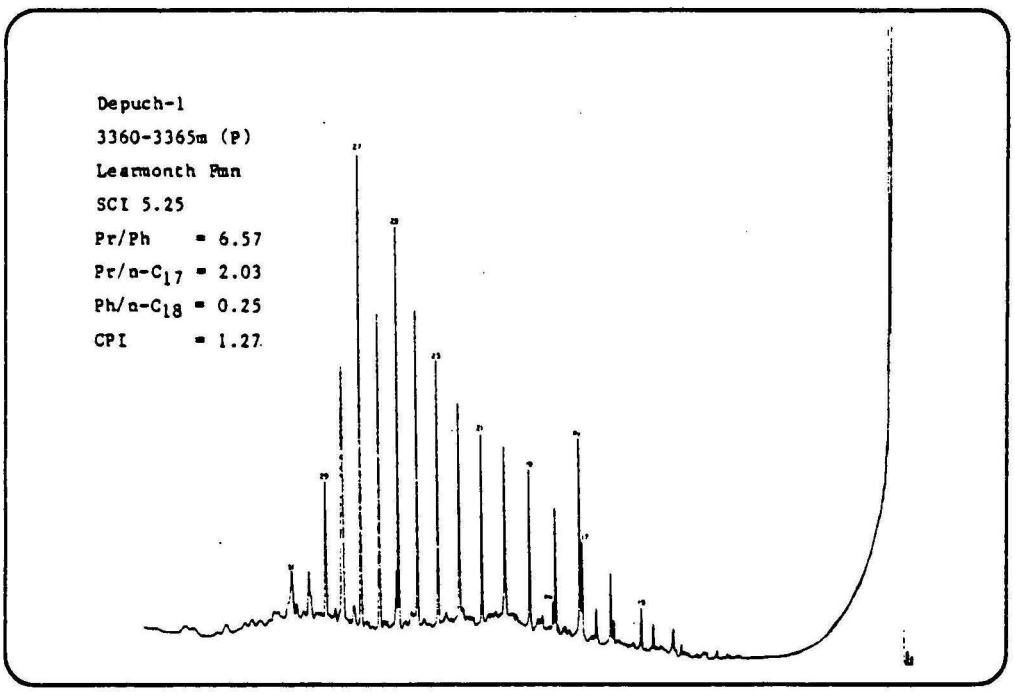

Depuch-1
3120-3125m (P)
Learmonth Pmn
SCI 5.0
Pr/Ph = 4.67
Pr/n-C17 = 1.61
Ph/n-C18 = 0.27
CPI = 1.31

Figure 3a


Depuch-1
3230-3235m (P)
Learmonth Pmn
SCI 5.25
Pr/Ph = 3.28
Pr/n-C17 = 1.34
Ph/n-C18 = 0.31
CPI = 1.28


Depuch-1
3360-3365m (P)
Learmonth Pmn
SCI 5.25
Pr/Ph = 6.57
Pr/n-C17 = 2.03
Ph/n-C18 = 0.25
CPI = 1.27

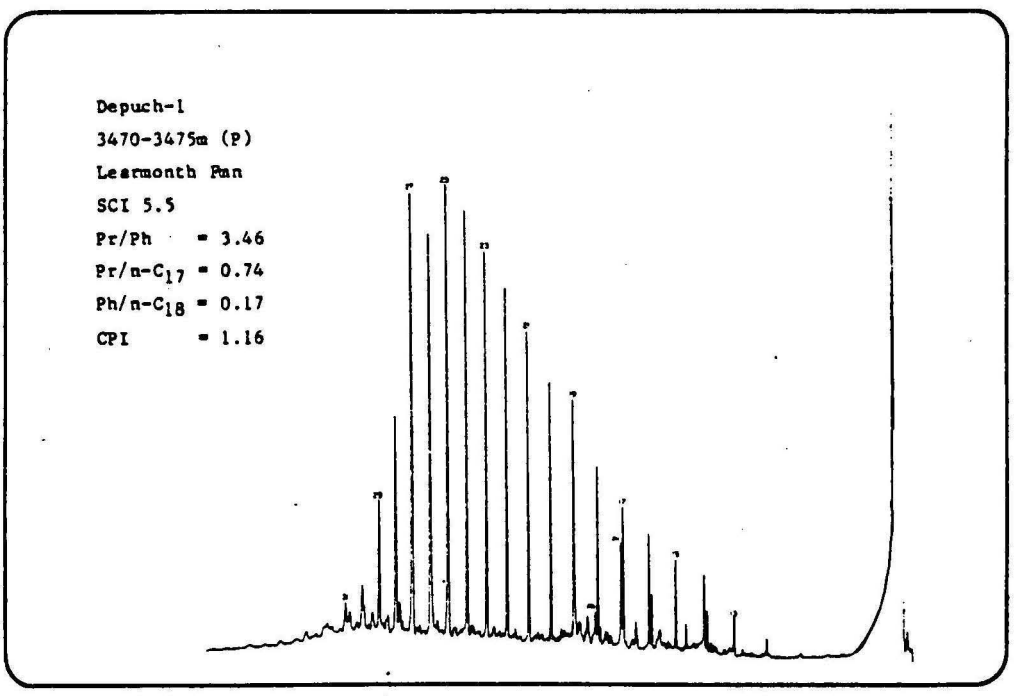
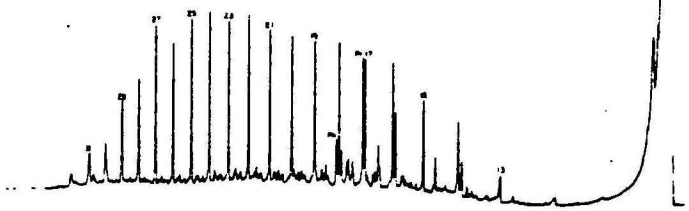

Depuch-1
3470-3475m (P)
Learmonth Pmn
SCI 5.5
Pr/Ph = 3.46
Pr/n-C17 = 0.74
Ph/n-C18 = 0.17
CPI = 1.16

Figure 3b

Depuch-1
4180-4190m (P)
Middle Dingo Claystone
SCI 6.25
Pr/Ph = 2.85
Pr/n-C_{17} = 1.02
Ph/n-C_{18} = 0.31
CPI = 1.11



Depuch-1
4180-4190m (COAL)
Middle Dingo Claystone
SCI 6.25
Pr/Ph = 4.48
Pr/n-C_{17} = 0.96
Ph/n-C_{18} = 0.18
CPI = 1.11

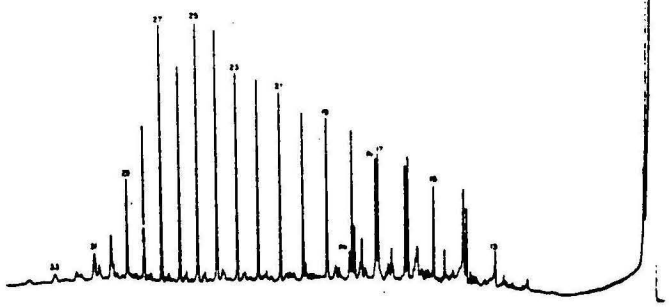


Figure 3c

EAGLEHAWK-1 WELL

SUMMARY

Geochemical analysis of samples from the interval 1707m to 3490m TD of the Eaglehawk-1 well shows that the well section is immature to 2100m, early mature between 2100m and 2750m and middle mature between 2750m and 3490m TD. The maturity gradients indicate 700m of missing Jurassic to Cretaceous sediments from the unconformity at 2750m. Extrapolation of the maturity gradients to seabed indicates that the sediments analysed are currently at or near their maximum burial depths. Little Tertiary or recent section is missing above 2561m. The well section has experienced high paleoheat flow sometime during the Jurassic to Cretaceous.

The Early Jurassic to Triassic section from 2750m to 3490m TD contains locally developed organically rich mudstones which have poor gas source potential.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 19° 30' 29.70"S, 116° 16' 36.83"E.

Operator and date of drilling: Bocal, 1972.

Well Status: Suspended oil discovery with gas shows.

TD: 3490m.

Mud Data: Seawater gel system: Seabed to 429m.
Seawater/Polymer system: 429m to 1296m.
Seawater/Dextrid/Qmix system: 1296m to 3490m TD.
Small quantities (1% to 5%) of oil added to mud.

Casing data: 30" at 156m, 20" at 418m, 13 3/8" at 1281m, 9 5/8" at 2896m.

BHT data: 87°C at 3476.5m, after 13 hours stopped circulation.

Elevation: RT 12.5m ASL.

Water depth: 120m.

Interval analysed: 1707m to 3490m TD.

EAGLEHAWK-1 WELL

Age of interval analysed:

	Depths (in metres)
Tertiary	1707-2582
Early-Late Cretaceous	2582-2740
Early Cretaceous	2740-2750
Late Triassic	2750-3490 TD

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: Results taken from Phase I report, data quality unknown.

b) Spore Colour Index: Results taken from Phase I report, data quality unknown.

Source rock data quality: The bulk of the results are taken from the Phase I report, data quality unknown. New results good.

MATURATION (Table 1, Figures 1 and 2)

Spore colour index values rise steadily from around 4 SCI units at 2561m to 5.5 to 6 SCI units at 2750m in the Tertiary section. Vitrinite reflectance values are also interpreted as increasing steadily from values of around 0.35% to 0.40% over the same interval. Below 2750m the spore colour index gradient increases steadily from 5.5 to 6 SCI units to 6.5 to 7 SCI units at 3490m TD. Vitrinite reflectance values increase from 0.55% to 0.75% over the same interval. The gradients show that the well section is immature to 2100m, early mature between 2100m and 2750m and middle mature between 2750m and 3490m TD. Extrapolation of the interpreted maturity gradients to the surface indicates that little Tertiary or younger section is missing above 2561m. The reflectance gradient suggests that a cumulative total of around 700m of Triassic to Cretaceous section is missing at the unconformity at 2750m. The increased gradient in the Triassic section also indicates that the well section has experienced high heat flow sometime during the Jurassic to Cretaceous. The sediments analysed are currently at or near their maximum depths of burial.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2)

The Late Triassic sequence contains interbedded mudstones and sandstones. Analysis of mudstone lithologies shows locally high organic carbon contents over the interval 3079m to 3490m TD with organic carbon contents of between 1.77% and 10.11%. Pyrolysis analysis of selected samples shows low hydrogen indices of between 28 and 84 indicating that the mudstones contain mostly inertinitic kerogen. These mudstones have at best only poor gas source potential at optimum maturity.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2)

The remaining samples in the Tertiary and Cretaceous section contain below average organic carbon contents of between 0.28% and 0.75%. These samples have no oil or gas potential.

Extraction of samples over the tested interval 2751m to 2767m (DST-1) shows that the samples contain only small quantities of extractable hydrocarbons. No further analysis was performed on these samples.

WELL: EAGLEHAWK-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1–10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
132.9		**Tertiary Undiff**									
1707-1723	Ctg	LST, lt ol gy	*		*	*	*				
1814-1829	"	LST, a/a	*	*	*	*	*				
1921-1936	"	LST, a/a	*		*	*	*				
2012-2027	"	MDST, lt ol gy/gn gy + 40% LST, v lt gy	*	*	*	*	*				
2104-2119	"	A/a	*	0.34(2)	*	*	*				
2226-2241	"	A/a	3.5-4.0		50	30	20				
2317-2332	"	MDST, a/a	4.0	*	60	30	10				
2409-2424	"	MDST, a/a	4.0		70	20	10				
2561-2576	"	MDST, med gy, v calc	4.0		90	5	5				
2581.7		**Miria Marl**									
2637-2652	"	MDST, a/a	4.0-4.5		90	5	5				
2700.5		**Toolonga Calcilutite**									
2721.3		**Haycock Marl**									
2740.2		**Muderong Shale**									
2750.2		**Brigadier Beds**									
2759-2774	P	MDST, dk gy						90	10	*	*
2790-2805	Ctg	MDST, med-dk gy + 40% SST, wht-lt brn	5.5-6.0		75	20	5				
2866-2881	"	MDST, a/a + 50% SST, a/a	6.0	0.53(5)	55	40	5				
2881-2896	P	MDST, dk gy						60	40	*	*
2907.8		**Mungaroo Fm**									
2912-2927	Ctg	MDST, gn-gy/med-gy + 40% SST, a/a	6.0		55	40	5				
3034-3049	"	MDST, a/a + 40% SST, a/a	6.0	0.62(5)	60	30	10				
3079-3095	P	MDST, dk gy						75	25	*	*
3140-3155	P	COAL		0.69(18)							
	P	MDST, dk gy						70	30	*	*
3186-3201	Ctg	MDST, med dk gy + 40% SST, a/a + tr COAL	6.0-6.5	0.70(3)	40	55	5				
3216-3232	P	COAL		0.69(22)							
3247-3262	P	COAL		0.70(30)							
3262-3277	P	MDST, dk gy, blk, carb						65	35	*	*
3323-3338	Ctg	SST, wht/v lt gy + 30% MDST, dk gy + 10% MDST, med gy	6.5		70	25	5				
3338-3354	P	MDST, dk gy						70	30	*	*

Table 1a Maturity and Kerogen Composition Data

WELL: EAGLEHAWK-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
3430-3445	Ctg	SST, varicol + 20% MDST, gn-gy/gy-rd/med -dk gy	6.5-7.0	0.76(2)	40	55	5				
3476-3490	P	MDST, dk gy						60	40	*	*

Table 1b Maturity and Kerogen Composition Data

WELL: EAGLEHAWK-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g TOC)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g TOC)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
132.9		**Tertiary Undiff**													
2561-2576	Ctg	MDST, med gy, v calc	0.30												
2581.7		**Miria Marl**													
2591-2607	"	MDST, a/a	0.28												
2607-2622	"	MDST, a/a	0.31												
2622-2637	"	MDST, a/a	0.45												
2637-2652	"	MDST, a/a	0.30												
2683-2698	Ctg	MDST, med gy, v calc + mnr MDST, ol-gy-gn-gy, v calc	-												
	P	MDST, med gy, v calc	0.75	*	*	328	*	*							
	"	MDST, ol-gy-gn-gy, v calc	0.39												
2700.5		**Toolonga Calcilutite**													
2698-2713	Ctg	MDST, gn-gy-med gy, v calc + 30% LST, wht	0.39												
2721.3		**Haycock Marl**													
2713-2729	"	MDST, a/a + 40% LST, a/a	0.56												
2740.2		**Moderong Shale**													
2729-2744	"	MDST, a/a + 40% LST, a/a	0.29												
2750.2		**Brigadier Beds**													
2744-2759	"	LST, wht + 30% MDST, med -dk gy + 30% MDST, gn-gy, v calc	-												
	P	MDST, med-dk gy	0.75	*	*	337	*	*							
	"	MDST, gn-gy, v calc	0.29												
2750-2768	Ctg	MDST, lt gy	0.56						345	62					
2759-2774	Ctg	MDST, dk gy + 30% MDST, gn gy + 30% MDST, med gy	-												
	P	MDST, dk gy gy	1.77	427	28	296	0.05	0.53							
	"	MDST, gn gy	0.40												
	"	MDST, med gy	0.52	*	*	611	*	*							
2774-2790	Ctg	MDST, dk gy/med gy/gn gy	0.82												
2777-2790	"	MDST, lt med gy + mnr SST, lt brn	0.84						350	42					
2790-2805	"	MDST, a/a + 40% SST, wht -lt brn	0.92												
2805-2820	"	MDST, gn-gy/med gy/dk gy + 50% SST, a/a	0.57												
2820-2832	Ctg	SST, pnk gy-lt brn + 60% MDST, med gy	-												
	P	MDST, med gy	0.78												

Table 2a Chemical Analysis Data

WELL: EAGLEHAWK-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g T.O.C.)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T.O.C.)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2851-2866	Ctg	MDST, med-dk gy + 10% SST, pnk gy-lt brn	-												
	P	MDST, med-dk gy	0.69												
2866-2881	Ctg	MDST, gn-gy/med gy/dk gy + 50% SST, wht-lt brn	0.60												
2881-2896	"	SST, wht-lt brn + 30% MDST, dk gy + 15% MDST, med gy + 15% MDST, gn-gy	-												
	P	MDST, dk gy	3.36	434	84	59	0.02	2.96							
	"	MDST, med gy	0.66	*	*	442	*	*							
	"	MDST, gn-gy	0.44												
2907.8		**Mungaroo Fm**													
2896-2912	Ctg	MDST, gn-gy/med-gy/dk gy + 50% SST, wht-lt brn	1.24												
2912-2927	Ctg	MDST, gn-gy/med gy/dk gy + 40% SST, wht-lt brn	2.11												
3034-3049	"	MDST, a/a + 40% SST, a/a	2.02												
3049-3064	"	SST, a/a + 40% MDST, a/a	1.22												
3064-3079	"	SST, a/a + 40% MDST, a/a	1.05												
3079-3095	Ctg	MDST, med gy + 30% SST, a/a + 15% MDST, gn-gy + 10% MDST, dk gy	-												
	P	MDST, med gy	0.61	*	*	351	*	*							
	"	MDST, gn-gy	0.33												
	"	MDST, dk gy	2.34	425	35	29	0.02	0.82							
3095-3110	Ctg	MDST, gn-gy/med gy/dk gy + 30% SST, a/a + tr COAL	0.92												
3110-3125	"	MDST, med gy + 10% MDST, dk gy + 10% SST, varicol + tr COAL	1.05												
3125-3140	"	MDST, a/a + 10% MDST, a/a + 10% SST, a/a	0.53												
3131-3146	Ctg	MDST, lt-med gy, slty + 10% MDST, med-dk gy + mnr SND	-												
	P	MDST, med-dk gy	0.81												
	"	MDST, lt-med gy, slty	0.24												
3140-3155	Ctg	MDST, med gy + 10% SST, a/a + 10% MDST, dk gy + tr COAL	-												
	P	MDST, med gy	0.44												
	"	MDST, dk gy	3.60	433	55	57	0.02	2.04							
3155-3171	Ctg	SST, wht/v lt gy + 30% MDST, gn-gy/med-dk gy	0.78												

Table 2b Chemical Analysis Data

WELL: EAGLEHAWK-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE °C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g TOC)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g TOC)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
3171-3186	Ctg	SST, wht/v lt gy + 30% MDST, gn-gy/med dk gy	0.43												
3186-3201	"	MDST, a/a + 40% SST, a/a + tr COAL	1.11												
3201-3216	"	MDST, a/a + 40% SST, a/a	1.22												
3216-3232	"	MDST, dk gy + 20% SST, a/a + mnr COAL	0.11												
3232-3247	"	MDST, a/a + 20% SST, a/a	9.90												
3247-3262	"	MDST, a/a + 20% SST, a/a	6.67												
3262-3277	Ctg	MDST, dk gy, blk, carb + 30% MDST, lt med gy, arg	-												
	P	MDST, lt-med gy, arg	0.19												
	"	MDST, dk gy, blk, carb	9.69	445	47	13	0.03	4.70							
3277-3293	Ctg	MDST, dk gy + 50% SST, a/a + mnr MDST, gn-gy	2.12												
3293-3308	Ctg	MDST, dk gy + 50% SST, wht /v lt gy + mnr MDST, gn-gy	2.82												
3308-3323	"	SST, wht/lt brn + 40% MDST, dk gy + 10% MDST, med gy	-												
	P	MDST, med gy	0.76	*	*	138	*	*							
3323-3338	Ctg	SST, wht/v lt gy + 30% MDST, dk gy + 10% MDST, med gy	1.56												
3338-3354	"	SST, a/a + 20% MDST, dk gy + 10% MDST, med gy	-												
	P	MDST, dk gy	4.32	433	33	66	0.00	1.50							
	"	MDST, med gy	0.72												
3354-3369	Ctg	SST, varicol + 20% MDST, gn-gy/gy-rd/med-dk gy + mnr COAL	1.28												
3369-3384	"	SST, varicol + 20% MDST, gn-gy/gy-rd/med-dk gy + mnr COAL	2.30												
3384-3399	"	SST, a/a + 20% MDST, a/a + mnr COAL	1.12												
3399-3415	"	SST, a/a + 20% MDST, a/a + mnr COAL	1.21												
3415-3430	"	SST, a/a + 20% MDST, a/a	0.36												
3430-3445	"	SST, a/a + 20% MDST, a/a	0.81												
3445-3460	"	SST, a/a + 20% MDST, a/a	0.40												
3460-3476	"	SST, a/a + 20% MDST, a/a	0.62												
3476-3490	"	SST, a/a + 10% MDST, dk gy + 10% MDST, med gy	-												
	P	MDST, dk gy	2.50	434	54	57	0.08	1.52							
	P	MDST, med gy	0.68	*	*	230	*	*							

Table 2c Chemical Analysis Data

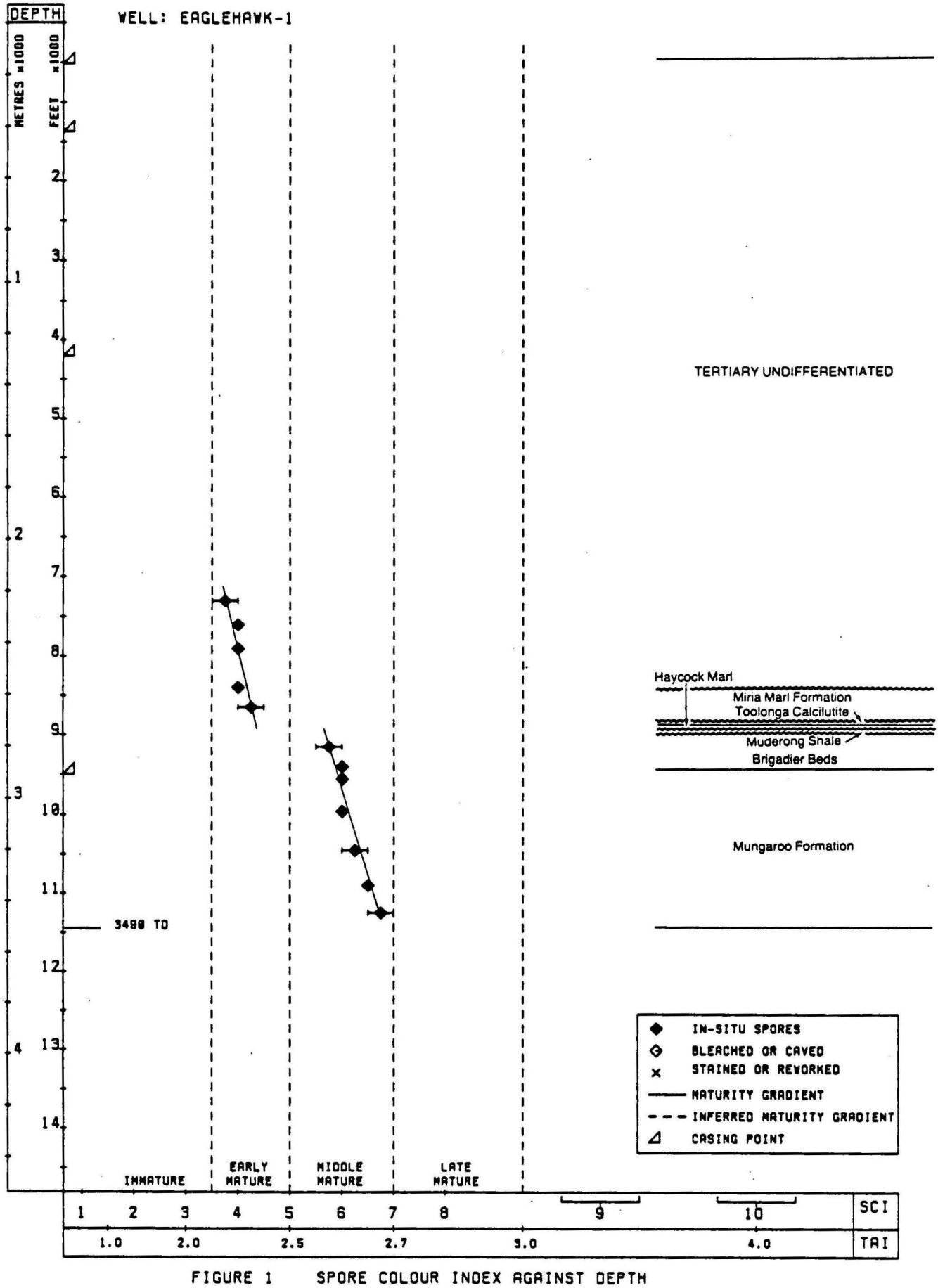


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

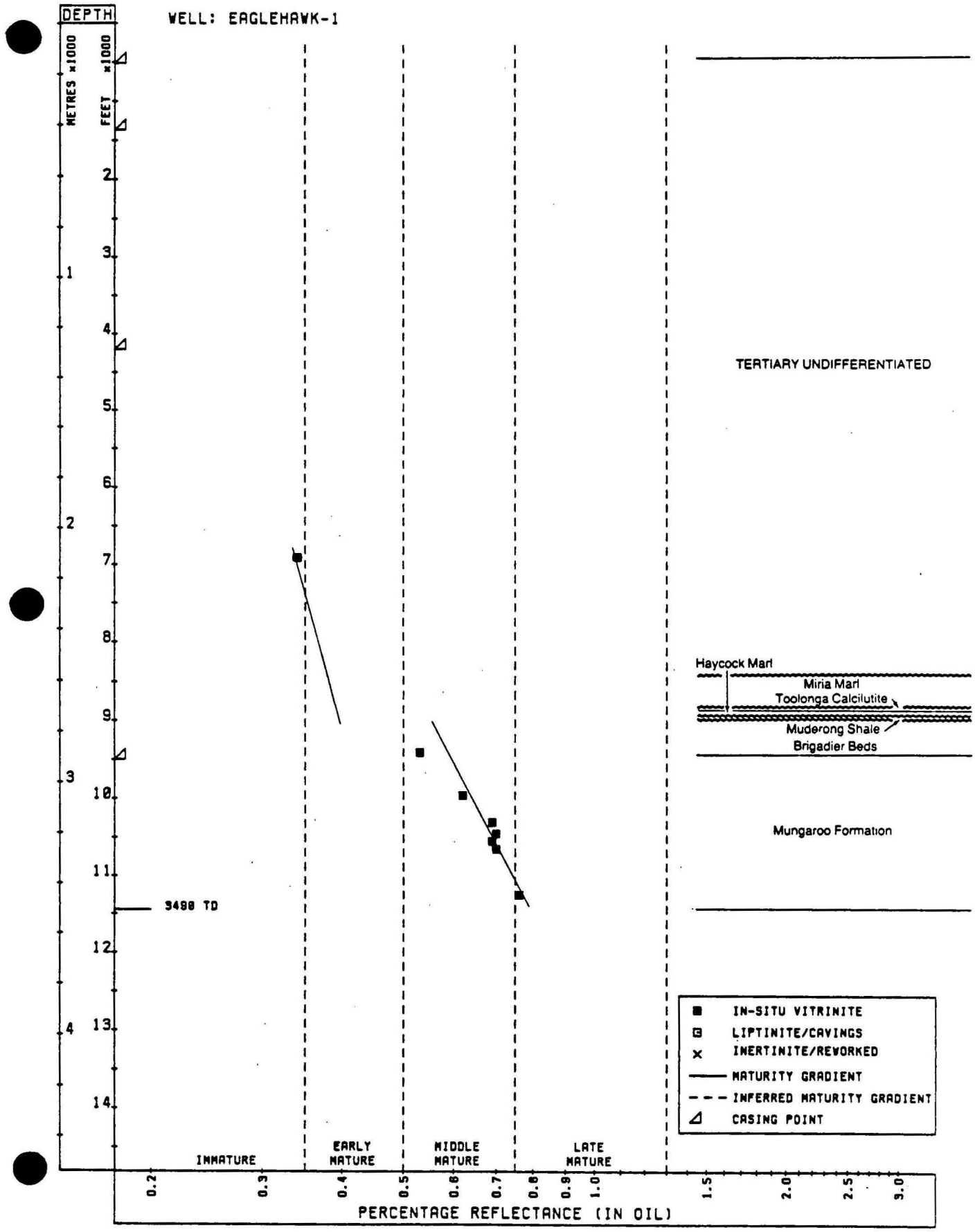


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH

EGRET-1 WELL

SUMMARY

Geochemical analysis of samples from the interval 2896m to 3649m of the Egret-1 well has shown that the Late Triassic sequence is middle mature. Extrapolation of the maturity gradients to the surface suggests that limited Early Jurassic or younger section is missing at the well location. The sediments analysed are currently at or near their maximum depths of burial.

Organically rich mudstones in the interval 3323m to 3649m of the Brigadier Beds and Mungaroo Formation have poor to fair gas source potential at optimum maturity.

The sample at 3323m to 3338m is stained by a mature oil derived from a source rich in waxy sapropel.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 19° 30' 23.2"S, 116° 20' 49.7"E.

Operator and date of drilling: Bocal, 1973.

Well status: Suspended oil discovery.

TD: 3658m.

Mud data: Seawater/gel slugs: Seabed to 442m.
Seawater/Bentonite system: 442m to 1292m.
Seawater/Bentonite/Dextrid system: 1292m to 3658m TD.

Casing data: 30" at 155m, 20" at 433.5m, $13^3/_8$" at 1278m, $9^5/_8$" at 3244m.

BHT data: 43°C at 1256m, stopped circulation time unknown.
97°C at 3251.5m, stopped circulation time unknown.
106°C at 3652.5m, stopped circulation time unknown.

Elevation: RT 12.5m ASL.

Water depth: 118m.

Interval analysed: 2896m to 3649m.

EGRET-1 WELL

Age of interval analysed:

	Depths (in metres)
Early Cretaceous	2896-3118
Late Jurassic	3118-3298
Late Triassic-Early Jurassic	3298-3649

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: The samples analysed yielded sufficient vitrinite for measurements. Results: Good. Maturity data confined to the Early Jurassic to Late Triassic interval.

b) Spore colour index: The samples analysed yielded sufficient sporomorphs for analysis. Results: Good. Maturity data confined to the Early Jurassic to Late Triassic interval.

Source rock data quality: Samples in the interval 2896m to 3216m were analysed in the Phase I study, data quality unknown. Samples below 3216m, data quality good.

Gas chromatography run at: 3119m to 3131m and 3323m to 3338m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Maturity analyses were not carried out in the Phase I study and have only been carried out on the Early Jurassic to Late Triassic interval in Phase II.

The results show that spore colour values rise steadily from around 6.5 units at 3323m to 6.5 to 7 units at 3649m. Vitrinite reflectance values rise from 0.60% to 0.68% over the same interval. The results show that the Late Triassic to Early Jurassic section is middle mature. Extrapolation of the gradients to the surface does not indicate that large amounts of Early Jurassic and younger section are missing at the well location. Present day depths of burial represent maximum or near maximum burial depths.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

Siltstones and dark grey mudstones in the interval 3323m to 3649m in the Early Jurassic to Late Triassic interval are organically rich containing between 2.26% and 7.95% organic carbon. Both visual kerogen analysis and pyrolysis data indicate that these sediments contain mostly inertinitic kerogen. These siltstones and mudstones have poor to fair gas source potential.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

Mudstone lithologies analysed in the interval 2896m to 3216m contain average to below average organic carbon contents of between 0.02% to 1.75%. Pyrolysis analysis shows that they contain mostly inertinitic kerogen. These sediments have no oil or gas source potential.

Extraction, fractionation and gas chromatography analysis of a sample over the tested interval 3120m to 3129m (DST-1) at 3119m to 3131m yielded only small amounts of a migrant oil derived from a mature source rich in terrestrially derived waxy kerogen.

Extraction, fractionation and gas chromatogrpahy analysis of samples in the Late Triassic to Early Jurassic interval at 3323m to 3338m and 3521m to 3537m shows that the sample at 3323m to 3338m is stained by a migrant oil, derived from a mature source containing abundant, terrestrially derived waxy sapropel.

WELL: EGRET-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
2906.3		**Muderong Shale**									
2957-2973	P	MDST, med-dk gy						90	10	*	*
2981		**Barrow Gp**									
3018-3034	"	MDST, med gy-med-dk gy						80	20	*	*
3049-3064	Ctg	MDST, med-dk gy + 40% MDST,ol-gy/gn-gy						90	10	*	*
3079-3095	P	MDST, med gy						80	20	*	*
3118.1		**Upper Dingo Claystone : Dupuy Sandstone Mbr Eqv**									
3125-3140	Ctg	MDST, med gy-med dk gy + 30% SST, lt gy						90	10	*	*
3140-3156	P	MDST, med gy						80	20	*	*
3297.9		**Brigadier Beds**									
3323-3338	Ctg	SST, wht-lt gy + 40% SLTST, med gy, v arg + 30% MDST, dk gy	6.0-6.5	0.59(32)	40	60	*				
	P	SLTST, a/a						40	50	*	10
	P	MDST, a/a						40	60	*	*
3369-3384	Ctg	SST, wht-lt gy + 20% SLTST, lt-med gy + 20% MDST, dk gy, carb	6.5-7.0	0.61(33)	55	45	mnr				
	P	SLTST, a/a						55	45	*	*
	P	MDST, a/a						50	45	*	5
3444.8		**Mungaroo Pan**									
3521-3537	Ctg	SST, a/a + 20% SLTST, a/a + 30% MDST, a/a	3.5-4.5cvd	0.66(24)	50	50	*				
	P	SLTST, a/a						85	15	*	*
	P	MDST, a/a						60	40	*	*
3634-3649	Ctg	SST, a/a + 30% SLTST, a/a + 20% MDST, a/a	6.5-7.0	0.67(38)	40	60	mnr				
	P	SLTST, a/a						70	30	*	*
	P	MDST, a/a						50	50	*	*

Table 1 Maturity and Kerogen Composition Data

WELL: EGRET-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	EXTRACT COMPOSITION (%)		
													SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2906.3		**Muderong Shale**													
2896-2912	Ctg	LST, v lt gy + 30% MDST, med gy + 10% MDST, gn gy + 10% MDST, rd gy	-												
	P	LST, v lt gy	0.13												
	"	MDST, med gy	0.58	*	*	158	*	*							
	"	MDST, gn-gy	0.17												
	"	MDST, rd-gy	0.02												
2912-2927	Ctg	MDST, med-dk gy/gn-gy, occ ol-gy/gy-rd	0.38												
2927-2942	"	MDST, med-dk gy/gn-gy, occ ol-gy/gy-rd	0.35												
2942-2957	"	MDST, med-dk gy/gn-gy, occ ol-gy/gy-rd	0.57												
2957-2973	"	MDST, med-dk gy + 20% MDST, gn-gy/ol-gy/gy-rd	-												
	P	MDST, med-dk gy	0.54	421	16	193	0.00	0.10							
2981		**Barrow Gp**													
2973-2988	Ctg	MDST, med-gy-med-dk gy + 10% MDST, gn-gy-gy-rd	0.63	*	*	171	*	*							
2988-3003	"	MDST, med gy-med-dk + 10% MDST, gn-gy-gy-rd	0.63												
3003-3018	"	MDST, med gy-med-dk + 10% MDST, gn-gy-gy rd	0.65												
3018-3034	Ctg	MDST, med gy-med-dk gy + 10% MDST, gn-gy-gy rd	-												
	P	MDST, med gy-med-dk gy	0.76	426	21	137	0.00	0.10							
	"	MDST, gn-gy-gy rd	0.11												
3034-3049	Ctg	MDST, a/a + 10% MDST, a/a	0.91												
3049-3064	"	MDST, med-dk gy + 40% MDST, ol-gy-gn-gy	1.39	430	7	106	0.00	0.10							
3064-3079	"	MDST, a/a + 40% MDST, a/a	1.54												
3079-3095	"	MDST, ol-gy-gn-gy + 30% MDST, dk gy + 30% MDST, med-gy + tr LST, mod brn	-												
	P	MDST, med gy	0.87	427	23	99	0.00	0.20							
	"	MDST, ol-gy-gn-gy	0.12												
	"	LST, mod brn	0.07												
3095-3110	Ctg	MDST, med dk gy + 40% MDST, ol-gy-gy + mnr LST, mod brn	1.55												
3118.1		**Upper Dingo Claystone: Dupuy Sst Mbr Eqv**													

Table 2a Chemical Analysis Data

WELL: EGRET-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T.O.C.)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T.O.C.)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
3110-3125	Ctg	MDST, med-dk gy + 40% MDST, ol-gy-gn-gy + mnr LST, mod brn	1.08												
3119-3131	"	MDST, med gy + mnr SST, wht	0.56						465	83	220	39	39	8	53
3125-3140	"	MDST, med gy-med dk gy + 30% SST, lt gy + mnr MDST, gy-gy/ol-gy	0.95	427	10	167	0.00	0.10							
3140-3156	"	MDST, med gy + 30% MDST, med-dk gy + 30% SST, a/a + mnr MDST, gn-gy-ol-gy	-												
	P	MDST, med gy	0.57	426	18	225	0.00	0.10							
	P	MDST, gn-gy-ol-gy	0.13												
3156-3171	Ctg	MDST, med gy-med-dk gy + 20% SST, lt gy + mnr MDST, gn-gy-ol-gy	1.23												
3171-3186	"	MDST, med gy-med-dk gy + 40% SST, a/a + mnr MDST, gn-gy-ol-gy	0.70												
3186-3201	"	MDST, med gy-med dk gy + 30% SST, a/a	1.14	*	*	147	*	*							
3201-3216	"	MDST, med gy/med-dk gy + 30% SST, lt gy + mnr MDST, gn-gy-ol-gy	-												
	P	MDST, med gy/med-dk gy	0.80	*	*	215	*	*							
	P	MDST, gn-gy-ol-gy	0.35												
3297.9		**Brigadier Beds**													
3323-3338	Ctg	SST, wht-lt-gy + 40% SLTST, med-gy, v arg + 30% MDST, dk gy	2.43						2935	121	1425	59	41	8	51
	P	SLTST, med-gy, v arg	7.95	432	164	46	0.03	13.48							
	P	MDST, dk gy	3.45	437	94	102	0.07	3.48							
3369-3384	Ctg	SST, wht-lt gy + 20% SLTST, lt-med gy + 20% MDST, dk gy, carb	-												
	P	SLTST, lt-med gy	2.26	435	81	93	0.07	1.99							
	P	MDST, dk gy carb	4.83	434	103	42	0.05	5.21							
3444.8		**Mungaroo Fm**													
3521-3527	Ctg	SST, a/a + 20% SLTST, lt-med gy + 30% MDST, dk-gy carb	2.65						600	23	225	8	25	13	62
	P	SLTST, lt-med gy	4.16	430	26	24	0.15	1.30							
	P	MDST, dk gy, carb	5.79	433	64	21	0.11	4.15							
3634-3649	Ctg	SST, a/a + 30% SLTST, lt-med gy + 20% MDST, dk gy, carb	-												
	P	SLTST, lt-med gy	0.92	428	46	211	0.24	0.55							
	P	MDST, dk gy carb	4.84	439	79	15	0.07	4.14							

Table 2b Chemical Analysis Data

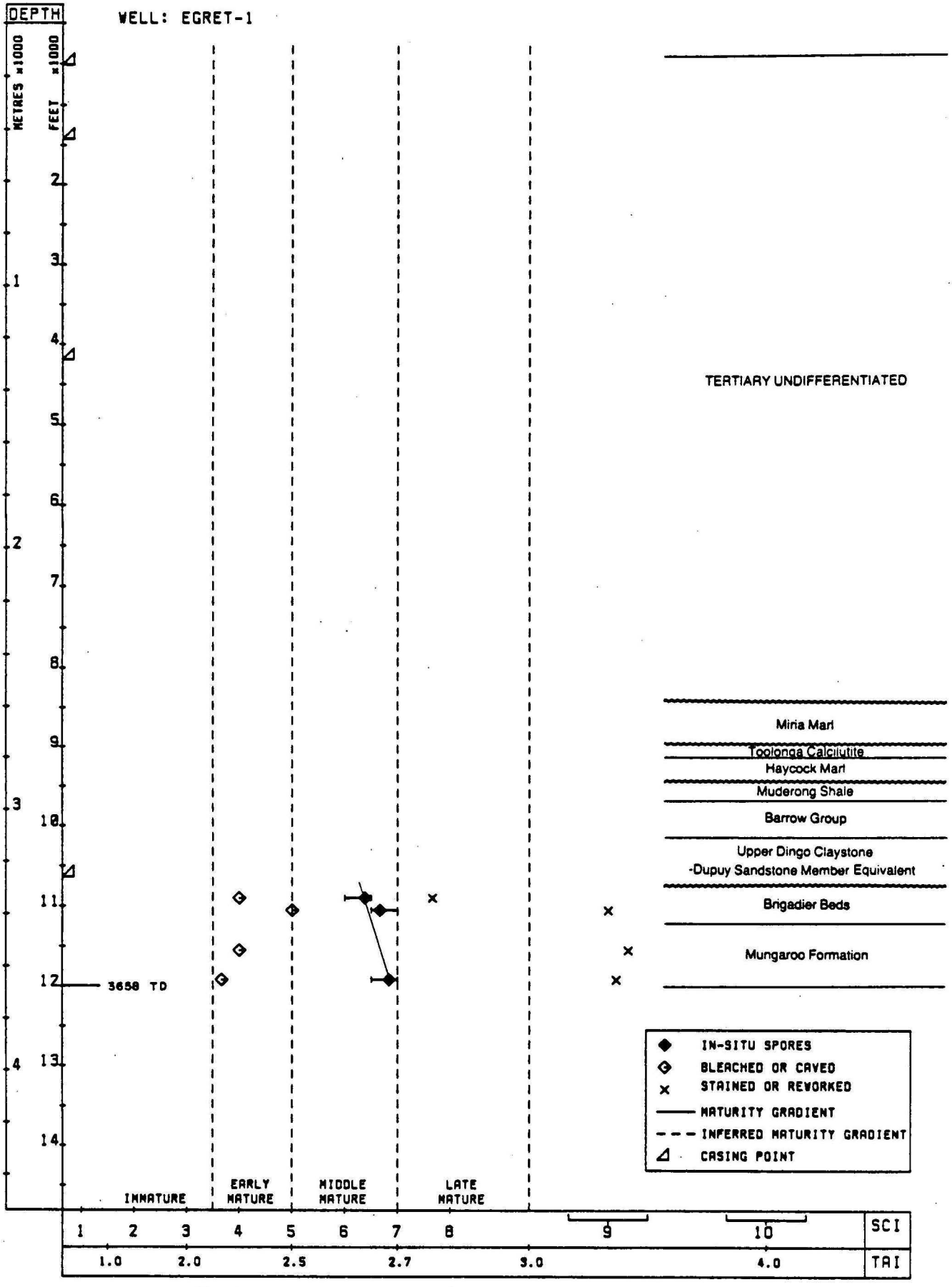


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

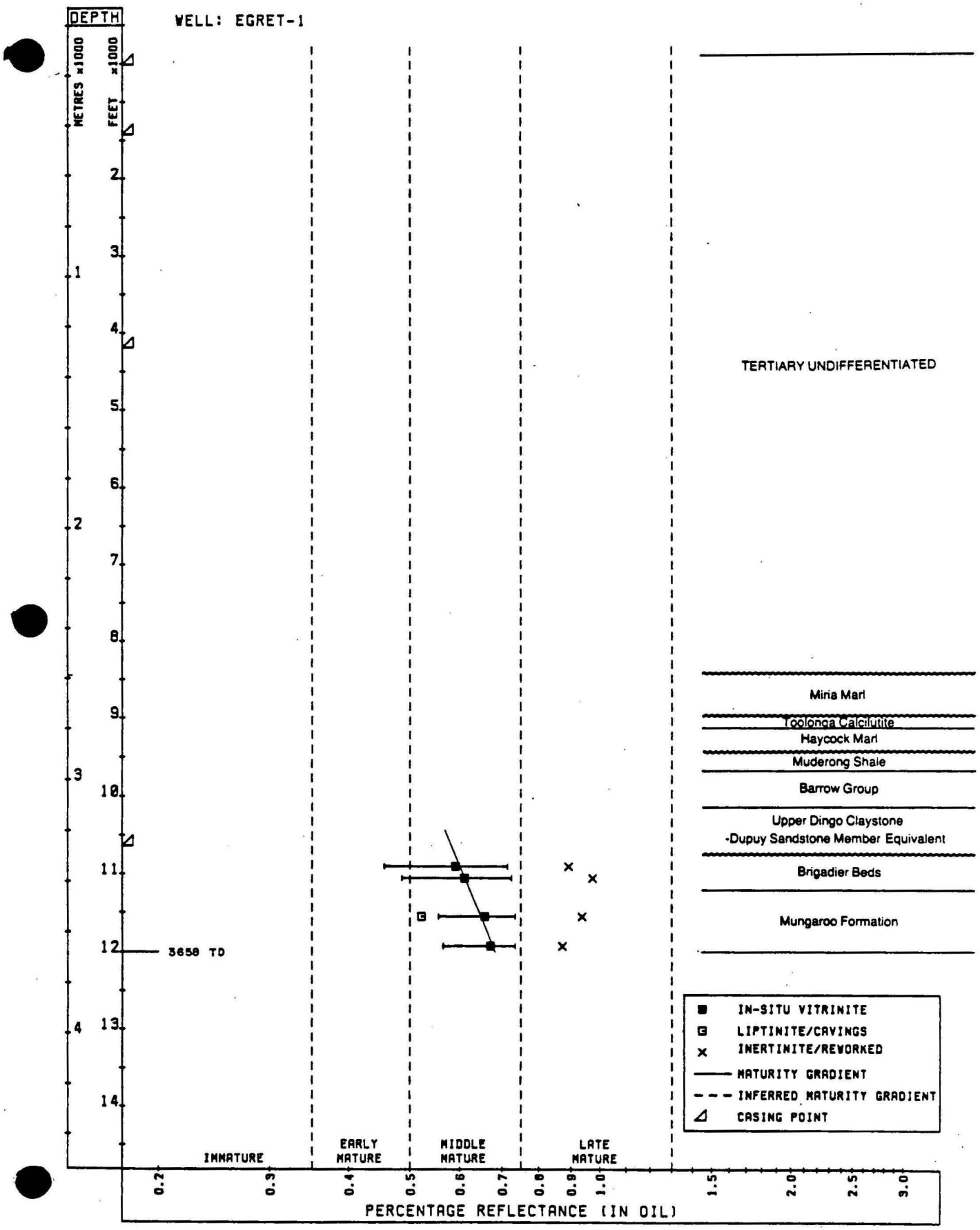
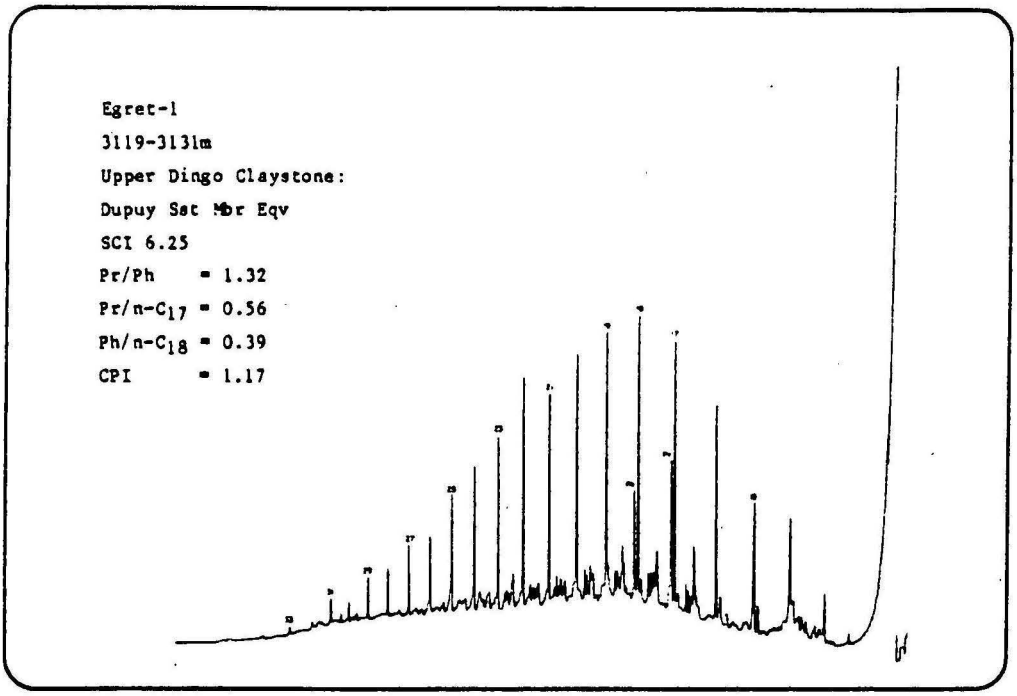


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH


Egret-1
3119-3131m
Upper Dingo Claystone:
Dupuy Sst Mbr Eqv
SCI 6.25
Pr/Ph = 1.32
Pr/n-C17 = 0.56
Ph/n-C18 = 0.39
CPI = 1.17

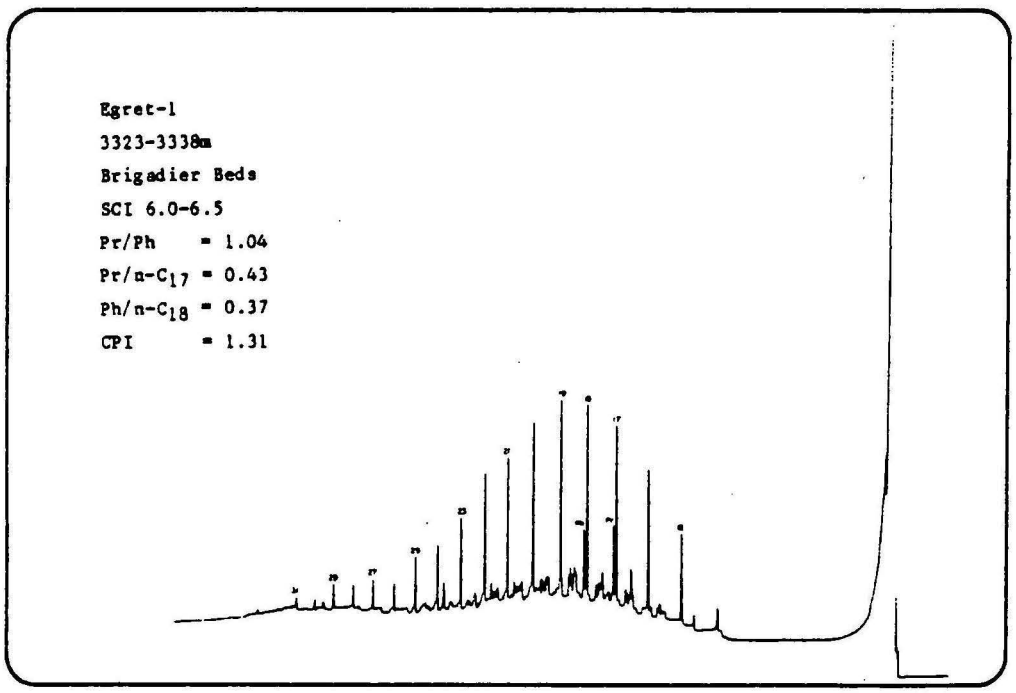

Egret-1
3323-3338m
Brigadier Beds
SCI 6.0-6.5
Pr/Ph = 1.04
Pr/n-C17 = 0.43
Ph/n-C18 = 0.37
CPI = 1.31

Figure 3

Robertson Research

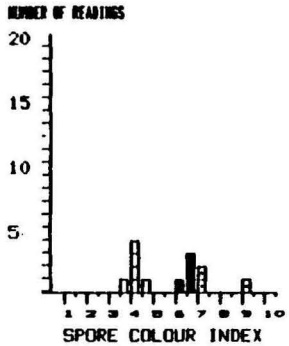
EGRET-1

IN SITU POPULATION

SAMPLE 3323-3338M

3.5 4.0 4.0 4.0 4.0 4.5 6.0 6.5 6.5 6.5
7.0 7.0 9.0

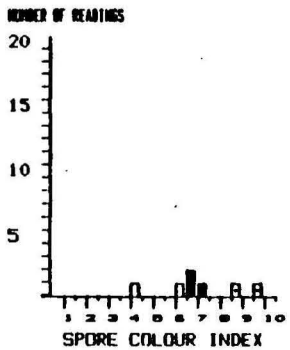
SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	6.0-6.5	4
CONTAM.SPORES/CAVED	3.5-4.5	6
STAINED/REWORKED	7.0-9.0	3



SAMPLE 3369-3384M

4.0 6.0 6.5 6.5 7.0 8.5 9.5

SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	6.5-7.0	3
CONTAM.SPORES/CAVED	4.0-6.0	2
STAINED/REWORKED	8.5-9.5	2



EGRET-1

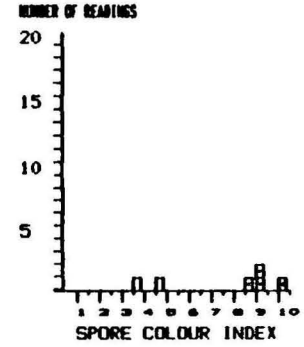
IN SITU POPULATION

SAMPLE 3521-3537M

3.5 4.5 8.5 9.0 9.0 10.0

SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	-	0
CONTAM.SPORES/CAVED	3.5-4.5	2
STAINED/REWORKED	8.5-10.0	4

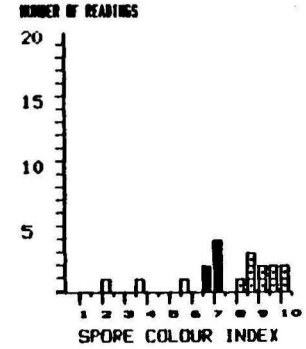
MUCH CONTAMINANT CUTICLE & SPOROMORPHS



SAMPLE 3634-3649M

2.0 3.5 5.5 6.5 6.5 7.0 7.0 7.0 7.0 8.0
8.5 8.5 8.5 9.0 9.0 9.5 9.5 10.0 10.0

SELECTED CLASS	RANGE	COUNT
IN SITU SPORES	6.5-7.0	6
CONTAM.SPORES/CAVED	2.0-5.5	3
STAINED/REWORKED	8.0-10.0	10



Appendix 1

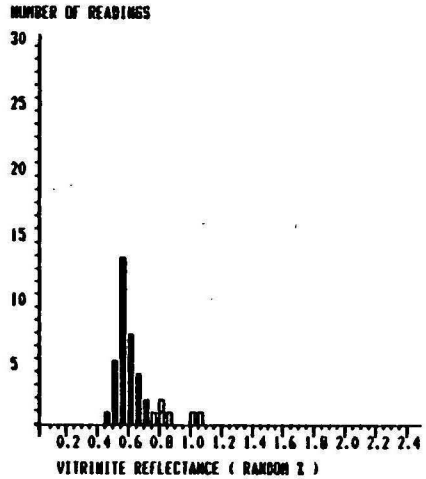
Robertson Research

EGRET-1

SAMPLE 3323-3338M

0.46 0.50 0.52 0.52 0.53 0.53 0.55 0.55 0.55 0.55
0.57 0.57 0.57 0.57 0.59 0.59 0.59 0.59 0.59 0.60
0.60 0.61 0.62 0.62 0.64 0.64 0.66 0.67 0.67 0.67
0.70 0.71 0.78 0.81 0.82 0.86 1.00 1.08

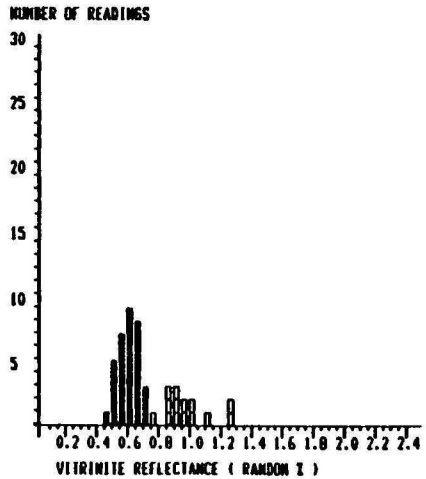
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.46-0.71	32	0.59	0.06
INERTINITE/REWORKED	0.78-1.08	6	0.89	0.12



SAMPLE 3369-3384M

0.49 0.51 0.52 0.52 0.53 0.53 0.56 0.56 0.57 0.57
0.59 0.59 0.59 0.60 0.60 0.61 0.61 0.61 0.61 0.62
0.63 0.64 0.65 0.65 0.66 0.66 0.67 0.68 0.69 0.69
0.70 0.71 0.72 0.75 0.85 0.85 0.86 0.90 0.90 0.91
0.95 0.97 1.01 1.03 1.12 1.26 1.27

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.49-0.72	33	0.61	0.06
INERTINITE/REWORKED	0.75-1.27	14	0.97	0.15

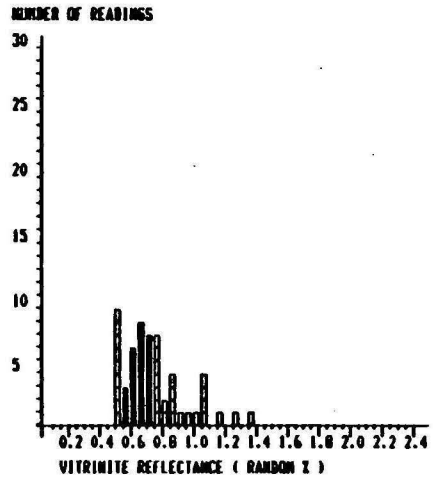


EGRET-1

SAMPLE 3521-3537M

0.51 0.51 0.51 0.52 0.52 0.52 0.53 0.53 0.54 0.56
0.56 0.58 0.60 0.61 0.61 0.62 0.62 0.63 0.65 0.65
0.66 0.66 0.68 0.68 0.69 0.69 0.70 0.71 0.72 0.72
0.72 0.73 0.73 0.76 0.77 0.77 0.78 0.78 0.78 0.79
0.80 0.83 0.87 0.87 0.88 0.89 0.93 0.98 1.02 1.06
1.06 1.07 1.09 1.16 1.27 1.35

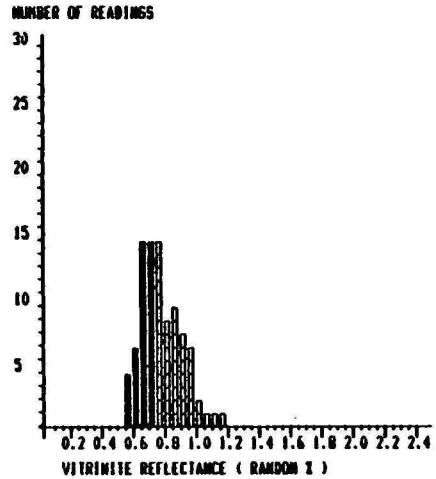
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.56-0.73	24	0.66	0.05
LIPTINITE/CAVINGS	0.51-0.54	9	0.52	0.01
INERTINITE/REWORKED	0.76-1.35	23	0.94	0.17



SAMPLE 3634-3649M

0.57 0.58 0.59 0.59 0.60 0.62 0.62 0.63 0.63 0.64
0.65 0.65 0.65 0.66 0.67 0.67 0.68 0.68 0.68 0.68
0.68 0.69 0.69 0.69 0.70 0.70 0.70 0.71 0.71 0.71
0.72 0.72 0.72 0.72 0.72 0.73 0.73 0.73 0.75 0.76
0.76 0.76 0.77 0.77 0.77 0.77 0.78 0.78 0.79 0.79
0.79 0.79 0.80 0.80 0.81 0.82 0.82 0.82 0.83 0.84
0.85 0.86 0.86 0.87 0.87 0.87 0.88 0.89 0.89 0.90
0.90 0.90 0.90 0.91 0.92 0.92 0.95 0.96 0.96 0.96
0.97 0.99 1.03 1.03 1.07 1.10 1.16

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.57-0.73	38	0.67	0.05
INERTINITE/REWORKED	0.75-1.16	49	0.87	0.10



Appendix 2

FLAG-1 WELL

SUMMARY

Geochemical analysis of samples from the interval 518m to 3735m of the Flag-1 well have shown that the well section is immature to around 1400m, early mature between 1400m and 2400m and middle mature between 2400m and 3803m TD. Extrapolation of the maturity gradients to surface shows a possible cumulative total of 1500m of Late Cretaceous and younger section missing above 1220m. The sediments analysed are currently at or near their maximum depths of burial.

