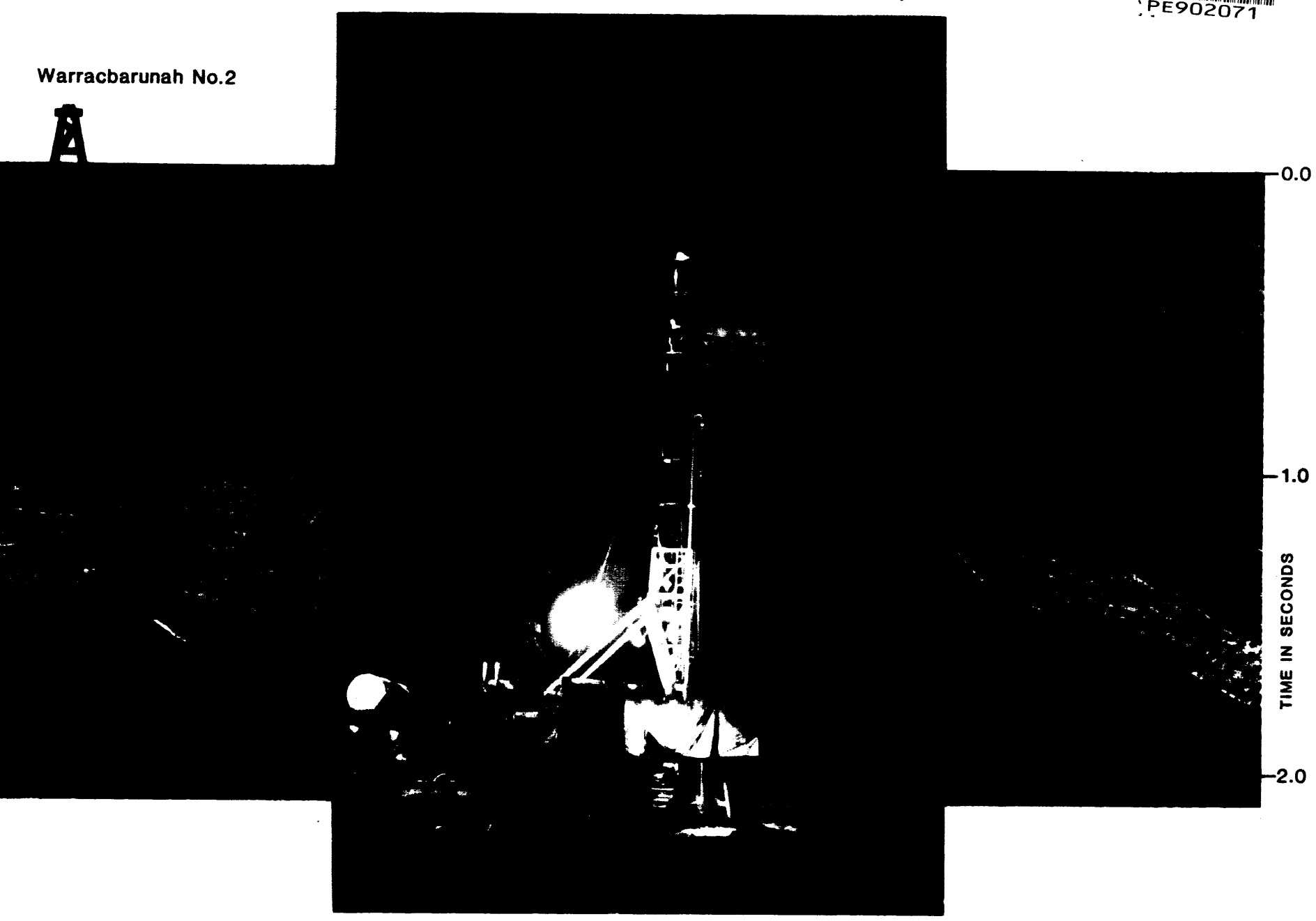
Warracbarunah No. 2

Well Completion Report

WCR vol. 1 Warracbarunah-2 (W1042)



Geological Survey of Victoria
Basin Studies

Department of Manufacturing and Industry Development

VOL. I: TEXT & APPENDICES

1991

GEOLOGICAL SURVEY OF VICTORIA

BASIN STUDIES

Warracbarunah 2

Well completion report

Unpublished report No.1991/66

Volume 1
Text and Appendices

Department of
Manufacturing
and Industry
Development

Prepared by:
Ahmad Tabassi
Cliff Menhennitt

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GEOCHEMISTRY REPORT

AMDEL
CORE
SERVICES

9 August 1991

Department of Manufacturing and
Industry and Development
PO Box 173
EAST MELBOURNE VIC 3002

Attention: John Leonard (Basin Studies Manager)

REPORT: 009/999

CLIENT REFERENCE:	Fax from Tabassi and Associates
MATERIAL:	SWC, Core and Cuttings
LOCALITY:	Warracbarunah-5
WORK REQUIRED:	Geochemistry

Please direct technical enquiries regarding this work to the signatory below under whose supervision the work was carried out.

