

predictive thermal maturation model which are noted in this study as SUM values and the Lopatin-Waples predictive thermal maturation model which are noted in this study as TTI values. A comparison of vitrinite maturation values to SUM values and TTI values is presented on Enclosure 48. Generally, the differences between the two models is that the Bandurski model accelerates maturation more rapidly than the Lopatin model, however the Lopatin model begins its maturation acceleration at lower burial temperatures. The Lopatin model is considered an empirical model; the Bandurski model is based on more theoretical evidence. In simple burial histories a comparison of the two models would show that the Lopatin sediments would be more mature than the Bandurski sediments early in the burial history, but with continued time and burial depth the maturation characteristics of the Bandurski sediments would meet and surpass the Lopatin sediments.

A comparison of the measured vitrinite data to vitrinite values of the theoretical models indicates that the Bandurski model is inferior to the Lopatin model in representing the thermal maturation of the Bass Basin sediments. As a result the remaining geothermal gradient analysis will consider only the Lopatin TTI theoretical values.

The vitrinite values of the Koorkah-1 well are illustrated on Enclosure 40. The Koorkah-1 well has extensive measured vitrinite data. The theoretical values in the shallower section of all three geothermal gradients are a fair match to measured data, but a geothermal gradient of 1.80°F per 100 feet has theoretical values too high at the bottom of the well in comparison to measured data. Either geothermal gradient of 1.70°F per 100 feet or 1.75°F per 100 feet fairly match the deeper measured data. The M. diversus measured data slightly favor a geothermal gradient of 1.75°F per 100 feet.

The vitrinite values of the Pelican-5 well are illustrated on Enclosure 41. The Pelican-5 well also has extensive measured vitrinite data significantly more mature than the Koorkah-1 well. Again any of the vitrinite comparisons of the three geothermal gradients presented is a fair match at the shallower levels. A geothermal gradient of 1.80°F per 100 feet has theoretical values too high in comparison to measured data at the bottom of the well. The best comparison is with theoretical values of 1.75°F per 100 feet.

The vitrinite data of the Poonboon-1 well are presented on Enclosure 42. The Poonboon-1 well has more limited vitrinite data than the Koorkah-1 or Pelican-5 wells. The theoretical vitrinite values from all three of the geothermal gradients presented are too mature at the bottom of the well. The best fit seems to be with the geothermal gradient of 1.75°F per 100 feet which generally matches mid depth measured vitrinite data.

The vitrinite data of the Bass-3 well are presented in Enclosure 43. A comparison of theoretical vitrinite values to measured vitrinite data through the depth of the well indicates that a geothermal gradient of 1.75°F per 100 feet represents the best match.

The vitrinite data of the Cormorant-1 well are presented in Enclosure 44. The best fit geothermal gradient for this well is 1.85°F per 100 feet,