Mudstones in the interval 1784m to 2143m in the Muderong Shale 2210m to 2567m in the Barrow Group and 3293m to 3735m in the Upper Dingo Claystone have very good oil source potential. The latter interval will already have generated significant quantities of oil. The organically rich mudstones throughout the Muderong Shale and Barrow Group and in the interval 3293m to 3735m of the Upper Dingo Claystone are a fair gas source. They are not, however, sufficiently mature to have generated significant quantities of gas.

The sample at 1277m to 1293m, taken over the tested interval 1278m to 1291m, contains small quantities of migrant hydrocarbons derived from mature terrestrially sourced waxy kerogens possibly mixed with a biodegraded oil.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 20° 27' 55"S, 115° 38' 44"E.

Operator and date of drilling: West Australian Petroleum Pty Ltd, 1970.

Well Status: Plugged and abandoned.

TD: 3803m.

Mud data: Seawater/gel system: Seabed to 2563m.
Seawater/gel/Soltex system with 7% diesel: 2563m to 3803m TD.

Casing data: 26" at 81m, 20" at 225.5m, $13^3/_8$" at 1278m, $9^5/_8$" at 2157m, 7" at 3239m.

FLAG-1 WELL

BHT data: 53°C at 1259.5m, after 2 hours stopped circulation time.
80°C at 2360.5m, after 4 hours stopped circulation time.
94.5°C at 2773m, after 4 hours stopped circulation time.
103°C at 3238m, after 5 hours stopped circulation time.
122°C at 3529.5m, after 5 hours stopped circulation time.
132°C at 3803m, after 6 hours stopped circulation time.

Elevation: RT 23m ASL.

Water depth: 36.5m.

Interval analysed: 518m to 3735m.

Age of interval analysed:

	Depths (in metres)
Late Cretaceous	518 -1203.3
Early Cretaceous	1203.3-2567
Middle-Late Jurassic	2567 -3735

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: Data used is from the Phase I study. Data quality unknown.

b) Spore Colour Index: Data used is from the Phase I study, data quality unknown.

Source rock data quality: The bulk of the results are from Phase I analyses, data quality unknown. Phase II data are of good quality.

Gas chromatography run at: 1277m to 1293m, 1832m to 1851m and 2317m to 2332m.

MATURATION (Table 1, Figures 1 and 2)

The interpreted spore colour gradient rises steadily from values of around 2.5 SCI units at 762m to around 7 SCI units at 3735m. Vitrinite reflectance values rise steadily from values of around 0.4% at 1220m to around 0.75% at 3735m. Extrapolation of the maturity gradients to seabed indicates a possible total of around

1500m of missing Late Cretaceous and younger section above 1220m. The well section is currently at or near its maximum depth of burial.

The results show that the well section is immature to around 1400m, early mature between 1400m and 2400m and middle mature between 2400m and 3803m TD.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

Medium to dark grey silty mudstones in the interval 1784m to 2143m in the Muderong Shale, the interval 2210m to 2567m of the Barrow Group and the interval 3293m to 3735m of the Upper Dingo Claystone contain average to above average organic carbon contents of between 1.40% and 4.13%. Pyrolysis analysis of samples in these intervals indicates that they contain between 15% and 30% oil-prone kerogen. These intervals all contain relatively thick sections of mudstones totalling 300m in the interval 1784m to 2143m, 120m in the interval 2210m to 2576m and 500m in the interval 3293m to 3803m TD. These intervals all have very good oil source potential. The lower interval in the Upper Dingo Claystone will have generated significant quantities of oil at its present maturity.

Extraction, fractionation and gas chromatography analysis of samples at 1832m to 1851m and 2317m to 2332m shows that these samples contain indigenous hydrocarbons derived from early mature to mature sources rich in terrestrially derived waxy kerogen. The organically rich mudstones throughout the Muderong Shale and Barrow Group and in the interval 3293m to 3737m of the Upper Dingo Claystone are also fair potential gas sources. At the present level of maturity, however, no significant quantities of gas will have been generated.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

The remaining sediments analysed in the interval 518m to 1768m of the Toolonga Calcilutite to Muderong Shale and in the interval 2567m to 3293m of the Dupuy Sandstone Member and Upper Dingo Claystone contain below average to average organic carbon contents of between 0.36% and 1.77%. These intervals contain mostly humic kerogen with no significant content of oil-prone material. They have no significant oil or gas source potential.

FLAG-1 WELL

Extraction, fractionation and gas chromatography analysis of the sample at 1277m to 1293m taken over the tested interval 1278m to 1211m shows that the sample contains small quantities of migrant oil, derived from a mature source containing predominantly waxy kerogens, possibly mixed with small amounts of a biodegraded oil.

WELL: FLAG-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
487.7		**Toolonga Calcilutite**									
762-777	Ctg	SLTST, ol-gy/gn-gy + 30% GYPSUM	2.0		65	35	mnr				
884-899	"	SLTST, a/a + 30% GYPSUM	2.5		35	65	mnr				
1067-1082	"	SLTST, gn gy	3.0	0.23cvd	35	65	mnr				
1112.5		**Gearle Siltstone**									
1203.3		**Windalia Radiolarite**									
1220-1235	"	MDST, ol-gy	3.5	0.40(8)	85	15	mnr				
1280-1296	P	MDST, med dk gy						70	15	*	15
1310		**Muderong Shale**									
1402-1418	Ctg	MDST, ol gy	3.5-4.0	0.42(22)	50	45	5	80	15	*	5
1524-1540	"	MDST, ol gy						70	25	*	5
1585-1601	"	MDST, ol-gy/med-dk gy	4.0-4.5	0.42(14)	60	35	5				
1646-1662	"	MDST, a/a						60	40	*	*
1707-1723	"	MDST, a/a	4.0	0.45(8)	50	45	5				
1829-1845	"	MDST, med-dk gy	4.5	*	30	60	10	40	40	*	20
1832-1851	"	MDST, ol gy						45	30	*	25
2012-2027	"	MDST, med dk gy	4.5	0.48(7)	35	50	15				
2015-2030	"	MDST, ol gy						55	30	*	15
2142.7		**Barrow Gp**									
2134-2149	"	MDST, med dk gy	4.5	0.51(14)	35	60	5				
2195-2210	"	MDST, med dk gy						45	55	*	*
2317-2332	P	MDST, med gy						60	25	5	10
2378-2393	Ctg	MDST, med dk gy	4.5-5.0	0.53(16)	65	25	10	55	25	*	20
2567		**Upper Dingo Claystone : Dupuy Sandstone Mbr**									
2561-2576	"	MDST, med lt gy, sndy	4.5-5.0	0.40cvd	60	35	5	50	25	5	20
2683-2698	"	SST, med gy/lt ol gy + 50% MDST, med dk gy	4.5-5.0	0.58(10)	40	55	5				
2750-2765	P	MDST, med gy-med dk gy						45	50	5	*
2866-2881	Ctg	SST, a/a + 30% MDST, med dk gy	5.0	0.40cvd	30	65	5				
2930-2945	P	MDST, med gy-med dk gy						60	40	*	*
2988-3003	Ctg	SST, lt ol-gy/mod yel-brn + 20% MDST, a/a	5.5	0.65(8)	40	50	10				
3037.3		**Upper Dingo Claystone**									
3110-3125	"	SST, a/a + MDST, brn gy	5.5	0.62(6)	35	65	mnr				
3232-3247	"	SST, a/a + MDST, a/a	6.0	0.64(14)	25	65	10				

Table 1a Maturity and Kerogen Composition Data

WELL: FLAG-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
3293-3308	P	MDST, med dk gy						25	60	*	15
3415-3430	Ctg	MDST, med-dk gy + 30% MDST, mod yel-brn	6.5	0.42cvd	40	55	5				
3476-3491	P	MDST, med dk gy						30	40	*	30
3598-3613	Ctg	MDST, a/a + 30% MDST, mod yel-brn		0.69(15)	30	65	5				
3659-3674	P	MDST, med dk gy						25	60	*	15
3720-3735	Ctg	MDST, a/a + 30% MDST, pal yel-brn	7.0	0.73(6)	65	25	10				

Table 1b Maturity and Kerogen Composition Data

WELL: FLAG-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g TOC)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g TOC)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
487.7		**Toolooga Calcilutite**													
518-534	Ctg	MDST, ol-gy, glauc + 40% satinspar GYPSUM, yel-gy (?additive)	0.46												
579-595	"	MDST, a/a + 40% GYPSUM, a/a	0.36												
640-655	"	MDST, a/a + 40% GYPSUM, a/a	0.40												
701-716	"	MDST, a/a + 40% GYPSUM, a/a	0.35												
762-777	"	MDST, ol-gy/gy-gy, v glauc, calc + 30% satinspar GYPSUM, a/a	0.30												
823-838	"	MDST, ol-gy, glauc, calc + 35% MDST, gn-gy, glauc, calc + 30% stainspar GYPSUM, a/a	-												
	P	MDST, gn-gy, glauc, calc	0.41												
884-899	Ctg	MDST, ol-gy/gn-gy, v glauc, calc + 30% satinspar GYPSUM, a/a	1.04												
945-960	"	MDST, gn-gy, occ ol-gy, glauc, v slty, glauc, v slty, calc + tr stainspar GYPSUM, a/a	0.57												
1006-1021	"	MDST, a/a + GYPSUM, a/a	0.44												
1067-1082	"	MDST, a/a + GYPSUM, a/a	1.02												
1112.5		**Gearle Siltstone**													
1128-1143	"	MDST, a/a + GYPSUM, a/a	1.16												
1189-1204	"	MDST, ol-gy, glauc, calc + mnr MDST, gn-gy, glauc, calc	0.98												
1203.3		**Windalia Radiolarite**													
1204-1220	"	MDST, a/a + mnr MDST, a/a	0.88												
1220-1235	"	MDST, a/a + mnr MDST, a/a	0.84												
1235-1250	"	MDST, a/a + mnr MDST, a/a	0.80												
1277-1293	"	SST, gy gn + 10% MDST, ol gy	1.01						540	53	280	28	47	4	49
1280-1296	"	MDST, ol-gy/gy-gy/med gy, glauc, calc + 10% MDST, med-dk gy, glauc, calc + 10S CMT	-												
	P	MDST, med-dk gy, glauc, calc	1.51	430	73	115	0.00	1.10							
1310		**Muderong Shale**													
1341-1357	Ctg	MDST, ol-gy/med gy/med -dk gy	1.02												

Table 2a Chemical Analysis Data

WELL: FLAG-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g TOC)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g TOC)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
1402-1418	Ctg	MDST, ol-gy, glauc, calc	1.09	429	64	181	0.00	0.70							
1463-1479	"	MDST, ol-gy, glauc, calc	1.30												
1524-1540	"	MDST, a/a	1.37	434	80	123	0.00	1.10							
1585-1601	"	MDST, ol-gy/med-dk gy, glauc, calc, v slty	1.22												
1646-1662	"	MDST, a/a	1.26	430	95	147	0.00	1.20							
1707-1723	Ctg	MDST, a/a	1.77												
1768-1784	"	MDST, med-dk gy, glauc, v slty, calc	2.84												
1829-1845	"	MDST, a/a	2.15	439	163	85	0.05	3.68							
1832-1851	"	MDST, ol gy	2.18	432	220	52	0.04	5.00	1280	59	370	17	27	2	71
1890-1905	"	MDST, med-dk gy, glauc, v slty, calc	2.25												
1951-1966	"	MDST, a/a	1.99												
2015-2030	"	MDST, ol gy	2.75	434	149	45	0.06	4.34							
2073-2088	"	MDST, med-dk gy, glauc, v slty, calc	2.33												
2134-2149	"	MDST, a/a	2.21												
2142.7		Barrow Gp													
2195-2210	"	MDST, a/a	3.33	435	99	141	0.40	5.50							
2256-2271	"	LCM + 10% MDST, a/a	-												
2317-2332	"	SND + 30% MDST, med gy	7.97						1455	18	400	5	22	5	73
	P	MDST, med gy	4.11	430	130	34	0.11	5.98							
2378-2393	Ctg	MDST, med-dk gy, glauc, v slty, calc	2.59	437	158	50	0.08	4.46							
2439-2454	"	MDST, a/a + 20% SST, pal brn	3.93												
2500-2515	"	MDST, a/a + 20% ?DOL, pal brn	4.46												
2567		Upper Dingo Claystone: Dupuy Sst Mbr													
2561-2576	"	MDST, med-lt gy, sndy	1.68	428	183	175	0.26	4.15							
2622-2637	"	SST, med gy/lt ol-gy, glauc + 50% MDST, med -dk gy, glauc, v slty	1.00												
2683-2698	"	SST, a/a + 50% MDST, a/a	0.99												
2750-2765	"	SST, wht-lt gy + 60% MDST, med gy-med dk gy	-												
	P	MDST, med gy-med dk gy	2.49	434	114	33	0.17	3.41							
2805-2820	Ctg	SST, lt ol gy/mod yel-brn, glauc + 30% MDST, med gy/ med-dk gy, v slty	0.52												

Table 2b Chemical Analysis Data

WELL: FLAG-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE °C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g T.O.C.)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T.O.C.)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2866-2881	Ctg	SST, lt ol-gy/med yel-brn, glauc + 30% MDST, med gy/med-dk gy, v slty	0.77												
2930-2945	"	SST, wht-lt gy + 50% MDST, med gy-med dk gy	-												
	P	MDST, a/a	1.88	437	63	84	0.09	1.30							
2988-3003	Ctg	80% SST, lt ol-gy/mod yel-brn, glauc + 20% MDST, med gy/med-dk gy, v slty	0.87												
3037.3		**Upper Dingo Claystone**													
3049-3064	Ctg	SLTST, lt ol-gy/brn-gy, occ med-dk gy, occ v sndy	0.92												
3110-3125	"	SLTST, a/a	0.91												
3171-3186	"	SLTST, a/a	0.98												
3232-3247	"	SLTST, a/a	0.90												
3293-3308	"	MDST, med-dk gy, glauc, v slty + 40% SST, mod yel-brn, glauc, oil-stained, v arg + LCM	-												
	P	MDST, a/a	1.91	439	183	57	0.50	7.00							
3354-3369	Ctg	MDST, a/a + 40% SST, a/a + LCM	1.69												
3415-3430	"	MDST, a/a + 30% SST, a/a + LCM	1.40												
3476-3491	"	MDST, a/a + 30% SST, a/a + LCM	-												
	P	MDST, a/a	2.04	438	240	37	0.30	7.00							
3537-3552	Ctg	MDST, a/a + 30% SST, a/a + LCM	1.65												
3598-3613	"	MDST, a/a + 30% SST, a/a + LCM	-												
	P	MDST, a/a	3.52												
3659-3674	Ctg	MDST, a/a + 40% SLTST, pal yel-brn, calc	-												
	P	MDST, a/a	3.45	439	165	24	0.00	5.70							
3720-3735	Ctg	MDST, med-dk gy + 30% SLTST, pal yel-brn, calc	2.00												

Table 2c Chemical Analysis Data

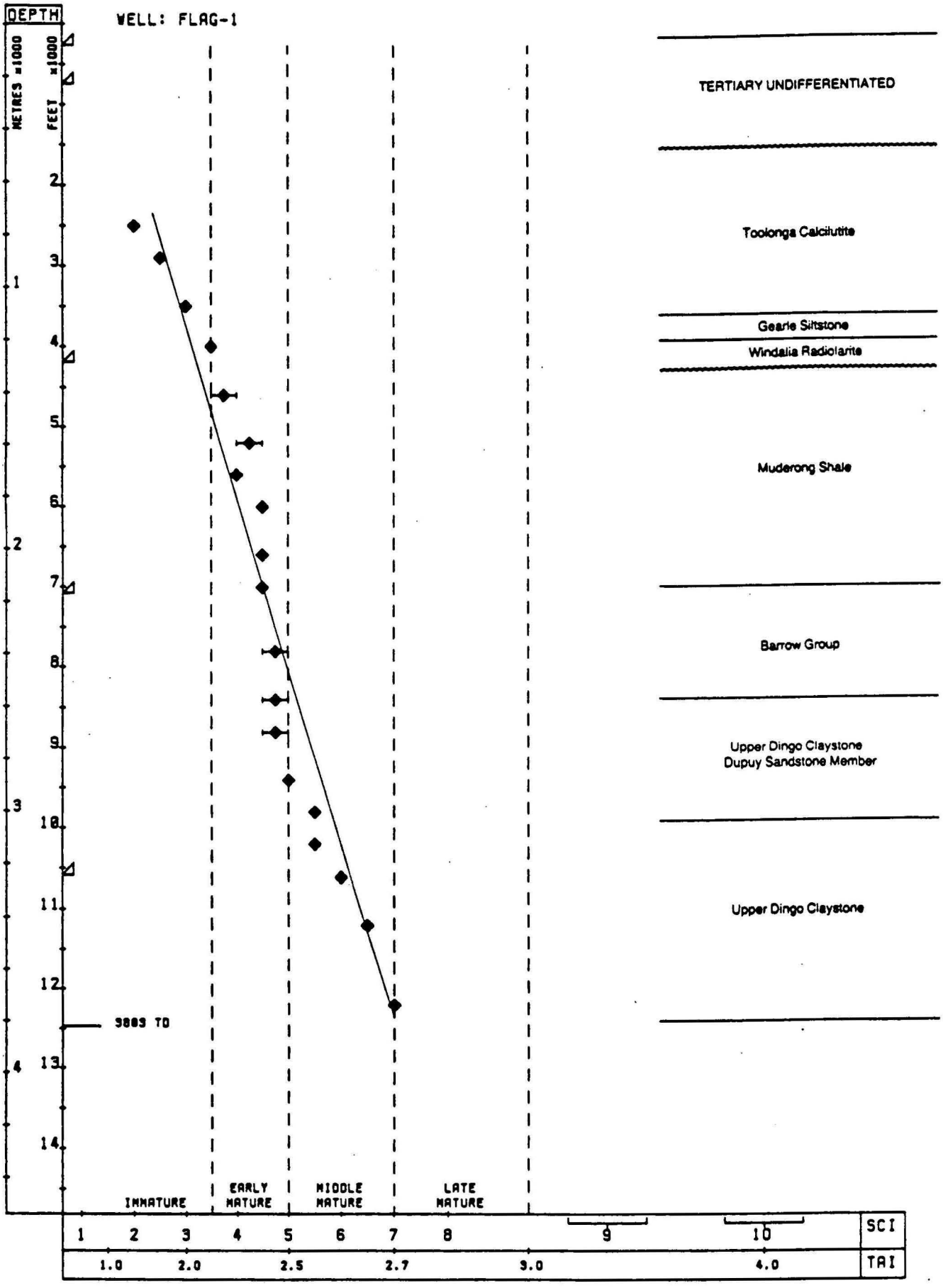


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

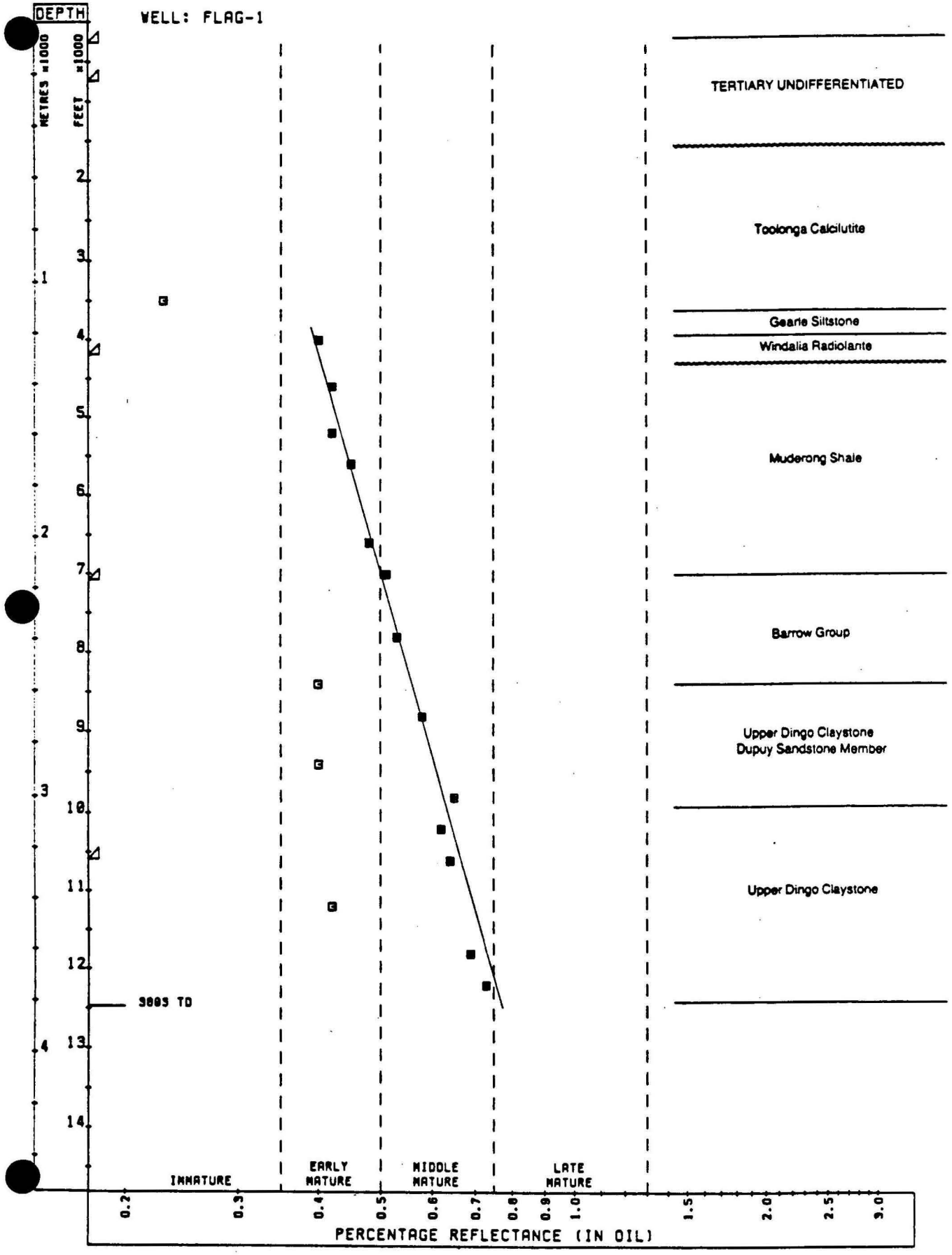
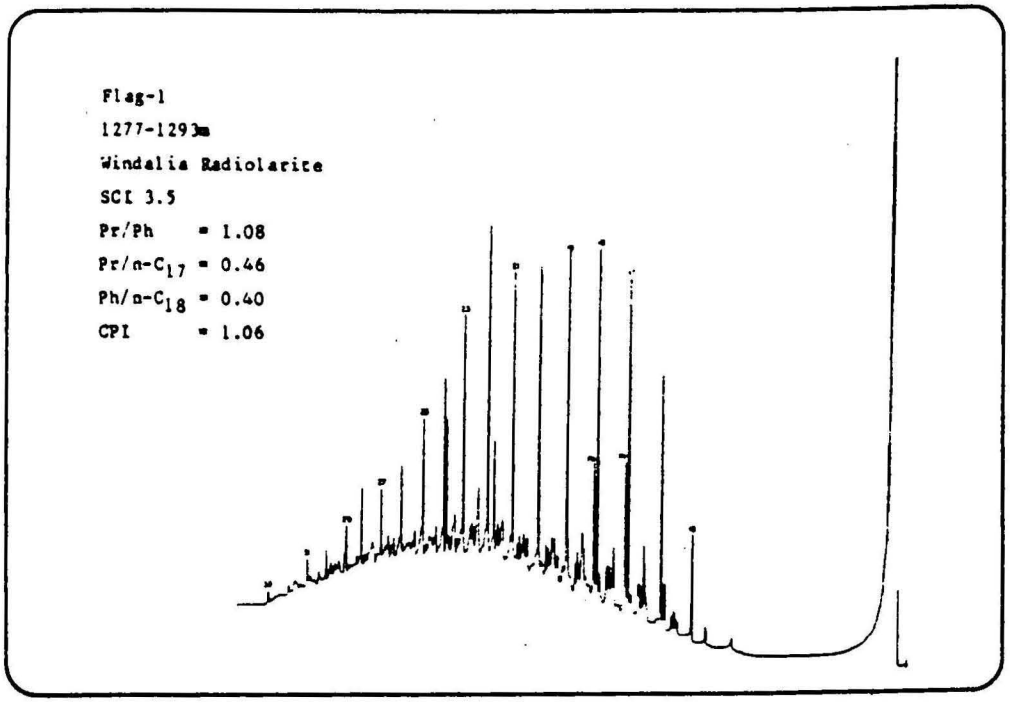
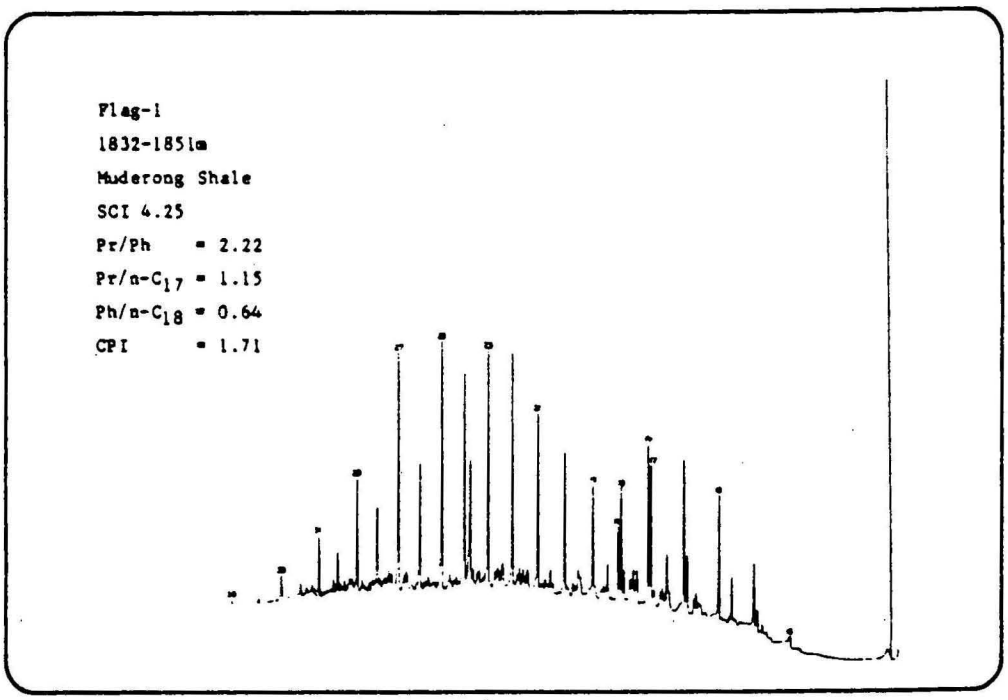


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH


Flag-1
1277-1293m
Windalia Radiolarite
SCI 3.5
Pr/Ph = 1.08
Pr/n-C17 = 0.46
Ph/n-C18 = 0.40
CPI = 1.06


Flag-1
1832-1851m
Muderong Shale
SCI 4.25
Pr/Ph = 2.22
Pr/n-C17 = 1.15
Ph/n-C18 = 0.64
CPI = 1.71

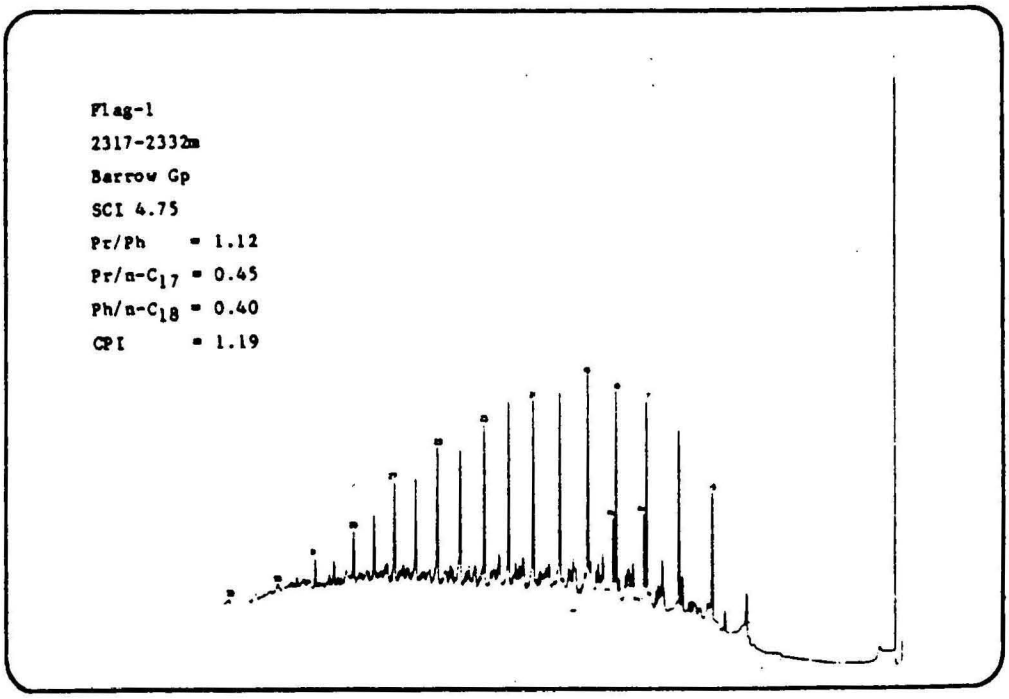

Flag-1
2317-2332m
Barrow Gp
SCI 4.75
Pr/Ph = 1.12
Pr/n-C17 = 0.45
Ph/n-C18 = 0.40
CPI = 1.19

Figure 3

FLINDERS SHOAL-1 WELL

SUMMARY

Geochemical analyses of samples from the interval 622m to 3616m TD of the Flinders Shoal-1 well have shown that the well section is immature to 1100m, early mature between 1100m and 1800m, middle mature between 1800m and 2850m, late mature between 2850m to 3600m and post mature below this depth.

The maturity gradients show around 200m of Late Permian to Early Triassic section missing at the unconformity at 3283m. Extrapolation of the reflectance gradient to seabed indicates that around 1000m of Early Cretaceous and younger section is missing above 622m. The spore colour gradient indicates that the maximum depth of burial of the sediments penetrated was around 500m greater than present day burial depths.

Mudstones in the interval 3305m to 3387m in the Byro Group have high residual organic carbon contents and may represent a post mature oil source. The well section is extensively stained by migrant hydrocarbons derived from early to middle mature terrestrially sourced waxy kerogens. This migrant oil is mixed with a biodegraded fraction at 1860m to 1875m and 3372m to 3387m.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 21° 04' 16"S, 115° 31' 18"E.

Operator and date of drilling: West Australian Petroleum Pty Ltd, 1969.

Well Status: Plugged and abandoned.

TD: 3616m.

Mud data: Seawater gel system: Seabed to 2136m.
Inhibited sea water system: 2136m to 3616m TD.

Casing data: 26" at 59m, 20" at 297m, $13^3/_8$" at 1200m, 7" at 3170m.

BHT data: 61.5°C at 1204.5m, after 1½ hours stopped circulation time.
83.5°C at 2137.5m, after 2 hours stopped circulation time.

106.5°C at 3032.5m, after 3½ hours stopped circulation time.
139°C at 3508.5m, after 1½ hours stopped circulation time.
144°C at 3616m TD, after 2½ hours stopped circulation time.

Elevation: RT 25.5m ASL.

Water depth: 15m.

Interval analysed: 622m to 3616m TD.

Age of interval analysed:

	Depths (in metres)
Early Cretaceous	622 -1062.2
Middle-Late Jurassic	1062.2-1892.2
Middle-Late Triassic	1892.2-2304.3
Early-Middle Triassic	2304.3-3283.6
Early Permian	3283.6-3616 TD

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: The samples yielded sufficient quantities of vitrinite for measurement but were complicated by reworked material. Results: Fair.

b) Spore Colour Index: The samples yielded sufficient quantities of indigenous sporomorphs but were complicated by contaminant material. Results: Good.

Source rock data quality: Poor.

Gas chromatography run at: 1738m to 1753m, 1860m to 1875m, 1982m to 1997m, 2241m to 2256m, 3305m to 3323m, 3372m to 3387m and 3534m to 3549m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Spore colour index values are interpreted to rise steadily from values of 2.5 SCI units at 2000m to around 8.25 SCI units at 3400m. Vitrinite reflectance values rise from 0.3% to 1.1% over

the same interval. Between 3400m and 3500m there is a marked discontinuity in both the spore colour and vitrinite reflectance gradients probably due to a normal fault with around 200m of recent vertical movement. Below the fault spore colour and vitrinite reflectance values once again rise steadily from 9 to 9.25 SCI units and 1.3% to 1.5% respectively.

The interpreted gradients show that around 200m of Late Permian to Early Jurassic section is missing at the unconformity at 3283m. Extrapolation of the gradients to seabed indicates that around 1000m of Early Cretaceous and younger section is missing above 622m and that the well section has been buried approximately 500m deeper than the present day burial depth. The results show that the well section is immature to 1100m, early mature between 1100m and 1800m, middle mature between 1800m and 2850m and late mature from 2850m to around 3600m.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

Mudstones in the interval 3305m to 3387m in the Bryo Group contain above average organic carbon contents of between 2.46% and 3.44%. This interval is post mature and may be a spent oil source.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

The remaining sediments analysed contain slightly below average to slightly above average organic carbon contents of between 0.88% and 2.15%. Pyrolysis and visual kerogen analysis shows that these samples contain mostly humic kerogen mixed occasionally with minor quantities of oil-prone kerogen. These sediments have no oil source potential and contain insufficient vitrinitic kerogen to be significant gas sources at optimum maturity.

Extraction, fractionation and gas chromatography of samples throughout the well section shows that samples are stained by varying amounts of migrant hydrocarbons derived from an early mature to mature source containing predominantly terrestrially derived waxy kerogens. This oil is mixed with a biodegraded fraction at 1860m to 1875m and 3372m to 3387m.

WELL: FLINDERS SHOAL-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1–10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
621.2		**Muderong Shale**									
622-637	Ctg	MDST, lt gy	2.5	0.29(7)	55	40	5				
668-683	"	MDST, lt gy						75	25	*	*
713-729	"	MDST, a/a						65	35	*	*
768.1		**Muderong Shale:Mardie Greensand Mbr**									
759-774	"	MDST, a/a	3.0	0.38(12)	60	40	tr	70	30	*	*
786.4		**Barrow Gp**									
1062.2		**Upper Dingo Claystone : Dupuy Sandstone Mbr**									
1557.5		**Upper Dingo Claystone**									
1738-1753	"	MDST, yel-gy, sl calc	4.5-5.0	0.56(6)	40	60	*				
	"	After extraction						45	55	*	*
1768-1784	"	MDST, a/a									
	"	After extraction						45	55	*	*
1799-1814	"	MDST, a/a									
	"	After extraction						45	50	*	5
1829-1845	"	MDST, a/a									
	"	After extraction						45	50	*	5
1860-1875	"	MDST, a/a									
	"	After extraction						45	45	*	10
1892.2		**Mungaroo Fm**									
1982-1997	"	MDST, a/a	5.0-5.5	0.64(5)	60	40	*				
	"	After extraction						50	40	*	10
2085-2101	"	MDST, a/a									
	"	After extraction						50	40	*	10
2241-2256	"	MDST, a/a + 40% MDST, med gy	?6.0	0.67(3)	70	30	*				
	P	MDST, med gy									
	P	After extraction						50	40	*	10
2304.3		**Locker Shale**									
3283.6		**Byro Gp?**									
3305-3323	Ctg	MDST, dk gy	7.5-8.0	1.13(6)	90	10	*				
3445-3460	"	MDST, med gy	8.0-8.5	1.45(2)	90	10	*				
3601-3616	"	MDST, a/a	7.5-8.0cvd	1.42(1)	80	20	tr				

Table 1 Maturity and Kerogen Composition Data

WELL: FLINDERS SHOAL-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % DRY WT OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
621.2		**Muderong Shale**													
622-637	Ctg	MDST, lt gy	0.88												
668-683	"	MDST, a/a	1.15	415	77	60	0.11	1.00							
713-729	"	MDST, a/a	1.50	422	100	53	0.07	1.61							
768.1		**Muderong Shale: Hardie Greensand Mbr**													
759-774	"	MDST, a/a	1.44	419	92	84	0.09	1.46							
786.4		**Barrow Gp**													
1062.2		**Upper Dingo Claystone: Dupuy Sst Mbr**													
1557.5		**Upper Dingo Claystone**													
1738-1753	"	MDST, yel-gy, sl calc	1.70	424	129	112	0.33	2.26	2215	130	580	34	22	4	74
	"	After extraction	1.61	423	89	104	0.06	2.20							
1768-1784	Ctg	MDST, a/a	2.24	419	180	88	0.28	4.00							
	"	After extraction	2.15	423	91	78	0.03	2.84							
1799-1814	Ctg	MDST, a/a	1.92	419	169	125	0.22	4.13							
	"	After extraction	1.74	424	131	93	0.04	2.37							
1829-1845	Ctg	MDST, a/a	1.99	421	143	138	0.22	3.64							
	"	After extraction	1.62	425	118	114	0.05	2.01							
1860-1875	Ctg	MDST, a/a	1.87	413	294	176	0.24	7.21	4675	250	3180	170	62	6	32
	"	After extraction	1.83	421	121	153	0.06	2.36							
1892.2		**Mungaroo Fm**													
1982-1997	Ctg	MDST, a/a	1.44	420	155	126	0.21	2.82	1410	98	685	48	44	5	51
	"	After extraction	1.24	422	128	119	0.08	1.72							
2085-2101	Ctg	MDST, a/a	1.59	419	119	155	0.27	2.59							
	"	After extraction	1.47	418	115	129	0.10	1.88							
2241-2256	Ctg	MDST, a/a + 40% MDST, med gy	1.11						1100	99	450	41	37	4	59
	P	MDST, yel-gy, sl calc	0.95												
	P	MDST, med gy	1.15												
	P	After extraction	1.26	429	125	34	0.05	1.66							
2304.3		**Locker Shale**													
3283.6		**Byro Gp?**													
3305-3323	Ctg	MDST, dk gy	3.44	428	56	67	0.36	2.97	2930	85	890	26	27	3	70
3372-3387	"	MDST, med dk gy	2.83	NDP	246	128	0.24	9.21	4445	157	660	23	13	2	85
	"	After extraction	2.46	412	162	101	0.09	4.39							
3445-3460	Ctg	MDST, med gy	1.28	437	73	119	0.26	1.25							

Table 2a Chemical Analysis Data

WELL: FLINDERS SHOAL-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE °C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
3534-3549	Ctg	MDST, med gy	1.60						740	46	310	19	36	6	58
	"	After extraction	1.48	474	44	70	0.13	0.75							
3601-3616	"	MDST, a/a	1.85												
	"	After extraction	1.80	433	70	65	0.13	1.44							

Table 2b Chemical Analysis Data

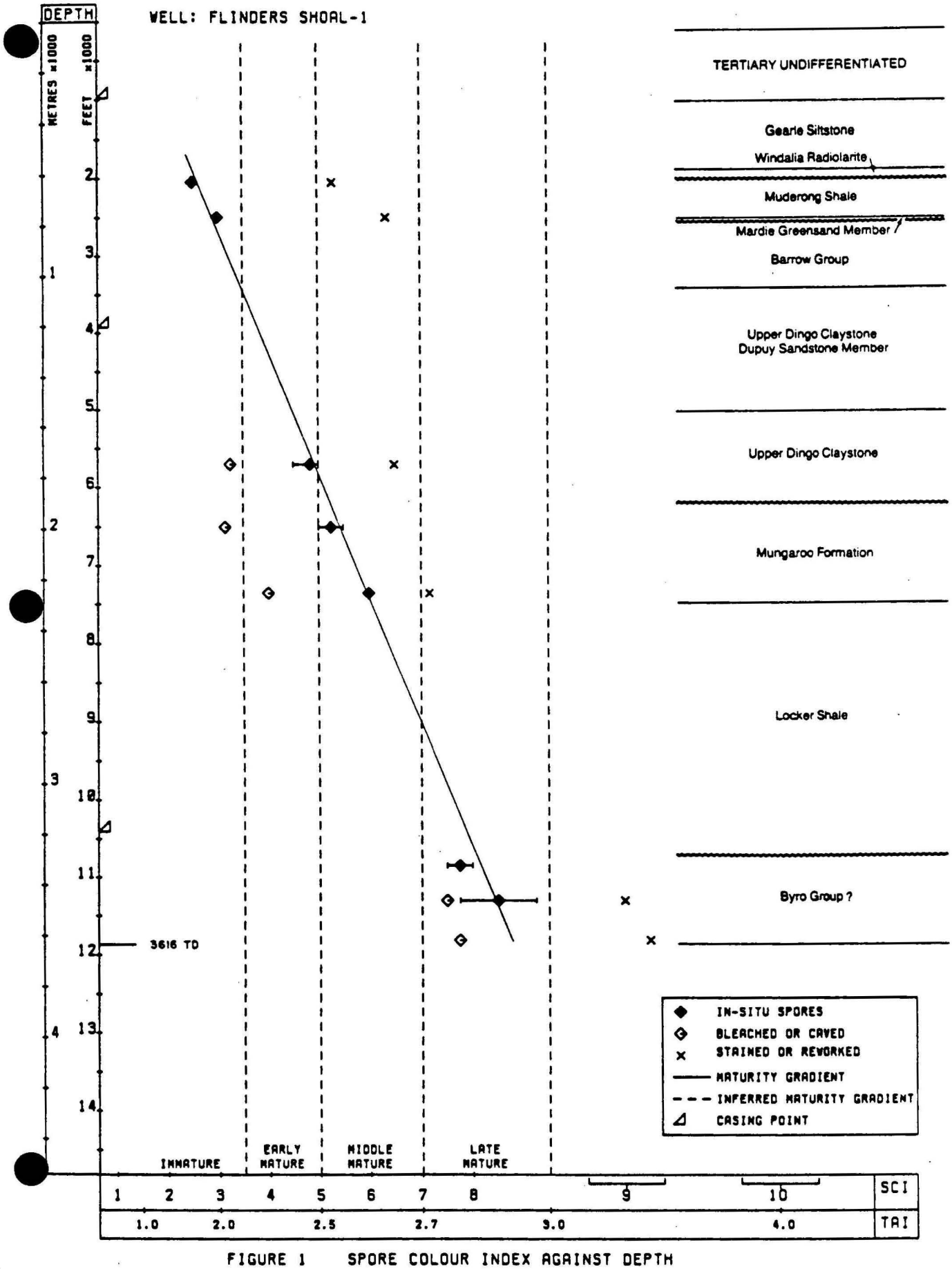


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

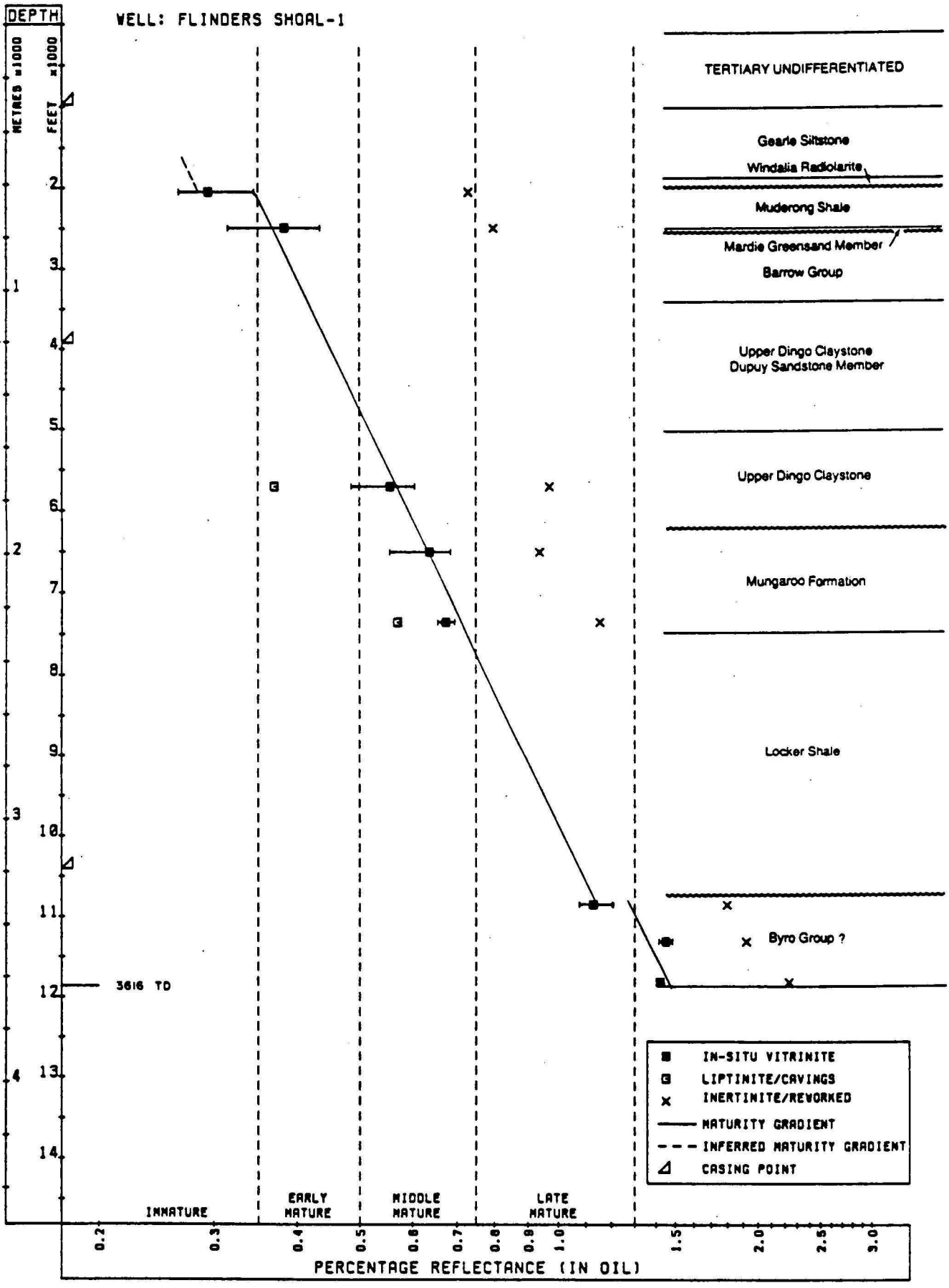
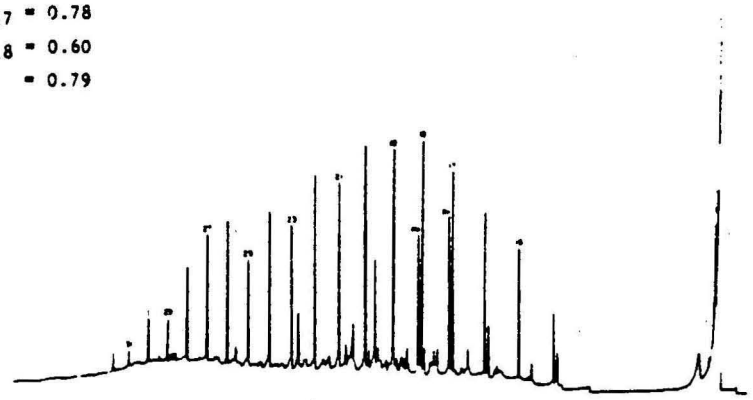
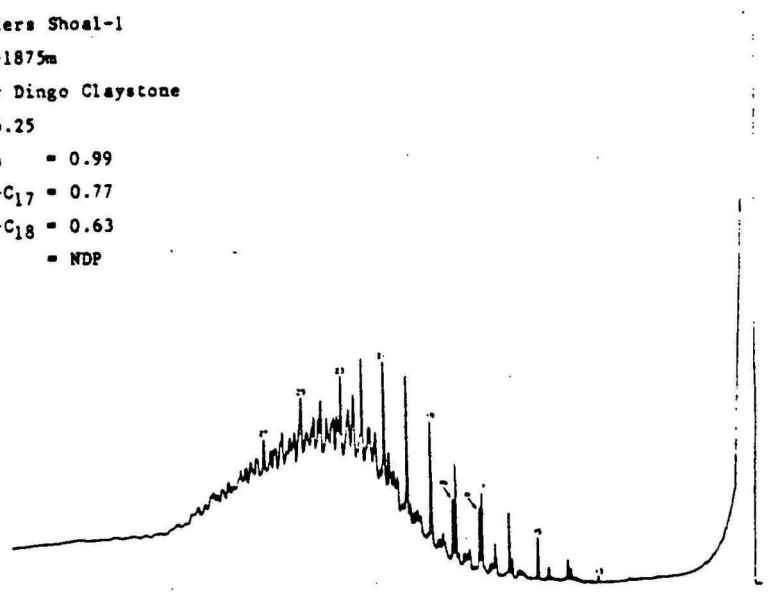