BRIAN L WATSON
Laboratory Supervisor
on behalf of Amdel Core Services Pty Ltd

1. INTRODUCTION

Twenty (20) core and cuttings samples were received for vitrinite reflectance analysis and TOC and Rock-Eval pyrolysis. This report is a formal presentation of the results of these analyses.

2. ANALYTICAL PROCEDURE

2.1 Sample Preparation

Samples (as received) were ground in a Siebtechnik mill for 20-30 seconds.

2.2 Total Organic Carbon (TOC)

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

2.3 Rock-Eval Pyrolysis

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

2.4 Organic Petrology

Representative portions of each sample (crushed to -14+35 BSS mesh) were obtained with a sample splitter and then mounted in cold setting Glasscraft resin using a 2.5 cm diameter mould. Each block was ground flat using diamond impregnated laps and carborundum paper. The surface was then polished with aluminium oxide and finally magnesium oxide.

Reflectance measurements were made with a Leitz MPV1.1 microphotometer fitted to a Leitz Ortholux microscope and calibrated against synthetic standards. All measurements were taken using oil immersion (n = 1.518) and incident monochromatic light (wavelength 546 nm) at a temperature of 23±1°C.

3. RESULTS

Vitrinite reflectance data are presented in Table 1 and are displayed graphically versus depth in Figure 1. Table 2 is a summary of TOC and Rock-Eval pyrolysis data. Figure 2 is a plot of Hydrogen Index versus T_{max} illustrating kerogen Type and maturity. Histogram plots of measured vitrinite reflectance data are presented on Appendix 1.

4. INTERPRETATION

4.1 Maturity

Vitrinite reflectance determinations (Table 1, Figure 1) indicate that the sediments intersected in this location have maturities ranging from immature to marginally mature. This data suggests that the sedimentary section is sufficiently mature for the generation of light oil/condensate from sediments rich in resinite and bituminite below approximately 900 m depth (VR threshold = 0.45%).

Extrapolation of this data indicates that significant gas generation should occur below approximately 1500 m depth (VR $\geq$ 0.6%) while oil generation from sediments rich in exinites other than resinite and bituminite should commence below approximately 1800 m depth (VR $\geq$ 0.7%). Rock-Eval Hydrogen Index and T_{max} data (Table 2, Figure 2) show maturites similar to those indicated by the measured vitrinite reflectance data.

Samples from depths 1343.0 - 1347.8 m and 1389.2 - 1389.8 m have low T_{max} values due to their small and ill-defined S_2 peaks.

Rock-Eval Production Indices are consistently low for these sample (PI $\leq$ 0.14; Table 2) which suggests that migrated hydrocarbons are not present in significant quantities in the samples analysed from this location.

4.2 Source Richness

Organic richness ranges from poor to excellent (TOC = 0.19 - 49.40%) in the samples studied. Source richness for the generation of hydrocarbons also ranges from poor to excellent ($S_1 + S_2$ = 0.49 - 76.39 kg of hydrocarbons/tonne). Samples which have excellent organic and source richness fall within the interval 558 to 813 metres depth and with the exception of the sample from 583.6 - 588 metres depth, all of these samples from this interval have both excellent organic and source richness. Samples from 498-501, 1176-1179 and 1296-1299 metres depth have both fair source richness and organic richness.

4.3 Kerogen Type and Source Quality

Rock-Eval Hydrogen Index and T_{max} data (Table 2, Figure 2) indicates that the samples examined contain organic matter which has bulk compositions ranging from Type II-III to Type IV kerogen. The samples which contain better quality (more oil-prone) Type II-III kerogen occur at the following depths:

Depth (m)	T_{max}	HI
739.0 - 743.4	430	234
810 - 813	431	196
1176 - 1179	439	174

TABLE 1

SUMMARY OF VITRINITE REFLECTANCE MEASUREMENTS

WARRACBARUNAH-5

Depth (m)	Mean Maximum Reflectance (%)	Standard Deviation	Range	Number of Determinations
498.0 - 501.0	0.33	0.01	0.31-0.37	30
516.0 - 519.0	0.34	0.02	0.31-0.39	14
558.0 - 561.0	0.36	0.02	0.33-0.39	25
583.6 - 588.0	0.36	0.03	0.33-0.41	7
739.0 - 743.4	0.44	0.05	0.35-0.54	30
759.0 - 762.0	0.46	0.04	0.39-0.54	30
810.0 - 813.0	0.44	0.03	0.38-0.52	30
894.0 - 897.0	0.45	0.04	0.39-0.51	21
959.3 - 960.9	-	-	-	-
1032.1 - 1032.9	0.46	0.01	0.45-0.47	4
1074.0 - 1077.0	0.48	0.04	0.41-0.52	9
1151.8 - 1152.8	0.55	0.05	0.46-0.61	11
1176.0 - 1179.0	0.51	0.03	0.47-0.60	30
1200.0 - 1203.0	0.53	0.05	0.47-0.61	14
1252.7 - 1253.6	0.56	0.05	0.48-0.62	12
1296.0 - 1299.0	0.59	0.05	0.49-0.70	30
1343.0 - 1347.8	-	-	-	-
1389.2 - 1389.8	-	-	-	-
1442.8 - 1445.7	0.56	0.05	0.46-0.65	20
1461.0 - 1464.0	0.60	0.05	0.51-0.71	24

TABLE 2

AMDEL CORE SERVICES

Rock-Eval Pyrolysis

12/07/91

Client: Department of Manufacturing and Industry Development

Well: Warracbarunah-5

Depth (m)	T Max	S1	S2	S3	S1+S2	PI	S2/S3	PC	TOC	HI	OI
498-501	430	0.13	1.96	2.58	2.09	0.06	0.75	0.17	3.39	58	76
516-519	431	0.14	1.61	2.57	1.75	0.08	0.62	0.14	1.44	111	178
558-561	418	2.09	74.30	23.25	76.39	0.03	3.19	6.36	49.40	150	47
583.6-588									0.19		
739.0-743.4	430	0.45	39.69	2.55	40.14	0.01	15.56	3.34	16.90	234	15
759-762	429	0.37	44.44	4.44	44.81	0.01	10.00	3.73	27.30	162	16
810-813	431	0.24	23.14	1.83	23.38	0.01	12.64	1.94	11.80	196	15
894-897	437	0.03	0.56	1.20	0.59	0.05	0.46	0.04	0.92	60	130
959.3-960.9	440	0.01	0.57	1.06	0.58	0.02	0.53	0.04	0.86	66	123
1032.1-1032.9	441	0.05	0.53	1.15	0.58	0.09	0.46	0.04	0.95	55	121
1074-1077	435	0.04	0.45	0.81	0.49	0.08	0.55	0.04	0.78	57	103
1151.8-1152.8	439	0.05	0.48	0.61	0.53	0.10	0.78	0.04	0.80	60	76
1176-1179	439	0.09	2.85	2.16	2.94	0.03	1.31	0.24	1.63	174	132
1200-1203	438	0.07	1.28	1.10	1.35	0.05	1.16	0.11	1.02	125	107
1252.7-1253.6	440	0.06	0.68	0.13	0.74	0.08	5.23	0.06	1.35	50	9
1296-1299	439	0.15	2.82	1.05	2.97	0.05	2.68	0.24	2.48	113	42
1343.0-1347.8	387	0.05	0.32	0.13	0.37	0.14	2.46	0.03	0.69	46	18
1389.2-1389.8	362	0.03	0.19	0.19	0.22	0.14	1.00	0.01	0.62	30	30
1442.8-1445.7	440	0.04	1.16	0.10	1.20	0.03	11.60	0.1	1.23	94	8
1461-1464	441	0.07	0.71	0.34	0.78	0.09	2.08	0.06	0.75	94	45

