

Cases of significant divergence between reflectance gradient and thermal gradient have been reported. Though unexplained at this stage, it should be recognized that such cases of low reflectance gradients and apparent lagging of maturation increase behind temperature increase also are reported in the Gippsland Basin.

### Pyrolysis

Core samples have been analysed by pyrolysis, using the Rock-Eval methods. Published results are summarized in Figure 31.

The samples from the lower Eastern View Coal Measure are rated as good to very good in regard to petroleum potential. This is in general agreement with source ratings obtained from other methods.

### Gippsland Basin Comparison

Results of several published studies on the subject of source-rock and maturation in the Gippsland Basin are summarized.

The main source-rock for the extensive oil and gas deposits so far discovered in the Gippsland Basin appear to be at depths greater than those reached by any of the exploratory wells.

Chromatographic analysis of Gippsland crudes suggest that the oils originated in solid organic matter derived from algae and land plants, the latter contributing to the higher than usual wax content.

Microscopic characterization of carbonaceous material reveals high contents of vitrinite and exinite. A typical composition of coal being vitrinite 84%, exinite 12%, and inertite, mostly fusinite, 4%.

Studies of the exinite indicate that the upper part of the Latrobe Group, time equivalent to the upper Eastern View Coal Measures, is above the maturation level. Therefore, it appears that the major oil, condensate and gas accumulations of the Gippsland Basin have not been sourced by in-situ mature source-rock, but are the results of long range migration along fault planes, bedding planes and unconformity surfaces, Figure 32. Figure 33 show that vitrinite reflectance versus depth increases at comparable rates in the Bass Basin as in the Gippsland Basin.