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH

Flinders Shoal-1
1738-1753m
Upper Dingo Claystone
SCI 4.5-5.0
Pr/Ph = 1.12
$Pr/n\text{-}C_{17}$ = 0.78
$Ph/n\text{-}C_{18}$ = 0.60
CPI = 0.79



Flinders Shoal-1
1860-1875m
Upper Dingo Claystone
SCI 5.25
Pr/Ph = 0.99
$Pr/n\text{-}C_{17}$ = 0.77
$Ph/n\text{-}C_{18}$ = 0.63
CPI = NDP



Flinders Shoal-1
1982-1997m
Mungaroo Fm
SCI 5.0-5.5
Pr/Ph = 1.41
$Pr/n\text{-}C_{17}$ = 0.69
$Ph/n\text{-}C_{18}$ = 0.45
CPI = 1.25

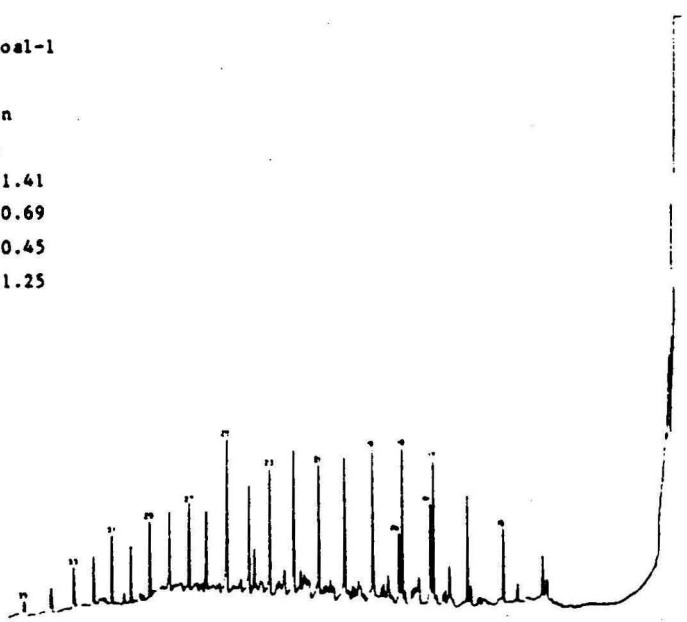
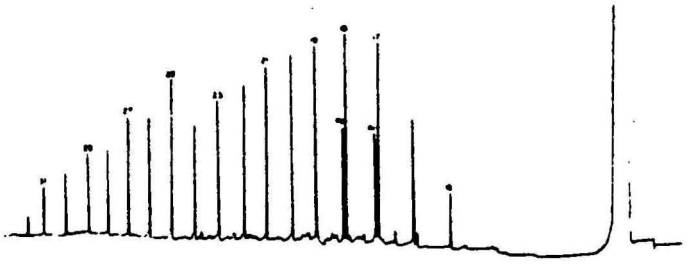
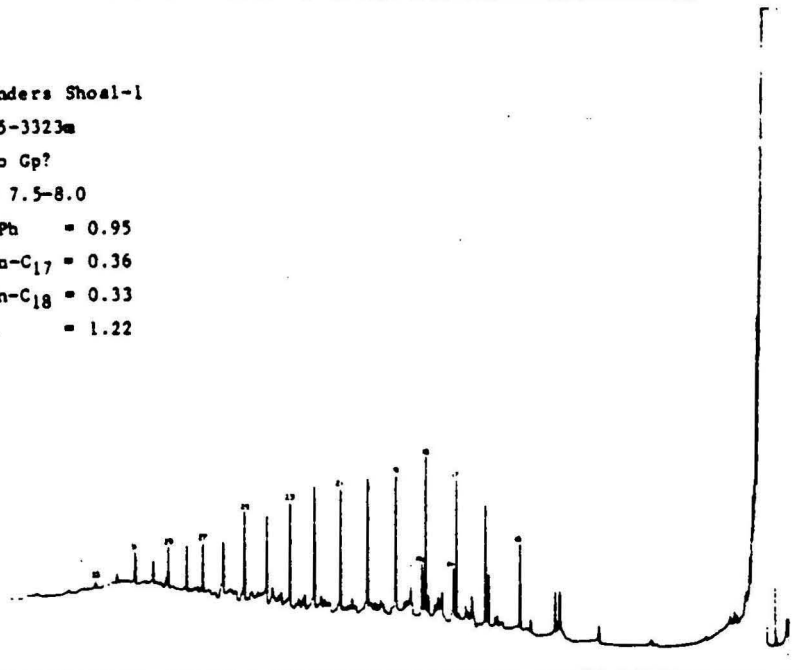


Figure 3a

Flinders Shoal-1
2241-2256m
Mungaroo Fmn
SCI 6.0
Pr/Ph = 0.96
Pr/n-C_{17} = 0.55
Ph/n-C_{18} = 0.56
CPI = 1.18



Flinders Shoal-1
3305-3323m
Byro Gp?
SCI 7.5-8.0
Pr/Ph = 0.95
Pr/n-C_{17} = 0.36
Ph/n-C_{18} = 0.33
CPI = 1.22



Flinders Shoal-1
3372-3387m
Byro Gp?
SCI 8.0
Pr/Ph = 0.76
Pr/n-C_{17} = 0.56
Ph/n-C_{18} = 0.68
CPI = 1.12

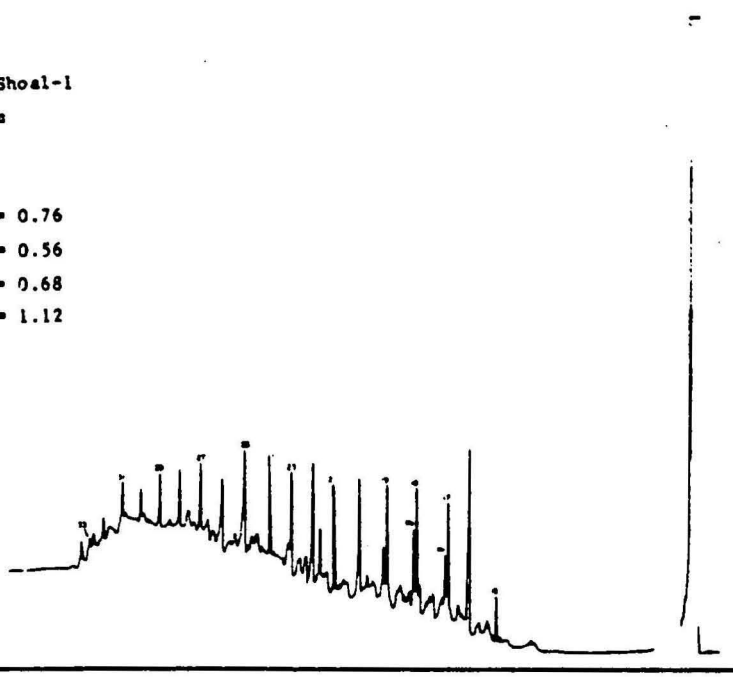


Figure 3b

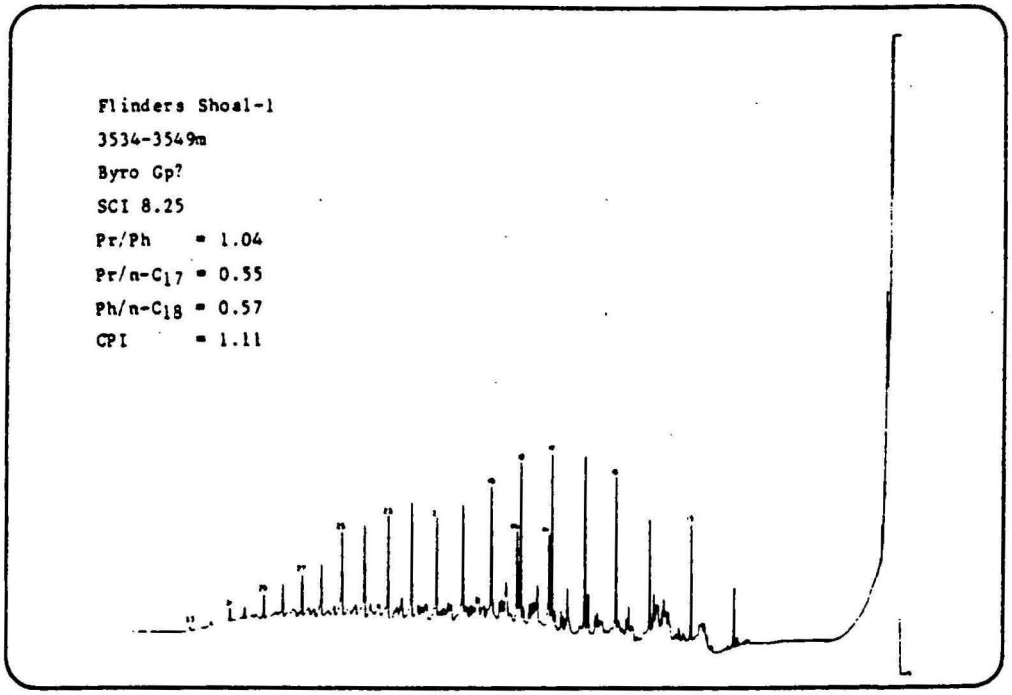

Flinders Shoal-1
3534-3549m
Byro Gp?
SCI 8.25
Pr/Ph = 1.04
Pr/n-C17 = 0.55
Ph/n-C18 = 0.57
CPI = 1.11

Figure 3c

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Appendix 1a

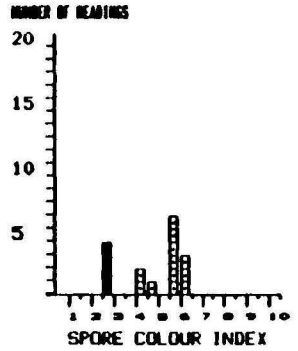
FLINDERS SHOAL-1

IN SITU POPULATION

SAMPLE 622-637M

2.5 2.5 2.5 2.5 4.0 4.0 4.5 5.5 5.5 5.5
5.5 5.5 5.5 6.0 6.0 6.0

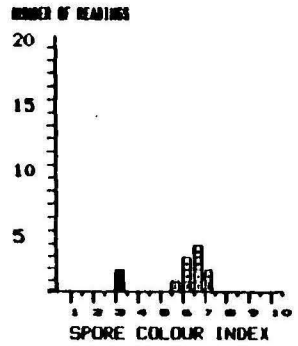
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	2.5-2.5	4
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	4.0-6.0	12



SAMPLE 759-774M

3.0 3.0 5.5 6.0 6.0 6.0 6.5 6.5 6.5 6.5
7.0 7.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	3.0-3.0	2
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	5.5-7.0	10



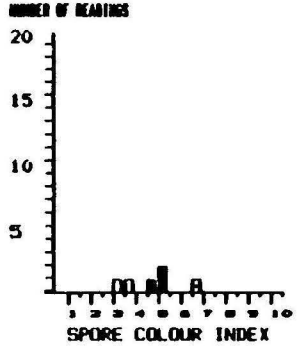
FLINDERS SHOAL-1

IN SITU POPULATION

SAMPLE 1738-1753M

3.0 3.5 4.5 5.0 5.0 6.5

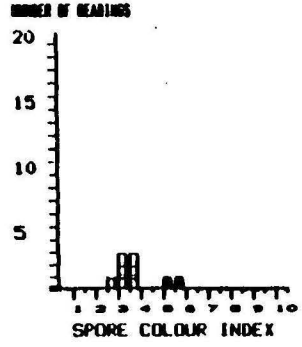
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.5-5.0	3
BLEACHED OR CAVED	3.0-3.5	2
STAINED OR REWORKED	6.5-6.5	1



SAMPLE 1982-1997M

2.5 3.0 3.0 3.0 3.5 3.5 3.5 5.0 5.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.5	2
BLEACHED OR CAVED	2.5-3.5	7
STAINED OR REWORKED	-	0



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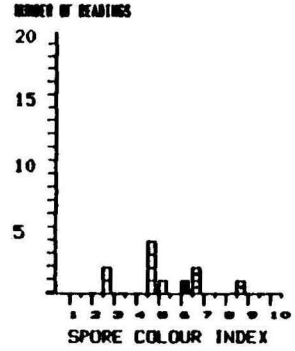
FLINDERS SHOAL-1

IN SITU POPULATION

SAMPLE 2241-2256M

2.5 2.5 4.5 4.5 4.5 4.5 5.0 6.0 6.5 6.5 8.5

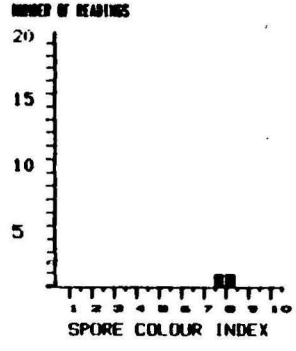
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.0-6.0	1
BLEACHED OR CAVED	2.5-5.0	7
STAINED OR REWORKED	6.5-8.5	3



SAMPLE 3305-3323M

7.5 8.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	7.5-8.0	2
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	-	0



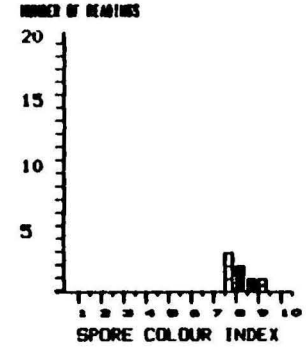
FLINDERS SHOAL-1

IN SITU POPULATION

SAMPLE 3445-3460M

7.5 7.5 7.5 8.0 8.0 8.5 9.0

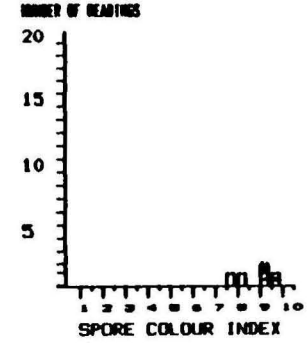
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	8.0-8.5	3
BLEACHED OR CAVED	7.5-7.5	3
STAINED OR REWORKED	9.0-9.0	1



SAMPLE 3601-3616M

7.5 8.0 9.0 9.0 9.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	-	0
BLEACHED OR CAVED	7.5-8.0	2
STAINED OR REWORKED	9.0-9.5	3



Appendix 1b

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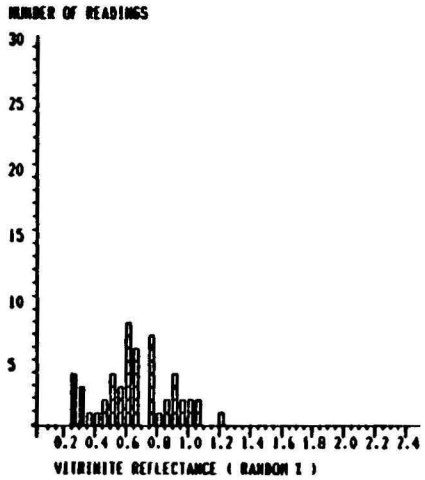
FLINDERS SHOAL-1

SAMPLE 622-637M

0.27 0.28 0.28 0.29 0.30 0.30 0.34 0.39 0.42 0.46
0.48 0.51 0.52 0.53 0.54 0.57 0.58 0.58 0.60 0.61
0.61 0.62 0.62 0.62 0.64 0.64 0.65 0.66 0.67 0.68
0.69 0.69 0.75 0.76 0.76 0.77 0.77 0.77 0.79 0.81
0.89 0.89 0.91 0.92 0.93 0.94 0.95 0.98 1.01 1.03
1.06 1.07 1.22

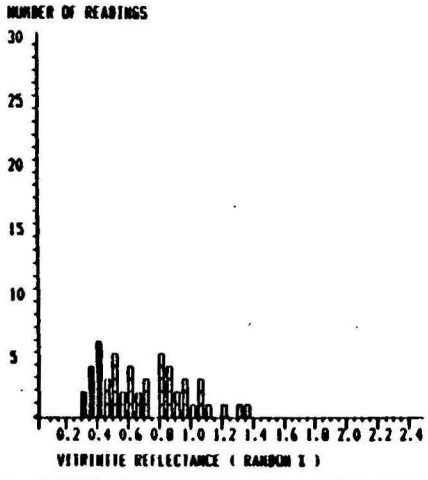
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.27-0.34	7	0.29	0.02
INERTINITE/REWORKED	0.39-1.22	46	0.73	0.19



SAMPLE 759-774M

0.32 0.34 0.35 0.36 0.36 0.38 0.40 0.40 0.41 0.42
0.43 0.43 0.47 0.49 0.49 0.50 0.51 0.51 0.52 0.54
0.56 0.56 0.61 0.62 0.63 0.63 0.67 0.69 0.70 0.72
0.73 0.80 0.80 0.82 0.83 0.84 0.85 0.86 0.86 0.87
0.90 0.93 0.96 0.96 0.99 1.01 1.07 1.07 1.09 1.11
1.23 1.33 1.38

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.32-0.43	12	0.38	0.04
INERTINITE/REWORKED	0.47-1.38	41	0.80	0.24

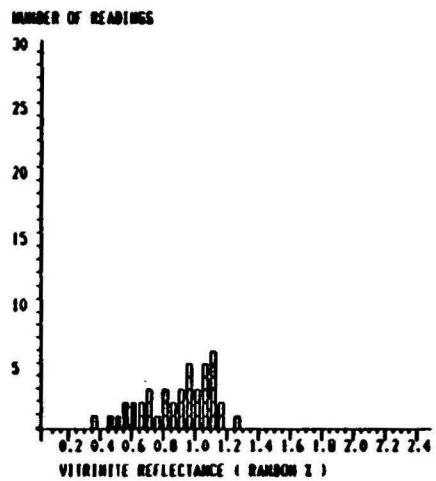


FLINDERS SHOAL-1

SAMPLE 1738-1753M

0.37 0.49 0.52 0.56 0.56 0.60 0.60 0.66 0.67 0.70
0.74 0.74 0.77 0.82 0.83 0.84 0.85 0.87 0.90 0.91
0.93 0.95 0.95 0.96 0.96 0.98 1.01 1.04 1.04 1.07
1.07 1.08 1.08 1.09 1.11 1.11 1.12 1.13 1.13 1.14
1.16 1.16 1.28

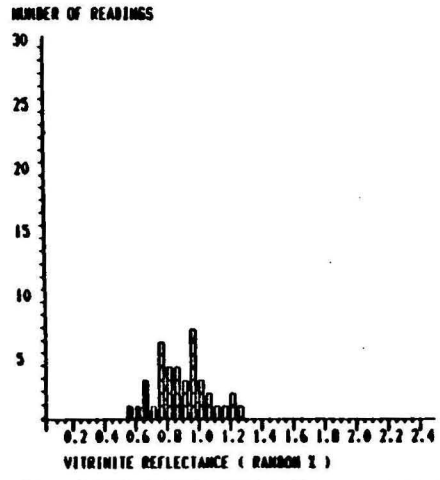
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.49-0.60	6	0.56	0.04
LIPTINITE/CAVINGS	0.37-0.37	1	0.37	
INERTINITE/REWORKED	0.66-1.28	36	0.97	0.16



SAMPLE 1982-1997M

0.56 0.60 0.66 0.68 0.68 0.74 0.75 0.75 0.76 0.76
0.77 0.78 0.81 0.82 0.83 0.83 0.86 0.86 0.87 0.87
0.90 0.92 0.93 0.95 0.96 0.97 0.97 0.98 0.98 0.99
1.00 1.01 1.02 1.05 1.06 1.13 1.15 1.21 1.23 1.27

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.56-0.68	5	0.64	0.05
INERTINITE/REWORKED	0.74-1.27	35	0.94	0.14



Appendix 2a

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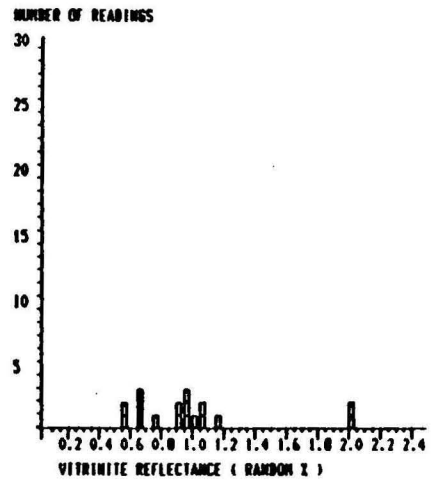
FLINDERS SHOAL-1

SAMPLE 2241-2256M

0.56 0.58 0.66 0.67 0.69 0.75 0.93 0.94 0.96 0.97
0.98 1.01 1.05 1.08 1.15 2.02 2.02

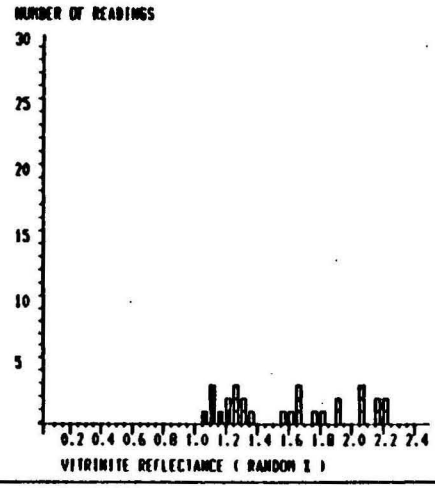
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.66-0.69	3	0.67	0.02
LIPTINITE/CAVINGS	0.56-0.58	2	0.57	0.01
INERTINITE/REWORKED	0.75-2.02	12	1.15	0.42



SAMPLE 3305-3323M

1.08 1.10 1.11 1.12 1.15 1.20 1.24 1.26 1.26 1.29
1.32 1.34 1.37 1.55 1.60 1.68 1.68 1.69 1.75 1.83
1.90 1.93 2.05 2.06 2.07 2.18 2.19 2.20 2.23 2.63
2.64

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.08-1.20	6	1.13	0.04
INERTINITE/REWORKED	1.24-2.64	25	1.80	0.42

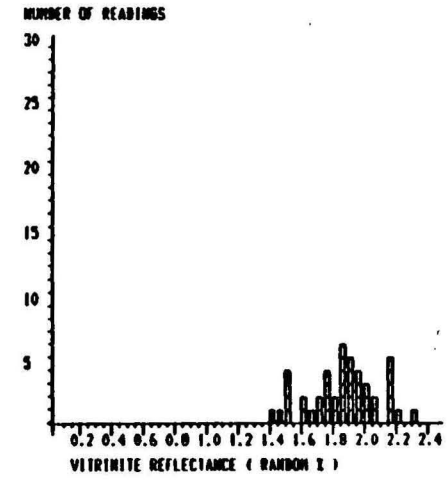


FLINDERS SHOAL-1

SAMPLE 3445-3460M

1.42 1.48 1.50 1.51 1.51 1.52 1.64 1.64 1.65 1.70
1.72 1.76 1.78 1.78 1.79 1.83 1.84 1.85 1.85 1.85
1.85 1.86 1.88 1.91 1.92 1.92 1.93 1.94 1.96 1.97
1.98 1.99 2.01 2.02 2.03 2.05 2.07 2.15 2.16 2.17
2.18 2.18 2.20 2.30 2.48 2.79

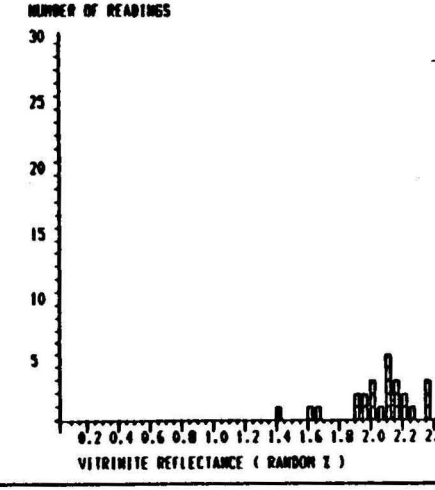
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.42-1.48	2	1.45	0.04
INERTINITE/REWORKED	1.50-2.79	44	1.92	0.25



SAMPLE 3601-3616M

1.42 1.64 1.67 1.93 1.94 1.96 1.99 2.01 2.02 2.03
2.07 2.10 2.13 2.14 2.14 2.14 2.15 2.17 2.19 2.20
2.23 2.29 2.35 2.39 2.39 2.40 2.41 2.45 2.47 2.50
2.60 2.80 2.82 2.90

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.42-1.42	1	1.42	
INERTINITE/REWORKED	1.64-2.90	33	2.23	0.29



Appendix 2b

HAMPTON-1 WELL

SUMMARY

Geochemical analyses of selected samples from the interval 850m to 2450m of the Hampton-1 well show that the well section is immature to 1600m and early mature between 1600m and 2450m. The maturity gradients show no evidence of any major uplift and erosion at unconformities present in the section. The sediments analysed are currently at or near their maximum depths of burial. Extrapolation of the reflectance gradient to seabed indicates that 500m of Middle Jurassic and younger section is missing above 850m. The samples analysed from the well section have no oil or gas source potential. Small quantities of biodegraded oil are present in the sample at 1410m to 1420m.

GENERAL COMMENTS

Basin: North Carnarvon Basin.

Location: 20° 07' 05"S, 116° 32' 47"E.

Operator and date of drilling: Bocal, 1974.

Well Status: Plugged and abandoned.

TD: 2584m.

Mud data: Seawater and Seawater gel systems: Seabed to 2450m.

Casing data: 30" at 108m, 20" at 400m, $13^3/_8$" at 1207m.

BHT data: 55.5°C at 1218m, after 5 hours stopped circulation.
77°C at 2584m TD, after 13 hours stopped circulation.

Elevation: RT 30m ASL.

Water depth: 53m.

Interval analysed: 850m to 2450m

Age of interval analysed:

	Depths (in metres)
Early-Middle Jurassic	850-1573
Middle-Late Triassic	1573-2086
Early-Middle Triassic	2086-2450

HAMPTON-1 WELL

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: Samples yielded sufficent quantities of vitrinite for measurements. Results: Good.

b) Spore Colour Index: Samples analysed yielded sufficient sporomorphs for measurement. Results: Good.

Source rock data quality: Good.

Gas chromatography run at: 1410m to 1420m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Vitrinite reflectance values over the section rise steadily from 0.34% at 850m to 0.5% at 2450m. Spore colour index values rise from 2 SCI units to around 5 SCI units over the same interval. The results show the well section to be immature to around 1600m and early mature between 1600m and 2450m. The difference in prediction of the depth to early maturity using vitrinite reflectance and spore colour index data is probably due to content of high reflecting vitrinite in samples above 2000m in the Jurassic section of the well. It is therefore considered that the spore colour gradient is a better indicator of the maturity of the section.

Neither of the maturity gradients indicate that large amounts of section have been removed at unconformities within the interval analysed. Extrapolation of the maturity gradients to the surface shows that 500m of Middle Jurassic and younger section is missing above 850m and that the sediments analysed are currently at or near their maximum depths of burial.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

None of the samples analysed has any significant oil or gas source potential.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

Analysis of selected samples in the Early to Middle Jurassic sediments shows that the mudstones in these samples selected at 850m to 860m, 885m to 895m, 1410m to 1420m, 1475m to 1485m and 1530m to 1550m contain average to below average organic carbon contents of between 0.84% and 3.81%. Pyrolysis analysis of samples with TOC values greater than 1.0% shows that these samples have low to moderate hydrogen indices (86 to 122), indicating that the samples contain only humic kerogen with insignificant quantities of oil-prone sapropel. This is confirmed by visual kerogen typing data which shows only minor (10-15%) liptinitic kerogen content. Most of this material represents contamination.

No samples were analysed from the Late Triassic interval of the well. Selected samples analysed in the Early Triassic interval of the well contain below average organic carbon contents of between 0.67% and 1.67%. Pyrolysis analysis of samples with greater than 1.0% TOC shows these samples to have low hydrogen indices (42 to 104) indicating that they contain predominantly humic kerogen. Visual kerogen typing data show samples analysed in this interval to contain only minor quantities of indigenous liptinitic kerogen.

Extraction, fractionation and gas chromatography analysis of the sample at 1410m to 1420m shows the sample to contain small amounts of extractable material. Fractionation data shows the extract to be composed of almost equal amounts of saturated and polar compounds. The alkane gas chromatogram of this extract shows minor n-alkanes in the range $\underline{n}$-C_{15} to $\underline{n}$-C_{21} superimposed on abundant branched and cyclic alkanes in the $\underline{n}$-C_{20} to $\underline{n}$-C_{28} range. This extract probably represents small quantities of indigenous hydrocarbons derived from a terrestrial source mixed with small quantities of a biodegraded oil or contaminant material.

None of the samples analysed has any significant oil or gas source potential.

WELL: HAMPTON-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
732		**Learmonth Mbr**									
850-860	Ctg	MDST, ol-gy/med lt gy + 10% SST, med lt gy + 10% SND	2.0	0.36(28)	60	25	15				
	P	MDST, a/a						50	50	*	*
885-895	P	MDST, ol-gy,						50	50	*	*
1332		**Lower Dingo Claystone**									
1335-1345	P	MDST, a/a						45	55	*	*
1410-1420	Ctg	MDST, med gy/ol-gy, calc + mnr SND	2.5-3.0	0.37(12)	25	65	10	45	55	*	*
1475-1485	"	MDST, lt ol-gy, calc						50	50	*	*
1530-1550	"	MDST, lt ol-gy/ol-gy, calc	3.0-3.5	0.40(7)	50	40	10				
1573		**Mungaroo Mbr**									
2040-2060	"	MDST, lt gy, calc, sndy + mnr SND	4.0-4.5	0.55(28)	50	35	15				
2086		**Locker Shale**									
2110-2120	"	MDST, lt gy, calc						60	40	*	*
2175-2185	P	MDST, med-gy						60	40	*	*
2230-2240	Ctg	MDST, brn-gy, calc + 30% MDST, med dk gy, carb	4.5	0.44(29)	60	20	20				
	P	MDST, brn-gy, calc						50	50	*	*
	P	MDST, med dk gy, carb						30	70	*	*
2335-2345	Ctg	MDST, lt brn-gy/brn -gy, calc + 20% MDST, med lt gy						40	60	*	*
2375-2385	P	MDST, med gy						50	50	*	*
2430-2440	P	MDST, brn-gy, calc						65	35	*	*
2445-2450	Ctg	MDST, brn-gy, calc + 50% MDST, med gy, carb + mnr LST, wht	5.0	0.49(7)	80	15	5				

Table 1 Maturity and Kerogen Composition Data

WELL: HAMPTON-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON Of ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
732		**Learmouth Fm**													
850-860	Ctg	MDST, ol-gy/med-lt gy 10% SST, med lt-gy + 10% SND + mnr contam	-												
	P	MDST, a/a	1.55	429	120	184	0.06	1.46							
885-895	Ctg	MDST, ol-gy, calc, sndy + mnr SND	-												
	P	MDST, a/a	1.89	424	110	81	0.04	2.16							
1332		**Lower Dingo Claystone**													
1335-1345	Ctg	MDST, ol-gy, calc, sl sndy + mnr SND	-												
	P	MDST, a/a	3.81	438	86	62	0.03	3.38							
1410-1420	Ctg	MDST, med gy/ol-gy, calc + mnr SND + mnr contam	2.37	434	122	88	0.02	2.95	800	34	475	20	54	5	41
1475-1485	"	MDST, lt ol-gy, calc	1.22	430	90	122	0.03	1.14							
1530-1550	"	MDST, lt ol-gy/ol-gy, calc	0.84												
1573		**Mungaroo Fm**													
2040-2060	"	MDST, lt gy, calc, sndy + mnr SND	0.61												
2086		**Locker Shale**													
2095-2105	"	MDST, lt brn-gy, calc, sndy + mnr SND	0.91												
2110-2120	"	MDST, lt gy, calc	1.67	436	66	50	0.03	1.14							
2125-2135	"	MDST, lt gy, calc	0.93												
2140-2150	"	MDST, lt gy/brn-gy, calc	0.92												
2155-2160	"	MDST, lt brn-gy/brn-gy, calc + 10% MDST, med-gy	0.86												
2175-2185	"	MDST, lt brn-gy/brn-gy, calc + 10% MDST, med gy	-												
	P	MDST, lt brn-gy/brn-gy, calc	0.90												
	P	MDST, med-gy	1.16	435	60	101	0.04	0.73							
2230-2240	Ctg	MDST, brn-gy, calc + 30% MDST, med dk gy, carb	-												
	P	MDST, brn-gy, calc	1.02	432	69	142	0.07	0.75							
	P	MDST, med dk gy, carb	1.94	439	104	47	0.02	2.07							
2335-2345	Ctg	MDST, lt brn-gy/brn-gy, calc + 20% MDST, med lt gy	1.04	435	88	148	0.04	0.95							
2375-2385	"	MDST, lt brn-gy/brn-gy, calc + 30% MDST, med gy	-												
	P	MDST, med gy	1.15	435	75	60	0.06	0.91							
	P	MDST, lt brn-gy/brn-gy, calc	0.97												

Table 2a Chemical Analysis Data

WELL: HAMPTON-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g TOC)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g TOC)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2400-2410	Ctg	MDST, lt brn-gy/brn-gy, gy, calc + 20% MDST, med gy	0.83												
2415-2425	"	MDST, a/a + 20% MDST, a/a	0.83												
2430-2440	Ctg	MDST, brn-gy, calc + 40% MDST, med dk gy, carb	-												
	P	MDST, brn-gy, calc	1.05	432	42	100	0.10	0.49							
	P	MDST, med dk gy, carb	0.94												
2445-2450	Ctg	MDST, brn-gy, calc + 50% MDST, med-gy, carb + mnr LST, wht	0.67												

Table 2b Chemical Analysis Data

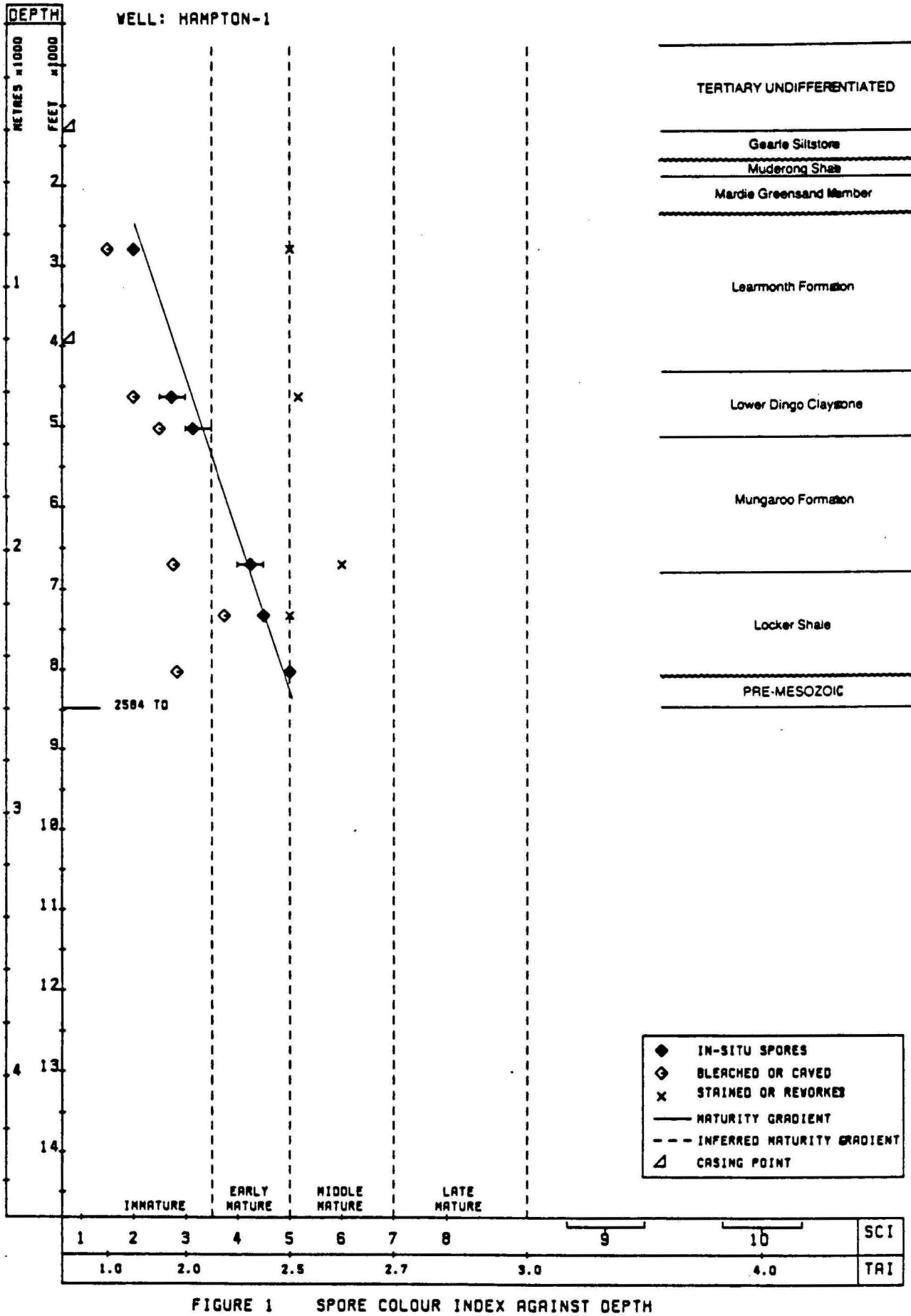


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

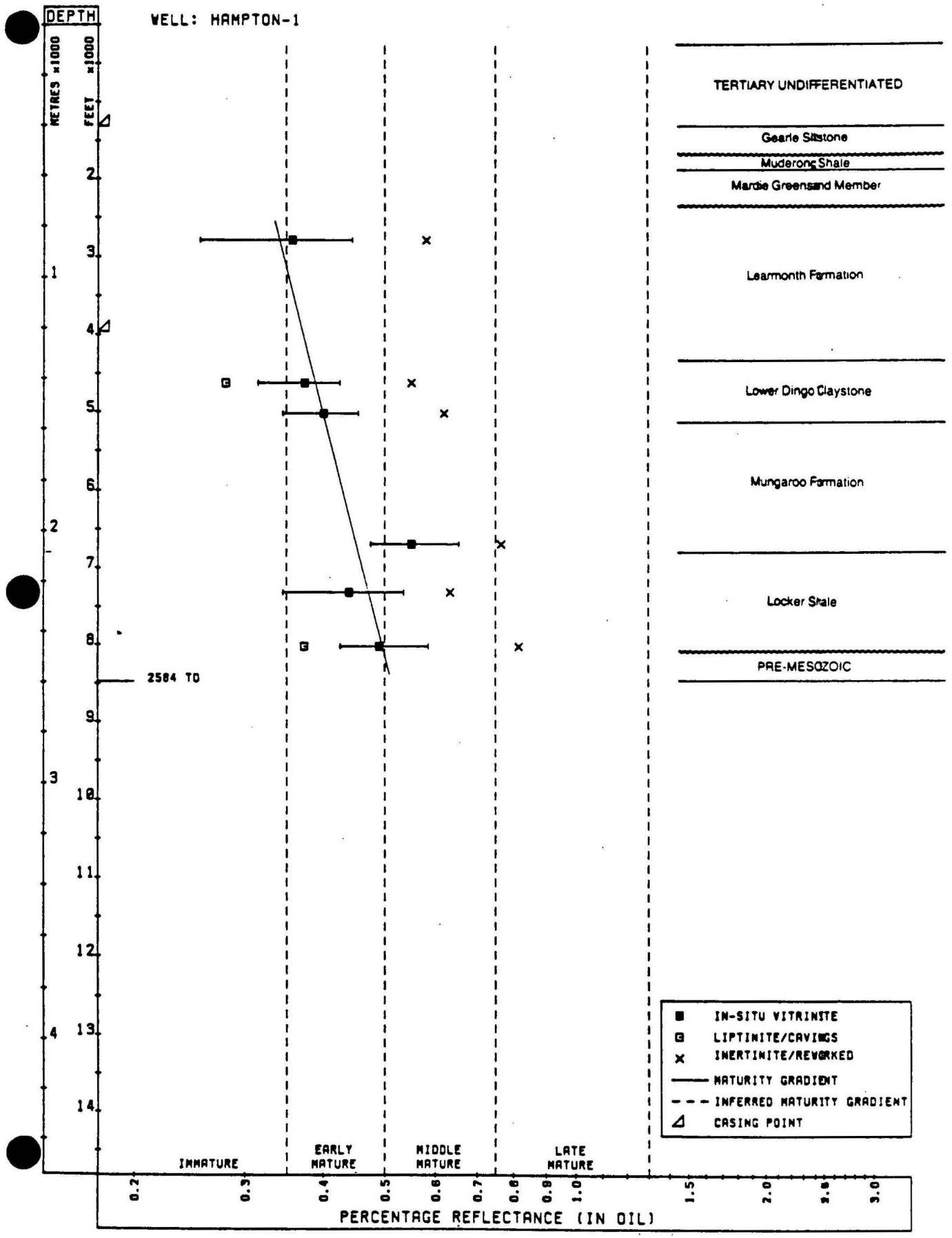


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH

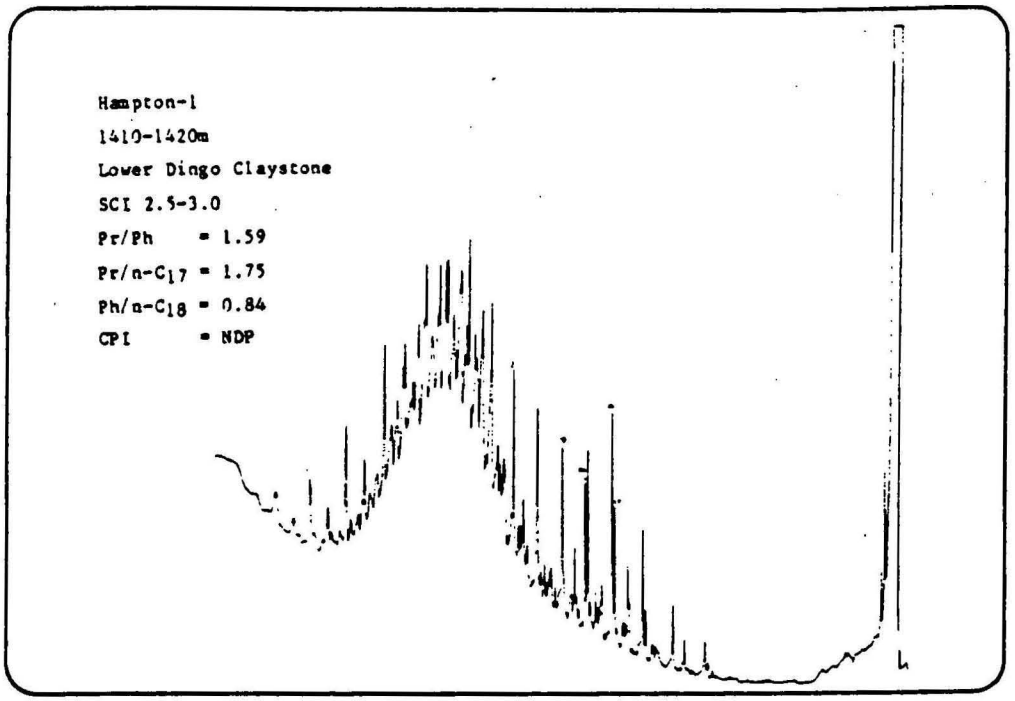

Hampton-1
1410-1420m
Lower Dingo Claystone
SCI 2.5-3.0
Pr/Ph = 1.59
Pr/n-C17 = 1.75
Ph/n-C18 = 0.84
CPI = NDP

Figure 3

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Appendix 1a

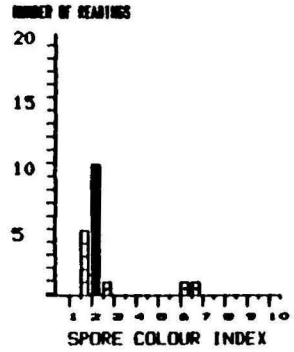
HAMPTON-1

IN SITU POPULATION

SAMPLE 850-860M

1.5 1.5 1.5 1.5 1.5 2.0 2.0 2.0 2.0 2.0
2.0 2.0 2.0 2.0 2.0 2.5 6.0 6.5

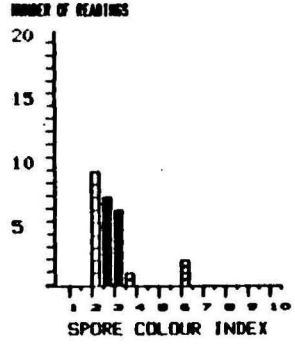
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	2.0-2.0	10
BLEACHED OR CAVED	1.5-1.5	5
STAINED OR REWORKED	2.5-6.5	3



SAMPLE 1410-1420M

2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.5
2.5 2.5 2.5 2.5 2.5 2.5 3.0 3.0 3.0 3.0
3.0 3.0 3.5 6.0 6.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	2.5-3.0	13
BLEACHED OR CAVED	2.0-2.0	9
STAINED OR REWORKED	3.5-6.0	3



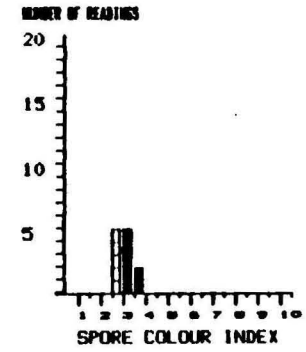
HAMPTON-1

IN SITU POPULATION

SAMPLE 1530-1550M

2.5 2.5 2.5 2.5 2.5 3.0 3.0 3.0 3.0 3.0
3.5 3.5

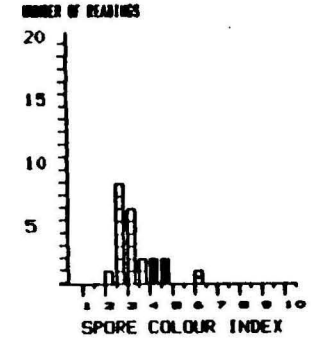
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	3.0-3.5	7
BLEACHED OR CAVED	2.5-2.5	5
STAINED OR REWORKED	-	0



SAMPLE 2040-2060M

2.0 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 3.0
3.0 3.0 3.0 3.0 3.0 3.5 3.5 4.0 4.0 4.5
4.5 6.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.0-4.5	4
BLEACHED OR CAVED	2.0-3.5	17
STAINED OR REWORKED	6.0-6.0	1



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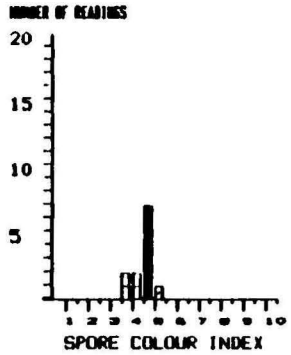
HAMPTON-1

IN SITU POPULATION

SAMPLE 2230-2240M

3.5 3.5 4.0 4.0 4.5 4.5 4.5 4.5 4.5 4.5 4.5 5.0

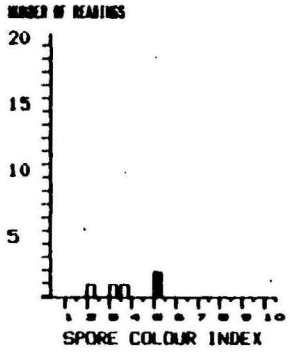
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.5-4.5	7
BLEACHED OR CAVED	3.5-4.0	4
STAINED OR REWORKED	5.0-5.0	1



SAMPLE 2445-2450M

2.0 3.0 3.5 5.0 5.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.0	2
BLEACHED OR CAVED	2.0-3.5	3
STAINED OR REWORKED	-	0



Appendix 1b

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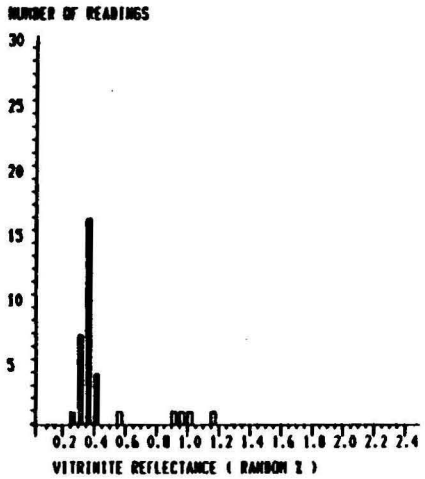
HAMPTON-1

SAMPLE 850-860M

0.26 0.30 0.30 0.33 0.33 0.34 0.34 0.34 0.35 0.35
0.35 0.35 0.35 0.35 0.36 0.36 0.36 0.37 0.37 0.37
0.37 0.38 0.38 0.39 0.40 0.41 0.41 0.44 0.58 0.93
0.96 1.00 1.15

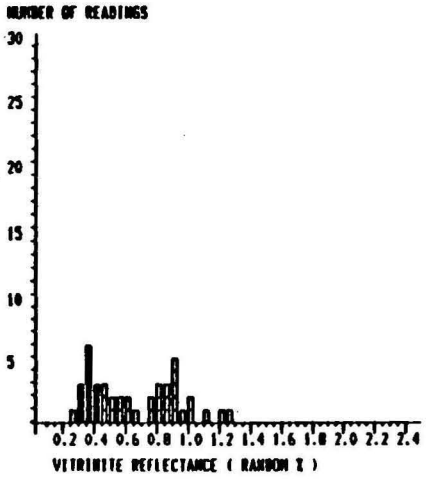
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.26-0.44	28	0.36	0.04
REWORKED	0.58-0.58	1	0.58	



SAMPLE 1410-1420M

0.28 0.32 0.33 0.33 0.37 0.38 0.38 0.38 0.38 0.39
0.40 0.41 0.42 0.45 0.47 0.48 0.52 0.52 0.55 0.57
0.64 0.64 0.66 0.76 0.78 0.81 0.82 0.83 0.88 0.88
0.89 0.90 0.92 0.93 0.94 0.94 0.99 1.02 1.03 1.11
1.20 1.28

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.32-0.42	12	0.37	0.03
LIPTINITE/CAVINGS	0.28-0.28	1	0.28	
REWORKED	0.45-0.66	10	0.55	0.08
INERTINITE/REWORKED	0.76-0.94	13	0.87	0.06

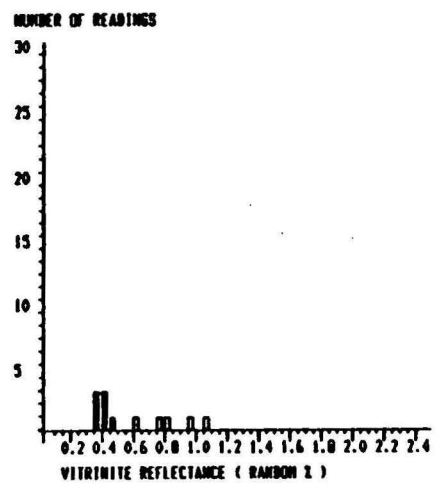


HAMPTON-1

SAMPLE 1530-1550M

0.35 0.37 0.38 0.41 0.42 0.43 0.45 0.62 0.76 0.82
0.96 1.05

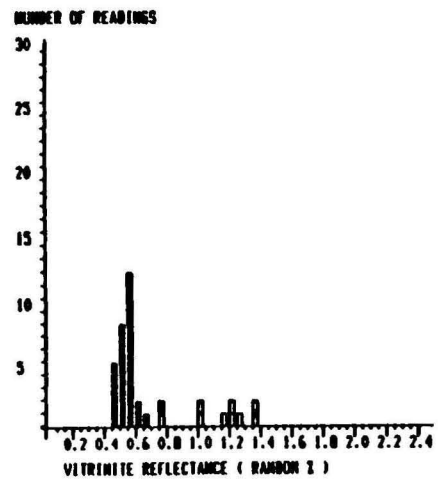
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.35-0.45	7	0.40	0.04
REWORKED	0.62-0.62	1	0.62	



SAMPLE 2040-2060M

0.48 0.48 0.48 0.49 0.49 0.50 0.50 0.51 0.52 0.53
0.53 0.54 0.54 0.55 0.56 0.56 0.57 0.58 0.58 0.58
0.58 0.58 0.59 0.59 0.59 0.61 0.64 0.65 0.76 0.77
1.01 1.02 1.19 1.20 1.21 1.25 1.35 1.35

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.48-0.65	28	0.55	0.05
REWORKED	0.76-0.77	2	0.77	0.01



Appendix 2a

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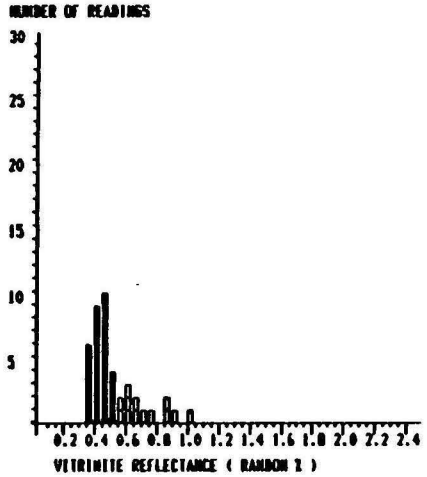
HAMPTON-1

SAMPLE 2230-2240M

0.35 0.36 0.37 0.37 0.38 0.38 0.40 0.41 0.41 0.42
0.42 0.43 0.43 0.44 0.44 0.45 0.45 0.45 0.46 0.47
0.47 0.48 0.48 0.48 0.49 0.50 0.50 0.52 0.53 0.55
0.55 0.61 0.62 0.64 0.68 0.69 0.73 0.79 0.86 0.87
0.92 1.00

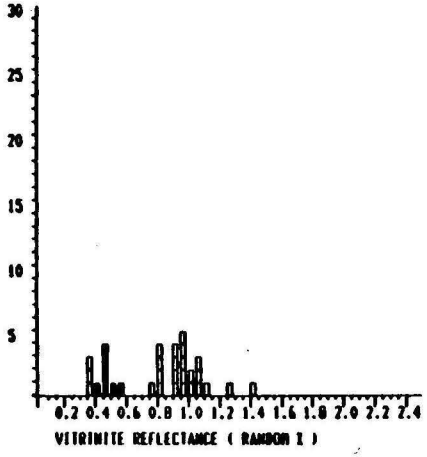
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.35-0.53	29	0.44	0.05
REWORKED	0.55-0.73	8	0.63	0.06



SAMPLE 2445-2450M

0.36 0.37 0.39 0.43 0.46 0.47 0.47 0.48 0.54 0.58
0.79 0.80 0.82 0.83 0.84 0.90 0.90 0.91 0.94 0.95
0.95 0.95 0.98 0.98 1.01 1.04 1.05 1.07 1.08 1.11
1.25 1.40

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.43-0.58	7	0.49	0.05
LIPTINITE/CAVINGS	0.36-0.39	3	0.37	0.02
REWORKED	0.79-0.84	5	0.82	0.02



Appendix 2b

HAUY-1 WELL

SUMMARY

Geochemical analyses of samples from the interval 549m to 805m of the Hauy-1 well have shown that the well section is immature to 800m. Vitrinite reflectance data indicates around 100m of missing section at the Cretaceous/Triassic unconformity at 680m. Extrapolation of the gradient to surface shows that the sediments analysed are currently at their maximum depths of burial and that little Tertiary to Recent section is missing above 549m.

