

DEPOSITIONAL SETTING

Core material from twenty-two wells was examined to determine the Tertiary and Cretaceous depositional setting in the Bass Basin. A list of wells and cored intervals studied is summarized in Table 1.

Stratigraphic units represented in the core samples include the Demon's Bluff, Eastern View Coal Measures and the Otway. The results of the study include photographic documentation of all core samples (Appendix C); 22 facies panels with descriptive text, representative photographs and downhole logs (Appendix B); and five isopach maps upon which the cores and subfacies are posted with respect to the biostratigraphic zones *T. longus*, *L. balmei*, *M. diversus*, *P. asperopolus* and *N. asperus* (Enclosures 25, 26, 27, 28 and 29).

The depositional setting of biostratigraphic zonations Cretaceous *T. longus*, and Tertiary *L. balmei*, *M. diversus*, *P. asperopolus* and *N. asperus* zones is discussed. A series of diagrammatic facies maps representing each of the biostratigraphic zones except *T. longus* were constructed (Enclosures 30, 31, 32, and 33). These maps do not display specific facies, but rather associations of facies. Neither core or biostratigraphic control, except in the Pelican area, was sufficient to map individual facies. The coastal/lacustrine/estuarine/embayment association (blue) includes shore-face, barrier and offshore sequences. The delta association (green) includes crevasse splays, channels (crevasse, distributary and fluvial), coals, marshes, and mouth bars. Additional data were obtained from the downhole logs of noncored wells, and were compared to log signatures of cored intervals in an effort to extend the interpretations. Gaps exist where wells failed to penetrate specific biostratigraphic zones, or a zone was not identified.

L. balmei/*M. diversus*. The persistence of the deltaic facies to the west and south, and its absence to the north and east is the most notable feature in the *L. balmei* and *M. diversus* intervals (Enclosures 30 and 31). These two intervals have structural and isopachous trends which are relatively similar to *P. asperopolus* and *N. asperus* (Enclosures 32 and 33). The apparent absence of the delta facies within the Cormorant Trough suggests a structural influence and sediment sources to the west and south. Similar relationships are observed in other pull-apart basins (North and Norwegian Seas) (Laresse and Haskell, 1984).

Pelican-1 and adjacent wells contain core samples representative of the *L. balmei* and *M. diversus* intervals. These samples indicate the existence of a transitional delta/coastal facies. *M. diversus* cores 8 and 9 are stacked fluvial channel sequences which exhibit large bank collapse intraclasts and carbonized grass filaments. *M. diversus* cores 6 and 7, originally interpreted as a lacustrine/embayment coastal association, have been found to contain marine/estuarine dinoflagellate cysts (Richard Hedlund, Amoco). Evidence for at least partial marine/estuarine incursions within *L. balmei* and *M. diversus* is supported by the recognition of marine shales from the computer rock zonation