The area mapped covers most of T/25P and the southern portion of T/18P which includes the Southwest Ramp, Pelican Trough and Poonboon Platform structural provinces. The depth-maturity parameters used in constructing these maps are tabulated (Table 10.1) and were mostly derived from the Pelican Deep Maturity Model. The results from these maps are further discussed in Sections 10.11 and 10.12.

The maturity maps were generated from seismic two-way time maps using calculated maturity profiles and a simple conversion based on a time depth curve from the Pelican 5 checkshot survey. The Pelican 5 time-depth curve is considered a good representation for all the Pelican Field, and most T/25P wells. Time depth relationships on the Poonboon Platform are slightly shifted but an error less than 100m is tolerable given the regional distribution of the well data and the error bars associated with vitrinite reflectance data.

10.10 Kinetic Calculations and Modelling

The kinetic (or Tissot-Espitalié) method has been employed in this study to predict hydrocarbon evolution. This technique, unlike the traditional TTI method (Lopatin 1971, Waples 1980), calculates multiple parallel reactions that occur as organic matter undergoes degradation to hydrocarbons. Each chemical reaction has its own kinetic parameters: reaction fraction (kerogen percentage with respect to activation energy), activation energy (energy required for bond rupture) and Arrhenius's constant (frequency factor) (Platt River Inc., 1989).

Several kinetic models have been developed. Tissot and Espitalié (1975) used a model to convert kerogens directly to oil. Further development of the kinetic approach by the Institut Francais du Pétrole predicted that kerogen will be converted to oil and then to gas and residues. The kinetic basin model used in this study simultaneously converts kerogens to oil and gas, then oil is transformed into gas and residues (Transformation Ratio Plots: Section 10.12).