The section analysed contains no oil or gas source rocks.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 19° 47' 39.2"S, 117° 15' 15.5"E.

Operator and date of drilling: Bocal, 1972.

Well Status: Plugged and abandoned.

TD: 825.5m.

Mud data: Seawater and gel pills: Seabed to 825.5m TD.

Casing data: 30" at 121m, 20" at 246m, $9^5/_8$" at 482m.

BHT data: 37.4°C at 487.8m, stopped circulation time unknown.
45.6°C at 825.5m TD, after 5 hours stopped circulation.

Elevation: RT 30m ASL.

Water depth: 65m.

Interval analysed: 549m to 805m.

Age of interval analysed:

	Depths (in metres)
Early Cretaceous	549-680
Early-Middle Triassic	680-805

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

HAUY-1 WELL

Maturation data quality:

a) Vitrinite Reflectance: The samples yielded sufficient vitrinite for accurate measurement. Results: Good.

b) Spore Colour Index: The samples yielded sufficient sporomorphs for measurement but measurements were complicated due to content of abundant reworked sporomorphs. Results: Good.

Source rock data quality: Good.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Vitrinite reflectance results show interpreted values increase from 0.32% at 549m to around 0.33% at the unconformity at 680m between Early Cretaceous and Early to Middle Triassic sediments. This unconformity is marked by a break in the vitrinite reflectance gradient indicating around 100m of missing section at this unconformity. Reflectance values increase from a value of around 0.36% at 680m to 0.42% at 790m to 805m below the unconformity.

Spore colour index results rise steadily from values of around 2.75 SCI units at 549m to a value of 3.75 SCI units at 790m to 805m. These results show the section to be immature to around 800m. Extrapolation of the maturity gradients to the surface shows that the sediments analysed are currently at or near their maximum depths of burial and that little Tertiary to Recent section is missing above 549m.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2)

None of the samples analysed has any significant oil or gas source potential.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2)

Analysis of mudstones within the well section shows that within the Cretaceous interval, from 549m to 591m, mudstones contain below average to average organic carbon contents of between 1.00% and 1.46%. Pyrolysis analysis of these samples shows them to have low hydrogen indices (43 to 64) which associated with very high

oxygen indices (93 to 212) suggests that the results have probably been affected by carbonates in the samples. These results suggest that these samples contain only humic kerogen. Visual kerogen typing at 549m to 564m shows a relatively high liptinite content of 20%. With an organic carbon content of only 1.00%, this is aninsufficient amount of oil-prone kerogen to generate significant quantities of oil.

Below the unconformity at 680m the samples analysed contain very low organic carbon contents of 0.61% to 0.75%. Pyrolysis analysis of samples in the interval 744m to 774m shows them to have very low hydrogen indices (25 to 27), suggesting that these samples contain predominantly inertinite. This is confirmed by visual kerogen typing data for samples at 713m to 729m and 790m to 805m.

WELL: HAUY-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
554.7		**Muderong Shale**									
549-564	Ctg	MDST, ol-gy, calc + 40% SST, ol-gy, calc + 30% LST, v lt gy	2.5-3.0	0.31(21)	50	30	20				
	P	MDST, ol-gy, calc						80	20	*	*
564-579	Ctg	MDST, ol-gy/dk gn-gy + mnr LST, v lt gy						80	20	*	*
579-591	"	MDST, ol-gy/dk gn-gy, sl calc						80	20	*	*
591.9		**Muderong Shale: Birdong Sandstone Mbr**									
679.7		**Locker Shale**									
713-729	"	MDST, brn-gy, sndy + mnr SND	3.0-4.0	0.39(35)	60	25	15				
782.4		**Locker Shale: Basal Sandstone Mbr**									
790-805	"	MDST, a/a + mnr SND	3.5-4.0	0.42(34)	60	30	10				

Table 1 Maturity and Kerogen Composition Data

WELL: HAUY-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g TOC)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g TOC)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
554.7		**Muderong Shale**													
549-564	Ctg	LST, v lt gy + 30% MDST, ol-gy, calc + 40% SST, ol-gy, calc	-												
	P	MDST, ol-gy, calc	1.00	426	62	93	0.03	0.64							
564-579	Ctg	MDST, ol-gy/dk gn-gy + LST, v lt gy	1.21	431	64	212	0.01	0.79							
579-591	"	MDST, a/a, sl calc	1.46	418	43	159	0.06	0.67							
591.9		**Muderong Shale: Birdrong Sst Mbr**													
679.7		**Locker Shale**													
698-713	"	MDST, brn gy, sndy, sl calc + mnr SND	0.65												
713-729	"	MDST, brn gy, sndy, sl calc + mnr SND	0.66												
729-744	"	MDST, a/a + mnr SND	0.67												
744-759	"	MDST, a/a + mnr SND	0.75	NDP	25	173	0.05	0.20							
759-774	"	MDST, a/a + mnr SND	0.75	NDP	27	191	0.09	0.22							
774-790	"	MDST, a/a + mnr SND	0.69												
782.4		**Locker Shale: Basal Sst Mbr**													
790-805	"	MDST, a/a + mnr SND	0.61												

Table 2 Chemical Analysis Data

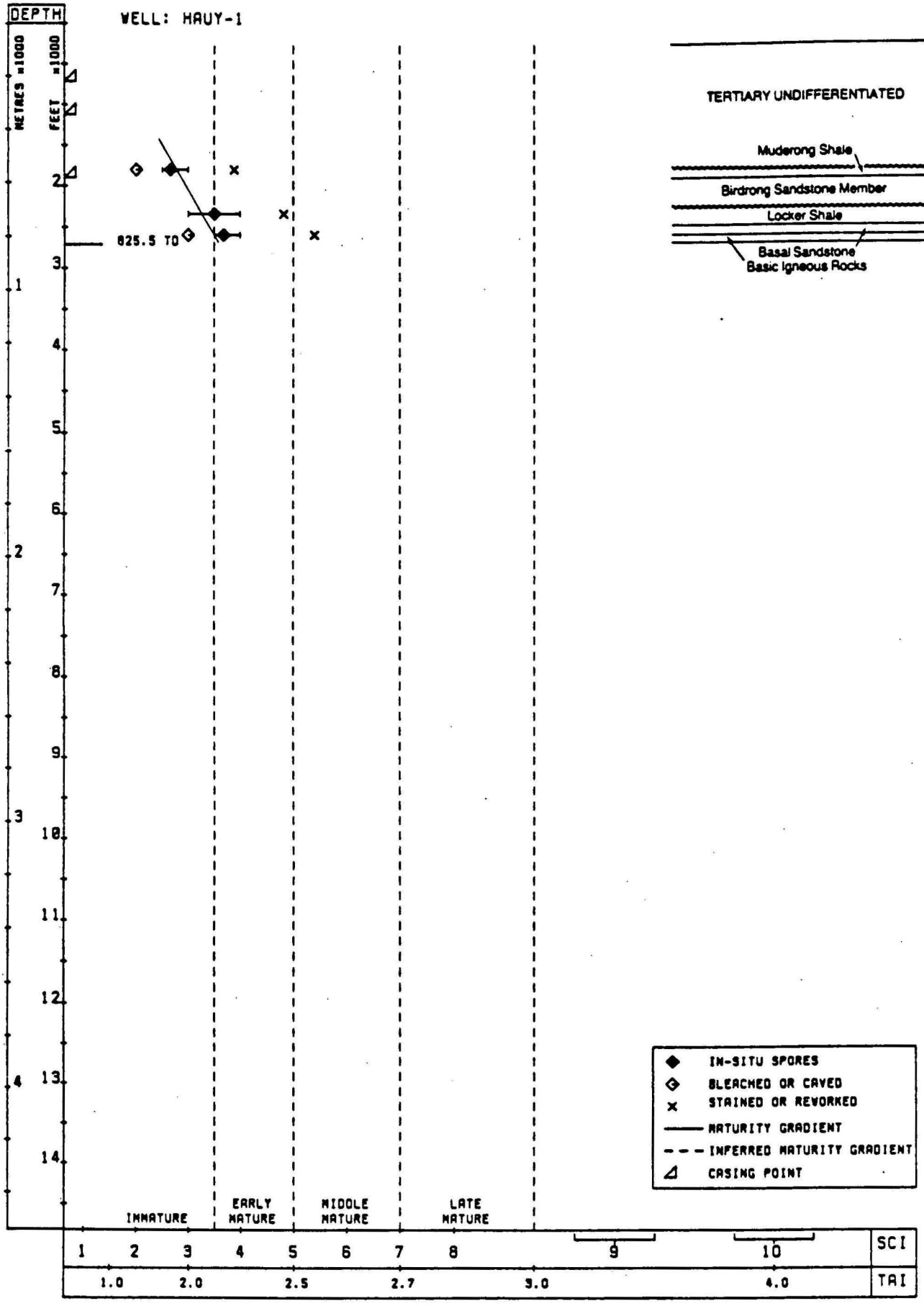


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

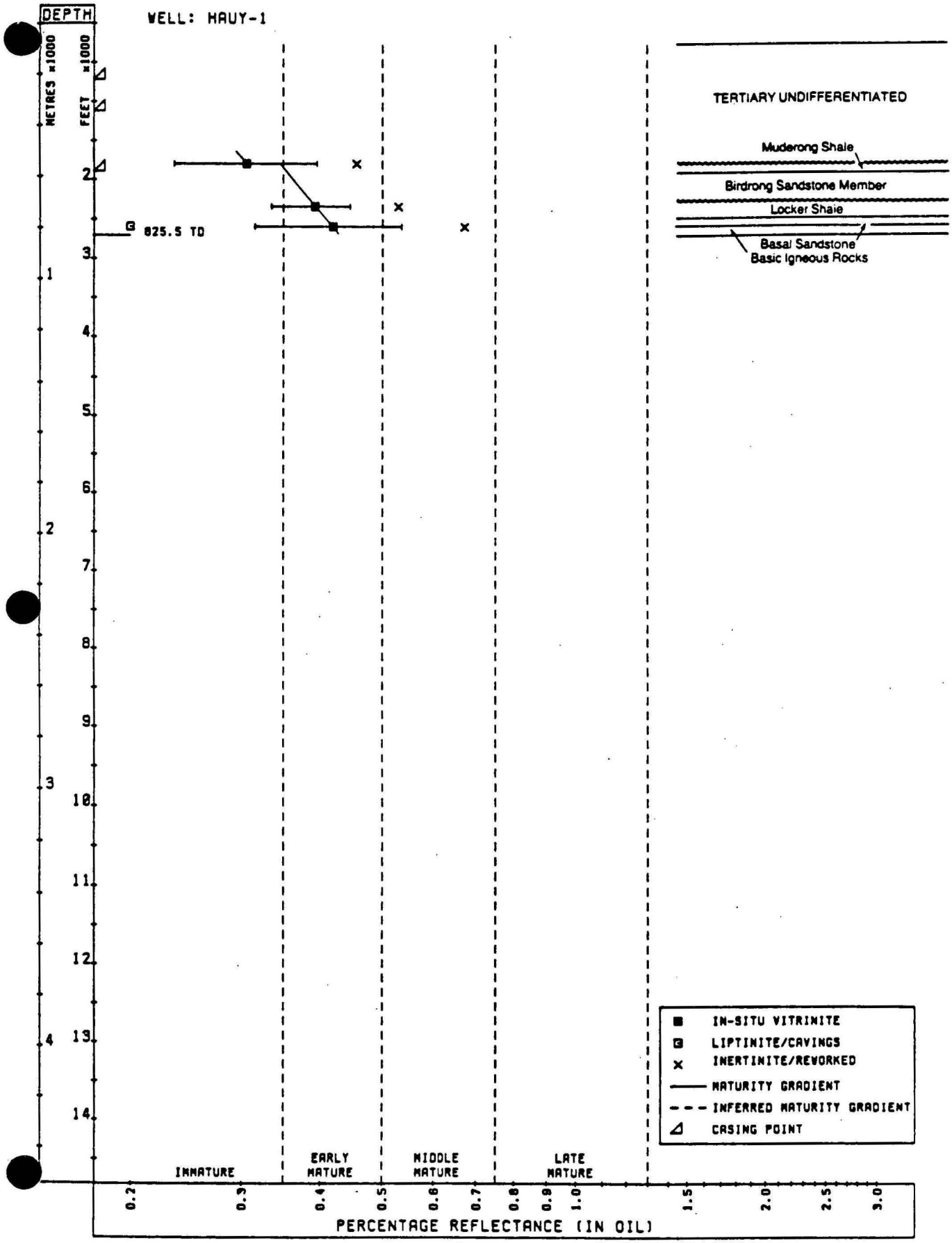


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH

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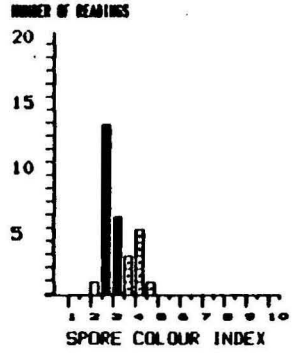
HAUY-1

IN SITU POPULATION

SAMPLE 549-564M

2.0 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5
2.5 2.5 2.5 2.5 3.0 3.0 3.0 3.0 3.0 3.0
3.5 3.5 3.5 4.0 4.0 4.0 4.0 4.0 4.5

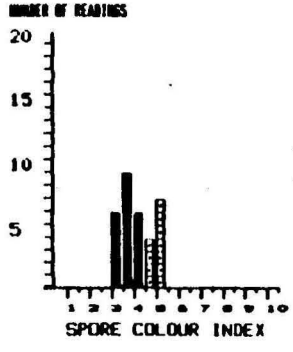
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	2.5-3.0	19
BLEACHED OR CAVED	2.0-2.0	1
STAINED OR REWORKED	3.5-4.5	9



SAMPLE 713-729M

3.0 3.0 3.0 3.0 3.0 3.0 3.5 3.5 3.5 3.5
3.5 3.5 3.5 3.5 3.5 4.0 4.0 4.0 4.0 4.0
4.0 4.5 4.5 4.5 4.5 5.0 5.0 5.0 5.0 5.0
5.0 5.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	3.0-4.0	21
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	4.5-5.0	11



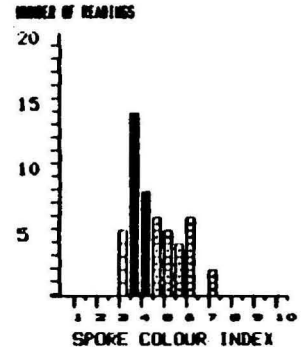
HAUY-1

IN SITU POPULATION

SAMPLE 790-805M

3.0 3.0 3.0 3.0 3.0 3.5 3.5 3.5 3.5 3.5
3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 4.0
4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.5 4.5 4.5
4.5 4.5 4.5 5.0 5.0 5.0 5.0 5.0 5.5 5.5
5.5 5.5 6.0 6.0 6.0 6.0 6.0 6.0 7.0 7.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	3.5-4.0	22
BLEACHED OR CAVED	3.0-3.0	5
STAINED OR REWORKED	4.5-7.0	23



Appendix 1

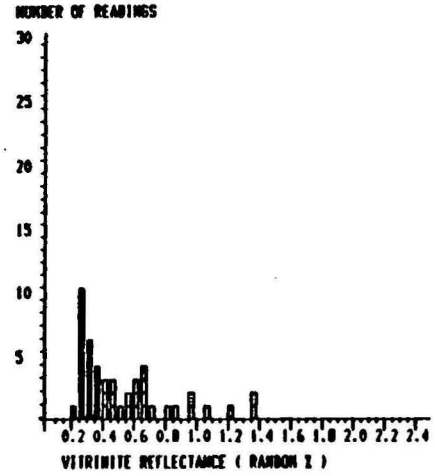
Robertson Research

HAUY-1

SAMPLE 549-564M

0.24 0.26 0.27 0.27 0.27 0.28 0.28 0.28 0.29 0.29
0.29 0.31 0.31 0.31 0.32 0.33 0.34 0.35 0.36 0.39
0.39 0.41 0.43 0.44 0.45 0.46 0.49 0.51 0.56 0.56
0.60 0.62 0.63 0.65 0.65 0.66 0.67 0.71 0.83 0.85
0.95 0.96 1.07 1.23 1.36 1.38

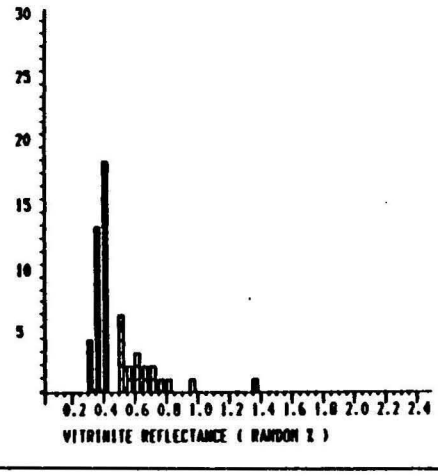
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.24-0.39	21	0.31	0.04
REWORKED	0.41-0.51	7	0.46	0.03
INERTINITE/REWORKED	0.56-0.71	10	0.63	0.05



SAMPLE 713-729M

0.34 0.34 0.34 0.34 0.35 0.36 0.36 0.36 0.37 0.37
0.37 0.38 0.38 0.38 0.39 0.39 0.39 0.40 0.40 0.40
0.40 0.41 0.41 0.41 0.41 0.41 0.41 0.42 0.42 0.43
0.43 0.43 0.43 0.44 0.44 0.50 0.50 0.51 0.52 0.53
0.53 0.56 0.58 0.60 0.60 0.64 0.68 0.69 0.72 0.74
0.77 0.80 0.95 1.38

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.34-0.44	35	0.39	0.03
REWORKED	0.50-0.58	8	0.53	0.03
INERTINITE/REWORKED	0.60-0.77	8	0.68	0.06

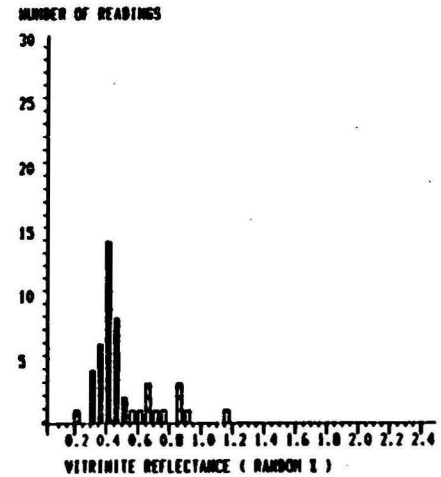


HAUY-1

SAMPLE 790-805M

0.20 0.32 0.32 0.33 0.34 0.35 0.37 0.37 0.37 0.38
0.38 0.40 0.40 0.40 0.41 0.41 0.42 0.42 0.42 0.43
0.43 0.43 0.44 0.44 0.44 0.46 0.46 0.46 0.46 0.46
0.49 0.49 0.49 0.50 0.53 0.56 0.62 0.66 0.67 0.69
0.72 0.78 0.85 0.87 0.88 0.90 1.18

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.32-0.53	34	0.42	0.05
LIPTINITE/CAVINGS	0.20-0.20	1	0.20	
REWORKED	0.56-0.78	7	0.67	0.07



Appendix 2

HERMITE-1 WELL

SUMMARY

Geochemical analysis of samples from the interval 1190m to 3250m of the Hermite-1 well have shown that the interval analysed is immature to around 1700m, early mature between 1700m and 2650m, middle mature from 2650m to 3200m and late mature from 3200m to 3300m TD. The maturity gradients show no evidence of any major erosional unconformities within the interval analysed, and extrapolation of the gradients to the surface shows that the sediments penetrated are at or near their maximum depths of burial and thatlittle Late Jurassic or younger section is missing above 1190m. The non-linearity in the maturity gradient below 2600m may be due to an igneous intrusive below the base of the well section.

The interval 2975m to 2985m in the Locker Shale Equivalent is a fair quality source rock but is of insufficient thickness to be a significant oil source.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 20° 49' 57.6"S, 115° 42' 08.5"E.

Operator and date of drilling: West Australian Petroleum Pty Ltd, 1977.

Well Status: Plugged and abandoned.

TD: 3300m.

Mud data: Sea water/gel and seawater, gel/lignosulphonate, Spersene and XP20 system: Seabed to 3300m TD.

Casing data: 30" at 63m, 20" at 949m, $9^5/_8$" at 2492m.

BHT data: 86°C at 2231m, after 5 hrs stopped circulation.
89°C at 2495m, after 6 hrs stopped circulation.
108°C at 3300m TD, after 8 hrs stopped circulation.

Elevation: RT 27.5m ASL.

Water depth: 16.5m.

Interval analysed: 1190m to 3250m.

HERMITE-1 WELL

Age of interval analysed:

	Depths (in metres)
Middle-Late Jurassic	1190-1466
Early-Middle Jurassic	1466-2045
Early Jurassic	2045-2207
Late Triassic-Early Jurassic	2207-2500
Middle-Late Triassic	2500-2850
Early-Middle Triassic	2850-3250

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: The samples yielded sufficient quantities of indigenous vitrinite but measurements were complicated by reworked and contaminant vitrinite. Results: Good.

b) Spore Colour Index: The samples yielded fair quantities of indigenous sporomorphs but were complicated by caved and reworked material. Results: Good.

Source rock data quality: Fair.

Gas chromatography run at: 1435m to 1445m, 2905m to 2915m and 3145m to 3150m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Vitrinite reflectance values rise steadily over the analysed interval from a value of 0.32% at 1190m to 1200m, to a value of 0.71% at 3145m to 3150m. Spore colour index values increase from 2½ to 3 SCI units to 6¼ to 7 SCI units over the same interval, but show a non-linear increase with depth between 2700m and 2900m, probably in response to an igneous intrusive below the base of the well section. Both sets of results are in good agreement and indicate that the interval analysed is immature to about 1700m, early mature between 1700m and 2650m, middle mature from 2650m to 3200m and late mature from 3200m to 3300m TD. Both vitrinite reflectance and spore colour index gradients suggest that no major erosional unconformities occur in the analysed interval. Extrapolation of the maturity gradients to the surface suggests that the sediments penetrated are presently at or near their

maximum depths of burial and that no major amounts of section are missing above 1190m.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

Mudstones in the interval 1325m to 1445m in the Upper Dingo Claystone Formation and in the interval 2830m to 3150m in the Mungaroo and Locker Shale Formations contain average to slightly above average organic carbon contents of between 1.06% and 2.31%. Pyrolysis analysis of these samples indicates that they contain small quantities of oil-prone kerogen. Extraction, fractionation and gas chromatography of selected samples from these intervals at 1435m to 1445m, 2905m to 2915m and 3145m to 3150m yielded small amounts of hydrocarbons derived from terrestrially sourced waxy kerogen.

These intervals have only poor oil source potential. Although organically richer, the sample at 2975m to 2985m is not of sufficient thickness to be more than a poor oil source.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

Mudstones in the intervals 1190m to 1265m, 1490m to 2635m and 3205m to 3250m contain below average to above average organic carbon contents of between 0.55% and 2.30%. Pyrolysis and visual kerogen analysis shows that these samples contain only humic kerogen comprising of mainly inertinitic kerogen. These samples have no significant oil source potential but may have minor gas source potential at optimum maturity.

The low hydrogen indices obtained indicate the predominance of humic kerogens. This observation is confirmed by both visual kerogen typing and kerogen composition calculated from pyrolysis data. This data suggests that these samples have no oil source potential although they may have minor to fair gas source potential at optimum maturity.

WELL: HERMITE-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
1069		**Upper Dingo Claystone**									
1190-1200	Ctg	MDST, yel-gy	2.5-3.0	0.32(14)	50	50	mnr				
1325-1335	"	MDST, lt ol-gy	2.5-3.0	0.32(4)	60	40	tr	55	40	*	5
1435-1445	"	MDST, a/a						40	45	*	15
1466		**Middle Dingo Claystone**									
1490-1500	"	MDST, a/a	3.0-3.5	0.33(9)	50	45	5				
1550-1560	"	MDST, ol gy						65	35	*	*
1615-1625	"	MDST, ol-gy	3.5-4.0	0.34(23)	60	40	mnr	60	40	*	*
1675-1685	"	MDST, med gy						65	35	*	*
1735-1745	"	MDST, a/a						60	40	*	*
1770-1780	"	MDST, med gy-ol gy + mnr SST	3.5-4.0	0.39(13)	80	20	*	70	30	*	*
1895-1905	P	SLTST, med gy						65	35	*	*
1975-1985	Ctg	MDST, a/a + mnr SND	4.0-4.5	0.45(12)	60	40	*	55	40	*	5
2035-2045	"	MDST, med gy						50	45	*	5
2045		**Lower Dingo Claystone**									
2110-2120	"	MDST, v lt gy	4.0-4.5	0.49(13)	60	35	5	55	45	*	*
2140		**North Rankin Beds**									
2207		**Brigadier Beds**									
2500		**Mungaroo Fm**									
2550-2565	"	MDST, a/a + 60% SST, wht-v lt gy	4.5-5.0	0.55(5)	70	30	*				
2625-2635	"	MDST, med gy + 50% SST, a/a	?6.0rew	0.65(16)	65	30	5				
2850		**Locker Shale Eqv**									
2830-2855	P	MDST, lt gy						50	40	*	10
2870-2885	Ctg	MDST, lt gy + 20% SST, v lt gy	6.0	0.71(14)	60	40	*				
	P	MDST, a/a						50	40	*	10
2885-2895	"	MDST, a/a						45	40	*	15
2905-2915	"	MDST, med gy						45	40	*	15
2920-2925	Ctg	MDST, med gy + 60% SST, a/a	6.0-6.5	0.67(30)	45	45	10				
	P	MDST, a/a						40	50	*	10
2975-2985	P	MDST, lt gy						40	50	*	10
3145-3150	Ctg	MDST, a/a + 70% SST	6.5-7.0	0.69(37)	65	30	5				
	P	MDST, a/a						45	40	*	15

Table 1 Maturity and Kerogen Composition Data

WELL: HERMITE-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g T.O.C.)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T.O.C.)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
1069		**Upper Dingo Claystone**													
1190-1200	Ctg	MDST, yel-gy, sl calc	0.92												
1255-1265	"	MDST, a/a	0.71												
1325-1335	"	MDST, lt ol-gy	1.55	423	165	299	0.04	2.67							
1435-1445	"	MDST, a/a	1.32	429	222	579	0.05	3.07	720	55	340	26	28	19	53
1466		**Middle Dingo Claystone**													
1490-1500	"	MDST, a/a	0.53												
1550-1560	"	MDST, ol-gy	1.98	430	75	197	0.07	1.61							
1615-1625	"	MDST, ol-gy, sl calc	1.97	432	82	152	0.07	1.73							
1675-1685	"	MDST, med gy	1.84	431	71	204	0.08	1.43							
1735-1745	"	MDST, a/a	1.89	425	87	296	0.06	1.74							
1770-1780	"	MDST, med gy, ol-gy + mnr SST	1.23	437	48	170	0.13	0.68							
1895-1905	"	SLTST, med gy + 20% SST, v lt gy + 10% SND	-												
	P	SLTST, med gy	2.30	416	66	70	0.08	1.65							
1975-1985	Ctg	MDST, med gy + mnr SND	1.25	432	98	237	0.07	1.31							
2035-2045	"	MDST, med gy	1.84	423	108	142	0.07	2.14							
2045		**Lower Dingo Claystone**													
2110-2120	"	MDST, v lt gy	1.51	422	99	109	0.07	1.60							
2140		**North Rankin Beds**													
2207		**Brigadier Beds**													
2500		**Mungaroo Fm**													
2550-2565	"	MDST, v lt gy + 60% SST, wht-v lt gy	-												
	P	MDST, a/a	0.73												
2625-2635	Ctg	MDST, med gy + 50% SST, a/a	-												
	P	MDST, a/a	0.91												
2830-2855	Ctg	MDST, lt gy + 50% SST, v lt gy-wht	-												
	P	MDST, lt gy	1.30	428	138	38	0.07	1.94							
2850		**Locker Shale Eqv**													
2870-2885	Ctg	MDST, lt gy + 20% SST, v lt gy	-												
	P	MDST, lt gy	1.06	430	115	108	0.10	1.35							
2885-2895	Ctg	MDST, lt gy + 80% SST, a/a	-												
	P	MDST, a/a	1.21	428	158	93	0.09	2.09							

Table 2a Chemical Analysis Data

WELL: HERMITE-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g TOC)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g TOC)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2905-2915	Ctg	MDST, med gy + 70% SST, v lt gy	0.59						425	72	255	43	40	20	40
	P	MDST, med gy	1.41	433	157	47	0.06	2.37							
2920-2925	Ctg	MDST, med gy + 60% SST, a/a	-												
	P	MDST, a/a	1.30	429	119	37	0.10	1.72							
2975-2985	Ctg	MDST, lt gy + 20% SST, v lt gy	-												
	P	MDST, lt gy	2.31	425	119	45	0.10	3.04							
3145-3150	Ctg	MDST, a/a + 70% SST, a/a	0.78						490	63	270	35	38	17	45
	P	MDST, a/a	1.32	431	123	69	0.10	1.81							
3205-3215	Ctg	MDST, a/a + 30% SST, a/a	-												
	P	MDST, a/a	0.90												
3240-3250	Ctg	MDST, v lt gy	0.55												

Table 2b Chemical Analysis Data

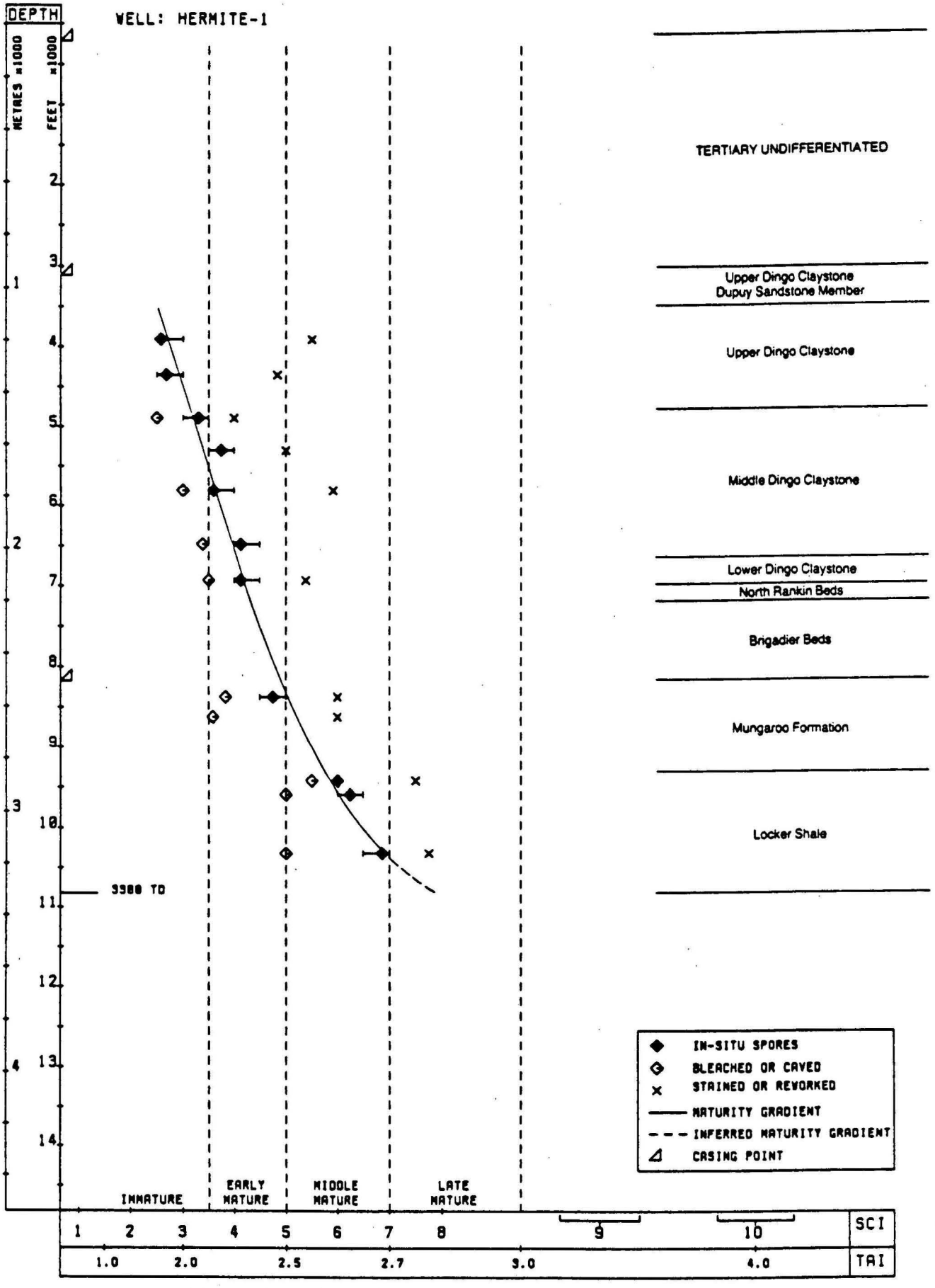


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

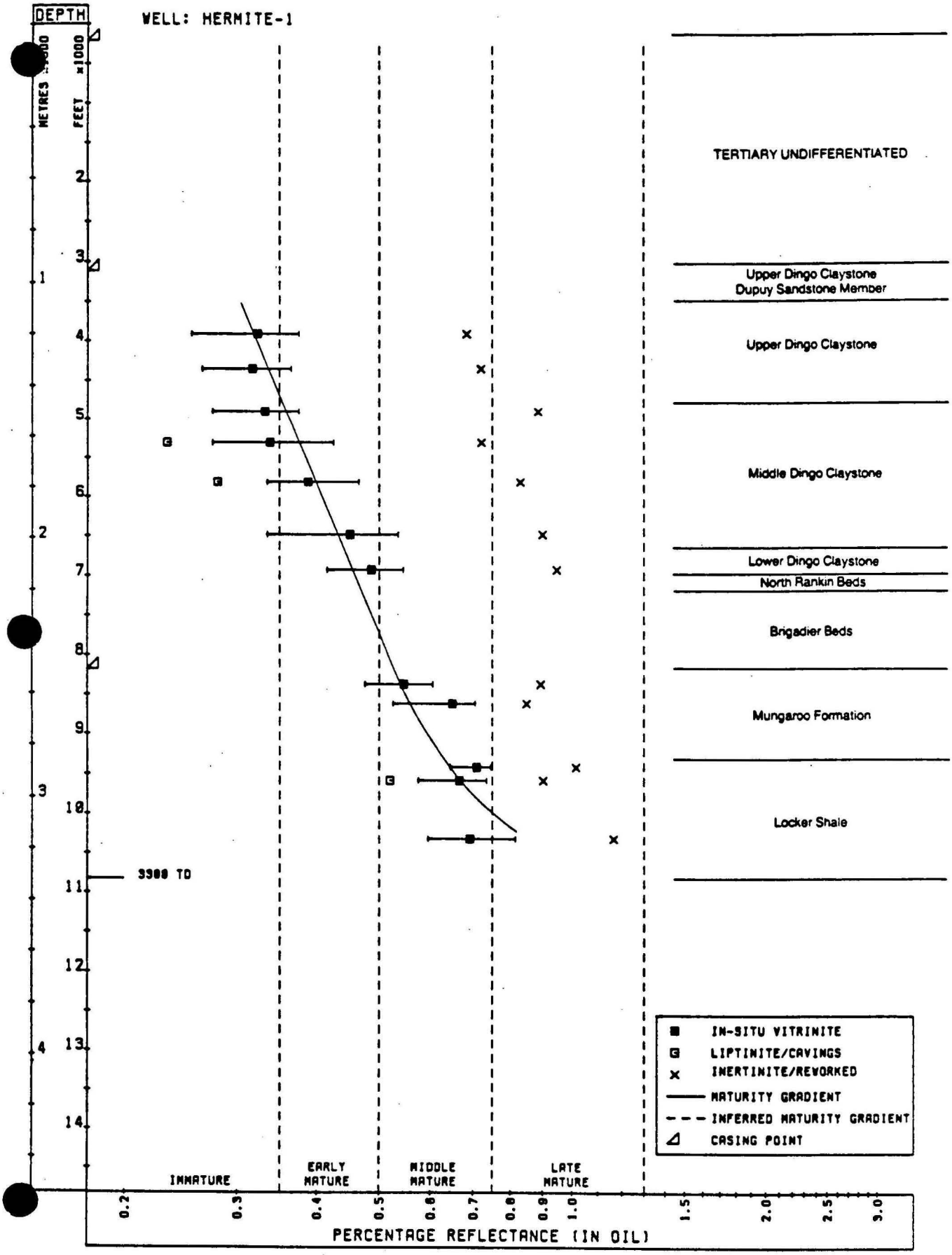
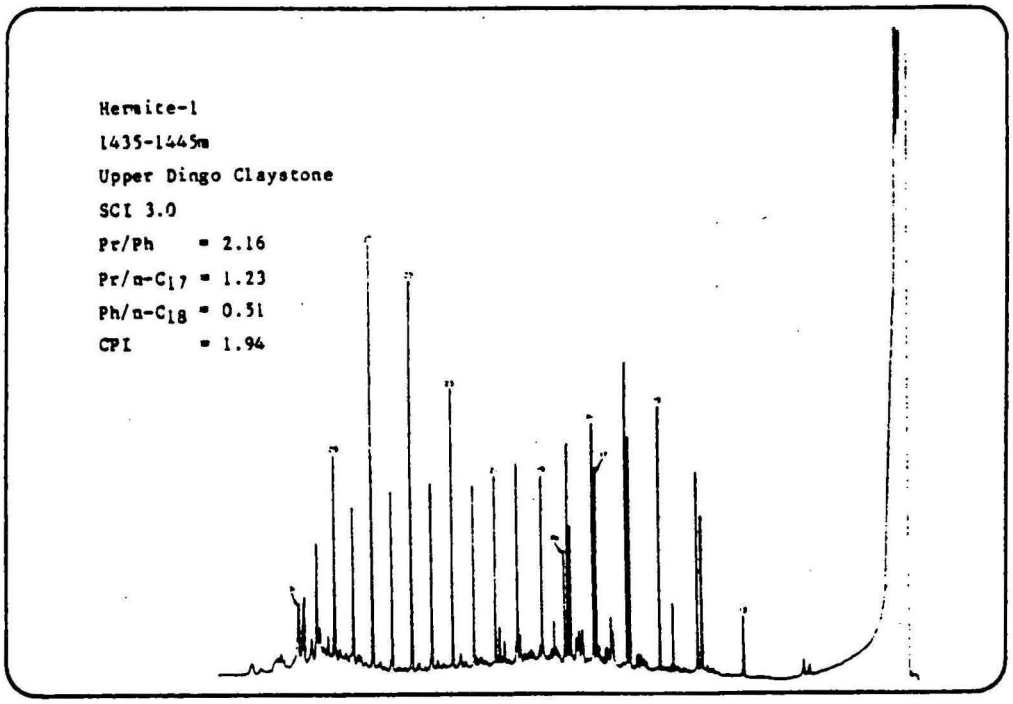
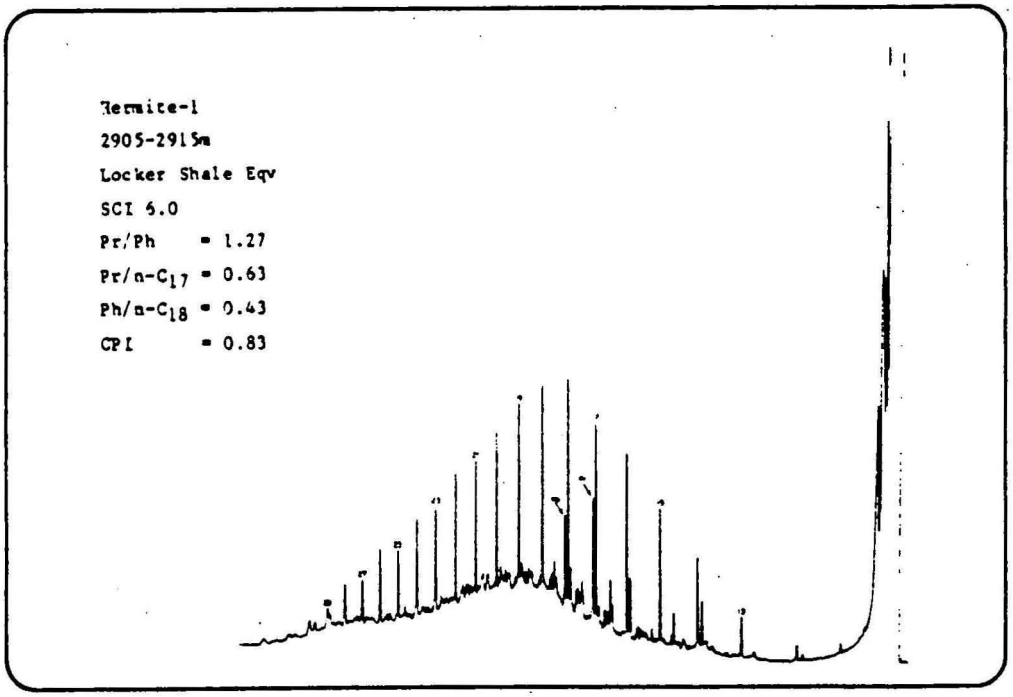


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH


Hermite-1
1435-1445m
Upper Dingo Claystone
SCI 3.0
Pr/Ph = 2.16
Pr/n-C17 = 1.23
Ph/n-C18 = 0.51
CPI = 1.94


Hermite-1
2905-2915m
Locker Shale Eqv
SCI 6.0
Pr/Ph = 1.27
Pr/n-C17 = 0.63
Ph/n-C18 = 0.43
CPI = 0.83

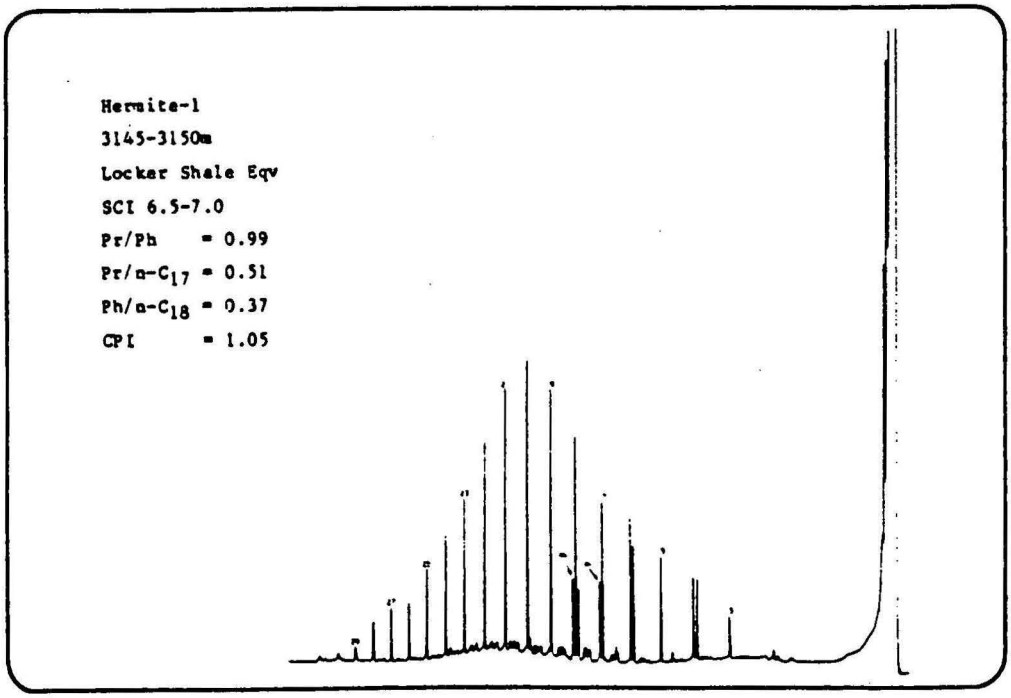

Hermite-1
3145-3150m
Locker Shale Eqv
SCI 6.5-7.0
Pr/Ph = 0.99
Pr/n-C17 = 0.51
Ph/n-C18 = 0.37
CPI = 1.05

Figure 3

Robertson Research

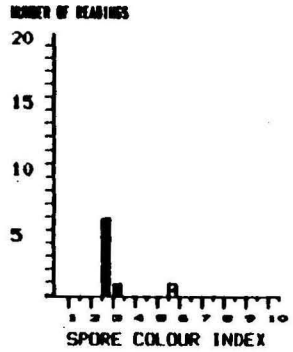
HERMITE-1

IN SITU POPULATION

SAMPLE 1190-1200M

2.5 2.5 2.5 2.5 2.5 2.5 3.0 5.5

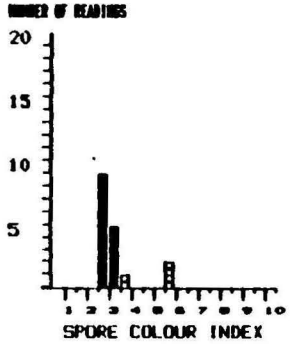
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	2.5-3.0	7
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	5.5-5.5	1



SAMPLE 1325-1335M

2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 3.0
3.0 3.0 3.0 3.0 3.5 5.5 5.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	2.5-3.0	14
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	3.5-5.5	3



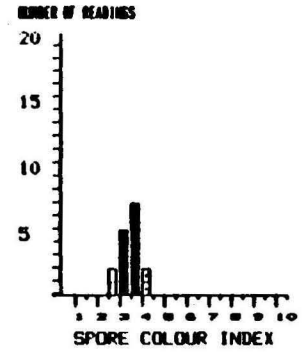
HERMITE-1

IN SITU POPULATION

SAMPLE 1490-1500M

2.5 2.5 3.0 3.0 3.0 3.0 3.0 3.5 3.5 3.5
3.5 3.5 3.5 3.5 4.0 4.0

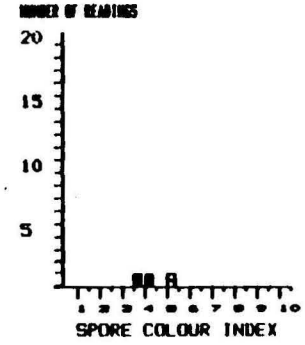
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	3.0-3.5	12
BLEACHED OR CAVED	2.5-2.5	2
STAINED OR REWORKED	4.0-4.0	2



SAMPLE 1615-1625M

3.5 4.0 5.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	3.5-4.0	2
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	5.0-5.0	1



Appendix 1a

Robertson Research

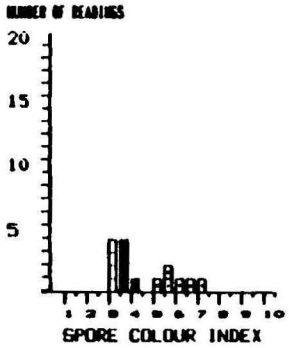
HERMITE-1

IN SITU POPULATION

SAMPLE 1770-1780M

3.0 3.0 3.0 3.0 3.5 3.5 3.5 3.5 4.0 5.0
5.5 5.5 6.0 6.5 7.0

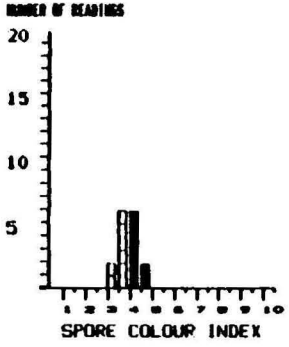
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	3.5-4.0	5
BLEACHED OR CAVED	3.0-3.0	4
STAINED OR REWORKED	5.0-7.0	6



SAMPLE 1975-1985M

3.0 3.0 3.5 3.5 3.5 3.5 3.5 3.5 4.0 4.0
4.0 4.0 4.0 4.0 4.5 4.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.0-4.5	8
BLEACHED OR CAVED	3.0-3.5	8
STAINED OR REWORKED	-	0



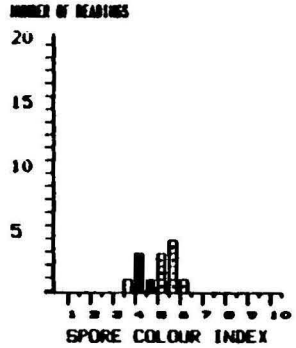
HERMITE-1

IN SITU POPULATION

SAMPLE 2110-2120M

3.5 4.0 4.0 4.0 4.5 5.0 5.0 5.0 5.5 5.5
5.5 5.5 6.0

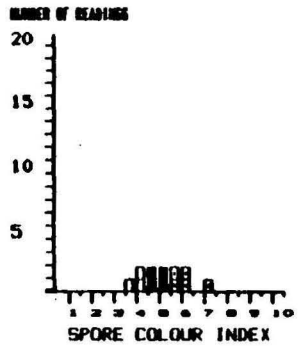
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.0-4.5	4
BLEACHED OR CAVED	3.5-3.5	1
STAINED OR REWORKED	5.0-6.0	8



