



To be presented by John Davidson (Petrecon) at Vic/Tas Branch meeting on Wednesday, 16th November, 1994.

Intermittent Compressional Pulses in Extensional Basins

In southeastern Australia the current maximum horizontal compressive stress is directed northwestwards. It can be shown that while the Gippsland, Bass and Otway Basins developed under extensional stress from the Late Jurassic to Recent there have been pulses of generally northwesterly directed compression in the Late Miocene to Recent, latest Eocene/earliest Oligocene, Early Eocene, Intra-Late Cretaceous (?Campanian), Early Cenomanian and Late (?) Albian.

In eastern Australia these compressive pulses have been recognised in the Late

Jurassic, Late Triassic, Mid Triassic, Late Permian and Early Permian.

It is possible to interpret many stresses on the global stress map in terms of plate tectonics. Plate tectonics on a constant radius earth predicts a state of zero stress in Australia, except for northerly to northeasterly compression along the northern margin where Australia interacts with the Pacific plate. However, the continent is everywhere in a state of significant horizontal compression.

Compression is generally directed to the centre of the Australian continent which suggests expansion-induced decrease in the radius of curvature, or surface flattening of the Earth accounts for upper crustal compression near major basin-forming normal faults. Contemporaneously the lower crust is extended which facilitates continued basin subsidence.

The recognition of probably all of the SE Australian compressive pulses and the Late Jurassic and Late Triassic events on the NW Shelf of Australia enhances the concept of global tectonic synchronicity.