

rocks. Upper Eocene time saw a change in sedimentary conditions from non-marine to restricted marine.

Uplift and slight deformation took place in Gippsland after deposition of the Eocene coal measures. Deposition apparently was continuous during this time in the Otway Basin. In the Bass Basin, however, there is seismic evidence of local unconformity at the top of the Eocene towards the basin margins.

During the Oligocene and Miocene time, marine conditions prevailed in the Bass Basin with deposition of fossiliferous limestone, calcareous mudstone, marl, and minor siltstone beds. Local angularity beneath the Oligocene-Miocene contact on seismic sections indicates a regressive pulse at the beginning of Miocene time. At and near the present edges of the Bass Basin in Tasmania and Victoria are outcrops of mainly Miocene skeletal limestones and some marine, fossiliferous siltstone.

In the southwest part of the Bass Basin in the vicinity of Three Hummock Island, and in the northern half of the basin, tuffite cones of Upper Oligocene and Lower Miocene age indicate Tectonic activity during this period.

During Pliocene time, the marine transgression reached the end of its full cycle in Gippsland and Otway. During Middle Pliocene time, these areas, and also 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.

Generalized Stratigraphy of the Bass Basin

Paleozoic Rocks - Paleozoic sediments (marine to non-marine), meta-sediments, 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 (Fergusons Hill-1 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 complexity 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. 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 feldspathic sandstone, chloritic greywacke, siltstone, mudstone, and carbonaceous shale, with fossil plants and thin black coal seams. In the Otway Basin, the Cretaceous and Jurassic rocks have a maximum composite thickness of 15,000 feet. They consist of several marine and non-marine formations comprised of siltstone, sandstone, and greywacke, with lesser amounts of conglomerate, mudstone, and coal. Plant fragments, spores, and foraminifera are present.

Some thin non-marine Triassic rocks are present in west-central Victoria. In Tasmania the only known Mesozoic sedimentary rocks are of Triassic age. They consist of 1,500 to 2,000 feet of lacustrine and fluvialite proto-quartzites, lithic arenites, lutytes, minor fine-grained conglomerates, and coal beds (Hale, Spry and Banks, 1962).