

- 1 the grid of "interpreted data" was taken, and a simple data interpolation procedure was done to get a value for every grid cell at 12.5 x 25 metres;
- 2 this surface of data was cut along every in-line location and back-interpolated to the seismic data;
- 3 with interpreted data on every line, the horizon was re-snapped to pick the apex/nadir of the wavelet peak/trough as appropriate, and the attribute data subsequently extracted.

As illustrated by a comparison of Figures 6 and 7 which show the Near top 2718 sand amplitude data before and after this sequence, a considerable amount of extra detail is attained using this technique. The Dip, Azimuth and Amplitude attributes are useful for identifying structural and stratigraphic detail and trends not recognisable in a 2D sense. The Dip and Azimuth maps effectively take out the structural detail and leave the faults and lineaments visible. A good example of this is shown in Figures 8 and 9. Figure 8 shows a small area of the Early Eocene dip magnitude map, with four distinctive lineaments not previously interpreted. As illustrated in Figure 9, on in-line 850, these translate into faults on the section. While the Early Eocene marker shows no disruption or displacement, lineament 2 for example, is clearly associated with displacement at shallower levels and coincident with a line of disruption at deeper levels. Clearly, this technique is useful in identifying faults with throws at or below the seismic resolution level, and is particularly important in this area where reservoirs are generally less than 20 metres thick, and small throw faults could become barriers to hydrocarbon migration due to seal juxtaposition.

The Amplitude attribute also can identify structural lineaments, but is primarily recognised as being a tool for the recognition and prediction of sand quality or fluid content. This attribute will become much more useful in a predictive and quantitative sense, following the drilling of a few appraisal wells, for calibration of the seismic response.

For some problem areas or levels, it was also found useful to use the other attributes available on the IES system, eg Instantaneous Phase, Instantaneous Frequency, Apparent Polarity etc. These can be calculated for specific in-lines and used to aid in the recognition of specific events. For example, the Instantaneous Phase is particularly useful in helping to identify the seismic character of the deep Palaeocene volcanic sequence.

4 RESULTS

Contour maps of time and depth structure, velocity and various attributes have been produced at each mapped level, at a scale of 1:25000, and copies have been forwarded to the Joint Venture partners under separate cover. For the purpose of this report, all maps, at approximately 1:150,000 scale are contained in Appendix I. Time and depth structure maps of the three main reservoir levels at a scale of 1:25000 are also included as Enclosures 4 to 9.

4.1 Structural History

The basic basin architecture was established during an Early Cretaceous rifting phase, related to the pull apart of the Australian and Antarctic plates. A deep structural ridge, underlying Yolla, was probably formed at this time, and remained a positive structural feature throughout the deposition of the EVCN. Drape and compaction form the dominant structural mechanisms with faults showing growth and increasing intensity with depth.