

At the close of Upper Cretaceous time the pre-Tertiary rocks were subjected to uplift and erosion and a widespread regional unconformity developed in the Otway Basin. The ancient land-mass which is believed to have existed west of Tasmania completely foundered, creating an open seaway to the Southern Ocean.

Paleocene-Lower Eocene - During Paleocene time gentle subsidence took place in the Otway Basin with the sands and conglomerates of the Pebble Point Formation being deposited unconformably over the old erosional surface. The Pebble Point grades upward into the Rivernook mudstones and overlying sandstones and siltstones of the Dilwyn Formation. These units are collectively referred to as the Wangerripp Group. In the Anglesea area swamp conditions prevailed, resulting in the deposition of the Eastern View Coal Measures.

Clastic sedimentation apparently persisted in parts of the basin on into Lower Eocene time, followed by structural uplift and erosion.

Upper Eocene - Recent - During Upper Eocene time the Otway Basin subsided gradually to receive the sandstones of the Mepunga Formation which probably grade into deeper water silts and/or mudstones. During Oligocene and Miocene time marls and limestones were deposited in the Otway Basin by the transgressing sea as the old clastic source areas had apparently been reduced to a very low level. These marine conditions persisted into late Miocene time when the marine transgression reached its fullest extent. During Middle Pliocene time the Otway Basin was subjected to uplift, probably accompanied by some gentle folding and faulting. Volcanism was widespread during this period in Tasmania and west-central Victoria and South Australia. In late Pliocene and Pleistocene time the sea in general retreated to its present level.

#### D) COMPOSITE STRATIGRAPHIC COLUMN

Portions of two representative well logs, Port Campbell No. 2 and Casterton No. 1 have been joined together to present a composite stratigraphic column (see Fig. 2). Formation names and generalized lithologies are indicated.

#### E) HYDROCARBON POTENTIAL

To date all hydrocarbon occurrences in the Otway Basin have been restricted to the upper and lower Cretaceous formations. The Otway formation appears to have some potential as a source for oil and gas, but the general lack of reservoir beds is discouraging. The Upper Cretaceous rocks do contain reservoirs and also may be useful as sources.

Extensive fresh water flushing is found in the Tertiary sands in the wells that have been drilled so far. Probably less flushing will be present in the offshore wells as the massive sands will interfinger with fine grained sediments in a seaward direction. Whether both reservoirs and source rocks will be found remains to be seen.

The hydrocarbon potential of the Jurassic rocks is essentially unknown. It would be unfortunate if the 1,250 feet of Jurassic sediment found at Casterton-1 were typical.

#### F) EXPLORATION HISTORY

##### 1. Wells

The first significant test well in the Otway Basin was the Port Campbell No. 1 drilled by Frome-Broken Hill Pty. Ltd. in 1959. This well had encouraging flows of gas and condensate from the Lower Cretaceous Waarree formation but pressure soon dropped and no commercial production was possible. Since then, twenty-two tests have been drilled in various parts of the basin