SAMPLE 2550-2565M

3.5 4.0 4.0 4.5 4.5 5.0 5.0 5.5 5.5 6.0
6.0 7.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.5-5.0	4
BLEACHED OR CAVED	3.5-4.0	3
STAINED OR REWORKED	5.5-7.0	5



Appendix 1b

Robertson Research

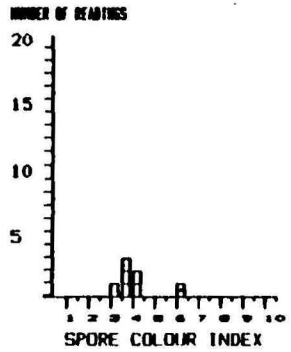
HERMITE-1

IN SITU POPULATION

SAMPLE 2625-2635M

3.0 3.5 3.5 3.5 4.0 4.0 6.0

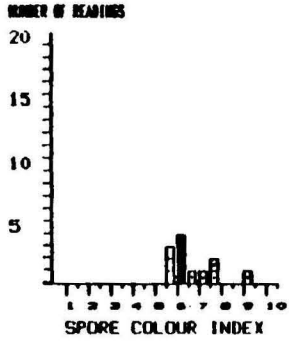
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	-	0
BLEACHED OR CAVED	3.0-4.0	6
STAINED OR REWORKED	6.0-6.0	1



SAMPLE 2870-2885M

5.5 5.5 5.5 6.0 6.0 6.0 6.0 6.5 7.0 7.5
7.5 9.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.0-6.0	4
BLEACHED OR CAVED	5.5-5.5	3
STAINED OR REWORKED	6.5-9.0	5



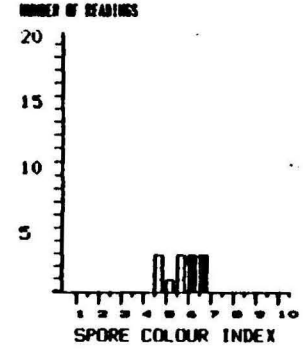
HERMITE-1

IN SITU POPULATION

SAMPLE 2920-2925M

4.5 4.5 4.5 5.0 5.5 5.5 5.5 6.0 6.0 6.0
6.5 6.5 6.5

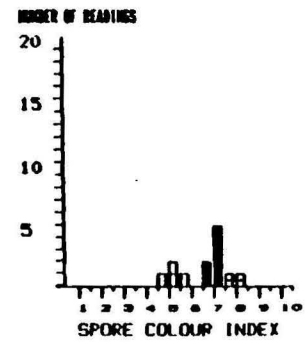
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.0-6.5	6
BLEACHED OR CAVED	4.5-5.5	7
STAINED OR REWORKED	-	0



SAMPLE 3145-3150M

4.5 5.0 5.0 5.5 6.5 6.5 7.0 7.0 7.0 7.0
7.0 7.5 8.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.5-7.0	7
BLEACHED OR CAVED	4.5-5.5	4
STAINED OR REWORKED	7.5-8.0	2



Appendix 1c

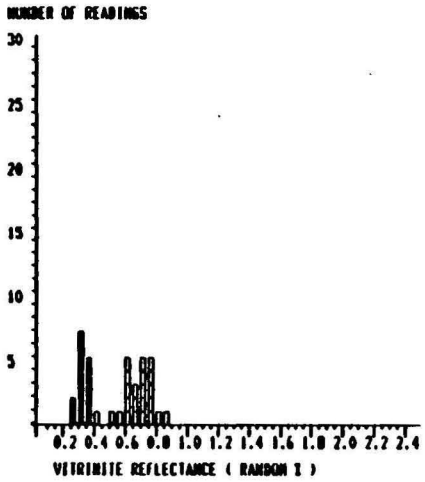
Robertson Research

HERMITE-1

SAMPLE 1190-1200M

0.26 0.28 0.30 0.31 0.31 0.32 0.32 0.32 0.33 0.35
0.35 0.35 0.36 0.37 0.42 0.50 0.57 0.60 0.61 0.61
0.62 0.64 0.65 0.68 0.68 0.70 0.71 0.72 0.72 0.73
0.76 0.77 0.78 0.78 0.79 0.83 0.87

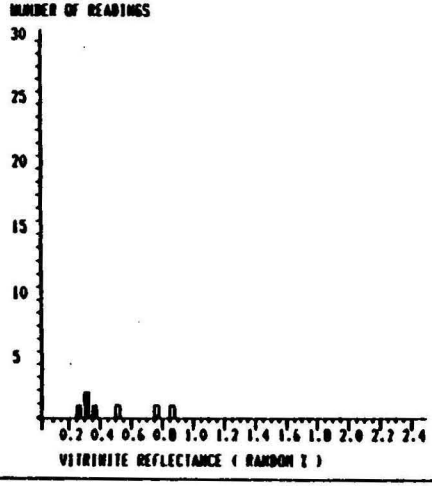
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.26-0.37	14	0.32	0.03
INERTINITE/REWORKED	0.42-0.87	23	0.68	0.11



SAMPLE 1325-1335M

0.27 0.30 0.34 0.36 0.50 0.79 0.87

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.27-0.36	4	0.32	0.04
INERTINITE/REWORKED	0.50-0.87	3	0.72	0.19

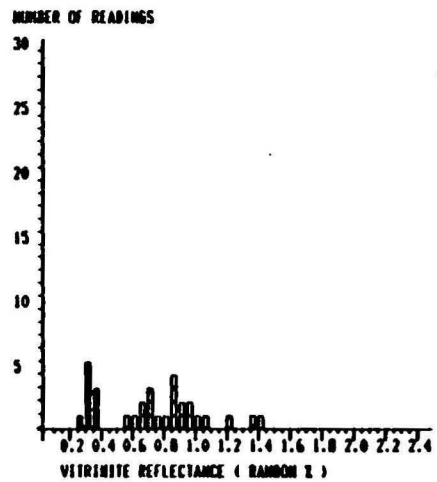


HERMITE-1

SAMPLE 1490-1500M

0.28 0.31 0.32 0.32 0.33 0.34 0.35 0.37 0.37 0.55
0.63 0.68 0.69 0.70 0.71 0.72 0.75 0.80 0.85 0.85
0.86 0.87 0.90 0.93 0.96 0.97 1.00 1.07 1.20 1.36
1.40

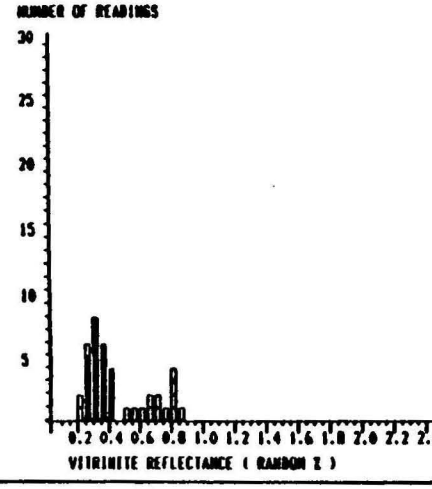
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.28-0.37	9	0.33	0.03
INERTINITE/REWORKED	0.55-1.40	22	0.88	0.22



SAMPLE 1615-1625M

0.21 0.23 0.26 0.28 0.28 0.29 0.29 0.29 0.30 0.30
0.31 0.32 0.32 0.33 0.33 0.34 0.35 0.35 0.36 0.36
0.36 0.38 0.40 0.41 0.41 0.42 0.51 0.55 0.64 0.66
0.67 0.70 0.73 0.76 0.81 0.82 0.83 0.84 0.86

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.28-0.42	23	0.34	0.04
LIPTINITE/CAVINGS	0.21-0.26	3	0.23	0.03
INERTINITE/REWORKED	0.51-0.86	13	0.72	0.11



Appendix 2a

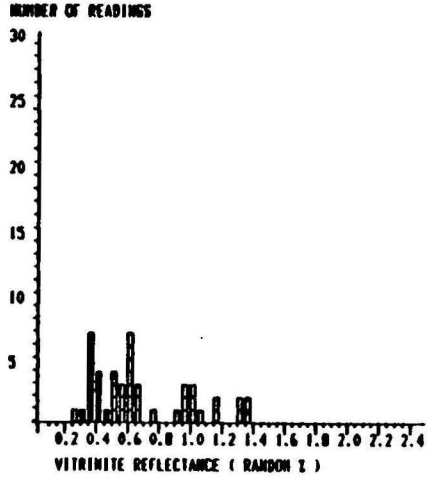
Robertson Research

HERMITE-1

SAMPLE 1770-1780M

0.28 0.34 0.35 0.36 0.36 0.36 0.37 0.39 0.39 0.40
0.41 0.42 0.43 0.46 0.51 0.52 0.52 0.53 0.55 0.58
0.58 0.60 0.60 0.61 0.62 0.63 0.63 0.64 0.65 0.65
0.65 0.76 0.93 0.95 0.97 0.98 1.01 1.03 1.04 1.07
1.17 1.18 1.31 1.33 1.35 1.36

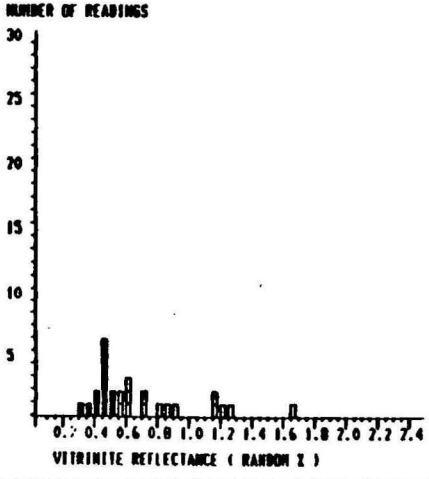
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.34-0.46	13	0.39	0.04
LIPTINITE/CAVINGS	0.28-0.28	1	0.28	
INERTINITE/REWORKED	0.51-1.36	32	0.83	0.28



SAMPLE 1975-1985M

0.34 0.37 0.40 0.44 0.45 0.47 0.47 0.47 0.48 0.48
0.51 0.53 0.55 0.58 0.60 0.62 0.63 0.70 0.70 0.80
0.88 0.90 1.18 1.19 1.23 1.26 1.66

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.34-0.53	12	0.45	0.06
INERTINITE/REWORKED	0.55-1.66	15	0.90	0.33

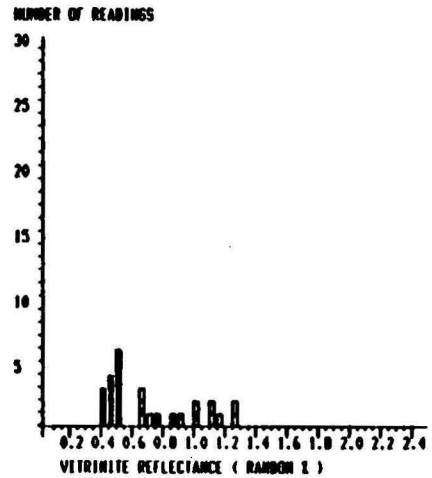


HERMITE-1

SAMPLE 2110-2120M

0.42 0.42 0.43 0.45 0.48 0.48 0.49 0.51 0.51 0.52
0.53 0.54 0.54 0.66 0.67 0.67 0.70 0.76 0.88 0.90
1.02 1.04 1.12 1.13 1.15 1.26 1.27

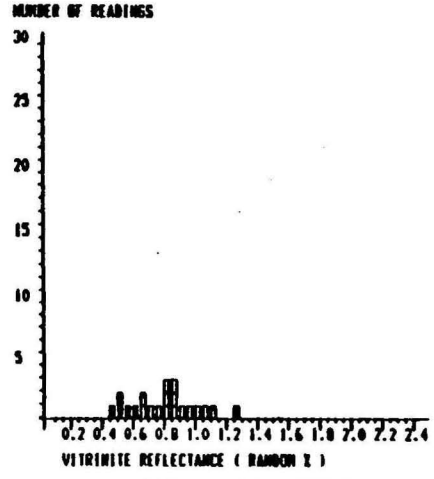
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.42-0.54	13	0.49	0.04
INERTINITE/REWORKED	0.66-1.27	14	0.95	0.23



SAMPLE 2550-2565M

0.48 0.53 0.53 0.59 0.60 0.68 0.69 0.71 0.78 0.80
0.83 0.84 0.85 0.86 0.86 0.92 0.96 1.02 1.08 1.13
1.27

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.48-0.60	5	0.55	0.05
INERTINITE/REWORKED	0.68-1.27	16	0.89	0.16



Appendix 2b

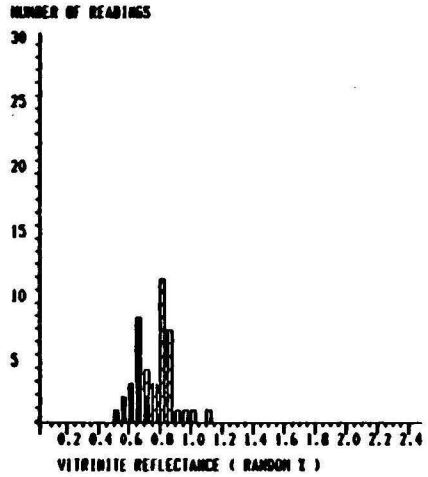
Robertson Research

HERMITE-1

SAMPLE 2625-2635M

0.53 0.56 0.59 0.63 0.64 0.64 0.65 0.66 0.68 0.68
0.68 0.68 0.69 0.69 0.70 0.70 0.73 0.74 0.76 0.79
0.79 0.80 0.80 0.80 0.80 0.80 0.81 0.82 0.82 0.83
0.83 0.83 0.86 0.87 0.87 0.87 0.87 0.89 0.89 0.90
0.96 1.04 1.10

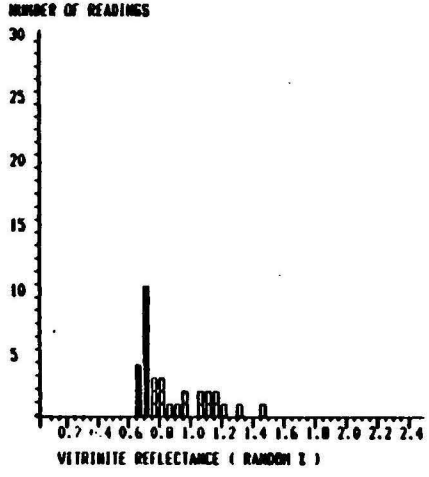
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.53-0.70	16	0.65	0.05
INERTINITE/REWORKED	0.73-1.10	27	0.85	0.08



SAMPLE 2870-2885M

0.65 0.67 0.69 0.69 0.70 0.70 0.71 0.71 0.73 0.73
0.73 0.74 0.74 0.74 0.77 0.79 0.79 0.81 0.82 0.84
0.89 0.92 0.96 0.97 1.00 1.00 1.10 1.12 1.16 1.18
1.20 1.32 1.47

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.65-0.74	14	0.71	0.03
INERTINITE/REWORKED	0.77-1.47	19	1.01	0.20

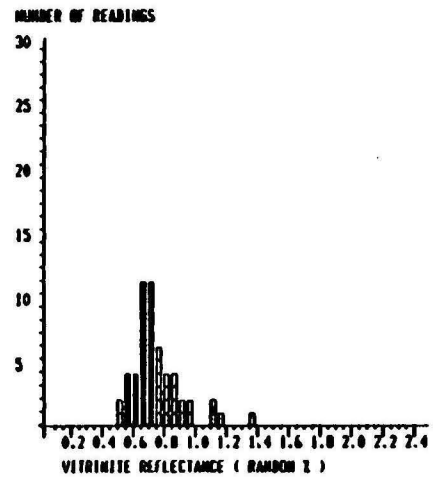


HERMITE-1

SAMPLE 2920-2925M

0.50 0.54 0.58 0.58 0.59 0.59 0.63 0.64 0.64 0.64
0.65 0.65 0.65 0.65 0.66 0.66 0.66 0.66 0.67 0.68
0.69 0.70 0.70 0.70 0.71 0.71 0.71 0.71 0.72 0.72
0.72 0.73 0.75 0.75 0.75 0.76 0.77 0.78 0.81 0.81
0.82 0.83 0.85 0.86 0.87 0.88 0.91 0.92 0.95 0.96
1.12 1.13 1.19 1.35

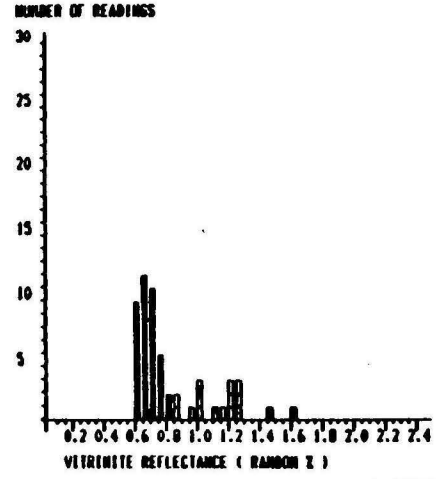
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.58-0.73	30	0.67	0.04
LIPTINITE/CAVINGS	0.50-0.54	2	0.52	0.03
INERTINITE/REWORKED	0.75-1.35	22	0.90	0.16



SAMPLE 3145-3150M

0.60 0.61 0.62 0.63 0.63 0.63 0.64 0.64 0.64 0.65
0.65 0.65 0.65 0.65 0.66 0.66 0.67 0.67 0.68 0.69
0.70 0.71 0.72 0.72 0.72 0.72 0.73 0.73 0.74 0.74
0.75 0.76 0.78 0.78 0.79 0.81 0.81 0.87 0.88 0.99
1.00 1.03 1.04 1.14 1.15 1.20 1.21 1.23 1.26 1.27
1.28 1.48 1.62

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.60-0.81	37	0.69	0.06
INERTINITE/REWORKED	0.87-1.62	16	1.17	0.20



Appendix 2c

HOPE ISLAND-1 WELL

SUMMARY

Geochemical analyses of samples from the interval 912m to 988m of the Hope Island-1 well shows that the interval analysed is transitional between immature and early mature stages.

Extrapolation of the maturity gradients to the surface shows no evidence of any major uplift and erosion at unconformities in the well section or at seabed. The sediments analysed are currently at their maximum depths of burial.

The samples analysed have no oil or gas source potential.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 22° 09' 34"S, 114° 28' 35"E.

Operator and date of drilling: West Australian Petroleum Pty Ltd, 1968

Well Status: Plugged and abandoned.

TD: 1426.5m.

Mud data: Seawater/gel: Seabed to 278m.
Seawater/Bentonite/CMC and lignosulphonate: 278m to 1426.5m TD.

Casing data: 16" at 13m, 11¾" at 276.5m.

BHT data: 72°C at 1426.5m TD, after 5 hours stopped circulation.

Elevation: RT 9m ASL.

Ground level: 5m above sea level.

Interval analysed: 912m to 988m.

Age of interval analysed:

	Depths (in metres)
Early-Middle Triassic	912-988

HOPE ISLAND-1 WELL

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: The samples yielded abundant vitrinite but measurements were complicated by content of abundant reworked/caved material. Results: Poor.

b) Spore Colour Index: The samples analysed yielded abundant sporomorphs but measurements were complicated by reworked/caved material. Results: Poor.

Source rock data quality: Good.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Vitrinite reflectance values rise from a value of 0.35% at 912m to 921m to a value of 0.36% at 976m to 988m. Spore colour index values rise from interpreted values of 3.0 to 3.5 SCI units to 3.5 to 4.0 SCI units over the same interval. These results show the interval analysed to be transitional between immature and early mature stages.

Extrapolation of the maturity gradients to the surface suggests that there has been no major uplift and erosion at unconformities in the well section, or at seabed and that the present day depths of burial represent near maximum burial depths at the well location.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2)

No oil or gas source rocks have been identified in the section analysed.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2)

The mudstones of the Locker Shale contain around average organic carbon contents of between 1.63% and 1.84%. The limestone present at 976m to 988m has a very low organic carbon content of 0.15%.

HOPE ISLAND-1 WELL

Pyrolysis analysis of the samples shows them to have very low hydrogen indices (34 to 70). However, the moderate to high oxygen indices recorded (56 to 87) are probably due to the presence of small amounts of carbonate present in the samples. These results suggest that these mudstones contain predominantly humic kerogen. This is confirmed by visual kerogen typing data which shows only minor (5%-10%) content of liptinitic kerogen. These samples have no significant oil or gas source potential.

WELL: HOPE ISLAND-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
911		**Locker Shale**									
912-921	Ctg	MDST, med gy	3.0-3.5	0.35(11)	70	25	5	70	30	*	*
921-930	"	MDST, a/a						70	30	*	*
930-939	"	MDST, ol-gy						65	35	*	*
939-948	"	MDST, a/a						80	20	*	*
948-957	"	MDST, a/a						80	20	*	*
957-966	"	MDST, a/a						75	25	*	*
966-976	"	MDST, ol-gy + mnr LST, wht						75	25	*	*
987.6		**Basal Sandstone**									
976-988	"	MDST, lt brn-gy/brn-gy + 10% LST, wht	3.5-4.0	?0.36(3)	70	20	10				
	P	MDST, a/a						75	25	*	*

Table 1 Maturity and Kerogen Composition Data

WELL: HOPE ISLAND-1

GENERAL DATA			CHEMICAL ANALYSIS DATA											
				PYROLYSIS					SOLVENT EXTRACTION					
													EXTRACT COMPOSITION (%)	
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g TOC)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g TOC)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
911		**Locker Shale**													
912-921	Ctg	MDST, med gy, sl calc	1.69	425	58	87	0.05	1.03							
921-930	"	MDST, a/a	1.87	428	59	81	0.04	1.15							
930-939	"	MDST, ol-gy	1.69	428	70	72	0.03	1.22							
939-948	"	MDST, a/a	1.63	419	34	82	0.05	0.58							
948-957	"	MDST, a/a	1.69	423	36	71	0.05	0.63							
957-966	"	MDST, a/a	1.69	420	35	71	0.05	0.62							
966-976	"	MDST, ol-gy, sl calc + mnr LST, wht	1.71	419	38	64	0.04	0.68							
987.6		**Basal Set**													
976-988	"	MDST, lt brn-gy/brn-gy + 10% LST, wht	-												
	P	MDST, a/a	1.84	425	53	56	0.05	1.02							
	P	LST, wht	0.15												

Table 2 Chemical Analysis Data

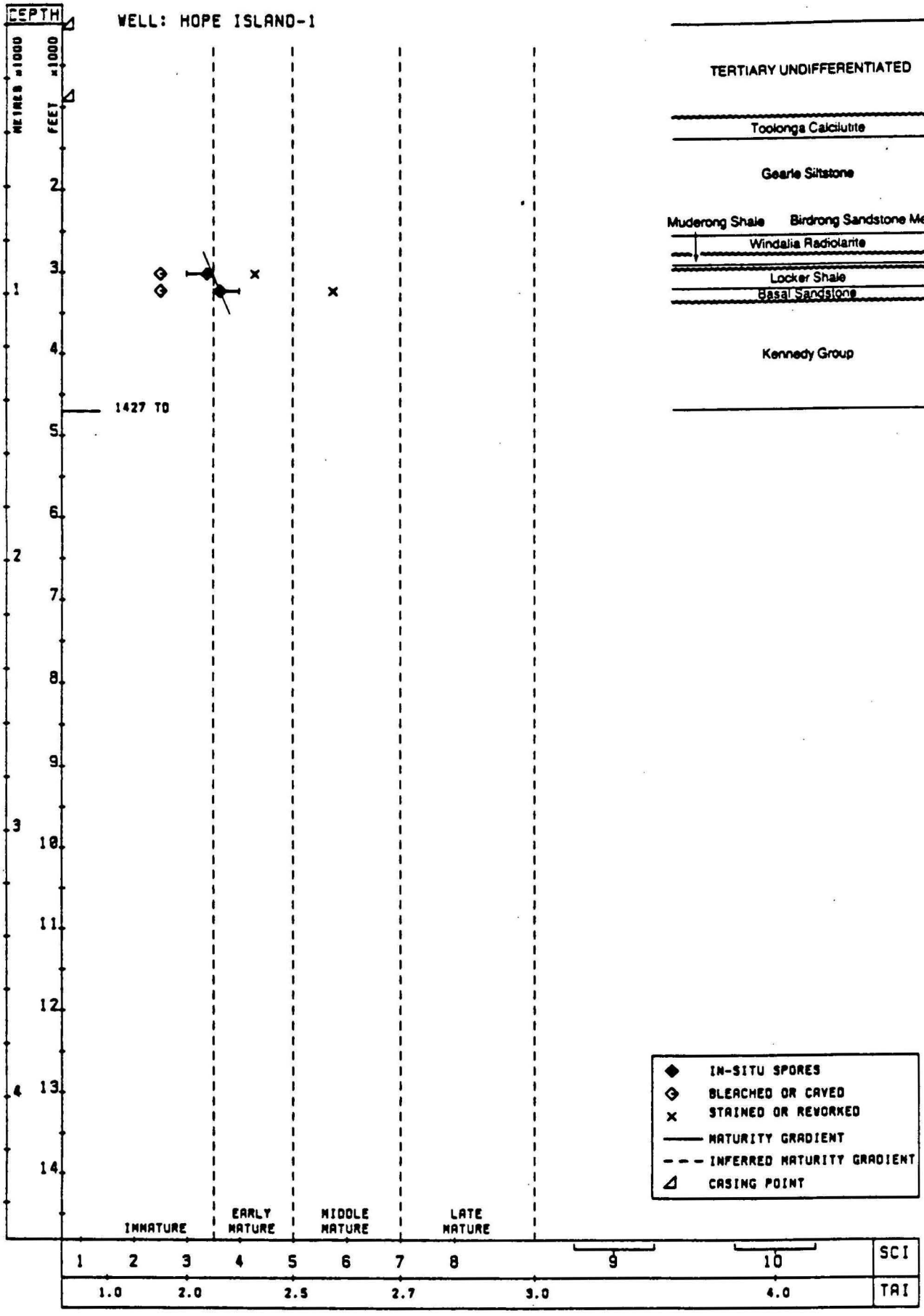


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

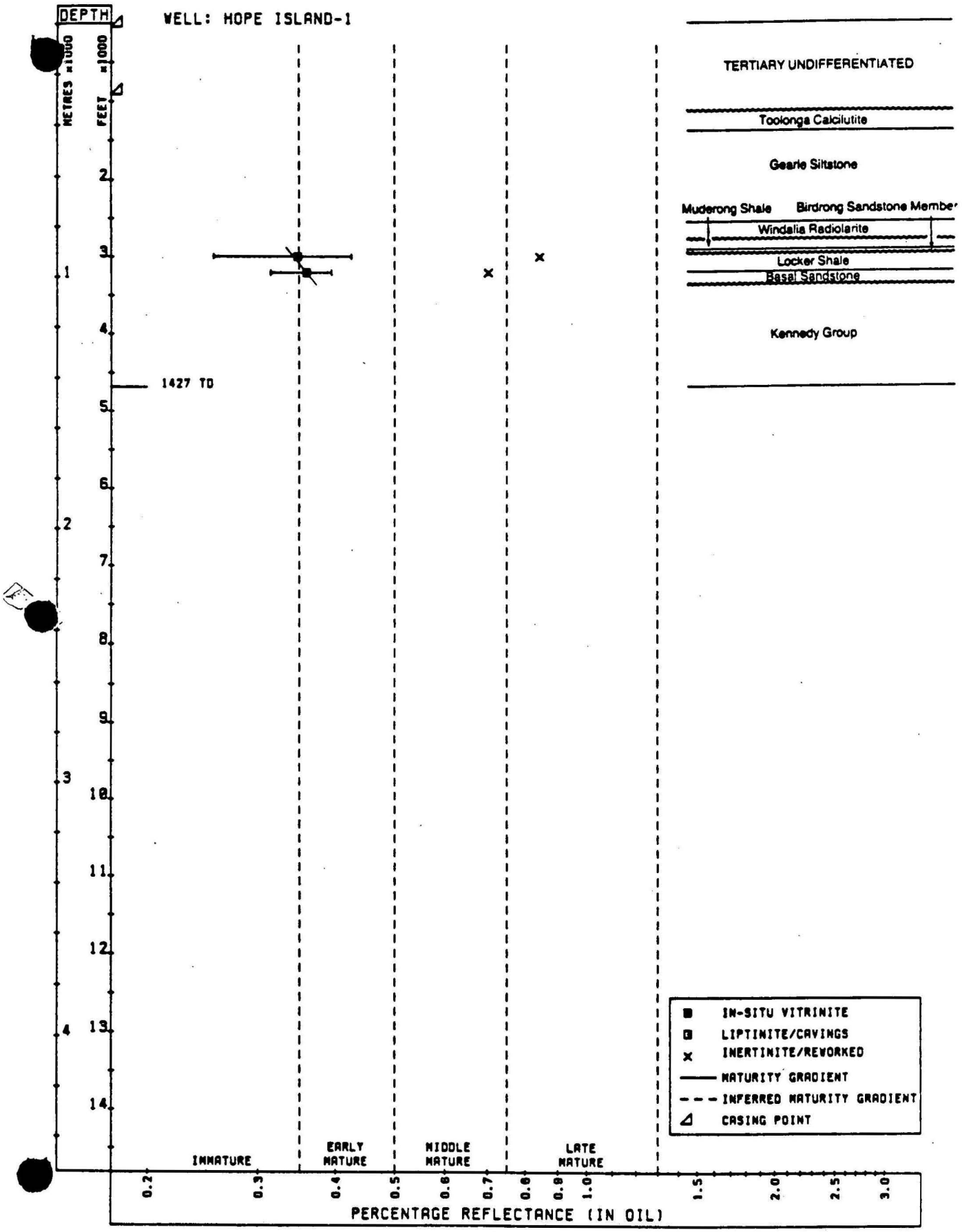


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH

Robertson Research

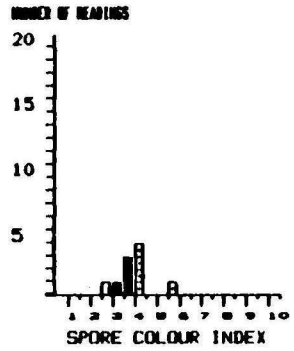
HOPE ISLAND-1

IN SITU POPULATION

SAMPLE 912-921M

2.5 3.0 3.5 3.5 3.5 4.0 4.0 4.0 4.0 5.5

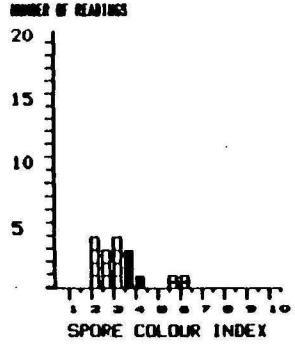
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	3.0-3.5	4
BLEACHED OR CAVED	2.5-2.5	1
STAINED OR REWORKED	4.0-5.5	5



SAMPLE 976-988M

2.0 2.0 2.0 2.0 2.5 2.5 2.5 3.0 3.0 3.0
3.0 3.5 3.5 3.5 4.0 5.5 6.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	3.5-4.0	4
BLEACHED OR CAVED	2.0-3.0	11
STAINED OR REWORKED	5.5-6.0	2



Appendix 1

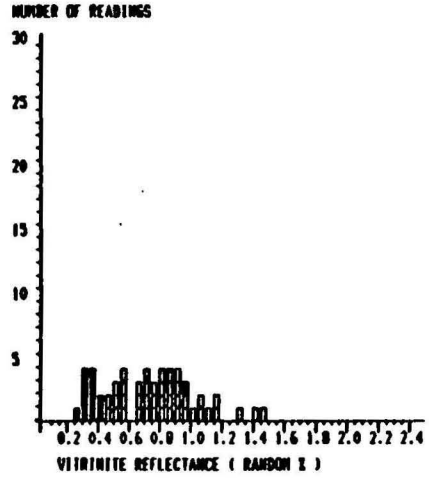
Robertson Research

HOPE ISLAND-1

SAMPLE 912-921M

0.26 0.30 0.32 0.34 0.34 0.35 0.35 0.36 0.37 0.42
0.42 0.48 0.49 0.51 0.52 0.53 0.56 0.56 0.57 0.59
0.65 0.68 0.69 0.70 0.73 0.74 0.74 0.76 0.76 0.78
0.81 0.82 0.84 0.84 0.86 0.86 0.86 0.87 0.92 0.93
0.94 0.94 0.95 0.96 0.97 1.02 1.05 1.08 1.12 1.17
1.19 1.33 1.40 1.46

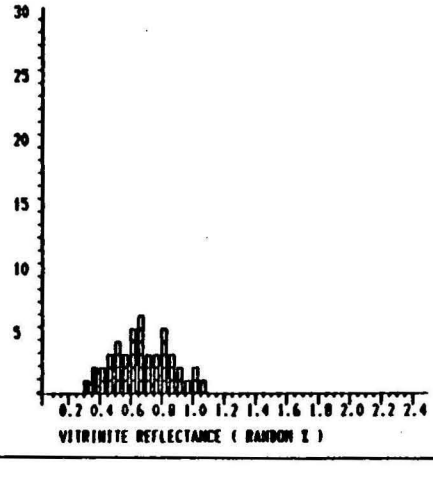
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.26-0.42	11	0.35	0.05
INERTINITE/REWORKED	0.48-1.46	43	0.84	0.24



SAMPLE 976-988M

0.32 0.37 0.39 0.43 0.44 0.45 0.46 0.49 0.50 0.51
0.51 0.52 0.57 0.58 0.59 0.60 0.61 0.62 0.64 0.64
0.65 0.66 0.67 0.68 0.69 0.69 0.72 0.73 0.73 0.75
0.78 0.79 0.80 0.80 0.81 0.81 0.81 0.85 0.88 0.89
0.91 0.91 0.96 1.01 1.02 1.06

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.32-0.39	3	0.36	0.04
INERTINITE/REWORKED	0.43-1.06	43	0.70	0.17



Appendix 2

JARMAN-1 WELL

SUMMARY

Geochemical analyses of selected samples from the interval 2250m to 2755m of the Jarman-1 well show that the interval analysed is early mature and contains no significant oil or gas source rocks.

The maturity gradients show no evidence of any major uplift and erosion at unconformities in the well section or at seabed. The sediments analysed are at or near their maximum depth of burial.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 19° 07' 19.6"S, 117° 20' 41.5"E.

Operator and date of drilling: Woodside/Union, 1978.

Well Status: Plugged and abandoned.

TD: 2906m.

Mud data: Seawater with high viscosity bentonite: Seabed to 440m.
Seawater with pre-hydrated bentonite and CMC: 440m to 1636m.
Brine-polymer mud system: 1636m to 2906m TD.

Casing data: 30" at 178m, 20" at 430m, $13^3/_8$" at 1621m.

Elevation: RT 8m ASL.

Water depth: 134m.

Interval analysed: 2250m to 2755m.

Age of interval analysed:

	Depths (in metres)
Early Cretaceous	2550-2551
Late Jurassic	2551-2660
Early-Middle Jurassic	2660-2755

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: Samples yielded sufficent vitrinite for measurements but contained abundant reworked/inertinitic material. Results: Good.

b) Spore Colour Index: Samples yielded sufficient sporomorphs for measurement. Results: Good.

Source rock data quality: Good.

Gas chromatography run at: 2350m to 2365m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Vitrinite reflectance values rise from interpreted values of 0.4% at 2250m to 0.48% at 2755m. Spore colour index values rise from 3.75 to 4.75 SCI units over the same interval. These results show that the section analysed is early mature.

Extrapolation of the maturity gradients to the surface shows no evidence of any major uplift and erosion at unconformities present within the well section or at seabed. Present day burial depths are therefore near maximum burial depths at the well location.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

No significant oil or gas source rocks have been identified in the section analysed.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

Organic carbon screening shows the mudstone samples to contain average organic carbon content. The late Neocomanian sediments between 2290m and 2465m contain relatively higher organic carbon contents of between 1.41% and 2.40%.

The remaining sediments contain only 0.59% to 1.83% organic carbon content. Pyrolysis analysis of samples with greater than 1.0% organic carbon content shows the samples analysed to have low to moderate hydrogen indices (71 to 124). These values indicate that the samples analysed contain only humic kerogen. This is

confirmed by visual kerogen typing data which shows only minor oil-prone kerogen content.

Extraction of samples at 2350m to 2365m and 2450m to 2465m shows that these samples contain small amounts of mainly non hydrocarbon material. The alkane gas chromatogram of the sample at 2350m to 2365m shows a hydrocarbon distribution consistent with derivation from early mature to mature waxy sapropel.

The data shows that none of the samples analysed have any signficant oil or gas source potential.

WELL: JARMAN-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
2227		**Muderong Shale**									
2250-2265	Ctg	MDST, ol-gy + mnr LST, wht	3.5-4.0	0.95(45)rew	50	50	mnr				
2290-2305	"	MDST, a/a + mnr LST, wht						45	55	*	*
2310-2325	"	MDST, a/a + mnr LST, wht						40	60	*	*
2330-2345	"	MDST, a/a + mnr LST, wht						40	60	*	*
2350-2365	"	MDST, a/a, mic + mnr LST, wht						30	70	*	*
2370-2385	"	MDST, a/a + mnr LST, wht						45	55	*	*
2390-2405	"	MDST, a/a + mnr LST, wht						60	40	*	*
2415		**Barrow Gp**									
2410-2425	"	MDST, med gy + 50% MDST, ol-gy, calc	4.0	0.43(12)	70	30	*	40	60	*	*
2430-2445	P	MDST, ol-gy, calc						50	50	*	*
2450-2465	Ctg	MDST, ol-gy/gn-gy, calc + mnr LST, wht						40	60	*	*
2530-2545	"	MDST, lt ol-gy, calc + 10% MDST, lt gy/ lt med gy	4.5-5.0	0.85(10)rew	75	25	*				
2551		**Upper Dingo Claystone**									
2578		**Upper Dingo Claystone : Dupuy Sandstone Mbr Eqv**									
2660		**Middle Dingo Claystone**									
2665-2675	P	SLTST, lt gy, sndy						45	55	*	*
	P	MDST, med gy						60	40	*	*
2695	P	MDST, med gy						60	40	*	*
2710-2715	Ctg	MDST, med gy + 50% SLTST, lt gy	4.5-5.0	0.47(28)	20	80	tr				
	P	MDST, a/a						50	50	*	*
2720-2730	P	MDST, lt gy, sl calc						50	50	*	*

Table 1 Maturity and Kerogen Composition Data

WELL: JARMAN-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2227		**Haderong Shale**													
2250-2265	Ctg	MDST, ol-gy + mnr LST, wht	0.96												
2270-2285	"	MDST, a/a + mnr LST, a/a	0.95												
2290-2305	"	MDST, ol-gy + mnr LST, wht	1.70	433	93	89	0.05	1.66							
2310-2325	"	MDST, a/a + mnr LST, a/a	2.14	436	104	86	0.06	2.38							
2330-2345	"	MDST, a/a + mnr LST, a/a	2.40	433	110	88	0.06	2.80							
2350-2365	"	MDST, ol-gy, mic, sl calc + mnr LST, wht	2.03	437	124	98	0.03	2.60	680	34	250	12	32	5	63
2370-2385	"	MDST, a/a + mnr LST, a/a	2.39	438	97	94	0.03	2.39							
2390-2405	"	MDST, a/a + mnr LST, a/a	1.69	438	77	76	0.02	1.33							
2415		**Barrow Gp**													
2410-2425	"	MDST, med gy + 50% MDST, ol-gy, calc	2.21	440	105	57	0.03	2.37							
2430-2445	Ctg	MDST, ol-gy, calc + mnr MDST, med gy	-												
	P	MDST, ol-gy, calc	2.20	438	84	51	0.04	1.91							
	P	MDST, med gy	0.90												
2450-2465	Ctg	MDST, ol-gy/gn-gy, calc + mnr LST, wht	1.41	437	104	132	0.05	1.54	780	55	305	22	34	5	61
2470-2485	"	MDST, ol-gy/gn-gy, calc, mic + 20% MDST, med lt gy	0.83												
2490-2505	"	MDST, ol-gy/gn-gy	0.66												
2510-2525	"	MDST, lt gy, calc + 10% MDST, ol-gy	0.67												
2530-2545	"	MDST, lt ol-gy, calc + 10% MDST, lt gy/med lt gy	0.78												
2551		**Upper Dingo Claystone**													
2550-2560	"	MDST, med lt gy + 50% MDST, lt ol-gy, calc	-												
	P	MDST, med lt gy	0.53												
	P	MDST, lt ol-gy, calc	0.61												
2565-2575	Ctg	MDST, ol gy, calc + 30% MDST, med gy	0.94												
2578		**Upper Dingo Claystone: Dupuy Sst Mbr Eqv**													
2660		**Middle Dingo Claystone**													
2665-2675	"	MDST, med gy + 40% SLTST, lt-gy, sndy	-												
	P	SLTST, lt-gy, sndy	0.92	434	80	170	0.07	0.80							
	P	MDST, med gy	1.83	441	71	99	0.06	1.38							

Table 2a Chemical Analysis Data

WELL: JARMAN-1

GENERAL DATA			CHEMICAL ANALYSIS DATA											
				PYROLYSIS					SOLVENT EXTRACTION					
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	EXTRACT COMPOSITION %	
													SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2695	Ctg	MDST, med gy + 50% SLTST, lt gy	-												
	P	MDST, med gy	1.52	435	71	63	0.08	1.17							
2710-2715	Ctg	MDST, med gy + 50% SLTST, lt gy	-												
	P	MDST, med gy	1.56	433	83	124	0.10	1.43							
2720-2730	Ctg	MDST, yel-brn, sl calc, slty + 40% MDST, lt gy, sl calc	-												
	P	MDST, yel-brn, sl calc, slty	0.93												
	P	MDST, lt gy, sl calc	1.09	437	83	189	0.06	0.96							
2740-2755	Ctg	MDST, yel-brn, sl calc + mnr MDST, med lt gy + mnr LST	0.59												

Table 2b Chemical Analysis Data

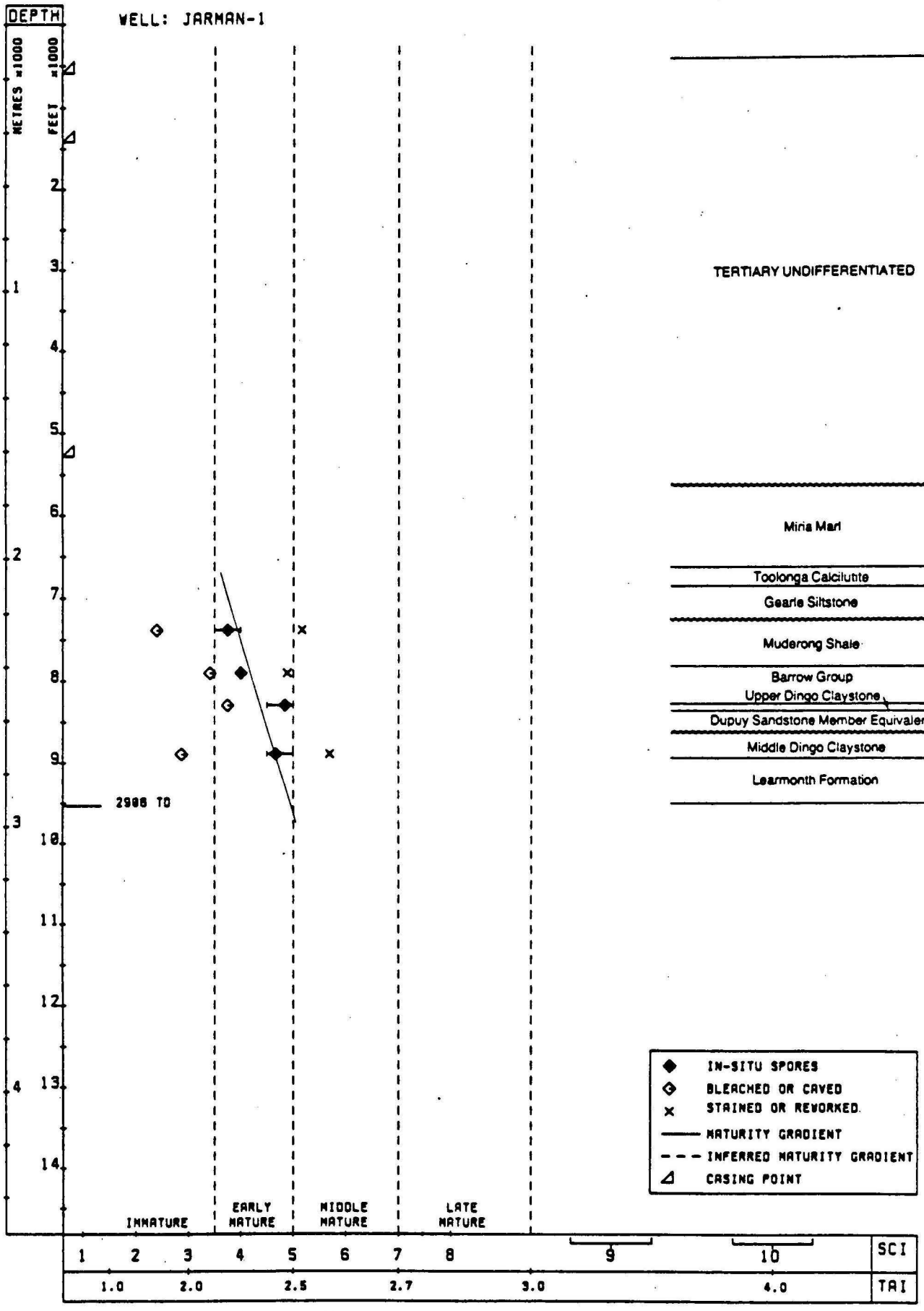


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

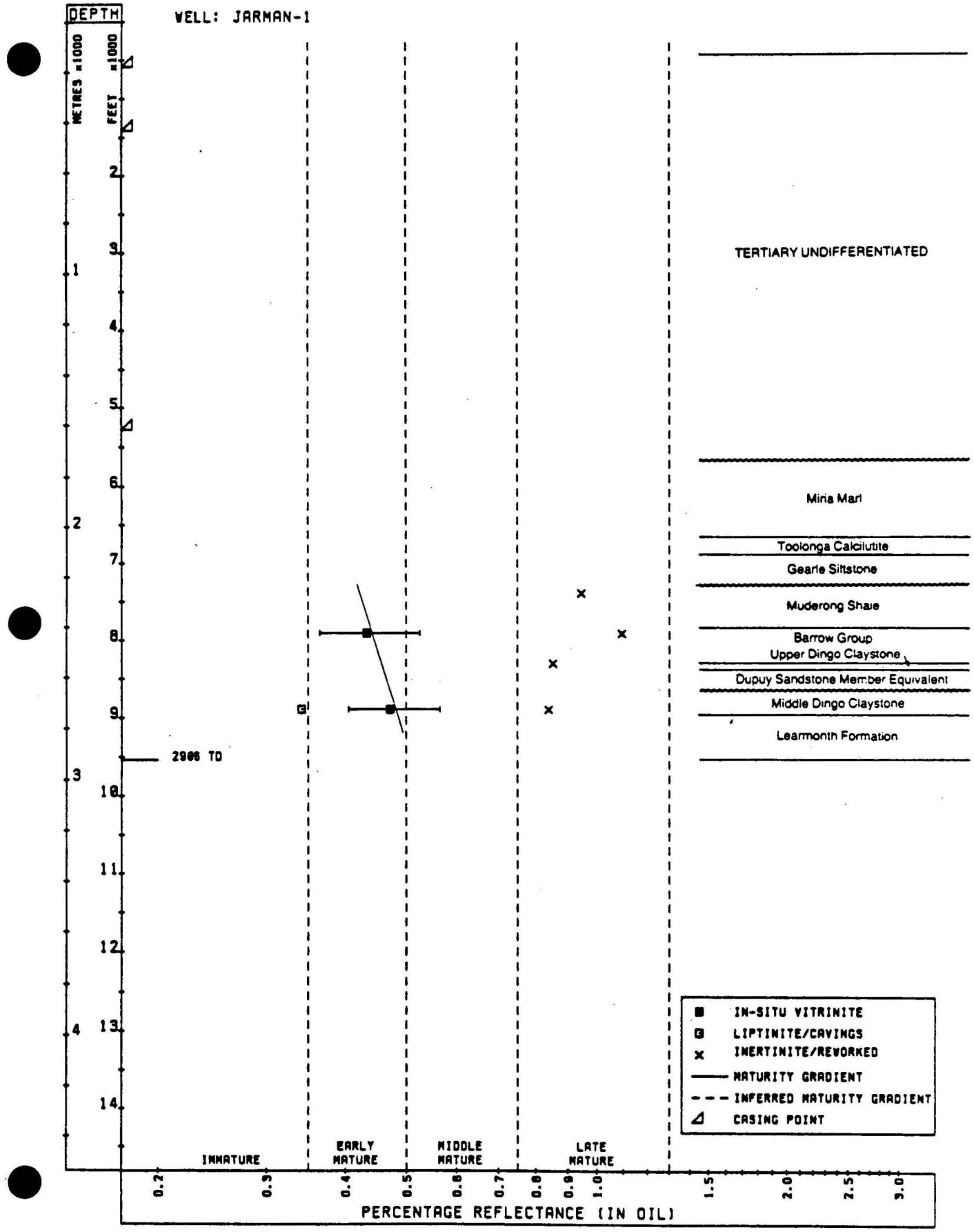


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH

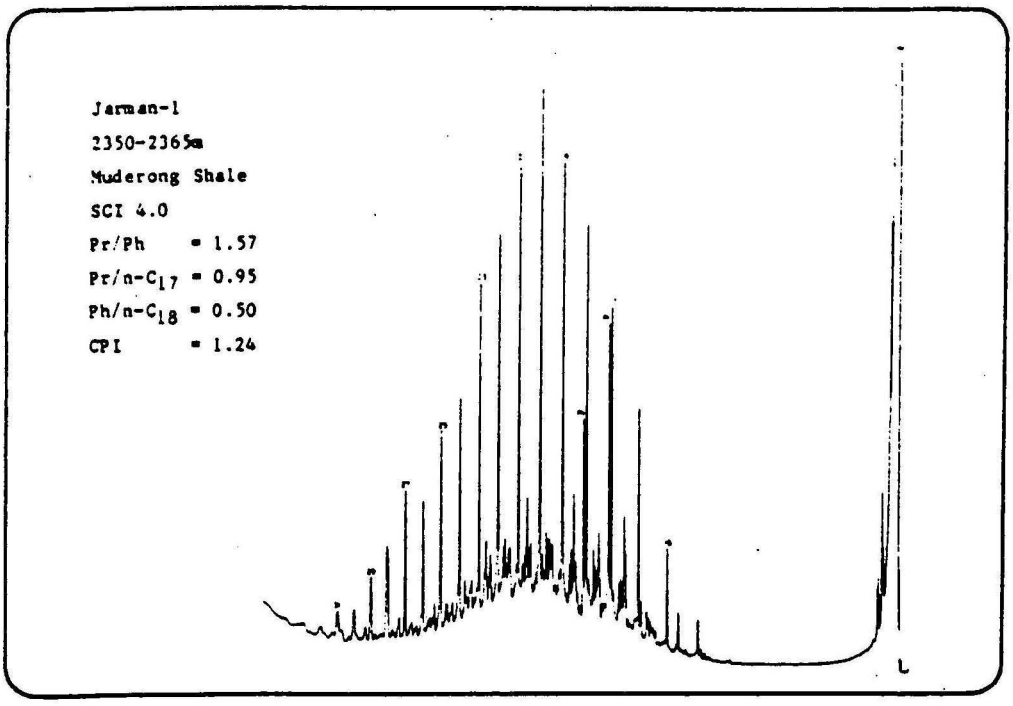

Jarman-1
2350-2365m
Muderong Shale
SCI 4.0
Pr/Ph = 1.57
Pr/n-C17 = 0.95
Ph/n-C18 = 0.50
CPI = 1.24

Figure 3

Robertson Research

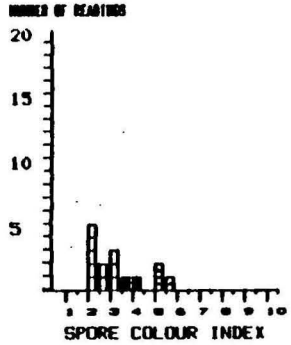
JARMAN-1

IN SITU POPULATION

SAMPLE 2250-2265M

2.0 2.0 2.0 2.0 2.0 2.5 2.5 3.0 3.0 3.0
3.5 4.0 5.0 5.0 5.5

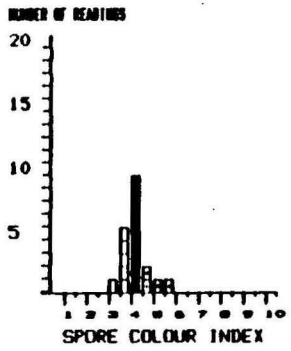
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	3.5-4.0	2
BLEACHED OR CAVED	2.0-3.0	10
STAINED OR REWORKED	5.0-5.5	3



SAMPLE 2410-2415M

3.0 3.5 3.5 3.5 3.5 3.5 4.0 4.0 4.0 4.0
4.0 4.0 4.0 4.0 4.0 4.5 4.5 5.0 5.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.0-4.0	9
BLEACHED OR CAVED	3.0-3.5	6
STAINED OR REWORKED	4.5-5.5	4



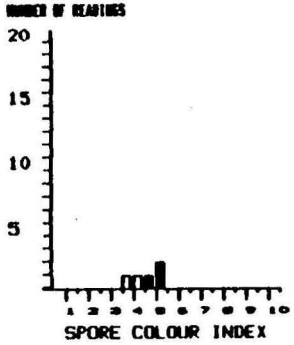
JARMAN-1

IN SITU POPULATION

SAMPLE 2530-2545M

3.5 4.0 4.5 5.0 5.0

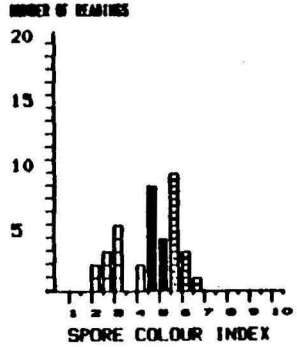
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.5-5.0	3
BLEACHED OR CAVED	3.5-4.0	2
STAINED OR REWORKED	-	0



SAMPLE 2710-2715M

2.0 2.0 2.5 2.5 2.5 3.0 3.0 3.0 3.0 3.0
4.0 4.0 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5
5.0 5.0 5.0 5.0 5.5 5.5 5.5 5.5 5.5 5.5
5.5 5.5 5.5 6.0 6.0 6.0 6.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.5-5.0	12
BLEACHED OR CAVED	2.0-4.0	12
STAINED OR REWORKED	5.5-6.5	13



Appendix 1

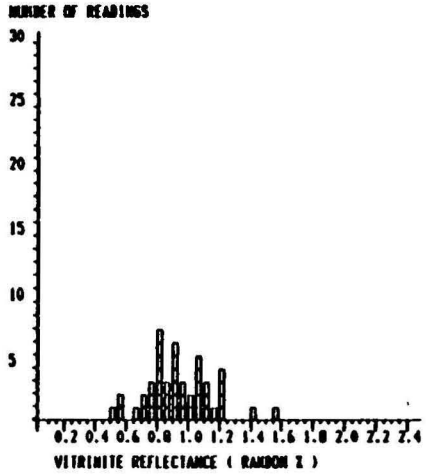
Robertson Research

JARNAN-1

SAMPLE 2250-2265M

0.51 0.57 0.58 0.68 0.70 0.70 0.78 0.79 0.79 0.80
0.80 0.81 0.81 0.83 0.84 0.84 0.85 0.85 0.86 0.91
0.91 0.92 0.92 0.92 0.94 0.96 0.98 0.99 1.03 1.04
1.05 1.05 1.06 1.06 1.08 1.10 1.13 1.14 1.16 1.21
1.21 1.21 1.22 1.40 1.58

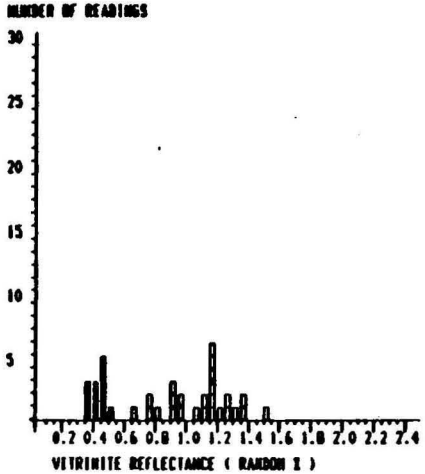
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
INERTINITE/REWORKED	0.51-1.58	45	0.95	0.21



SAMPLE 2410-2425M

0.37 0.38 0.39 0.40 0.40 0.41 0.45 0.46 0.47 0.47
0.48 0.52 0.67 0.75 0.78 0.81 0.92 0.93 0.94 0.96
0.98 1.07 1.10 1.14 1.16 1.16 1.16 1.17 1.18 1.18
1.21 1.25 1.27 1.33 1.35 1.39 1.50

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.37-0.52	12	0.43	0.05
INERTINITE/REWORKED	0.67-1.50	25	1.09	0.21

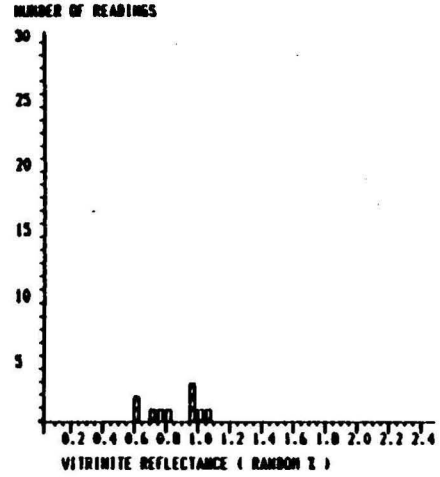


JARNAN-1

SAMPLE 2530-2545M

0.60 0.64 0.72 0.76 0.80 0.96 0.97 0.99 1.01 1.08

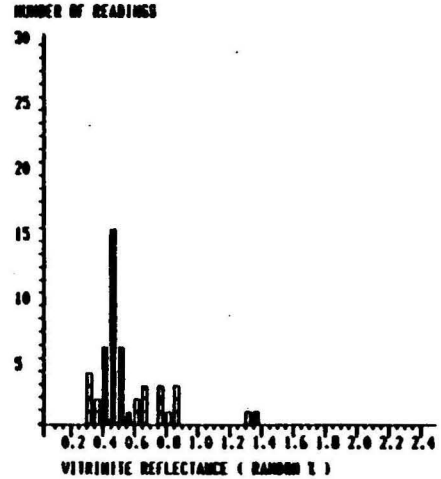
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
INERTINITE/REWORKED	0.60-1.08	10	0.85	0.17



SAMPLE 2710-2715M

0.31 0.33 0.33 0.34 0.36 0.38 0.41 0.43 0.43 0.43
0.43 0.44 0.45 0.45 0.45 0.45 0.46 0.46 0.46 0.46
0.46 0.46 0.47 0.47 0.47 0.48 0.49 0.50 0.50 0.52
0.53 0.54 0.54 0.56 0.62 0.64 0.66 0.68 0.69 0.75
0.76 0.78 0.84 0.87 0.88 0.89 1.32 1.38

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.41-0.56	28	0.47	0.04
LIPTINITE/CAVINGS	0.31-0.38	6	0.34	0.02
INERTINITE/REWORKED	0.62-1.38	14	0.84	0.23



Appendix 2

KOOLINDA-1 WELL

SUMMARY

Geochemical analysis of samples from the interval 1980m to 3725m of the Koolinda-1 well has shown that the well section analysed is middle mature between 1980m and 2650m and late mature between 2650m and 3732m TD. Extrapolation of the maturity gradients to the seabed shows that around 1450m of Late Jurassic and younger section is missing and that the maximum depth of burial of the sediments analysed was around 700m greater than present day burial depths.