FIGURE 1

VITRINITE REFLECTANCE VERSUS DEPTH
WARRACBARUNAH-5

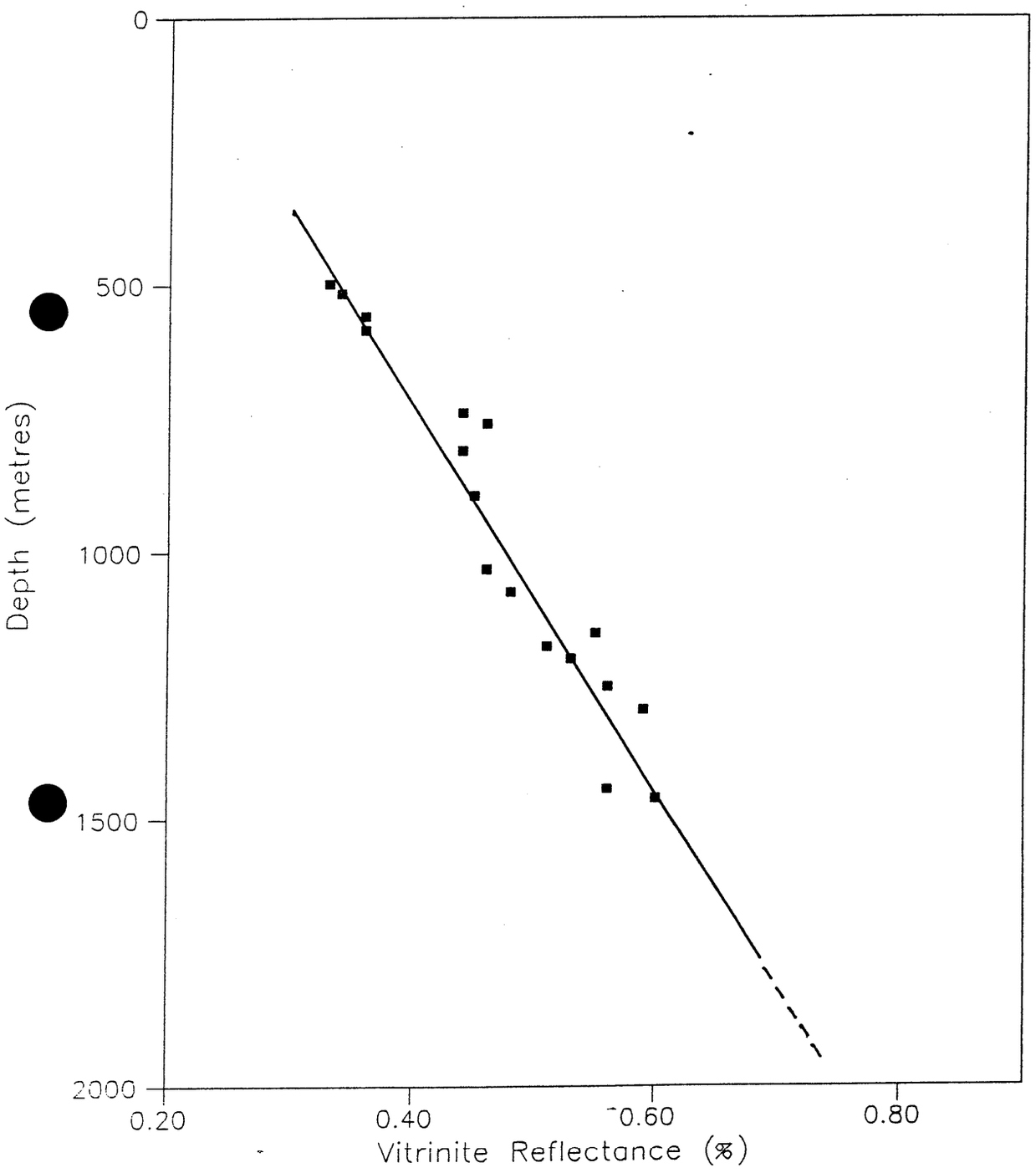
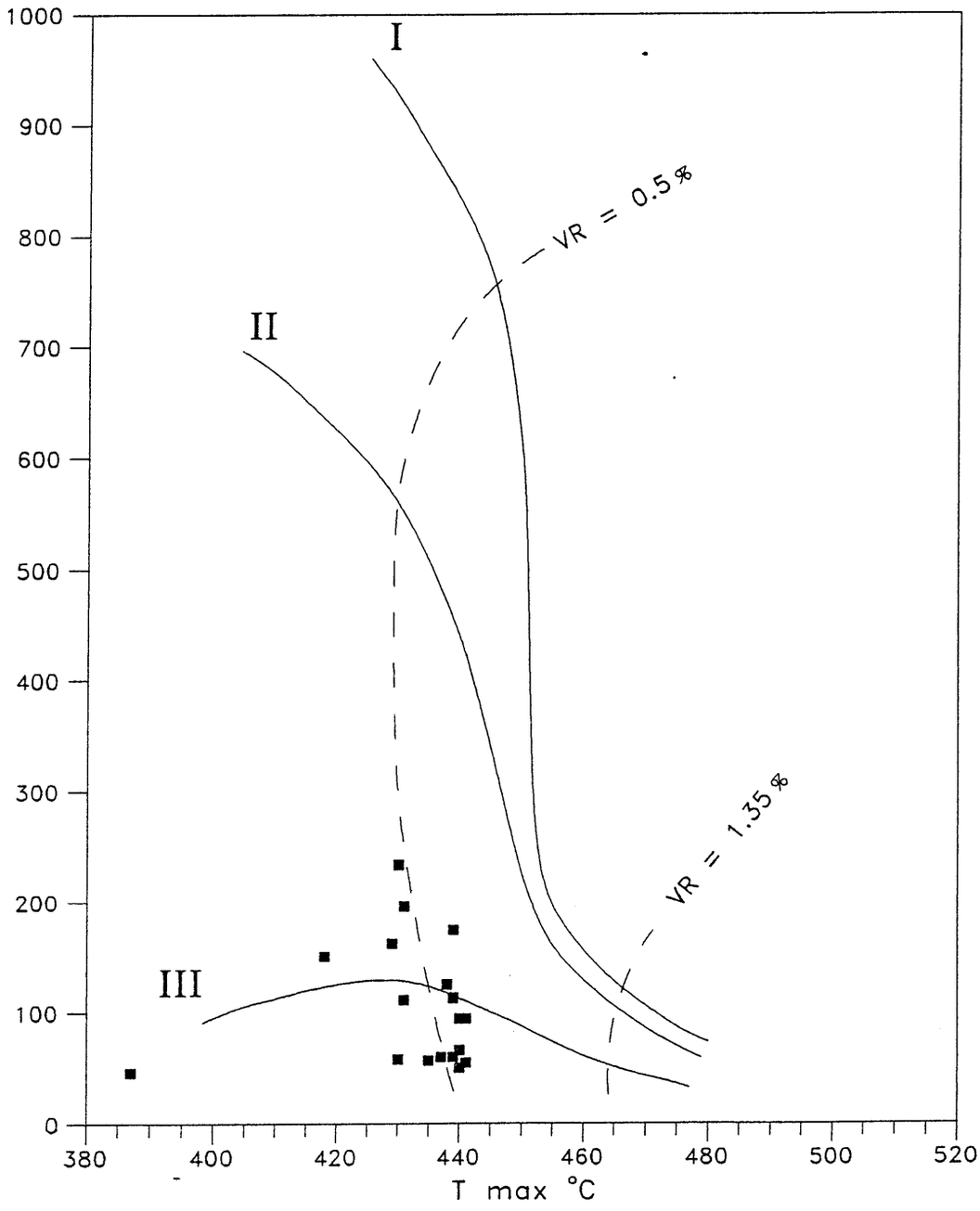


