

However, geothermal gradients during the period of the Cenomanian and Turonian may have been higher in view of the outpourings of volcanics that covered the surface of the Otway Group. Goldstien is reviewing the data to take account of this possibility.

5.0 PROSPECTS

The most prospective sub-basin is that of the Boobyalla. Post-depositional, detached, roll-over structures are mapped on both east and west margins of the central and southern graben, and there is every opportunity for further structures to be mapped with the acquisition of more seismic data along these trends. There are numerous lateral closures suggested against the updip culminations of tilted fault blocks of Turonian and Cenomanian beds.

Two Eocene structures are mapped west of Chat-1, and the pinch-out edge of the Cenomanian might be prospective in the Bark Sub-Basin.

5.1 Post-Depositional, Detached, Roll-over Structures in the Boobyalla Sub-Basin.

A roll-over structure is one formed on the downthrown side of a growth fault in which beds dip towards the fault surface in a structural orientation opposite to that produced by drag (Bates and Jackson, 1980). The detached, post-depositional, roll-over structure owes its origin to the brief period of extension that separated beds from their depositional position against the fault face, causing them to collapse under gravity into the newly available space. The resulting anticlinal structure puts the beds into further extension, inducing an assemblage of synthetic and antithetic normal faults.

A post-depositional, detached, roll-over structure, is mapped at the intersection of seismic lines BB88-165, WB 82-38, and BB 88-166 with seismic lines BB 88-173 and BB 88-172 (Enclosure 18). The structure formed at the end of Turonian times in response to the extensional forces that caused the rifting that separated Australia from Lord Howe Rise. It is located at the southern termination of the listric fault that forms the western boundary to the Boobyalla Sub-Basin. The throw of this fault decreases to the south until it becomes no more than an interruption to the continuity of seismic data. The amount that the structure has rolled-over is proportional to the throw of this fault. The structure plunges basinwards in the direction of the increasing throw of the fault.

The axis of the structure runs in a northwest to southeast direction. The assemblage of synthetic and antithetic faults parallels this axial direction. Since the plunge of the structure is northwesterly, closure in the updip direction becomes critical. This closure may be structural, or fault-bounded, or a combination of both. Further seismic must clarify this.

A second roll-over structure along the same listric fault is mapped immediately to the north of the first one. Seismic lines BB 88-162, WB 82-36, BB 88-164 and WB 82-37, indicate the complexity of the structure. There is need for more seismic lines to be recorded across this structure (Enclosure 18).