The intervals 2530m to 2950m and 3305m to 3475m of the Dingo Claystone have very good and good oil source potential respectively. Most of this potential has been generated at their present levels of maturity.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 21° 23' 45.6"S, 115° 03' 13.4"E.

Operator and date of drilling: West Australian Petroleum Pty Ltd, 1978.

Well Status: Plugged and abandoned.

TD: 3732m.

Mud data: Seawater and lignosulphonate system: Seabed to 3732m TD.

Casing data: 30" at 89.5m, 20" at 475.2m, $13^3/_8$ at 1235.7m, $9^5/_8$" at 2597m.

BHT data: 86°C at 2314m, after 5 hours stopped circulation.
104°C at 2602m, after 13 hours stopped circulation.
135°C at 3732m TD, after 10 hours stopped circulation.

Elevation: RT 31.5m ASL.

Water depth: 18m.

Interval analysed: 1980m to 3725m.

KOOLINDA-1 WELL

Age of interval analysed:

	Depths (in metres)
Late Jurassic	1980-2900
Early?-Middle Jurassic	2900-3725

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: The samples yielded sufficent quantities of vitrinite for accurate measurement. Vitrinite population good. Results: Good.

b) Spore Colour Index: The samples yielded sufficient quantities of indigenous sporomorphs for accurate measurement. Results: Good.

Source rock data quality: Fair.

Gas chromatography run at: 2530m to 2540m, 3225m to 3235m and 3305m to 3315m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Vitrinite reflectance values over the interval analysed increase from an interpreted value of 0.62% at 1980m to 1995m, to an interpreted value of 1.09% at 3715m to 3725m. Spore colour index values over the same interval rise from 5½ to 6 SCI units to 8 to 8½ SCI units. The results obtained indicate that the analysed interval is middle mature between 1980m and 2650m and late mature from 2650m to 3732m TD. The interpreted vitrinite reflectance gradient suggests that no major erosional unconformities are present within the section analysed. Extrapolation of the interpreted gradients to the seabed indicates that there is possibly 1450m of missing Late Jurassic and younger section. The sediments penetrated are not currently at their maximum depths of burial. Maximum depths of burial were around 700m greater than those of the present day.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

Mudstone and interbedded siltstones in the intervals 2530m to 2950m and 3305m to 3475m of the Dingo Claystone contain average

organic carbon contents of between 1.08% and 1.77%. Pyrolysis analysis of these samples shows that they contain mostly humic kerogen mixed with 10% to 15% oil-prone kerogen. At the relatively high levels of maturity of these samples, this content of oil-prone kerogen is significant. These intervals have very good and good oil source potential respectively and will have generated most of their oil potential in reaching their present levels of maturity.

Extraction, fractionation and gas chromatography of the samples at 2530m to 2540m and 3305m to 3315m shows that these samples contain indigenous hydrocarbons derived from middle and late mature terrestrially sourced waxy kerogens respectively.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

Mudstones analysed in the intervals 1980m to 2530m, 3140m to 3150m and 3475m to 3725m are organically lean containing between 0.44% and 0.97% organic carbon. Samples at 3225m to 3235m and 3560m to 3570m contain higher organic carbon contents of between 1.74% and 2.72% but contain only humic kerogen and therefore have no oil source potential. These samples are too organically lean to be significant gas sources.

Extraction, fractionation and gas chromatography analysis of the sample at 3225m to 3235m shows that this sample contains small quantities of migrant oil derived from mature, terrestrially sourced, waxy kerogens.

WELL: KOOLINDA-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
1858		**Upper Dingo Claystone :Dupuy Sandstone Mbr**									
1980-1995	Ctg	SLTST, lt ol gy, arg + 30% SST, yel gy	5.5-6.0	?0.62(2)	30	30	40				
2090-2100	"	SLTST, lt ol gy-yel gy, arg	2.5-4.5cvd		80	5	15				
2160-2170	"	SLTST, a/a	6.0-6.5	0.64(4)	85	15	mnr				
2304		**Upper Dingo Claystone**									
2330-2340	"	SLTST, med gy, arg, sl calc + 10% SLTST, a/a	6.5-7.0	0.72(20)	85	15	tr				
2530-2540	"	SLTST, med gy, v arg, sl calc	7.5	0.75(10)	90	10	mnr	55	25	*	20
2745-2760	"	MDST, lt ol gy, sl calc	7.0-7.5	?0.83(1)	90	10	*	70	20	*	10
2835-2850	"	MDST, a/a						65	25	*	10
2900		**?Middle and Lower Dingo Claystone**									
2935-2950	"	MDST, ol gy, sl calc						50	35	*	15
3030-3045	"	MDST, a/a	7.5-8.0	0.88(5)	85	15	tr	60	40	*	*
3225-3235	"	MDST, ol gy, sl calc	8.0	0.23(4)cvd	75	25	*	70	30	*	*
3305-3315	"	MDST, a/a						60	30	*	10
3405-3415	"	MDST, a/a	8.0	0.96(4)	90	10	*	70	20	*	10
3475-3485	"	MDST, lt ol gy, sl calc						65	20	*	15
3560-3570	"	MDST, a/a	8.0-8.5	1.05(6)	70	15	15	75	20	*	5
3570-3680	"	MDST, a/a						75	20	*	5
3715-3725	"	MDST, a/a	8.0-8.5	?1.10(2)	80	20	*				

Table 1 Maturity and Kerogen Composition Data

WELL: KOOLINDA-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
1858		**Upper Dingo Claystone: Dupuy Sst Mbr**													
1980-1995	Ctg	SLTST, lt ol gy, arg + 30% SST, yel gy	-												
	P	SLTST, lt ol gy, arg	0.81												
2090-2100	Ctg	SLTST, lt ol gy-yel gy, arg	0.49												
2160-2170	"	SLTST, a/a	0.44												
2200-2210	"	SLTST, a/a	0.53												
2304		**Upper Dingo Claystone**													
2330-2340	"	SLTST, med gy, arg, sl calc + 10% SLTST, lt ol-gy-yel, arg	-												
	P	SLTST, med gy, arg, sl calc	0.95												
	P	SLTST, lt ol gy-yel, arg	0.50												
2430-2440	Ctg	SLTST, med gy, sl calc, mnr SLTST, lt ol gy-yel gy, arg	0.97												
2530-2540	"	SLTST, med gy, v arg, sl calc	1.75	437	119	61	0.25	2.78	1650	94	1240	71	49	26	25
2650-2660	"	SLTST, v lt gy, v arg, sl calc	0.96												
2745-2760	"	MDST, lt ol gy, sl calc	1.72	438	63	223	0.21	1.38							
2745-2760	"	MDST, lt ol gy, sl calc	1.72	438	63	223	0.21	1.38							
2835-2850	"	MDST, a/a	1.53	441	72	397	0.25	1.47							
2900		**Middle and Lower Dingo Claystone**													
2935-2950	"	MDST, ol gy, sl calc	1.73	442	86	247	0.33	2.22							
3030-3045	"	MDST, a/a	1.45	449	53	123	0.38	1.24							
3140-3150	"	MDST, a/a	0.97												
3225-3235	"	MDST, ol gy, sl calc	2.72	460	43	104	0.42	1.99	1555	57	1210	45	54	24	22
3305-3315	"	MDST, a/a	1.43	453	57	211	0.38	1.30	1060	74	450	32	39	4	57
3405-3415	"	MDST, a/a	1.77	NDP	43	192	0.37	1.21							
3475-3485	"	MDST, lt ol gy, sl calc	1.08	443	57	283	0.33	0.93							
3560-3570	"	MDST, a/a	1.74	445	35	157	0.25	0.81							
3670-3680	"	MDST, a/a	1.82	425	31	142	0.22	0.72							
3715-3725	"	MDST, a/a	0.96												

Table 2 Chemical Analysis Data

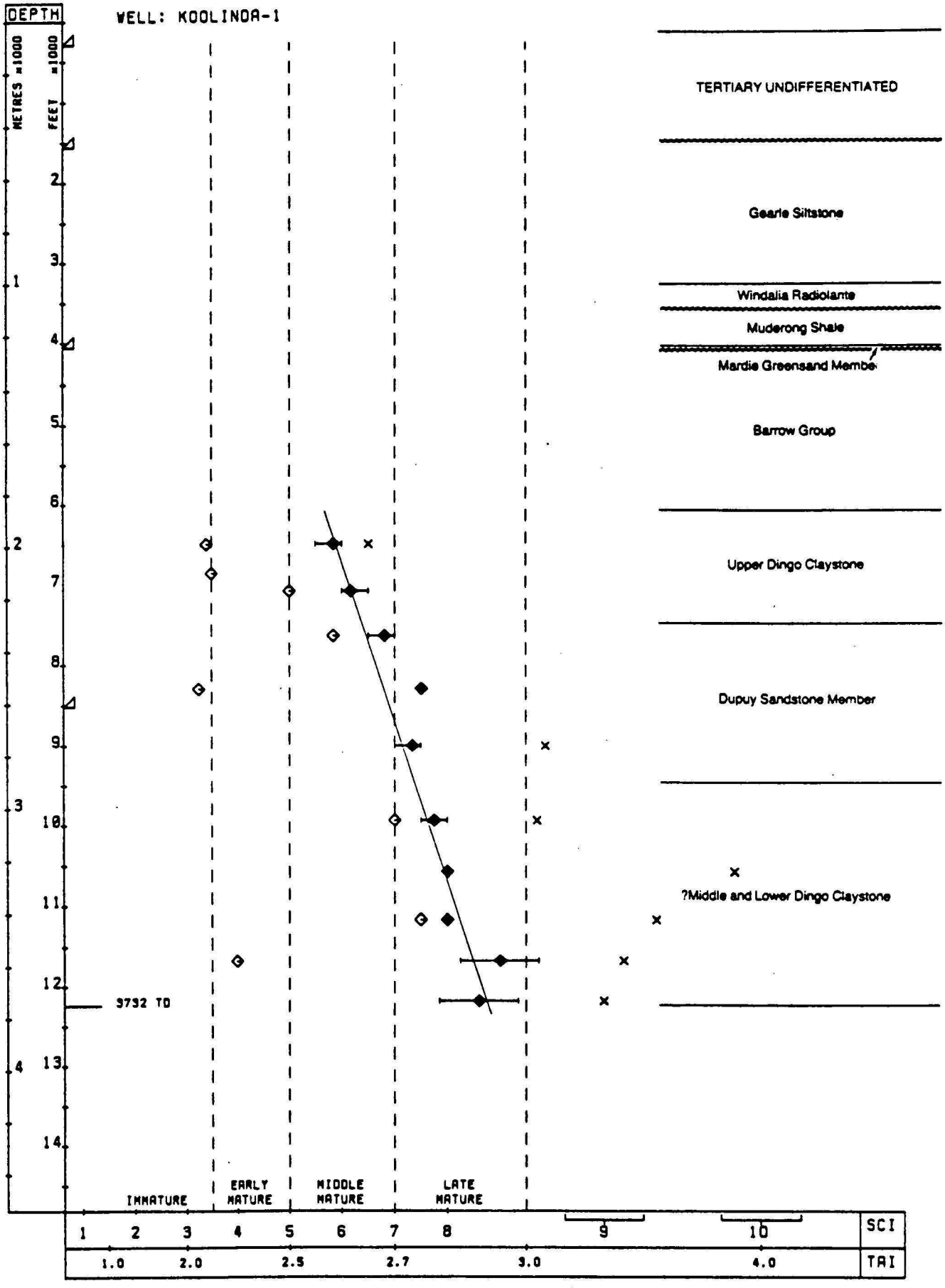


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

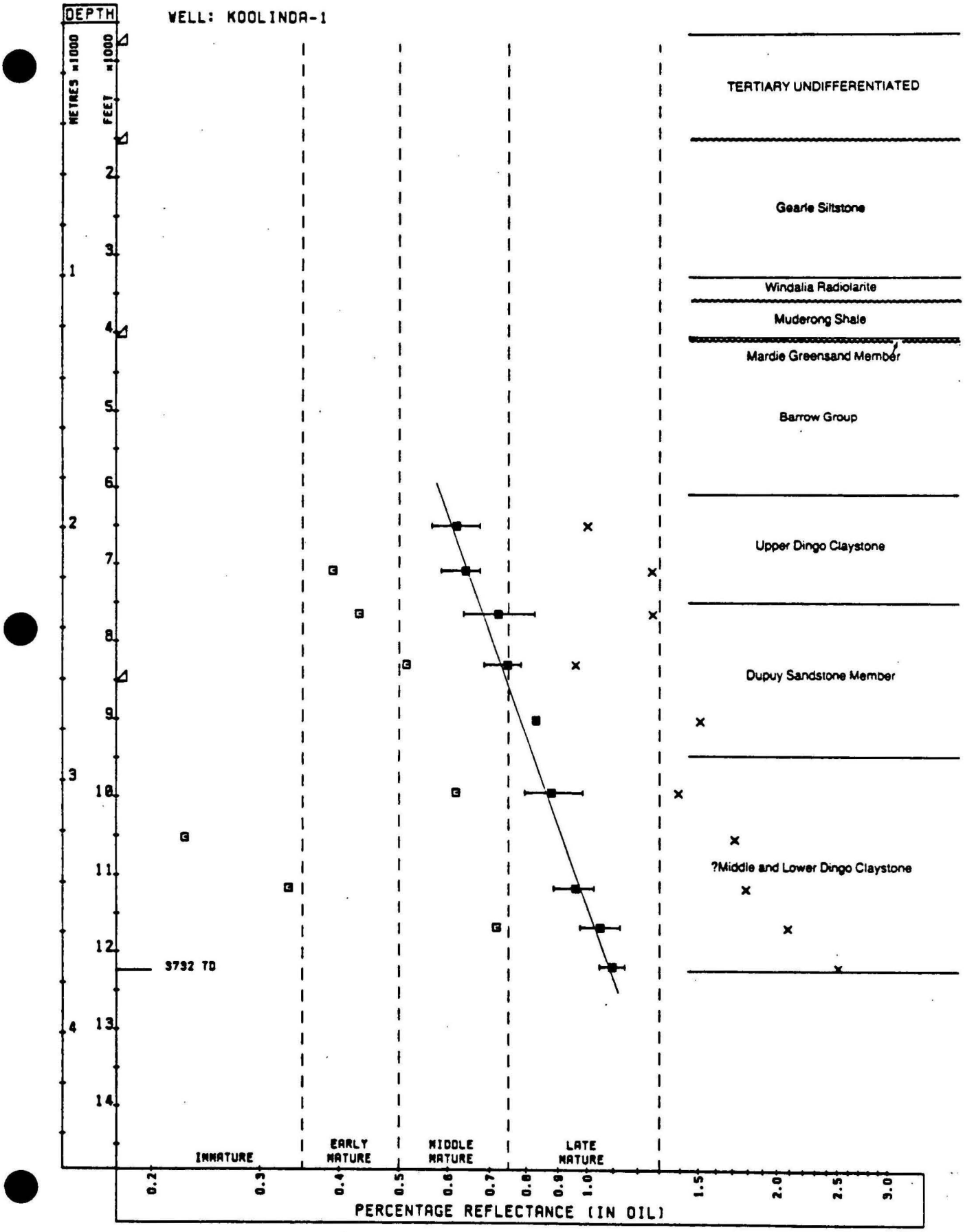
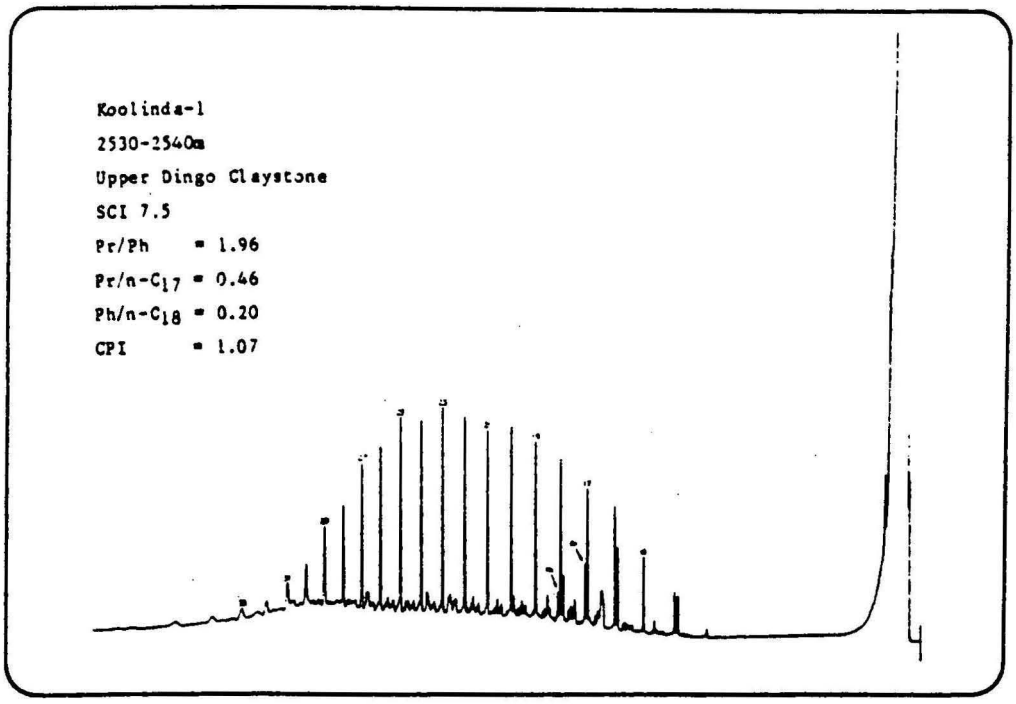
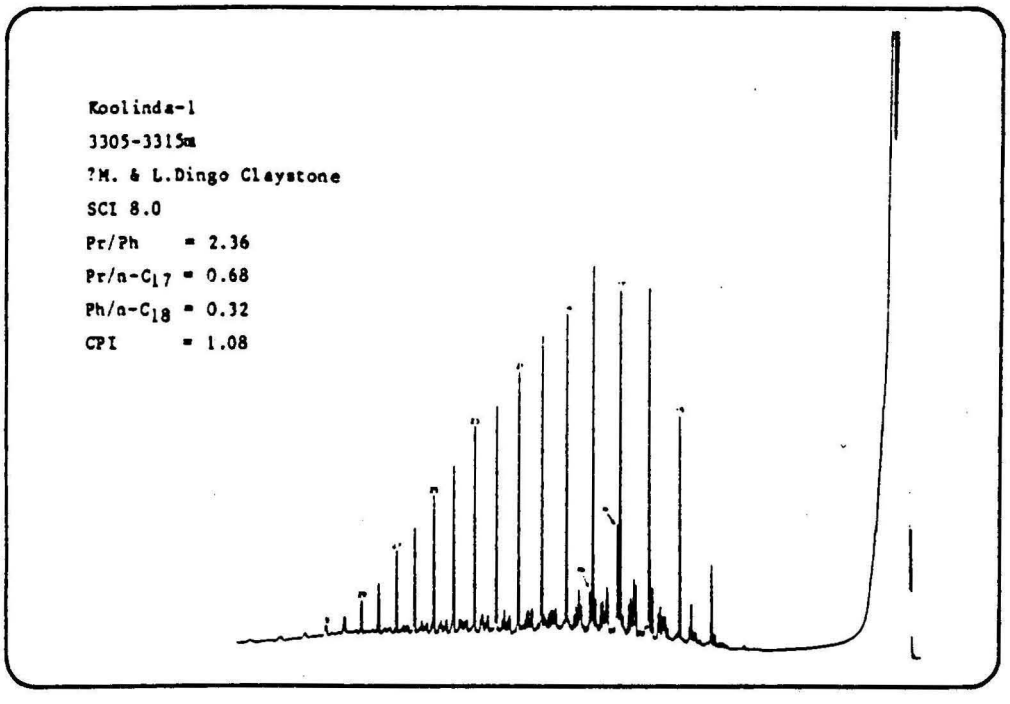


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH


Koolinda-1
2530-2540m
Upper Dingo Claystone
SCI 7.5
Pr/Ph = 1.96
Pr/n-C17 = 0.46
Ph/n-C18 = 0.20
CPI = 1.07


Koolinda-1
3305-3315m
?M. & L.Dingo Claystone
SCI 8.0
Pr/Ph = 2.36
Pr/n-C17 = 0.68
Ph/n-C18 = 0.32
CPI = 1.08

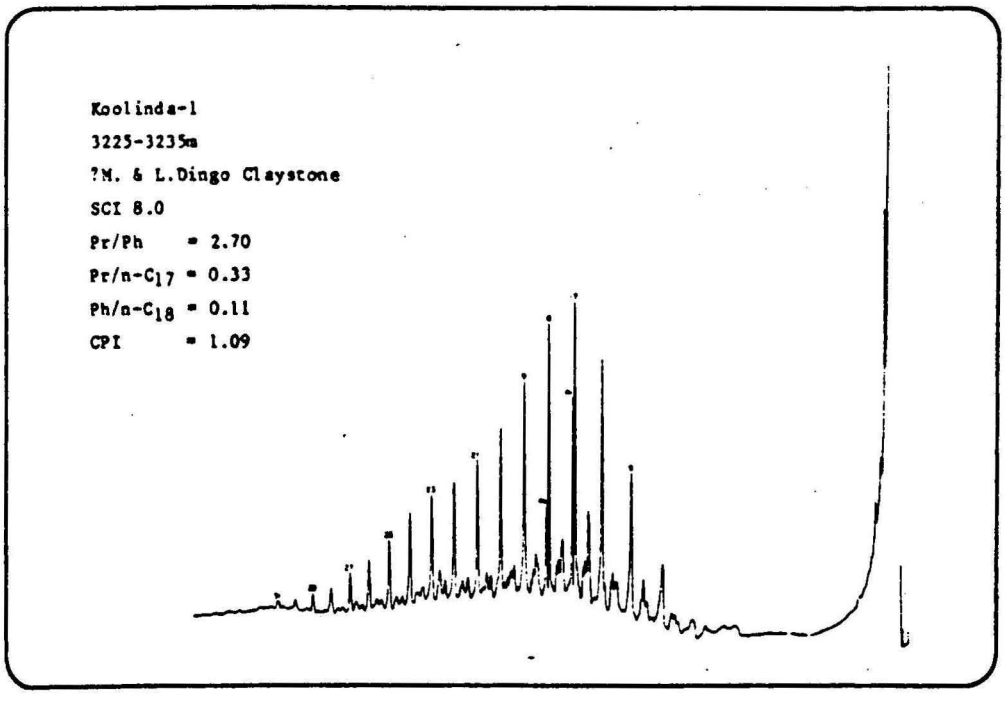

Koolinda-1
3225-3235m
?M. & L.Dingo Claystone
SCI 8.0
Pr/Ph = 2.70
Pr/n-C17 = 0.33
Ph/n-C18 = 0.11
CPI = 1.09

Figure 3

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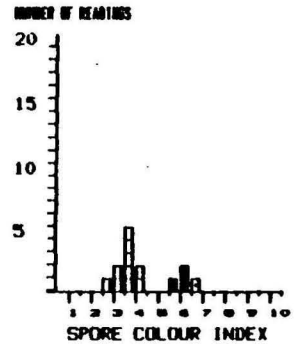
KOOLINDA-1

IN SITU POPULATION

SAMPLE 1980-1995M

2.5 3.0 3.0 3.5 3.5 3.5 3.5 3.5 4.0 4.0
5.5 6.0 6.0 6.5

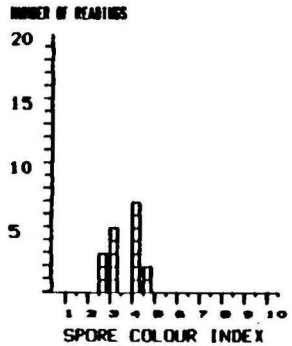
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.5-6.0	3
BLEACHED OR CAVED	2.5-4.0	10
STAINED OR REWORKED	6.5-6.5	1



SAMPLE 2090-2100M

2.5 2.5 2.5 3.0 3.0 3.0 3.0 3.0 4.0 4.0
4.0 4.0 4.0 4.0 4.0 4.5 4.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	-	0
BLEACHED OR CAVED	2.5-4.5	17
STAINED OR REWORKED	-	0



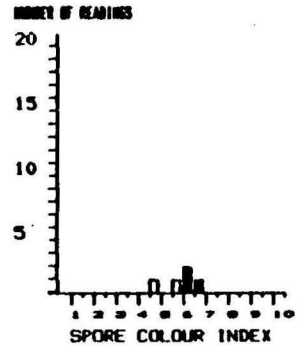
KOOLINDA-1

IN SITU POPULATION

SAMPLE 2160-2170M

4.5 5.5 6.0 6.0 6.5

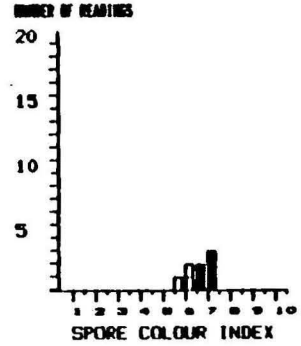
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.0-6.5	3
BLEACHED OR CAVED	4.5-5.5	2
STAINED OR REWORKED	-	0



SAMPLE 2330-2340M

5.5 6.0 6.0 6.5 6.5 7.0 7.0 7.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.5-7.0	5
BLEACHED OR CAVED	5.5-6.0	3
STAINED OR REWORKED	-	0



Appendix 1a

Robertson Research

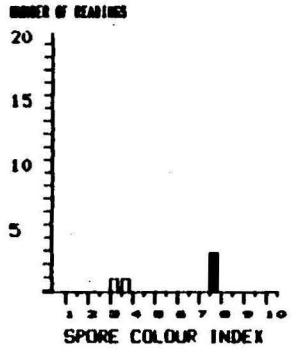
KOOLINDA-1

IN SITU POPULATION

SAMPLE 2530-2540M

3.0 3.5 7.5 7.5 7.5

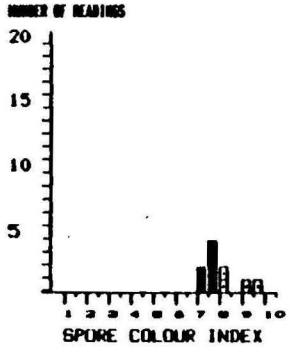
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	7.5-7.5	3
BLEACHED OR CAVED	3.0-3.5	2
STAINED OR REWORKED	-	0



SAMPLE 2745-2760M

7.0 7.0 7.5 7.5 7.5 7.5 8.0 8.0 9.0 9.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	7.0-7.5	6
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	8.0-9.5	4



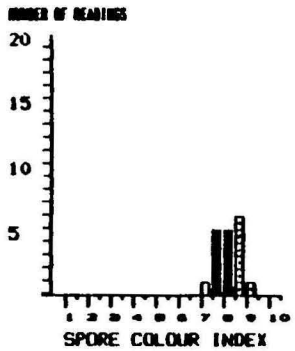
KOOLINDA-1

IN SITU POPULATION

SAMPLE 3030-3045M

7.0 7.5 7.5 7.5 7.5 7.5 8.0 8.0 8.0 8.0
8.0 8.5 8.5 8.5 8.5 8.5 8.5 9.0

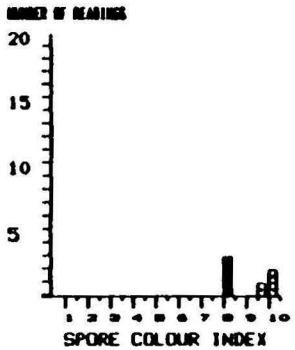
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	7.5-8.0	10
BLEACHED OR CAVED	7.0-7.0	1
STAINED OR REWORKED	8.5-9.0	7



SAMPLE 3225-3235M

8.0 8.0 8.0 9.5 10.0 10.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	8.0-8.0	3
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	9.5-10.0	3



Appendix 1b

Robertson Research

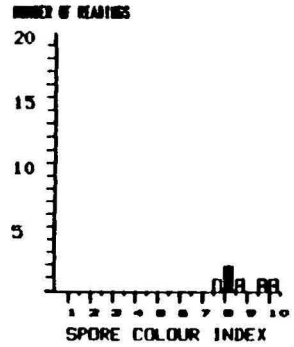
KOOLINDA-1

IN SITU POPULATION

SAMPLE 3405-3415M

7.5 8.0 8.0 8.5 9.5 10.0

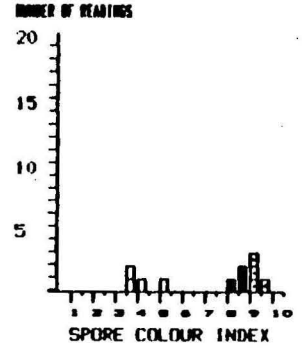
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	8.0-8.0	2
BLEACHED OR CAVED	7.5-7.5	1
STAINED OR REWORKED	8.5-10.0	3



SAMPLE 3560-3570M

3.5 3.5 4.0 5.0 8.0 8.5 8.5 9.0 9.0 9.0 9.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	8.0-8.5	3
BLEACHED OR CAVED	3.5-5.0	4
STAINED OR REWORKED	9.0-9.5	4



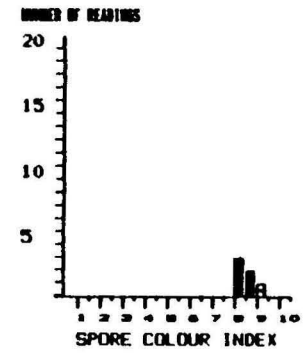
KOOLINDA-1

IN SITU POPULATION

SAMPLE 3715-3725M

8.0 8.0 8.0 8.5 8.5 9.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	8.0-8.5	5
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	9.0-9.0	1



Appendix 1c

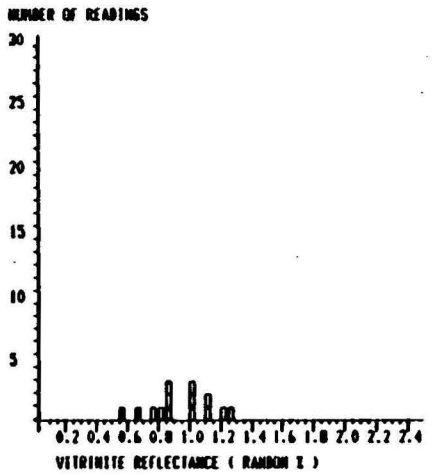
Robertson Research

KOOLINDA-1

SAMPLE 1980-1995M

0.57 0.67 0.79 0.84 0.85 0.87 0.89 1.00 1.02 1.02
1.12 1.12 1.21 1.29

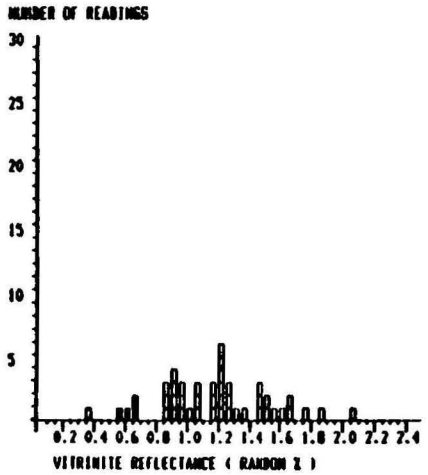
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.57-0.67	2	0.62	0.07
INERTINITE/REWORKED	0.79-1.29	12	1.00	0.16



SAMPLE 2160-2170M

0.39 0.59 0.64 0.66 0.67 0.87 0.88 0.88 0.93 0.93
0.93 0.94 0.95 0.98 0.99 1.02 1.07 1.08 1.09 1.10
1.10 1.19 1.20 1.20 1.21 1.23 1.24 1.24 1.25 1.25
1.26 1.32 1.35 1.47 1.48 1.48 1.50 1.53 1.58 1.63
1.65 1.67 1.77 1.85 2.07

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.59-0.67	4	0.64	0.04
LIPTINITE/CAVINGS	0.39-0.39	1	0.39	
INERTINITE/REWORKED	0.87-2.07	40	1.26	0.30

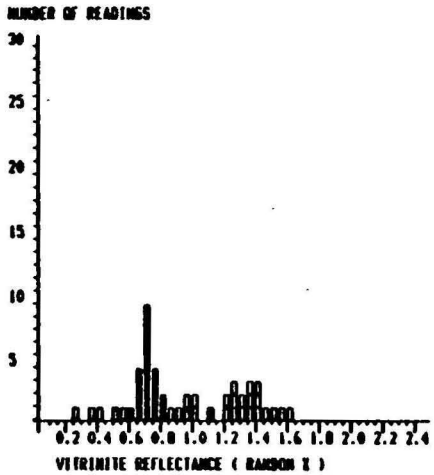


KOOLINDA-1

SAMPLE 2330-2340M

0.26 0.37 0.40 0.54 0.58 0.64 0.65 0.66 0.67 0.69
0.70 0.70 0.71 0.72 0.72 0.72 0.73 0.73 0.73 0.75
0.75 0.77 0.78 0.81 0.82 0.89 0.94 0.96 0.98 1.01
1.02 1.11 1.20 1.24 1.26 1.27 1.27 1.33 1.34 1.37
1.39 1.39 1.40 1.42 1.42 1.49 1.50 1.57 1.62

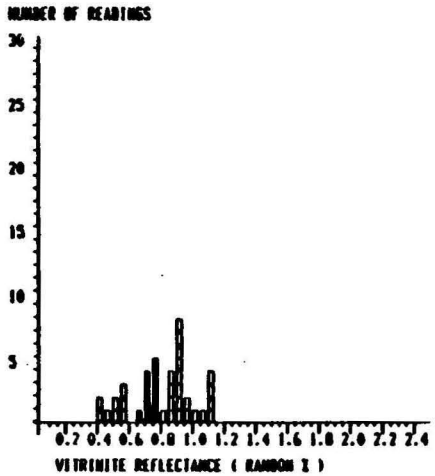
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.64-0.82	20	0.72	0.05
LIPTINITE/CAVINGS	0.26-0.58	5	0.43	0.13
INERTINITE/REWORKED	0.89-1.62	24	1.27	0.21



SAMPLE 2530-2540M

0.42 0.44 0.49 0.54 0.54 0.55 0.56 0.57 0.69 0.72
0.73 0.74 0.74 0.75 0.77 0.77 0.78 0.78 0.84 0.85
0.86 0.87 0.88 0.90 0.90 0.90 0.90 0.92 0.92 0.94
0.94 0.95 0.96 1.00 1.08 1.13 1.13 1.13 1.14

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.69-0.78	10	0.75	0.03
LIPTINITE/CAVINGS	0.42-0.57	8	0.51	0.06
INERTINITE/REWORKED	0.84-1.14	21	0.96	0.10



Appendix 2a

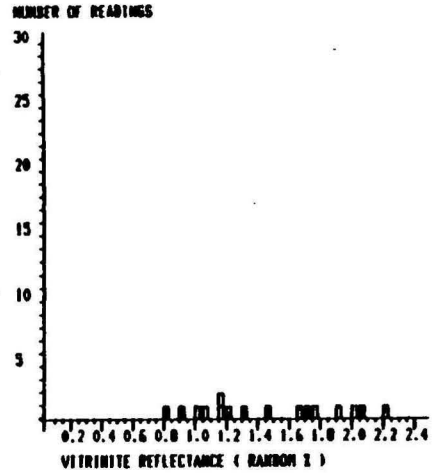
Robertson Research

KOOLINDA-1

SAMPLE 2745-2760M

0.83 0.94 1.01 1.05 1.15 1.17 1.21 1.31 1.46 1.67
1.71 1.77 1.92 2.01 2.05 2.22

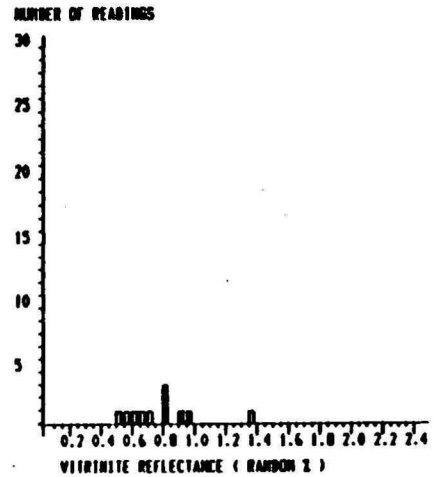
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.83-0.83	1	0.83	
INERTINITE/REWORKED	0.94-2.22	15	1.51	0.42



SAMPLE 3030-3045M

0.52 0.58 0.64 0.65 0.70 0.80 0.83 0.84 0.94 0.98
1.39

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.80-0.98	5	0.88	0.08
LIPTINITE/CAVINGS	0.52-0.70	3	0.62	0.07
INERTINITE/REWORKED	1.39-1.39	1	1.39	

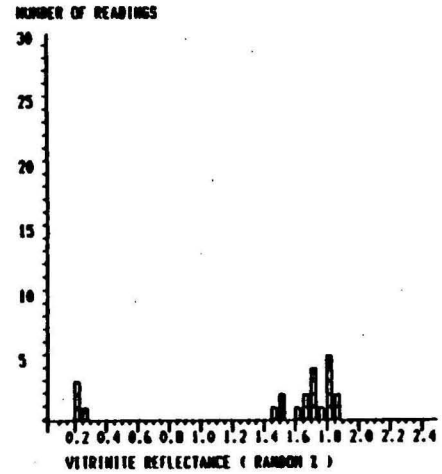


KOOLINDA-1

SAMPLE 3225-3235M

0.21 0.22 0.23 0.25 1.49 1.51 1.52 1.61 1.69 1.69
1.70 1.70 1.72 1.73 1.75 1.80 1.82 1.82 1.84 1.84
1.85 1.87

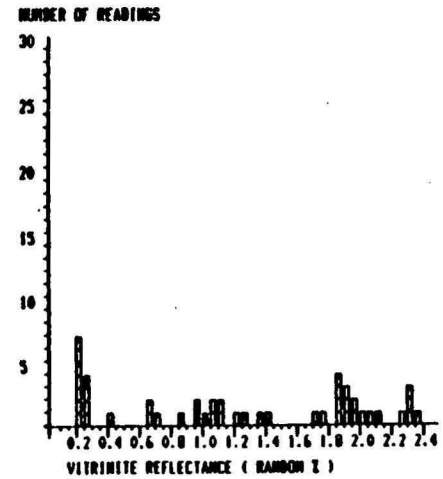
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
LIPTINITE/CAVINGS	0.21-0.25	4	0.23	0.02
INERTINITE/REWORKED	1.49-1.87	18	1.72	0.12



SAMPLE 3405-3415M

0.21 0.21 0.22 0.22 0.22 0.23 0.24 0.25 0.25 0.26
0.26 0.42 0.65 0.65 0.70 0.89 0.95 0.98 1.02 1.07
1.08 1.13 1.13 1.24 1.25 1.37 1.40 1.70 1.79 1.85
1.86 1.89 1.89 1.90 1.90 1.94 1.96 1.99 2.02 2.09
2.12 2.25 2.30 2.31 2.33 2.36

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.89-1.02	4	0.96	0.05
LIPTINITE/CAVINGS	0.21-0.70	15	0.33	0.18
INERTINITE/REWORKED	1.07-2.36	27	1.78	0.42



Appendix 2b

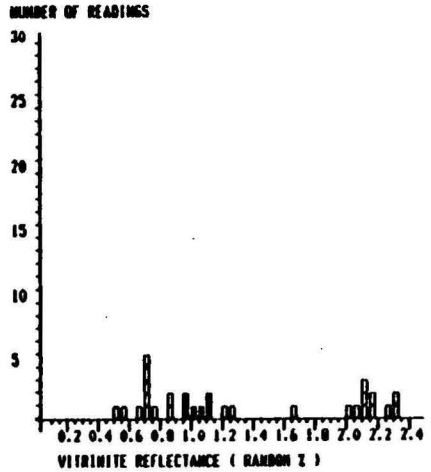
Robertson Research

KOOLINDA-1

SAMPLE 2560-2570M

0.54 0.59 0.66 0.70 0.72 0.73 0.74 0.74 0.77 0.85
0.85 0.98 0.99 1.03 1.06 1.11 1.12 1.22 1.29 1.69
2.01 2.07 2.10 2.11 2.13 2.18 2.18 2.25 2.32 2.33
2.41 2.94

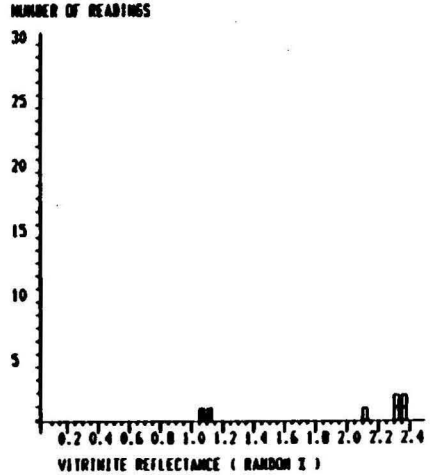
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.98-1.12	6	1.05	0.06
LEPTINITE/CAVINGS	0.54-0.85	11	0.72	0.10
INERTINITE/REWORKED	1.22-2.94	15	2.00	0.43



SAMPLE 3715-3725M

1.05 1.14 2.11 2.30 2.33 2.38 2.39 2.40 2.40 2.41
2.42 2.42 2.43 2.44 2.45 2.45 2.46 2.47 2.48 2.50
2.56 2.56 2.60 2.79 2.80 2.82 3.19

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	1.05-1.14	2	1.10	0.06
INERTINITE/REWORKED	2.11-3.19	25	2.51	0.21



Appendix 2c

LAMBERT-1 WELL

SUMMARY

Geochemical analyses on selected samples from the interval 2810m to 3695m of the Lambert-1 well show that the well section becomes middle mature at around 2900m. The vitrinite reflectance gradient shows no major erosional unconformities in the well section. A cumulative total of 400m of Early Cretaceous and younger section is missing above 2810m. The well section is currently at or near its maximum depth of burial.

Mudstones analysed in the interval 3650m to 3700m TD of the Lower Dingo Claystone have fair oil source potential. The alkane gas chromatograms of samples at 3610m to 3625m and 3685m to 3695m may indicate that some biodegradation of hydrocarbons within these samples has taken place, or that the samples contain contaminant material.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 19° 27' 23.2"S, 116° 29' 23"E.

Operator and date of drilling: Bocal, 1974.

Well Status: Suspended oil and gas discovery.

TD: 3700m.

Mud data: Brine/polymer mud system: Seabed to 3700m TD.

Casing data: 30" at 159m, 20" at 445m, $13^3/_8$" at 1282m, $9^5/_8$" at 3174m.

BHT data: 86°C at 3182m, after 9 hours stopped circulation.
110°C at 3699m, after 6 hours stopped circulation.

Elevation: RT 10m ASL.

Water depth: 125m.

Interval analysed: 2810m to 3695m.

LAMBERT-1 WELL

Age of interval analysed:

	Depths (in metres)
Early Cretaceous	2810 -3101
Late Jurassic	3101 -3637.5
Early Jurassic	3637.5-3695

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: The samples yielded abundant vitrinitic kerogen but measurements were hindered by reworked and caved material. Results: Fair.

b) Spore Colour Index: The samples yielded sufficient indigenous sporomorphs for measurements. Results: Good.

Source rock data quality: Good.

Gas chromatography run at: 3100m to 3110m, 3610m to 3625m and 3685m to 3695m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

The interpreted vitrinite reflectance gradient rises steadily from values of around 0.5% at 2810m to values of around 0.6% at 3695m. The results show that the section becomes middle mature at around 2900m. Spore colour index values rise from 5 to 6 SCI units over the same interval.

The vitrinite reflectance gradient suggests that there are no major erosional unconformities within the section analysed. Extrapolation of the gradients to seabed indicates that the well section is currently at or near its maximum depth of burial. A cumulative total of 400m of Early Cretaceous and younger sediments are missing above 2810m.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

Mudstones in the interval 3610m to 3695m in the Lower Dingo Claystone contain average organic carbon contents of between 1.13% and 1.42%. Pyrolysis analysis of samples in this interval shows

them to have moderate to high hydrogen indices of between 106 and 226. This data suggests that the samples contain mostly inertinitic kerogen mixed with minor oil-prone and vitrinitic kerogen. The results suggest that the interval 3650m to 3700m TD of the Lower Dingo Claystone has fair oil source potential. At the present level of maturity of this interval these sediments will already have generated some of their original oil potential.

Extraction of samples at 3610m to 3625m and 3685m to 3695m yielded only small quantities of hydrocarbons. Gas chromatograms of these samples shows them to contain a relatively large proportion of branched and cyclic alkanes and relatively high concentrations of pristane and phytane. The overall n-alkanes distribution suggests that they are derived from terrestrially sourced waxy sapropel. The raised baseline of unresolved napthenic compound may be due to content of small quantities of a biodegraded oil fraction in the samples.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

The mudstone samples analysed in the interval 2810m to 3535m contain below average organic carbon contents of between 0.02% and 0.88% (average around 0.45%). Although visual kerogen analysis indicates that sediments in the interval 2945m to 3535m contain between 20% and 35% oil-prone kerogen, it is unlikely that these sediments are organically rich enough to be significant oil or gas source rocks.

Extraction of a sample taken from the tested interval 3101m to 3111m (DST-1) shows that the sample contains only small quantities of extractable hydrocarbons derived from a mature source rock rich in waxy kerogen.