FIGURE 2

HYDROGEN INDEX vs T max

Company : DEPARTMENT OF MANUFACTURING AND INDUSTRY DEVELOPMENT
Well : WARRACBARUNAH-2



APPENDIX 1

HISTOGRAM PLOTS OF VITRINITE REFLECTANCE DATA

WARRACBARUNAH-5

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 498-501m

Sorted List

0.31	0.33	0.34
0.31	0.33	0.34
0.32	0.33	0.34
0.32	0.33	0.34
0.32	0.33	0.34
0.32	0.33	0.35
0.32	0.33	0.35
0.32	0.33	0.35
0.33	0.33	0.37
0.33	0.33	0.37

Number of values= 30

Mean of values 0.33
Standard Deviation 0.01

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

31-33	**********
34-36	********
37-39	**

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 516-519m

Sorted List

0.31	0.36
0.32	0.36
0.32	0.38
0.33	0.39
0.33	
0.33	
0.34	
0.34	
0.34	
0.35	

Number of values= 14

Mean of values 0.34
Standard Deviation 0.02

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

31-33	******
34-36	******
37-39	**

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 558-561m

Sorted List

0.33	0.35	0.37
0.33	0.35	0.37
0.34	0.36	0.38
0.34	0.36	0.39
0.34	0.36	0.39
0.34	0.36	
0.35	0.36	
0.35	0.36	
0.35	0.36	
0.35	0.37	

Number of values= 25

Mean of values 0.36
Standard Deviation 0.02

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

33-35 **********
36-38 **********
39-41 **

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 583.6-588.0m

Sorted List

0.33
0.33
0.34
0.35
0.38
0.41
0.41

Number of values= 7

Mean of values 0.36
Standard Deviation 0.03

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

33-35 ****
36-38 *
39-41 **

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 739.0-743.4m

Sorted List

0.35	0.42	0.48
0.35	0.42	0.48
0.37	0.42	0.48
0.38	0.43	0.48
0.38	0.44	0.49
0.39	0.45	0.49
0.39	0.46	0.51
0.40	0.46	0.51
0.41	0.47	0.51
0.41	0.48	0.54

Number of values= 30

Mean of values 0.44
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

35-37	***
38-40	*****
41-43	******
44-46	****
47-49	********
50-52	***
53-55	*

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 759-762m

Sorted List

0.39	0.44	0.48
0.40	0.44	0.49
0.41	0.45	0.49
0.41	0.46	0.49
0.42	0.46	0.50
0.42	0.46	0.50
0.42	0.47	0.51
0.43	0.47	0.52
0.43	0.47	0.52
0.44	0.48	0.54

Number of values= 30

Mean of values 0.46
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

39-41	****
42-44	********
45-47	*******
48-50	*******
51-53	***
54-56	*

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 810-813m

Sorted List

0.38	0.42	0.44
0.39	0.43	0.45
0.39	0.43	0.45
0.40	0.43	0.46
0.40	0.43	0.46
0.41	0.44	0.47
0.41	0.44	0.47
0.42	0.44	0.47
0.42	0.44	0.48
0.42	0.44	0.52

