

1. INTRODUCTION

Seventeen cuttings samples and one core sample from Pelican-5 were received for vitrinite reflectance determinations and descriptions of dispersed organic matter over the period 7 January to 4 March 1986. Results of these samples were reported by phone on a daily basis as work was completed.

Six sidewall core samples were received on 15 May 1986 for the same analyses. This report is a formal presentation of the data from this work.

2. ANALYTICAL PROCEDURE

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 $23 \pm 1^\circ\text{C}$. Fluorescence observations were made on the same microscope utilising a 3 mm BG3 excitation filter, a TK400 dichroic mirror and a K510 suppression filter.

3. RESULTS

Vitrinite reflectance determinations are summarised in Table 1. Figure 1 is a plot of vitrinite reflectance versus depth. Histogram plots of this data are presented in Appendix 1. Descriptions of the dispersed organic matter in these samples are presented in Tables 2-4. Important aspects of these descriptions are illustrated by a series of plates in Appendix 2.

4. DISCUSSION

4.1 Maturity

The vitrinite reflectance data (Table 1, Figure 1) indicates that the sedimentary section penetrated by Pelican-5 is sufficiently mature for the generation of light oil from resinite-rich dispersed organic matter (DOM) below approximately 1350 metres depth (threshold VR = 0.45%; Snowdon and Powell, 1982).

Significant gas generation from woody-herbaceous DOM (vitrinite, and to a lesser extent, inertinite) commences at VR = 0.6 (Monier *et al.*, 1983). On this basis, sediments below 2400 metres depth in Pelican-5 should be sufficiently mature to generate significant quantities of gas.