WELL: LAMBERT-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
2808		**Muderong Shale**									
2810-2825	Ctg	MDST, med gy	5.0	0.53(2)	70	25	5				
2872		**Barrow Gp**									
2945-2960	"	MDST, yel gy	5.0-5.5	0.51(12)	45	20	35				
3085-3100	"	MDST, yel gy-lt med gy	7.0rew	0.53(8)	60	20	20				
3101		**Upper Dingo Claystone : Dupuy Sandstone Mbr Eqv**									
3340-3355	"	MDST, v lt gy, slty	5.0-5.5	0.52(10)	60	10	30				
3518		**Upper Dingo Claystone**									
3520-3535	"	MDST, lt med gy	5.5	0.54(3)	65	10	25				
3610-3625	"	MDST, lt-med gy						65	25	*	10
3637.5		**Lower Dingo Claystone**									
3650-3665	"	MDST, lt med gy + mnr SST	5.5-6.0	0.62(33)	70	30	*	45	40	*	15
3665-3680	"	MDST, lt-med gy						40	40	*	20
3685-3695	"	MDST, mod ol brn						30	40	*	30

Table 1 Maturity and Kerogen Composition Data

WELL: LAMBERT-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g TOC)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g TOC)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2808		**Muderong Shale**													
2810-2829	Ctg	MDST, med gy	0.26												
2845-2860	"	MDST, med gy	0.44												
2872		**Barrow Gp**													
2875-2890	"	MDST, yel gy	0.27												
2910-2925	"	MDST, yel gy	0.25												
2945-2960	"	MDST, a/a	0.27												
2980-2995	"	MDST, a/a	0.85												
3015-3030	"	MDST, yel gy-lt med gy	0.36												
3050-3065	"	MDST, a/a	0.54												
3085-3100	"	MDST, a/a	0.24												
3101		**Upper Dingo Claystone: Dupuy Sst Mbr Eqv**													
3100-3110	"	SND + 20% MDST, lt gy, slty	0.97						660	68	285	29	38	5	57
3340-3355	"	MDST, v lt gy, slty	0.02												
3365-3380	"	MDST, a/a	0.46												
3518		**Upper Dingo Claystone**													
3520-3535	"	MDST, lt med gy	0.51												
3550-3565	"	MDST, a/a	0.87												
3580-3595	"	MDST, lt med gy	0.88												
3610-3625	"	MDST, a/a	1.42	425	106	101	0.13	1.74	735	52	380	27	43	9	48
3637.5		**Lower Dingo Claystone**													
3650-3665	"	MDST, lt med gy + mnr SST	1.31	426	148	97	0.07	2.08							
3665-3680	"	MDST, a/a	1.13	427	170	132	0.13	2.20							
3685-3695	"	MDST, med ol brn	1.26	425	226	173	0.13	3.28	1020	81	460	37	32	13	55

Table 2 Chemical Analysis Data

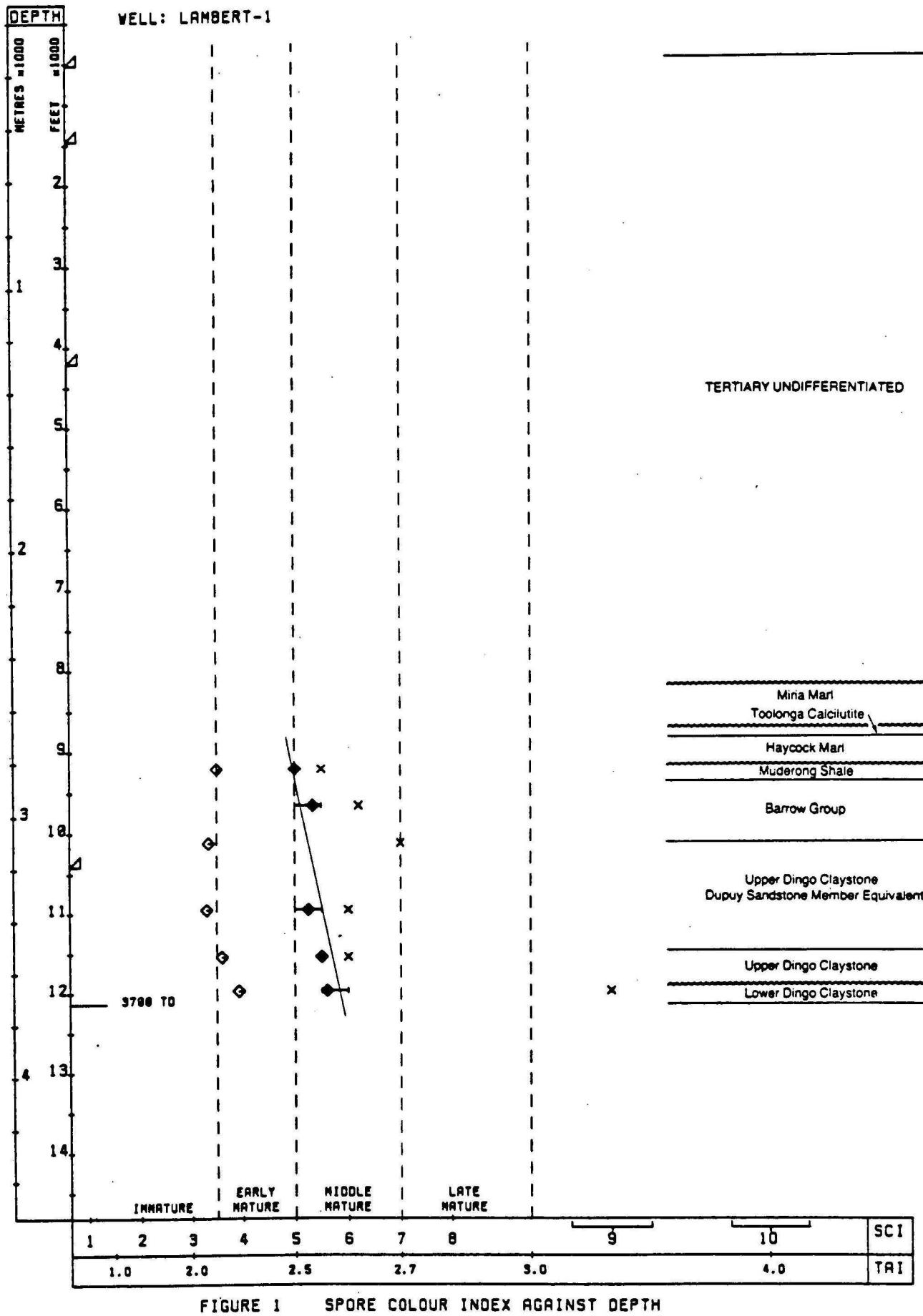


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

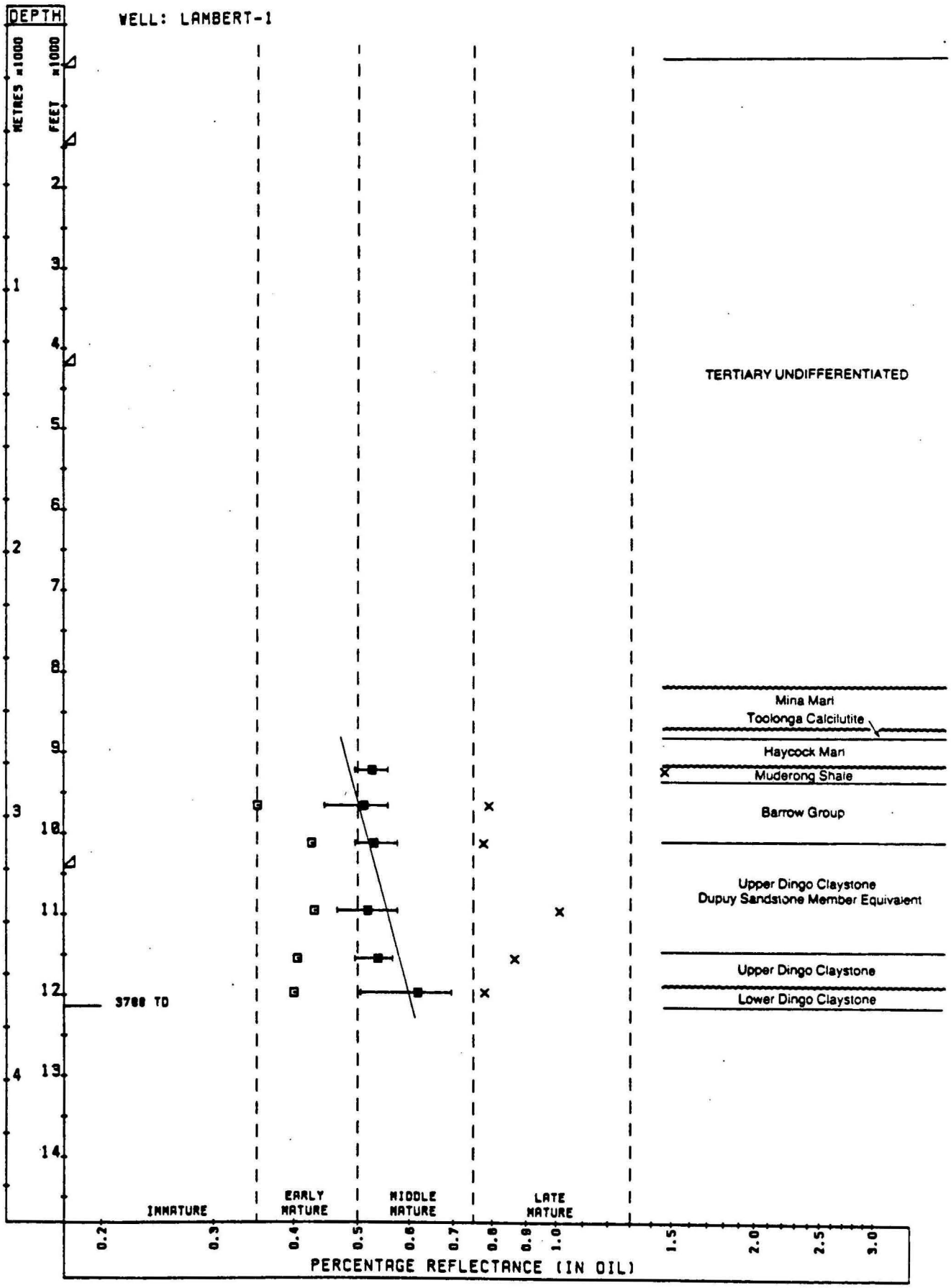
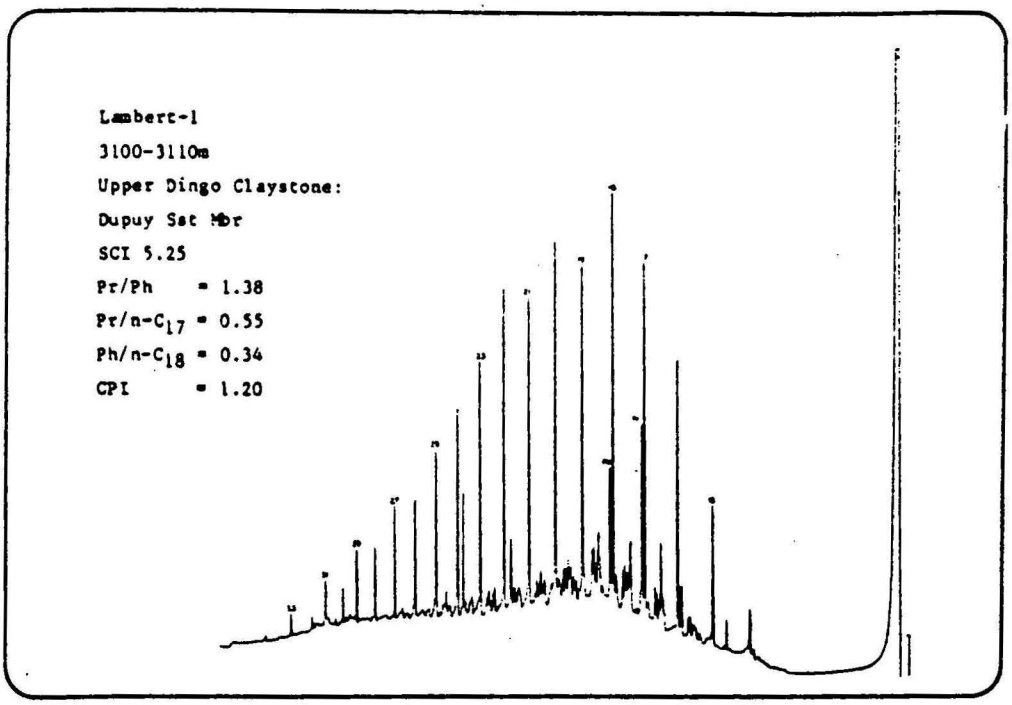
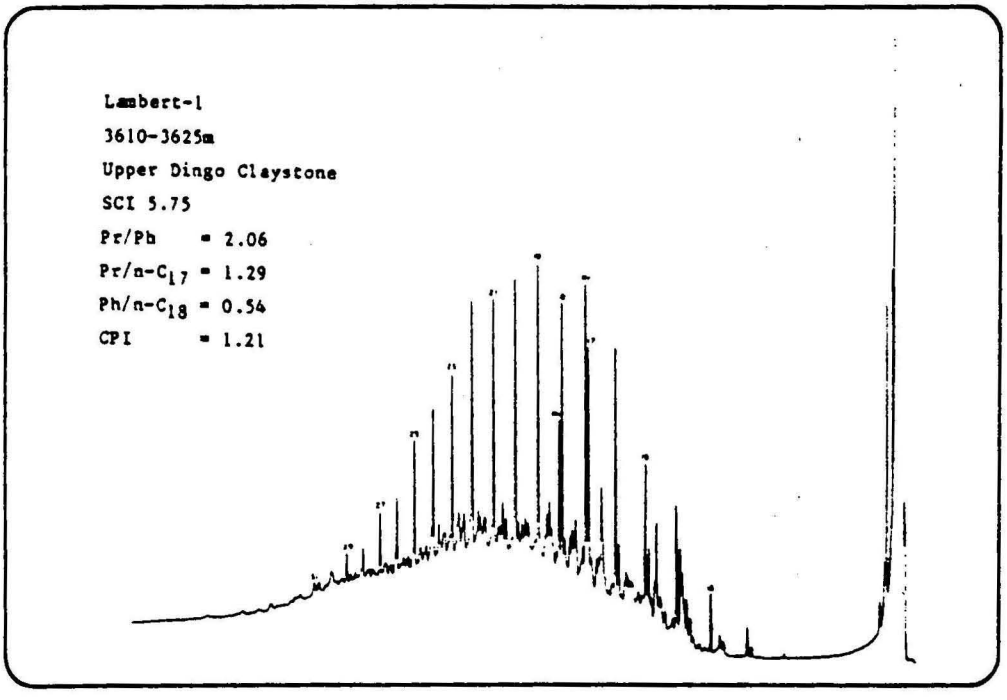


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH


Lambert-1
3100-3110m
Upper Dingo Claystone:
Dupuy Sst Mbr
SCI 5.25
Pr/Ph = 1.38
Pr/n-C17 = 0.55
Ph/n-C18 = 0.34
CPI = 1.20


Lambert-1
3610-3625m
Upper Dingo Claystone
SCI 5.75
Pr/Ph = 2.06
Pr/n-C17 = 1.29
Ph/n-C18 = 0.54
CPI = 1.21

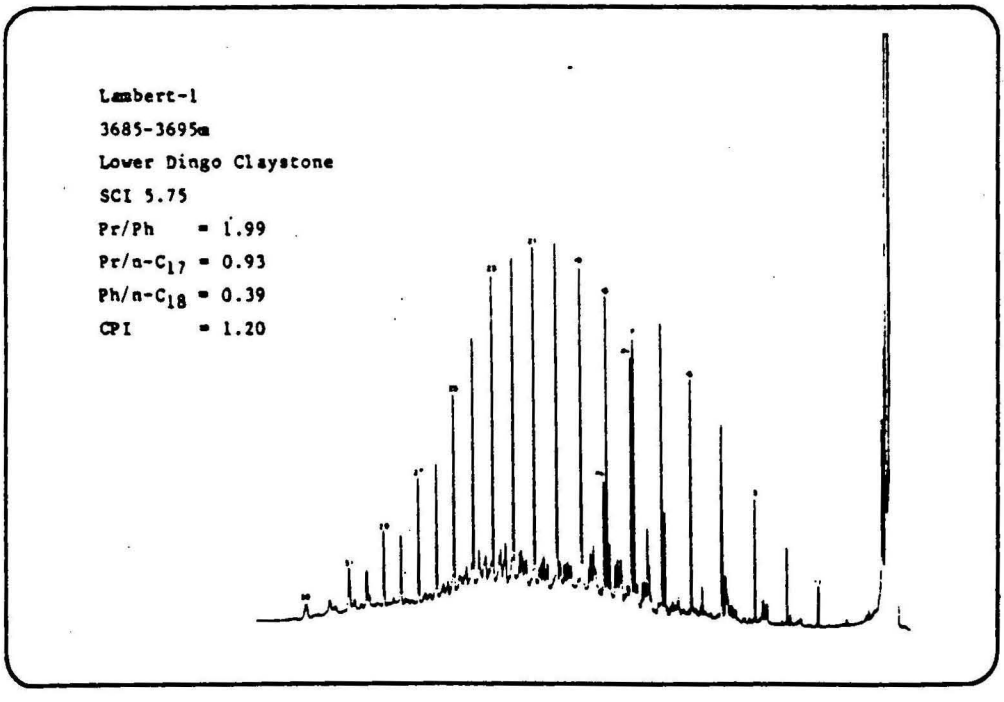

Lambert-1
3685-3695m
Lower Dingo Claystone
SCI 5.75
Pr/Ph = 1.99
Pr/n-C17 = 0.93
Ph/n-C18 = 0.39
CPI = 1.20

Figure 3

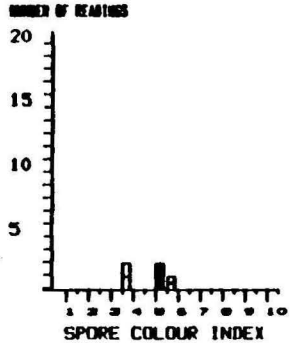
Robertson Research

LAMBERT-1

IN SITU POPULATION

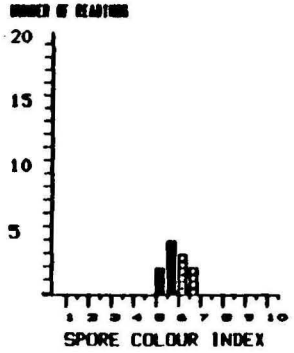
SAMPLE 2810-2825M
3.5 3.5 5.0 5.0 5.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.0	2
BLEACHED OR CAVED	3.5-3.5	2
STAINED OR REWORKED	5.5-5.5	1



SAMPLE 2945-2960M
5.0 5.0 5.5 5.5 5.5 5.5 6.0 6.0 6.0 6.5 6.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.5	6
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	6.0-6.5	5

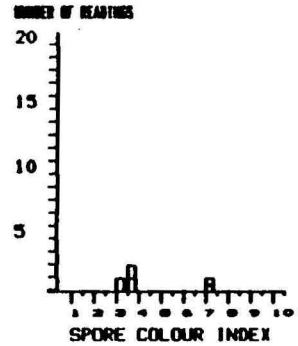


LAMBERT-1

IN SITU POPULATION

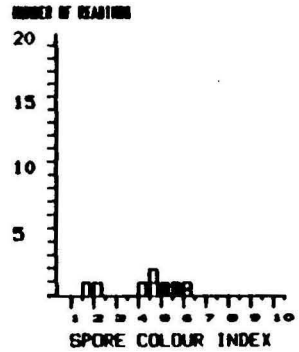
SAMPLE 3085-3100M
3.0 3.5 3.5 7.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	-	0
BLEACHED OR CAVED	3.0-3.5	3
STAINED OR REWORKED	7.0-7.0	1



SAMPLE 3340-3355M
1.5 2.0 4.0 4.5 4.5 5.0 5.5 6.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.0-5.5	2
BLEACHED OR CAVED	1.5-4.5	5
STAINED OR REWORKED	6.0-6.0	1



Appendix 1a

Robertson Research

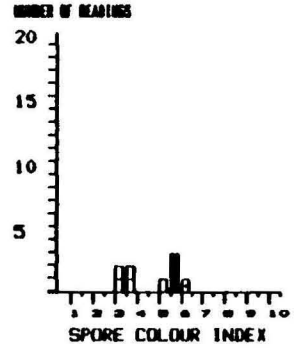
LAMBERT-1

IN SITU POPULATION

SAMPLE 3520-3535M

3.0 3.0 3.5 3.5 5.0 5.5 5.5 5.5 6.0

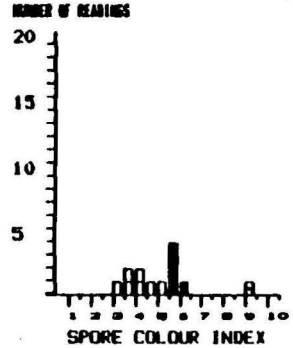
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.5-5.5	3
BLEACHED OR CAVED	3.0-5.0	5
STAINED OR REWORKED	6.0-6.0	1



SAMPLE 3650-3665M

3.0 3.5 3.5 4.0 4.0 4.5 5.0 5.5 5.5 5.5 5.5 6.0 9.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.5-6.0	5
BLEACHED OR CAVED	3.0-5.0	7
STAINED OR REWORKED	9.0-9.0	1



Appendix 1b

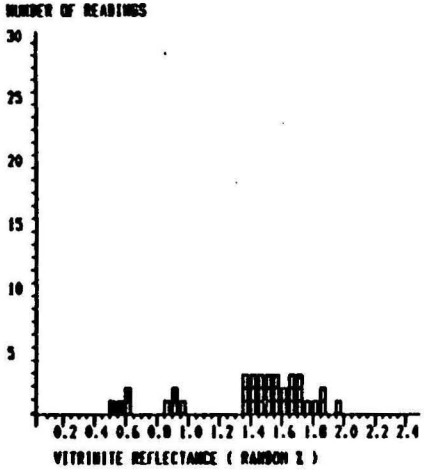
Robertson Research

LAMBERT-1

SAMPLE 2810-2875

0.50 0.55 0.61 0.62 0.85 0.90 0.93 0.97 1.37 1.38
1.38 1.41 1.44 1.44 1.46 1.48 1.48 1.52 1.52 1.54
1.57 1.59 1.59 1.60 1.64 1.65 1.66 1.67 1.70 1.72
1.74 1.75 1.84 1.86 1.87 1.99

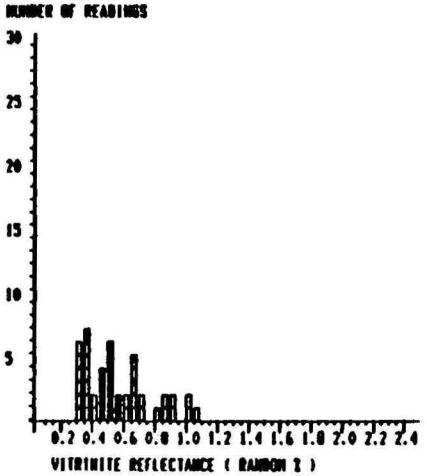
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.50-0.55	2	0.53	0.04
INERTINITE/REWORKED	0.61-1.99	34	1.46	0.35



SAMPLE 2945-2960

0.30 0.30 0.31 0.31 0.32 0.33 0.35 0.36 0.36 0.36
0.37 0.37 0.39 0.41 0.41 0.45 0.47 0.48 0.48 0.51
0.52 0.52 0.52 0.54 0.54 0.55 0.55 0.60 0.62 0.65
0.65 0.65 0.66 0.67 0.72 0.73 0.83 0.88 0.89 0.90
0.91 1.00 1.04 1.05

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.45-0.55	12	0.51	0.03
LIPTINITE/CAVINGS	0.30-0.41	15	0.35	0.04
INERTINITE/REWORKED	0.60-1.05	17	0.79	0.15

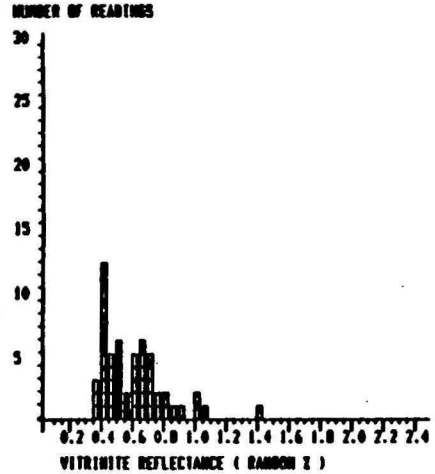


LAMBERT-1

SAMPLE 3005-3100

0.38 0.38 0.39 0.40 0.40 0.41 0.41 0.42 0.43 0.43
0.43 0.43 0.43 0.44 0.44 0.45 0.45 0.46 0.46 0.47
0.50 0.51 0.51 0.52 0.53 0.53 0.56 0.57 0.61 0.63
0.64 0.64 0.64 0.65 0.65 0.66 0.66 0.66 0.69 0.70
0.72 0.72 0.73 0.74 0.77 0.77 0.81 0.82 0.87 0.90
1.01 1.03 1.06 1.42

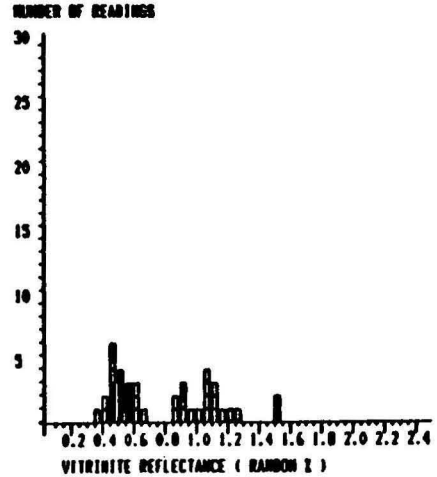
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.50-0.57	8	0.53	0.02
LIPTINITE/CAVINGS	0.38-0.47	20	0.43	0.03
INERTINITE/REWORKED	0.61-1.42	26	0.78	0.18



SAMPLE 3340-3355

0.36 0.41 0.44 0.45 0.46 0.46 0.47 0.49 0.49 0.50
0.51 0.52 0.52 0.53 0.56 0.57 0.60 0.62 0.63 0.66
0.87 0.88 0.90 0.90 0.93 0.98 1.04 1.05 1.06 1.07
1.08 1.10 1.10 1.11 1.19 1.24 1.25 1.51 1.52

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.47-0.57	10	0.52	0.03
LIPTINITE/CAVINGS	0.36-0.46	6	0.43	0.04
INERTINITE/REWORKED	0.60-1.52	23	1.01	0.25



Appendix 2a

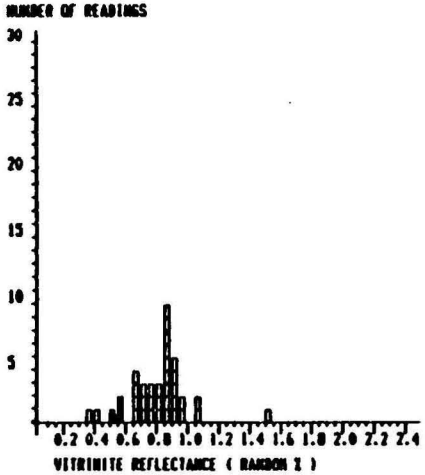
Robertson Research

LAMBERT-1

SAMPLE 3520-3535

0.39 0.42 0.50 0.55 0.56 0.65 0.66 0.67 0.68 0.70
0.72 0.73 0.77 0.77 0.78 0.82 0.83 0.83 0.85 0.86
0.87 0.87 0.87 0.88 0.88 0.89 0.89 0.90 0.90 0.91
0.93 0.93 0.98 0.98 1.08 1.09 1.52

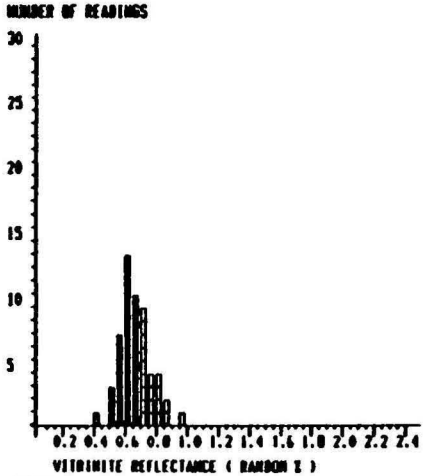
SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.50-0.56	3	0.54	0.03
LIPTINITE/CAVINGS	0.39-0.42	2	0.41	0.02
INERTINITE/REWORKED	0.65-1.52	32	0.87	0.16



SAMPLE 3650-3665

0.40 0.51 0.53 0.54 0.56 0.57 0.57 0.57 0.57 0.59
0.59 0.60 0.60 0.62 0.62 0.62 0.62 0.63 0.63 0.63
0.63 0.63 0.63 0.64 0.65 0.65 0.66 0.66 0.66 0.67
0.67 0.68 0.69 0.69 0.71 0.71 0.72 0.72 0.73 0.73
0.73 0.73 0.74 0.75 0.76 0.78 0.78 0.80 0.81 0.82
0.82 0.88 0.89 0.90

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.51-0.69	33	0.62	0.05
LIPTINITE/CAVINGS	0.40-0.40	1	0.40	
INERTINITE/REWORKED	0.71-0.90	20	0.78	0.07



Appendix 2b

LEGENDRE-1 WELL

SUMMARY

Geochemical analysis of samples from the interval 1707m to 3460m of the Legendre-1 well shows that the well section becomes middle mature at around 2800m and is presently at its maximum depth of burial. Vitrinite reflectance data indicates a cumulative total of 300m of Early Cretaceous and younger section missing above 1707m.

The interval analysed contains no oil or gas source rocks but contains several horizons with abundant migrant oil stain.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 19° 40' 19"S, 116° 43' 55.5"E.

Operator and date of drilling: Bocal, 1968.

Well Status: Suspended oil well.

TD: 3473m.

Mud Data: Lignosulphonate based system.

Casing data: 30" at 85m, 20" at 203m, $13^3/_8$" at 1034m, $9^5/_8$" at 2476m.

BHT data: 48°C at 1005m, stopped circulation time unknown.
77°C at 2165m, stopped circulation time unknown.
89°C at 2488m, stopped circulation time unknown.
92°C at 2926m, stopped circulation time unknown.
102°C at 3238m, stopped circulation time unknown.

Elevation: RT 9m ASL.

Water depth: 52m.

Interval analysed: 1707m to 3460m.

LEGENDRE-1 WELL

Age of interval analysed:

	Depths (in metres)
Early Cretaceous	1707-2164
Middle-Late Jurassic	2164-2612
Middle Jurassic	2612-3460

Sample type and quality: Dried ditch cuttings and core pieces of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: Samples analysed in Phase I study, quality unknown.

b) Spore Colour Index: Samples analysed in Phase I study, quality unknown.

Source rock data quality: Samples analysed in Phase I study, data quality unknown. Samples run in Phase II study, data quality good.

Gas chromatography run at: 1893m to 1908m, 2671m to 2686m and 3024m to 3040m.

MATURATION (Table 1, Figures 1 and 2)

No maturity analyses were undertaken from this well, the maturity data is that presented in Phase I study. These results show that spore colour index values rise steadily from around 3.5 to 4 SCI units at 1707m to around 6 SCI units at 3460m. Vitrinite reflectance values rise from around 0.4% to 0.65% over the same interval. The results indicate that the well section becomes middle mature at around 2800m. Extrapolation of the vitrinite reflectance and spore colour gradients to the surface indicates that the well section is currently at or near its maximum depth of burial and that the cumulative amount of missing Early Cretaceous and younger section above 1707m is around 300m.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

No oil or gas sources have been identified in the interval analysed.

LEGENDRE-1 WELL

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

Yellow brown siltstones and medium to dark grey mudstones analysed throughout the interval 1707m to 3460m contain generally average organic carbon contents of between 1.61% to 3.19%. Pyrolysis analysis of samples shows generally low hydrogen indices where not affected by oil staining, indicating only humic kerogen content in the samples analysed.

Extraction of samples at 2671m to 2686m, 3024m to 3040m and of a composite sample taken over the tested interval 1893m to 1908m, shows that all of these samples contain abundant migrant oil. The alkane gas chromatograms of the samples at 2671m to 2686m and 3024m to 3040m show abundant $\underline{n}$-C_{15} to $\underline{n}$-C_{27} alkane. Phytane is dominant over pristane. These migrant oils are derived from a mature to late mature source containing abundant mixed algal and waxy kerogens.

WELL: LEGENDRE-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol) (by microscopic examination)			KEROGEN COMPOSITION (% wt) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
1645.9		**Muderong Shale**									
1707-1723	Ctg	MDST, med gy/med-dk gy, slty + mnr SST, lt gy-brn	3.5-4.0	0.38(7)	30	65	5				
1895.1		**Barrow Gp**									
1936	Core	MDST, med gy, sndy	4.5	0.41(25)	40	50	10	90	10	*	*
2164.1		**Upper Diago Claystone : Dupuy Sandstone Mbr**									
2359	"	SST, ol-gy/dusky yel -brn, glauc						80	20	*	*
2374.4		**Upper Diago Claystone**									
2487	"	MDST, med-dk gy + 50% SST, lt gy/med gy	4.5-5.0	0.50(9)	40	40	20	60	35	*	5
2536	"	SST/SLTST, med gy/med dk gy, arg, lam						55	40	5	*
2612		**Learmonth Mbr**									
2671-2686	Ctg	SND + mnr MDST, dk yel brn									
	"	After extraction						55	45	*	*
2701-2716	"	SLTST/SST, mod yel -brn	5.0	0.54(9)	35	50	15				
2976	Core	SLTST/SST, lt gy/yel -gy						60	40	*	*
3181	"	MDST, med gy/med-dk gy	5.5	0.57(3)	20	50	30				
3385	"	MDST, med-dk gy	5.5-6.0	0.63(20)	50	25	25	40	60	*	*
3445-3460	Ctg	MDST, mod yel-brn/med -dk gy + 30% SST, wht /gy + 10% COAL		0.65(17)							

Table 1 Maturity and Kerogen Composition Data

WELL: LEGENDRE-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION %		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
1645.9		**Maderong Shale**													
1707-1723	Ctg	MDST, med gy/med-dk gy, slty + mnr SST, lt gy-brn	2.12												
1738-1753	"	MDST, a/a + 40% SST/ SLTST, lt gy-brn	2.27												
1768-1784	Ctg	MDST, med gy/med-dk gy + 50% SST/SLTST, a/a	-												
	P	MDST, a/a	3.19												
1895.1		**Barrow Gp**													
1893-1908	Ctg	MDST, lt-med gy, slty	1.53						2830	185	2395	157	77	8	15
1936	Core	MDST, med gy, sndy	2.03	427	9	14	0.00	0.20							
2058-2073	Ctg	MDST, med-dk-gy, slty + 30% SLTST/SST, lt brn-gy	-												
	P	MDST, med-dk gy, slty	2.05												
2164.1		**Upper Dingo Claystone: Dupuy Sst Mbr**													
2195-2210	Ctg	MDST, a/a + 20% SLTST /SST, a/a	1.61												
2359	Core	SST, ol-gy/dusky, yel-brn, glauc	1.19	429	36	36	0.00	0.40							
2374.4		**Upper Dingo Claystone**													
2433-2448	Ctg	MDST, yel-brn + 20% MDST, med gy/med-dk gy	-												
	P	MDST, med gy/med-dk gy	1.34												
2487	Core	MDST, med-dk gy + 50% SST, lt gy/med gy	-												
	P	MDST, a/a	1.80	432	121	18	0.00	2.20							
	"	SST, lt gy/med gy	0.38												
2536	Core	SST/SLTST, med gy/med -dk gy, arg, lam	1.18	425	110	23	0.2	1.63							
2612		**Learmonth Mbr**													
2613-2628	Ctg	SLTST/SST, mod yel-brn	2.44												
2671-2686	"	SND + mnr MDST, dk yel brn	2.23	NDP	113	64	0.72	9.04	7995	359	6910	310	81	5	14
	"	After extraction	0.81	422	94	121	0.23	0.99							
2701-2716	Ctg	SLTST/SST, med yel-brn	2.53	*	*	64	*	*							
2866-2881	"	SLTST/SST, a/a	2.14	*	*	111	*	*							
2927-2942	"	SLTST/SST, a/a	2.49												
2976	Core	SLTST/SST, lt gy/yel-gy	0.12	*	*	684	*	*							
3024-3040	Ctg	MDST, lt-v lt gy + mnr MDST, med-dk gy	1.71	431	222	80	0.56	8.68	6865	401	5640	330	76	6	18
	"	After extraction	0.90	NDP	201	147	0.11	2.04							

Table 2a Chemical Analysis Data

WELL: LEGENDRE-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	EXTRACT COMPOSITION (%)		
													SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
3034-3049	Ctg	MDST, mod yel-brn	3.16												
3181	Core	MDST, med gy/med-dk gy	0.70	436	40	27	0.00	0.30							
3262-3277	Ctg	MDST, a/a + 50% MDST, mod yel-brn	1.71												
3385	Core	MDST, med-dk gy	2.11	432	72	26	0.20	1.88							
3445-3460	Ctg	SST, wht/gy oil-stained + 30% MDST, med-dk gy + 10% COAL	-												
	P	MDST, med-dk gy	2.21	434	167	34	0.50	7.40							

Table 2b Chemical Analysis Data

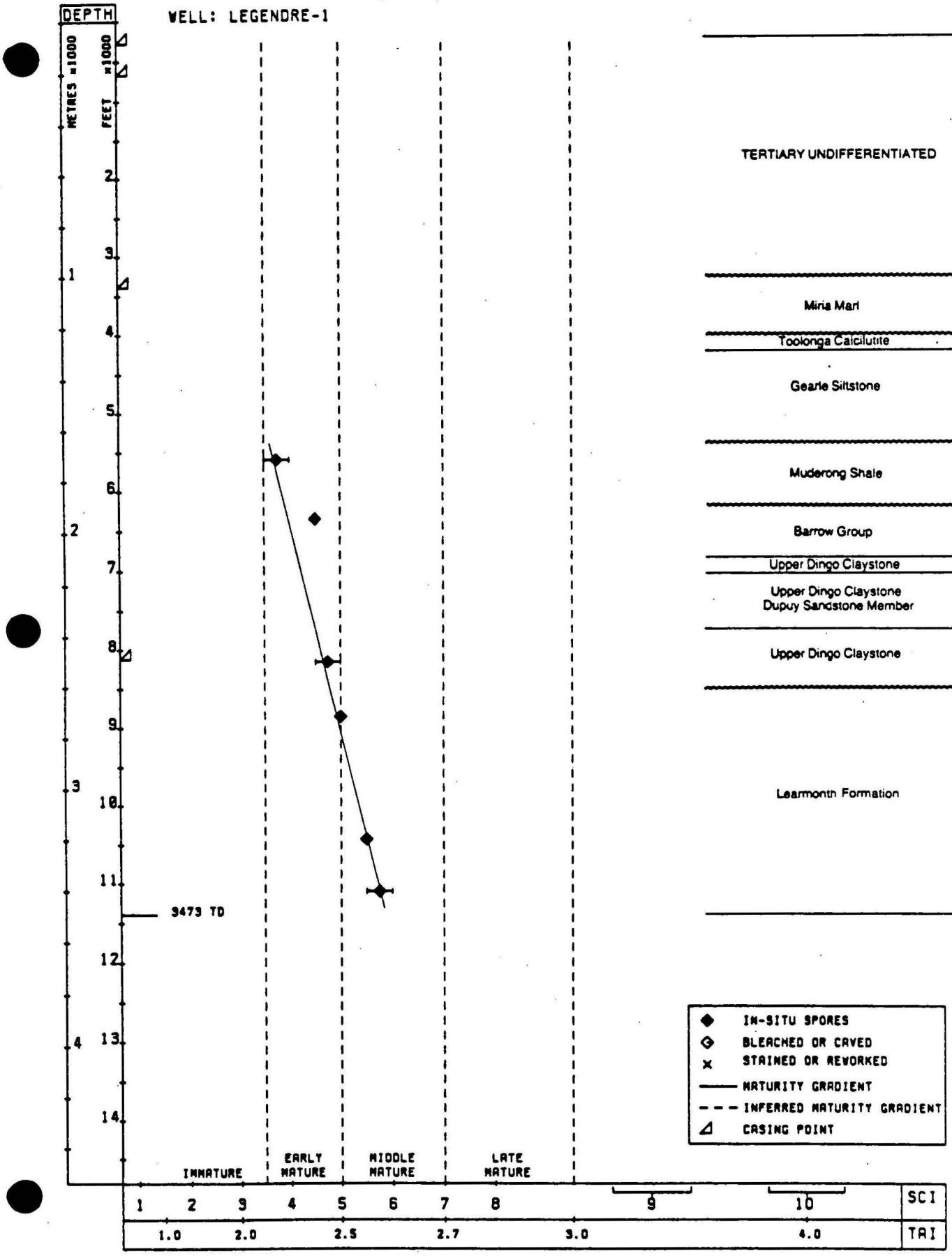


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

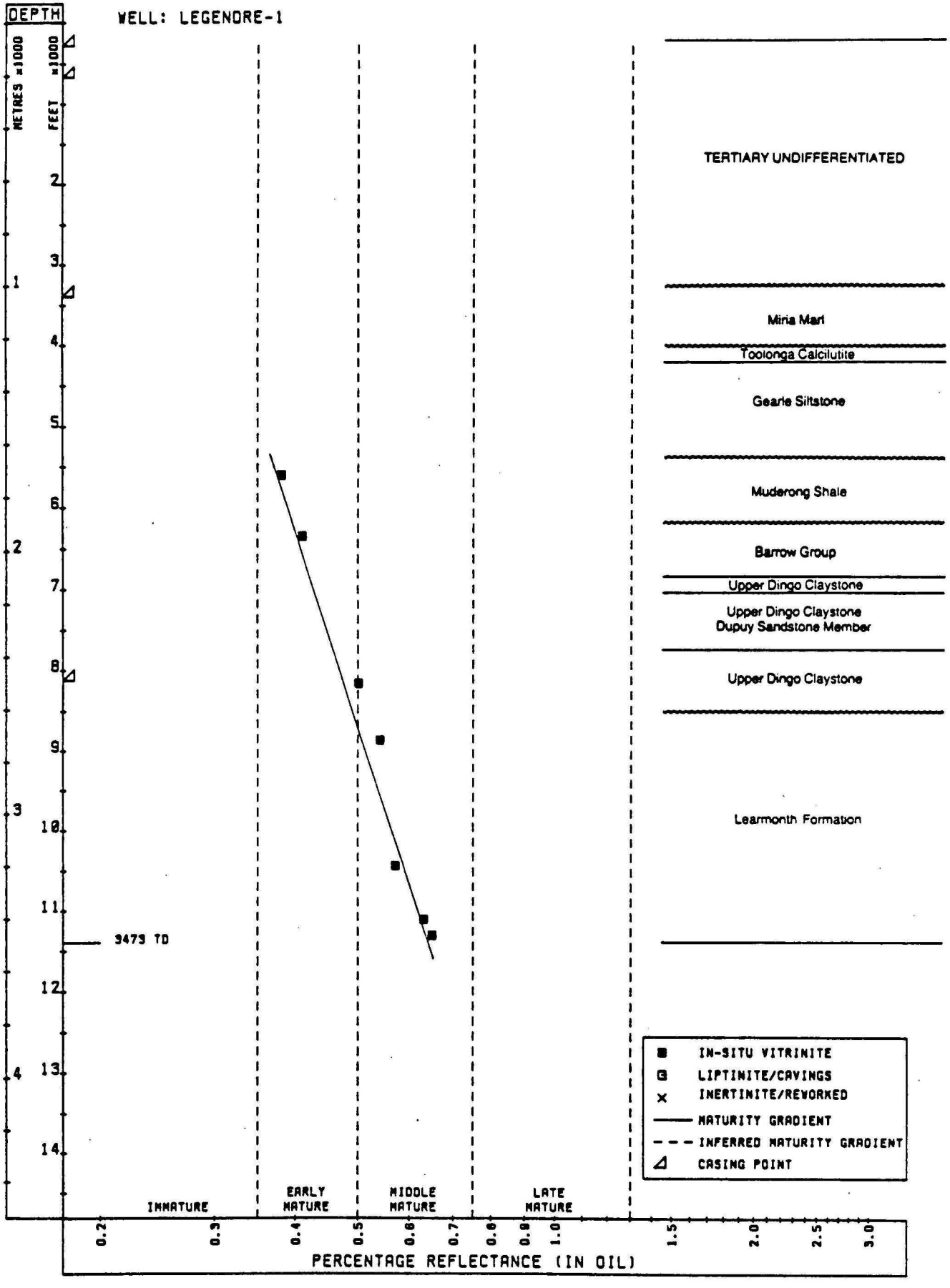
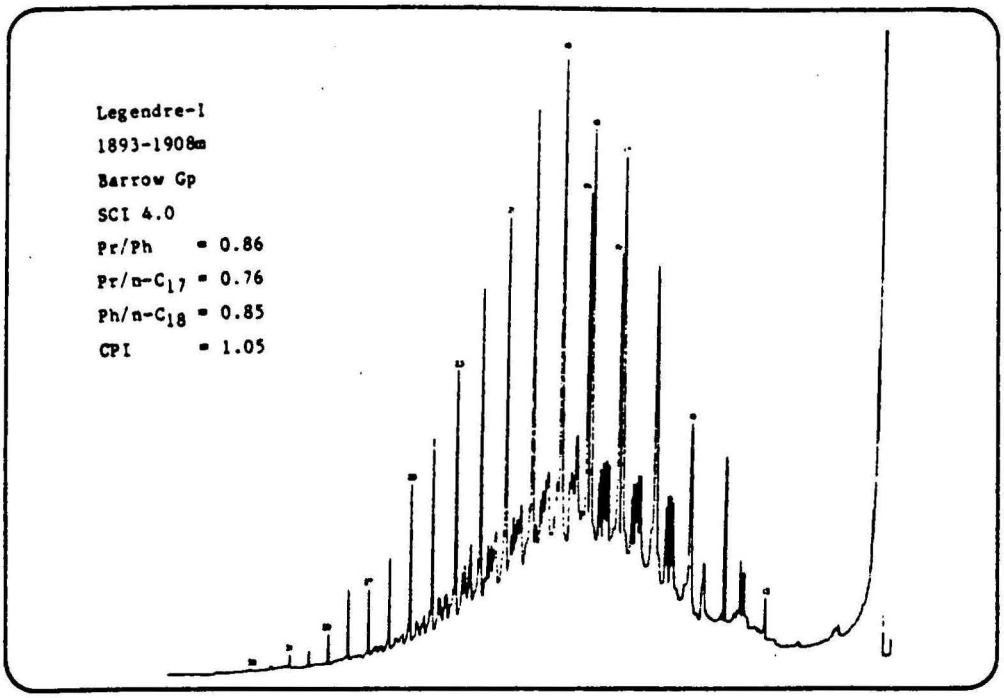
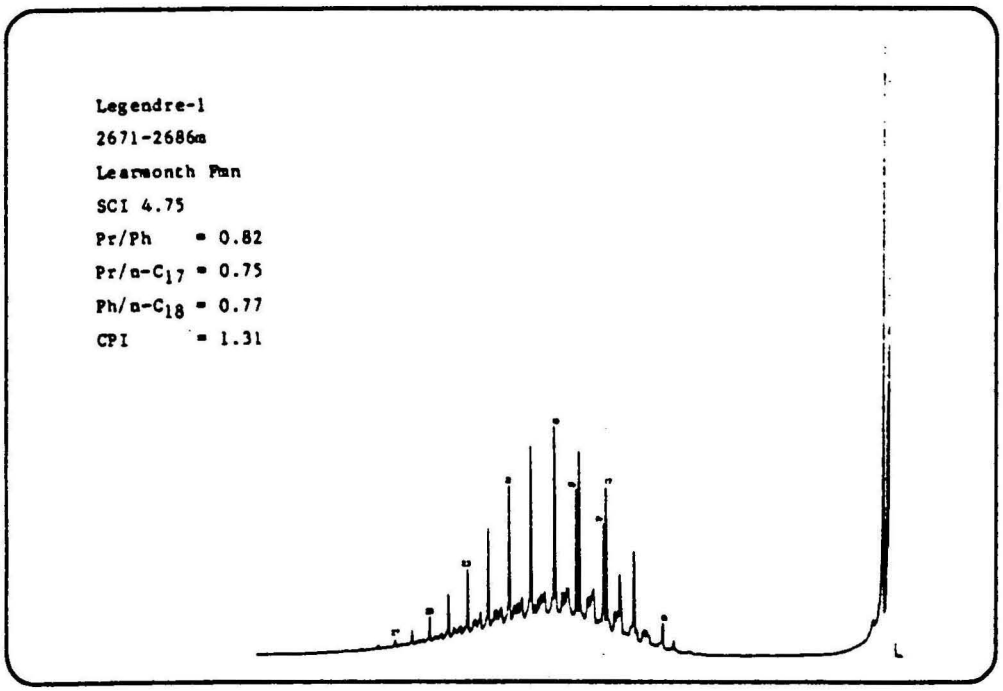


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH


Legendre-1
1893-1908m
Barrow Gp
SCI 4.0
Pr/Ph = 0.86
Pr/n-C17 = 0.76
Ph/n-C18 = 0.85
CPI = 1.05


Legendre-1
2671-2686m
Learmonth Fmn
SCI 4.75
Pr/Ph = 0.82
Pr/n-C17 = 0.75
Ph/n-C18 = 0.77
CPI = 1.31

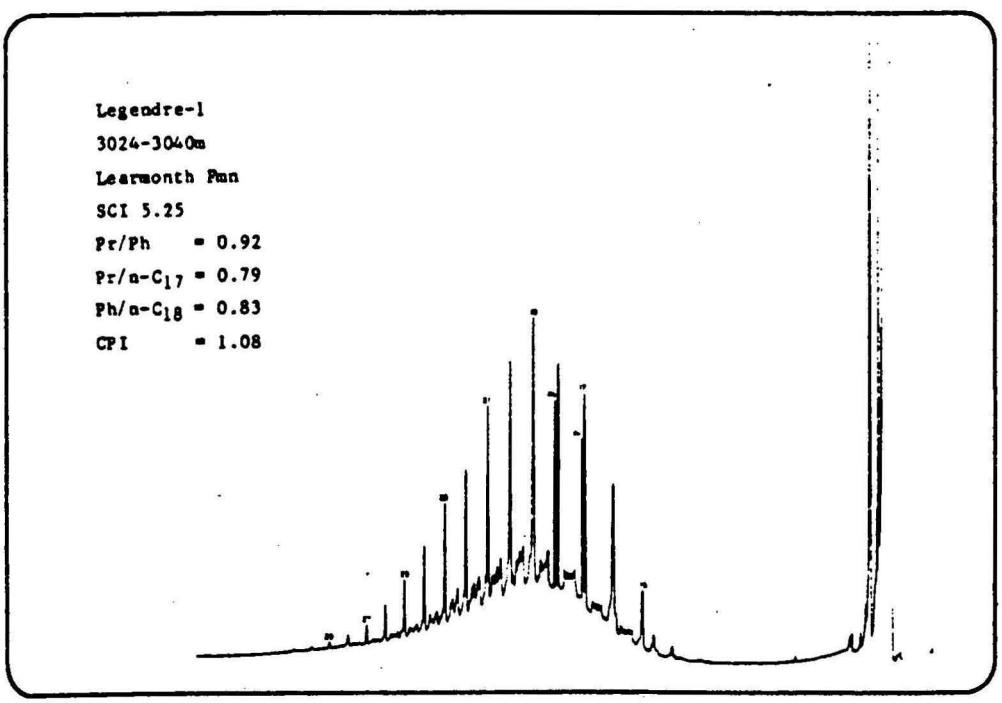

Legendre-1
3024-3040m
Learmonth Fmn
SCI 5.25
Pr/Ph = 0.92
Pr/n-C17 = 0.79
Ph/n-C18 = 0.83
CPI = 1.08

Figure 3

LOWENDAL-1 WELL

SUMMARY

Geochemical analyses on selected samples from the interval 3005m to 3600m of the Lowendal-1 well show that the section analysed reaches middle maturity at around 2600m and is middle mature between 2600m and 3642m TD. The reflectance gradient shows that around 300m of Jurassic to Cretaceous section is missing at the unconformity at 3107m. Extrapolation of the maturity gradients to the seabed indicates that little Early Cretaceous and younger section is missing above 3005m. The sediments analysed are currently at or near their maximum depths of burial. Mudstones in the interval 3280m to 3333m in the Mungaroo Formation have good oil source potential.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 19° 52' 48.4"S, 115° 38' 02.32"E.

Operator and date of drilling: Bocal, 1974.

Well Status: Plugged and abandoned.

TD: 3642m.

Mud data: Lightly dispersed seawater system.

Casing data: 30" at 140m, 20" at 435m, $13^3/_8$" at 1196m.

BHT data: 47°C at 1195m, after 2 hours stopped circulation.
50°C at 1197m, after 6 hours stopped circulation.
112°C at 3637.5m, after 14 hours stopped circulation.
100°C at 3642.5m, after 5 hours stopped circulation.

Elevation: RT 30m ASL.

Water depth: 85m.

Interval analysed: 3005m to 3600m.

Age of interval analysed:

	Depths (in metres)
Early Cretaceous	3005-3107
Late Triassic	3107-3600

LOWENDAL-1 WELL

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: The samples analysed yielded sufficient vitrinitic kerogen for analysis. Results: Good.

b) Spore Colour Index: The samples analysed generally yield sufficient indigenous sporomorphs for measurements. Results: Good.

Source rock data quality: Good.