Number of values= 30

Mean of values 0.44
Standard Deviation 0.03

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

38-40	*****
41-43	**********
44-46	**********
47-49	****
50-52	*

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 894-897m

Sorted List

0.39	0.45	0.51
0.39	0.46	
0.40	0.47	
0.40	0.47	
0.41	0.47	
0.41	0.47	
0.41	0.49	
0.42	0.49	
0.43	0.49	
0.44	0.50	

Number of values= 21

Mean of values 0.45
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

39-41	*******
42-44	***
45-47	******
48-50	****
51-53	*

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 1032.1-1032.9m

Sorted List

0.45
0.45
0.46
0.47

Number of values= 4

Mean of values 0.46
Standard Deviation 0.01

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

45-47 ****

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 1074-1077m

Sorted List

0.41
0.44
0.45
0.47
0.49
0.50
0.50
0.52
0.52

Number of values= 9

Mean of values 0.48
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

41-43 *
44-46 **
47-49 **
50-52 ****

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 1151.8-1152.8m

Sorted List

0.46	0.61
0.48	
0.53	
0.54	
0.55	
0.57	
0.58	
0.58	
0.59	
0.60	

Number of values= 11

Mean of values 0.55
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

46-48	**
49-51	
52-54	*
55-57	***
58-60	****
61-63	*

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 1176-1179m

Sorted List

0.47	0.49	0.52
0.48	0.50	0.53
0.48	0.50	0.53
0.48	0.51	0.53
0.48	0.51	0.54
0.49	0.51	0.54
0.49	0.51	0.55
0.49	0.51	0.56
0.49	0.52	0.57
0.49	0.52	0.60

Number of values= 30

Mean of values 0.51
Standard Deviation 0.03

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

47-49	**********
50-52	**********
53-55	*****
56-58	***
59-61	*

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 1200-1203m

Sorted List

0.47	0.56
0.47	0.61
0.48	0.61
0.49	0.61
0.50	
0.53	
0.53	
0.53	
0.54	
0.55	

Number of values= 14

Mean of values 0.53
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

47-49	****
50-52	*
53-55	****
56-58	**
59-61	***

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 1252.7-1253.6m

Sorted List

0.48	0.62
0.48	0.62
0.51	
0.54	
0.55	
0.56	
0.57	
0.57	
0.57	
0.62	

Number of values= 12

Mean of values 0.56
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

48-50	**
51-53	*
54-56	**
57-59	****
60-62	***

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 1296-1299m

Sorted List

0.49	0.57	0.61
0.50	0.57	0.61
0.51	0.57	0.61
0.51	0.57	0.63
0.53	0.58	0.64
0.54	0.58	0.65
0.54	0.59	0.65
0.55	0.60	0.66
0.56	0.60	0.67
0.56	0.60	0.70

Number of values= 30

Mean of values 0.59
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

49-51	****
52-54	*
55-57	*********
58-60	******
61-63	****
64-66	****
67-69	*
70-72	*

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 1442.8-1445.7m

Sorted List

0.46	0.57
0.48	0.57
0.51	0.58
0.53	0.58
0.53	0.60
0.54	0.60
0.54	0.61
0.55	0.62
0.55	0.63
0.56	0.65

Number of values= 20

Mean of values 0.56
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

46-48	**
49-51	*
52-54	**
55-57	*******
58-60	****
61-63	***
64-66	*

VITRINITE REFLECTANCE VALUES

Well Name: WARRACBARUNAH-5
Depth: 1461-1464m

Sorted List

0.51	0.59	0.66
0.52	0.59	0.67
0.53	0.60	0.69
0.56	0.61	0.71
0.56	0.62	
0.56	0.62	
0.57	0.63	
0.58	0.63	
0.58	0.64	
0.58	0.66	

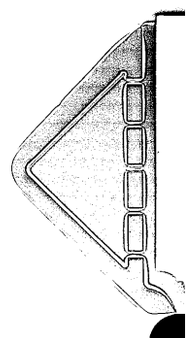
Number of values= 24

Mean of values 0.60
Standard Deviation 0.05

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

51-53	***
54-56	
57-59	*********
60-62	****
63-65	***
66-68	***
69-71	**

Appendix 9



APPENDIX 9

CORE ANALYSIS REPORT

AMDEL
CORE
SERVICES

20th May 1991

Department of Manufacturing and Industry Development
PO Box 173
EAST MELBOURNE VIC 3002

Attention: Mr C Menhennitt

REPORT: 008/096

CLIENT REFERENCE:	cm.ge.L1
MATERIAL:	Whole Core Samples
LOCALITY:	Warracbarunah No.2
WORK REQUIRED:	Conventional Core Analysis

Please direct technical enquiries regarding this work to the signatory below under whose supervision the work was carried out.

