

Two wells, Flinders 1 (flank setting) and Pelican 5 (trough setting), were used as a guide in examining the thermal and tectono-sedimentary history of the area. The extrapolation of well profiles, using seismic data, yielded a thermal maturation history of parts of the basin beyond present drilling depths (Pelican Deep Model) and in areas untested (maturity maps). Maturation modelling provides an estimate of the timing of hydrocarbon generation.

10.3 **Stratigraphy and Compaction Effects**

Stratigraphic data were provided as formation tops and unit thicknesses, obtained from wells and seismic data. Some formations were further subdivided into two or three lithologically distinct units (eg EVCM Units A, B and C - Appendix 6) in order to model their compaction and heat flow characteristics. Use of such data in basin modelling routines can provide more accurate estimates of both the timing and extent of hydrocarbon generation in sedimentary systems.

Lithologies were obtained from mudlogs and petrophysical logs and were specified as percentages of sand, silt, shale and occasional coals and volcanics. The stratigraphic units and their respective lithologies used for basin modelling are outlined in Appendix 2.

Mechanical compaction was calculated using the Sclater-Christie Compaction model (1980) (a porosity-depth dependent exponential algorithm). The basic assumption made is that the thickness of sediments are reduced by a predictable amount according to lithology and depth of burial. The equation used is considered to be more accurate than the Falvey/Middleton (1981) model when rapid rates of deposition have occurred.

10.4 **Burial History Model**

The Pelican Trough contains a sedimentary section up to 6 kilometres thick. The deepest well in the area is 4267m deep (Pelican 5), and therefore estimation of parameters for maturity and burial history models must be made from seismic data and regional correlations for the deepest, most mature source rocks.