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16 February 1983

F3/178/0
4106/83

Esso Australia Ltd.,
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Attention: Mr K. Kuttan

REPORT F4106/83

YOUR REFERENCE:	Document dated 28/1/83
MATERIAL:	11 plugs
LOCALITY:	WIRRAH #1
IDENTIFICATION:	Cores 5 and 6
DATE RECEIVED:	2 February 1983
WORK REQUIRED:	Core analysis

Investigation and Report by: J. Thorpe

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for Norton Jackson
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1. INTRODUCTION

Eleven core plugs from Wirrah No.1 well were received for porosity and permeability determination at both ambient and overburden conditions.

Following porosity and permeability measurement, up to six samples were to be selected for absolute grain density determinations.

2. PROCEDURE

All cores were cleaned in soxhlet extractors using toluene as the cleaning solvent.

Drying was carried out at 60°C and 60% humidity.

After cooling in a sealed container, each core was in turn placed in the core holder and subjected to a confining or ambient pressure of 1000 KPa.

Pore volume was measured by helium injection, followed by permeability.

Confining pressure was then increased to overburden pressure and pore volume and permeability were again measured.

For samples 1-10 overburden pressure was 32,400 KPa and 24,8000 KPa for samples 11-13.

4700 psi & 3597 psi

3. RESULTS

Porosities and permeabilities for the cores at ambient conditions are given in Table 1, and for overburden pressure in Table 2.

Six samples with varying porosity and permeability were selected for absolute grain density.

To aid your assessment of absolute and apparent grain densities, apparent grain densities were calculated in the following way:

- (a) at 60% humidity
- (b) after drying 72 hours at 60°C.

Results and absolute grain densities are listed in Table 3.

TABLE 1

ANDEL CORE ANALYSIS

WIRRAH #1 GIPPSLAND BASIN - AMBIENT

SAMPLE	PERMEABILITY (MD)	POROSITY (%)	
CORE 6 PLUG 1	111	18.4	2046.50
CORE 6 PLUG 2	89	18.2	2046.59
CORE 6 PLUG 4	183	19.7	2046.68
CORE 6 PLUG 5	105	16.8	2046.83
CORE 6 PLUG 6	874	23.6	2047.07
CORE 6 PLUG 7	434	21.4	2047.15
CORE 6 PLUG 8	1.4	12.0	2049.00
CORE 6 PLUG 10	2.6	12.3	2049.17
CORE 5 PLUG 11	3.1	16.0	1586.62
CORE 5 PLUG 12	.363	12.0	1586.88
CORE 5 PLUG 13	4.1	15.6	1587.05

↑
mMD Measured depth as
cut (unshifted).

TABLE 2

AMDEL CORE ANALYSIS

WIRRAH #1 GIPPSLAND BASIN -OBP

SAMPLE	PERMEABILITY (MD)	POROSITY (%)
CORE 6 PLUG 1	22.3	15.2
CORE 6 PLUG 2	27.5	17.8
CORE 6 PLUG 4	19.3	14.8
CORE 6 PLUG 5	4.8	13.2
CORE 6 PLUG 6	462	20.4
CORE 6 PLUG 7	316	19.0
CORE 6 PLUG 8	.077	8.6
CORE 6 PLUG 10	.142	10.9
CORE 5 PLUG 11	1.1	14.0
CORE 5 PLUG 12	.012	11.4
CORE 5 PLUG 13	1.3	13.9

TABLE 3: GRAIN DENSITIES - WIRRAH #1

	Absolute Grain Density	Apparent Grain Density 60% Humidity	Apparent Grain Density After Drying 60°C
Core 6 Plug 1	-	2.67	2.67
2	2.70	2.67	2.67
4	-	2.67	2.67
5	2.71	2.68	2.67
6	2.72	2.67	2.66
7	-	2.66	2.66
8	2.71	2.74	2.73
10	-	2.70	2.69
Core 5 Plug 11	-	2.62	2.62
12	2.63	2.62	2.61
13	2.63	2.63	2.62