RUSSELL R MARTIN
Laboratory Supervisor
Core Analysis/Special Core Analysis
on behalf of Amdel Core Services

CONTENTS:

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1. INTRODUCTION

Nine (9) small sections of whole core sample arrived at Amdel Core Services (ACS) Adelaide laboratories for conventional core analysis and petrological analysis on the 13 May 1991.

The following report includes conventional core analysis data: helium injection porosity, permeability to air and calculated grain density determinations. Data presented graphically in this Report includes a porosity versus permeability to air cross-plot.

Off-cuts of samples 1 and 8 were dispatched to the Petrology Department of ACS for analysis and results will be issued in a separate report.

The data contained in this report has been derived by the following methods:

2. PLUG PREPARATION

1½" diameter plugs were taken from the core sections provided. Tap water was used as the bit lubricant. The plug samples were cut along the strike of the bedding as appearing in the core sections, therefore determining a maximimum permeability into the well bore. Samples were trimmed square and the offcuts retained. Offcuts of samples 1 and 8 were delivered to the ACS Petrology Department for analysis as requested.

Residual hydrocarbons and salts are extracted from the plugs using a 3:1 chloroform methanol mixture in a Soxhlet extractor. The solvent is recycled in the Soxhlet until the samples are free of soluble hydrocarbons and salts.

After cleaning, the plugs are dried in a dry oven at temperatures not exceeding 80°C and are then stored in a desicator and allowed to cool to room temperature.

3. PERMEABILITY TO AIR

A plug sample is used for this measurement and is placed in a Hassler cell to which a confining pressure of 200 psig (1380 kpa) is applied; this pressure is used to prevent bypassing of air around the sides of the sample when the measurement is made. A known pressure is then applied to the upstream sample face and the differential pressure (between the upstream and downstream faces) is monitored at the downstream face. Permeability is then calculated using Darcy's Law.

4. HELIUM INJECTION POROSITY

The porosity of a clean dry core plug is determined as follows: it is first placed in a matrix cup; a known volume of helium at a known pressure is expanded into the matrix cup which contains the core plug; the resulting pressure is recorded and the unknown volume (that is, the volume of the grains) is determined using Boyle's Law. The bulk volume is determined by mercury immersion. The difference between the grain volume and the bulk volume is the pore volume and from this the porosity is calculated as the volume percentage of pores with respect to the bulk volume.

5. APPARENT GRAIN DENSITY

The apparent grain density is derived from the measurements described in Section 4, above, and is the ratio of the weight of the core plug divided by the grain volume.

BLE 1

CONVENTIONAL CORE ANALYSIS

Company: Department of Manufacturing and Industry Development
Report: 008/096 Well: Warracbarunah No.2
Date: 20 May 1991 Field:
State: Victoria Country: Australia

Sample Number	Depth (m)	Porosity (%)		Density		Permeability (md)		Summation of Fluids			Remarks
		He Inj	Roll Av	Nat	Grain	Ka	Roll Av Ka	Por %	Oil %	Water %	
1		11.5		2.70		0.79					
2		10.2		2.68		0.62					
3		11.7		2.68		1.4					
4		15.2		2.66		25					
5		14.3		2.68		0.23					
6		15.2		2.68		0.20					
7		15.9		2.68		174					VF
8		6.4		2.71		0.01					
9		19.0		2.67		5.6					

VF = Vertical Fracture; HF = Horizontal Fracture; MP = Mounted Plug; SP = Short Plug;
C# = Top of Core; B# = Bottom of Core; OWC = Probable Oil/Water Contact;
Tr = Probable Transition Zone; GC = Probable Gas Cap;

TAB 2

CORE PLUG DESCRIPTION

Company: Department of Manufacturing and Industry Development

Report: 008/096 Well: Warracbarunah No.2

Date: 20 May 1991 Field:

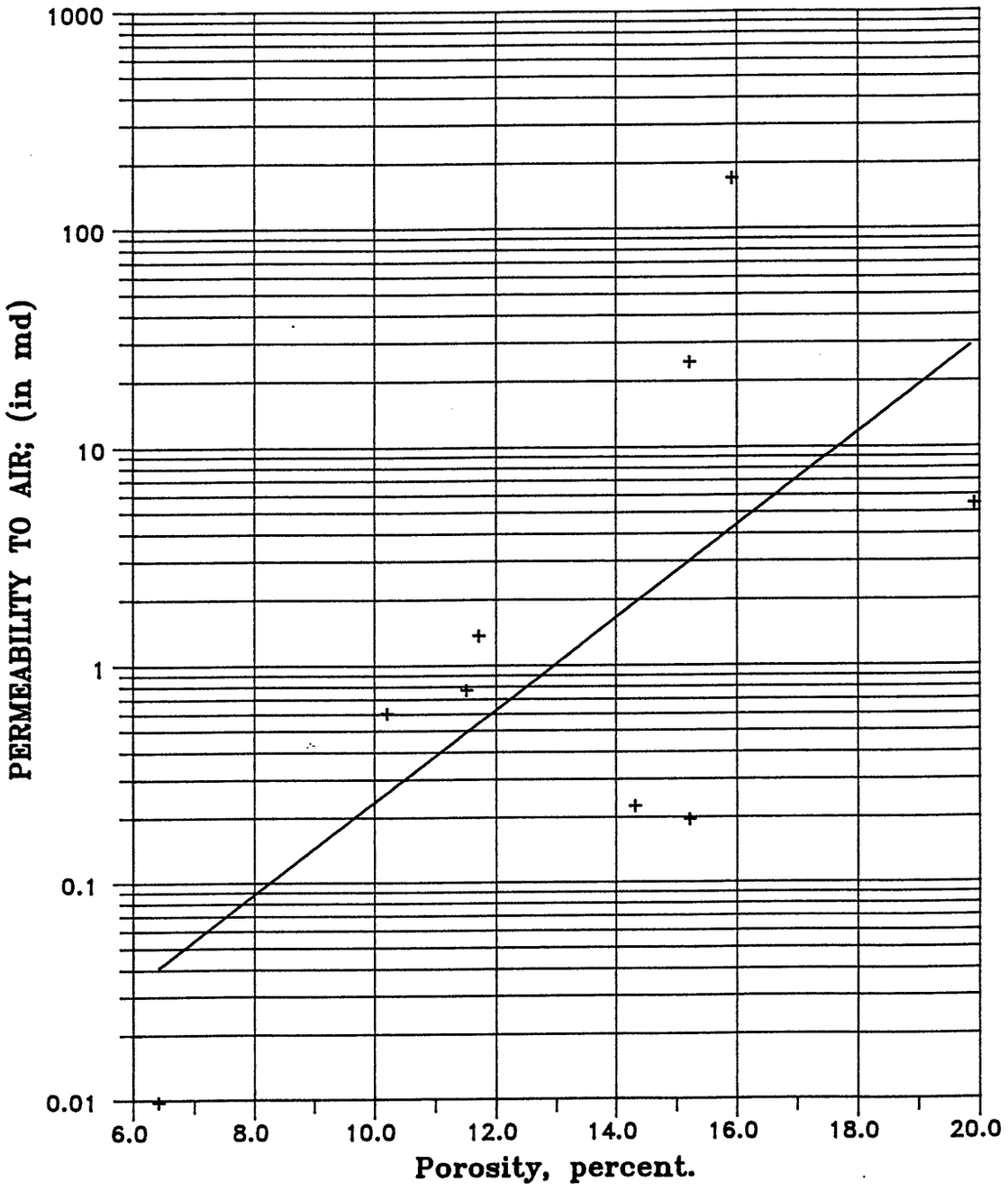
State: Victoria Country: Australia

Sample Number	Depth (m)	Description
1	1524.88-1527.46	Sst: med gry, wl srt, f-med gr, mod wl rndd to sbang, Qtz w/ Cl Cmt.
2	1497.36-1501.31	Sst: med-lt gry, wl srt, f-med gr, sbrndd to slily ang, Qtz w/ Fspr, Cl Cmt, occ carb clasts.
3	1497.36-1501.31	Sst: as in 2.
4	1497.36-1504.31	Sst: slily gnsh gry, mod wl srt, f-crs gr, sbrndd to sbang, Qtz w/ Fspr, occ Rk Frag & Mic, r carb clasts.
5	1442.77-1445.72	Sst: slily brnsh gry, mod-wl srt, f-vf gr, rndd to sbrndd, Qtz & Fspr w/ Cl & Mic, r Rk Frag, carb Bnd, slily turb, v wl cmt.
6	1442.77-1445.72	Sst: slily tn gry, mod srt, f-vf gr, wl rndd to sbrndd, Qtz & Fspr w/ Mic & Cl, carb Bnd & r sml carb clasts, wl cmt.
7	1342.99-1347.84	Sst: gry-bu, wl srt, f-med gr, wl rndd to sbang, Qtz & Fspr w/ Mic & Cl, occ Rk Frag, crs gr qtz Bnd, carb Lam w/ sl Frac, slily turb.
8	1342.99-1347.84	Sst: tn gry, v wl srt, vf gr, sbrndd to sbang, Qtz w/ Fspr Mic & Cl, r Rk Frag, v wl cmt.
9	1032.12-1032.92	Sst: gnsh tn gry, mod srt, crs-f gr, mod rndd to sbang, Qtz w/ Fspr & Cl, occ Mic & sml carb clasts, fri.

Figure 1

POROSITY Vs PERMEABILITY

Company: Department of Manufacturing and Industry Development
Well : Warracburunah No.2



$$K_{md} = 0.002 \times \exp^{(0.489 \times \text{Porosity})}$$