STRATIGRAPHIC AND STRUCTURAL DEVELOPMENT OF THE ST. VINCENT TERTIARY BASIN, SOUTH AUSTRALIA

by

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SUMMARY

The St. Vincent Basin in South Australia is a Cainozoic basin which contains sediments of fluviatile and marine origin. On the eastern side of the basin, thicknesses and facies relationships indicate that ancient faults formed the boundaries between high and moderately subsiding areas. Facies relationships suggest that during the Tertiary there were times when movements of blocks adjacent to these faults were independent of one another. The fluviatile sediments are typical of floodbasin deposits and distinctly lack a thick Tertiary conglomerate facies. The absence of this facies and the fine grained nature of marine sediments adjacent to faults indicates that little structural movement occurred on highs separating marine embayments while relative subsidence was the main form of movement in the embayments.

Basal fluviatile floodbasin deposits are typical on the northern side of the basin. Unconformable relationships between sediments of Upper Eocene and Miocene age appear to be widespread in this area denoting a period of very mild uplift during the Oligocene. This movement in part occurred along linear elements but is possibly related to "epeirogenic" movements. Marine sediments intercalated with a lagoonal facies are characteristic of sediments of the western side of the basin. This area also can be subdivided into blocks which at times acted independently of one another.

Upper Miocene - Lower ?Pliocene and Pleistocene phases of folding and faulting are recognized in sediments on the

margins of the basin. These movements were less intense on the western side ("shield" area) than on its eastern side.

On the eastern side of the basin, fluviatile sediments of Middle Eocene age are present at the base of the Cainozoic sequence, but other fluviatile deposits are younger and are intercalated between marine sediments on the margin of the basin. Still younger fluviatile or lacustrine sediments are found in parts of the Mt. Lofty Ranges. Marine sediments overlap basement in areas of the eastern side of the basin and both on its western and northern sides. Although marine regressions are recognised there is little evidence of reworked foraminifera which suggests that erosion on the margins of the basin was at a minimum. The very mild movements of the rims of the basin, the absence of a major orogeny since the Lower Palaeozoic, thin sequences of Tertiary sediments and movements adjacent ancient faults indicate that the St. Vincent Basin is an intracratonic basin.