

VOLCANICS

Extrusive and intrusive igneous sections have been penetrated by nine of the wells in the Bass Basin. The extrusive volcanic sediments are thickest in the Late Cretaceous and Paleocene intervals with an overall interval thickness of 1700 feet, 1100 feet and 2600 feet penetrated in the Aroo-1, Yolla-1 and Tilana-1 wells respectively (Enclosure 23). Additional extrusive volcanics are in the Eocene through Miocene sections. Intrusive igneous intervals have been penetrated by Bass Basin wells also. These intrusive intervals are associated with extrusive volcanics, and their association has been interpreted to reflect that the extrusive volcanics were an impenetrable cap for later intrusive magmas forced through the pre-Oligocene sediments.

The geochronology data are posted on Enclosure 23. The 54 million year age for the deeper extrusives of the Yolla-1 well agrees with the palynology dating of the overlying sediments. The other four geochronology ages are in the 20 to 28 million year age range. This suggests that there were pervasive late Oligocene-early Miocene intrusive activity in the basin associated with the same age extrusives in the Bass-1, Yolla-1 and Tilana-1 wells and seen throughout the basin on seismic lines (Appendix A). 26

The 28.3 million year age date for the junk sub sample in the Tilana-1 well is interpreted to reflect dating of cave from the shallower intrusion.

The 22.4 million year age date of the sample in the Cormorant-1 well is difficult to interpret. The sample could be from an intrusive zone within the extrusive interval.

The lateral continuity and extent of the Late Cretaceous and Paleocene extrusives are difficult to evaluate. The extrusive intervals, highlighted in fluorescent orange in Appendix A, show little seismic contrast in comparison to nonvolcanic sediments and are difficult to follow reliably in a lateral direction. The lateral continuity may be extensive for these Late Cretaceous and Paleocene extrusives. Onshore exposures of Paleocene extrusives, Enclosure 24, show an erosion influenced, present day continuity of 15 square kilometers or 10 square miles, with indications that its pre-Recent erosion continuity may have been three times as great. The Bass Basin is interpreted to have a lithospheric extensional Beta factor of 2.6. Basins with Beta factors of 2 or greater are associated with extensive flood basalt deposition (personal communication, John F. Dewey, Oxford University). E the ridge sig
 $\beta = 1.6$
 $\beta \neq$ igneous activity

The importance of this interpretation is that laterally extensive extrusive basalt could have been a barrier for migrating oil from pre-Paleocene source rocks to reach the younger Eastern View Coal Measure reservoirs. Migration must have been primarily lateral below the basalts except in areas of well defined graben-edge faults. if it occurred
at all