

Volcanic tuffite cones dated as Upper Oligocene and Lower Miocene indicate tectonic activity of this age in the northern and south-western parts of the Bass Basin.

During Pliocene time, the marine transgression reached the end of its full cycle in Gippsland and Otway. During Middle Pliocene time, these areas and apparently the entire Bass Straits region, were subjected to uplift, probably accompanied by some gentle deformation and faulting. Volcanism and outpouring of lava was widespread in Tasmania and west-central Victoria.

The sea in general regressed to its present limits during late Pliocene and Pleistocene time.

Generalised Stratigraphy of the Bass Basin

Paleozoic Rocks - Paleozoic sediments (marine to non-marine), metasediments, metamorphics, and igneous intrusive and extrusive rocks are believed to comprise "economic" basement in the greater Bass Strait region.

In the Mesozoic-Tertiary Otway Basin two wells reached the Paleozoics (Frome-Broken Hill Ferguson's Hill- and Pretty Hill-1), as did the Arco S.W. Bairnsdale-1, Duck Bay-1, and others in the Gippsland Basin. Hence, it is reasonable to expect that the Paleozoics will similarly be an unprospective complex of sedimentary, metamorphic and igneous rocks in the Bass Basin.

Mesozoic Rocks - Mesozoic rocks are present at the surface in both Victoria and Tasmania. They have been penetrated or encountered in many wells in Otway and Gippsland. Some thin non-marine Triassic rocks are present in west-central Victoria. In Tasmania the only known Mesozoic rocks are of Triassic age. They consist of 1500 to 2000 feet of lacustrine and fluviatile proto-quartzites, lithic arenites, lutytes, minor fine-grained conglomerates, and coal beds (Hale Spry and Banks, 1962). In onshore Gippsland, more than 8,600 feet of the Jurassic and Lower Cretaceous Otway Group have been drilled. This Group consists of non-marine felspathic sandstone, chloritic greywacke, siltstone, mudstone, and carbonaceous shale, with fossil plants and thin black coal seams.

The Bass Basin contains Mesozoic rocks of Upper Cretaceous age and probably the Otway Group equivalent.

Esso's recent offshore well, Esso Gippsland Shelf-1 encountered 2994 feet of Upper Cretaceous sandstone and siltstone. Esso Bass-1 drilled 1337 feet of beds of similar age and lithology. In the Gippsland Basin offshore there is apparently continuous deposition from Upper Cretaceous through Paleocene time. In the Bass Basin however, angularity of beds immediately beneath the Paleocene-Upper Cretaceous contact indicates at least local unconformity between the Cretaceous and Tertiary systems.

In the Otway Basin, the Cretaceous and Jurassic rocks have a maximum composite thickness of 15,000 feet. They consist of several marine to non-marine formations comprised of siltstone, sandstone, and greywacke, with lesser amounts of conglomerate, mudstone, and coal. Plant fragments, spores, and foraminifera are present.

Tertiary Rocks - The Esso Bass-1 well encountered a Tertiary section from Paleocene to Upper Miocene in age.

Paleocene-Eocene - The lowermost Tertiary unit present in the Esso Bass-1 well is made up of 445 feet of interbedded sandstone, siltstone, shale, and coal; palynological age determination indicates that this interval correlated with the Paleocene to Mid-Miocene of Western Victoria.