Gas chromatography run at: 3280m to 3295m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

The interpreted vitrinite reflectance gradient rises steadily from values of around 0.55% at 3005m to a value of around 0.65% at 3600m. Spore colour index values rise from values of 5.5 SCI units to around 6.5 SCI units over the same interval. The results suggest that the well section becomes mature at around 2600m and is middle mature between 2600m and 3642m TD. The vitrinite reflectance gradient suggests that around 300m of Jurassic to Cretaceous section is missing at the unconformity at 3107m. Extrapolation of the maturity gradients to the seabed indicates that little Early Cretaceous and younger section is missing above 3005m. The sediments analysed are currently at or near their maximum depths of burial.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

Mudstones analysed in the interval 3280m to 3435m of the Mungaroo Formation generally contain average to above average organic carbon contents of between 1.13% and 4.92%. Pyrolysis analysis of samples in this interval shows that these mudstones contain between 5% and 25% oil-prone kerogen. Analysis of the electric log for the well shows a high gamma response in mudstones between 3222m and 3333m, corresponding to these organically richer mudstones. These mudstone intervals are 53m thick. Mudstones with higher organic carbon contents below 3333m are interpreted as cavings. These mudstones have good oil source potential and will

already have generated significant quantities of oil in reaching their present level of maturity.

Extraction, fractionation and gas chromatography analysis of the sample at 3280m to 3295m shows that this sample contains small amounts of indigenous hydrocarbons derived from mature terrestrially sourced waxy kerogens.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

The majority of the remaining samples analysed contain mudstones with below average organic carbon contents of between 0.07% and 0.74%. Slightly higher organic carbon contents are present in mudstones between 3105m to 3140m and 3205m to 3220m, but pyrolysis analysis shows that these samples contain predominantly humic kerogens. These sediments have no significant oil or gas source potential.

WELL: LOWENDAL-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt.) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
2931		**Haycock Marl**									
3005-3015	Ctg	MDST, v lt gy	7.5rew	0.50(3)	70	30	nnr				
3041		**Underoug Shale**									
3107		**Brigadier Beds**									
3105-3115	"	MDST, med lt gy						60	30	*	10
3130-3140	"	MDST, lt-med gy						70	30	*	*
3155-3170	"	MDST, med gy + 30% MDST, gy-yel gy	5.5-6.0	0.56(18)	60	20	20				
3205-3220	"	MDST, med gy						65	30	*	5
3222		**Mungaroo Fm**									
3280-3285	"	MDST, dk gy						60	30	*	10
3280-3295	"	MDST, med-lt gy						60	30	*	10
3285-3290	"	MDST, dk gy						60	30	*	10
3290-3295	"	MDST, dk gy-gy blk						65	30	*	5
3305-3320	"	MDST, med-lt-gy	6.0-6.5	0.58(40)	60	25	15	60	30	*	10
3310-3315	"	MDST, dk gy + nnr SND						65	30	*	5
3315-3320	"	MDST, med-dk gy						45	30	*	25
3335-3340	P	MDST, med dk gy						65	30	*	5
3335-3350	Ctg	MDST, med-lt gy						60	30	*	10
3340-3345	P	MDST, med dk gy						50	30	*	20
3345-3350	P	MDST, med dk gy						60	30	*	10
3420-3435	Ctg	MDST, med gy	6.0-7.0	0.65(30)	80	20	*	60	30	*	5
3590-3600	"	MDST, med gy	6.0-7.0	0.68(21)							

Table 1 Maturity and Kerogen Composition Data

WELL: LOWENDAL-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPUSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg/Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg/g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg/g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
2931		**Haycock Marl**													
3005-3015	Ctg	MDST, v lt gy	0.03												
3041		**Muderong Shale**													
3045-3060	"	MDST, lt-med gy	0.63												
3065-3080	"	MDST, med-lt gy	0.39												
3085-3100	"	MDST, med gy	0.74												
3107		**Brigadier Beds**													
3105-3115	"	MDST, med lt gy	1.27	427	105	123	0.08	1.44							
3130-3140	"	MDST, lt-med gy	2.01	427	61	90	0.06	1.31							
3155-3170	"	MDST, med gy + 30% MDST, gy-yel gy	0.47												
3205-3220	"	MDST, med gy	1.01	427	96	194	0.08	1.05							
3222		**Mungaroo Pau**													
3235-3250	"	MDST, med gy	0.90												
3280-3285	"	MDST, dk gy	3.40	436	100	32	0.07	3.68							
3285-3290	"	MDST, dk gy	1.98	436	101	44	0.09	2.18							
3280-3295	"	MDST, med-lt gy	3.52	429	106	33	0.05	3.90	705	20	370	11	18	34	48
3290-3295	"	MDST, dk gy-gy blk	1.13	434	73	73	0.19	1.03							
3310-3315	"	MDST, dk gy + mnr SND	1.99	436	85	63	0.17	2.03							
3315-3320	"	MDST, med-dk gy	4.64	430	167	27	0.04	8.04							
3305-3320	"	MDST, a/a	2.04	427	105	78	0.06	2.28							
3335-3340	"	MDST, med-dk gy + 30% SND	-												
	P	MDST, a/a	1.65	435	76	59	0.07	1.34							
3340-3345	Ctg	MDST, med-dk gy, slty + 10% SND	-												
	P	MDST, a/a	4.92	432	160	27	0.02	8.08							
3345-3350	Ctg	MDST, a/a + 20% SND	-												
	P	MDST, a/a	2.47	434	109	34	0.05	2.83							
3335-3350	Ctg	MDST, med-lt gy	2.10	428	99	69	0.05	2.18							
3385-3400	"	MDST, lt-med gy	0.62												
3420-3435	"	MDST, med gy	1.07	431	73	122	0.07	0.84							
3495-3510	"	MDST, med gy	0.42												
3510-3525	"	MDST, a/a	0.52												
3530-3540	"	MDST, lt gy	0.33												
3555-3565	"	MDST, a/a	0.55												
3570-3575	"	MDST, lt med gy	0.43												
3590-3600	"	MDST, med gy	0.07												

Table 2 Chemical Analysis Data

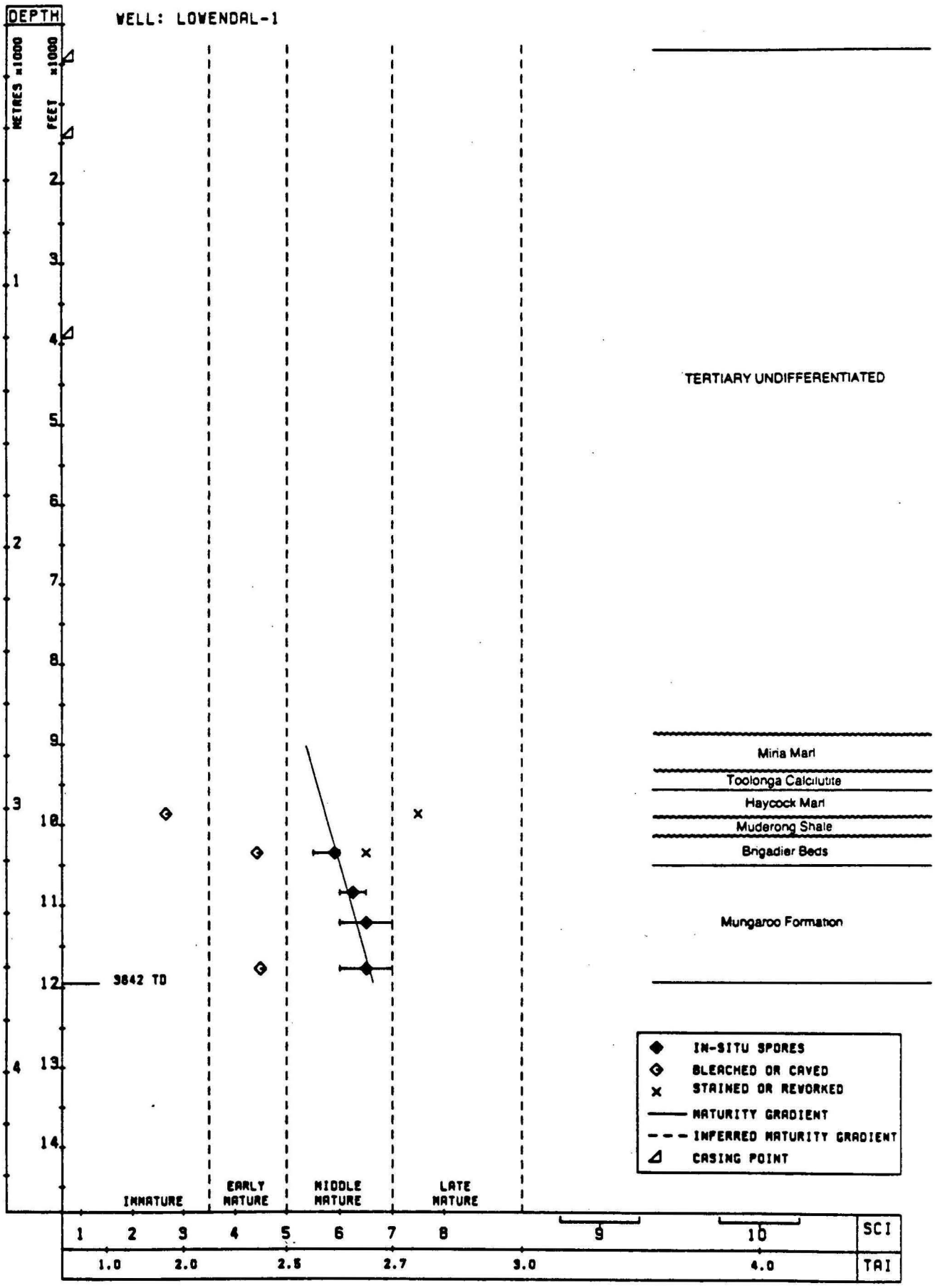


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

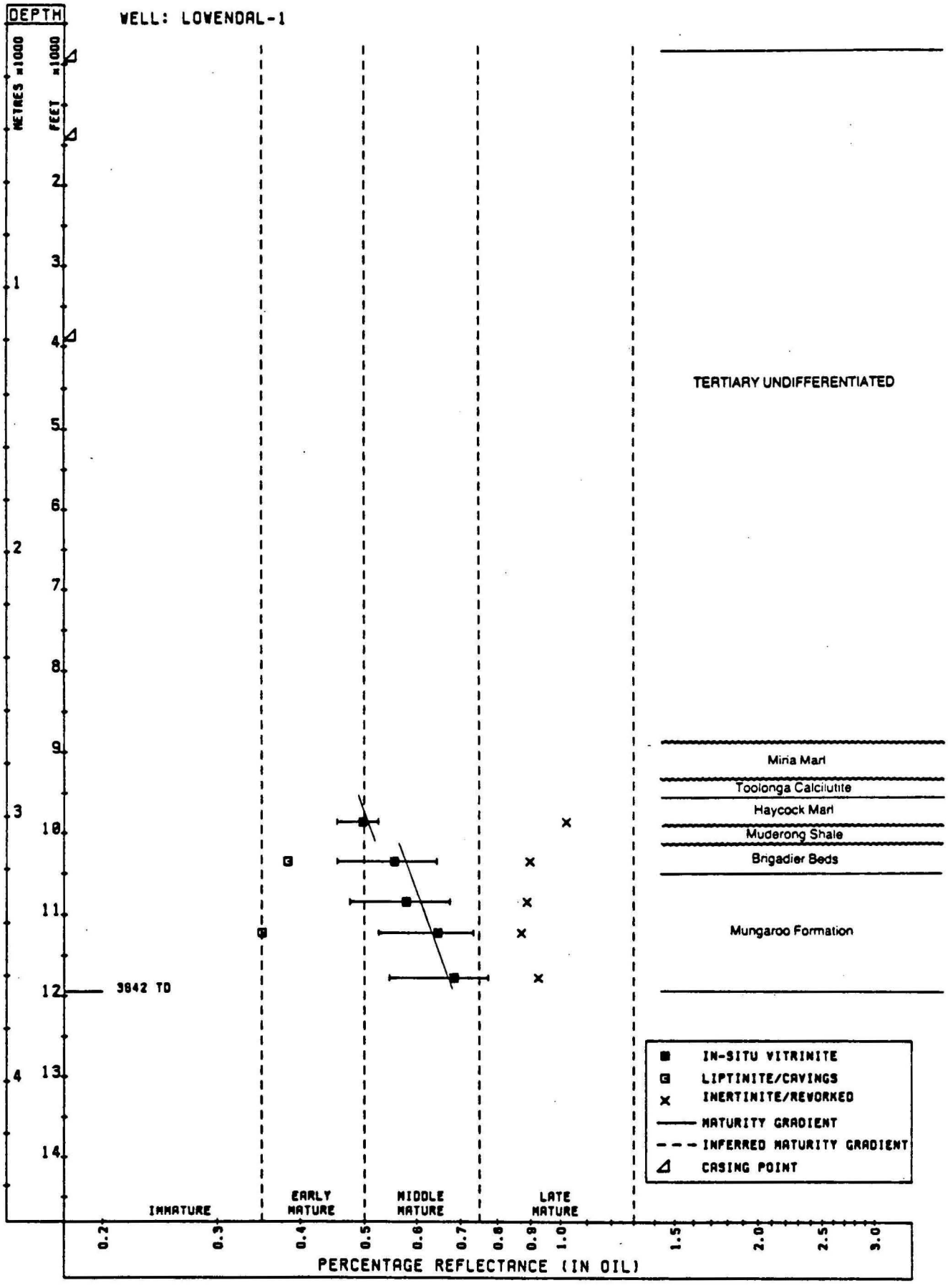


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH

Lowendal-1

3280-3295m

Mungaroo Fm

SCI 6.0

Pr/Ph = 3.48

Pr/n-C_{17} = 1.66

Ph/n-C_{18} = 0.49

CPI = 1.52

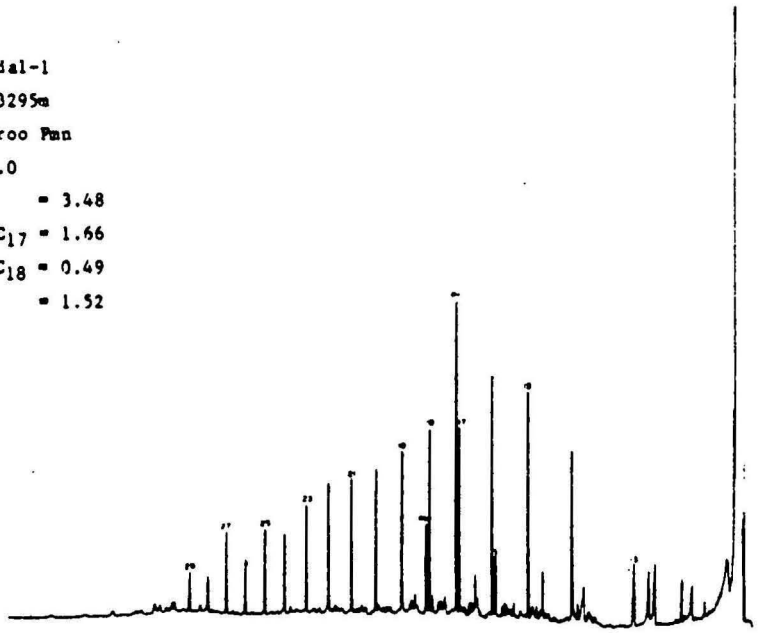


Figure 3

Robertson Research

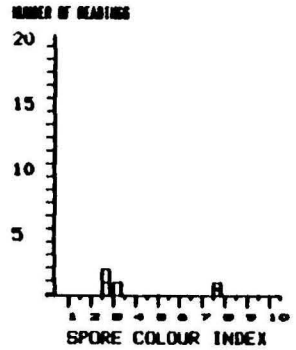
LOWENDAL-1

IN SITU POPULATION

SAMPLE 3005-3015M

2.5 2.5 3.0 7.5

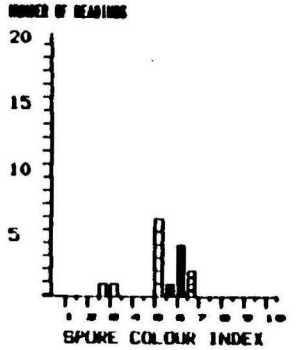
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	-	0
BLEACHED OR CAVED	2.5-3.0	3
STAINED OR REWORKED	7.5-7.5	1



SAMPLE 3155-3170M

2.5 3.0 5.0 5.0 5.0 5.0 5.0 5.0 5.5 6.0
6.0 6.0 6.0 6.5 6.5

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	5.5-6.0	5
BLEACHED OR CAVED	2.5-5.0	8
STAINED OR REWORKED	6.5-6.5	2



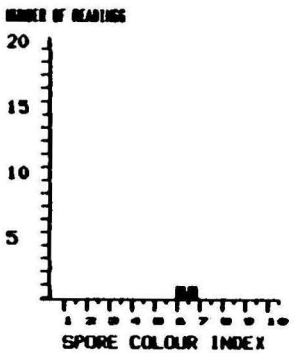
LOWENDAL-1

IN SITU POPULATION

SAMPLE 3305-3320M

6.0 6.5

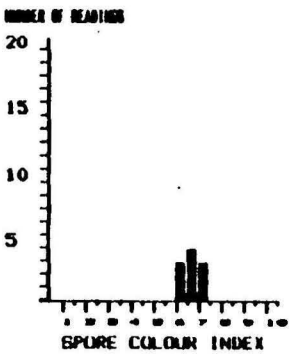
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.0-6.5	2
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	-	0



SAMPLE 3420-3435M

6.0 6.0 6.0 6.5 6.5 6.5 6.5 7.0 7.0 7.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.0-7.0	10
BLEACHED OR CAVED	-	0
STAINED OR REWORKED	-	0



Appendix 1a

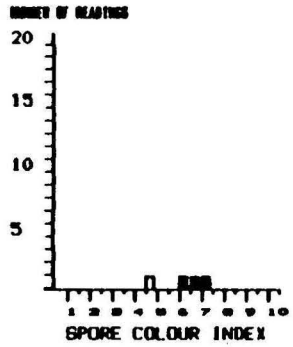
Robertson Research

LOWENDAL-1

IN SITU POPULATION

SAMPLE 3590-3600M
4.5 6.0 6.5 7.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	6.0-7.0	3
BLEACHED OR CAVED	4.5-4.5	1
STAINED OR REWORKED	-	0



Appendix 1b

Robertson Research

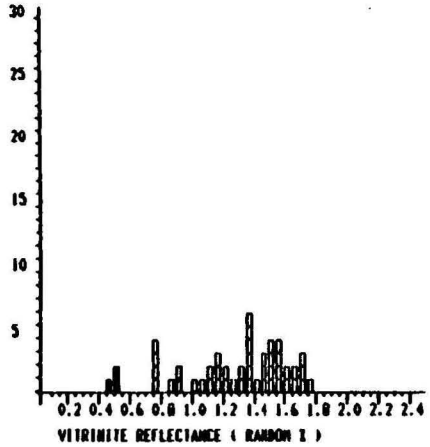
LOMENDAL-1

SAMPLE 3005-3015M

0.46 0.51 0.52 0.78 0.78 0.78 0.79 0.87 0.93 0.93
1.03 1.08 1.10 1.14 1.15 1.16 1.16 1.20 1.24 1.25
1.30 1.31 1.35 1.36 1.36 1.37 1.38 1.39 1.41 1.45
1.46 1.48 1.51 1.51 1.53 1.54 1.57 1.58 1.58 1.59
1.60 1.61 1.65 1.66 1.71 1.71 1.72 1.75

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.46-0.52	3	0.50	0.03
INERTINITE/REWORKED	0.78-1.25	17	1.02	0.17
REWORKED	1.30-1.75	28	1.52	0.13

NUMBER OF READINGS

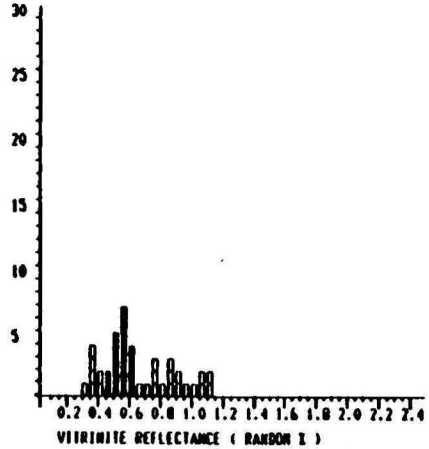


SAMPLE 3155-3170M

0.31 0.38 0.38 0.38 0.39 0.40 0.44 0.46 0.49 0.50
0.51 0.52 0.53 0.54 0.55 0.56 0.56 0.56 0.57 0.58
0.59 0.60 0.62 0.62 0.64 0.68 0.74 0.76 0.76 0.77
0.82 0.85 0.87 0.87 0.90 0.92 0.95 1.00 1.07 1.07
1.11 1.13

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.46-0.64	18	0.56	0.05
LIPTINITE/CAVINGS	0.31-0.44	7	0.38	0.04
INERTINITE/REWORKED	0.68-1.13	17	0.90	0.14

NUMBER OF READINGS



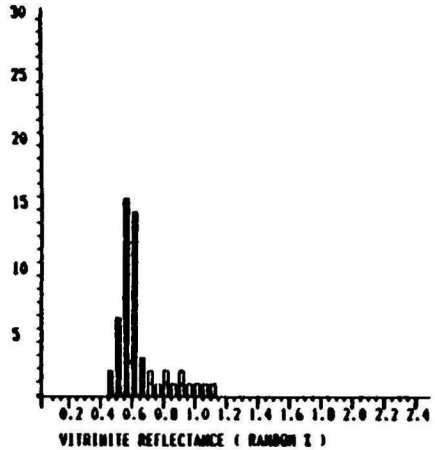
LOMENDAL-1

SAMPLE 3305-3320M

0.48 0.49 0.51 0.53 0.54 0.54 0.54 0.54 0.55 0.55
0.55 0.55 0.55 0.55 0.56 0.56 0.56 0.56 0.56 0.57
0.58 0.59 0.59 0.60 0.60 0.60 0.60 0.61 0.61 0.61
0.61 0.61 0.62 0.62 0.62 0.63 0.63 0.65 0.66 0.67
0.70 0.73 0.79 0.80 0.80 0.87 0.90 0.92 0.98 1.01
1.06 1.11

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.48-0.67	40	0.58	0.04
INERTINITE/REWORKED	0.70-1.11	12	0.89	0.13

NUMBER OF READINGS

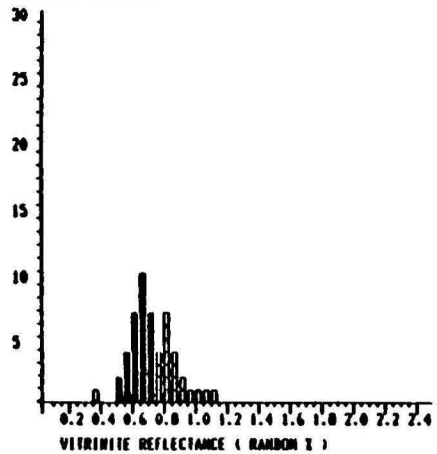


SAMPLE 3420-3435M

0.35 0.53 0.53 0.55 0.56 0.59 0.59 0.60 0.61 0.62
0.62 0.63 0.64 0.64 0.65 0.65 0.66 0.66 0.66 0.67
0.68 0.69 0.69 0.69 0.70 0.70 0.70 0.71 0.72 0.73
0.73 0.76 0.77 0.77 0.77 0.80 0.81 0.81 0.81 0.82
0.83 0.84 0.85 0.85 0.85 0.89 0.90 0.92 0.98 1.04
1.08 1.14

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.53-0.73	30	0.65	0.06
LIPTINITE/CAVINGS	0.35-0.35	1	0.35	
INERTINITE/REWORKED	0.76-1.14	21	0.87	0.11

NUMBER OF READINGS



Appendix 2a

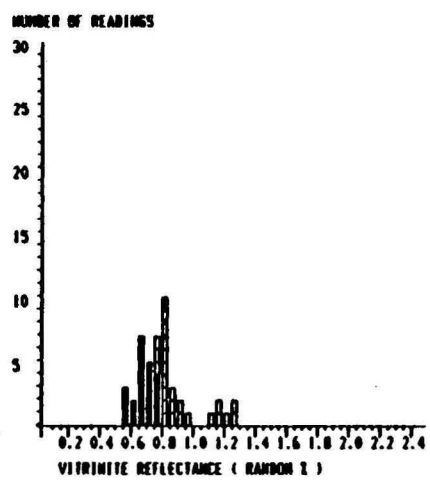
Robertson Research

LOWENDAL-1

SAMPLE 3590-3600M

0.55 0.56 0.58 0.63 0.64 0.67 0.67 0.68 0.68 0.68
0.69 0.69 0.70 0.71 0.73 0.73 0.74 0.75 0.75 0.76
0.77 0.78 0.79 0.79 0.80 0.80 0.81 0.81 0.81 0.82
0.82 0.83 0.84 0.84 0.85 0.86 0.88 0.91 0.91 0.97
1.10 1.15 1.17 1.21 1.26 1.29

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.55-0.77	21	0.68	0.06
INERTINITE/REWORKED	0.78-1.29	25	0.92	0.17



Appendix 2b

OBSERVATION-1 WELL

SUMMARY

Geochemical analyses on selected samples from the interval 915m to 2256m of the Observation-1 well have shown that the interval analysed is early mature and contains no significant oil or gas source rocks.

Extrapolation of the maturity gradients to the surface shows no evidence of any major uplift and erosion at unconformities in the well section or above 914m. The sediments analysed are currently at their maximum depths of burial.

The sample extracted at 2104m to 2116m may contain small amounts of biodegraded oil.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 21° 44' 28"S, 114° 32' 12"E.

Operator and date of drilling: West Australian Petroleum Pty Ltd, 1968.

Well Status: Plugged and abandoned.

TD: 2292m.

Mud data: Seawater and gel pills: Seabed to 472.6m.
Seawater and Bentonite/CMC with added lignosulphate: 472.6m to 2292m TD.

Casing data: 16" at 15m, 11¾" at 288.5m, $8^5/_8$" at 986.5m.

BHT data: 55°C at 986.3m, after 4 hours stopped circulation.
87°C at 2157.9m, after 6 hours stopped circulation.
88°C at 2292m TD, after 5 hours stopped circulation.

Elevation: RT 9m ASL.

Ground level: 4.9m above sea level.

Interval analysed: 915m to 2256m.

OBSERVATION-1 WELL

Age of interval analysed:

	Depths (in metres)
Early Cretaceous	915- 930
Middle-Late Triassic	930-1992
Early-Middle Triassic	1992-2256

Sample type and quality: Dried ditch cuttings of good quality for geochemical analysis.

Maturation data quality:

a) Vitrinite Reflectance: The samples yielded sufficient quantities of vitrinite for accurate measurement. Vitrinite population good. Results: Good.

b) Spore Colour Index: The samples yielded sufficient quantities of indigenous sporomorphs but were complicated by reworked material. Results: Good.

Source rock data quality: Good.

Gas chromatography run at: 915m to 927m and 2104m to 2116m.

MATURATION (Table 1, Figures 1 and 2, Appendices 1 and 2)

Vitrinite reflectance values rise steadily over the interval analysed from values of around 0.48% at 1997m to 2012m, to a value of around 0.51% at 2162m to 2171m. Spore colour index values rise from around 4.25 to 4.5 SCI units over the same interval. These results show the interval analysed to be early mature.

Extrapolation of the maturity gradients to surface suggests that there has been no major uplift and erosion at unconformities within the well section or at surface and that the present day depths of burial represent maximum burial depths at the well location.

OIL AND GAS SOURCE ROCKS (Tables 1 and 2, Figure 3)

No oil and gas source potential has been identified in the samples analysed.

GEOCHEMICAL CHARACTERISTICS OF THE REMAINING SEDIMENTS (Tables 1 and 2, Figure 3)

Samples selected at intervals throughout the Triassic Locker Shale Formation contained mudstones with minor sandstone. Analysis of mudstone lithologies shows them to contain average to below average organic carbon contents of between 0.53% and 2.03%. Pyrolysis analysis of these samples shows them to have low hydrogen indices (53 to 119) associated with high oxygen indices (40 to 124). The latter have been affected by carbonates within the samples. The results suggest that the samples contain predominantly humic kerogen with very little oil-prone kerogen content. Visual kerogen typing analysis of samples at 1997m to 2012m and 2162m to 2171m shows that these samples contain only humic kerogen. No source rock analyses were performed on the Early Cretaceous and Late Triassic sediments in the interval 915m to 1997m.

Extraction, fractionation and gas chromatography data for the sample at 2104m to 2116m shows that the sample contains small amounts of hydrocarbons derived from early mature terrestrially sourced waxy kerogens present within the sample. The high content of branched/cyclic alkanes, as shown by the raised baseline of the gas chromatogram, may indicate that the sample contains small amounts of biodegraded oil or contaminant.

Extraction of the sample at 915m to 927m, taken over the interval showing significant oil staining in the Birdrong Sandstone Member in the well completion report, yielded only a small quantity of extractable bitumen. The alkane gas chromatogram of this sample shows that the sample contains small quantites of extract derived from an early mature source containing abundant terrestrially derived waxy sapropel.

WELL: OBSERVATION-1

SAMPLE DEPTH (METRES)	SAMPLE TYPE	GENERALISED LITHOLOGY	SPORE COLOUR INDEX (1-10)	VITRINITE REFLECTIVITY (R oil av %)	KEROGEN COMPOSITION (% vol.) (by microscopic examination)			KEROGEN COMPOSITION (% wt) (by calculation from pyrolysis data)			
					INERTINITE	VITRINITE	SAPROPEL	INERTINITE	VITRINITE	ALGAL SAPROPEL	WAXY SAPROPEL
1991.9		**Locker Shale**									
1997-2012	Ctg	SST, lt ol gy, calc + 40% MDST, med gy + 20% MDST, lt ol-gy	4.0-4.5	0.48(31)	50	40	10				
	P	MDST, med gy						45	55	*	*
2046-2061	P	MDST, med gy + MDST, lt ol-gy						45	55	*	*
2104-2116	P	MDST, med gy + MDST, lt ol-gy						25	75	*	*
2149-2159	P	MDST, med gy + MDST, lt ol gy						45	55	*	*
2162-2171	Ctg	SST, lt ol gy, calc + 30% MDST, med gy + 10% MDST, lt ol gy	4.0-4.5	0.51(31)	30	70	mnr				
	P	MDST, med gy + MDST, lt ol-gy						55	45	*	*
2201-2213	P	MDST, med gy + MDST, lt ol-gy						30	70	*	*
2241-2256	P	MDST, med gy + MDST, lt ol-gy						30	70	*	*

Table 1 Maturity and Kerogen Composition Data

WELL: OBSERVATION-1

GENERAL DATA			CHEMICAL ANALYSIS DATA												
				PYROLYSIS					SOLVENT EXTRACTION						
													EXTRACT COMPOSITION (%)		
SAMPLE DEPTH (METRES)	SAMPLE TYPE	ANALYSED LITHOLOGY	ORGANIC CARBON % OF ROCK	TEMPERATURE C	HYDROGEN INDEX	OXYGEN INDEX	PRODUCTION INDEX	POTENTIAL YIELD (kg Tonne)	TOTAL EXTRACT (ppm)	TOTAL EXTRACT (mg g T O C)	HYDROCARBONS (ppm)	HYDROCARBONS (mg g T O C)	SATURATED HYDROCARBONS	AROMATIC HYDROCARBONS	POLAR COMPOUNDS
913.2		**Birdrong Sst Mbr**													
915-927	Ctg	SST, gy-gn, v arg, glauconitic	1.12						565	50	330	30	50	8	42
930.2		**Mungaroo Fm**													
1991.9		**Locker Shale**													
1997-2012	Ctg	SST, lt ol-gy, calc + 40% MDST, med-gy + 20% MDST, lt ol-gy	-												
	P	MDST, med-gy	1.55	435	78	74	0.03	1.25							
	"	MDST, lt ol-gy	0.53												
2046-2061	Ctg	SST, lt ol-gy, calc + 40% MDST, med gy + 10% MDST, lt ol-gy	-												
	P	MDST, med-gy + MDST, lt ol-gy	0.92	437	83	124	0.04	0.79							
2104-2116	Ctg	SST, lt ol-gy, calc + 30% MDST, med-gy + 10% MDST, lt ol-gy	-												
	P	MDST, med-gy + MDST, lt ol-gy	1.34	438	119	63	0.03	1.65	340	25	130	10	25	13	62
2149-2159	Ctg	SST, lt ol-gy, calc + 30% MDST, med-gy + 10% MDST, lt ol-gy	-												
	P	MDST, med-gy + MDST, lt ol-gy	1.17	438	75	99	0.05	0.93							
2162-2171	Ctg	SST, lt ol-gy, calc + 30% MDST, med gy + 10% MDST, lt ol-gy	-												
	P	MDST, med-gy + MDST, lt ol-gy	1.45	443	53	108	0.08	0.84							
2201-2213	Ctg	SST, lt ol-gy, calc + 60% MDST, med-gy + 20% MDST, lt ol-gy	-												
	P	MDST, med-gy + MDST, lt ol-gy	2.03	436	91	43	0.03	1.90	640	32	215	11	26	8	66
2241-2256	Ctg	SST, lt ol-gy, calc + 60% MDST, med-gy + 10% MDST, lt ol-gy	-												
	P	MDST, med-gy + MDST, lt ol-gy	1.26	435	77	40	0.03	1.00							

Table 2 Chemical Analysis Data

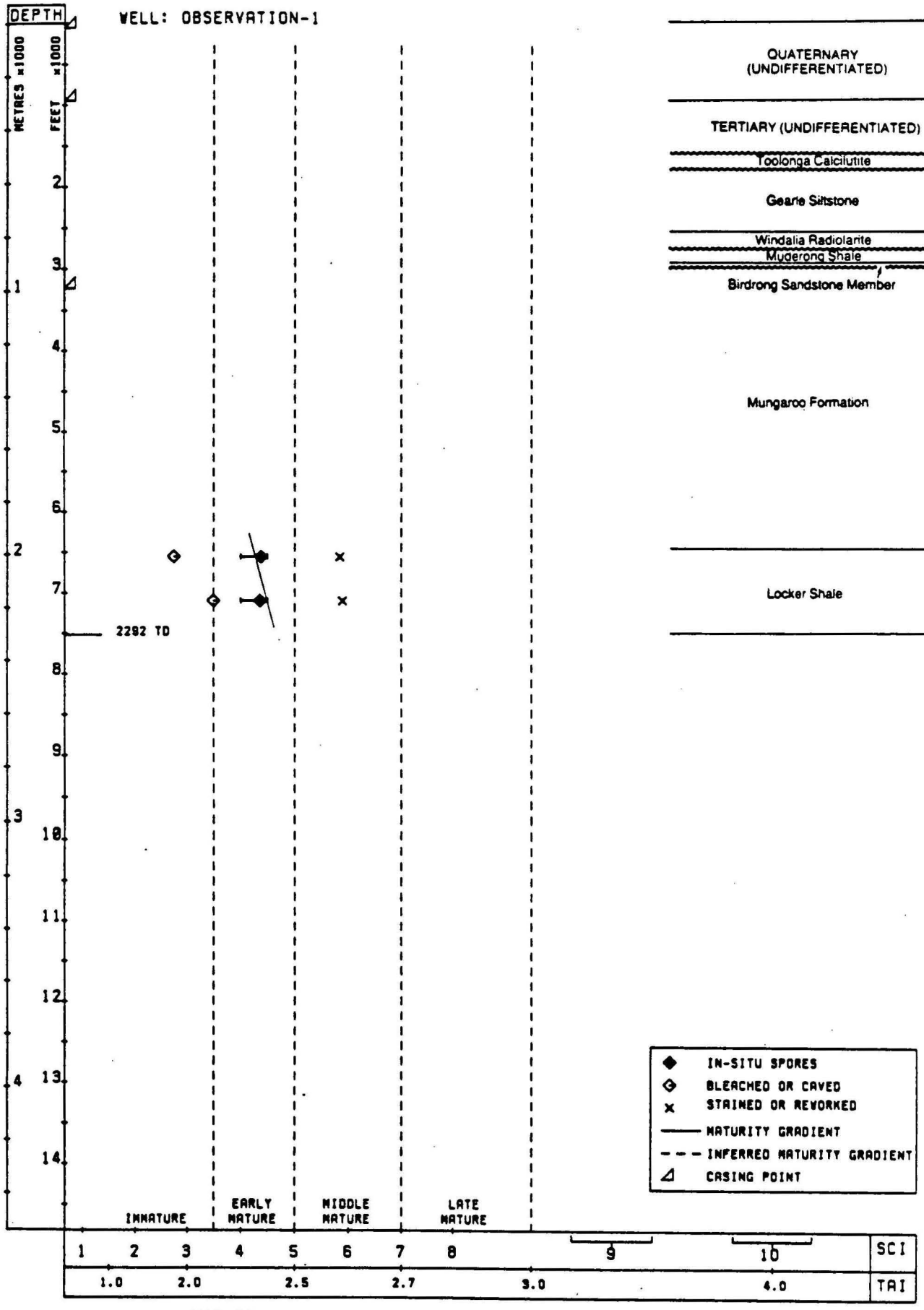


FIGURE 1 SPORE COLOUR INDEX AGAINST DEPTH

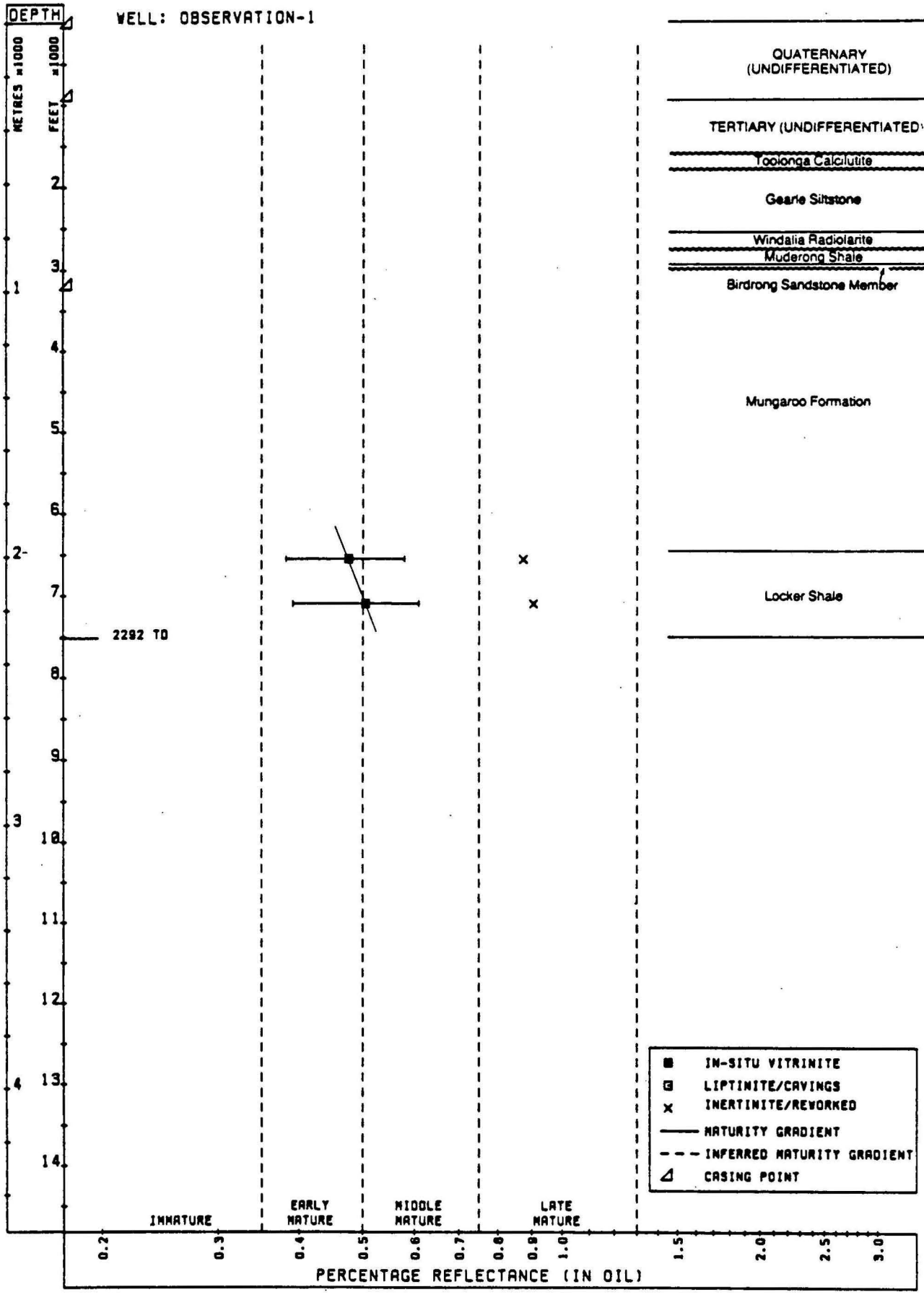
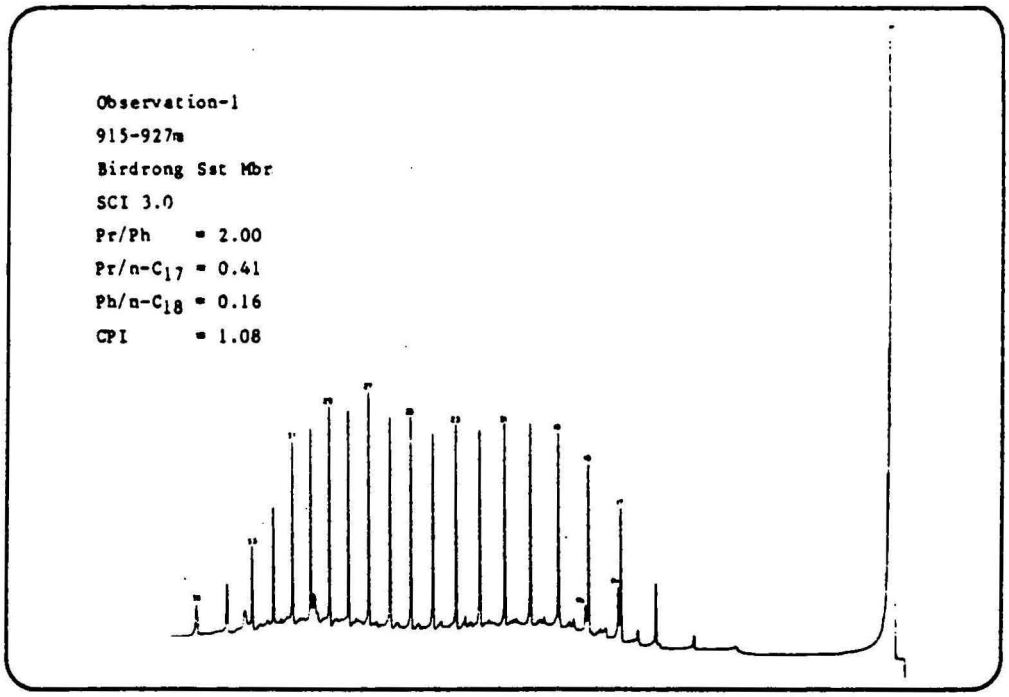
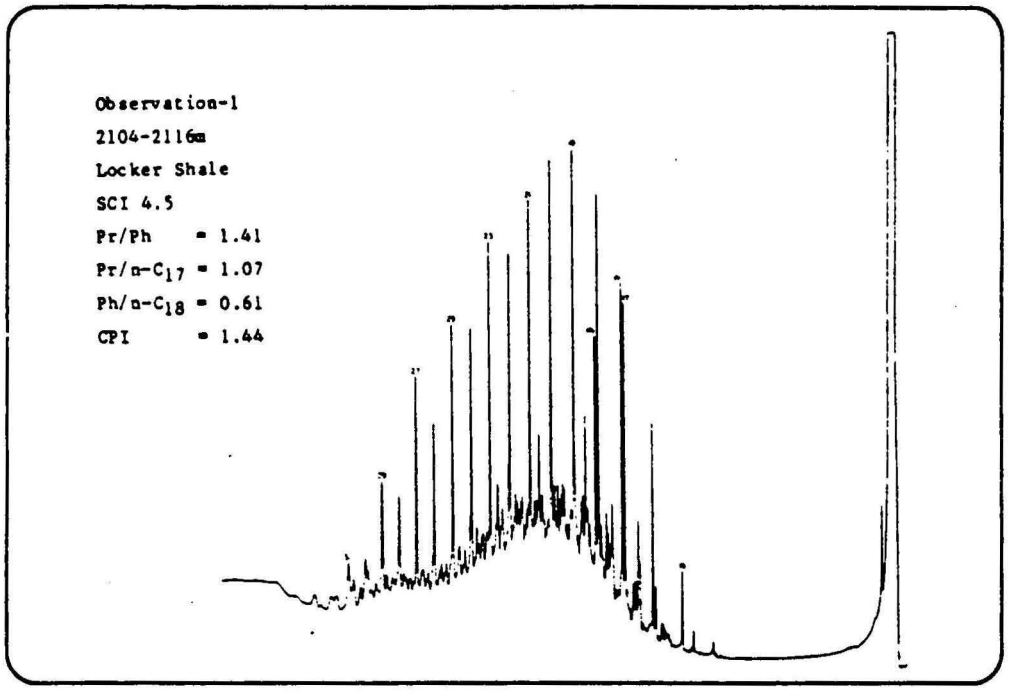


FIGURE 2 VITRINITE REFLECTANCE AGAINST DEPTH


Observation-1
915-927m
Birdrong Sst Mbr
SCI 3.0
Pr/Ph = 2.00
Pr/n-C17 = 0.41
Ph/n-C18 = 0.16
CPI = 1.08


Observation-1
2104-2116m
Locker Shale
SCI 4.5
Pr/Ph = 1.41
Pr/n-C17 = 1.07
Ph/n-C18 = 0.61
CPI = 1.44

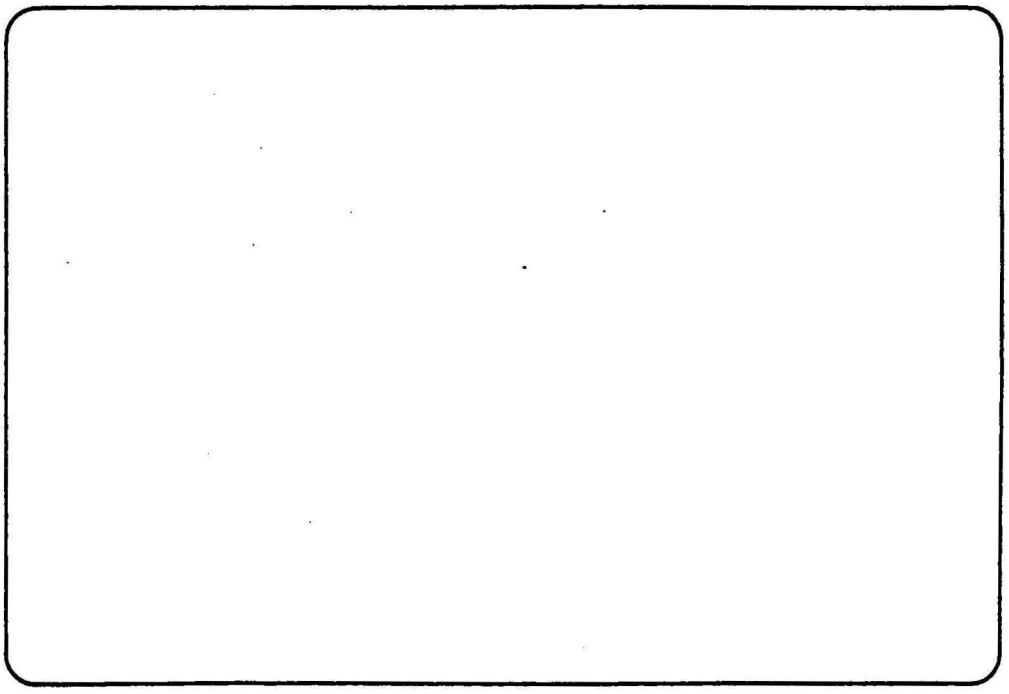


Figure 3

Robertson Research

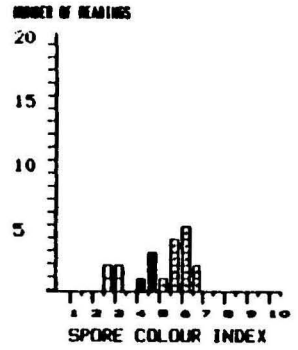
OBSERVATION-1

IN SITU POPULATION

SAMPLE 1937-2012M

2.5 2.5 3.0 3.0 4.0 4.5 4.5 4.5 5.0 5.5
5.5 5.5 5.5 6.0 6.0 6.0 6.0 6.0 6.5 6.5

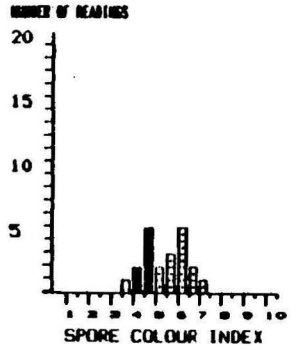
SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.0-4.5	4
BLEACHED OR CAVED	2.5-3.0	4
STAINED OR REWORKED	5.0-6.5	12



SAMPLE 2162-2171M

3.5 4.0 4.0 4.5 4.5 4.5 4.5 4.5 5.0 5.0
5.5 5.5 5.5 6.0 6.0 6.0 6.0 6.0 6.5 6.5
7.0

SELECTED CLASS	RANGE	COUNT
IN-SITU SPORES	4.0-4.5	7
BLEACHED OR CAVED	3.5-3.5	1
STAINED OR REWORKED	5.0-7.0	13



Appendix 1

PEPPER-1 WELL

SUMMARY

Geochemical analysis of the interval 1073m to 2616m of the Pepper-1 well shows that the well section is immature to 1150m, early mature between 1150m and 1800m and middle mature between 1800m and 2743m TD. The maturity gradients do not show any major amounts of missing section at unconformities within the section analysed. Extrapolation of the gradients to the seabed also suggests that around 800m of Early Cretaceous and younger sediments are missing above 1073m and that the sediments penetrated are presently at or near their maximum depths of burial.

The intervals 1945m to 2058m in the Barrow Group and 2607m to 2616m in the Upper Dingo Claystone have fair and poor oil source potential respectively. Mudstones in the interval 1073m to 1241m in the Muderong Shale will have poor gas source potential at optimum maturity.

Extraction of samples at 1659m to 1674m, 1945m to 1951m, 2369m to 2387m and 2445m to 2460m yielded migrant hydrocarbons derived from mature waxy kerogens which were deposited under strongly anoxic conditions.

GENERAL COMMENTS

Basin: Northern Carnarvon Basin.

Location: 115° 18' 04"E, 21° 03' 28"S.

Operator and date of drilling: West Australian Petroleum Pty Ltd, 1970.

Well Status: Plugged and abandoned with gas shows.

TD: 2743m.

Mud data: Sea water system: Seabed to 1327m.
Sea water/gel system: 1327m to 2743m TD.

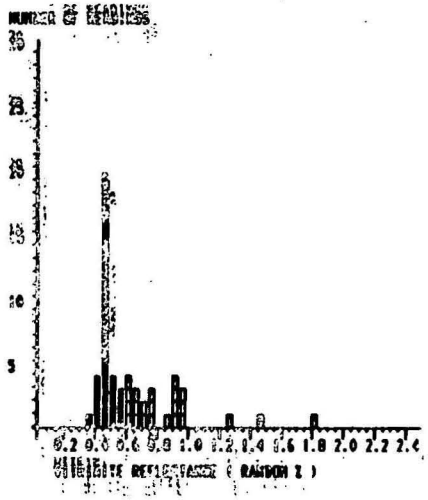
Casing data: 26" at 47.5m, $13^5/_8$" at 463m, $9^5/_8$" at 1314m, 7" at 2600m.

BHT data: 75°C at 1327m, after 3½ hours stopped circulation.
110°C at 2607m, after 5 hours stopped circulation.

SAMPLE 1797-[illegible]

0.39 0.41 0.42 0.43 0.44 0.45 0.45 0.45 0.46 0.46
0.47 0.47 0.47 0.48 0.48 0.48 0.48 0.48 0.48 0.49
0.49 0.49 0.50 0.50 0.50 0.50 0.51 0.51 0.51 0.52
0.52 0.52 0.52 0.53 0.54 0.54 0.57 0.60 0.71 0.79
0.79 0.79 0.79 0.86 0.92 0.92 0.93 0.94 0.95 0.95
0.96 1.02 1.03 1.82

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.39-0.95	31	0.48	0.04
[illegible]	[illegible]	[illegible]	0.88	0.[illegible]



SAMPLE 2162-2171

0.40 0.42 0.43 0.45 0.45 0.45 0.46 0.47 0.47 0.48
0.48 0.48 0.49 0.50 0.50 0.50 0.51 0.51 0.51 0.52
0.53 0.54 0.55 0.56 0.57 0.57 0.58 0.58 0.59 0.60
0.61 0.63 0.64 0.70 0.71 0.75 0.75 0.77 0.80 0.85
0.92 0.93 0.93 0.99 0.99 0.96 0.97 1.00 1.00 1.05
1.16 1.17 1.85

SELECTED CLASS	RANGE (%)	COUNT	AV(%)	ST.DEV
IN SITU VITRINITE	0.40-0.61	31	0.51	0.05
INERTINITE/REWORKED	0.65-1.85	22	0.91	0.25