

4.7 Palynology

A palynology report by AD Partridge and R Morgan is included in Appendix 5.

4.8 Geochemistry

Selected cuttings samples from the Eastern View Coal Measures were submitted to Geotech (Geotechnical Services Pty Ltd) for maturity and geochemical analyses. Twenty-seven samples were analysed by Rock Eval and twenty five of these samples were submitted for determination of vitrinite reflectance measurements (see Appendix 4).

Total Organic Carbon (TOC) is consistently high partly due to the presence of coals in the cuttings samples. Consequently TOC values typically fall in the very good to excellent category (2-4%). Free hydrocarbon richness (S_1) is fair to very good (0.20-1.60 mg/g) and locally excellent (> 1.60 mg/g).

The potential yield or genetic potential (S_1/S_2) is generally moderate to very good (2-20 mg/g) and is occasionally excellent (> 20 mg/g). The production indices ($S_1/(S_1 + S_2)$) are largely affected by igneous activity observed at the Flinders 1 and are high (circa 0.3) above and immediately below the igneous intrusion, and decrease to approximately 0.15 below the intrusion.

TMax values show an unusual profile resulting from igneous activity associated with the Flinders structure. From the near top EVCM to immediately below the igneous intrusion TMax values are consistently overmature ($> 460^\circ\text{C}$) whilst the lower part of the EVCM below approximately 2400m has TMax values in the oil mature window (430-460 $^\circ\text{C}$) consistent with a regional maturity profile unaffected by intrusives.

The vitrinite reflectance profile is in agreement with that shown by the TMax data, although because all the samples are from cuttings many of the histograms are bimodal due to contamination by cavings. A hydrogen index versus oxygen index plot shows that the source material is mixed type II and III kerogen consistent with other source material from the Eastern View Coal Measures elsewhere in the Bass Basin.

4.9 Conclusions and Contributes to Geological Knowledge

The primary objectives of Flinders 1 were the fluvial sandstones of the lower to middle *M. diversus* (Primary Zone) of the Eastern View Coal Measures, located some 500m updip of the Pelican Field in a large fault bounded structure. The primary objective fluvial sandstones were intersected as prognosed, an amplitude anomaly observed on seismic data was caused by the presence of an igneous intrusion, intruded near to the top of the primary target. There were no significant shows associated with the primary target. Sandstones below the primary target, age dated as Palaeocene, over the intervals 2559-2562m and 2673-2676m have minor shows of fluorescence and cut, possibly resulting from early *insitu* generation or migration of hydrocarbons.